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AGE AND THE LABOR MARKET FOR HISPANICS IN THE UNITED STATES

Joanna Lahey  
Roberto M. Mosquera

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### **ABSTRACT**

We explore the labor market for Hispanic high school graduates in the United States by age using information from the US Census, American Community Survey, Current Population Survey, and three laboratory experiments. We find, in general, that the differences in outcomes for Hispanic and non-Hispanic high school graduates do not change across the lifecycle. Moving to a laboratory setting, we provided participants with randomized resumes for a clerical position that are on average equivalent except for name and age (as indicated by date of high school graduation). In all three experiments, hypothetical applicants with Hispanic and non-Hispanic names were generally treated the same across the lifecycle by a student population, a population of human resources managers, and a more general population from mTurk. These results stand in contrast to earlier results that find strong differences by age in how resumes with Black and White names are treated.

Joanna Lahey  
The Bush School  
Texas A&M University  
Mailstop 4220  
College Station, TX 77843  
and NBER  
jlahey47@gmail.com

Roberto M. Mosquera  
Department of Economics  
Universidad de las Americas  
De los Granados E12-41  
Quito  
Ecuador  
roberto.mosquera@udla.edu.ec

## I. Introduction

The population of Hispanics in the United States has been steadily growing over time. In the 2020 Census, Hispanics accounted for 19% of the total population compared to 6.5% in 1980 (Flores et al., 2017; USA Facts 2022). These increases have occurred among both foreign-born and native-born populations and more than half of Hispanics are native-born (USA Facts 2022). Although the median age of Hispanics in the US is still in the 20s, this age has been steadily increasing over time (Flores et al., 2017). Despite these increasing demographic pressures, the work outcomes of Hispanics across the lifespan are understudied, making what happens to Hispanic workers as they age an increasingly important question for new research.

By some measures, Hispanic workers are doing better than similarly educated White workers; lower educated White Hispanics enjoy higher employment and labor market participation than do similarly educated White non-Hispanics (Authors calculations from the American Community Survey (ACS)). By other measures, however, they are doing worse and these negative gaps between Hispanics and Non-Hispanics increase as these groups age. Earnings trajectories are lower for Hispanic men compared to non-Hispanic White men, particularly among the more educated (Tomaskovic-Devey et al., 2005). Hispanics are more likely than other groups to live in poverty at older ages and experience lower Social Security receipt (Hungerford et al., 2001). They also have a higher risk of being work-disabled at younger ages than White non-Hispanics in the HRS (Brown & Warner, 2008). A recent study looking at retirement pathways for workers age 50-75 finds consistent patterns for White and Black workers, but not for Hispanic workers, particularly across gender and education (Moen, 2022).

We might expect Hispanic job applicants to be discriminated against in the labor market because of negative stereotypes. For example, there are beliefs that Hispanics are less likely to be documented workers, have poor communication skills, need more supervision, are lazy, and tend to have many children (Dixon & Rosenbaum, 2004; Dong & Murrillo, 2007; Jackson, 1995; Jones, 1991; Market, 2004; Ramirez Berg, 1990).<sup>2</sup> These stereotypes may vary by age. For example, older Hispanic applicants may be more likely to have previously become US citizens under amnesty (Immigration Reform and Control Act, 1986). Communication skills may be better for younger cohorts, or they may have instead improved with time spent in the workforce. Beliefs that Hispanics have more children may be problematic for workers when the children are in the household, but will be less of a concern as children age out of needing supervision. On the other hand, people with Hispanic ethnicity may be assumed to be bilingual, and knowledge of Spanish is particularly useful in the United States, making Hispanic applicants more attractive to employers.

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<sup>2</sup> Appendix Table C 1 provides lists of stereotypes from previous literature.

Evidence on labor market discrimination against Hispanic and Latinx job applicants is mixed (Gaddis, 2017). Early audit studies that found discrimination often used in-person audits that did not make the treatment and control groups identical. For example, one instructed their Hispanic applicants to use fake accents, another included only testers who were “foreign-looking/sounding,” another used college students for the non-Hispanic but not Hispanic auditors, and some gave additional qualifications to Latinx resumes, which could result in over-qualification (see James & DelCastillo 1992 for a literature review).<sup>3</sup> Even with these differences, these early audits only found discrimination in the in-person or phone component, and not the resume component (e.g. Bendick et al., 1991; Cross et al., 1990; James & DelCastillo, 1992). Newer studies generally work to make the pools of treatment and control testers similar to each other, and, with the exception of Pager et al. (2009) which focuses only on Puerto Rican applicants in New York City,<sup>4</sup> do not find evidence of labor market discrimination against Hispanic/Latinx job applicants (Darolia et al., 2016; Decker et al., 2015; Kleycamp, 2009). A meta-analysis by Quillian et al., (2017) thus finds a modest decline in discrimination for Latinos as measured by labor market audit studies.<sup>5</sup>

Because the design of labor market experiments on age requires a graduation date, we focus the attention in this paper on the outcomes of the largest education group in the US, those with high school education and no additional degrees. These groups make up 28-53% of the Hispanic population and 26-47% of the non-Hispanic population age 25-75 depending on how people with some college are categorized (Authors calculations from the 2019 ACS). While this group is important from an external validity standpoint, the main reason for our focus is pragmatic—the study of age discrimination via the resume methods we utilize in this paper is limited by how age is signaled: in this case via date of high school graduation. Similarly, although resume methods do not require that the hypothetical applicant be a US citizen, applicants must have graduated from a US high school, increasing the likelihood of citizenship.<sup>6</sup> We therefore focus our data work on the native-born population.

To explore the experiences of Hispanic Americans over the lifecycle, we use four different approaches across five studies. In the first approach, we use publicly available data from the US

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<sup>3</sup> Education levels in these studies include high school, and in some cases, college degrees. Most, but not all, of these studies focus on the youth labor market for men, particularly the in-person audit studies.

<sup>4</sup> Wojtkiewicz and Donato (1995) outline differences in educational attainment between Puerto Ricans born on the mainland US and US-born children of Mexican heritage.

<sup>5</sup> Audit studies also find mixed evidence of discrimination against Hispanic/Latinx in other realms. Several studies have mixed findings regarding housing discrimination against Hispanic applicants (Feldman & Weseley, 2013; Gaddis & Ghoshal, 2020; Hanson & Santas, 2014; Turner et al., 1991a, b; Yinger, 1991). Blair et al., (2013) finds implicit but not explicit discrimination against Latinx health professionals and community members. Mendez & Grose (2018) and White et al., (2015) find that legislators and bureaucrats are less likely to send communications to Latino constituents.

<sup>6</sup> Using 2012-2016 data, Zong & Batalova (2019) estimate that approximately 80,500 undocumented Hispanic students graduate from US high schools every year. For the same years as the study, the National Center for Educational Statistics reports that approximately 672,490 Hispanic students graduated. Thus, undocumented Hispanic graduates account for about 12% of all Hispanic high school graduates during that time frame. It should also be noted that employers would see that most of the resumes in our sample show US work histories.

Census, ACS, and matched monthly CPS to explore differences in standard labor market outcomes across time. Unlike previous findings that find stark patterns in the differences in the labor market outcomes for Black and White Americans across age and time (Lahey 2018), differences in these outcomes are much flatter across age for Hispanic and non-Hispanic Americans. Similarly, point in time data from a pre-pandemic ACS finds steady differences in outcomes across the lifecycle for many, but not all, of the outcomes tested.

In the second approach, we re-analyze data from two previous eye-tracking experiments that asked students (Experiment 1) and human resources (HR) managers (Experiment 2) to rate resumes with randomized inputs for a clerical position while tracking their eyes with an eye-tracking device. Ages listed on resumes (as indicated by date of high school graduation) ranged from mid-30s to mid-70s and 13% of resumes indicated Hispanic status by Hispanic last, but not first, name. Generally, participants did not treat resumes with Hispanic and non-Hispanic resumes differently for the different age groups.

Our third approach (Experiment 3) used a large sample of mTurk managers, clerical workers, and the general population as our participant population and again asked participants to rate resumes for a clerical position. In this study, we expanded indicators of Hispanic status to include Hispanic first names in addition to last names, we added indicators on resumes to contradict or reinforce Hispanic stereotypes, and we asked questions about specific aspects of each worker such as need for supervision and communication skills. As with the previous approaches, we find little evidence that Hispanic applicants are treated differently than non-Hispanics across these age groups. Finally, we complement Experiment 3 with another intervention in mTurk to ask more specific questions about the Hispanic status and socioeconomic status signaled by names. We find additional evidence that the mTurk population can infer ethnicity correctly from a name. We also find that five distinctively Hispanic names are consistently misidentified as non-Hispanic. The results in Experiment 3 are robust to excluding these names. Similarly, controlling for perceived socioeconomic status of first and last names does not affect Experiment 3's conclusions.

To summarize, publicly available data show no stark differences in labor market outcomes between Hispanics and non-Hispanics as they age, although some differences in characteristics that might affect these outcomes, such as access to a laptop, do increase with age. Similarly, experimental data from three different populations suggest the absence of hiring discrimination against Hispanics in the first stage of hiring at middle and older ages. Although each of these approaches may be imperfect, together, they suggest that, unlike the case for similarly educated Black Americans (Lahey 2018; Lahey & Oxley, 2021), Hispanic Americans with high school degrees from the US (but without an additional degree) are treated similarly in the first stage of hiring across middle and older ages.

## II. Results from Survey Data

As a first step, we look at labor market outcomes between Hispanic and non-Hispanic high school graduates without an additional degree using several nationally representative surveys.<sup>7</sup> We first use the Census and American Community Survey (ACS) for years 1970 to 2015 to create longitudinal charts exploring employment outcomes for cohorts across the lifespan. We limit our dataset to native born<sup>8</sup> because we want to be consistent across the different studies in this project and the experiments by necessity will include hypothetical applicants with US high school diplomas. That said, perhaps surprisingly, patterns are not much different when foreign-born are included (results available from the authors).

We might expect differences in labor force outcomes for similarly educated Hispanic and non-Hispanic workers in the US because there are differences in these data for Black vs. White people (Lahey, 2018). Figure 1a shows the difference in the probability of being employed in the US Census/ACS by age for birth cohorts from 1933 to 1978 for Hispanic men compared to non-Hispanic men, while Figure 1b shows the same comparison for women. Unlike similar graphs comparing Black vs. White high school graduate women (Lahey, 2018), there are no discernable patterns for women by age or by cohort. The difference in probability of employment ranges generally ranges between -0.04 and 0.02 points with a few outliers, indicating on average that Hispanic women are less likely to be employed. The difference in probability of employment for men is generally negative, indicating that Hispanic men are less likely to be employed than are non-Hispanic Men.

For men, differences tend to be smaller and flatter for newer cohorts, and for older members of earlier cohorts. Figure 1c and 1d repeat this exercise for wage differences and find little difference in wages at younger ages, and generally negative differences at older ages for women, suggesting that older Hispanic women make less on average than do older non-Hispanic women. Hispanic men earn consistently less than do non-Hispanic men, and those differences are larger at older ages and for earlier cohorts. Figure 1e and 1f again repeat this exercise for differences in the probability of unemployment for women and men respectively. For the most part, at older ages Hispanic men and women are somewhat more likely to be unemployed than are non-Hispanic. At younger ages, differences are mixed with no discernable pattern by cohort. In general, differences in employment outcomes for Hispanic compared to non-Hispanic people by age and cohort are

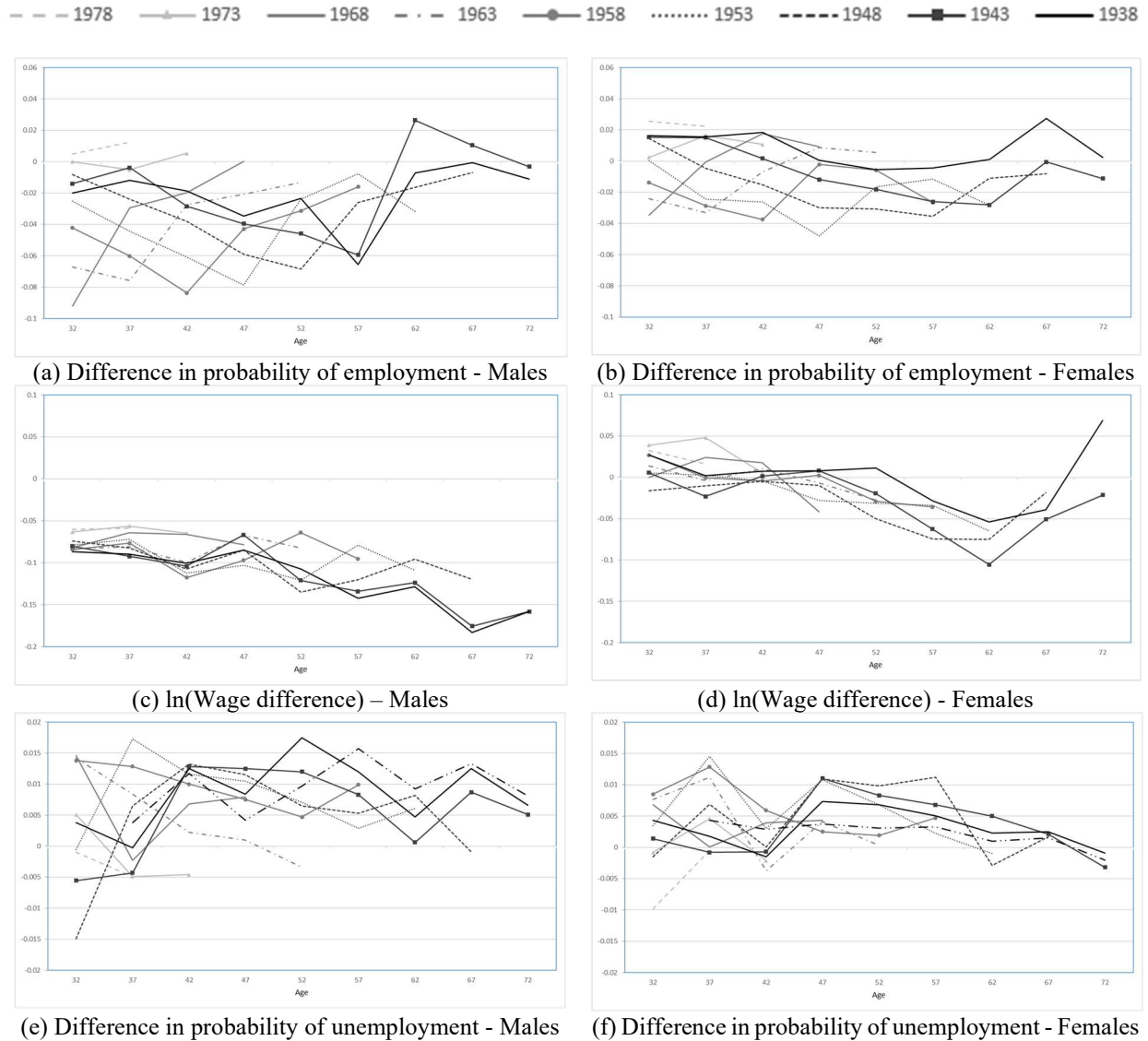
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<sup>7</sup> How the Census/ACS records people who have obtained additional schooling beyond a high school diploma or GED but have not gotten an additional degree changes over time. For 1970 and 1980, we include people who have grade 12 and some college less than one year. For 1990, we include high school grad or GED, which implicitly includes people who have some college less than one year. For 2000 and later years, we include high school grad or GED and some college less than one year. Results are similar limiting to just grade 12/high school grad or GED, although for 1990 this again implicitly includes some college less than one year.

<sup>8</sup> The current version of “born in the United States” limits to those living in the 50 states and DC. Results including territories such as Puerto Rico, American Samoa, Guam and the US Virgin Islands are nearly identical. Resumes in the resume experiments only include Southwestern high schools and do not include Puerto Rico. We also do not limit to White people only in these charts, but patterns are very similar when we do (results available from authors), with the minor difference of Hispanic men being slightly less likely to be employed than non-Hispanic men until age 60 in Figure 2a.

neither as stark as those for Black vs. White people (Lahey, 2018), nor do they follow any obvious patterns.

Figure 1 Census/ACS Trends – Hispanics compared to non-Hispanics

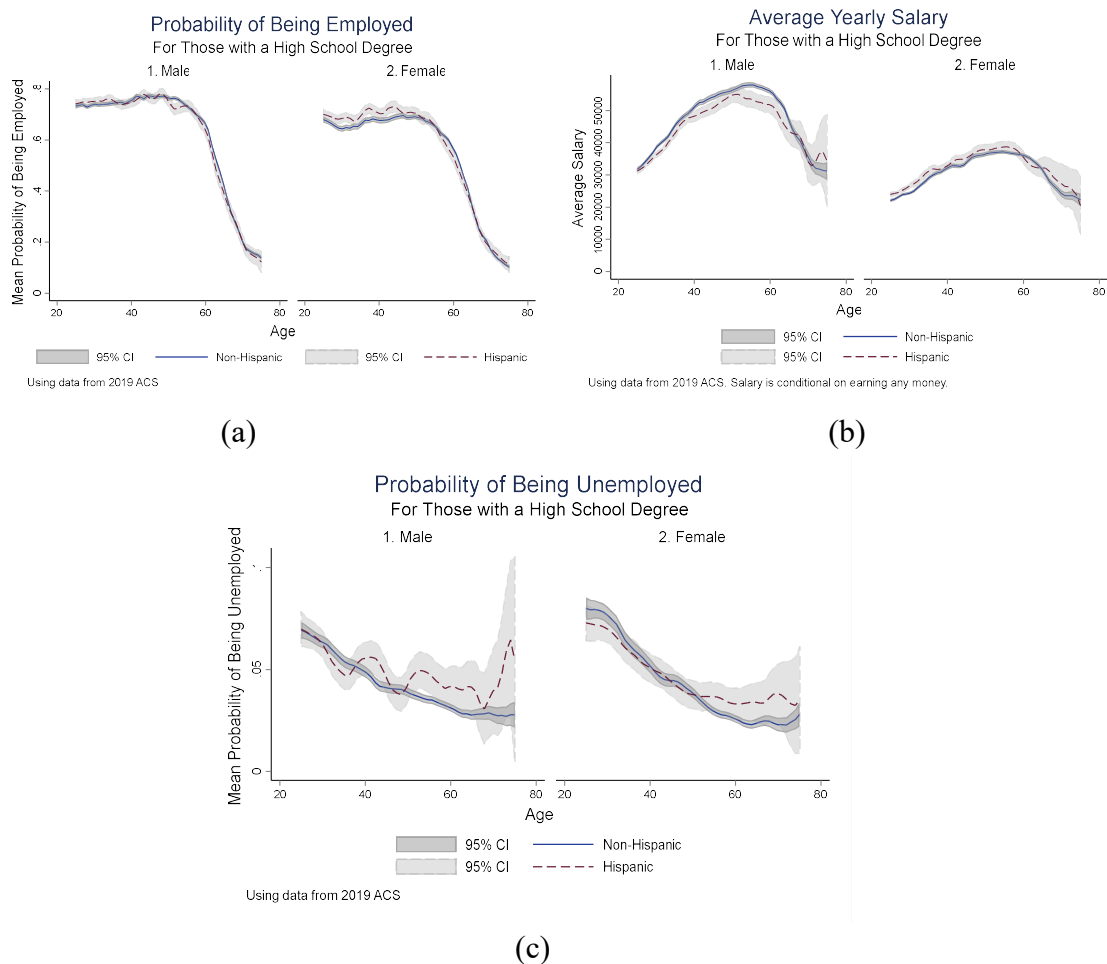


A second way to look at differences in outcomes for Hispanic compared to non-Hispanic people by age is to use a point in time estimate using a dataset such as the 2019 ACS, again limited to native-born high school graduates without a college degree.<sup>9</sup> Figure 2 (a-c) shows employment outcomes separately by age comparing Hispanic and non-Hispanic men and women using a local polynomial smoother. In general, Hispanic men are slightly more likely to be employed than are non-Hispanic men, though this difference decreases as men reach standard retirement ages. There

<sup>9</sup> We focus on 2019 to match the period when we ran Experiment 3 and to avoid measuring the effects of the pandemic.

seems to be no difference in employment outcomes between Hispanic and non-Hispanic women. Non-Hispanic men and women both have higher annual wages on average than do their Hispanic counterparts, though again, this difference decreases at standard retirement ages. Younger Hispanic men may be less likely to be unemployed than their non-Hispanic counterparts, but there do not appear to be any differences in unemployment rates between the two ethnicities starting around age 50, although these data are highly noisy for older Hispanic adults. Women appear to have smaller differences in unemployment rates overall and across age.

Figure 2 Employment Outcomes ACS 2019

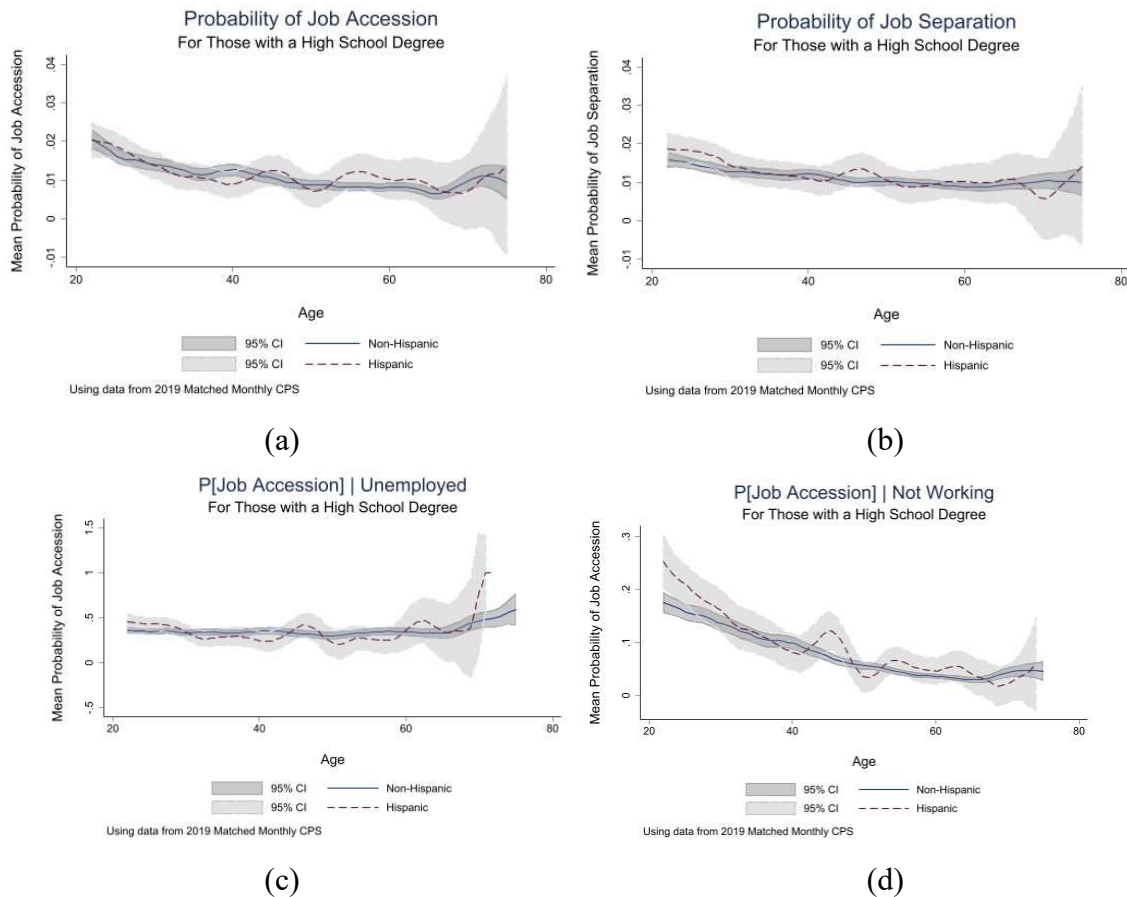


A third way to look at differences in outcomes for Hispanic compared to non-Hispanic people by age is to use the rotating panel aspects of the Current Population Survey (CPS) to study how job flows into and out of employment vary by Hispanic status, again limiting to native-born high school graduates without a college degree in 2019. Here we use the methodology from (Bleakley et al., 1999) on the IPUMS CPS (Flood et al., 2020) to create measures of job accessions,



defined as being not employed in month  $t$  and employed in month  $t+1$  and job losses, defined as being employed in month  $t$  and not employed in month  $t+1$ . This rough measure of job flows does not capture many short spells of unemployment, nor does it capture moving jobs without a break in between. However, it provides a consistent measure of movements into and out of longer spells non-employment. Figures 3a-d present probabilities by age using a local polynomial smoother.<sup>10</sup>

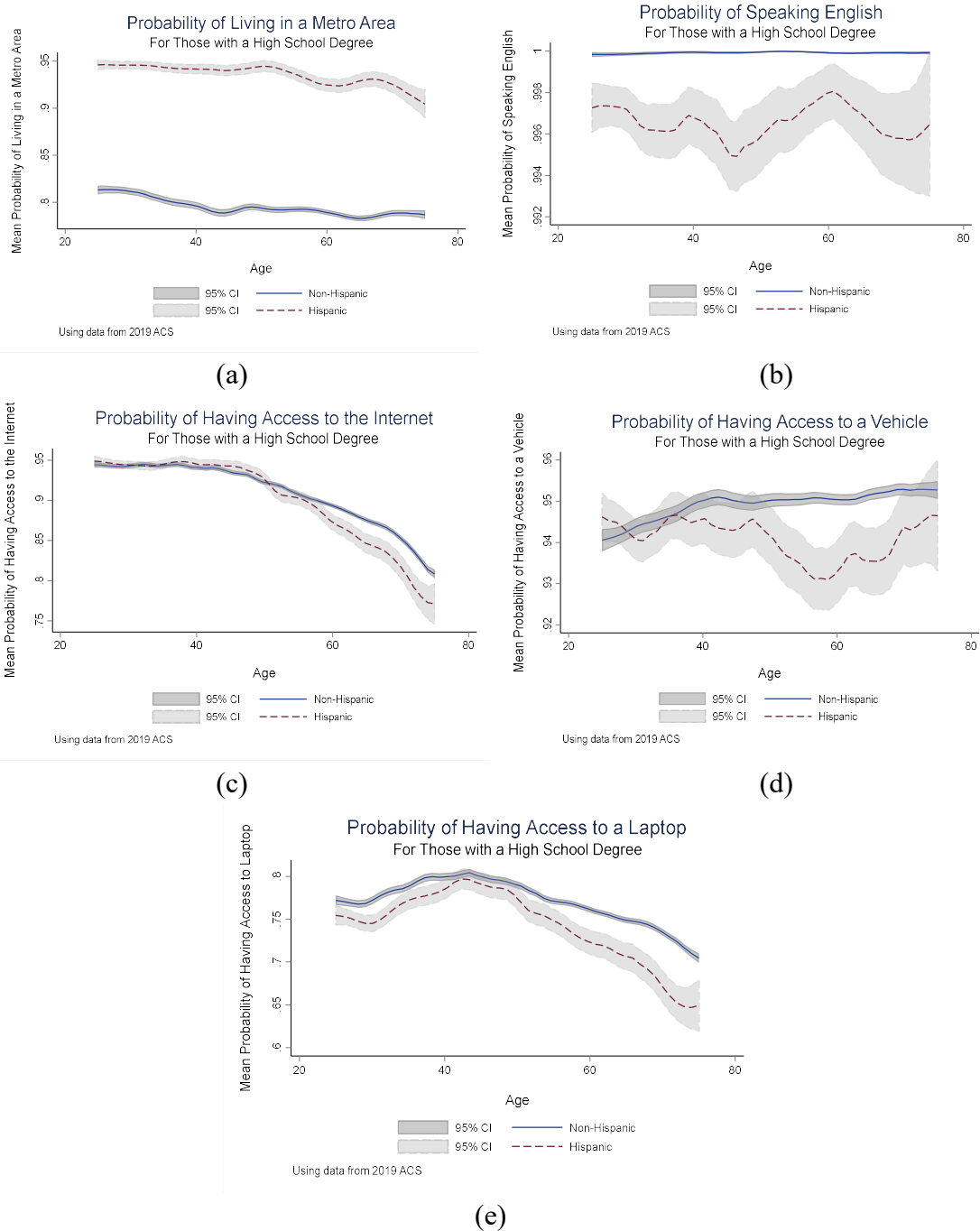
Figure 3 Job Flows CPS 2019



Although there are slight differences in the probability of a job accession between the two groups that vary with age of the worker shown in Figure 3a, for the most part they overlap. Similarly, Hispanic workers are no more likely to see a job separation than are non-Hispanic workers, shown in Figure 3b. Once we condition on people who were unemployed as in Figure 3c or not working, as in Figure 3d, it appears that Hispanic job seekers are more slightly likely to have a job accession, at least at younger ages.

<sup>10</sup> Because the CPS does not differentiate between years of schooling in the “some college but no degree” category, this group may be slightly more educated on average than the samples shown in Figures 1, 2, and 4, which only include people with less than a full year of post-high school education. However, these other figures are not sensitive to the inclusion or exclusion of people with 1 or more years of post-high school education.

Figure 4 Characteristics and Items that could affect Employment Outcomes



We next return to the 2019 ACS sample to look at differences in characteristics and items that could affect employment outcomes among Native-born people in the US. Figures 4a-e plot different characteristics by age. Although Hispanics are more likely, on average, to live in a metropolitan area than are non-Hispanics, this difference remains relatively constant across the adult lifecycle with about 95% of Hispanics reporting living in a metropolitan area compared to

80% of non-Hispanics. Similarly, nearly 100% of non-Hispanics in our sample report speaking English as do over 99% of non-Hispanics. Although access to internet decreases with age, this access is nearly identical for Hispanics and non-Hispanics, with a small but statistically significant difference after age 60 in favor of non-Hispanics. Access to a vehicle is nearly the same for younger Hispanics and non-Hispanics, but while it remains around 95% for non-Hispanics between ages 55 and 75, it gradually decreases to around 94% for non-Hispanics during this time period. Access to a laptop is generally lower for Hispanics compared to non-Hispanics, though this difference reaches its smallest point around ages 45-50.

There are several problems with using data from national surveys to compare Hispanic to non-Hispanic outcomes, particularly over time as with the cohort graphs. First, the Census and ACS data were affected by several question changes in 1980, 2000, and 2008 that increased the number of people responding that they were Hispanic which could also change the composition of people who report being Hispanic and non-Hispanic. Second, these surveys do not fully capture all Hispanic people in the US, and the extent of this problem will vary with changes to citizenship status, xenophobia, and the legal status of immigrants (O'Hare 2019). Additionally, survey data can only provide information about point-in-time general equilibrium, which includes both supply and demand sides of markets. Resume experiments like the three discussed below can instead look at the first step of the hiring process to determine how hypothetical job applicants are treated by Hispanic status, *ceteris paribus*.

### III. Experiment 1—Student sample

Experimental data allow us to study partial equilibrium and potential mechanisms for patterns including hiring discrimination against Hispanics or its absence. They also allow us to bypass problems with selection and reporting concerns that plague survey data. We turn our attention to three experiments to study whether discrimination affects Hispanics in the early stages of the hiring process.

The first two experiments discussed in this paper have a similar methodology. In both studies, participants were asked to rate 40 resumes for an entry-level clerical position for which the items in the resume had been randomized. While doing the rating, their eyes were tracked with an eye-tracking device. In both experiments about 13% of the resumes had Hispanic last names. Thus, these experiments will only be able to say something about Hispanic applicants with Hispanic last-names and non-Hispanic first names.

#### III.A. Design

The study took place between January 2013 and January 2014. We recruited participants using flyers at a large southwestern university. The sample was restricted to professional students, particularly MBA, MPA, and HR graduate students as well as business undergraduates. We

dropped two non-native English speakers and one participant with a diagnosed learning disability because these could affect eye-tracking (Holmqvist et al., 2011). The final sample has 152 participants who were paid \$20 for the session. Thirty-eight percent of participants were Master students, one percent were Ph.D. students, 38 percent were upper-division business majors, and 23 percent were lower-division business majors. As shown in Table 1, the average age was 22, and 56 percent of the sample was female. Eighty-nine percent of the participants identified as White, 7 percent as Asian, and 5 percent as Black or African American. Fifteen percent of participants identified as Hispanic or Latino. Because of constraints of the eye-tracking system, the sessions were run individually for each participant. Most people finished in less than 45 minutes.

The task consisted of rating resumes for an administrative level one position. We created the resumes using Lahey and Beasley's (2009) resume randomizer program and used a database of resume inputs drawn from actual resumes. The program randomly chooses from the database high school graduation date (to signal age), first name (to signal gender and race), last name (to signal ethnicity), home address, email address, high school attended, previous work experience texts, additional training, volunteer experience, and a statement about flexibility. Addresses were selected randomly from the Houston metropolitan area, and we took high school names randomly from across Texas. In another study, we checked the perceived race, gender, ethnicity, and socioeconomic status of the names using a sample of 95 psychology students (Barlow and Lahey, 2018).<sup>11</sup>

Each participant rated 40 unique resumes. Resume characteristics repeated across participants, but each participant saw each specific line at most once. Graduation dates followed a uniform distribution, 50 percent of the resumes had a female name, 9 percent had Black names, and 13 percent had Hispanic last names and non-Hispanic first names. After the sessions, we divided the resumes into "Areas of Interest" (AOI) to measure the time spent in each section. For the purposes of this study, we removed the resumes with Black first names prior to data analysis because there may be interactions between Black first names and Hispanic last names but we do not have a large enough sample size to investigate those interactions.

At the start of the session, participants read an information sheet and consented to participate. We told participants that the purpose of the study was understanding how hiring managers decide whom to interview. We calibrated the eye-tracking equipment, a D6 eye tracking system from Applied Science Laboratories (Bedford, MA), to capture where the participant was looking on the computer screen. Participants read a description of the administrative position and were asked to rate the ability of the candidate to fulfill the position, using a 7-point Likert scale, with 7 as most "hireable". Participants rated 40 resumes, one at a time. After rating the resumes, participants

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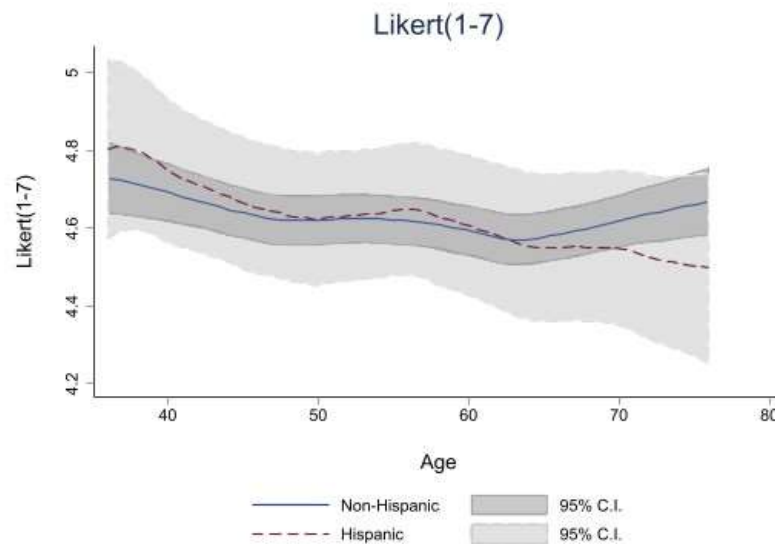
<sup>11</sup> 95% of names with non-Hispanic first names and Hispanic last names were correctly coded as Hispanic, and 95% of non-Hispanic first names and non-Hispanic last names were correctly coded as non-Hispanic. No difference by Hispanic-name status was found in the probability of the hypothetical person's mother having a college degree (authors calculations using Barlow and Lahey 2018 dataset).

completed a series of psychological, political, and demographic questions. After finishing the survey, participants were debriefed and paid.

### III.B. Results

In Figure 5 we plot separately for Hispanic and non-Hispanic hypothetical applicants, age, as indicated by date of high school graduation, against the participant's Likert (1-7) rating, with 7 indicating most hireable, using a local polynomial smoother with 95% confidence intervals. Here we see a general, but not statistically significant, decline of resume rating with age for both groups. The lines for the two groups are overlapping until around age 60 when the non-Hispanic group increases in ratings while the Hispanic group continues on its downward trend. Even with the trends diverging, the non-Hispanic line is still within the confidence intervals of the Hispanic line.

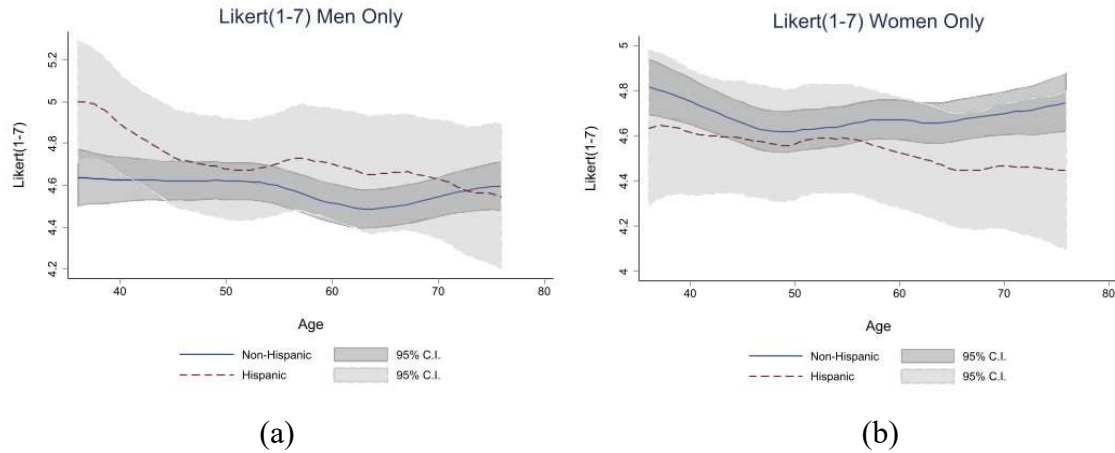
Figure 5 Ratings across Ethnicity and Age – Experiment 1



Figures 6a and b repeat this exercise for male and female hypothetical applicants respectively. We see in general that for men, Hispanic applicants are generally preferred to non-Hispanic applicants, but that their confidence intervals are generally overlapping and trends overall seem similar: mostly flat with a slight downward trend. For women, the order of the lines is reversed, with non-Hispanic women preferred over Hispanic women. Here, the line for Hispanic women is a straight downward trend while that for non-Hispanic women shows an initial decline followed by a bump up around age 50. Even so, the confidence intervals for these two groups have substantial overlap. While there may be concerns about sample size, it is important to note that using the same experiment, Lahey and Oxley (2021) found significant differences in the patterns of hypothetical applicants with Black names and those without, even though the proportion of resumes with Black first names (9%) is smaller than those with Hispanic last names (13%).

Regression analysis in Table 2 finds no significant interaction with Hispanic last names and a quadratic age term.

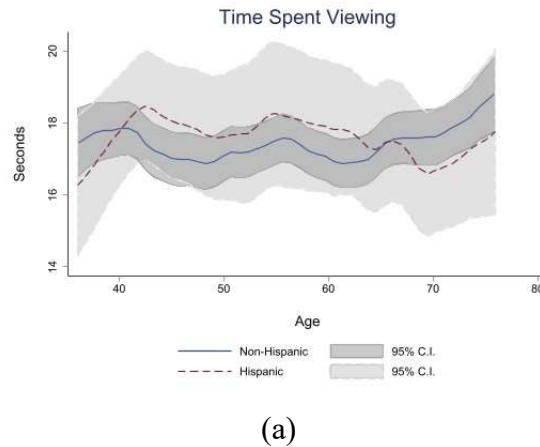
Figure 6 Ratings across Ethnicity and Age by Gender – Experiment 1

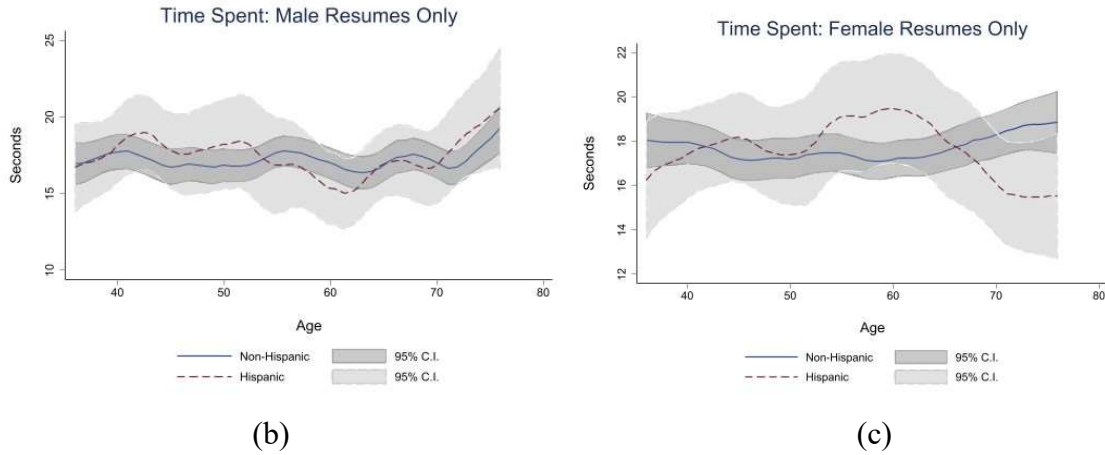


We have also repeated the previous charts using time spent on the resume as the outcome variable, as demonstrated in Figures 7a-c. There are no consistent differences in time spent on Hispanic resumes compared to non-Hispanic resumes and the confidence intervals overlap.

There may be concern that the student sample, while made up of masters and undergraduate students likely to be hiring in the future, is too young to provide an externally valid group for this study. Therefore experiment 2 repeats this study with a sample of human resource managers recruited from career fairs and businesses.

Figure 7 Time Spent on the Resume by Ethnicity and Age – Experiment 1





#### IV. Experiment 2—Human resources sample

##### IV.A. Methods

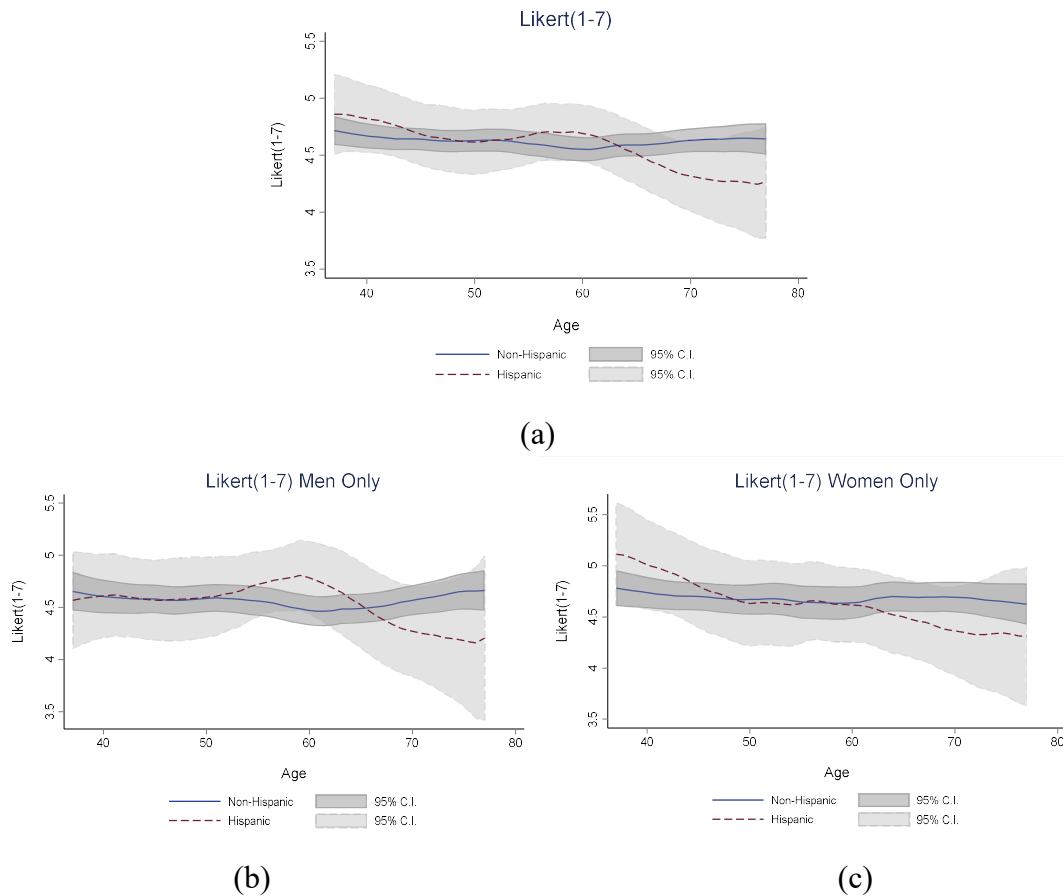
The design and methodology to Experiment 2 were identical to that of Experiment 1 with the following changes: First, and importantly, the participants of this study were 67 human resource professionals who were recruited with the help of a regional human resources association. Instead of bringing participants into the laboratory, we brought a portable Tobii X2-50 eye-tracker to human resources conferences and to participants' places of work. Finally, participants were paid \$50 to compensate them for their time rather than \$20 in acknowledgement of the increased value of their time.

The demographics of this new sample differ considerably from the student sample, as demonstrated in Table 1. They are more likely to be female (81%), somewhat less likely to be White (85%), less likely to be Asian (1%), more likely to be Black (15%), slightly more likely to be Hispanic (19%) and about 20 years older on average (average age is 44).

##### IV.B. Results

Figures 8a-c repeat the exercise in Figures 5 and 6 for the population of HR manager participants. Again, we see evidence of a slight downward trend and the non-Hispanic line being entirely within the confidence intervals for the Hispanic line. As with the student sample, if anything, there is a divergence at older ages with the Hispanic sample less preferred than the non-Hispanic sample. Given the smaller sample size, the lines, particularly for Hispanic applicants, are not as smooth as they are for the larger student sample, which could account for the odd bump in the middle of the HR sample, driven by resumes with male names. Alternatively, these bumps could be representative of differences in beliefs between the two samples.

Figure 8 Ratings across Ethnicity and Age – Experiment 2



Figures 8b and c again repeat these exercises for male and female hypothetical resumes, respectively. Unlike with the student sample, there is no pattern of Hispanic male resumes being preferred over non-Hispanic male resumes. Instead, the lines are generally overlapping. Similarly, there is no pattern of non-Hispanic female resumes being preferred over female Hispanic resumes with the HR sample. Again, the lines are generally overlapping, although there may be some divergence at older ages as Hispanic female resumes earn lower hireability ratings at older ages. Regression analysis in Table 2 finds no significant interaction with Hispanic last names and a quadratic age term. In general, it appears that Hispanic and non-Hispanic resumes are not treated very differently by the HR sample. Again, this is in contrast to findings for Black and White resumes, which show different patterns (see Lahey & Oxley, 2021), although statistical significance is too small to say anything definitive.

We again repeat these charts using time spent on resumes as the Y variable in Figures 9a-c. Again, there are no consistent differences in time spent on Hispanic resumes compared to non-Hispanic resumes and the confidence intervals mostly overlap. Any differences, if they exist, remain small.



## V. Experiment 3—New experiment with mTurk sample

One limitation of the first and second experiments is that ethnicity is signaled using only Hispanic last names. While this type of signal has the benefit of last names being less susceptible to parental choice compared to first names, these experiments are not externally valid for Hispanic people who go by Hispanic first names, who are still common among Hispanic people in the United States.<sup>12</sup> Additionally, people may have perceptions of Hispanic people with non-Hispanic first names and Hispanic last names as second- or later- generation people who are no different from non-Hispanic people (see, for example, Senator Ted Cruz, also Gaddis & Goshal, 2020). Both reasons could explain the absence of significant differences in ratings between Hispanic and non-Hispanic resumes in the previous experiments. Thus, in the third experiment, we widen the signal of Hispanic names to include combinations with Hispanic first names. We also take the study to mTurk to expand the sample to cover a broader part of the US population and recruit a larger sample to increase statistical power. One disadvantage of this sample is that we cannot use eye-tracking technology to validate if the participants are paying attention to the different sections of the resumes.

In addition to widening the Hispanic signal, we test if stereotypes against Hispanics affect ratings. Potential stereotypes include the beliefs that Hispanics have poor communication skills, need more supervision, are lazy, tend to have many children, and are more suited to manual labor (Dixon & Rosenbaum, 2004; Dong & Murrillo, 2007; Jackson, 1995; Jones, 1991; Markert, 2004; Ramirez Berg, 1990).<sup>13</sup> These stereotypes may affect resume ratings and point towards levels-based statistical discrimination/incorrect stereotypes.<sup>14</sup> We introduce questions and resume elements to test if specific stereotypes against Hispanics may explain potential differences in resume ratings.

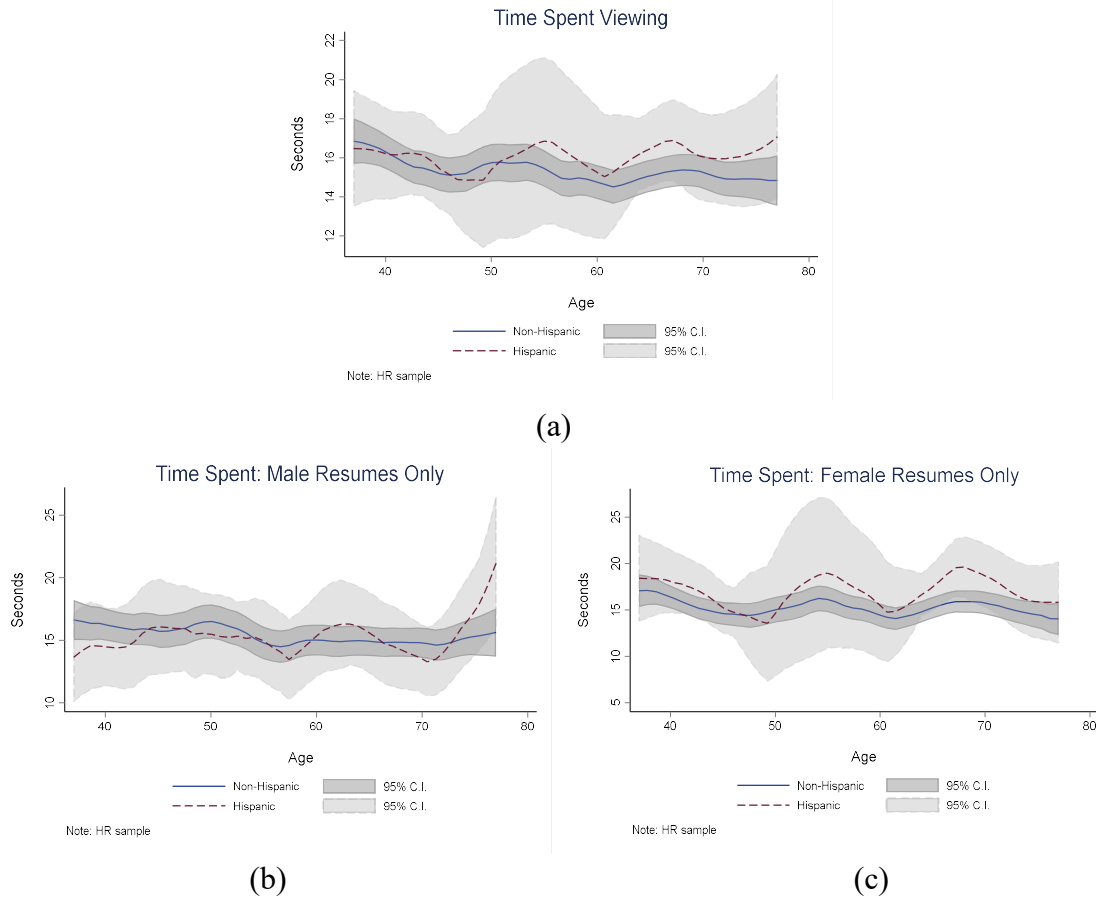
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<sup>12</sup> The census website <https://www.ssa.gov/oact/babynames/decades/> provides information on popular US names by decade. Jose, Juan, and Carlos all appear in the top 200 names for US Social Security card applications from the 1950s-1980s. Miguel, Jesus, Jorge, and Alejandro appear in the top 200 for the younger cohorts in the sample. For the ages in our sample, the only distinctively Hispanic girls' name to make their top 1000 list is Guadalupe, which peaks at the 304<sup>th</sup> spot in 1950 and the 390<sup>th</sup> spot in 1980. Maria, Patricia, Sandra, Linda, and other common Hispanic girls names do appear on the lists, but they are not distinctively Hispanic.

<sup>13</sup> See Appendix Table C 1 for more potential stereotypes from literature.

<sup>14</sup> Note that for the purposes of this modeling, the outcomes of levels-based statistical discrimination is the same when using incorrect stereotypes as inputs.

Figure 9 Time Spent on the Resume by Ethnicity and Age – Experiment 2



### V.A. Design

We recruited 1,068 participants from Amazon’s mTurk in five waves between September 2019 and July 2020. We recruited participants with verified managerial experience in the first two rounds, participants with clerical experience in waves three and four, and the general population in waves four and five.<sup>15</sup> We created a task in mTurk asking workers to rate 30 resumes of applicants to the same administrative position as in experiments 1 and 2 (for a total of 32,040 unique resumes). If the worker accepted the task, they were directed to a survey hosted in Qualtrics. To prevent biasing participants, we did not disclose that the survey was part of a research project until they completed the survey. The survey described first the characteristics of the position, then displayed the resumes one by one, asking participants to rate them on a 7-point Likert scale for “hireability” as in the prior studies. Then, in a second round, we redisplayed the resumes in the same order asking participants to rate if the applicant had necessary skills, the applicant’s communication skills, and their need for supervision. We followed with a series of demographic

<sup>15</sup> mTurk allows for tasks to be sent to participants with particular traits.

questions, and unincentivized trust, reciprocity, and altruism questions (Appendix B). After completing the survey, the participants received a code to enter in mTurk to receive their payment. We debriefed participants, revealing that they had participated in academic research, and gave them the option to drop out of the study without affecting their payment. Nobody dropped out of the study. We paid participants \$4 for a half an hour task.<sup>16</sup>

We created fictitious resumes using the same procedure described in experiments 1 and 2. As mentioned above, we enhanced the Hispanic signal introducing Hispanic first names to the resumes. The resumes were randomized such that the proportion of Hispanics and non-Hispanics is representative of the population in Texas. Specifically, 80 percent of the resumes have non-Hispanics first and last names, 10 percent have Hispanic first and last names, 5 percent have a non-Hispanic first name and Hispanic last name, and 5 percent have a Hispanic first name and non-Hispanic last name. Fifty percent of the resumes have female names, and age ranges between 35 and 75 years.

To test some of the stereotypes affecting Hispanics, when we brought back the resumes after the first rating, we asked participants questions to assess potential stereotypes as outcome variables. We asked participants how much supervision they think the candidate needs and to rate the candidates' communication skills. We also randomly changed resume characteristics to highlight traits related to stereotypes. We use volunteering at a Parent Teacher Association (PTA) to signal having children as in Correll (2007). We also exploit random variation in work histories to signal low-skill manual labor. Finally, we randomly include knowledge of Spanish in the resumes to test if it makes Hispanic applicants more attractive to employers.

#### V.B. Data Quality and Participants

While recent research shows that experimenter demand effects are not likely to be a concern in survey experiments in general and mTurk survey experiments in particular (Mummolo & Peterson, 2019, de Quidt et al., 2018), we took several steps to ensure the best possible data quality. First, as mentioned above, participants did not know the rating process was part of academic research until they finished the survey. Small companies use mTurk to rate applicants, so this task is not unusual for mTurk workers. Second, after the participants finished rating the resumes, we introduced an attention check question asking for a specific answer to stimulate respondents to pay extra attention to the subsequent rating questions (Appendix B). We introduced a second attention check question after the demographic questions. Finally, there may be some concerns about lack of effort, lack of attention, and deception in mTurk that could affect the quality of the data collected (Hauser et al., 2018; Kennedy et al., 2020; Dennis et al., 2019). To address this concern, we restrict the sample to participants who passed attention checks, took more than 20 minutes to complete the survey, and have a unique IP address. We also checked three open-ended questions that asked

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<sup>16</sup> The first wave was a pilot with 79 participants to obtain data to calculate power and calibrate payment according to mTurk's ongoing rates. In this wave, we paid participants \$3 for completing the task.

participants in which state they were born, grew up, and where they currently reside. We excluded participants who did not write a valid US state name in these questions. As a last check, Qualtrics reports GPS coordinates associated with IP addresses at the city level. We deleted any participants whose coordinates do not belong to the United States. The final sample has 739 participants (22,170 resumes).

Table 3 presents summary statistics for the mTurk participants. Fifty-five percent of the participants in the third experiment are women. The average age of the participants is 41.7 years. Eighty-two percent of the sample identifies as White, and 10 percent as Hispanic. These proportions are close to the general U.S. population. Sixty-three percent of the sample has a college education or more, which is a larger proportion than in the general US population. Almost 55% of the sample has worked for more than 15 years. Ninety-two percent report having worked for payment during the last week, and 44% report having an annual income above \$50,000. Almost 30 percent of the sample has human resources experience, 62 percent has some hiring experience, and 68 percent of the participants report having some managerial experience, which is consistent with our targeting of managers.

We used data from the first wave (79 participants) to calculate the sample size needed to detect effect sizes larger than 0.1 with 80 percent power. This way, we can detect anything but small effect sizes. Given our design, to detect differences among the four ethnicity signals (non-Hispanics, Hispanic first and last name, non-Hispanic first name and Hispanic last name, and Hispanic first name and non-Hispanic last name), we required a sample of 271 participants. To detect differences across the age range, we required a sample with 276 participants. To detect differences among the ethnicity signals as they age, we required a sample with 394 participants. Hence, the final sample of 739 participants has enough power to detect anything but small effect sizes.

## V.C. Results

### V.C.1 mTurk Participants Pay Attention to the Resumes

Moving the study to mTurk has the disadvantage that we are not able to track what participants are looking in the resumes. We address this issue in four ways. First, we restricted the sample to ensure high-quality data, as we discussed in the previous section, so that people who were not engaging with the survey as a whole were removed.

Second, in the pilot wave, we designed questions similar to Equal Employment Opportunity items and asked participants if they believed that the candidate was over 40 years, if the candidate was part of an underrepresented minority group, and whether or not the candidate was a veteran (although we do not use answers to the latter). We use the age question to test if participants can infer age from the resume and the minority question as a proxy to test if participants can infer ethnicity. We did not ask for ethnicity directly to keep the questions as similar to a hiring questionnaire as possible since, at this point, participants did not know they were part of research.

Table 4 shows that for resumes with an age less than 40, almost 90 percent of the participants correctly indicate that the candidate is younger than 40 years old. For resumes signaling age 40 or more, 69 percent of the participants correctly indicate that the candidate is age 40 or older.

Table 5 shows that for non-Hispanic resumes, 92.6 percent of the participants correctly indicate that the candidate is not from a minority group. For resumes with both a Hispanic first and last name, 67.1 percent of the participants correctly indicate the candidate is from a minority group. Results are not as clear for resumes with a Hispanic and non-Hispanic mix in the name. Participants believe that 57 percent of the resumes with a non-Hispanic first name and a Hispanic last name belong to a minority group. In comparison, they indicate that 44 percent of the resumes with a Hispanic first name and a non-Hispanic last name are part of a minority group.<sup>17</sup> We can conclude that, in general, participants can obtain age and ethnicity status from the resumes. It is important to note that this experiment's objective is to measure how participants respond to observed signals of minority status, in this case, different types of Hispanic names as indicated on resumes, not how they respond to unobserved minority status. However, there is an external validity question regarding how much the results overlap with U.S. populations that identify as Hispanic but may or may not have a Hispanic name to signal their ethnicity status, such as those in the national surveys discussed in Section II.

Third, there is a concern that participants who answered the survey on a cellphone or tablet might not be able to read the resumes clearly because of a smaller screen. Qualtrics reports the device's operating system where the participant completed the survey, and we use this information to identify the type of device. Of the participants who pass all the data quality checks, only 34 answered the survey on a cellphone or tablet. These participants do not exhibit significant differences in ratings compared to participants who completed the survey on a computer.

Finally, to check if participants pay attention to resumes, we estimated three machine learning models that use resume characteristics, excluding age and ethnicity, to predict resume ratings. Specifically, we included as predictors indicators for every job history, skill, email provider, high school name, and volunteering experience included in the resumes. We estimated a linear LASSO, a two-step adaptative LASSO, and a Random Forest. For comparison, we also estimated a linear regression, including the same resume characteristics we used to train the machine learning models. Table 6 presents the predictive power of these models. The LASSO models'  $R^2$  fluctuates between 0.218 and 0.229 in the training and validation sets. For comparison, the linear regression with the same controls has an  $R^2$  of 0.2. The Random Forest model has an  $R^2$  of 0.793. This model has a higher predictive power because it tests arbitrarily for more interactions than the LASSO. Table A 1 shows that all these specifications are highly correlated. We can conclude that resume characteristics have high predictive power for resume ratings.

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<sup>17</sup> We find similar patterns splitting the resumes by the applicant's gender.

We also take advantage of the fact that all of the resume controls (other than age, which we do not include in our machine learning) are dummy variables to check which characteristics of the resume contribute more to the prediction. We rank the variables LASSO keeps as predictors by the magnitude of their coefficients and find that detailed job histories related to clerical experience and skills related to clerical work have the highest weights in LASSO. On the other hand, job histories not related to clerical work like babysitting, waiter or cook, high school name, and email provider have the lowest weights or are not chosen as predictors by LASSO. The same is true for OLS estimates that use the same variables as LASSO as predictors. Coefficients for jobs that explicitly use the words “clerical” or “clerk,” are positive, highly significant and have large magnitudes. Similarly, volunteer experience generally has a positive effect on resume ratings, unemployment spells have a negative effect, and listed skills have positive effects. Overall, these results suggest that participants read the resumes and used their information to rate the candidates.

### V.C.2 Baseline Results on Age and Hispanic Status

Figure 10 Resume Ratings by Ethnicity and Age – mTurk Sample

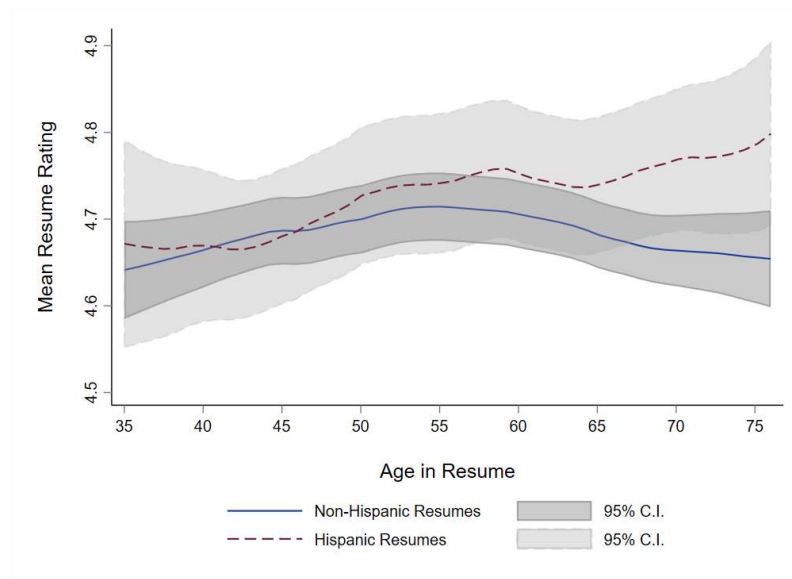
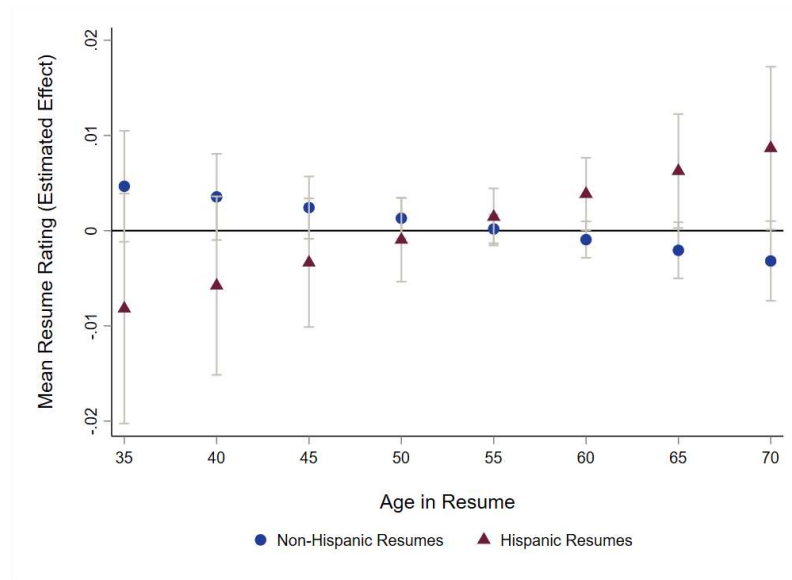


Figure 10 replicates the same exercise as in Figures 5 and 8a. In contrast with the results of the previous experiments, we only observe a decline of resume ratings for non-Hispanics starting around age 55. However, the trends in ratings across age are not necessarily statistically significant. For Hispanic applicants, we can see a decline in ratings until age 45. After that point, ratings increase with age. There is no statistically significant difference between Hispanic and non-Hispanic ratings. The non-Hispanic line is within the confidence intervals of the Hispanic line

except for the oldest hypothetical applicants.<sup>18</sup> Table 7, Panel A, provides regression estimates for Figure 10 and shows no meaningful difference in resume ratings between Hispanic and non-Hispanic resumes. Similarly, in Table 8, we present the results of a regression of a quadratic trend in age interacted with a Hispanic indicator. For non-Hispanics, we cannot reject that ratings are not affected by age. The point estimates are small and statistically insignificant. For Hispanics, the results support that ratings have an inverse-U shaped pattern across age. To visualize this effect of age on ratings, Figure 11 plots the marginal effect of age for Hispanics and non-Hispanics at different age thresholds. For non-Hispanics, the marginal effect of age has a negative trend, but the coefficients are small and statistically insignificant. For Hispanics, the marginal effect of age has a positive trend, and the marginal effects become statistically significant at age 60.<sup>19</sup>

Figure 11 Marginal Effect of Age for Hispanics and non-Hispanics – mTurk Sample



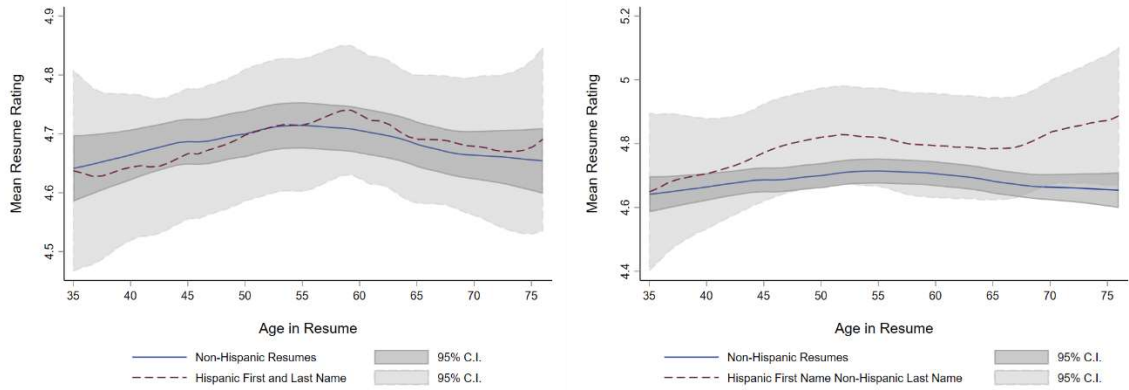
In Figures 12a-c, we split Hispanic resumes by the three different types of Hispanic names. We find that resume ratings for resumes with a full Hispanic name follow the ratings for non-Hispanic resumes closely. The increasing trend in ratings with age is present only for resumes with a mixed name (either a Hispanic first name or last name, but not both). However, there is no significant difference with non-Hispanic resumes. Regressions to verify the patterns in Figure 12 in Table 7, Panel B, indicate that, on average, there is no meaningful difference in resume ratings

<sup>18</sup> In addition to asking about the “Hireability” rating in the first round of resume rating, we also asked participants whether or not each candidate had the necessary skills to fulfill the position in the second round of rating (Appendix Figure A 1). Again, we find no significant difference between Hispanic and non-Hispanic resumes. The patterns are similar to the results in Figure 10. For non-Hispanics, ratings are flat, with a slight decline starting at age 55. For Hispanics, ratings increase with age.

<sup>19</sup> Under a linear specification, we cannot say that ratings are affected by age for Hispanics and non-Hispanics, and there is no statistically significant difference between the two groups.

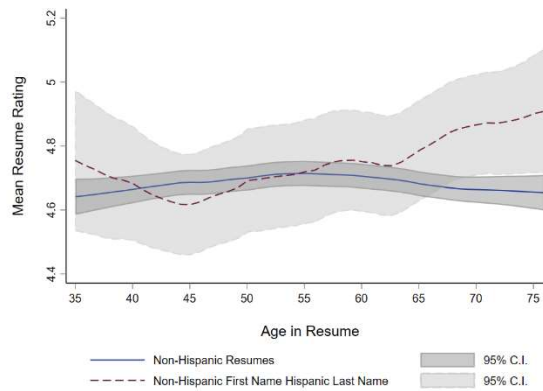
between Hispanic and non-Hispanic resumes. In every case, that point estimates are smaller than 1.5 percent of the average rating for non-Hispanics and statistically insignificant.<sup>20</sup>

Figure 12 Resume Ratings by Type of Hispanic Signal



(a) Hispanic first and last name

(b) Hispanic first name, non-Hispanic last name



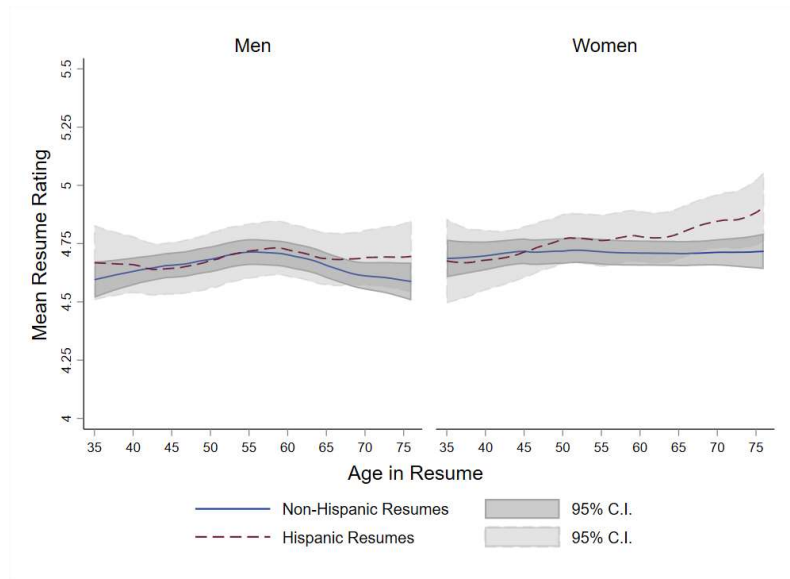
(c) Non-Hispanic first name, Hispanic last name

Figure 13 splits Figure 10 by applicant gender, comparable to Figures 6a-b and 8b-c. Again, there is no significant difference between Hispanics and non-Hispanics across different ages. For men, both Hispanic and non-Hispanics display an inverse-U trend, and the ratings are close to each other. For non-Hispanic women, there is a slight negative trend, while Hispanic women display an increasing trend. The increasing trend with age is driven by female applicants with mixed Hispanic names (Appendix Figure A 2). For both genders, for almost every age, the non-Hispanic line lies within the Hispanic line's confidence interval.

<sup>20</sup> We also check if the most common Hispanic names according to Census data (such as Jose, Juan, Guadalupe and Martina) elicit a different response. Again, the point estimates are small and there is no significant difference in the response to these names compared to less common, Hispanic names (such as Santiago, Diego, Pilar, and Manuela).



Figure 13 Resume Ratings by Ethnicity, Age, and Gender – mTurk Sample



To test the robustness of these results, we apply several restrictions to the sample to try to match it to the HR sample from Experiment 2. First, we restrict the sample to participants with at least a college education (Appendix Figure A 3). We then select participants with a college education, HR experience, and hiring experience (Appendix Figure A 4). We also matched mTurk participants to the HR sample from Experiment 2 using propensity score matching on all observable demographics (Appendix Figure A 5). Finally, we restrict the sample to waves one and two, where we contacted mTurk workers with manager qualifications registered in mTurk (Appendix Figure A 6). We find similar patterns as the results in Experiments 1 and 2, and we cannot reject that Hispanics have the same pattern as non-Hispanics.

### V.C.3. Heterogeneity by Participant Characteristics

We now explore if there are different patterns in resume ratings among participants with different characteristics. Figures 14a-f present these results. In general, we find no significant differences in ratings between Hispanic and non-Hispanic resumes, and the patterns are consistent with the main results. Figure 14a shows that men and women give similar ratings to Hispanic and non-Hispanic resumes. Patterns across age are similar, and there is no significant difference in ratings. Splitting participants by age, we find that participants older than 45 years give lower ratings than do younger participants, give lower ratings for older non-Hispanic candidates, and prefer an older Hispanic applicant to an older non-Hispanic applicant (Figure 14b). Participants younger than 45 years give flatter ratings for both Hispanics and non-Hispanics, with no meaningful differences between both groups.

Figure 14 Heterogeneity in Resume Ratings by Participant Characteristics

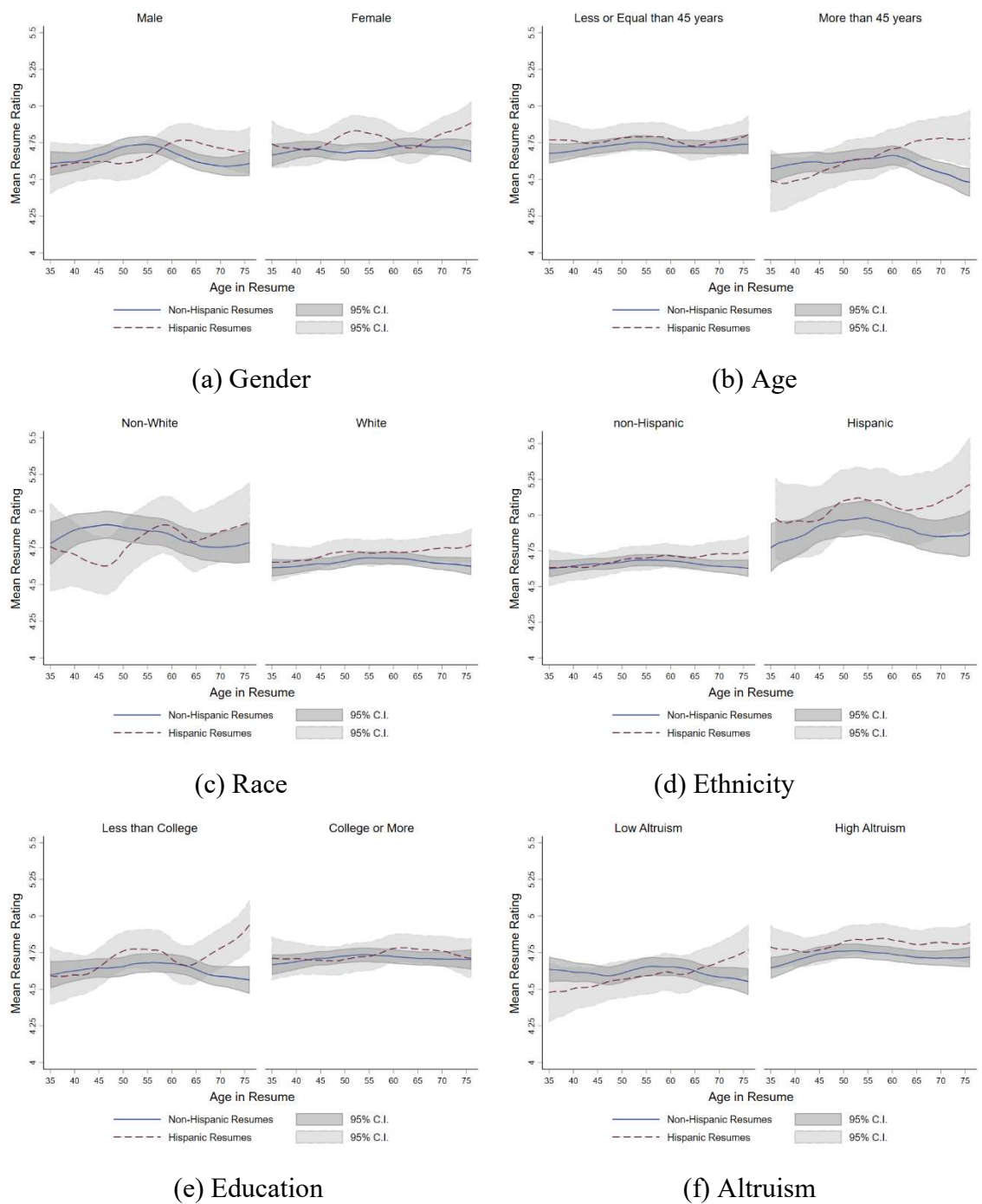


Figure 14c displays ratings splitting participants by race. White participants give lower ratings than non-White participants in general, and there are no significant differences between Hispanics and non-Hispanic resumes. The estimates for non-White participants are noisier than the ones for White participants because of their smaller sample size, but again there are no

differences between Hispanics and non-Hispanic resumes. Regarding ethnicity, participants who identify as Hispanic give higher ratings than participants who do not identify as Hispanic and slightly higher ratings for Hispanic resumes (Figure 14d).

Figure 14e explores differences by participant's education. Participants with a college education or more give flat ratings across age for both Hispanic and non-Hispanic applicants, with no significant difference between both groups. Less-educated participants give higher ratings to older Hispanic candidates.

Finally, we also included a question to elicit altruism (see Appendix B) from participants and check if differences in altruism lead to differences in ratings between Hispanic and non-Hispanic resumes. Figure 14f presents these results. High-altruism participants give Hispanics higher ratings, and the difference to low-altruism participants is statistically significant. However, these results are only suggestive since we did not incentivize the question that elicits altruism.

#### V.C.4. Regional Heterogeneity in Resume Ratings

Next, we check if resume ratings for Hispanics and non-Hispanics vary across the United States. We asked participants in which state they currently reside, and Qualtrics reports the geographic coordinates associated with the participant's internet provider's IP address. With these inputs, we distribute participants into five regions: Northeast, Southeast, Midwest, Southwest, and Northwest. It is important to note that in this classification, the Southwest includes all territories that were once part of Mexico, including California.

Figure 15 presents how resume ratings vary across regions. Participants in the Northeast and Southeast rate non-Hispanic applicants similarly, with a flat trend across age. In contrast, non-Hispanic resume ratings display a negative trend across age in the Midwest, Southwest, and Northwest. In the first two regions, this negative trend starts around age 55, while it is present in the Northwest's entire age range. We cannot find statistically significant differences in ratings for Hispanic applicants in any region, but we find different patterns across regions. In the Midwest and Southwest, which have large Hispanic populations, resume ratings for Hispanics display an increasing trend across the entire age range. This increasing trend is also present in the Northeast, which also has a substantial Hispanic population, particularly in New York, but it only affects older Hispanics, starting around age 60. In the Southeast, ratings for Hispanic resumes are flatter, more similar to ratings of non-Hispanics. Finally, in the Northwest, ratings for Hispanic resumes exhibit a negative trend, similar to the one for non-Hispanic resumes.

Figure 15 Regional Heterogeneity in Resume Ratings

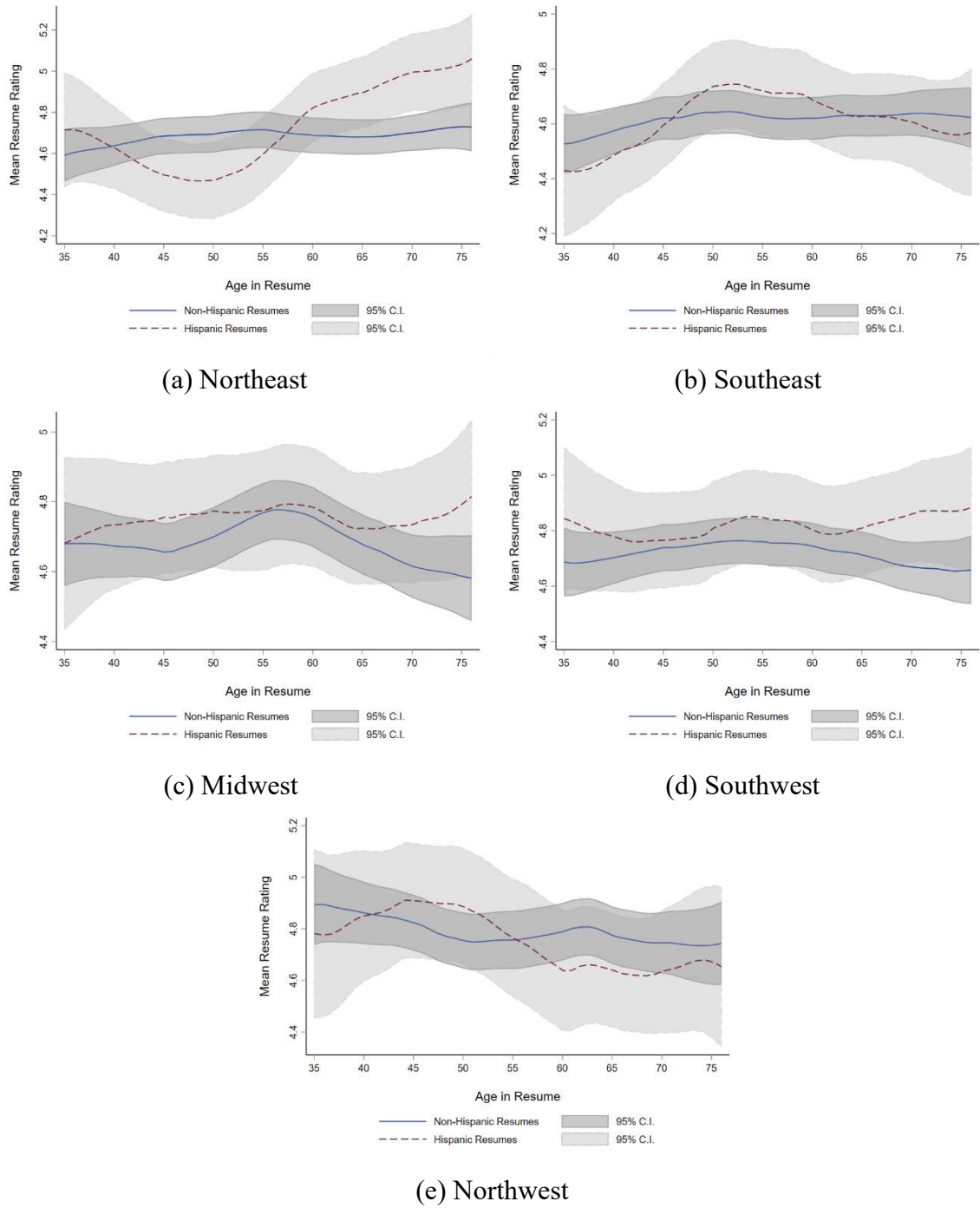
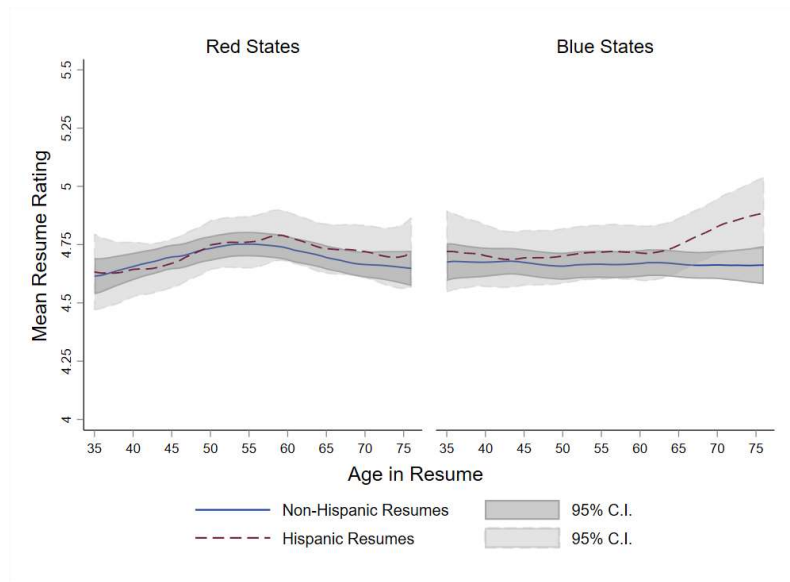


Figure 16 Differences between Red vs Blue States



We also split participants into living in “Red” or “Blue” states using the 2016 Presidential Election results (Figure 16). In “Red” states, resume ratings for Hispanic and non-Hispanic applicants are similar, following the same trends across age. In “Blue” states, resume ratings for Hispanic candidates display an increasing trend starting at age 55. In both cases, there are no statistically significant differences in ratings between Hispanic and non-Hispanic resumes.

#### V.C.5. Checking Hispanic Stereotypes

The academic literatures in psychology, sociology, and media studies identify several stereotypes of Hispanics that could also be present in labor markets. These stereotypes include being lazy and needing more supervision, having poor communication skills, having many children and taking time off work, and being suited to manual labor (Ramirez Berg, 1990; Jones, 1991; Jackson, 1995). We introduced two approaches in the survey to analyze the potential effects of these stereotypes on resume ratings. First, when we brought back the resumes after the first rating, we asked participants questions to assess potential stereotypes as outcome variables. We asked participants how much supervision they think the candidate needs and rate the candidates’ communication skills.<sup>21</sup>

<sup>21</sup> We also asked whether or not they had the skills for the position.

Figure 17 Need for Supervision and Communication Skills

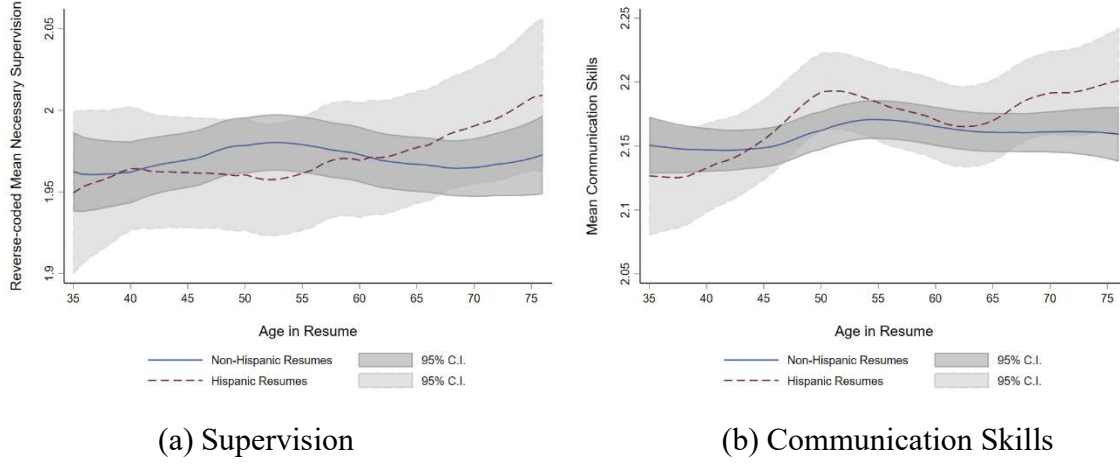


Figure 17 presents these results. Note that in Figure 17a, we inverted the measure, so a higher number means less need for supervision. While younger Hispanic resumes have slightly lower ratings, we do not find statistically significant differences between Hispanic and non-Hispanic candidates. The patterns across age are consistent with the ones for resume ratings, with Hispanics experiencing an increasing trend starting at age 55. Figure 17b shows the ratings for communication skills. Again, we do not find statistically significant differences between Hispanic and non-Hispanic candidates, and the patterns across age are consistent with the ones for resume ratings. If anything, communication skills for Hispanics increase with age.<sup>22</sup>

As a second approach to study the effect of stereotypes of Hispanics, we randomly changed resume characteristics to highlight traits related to stereotypes, then used an interaction term in a regression to determine whether the characteristic differentially affected Hispanics compared to non-Hispanics. Specifically, for resume  $i$  rated by participant  $j$ , we run the following regression:

$$(1) \text{Rating}_{ij} = \alpha_j + \delta \text{Characteristic}_i + \beta \text{Hispanic}_i + \theta \text{Characteristic}_i \times \text{Hispanic}_i + u_{ij}$$

Where  $\theta$  is the coefficient of interest. We use this approach to test the effect of having many children, being suited for manual labor on ratings, and knowing Spanish.

We use volunteering at a Parent Teacher Association (PTA) to signal having children as in Correll (2007). Table 9 presents these results. The PTA signal has a positive effect on ratings (Column 1). On average, resume ratings increase by 0.13 Likert points (2.7 percent of the baseline) for candidates with this signal. The interaction term between the PTA signal and Hispanic is

<sup>22</sup> We also test if there are differences across the different types of Hispanic signals. We do not find statistically significant differences between Hispanic and non-Hispanic candidates.

positive and small (0.8 percent of the baseline) and statistically insignificant. These results hold if we restrict the sample to resumes with a female name (Column 2).

To test if the stereotype that Hispanics are suited for manual work affects ratings, we first exploit the notion that this stereotype is also associated with the idea that Hispanics often work as cooks. We check if previous job experience related to cooking and working in a restaurant affects ratings. Column 1 in Table 10 shows that having cooking or restaurant-related work experience in the resume decreases ratings by 0.35 Likert points (7.4 percent of the baseline). However, there is no differential effect on Hispanics. The interaction term is small (0.4 percent of the baseline) and insignificant.

Next, we expand the low-skill, manual labor signal by including previous job experience related to sales, being a cashier, and babysitting to the restaurant signal. The estimates in Column 2 show that the new low-skill signal has a negative effect on ratings of 0.24 Likert points (5.1 percent of the baseline). However, this effect is attenuated for Hispanics by 8.7 Likert points (1.8 percent of the baseline), significant at the ten percent level. This result is consistent with a setting where participants believe that it is more likely for Hispanics to work in low-skill jobs, thus penalizing them less for having these jobs on their resumes.

To further explore the previous result, we estimate the effect of having relevant job experience on ratings. We perform this test in two ways. First, we estimate the effect of having previous jobs on the resume that explicitly have the words “clerical” or “clerk” in their description. Column 3 in Table 10 presents these results. The words “clerical” or “clerk” on the job descriptions increase resume ratings by 0.46 Likert points (10.2 percent of the baseline). Hispanics benefit from an additional increase of 0.08 Likert points (1.7 percent of the baseline), although this result is imprecise. Second, we estimate the effect of having detailed job descriptions on the resume. We count the number of characters in the job description section and define detailed job experience as having more characters in the section than the median (1134 characters). Column 4 in Table 10 shows that having detailed job experience on the resume increases ratings by 0.55 Likert points (12.5 percent of the baseline). Hispanics benefit from an extra increase of 0.09 Likert points (2.1 percent of the baseline), significant at the 5 percent level. These results are also consistent with participants believing that Hispanics are more likely to have low-skill jobs, as having relevant job experience grants them a premium in ratings.

Finally, due to a growing Hispanic population, knowledge of Spanish is particularly useful in the United States, which could make Hispanic applicants more attractive to employers. Hispanics might be preferred because they are assumed to be bilingual, but we find that signaling knowledge of Spanish in the resume does not affect ratings in general and has no differential effect for Hispanic applicants (Table 10, column 5).

#### V.C.6. Additional Checks on the Hispanic Signal

Previously, in our pilot study we checked to see what percentage of our participants were able to accurately identify applicants with Hispanic names as coming from underrepresented groups. However, because we did not want them to realize that they were involved in a study, we were unable to ask them more specific questions about Hispanic status and we were unable to determine what other attributes the names signaled (particularly socioeconomic status). To get these measurements, we ran an additional experiment on mTurk. We recruited 200 participants, showed them 40 randomly generated names that used the same White and Hispanic first and last name components we used in the main experiment, and asked them to identify the name's gender, race, ethnicity, and mother's education.<sup>23</sup> After removing participants who failed quality checks, we had 179 participants.

Figure 18 Ethnicity Identification

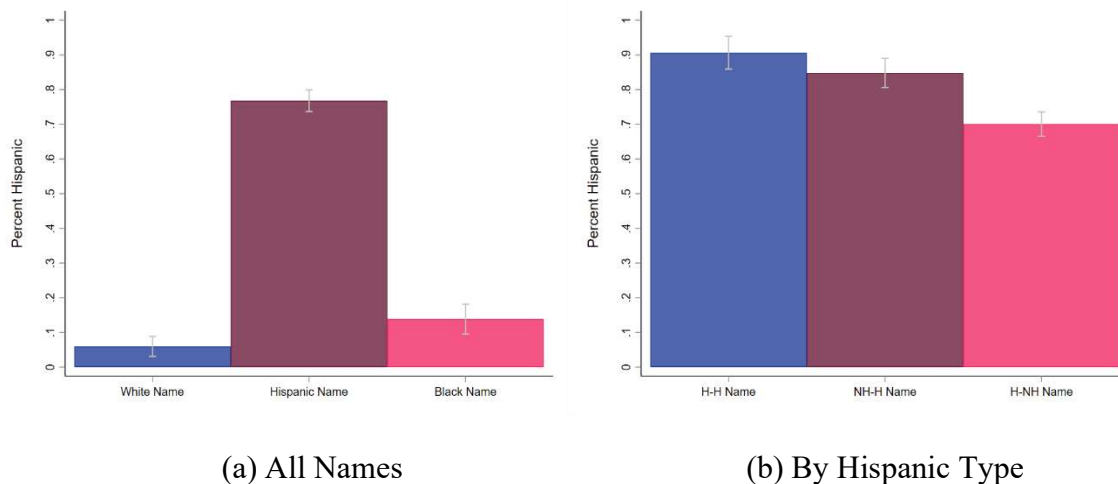


Figure 18 shows that an mTurk sample can infer ethnicity correctly from a name. When we consider any Hispanic name, participants indicated that the person was Hispanic 76 percent of the time. Like the results from our previous study, having both a Hispanic first and last name has the strongest ethnicity signal, and the Hispanic signal weakens for names with a non-Hispanic first name and Hispanic last name or a Hispanic first name and a non-Hispanic last name.

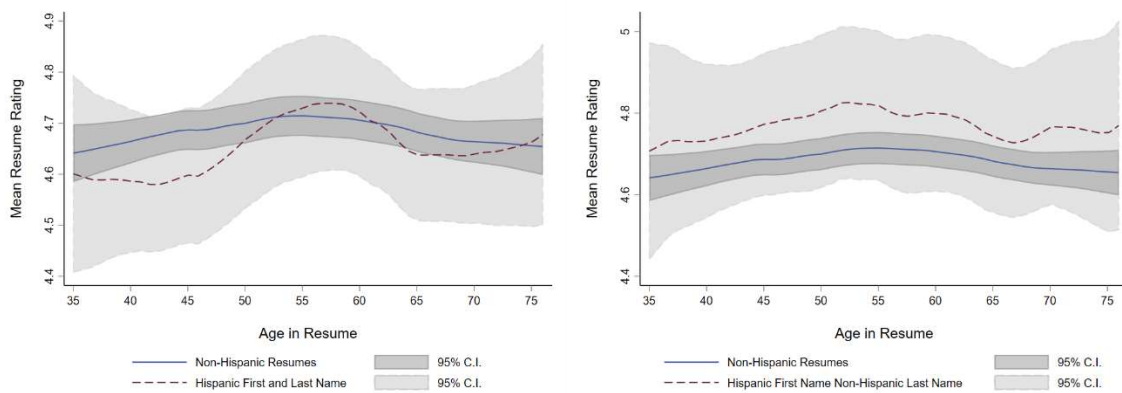
We also check to see if specific names are responsible for misidentification (Appendix Figure A 7). When combined with a Hispanic last name, no Hispanic first name displays a systematic pattern of misidentification. However, when paired with a non-Hispanic last name, for five female names (Abril, Josefina, Martina, Pilar, and Ximena), participants think the name belongs to a non-

<sup>23</sup> We included four Black names to validate if the responses follow the pattern of similar studies that focus on Black people (Barlow & Lahey, 2018), which they do. We apply the same data quality checks to this sample as we did in the main study. Additionally, we ended this study with an explicit bias questionnaire (Cárdenas et al., 2010; Karl, 2011; Guimond et al., 2013) which finds that a minority of mTurk respondents are willing to admit to explicit bias against Hispanic people (26 percent answer four or more questions out of an eleven-question questionnaire displaying explicit bias against Hispanics).



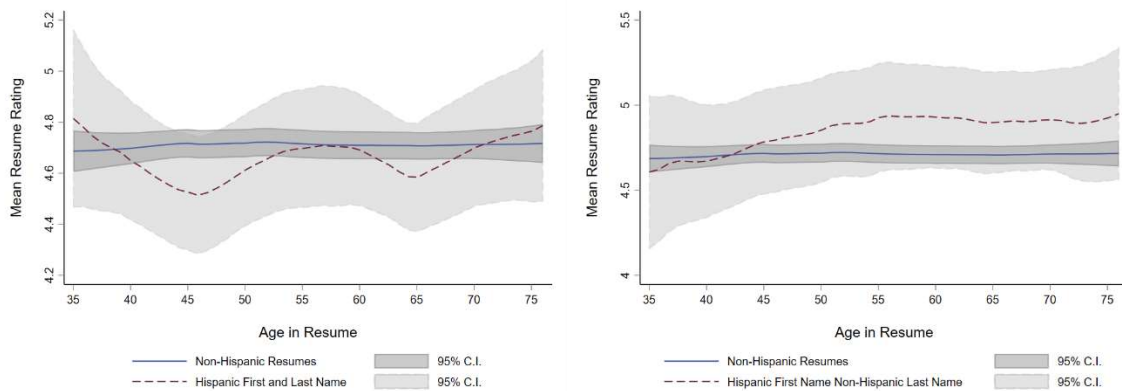
Hispanic person in more than 50 percent of the time. We then test the robustness of the main results to excluding resumes that have one of these five first names. Figure 19 presents these results. Compared to the main results presented in Figure 12, panels (a) and (b), resume ratings for Hispanics are slightly lower, but we cannot reject that they are the same as the main results or different than ratings for non-Hispanics. It is important to note that these names were all chosen because they are popular Hispanic names that are not frequently given to non-Hispanic children, thus even if people do not recognize them as Hispanic, our results are still externally valid for this population. We can say less, however, about job applicants with frequently used names like Maria which may signal Hispanic when paired with a Hispanic last name but not with a non-Hispanic last name.

Figure 19 Resume Ratings by Type of Hispanic Signal Excluding Systematically Misidentified First Names



(a) Hispanic first and last name

(b) Hispanic first name, non-Hispanic last name



(c) Hispanic first and last name – Women

(d) Hispanic first name, non-Hispanic last name – Women

A final concern with using names to signal ethnicity is that names also signal beliefs about socioeconomic status in addition to ethnicity or race (see Barlow & Lahey, 2018; Gaddis, 2017

among others). Again, this concern is not a problem if we are testing the bundle of characteristics belonging to people with Hispanic names, but could be problematic if we are interested in the effect of all Hispanic applicants and, for example, higher socioeconomic status parents are more likely to give their children names that do not signal Hispanic status. We test for this concern in the second mTurk study by asking participants how much education they think the mother of a person with a particular name has. Appendix Figure A 8 shows that while participant perceptions of socioeconomic status do not match population distributions by race and ethnicity (they tend to assume a more highly educated population distribution), they perceive that White names have a higher socioeconomic status than Hispanic names of any type.

We check if the estimates in Table 7 are robust to controlling for the socioeconomic status associated with a name. Appendix Table A 3 presents these results. The first two columns reproduce the results in Table 7, and the third column controls flexibly for socioeconomic status of the first and last name using second degree polynomials. If anything, perceptions about socioeconomic status bias the effect of Hispanic ethnicity downwards; ratings increase for Hispanics by 0.1 Likert points (3 percent of the baseline). We find a similar effect for Hispanic types with a Hispanic first name, while the estimate for the type with a non-Hispanic is not affected. We also check if the results on the marginal effect of age for Hispanics and non-Hispanics in Figure 11 are affected when controlling for socioeconomic status. Appendix Figure A 9 shows that after controlling for socioeconomic status the same patterns arise and the magnitudes are very similar to the ones in Figure 11.

## VI. Discussion and Conclusion

We have combined public-use survey data from the Census/ACS and matched monthly CPS with four different laboratory experiments to demonstrate that, unlike the case for Black and White high school graduates, Hispanic and non-Hispanic high school graduates from US high schools are treated similarly across the lifecycle. General equilibrium survey results from national surveys show no clear labor market patterns by Hispanic status, though older Hispanics are less likely to have access to the internet or a laptop compared to other groups. Results from two laboratory resume experiments using a student sample and an HR sample suggest no differences in how resumes with Hispanic last names compared to those with non-Hispanic last names are treated overall and few differences when the sample is split by gender of the resume. The mTurk results from the third laboratory experiment similarly do not show differences in how resumes are rated across the lifecycle, except perhaps for a slight preference for Hispanic compared to non-Hispanic applicants at much older ages.

Not only do we not find differences across the life-cycle, unlike research comparing Black and White members of the labor force (Lahey, 2018; Lahey & Oxley, 2021), we do not find overall

differences between Hispanic and non-Hispanic job seekers. This lack of finding discrimination overall may not be surprising given modern audit study results that similarly find no statistical difference between the resume or online portions of audit studies, at least among relatively younger job seekers (Darolia et al., 2016; Decker et al., 2015; Kleycamp, 2009). These results additionally fit within a sociology literature that finds less or, in some cases, no discrimination against “Americanized” Latinx (e.g. Gaddis & Goshal, 2020), and converging educational and health outcomes for later generation Hispanics (e.g. Bean et al., 2015; Franzini et al., 2001). Given that our studies focus on US-born Hispanics for our empirical work and graduates from US high schools with US work history for our experimental treatments, it is likely that we are capturing the experiences of Hispanics who are assumed to be US citizens, and likely assimilated US Citizens.

The next question is why do we find no differences in the general equilibrium results across age and in how hypothetical applicants are rated by ethnicity. An obvious explanation for the lack of nationally representative survey differences is that there is measurement error in the nationally representative surveys, both in terms of who takes these surveys and who identifies as Hispanic (O’Hare 2019). However, given that we limit to US citizens with a high school degree, this problem may be less prevalent than it would be had we looked at the Hispanic vs. non-Hispanic population as a whole. That said, measurement error in the general equilibrium survey data does not explain the lack of differences by ethnicity across the lifespan in our three experiments.

To explain the lack of different treatment we find in the experiments, the most worrisome suggestion is that our participants, unlike hiring managers going through the actual hiring process, simply do not pay attention to signals of name and age as they would were they not in an experiment. However, we show that participants in all three experiments do look at the names and have a sense of the hypothetical applicants’ general age. In Experiments 1 and 2, we show directly in Table 1 that the participants view the areas of interest for name and for date of high school graduation. In Experiment 3, participants in our pilot report, on average, that Hispanic applicants are minority applicants and applicants over 40 are over the age of 40. Also, resume characteristics that should be useful for rating resumes (relevant job experience and skills) are highly significant and contribute to predict ratings. Because of these results, and after eliminating mTurk participants who fail standard quality checks (out of US IP addresses, taking too little time to complete the survey, failing to answer attention check questions correctly, etc.), we are confident that participants are seeing the signals of ethnicity and age.

A less worrisome possibility is that participants do not consider people with non-Hispanic first names to truly be “Hispanic,” that is they consider people with Hispanic heritage and US first names to be equivalent to non-Hispanic White people, particularly in the Southwest where the first two experiments take place. Indeed, results from the mTurk checks mentioned in the previous paragraph suggest a stronger identification of minority group status when both the first and last name of the applicant are Hispanic, although even with these groups the majority of participants identify people with Hispanic last names and non-Hispanic first names as minorities on average. We provide further evidence that names convey ethnicity with a fourth experiment where we

directly asked participants specific questions about Hispanic status; these results on Hispanic status and names are similar to those in Gaddis (2017). That said, not all Hispanic people in the United States have first and last names that indicate their Hispanic status, and as such, our experimental results are more externally valid for the Hispanic population than would be results that limit to just those with Hispanic first and last names.

Another possibility is that positive and negative stereotypes about Hispanic workers balance out on average in our samples, leading to overall null results by ethnicity and by age. In the mTurk experiment, we included signals that reinforce or contradict different stereotypes that people have about Hispanic workers compared to non-Hispanic workers. We find suggestive evidence that Hispanic women may be negatively affected by the belief that they have multiple children. We also find evidence consistent with participants believing that it is more likely for Hispanics to work in low-skill jobs, thus penalizing them less for having these jobs on their resumes and granting them a premium for relevant job experience.

One final explanation for the lack of discrimination found in these studies relies on the fact that our experiments limited us to studying one educational sub-population, similar to the limits of audit studies. There is likely to be different selection into the high school graduate sample. For example, if we assume that the underlying distribution of worker quality is the same across the two groups, then the fact that there are more Hispanic adults without a high school degree than there are non-Hispanic adults without a high school degree (potentially because of pre-labor market discrimination or lack of opportunities) would mean that the average underlying quality of Hispanic high school graduates would be higher than that of non-Hispanic high school graduates.<sup>24</sup> In this sense, although we do not see discrimination based on observable characteristics, there might still be differences in underlying unobservable-to-the-researcher worker ability. Similarly, because we do not have a full hiring package, it is possible that there is discrimination but that it is showing up in lower wage offers and not lower hireability ratings; for example, James and DelCastillo (1992)'s in-person audit found lower wage offers for Hispanic auditors, but the difference was not statistically significant.

Our experimental evidence suggests that Hispanic and non-Hispanic high school graduates are treated similarly across the lifecycle when the resumes of middle-aged and older candidates to hire are assessed. This result does not imply that there is no discrimination in terms of the post-interview hiring decision or in terms of the wages paid to Hispanics and non-Hispanics high school graduates. Future research is needed to test if the absence of discrimination suggested by our results carries through the rest of the hiring process. Notably, while there could be no discrimination in

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<sup>24</sup> For example, Bean et al., (2015) suggest that first generation children of Mexican parents are more likely to enter the labor market rather than college when the immigrant mother does not have a green card, suggesting short term labor needs outweigh the ability to invest in education.

screening or hiring, the observational data still show a wage gap between Hispanics and non-Hispanics, particularly among men.

As a final caution, our results do not reflect conditions for those with less than a high school degree (14% of the native-born Hispanic population and 7% of the native-born non-Hispanic population age 25-75 in the 2019 ACS) and those with associates or higher degrees (33% of the native-born Hispanic population and 45.5% of the native-born non-Hispanic population). From a policy perspective, if discrimination against Hispanics is an issue for the less and more educated populations, it could impede the social mobility of the next generations of Hispanics in the US. For example, Alonso-Villar et al., (2012) find higher occupational segregation by race and ethnicity for both less and more educated groups than for those with a high school degree but no additional degree. Future research is needed to test hiring discrimination for these segments of the labor force.

## Works Cited

- Alonso-Villar, O., Del Rio, C., & Gradin, C. (2012). The Extent of Occupational Segregation in the United States: Differences by Race, Ethnicity, and Gender. *Industrial Relations*, 51(2), 179–212.
- Barlow, M. R., & Lahey, J. N. (2018). What Race Is Lacey? Intersecting Perceptions of Racial Minority Status and Social Class. *Social Science Quarterly*, 99(5), 1680-1698.
- Bean, F. D., Brown, S. K., Bachmeier, J. D., Brown, S., & Bachmeier, J. (2015). *Parents Without Papers: The Progress and Pitfalls Of Mexican American Integration*. Russell Sage Foundation.
- Bendick Jr, M., Jackson, C. W., Reinoso, V. A., & Hodges, L. E. (1991). Discrimination Against Latino Job Applicants: A Controlled Experiment. *Human Resource Management*, 30(4), 469-484.
- Blair I.V., Havranek E.P., Price D.W., Hanratty R, Fairclough D.L., Farley T, Hirsh H.K., & Steiner J.F. (2013). Assessment of biases against Latinos and African Americans among primary care providers and community members. *American Journal of Public Health*, 103(1):92-8.
- Bleakley, H., Ferris, A. E., & Fuhrer, J. C. (1999). New Data on Worker Flows During Business Cycles. *New England Economic Review*, July, 49-76.
- Brown, T. H., & Warner, D. F. (2008). Divergent Pathways? Racial/Ethnic Differences in Older Women's Labor Force Withdrawal. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 63(3), S122-S134.
- Cárdenas, M., Meza, P., Lagues, K., & Yañez, S. (2010). Adaptación y Validación de la Escala de Orientación a la Dominancia Social (SDO) en una Muestra Chilena. *Universitas Psychologica*, 9(1), 161-168.
- Correll, S., Benard, S., & Paik, I. (2007). Getting a Job: Is There a Motherhood Penalty? *American Journal of Sociology*, 112(5), 1297-1339. <https://doi.org/10.1086/511799>
- Cross, H., Kenney, G. M., Mell, J., & Zimmermann, W. (1990). *Employer Hiring Practices: Differential Treatment of Hispanic and Anglo Job Seekers*. Washington, DC: The Urban Institute Press.
- Darolia, R., Koedel, C., Martorell, P., Wilson, K., & Perez-Arce, F. (2016). Race And Gender Effects on Employer Interest in Job Applicants: New Evidence from a Resume Field Experiment. *Applied Economics Letters*, 23(12), 853-856.

- de Quidt, J., Haushofer, J., & Roth, C. (2018). Measuring and Bounding Experimenter Demand. *American Economic Review*, 108(11), 3266-3302.
- Decker, S. H., Ortiz, N., Spohn, C., & Hedberg, E. (2015). Criminal Stigma, Race, and Ethnicity: The Consequences of Imprisonment for Employment. *Journal of Criminal Justice*, 43(2), 108-121.
- Dennis, S. A., Goodson, B. M., & Pearson, C. (2019). Virtual Private Servers and The Limitations of IP-Based Screening Procedures: Lessons from The Mturk Quality Crisis of 2018. *Available at SSRN 3233954*.
- Dixon, J. C., & Rosenbaum, M. S. (2004). Nice to Know You? Testing Contact, Cultural, and Group Threat Theories of Anti Black and Anti Hispanic Stereotypes. *Social Science Quarterly*, 85(2), 257-280. (Social Science Quarterly)
- Dong, Q., & Murrillo, A. P. (2007). The Impact of Television Viewing on Young Adults' Stereotypes Towards Hispanic Americans. *Human Communication*, 10(1), 33-44.
- Feldman, M. E., & Weseley, A. J. (2013) Which Name Unlocks The Door? The Effect of Tenant Race/Ethnicity on Landlord Response. *Journal of Applied Social Psychology*, 43(2), E416-E425.
- Flood, S., King, M., Rodgers, R., Ruggles, S., Warren, J. R., & Westberry, M.. *Integrated Public Use Microdata Series, Current Population Survey: Version 9.0 [dataset]*. Minneapolis, MN: IPUMS, 2021. <https://doi.org/10.18128/D030.V9.0>
- Flores, A., López, G., & Radford, J. (2017). *Facts on US Latinos, 2015: Statistical Portrait of Hispanics in the United States. Trend data*. <http://www.pewhispanic.org/2017/09/18/facts-on-u-s-latinos/>
- Franzini L, Ribble JC, Keddie AM. Understanding the Hispanic Paradox. (2001) *Ethn Dis*. 11(3): 496–518
- Gaddis, S. M. (2017). How Black are Lakisha and Jamal? Racial Perceptions from Names Used in Correspondence Audit Studies. *Sociological Science*, 4, 469-489.
- Gaddis, S. Michael & Ghoshal, Raj, (2020). Dynamic Racial Triangulation: Examining the Racial Order Using an Experiment on Discrimination by White Millennials. *SSRN Electronic Journal*., <http://dx.doi.org/10.2139/ssrn.3022208>.
- Guimond, S., Crisp, R. J., De Oliveira, P., Kamiejski, R., Kteily, N., Kuepper, B., Lalonde, R. N., Levin, S., Pratto, F., & Tougas, F. (2013). Diversity Policy, Social Dominance, and Intergroup Relations: Predicting Prejudice in Changing Social and Political Contexts. *Journal of Personality and Social Psychology*, 104(6), 941.

- Hanson, A., & Santas, M. (2014). Field Experiment Tests for Discrimination Against Hispanics in the US Rental Housing Market. *Southern Economic Journal*, 81(1), 135-167.
- Hauser, D., Paolacci, G., & Chandler, J. (2019). Common Concerns with MTurk as a Participant Pool: Evidence and Solutions. In F. R. Kardes, P. M. Herr, & N. Schwarz (Eds.), *Handbook of research methods in consumer psychology*, 319–337.
- Holmqvist, K., Nyström, M., Andersson, R., Dewhurst, R., Jarodzka, H., & Van de Weijer, J. (2011). *Eye tracking: A Comprehensive Guide to Methods and Measures*. OUP Oxford.
- Hungerford, T., Rasette, M., Iams, H., & Koenig, M. (2001). Trends in the Economic Status of the Elderly, 1976-2000. *Soc. Sec. Bull.*, 64, 12.
- Jackson, L. (1995). Stereotypes, Emotions, Behavior, and Overall Attitudes Toward Hispanics by Anglos. *Personality and Social Psychology Bulletin*, 10.
- James, F., & DelCastillo, S. (1992). Measuring Job Discrimination: Hopeful Evidence from Recent Audits. *Harvard Journal of African American Public Policy*, 1(1), 33-53.
- Jones, M. (1991). Stereotyping Hispanics and Whites: Perceived Differences in Social Roles as a Determinant of Ethnic Stereotypes. *The Journal of Social Psychology*, 131(4), 469-476.
- Karl, K. (2011). Politics & Prejudice Toward Hispanics: Assessing the Validity of Symbolic Measures. In *APSA 2011 Annual Meeting Paper*.
- Kennedy, R., Clifford, S., Burleigh, T., Waggoner, P. D., Jewell, R., & Winter, N. J. (2020). The Shape of and Solutions to the MTurk Quality Crisis. *Political Science Research and Methods*, 8(4), 614-629.
- Kleykamp, M. (2009). A Great Place to Start? The Effect of Prior Military Service On Hiring. *Armed Forces & Society*, 35(2), 266-285.
- Lahey, J., & Beasley, R. (2018). Technical Aspects of Correspondence Studies. In S. M. Gaddis (Ed.), *Audit Studies: Behind the Scenes with Theory, Method, and Nuance* (pp. 81-101). Springer, Cham. [https://doi.org/10.1007/978-3-319-71153-9\\_4](https://doi.org/10.1007/978-3-319-71153-9_4)
- Lahey, J. N. (2018). Understanding Why Black Women Are Not Working Longer. In C. Goldin & L. F. Katz (Eds.), *Women Working Longer: Increased Employment at Older Ages*. University Chicago Press.
- Lahey, J. N., & Oxley, D. R. (2021). Discrimination at the Intersection of Age, Race, and Gender: Evidence from an Eye-Tracking Experiment. *Journal of Policy Analysis and Management*.
- Markert, J. (2004). “The George Lopez Show”: The Same Old Hispano? *Bilingual Review/La Revista Bilingüe*, 148-165. (Bilingual Review/La Revista Bilingüe)



- Mendez, M. S., & Grose, C. R. (2018). Doubling Down: Inequality in Responsiveness and the Policy Preferences of Elected Officials. *Legislative Studies Quarterly*, 43(3), 457-491. <https://doi.org/10.1111/lsq.12204>.
- Moen, P., Flood, S. M., & Wang, J. (2022). The Uneven Later Work Course: Intersectional Gender, Age, Race, and Class Disparities. *The Journals of Gerontology: Series B*. 77(1), 170-180, <https://doi.org/10.1093/geronb/gbab039>.
- Mummolo, J., & Peterson, E. (2019). Demand Effects In Survey Experiments: An Empirical Assessment. *American Political Science Review*, 113(2), 517-529.
- O'Hare, W. P. (2019). Census Coverage of the Hispanic Population. In W. P. O'Hare (Ed.), *Differential Undercounts in the U.S. Census: Who is Missed?* (pp. 71-82). Springer International Publishing. [https://doi.org/10.1007/978-3-030-10973-8\\_7](https://doi.org/10.1007/978-3-030-10973-8_7)
- Pager, D., Western, B., & Bonikowski, B. (2009). Discrimination in a Low-Wage Labor Market: A Field Experiment. *American Sociological Review*, 74(5), 777-799. <https://doi.org/10.1177/000312240907400505>.
- Quillian, L., Pager, D., Hexel, O., & Midtbøen, A. H. (2017). Meta-Analysis Of Field Experiments Shows No Change In Racial Discrimination In Hiring Over Time. *Proceedings of the National Academy of Sciences*, 114(41), 10870-10875.
- Ramírez Berg, C. (1990). Stereotyping in Films in General and of the Hispanic in Particular. *The Howard Journal of Communications*, 2(3), 286-300. <https://doi.org/10.1080/10646179009359721>
- Immigration Reform and Control Act of 1986. - 99th Congress (1985-1986): (1986, November 6). <https://www.congress.gov/bill/99th-congress/senate-bill/1200>
- Tomaskovic-Devey, D., Thomas, M. & Johnson, K. 2005. "Race and the Accumulation of Human Capital across the Career: A Theoretical Model and Fixed-Effects Application." *American Journal of Sociology*, 111(1), 58-89.
- Turner, M. A., Mikelsons, M., & Edwards, J., (1991a). Analysis of Steering in the Housing Discrimination Study. *Washington, DC: U.S. Department of Housing and Urban Development, Office of Policy Development and Research*.
- Turner, M. A., Struyk, R. J., & Yinger, J. (1991b). Housing discrimination study, synthesis, In editor R. J. Struyk & J. Yinger (Eds.). *Washington, DC: U.S. Department of Housing and Urban Development, Office of Policy Development and Research*.
- USA Facts. (2022). *The Hispanic Population Has Quadrupled in the Past Four Decades. it is Also Becoming More Diverse*. USA Facts. Retrieved May 5, 2022, from <https://usafacts.org/articles/demographics-hispanic-americans/>

- White, A. R., Nathan, N. L., & Faller, J. K. (2015). What do I need to vote? Bureaucratic Discretion and Discrimination by Local Election Officials. *American Political Science Review*, 109(1), 129-142.
- Wojtkiewicz, R. A., & Donato, K. M. (1995). Hispanic Educational Attainment: The Effects of Family Background and Nativity. *Social Forces*, 74(2), 559-574.  
<https://doi.org/10.2307/2580492>
- Yinger, John. (1991). Acts of Discrimination: Evidence from the 1989 Housing Discrimination Study. *Journal of Housing Economics*, 1(4), 318-346.
- Zong, Jie & Batalova, Jeanne. (2019). *How Many Unauthorized Immigrants Graduate from U.S High Schools Annually?* Washington, DC: Migration Policy Institute.

Table 1 Summary Statistics Experiments 1 and 2

|                             | Experiment 1 |      | Experiment 2 |       |
|-----------------------------|--------------|------|--------------|-------|
|                             | Mean         | SD   | Mean         | SD    |
| Resume Characteristics      |              |      |              |       |
| Female                      | 0.50         | 0.50 | 0.50         | 0.50  |
| Hispanic                    | 0.13         | 0.34 | 0.12         | 0.33  |
| Age                         | 56.10        | 11.7 | 56.69        | 11.95 |
| Participant Characteristics |              |      |              |       |
| Female                      | 0.56         |      | 0.81         |       |
| White                       | 0.89         |      | 0.85         |       |
| Asian                       | 0.07         |      | 0.01         |       |
| Black                       | 0.05         |      | 0.15         |       |
| Hispanic                    | 0.15         |      | 0.19         |       |
| Age                         | 21.97        | 2.83 | 44.15        | 11.43 |
| Ratings                     |              |      |              |       |
| Likert (1-7)                | 4.63         | 1.40 | 4.63         | 1.44  |
| Eye-tracking                |              |      |              |       |
| Seconds spent: total        | 16.28        | 10.2 | 15.45        | 9.35  |
| outside                     | 3.01         | 3.77 | 0.37         | 0.69  |
| employment history          | 4.90         | 5.75 | 5.82         | 4.74  |
| name                        | 0.18         | 0.53 | 0.09         | 0.20  |
| high school                 | 1.20         | 1.78 | 0.43         | 0.67  |
| years employed              | 0.49         | 1.10 | 0.76         | 1.01  |
| graduation year             | 0.02         | 0.14 | 0.05         | 0.14  |
| other                       | 0.22         | 0.56 | 0.20         | 0.51  |
| education                   | 0.21         | 0.46 | 0.27         | 0.37  |

*Notes:* In the student sample, there are 5,425 resumes for the non-eyetracking statistics and 4,475 resumes for the eyetracking statistics, other than seconds spent total which has 5,109 resumes. In the HR sample, there are 2,680 resumes for the non-eyetracking statistics and 2,624 resumes for the eye-tracking statistics, except seconds spent total which has 2,637 resumes.

Table 2 Regression Results Experiments 1 and 2

| Likert (1-7) Hireability Rating         |                       |                     |
|-----------------------------------------|-----------------------|---------------------|
| Sample:                                 | (1)<br>Student        | (2)<br>HR.          |
| Hispanic name                           | -0.7369<br>(1.4153)   | -1.4657<br>(2.4916) |
| Age in Resume                           | -0.0393**<br>(0.0187) | -0.0515<br>(0.0312) |
| Hispanic $\times$ Age in Resume         | 0.0325<br>(0.0518)    | 0.0676<br>(0.0921)  |
| Age in Resume Squared                   | 0.0003**<br>(0.0002)  | 0.0004<br>(0.0003)  |
| Hispanic $\times$ Age in Resume Squared | -0.0003<br>(0.0005)   | -0.0007<br>(0.0008) |
| Observations                            | 5,425                 | 2,416               |

Note: These are results from Experiments 1 and 2 interacting Hispanic status of names on resumes with ages on resume as indicated by date of high school graduation. Robust standard errors clustered on participant are in parentheses.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 3 Summary Statistics of mTurk Participants

|                            |                    |                                       |                  |
|----------------------------|--------------------|---------------------------------------|------------------|
| Proportion of women        | 0.555<br>(0.497)   | Hiring experience                     | 0.621<br>(0.485) |
| Age                        | 41.697<br>(12.127) | Managerial experience                 | 0.675<br>(0.469) |
| Proportion of White        | 0.825<br>(0.380)   | Number of children                    | 0.790<br>(1.195) |
| Proportion Hispanics       | 0.104<br>(0.306)   | Worked last week                      | 0.919<br>(0.273) |
| Less than college          | 0.367<br>(0.482)   | Income above \$50,000                 | 0.444<br>(0.497) |
| College                    | 0.445<br>(0.497)   | Up to 5 years of work experience      | 0.126<br>(0.332) |
| More than college          | 0.188<br>(0.391)   | 6-15 years of work experience         | 0.326<br>(0.469) |
| Human resources experience | 0.298<br>(0.458)   | More than 15 years of work experience | 0.548<br>(0.498) |

*Notes:* This table presents summary statistics for the final sample of 739 mTurk workers. Standard deviations in parentheses.

Table 4 Participants Assessing Age from Resumes

|              | Participant believes the<br>candidate has less than 40 years | Participant believes the<br>candidate has 40 years or more |
|--------------|--------------------------------------------------------------|------------------------------------------------------------|
| Less Than 40 | 0.895                                                        | 0.105                                                      |
| 40 or More   | 0.312                                                        | 0.688                                                      |

*Notes:* This table presents how the participants in the pilot wave infer age from the resumes. The sample is 739 participants, 22,170 resumes.

Table 5 Participants Assessing Ethnicity from Resumes

|                                            | No Minority | Minority |
|--------------------------------------------|-------------|----------|
| Non-Hispanic                               | 0.926       | 0.074    |
| Hispanic First and Last Name               | 0.329       | 0.671    |
| Non-Hispanic First Name Hispanic Last Name | 0.431       | 0.569    |
| Hispanic First Name Non-Hispanic Last Name | 0.563       | 0.437    |
| Any Hispanic Signal                        | 0.420       | 0.580    |

*Notes:* This table presents how the participants in the pilot wave infer ethnicity from the resumes. The sample is 739 participants, 22,170 resumes.

Table 6 Machine Learning Models Predictive Power

|                |                | MSE    | R2     | N     |
|----------------|----------------|--------|--------|-------|
| Linear LASSO   | Training set   | 2.0131 | 0.2324 | 15510 |
|                | Validation set | 1.9162 | 0.2185 | 6660  |
| Adaptive LASSO | Training set   | 2.0149 | 0.2317 | 15510 |
|                | Validation set | 1.9178 | 0.2179 | 6660  |
| Random Forest  | Full Sample    | 0.536  | 0.793  | 22170 |

*Notes:* This table presents the predictive power of three machine learning models estimated to predict resume ratings using resume characteristics as inputs.

Table 7 Estimated Differences for Likert (1-7) Rating – mTurk Sample

|                                            | (1)                              | (2)                            |
|--------------------------------------------|----------------------------------|--------------------------------|
|                                            | a. Any Hispanic Type             |                                |
| Any Hispanic Type                          | 0.0322<br>(0.0247)<br>[0.0069]   | 0.0268<br>(0.0203)<br>[0.0057] |
|                                            | b. By Hispanic Type              |                                |
| Hispanic First and Last Name               | -0.0033<br>(0.0341)<br>[-0.0006] | 0.0050<br>(0.0289)<br>[0.0011] |
| Non-Hispanic First Name Hispanic Last Name | 0.0549<br>(0.0443)<br>[0.0117]   | 0.0476<br>(0.0353)<br>[0.0102] |
| Hispanic First Name Non-Hispanic Last Name | 0.0789*<br>(0.0452)<br>[0.0169]  | 0.0487<br>(0.0378)<br>[0.0104] |
| Baseline Rating                            | 4.6809                           |                                |
| Control for resume quality                 | X                                |                                |

*Notes:* Standard errors clustered by participants are in parentheses. Percent change from the baseline is in brackets. The Likert resume rating ranges from 1 (least hireable) to 7 (most hireable). Each Panel and column presents results for a separate OLS regression. The baseline in Panel b is the average rating for non-Hispanic resumes. Estimates control for participant fixed effects. The sample size is 22,170 resumes.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 8 Effect of Age on Ratings – mTurk Sample

|                                                  |                       |
|--------------------------------------------------|-----------------------|
| Any Hispanic Type                                | 0.9744**<br>(0.4756)  |
| Age in Resume                                    | 0.0125<br>(0.0078)    |
| Any Hispanic Type $\times$ Age in Resume         | -0.0375**<br>(0.0176) |
| Age in Resume Squared                            | -0.0001<br>(0.0001)   |
| Any Hispanic Type $\times$ Age in Resume Squared | 0.0004**<br>(0.0002)  |

*Notes:* Standard errors clustered by participants are in parentheses. The baseline is the average rating for non-Hispanic resumes. Estimates control for resume quality and participant fixed effects. The sample size is 739 participants.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$



Table 9 Testing the Stereotype that Hispanics have Multiple Children

|                                       | Full Sample                       | Female Resumes                   |
|---------------------------------------|-----------------------------------|----------------------------------|
| Any Hispanic Type                     | 0.0288<br>(0.0264)<br>[0.0062]    | 0.0413<br>(0.0371)<br>[0.0088]   |
| PTA Signal                            | 0.1249***<br>(0.0369)<br>[0.0267] | 0.1053**<br>(0.0508)<br>[0.0224] |
| Any Hispanic Type $\times$ PTA Signal | 0.0380<br>(0.0804)<br>[0.0081]    | 0.0439<br>(0.1171)<br>[0.0093]   |
| Baseline                              | 4.6717                            | 4.7019                           |

Notes: Standard errors clustered by participant are in parentheses. Percent with respect to baseline is in brackets. Estimates control for participant fixed effects. The sample size is 22,170 resumes.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Table 10 Heterogeneity in Ratings to Job History Content

| Job Signal =            | Cooking/<br>Restaurant<br>Experience | Low-Skill Job<br>Experience        | Clerical/<br>Clerk in<br>Job<br>Description | Detailed<br>Job<br>Experience    | Spanish<br>Knowledge            |
|-------------------------|--------------------------------------|------------------------------------|---------------------------------------------|----------------------------------|---------------------------------|
| Any Hispanic Type       | 0.0315<br>-0.0267<br>[0.0067]        | 0.0023<br>-0.031<br>[0.0005]       | -0.0048<br>-0.0348<br>[-0.0011]             | -0.0049<br>-0.0341<br>[-0.0011]  | 0.0329<br>-0.0262<br>[0.0070]   |
| Job Signal              | -0.3466***<br>-0.0358<br>[-0.0735]   | -0.2425***<br>-0.0237<br>[-0.0509] | 0.4581***<br>-0.0232<br>[0.1024]            | 0.5511***<br>-0.0238<br>[0.1251] | 0.0081<br>-0.0343<br>[0.0017]   |
| Any Hispanic Type × Job | -0.0198<br>-0.085<br>[-0.0042]       | 0.0868*<br>-0.0483<br>[0.0182]     | 0.0778<br>-0.0476<br>[0.0174]               | 0.0940**<br>-0.0467<br>[0.0213]  | -0.0064<br>(0.0775<br>[-0.0014] |
| Baseline                | 4.7185                               | 4.7682                             | 4.4725                                      | 4.4064                           | 4.6809                          |

Notes: Standard errors clustered by participant in parentheses. Percent with respect to baseline in brackets. Estimates control for participant fixed effects. The sample size is 22,170 resumes.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Appendix A Additional Figures and Tables

Figure A 1 Having the Necessary Skills by Ethnicity and Age

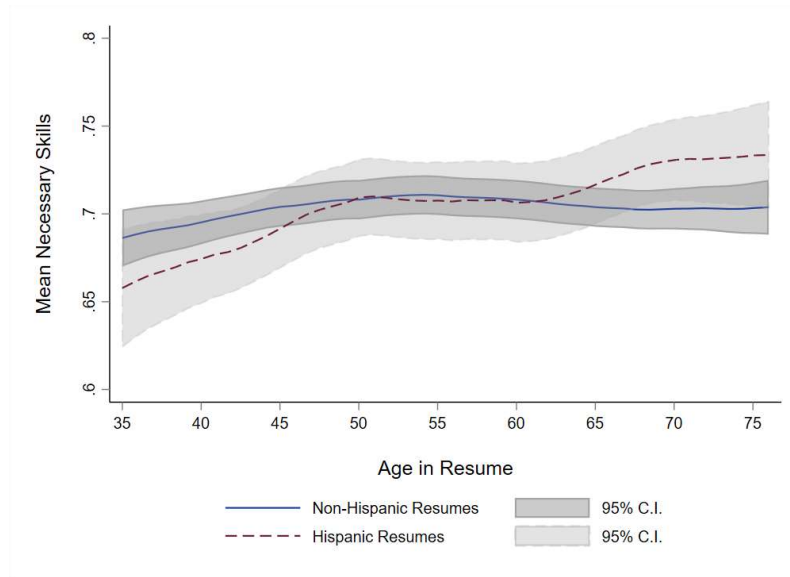
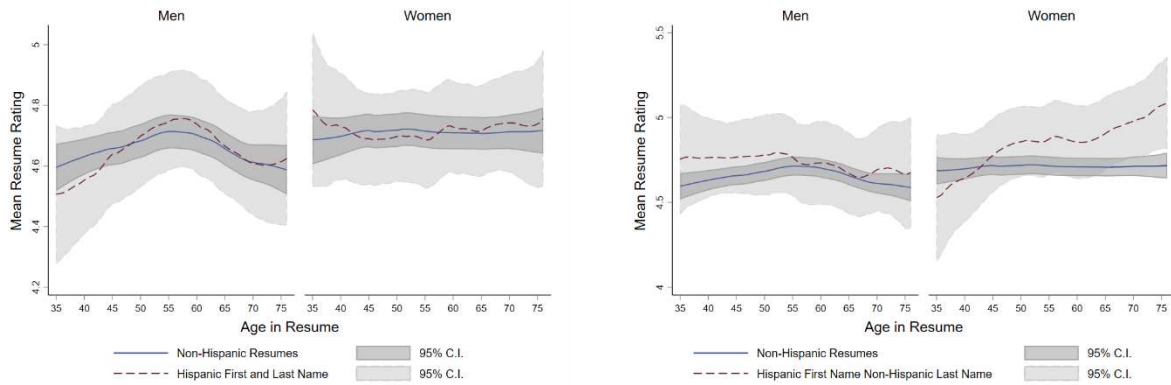
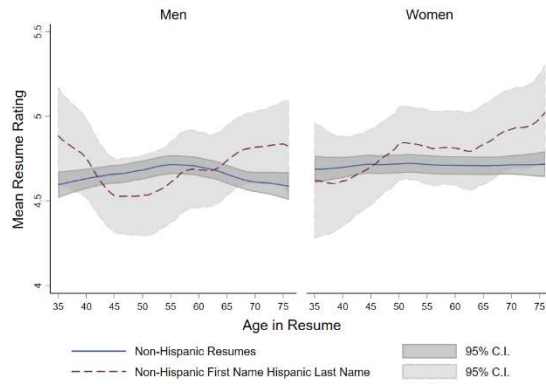


Figure A 2 Resume Ratings by Ethnicity, Age, Gender, and Type of Hispanic Signal – mTurk Sample



(a) Hispanic first and last name

(b) Hispanic first name, non-Hispanic last name



(c) Non-Hispanic first name, Hispanic last name

Figure A 3 Resume Ratings by Ethnicity and Age – mTurk Sample Restricted to Participants with a College Education

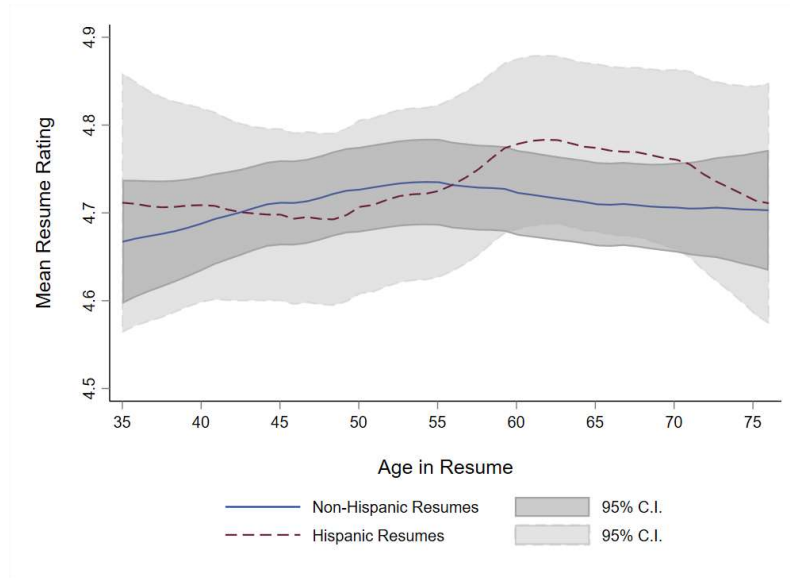


Figure A 4 Resume Ratings by Ethnicity and Age – mTurk Sample Restricted to Participants with Hiring and HR Experience

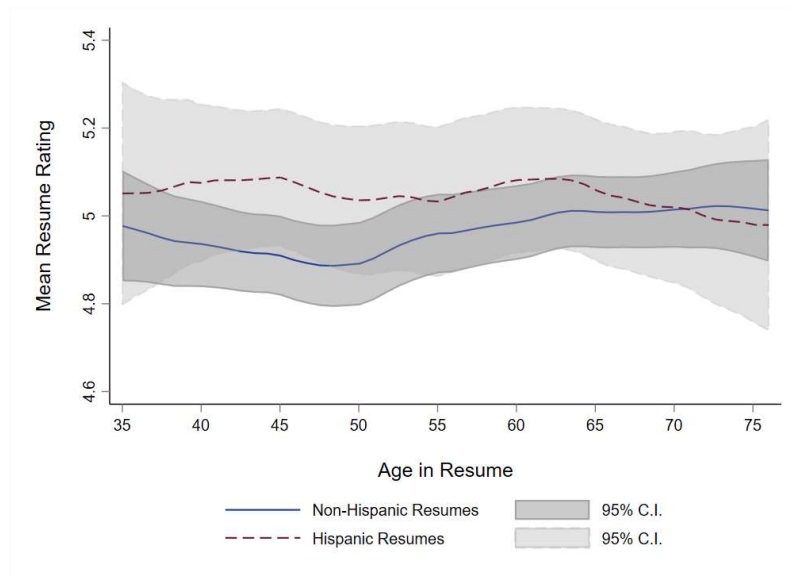


Figure A 5 Resume Ratings by Ethnicity and Age – mTurk Sample Restricted to Participants matched with HR Sample using Propensity Score Matching

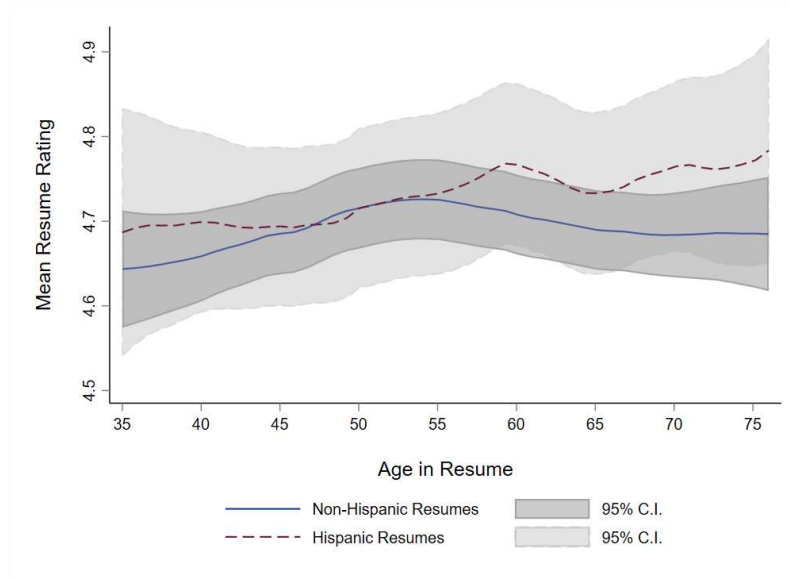


Figure A 6 Resume Ratings by Ethnicity and Age – mTurk Sample Restricted to Waves 1 and 2

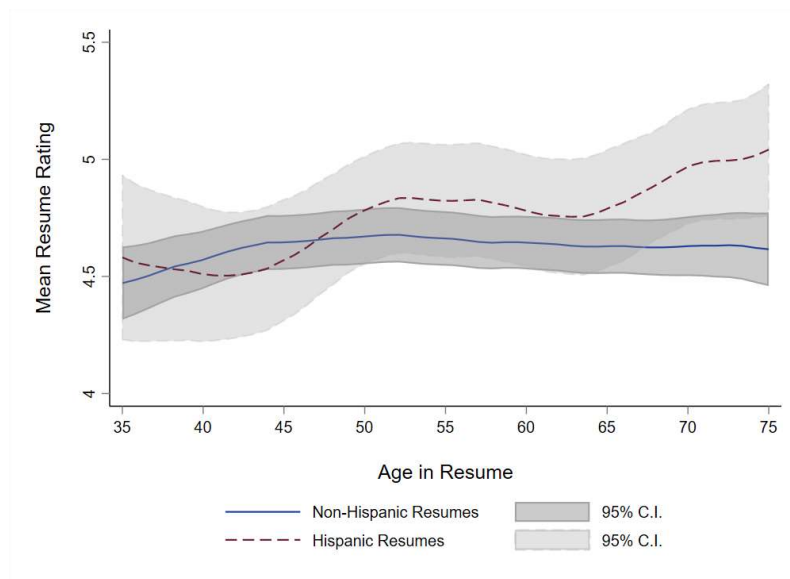


Figure A 7 Mistakes Identifying Hispanics by First Name

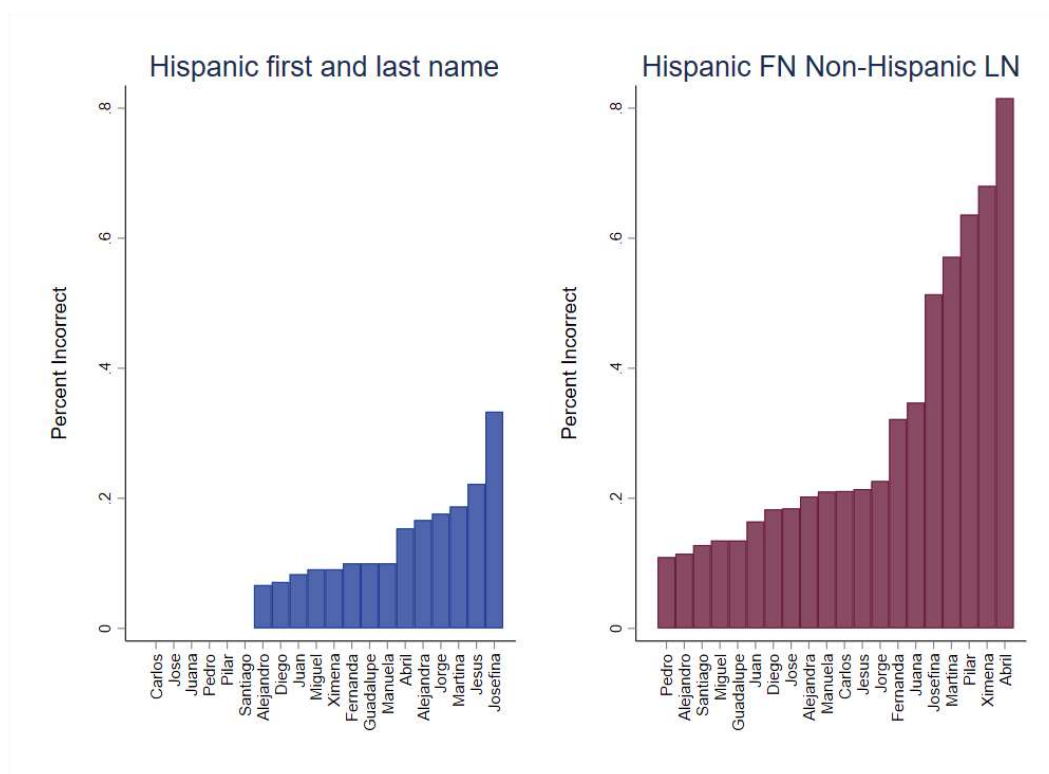
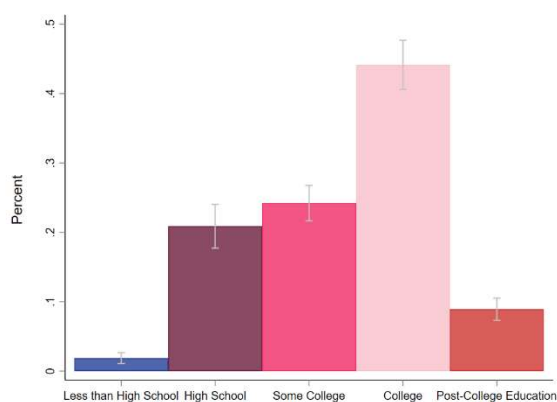
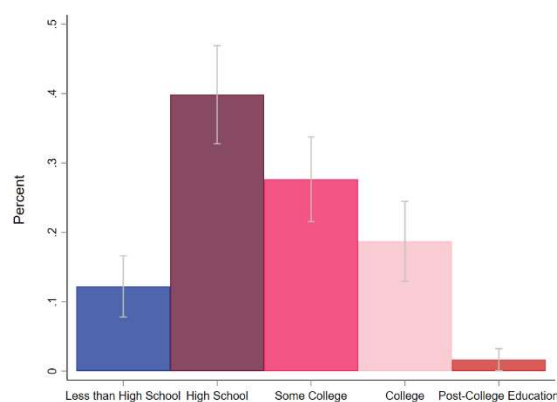


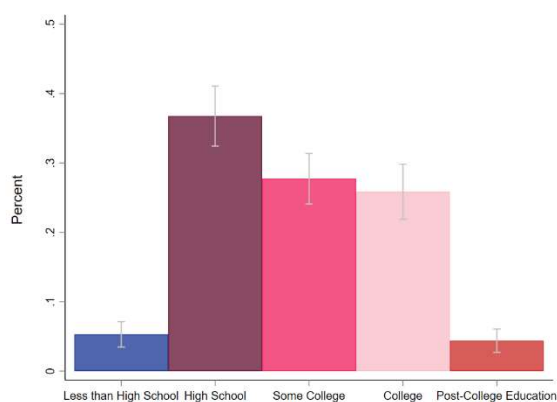
Figure A 8 Perceived Education of the Mother of a Person with a Particular Name



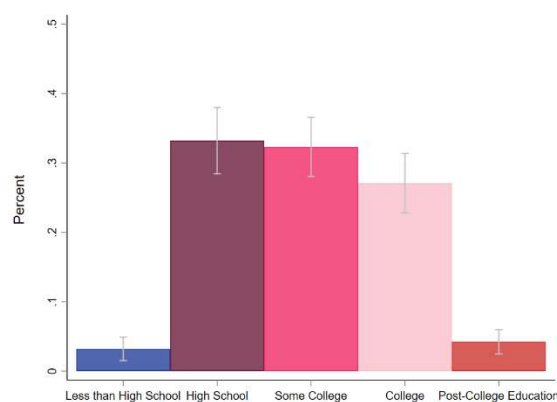
(a) White name



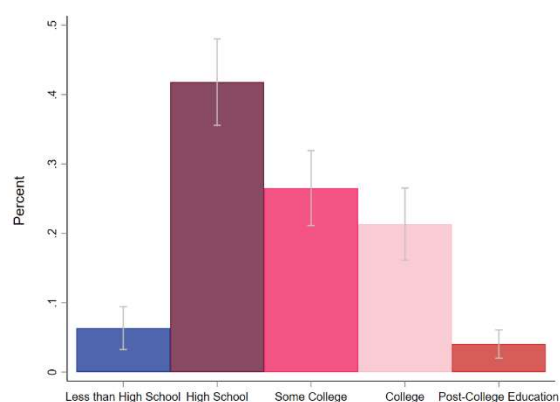
(b) Hispanic first and last name



(c) Hispanic first name, non-Hispanic last name



(d) Non-Hispanic first name, Hispanic last name



(e) Black first name, any last name



Figure A 9 Marginal Effect of Age for Hispanics and non-Hispanics – mTurk Sample controlling for SES

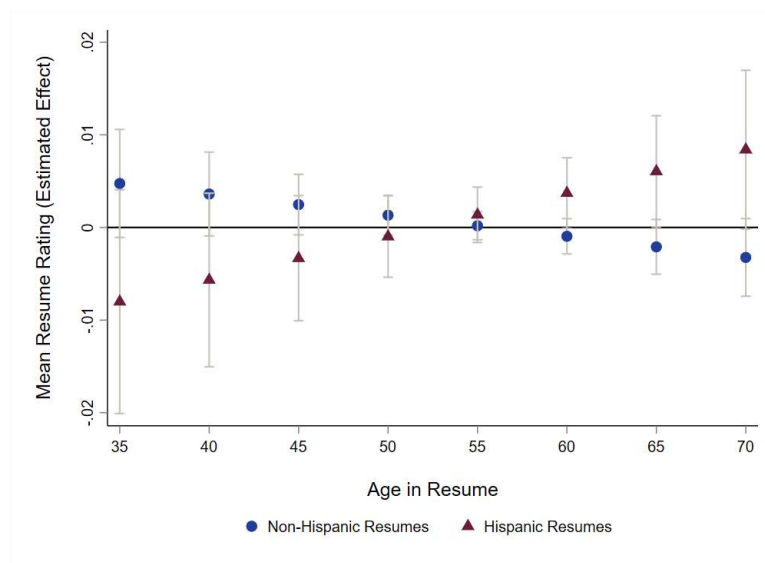


Table A 1 Correlation between Machine Learning Models

|                  | Adaptative<br>LASSO | OLS   |
|------------------|---------------------|-------|
| Causal Forest    | 0.550               | 0.551 |
| Adaptative LASSO |                     | 0.999 |

*Notes:* This table presents the correlation coefficient for the forecasts of the machine learning models.

Table A 2 Estimated Differences for Likert (1-7) Rating – mTurk Sample controlling for SES

|                                            | (1)                              | (2)                            | (3)                               |
|--------------------------------------------|----------------------------------|--------------------------------|-----------------------------------|
| <i>a. Any Hispanic Type</i>                |                                  |                                |                                   |
| Any Hispanic Type                          | 0.0322<br>(0.0247)<br>[0.0069]   | 0.0268<br>(0.0203)<br>[0.0057] | 0.1094***<br>(0.0355)<br>[0.0234] |
| <i>b. By Hispanic Type</i>                 |                                  |                                |                                   |
| Hispanic First and Last Name               | -0.0033<br>(0.0341)<br>[-0.0006] | 0.0050<br>(0.0289)<br>[0.0011] | 0.1475***<br>(0.0548)<br>[0.0315] |
| Non-Hispanic First Name Hispanic Last Name | 0.0549<br>(0.0443)<br>[0.0117]   | 0.0476<br>(0.0353)<br>[0.0102] | 0.0602<br>(0.0492)<br>[0.0129]    |
| Hispanic First Name Non-Hispanic Last Name | 0.0789*<br>(0.0452)<br>[0.0169]  | 0.0487<br>(0.0378)<br>[0.0104] | 0.1414***<br>(0.0509)<br>[0.0302] |
| Baseline Rating                            |                                  | 4.6809                         |                                   |
| Control for resume quality                 |                                  | X                              | X                                 |
| First and last name socioeconomic status   |                                  |                                | X                                 |

Notes: Standard errors clustered by participant in parentheses. Percent with respect to baseline in brackets

## Appendix B

### B.1 mTurk Survey

#### **Instructions**

This task has three parts. In the first part, we will show you 30 resumes from applicants to a clerical position. Please rate each candidate's ability to fulfill the position. The job description for the position is as follows:

#### **Administrative Assistant I**

To provide administrative support in an office environment.

#### **Main Job Tasks and Responsibilities**

- Answering and directing phone calls
- Taking phone calls
- Taking and distributing messages
- Handling inquiries and incoming work requests
- Reviewing files and records to answer requests for information
- Checking and distributing documents and correspondence
- Receiving, sorting and distributing incoming mail
- Maintaining filing systems
- Compiling records of office activities
- Photocopying      Preparing outgoing mail
- Typing documents
- Organizing meetings and appointments
- Coordinating workflow

#### **Education Requirements**

High school diploma or equivalent

In the second part, we will show the same 30 resumes and ask you more detailed questions about each candidate.

In the third part, we will ask you to complete a short survey. Once you complete these questions you will receive a code that you should enter in Amazon Mechanical Turk to complete the task and receive your payment.

Your payment will be credited to your Worker account up to three days after you complete the task.

The entire task should take up to 30 minutes to complete.



Please rate the candidate's ability to fulfill the position (1 - Most Unable, 7 - Most Able) (For 30 resumes)

- ☐ 1 (1)
- ☐ 2 (2)
- ☐ 3 (3)
- ☐ 4 (4)
- ☐ 5 (5)
- ☐ 6 (6)
- ☐ 7 (7)

### **Attention Check 1**

We want to know your opinion on the potential candidates. We also want to know whether people read resumes carefully. To show you've read this much, please ignore the question and select both "List skills" and "Volunteering experience". Yes, ignore the question and select both of these options

Which of the following do you think are the most important characteristics of a successful candidate?

Complete work history (1)

- ☐ Professional-looking resume (2)
- ☐ Lists skills (3)
- ☐ Volunteering experience (4)

Second view of resumes (for the same 30 resumes)

Does this candidate have the necessary skillset for an administrative assistant position?

- ☐ Yes (1)
- ☐ No (2)

How much supervision do you think this candidate will need to perform his or her duties?

- ☐ High supervision (1)
- ☐ Average supervision (2)
- ☐ Low supervision (3)

How would you rate this candidate's communication skills?

- ☐ Deficient communication skills (1)
- ☐ Average communication skills (2)
- ☐ Excellent communication skills (3)

#### Demographic questions

Compared to 6 months ago, how important do you think are the following technology skills for a person working in a clerical position now. Please select one for each option. (only in waves 4-5)

|                                                                                                   | (1)                   | (2)                   | (3)                   | (4)                   | (5)                   |
|---------------------------------------------------------------------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Analyze data and create graphs in Microsoft Excel or a similar software (1)                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Save files so they can be opened in different software versions (i.e., Word 97 vs. Word 2000) (2) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Take digital video and transfer it to my computer (3)                                             | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Take digital pictures and transfer them to my computer (4)                                        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Create presentations in Microsoft PowerPoint or a similar software (5)

☐☐☐☐☐

Use videoconference applications like Skype or Zoom (6)

☐☐☐☐☐

Use applications for remote collaboration like Microsoft Teams (7)

☐☐☐☐☐

Plan and integrate technology-based learning in the workplace (8)

☐☐☐☐☐

What is the highest level of education you have completed?

☐ Elementary or some high school (1)

☐ High school graduate/GED (2)

☐ Trade or vocational certification (3)

☐ Some college/Associates degree (4)

☐ College graduate (5)

☐ Some post-graduate work (6)

☐ Post-grad degree (7)

Last week did you do any work for either pay or profit?

☐ Yes, full-time employment (1)

☐ Yes, part-time employment (2)

☐ No (3)

☐ Retired (4)

☐ Disabled (5)

☐ Unable to work (6)

How many years of paid work experience have you had over the course of your life?

- ☐ Less than 1 year (1)
- ☐ Between 1 and 5 years (2)
- ☐ Between 6 and 10 years (3)
- ☐ Between 11 and 15 years (4)
- ☐ Between 16 and 20 years (5)
- ☐ More than 20 years (6)

How much has your income changed in the past three months? (only in waves 4-5)

- ☐ Decreased a lot (1)
- ☐ Some decrease (2)
- ☐ Decreased a little (3)
- ☐ No change (4)
- ☐ Increased a little (5)
- ☐ Some increase (6)
- ☐ Increased a lot (7)

Have you ever worked in a human resources role as your primary occupation?

- ☐ I have worked in that capacity (1)
- ☐ I have not worked in that capacity (2)

*Display This Question:*

*If Have you ever worked in a human resources role as your primary occupation? = I have worked in that capacity*



How many years of experience do you have working in human resources?

- Less than 1 year (1)
- Between 1 and 5 years (2)
- Between 6 and 10 years (3)
- Between 11 and 15 years (4)
- Between 16 and 20 years (5)
- More than 20 years (6)

Do you have any experience in hiring employees even if it was not your primary occupation?

- ☐ Yes (1)
- ☐ No (2)

Have you ever worked in a managerial role as your primary occupation?

- ☐ I have worked in that capacity (1)
- ☐ I have not worked in that capacity (2)

*Display This Question:*

*If Have you ever worked in a managerial role as your primary occupation? = I have worked in that capacity*



How many years of experience do you have working in a managerial role?

- ☐ Less than 1 year (1)
- ☐ Between 1 and 5 years (2)
- ☐ Between 6 and 10 years (3)
- ☐ Between 11 and 15 years (4)
- ☐ Between 16 and 20 years (5)
- ☐ More than 20 years (6)

Have you ever worked in a clerical/administrative position? (only in wave 5)

- ☐ I have worked in that capacity (1)
- ☐ I have not worked in that capacity (2)

*Display This Question:*

*If Have you ever worked in a clerical/administrative position? = I have worked in that capacity*

How many years of experience do you have working in a clerical/administrative position?  
(only in wave 5)

- ☐ Less than 1 year (1)
- ☐ Between 1 and 5 years (2)
- ☐ Between 6 and 10 years (3)
- ☐ Between 11 and 15 years (4)



☐ Between 16 and 20 years (5)

☐ More than 20 years (6)

In what year were you born?

From the following options, do you consider yourself to be (select all that apply):

☐ Black, or African American (1)

☐ White (2)

☐ Asian (3)

☐ American Indian (4)

☐ Native Hawaiian or other Pacific Islander (5)

☐ I prefer not to answer (6)

Do you identify yourself as Hispanic or Latino?

☐ Yes (1)

☐ No (2)

Are you

☐ Single (1)

☐ Married (living together) (2)

☐ Married (living apart) (3)

☐ Separated (4)

☐ Divorced (5)

☐ Widowed (6)

☐ Cohabiting (7)

☐ Other (8) \_\_\_\_\_

How many children under the age of 18 live in your household?

\_\_\_\_\_

What was the estimated annual income for your household for 2018?

- ☐ Less than \$10,000 (1)
- ☐ \$10,000 to \$20,000 (2)
- ☐ \$21,000 to \$30,000 (3)
- ☐ \$31,000 to \$40,000 (4)
- ☐ \$41,000 to \$50,000 (5)
- ☐ \$51,000 to \$60,000 (6)
- ☐ \$61,000 to \$70,000 (7)
- ☐ \$71,000 to \$80,000 (8)
- ☐ \$81,000 to \$90,000 (9)
- ☐ \$91,000 to \$100,000 (10)
- ☐ More than \$100,000 (11)

Are you male or female?

- ☐ Male (1)
- ☐ Female (2)

In what state were you born?

---

In what state did you primarily grow up?

---

In what state do you currently reside?

---

Assuming that money is not an issue, rank the following destinations for vacation (1 is the most preferred and 10 is your least preferred)

- \_\_\_\_\_ Outer Banks, North Carolina (1)
- \_\_\_\_\_ Honolulu, Hawaii (2)
- \_\_\_\_\_ Boca Raton, Florida (3)
- \_\_\_\_\_ Galveston, Texas (4)
- \_\_\_\_\_ Santa Barbara, California (5)
- \_\_\_\_\_ Cancun, Mexico (6)
- \_\_\_\_\_ Playa del Carmen, Mexico (7)
- \_\_\_\_\_ San Andres, Colombia (8)
- \_\_\_\_\_ Bocas del Toro, Panama (9)
- \_\_\_\_\_ Punta del Este, Uruguay (10)

Which of the following reasons make [\\${Q1383/ChoiceGroup/ChoiceWithHighestValue}](#) the least preferred? Select all that apply.

- ☐ Not my type of vacation (1)
- ☐ Never heard about this place (2)
- ☐ I already visited this place (3)
- ☐ Concerned about safety (4)
- ☐ I don't speak the language (5)
- ☐ Worried about the food (6)
- ☐ Health concerns (7)

End of Block: Travel Questions

---

Start of Block: Attention Check 2

As you have seen in this survey, we want to know your opinion on the potential candidates. We

also want to know whether people read questions carefully. To show you've read this much, please ignore the question below, select other and write "none" as your answer.

Which of these facilities are available at your workplace?

- ☐ Vending machine (1)
- ☐ Lounge (2)
- ☐ Coffee maker (3)
- ☐ Windows (4)
- ☐ Parking (5)
- ☐ Childcare facilities (6)
- ☐ Store room (7)
- ☐ Other (8) \_\_\_\_\_

End of Block: Attention Check 2

---

Start of Block: Reciprocity/Trust

To what degree do you agree with the following statements? Please use a scale from 0 to 10, where 0 means you "completely disagree" and 10 means you "completely agree" with the statement. You can also use any numbers between 0 and 10 to indicate where you fall on the scale, like 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.

|                                                                                                   | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|---------------------------------------------------------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| If someone does me a favor, I am prepared to return it (1)                                        |     |     |     |     |     |     |     |     |     |      |      |
| I go out of my way to help somebody who has been kind to me before (4)                            |     |     |     |     |     |     |     |     |     |      |      |
| I am willing to undergo personal costs to help somebody who helped me before (5)                  |     |     |     |     |     |     |     |     |     |      |      |
| If I suffer a serious wrong, I will take revenge as soon as possible, no matter what the cost (6) |     |     |     |     |     |     |     |     |     |      |      |
| If somebody puts me in a difficult position, I will do the same to him/her (7)                    |     |     |     |     |     |     |     |     |     |      |      |
| If somebody offends me, I will offend him/her back (8)                                            |     |     |     |     |     |     |     |     |     |      |      |
| On the whole one can trust people (9)                                                             |     |     |     |     |     |     |     |     |     |      |      |
| Nowadays one can't rely on anyone (10)                                                            |     |     |     |     |     |     |     |     |     |      |      |
| If one is dealing with strangers, it is better to be careful before one can trust them (11)       |     |     |     |     |     |     |     |     |     |      |      |

End of Block: Reciprocity/Trust

Start of Block: Altruism



Imagine the following situation: Today you unexpectedly received 100000 dollars. How much of this amount would you donate to a good cause? (Values between 0 and 100000 are allowed, do not use commas)

---

End of Block: Altruism

**Thank you for completing the survey!**

Please copy the following code that you will enter on MTURK in order to receive payment.  
CODE: `#{e://Field/Code}`

Please select “Next” to continue.

**Thank you for your participation!**

Purpose of the Study:

This task was part of a research study whose purpose is examining what characteristics of resumes are important in decision making.

Confidentiality:

You may view the survey host’s confidentiality policy at <https://www.qualtrics.com/privacystatement/>

mTurk will **not** provide the researchers with your identifying information. All information you provided in this task will be kept on a password protected computer and is only accessible by the research team.

The results of this study may be published but no one will be able to identify you.

You may decide that you do not want your data used in this research. If you would like your data removed from the study and permanently deleted please contact [REDACTED]@gmail.com and provide your unique identification number `#{e://Field/Code}`.

Whether you agree or do not agree to have your data used for this study, you will still receive **\$4** for your participation.

Please do not disclose that this is a research study to anyone who might participate in this study in the future as this could affect the results of the study.

Final Report:

If you would like to receive a copy of the final report of this study (or a summary of the findings) when it is completed, please feel free to contact us.

Useful Contact Information:

If you have any questions or concerns regarding this study, its purpose or procedures, or if you have a research-related problem, please contact the principal investigator, Joanna N. Lahey at 979 458 3463 or [jlahey@tamu.edu](mailto:jlahey@tamu.edu).

If you have any questions concerning your rights as a research subject, you may contact the [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

**Once again, thank you for your participation in this study!**

## B.2 Sample resumes for Experiments 1 and 2

Helen Williams



HelenWilliams14@gmail.com

### Employment History

|           |                                                                                                                                                                                                     |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2012–now  | Clerical Worker, Harris County, Houston, Texas                                                                                                                                                      |
| 2009–2012 | Owner, Sunrise Natural Food Co-Operative, Killeen, Texas<br>Operated health food cooperative by taking orders, invoicing,<br>loaded/unloaded/distributed foods to members.                          |
| 2008–2009 | Clerical Aide, Tennaco, Texas<br>Assigned to human resources department , processed new<br>employees packets, took pictures and issue employees Id's,<br>made appointments. filed, answered phones. |
| 2003–2008 | Corporate Sales Coordinator, Motivated Sales International<br>Inc                                                                                                                                   |

### Education

|      |                         |
|------|-------------------------|
| 1991 | Friendswood High School |
|------|-------------------------|

### Other

Neighborhood Association Member



## Emily Martinez



EmilyMartinez75@gmail.com

### Employment History

|           |                                                                                                                                                                                                                                  |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2013–now  | Secretary, Asheboro City Schools, Texas<br>Clerical support to the Alternative School                                                                                                                                            |
| 2007–2013 | Admin/Clerical/Dispatcher, Tex Cut Concrete, Irving, Texas<br>Dispatcher, Billing, Answering Phones, Payroll                                                                                                                     |
| 2006–2007 | Cashier attendant, Columbia Road Gulf Service Inc, Greatwood, TX<br>Collecting cash from customers on workorders, sales of gasoline and motor oils, miscellaneous automobile necessities, such as fuses, wiperblades, tires etc. |
| 2004–2006 | Clerical, Four Seasons Mechanical, El Paso, Texas<br>Clerical accounts receivable, some payroll, sales tax, customer service, answer phones, make deposits. Some collection and sales to the clients.                            |

### Education

|      |                        |
|------|------------------------|
| 1996 | Clear Lake High School |
|------|------------------------|

### Other

### B.3 Sample Resumes for Experiment 3 (mTurk sample)

Non-Hispanic resume

**Christopher Anderson**  
  
christopher.anderson96@hotmail.com

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**Recent Employment History**

---

|           |                                                                                                                                                                                                                                                  |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2018–2020 | Cook/Grooming, Texas Home Health Of America Inc, Houston                                                                                                                                                                                         |
| 2017–2018 | Receptionist, Good Time Stores Inc<br>To perform routine clerical duties; to act as a receptionist; to assist and inform the public on departmental policies and procedures; and to provide basic sorting, filing, copying or clerical services. |
| 2015–2017 | Mortgage Lending, R H Lending Inc<br>Evaluate, authorize, or recommend approval of commercial, real estate, or credit loans. Advise borrowers on financial status and methods of payments.                                                       |
| 2012–2015 | Executive Assistant, City of Wylie Tx, Texas<br>Executive level clerical support to City Manager's office                                                                                                                                        |
| 2010–2012 | Executive Assistant, North Houston High School for Business, Houston, Texas<br>Assisted the superintendent, coordinated information for the school and general clerical duties.                                                                  |

---

**Education**

---

|      |                        |
|------|------------------------|
| 1975 | Gatesville High School |
|------|------------------------|

---

**Skills**

---

Word  
Customer service  
Interpersonal skills  
Collaboration

---

**Volunteering**

---

Notes: Address and phone number are blacked out, but participants observed these elements. All resumes are randomized and the distributions are equivalent on average—these resumes were randomly picked for each name type.

Draft: June 2022

Hispanic first and last name

**Pedro Rodriguez**



pedro.rodriguez84@yahoo.com

#### **Recent Employment History**

---

|           |                                                                                                                                                           |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2015–2020 | Cashier, Home Depot, Woodlands, Texas<br>I Greeted Customers to the register when their items needed to be checked out<br>I also worked in Self Checkout. |
| 2013–2015 | Checker, Albertons, Huble, TX                                                                                                                             |
| 2010–2013 | Recruiter, Advantage Human Resourcing Inc                                                                                                                 |

#### **Education**

---

|      |                   |
|------|-------------------|
| 1991 | Lamar High School |
|------|-------------------|

#### **Skills**

---

Customer service  
Fast learner  
Proficient with social media  
Spanish

#### **Volunteering**

---

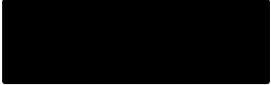
Houston Food Banks

Notes: Address and phone number blacked out, but participants observed these elements.

Draft: June 2022

Hispanic first name, non-Hispanic last name

**Carlos Gray**

  
carlos.gray09@gmail.com

#### **Recent Employment History**

---

|           |                                                                                                                                                                                                                                                        |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2016–2020 | Area Manager, Stripes LLC, Midland, Texas<br>Area manager in charge of 8 retail convenience stores, all overall operations, personnel, auditing, inventory, total operations management.                                                               |
| 2010–2016 | Customer service agent/reservations, Delta Air Lines<br>Making reservations, listening to customer needs, changing flights, electronic ticketing, reissuing of tickets as changes were made, special member service help desk, helping irate customers |

#### **Education**

---

|      |                       |
|------|-----------------------|
| 1991 | St Thomas High School |
|------|-----------------------|

#### **Skills**

---

Conflict resolution  
Microsoft Office

#### **Volunteering**

---

Notes: Address and phone number blacked out, but participants observed these elements.

Non-Hispanic first name, Hispanic last name

**Jacob Lopez**



jacob.lopez09@hotmail.com

#### **Recent Employment History**

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|           |                                                                                                                                                   |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| 2017–2020 | Clerk, Utpa, Texas<br>Basic clerical duties and library services.                                                                                 |
| 2010–2017 | Administrative Assistant, Kevin Fallwell Associates, Flower Mound, Texas<br>Answered telephone, set up appointments, customer and client service. |

#### **Education**

---

|      |                  |
|------|------------------|
| 1977 | Troy High School |
|------|------------------|

#### **Skills**

---

Microsoft Office  
Collaboration  
Interpersonal skills  
Data analysis  
Critical Thinking

#### **Volunteering**

---

Notes: Address and phone number blacked out, but participants observed these elements.

## Appendix C Potential stereotypes against Hispanics

Table C 1 Stereotypes List Documented in the Literature

| Paper                                                                                                                                                                                                  | Date of publication | List of stereotypes                                                                                                                                                                        | Comments                                                                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| McConahay, J. B. (1986). Modern racism, ambivalence, and the Modern Racism Scale. In J. F. Dovidio & S. L. Gaertner (Eds.), <i>Prejudice, discrimination, and racism</i> (pp. 91–125). Academic Press. | 1986                | Preferential treatment from government and media, Demand too much from society, Less intelligent, Should be segregated.                                                                    | Divided stereotypes into 'Modern' and 'Old fashioned' racism items.                                                                                                                                                                     |
| Casas, J. M., Ponterotto, J. G., & Sweeney, M. (1987). Stereotyping the Stereotype a Mexican American Perspective. <i>Journal of Cross-Cultural Psychology</i> , 18(1), 45–57.                         | 1987                | Negative physical attributes (dirty, short, fat), Less intelligent, Uneducated, Lack of work ethic, Lower social class.                                                                    | Categorizes each stereotype into one of five categories: Physical, Intelligence/Education, Personality/Character, Social Status, and Treatment.                                                                                         |
| Ramirez, A. (1988). Racism toward Hispanics. In <i>Eliminating racism</i> (pp. 137-157). Springer, Boston, MA.                                                                                         | 1988                | Present-oriented, Immediate gratification, Passive, Low level of aspiration, Non-goal-oriented, Non-success-oriented, External locus of control, Lower intelligence.                       | Performs a literature review of the psychological research on Hispanics relevant to the issues of prejudice, discrimination, and racism.                                                                                                |
| Ramirez Berg, C. (1990). Stereotyping in films in general and of the Hispanic in particular. <i>Howard Journal of Communications</i> , 2(3), 286-300.                                                  | 1990                | No moral compass, Violent, Irrational, Negative physical characteristics, Prone to criminal activity, Less intelligent, Hot-tempered, Promiscuous, Simple-minded.                          | Groups Hollywood stereotypes together into six classifications: El Bandido, Half-bred Harlot, Male Buffoon, Female Clown, Latin Lover, Dark Lady. Discusses other categories: the Wise Old Man, Fat Mama, Poor Peon.                    |
| Jones, M. (1991). Stereotyping Hispanics and Whites: Perceived differences in social roles as a determinant of ethnic stereotypes. <i>The Journal of Social Psychology</i> , 131(4), 469-476.          | 1991                | Independence, Aggressiveness, Family-oriented, Tendency to work hard, Intelligence, Ambition, Religiousness, Competitiveness, Traditionalism, Talkativeness, Competence, Cruelty, Loyalty. | Participants rated stimulus person on a 15-point scale ranging from <i>not at all</i> (1) to <i>very much</i> (15). Looked at 13 stereotypic attributes, but statistical significance was found only for work ethic and traditionalism. |

| Paper                                                                                                                                                                                     | Date of publication | List of stereotypes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Comments                                                                                                                                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Jackson, L. A.<br>(1995). <i>Stereotypes, emotions, behavior, and overall attitudes toward Hispanics by Anglos</i> (No. 10). Julian Samora Research Institute, Michigan State University. | 1995                | Hispanics less than Anglos:<br>Productive, Conservative, Optimistic, Ambitious, Athletic, Materialistic, Competitive, Business-wise, Dependable, Independent, Self-centered, Self-disciplined, Planful, Progressive, Efficient, Individualistic, Intelligent, Sophisticated, Good-looking, Well-adjusted, Patriotic, Industrious, Prosperous, Knowledgeable, Prompt, Physical fitness, Mature love, Recognition by community, Good life for others, National greatness, Putting off pleasure, Pursuit of knowledge, Good health, Economic prosperity, Financial independence.<br>Hispanics more than Anglos:<br>Strong family, Poor, Tradition-loving, Religious, Uneducated, Old fashioned, Rebellious, Physically violent, Criminal tendencies, Dirty/smelly, Noisy, Salvation, Religious experience. | Only categorizes characteristics as a 'stereotype' if a 10% difference or greater between Hispanics and Non-Hispanics.                                                                                 |
| Tomkiewicz, J., & Adeyemi-Bello, T. (1997). Perceptual differences in racial descriptions of Euro-American and Hispanic persons. <i>Psychological Reports</i> , 80(3 Pt 2), 1339–1343.    | 1997                | Leadership ability, Emotionally stable, Intelligent, Intuitive, Analytical ability, High self-regard, Self-confident, Kind, Strong need for achievement, Values pleasant surroundings, Interested in own appearance, Persistent, Well-informed, Competitive, Decisive, Steady, Sophisticated, Neat, Independent, Firm, Ambitious, Competent, Direct, Logical, Assertive, Skilled in business matters, Grateful, Uncertain, Quarrelsome, Vulgar, Passive, Submissive, Timid, Easily influenced, Nervous.                                                                                                                                                                                                                                                                                                 | Uses Schein's 92-item Descriptive Questionnaire (1973); only the characteristics with means below 1.5 (positive) and greater than 2.5 (negative) were included in analysis. 35 items were reported on. |
| Niemann, Y. F. (2001). Stereotypes about Chicanas and Chicanos: Implications for Counseling. <i>The Counseling Psychologist</i> , 29(1), 55–90.                                           | 2001                | Low moral standards, Dirty, Lazy, Ignorant, Inferior, Violent, Criminal, Artistic, Promiscuous, Unintelligent, Overweight, Aggressive, Poor, Family-oriented, Unreliable, Religious, United.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                        |
| Dixon, J. C., & Rosenbaum, M. S. (2004). Nice to know you? Testing contact, cultural, and                                                                                                 | 2004                | Unintelligent, Lazy, Lacking commitment to strong families.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                        |

| Paper                                                                                                                                                                                                                                             | Date of publication | List of stereotypes                                                                                                                                                                                                                                                                                                          | Comments                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| group threat theories of anti-Black and anti-Hispanic stereotypes. <i>Social Science Quarterly</i> , 85(2), 257-280.                                                                                                                              |                     |                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Markert, J. (2004). "The George Lopez Show": The Same Old Hispano?. <i>Bilingual Review/La Revista Bilingüe</i> , 148-165.                                                                                                                        | 2004                | Hypersexual, 'Primitiveness' of immigrants, Large family size, Lack of work ethic, Obsession with Castro among Cubans.                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Weyant, J. M. (2005). Implicit Stereotyping of Hispanics: Development and Validity of a Hispanic Version of the Implicit Association Test. <i>Hispanic Journal of Behavioral Sciences</i> , 27(3), 355–363.                                       | 2005                | Less intelligent                                                                                                                                                                                                                                                                                                             | Used a modified Implicit Association Test to see if Hispanics are viewed as less intelligent. The words associated with a lack of intelligence were: dense, dull, gullible, half-witted, ignorant, and inept.                                                                                                                                                                                                                        |
| Karl, K. (2011). Politics & prejudice toward Hispanics: assessing the validity of symbolic measures. In <i>APSA 2011 Annual Meeting Paper</i> .                                                                                                   | 2011                | Hispanics no longer face much prejudice or discrimination ("denial of discrimination"), Hispanics' failure to progress is due to their unwillingness to work hard enough ("work ethic"), Hispanics are demanding too much ("excessive demands"), and Hispanics have gotten more than they deserve ("underserved advantage"). | Uses an adapted understanding of symbolic racism and its four themes.                                                                                                                                                                                                                                                                                                                                                                |
| Ojeda, L., Navarro, R. L., Meza, R. R., & Arbona, C. (2012). Too Latino and Not Latino Enough: The Role of Ethnicity-Related Stressors on Latino College Students' Life Satisfaction. <i>Journal of Hispanic Higher Education</i> , 11(1), 14-28. | 2012                | Perceived criminal activities, Less intelligent, Lack of work ethic, Poor academic performance.                                                                                                                                                                                                                              | The 11-item Stereotype Confirmation Concern Scale (SCSS) lists: owning certain things, attending/participating in certain social activities, physical appearance, shopping in certain store or eating at certain restaurants, eating certain foods, doing certain household tasks, dressing in a certain way, playing certain sports, taking your studies too seriously, talking a certain way, revealing your socioeconomic status. |
| Bean, M. G., Stone, J., Badger, T. A., Focella, E. S., & Moskowitz, G. B. (2013). Evidence of nonconscious stereotyping of Hispanic patients by nursing and medical students. <i>Nursing research</i> , 62(5), 362.                               | 2013                | Health noncompliance/uncooperative, Health risk/damage, Uneducated, Unimaginative.                                                                                                                                                                                                                                           | Uses a similar method to the IAT approach, where pictures and words are flashed on a screen for participants to group.                                                                                                                                                                                                                                                                                                               |
| Lacayo, C. O. (2017). Perpetual inferiority: Whites' racial ideology toward Latinos. <i>Sociology of Race and Ethnicity</i> , 3(4), 566-579.                                                                                                      | 2017                | Lawless, Less intelligent, Have too many children, Culturally inferior, Poor work ethic, Prone to criminal activity, Abuse public services, Refuse to                                                                                                                                                                        | Uses in-depth interviews with 40 self-identified white residents of Orange County, California.                                                                                                                                                                                                                                                                                                                                       |



| Paper                                                                                                                                                                                        | Date of publication | List of stereotypes                                                                                                                                          | Comments                                                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
|                                                                                                                                                                                              |                     | assimilate to U.S. culture,<br>Hardworking, Family oriented,<br>Lack motivation.                                                                             |                                                          |
| Mata, S. Y. (2018). Implicit and Explicit Attitudes Towards Latinos, Crime and Immigration.                                                                                                  | 2018                | Demand too much from society,<br>Taking jobs from non-minorities,<br>Commit more crimes than White people, Preferential treatment from government and media. | Used an adapted 12-question Modern Ethnicity Bias Scale. |
| Feldman, M. E. and A. J. Weseley (2013). "Which name unlocks the door? The effect of tenant race/ethnicity on landlord response." <i>Journal of Applied Social Psychology</i> 43: E416-E425. | 2013                | Poor, Rebellious, Uneducated.                                                                                                                                |                                                          |