

Discrimination against migrants and its determinants: Evidence from a Multi-Purpose Field Experiment in the Housing Rental Market

Wladimir Zanoni
Lina Díaz

Country Department Andean
Group
Country Office in Ecuador

Housing and Urban
Development Division

TECHNICAL
NOTE N°
IDB-TN-2674

Discrimination against migrants and its determinants: Evidence from a Multi-Purpose Field Experiment in the Housing Rental Market

Wladimir Zanoni
Lina Díaz

March, 2023



Cataloging-in-Publication data provided by the
Inter-American Development Bank
Felipe Herrera Library

Discrimination against migrants and its determinants: evidence from a multi-purpose
field experiment in the housing rental market / Wladimir Zanoni, Lina Díaz.

p. cm. — (IDB Technical Note ; 2674)

Includes bibliographic references.

1. Immigrants-Housing-Colombia. 2. Venezuelans-Public opinion-Colombia. 3.
Venezuelans-Social conditions-Colombia. 4. Rental Housing-Social aspects-Colombia.
I. Zanoni López, Wladimir, 1975- II. Diaz, Lina M. III. Inter-American Development
Bank. Country Department Andean Group. IV. Inter-American Development Bank.
Country Office in Ecuador. V. Inter-American Development Bank. Housing and Urban
Development Division. VI. Series.

IDB-TN-2674

<http://www.iadb.org>

Copyright © 2023 Inter-American Development Bank. This work is licensed under a Creative Commons IGO 3.0 Attribution-NonCommercial-NoDerivatives (CC-IGO BY-NC-ND 3.0 IGO) license (<http://creativecommons.org/licenses/by-nc-nd/3.0/igo/legalcode>) and may be reproduced with attribution to the IDB and for any non-commercial purpose. No derivative work is allowed.

Any dispute related to the use of the works of the IDB that cannot be settled amicably shall be submitted to arbitration pursuant to the UNCITRAL rules. The use of the IDB's name for any purpose other than for attribution, and the use of IDB's logo shall be subject to a separate written license agreement between the IDB and the user and is not authorized as part of this CC-IGO license.

Note that link provided above includes additional terms and conditions of the license.

The opinions expressed in this publication are those of the authors and do not necessarily reflect the views of the Inter-American Development Bank, its Board of Directors, or the countries they represent.



Discrimination against migrants and its determinants: evidence from a Multi-Purpose Field Experiment in the Housing Rental Market*

Wladimir Zanoni[†] Lina Díaz[‡]

March 22, 2023

Abstract

The increasing number of Venezuelan migrants in Colombia, which now exceeds 2.9 million, has raised concerns about their potential discrimination and socioeconomic integration. We propose a novel approach to studying discrimination in the housing rental market by conducting a multi-purpose field experiment with 574 real estate agents to, not only measure the extent of discrimination but also to explore its determinants. After gathering comprehensive data about the REAs, they evaluated rental applications from Colombian, Venezuelan, and OECD families. Our findings suggest the presence of discrimination in the housing rental market, as REAs were less likely to choose a Venezuelan family over a Colombian or OECD family. We identified that this discrimination was a combination of taste and statistical discrimination, influenced by factors such as age, gender, cognitive skills, and local market knowledge. We found that the discriminatory social norm is well recognized among REAs. This study has significant implications for policymakers, advocates, and practitioners, not only in Colombia but globally, as it sheds light on the mechanisms of discrimination against migrant populations and emphasizes the need to promote their integration and well-being.

Keywords: Migration; Discrimination; Real estate market; Field research

JEL Codes: F22, J15, R38

*This work would not have been possible without the contribution of Paloma Acevedo Alameda and the excellent fieldwork of the team of collaborators at ANOVA and Equilibrium: Hugo Hernández, Omar Zambrano, Gustav Brauckmeyer, Catalina Arenas Ortiz, and Daniela Cantor. Thanks also to Allen Blackman and Osmel Manzano for supporting this research program. Emily Diaz provided excellent research support. This research was funded with IDB's research funds.

[†]IADB, Quito, Ecuador

[‡]IADB, Washington, DC

1 Introduction

Over the past 10 years, Venezuela has seen a massive outflow of people due to a severe economic and humanitarian crisis, resulting in the largest migration in the Western Hemisphere in the past half-century (Tribín-Uribe et al., 2020), and the second-largest displacement in the world after that witnessed in Syria (UNHCR, 2022). Approximately 7 million Venezuelans (from an overall population of nearly 28 million in 2010) have emigrated from their country, 84% of whom have moved to countries in Latin America and the Caribbean. As the neighbor with the closest economic, social, and cultural ties to Venezuela, Colombia is the leading destination for migrants, with an estimated 2.9 million Venezuelans residing there as of February 2022 (Ministry of Foreign Affairs, 2022).¹

This study investigates the impact of discrimination in the rental market on the availability of housing for Venezuelan migrants in Colombia. It also examines underlying factors (individual-level attributes and social norms) contributing to discriminatory practices among key intermediaries in the housing market: real estate agents (REAs) who lease properties.

Despite numerous policies promoting integration, Venezuelan migrants in Colombia still face difficulties with social and economic integration. The Colombian government has made considerable efforts to assist these migrants through the adoption of the “Temporary Statute of Protection for Venezuelan Migrants,” which grants formal legal status to Venezuelans residing in Colombia. The statute also provides for the implementation of programs to improve migrant access to housing,² recognize educational credentials (3106 degrees validated from 2019 to 2022), certify labor competencies (9371 labor competencies certified from 2019 to 2022), and reduce animosity toward migrants with informational campaigns.³ Nevertheless, discrimination and xenophobia remain major obstacles to economic integration (Taborda Burgo, Acosta Ortiz and Garcia, 2021; World Bank, 2018). Colombian citizens continue to negatively stereotype Venezuelan migrants (Proyecto migración Venezuela, 2020), fueled by concerns that the migrant population may harm employment and increase crime (World Bank, 2018; Bahar, Dooley and Selee, 2020), further hindering integration.

With such a massive exodus of Venezuelans into Colombia, examining the relationship between discrimination and the limitations on Venezuelan economic assimilation in the Colombian housing market is of the utmost significance. Costly access to housing opportunities due

¹There are challenges for the Colombian government in fostering migrant assimilation in the labor market (Bonilla-Mejía et al., 2020), in relation to violence (Knight and Tribin, 2020), at the political level (Roza and Vargas, 2021), and at the macroeconomic level Tribín-Uribe et al. (2020).

²Decree of the Colombian Ministry of Housing: <https://minvivienda.gov.co/sites/default/files/normativa/decreto-1104-del-29-de-junio-de-2022.pdf>

³Protocols for the pedagogical approach to risk: https://www.colombiaaprende.edu.co/sites/default/files/files_public/2022-09/Racismo%20y%20Xenofobia_compressed-min.pdf.

to discrimination sets a toll on the economic, social, and cultural integration of migrants, in this case resulting in inferior outcomes for the Colombian economy and depriving a vulnerable population of safe, affordable, and fair housing options. Discrimination in the housing rental market could also be impacting today the poverty levels of Venezuelan migrants and, more generally, income inequality in Colombia. Consequently, there is a need to raise public awareness regarding whether this type of discrimination exists, its magnitude, and what predicts it to inform policy discourse and practice with empirical evidence. Research suggests that discrimination affects migrants in this market Namen, Rodríguez and Romero (2021), but the extent of evidence is limited. Determining the prevalence of discriminatory practices against migrants in the housing market in Colombia is important in the identification and elimination of housing barriers, a problem that affects not only migrants but natives as well.⁴

To address our research questions, we conducted an artifactual field experiment similar to a simulated personnel decision (as described in Neumark (2018)), a Goldberg-paradigm study (as described in Bertrand and Duflo (2017)), or a factorial survey (as described in Rossi (1979)). This class of experiments has been implemented to study discrimination more frequently in the labor market (see Zanoni et al. (2022) for a recent paper on the topic). The approach involves working with market intermediaries (recruiters) to evaluate job applicants just as recruiters would in a correspondence study of the type popularized by Bertrand and Mullainathan (2004) (and extensively replicated across markets and attributes subject to prejudice).⁵ To facilitate referencing artifactual field experiments of the type we are implementing, we label them "simulated intermediaries decision" (SID) studies in this paper, thus paraphrasing and broadening Neumark (2018)'s labeling.

To study discrimination in the leasing housing market in Colombia, we conducted an extended SID field experiment involving 574 REAs in the cities of Bogotá and Cúcuta. The study began with collection of information on the REAs' educational, employment, and sociodemographic backgrounds. We then administered tests to assess their personality traits (using the NEO Five Factors Inventory [NEO-FFI] test, which measures the big "five" traits) and cognitive skills (using the Wonderlic test). The REAs were then given ten sets of five observationally equivalent middle-income families to evaluate for rentals (apartments and

⁴Colombian households were already experiencing a housing deficit before Venezuelans started their massive migration into that country, with 33% of the population lacking affordable and safe housing (, 2021).

⁵Research on hiring discrimination is extensive (see, for instance, recent meta-analyses in Quillian et al. (2017) and Lippens, Vermeiren and Baert (2023)). There are literature reviews in Bertrand and Duflo (2017) and Neumark (2018). Verhaeghe (2020) provides a typology of research. Recent research on hiring discrimination in several countries, includes Canada (Oreopoulos (2011)), China (Maurer-Fazio (2012)), and Mexico (Arceo-Gomez and Campos-Vazquez (2014)). Discrimination attributes studied include age (David, Ian and Button (2019), Burn et al. (2022)), unemployment spells (Kroft, Lange and Notowidigdo (2013)), gender (Haoran He and Han (2023)), and race Kline, Rose and Walters (2022).

houses) in the two cities, and were asked to indicate their preferred choice and assess the fit for each property for each of the families. Finally, before the experiment's conclusion, we introduced an incentivized intervention where the REAs were asked to evaluate the last property and behave as they believed most of the other REAs in the study would have done.

Our findings demonstrate significant discrimination against Venezuelan families in the housing market. On average, REAs chose Colombian families over Venezuelan families by a margin of 24.5 percent more (and did so by a margin of 12.7 percent more when it comes to OECD families). We also found that this type of discrimination is linked to the income stratum of the rental, and cities mediate in that relationship. This discrimination against Venezuelans was found to be more pronounced in Cúcuta compared to Bogotá (with overall levels of discrimination reaching 31.7% in the former and 19.7% in the latter) and was particularly prevalent for rental properties in higher-income strata (where, for instance, the discrimination rate was 24% in stratum 3 and 28.1% in stratum 5).

We also found that age, and neuroticism, play a significant role in predicting discriminatory behavior among REAs in the market, regardless of the degree of discrimination being considered. As the level of discrimination intensifies, other factors such as gender, cognitive skills, and local market knowledge also become important predictors of the REAs' behaviors.

After being subjected to a second-order belief elicitation in which they were asked to reassess a property, this time as their peers would have, the REAs did not alter their discriminatory practices. They continued to select Venezuelan families 10.6% of the time and Colombian families 71.5% of the time. This outcome highlights two important points. Firstly, it shows that discrimination against Venezuelans in this market is socially acceptable, because the REAs conformed to the dominant social norm when making their choices. In addition, the result suggests that the experiment successfully revealed the participants' underlying discriminatory tendencies.

The research presented in this paper makes several contributions to the existing literature. we provide the first experimental evidence of discrimination in the housing market against migrants from Venezuela, a population that, as we mentioned, joins several million people. So far, most experimental evidence of discrimination in real estate markets has been found in developed countries, including Sweden (Ahmed and Hammarstedt, 2008), Spain (Bosch, Carnero and Farre, 2010), Italy (Baldini and Federici, 2011), the UK (Koppensteiner, Oliveira and Rohith, 2022), and the United States (Hanson and Santas 2014; Ewens, Tomlin and Wang 2014; Massey and Lundy 2001; Page 1995; Roychoudhury and Goodman 1996; Choi, Ondrich and Yinger 2005; Zhao, Ondrich and Yinger 2006.)

Previous studies have documented discrimination of racial origin in the housing market. The evidence indicates that African Americans and immigrants of African or Arab origin face

higher levels of discrimination in specific areas, such as high-income areas and central city areas of the United States (Hanson and Hawley, 2014). Recently arrived immigrants in the United States also face discrimination in rental applications (Osorio 2022; Hanson and Santas 2014). Studies by Dirk W. Early (2018) and Myers (2004) have shown that racial minorities pay more for rental homes than nonminorities. Researchers argue that the dominant form of discrimination in rental markets is statistical discrimination based on the minority status of applicants (Ross and Turner 2014; der Bracht, Coenen and de Putte 2015). Early (2011) suggests that discrimination increases with greater demand and less availability of housing units in densely populated areas. Our research extends this knowledge by demonstrating that rental discrimination also occurs in Latin America and affects the most significant population of migrants in the Americas (Venezuelans).

Additionally, our research provides valuable insights into some of the underlying attributes of individuals that drive discriminatory behaviors, which can be used to develop targeted interventions to influence the behaviors of individuals with specific characteristics. Previous studies in the psychology literature have also found evidence of statistical associations between personality traits and discriminatory behaviors: for instance, Ekehammar et al. (2004); Sibley and Duckitt (2008); Crawford and Brandt (2019) all found that the Big Five personality traits are associated with prejudice. However, the evidence needs to be extended to reach more-definitive conclusions. The sign and magnitude of those associations are likely to be heterogeneous according to the method used to estimate the association and to what market, country, and attribute subject to prejudice are analyzed. Thus, our finding that cognitively intelligent individuals discriminate more and more-neurotic individuals discriminate less in this market adds to the body of evidence and provides guides to targeting interventions.

In addition, our experiment reveals a strong social norm favoring discriminatory behavior toward Venezuelan migrants in the Colombian real estate industry. The literature suggests that social norms can play a crucial role in shaping discrimination based on nationality and that the extent of perceived social unacceptability of such behavior can drive discriminatory actions ((Barr, Lane and Nosenzo, 2018; Choi, Poertner and Sambanis, 2019)). This insight supports using trending or dynamic norms (Mortensen et al., 2019) to design communication campaigns to decrease discrimination in this context, where the undesired behavior is predominant.

In conclusion, our study contributes significantly to the literature by shedding new light on the nature and extent of discrimination against migrants in the real estate market in Colombia and some underlying mechanisms that drive it. Additionally, our multipurpose field experiment showcases a cost-effective and innovative approach to investigating discrimination. It can be used to measure discrimination, understand its determinants better, and

evaluate effectiveness of behavioral interventions to reduce it. By taking this comprehensive methodological approach, we provide valuable insights that can inform broader efforts to address discrimination against Venezuelan migrants in the housing market in Latin America and possibly other migrant populations there and in other markets.

A caveat that warrants mention is that our study focuses on discrimination in the formal leasing market in Colombia, while policy interest extends to the broader economic inclusion of migrants in informal housing arrangements. However, our findings can still illuminate the systemic barriers and behaviors that affect not only middle-income families in formal transactions but also those in more-informal markets in which lower-income families participate. By studying discrimination in the formal real estate market, we can understand how it operates at different income strata and inform broader efforts to address it as a general problem. The experiences and challenges faced by middle-class migrants in this context can help to refine the analysis of broader societal issues and inform policy efforts to address the challenges faced by poor migrants. Thus, our research contributes to a broader understanding of discrimination and its impacts on economic inclusion, an understanding that extends to marginalized populations.

The remainder of the paper is organized as follows: in the next section, we describe the experimental design. In section 4, we explain the models we use to estimate the effects. In section 5, we present our results. Finally, we comment on the conclusions and limitations of this study.

2 Experimental Design and Data Collection

To determine the degree of discrimination against migrants in the Colombian real estate market, we followed the procedures outlined by Zaroni et al. (2022) and conducted a SID artificial experiment. A total of 574 real estate agents (REAs) participated in the experiment and were tasked with evaluating different sets of prospective tenant families for various properties in Bogotá and Cúcuta. Bogotá is home to the largest Venezuelan population in Colombia (393,716 people), while Cúcuta is the third-largest city for Venezuelan migration (98,680) (Ministry of Foreign Affairs, 2022). Cúcuta, located near the border with Venezuela, has been exposed to the constant influx and outflow of migrants from that country for many years.

The data collection regarding the characteristics of the REAs and the assessment of the applicant families for real estate properties were carried out through a custom-designed online platform. The platform was created to closely replicate REAs' real-life decision-making processes. The REAs began by providing information about their demographic

profile and work experience and taking tests for socio-emotional, cognitive, and market knowledge. Then, they were assigned the task of participating in nine individual trials, each featuring differing properties and family attributes. Finally, a validity check was implemented during the tenth trial of the experiment.

2.1 Recruitment of the REAs

REAs were recruited using the respondent-driven sampling (RDS) methodology, a network-based technique that uses a chain-referral sampling mechanism (Heckathorn, 2002; Volz and Heckathorn, 2008). The RDS process begins with a nonrandom sample of individuals of the target population considered “seeds.” Seeds are allocated a fixed amount of referral tokens and are directed to distribute them among acquaintances in the same target population, which creates a second wave of nodes in the network tree. These and all subsequent nodes are allocated the same number of referral tokens. All participants are compensated monetarily for each referral who completes the experiment successfully. This increases the likelihood of completion by creating an incentive for all participants to seek referrals with a high response probability.

We planted four seeds in Bogotá and five in Cúcuta. These were selected using social media and referrals based on two principles: first, we only considered individuals with at least five years of experience in the market to guarantee a certain degree of connectedness in the network; second, we selected agents as distant as possible from each other to achieve representativeness. For the latter, the seeds varied with regard to gender, years of experience, and real estate company.⁶ Each REA was assigned three referral tokens and they received monetary compensation for each of their referrals who completed the online activities.

RDS is used to achieve statistical representativeness in target populations who are hard to reach. A hard-to-reach population is a small group in relation to the general population, for which no exhaustive list of members is available (Heckathorn, 1997). Colombian REAs fit the definition of a hard-to-reach population, because licenses or trade association registrations are not required to operate in the market. The individuals recruited were verified to be REAs by means of a set of questions they answered at the beginning of the experiment regarding housing regulations and key attributes of the local rental market in each city.

2.2 Description of the experiment

The experiment was conducted between December 2021 and February 2022. All REAs were compensated for their participation with gift cards redeemable on a virtual platform in

⁶Two seeds in each city were self-employed REAs.

exchange for various goods and services in chain stores, restaurants, clothing stores, and other businesses. Participants were recruited as part of a research study in which they were to be consulted on the basis of their professional experience.

The experiment had two parts. In the first part, some information about the REAs was collected through online surveys. The surveys included questions about the REAs' sociodemographic characteristics, work history, and familiarity with the Colombian real estate market. The latter was used as a screening tool to verify that participants were, in fact, REAs. In addition, we assessed their cognitive and noncognitive abilities by administering several tests. These tests included the Wonderlic Intelligence Quotient (IQ) assessment and a self-esteem Rosenberg test, as well as the OCEAN-based personality test, which measured the agents' levels of openness, conscientiousness, extroversion, agreeableness, and neuroticism. This information enables us to identify potential contributing factors and understand whether specific characteristics are linked to an increased potential for discrimination.

In the second part of the study, all participants were presented with 10 sets of families as if they were evaluating prospective tenants for predefined properties. To mitigate potential social desirability bias, the description of families in each trial was structured in such a manner as to emphasize their nationalities without making the purpose of the experiment obvious. With that in mind, each trial referred to a different property and was presented with five applicant families: two Colombian, two Venezuelan, and one of another nationality (to simplify references, we designate this last type of applicant family as being from an OECD country). Applicants were qualitatively similar in all aspects except for their nationality. Participants were asked to perform four tasks in each trial: (i) select the most suitable applicant for the property, (ii) rate all applicants on a scale from 1 to 10, and (iii) rate on a scale from 1 to 10 various considerations that impacted their decision, including (a) the probability of the applicant complying with the contract in terms of time, (b) the probability of the applicant complying with the contract in terms of payments, (c) the likelihood of renewing the lease, and (d) the applicant's occupation. Section 5.1 in the appendix includes screenshots as examples of the interface as participants saw it.

2.3 Synthetic properties and applicants' profiles

The properties and families used in the experiment were meticulously designed to closely approximate market conditions, being informed by the findings of a preliminary qualitative study. Stakeholder interviews were conducted to gain an understanding of the functioning of the real estate markets in the two cities studied, while focus groups with REAs were held to determine the desired attributes of both the properties and families to be included in the

experiment.

Table 1: **Characteristics of the rental properties.**

Attribute	Bogotá			Cúcuta		
	3	4	5	3	4	5
Stratum						
Rent price*	1.200	1.950	2.900	0.550	0.800	0.800
	-	2.500	3.200	0.660	1.200	1.200
	1.429	3.100	4.900	0.760	1.400	2.500
Square meters	60	48	87	49	96	36
	84	85	92	-	107	90
	85	300	150	-	126	300

Note: Rent prices are in millions of Colombian pesos. At the time of the experiment, the average exchange rate to USD 1 was COP 3,967. The specific income brackets for Bogotá are revised periodically by the city government. As of September 2021, the income brackets and their corresponding monthly income ranges were as follows: Stratum 3: COP 1,313,704 to 2,188,968 (approximately USD 337 to 562); Stratum 4: COP 2,188,968 to 3,521,548 (approximately USD 562 to 905); and Stratum 5: COP 3,521,548 to 6,254,880 (approximately USD 905 to 1,606). A – sign indicates that we did not display that attribute when showing the properties.

In Colombia, properties are categorized into six strata, with Stratum 6 corresponding to the wealthiest and Stratum 1 to the poorest. This categorization enables a subsidy scheme to support lower-stratum residents with utilities and services using revenue from fees paid by residents in higher strata. For this experiment, only Strata 3, 4, and 5 were considered, as the highest and lowest strata have unique market conditions: in Strata 1 and 2, properties are rented directly without the involvement of a REA. In contrast, the client profile and requirements in Strata 6 differ from those in other strata.⁷

The properties used in the experiment were sourced from available information on the Colombian real estate websites Metrocuadrado.com and Fincaraiz.com. The main attribute displayed was the total rental price, followed by a general description of the property (such as area in square meters, age of the property, and neighborhood income stratum) and a list of secondary characteristics (such as concierge service and common areas) as well as information about the neighborhood and property photographs. The rent amount and square meters for

⁷The specific income brackets for Bogotá are revised periodically by the city government. As of September 2021, the income brackets and their corresponding monthly income ranges were as follows: Stratum 1: up to COP 877,803 (approximately USD 226); Stratum 2: COP 877,803 to 1,313,704 (approximately USD 226 to 337); Stratum 3: COP 1,313,704 to 2,188,968 (approximately USD 337 to 562); Stratum 4: COP 2,188,968 to 3,521,548 (approximately USD 562 to 905); Stratum 5: COP 3,521,548 to 6,254,880 (approximately USD 905 to 1,606); Stratum 6: above COP 6,254,880 (approximately USD 1,606).

each stratum level were considered as per the parameters listed in Table 1. Nine properties in total were included for each city based on these parameters.

Table 2: **Profiles of applicant families.**

Attribute	Categories	# of profiles	
		Bogotá	Cúcuta
Family composition	Heteroparental family with children	10	13
	Heteroparental family, no children	10	2
	Homoparental family, no children	5	0
	Couple of siblings, cousins or roommates	10	15
	Trio of siblings, cousins or roommates	0	5
	Single father	3	2
	Single mother	2	3
	Young woman	3	3
	Young man	2	2
Economic activity	Sales	7	7
	Construction	1	1
	Education, culture, tourism	10	10
	Legal/Law advisor	7	7
	Manufacturing	4	4
	Health services	9	9
Nationality	R&D	7	7
	Colombian	18	18
	Venezuelan	18	18
Identification document	Other	9	9
	Colombian ID	18	18
	Foreigner ID	11	11
	Special stay permit (for Venezuelans)	9	6
	Diplomatic visa	0	6
	Resident visa	7	4

Note: In each trial of the experiment, both the economic activity and identification documents were shown for both the main person in the rental application (the main applicant) and, if a spouse or partner is present, also for that additional person (that we call secondary applicant). However, this table displays the distribution of these variables for only the primary applicants. It should be noted that the same categories were applied to both primary and secondary applicants.

Ninety applicant profiles were generated using the data collected from REAs in focus

groups. These profiles were presented in groups of five for each property in the two cities. The experiment included 10 trials, each corresponding to a specific property and its associated 5 applicants. Table 2 illustrates the number of profiles that were created for various family compositions.

The nationality of applicants was randomly assigned to be Venezuelan, Colombian, or OECD. In each trial, the OECD nationality was randomly chosen from among the following: Canadian, German, Brazilian, Chilean, French, Chinese, Spanish, Dutch, Japanese, Argentinian, American, Italian, and Portuguese. Identification documents were also assigned to each profile to reinforce the differences in nationality and prevent the purpose of the experiment from being too evident to participants.⁸ Family composition information was also included for each profile, as well as information about the primary and secondary applicants' occupations and working sectors. Financial information such as income in relation to rent, job letters, availability of pay stubs, and bank statements were also provided for some profiles. The experiment design was a balancing act between internal and external validity. The profiles were made observationally equivalent in all aspects except nationality and realistic enough not to trigger social desirability bias. As a result, applicants in the same trial are qualitatively but not quantitatively equivalent. Table 9 in the appendix shows quantitative differences. The profile validation was carried out with the help of REAs who participated in the focus groups.⁹

3 Results

3.1 Applicant characteristics and REAs' choices

In Table 3, we present the rates at which the REAs selected families from the three different nationalities for a randomly selected experiment trial ($N=5,148$ trials).¹⁰ Recall that the REAs evaluated five families in each trial of the experiment, two from Venezuela, two from Colombia, and one from an OECD country. Our research design was crafted so that, in the absence of discrimination and given the frequency of nationalities in each trial, Colombian and Venezuelan families would each have had a 40% chance of selection. Consequently, those

⁸The study assigned identification documents to applicants based on their citizenship, which included Colombian ID, foreigner ID, special stay permit (for Venezuelan citizens), diplomatic visa, and resident visa. All migrants had legal migratory status. The Colombian government enacted the Temporary Protection Statute (TPS) specifically for Venezuelans, which provided for the creation of a registry of migrants and instituted a protection permit valid for 10 years. The study included the family's application to the registry and the permit to signal a high likelihood of remaining in the country for an extended period.

⁹REAs who participated in the focus groups did not participate in the experiment.

¹⁰A total of 574 agents made decisions over 9 trials. And in addition, all applicants were also subject to an intervention trial; so which adds 574 additional trials to the data.

proportions do not express probabilities that account for selection likelihoods. Families from an OECD country would have a 20% chance of being chosen in each trial. The results in Table 3 show that the choices of REAs did not follow the expected pattern of responses absent discrimination. While *Colombian* and OECD applicants were chosen 65% and 20% of the time, respectively, *Venezuelan* families were chosen only 14.5% of the time.

Table 3: **Proportion of families chosen by the REAs (by nationality and city).**

	OECD	Venezuela	Colombia
Both cities	0.202	0.145	0.653
N trials	1,045	750	3,371
Cúcuta	0.199	0.088	0.713
N trials	461	203	1,649
Bogotá	0.205	0.192	0.604
N trials	584	547	1,722

Note: The table shows the rates and frequencies families were chosen by the REAs by their nationality (columns) and by city (Cúcuta and Bogotá together and separately, rows) across 5,148 trials in the experiment.

In Table 4, we use regression analysis to cross-compare the probabilities that a REA chose families from a particular nationality. We show the mean difference in the rates of choice of Non-Colombian vs. Colombian families (column 1), Venezuelan vs. Colombian (column 2), OECD vs. Colombian (column 3), and OECD vs. Venezuelan (column 4). The dependent variable in all regressions takes a value of 1 if a family was chosen and 0 otherwise. In each regression, we restricted the data to families with the nationalities defined in the column labels. The coefficient estimates in the table are from indicator variables that take the value of 1 if the family is of the nationality in the first group in the column label and 0 otherwise. We clustered the standard errors in all specifications at the REA level. We present three horizontal panels. We use data from the whole sample in the top panel: “A. Both cities,” the subsequent panels use data from “B. Cúcuta” and “C. Bogotá.”

In column 1 of Table 4, we can see that the REAs preferred Colombian families over families of other nationalities by 21 percentage points. That preference pattern seems more prevalent in Cúcuta than in Bogotá (compare the coefficient estimates of 0.26 vs. 0.17 in column 1). When comparing Venezuelan with Colombian families (column 2), the REAs chose the latter over the former by a margin of 25 percentage points; and, as in column 1, this preference was more likely to be operative in Cúcuta than in Bogotá. Column 3 in the table

Table 4: **Unconditional mean differences in the choice rates.**

	(1)	(2)	(3)	(4)
	Non-Col.	Ven.	OECD	OECD
	vs. Col.	vs. Col.	vs. Col.	vs. Ven.
A. Both cities				
Mean Difference	-0.210	-0.254	-0.124	0.130
P-value	0.000	0.000	0.000	0.000
B. Cúcuta				
All Cúcuta	-0.261	-0.313	-0.157	0.155
P-value	0.000	0.000	0.000	0.000
C. Bogotá				
All Bogotá	-0.170	-0.206	-0.097	0.109
P-value	0.000	0.000	0.000	0.000

Note: The table shows the difference in rates at which families of the specified nationalities were the first choice an REA made. Below the differences in the means we show the p -value of the t -test that evaluates the statistical significance of those differences. The values are presented for both cities (row A. Both cities) and by city (row B. Cúcuta and row C. Bogotá).

shows that Colombian families were preferred to OECD families by a margin of 12 percentage points (and, in line with the differences by city we have already mentioned, this was the case more in Cúcuta than in Bogotá). Finally, note that Table 4 also presents evidence that REAs preferred OECD families to Venezuelan ones (by a margin of 13 percentage points) and again, REAs in Cúcuta were marked by this preference more than REAs in Bogotá.

3.2 Regression-based analysis: Measuring discrimination

In Table 5, we show our main results, which are estimates of the differences in the rates at which a synthetic family from Venezuela was the first choice of an REA compared to a synthetic Colombian family's being chosen first. We present these results in the rows named "Venezuelan", divided into three horizontal panels in the table. The top panel ("A. Both cities") shows estimates for both cities together. The next panel ("B. By city") shows estimates for Cúcuta and Bogotá individually. Panel C (C. By income strata) shows estimates across the three income strata where we located the real estate properties, namely Strata 3, 4, and 5. We computed these estimates with linear probability models where the dependent variable was an indicator taking the value of 1 if a family was chosen and 0 otherwise and the independent variable (the coefficient estimates of which we present in the table) was likewise an indicator taking the value of 1 if the family was Venezuelan and 0 otherwise.

All model specifications include one indicator variable for whether the family was from the OECD and keep Colombian families as the excluded baseline category. We clustered the standard errors in all specifications at the REA level and present those in parentheses below the estimates. ***, **, and * next to the estimates indicate significance at the 1, 5, and 10% critical levels, respectively. For comparison purposes, in each individual panel of the Table, the row denoted “OECD” below the row “Venezuelan” shows estimates of the differences in the rates of choice between OECD and Colombian families.

Each column in Table 5 represents a model specification. The empirical model is of the type:

$$y_{ipr} = \alpha + \beta Vzla_{ip} + \sigma OECD_{ip} + \nu X_{ip} + \delta_p + \gamma_{ip} + \epsilon_{ipr}. \quad (1)$$

The variable of interest, denoted as y_{ipr} , refers to the outcome that is being evaluated for a particular property p by a specific REA r for a particular applicant i . The model includes a constant term α , and two dummy variables: $Vzla_{ip}$ and $OECD_{ip}$. The variable $Vzla_{ip}$ takes the value 1 if the applicant’s synthetic family is from Venezuela, and 0 otherwise. Similarly, $OECD_{ip}$ is equal to 1 if the applicant’s synthetic family is from an OECD country, and 0 otherwise. By including these two dummy variables, we are assuming that the default or comparison group is composed of only Colombian families. The coefficients β and σ represent the differences in the likelihood of an applicant from Venezuela or an OECD country being chosen by REAs, compared to Colombian applicants.

In the model, X_{ip} is a vector of controls for synthetic-candidate-specific characteristics, and δ_p are fixed effects for the properties. γ_{ip} represents what we call “design” fixed effects. Those are controls that are specific to our research design and include indicators for the city, income stratum of the property, and the trial in the experiment. Finally, ϵ_{ipr} is unobserved heterogeneity. Our parameter of interest is β . The estimated β provides the differences between the REAs’ rates of choosing between Venezuelan families and other families.

The regression model under **Model 1** is an unconditional comparison where we did not include covariates. The specification in **Model 2** includes fixed effects for the city and income stratum of the property evaluated. We showed 18 properties with fixed attributes to REAs (9 for Cúcuta and 9 for Bogotá, because there were 9 main trials in the experiment). Thus we included fixed effects for those real estate units. **Model 2** also added fixed effects for the trial of the experiment. To address the imbalance in family characteristics highlighted in Table 9 in the appendix, in **Model 3** we control for those characteristics directly in the specification.¹¹

¹¹The results do not change if we add family fixed effects instead of controlling for family characteristics as in **Model 3**.

Table 5: OLS models of the differences in the choice rates.

	Model 1	Model 2	Model 3	Model 4
A. Both cities				
Venezuela	-0.254*** (0.009)	-0.254*** (0.009)	-0.245*** (0.010)	-0.216*** (0.009)
OECD	-0.124*** (0.016)	-0.124*** (0.016)	-0.127*** (0.016)	-0.108*** (0.015)
Observations	25830	25830	25830	25830
B. By city				
Properties in Cúcuta				
Venezuelan	-0.313*** (0.012)	-0.313*** (0.012)	-0.317*** (0.014)	-0.235*** (0.012)
OECD	-0.157*** (0.022)	-0.157*** (0.022)	-0.181*** (0.022)	-0.110*** (0.019)
Observations	11565	11565	11565	11565
Properties in Bogotá				
Venezuelan	-0.206*** (0.013)	-0.206*** (0.013)	-0.197*** (0.013)	-0.192*** (0.013)
OECD	-0.097*** (0.023)	-0.097*** (0.023)	-0.080*** (0.023)	-0.097*** (0.021)
Observations	14265	14265	14265	14265
C. By income strata				
Properties in stratum 3				
Venezuelan	-0.246*** (0.011)	-0.246*** (0.011)	-0.240*** (0.012)	-0.207*** (0.011)
OECD	-0.127*** (0.018)	-0.127*** (0.018)	-0.096*** (0.019)	-0.111*** (0.017)
Observations	8610	8610	8610	8610
Properties in stratum 4				
Venezuelan	-0.243*** (0.011)	-0.243*** (0.011)	-0.225*** (0.013)	-0.208*** (0.011)
OECD	-0.122*** (0.018)	-0.122*** (0.018)	-0.134*** (0.019)	-0.107*** (0.017)
Observations	8610	8610	8610	8610
Properties in stratum 5				
Venezuelan	-0.272*** (0.011)	-0.272*** (0.011)	-0.281*** (0.013)	-0.234*** (0.011)
OECD	-0.123*** (0.020)	-0.123*** (0.020)	-0.129*** (0.020)	-0.106*** (0.018)
Observations	8610	8610	8610	8610
Model specification				
Design fixed effects	NO	YES	YES	YES
Family characteristics	NO	NO	YES	YES
Family quality rating	NO	NO	NO	YES

Note: The table shows estimates of the difference in the rates at which a synthetic family from Venezuela and OECD were the first choice of an REA as opposed to a synthetic Colombian family's being chosen first (across three model specifications: both cities, by city, and by income strata). Each column represents a model specification. All model specifications keep Colombians as the excluded baseline category. Standard errors are clustered at the REA level and presented below the estimates in parentheses. **Model 1** does not add any covariates. **Model 2** includes fixed effects for the city, income stratum of the property evaluated, for the 20 properties shown to REAs (10 in Cúcuta and 10 in Bogotá), and for the trial of the experiment. In **Model 3** we control for characteristics of the applicant families shown in Table 9 in the appendix. ***, **, and * indicate statistical significance at the 1, 5, and 10% critical levels, respectively.

First, we notice again that there was a 25.4% difference between the rate at which Venezuelan families were chosen with respect to Colombian ones (Panel A. Both cities; Model 1). Note that the estimates in columns Model 1, Model 2, and Model 3 are very

similar in magnitude. In fact, we found no statistically significant differences in the mean estimates across the three models. This similarity in results across models (presented in panel A. Combined) suggests that REAs did not act on the differences in family characteristics that we reported in Table 9 in the appendix. This result reinforces the hypothesis (implicit in our design) that each trial resembles the experimental benchmark where all families are observationally equivalent. In what follows, we will refer to the estimates presented in column Model 3 to elaborate upon the results further. We will discuss the results shown under column **Model 4** in the following sections.

Second, we study whether Venezuelans were discriminated against differently according to the Colombian city in which they settled. In panel B of Table 5, we highlight that, while in Cúcuta there was a difference of 31.3 percentage points between the rates at which Venezuelans and Colombians were chosen, the difference in the rates was almost 11 percentage points smaller in Bogotá (20.6%). The greater gap in Cúcuta vs. the smaller gap in Bogotá is statistically significant at conventional critical levels, so the results suggest more real estate discrimination against Venezuelans in the former city than in the latter city.

Finally, in panel “C. By income strata” of Table 5, we explore whether discrimination differs by the income strata of the leasing property’s address. The results suggest that the REAs were more reluctant to choose Venezuelan families as their top choice when they were leasing properties in Stratum 5 (top income), compared to their leasing of properties in lower-income strata (there are differences of 4.1 and 5.6 percentage points between Stratum 5 and Stratum 3 and Stratum 4, respectively). This result indicates that REAs were likelier to exercise unequal treatment of equal families by nationality when they evaluated properties located in city areas with populations in the higher tier of the income distribution.

The evidence presented in Table 5 suggests that the REAs discriminated against Venezuelans generally and more in Cúcuta than in Bogotá. The differences in reported results by income strata suggest the REAs recommended fewer Venezuelan families when properties were in the highest income strata. Across model specifications, we controlled for family characteristics and added a battery of design-driven fixed effects. Even with the differences in specifications, the results are consistent across models.

3.3 Isolating taste-based discrimination: A digression

In line with economic theory, in our study, we consider two types of discrimination that REAs could exhibit: taste-based discrimination and statistical discrimination. REAs would be demonstrating taste-based discrimination if they acted on their personal preferences for certain kinds of tenants based on their likes or dislikes of a particular nationality. In this

case, the individual preferences of REAs play a definite role in their choice of tenants. REAs would be exhibiting statistical discrimination when unobservable factors (such as, their creditworthiness) play a role in their decision-making process when choosing a tenant. In this case, differential inferences about the means of the unobservable components can be interpreted as statistical discrimination Neumark (2012). Both types of discrimination could happen simultaneously.

As indicated, the REAs were tasked with assessing the families' suitability for the leasing property in each trial. The REAs rated all families on a Likert scale from 1 to 10, where 10 and 1 were the highest and lowest suitability ratings, respectively. Such a rating expresses differences in the perceived quality of the families in terms of factors that define a good tenant. Absent discrimination, two equally rated families should have the same probability of being selected by an REA. The question we aim to answer here is whether the REAs still systematically chose Colombian over Venezuelan families after holding constant the differences in perceived family quality illustrated by the rating. Absent discrimination, when holding constant the family quality rating, only chance should explain differences in the rates at which the REAs chose Colombian families over Venezuelan families (Zanoni et al., 2022).

In Table 5, the discrimination coefficients were reassessed in Column **Model 4**, while controlling for the ratings of family suitability. We added fixed effects to compute the estimates, accounting for the REAs' evaluations of each family's quality as tenants for the evaluated property. The results in Column Model 4 of Table 5 indicate little variability in the discrimination coefficients when the family suitability rating is held constant in the sample combining both cities. The discrimination coefficient decreases by 2.9 percentage points when the family suitability assessment is controlled for. Still, the difference between the estimates controlling and not controlling for suitability is not statistically significant. This suggests that taste-based discrimination dominates the behavior of the REAs.

However, the estimates by city show a different pattern. In Cúcuta, the magnitude of the discrimination coefficient drops by 8.1 percentage points when the family suitability measure is controlled for (and the difference between the top and bottom coefficients is statistically significant). In contrast, the discrimination coefficient in Bogotá barely changes when the family suitability ratings are controlled for. This result suggests that discrimination against Venezuelans in Cúcuta was influenced by animosity toward them and by differences in suitability that were not observed by the researchers but were noticed by the REAs. The difference between the two coefficients is in line with the concept of statistical discrimination, where the likelihood of hiring a minority is decreased based on expectations of quality differences that have no systematic counterpart in the observed variables.

It is also worth noting that the discrimination coefficient drops by 4.7 percentage points

when the family suitability rating is controlled for in Stratum 5. This further highlights the role that differences that the REAs perceived in family suitability play in the discrimination against migrants.

Our findings suggest that while taste-based discrimination is a significant factor driving discrimination against Venezuelan migrants, there is also evidence of statistical discrimination, particularly in Cúcuta and the highest-income stratum. When controlling for perceived suitability, the observed drop in discrimination coefficients highlights the importance of considering unobservable differences in productivity when analyzing discrimination. These results provide valuable insight into the mechanisms driving discrimination in the real estate industry and offer avenues for future research aimed at mitigating discrimination and promoting more-inclusive practices.

3.4 REAs preferences for OECD over Venezuelan families

By comparing the estimated coefficients for the Venezuelan and OECD migrant groups in each panel of Table 5, we can assess differences in the rates of preference for REAs between these two groups. These disparities can provide valuable insights into whether discriminatory attitudes towards migrants are systemic and affect all migrants, regardless of their country of origin, or whether there is some idiosyncratic process affecting Venezuelans over other migrants.

The discrimination coefficients for families from Venezuela and the OECD are different in all models of Table 5. This indicates differences in the level of discrimination that REAs exhibit towards these two groups of migrants. Specifically, under Model 3 (again: our preferred specification), the coefficient for Venezuelans is between 1.93 (in the case of both cities) and 2.5 (in the case of properties in Bogotá) times larger than the coefficient for OECD families. This suggests that REAs systematically discriminate more against Venezuelans than they do against OECD families.

As we indicated, discrimination can be of taste or statistical type, and both could interact to influence the decision-making process of the REAs. Differences in the discrimination coefficients between migrants from different nationalities in our study could suggest differences in either one of those two types of discrimination, or both. Examining results in Model 4 of Table 5, we can better understand whether either of those types of discrimination dominates the behaviors that underlie discrimination against Venezuelan migrants.

Notably, the changes in discrimination coefficients resulting from controlling for family quality assessment differ for families from Venezuela and the OECD. Specifically, in Model 4, compared to the baseline in Model 3, the coefficient for Venezuelan families decreases

in all samples analyzed in Table 5, indicating negative statistical discrimination against Venezuelan migrants. In contrast, the coefficient for OECD families increases in Bogotá and in stratum 3, suggesting that while statistical discrimination against OECD families is also negative on average, there is one city and one income stratum where REAs have positive expectations about the unobservable factors that characterize OECD families, indicating positive statistical discrimination in their favor.

3.5 Discrimination behavior: Correlates with REAs’ characteristics

In this section, we investigate the patterns of statistical association between the characteristics of the REAs and their choices between Venezuelan and other families. To this end, we redefine the unit of REA analysis as the REA and collapse the data accordingly ($N=574$). We then estimate models where the outcome variables are indicators reflecting whether the REAs never chose a Venezuelan family or whether they did choose a Venezuelan family once, twice, or up to three times during the first nine trials of the experiment (the indicators are set to 0 otherwise). The dependent variables are modeled as functions of various characteristics of the REAs that were identified during the recruitment process.

The characteristics of the REAs that were analyzed included gender and age (with age squared and cubed terms also included), educational attainment (a binary indicator of whether or not the REA held at least a bachelor’s degree), city of operation (Bogotá or Cúcuta), and employment status (working for a real estate agency versus self-employed). To assess the relationship between noncognitive skills and discrimination, we control for standardized scores of five personality domains obtained from a NEO Five Factors Inventory (NEO-FFI) test. The domains included neuroticism, extroversion, openness to experience, agreeableness, and conscientiousness. We control for scores obtained from a Wonderlic Cognitive Ability Test to examine the association between discrimination and cognitive ability. Finally, we also control for a measure of the REAs’ knowledge of the real estate market in their city of operation, which was computed as a score ranging from 1 to 5 based on the number of correct answers given to a battery of five questions about their local markets. The empirical model is of the type:

$$Z_r = \omega + R_r\varphi + \vartheta_r, \tag{2}$$

where Z_r represents the discrimination measure exhibited by REA r across all experiment trials, excluding the last trial (which refers to the validity check). The model includes a constant term, ω , a vector of REA-level variables, R_r , the association of which with dis-

Table 6: **Choice of Venezuelan families.**

	(1)	(2)	(3)	(4)
	Never	Once	Up to 2 times	Up to 3 times
Work and demographics:				
Gender is female	0.381** (0.192)	0.308 (0.204)	0.194 (0.233)	-0.209 (0.276)
Age	-0.219* (0.113)	-0.248** (0.125)	-0.481*** (0.160)	-0.442** (0.193)
Age ²	0.005** (0.002)	0.005** (0.003)	0.010*** (0.003)	0.009** (0.004)
Age ³	-0.000** (0.000)	-0.000** (0.000)	-0.000*** (0.000)	-0.000** (0.000)
Works for an agency	0.198 (0.213)	0.195 (0.236)	-0.063 (0.283)	-0.141 (0.347)
College degree	-0.267 (0.195)	0.011 (0.207)	-0.014 (0.233)	0.212 (0.270)
Neuroticism	-0.084*** (0.015)	-0.097*** (0.017)	-0.094*** (0.020)	-0.094*** (0.024)
Extroversion	-0.007 (0.023)	0.005 (0.025)	0.004 (0.031)	0.008 (0.037)
Openness	-0.005 (0.024)	-0.034 (0.027)	-0.038 (0.032)	-0.015 (0.040)
Agreeableness	0.000 (0.023)	0.012 (0.025)	0.010 (0.029)	0.012 (0.035)
Conscientiousness	0.031 (0.022)	0.029 (0.024)	0.037 (0.028)	0.040 (0.032)
Cognitive skills and kwnowledge:				
Wonderlic test	0.528*** (0.126)	0.557*** (0.142)	0.516*** (0.166)	0.184 (0.192)
Market knowledge	-0.444** (0.210)	-0.457** (0.222)	-0.523** (0.250)	-0.471 (0.290)
Model specification				
Design fixed effects	YES	YES	YES	YES

Note: The unit of analysis are the REAs ($N=574$ in all regressions). The outcome is an indicator variable taking the value of 1 if the REA chose a Venezuelan family as many times as indicated in the column labels out of the nine trials of the experiment (never, once, up to twice, and up to three times), and 0 otherwise. Standard errors are presented below the estimates in parentheses. All columns estimate the model described in equation 2. ***, **, and * indicate significance at the 1, 5, and 10% critical levels, respectively.

crimination is being studied. Additionally, the model includes an unobserved heterogeneity term, ϑ_r . The estimation of the model is performed using a linear probability model.

In Table 6, we analyze the relationships between the discriminatory behavior of the REAs and their respective attributes, as depicted by four linear probability models. The dependent variable in each model is a measure of discrimination, while the independent variables are the REA-level characteristics previously described. The results are arranged in four columns, each presenting the coefficient estimates and standard errors for the various explanatory variables in regard to the likelihood of the REAs' frequency of choosing a Venezuelan family (Column 1: "Never"), choosing once (Column 2: "Once"), choosing twice or fewer (Column 3: "Up to 2 times"), and choosing three times or fewer (Column 4: "Up to 3 times").

Turning to the first column, “1. Never,” we see that compared to male REAs, female REAs are more likely to be considered high discriminators, i.e., never choosing a Venezuelan family. Additionally, younger REAs are more likely to discriminate than older REAs. The only noncognitive skill that correlates statistically significantly with the likelihood of never choosing a Venezuelan family is neuroticism, with a negative coefficient indicating that individuals who experience negative emotions more frequently are also less likely to never choose Venezuelan families. Higher cognitive ability is also related to a higher likelihood of never choosing a Venezuelan family while scoring higher on the local real estate market knowledge test is associated with a lower likelihood of never choosing a Venezuelan family.

In Table 6, the definition of discrimination becomes less strict as we move from the leftmost column to the rightmost. This enables us to evaluate the significance of each factor in predicting discriminatory behavior as a whole. A notable pattern is that the coefficient estimates for age and neuroticism (both with negative signs) become weaker as the definition of discrimination is relaxed. However, they still remain significant predictors of discriminatory behavior in all four models. On the other hand, the coefficients for gender, cognitive skills, and market knowledge, which are significant predictors of high discrimination in the first column, decrease in magnitude and lose statistical significance as the definition of discrimination is broadened.

In summary, our findings suggest that age and neuroticism each play a significant role in predicting discriminatory behavior among REAs in the market, regardless of the degree of discrimination being considered. As the level of discrimination intensifies, other factors such as gender, cognitive skills, and local market knowledge also become important predictors. It is important to note that these results should not be interpreted as causal evidence, but rather as a useful starting point for designing targeted interventions to reduce discrimination and promote inclusion in the real estate market.

3.6 Validity check: REAs’ second-order beliefs

In this section, we examine the second-order beliefs of the REAs, specifically their beliefs about the preferences of other REAs, as a means of methodological validation in our experiment. As REAs’ behavior may be susceptible to social desirability bias, we introduced an incentive-compatible measure to elicit their true underlying preferences.

In the final trial of the experiment, we requested that REAs reassess the applicants for one of the properties whom the REAs had evaluated previously. Although the content presented in trial 10 was the same as in trial 4, the task differed. REAs were asked to evaluate the applicants as they believed other agents had in the past. We incentivized the answers in the

final trial by offering a USD 100 prize. The REA whose responses in trial 10 were closest to the responses most REAs gave when they evaluated the applicants in trial 4 would be the winner.

For two reasons, the final trial of the experiment should be less prone to social desirability bias. Firstly, concerns about being portrayed as discriminatory diminish as the question reflects on others and not the individual. Secondly, the monetary incentive increases the opportunity cost of social desirability bias. We attempted to strengthen the monetary incentive by awarding the winner a larger monetary incentive than that provided for participation in the experiment.

Research in the experimental literature suggests that beliefs about others' behavior are frequently correlated with subjects' own choices (Vanberg 2019; Roth and Voskort 2014). This is known as the *false consensus effect* in psychology. While the name may suggest that this refers to a bias where individuals overestimate the similarity between their choices and those of others, it may actually be entirely rational under a Bayesian framework to infer this similarity in the absence of additional information (Dawes 1989; Vanberg 2019).

In the final trial, we thus utilize the false consensus effect to determine whether the decisions made in previous trials reveal REAs' true preferences. As this is a measure of individuals' preferences in a context with reduced social desirability bias, we find that the choices made in trial 10 replicate the pattern observed throughout trials 1 to 9: most REAs selected a Colombian family. Table 7 shows the frequency of nationality selection by city, which is consistently higher for Colombian families than for families of other nationalities. This result suggests that the preference elicitation in trials 1 to 9 likely revealed REAs' true preferences.

This is also evident when we estimate the specification discussed previously for **Model 3** of Table 5 separately by trials. Table 8 presents estimates of the discrimination coefficients computed across subsamples defined sequentially. Columns 1, 2, and 3 show estimates of the discrimination coefficients across triplets of subsamples in the first nine trials of the experiment. Columns 4 and 5 show the discrimination coefficient for trials 4 and 10 individually. This gives us confidence that the preference elicitation in trials 1–9 was not affected by social desirability bias and thus our instrument can reliably capture discrimination in the housing market.

It is noteworthy that the validation of the field experiment is not the only outcome of this check. The elicitation of second-order beliefs of the REAs also provides insight into the consensus about the prevailing social norm. Not only do REAs typically discriminate against Venezuelan applicants, they also think other REAs do the same. This finding is significant when it comes to designing policies to address the issue of discrimination, because it suggests

Table 7: **Nationality selection frequency.**

Trials	Bogotá			Cúcuta		
	OECD	VEN	COL	OECD	VEN	COL
1	69	92	156	69	19	169
2	59	52	206	38	24	195
3	53	49	215	51	32	174
4	51	37	229	38	26	193
5	65	72	180	53	21	183
6	67	100	150	70	15	172
7	75	51	191	56	16	185
8	78	48	191	36	32	189
9	67	46	204	50	18	189
10	73	32	212	31	29	197

Note: The table shows the number of REAs who selected families of each nationality by trial. The highest frequency by city is highlighted for each trial.

Table 8: **Effects of discrimination by subsets of trials in the experiment.**

	(1) Trials 1–3	(2) Trials 4–6	(3) Trials 7–9	(4) Trial 4	(5) Trial 10
Discrimination coefficients					
Nationality=2	-0.254*** (0.006)	-0.225*** (0.011)	-0.281*** (0.011)	-0.290*** (0.019)	-0.283*** (0.019)
Observations	28700	8610	8610	2870	2870
Model specification					
OECD fixed effects	YES	YES	YES	YES	YES
Design fixed effects	YES	YES	YES	YES	YES
Family characteristics	YES	YES	YES	YES	YES

Note: The table shows coefficient estimates of the discrimination effect from OLS regressions. The dependent variables are dummy variables indicating whether a Venezuelan family was selected. Standard errors, clustered at the REA level, are reported in parentheses. ***, **, and * indicate significance at the 1, 5, and 10% critical levels, respectively.

that policies relying on pro-migratory sentiments may be ineffective.

Behavioral interventions where a person’s actions are compared to those of their peers have proven effective for changing behavior in various domains (Bhanot 2021; Allcott 2011; Goldstein, Cialdini and Griskevicius 2008). However, in certain cases using nudges on social norms can fail to be effective or even backfire Bicchieri and Dimant (2022). This is a potential

risk here, where the behavior that an intervention wants to encourage is performed only by a minority of REAs. Thus in this context, it is important to use caution so as not to reinforce the discriminatory social norm. One way of dealing with this issue is using trending norms Mortensen et al. (2019) to highlight how the social norm is increasingly pro-migratory, if that were the case in Colombia.

4 Conclusions

Discrimination against migrants is a barrier that hinders the inclusion of vulnerable populations in the economic, social, and cultural fabric of receiving countries. Discrimination leads to lost economic opportunities and reduced diversity, which negatively impact innovation, poverty, and inequality. The Venezuelan migration is the most significant migratory phenomenon in the Americas at the present time, and Colombia is the most important receptor of those migrants.

This study measures the magnitude of discrimination against Venezuelan migrants in the Colombian rental housing market and identifies the underlying individual-level factors that contribute to discriminatory behaviors exercised by REAs. We found that discrimination against Venezuelans in the rental housing market is prevalent in Colombia and further that younger, less neurotic, and more cognitively able real estate agents are more likely to discriminate. Taste-based discrimination dominates the nature of this discriminatory behavior, but statistical discrimination may also play an important role. Among REAs there are social norms according to which this type of discrimination is socially acceptable.

The findings of this study highlight the significant problem of real estate agents' discriminating against Venezuelan migrants in Colombia, which creates a potential barrier in the search for housing for millions of vulnerable individuals. There is a clear need for policy interventions to address this societal problem. The discovery that discriminatory behavior in this market may be influenced by individual characteristics and psychological factors provides valuable insight for designing interventions. Moreover, this discriminatory behavior is not solely an individual-level issue, but rather is influenced by broader social and cultural norms. Thus, policy interventions should take a comprehensive approach, targeting both individuals and broader systemic changes to influence prevailing norms, in order to address this issue.

Future research should investigate strategies to ameliorate discrimination in the housing market. Policies such as providing economic incentives to landlords who demonstrate a commitment to fair housing practices (in the form of tax breaks or other types of financial rewards) and increasing access to information about available housing options and tenant

rights may be effective in addressing this issue. However, it is also worthwhile to think about ways to foster collective change Bicchieri and Dimant (2022). Although social norms should be used with care in this context, there are potential gains in using the power of mechanisms such as trending social norms. There is still much to be done to prevent discrimination in the housing market, which has a significant impact on an already vulnerable population of migrants.

References

- Ahmed, Ali M., and Mats Hammarstedt.** 2008. “Discrimination in the rental housing market: A field experiment on the Internet.” *Journal of Urban Economics*, 64(2): 362–372.
- Allcott, Hunt.** 2011. “Social norms and energy conservation.” *Journal of Public Economics*, 95(9–10): 1082–1095.
- Arceo-Gomez, Eva O., and Raymundo M. Campos-Vazquez.** 2014. “Race and Marriage in the Labor Market: A Discrimination Correspondence Study in a Developing Country.” *American Economic Review*, 104(5): 376–380.
- Bahar, Dany, Meagan Dooley, and Andrew Selee.** 2020. “Venezuelan migration, crime, and misperceptions: A review of data from Colombia, Peru, and Chile.” Migration Policy Institute.
- Baldini, Massimo, and Marta Federici.** 2011. “Ethnic discrimination in the Italian rental housing market.” *Journal of Housing Economics*, 20(1): 1–14.
- Barr, Abigail, Tom Lane, and Daniele Nosenzo.** 2018. “On the social inappropriateness of discrimination.” *Journal of Public Economics*, 164: 153–164.
- Bertrand, M., and E. Duflo.** 2017. “Field Experiments on Discrimination.” In *Handbook of Field Experiments*. Vol. 1 of *Handbook of Economic Field Experiments*, , ed. Abhijit Vinayak Banerjee and Esther Duflo, 309–393. North-Holland.
- Bertrand, Marianne, and Sendhil Mullainathan.** 2004. “Are Emily and Greg More Employable Than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination.” *American Economic Review*, 94(4): 991–1013.
- Bhanot, Syon P.** 2021. “Isolating the effect of injunctive norms on conservation behavior: New evidence from a field experiment in California.” *Organizational Behavior and Human Decision Processes*, 163: 30–42.
- Bicchieri, Cristina, and Eugen Dimant.** 2022. “Nudging with care: The risks and benefits of social information.” *Public choice*, 191(3–4): 443–464.
- Boletín Técnico Déficit Habitacional: Encuesta Nacional de Calidad de Vida (ECV) 2021.** 2021. “Boletín Técnico Déficit Habitacional: Encuesta Nacional de Calidad de Vida (ECV) 2021.” Departamento Administrativo Nacional de Estadística.

- Bonilla-Mejía, Leonardo, Leonardo Fabio Morales, Didier Hermida-Giraldo, and Luz A Flórez.** 2020. “The labor market of immigrants and non-immigrants evidence from the Venezuelan refugee crisis.” *Borradores de Economía*, , (1119).
- Bosch, Mariano, M. Angeles Carnero, and Lidia Farre.** 2010. “Information and discrimination in the rental housing market: Evidence from a field experiment.” *Regional Science and Urban Economics*, 40(1): 11–19.
- Burn, Ian, Patrick Button, Luis Munguia Corella, and David Neumark.** 2022. “Does Ageist Language in Job Ads Predict Age Discrimination in Hiring?” *Journal of Labor Economics*, 40(3): 613–667.
- Choi, Donghyun Danny, Mathias Poertner, and Nicholas Sambanis.** 2019. “Parochialism, social norms, and discrimination against immigrants.” *Proceedings of the National Academy of Sciences*, 116(33): 16274–16279.
- Choi, Seok Joon, Jan Ondrich, and John Yinger.** 2005. “Do rental agents discriminate against minority customers? Evidence from the 2000 Housing Discrimination Study.” *Journal of Housing Economics*, 14(1): 1–26.
- Crawford, Jarret T., and Mark John Brandt.** 2019. “Who Is Prejudiced, and Toward Whom? The Big Five Traits and Generalized Prejudice.” *Personality and Social Psychology Bulletin*, 45: 1455–1467.
- David, Neumark, Burn Ian, and Patrick Button.** 2019. “Is It Harder for Older Workers to Find Jobs? New and Improved Evidence from a Field Experiment.” *Journal of Political Economy*, 127(2): 922–970.
- Dawes, Robyn M.** 1989. “Statistical criteria for establishing a truly false consensus effect.” *Journal of Experimental Social Psychology*, 25(1): 1–17.
- der Bracht, Koen Van, Ad Coenen, and Bart Van de Putte.** 2015. “The Not-in-My-Property Syndrome: The Occurrence of Ethnic Discrimination in the Rental Housing Market in Belgium.” *Journal of Ethnic and Migration Studies*, 41(1): 158–175.
- Dirk W. Early, Paul E. Carrillo, Edgar O. Olsen.** 2018. “Statistical discrimination or prejudice? A large sample field experiment.” *Journal of Regional Science*, 59(4): 669–700.
- Early, Dirk.** 2011. “Racial and Ethnic Disparities in Rents of Constant Quality Units in the Housing Choice Voucher Program: Evidence from HUD’s Customer Satisfaction Survey - Assisted Housing Research Cadre Reports.”

- Ekehammar, Bo, Nazar Akrami, Magnus Gylje, and Ingrid Zakrisson.** 2004. “What matters most to prejudice: Big Five personality, Social Dominance Orientation, or Right-Wing Authoritarianism?” *European Journal of Personality*, 18: 463–482.
- Ewens, Michael, Bryan Tomlin, and Liang Choon Wang.** 2014. “Statistical discrimination or prejudice? A large sample field experiment.” *Review of Economics and Statistics*, 96(1): 119–134.
- Goldstein, Noah J., Robert B. Cialdini, and Vldas Griskevicius.** 2008. “A room with a viewpoint: Using social norms to motivate environmental conservation in hotels.” *Journal of Consumer Research*, 35(3): 472–482.
- Hanson, Andrew, and Michael Santas.** 2014. “Field experiment tests for discrimination against Hispanics in the US rental housing market.” *Southern Economic Journal*, 81(1): 135–167.
- Hanson, Andrew, and Zackary Hawley.** 2014. “Where does racial discrimination occur? An experimental analysis across neighborhood and housing unit characteristics.” *Regional Science and Urban Economics*, 44: 94–106.
- Haoran He, Sherry Xin Li, and Yuling Han.** 2023. “Labor Market Discrimination against Family Responsibilities: A Correspondence Study with Policy Change in China.” *Journal of Labor Economics*, Just Accepted.
- Heckathorn, Douglas D.** 1997. “Respondent-driven sampling: A new approach to the study of hidden populations.” *Social Problems*, 44(2): 174–199.
- Heckathorn, Douglas D.** 2002. “Respondent-driven sampling II: deriving valid population estimates from chain-referral samples of hidden populations.” *Social Problems*, 49(1): 11–34.
- Kline, Patrick, Evan K. Rose, and Christopher R. Walters.** 2022. “Systemic Discrimination Among Large U.S. Employers.” *The Quarterly Journal of Economics*, 137(4): 1963–2036.
- Knight, Brian G., and Ana Tribin.** 2020. “Immigration and violent crime: Evidence from the Colombia-Venezuela border.” National Bureau of Economic Research Working Paper 27620.
- Koppensteiner, Martin, Tania Oliveira, and Nikitha Rohith.** 2022. “Testing for Discrimination in Rental Markets: Experimental Evidence from the UK.” IZA Discussion Paper.

- Kroft, Kory, Fabian Lange, and Matthew J. Notowidigdo.** 2013. “Duration Dependence and Labor Market Conditions: Evidence from a Field Experiment.” *The Quarterly Journal of Economics*, 128(3): 1123–1167.
- Lippens, Louis, Siel Vermeiren, and Stijn Baert.** 2023. “The state of hiring discrimination: A meta-analysis of (almost) all recent correspondence experiments.” *European Economic Review*, 151: 104315.
- Massey, Douglas S., and Garvey Lundy.** 2001. “Use of Black English and racial discrimination in urban housing markets: New methods and findings.” *Urban Affairs Review*, 36(4): 452–469.
- Maurer-Fazio, M. E.** 2012. “Ethnic discrimination in China’s internet job board labor market.” *IZA Journal of Migration*, 1.
- Ministry of Foreign Affairs.** 2022. “Distribución de Venezolanos en Colombia - Corte 28 de febrero de 2022.” Ministry of Foreign Affairs, Colombia.
- Mortensen, Chad R., Rebecca Neel, Robert B. Cialdini, Christine M. Jaeger, Ryan P. Jacobson, and Megan M Ringel.** 2019. “Trending norms: A lever for encouraging behaviors performed by the minority.” *Social Psychological and Personality Science*, 10(2): 201–210.
- Myers, Caitlin Knowles.** 2004. “Discrimination and neighborhood effects: understanding racial differentials in US housing prices.” *Journal of Urban Economics*, 56(2): 279–302.
- Namen, Olga, Marisol Rodríguez, and Nicolás Romero.** 2021. “Las dos caras de la integración: percepciones de colombianos y venezolanos sobre el fenómeno migratorio en Bogotá, Colombia.” *Las dos caras de la integración: percepciones de colombianos y venezolanos sobre el fenómeno migratorio en Bogotá Colombia*.
- Neumark, David.** 2012. “Detecting Discrimination in Audit and Correspondence Studies.” *The Journal of Human Resources*, 47(4): 1128–1157.
- Neumark, David.** 2018. “Experimental Research on Labor Market Discrimination.” *Journal of Economic Literature*, 56(3): 799–866.
- Oreopoulos, Philip.** 2011. “Why Do Skilled Immigrants Struggle in the Labor Market? A Field Experiment with Thirteen Thousand Resumes.” *American Economic Journal: Economic Policy*, 3(4): 148–171.

- Osorio, Diego S.** 2022. “Rental Discrimination on the Basis of Immigration Status.” *CUNY Academic Works*.
- Page, Marianne.** 1995. “Racial and ethnic discrimination in urban housing markets: Evidence from a recent audit study.” *Journal of Urban Economics*, 38(2): 183–206.
- Proyecto migración Venezuela.** 2020. “Percepción de la integración de los migrantes en Colombia en tiempos de coronavirus.” Proyecto migración Venezuela.
- Quillian, Lincoln, Devah Pager, Ole Hexel, and Arnfinn H. Midtbøen.** 2017. “Meta-analysis of field experiments shows no change in racial discrimination in hiring over time.” *Proceedings of the National Academy of Sciences*, 114: 10870–10875.
- Rossi, P. H.** 1979. “Vignette Analysis: Uncovering the Normative Structure of Complex Judgments.” *Qualitative and Quantitative Social Research: Papers in Honor of Paul F. Lazarsfeld*, 176–186. New York, NY:New York: Free Press.
- Ross, Stephen L., and Margery Austin Turner.** 2014. “Housing Discrimination in Metropolitan America: Explaining Changes between 1989 and 2000.” *Social Problems*, 52(2): 152–180.
- Roth, Benjamin, and Andrea Voskort.** 2014. “Stereotypes and false consensus: How financial professionals predict risk preferences.” *Journal of Economic Behavior & Organization*, 107: 553–565.
- Roychoudhury, Canopy, and Allen C. Goodman.** 1996. “Evidence of Racial Discrimination in Different Dimensions of Owner-Occupied Housing Search.” *Real Estate Economics*, 24(2): 161–178.
- Rozo, Sandra V., and Juan F. Vargas.** 2021. “Brothers or invaders? How crisis-driven migrants shape voting behavior.” *Journal of Development Economics*, 150: 102636.
- Sibley, Chris G., and J. H. Duckitt.** 2008. “Personality and Prejudice: A Meta-Analysis and Theoretical Review.” *Personality and Social Psychology Review*, 12: 248–279.
- Taborda Burgo, Juan Camilo, Alida Maria Acosta Ortiz, and Maria Camila Garcia.** 2021. “Silent discrimination: Venezuelan migrants’ perception of discrimination in Colombia.” *Desarrollo y Sociedad*, , (89): 143–186.
- Tribín-Uribe, Ana María, Achyuta Adhvaryu, Cesar Anzola-Bravo, Oscar Ávila-Montealegre, Leonardo Bonilla-Mejía, Juan Carlos Castro-Fernández,**

- Luz Adriana Flórez, Ánderson Grajales-Olarte, Alexander Guarín-López, Franz Hamann-Salcedo, et al.** 2020. “Migración desde Venezuela en Colombia: caracterización del fenómeno y análisis de los efectos macroeconómicos.” *Revista Ensayos sobre Política Económica*, , (97): 1–74.
- UNHCR.** 2022. “Refugee Statistics.” *United Nations High Commissioner for Refugees* (<https://www.unhcr.org/refugee-statistics/> visited on 12/15/2022).
- Vanberg, Christoph.** 2019. “A short note on the rationality of the false consensus effect.” Discussion Paper Series.
- Verhaeghe, Pieter-Paul.** 2020. “Correspondence Studies.” *Handbook of Labor, Human Resources and Population Economics*, , ed. Klaus F. Zimmermann, 1–19. Cham:Springer International Publishing.
- Volz, Erik, and Douglas D. Heckathorn.** 2008. “Probability based estimation theory for respondent driven sampling.” *Journal of Official Statistics*, 24(1): 79.
- World Bank.** 2018. “Migración desde Venezuela a Colombia: impactos y estrategia de respuesta en el corto y mediano plazo.”
- Zanoni, Wladimir, Acevedo Paloma, Zane Giulia, and Hernandez Hugo.** 2022. “Exploring the Prevalence, Causes, and Solutions to Discrimination Against Workers from Slums.” *IDB Technical Note*.
- Zhao, Bo, Jan Ondrich, and John Yinger.** 2006. “Why do real estate brokers continue to discriminate? Evidence from the 2000 Housing Discrimination Study.” *Journal of Urban Economics*, 59(3): 394–419.

5 Appendix

5.1 Experimental materials

Figure 1: Property posting



Figure 2: Applicants' profiles

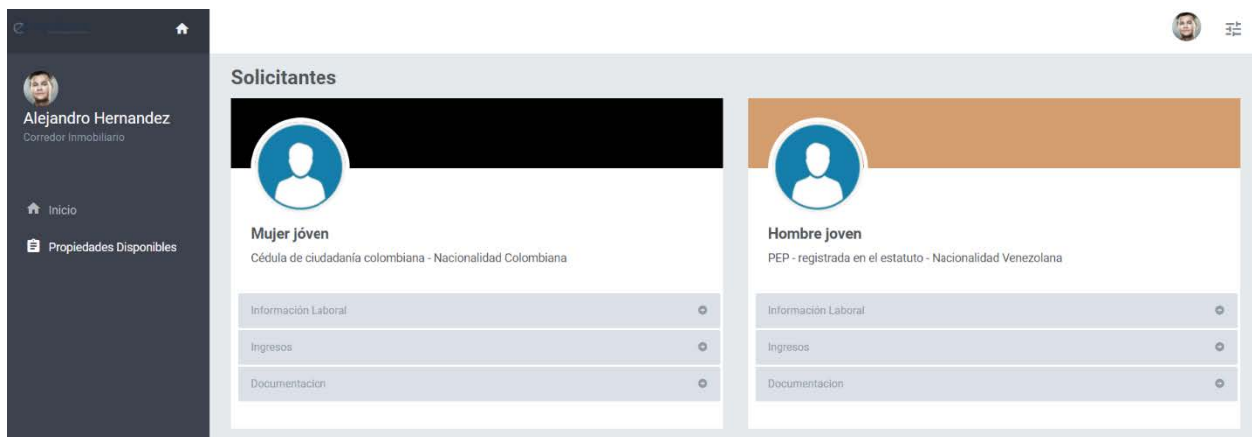


Figure 3: Applicants selection

Selección definitiva de solicitantes

Si una escala del 1 al 10 ¿cómo consideraría que cada grupo familiar sistemáticamente se adecua al ambiente?

Mujer joven Dada la situación económica colombiana	Hombre joven Por representar a sector tradicional	Hombre joven Dada la situación económica colombiana	Mujer joven Por tener un futuro prometedor	Mujer joven Dada la situación económica colombiana
---	--	--	---	---

El valor total del canon de arrendamiento sugerido para este inmueble equivale a \$2.500.000 COP un embargo. Luego de ver los perfiles, por favor indique ¿Cuál es el canon que usted recomendaría? (dado el nivel de riesgo que ha identificado para esta perfil)
(Indique el valor en pesos colombianos COP, ingrese sólo números, sin símbolos, en puntos ni comas)

Mujer joven Dada la situación económica colombiana	Hombre joven Por representar a sector tradicional	Hombre joven Dada la situación económica colombiana	Mujer joven Por tener un futuro prometedor	Mujer joven Dada la situación económica colombiana
---	--	--	---	---

¿Cuál es su candidato principal para atender esta propiedad?

Mujer joven Dada la situación económica colombiana	Hombre joven Por representar a sector tradicional	Hombre joven Dada la situación económica colombiana	Mujer joven Por tener un futuro prometedor	Mujer joven Dada la situación económica colombiana
---	--	--	---	---

Valores del 1 al 10 la influencia que tiene cada uno de los siguientes factores a la hora de valorar a cada perfil:

Probabilidad de cumplimiento del contrato en tiempo	Probabilidad de cumplimiento del contrato en caso del inmueble habiendo regulado en el inmueble	Probabilidad de renovación	Actividad económica del arrendatario	Otra razón: describe
---	---	----------------------------	--------------------------------------	----------------------

Por favor comente en qué criterio ha basado su selección

5.2 Tables

Table 9: **Balance in the attributes of applicant families.**

Variable	(1) OECD		(2) Venezuela		(3) Colombia		(1)-(2)	T-test Difference	
	N/[Clusters]	Mean/SE	N/[Clusters]	Mean/SE	N/[Clusters]	Mean/SE		(1)-(3)	(2)-(3)
Two or more adults	5166 [574]	0.667 (0.000)	10332 [574]	0.778 (0.000)	10332 [574]	0.728 (0.002)	-0.111	-0.061***	0.050***
Pets	5166 [574]	0.161 (0.002)	10332 [574]	0.142 (0.001)	10332 [574]	0.111 (0.000)	0.019***	0.050***	0.031***
Household size	5166 [574]	2.050 (0.002)	10332 [574]	2.099 (0.005)	10332 [574]	2.099 (0.005)	-0.050***	-0.050***	0.000
N Children	5166 [574]	0.172 (0.002)	10332 [574]	0.186 (0.003)	10332 [574]	0.130 (0.003)	-0.013**	0.042***	0.056
Sales	5166 [574]	0.172 (0.002)	10332 [574]	0.186 (0.003)	10332 [574]	0.117 (0.002)	-0.013**	0.056***	0.069***
Construction	5166 [574]	0.000 (0.000)	10332 [574]	0.056 (0.000)	10332 [574]	0.000 (0.000)	-0.056	N/A	0.056
Education, culture, tourism	5166 [574]	0.172 (0.002)	10332 [574]	0.272 (0.002)	10332 [574]	0.197 (0.001)	-0.099***	-0.025***	0.075***
Legal/Law advisor	5166 [574]	0.149 (0.007)	10332 [574]	0.086 (0.001)	10332 [574]	0.228 (0.002)	0.063***	-0.079***	-0.142***
Manufacturing	5166 [574]	0.061 (0.002)	10332 [574]	0.167 (0.000)	10332 [574]	0.025 (0.001)	-0.105***	0.036***	0.142***
Public services	5166 [574]	0.222 (0.000)	10332 [574]	0.117 (0.002)	10332 [574]	0.272 (0.002)	0.105***	-0.050***	-0.155***
R&D	5166 [574]	0.222 (0.000)	10332 [574]	0.117 (0.002)	10332 [574]	0.161 (0.002)	0.105***	0.061***	-0.044***

Notes: The value displayed for t-tests are the differences in the means across the groups. Standard errors are clustered at variable id. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.