Joint Center for Housing Studies

Harvard University

A Critical Look at Rising Homeownership Rates in the United States Since 1994

George S. Masnick, Nancy McArdle and Eric S. Belsky

W99-2

January 1999

George S. Masnick is a Senior Research Fellow, Nancy McArdle is a Research Analyst and Eric S. Belsky is Executive Director at the Joint Center for Housing Studies of Harvard University.

A Critical Look at Rising Homeownership Rates in the United States Since 1994

George S. Masnick, Nancy McArdle and Eric S. Belsky

W99-2

Joint Center for Housing Studies

January 1999

Abstract

In spite of warnings to exercise caution when using the Current Population Survey to track trends between 1993 and later years because of major changes since 1994 in the way in which CPS data were sampled, collected and weighted to produce national estimates, housing analysts have pretty much taken recent homeownership trends on face value. These trends show a large increase in the homeownership rate, especially between 1994 and 1996, that most observers have accepted as a logical outcome of a good economy, favorable mortgage interest rates, and aggressive public policy initiatives to increase homeownership. A closer look at this recent upward trend in homeownership reveals some anomalies that are difficult to explain. First is the substantial decline in the number of renter households that took place between 1994 and 1996, without an equally large change in the number of vacant-for-rent units on the market. Second is the observation that the prior decline in homeownership took place unevenly across households stratified by age of head and family composition, while the upswing has been evenly spread across all age groups and broad family types. Third is the fact that the geographic distribution of the changes in homeownership since 1994 is not always consistent with where increases in homeownership might have been expected to occur because of economic trends or public policy initiatives. While we believe that homeownership rates have certainly increased in recent years, we conclude that several changes in CPS methodology between 1993 and 1996 very well could have exaggerated this change.

A Critical Look at Rising Homeownership Rates in the United States Since 1994

by

George S. Masnick, Nancy McArdle, Eric S. Belsky

Introduction

After rising dramatically between 1940 and 1960, and further increasing between 1960 and 1980, the U.S. homeownership rate moved downward between 1980 and 1985, stagnated around 64 percent between 1985 and 1994, and since 1994 appears to have regained the early 1980s losses (Exhibits 1-3). Significantly, this upswing appears to have taken place among all ages of household heads, among both married and unmarried, among city residents, suburbanites and rural dwellers, among whites and non-whites, and among the native born and immigrants, raising the aggregate homeownership rate to an all-time high 65.7 percent in 1997.[1]

Housing observers have a ready explanation for this recent apparent increase in homeownership. They cite the growth in jobs and the expansion of the economy, historically low mortgage interest rates, and the aging of the baby boom generation into high ownership age groups. Lubricating these favorable economic and demographic trends are renewed public policy initiatives to provide homeownership opportunities to households not well served by historical market conditions.[2]

But favorable housing market conditions and public policy initiatives may not be the whole story. Between 1994 and 1996, the two years with the biggest jump in homeownership, the Current Population Survey (CPS), the principal data source used to measure homeownership trends in the United States, underwent the most major methodological revisions in its entire history. Despite Census Bureau admonitions about unknown consequences of these changes in data collection for tracking trends in certain social indicators, analysts have continued to use the CPS data series when focusing on recent

[1] For the fourth quarter of 1998 the rate reached 66.4 percent. The recently released March 1998 Current Population Survey places the rate at 66.2 percent.

[2] The Clinton Administration's initiative to raise the homeownership rate to 67.5 percent began in the summer of 1994. The strategy consists of four elements: 1) make homeownership more affordable; 2) eliminate barriers to homeownership; 3) enable families to manage the responsibilities and rewards of homeownership, and; 4) make it easier to buy a home. HUD is coordinating efforts in these areas with about two dozen public and private organizations that serve as national housing advocates.

homeownership trends, often without acknowledging the possibility of serious data discontinuities.

A close examination of the recent trends in owner and renter household growth reveals some troubling inconsistencies. The novelty of some recent trends, together with changes in how they are measured, cast doubt on whether the whole story has been told. To the extent that discontinuities in the data series may be responsible for some of the measured changes in homeownership, it may be premature to draw conclusions about recent developments.

The purpose of this working paper is to dissect and decompose the trend in the aggregate national homeownership rate into its component parts in order to gain a better understanding of the recent changes. We look at trends in owner and renter household growth, trends by geographic location (state, and city-suburb-non-metropolitan location), trends by age and family type, and trends by race and Hispanic origin. We then conclude with a discussion of unanswered questions about the possible impact of the methodological changes in the CPS on the homeownership rate. Only with this thorough review can we gain the perspective we need to better understand homeownership trends in the mid-1990s.

How We Measure Homeownership

Sources of Data - The preferred source of data on recent trends in homeownership is the aggregated monthly Current Population Survey statistics released in conjunction with the Housing Vacancy Survey (HVS).[3] These data are preferred because they are timely, being released quarterly. In addition, once every calendar year, the previous 12 monthly CPS data sets are pooled and an annual mid-year average set of homeownership statistics is created. We refer to this pooled CPS data as the HVS series. They are particularly well suited to tracking year-to-year trends, with the typical sampling and other random month-to-month variations characteristic of the CPS greatly smoothed by the pooling. The annual data also allow for a detailed breakdown of homeownership rates by age and family type, by race and Hispanic origin, as well as by geography.

Some variables, such as race and Hispanic origin by age and family type, are not cross-tabulated in the HVS data, even in the annual pooled data. To examine these breakdowns the analyst must turn to other data sources. The most commonly used data for

[3] The data were formerly released by the Census Bureau as the H-111 series. For the past several years, the data are available in electronic format, made available through the Census Bureau's web site.

tabulations of variables not available from the HVS have been the annual March CPS public use data and the American Housing Survey (AHS) public use data. The March CPS is made available to enable analysts and researchers to produce custom tabulations and statistical analyses. The March CPS is chosen for such a public use data set partly because it contains a supplement of additional demographic variables, and partly because Hispanic households are over-sampled in order to boost their representation in the survey.

Unfortunately, the March CPS is not always reliable for tracking short-term annual trends in measures such as homeownership, because random variation often comes into play when a single month's worth of data is compared to another month's over a short period of time like a year. When comparisons are made over longer time periods, say three to five years where trends and differences might be larger, the reliability of just using the March CPS is improved.[4]

The CPS, being a household survey, also does not collect good data on housing characteristics. For example, about 10 percent of households fail to report structure type. Better housing data are collected by the American Housing Survey (AHS), fielded yearly as the Annual Housing Survey through 1983, and bi-annually every odd year since.[5] The AHS focuses its data collection by following specific housing units over time, not specific households. The sample is not chosen to be representative of characteristics of households.[6] Consequently, the AHS is not the best source of data on detailed **levels** of homeownership for subgroups of households, although the AHS can reliably measures **trends** in homeownership, as long as any biases in the data are approximately the same order of magnitude from survey to survey.

Because the AHS data are now available only every two years, and with the usual delay of over one year until the AHS public use micro-data files are released, the AHS is not generally used to measure trends in homeownership. We do, however, present AHS data on

[4] Recently, the Census Bureau has made available public use versions of the basic CPS sample for each month since 1994. It is these monthly samples which are averaged by the Census Bureau to produce the annual HVS series. Now that the monthly data are available, researchers can create custom tabulations and then average the results across several months to create a more stable series than the March CPS alone. While a potential boon to researchers with the data processing capabilities to aggregate and analyze these monthly files, they will not replace the quarterly HVS data for ease of accessibility to most who follow housing trends. These data were not available in time for the analyses presented here.

[5] Tenure is a characteristic of the household, not of the housing unit, and as such it is most reliably measured by the CPS.

[6] Though AHS figures are weighted up to reflect basic age by sex by tenure totals from the CPS.

longer-term trends and differentials in homeownership, and AHS data are essential when the focus is the variation of homeownership across housing related variables.

The fourth source of homeownership data is the decennial census. The census is by far the most useful data source for tracking long-term trends and differentials. It is also the only data source with sufficient coverage to be able to focus the data on specific geographic locations with any degree of reliability.. Because our focus in this working paper is the recent change in homeownership, census data are referred to only to provide a longer-term context for more recent trends.

The Homeownership Rate Defined - The homeownership rate is defined as the proportion of occupied housing units that are owner-occupied. Mathematically, the ownership rate is calculated as the ratio of the number of owner-occupied households to the number of total households. Since the number of total households is nothing more than the sum of the number of owner households and the number of renter households, the ownership rate is:

$$\textbf{Ownership Rate} = \frac{\textbf{Owner HH}}{\textbf{Owner HH + Renter HH}}$$

One can readily see that the ownership rate can rise (or fall) only if the number of owner households increases at a faster (or slower) rate than the number of renter households. The most favorable condition for an increase in the ownership rate is if owner households increase and renter households decrease.

During the 1994-1996 upswing in the ownership rate, owner households increased at what appears to be a record pace, and renter households decreased in absolute numbers also at unprecedented levels. According to the HVS aggregated annual CPS data, average annual total household growth was 1.14 million between 1994 and 1996. This resulted from an average annual increase in owner households of 1,450,000 and an average decrease of renter households of 310,000 annually. Each level of owner growth and renter loss would be the largest two-year totals in U.S. history. These opposite trends in the growth of owner and renter households, affecting the numerator and denominator of the above equation in opposite directions, greatly magnified the increase in the homeownership rate.

Some Inconsistencies in Trends

On first thought, gains in owner households and losses in renter households appear to be entirely consistent - indeed might be thought of as two sides of the same coin. A first-time owner household usually moves from rent to own (although some transition directly from non-head to own), and sometimes even two renter households might merge into one owner household, yielding two losses on the renter side for every gain on the owner side. And increasingly, as delayed marriages and remarriages assume a larger share of all marriages, existing owner households might absorb existing renter households as a consequence of such marriages, creating a loss on the renter side without a gain on the owner side.

However, such a large decline in renter household formation as experienced between 1994 and 1996, from positive 300,000 annual average growth in the early 1990s to negative 300,000 per year during 1994-1996, should have created vacancies in the rental stock. Surprisingly, the unprecedented weakness in the formation of renter households appears **not** to have coincided with a commensurate increase in the number of vacant-for-rent units. Exhibit 4 highlights the unparalleled nature of the simultaneous post-1994 increase in owner households and decrease in renter households as well as the modest nature of the change in vacant-for-rent units relative to earlier periods.[7]

The only way that a decline in renter households could occur without affecting rental vacancies is if tenure conversions were occurring within existing housing units.[8] Such could be the case if landlords are willing to sell their rental units, and the renters are suddenly able to buy their units because of favorable interest rates, higher household wages, more lenient mortgage lending practices, or a combination of all three. If significant conversions from renter to owner units happened between 1994 and 1996, it appears to have affected mostly whites as we document below, and it happened especially in suburbs and non-metropolitan areas. Federal initiatives to convert public housing to owner occupancy, or to place mortgages more easily in the hands of minorities do not explain why the draw down in renters happened to mostly suburban and ex-urban whites.

[7] Not shown here is the additional fact that the small increase in vacant-for-rent units in Exhibit 4 is entirely in the single-family category. Apartments in both the 2-to-4 unit and 5+ unit categories have shown virtually no increase in the percent vacant-for-rent during the mid-1990s.

[8] A second way would be if those moving from renting to owning vacate rental units that are then taken off the market. This is unlikely, since rental units that leave the stock are generally those in the worse shape, an unlikely launching pad for prospective owners.

Normally, the trends in owner and renter household growth are expected to move somewhat in the same direction. Good economic conditions may permit increased movement from renter to owner tenure, but the loss of renter households from such transitions are usually more than offset by increases in new renter household formation that economic prosperity fosters (thus keeping rental vacancies down). During a sustained economic expansion with favorable mortgage interest rates we might expect the homeownership rate to creep upward if the rate of owner household growth, made possible by new housing construction, exceeds the rate of renter growth. But such conditions do not generally result in large surges in homeownership. Steady increases in both owner and renter households seem to have occurred throughout the 1960s and most of the 1970s, when both economic and demographic conditions favored both owner and renter household formation (Exhibit 4).

When the economic conditions are ones of recession and recovery rather than sustained growth, the conventional wisdom is that persons at the economic margins are the ones to be most affected by economic swings, and these persons are more likely to be renters. When an economy enters a recession, renters are the first to withdraw from the housing market by foregoing independent household formation or by doubling up more to save on rent. When an economy pulls out of a recession, the ownership rate often first goes lower as new renter households are quickly formed to satisfy pent-up demand for household formation.

Exhibits 5 and 6 illustrate these interpretations by following the growth and decline in homeownership rates (and the component owner and renter household growth) in California through its 1980s economic expansion, early 1990s recession, and mid-1990s recovery. During the period 1984-1990, California's economy expanded as shown by the steady increase in the number of wage and salary jobs, yet homeownership rates hovered around 54 percent. Both owner and renter household formation increased apace during that period. When the recession began to hit California hard starting in 1990, homeownership rates actually increased, not decreased, because renter household formation leveled off while the number of owner households continued to rise. During the initial years of the recent economic recovery in California, it appears that renter household formation has increased more rapidly than owner household formation, and consequently the ownership rate has fallen.

For the U.S. as a whole, neither a counter-cyclical trend in economic growth and ownership, following the California model after 1990, nor the sustained growth model characterizing the entire U.S. in the 1960s and 1970s and California in the 1980s, appears to have held sway. During most of the 1980s, U.S. owner household growth was depressed below its demographic potential, and renter household growth was above average. Since 1994, owner household growth has increased while renter household growth has decreased in a pattern that appears highly unusual when compared to longer-term trends. While we appear comfortable explaining the low owner growth in the 1980s and recent mid-1990s increase in economic terms, we struggle for an explanation for the 1994-1996 renter household losses with which we are equally comfortable.

One might argue that the 1990s economic trends could have affected different groups of people differently. In one scenario, the better educated are able to take advantage of good job prospects and higher wages, and move into homeownership, while the less well educated cannot find jobs or earn enough to qualify for homeownership or even live more independently as heads of renter households. While this "dual economy theory" might have intuitive appeal, one troubling fact about the trend in owner and renter households does not square with such a thesis. The big disparity in owner and renter household growth is entirely for non-Hispanic white households. Between 1994 and 1997, owner households for whites increased by an annual average of 774,000, while white renter households decreased by an average of 405,000 each year (see Exhibit 18 below). For the minority population, both owner and renter households increased significantly (564,000 owner and 238,000 renter households annually). The "dual economy" thesis would not be expected to fall more heavily on whites than on minorities.

Perhaps, rather than being converted from renter to owner households through market transactions, an entirely different line of explanation is called for. Maybe a simple "adjustment" of renter and owner household counts occurred because of methodological changes in the CPS that took place between 1994 and 1996, an adjustment that reduced the estimates of the number of renter households included in the survey and increased the number of owner households. Maybe both the owner household increase and renter household decline between 1994 and 1996 was exaggerated by the change in the way the data were sampled, collected and/or weighted.

In a recent paper, Pitkin (1998) compares estimates of household growth and homeownership rate change between 1993 and 1995 as measured by the HVS and the AHS. AHS questionnaire design and administration remained fairly constant between the two years, while HVS (CPS) questionnaire design and administration changed. By using the basic AHS weights to estimate AHS household counts by tenure, the growth in homeownership can be estimated independently of the CPS adjustments employed in the final weighting of the AHS. Pitkin finds that the HVS gives a lower estimate of the growth in number of households (about 700,000 – the majority being renter households) and a higher estimate of the increase in the homeownership rate between 1993 and 1995 than the AHS. While the difference in household counts is statistically significant, the difference in the increase in the homeownership rate between 1993 and 1995 (+0.76 in the HVS compared to +0.33 in the AHS) is less than two standard errors, and is therefore judged not statistically significant. Such "statistically correct" thinking probably obscures the basic point that the real ownership rate simply did not rise enough in the two-year period from 1993 to 1995 to exceed the margin of error of the AHS. We prefer to interpret his findings as suggestive of a possible overestimate in the homeownership increase as measured by the HVS, due to an underestimate of renter household growth. This overestimate of the increase is in the neighborhood of 50 to 60 percent of the HVS estimated growth according to Pitkin's figures.

Before we turn to an examination of methodological changes in the CPS and their possible effects on the homeownership rate, several additional dimensions of the post-1994 increase in homeownership deserve to be discussed.

Trends by Age and Marital Status

The Longer Term Trend - When homeownership is examined by age of head, we see a steady decline since the early 1980s in the younger age groups' rates. Among under-35 year old heads, there was a four-point drop between 1982 and 1994. Married couple ownership rates among under-35 year olds declined about 2 points during this period, while ownership for all other household types remained fairly stable. (See Exhibits 7a-c and Appendix A.) The larger downward trend for all marital statuses combined resulted partly from the increasing share of all households that are non-married couple households, and which have ownership levels less than half that of married couples in the under 35 age group (approximately 20 percent compared to 40 percent). After 1994, the upswing in ownership is

due to an upswing in the ownership rates for both married and unmarried heads. By 1997, the married heads under-35 returned to their 1982-1988 levels of ownership, while the unmarried heads increased their ownership rate 10 percent above previous levels.

A similar pattern of pre-1994 decline, marked by a 5-percentage point drop, is experienced by the 35-44 age group (See Exhibits 8a-c). Here, both married couple and other household heads experienced declining ownership rates between 1982 and 1994. The 2-3 percentage point drop within each of the two broad marital status groups also indicates that the shift to unmarried household headship was an important part of the larger overall decline in the homeownership rate for this age group. The homeownership rate for other household types is again roughly half that of married couples (44 percent versus 81 percent).

Even 45-54 year old heads showed a decline (2 percentage points) in the overall ownership rate between 1982 and 1994, brought about by a shift in the share of heads not currently married couples. Married couple ownership dropped only about 1 percent while other household ownership increased by roughly the same amount (Exhibits 9a-c). Homeownership among 55-64 year olds remained fairly stable in the aggregate at around 80 percent, even as the rates for married and unmarried heads oscillated in a slightly upward direction, again showing the effects of the shift toward the increasing share of households headed by someone not married (See Exhibits 10a-c)

Homeownership rate trends for 65+ heads look very different. Throughout the 1982-1997 period, homeownership among the elderly climbed steadily upward, gaining 3 percentage points from 1982 to 1994 and another 2 percentage points since 1994. The respective gains among married couples were almost 4 percentage points during the first period and a little over a point in the second. Other households headed by 65+ year-olds added 3 percentage points to their ownership rate during the early period and another 2.5 points since 1994 (See Exhibits 11a-c).

Summarizing the Trends Since 1994 - Exhibits 7-11 dramatically show that the post-1994 increase in homeownership took place across all age groups. Exhibit 12 summarizes this fact. The data are reported for 5-year age groups instead of the 10-year age groups reported earlier to test whether aggregating the data into broader age categories concealed any important differences. Clearly, this is not the case.

When this 1994-1997 increase in homeownership is examined separately for married couple and all other households, broadly similar levels of change are experienced across all age groups for both household types (Exhibits 13 and 14). This recent upswing in homeownership is different from the downward trend in the 1980s and early 1990s, when younger married couple ownership declined, and ownership trends for households other than married couples were less consistent by age – stable for the youngest, declining for the 35-44 year olds, and increasing after age 45.

The pre-1994 historical trends are more "normal" in the sense that different cohorts, at different stages of the life cycle, respond differently to market forces affecting homeownership. The post-1994 trend is unusual in its consistency across age and household types, and as we shall see below, across other population categories as well.

Trends by Geographic Location

City/Suburb/Non-Metropolitan Location - Exhibit 15 shows that the recent upswing in homeownership has taken place across the entire spectrum of city/ suburban/ non-metropolitan classification of areas. The 1995 and forward data points use the 1990 census metropolitan/ non-metropolitan definition, whereas the 1980 census definition is used for earlier years. This accounts for the heightened upsurge in the suburban trend because of the inclusion of higher ownership non-metropolitan counties as belonging to the suburbs in the redefined metropolitan areas. This redefinition also softened the 1994-1995 increase in non-metropolitan homeownership. Without this redefinition of metropolitan areas, it appears that the upswing in homeownership was fairly equally distributed across all three types of areas.

Trends in a Sample of States - While there appears to have been broad participation in the increase in homeownership by areas close to central cities and far removed, within regions of the country, different states did not share such uniformity. The national increase in homeownership between 1994 and 1997 was achieved by some states in all parts of the country showing an extraordinary jump in rates, while other states' rates stagnated or declined (Exhibits 16a-d and 17a-d and Appendix B). With the mega-states of New York and California falling in the no-growth category, it must necessarily be the case that smaller states collectively experienced even larger gains than did the national average. It must also be the case that favorable mortgage interest rates and mortgage availability alone can not account for the upward trend in homeownership, otherwise the trend would be more uniform across the

states. The emergence of the secondary mortgage market has greatly reduced regional and state variation in mortgage interest rates, and national policies to make mortgages available to households not well served by the market should not create advantages for certain states.

Local economic trends and other housing market factors clearly must be drawn into the discussion in order to explain state variations in homeownership trends. Such a discussion is beyond the scope of this paper. Suffice it to say that state variations in economic or housing market conditions probably could not have emerged suddenly in 1993 –1996, altering the direction of stable or declining homeownership rates in such diverse states as Minnesota (a 10 percentage point jump), Illinois (a 6 percentage point jump), Iowa (a 5 percentage point increase) and Nevada (a 5 percentage point leap). While economic growth in these states, as measured by the increase in wage and salary jobs, might be thought to underpin this rise in homeownership, similar levels of job growth in the mid-to-late 1980s were not matched by a strong rise in the homeownership rate. Furthermore, the rapid rise in ownership in these states appears to have suddenly halted in 1997 without a similar change in either job growth or mortgage interest rates, casting further doubt as to whether economic and housing market conditions are responsible for the 1994-1996 increase.

California, New York, Arizona and New Jersey have all experienced an increase in wage and salary jobs since 1993, yet homeownership rates have not trended upward, and may have even declined. The 1980s increase in jobs in these states was accompanied by an increase in the homeownership rate in all but California. The shift from a cyclical to a counter-cyclical relationship between economic growth and homeownership is not readily explained.

Trends by Race and Hispanic Origin

A very important component of the post-1994 upswing in ownership has been the increase in owner households among minorities. Whereas minorities (defined here as everyone other than a non-Hispanic white) headed only 15 percent of all owner households in 1994, they contributed 42 percent of total owner household growth between 1994 and 1997. Starting from lower base ownership rates in 1994, minority ownership grew more rapidly than white ownership over this three-year period (see Exhibits 3). For some observers, increasing homeownership among minorities underscores the significance of the 1990s economic expansion as the reason for the strong upswing in homeownership.

To put some longer-term historical perspective on recent homeownership trends by race and Hispanic origin, Exhibit 18 compares 1994-1997 trends as measured by HVS data with 1985-1995 trends as measured by the AHS (breakdowns by race are not available from the HVS series prior to 1994). This earlier data shows that minority ownership growth was also higher between 1985 and 1995. The reasons for this high minority growth in owner households are primarily demographic. In particular, younger minority age structures mean that new owner household formation by young adults are less offset by owner household dissolution among old cohorts compared to non-Hispanic whites. Minority immigration, which also favors young adults, further adds to minority owner household formation. These differences between whites and minorities are discussed in greater detail in a recent Joint Center publication (Masnick 1998).

The sustained high minority growth in homeownership should not cause us to lose sight of the fact that the post-1994 upswing took place among non-Hispanic whites as well. While the annual percentage owner household growth for minorities increased from 3.9 percent to 5.9 percent, a 55 percent improvement, owner household growth for non-Hispanic whites also saw more than 50 percent improvement, rising from 0.9 percent annual growth during 1985-1995 to 1.4 percent annual growth during 1994-1997. Numerically, minorities increased their annual owner household growth from 279,000 to 564,000, or an increase of 285,000. Non-Hispanic whites increased their annual contribution to overall owner household growth from 460,000 annually to 774,000, or a growth of 314,000.

In summary, the upswing in homeownership post-1994 as measured by changes in the number of homeowner households was broad-based when disaggregated by race and Hispanic origin. Both whites and non-whites contributed significantly to the recent trend. In states like Minnesota, Kentucky, and North Dakota, which have very small minority populations, large increases in homeownership between 1994 and 1996 are entirely due to trends among non-Hispanic whites.

By the same token, absolute rates of growth of both total and owner minority households have been higher, and for non-black minorities significantly higher, than the growth rates for non-Hispanic whites. The demographic roots for higher minority owner household growth implies that the minority advantage will be sustained well into the future.

Changes to the CPS in 1994-1996

Beginning in January of 1994, a series of major changes were initiated in CPS methodology. Some were immediate and some were phased in over a period of time. These changes include shifting from 1980 to 1990 census weights, re-weighting the CPS sample for the first time for census undercount estimates, shifting to computer assisted interviewing, totally redesigning the CPS questionnaire to take advantage of computer automated skip patterns and internal consistency editing, substituting the 1990 census sampling frame for the 1980s sampling frame for rotating new households into the sample, and reducing the total number of sampling units and households sampled in a cost-saving measure. These changes affected which households were included in the CPS sample, the rate of interview completion and incidence of unanswered questions, and how successful interviews were weighted up to produce nationally representative samples. These changes were concentrated in the 1994-1996 period, although households included from the "uncut" 1990 sampling frame (before sample size reduction) were not fully rotated out of the sample until May 1997.

Some of these changes are expected to reduce and others to increase estimates of homeownership. Some changes have a one-time impact, and others have impacts spread over a year or more. Some changes can be evaluated independently and some can not because their impacts cannot be separated from other changes introduced simultaneously. It is outside the scope of this paper to evaluate the direction and size of the impact of each change on homeownership estimates. Instead, we focus primarily on two changes we can address with available information.

First, we look at the possible impact of switching to the new computer assisted questionnaire design. Here we are concerned about the impact on homeownership estimates because of the higher rate of non-interviews that followed the shift to computer assisted personal interview (CAPI) questionnaire design. Second, we discuss possible impacts of the two changes in sampling frame: moving from the 1980 to the 1990 census base (affecting who might be included in the CPS sample); and reducing the number of primary sampling units in a cost saving move after January 1, 1996.

Changes in Questionnaire Design and Data Collection - One consequence of the new questionnaire design and computer assisted interviewing is the higher level of non-interviews under the new data collection regime (Exhibit 19). There was a bump upward in

the non-interview rate when the new data collection procedures were introduced in 1994, and a further increase when, in 1996, the sampling frame was adjusted.

As judged by the Census Bureau's estimates of under-coverage in the CPS (including missed households and missed persons within households), non-interviews likely vary by age, sex and race. Under-coverage is higher for males than for females, higher for blacks than for whites, and higher for persons in their teens, twenties and thirties than for older persons (Exhibit 20).

In the process of weighting the interviewed households up to national estimates, the weights for all interviewed households are first adjusted to account for non-interviews. Further, the interviewed households are ratio adjusted to match independent national estimates of age-race-sex-Hispanic population controls, and this adjustment partially corrects for under-coverage. However, to the extent that missed persons in missed households or missed persons in interviewed households have different characteristics from interviewed persons in the same age-sex-race-Hispanic group, and this includes headship and ownership characteristics, these biases are magnified in the weighting. In other words, by assuming missed households have the same characteristics as interviewed households, an increase in the non-interview rate would result in an over-estimate of headship and ownership if the non-interviewed persons are more likely to be non-heads or renters.

One test of this proposition is to compare headship rates estimated by the 1990 census with those estimated by the 1990 CPS. On the basis of the data in Exhibit 20, we would expect respective headship rate estimates to be closer for whites than for blacks, and closer in the older age groups than the younger age groups, where they should be higher. Exhibits 21 and 22 show exactly this. CPS headship is overestimated for young ages, particularly among blacks, which have lower coverage in the CPS.[9]

In a further caveat, as part of the questionnaire redesign affecting the race question and its edits, a growing number of respondents were coded in the "other" category (about a threefold increase between 1993 and 1995). The Census Bureau caught the problem in 1995 and corrected it for 1996, but has not issued a consistent version of the 1994 and 1995 CPS weights. How this error has affected the growth in homeowner households by race is not

[9] The 1990 CPS estimates were made by averaging 1989, 1990 and 1991 CPS data in order to provide a smoother series for comparison to the 1990 census.

clear, although the effect on total household estimates and the total homeownership rate appears small (Passel 1997, Pitkin 1998).

Changes to the CPS Sampling Frame - Two major changes in the CPS sample we consider are the redesign of the sampling frame from the 1980 to the 1990 census, and the cut in the size of the CPS sample in 1996. Because the CPS sample follows a schedule of rotation - where a household is in the sample for four months, out for eight, and back in for four, before being dropped from the sample - it takes 16 months for households drawn from the old sampling frame to be entirely replaced by households drawn from the new sampling frame. Since the new sample was first introduced in January 1994, it would not be until May 1995 that all households in the CPS survey would be drawn from the new sampling frame.

Another adjustment to the sampling frame occurred in January 1996, when 6,000 households were cut from the sample, with the cuts restricted to nine states. Given these two changes, all households included in the CPS sample would not be drawn from the same sampling frame until after May 1997. Thus, any effects of these changes would be gradual over the period 1994 to early 1997.

These shifts in the sampling frame include shifts in the eligible households between states, and within states, as well as shifts in the associated population weights for each primary sampling unit. To the extent that the included households differ on headship and ownership characteristics from those excluded from the sample, the national estimates of household growth by tenure will be affected. Again, weighting to controls for independent population estimates (for the over 16 population) of states, and national population estimates by age, race and Hispanic origin, helps firm up the estimates of households by tenure, but the effects of shifting the sampling frame can be neither estimated or eliminated.

Starting in January 1996, the CPS sample was cut by 6,000 households (over 10 percent) in a cost-saving move. The cuts were clustered in seven states (MA, PA, NC, OH, NJ, IL, and MA) and in New York City and Los Angeles County in order to achieve maximum cost savings. These areas were selected because they generally had a higher share of eligible households included in the precut sample than their share in the nation as a whole, and thus could afford to be downsized without jeopardizing the reliability of the state estimates. If the reduction were made more randomly across all states, not only would the cost savings be less, states with fewer eligible households in the CPS sample might suffer in how reliably those state estimates could be made.

We have examined differences in the homeownership rates for states included and excluded in the 1996 sample reduction, and find that rates were lower, on average, in areas where sample was cut from the CPS (Exhibits 23 and Appendix C). Again, exactly how these differences were compensated during the ratio adjustments and weighting adjustments remains clouded, but there is ample room for concern that the sample size reduction was not totally benign to the national estimates of owner and renter household growth.

Summary and Conclusions

At issue is whether all of the jump in homeownership after 1994 (and particularly 1994 to 1996) as measured by the HVS (CPS) was real, or was in part due to changes in the CPS data collection methodology. The magnitude of the changes in the CPS data collection procedures should raise red flags and make us very cautious about any trends that might be derived when comparing data collected during 1994, 1995 and 1996. Furthermore, certain anomalies in the data beg for a clearer understanding before post-1994 homeownership trends can be accepted on face value.

Three aspects of the trends in tenure need further clarification. First is that the substantial decline in renter household growth between pre-1994 levels and 1994-1996 levels (a swing of –600,000 or more households) occurred without an especially large change in the number of vacant-for-rent units. Second is the fact that decline in the homeownership rate during the 1980s and early 1990s took place unevenly by age and marital status of head, while the upswing was spread fairly evenly across all age groups and family types. The third anomaly is the fact that the distribution of the changes in homeownership since 1994 are not always consistent with where increases in homeownership might be expected to occur because of economic trends or public policy initiatives.

We have singled out the increase in the rate of non-interviews following the introduction of computer assisted interviewing, combined with the redesign of the CPS survey instrument and the redesign of the sampling frame, as two areas where change in methodology might account for some of the 1994 to 1996 change. If Pitkin's estimates of the growth in homeownership between 1993 and 1995 using AHS data serve as a guide, perhaps as much as half of the 1994 to 1995 increase, and maybe a smaller share of the increase in homeownership as measured by the HVS is a product of changes in data collection methodology.

The Census Bureau has recently released estimates of seasonally adjusted quarterly homeownership rates for 1998 and earlier years that we can use to quantify annual ownership rates and annual changes.

Assuming that the 1994-95 change should be discounted by perhaps one-half, and the 1995-96 change by perhaps one-third, this puts the average growth in the ownership rate at somewhere near 0.4 points per year from 1994 to 1997, and at about 0.5 in the past year. Such a set of adjustments would mean that 1998 has probably been the strongest year for homeownership growth in the 1990s. Such an adjustment would produce a time series of ownership rates more consistent with pre-1994 measures, and would yield an adjusted 1998 annual homeownership rate of about 65.5 percent.

References:

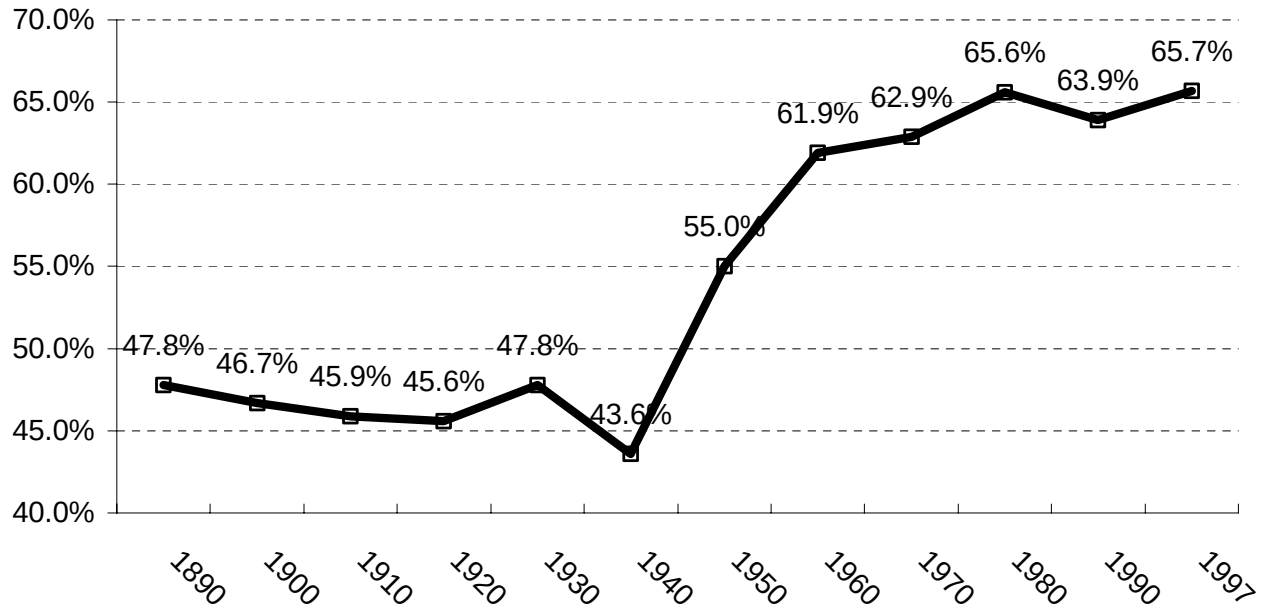
Masnick, George. 1998. Understanding the Minority Contribution to U.S. Owner Household Growth. Working Paper 98-9. Cambridge, MA: Joint Center for Housing Studies, Harvard University.

Passel, Jeffrey S. 1997 CPS Weights, etc. Email dated May 28, 1997. Washington DC: The Urban Institute.

Pitkin, John R. 1998. Changes in Homeownership and Households, 1993 to 1995: An Evaluation of Estimates from the Current Population Survey. *Journal of Housing Research*

Exhibit 1

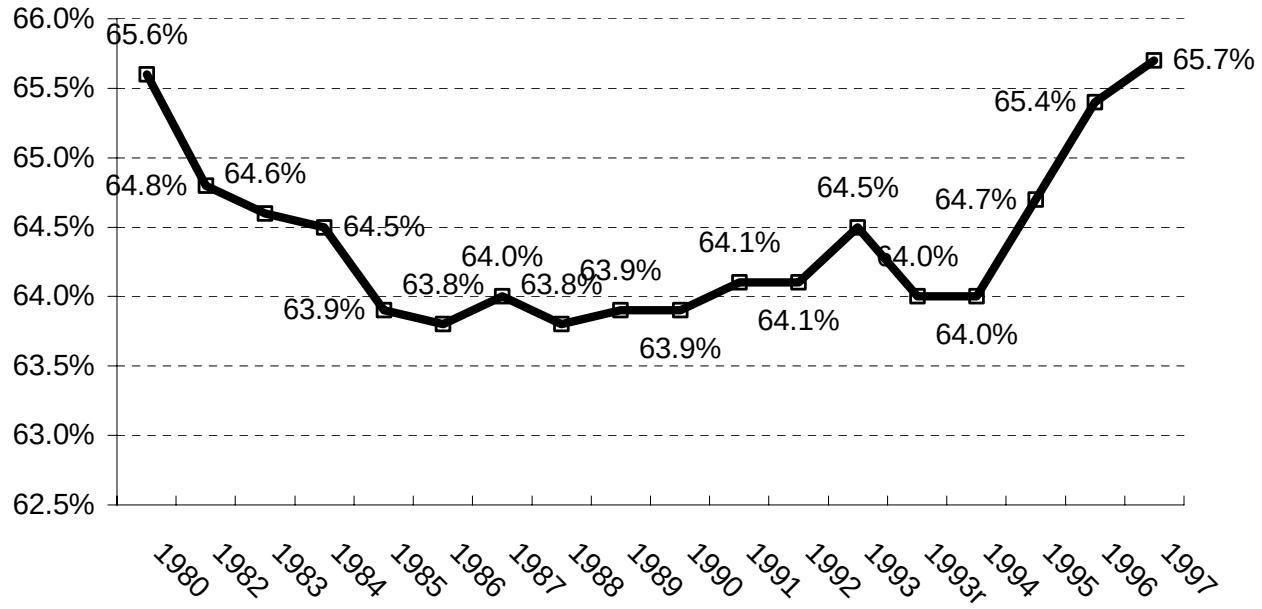
U.S. Aggregate Homeownership Rate
1890 to 1997



Source: decennial census data 1890-1990 and 1997 HVS annual data (see Appendix A)

Exhibit 2

U.S. Aggregate Homeownership Rate
1980 to 1997



Source: HVS annual data (see Appendix A)

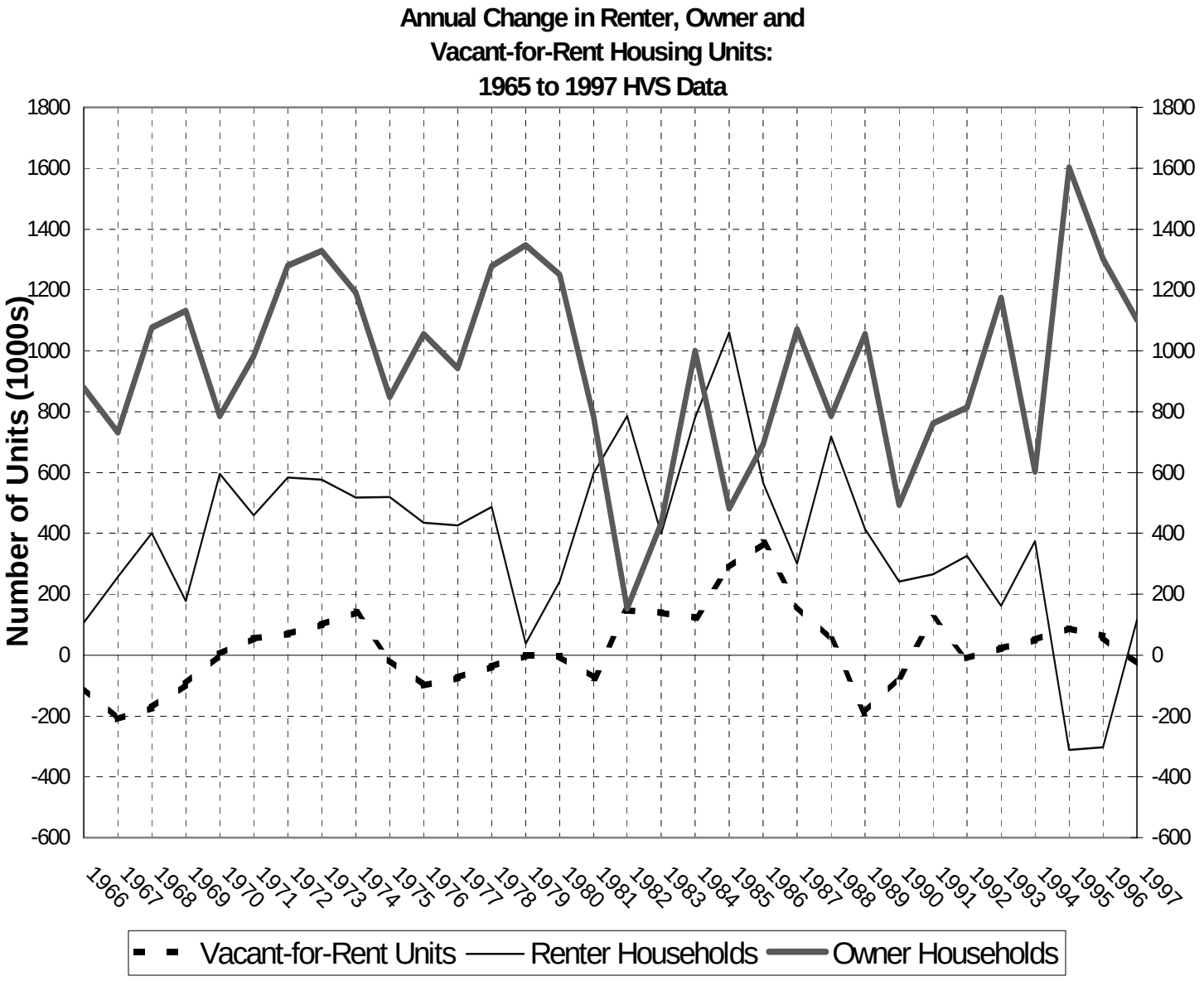
Exhibit 3

Homeownership Rates by Race and Hispanic Origin: 1994 to 1997

	1994	1995	1996	1997	Growth 1994-1997 Absolute	Growth 1994-1997 Rate
U.S. Total Rate	64.0	64.7	65.4	65.7	1.7	2.7%
White Total	67.7	68.7	69.1	69.3	1.6	2.3%
Non-Hispanic White	70.0	70.9	71.7	72.0	2.0	2.8%
Black	42.3	42.7	44.1	44.8	2.5	5.9%
Other Race	47.7	47.2	51.0	52.5	4.8	10.1%
Hispanic	41.2	42.0	42.8	43.3	2.1	5.1%
Non-Hispanic	65.9	66.7	67.4	67.8	1.9	2.8%

Source: U.S. Bureau of the Census, Housing Vacancies and Homeownership, Annual Statistics 1997, Table 20.

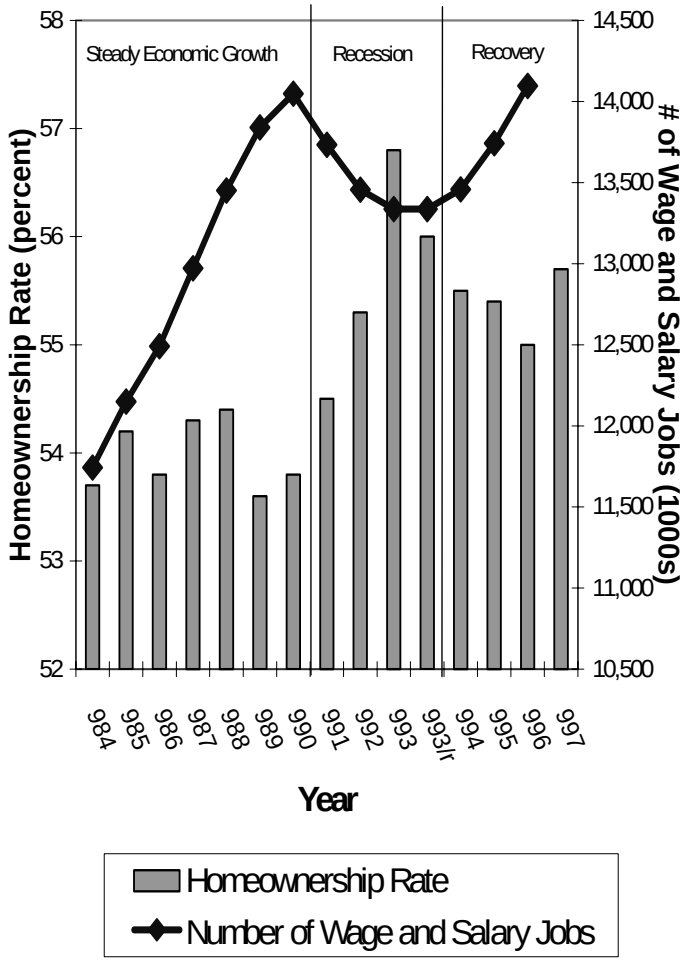
Exhibit 4



Source: U.S. Bureau of the Census, HVS annual statistics, historical tables – Table 7 and Table 15 (http://www.census.gov/hhes/www/housing/hvs/historic/)

Exhibit 5

Number of Wage and Salary Jobs and Homeownership Rate in California: 1984-1997

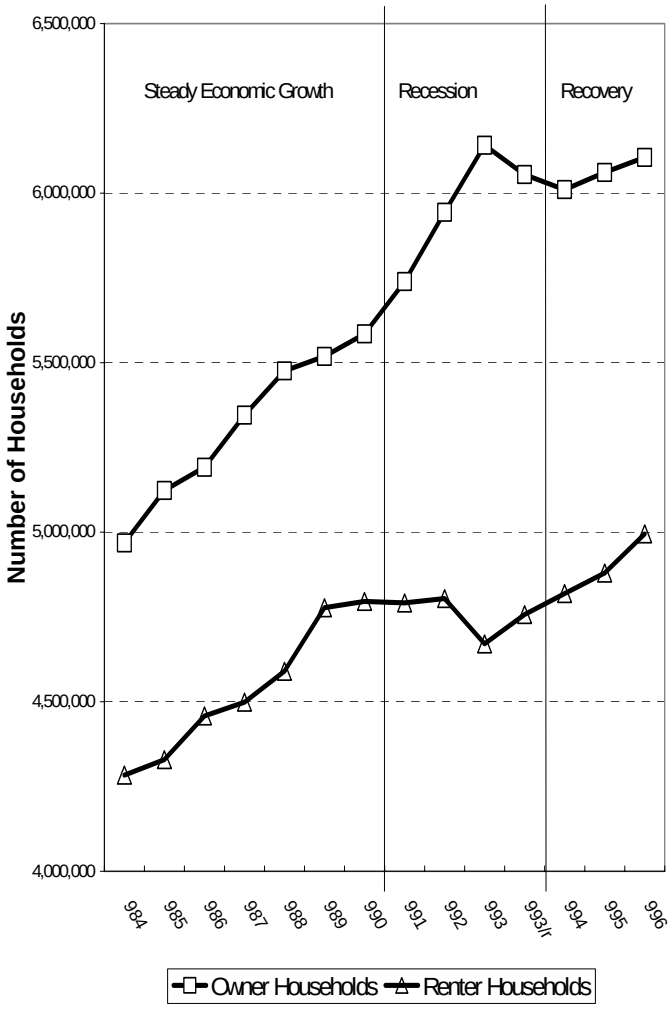


The homeownership rate trend has been counter-cyclical to the economic trend in California.

Source: HVS annual data (see Appendix B) and REIS economic data

Exhibit 6

Trend in Owner and Renter Households California: 1984 to 1996



During the period of stable economic growth, both owner and renter household formation took place apace, and the homeownership rate remained stable. During the early 1990s recession, renter household formation lagged while owner household formation surged in response to falling house prices. During the recovery, renter household formation outpaced owner household formation, and the homeownership rate fell initially.

Exhibit 7a

Homeownership Rate Trend: 1982-1997
Heads <35: All Household Types

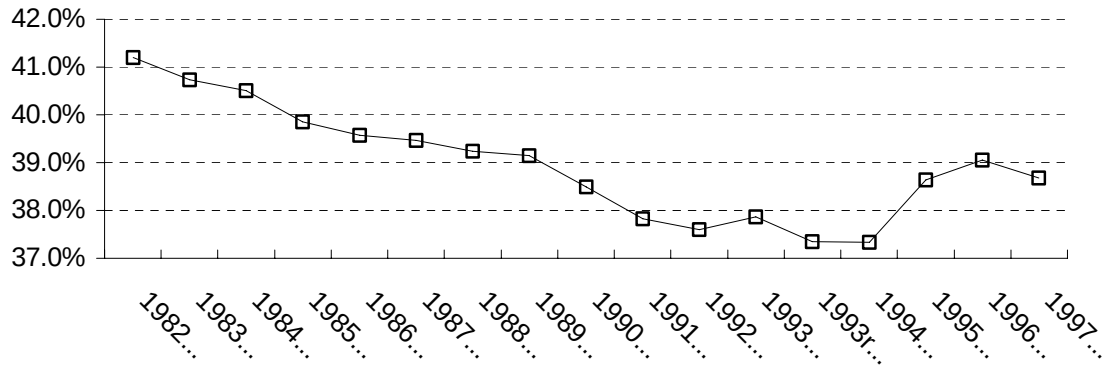


Exhibit 7b

Homeownership Rate Trend: 1982-1997
Heads <35: Married Couple Households

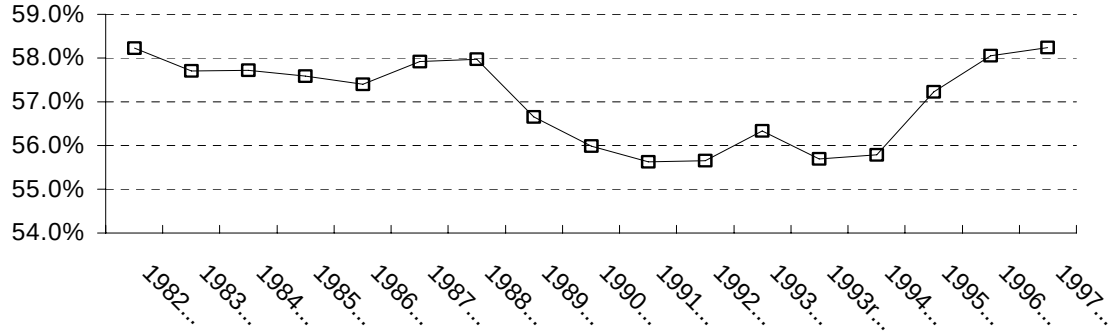


Exhibit 7c

Homeownership Rate Trend: 1982-1997
Heads <35: All Other Household Types

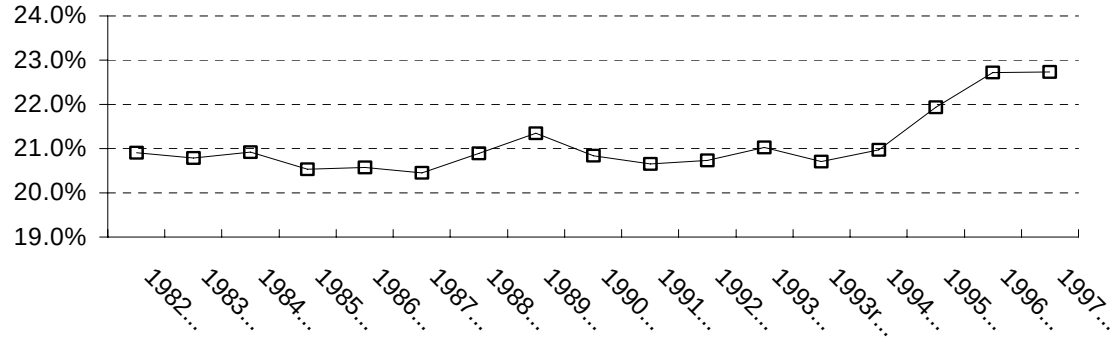


Exhibit 8a

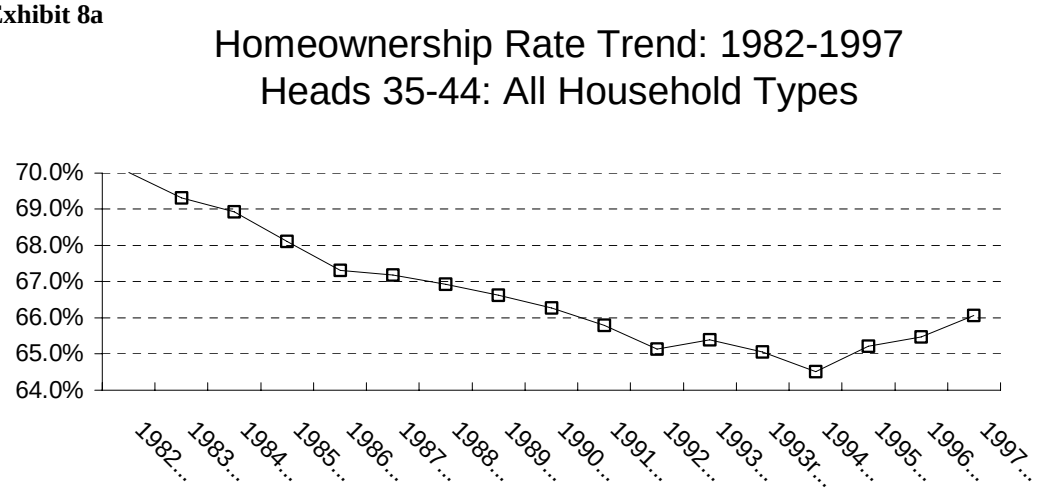


Exhibit 8b

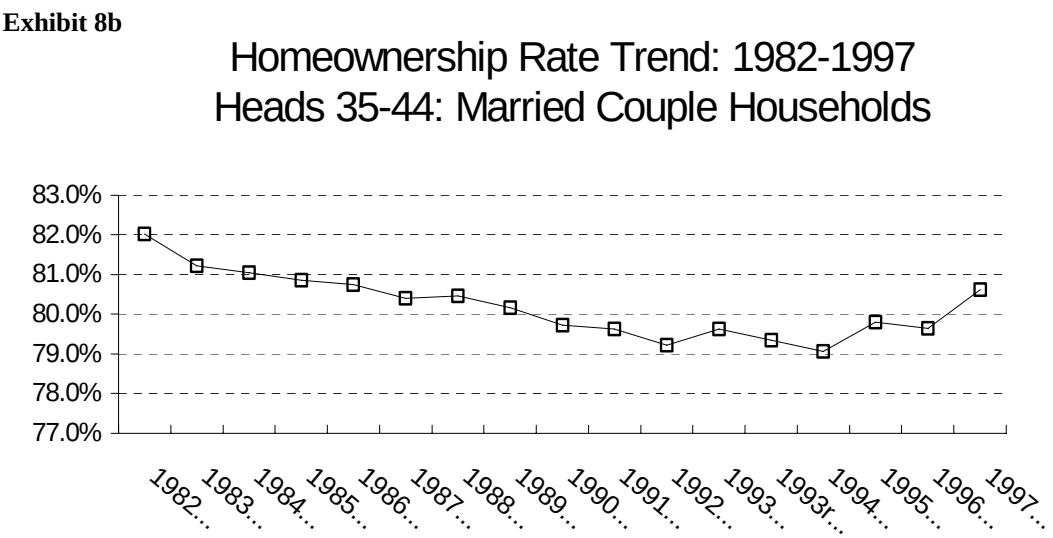


Exhibit 8c

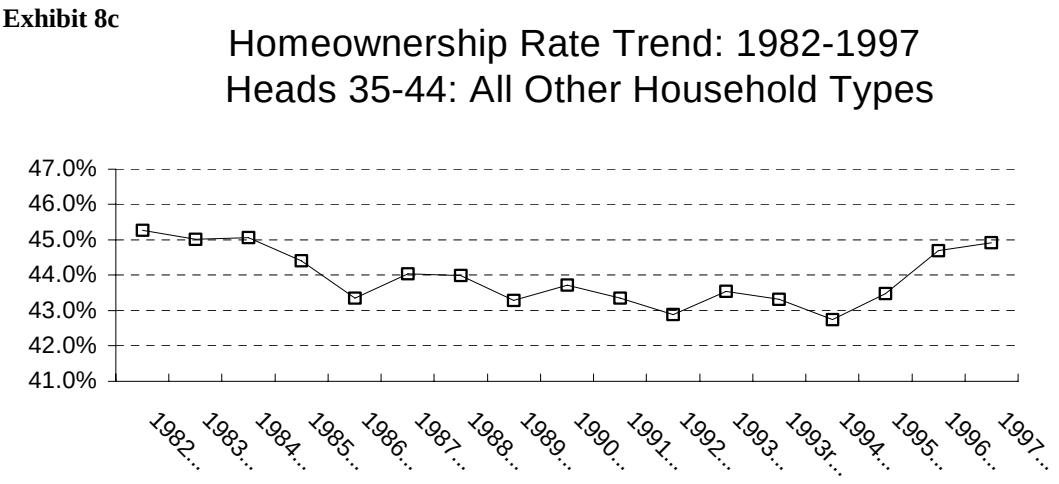


Exhibit 9a

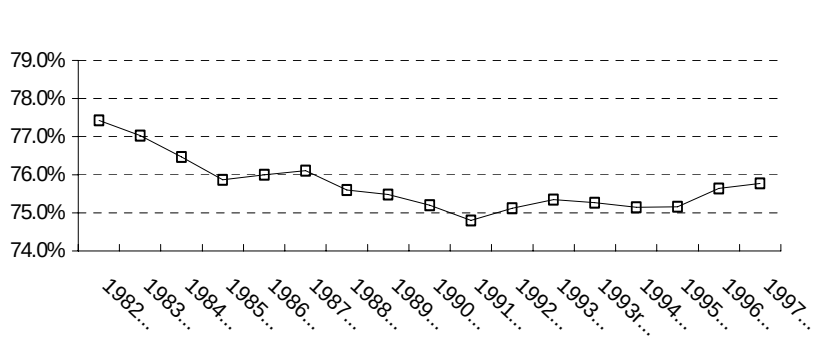


Exhibit 9b

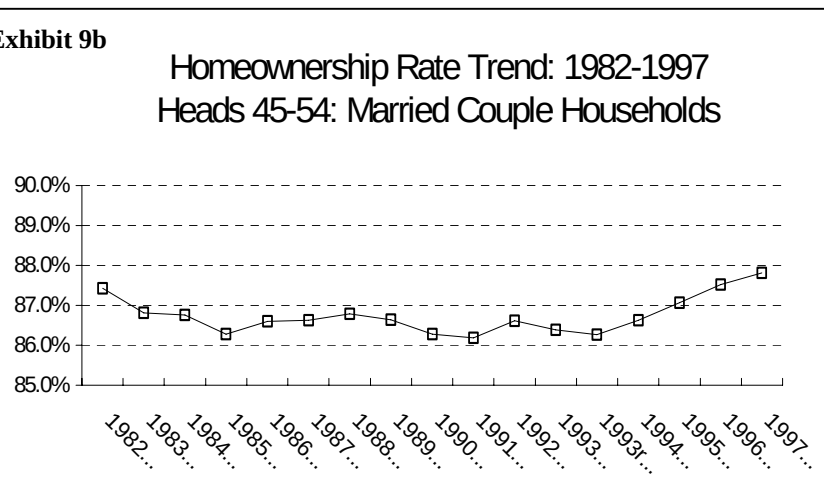


Exhibit 9c

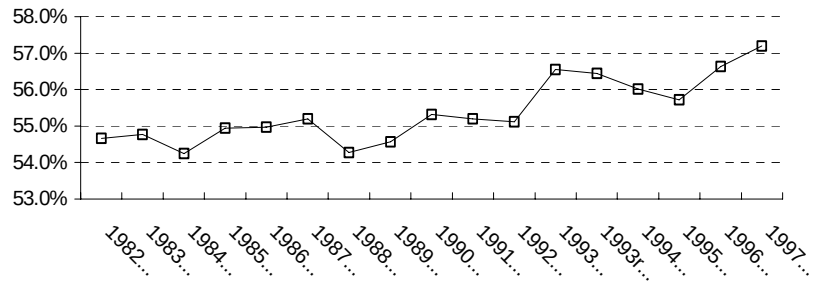


Exhibit 10a

Homeownership Rate Trend: 1982-1997
Heads 55-64: All Household Types

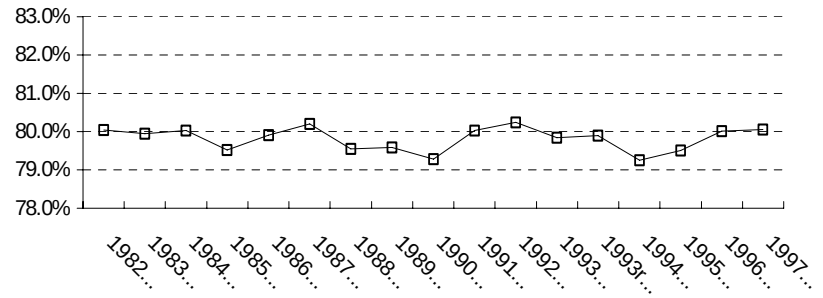


Exhibit 10b

Homeownership Rate Trend: 1982-1997
Heads 55-64: Married Couple Households

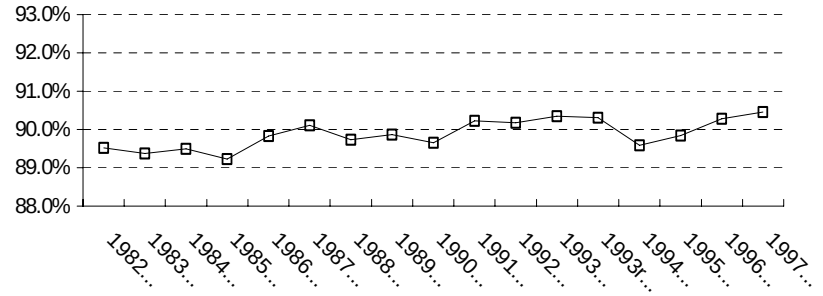


Exhibit 10c

Homeownership Rate Trend: 1982-1997
Heads 55-64: All Other Household Types

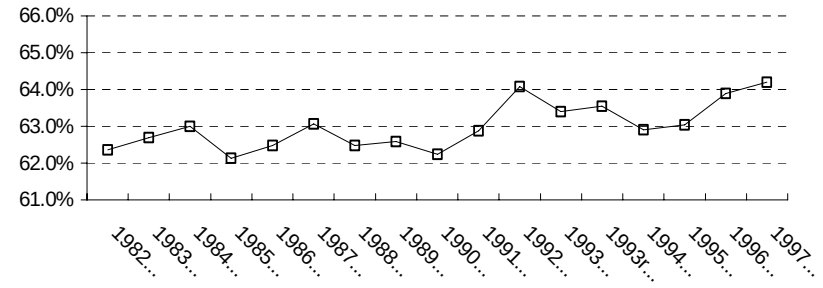


Exhibit 11a

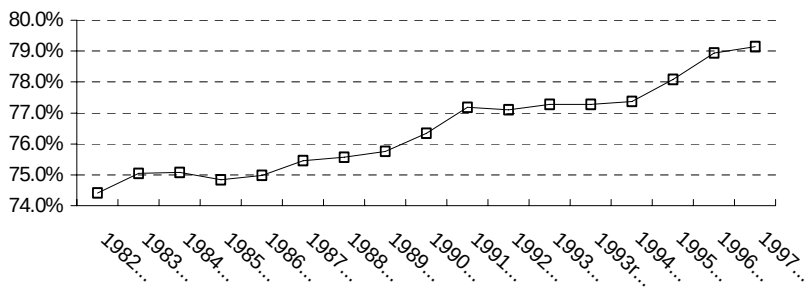


Exhibit 11b

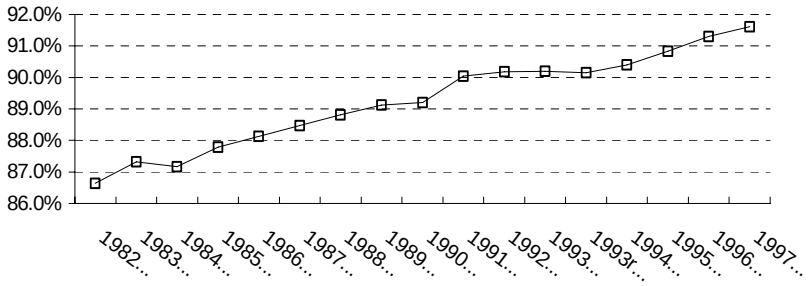
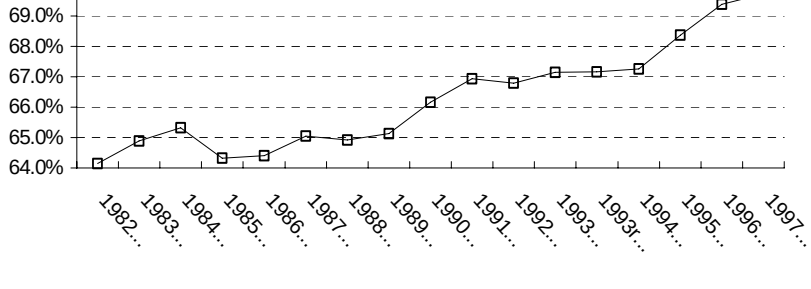
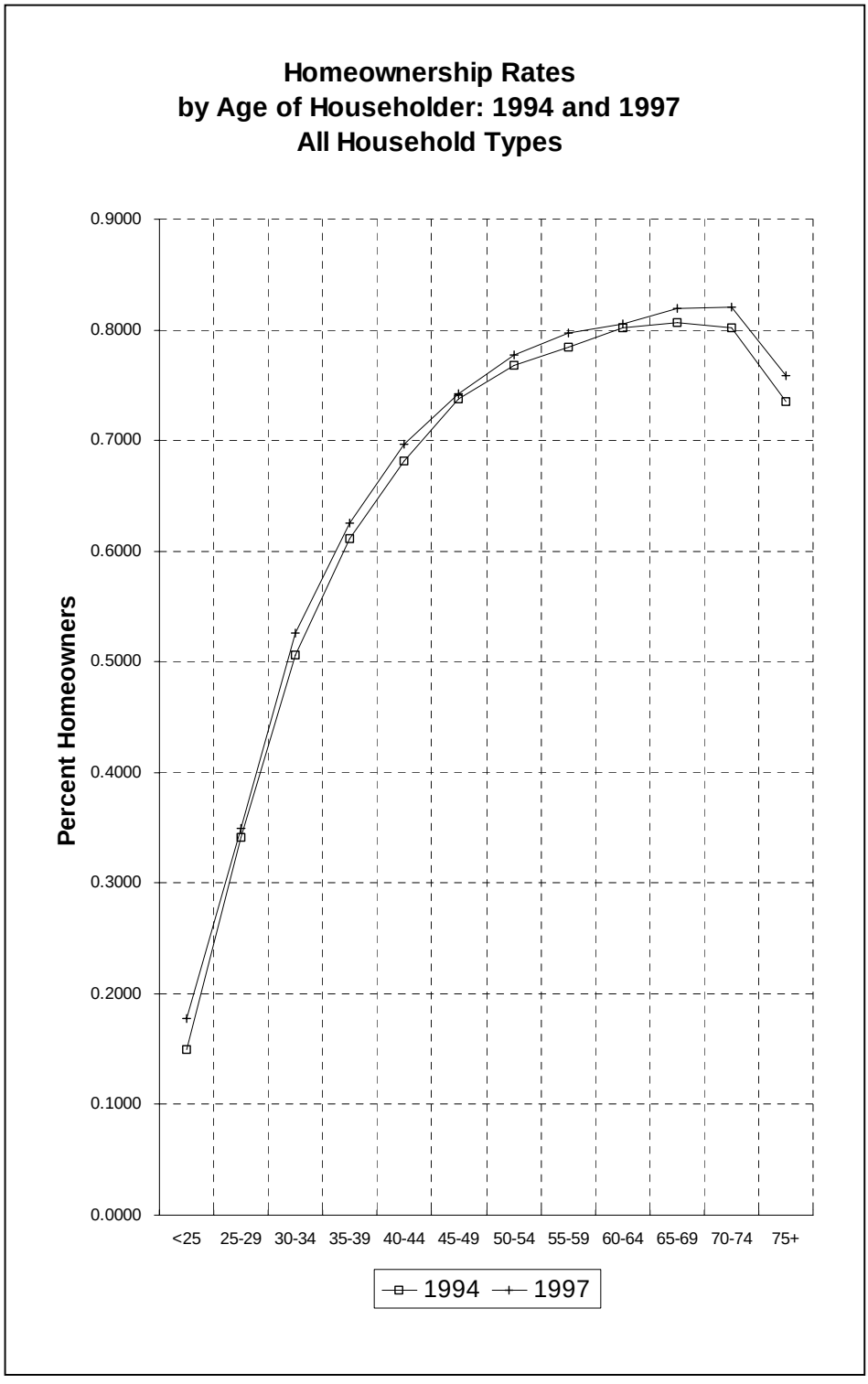


Exhibit 11c



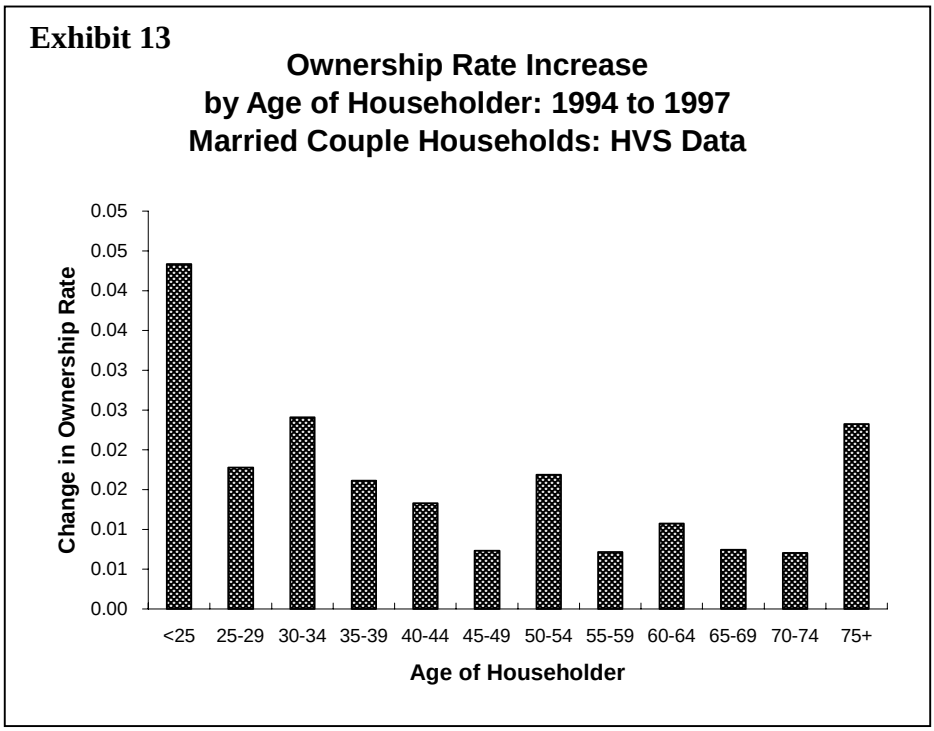
Source Exhibits 7 – 11: HVS annual statistics, Historical Table 15 (see Appendix A)

Exhibit 12



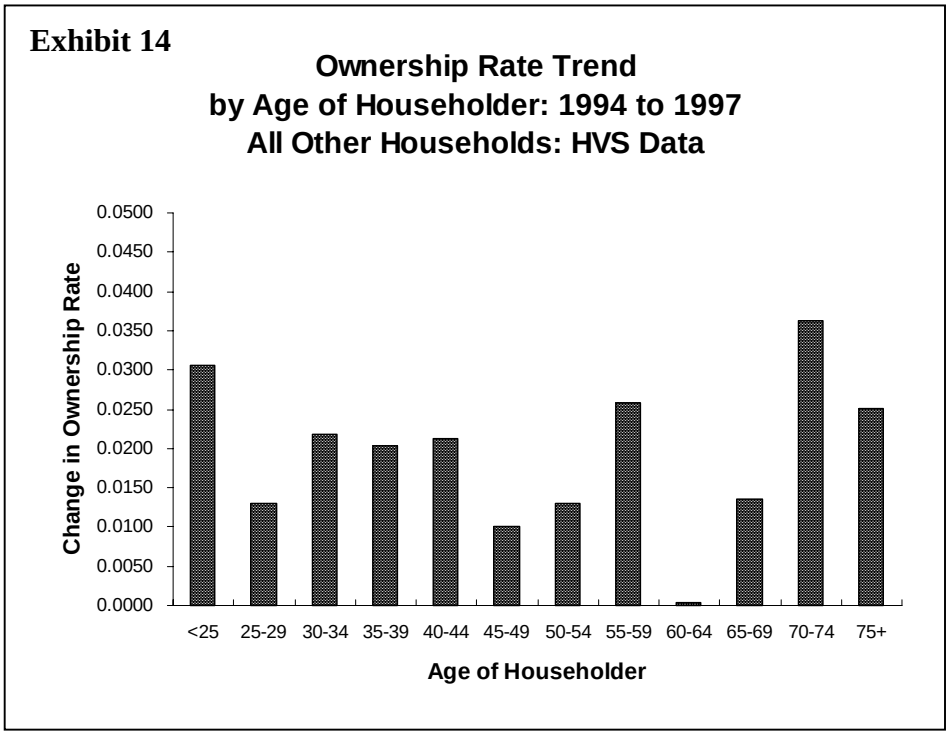
Source: HVS annual statistics, historical data Table 15 (see Appendix A)

Exhibit 13



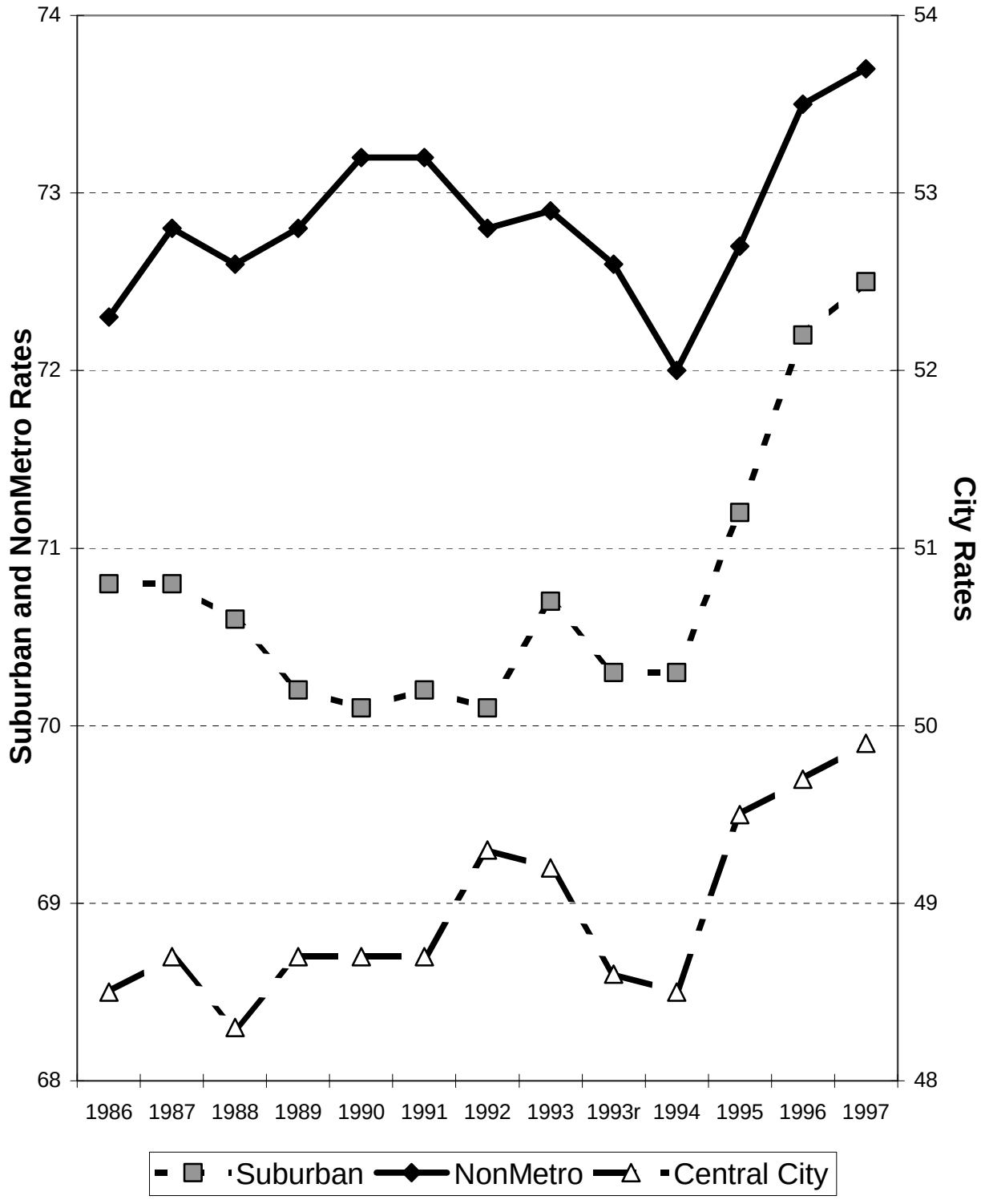
Source: HVS annual statistics, historical data Table 15 (see Appendix A)

Exhibit 14



Source: HVS annual statistics, historical data Table 15 (see Appendix A)

Exhibit 15
Percent Homeowners by City/ Suburb/ NonMetro Location: 1986-1997 HVS Data



Source: HVS annual statistics, Table 12 (http:/www.census.gov/hhes/www/housing/hvs/annual97/ann97t12.html)

Some States with a Recent Surge in Homeownership as Measures by the HVS (CPS)

Exhibit 16a
Homeownership Rate and Number of Wage and Salary Jobs: 1984-1997
Minnesota

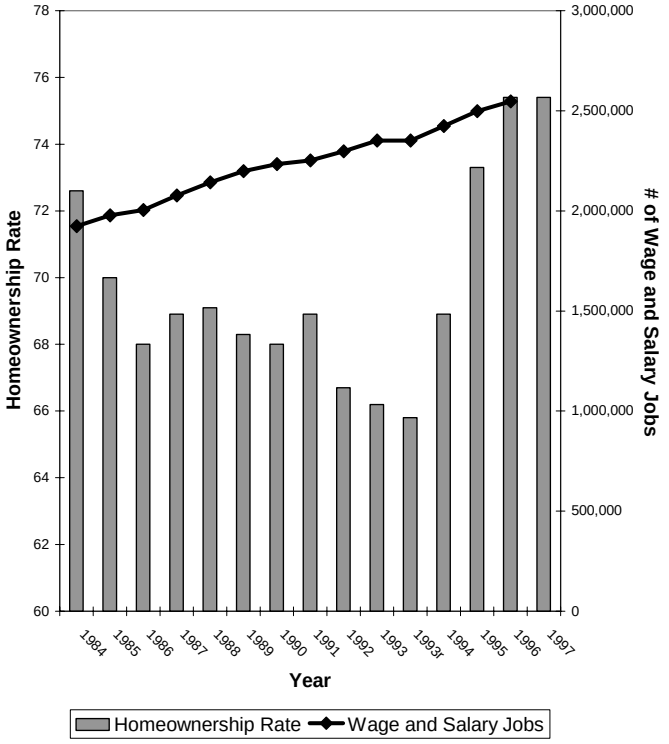


Exhibit 16b
Homeownership Rate and Number of Wage and Salary Jobs: 1984-1997
Illinois

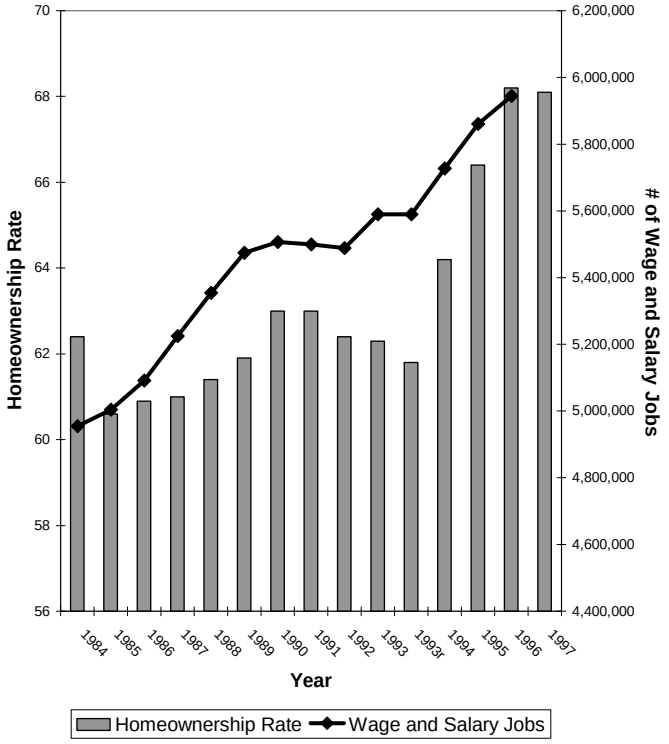


Exhibit 16c
Homeownership Rate and Number of Wage and Salary Jobs: 1984-1997
Iowa

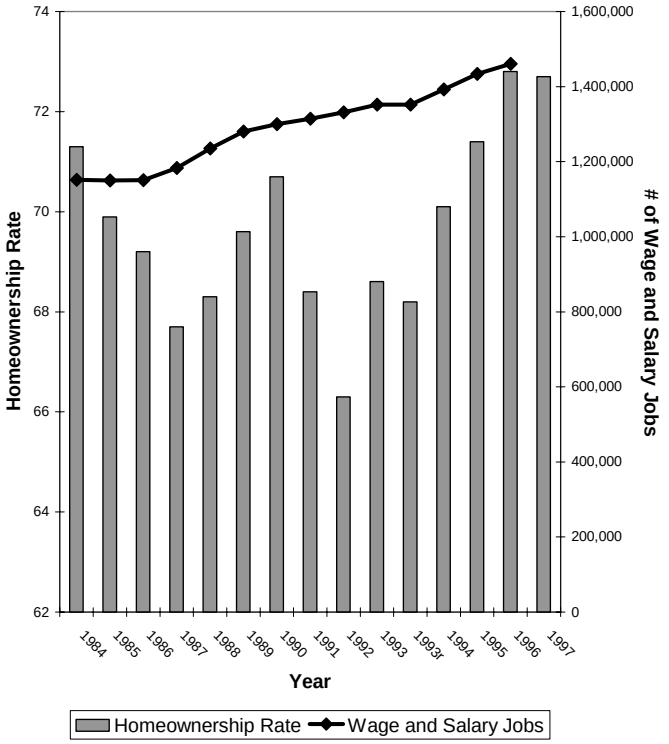
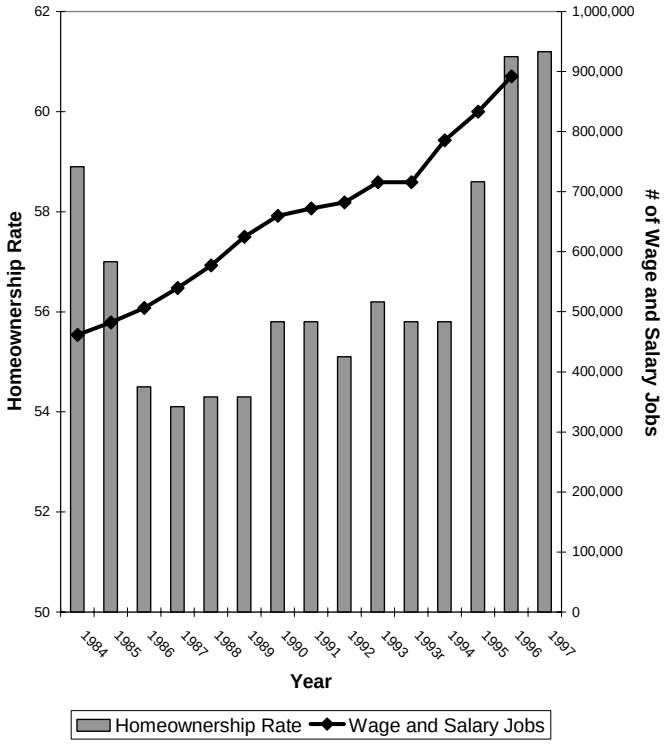


Exhibit 16d
Homeownership Rate and Number of Wage and Salary Jobs: 1984-1997
Nevada



Source: Housing Vacancy Survey annual data (see Appendix B) and REIS economic data (www.bea.doc.gov/bea/dr1.htm)

Some States with a Recent Stagnation in Homeownership as Measures by the HVS (CPS)

Exhibit 17a
Homeownership Rate and Number of Wage and Salary Jobs: 1984-1997
California

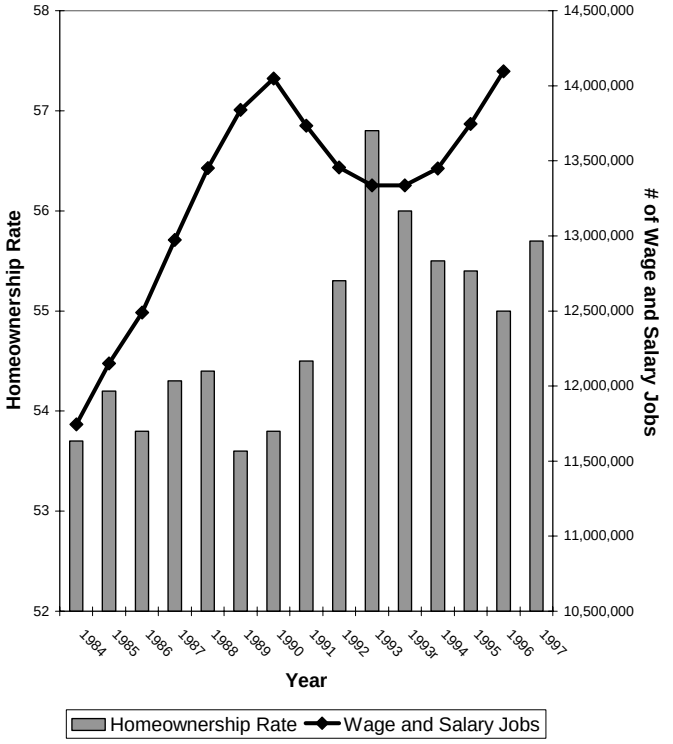


Exhibit 17b
Homeownership Rate and Number of Wage and Salary Jobs: 1984-1997
New York

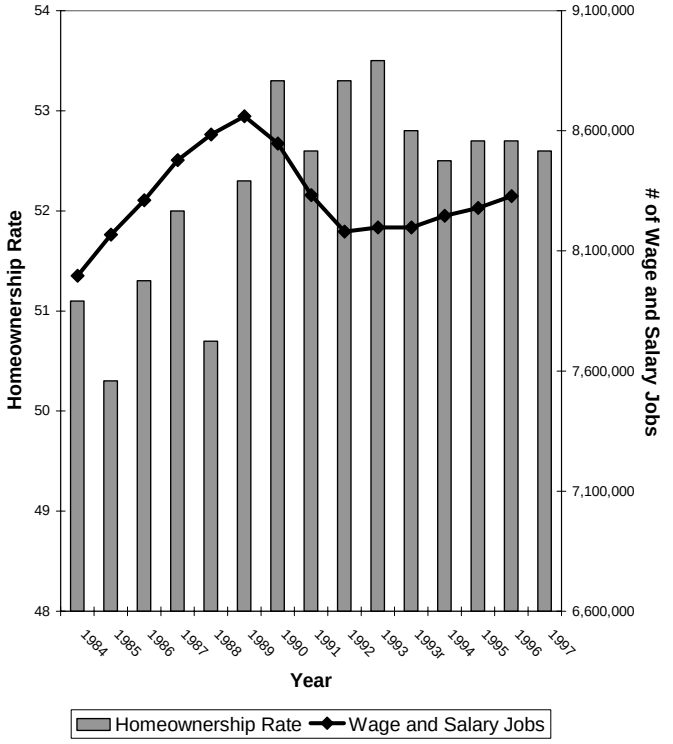


Exhibit 17c
Homeownership Rate and Number of Wage and Salary Jobs: 1984-1997
Arizona

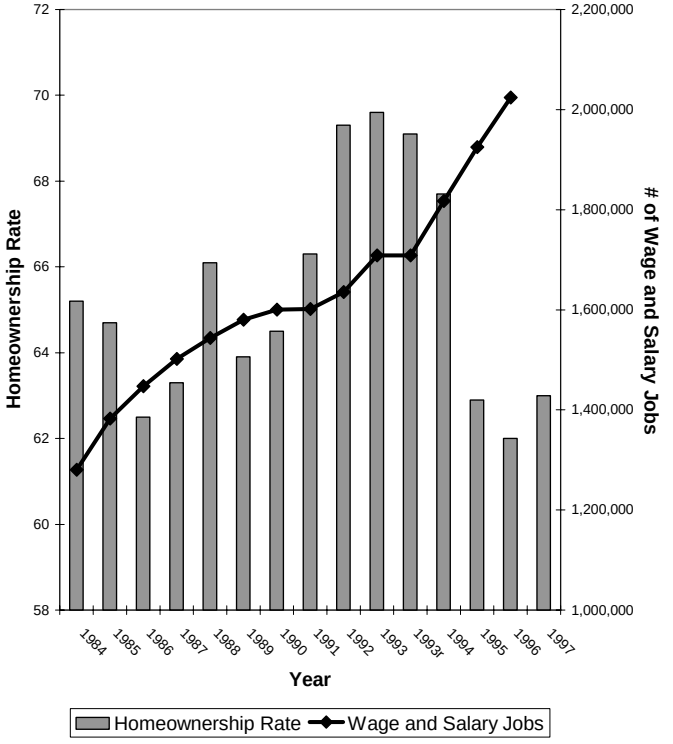
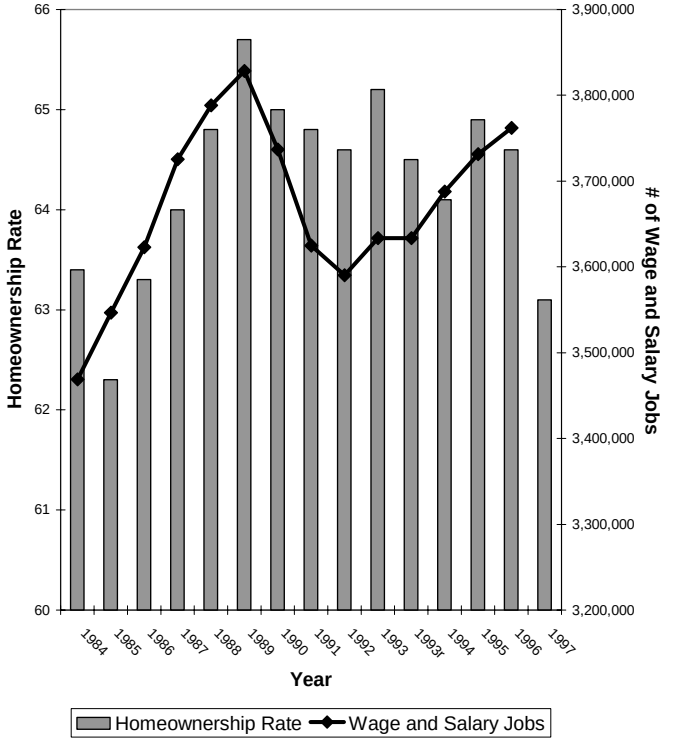


Exhibit 17d
Homeownership Rate and Number of Wage and Salary Jobs: 1984-1997
New Jersey



Source: Housing Vacancy Survey annual data (see Appendix B) and REIS economic data (www.bea.doc.gov/bea/dr1.htm)

Exhibit 18

Average Annual Numerical and Percentage Total and Owner Household Growth: 1985-1995 and 1994-1997

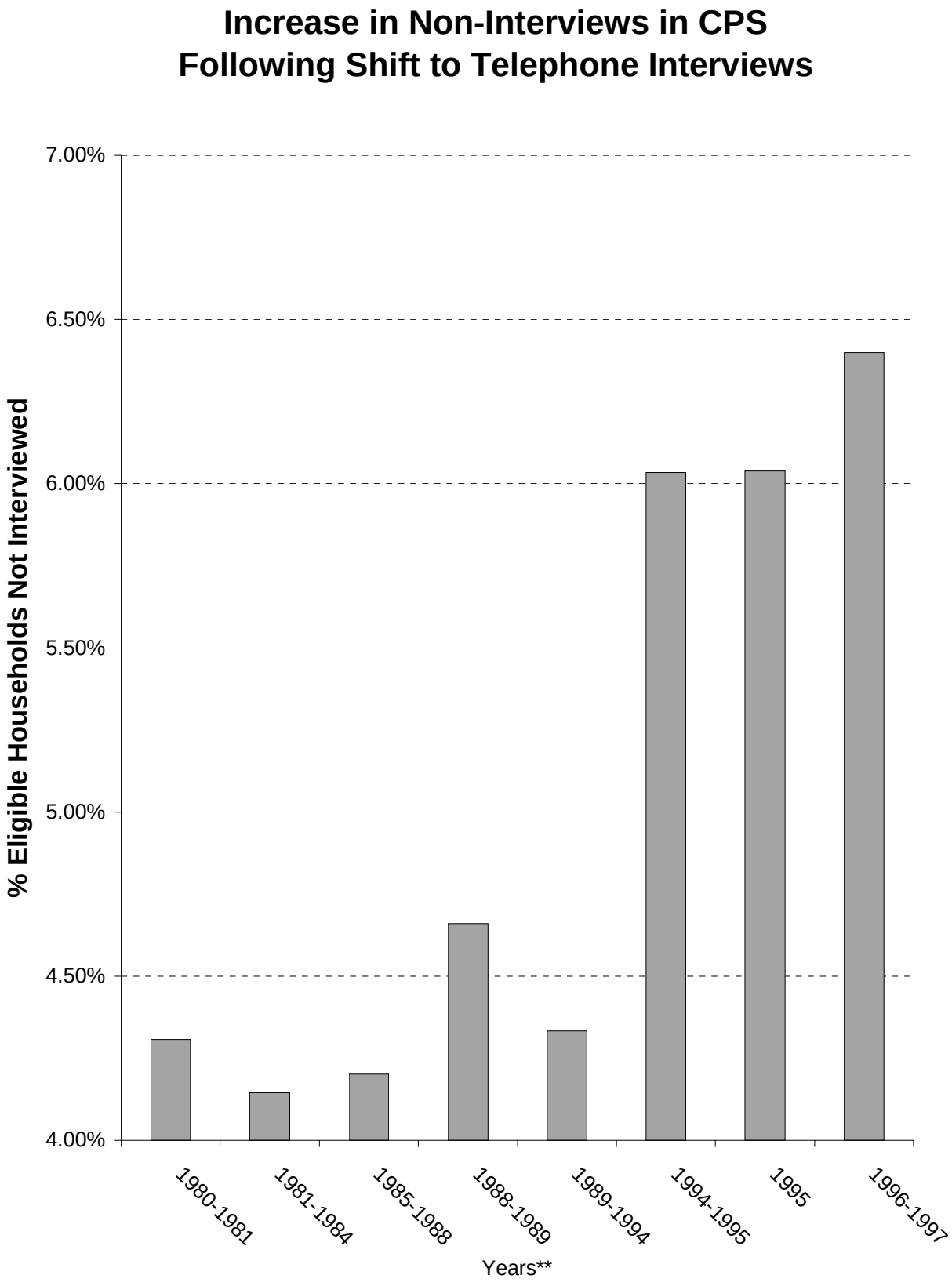
Numerical Increase

Total HH	Non-Hispanic White	Non-Hispanic Black	Non-Hispanic Other	Hispanic	Total Minority
1985-95	344,000	180,000	137,000	268,000	585,000
1994-97	369,000	192,000	286,000	324,000	802,000
Owner HH					
1985-95	460,000	76,000	80,000	123,000	279,000
1994-97	774,000	196,000	177,000	191,000	564,000

Annual Rate of Increase

Total HH	Non-Hispanic White	Non-Hispanic Black	Non-Hispanic Other	Hispanic	Total Minority
1985-95	0.5%	1.9%	7.4%	5.3%	3.5%
1994-97	0.5%	1.7%	10.0%	4.2%	3.6%
Owner HH					
1985-95	0.9%	1.8%	9.6%	6.1%	3.9%
1994-97	1.4%	4.0%	12.1%	6.0%	5.9%

Source: 1985 and 1995 Joint Center tabulations of the American Housing Survey, and 1994 to 1997 unpublished annual Housing Vacancy Survey data provided by the U.S. Bureau of the Census.



Source: http:www.bls.census.gov/cps/bsampdes.htm

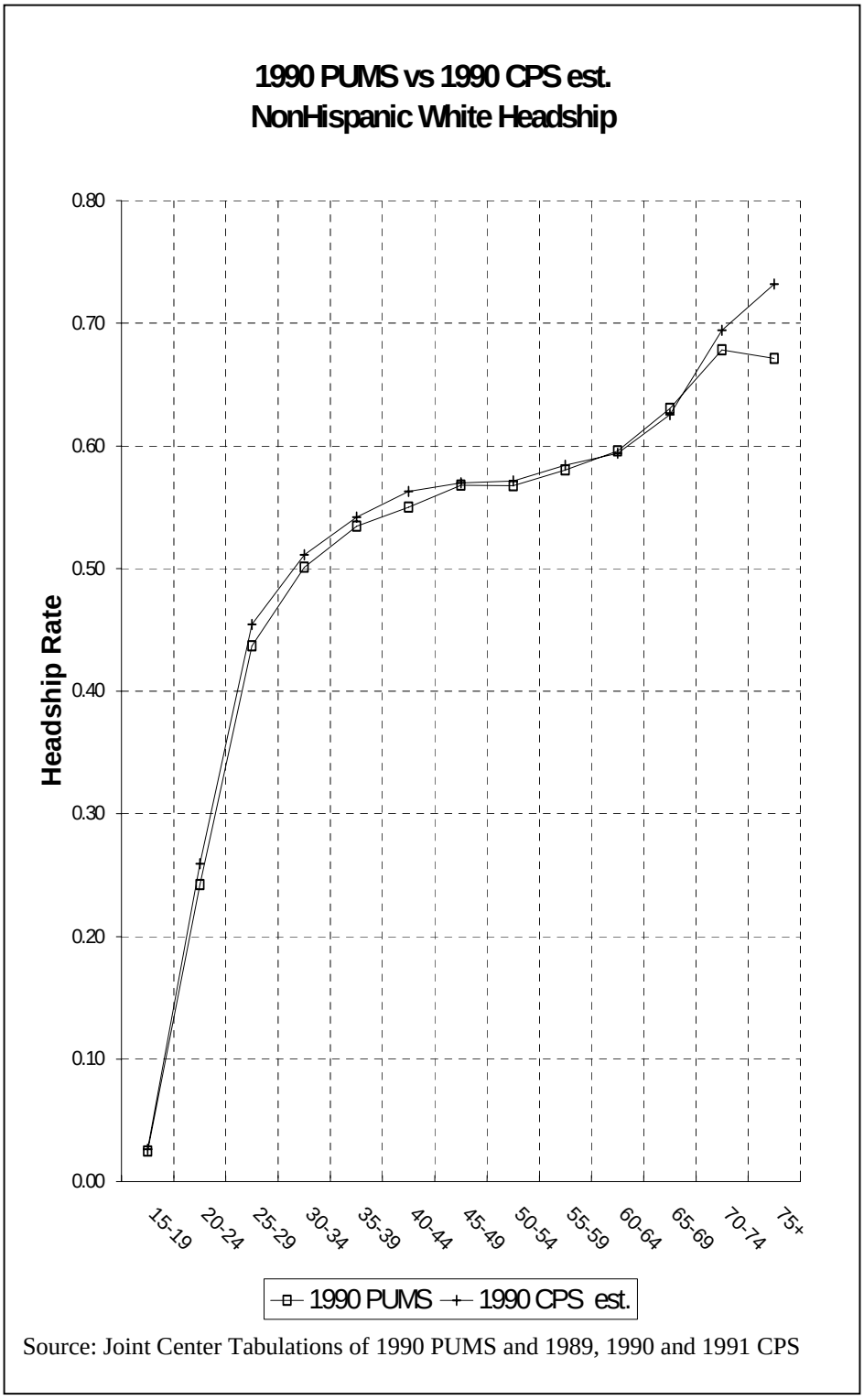
Exhibit 20

May 1993 CPS Coverage Ratios*

Age	Non-Black…. Male	…… Female	Black…. Male	……. Female
0 to 14	.929	.964	.850	.838
15	.933	.895	.763	.824
16 to 19	.881	.891	.711	.802
20 to 29	.847	.897	.660	.811
30 to 39	.904	.931	.680	.845
40 to 49	.928	.966	.816	.911
50 to 59	.953	.974	.896	.927
60 to 64	.961	.941	.954	.953
65 to 69	.919	.972	.982	.984
70 and older	.993	1.004	.996	.979

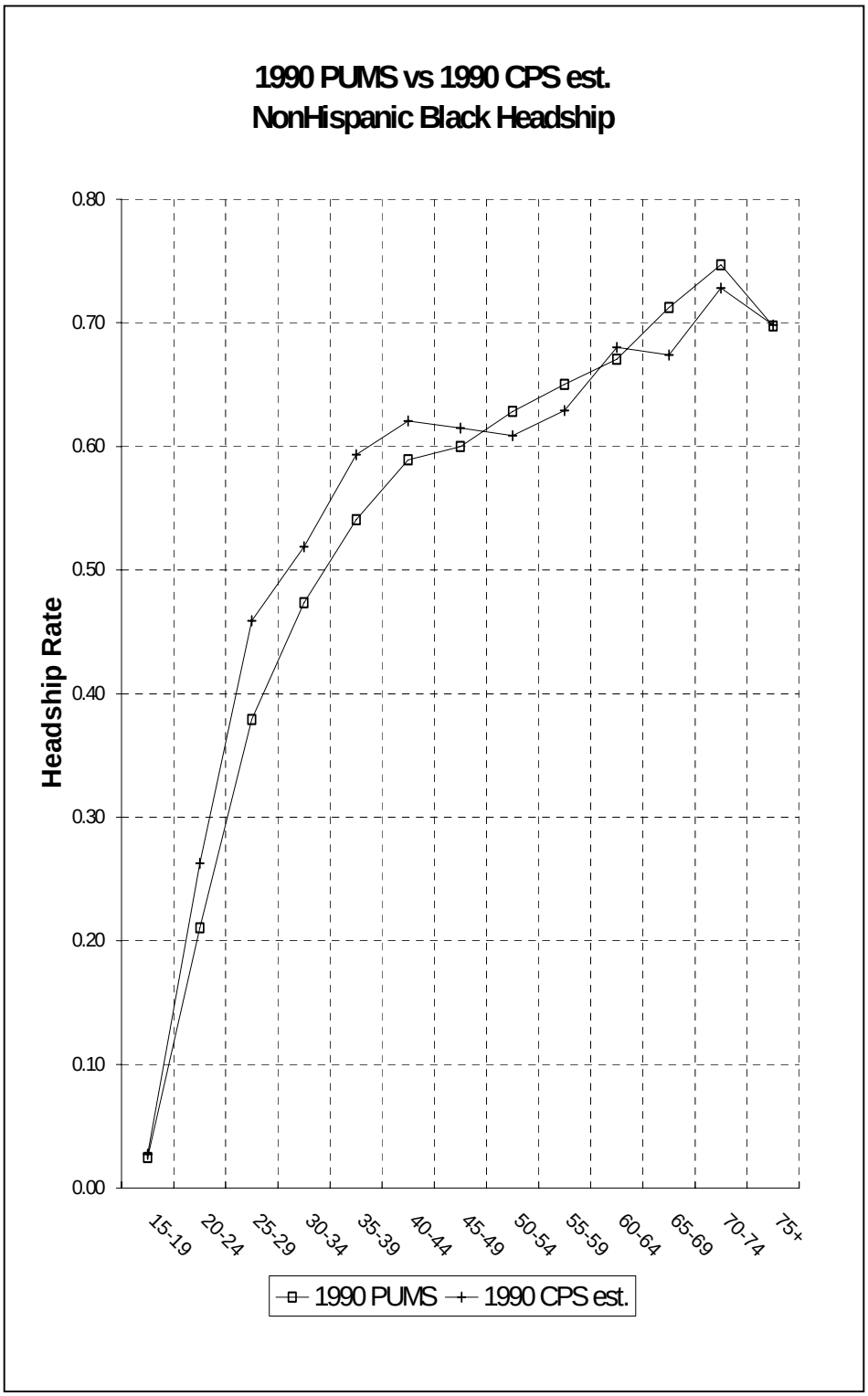
Source: Current Population Reports, Household and Family Characteristics: March 1994, Series P20-483, Table C-2.
*Coverage ratio equals the estimated population before ratio adjustment divided by the independent population control estimate.

Exhibit 21



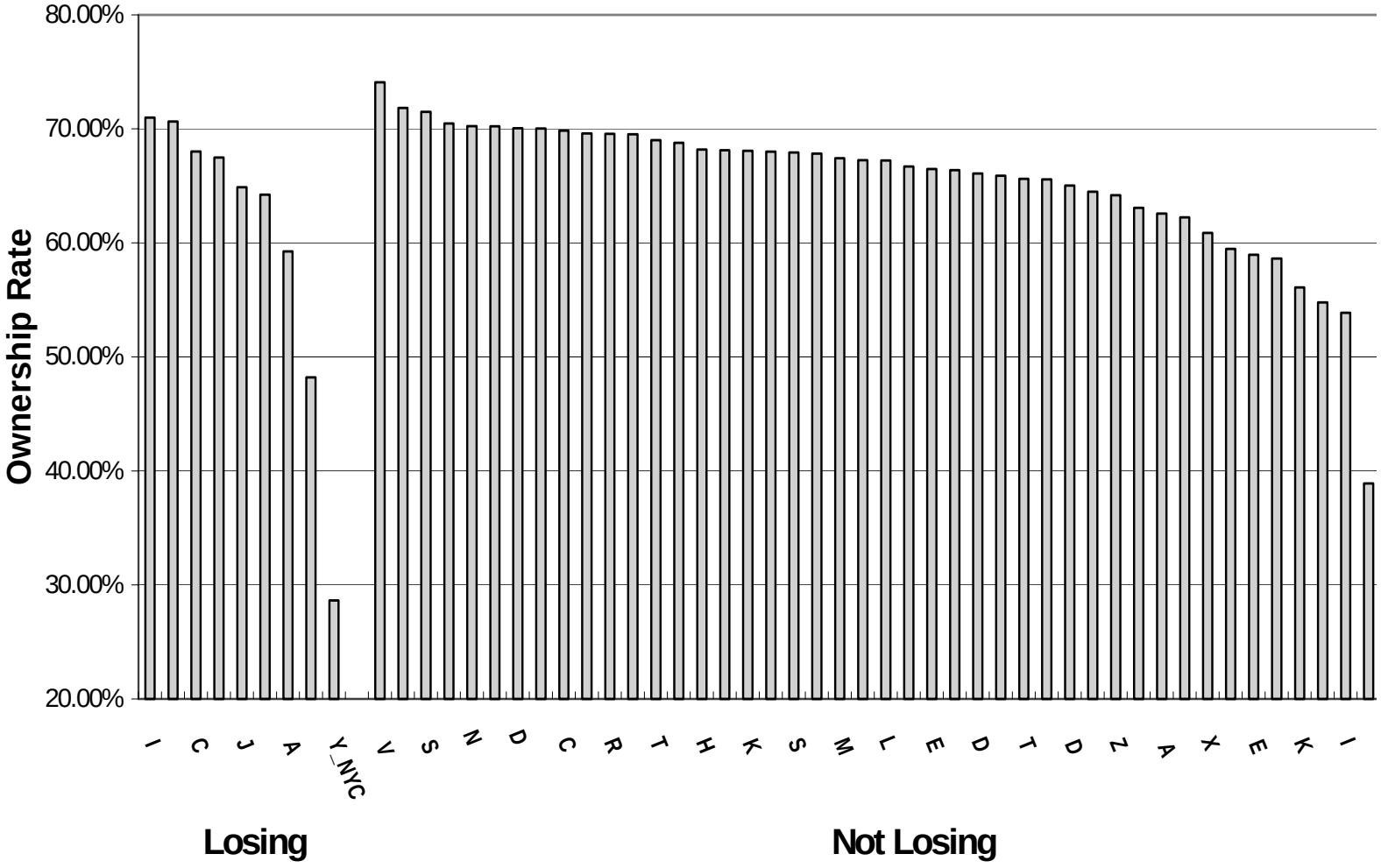
Source: Joint Center Tabulations of 1990 PUMS and 1989, 1990 and 1991 CPS

Exhibit 22



Source: Joint Center Tabulations of 1990 PUMS and 1989, 1990 and 1991 CPS

1990 Census Ownership Rates of Households in Areas Losing and Not Losing Eligible Households in 1996 CPS Sample Reduction



Source: data provided to authors by U.S Census Bureau, Current Population Survey Branch – see Appendix C

Exhibit 24

HVS Seasonally Adjusted Annual Ownership Estimates*

1998.....66.25	Change:
1997.....65.73	1997-98.....+0.52
1996.....65.38	1996-97.....+0.35
1995.....64.78	1995-96.....+0.60
1994.....63.98	1994-95.....+0.80
1993r……63.98	(1993-94 omitted)
1993 (not available)	
1992…….64.13	1992-93**...+0.33
1991…….64.05	1991-92…..+0.08
1990…….63.95	1990-91…..+0.10

*average of quarterly rates

** based on average of quarterly rates not seasonally adjusted

Source: http://www.census.gov/hhes/www/housing/hvs/q498prss.html.

Appendix A

Housing Vacancy Survey Total and Homeowner Annual Household Numbers and Ownership Rates
Total, Married, and All Other Household Types: Broad Age Groups - 1982 to 1997

All Households

	1982... Total	1983... Total	1984... Total	1985... Total	1986... Total	1987... Total	1988... Total	1989... Total
Less than 35 years..	24,860	24,544	25,055	25,314	25,498	25,485	25,579	26,436
35 to 44 years.....	15,298	15,880	16,709	17,534	18,090	18,802	19,281	20,157
45 to 54 years..... .	12,540	12,476	12,529	12,674	12,930	13,237	13,809	14,273
55 to 64 years... ...	12,957	13,062	13,105	13,125	13,003	12,897	12,755	12,686
65 years and over...	17,440	17,778	18,218	18,496	18,829	19,281	19,700	19,939
All Ages	83,095	83,740	85,616	87,143	88,350	89,702	91,124	93,491
	Owner	Owner	Owner	Owner	Owner	Owner	Owner	Owner
Less than 35 years..	10,241	9,997	10,150	10,089	10,090	10,057	10,038	10,348
35 to 44 years..... .	10,711	11,008	11,516	11,943	12,178	12,631	12,905	13,429
45 to 54 years... ...	9,709	9,610	9,580	9,615	9,827	10,075	10,440	10,774
55 to 64 years.....	10,370	10,442	10,487	10,437	10,390	10,344	10,146	10,096
65 years and over...	12,978	13,341	13,676	13,841	14,118	14,549	14,888	15,106
All Ages	54,009	54,398	55,409	55,925	56,603	57,656	58,417	59,753
	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate
Less than 35 years..	41.2%	40.7%	40.5%	39.9%	39.6%	39.5%	39.2%	39.1%
35 to 44 years.....	70.0%	69.3%	68.9%	68.1%	67.3%	67.2%	66.9%	66.6%
45 to 54 years..... .	77.4%	77.0%	76.5%	75.9%	76.0%	76.1%	75.6%	75.5%
55 to 64 years... ...	80.0%	79.9%	80.0%	79.5%	79.9%	80.2%	79.5%	79.6%
65 years and over...	74.4%	75.0%	75.1%	74.8%	75.0%	75.5%	75.6%	75.8%
All Ages	65.0%	65.0%	64.7%	64.2%	64.1%	64.3%	64.1%	63.9%

All Households

	1990... Total	1991... Total	1992... Total	1993... Total	1993r... Total	1994... Total	1995... Total	1996... Total	1997... Total
Less than 35 years..	25,864	25,545	25,217	25,057	25,596	25,320	25,370	25,072	24,894
35 to 44 years..... .	20,807	21,490	21,835	22,283	22,457	22,837	23,144	23,727	24,035
45 to 54 years.....	14,570	15,038	15,945	16,801	16,629	17,248	17,962	18,504	19,182
55 to 64 years.....	12,628	12,495	12,502	12,491	12,198	12,256	12,215	12,310	12,678
65 years and over...	20,350	20,681	20,891	21,096	20,837	21,030	21,295	21,370	21,412
All Ages	94,219	95,249	96,390	97,728	97,717	98,691	99,986	100,983	102,201
	Owner	Owner	Owner	Owner	Owner	Owner	Owner	Owner	Owner
Less than 35 years..	9,955	9,664	9,480	9,489	9,559	9,453	9,803	9,793	9,630
35 to 44 years.....	13,789	14,137	14,223	14,573	14,611	14,733	15,093	15,534	15,880
45 to 54 years.....	10,957	11,249	11,977	12,660	12,516	12,962	13,501	13,996	14,536
55 to 64 years.....	10,011	9,999	10,031	9,972	9,746	9,714	9,712	9,850	10,150
65 years and over...	15,536	15,962	16,106	16,304	16,103	16,273	16,629	16,869	16,946
All Ages	60,248	61,011	61,817	62,998	62,535	63,135	64,738	66,042	67,142
	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate
Less than 35 years..	38.5%	37.8%	37.6%	37.9%	37.3%	37.3%	38.6%	39.1%	38.7%
35 to 44 years..... .	66.3%	65.8%	65.1%	65.4%	65.1%	64.5%	65.2%	65.5%	66.1%
45 to 54 years..... .	75.2%	74.8%	75.1%	75.4%	75.3%	75.2%	75.2%	75.6%	75.8%
55 to 64 years..... .	79.3%	80.0%	80.2%	79.8%	79.9%	79.3%	79.5%	80.0%	80.1%
65 years and over...	76.3%	77.2%	77.1%	77.3%	77.3%	77.4%	78.1%	78.9%	79.1%

Appendix A (continued)

All Ages	63.9%	64.1%	64.1%	64.5%	64.0%	64.0%	64.7%	65.4%	65.7%
Married Couple HH									
	1982...	1983...	1984...	1985...	1986...	1987...	1988...	1989...	
	Total	Total	Total	Total	Total	Total	Total	Total	
Less than 35 years..	13,513	13,256	13,339	13,200	13,154	12,933	12,657	13,326	
35 to 44 years.....	10,301	10,658	11,079	11,401	11,596	11,964	12,127	12,757	
45 to 54 years.....	8,711	8,667	8,562	8,461	8,597	8,808	9,059	9,307	
55 to 64 years.....	8,433	8,446	8,418	8,425	8,286	8,172	7,987	7,904	
65 years and over...	7,966	8,048	8,128	8,282	8,392	8,573	8,783	8,833	
All Ages	48,924	49,075	49,526	49,769	50,025	50,450	50,613	52,127	
	Owner	Owner	Owner	Owner	Owner	Owner	Owner	Owner	
Less than 35 years..	7,868	7,650	7,699	7,602	7,550	7,490	7,338	7,549	
35 to 44 years.....	8,449	8,657	8,979	9,219	9,363	9,620	9,758	10,226	
45 to 54 years..... .	7,616	7,524	7,428	7,300	7,445	7,630	7,862	8,064	
55 to 64 years..... .	7,549	7,548	7,534	7,517	7,443	7,364	7,167	7,103	
65 years and over...	6,901	7,027	7,085	7,271	7,396	7,584	7,800	7,873	
All Ages	38,383	38,406	38,725	38,909	39,197	39,688	39,925	40,815	
	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	
Less than 35 years..	58.2%	57.7%	57.7%	57.6%	57.4%	57.9%	58.0%	56.6%	
35 to 44 years.....	82.0%	81.2%	81.0%	80.9%	80.7%	80.4%	80.5%	80.2%	
45 to 54 years.....	87.4%	86.8%	86.8%	86.3%	86.6%	86.6%	86.8%	86.6%	
55 to 64 years.....	89.5%	89.4%	89.5%	89.2%	89.8%	90.1%	89.7%	89.9%	
65 years and over...	86.6%	87.3%	87.2%	87.8%	88.1%	88.5%	88.8%	89.1%	
All Ages	78.5%	78.3%	78.2%	78.2%	78.4%	78.7%	78.9%	78.3%	

Married Couple HH									
	1990...	1991...	1992...	1993...	1993r...	1994...	1995...	1996...	1997...
	Total	Total	Total	Total	Total	Total	Total	Total	Total
Less than 35 years..	12,986	12,547	12,173	11,953	12,176	11,900	12,008	11,593	11,184
35 to 44 years..... .	13,034	13,289	13,372	13,500	13,555	13,690	13,848	14,105	14,238
45 to 54 years..... .	9,358	9,516	10,123	10,587	10,497	10,779	11,142	11,385	11,643
55 to 64 years.....	7,847	7,835	7,739	7,617	7,452	7,512	7,504	7,521	7,659
65 years and over...	8,993	9,170	9,205	9,278	9,173	9,200	9,212	9,315	9,209
All Ages	52,218	52,357	52,612	52,935	52,853	53,081	53,714	53,919	53,933
	Owner	Owner	Owner	Owner	Owner	Owner	Owner	Owner	Owner
Less than 35 years..	7,271	6,979	6,775	6,734	6,781	6,639	6,872	6,730	6,514
35 to 44 years.....	10,391	10,582	10,594	10,749	10,755	10,823	11,051	11,233	11,479
45 to 54 years.....	8,074	8,201	8,768	9,146	9,055	9,338	9,701	9,964	10,224
55 to 64 years.....	7,035	7,069	6,979	6,882	6,730	6,730	6,742	6,790	6,928
65 years and over...	8,022	8,257	8,301	8,368	8,270	8,316	8,367	8,505	8,437
All Ages	40,793	41,088	41,417	41,879	41,591	41,846	42,733	43,222	43,582
	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate
Less than 35 years..	56.0%	55.6%	55.7%	56.3%	55.7%	55.8%	57.2%	58.1%	58.2%
35 to 44 years.....	79.7%	79.6%	79.2%	79.6%	79.3%	79.1%	79.8%	79.6%	80.6%
45 to 54 years.....	86.3%	86.2%	86.6%	86.4%	86.3%	86.6%	87.1%	87.5%	87.8%
55 to 64 years.....	89.7%	90.2%	90.2%	90.4%	90.3%	89.6%	89.8%	90.3%	90.5%
65 years and over...	89.2%	90.0%	90.2%	90.2%	90.2%	90.4%	90.8%	91.3%	91.6%
All Ages	78.1%	78.5%	78.7%	79.1%	78.7%	78.8%	79.6%	80.2%	80.8%

Appendix A (continued)

All Other HH Types

	1982... Total	1983... Total	1984... Total	1985... Total	1986... Total	1987... Total	1988... Total	1989... Total
Less than 35 years..	11,347	11,288	11,716	12,114	12,344	12,552	12,922	13,110
35 to 44 years.....	4,997	5,222	5,630	6,133	6,494	6,838	7,154	7,400
45 to 54 years.....	3,829	3,809	3,967	4,213	4,333	4,429	4,750	4,966
55 to 64 years.....	4,524	4,616	4,687	4,700	4,717	4,725	4,768	4,782
65 years and over...	9,474	9,730	10,090	10,214	10,437	10,708	10,917	11,106
All Ages	34,171	34,665	36,090	37,374	38,325	39,252	40,511	41,364
	Owner	Owner	Owner	Owner	Owner	Owner	Owner	Owner
Less than 35 years..	2,373	2,347	2,451	2,487	2,540	2,567	2,700	2,799
35 to 44 years.....	2,262	2,351	2,537	2,724	2,815	3,011	3,147	3,203
45 to 54 years.....	2,093	2,086	2,152	2,315	2,382	2,445	2,578	2,710
55 to 64 years.....	2,821	2,894	2,953	2,920	2,947	2,980	2,979	2,993
65 years and over...	6,077	6,314	6,591	6,570	6,722	6,965	7,088	7,233
All Ages	15,626	15,992	16,684	17,016	17,406	17,968	18,492	18,938
	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate
Less than 35 years..	20.9%	20.8%	20.9%	20.5%	20.6%	20.5%	20.9%	21.4%
35 to 44 years.....	45.3%	45.0%	45.1%	44.4%	43.3%	44.0%	44.0%	43.3%
45 to 54 years.....	54.7%	54.8%	54.2%	54.9%	55.0%	55.2%	54.3%	54.6%
55 to 64 years..... .	62.4%	62.7%	63.0%	62.1%	62.5%	63.1%	62.5%	62.6%
65 years and over...	64.1%	64.9%	65.3%	64.3%	64.4%	65.0%	64.9%	65.1%
All Ages	45.7%	46.1%	46.2%	45.5%	45.4%	45.8%	45.6%	45.8%

All Other HH Types

	1990... Total	1991... Total	1992... Total	1993... Total	1993r... Total	1994... Total	1995... Total	1996... Total	1997... Total
Less than 35 years..	12,878	12,998	13,044	13,104	13,420	13,420	13,362	13,479	13,710
35 to 44 years.....	7,773	8,201	8,463	8,783	8,902	9,147	9,296	9,622	9,797
45 to 54 years.....	5,212	5,522	5,822	6,214	6,132	6,469	6,820	7,119	7,539
55 to 64 years.....	4,781	4,660	4,763	4,874	4,746	4,744	4,711	4,789	5,019
65 years and over...	11,357	11,511	11,686	11,818	11,664	11,830	12,083	12,055	12,203
All Ages	42,001	42,892	43,778	44,793	44,864	45,610	46,272	47,064	48,268
	Owner	Owner	Owner	Owner	Owner	Owner	Owner	Owner	Owner
Less than 35 years..	2,684	2,685	2,705	2,755	2,778	2,814	2,931	3,063	3,116
35 to 44 years.....	3,398	3,555	3,629	3,824	3,856	3,910	4,042	4,301	4,401
45 to 54 years.....	2,883	3,048	3,209	3,514	3,461	3,624	3,800	4,032	4,312
55 to 64 years.....	2,976	2,930	3,052	3,090	3,016	2,984	2,970	3,060	3,222
65 years and over...	7,514	7,705	7,805	7,936	7,833	7,957	8,262	8,364	8,509
All Ages	19,455	19,923	20,400	21,119	20,944	21,289	22,005	22,820	23,560
	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate
Less than 35 years..	20.8%	20.7%	20.7%	21.0%	20.7%	21.0%	21.9%	22.7%	22.7%
35 to 44 years.....	43.7%	43.3%	42.9%	43.5%	43.3%	42.7%	43.5%	44.7%	44.9%
45 to 54 years.....	55.3%	55.2%	55.1%	56.5%	56.4%	56.0%	55.7%	56.6%	57.2%
55 to 64 years..... .	62.2%	62.9%	64.1%	63.4%	63.5%	62.9%	63.0%	63.9%	64.2%
65 years and over...	66.2%	66.9%	66.8%	67.2%	67.2%	67.3%	68.4%	69.4%	69.7%
All Ages	46.3%	46.4%	46.6%	47.1%	46.7%	46.7%	47.6%	48.5%	48.8%

Source: U.S. Bureau of the Census, Housing Vacancies and Homeownership: Historical Tables – Table 15
http://www.census.gov/hhes/www/housing/hvs/historic/histt15.html

Appendix B

Housing Vacancy Data Homeownership Rates by State: 1984 to 1997

	1984	1985	1986	1987	1988	1989	1990	1991
United States...	64.5	63.9	63.8	64.0	63.8	63.9	63.9	64.1
Alabama.....	73.7	70.4	70.3	67.9	66.5	67.6	68.4	69.9
Alaska.....	57.6	61.2	61.5	59.7	57.0	58.7	58.4	57.1
Arizona.....	65.2	64.7	62.5	63.3	66.1	63.9	64.5	66.3
Arkansas.....	65.9	66.6	67.5	68.1	67.0	66.3	67.8	68.6
California.....	53.7	54.2	53.8	54.3	54.4	53.6	53.8	54.5
Colorado.....	64.7	63.6	63.7	61.8	60.1	58.6	59.0	59.8
Connecticut.....	67.8	69.0	68.1	67.0	66.5	66.4	67.9	65.5
Delaware.....	70.4	70.3	71.0	71.1	70.1	68.7	67.7	70.2
District of Columbia	37.3	37.4	34.6	35.8	37.5	38.7	36.4	35.1
Florida.....	66.5	67.2	66.5	66.3	64.9	64.4	65.1	66.1
Georgia.....	63.6	62.7	62.4	63.9	64.8	64.7	64.3	65.7
Hawaii.....	50.7	51.0	50.9	50.7	53.2	54.7	55.5	55.2
Idaho.....	69.7	71.0	69.8	71.6	71.5	70.2	69.4	68.4
Illinois.....	62.4	60.6	60.9	61.0	61.4	61.9	63.0	63.0
Indiana.....	69.9	67.6	67.6	69.1	68.3	68.2	67.0	66.1
Iowa.....	71.3	69.9	69.2	67.7	68.3	69.6	70.7	68.4
Kansas.....	72.7	68.3	66.4	67.9	68.6	68.1	69.0	69.7
Kentucky.....	70.2	68.5	68.1	67.6	65.4	64.9	65.8	67.2
Louisiana.....	70.1	70.2	70.4	71.0	68.5	66.3	67.8	68.9
Maine.....	74.1	73.7	74.0	73.2	72.2	73.6	74.2	72.0
Maryland.....	67.8	65.6	62.8	62.7	63.5	65.5	64.9	63.8
Massachusetts...	61.7	60.5	60.3	60.6	60.0	58.9	58.6	60.2
Michigan.....	72.7	70.7	70.9	71.7	72.5	73.2	72.3	70.6
Minnesota.....	72.6	70.0	68.0	68.9	69.1	68.3	68.0	68.9
Mississippi.....	72.3	69.6	70.4	72.5	73.7	72.2	69.4	71.8
Missouri.....	69.5	69.2	67.8	66.1	64.8	63.7	64.0	64.2
Montana.....	66.4	66.5	64.4	65.0	65.4	67.9	69.1	69.6
Nebraska.....	69.3	68.5	68.3	66.8	66.6	67.2	67.3	67.5
Nevada.....	58.9	57.0	54.5	54.1	54.3	54.3	55.8	55.8
New Hampshire...	67.1	65.5	64.8	66.4	67.9	67.0	65.0	66.8
New Jersey.....	63.4	62.3	63.3	64.0	64.8	65.7	65.0	64.8
New Mexico.....	68.0	68.2	67.8	67.2	65.4	65.5	68.6	69.5
New York.....	51.1	50.3	51.3	52.0	50.7	52.3	53.3	52.6
North Carolina..	68.8	68.0	68.2	68.4	68.3	69.4	69.0	69.3
North Dakota....	70.1	69.9	69.2	68.9	67.7	67.1	67.2	65.4
Ohio.....	67.7	67.9	68.2	68.6	69.6	69.6	68.7	68.7
Oklahoma.....	71.0	70.5	69.7	70.9	72.1	71.4	70.3	69.2
Oregon.....	61.9	61.5	63.9	64.6	64.0	63.4	64.4	65.2
Pennsylvania....	71.1	71.6	72.3	71.8	72.1	72.8	73.8	74.0
Rhode Island....	60.9	61.4	62.2	60.4	62.0	61.2	58.5	58.2
South Carolina..	69.1	72.0	70.3	72.8	73.8	71.0	71.4	73.1
South Dakota....	69.6	67.6	65.9	66.8	66.4	65.8	66.2	66.1
Tennessee.....	67.6	67.6	67.4	67.2	66.9	67.3	68.3	68.0
Texas.....	62.5	60.5	61.0	61.1	59.9	61.0	59.7	59.0
Utah.....	69.9	71.5	68.0	69.0	70.2	70.4	70.1	70.7
Vermont.....	66.9	69.5	69.8	70.5	68.7	69.7	72.6	70.8
Virginia.....	68.3	68.5	68.2	69.0	69.8	70.2	69.8	68.9
Washington.....	65.7	66.8	65.1	64.4	64.2	64.2	61.8	61.8
West Virginia...	72.0	75.9	76.4	72.5	73.2	74.8	72.0	72.4
Wisconsin.....	65.2	63.8	66.5	68.2	68.0	69.3	68.3	68.9
Wyoming.....	68.8	73.2	72.0	68.9	67.8	69.6	68.9	68.7

Appendix B (continued)

	1992	1993	1993/r	1994	1995	1996	1997
United States...	64.1	64.5	64.0	64.0	64.7	65.4	65.7
Alabama.....	70.3	70.5	70.2	68.5	70.1	71.0	71.3
Alaska.....	55.5	56.0	55.4	58.8	60.9	62.9	67.2
Arizona.....	69.3	69.6	69.1	67.7	62.9	62.0	63.0
Arkansas.....	70.3	70.8	70.5	68.1	67.2	66.6	66.7
California.....	55.3	56.8	56.0	55.5	55.4	55.0	55.7
Colorado.....	60.9	62.3	61.8	62.9	64.6	64.5	64.1
Connecticut.....	66.1	65.0	64.5	63.8	68.2	69.0	68.1
Delaware.....	73.8	74.4	74.1	70.5	71.7	71.5	69.2
District of Columbia	35.0	36.4	35.7	37.8	39.2	40.4	42.5
Florida.....	66.0	66.0	65.5	65.7	66.6	67.1	66.9
Georgia.....	66.9	66.8	66.5	63.4	66.6	69.3	70.9
Hawaii.....	53.8	53.2	52.8	52.3	50.2	50.6	50.2
Idaho.....	70.3	72.5	72.1	70.7	72.0	71.4	72.3
Illinois.....	62.4	62.3	61.8	64.2	66.4	68.2	68.1
Indiana.....	67.6	69.0	68.7	68.4	71.0	74.2	74.1
Iowa.....	66.3	68.6	68.2	70.1	71.4	72.8	72.7
Kansas.....	69.8	69.3	68.9	69.0	67.5	67.5	66.5
Kentucky.....	69.0	69.0	68.8	70.6	71.2	73.2	75.0
Louisiana.....	66.7	65.8	65.4	65.8	65.3	64.9	66.4
Maine.....	72.0	72.1	71.9	72.6	76.7	76.5	74.9
Maryland.....	64.8	65.8	65.5	64.1	65.8	66.9	70.5
Massachusetts...	61.8	61.2	60.7	60.6	60.2	61.7	62.3
Michigan.....	70.6	72.6	72.3	72.0	72.2	73.3	73.3
Minnesota.....	66.7	66.2	65.8	68.9	73.3	75.4	75.4
Mississippi.....	70.4	69.9	69.7	69.2	71.1	73.0	73.7
Missouri.....	65.2	66.8	66.4	68.4	69.4	70.2	70.5
Montana.....	69.9	70.0	69.7	68.8	68.7	68.6	67.5
Nebraska.....	68.4	68.0	67.7	68.0	67.1	66.8	66.7
Nevada.....	55.1	56.2	55.8	55.8	58.6	61.1	61.2
New Hampshire...	66.6	65.7	65.4	65.1	66.0	65.0	66.8
New Jersey.....	64.6	65.2	64.5	64.1	64.9	64.6	63.1
New Mexico.....	70.5	69.5	69.1	66.8	67.0	67.1	69.6
New York.....	53.3	53.5	52.8	52.5	52.7	52.7	52.6
North Carolina..	68.6	69.1	68.8	68.7	70.1	70.4	70.2
North Dakota....	63.7	63.1	62.7	63.3	67.3	68.2	68.1
Ohio.....	69.1	68.8	68.5	67.4	67.9	69.2	69.0
Oklahoma.....	68.9	70.7	70.3	68.5	69.8	68.4	68.5
Oregon.....	64.3	64.1	63.8	63.9	63.2	63.1	61.0
Pennsylvania....	73.1	72.3	72.0	71.8	71.5	71.7	73.3
Rhode Island....	56.8	58.1	57.6	56.5	57.9	56.6	58.7
South Carolina..	71.0	71.4	71.1	72.0	71.3	72.9	74.1
South Dakota....	66.5	66.1	65.6	66.4	67.5	67.8	67.6
Tennessee.....	67.4	64.4	64.1	65.2	67.0	68.8	70.2
Texas.....	58.3	59.3	58.7	59.7	61.4	61.8	61.5
Utah.....	70.0	69.4	68.9	69.3	71.5	72.7	72.5
Vermont.....	70.8	68.5	68.5	69.4	70.4	70.3	69.1
Virginia.....	67.8	68.8	68.5	69.3	68.1	68.5	68.4
Washington.....	62.5	63.5	63.1	62.4	61.6	63.1	62.9
West Virginia...	73.3	73.6	73.3	73.7	73.1	74.3	74.6
Wisconsin.....	69.4	66.0	65.7	64.2	67.5	68.2	68.3
Wyoming.....	67.9	67.6	67.1	65.8	69.0	68.0	67.6

Source: http://www.census.gov/hhes/www/housing/hvs/annual97/ann97t13.html

Appendix C

- Details of 1996 Reduction in CPS Sample Size

	1990 Census HH Counts	Share Total Households	1990 Ownership Rate		CPS April 1992	CPS Eligible 1995 and Before		1996		Reduction	
US	91,947,410	100.0%	64.12%	59,424	100.0%	56,000	100.0%	0.0%	50,000	100.0%	6,000
MI	3,419,331	3.7%	71.00%	2,554	4.3%	2,500	4.5%	0.2%	1,700	3.4%	800
PA	4,495,966	4.9%	70.64%	2,612	4.4%	2,600	4.6%	0.2%	2,200	4.4%	400
NC	2,517,026	2.7%	68.01%	2,543	4.3%	2,400	4.3%	0.0%	1,300	2.6%	1,100
OH	4,087,546	4.4%	67.48%	2,687	4.5%	2,500	4.5%	-0.1%	1,900	3.8%	600
NJ	2,794,711	3.0%	64.89%	2,432	4.1%	2,300	4.1%	0.0%	1,500	3.0%	800
IL	4,202,240	4.6%	64.23%	2,441	4.1%	2,300	4.1%	0.0%	2,000	4.0%	300
MA	2,247,110	2.4%	59.25%	2,342	3.9%	2,300	4.1%	0.2%	1,200	2.4%	1,100
CA_LA	2,989,552	3.3%	48.20%	2,044	3.4%	1,700	3.0%	-0.4%	1,600	3.2%	100
NY_NYC	2,819,401	3.1%	28.64%	1,855	3.1%	2,300	4.1%	1.0%	1,500	3.0%	800
WV	688,557	0.7%	74.08%	725	1.2%	700	1.3%	0.0%	700	1.4%	0
MN	1,647,853	1.8%	71.83%	653	1.1%	700	1.3%	0.2%	700	1.4%	0
MS	911,374	1.0%	71.50%	809	1.4%	600	1.1%	-0.3%	600	1.2%	0
AL	1,506,790	1.6%	70.47%	768	1.3%	700	1.3%	0.0%	700	1.4%	0
IN	2,065,355	2.2%	70.25%	711	1.2%	700	1.3%	0.1%	700	1.4%	0
DE	247,497	0.3%	70.23%	519	0.9%	500	0.9%	0.0%	500	1.0%	0
ID	360,723	0.4%	70.06%	729	1.2%	700	1.3%	0.0%	700	1.4%	0
IA	1,064,325	1.2%	70.03%	796	1.3%	700	1.3%	-0.1%	700	1.4%	0
SC	1,258,044	1.4%	69.85%	773	1.3%	500	0.9%	-0.4%	500	1.0%	0
KY	1,379,782	1.5%	69.61%	715	1.2%	700	1.3%	0.0%	700	1.4%	0
AR	891,179	1.0%	69.56%	796	1.3%	700	1.3%	-0.1%	700	1.4%	0
NY_BAL	3,819,921	4.2%	69.52%	2,453	4.1%	1,800	3.2%	-0.9%	1,800	3.6%	0
VT	210,650	0.2%	69.01%	496	0.8%	500	0.9%	0.1%	500	1.0%	0
MO	1,961,206	2.1%	68.77%	667	1.1%	600	1.1%	-0.1%	600	1.2%	0
NH	411,186	0.4%	68.19%	492	0.8%	500	0.9%	0.1%	500	1.0%	0
UT	537,273	0.6%	68.12%	632	1.1%	600	1.1%	0.0%	600	1.2%	0
OK	1,206,135	1.3%	68.08%	750	1.3%	800	1.4%	0.2%	800	1.6%	0
TN	1,853,725	2.0%	68.00%	753	1.3%	600	1.1%	-0.2%	600	1.2%	0
KS	944,726	1.0%	67.93%	763	1.3%	700	1.3%	0.0%	700	1.4%	0

Appendix C (continued)

	1990 Census HH Counts	Share Total Households	1990 Ownership Rate	CPS April 1992	CPS Eligible Households.....1995 and Before			1996		
										Reduction
WY	168,839	0.2%	67.84%	526	0.9%	700	1.3%	0.4%	700	1.4%	0
NM	542,709	0.6%	67.43%	659	1.1%	700	1.3%	0.1%	700	1.4%	0
MT	306,163	0.3%	67.25%	782	1.3%	800	1.4%	0.1%	800	1.6%	0
FL	5,134,869	5.6%	67.23%	2,855	4.8%	2,500	4.5%	-0.3%	2,500	5.0%	0
WI	1,822,118	2.0%	66.70%	859	1.4%	700	1.3%	-0.2%	700	1.4%	0
NE	602,363	0.7%	66.47%	796	1.3%	700	1.3%	-0.1%	700	1.4%	0
VA	2,291,830	2.5%	66.38%	823	1.4%	800	1.4%	0.0%	800	1.6%	0
SD	259,034	0.3%	66.08%	852	1.4%	700	1.3%	-0.2%	700	1.4%	0
LA	1,499,269	1.6%	65.89%	624	1.1%	700	1.3%	0.2%	700	1.4%	0
CT	1,230,479	1.3%	65.62%	557	0.9%	500	0.9%	0.0%	500	1.0%	0
ND	240,878	0.3%	65.57%	817	1.4%	700	1.3%	-0.1%	700	1.4%	0
MD	1,748,991	1.9%	65.03%	602	1.0%	600	1.1%	0.1%	600	1.2%	0
GA	2,366,615	2.6%	64.49%	646	1.1%	800	1.4%	0.3%	800	1.6%	0
AZ	1,368,843	1.5%	64.18%	639	1.1%	800	1.4%	0.4%	800	1.6%	0
OR	1,103,313	1.2%	63.08%	627	1.1%	600	1.1%	0.0%	600	1.2%	0
WA	1,872,431	2.0%	62.57%	724	1.2%	700	1.3%	0.0%	700	1.4%	0
CO	1,282,489	1.4%	62.24%	691	1.2%	700	1.3%	0.1%	700	1.4%	0
TX	6,070,937	6.6%	60.87%	2,599	4.4%	2,300	4.1%	-0.3%	2,300	4.6%	0
RI	377,977	0.4%	59.47%	556	0.9%	500	0.9%	0.0%	500	1.0%	0
ME	465,312	0.5%	58.95%	587	1.0%	600	1.1%	0.1%	600	1.2%	0
CA_BAL	1,146,858	1.2%	58.62%	2,531	4.3%	2,400	4.3%	0.0%	2,400	4.8%	0
AK	188,915	0.2%	56.10%	776	1.3%	500	0.9%	-0.4%	500	1.0%	0
NV	466,297	0.5%	54.77%	673	1.1%	600	1.1%	-0.1%	600	1.2%	0
HI	356,267	0.4%	53.87%	517	0.9%	500	0.9%	0.0%	500	1.0%	0
DC	249,634	0.3%	38.90%	596	1.0%	700	1.3%	0.2%	700	1.4%	0
					.						
CA	10,381,206	11.3%	55.62%	2,820	4.7%	4,100	7.3%	2.6%	4,000	8.0%	100
NY	6,639,322	7.2%	52.18%	2,522	4.2%	4,100	7.3%	3.1%	3,300	6.6%	800

Source: Memo from Melinda Kraus, Current Population Survey Branch, April 18, 1996,
"Summary of Changes Resulting from the January 1996 CPS Sample Reduction," Attch. A,
and 1990 Census STF-1A state files.