

1. OVERVIEW OF THE CENSUS DATA API

The Census Data API is a data service that enables developers, data scientists, and others to access and use statistical data from the American Community Survey (ACS), decennial census, Population Estimates and Projections, County Business Patterns, and many other U.S. Census Bureau programs. The Census Bureau's Web site provides a complete list of data sets available through the Census Data API.³

Why Use the Census Data API?

The Census Data API has a simple interface. It provides an efficient way to get ACS and other data directly from the Census Bureau, without storing the data on a computer or a local server. If you know how to read the documentation and create a request, you can easily download variables and geographic areas of interest. Data are continuously available and regularly updated, so you have immediate access to new data as it is released.

The Census Data API makes it easy to access ACS data, but for novice users, the amount of data available can be overwhelming. The ACS covers over 40 different topics and releases thousands of tables.⁴ Developers can help make the ACS data more accessible by building programs using statistical software like R and Python, creating mobile and Web apps, and developing interactive data visualizations that display data directly in an app or browser window in an easily consumable format.

Examples of Census Bureau applications that draw ACS data directly from the Census Data API include My Tribal Area and My Congressional District.⁵

The Census Data API is also used widely by organizations outside of the Census Bureau.

For example, the Pennsylvania State Data Center uses the API to produce a series of dashboards based on ACS estimates, and Cleargov.com uses the Census Data API and other sources to produce online profiles of cities and towns for state and local governments.⁶

³ U.S. Census Bureau, Developers, Available APIs, <www.census.gov/data/developers/data-sets.html>; Census API: Datasets in /data and its descendants, <<https://api.census.gov/data/>>.

⁴ U.S. Census Bureau, American Community Survey (ACS), Subjects Included in the Survey, <www.census.gov/programs-surveys/acs/guidance/subjects.html>.

⁵ U.S. Census Bureau, My Tribal Area, <www.census.gov/tribal/>; My Congressional District, <www.census.gov/mycd/>.

⁶ Pennsylvania State Data Center, PaSDC Dashboards, <<https://pasdc.hbg.psu.edu/Data/PaSDCDashboards/tabid/2049/Default.aspx>>; ClearGov, <www.cleargov.com/>.

ACS Data Sets Available Through the Census Data API

The Census Data API currently includes the following ACS data sets:

- ACS 1-Year Estimates: Data for geographic areas with populations of 65,000 or more. Covers a broad range of topics about social, economic, housing, and demographic characteristics of the U.S. population.⁷
- ACS 5-Year Estimates: Data available down to the block-group level.⁸ Covers a range of topics about social, economic, housing, and demographic characteristics of the U.S. population.⁹
- ACS Migration Flows: Data on the movement of people between counties, minor civil divisions, and metropolitan statistical areas using ACS 5-year estimates. Flows are crossed by selected characteristics.¹⁰
- ACS 1-Year Supplemental Estimates: Simplified versions of popular ACS tables for geographic areas with populations of 20,000 or more.¹¹
- The Planning Database: Data File with selected variables from the 2010 Decennial Census and ACS 5-year estimates at the block group and census tract levels.¹²

Within the ACS 1-year and 5-year data sets, five different collections of data are available. "Profiles" contain some of the most commonly used ACS statistics, while "Tables" provide more detailed tabulations of ACS estimates:

- Detailed Tables: Include the most detailed cross-tabulations of ACS data, many of which are published down to the block-group level. There are over 31,000 variables in this data set.

⁷ U.S. Census Bureau, Developers, American Community Survey 1-Year Data, <www.census.gov/data/developers/data-sets/acs-1year.html>.

⁸ Block groups are subdivisions of census tracts that include between 600 and 3,000 people each.

⁹ U.S. Census Bureau, Developers, American Community Survey 5-Year Data, <www.census.gov/data/developers/data-sets/acs-5year.html>. In addition to the 1-year and 5-year data files, the Census Bureau also produced a 3-year data file, but that series has been discontinued.

¹⁰ U.S. Census Bureau, Developers, American Community Survey Migration Flows, <www.census.gov/data/developers/data-sets/acs-migration-flows.html>.

¹¹ U.S. Census Bureau, Developers, American Community Survey 1-Year Supplemental Data, <www.census.gov/data/developers/data-sets/ACS-supplemental-data.html>.

¹² U.S. Census Bureau, Developers, The Planning Database (2015–2016), <www.census.gov/data/developers/data-sets/planning-database.html>.

- **Data Profiles:** Include profiles of social, economic, housing, and demographic characteristics for areas down to the census tract level. Data are presented as both counts and percentages. There are over 1,000 variables in this data set.
- **Comparison Profiles:** Include ACS data for the nation, states, counties, places, congressional districts, and metropolitan/micropolitan statistical areas with populations of 5,000 or more. Comparison Profiles are similar to Data Profiles but include comparisons with past-year data and statistical significance testing. There are over 1,000 variables in this data set.
- **Subject Tables:** Include estimates covering specific topics—such as age, commuting characteristics, educational attainment, and marital status—for geographic areas down to the census tract level. The data are presented as both counts and percentages. There are over 16,000 variables in this data set.
- **Selected Population Profiles:** Include estimates covering social, economic, housing, and demographic data. Data are available for over 100 racial, ethnic, tribal, ancestry, and country/region of birth groups. These profiles are generally only available

for areas with large populations and for large population subgroups.

Finding the Data Set and Variables You Need

With all the data sets available in the Census Data API, finding the one you need can be challenging. The Census Data API Discovery Tool can help you make sense of all this information.¹³ A complete list of available data sets is available on the Census Bureau's Web site in HTML format.¹⁴ Users can also navigate to specific data sets from the Developers Web page.¹⁵

To find a particular data set, you can scroll through the list or search within your Web browser for a specific year or phrase (for example, "2016" or "ACS 5-Year"). If you click on the link for "geographies" for the 2016 ACS 5-Year Detailed Tables, you can see a list of the 87 geographic areas available for that data set (see Figure 1.1).

¹³ U.S. Census Bureau, Developers, Census Data API Discovery Tool, <www.census.gov/data/developers/updates/new-discovery-tool.html>.

¹⁴ U.S. Census Bureau, Census API: Datasets in /data and its descendants, <<https://api.census.gov/data.html>>.

¹⁵ U.S. Census Bureau, Developers, Available APIs, <www.census.gov/data/developers/data-sets.html>.

Figure 1.1. List of Selected Geographic Areas Available From the 2012–2016 ACS 5-Year Detailed Tables

Census Data API: FIPS Geographies in /data/2016/acs/acs5/geography

Reference Date	Geography Level	Geography Hierarchy
2015-01-01	010	us
2015-01-01	020	region
2015-01-01	030	division
2015-01-01	040	state
2015-01-01	050	state > county
2015-01-01	060	state > county > county subdivision
2015-01-01	140	state > county > tract
2015-01-01	160	state > place
2015-01-01	230	state > alaska native regional corporation
2015-01-01	250	american indian area/alaska native area/hawaiian home land
2015-01-01	310	metropolitan statistical area/micropolitan statistical area
2015-01-01	330	combined statistical area
2015-01-01	350	new england city and town area
2015-01-01	400	urban area
2015-01-01	500	state > congressional district
2015-01-01	950	state > school district (elementary)
2015-01-01	960	state > school district (secondary)

Note: Only the first 17 rows and the first 3 columns are displayed in Figure 1.1.

Source: U.S. Census Bureau, Census Data API Discovery Tool, <<https://api.census.gov/data/2016/acs/acs5/geography.html>>.

You can also click on the link for “variables” to view a list of all the variables available in the data set (see Figure 1.2). This Web page may take a minute or two to load, given the large number of variables—over 22,000—that are available in the 2012-2016 ACS 5-Year Detailed Tables. You can use the search feature within

your Web browser to find variables related to your topic of interest. You can also click on a data set on the Census Bureau’s Web site to view the data documentation for that file.¹⁶

¹⁶ U.S. Census Bureau, Developers, Available APIs, <www.census.gov/data/developers/data-sets.html>.

Figure 1.2. List of Variables Available From the 2012-2016 ACS 5-Year Detailed Tables

Census Data API: Variables in /data/2016/acs/acs5/variables		
Name	Label	Concept
AIANHH	American Indian Area/Alaska Native Area/Hawaiian Home Land	
AIHHTLI	American Indian Area (Off-Reservation Trust Land Only) Hawaiian Home Land	
AITSCE	American Indian Tribal Subdivision (Census)	
ANRC	Alaska Native Regional Corporation	
B00001_001E	Estimate!!Total	UNWEIGHTED SAMPLE COUNT OF THE POPULATION
B00002_001E	Estimate!!Total	UNWEIGHTED SAMPLE HOUSING UNITS
B01001_001E	Estimate!!Total	SEX BY AGE
B01001_002E	Estimate!!Total!!Male	SEX BY AGE
B01001_003E	Estimate!!Total!!Male!!Under 5 years	SEX BY AGE
B01001_004E	Estimate!!Total!!Male!!5 to 9 years	SEX BY AGE
B01001_005E	Estimate!!Total!!Male!!10 to 14 years	SEX BY AGE
B01001_006E	Estimate!!Total!!Male!!15 to 17 years	SEX BY AGE
B01001_007E	Estimate!!Total!!Male!!18 and 19 years	SEX BY AGE

Note: Only the first 13 rows and the first three columns are displayed in Figure 1.2.
Source: U.S. Census Bureau, Census Data API Discovery Tool, <<https://api.census.gov/data/2016/acs/acs5/variables.html>>.

Others may find it useful to search for variables within “groups” to classify variables based on the published ACS tables from which they are drawn. For example, in Figure 1.3, the third row provides a link to selected variables available from ACS Table B01001: Sex by Age. The next section describes how you can use the “groups” function to select multiple ACS variables with a single API query.

The Census Data API Discovery Tool is also available in Extensible Markup Language (XML) and JavaScript Object Notation (JSON) formats for more advanced data users who want to access the metadata (the descriptive information or documentation about the data sets) in machine-readable formats.¹⁷

¹⁷ U.S. Census Bureau, <<https://api.census.gov/data.xml>>; <<https://api.census.gov/data.json>>.

Figure 1.3. List of Groups in the 2012-2016 ACS 5-Year Detailed Tables

Census API: groups in /data/2016/acs/acs5/groups

Name	Description	Variable List
B00001	UNWEIGHTED SAMPLE COUNT OF THE POPULATION	selected variables
B00002	UNWEIGHTED SAMPLE HOUSING UNITS	selected variables
B01001	SEX BY AGE	selected variables
B01001A	SEX BY AGE (WHITE ALONE)	selected variables
B01001B	SEX BY AGE (BLACK OR AFRICAN AMERICAN ALONE)	selected variables
B01001C	SEX BY AGE (AMERICAN INDIAN AND ALASKA NATIVE ALONE)	selected variables
B01001D	SEX BY AGE (ASIAN ALONE)	selected variables
B01001E	SEX BY AGE (NATIVE HAWAIIAN AND OTHER PACIFIC ISLANDER ALONE)	selected variables
B01001F	SEX BY AGE (SOME OTHER RACE ALONE)	selected variables
B01001G	SEX BY AGE (TWO OR MORE RACES)	selected variables
B01001H	SEX BY AGE (WHITE ALONE, NOT HISPANIC OR LATINO)	selected variables
B01001I	SEX BY AGE (HISPANIC OR LATINO)	selected variables
B01002	MEDIAN AGE BY SEX	selected variables
B01002A	MEDIAN AGE BY SEX (WHITE ALONE)	selected variables
B01002B	MEDIAN AGE BY SEX (BLACK OR AFRICAN AMERICAN ALONE)	selected variables

Note: Only the first 15 rows are displayed in Figure 1.3.

Source: U.S. Census Bureau, Census Data API Discovery Tool, <<https://api.census.gov/data/2016/acs/acs5/groups.html>>.