1. OVERVIEW OF THE ACS SUMMARY FILE

The American Community Survey (ACS) Summary File is a unique data product that includes all estimates and margins of error (MOEs) from the Detailed Tables for all geographies that are published for the ACS. The Detailed Tables are designed for advanced data users or those who want access to the most comprehensive ACS tables. They begin with the letters "B" for base tables and "C" for collapsed tables (e.g., B01001 or C15002). The collapsed tables cover the same topics as the base tables, but with fewer categories. 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.[3]

The 2005 through 2021 ACS Summary Files were released in a sequence-based format containing the estimates and MOEs from the tables in two separate files. The sequences excluded metadata such as the titles of the tables, the descriptions of the rows, and the names of the geographic areas. The metadata and MOEs were stored in other files that users had to merge with the data files to reproduce the complete tables.

Beginning with the 2018 ACS, the U.S. Census Bureau began testing a streamlined format that the estimates and MOEs were grouped by table ID. Under this table-based format, a file is posted for each table that contains the estimates and MOEs for all available geographies. Users can easily select the individual table(s), only needing to merge in a separate file containing geographic labels to reproduce the complete table(s). The table-based format will be the only format available starting with the 2022 ACS data release.

The ACS Summary File can be challenging to use and is intended for advanced users who work with statistical software, like SAS or Python. The Census Bureau provides SAS programs that can be used to access and process the data, as well as instructions for using Excel to merge the geography file with a sample data table in the Table-Based ACS Summary File format.[4] 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 data dissemination platform.[5]

Benefits and Uses of the ACS Summary File's Table-Based Format

The table-based format for the ACS Summary File provides access to each detailed table for all available geographies. The main benefit of the table-based format is that for each table, estimates and MOEs are combined into a single file and only require data users to merge in a single file of geography labels to create complete tables. The new format enables data users to:

- Make comparisons across different geographic areas.
- Evaluate the precision of a particular estimate since each table's estimates and MOEs are now in a single file.
- Access the ACS data needed since each table is now in a separate file and the supporting documentation has been simplified.
- Use either a statistical (e.g., SAS, SPSS, or Python) or spreadsheet (e.g., Excel) program to work with the Summary File tables.

The table-based format still allows users the ability to:

- 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." 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.

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[3] For information about the types of ACS tables that are available, refer to the U.S. Census Bureau's "Table IDs Explained" webpage at <www.census.gov/programs-surveys/acs/data/data-tables/table-ids-explained.html>.

[4] U.S. Census Bureau, "Instructions on How to Read American Community Survey Geography Names into Summary File Tables Using Excel," <https://www2.census.gov/programs-surveys/acs/summary_file/2021/table-based-SF/documentation/ACS_Table_Based_SF_Excel_Import%20GEO%20Names_Tool.pdf>.

[5] U.S. Census Bureau, "<https://data.census.gov>."

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:[6]

- 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

Not all geographic levels are published for all ACS Summary File datasets. While all available geographic levels are available for the 5-year files, some levels are not available for the 1-year datasets as they may not meet the minimum population threshold of 65,000. For a list of the most common geographic levels published for the 1-year and 5-year Summary Files (as well as for the 1-year Supplemental Files), refer to the "Areas Published" or "Reference Materials" webpages on the Census Bureau's website.[7]

Many resources are available to help users understand the ACS geographic terms and concepts. For additional information, refer to the Census Bureau's "About Geographic Areas" and "Geography and ACS" webpages.[8]

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[6] A figure showing the complete geographic hierarchy for standard entities is available in the file "Standard Hierarchy of Census Geographic Entities" at <https://www2.census.gov/geo/pdfs/reference/geodiagram.pdf>.

[7] U.S. Census Bureau, "Areas Published," <www.census.gov/programs-surveys/acs/geography-acs/areas-published.html>. To view the complete list of geographic levels published, refer to the Census Bureau's "Reference Materials" webpage at <www.census.gov/programs-surveys/acs/geography-acs/reference-materials.html>.

[8] U.S. Census Bureau, "About Geographic Areas," <www.census.gov/programs-surveys/geography/guidance/geo-areas.html> and "Geography & ACS," <www.census.gov/programs-surveys/acs/geography-acs.html>.

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 (B17001), the table title "Poverty Status in the Past 12 Months by Sex by Age," and the source file "2021 American Community Survey, 1-year estimates." The body of the table provides the estimates and MOEs for each selected geography (e.g., Citrus County, Florida). The highlighted box shows that in 2021, there were 155,317 people whose poverty status was determined in Citrus County, and there were 25,014 people whose income in the past 12 months was below the poverty level. (The MOEs for these estimates were ±2,105 and ±4,670, respectively.)

As conveyed in Figure 1.2, the Summary File does not contain any of the metadata included in the published table. Rather, the file only contains the geographic identifiers, estimates, and MOEs that are separated by pipes (i.e., vertical bar symbols).

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 webpage on the Census Bureau's website.[9] This webpage includes links to 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 tables or geographies. You can also browse notes from previous years.

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[9] U.S. Census Bureau, "Data Releases," <www.census.gov/programs-surveys/acs/news/data-releases.html>.

Figure 1.1. **Excerpt From 2021 American Community Survey 1-Year Estimates on Data.census.gov**

Source: U.S. Census Bureau, 2021 American Community Survey, 1-year estimates Detailed Tables, Table B17001, <https://data.census.gov/table?q=B17001:+POVERTY+STATUS+IN+THE+PAST+12+MONTHS+BY+SEX+BY+AGE&g=050XX00US12017&tid=ACSDT1Y2021.B17001>.

Figure 1.2. **Excerpt From 2021 American Community Survey 1-Year Summary File**

Source: U.S. Census Bureau, 2021 American Community Survey 1-year estimates, 1-year Summary File (table-based), Table B17001 (truncated). The complete file is available on the Census Bureau's website at <www2.census.gov/programs-surveys/acs/summary_file/2021/table-based-SF/data/1YRData/acsdt1y2021-b17001.dat>.