

How to Guide:

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

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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 2019 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/about/adrm/ced/apply-for-access.html> to find useful information about how to apply to use the data.

What is the 2015 PUMS/HUD Indicator?

HUD anticipates that many analysts will want to use the ACS-HUD linked files to produce summary statistics but either cannot get Special Sworn status due to limited resources or do not want to go through the process of obtaining Special Sworn Status and getting access to a Federal Statistical Research Data Center (FSRDC) without some assurance that their methodology is feasible. To accommodate those users, HUD has developed a “HUD-assisted unit” categorical indicator that can be merged to the 2015 ACS Public Use Microdata Sample (PUMS). This product, called the 2015 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 (None). Only PUMS records that are for rented households are included in the data.

The U.S. Census Bureau reviewed this data product for unauthorized disclosure of confidential information and approved the disclosure avoidance practices applied to this release. CBDRB-FY22-POP001-0230.

Development of the PUMS/HUD Indicator

The 2015 PUMS/HUD indicator was developed by treating the 2015 ACS-HUD linked file as a training data set. Specifically, the 2015 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 2015 ACS PUMS. Functionally, the 2015 ACS PUMS is a subset of the 2015 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 2015 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 2015 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.

Two versions of the PUMS/HUD indicator have been released. The previous release (hud_assign.txt) was based on the 2013 ACS-HUD linked file and 2013 ACS PUMS. Since then, the process to link the ACS IUF microdata records with the HUD-assisted tenant data was improved. HUD updated the PUMS/HUD indicator based on the improved ACS-HUD linked file and is now based on the 2015 ACS PUMS. Data users should use the updated the PUMS/HUD indicator to develop code and test sample size as described in the next section.

Use of the PUMS/HUD Indicator

****The 2015 PUMS/HUD indicator user must clearly understand that this indicator was not built for producing publication-quality estimates of HUD-assisted units.****

The PUMS/HUD indicator were created for three purposes:

- 1) Develop code to produce estimates of interest. Users can then supply their code to HUD so that it can be run on the 2015 ACS-HUD linked file (or any ACS-HUD linked file from 2011 through 2019) to produce publication-quality estimates.
- 2) Testing sample sizes before moving forward getting Special Sworn Status and submitting a proposal to access the restricted ACS-HUD linked files. If the sample sizes based on the PUMS/HUD indicator need further clarification, users could supply code to HUD to get confirmation of sample sizes.
- 3) Develop code outside a Federal Statistical Research Data Center (FSRDC) to be brought into the Census environment for use on the restricted ACS-HUD linked files.

Users must note that all estimates produced from the restricted 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.

The 2015 ACS PUMS is available to any data user. The linkage to the 2015 ACS PUMS is made using the variable SERIALNO, which appears on the 2015 ACS PUMS and on the 2015 PUMS/HUD indicator file (hudassign_v2.txt).

Appendix 1. 2015 HUD Program Control Totals

The following control totals were based on analysis of HUD program financial and participation data as of July 1, 2015. 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	29,516	37,593	34,244	116,482	76,173	53,347
Middle Atlantic	117,602	180,343	99,288	257,869	145,258	99,883
East North Central	42,644	94,257	50,532	239,223	132,307	148,236
West North Central	20,827	38,028	23,282	100,471	50,724	54,882
South Atlantic	43,912	119,126	74,621	269,513	107,177	121,266
East South Central	23,983	75,388	16,887	100,466	39,393	58,804
West South Central	26,237	68,263	44,578	188,982	45,349	62,062
Mountain	8,122	18,069	23,267	78,402	29,195	28,350
Pacific	18,552	38,958	130,310	268,472	101,472	54,219