ANNEX 3: TESTS OF STATISTICAL SIGNIFICANCE

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The gross measure of adverse treatment is simply an estimate of the probability that the white tester is favored over his or her minority partner, or the empirical mean of a variable (Z_{10}) that takes on the value of one if the white tester is favored and zero otherwise. In simple random samples, the standard error of the gross measure estimate is square root of the element variance of this discrete outcome divided by the sample size; the element variance of the variable is simply

$$\sigma_g^2 = E[Z_{10}^2] - E[Z_{10}]^2 = Pr[W_{ik}=1, M_{ik}=0] \; (\; 1.0 - Pr[W_{ik}=1, M_{ik}=0] \;) \qquad (4)$$

where W_{ik} is a Bernoulli variable denoting a favorable outcome for the white tester (1=favorable; 0=unfavorable) and M_{ik} denotes the Bernoulli analogue for the Minority treatment outcome. Doubling the standard error yields a 95 percent confidence interval for the gross measure of adverse treatment. However, this apparently straightforward hypothesis test that the gross measure is greater than zero is not meaningful; the fact that any instances of white- or minority-favored treatment occurred in the sample of tests means (by definition) that the null hypothesis must be rejected (the probability of differential treatment in the total population cannot be equal to zero). In other words, a null hypothesis that a probability is zero is automatically rejected whenever at least one such event is observed.

The (effective) sample size for these tests is quite large, and based on the central limit theorem the 95 percent confidence interval for the gross measure is simply the estimated measure plus or minus 1.96 times the estimated standard error. This assumes that the estimated proportion is neither close to zero or one. If percentages are extreme (say, greater than 0.95 or less than 0.05), nonsymmetrical confidence intervals are calculated using formulae in Fleiss (1981) with adjustments to variance which incorporate the design effect. Also, note that the standard error cannot be used to provide a statistical test that the gross measure is greater than or equal to zero. The gross measure is the estimate of an event probability. The null hypothesis that a probability equals zero is rejected upon even a single observation of the event because if the null is true the event cannot occur.

The net measure of adverse treatment is the difference between the proportion of tests where the white is favored and the proportion where the minority is favored. For the net measure, the standard error of the estimate is based on a simple difference of means, and the variance of the net measure may be written as

$$\sigma_n^2 = Var[W_{ik}] + Var[M_{ik}] - 2 \; Cov[W_{ik}, M_{ik}] \qquad (5)$$

W_{ik} and M_{ik} are both binary variables, and calculations of their variance are straightforward. The element covariance can be calculated as follows:

$$\sigma_{WM} = Pr[W_{ik}=1, M_{ik}=1] * Pr[W_{ik}=0, M_{ik}=0] - Pr[W_{ik}=1, M_{ik}=0] * Pr[W_{ik}=0, M_{ik}=1] \quad (6)$$

The null hypothesis that the net measure is positive and differs from zero (a one-sided test) is rejected with a 5 percent chance of a type I error or less if the net exceeds 1.65 times the estimated standard error.

Changes in the national incidence of adverse treatment are calculated for a core set of incidence measures that can be constructed comparably for both 1989 and 2000. These changes are based on a common sampling frame so that the change in patterns of adverse treatment can be attributed to a change in underlying real estate agent behavior rather than a change in the distribution of advertised units across sites. Specifically, gross and net adverse treatment are recalculated for the 1989 HDS using only the sites that are common between 1989 and 2000, and the statistical procedures control for differences across time in the effective number of tests in each site.

Let G_{jk1} and G_{jk2} denote average gross measures of adverse treatment in Site j, averaged over all tests for that site and measured with survey analytic weights at time 1 (i.e., 1989) and time 2 (i.e., 2000), respectively. Then the change over time is estimated by

$$D_{jk} = G_{jk1} - G_{jk2} \quad \text{for each site j,} \quad (7)$$

and an overall measure for change can be obtained by taking a weighted average of the D_{jk} across sites using weights discussed earlier. The difference between the revised 1989 and 2000 HDS measures of adverse treatment represents the change in adverse treatment holding the sampling frame fixed over the time period.

The standard errors for the estimates of change may be calculated using the standard difference of means described earlier in equations (4) and (5). We chose to ignore the two-stage nature of the design and the fact that our analysis contains only a sample of relevant MSA's within the United States. Rather, we exploit the fact that HDS2000 sampled the subset of MSA's from the 1989 HDS sample and test whether the incidence of discrimination has changed in this set of MSA's between 1989 and 2000. This shift substantially increases our statistical precision, but implies some sacrifice in terms of the generalizability of the findings.

The statistical tests based on individual metropolitan areas are based on small sample sizes of approximately 72 tests per site, tenure, and ethnic group. The statistical tests described earlier could be replaced by a t-test with N-1 degrees of freedom in which N is the sample size. This test, however, requires either an assumption that the errors are distributed normally or a large enough sample size to invoke the central limit theorem, which insures normality of the mean even when errors are non-Normal. We apply the central limit theorem for the confidence intervals on the gross measure of adverse treatment. Gross adverse treatment

is simply a binary or Bernoulli variable. In practice, the frequencies arising from a Bernoulli variable are approximately distributed normally when each cell contains at least five entries.

Neither the normality assumption nor the use of the central limit theorem is appropriate for the net measure of adverse treatment. For example, Heckman and Siegelman (1993) examines data from the Urban Institute employment tests and finds that the t-test for a difference of means is less likely to detect net adverse treatment against minority testers compared to more appropriate statistical tests.

Heckman and Siegelman (1993) suggest that the one-sided test for whether net adverse treatment is greater than zero can be written as simply

$$H_0: \quad E[Y_{10} \mid Y_{11}=0, Y_{00}=0] <= 0.5 \qquad (8)$$

where Y_{11} is one if $W_{ik}=1$ and $M_{ik}=1$ and Y_{00} is one if $W_{ik}=0$ and $M_{ik}=0$. This test conditions on the occurrence of either relatively favorable white or minority treatment, and tests whether the conditional likelihood of white-favored treatment is 50 percent. This test, often called the sign test, is the uniformly most powerful statistical test for this null hypothesis.

Under H_0, the probability of observing N_2 or more tests in which the white tester receives favorable treatment and the minority tester does not is the number of permutations under this restriction divided by the total number of permutations for which N_d tests can be assigned to two outcomes.

$$Pr[N_2 = k \mid N_d = N_2 + N_3] = N_d! / (2^{Nd} (N_d - k)!\, k!) \qquad (9)$$

where N_3 is the number of tests in which outcome 3 is observed. The critical value (N_C) is chosen so that

$$\sum_{j=N_C}^{N_d} Prob\ [\ N_2 = j \mid N_d\ ] \leq 0.05 \qquad (10)$$

Due to the nature of permutation tests, the sum of the probabilities will not equal 5 percent exactly. In principle, a randomization test may be conducted so that the null will be rejected with some probability if N_2 equals N_C minus one.[1] In practice, however, the probability

[1] Heckman shows that a randomized test can be used to obtain significant tests with exactly a 5% probability of a type I error. The randomized test rejects the null hypothesis if the value of N_2 exceeds N_C, and also rejects the null hypothesis with probability a if the net measure equals the N_C minus one where the following equation holds: a $p_2 + p_1 = 0.05$, p_1 the probability of a type I error implied by the cut-off of N_C, and p2 is the increase in the probability of a type I error implied by lowering the cut-off to N_C minus 1.

of a type one error given the observed values is simply calculated by setting N_C equal to N_2 in equation (10).

ANNEX 4: PRELIMINARY RESULTS FROM TRIAD TESTING

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This annex describes the methodology for and presents preliminary results from triad tests that were conducted in two metropolitan areas in Phase II of HDS2000. Triad tests involve visits by three testers to inquire about each randomly selected advertisement. Two of the visits in each test involve testers of the same race. A comparison of the experiences of the two same-race testers provides a direct measure of random differences in treatment during the testing process. This methodological innovation was strongly recommended by members of the National Academy of Sciences workshop on the measurement of discrimination, held in September of 2000. The full report for Phase II of HDS2000 will include a comprehensive analysis of the triad testing results.

Methodology

The triad tests conducted in Phase II of HDS2000 were structured both to maximize the opportunity for obtaining traditional incidence measures from paired comparisons and to minimize any bias caused by time lags between the visits of the two same-race testers. In each of two major metro areas (Baltimore and Miami), a total of 70 tests were conducted, in which 35 involved a minority tester visiting first followed by two white testers, and 35 involved a white tester visiting first followed by two minority testers. This protocol assured that all tests resulted in one completed minority-white pair whether or not the full triad test was completed. In addition, it minimized the time lag between the two same-race testers, so as not to exaggerate random differences in treatment.

A triad test can result in any one of eight possible outcomes. In the explanation that follows, we refer to triad tests in which a white tester (W) is followed by two minority testers (M1 and M2), but the same methodology applies to tests in which a minority tester visits first (M), followed by two whites (W1 and W2).

Y1 = 1 If W is favored, M1 is favored, and M2 is favored

Y2 = 1 If W is favored, M1 is favored, and M2 is not favored

Y3 = 1 If W is favored, M1 is not favored, and M2 is favored

Y4 = 1 If W is not favored, M1 is favored, and M2 is favored

Y5 = 1 If W is favored, M1 is not favored, and M2 is not favored

Y6 = 1 If W is not favored, M1 is favored, and M2 is not favored

Y7 = 1 If W is not favored, M1 is not favored, and M2 is favored

Y8 = 1 If W is not favored, M1 is not favored, and M2 is not favored

The incidence of differential treatment between the same-race testers can be expressed as:

Same-Race Differential Treatment = Pr[Y2=1] + Pr[Y3=1] + Pr[Y6=1] + Pr[Y7=1]

The incidence of white-favored treatment can be calculated in either of two ways. The first approach only considers the first tester pair, and counts treatment favoring the white tester (W) over the first minority tester (M1):

Paired White-Favored = Pr[Y3=1] + Pr[Y5=1].

The second approach uses all of the information from the three-part test, counting treatment favoring the white tester over either of the minority testers, and is the sum of probabilities weighted by the number of favorable treatments:

Triad White-Favored = Pr[Y2=1] + Pr[Y3=1] + 2*Pr[Y5=1]

Correspondingly, there are two approaches for calculating the incidence of minority-favored treatment:

Paired Minority-Favored = Pr[Y4=1] + Pr[Y6=1], and

Triad Minority-Favored = 2*Pr[Y4=1] + Pr[Y6=1] + Pr[Y7=1].

These calculations can be used to estimate the incidence of systematic adverse treatment of minority testers, by subtracting the incidence of same-race differential treatment from the gross incidence of white-favored treatment:

Systematic White-Favored = 2*Pr[Y5=1] – (Pr[Y6=1] + Pr[Y7=1])

Note that probabilities associated with events Y2 and Y3 drop out and the resulting comparison depends upon whether the likelihood of the white tester being unambiguously favored over both minority testers exceeds the likelihood of one or the other minority tester being favored above the other while neither is disfavored relative to the white tester.

In addition, we can compare the incidence of same-race differential treatment to the incidence of minority-favored treatment to assess the validity of the traditional net measure of differential treatment as an estimate of systematic discrimination. For this comparison, we focus on the paired white-favored and minority-favored calculations presented above, rather than the triad calculations.

Due to the small sample sizes for the triad tests, we must use exact, non-parametric tests to determine the statistical significance of the net adverse treatment measures. A simple sign test can be constructed by creating a sample in which the events Y6 and Y7 each create one observation in which differential treatment occurs between testers of the same race (Y5=0) and the event Y5 creates two observations in which white favored treatment occurs (Y5=1). The resulting sign test is

$$\text{Prob}[Y5=1 \mid Y1 + Y2 + Y3 + Y4 + Y8 = 0] <= 0.5$$

where the observations with Y5=1 enter the sample twice.[1]

Results

Preliminary results from triad testing suggest that the incidence of same-race differences in treatment is generally not significantly different from the incidence of minority-favored treatment. In other words, minority-favored treatment may be a reasonable proxy for random difference in treatment, and the traditional net measure (which subtracts minority-favored treatment from white-favored treatment) may provide a reasonable estimate of systematic discrimination. However, for black/white rental tests, the incidence of minority-favored treatment diverges significantly from the incidence of same-race differences for at least some treatment variables. Moreover, because sample sizes are small and not all treatment variables and composites have been considered, these results should be interpreted cautiously.

[1] Strictly speaking this test is no longer a permutation test because the event Y5 cannot truly occur twice and the two across group comparisons in the triad test are mutually exclusive. Nonetheless, the sign test does provide a convenient non-parametric test for whether two probabilities differ from each other.

For black/white tests, we find some evidence that the incidence of minority-favored treatment may differ from the incidence of random differential treatment and is therefore a poor proxy for the level of randomness in a test (Annex 4-1). In the rental market, same-race differential treatment for availability of the advertised unit exceeds the incidence of minority-favored treatment, while for invitations to fill out an application, same-race differential treatment is significantly lower than the incidence of minority-favored treatment. For sales tests, same-race differences for follow-up phone calls significantly exceed minority-favored treatment. The results for invitations to fill out an application are consistent with the hypothesis that minorities are sometimes favored for systematic reasons, but the results for availability of the advertised unit and follow-up phone calls are more puzzling and suggest that sometimes the incidence of random differential treatment may exceed the incidence of minority-favored treatment. One possible explanation is that fair housing enforcement causes real estate agents to be much more careful about treating people the same when they are visited in close succession by two customers of different racial/ethnic groups. This behavior would reduce the incidence of both white- and minority-favored treatment without affecting the incidence of differential treatment between testers of the same race.

For Hispanic/non-Hispanic white tests there is no statistically significant evidence that the traditional measure of net adverse treatment differs from the revised net adverse treatment based on the triad methodology (Annex 4-2). However, the samples sizes are small, making it difficult to interpret the implications of these findings with confidence.

While Annex 4-1 and 4-2 compare same-race differences in treatment to *paired* white-favored and minority-favored treatment, Annex 4-3 takes advantage of all the information from the triad tests to produce estimates of white-favored and minority-favored treatment as well as alternative estimates of systematic discrimination. These calculations lead to the same conclusions – that in general, same race differences in treatment are as high or higher than minority-favored treatment.

Annex 4-1: Preliminary Results from Black/White Triad Tests

Rental Treatment Variables	Paired Test Results			Effect of Triad Tests		
	White Favored	Black Favored	Net	Black Favored	Same Race Diff	Difference in Net
Advertised Unit Available	9.9	5.6	4.3	5.6	15.5	-9.9
Advertised Unit Inspected	9.9	8.4	1.5	8.4	9.9	-1.5
Rental Incentives Offered	11.3	11.3	0.0	11.3	8.5	2.8
Asked to Fill Out Application	9.8	29.6	-19.8**	29.6	9.9	19.7**
Sales Treatment Variables	Paired Test Results			Effect of Triad Tests		
	White Favored	Black Favored	Net	Black Favored	Same Race Diff	Difference in Net
Advertised Unit Available	14.3	20.0	-6.7	20.0	20.0	0.0
Advertised Unit Inspected	11.4	15.7	-3.3	15.7	14.3	1.4
Financial Assistance Offered	32.9	17.1	15.8*	17.1	27.1	-10.0
Follow-up Phone Call	24.3	15.7	8.6	15.7	32.9	-17.2*

Note: For differences, * represents statistical significance at the 90% level, and ** represents statistical significance at the 95% level.

Annex 4-2: Preliminary Results from Hispanic/Non-Hispanic White Triad Tests

Rental Treatment Variables	Paired Test Results			Effect of Triad Tests		
	N-H White Favored	Hispanic Favored	Net	Hispanic Favored	Same Race Diff	Difference in Net
Advertised Unit Available	11.0	8.2	2.8	8.2	9.6	-1.4
Advertised Unit Inspected	2.8	8.2	-5.4	8.2	4.1	4.1
Rental Incentives Offered	9.6	9.6	0.0	9.6	8.2	1.4
Asked to Fill Out Application	13.7	11.0	2.7	11.0	11.0	0.0
Sales Treatment Variables	Paired Test Results			Effect of Triad Tests		
	N-H White Favored	Hispanic Favored	Net	Hispanic Favored	Same Race Diff	Difference in Net
Advertised Unit Available	11.4	14.3	-2.9	14.3	11.4	2.9
Advertised Unit Inspected	12.9	14.3	-1.4	14.3	14.3	0.0
Financial Assistance Offered	28.6	18.6	10.0	18.6	18.6	0.0
Follow-up Phone Call	20.0	11.4	8.6	11.4	22.9	-11.5

Note: For differences, * represents statistical significance at the 90% level, and ** represents statistical significance at the 95% level.

Annex 4-3: Preliminary Results from Triad Tests Using All Possible Comparisons

Black/White Rental						
Treatment Variables	White Favored	Black Favored	Traditional Net	Same Race Diff	Triad Net	Difference in Net
Advertised Unit Available	8.5	7.0	1.5	12.7	-4.2	-5.7**
Advertised Unit Inspected	8.5	10.6	-2.1	6.3	2.2	4.3
Rental Incentives Offered	12.0	12.0	0.0	8.5	3.5	3.5
Asked to Fill Out Application	10.6	24.6	-14.0**	15.5	-4.9	9.1**
Hispanic/Non-Hispanic White Rental						
Treatment Variables	N-H White Favored	Hispanic Favored	Traditional Net	Same Race Diff	Triad Net	Difference in Net
Advertised Unit Available	11.0	7.5	3.5	10.3	0.7	2.8
Advertised Unit Inspected	5.5	7.5	2.0	7.5	2.0	0.0
Rental Incentives Offered	10.3	10.3	0.0	8.2	2.1	2.1
Asked to Fill Out Application	11.6	8.2	3.4	11.6	0.0	-3.4
Black/White Sales						
Treatment Variables	White Favored	Black Favored	Traditional Net	Same Race Diff	Triad Net	Difference in Net
Advertised Unit Available	12.9	23.6	-10.7	20.0	-7.1	3.6
Advertised Unit Inspected	13.6	17.9	-4.3	14.3	-0.7	3.6
Financial Assistance Offered	30.0	20.7	9.3	20.7	9.3**	0.0
Follow-up Phone Call	22.9	22.1	0.8	25.0	-2.1	-2.9

Hispanic/Non-Hispanic White Sales						
Treatment Variables	N-H White Favored	Hispanic Favored	Traditional Net	Same Race Diff	Triad Net	Difference in Net
Advertised Unit Available	10.7	12.9	-2.2	12.1	-1.4	0.8
Advertised Unit Inspected	10.0	12.9	-2.9	12.9	-2.9	0.0
Financial Assistance Offered	29.3	20.0	9.3	17.9	11.4**	2.1
Follow-up Phone Call	17.1	15.0	1.9	16.4	0.7	-1.2

Note: For differences, * represents statistical significance at the 90% level, and ** represents statistical significance at the 95% level.

ANNEX 5: COMPARABILITY OF 1989 TREATMENT MEASURES

ANNEX 5: COMPARABILITY OF 1989 TREATMENT MEASURES

Phase I of HDS2000 is intended to measure changes in the level of discrimination between 1989 and 2000. The testing procedures and data collection process were designed to assure comparability between the 1989 and 2000 studies. At the same time, the real estate market changed dramatically during the intervening decade and some changes in testing protocols were required to maintain the integrity of the testing process, and as a result some variables that were used in 1989 to assess the treatment of minority home seekers were no longer relevant. In addition, our understanding of the real estate market has evolved since 1989 leading to different decisions concerning the inclusion and/or construction of specific treatment variables. Therefore, while the data generated by the 1989 and 2000 studies are comparable, no attempt was made for HDS2000 to replicate the precise results that were originally reported for HDS 1989. Rather, consistent treatment measures were generated using data from both HDS 1989 and 2000 and reported in the replication section of this report. In addition, the 1989 weights that are used for the 2000 report were adjusted to ensure that sites entered with the same weight in 1989 and in 2000 in order to ensure comparability between the estimated 1989 and 2000 incidences of adverse treatment.

In the 1989 report, the treatment variables were divided into three groups: housing availability, sales effort, and either terms and conditions for rental or financing assistance for sales tests. These three groups are comparable to the four categories in HDS2000 where the availability and inspection variables from the 1989 availability category were split into two separate categories on housing availability and inspection, the sales effort category was renamed agent encouragement, and the terms and conditions category from the rental tests was renamed housing costs. In both 1989 and 2000, a consistency composite measure was created for each category as well as an overall consistency composite measure based on all treatment variables in all categories, where favorable treatment was defined as favorable treatment on at least one measure and not treated disfavorably on any measure. In HDS2000, hierarchical composite measures were developed as well, in which treatment variables were ordered based on subjective importance and favorable treatment is defined as favorable treatment on one variable and no disfavorable treatment on any variable that is rated equal to or above that variable.

The 1989 availability category contained five variables representing: whether no appointment was made or no units available, whether the advertised unit was available, whether the advertised unit or a unit similar to the advertised unit was inspected, number of units inspected, and finally, number of total units recommended to the tester. The no appointment variable is not comparable between 1989 and 2000 and is dropped from the list of treatment variables because the protocols for initial contact by the tester were changed between 1989 and 2000. The 1989 study combined information on whether the advertised unit or similar units

were inspected, which is labeled similar unit available in the 1989 report, but in 2000 we decided to divide this information into two variables as well as add an additional treatment variable for whether at least one similar unit was available. As a result, we created two categories: housing availability and housing inspection. These modifications were made because research on the 1989 data suggested that the agent decision to show a house might vary dramatically between the advertised and other available units.

The 1989 terms and conditions category also contained five variables: application fee required, special rental incentives offered, rent of the advertised unit, amenities in rent, and amount of security deposit. Amenities in rent were dropped from the list because the list of potential amenities was incredibly broad and it was uncertain whether amenities were sometimes not mentioned even though they were available. The application fee required was redefined to include the cost of a credit check, which was reported with the application fee for HDS2000, as well as to broaden the sample base to include all tests where the fee required is only set to one if it is mentioned to the tester. Rent of advertised unit and amount of security deposit were changed in order to deal with the fact that in many tests multiple units are described as the advertised unit. The comparison of rent and security deposit is only made when each tester only reports one advertised unit; or, if multiple advertised units are reported, then only if each tester only reports one advertised unit that meets the tester's needs in terms of number of bedrooms, price range, and availability.

The 1989 financing assistance category contained four variables: percentage of units for which the tester discussed conventional fixed-rate financing, percentage of units for which the tester discussed conventional adjustable rate financing, whether agent said tester was not qualified, and whether agent offered assistance with financing. In today's market, agents do not discuss the details of financing with regard to specific units, but rather have a general discussion with the homeseeker about the mortgage process, which may include a mortgage pre-qualification for a maximum loan amount. Therefore, in HDS2000, information on financing assistance is collected at the test level. The new variables for the financing assistance category are: agent offered assistance with financing, agent recommended specific lenders, and agent discussed downpayment requirements. These new variables are much more relevant in today's market.

A specific discussion of adjustable rate mortgages is simply less important today, since most homebuyers are aware of this option. Many real estate agents have close relationships with mortgage lenders today and often provide names of lenders to homebuyers. In addition, many active homeseekers face substantial downpayment constraints in today's market, and there are many more options available for such buyers than there were in 1989. Not that the discussed downpayment requirements is a different variable from what was reported in the 1989 report as asked about downpayment, which recorded whether the agent asked the tester about the resources that they had available for downpayment.

The 1989 sales effort category contained five variables: questions about income, questions about reason for move, invitation to call back, follow-up phone call, and length of interview. The agent question variables were dropped because existing research raised serious questions about the interpretation of these variables. It is not possible to determine whether questions were being asked in order to provide more service or in order to filter out certain types of homeseekers. In addition, length of interview was dropped because the data on interview time was quite noisy and there were differences between how interview timing was recorded in 1989 and 2000. The new variables, called agent encouragement variables, include: follow-up contact from agent, arrangements made for future contact, agent stated that tester was qualified, and for rental tests, whether tester was asked to fill out an application. Arrangements made for future contact simply broadens the invitation to call back by including any other arrangements that might have been made for the tester to keep in touch with the agent. Statements about being qualified were used to replace statements about not being qualified because the testers were almost never told that they were not qualified.

The 1989 report contains results for steering by percent black or Hispanic, per capita income, and median house value. In 2000, however, the replication report only presents changes in the level of steering for percent white, which yields results that are very similar to those for percent black or percent Hispanic, because there was no evidence of steering on any other variable in 2000. In 1989, the steering results were presented for inspected units only. HDS2000 presents steering results on both units that were recommended and units that were inspected. In addition, no composite is presented for the steering results in HDS2000. The 1989 steering results in this report differ from the results in the 1989 report because they are based on a 1990 census tract definitions and actual 1990 census data while the results in the 1989 report were based on Claritas estimates for 1989 using 1980 census tract definitions. These changes had very little effect on the ethnic steering of Hispanics, but had a large effect on the racial steering of blacks. In fact, there is little evidence of racial steering against blacks in 1989 based on updated census data.

The reader should keep in mind that these changes lead to substantial reductions in the gross level of adverse treatment (incidence of white favored tests) for the overall consistency measures, as compared to the results presented in the 1989 report. The overall consistency score for white favored tests was between 42 and 51 percentage points for the four sets of tests as reported in the 1989 report, but fell to between 24 and 29 percentage points for the 1989 HDS as reported in the HDS2000 report. These differences are primarily driven by the changes in the variables included in the analysis, but also reflect some substantial changes in the weights used for the replication analysis. A final difference between the overall consistency composite measures for the 1989 and the 2000 reports involves the steering variables for the sales tests. Both HDS 1989 and 2000 presented steering results for sales tests at the national

level, but unlike the 1989 measure the overall composite measure for the HDS2000 report included the racial steering variables into the overall composite measures.

ANNEX 6: ANALYSIS OF OVER-SAMPLE AND SUPPLEMENTAL TESTS

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For comparability, Phase I of HDS2000 implemented the same weekly ad-sampling methodology that was used in 1989. However, the 1989 HDS found that some geographic areas within many metropolitan housing markets were under-represented in the major metropolitan newspaper. In order to learn more about this issue, two additional samples of available housing units were selected for a subset of sites in HDS2000. First, additional advertisements for units in under-represented communities were drawn from the major metro newspaper. And second, additional units available for sale or rent were identified from other sources for the most under-represented communities. In this annex, we stratify tests based on whether the advertised unit was located in a well-represented community or an under-represented community to determine whether patterns of treatment vary.

Methodology

During the ad-sampling process in four of the HDS2000 sites, the distribution of advertisements across geographic communities was compared to the distribution of all housing units in order to identify the communities that were under-represented in the classified ads of the major metropolitan newspaper. Estimates of total rental and homeowner housing units by census tract in 2000 were obtained from Claritas, Inc. A geographic community was considered to be under-represented if the ratio of advertisements to owner-occupied or rental units fell below one-half. For these communities, ads were "over-sampled" to yield additional tests in under-represented communities. In addition, for the communities with the fewest newspaper advertisements, additional available units were identified from alternative information sources.

In the analysis that follows, the expanded sample of tests for these four metropolitan areas is stratified into two categories: 1) tests where the advertised units were located in a well-represented geographic community, and 2) tests where the advertised units were located in an under-represented community. The second category includes some tests from the basic replication sample (if the advertised unit was located in an under-represented community), as well as all the over-sampled and supplemental tests.[1] We then compare the incidence of white-favored and minority-favored treatment for these two categories to determine whether tests conducted in communities that are well-represented in the classified advertising sections of major metropolitan newspapers may over- or under-state the incidence of discrimination. These

[1] Note that any replication tests for which the location of the advertised unit could not be identified are assumed to be drawn from well-represented communities.

comparisons are based upon the measures of treatment consistency discussed in chapter 2.[2] To test for the statistical significance of differences between the two categories of tests, we used a Fisher's exact test.[3] Note that this test does not explicitly determine whether the level of adverse treatment varies between the two groups of tests. For example, the null hypothesis (that outcomes are the same for the two categories of tests) might be rejected because the incidence of equal treatment differs significantly between the two categories, even though net adverse treatment is the same.

Results

When tests are pooled across sites, no statistically significant differences between tests in well-represented communities and under-represented communities were found. However, when the two categories of tests are compared on a site-by-site basis, some statistically significant differences occur. In general, when statistically significant differences are found, adverse treatment against black testers tends to be higher in tests from under-represented communities, while adverse treatment against Hispanic testers tends to be higher in well-represented communities. These findings reinforce the importance of drawing samples of available housing units from a wider range of sources than major metropolitan newspapers, a change that has been implemented in Phase II of HDS2000.

Annex 6-1 presents results for black/white rental tests in Atlanta, Chicago, and New York, and for Hispanic/non-Hispanic white rental tests in Chicago, New York, and San Antonio. For Atlanta, statistically significant differences between well-represented communities and under-represented communities occur for housing availability and encouragement, and the incidence of white-favored treatment is higher in under-represented communities for both variables. For black/white tests in Chicago and New York, no treatment differences are statistically significant.

For Hispanic/non-Hispanic white rental tests in Chicago, no treatment differences are statistically significant. In New York, however, significant differences are found for housing availability, inspections, and housing costs. The incidence of non-Hispanic white-favored treatment is higher in well-represented communities for housing availability and inspections, but

[2] For sales tests, a composite steering indicator was created by examining the treatment outcomes on racial steering for housing recommendations and housing inspections.

[3] The Fisher's exact test is a permutation test in which the permutations associated with the observed outcome is compared to total number of permutations possible. The specific test used here is a test for homogeneity across the rows of the table, and the distribution of permutations is described by the multiple hypergeometric distribution.

the incidence of Hispanic-favored is higher in well-represented communities for housing cost.[4] Finally, in San Antonio, significant differences occur for the inspections, encouragement, and overall treatment, and in all cases white-favored treatment is higher in well-represented tracts.

Annex 6-2 presents results for black/white sales tests in Atlanta, Chicago, and New York, and for Hispanic/non-Hispanic white sales tests in Chicago, New York, and San Antonio. For black/white sales tests in Atlanta, statistically significant differences are found for financing assistance, encouragement, and overall treatment. In general, the net measure (the difference between white- and minority-favored treatment) is higher in under-represented communities. For overall treatment, the incidence of white-favored treatment is 18 percentage points higher in under-represented tracts. In Chicago, significant differences occur only for housing availability, and again, white-favored treatment is much higher in under-represented communities. Finally, in New York, significant differences are found for financing assistance and steering. The incidence of white-favored treatment is again higher in under-represented communities for steering, but the incidence of black-favored treatment is higher in under-represented communities for financing assistance.

For Hispanic/non-Hispanic white sales tests in Chicago, statistically significant differences occur for inspections and encouragement. In both cases, net adverse treatment is higher in well-represented communities. In New York, only the differences in encouragement are significant, and as in Chicago, net adverse treatment is higher in well-represented communities.[5] In San Antonio, however, the incidence of non-Hispanic white-favored treatment is higher in under-represented tracts for financing assistance and encouragement.

[4] The different patterns for access and cost may reflect differences in the actual advertised units that were made available to white and minority testers rather than the differences in price for the same unit.

[5] Steering is significant at the 90% level, but this appears to arise from a lower probability of equal treatment as opposed to differences in white- or minority-favored treatment.

Annex 6-1: Comparison of Rental Testing Results for Well-Represented and Under-Represented Geographic Communities

Black/White Rental Tests in Atlanta					
Consistency Treatment Measures	Well-Represented		Under-Represented		Statistical Signif
	White Favored	Black Favored	White Favored	Black Favored	
Availability	19.2%	11.5%	32.4%	26.5%	95%
Inspection	19.2%	10.3%	14.7%	17.7%	Not Sig.
Cost	38.5%	11.5%	26.5%	26.5%	Not Sig.
Encouragement	20.5%	29.5%	38.2%	8.8%	95%
Overall	30.8%	12.8%	14.7%	14.7%	Not Sig.
Sample Size	78		34		

Black/White Rental Tests in Chicago					
Consistency Treatment Measures	Well-Represented		Under-Represented		Statistical Signif
	White Favored	Black Favored	White Favored	Black Favored	
Availability	22.6%	22.6%	18.8%	12.5%	Not Sig.
Inspection	14.5%	14.5%	18.8%	21.9%	Not Sig.
Cost	19.4%	24.2%	15.6%	15.6%	Not Sig.
Encouragement	30.7%	24.2%	25.0%	12.5%	Not Sig.
Overall	14.5%	22.6%	12.5%	15.6%	Not Sig.
Sample Size	62		32		

Black/White Rental Tests in New York					
Consistency Treatment Measures	Well-Represented		Under-Represented		Statistical Signif
	White Favored	Black Favored	White Favored	Black Favored	
Availability	32.8%	26.9%	20.0%	23.3%	Not Sig.
Inspection	29.9%	13.4%	26.7%	13.3%	Not Sig.
Cost	16.4%	19.4%	10.0%	10.0%	Not Sig.
Encouragement	28.4%	20.9%	16.7%	20.0%	Not Sig.
Overall	19.4%	14.9%	30.0%	20.0%	Not Sig.
Sample Size	67		30		

Hispanic/Non-Hispanic White Rental Tests in Chicago					
Consistency Treatment Measures	Well-Represented		Under-Represented		Statistical Signif
	N-H White Favored	Hispanic Favored	N-H White Favored	Hispanic Favored	
Availability	32.2%	17.0%	23.5%	11.8%	Not Sig.
Inspection	22.0%	20.3%	17.7%	14.7%	Not Sig.
Cost	33.9%	10.2%	29.4%	20.6%	Not Sig.
Encouragement	18.6%	27.1%	38.2%	20.6%	Not Sig.
Overall	32.2%	22.0%	38.2%	14.7%	Not Sig.
Sample Size	59		34		

Hispanic/Non-Hispanic White Rental Tests in New York					
Consistency Treatment Measures	Well-Represented		Under-Represented		Statistical Signif
	N-H White Favored	Hispanic Favored	N-H White Favored	Hispanic Favored	
Availability	37.3%	28.8%	20.6%	20.6%	90%
Inspection	30.5%	15.3%	11.8%	11.8%	90%
Cost	20.3%	20.3%	14.7%	3.0%	95%
Encouragement	20.3%	17.0%	14.7%	23.5%	Not Sig.
Overall	27.1%	11.9%	29.4%	20.6%	Not Sig.
Sample Size	59		34		

Hispanic/Non-Hispanic White Rental Tests in San Antonio					
Consistency Treatment Measures	Well-Represented		Under-Represented		Statistical Signif
	N-H White Favored	Hispanic Favored	N-H White Favored	Hispanic Favored	
Availability	48.1%	23.1%	30.2%	32.1%	Not Sig.
Inspection	36.6%	17.3%	15.1%	24.5%	95%
Cost	26.9%	15.4%	17.0%	15.1%	Not Sig.
Encouragement	30.8%	17.3%	28.3%	35.9%	90%
Overall	21.2%	7.7%	22.6%	28.3%	95%
Sample Size	52		53		

Annex 6-2: Comparison of Sales Testing Results for Well-Represented and Under-Represented Geographic Communities

Black/White Sales Tests in Atlanta					
Consistency Treatment Measures	Well-Represented		Under-Represented		Statistical Signif
	White Favored	Black Favored	White Favored	Black Favored	
Availability	43.1%	40.3%	52.3%	33.3%	Not Sig.
Inspections	52.8%	29.2%	59.5%	28.6%	Not Sig.
Financing	29.2%	40.3%	31.0%	16.7%	95%
Encouragement	25.0%	44.4%	23.8%	26.2%	90%
Steering	31.9%	22.2%	35.7%	21.4%	Not Sig.
Overall	8.3%	11.1%	26.2%	11.9%	95%
Sample Size	72		42		

Black/White Sales Tests in Chicago					
Consistency Treatment Measures	Well-Represented		Under-Represented		Statistical Signif
	White Favored	Black Favored	White Favored	Black Favored	
Availability	32.7%	43.6%	61.8%	17.7%	95%
Inspection	36.4%	36.4%	41.2%	17.7%	Not Sig.
Financing	41.8%	29.1%	35.3%	32.3%	Not Sig.
Encouragement	27.3%	18.2%	38.3%	17.7%	Not Sig.
Steering	16.4%	21.8%	20.6%	5.9%	Not Sig.
Overall	12.7%	9.1%	20.6%	5.9%	Not Sig.
Sample Size	55		34		

Black/White Sales Tests in New York					
Consistency Treatment Measures	Well-Represented		Under-Represented		Statistical Signif
	White Favored	Black Favored	White Favored	Black Favored	
Availability	35.7%	19.1%	32.7%	21.2%	Not Sig.
Inspection	31.0%	14.3%	17.3%	23.2%	Not Sig.
Financing	23.8%	19.1%	25.0%	44.3%	95%
Encouragement	11.9%	14.3%	7.7%	21.2%	Not Sig.
Steering	4.8%	7.1%	23.1%	7.7%	95%
Overall	28.6%	23.8%	21.2%	17.3%	Not Sig.
Sample Size	42		52		

Hispanic/Non-Hispanic White Sales Tests in Chicago					
Consistency Treatment Measures	Well-Represented		Under-Represented		Statistical Signif
	N-H White Favored	Hispanic Favored	N-H White Favored	Hispanic Favored	
Availability	52.4%	19.1%	44.4%	22.2%	Not Sig.
Inspection	42.9%	27.0%	19.4%	33.3%	95%
Financing	55.6%	11.1%	47.2%	11.1%	Not Sig.
Encouragement	34.9%	7.9%	22.2%	33.3%	99%
Steering	17.5%	22.2%	16.7%	13.9%	Not Sig.
Overall	27.0%	6.4%	19.4%	19.4%	Not Sig.
Sample Size	63		36		

Hispanic/Non-Hispanic White Sales Tests in New York					
Consistency Treatment Measures	Well-Represented		Under-Represented		Statistical Signif
	N-H White Favored	Hispanic Favored	N-H White Favored	Hispanic Favored	
Availability	33.3%	25.0%	29.6%	27.3%	Not Sig.
Inspection	14.6%	25.0%	20.5%	20.5%	Not Sig.
Financing	27.1%	20.8%	29.6%	22.7%	Not Sig.
Encouragement	27.1%	2.1%	9.1%	2.2%	95%
Steering	2.1%	6.3%	13.6%	11.4%	90%
Overall	35.4%	16.7%	22.7%	20.5%	Not Sig.
Sample Size	48		44		

Hispanic/Non-Hispanic White Sales Tests in San Antonio					
Consistency Treatment Measures	Well-Represented		Under-Represented		Statistical Signif
	N-H White Favored	Hispanic Favored	N-H White Favored	Hispanic Favored	
Availability	45.5%	32.7%	35.1%	42.1%	Not Sig.
Inspection	21.8%	38.2%	15.8%	42.1%	Not Sig.
Financing	47.3%	14.6%	63.2%	19.3%	95%
Encouragement	32.7%	18.2%	54.4%	17.0%	95%
Steering	18.2%	7.1%	19.3%	7.1%	Not Sig.
Overall	23.6%	7.3%	12.3%	5.3%	Not Sig.
Sample Size	55		57		

ANNEX 7: COMPOSITION OF SUMMARY TREATMENT INDICATORS

- **BLACK/WHITE RENTAL TESTS — OVERALL COMPOSITES — 2000 AND 1989**
- **HISPANIC/NON-HISPANIC WHITE RENTAL TESTS – OVERALL COMPOSITES – 2000 AND 1989**
- **BLACK/WHITE SALES TESTS — OVERALL COMPOSITES — 2000 AND 1989**
- **HISPANIC/NON-HISPANIC WHITE SALES TESTS – OVERALL COMPOSITES – 2000 AND 1989**

BLACK/WHITE RENTAL TESTS -- OVERALL COMPOSITES -- 2000 AND 1989

2000	Individual Indicators			Contribution to Hierarchical Composite			Contribution to Consistency Composite		
	% white favored	% black favored	net measure	% white favored	% black favored	net measure	% white favored	% black favored	net measure
Advertised unit available?	12.3%	8.3%	4.1%	12.3%	8.3%	4.1%	12.3%	8.3%	4.1%
Advertised unit inspected?	15.6%	9.2%	6.4%	21.1%	13.9%	7.2%	21.1%	13.7%	7.4%
Rent for advertised unit	9.3%	12.0%	-2.7%	24.5%	18.1%	6.4%	23.6%	17.2%	6.5%
Similar units available?	14.3%	15.4%	-1.0%	31.8%	25.5%	6.3%	26.9%	21.7%	5.2%
Similar units inspected?	8.1%	7.2%	0.9%	34.2%	27.4%	6.8%	27.3%	21.9%	5.4%
Number units recommended	28.3%	23.3%	5.1%	38.9%	31.3%	7.6%	29.9%	24.1%	5.8%
Number units inspected	23.3%	16.2%	7.0%	39.7%	31.9%	7.8%	29.7%	23.9%	5.8%
Rental incentives offered?	9.2%	6.5%	2.7%	41.3%	32.9%	8.4%	29.9%	22.8%	7.1%
Amount of security deposit	5.3%	5.3%	0.0%	41.6%	33.5%	8.0%	29.9%	22.9%	7.0%
Application fee required?	10.7%	14.5%	-3.8%	43.7%	36.6%	7.1%	25.4%	21.8%	3.6%
Follow-up contact from agent?	2.5%	2.1%	0.4%	44.3%	36.9%	7.4%	25.4%	21.6%	3.8%
Asked to complete application?	18.1%	15.8%	2.3%	46.8%	39.2%	7.6%	24.6%	21.1%	3.5%
Arrangements for future?	14.7%	16.3%	-1.6%	48.9%	41.1%	7.8%	22.0%	19.6%	2.4%
Told qualified to rent?	3.6%	3.4%	0.2%	49.0%	41.1%	7.9%	21.6%	19.2%	2.3%
Overall Hierarchical				49.0%	41.1%	7.9%			
Overall Consistency							21.6%	19.2%	2.3%

1989	Individual Indicators			Contribution to Hierarchical Composite			Contribution to Consistency Composite		
	% white favored	% black favored	net measure	% white favored	% black favored	net measure	% white favored	% black favored	net measure
Advertised unit available?	18.5%	11.9%	6.6%	18.5%	11.9%	6.6%	18.5%	11.9%	6.6%
Advertised unit inspected?	22.6%	11.6%	11.0%	28.8%	17.8%	11.0%	28.6%	17.5%	11.0%
Rent for advertised unit	13.9%	16.4%	-2.4%	32.8%	23.1%	9.7%	31.9%	21.9%	10.0%
Similar units available?	22.1%	14.3%	7.9%	40.5%	29.6%	11.0%	37.0%	24.1%	13.0%
Similar units inspected?	10.3%	10.1%	0.2%	41.8%	32.2%	9.6%	34.5%	23.4%	11.1%
Number units recommended	39.3%	23.7%	15.6%	48.6%	36.5%	12.1%	38.4%	23.1%	15.3%
Number units inspected	33.8%	14.8%	19.0%	50.1%	36.7%	13.4%	38.7%	21.7%	17.0%
Rental incentives offered?	12.0%	5.5%	6.4%	51.0%	37.5%	13.5%	38.1%	19.3%	18.8%
Amount of security deposit	6.3%	6.0%	0.3%	51.2%	37.8%	13.4%	37.5%	19.4%	18.1%
Application fee required?	14.1%	11.1%	3.1%	53.2%	38.5%	14.8%	34.9%	18.2%	16.7%
Follow-up contact from agent?	2.2%	2.8%	-0.6%	53.2%	38.5%	14.7%	34.1%	17.8%	16.2%
Asked to complete application?	19.7%	17.2%	2.5%	53.6%	39.9%	13.7%	31.0%	17.4%	13.6%
Arrangements for future?	23.3%	16.2%	7.1%	54.6%	41.0%	13.6%	27.3%	15.3%	12.1%
Told qualified to rent?	5.1%	4.8%	0.3%	54.6%	41.2%	13.4%	26.4%	15.3%	11.1%
Overall Hierarchical				54.6%	41.2%	13.4%			
Overall Consistency							26.4%	15.3%	11.1%

HISPANIC/NON-HISPANIC WHITE RENTAL TESTS -- OVERALL COMPOSITES -- 2000 AND 1989

2000	Individual Indicators			Contribution to Hierarchical Composite			Contribution to Consistency Composite		
	% n-H white favored	% Hispanic favored	net measure	% n-H white favored	% Hispanic favored	net measure	% n-H white favored	% Hispanic favored	net measure
Advertised unit available?	12.0%	5.4%	6.6%	12.0%	5.4%	6.6%	12.0%	5.4%	6.6%
Advertised unit inspected?	11.4%	7.5%	3.9%	17.5%	11.1%	6.4%	17.4%	11.1%	6.3%
Rent for advertised unit	12.2%	6.5%	5.7%	21.5%	13.3%	8.2%	21.4%	12.4%	9.0%
Similar units available?	12.7%	11.7%	0.9%	29.1%	20.6%	8.5%	26.7%	18.3%	8.4%
Similar units inspected?	7.9%	7.3%	0.6%	31.7%	21.8%	9.9%	27.1%	18.2%	8.8%
Number units recommended	29.4%	20.8%	8.6%	39.9%	25.9%	14.0%	33.0%	20.2%	12.8%
Number units inspected	20.7%	14.3%	6.3%	41.0%	26.6%	14.4%	33.5%	20.2%	13.2%
Rental incentives offered?	8.5%	6.7%	1.8%	43.4%	27.8%	15.6%	34.0%	20.7%	13.3%
Amount of security deposit	8.5%	8.0%	0.5%	44.4%	29.3%	15.1%	34.8%	22.1%	12.7%
Application fee required?	8.6%	12.2%	-3.6%	46.2%	31.3%	15.0%	29.6%	21.0%	8.6%
Follow-up contact from agent?	2.5%	2.7%	-0.2%	46.5%	31.7%	14.8%	28.9%	21.0%	8.0%
Asked to complete application?	17.3%	17.1%	0.2%	49.1%	35.3%	13.8%	27.1%	22.1%	5.0%
Arrangements for future?	20.7%	14.5%	6.2%	52.6%	36.9%	15.7%	27.2%	19.3%	7.9%
Told qualified to rent?	4.4%	5.0%	-0.6%	52.7%	37.6%	15.1%	25.7%	19.5%	6.1%
Overall Hierarchical				52.7%	37.6%	15.1%			
Overall Consistency							25.7%	19.5%	6.1%

1989	Individual Indicators			Contribution to Hierarchical Composite			Contribution to Consistency Composite		
	% n-H white favored	% Hispanic favored	net measure	% n-H white favored	% Hispanic favored	net measure	% n-H white favored	% Hispanic favored	net measure
Advertised unit available?	16.5%	7.7%	8.7%	16.5%	7.7%	8.7%	16.5%	7.7%	8.7%
Advertised unit inspected?	18.3%	13.1%	5.2%	24.5%	15.8%	8.7%	24.2%	15.4%	8.8%
Rent for advertised unit	11.5%	16.9%	-5.3%	29.1%	22.7%	6.4%	28.5%	22.1%	6.4%
Similar units available?	15.9%	13.1%	2.8%	34.8%	28.1%	6.7%	30.5%	23.5%	7.0%
Similar units inspected?	9.9%	10.7%	-0.7%	37.1%	30.9%	6.3%	30.2%	23.7%	6.5%
Number units recommended	35.4%	24.2%	11.2%	44.8%	35.7%	9.1%	34.4%	24.5%	9.8%
Number units inspected	27.2%	17.2%	10.0%	46.3%	36.2%	10.1%	34.9%	24.2%	10.7%
Rental incentives offered?	10.8%	6.8%	4.1%	48.0%	36.8%	11.3%	34.0%	22.5%	11.5%
Amount of security deposit	7.2%	7.2%	0.0%	49.3%	36.9%	12.3%	34.2%	21.8%	12.4%
Application fee required?	8.4%	12.7%	-4.3%	49.9%	38.2%	11.7%	30.9%	21.0%	9.9%
Follow-up contact from agent?	3.7%	1.1%	2.6%	50.4%	38.2%	12.1%	30.8%	20.0%	10.7%
Asked to complete application?	21.6%	14.5%	7.1%	52.4%	39.1%	13.3%	29.9%	18.1%	11.8%
Arrangements for future?	22.5%	19.0%	3.5%	53.2%	41.0%	12.2%	24.2%	15.3%	8.9%
Told qualified to rent?	8.3%	4.4%	4.0%	53.2%	41.3%	11.9%	24.2%	14.6%	9.6%
Overall Hierarchical				53.2%	41.3%	11.9%			
Overall Consistency							21.8%	13.7%	8.1%

BLACK/WHITE SALES TESTS -- OVERALL COMPOSITES -- 2000 AND 1989

2000	Individual Indicators			Contribution to Hierarchical Composite			Contribution to Consistency Composite		
	% white favored	% black favored	net measure	% white favored	% black favored	net measure	% white favored	% black favored	net measure
Advertised unit available?	15.8%	15.1%	0.8%	15.8%	15.1%	0.8%	15.8%	15.1%	0.8%
Advertised unit inspected?	19.1%	15.7%	3.4%	25.0%	21.1%	3.8%	24.5%	20.9%	3.6%
Similar units available?	18.7%	15.6%	3.1%	33.2%	28.4%	4.8%	29.0%	24.9%	4.1%
Similar units inspected?	22.9%	16.0%	6.9%	38.6%	32.2%	6.4%	33.0%	26.5%	6.5%
Steering for rec units	15.8%	12.1%	3.7%	43.6%	34.6%	9.0%	34.0%	24.8%	9.2%
Number units recommended	44.6%	38.6%	6.0%	50.9%	41.9%	8.9%	31.7%	24.9%	6.8%
Steering for inspected units	11.0%	7.5%	3.5%	50.9%	41.9%	8.9%	31.5%	24.1%	7.4%
Number units inspected	43.2%	30.9%	12.4%	51.2%	42.0%	9.1%	28.2%	21.2%	7.0%
Help with financing offered?	18.6%	17.2%	1.4%	51.7%	43.0%	8.7%	23.8%	18.9%	4.9%
Lenders recommended?	18.9%	17.5%	1.3%	52.0%	43.5%	8.6%	22.3%	17.8%	4.5%
Downpayment reqs discussed?	21.7%	16.1%	5.6%	52.5%	44.3%	8.2%	20.7%	16.1%	4.6%
Follow-up contact from agent?	17.1%	14.7%	2.4%	52.7%	44.4%	8.4%	18.5%	13.4%	5.1%
Told qualified?	20.4%	12.3%	8.1%	53.0%	44.4%	8.6%	18.0%	12.5%	5.5%
Arrangements for future?	4.9%	7.6%	-2.8%	53.1%	44.8%	8.3%	17.0%	12.4%	4.6%
Overall Hierarchical				53.1%	44.8%	8.3%			
Overall Consistency							17.0%	12.4%	4.6%

1989	Individual Indicators			Contribution to Hierarchical Composite			Contribution to Consistency Composite		
	% white favored	% black favored	net measure	% white favored	% black favored	net measure	% white favored	% black favored	net measure
Advertised unit available?	9.6%	5.4%	4.2%	9.6%	5.4%	4.2%	9.6%	5.4%	4.2%
Advertised unit inspected?	11.4%	6.9%	4.5%	15.7%	8.7%	7.0%	15.7%	8.6%	7.0%
Similar units available?	18.9%	10.2%	8.7%	28.9%	15.9%	13.0%	27.1%	14.2%	12.9%
Similar units inspected?	10.1%	6.3%	3.8%	33.3%	19.1%	14.2%	30.1%	16.5%	13.6%
Steering for rec units	5.9%	11.7%	-5.7%	35.7%	24.0%	11.7%	29.1%	20.2%	8.9%
Number units recommended	37.8%	23.0%	14.8%	44.6%	30.6%	14.0%	34.7%	22.2%	12.5%
Steering for inspected units	3.5%	5.9%	-2.4%	44.6%	30.6%	14.0%	34.1%	21.6%	12.5%
Number units inspected	24.3%	12.4%	11.9%	44.6%	30.6%	14.1%	32.8%	20.1%	12.7%
Help with financing offered?	20.5%	15.1%	5.4%	49.2%	33.4%	15.8%	33.6%	19.5%	14.1%
Lenders recommended?	10.3%	4.4%	5.9%	49.5%	33.4%	16.1%	33.5%	18.8%	14.7%
Downpayment reqs discussed?	25.4%	17.6%	7.8%	52.3%	36.3%	16.0%	32.7%	18.7%	14.1%
Follow-up contact from agent?	16.0%	9.5%	6.4%	53.2%	37.4%	15.8%	31.4%	17.6%	13.8%
Told qualified?	16.3%	14.1%	2.2%	54.2%	38.0%	16.2%	29.0%	16.9%	12.1%
Arrangements for future?	12.8%	7.6%	5.2%	56.1%	39.0%	17.1%	29.0%	16.2%	12.8%
Overall Hierarchical				56.1%	39.0%	17.1%			
Overall Consistency							29.0%	16.2%	12.8%

HISPANIC/NON-HISPANIC WHITE SALES TESTS -- OVERALL COMPOSITES -- 2000 AND 1989

2000	Individual Indicators			Contribution to Hierarchical Composite			Contribution to Consistency Composite		
	% n-H white favored	% Hispanic favored	net measure	% n-H white favored	% Hispanic favored	net measure	% n-H white favored	% Hispanic favored	net measure
Advertised unit available?	12.0%	15.0%	-3.0%	12.0%	15.0%	-3.0%	12.0%	15.0%	-3.0%
Advertised unit inspected?	17.1%	19.3%	-2.2%	22.3%	24.6%	-2.3%	22.3%	24.6%	-2.3%
Similar units available?	16.7%	12.9%	3.8%	31.0%	31.6%	-0.6%	28.9%	29.4%	-0.5%
Similar units inspected?	18.3%	15.4%	2.9%	35.9%	34.2%	1.7%	30.9%	29.9%	1.0%
Steering for rec units	17.1%	15.6%	1.5%	41.7%	37.5%	4.2%	33.6%	28.2%	5.4%
Number units recommended	44.4%	40.7%	3.7%	49.0%	44.7%	4.3%	29.7%	26.0%	3.7%
Steering for inspected units	14.7%	9.7%	5.0%	49.0%	44.7%	4.3%	29.6%	25.4%	4.2%
Number units inspected	35.7%	38.1%	-2.4%	49.6%	45.0%	4.5%	27.4%	23.4%	4.0%
Help with financing offered?	22.2%	10.5%	11.7%	50.4%	45.4%	5.1%	26.4%	18.8%	7.6%
Lenders recommended?	19.6%	12.8%	6.7%	50.5%	45.9%	4.6%	25.0%	18.3%	6.7%
Downpayment reqs discussed?	24.9%	15.4%	9.4%	50.8%	46.6%	4.2%	22.9%	15.0%	7.9%
Follow-up contact from agent?	15.3%	14.6%	0.7%	50.8%	46.7%	4.1%	20.8%	14.2%	6.6%
Told qualified?	18.8%	15.6%	3.2%	50.9%	46.7%	4.2%	19.5%	12.8%	6.7%
Arrangements for future?	5.2%	4.9%	0.3%	51.6%	46.8%	4.9%	19.7%	12.3%	7.4%
Overall Hierarchical				51.6%	46.8%	4.9%			
Overall Consistency							19.7%	12.3%	7.4%

1989	Individual Indicators			Contribution to Hierarchical Composite			Contribution to Consistency Composite		
	% n-H white favored	% Hispanic favored	net measure	% n-H white favored	% Hispanic favored	net measure	% n-H white favored	% Hispanic favored	net measure
Advertised unit available?	9.4%	5.9%	3.5%	9.4%	5.9%	3.5%	9.4%	5.9%	3.5%
Advertised unit inspected?	13.8%	8.1%	5.7%	15.1%	10.6%	4.5%	15.1%	10.5%	4.5%
Similar units available?	19.0%	13.4%	5.5%	27.9%	20.2%	7.7%	25.0%	17.2%	7.7%
Similar units inspected?	7.5%	6.8%	0.7%	30.6%	22.9%	7.8%	26.4%	18.4%	8.0%
Steering for rec units	12.5%	8.5%	3.9%	36.1%	25.7%	10.4%	28.3%	19.1%	9.3%
Number units recommended	39.2%	22.3%	16.8%	45.2%	31.0%	14.2%	34.3%	20.1%	14.1%
Steering for inspected units	7.3%	5.8%	1.5%	45.2%	31.0%	14.2%	33.9%	19.7%	14.2%
Number units inspected	27.2%	13.9%	13.3%	45.8%	31.4%	14.5%	33.3%	19.0%	14.3%
Help with financing offered?	19.1%	19.6%	-0.5%	48.6%	35.9%	12.7%	30.3%	21.4%	8.8%
Lenders recommended?	9.0%	9.4%	-0.4%	49.0%	36.0%	13.0%	29.9%	20.8%	9.1%
Downpayment reqs discussed?	21.0%	21.5%	-0.5%	50.7%	39.4%	11.3%	28.7%	22.2%	6.5%
Follow-up contact from agent?	18.1%	6.4%	11.7%	51.4%	39.7%	11.6%	27.3%	19.2%	8.1%
Told qualified?	18.1%	13.3%	4.8%	52.8%	40.1%	12.7%	26.5%	17.8%	8.7%
Arrangements for future?	12.2%	6.1%	6.1%	55.0%	40.4%	14.6%	26.8%	16.4%	10.5%
Overall Hierarchical				55.0%	40.4%	14.6%			
Overall Consistency							26.8%	16.4%	10.5%