



UNITED STATES DEPARTMENT OF COMMERCE
Economics and Statistics Administration
U.S. Census Bureau
Washington, DC 20233-0001

September 9, 2014

2014 AMERICAN COMMUNITY SURVEY RESEARCH AND EVALUATION REPORT
MEMORANDUM SERIES #ACS14-RER-26

MEMORANDUM FOR ACS Research and Evaluation Advisory Group

From: James B. Treat (signed on September 5, 2014)
Chief, American Community Survey Office

Prepared by: Sandra Lockett Clark
American Community Survey Office

Subject: Evaluation of the Effect on Item Nonresponse of Changes to the Failed Edit
Follow-up Operation

Attached is the final American Community Survey (ACS) Research and Evaluation report, "Evaluation of the Effect on Item Nonresponse of Changes to the Failed Edit Follow-up Operation". We conducted this evaluation to understand the effect the cut back in follow-up had on data quality. If you have any questions about this report, please contact Sandra Clark at 301-763-5884.

Attachment

cc:
ACS Research and Evaluation Workgroup
David Raglin (ACSO)
Dameka Reese
Tony Tersine (DSSD)
Beth Tyszka
Mary Frances Zelenak
Michael Ikeda (CSRM)

Evaluation of the Effect on Item Nonresponse of Changes to the Failed Edit Follow-up Operation

FINAL REPORT

Sandra Lockett Clark

American Community Survey Office



Executive Summary

Over the last two years, the American Community Survey has made changes to its data collection operations. On October 1, 2012, the ACS reduced the scope of the Failed Edit Follow-up operation, resulting in substantially fewer incomplete self-response returns going to follow-up. In addition, we added a new mode of data collection starting with the January 2013 ACS panel, allowing respondents to complete the survey over the Internet. Because of these changes, we expected to see differences in item nonresponse.

We compared item allocation rates prior to the changes to item allocation rates after the changes were made and found the reduction in follow-up resulted in higher allocation rates. The addition of the Internet mode helped lower the allocation rates for many of the items in the housing section of the survey, however the new mode resulted in even higher allocation rates for the items in the detailed population section of the survey.

Introduction

The American Community Survey (ACS) conducts a follow-up operation to re-contact responding households to try to collect information missing or inconsistent on self-response questionnaires and Internet surveys. This operation is called Failed Edit Follow-up (FEFU)¹.

Due to budget cuts, the ACS reduced the scope of the FEFU operation on October 1, 2012. The reduction resulted in significantly fewer cases going to FEFU, and therefore we expected to see an increase in item nonresponse.

With the January 2013 panel, the ACS started collecting self-response data via the Internet. Due to the design of the Internet survey, very few Internet responses from occupied households meet the new eligibility requirements and go to FEFU. With Internet responses accounting for over half of the self-response returns in 2013, the FEFU workload was further reduced, and therefore we expected to see an additional impact on item nonresponse.

Given the recent changes, we believe it is important to document the effects of the FEFU reduction. The primary benefit is an understanding of the effect of the cutback in follow-up on data quality. This evaluation compares item allocation rates prior to the FEFU reduction to item allocation rates for two post reduction periods – prior to the addition of the Internet mode and after the Internet mode was implemented.

Background

The ACS uses multiple modes of data collection, starting with self-response modes, which encourage households in sample to complete and return the survey on their own. Prior to the January 2013 ACS panel², the mail questionnaire was the only self-response mode. Beginning

¹ For more information on FEFU, see U.S. Census Bureau (2014).

² For information on data collection and ACS sample panels, see U.S. Census Bureau (2014).

with the January 2013 panel, there are two self-response modes: Internet and mail. Initial mailings are sent to sampled households instructing them to complete the survey online. If an online response is not received within two weeks, we send a mail questionnaire. Those who choose not to reply by self-response are eligible to be contacted by an interviewer over the telephone (Computer Assisted Telephone Interview (CATI)) or in person (Computer Assisted Personal Interview (CAPI)). In addition, we follow-up (by phone) with some mail and Internet respondents in an attempt to retrieve missing data through our Failed Edit Follow-up Operation (FEFU). Note some returns are also completed over the phone as a result of the respondent calling our help line for Telephone Questionnaire Assistance (TQA). This evaluation focuses only on responses from the mail and Internet modes after eligible returns are sent to FEFU.

Prior to October 1, 2012, roughly one third of mail respondents were eligible for FEFU. Responding households were eligible for coverage and content reasons. Coverage reasons included mail responses for households consisting of more than five people (there is room on the questionnaire to collect data for only five people), mail responses where the count of people (household size) on the cover page did not equal the number of persons with data on the form, and mail responses with preliminary data indicating the housing unit was vacant or temporarily occupied. Content reasons included mail responses with varying degrees of missing data, as determined by criteria in the “mail return edit.” No matter the reason a case goes to FEFU, the interviewer attempts to collect all missing data.

On October 1, 2012, the ACS reduced the scope of the FEFU operation to only send households eligible for coverage reasons. Coverage cases represent a small percentage of the old FEFU workload. With significantly fewer cases going to FEFU, we expected to see an increase in item nonresponse. However, the reduction affected only 3 months of 2012 ACS data and subject matter analysts did not identify any major concerns during their review of the 2012 data.

With the January 2013 panel, the ACS added the Internet mode. The Internet mode was successful and approximately 55 percent of the 2013 self-response returns were collected through an Internet survey (Baumgardner et al (2014)). Unlike the mail questionnaire, the Internet survey is not restricted to only collecting data for five household members. In addition, the Internet survey does not include a cover page asking for a count of household members. The only Internet surveys that meet the new FEFU eligibility requirements are those with data indicating the housing unit is vacant, which is a very small number of surveys. Therefore, adding the Internet mode further reduced the number of self-response returns sent to FEFU. We suspected this would lead to an additional increase in item nonresponse.

During the 2013 data review, subject matter analysts compared the 2013 item allocation rates to the 2012 item allocation rates, and found that the 2013 rates were significantly higher for many items. Reviewing the rates by mode showed the increase was primarily in the self-response modes. This evaluation examines the effect the reduction in the FEFU operation had on item allocation rates from self-response returns.

Research Questions

This report answers the following research questions:

- 1) How do the item allocation rates post FEFU reduction compare to the pre FEFU reduction rates?
- 2) Are there any additional effects from the introduction of the Internet mode?

Methodology and Limitations

To answer the research questions, we compared the item allocation rates from self-response returns collected prior to the FEFU reduction with the item allocation rates from self-response returns collected after the reduction was implemented. We broke the post reduction period into two groups: one before the introduction of the Internet mode and one after the introduction of the Internet mode. The three periods we researched are:

Pre FEFU cut: January 2012 to September 2012

Post FEFU cut, Pre Internet: October 2012 to December 2012

Post FEFU cut, Post Internet: January 2013 to September 2013³

We defined these groups using the date we sent the return through the algorithm used to determine if the return was eligible for FEFU.

We used self-response data from the 2012 ACS and the 2013 ACS⁴. We excluded data from group quarters and Puerto Rico. The research datasets included response data and flag variables indicating whether the response was reported, edited/assigned, or allocated. 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 donor. Using the response data and flag variables, we created allocation rates for all survey items using the following formula:

Allocation rate for item X = (# allocated a response for item X / # in universe for item X) * 100

³ We chose the January to September 2013 period to be consistent with the January to September 2012 period. In addition, the government shutdown in October 2013 affected our data collection operations; therefore, we chose to exclude any return coming in after September 30, 2013. We also excluded records from the October 2013 panel that came in during September 2013. Note a small number of returns in the 2013 datasets are 2012 panel mail returns that came in after January 1, 2013. These returns are from housing units that were not part of the “push-Internet” notification strategy (first implemented for the January 2013 panel cases), and therefore they were never given an Internet option.

⁴ The datasets used for this evaluation were created after we applied the primary selection algorithm, which selects a single return for housing units with multiple returns. Returns not selected were not included in our research datasets, even if the return was included in our FEFU operation.

All estimates shown in the report are weighted using the base weights, which account for the sample design. We conducted statistical testing for the estimates shown in the report. To do this, we used replicate weights⁵ to calculate margins of error (MOE) for each estimate. In addition, we calculated MOEs for the differences between the pre FEFU and post FEFU allocation rates from periods falling in the same calendar year⁶. Our tests use a 90 percent confidence level. We did not make adjustments for multiple comparisons.

We calculated the rates in this study using only self-response data collected during specific time periods, and therefore they are not the official ACS allocation rates. In addition, the results in this study are from data collected using the ACS data collection methods. The ACS first attempts to collect data from respondents through the Internet survey, then two weeks later we follow up with those who have not responded by sending a mail questionnaire. Respondents are not assigned to respond by mail or Internet randomly; rather those who get both modes ultimately have a choice in their response method. Therefore, the results in this report are not generalizable to how respondents respond to all mail surveys and Internet surveys.

Results

How do the item allocation rates post FEFU reduction compare to the pre FEFU reduction rates?

Table 1 in the Appendix shows self-response item allocation rates for the Pre FEFU cut period and Post FEFU cut, Pre Internet period.

The table shows the reduction in FEFU clearly had a negative impact on item allocation rates. The rates for all items, except *the month moved in* item (which is not significantly different between periods) are higher for the Post FEFU cut, Pre Internet period than the Pre FEFU cut period. The FEFU reduction had a larger impact on the population items than the housing items. The overall allocation rate for the housing items is 1.8 percentage points higher for the period following the FEFU reduction and the overall allocation rate for the population items is 3.4 percentage points higher. This finding is not surprising since population items are more likely than housing items to be left blank (and sent to FEFU under the old eligibility requirements) because there are more population items than housing items, they are located towards the end of the survey, and they are asked of all the people living in the household.

Are there any additional effects from the introduction of the Internet mode?

Self-response item allocation rates for the Pre FEFU cut period and Post FEFU cut, Post Internet period are shown in Table 2 in the Appendix.

⁵ The ACS uses successive difference replication to produce the margins of error. For more information, see U.S. Census Bureau (2014).

⁶ To compare rates for the pre-FEFU period and post-FEFU, pre-Internet period, we calculated the MOEs on the difference between the periods because both periods include dates in the same calendar year. To compare rates for the pre-FEFU period and post-FEFU, post-Internet period, we compared the individual MOEs to determine statistical significance because the dates for these periods are in different calendar years.

Table 2 reiterates the findings shown in Table 1 – overall the FEFU reduction had a negative impact on item allocation rates. All differences in Table 2 are statistically significant, except the difference for the *service connected disability rating value* item. The rates for most items are higher for the Post FEFU cut, Post Internet period than the Pre FEFU cut period. However, this table shows that for some items the Internet mode was able to minimize the effect the FEFU reduction had on allocation rates. For seven items, it appears the Internet mode completely offset the negative effect of the FEFU reduction and for those items actually resulted in lower allocation rates than those from the Pre FEFU cut period. Six of the seven items with lower rates for the Post FEFU cut, Post Internet period are located in the housing section of the survey and the remaining item (*sex*) is in the basic demographic section.

Interestingly, the differences shown in Table 2 for most housing items are smaller than the differences shown in Table 1⁷. This suggests that even though the addition of the Internet mode resulted in a further reduction in follow-up, it resulted in more responses to the housing items on self-response returns than we would have had under the new FEFU eligibility requirements with mail as the only self-response mode.

The population items allocation rates, however, appear to have taken a further hit with the addition of the Internet mode. Many of the differences for the population items shown in Table 2 are larger than the differences shown in Table 1. This suggests the additional decrease in FEFU caused by adding the Internet mode resulted in even higher item allocation rates for most population items than the initial increase observed after the October 2012 cut.

To help understand these findings, we looked at the self-response allocation rates for the Post FEFU cut, Post Internet period separately by mode. Table 3 in the Appendix shows the mail and Internet rates for the Post FEFU cut, Post Internet period.

Four of the items listed in Table 3 have no significant difference in allocation rates between modes (*citizenship, visual difficulty, fertility, and responsibility for grandchildren*), while the rest of the items have rates that are statistically different between modes. All of the items with different rates had lower Internet rates than mail rates, except three items (*hearing difficulty, months responsible for grandchildren, and time of departure*). What is interesting is the Post FEFU cut, Post Internet mail rates in Table 3 are higher than the mail rates from the Post FEFU cut, Pre Internet period shown in Table 1⁸. Adding the Internet mode resulted in more missing data from mail returns and even higher mail item allocation rates. It should be noted the universe for these two periods are different because some households included in the Post FEFU cut, Post Internet period had the option to chose to respond by Internet or mail, while mail was the only self-response option for households in the Post FEFU, Pre Internet period.

While the mail allocation rates are higher for most population and housing items after adding Internet, the difference for the population items is greater than the difference for the housing

⁷ There are seven exceptions. The differences for four housing items are not statistically different (*bathtub or shower, sink with faucet, stove or range, and other monthly mortgage payment*) and three housing items have larger differences in Table 2 than Table 1 (*month moved in, monthly mortgage payment, and monthly condominium fee*).

⁸ There are two exceptions. The difference for the *service connected disability rating value* item is not statistically different and the difference for the *sex* item is slightly lower in Table 3 than Table 1.

items. In addition, the Internet item allocation rates are higher for the population items than the housing items. In the Internet mode, the overall allocation rate for housing items is 2.0 percent and the overall allocation rate for population items is 7.9 percent. For housing items, the low Internet rates offset the higher mail rates and brought the overall self-response rates closer to the Pre FEFU cut rates. However, it appears that even though the Internet rates for most population items are lower than the mail rates they are not low enough to offset the higher mail rates. Therefore, the overall self-response allocation rates for the population items are higher in the Post FEFU cut, Post Internet period than they are in the other periods.

More research is necessary to understand why mail item nonresponse increased due to adding the Internet mode. One hypothesis is our better (more thorough) mail responders may have decided to complete the Internet survey, while mail responders who are less thorough and tend to leave more items blank continue to use the mail mode.

Conclusion

This research confirms the reduction in the FEFU workload occurring in October 2012 had a negative impact on item allocation rates. The reduction had a greater effect on items in the population section than it did on items in the housing section; however, all items on the survey (except one, which was not statistically different) had higher allocation rates after the reduction.

Adding the Internet mode in January 2013 appears to have had both a positive and negative effect on item allocation rates. Items in the housing section had lower rates once we added the Internet mode than prior to the Internet mode under the new FEFU eligibility rules. However, the housing item rates were still higher than the Pre FEFU cut rates. Unfortunately, the addition of the Internet mode appears to have further increased the self-response item allocation rates for the items in the population section of the survey. The addition of the Internet mode resulted in even higher mail item allocation rates, which contributed to higher overall item allocation rates in the self-response modes.

More research is necessary to investigate ways to improve our item allocation rates. Based on the findings in this evaluation, we recommend bringing back the old FEFU eligibility rules. This would improve our item allocation rates and could be implemented quickly if funding were available. If we were able to do this, we would re-evaluate our item allocation rates to verify they improved. Then we could continue our research to make sure we have the best criteria for determining which returns we follow-up with in FEFU.

In addition, we can research other ways to reduce Internet item nonresponse. One way to do this, which is currently being researched, is to reduce Internet breakoffs. An Internet breakoff occurs when a household starts but does not finish an Internet survey. Research has shown breakoffs present issues to the survey, especially for questions appearing later in the survey (Horwitz (2013)). Finally, more research is needed to understand the characteristics of Internet and mail respondents, and their differences. This would provide insight into additional areas for improvement.

References

Baumgardner, S., Griffin, D., and Raglin, D. (2014). "The Effects of Adding an Internet Response Option to the American Community Survey," 2014 American Community Survey Research and Evaluation Report Memorandum Series #ACS14-RER-21, May 29, 2014.

Horwitz, R., Tancreto, J. G., Zelenak, M. F., and Davis, M. C. (2013). "Use of Paradata to Assess the Quality and Functionality of the American Community Survey Internet Instrument," 2012 American Community Survey Research and Evaluation Report Memorandum Series #ACS12-RER-26-R1, January 17, 2013.

U.S. Census Bureau (2014), "(ACS) Design and Methodology," available at: http://www.census.gov/acs/www/methodology/methodology_main/, last accessed in August 2014.

Appendix

Table 1. Item Allocation Rates – Pre FEFU cut vs. Post FEFU cut, Pre Internet

Item	Pre FEFU cut (Jan - Sep 2012)		Post FEFU cut, Pre Internet (Oct - Dec 2012)		Difference -- Post FEFU cut, Pre Internet minus Pre FEFU cut	MOE of Diff
	Total Self Resp	MOE	Total Self Resp	MOE		
<u>Overall Housing items</u>	3.6	--	5.4	--	1.8	--
Tenure	0.9	--	1.7	--	0.8	--
Units in structure	0.7	--	1.5	--	0.7	--
Year moved in	1.9	--	3.1	0.1	1.2	0.1
Month moved in	0.5	--	0.5	--	0.0#	--
Year built	5.8	--	6.2	0.1	0.4	0.1
Lot size	5.1	--	7.9	0.1	2.9	0.1
Agricultural sales	4.1	0.1	6.5	0.2	2.4	0.2
Business on property	4.5	--	6.7	0.1	2.2	0.1
Number of rooms	3.8	--	4.7	0.1	1.0	0.1
Number of bedrooms	1.7	--	2.6	--	0.9	0.1
Running water	0.7	--	1.2	--	0.5	--
Flush toilet	0.8	--	1.4	--	0.6	--
Bathtub or shower	0.8	--	1.4	--	0.6	--
Sink with faucet	0.8	--	1.5	--	0.6	--
Stove or range	0.9	--	1.5	--	0.6	--
Refrigerator	1.1	--	1.7	--	0.6	--
Telephone	1.3	--	2.2	--	0.9	--
Number of vehicles	1.0	--	1.6	--	0.6	--
Heating fuel	3.6	--	5.3	0.1	1.7	0.1
Monthly electric costs	2.9	--	5.1	0.1	2.3	0.1
Monthly gas costs	8.9	--	13.6	0.1	4.8	0.1
Yearly water and sewer costs	4.9	--	8.3	0.1	3.3	0.1
Yearly other fuel costs	16.0	0.1	23.5	0.1	7.5	0.1
Yearly household food stamp reciprocity	1.0	--	1.8	--	0.8	--
Yearly real estate taxes	9.0	0.1	14.0	0.1	5.0	0.1
Yearly property insurance	14.0	0.1	18.5	0.1	4.5	0.2
Mortgage status	1.4	--	2.8	0.1	1.4	0.1
Monthly mortgage payment	6.5	0.1	9.3	0.1	2.8	0.1
Mortgage payment incl. real estate taxes	4.1	--	5.8	0.1	1.7	0.1
Mortgage payment incl. insurance	5.0	--	6.8	0.1	1.8	0.1
Second mortgage	1.8	--	3.6	0.1	1.8	0.1
Home equity loan	2.0	--	3.9	0.1	1.9	0.1
Other monthly mortgage payment	12.7	0.2	16.8	0.3	4.1	0.4
Property value	8.8	0.1	11.6	0.1	2.9	0.1
Mobile home loan	21.0	0.3	30.1	0.6	9.1	0.6
Monthly condominium fee	0.5	--	0.7	--	0.2	--
Monthly rent	5.2	0.1	7.3	0.2	2.1	0.2
Meals included in rent	2.5	0.1	4.3	0.1	1.8	0.1

Table 1 continued...

Item	Pre FEFU cut (Jan - Sep 2012)		Post FEFU Cut, Pre Internet (Oct - Dec 2012)		Difference -- Post FEFU cut, Pre Internet minus Pre FEFU cut	MOE of Diff
	Total Self Resp	MOE	Total Self Resp	MOE		
<u>Overall Population Items</u>	5.7	--	9.1	0.1	3.4	0.1
Race	1.8	--	3.1	--	1.3	0.1
Hispanic Origin	2.5	--	5.3	0.1	2.9	0.1
Sex	0.2	--	0.3	--	0.1	--
Age	0.7	--	0.9	--	0.2	--
Relationship	1.0	--	1.6	--	0.6	--
Place of birth	6.8	--	13.3	0.1	6.5	0.1
Citizenship	2.4	--	4.7	0.1	2.3	0.1
Year of naturalization	11.2	0.2	17.8	0.4	6.5	0.4
Year of entry	6.6	0.1	10.5	0.2	3.9	0.3
Speak another language at home	3.3	--	6.3	0.1	3.0	0.1
Language spoken	9.9	0.1	13.5	0.3	3.6	0.3
English ability	5.4	0.1	8.5	0.2	3.0	0.2
School enrollment	3.9	--	6.8	0.1	2.9	0.1
Grade level attending	6.1	0.1	9.8	0.1	3.7	0.2
Educational Attainment	4.4	--	7.8	0.1	3.3	0.1
Field of degree	7.8	0.1	10.8	0.1	3.0	0.2
Mobility status	4.6	--	8.0	0.1	3.4	0.1
Migration state/foreign country	9.7	0.2	14.3	0.3	4.6	0.3
Migration county	10.1	0.2	14.6	0.3	4.5	0.3
Migration minor civil division	10.1	0.2	14.6	0.3	4.5	0.3
Migration place	10.1	0.2	14.7	0.3	4.5	0.3
Health insurance through employer/union	7.9	--	10.6	0.1	2.8	0.1
Health insurance purchased directly	9.8	0.1	12.6	0.1	2.8	0.1
Health insurance through Medicare	5.7	--	8.5	0.1	2.8	0.1
Health insurance through Medicaid	11.5	0.1	14.5	0.1	3.0	0.1
Health insurance through TRICARE	12.1	--	15.1	0.1	2.9	0.1
Health insurance through VA	12.0	0.1	14.9	0.1	2.9	0.1
Health insurance through Indian Health Service	13.0	0.1	15.9	0.1	3.0	0.1
Hearing difficulty	2.8	--	5.3	0.1	2.5	0.1
Visual difficulty	3.4	--	5.9	0.1	2.5	0.1
Physical difficulty	3.3	--	7.5	0.1	4.3	0.1
Difficulty remembering	3.2	--	7.3	0.1	4.1	0.1
Difficulty dressing	3.3	--	7.5	0.1	4.2	0.1
Difficulty going out	3.2	--	7.0	0.1	3.9	0.1
Marital status	2.6	--	4.6	0.1	2.0	0.1
Married past 12 months	4.0	--	7.7	0.1	3.7	0.1
Widowed past 12 months	4.7	--	8.6	0.1	4.0	0.1
Divorced past 12 months	4.6	--	8.5	0.1	3.9	0.1
Times married	3.7	--	7.4	0.1	3.6	0.1
Year last married	6.8	--	10.2	0.1	3.4	0.1
Fertility	3.3	0.1	5.5	0.1	2.2	0.1

Table 1 continued...

Item	Pre FEFU cut (Jan - Sep 2012)		Post FEFU cut, Pre Internet (Oct - Dec 2012)		Difference -- Post FEFU cut, Pre Internet minus Pre FEFU cut	MOE of Diff
	Total Self Resp	MOE	Total Self Resp	MOE		
Grandchildren living in home	0.8	--	1.1	--	0.3	--
Responsibility for grandchildren	10.4	0.3	14.5	0.6	4.1	0.7
Months responsible for grandchildren	11.7	0.5	16.7	0.8	4.9	0.9
Veteran status	3.5	--	7.4	0.1	3.9	0.1
Period of military service	4.8	0.1	9.2	0.2	4.4	0.2
Service-connected disability rating	2.9	0.1	5.2	0.1	2.3	0.1
Service-connected disability rating value	0.3	--	0.3	0.1	0.1	0.1
Employment status recode	5.2	--	9.5	0.1	4.2	0.1
When last worked	5.9	--	11.3	0.1	5.4	0.1
Weeks worked in the past 12 months	6.0	--	9.3	0.1	3.3	0.1
Hours worked per week	6.1	--	9.2	0.1	3.1	0.1
Place of state/foreign county	5.7	--	8.5	0.1	2.8	0.1
Place of work county	6.0	--	8.8	0.1	2.8	0.1
Place of work minor civil division	1.6	--	2.4	--	0.8	--
Place of work place	6.3	--	9.1	0.1	2.8	0.1
Transportation to work	5.1	--	7.3	0.1	2.2	0.1
Carpool size	6.6	0.1	8.9	0.1	2.3	0.1
Time of departure	10.5	0.1	13.5	0.1	3.0	0.1
Commuting time	7.1	0.1	9.7	0.1	2.7	0.1
Class of worker	7.6	--	11.9	0.1	4.4	0.1
Industry	7.3	--	11.9	0.1	4.6	0.1
Occupation	7.4	--	12.1	0.1	4.6	0.1
Wages/salary income	10.2	--	15.4	0.1	5.3	0.1
Self-employment income	5.2	--	10.3	0.1	5.1	0.1
Interest, dividends, etc. income	7.6	--	13.1	0.1	5.5	0.1
Social security or railroad retirement	7.2	--	12.1	0.1	4.9	0.1
Supplemental security income	5.9	--	11.2	0.1	5.4	0.1
Public assistance	6.1	--	11.6	0.1	5.6	0.1
Retirement income	6.5	--	11.8	0.1	5.3	0.1
Other income	6.1	--	11.6	0.1	5.4	0.1
Total income	14.9	0.1	20.5	0.1	5.6	0.1

Source: 2012 American Community Survey (For more information, see <https://www.census.gov/acs>)

#Difference not statistically significant

-- Margin of error (MOE) rounds to 0.0

Table 2. Item Allocation Rates – Pre FEFU cut vs. Post FEFU cut, Post Internet

Item	Pre FEFU cut		Post FEFU cut, Post Internet		Difference – Post FEFU cut, Post Internet minus Pre FEFU cut	MOE of Diff
	(Jan - Sep 2012)		(Jan - Sep 2013)			
	Total Self Resp	MOE	Total Self Resp	MOE		
<u>Overall Housing items</u>	3.6	--	4.2	--	0.6	--
Tenure	0.9	--	1.4	--	0.5	--
Units in structure	0.7	--	1.1	--	0.4	--
Year moved in	1.9	--	2.6	--	0.6	--
Month moved in	0.5	--	0.5	--	-0.1	--
Year built	5.8	--	4.6	--	-1.2	--
Lot size	5.1	--	4.9	--	-0.1	0.1
Agricultural sales	4.1	0.1	4.3	0.1	0.3	0.1
Business on property	4.5	--	3.7	--	-0.7	0.1
Number of rooms	3.8	--	4.3	--	0.5	--
Number of bedrooms	1.7	--	2.4	--	0.7	--
Running water	0.7	--	1.1	--	0.4	--
Flush toilet	0.8	--	1.3	--	0.5	--
Bathtub or shower	0.8	--	1.4	--	0.6	--
Sink with faucet	0.8	--	1.4	--	0.6	--
Stove or range	0.9	--	1.5	--	0.6	--
Refrigerator	1.1	--	1.6	--	0.5	--
Telephone	1.3	--	1.8	--	0.5	--
Number of vehicles	1.0	--	1.3	--	0.4	--
Heating fuel	3.6	--	3.9	--	0.3	--
Monthly electric costs	2.9	--	4.9	--	2.0	--
Monthly gas costs	8.9	--	9.9	0.1	1.0	0.1
Yearly water and sewer costs	4.9	--	6.4	--	1.5	0.1
Yearly other fuel costs	16.0	0.1	13.4	0.1	-2.6	0.1
Yearly household food stamp reciprocity	1.0	--	1.8	--	0.8	--
Yearly real estate taxes	9.0	0.1	12.4	0.1	3.4	0.1
Yearly property insurance	14.0	0.1	17.0	0.1	3.0	0.1
Mortgage status	1.4	--	2.2	--	0.9	--
Monthly mortgage payment	6.5	0.1	9.5	0.1	3.0	0.1
Mortgage payment incl. real estate taxes	4.1	--	5.5	--	1.4	0.1
Mortgage payment incl. insurance	5.0	0.1	5.9	--	1.0	0.1
Second mortgage	1.8	--	2.8	--	1.0	0.1
Home equity loan	2.0	--	3.1	--	1.0	0.1
Other monthly mortgage payment	12.7	0.2	17.2	0.2	4.5	0.3
Property value	8.8	0.1	8.6	--	-0.2	0.1
Mobile home loan	21.0	0.3	24.1	0.4	3.1	0.5
Monthly condominium fee	0.5	--	0.8	--	0.2	--
Monthly rent	5.2	0.1	6.2	0.1	1.1	0.1
Meals included in rent	2.5	0.1	3.3	0.1	0.7	0.1

Table 2 continued...

Item	Pre FEFU cut		Post FEFU cut, Post Internet		Difference – Post FEFU cut, Post Internet minus Pre FEFU cut	MOE of Diff
	(Jan - Sep 2012)		(Jan - Sep 2013)			
	Total Self Resp	MOE	Total Self Resp	MOE		
<u>Overall Population Items</u>	5.7	--	9.7	--	4.0	--
Race	1.8	--	2.2	--	0.3	--
Hispanic Origin	2.5	--	3.4	--	1.0	--
Sex	0.2	--	0.1	--	-0.1	--
Age	0.7	--	1.0	--	0.3	--
Relationship	1.0	--	1.2	--	0.1	--
Place of birth	6.8	--	11.0	--	4.2	0.1
Citizenship	2.4	--	6.4	--	4.0	0.1
Year of naturalization	11.2	0.2	20.3	0.2	9.1	0.3
Year of entry	6.6	0.1	11.7	0.1	5.1	0.2
Speak another language at home	3.3	--	7.5	--	4.2	0.1
Language spoken	9.9	0.1	12.5	0.1	2.6	0.2
English ability	5.4	0.1	9.8	0.1	4.4	0.2
School enrollment	3.9	--	7.6	--	3.7	0.1
Grade level attending	6.1	0.1	12.0	0.1	5.9	0.1
Educational Attainment	4.4	--	8.6	--	4.2	0.1
Field of degree	7.8	0.1	11.0	0.1	3.2	0.1
Mobility status	4.6	--	8.7	--	4.1	0.1
Migration state/foreign country	9.7	0.2	15.8	0.1	6.1	0.2
Migration county	10.1	0.2	16.2	0.1	6.1	0.2
Migration minor civil division	10.1	0.2	16.2	0.1	6.1	0.2
Migration place	10.1	0.2	16.2	0.2	6.1	0.2
Health insurance through employer/union	7.9	--	11.7	0.1	3.8	0.1
Health insurance purchased directly	9.8	0.1	13.2	0.1	3.4	0.1
Health insurance through Medicare	5.7	--	10.3	0.1	4.6	0.1
Health insurance through Medicaid	11.5	0.1	14.9	0.1	3.4	0.1
Health insurance through TRICARE	12.1	--	15.6	0.1	3.4	0.1
Health insurance through VA	12.0	0.1	15.4	0.1	3.5	0.1
Health insurance through Indian Health Service	13.0	0.1	16.3	0.1	3.4	0.1
Hearing difficulty	2.8	--	7.3	--	4.5	0.1
Visual difficulty	3.4	--	7.8	--	4.4	0.1
Physical difficulty	3.3	--	8.7	0.1	5.4	0.1
Difficulty remembering	3.2	--	8.6	0.1	5.3	0.1
Difficulty dressing	3.3	--	8.7	--	5.4	0.1
Difficulty going out	3.2	--	8.2	--	5.0	0.1
Marital status	2.6	--	5.0	--	2.4	--
Married past 12 months	4.0	--	6.8	--	2.8	0.1
Widowed past 12 months	4.7	--	8.3	--	3.6	0.1
Divorced past 12 months	4.6	--	8.2	--	3.6	0.1
Times married	3.7	--	7.8	--	4.1	0.1
Year last married	6.8	--	9.2	--	2.4	0.1

Table 2 continued...

Item	Pre FEFU cut		Post FEFU cut, Post Internet		Difference – Post FEFU cut, Post Internet minus Pre FEFU cut	MOE of Diff
	(Jan - Sep 2012)		(Jan - Sep 2013)			
	Total Self Resp	MOE	Total Self Resp	MOE		
Fertility	3.3	0.1	7.9	0.1	4.6	0.1
Grandchildren living in home	0.8	-----	1.1	-----	0.3	-----
Responsibility for grandchildren	10.4	0.3	16.7	0.3	6.2	0.5
Months responsible for grandchildren	11.7	0.5	18.9	0.5	7.1	0.8
Veteran status	3.5	-----	8.1	-----	4.6	0.1
Period of military service	4.8	0.1	9.1	0.1	4.3	0.2
Service-connected disability rating	2.9	0.1	7.0	0.1	4.0	0.1
Service-connected disability rating value	0.3	-----	0.2	-----	0.0#	0.1
Employment status recode	5.2	----	9.9	0.1	4.6	0.1
When last worked	5.9	----	11.3	0.1	5.4	0.1
Weeks worked in the past 12 months	6.0	----	10.5	0.1	4.4	0.1
Hours worked per week	6.1	----	10.9	0.1	4.7	0.1
Place of state/foreign county	5.7	----	11.6	0.1	5.8	0.1
Place of work county	6.0	----	11.7	0.1	5.8	0.1
Place of work minor civil division	1.6	----	3.2	----	1.6	----
Place of work place	6.3	----	12.0	0.1	5.7	0.1
Transportation to work	5.1	----	9.6	0.1	4.5	0.1
Carpool size	6.6	0.1	11.0	0.1	4.4	0.1
Time of departure	10.5	0.1	19.0	0.1	8.4	0.1
Commuting time	7.1	0.1	12.5	0.1	5.4	0.1
Class of worker	7.6	----	12.6	0.1	5.0	0.1
Industry	7.3	----	12.9	----	5.6	0.1
Occupation	7.4	----	13.1	----	5.7	0.1
Wages/salary income	10.2	----	15.4	0.1	5.2	0.1
Self-employment income	5.2	----	10.8	----	5.6	0.1
Interest, dividends, etc. income	7.6	----	13.4	0.1	5.8	0.1
Social security or railroad retirement	7.2	----	12.5	0.1	5.3	0.1
Supplemental security income	5.9	----	11.6	0.1	5.8	0.1
Public assistance	6.1	----	12.0	0.1	5.9	0.1
Retirement income	6.5	----	12.2	0.1	5.7	0.1
Other income	6.1	----	11.9	0.1	5.8	0.1
Total income	14.9	0.1	20.1	0.1	5.2	0.1

Source: 2012 American Community Survey and 2013 American Community Survey (For more information, see <https://www.census.gov/acs>)

#Difference not statistically significant
 -- Margin of error (MOE) rounds to 0.0

Table 3. Post FEFU cut, Post Internet Item Allocation Rates – Internet vs. Mail

Item	Post FEFU cut, Post Internet					
	Internet	MOE	Mail	MOE	Difference – Internet minus mail	MOE of Diff
<u>Overall Housing items</u>	2.0	--	6.7	--	-4.7	--
Tenure	0.5	--	2.5	--	-2.0	--
Units in structure	0.2	--	2.1	--	-2.0	--
Year moved in	0.9	--	4.4	--	-3.5	0.1
Month moved in	0.2	--	0.8	--	-0.6	--
Year built	1.4	--	8.2	0.1	-6.8	0.1
Lot size	0.6	--	9.7	0.1	-9.1	0.1
Agricultural sales	0.7	--	7.8	0.2	-7.1	0.2
Business on property	0.5	--	7.4	0.1	-6.9	0.1
Number of rooms	2.7	--	6.0	0.1	-3.4	0.1
Number of bedrooms	1.6	--	3.3	--	-1.7	0.1
Running water	0.5	--	1.7	--	-1.2	--
Flush toilet	0.8	--	1.8	--	-1.0	--
Bathtub or shower	1.0	--	1.9	--	-0.8	--
Sink with faucet	1.0	--	1.9	--	-0.9	--
Stove or range	1.0	--	1.9	--	-0.9	--
Refrigerator	1.1	--	2.1	--	-1.0	--
Telephone	0.6	--	3.1	--	-2.5	--
Number of vehicles	0.6	--	2.2	--	-1.6	--
Heating fuel	0.7	--	7.5	0.1	-6.8	0.1
Monthly electric costs	3.2	--	6.7	0.1	-3.4	0.1
Monthly gas costs	3.7	--	16.7	0.1	-13.0	0.1
Yearly water and sewer costs	2.8	--	10.4	0.1	-7.6	0.1
Yearly other fuel costs	1.4	--	26.7	0.1	-25.3	0.1
Yearly household food stamp reciprocity	0.8	--	2.9	--	-2.1	--
Yearly real estate taxes	8.1	0.1	17.2	0.1	-9.1	0.1
Yearly property insurance	12.0	0.1	22.8	0.1	-10.8	0.1
Mortgage status	0.7	--	3.9	0.1	-3.2	0.1
Monthly mortgage payment	6.8	0.1	13.2	0.1	-6.4	0.1
Mortgage payment incl. real estate taxes	4.6	0.1	6.6	0.1	-2.0	0.1
Mortgage payment incl. insurance	5.0	0.1	7.2	0.1	-2.2	0.1
Second mortgage	1.1	--	5.3	0.1	-4.2	0.1
Home equity loan	1.3	--	5.7	0.1	-4.4	0.1
Other monthly mortgage payment	15.8	0.2	19.4	0.3	-3.6	0.3
Property value	3.3	--	14.6	0.1	-11.3	0.1
Mobile home loan	10.2	0.4	32.0	0.5	-21.7	0.6
Monthly condominium fee	0.7	--	0.8	--	-0.1	--
Monthly rent	4.0	0.1	8.5	0.1	-4.5	0.2
Meals included in rent	1.6	0.1	4.9	0.1	-3.3	0.1

Table 3 continued...

Item	Post FEFU cut, Post Internet					
	Internet	MOE	Mail	MOE	Difference -- Internet minus mail	MOE of Diff
<u>Overall Population Items</u>	7.9	0.1	12.1	--	-4.2	0.1
Race	0.7	--	4.0	--	-3.3	0.1
Hispanic Origin	0.4	--	7.4	0.1	-7.0	0.1
Sex	0.0	--	0.2	--	-0.2	--
Age	0.6	--	1.5	--	-0.9	--
Relationship	0.4	--	2.2	--	-1.9	--
Place of birth	6.9	0.1	16.2	0.1	-9.3	0.1
Citizenship	6.4	0.1	6.3	0.1	0.1#	0.1
Year of naturalization	19.9	0.3	20.9	0.3	-1.0	0.4
Year of entry	10.4	0.2	13.6	0.2	-3.2	0.3
Speak another language at home	6.8	0.1	8.4	0.1	-1.6	0.1
Language spoken	10.1	0.2	15.3	0.2	-5.2	0.3
English ability	9.6	0.2	10.0	0.2	-0.4	0.2
School enrollment	6.7	0.1	8.7	0.1	-2.0	0.1
Grade level attending	11.1	0.1	13.4	0.1	-2.3	0.2
Educational Attainment	7.4	0.1	10.1	0.1	-2.7	0.1
Field of degree	8.9	0.1	15.2	0.1	-6.3	0.2
Mobility status	6.8	0.1	11.0	0.1	-4.2	0.1
Migration state/foreign country	13.1	0.2	19.5	0.2	-6.5	0.3
Migration county	13.5	0.2	19.9	0.2	-6.4	0.3
Migration minor civil division	13.5	0.2	19.9	0.2	-6.4	0.3
Migration place	13.5	0.2	19.9	0.2	-6.4	0.3
Health insurance through employer/union	10.0	0.1	13.8	0.1	-3.8	0.1
Health insurance purchased directly	11.2	0.1	15.6	0.1	-4.4	0.1
Health insurance through Medicare	10.0	0.1	10.6	0.1	-0.5	0.1
Health insurance through Medicaid	12.7	0.1	17.6	0.1	-4.9	0.1
Health insurance through TRICARE	13.1	0.1	18.7	0.1	-5.6	0.1
Health insurance through VA	13.1	0.1	18.4	0.1	-5.3	0.1
Health insurance through Indian Health Service	13.7	0.1	19.6	0.1	-5.9	0.1
Hearing difficulty	7.5	0.1	7.0	0.1	0.4	0.1
Visual difficulty	7.8	0.1	7.7	0.1	0.1#	0.1
Physical difficulty	7.6	0.1	10.0	0.1	-2.4	0.1
Difficulty remembering	7.6	0.1	9.8	0.1	-2.2	0.1
Difficulty dressing	7.7	0.1	10.0	0.1	-2.3	0.1
Difficulty going out	6.9	0.1	9.7	0.1	-2.8	0.1
Marital status	3.9	--	6.3	--	-2.4	0.1
Married past 12 months	3.7	--	10.5	0.1	-6.8	0.1
Widowed past 12 months	5.3	0.1	11.8	0.1	-6.5	0.1
Divorced past 12 months	5.3	0.1	11.6	0.1	-6.2	0.1
Times married	5.8	0.1	10.1	0.1	-4.3	0.1
Year last married	5.0	0.1	14.3	0.1	-9.3	0.1
Fertility	7.9	0.1	7.9	0.1	-0.1#	0.1

Table 3 continued...

Item	Post FEFU cut, Post Internet					
	Internet	MOE	Mail	MOE	Difference -- Internet minus mail	MOE of Diff
Grandchildren living in home	0.5	--	1.8	--	-1.3	--
Responsibility for grandchildren	16.9	0.5	16.4	0.5	0.5#	0.7
Months responsible for grandchildren	19.6	0.7	18.3	0.7	1.3	0.9
Veteran status	6.4	0.1	10.1	0.1	-3.8	0.1
Period of military service	5.6	0.1	12.9	0.2	-7.2	0.3
Service-connected disability rating	4.3	0.1	9.7	0.2	-5.4	0.2
Service-connected disability rating value	0.1	--	0.4	0.1	-0.3	0.1
Employment status recode	6.8	0.1	13.6	0.1	-6.8	0.1
When last worked	7.4	0.1	16.0	0.1	-8.7	0.1
Weeks worked in the past 12 months	8.6	0.1	13.3	0.1	-4.8	0.1
Hours worked per week	9.4	0.1	13.0	0.1	-3.6	0.1
Place of state/foreign county	11.2	0.1	12.2	0.1	-1.0	0.1
Place of work county	11.3	0.1	12.5	0.1	-1.2	0.1
Place of work minor civil division	3.1	--	3.5	0.1	-0.4	0.1
Place of work place	11.4	0.1	12.9	0.1	-1.5	0.1
Transportation to work	9.0	0.1	10.4	0.1	-1.4	0.1
Carpool size	10.0	0.1	12.4	0.1	-2.4	0.1
Time of departure	19.6	0.1	18.1	0.1	1.5	0.2
Commuting time	11.9	0.1	13.4	0.1	-1.5	0.1
Class of worker	9.4	0.1	17.0	0.1	-7.6	0.1
Industry	10.0	0.1	16.8	0.1	-6.8	0.1
Occupation	10.3	0.1	17.0	0.1	-6.7	0.1
Wages/salary income	11.2	0.1	20.5	0.1	-9.3	0.1
Self-employment income	7.5	0.1	14.7	0.1	-7.2	0.1
Interest, dividends, etc. income	9.9	0.1	17.5	0.1	-7.6	0.1
Social security or railroad retirement	9.5	0.1	16.2	0.1	-6.7	0.1
Supplemental security income	8.7	0.1	15.1	0.1	-6.4	0.1
Public assistance	9.0	0.1	15.6	0.1	-6.6	0.1
Retirement income	9.3	0.1	15.8	0.1	-6.5	0.1
Other income	9.0	0.1	15.4	0.1	-6.5	0.1
Total income	14.4	0.1	26.9	0.1	-12.5	0.1

Source: 2013 American Community Survey (For more information, see <https://www.census.gov/acs>)

#Difference not statistically significant

-- Margin of error (MOE) rounds to 0.0