Housing Tenure, Expenditure, and Satisfaction Across Hispanic, African-American, and White Households: Evidence From the American Housing Survey

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Abstract

Because of the significant growth in the number of Hispanic households in the United States, this article pools the 1998, 2002, and 2004 standard metropolitan statistical area samples of the American Housing Survey to compare the housing situations of Hispanic, African-American, and White households. We first consider the likelihood of ownership and housing costs (for both owners and renters) across race/ethnicity for all households and also households that were recent movers. We then analyze differences in ordinal rankings of structural and neighborhood quality. We find that factors that determine good structural and neighborhood quality appear to be consistent across all household types; that is, American households agree on what makes good housing. Several unique issues are identified for the Hispanic households in the sample; for example, crowding, high debt levels, and high annual housing costs per square foot for owners. On a positive note, rent subsidies appear to have a significant effect on lowering rental payments for all households. Furthermore, owners consistently rank both their structural housing characteristics and neighborhood quality higher than renters do.

Introduction[1]

In its proposed budget for fiscal year 2005, the U.S. Department of Housing and Urban Development (HUD) laid out its primary area of policy emphasis, which continues to be promoting affordable homeownership and stronger communities. In developing the details of such programs, HUD acknowledged the increasing importance of the Hispanic-American population, particularly as a component of low-income households whose housing options need improvement.

According to data from the Current Population Survey (HUD, 2006), in 1983 approximately 69.1 percent of White households, 45.6 percent of African-American households, and 41.2 percent of Hispanic households were homeowners. As of the third quarter of 2005, these figures had improved for all racial/ethnic groups; specifically, the shares of households that were homeowners amounted to 75.7 percent for Whites, 48.7 percent for African Americans, and 49.1 percent for Hispanics.[2] Despite the improvement, the gap between Whites and minorities has not narrowed significantly. Given the importance of owned housing as an asset, particularly for lower income households, and the service and externality benefits associated with homeownership, this gap in homeownership rates is a cause for concern.[3]

Even though the percentage of Hispanic households in the country now exceeds the comparable figure for African-American households as the largest minority group in the United States, it is surprising how little academic work appears in the housing economics literature focusing on the housing choices of Hispanic households (particularly, lower income households) as compared with those of White and African-American households. This dearth of research is particularly acute for a primary research question considered in this study—namely, the current state of housing quality and householders' satisfaction with their housing situation.

A significant amount of recent academic and policy research has examined how to expand homeownership opportunities for Hispanic households. What becomes quite clear from the literature is that, in addressing this question from a policy perspective, analysts and policymakers need to develop a better understanding of the differences in the housing situations that households with different racial/ethnic backgrounds (that is, Hispanic, African-American, and White) face. Issues to explore include determining how much better the quality of housing services is when provided by owned housing as compared with rental housing and what it is specifically about households' housing situations that gives rise to observed differences in the perceived quality of the housing services each racial/ethnic group receives. In particular, how do perceptions of service quality differ for Hispanic households as compared with other households? Using recent standard metropolitan statistical area (SMSA) samples of the American Housing Survey (AHS), we address these issues and investigate how they differ for Hispanics as compared with other racial groups across a number of different housing markets.

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[1] This article was originally part of a series of papers that the U.S. Department of Housing and Urban Development commissioned to examine Hispanic homeownership. See Cortes et al. (2006) for references to the complete series of reports.

[2] See HUD (2005: p. 85). Also, see Herbert et al. (2005) for a thorough discussion of trends in homeownership differences by race/ethnicity and a review of the literature examining the causes of these gaps and policies designed to address them.

[3] See Boehm and Schlottmann (2002, 1999) for further development of these issues.

The analysis presented in this article has two broad thrusts. A primary point of focus is the consideration of differences by households in the sample in the perceived quality of the structural and neighborhood components of housing services. The AHS data contains detailed information on the structural characteristics of the house, the characteristics of the neighborhood in which the house is located, the demographic characteristics of the resident of the dwelling at the time of the interview, and two indices that measure the resident's satisfaction with his or her neighborhood and the quality of the structure in which they reside on an ordinal scale from 1 to 10. In general, we examine various racial groups to compare Hispanic households' satisfaction with their housing situation as compared with that of African-American and/or White households by tenure type and income category. Taking this idea one step further, we also investigate the relative importance of various individual structural and neighborhood attributes in determining households' perceptions of overall dwelling and neighborhood quality.

To place the results for housing quality within both the context of the literature and our data, however, we initially analyze the likelihood of homeownership for Hispanic households and their pattern of housing expenditures; that is, house value for owners and rental payments for renters. Differentials in household assessment of "quality" do not, of course, occur within a vacuum; instead they occur within the basic household homeownership decision. For example, an important observation one can make about structural (that is, dwelling unit) and neighborhood quality is that, across racial/ethnic groups and income levels, both structural and neighborhood quality are substantially higher for owners (as compared with renters). Thus, understanding the forces that influence the likelihood of homeownership and expenditure level are important to understanding differentials in housing satisfaction. As noted in the literature, different racial/ethnic groups may have different understandings of, access to, and proclivity to use financial markets and institutions for both saving and borrowing. For Hispanic households attempting to accumulate wealth to purchase a home, such differences, along with differentials in household income and other socio-economic factors, could have a significant effect on the timing and likelihood of homeownership and the value of the housing they purchase.[4]

This article is organized into seven sections. Following this introductory section, the second section presents an overview of the data on which the study is based and the two data sets (the full sample and a subsample of recent movers) used in the analysis. The second section presents and discusses various aspects of housing quality and characteristics and shows the results along the dimensions of low-income, high-income, and minority household status. The third section presents results for the likelihood of ownership and expenditure for the full sample of households and recent movers. The fourth section presents 2002 and 2004 data on the effect on homeownership and expenditures over time in the United States (for nonnative born residents). The fifth section discusses the study's methodology for assessing housing and neighborhood quality differentials, and the sixth section summarizes empirical results for those quality differentials. Conclusions follow in the last section.

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[4] As noted, the main emphasis of this study is the assessment of housing quality. Thus, although we do not suggest that our analysis is a detailed study of the dynamics of wealth accumulation and housing choice, it is important to consider the fundamental issues of homeownership and housing expenditure to establish a contextual basis for the rest of the analysis. For more detailed examination of wealth accumulation and housing dynamics, see Boehm and Schlottmann (2004) and the series of papers in Retsinas and Belsky (2002).

The Quality, Size, and Cost of Housing: The American Housing Survey 1998, 2002, and 2004

The data presented and analyzed in this article are from recent AHS samples for 41 SMSAs. Information is gathered for samples of approximately 5,000 households in each SMSA. Approximately 14 SMSAs are selected for each sampling year.[5] The most recently available SMSAs are for the sampling years 1998, 2002, and 2004; information from all these SMSAs is combined for this analysis.[6] We used the SMSA samples rather than the national version of the data set for two reasons. First, for the national sample, of the almost 50,000 units included in the data set, only about 4,000 are occupied by Hispanic households and slightly less than one-half of these households are owner occupants. Using the SMSA samples of the AHS makes it possible to obtain a larger total Hispanic sample size; specifically, approximately 17,968 Hispanic households are in the full sample used in this study.[7] Second, by using the SMSA samples we can identify the specific market in which housing decisions are being made. Market identification is not possible with the national sample.

Using the unique characteristic of the AHS, exhibit 1 provides measures of households' perceptions of the quality of the environment in which they live. Specifically, households are asked to rank the quality of both their structures and their neighborhood on an ordinal scale from 1 to 10 (where a rank of 1 is worst and a rank of 10 is best).[8] Exhibit 1 also reports values for several other variables of interest related to a household's housing experience. Specifically, tenure choice (owning or renting), housing value (for owners) or annual rent (for renters), total monthly housing costs, amount of mortgage debt (for owners), and household size are considered. To facilitate meaningful comparisons, the data are disaggregated along three additional dimensions based on our previous work with the AHS and the literature. Specifically, information is provided by income (relative to median income), by owners versus renters, and for recent movers into the area (approximately 6,446 of which are Hispanic households) who, it might be assumed, made a recent "active" housing choice.[9]

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[5] Most of these SMSAs are also resampled periodically.

[6] The SMSAs included in the sample are, for 1998, Baltimore, MD, Birmingham, AL, Boston, MA, Cincinnati, OH-KY-IN, Houston, TX, Minneapolis-St. Paul, MN, Newport News-Hampton, VA, Oakland, CA, Providence-Pawtucket-Warwick, RI, Rochester, NY, Salt Lake City, UT, San Francisco, CA, San Jose, CA, Tampa-St. Petersburg, FL, and Washington, DC-MD-VA; for 2002, Anaheim-Santa Ana-Garden Grove, CA, Buffalo, NY, Charlotte, NC-SC, Columbus, OH, Dallas, TX, Fort Worth, TX, Kansas City, MO-KS, Miami, FL, Milwaukee, WI, Phoenix, AZ, Portland, OR-WA, Riverside-San Bernardino-Ontario, CA, and San Diego, CA; for 2004, Atlanta, GA, Cleveland, OH, Denver, CO, Hartford, CT, Indianapolis, IN, Memphis, TN-MS-AR, New Orleans, LA, Oklahoma City, OK, Pittsburgh, PA, Sacramento, CA, San Antonio, TX, Seattle-Everett, WA, and St. Louis, MO-IL.

[7] Because of the large numbers of White households in the sample assembled in this way, a random subsample of these households was selected to make the analysis more tractable.

[8] The determinants of these rankings are explored later in the article.

[9] Basing the definition on their previous work, the authors define low income as being at 80 percent or less of the median income. Results are not sensitive to moderate changes in this definition. Recent movers engaged in a move within the previous 12 months before the date of their interview.

Exhibit 1a

Housing Characteristics by Household Type[a] (1 of 2)

Household Type: All Households	Number of Observations	Mean Structural Quality	Mean Neighborhood Quality	Inadequate Housing (%)	Rank Neighborhood Poor (%)	Rank Structure Poor (%)	Household Type That Own (%)	Mean House Value or Monthly Rent ($)	Mean Monthly Housing Cost[b] ($)
White high-income owners	15,764	8.46	8.22	0.53	1.18	0.40	85.98	221,475	1,253
African-American high-income owners	4,302	8.43	7.99	1.19	2.00	0.67	74.31	142,664	1,038
Hispanic high-income owners	5,308	8.48	8.16	0.87	1.45	0.60	74.49	204,248	1,289
White low-income owners	9,856	8.44	8.14	1.13	2.00	0.89	60.84	147,289	683
African-American low-income owners	4,781	8.31	7.71	2.11	3.62	1.40	35.55	95,055	654
Hispanic low-income owners	4,121	8.36	8.02	2.11	2.74	1.14	38.01	128,681	774
White high-income renters	2,571	7.46	7.55	1.40	2.84	2.18	NA	865	972
African-American high-income renters	1,487	7.41	7.33	2.69	5.31	3.50	NA	694	806
Hispanic high-income renters	1,818	7.49	7.54	2.75	3.74	2.81	NA	807	906
White low-income renters	6,343	7.56	7.45	2.73	4.41	2.73	NA	606	663
African-American low-income renters	8,666	7.30	6.98	3.83	8.55	5.27	NA	496	547
Hispanic low-income renters	6,721	7.39	7.34	3.33	6.00	4.48	NA	592	647
Total households	**71,738**								

Exhibit 1a

Housing Characteristics by Household Type[a] (2 of 2)

Household Type: All Households	Number of Observations	Mean Structural Quality	Mean Neighborhood Quality	Inadequate Housing (%)	Rank Neighborhood Poor (%)	Rank Structure Poor (%)	Household Type That Own (%)	Mean House Value or Monthly Rent ($)	Mean Monthly Housing Cost[b] ($)
Recent Movers									
White high-income owners	2,548	8.52	8.31	0.55	0.90	0.24	64.46	240,004	1,504
African-American high-income owners	803	8.75	8.44	1.12	1.37	0.50	52.76	172,381	1,221
Hispanic high-income owners	1,151	8.61	8.36	0.61	1.04	0.52	54.32	211,303	1,451
White low-income owners	1,156	8.27	8.00	1.38	2.34	0.78	26.55	148,350	893
African-American low-income owners	635	8.54	8.12	1.10	1.89	0.94	12.68	107,547	804
Hispanic low-income owners	784	8.47	8.10	2.68	1.66	0.77	18.12	120,694	896
White high-income renters	1,405	7.51	7.53	1.85	2.42	1.71	NA	892	995
African-American high-income renters	719	7.55	7.42	1.95	5.98	3.06	NA	720	830
Hispanic high-income renters	968	7.53	7.59	2.58	3.20	2.48	NA	840	934
White low-income renters	3,198	7.48	7.33	2.41	4.38	2.53	NA	632	688
African-American low-income renters	4,372	7.32	6.99	3.34	8.60	4.85	NA	521	571
Hispanic low-income renters	3,543	7.44	7.38	2.71	5.84	4.06	NA	601	662
Total recent movers	**21,282**								

NA = Not applicable.

[a] Low-income households are defined as those with 80 percent or less of the median income for the metropolitan statistical area in which the household resides.

[b] Housing cost includes the cost of all utilities, property taxes, insurance, rent, all mortgage payments, and other fees associated with occupancy.

Note: For additional detail about housing cost, see the definition in exhibit 2 of this article.

Exhibit 1b

Housing Characteristics by Household Type[a] (1 of 2)

Household Type: All Households	Number of Observations	Mean Housing Cost[b] to Income Ratio (%)	Households Spending More Than 30% of Income on Housing (%)	Mean Amount of Debt on Owned Units ($)	Mean Unit Size in Square Feet	Mean Household Size	Mean Unit Square Feet to Household Size	Mean Housing Cost to Unit Square Feet ($)
White high-income owners	15,764	16.30	8.16	90,404	2,338	2.95	948	0.64
African-American high-income owners	4,302	16.12	7.88	69,442	2,262	3.15	901	0.72
Hispanic high-income owners	5,308	18.07	11.27	93,160	2,041	3.63	687	0.75
White low-income owners	9,856	32.98	40.44	35,509	1,806	1.98	1130	0.49
African-American low-income owners	4,781	34.92	46.29	35,164	1,820	2.35	1062	0.68
Hispanic low-income owners	4,121	36.20	49.36	45,871	1,558	3.17	681	0.63
White high-income renters	2,571	15.82	3.19	NA	1,262	2.40	635	0.93
African-American high-income renters	1,487	14.98	2.56	NA	1,232	2.93	522	1.02
Hispanic high-income renters	1,818	15.38	2.42	NA	1,157	3.51	413	0.95
White low-income renters	6,343	39.62	51.73	NA	955	1.81	640	0.91
African-American low-income renters	8,666	40.51	52.90	NA	998	2.32	574	0.92
Hispanic low-income renters	6,721	39.80	56.10	NA	902	3.07	391	0.91
Total households	**71,738**							

Exhibit 1b

Housing Characteristics by Household Type[a] (2 of 2)

Household Type: All Households	Number of Observations	Mean Housing Cost[b] to Income Ratio (%)	Households Spending More Than 30% of Income on Housing (%)	Mean Amount of Debt on Owned Units ($)	Mean Unit Size in Square Feet	Mean Household Size	Mean Unit Square Feet to Household Size	Mean Housing Cost to Unit Square Feet ($)
Recent Movers								
White high-income owners	2,548	19.38	12.72	131,055	2,395	2.88	969	0.75
African-American high-income owners	803	18.59	11.96	105,751	2,348	3.17	929	0.70
Hispanic high-income owners	1,151	21.04	17.38	122,094	2,046	3.57	689	0.83
White low-income owners	1,156	36.44	49.67	64,821	1,775	2.18	1049	0.63
African-American low-income owners	635	34.83	53.21	63,428	1,773	2.66	927	0.72
Hispanic low-income owners	784	38.27	58.19	65,687	1,519	3.51	563	0.74
White high-income renters	1,405	16.25	3.84	NA	1,238	2.38	612	0.93
African-American high-income renters	719	15.44	3.06	NA	1,231	2.89	524	0.95
Hispanic high-income renters	968	16.10	3.31	NA	1,165	3.28	440	0.94
White low-income renters	3,198	40.16	53.49	NA	941	1.89	617	0.91
African-American low-income renters	4,372	41.24	54.49	NA	1,003	2.39	567	0.89
Hispanic low-income renters	3,543	40.38	57.41	NA	906	3.03	392	0.91
Total recent movers	**21,282**							

NA = Not applicable.

[a] Low-income households are defined as those with 80 percent or less of the median income for the metropolitan statistical area in which the household resides.
[b] Housing cost includes the cost of all utilities, property taxes, insurance, rent, all mortgage payments, and other fees associated with occupancy.
Note: For additional details about housing cost, see the definition in exhibit 2 of this article.

Several interesting points appear in exhibit 1. Irrespective of either minority status or income level, the primary differential in both perceived neighborhood quality and housing quality stems from ownership status. Renters clearly perceive their situation as worse than that of owners. As shown for the quality dimensions of structure and neighborhood in exhibit 1a, the difference between renters and owners appears particularly important for the structural quality of the housing unit. The largest differentials between renters and owners in neighborhood quality and structural quality occur for low-income households. Some of the largest differentials occur for low-income Hispanic households. For low-income Hispanic households, comparing owners with renters, neighborhood quality ranges from 8.02 (owner) to 7.34 (renter). For structural quality, the difference is 8.36 to 7.39. In addition, rental units were classified as "inadequate" more often than were owner-occupied units.[10] In particular, for low-income renters, 2.73 percent of Whites, 3.83 percent of African Americans, and 3.33 percent of Hispanics were categorized as living in inadequate housing. For low-income owners, the percentages sorted by the same racial/ethnic categories were 1.13, 2.11, and 2.11 percent, respectively.

Given these positive factors associated with ownership, it is important to note that Hispanic and African-American households have a similar likelihood of owning, which is substantially lower than that of their White counterparts; this difference is much greater for lower income individuals. For the full sample, among low-income households, only 35.6 percent of African Americans and 38.0 percent of Hispanics own as compared with 60.8 percent of White households. For higher income households, these probabilities sorted by the same racial/ethnic categories are 74.3, 74.5, and 86.0 percent, respectively.

In addition to noting Whites' higher likelihood of ownership, it is important to note that both house value and rental cost for Hispanic and African-American households are lower than for White households. Hispanic homeowners' monthly housing cost is higher than that of White homeowners, however, even though Hispanics' house value is lower.[11] This observation is particularly true for low-income owners. Specifically, for the full sample, low-income Hispanic households' average monthly housing cost is $774, whereas low-income Whites spend an average of $683 on monthly housing costs. Conversely, comparable average home values are $128,681 for Hispanics and $147,298 for Whites. Note that this relationship holds true for recent movers, although the housing cost differential is not as great. These facts suggest that some significant differentials in financing may exist. The amount of mortgage debt could be higher and/or the terms, points, fees, and so on associated with the loans obtained by these Hispanic households could be less favorable. Developing this point further, low-income Hispanic owners have relatively high mortgage debt on owned units as compared with mortgage debt levels for other households. For the full sample,

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[10] A variety of specific structural deficiencies are considered when designating a unit as being "moderately" or "severely" inadequate. For details about the way in which this categorization is made, see ICF Consulting (2004) for the definition of the variable ZADEQ in version 1.77 of the AHS codebook.

[11] As defined subsequently in exhibit 2, monthly housing costs include the cost of electricity, gas, and other heating fuels; water and sewer; real estate taxes; property insurance; condominium fees; mobile home park fees; homeowners association fees; rent; mortgage and home equity loan payments; other mortgage fees paid periodically; and expenditures for routine maintenance.

low-income Hispanic owners average more than $10,000 more in debt collateralized by their homes relative to comparable White households ($45,871 and $35,509, respectively).[12] In this regard, however, Hispanic recent movers do better, with little difference in debt levels compared with White recent movers. Is this higher debt among all Hispanic owners related to differentials in the amount borrowed using home financing related to home equity loans and junior mortgages or to less financial expertise in obtaining such loans, and so on? Whatever the reason, longer term Hispanic homeowners in this sample face a suggested negative dynamic.

We also considered another factor that might be expected to influence housing satisfaction: Hispanic households appear to be much more crowded than other households are. In addition, as with African-American low-income homeowners, Hispanic low-income homeowners pay significantly more in monthly housing cost per square foot than their White counterparts do. For low-income households in the full sample, Hispanic households average 681 square feet per person. Comparable African-American and White households average 1,062 and 1,130 square feet per person, respectively. For renters, the square-feet-per-person figures sorted by the same racial/ethnic categories are 391, 574, and 640, respectively. For recent movers, these differences are very similar. In several instances, the average number of square feet per person is higher for low-income owners than it is for high-income owners. It is likely the case that a higher proportion of retirees, who are still living in owner-occupied homes that they bought many years earlier when their families were larger and/or their incomes were higher, are in these samples. Regarding monthly mortgage cost per square foot, for the full sample, low-income Hispanic and African-American owners pay $0.63 and $0.68, respectively, per square foot, whereas White owners pay only $0.49. For recent movers, the comparable numbers sorted by the same racial/ethnic categories are $0.74, $0.72, and $0.63 respectively.

Although generalizations of data are difficult to do, overall, the results in exhibit 1 suggest that low-income African-American households are doing somewhat worse in terms of housing outcomes than low-income Hispanic households are. This statement is based on the observation that, across the board, African-American households have by far the lowest housing values and annual rents and slightly lower homeownership rates than other races/ethnicities. In addition, for the full sample, all African-American households have rankings of structural and neighborhood quality that are slightly lower. Using these same criteria, we observe that both African-American and Hispanic households appear to have less favorable housing outcomes than White households do.

As noted previously, because housing tenure and house value or rent influence the quality of housing services a household receives, in the next section we analyze the likelihood of homeownership for Hispanic households and their pattern of housing values or rents as compared with those of other racial/ethnic groups. The regression analysis allows for consideration of the significance and magnitude of being in a particular racial/ethnic group, controlling for other socioeconomic factors that might be expected to influence these outcomes. In addition, the analysis enables us to examine how various socioeconomic control variables differ across these groups and, therefore, how they affect their housing outcomes.

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[12] These debt totals represent loan amounts at origination for all types of mortgage lending (that is, first mortgages, junior mortgages, and home equity loans).

The Likelihood of Homeownership and Differences in Housing Values and Rents

Our estimation approach to the likelihood of homeownership follows the original work of Boehm (1993) and the development of the logit approach contained in the exhaustive set of references in, for example, Boehm and Schlottmann (2004) and Retsinas and Belsky (2002). The likelihood of a household being an owner instead of a renter is hypothesized as a function of a standard set of socioeconomic variables, including income, savings, minority status, and dummy variables for the year in which the housing choice was made and the market in which the unit is located.[13] For the AHSs in 2002 and 2004, an additional variable is available, namely the time spent living in the United States. Exhibit 2 shows the complete set of variables included in the analysis.[14]

We use the entire sample and a sample restricted to recent movers. These two approaches bring a different perspective through which to evaluate the forces shaping the housing outcomes of households in the sample. Specifically, the full sample shows us how everyone is housed at a given point in time. This information enables us to observe differences in housing circumstances across income and racial groups that have occurred as a result of decades of evolution in the housing market conditions experienced by the households in the sample. Alternatively, a recent mover sample enables us to observe differential outcomes for households that have recently, actively made adjustments in their housing consumption based on their current socioeconomic characteristics and the current housing and mortgage market conditions. Each of these analyses is presented in turn in the following text.

Entire Sample

Three separate sets of regression results are shown (pair-wise) in the six columns of exhibit 3. These regression results include separate analyses for the probability of owning versus renting, the determinants of house value stratified by low- and high-income households, and the determinants of monthly housing cost stratified by low- and high-income renter households. The specification of the probability of homeownership, house value for owners, and monthly gross rental payment for renters is consistent with the general specifications in the literature.

The results shown in exhibit 3 are largely consistent with the literature; however, several observations are of particular interest. First, the primary reason for estimating these regressions is to determine if the substantial differences across racial/income groups in exhibit 1 would be present after we controlled for other factors that influence the choices of ownership versus rental tenure and, conditionally, upon that choice, to determine the house value (for owners) and the dollar amount of rent (for renters). Indeed, both African-American households and Hispanic households have substantially different outcomes than White households do, controlling for the SMSA in

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[13] Because the AHS follows housing units (rather than households) over time, the definition of homeownership cannot be used to determine housing transitions or the number of homes the household has owned or rented. As noted previously, however, given the large differences illustrated in exhibit 1, our intent is to explore the extent to which such large differentials appear within a regression analysis of homeownership.

[14] Note that some selected variables are available only for certain subsamples. For example, the concept of "owned prior to the move" is available only for recent movers.

Exhibit 2

Variable Names and Definitions (1 of 2)

Variable Name	Variable Definition
Own Home	1 = if homeowner; 0 = if renter
Current House Value	Current house value in thousand dollar units
Monthly Housing Cost	Included are the costs of electricity, gas, other heating fuels, water and sewer, real estate taxes, property insurance, condominium fees, mobile home park fees, homeowner association fees, rent, mortgage and home equity loan payments, other mortgage fees paid periodically, and routine maintenance
Monthly Rent	Monthly rent in dollars
Rent Subsidy	1 = if rent is subsidized by the government; 0 = if otherwise
Total Mortgage Payments	Total dollar amount of mortgage payments including up to four mortgages and/or three home equity lines of credit
Unit—Condominium	1 = if housing unit is a condominium; 0 = if otherwise
Unit—Owned Manufactured	1 = if unit is manufactured housing; 0 = if otherwise
Not High School Graduate	1 = if did not graduate from high school; 0 = if otherwise
High School Graduate	1 = high school graduate; 0 = otherwise
Post High School	1 = some education after high school, but not a college graduate; 0 = otherwise
College Graduate	1 = college graduate or more; 0 = otherwise
Married	1 = married couple or partner present; 0 = otherwise
Single Female	1 = household head a single female; 0 = otherwise
Single Male	1 = household head a single male; 0 = otherwise
Household Size	Number of persons in household
Household Income	Household income in $10,000 units
Age 24 or Less	1 = age of household head less that 24 years of age; 0 = otherwise
Age 25–44	1 = age of household head 25 to 44 years of age; 0 = otherwise
Age 45–61	1 = age of household head 45 to 61 years of age; 0 = otherwise
Age 62 or More	1 = age of household head 62 years of age or more; 0 = otherwise
Savings 25K or More	1 = household has $25,000 or more in savings; 0 = otherwise
White[a, b]	1 = household's race designated to be White; 0 = otherwise
African-American[a, b]	1 = household's race designated to be African-American; 0 = otherwise
White Hispanic[a, b]	1 = household identified as Hispanic and White; 0 = otherwise
Non-White Hispanic[a, b]	1 = household identified as Hispanic and non-White; 0 = otherwise
Number of Years in Residence	Number of years household resided at its current location
First-Time Owner	1 = first home owned by the household; 0 =otherwise
Native-Born American[c]	1 = household head or partner a U.S. citizen and lived in the United States their entire life; 0 = otherwise
Less than 5 Years in United States[c]	1 = household head and partner lived in United States less than 5 years; 0 = otherwise

Exhibit 2

Variable Names and Definitions (2 of 2)

Variable Name	Variable Definition
5–12 Years in United States[c]	1 = household head and partner lived in United States 5 to 12 years; 0 = otherwise
13–22 Years in United States[c]	1 = household head and partner lived in United States 13 to 22 years; 0 = otherwise
23 Years or More in United States[c]	1 = household head and partner lived in United States 23 years or more; 0 = otherwise
Owned Prior to Move[d]	1 = household head was a homeowner prior to moving into current housing unit; 0 = otherwise
Metropolitan Areas	Households in the sample came from 41 SMSAs in three interview periods (1998, 2002, 2004); discrete variables indicating the SMSA in which each housing unit was located were included in regression analyses. For a complete list of the SMSAs included in the analysis, see appendix A .

SMSA = standard metropolitan statistical area.

[a] Because the American Housing Survey designates race and Hispanic ethnicity separately, many White and non-White individuals identify themselves as Hispanic. This split is represented in the categorization of Hispanics as White and non-White in the table.

[b] The race of the spouse (or partner) was considered when identifying the race of the household. For mixed-race couples, if either the head or spouse was Hispanic, the household was considered to be Hispanic; for other couples, where one partner was African-American, the household was considered to be African-American.

[c] Available only for 2002 and 2004 sample years.

[d] Available only for recent mover sample.

which these households reside and the household's age profile, income, education, and so on. African-American and Hispanic households are less likely to own, and owners exhibit lower levels of housing values, while renters have lower levels of annual rents. These trends suggest a systematic problem for minority households. Regarding Hispanics, the AHS, because it asks questions about race separate from Hispanic ethnicity, allows us a unique opportunity to compare results for Hispanic households that have different racial characteristics. Consequently, Hispanic households were split into two distinct groups: White and non-White Hispanics.[15] Non-White Hispanics have less desirable housing outcomes than White Hispanics do. As shown in exhibit 3, low-income non-White Hispanics have the lowest likelihood of homeownership and the lowest housing value. Although it is not clear whether this result is suggestive of discrimination or rather is the result of correlation with some omitted variable, it is the first time we have seen this difference empirically demonstrated, and it clearly merits additional investigation.

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[15] This designation was based on the householder's categorization for single individuals. For married couples, if one individual was White and the other Hispanic or African American, the household was deemed Hispanic or African American, respectively. For cases in which a householder and spouse were both Hispanic, if either the spouse or the householder was classified as a non-White Hispanic, the household was designated as non-White Hispanic. If a householder or spouse was Hispanic and the other African American, the household was classified as African American. For the full sample, approximately 64 percent of low-income Hispanics are reported to be White and 36 percent are non-White. Among high-income Hispanics, 71 percent are White and 29 percent are non-White. For the recent movers, 59 percent of low-income Hispanics are White and 41 percent are non-White. For their high-income counterparts, the percentages are 62 and 38 percent, respectively.

Exhibit 3

Sample: All Households in All Years

Regression Coefficients and Significance[a, b, c] (1 of 2)

Variable Name	Low Income, P(Own)	High Income, P(Own)	Low-Income Owner, House Value[d]	High-Income Owner, House Value[d]	Low-Income Owner, Housing Cost	High-Income Owner, Housing Cost	Low-Income Renter, Rent	High-Income Renter, Rent
Intercept	– 0.90365 *	1.15341 *	265.1007 *	304.5289 *	467.0726 *	775.1462 *	733.2642 *	1150.5191 *
Rent Subsidy	NA	NA	NA	NA	NA	NA	– 44.6759 *	– 77.6438 **
Total Mortgage Payments	NA	NA	NA	NA	0.9214 *	0.8243 *	NA	NA
Unit—Condominium	NA	NA	NA	NA	– 14.6278	– 93.8084 *	NA	NA
Unit—Owned Manufactured	NA	NA	NA	NA	95.9540 *	– 69.7088 *	NA	NA
High School Graduate	0.17628 *	0.30287 *	11.4106 *	12.6865 *	NA	NA	33.2714 *	98.1926 *
Post High School	0.27570 *	0.47035 *	21.0954 *	24.4424 *	NA	NA	69.8501 *	150.8448 *
College Graduate	0.40019 *	0.68698 *	59.6001 *	70.7723 *	NA	NA	121.7508 *	243.9352 *
Single Female	– 0.78472 *	– 1.08672 *	– 19.9748 *	– 30.9336 *	NA	NA	12.8566 *	– 15.4230
Single Male	– 0.95726 *	– 1.42484 *	– 25.9315 *	– 23.9932 *	NA	NA	– 8.0430	– 42.3257 *
Household Size	0.07337 *	0.07926 *	2.5617 *	3.8244 *	NA	NA	29.5515 *	31.2130 *
Household Income	0.36443 *	0.02682 *	1.3073 **	3.4340 *	NA	NA	32.2427 *	1.7973 *
Age 24 or Less	– 1.70622 *	– 1.62107 *	34.5308 *	10.4148	NA	NA	32.2511 *	– 25.3692
Age 25–44	– 0.91547 *	– 0.87961 *	0.1594	– 7.2805 *	NA	NA	– 2.8043	– 30.4830 *
Age 62 or More	1.19256 *	0.84593 *	7.8439 *	14.4785 *	NA	NA	23.5471 *	89.0619 *
Savings 25K or More	1.16893 *	0.69443 *	27.9968 *	26.3942 *	NA	NA	136.9097 *	11.5115 *

Exhibit 3

Sample: All Households in All Years
Regression Coefficients and Significance[a, b, c] (2 of 2)

Variable Name	Low Income, P(Own)	High Income, P(Own)	Low-Income Owner, House Value[d]	High-Income Owner, House Value[d]	Low-Income Owner, Housing Cost	High-Income Owner, Housing Cost	Low-Income Renter, Rent	High-Income Renter, Rent
African-American	– 0.76399 *	– 0.64752 *	– 20.1132 *	– 35.0772 *	NA	NA	– 59.2936 *	– 109.3235 *
White Hispanic	– 0.62149 *	– 0.46376 *	– 19.7677 *	– 23.7147 *	NA	NA	– 63.6912 *	– 80.3219 *
Non-White Hispanic	– 0.86910 *	– 0.67916 *	– 28.8447 *	– 45.0185 *	NA	NA	– 72.6176 *	– 147.4588 *
Number of Years in Residence	NA	NA	0.1543 **	– 0.8198 *	NA	NA	– 5.0728 *	– 13.6543 *
First-Time Owner	NA	NA	25.2690 *	58.3705 *	NA	NA	NA	NA
R^2	0.21927 [e]	0.15975 [e]	0.3267	0.3723	0.64260	0.6694	0.31530	0.39370
Number of observations	40,488	31,250	18,758	25,374	18,758	25,374	21,730	5,876

NA = Not applicable.

[a] The P(Own) equations were estimated using logit analysis.

[b] *, **, and *** represent significance at the 1-, 5-, and 10-percent levels, respectively.

[c] All regressions include discrete variables indicating in which of 41 standard metropolitan statistical areas (SMSAs) the housing units were located (over the 3-year time period: 1998, 2002, and 2004). For a complete list of these SMSAs, see appendix A.

[d] House value in thousand dollar units.

[e] For the logit equations, the R^2 is computed as 1- (unrestricted log-likelihood function/restricted log-likelihood function).

Second, the negative effect of a lack of savings as it relates to required downpayment constraints and the probability of homeownership is demonstrated in exhibit 3. Although the discrete variable indicating whether a household has $25,000 or more in savings is an arbitrary way to categorize the household's savings, it does identify those people who in general have exhibited a much higher propensity to save.[16] As the literature suggests, the ability to accumulate wealth is a critical factor in the ability to achieve homeownership. As discussed by Golding (2002), estimates from the U.S. Census Bureau suggest that reducing origination costs just $1,000 could help an additional 116,000 renters attain homeownership. The difficulty of lower income households in overcoming increases in downpayment requirements should not be understated.

These households have difficulty accumulating savings to purchase a home. For example, Di (2001) discusses trends in wealth that include data for renters with lower incomes. These data, from the Survey of Consumer Finances, clearly suggest that what might appear to be modest changes in fixed payments associated with a home purchase are difficult for these households to afford. For example, among Hispanic renters, the average savings (or wealth) was $2,000. This figure for savings falls to $1,661 for African-American renters.[17] Quercia, McCarthy, and Wachter's (2002) formal analysis and empirical estimates reinforce these statements.[18]

Third, the positive effect of rent subsidies in lowering rents for low-income households is seen in exhibit 3. Given the low levels of household savings among lower income households (discussed previously), programs such as rent subsidies have the potential to positively affect savings and/or expenditures on other necessities by reducing a household's required monthly outlays for rental payments.

Magnitude of Effects

To more fully explore the results discussed previously, exhibits 4 through 6 provide evidence on the variable means and the effect of estimated coefficients on several dimensions of housing choice: the likelihood of homeownership, house value for owners, and rental payment for renters. In exhibit 4, probabilities of ownership are calculated at the sample means for all variables except the specific variable listed, which is evaluated at the mean for each minority group and Whites.[19, 20]

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[16] This definition of savings is based on the specific question in the AHS.

[17] See figure 10 in Di (2001).

[18] Savings also impacts the value of the house homeowners can afford to purchase and, in addition, the quality (as measured by cost) of rental units.

[19] These percentages were calculated using coefficient estimates from a logit model of homeownership. For example, in the case of non-White Hispanic households, the likelihood of homeownership was calculated with all variables included in the regression set at the overall sample mean except those for the household's race (that is, White, African American, White Hispanic, non-White Hispanic). In the case of race, this variable was first set at 1 for a particular minority group (for example, non-White Hispanics) and 0 for all other racial groups. Subsequently, the probability was recalculated with all the race variables set at 0, which represents White households that are the excluded group in the analysis. The difference in these two probability calculations represents the impact of being in the particular minority group as compared with a White household on the likelihood of homeownership. Similar calculations and interpretations can be made for other variables.

[20] Note that for the Hispanic households, rather than using the proportions of White or non-White Hispanics, as presented in the exhibits, a value of 1 was used to denote each category to make the magnitudes that were calculated comparable with the calculation for African Americans without having to combine the non-White and White Hispanics in a single group.

The primary result of note is the magnitude of negative effects of minority status on the likelihood of homeownership. The negative effect of race/ethnicity itself on the likelihood of homeownership is quite similar between non-White Hispanic households and African-American households: -40.53 and -39.22 percent (panel A), respectively, for low-income households and -10.55 and 9.66 percent (panel B), respectively, for high-income households. The effects of race are dramatically smaller for higher income households, but, in either case, they dominate the effects of other factors.

Exhibit 4

Sample: All Households in All Years
Variable Means and Effect of Variables on the Likelihood of Homeownership (1 of 2)

	Panel A: Low-Income Households				
	Sample Mean			**Pr(Own)$_{African-American}$ Minus Pr(Own)$_{White}$[a, b] (%)**	**Pr(Own)$_{Hispanic}$ Minus Pr(Own)$_{White}$[a, b] (%)**
Variable Name	**White**	**African-American**	**Hispanic**		
Own Home	0.60843	0.35554	0.38010	NA	NA
Intercept	NA	NA	NA	NA	NA
High School Graduate	0.29897	0.29910	0.25835	0.001	– 0.390
Post High School	0.30551	0.29903	0.20679	– 0.098	– 1.482
College Graduate	0.22483	0.11423	0.09334	– 2.413	– 2.868
Single Female	0.43706	0.58065	0.30788	– 6.110	5.548
Single Male	0.23662	0.22392	0.19452	0.662	2.197
Household Size	1.91216	2.33331	3.10764	1.681	4.783
Household Income	2.44268	2.05510	2.42986	– 7.677	– 0.256
Age 24 or Less	0.06803	0.08136	0.09408	– 1.240	– 2.421
Age 25–44	0.29977	0.43861	0.52518	– 6.943	– 11.229
Age 62 or More	0.39330	0.20406	0.15505	– 12.322	– 15.469
Savings 25K or More	0.08877	0.01153	0.01817	– 4.922	– 4.501
African-American	0.00000	1.00000	0.00000	– 40.529	0.000
White Hispanic	0.00000	0.00000	0.63752	0.000	– 28.501
Non-White Hispanic	0.00000	0.00000	0.36248	0.000	– 39.218
All metropolitan areas[c]				8.514	– 0.200
Number of observations	16,199	13,447	10,842		
	Panel B: High-Income Households				
	Sample Mean			**Pr(Own)$_{African-American}$ Minus Pr(Own)$_{White}$[a, b] (%)**	**Pr(Own)$_{Hispanic}$ Minus Pr(Own)$_{White}$[a, b] (%)**
Variable Name	**White**	**African-American**	**Hispanic**		
Own Home	0.85978	0.74313	0.74488	NA	NA
Intercept	NA	NA	NA	NA	NA
High School Graduate	0.19302	0.21247	0.21765	0.083	0.106
Post High School	0.28890	0.34807	0.31504	0.394	0.175
College Graduate	0.46905	0.33495	0.29820	– 1.315	– 1.690
Single Female	0.12893	0.24598	0.11563	– 1.840	0.199
Single Male	0.14475	0.14528	0.13261	– 0.010	0.241
Household Size	2.87118	3.09691	3.60132	0.257	0.821
Household Income	10.48242	8.74979	9.62220	– 0.668	– 0.329

Exhibit 4

Sample: All Households in All Years
Variable Means and Effect of Variables on the Likelihood of Homeownership (2 of 2)

Variable Name	Sample Mean			Pr(Own)$_{African\text{-}American}$ Minus Pr(Own)$_{White}$[a, b] (%)	Pr(Own)$_{Hispanic}$ Minus Pr(Own)$_{White}$[a, b] (%)
Panel B: High-Income Households (continued)					
	White	**African-American**	**Hispanic**		
Age 24 or Less	0.01445	0.02505	0.02722	– 0.242	– 0.292
Age 25–44	0.44816	0.48886	0.57732	– 0.488	– 1.592
Age 62 or More	0.12621	0.09121	0.06582	– 0.418	– 0.727
Savings 25K or More	0.02062	0.00432	0.00603	– 0.160	– 0.143
African-American	0.00000	1.00000	0.00000	– 10.548	0.000
White Hispanic	0.00000	0.00000	0.70601	0.000	– 6.161
Non-White Hispanic	0.00000	0.00000	0.29399	0.000	– 9.661
All metropolitan areas[c]				0.671	– 1.781
Number of observations	18,335	5,789	7,126		

NA = Not applicable.

[a] *Probabilities are calculated at the means for the entire sample (all Whites, African-Americans, and Hispanics) except for the variable in question, which is evaluated at the mean for the denoted minority group and Whites, respectively.*

[b] *Pr(Own) = 1 / (1 – e$^{-X\beta}$), where Xß = a vector representing the sum of the product individual independent variable values (Xs) and estimated coefficients (ßs). Pr(Own)$_{minority}$ = the probability of owning given all the variables in the regression are evaluated at the overall sample mean except the particular variable in question, which is evaluated at the mean for the minority households. Pr(Own)White = the probability of owning given all the variables in the regression are evaluated at the overall sample mean except the particular variable in question, which is evaluated at the mean for the White households. Pr(Own)$_{minority}$ – Pr(Own)$_{White}$ is expressed as a percentage of Pr(Own), the predicted average likelihood of ownership calculated at the mean for the overall sample. Thus, if for a given variable, xj, Pr(Own)$_{minority}$ = 0.40 and Pr(Own)$_{White}$ = 0.45 and Pr(Own) = 0.42, then the calculation for variable xj is [(0.40 – 0.45) /0.42] x 100 = 11.9 percent.*

[c] *"All metropolitan areas" represents the cumulative impact of a set of categorical variables corresponding to the different SMSAs in which the households are located.*

Exhibit 5 presents similar results for the house value models for homeowners. A number of differences in the characteristics of Hispanics and African Americans lead to substantial reductions in the value of the housing they occupy.[21] For example, particularly in the low-income group (exhibit 5a), lower levels of educational attainment for Hispanics and African Americans are correlated with lower valued owned homes. Specifically, for Hispanic households their house values are $8,523.22 ($590.86 + $1,599.66 + $6,332.70) lower than those of low-income White owners. For African-American households, the difference is $4,542.20 ($502.57 + $118.97 + $3,920.66). Other

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[21] Because the regression coefficients in this analysis were estimated using a sample that pools households of all three ethnic/racial groups, the implicit assumption being made is that the coefficients corresponding to the various independent variables (for example, education, income, age) have the same impact across all ethnic groups. This assumption may not be the case. The assumption could be relaxed by stratifying the samples into White, African-American, and Hispanic subsamples. Given that the primary purpose of estimating these equations was to demonstrate that significant racial differences still exist when controlling for various other characteristics that might influence the demand for housing services, we chose not to run separate regressions for each racial group. This type of stratification, however, is employed in the second part of the article in which the factors affecting households' perceptions of the structural quality of their dwelling and the neighborhood in which it is located are investigated.

observations can be found by merely examining the differences in sample means. For example, it is noteworthy that for White households a substantially higher proportion of the households in the sample have heads that are more than 62 years old, suggesting they are in the low-income subsample because of retirement. As one might expect, their house values are much higher than those of low-income, working-age households. Again, focusing on the low-income group, those with substantial savings have higher house values, as one might expect. The largest effect on house value for both high- and low-income households, controlling for as many socioeconomic charac-

Exhibit 5a

Sample: All Households in All Years
Variable Means and Effects of Variables on House Value
Low-Income Homeowners

Variable Name	Sample Mean			House Value (African American Mean -White Mean) x Coefficient[a]	House Value (Hispanic Mean -White Mean) x Coefficient[a]
	White	African- American	Hispanic	($)	($)
Current House Value	147.28920	95.05469	128.68114	NA	NA
Monthly Housing Cost	683.4819	653.5064	773.6894	NA	NA
Total Mortgage Payments	341.46408	363.21125	463.47852	NA	NA
Unit—Condominium	0.08127	0.03451	0.07450	NA	NA
Unit—Owned Manufactured	0.07599	0.01360	0.07037	NA	NA
High School Graduate	0.31240	0.26835	0.26062	(502.57)	(590.86)
Post High School	0.29616	0.29052	0.22033	(118.97)	(1,599.66)
College Graduate	0.21763	0.15185	0.11138	(3,920.66)	(6,332.70)
Single Female	0.39945	0.50617	0.25285	(2,131.67)	2,928.32
Single Male	0.17644	0.18113	0.13079	(121.69)	1,183.70
Household Size	1.97524	2.35411	3.16671	970.56	3,052.22
Hosuehold Income	2.54560	2.41994	2.71158	(164.27)	217.00
Age 24 or Less	0.02232	0.02426	0.02766	67.03	184.45
Age 25–44	0.21652	0.29283	0.42344	12.16	32.98
Age 62 or More	0.51228	0.36101	0.28076	(1,186.50)	(1,816.02)
Savings 25K or More	0.12226	0.02384	0.03688	(2,755.33)	(2,390.26)
Number of Years in Residence	18.54799	16.65175	12.19655	(292.50)	(979.73)
First-Time Owner	0.55875	0.27798	0.35598	(7,094.80)	(5,123.66)
African-American	0.00000	1.00000	0.00000	(20,113.18)	—[b]
White Hispanic	0.00000	0.00000	0.71099	—	(19,767.67)[b]
Non-White Hispanic	0.00000	0.00000	0.28901	—	(28,844.68)[b]
All metropolitan areas[c]	NA	NA	NA	(14,930.12)	15,042.99
Number of observations	9,856	4,781	4,121		

NA = Not applicable.

[a] Regression coefficients are presented in exhibit 3. This calculation for a given variable, x_j is $(x_{jm} - x_{jw}) \times \beta_j$, where x_{jm} = the minority mean for variable j, x_{jw} = the White mean for variable j, β_j = the regression coefficient for variable j.

[b] Effect calculated based on a value of 1 for the racial category in question and 0 for all other alternatives.

[c] "All metropolitan areas" represents the cumulative impact of a set of categorical variables corresponding to the different SMSAs in which the households are located.

Exhibit 5b

Sample: All Households in All Years
Variable Means and Effects of Variables on House Value
High-Income Homeowners

Variable Name	Sample Mean			House Value (African American Mean -White Mean) x Coefficient[a] ($)	House Value (Hispanic Mean -White Mean) x Coefficient[a] ($)
	White	African-American	Hispanic		
Current House Value	221.4752	142.6643	204.2477	NA	NA
Monthly Housing Cost	1252.61	1037.63	1289.08	NA	NA
Total Mortgage Payments	904.06236	726.67911	949.99642	NA	NA
Unit—Condominium	0.04796	0.03231	0.05350	NA	NA
Unit—Owned Manufactured	0.01662	0.00604	0.01771	NA	NA
High School Graduate	0.19075	0.2101	0.2087	245.91	228.24
Post High School	0.28749	0.3387	0.3244	1,251.18	902.55
College Graduate	0.47437	0.3491	0.3229	(8,862.96)	(10,719.40)
Single Female	0.11361	0.2194	0.0921	(3,273.38)	664.71
Single Male	0.10962	0.1172	0.0820	(180.86)	663.77
Household Size	2.94722	3.1530	3.6336	786.80	2,624.89
Hosuehold Income	10.79164	8.7928	10.1724	(6,864.04)	(2,126.32)
Age 24 or Less	0.00907	0.0149	0.0128	60.46	38.95
Age 25–44	0.41994	0.4421	0.5373	(161.45)	(854.43)
Age 62 or More	0.13759	0.1102	0.0829	(396.87)	(791.95)
Savings 25K or More	0.02220	0.0049	0.0073	(457.17)	(392.09)
Number of Years in Residence	11.02582	10.6446	8.6486	312.52	1,948.71
First-Time Owner	0.64660	0.4000	0.5049	(14,391.44)	(8,271.19)
African-American	0.00000	1.0000	0.0000	(35,077.24)	NA
White Hispanic	0.00000	0.0000	0.7340	NA	(23,714.68)
Non-White Hispanic	0.00000	0.0000	0.2660	NA	(45,018.53)
All metropolitan areas[c]	NA	NA	NA	(11,751.70)	28,278.59
Number of observations	15,764	4,302	5,308		

NA = Not applicable.

[a] Regression coefficients are presented in exhibit 3. This calculation for a given variable, x_j is $(x_{jm} - x_{jw}) \times \beta_j$, where x_{jm} = the minority mean for variable j, x_{jw} = the White mean for variable j, β_j = the regression coefficient for variable j.

[b] Effect calculated based on a value of 1 for the racial category in question and 0 for all other alternatives.

[c] "All metropolitan areas" represents the cumulative impact of a set of categorical variables corresponding to the different SMSAs in which the households are located.

teristics as possible, is race. For example, low-income African-American households' average house value is $20,113.18 lower than that of Whites. For White and non-White Hispanics, these figures are $19,767.67 and $28,848.68, respectively. For high-income households, these differentials are comparable (exhibit 5b). This observation suggests that substantial differences exist in the current value of houses purchased by minorities, even after our sample is stratified by income, and controls are included in the regression for the market in which the dwelling was located, the time when

the value was observed, and the major socioeconomic factors thought to influence the value of a family's home purchase.

Exhibit 6 shows that, for renters, significant household differences by minority status exist in the basic rents paid by households in the sample. Minority households have substantially lower rents than White households do. Also, non-White Hispanics have slightly lower rents than either their high- or low-income African-American counterparts do. Specifically, the differential in annual rental cost when comparing with White households is $871 for low-income non-White Hispanics and $1,770 for high-income non-White Hispanics. For African-American households, these differences are $712 and $1,312, respectively.

Collectively, the results in exhibits 4 through 6 demonstrate the importance of racial differences per se (controlling for other socioeconomic differences and differences in the markets in which the choices were made) as determinants of house value and rental expenditures for renters. They reinforce the arguments made previously in the discussion of mean characteristics (exhibit 1) in which the mean house values for owners or rental payments are always the highest for Whites regardless

Exhibit 6

Sample: All Households in All Years
Variable Means and Effects of Variables on Annual Rent (1 of 2)

Variable Name	Panel A: Low-Income Renters				
	Sample Mean			Annualized (African-American Mean – White Mean) x Coefficient[a]	Annualized (Hispanic Mean – White Mean) x Coefficient[a]
	White	African-American	Hispanic	($)	($)
Monthly Rent	605.8988	496.2181	592.2403	NA	NA
Intercept	NA	NA	NA	NA	NA
Rent Subsidy	0.05959	0.10835	0.05535	(26.14)	2.28
High School Graduate	0.27810	0.31606	0.25696	15.16	(8.44)
Post High School	0.32004	0.30372	0.19848	(13.68)	(101.89)
College Graduate	0.23601	0.09347	0.08228	(208.25)	(224.60)
Single Female	0.49551	0.62174	0.34162	19.48	(23.74)
Single Male	0.33013	0.24752	0.23360	7.97	9.32
Household Size	1.81413	2.32183	3.07142	180.04	445.86
Household Income	2.28276	1.85383	2.25711	(165.96)	(9.92)
Age 24 or Less	0.13905	0.11285	0.13480	(10.14)	(1.64)
Age 25–44	0.42913	0.51904	0.58756	(3.03)	(5.33)
Age 62 or More	0.20842	0.11747	0.07796	(25.70)	(36.86)
Savings 25K or More	0.03673	0.00473	0.00670	(52.58)	(49.35)
Number of Years in Residence	4.26060	3.86049	3.05148	24.36	73.60
African-American	0.00000	1.00000	0.00000	(711.52)	—
White Hispanic	0.00000	0.00000	0.59247	—	(764.29)
Non-White Hispanic	0.00000	0.00000	0.40753	—	(871.41)
All metropolitan areas[b]				(346.17)	574.77
Number of observations	6,343	8,666	6,721		

Exhibit 6

Sample: All Households in All Years
Variable Means and Effects of Variables on Annual Rent (2 of 2)

Variable Name	Sample Mean			Annualized (African-American Mean – White Mean) x Coefficient[a] ($)	Annualized (Hispanic Mean – White Mean) x Coefficient[a] ($)
	White	African-American	Hispanic		
Panel B: High-Income Renters					
Monthly Rent	864.9844	693.5057	807.3124	NA	NA
Intercept	NA	NA	NA	NA	NA
Rent Subsidy	0.00467	0.02017	0.01155	(14.45)	(6.41)
High School Graduate	0.20692	0.21923	0.24367	14.50	43.30
Post High School	0.29755	0.37525	0.28768	140.65	(17.87)
College Graduate	0.43641	0.29388	0.22607	(417.20)	(615.69)
Single Female	0.22287	0.32280	0.18427	(18.49)	7.14
Single Male	0.36017	0.22663	0.28053	67.83	40.45
Household Size	2.40490	2.93477	3.50715	198.47	412.85
Household Income	8.58649	8.62539	8.01568	0.84	(12.31)
Age 24 or Less	0.04745	0.05447	0.06931	(2.14)	(6.65)
Age 25–44	0.62116	0.62408	0.69417	(1.07)	(26.71)
Age 62 or More	0.05640	0.03631	0.01595	(21.46)	(43.23)
Savings 25K or More	0.01089	0.00269	0.00220	(1.13)	(1.20)
Number of Years in Residence	3.23221	3.53867	2.79428	(50.21)	71.75
African American	0.00000	1.00000	0.00000	(1,311.88)	—
White Hispanic	0.00000	0.00000	0.62431	—	(963.86)
Non-White Hispanic	0.00000	0.00000	0.37569	—	(1,769.51)
All metropolitan areas[b]				(641.99)	729.03
Number of observations	2,571	1,487	1,818		

NA = Not applicable.

[a] Regression coefficients are presented in exhibit 3. This calculation for a given variable, x_j, is $(x_{jm} - x_{jw}) \times \beta_j$, where xjm = the minority mean for variable j, x_{jw} = the white mean for variable j, and β_j = the regression coefficient for variable j.

[b] "All metropolitan areas" represents the cumulative impact of a set of categorical variables corresponding to the different SMSAs in which the households are located.

of whether they were high or low income, and African-American households' house values and rental payments are substantially lower than those of both their White and Hispanic counterparts.

Recent Movers

To more fully explore the issues for households assumed to be faced with a recent housing decision, exhibits 7 through 10 present results only for recent movers. As stated earlier, consideration of this subsample of households is potentially important for two related reasons. First, it represents how minority and other households are being treated today as they make active housing choices, as compared with a presentation of the cumulative outcome of housing choices that were made

(or not made) over decades. Second, because these choices have been made recently, household income, household size, and other socioeconomic factors represent measures of the households' situations at the time when these housing choices were actively made. These exhibits include an additional variable in the analysis as defined in exhibit 2: whether the household was a homeowner before the recent move.

In general, the results for recent movers are similar to those for the full sample based on this smaller set of observations; however, several points in the analysis for recent movers are of particular interest. As stated previously, a primary motivation for running regressions (exhibit 7) and calculating the magnitude of the effect of variables on the likelihood of ownership, housing values for owners, and annual rental cost for renters (exhibits 8 through 10) is to demonstrate the importance of race, controlling for other factors influencing these choices. As previously demonstrated, race is particularly important in each of these outcomes. It is important to note, however, that the effect of race cannot be construed as a result of some form of discrimination. Although discrimination could play a role in producing this result, it could also be partly the result of omitted variables. For instance, using the AHS data, household wealth cannot be specified as well as one would like. In addition, it is not clear that Hispanic and African-American households would have the same preference for homeownership and/or the same level of demand for housing services, as is the case for comparable White households. Nonetheless, insights can be gained by considering any subtle differences that exist across the different racial/ethnic groups.

Regarding the effect on the likelihood of ownership (exhibit 8), African Americans appear to experience more of a negative effect than Hispanics do, and non-White Hispanics no longer appear to systematically be doing worse than White Hispanics. In particular, low-income African Americans have a 52.33-percent lower chance of owning a home and, for high-income African Americans, this differential is only 5.37 percent. For low- and high-income White Hispanics, these differentials are 38.20 and 4.17 percent, respectively; for low- and high-income non-White Hispanics, these differentials are estimated at 23.03 and 3.39 percent, respectively. The fact that non-White Hispanics have a lower differential than Whites is the opposite of what was observed for the full sample.

For housing value, no clear change is evident in the calculated differentials. Both high- and low-income African Americans and Hispanics continue to have substantially lower house values than Whites have. The same is true of annual rent for renters.

A result of interest involves the consistent sign and significance of previous tenure (which can be included only in recent mover sample) in all of the estimated equations. As noted in several recent papers such as Belsky and Duda (2002) and Boehm and Schlottmann (2002), asset accumulation through previous homeownership is an important determinant of future homeownership. Consistently, the results for recent movers confirm that previous homeownership is a significant determinant of current homeownership, house value, and, if the recent movers are renting, the value of the rental unit. Although they are indirect evidence, these results lend support to the importance of programs designed to increase homeownership as a means of wealth accumulation, which could enable a household to move to obtain better, more highly valued housing in the future.

Exhibit 7

Sample: Recent Movers in All Years
Regression Coefficients and Significance[a, b, c] (1 of 2)

Variable Name	Low-Income, P(Own)	High-Income, P(Own)	Low-Income Owner, House Value[d]	High-Income Owner, House Value[d]	Low-Income Owner, Housing Cost	High-Income Owner, Housing Cost	Low-Income Renter, Rent	High-Income Renter, Rent
Intercept	-2.6648 *	-0.122352	239.6721 *	301.1626 *	458.3242 *	603.5285 *	775.8281 *	1191.2327 *
Rent Subsidy	NA	NA	NA	NA	NA	NA	-25.6661 *	-117.5344 **
Total Mortgage Payments	NA	NA	NA	NA	0.9568 *	1.0006 *	NA	NA
Unit—Condominium	NA	NA	NA	NA	-1.3803	-36.0383 ***	NA	NA
Unit—Owned Manufactured	NA	NA	NA	NA	124.6671 *	80.6640 **	NA	NA
High School Graduate	0.0605	0.284679 *	10.6494 ***	19.0405 **	NA	NA	29.7014 *	131.1436 *
Post High School	0.1809 **	0.363289 *	22.1824 *	34.4826 *	NA	NA	73.2485 *	173.9658 *
College Graduate	0.4315 *	0.707306 *	47.3261 *	71.3781 *	NA	NA	120.3864 *	279.5982 *
Single Female	-0.6657 *	-1.009692 *	-22.6617 *	-37.4740 *	NA	NA	18.2430 *	-22.2923
Single Male	-0.8659 *	-1.270501 *	-24.3034 *	-25.3587 *	NA	NA	-1.5905	-36.0999 *
Household Size	0.1071 *	0.064878 *	1.9295	9.2230 *	NA	NA	34.1079 *	46.0567 *
Hosuehold Income	0.4289 *	0.013798 *	1.2115	5.9081 *	NA	NA	30.1751 *	2.1258 *
Age 24 or Less	-1.1114 *	-0.837417 *	4.1801	-16.3486	NA	NA	17.4452 **	-22.6096
Age 25–44	-0.2998 *	-0.204607 *	-5.5756	-15.0986 *	NA	NA	1.1432	-21.0127
Age 62 or More	0.8016 *	0.443105 *	-1.5401	-13.9301	NA	NA	32.6108 *	66.8954 *
Savings 25K or More	0.7714 *	-0.197007	61.9855 *	23.9694	NA	NA	134.1262 *	37.6346

Exhibit 7

Sample: Recent Movers in All Years
Regression Coefficients and Significance[a, b, c] (2 of 2)

Variable Name	Low-Income, P(Own)	High-Income, P(Own)	Low-Income, Owner, House Value[d]	High-Income, Owner, House Value[d]	Low-Income, Owner, Housing Cost	High-Income, Owner, Housing Cost	Low-Income, Renter, Rent	High-Income, Renter, Rent
African-American	– 0.6498 *	– 0.334796 *	– 15.6557 *	– 22.5373 *	NA	NA	– 61.9148 *	– 115.4088 *
White Hispanic	– 0.5460 *	– 0.288677 *	– 32.2758 *	– 23.7357 *	NA	NA	– 70.3688 *	– 66.0502 *
Non-White Hispanic	– 0.3921 *	– 0.267641 *	– 24.0538 *	– 48.6101 *	NA	NA	– 78.8632 *	– 144.4279 *
Number of Years in Residence	NA	NA	– 3.4167	– 11.1044 *	NA	NA	– 11.3390 *	– 31.3817 *
First-Time Owner	NA	NA	20.4978 *	39.3487 *	NA	NA	NA	NA
Owned Prior to Move	0.8201 *	0.963640 *	11.0657 **	37.5928 *	NA	NA	22.9222 *	32.3176 **
R²	0.16307 [e]	0.14979 [e]	0.2913	0.2913	0.2913	0.2913	0.3346	0.4222
Number of observations	13688	7594	2543	3940	2575	4502	11113	3092

NA = Not applicable.

[a] The P(Own) equations were estimated using logit analysis.

[b] *, **, and *** represent significance at the 1-, 5-, and 10-percent levels, respectively.

[c] All regressions include discrete variables indicating in which of 41 standard metropolitan statistical areas (SMSAs) the housing units were located (over the 3-year time period: 1998, 2002, and 2004). For a complete list of these SMSAs, see appendix A.

[d] House value in thousand dollar units.

[e] For the logit equations, the R² is computed as 1- (unrestricted log-likelihood function/restricted log-likelihood function).

Exhibit 8

Sample: Recent Movers in All Years
Variable Means and Effect of Variables on the Likelihood of Homeownership (1 of 2)

Variable Name	Sample Mean			Pr(Own)_{African-American} Minus Pr(Own)_{White} [a, b] (%)	Pr(Own)_{Hispanic} Minus Pr(Own)_{White} [a, b] (%)
	White	**African-American**	**Hispanic**		
Panel A: Low-Income Households					
Own Home	0.26550	0.12682	0.18119	NA	NA
Intercept	NA	NA	NA	NA	NA
High School Graduate	0.25999	0.31196	0.27340	0.268	0.069
Post High School	0.34819	0.33034	0.21562	− 0.277	− 2.042
College Graduate	0.26412	0.11604	0.08643	− 5.516	− 6.589
Single Female	0.45223	0.60835	0.31754	− 8.604	7.957
Single Male	0.32154	0.24506	0.22787	5.585	6.877
Household Size	1.96716	2.42820	3.11786	4.117	10.556
Household Income	2.48910	2.02979	2.39491	− 16.655	− 3.610
Age 24 or Less	0.18833	0.15898	0.17518	2.784	1.239
Age 25–44	0.48048	0.57360	0.60827	− 2.398	− 3.278
Age 62 or More	0.12517	0.05652	0.04553	− 4.740	− 5.482
Savings 25K or More	0.03836	0.00479	0.00855	− 2.216	− 1.970
Owned Prior to Move	0.32843	0.17775	0.18119	− 10.714	− 10.481
African-American	0.00000	1.00000	0.00000	− 52.331	0.000
White Hispanic	0.00000	0.00000	0.59787	0.000	− 38.195
Non-White Hispanic	0.00000	0.00000	0.40213	0.000	− 23.034
All metropolitan areas[c]				7.937	2.236
Number of observations	4,354	5,007	4,327		

Exhibit 8

Sample: Recent Movers in All Years
Variable Means and Effect of Variables on the Likelihood of Homeownership (2 of 2)

Variable Name	Sample Mean			Pr(Own)_African-American Minus Pr(Own)_White [a,b] (%)	Pr(Own)_Hispanic Minus Pr(Own)_White [a,b] (%)
	Panel B: High-Income Households				
	White	African-American	Hispanic		
Own Home	0.64457	0.52760	0.54318	NA	NA
Intercept	NA	NA	NA	NA	NA
High School Graduate	0.17126	0.20499	0.22322	0.144	0.221
Post High School	0.29168	0.37582	0.31524	0.455	0.128
College Graduate	0.49456	0.33771	0.29873	− 1.654	− 2.085
Single Female	0.15153	0.25033	0.14960	− 1.525	0.029
Single Male	0.23096	0.18988	0.20104	0.778	0.570
Household Size	2.70023	3.03351	3.43841	0.325	0.714
Household Income	10.13987	8.90115	8.72166	− 0.256	− 0.293
Age 24 or Less	0.04022	0.05519	0.06135	− 0.187	− 0.265
Age 25–44	0.65343	0.68003	0.71071	− 0.081	− 0.176
Age 62 or More	0.04225	0.02234	0.01982	− 0.132	− 0.149
Savings 25K or More	0.01568	0.00329	0.00378	0.037	0.035
Owned Prior to Move	0.47129	0.29238	0.33129	− 2.606	− 2.012
African-American	0.00000	1.00000	0.00000	− 5.372	0.000
White Hispanic	0.00000	0.00000	0.66730	0.000	− 4.169
Non-White Hispanic	0.00000	0.00000	0.33270	0.000	− 3.389
All metropolitan areas[c]				0.848	− 0.291
Number of observations	3,953	1,522	2,119		

NA = Not applicable.

[a] *Probabilities are calculated at the means for the entire sample (all Whites, African-Americans, and Hispanics) except for the variable in question, which is evaluated at the mean for the denoted minority group and Whites, respectively.*

[b] *Pr(Own) = 1 / (1 − e^{-Xß}), where Xß= a vector representing the sum of the product individual independent variable values (Xs) and estimated coefficients (ßs). Pr(Own)_minority = the probability of owning given all the variables in the regression are evaluated at the overall sample mean except the particular variable in question, which is evaluated at the mean for the minority households. Pr(Own)_White = the probability of owning given all the variables in the regression are evaluated at the overall sample mean except the particular variable in question, which is evaluated at the mean for the white households. Pr(Own)_minority − Pr(Own)_White is expressed as a percentage of Pr(Own), the predicted average likelihood of ownership calculated at the mean for the overall sample. Thus, if for a given variable, xj, Pr(Own)_minority = 0.40 and Pr(Own)_White = 0.45 and Pr(Own) = 0.42, then the calculation for variable xj is [(0.40 − 0.45) /0.42] x 100 = 11.9 percent.*

[c] *"All metropolitan areas" represents the cumulative impact of a set of categorical variables corresponding to the different SMSAs in which the households are located.*

Exhibit 9a

Sample: Recent Movers in All Years
Variable Means and Effects of Variables on House Value
Low-Income Homeowners

Variable Name	Sample Mean			House Value (African American Mean -White Mean) x Coefficient[a]	House Value (Hispanic Mean -White Mean) x Coefficient[a]
	White	African-American	Hispanic	($)	($)
Current House Value	148.350	107.547	120.694	NA	NA
Monthly Housing Cost	893.242	803.674	896.477	NA	NA
Total Mortgage Payments	578.87	555.26	619.07	NA	NA
Unit—Condominium	0.12889	0.07559	0.09949	NA	NA
Unit—Owned Manufactured	0.11851	0.02205	0.11480	NA	NA
High School Graduate	0.25692	0.24409	0.27168	(136.59)	157.22
Post High School	0.33045	0.36063	0.23980	669.47	(2,010.92)
College Graduate	0.29585	0.22992	0.10842	(3,120.05)	(8,870.31)
Single Female	0.39014	0.51654	0.20663	(2,864.38)	4,158.56
Single Male	0.22059	0.19528	0.14668	615.18	1,796.13
Household Size	2.17561	2.66457	3.50765	943.47	2,570.23
Household Income	2.90528	2.90860	2.93063	4.02	30.71
Age 24 or Less	0.07612	0.05669	0.07526	(81.23)	(3.63)
Age 25–44	0.46107	0.60157	0.65051	(783.38)	(1,056.22)
Age 62 or More	0.20675	0.09606	0.08673	170.47	184.84
Savings 25K or More	0.06055	0.01575	0.01786	(2,777.30)	(2,646.56)
Number of Years in Residence	1.00433	0.97953	0.99235	84.73	40.93
First-Time Owner	0.54844	0.29291	0.33801	(5,237.79)	(4,313.40)
Owned Prior to Move	0.49481	0.25984	0.30357	(2,600.07)	(2,116.18)
African-American	0.00000	1.00000	0.00000	(15,655.73)	—[b]
White Hispanic	0.00000	0.00000	0.59566	—	(32,275.81)[b]
Non-White Hispanic	0.00000	0.00000	0.40434	—	(24,053.82)[b]
All metropolitan areas[c]	NA	NA	NA	(10,004.17)	13,536.26
Number of observations	1,140	627	776		

NA = Not applicable.

[a] Regression coefficients are presented in exhibit 3. This calculation for a given variable, x_j is $(x_{jm} - x_{jw}) \times \beta_j$, where x_{jm} = the minority mean for variable j, x_{jw} = the White mean for variable j, β_j = the regression coefficient for variable j.

[b] Effect calculated based on a value of 1 for the racial category in question and 0 for all other alternatives.

[c] "All metropolitan areas" represents the cumulative impact of a set of categorical variables corresponding to the different SMSAs in which the households are located.

Exhibit 9b

Sample: Recent Movers in All Years
Variable Means and Effects of Variables on House Value
High-Income Homeowners

Variable Name	Sample Mean			House Value (African American Mean -White Mean) x Coefficient[a] ($)	House Value (Hispanic Mean -White Mean) x Coefficient[a] ($)
	White	African-American	Hispanic		
Current House Value	240.00	172.38	211.30	NA	NA
Monthly Housing Cost	1503.63	1220.67	1451.26	NA	NA
Intercept	NA	NA	NA	NA	NA
Total Mortgage Payments	1176.53	951.12	1139.82	NA	NA
Unit—Condominium	0.07575	0.04981	0.08080	NA	NA
Unit—Owned Manufactured	0.02002	0.00125	0.02172	NA	NA
High School Graduate	0.15816	0.19303	0.21894	663.81	1,157.22
Post High School	0.27669	0.35866	0.33015	2,826.45	1,843.44
College Graduate	0.52630	0.37858	0.33884	(10,543.61)	(13,380.50)
Single Female	0.11264	0.20672	0.10513	(3,525.83)	281.48
Single Male	0.15031	0.13574	0.11295	369.55	947.62
Household Size	2.87637	3.16563	3.57428	2,667.80	6,436.81
Household Income	10.92931	9.11381	9.48721	(10,726.05)	(8,519.98)
Age 24 or Less	0.02237	0.03362	0.03301	(183.98)	(174.02)
Age 25–44	0.64560	0.66874	0.70895	(349.35)	(956.41)
Age 62 or More	0.05024	0.02864	0.02780	300.79	312.50
Savings 25K or More	0.01648	0.00125	0.00608	(365.25)	(249.33)
Number of Years in Residence	1.05769	1.01494	1.03301	474.69	274.03
First-Time Owner	0.68407	0.42964	0.53345	(10,011.37)	(5,926.57)
Owned Prior to Move	0.57653	0.35866	0.44570	(8,190.55)	(4,918.31)
African-American	0.00000	1.00000	0.00000	(22,537.31)	—[b]
White Hispanic	0.00000	0.00000	0.68028	—	(23,735.67)[b]
Non-White Hispanic	0.00000	0.00000	0.31972	—	(48,610.08)[b]
All metropolitan areas[c]	NA	NA	NA	(8,102.69)	26,123.00
Number of observations	2,537	800	776		

NA = Not applicable.

[a] Regression coefficients are presented in exhibit 3. This calculation for a given variable, x_j is $(x_{jm} - x_{jw}) \times \beta_j$, where xjm = the minority mean for variable j, x_{jw} = the White mean for variable j, ßj = the regression coefficient for variable j.

[b] Effect calculated based on a value of 1 for the racial category in question and 0 for all other alternatives.

[c] "All metropolitan areas" represents the cumulative impact of a set of categorical variables corresponding to the different SMSAs in which the households are located.

Exhibit 10

Sample: Recent Movers in All Years
Variable Means and Effects of Variables on Annual Rent (1 of 2)

	Panel A: Low-Income Renters				
	Sample Mean			Annualized (African-American Mean – White Mean) x Coefficient[a]	Annualized (Hispanic Mean – White Mean) x Coefficient[a]
Variable Name	White	African-American	Hispanic		
Monthly Rent	631.72	520.84	600.54	NA	NA
Intercept	NA	NA	NA	NA	NA
Rent Subsidy	0.04534	0.09927	0.04177	(16.61)	1.10
High School Graduate	0.26110	0.32182	0.27378	21.64	4.52
Post High School	0.35460	0.32594	0.21027	(25.19)	(126.86)
College Graduate	0.25266	0.09950	0.08157	(221.26)	(247.16)
Single Female	0.47467	0.62168	0.34208	32.18	(29.03)
Single Male	0.35804	0.25229	0.24584	2.02	2.14
Household Size	1.89181	2.39387	3.03161	205.49	466.52
Household Income	2.33865	1.90215	2.27636	(158.06)	(22.56)
Age 24 or Less	0.22889	0.17383	0.19729	(11.53)	(6.62)
Age 25–44	0.48749	0.56953	0.59893	1.13	1.53
Age 62 or More	0.09568	0.05078	0.03641	(17.57)	(23.20)
Savings 25K or More	0.03033	0.00320	0.00649	(43.66)	(38.37)
Number of Years in Residence	0.80394	0.81016	0.77900	(0.85)	3.39
Owned Prior to Move	0.26829	0.16583	0.15411	(28.18)	(31.41)
African-American	0.00000	1.00000	0.00000	(742.98)	—
White Hispanic	0.00000	0.00000	0.59836	—	(844.43)
Non-White Hispanic	0.00000	0.00000	0.40164	—	(946.36)
All metropolitan areas[c]	NA	NA	NA	(327.19)	557.13
Number of observations	3,198	4,372	3,543		

Exhibit 10

Sample: Recent Movers in All Years
Variable Means and Effects of Variables on Annual Rent (2 of 2)

Variable Name	Sample Mean			Annualized (African-American Mean – White Mean) x Coefficient[a]	Annualized (Hispanic Mean – White Mean) x Coefficient[a]
	White	African-American	Hispanic		
Panel B: High-Income Renters					
Monthly Rent	891.51	719.57	840.01	NA	NA
Intercept	NA	NA	NA	NA	NA
Rent Subsidy	0.00285	0.01669	0.01033	(19.52)	(10.55)
High School Graduate	0.19502	0.21836	0.22831	36.73	52.39
Post High School	0.31886	0.39499	0.29752	158.93	(44.55)
College Graduate	0.43701	0.29207	0.25103	(486.29)	(623.99)
Single Female	0.22206	0.29903	0.20248	(20.59)	5.24
Single Male	0.37722	0.25035	0.30579	54.96	30.95
Household Size	2.38078	2.88595	3.27686	279.20	495.24
Hosuehold Income	8.70822	8.66364	7.81138	(1.14)	(22.88)
Age 24 or Less	0.07260	0.07928	0.09504	(1.81)	(6.09)
Age 25–44	0.66762	0.69263	0.71281	(6.31)	(11.40)
Age 62 or More	0.02776	0.01530	0.01033	(10.00)	(13.99)
Savings 25K or More	0.01423	0.00556	0.00103	(3.92)	(5.96)
Number of Years in Residence	0.85765	0.79138	0.79752	24.96	22.64
Owned Prior to Move	0.28043	0.21836	0.19525	(24.07)	(33.03)
African-American	0.00000	1.00000	0.00000	(1,384.91)	—
White Hispanic	0.00000	0.00000	0.65186	—	(792.60)
Non-White Hispanic	0.00000	0.00000	0.34814	—	(1,733.13)
All metropolitan areas[c]	NA	NA	NA	(659.53)	667.98
Number of observations	1,405	719	968		

NA = Not applicable.

[a] *Regression coefficients are presented in exhibit 3. This calculation for a given variable, x_j is $(x_{jm} - x_{jw}) \times \beta_j$, where x_{jm} = the minority mean for variable j, x_{jw} = the White mean for variable j, β_j = the regression coefficient for variable j.*

[b] *Effect calculated based on a value of 1 for the racial category in question and 0 for all other alternatives.*

[c] *"All metropolitan areas" represents the cumulative impact of a set of categorical variables corresponding to the different SMSAs in which the households are located.*

Time in the United States: Effects on the Likelihood of Homeownership, Housing Values, and Rents

As shown in exhibit 2, the AHS in 2002 and 2004 has an additional variable of interest, namely the length of time a nonnative-born resident has been in this country. The literature on immigrant assimilation generally considers time spent in the United States as a major factor (see the recent literature review by Waters and Jiménez, 2005). Because Hispanic households are immigrating to this country at an increasingly rapid rate, and because length of residence might influence the effectiveness with which a household could function in the housing and mortgage markets, we selected a sample that included only households from the 2002 and 2004 sample periods. This selection was made to observe the effect of length of time in the United States on housing choices. It was our expectation that a discrete set of classifications would work better than a continuous variable due to the nonlinear nature of a household's learning curve. Consequently, we developed a classification scheme for length of residence in the United States (5 years or less, 5 to 12 years, 13 to 22 years, and 23 years or more) by dividing the observed distribution of this variable for nonnatural-born residents into quartiles. Subsequently, we estimated the same set of regressions discussed in the third section for both the full sample and for recent movers using the 2002 and 2004 AHS files to take advantage of this potentially insightful information.[22]

Exhibit 11 provides a summary of the effects on housing outcomes of time spent in the United States. The increase in the probability of homeownership as time in the United States increases for both low- and high-income households is striking for the full sample. For low-income households, holding income, age, education, marital status, and so on constant, both remaining in this country less than 5 years and living in the country between 5 and 12 years decrease the probability of owning; the coefficient values are -0.73896 and -0.42444, respectively. For high-income households, the coefficient values are -0.9279 and -0.4859, respectively.[23] All coefficients are statistically significant at the 1-percent level. To the extent that increased time spent in the United States can affect earned income, significantly lower rents are associated with more recent immigrants.

For recent movers, the negative effects are much smaller. Specifically, the coefficients for households that have been in the country 5 years or less are -0.1895 for low-income households and -0.40923 for households with higher incomes. Only the latter effect is statistically significant. For those households that have been in the United States between 5 and 12 years, both coefficients are insignificant and one has a positive sign. These results suggest a dynamic that may be at work. Recent movers represent households that have made an adjustment in their housing consumption and, therefore, are more likely to have moved closer to a traditional housing equilibrium situation. Therefore, they are more likely to be owners, and, whether owners or renters, closer to their optimal level of housing expenditure (housing value for owners, rent for renters) given their income, family size, and other characteristics. Their recent adjustment in housing consumption might be expected to diminish differences in their housing situation that primarily resulted from

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[22] Selected exhibits of these regressions appear in appendix B.

[23] Note that, because of the nonlinear nature of the logit probability model, these coefficient magnitudes do not represent the exact change in the probability of ownership associated with these variables. Nonetheless, the values are relatively large as compared with many of the other variables included in the regression.

a lack of information about U.S. markets when they first immigrated. The top panel of exhibit 11 shows clearly that the households that are recent arrivals have worse housing outcomes compared with other households, but these differences are much smaller among those recent arrivals that also recently moved. These results suggest that if recent arrivals are able to move, they improve their housing circumstances and so are not at the same disadvantage over time.[24]

Exhibit 11

Time Spent in the United States for Nonnative-Born Citizens Living in the United States Their Entire Lives
Regression Coefficients and Significance[a, b, c]

	Sample: All Households in 2002 and 2004					
Variable Name	**Low Income, P(Own)**	**High Income, P(Own)**	**Low-Income Owner, House Value[d]**	**High-Income Owner, House Value[d]**	**Low-Income Renter, Rent**	**High-Income Renter, Rent**
Less Than 5 Years in United States	– 0.73896 *	– 0.9279 *	– 9.9162	0.4730	– 38.2796 *	– 97.8302 *
5–12 Years in United States	– 0.42444 *	– 0.4859 *	– 7.5731	– 7.3579	– 26.2431 *	– 64.3877 **
13–22 Years in United States	0.06040	0.0426	– 7.3530	6.9505	– 17.0748	– 69.7892 **
23 Years or More in United States	0.30797 *	0.3750 *	4.1590	0.9481	– 12.6175	– 5.9086
Number of observations	26,476	19,723	12,389	15,700	13,992	3,543

	Sample: Recent Movers in 2002 and 2004					
Variable Name	**Low Income, P(Own)**	**High Income, P(Own)**	**Low-Income Owner, House Value[d]**	**High-Income Owner, House Value[d]**	**Low-Income Renter, Rent**	**High-Income Renter, Rent**
Less Than 5 Years in United States	– 0.1895	– 0.40923 *	– 1.1540	– 4.4248	– 63.6214 *	– 97.6543 *
5–12 Years in United States	0.1502	– 0.11495	– 3.6726	– 2.6956	– 36.2107 *	– 41.7562
13–22 Years in United States	0.4860 *	0.28948	5.6428	– 15.8701	– 20.8422	– 67.6456
23 Years or More in United States	0.4204 **	0.36927	30.4118 **	– 10.2522	– 23.1130	– 35.6294
Number of observations	9,244	4,997	1,817	2,626	7,405	1,947

[a] The P(Own) equations were estimated using logit analysis.

*[b] *, **, and *** represent significance at the 1- , 5- , and 10-percent levels, respectively.*

[c] These regressions include all the variables in regressions estimated for the full sample. Appendix B contains the complete results for these regressions.

[d] House value in thousand dollar units.

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[24] The AHS is not, of course, a longitudinal household survey. This argument implies that, over time, the household experiences some type of (positive) work history, additional financial knowledge of the housing system, and so on.

Neighborhood and Structural Quality

The results discussed previously for the likelihood of homeownership for minority households and their pattern of housing expenditures provide a context for a more detailed analysis of housing quality. In particular, minority households have lower likelihoods of ownership and lower levels of housing expenditure on both owned and rented units for both higher and lower income households. Thus, minority households might be expected to rank their circumstances somewhat lower than those of White households overall, and the individual factors that combine to produce the housing services these households receive could be quite different depending on the racial/ethnic group to which a household belongs.

The purpose of this section is to analyze the relative importance of various individual structural and neighborhood attributes in determining households' perceptions of overall dwelling and neighborhood quality. In addition, we present results separately for households that are owners and those that are renters.

As noted, the AHS data contain detailed information on the structural characteristics of the house, the characteristics of the neighborhood in which the house is located, the current cost of housing services, the demographic characteristics of the resident of the dwelling at the time of the interview, and two indices that measure the resident's satisfaction with his or her neighborhood and the quality of the structure in which he or she resides on an ordinal scale from 1 to 10. Basic characteristics of these data have been presented previously in the second section (the quality, size, and cost of housing: AHS 1998, 2002, 2004).

Conceptual Model

Most of the research considering the relative importance of individual structural and other (for example, neighborhood, public service, location) housing characteristics on household preferences has been implemented by estimating hedonic price models. In this approach, sales price or contract rent is regressed on a set of variables that describe the structure and its environment. Unfortunately, the hedonic approach has often been criticized because it assumes that consumer preferences are identical. In reality, however, consumer preferences may not be identical. For example, some individuals may not mind cracks in walls or peeling paint while others would find them quite objectionable. On the margin, if a household that ends up occupying a given dwelling is indifferent to these structural defects, then they will be uncorrelated with rent or value, even though most people would consider them to be bothersome.

In lieu of the hedonic approach, we employ the estimating technique in Boehm and Ihlanfeldt (1991), which reveals the importance of individual neighborhood characteristics on the overall quality of the neighborhood. In this analysis, the AHS 10-point scale is interpreted to be an ordinal utility index.[25] This approach has two primary advantages. First, for each household group, estimates represent the group average rather than the preferences of the marginal purchaser of housing services. Second, by focusing on perceptions rather than the relationship between some objective characteristics and dwelling rent/price, we can identify more clearly the factors that influence the way people feel about their living environment.

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[25] See appendix C for a detailed description of the assumptions underlying this estimation technique.

Variable Definitions

A great deal of structural information is provided for each housing unit included in the AHS, including structure age; unit size (used to construct a measure of crowding); availability and age of major appliances; type and condition of heating, air-conditioning, plumbing, and electrical systems; and structural problems with the roof, internal and external walls, windows, and foundation. In addition, a detailed set of neighborhood factors is included in the questions that relate to such issues as crime, noise, litter, abandoned buildings, general deterioration, and so on. Exhibit 12 contains variable names and definitions for all the variables included in the analysis.[26]

Exhibit 12

Structural and Neighborhood Quality
Variable Names and Definitions (1 of 3)

Variable Name	Variable Definition
Structural	
Structure Quality	Housing structural quality ranking: 0 = worst, 9 = best[a]
Structure Age	Age of the structure in years
Porch	1 = housing unit has a porch; 0 = otherwise
Garage	1 = housing unit has a garage or carport; 0 = otherwise
Equipment	Number of the following items the housing unit has at least one of: refrigerator, garbage disposal, stove/oven, dishwasher, washer/dryer
Bathroom and Water	1 = unit has a private toilet; 0 = otherwise
	1 = unit has hot and cold piped water; 0 = otherwise
Septic or Cesspool	1 = unit is connected to a public sewer or septic system; 0 = otherwise
Central Air	1 = unit has central air conditioning; 0 = otherwise
Structural Problems	Number of structural problems observed by the enumerator: sagging roof, missing roof materials, holes in roof, missing wall material or siding, sloping exterior walls, broken windows, bars on windows, and/or crumbling foundation
Exterior Leaks	1 = exterior leak in the past 12 months; 0 = otherwise
Interior Leaks	1 = interior leak in the past 12 months; 0 = otherwise
Interior Deterioration	1 = cracks or holes in walls or ceiling, holes in floor, or broken plaster or peeling paint more than 1 square foot; 0 = otherwise
Water Breakdowns	Number of water source breakdowns in the past 90 days
Toilet Breakdowns	Number of toilet breakdowns in the past 90 days
Sewer Breakdowns	Number of public sewer breakdowns in the past 90 days
Inadequate Wiring	1 = inadequate electrical wiring; 0 = otherwise
Blown Fuses	Number of times fuses blew or breakers tripped in the past 90 days
Heating Breakdowns	Number of heat breakdowns last winter lasting 6 hours or more
	1 = steam, electric, heat pump, or central warm air furnace; 0 = otherwise
Built-in Electric Heat	1 = other built-in electric floor, wall, or heaters; 0 = otherwise

[26] Often when one incorporates many structural variables in estimating an equation, multicollinearity can be a significant concern. Fortunately, this issue does not appear to be a significant issue in our low-income household samples.

Exhibit 12

Structural and Neighborhood Quality
Variable Names and Definitions (2 of 3)

Variable Name	Variable Definition
Lowest Quality Heat	1 = space heaters, stoves, fireplaces, or no heat; 0 = otherwise
Vermin Present	1 = presence of rats or mice in building in the past 90 days; 0 = otherwise
Water Not Safe	1 = water is not safe to drink; 0 = otherwise
Rooms to Household Size	Number of rooms in the housing unit divided by the number of individuals in the household.
Unit Manufactured	1 = housing unit was manufactured; 0 = otherwise
Neighborhood	
Neighborhood Quality	Housing neighborhood quality ranking: 0 = worst, 9 = besta
Lowrise Buildings	1 = enumerator observed single-family or other lowrise buildings within 1/2 block of unit; 0 = otherwise
Midrise Buildings	1 = enumerator observed midrise residential buildings within 1/2 block of unit; 0 = otherwise
Highrise Buildings	1 = enumerator observed highrise residential buildings within 1/2 block of unit; 0 = otherwise
Mobile Homes	1 = enumerator observed mobile homes within 1/2 block of unit; 0 = otherwise
Commercial Buildings	1 = enumerator observed commercial/institutional/industrial buildings within 1/2 block of unit; 0 = otherwise
Parking Lots	1 = enumerator observed residential parking lots within 1/2 block of unit; 0 = otherwise
Water	1 = enumerator observed a body of water within 1/2 block of unit; 0 = otherwise
Green Space	1 = enumerator observed open space/park/woods/farm/ranch within 1/2 block of unit; 0 = otherwise
Older Buildings	1 = enumerator observed buildings in the area are predominantly older than the unit; 0= otherwise
Newer Buildings	1 = enumerator observed buildings in the area are predominantly younger than the unit; 0= otherwise
Abandoned Buildings	1 = enumerator observed abandoned buildings within 1/2 block of unit; 0 = otherwise
Bars on Windows	1 = enumerator observed bars on windows of buildings within 1/2 block of unit; 0 = otherwise
Road Repairs Needed	1 = enumerator observed roads in need of repairs within 1/2 block of unit; 0 = otherwise
Junk	1 = enumerator observed trash, litter, or junk accumulated in the neighborhood; 0 = otherwise
Crime Problem	1 = resident feels crime in the neighborhood is bothersome; 0 = otherwise
Noise Problem	1 = resident feels noise in the neighborhood is bothersome; 0 = otherwise
Litter Problem	1 = resident feels litter or housing deterioration in the neighborhood is bothersome; 0 = otherwise

Exhibit 12

Structural and Neighborhood Quality
Variable Names and Definitions (3 of 3)

Variable Name	Variable Definition
Poor Services	1 = resident feels poor city/county services in the neighborhood are bothersome; 0 = otherwise
Property Use Problem	1 = resident feels undesirable nonresidential uses in the neighborhood are bothersome; 0 = otherwise
Odor Problem	1 = resident feels odor in the neighborhood is bothersome; 0 = otherwise
Neighbor Problem	1 = resident feels people in the neighborhood are bothersome; 0 = otherwise
Other Problem	1 = resident feels some other feature in the neighborhood is bothersome; 0 = otherwise
Schools Inadequate	1 = schools in the area are inadequate; 0 = otherwise
Shopping Inadequate	1 = resident feels shopping in the area is inadequate; 0 = otherwise
Public Transit Good	1 = resident feels public transportation in the area is adequate; 0 = otherwise
Police Inadequate	1 = resident feels dissatisfied with police services; 0 = otherwise

[a] *In the American Housing Survey data, both structural and neighborhood quality are ordinal rankings with a range of 1 to 10. For the estimation software, the first category needs to be 0. Consequently, the means in this table are based on the normalized rankings between 0 and 9.*

Results

Exhibits 13 through 16 present the four separate sets of results for the dimensions of housing quality and neighborhood quality for both owners and renters. Separate equations are estimated for African-American, Hispanic, and White households.[27] For ease of exposition, we first consider the results for owners and then for renters.

Owners

Exhibit 13 shows owners' assessments of characteristics, or variables, that affect structural quality. These variables shed light on the sources of satisfaction (and dissatisfaction) with existing housing both overall and for specific minority groups. For each variable, the exhibit provides both the estimated regression coefficients and the mean values by household type.

In general, all households react in a similar manner to negative aspects of their owner-occupied homes. In exhibit 13, when one considers which variables have a significant effect on household rankings of the structural quality of their dwellings, variables such as external leaks, internal leaks, and vermin problems are viewed as lowering the quality of housing services. Households that are

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[27] As part of the racial/ethnic stratification, we decided not to split the Hispanic sample into White and non-White subsets for several reasons. First, the more data stratifications employed in the analysis, the more difficult and cumbersome it becomes to present all the results. Second, each stratification of the data reduces the sample size for a given regression. Finally, the most important variables demonstrated to influence structural and neighborhood rankings were relatively similar across the racial/ethnic groups currently employed.

Exhibit 13

Structural Quality of Owned Units
Ordinal Probit Coefficients and Means (1 of 3)

Variable Name	Hispanic Coefficients[a,b,c]	African-American Coefficients[a,b,c]	White Coefficients[a,b,c]	Hispanic Low Income Means	African-American Low Income Means	White Low Income Means	Hispanic High Income Means	African-American High Income Means	White High Income Means
Structure Quality[c]	NA	NA	NA	7.3608	7.3068	7.4446	7.4761	7.4354	7.4566
Intercept	1.8867 *	2.62347 *	2.1667 *	NA	NA	NA	NA	NA	NA
Structure Age	– 0.0033 *	– 0.00130 **	– 0.0021 *	39.8492	45.5429	40.2947	29.7078	33.0196	31.5746
Porch	0.0941 *	0.02462	0.1014 *	0.8437	0.8488	0.8837	0.9007	0.8809	0.9237
Garage	0.0973 *	0.09097 *	0.1513 *	0.7069	0.5840	0.7714	0.8450	0.7490	0.8693
Equipment	0.0244 ***	0.01183	0.0543 *	3.8758	3.6593	4.1133	4.4998	4.2745	4.5790
Bathroom and Water	0.9096 **	0.15702	0.4428	0.9978	0.9978	0.9996	0.9996	0.9995	0.9999
Septic or Cesspool	0.1447 *	0.16032 *	0.2858 *	0.0682	0.0611	0.1946	0.0856	0.0544	0.1964
Central Air	0.1185 *	0.11540 *	0.0758 *	0.5770	0.5906	0.6179	0.7195	0.7584	0.7078
Structural Problems	– 0.1025 *	– 0.13808 *	– 0.1903 *	0.4315	0.5442	0.2304	0.2438	0.3266	0.1741
Exterior Leaks	– 0.1917 *	– 0.10193 *	– 0.1008 *	0.1030	0.1551	0.1356	0.1062	0.1551	0.1612
Interior Leaks	– 0.2090 *	– 0.14695 *	– 0.1351 *	0.0809	0.1004	0.0722	0.1099	0.1080	0.0917
Interior Deterioration	– 0.2423 *	– 0.42731 *	– 0.3240 *	0.0921	0.1175	0.0604	0.0678	0.0730	0.0547
Water Breakdowns	– 0.0484	0.06335	– 0.0741 *	0.0301	0.0263	0.0340	0.0295	0.0232	0.0287
Toilet Breakdowns	– 0.0785 ***	0.02758	– 0.1518 *	0.0296	0.0309	0.0111	0.0191	0.0251	0.0103

Exhibit 13

Structural Quality of Owned Units
Ordinal Probit Coefficients and Means (2 of 3)

Variable Name	Hispanic Coefficients[a,b,c]	African-American Coefficients[a,b,c]	White Coefficients[a,b,c]	Hispanic Low Income Means	African-American Low Income Means	White Low Income Means	Hispanic High Income Means	African-American High Income Means	White High Income Means
Sewer Break-downs	0.0615	– 0.10718 ***	– 0.0607	0.0249	0.0247	0.0119	0.0158	0.0227	0.0088
Inadequate Wiring	– 0.0708	0.02800	– 0.1072 ***	0.0189	0.0232	0.0136	0.0143	0.0128	0.0114
Blown Fuses	– 0.0355 *	– 0.01321	– 0.0132 **	0.2127	0.3427	0.3510	0.3352	0.4470	0.4821
Heating Break-downs	– 0.0711	– 0.02606	– 0.0741 **	0.0269	0.0453	0.0260	0.0306	0.0372	0.0223
Built-in Electric Heat	0.0432	– 0.04149	– 0.0721 **	0.0938	0.0613	0.0518	0.0478	0.0365	0.0342
Lowest Quality Heat	– 0.1035 **	– 0.03467	– 0.1114 **	0.1072	0.0626	0.0279	0.0299	0.0237	0.0133
Vermin Present	– 0.1405 *	– 0.08251 *	– 0.0706 *	0.1879	0.2578	0.2024	0.1727	0.1897	0.2112
Water Not Safe	– 0.0383	– 0.08100 **	– 0.1277 *	0.2426	0.1341	0.0846	0.1895	0.1317	0.0756
Rooms to House-hold Size	0.0617 *	0.02785 *	0.0610 *	2.4742	3.5113	3.8290	2.2516	2.7552	2.9218
Unit Manu-factured	– 0.3604 *	– 0.08190	– 0.2910 *	0.0709	0.0133	0.0764	0.0179	0.0060	0.0164

Exhibit 13

Structural Quality of Owned Units
Ordinal Probit Coefficients and Means (3 of 3)

Variable Name	Hispanic Coefficients[a,b,c]	African-American Coefficients[a,b,c]	White Coefficients[a,b,c]	Hispanic Low Income Means	African-American Low Income Means	White Low Income Means	Hispanic High Income Means	African-American High Income Means	White High Income Means
Number of observations	9,207	8,709	24,920	4,019	4,570	9,511	5,188	4,139	15,409
Log likelihood fn	– 14565.14	– 14033.8	– 39019.04						
Chi-squared	776.8221	703.9435	1953.349						
Degrees of freedom	23	23	23						

NA = Not applicable.

[a] Not presented in this table is a set of "threshold" parameters corresponding to n-1 ordinal categories (for example, structural quality has rankings from 0 to 9).

[b] *, **, and *** represent significance at the 1-, 5-, and 10-percent levels, respectively. In addition, 8 "threshold" parameters (μjs) and one intercept term are estimated. All these parameters are significant at the 1-percent level.

[c] In the American Housing Survey data, both structural and neighborhood quality are ordinal rankings with a range of 1 to 10. For the estimation software, the first category needs to be 0. Consequently, the means in this table are based on the normalized rankings between 0 and 9.

on a public sewer system with a home's toilet systems and other plumbing working satisfactorily and that have a central heating system (as opposed to space heaters) have increased perceptions of quality. Although these statements might seem predictable, the results shown in exhibit 13, in general, dispel any myth of significant household differences in housing quality perceptions. To summarize, regardless of race/ethnicity, American households in general appear to agree on what makes good owner-occupied housing.

Significant issues should be noted, however, when comparing the mean quality levels by individual characteristics for households by minority status. In each exhibit, the mean values presented represent the average characteristic value observed for each racial group, stratified further into high- and low-income subgroups. Major structural problems and water-quality issues are much worse for Hispanic households and African-American households than they are for White households.[28] In exhibit 13, 43.2 percent of low-income Hispanics and 54.4 percent of low-income African Americans occupy owned homes with major structural problems, as compared with only 23.0 percent of low-income Whites. Similarly, 24.3 percent of low-income Hispanics occupy owned homes with water that is not safe to drink. This percentage is substantially higher than that of both low-income African-American households, at 13.4 percent, and low-income White households, at 8.5 percent. Although lower in magnitude, comparable differences exist for higher income households as well. The deterioration of interior facilities appears much worse for low-income minority homeowners, at 9.2 and 11.8 percent, respectively, for Hispanics and African Americans, as compared with 6.0 percent for Whites. Similarly, low-income Hispanic homeowners are substantially more likely to have lower quality heating sources (that is, space heaters, stoves, fireplaces, or no heat), with 10.7 percent of households falling into this category as compared with 6.3 percent of low-income African Americans and only 2.8 percent of low-income Whites. Finally, both low- and high-income Hispanics face more crowding. Low-income Hispanic households average 2.5 rooms per person; in contrast, African-American and White households have more than a room more of space per person, averaging 3.5 and 3.8 rooms per person, respectively.

Exhibit 14 presents results for owners' determinants of neighborhood quality. As with structural characteristics, the results for the parameter estimates of the effect of individual characteristics on neighborhood quality (the first three columns) are relatively consistent in terms of the consistency of the sign, statistical significance, and magnitudes of these coefficients. These coefficient estimates demonstrate whether and to what extent various factors affect households' neighborhood rankings. Examining homeowners by minority status, general consistency is evident in the factors that matter—crime problems, litter problems, noise problems, roads in need of repair, junk and abandoned buildings—all creating undesirable neighborhoods. Similarly, neighborhoods with features such as green space and newer buildings are more desirable for all racial/ethnic groups.

As with structural characteristics, however, significant differences appear in household means of individual neighborhood characteristics by minority status. These differences appear particularly among low-income homeowners. Low-income Hispanic and African-American households consider inadequate policing to be more of an issue than White households do. Specifically, 10.7 percent

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[28] As defined in exhibit 12, structural problems include a number of conditions identified by survey enumerators—specifically, sagging roof, missing roof materials, holes in roof, missing wall material or siding, sloping exterior walls, broken windows, bars on windows, and/or crumbling foundation.

Exhibit 14

Neighborhood Quality of Owned Units
Ordinal Probit Coefficients and Means (1 of 2)

Variable Name	Hispanic Coefficients[a,b,c]	African-American Coefficients[a,b,c]	White Coefficients[a,b,c]	Hispanic Low Income Means	African-American Low Income Means	White Low Income Means	Hispanic High Income Means	African-American High Income Means	White High Income Means
Neighborhood Quality[c]	NA	NA	NA	7.0331	6.7352	7.1712	7.1717	6.9983	7.2378
Intercept	3.4329 *	3.3047 *	3.5253 *	NA	NA	NA	NA	NA	NA
Lowrise Buildings	– 0.1160 *	– 0.1369 *	– 0.1582 *	0.2446	0.2790	0.2094	0.2088	0.2402	0.1604
Midrise Buildings	0.1827 **	0.0271	0.0213	0.0239	0.0317	0.0197	0.0177	0.0239	0.0151
Highrise Buildings	0.0472	0.1137	0.2059 *	0.0127	0.0103	0.0099	0.0075	0.0080	0.0064
Mobile Homes	– 0.0799 **	0.0761	– 0.2335 *	0.1028	0.0359	0.1058	0.0457	0.0259	0.0397
Commercial Buildings	– 0.0280	– 0.0373	– 0.0590 *	0.2797	0.2796	0.1970	0.1991	0.2431	0.1553
Parking Lots	– 0.0944 **	– 0.0012	– 0.0748 *	0.1368	0.1243	0.1340	0.1126	0.1087	0.1036
Water	0.0687 ***	0.0731 ***	0.0731 *	0.0928	0.0842	0.1727	0.1457	0.1384	0.2055
Green Space	0.0872 *	0.0874 *	0.1388 *	0.2379	0.2718	0.3567	0.3279	0.3276	0.4204
Older Buildings	– 0.0653 ***	0.0799 **	0.0156	0.0970	0.0954	0.1193	0.0634	0.0626	0.0788
Newer Buildings	0.0560	0.0862 **	0.0544 **	0.0637	0.0613	0.0752	0.0750	0.0732	0.0830
Abandoned Buildings	– 0.2478 *	– 0.2605 *	– 0.3268 *	0.0605	0.1497	0.0383	0.0372	0.0727	0.0238
Bars on Windows	– 0.0773 **	– 0.0349	– 0.1230 *	0.1956	0.2652	0.0539	0.1214	0.1759	0.0429
Road Repairs Needed	– 0.1402 *	– 0.1943 *	– 0.1587 *	0.3976	0.4928	0.3474	0.3167	0.3842	0.3126
Junk	– 0.3469 *	– 0.4381 *	– 0.4049 *	0.1053	0.1611	0.0841	0.0738	0.1020	0.0600
Crime Problem	– 0.5695 *	– 0.5320 *	– 0.5651 *	0.1257	0.1759	0.0877	0.1097	0.1206	0.0863
Noise Problem	– 0.3671 *	– 0.4047 *	– 0.4324 *	0.1483	0.1729	0.1356	0.1378	0.1256	0.1199
Litter Problem	– 0.5235 *	– 0.3155 *	– 0.4101 *	0.0251	0.0457	0.0216	0.0262	0.0319	0.0164

Exhibit 14

Neighborhood Quality of Owned Units
Ordinal Probit Coefficients and Means (2 of 2)

Variable Name	Hispanic Coefficients[a,b,c]	African-American Coefficients[a,b,c]	White Coefficients[a,b,c]	Hispanic Low Income Means	African-American Low Income Means	White Low Income Means	Hispanic High Income Means	African-American High Income Means	White High Income Means
Poor Services	– 0.1396	– 0.0181	– 0.0457	0.0144	0.0341	0.0088	0.0145	0.0239	0.0103
Odor Problem	– 0.3092 *	– 0.2122 *	– 0.2700 *	0.0075	0.0140	0.0076	0.0100	0.0106	0.0094
Property Use Problem	– 0.1966 ***	0.0921	– 0.2534 *	0.0455	0.0532	0.0339	0.0380	0.0350	0.0278
Neighbor Problem	– 0.4434 *	– 0.4685 *	– 0.6488 *	0.0530	0.0611	0.0453	0.0445	0.0505	0.0397
Other Problem	– 0.2979 *	– 0.2163 *	– 0.3151 *	0.1120	0.1138	0.1018	0.1297	0.1317	0.1120
Schools Inadequate	– 0.3504 *	– 0.3497 *	– 0.3003 *	0.0296	0.0306	0.0139	0.0412	0.0466	0.0275
Shopping Inadequate	– 0.0988 *	– 0.0890 *	– 0.0346 ***	0.1197	0.2066	0.1276	0.0921	0.1438	0.1041
Public Transit Good	– 0.0627 *	– 0.0541 **	– 0.0410 *	0.5272	0.5267	0.3356	0.4329	0.4148	0.3087
Police Inadequate	– 0.2684 *	– 0.3317 *	– 0.2202 *	0.1070	0.1245	0.0584	0.0779	0.0778	0.0513
Number of observations	9,207	8,709	24,920	4,019	4,570	9,511	5,188	4,139	15,409
Log likelihood fn	– 15322.75	– 15022.43	– 40756.8						
Chi-squared	1957.959	2365.287	4748.447						
Degrees of freedom	26	26	26						

NA = Not applicable.

[a] Not presented in this table is a set of "threshold" parameters corresponding to n-1 ordinal categories (for example, structural quality has rankings from 0 to 9). Thus, 8 "threshold" parameters (μjs) and one intercept term are estimated. All these parameters are significant at the 1-percent level.

[b] *, **, and *** represent significance at the 1-, 5-, and 10-percent levels, respectively.

[c] In the American Housing Survey data, both structural and neighborhood quality are ordinal rankings with a range of 1 to 10. For the estimation software, the first category needs to be 0. Consequently, the means in this table are based on the normalized rankings between 0 and 9.

of low-income Hispanic households and 12.5 percent of low-income African-American households consider police protection inadequate, compared with 5.8 percent of low-income White households. This trend is consistent with the observation that both minority groups have added concerns regarding the perceptions of crime problems within their neighborhood. In particular, 12.6 and 17.6 percent of low-income Hispanics and African Americans, respectively, perceive crime to be a problem, whereas only 8.8 percent of low-income Whites share this concern. Also, both high- and low-income White households have greater access to green space. In particular, on average, only 23.8 percent of low-income Hispanics and 27.2 percent of low-income African Americans have open green space within one-half block of their units, compared with 35.7 percent of low-income Whites. Consistent with central city locations, low-income African-American households tend to have more nearby abandoned buildings, which appear to exhibit a negative effect on neighborhood quality. Approximately 15 percent of low-income African Americans live near abandoned buildings as compared with 6.1 percent of low-income Hispanics and 3.8 percent of low-income Whites.

Renters

The results for renters, both for structural quality and neighborhood quality, are, in general, remarkably similar to the results for owners. In addition, perceptions of quality, as measured by the sign and statistical significance of the estimated coefficients shown in exhibit 15, are consistent across minority status as they were for owners. Significant characteristics that affect structural quality include external leaks, internal leaks, and vermin problems—all of which lower the perceived quality of rental housing. Similarly, households with well-functioning plumbing, heating systems, and other infrastructure systems all clearly rank their housing quality higher.

When considering differences in the average structural characteristics that affect the quality of housing services provided in rental units, the primary differences are remarkably similar to that of homeowners. Specifically, major structural problems are much more prevalent in units rented by minorities than in units rented by Whites. For low-income Hispanic and African-American renters, 48.4 and 51.8 percent, respectively, of the rental units have major structural problems. For low-income White renters, this number is only 34.3 percent. Similarly, units rented by low-income Hispanics and African Americans have higher percentages of major interior deterioration than do units rented by Whites—12.9, 15.0, and 9.9 percent, respectively. Also, for both the higher and lower income groups, Hispanic renters are much more likely than African-American or White renters to have the lowest quality heating options, water that is not safe to drink, and to be substantially more crowded in their units. In particular, for low-income Hispanic renters, 10.6 percent have low-quality heating, 31.3 percent have water that is not safe to drink, and, on average, this cohort has only 1.8 rooms per person as compared with approximately 2.5 rooms per person for other households.

Exhibit 16 presents results for renters' determinants of neighborhood quality. Factors that influence renters' perceptions of neighborhood quality are consistent with those factors affecting owners. In addition, these factors are similar across households by minority status. Crime problems, litter problems, noise problems, roads in need of repair, junk and abandoned buildings, and so on, create undesirable neighborhoods. A neighborhood with amenities such as green space and newer buildings is more desirable.

Exhibit 15

Structural Quality of Rental Units
Ordinal Probit Coefficients and Means (1 of 2)

Variable Name	Hispanic Coefficients[a,b,c]	African-American Coefficients[a,b,c]	White Coefficients[a,b,c]	Hispanic Low Income Means	African-American Low Income Means	White Low Income Means	Hispanic High Income Means	African-American High Income Means	White High Income Means
Structure Quality[c]	NA	NA	NA	6.3932	6.3020	6.5586	6.4866	6.4107	6.4653
Intercept	1.1346*	1.6290*	2.1585*	NA	NA	NA	NA	NA	NA
Structure Age	0.0001	0.0004	–0.0011**	40.1208	43.2640	40.6971	35.3555	35.4121	37.2146
Porch	0.1216*	0.0945*	0.0380	0.6486	0.6468	0.6568	0.7984	0.7665	0.7937
Garage	0.0621**	0.1130**	0.0280	0.3558	0.1963	0.3258	0.5465	0.3760	0.5375
Equipment	0.0741*	0.0466*	0.0350*	3.2515	3.1867	3.4355	3.8231	3.9027	4.0341
Bathroom and Water	0.9466*	0.4981*	0.3936**	0.9965	0.9960	0.9959	0.9994	0.9993	0.9992
Septic or Cesspool	0.1452***	0.1398	0.2026*	0.0178	0.0114	0.0520	0.0252	0.0111	0.0512
Central Air	0.0551***	0.0338	0.0034	0.4704	0.5109	0.4395	0.5571	0.6824	0.5502
Structural Problems	–0.1488*	–0.1395*	–0.1556*	0.4839	0.5183	0.3432	0.4003	0.4163	0.3130
Exterior Leaks	–0.1597*	–0.1338*	–0.1309*	0.0992	0.1226	0.1130	0.0974	0.1487	0.1313
Interior Leaks	–0.2739*	–0.2481*	–0.2486*	0.1322	0.1564	0.1176	0.1607	0.1619	0.1305
Interior Deterioration	–0.3376*	–0.4371*	–0.4773*	0.1290	0.1500	0.0994	0.0890	0.1140	0.0936
Water Breakdowns	–0.0909*	–0.0713*	–0.1479*	0.0696	0.0579	0.0592	0.0633	0.0688	0.0678
Toilet Breakdowns	–0.1571*	–0.0954*	–0.0770	0.0562	0.0680	0.0268	0.0392	0.0403	0.0294
Sewer Breakdowns	–0.0869**	–0.0835**	–0.0188	0.0315	0.0362	0.0145	0.0140	0.0299	0.0198
Inadequate Wiring	–0.2379*	–0.3235*	–0.3029*	0.0337	0.0351	0.0280	0.0241	0.0236	0.0186

Exhibit 15

Structural Quality of Rental Units
Ordinal Probit Coefficients and Means (2 of 2)

Variable Name	Hispanic Coefficients[a,b,c]	African-American Coefficients[a,b,c]	White Coefficients[a,b,c]	Hispanic Low Income Means	African-American Low Income Means	White Low Income Means	Hispanic High Income Means	African-American High Income Means	White High Income Means
Blown Fuses	− 0.0337 **	− 0.0216 ***	− 0.0114	0.1737	0.2661	0.2869	0.2794	0.3426	0.3566
Heating Breakdowns	− 0.0392	− 0.0543 *	− 0.1128 *	0.0464	0.0830	0.0477	0.0319	0.0507	0.0341
Built-in Electric Heat	− 0.0278	− 0.0644 **	− 0.0980 *	0.1916	0.1022	0.1538	0.1445	0.0730	0.1111
Lowest Quality Heat	− 0.0621	− 0.1313 **	− 0.1119 **	0.1056	0.0494	0.0347	0.0711	0.0271	0.0218
Vermin Present	− 0.1541 *	− 0.2194 *	− 0.2194 *	0.1388	0.1737	0.1076	0.1310	0.1258	0.0980
Water Not Safe	− 0.0254	− 0.1820	− 0.2306 *	0.3126	0.1598	0.1203	0.2772	0.1779	0.1115
Rooms to Household Size	0.0876 *	0.0652 *	0.0869 *	1.7766	2.4541	2.7757	1.6911	2.0772	2.5124
Number of observations	8,366	9,764	8,599	6,580	8,325	6,078	1,786	1,439	2,521
Log likelihood fn	− 15621.99	− 18553.46	− 15552.12						
Chi-squared	1184.50	1569.755	1067.849						
Degrees of freedom	22	22	22						

NA = Not applicable.

[a] Not presented in this table is a set of "threshold" parameters corresponding to n-1 ordinal categories (for example, structural quality has rankings from 0 to 9). Thus, 8 "threshold" parameters (μjs) and one intercept term are estimated. All these parameters are significant at the 1-percent level.

[b] *, **, and *** represent significance at the 1-, 5-, and 10-percent levels, respectively.

[c] In the American Housing Survey data, both structural and neighborhood quality are ordinal rankings with a range of 1 to 10. For the estimation software, the first category needs to be 0. Consequently, the means in this table are based on the normalized rankings between 0 and 9.

Exhibit 16

Neighborhood Quality of Rental Units
Ordinal Probit Coefficients and Means (1 of 2)

Variable Name	Hispanic Coefficients[a,b,c]	African-American Coefficients[a,b,c]	White Coefficients[a,b,c]	Hispanic Low Income Means	African-American Low Income Means	White Low Income Means	Hispanic High Income Means	African-American High Income Means	White High Income Means
Neighborhood Quality[c]	NA	NA	NA	6.3555	6.0049	6.4717	6.5414	6.3398	6.5593
Intercept	2.9305*	2.9592*	3.3706*	NA	NA	NA	NA	NA	NA
Lowrise Buildings	−0.1503*	−0.1294*	−0.1404*	0.7068	0.7082	0.6757	0.6176	0.6623	0.6283
Midrise Buildings	−0.0239	0.1165*	0.1186*	0.0891	0.1170	0.1158	0.0778	0.0910	0.0881
Highrise Buildings	0.0379	0.0238	0.0741	0.0394	0.0633	0.0456	0.0353	0.0424	0.0325
Mobile Homes	−0.0146	0.0712	−0.1587*	0.0509	0.0237	0.0457	0.0442	0.0229	0.0309
Commercial Buildings	0.0266	0.0268	−0.0531**	0.5260	0.5313	0.4808	0.4692	0.4767	0.4038
Parking Lots	0.0329	0.0145	−0.0581**	0.4353	0.4532	0.4732	0.3897	0.4225	0.3990
Water	0.0509	0.0564	0.0454	0.0916	0.0897	0.1479	0.1366	0.1508	0.1928
Green Space	0.0884*	0.0414**	0.1441**	0.2553	0.2924	0.3351	0.3007	0.3259	0.3689
Older Buildings	−0.0558***	−0.0478	−0.0610***	0.1470	0.1398	0.1420	0.1125	0.1070	0.1095
Newer Buildings	0.0963**	0.1346*	0.1164*	0.0676	0.0770	0.0867	0.0829	0.0890	0.0877
Abandoned Buildings	−0.2049*	−0.1731*	−0.3060*	0.0894	0.1594	0.0610	0.0622	0.0952	0.0464
Bars on Windows	0.0297	−0.0139	−0.0994**	0.1655	0.2022	0.0806	0.1305	0.1494	0.0793
Road Repairs Needed	−0.1839*	−0.1592*	−0.1848*	0.4339	0.5032	0.3799	0.3712	0.4315	0.3249
Junk	−0.3921*	−0.4288*	−0.4268*	0.1825	0.2223	0.1436	0.1366	0.1550	0.0889
Crime Problem	−0.7448*	−0.7501*	−0.6471*	0.1626	0.2072	0.1451	0.1450	0.1654	0.1111
Noise Problem	−0.3295*	−0.3939*	−0.4389*	0.1597	0.1886	0.1749	0.1545	0.1564	0.1698
Litter Problem	−0.1885**	−0.1710*	−0.2924*	0.0240	0.0329	0.0196	0.0230	0.0285	0.0167

Exhibit 16

Neighborhood Quality of Rental Units
Ordinal Probit Coefficients and Means (2 of 2)

Variable Name	Hispanic Coefficients[a,b,c]	African-American Coefficients[a,b,c]	White Coefficients[a,b,c]	Hispanic Low Income Means	African-American Low Income Means	White Low Income Means	Hispanic High Income Means	African-American High Income Means	White High Income Means
Poor Services	0.0308	−0.0589	0.0737	0.0119	0.0222	0.0094	0.0078	0.0097	0.0083
Odor Problem	−0.1067**	−0.2525*	−0.2257*	0.0065	0.0092	0.0059	0.0073	0.0056	0.0075
Property Use Problem	−0.1767	0.0809	0.0335	0.0590	0.0708	0.0451	0.0504	0.0514	0.0329
Neighbor Problem	−0.4037*	−0.4975*	−0.5157*	0.0622	0.0668	0.0545	0.0588	0.0618	0.0440
Other Problem	−0.1563*	−0.2593*	−0.2502*	0.0886	0.0949	0.0905	0.1086	0.1001	0.0944
Schools Inadequate	−0.3976*	−0.2415*	−0.3392*	0.0281	0.0381	0.0146	0.0269	0.0354	0.0179
Shopping Inadequate	−0.0431	−0.1797*	−0.0126*	0.0913	0.1529	0.0944	0.0789	0.1015	0.0651
Public Transit Good	0.0285	−0.0203	0.0374	0.6480	0.6671	0.4956	0.5588	0.5594	0.4463
Police Inadequate	−0.2919*	−0.3539*	−0.3722*	0.1035	0.1174	0.0548	0.0711	0.0792	0.0389
Number of observations	8,366	9,764	8,599	6,580	8,325	6,078	1,786	1,439	2,521
Log likelihood fn	−15537.9	−18439.01	−15592.07						
Chi-squared	2183.674	3535.939	2309.241						
Degrees of freedom	26	26	26						

NA = Not applicable.

[a] Not presented in this table is a set of "threshold" parameters corresponding to n-1 ordinal categories (for example, structural quality has rankings from 0 to 9). Thus, 8 "threshold" parameters (μjs) and one intercept term are estimated. All these parameters are significant at the 1-percent level.

[b] *, **, and *** represent significance at the 1-, 5-, and 10-percent levels, respectively.

[c] In the American Housing Survey data, both structural and neighborhood quality are ordinal rankings with a range of 1 to 10. For the estimation software, the first category needs to be 0. Consequently, the means in this table are based on the normalized rankings between 0 and 9.

Based on mean values, Hispanic and African-American households that rent report higher levels of police inadequacy, poorer roads, and abandoned buildings; these results are similar to those for owners. In particular, for both lower and higher income renters, approximately twice as many renter households felt police protection was inadequate compared with owners. For low-income renters, this proportion amounted to 10.4 percent for Hispanics, 11.7 percent for African Americans, and only about 5.5 percent for Whites. Regarding road repairs, for low-income renters, 43.4 percent of Hispanics and 50.3 percent of African Americans said roads in their neighborhoods were in need of repair, but only 38.0 percent of Whites reported that need. Almost 16 percent of low-income African-American renters have abandoned buildings in their neighborhoods, but only 8.9 percent of Hispanic and 6.1 percent of White low-income renters note a similar problem in their neighborhoods.

The study shows a remarkable consistency between owners and renters regarding the basic factors that play a role in affecting the quality of their housing experience regarding both structure and neighborhood. In simple terms, this result suggests that to implement sound housing policy, policymakers can concentrate on a consistent set of housing and neighborhood factors. In addition, differences in a number of key characteristics, for both owners and renters, suggest ways in which gaps between minority and White housing circumstances could be improved. In particular, both lower income African-American and Hispanic households' housing experiences could be better if major structural problems and interior deterioration could be reduced. Such a goal is consistent with stricter building code enforcement, perhaps through point-of-turnover inspection requirements and/or tax incentive programs, which encourage maintenance and improvements. Similarly, for both minority groups, implementing programs to improve relations with the police and reduce crime could help reduce the gap between their perceived problems in these areas and the perceptions of White households regarding crime problems. In addition, accessible green spaces and fewer abandoned buildings would also enhance minority households' perceptions of their neighborhoods. For lower income Hispanic households' perceptions of housing quality to be on a par with those of other racial/ethnic groups, problems with poor-quality water need to be addressed, crowded conditions need to be overcome, and inadequate heating systems need to be improved.

Conclusions

A substantial amount of recent academic and policy research has been conducted in an attempt to understand how to expand the homeownership opportunities for minority households. What becomes quite clear from this literature is that, in addressing this question from a policy perspective, analysts and policymakers need to develop a better understanding of differences in the housing situations faced by households with different racial/ethnic backgrounds (that is, Hispanic, African-American, and White backgrounds). These stakeholders need to understand how much better the quality of housing services is when provided by owned housing as compared with rental housing, and what it is specifically about households' housing situations that prompts observed differences in the perceived quality of the housing services they receive. In addition, analysts and policymakers need to gain an understanding of how perceptions of service quality differ for Hispanic households as compared with other households.

One key to better understanding Hispanics' circumstances relative to those of other race/ethnicities is finding enough Hispanic households to observe. To this end, using a set of recent standard metropolitan statistical area samples of the American Housing Survey provided many more Hispanic households (17,968 full sample and 6,446 recent movers) than previously available in other data sets with extensive housing information. In this context, this study investigates several ways in which housing circumstances differ for Hispanics as compared with other racial/ethnic groups across a number of different housing markets.

Our preliminary analysis of housing quality, size, and cost in exhibits 1a and 1b yields several observations:

- Irrespective of either minority status or income level, the primary differential in both perceived neighborhood quality and housing quality stems from ownership status. Owners clearly perceive their situation as better than renters do. As shown for the quality dimensions of structure and neighborhood in exhibit 1a, the difference between owners and renters appears particularly important for the structural quality of the housing unit (as compared with the quality of the neighborhood). Given this situation, it is not surprising that renters' housing situations are categorized as inadequate more often than those of owners.

- Low-income households, particularly Hispanics, experience the largest differentials between renters' and owners' average rankings of neighborhood and dwelling structural quality. For low-income Hispanics, average structural quality ranges from 8.36 for owners to 7.39 for renters; for neighborhood quality, the figures are 8.02 for owners and 7.34 for renters.

- White households have a higher proportion of homeownership, White owners have higher house values, and White renters have higher rental costs than comparable minority households have.

- Hispanic households, particularly low-income households, have higher levels of mortgage debt than White households do. Given the fact that their house values are lower than Whites, this trend suggests a substantial difference in borrowing and/or loan terms for Hispanics.

- Hispanic households appear to be much more crowded than other households and, as with African-American households, pay substantially more in housing cost per square foot than White households do.

- In this sample, housing outcomes are generally worse for African-American households than they are for Hispanic households. Specifically, both high- and low-income African-American households are observed to have slightly lower rates of ownership and substantially lower valued homes and lower rents compared with high- and low-income Hispanic households.

The assessment of quality does not, of course, occur within a vacuum but rather within the context of basic household decisions regarding homeownership and the amount to spend on an apartment or an owned home. To place the results for housing quality within both the context of the literature and our data, we also analyzed the likelihood of homeownership for Hispanic households and their pattern of housing values and rents. For example, as noted in the literature, different racial/ethnic groups may have different understandings of, access to, and proclivity to

use financial markets and institutions for both saving and borrowing. For Hispanic households, differentials in socioeconomic factors could have a significant effect on the timing and likelihood of homeownership and the level of housing values and rents. Our results suggest systematic problems for minority households, including the following:

- It is important to note that minority households have a lower likelihood of owning, lower house value for owners, and lower rental costs for renters compared with White households, controlling for the socioeconomic characteristics of the household and the market in which these housing choices were made.

- Even though house value is lower for Hispanic homeowners compared with White homeowners, Hispanics' associated monthly housing cost is higher. This trend is particularly true for low-income owners. This observation suggests some significant differentials in factors such as loan-to-value ratios and/or other mortgage terms, points, fees, and so on. Of course, these issues can be examined directly with the AHS. Such a comparison of mortgage characteristics across racial groups using the same AHS database is the subject of another article that is part of this research project (Boehm and Schlottman, 2007).

- For the full sample, which, in comparison with recent movers, represents housing and mortgage market decisions made over a longer period of time, Hispanic owners (particularly low-income owners) have relatively high mortgage debt on owned units compared with other households. In this regard, however, recent Hispanic movers do better; that is, their average level of debt is much closer to that of their White counterparts. This observation raises the question of whether this outcome may be related to differentials in home financing related to junior mortgages, home equity loans, refinancing loans, less financial expertise in obtaining loans, and so on. Specifically, do mortgage terms and the use of mortgage financing differ between Hispanic households and other racial/ethnic households?

- Recent immigrants are significantly less likely to be owners and, when they rent, they have significantly lower rental payments. If recent immigrants achieve ownership, however, their expenditure levels do not appear to be substantially different than other households who have not recently immigrated.

- On a positive note, rent subsidies had a significant effect on lowering rents for low-income households. In the regression analysis of rent levels, rent subsidies had coefficient estimates that were negative and statistically significant for both recent movers and the full sample of households.

- The results for households' assessments of both structural quality and neighborhood quality are important for housing policy in that a fundamental unanimity exists regarding the characteristics that define quality.

In general, all households react in a similar manner to structural problems with their owner-occupied homes. Having external leaks, internal leaks, vermin problems, major structural problems, interior deterioration, and so on, is viewed as lowering the quality of housing. For example, households that are on public sewer systems with well-functioning toilets and other satisfactorily working plumbing and that have central heating systems instead of space heaters perceive their housing

to be of higher quality than that of households without these services. Although these statements might seem predictable, the results shown in exhibit 13 generally dispel any notion of significant household differences in housing quality perceptions. To summarize, American households agree on what defines good-quality housing.

Substantial differences are apparent, however, in the mean quality levels by individual characteristics for households across minority status. Issues of poor water quality are much worse for Hispanic households than for African-American or White households. Similarly, low-income Hispanic households face more crowding and are more likely to have the poorest quality heating. Also, the deterioration of interior facilities (that is, cracks, holes in walls or ceilings, holes in the floor, or broken plaster or peeling paint) and major structural problems appear much worse for minority households than for White households.

Similar comments regarding structural quality are applicable to the results for determinants of neighborhood quality. Again, the results for neighborhood quality are consistent across households by minority status in defining a good neighborhood versus a bad neighborhood. Crime problems, litter problems, noise problems, roads in need of repair, junk and abandoned buildings, and so on, create undesirable neighborhoods. A neighborhood with green space, newer buildings, and similar amenities is more desirable. Once again, American households in general seem to agree on what makes good neighborhoods. As with structure, however, a few substantial differences are apparent in neighborhood characteristics across racial/ethnic groups. Most notably, crime and inadequate police protection are more likely to be perceived by African Americans and Hispanics, particularly those who have lower incomes. For those who own their homes, green space is less likely to be near minority-owned homes. Consistent with their greater tendency to live in inner-city locations, both African-American owners and renters are more likely to have abandoned buildings nearby. Finally, minority renters appear to be located in neighborhoods in which road repairs are more likely to be a concern.

In summary, although Hispanic and African-American households' housing experience is not as positive yet as that of their White counterparts, this analysis has demonstrated more specifically the exact magnitude and nature of those differences for a relatively large cross-section of households. Developing a better understanding of the specifics of such differences will improve our ability to take actions that promote equal housing opportunities for all Americans.

Appendix A
List of Standard Metropolitan Statistical Areas in the American Housing Survey for 1998, 2002, and 2004

Exhibit A-1

American Housing Survey SMSA Sample Information

Sample Year	SMSA Code	SMSA Name	SMSA Median Income ($)
2004	0520	Atlanta, GA	69,000
2004	1680	Cleveland, OH	59,900
2004	2080	Denver, CO	69,500
2004	3280	Hartford, CT	73,900
2004	3480	Indianapolis, IN	63,800
2004	4920	Memphis, TN-AR	54,100
2004	5560	New Orleans, LA	49,900
2004	5880	Oklahoma City, OK	52,100
2004	6280	Pittsburgh, PA	55,100
2004	6920	Sacramento, CA	64,100
2004	7040	St. Louis, MO-IL	65,900
2004	7240	San Antonio, TX	51,500
2004	7600	Seattle-Everett, WA	71,900
2002	0360	Anaheim-Santa Ana-Garden Grove, CA	75,600
2002	1280	Buffalo, NY	50,800
2002	1520	Charlotte, NC	64,100
2002	1840	Columbus, OH	63,400
2002	1920	Dallas, TX	66,500
2002	2800	Fort Worth, TX	61,300
2002	3760	Kansas City, MO-KS	64,500
2002	5000	Miami, FL	48,200
2002	5080	Milwaukee, WI	67,200
2002	6200	Phoenix, AZ	57,900
2002	6440	Portland, OR-WA	57,200
2002	7280	San Bernardino-Riverside-Ontario, CA	50,300
2002	7320	San Diego, CA	60,100
1998	0720	Baltimore, MD	55,600
1998	1000	Birmingham, AL	44,000
1998	1120	Boston, MA	60,000
1998	1640	Cincinnati, OH-KY-IN	51,500
1998	3360	Houston, TX	50,400
1998	5120	Minneapolis-St. Paul, MN	60,800
1998	5680	Newport News-Hampton, VA	44,600
1998	5775	Oakland, CA*	63,300
1998	6480	Providence-Pawtucket-Warwick, RI-MA	46,900
1998	6840	Rochester, NY	48,800
1998	7160	Salt Lake City, UT	48,200
1998	7360	San Francisco, CA *	68,600
1998	7400	San Jose, CA	77,200
1998	8280	Tampa-St. Petersburg, FL	42,000
1998	8840	Washington, DC-MD-VA	72,300

SMSA = standard metropolitan statistical area.

* Although Oakland, CA and San Francisco, CA are one SMSA, HUD has split them into two separate American Housing Survey metropolitan samples and assigned them the SMSA codes shown.

Appendix B
Selected Regression Exhibits for the American Housing Survey Sample 2002 and 2004: Time Spent in the United States

Exhibit B-1

Sample: All Households in 2002 and 2004
Regression Coefficients and Significance[a, b, c] (1 of 2)

Variable Name	Low Income, P(Own)	High Income, P(Own)	Low-Income Owner, House Value[d]	High-Income Owner, House Value[d]	Low-Income Owner, Housing Cost	High-Income Owner, Housing Cost	Low-Income Renter, Rent	High-Income Renter, Rent
Own Home	NA	NA	NA	NA	NA	NA	NA	NA
Intercept	– 0.93807 *	1.3472 *	260.5866 *	297.9933 *	467.2980 *	835.0965 *	749.1402 *	1186.8850 *
Rent Subsidy	NA	NA	NA	NA	NA	NA	– 26.5670 *	– 103.5764 ***
Total Mortgage Payments	NA	NA	NA	NA	0.9271 *	0.7921 *	NA	NA
Unit—Condominium	NA	NA	NA	NA	– 38.7510 **	– 157.5712 *	NA	NA
Unit—Owned Manufactured	NA	NA	NA	NA	112.1992 *	– 111.8529 *	NA	NA
High School Graduate	0.13110 *	0.2485 *	10.6687 *	14.8738 *	NA	NA	31.6601 *	88.6468 *
Post High School	0.20977 *	0.4138 *	21.4922 *	27.3006 *	NA	NA	69.6483 *	130.3886 *
College Graduate	0.43251 *	0.7140 *	62.7798 *	79.6498 *	NA	NA	116.0044 *	228.5309 *
Single Female	– 0.78937 *	– 1.1302 *	– 20.9859 *	– 35.4732 *	NA	NA	7.7141	– 32.0119 **
Single Male	– 0.97450 *	– 1.5390 *	– 25.3775 *	– 21.6512 *	NA	NA	– 12.3569 ***	– 43.8872 *
Household Size	0.09292 *	0.0753 *	3.3776 *	4.6903 *	NA	NA	29.8159 *	31.9178 *
Hosuehold Income	0.37088 *	0.0179 *	2.1299 **	3.2234 *	NA	NA	31.7760 *	1.2966 *
Age 24 or Less	– 1.71783 *	– 1.6312 *	30.1190 *	3.8044	NA	NA	31.8218 *	– 16.5469 *
Age 25–44	– 0.84239 *	– 0.8045 *	– 0.2646	– 7.0191 **	NA	NA	– 0.4523	– 20.7899 *
Age 62 or More	1.15089 *	0.6484 *	8.7331 *	15.5786 *	NA	NA	27.1972 *	81.5269 *
Savings 25K or More	1.23352 *	10.5870	29.8835 *	69.0976	NA	NA	162.1297 *	NA
African-American	– 0.74192 *	– 0.6794 *	– 20.7580 *	– 36.3103 *	NA	NA	– 53.8819 *	– 97.2112 *
White Hispanic	– 0.51505 *	– 0.4069 *	– 21.4140 *	– 24.4089 *	NA	NA	– 61.3960 *	– 78.5908 *
Non-White Hispanic	– 0.76231 *	– 0.6482 *	– 26.5512 *	– 43.9960 *	NA	NA	– 66.0189 *	– 146.4973 *
Number of Years in Residence	NA	NA	0.0756	– 1.2049 *	NA	NA	– 5.8669 *	– 14.7361 *

Exhibit B-1

Sample: All Households in 2002 and 2004
Regression Coefficients and Significance[a, b, c] (2 of 2)

Variable Name	Low Income, P(Own)	High Income, P(Own)	Low-Income Owner, House Value[d]	High-Income Owner, House Value[d]	Low-Income Owner, Housing Cost	High-Income Owner, Housing Cost	Low-Income Renter, Rent	High-Income Renter, Rent
First-Time Owner	NA	NA	27.4957 *	66.1191 *	NA	NA	NA	NA
Less Than 5 Years in United States	– 0.73896 *	– 0.9279 *	– 9.9162	0.4730	NA	NA	– 38.2796 *	– 97.8302 *
5–12 Years in United States	– 0.42444 *	– 0.4859 *	– 7.5731	– 7.3579	NA	NA	– 26.2431 *	– 64.3877 **
13–22 Years in United States	0.06040	0.0426	– 7.3530	6.9505	NA	NA	– 17.0748	– 69.7892 **
23 Years or More in United States	0.30797 *	0.3750 *	4.1590	0.9481	NA	NA	– 12.6175	– 5.9086
R^2	0.21946[e]	0.16186[e]	0.27400	0.31670	0.57830	0.59900	0.26850	0.30890
Number of observations	26,476	19,723	12,389	15,700	12,484	16,180	13,992	3,543

NA = Not applicable.

[a] The P(Own) equations were estimated using logit analysis.

[b] *, **, and *** represent significance at the 1-, 5-, and 10-percent levels, respectively.

[c] All regressions include discrete variables indicating in which of 41 standard metropolitan statistical areas (SMSAs) the housing units were located (over the 3-year time period: 1998, 2002, and 2004). For a complete list of these SMSAs, see appendix A.

[d] House value in thousand dollar units.

[e] For the logit equations, the R^2 is computed as 1- (unrestricted 1n likelihood function/restricted 1n likelihood function).

Exhibit B-2

Sample: Recent Movers in 2002 and 2004

Regression Coefficients and Significance[a, b, c] (1 of 2)

Variable Name	Low Income, P(Own)	High Income, P(Own)	Low-Income Owner, House Value[d]	High-Income Owner, House Value[d]	Low-Income Owner, Housing Cost	High-Income Owner, Housing Cost	Low-Income Renter, Rent	High-Income Renter, Rent
Intercept	−2.9225*	0.04901	241.3872*	290.7388*	461.4482*	588.8785*	794.3608*	1214.8268*
Rent Subsidy	NA	NA	NA	NA	NA	NA	−8.2941	−146.6555***
Total Mortgage Payments	NA	NA	NA	NA	0.9582*	1.0094*	NA	NA
Unit—Condominium	NA	NA	NA	NA	−17.3624	−43.1631	NA	NA
Unit—Owned Manufactured	NA	NA	NA	NA	134.9881*	100.5689***	NA	NA
High School Graduate	0.1318	0.24007***	6.9391	18.3246	NA	NA	25.6676*	121.9683*
Post High School	0.2585*	0.27938**	25.4592*	36.8824*	NA	NA	68.5882*	160.6264*
College Graduate	0.6124*	0.73281*	51.1914*	78.0295*	NA	NA	110.4100*	264.4750*
Single Female	−0.6385*	−1.07405*	−27.1984*	−38.7168*	NA	NA	8.3580	−40.7509**
Single Male	−0.9046*	−1.32240*	−25.6838*	−20.4932**	NA	NA	−9.7115	−43.8524**
Household Size	0.1263*	0.05309**	1.8553	12.2060*	NA	NA	35.2973*	49.5141*
Hosuehold Income	0.4455*	0.00849**	1.1981	5.7208*	NA	NA	28.7280*	1.5382*
Age 24 or Less	−1.0926*	−0.74512*	3.5019	−21.7522	NA	NA	16.1503***	−17.9498
Age 25–44	−0.3189*	−0.20922*	−7.0459	−18.0600**	NA	NA	3.8745	−20.6127
Age 62 or More	0.8506*	0.36176***	−1.8535	−13.5326	NA	NA	32.8029**	56.5439
Savings 25K or More	0.7376*	11.02229	62.9920*	281.0762**	NA	NA	147.7788*	NA
African-American	−0.6716*	−0.37539*	−16.4175**	−24.2182*	NA	NA	−57.4875*	−109.1982*
White Hispanic	−0.6052*	−0.25999*	−39.8952*	−20.9416**	NA	NA	−65.1228*	−77.1629*
Non-White Hispanic	−0.3632*	−0.20809***	−28.4852*	−44.9420*	NA	NA	−66.8850*	−150.6409*
Number of Years in Residence	NA	NA	−3.9505	−14.0587*	NA	NA	−7.3104***	−23.8713**
First-Time Owner	NA	NA	22.9903*	41.7715*	NA	NA	NA	NA
Owned Prior to Move	0.8715*	0.95431*	11.8052***	44.7192*	NA	NA	25.3926*	42.9647**

Exhibit B-2

Sample: Recent Movers in 2002 and 2004

Regression Coefficients and Significance[a, b, c] (2 of 2)

Variable Name	Low Income, P(Own)	High Income, P(Own)	Low-Income Owner, House Value[d]	High-Income Owner, House Value[d]	Low-Income Owner, Housing Cost	High-Income Owner, Housing Cost	Low-Income Renter, Rent	High-Income Renter, Rent
Less Than 5 Years in United States	– 0.1895	– 0.40923 *	– 1.1540	– 4.4248	NA	NA	– 63.6214 *	– 97.6543 *
5–12 Years in United States	0.1502	– 0.11495	– 3.6726	– 2.6956	NA	NA	– 36.2107 *	– 41.7562
13–22 Years in United States	0.4860 *	0.28948	5.6428	– 15.8701	NA	NA	– 20.8422	– 67.6456
23 Years or More in United States	0.4204 **	0.36927	30.4118 **	– 10.2522	NA	NA	– 23.1130	– 35.6294
R^2	0.17793 [e]	0.14900	0.27080 [e]	0.34970	0.74710	0.83630	0.28360	0.33390
Number of observations	9,244	4,997	1,817	2,626	1,839	3,050	7,405	1,947

NA = Not applicable.

[a] The P(Own) equations were estimated using logit analysis.

[b] *, **, and *** represent significance at the 1-, 5-, and 10-percent levels, respectively.

[c] All regressions include discrete variables indicating in which of 41 standard metropolitan statistical areas (SMSAs) the housing units were located (over the 3-year time period: 1998, 2002, and 2004). For a complete list of these SMSAs, see appendix A.

[d] House value in thousand dollar units.

[e] For the logit equations, the R^2 is computed as 1– (unrestricted 1n likelihood function/restricted 1n likelihood function).

Exhibit B-3

Sample: All Households in 2002 and 2004
Variable Means and Effect of Variables on the Likelihood of Homeownership (1 of 2)

	Panel A: Low-Income Households				
Variable Name	**Sample Mean**			**Pr(Own)$_{African-American}$ Minus Pr(Own)$_{White}$** [a, b] **(%)**	**Pr(Own)$_{Hispanic}$ Minus Pr(Own)$_{White}$** [a, b] **(%)**
	White	**African-American**	**Hispanic**		
Own Home	0.62133	0.36959	0.39590	NA	NA
Intercept	NA	NA	NA	NA	NA
High School Graduate	0.30008	0.30927	0.26118	0.064	– 0.273
Post High School	0.31375	0.30715	0.19832	– 0.074	– 1.296
College Graduate	0.22372	0.11500	0.09002	– 2.519	– 3.097
Single Female	0.43903	0.58020	0.31082	– 5.940	5.436
Single Male	0.23942	0.22660	0.19375	0.668	2.384
Household Size	1.89741	2.36042	3.13337	2.299	6.152
Household Income	2.60348	2.17358	2.48295	– 8.524	– 2.400
Age 24 or Less	0.06735	0.08325	0.09385	– 1.464	– 2.438
Age 25–44	0.28580	0.43309	0.51926	– 6.657	– 10.524
Age 62 or More	0.39123	0.18944	0.15559	– 12.453	– 14.521
Savings 25K or More	0.07606	0.01047	0.01593	– 4.334	– 3.974
African-American	0.00000	1.00000	0.00000	– 38.766	0.000
White Hispanic	0.00000	0.00000	0.68400	0.000	– 23.282
Non-White Hispanic	0.00000	0.00000	0.31600	0.000	– 33.618
Less Than 5 Years in United States	0.00749	0.01811	0.16473	– 0.421	– 6.211
5–12 Years in United States	0.00770	0.01834	0.13966	– 0.242	– 2.997
13–22 Years in United States	0.00628	0.01646	0.10780	0.033	0.328
23 Years or More in United States	0.02978	0.01023	0.10027	– 0.322	1.163
All metropolitan areas[c]				9.092	0.548
Number of observations	9,874	8,504	8,098		

Exhibit B-3

Sample: All Households in 2002 and 2004
Variable Means and Effect of Variables on the Likelihood of Homeownership (2 of 2)

Variable Name	Sample Mean			Pr(Own)$_{African-American}$ Minus Pr(Own)$_{White}$ [a, b] (%)	Pr(Own)$_{Hispanic}$ Minus Pr(Own)$_{White}$ [a, b] (%)
	White	African-American	Hispanic		
Panel B: High-Income Households					
Own Home	0.87049	0.75728	0.75998	NA	NA
Intercept	NA	NA	NA	NA	NA
High School Graduate	0.18327	0.20717	0.22205	0.080	0.130
Post High School	0.30449	0.35806	0.31946	0.298	0.084
College Graduate	0.46760	0.34127	0.28655	– 1.212	– 1.762
Single Female	0.13374	0.24328	0.11178	– 1.728	0.328
Single Male	0.14801	0.14698	0.13580	0.022	0.253
Household Size	2.85843	3.11422	3.60356	0.262	0.752
Household Income	11.62895	9.58385	9.89870	– 0.495	– 0.418
Age 24 or Less	0.01537	0.02464	0.02591	– 0.204	– 0.232
Age 25–44	0.42645	0.49720	0.57291	– 0.761	– 1.610
Age 62 or More	0.12914	0.08567	0.06771	– 0.380	– 0.539
Savings 25K or More	0.00018	0.00028	0.00095	0.014	0.109
African-American	0.00000	1.00000	0.00000	– 10.714	0.000
White Hispanic	0.00000	0.00000	0.74579	0.000	– 5.266
Non-White Hispanic	0.00000	0.00000	0.25421	0.000	– 9.066
Less Than 5 Years in United States	0.00644	0.01316	0.08436	– 0.083	– 0.987
5–12 Years in United States	0.00801	0.01960	0.08133	– 0.076	– 0.483
13–22 Years in United States	0.00884	0.02492	0.07963	0.009	0.041
23 Years or More in United States	0.01997	0.01764	0.08057	– 0.012	0.305
All metropolitan areas[c]				1.082	– 1.147
Number of observations	10,864	3,572	5,287		

NA = Not applicable.

[a] Probabilities are calculated at the means for the entire sample (all Whites, African-Americans, and Hispanics) except for the variable in question, which is evaluated at the mean for the denoted minority group and Whites, respectively.

[b] Pr(Own) = 1 / (1 – e$^{-X\beta}$), where Xβ = a vector representing the sum of the product individual independent variable values (Xs) and estimated coefficients (βs). Pr(Own)$_{minority}$ = the probability of owning given all the variables in the regression are evaluated at the overall sample mean except the particular variable in question, which is evaluated at the mean for the minority households. Pr(Own)$_{White}$ = the probability of owning given all the variables in the regression are evaluated at the overall sample mean except the particular variable in question, which is evaluated at the mean for the white households. Pr(Own)$_{minority}$ – Pr(Own)$_{White}$ is expressed as a percentage of Pr(Own), the predicted average likelihood of ownership calculated at the mean for the mean for the overall sample. Thus, if for a given variable, xj, Pr(Own)$_{minority}$ = 0.40 and Pr(Own)$_{White}$ = 0.45 and Pr(Own) = 0.42, then the calculation for variable xj is [(0.40 – 0.45) /0.42] x 100 = 11.9 percent.

[c] "All metropolitan areas" represents the cumulative impact of a set of categorical variables corresponding to the different SMSAs in which the households are located.

Exhibit B-4

Sample: Recent Movers in 2002 and 2004
Variable Means and Effect of Variables on the Likelihood of Homeownership (1 of 2)

	Sample Mean			Pr(Own)$_{African-American}$ Minus Pr(Own)$_{White}$[a, b] (%)	Pr(Own)$_{Hispanic}$ Minus Pr(Own)$_{White}$[a, b] (%)
Variable Name	**White**	**African-American**	**Hispanic**		
Own Home	0.28587	0.13251	0.19182	NA	NA
Intercept	NA	NA	NA	NA	NA
High School Graduate	0.26256	0.31957	0.27820	0.641	0.176
Post High School	0.35652	0.33898	0.21088	– 0.390	– 3.202
College Graduate	0.26402	0.11525	0.08177	– 7.914	– 9.627
Single Female	0.46249	0.61418	0.31817	– 7.993	8.129
Single Male	0.31755	0.24468	0.23025	5.552	6.683
Household Size	1.94792	2.42958	3.13987	5.030	12.853
Household Income	2.64539	2.11357	2.47053	– 20.113	– 6.987
Age 24 or Less	0.18318	0.15747	0.17522	2.398	0.737
Age 25–44	0.46103	0.56857	0.60467	– 2.948	– 3.922
Age 62 or More	0.13693	0.05239	0.04580	– 6.206	– 6.677
Savings 25K or More	0.03423	0.00431	0.00769	– 1.887	– 1.676
Owned Prior to Move	0.33758	0.18367	0.18598	– 11.660	– 11.493
African-American	0.00000	1.00000	0.00000	– 53.615	0.000
White Hispanic	0.00000	0.00000	0.63172	0.000	– 43.064
Non-White Hispanic	0.00000	0.00000	0.36828	0.000	– 18.601
Less Than 5 Years in United States	0.01092	0.02681	0.20873	– 0.259	– 3.188
5–12 Years in United States	0.01165	0.02496	0.15955	0.170	1.899
13–22 Years in United States	0.01020	0.01572	0.08884	0.227	3.271
23 Years or More in United States	0.01493	0.00555	0.04857	– 0.335	1.209
All metropolitan areas[c]				10.607	5.458
Number of observations	2,746	3,245	3,253		

Exhibit B-4

Sample: Recent Movers in 2002 and 2004
Variable Means and Effect of Variables on the Likelihood of Homeownership (2 of 2)

Variable Name	Sample Mean			$Pr(Own)_{African-American}$ Minus $Pr(Own)_{White}$[a, b] (%)	$Pr(Own)_{Hispanic}$ Minus $Pr(Own)_{White}$[a, b] (%)
	White	African-American	Hispanic		
Own Home	0.66278	0.55118	0.56871	NA	NA
Intercept	NA	NA	NA	NA	NA
High School Graduate	0.17152	0.20472	0.22799	0.291	0.494
Post High School	0.30225	0.37303	0.32742	0.720	0.257
College Graduate	0.48210	0.34843	0.27866	− 3.554	− 5.446
Single Female	0.15612	0.24409	0.14123	− 3.476	0.580
Single Male	0.24938	0.19980	0.20963	2.389	1.919
Household Size	2.68984	3.00591	3.44142	0.613	1.454
Household Income	11.15228	9.87937	8.73692	− 0.394	− 0.749
Age 24 or Less	0.04788	0.05315	0.06016	− 0.143	− 0.334
Age 25–44	0.63031	0.67323	0.70044	− 0.327	− 0.535
Age 62 or More	0.04455	0.02953	0.02217	− 0.198	− 0.295
Savings 25K or More	0.00042	0.00000	0.00063	− 0.167	0.087
Owned Prior to Move	0.48834	0.31791	0.34642	− 5.938	− 4.927
African-American	0.00000	1.00000	0.00000	− 14.033	0.000
White Hispanic	0.00000	0.00000	0.68524	0.000	− 8.861
Non-White Hispanic	0.00000	0.00000	0.31476	0.000	− 5.613
Less Than 5 Years in United States	0.01207	0.01476	0.13300	− 0.040	− 1.809
5–12 Years in United States	0.00958	0.02657	0.09816	− 0.071	− 0.372
13–22 Years in United States	0.00791	0.02362	0.07220	0.166	0.678
23 Years or More in United States	0.01707	0.01280	0.04180	− 0.058	0.333
All metropolitan areas[c]				2.434	− 0.553
Number of observations	2,402	1,016	1,579		

NA = Not applicable.

[a] Probabilities are calculated at the means for the entire sample (all Whites, African-Americans, and Hispanics) except for the variable in question, which is evaluated at the mean for the denoted minority group and Whites, respectively.

[b] $Pr(Own) = 1 / (1 − e^{-X\beta})$, where $X\beta$ = a vector representing the sum of the product individual independent variable values (Xs) and estimated coefficients (ßs). $Pr(Own)_{minority}$ = the probability of owning given all the variables in the regression are evaluated at the overall sample mean except the particular variable in question, which is evaluated at the mean for the minority households. $Pr(Own)_{White}$ = the probability of owning given all the variables in the regression are evaluated at the overall sample mean except the particular variable in question, which is evaluated at the mean for the white households. $Pr(Own)_{minority} − Pr(Own)_{White}$ is expressed as a percentage of Pr(Own), the predicted average likelihood of ownership calculated at the mean for the mean for the overall sample. Thus, if for a given variable, xj, $Pr(Own)_{minority}$ = 0.40 and $Pr(Own)_{White}$ = 0.45 and Pr(Own) = 0.42, then the calculation for variable xj is [(0.40 − 0.45) /0.42] x 100 = 11.9 percent.

[c] "All metropolitan areas" represents the cumulative impact of a set of categorical variables corresponding to the different SMSAs in which the households are located.

Appendix C
Assumptions Underlying Models Interpreting American Housing Survey
10-Point Satisfaction Scale as Ordinal Utility Level

The American Housing Survey (AHS) 10-point scale is interpreted to be an ordinal utility index.

Assuming that utility functions are strongly separable, the j th household's utility from its dwelling (U_j^N) can be expressed as a function of individual structural attributes ($X_i i = 1, \ldots, k$),

$$U_j^{NG} = u_j (X_1 \ldots, X_k) \ (j = 1, \ldots, s), \tag{1}$$

where G represents a group identification variable. We hypothesize homogenous preference functions for households within a particular group but permit these functions to differ among groups. The utility function for households within the same group then can be defined over the set of structural attributes and, assuming it is linear in its parameters, can be expressed as

$$U_j^{NG} = u_j^G (X) = \Sigma \beta_i X_{ij} + \varepsilon_j, \tag{2}$$

with the stochastic term ε_j accounting for the influence of unobserved attributes of the neighborhood and random deviations in preferences from the average of the subgroup. It is assumed that the ε_j are distributed normally ($N(0, \sigma^2 I)$).

In principle, the ordinary least-squares (OLS) regression model could be employed to estimate the relationship between utility and observed structural attributes. This model assumes an interval-level dependent variable, however, which would require a cardinal measure of utility.

Such a measure is not available; however, our data do provide an ordinal version of U_j^N for which the OLS model is satisfied. Households were asked to rank the overall quality of their dwelling on a 10-point scale, with "1" indicating worst and "10" best. We assume that greater utility levels from either the structure or the neighborhood are concomitant with higher rankings. This quality ranking therefore provides a utility measure of ordinal strength, namely I.

An estimating equation using I_j in lieu of U_j^N as the dependent variable can be derived by first noting that in the general case, if there are Z distinct structure/neighborhood rankings (R_m, $m = 1, \ldots, Z$), there must be Z + 1 hypothetical category boundaries (α_m, $m = 0, \ldots, Z$) such that the j_{it} household ranks its dwelling or neighborhood as a "1" (R_1) if $\alpha_0 < U_j^N < \alpha_1$ as a "2" (R_2) if $\alpha_1 < U_j^N < \alpha_2$, etc. In other words, we observe the mth ranking if the true (but nonobservable) value of cardinal utility falls within that category's boundaries (α_{m-1}, α_m). Because it has been assumed that U_j^N is normally distributed, the probability of observing the mth rank by the jth household can be expressed as

$$P(R_{mj}) = F[(U_j^N - \alpha_{m-1})/ \sigma] - F[(U_j^N - \alpha_m)/ \sigma] \tag{3}$$

where F is the cumulative standard normal density function. Following the convention of setting $\alpha_0 = ^- \infty$, $\alpha_1 = 0$, and $\sigma^2 = 1$ and substituting from (2), then (3) can be rewritten as

$$P(R_{mj}) = F[\Sigma \beta_i X_{ij} - \alpha_{m-1}] - F[\Sigma \beta_i X_{ij} - \alpha_m]. \tag{4}$$

Equation (4) estimates the conditional probability of observing a particular structure or neighborhood ranking. McKelvey and Zavoina (1975) have provided a model (namely, N-chotomous multivariate probit) that simultaneously provides estimates of the β and α vectors of (4) that are minimum variance and consistent. Furthermore, because the parameter estimates are obtained by maximum likelihood techniques, they are known to be asymptotically normally distributed, allowing for standard statistical tests.[29]

Acknowledgments

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[29] In surveys such as the AHS, household responses are preferences as expressed by an ordinal ranking. In this regard, the "unit distance" between the set of observed values (as contrasted to traditional statistical analyses of metric data) is not significant. Thus, the estimation procedure uses an additional set of "variables" (break points) that merely preserve the ranking criterion. Because these coefficients have no economic or policy interpretation they are suppressed in exhibits 13 through 16.

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