USING THE AMERICAN COMMUNITY SURVEY SUMMARY FILE: WHAT DATA USERS NEED TO KNOW

1. INTRODUCTION

The American Community Survey (ACS) Summary File is a comma-delimited text file that contains all the Detailed Tables for the ACS. Data users with programming skills and access to statistical software can use the Summary File to download and analyze ACS data for a wide range of geographic areas.

This guide provides an overview of the ACS Summary File and how it can be used to access data on America's communities.

What Is the ACS?

The ACS is a nationwide survey designed to provide communities with reliable and timely social, economic, housing, and demographic data every year. A separate annual survey, called the Puerto Rico Community Survey (PRCS), collects similar data about the population and housing units in Puerto Rico. The U.S. Census Bureau uses data collected in the ACS and the PRCS to provide estimates on a broad range of population, housing unit, and household characteristics for states, counties, cities, school districts, congressional districts, census tracts, block groups, and many other geographic areas.

The ACS has an annual sample size of about 3.5 million addresses, with survey information collected nearly every day of the year. Data are pooled across a calendar year to produce estimates for that year. As a result, ACS estimates reflect data that have been collected over a period of time rather than for a single point in time, as in the decennial census, which is conducted every 10 years and provides population counts as of April 1 of the census year.

ACS 1-year estimates are data that have been collected over a 12-month period and are available for geographic areas with at least 65,000 people. Starting with the 2014 ACS, the Census Bureau is also producing "1-year Supplemental Estimates"—simplified versions of popular ACS tables—for geographic areas with at least 20,000 people. The Census Bureau combines 5 consecutive years of ACS data to produce multiyear estimates for geographic areas with fewer than 65,000 residents. These 5-year estimates represent data collected over a period of 60 months.

For more detailed information about the ACS—how to judge the accuracy of ACS estimates, understanding multiyear estimates, knowing which geographic areas are covered in the ACS, and how to access ACS data on the Census Bureau's Web site—see the Census Bureau's handbook on *Understanding and Using American Community Survey Data: What All Data Users Need to Know.*[1]

Overview of the ACS Summary File

The ACS Summary File is a unique data product that includes all estimates and margins of error from the Detailed Tables for all geographies that are published for the ACS. Other ACS data products, such as Subject Tables and Data Profiles, are created from the Detailed Tables and, therefore, are not available in the ACS Summary File.[2]

The ACS Summary File is in American Standard Code for Information Interchange (ASCII) format. The file is divided into three types:

- Geographies—(position based and comma delimited).
- Estimates—(comma delimited).
- Margins of Error—(comma delimited).

Section 2 describes each component in detail and how to put them all together.

Since the Detailed Tables contain a large number of cells, the tables are stored in a series of files, called sequences, containing only the estimates from the tables. The sequences exclude metadata such as the titles of the tables, the descriptions of the rows, and the names of the geographic areas. The metadata is stored in other files that you must merge with the data files to reproduce the complete tables. Learn more about metadata in Sections 2 and 3.

The ACS Summary File can be challenging to use and is intended for advanced users who work with

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[1] U.S. Census Bureau, *Understanding and Using American Community Survey Data: What All Data Users Need to Know*, <www.census.gov/programs-surveys/acs/guidance/handbooks /general.html>.

[2] For information about the types of ACS tables that are available, see the Census Bureau's Table IDs Explained Web page, <www.census .gov/programs-surveys/acs/guidance/which-data-tool/table -ids-explained.html>.

statistical software. The Census Bureau provides programs written in SAS that can be used to access and process the data. There is also an Excel-based tool for those without access to a statistical package. However, before using the Summary File, users should first check if the data of interest are easily available for download on data.census.gov—the Census Bureau's new data dissemination platform.[3]

Section 4 provides information about tools to help you access the tables you need. You can access these tools through the Summary File Documentation on the Census Bureau's ACS Web site.[4]

Benefits and Uses of the ACS Summary File

Because the ACS Summary File provides access to all the Detailed Tables for all available geographies, it enables data users to more easily:

- Connect data across tables, for example calculate the number of people living in census tracts with at least 30 percent of the population living in poverty.

- Filter the data based on specified criteria, for example only extract data for table totals and selected estimates.

- Recode variables, for example aggregate data across several categories or calculate rates and percentages.

- Produce tabulations across many subjects and geographies, for example tables about educational attainment, poverty, disability, and commuting for all 50 states, the District of Columbia, and Puerto Rico.

Geographies Covered

The ACS Summary File covers geographic areas based on "summary levels." A summary level specifies the content and the hierarchical relationships of the geographic elements that are required to tabulate and summarize data.

Summary levels range from very large reporting units such as "State" to much smaller reporting units such as "Census Tract." Summary levels may nest within other geographic areas, such as "State" to "County" to "Census Tract," or they may cross between two or

more geographic hierarchies to produce units that are only portions of geographic areas. For example, summary level "State-Place-County" crosses the "State-Place" hierarchy with the "State-County" hierarchy and may create units that cover only a portion of one county.

Each summary level has an assigned three-digit summary level code to help data users link each summary level to its appropriate use in a table, map, or other data summarization format. Here are some common summary levels used to identify types of geographic areas:

- 010 Nation

- 020 Region

- 030 Division

- 040 State

- 050 State-County

- 140 State-County-Census Tract

- 250 American Indian Area/Alaska Native Area/ Hawaiian Home Land

- 310 Metropolitan Statistical Area/Micropolitan Statistical Area

- 500 State-Congressional District

A complete list of Cartographic Boundary File Summary Level Codes is available on the Census Bureau's Web site.[5]

Many resources are available to help users understand the ACS geographic terms and concepts. For additional information, refer to the Census Bureau's Geography Reference Manual and Geography and ACS Web page.[6]

Comparing Published Detailed Tables to the ACS Summary File

The ACS Summary File contains the same data as the Detailed Tables but in a more flexible format to allow data users to extract only the desired data.

Figure 1.1 shows an example using a table from data.census.gov, and Figure 1.2 shows the corresponding estimates from the Summary File. The published table includes information such as the table ID

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[3] U.S. Census Bureau, data.census.gov, <https://data.census.gov>.
[4] U.S. Census Bureau, American Community Survey (ACS), Summary File Documentation, <www.census.gov/programs-surveys /acs/technical-documentation/summary-file-documentation.html>.

[5] U.S. Census Bureau, Geography Program, Cartographic Boundary File Summary Level Codes, <www.census.gov/programs-surveys /geography/technical-documentation/naming-convention /cartographic-boundary-file/carto-boundary-summary-level.html>.
[6] U.S. Census Bureau, Geography Program, Geographic Areas Reference Manual, <www.census.gov/programs-surveys/geography /guidance/geographic-areas-reference-manual.html>; and U.S. Census Bureau, American Community Survey (ACS), Geography and ACS, <www.census.gov/programs-surveys/acs/geography-acs.html>.

Figure 1.1. **Excerpt From a Published Table in Data.census.gov**

	Atlantic County, New Jersey		Bergen County, New Jersey		Burlington County, New Jersey		Camden C
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate
Total:	263,996	+/-1,665	937,588	+/-1,798	436,598	+/-2,199	504,
Income in the past 1...	39,172	+/-4,856	61,596	+/-7,325	27,642	+/-4,188	57,
Male:	17,639	+/-2,869	27,414	+/-4,120	11,720	+/-2,200	25,
Under 5 years	1,309	+/-653	1,542	+/-868	1,219	+/-568	3,
5 years	79	+/-131	114	+/-140	255	+/-209	
6 to 11 years	2,791	+/-938	2,253	+/-814	1,278	+/-645	3,
12 to 14 years	567	+/-328	1,172	+/-589	676	+/-354	1,
15 years	343	+/-261	475	+/-377	230	+/-206	
16 and 17 years	1,146	+/-615	571	+/-419	472	+/-309	
18 to 24 years	1,771	+/-744	2,625	+/-1,004	1,169	+/-836	1,
25 to 34 years	755	+/-491	4,526	+/-1,316	964	+/-539	2,
35 to 44 years	1,978	+/-788	2,304	+/-856	1,130	+/-551	3,

Source: U.S. Census Bureau, Table B17001: Poverty Status in the Past 12 Months by Sex By Age, <data.census.gov>.

Figure 1.2. **Excerpt From a Summary File**

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ACSSF,2017e1,nj,000,0062,0000001,8831200,882673,387129,39721,7588,47155,
ACSSF,2017e1,nj,000,0062,0000002,8379555,857808,374849,38727,7463,46295,
ACSSF,2017e1,nj,000,0062,0000003,451645,24865,12280,994,125,860,730,52,24
ACSSF,2017e1,nj,000,0062,0000004,8831200,882673,387129,39721,7588,47155,
ACSSF,2017e1,nj,000,0062,0000005,8831200,882673,387129,39721,7588,47155,
ACSSF,2017e1,nj,000,0062,0000006,947215,241099,105983,14114,2520,15305,70
ACSSF,2017e1,nj,000,0062,0000007,7883985,641574,281146,25607,5068,31850,
ACSSF,2017e1,nj,000,0062,0000008,263996,39172,17639,1309,79,2791,567,343,
ACSSF,2017e1,nj,000,0062,0000009,937588,61596,27414,1542,114,2253,1172,47
ACSSF,2017e1,nj,000,0062,0000010,436598,27642,11720,1219,255,1278,676,230
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Source: U.S. Census Bureau, 2017 ACS 1-year Summary File, e20171nj0062000.txt, <https://www2.census.gov/programs-surveys/acs/summary _file/2017/data/1_year_by_state/>.

(B17001), the table title ("Poverty Status in the Past 12 Months by Sex by Age"), and the source file ("2017 American Community Survey 1-year Estimates"). The body of the table provides the estimates and margins of error for each selected geography (in this case, counties in New Jersey). The highlighted box shows that in 2017, there were 263,996 people whose poverty status was determined in Atlantic County, New Jersey, and there were 39,172 people whose income in the past 12 months was below the poverty level.

As shown in Figure 1.2, the Summary File does not contain any of the metadata that is included in the published table. Rather, the file only contains the estimates and they are separated by commas. The estimates are the same but in a different format.

Data Release Schedule and Notable Changes to the Summary File

You can learn more details about each data release by visiting the ACS Data Releases page on the Census Bureau's Web site.[7] This page includes a schedule, notes about new estimates or new guidance, and technical information about geography and product changes. Check the updated data release information before using the Summary File, as changes may impact the table sequences or geographies. You can also browse notes from previous years.

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[7] U.S. Census Bureau, American Community Survey (ACS), Data Releases, <www.census.gov/programs-surveys/acs/news/data-releases.html>.