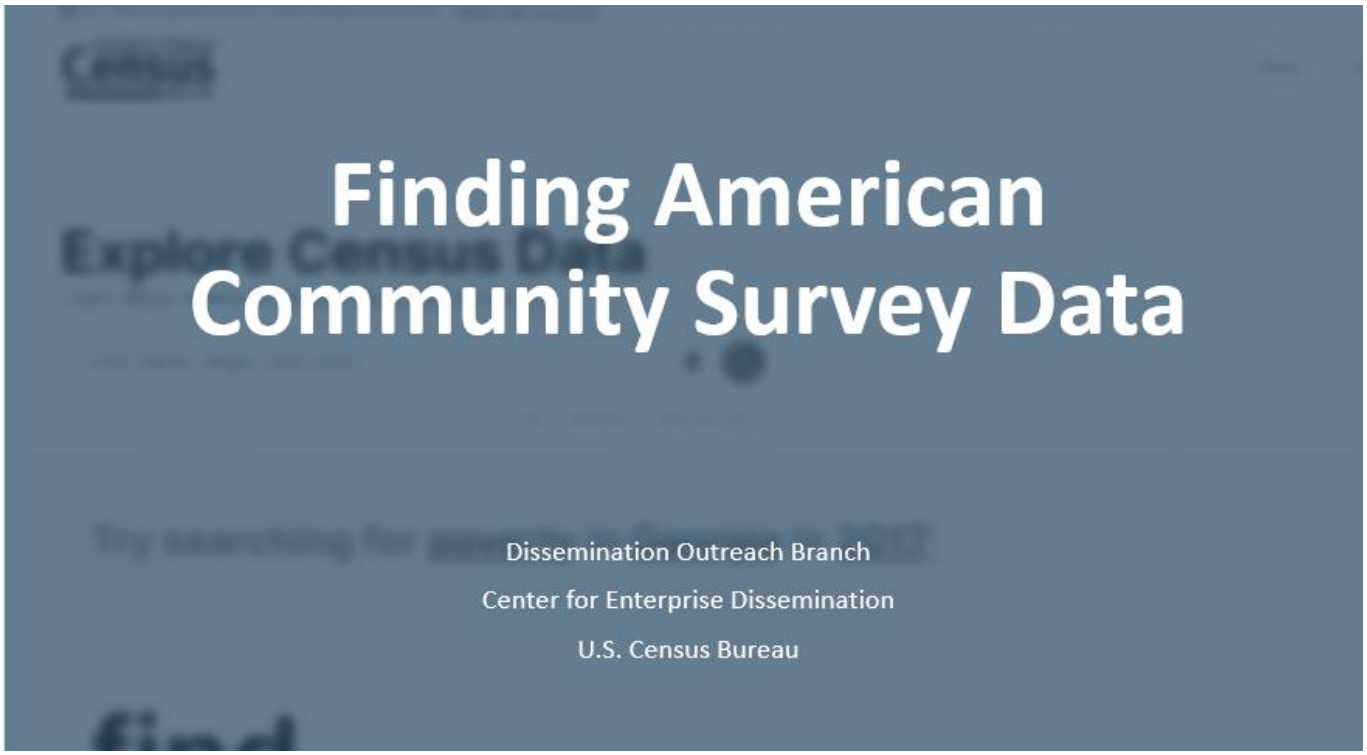


Revised May 12, 2025

Contents

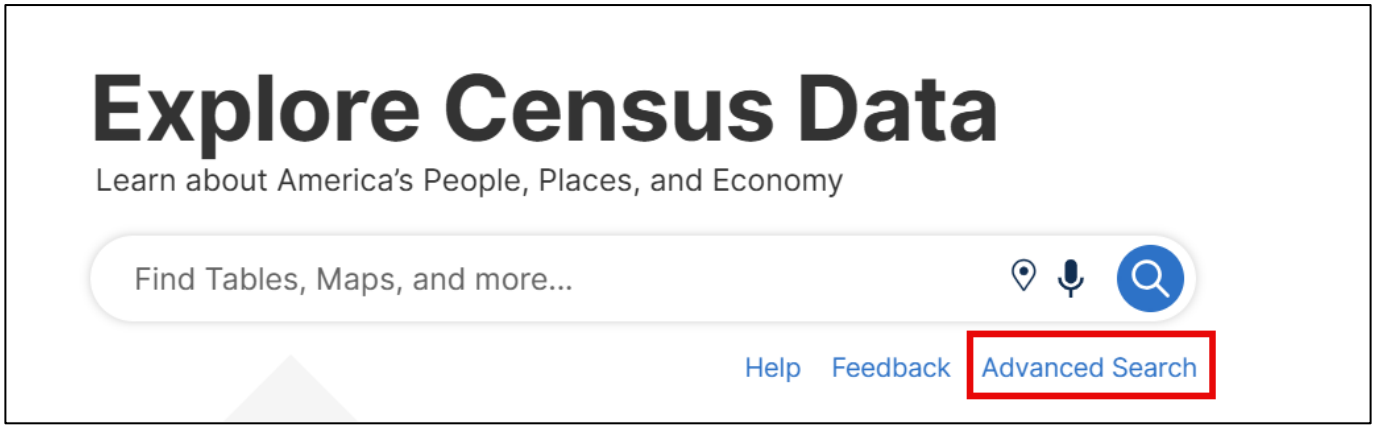
ACS Data in data.census.gov

1 Group Exercises

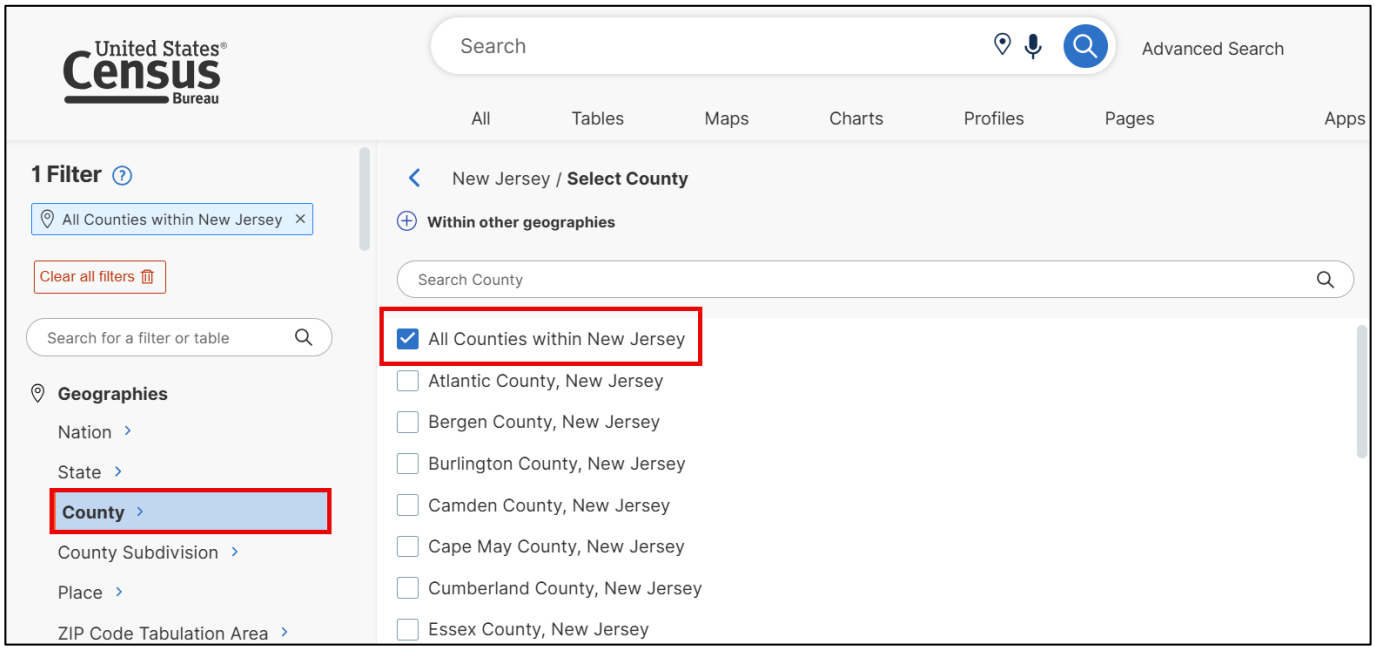
Let's start off by showing you how to find data from the American Community Survey (ACS) in our main data dissemination tool, data.census.gov. There are two main ways to search in data.census.gov – there's the Single Search and the Advanced Search. We typically recommend users try their hand at the Advanced Search first, since it provides a lot of search options that will pull up relevant ACS tables. Additionally, the Advanced Search allows you to select geographies that may be a bit complicated to enter into the Single Search bar, and provides you with available search terms, which removes the need to guess at keywords to use.

1.1 Commuting characteristics for all counties in New Jersey – Advanced Search

Step 1. Start by going to https://data.census.gov/. Then, click on the Advanced Search button located underneath the Single Search bar.

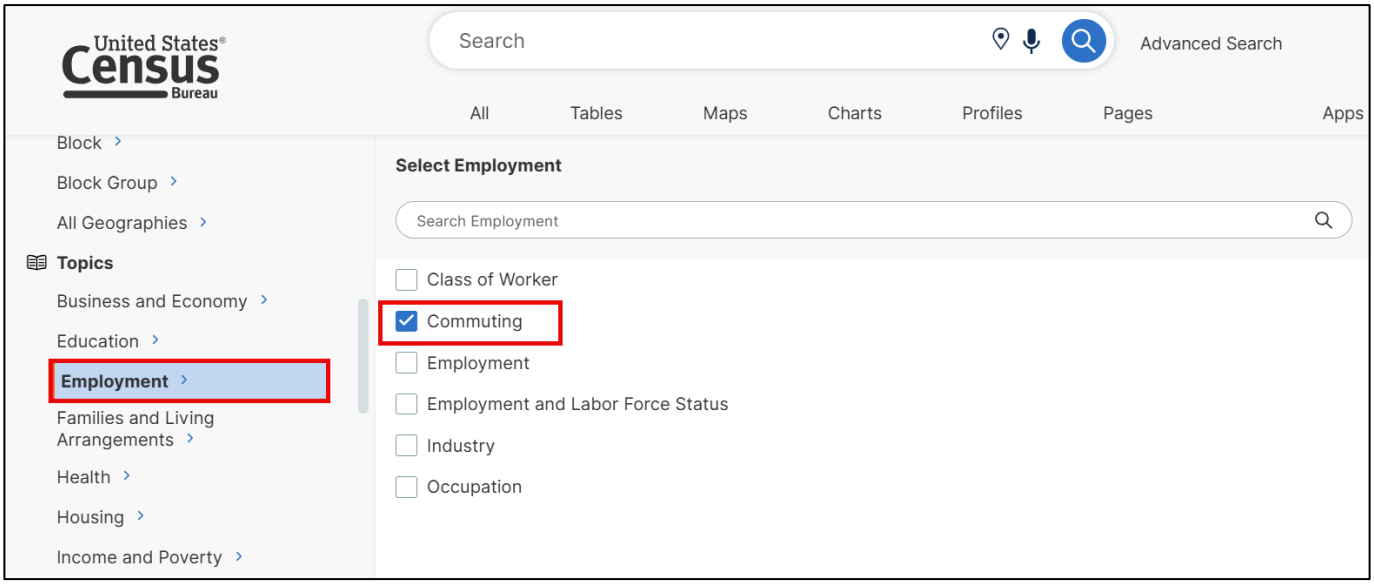


Step 2: Once you reach the Advanced Search, the filter panel is located on the left side of the screen. This will give you all your available search options. The Geographies section is at the top, and we usually recommend that you add your geographies to your search first. In this section, select County, click on New Jersey, and then finally select 'All Counties within New Jersey'.

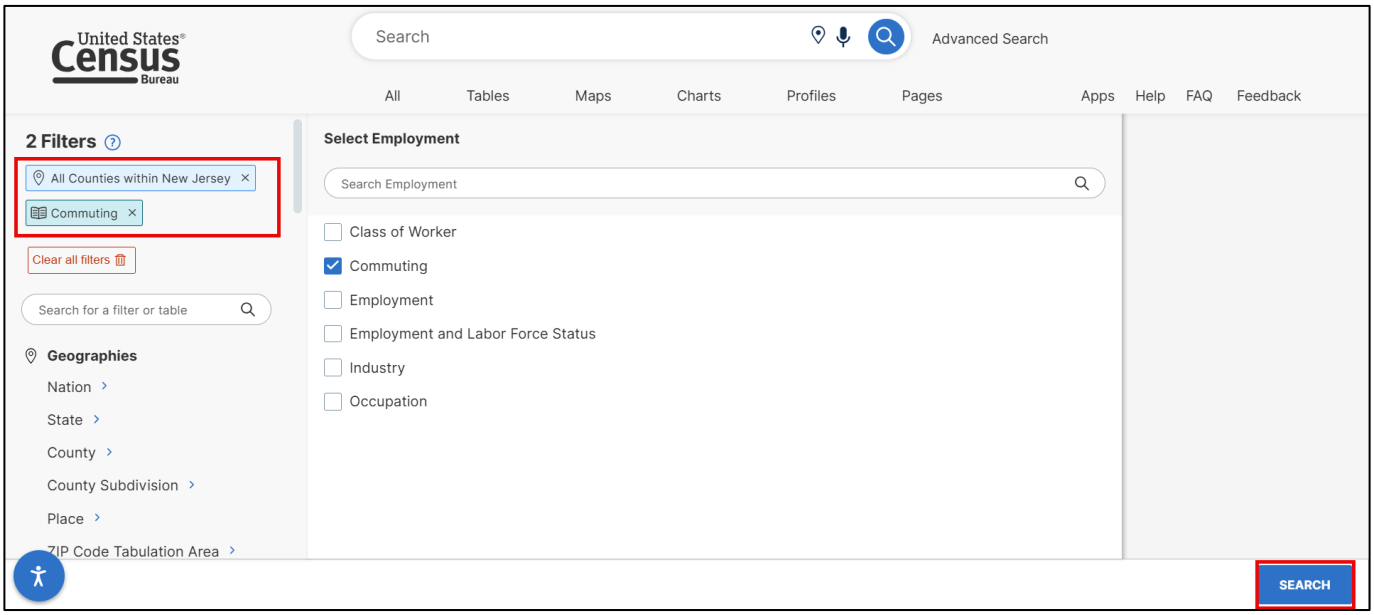


Step 3. Next, select your search topic. Commuting is a topic that is often overlooked by data users, because it's actually found in the Employment section. That is why we recommend looking through the available filters, since you may find the topic you're searching for in an unexpected place.

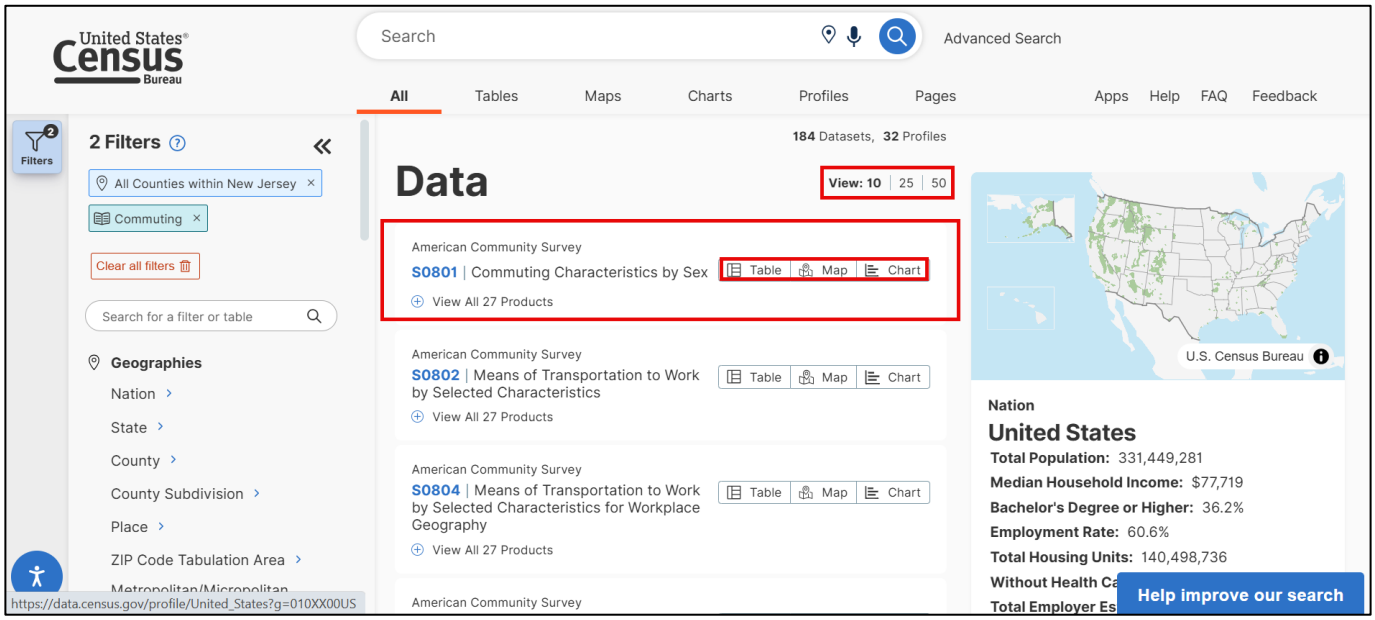
To add Commuting to your search, scroll to the Topics section, click on Employment, and then select 'Commuting'.



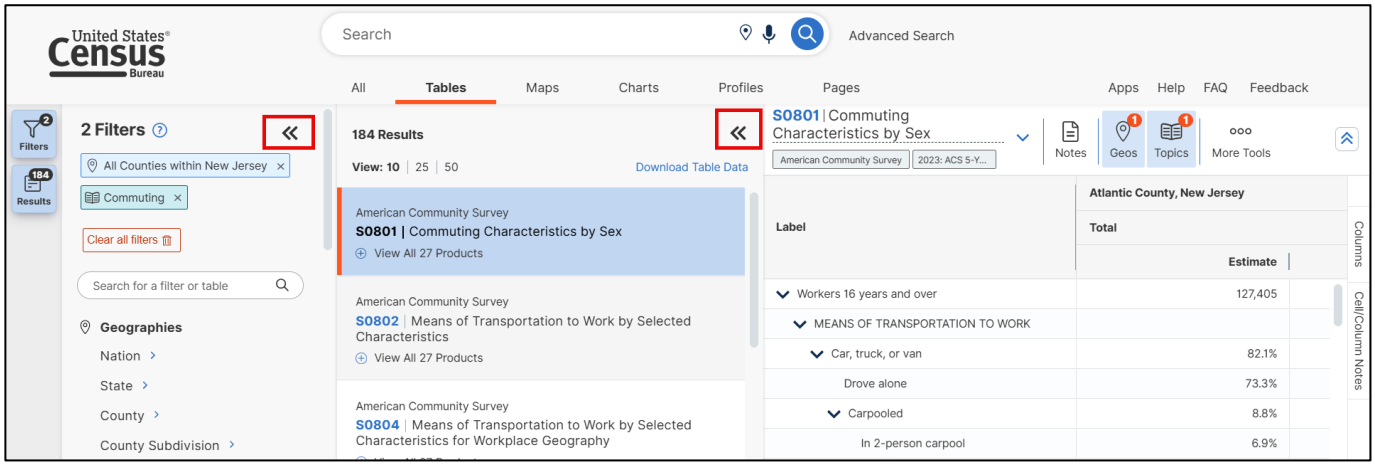
Step 4. Confirm your filters, then click on the Search button in the bottom right corner of the screen.

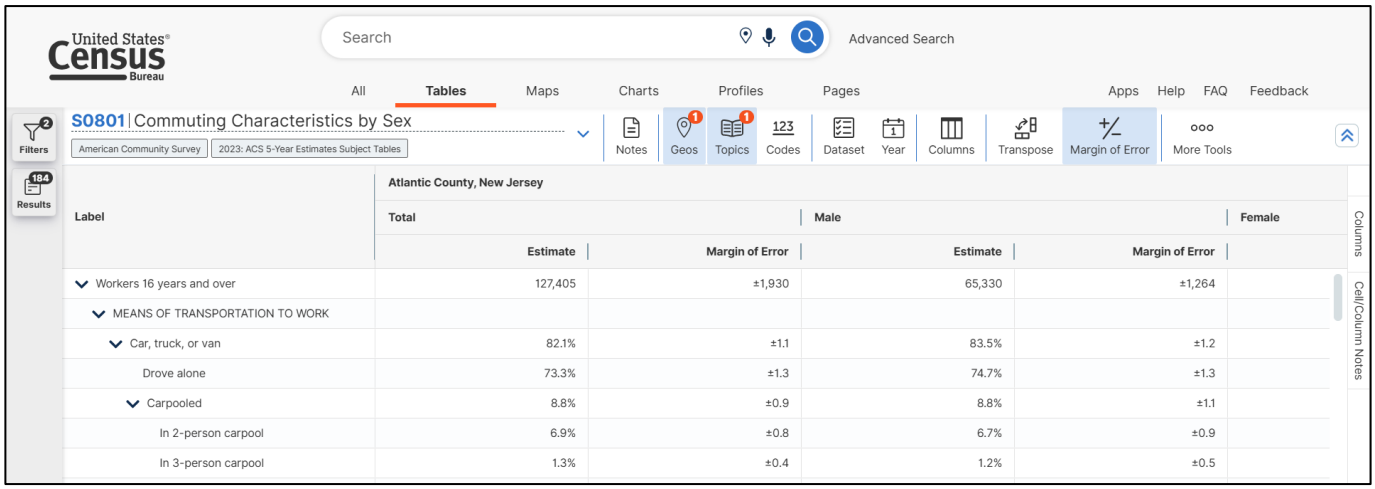


Step 5. Once you click on the Search button, you can see the available data related to commuting. You can see that the data can be viewed in a table, map, or chart. You can also expand your view at the top to see 25 or 50 results at a time. If you select any of the results found under the Data section, such as the first one, S0801, it will default to the table view.



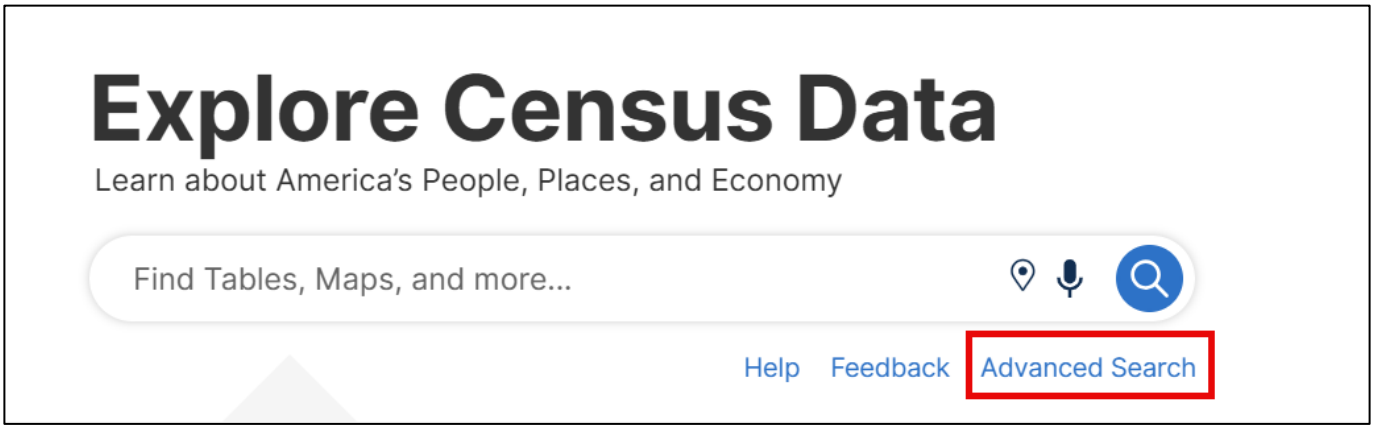
You can collapse the Filter and Results panels to get a better look at the full table.





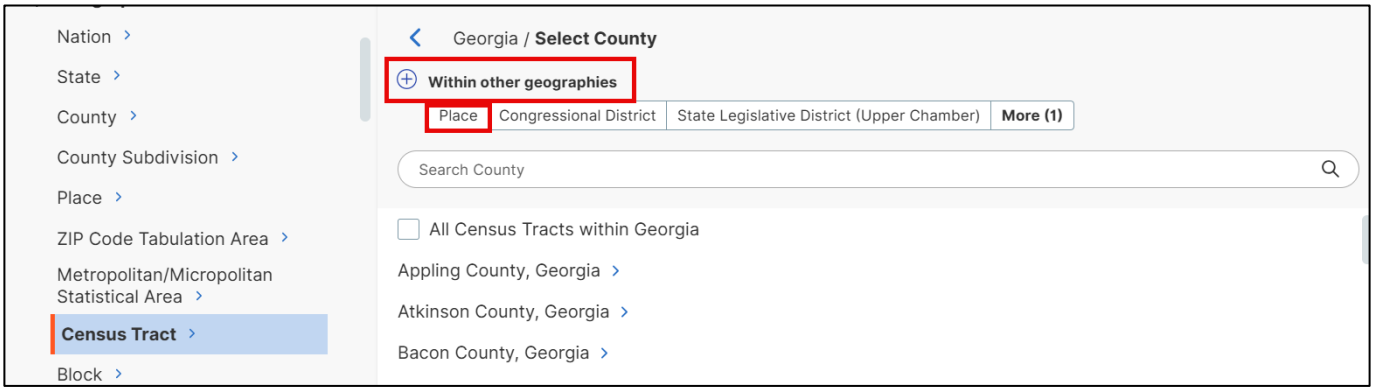
1.2 Veteran status for all Census Tracts in Atlanta, Georgia – Advanced Search

Step 1. Start by going to https://data.census.gov/. Then, click on the Advanced Search button located underneath the Single Search bar.

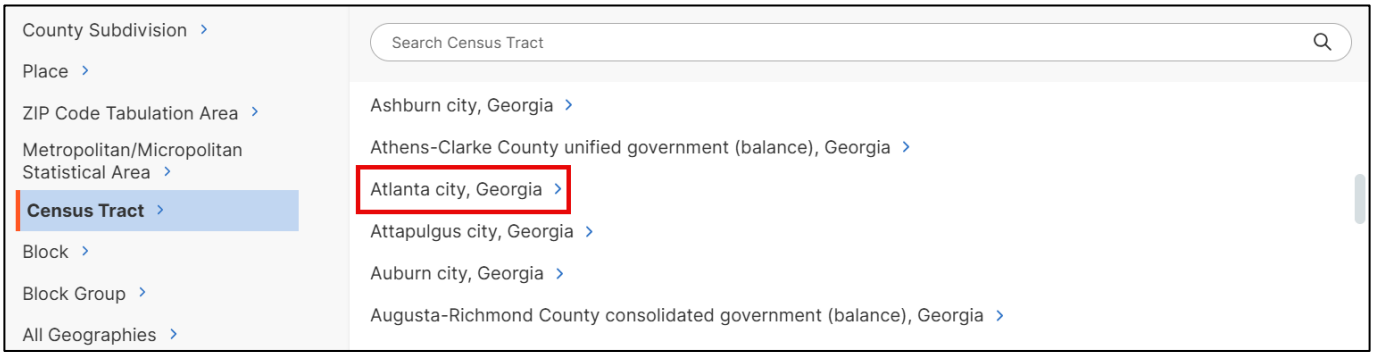


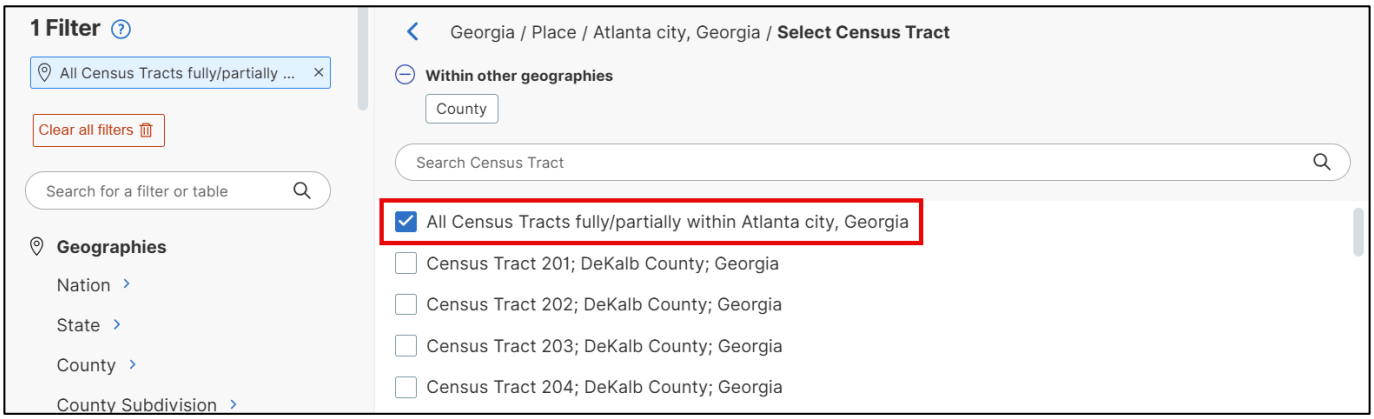
Step 2: We'll start off by selecting our geography first, this time looking at all Census Tracts within Atlanta, Georgia. First, select Census Tract from the listed geographies and choose Georgia as your state.

Step 3. Then, click on the plus sign next to the 'Within other geographies' label. This will allow you to select Census Tracts that are grouped within other types of geographies besides counties. Click on 'Place' to view Census Tracts within geographies like cities and towns.

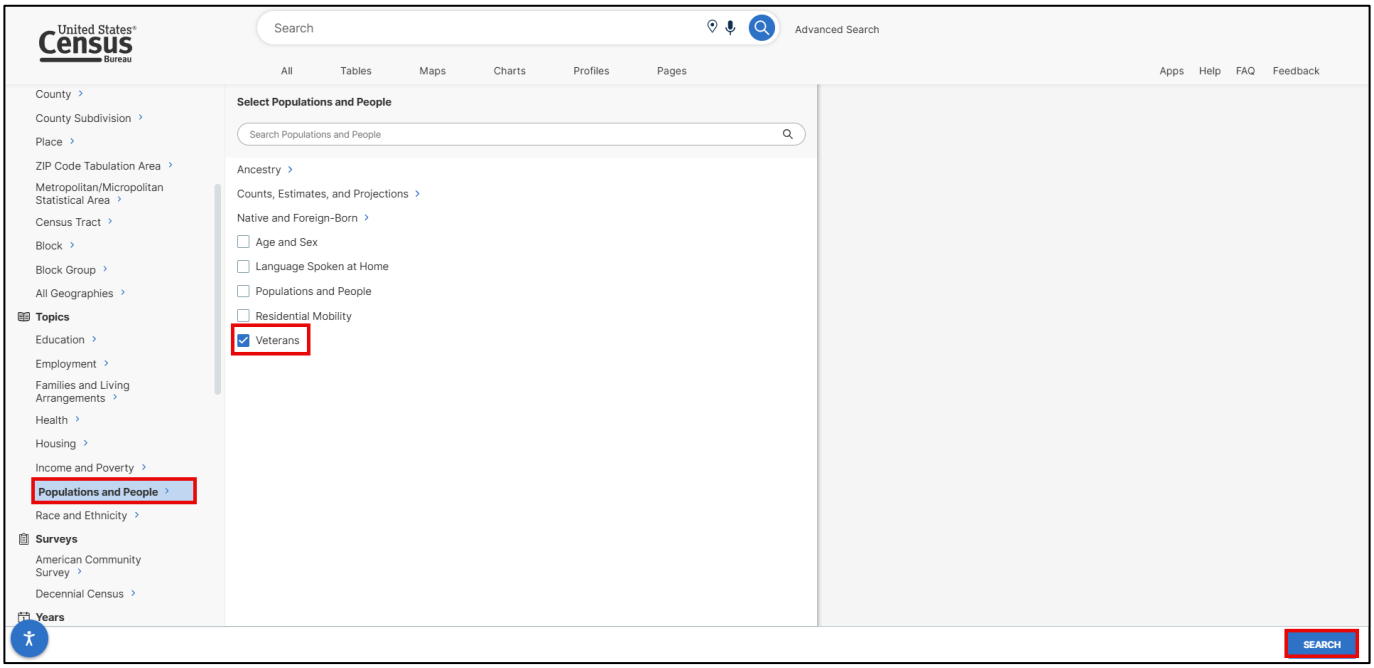


Step 4. The list will show all Places in Georgia. Select Atlanta city, Georgia, and then click on the checkbox next to 'All Census Tracts fully/partially within Atlanta city, Georgia'.

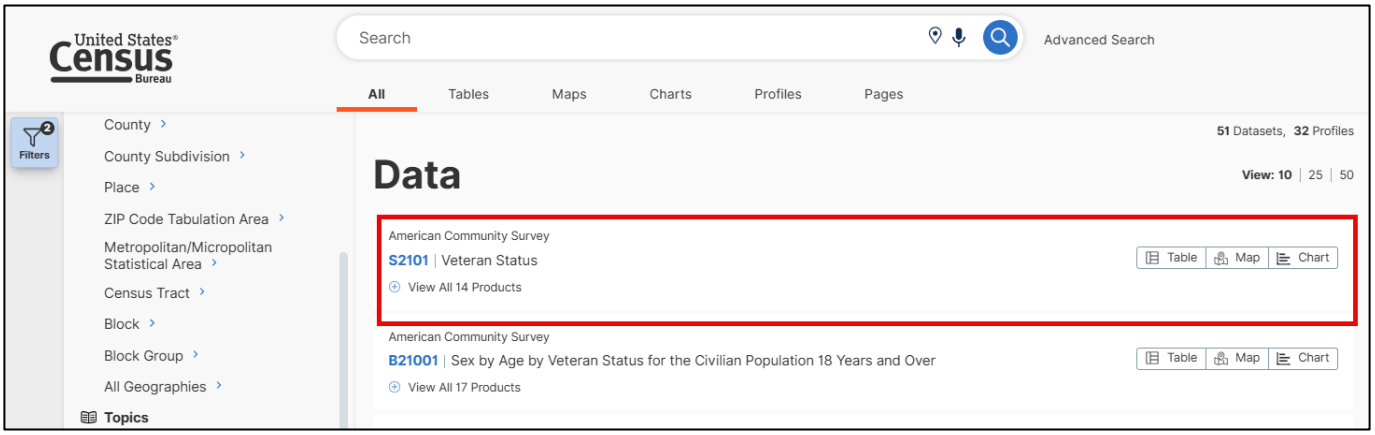




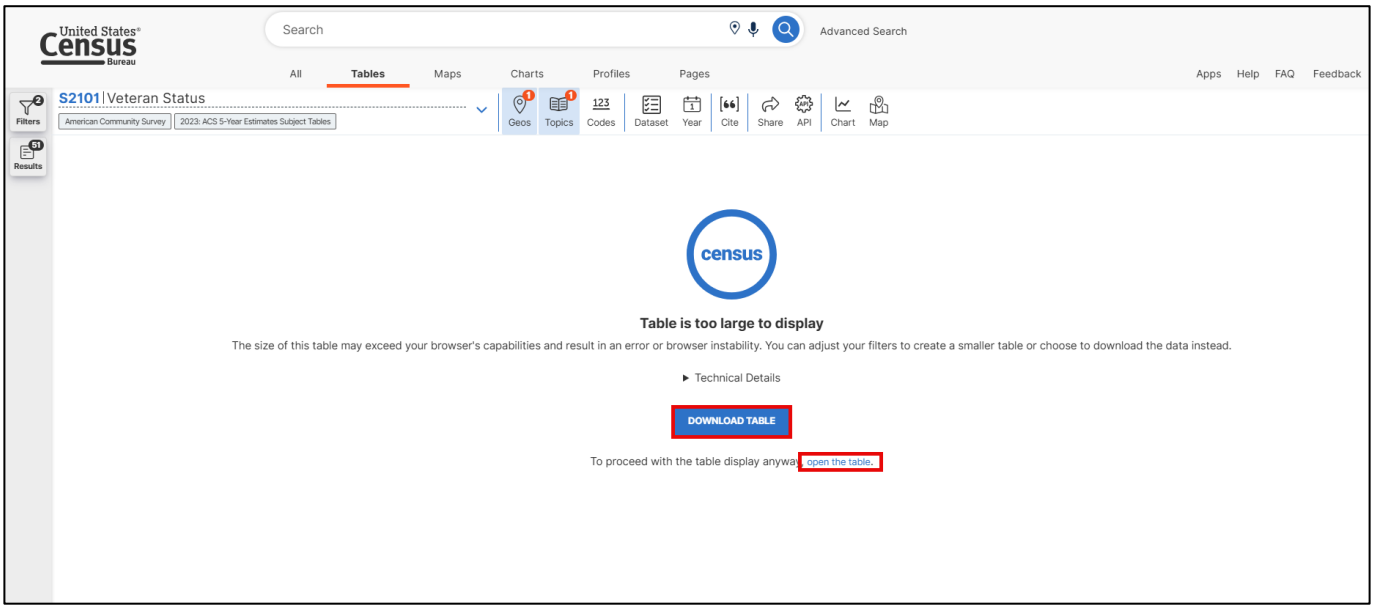
Step 5. Next, select the Veterans filter. It can be found under Topics > Populations and People > Select 'Veterans'. Then, click on the 'Search' button on the bottom right corner of the screen.



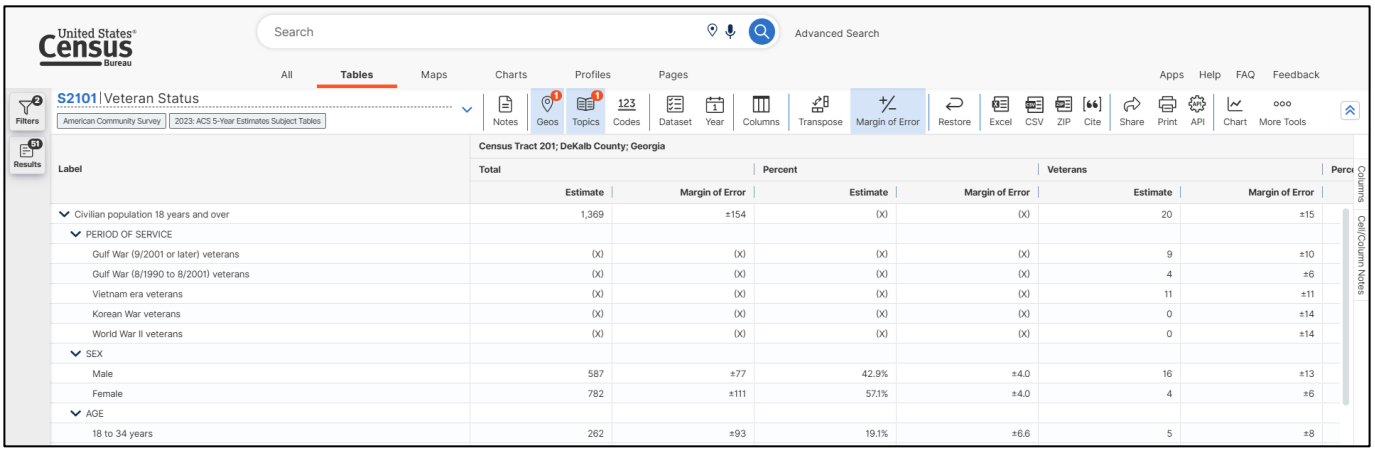
Step 6. Once you click on the Search button, you can see the available data related to veterans. Select table S2101 to view the data.



Note: Depending on the number of geographies and/or the overall size of the table, you may get a message like the one below. This is not an error, rather just a mechanism the site uses to let you know that the display may be affected by the size of the table. You can either reduce the number of geographies you've searched for, download the table, or try to open it anyway on the site.



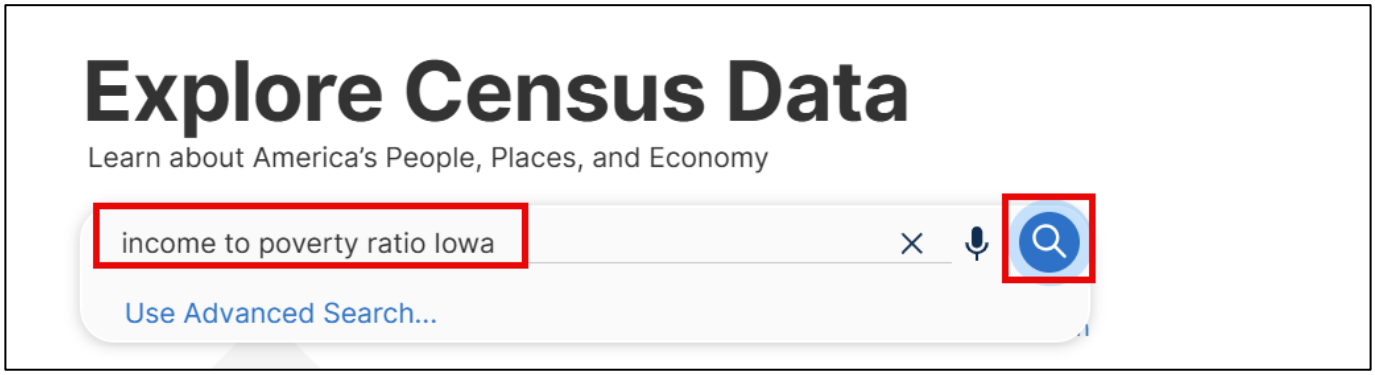
Please keep in mind that the success of opening the table on the screen is dependent on the browser you're using and the size of your table.



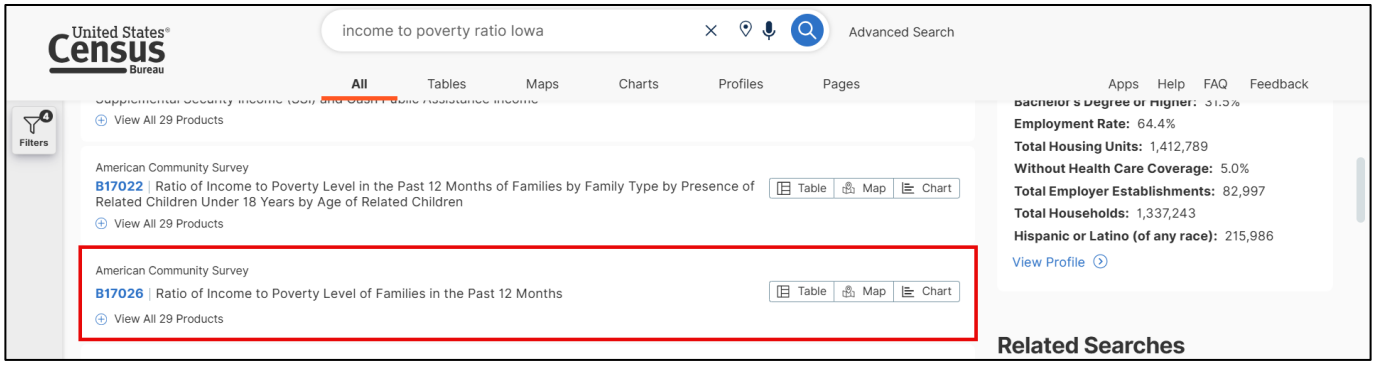
1.3 Income to poverty ratio for Iowa – Single Search

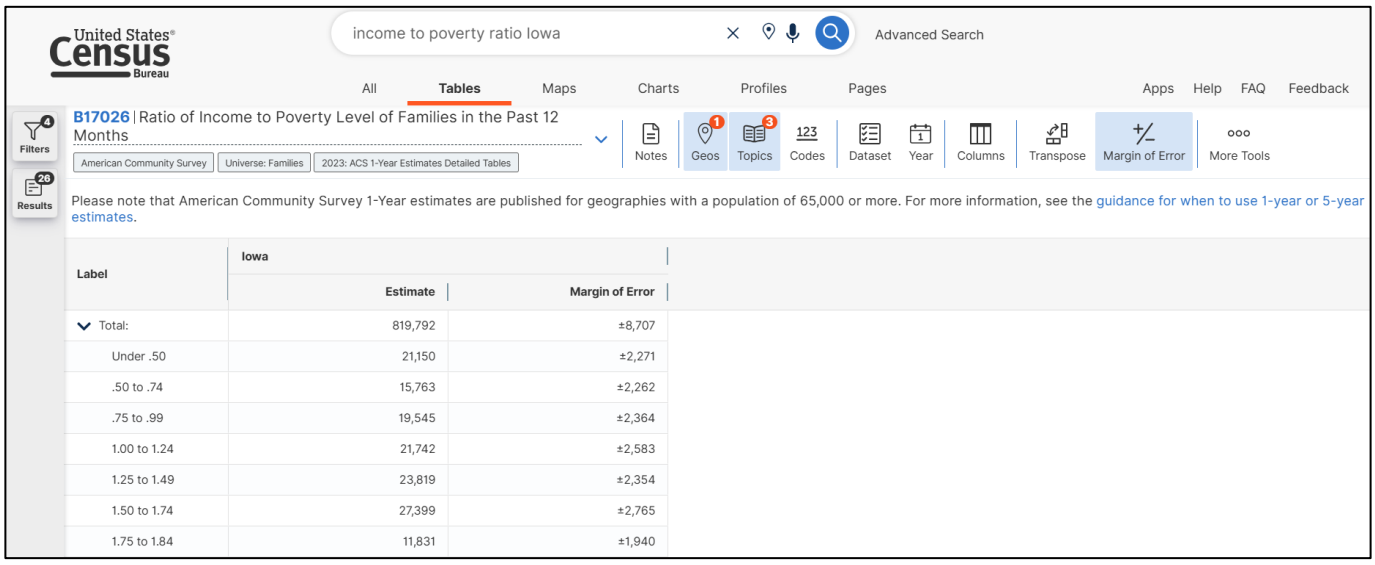
If you're not quickly finding what you need with the filters available in the Advanced Search, you can always use the Single Search to enter a more direct search term. For example, there is not a filter specifically for income to poverty ratios, so we can use that term in the Single Search to see what comes up. While these tables would come up if the Income filter was used in the Advanced Search, you may need to sort through many other tables to reach them. In these cases, using the Single Search can sometimes be a quicker way to access the tables you need.

Step 1. Start by going to https://data.census.gov/. Enter **income to poverty ratio Iowa** into the search bar. Click on the magnifying glass icon or hit Enter.



Step 2. View the available data tables. Table B17026 provides income to poverty ratio data for families.



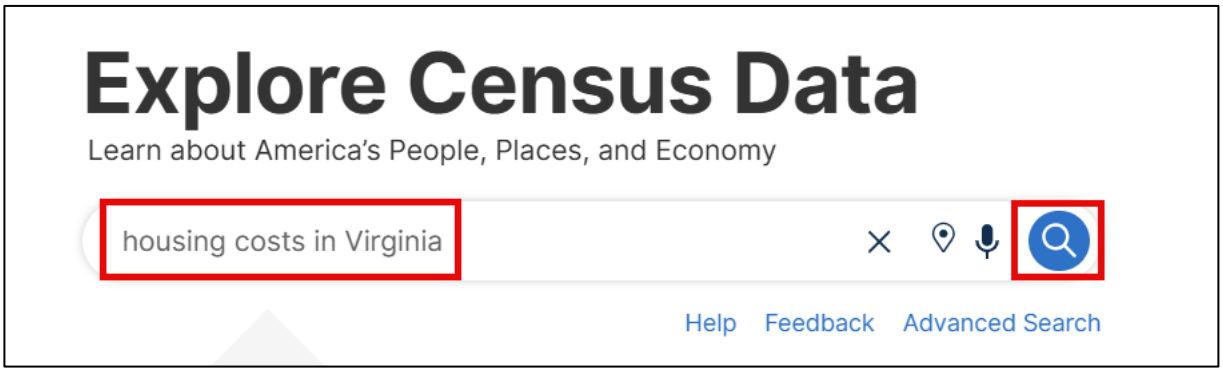


Label	Iowa	
	Estimate	Margin of Error
Total:	819,792	±8,707
Under .50	21,150	±2,271
.50 to .74	15,763	±2,262
.75 to .99	19,545	±2,364
1.00 to 1.24	21,742	±2,583
1.25 to 1.49	23,819	±2,354
1.50 to 1.74	27,399	±2,765
1.75 to 1.84	11,831	±1,940

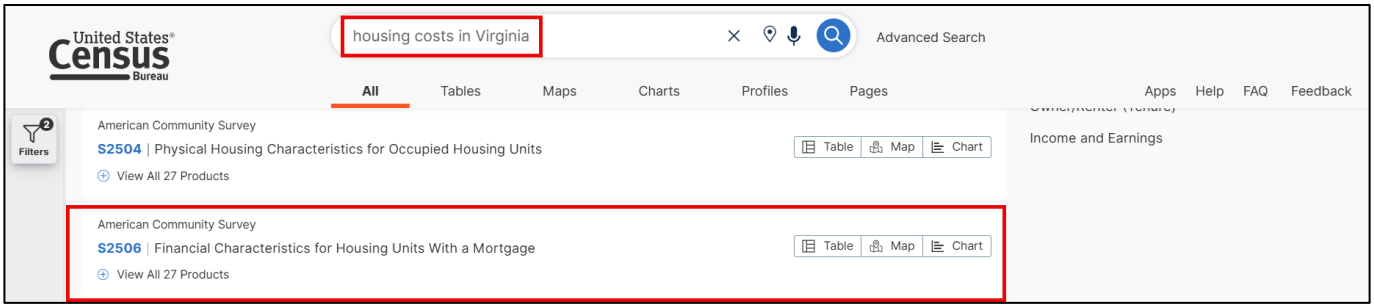
1.4 Monthly housing costs in Virginia – Single Search

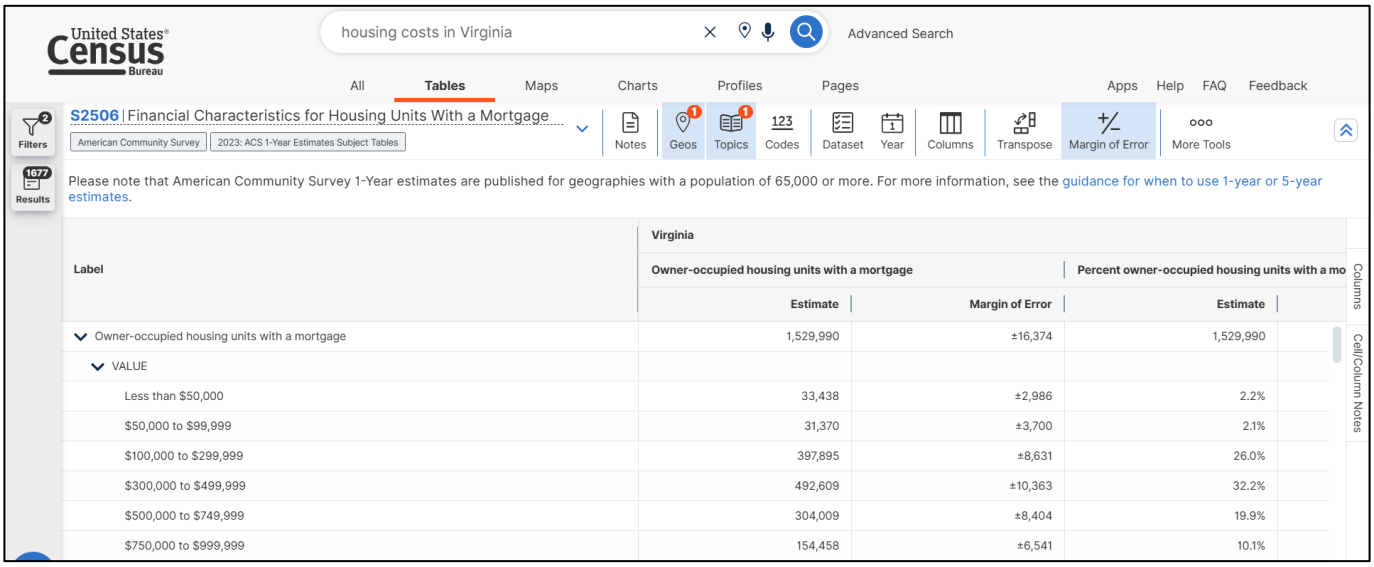
A similar search can be done by using the Single Search to find monthly housing costs for owner occupied housing units with a mortgage in Virginia. With complicated search terms like this, you may find that it's easier to type the essential topic and geographic information into the Single Search bar.

Step 1. Start by going to https://data.census.gov/. Enter **housing costs in Virginia** into the search bar. Click on the magnifying glass icon or hit Enter.



Step 2. View the available data tables. If we look at the table list more closely, we can see that there is a table that shows financial characteristics specifically for housing units with a mortgage. Click on table S2506 to view more detailed data points.



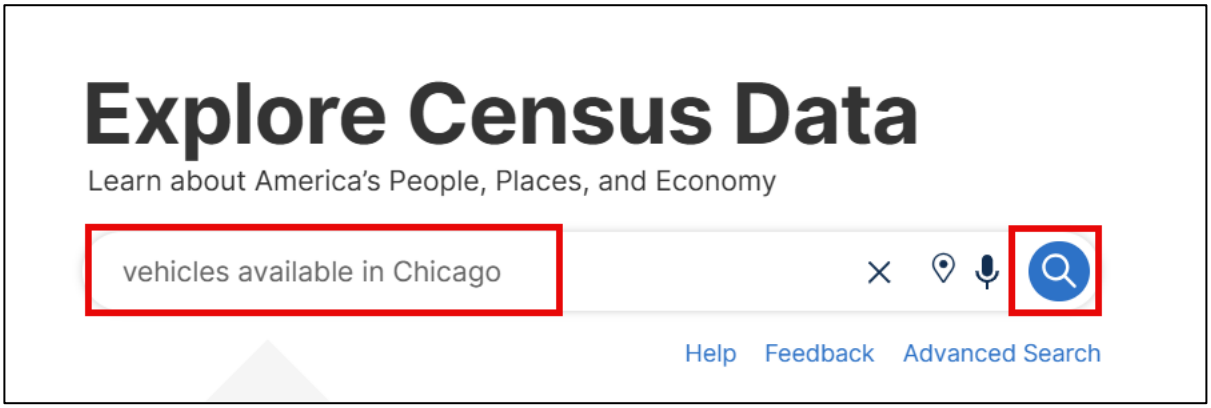


2 Individual Exercises

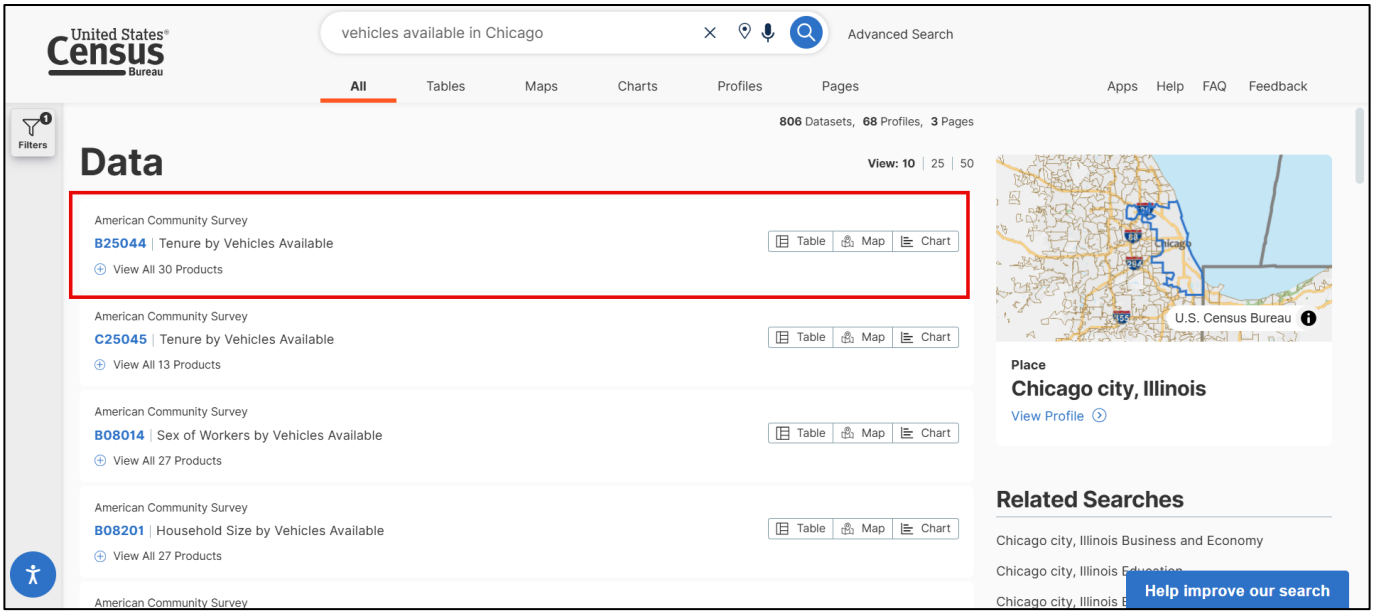
The Single Search and Advanced Search both have advantages and disadvantages when trying to find data from the American Community Survey. For this first individual exercise, we'll use the Single Search to find data on a topic that may be a little trickier to find using the Advanced Search.

2.1 Tenure by vehicles available in Chicago, Illinois – Single Search

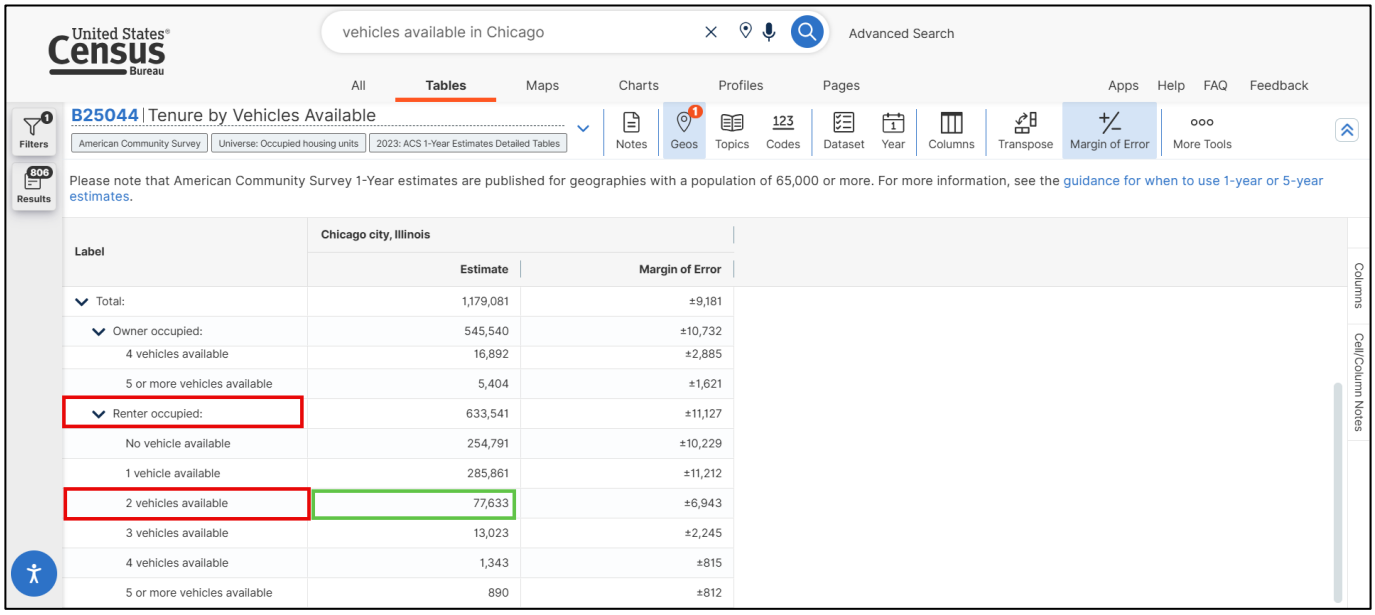
Step 1. For this exercise, we want to find data on tenure by vehicles in Chicago using the Single Search. Once you arrive at https://data.census.gov/, enter **vehicles available in Chicago** into the search bar – this simple search term will hopefully bring up tables that we are interested in. Then, click on the magnifying glass icon or hit Enter.



Step 2. Next, view the table list. Since we are looking for tenure by vehicles available, select table B25044.

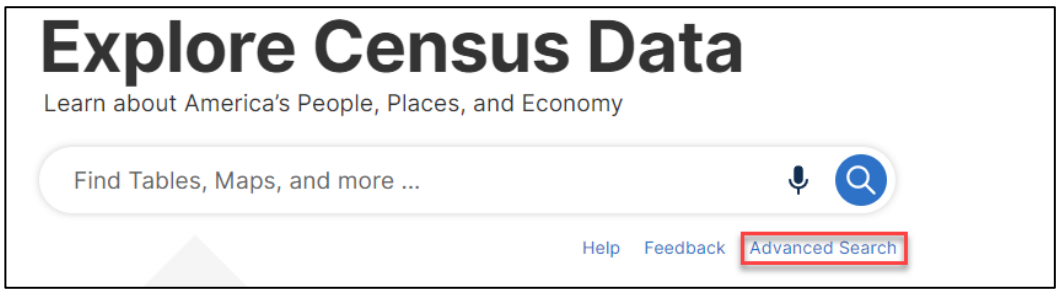


Step 3. Using the most recent ACS Estimates, we were looking for the number of renter occupied housing units that had two vehicles available. Here we can see that the answer is 77,633 using the 2023 1-year ACS estimates.

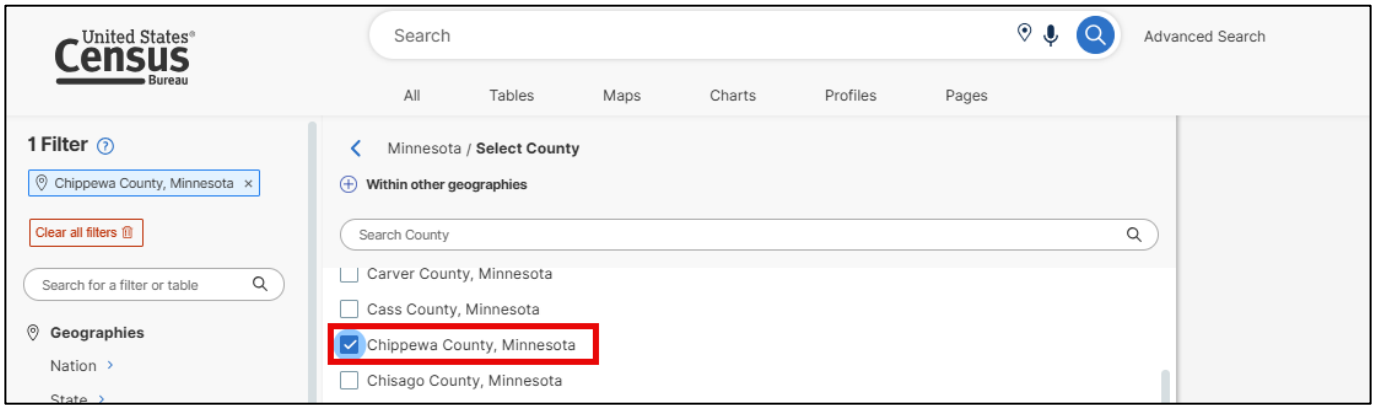


2.2 Median earnings for Chippewa County, Minnesota – Advanced Search

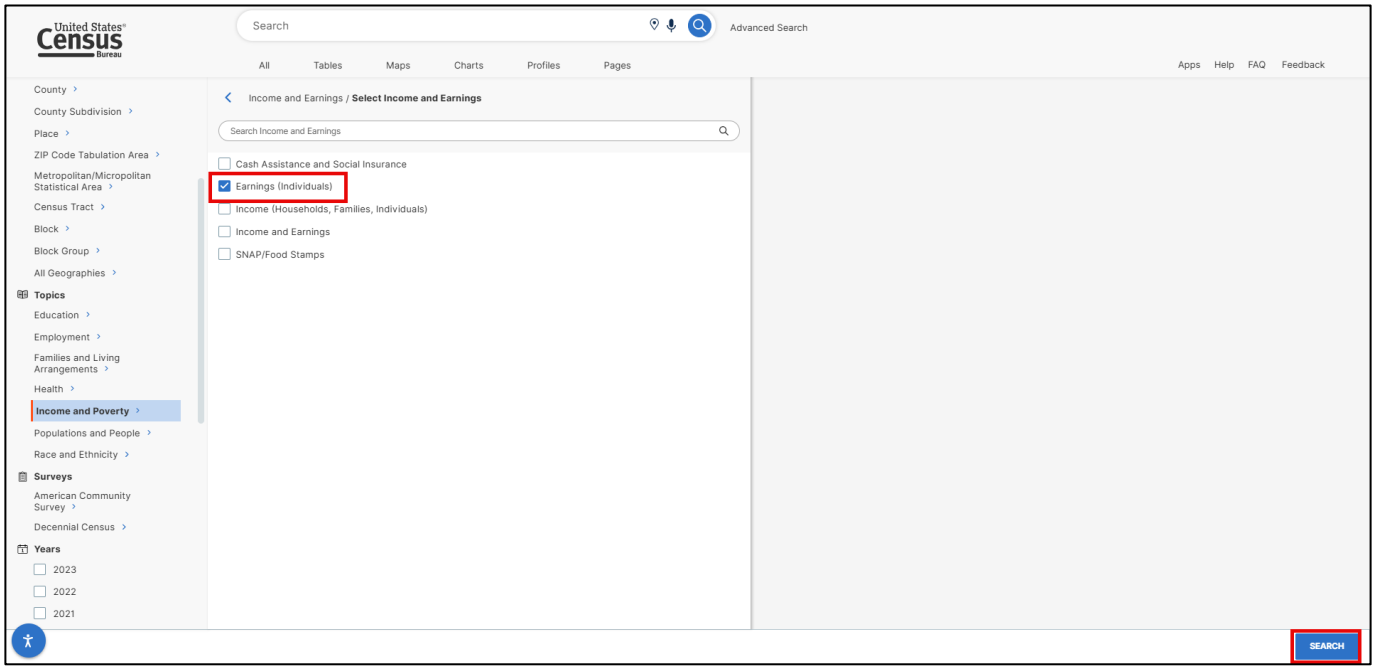
Step 1. For this exercise, we want to find median earnings data for Chippewa County, Minnesota. Start by going to https://data.census.gov/. Click on the Advanced Search button located directly beneath the search bar. Alternatively, you can go directly to the Advanced Search by going to https://data.census.gov/advanced.



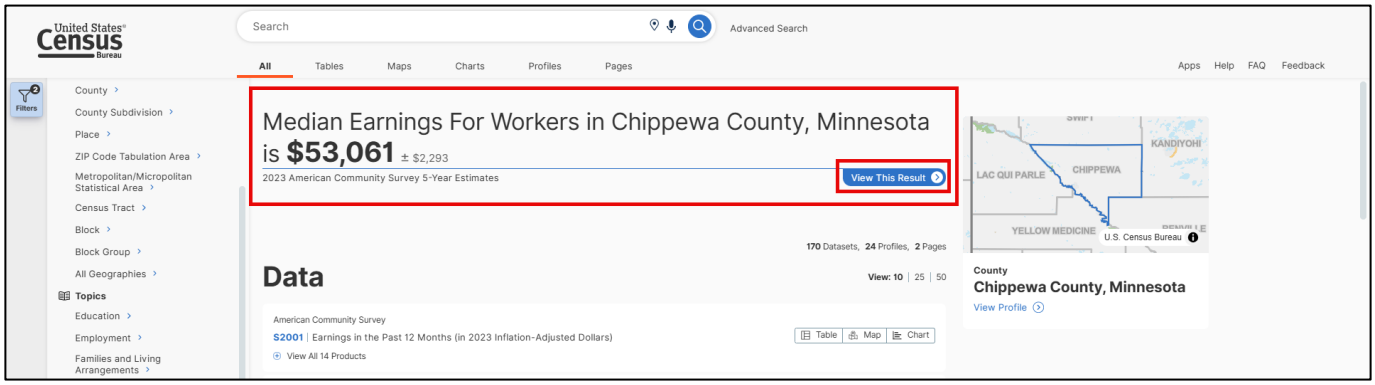
Step 2. Let's select the geographies first. Click on Geography > County > Minnesota > check the box for Chippewa County, Minnesota



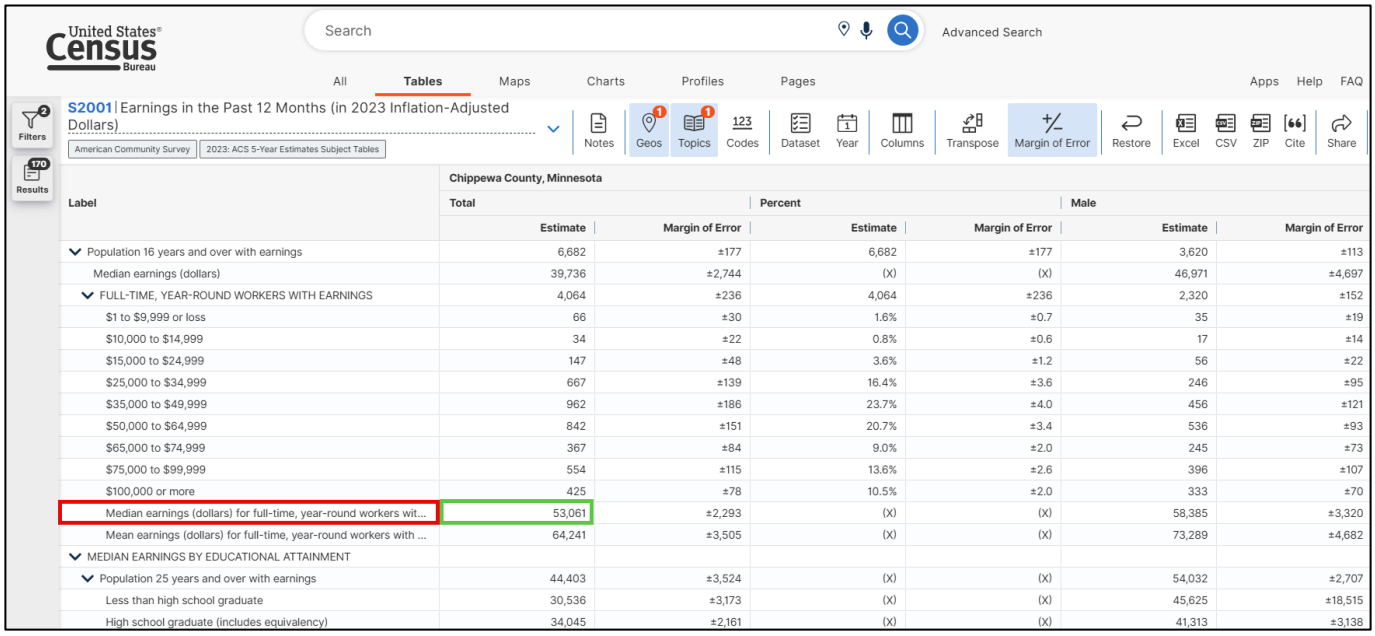
Step 3. Next, under Topics, click on Income and Poverty > Income and Earnings > check the box for Earnings (Individuals). Then hit the Search button in the lower right corner of the screen.



Step 4. This returns the full list of tables that are related to earnings data for Chippewa County. We can also see a featured statistic that provides a median earnings figure for Chippewa County. Let's keep that number in mind and click on the 'View This Result' button to get more information.



Step 5. You can see that this data is coming from table S2001. After scanning the table, we can confirm that the median earnings for full-time, year-round workers is $53,061 using the 2023 1-year ACS estimates.



United States Census Bureau

Search | Advanced Search

All | Tables | Maps | Charts | Profiles | Pages | Apps | Help | FAQ

S2001 | Earnings in the Past 12 Months (in 2023 Inflation-Adjusted Dollars)

American Community Survey | 2023: ACS 5-Year Estimates Subject Tables

Filters 2 | Results 170 | Notes | Geos 1 | Topics 1 | Codes | Dataset | Year | Columns | Transpose | Margin of Error | Restore | Excel | CSV | ZIP | Cite | Share

Label	Chippewa County, Minnesota					
	Total		Percent		Male	
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error
Population 16 years and over with earnings	6,682	±177	6,682	±177	3,620	±113
Median earnings (dollars)	39,736	±2,744	(X)	(X)	46,971	±4,697
FULL-TIME, YEAR-ROUND WORKERS WITH EARNINGS	4,064	±236	4,064	±236	2,320	±152
$1 to $9,999 or loss	66	±30	1.6%	±0.7	35	±19
$10,000 to $14,999	34	±22	0.8%	±0.6	17	±14
$15,000 to $24,999	147	±48	3.6%	±1.2	56	±22
$25,000 to $34,999	667	±139	16.4%	±3.6	246	±95
$35,000 to $49,999	962	±186	23.7%	±4.0	456	±121
$50,000 to $64,999	842	±151	20.7%	±3.4	536	±93
$65,000 to $74,999	367	±84	9.0%	±2.0	245	±73
$75,000 to $99,999	554	±115	13.6%	±2.6	396	±107
$100,000 or more	425	±78	10.5%	±2.0	333	±70
Median earnings (dollars) for full-time, year-round workers wit...	53,061	±2,293	(X)	(X)	58,385	±3,320
Mean earnings (dollars) for full-time, year-round workers with ...	64,241	±3,505	(X)	(X)	73,289	±4,682
MEDIAN EARNINGS BY EDUCATIONAL ATTAINMENT						
Population 25 years and over with earnings	44,403	±3,524	(X)	(X)	54,032	±2,707
Less than high school graduate	30,536	±3,173	(X)	(X)	45,625	±18,515
High school graduate (includes equivalency)	34,045	±2,161	(X)	(X)	41,313	±3,138

ACS Data in the Census API

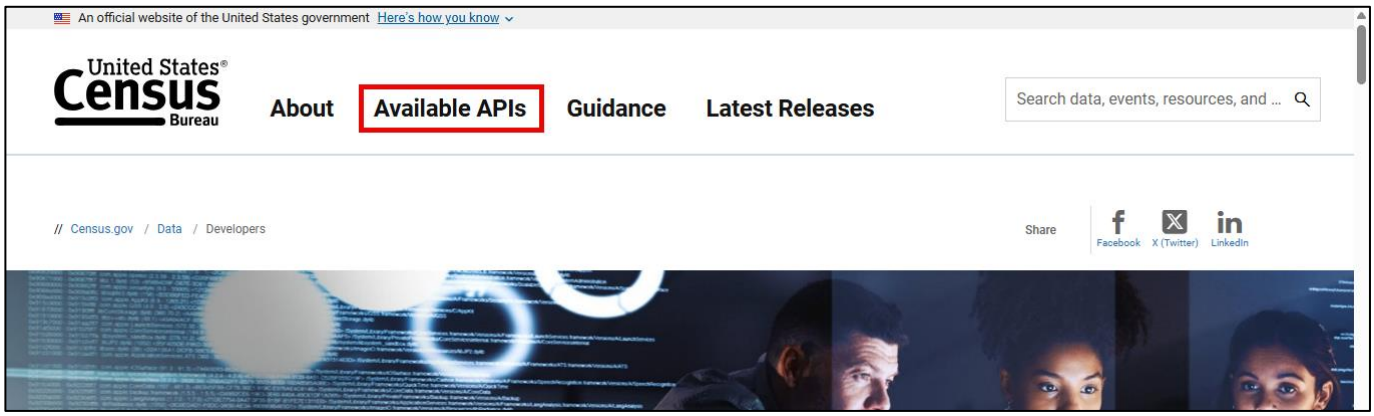
So, you've taken a look at the data in data.census.gov, but maybe you want just one variable from the ACS for a bunch of geographies instead of pulling a large table within the site. Maybe you want to view data points from different tables at once, or maybe you want to use Census data in a third-party app or dashboard? In these cases, you'd likely want to use the Census Application Programming Interface, or API. Data.census.gov actually pulls its data directly from the API, but it puts it together into a readable table, map, or chart format.

3 Group Exercises

In this section, you'll learn how to get to the Census API, select a dataset, and then build a query. You'll also learn how to create a group call, which will provide all the data found in a table for selected geographies.

3.1 Unemployed population for all states in the U.S.

Step 1. Start by going to the Available APIs page (https://www.census.gov/data/developers/data-sets.html). It can be found through our Developers page (https://www.census.gov/data/developers.html). From here, click on Available APIs.



An official website of the United States government Here's how you know

United States Census Bureau

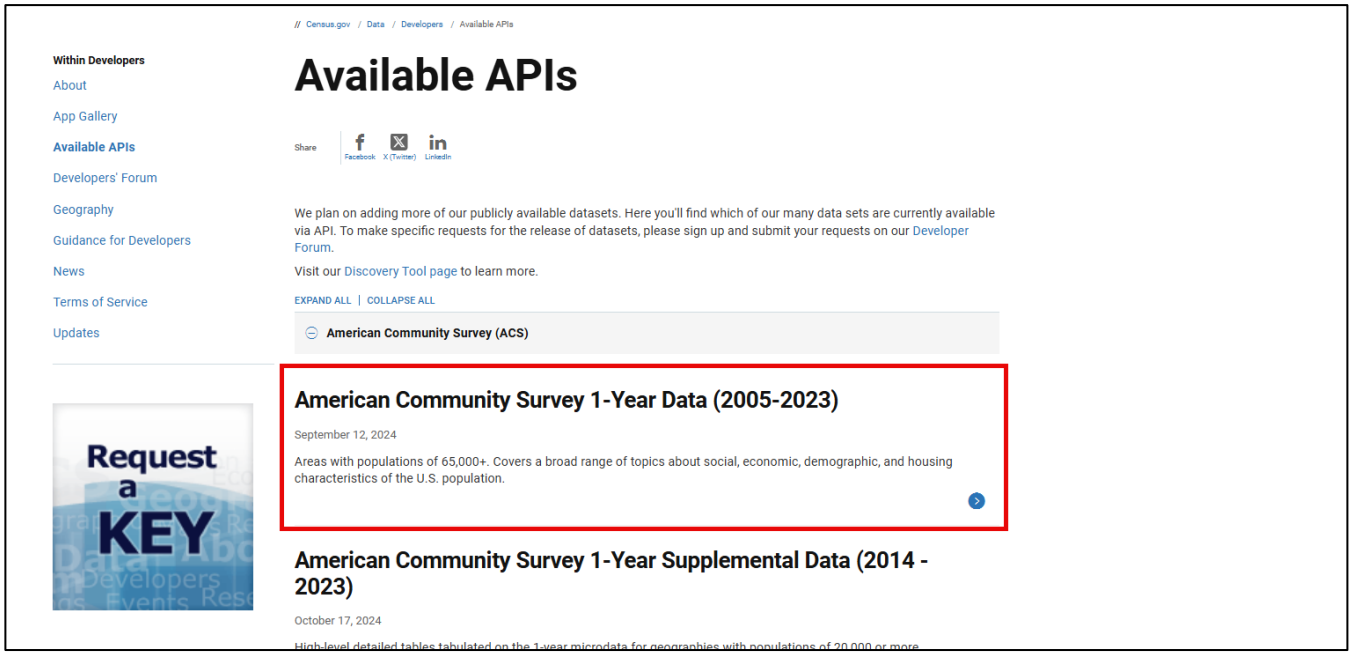
About | Available APIs | Guidance | Latest Releases

Search data, events, resources, and ...

// Census.gov / Data / Developers

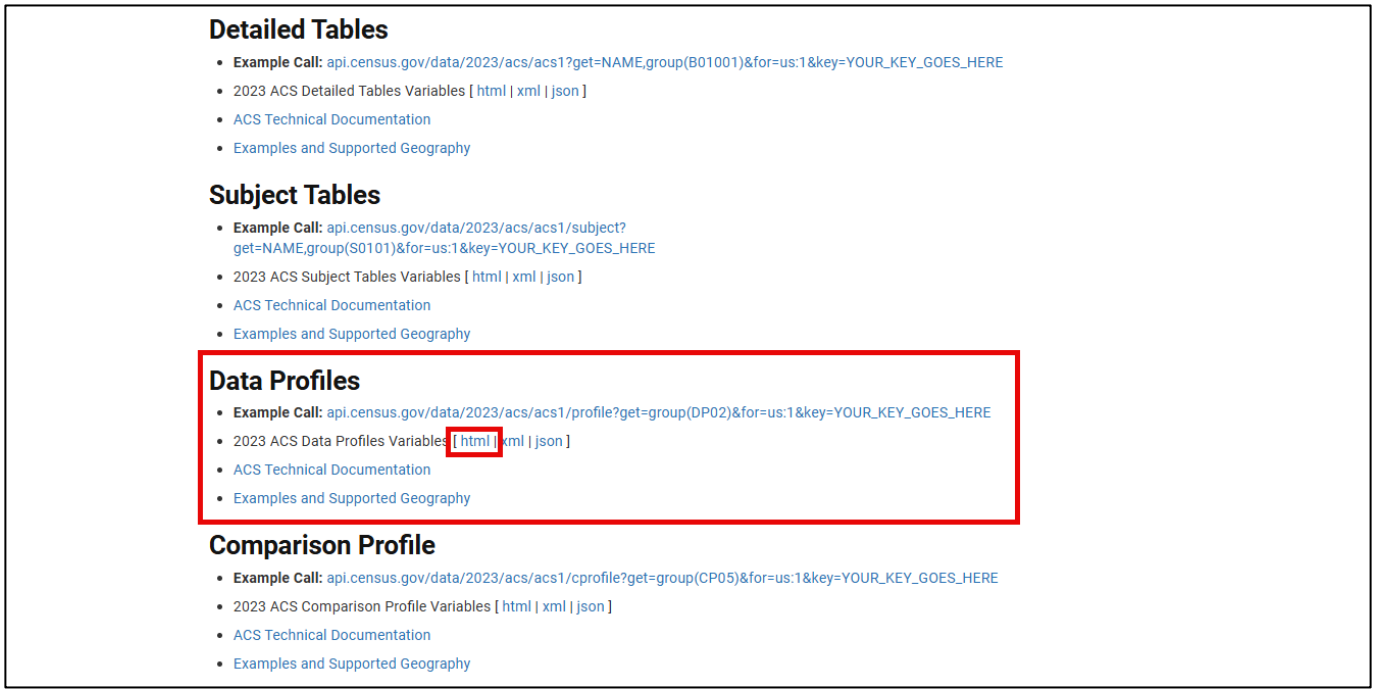
Share Facebook X (Twitter) LinkedIn

The Available APIs page displays the American Community Survey (ACS) API datasets at the top of the list. If you expand the view, you can see all the datasets from the ACS that are available in the Census API. Since our example is looking at all states, we can pull our table from the 1-Year Data. Click on 'American Community Survey 1-Year Data.'



Step 2. The ACS 1-Year API page provides information on the different table types (which informs the structure of your query), variable changes, and sections for each dataset that has example calls, variables, technical documentation, and supported geographies. Since Data Profiles have a lot of varied data points, let's see if there is a variable for the estimated total unemployed population.

To check this, go to the Data Profiles heading on the 2023 page, and select the HTML version of the 2023 ACS Data Profiles Variables.



Step 3. This page will provide you with a comprehensive list of variables for all Data Profile tables (DP02, DP03, DP04, and DP05). Using the CTRL + F function, search for 'unemployed'. The first variable, DP03_0005E, is what we're looking for. Keep that variable code in mind as we go to build the rest of our query.

DP03_0001PE	Percent!!EMPLOYMENT STATUS!!Population 16 years and over	Selected Economic Characteristics	not required	unemployed 1/12 DP03_0001PMA			DP03
DP03_0002E	Estimate!!EMPLOYMENT STATUS!!Population 16 years and over!!In labor force	Selected Economic Characteristics	not required	DP03_0002EA, DP03_0002M, DP03_0002MA	0	int	DP03
DP03_0002PE	Percent!!EMPLOYMENT STATUS!!Population 16 years and over!!In labor force	Selected Economic Characteristics	not required	DP03_0002PEA, DP03_0002PM, DP03_0002PMA	0	float	DP03
DP03_0003E	Estimate!!EMPLOYMENT STATUS!!Population 16 years and over!!In labor force!!Civilian labor force	Selected Economic Characteristics	not required	DP03_0003EA, DP03_0003M, DP03_0003MA	0	int	DP03
DP03_0003PE	Percent!!EMPLOYMENT STATUS!!Population 16 years and over!!In labor force!!Civilian labor force	Selected Economic Characteristics	not required	DP03_0003PEA, DP03_0003PM, DP03_0003PMA	0	float	DP03
DP03_0004E	Estimate!!EMPLOYMENT STATUS!!Population 16 years and over!!In labor force!!Civilian labor force!!Employed	Selected Economic Characteristics	not required	DP03_0004EA, DP03_0004M, DP03_0004MA	0	int	DP03
DP03_0004PE	Percent!!EMPLOYMENT STATUS!!Population 16 years and over!!In labor force!!Civilian labor force!!Employed	Selected Economic Characteristics	not required	DP03_0004PEA, DP03_0004PM, DP03_0004PMA	0	float	DP03
DP03_0005E	Estimate!!EMPLOYMENT STATUS!!Population 16 years and over!!In labor force!!Civilian labor force!!Unemployed	Selected Economic Characteristics	not required	DP03_0005EA, DP03_0005M, DP03_0005MA	0	int	DP03
DP03_0005PE	Percent!!EMPLOYMENT STATUS!!Population 16 years and over!!In labor force!!Civilian labor force!!Unemployed	Selected Economic Characteristics	not required	DP03_0005PEA, DP03_0005PM, DP03_0005PMA	0	float	DP03
DP03_0006E	Estimate!!EMPLOYMENT STATUS!!Population 16 years and over!!In labor force!!Armed Forces	Selected Economic Characteristics	not required	DP03_0006EA, DP03_0006M, DP03_0006MA	0	int	DP03

Step 4. Navigate back to the ACS API page. Then, open the 'Examples and Supported Geography' link. This will provide example queries for the available geographies in the Data Profiles.

Then, select the link to the Examples.

Census API: Datasets in /data/2023/acs/acs1/profile and its descendants

Title	Description	Vintage	Dataset Name	Dataset Type	Geography List	Variable List	Group List	SortList	Examples	Developer Documentation	API Base URL
ACS 1-Year Data Profiles	The American Community Survey (ACS) is a US-wide survey designed to provide communities a fresh look at how they are changing. The ACS replaced the decennial census long form in 2010 and thereafter by collecting long form type information throughout the decade rather than only once every 10 years. Questionnaires are mailed to a sample of addresses to obtain information about households -- that is, about each person and the housing unit itself. The American Community Survey produces demographic, social, housing and economic estimates in the form of 1 and 5-year estimates based on population thresholds. The strength of the ACS is in estimating population and housing characteristics. The data profiles provide key estimates for each of the topic areas covered by the ACS for the us, all 50 states, the District of Columbia, Puerto Rico, every congressional district, every metropolitan area, and all counties and places with populations of 65,000 or more. Although the ACS produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the US, states, counties, cities and towns, and estimates of housing units for states and counties. For 2010 and other decennial census years, the Decennial Census provides the official counts of population and housing units.	2023	acs› acs1› profile	Aggregate	geographies	variables	groups	sorts	examples	documentation	http://api.census.gov/data/2023/acs/acs1/profile

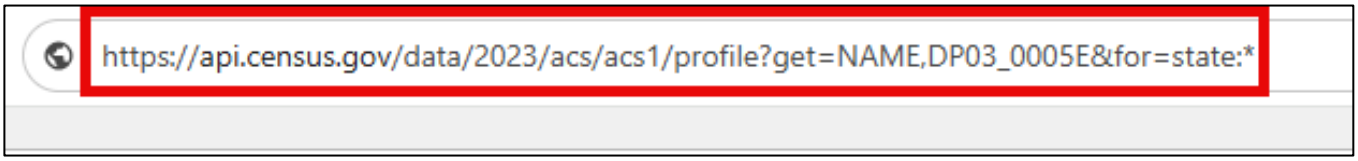
1 dataset

Step 5. Following this link will open a list of example calls by geography. The state level examples are toward the top of the page. The asterisk in the query indicates that data will be pulled for all states, so let's select the first example query in the state section.

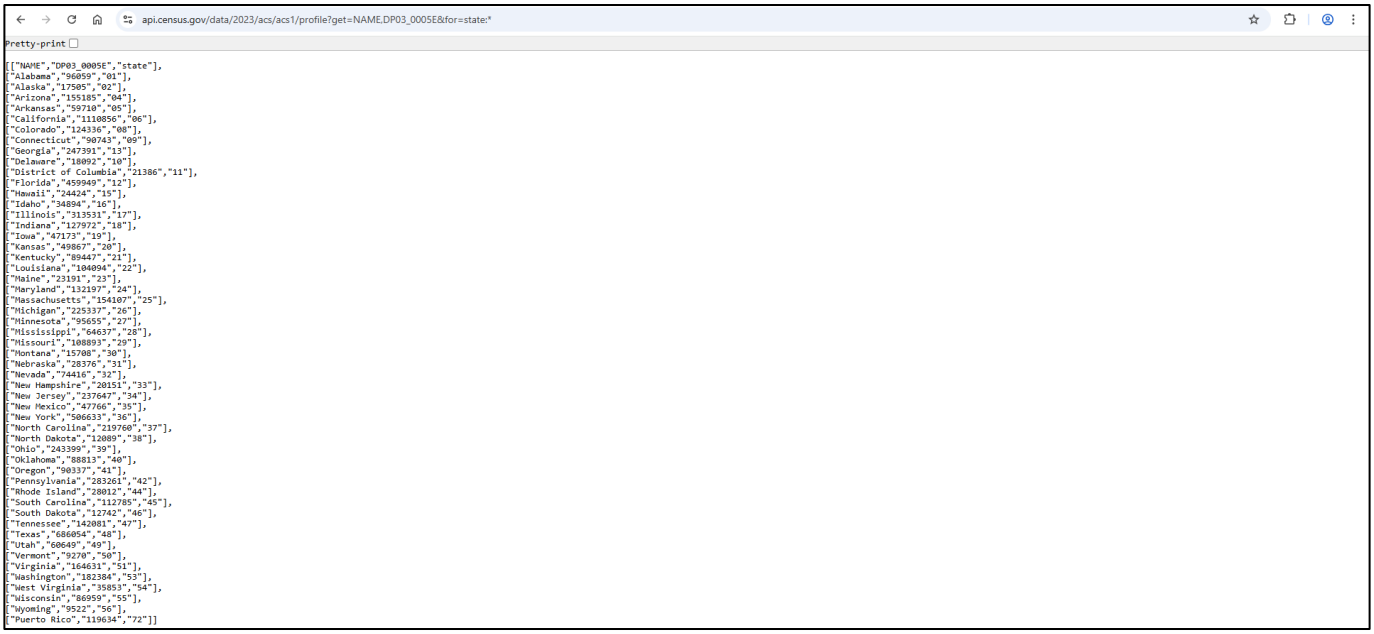
Census API: Examples for /data/2023/acs/acs1/profile

Geography Hierarchy	Geography Level	Example URL	Number
us	010	https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=us:*&key=YOUR_KEY_GOES_HERE	1
		https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=us:1&key=YOUR_KEY_GOES_HERE	2
region	020	https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=region:*&key=YOUR_KEY_GOES_HERE	3
		https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=region:3&key=YOUR_KEY_GOES_HERE	4
division	030	https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=division:*&key=YOUR_KEY_GOES_HERE	5
		https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=division:5&key=YOUR_KEY_GOES_HERE	6
state	040	https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=state:*&key=YOUR_KEY_GOES_HERE	7
		https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=state:06&key=YOUR_KEY_GOES_HERE	8
state› county	050	https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=county:*&key=YOUR_KEY_GOES_HERE	9
		https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=county:*&in=state:*&key=YOUR_KEY_GOES_HERE	10
		https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=county:037&in=state:06&key=YOUR_KEY_GOES_HERE	11
state› county› county subdivision	060	https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=county%20subdivision:*&in=state:17&key=YOUR_KEY_GOES_HERE	12
		https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=county%20subdivision:*&in=state:17&in=county:*&key=YOUR_KEY_GOES_HERE	13
		https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=county%20subdivision:14000&in=state:17%20county:031&key=YOUR_KEY_GOES_HERE	14
state› place	160	https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=place:*&key=YOUR_KEY_GOES_HERE	15
		https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=place:*&in=state:*&key=YOUR_KEY_GOES_HERE	16
		https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=place:51000&in=state:36&key=YOUR_KEY_GOES_HERE	17

Step 6. Now we have the query open. As the query currently stands, it is only displaying the state name and FIPS code. We are going to add our variable into this query by adding a comma (,) behind the NAME code and typing **DP03_0005E** (do not include any spaces). Then click enter to run the updated query URL.



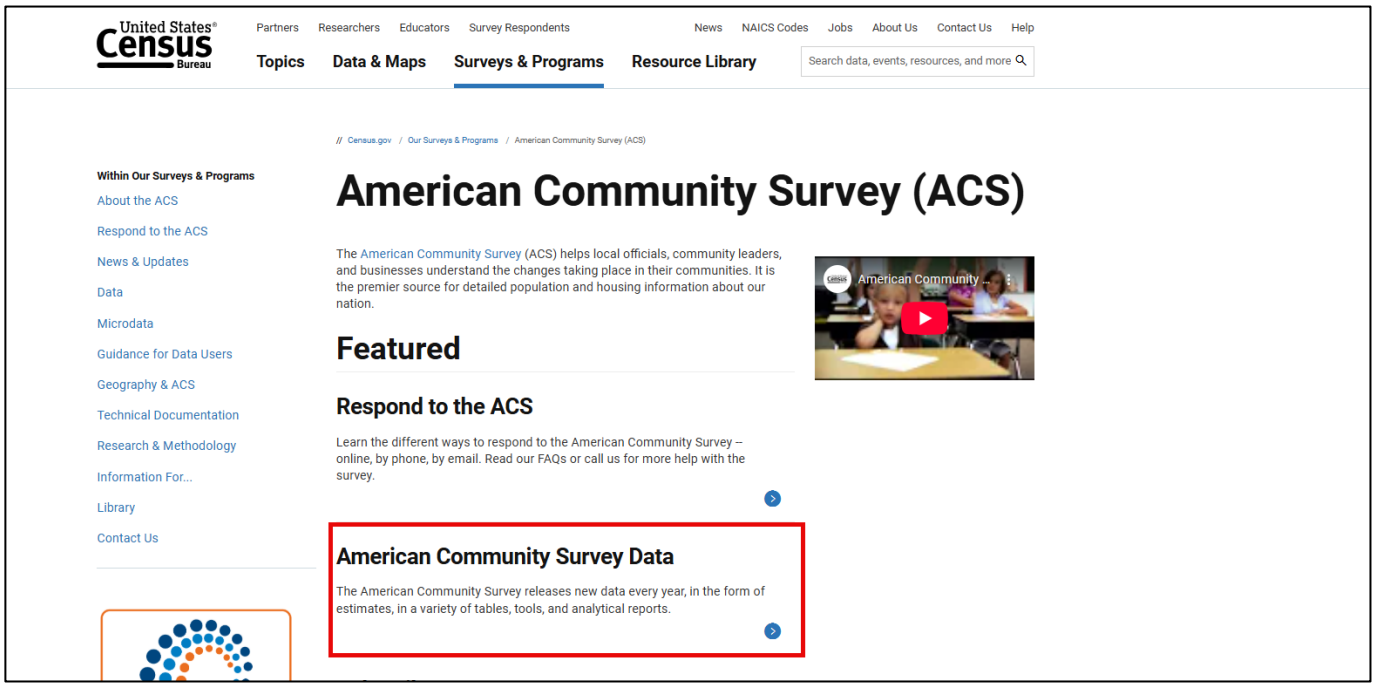
Step 7. The API output now updates to show the state name, the estimate of the total unemployed population by state, and the state FIPS code.



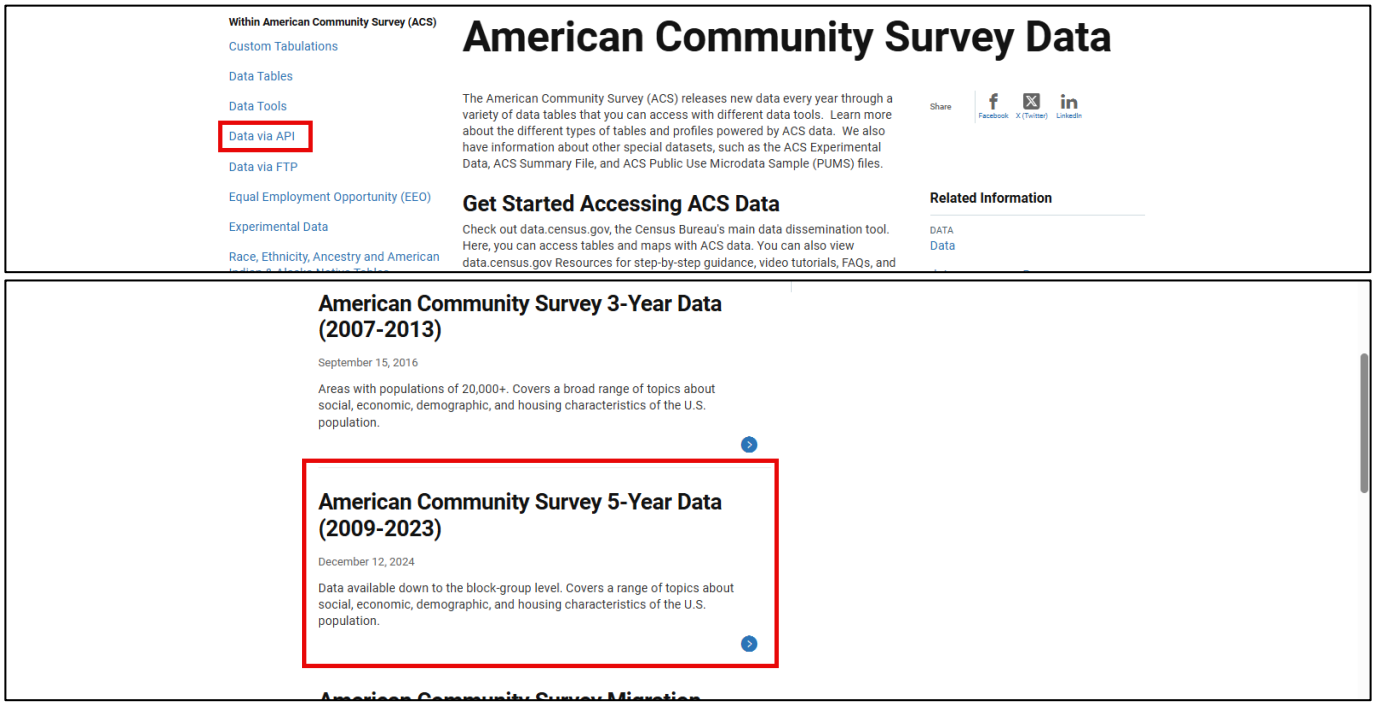
3.2 Commuting data for all counties in the U.S.

Step 1. Now we are going to try out a group call, which will pull data from an entire table. You'll also learn how you can add a few extra commands to your query so you can download the data in a machine-readable table format that includes variable labels for easier reading.

To get started, let's use a different path to access the API – specifically, from the ACS program page. First, go to census.gov/acs. This will take you directly to the ACS program page, which has a lot of helpful information related to the ACS. Click on the 'American Community Survey Data' link.

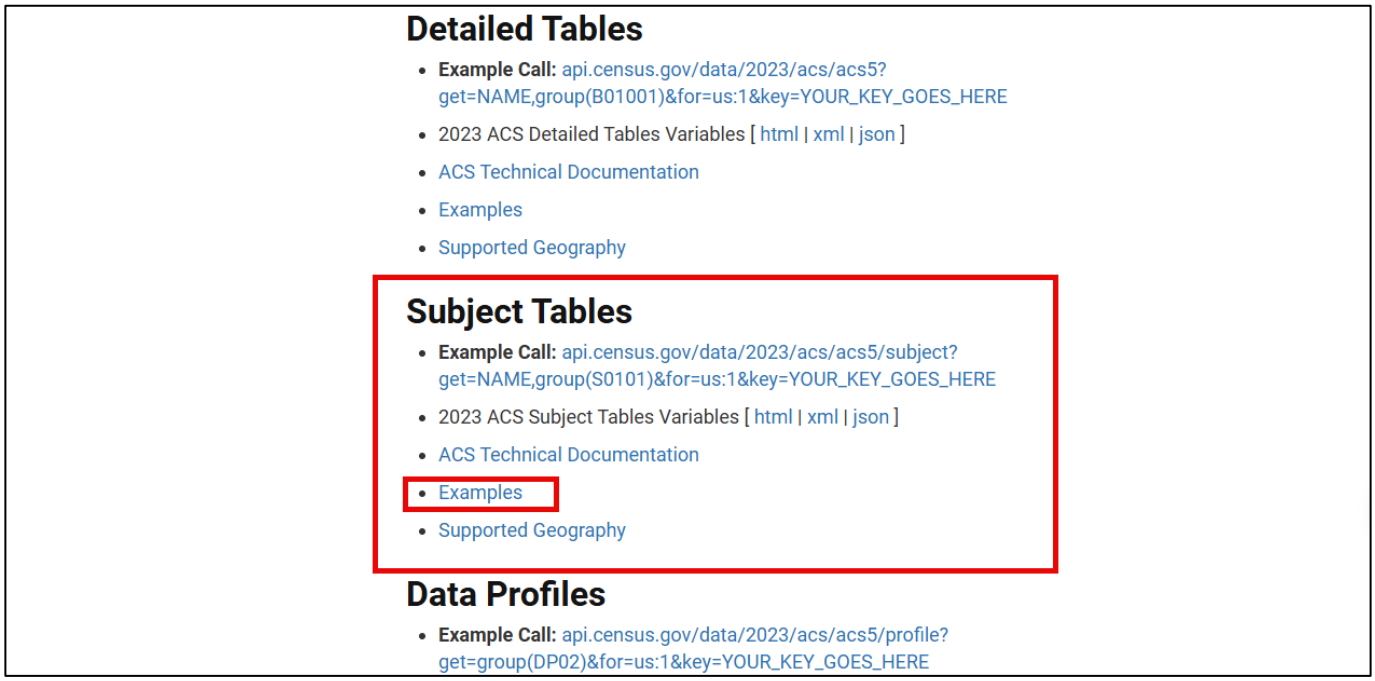


Step 2: Then, click on the 'Data via API' link in the sidebar on the left side of the screen. This will provide a similar layout to the Available APIs page, but specifically tailored to ACS data. Select the 'American Community Survey 5-Year Data' link.



Step 3. Now we've reached the same page layout that we saw in the first example. For this next exercise, we're going to use an example group call and modify it to show data for table S0801 – which we've taken a look at in this workshop already – for all counties in the U.S.

Since S0801 is a Subject Table, go to that section of the 2023 page. Click on the Examples link, which will open in a new tab.



Detailed Tables

- **Example Call:** api.census.gov/data/2023/acs/acs5?get=NAME,group(B01001)&for=us:1&key=YOUR_KEY_GOES_HERE
- 2023 ACS Detailed Tables Variables [html | xml | json]
- ACS Technical Documentation
- Examples
- Supported Geography

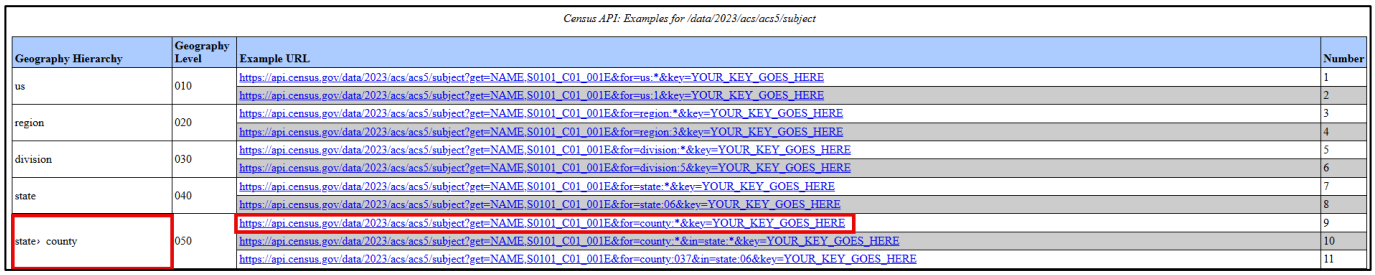
Subject Tables

- **Example Call:** api.census.gov/data/2023/acs/acs5/subject?get=NAME,group(S0101)&for=us:1&key=YOUR_KEY_GOES_HERE
- 2023 ACS Subject Tables Variables [html | xml | json]
- ACS Technical Documentation
- Examples
- Supported Geography

Data Profiles

- **Example Call:** api.census.gov/data/2023/acs/acs5/profile?get=group(DP02)&for=us:1&key=YOUR_KEY_GOES_HERE

Step 4. Now, let's check out the example queries for counties. Since we're looking for data for all counties, select the first query in the set of county level examples.



Census API: Examples for /data/2023/acs/acs5/subject

Geography Hierarchy	Geography Level	Example URL	Number
us	010	https://api.census.gov/data/2023/acs/acs5/subject?get=NAME,S0101_C01_001E&for=us:*&key=YOUR_KEY_GOES_HERE	1
		https://api.census.gov/data/2023/acs/acs5/subject?get=NAME,S0101_C01_001E&for=us:1&key=YOUR_KEY_GOES_HERE	2
region	020	https://api.census.gov/data/2023/acs/acs5/subject?get=NAME,S0101_C01_001E&for=region:*&key=YOUR_KEY_GOES_HERE	3
		https://api.census.gov/data/2023/acs/acs5/subject?get=NAME,S0101_C01_001E&for=region:3&key=YOUR_KEY_GOES_HERE	4
division	030	https://api.census.gov/data/2023/acs/acs5/subject?get=NAME,S0101_C01_001E&for=division:*&key=YOUR_KEY_GOES_HERE	5
		https://api.census.gov/data/2023/acs/acs5/subject?get=NAME,S0101_C01_001E&for=division:5&key=YOUR_KEY_GOES_HERE	6
state	040	https://api.census.gov/data/2023/acs/acs5/subject?get=NAME,S0101_C01_001E&for=state:*&key=YOUR_KEY_GOES_HERE	7
		https://api.census.gov/data/2023/acs/acs5/subject?get=NAME,S0101_C01_001E&for=state:06&key=YOUR_KEY_GOES_HERE	8
state> county	050	https://api.census.gov/data/2023/acs/acs5/subject?get=NAME,S0101_C01_001E&for=county:*&key=YOUR_KEY_GOES_HERE	9
		https://api.census.gov/data/2023/acs/acs5/subject?get=NAME,S0101_C01_001E&for=county:*&in=state:*&key=YOUR_KEY_GOES_HERE	10
		https://api.census.gov/data/2023/acs/acs5/subject?get=NAME,S0101_C01_001E&for=county:037&in=state:06&key=YOUR_KEY_GOES_HERE	11

Step 5. Next we need to change from looking at a single variable to looking at data for all of table S0801. Delete **NAME,S0101_C01_001E** from the URL and replace it with **group(S0801)**. Then click Enter to run the query.

api.census.gov/data/2023/acs/acs5/subject?get=~~NAME,S0101_C01_001E~~&for=county:*

Pretty-print ☐

```
[["NAME","S0101_C01_001E","state","county"],
["Autauga County, Alabama","59285","01","001"],
["Baldwin County, Alabama","239945","01","003"],
["Barbour County, Alabama","24757","01","005"],
```

api.census.gov/data/2023/acs/acs5/subject?get=group(S0801)&for=county:*

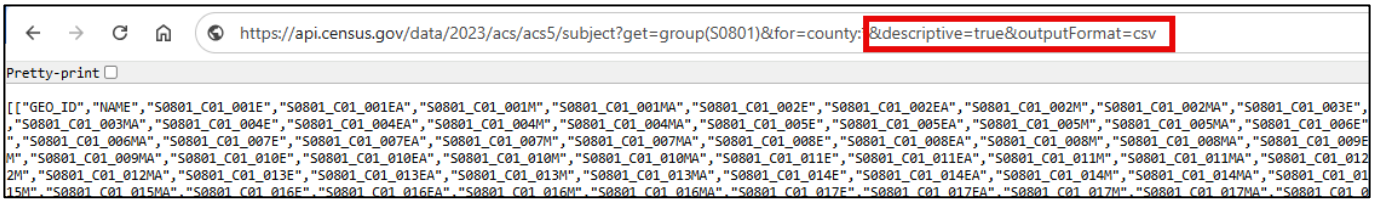
Pretty-print ☐

```
[["GEO_ID","NAME","S0801_C01_001E","S0801_C01_001EA","S0801_C01_001M","S0801_C01_001MA","S0801_C01_002E","S0801_C01_002EA","S0801_C01_002M","S0801_C01_002MA","S080
,"S0801_C01_003MA","S0801_C01_004E","S0801_C01_004EA","S0801_C01_004M","S0801_C01_004MA","S0801_C01_005E","S0801_C01_005EA","S0801_C01_005M","S0801_C01_005MA","S08
","S0801_C01_006MA","S0801_C01_007E","S0801_C01_007EA","S0801_C01_007M","S0801_C01_007MA","S0801_C01_008E","S0801_C01_008EA","S0801_C01_008M","S0801_C01_008MA","S
M","S0801_C01_009MA","S0801_C01_010E","S0801_C01_010EA","S0801_C01_010M","S0801_C01_010MA","S0801_C01_011E","S0801_C01_011EA","S0801_C01_011M","S0801_C01_011MA","S
2M","S0801_C01_012MA","S0801_C01_013E","S0801_C01_013EA","S0801_C01_013M","S0801_C01_013MA","S0801_C01_014E","S0801_C01_014EA","S0801_C01_014M","S0801_C01_014MA","
15M","S0801_C01_015MA","S0801_C01_016E","S0801_C01_016EA","S0801_C01_016M","S0801_C01_016MA","S0801_C01_017E","S0801_C01_017EA","S0801_C01_017M","S0801_C01_017MA","
```

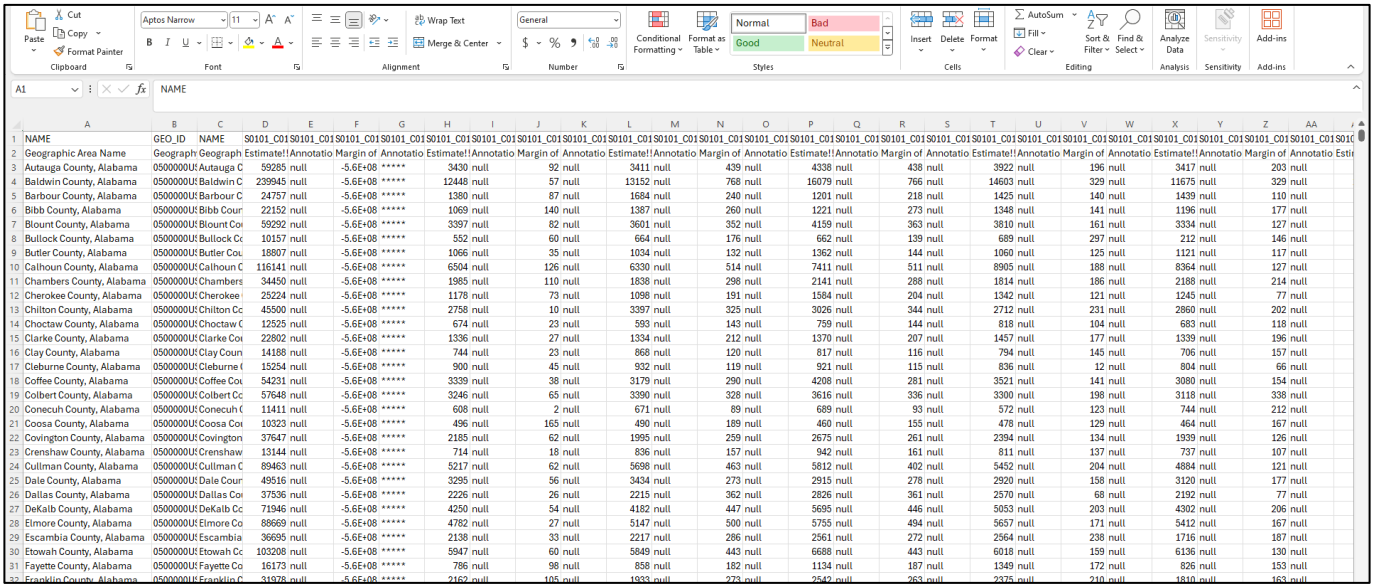
Step 6. Rather than copy/paste the URL results into Excel, you can now add parameters to your query to make the data more readable and output it into an Excel format. Add the following parameters to the end of your query:

&descriptive=true – this will add the data point labels so you know what each variable refers to

&outputFormat=csv – this will provide a download of the data in API format



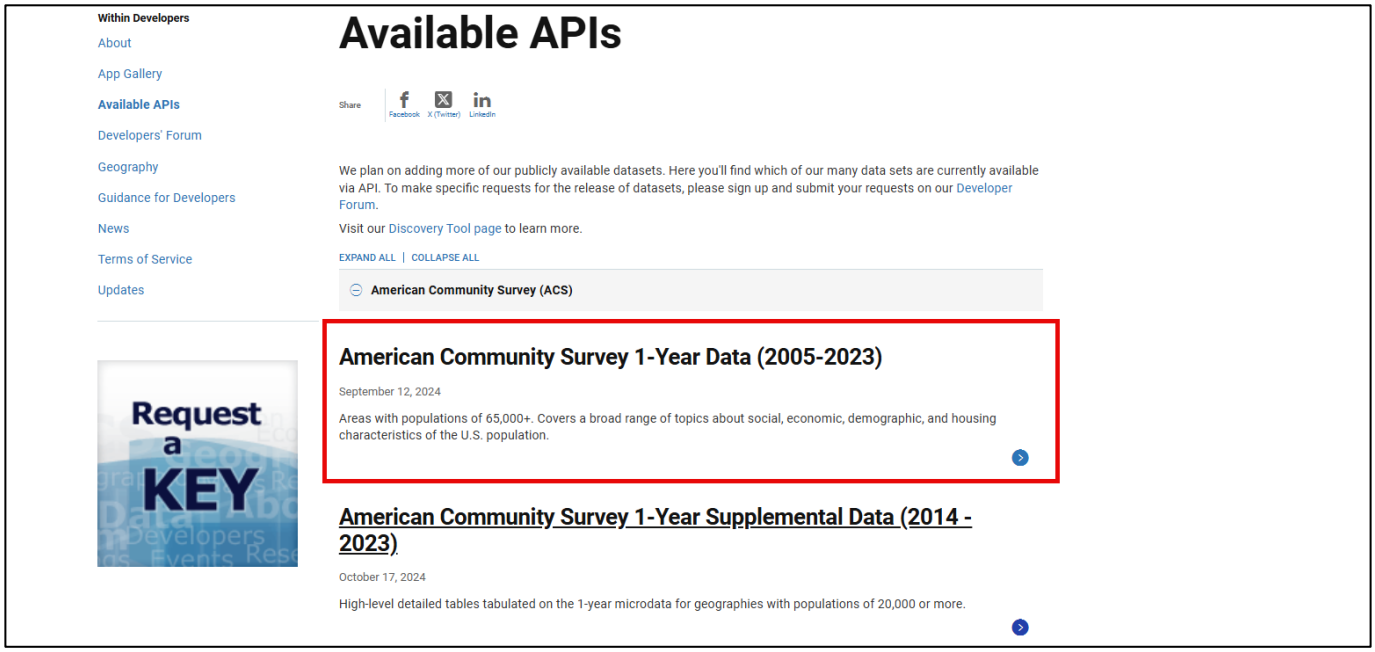
Step 7. Clicking Enter on this new query will trigger a download of the Excel file that provides descriptions of the geographies and the variable names. Open the downloaded file to view the data in a more accessible format.



4 Individual Exercise

4.1 Marital status data for South Carolina

Step 1. For this exercise, we want to find the number of females who have never married in South Carolina using the ACS API. Go to the Available APIs page: https://www.census.gov/data/developers/data-sets.html and select the American Community Survey 1-Year Data.



Step 2. For this example, let's go back to the Data Profiles to see if there's a marital status variable. Under the Data Profiles heading, click on the HTML version of the 2023 ACS Data Profiles Variables.

Step 3. Once you reach the Variable list, use the Control + F functionality and search for 'marital'. You'll have to scroll through the variables for the male population first, but you'll find that the variable code for females 15 and over who have never been married is DP02_0032E. Keep that code in mind as we build the rest of our query.

DP02_0029E	Estimate!!MARITAL STATUS!!Males 15 years and over!!Widowed	Selected Social Characteristics in the United States	not required	DP02_0029EA, DP02_0029M, DP02_0029MA	0	int	DP02
DP02_0029PE	Percent!!MARITAL STATUS!!Males 15 years and over!!Widowed	Selected Social Characteristics in the United States	not required	DP02_0029PEA, DP02_0029PM, DP02_0029PMA	0	float	DP02
DP02_0030E	Estimate!!MARITAL STATUS!!Males 15 years and over!!Divorced	Selected Social Characteristics in the United States	not required	DP02_0030EA, DP02_0030M, DP02_0030MA	0	int	DP02
DP02_0030PE	Percent!!MARITAL STATUS!!Males 15 years and over!!Divorced	Selected Social Characteristics in the United States	not required	DP02_0030PEA, DP02_0030PM, DP02_0030PMA	0	float	DP02
DP02_0031E	Estimate!!MARITAL STATUS!!Females 15 years and over	Selected Social Characteristics in the United States	not required	DP02_0031EA, DP02_0031M, DP02_0031MA	0	int	DP02
DP02_0031PE	Percent!!MARITAL STATUS!!Females 15 years and over	Selected Social Characteristics in the United States	not required	DP02_0031PEA, DP02_0031PM, DP02_0031PMA	0	int	DP02
DP02_0032E	Estimate!!MARITAL STATUS!!Females 15 years and over!!Never married	Selected Social Characteristics in the United States	not required	DP02_0032EA, DP02_0032M, DP02_0032MA	0	int	DP02
DP02_0032PE	Percent!!MARITAL STATUS!!Females 15 years and over!!Never married	Selected Social Characteristics in the United States	not required	DP02_0032PEA, DP02_0032PM, DP02_0032PMA	0	float	DP02
DP02_0033E	Estimate!!MARITAL STATUS!!Females 15 years and over!!Now married, except separated	Selected Social Characteristics in the United States	not required	DP02_0033EA, DP02_0033M, DP02_0033MA	0	int	DP02

Step 4. Next, we'll go back to the ACS API page and click on the Examples and Supported Geography link. Then, select the link to the Examples.

Subject Tables

- **Example Call:** api.census.gov/data/2023/acs/acs1/subject?get=NAME,group(S0101)&for=us:1&key=YOUR_KEY_GOES_HERE
- 2023 ACS Subject Tables [html | xml | json]
- ACS Technical Documentation
- Examples and Supported Geography

Data Profiles

- **Example Call:** api.census.gov/data/2023/acs/acs1/profile?get=group(DP02)&for=us:1&key=YOUR_KEY_GOES_HERE
- 2023 ACS Data Profiles Variables [html | xml | json]
- ACS Technical Documentation
- Examples and Supported Geography

Comparison Profile

- **Example Call:** api.census.gov/data/2023/acs/acs1/cprofile?get=group(CP05)&for=us:1&key=YOUR_KEY_GOES_HERE
- 2023 ACS Comparison Profile Variables [html | xml | json]
- ACS Technical Documentation
- Examples and Supported Geography

Census API: Datasets in /data/2023/acs/acs1/profile and its descendants

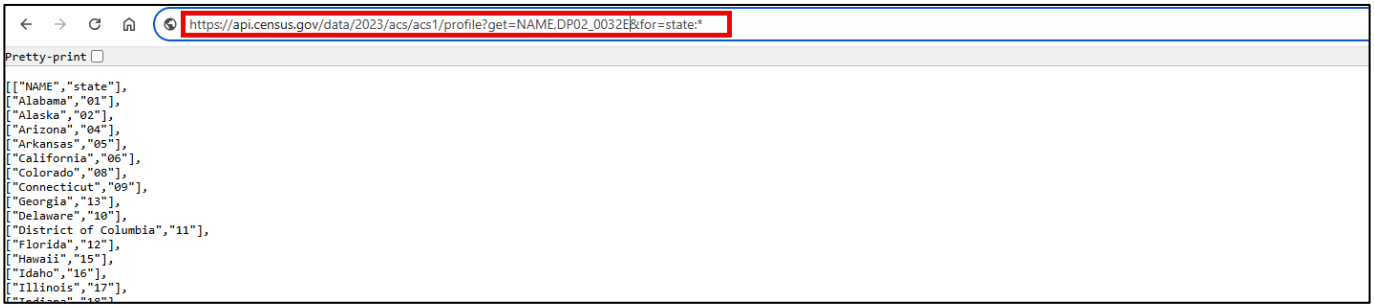
Title	Description	Vintage	Dataset Name	Dataset Type	Geography List	Variable List	Group List	SortList	Examples	Developer Documentation	API Base URL
ACS 1-Year Data Profiles	The American Community Survey (ACS) is a US-wide survey designed to provide communities a fresh look at how they are changing. The ACS replaced the decennial census long form in 2010 and thereafter by collecting long form type information throughout the decade rather than only once every 10 years. Questionnaires are mailed to a sample of addresses to obtain information about households -- that is, about each person and the housing unit itself. The American Community Survey produces demographic, social, housing and economic estimates in the form of 1 and 5-year estimates based on population thresholds. The strength of the ACS is in estimating population and housing characteristics. The data profiles provide key estimates for each of the topic areas covered by the ACS for the us, all 50 states, the District of Columbia, Puerto Rico, every congressional district, every metropolitan area, and all counties and places with populations of 65,000 or more. Although the ACS produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the US, states, counties, cities and towns, and estimates of housing units for states and counties. For 2010 and other decennial census years, the Decennial Census provides the official counts of population and housing units.	2023	acs› acs1› profile	Aggregate	geographies	variables	groups	sorts	examples	documentation	http://api.census.gov/data/2023/acs/acs1/profile
1 dataset											

Step 5. From the list of example queries, select the first one in the state section – this will pull data for all states the U.S.

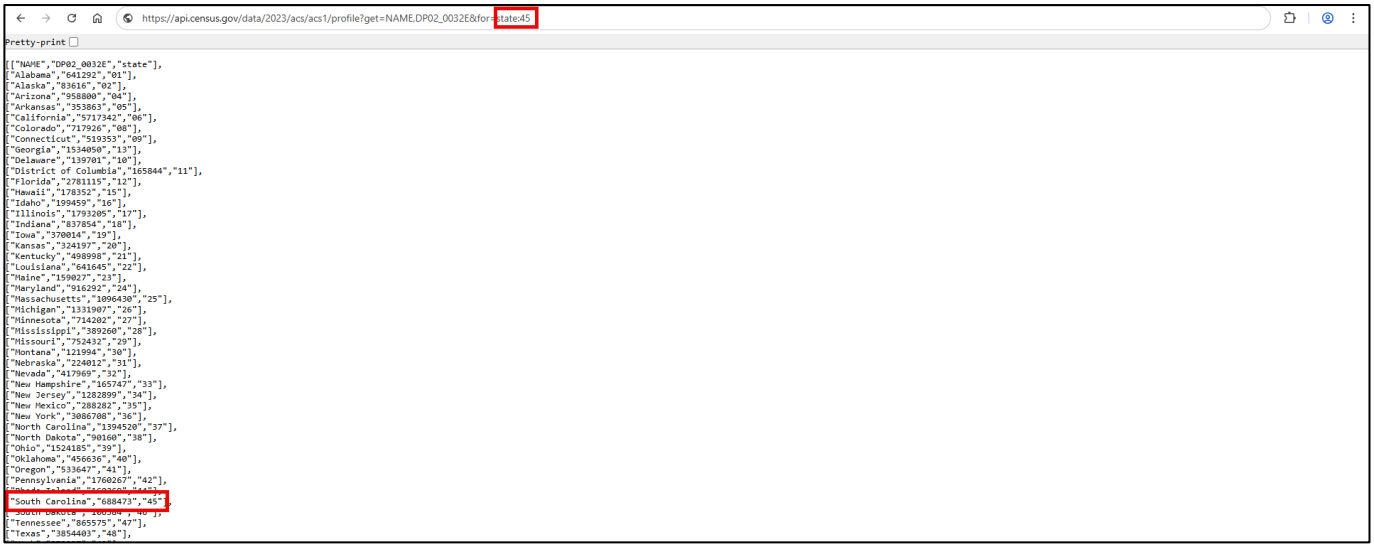
Census API: Examples for /data/2023/acs/acs1/profile

Geography Hierarchy	Geography Level	Example URL	Number
us	010	https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=us:*&key=YOUR_KEY_GOES_HERE	1
		https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=us:1&key=YOUR_KEY_GOES_HERE	2
region	020	https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=region:*&key=YOUR_KEY_GOES_HERE	3
		https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=region:3&key=YOUR_KEY_GOES_HERE	4
division	030	https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=division:*&key=YOUR_KEY_GOES_HERE	5
		https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=division:5&key=YOUR_KEY_GOES_HERE	6
state	040	https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=state:*&key=YOUR_KEY_GOES_HERE	7
		https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=state:06&key=YOUR_KEY_GOES_HERE	8
state› county	050	https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=county:*&key=YOUR_KEY_GOES_HERE	9
		https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=county:*&in=state:*&key=YOUR_KEY_GOES_HERE	10
		https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=county:037&in=state:06&key=YOUR_KEY_GOES_HERE	11
state› county› county subdivision	060	https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=county%20subdivision:*&in=state:17&key=YOUR_KEY_GOES_HERE	12
		https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=county%20subdivision:*&in=state:17&in=county:*&key=YOUR_KEY_GOES_HERE	13
		https://api.census.gov/data/2023/acs/acs1/profile?get=NAME&for=county%20subdivision:14000&in=state:17%20county:031&key=YOUR_KEY_GOES_HERE	14

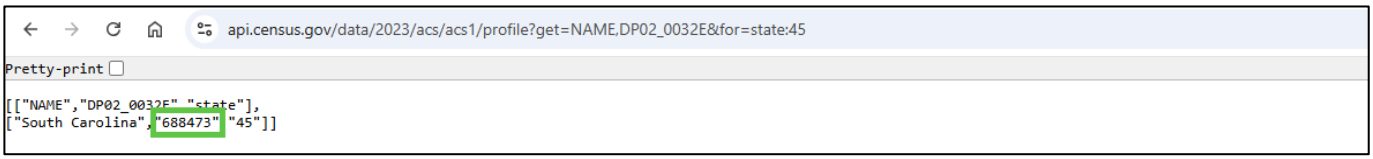
Step 6. To add the marital status variable to this query, add a comma (,) behind the NAME variable, and then add **DP02_0032E**. Then, click enter to update the query.



Step 7. The output now includes the number of females 15 and over who have never been married in each state. If you'd like to view the estimate for just South Carolina, you can replace the asterisk (*) in the geography portion of the query with FIPS code 45 for South Carolina.



Step 8. When we do this, we can see that there are 688,473 females aged 15 and over who have never been married in South Carolina.



ACS Data in the Microdata Access Tool

Now what if you exhaust your search options in data.census.gov and the API, and still have not found the ACS data tables you're looking for? This is where the Microdata Access Tool, or MDAT, comes in handy. This tool allows you to create custom tables by selecting variables, geographies, and the table layout. It also lets you to create recodes for variables to allow for even more customization.

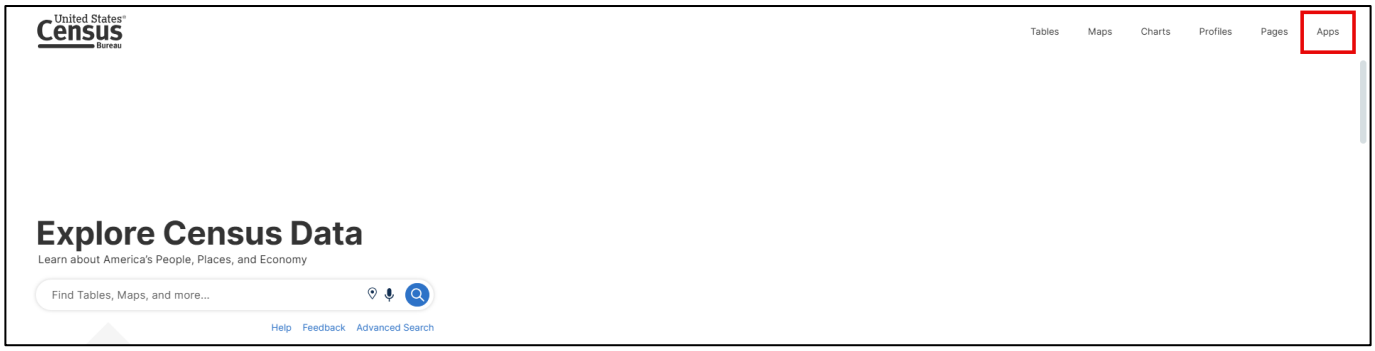
5 Group Exercises

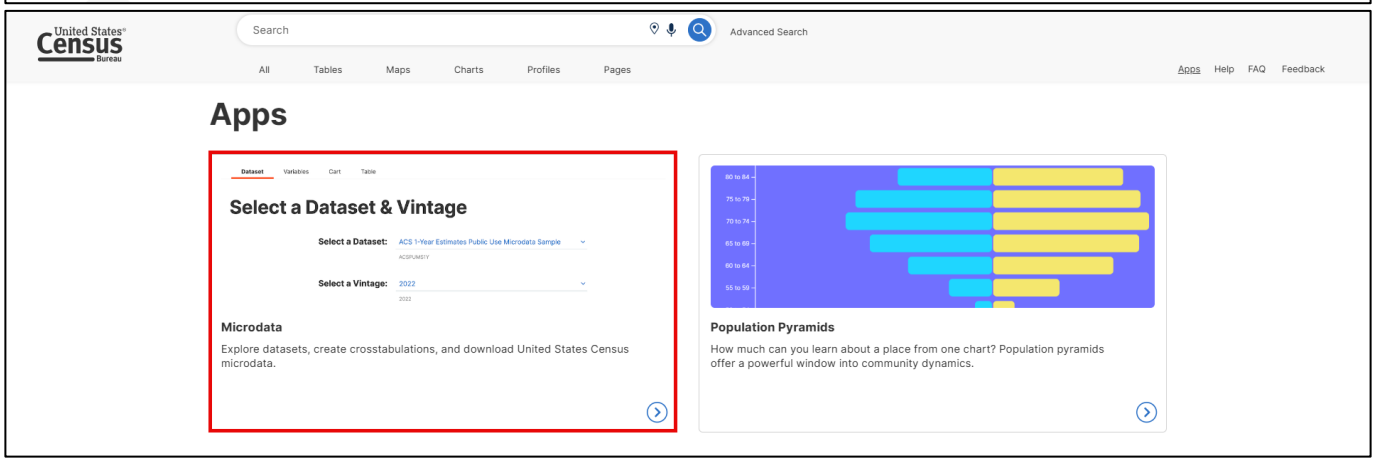
5.1 Earnings by race for all states in the U.S.

For this first example, we are looking at earnings by race for all states in the U.S. Within data.census.gov, this is not a table we can find, so we can use MDAT and create our own earnings ranges by recoding the variable.

Step 1. The easiest way to get to MDAT is by going to the main data.census.gov page first: https://data.census.gov/. Click on the Apps tab at the top right corner of the page, and then click on the widget for Microdata Access.

You can also access MDAT directly at https://data.census.gov/app/mdat.



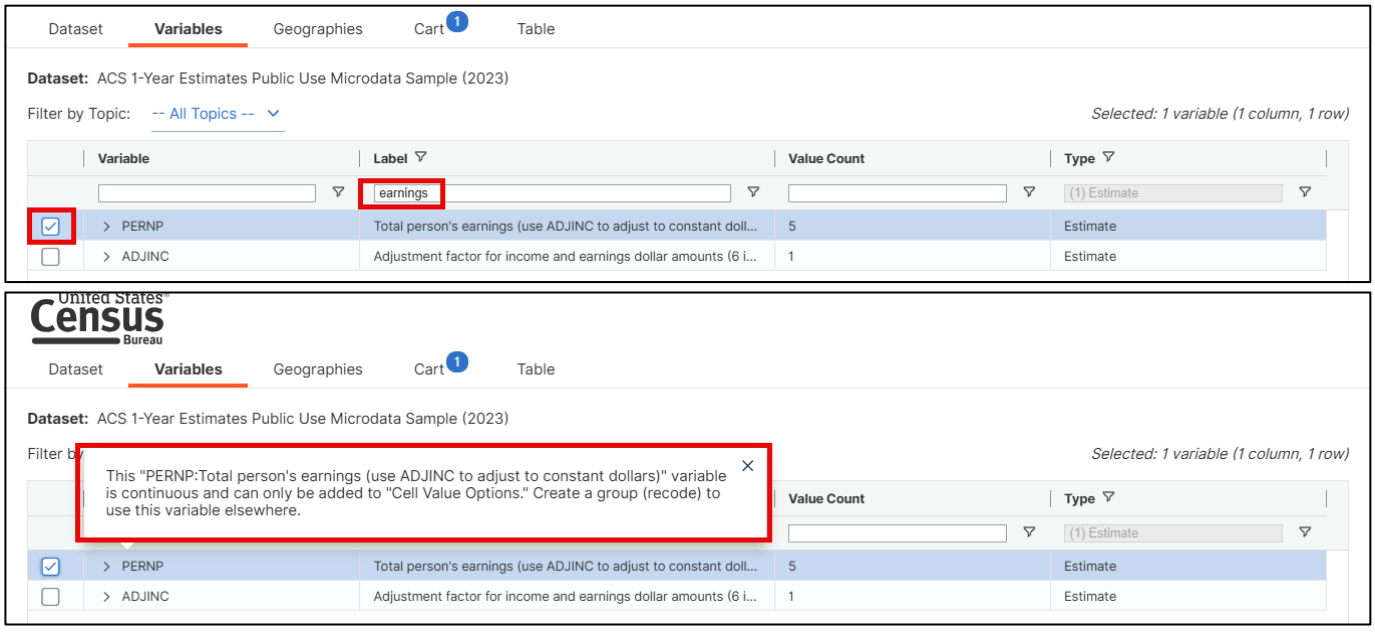


Step 2. Now you are at the main landing page of MDAT. Start by selecting the Dataset and Vintage. By default, MDAT displays the ACS 1-Year Estimates Public Use Microdata Sample (PUMS) for the most recent year data is available. We'll use the default dataset and vintage for our first example—the 2023 ACS 1-Year Estimates Public Use Microdata Sample. Then, click on the Next button.

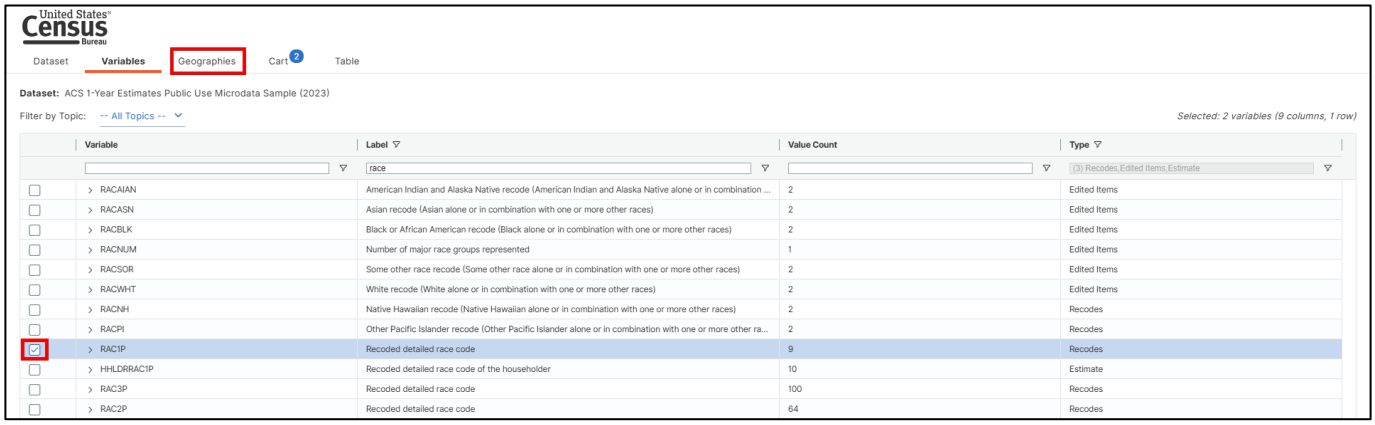
Step 3. That action will take you to the Variables tab. If you know the variable code, you can type it into the Variable search bar to the left. However, if you don't know the variable code, you can always use the Label search bar to the right, and type in a keyword or phrase.

For this example, you're looking for two variables: earnings and race. Start by typing 'earnings' into the Label search bar. You can see that variable PERNP comes up in the search. If you click on the chevron next to the variable name, you can see what values are contained within the variable.

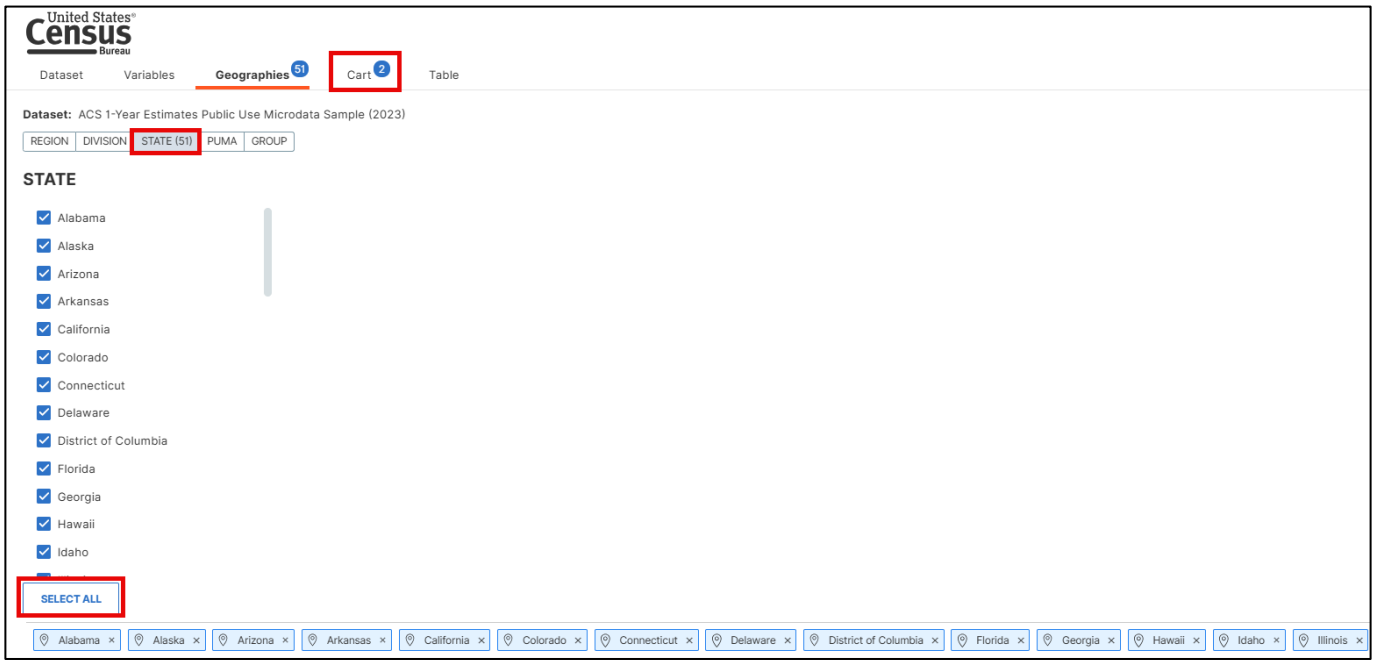
To add this variable to the Cart, click on the checkbox to the left of the variable code. When you do, you'll see a message that says that the variable is continuous and can only be added to "Cell Value Options," and that you must create a group (recode) to use this variable elsewhere. This just means that in order to include the PERNP variable on the table, you'll need to create a recode, which is where you'll create custom groups pulled from the values within the earnings variable.



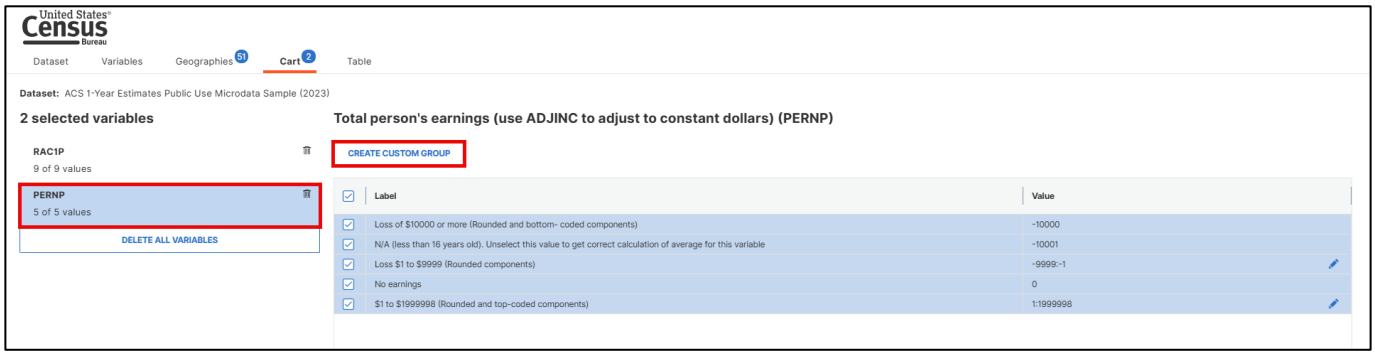
Step 4. Now you need to add your race variable to the search. Using the Label search bar again, type in 'race' and select the RAC1P to add it to your Cart. Next, click on the Geographies tab.



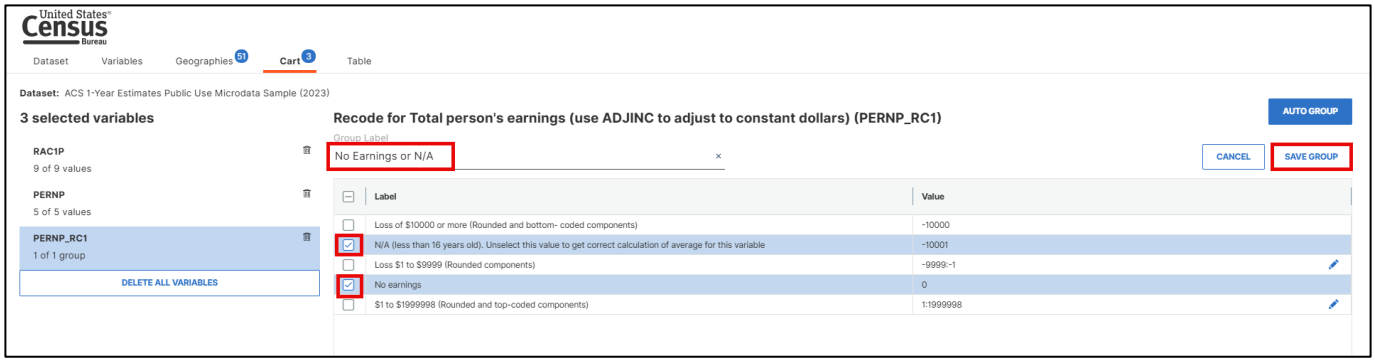
Step 5. For your geographies, you'll need to select all states in the U.S. Once you select the Geographies tab, click on the State button, and then click Select All. This will add all states and DC to your selected geographies once you go into the table view. Next, you'll move on to the Cart tab.



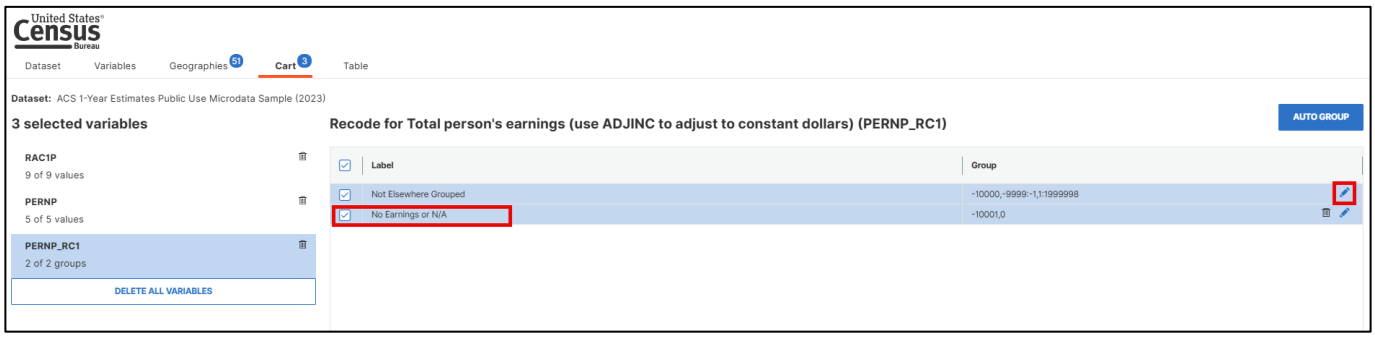
Step 6. This is where you can select which values in each variable you want to see in your table, as well as create recodes. For this example, create a recode for your earnings variable. Switch over to the PERNP variable. You can see that the available values look a little different from those for the race variable, as the PERNP values are ranges (making it a continuous variable). To start a recode, click on the Create Custom Group button.



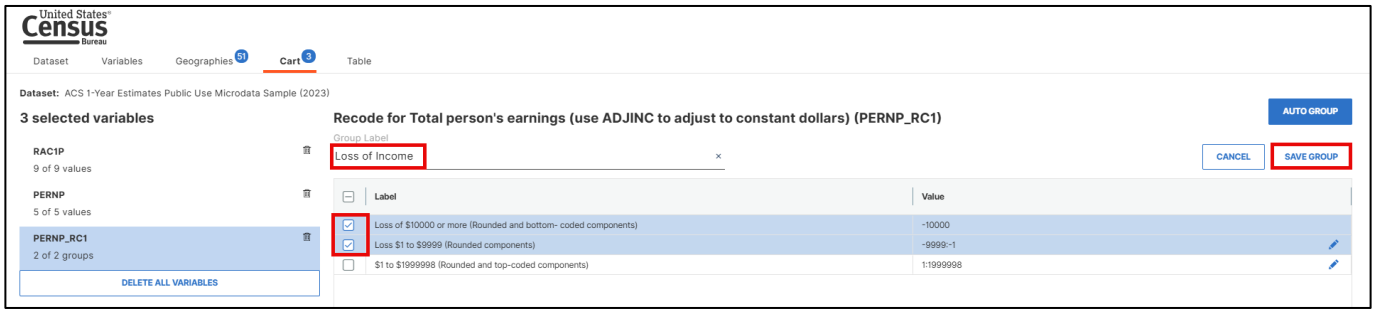
Step 7. This is where you can select which values go in each of your custom groups. Since this variable is continuous, it also means you can adjust these ranges to show exactly what you want to see on the table. Let's start off by creating a group for No Earnings or N/A. Change the group label to create your first group and then uncheck each of the other values so only the 'N/A' and 'No earnings' checkboxes are left. Then, click on the Save Group button to lock in this first group.



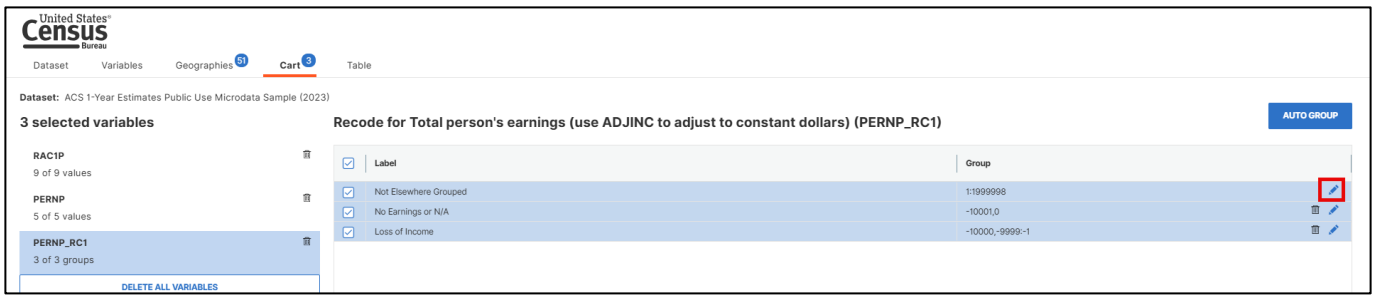
Step 8. Now, you have your first group, and the rest of the values are in this 'Not Elsewhere Classified' group. Click on the pencil icon to edit the remaining values.



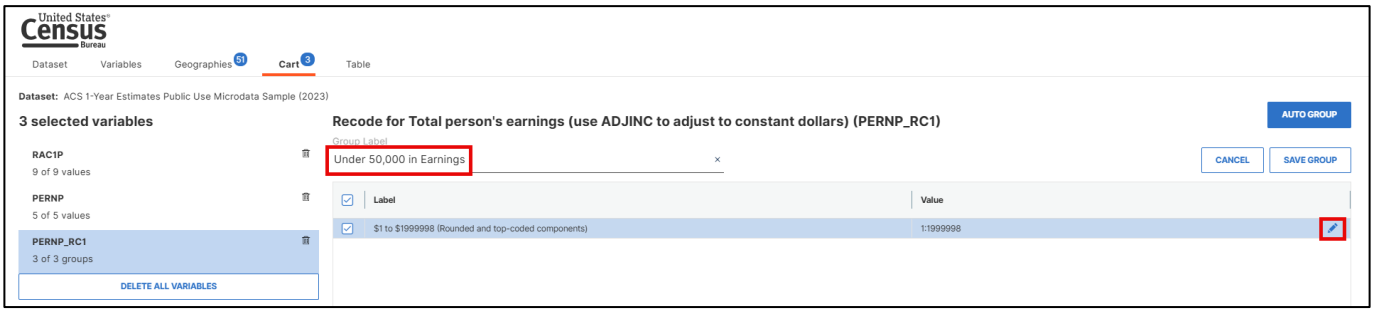
Step 9. The next group will show Loss of Income, so type that into the Group Label box. Uncheck the bottom value, which provides data on those who did have earnings. This leaves you with the two loss-of-income values selected. Then, click on the Save Group button.



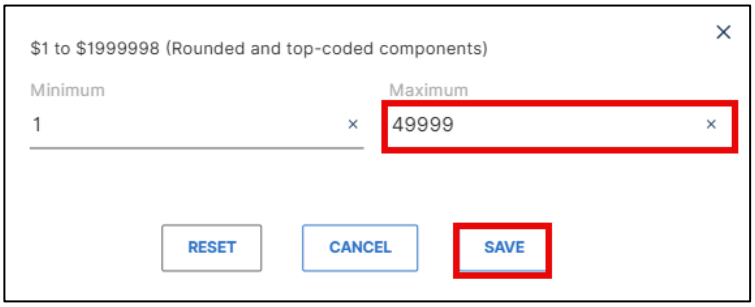
Step 10. Now you can see that the Loss of Income group is found underneath your first group. Now start grouping the remaining earnings values, again by clicking on the pencil icon next to the Not Elsewhere Grouped label.

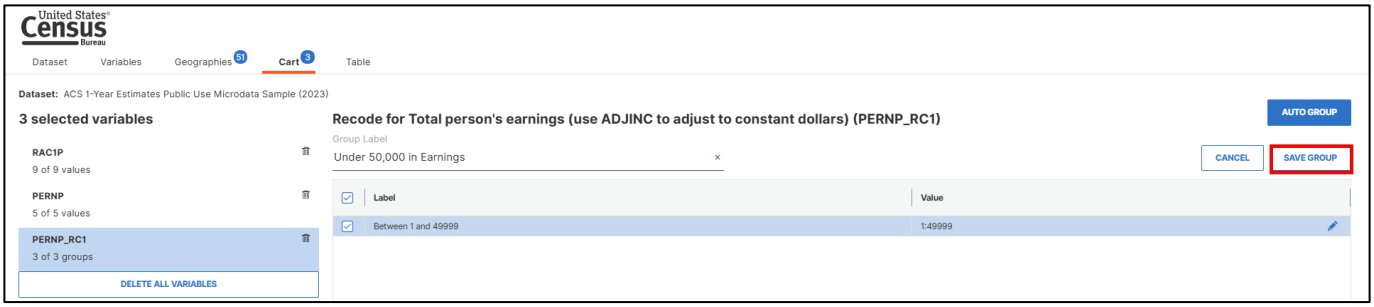


Step 11. For the sake of time, let's just separate the earnings into a few groups. Our first earnings group will be 'Under 50,000 in Earnings', so change the Group Label to that. To edit the end range of the last remaining value, click on the pencil icon next to it.



Step 12. Edit the maximum from the default value to **49999**. This will represent the earnings under $50,000. Click on the Save button within the panel, and then click on the Save Group button you've used in previous groups to lock in your edits.



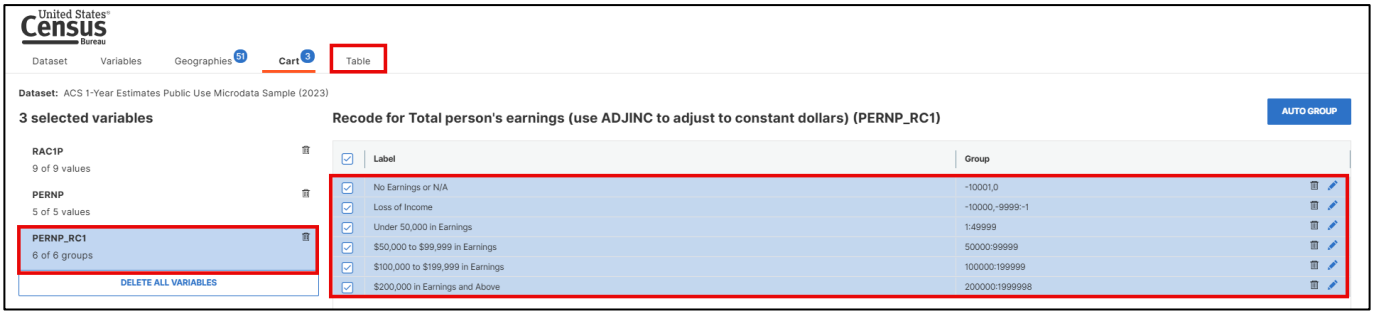


Step 13. Repeat this process for the following groups and values:

- $50,000 to $99,999 in Earnings: 50,000 – 99,999
- $100,000 to $199,999 in Earnings: 100,000 – 199,999
- $200,000 in Earnings and Above: 200,000 to the maximum top-coded value of 1,999,998*

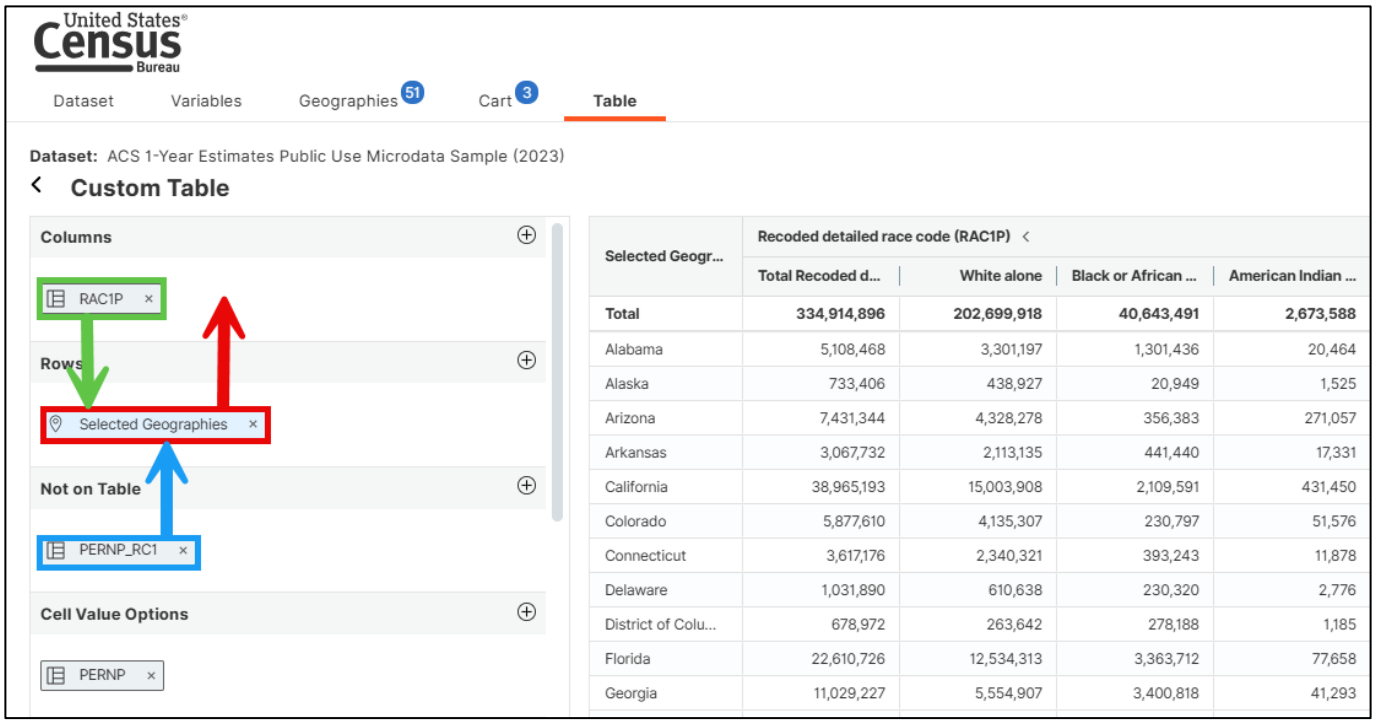
*You do not need to edit the end range for this group—just create the group label and save the group.

Once you finish creating your recode (which is denoted by PERNP_RC1), click on the Table tab.



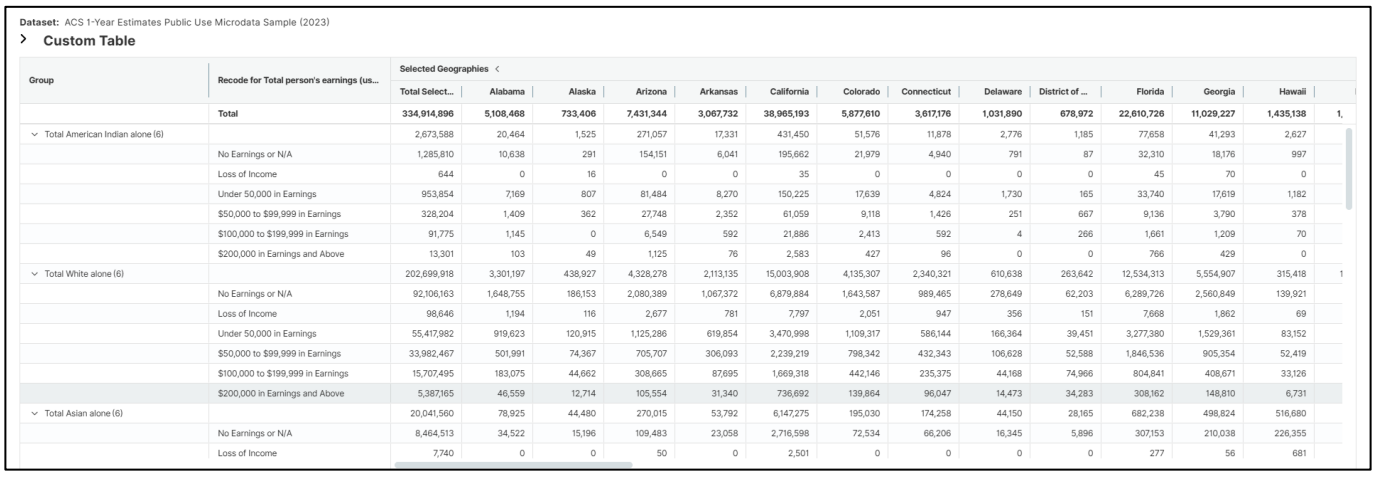
Step 14. This is where you'll determine which variables go into either the columns or the rows. You have flexibility when it comes to the table view, so you can arrange the table in the configuration you can most easily read.

For now, click and drag the Selected Geographies up to the Columns and move the race variable to the Rows. The earnings recode (PERNP_RC1) is currently in the Not on Table section, but since you made sure to include all possible values within your new variable, you don't have to worry about this variable limiting the universe of your table. Move the earnings recode up to the Rows as well.



Selected Geogr...	Recoded detailed race code (RAC1P)			
	Total Recoded d...	White alone	Black or African ...	American Indian ...
Total	**334,914,896**	**202,699,918**	**40,643,491**	**2,673,588**
Alabama	5,108,468	3,301,197	1,301,436	20,464
Alaska	733,406	438,927	20,949	1,525
Arizona	7,431,344	4,328,278	356,383	271,057
Arkansas	3,067,732	2,113,135	441,440	17,331
California	38,965,193	15,003,908	2,109,591	431,450
Colorado	5,877,610	4,135,307	230,797	51,576
Connecticut	3,617,176	2,340,321	393,243	11,878
Delaware	1,031,890	610,638	230,320	2,776
District of Colu...	678,972	263,642	278,188	1,185
Florida	22,610,726	12,534,313	3,363,712	77,658
Georgia	11,029,227	5,554,907	3,400,818	41,293

Step 15. Now you can view the data from the custom table you created, including the values in the recoded earnings variable.

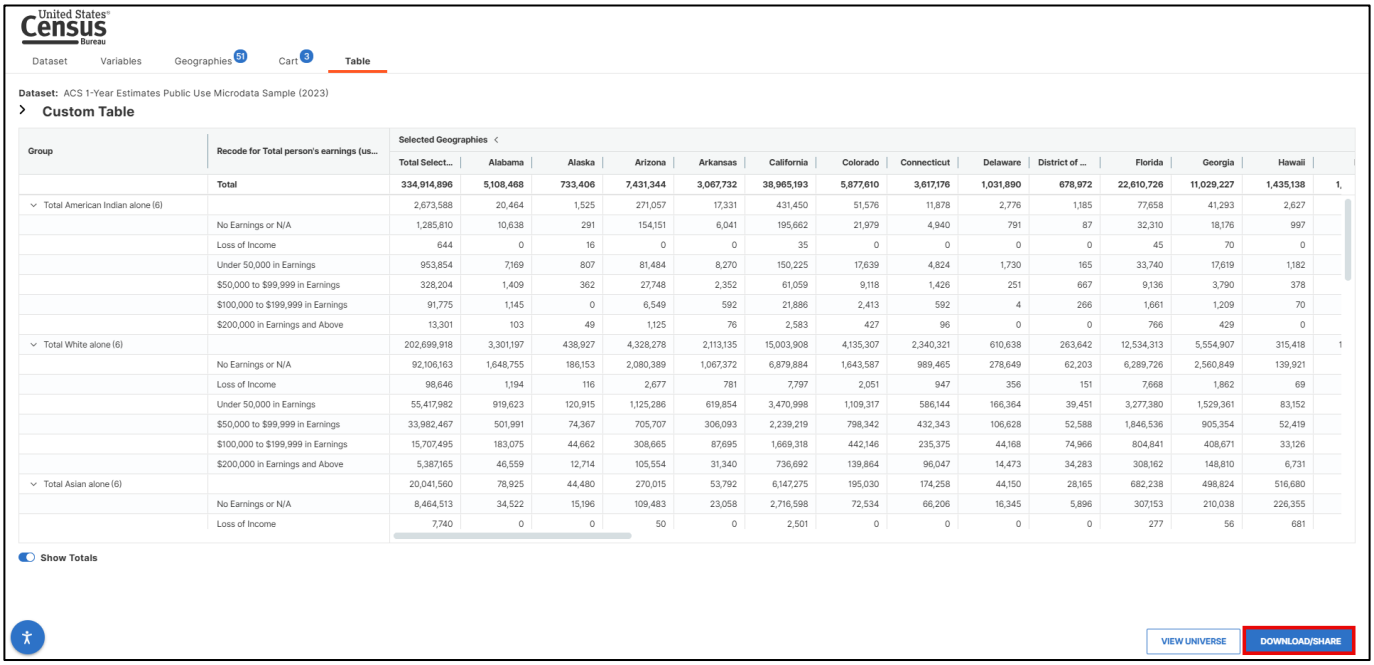


Dataset: ACS 1-Year Estimates Public Use Microdata Sample (2023)

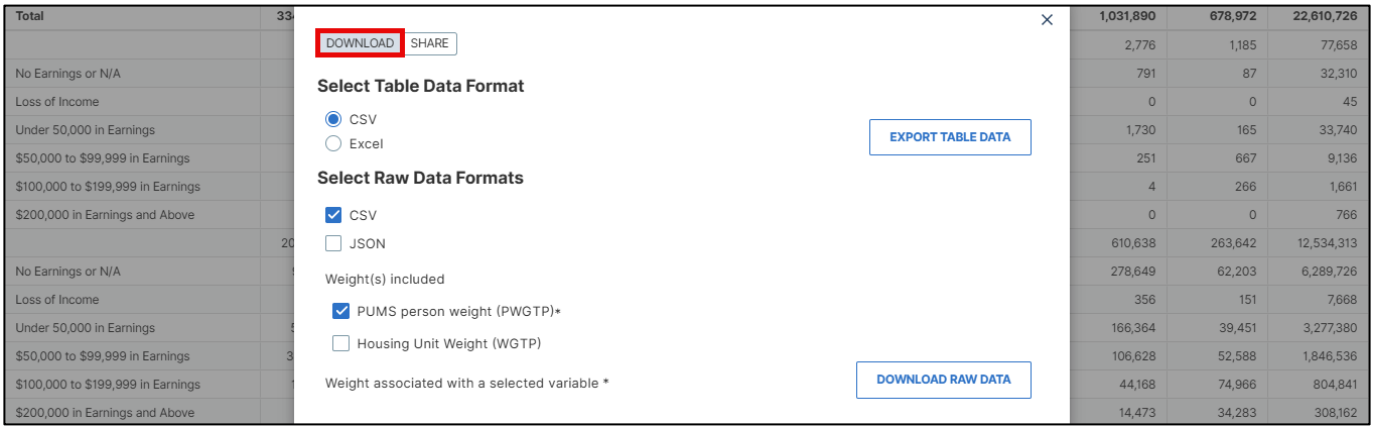
Custom Table

Group	Recode for Total person's earnings (us...	Selected Geographies												
		Total Select...	Alabama	Alaska	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	District of ...	Florida	Georgia	Hawaii
	Total	**334,914,896**	**5,108,468**	**733,406**	**7,431,344**	**3,067,732**	**38,965,193**	**5,877,610**	**3,617,176**	**1,031,890**	**678,972**	**22,610,726**	**11,029,227**	**1,435,138**
Total American Indian alone (6)		2,673,588	20,464	1,525	271,057	17,331	431,450	51,576	11,878	2,776	1,185	77,658	41,293	2,627
	No Earnings or N/A	1,285,810	10,638	291	154,151	6,041	195,662	21,979	4,940	791	87	32,310	18,176	997
	Loss of Income	644	0	16	0	0	35	0	0	0	0	45	70	0
	Under 50,000 in Earnings	953,854	7,169	807	81,484	8,270	150,225	17,639	4,824	1,730	165	33,740	17,619	1,182
	$50,000 to $99,999 in Earnings	328,204	1,409	362	27,748	2,352	61,059	9,118	1,426	251	667	9,136	3,790	378
	$100,000 to $199,999 in Earnings	91,775	1,145	0	6,549	592	21,886	2,413	592	4	266	1,661	1,209	70
	$200,000 in Earnings and Above	13,301	103	49	1,125	76	2,583	427	96	0	0	766	429	0
Total White alone (6)		202,699,918	3,301,197	438,927	4,328,278	2,113,135	15,003,908	4,135,307	2,340,321	610,638	263,642	12,534,313	5,554,907	315,418
	No Earnings or N/A	92,106,163	1,648,755	186,153	2,080,389	1,067,372	6,879,884	1,643,587	989,465	278,649	62,203	6,289,726	2,560,849	139,921
	Loss of Income	98,646	1,194	116	2,677	781	7,797	2,051	947	356	151	7,668	1,862	69
	Under 50,000 in Earnings	55,417,982	919,623	120,915	1,125,286	619,854	3,470,998	1,109,317	586,144	166,364	39,451	3,277,380	1,529,361	83,152
	$50,000 to $99,999 in Earnings	33,982,467	501,991	74,367	705,707	306,093	2,239,219	798,342	432,343	106,628	52,588	1,846,536	905,354	52,419
	$100,000 to $199,999 in Earnings	15,707,495	183,075	44,662	308,665	87,695	1,669,318	442,146	235,375	44,168	74,966	804,841	408,671	33,126
	$200,000 in Earnings and Above	5,387,165	46,559	12,714	105,554	31,340	736,692	139,864	96,047	14,473	34,283	308,162	148,810	6,731
Total Asian alone (6)		20,041,560	78,925	44,480	270,015	53,792	6,147,275	195,030	174,258	44,150	28,165	682,238	498,824	516,680
	No Earnings or N/A	8,464,513	34,522	15,196	109,483	23,058	2,716,598	72,534	66,206	16,345	5,896	307,153	210,038	226,355
	Loss of Income	7,740	0	0	50	0	2,501	0	0	0	0	277	56	681

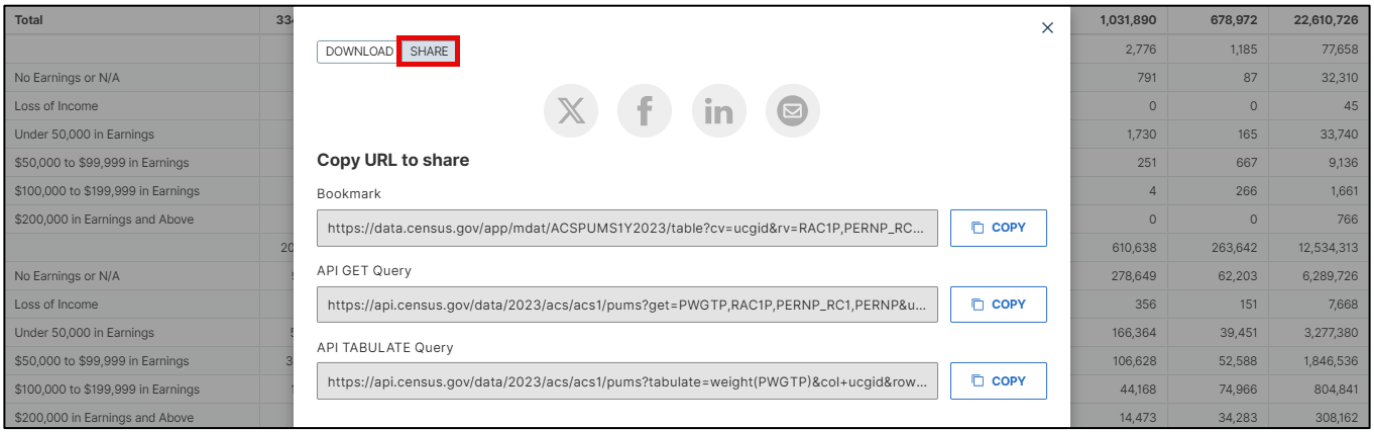
Step 16. To Download or Share this table, click on the Download/Share button in the bottom right corner of the screen.



You can download the table in either a CSV or Excel format or download the raw data in either the CSV or JSON format.



We also have the share tab, which allows you to share the table via social media, and provides links to bookmark in your browser so you don't have to go through creating the table each time you want to view it directly on MDAT.



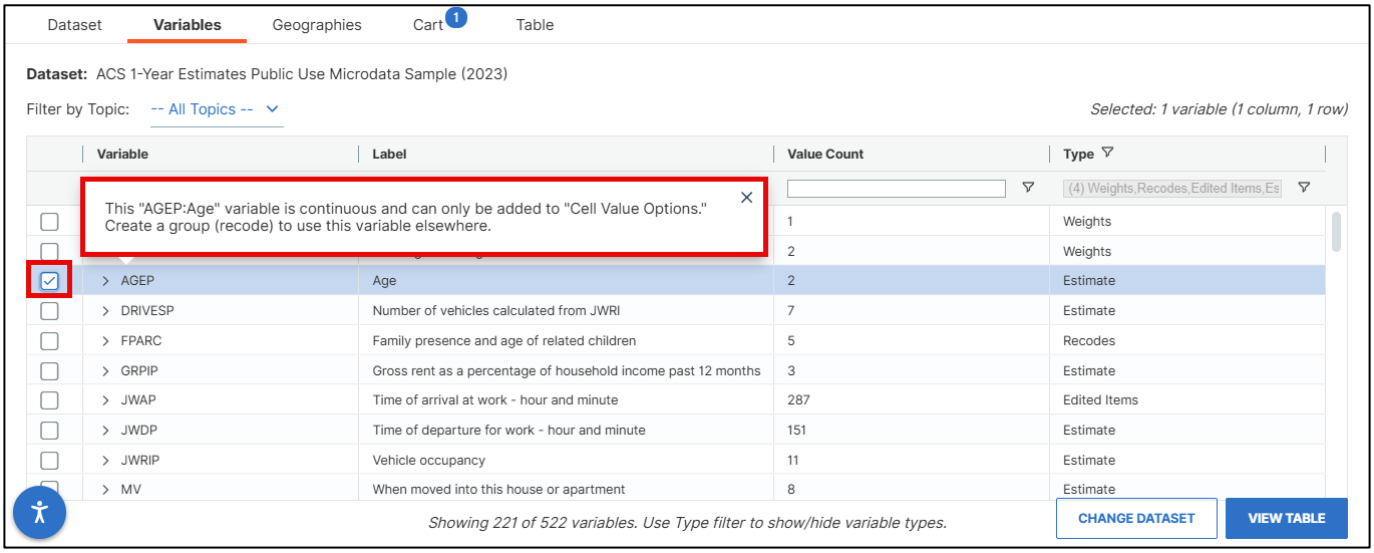
5.2 Hispanic origin and sex by single year of age for the U.S.

This next example will cover how to create a recode using MDAT's Autogroup feature.

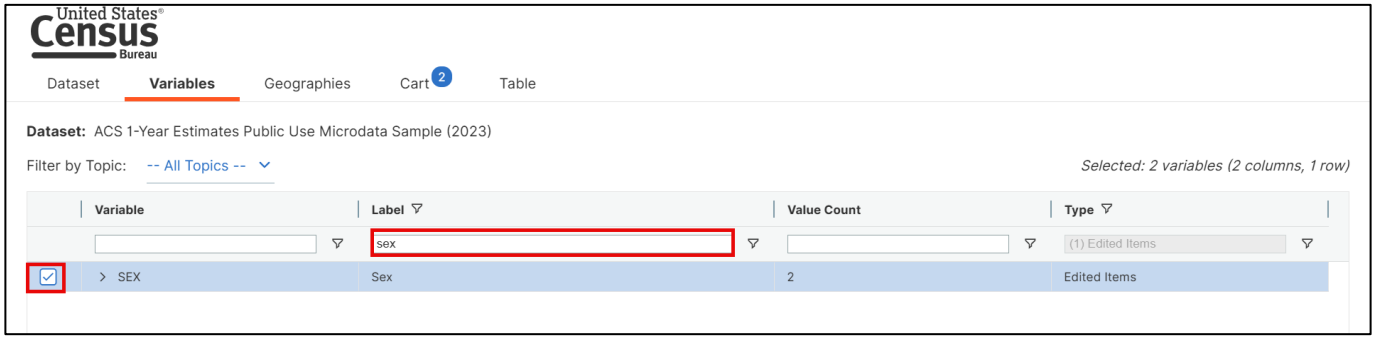
Step 1. Go to the main landing page of MDAT at https://data.census.gov/app/mdat. You can use the default dataset and vintage, the ACS 1-Year PUMS for 2023. Then, click on the Next button.

Step 2. Now you need to select your variables. There are three in this example: age, sex, and Hispanic origin. The age variable, AGEP, appears at the top of the default list of variables. Select the AGEP variable by clicking on the checkbox next to the variable code and add it to your cart.

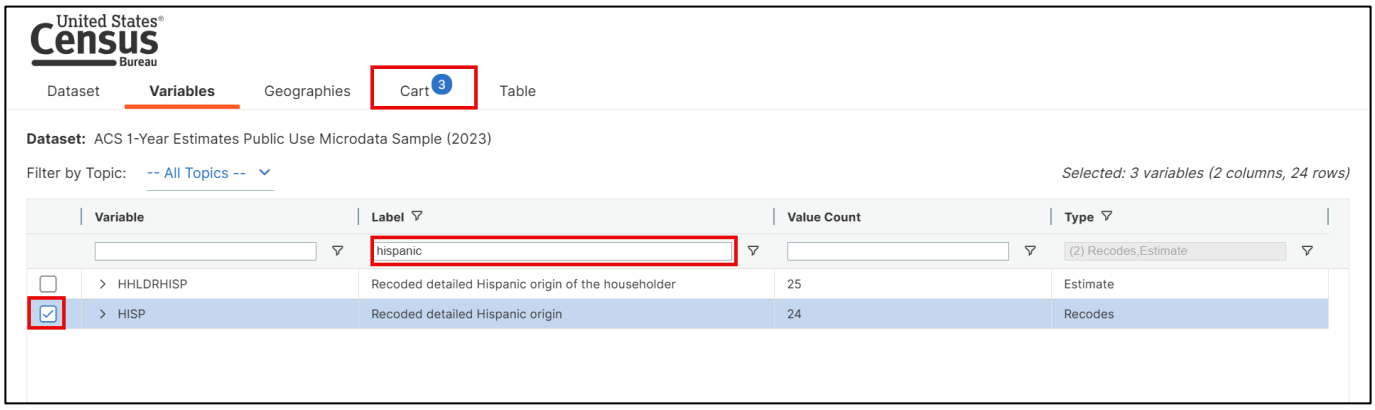
Like the last example, a message appears telling you that the AGEP variable is continuous. Since we are planning on creating a recode for this anyway, you can move on to selecting the other two variables.



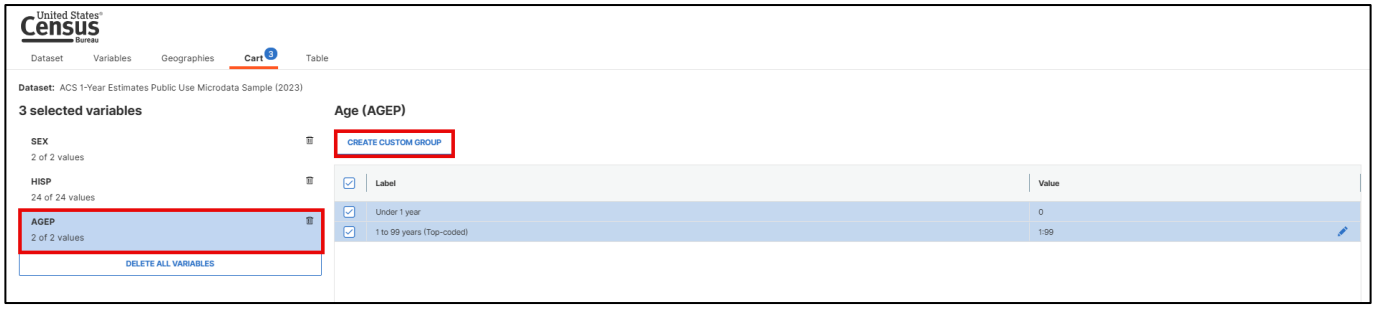
Step 3. Next, type ‘sex’ into the Label search bar and select the SEX variable to add it to your Cart.



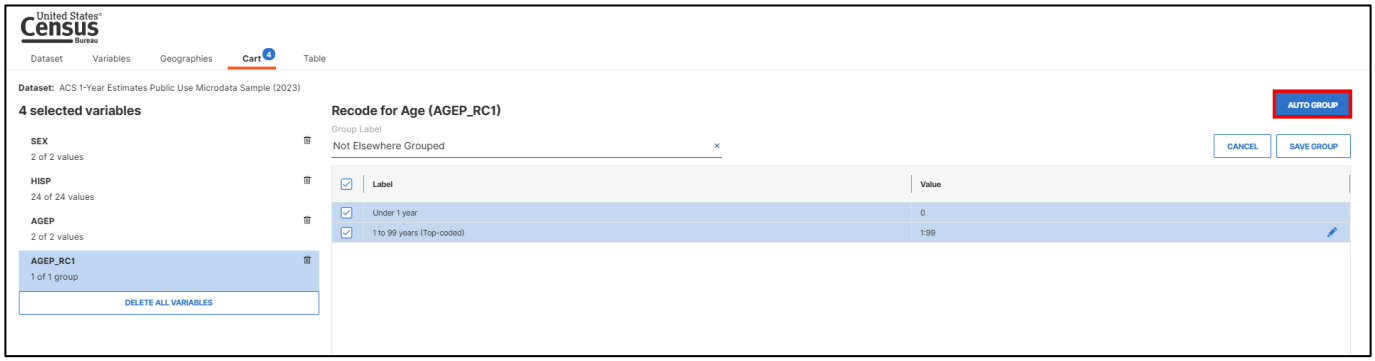
Then, type ‘Hispanic’ into the Label search bar and select the HISP variable to add it to your Cart. Since you’re building this table for the whole U.S., you don’t need to select a geography (if you don’t add a geography, the table defaults to providing data for the nation). Once you’ve added all your variables, move straight to the Cart tab.



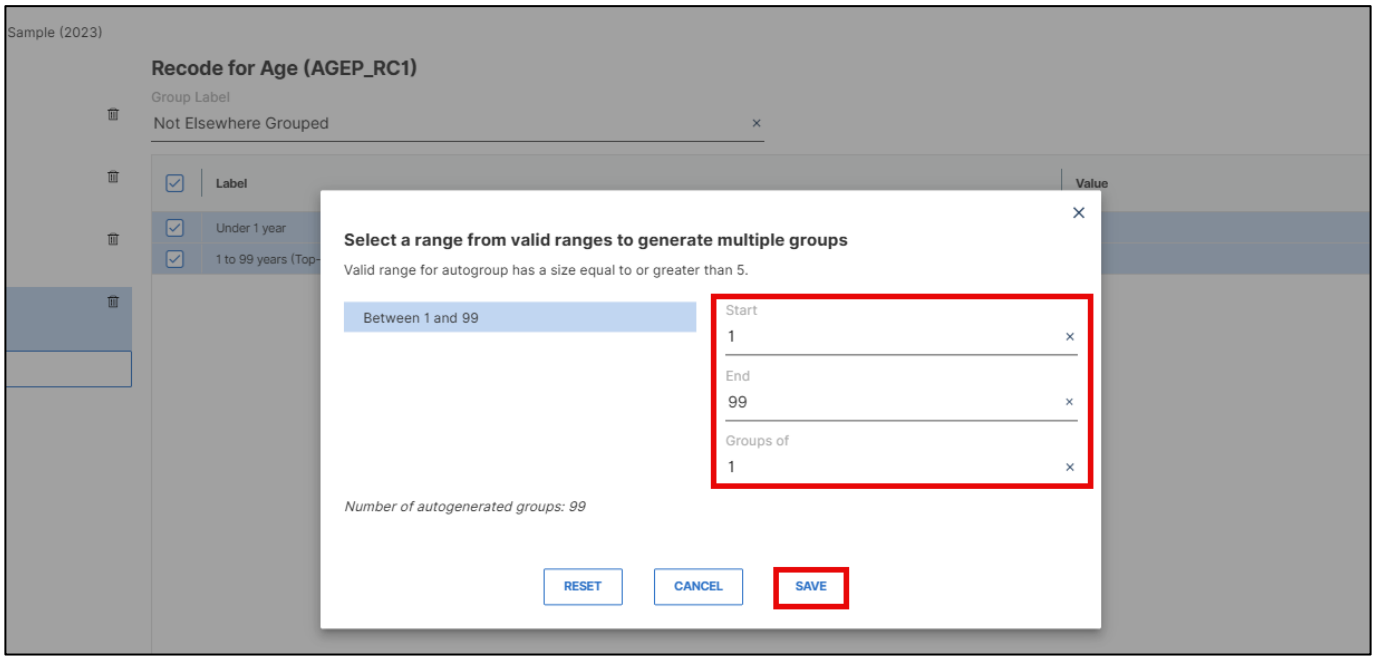
Step 4. Now that you’ve reached the Cart tab, start on your recode. Select the AGEP variable and click on the Create Custom Group button.



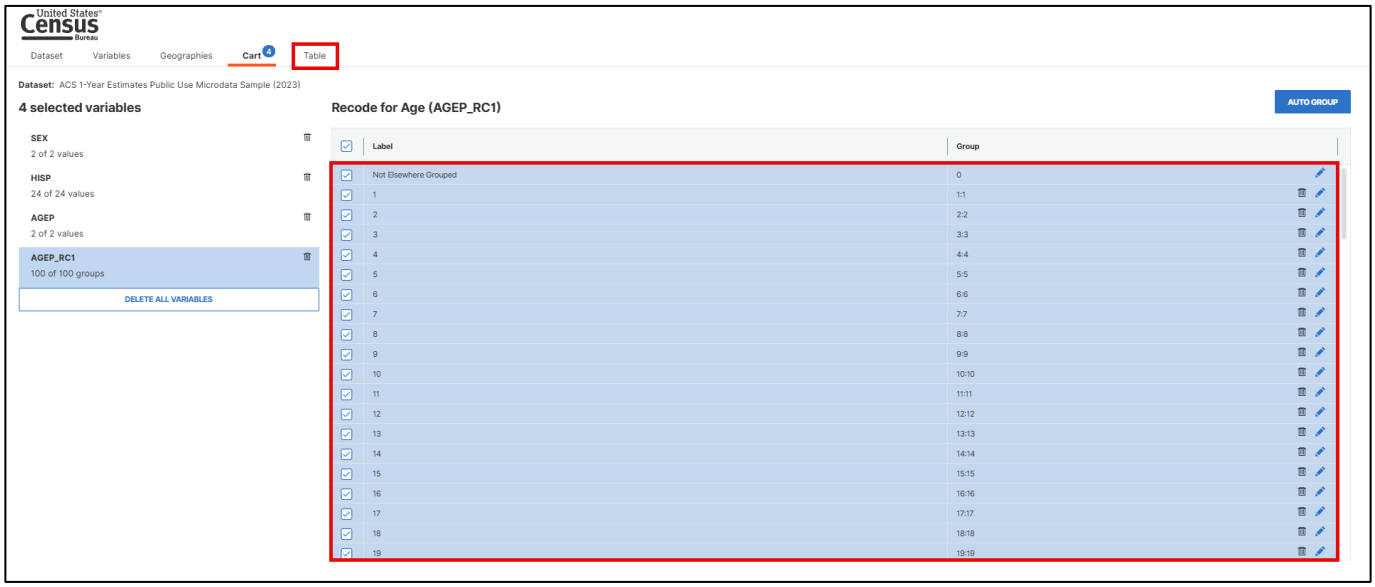
Step 5. Instead of creating groups individually, click on the Auto Group button in the top right corner of the screen.



Step 6. Within the Auto Group feature, you can choose what values to start and end with, and how many values are in each group. Since we want single year of age data, we can leave these preset values alone. To create these groups, click on the save button.

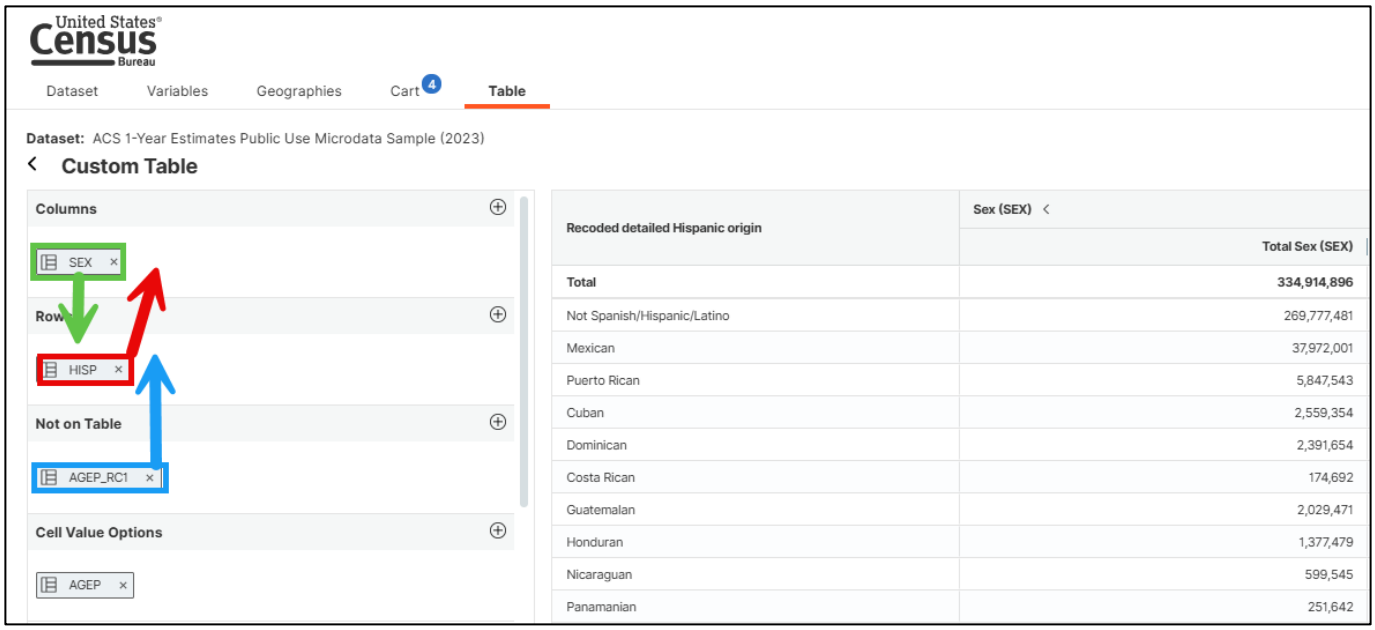


Step 7. We now have a recode that separates the AGEP variable into single year of age. To use this in your table and arrange the variables, move on to the Table tab.

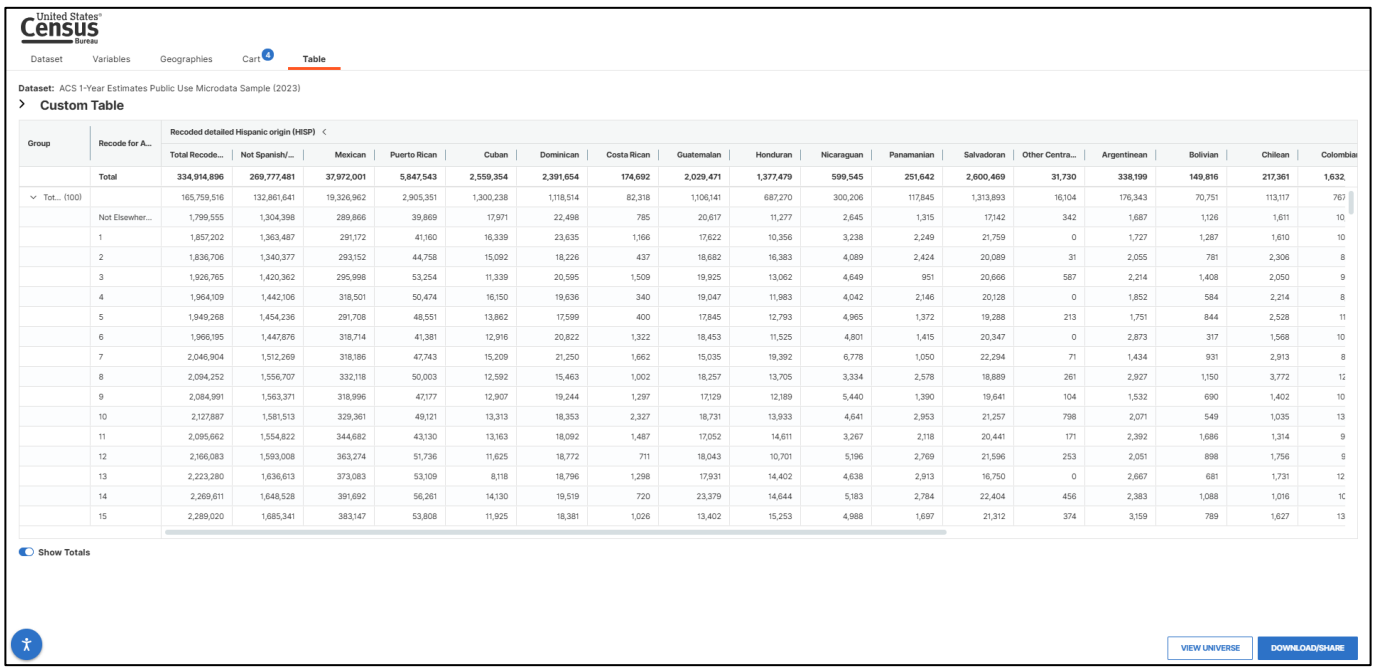


Step 8. This is where we'll determine which variables go into either the columns or the rows. You have flexibility when it comes to the table view, so you can arrange the table in the configuration you can most easily read.

For now, click and drag the Hispanic origin variable up to the Columns and move the sex variable down to the Rows. The age recode, AGEP_RC1, is currently in the Not on Table section, but since you made sure to include all possible values within your new variable, you don't have to worry about this variable limiting the universe of your table. You can move the age recode up to the Rows, as well.



Step 9. Now you can view the data from the custom table you created, including the values in the recoded AGEP variable.



6 Individual Exercise

6.1 Detailed language spoken at home by sex for California

Step 1. Go to the main landing page of MDAT at https://data.census.gov/app/mdat. You can use the default dataset and vintage, the ACS 1-Year PUMS for 2023. Then, click on the Next button.

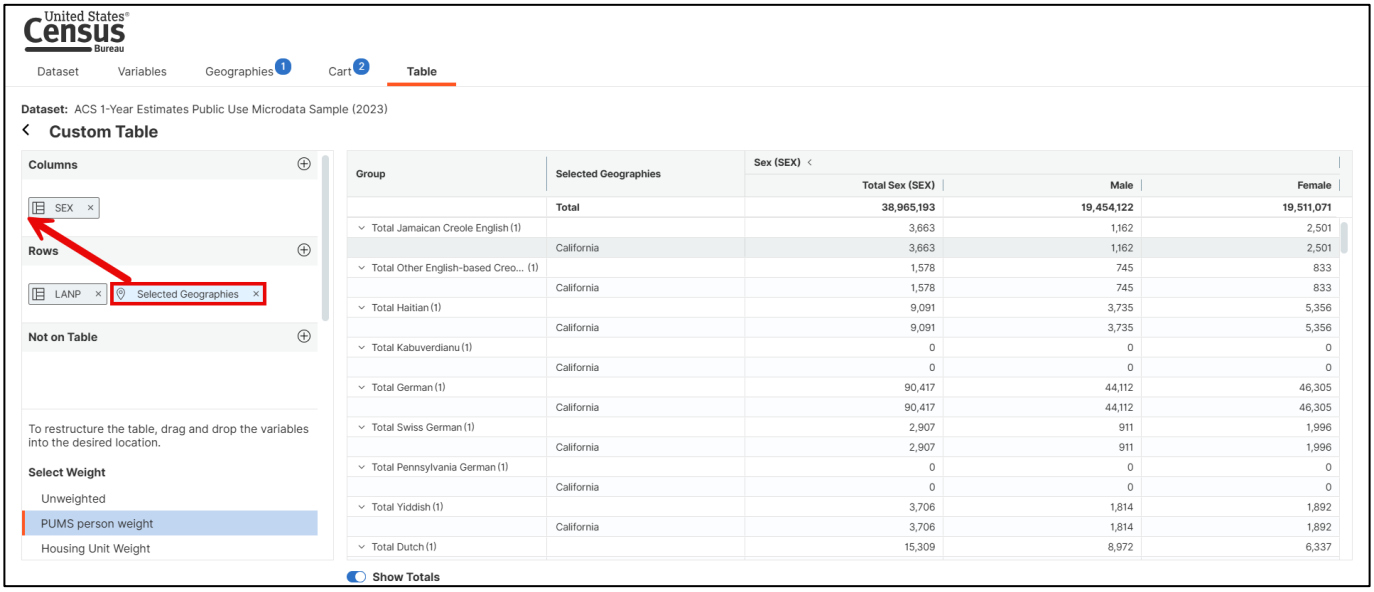
Step 2. Now you need to select your variables. For this exercise, you'll only need to find two variables, the first being sex. In the Label search bar, type 'sex' and click on the checkbox next to the variable SEX.

Step 3. Clear the Label search bar and type in 'language.' Select the checkbox next to the variable LANP and then navigate to the Geographies tab.

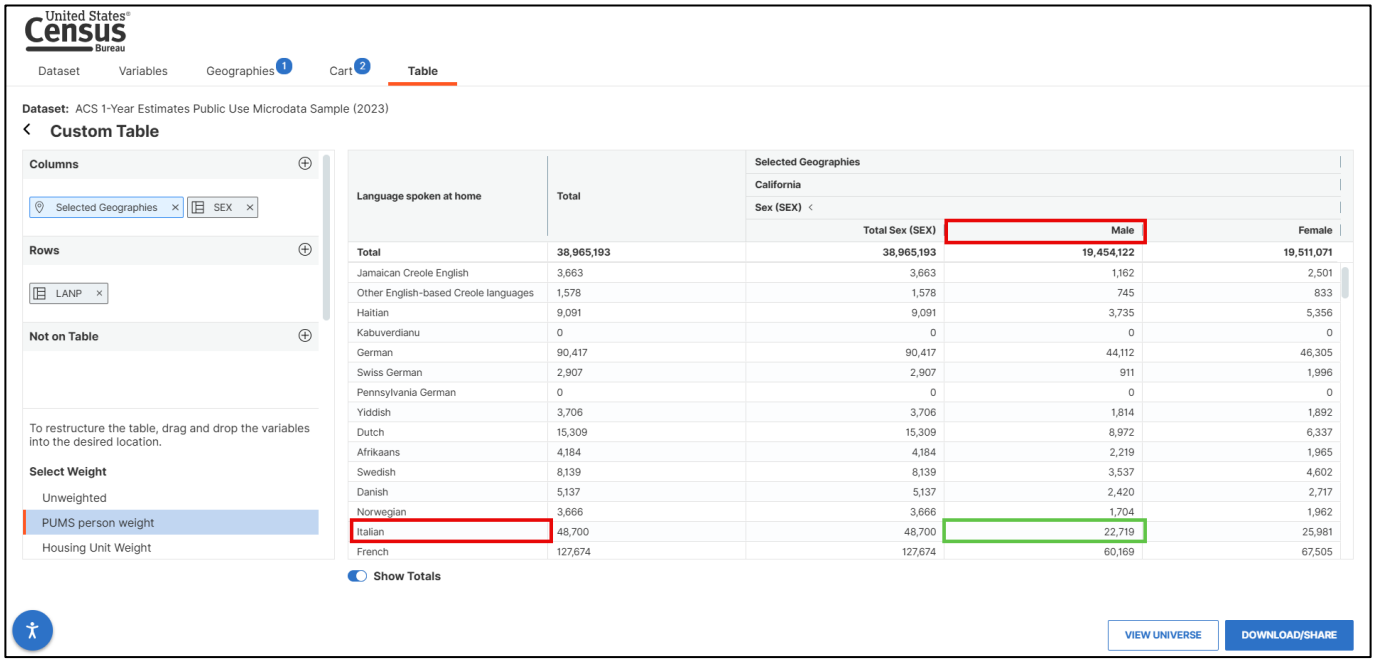
Step 4. In the Geographies tab, select the button for State. Then, click on the checkbox next to California. There's no need to edit your variables or create any recodes in this example, so you can go straight to the Table tab.

Step 5. This is where we'll determine which variables go into either the columns or the rows. You have flexibility when it comes to the table view, so you can arrange the table in the configuration you can most easily read.

For now, click and drag the Selected Geographies up to the Columns, moving it in front of the Sex variable. The order of the table display is based on how you order the variables in the side panel; If you place the geographies in front the sex variable, that will be reflected as the geographies appearing above the sex variable within the table.



Step 6. Now you can view the table. You need to know how many males spoke Italian in California, and from this table, we can see that the answer is 22,179.



Language spoken at home	Total	Selected Geographies: California: Sex (SEX): Total Sex (SEX)	Male	Female
Total	**38,965,193**	**38,965,193**	**19,454,122**	**19,511,071**
Jamaican Creole English	3,663	3,663	1,162	2,501
Other English-based Creole languages	1,578	1,578	745	833
Haitian	9,091	9,091	3,735	5,356
Kabuverdianu	0	0	0	0
German	90,417	90,417	44,112	46,305
Swiss German	2,907	2,907	911	1,996
Pennsylvania German	0	0	0	0
Yiddish	3,706	3,706	1,814	1,892
Dutch	15,309	15,309	8,972	6,337
Afrikaans	4,184	4,184	2,219	1,965
Swedish	8,139	8,139	3,537	4,602
Danish	5,137	5,137	2,420	2,717
Norwegian	3,666	3,666	1,704	1,962
Italian	48,700	48,700	22,719	25,981
French	127,674	127,674	60,169	67,505