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MEMORANDUM FOR ACS Research and Evaluation Advisory Group

From: James B. Treat (signed on April 8, 2015)
Chief, American Community Survey Office

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American Community Survey Office

Subject: Documentation and Analysis of Item Allocation Rates

Attached is the final American Community Survey (ACS) Research and Evaluation report, "Documentation and Analysis of Item Allocation Rates". We conducted this evaluation to determine how item allocation rates vary for social, economic, and demographic subgroups, and by geographic area. If you have any questions about this report, please contact Sandra Clark at 301-763-5884.

Attachment

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American Community Survey Research and Evaluation Program

April 2015

Documentation and Analysis of Item Allocation Rates

FINAL REPORT

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American Community Survey Office

United States Census Bureau

Executive Summary

American Community Survey staff produce item allocation rates for the nation and states. However, we do not produce final item allocation rates for the smallest tabulation geographies (i.e. Census tract and block groups), demographic subgroups, or operational categories in an easy-to-digest format. What sets the American Community Survey apart from other surveys is its ability to capture data for small areas and populations. Therefore, the purpose of this research was to provide an indicator of data quality by calculating item allocation rates for these subgroups using 2013 1-year and 2009-2013 5-year ACS data. Some of our findings include:

- The majority of places, tracts, and block groups had low overall population and housing item allocation rates, with most ranging from 2.0 percent to up to 7.9 percent.
- The rates vary by item for all subgroups.
- The property value and percent of household income items were the items with the highest allocation rates.
- For group quarters, we allocated about 10 percent of survey items and the rates varied by the type of group quarter, with other health care facilities ranking among the highest and military and correctional facilities ranking among the lowest.
- The rates vary by data collection mode, with some of the lowest from the two modes conducted by trained interviewers, particularly for the detailed person questions.
- The item allocation rates for vacant housing units were high (around 23 percent), which we attributed to extensive proxy reporting for vacant units.
- Item allocation rates generally increased as the person order number increased.
- There were differences by demographic characteristics, but overall the rates for most items were generally low.

Contents

I. Introduction

Nonresponse from questions left blank by respondents is present in all surveys. Measuring the amount of missing data, or item nonresponse, is an important indicator of data quality. The Census Bureau measures item nonresponse in the American Community Survey (ACS) to show data users the completeness of the data on which the survey estimates are based. To measure item nonresponse, we calculate and publish ACS item allocation rates for the population required to answer the items. However, these rates can vary for social, economic, and demographic subgroups, and by geographic area, which can lead to greater nonresponse error for some subgroups and areas than for others.

This research used 2013 ACS 1-year and 2009-2013 ACS 5-year data to examine item allocation rates for a variety of subgroups and small geographic areas. It included aggregated rates for all population and housing items, along with individual rates for key survey items. The goal of the research was to determine how item allocation differs by geography and by demographic characteristics, such as age, race, citizenship, educational attainment, and income. The research showed which areas and population groups had higher item allocation rates, which provides data users and researchers information about the quality of survey data.

II. Methodology and Limitations

We calculated item allocation rates using the final 2013 ACS 1-year data and, when needed for geographic detail, the 2009-2013 ACS 5-year data. We included data for Puerto Rico in our analysis. We excluded data collected from people living in group quarters (GQs) and vacant housing units, except for tabulations calculated specifically for these groups. All estimates shown in the report are weighted using the final weights, which control the estimates by population characteristics to conform to the estimates from the Population Estimates Program of the Census Bureau[1].

ACS data are subject to an editing process. This process cleans up reported data and imputes data for items left blank. The ACS uses two imputation methods: assignment and allocation. When a response can be determined based on a reported response to another item, it is referred to as an "assignment." When we cannot assign a response for a missing item, we use statistical procedures to "allocate" a response based on donors. We believe that assignments

[1] For more information on weights and population controls, see U.S. Census Bureau (2014).

are less prone to error than allocations; therefore, this research focused only on the "allocation" imputation method. "Assignments" are not included in our calculations.

In our analysis, we tabulated overall housing and population item allocation rates and individual item allocation rates for some key survey items. An overall item allocation rate measures how well the respondent filled out the housing or person sections of the ACS. To compute the overall item allocation rates for a particular subgroup, we aggregated all the missing housing/population data within the subgroup and tabulated it as a proportion of the total housing/population items the subgroup are required to answer based on skip patterns. We refer to this average measure as the overall housing or population item allocation rate. Specifically, we defined the overall rates using the following formulas:

$$\text{Overall housing item allocation rate for subgroup X} = \frac{\text{total \# of allocated housing items for subgroup X}}{\text{total \# of required housing items for subgroup X}} * 100$$

$$\text{Overall population item allocation rate for subgroup X} = \frac{\text{total \# of allocated population items for subgroup X}}{\text{total \# of required population items for subgroup X}} * 100$$

In addition to the overall item allocation rates, we tabulated individual item allocation rates for some key housing and population items. We worked with subject matter analysts and other survey statisticians at the Census Bureau to determine which items to include in the research. We chose the following housing items: tenure, property value, monthly rent, number of total rooms, number of bedrooms, and household income; and, the following population items: race, Hispanic origin, citizenship, educational attainment, disability, health insurance, and employment status. We calculated an additional population item (individual income) for the group quarters and person order number subgroups, because it was not possible to calculate household income for these subgroups. We used the following formula to calculate the individual item allocation rates:

$$\text{Allocation rate for item Z for subgroup X} = \frac{\text{total \# of allocated responses for item Z for subgroup X}}{\text{total \# of required responses for item Z for subgroup X}} * 100$$

We calculated the household income and individual income items slightly different from the other individual survey items. Household income is the sum of eight income types for all the people in the household. Individual income is similar, except the eight income types are summed at a person level, rather than for everyone in the household. Sometimes people report their main source of income (for example, the wages income item) and leave other sources blank (for example, the supplemental security income item). Sometimes they may grow tired of completing the income questions for all household members and decide to them blank for one or more household members. Most people or households with any type of income missing (even for one household member), would be included in our allocation rates if we used the formula that we

used for the other items (shown above). We felt that this might be misleading, so we decided to use another method.

Our research dataset included a variable telling us the percentage of income that was allocated for each person and household, as well as the final, edited person and household income. We used these data to determine the amount of individual/household income allocated for each person/household, like this:

Household/Individual income allocated for hhld/per X = final, edited hhld/per income for hhld/per X * % of hhld/per income allocated for hhld/per

Then we aggregated all allocated household/individual income and final household/individual income for each subgroup and calculated the percent of household/individual income allocated for each subgroup using the following formula:

$$\%\text{ of Household/Individual income allocated for subgroup X} = \frac{\text{sum of allocated income for subgroup X}}{\text{sum of final income for subgroup X}} * 100$$

It is important to point out that the health insurance item covers a series of eight different types of health insurance, all of which are separate questions that each require a response of "yes" or "no". In the automated modes (CATI/CAPI) trained interviewers guide repondents through the series of questions. On the mail form and Internet survey (self-reponse modes) the health insurance series is designed as a single question with eight sub-questions (a through h). Respondents are required to go through each sub-question and answer "yes" or "no"; however, we often see various patterns of yes, no, and missing responses to the questions in this series. For this research, the health insurance item is considered allocated if we did not receive a response to one or more of the sub-questions. Therefore, the rates for the health insurance item found in this research are likely higher than the rates for the individual types of health insurance.

The rate for the disability item was also calculated by combining several questions on disability status. These questions are shown as separate questions for all data collections modes and there was less variation in response patterns than what we found with the health insurance series. However, it is possible that the rates for the individual questions are lower than the combined rate.

The universes we used for our calculation were based on the group considered in-scope for the question - they were not limited to the group for which we publish our data products. Sometimes these two groups are the same; however, sometimes they are different. For example, we ask the educational attainment item to the population over three years old, but our published tables generally report educational attainment data for the population 25 years and over.

We met with the Census Bureau analysts who review and analyze ACS data to determine the subgroups for which to tabulate item allocation rates. We chose the following geographic, operational, and demographic groups:

- Geographic
  - Small Areas (Places, Tracts, and Block Groups)
  - American Indian and Alaskan Native Reservation Areas

- Operational[2]
  - Group Quarters
  - Vacant Housing Units
  - Data Collection Mode
  - Person Order Number

- Demographic
  - Age
  - Race
  - Hispanic Origin
  - Citizenship
  - English Proficiency
  - Educational Attainment
  - Tenure
  - Building Type

We conducted statistical testing to identify differences between estimates shown in the report, except for those in the section on small geographic areas (due to the large number of estimates and the way we summarized the data). To do this, we used replicate weights[3] to calculate margins of error (MOE) for each estimate. Our tests use a 90 percent confidence level. We did not make adjustments for multiple comparisons. Margins of error are located in Appendix B.

We crossed overall item allocation rates by various demographic populations. The demographic populations were determined using edited data, which includes allocated data. Therefore, the data used to identify these demographic groups comes from the survey itself and are subject to nonresponse error like all survey items. Hence, the cross-tabulated rates we produced have a corresponding level of error in them too. For this reason, we specifically avoided tabulating

[2] We will not calculate housing item allocation rates for "group quarter's types" and "mode by person roster order" tabulations because they are not applicable. We will not calculate population item allocation rates for "vacant units by mode" tabulations since vacant units are not asked population items.
[3] The ACS uses successive difference replication to produce the margins of error. For more information, see U.S. Census Bureau (2014).

overall item allocation rates by variables with high rates of allocation, like poverty status. We believe this significantly limits the error in the rates produced.

III. Results

A. Geographic

1. Small Geographic Areas

Using 2009-2013 ACS 5-year data, we calculated item allocation rates for the following geographic levels in the United States: places, tracts, and block groups. Our datasets included 29,342 places, 73,124 tracts, and 218,790 block groups. Due to the large number of areas within each geographic level, we calculated item allocation rates to the integer (truncated the decimal) for each area and organized them into seven ranges. Then we summarized the areas by calculating the percentage of areas within each geographic level by the ranges.

We defined these ranges as:

- 0 percent up to 1.9 percent
- 2.0 percent up to 3.9 percent
- 4.0 percent up to 5.9 percent
- 6.0 percent up to 7.9 percent
- 8.0 percent up to 9.9 percent
- 10.0 percent up to 14.9 percent
- 15.0 percent or more.

The data are shown in Appendix A, Tables A.1 and A.2. We did not calculate standard errors for the estimates in this section or test the estimates to determine if they were statistically different from one another. All comparisons mentioned in this section are based on the nominal estimates and do not factor in margins of error.

The distributions of the rates for the items included in our analysis followed similar patterns between geographic levels. For the overall population and housing items, the majority of areas had rates from 2.0 percent to up to 7.9 percent. While there were similarities between geographies, when compared to places and block groups, for some items there were smaller proportions of tracts with item allocation rates less than 2.0 percent. This was true of all the items in our study, except for the bedrooms, tenure, race and Hispanic Origin items. We found that many of the places and block groups with item allocation rates less than 2.0 percent were areas with smaller populations.

While the item allocation rates were distributed similarly between geographic levels, they varied by item. For housing items, the rooms, bedrooms, tenure, and rent items had more geographic areas with lower item allocation rates than the property value and percent of

household income items. For the population items, the health insurance coverage item stood out from the rest by having a larger proportion of areas in the higher item allocation rate ranges than the other population items. The three items that had the highest proportion of small areas with higher item allocation rates (property value, percent of household income, and health insurance coverage) were items that generally have high rates, even at the national level. The property value item may be difficult for some respondents to provide answers to from memory, while the percent of household income and health insurance items may be difficult for respondents to navigate because there are multiple questions in the series. In addition, these questions may be considered individual or sensitive to respondents. Therefore, these items may be more likely than other items to be left blank.

To better understand rates by geographic area, we looked more thoroughly into two items that had a larger portion of areas with high item allocation rates. We chose the property value item from the housing section and the health insurance coverage item from the population section. We broke the highest item allocation rate range (15.0 percent or more) for these items into more detailed ranges. The data are shown in Table 1 on the following page.

Table 1. Percent of Places (PL), Tracts (TR), and Block Groups (BG) in the United States by Item Allocation Rates: 2009-2013 American Community Survey (in percents)

Item Allocation Rate	Property Value (11.6%)[1]			Health Insurance Coverage (10.1%)		
	PL	TR	BG	PL	TR	BG
0.0% up to 1.9%	7.8	3.3	14.7	9.2	0.7	3.7
2.0% up to 3.9%	3.8	5.5	7.2	6.4	2.4	7.3
4.0% up to 5.9%	8.2	9.9	9.1	9.8	8.4	12.0
6.0% up to 7.9%	11.9	12.9	9.6	14.2	17.4	15.2
8.0% up to 9.9%	12.2	13.4	9.0	18.1	22.4	15.4
10.0% up to 14.9%	23.4	25.9	18.7	30.2	37.4	27.4
15.0% up to 19.9%	12.9	14.2	12.2	7.4	8.7	11.7
20.0% up to 24.9%	6.8	7.1	7.4	2.3	1.7	4.4
25.0% up to 29.9%	4.3	3.5	4.6	1.0	0.5	1.7
30.0% up to 39.9%	4.1	2.7	4.3	0.7	0.3	1.0
40.0% up to 49.9%	1.9	0.9	1.7	0.2	0.0	0.2
50.0% up to 59.9%	1.1	0.3	0.8	0.1	0.0	0.0
60.0% or more	1.5	0.3	0.9	0.2	0.0	0.0

[1]Rates in the column headings represent allocation rates for all occupied U.S. housing units (property value) or total household population (health insurance).

Source: 2009-2013 American Community Survey 5-year Estimates (For more information, see https://www.census.gov/acs)

Appendix Table A.1 shows that roughly 30 percent of places, tracts, and block groups had an item allocation rate for the property value item of 15.0 percent or more. The additional detail in

Table 1 above shows that a good portion of the areas in that range had rates between 15.0 percent and 24.9 percent. Roughly 13 percent of places, 8 percent of tracts, and 12 percent of block groups had property value item allocation rates of 25.0 percent or more. For the health insurance coverage item, 12 percent of places, 11 percent of tracts, and 19 percent of block groups had item allocation rates at or above 15.0 percent; however, very few (one to three percent) of the areas had rates of 25.0 percent or more.

We also looked more closely at the areas with the lowest and highest rates for the property value and health insurance items to identify differences. We did this by calculating the percentage of areas (places, tracts, block groups) within each state having allocation rates falling in the top 10 percent (highest rates) and bottom 10 percent (lowest rates) of the rates for each geographic level. The results, however, were dependent on the number of places, tracts, and block groups there are within each state. Table 2 (on the next page) shows the number of these geographic levels by state.

Table 2. Number of Places, Tracts, and Block Groups in the United States by State: 2009-2013 American Community Survey (in percents)

State	Places	Tracts	Block Groups	State	Places	Tracts	Block Groups
AL	579	1176	3432	MT	365	269	839
AK	333	166	531	NE	578	529	1629
AZ	441	1513	4155	NV	129	679	1818
AR	539	684	2142	NH	98	292	919
CA	1498	7984	23092	NJ	544	1996	6287
CO	452	1235	3513	NM	432	498	1445
CT	143	825	2575	NY	1189	4826	15117
DE	78	214	569	NC	738	2165	6092
DC	1	176	447	ND	399	205	571
FL	917	4162	11336	OH	1205	2938	9213
GA	624	1954	5510	OK	731	1045	2961
HI	152	315	828	OR	375	825	2623
ID	226	298	961	PA	1753	3195	9705
IL	1366	3115	9672	RI	35	240	810
IN	681	1504	4803	SC	396	1086	3026
IA	1008	823	2626	SD	385	222	653
KS	670	760	2338	TN	428	1475	4095
KY	522	1106	3269	TX	1701	5215	15731
LA	474	1126	3437	UT	323	584	1682
ME	133	351	1077	VT	121	183	520
MD	513	1386	3890	VA	594	1873	5276
MA	246	1458	4950	WA	622	1444	4759
MI	693	2741	8116	WV	401	484	1590
MN	905	1331	4102	WI	774	1391	4469
MS	363	657	2154	WY	192	131	409
MO	1023	1388	4495	PR	254	886	2531

Source: 2009-2013 American Community Survey 5-year Estimates (For more information, see https://www.census.gov/acs)

Figure A.1 in Appendix A shows the data for areas with high allocation rates for the property value item. The data are sorted by the place level data. The states with the largest proportion of places with high item allocation rates for the property value item were Puerto Rico (52.4 percent), Alaska (48.3 percent), New Mexico (35.2 percent), and Arizona (34.2 percent). Many of the states in the northeast region of the United States (such as Maine, Michigan, Massachusetts, and Connecticut) had very small percentages of places falling in the highest item allocation rate range. For the most part, the tract and block group data were similar to the place data. Mississippi and New York deviate the most, with high rates for a larger proportion of tracts and block groups.

Figure A.2 in Appendix A shows the data for areas with low allocation rates for the property value item. Again, the data are sorted by the place data (as are the next two graphs). The states with the largest proportion of places with low item allocation rates for the property value item were Wyoming (25.0 percent), Nevada (21.7 percent), and South Dakota (20.3 percent). Many southeastern states (such as Florida, Louisiana, and Tennessee) had small proportions of places in the lowest range. The states that had a high proportion of areas with low allocation rates for the property value item varied by the geographic levels. This suggests that low allocation rates for the property value item are spread throughout the United States and are not as concentrated as high allocation rates for this item.

Figure A.3 in Appendix A shows the data for areas with high allocation rates for the health insurance item. Many states had similar proportions of places and block groups with high allocation rates for the health insurance coverage item. States with large proportions of places with high rates were Florida (27.0 percent) and Arizona (19.3 percent). These states have a large number of retirees, and this research found higher allocation rates for older population groups (see results in section C. 1. below).

Figure A.4 in Appendix A shows the data for areas with low allocation rates for the health insurance item. Rhode Island (65.7 percent) and Tennessee (57.5 percent) ranked very high on the list of states with a large proportion of places with low item allocation rates, and Puerto Rico had a high percentage of tracts and block groups with low allocation rates for health insurance coverage. Unlike the graph of high rate areas, the graph of low rate areas clearly shows that some states have better allocation rates for health insurance coverage than others.

2. American Indian and Alaska Native Areas

Another geographic area we included in our analysis was American Indian and Alaska Native reservation areas. Using the 2009-2013 ACS 5-year estimates, we summarized cases from these areas and calculated their item allocation rates as a group. These rates are shown in Appendix A, Tables A.3 and A.4. For this group, we allocated a response for 4.8 percent of housing items and 5.8 percent of population items. The items with the highest allocation rates were the property value, percent of household income, and health insurance coverage items.

B. Operational

1. Group Quarters

The ACS collects data from the population living in GQs. A GQ is a place where people (usually not related) live or stay, in a group arrangement that is owned or managed by an entity or organization providing housing and/or services for the residents. The GQ population is often

looked at in conjunction with the household population. However, in this study we wanted to see the item allocation rates separately for the entire GQ population, as well as individually by the major GQ types.

The rates are shown in Appendix A, Table A.5. The housing items are not included in the table because they are not asked of GQs. Overall, we allocated 10.0 percent of population items for GQs. The rates varied by item and by GQ type. When we looked at the total GQ population, the rates for the race, Hispanic Origin, and citizenship items were the lowest of those included in the study (about 4 percent); while the educational attainment, employment status, health insurance, and percent of individual income items were the highest (at around 10 percent for the first three and 45 percent for percent of individual income). We generally conduct most GQ interviews through Computer-Assisted Personal Interviews (CAPI); however, there are some GQ facilities that will not allow personal interviews. In those facilities, the interviewers drop off the questionnaire for self-response, and return later to pick up the completed questionnaire. In addition, we conduct some GQ interviews with a proxy respondent, who completes the survey for the GQ resident. The items with lower rates were the items that are easy for a proxy to answer; for example, they can be answered by looking at, or knowing, the sampled respondent. The items with higher rates were those that are not as easily answered by a proxy respondent.

When we looked at the rates by major GQ type, there were many differences. When looking at the overall rate for all population items, the group with the highest allocation rate was other health care facilities. While the rates were high for this group overall and for many individual items, there are few of these facilities and therefore the margins of error for the other health care facilities rates were high. Military GQs had the lowest overall population item allocation rate among the major GQ types, followed by adult correctional facilities. Several of the individual items for these types of facilities were also low. Residents of military GQs may be more comfortable responding to a government survey than other GQ types, and residents of adult correctional facilities are likely easier to contact than residents of facilities such as college housing. The overall item allocation rates for college, juvenile, nursing, and other non-institutional facilities were all similar (around 10 percent).

The item allocation rates for the race, Hispanic Origin, and citizenship items were pretty low (0.5 percent to 6.3 percent), with the exception of the citizenship item allocation rate for other health care facilities (12 percent). This could be due to proxy respondents not knowing the answer for this item. The rate for the educational attainment item was low for College (3.3 percent) and military (4.4 percent) and higher for the institutional facilities and the facilities falling in the other non-institutional group.

2. Vacant Housing Units

The ACS collects housing data for sampled addresses that are vacant. Data collected from vacants are included in some of our published estimates. Since no one is living at the unit, few self-response returns come back indicating that the unit is vacant. The majority of vacant returns come from CAPI, where the status is determined once an interviewer visits the housing unit. It is often difficult to make contact with the owners of vacant units; therefore, proxy respondents (such as a neighbor or building attendant) usually provide answers to the questions. Some questions are more difficult than others for a proxy to answer (like the number of rooms item).

Appendix A, Table A.6 shows the data for vacant housing units. When calculated for all vacants, the item allocation rates of the individual housing items included in our study were all high (over 23 percent). The rates by mode, however, showed clear differences. CATI generally had the lowest item allocation rates for vacant units. The only vacant units that come from CATI are those that are temporarily occupied, which are usually conducted with the owner who is familiar with the housing unit. This is also true of mail and Internet modes because someone received the survey and took the initiative to complete and return it. The Internet survey is designed to only ask a few specific questions to vacant housing units, while specific questions geared towards vacant units are not obvious on the paper form. The rent item had high item allocation rates regardless of mode. It may be difficult for respondents to estimate what a vacant unit would rent for if a renter occupied the housing unit.

The property value item had similar high rates, especially from the Internet and CAPI modes. Like the rent item, this item may be difficult for respondents to estimate, particularly proxy respondents. In addition, we believe this rate (and possibly some other item allocation rates for Internet vacants) could be higher than expected due to a small processing error. The error caused us to omit a small amount of response data for the item asking about the type of vacancy. This only affected Internet vacants that we did not follow-up with during FEFU or CAPI, which is a very small proportion of vacant units. For these housing units, we had to allocate data for items for which we originally had responses. The overall impact of the error was very small and is only noticeable when looking at item allocation rates for vacant units by mode.

3. Data Collection Mode

The ACS is a multi-modal survey. First, we offer sample housing units the opportunity to complete the ACS over the Internet. Next, we send a mail questionnaire to nonresponding households. If the housing unit does not self-respond through Internet or mail, we attempt to contact the household by phone as long as we have a phone number for the address. This is

referred to as a Computer-Assisted Telephone Interview (CATI). As a final resort, we follow-up with nonresponders by sending an interviewer to the housing unit for a personal visit (CAPI). Research has shown that the characteristics of the respondents are different between the modes, so we expect that item allocation rates would also be different (Joshipura, 2008).

The rates for the housing items and population items are displayed separately in Appendix A, Tables A.7 and A.8. Typically, the CATI and CAPI modes have low item allocation rates because they are conducted with trained interviewers. The rates for these modes were all low, except for the property value and percent of household income items. These items tend to have high allocation rates because some respondents consider their income a personal or sensitive topic and are reluctant to provide a response.

The Internet mode had the lowest overall housing item allocation rate of the four modes; however, the Internet mode's overall population item allocation rate was the second highest. We believe the higher rates for population items were due to households starting but not finishing the population items for all household members. We will discuss this further when we look at the allocation rate by person number later in this report.

The mail mode had the highest rates of the four modes with 8.6 percent of housing items and 12.8 percent of population items allocated. The individual item rates for all but three of the thirteen items in the analysis were highest for mail. First, the mail mode does not have interviewers like CATI and CAPI. In addition, unlike the other three modes, the mail mode is not an electronic mode and therefore does not benefit from skip patterns built into the instrument. These skip patterns lead respondents down specific paths based on answers they provide to previous questions. Mail respondents may be more likely than electronic mode respondents to incorrectly skip items they are required to answer since they guide themselves through the questionnaire and can skip around as they choose. Internet responders may not know that they can skip questions and still continue through the survey. Soft edits are included on several items in the Internet survey to aid respondents. Additionally, the Internet mode is the first mode available to respondents, and it is possible that early responders are more conscientious and thorough when completing the survey.

4. Person Order Number

We ask population items of everyone living in the sampled housing unit. The ACS is divided into three main sections: The basic section, which asks general items such as age and race; the housing section, which asks questions about the housing unit such as number of rooms and property value; and the detailed population section, which asks items such as educational attainment and employment status. The basic section is the first and smallest section of the

survey with six questions for each person living in the household. The basic section is followed by the housing section where up to 24 questions are asked about the housing unit. Next is the detailed population section, which asks up to 42 questions for every household member. In the detailed population section, respondents begin by answering all applicable questions for one person, then all applicable questions for another person, followed by the same pattern for everyone else in the household. We call the order in which they chose to answer the person order number. Person one is the first, person two is the second, and so on.

Because the detailed population section is so long and can be burdensome for large households, we expected item allocation rates to be higher for the people farther down the person order number list. We also expected the rates to differ by household type and mode. A respondent who completes the survey for a family household (or for themselves in a single-person household) is more likely to know the answers to the questions for everyone in the household than a respondent who answers for a non-family household. Appendix A, Table A.9 shows item allocation rates by the household type (family vs. non-family), mode, and person order number. Single-person households are included with family households.

The data confirmed our hypotheses. Generally speaking, item allocation rates increased as the person order number increased and the increase was more dramatic for non-family households. The item allocation rates for persons six and over were substantially higher than the rates for persons one through five. The items with the highest rates and largest differences between person order number were those found in the detailed population section (educational attainment, employment status, disability, health insurance, and percent of individual income). This is not surprising since this section is at the end of the survey and is the most burdensome. The rates for the race and Hispanic Origin items were generally low for all person order numbers and household types. The highest overall rates were those for persons six and over from mail. They were high for family and non-family households, and even high for the race and Hispanic Origin items. Part of this, however, can be explained by the design of the mail questionnaire. There is a limited amount of space on mail returns, therefore the only population items asked for persons six and over are name, sex, and age. In our Failed Edit Follow-up (FEFU) operation, we follow-up with all households with more than five people listed on a mail return. However, if we are unable to contact the household, we allocate most of the person data for persons six and over.

The mode that had the most similar rates across all person numbers and household types was CAPI. CAPI interviews are conducted in-person by trained interviewers who are very successful in getting complete interviews.

Several of the Internet rates for items located in the detailed population section (especially those for non-family households) were even higher than the mail rates. We believe this is due to the Internet "breakoffs," households that start but do not complete the survey. Research has shown that the Internet survey suffers from "breakoffs" and larger households tend to break-off more often than smaller households. See Horwitz et al (2013) for more information regarding Internet "breakoffs".

C. Demographic

In addition to studying how geographic and operational differences affect item allocation rates, we explored how item allocation rates differ by population and household characteristics, or subgroups. We looked at housing item allocation rates and studied differences using the characteristics of the householder, as well as some of the characteristics of the housing unit. For the population items, we looked at the characteristics of all the people living in the household, in addition to some of the characteristics of the housing unit. Appendix A, Table A.10 shows the housing item allocation rates by subgroup and Appendix A, Table A.11 shows the population item allocation rates by subgroup. We summarized the findings by subgroups below.

1. Age

The data show a pattern, as most housing item allocation rates increased as the age of the householder increased. The only exception was the percent of household income item, which had lower rates for householders between the age of 30 and 64 than householders between 15 and 29 years old and between 65 and 84 years old (the rates for the 15 to 29 year old and 65 to 84 year old groups were not statistically different). The overall population item allocation rate also increased with age, except for a small dip in the rate for the population 30 to 64 (the following groups were not statistically different: under 5 vs. 5 to 9; and 5 to 9 vs. 10 to 14). Unlike the individual housing items, the individual population items did not follow a clear pattern. The rates for some population items, such as race, citizenship, and education attainment, were higher for some of the lower age ranges than the higher age ranges.

2. Race

The two race groups with the highest overall housing and population item allocation rates were Black alone and Native Hawaiian and Pacific Islander alone (6.3 and 6.2 percent for the overall housing rate, which were not statistically different; and 10.0 and 11.3 percent for the overall population rate). The groups with the lowest overall housing item allocation rate were: White alone, Asian alone, and Two or more races. The rates varied some by individual items, especially for housing items. Asian alone had the highest allocation rate for the rooms item (7.1

percent), American Indian Alaska Native alone had the highest allocation rate for the property value item (26.3 percent), and Some Other Race alone had the highest allocation rate for the percent of household income item (31.0 percent). Interestingly, for the rent item the rates were lowest for Some Other Race alone, Two or more races, Asian alone, and Native Hawaiian Pacific Islander (5.0, 5.4, 5.7, and 5.7 percent, respectively - none of which are significantly different from one another except for Two or more races and Asian alone). The Native Hawaiian Pacific Islander alone group had the highest rates for the citizenship, employment status, and disability items. The rates for this group were also high for the Hispanic Origin, educational attainment, and health insurance items, but not statistically different from some other groups (Black alone for the Hispanic Origin item; Native Hawaiian Pacific Islander alone for the educational attainment; and all groups except for Some Other Race alone and Two or More races for the health insurance item).

3. Hispanic Origin

When we looked at the rates broken out by Hispanic vs non-Hispanic, the overall housing and population item allocation rates were close (5.2 percent vs. 5.3 percent and 8.4 percent vs. 8.2 percent). However, there were individual item allocation rates with large differences. The rates for all the items were statistically different, and nine of the thirteen individual items had rates that differed by at least one percentage point. Four of these items had lower rates for the Hispanic group (rent, Hispanic Origin, disability, health insurance) and five had lower rates for the non-Hispanic group (rooms, property value, percent of household income, race, and educational attainment).

4. Citizenship

We looked at three groups when we studied the rates by citizenship status: native-born U.S., naturalized U.S., and non-U.S. The overall housing item allocation rates were the same for native-born U.S. citizens and non-U.S. citizens (5.2 percent), and slightly higher for naturalized U.S. citizens (5.7 percent). The rates for the three groups were all statistically different for the overall population item and all of the individual housing and population items. The highest rates for the individual housing items varied among the three groups. Naturalized U.S. citizens had the highest rates for all individual population items, except for the race and educational attainment items (non-U.S. had the highest rate for those items). Surprisingly, the non-U.S. group had the lowest rates for the bedrooms, tenure, Hispanic Origin, employment status, disability, and health insurance items.

5. English Speaking Ability

Householders and household members who speak another language and English less than very well had overall housing and overall population item allocation rates similar to those who speak English only or English very well. The rates were also similar for many of the individual item allocation rates in the study, especially the population items. Some of the largest differences

were in the rates between the English only group and the other language, English less than very well group for the educational attainment item (7.5 percent vs. 10.8 percent), rooms item (2.6 percent vs. 5.5 percent), property value (23.6 percent vs. 11.9 percent), and percent of household income (27.6 percent vs. 19.0 percent). For the health insurance item, the English only group had a higher item allocation rate than the other groups.

6. Educational Attainment

In general, many of the item allocation rates were lower for the higher educational attainment groups than the lower educational attainment groups. The overall housing item allocation rate was 7.2 percent for householders with less than a 9th grade education and 4.2 percent for householders with a graduate or professional degree. Over twenty percent of responses for the property value item were allocated for each of the two groups with less than a high school degree, while less than 10 percent of the responses were allocated for each of the three groups of households with householders having some sort of college degree. The allocation rates for the rent item were different from the other items, as the group with the highest item allocation rate was the high school graduates category. The population item allocation rates followed a pattern similar to the housing item rates. Those with a graduate or professional degree had the lowest rates for all population items, except the health insurance item. Interestingly, the population with less than a 9th grade education had the lowest item allocation rate for the health insurance item of all the educational attainment levels.

7. Tenure

Renter occupied units had a lower overall housing item allocation rate than owner occupied units (4.7 percent vs. 5.5 percent). This was not true for all individual housing items, as the rates for some items were lower for owner occupied units. Owner occupied units are asked the property value item and renter occupied units are asked the rent item. The property value item allocation rate was 12.5 percent and the rent item allocation rate was 7.4 percent. The lower rate for the rent item may have contributed to the lower overall housing item allocation rate for renter occupied units. The overall population item allocation rate was lower for the population living in renter occupied units than the population living in owner occupied units. Actually, all of the population item allocation rates were lower for the renter population, except the rates for the race and educational attainment items.

8. Building Type

All of the rates were the highest for the population living in boats, RV, etc. (the rates for the household income and property value items were not statistically different between the mobile home group and the boat, RV, van, etc. group). This is not a surprise since this a small group and it is likely more difficult to make contact with this group than the others. The population item rates for the those living in apartments, single family homes, and mobile homes were similar;

however, in general apartments had the lowest and mobile home the highest. For the housing items, apartments, single-family homes, and mobile homes had similar rates for the rooms, bedrooms, tenure, and rent items, while the rates for the property value and percent of household income varied.

IV. Conclusion

This research concludes that the quality of the ACS data, in terms of item allocation rates, is good even for most small geographic areas and small operational and demographic subgroups. While population and housing item allocation rates varied some among the subgroups, overall the rates were generally low. The research, however, did identify some areas worthy of additional research. Certain items, such as the property value and percent of household and individual income items had higher item allocation rates than other items included in the study. Some states had more areas than others with high item allocation rates. Some modes and GQ types had better rates than other modes and GQ types. In addition, the findings further support findings from other research showing that households responding by Internet (particularly large ones) occasionally break off from the survey prior to providing answers to the items in the detailed population section. Research is underway to help alleviate the issue of break-offs.

The next step is for Census Bureau survey analysts and methodologists to use this research to develop ways to improve the ACS survey. For example, items with high allocation rates may benefit from new question wording, informational help guides, additional soft edits, or interviewer training. Additional interviewer training could also help areas and group quarter types improve item allocation rates. We could use the findings to adjust our telephone follow-up criteria to target specific modes or geographic areas (or other subgroups) with high item allocation rates. In addition to documenting a quality indicator of the ACS data for various subgroups and geographic areas, this research set up framework that can be used in the future to re-run item allocation rates in order to monitor them over time, or as survey content or operations change. To research some of the findings in more detail, Census Bureau researchers may decide to conduct additional exploratory data analysis (such as fitting a main effects model).

V. References

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Appendix A. Data Tables and Figures

Table A.1. Percent of Places (PL), Tracts (TR), and Block Groups (BG) in the United States by Housing Item Allocation Rates: 2009-2013 American Community Survey (in percents)

Item Allocation Rate	Overall Housing Items (4.5%)[1]			Rooms (2.7%)			Bedrooms (1.6%)			Tenure (1.0%)			Property Value (11.6%)			Rent (6.6%)			% of Household Income (17.4%)		
	PL	TR	BG	PL	TR	BG	PL	TR	BG	PL	TR	BG	PL	TR	BG	PL	TR	BG	PL	TR	BG
0.0% to 1.9%	4.5	0.9	5.0	61.6	43.7	52.6	76.0	69.0	69.2	86.1	83.4	80.2	7.8	3.3	14.7	47.3	33.6	60.2	4.0	0.2	1.9
2.0% to 3.9%	39.1	37.1	40.1	25.5	35.0	22.2	16.4	24.1	17.4	9.3	13.2	11.8	3.8	5.5	7.2	8.8	13.2	4.7	1.3	0.4	2.9
4.0% to 5.9%	41.7	47.1	35.1	7.6	14.2	12.2	4.0	5.1	7.2	2.3	2.5	4.3	8.2	9.9	9.1	10.1	12.0	4.9	2.0	1.4	4.5
6.0% to 7.9%	10.2	12.1	13.1	2.5	4.7	6.2	1.5	1.2	3.1	0.9	0.6	1.8	11.9	12.9	9.6	8.1	9.7	4.3	3.7	3.5	6.0
8.0% to 9.9%	2.6	2.2	4.3	1.0	1.6	3.2	0.8	0.3	1.5	0.5	0.2	0.9	12.2	13.4	9.0	5.9	7.5	3.7	5.6	6.4	7.1
10.0% to 14.95%	1.5	0.6	2.1	1.0	0.7	2.8	0.7	0.2	1.2	0.5	0.1	0.8	23.4	25.9	18.7	8.6	11.5	7.1	22.1	24.0	19.4
15.0% or more	0.4	0.0	0.2	0.7	0.1	0.8	0.6	0.0	0.4	0.4	0.0	0.2	32.6	29.0	31.7	11.3	12.5	15.0	61.4	64.1	58.1

[1]Rates in column headings represent national allocation rates for all occupied U.S. housing units

Source: 2009-2013 American Community Survey 5-year Estimates (For more information, see https://www.census.gov/acs)

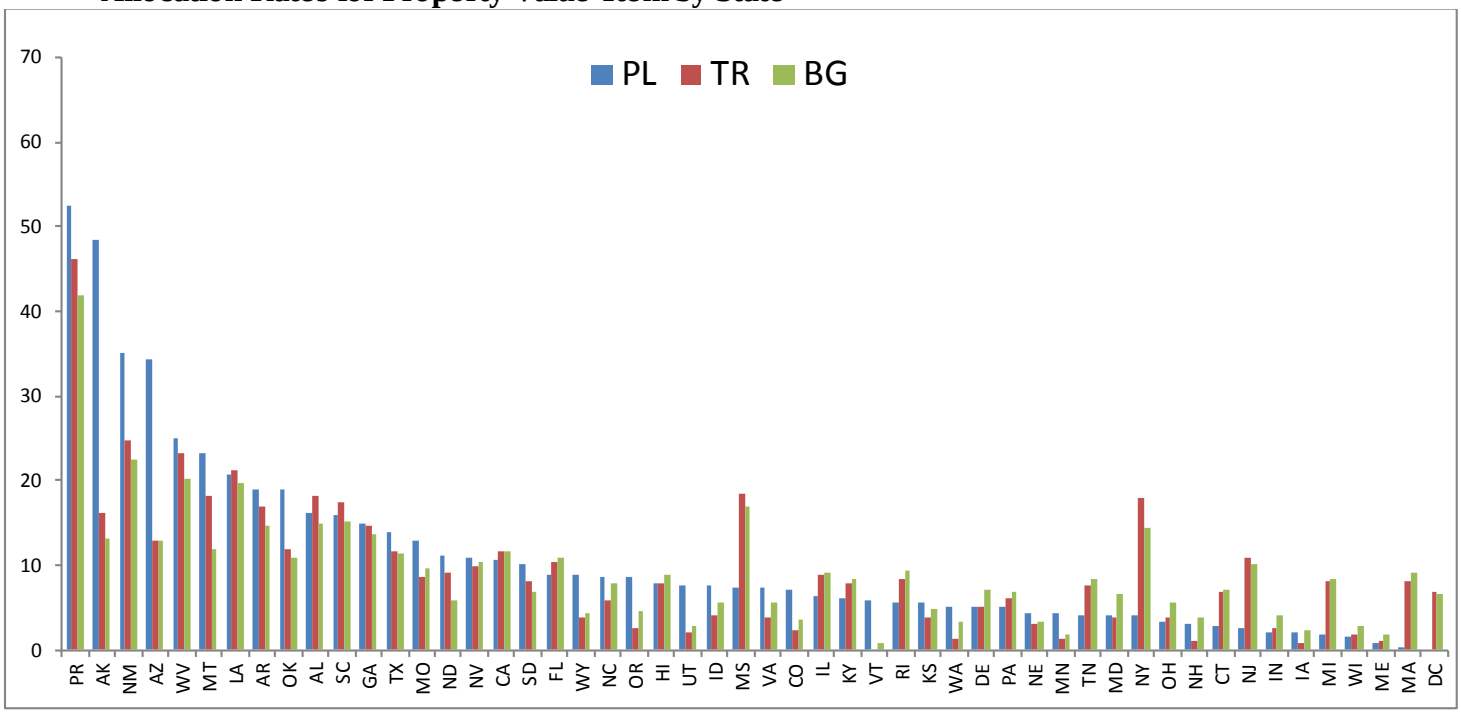
Table A.2. Percent of Places (PL), Tracts (TR), and Block Groups (BG) in the United States by Population Item Allocation Rates: 2009-2013 American Community Survey (in percents)

Item Allocation Rate	Overall Population Items (6.2%)[1]			Race (1.5%)			Hispanic Origin (1.9%)			Citizenship (3.1%)			Educational Attainment (5.6%)			Health Insurance Coverage (10.1%)			Disability (5.1%)			Employment Status (5.6%)		
	PL	TR	BG	PL	TR	BG	PL	TR	BG	PL	TR	BG	PL	TR	BG	PL	TR	BG	PL	TR	BG	PL	TR	BG
0.0% to 1.9%	7.8	0.6	4.1	84.6	74.6	75.3	71.3	62.4	65.4	54.4	38.0	50.9	22.8	7.1	22.1	9.2	0.7	3.7	24.8	7.2	22.7	22.2	6.1	20.5
2.0% to 3.9%	23.4	14.4	24.8	11.3	18.8	14.1	21.7	28.9	20.3	29.1	36.7	22.4	25.1	26.5	22.5	6.4	2.4	7.3	26.0	30.5	25.0	23.4	25.7	22.6
4.0% to 5.9%	35.2	39.8	29.1	2.4	4.6	5.4	4.3	6.5	7.8	9.6	15.3	11.7	24.6	28.8	18.7	9.8	8.4	12.0	26.7	32.0	20.1	26.2	30.8	19.8
6.0% to 7.9%	20.0	26.4	18.9	0.8	1.3	2.4	1.3	1.6	3.4	3.3	5.9	6.2	13.4	17.8	13.0	14.2	17.4	15.2	12.1	17.0	12.7	14.4	19.5	13.7
8.0% to 9.9%	7.2	11.3	10.4	0.3	0.4	1.2	0.5	0.4	1.5	1.4	2.3	3.5	5.9	9.9	8.3	18.1	22.4	15.4	4.7	7.4	7.5	6.3	9.4	8.7
10.0% to 14.95%	4.7	6.7	9.6	0.3	0.2	1.1	0.5	0.2	1.2	1.3	1.6	3.6	5.5	8.1	10.1	30.2	37.4	27.4	3.7	4.9	8.1	5.2	7.0	9.9
15.0% or more	1.7	0.9	3.2	0.3	0.1	0.5	0.4	0.0	0.4	0.9	0.3	1.6	2.6	1.9	5.3	12.0	11.2	19.0	2.0	0.9	3.7	2.4	1.4	4.7

[1]Rates in column headings represent national allocation rates for the total household population

Source: 2009-2013 American Community Survey 5-year Estimates (For more information, see https://www.census.gov/acs)

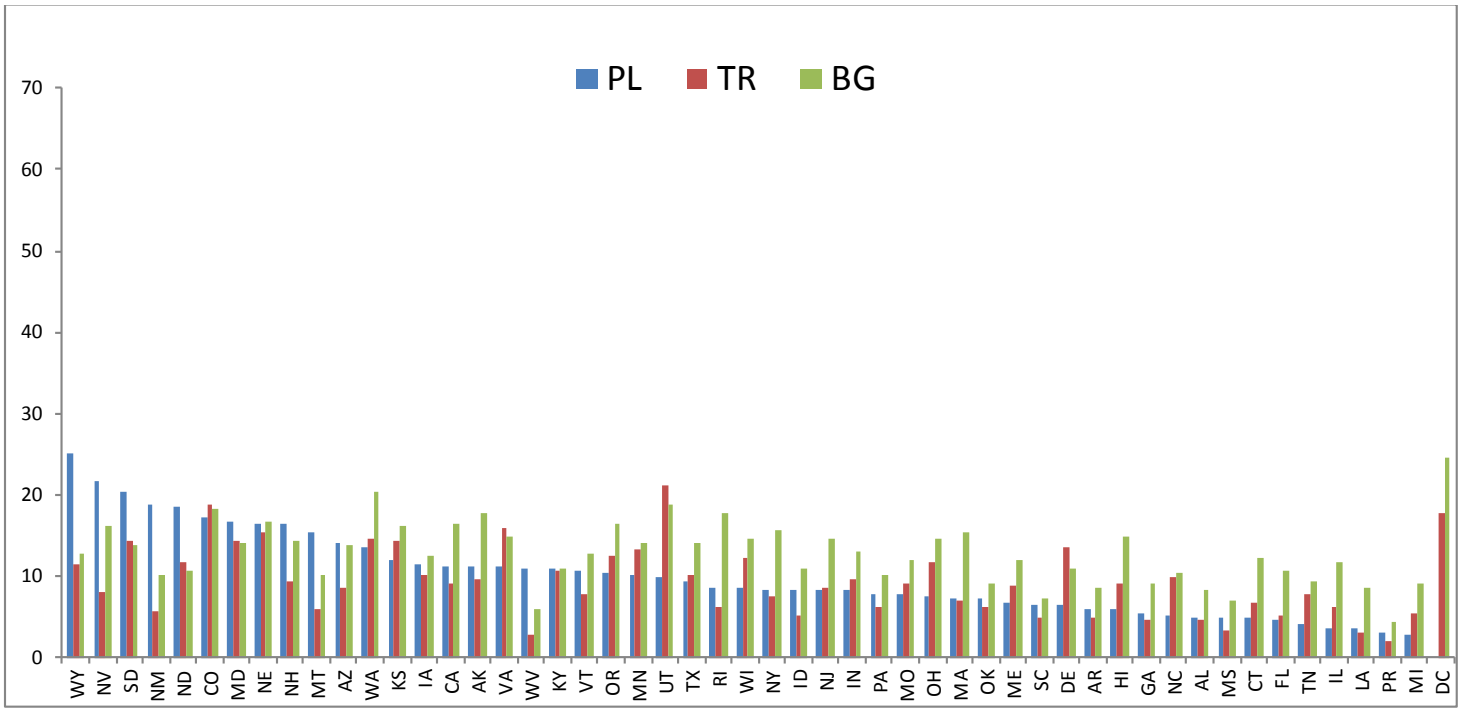
Figure A.1. Proportion of Areas (Places (PL), Tracts (TR), and Block Groups (BG)) With High[1] Allocation Rates for Property Value Item by State



[1]High is defined as top 10 percent of rates for each geographic level. The data is sorted in descending order by the place level estimate.

Source: 2009-2013 American Community Survey 5-year Estimates (For more information, see https://www.census.gov/acs)

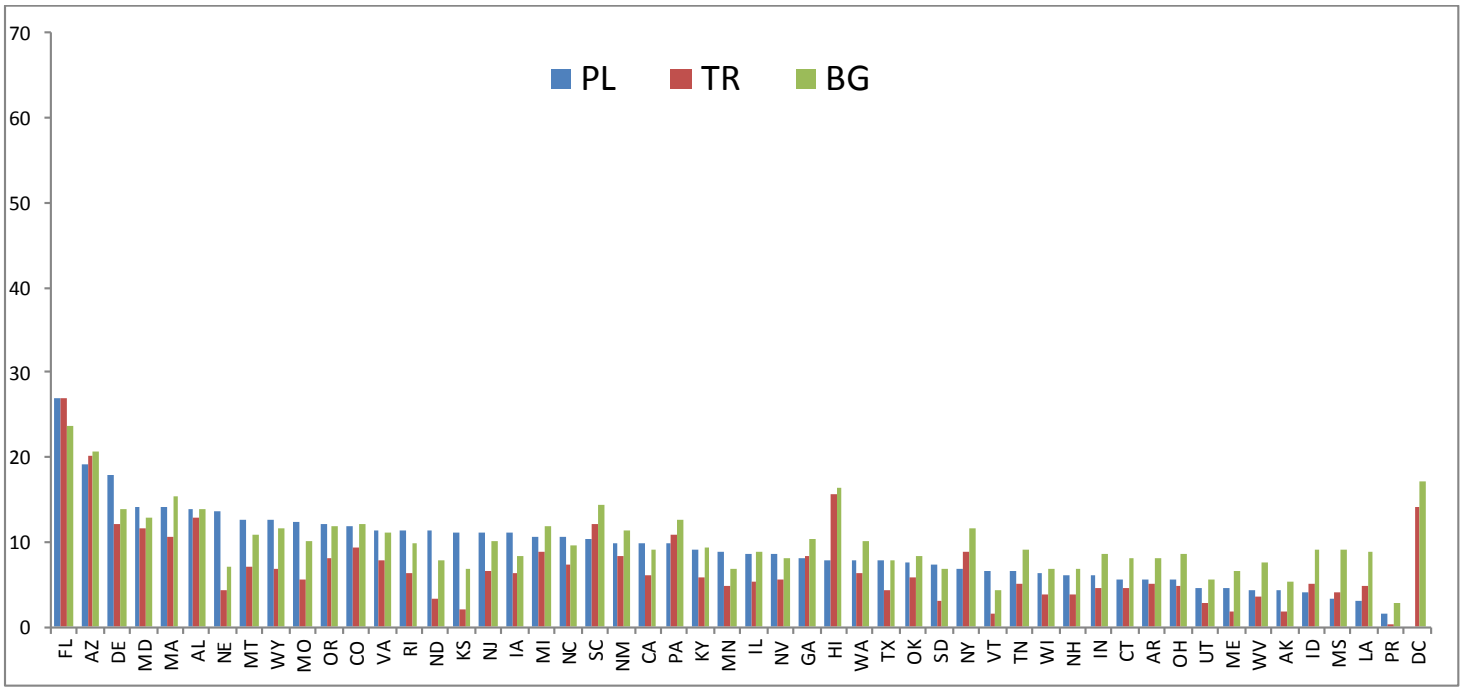
Figure A.2. Proportion of Areas (Places (PL), Tracts (TR), and Block Groups (BG)) With Low[1] Allocation Rates for Property Value Item by State



[1]Low is defined as bottom 10 percent of rates for each geographic level. The data is sorted in descending order by the place level estimate.

Source: 2009-2013 American Community Survey 5-year Estimates (For more information, see https://www.census.gov/acs)

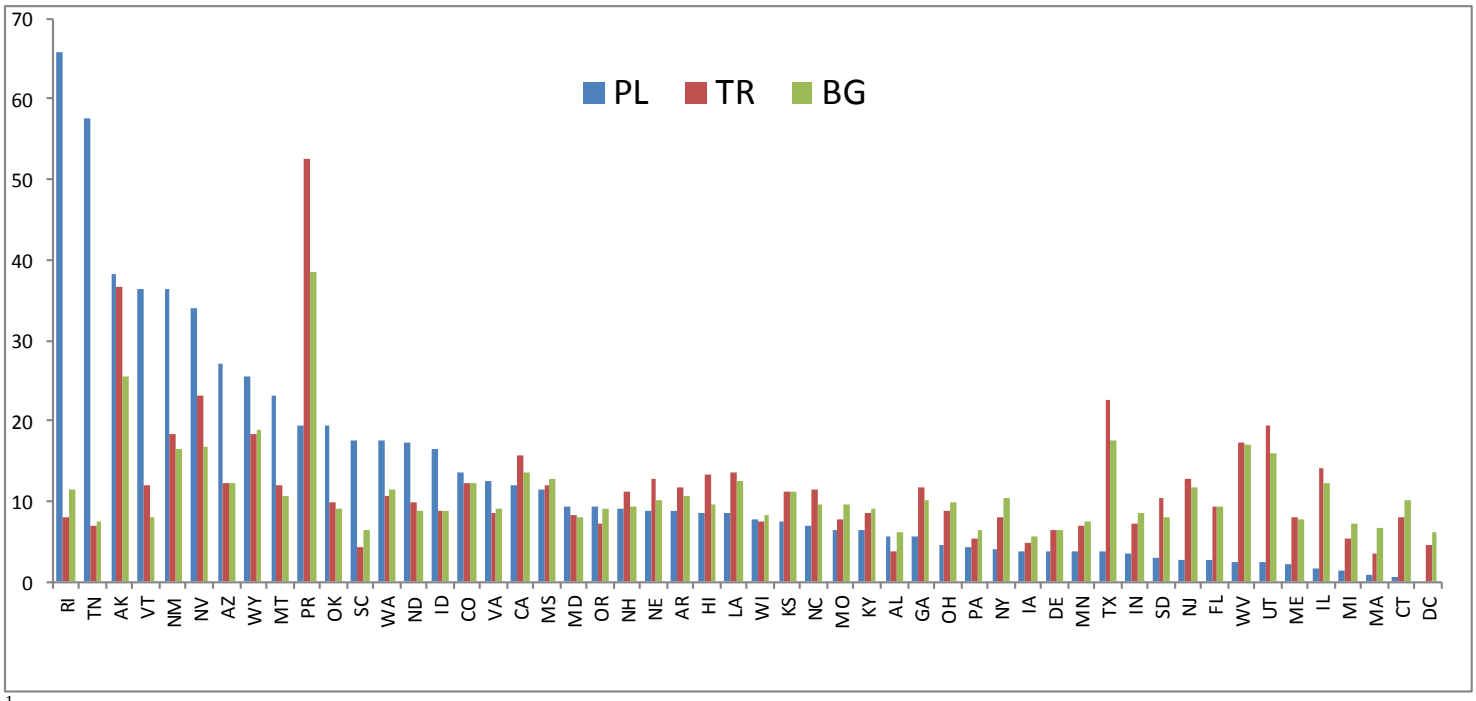
Figure A.3. Proportion of Areas (Places (PL), Tracts (TR), and Block Groups (BG)) With High[1] Allocation Rates for Health Coverage Item by State



[1]High is defined as top 10 percent of rates for each geographic level. The data is sorted in descending order by the place level estimate.

Source: 2009-2013 American Community Survey 5-year Estimates (For more information, see https://www.census.gov/acs)

Figure A.4. Proportion of Areas (Places (PL), Tracts (TR), and Block Groups (BG)) With Low[1] Allocation Rates for Health Coverage Item by State



[1]Low is defined as bottom 10 percent of rates for each geographic level. The data is sorted in descending order by the place level estimate.

Source: 2009-2013 American Community Survey 5-year Estimates (For more information, see https://www.census.gov/acs)

Table A.3. Housing Item Allocation Rates for American Indian Alaska Native Areas: 2009 to 2013 American Community Survey (in percents)

Overall Housing Items	Rooms	Bedrooms	Tenure	Property Value*	Rent**	% of Household Income
4.8	2.2	1.5	1.2	17.4	6.4	20.3

* Owner occupied housing units **Renter occupied housing units

Source: 2009-2013 American Community Survey 5-year Estimates (For more information, see https://www.census.gov/acs)

Table A.4. Population Item Allocation Rates for American Indian Alaska Native Areas: 2009 to 2013 American Community Survey (in percents)

Overall Population Items	Race	Hispanic Origin	Citizenship	Educational Attainment*	Health Insurance Coverage	Disability	Employment Status**
5.8	1.0	1.6	2.5	5.3	9.7	4.4	5.1

*Universe is 3 years and over ** Universe is 15 years and over

Source: 2009-2013 American Community Survey 5-year Estimates (For more information, see https://www.census.gov/acs)

Table A.5. Population Item Allocation Rates by Type of Group Quarters: 2013 American Community Survey (in percents)

Subgroup	Overall Population Items	Race	Hispanic Origin	Citizenship	Educational Attainment*	Employment Status**	Disability	Health Insurance	% of Individual Income
Total Group Quarters Population	**10.0**	**2.6**	**2.7**	**3.9**	**10.0**	**10.7**	**6.5**	**9.5**	**45.0**
Type of Group Quarters									
Adult Correctional	7.2	1.2	1.8	2.0	7.0	NA	5.4	6.5	39.9
Juvenile Facilities	10.7	2.5	2.8	6.3	14.0	NA	7.2	14.1	43.1
Nursing Facilities	11.6	0.5	1.0	3.8	22.2	NA	4.0	7.1	65.2
Other Health Care	18.0	4.2	3.5	12.0	30.0	NA	14.3	14.8	54.4
College	11.9	6.0	5.3	6.0	3.3	14.1	9.7	14.7	27.5
Military	5.4	2.2	1.7	2.0	4.4	2.9	2.4	3.7	13.0
Other Noninstutional	9.7	0.8	1.4	2.8	14.9	5.2	5.0	7.7	45.4

* Universe is 3 years and over

** Universe is 15 years and over

Source: 2013 American Community Survey 1-year Estimates (For more information, see https://www.census.gov/acs)
For definitions and examples of types of group quarters facilities refer to:
http://www.census.gov/acs/www/Downloads/data_documentation/GroupDefinitions/2013GQ_Definitions.pdf

Table A.6. Housing Item Allocation Rates for Vacant Housing Units by Mode: 2013 American Community Survey (in percents)

Mode	Overall Housing Items	Rooms	Bedrooms	Property Value*	Rent**
Vacant housing units	**13.8**	**23.5**	**23.7**	**33.7**	**37.3**
Mail	11.5	12.9	11.4	11.9	35.6
CATI	1.8	1.1	1.4	11.5	26.2
CAPI	14.3	24.7	24.9	34.6	37.4
Internet	9.1	8.8	7.0	31.8	35.7

*Only vacant-for-sale housing units

**Only vacant-for-rent housing units

Source: 2013 American Community Survey 1-year Estimates (For more information, see https://www.census.gov/acs)

Table A.7. Housing Item Allocation Rates by Data Collection Mode: 2013 American Community Survey (in percents)

Subgroup	Overall Housing Items	Rooms	Bedrooms	Tenure	Property Value*	Rent**	% of Household Income
Occupied Housing Units	**5.2**	**3.0**	**1.9**	**1.3**	**12.5**	**7.4**	**19.9**
Data Collection Mode							
Internet	2.5	2.7	1.5	0.6	3.3	3.8	10.9
Mail	8.6	6.3	3.4	2.5	14.9	8.8	17.3
CATI	4.5	0.6	0.8	0.3	17.3	7.7	26.1
CAPI	5.5	1.3	1.4	1.2	21.6	8.3	34.0

* Owner occupied housing units **Renter occupied housing units

Source: 2013 American Community Survey 1-year Estimates (For more information, see https://www.census.gov/acs)

Table A.8. Population Item Allocation Rates by Data Collection Mode: 2013 American Community Survey (in percents)

Subgroup	Overall Population Items	Race	Hispanic Origin	Citizenship	Educational Attainment*	Employment Status**	Disability	Health Insurance
Total Household Population	**8.4**	**1.5**	**2.0**	**5.2**	**7.9**	**8.1**	**8.2**	**12.5**
Data Collection Mode								
Internet	8.9	0.8	0.4	7.5	8.5	7.9	10.8	16.0
Mail	12.8	4.1	7.7	6.7	10.7	14.7	14.0	21.7
CATI	5.4	1.2	0.5	3.2	5.4	4.1	4.2	6.7
CAPI	5.7	0.7	0.3	2.7	6.2	4.4	3.2	5.1

* Universe is 3 years and over ** Universe is 15 years and over

Source: 2013 American Community Survey 1-year Estimates (For more information, see https://www.census.gov/acs)

Table A.9. Population Item Allocation Rates by Household Type, Mode, and Person Order Number: 2013 American Community Survey (in percents)

Subgroup	Overall Population Items		Race		Hispanic Origin		Citizenship		Educational Attainment*		Employment Status**		Disability		Health Insurance		Personal Income	
	Family[1]	Nonfamily	Family	Nonfamily	Family	Nonfamily	Family	Nonfamily	Family	Nonfamily	Family	Nonfamily	Family	Nonfamily	Family	Nonfamily	Family	Nonfamily
Total Population	**8.2**	**11.2**	**1.5**	**1.6**	**2.0**	**1.9**	**5.0**	**7.4**	**7.7**	**10.8**	**7.9**	**9.9**	**8.1**	**9.6**	**12.3**	**15.2**	**20.1**	**25.9**
Mail	**12.8**	**13.6**	**4.1**	**4.3**	**7.7**	**7.5**	**6.6**	**8.1**	**10.7**	**10.6**	**14.7**	**14.8**	**13.9**	**14.5**	**21.8**	**20.0**	**17.7**	**20.2**
Person 1	12.0	10.0	1.8	1.7	6.4	5.0	5.1	4.0	7.2	5.8	13.7	10.8	14.1	11.4	25.8	17.5	15.8	15.6
Person 2	11.9	15.2	3.7	5.7	7.5	9.3	5.8	9.9	9.1	12.4	13.6	16.6	12.6	15.9	20.1	21.1	18.0	23.0
Person 3	13.5	19.4	5.1	7.6	7.6	9.0	6.6	14.4	15.1	18.8	16.3	20.7	12.5	18.4	14.8	22.4	31.6	38.3
Person 4 or 5	13.9	23.7	5.5	7.3	6.7	8.5	7.2	18.6	17.7	23.4	20.2	27.3	12.4	21.8	14.9	29.1	37.6	47.2
Person 6+	45.7	49.7	42.4	36.6	42.2	36.6	43.8	41.6	48.2	55.1	57.4	54.7	47.5	47.2	48.4	55.8	80.8	87.0
CATI	**5.3**	**8.2**	**1.2**	**1.2**	**0.5**	**0.9**	**3.1**	**4.7**	**5.3**	**10.1**	**4.0**	**6.0**	**4.2**	**5.9**	**6.5**	**11.7**	**27.0**	**31.3**
Person 1	2.9	3.0	1.1	0.8	0.5	0.7	0.3	0.6	1.3	1.3	1.7	1.7	1.6	1.5	2.9	2.8	20.9	17.9
Person 2	5.6	10.3	1.2	1.3	0.5	1.0	2.9	5.8	5.8	14.2	4.3	7.2	4.0	7.4	6.8	15.9	29.3	42.7
Person 3	7.7	17.0	1.2	1.8	0.4	1.0	5.0	12.0	8.0	23.9	7.0	15.7	5.8	12.1	9.2	24.2	52.0	55.0
Person 4 or 5	9.2	26.2	1.4	1.2	0.5	1.0	7.1	22.1	10.1	29.1	11.3	30.4	7.6	21.9	10.5	32.5	57.2	64.5
Person 6+	14.6	39.5	1.8	5.0	0.3	5.0	12.5	33.8	17.8	43.4	17.0	52.9	12.8	32.8	17.3	42.1	65.9	90.4
CAPI	**5.5**	**8.5**	**0.7**	**0.9**	**0.3**	**0.6**	**2.5**	**4.2**	**5.9**	**9.6**	**4.3**	**5.7**	**3.1**	**4.2**	**4.7**	**10.2**	**34.5**	**36.8**
Person 1	5.0	3.9	0.7	0.6	0.3	0.3	1.9	1.6	4.2	3.2	3.5	2.7	2.7	2.1	3.9	2.8	29.1	22.3
Person 2	6.0	9.7	0.7	1.0	0.3	0.7	2.8	4.6	6.6	11.6	4.5	6.1	3.3	4.4	5.0	12.2	37.7	44.9
Person 3	5.5	15.1	0.7	1.4	0.3	1.0	2.7	8.4	6.5	17.7	5.4	10.9	3.3	7.0	5.0	20.4	56.2	60.0
Person 4 or 5	5.4	18.4	0.7	1.9	0.3	1.3	2.9	10.2	6.9	21.3	6.4	15.1	3.3	9.7	5.0	22.6	58.9	66.2
Person 6+	6.9	24.6	0.7	1.2	0.2	3.0	3.9	13.9	10.3	32.9	8.1	22.4	4.3	16.2	6.5	30.6	63.5	74.6
Internet	**8.5**	**14.2**	**0.7**	**1.1**	**0.4**	**0.7**	**7.2**	**12.0**	**8.2**	**12.7**	**7.5**	**13.8**	**10.5**	**15.5**	**15.7**	**20.5**	**10.9**	**16.7**
Person 1	4.5	5.3	0.6	0.9	0.3	0.5	1.2	1.8	1.6	2.2	2.7	3.5	4.6	5.0	12.7	10.6	8.2	9.8
Person 2	9.3	16.8	0.7	1.1	0.3	0.6	7.8	14.8	8.6	15.6	8.9	16.8	11.3	18.6	16.4	23.1	12.8	20.1
Person 3	12.7	31.2	0.8	1.9	0.4	1.2	11.3	29.4	14.2	31.0	14.4	34.4	14.4	33.2	16.6	38.2	24.5	45.4
Person 4 or 5	15.6	38.4	1.0	2.6	0.5	1.8	14.3	36.8	17.3	38.5	21.3	43.4	17.1	40.4	19.0	45.0	35.3	56.5
Person 6+	25.1	59.0	1.8	2.5	1.0	3.0	23.6	62.2	26.9	64.0	33.0	67.4	26.4	64.9	30.0	65.5	51.0	89.5

[1]Includes single person households

*Universe is 3 years and over ** Universe is 15 years and over

Source: 2013 American Community Survey 1-year Estimates (For more information, see https://www.census.gov/acs)

Table A.10. Housing Item Allocation Rates by Subgroup: 2013 American Community Survey (in percents)

Subgroup	Overall Housing Items	Rooms	Bedrooms	Tenure	Property Value*	Rent**	% of Household Income
Occupied Housing Units	**5.2**	**3.0**	**1.9**	**1.3**	**12.5**	**7.4**	**19.9**
Characteristic of Householder							
Age							
15 to 29	4.2	2.8	1.1	0.7	10.0	4.7	21.3
30 to 64	4.9	2.8	1.8	1.1	10.8	6.5	19.2
65 to 84	6.4	3.3	2.6	1.9	15.8	12.6	21.0
85 and over	8.3	4.7	3.3	2.6	23.7	33.3	29.2
Race							
White alone	5.1	2.6	1.9	1.2	11.7	7.4	18.6
Black alone	6.3	3.2	2.1	1.6	19.1	8.7	29.2
AIAN alone	5.7	3.3	2.0	1.2	26.3	7.5	28.2
Asian alone	5.1	7.1	2.2	1.0	11.2	5.7	18.5
NHPI alone	6.2	5.8	2.6	1.9	16.9	5.7	28.2
Some other race alone	5.6	3.8	1.6	1.0	19.9	5.0	31.0
Two or more races	5.0	4.2	1.9	1.2	12.5	5.4	20.1
Hispanic Origin							
Not Hispanic	5.2	2.8	1.9	1.3	11.9	8.0	19.3
Hispanic	5.3	4.0	1.7	1.0	17.9	4.7	25.2
Citizenship							
Native born U.S. citizen	5.2	2.7	1.9	1.3	12.2	7.8	19.2
Naturalized U.S. citizen	5.7	5.5	2.4	1.2	14.0	7.3	22.0
Non-U.S. citizen	5.2	4.3	1.6	0.8	17.6	4.6	26.6
English Speaking Ability							
Other language, No English or less than very well	5.8	5.5	2.0	1.2	23.6	5.5	27.6
Other language, English very well	5.3	4.2	1.9	1.0	13.4	5.7	22.5
English only	5.2	2.6	1.9	1.3	11.9	8.0	19.0
Educational Attainment							
Less than 9th grade	7.2	5.1	2.9	2.1	28.6	7.3	36.6
9th to 12th grade, no diploma	6.8	3.9	2.4	2.0	23.5	7.7	31.8
High school graduate	6.2	3.3	2.3	1.7	17.3	8.9	27.0
Some college, no degree	5.0	2.7	1.7	1.1	11.5	6.3	21.4
Associates degree	4.6	2.5	1.6	1.0	9.6	5.8	19.2
Bachelor's degree	4.4	2.6	1.6	0.8	7.8	6.9	17.2
Graduate or professional degree	4.2	2.5	1.6	0.8	6.6	7.7	12.9

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Table A.10. (continued)

Subgroup	Overall Housing Items	Rooms	Bedrooms	Tenure	Property Value*	Rent**	% of Household Income
Characteristics of Housing Unit							
Tenure							
Owner occupied units	5.5	2.7	2.0	1.4	12.5	NA	18.3
Renter occupied units	4.7	3.4	1.7	1.0	NA	7.4	25.0
Building Type							
Mobile home	6.0	3.1	1.8	1.6	21.4	6.2	27.8
Single family home	5.2	2.6	1.9	1.4	11.7	7.3	18.8
Apartments	5.0	3.9	1.8	0.9	14.8	7.5	23.1
Boat, RV, van, etc.	7.7	12.5	5.2	2.6	23.4	14.3	28.6

* Owner occupied housing units **Renter occupied housing units

Source: 2013 American Community Survey 1-year Estimates (For more information, see https://www.census.gov/acs)

Table A.11. Population Item Allocation Rates by Subgroup: 2013 American Community Survey (in percents)

Subgroup	Overall Population Items	Race	Hispanic Origin	Citizenship	Educational Attainment*	Employment Status**	Disability	Health Insurance
Total Household Population	**8.4**	**1.5**	**2.0**	**5.2**	**7.9**	**8.1**	**8.2**	**12.5**
Population Characteristics								
Age								
Under 5	6.7	2.3	2.0	6.5	9.2	NA	7.8	9.5
5 to 9	6.8	2.0	1.7	6.3	10.4	NA	8.4	9.3
10 to 14	6.9	1.8	1.7	6.3	11.1	NA	8.3	9.6
15 to 17	8.2	1.8	1.7	6.1	11.7	9.8	8.9	10.0
18 to 29	9.3	1.6	1.6	6.1	8.4	8.4	8.1	10.8
30 to 64	7.7	1.4	1.7	4.4	6.6	6.8	7.3	9.3
65 to 84	10.9	1.2	3.9	4.5	7.3	11.2	10.4	29.3
85 and over	13.7	1.2	4.9	6.3	10.6	15.0	13.5	33.7
Race								
White alone	8.0	1.5	1.8	4.8	7.3	7.6	7.9	12.7
Black alone	10.0	1.1	3.7	5.9	9.5	10.0	9.1	12.4
AIAN alone	9.1	1.5	2.7	5.3	9.0	8.8	8.1	13.1
Asian alone	9.4	1.2	2.8	7.2	9.6	9.3	9.7	12.8
NHPI alone	11.3	1.8	3.2	8.8	11.9	11.8	10.8	13.3
Some other race alone	8.7	4.2	0.8	6.3	10.8	8.0	7.3	9.7
Two or more races	8.4	1.5	1.8	6.0	8.6	8.8	8.4	11.1
Hispanic Origin								
Not Hispanic	8.4	1.1	2.2	5.0	7.6	8.0	8.3	13.1
Hispanic	8.2	3.6	1.3	5.8	9.5	8.2	7.4	9.7
Citizenship								
Native born U.S. citizen	8.4	1.5	2.1	5.0	7.6	8.1	8.2	12.7
Naturalized U.S. citizen	9.6	2.0	2.3	7.6	9.6	9.1	9.3	13.6
Non-U.S. citizen	7.7	2.2	1.1	5.5	10.1	6.7	6.2	8.8
Housing Characteristics								
Tenure								
Pop living in owner occ units	8.6	1.5	2.1	5.3	7.8	8.3	8.8	13.8
Pop living in renter occ units	8.0	1.6	1.8	4.9	8.1	7.6	7.0	10.1
Building Type								
Population living in mobile home	8.5	1.6	2.7	4.7	8.6	8.7	8.0	11.9
Pop living in single family home	8.4	1.5	2.0	5.3	7.9	8.1	8.5	12.9
Pop living in apartments	8.1	1.6	2.0	4.8	7.8	7.7	7.1	11.0
Pop living in boat, RV, etc.	14.6	4.7	4.3	10.0	13.5	15.1	15.4	20.1

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Table A.11. (continued)

Subgroup	Overall Population Items	Race	Hispanic Origin	Citizenship	Educational Attainment*	Employment Status**	Disability	Health Insurance
Total Household Population 5 and over	**8.4**	**1.5**	**2.0**	**5.1**	**7.9**	**8.1**	**8.2**	**12.7**
English Speaking Ability								
Other language, No English or less than very well	8.4	2.6	1.5	5.9	10.8	8.1	7.2	10.2
Other language, English very well	8.2	2.7	1.6	5.6	8.1	7.9	7.6	10.5
English only	8.5	1.2	2.2	4.9	7.5	8.1	8.4	13.3
Total Household Population 3 and over	**8.4**	**1.5**	**2.0**	**5.1**	**7.9**	**8.1**	**8.2**	**12.6**
Less than 9th grade	8.4	2.1	2.0	6.5	10.7	12.7	8.7	10.5
9th to 12th grade, no diploma	10.2	1.9	2.8	6.6	11.3	11.0	10.0	13.3
High school graduate	9.9	1.4	2.8	5.4	8.1	9.5	9.3	15.1
Some college, no degree	8.2	1.3	1.9	4.5	6.8	7.3	7.6	12.9
Associates degree	7.2	1.2	1.6	3.9	5.9	6.2	6.9	11.1
Bachelor's degree	7.1	1.1	1.3	3.9	5.5	5.9	6.7	11.5
Graduate or professional degree	6.4	1.0	1.2	3.2	4.4	5.0	6.0	12.4

* Universe is 3 years and over

** Universe is 15 years and over

Source: 2013 American Community Survey 1-year Estimates (For more information, see https://www.census.gov/acs)

Appendix B. Margin of Error Tables

Table B.1. Margins of Error for Housing Item Allocation Rates for American Indian Alaska Native Areas: 2009 to 2013 American Community Survey 5-year Estimates (in percents)

Overall Housing Items	Rooms	Bedrooms	Tenure	Property Value*	Rent**	% of Household Income
0.04	0.07	0.06	0.05	0.16	0.18	0.22

* Owner occupied housing units **Renter occupied housing units

Source: 2009-2013 American Community Survey 5-year Estimates (For more information, see https://www.census.gov/acs)

Table B.2. Margins of Error for Population Item Allocation Rates for American Indian Alaska Native Areas: 2009 to 2013 American Community Survey 5-year Estimates (in percents)

Overall Population Items	Race	Hispanic Origin	Citizenship	Educational Attainment*	Health Insurance Coverage	Disability	Employment Status**
0.06	0.04	0.05	0.06	0.08	0.11	0.09	0.08

*Universe is 3 years and over ** Universe is 15 years and over

Source: 2009-2013 American Community Survey 5-year Estimates (For more information, see https://www.census.gov/acs)

Table B.3. Margins of Error for Population Item Allocation Rates by Type of Group Quarters: 2013 American Community Survey (in percents)

Subgroup	Overall Population Items	Race	Hispanic Origin	Citizenship	Educational Attainment*	Emp. Status**	Disability	Health Insurance	% of Individual Income
Total Group Quarters Population	**0.14**	**0.11**	**0.11**	**0.16**	**0.17**	**0.25**	**0.19**	**0.17**	**0.70**
Type of Group Quarters									
Adult Correctional	0.25	0.16	0.14	0.25	0.31	NA	0.34	0.36	2.07
Juvenile Facilities	0.57	0.40	0.44	0.70	1.15	NA	0.79	1.02	5.16
Nursing Facilities	0.14	0.08	0.12	0.21	0.44	NA	0.23	0.24	0.96
Other Health Care	1.19	1.78	1.75	1.81	2.16	NA	1.87	1.49	4.22
College	0.29	0.29	0.28	0.31	0.22	0.38	0.41	0.35	0.88
Military	0.47	0.47	0.42	0.68	0.65	0.68	0.49	0.73	1.19
Other Noninstitutional	0.36	0.11	0.17	0.38	0.57	0.43	0.40	0.52	2.39

* Universe is 3 years and over ** Universe is 15 years and over

Source: 2013 American Community Survey 1-year Estimates (For more information, see https://www.census.gov/acs)

Table B.4. Margins of Error for Housing Item Allocation Rates by Data Collection Mode: 2013 American Community Survey (in percents)

Subgroup	Overall Housing Items	Rooms	Bedrooms	Tenure	Property Value*	Rent**	% of Household Income
Occupied Housing Units	**0.02**	**0.02**	**0.09**	**0.03**	**0.02**	**0.14**	**0.08**
Data Collection Mode							
Internet	0.01	0.01	0.04	0.03	0.03	0.09	0.10
Mail	0.03	0.03	0.09	0.07	0.04	0.13	0.12
CATI	0.03	0.02	0.20	0.04	0.04	0.25	0.30
CAPI	0.04	0.04	0.17	0.04	0.04	0.21	0.11

* Owner occupied housing units **Renter occupied housing units

Source: 2013 American Community Survey 1-year Estimates (For more information, see https://www.census.gov/acs)

Table B.5. Margins of Error for Population Item Allocation Rates by Data Collection Mode: 2013 American Community Survey (in percents)

Subgroup	Overall Population Items	Race	Hispanic Origin	Citizenship	Educational Attainment*	Employment Status**	Disability	Health Insurance
Total Household Population	**0.04**	**0.02**	**0.03**	**0.04**	**0.04**	**0.05**	**0.06**	**0.08**
Data Collection Mode								
Mail	**0.05**	**0.05**	**0.06**	**0.06**	**0.06**	**0.08**	**0.08**	0.09
CATI	0.09	0.05	0.03	0.10	0.11	0.10	0.11	0.13
CAPI	0.05	0.03	0.02	0.05	0.07	0.06	0.06	0.07
Internet	0.06	0.02	0.01	0.07	0.08	0.07	0.08	0.09

* Universe is 3 years and over ** Universe is 15 years and over

Source: 2013 American Community Survey 1-year Estimates (For more information, see https://www.census.gov/acs)

Table B.6. Margins of Error for Housing Item Allocation Rates for Vacant Housing Units by Mode: 2013 American Community Survey (in percents)

Mode	Overall Housing Items	Rooms	Bedrooms	Property Value*	Rent**
Vacant housing units	**0.09**	**0.18**	**0.17**	**0.60**	**0.45**
Mail	0.82	1.05	0.99	2.53	4.92
CATI	0.12	0.19	0.21	1.82	2.60
CAPI	0.10	0.19	0.18	0.63	0.46
Internet	0.48	0.60	0.51	2.06	2.25

*Only vacant-for-sale housing units **Only vacant-for-rent housing units

Source: 2013 American Community Survey 1-year Estimates (For more information, see https://www.census.gov/acs)

Table B.7. Margins of Error for Population Item Allocation Rates by Household Type, Mode, and Person Order Number: 2013 American Community Survey (in percents)

Subgroup	Overall Population Items		Race		Hispanic Origin		Citizenship		Educational Attainment*		Employment Status**		Disability		Health Insurance		% of Individual Income	
	Fam[1]	Nonfam[2]	Fam	Nonfam	Fam	Nonfam	Fam	Nonfam	Fam	Nonfam	Fam	Nonfam	Fam	Nonfam	Fam	Nonfam	Fam	Nonfam
Total Population	**0.04**	**0.15**	**0.02**	**0.07**	**0.03**	**0.08**	**0.04**	**0.17**	**0.05**	**0.20**	**0.05**	**0.18**	**0.06**	**0.20**	**0.08**	**0.21**	**0.14**	**0.38**
Mail	**0.05**	**0.23**	**0.05**	**0.18**	**0.07**	**0.25**	**0.06**	**0.26**	**0.07**	**0.28**	**0.09**	**0.31**	**0.08**	**0.34**	**0.09**	**0.32**	**0.13**	**0.58**
Person 1	0.05	0.21	0.03	0.14	0.06	0.22	0.05	0.22	0.06	0.25	0.08	0.33	0.09	0.33	0.11	0.39	0.15	0.70
Person 2	0.07	0.26	0.07	0.27	0.09	0.32	0.07	0.32	0.10	0.35	0.12	0.36	0.11	0.39	0.13	0.38	0.23	0.75
Person 3	0.12	0.99	0.10	0.78	0.14	0.80	0.13	1.08	0.17	1.09	0.23	1.30	0.16	1.32	0.17	1.22	0.63	2.91
Person 4 or 5	0.16	2.05	0.14	1.40	0.16	1.34	0.15	2.19	0.23	2.36	0.38	2.93	0.16	2.25	0.19	2.77	1.02	4.76
Person 6+	0.84	8.91	0.79	11.06	0.79	11.06	0.80	10.94	0.83	10.04	1.48	11.45	0.82	10.93	0.77	9.16	1.56	8.80
CATI	**0.09**	**0.49**	**0.06**	**0.24**	**0.03**	**0.26**	**0.10**	**0.54**	**0.12**	**0.66**	**0.10**	**0.61**	**0.11**	**0.57**	**0.13**	**0.66**	**0.26**	**1.46**
Person 1	0.04	0.24	0.05	0.17	0.03	0.25	0.03	0.20	0.07	0.32	0.06	0.37	0.07	0.35	0.09	0.43	0.31	1.59
Person 2	0.10	0.54	0.06	0.29	0.04	0.28	0.11	0.64	0.14	0.89	0.13	0.69	0.13	0.63	0.17	0.93	0.40	2.17
Person 3	0.17	1.96	0.08	0.90	0.05	0.56	0.17	1.99	0.22	3.03	0.27	2.59	0.18	1.97	0.25	2.53	0.84	6.29
Person 4 or 5	0.28	4.50	0.11	1.25	0.08	1.24	0.27	5.18	0.33	4.99	0.54	6.51	0.27	4.83	0.34	5.66	1.48	8.88
Person 6+	0.91	18.47	0.29	8.31	0.11	8.31	0.92	19.70	1.10	21.11	1.65	27.22	0.96	21.22	1.04	20.74	2.77	15.90
CAPI	**0.06**	**0.22**	**0.03**	**0.11**	**0.02**	**0.08**	**0.05**	**0.22**	**0.08**	**0.33**	**0.07**	**0.26**	**0.06**	**0.24**	**0.07**	**0.32**	**0.21**	**0.65**
Person 1	0.05	0.14	0.02	0.08	0.02	0.05	0.05	0.14	0.08	0.20	0.06	0.18	0.06	0.15	0.07	0.18	0.25	0.74
Person 2	0.06	0.25	0.03	0.12	0.02	0.09	0.06	0.27	0.10	0.42	0.08	0.29	0.07	0.27	0.08	0.40	0.32	0.83
Person 3	0.09	0.57	0.04	0.30	0.03	0.22	0.08	0.59	0.13	0.94	0.16	0.68	0.09	0.59	0.11	0.90	0.79	1.64
Person 4 or 5	0.12	1.17	0.06	0.52	0.03	0.41	0.11	1.20	0.16	1.58	0.30	1.77	0.12	1.25	0.14	1.69	0.97	3.27
Person 6+	0.37	4.48	0.13	1.14	0.07	2.22	0.33	4.43	0.56	5.99	0.78	6.16	0.35	5.22	0.41	5.76	1.75	8.62
Internet	**0.06**	**0.26**	**0.02**	**0.10**	**0.02**	**0.08**	**0.07**	**0.30**	**0.08**	**0.30**	**0.07**	**0.31**	**0.08**	**0.30**	**0.09**	**0.33**	**0.10**	**0.42**
Person 1	0.03	0.12	0.02	0.09	0.01	0.06	0.02	0.12	0.03	0.13	0.03	0.13	0.04	0.18	0.07	0.27	0.09	0.41
Person 2	0.07	0.31	0.02	0.10	0.01	0.07	0.08	0.34	0.09	0.36	0.08	0.35	0.09	0.36	0.10	0.42	0.15	0.56
Person 3	0.12	0.91	0.03	0.30	0.02	0.23	0.12	0.97	0.15	0.98	0.19	1.14	0.13	1.08	0.14	1.07	0.49	2.06
Person 4 or 5	0.19	1.40	0.05	0.59	0.03	0.51	0.20	1.45	0.23	1.61	0.36	1.89	0.20	1.62	0.21	1.72	0.79	4.27
Person 6+	0.61	5.02	0.19	1.67	0.16	2.40	0.64	6.26	0.70	6.20	1.00	6.51	0.68	5.80	0.66	5.97	2.01	5.42

[1]Family households ⁱncludes single person households [2]Nonfamily households

*Universe is 3 years and over ** Universe is 5 years and over

Source: 2013 American Community Survey 1-year Estimates (For more information, see https://www.census.gov/acs)

Table B.8. Margins of Error for Housing Item Allocation Rates by Subgroup: 2013 American Community Survey (in percents)

Subgroup	Overall Housing Items	Rooms	Bedrooms	Tenure	Property Value*	Rent**	% of Household Income
Occupied Housing Units							
Characteristic of Householder							
Age							
15 to 29	0.05	0.08	0.05	0.04	0.32	0.15	0.28
30 to 64	0.02	0.03	0.02	0.02	0.10	0.10	0.14
65 to 84	0.04	0.06	0.05	0.05	0.12	0.28	0.19
85 and over	0.10	0.16	0.15	0.12	0.40	0.81	0.49
Race							
White alone	0.02	0.03	0.02	0.02	0.09	0.09	0.14
Black alone	0.05	0.08	0.05	0.05	0.29	0.18	0.27
AIAN alone	0.18	0.28	0.18	0.18	0.73	0.64	1.08
Asian alone	0.07	0.17	0.10	0.06	0.30	0.27	0.42
NHPI alone	0.60	0.89	0.65	0.63	2.57	1.42	2.11
Some other race alone	0.09	0.12	0.09	0.07	0.58	0.26	0.54
Two or more races	0.10	0.18	0.12	0.09	0.48	0.38	0.66
Hispanic Origin							
Not Hispanic	0.02	0.03	0.02	0.02	0.09	0.09	0.14
Hispanic	0.04	0.08	0.05	0.03	0.24	0.13	0.30
Citizenship							
Native born U.S. citizen	0.02	0.03	0.02	0.02	0.09	0.09	0.14
Naturalized U.S. citizen	0.05	0.11	0.06	0.05	0.22	0.27	0.32
Non-U.S. citizen	0.06	0.12	0.07	0.04	0.41	0.17	0.39
English Speaking Ability							
Other language, No English or less than very well	0.07	0.14	0.08	0.06	0.35	0.24	0.61
Other language, English very well	0.03	0.07	0.04	0.03	0.17	0.14	0.23
English only	0.02	0.03	0.02	0.02	0.09	0.09	0.15
Educational Attainment							
Less than 9th grade	0.09	0.14	0.10	0.09	0.43	0.25	0.50
9th to 12th grade, no diploma	0.07	0.11	0.08	0.07	0.33	0.23	0.43
High school graduate	0.03	0.05	0.04	0.04	0.16	0.17	0.22
Some college, no degree	0.03	0.05	0.04	0.03	0.15	0.13	0.19
Associates degree	0.05	0.07	0.05	0.05	0.19	0.20	0.30
Bachelor's degree	0.03	0.05	0.04	0.02	0.12	0.18	0.21
Graduate or professional degree	0.04	0.06	0.04	0.04	0.11	0.28	0.18

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Continued…Table B.8. Margins of Error for Housing Item Allocation Rates by Subgroup: 2013 American Community Survey (in percents)

Subgroup	Overall Housing Items	Rooms	Bedrooms	Tenure	Property Value*	Rent**	% of Household Income
Characteristics of Housing Unit							
Tenure							
Owner occupied units	0.02	0.03	0.03	0.02	0.09	NA	0.13
Renter occupied units	0.02	0.06	0.03	0.02	NA	0.08	0.19
Building Type							
Mobile home	0.07	0.10	0.08	0.08	0.33	0.39	0.45
Single family home	0.02	0.03	0.02	0.02	0.08	0.13	0.14
Apartments	0.03	0.07	0.04	0.03	0.28	0.10	0.24
Boat, RV, van, etc.	0.71	1.39	1.02	0.74	2.61	3.89	5.11

* Owner occupied housing units **Renter occupied housing units

Source: 2013 American Community Survey 1-year Estimates (For more information, see https://www.census.gov/acs)

Table B.9. Margins of Error for Population Item Allocation Rates by Subgroup: 2013 American Community Survey (in percents)

Subgroup	Overall Population Items	Race	Hispanic Origin	Citizenship	Educational Attainment*	Employment Status**	Disability	Health Insurance
Total Household Population	**0.04**	**0.02**	**0.03**	**0.04**	**0.04**	**0.05**	**0.06**	**0.08**
Population Characteristics								
Age								
Under 5	0.11	0.06	0.06	0.13	0.19	NA	0.14	0.16
5 to 9	0.09	0.06	0.05	0.11	0.14	NA	0.13	0.13
10 to 14	0.09	0.06	0.05	0.11	0.15	NA	0.13	0.13
15 to 17	0.12	0.06	0.06	0.12	0.19	0.18	0.16	0.15
18 to 29	0.09	0.04	0.04	0.09	0.09	0.11	0.11	0.12
30 to 64	0.03	0.02	0.02	0.04	0.05	0.04	0.05	0.05
65 to 84	0.06	0.03	0.06	0.05	0.07	0.10	0.09	0.19
85 and over	0.15	0.08	0.14	0.17	0.21	0.22	0.24	0.35
Race								
White alone	0.03	0.02	0.02	0.04	0.05	0.05	0.05	0.07
Black alone	0.11	0.04	0.10	0.12	0.13	0.16	0.17	0.16
AIAN alone	0.29	0.16	0.19	0.32	0.37	0.38	0.40	0.48
Asian alone	0.12	0.07	0.10	0.14	0.17	0.17	0.16	0.17
NHPI alone	0.86	0.47	0.54	0.97	1.09	1.13	1.02	1.09
Some other race alone	0.18	0.16	0.06	0.19	0.24	0.22	0.23	0.25
Two or more races	0.17	0.11	0.09	0.18	0.21	0.21	0.23	0.23
Hispanic Origin								
Not Hispanic	0.04	0.02	0.03	0.04	0.05	0.05	0.06	0.08
Hispanic	0.09	0.08	0.04	0.10	0.11	0.12	0.13	0.14
Citizenship								
Native born U.S. citizen	0.04	0.02	0.03	0.04	0.05	0.05	0.06	0.08
Naturalized U.S. citizen	0.09	0.06	0.06	0.12	0.12	0.13	0.13	0.16
Non-U.S. citizen	0.10	0.07	0.05	0.11	0.17	0.12	0.13	0.14
Housing Characteristics								
Tenure								
Pop living in owner occ units	0.04	0.02	0.03	0.04	0.05	0.05	0.06	0.08
Pop living in renter occ units	0.06	0.04	0.04	0.07	0.07	0.09	0.09	0.10
Building Type								
Population living in mobile home	0.14	0.08	0.10	0.14	0.19	0.18	0.19	0.23
Pop living in single family home	0.04	0.02	0.03	0.05	0.05	0.05	0.06	0.08
Pop living in apartments	0.07	0.04	0.04	0.07	0.08	0.09	0.09	0.11
Pop living in boat, RV, etc.	1.52	0.96	0.93	1.73	1.83	1.75	1.93	2.06

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Continued…Table B.9. Margins of Error for Population Item Allocation Rates by Subgroup: 2013 American Community Survey (in percents)

Subgroup	Overall Population Items	Race	Hispanic Origin	Citizenship	Educational Attainment *	Employment Status**	Disability	Health Insurance
Total Household Population 5 and over	**0.04**	**0.02**	**0.03**	**0.04**	**0.04**	**0.05**	**0.06**	**0.08**
English Speaking Ability								
Other language, No English or less than very well	0.09	0.07	0.05	0.11	0.15	0.13	0.12	0.14
Other language, English very well	0.08	0.06	0.04	0.08	0.10	0.11	0.11	0.12
English only	0.04	0.02	0.03	0.04	0.05	0.05	0.06	0.07
Total Household Population 3 and over	**0.04**	**0.02**	**0.03**	**0.04**	**0.04**	**0.05**	**0.06**	**0.08**
Educational Attainment								
Less than 9th grade	0.09	0.05	0.04	0.09	0.12	0.21	0.12	0.13
9th to 12th grade, no diploma	0.09	0.04	0.06	0.09	0.12	0.13	0.12	0.13
High school graduate	0.06	0.03	0.05	0.06	0.07	0.08	0.09	0.11
Some college, no degree	0.06	0.03	0.03	0.06	0.07	0.08	0.08	0.09
Associates degree	0.06	0.05	0.05	0.07	0.09	0.08	0.09	0.13
Bachelor's degree	0.05	0.03	0.03	0.05	0.07	0.06	0.06	0.08
Graduate or professional degree	0.06	0.04	0.03	0.06	0.07	0.07	0.07	0.11

* Universe is 3 years and over ** Universe is 15 years and over

Source: 2013 American Community Survey 1-year Estimates (For more information, see https://www.census.gov/acs)