A Tale of Two Surveys: Mortgage Wealth Data in the AHS and the SIPP[1]

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Abstract

In 2004, homeownership rates peaked in the United States with home prices peaking 2 years later in 2006. Since these peaks, homeownership rates and home prices have fallen at the national level. In the current housing market downturn, it is crucial that researchers have accurate mortgage data to document changes over time. Two longitudinal surveys conducted by the U.S. Census Bureau collect mortgage data. The American Housing Survey (AHS) follows housing units over time and collects information on the quality of housing in the United States, as well as information on household characteristics. The Survey of Income and Program Participation (SIPP) is a panel study of households. The main objective of the SIPP is to provide accurate and comprehensive information about income and program participation in the United States.

To provide a baseline for analyzing housing unit and household mortgage data after the burst of the housing bubble, we analyze data on owner-occupied housing units and homeowners with a least one mortgage from the 2005 AHS and wave 3 of the 2004 SIPP panel. This paper documents (1) differences in mortgage questions asked in both surveys; (2) the magnitude of differences between mortgage items between the two surveys; and (3) the extent to which differences are due to sample and questionnaire differences.

We examine data on the prevalence of fixed mortgages, adjustable rate mortgages, and government insured mortgages, as well as data on interest rates, mortgage terms, and levels of home equity. In addition to analyzing the differences between the surveys, we examine demographic, economic, and regional differences in mortgage characteristics. Our findings suggest that terms and interest rates for first and second mortgages are consistent across both surveys, that the AHS underrepresents the number of adjustable rate mortgages (ARMs), and that the SIPP overrepresents FHA and VA program participation on second mortgages. We conclude with suggestions for improving mortgage data on both surveys.

Keywords: housing, homeownership, mortgages, loans, wealth, AHS, SIPP, sample design, questionnaire design

I. Introduction

In 2004, homeownership rates peaked in the United States[2] with home prices peaking two years later in 2006[3]; since these peaks, homeownership rates and home prices have fallen at the national level. In the current housing market downturn, it is crucial that researchers have accurate housing and mortgage data to document changes over time.

Two longitudinal surveys conducted by the U.S. Census Bureau collect mortgage data. The American Housing Survey (AHS) follows housing units over time and collects information on the quality of housing in the United States, as well as information on household characteristics. The Survey of Income and Program Participation (SIPP) is a panel study of households that follows individuals over time, usually for two to three years. The main objective of the SIPP is to provide accurate and comprehensive information about income and program participation in the United States. In order to model eligibility for such means-tested programs as Temporary Assistance for Needy Families (TANF), the SIPP also collects detailed asset and liability data (e.g., data on property value and debt).

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[1] This paper is intended to inform interested parties of ongoing research to encourage discussion of work in progress. The views expressed on methodological, technical or operational issues are those of the authors and not necessarily those of the U.S. Census Bureau.
[2] U.S. Census Bureau, Current Population Survey. For more information, refer to: http://www.census.gov/hhes/www/housing/hvs/qtr108/q108tab5.html
[3] Standard & Poor's Case-Shiller Index. For more information refer to: http://www2.standardandpoors.com/

To provide a baseline for analyzing housing unit and household mortgage data after the burst of the housing bubble, we analyze data on owner-occupied housing units and homeowners with a least one mortgage from the 2005 AHS and 2004 SIPP panel. This paper will document (1) differences in mortgage questions asked in both surveys; (2) the magnitude of differences between mortgage items between the two surveys; and (3) the extent to which differences are due to sample and questionnaire differences. Specifically, we examine data on the prevalence of fixed mortgages, adjustable rate mortgages, and government insured mortgages, as well as data on interest rates, mortgage terms, and home value. In addition to analyzing the differences between the surveys, we examine demographic, economic, and regional differences in mortgage characteristics.

The remainder of the paper will be organized as follows: In the second section, we provide a brief overview of each survey; in section three we discuss some of the literature which has used AHS and SIPP mortgage data; in section four we discuss questionnaire differences between the AHS and SIPP; in section five results will be presented and discussed; and concluding remarks will be provided in the last section.

II. Overview of the AHS and the SIPP

The AHS started in 1973 and has had the same sample since 1985 with updates for new construction. Between 1973 and 1981, the AHS, formerly called the Annual Housing Survey, was conducted annually. The AHS consists of two surveys: a national survey and a metropolitan area survey. Since 1983, the national survey has interviewed a nationally representative sample of approximately 55,000 housing units every two years in odd numbered years. The metropolitan area survey has interviewed between 3,000 and 15,000 housing units in selected metropolitan areas of the United States in even numbered years. In 2007, the AHS metropolitan survey was conducted in 7 metropolitan areas. Starting in 2007, data collection for the metropolitan area survey is conducted concurrently with the national survey. Both national and metropolitan area AHS surveys are longitudinal, following the same housing units over time.

The 1973 AHS through the 1983 AHS followed a sample of housing units drawn from the 1970 Census. Since 1985 the AHS has followed a sample of housing units drawn from the 1980 Census. Building permit data and data from other resources have been used to update the sample to account for new construction. Updates have also been made for housing units missed in the 1980 Census, a sample of units added to existing sample units, manufactured/mobile homes from Census 2000, and a sample of assisted living units to improve coverage of the elderly.[4] Returning cases are interviewed with dependent interviewing techniques on some items, confirming housing characteristics recorded in previous administrations of the AHS.[5]

In this paper, we analyze data from the 2005 American Housing Survey National file, which was collected between late-April and mid-September of 2005. For the 2005 AHS, approximately 59,450 sample housing units were selected for interview. About 2,800 of these units were found to be ineligible because the units did not meet the AHS-N definition of a housing unit. Of the 56,650 eligible sample units, about 6,150 were classified (both occupied and vacant housing units), as "Type A" noninterviews because (a) no one was at home after repeated visits, (b) the respondent refused to be interviewed, or (c) the interviewer was unable to find the unit. This classification produced an unweighted overall response rate of 89 percent. The weighted overall response rate was 90 percent.

In regard to SIPP, the population represented in the 2004 SIPP (the population universe) is the civilian non-institutionalized population living in the United States. The institutionalized population, which is excluded from the population universe, is composed primarily of the population in correctional institutions and nursing homes (91 percent of the 4.1 million institutionalized people in Census 2000).

The Census Bureau employs a two-stage sample design to select the SIPP sample. The two stages are (1) selection of primary sampling units (PSUs) and (2) selection of address units within sample PSUs. The sample frame for the selection of sample PSUs consists of a listing of U.S. counties and independent cities, along with population counts and other data for those units from the most recent census of population.

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[4] The sample frame of assisted living units was constructed by matching independent lists of assisted living units to addresses of housing units from Census 2000. While improving coverage of the elderly, this methodology may have missed assisted living housing units that were erroneously enumerated as group quarters in Census 2000.

[5] Further detailed information concerning the AHS sample can be found at http://www.census.gov/hhes/www/housing/ahs/ahs01/appendixb.pdf.

Sample households within a given SIPP panel are divided into four random subsamples of nearly equal size. These subsamples are called rotation groups and one rotation group is interviewed each month. Each household in the sample is interviewed at four-month intervals over a period of roughly four years beginning in February 2004. SIPP interviews are conducted via computer assisted personal interview (CAPI) and computer assisted telephone interview (CATI). The reference period for the questions is the four-month period preceding the interview month. The most recent month is designated reference month four, the earliest month is reference month one. In general, one cycle of four interview months covering the entire sample, using the same questionnaire, is called a wave. For example, wave 1 rotation group 1 of the 2004 Panel was interviewed in February 2004 and data for the reference months October 2003 through January 2004 were collected.

The SIPP is comprised of core and topical module data. Core data pertain to the basic items in the SIPP, such as demographics, program participation, income, and employment, while topical module data pertain to special topics such as assets and liabilities, marital and fertility history, education and training history, employment history, and disability. The core questions of the SIPP are asked every wave of the survey, while topical module questions are only asked during certain waves and usually for one wave only, though some modules are asked multiple times. The asset and liability topical module, where questions pertaining to real estate are asked, is fielded every three waves. For the 2004 SIPP panel, the asset and liability topical module was administered for the first time in wave 3.

In wave 1, the 2004 SIPP began with a sample of about 62,700 housing units (HUs). About 11,300 of these HUs were found to be vacant, demolished, converted to nonresidential use, or otherwise ineligible for the survey. Field Representatives (FRs) were able to obtain interviews for about 43,700 of the eligible HUs. FRs were unable to interview approximately 7,700 eligible HUs in the panel because the occupants: (1) refused to be interviewed or (2) could not be found at home. Only original sample people (those in wave 1 sample households and interviewed in wave 1) and people living with them are eligible to be interviewed. The SIPP sample follows original sample members who move, provided they are not institutionalized, do not live in military barracks, or do not move abroad. Based on these follow-up criteria, FRs were able to interview about 40,600 HUs of the approximately 44,200 eligible HUs for wave 2 and about 39,100 HUs of the approximately 44,600 eligible HUs for wave 3. The rates of non-interviewed housing units due to direct or indirect refusal were 6.6 percent for wave 2 and 9.9 percent for wave 3. In comparison, the refusal rates for the 2005 AHS were 6.7 percent. The rates of non-interviewed HUs due in the SIPP to moving to an unknown address were 1.4 percent for wave 2 and 2.5 percent for wave 3.[6]

III. Literature Review

Numerous studies have used the AHS and SIPP to analyze housing related research questions pertaining to the financial characteristics of mortgages. Two examples of research using data from the AHS are Boehm et al.'s research on race/ethnic differences in mortgage pricing and interest rates (Boehm, Schlottmann, and Abt 2006; Boehm, Thistle, and Schlottmann 2006) and Quercia et al.'s research on the effects of affordable mortgage products on homeownership rates (Quercia, McCarthy, and Wachter 2003).

Boehm, Schlottmann, and Abt (2006) examined differences in mortgage pricing among Hispanics, Blacks, and Whites using metropolitan data from the AHS from 1998, 2002, and 2004. They looked at differences in interest rates on first and junior mortgages by race/ethnicity, income, and characteristics of the borrower, the property, and the loan. They found that Blacks and Hispanics had mortgages with considerably higher interest rates than Whites. Hispanics with mortgages had higher cost to income ratios than both Blacks and Whites. Boehm, Thistle, and Schlottmann (2006), using data from the 1991-2001 National AHS, found that Blacks have higher interest rates on both purchases and refinances, after controlling for other factors.

Quercia, McCarthy, and Wachter (2003) used the 1995 AHS national data to develop a simulation to examine the impact of affordable lending efforts on homeownership rates. Affordable mortgage products were found to likely increase homeownership opportunities, but not in equal levels among all groups. Homeownership among recent movers and central city households was affected least by these products. Mortgage products that permitted smaller downpayments had the largest effects on homeownership. Home value, income, and wealth measures from the AHS were used in these models.

[6] Further detailed information concerning the SIPP sample can be found at http://www.census.gov/sipp/sourceac/S&A04_W1toW12(S&A-9).pdf.

Two examples using SIPP data are the U.S. Census Bureau's "Who Could Afford to Buy a Home?" report series (Savage, 2009; Savage, 2007; Savage, 1999; Savage, 1997; Savage and Fronczek, 1993) and Listokin, et al.'s (2001) research on mortgage innovation and homeownership.

In the "Who Could Afford to Buy a Home?" report series produced by the U.S. Census Bureau, housing affordability is gauged for housing units priced at various ranges, such as "low-priced" homes, "modestly priced" homes, new housing, etc. For each "criterion home," its affordability is determined based on a potential buyer's financial profile (i.e., income, assets, and debt). This series makes extensive use of SIPP housing and wealth data, including property values and debt.

Listokin, et al. (2001) analyzes mortgage innovation in promoting homeownership in the U.S. They use SIPP data to model direct purchase costs, using data on the financial characteristics of households, such as data on income, debt, and assets, to determine affordability. Their models are calibrated using SIPP data on renter demographic and financial characteristics and they find that even the most aggressive mortgage innovation plays a limited role in extending homeownership to this population.

IV. Questionnaire Differences[7]

Loan Characteristics

In this paper, we examine loan characteristics for owner-occupied housing units, excluding manufactured/mobile homes. While the AHS reports these characteristics for manufactured/mobile homes, the SIPP does not.

1. Interest Rates

In the AHS, mortgage interest rates are determined by a question that asks what the current interest rate on the mortgage is. The question is asked of both regular mortgages and home equity loans. The answer is recorded on two screens, one which captures the integer part of the percentage and another which captures the fraction part of the percentage. The two variables that result from these screens are combined to give the interest rate for the mortgage or loan.

In the SIPP, respondents are asked what the current annual interest rate on this mortgage or loan is. They are directed to enter a percent from 00.001 percent to 99.999 percent. A conversion table is provided for the field representative to convert fractions into decimals if the respondent answers in fractions. In the 2004 SIPP Panel Wave 3, a couple problems were identified with the collection of interest rates. A sizeable portion of the universe has values under one percentage point, likely due to field representatives entering the fraction part of the interest rate, but not the integer. Other cases had excessively high interest rates, likely due to keying errors.[8] In the SIPP tables discussed in the Results section, interest rates were truncated to exclude values below 1 percent.

2. Type of Mortgage: Fixed/Variable

In the AHS, the type of mortgage is determined by two questions. The first question asks whether the payments on the mortgage or loan are the same across the whole length of the mortgage or loan. If a respondent says no, they are asked a second question, which asks how their payment changes. They are given six reasons for why a payment would change and are allowed to pick all that apply to their situation: (1) Change in taxes or insurance or due to decline in principal balance; (2) Change based on interest rates(ARM); (3) Rise at fixed schedule during part of loan(type of Graduated Payment Mortgage); (4) Rise at fixed schedule whole length of loan (type of Graduated Payment Mortgage); (5) Last payment the biggest (Balloon); and (6) Other, specify. In our analyses, data from these items were used to produce percentages of fixed, self-amortizing mortgages and adjustable rate mortgages.[9]

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[7] See appendix for question wording from the AHS and the SIPP.

[8] For more information on interest rate errors, see: http://www.census.gov/sipp/top_mod/top_notes/2004w3realnote.html

[9] Eggers (2007: 27) suggests that HUD and the U.S. Census Bureau should provide code to convert mortgage features into mortgage products and clearly indicate that the variables available on the public user file do not directly estimate mortgage products, such as Adjustable Rate, Graduated Payment, and Balloon mortgages.

In the SIPP, the respondent is asked whether the interest rate on the mortgage or loan is variable or fixed. They are told that variable interest rates can change over the term of the mortgage or loan. While the AHS captures mortgage types other than fixed or adjustable rate mortgages, in the SIPP, mortgages are only classified in these two categories.

3. FHA/VA question differences

In the AHS, respondents are asked whether their mortgage is federally insured or conventional through a question that asks whether the mortgage is an FHA, VA, Rural Housing Service /Rural Development mortgage, or some other type. In the SIPP, respondents are asked if the mortgage was obtained through an FHA or VA mortgage program. While SIPP allows second mortgages to be classified as FHA or VA mortgages, the AHS does not.

4. Term

In the AHS, respondents are asked the mortgage or loan term through a question that asks, "When you first obtained this mortgage (or loan), how many years was it for?" In the SIPP, the respondent is asked "What is the total number of years over which payments are to be made (to this mortgage or loan)?"

5. No separate question for home equity debt in AHS

While the SIPP provides a home equity variable on its public user file, the AHS does not. Some researchers have approximated a value for home equity for the AHS by subtracting the total remaining principal on all mortgages and loans from the current value of the housing unit (Krivo and Kaufman 2004, Bourassa and Yin 2008). HUD states that home equity can be calculated in this way, using AHS National Publication table specifications code, but advises against doing so, as the home value and the loan amounts used to calculate outstanding principal are topcoded.[10]

6. Home Value

The SIPP asks "What is the current value of this property; that is, how much do you think it would sell for on today's market if it were for sale? Include rental properties attached to or located on this residence." In the AHS, respondents are asked: "How much do you think the house and lot would sell for on today's market?" AHS respondents are not asked to include rental properties attached to the residence. Kiel and Zabel (1999) in their comparison of AHS house value data to sales prices of houses sold in the twelve months prior to the interview, found that owners reported housing values 5.1 percent higher than stated sales prices and recent buyers reported house values 8.4 percent higher than stated sales prices. They found AHS estimates to be reliable, although they consistently overestimated house value.

Demographic and Socioeconomic Characteristics

While most demographic and socioeconomic variables used in our analyses were collected in similar ways in the AHS and the SIPP, employment status, income, and race exhibited some differences.

1. Employment Status

In the AHS, employment status is determined based upon whether the householder worked at all the week before the interview. In the tables in this paper, AHS householders are classified as either working last week or not. The SIPP has a series of more complicated questions that determine whether the householder is employed, unemployed, or out of the labor force. Householders are classified as employed if they (1) had a job the entire month, and worked all weeks in the month or (2) had a job all month, were absent from work without pay for 1+ weeks, and the absence was not due to a layoff or (3) had a job all month, were absent from work without pay 1+ weeks, and the absence was due to a layoff or (4) had a job at least 1 but not all week, spent no time on layoff and no time looking for work or (5) had a job at least 1 but not all weeks, spent some weeks on layoff or looking for work. A householder is classified as unemployed is they (1) had no job all month, were on layoff or were looking for work all weeks or (2) had no job all month and spent at least one but not all weeks on layoff or looking for work. A householder is classified as not in the labor force if they had no job all month and spent no time on layoff and no time looking for work.

[10] Vandenbroucke, David A. "AHS Data Users FAQ" page 11-12. http://www.huduser.org/Datasets/ahs/AHS_%20FAQ_9-9-08.pdf

2. Income Quintiles were used from SIPP

The income distributions in the AHS and the SIPP were not exactly the same, so that income quintiles did not have the same cutpoints across the two surveys. For this reason, the cutpoints for the SIPP income quintiles were used for both the SIPP and the AHS to provide comparable breakouts of the loan characteristics by income categories.

3. Other Race category

Both the AHS and the SIPP ask separate questions on race and Hispanic origin. The SIPP public use file recodes the race categories, including multiracial racial identification, into four categories: White, Black, Asian, and Other. To achieve similarity in coding, the AHS race variable was recoded, making "White Only" equal to "White," "Black Only" equal to "Black," "Asian Only" equal to "Asian," and making "Native American," all multiple racial identifications, and "other, specify" categories equal to "Other".

V. Results[11]

In this section, we present the results of our comparison of loan characteristics for first and second mortgages and loans[12] reported in the AHS and the SIPP broken down by the demographic and socioeconomic characteristics of owner-occupied households. Analyses exclude manufactured/mobile homes, except in the calculation of home equity in the SIPP. Table 1 presents loan characteristics for households with first mortgages or loans in the AHS and the SIPP. Table 2 presents loan characteristics for households with second mortgages or loans in the AHS and the SIPP.

Turning first to the comparison of first mortgages or loans in Tables 1, we find interest rates to be remarkably consistent between the two surveys. The greatest differences are of .125 percentage points among respondents living in the Northeast, respondents living in the Midwest, Black respondents, and respondents with less than a high school education.

Prior research has found that the AHS has historically underreported the number of adjustable rate mortgages (Lam and Kaul 2003). This finding receives further support in our analyses. Percentages of variable rate mortgages varied greatly between the two surveys with percentages for the SIPP ranging between 2 and 3 times those for the AHS for most cases. The AHS splits up loans with variable payments into multiple loan types, such as adjustable rate mortgages, graduated payment mortgages, and balloon mortgages, while the SIPP only has one category for these variable payment structures. This may account for the lower percentages of variable rate mortgages and loans found in the AHS and the higher percentages found in the SIPP.

Percentages for fixed rate mortgages do not differ much between the two surveys.[13] The greatest differences were found for households with black householders, householders age 65 or older, and householder who did not work in the last week or who were unemployed, who differed by 4.9, 6.1, and 6.7 percentage points respectively. Across the board, the SIPP reports higher percentages of FHA/VA first mortgages or loans.[14] No differences were found on the median term of the mortgage between the two surveys. All demographic and socioeconomic groups examined had a 30 year median term for the first mortgage or loan.

As mentioned above, we were not able to calculate home equity values for the AHS households. Home equity values for the SIPP can be found in Table 1. We did, however, choose to compare a component used in the calculation of the home equity, the home value. Home values were exactly the same for eight of our comparison categories and differed by under $20,000 for all but two of the categories listed in the tables. The greatest differences were found in the West, which differed by $30,000, and Asian householders, which differed by $45,000, between the two surveys.

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[11] All differences reported in the text have been tested at the 10% significance level.

[12] Results for the AHS are presented on the first and second mortgage or lump sum home equity loan. Results for the SIPP are presented on the first and second mortgage, home equity loan, or other type of debt.

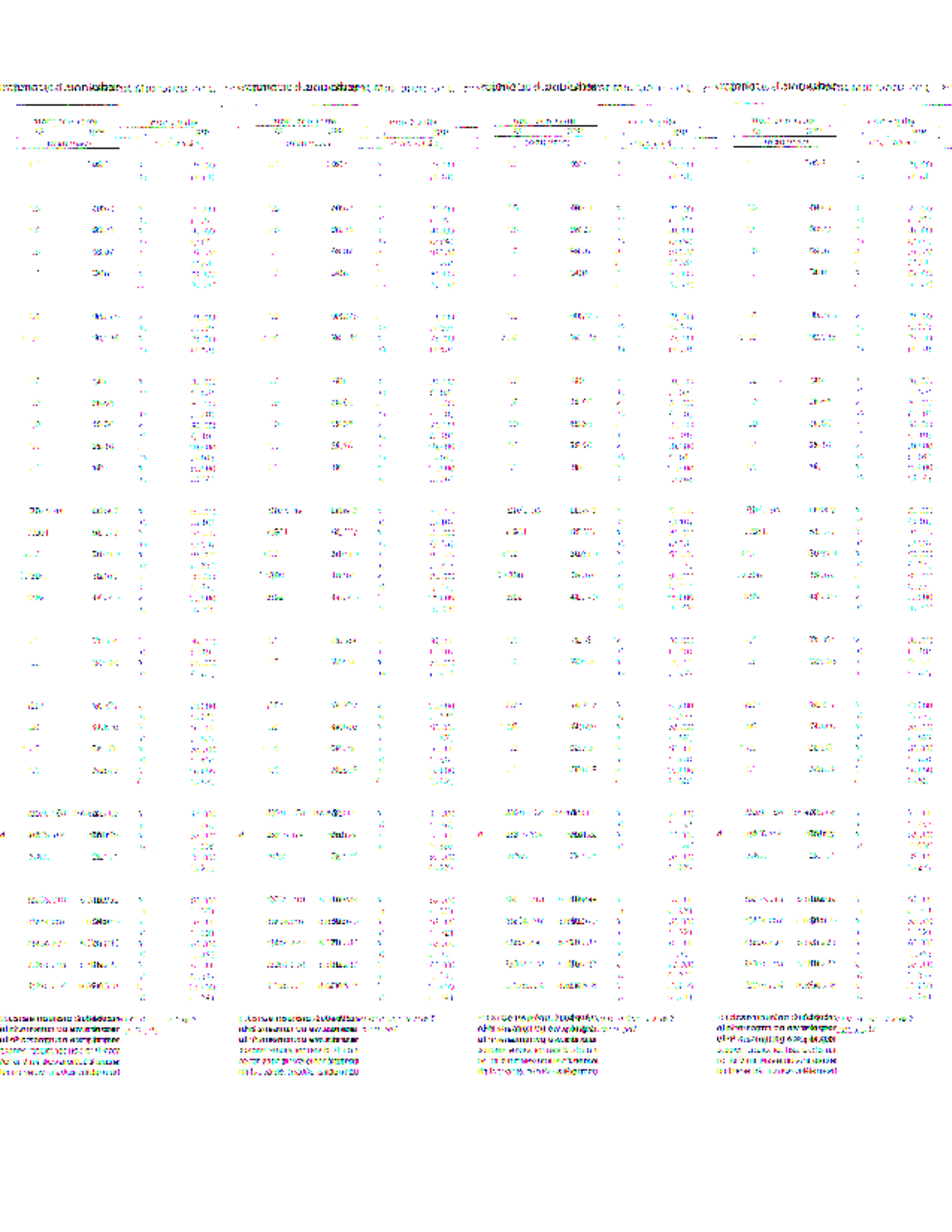
[13] Percentages for variable and fixed rate mortgages sum to 100% in the SIPP, but not in the AHS, because the AHS includes other mortgage categories not reported in the tables.

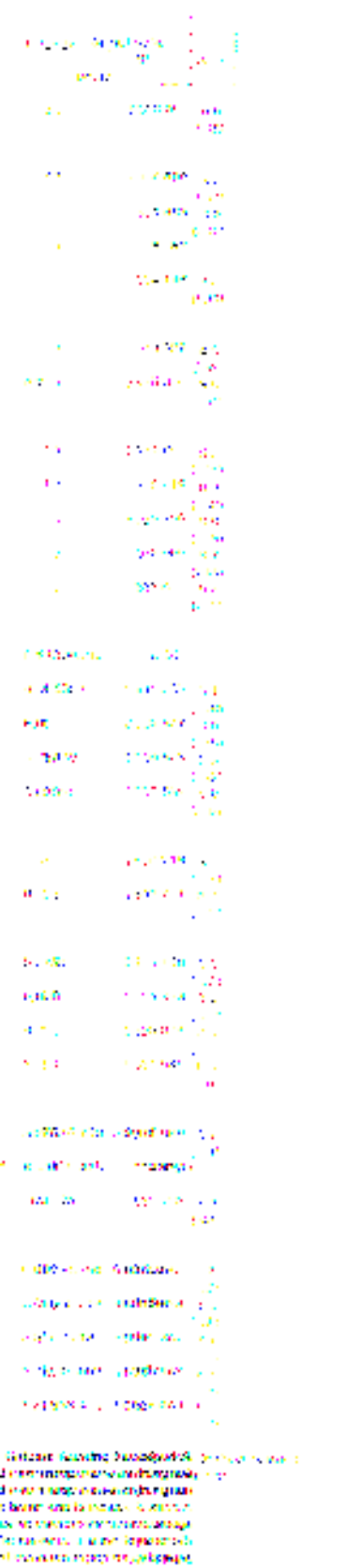
[14] The following categories are not statistically significant at the 10% significance level between the SIPP and the AHS: Black, <35, 55-64, and the Fourth Monthly Income Quintile.

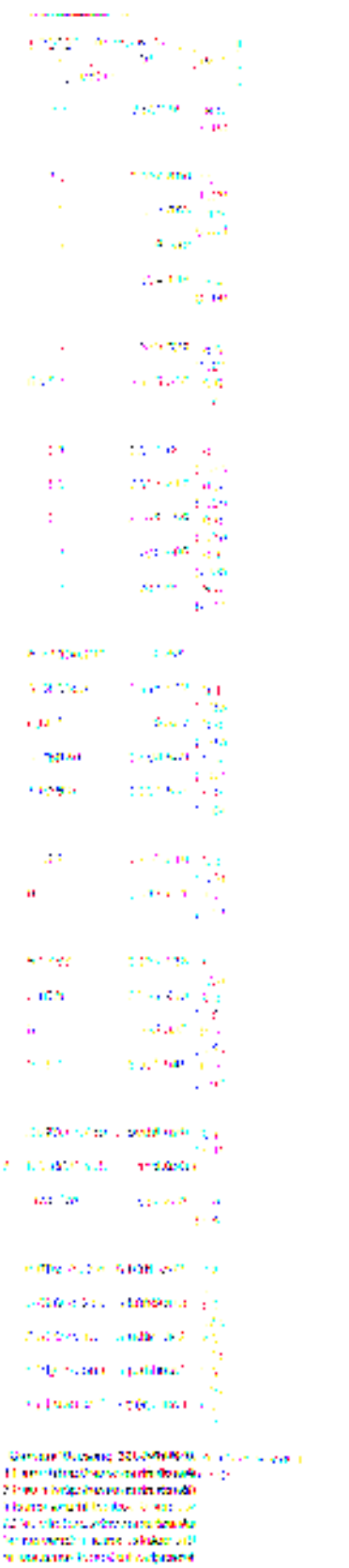
In table 2, we present our comparison of loan characteristics of second mortgages and loans in the AHS and the SIPP by demographic and socioeconomic characteristics.[15] As with the first mortgage or loan, we found interest rates to be very similar across the two surveys. The greatest interest rates differences, which were only 1 percentage point, were observed among households in the top income quintile and householders with advanced degrees. Regarding variable rate mortgages and loans, we found even more pronounced differences than we found with the first mortgage or loan. In all groups examined, the SIPP reports higher percentages of variable rate mortgages. This is likely due to the AHS providing more options to respondents than the SIPP as to how their rates can vary.

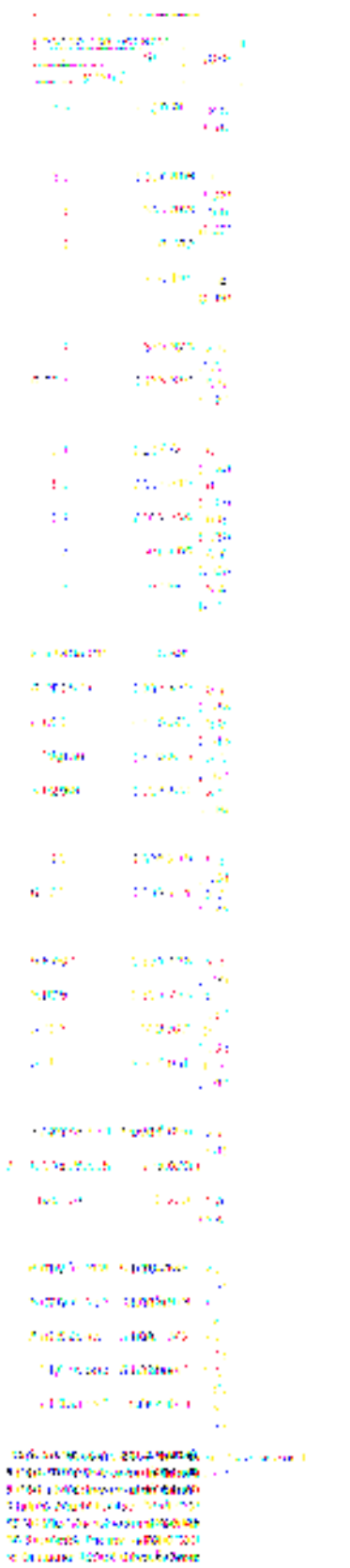
In every demographic and socioeconomic category, the SIPP reports lower percentages of fixed rate second mortgages than the AHS. This also is likely due to the greater differentiation that the AHS makes between fixed rates mortgages and different types of variable rate mortgages. As with the first mortgage, most median mortgage terms were found to be the same. All median terms on the SIPP, and most median terms on the AHS, were 15 year terms for the second mortgage or loan, as opposed to the 30 years terms for the first mortgage or loan. The exceptions were found in the AHS among Hispanic and Other Race householders, who had 20 and 30 year median mortgage terms respectively. Finally, differences in home values were under $20,000 in most cases, with eight categories exhibiting no difference at all.

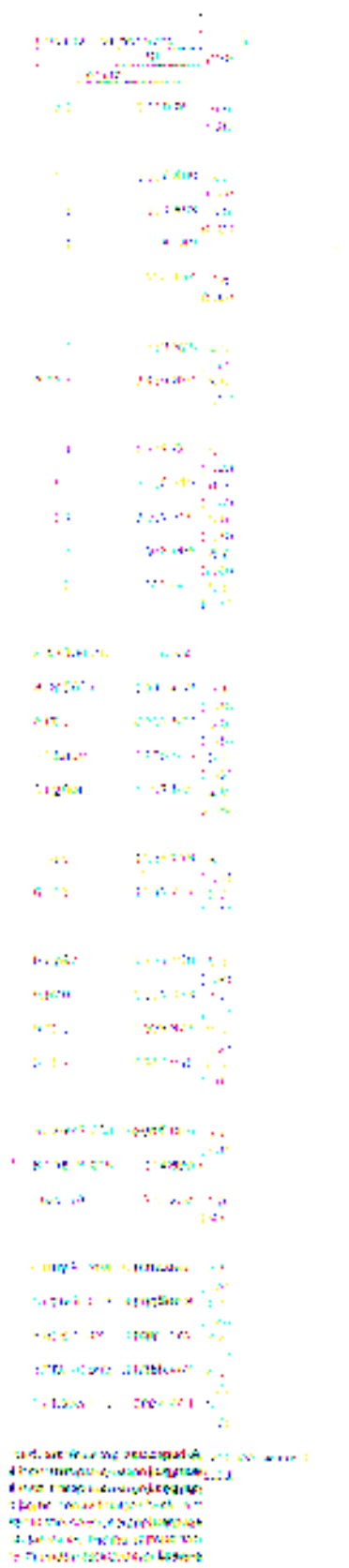
[15] We do not report on FHA/VA mortgages for second mortgages and loans in Table 2. The AHS data editing process does not allow second mortgages to be FHA/VA mortgages, but the SIPP does. In the AHS, if the respondent says the second mortgage is and FHA/VA mortgage, but says the first mortgage is not, the two loans are flipped. If the respondent says both the first and second mortgages are FHA/VA mortgages, the second mortgage is edited to be a conventional mortgage.











VI. Conclusion

Mortgage terms and home values are very similar across the two surveys. After truncating interest rate values in the SIPP below 1 percent, interest rates were also very similar. In the 2008 SIPP panel problems associated with the interest rate question were addressed. FRs are now required to insert a hard decimal point (e.g., 5.5) when recording an answer and are provided with a list of examples of fractions in an FR note. Respondents are allowed to provide either a fraction or a decimal answer and interest rates are capped at 30 percent.

Our findings on variable rate mortgages lend further support to the contention that the AHS underreports adjustable rate mortgages (Lam and Kaul 2003). For both first and second mortgages, SIPP reports higher percentages of variable rate mortgages than the AHS. Estimates of ARMs in the SIPP are no doubt influenced by the relative lack of differentiation between ARMs and other non-traditional mortgage products, such as graduated payment mortgages and balloon mortgages. More research needs to be done to determine whether respondents in the AHS can knowledgeably answer questions about non-traditional mortgage products and whether the SIPP would benefit from a greater differentiation amongst these products. From a data user perspective, AHS variables for the number of fixed rate and adjustable rate mortgages are not provided as recodes on the public user file and must be translated into mortgage product categories with additional code. This may contribute to data user error. Providing recodes of mortgage products on the data user file will make data analysis easier and remove a potential source of programming error.

While FHA and VA mortgages and loans are allowed for second housing debts on the SIPP, they are not allowed on the AHS. There are no second mortgages that are FHA or VA. The FHA program can finance close to 100 percent of the mortgage and the VA program can finance 100 percent of the mortgage, so second mortgage are not necessary for homeowners who participate in these programs. After paying down the first mortgage, a homeowner could get a second mortgage, but this mortgage would not be an FHA or VA mortgage. The original FHA or VA mortgage could be refinanced, but this mortgage would remain a first mortgage. We suggest that the SIPP FHA/VA variable be edited in a similar way to how it is on the AHS now, not allowing second mortgages to be FHA or VA loans.

Not surprisingly, the SIPP, given its focus on income and wealth data, collects more detailed information on employment and wealth than the AHS. The AHS would benefit from including an employment classification similar to the CPS and the SIPP. The SIPP collects data on assets, including interest-earning assets, stocks and mutual fund shares, rental property, amounts due from the sale of a business or property, regular checking accounts, U.S. savings bonds, owned primary and vacation homes, IRA and KEOGH accounts, 401K and Thrift Savings Plans, vehicles, and other financial assets. The SIPP also collects data on both secured and unsecured liabilities, including mortgages, business debt, vehicle loans, credit card bills, store bills, medical bills, loans from individuals and financial institutions, and educational loans. While the AHS does not require the same extensive questions about wealth as the SIPP, it would benefit from expanding its collection of wealth data, since wealth data is used in conjunction with income data and credit scores when banks decide who should receive mortgages and loans. Without information on assets and liabilities, researchers using the AHS must rely solely on income variables in their analyses of different mortgage products.

Finally, the AHS does not provide a variable for home equity on its public user file like the SIPP does. Home equity has been estimated by some researchers using the AHS by subtracting an estimate of the total outstanding principal from the owner's estimation of the home value. Unfortunately, both outstanding principal and home value are topcoded on the public use file, resulting in incorrect estimates of home equity for some homeowners. At this time, the SIPP can be used to estimate the percentage of homeowners who are underwater in their mortgages, but the AHS cannot. The addition of a home equity variable to the AHS public use file would no doubt be valuable to both researchers and policymakers.

References

Boehm, Thomas P., Schlottmann, Alan. M., Abt Associates. 2006. "Mortgage Pricing Differentials Across Hispanic, Black, and White Households: Evidence from the American Housing Survey" Report Prepared for the U.S. Department of Housing and Urban Development, Office of Policy Development and Research.

Boehm, Thomas P., Thistle, Paul D., and Schlottmann, Alan. 2006. "Rates and Race: An Analysis of Racial Disparities in Mortgage Rates" *Housing Policy Debate*, Volume 17, Issue 1, pp. 109-149.

Bourassa, Steven C., Yin, Ming. 2008. "Tax Deductions, Tax Credits and the Homeownership Rate of Young Urban Adults in the United States." *Urban Studies*, Vol 45, Issue 5&6: pp 1141-1161.

Eggers, Frederick. J. 2007. "The American Housing Survey and Non-Traditional Mortgage Products." Prepared for: U.S. Department of Housing and Urban Development, Office of Policy Development and Research.

Kiel, Katherine A., Zabel, Jeffrey E. 1999. "The Accuracy of Owner-Provided House Values: The 1978-1991 American Housing Survey." *Real Estate Economics*, Volume 27, Issue 2, pp. 263-298.

Krivo, Lauren J., Kaufman, Robert L. 2004. "Housing and Wealth Inequality: Racial-Ethnic Differences in Home Equity in the United States." *Demography*, Vol 41, Issue 3: pp. 585-605.

Lam, Ken, Kaul, Bulbul. 2003. "Analysis of Housing Finance Issues Using the American Housing Survey (AHS)" (April), Prepared for: U.S. Department of Housing and Urban Development, PD&R.

Listokin, David, Wyly, Elvin K., Schmitt, Brian, Voicu, Ioan. 2001. "The Potential and Limitations of Mortgage Innovation in Fostering Homeownership in the United States." *Housing Policy Debate*, Volume 12, Issue 3: pp 465-513.

Quercia, Roberto G., McCarthy, George W., Wachter, Susan, M. 2003. "The Impacts of Affordable Lending Efforts on Homeownership Rates" *Journal of Housing Economics*, Volume 12, Number 1 (March), pp. 29-59.

Savage, Howard. 1997. "Who could afford to buy a house in 1993?" U.S. Department of Commerce, U.S. Census Bureau, http://www.census.gov/hhes/www/housing/hsgaffrd/afford93/afford93.html

Savage, Howard. A. 1999. "Who could afford to buy a house in 1995?" U.S. Department of Commerce, U.S. Census Bureau, Current Housing Reports H121/99-1.

Savage, Howard A. 2007. "Who could afford to buy a home in 2002?" U.S. Department of Commerce, U.S. Census Bureau, Current Housing Reports H121/07-1.

Savage, Howard A. 2009. "Who could afford to buy a home in 2004?" U.S. Department of Commerce, U.S. Census Bureau, Current Housing Reports H121/09-1

Savage, Howard A. and Fronczek, Peter J. 1993. "Who can afford to buy a house in 1991" U.S Department of Commerce, U.S. Census Bureau, Current Housing Reports H121/93-3.

Appendix: Question Wording

AHS

AMRTZ =
Years needed to pay off 1st mortgage
1:40 1-40 Years
B Not applicable
Long description:
At your current payments, how long would it take to pay off the loan?

AMRTZ2 =
Years needed to pay off 2nd mortgage
1:40 1-40 Years
B Not applicable
Long description:
At your current payments, how long would it take to pay off the loan?

ARM =
1st mortgage changes due to interest rate
X Change based on interest rates
B Not applicable
Blank Not reported
Long description:
How do they (the mortgage payments) change?

ARM2 =
2nd mortgage changes due to interest rate
X Change based on interest rates
B Not applicable
Blank Not reported
Long description:
How do they (the mortgage payments) change?

BLOON =
1st mortgage's last payment biggest
X Last payment biggest
B Not applicable
Blank Not reported
Long description:
How do they (the mortgage payments) change?

BLOON2 =
2nd mortgage's last payment biggest
X Last payment biggest
B Not applicable
Blank Not reported
Long description:
How do they (the mortgage payments) change?

CANVAR =
Term of 1st mortgage can vary
X Can Vary
B Not applicable
Blank Not reported
Long description:
When you first obtained THIS mortgage, how many years was it for?

CANVR2 =
Term of 2nd mortgage can vary
X Can Vary
B Not applicable
Blank Not reported
Long description:
When you first obtained THIS mortgage, how many years was it for?

CURRINT =
(INTW+(INTF/8))

CURRINT2 =
(INTW2+(INTF2/8))

FIXED =
1st mortgage changes for taxes/insurance
X Change in taxes or insurance, or due to decline in principal balance
B Not applicable
Blank Not reported
Long description:
How do they (the mortgage payments) change?

FIXED2 =
2nd mortgage changes for taxes/insurance
X Change in taxes or insurance, or due to decline in principal balance
B Not applicable
Blank Not reported
Long description:
How do they (the mortgage payments) change?

GPM =
1st mortgage payments rise on fixed schedule part
X Rise at fixed schedule during part of loan
B Not applicable
Blank Not reported
Long description:
How do they (the mortgage payments) change?

GPM2 =
2nd mortgage payments rise on fixed schedule part
X Rise at fixed schedule during part of loan
B Not applicable
Blank Not reported
Long description:
How do they (the mortgage payments) change?

HHAGE =
Age of householder
Information for this variable is also stored in: **AGE1**
0:120 0-120 years old

HHGRAD =
Education level of householder
Information for this variable is also stored in: **GRAD1**
31 Less than 1st grade

32 1st, 2nd, 3rd or 4th grade
33 5th or 6th grade
34 7th or 8th grade
35 9th grade
36 10th grade
37 11th grade
38 12th grade
39 High School Graduate - High School Diploma or equivalent (For Ex: GED)
40 Some college but no degree
41 Diploma or certificate from a vocational, technical, trade business school beyond high school
42 Associate degree in college - Occupational/vocational program
43 Associate degree in college - Academic program
44 Bachelors degree (For Ex: BA, AB, BS)
45 Master's Degree (For Ex: MA, MS, Meng, Med, MSW, MBA)
46 Professional School Degree (For Ex: MD, DDS, DVM, LLB, JD)
47 Doctorate Degree (For Ex: PhD, EdD)
. Not reported

HHMAR =
Marital status of householder
Information for this variable is also stored in: **MAR1**
1 Married, Spouse Present
2 Married, Spouse Absent
3 Widowed
4 Divorced
5 Separated
6 Never married
Blank Not reported

HHRACE =
Race of householder
Information for this variable is also stored in: **RACE1**
1 White Only
2 Black Only
3 American Indian, Alaskan Native Only
4 Asian Only
5 Hawaiian, Pacific Islander Only
6 White / Black
7 White / American Indian, Alaska Native
8 White / Asian
9 White / Hawaiian, Pacific Islander
10 Black / American Indian, Alaska Native
11 Black / Asian
12 Black / Hawaiian, Pacific Islander
13 American Indian, Alaska Native / Asian
14 Asian / Hawaiian, Pacific Islander
15 White / Black / American Indian, Alaska Native
16 White / Black / Asian
17 White / American Indian, Alaska Native / Asian
18 White / Asian/Hawaiian, Pacific Islander
19 White / American Indian, Alaska Native / Asian
20 Other combinations of 2 or 3 races
21 Other combinations of 4 or 5 races

HHSPAN =
Spanish origin of householder
Information for this variable is also stored in: **SPAN1**
1 Yes
2 No

HHWLINEQ =
Householder worked at all last week
Information for this variable is also stored in: **WLINEQ1**
1 Yes
2 No
D Don't Know
R Refused
Blank Not reported

INTF =
Interest rate of 1st mortgage - fraction
0 no fraction
1 1/8 percent
2 1/4 percent
3 3/8 percent
4 1/2 percent
5 5/8 percent
6 3/4 percent
7 7/8 percent
B Not applicable
Long description:
What is the current interest rate on the mortgage?
(Rounded down to nearest 1/8 percent)

INTF2 =
Interest rate of 2nd mortgage - fraction
0 no fraction
1 1/8 percent
2 1/4 percent
3 3/8 percent
4 1/2 percent
5 5/8 percent
6 3/4 percent
7 7/8 percent
B Not applicable
Long description:
What is the current interest rate on the mortgage?
(Rounded down to nearest 1/8 percent)

INTW =
Interest rate of 1st mortgage - whole #
1:20 1-20% (whole number part)
B Not applicable
Long description:
What is the current interest rate on the mortgage?
(Rounded down to nearest 1/8 percent)

INTW2 =
Interest rate of 2nd mortgage - whole #
1:20 1-20% (whole number part)

B Not applicable
Long description:
What is the current interest rate on the mortgage?
(Rounded down to nearest 1/8 percent)

MATBUY =
Got 1st mortgage in same year bought unit
1 Yes
2 No
B Not applicable
Long description:
Did you get the first mortgage the same year you bought your home?

MATBY2 =
Got 2nd mortgage in same year bought unit
1 Yes
2 No
B Not applicable
Long description:
Did you get the second mortgage the same year you bought your home?

MCNT =
Number of regular mortgages (can be a combination of regular mortgages and lump sum home equity loans)
0:6 0-6 regular mortgages
7 7 or more regular mortgages
B Not applicable
. Not reported

MORTIN =
Type of 1st mortgage
1 FHA
2 VA
3 Farmer's Home Administration Mortgage
4 Some other type
B Not applicable
D Don't Know
R Refused
Blank Not reported
Long description:
Is the mortgage an FHA, VA, Farmers Home Administration Mortgage, or some other type?

MORTN2 =
Type of 2nd mortgage
1 FHA
2 VA
3 Farmer's Home Administration Mortgage
4 Some other type
B Not applicable
D Don't Know
R Refused
Long description:
Is the mortgage an FHA, VA, Farmers Home Administration Mortgage, or some other type?

MZINC2 =
ZINC2/12

NEWMOR =
1st mortgage new or assumed
1 New
2 Assumed
3 Wrap around
B Not applicable
Long description:
With regard to the first mortgage, did you get a new mortgage or did you assume someone else's mortgage?

NEWMR2 =
2nd mortgage new or assumed
1 New
2 Assumed
3 Wrap around
B Not applicable
Long description:
With regard to the second mortgage, did you get a new mortgage or did you assume someone else's mortgage?

NUNIT2 =
Structure type
1 One-unit building, detached from any other building
2 One-unit building, attached to one or more buildings
3 Building with two or more apartments
4 Manufactured (mobile) home
B Not applicable
Long description:
Are these living quarters in a –

REGION =
Census region
1 Northeast
2 Midwest
3 South
4 West

Northeast includes: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania.
Midwest includes: Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas.
South includes: Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, Texas.
West includes: Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Washington, Oregon, California, Alaska, Hawaii.

STATUS =
Interview status
1 Occupied interview
2 URE (Usual Residence Elsewhere) interview
3 Vacant interview
4 Noninterview

TENURE =
Owner/renter status of unit

1 Owned or being bought by someone in your household?
2 Rented for cash rent
3 Occupied without payment of cash rent?
B Not applicable
Long description:
Is this housing unit -
READ CATEGORIES UNTIL A "YES" REPLY IS RECEIVED

TERM =
Term of 1st mortgage
1:40 1-40 years
B Not applicable
Long description:
This variable is created by the bridge system.
How many years remained on the mortgage then?
When you first obtained THIS mortgage, how many years was it for?

TERM2 =
Term of 2nd mortgage
1:40 1-40 Years
B Not applicable
Long description:
This variable is created by the bridge system.
How many years remained on the mortgage then?
When you first obtained THIS mortgage, how many years was it for?

TYPE =
Structure type
1 House, apartment, flat
2 Mobile home with No permanent room added
3 Mobile home with permanent room added
4 HU, in nontransient hotel, motel, etc.
5 HU, in permanent transient hotel, motel, etc.
6 HU, in rooming house
7 Boat or recreation vehicle
8 Tent, cave, or railroad car
9 HU, not specified above
10 Unoccupied site for mobile home, trailer or tent
11 Group Quarters
B Not applicable
Long description:
Are your living quarters in a –

VALUE =
Current market value of unit
1:999997 $1-$999,997
999998 $999,998 or more
B Not applicable
D Don't Know
R Refused
. Not reported
Long description:
Current market value of this housing unit.

VARM =
1st mortgage changes for other reason

X Other, specify
B Not applicable
Blank Not reported
Long description:
How do they (the mortgage payments) change?

VARM2 =
2nd mortgage changes for other reason
X Other, specify
B Not applicable
Blank Not reported
Long description:
How do they (the mortgage payments) change?

VARY =
1st mortgage payments change
1 Yes
2 No
B Not applicable
D Don't Know
R Refused
Blank Not reported
Long description:
Are the payments on this loan the same during the whole length of the mortgage?

VARY2 =
2nd mortgage payments change
1 Yes
2 No
B Not applicable
D Don't Know
R Refused
Blank Not reported
Long description:
Are the payments on this loan the same during the whole length of the mortgage?

WGT90GEO =
Final weight based on 1990 Census geography
00000:99999 0-99,999
Long description:
Product of pure weight (PWT), noninterview adjustment factor, 1st stage ratio estimation factor, 2nd stage ratio estimation factor, and 3rd stage ratio estimation factors.
Based on 1990 Census geography.

ZINC2 =
Household Income
-10000 loss of $10,000 or more
-9999:-1 loss of $1-$9,999
0 no income
1:9999995 income of $1-$9,999,995
9999996 income of $9,999,996 or more
B Not applicable
Long description:
The household income recode is the sum of the wage & salary income of all household members age 14+ and all other reported income.

RE02
ASK IF NOT APPARENT:
Is this residence a mobile home?
(1) Yes
(2) No

RE03
Which persons in this household are the owners of this home?
ENTER LINE NUMBER OF PERSON(S) IN HOUSEHOLD
WHO OWN HOME.
ENTER (N) FOR NONE/NO MORE

RE04
When was this home purchased?
MONTH:
YEAR:

RE05
Is there a mortgage, home equity loan, or other debt on this home?
INCLUDE RENTAL PROPERTIES ATTACHED TO OR LOCATED IN THE RESIDENCE
(1) Yes
(2) No
Enter Number Altogether, how many mortgages, home equity loans, or other debts are there on this home?

RE06
Number
THE NUMBER OF MORTGAGES/LOANS/ETC. ENTERED -- [FILL RE06FIL] -- IS VERY LARGE.

RE062BIG
IS IT CORRECT?
DOES THE RESPONDENT UNDERSTAND THAT WE ARE ASKING ABOUT THE *NUMBER OF DIFFERENT LOANS* (*NOT* THE TERM OF THE MORTGAGE -- THE NUMBER OF YEARS OVER WHICH IT IS TO BE PAID OFF)?
(1) BACK UP AND CORRECT (2) PROCEED

RE07
FIRST MORTGAGE
How much principal is currently owed on the first mortgage or loan?
If possible, please check any records you may have from the lender or mortgage company to obtain the most accurate estimate available.
Enter Number

RE08
FIRST MORTGAGE In what year was the first mortgage or loan obtained? If the mortgage was assumed, report the original date of
the mortgage. YEAR:
Enter Number FIRST MORTGAGE

RE09
And in which month was the first mortgage or loan obtained?

Month:
Enter Number

RE10
FIRST MORTGAGE
What was the amount of the mortgage or loan when it was obtained or last refinanced? If the mortgage was assumed, give the original amount of
the mortgage.
Enter Number

RE11
FIRST MORTGAGE
What is the total number of years over which payments are to be made? ENTER (N) FOR NOT FIXED
Number of Years

RE12
FIRST MORTGAGE What is the current annual interest rate on this mortgage or loan? ENTER PERCENT FROM 00.001% TO 99.999% 1/8 = .125 5/8 = .625 1/4 = .25 3/4 = .75 3/8 = .375 7/8 = .875 1/2 = .5
Enter Number

RE13
FIRST MORTGAGE
Is the interest rate variable or fixed?
VARIABLE INTEREST RATES CAN CHANGE OVER THE TERM OF THE MORTGAGE OR LOAN
(1) Variable interest rate
(2) Fixed interest rate

RE14
FIRST MORTGAGE
Was this mortgage obtained through an FHA or VA mortgage program?
(1) Yes - FHA LOAN
(2) Yes - VA LOAN
(3) No

RE15
SECOND MORTGAGE
How much principal is currently owed on the second mortgage or loan?
If possible, please check any records you may have from the lender or mortgage company to obtain the most accurate estimate available.

RE16
SECOND MORTGAGE In what year was the second mortgage or loan obtained? If the mortgage was assumed, report the original date of
the mortgage. ENTER 4 DIGIT YEAR:

RE17
SECOND MORTGAGE
And in which month was the second mortgage or loan obtained?
Month:
Enter Number

RE18
SECOND MORTGAGE
What was the amount of the mortgage or loan when it was obtained or last refinanced?
If the mortgage was assumed, give the original amount of the mortgage.

RE19
SECOND MORTGAGE
What is the total number of years over which payments are to be made? ENTER (N) FOR NOT FIXED
Number of years
Enter Number

RE20
SECOND MORTGAGE
What is the current annual interest rate on this mortgage or loan?
ENTER PERCENT FROM 00.001% TO 99.999%
1/8 = .125 5/8 = .625 1/4 = .25 3/4 = .75 3/8 = .375 7/8 = .875 1/2 = .5
Mark One Only

RE21
SECOND MORTGAGE
Is the interest rate variable or fixed?
VARIABLE INTEREST RATES CAN CHANGE OVER THE TERM OF THE MORTGAGE OR LOAN
(1) Variable interest rate
(2) Fixed interest rate
Mark One Only

RE22
SECOND MORTGAGE
Was this mortgage obtained through an FHA or VA mortgage program?
(1) Yes - FHA LOAN
(2) Yes - VA LOAN
(3) No
Enter Number

RE23
THIRD MORTGAGE
How much principal is currently owed on all the remaining mortgages or loans not reported previously?
If possible, please check any records you may have from any other lender or mortgage company to obtain the most accurate estimate available.

RE24
What is the current value of this property; that is, how much do you think it would sell for on today's market if it were for sale? Include rental properties attached to or located on this residence.

RE27
MOBILE HOME
How much principal is currently owed on all mortgages?
Enter Number

RE28
MOBILE HOME
How much do you think this mobile home would sell for today if it were for sale?