

Does Housing Discrimination Exist Based on the “Color” of an Individual’s Voice?

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This article reflects the views of the author and does not necessarily reflect the views of the U.S. Department of Housing and Urban Development.

Abstract

Does housing discrimination exist based on the “color” of an individual’s voice? Linguistic profiling occurs when people make judgments over the telephone about the character of the individual with whom they are talking. This study uses a logit model regression to determine if the race of a person searching for housing has any correlation with whether he or she is able to make an appointment over the phone. The data used for this analysis come from the Housing Discrimination Study (HDS) 2000 Phase I that was sponsored by the U.S. Department of Housing and Urban Development, which measured the patterns of racial and ethnic discrimination in urban housing markets across the United States through paired testing. HDS 2000 found statistically significant evidence that unacceptable levels of housing discrimination still persist across the nation. Although it is important to note that the paired tests used to measure levels of housing discrimination in HDS 2000 are based on the physical race of the tester and not whether the tester had a linguistic speech pattern commonly associated with a specific race or ethnicity, this research finds that there is little association between race and the ability to make an appointment over the phone. It was found that the predicted probability of making an appointment to inquire about a rental or sales unit is similar across racial and ethnic groups, varying slightly around 97 percent. These results suggest that while there may be minor differences among racial groups in the ability to make an appointment over the phone to inquire about a rental or sales housing unit, none of these differences are statistically significant. Although these initial findings indicate that linguistic profiling is probably not a major factor in measuring housing discrimination, it is crucial that further research be conducted in this area to more accurately determine whether and to what extent linguistic profiling affects levels of housing discrimination.

Introduction

Does housing discrimination exist based on the “color” of an individual’s voice? Linguistic profiling occurs when people make judgments over the telephone about the character of the individual with whom they are talking. While the U.S. Department of Housing and Urban Development (HUD) has sponsored several national housing discrimination studies in which paired tests (audits) have been used to measure levels of housing discrimination, and although other audit studies have been conducted in various cities around the United States, no analysis of housing discrimination based on linguistic profiling in metropolitan housing markets across the United States had been conducted. This study uses a logit model regression to examine if the race of people searching for housing has any correlation with whether they are able to make an appointment over the phone. The data used for this analysis come from the Housing Discrimination Study 2000 (HDS 2000) Phase I, which HUD sponsored and which measured the patterns of racial and ethnic discrimination in urban housing markets through paired testing. HDS 2000 found statistically significant evidence that unacceptable levels of housing discrimination still persist across the nation.

Even though HDS 2000 provides evidence that unacceptable levels of housing discrimination still exist, fair housing advocates such as the National Fair Housing Alliance (NFHA) have argued that levels of housing discrimination for African Americans and Hispanics may in fact be higher than the measures presented in HDS 2000 suggest. This discrepancy, they argue, is due to factors of linguistic profiling—factors that were not accounted for in the original measure of housing discrimination (adverse treatment) for HDS 2000. This research provides initial answers to this debate.

For the purpose of this article, it is important to note that the paired tests used to measure levels of housing discrimination in HDS 2000 were not specifically designed to examine whether the tester had a linguistic speech pattern commonly associated with a particular race or ethnicity.

The research addressed in this article finds that little association exists between race and the ability to make an appointment over the phone. It finds that the predicted probability of making an appointment to inquire about a rental or sales unit is similar across racial and ethnic groups, varying slightly around 97 percent. These results suggest that, although minor differences may occur among racial groups in the ability to make an appointment over the phone to inquire about a rental or sales housing unit, none of these differences are statistically significant. These initial findings indicate that linguistic profiling is probably not a major factor in measures of housing discrimination.

The Housing Discrimination Study 2000

HDS 2000, the third national study that HUD sponsored, was conducted by the Urban Institute to measure patterns of racial and ethnic discrimination in metropolitan housing markets (HUD, 2002a). Preceding HDS 2000, HUD sponsored the 1979 Housing Market Practices Study and the 1989 Housing Discrimination Study, both of which found significant levels of racial and ethnic discrimination in rental and sales markets nationwide (HUD, 1979; HUD, 1989).

HDS 2000 Phase I found that discrimination still persists nationwide in both the rental and sales markets of large metropolitan areas but that the incidence of discrimination generally has declined since 1989. The study concluded that only Hispanic renters face essentially the same incidence of discrimination today as they did in 1989, and while the incidence of consistent adverse treatment against minority home seekers has declined over the past decade, it is still significant.

In terms of metropolitan rental markets nationwide, African Americans still face discrimination when they search for rental housing. The overall incidence of consistent White-favored treatment in seeking rental housing dropped by 4.8 percentage points, from 26.4 percent in 1989 to 21.6 percent in 2000. Hispanic renters nationwide also still face significant levels of discrimination. Non-Hispanic Whites were consistently favored in 25.7 percent of tests.

In terms of metropolitan sales markets, African-American homebuyers continue to face discrimination in metropolitan housing markets nationwide. The overall incidence of consistent White-favored treatment (compared to African Americans) in homebuying dropped by 12.0 percentage points, from 29.0 percent in 1989 to 17.0 percent in 2000. Hispanic homebuyers also face significant levels of discrimination. The overall incidence of consistent non-Hispanic White-favored treatment (compared to Hispanics) in homebuying dropped by 7.1 percentage points, from 26.8 percent in 1989 to 19.7 percent in 2000.

Literature Review

Title VIII of the Civil Rights Act of 1968, The Fair Housing Act, prohibits discrimination in the sales, rental, and financing of housing based on race, color, national origin, religion, sex, familial status, or disability. In 2002, HUD conducted a study that assessed public awareness of and support for fair housing laws and individuals' perceptions concerning whether they had ever experienced housing discrimination. The findings show that widespread knowledge of and support for most fair housing protection and prohibitions exists. The public, however, understands and supports some areas of the law more than others. (HUD, 2002b)

Housing discrimination studies are crucial for determining how fair housing policy can most effectively provide equal housing opportunities for all. Before paired testing, research findings for housing discrimination typically came from studies using multivariate analyses. In these studies the analyst would control for factors such as age and education, factors that could reasonably be expected to account for the outcomes observed for majorities and minorities separately. The analyst would then identify a residual difference between the two groups. Some unknown share (possibly all) of the residual could be suspected of being due to discrimination, but the exact share would not be known. Many problems emerged, however, in attempting to fully specify such multivariate models, which introduced uncertainty about whether the magnitude of the residual itself was correct. Furthermore, such studies could not report the incidence of discrimination, only the magnitude of the resulting impact. In conclusion, a good deal of uncertainty about the level of discrimination was the rule in such studies (Fix, Galster, and Struyk, 1993). The solution to this problem was paired testing.

The Housing Market Practices Study (HMPS) was the first national audit study of housing availability to use paired testing. In the HMPS study, more than 3,200 audits/paired tests were

conducted in 40 randomly selected metropolitan areas to measure the level of discrimination against African Americans in the rental and sales markets across the country (HUD, 1979). In the Housing Discrimination Study of 1989 (HDS 1989), approximately 3,800 paired tests were conducted in the summer of 1989 in 25 metropolitan areas to measure the level of housing discrimination against African Americans and Hispanics. African American/White tests were conducted in 20 of these sites, while Hispanic/non-Hispanic White tests were conducted in 13 sites (HUD, 1989). The basic testing protocols in HDS 2000 were modeled from HDS 1989 in order to yield comparable measures of differential treatment between 1989 and 2000. Testers visited rental and sales offices in person to inquire about the availability of advertised units so rental and sales agents could actually see the race or ethnicity of the testers (HUD, 2002a).

Paired testing is a tool of fair housing enforcement that detects and documents individual instances of discrimination. In a paired test, one minority and one White tester pose as home seekers with identical backgrounds, aside from their obvious race/ethnic differences, and visit rental and sales agents to inquire about availability of advertised housing units. This methodology provides direct evidence of differences in the treatment minorities and Whites experience when they search for housing. Major advantages to paired testing include the comparative level of confidence its results inspire, the political persuasiveness of those results, its ability to detect subtle forms of discrimination, and its efficiency as an enforcement tool (Fix, Galster, and Struyk, 1993).

There are measurement issues, however, associated with paired testing. As stated in HDS 2000,

The simplest measure of adverse treatment with paired testing is the share of all tests in which the white tester is favored over the minority tester, or in the rare cases where the minority tester is favored over the white tester. While these gross measures are straightforward, they usually overstate the frequency of systemic discrimination since differential treatment may occur during a test because of random differences in the circumstances of their visit to the rental/sales office rather than because of differences in race or ethnicity. Gross measures of white-favored and minority-favored treatment include both random and systemic factors, and therefore, provide an upper-bound estimate of systemic discrimination. One strategy for estimating systemic discrimination, cases where non-discriminatory random events are not responsible for differences in treatment, is to subtract the incidence of minority-favored treatment from the incidence of white-favored treatment to produce a net measure. The net measure reflects the extent to which the differential treatment that occurs is more likely to favor whites than minorities and provides lower-bound estimates of systemic discrimination (HUD, 2002a).

This article addresses a novel issue in the world of fair housing: whether housing discrimination exists based on the “color” of an individual’s voice. The debate surrounding this matter revolves around the concept of linguistic profiling. John Baugh provides the definition of linguistic profiling in the article “Racial Identification by Speech.” Linguistic profiling is based on auditory cues that people may use to identify an individual as belonging to a linguistic subgroup within a given speech community, including a racial subgroup, when they make judgments over the telephone about the character of the individual with whom they are talking. Baugh notes that linguistic profiling becomes illegal when people discriminate based on such judgments (Baugh, 2000).

The article “Perceptual and Phonetic Experiments on American English Dialect Identification” by Baugh et al. (1999) discusses how the ability to detect the use of nonstandard dialect often gives enough information to determine a speaker’s ethnicity, and speakers may consequently suffer discrimination based on their speech. The article details four experiments that present evidence that housing discrimination based solely on telephone conversations can occur, because dialect identification is possible using the word “hello” and phonetic correlations of dialect can be discovered. This article is critical to this research topic because it provides evidence that linguistic profiling is possible. (Baugh et al., 1999)

In the article “Use of Black English and Racial Discrimination in Urban Housing Markets,” Massey and Lundy (2001) further argue that racial discrimination in housing markets does not need to involve personal contact between agents and renters. To test this hypothesis, Massey and Lundy designed an audit study in Philadelphia to compare male and female speakers of White Middle-Class English, Black Accented English, and Black English Vernacular. Their study found significant racial discrimination that was often exacerbated by class and gender. (Massey and Lundy, 2001)

Baugh bases his argument for the existence of linguistic profiling on the fact that there are concrete differences in linguistics for people from different ethnic backgrounds—especially for African Americans and Hispanics, with distinctions in Black and Chicano vernacular. Linguistic differences include dialect differences, grammar differences, and phonological differences (different pronunciations of particular sounds) (Baugh, 1983).

The variety of English can be influenced by regional or national norms and explains why Chicano English Vernacular in New York may sound different from Chicano English Vernacular in California. Besides local dialects of English, features of English repeat themselves in different local communities and have been associated with socioeconomic differences within communities. An example is the unstressed sound of “ing” in words such as “talkin(g),” which has been found to be used more frequently among lower socioeconomic status speakers than among higher socioeconomic status speakers in the same community (Wald, 1984).

Data and Research Design

Data Description

The HDS 2000 Phase I data provide national estimates of adverse treatment against African Americans and Hispanics from 4,600 paired tests conducted in 20 metropolitan areas.

The results of HDS 2000 Phase I are based on a nationally representative sample of 20 metropolitan areas with a population greater than 100,000 and with significant African American and/or Hispanic minority populations. The sample of sites was selected from the 25-site sample of metropolitan areas covered by HDS 1989. In Phase I of HDS 2000, African American/White testing was conducted in 16 of the 20 sites and Hispanic/non-Hispanic White testing was conducted in 10 of these metropolitan areas. Tests were conducted during the summer of 2000.

To conduct the tests, random samples of advertised housing units were drawn each week from major metropolitan newspapers from the designated sample sites. Each week the sampled ads were assigned to paired testers, and testers visited the sampled rental and sales offices to inquire about the availability of these advertised units. Both minority and White testers were assigned income, asset, and debt levels to make them equally qualified to buy or rent the advertised housing unit. Paired testers were also assigned comparable family circumstances, job characteristics, education levels, and housing preferences. They visited sales and rental agents and recorded the information and assistance they received about the advertised unit, including location, quality and condition, rent or sales price, as well as other terms and conditions. (For more information and further details on the sampling methodology of metropolitan areas and advertised housing units, see the HDS 2000 report [HUD, 2002a].)

The subsample used for this practicum consisted of paired-tests in which testers needed to call and make an appointment before visiting the rental or sales unit being tested. These steps occurred for all sales tests and for rental tests in which the test coordinator had predetermined from an initial advance call by a nonminority individual that an appointment was necessary. In addition, testers made calls for rental tests if only a phone number (no address) appeared in the advertisement, in which case it would have not been realistic for the tester to show up without calling to find out the address.

Cases in which no appointment was necessary were dropped from this study.¹ Because all testers were not required to make an appointment before visiting a test site, some testers may have recorded a disposition of an appointment being unnecessary as not being able to make an appointment; this discrepancy is most likely due to inconsistent reporting by testers and test coordinators in the field. This problem was addressed by looking at a sample of actual test report files to evaluate the pattern of recording among testers and to assess the extent of misrecording. It was found that in the majority of sample cases in which testers initially indicated they were unable to make an appointment but subsequently went to the test site, an appointment was not necessary, and these cases were recoded as being able to make an appointment.²

Another issue addressed in cleaning the data was that because testers may have called multiple times before they actually made contact with a housing agent, only the last call and final outcome were considered. The last call was determined by the number of calls to the agent and by the date and time of the calls. Looking at only the last call, cases were dropped in which the final outcome indicated the tester did not make an appointment but it had been previously recorded that the tester was able to make an appointment. For rental tests, this would not be logical under any circumstance and 42 cases were dropped. For sales tests, it could have been the case that the tester was able to make an initial “casual appointment” but then was unable to make a second appointment in which he or she needed to be prequalified. Of the sales tests, 164 cases were dropped due to time constraints, since it would have been extremely time consuming to determine the exact circumstances of each of these cases.

In addition, only cases in which the housing agent heard the tester’s voice were included. In these cases, the agent spoke with the tester and told him or her no appointment was necessary to visit, the agent would not make an appointment for the tester, or the agent told the tester no

other housing was available. These cases also included an “other” situation in which the tester’s voice may have been heard; for example, when the tester left a message on the agent’s voicemail/ answering machine or the tester was told by the agent to call back. Cases that were excluded in which the voice of the tester would not have been heard included cases where the tester was directed to terminate the test by the test coordinator, the tester had the wrong number, there was no answer, or the telephone number was disconnected.

Ultimately, the dependent variable of whether a tester was able to make an appointment was kept in the sample based on incorporating information on the disposition of cases. Looking at the final outcome, cases were kept only if the disposition matched up with whether the tester made an appointment. For instance, cases were dropped if it was recorded that an appointment was not made but the disposition was recorded that an appointment was made.

Finally, before creating the final sample, it was determined whether it mattered if a tester called first or second within a paired test. A new variable was created, incorporating information on the date and time of the call, as well as the Tester ID, and the Control Number of the test. After running a logit regression with this newly created variable, it was found that whether the tester called first or second did not have any statistically significant impact on the tester’s ability to make an appointment and, therefore, this variable was ultimately dropped from the final regression model.

Analytic Methods

The study discussed in this article tests the hypothesis that linguistic profiling affects levels of housing discrimination by incorporating the APPTCALL data set from HDS 2000 Phase I, which recorded information on whether an appointment was made or not by a tester, with the ASSIGNMT data set, which has information on the tester’s race. After merging these two data sets together, based on the Tester ID and Control Number of a test, the study analyzes whether a tester’s race has any impact on his or her ability to make an appointment.

Since the dependent variable for this study has only two possible outcomes (whether a tester can or cannot make an appointment over the phone), a logit model was used. Regression models for binary outcomes enable a researcher to explore how each explanatory variable affects the probability of the event occurring.

Although discreteness of a dependent variable does not in itself mean that a linear probability model (LPM) is inappropriate, logit models can overcome the shortcomings of the LPM. Instead of using ordinary least squares to estimate the LPM models, this study used the maximum likelihood estimation (MLE). For estimating limited dependent variable models, maximum likelihood methods are indispensable since MLE is based on the distribution of y given x , and the heteroskedasticity in $\text{Var}(y | x)$ is automatically accounted for.

$P(y=1 | \mathbf{x}) = P(y=1 | x_1, x_2, \dots, x_K)$ where \mathbf{x} denotes the full set of explanatory variables.

In this study, y is the indicator of whether an appointment was made, and the vector \mathbf{x} contains individual characteristics of race, gender, and age, which are possible characteristics that could be determined strictly by linguistic profiling of an individual over the phone.

Results

Descriptive Statistics

The following information describes the testers in this subsample who participated in HDS 2000 Phase I in terms of race, gender, and age and whether they were able to make an appointment over the phone or not.

Testers who participated in HDS 2000 Phase I comprised different races and ethnicities. As shown in exhibit 1, White testers outnumbered minority testers because they were paired with all minority testers. White testers were able to make an appointment over the phone in 97.45 percent (2,213) of the cases in the study, African-American testers were able to make an appointment in only 96.73 percent (1,271) of the cases, and Hispanic testers in 98.33 percent (941) of the cases. Although differences exist among the three races, it is important to note that these differences in race are not statistically significant, not holding all other factors constant.

Exhibit 1

Race		
Race	Frequency of Appointments Made	Percent of Appointments Made
White	2,213	97.45
African American	1,271	96.73
Hispanic	941	98.33

The lower percentage of appointments made for African-American testers could have been because African Americans have a distinct tone in their voice or may use Black English Vernacular, which rental and sales agents are able to linguistically profile and discriminate against when African-American testers call to inquire about a housing unit. The fact that Hispanic testers were more likely to be able to make an appointment than White testers, however, is surprising since Hispanics might be linguistically profiled due to distinguishable accents and the use of Chicano English Vernacular. One explanation for why Hispanic testers were able to make more appointments than White testers may be due to the fact that the individuals who participated in HDS 2000 were from higher educational and social class backgrounds and were less likely to have accents or use Chicano English Vernacular. Hispanic testers were required to have no problems communicating in English, but this is not a reality for all Hispanics.

In terms of gender, as shown in exhibit 2a, among the testers in the subsample, 97.71 percent of males (1,962) were able to make an appointment, and 97.35 percent of females (2,426) were able to make an appointment. Even though subtle differences appear in the results between genders, it is important to note that these differences are not statistically significant, not holding all other factors constant.

When analyzing gender by race (see exhibit 2b), of White testers, 97.70 percent of males (978) were able to make an appointment over the phone, and 97.44 percent of females (1,219) were able to make an appointment. For African-American testers, only 96.53 percent of males (529) were able to make an appointment over the phone, while 97.05 percent of females (724) were able to

Exhibit 2a

Gender

Gender	Frequency of Appointments Made	Percent of Appointments Made
Male	2,426	97.35
Female	1,962	97.71

make an appointment. Finally, of Hispanic testers, a surprising 99.13 percent of males (455) were able to make an appointment over the phone and only 97.58 percent of females (483) were able to make an appointment. Again, it is important to note that, although there were differences in the results between gender and among race, these observed differences are not statistically significant, not holding all other factors constant. The lower percentage of African-American males who were able to make an appointment may be due to the fact that it is easier to linguistically profile African-American men due to their distinguishable tone of voice. The lower percentage of Hispanic females who were able to make an appointment, compared to the males in their subgroup, may be due to the fact that rental agents may assume that women who call to inquire about a housing unit may be more likely to have children or to be single parents with children.

Exhibit 2b

Gender by Race

Race	Frequency of Appointments Made by Females	Percent of Appointments Made by Females	Frequency of Appointments Made by Males	Percent of Appointments Made by Males
White	1,219	97.44	978	97.70
African-American	724	97.05	529	96.53
Hispanic	483	97.58	455	99.13

Testers in the subsample who participated in HDS 2000 Phase I ranged in age from 18 to 73 years, while the mean age of testers was 37 years. As shown in exhibit 3a, of the young testers (2,094), ages 18 through 36, 97.40 percent were able to make an appointment over the phone. Of middle-age testers (2,083), ages 37 through 65, 97.34 percent were able to make an appointment over the phone. Although the results differed between the two age groups, it is important to note that these differences between the age groups are not statistically significant, not holding all other factors constant. The similarity in percentages of young and middle-age testers being able to make an appointment may be due to the fact that it is difficult to determine the age of an individual over the phone.

Exhibit 3a

Age

Age	Frequency of Appointments Made	Percent of Appointments Made
Young (18–36)	2,094	97.40
Middle Age (37–65)	2,083	97.34

When analyzing age by race (see exhibit 3b), of White testers, only 97.07 percent of young testers (1,062) were able to make an appointment over the phone, while 97.83 percent of middle-age testers (1,035) were able to make an appointment. For African-American testers, 97.01 percent of young testers (551) were able to make an appointment and 96.19 percent of middle-age testers (632) were able to make an appointment. For Hispanic testers, 98.57 percent of young testers (481) were able to make an appointment and 97.88 percent of middle-age testers (416) were able to make an appointment. Again, it is important to note that even though there were differences between the percentage of appointments made by testers of different ages and race, these observed differences are not statistically significant, not holding all other factors constant.

Exhibit 3b

Age by Race

Race	Frequency of Appointments Made by Young Testers	Percent of Appointments Made by Young Testers	Frequency of Appointments Made by Middle-Age Testers	Percent of Appointments Made by Middle-Age Testers
White	1,062	97.07	1,035	97.83
African American	551	97.01	632	96.19
Hispanic	481	98.57	416	97.88

Regression Results

Exhibit A-1 in the appendix presents the logistical regression results. The logit model findings suggest that the race of a person has no statistically significant effect on whether one is able to make an appointment over the phone to inquire about a rental or sales housing unit. Results suggest there are only minor differences among racial groups in their ability to make an appointment over the phone to inquire about a rental or sales housing unit. None of these differences are statistically significant.

Odds Ratio Estimates

As expected, in general, it was found that African Americans are less likely to be able to make an appointment over the phone than Whites. Specifically, African Americans are 27 percent less likely to be able to make an appointment over the phone than Whites, with a statistical significance of 0.1481. This finding means there is approximately an 85 percent chance that this result will occur as a result of random variation and, therefore, lacks statistical significance. Surprisingly, however, Hispanics were found to be more likely to be able to make an appointment than Whites. This unusual finding may be due to the smaller sample size of Hispanic testers and the fact that the testers who participated in HDS 2000 were from a higher social class and, therefore, less likely to have strong accents or to speak in Chicano English Vernacular. Specifically, it was found that Hispanics are 39 percent more likely to be able to make an appointment than Whites, with a statistical significance of 0.2564. This finding means there is approximately a 74 percent chance that this result will occur as a result of random variation and, therefore, also lacks statistical significance.

As for gender, females were found to be less likely to be able to make an appointment than males. This finding again may be due to the fact that rental or sales agents may be more cautious about renting to females because they are more likely to have children or be single parents with children. Specifically, females are 11 percent less likely to be able to make an appointment than males, with a statistical significance of 0.5549. This finding means that there is approximately a 45 percent chance that this result will occur as a result of random variation and, therefore, lacks statistical significance.

Finally, in terms of age, middle-age individuals (ages 37 through 65) were found to be slightly more likely to be able to make an appointment than younger individuals (ages 18 through 36). This finding may be due to the fact that younger individuals are more likely to have young children and rental or sales agents are more likely to discriminate against younger families, although it is probably more likely to be harder to determine someone's age over the phone than a person's race. Specifically, middle-age testers were 0.4 percent more likely to be able to make an appointment by phone than were younger individuals, with a statistical significance of 0.9835. This finding means there is approximately only a 2 percent chance that this result will occur as a result of random variation and, therefore, lacks statistical significance. This result makes sense, however, since it is more likely to be harder to determine a person's age over the phone than a person's race.

Predicted Probability Estimates

$$PP = \frac{\sum [\exp(A_j + Bx)]}{1 + \sum [\exp(A_j + Bx)]}$$

Based on the following predicted probabilities, it can be concluded that the ability of an individual to make an appointment over the phone to inquire about a rental or sales housing unit is similar across racial and ethnic groups. Results suggest that there are only minor differences among racial groups in their ability to make an appointment over the phone to inquire about a rental or sales housing unit.

- The predicted probability of a young, White female being able to make an appointment over the phone is 97 percent, whereas the predicted probability of a young, White male being able to make an appointment over the phone is 98 percent.
- The predicted probability of a middle-age, White female being able to make an appointment over the phone is also 97 percent, whereas the predicted probability of a middle-age, White male being able to make an appointment over the phone is higher, at 98 percent.
- The predicted probability of a young, African-American female being able to make an appointment over the phone is the same for a young, African-American male being able to make an appointment over the phone, which is 97 percent.
- The predicted probability of a middle-age, African-American female being able to make an appointment over the phone is the same for a middle-age, African-American male being able to make an appointment over the phone, which is 97 percent.

These results show that White males, regardless of age, are most likely to be able to make an

appointment over the phone, at 98 percent.

The predicted probabilities for Hispanics were not as expected. Although the differences were similar, the predicted probability for Hispanic females was higher than for White and African-American females, and the predicted probability for Hispanic males was the same for White males. The predicted probability of a young, Hispanic female being able to make an appointment over the phone is the same for a young, Hispanic male, at 98 percent. Similarly, the predicted probability of a middle-age, Hispanic female being able to make an appointment over the phone is the same for a middle-age, Hispanic male, at 98 percent.

Limitations

Limitations of this study include the fact that even though HDS 2000 collected and recorded appointment call information, tests were not set up to reveal the race of a tester over the phone and, therefore, testers' voices may not have had auditory cues for a rental or sales agent to determine the race of a tester and discriminate by linguistic profiling. In addition, HDS 2000 most likely included individuals with higher educational levels than those individuals who have thicker accents and/or who speak in Black English Vernacular or Chicano English Vernacular. Since HDS 2000 testers were probably composed of individuals from higher educational levels, the final results could have been underestimated and there could be an interaction of race and class that is not captured in this model. This limitation should be considered in future research, especially since Massey and Lundy's study found that racial discrimination through linguistic profiling was often exacerbated by class. The findings in this research contradict previous studies regarding linguistic profiling and housing discrimination, suggesting there are only minor differences among racial groups in their ability to make an appointment over the phone to inquire about a rental or sales housing unit. It is crucial, however, that further research, which incorporates factors such as class and region be conducted in this area. It is critical that future studies of housing discrimination experiment with different methods to measure levels of housing discrimination and address the issue of linguistic profiling in their research models.

In addition, this study uses a logit regression model to analyze whether a tester could make an appointment over the phone on an individual case basis. Future research could analyze these data as paired tests, finding the share of all tests in which the White tester is favored over the minority tester in attempting to make an appointment over the phone to inquire about an advertised housing unit.

Conclusion

These research findings suggest that the race of a person has no statistically significant effect on whether one is able to make an appointment over the phone to inquire about a rental or sales housing unit. Logit regression results suggest that there are only minor differences among racial groups in their ability to make an appointment over the phone to inquire about a rental/sales housing unit, varying slightly around a 97 percent predicted probability. As noted before, however, none of these differences were statistically significant, and, as previously discussed, it is crucial that further research be conducted in this area to more accurately determine whether linguistic profiling affects levels of housing discrimination and to what extent.

Appendix

Exhibit A-1

Logistical Regression Results

	Estimate	Odds Ratio	Estimate	95% Wald Confidence Intervals
Intercept	3.7571 (0.001)	—	—	—
African American	- 0.3090 (0.1481)	0.734		0.483–1.116
Hispanic	0.3278 (0.2564)	1.388		0.788–2.444
Female	- 0.1175 (0.5549)	0.889		0.602–1.313
Middle age	0.00406 (0.9835)	1.004		0.683–1.475

Dependent Variable:

Was the tester able to make an appointment?

CAPPOINT—able to make an appointment

1=yes, 2=no

CDISPTN—**outcome** of phone call for appointment. Bolded numbers indicate cases in which the tester's voice could have been heard and are cases that were considered in the sample.

Appointment Call Completed:

Appointment made	05
Appointment not made	
Told no appointment necessary to visit	21
Agent will not make appointment	22
No other housing available	23
Other, no appointment (specify)	24
Tester is directed to terminate by the test coordinator	09

Appointment Call Not Completed:

Left message on voicemail, answering machine, or pager	11
Wrong number	12
No answer	13
Telephone number disconnected	14
Told to call back	15
Other, appointment call not completed (specify)	16

Independent Variables:

ARACE1—race of tester

AGENDR1—gender of tester

AAGE1—age of tester

CDATE_D—date of call (day)
CDATE_M—date of call (month)
CDATE_Y—date of call (year)
CTIME_AM—time of call (am/pm)
CTIME_H—time of call (hour)
CTIME_M—time of call (minute)

All of the above C_ variables were combined to create a variable FIRST to determine which tester called first. It was ultimately determined that this variable had no impact on outcome and was dropped from the model.

Author

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Notes

1. In cleaning the APPTCALL data set from Housing Discrimination Study 2000 Phase I, cases were dropped if CAPPOINT=0 (3,449 cases) and/or CDISPTN=21 (131 cases).
2. Recoded cases that had CDISPTN=21 and CAPPOINT=2 to CAPPOINT=1 (101 cases).

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