Using the American Community Survey Summary File

Scan QR codes throughout the webinar to access resources



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This webinar is being recorded. The recording will be available after the webinar.

census.gov/data/academy/webinars/2022/using-the-american-community-survey-summary-file.html



September 28, 2022

Using the American Community Survey Summary File Outline

- Overview of the American Community Survey
- Definition and Legacy of the Summary File
- Explanation of Sequence and Table-Based Summary File Formats
- Demo- Walk Through Examples of Table-Based format
- Resources to Learn More

2

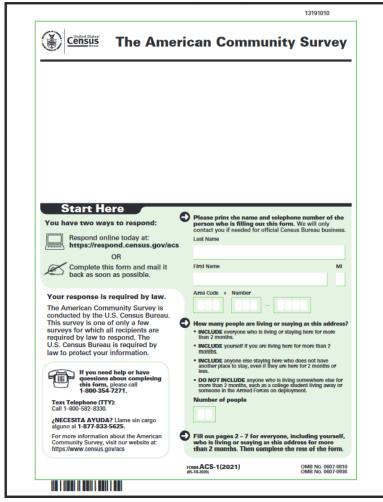




Using The American Community Survey Summary File The Foundation

The American Community Survey is on the leading edge of survey design, continuous improvement, and data quality

- The nation's most current, reliable, and accessible data source for local statistics on critical planning topics such as age, children, veterans, commuting, education, income, and employment
- Surveys 3.5 million addresses and informs over \$675 billion of federal government spending each year
- Covers **40+ topics**, supports over **300** evidence-based federal government uses, and produces **11 billion** estimates each year
- Typically provides three key annual data releases:
 - 1-year Estimates (for large populations, geographies of 65,000+ population)
 - 1-year Supplemental Estimates (for small populations, geographies of 20,000+ population)
 - 5-year Estimates (for very small populations, geographies down to Census Tracts and Block Groups)





Using The American Community Survey Summary File Availability of ACS Data Products

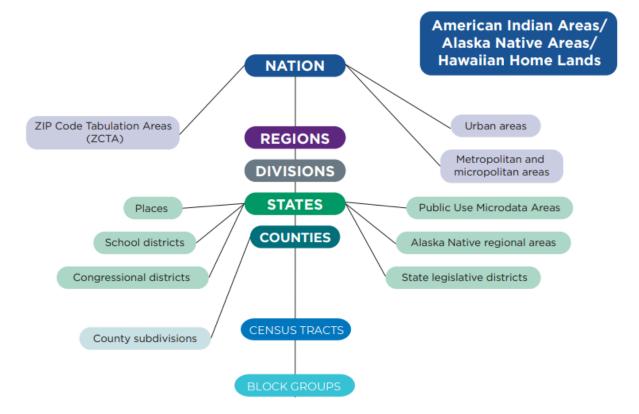


Estimated Population of Geographic Area		1-Year Supplemental	
	1-Year Estimates	Estimates	5-Year Estimates
65,000 or more	Х	Х	Х
20,000 to 64,999		X	X
Less than 20,000			X
Typical Release Date (Occurs in the calendar year after data collection)	September 15, 2022	October 20, 2022	December 8, 2022

census.gov/programs-surveys/acs/news/data-releases.html



Using The American Community Survey Summary File ACS Geographies







Using the American Community Survey Summary File **Content Overview**

POPULATION		HOUSING
SOCIAL Ancestry Citizenship Citizen Voting Age Population Disability Educational Attainment	DEMOGRAPHIC Age Hispanic Origin Race Relationship Sex	Computer & Internet Use Costs (Mortgage, Rent, Taxes, Insurance) Heating Fuel Home Value Occupancy
Fertility Grandparents Language Marital Status Migration School Enrollment Veterans	ECONOMIC Class of Worker Commuting Employment Status Food Stamps (SNAP) Health Insurance Hours/Week, Weeks/Year Income Industry & Occupation	Plumbing/Kitchen Facilities Structure Tenure (Own/Rent) Utilities Vehicles Year Built/ Year Moved In





census.gov/programs-surveys/acs/guidance/subjects.html

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Using the American Community Survey Summary File What is the ACS Summary File?

The ACS Summary File

- A set of files that contain the same data as the Detailed Tables but in a more flexible format to allow data users to extract only the desired data or entire datasets.
- Used by advanced users who want entire datasets.
- Subject Tables and Data Profiles are created from the Detailed Tables and, therefore, are not available.





<u>Original Database</u> by <u>shindoverse</u> is licensed under <u>CC BY-NC-SA 2.0</u>.



Using The American Community Survey Summary File The ACS Detailed Tables

- Most detailed ACS data and cross tabulations of ACS variables.
- Begin with the letters "B" for base tables and "C" for collapsed tables. Collapsed tables cover the same topics as the base table, but with fewer categories.
- All geographic areas down to the **block group level**.
- Available through the ACS Summary File, Census Bureau Application Programming Interface, and data.census.gov

Table ID	Table Title
B01001	SEX BY AGE
B01001A	SEX BY AGE (WHITE ALONE)
B01001B	SEX BY AGE (BLACK OR AFRICAN AMERICAN ALONE)
B01001C	SEX BY AGE (AMERICAN INDIAN AND ALASKA NATIVE ALONE)
B01001D	SEX BY AGE (ASIAN ALONE)
B01001E	SEX BY AGE (NATIVE HAWAIIAN AND OTHER PACIFIC ISLANDER ALONE)
B01001F	SEX BY AGE (SOME OTHER RACE ALONE)
B01001G	SEX BY AGE (TWO OR MORE RACES)
B01001H	SEX BY AGE (WHITE ALONE, NOT HISPANIC OR LATINO)
B01001I	SEX BY AGE (HISPANIC OR LATINO)
B01002	MEDIAN AGE BY SEX
B01002A	MEDIAN AGE BY SEX (WHITE ALONE)
B01002B	MEDIAN AGE BY SEX (BLACK OR AFRICAN AMERICAN ALONE)
B01002C	MEDIAN AGE BY SEX (AMERICAN INDIAN AND ALASKA NATIVE ALONE)
B01002D	MEDIAN AGE BY SEX (ASIAN ALONE)
B01002E	MEDIAN AGE BY SEX (NATIVE HAWAIIAN AND OTHER PACIFIC ISLANDER ALONE)
B01002F	MEDIAN AGE BY SEX (SOME OTHER RACE ALONE)
B01002G	MEDIAN AGE BY SEX (TWO OR MORE RACES)
B01002H	MEDIAN AGE BY SEX (WHITE ALONE, NOT HISPANIC OR LATINO)
B01002I	MEDIAN AGE BY SEX (HISPANIC OR LATINO)
B01003	TOTAL POPULATION
B02001	RACE
B02003	DETAILED RACE
B02008	WHITE ALONE OR IN COMBINATION WITH ONE OR MORE OTHER RACES
	BLACK OR AFRICAN AMERICAN ALONE OR IN COMBINATION WITH ONE OR MORE
B02009	OTHER RACES
	AMERICAN INDIAN AND ALASKA NATIVE ALONE OR IN COMBINATION WITH ONE OR
B02010	MORE OTHER RACES
B02011	ASIAN ALONE OR IN COMBINATION WITH ONE OR MORE OTHER RACES
	NATIVE HAWAIIAN AND OTHER PACIFIC ISLANDER ALONE OR IN COMBINATION WITH
B02012	ONE OR MORE OTHER RACES
B02013	SOME OTHER RACE ALONE OR IN COMBINATION WITH ONE OR MORE OTHER RACES
B02014	AMERICAN INDIAN AND ALASKA NATIVE ALONE FOR SELECTED TRIBAL GROUPINGS
B02015	ASIAN ALONE BY SELECTED GROUPS



Using The American Community Survey Summary File What is the Legacy of the Summary File?

- A unique product the Census Bureau provides as its commitment to releasing the files to all stakeholders in a fair and balanced method.
- Census data products have included "summary files" for many censuses (1960 data earliest known use found)
- First used internally by staff to prepare Census tables and printed reports.
- Eventually, data was provided in tape reels for State Data Centers (SDC's) but the format was not user-friendly for most data users and even the partners in the SDC program (required a large storage space & special computing hardware that used tape reels).
- Census later made the summary files available on CD/DVD to the public. This was thought to make the data so much more accessible and usable for many MORE data users.
- Census continued to use the data in summary files as input files to create other products: tables in print, pdf, and on American FactFinder and now data.census.gov.



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Using the American Community Survey Summary File Overview of the Summary File Formats



Two Summary File formats are currently available

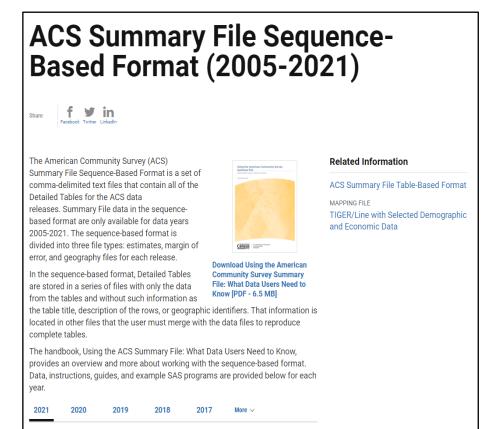
- Sequence-based (original)
- Table-based (current)
- Sequence-based format provides ACS data from 2005 to 2021.
- Table-based format provides ACS data from 2018 and beyond
- Users should first check if the data of interest are easily available for download on data.census.gov



Using the American Community Survey Summary File Overview of the Sequence-Based Summary File

The Sequence-based ACS Summary File Format

- Includes three files: estimates, margins of error, and geography files
- Found in the File Transfer Protocol (FTP) site, accessible through the Summary File Data page
- Contain a large number of cells, they are stored in a series of files, called sequences, containing only the estimates from the tables.
- Sequences don't include metadata such as the titles of the tables, the descriptions of the rows, and the names of the geographic areas.
- The metadata must be merged with the data files to reproduce the complete tables.





census.gov/programs-surveys/acs/data/summary-file/sequence-based.html



Using the American Community Survey Summary File Overview of the Sequence-Based Summary File

CHALLENGES:

- Can be confusing for data users
- Multiple sources of technical documentation needed to discover which file or sequence contains the table of interest, then must combine three files to recreate this table.
- Each year ACS staff must split the data into 40,000 files and prepare the same information into two different formats to accommodate the requirements for the ACS Summary File and the Application Programming Interface (API).



Using the American Community Survey Summary File Overview of the Sequence-Based Summary File

Resources/Guides for the ACS Sequencebased Summary File Format:

- Handbook- Using the American Community Survey Summary File What Data Users Need to Know
- Instructions on How to Read the ACS Summary File into Excel
- Instructions on Joining the ACS Summary File to the TIGER/Line Shapefiles
- SAS programs for each sequence per state
- Example of Creating a Table Using SAS





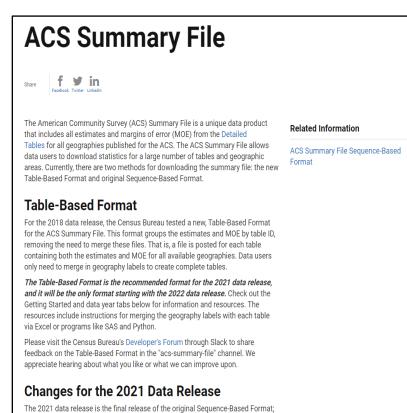
census.gov/programs-surveys/acs/data/summary-file/sequence-based.html



Using the American Community Survey Summary File Overview of the Table-Based Summary File

The Table-Based ACS Summary File Format

- Streamlines the ACS SF production by delivering only <u>one</u> file.
- Instead of splitting the files by state and sequence number, the new format will be by table ID.
- Reduces the complexity of the ACS SF from over 140,000 files to about 1,000 files.
- Now split by table ID (no longer split by state and sequence number)
- One file for each table containing estimates, MOEs, for all geographies







Using the American Community Survey Summary File Overview of the Table-Based Summary File

Table-based Format

Benefits:

- Estimates and margins of error for each table are combined into one file
- All geography identifiers and labels combined into one file
- Simplified documentation For Census Bureau: Saves time and resources
- Can use Excel, SAS, or Python to work with the SF



Using the American Community Survey Summary File Overview of the Table-Based Summary File



Resources/Guides for the ACS Current Summary File Format:

- <u>ACS Summary File GitHub wiki page</u>
- <u>ACS Summary File GitHub repository</u>

Data Analysis Examples Provided in GitHub:

- SAS
- Python

Instructions on Reading the Geography Names into the SF Using Excel

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Description	* P	ages 🕥				
The U.S. Censur Bureau is transitioning to a new format for the ACS Summany Elle. The new format groups the estimates		a Page				
margin of error (MCE) by bable ID, which means data users no longer need to merge these files together anymore. Unlike current summary file, sequence number and logical record number are no longer used. This makes downloading statistics all available geographies for each table much easier. This repo provides Summary File example code in SAS and Python. In the future more languages will be added in support	the + H from D of N v-file	escription ackground otes on Data. Geography and ariable Changes				
channel on the Census' Slack Workspace References:	F C	hange Log requently Asked Questions cample code for the ACS Summary le				
New ACS Summary File Main Page		SAS				
 2020 ACS Summary File Data (New Format) 		Python				
Census' Slack Workspace (#acs-summary-file) channel	• B	ackground				
Product ~ Team Enterprise Explore ~ Marketplace Pricing ~ :	• B	ackground				
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Product > Team Enterprise Explore > Marketplace Pricing > /-file (Pasic) ts © Discussions ⊙ Actions ⊞ Projects □ Wiki © Security 🗠 Insights P matter - 12 4 branches © 3 togs Go to Bie Con	Search Ie - About Techni	Image: Sign in the second s				
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	nuthenkiky edited this page 11 days age-22 resistors Description The U.S. Census Bureau is transitioning to a new format for the ACS Summary File. The new format groups the estimaters a margin of error (MOE) by table ID, which means data users no longer need to merge these files together anymore. Unlike urveating and error (MOE) by table ID, which means data users no longer need to merge these files together anymore. Unlike urveating and the geographies for each table much easier. This reop provides Summary File seample code in SA and Python. In the future more languages will be added in support the new format. If you have seek Workspace. Reference: • New ACS Summary File Main Page	reathending edited this page 11 days age - 22 revisions				

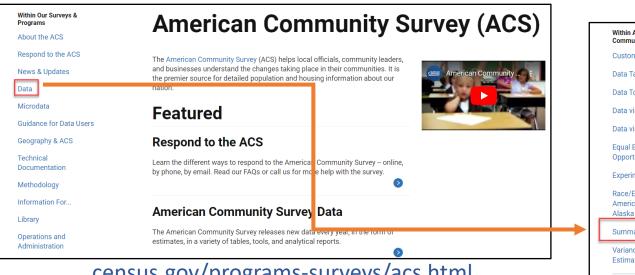


github.com/uscensusbureau/acs-summary-file/wiki

& github.com/uscensusbureau/acs-summary-file

Using the American Community Survey Summary File Accessing Summary File from the ACS Data Page





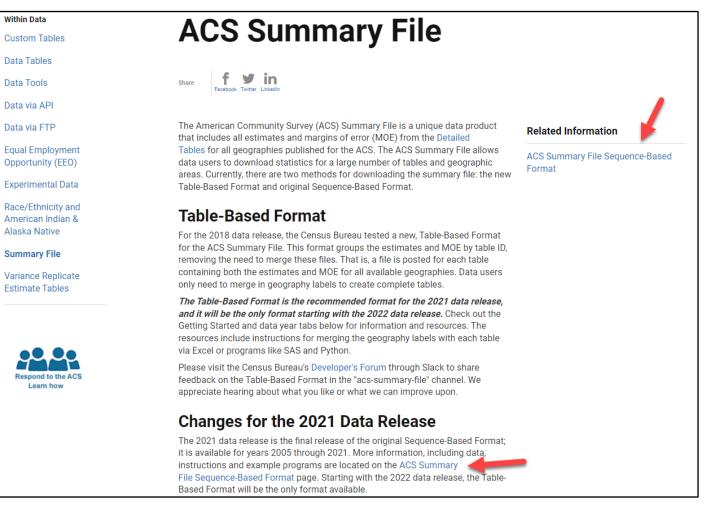
census.gov/programs-surveys/acs.html

in American Imunity Survey (ACS)	American Community Survey Data						
tom Tables	American community curvey bata						
a Tables	a se to						
a Tools	Share T Y IN Facebook Twitter Linkedin						
a via API							
a via FTP	The American Community Survey (ACS) releases new data every year through a variety of data tables that you can access with different data tools. Learn more	Related Information					
al Employment portunity (EEO)	about the different types of tables and profiles powered by ACS data. We also have information about other special datasets, such as the ACS Experimental Data, ACS Summary File, and ACS Public Use Microdata Sample (PUMS) files.	DATA Data					
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e/Ethnicity and	Get Started Accessing ACS Data						
erican Indian & ska Native nmary File iance Replicate	Check out data.census.gov, the Census Bureau's main data dissemination tool. Here, you can access tables and maps with ACS data. You can also view data.census.gov Resources for step-by-step guidance, video tutorials, FAQs, and more.						
mate Tables	GO TO DATA.CENSUS.GOV						
	data.census.gov Resources						

census.gov/programs-surveys/acs/data.ntml



Using the American Community Survey Summary File Accessing Sequence-Based from the Main Summary File Page



census.gov/programs-surveys/acs/data/summary-file.html





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Using the American Community Survey Summary File Demo: Access the Table-Based Summary File Tables

Accessing the Summary File Tables and Geography File from the FTP site:

Visit the ACS Summary File page at <u>https://www.census.gov/programs-</u> <u>surveys/acs/data/summary-file.html</u>

For the sequence-based format, visit <u>https://www.census.gov/programs-</u> <u>surveys/acs/data/summary-file/sequence-based.html</u>

ACS Summary File

The American Community Survey (ACS) Summary File is a unique data product that includes all estimates and margins of error (MOE) from the Detailed Tables for all geographics published for the ACS. The ACS Summary File allows data users to download statistics for a large number of tables and geographic areas. Currently, there are two methods for downloading the summary file: the new Table-Based Format and original Sequence-Based Format.

Table-Based Format

For the 2018 data release, the Census Bureau tested a new, Table-Based Format for the ACS Summary File. This format groups the estimates and MOE by table ID, removing the need to merge these files. That is, a file is posted for each table containing both the estimates and MOE for all available geographies. Data users only need to merge in geography labels to create complete tables.

The Table-Based Format is the recommended format for the 2021 data release, and it will be the only format starting with the 2022 data release. Check out the Getting Started and data year tabs below for information and resources. The resources include instructions for merging the geography labels with each table via Excel or programs like SAS and Python.

Please visit the Census Bureau's Developer's Forum through Slack to share feedback on the Table-Based Format in the "acs-summary-file" channel. We appreciate hearing about what you like or what we can improve upon.

Changes for the 2021 Data Release

The 2021 data release is the final release of the original Sequence-Based Format; it is available for years 2005 through 2021. More information, including data, instructions and example programs are located on the ACS Summary File Sequence-Based Format page. Starting with the 2022 data release, the Table-Based Format will be the only format available.

Getting Started 2021 2020 2019 2018 2017 to 2005

Getting Started The Table-Based ACS Summary File contains three file types: Table Labels - Description of each line item in a table



Using the American Community Survey Summary File Table Shells

ACS20211YR_Table_Shells.txt

🚽 ACS20211YR_Table_Shells.txt 🔝 Table ID|Line|Indent|Unique ID|Label|Title|Universe|Type B01001|1.0|0|B01001 001|Total:|SEX BY AGE|Total Population|int 3 B01001|2.0|1|B01001 002|Male:|SEX BY AGE|Total Population|int 4 B01001|3.0|2|B01001 003|Under 5 years|SEX BY AGE|Total Population|int 5 B01001|4.0|2|B01001 004|5 to 9 years|SEX BY AGE|Total Population|int 6 B01001|5.0|2|B01001_005|10 to 14 years|SEX BY AGE|Total Population|int 7 B01001|6.0|2|B01001 006|15 to 17 years|SEX BY AGE|Total Population|int 8 B01001|7.0|2|B01001 007|18 and 19 years|SEX BY AGE|Total Population|int 9 B01001|8.0|2|B01001_008|20 years|SEX BY AGE|Total Population|int 10 B01001|9.0|2|B01001_009|21 years|SEX BY AGE|Total Population|int 11 B01001|10.0|2|B01001 010|22 to 24 years|SEX BY AGE|Total Population|int 12 B01001|11.0|2|B01001 011|25 to 29 years|SEX BY AGE|Total Population|int 13 B01001|12.0|2|B01001_012|30 to 34 years|SEX BY AGE|Total Population|int 14 B01001|13.0|2|B01001_013|35 to 39 years|SEX BY AGE|Total Population|int 15 B01001|14.0|2|B01001 014|40 to 44 years|SEX BY AGE|Total Population|int 16 B01001|15.0|2|B01001 015|45 to 49 years|SEX BY AGE|Total Population|int 17 B01001|16.0|2|B01001_016|50 to 54 years|SEX BY AGE|Total Population|int 18 B01001|17.0|2|B01001 017|55 to 59 years|SEX BY AGE|Total Population|int 19 B01001|18.0|2|B01001_018|60 and 61 years|SEX BY AGE|Total Population|int 20 B01001|19.0|2|B01001 019|62 to 64 years|SEX BY AGE|Total Population|int 21 B01001|20.0|2|B01001 020|65 and 66 years|SEX BY AGE|Total Population|int 22 B01001|21.0|2|B01001_021|67 to 69 years|SEX BY AGE|Total Population|int 23 B01001|22.0|2|B01001 022|70 to 74 years|SEX BY AGE|Total Population|int 24 B01001|23.0|2|B01001 023|75 to 79 years|SEX BY AGE|Total Population|int 25 B01001|24.0|2|B01001 024|80 to 84 years|SEX BY AGE|Total Population|int 26 B01001|25.0|2|B01001 025|85 years and over|SEX BY AGE|Total Population|int



- Added hierarchy, line type and universe as columns
- Now one file for 1-year shells, one file for 5-year shells
- Excel version still available at a different location
- Pipe delimited; utf-8 encoded

github.com/uscensusbureau/acs-summary-file/wiki/Change-Log



Using the American Community Survey Summary File Geography File

Geos20211YR.txt

📙 Geo	s20211YR.txt 🗵
1	FILEID STUSAB SUMLEVEL COMPONENT US REGION DIVISION STATE COUNTY COUSUB PLACE TRACT BLKGRP CON
2	ACSSF US 010 00 1
3	ACSSF US 010 01 1
4	ACSSF US 010 43 1
5	ACSSF US 010 89 1
6	ACSSF US 010 91 1
7	ACSSF US 010 93 1
8	ACSSF US 010 94 1
9	ACSSF US 010 A0 1
10	ACSSF US 010 C0 1
11	ACSSF US 010 C1 1
12	ACSSF US 010 C2 1
13	ACSSF US 010 E0 1
14	ACSSF US 010 E1 1
15	ACSSF US 010 E2 1
16	ACSSF US 010 G0 1
17	ACSSF US 010 H0 1

- Geography identifier now matches data (GEO_ID in data = GEO_ID in Geos20211YR.txt)
- Added Tiger-Shape IDs
- Saved as txt file instead of csv
- Pipe delimited; utf-8 encoded

github.com/uscensusbureau/acs-summary-file/wiki/Change-Log

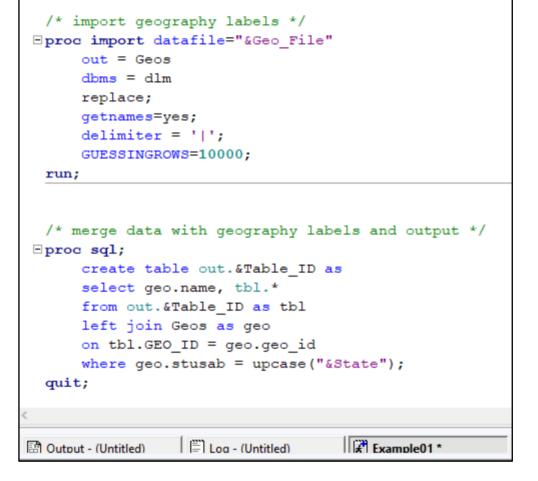




Using the American Community Survey Summary File SAS Example

Output data from all geographies and sub-geographies of a given state from the selected data table

SAS - [Example01 *]	
🖹 <u>F</u> ile <u>E</u> dit <u>V</u> iew <u>T</u> ools <u>R</u> un <u>S</u> olutions <u>W</u> indow <u>H</u> elp	
* * * * * * * * * *	×
/*ADD INPUT HERE*/	
<pre>%let Table_ID =b01001;</pre>	
<pre>%let State =ca;</pre>	
<pre>%let Data_Dir =H:\New Summary Files\Demo\1YRData;</pre>	
<pre>%let Geo_File =H:\New Summary Files\Demo\Geos20211YR.txt;</pre>	
/**/	
<pre>libname out "."; /** Import Data **/</pre>	
<pre>□proc import datafile = "&Data_Dir./acsdt1y2021-&Table_IDdat"</pre>	
<pre>out = out.&Table_ID</pre>	
dbms = dlm	
replace;	
getnames = yes;	
<pre>delimiter = ' ';</pre>	
GUESSINGROWS=10000;	
run;	





Using the American Community Survey Summary File All Data from the State of California in Table B01001

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	NAME	GEO_ID	B01001_E001	B01001_M001	B01001_E002	B01001_M002	B01001_E003	B01001_M003	B01001_E004	B01001_M004 ^
1	California	0400000US06	39237836	-555555555	19618934	6432	1129355	3475	1210580	14702
2	California Urban	0400001US06	37039607	40644	18459965	24696	1060499	5939	1148785	14470
3	California Rural	0400043US06	2198229	40644	1158969	23831	68856	5217	61795	4717
4	California In metropolitan or micropolitan statistical area	04000A0US06	38956998	-555555555	19474623	6175	1122822	3435	1204457	14791
5	California In metropolitan statistical area	04000C0US06	38374563	-555555555	19179376	5102	1110028	3000	1188541	14611
6	California In metropolitan statistical area in principal city	04000C1US06	17768429	3337	8873501	24723	501178	11127	531411	11901
7	California In metropolitan statistical area not in principal city	04000C2US06	20606134	3337	10305875	23993	608850	11461	657130	12638
8	California In micropolitan statistical area	04000E0US06	582435	-555555555	295247	3170	12794	1392	15916	2011
9	California In micropolitan statistical area in principal city	04000E1US06	157703	8859	80663	5977	2809	1234	3447	1304
10	California In micropolitan statistical area not in principal city	04000E2US06	424732	8859	214584	7107	9985	1412	12469	1881
11	California Not in metropolitan or micropolitan statistical area	04000G0US06	280838	-555555555	144311	1596	6533	990	6123	1259
12	California Not in metropolitan statistical area	04000H0US06	863273	-555555555	439558	3400	19327	1505	22039	2011
13	Alameda County, California	0500000US06001	1648556	-555555555	816792	301	44662	199	46548	2478
14	Butte County, California	0500000US06007	208309	-555555555	103229	826	5124	303	5783	1049
15	Contra Costa County, California	0500000US06013	1161413	-555555555	570719	716	31081	2	32812	2867
16	El Dorado Countv. California	0500000US06017	193221	-555555555	96068	849	4295	522	4050	1006 .*



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- Purpose:
 - Improve understanding of the value and utility of ACS data.
 - Promote information sharing among data users about key ACS data issues and applications.
- Includes users group website and online community
- ACS Data Users Conference
- Membership is free and open to all interested ACS data users



Using the American Community Survey Summary File Continue the Conversation



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Website census.gov/acs

Census Bureau **Source Us** U.S. Census Bureau, [YYYY – YYYY] American Community Survey [1/5]-year estimates