Cybersegregation in Boston and Dallas: Is Neil a More Desirable Tenant than Tyrone or Jorge?

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Introduction

While levels of racial segregation and discrimination have ameliorated somewhat in recent years they remain central dynamics shaping opportunities in housing markets and the uneven development of metropolitan areas generally. Racial and ethnic minorities still confront unlawful discrimination approximately one out of every five times they inquire about the availability of homes to purchase or rent (Turner et al. 2002). A wealth of research has documented severe social costs for those who are victimized by these practices, their communities, and entire metropolitan areas (Massey and Denton 1993; Cashin 2004; Carr and Kutty 2008; Hartman and Squires 2010).

But changes in the structure of the housing industry, particularly the way households search for housing, indicate that the nation's current fair housing research and enforcement activities may be missing an important "piece of the action" when it comes to the practice of housing discrimination. About 50 to 70 percent of all renters now use the internet to search for homes (Fred M. Magid Associates 2003; Trosien 2003; Wagner 2008). According to a study by the National Association of Realtors, 77 percent of home buyers used the internet to search for a home in 2005, up from just 2 percent in 1995 (National Association of Realtors 2006).

Housing in this growing segment of the market, however, has not been scrutinized by housing researchers and fair housing enforcement groups as carefully as housing advertised in the printed media and marketed through other channels. No doubt, in recent years, fair housing advocates have brought significant attention to discrimination in the electronic segment of the housing market, specifically in terms of the content of the electronic advertisements. At least one lawsuit (Chicago Lawyer's Committee for Civil Rights under Law, Inc, v. Craigslist, U.S. District Court, Northern District Illinois, Eastern Division 2006) and nine Department of Housing and Urban Development ("HUD") administrative complaints, out of approximately 2500, (Greene 2006) have recently been filed charging Craigslist and other web sites with violating the federal Fair Housing Act due to the discriminatory content of selected ads. Among the comments that have appeared in these ads are the following: "Not racist, but white only;" and "Applicants must be gay, white or light-skinned Hispanic males" (Filosa 2006; Hughlett 2006).

But what has largely been overlooked by researchers and fair housing advocates, alike, is the discrimination that may exist in the responses of housing providers to home seekers in the electronic market. To our knowledge, only a handful of studies exist examining the electronic housing market (Ahmed et al. 2008, 2010; Ahmed and Hammarstedt 2008; Berry and Hogan 2008; Bosch et al. 2010; Carpusor and Loges 2006; Tomlin et al. 2010) with only one of them being conducted in the U.S. (Carpusor and Loges 2006). Berry and Hogan (2008) focus on discrimination in the electronic rental housing market in Toronto, a racial and ethnic context similar to metropolitan areas in the U.S.[1] They find that those with Asian, African-American, and Arab-sounding names are treated less favorably than whites. Carpusor and Loges (2006) also find differences in the treatment of Arab and blacks, relative to whites in Los Angeles, California. Tomlin et al. (2010) find differences in the treatment that blacks and whites receive based on the level of positive or negative information included in the inquiries. There are limitations, however, with these studies. All but one focus on one metropolitan area. (Tomlin et al. (2010) examines 35 communities.) More problematic is the fact that Hispanics are ignored in all of the studies. Given that Hispanics now constitute the largest racial or ethnic minority group in the U.S. and that unfavorable treatment toward Hispanics, relative to whites, remained at the same high levels in the rental market between 1990 and 2000 even exceeding that of blacks relative to whites in 2000 (Turner et al. 2002), broadening the focus to include Hispanics is particularly important. A critical flaw in the study by Carpusor and Loges (2006) is the fact that their white, Arab, and African-American testers approached different sets of housing providers, so it could not be definitively determined if the racial and ethnic differences in treatment that they found were reflective of discriminatory treatment, the fact that the unit was simply unavailable, or other differences.

This paper seeks to build on the findings of these studies and attempts to fill the void that exists in our knowledge about the treatment of home seekers by housing providers advertising in the electronic market in the U.S. The data for this study come from housing audits that were conducted in 2009 using electronic advertisements made over the popular internet site, Craigslist. Identical inquiries were made by males with white-, black-, and Hispanic-sounding names in response to a random sample of rental-

[1] We do not discuss the other studies further because they are focused on Sweden and Spain, and their results are not relevant to the racial and ethnic context being explored in the present study.

unit advertisements in the Boston and Dallas metropolitan areas, communities with characteristics common to many metropolitan areas in the U.S but distinct enough to render some variation between the two areas. The specific objectives of this paper are to document the extent to which disparities exist in Boston and Dallas among those with white-, black-, and Hispanic-sounding names in access to housing via the internet (1) at the tester-level of analysis by focusing on the prevalence of access to rental housing by tester race and ethnicity; (2) in a multivariate analysis with the inclusion of controls for variation that exists across testers and the audits; and (3) at the audit-level of analysis, comparing the treatment of minorities to whites specifically within each audit.

Background and Significance

U.S. metropolitan areas continue to be highly segregated more than 40 years after the passage of the Fair Housing Act. While declining somewhat in recent years, Black/white segregation remains particularly high, and Hispanic/white and Asian/white segregation have actually increased slightly (Iceland et al. 2002). Discrimination in the housing market remains one of the major causes of the persistence of racial residential segregation (Massey and Denton 1993; Massey 2001; Squires 1997; Turner et al. 2002; Yinger 1995). However, in recent years, studies of the causes of residential segregation have perhaps over-stated the role of individual-level tastes, preferences, and behaviors, and the roles of demographic and socioeconomic factors directing attention away from critical structural-level factors (e.g., Bobo and Zubrinsky 1996; Charles 2000, 2001; Clark 1991, 1992, 2002; Crowder and South 2008; Ellen 2000; Farley et al. 1994; Harris 1999, 2001; Iceland and Wilkes 2006; Iceland et al. 2004; Krysan 2002a,b; Rosenbaum and Friedman 2007). In large part the overemphasis on such non-structural factors stems from the fact that data for such studies are much more readily available and cheaper to use.

Unfortunately, there are consequences to the limited research that explicitly explores housing discrimination or discrimination in other social institutions in American society. Results of public opinion polls continually reflect the individualistic bias emphasized by such research and perpetuate misunderstandings of racial inequality, particularly by whites (Pager 2007; Schuman et al. 1997; Tuch

and Martin 1997). When asked why blacks tend to lag behind whites in terms of their economic well being and social status, whites cite individual-level factors, such as a lack of motivation or work ethic, as the primary reasons; blacks, on the other hand, attribute their disadvantage to structural-level factors, such as discrimination and access to poorer quality educational opportunities. One poll revealed that half as many whites as blacks perceived discrimination against blacks as a factor in determining racial disparities in wages (32 percent versus 65 percent) and promotion to middle management (36 percent versus 68 percent) (Tuch and Martin 1997). Lower-income and less educated whites are even less informed about these disparities (Morin 2001). What is unfortunate is that if more people were informed about the role of discrimination, more actions might be taken to combat it. Abravanel (2002) found that those who have a more accurate understanding of what the Fair Housing act requires are more likely to support and take action to encourage stronger enforcement of the law. Taken together, these findings indicate a critical need for more research, and dissemination of research findings, on the structural causes of racial inequality that persists in U.S. housing markets and American society generally.

In the housing arena, the most comprehensive efforts to understand the nature of discrimination in housing have been the housing discrimination studies (HDS) conducted by HUD and the Urban Institute in 1977, 1989, and 2000 (Turner et al. 2002). Results from the 2000 HDS reveal that white renters were consistently favored over black and Hispanic renters in 21.6 and 25.7 percent of the tests, respectively. With respect to homebuyers, whites were consistently favored over blacks and Hispanics in 17.0 and 19.7 percent of the tests. A comparison of the 1989 and 2000 HDS reveal declining levels of discrimination during the 1990s; by 17.0 percentage points for black homeowners and 4.8 percentage points for black renters (Ross and Turner 2005). Among Hispanics the drop was 7.1 percentage points for homebuyers but there was no significant change for renters.

Researchers and fair housing advocates claim that the HDS has understated the extent of discrimination in the housing market (Bradford 2003). Examining levels of segregation over time indirectly reveals the overly optimistic picture suggested by the HDS results. Despite the declines in discrimination in the HDS, between 1989 and 2000, segregation between blacks and whites between 1990 and 2000 dropped only by 3.8 percentage points (from 68.8 to 65.0). For Hispanics, segregation

actually increased by .9 percentage points from 50.6 to 51.5 (Lewis Mumford Center 2001). Limitations of the HDS methodology likely contribute to the underestimates of current levels of discrimination (Bradford 2003). No audit test was included in the analysis unless both testers were able to meet with the housing provider. So if one tester was unable to get an appointment, due to linguistic profiling or other factors, that test was not included in the analysis. HDS researchers also did not examine what happens after the initial visit. Nothing was learned about what might have occurred during a follow-up contact, or after an offer was made to buy or rent a home. Efforts to secure a mortgage loan or home insurance policy were not explored. Thus, much discrimination occurs in the housing market that was not tapped by this study. Despite a potential underestimation of the prevalence of discrimination, results from the HDS study demonstrated one important link between discrimination and residential segregation. Between 1989 and 2000, the steering of black homebuyers increased by 11 percentage points (Galster and Godfrey 2005; Ross and Turner 2005).

Recent research on "linguistic profiling" reveals that discrimination can and does occur before homeseekers even meet with a sales or rental agent (Massey and Lundy 2001; Fischer and Massey 2004). That is, housing providers often discriminate just on the basis of the sound of a person's voice over the phone. But these two studies are somewhat limited in that they only focus on Philadelphia and do not explore discrimination against Hispanics who now constitute a larger share of the nation's population than blacks and one of the fastest growing non-white groups in the U.S.

Certainly the missed discrimination that occurs before the initial visit to the agent or the home needs more scrutiny. But as Massey (2005:148) points out, "racial discrimination is a moving target." Thus, declines in discrimination revealed in the comparison of results from the 1989 and 2000 HDS could in fact be valid but do not necessarily mean that housing discrimination has been reduced. Instead, it could be the case that the nature of discrimination has changed and traditional audit studies like the HDS no longer capture the most prevalent forms of discrimination taking place in the 21st century. Roscigno and colleagues (2009) find some evidence for this in Ohio. In their analysis of verified cases of racial discrimination in housing, they find that discrimination taking place in existing established housing arrangements (non-exclusionary discrimination) is more prevalent in recent years than exclusion from

particular housing units (exclusionary discrimination). In addition, the range of practices that systematically excludes people from housing are "too varied" to necessarily be captured by a single audit study (Roscigno et al. 2009).

No doubt, the HDS and other existing audit studies provide powerful evidence of systemic discrimination in today's housing market (Pager and Shepherd 2008). And fair housing enforcement efforts have met with some success in recent years. Private, non-profit fair housing groups alone have generated more than $275 million in relief for victims between 1990 and 2003 (National Fair Housing Alliance 2009). But an emerging force in the nation's housing market which has not been scrutinized closely is the internet. As noted above, more than half of those seeking rental housing are now using the internet in their search and more than three-quarters of homebuyers are using the internet. Moreover, much of the search process that takes place on the internet involves exchanges of information between home seekers and home providers before an in-person visit, often without the benefit of even a telephone call. Thus, discrimination that may be taking place within this arena of the housing market has surely been missed by studies like the HDS. Given the changing nature of the housing market, it is important to assess the prevalence of discrimination that may be occurring in cyberspace, simply on the basis of the name that may be appearing in selected requests for housing, to not only further our understanding of the causes of residential segregation but also to promote equal access to housing opportunities for all racial/ethnic minority groups through enforcement of fair housing legislation, consumer education, and other means.

Research on employment practices has uncovered systematic patterns of name-based discrimination within the labor market (Bertrand and Mullainathan 2004). When asked, "Are Emily and Greg More Employable than Lakisha and Jamal?" employers in Boston and Chicago answered affirmatively. When resumes were mailed to employers in those two cities, applicants with white sounding names were 50 percent more likely to be invited for interviews even though applicants with black sounding names were assigned slightly better employment records (Bertrand and Mullainathan 2004). A similar effect has been documented in education. Figlio (2005) found that at least 15 percent of the black-white test score gap in a large Florida school district is due to differences in the "blackness" of the names given.

Whether the same phenomenon exists in the housing market is the primary objective of this study. Specifically, this study seeks to contribute to the literature in at least two important ways. First, the extent to which name-based discrimination exists in the housing market will be documented, thereby systematically investigating a form of discrimination that has been virtually unexplored in the current, limited literature on housing discrimination. Second, an explicit focus on the discrimination potentially experienced by Hispanics in the electronic housing market will be undertaken, with the intent of broadening our knowledge about this growing yet under-researched group.

If discrimination exists in the electronic housing market, it is expected that relative to whites, black and Hispanic home seekers will be more likely to experience unfavorable treatment in their search for housing. It is hypothesized that whites will be more likely than blacks and Hispanics to receive an e-mail response or will receive more responses to their inquiries about a particular housing unit, be told a unit is available, receive an invitation to inspect a unit, and be told to contact the housing provider by phone.

Because minority economic and social well-being as well as their basic physical and mental health is significantly affected by residential segregation (Kawachi and Kennedy 2002; Kington and Nickens 2000; Massey et al. 1987), it is important to better understand how discrimination operates within today's housing market. In addition, for purposes of most effectively enforcing the Fair Housing Act, it is important that the contours of discrimination that exist within today's housing market, including the growing electronic market, be clearly identified and understood.

Data and Methods

Data. Data for this study come from a primary data collection initiative conducted in Boston and Dallas over a 16-week period between January and early May of 2009. During that period, a systematic random sample of housing providers advertising rental housing units on Craigslist in each of these two metropolitan areas was selected, and e-mail inquiries about the advertised unit from equally matched prospective renters with white-, black-, and Hispanic-sounding names were sent.[2] Audits or

[2] Given that a tripartite audit is conducted, we calculate the sample size for each metropolitan area based on a formula given by Tortora (1978). In Boston and Dallas, we employed a sampling design that allowed us to collect data for a minimum of 724 audits.

correspondence tests were conducted during the business week (i.e., Monday through Friday), but because of staffing issues, somewhat more audits were conducted on Wednesdays as opposed to the other four days of the week. In total, 775 audits were conducted each in Boston and Dallas. After filtering out audits that were disqualified (i.e., due to data collection errors or detections on the part of the housing providers (discussed below)) or were unable to be geocoded, we are left with an analytical sample of 739 audits in Boston and 726 in Dallas.

Several factors informed our choice of Boston and Dallas as the sites for our study. First, these metropolitan areas fall in very different regions of the country and, therefore, have different racial and ethnic compositions and histories. According to Census 2000, the Boston metropolitan area is 80 percent white, 7.3 percent black, and 5.9 percent Hispanic. In contrast, the Dallas metropolitan area is comprised of lower shares of whites (59.3 percent) and greater shares of minorities (13.6 percent black and 21.5 percent Hispanic). As a traditional Northeastern city and a predominantly white one, Boston has had a long history in dealing with racism and residential segregation (Bluestone and Stevenson 2000). Second, both housing markets remain moderately-to-highly segregated, implying the persistence of discriminatory practices on the part of home providers. In 2000, 63.9 and 56.7 percent of black renters would have had to move to be evenly distributed with white renters in Boston and Dallas, respectively; 56.9 and 55.8 percent of Hispanics would have had to move in Boston and Dallas, respectively, to be evenly distributed with whites (Friedman et al. 2010).

Finally, both areas are comprised of highly educated populations with relatively high levels of employment in professional, management, and related occupations, increasing the probability that residents have computers and use the internet to search for housing. According to the 2002 American Community Survey, the cities of Boston and Dallas rank 6th and 25th out of 70 cities with 250,000 population or more in terms of the percentage of the population aged 25 and over with graduate and professional degrees (U.S. Bureau of the Census 2004). Data from Census 2000 reveal that the Boston and Dallas metropolitan areas rank 13th and 44th, respectively, in the percent of their civilian populations employed in the professional, management, and related occupations aggregate category (U.S. Bureau of the Census 2002). Taken together, the data on these two areas reveal that while there are some

important differences between these two communities, together they share characteristics common to many metropolitan areas in the U.S. In fact, a combination of their similarities and differences make them appropriate complements for this analysis.

The rental housing market is the focus of this study because there are fewer intermediaries in the rental market (i.e., the renter and the property owner or rental agent are the primary parties interacting) than in the sales market (i.e., parties involve the buyer, seller, real estate agent, insurance agent, mortgage lender). As such, more of the transaction for rental housing can be conveyed via e-mail than is the case for a home purchase. Thus, name discrimination is likely to be more easily detectable and cleanly estimated in the rental market.

Why Craiglist? Craigslist is an ideal source of rental ads primarily because the first contact between housing provider and prospective renter can occur via e-mail. Although the ads on Craigslist often provide a phone number, they always provide an e-mail address, encouraging home seekers to contact the housing provider directly via e-mail. Other electronic search engines, such as those associated with the real estate sections of the on-line versions of the local newspapers in these areas, do not always insure direct e-mail contact between the housing provider and prospective renter. When the user clicks on the links to such search engines, they are required to fill in information about themselves, including both their e-mail address and phone number, which are then directly submitted to the housing provider. In these cases, it is unclear whether correspondence by the housing provider will be conducted via e-mail or by phone. It is up to the housing provider. In addition, such providers have more information making it more difficult to determine the extent to which the name itself might account for any difference in treatment. Another reason why Craigslist is an ideal source is because its format is similar in these two metropolitan areas. Such similarity eliminates the possibility that the source of the ads itself could bias the findings. A final reason why Craigslist was chosen for this informal test is because of the geographic information often provided in the listings. Most ads list the cross-streets where the housing is found allowing for a geocoding of these data.

The white and black names that were used in the audit in responses to the electronic ads for rental housing come from the name frequency data used by Bertrand and Mullainathan (2004) in their job

market study. Two sets of these names were used in audits to decrease the chances that housing providers might detect that audits were underway. For whites, the names used were Neil Baker and Matthew O'Brien[3], and for blacks the names were Tyrone Jackson and Tremayne Robinson, names that were selected in the Boston and Chicago employment study due to their high racial/ethnic identification. For Hispanics, we used the names Jorge Rodriguez and Pedro Gonzales because of they are easily recognizable as "Hispanic" and therefore have high face validity.

This study is focused on males for two reasons. For each ad, three inquiries were e-mailed. If females were included, the number of contacts would have had to be increased to six inquiries per ad. With so many inquiries, we were concerned that the home provider would be more likely to become aware that the inquiries are part of an audit. This is particularly the case because the inquiries are in writing and lend themselves to being much more easily compared. Focusing on male names is also appropriate for detecting discrimination solely on the basis of race and ethnicity. If housing providers deny access to persons with female-sounding names, it is unclear whether they are denied on the basis of their race and ethnicity, gender, or the home providers' perceptions about their family types.[4]

Table 1 shows the e-mail messages that were sent by the auditors in response to the ads randomly selected from the Boston and Dallas Craigslist websites. The wording is varied in the six e-mails but convey the same message. We found that in our initial audits that this type of variation in the wording of the e-mail was necessary because it reduced detection of the audits by housing providers.[5] We conducted a one-time randomization of the names to the e-mails. Logistically, it was easiest for our data

[3] We originally used the name Matthew McCarthy, but in Boston, we learned that 5 of the 6 agents working at Riverfront Realty had the last name McCarthy. Because we did not want other housing providers to make a link between our tester and the rental agents, we changed Matthew's last name to O'Brien.

[4] Massey and Lundy (2001) find that black female home seekers, and in particular, poor black females, were discriminated against the most by housing providers, relative to white females and black and white males. It could be the case that housing providers associate black females more with single-parent families than they do for white females and for all males, thereby making it hard to know if discrimination against females is due to their gender or family status.

[5] We had previously used another set of e-mails, but we had to revise the messages because a few housing providers in the Boston area suspected that they were being tested. In a handful of occasions, our audits, which employed the original e-mail messages, were detected by housing providers in Boston. In one instance, the housing provider actually inquired as to whether we were conducting a test. In addition to being detected, some housing providers treated auditors as if they were roommates. Beginning with audit 226, we changed the e-mail messages to those that appear in Table 1 in order to increase the variety of content. We had no subsequent problems in our audits with the revised e-mails. We control for this methodological change in our multivariate analysis below.

collectors to keep one e-mail message and account with the same tester. We randomized the testers to having either a Yahoo or Hotmail account each in Boston and in Dallas. For each ad, however, the order in which the testers sent their e-mails was randomized.[6] This randomization in the ordering of the contacts insured that if any difference in treatment by the auditor was indicated, it cannot be explained away by the fact that the unit is no longer available.

Audit studies have been criticized. One key issue is that there may be systematic differences between testers that are observable to the respondent but which are not observable to the researchers (Heckman and Siegelman 1992). But this is a far greater potential problem in labor market than in housing market studies. Employers often require and seek more information on employees with whom they may have a long-term business relationship than housing providers need from homeseekers. There may be characteristics of potential employees that employers, but not researchers, are aware of. Housing providers, however, are generally involved in just one transaction with the homeseeker, and consequently, engage in a more limited screening.

Systematic differences that may be observed by respondents but not researchers are also more critical where testers and respondents directly meet. For example, in an audit of white/Hispanic labor market differences, all the Hispanic testers had facial hair and strong accents, but none of the white testers had either characteristic. The different outcomes may well have been due to employer preferences for employees without facial hair and without any accent rather than ethnic discrimination (Heckman and Siegelman 1992). Since our testers had no direct contact with housing providers, such problems are substantially reduced if not eliminated in our methodology.

Another potential problem is that the definition of "unfavorable treatment" and inferences that can be drawn from auditor reports may be ambiguous (Heckman and Siegelman 1992). However, a key strength of data collected in our correspondence test is that we have the word-for-word responses given by housing providers, eliminating the error that has occurred in previous audit studies from testers having to record their treatment after the audit was completed. Despite the criticisms lodged against the audit

[6] At first the white tester always sent his e-mail last and the order in which the black and Hispanic testers sent theirs was randomized, but about one-third of the way through the study, the order in which all of the testers send their e-mails was randomized. We control for tester order in the multivariate analysis below.

methodology, evidence from such studies has been consistently used in U.S. courts as evidence of housing discrimination (see Metcalf 1988, Fix and Struyk 1993, Fix and Turner 1999).

Variables. The key dependent variables in our analysis are derived from the outcomes generated by the e-mail inquiries responding to random samples of ads for rental housing from the Boston and Dallas Craigslist websites. Specifically, we recorded whether each auditor received a response or more than one response and if they were told the advertised units is available, were invited to inspect the unit, were advised to contact the housing provider, and were informed of additional units that are available.

The key independent variables in the analysis are indicator variables for the race and ethnicity of the tester, with those having white-sounding names forming the reference group. The other independent variables relate to the housing provider and the process by which the data were collected.[7] With respect to the housing provider, we attempted to control for the type of housing provider who advertised the unit. If a company name was identified either in the ad itself or the e-mail address of the provider, we considered the housing provider to be a company; if no company name was listed, we considered the provider to be an individual owner. We expect that discrimination might be greater on the part of "mom and pop" owners than by larger real estate establishments. Regarding the process by which the data are collected, variables for the following characteristics are included: 1) the month when the advertisement is listed; 2) the day of the week when the advertisement is listed; 3) the order in which the testers made their e-mail contacts; 4) whether the tester used a Yahoo or Hotmail e-mail account; and 5) whether the e-mail message sent was the original or revised version.

Analytical Plan. To examine the extent to which disparities exist among those with white, black, and Hispanic-sounding names in access to housing via the internet, descriptive analyses are conducted examining the percentage of testers with white-, black-, and Hispanic-sounding names who received a response or more than one response, and were told the advertised unit is available, were invited to inspect the unit, were advised to contact the housing provider, and were informed of additional units that are available. Like Pager and colleagues (2009), we have three testers sending e-mails to the same

[7] In our initial analyses, we had included other variables measuring aspects of the advertised unit (i.e., the type of structure in which the unit is located (building with 3 or less units, duplex, etc.), the number of bedrooms in the unit, and whether a broker's fee was required), but none of the coefficients of these variables proved to be significant.

housing provider or a “matched triplet” and therefore, cannot used standard t-tests to assess statistical significance of comparisons of these percentages. Following Pager and colleagues (2009), we fit hierarchical logistic regression models with a random effect for each housing provider. Our six dependent variables – received a response, more than one response, were told the unit is available, were invited to inspect the unit, were told to contact the provider, and were informed of additional units that are available – are treated as binary variables, with scores of 1 for positive responses and 0 otherwise. To assess whether the percentages on these six dependent variables are significantly different between testers with white-sounding names and those with black- or Hispanic-sounding names, we fit hierarchical logistic regression models with dummy variables for whether the tester had a black- or Hispanic-sounding name (with those with a white-sounding name forming the reference group). The housing provider random effects induce a correlation among observations from the same housing providers and reduce standard errors, making the statistical inference more accurate.

Although the audit methodology is experimental in nature, there are many factors that need to be controlled for from audit-to-audit in order to more precisely estimate the effects of race and ethnicity on access to rental units. Primary among these are the order in which the testers sent their e-mails, the day and month in which the audit was performed, and whether the housing provider is from a large real-estate establishment or an individual renting his or her own property. To control for such factors and make more precise how the race and ethnicity of testers affects access to rental units within the electronic housing market, we specify additional hierarchical logistic regression models controlling for these additional variables.

One of the limitations with the tester-level analysis, however, is that it does not specify how minorities compare in their access to housing to whites within the same audit. For example, consider the dependent variable, being told to contact the provider. The percentages of testers with white-, black-, and Hispanic-sounding names who were told to contact the provider provide us with the prevalence of this phenomenon for each tester. However, we do not know whether all of the testers in the audit were given the same response, whether white testers were the only ones given the responses, whether black and Hispanic testers were the only ones given responses, or the other combinations of response

patterns that could have emerged. To assess within-audit level tester treatment for our six dependent variables, we calculate the percent of audits in which: 1) all testers received a response; 2) none of the testers did; 3) only white testers received a response; 4) only black testers received a response; and 5) only Hispanic testers received a response. The chi-square test of independence is used for each of the six dependent variables to assess whether the response patterns of housing providers are independent of the race and ethnicity of the testers.

Results

Table 2 presents our first set of descriptive analyses addressing the question of whether Neil is a more desirable tenant than Tyrone or Jorge. The answer appears to be yes. Table 2 reports the percent of testers with white-, black-, and Hispanic sounding names that received a response from the housing provider, more than one response, were told the unit is available, were invited to inspect the unit, were told to contact the provider, and were informed of additional housing units. Row 1 indicates that the absolute levels of response rates for white, black, and Hispanic testers were quite high in both Boston and Dallas, with nearly three-quarters of testers receiving responses in Boston and even more than that in Dallas. In Dallas, despite such high levels of responses, testers with black- and Hispanic-sounding names were significantly less likely to receive a response than testers with white-sounding names. The data in row 2 indicate that there were fewer testers receiving more than one response than initial responses from housing providers in Boston and Dallas. In Boston, testers with black- and Hispanic-sounding names were significantly less likely to receive more than one response from housing providers than testers with white-sounding names.

Moving beyond the data characterizing the number of responses to testers, row 3 evaluates the extent to which testers were told that the advertised unit is available. Interestingly, as in the case of response rates, the large majority of testers were told that the unit is available. In Boston, at least two-thirds of testers were informed of the availability of the advertised unit. In Dallas, even greater percentages of testers were told about the availability of the unit. However, significant racial and ethnic

disparities emerge, with testers having black- and Hispanic-sounding names less likely than testers with white-sounding names being told the unit is available.

The largest racial and ethnic disparities in tester access to rental housing emerge in row 4 when examining the percentage of testers being invited to inspect the advertised unit. In both Boston and Dallas, black and Hispanic testers are significantly less likely than white testers to be invited to inspect the unit. The magnitude of the difference between white and black testers is just over 10 percentage points in both Boston and Dallas. The size of the difference in these percentages between white and Hispanic testers is just over 3 percentage points in Boston and 6 percentage points in Dallas.

The other substantively large percentage difference that emerges in our descriptive analysis is between white and black testers in the percent being told to contact the provider. Just fewer than 49 percent of white testers in Boston are told to contact the provider, compared to only 41.4 percent of black testers. The difference in access to the housing provider is not significant between white and Hispanic testers nor is it statistically significant between white and minority testers in Dallas.

The final variable we evaluate in Table 2 is in row 6, the percentage of testers being informed of additional housing units. We collected data on this variable to gauge whether racial and ethnic steering takes place in the rental housing market. If minority (or white) testers are informed of additional units in predominantly minority (or white) neighborhoods, this would be evidence suggesting that such steering may be operating within the rental market. Row 6 of Table 2 shows that very few testers were informed of additional units. Because of the extremely small prevalence of testers being informed about additional units, we drop the focus on this variable in subsequent analyses.

Taken together, the descriptive results here yield a number of interesting findings. First and foremost, it is clear that the electronic market yields high levels of access to the electronic housing market for all testers, particularly in terms of testers getting initial responses from housing providers and being told the unit is available. Nevertheless, discrimination exists. It appears that the most disparate treatment experienced by minorities, relative to whites, by housing providers in both metropolitan areas occurs when examining whether testers were invited to inspect the unit. Third, it is noteworthy that the absolute levels of feedback from housing providers to all testers is greatest when it involves the least

amount of communication (i.e., receive an e-mail response) with providers and decline as the level of contact with the provider gets potentially greater (i.e., invited to inspect the unit, told to contact the provider). Fourth, with the exception of the outcome, "being invited to inspect the unit," the nature of the racial and ethnic disparities in access to housing seems to differ between Boston and Dallas. In Dallas, minority testers are treated differently than whites on outcomes that involve potentially less communication with housing providers (i.e., receive a response, told the unit is available) than is the case in Boston (i.e., receive more than one response, told to contact the housing provider).

The results in Table 2, of course, are unadjusted percentages. In order to more precisely estimate the effect of race and ethnicity on tester access to the rental housing market, the order in which testers made their e-mails needs to be accounted for as well as variation in the e-mail accounts used by testers. In addition, audit-to-audit variation in the type of housing provider and process by which the data were collected need to be considered. Table 3 reports tester-level characteristics by the race and ethnicity of testers in Boston and Dallas. Consistent with the discussion of the methodology in the previous section, this table reveals that tester order varies by the race and ethnicity of the tester. In Boston and Dallas, just over 70 percent of black and Hispanic testers sent their e-mail inquiries to housing providers either first or second, compared to about 54 percent of whites. It is likely that such variation could have an effect on the way the race and ethnicity of the tester relates to access to housing. The same is probably not true of the e-mail account that testers used. The results in Table 3 reveal that the magnitude of differences in the percentages using Yahoo accounts is small by the race and ethnicity of the testers, particularly compared to the results regarding tester order.

Table 4 reports the audit-level characteristics in Boston and Dallas. With respect to the day of the week when the audit was conducted, it is clear that Wednesday was the modal day in Boston and Dallas, consistent with the methodology identified above to conduct the study. The other days of the week were about the same in terms of the percentage of audits being conducted on those days. As far as the month of the audit, Table 4 shows that audits were conducted evenly between January and April in Boston and Dallas. Considerably fewer audits were done in May because that was the end of the 16-week period during which the data were collected. As mentioned in the data and methods section, the e-

mails sent by the testers had to be modified because of detection by housing providers. Table 4 reports that about 29 percent of the audits each in Boston and Dallas used the old versions of the e-mails. The most interesting finding from the table is the difference in audits between Boston and Dallas in which the housing provider is characterized as a company. In Boston 87.3 percent of the housing providers were associated with companies, but just under half as many (49.6 percent) were associated with companies in Dallas. Perhaps this could explain the differences in the nature of the racial and ethnic disparities in access to rental housing uncovered in Table 2. Companies have been found to be less likely than "mom and pop" housing providers to engage in overt discrimination (Fischer and Massey 2004).

What is the impact of tester race and ethnicity once we control for the variation in tester- and audit-level characteristics? Table 5 reports the results from the hierarchical logistic regression models of access to rental housing in Boston and Dallas, excluding the variable, being informed about additional housing units. The results here are consistent with those from the descriptive analysis in Table 2. In Boston, controlling for other relevant tester- and audit-level factors, testers with black-sounding names are significantly less likely than testers with white-sounding names to receive a response from housing providers, get more than one response, be invited to inspect the unit, and be told to contact the provider. Hispanic testers are significantly less likely than white testers to receive more than one response and be invited to inspect the unit by housing providers. In Dallas, testers with black- and Hispanic-sounding names are significantly less likely than those with white-sounding names to receive a response from housing providers, be told the unit is available, and be invited to inspect the unit, controlling for other relevant factors.

The results in Table 5 provide slightly stronger evidence of name-based discrimination than those in table 2 for two reasons. First, the effects of tester race and ethnicity either remain the same or become slightly stronger in magnitude, controlling for other tester- and audit-level characteristics. For example, in Dallas, in table 2, the difference in being invited to inspect the unit between white and black testers is 10.2 percentage points and between white and Hispanic testers is 6.4 percentage points; the difference in the predicted probabilities derived from Table 5 between whites and blacks is 11.4 percentage points and between white and Hispanic testers is 7.3 percentage points (not shown). Second, in Boston, for the

model of whether a response is provided, a significant difference emerges between testers with a black- and white-sounding when controlling for tester- and audit-level characteristics. Black testers are .83 times as likely as white testers to get a response from housing providers, controlling for other relevant factors.

What impact do the tester- and audit-level variables have on tester access to rental housing in Boston and Dallas? Tester order appears to be one of the most important variables in influencing access to rental housing. In Boston, testers who send their e-mails third, or last in our correspondence test, are significantly less likely than those who send them first to receive a response, be told the unit is available, be invited to inspect the unit, and be told to contact the provider. Those who send their e-mails second are significantly less likely than those who send them first to receive a response. In Dallas, testers who send their e-mails second are significantly less likely than those who send them first to receive a response and more than one response. Those who send their e-mails third are significantly less likely than those who send them first to be told the unit is available.

The other set of control variables that has some impact on access to rental housing is the day of the week that the audit took place, although it is more of the case in Boston than in Dallas. For example, testers who sent their inquiries on Tuesday and Thursday are significantly less likely to get a response than those who sent their inquiries on Monday. Those who sent their e-mail messages on Tuesday, Thursday, and Friday are significantly less likely than those who sent their e-mails on Monday to be told that the unit is available. In Dallas, the only outcome for which the day-of-the-week coefficients are significant is being told to contact the provider. Testers who send their e-mails on Tuesday, Wednesday, Thursday, or Friday are significantly more likely than those who send their e-mails on Monday to be told to contact the provider. The coefficients of the other control variables -- month of the audit, whether the tester used a Yahoo account, and whether the provider is a company -- are not significantly related to tester access to rental housing. Taken together, it is evident that tester order and day of the week have modest effects on access to rental housing, but it is important to note that the effects of race and ethnicity persist in shaping access to such housing.

Thus far, the analysis has focused on the data at the tester-level of analysis. We now turn to some descriptive statistics at the audit level. As mentioned above, if we just focus on racial and ethnic differences in the prevalence of tester outcomes, we cannot precisely characterize how minorities compare in their access to housing to whites within the same audit. Table 6 reports the results of the latter type of analysis at the audit level. More specifically, table 6 shows the percent of audits in which all or no testers received a response on our six outcome measures, only the white tester received a response, only the black tester received a response, and only the Hispanic tester received a response. Several results are noteworthy. First, a large percentage of our testers appear to have been treated equally (columns 1, 2 in Boston; columns 3, 4 in Dallas), but when the outcomes involve potential contact with the provider, the absolute percentage of those being treated equally is lower. For example, in Boston and Dallas, in 73.2 and 77.2 percent of the audits, respectively, all testers either received a response or got no response. However, on the variable, told to contact the provider, in Boston and in Dallas, respectively, 68.6 and 48.1 percent of testers received equivalent treatment (i.e., with all or none of them receiving identical responses).

Second, in both Boston and Dallas, the distribution of audits across all the outcomes gauging access to rental housing differed from that which would occur if in fact race and ethnicity were independent of access. The percentage of audits in which only whites receive a response on all six outcomes exceeds that in which blacks or Hispanics each only receive a response.[8] Thus, by examining how testers fare, relative to their counterparts in the given audit, we find that race and ethnicity is significant on virtually all aspects of access to rental housing, which was not the case in the analyses of data at the tester level.

Third, in both Boston and Dallas, a distinct pattern emerges in the extent to which black and Hispanic testers only receive responses on the dependent variables, as compared to whites. Clearly, audits in which white testers are the only one to receive responses on the dependent variables outnumber the audits in which black and Hispanic testers each are the only ones to receive responses. However, the pattern of treatment of blacks and Hispanics differs depending upon the outcome of interest. When the outcomes involve potential contact with providers (i.e., invited to inspect the unit, told to contact the

[8] The only exception is that in Boston for the outcome, informed of additional housing units, whites are equally likely as blacks and less likely than Hispanics to be informed of additional units.

provider), the percent of audits in which black testers are the only ones receiving responses is lower than the percent of audits in which Hispanic testers are the only ones receiving responses in both metropolitan areas. Indeed, in Boston and Dallas, the greatest disparity in the percent of audits in which blacks are the only ones to receive responses, relative to those in which whites are the only testers to receive responses, exists on the variable, being invited to inspect the unit. In Boston, the percent of audits where blacks are the only ones to be invited to inspect the unit is one third of the percentage where whites are the only testers to be invited to inspect the unit (i.e., 2.4 percent versus 7.8 percent); in Dallas the percent of audits in which blacks were the only ones to receive invitations to inspect the unit is one-fourth the percent of whites (i.e., 1.2 percent versus 5.5 percent). However, when the outcomes involve less potential contact (i.e., receive a response, told the unit is available), the percent of audits in which blacks are the only testers to receive responses is slightly larger than audits in which the Hispanic testers receive responses. Thus, housing providers appear to have a slight preference for blacks over Hispanics on outcomes where less potential contact is involved, but where more potential contact is involved, providers appear to have a slight preference for blacks over Hispanics.

Fourth, as observed in the tester-level analysis, the nature of the racial and ethnic disparities in access to rental housing here in table 6 at the audit-level of analysis appears to differ between Boston and Dallas. In Boston, minority testers are more likely to be treated differently than whites on outcomes that involve potentially more communication with housing providers (i.e., receive more than one response, invited to inspect the unit, told to contact the housing provider). But this is not the case in Dallas where the largest disparity was on the variables receive a response and told the unit is available.[9] In Boston, the percent of audits in which white testers are the only ones being told to contact the provider is more than 2.5 times as large as the percent of audits in which blacks are the only ones being told to contact the provider (i.e., 7.2 percent versus 2.8 percent). In Dallas, however, the percent of audits in which whites are the only testers being told to contact the provider is just 1.8 times as large as the percent of audits in which blacks are the only ones being told to contact the provider. Also noteworthy is that the disparities in the percent of audits in which whites are the only ones to receive

[9] In Dallas, however, significant disparities exist between whites and minorities on the variable, invited to inspect the unit.

responses, relative to those in which Hispanics are the only ones to receive responses, is much greater in Dallas than in Boston. In Dallas, on the outcomes, received a response, told the unit is available, and was invited to inspect the unit, the percent of audits in which whites were the only ones to receive a response was at least 3.2 times as large as the percent where Hispanics were the only ones to get a response.

We also construct a "consistency index" similar to that developed by Turner and colleagues (2002) in the HDS. The consistency index is useful for our analysis because it considers the treatment of the testers within each audit, simultaneously, on all six of the dependent variables. White-favored audits are those in which the white tester is favored on at least one of the six dependent variables and black and Hispanic testers are favored on none. Black-favored audits are those in which the black tester is favored on at least one of the six dependent variables and white and Hispanic testers are favored on none. Hispanic-favored audits are those in which the Hispanic tester is favored on at least one of the six dependent variables and white and black testers are favored on none.

The last row in Table 6 reports the consistency indices. In Boston and Dallas, the percent of audits considered to be white-favored are 14.5 and 14.9 percent, respectively, more than double the percent considered to be black-favored audits (i.e., 6.5 and 6.9 percent, respectively). The results make clear that white-favored audits exceed the percent of black- and Hispanic-favored audits, and that the percent of black-favored audits is the lowest among the three groups. Thus, it appears that race and ethnicity and particular black race significantly structures access to the rental housing market in these metropolitan areas.

Discussion and Conclusions

The primary goal of this study was to assess the treatment of rental home seekers in Boston and Dallas with white-, black-, and Hispanic-sounding names by housing providers advertising on the internet. To fulfill this goal, the analysis centered around three objectives. One was to document the extent to which disparities exist in Boston and Dallas among those with white-, black-, and Hispanic-sounding names in access to housing via the internet at the tester-level of analysis by focusing on the

prevalence of access to rental housing by tester race and ethnicity. The second objective was to examine racial and ethnic differences in tester treatment in a multivariate analysis with the inclusion of controls for variation that exists across testers and the audits. The final objective was to examine racial and ethnic disparities at the audit-level of analysis, comparing the treatment of minorities to whites specifically within the audits themselves.

The main finding cross-cutting all of these analyses is that race and ethnicity continue to shape access to rental housing via the internet in Boston and Dallas. In both metropolitan areas, the treatment of black and Hispanic testers is particularly unfavorable, relative to whites, in being invited to inspect the unit by housing providers. In addition, in Boston, black testers are significantly less likely than white testers to get more than one response from housing providers and be told to contact the provider, controlling for other factors; Hispanic testers are significantly less likely than white testers to receive more than one response. In Dallas, testers with black- and Hispanic-sounding names are significantly less likely than those with white-sounding names to receive a response from housing providers and be told the unit is available, controlling for other relevant factors. When comparing the treatment of the minority testers to whites specifically in the same audit, it is clear that the percent of audits favoring whites is significantly greater than those each favoring blacks and Hispanics.

Our results have a number of important implications for existing research on residential segregation and housing discrimination. First, it is clear that housing discrimination against racial and ethnic minorities is alive and well in the 21st century and that studies that ignore such discrimination will continue to overstate the roles of individual-level tastes, preferences, and behaviors in causing residential segregation. Second, examining Hispanic access to rental housing is extremely important because they are not excluded from discriminatory treatment in the housing market, even though they have been excluded from all other studies examining the electronic housing market. Our results point to some evidence that Hispanic access to rental housing may be somewhat more constrained than that of blacks in outcomes where the housing provider has very little potential contact with the provider (i.e., receiving an e-mail response, being told the unit is available). However, Hispanics seem to be less constrained to access that involves potentially more contact with providers (i.e., being invited to inspect

the unit, told to contact the provider). Third, studies of housing discrimination that ignore the internet are indeed missing "an important piece of the action." Our study makes clear that further study of internet-based housing discrimination against racial and ethnic minorities is warranted based upon the results of this study. We need to know much more about the nature of discrimination in the sales market, in many more metropolitan areas, and against other protected-class groups.

Fourth, and perhaps most important, our study confirms Massey's assertion that racial and ethnic discrimination is a "moving target." Studies that only conduct a one-time audit or correspondence test are much less useful in uncovering racial and ethnic discrimination today than they were years ago. Our study has shown that large majorities of our testers, regardless of race or ethnicity, receive responses from housing providers. No doubt, in Dallas, minority testers are significantly less likely than white testers to receive responses, but the magnitude of these racial/ethnic disparities is quite small. The disparities are larger between the percentages of white and minority testers being invited to inspect the unit. Through such invitations the housing provider is more likely to potentially engage in contact with home seekers. This seems to be where the discriminatory "action" may be occurring. Future studies that can capture not just one-time contact with housing providers but multiple and more engaged contact with providers no doubt will more precisely characterize the "moving target" of housing discrimination.

In addition to having implications for scholarly research, the findings in this study have important policy implications. It is clear that HUD, the Department of Justice (DOJ), and state and local enforcement agencies should expand their investigations of the electronic market. While in recent years much attention has been given to the discriminatory nature of the content of internet housing advertisements, far less attention – if any attention at all – has been given to discriminatory treatment of people searching for housing through the internet. With the significant rise in the shares of people using the internet to search for housing, a shift in the nature of the enforcement activities of HUD, DOJ, and state and local agencies to cyberspace is also critical for effective enforcement of the Fair Housing Act.

Our study is not without limitations. As already discussed above, our study is based upon a one-time correspondence test and as such likely underestimates the level of discrimination that exists in the housing market. Additional limitations are that the study only tests for name-based discrimination in two

metropolitan areas and only for males. With respect to the former, our results reveal some slight differences in racial and ethnic disparities between Boston and Dallas. With the exception of the outcome, "being invited to inspect the unit," in Dallas, minority testers are treated differently than whites on outcomes that involve potentially less communication with housing providers (i.e., receive a response, told the unit is available) than is the case in Boston (i.e., receive more than one response, told to contact the housing provider). Perhaps discrimination in the Boston housing market is more covert than in Dallas, largely stemming from the legacy of racial and ethnic tensions that have existed in the Boston area since the 1960s. In other words, Boston housing providers have "learned" how to not be so obvious in their discriminatory behavior. Dallas housing providers have not had to be so savvy. It is hard to draw such a conclusion, however, with the study only having been conducted in two metropolitan areas.

A final limitation of this analysis is that it is based upon quantitative outcomes of access to housing that might be hiding other, potentially different forms of unfavorable treatment. Our study finds that testers receive high levels of responses from providers and large percentages of testers are told that the housing units they inquire about are available. We wonder the extent to which the quality of the messages is the same. Perhaps the nature of the response might be more encouraging towards the white tester as compared to the minority testers. Such differences would not be captured in the analysis of quantitative outcomes conducted here.

These limitations do not detract from the evidence found in the study that race and ethnicity matter to housing providers that advertise via the internet. These limitations, however, point to a number of suggestions for future research. First, future studies of housing discrimination against racial and ethnic minorities need to be much more creative in their methodologies to capture the "moving target" of discrimination. A mixed methodology employing internet-based correspondence tests and telephone and in-person audits seems to be the most effective strategy. Future studies need to have testers make at least two contacts with housing providers. Second, and as mentioned above, future research needs to examine housing discrimination in other metropolitan areas, against other protected-class groups, and for specific subgroups of blacks and Hispanics (e.g., African immigrants, Mexicans, Dominicans). Third, an evaluation of the actual word-for-word responses of housing providers to testers needs to be

conducted to explore other ways in which housing providers may discriminate against racial and ethnic minorities, relative to whites, in accessing housing. Finally, the role that the neighborhood racial and ethnic composition plays in shaping racial and ethnic disparities in access to housing needs to be explored to make more explicit the link between housing discrimination and residential segregation.

In conclusion, Neil is a more desirable tenant than Tyrone or Jorge. No doubt such unlawful discriminatory practices deny the targeted victims and their families access to safe streets, good jobs, decent schools, health care and many other public and private amenities. Fair housing advocacy remains critical to assure equal access to virtually all valued goods and resources. Given the growing use of electronic resources in the housing market and the discrimination that has been uncovered in this study, the time has come for fair housing advocates, researchers, and policy makers alike to direct their energies to combating discrimination in this important segment of the housing market.

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Table 1. E-mails Sent by White, Black, and Hispanic Prospective Tenants

1. Tremayne Robinson

Subject: Ad on Craigslist

Hi-

I am interested in the Craigslist posting for the [list the place], however, I would like to know… What is the typical electric bill? Do tenants pay for water or does the landlord cover it?

If it's still available, I would like to see it. You can respond to me at this email address. Thank you.

Tremayne Robinson

2. Pedro Gonzales

Subject: Advertisement

Hello, I recently saw your ad on Craigslist for the [list the place] and am interested in knowing more about it. Are utilities paid separately or are they included in the rent?

If the unit is still available, please feel free to email me so I could schedule an appointment to see it.

Thanks-

Pedro Gonzales

3. Neil Baker

Subject: Craigslist ad

Hi, I'm writing about the [list the place] that has been listed on Craigslist.

I have a couple of questions: Is it still available for rent? How soon will it be ready for viewing?
I'm available via email to make an appointment to see the place.

Thanks for your help.

Neil Baker

Table 1. E-mails Sent by White, Black, and Hispanic Prospective Tenants (cont'd)

4. Matthew O'Brien

Subject: Ad

Hi. I'm looking for a place to rent and saw your ad on Craigslist for the [list the place]. I would be interested in seeing it, but had a few questions: Is it still available? How soon will it be ready for viewing?

Could you tell me when would be a good time to come see it? You can reach me at this email address.

Thank you very much.

Matthew O'Brien

5. Tyrone Jackson

Subject: Place for Rent

Hi –

I'm interested in the [list place] that was advertised on Craigslist, and wanted to know: What is the typical electric bill? Do tenants pay for water or does the landlord cover it?

Thank you for your help. I look forward to hearing back from you and seeing the place.

Tyrone Jackson

6. Jorge Rodriguez

Subject: Rental listing

Hello,

I saw your Craigslist ad today for the [list place]. I was wondering whether any utilities are included.

I'd like to see the unit at your earliest convenience. Please contact me and let me know if it is still available.

Thanks,

Jorge Rodriguez

Table 2. Access to Rental Housing by Race and Ethnicity of Testers in Boston and Dallas

	Percent in Boston:			Percent in Dallas:		
Outcome	White (1)	Black (2)	Hispanic (3)	White (4)	Black (5)	Hispanic (6)
1) Response provided	75.4	72.7	74.7	82.0	77.7**	76.7**
2) More than one response provided	12.6	10.8*	9.9**	18.2	16.4	16.9
3) Told unit is available	69.4	66.7	67.9	77.8	74.4*	73.6**
4) Invited to inspect unit	61.6	50.9**	57.8*	72.9	62.7**	66.5**
5) Told to contact provider	48.7	41.4**	46.4	65.4	66.1	63.9
6) Informed of additional housing units	1.2	1.4	1.5	2.2	1.4**	1.7
N		739			726	

** p<.01; *p<.05

Table 3. Tester-Level Characteristics in Boston and Dallas

	Percent in Boston:			Percent in Dallas:		
	White	Black	Hispanic	White	Black	Hispanic
Characteristic	(1)	(2)	(3)	(4)	(5)	(6)
Tester order						
First	26.7	35.9	37.5	26.6	36.6	36.8
Second	27.7	35.9	36.4	28.4	36.1	35.5
Third	45.6	28.3	26.1	45.0	27.3	27.7
Yahoo account (ref. Hotmail account)	52.1	49.0	50.3	47.9	48.2	49.0
N		739			726	

** p<.01; *p<.05

Table 4. Audit-Level Characteristics in Boston and Dallas

	Percent:	
Characteristic	Boston (1)	Dallas (2)
Day of week of audit		
Monday	17.6	17.6
Tuesday	15.4	16.1
Wednesday	32.9	29.8
Thursday	15.6	18.5
Friday	18.5	18.0
Month of audit		
January	23.3	24.0
February	23.3	23.4
March	25.0	25.2
April	25.2	24.2
May	3.3	3.2
E-mail messages (original)	29.2	29.8
Housing provider's name is a company	87.3	49.6
N	739	726

** p<.01; *p<.05

Table 5. Hierarchical Logistic Regression Coefficients of Models of Access to Rental Housing, Boston and Dallas 2009

	Boston					Dallas				
Characteristic	Response Provided (1)	More than One Response (2)	Unit Available (3)	Invited to Inspect Unit (4)	Told to Contact Provider (5)	Response Provided (6)	More than One Response (7)	Unit Available (8)	Invited to Inspect Unit (9)	Told to Contact Provider (10)
Tester race/ethnicity (ref. white)										
Black	-.185*	-.192*	-.145	-.466**	-.331**	-.290**	-.144	-.220**	-.495**	.054
	(.085)	(.081)	(.079)	(.077)	(.071)	(.085)	(.080)	(.079)	(.073)	(.098)
Hispanic	-.090	-.296**	-.095	-.185*	-.126	-.345**	-.106	-.262**	-.324**	-.047
	(.085)	(.084)	(.077)	(.080)	(.071)	(.077)	(.070)	(.074)	(.068)	(.103)
Tester order (ref. 1st)										
2nd tester	-.192**	-.011	-.107	-.062	.012	-.028**	-.129*	-.033	.098	-.079
	(.071)	(.083)	(.065)	(.065)	(.067)	(.083)	(.066)	(.078)	(.071)	(.095)
3rd tester	-.384**	-.157	-.183*	-.169*	-.143*	-.162	-.141	-.191*	-.078	.082
	(.096)	(.095)	(.081)	(.079)	(.071)	(.084)	(.072)	(.081)	(.080)	(.096)
Day of week of audit (ref. Mon.)										
Tuesday	-.715*	-.168	-.730*	-.358	-.256	.297	-175	.127	.098	.579*
	(.351)	(.466)	(.325)	(.312)	(.286)	(.322)	(.346)	(.315)	(.290)	(.239)
Wednesday	-.173	-.015	-.294	-.224	.212	.363	-.173	.201	.148	.363*
	(.215)	(.308)	(.223)	(.180)	(.174)	(.247)	(.259)	(.247)	(.221)	(.178)
Thursday	-1.025**	-.222	-.956**	-.780*	-.175	.183	-.173	-.022	.145	.431*
	(.332)	(.463)	(.333)	(.307)	(.289)	(.300)	(.311)	(.289)	(.268)	(.204)
Friday	-.434	.250	-.478*	-.392	-.191	-.207	-.485	-.413	-.253	.358*
	(.248)	(.342)	(.232)	(.210)	(.205)	(.256)	(.277)	(.250)	(.229)	(.179)
Month of audit (ref. January)										
February	.173	.231	.273	.099	.184	.139	.469	.102	.123	-.263
	(.352)	(.391)	(.310)	(.288)	(.286)	(.334)	(.365)	(.320)	(.306)	(.265)
March	-.368	-.175	-.121	-.333	.375	.556	.859	.296	.132	.050
	(.445)	(.491)	(.425)	(.379)	(.401)	(.433)	(.483)	(.424)	(.397)	(.335)
April	-.530	-.582	-.125	-.226	.100	.623	1.120*	.353	-.093	-.137
	(.437)	(.446)	(.436)	(.375)	(.360)	(.434)	(.458)	(.423)	(.397)	(.327)
May	-.866	-.912	-.478	-.832	.027	.380	.511	.510	.207	.837
	(.676)	(.723)	(.655)	(.540)	(.593)	(.597)	(.622)	(.591)	(.547)	(.561)

Table 5 (cont'd). Hierarchical Logistic Regression Coefficients of Models of Access to Rental Housing, Boston and Dallas 2009

	Boston					Dallas				
Characteristic	Response Provided (1)	More than One Response (2)	Unit Available (3)	Invited to Inspect Unit (4)	Told to Contact Provider (5)	Response Provided (6)	More than One Response (7)	Unit Available (8)	Invited to Inspect Unit (9)	Told to Contact Provider (10)
Yahoo account (ref. Hotmail)	.065	.074	.005	-.010	-.134	.084	-.041	.086	.055	.056
	(.092)	(.093)	(.083)	(.077)	(.080)	(.076)	(.068)	(.071)	(.068)	(.080)
E-mail message used (ref. latest)	.130	.010	.256	.125	.361	.210	.696	.207	.090	-.210
	(.377)	(.339)	(.327)	(.299)	(.257)	(.326)	(.360)	(.318)	(.314)	(.276)
Provider is company	.176	.630	-.011	.144	.034	-.155	.297	.017	.097	-.229
	(.222)	(.288)	(.218)	(.204)	(.210)	(.146)	(.161)	(.143)	(.135)	(.105)
Intercept	1.792**	-2.314**	1.361**	.881	-.183	1.073*	-2.229**	1.034*	.814	.505
	(.489)	(.625)	(.491)	(.451)	(.442)	(.455)	(.507)	(.445)	(.419)	(.372)
N										

** p<.01; *p<.05

Table 6. Differential Treatment in Access to Rental Housing by Race and Ethnicity of Testers in Boston and Dallas

	Percent in Boston:					Percent in Dallas:				
	Tester Receiving Response					Tester Receiving Response				
	All	None	White	Black	Hispanic	All	None	White	Black	Hispanic
Outcome	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1) Response provided	59.7	13.5	4.5	2.6	2.8	65.6	11.6	4.1	1.2	0.7
2) More than one response provided	5.4	82.4	4.1	2.0	1.2	10.5	75.3	3.2	2.8	2.3
3) Told unit is available	52.9	19.1	4.9	3.1	2.7	62.0	14.7	4.1	1.4	1.2
4) Invited to inspect unit	38.6	27.1	7.8	2.4	3.9	51.5	20.5	5.5	1.2	1.7
5) Told to contact provider	29.6	39.0	7.2	2.8	5.1	37.1	11.0	8.4	4.7	6.5
6) Informed of additional housing units	0.7	97.7	0.3	0.3	0.7	0.3	96.3	1.2	0.3	1.0
Consistency Index	NA	NA	14.5	6.5	8.5	NA	NA	14.9	6.9	9.2
N			739					726		

NOTE: Based upon the chi-square test of independence, the distribution of responses for outcomes 1 to 5 are significantly different from those expected under statistical independence.