

How to Guide:

The American Community Survey/HUD-Assisted Tenant Public Use Microdata Sample Indicator

Shawn Bucholtz, PD&R

Introduction

The purpose of this “How to” is to describe the development, availability, and use of new data product derived from matching U.S. Department of Housing and Urban Development (HUD)-Assisted Tenant data with the U.S. Census Bureau’s American Community Survey (ACS) Public Use Microdata Sample (PUMS).

Background

HUD and the Census Bureau have linked the 2011 through 2018 ACS internal use file (IUF) microdata records with HUD-assisted tenant data to produce the ACS-HUD linked files (one for each year of the ACS). The ACS contains a wealth of household and demographic information that is not currently collected by HUD. Some examples of information in the ACS include—

- Type of occupation and commuting mode.
- Veteran status.
- Health insurance status.
- Expanded racial categories and household relationship types.
- Internet access.

That information can be used to gain insights into HUD-assisted households that would otherwise not be possible with current administrative data. For instance, with those matched data, HUD now knows that approximately 290,000 veterans live in HUD-assisted housing and approximately 55,000 HUD-assisted households include a person of Chinese descent.

To protect the confidentiality of survey respondents, the ACS-HUD linked files are restricted-use files. Interested researchers can submit a proposal to use the data through the Federal Statistical Research Data Center (<https://www.census.gov/fsrdc>). Please visit the Census Bureau’s restricted use application website: <https://www.census.gov/programs-surveys/ces/data/restricted-use-data/apply-for-access.html> to find useful information about how to apply to use the data.

What Is the 2013 PUMS/HUD Indicator?

HUD anticipates that many analysts will want to use the ACS-HUD linked files to produce summary statistics but will not want to go through the process of obtaining Special Sworn Status. To accommodate those users and to ensure that all analysts have the opportunity to explore the ACS-HUD linked files, HUD has developed a “HUD-assisted unit” categorical indicator that can be merged to the 2013 ACS Public Use Microdata Sample (PUMS). This product, called the 2013 PUMS/HUD indicator, classifies each ACS PUMS housing unit as one of four values: public housing (PH), voucher (VO), project-based Section 8 (MF), or not assisted (NA). The 2013 ACS PUMS is available to any data user. The linkage to the 2013 ACS PUMS is made using the variable SERIALNO, which appears on the 2013 ACS PUMS and on the 2013 PUMS/HUD indicator file (hudassign.csv).

Development of the PUMS/HUD Indicator

The 2013 PUMS/HUD indicator was developed by treating the 2013 ACS-HUD linked file as a training data set. Specifically, the 2013 ACS-HUD linked file were used to estimate the parameters of a multinomial logistic regression model in which HUD program type (three types) was the dependent variable. Predictor variables included state, household size, presence of elderly household members, householder race, gross rent, and household income.

The parameter estimates were applied to the 2013 ACS PUMS. Functionally, the 2013 ACS PUMS is a subset of the 2013 ACS IUF but with significantly more disclosure-avoidance techniques applied, including removal of geographic indicators and top coding of income. Still, the process of applying the logistic regression parameter estimates based on the 2013 ACS-HUD linked file to the ACS PUMS is possible because the ACS PUMS includes the same predictor variables.

The application of parameter estimates to the 2013 ACS PUMS yielded, for each ACS housing unit record, a probability of being in each of the three HUD programs. The raw probabilities were turned into a categorical 2013 PUMS/HUD indicator based on the probability values and known program control totals. Summing the weighted ACS PUMS housing units by their indicator values will yield estimates of program totals that roughly match the program control totals in Appendix 1.

Use of the PUMS/HUD Indicator

The 2013 PUMS/HUD indicator user must clearly understand that this indicator was not built for producing publication-quality estimates of HUD-assisted units. The 2013 PUMS/HUD indicator was built to enable users to explore ways to use ACS-HUD linked files without needing access to the data. HUD anticipates that typical users would use the 2013 PUMS/HUD indicator to explore the 2013 ACS PUMS data and to develop code to produce estimates of interest. Users would then supply their code to HUD so that it can be run on the 2013 ACS-HUD linked file (or any ACS-HUD linked file from 2011 through 2018) to produce publication-quality estimates.

Users must note that all estimates produced from the ACS-HUD linked files must go through Census Bureau disclosure review. HUD can facilitate that process. Users should anticipate up to 3 weeks to complete Census Bureau's disclosure review process.

Appendix 1. 2013 HUD Program Control Totals

The following control totals were based on analysis of HUD program financial and participation data as of July 1, 2013. The control totals are for the 50 states; they do not include Puerto Rico or outlying territories. The control totals may not necessarily match other published program estimates found in budget documents or in HUD's A Picture of Subsidized Households data set.

Census Division	Count of elderly households in project-based Section 8	Count of nonelderly households in project-based Section 8	Count of elderly households receiving voucher	Count of nonelderly households receiving voucher	Count of elderly households in public housing	Count of nonelderly households in public housing
New England	72,134	54,193	28,729	118,433	29,221	39,308
Middle Atlantic	140,968	100,544	93,573	270,120	114,400	185,755
East North Central	123,409	145,120	43,603	235,755	42,433	97,293
West North Central	47,931	53,594	21,012	101,022	20,649	39,299
South Atlantic	99,317	118,696	67,033	271,053	43,578	129,054
East South Central	36,357	56,358	15,001	101,423	23,858	80,036
West South Central	41,460	60,715	40,582	195,650	25,897	72,073
Mountain	27,648	27,928	20,338	79,988	8,071	18,855
Pacific	95,617	55,512	116,937	282,991	17,960	42,225