Evaluation of Gross Vacancy Rates From the 2010 Census Versus Current Surveys: Early Findings from Comparisons with the 2010 Census and the 2010 ACS 1-Year Estimates

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The views expressed in this paper are solely attributable to the author and do not necessarily reflect the position of the United States Census Bureau.

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Purpose of this paper

This paper is part of a larger effort to understand why there are differences in the level of occupied and vacant housing units among the 2010 Census, the 2010 American Community Survey (ACS), the Current Population Survey/Housing Vacancy Survey[1] (HVS), and the American Housing Survey[2] (AHS). The specific focus of this paper is to provide a snapshot of research completed to date on factors that might explain differences in the level of vacant and occupied housing units between the 2010 Census and 2010 American Community Survey (ACS). Thus, this paper is not intended to answer all questions or issues concerning these differences. The 2010 ACS 1-year estimate for the gross vacancy rate (GVR) was 13.1 percent compared to 11.4 percent for the 2010 Census. We expect to produce a more comprehensive report on the 2010 Census – ACS differences in 2012 with additional reports to address the differences between the 2010 Census, the HVS and AHS. The goals of these reports are: 1) to understand better why these totals differ and 2) to address particular factors, where possible, that might lead to more consistent results across data collection efforts in the future.

Introduction

When different data collection efforts, whether they are a decennial census or a statistically representative sample survey of households, attempt to measure a similar phenomenon, there is the *prima facie* expectation that these efforts will produce similar results. However, when these data collection efforts differ in their purpose, design, operations, or procedures, differences can occur even when the phenomenon is being measured during a similar time period. In the case of the decennial census and the ACS, we expected to find some differences based on a number of factors discussed below. The Census Bureau has dealt with this issue by conducting detailed studies that attempt to compare the results from these efforts and provide an explanation for the differences based on the best information available. One example of this type of analysis is the effort to compare the results from the 2000 Census with those from the Census 2000 Supplemental Survey (C2SS), which was the immediate precursor to the ACS (see http://www.census.gov/acs/www/library/by_year/2004/ which includes a set of comparison studies and Love, 2001). In some cases, differences (beyond sampling error) may be due to different reference periods, different residence rules, or perhaps different data collection or processing procedures.

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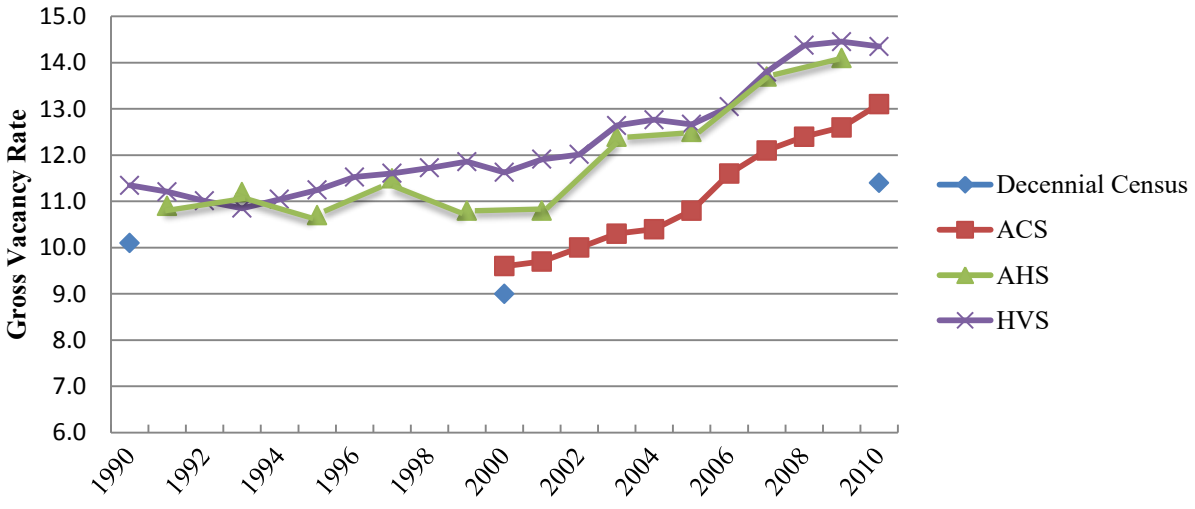
[1] The Housing Vacancy Survey (HVS) is a supplement of the Current Population Survey (CPS) and provides current information on the rental and homeowner vacancy rates, and characteristics of units available for occupancy. There are about 72,000 housing units both occupied and vacant contained in the CPS sample. Approximately 10,800 are visited, but found to be vacant or otherwise not interviewed each month. These vacant units are included in the HVS.

[2] The American Housing Survey (AHS) is conducted by the Bureau of the Census for the Department of Housing and Urban Development (HUD). The AHS collects data on the Nation's housing, including apartments, single-family homes, mobile homes, vacant housing units, household characteristics, income, housing and neighborhood quality, housing costs, equipment and fuels, size of housing unit, and recent movers. National data are collected in odd numbered years, and data for each of 47 selected Metropolitan Areas are collected currently about every six years. The national sample covers an average 55,000 housing units. Each metropolitan area sample covers 4,100 or more housing units. The AHS returns to the same housing units year after year to gather data; therefore, this survey is ideal for analyzing the flow of households through housing.

Historical Differences in Estimates of Gross Vacancy Rates

Figure 1 below shows the pattern of differences among the decennial census, the ACS, the AHS, and the HVS gross vacancy rates (GVRs) [3] starting in 1990 through 2010.

Figure 1. Comparison of Gross Vacancy Rates: 1990-2010



Source: HVS: http://www.census.gov/hhes/www/housing/hvs/historic/files/histtab7.xls; AHS: http://www.census.gov/housing/ahs/data/national.html for 1997 through 2009 and published paper reports for1991 through 1995; ACS: 1-year tabulations from American FactFinder; Decennial Census: http://www.census.gov/hhes/www/housing/census/censushousing.html for 1990 and 2000 and American FactFiinder for 2010.

Several observations should be noted at this point:

1. The Gross Vacancy Rate (GVRs) for the HVS are consistently higher than those for each of the decennial censuses, with a difference of 1.2 percentage points 1990, 2.6 percentage points in 2000, and 2.9 percentage points in 2010.
2. The GVRs for the AHS (for which the national survey is conducted only in odd-numbered years) are also consistently higher than those for the decennial census. In 1991, 1993, 1997, 2003, 2005, and 2007 the AHS GVRs were not statistically different from the HVS GVRs. However, the AHS GVRs were lower than the HVS GVRs in 1995, 1999, 2001, and 2009.
3. The GVRs for the ACS are also higher than those for the 2000 and 2010 censuses, however, the difference in 2000 was smaller (0.6 percentage points compared to 1.7 percentage points)
4. All data sources point to an increase in the GVR between 2000 and 2010.

As noted in the beginning, the purpose of this paper will be to focus on differences between the 2010 Census and the 2010 ACS. More specifically, we will focus on differences in overall levels of vacant and occupied housing units, GVRs, and vacancy status[4]. We will also briefly touch on differences in the average household size (also stated as

[3] The gross vacancy rate (GVR) is the percentage of the total housing inventory that is vacant. The rate is computed with the formula: (All vacant units/All housing units (occupied + vacant)) * (100)

[4] For the 2010 Census and the 2005 through the 2010 ACS, vacant units were subdivided according to their housing market classification as follows: "For Rent," "Rented, Not Occupied," "For Sale Only," "Sold, Not Occupied," "For Seasonal, Recreational, or Occasional Use," "For Migrant Workers," and "Other Vacant." For the 2000 through

persons per household) that has been affected by the overall differences in occupied and vacant housing units. As will become clear in the discussion that ensues, one cannot talk about differences in levels of vacant units without discussing the impact those levels have on occupied housing units (households).

Comparison of Statistics at the National Level

Table 1 below shows a comparison of results from the 2010 Census and the 2010 ACS:

Table 1. Comparison of 2010 ACS 1-Year and 2010 Census Housing Unit Status and Household Size: U.S. Total

	2010 ACS 1-Year Estimate	2010 ACS Margin of Error	2010 Census	Difference (ACS-Census)
Total Housing Units	**131,791,065**	**5,741**	**131,704,730**	**86,335**
Total Occupied Housing Units	114,567,419	163,249	116,716,292	-2,148,873
Total Vacant Housing Units	17,223,646	167,247	14,988,438	2,235,208
Gross vacancy rate	13.1	0.1	11.4	1.7
Total Population in Housing Units	**301,362,366**	**(NA)**	**300,758,215**	**604,151**
Average household size	2.63	0.01	2.58	0.05

(NA) Not applicable
Source: 2010 ACS 1-year tables and 2010 Census Summary File 1 in American FactFinder

Observations include:

1. At the national level the 2010 ACS 1-year GVR (13.1 percent) is estimated to be about 1.7 percentage points higher than that of the 2010 Census (11.4 percent). The margin of error around the ACS national-level estimate is relatively low and the difference is statistically significant.
2. As a result of the difference in the estimate of vacant housing units, there is a corresponding difference of about 2.1 million fewer occupied housing units[5] or households in the 2010 ACS.
3. The combined effect of fewer total households in the 2010 ACS 1-year estimates and an estimated total population that was similar to that for the 2010 Census[6] means that the 2010 ACS 1-year estimate of household size (also expressed as persons per household) is higher than that in the 2010 Census. Although analysis of the impact of these differences on average household size will not be the focus of this analysis, it is an important demographic measure that affects a wide range of activities such as small-area population estimation, determination of housing needs, and assessment of the impact of income programs.

2004 ACS, the two categories "Sold, Not Occupied" and "Rented, Not Occupied" were grouped under one category, "Rented or Sold, Not Occupied."

[5] It is important to note that the total housing unit counts for the 2010 ACS was controlled to independent estimates based on the 2010 that were estimated forward from our Population Estimates Program to July 1, 2010. However, there is no control for occupied housing units.

[6] This follows from the fact that the total population was controlled to independent estimates based on the 2010 Census and were estimated forward from our Population Estimates Program to July 1, 2010.

Delving a Little Deeper – Comparison of Vacancy Status at the National Level

Both the decennial census and the ACS used the same categories to determine the reason why a housing unit was vacant, or "vacancy status." Table 2 shows both some consistency and some striking differences between the 2010 ACS and the 2010 Census.

Table 2. Comparison of 2010 ACS and 2010 Census Information on Vacancy Status: United States

	2010 ACS		2010 Census	Difference (ACS-Census)	2010 ACS		2010 Census	Difference (ACS-Census)
	Estimate (1)	Margin of Error (2)	(3)	(4)	Percent (5)	Margin of Error (6)	Percent (7)	(5-7)
Total Vacant Units	**17,223,646**	**167,247**	**14,988,438**	**2,235,208**	**100.0**	**(NA)**	**100.0**	**(NA)**
For rent	3,587,148	44,663	4,137,567	-550,419	20.8	0.2	27.6	-6.8
Rented (not yet occupied)	610,827	17,510	206,825	404,002	3.5	0.1	1.4	2.2
For sale	1,929,351	34,885	1,896,796	32,555	11.2	0.2	12.7	-1.5
Sold (not yet occupied)	610,798	15,083	421,032	189,766	3.5	0.1	2.8	0.7
For seasonal, recreational, or occasional use	5,153,003	56,603	4,649,298	503,705	29.9	0.2	31.0	-1.1
For migrant workers	31,607	3,768	24,161	7,446	0.2	0.0	0.2	0.0
Other vacant	5,300,912	67,127	3,652,759	1,648,153	30.8	0.3	24.4	6.4

(NA) Not applicable
Source: ACS 1-year tables and 2010 Census Summary File 1 in American FactFinder

The largest difference in absolute numbers, by far, between the decennial census and the 2010 ACS was in the "Other vacant" category, which is a "none of the above" category with no provision on the question to provide further information on why the housing unit was vacant. The 2010 ACS also had a larger number of vacant housing units in the "For seasonal, recreational, or occasional use" category than did the 2010 Census. We believe that focusing on the differences in both the "Other vacant" and "For seasonal, recreational, or other use" categories will help explain some of the reasons for the large overall difference.

The only vacancy status category where the decennial census had a higher number was in the "For rent" category. This is not unexpected because in the ACS most vacant units from a given month's sample are not identified as vacant until about three months later during the personal visit phase of the ACS. Given the amount of time between the original mail out and the personal interview and, together with the ACS 's current residence rule[7], a rental unit that may have originally been vacant at the time of the mail out may be legitimately occupied by the time of the personal visit interview over two months later. Reflecting this relationship, the rental vacancy rate[8] (which is a key measure of housing availability and is shown in Table 3 below) for the 2010 ACS (8.2 percent) is lower than that for the 2010 Census (9.2 percent).

[7] In the ACS, residence is determined as of the date of the interview. A person who is living or staying in a sample housing unit on interview day and whose actual or intended length of stay is more than 2 months is considered a current resident of the unit. The Census Bureau classifies as vacant a housing unit in which no one is determined to be a current resident.

[8] The rental vacancy rate is the proportion of the rental inventory that is vacant "for rent." It is computed by dividing the number of vacant units "for rent" by the sum of the renter-occupied units, vacant units that are "for rent," and vacant units that have been rented but not yet occupied, and then multiplying by 100.

The only vacancy status category where there was no statistical difference in the estimates was for the "For sale" category. Reflecting this relationship, the 2010 ACS 1-year national level homeowner vacancy rate[9] of 2.5 percent is not statistically different from the 2010 Census homeowner vacancy rate of 2.4 percent. This could reflect the fact that both ACS Field Representatives (FRs) and census enumerators had little difficulty identifying vacant for sale units with a "For Sale" sign or some other obvious indicator that the housing unit was for sale.

Table 3. Comparison of 2010 ACS 1-Year and 2010 Census Housing Homeowner and Rental Vacancy Rates : U.S. Total

	2010 ACS 1-Year Estimate	2010 ACS Margin of Error	2010 Census	Difference (ACS- Census)
Homeowner vacancy rate	2.5%	0.1	2.4%	0.1
Rental vacancy rate	8.2%	0.1	9.2%	-1.0

Source: ACS 1-year tables and 2010 Census Summary File 1 in American FactFinder

Now, we will look at comparisons of occupancy status and vacancy status below the national level to see if there are any noticeable patterns.

Analysis of Vacancy Status Below the National Level

Attachment A provides a table showing the GVR in the 2010 census and the 2010 ACS by state. While the phenomenon of higher GVRs for the ACS persists with most states, the following states had 2010 Census GVRs that were not statistically different from the ACS GVRs but appeared to be slightly above, below or equal to the ACS GVRs: Idaho, Iowa, Minnesota, Nebraska, New Hampshire, North Dakota, Utah, Vermont, and Wisconsin. There were no states where the ACS GVRs were lower than the 2010 Census GVRs and statistically significant.

When these differences in the GVR by State are sorted by size of percentage point difference, there is a clear regional character in these differences (See Attachment B). Of the 7 states and the District of Columbia for which the percentage point difference in the GVR is statistically higher than 2 percentage points (District of Columbia, Florida, Delaware, Alabama, New Mexico, Mississippi, and Georgia), 6 of them are from the South region and 1 is from the West region (New Mexico). By contrast, among the 7 states for which the percentage point difference in the GVR was statistically less than a 1 percentage-point (Washington, Nebraska, Wisconsin, Utah, Iowa, Vermont, and Minnesota), the Midwest region had the largest number (4 states), followed by the West region (2 states) and the Northeast region (1 state).

It is important to note at this point of the analysis that a high GVR, in and of itself, is not necessarily an indicator of a troubled housing market. We note in the 2010 Census Brief *Housing Characteristics* :

> Of the 50 states, nine states had gross vacancy rates greater than 15.0 percent in 2010. Of these nine states, three were located in the Northeast (Maine, Vermont, New Hampshire), three in the South (Florida, South

[9] The homeowner vacancy rate is the proportion of the homeowner inventory that is vacant "for sale." It is computed by dividing the number of vacant units "for sale only" by the sum of the owner-occupied units, vacant units that are "for sale only," and vacant units that have been sold but not yet occupied, and then multiplying by 100.

> Carolina, Delaware), and three in the West (Arizona, Alaska, Montana). Though these states had the highest gross vacancy rates, it is of note that all but South Carolina had a higher-than-average proportion of vacant units classified as "Vacant—for seasonal, recreational, and occasional use" in 2010 …" (Census Bureau, 2011, p. 4).

Thus, in analyzing differences in vacancy rates, it is very important (as noted in the national-level analysis) to look at differences in vacancy status.

Shifting the focus to differences in reporting of vacancy status (expressed as a percent of all housing units) by State, the largest difference in the reporting of vacancy status occurs in 23 States and the District of Columbia (11 in the South)[10] for the "Other vacant" category (See Attachments C and D). This is not surprising given the large difference at the national level. Florida was the exception with "For seasonal, recreational, or occasional use" having the largest difference. There was no single category in the other 26 states that was statistically the largest category.

Looking at differences in the GVR by cities, 39 of the largest 50 cities in the United States had ACS GVRs that were larger than the census GVRs. Among those cities, the following cities had GVR differences that were statistically higher than 3 percentage points: Miami, Florida (8.5); Detroit, Michigan (6.4); Atlanta, Georgia (6.0); Washington, DC (4.9); and Jacksonville, Florida (4.5). Twenty-six of the top 50 cities experienced ACS GVRs that were statistically greater than 10 percent with some cities such as Detroit, Atlanta, Miami, and Cleveland experiencing ACS GVRs over 20 percent.

Table 4 shows that for a number of these cities, the percent of vacant units designated as "Other vacant" was much higher than the national average (30.8 percent) for the ACS. These same cities also had census GVRs that were higher than the national average (24.4 percent) for the 2010 Census.

Table 4. Percent of Vacant Units Designated as "Other Vacant" in the 2010 ACS and the 2010 Census for Selected Cities

City	Percent Other Vacant of Total Vacants 2010 ACS	Percent Other Vacant of Total Vacants 2010 Census
United States	30.8	24.4
Chicago, IL	49.0	31.6
Philadelphia, PA	52.3	41.1
Indianapolis (balance), IN	56.5	36.3
Baltimore, MD	63.1	48.7
Milwaukee, WI	75.3	34.7
Oklahoma City, OK	54.3	31.1
Cleveland, OH	63.4	45.5

Source: 2010 ACS 1-year estimates and 2010 Census from Summary File 1 on American FactFinder

These are extraordinarily high percentages (both for the 2010 ACS and for the 2010 census) for what should be a "residual" category and provide evidence of the difficultly that both ACS field representatives and decennial census enumerators faced as they tried to identify and classify vacant units.

[10] Alabama, Arizona, California, Georgia, Illinois, Indiana, Louisiana, Maryland, Massachusetts, Michigan, Mississippi, Montana, New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Rhode Island, Tennessee, Texas, Virginia, and Wisconsin.

In response to concerns about the size and pattern of these differences, we organized an interdivisional working group to investigate in a systematic and comprehensive manner the possible causes for these differences. What follows is a summary of research findings to date.

Findings of the Working Group

We have been conducting our analysis along a number of different but related topic areas:

1. Field Procedures (2010 Census and ACS)
2. Evaluation of 2010 Census Methods
3. ACS Methods, Frame, Sampling, and Estimation
4. Analysis of ACS-Census Match Cases
5. "Demographic Analysis"

Field Procedures (2010 Census and ACS)

Nearly all of the housing units in the 2010 Census and the vast majority of housing units in the ACS that are assigned a status of "vacant" obtain that status during a personal interview. An ACS personal interview is conducted by a field representative (FR) and a census personal visit interview is conducted by an enumerator. While the title given to the personal interviewers is different between the ACS and the census, the job is very similar in nature. Both FRs and enumerators are required to complete training and are given field procedures and other materials to aid them in their work.

One task of the working group was to review the field procedures and training materials to see if there were any differences that could lead us to suspect differences in the way the interviewers classified housing units. In addition, the working group conducted debriefing interviews with selected ACS FRs (some of whom also served as 2010 Census enumerators) from 4 regional offices. After a review of the material and debriefing sessions, the working group concluded that the instructions were generally consistent about how to define a housing unit. Furthermore, the vacancy status categories used in the ACS and the decennial census were identical.

However, there were differences in the way in the way each data collection effort determined occupancy status. As we will discuss below, there are some obvious differences in the residence rules (the 2010 Census uses a "usual residence" rule while the ACS uses a "current residence" rule) and reference date (the 2010 Census uses a reference date of April 1, 2010 while the ACS bases the reference date as of the date of the interview). There are some other differences we have noted. For example, the ACS FR is expected to determine occupancy status basically at the beginning of the interview, while the census enumerator must first ask a series of 4 questions that will help the enumerator determine the occupancy status. However, it does not appear at this point of the analysis that any of these differences have played a major role in explaining differences in the GVR.

During the debriefings, the FRs identified a number of situations that made identification of occupancy status and vacancy status very difficult in both the ACS and the census:

1. Seasonal housing units and trailers. FRs sometimes had difficulty finding a neighbor or person who knew the status of a unit during the summer in an area with temporary residents.
2. Foreclosed homes – some did not have any signs posted and it was hard to determine whether they were either occupied or vacant properties that were abandoned (no sign posted and owners/residents absent). The situation was made worse when neighbors were reluctant to give information or were not knowledgeable.
3. Accessibility problems, especially at gated communities, large properties with security, and townhouses with locked gates and no manager available on site[11].
4. Communities with homeowner's associations and no manager[11]

[11] 2010 Census included special "blitz" operations to improve enumeration in these types of areas.

5. Situations with apartments which are described as vacant by office managers but observed as occupied by residents
6. Townhouses with locked gates and no manager available on site [11]
7. A home that does not look habitable, but is occupied
8. Houses that are not primary residences but look inhabited.
9. Housing units where people walk away leaving no lockbox or a "for sale" sign in areas where neighbors do not know anything or are reluctant to discuss the status of the unit

Clearly, FRs and enumerators had a very difficult task, especially given the housing crisis, the surge of foreclosures, and the limited time frame within which they had to work. It is also clear that there was room for a great deal of personal interpretation when classifying housing units.

Evaluation of 2010 Census Methods

As part of every decennial census, the Census Bureau conducts a wide range of assessments to determine how well the operations were conducted, which serves as a "lessons learned" for the next census. The primary focus of the decennial census is to count every resident in the United States to fulfill its constitutional mandate for reapportionment and its legislative requirement to provide counts of the population down to the block level to enable states to conduct legislative redistricting. While the 2010 Census benefited from the publicity and perceived importance of a decennial census, its design had to accommodate a tremendous workload under tight operational scheduling constraints. Thus, to accurately and fairly produce census counts, a single reference date must be used. The 2010 census results therefore must describe the population and housing as it was on April 1, 2010.

The Census Bureau, in meeting its Constitutional mandate, is committed to achieving a complete enumeration, and does not rely on the use of statistical sampling to adjust the counts to correct for possible errors. Given this and the large number of temporary staff that must be hired to conduct the enumeration, the Census Bureau relies on special coverage improvement procedures. These procedures have been shown to improve the completeness of the housing unit inventory and the count of the population. For example, if the U.S. Postal Service identifies a particular mail-delivered form as "undeliverable as addressed[12]," the Census Bureau will include this address in its nonresponse followup (NRFU) operation to make sure that the address is either: 1) truly nonexistent or not a housing unit and should be deleted, 2) vacant, or 3) actually occupied. In addition, if during nonresponse follow up (NRFU) operations, an enumerator identified a housing unit as vacant or to be deleted and there was no designation of "Undeliverable as Addressed" (UAA) or no other source existed to confirm the housing status, the housing unit was revisited in a subsequent operation, called the "Vacant Delete Check" (VDC) operation, to make sure that the unit was truly vacant or should be deleted. [13] VDC also included a first-time enumeration of a number of records from other sources.[14] NRFU operations were conducted from May through July and VDC operations were conducted

[12] In the ACS, mail questionnaires returned as "Undeliverable as Addressed" were included in computer assisted telephone interview (CATI) and computer assisted personal interview (CAPI) operations.

[13] In pretests conducted prior to the 1970 Census, the Census Bureau found that occupied housing units that were incorrectly classified as vacant were a significant factor in the population undercount (U.S. Census Bureau, 1974). The National Vacancy Check that was conducted for a sample of addresses during the 1970 Census detected a misclassification rate of 11.4 percent among units initially classified as non-seasonal vacant (U.S. Census Bureau, 1974). Starting in the 1980 Census, a comprehensive review of all units classified as vacant (the predecessor of the VDC) was added as a coverage improvement mechanism. In 1980 this check converted about 10.1 percent of initially classified vacant units to occupied, but it also found that after all coverage improvement efforts, about 0.9 percent of all occupied units were over-enumerated (U.S. Census Bureau, 1985). Similar methods were used in the 1990 and 2000 censuses with similar findings – coverage of the population could be achieved with some added level of duplication or over-enumeration.

[14] This operation also enumerated added housing units discovered in an earlier census operation such as those added or reinstated through the 2010 Local Update of Census Addresses (LUCA) appeals process; records added from the Housing Unit Address Review conducted as part of the Count Review operation; records added as a result of research into potentially missed addresses in Address Canvassing (as reported on internal documents known as INFO-COMMS); previously un-geocoded addresses in the Master Address File; new addresses from periodic postal

July through August. The fact that the VDC operation is conducted three months or more after Census Day increases the chance that information obtained from respondents (inhabitants of the housing unit or "knowledgeable sources") or poor execution of enumeration procedures could result in erroneous classification as occupied or vacant.

One important finding from a review of the VDC operation was that the count of vacant units that were included in this operation declined from 4,379,192 before the VDC operation to 3,840,147 afterwards. Table 5 below shows the summary of this operation's outcomes.

Table 5. Status Outcome of NRFU Cases Included in the Vacant Delete Check Operation : 2010 Census

Status	NRFU Status Before VDC		Status After VDC		Difference (VDC-NRFU)
	Number	Percent	Number	Percent	
Total	5,625,001	100	5,625,001	100	**(NA)**
Occupied	40,789	0.7	1,081,913	19.2	1,041,124
Vacant	4,379,192	77.9	3,840,147	68.3	-539,045
Deleted	1,155,708	20.5	702,466	12.5	-453,242
Unresolved	49,312	0.9	475	0	-48,837

(NA) Not applicable

Source: Heimel, S., Jackson, G., Winder, S. and Walker, S. (2011). 2010 Census Nonresponse Follow Up Operations Assessment

The decrease in the vacant count was the net effect of the shift of 842,140 housing units from "vacant" in NRFU to "occupied" in VDC; a shift of 278,175 housing units from "deleted" in NRFU to "vacant" in VDC; and a shift of 24,920 housing units from "unresolved" in NRFU to "vacant" in VDC. This can be seen quite clearly in Table 6 below.

Table 6. Source of Changes to Counts of Vacant Units in 2010 Census VDC Operation

Vacant units at the start of VDC	4,379,192
Vacant units identified as occupied in VDC	-842,140
Deleted units identified as vacant in VDC	278,175
Unresolved units identified as vacant in VDC	24,920
Vacant units after VDC	3,840,147

Source: Heimel, S., Jackson, G., Winder, S. and Walker, S. (2011). 2010 Census Nonresponse Follow Up Operations Assessment

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updates; records added by the Update/Leave operation; and addresses provided in the New Construction operation by Tribal and local governments.

It is not clear at this point to what extent any of those 842,140 housing units re-classified as occupied might have been misclassified in that category.

Although the processing phase of the census covered a wide range of activities, the Working Group focused on the results of analysis of the impact that the count imputation process might have had on the count of vacant units in 2010. There were 3 types of "count imputation" that were conducted in the 2010 census: 1) status imputation[15], 2) occupancy imputation[16], and 3) household size imputation[17]. For the purposes of the Working Group's investigation, status imputation and occupancy imputation (whether occupied or vacant) were the key operations of interest. Only 197,146 records were accounted for by status imputation and occupancy imputation (158,971 status imputation cases and 38,175 occupancy imputation cases) out of a total 521,947 count imputation cases (Census Bureau, 2011). Before count imputation, the GVR among all address records determined as occupied or vacant was 11.35 percent. After count imputation, the gross vacancy rate increased, but only by 0.03 percentage points to 11.38 percent. Even if all the status and occupancy cases had been imputed as occupied, the GVR would only have decreased only from 11.35 percent to 11.33 percent. On the other hand, if all these cases had been imputed as vacant, the GVR would have increased only from 11.35 percent to 11.48 percent (Heimel, 2011). Thus, the impact of the census count imputation on differences in GVRs between the 2010 Census and the 2010 ACS is negligible.

ACS Methods Frame, Sampling, and Estimation

Before we begin the discussion of the ACS frame, sampling and estimation, it is important to understand where the ACS differs from the census in purpose, scope, and procedures.

The ACS is designed to efficiently collect detailed data to measure the characteristics of the Nation's population and housing in a survey setting. The primary goal of the ACS is to provide survey estimates every year instead of once a decade – giving communities the current information they need between censuses to plan investments and services. The ACS estimates the characteristics of the Nation over the course of a year, requiring that responses by collected continuously with a floating reference date based on the date of the interview. Thus, 2010 ACS 1-year estimates show the average characteristics (in this case, occupancy status and vacancy status) during 2010, not the specific rate as of any specific day in 2010. The decennial census, by contrast, provides counts of the population and housing, including occupancy status and vacancy status, as of April 1, 2010.

Another key difference with the decennial census is the fact that the ACS uses a concept of "current residence" as of as of the time of the interview given the monthly samples distributed throughout the year, rather than the census concept of "usual residence" as of April 1. Furthermore, as noted above, the ACS employs a "two-month" residency rule that, for example, would allow someone who is temporarily residing at a housing unit for more than two months to be interviewed as being an occupant of the housing unit.

Although coverage of the entire population is critical in the decennial census, the special efforts undertaken in the decennial census to ensure complete coverage are impractical and cost-prohibitive in a sample survey like the ACS. The need for such coverage checks may also be less important in a survey setting such as the ACS with more full-time staff. Finally, while statistical adjustments cannot be made to census counts, such adjustments are standard procedure in surveys to account for possible coverage shortcomings.

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[15] Required by records with conflicting or insufficient information on whether an address represented a valid, non-duplicated unit. Count imputation imputed these records to have a status of occupied, vacant, or non-existent. If imputed to be occupied, a household size from one to nine is also imputed.

[16] Required by records for which the unit is only known to exist as a housing unit. Count imputation imputed these records to have a status of occupied or vacant. If imputed to be occupied, a household size from one to nine is also imputed.

[17] Required by records for which the unit is known to be occupied but is missing a population count. Count imputation imputed these records to have a household size from one to nine.

As part of the analysis of the GVR differences, the following data from various operational phases of the ACS were reviewed. For the purposes of this paper, we will focus on the following three:

1. Analysis of GVRs by panel month[18] (to assess the impact of year-round data collection and to determine if GVRs varied, both during and after the period of the 2010 Census)
2. Changes in the Master Address File[19] (MAF) during the time period when the main and supplemental[20] ACS samples were selected
3. ACS GVRs at various stages of ACS weighting and estimation (to assess the possible effects of those weights on the estimate)

Analysis of Vacancy Rates by Panel Month - Since the ACS is conducted continuously throughout the year, it seemed plausible that the ACS would differ from the census if vacancy rates during non-census months (months other than March through July) were different from those experienced during census months. However, analysis of ACS GVRs by panel month over several years, including 2010, revealed no distinct seasonal pattern in the ACS that would help explain differences with 2010 Census GVRs.

Changes in the MAF during the time the main and supplemental samples were drawn - As noted above, the main sample for the 2010 ACS was drawn from the MAF in August and September of 2009 and the supplemental sample was drawn in January and February of 2010. Thus, because the 2010 Address Canvassing[21] was still being conducted while 2010 ACS main sample selection was being implemented, the main sample selection, at least through the period of January through April 2010, was taken from an older sampling frame and could not take advantage of the massive updating of the MAF that the Address Canvassing operation and subsequent Census 2010 operations represent. Although the supplemental sample was drawn from a MAF-based sampling frame updated by Address Canvassing, this sampling frame also was subject to the same process of deleted units and added units through 2010 Census operations that affected the frame from which the main sample was selected. We believe that this difference in frames between the 2010 ACS and the 2010 Census played a role in explaining some of the difference in the GVRs, but this hypothesis requires more investigation.

ACS GVRs at various stages of ACS weighting and estimation – The weighting and estimation method used for the ACS is explained quite thoroughly in the following url: http://www.census.gov/acs/www/Downloads/survey_methodology/Chapter_11_RevisedDec2010.pdf . We evaluated the GVR at each stage of the estimation process and we found that after application of the weights to reflect sampling probabilities[22], the estimation process had little or no effect on the level of the GVR[23].

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[18] There is a new panel (sample) for each month of the year consisting of approximately 250,000 addresses per month.

[19] The Master Address File (MAF) is a Census Bureau file that contains an accurate, up to date inventory of all known living quarters in the United States, Puerto Rico and associated island areas. The MAF is used to support most of the census and surveys that the Census Bureau conducts including the decennial census, the American Community Survey and ongoing demographic surveys. The content of the MAF includes address information, Census geographic location codes, as well as source and history data.

[20] The sample selected for the ACS in any given year is done in two phases. The "main" sample is selected from the Master Address File (MAF) in the August and September preceding the data collection year (e.g., 2009 for the 2010 ACS, 2008 for the 2009 ACS, etc). A "supplemental" sample consisting of additions (mainly new construction) to the MAF is selected in January and February of the data collection year (e.g., 2010 for 2010 ACS, 2009 for 2009 ACS, etc.) and in 2010 was included starting in May (U.S. Census Bureau, 2009).

[21] The Census Bureau needs the address and physical location of each living quarter in the United States to conduct the census. During the address canvassing operation, the Census Bureau verifies that its master address list and maps are accurate so that it can mail or hand-deliver questionnaires to housing units and potential group quarters. A complete and accurate address list is the cornerstone of a successful census.

[22] Cases where neither a completed mail questionnaire has been received nor a computer assisted telephone interview (CATI) interview completed are eligible for computer assisted personal interview (CAPI) in the third month, as are the unmailable addresses. An address is considered unmailable if the address is incomplete or directs mail to only a post office box. The subsampling rate for CAPI cases vary from 1-in-3 to 2-in-3.

Analysis of ACS-Census Match Cases

We succeeded in matching the 2010 ACS sample to a record in the 2010 Census. Furthermore, we were able to distinguish matched cases by whether they were in the main sample or the supplemental sample, the month the cases were in sample, and many other characteristics. Although analysis of the results from these cases is ongoing, the following observations can be made:

1. For both the main sample and the supplemental sample, the proportion of cases where the 2010 ACS designated the unit as vacant and the 2010 census designated the same unit as occupied was larger than the proportion of cases where the 2010 ACS designated a unit as occupied and the 2010 Census the same unit as vacant.
2. Units assigned for collection between January and April were much more likely to be designated as "deleted" in the census than units assigned to the rest of the year. This is because the supplemental sample not only provided additional units from a frame improved by Census operations, but also cleaned up sample units in the main sample that were assigned to the remainder of the year (after April).

Clearly, more work is needed to determine how the results of this match study will help explain differences in the levels of occupied and vacant units.

Demographic Analysis

This line of analysis was comprised primarily by observing cross-tabulations of variables thought to be related to the differences in the GVRs with the expectation that certain patterns in the data would reveal potential factors that might explain these differences. Multivariate analysis will also play a role in this research; however, there are no results to report at this point.

Probably, one of the more important findings to date, already been reported above, is that most of the largest differences in the GVR in 2010 are concentrated in the South region. Figures 2-5 below provides the same view from an historical perspective.

[23] We should note that in 2006, we implemented a new estimation methodology that accomplished two important goals: 1) ensured equality of husbands and wives through the process of family equalization and 2) produced logically consistent estimates of occupied housing units, households, and householders. The new estimation methodology also had the side effect of increasing the estimate of vacant units, raising the GVR slightly from 10.8 percent to 11.0 percent.

Figure 3. Gross Vacancy Rates: Northeast

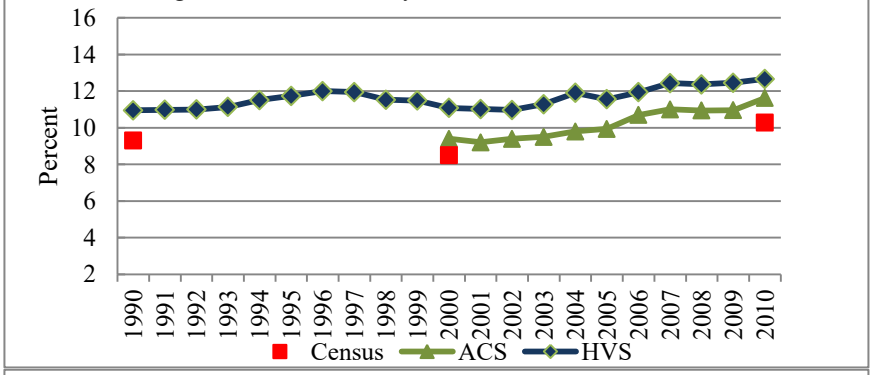


Figure 2. Gross Vacancy Rates: Midwest

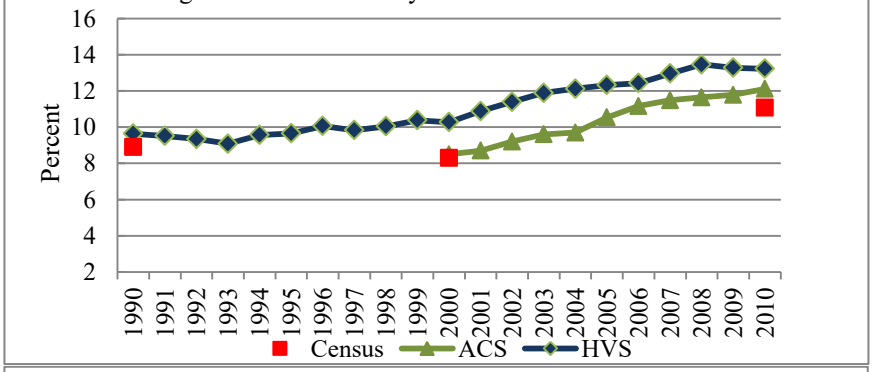


Figure 4. Gross Vacancy Rates: South

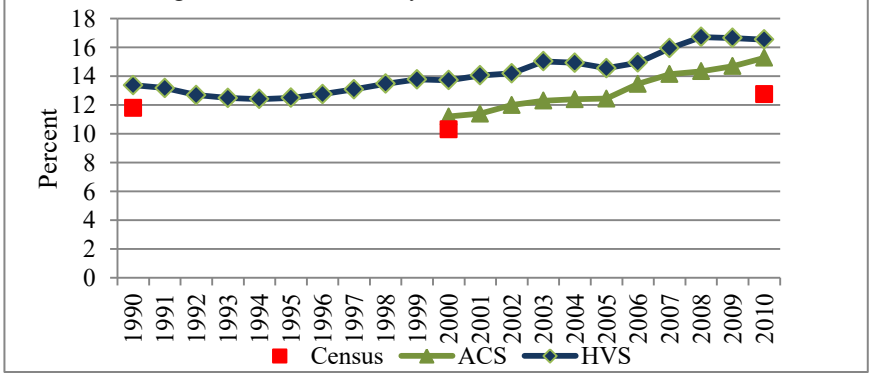
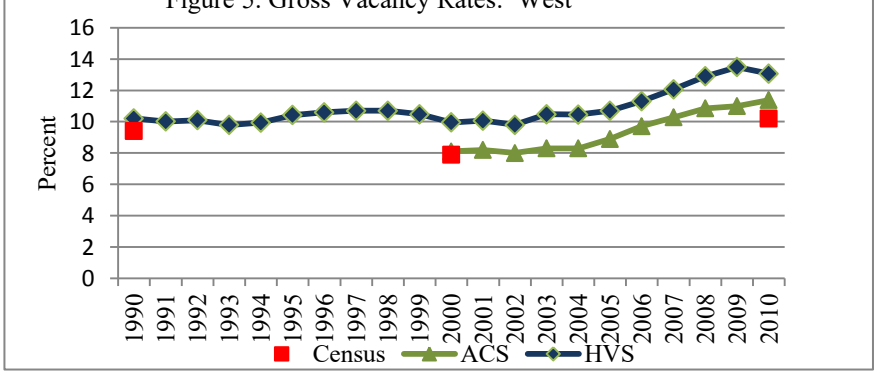


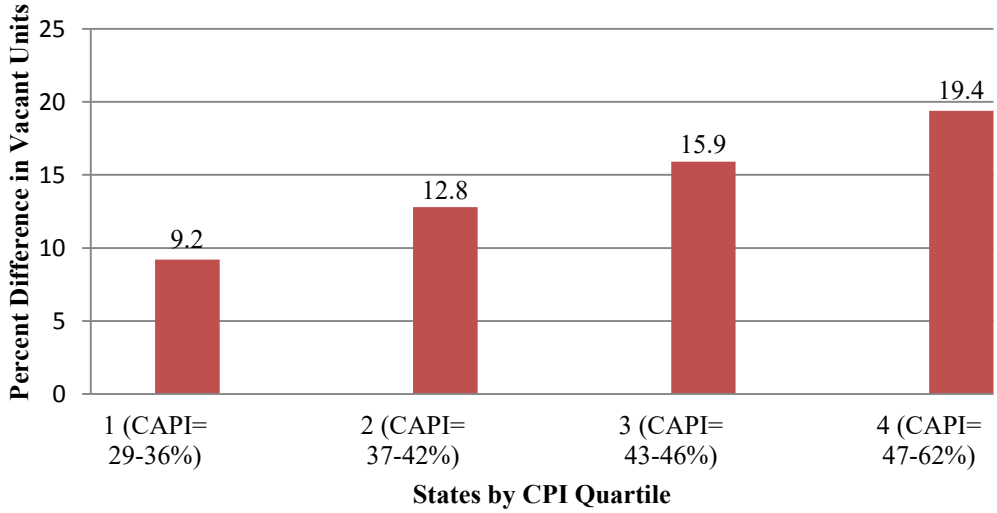
Figure 5. Gross Vacancy Rates: West



Source for Figures 2-5: ACS 1-Year, HVS, and 2010 Census data from American FactFinder

Furthermore, there appears to be a positive relationship between the percent of Computer Assisted Personal Interviews (CAPI) interviews in the ACS and the level of differences in vacant housing units by state[24]. Figure 6 below shows the greater differences in vacant housing units among states seem to be associated with higher CAPI rates. For example, for states in the highest quartile of CAPI rates, the average difference is 19.4 percent. By contrast, for states in the lowest quartile of CAPI rates, the average difference is 9.2 percent.

Figure 6. Percent Difference in Vacant Units* Between the 2010 ACS and the 2010 Census by State Sorted by Quartile of ACS CAPI Rates



* Percent expressed as a percent of 2010 Census vacant units.

Source for Figure 7: 2010 ACS 1-Year, 2010 Census data from American FactFinder and unpublished ACS tabulations from the American Community Survey

However, CAPI rates not only provide an indication of the level of vacant units; they also provide an indicator of cooperation with the ACS, much like what mail response rates or "participation rates" represent for the decennial census. Evidence obtained thus far seems to indicate that the same areas that have relatively high CAPI rates (and correspondingly high differences in GVRs and in the percent of "Other Vacants" such as in Table 4 above) are also the same types of areas where census mail response rates are low, requiring extensive nonresponse followup. Many of these areas are also areas that were identified as having high "hard-to-count" (HTC) scores[25] for the 2010 census. Recalling the section above concerning the debriefing of ACS FRs (many of whom also participated as census enumerators), these areas pose significant problems not only getting an accurate count of the population but also determining occupancy status and the vacancy status. For example, Figures 7 and 8 show the GVRs for New York City, and the rest of the State of New York. It is clear among these graphs that when one excludes New York City from the comparison of GVRs between the 2010 ACS and the 2010 census, the GVRs are almost identical in 2000 and are much closer to each other than for New York City in 2010.

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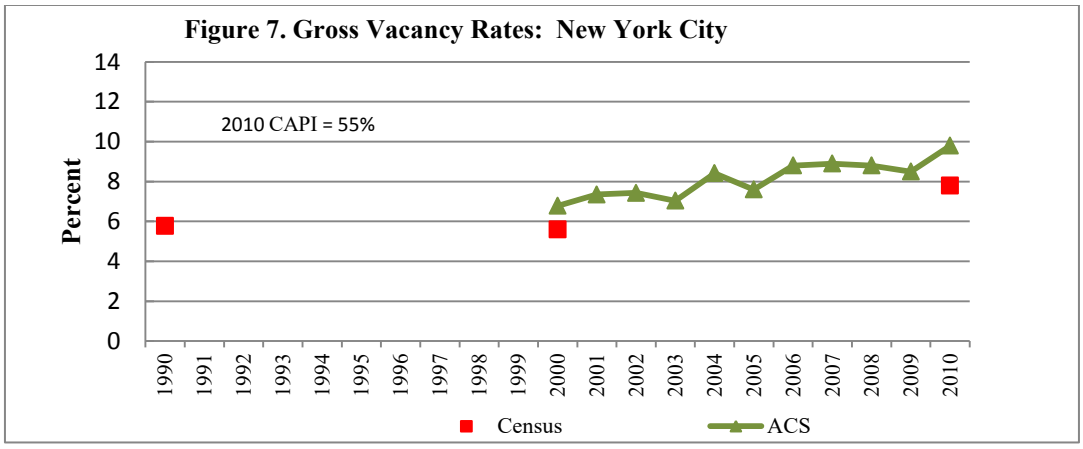
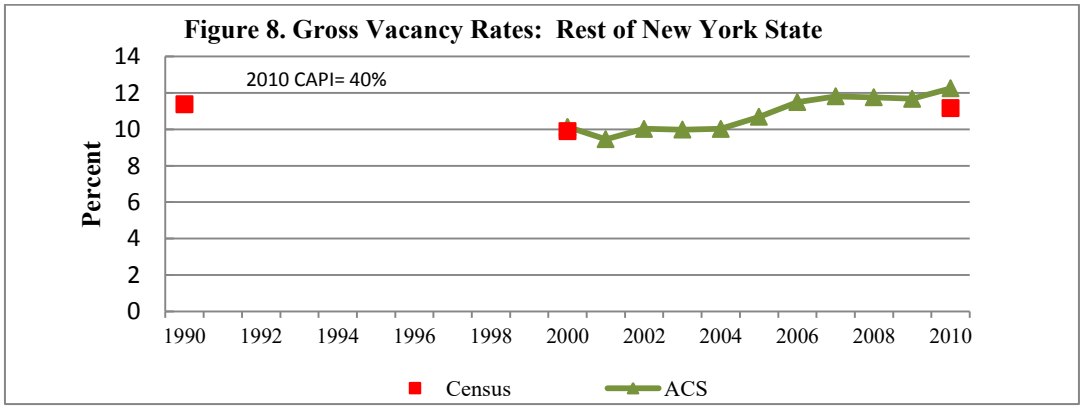
[24] It is important to note that virtually all vacant units in the ACS are identified in the CAPI operation so that one would expect higher CAPI rates in part to be associated with areas having higher vacancy rates

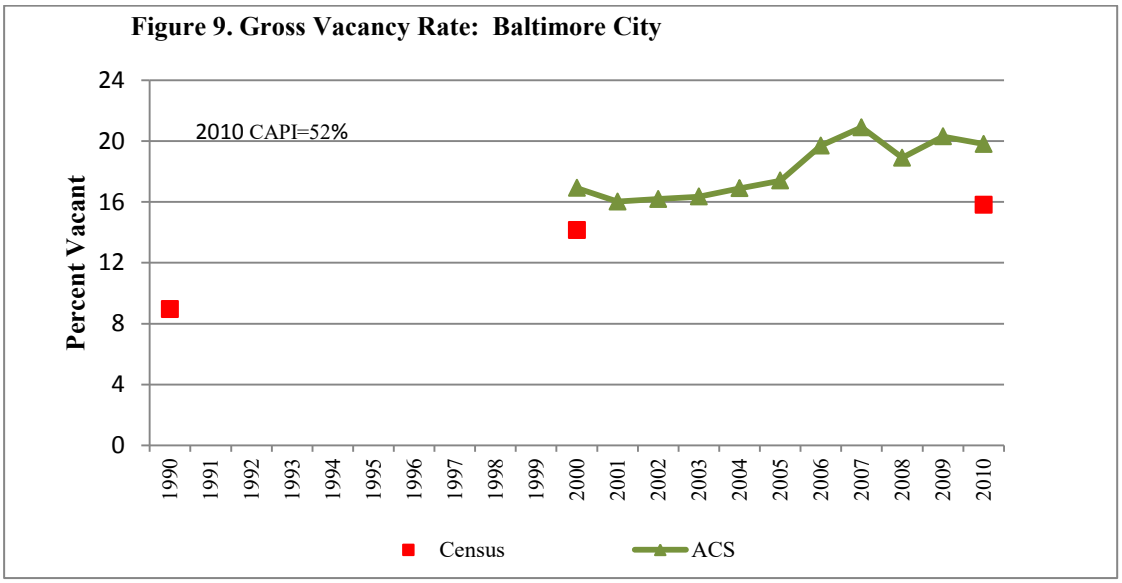
[25] "Hard-to-count" (HTC) scores summarize 12 attributes or variables of each tract in terms of reasons people are missed in the census. These 12 variables include housing indicators (percent renters, multi-units, crowded housing, lack of telephones, vacancy) and people indicators (poverty, not high school graduate, unemployed, complex households, mobility, language isolation). Other operational and demographic data are also included, such as race/ethnic distributions. The highest HTC scores (for example, more than 60) usually predict areas of high nonreturn rates and undercount rates while areas with the lowest scores are likely to be areas with low nonreturn rates. HTC scores can range from 0 to 132.

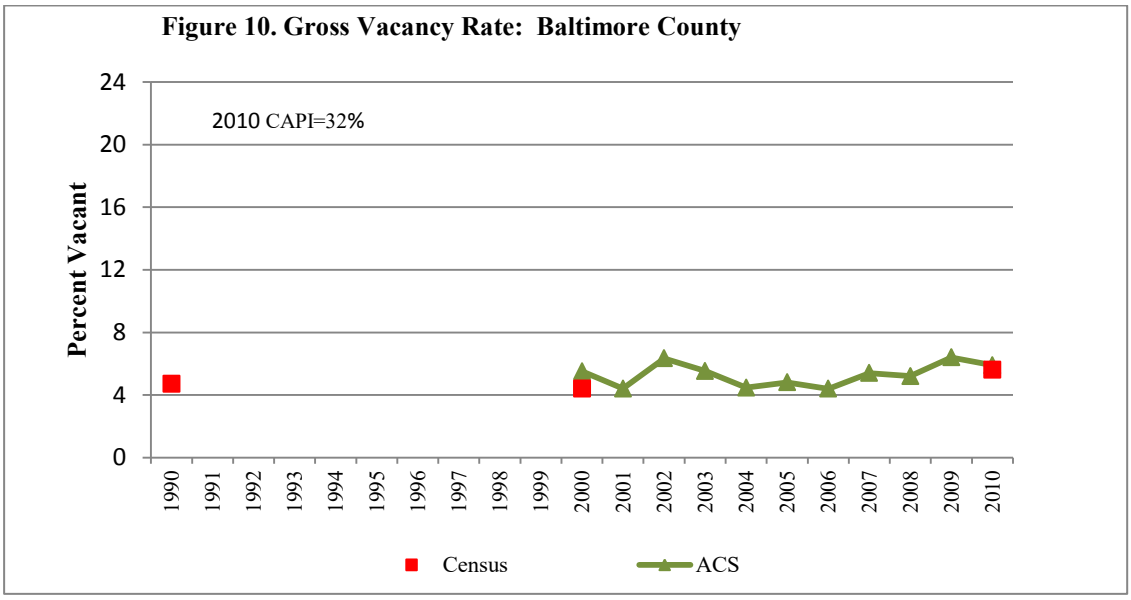




Source for Figures 7 and 8: 2010 ACS 1-Year and 2010 Census from American FactFinder and unpublished tabulations from the ACS

Figures 9 and 10 below show the contrast in the pattern of ACS GVRs relative to census GVRs for Baltimore City and Baltimore County (Baltimore County surrounds but does not include Baltimore City). It is very clear that Baltimore City, which had a much higher "hard-to-count" score than Baltimore County, had significant differences in the GVR between the ACS and the census in 2000 and 2010. On the other hand, the GVRs for Baltimore County were very close in both 2000 and 2010.





Source for Figures 9 and 10: 2010 ACS 1-Year and 2010 Census from American FactFinder and unpublished tabulations from the ACS

Conclusions

From the research conducted thus far, we draw the following tentative conclusions:

1. Although the census and the ACS have different reference periods and different residence rules, we do not believe differences in the reference period and residence rules were major contributors to the overall difference in the gross vacancy rates. However, problems can arise when implementing reference periods

combined with residence rules. In the 2010 census, vacant housing units were enumerated in either Nonresponse Followup (NRFU) or in Vacant Delete Check (VDC) which was at least two months after Census Day. This enumeration of the Census Day reference date can make the determination of occupancy status problematic. FRs in the ACS and census enumerators can also misunderstand or misapply a usual residence or current residence rule.

2. Response categories for occupancy status and vacancy status are similar between the ACS and the 2010 Census, but the way the questions are asked are different. It is not clear, though, if this played a role in explaining some of the differences in classification of housing units.
3. The 2010 ACS sample was not drawn from the 2010 Census, which may help to explain at least a portion of the difference between the ACS and census GVRs.
4. Large differences in the reporting of "Other" vacancy status and a possible connection between difficulty in obtaining a response (as measured by percent CAPI in the ACS and "hard-to-count" scores in the census) and differences in the GVR may provide some clues to understanding these differences.
5. The census implemented coverage improvement procedures, such as special methods to review and confirm the status of housing, which are unique to the census and are not implemented in the ACS. The VDC operation in 2010 resulted in a net decrease of about 537 thousand vacant units.
6. It was clear from debriefings with interviewers that they faced a very difficult task, Despite common procedures, differences in interpretation of what is an occupied unit can occur, especially in hard to count areas and, in general, in areas experiencing large numbers of foreclosures. Determining the occupancy status of a unit is especially hard in some areas when no household members can be contacted and neighbors are unwilling to provide information.

We plan to produce a series of reports in 2012 that will provide a more in depth analysis of potential factors that could explain the reasons for these differences, not only between the ACS and the census, but also among the ACS, the census and the Housing Vacancy Survey. From these reports, we hope to draw conclusions that will enable us, where possible, to take specific actions that could help provide more consistent results between the ACS and the census and, in general, among all our current surveys.

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Attachment A. Gross Vacancy Rates for the United States by State: 2010 Census and 2010 American Community Survey

	2010 Census		2010 ACS				2010 Census	2010 ACS		
	Total Housing Units	Vacant Housing Units	Total Housing Units	Vacant Housing Units	MOE	ACS-Census	Gross Vacancy Rate	Gross Vacancy Rate	MOE	ACS-Census
United States	131,704,730	14,988,438	131,791,065	17,223,646	167,247	2,235,208	11.4	13.1	0.1	1.7
Alabama	2,171,853	288,062	2,174,428	359,276	10,906	71,214	13.3	16.5	0.5	3.3
Alaska	306,967	48,909	307,065	52,455	2,826	3,546	15.9	17.1	0.9	1.1
Arizona	2,844,526	463,536	2,846,738	512,688	12,983	49,152	16.3	18.0	0.5	1.7
Arkansas	1,316,299	169,215	1,317,818	202,916	8,121	33,701	12.9	15.4	0.6	2.5
California	13,680,081	1,102,583	13,682,976	1,276,501	16,972	173,918	8.1	9.3	0.1	1.3
Colorado	2,212,898	240,030	2,214,262	253,677	9,277	13,647	10.8	11.5	0.4	0.6
Connecticut	1,487,891	116,804	1,488,215	129,406	7,141	12,602	7.9	8.7	0.5	0.8
Delaware	405,885	63,588	406,489	77,724	4,193	14,136	15.7	19.1	1.0	3.5
District of Columbia	296,719	30,012	296,836	44,448	3,730	14,436	10.1	15.0	1.3	4.9
Florida	8,989,580	1,568,778	8,994,091	1,959,023	25,736	390,245	17.5	21.8	0.3	4.3
Georgia	4,088,801	503,217	4,091,482	609,062	15,594	105,845	12.3	14.9	0.4	2.6
Hawaii	519,508	64,170	519,992	74,180	4,221	10,010	12.4	14.3	0.8	1.9
Idaho	667,796	88,388	668,634	91,925	5,747	3,537	13.2	13.7	0.9	0.5
Illinois	5,296,715	459,743	5,297,077	544,220	13,706	84,477	8.7	10.3	0.3	1.6
Indiana	2,795,541	293,387	2,797,172	326,267	11,365	32,880	10.5	11.7	0.4	1.2
Iowa	1,336,417	114,841	1,337,563	114,124	6,761	-717	8.6	8.5	0.5	-0.1
Kansas	1,233,215	121,119	1,234,037	132,379	7,007	11,260	9.8	10.7	0.6	0.9
Kentucky	1,927,164	207,199	1,928,617	244,269	9,881	37,070	10.8	12.7	0.5	1.9
Louisiana	1,964,981	236,621	1,967,947	278,125	9,586	41,504	12.0	14.1	0.5	2.1
Maine	721,830	164,611	722,217	176,800	5,588	12,189	22.8	24.5	0.8	1.7
Maryland	2,378,814	222,403	2,380,605	253,166	8,692	30,763	9.3	10.6	0.4	1.3
Massachusetts	2,808,254	261,179	2,808,727	288,308	10,381	27,129	9.3	10.3	0.4	1.0
Michigan	4,532,233	659,725	4,531,231	724,610	12,485	64,885	14.6	16.0	0.3	1.4
Minnesota	2,347,201	259,974	2,348,242	256,694	8,244	-3,280	11.1	10.9	0.4	-0.1
Mississippi	1,274,719	158,951	1,276,441	196,442	8,351	37,491	12.5	15.4	0.7	2.9
Missouri	2,712,729	337,118	2,714,017	363,389	10,284	26,271	12.4	13.4	0.4	1.0
Montana	482,825	73,218	483,006	80,259	4,183	7,041	15.2	16.6	0.9	1.5
Nebraska	796,793	75,663	797,677	78,373	4,772	2,710	9.5	9.8	0.6	0.3
Nevada	1,173,814	167,564	1,175,070	185,259	6,974	17,695	14.3	15.8	0.6	1.5
New Hampshire	614,754	95,781	614,996	99,565	4,537	3,784	15.6	16.2	0.7	0.6
New Jersey	3,553,562	339,202	3,554,909	382,488	11,773	43,286	9.5	10.8	0.3	1.2
New Mexico	901,388	109,993	902,242	137,059	5,660	27,066	12.2	15.2	0.6	3.0
New York	8,108,103	790,348	8,108,211	911,784	16,313	121,436	9.7	11.2	0.2	1.5
North Carolina	4,327,528	582,373	4,333,479	662,620	14,806	80,247	13.5	15.3	0.3	1.8
North Dakota	317,498	36,306	318,099	37,687	3,292	1,381	11.4	11.8	1.0	0.4
Ohio	5,127,508	524,073	5,128,113	603,047	16,088	78,974	10.2	11.8	0.3	1.5
Oklahoma	1,664,378	203,928	1,666,205	233,246	7,555	29,318	12.3	14.0	0.5	1.7
Oregon	1,675,562	156,624	1,676,476	169,339	8,193	12,715	9.3	10.1	0.5	0.8
Pennsylvania	5,567,315	548,411	5,568,820	632,790	14,216	84,379	9.9	11.4	0.3	1.5
Rhode Island	463,388	49,788	463,416	61,121	4,276	11,333	10.7	13.2	0.9	2.4
South Carolina	2,137,683	336,502	2,140,337	378,944	10,727	42,442	15.7	17.7	0.5	2.0
South Dakota	363,438	41,156	364,031	45,076	3,527	3,920	11.3	12.4	1.0	1.1
Tennessee	2,812,133	318,581	2,815,087	374,424	13,014	55,843	11.3	13.3	0.5	2.0
Texas	9,977,436	1,054,503	9,996,209	1,257,545	20,394	203,042	10.6	12.6	0.2	2.0
Utah	979,709	102,017	981,821	101,796	5,016	-221	10.4	10.4	0.5	0.0
Vermont	322,539	66,097	322,698	65,776	2,734	-321	20.5	20.4	0.8	-0.1
Virginia	3,364,939	308,881	3,368,674	375,942	14,732	67,061	9.2	11.2	0.4	2.0
Washington	2,885,677	265,601	2,888,594	281,731	9,799	16,130	9.2	9.8	0.3	0.5
West Virginia	881,917	118,086	882,213	140,273	5,743	22,187	13.4	15.9	0.7	2.5
Wisconsin	2,624,358	344,590	2,625,477	345,945	9,456	1,355	13.1	13.2	0.4	0.0
Wyoming	261,868	34,989	262,286	39,483	3,602	4,494	13.4	15.1	1.4	1.7

Source: 2010 1-Year ACS and 2010 Census Summary File 1 from American FactFinder.

Attachment B. Gross Vacancy Rates Sorted by Size of Difference in Gross Vacancy Rate by State: 2010 Census and 2010 American Community Survey

	Region	2010 Census Gross Vacancy Rate	2010 ACS Gross Vacancy Rate	2010 ACS MOE	ACS-Census
United States		11.4	13.1	0.1	1.7
District of Columbia	South	10.1	15.0	1.3	4.9
Florida	South	17.5	21.8	0.3	4.3
Delaware	South	15.7	19.1	1.0	3.5
Alabama	South	13.3	16.5	0.5	3.3
New Mexico	West	12.2	15.2	0.6	3.0
Mississippi	South	12.5	15.4	0.7	2.9
Georgia	South	12.3	14.9	0.4	2.6
Arkansas	South	12.9	15.4	0.6	2.5
West Virginia	South	13.4	15.9	0.7	2.5
Rhode Island	Northeast	10.7	13.2	0.9	2.4
Louisiana	South	12.0	14.1	0.5	2.1
Texas	South	10.6	12.6	0.2	2.0
Virginia	South	9.2	11.2	0.4	2.0
Tennessee	South	11.3	13.3	0.5	2.0
South Carolina	South	15.7	17.7	0.5	2.0
Kentucky	South	10.8	12.7	0.5	1.9
Hawaii	West	12.4	14.3	0.8	1.9
North Carolina	South	13.5	15.3	0.3	1.8
Oklahoma	South	12.3	14.0	0.5	1.7
Arizona	West	16.3	18.0	0.5	1.7
Wyoming	West	13.4	15.1	1.4	1.7
Maine	Northeast	22.8	24.5	0.8	1.7
Illinois	Midwest	8.7	10.3	0.3	1.6
Ohio	Midwest	10.2	11.8	0.3	1.5
Pennsylvania	Northeast	9.9	11.4	0.3	1.5
New York	Northeast	9.7	11.2	0.2	1.5
Nevada	West	14.3	15.8	0.6	1.5
Montana	West	15.2	16.6	0.9	1.5
Michigan	Midwest	14.6	16.0	0.3	1.4
Maryland	South	9.3	10.6	0.4	1.3
California	West	8.1	9.3	0.1	1.3
New Jersey	Northeast	9.5	10.8	0.3	1.2
Indiana	Midwest	10.5	11.7	0.4	1.2
Alaska	West	15.9	17.1	0.9	1.1
South Dakota	Midwest	11.3	12.4	1.0	1.1
Massachusetts	Northeast	9.3	10.3	0.4	1.0
Missouri	Midwest	12.4	13.4	0.4	1.0
Kansas	Midwest	9.8	10.7	0.6	0.9
Connecticut	Northeast	7.9	8.7	0.5	0.8
Oregon	West	9.3	10.1	0.5	0.8
Colorado	West	10.8	11.5	0.4	0.6
New Hampshire	Northeast	15.6	16.2	0.7	0.6
Washington	West	9.2	9.8	0.3	0.5
Idaho	West	13.2	13.7	0.9	0.5
North Dakota	Midwest	11.4	11.8	1.0	0.4
Nebraska	Midwest	9.5	9.8	0.6	0.3
Wisconsin	Midwest	13.1	13.2	0.4	0.0
Utah	West	10.4	10.4	0.5	0.0
Iowa	Midwest	8.6	8.5	0.5	-0.1
Vermont	Northeast	20.5	20.4	0.8	-0.1
Minnesota	Midwest	11.1	10.9	0.4	-0.1

Source: 2010 1-Year ACS and 2010 Census Summary File 1 from American FactFinder.

Attachment C. Vacancy Status by State: 2010 Census and 2010 American Community Survey

	2010 Census Total Vacant	2010 ACS Total Vacant	For rent				Rented, not yet occupied				For sale only			
			2010 Census	2010 ACS Estimate	2010 ACS MOE	ACS-Census	2010 Census	2010 ACS Estimate	2010 ACS MOE	ACS-Census	2010 Census	2010 ACS Estimate	2010 ACS MOE	ACS-Census
United States	14,988,438	17,223,646	4,137,567	3,587,148	44,663	-550,419	206,825	610,827	17,510	404,002	1,896,796	1,929,351	34,885	32,555
Alabama	288,062	359,276	79,265	59,569	4,881	-19,696	3,761	16,251	2,613	12,490	35,903	34,853	3,894	-1,050
Alaska	48,909	52,455	6,729	3,628	1,001	-3,101	667	1,858	903	1,191	2,876	2,615	871	-261
Arizona	463,536	512,688	120,490	102,806	7,084	-17,684	5,449	14,711	2,756	9,262	64,407	70,058	6,061	5,651
Arkansas	169,215	202,916	46,443	42,929	4,613	-3,514	2,139	4,090	1,457	1,951	18,500	21,342	2,896	2,842
California	1,102,583	1,276,501	374,610	345,695	10,315	-28,915	20,347	54,643	4,688	34,296	154,775	156,825	7,298	2,050
Colorado	240,030	253,677	57,644	48,991	4,734	-8,653	3,058	12,206	2,349	9,148	32,673	33,172	3,987	499
Connecticut	116,804	129,406	40,004	33,772	3,558	-6,232	1,960	7,122	1,906	5,162	15,564	16,043	2,470	479
Delaware	63,588	77,724	11,399	13,907	2,175	2,508	676	922	610	246	5,985	8,440	1,698	2,455
District of Columbia	30,012	44,448	13,393	15,572	2,428	2,179	926	2,341	880	1,415	3,930	3,636	1,020	-294
Florida	1,568,778	1,959,023	371,626	317,500	12,645	-54,126	15,438	50,978	4,870	35,540	198,232	209,037	10,048	10,805
Georgia	503,217	609,062	174,416	159,230	8,025	-15,186	6,792	21,032	2,871	14,240	83,852	91,305	6,462	7,453
Hawaii	64,170	74,180	16,441	18,395	2,382	1,954	954	2,737	942	1,783	4,277	5,944	1,365	1,667
Idaho	88,388	91,925	16,360	15,433	2,254	-927	997	4,014	1,367	3,017	12,814	12,909	2,327	95
Illinois	459,743	544,220	158,882	128,698	6,089	-30,184	7,998	18,439	2,802	10,441	82,739	78,208	6,028	-4,531
Indiana	293,387	326,267	93,029	72,083	5,571	-20,946	3,859	14,924	2,712	11,065	46,410	46,418	4,453	8
Iowa	114,841	114,124	31,812	23,284	2,931	-8,528	1,803	3,277	986	1,474	18,405	19,374	2,724	969
Kansas	121,119	132,379	40,445	28,678	3,335	-11,767	1,962	6,321	1,676	4,359	16,286	18,027	2,813	1,741
Kentucky	207,199	244,269	56,960	43,906	4,196	-13,054	3,059	11,069	2,161	8,010	27,286	30,189	3,348	2,903
Louisiana	236,621	278,125	66,857	55,186	3,781	-11,671	3,273	11,280	1,931	8,007	21,480	25,523	3,597	4,043
Maine	164,611	176,800	15,738	14,545	2,182	-1,193	1,021	2,735	1,092	1,714	9,711	11,933	1,805	2,222
Maryland	222,403	253,166	61,874	57,868	5,126	-4,006	3,742	9,107	1,839	5,365	32,883	33,153	2,751	270
Massachusetts	261,179	288,308	66,673	59,440	4,841	-7,233	3,822	13,531	2,519	9,709	25,038	24,570	3,009	-468
Michigan	659,725	724,610	141,687	111,891	6,070	-29,796	6,684	16,842	2,430	10,158	77,080	71,061	4,943	-6,019
Minnesota	259,974	256,694	48,091	36,319	3,901	-11,772	3,198	8,355	1,868	5,157	30,726	29,712	2,826	-1,014
Mississippi	158,951	196,442	44,735	47,780	4,099	3,045	1,920	4,706	1,321	2,786	16,886	19,377	2,634	2,491
Missouri	337,118	363,389	92,946	66,493	4,395	-26,453	4,290	9,850	1,898	5,560	44,200	45,061	4,198	861
Montana	73,218	80,259	10,082	9,001	1,900	-1,081	773	1,958	862	1,185	5,964	4,801	1,141	-1,163
Nebraska	75,663	78,373	24,404	16,626	2,776	-7,778	1,279	3,112	1,014	1,833	9,167	8,298	1,792	-869
Nevada	167,564	185,259	61,985	51,653	4,311	-10,332	1,838	6,881	1,705	5,043	32,949	25,786	2,946	-7,163
New Hampshire	95,781	99,565	13,293	8,294	2,160	-4,999	787	2,662	951	1,875	7,521	6,834	1,822	-687
New Jersey	339,202	382,488	92,118	87,470	5,014	-4,648	4,578	10,898	2,003	6,320	39,260	42,865	3,810	3,605
New Mexico	109,993	137,059	22,150	19,629	2,835	-2,521	1,303	3,562	1,017	2,259	11,050	12,046	2,326	996
New York	790,348	911,784	200,039	176,495	7,068	-23,544	12,786	41,538	4,160	28,752	77,225	72,179	4,691	-5,046
North Carolina	582,373	662,620	156,587	135,499	7,497	-21,088	6,671	18,867	3,066	12,196	71,693	77,975	4,952	6,282
North Dakota	36,306	37,687	7,422	6,424	1,566	-998	554	1,321	715	767	2,734	2,800	908	66
Ohio	524,073	603,047	184,143	151,266	7,487	-32,877	8,126	20,344	3,097	12,218	78,089	75,435	5,074	-2,654
Oklahoma	203,928	233,246	59,264	43,934	3,918	-15,330	2,717	9,978	2,332	7,261	22,671	23,944	3,002	1,273
Oregon	156,624	169,339	40,193	33,958	4,043	-6,235	2,608	7,487	1,831	4,879	24,191	25,048	3,125	857
Pennsylvania	548,411	632,790	135,262	103,459	6,238	-31,803	9,386	21,851	3,113	12,465	64,818	63,631	5,685	-1,187
Rhode Island	49,788	61,121	15,763	16,831	2,463	1,068	727	3,111	1,125	2,384	5,171	5,797	1,638	626
South Carolina	336,502	378,944	92,758	88,692	5,989	-4,066	3,957	7,774	1,709	3,817	36,523	38,338	3,988	1,815
South Dakota	41,156	45,076	10,366	8,357	1,852	-2,009	642	1,495	845	853	3,696	4,388	1,133	692
Tennessee	318,581	374,424	98,370	91,638	5,940	-6,732	3,980	17,918	3,078	13,938	47,274	44,516	4,405	-2,758
Texas	1,054,503	1,257,545	394,310	383,448	10,770	-10,862	16,509	52,512	4,621	36,003	121,430	126,253	8,339	4,823
Utah	102,017	101,796	20,176	18,859	2,809	-1,317	1,408	2,536	1,000	1,128	14,580	12,741	2,362	-1,839
Vermont	66,097	65,776	5,635	6,087	1,325	452	597	1,221	530	624	3,598	2,654	751	-944
Virginia	308,881	375,942	82,493	74,992	6,001	-7,501	5,408	25,210	3,024	19,802	44,881	44,539	4,074	-342
Washington	265,601	281,731	72,112	59,901	5,428	-12,211	4,877	10,683	2,463	5,806	41,417	43,467	4,649	2,050
West Virginia	118,086	140,273	19,521	18,933	2,293	-588	1,366	3,907	1,197	2,541	10,381	12,556	2,021	2,175
Wisconsin	344,590	345,945	63,268	47,366	4,150	-15,902	3,695	8,446	1,715	4,751	34,219	31,479	3,186	-2,740
Wyoming	34,989	39,483	7,304	4,738	1,301	-2,566	458	2,214	932	1,756	3,376	2,196	774	-1,180

Source: 2010 1-Year ACS and 2010 Census Summary File 1 from American FactFinder.

Attachment C. Vacancy Status by State: 2010 Census and 2010 American Community Survey (Cont.)

	Sold, not yet occupied				For seasonal, recreational, or occasional use				For migrant workers				Other Vacant				Statistcally Largest Vacancy Status Category
	2010 Census	2010 ACS Estimate	2010 ACS MOE	ACS-Census	2010 Census	2010 ACS Estimate	2010 ACS MOE	ACS-Census	2010 Census	2010 ACS Estimate	2010 ACS MOE	ACS-Census	2010 Census	2010 ACS Estimate	2010 ACS MOE	ACS-Census	
United States	421,032	610,798	15,083	189,766	4,649,298	5,153,003	56,603	503,705	24,161	31,607	3,768	7,446	3,652,759	5,300,912	67,127	1,648,153	Other
Alabama	9,227	11,783	2,544	2,556	63,890	82,506	5,790	18,616	238	452	557	214	95,778	153,862	7,508	58,084	Other
Alaska	1,006	1,030	641	24	27,901	29,919	2,148	2,018	362	897	537	535	9,368	12,508	1,627	3,140	
Arizona	10,550	18,663	2,616	8,113	184,327	192,310	8,104	7,983	538	1,159	722	621	77,775	112,981	6,136	35,206	Other
Arkansas	4,995	17,558	2,339	12,563	38,153	49,798	3,827	11,645	345	145	203	-200	58,640	67,054	4,606	8,414	
California	34,288	50,059	3,816	15,771	302,815	338,825	8,021	36,010	2,100	1,867	821	-233	213,648	328,587	11,294	114,939	Other
Colorado	5,418	5,442	1,576	24	101,965	106,349	6,070	4,384	524	303	266	-221	38,748	47,214	3,895	8,466	
Connecticut	3,729	4,765	1,331	1,036	29,618	30,074	3,411	456	55	41	68	-14	25,874	37,589	3,667	11,715	
Delaware	1,011	1,137	616	126	35,939	42,046	2,824	6,107	43	251	263	208	8,535	11,021	2,101	2,486	
District of Columbia	1,007	3,804	1,304	2,797	3,537	2,946	1,117	-591	8	0	292	-8	7,211	16,149	2,200	8,938	Other
Florida	31,911	61,194	4,558	29,283	657,070	877,251	18,485	220,181	1,541	4,124	1,338	2,583	292,960	438,939	13,841	145,979	Seasonal
Georgia	13,118	21,218	3,185	8,100	81,511	97,534	6,364	16,023	854	389	365	-465	142,674	218,354	9,985	75,680	Other
Hawaii	1,151	1,139	502	-12	30,079	32,295	3,238	2,216	117	147	181	30	11,151	13,523	2,266	2,372	
Idaho	2,177	2,797	941	620	41,660	38,456	2,892	-3,204	632	809	535	177	13,748	17,507	2,335	3,759	
Illinois	16,677	27,920	2,974	11,243	47,289	46,429	3,690	-860	315	41	70	-274	145,843	244,485	7,667	98,642	Other
Indiana	10,862	19,202	2,940	8,340	45,571	43,155	3,168	-2,416	200	306	284	106	93,456	130,179	7,239	36,723	Other
Iowa	5,555	5,190	1,209	-365	21,020	20,825	2,064	-195	87	135	207	48	36,159	42,039	3,920	5,880	
Kansas	5,267	4,399	1,242	-868	12,763	14,128	1,875	1,365	129	926	611	797	44,267	59,900	4,641	15,633	
Kentucky	8,687	24,938	2,878	16,251	38,616	42,980	3,153	4,364	627	716	496	89	71,964	90,471	6,082	18,507	
Louisiana	7,294	8,315	1,686	1,021	42,253	54,455	4,321	12,202	999	1,293	629	294	94,465	122,073	6,531	27,608	Other
Maine	2,089	1,673	767	-416	118,310	120,881	4,186	2,571	160	206	169	46	17,582	24,827	2,759	7,245	
Maryland	6,586	8,014	2,017	1,428	55,786	56,219	4,021	433	177	349	257	172	61,355	88,456	5,098	27,101	Other
Massachusetts	6,408	6,187	1,485	-221	115,630	118,991	4,979	3,361	161	0	285	-161	43,447	65,589	5,148	22,142	Other
Michigan	17,978	30,672	3,351	12,694	263,071	278,351	6,325	15,280	1,773	1,331	544	-442	151,452	214,462	7,757	63,010	Other
Minnesota	6,232	6,195	1,309	-37	130,471	119,544	3,970	-10,927	334	176	106	-158	40,922	56,393	4,362	15,471	
Mississippi	4,915	3,931	1,327	-984	28,867	37,631	3,350	8,764	318	378	348	60	61,310	82,639	5,561	21,329	Other
Missouri	11,098	11,354	1,788	256	80,374	88,434	4,555	8,060	193	485	404	292	104,017	141,712	7,382	37,695	
Montana	1,353	1,597	861	244	38,510	38,434	2,782	-76	283	429	269	146	16,253	24,039	2,334	7,786	Other
Nebraska	2,804	2,896	952	92	13,881	14,588	1,404	707	60	33	52	-27	24,068	32,820	2,912	8,752	
Nevada	3,416	5,250	1,616	1,834	32,703	46,371	4,144	13,668	242	0	309	-242	34,431	49,318	4,044	14,887	
New Hampshire	1,393	1,118	563	-275	63,910	64,281	3,289	371	27	24	41	-3	8,850	16,352	2,286	7,502	
New Jersey	8,145	11,164	2,149	3,019	134,903	135,173	5,737	270	156	277	284	121	60,042	94,641	5,804	34,599	Other
New Mexico	2,143	5,756	1,193	3,613	36,612	50,450	3,745	13,838	229	1,338	736	1,109	36,506	44,278	3,181	7,772	
New York	21,027	36,570	3,810	15,543	289,301	297,944	8,273	8,643	892	1,410	691	518	189,078	285,648	8,778	96,570	Other
North Carolina	14,510	14,662	2,753	152	191,508	201,893	6,746	10,385	1,620	696	517	-924	139,784	213,028	8,169	73,244	Other
North Dakota	1,043	1,850	557	807	11,483	13,082	1,368	1,599	319	965	555	646	12,751	11,245	1,450	-1,506	
Ohio	19,263	23,564	2,702	4,301	58,591	58,776	4,048	185	346	270	304	-76	175,515	273,392	10,946	97,877	Other
Oklahoma	8,405	8,894	1,735	489	35,187	41,405	2,831	6,218	318	1,285	791	967	75,366	103,806	5,244	28,440	Other
Oregon	4,401	6,965	1,737	2,564	55,473	60,551	4,709	5,078	461	668	402	207	29,297	34,662	3,394	5,365	
Pennsylvania	20,131	25,485	2,783	5,354	161,582	179,482	5,698	17,900	411	311	327	-100	156,821	238,571	9,319	81,750	Other
Rhode Island	1,219	785	547	-434	17,077	17,265	2,230	188	12	132	185	120	9,819	17,200	2,738	7,381	Other
South Carolina	8,519	9,532	1,922	1,013	112,531	125,994	6,742	13,463	370	604	540	234	81,844	108,010	6,754	26,166	
South Dakota	1,314	1,102	535	-212	13,277	15,661	1,916	2,384	88	154	168	66	11,773	13,919	1,635	2,146	
Tennessee	10,518	14,835	2,566	4,317	60,778	67,862	4,955	7,084	392	717	598	325	97,269	136,938	7,122	39,669	Other
Texas	30,437	37,644	4,198	7,207	208,733	241,746	8,119	33,013	2,209	1,949	676	-260	280,875	413,993	12,483	133,118	Other
Utah	2,828	5,003	1,319	2,175	47,978	45,822	3,141	-2,156	232	315	224	83	14,815	16,520	2,105	1,705	
Vermont	615	432	371	-183	50,198	46,915	2,200	-3,283	39	273	361	234	5,415	8,194	1,395	2,779	
Virginia	9,570	16,284	2,897	6,714	80,468	97,828	5,434	17,360	608	918	628	310	85,453	116,171	6,459	30,718	Other
Washington	7,623	9,013	1,791	1,390	89,907	87,564	5,823	-2,343	1,328	832	520	-496	48,337	70,271	5,650	21,934	
West Virginia	4,597	6,346	1,459	1,749	38,283	44,809	3,163	6,526	118	246	293	128	43,820	53,476	4,450	9,656	
Wisconsin	5,741	4,954	1,126	-787	193,046	179,435	5,304	-13,611	249	213	174	-36	44,372	74,052	4,883	29,680	Other
Wyoming	781	518	492	-263	14,892	17,340	2,200	2,448	322	622	477	300	7,856	11,855	1,910	3,999	

Source: 2010 1-Year ACS and 2010 Census Summary File 1 from American FactFinder.

Attachment D. Percent Distribution of Vacancy Status by State: 2010 Census and 2010 American Community Survey
(Percent of total housing units)

	For rent				Rented, not yet occupied				For sale only				Sold, not yet occupied			
		2010 ACS				2010 ACS				2010 ACS				2010 ACS		
	2010 Census	Estimate	MOE	ACS-Census	2010 Census	Estimate	MOE	ACS-Census	2010 Census	Estimate	MOE	ACS-Census	2010 Census	Estimate	MOE	ACS-Census
United States	3.1	2.7	0.0	-0.4	0.2	0.5	0.0	0.3	1.4	1.5	0.0	0.0	0.3	0.5	0.0	0.1
Alabama	3.6	2.7	0.2	-0.9	0.2	0.7	0.1	0.6	1.7	1.6	0.2	-0.1	0.4	0.5	0.1	0.1
Alaska	2.2	1.2	0.3	-1.0	0.2	0.6	0.3	0.4	0.9	0.9	0.3	-0.1	0.3	0.3	0.2	0.0
Arizona	4.2	3.6	0.2	-0.6	0.2	0.5	0.1	0.3	2.3	2.5	0.2	0.2	0.4	0.7	0.1	0.3
Arkansas	3.5	3.3	0.3	-0.3	0.2	0.3	0.1	0.1	1.4	1.6	0.2	0.2	0.4	1.3	0.2	1.0
California	2.7	2.5	0.1	-0.2	0.1	0.4	0.0	0.3	1.1	1.1	0.1	0.0	0.3	0.4	0.0	0.1
Colorado	2.6	2.2	0.2	-0.4	0.1	0.6	0.1	0.4	1.5	1.5	0.2	0.0	0.2	0.2	0.1	0.0
Connecticut	2.7	2.3	0.2	-0.4	0.1	0.5	0.1	0.3	1.0	1.1	0.2	0.0	0.3	0.3	0.1	0.1
Delaware	2.8	3.4	0.5	0.6	0.2	0.2	0.1	0.1	1.5	2.1	0.4	0.6	0.2	0.3	0.2	0.0
District of Columbia	4.5	5.2	0.7	0.7	0.3	0.8	0.3	0.5	1.3	1.2	0.3	-0.1	0.3	1.3	0.4	0.9
Florida	4.1	3.5	0.1	-0.6	0.2	0.6	0.1	0.4	2.2	2.3	0.1	0.1	0.4	0.7	0.0	0.3
Georgia	4.3	3.9	0.2	-0.4	0.2	0.5	0.1	0.3	2.1	2.2	0.1	0.2	0.3	0.5	0.1	0.2
Hawaii	3.2	3.5	0.4	0.4	0.2	0.5	0.2	0.3	0.8	1.1	0.3	0.3	0.2	0.2	0.1	0.0
Idaho	2.4	2.3	0.3	-0.1	0.1	0.6	0.2	0.5	1.9	1.9	0.3	0.0	0.3	0.4	0.1	0.1
Illinois	3.0	2.4	0.1	-0.6	0.2	0.3	0.1	0.2	1.6	1.5	0.1	-0.1	0.3	0.5	0.1	0.2
Indiana	3.3	2.6	0.2	-0.8	0.1	0.5	0.1	0.4	1.7	1.7	0.1	0.0	0.4	0.7	0.1	0.3
Iowa	2.4	1.7	0.2	-0.6	0.1	0.2	0.1	0.1	1.4	1.4	0.2	0.1	0.4	0.4	0.1	0.0
Kansas	3.3	2.3	0.2	-1.0	0.2	0.5	0.1	0.4	1.3	1.5	0.2	0.1	0.4	0.4	0.1	-0.1
Kentucky	3.0	2.3	0.2	-0.7	0.2	0.6	0.1	0.4	1.4	1.6	0.2	0.1	0.5	1.3	0.1	0.8
Louisiana	3.4	2.8	0.2	-0.6	0.2	0.6	0.1	0.4	1.1	1.3	0.2	0.2	0.4	0.4	0.1	0.1
Maine	2.2	2.0	0.3	-0.2	0.1	0.4	0.2	0.2	1.3	1.7	0.2	0.3	0.3	0.2	0.1	-0.1
Maryland	2.6	2.4	0.2	-0.2	0.2	0.4	0.1	0.2	1.4	1.4	0.1	0.0	0.3	0.3	0.1	0.1
Massachusetts	2.4	2.1	0.2	-0.3	0.1	0.5	0.1	0.3	0.9	0.9	0.1	0.0	0.2	0.2	0.1	0.0
Michigan	3.1	2.5	0.1	-0.7	0.1	0.4	0.1	0.2	1.7	1.6	0.1	-0.1	0.4	0.7	0.1	0.3
Minnesota	2.0	1.5	0.2	-0.5	0.1	0.4	0.1	0.2	1.3	1.3	0.1	0.0	0.3	0.3	0.1	0.0
Mississippi	3.5	3.7	0.3	0.2	0.2	0.4	0.1	0.2	1.3	1.5	0.2	0.2	0.4	0.3	0.1	-0.1
Missouri	3.4	2.4	0.1	-1.0	0.2	0.4	0.1	0.2	1.6	1.7	0.1	0.0	0.4	0.4	0.1	0.0
Montana	2.1	1.9	0.4	-0.2	0.2	0.4	0.2	0.2	1.2	1.0	0.2	-0.2	0.3	0.3	0.2	0.1
Nebraska	3.1	2.1	0.3	-1.0	0.2	0.4	0.1	0.2	1.2	1.0	0.2	-0.1	0.4	0.4	0.1	0.0
Nevada	5.3	4.4	0.3	-0.9	0.2	0.6	0.1	0.4	2.8	2.2	0.2	-0.6	0.3	0.4	0.1	0.2
New Hampshire	2.2	1.3	0.3	-0.8	0.1	0.4	0.2	0.3	1.2	1.1	0.3	-0.1	0.2	0.2	0.1	0.0
New Jersey	2.6	2.5	0.1	-0.1	0.1	0.3	0.1	0.2	1.1	1.2	0.1	0.1	0.2	0.3	0.1	0.1
New Mexico	2.5	2.2	0.3	-0.3	0.1	0.4	0.1	0.3	1.2	1.3	0.3	0.1	0.2	0.6	0.1	0.4
New York	2.5	2.2	0.1	-0.3	0.2	0.5	0.1	0.4	1.0	0.9	0.1	-0.1	0.3	0.5	0.0	0.2
North Carolina	3.6	3.1	0.2	-0.5	0.2	0.4	0.1	0.3	1.7	1.8	0.1	0.1	0.3	0.3	0.1	0.0
North Dakota	2.3	2.0	0.5	-0.3	0.2	0.4	0.2	0.2	0.9	0.9	0.3	0.0	0.3	0.6	0.2	0.3
Ohio	3.6	2.9	0.1	-0.6	0.2	0.4	0.1	0.2	1.5	1.5	0.1	-0.1	0.4	0.5	0.1	0.1
Oklahoma	3.6	2.6	0.2	-0.9	0.2	0.6	0.1	0.4	1.4	1.4	0.2	0.1	0.5	0.5	0.1	0.0
Oregon	2.4	2.0	0.2	-0.4	0.2	0.4	0.1	0.3	1.4	1.5	0.2	0.1	0.3	0.4	0.1	0.2
Pennsylvania	2.4	1.9	0.1	-0.6	0.2	0.4	0.1	0.2	1.2	1.1	0.1	0.0	0.4	0.5	0.0	0.1
Rhode Island	3.4	3.6	0.5	0.2	0.2	0.7	0.2	0.5	1.1	1.3	0.3	0.1	0.3	0.2	0.1	-0.1
South Carolina	4.3	4.1	0.3	-0.2	0.2	0.4	0.1	0.2	1.7	1.8	0.2	0.1	0.4	0.4	0.1	0.0
South Dakota	2.9	2.3	0.5	-0.6	0.2	0.4	0.2	0.2	1.0	1.2	0.3	0.2	0.4	0.3	0.1	-0.1
Tennessee	3.5	3.3	0.2	-0.2	0.1	0.6	0.1	0.5	1.7	1.6	0.1	-0.1	0.4	0.5	0.1	0.2
Texas	4.0	3.8	0.1	-0.1	0.2	0.5	0.0	0.4	1.2	1.3	0.1	0.0	0.3	0.4	0.0	0.1
Utah	2.1	1.9	0.3	-0.1	0.1	0.3	0.1	0.1	1.5	1.3	0.2	-0.2	0.3	0.5	0.1	0.2
Vermont	1.7	1.9	0.4	0.1	0.2	0.4	0.2	0.2	1.1	0.8	0.2	-0.3	0.2	0.1	0.1	-0.1
Virginia	2.5	2.2	0.2	-0.2	0.2	0.7	0.1	0.6	1.3	1.3	0.1	0.0	0.3	0.5	0.1	0.2
Washington	2.5	2.1	0.2	-0.4	0.2	0.4	0.1	0.2	1.4	1.5	0.2	0.1	0.3	0.3	0.1	0.0
West Virginia	2.2	2.1	0.2	-0.1	0.2	0.4	0.1	0.3	1.2	1.4	0.2	0.2	0.5	0.7	0.2	0.2
Wisconsin	2.4	1.8	0.2	-0.6	0.1	0.3	0.1	0.2	1.3	1.2	0.1	-0.1	0.2	0.2	0.0	0.0
Wyoming	2.8	1.8	0.5	-1.0	0.2	0.8	0.3	0.7	1.3	0.8	0.3	-0.5	0.3	0.2	0.2	-0.1

Source: 2010 1-Year ACS and 2010 Census Summary File 1 from American FactFinder.

Attachment D. Percent Distribution of Vacancy Status by State: 2010 Census and 2010 American Community Survey (Cont)

(Percent of total housing units)

	For seasonal, recreational, or occasional use				For migrant workers				Other Vacant			
		2010 ACS				2010 ACS				2010 ACS		
	2010 Census	Estimate	MOE	ACS-Census	2010 Census	Estimate	MOE	ACS-Census	2010 Census	Estimate	MOE	ACS-Census
United States	3.5	3.9	0.0	0.4	0.0	0.0	0.0	0.0	2.8	4.0	0.0	1.2
Alabama	2.9	3.8	0.2	0.9	0.0	0.0	0.0	0.0	4.4	7.1	0.3	2.7
Alaska	9.1	9.7	0.5	0.7	0.1	0.3	0.2	0.2	3.1	4.1	0.5	1.0
Arizona	6.5	6.8	0.2	0.3	0.0	0.0	0.0	0.0	2.7	4.0	0.2	1.2
Arkansas	2.9	3.8	0.2	0.9	0.0	0.0	0.0	0.0	4.5	5.1	0.3	0.6
California	2.2	2.5	0.0	0.3	0.0	0.0	0.0	0.0	1.6	2.4	0.1	0.8
Colorado	4.6	4.8	0.2	0.2	0.0	0.0	0.0	0.0	1.8	2.1	0.2	0.4
Connecticut	2.0	2.0	0.2	0.0	0.0	0.0	0.0	0.0	1.7	2.5	0.2	0.8
Delaware	8.9	10.3	0.4	1.5	0.0	0.1	0.1	0.1	2.1	2.7	0.5	0.6
District of Columbia	1.2	1.0	0.4	-0.2	0.0	0.0	0.0	0.0	2.4	5.4	0.6	3.0
Florida	7.3	9.8	0.2	2.4	0.0	0.0	0.0	0.0	3.3	4.9	0.1	1.6
Georgia	2.0	2.4	0.1	0.4	0.0	0.0	0.0	0.0	3.5	5.3	0.2	1.8
Hawaii	5.8	6.2	0.5	0.4	0.0	0.0	0.0	0.0	2.1	2.6	0.4	0.5
Idaho	6.2	5.8	0.2	-0.5	0.1	0.1	0.1	0.0	2.1	2.6	0.3	0.6
Illinois	0.9	0.9	0.1	0.0	0.0	0.0	0.0	0.0	2.8	4.6	0.1	1.9
Indiana	1.6	1.5	0.1	-0.1	0.0	0.0	0.0	0.0	3.3	4.7	0.2	1.3
Iowa	1.6	1.6	0.1	0.0	0.0	0.0	0.0	0.0	2.7	3.1	0.2	0.4
Kansas	1.0	1.1	0.1	0.1	0.0	0.1	0.0	0.1	3.6	4.9	0.3	1.3
Kentucky	2.0	2.2	0.1	0.2	0.0	0.0	0.0	0.0	3.7	4.7	0.3	1.0
Louisiana	2.2	2.8	0.2	0.6	0.1	0.1	0.0	0.0	4.8	6.2	0.3	1.4
Maine	16.4	16.7	0.2	0.3	0.0	0.0	0.0	0.0	2.4	3.4	0.4	1.0
Maryland	2.3	2.4	0.1	0.0	0.0	0.0	0.0	0.0	2.6	3.7	0.2	1.1
Massachusetts	4.1	4.2	0.1	0.1	0.0	0.0	0.0	0.0	1.5	2.3	0.2	0.8
Michigan	5.8	6.1	0.1	0.3	0.0	0.0	0.0	0.0	3.3	4.7	0.2	1.4
Minnesota	5.6	5.1	0.0	-0.5	0.0	0.0	0.0	0.0	1.7	2.4	0.2	0.7
Mississippi	2.3	2.9	0.2	0.7	0.0	0.0	0.0	0.0	4.8	6.5	0.3	1.7
Missouri	3.0	3.3	0.1	0.3	0.0	0.0	0.0	0.0	3.8	5.2	0.2	1.4
Montana	8.0	8.0	0.4	0.0	0.1	0.1	0.1	0.0	3.4	5.0	0.4	1.6
Nebraska	1.7	1.8	0.1	0.1	0.0	0.0	0.0	0.0	3.0	4.1	0.3	1.1
Nevada	2.8	3.9	0.3	1.2	0.0	0.0	0.0	0.0	2.9	4.2	0.3	1.3
New Hampshire	10.4	10.5	0.2	0.1	0.0	0.0	0.0	0.0	1.4	2.7	0.4	1.2
New Jersey	3.8	3.8	0.1	0.0	0.0	0.0	0.0	0.0	1.7	2.7	0.1	1.0
New Mexico	4.1	5.6	0.3	1.5	0.0	0.1	0.1	0.1	4.0	4.9	0.3	0.9
New York	3.6	3.7	0.1	0.1	0.0	0.0	0.0	0.0	2.3	3.5	0.1	1.2
North Carolina	4.4	4.7	0.1	0.2	0.0	0.0	0.0	0.0	3.2	4.9	0.2	1.7
North Dakota	3.6	4.1	0.2	0.5	0.1	0.3	0.2	0.2	4.0	3.5	0.3	-0.5
Ohio	1.1	1.1	0.1	0.0	0.0	0.0	0.0	0.0	3.4	5.3	0.2	1.9
Oklahoma	2.1	2.5	0.1	0.4	0.0	0.1	0.0	0.1	4.5	6.2	0.2	1.7
Oregon	3.3	3.6	0.2	0.3	0.0	0.0	0.0	0.0	1.7	2.1	0.2	0.3
Pennsylvania	2.9	3.2	0.1	0.3	0.0	0.0	0.0	0.0	2.8	4.3	0.1	1.5
Rhode Island	3.7	3.7	0.4	0.0	0.0	0.0	0.0	0.0	2.1	3.7	0.5	1.6
South Carolina	5.3	5.9	0.3	0.6	0.0	0.0	0.0	0.0	3.8	5.0	0.3	1.2
South Dakota	3.7	4.3	0.4	0.6	0.0	0.0	0.0	0.0	3.2	3.8	0.3	0.6
Tennessee	2.2	2.4	0.2	0.2	0.0	0.0	0.0	0.0	3.5	4.9	0.2	1.4
Texas	2.1	2.4	0.1	0.3	0.0	0.0	0.0	0.0	2.8	4.1	0.1	1.3
Utah	4.9	4.7	0.2	-0.2	0.0	0.0	0.0	0.0	1.5	1.7	0.2	0.2
Vermont	15.6	14.5	0.3	-1.0	0.0	0.1	0.1	0.1	1.7	2.5	0.4	0.9
Virginia	2.4	2.9	0.1	0.5	0.0	0.0	0.0	0.0	2.5	3.4	0.1	0.9
Washington	3.1	3.0	0.2	-0.1	0.0	0.0	0.0	0.0	1.7	2.4	0.2	0.8
West Virginia	4.3	5.1	0.3	0.7	0.0	0.0	0.0	0.0	5.0	6.1	0.4	1.1
Wisconsin	7.4	6.8	0.1	-0.5	0.0	0.0	0.0	0.0	1.7	2.8	0.2	1.1
Wyoming	5.7	6.6	0.6	0.9	0.1	0.2	0.2	0.1	3.0	4.5	0.6	1.5

Source: 2010 1-Year ACS and 2010 Census Summary File 1 from American FactFinder.