How to Access Granular Data on MDAT

New Jersey State Data Users Meeting
October 4, 2023

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Center for Enterprise Dissemination (CED)
U.S. Census Bureau

United States® Census Bureau

Microdata = PUMS Files

Public **U**se **M**icrodata

Anonymized

- No personally identifiable information
- Edits to protect confidentiality

Individual Responses

- Must be tabulated and weighted by user

Accessible

- data.census.gov/mdat
- Application Programming Interface (API)
- Download through FTP sites

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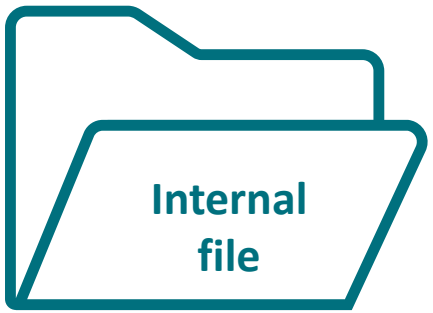
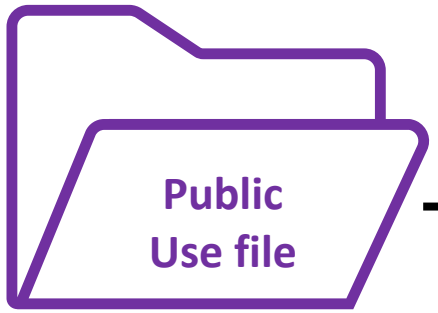
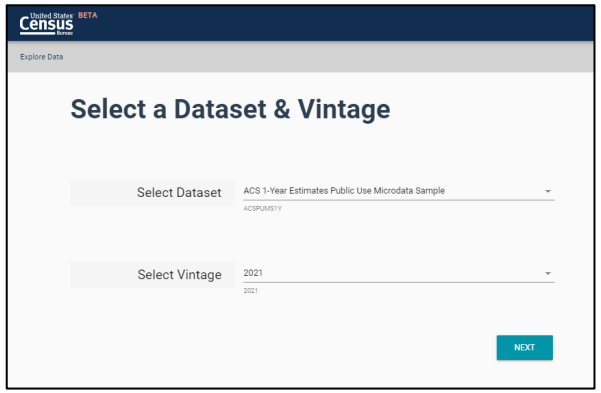
What's the difference between data.census.gov and Microdata Access?

Survey Responses (individual records)

Edits to protect confidentiality applied







data.census.gov

- Estimates are created using individual records that are only available to Census program area staff

Microdata Access (internally known as MDAT)

- Estimates are created using a sample of individual records that have been processed for use by the public

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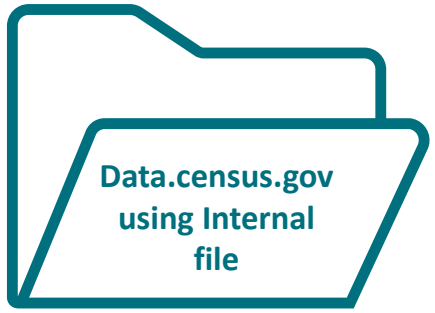
What are the pros and cons of using data.census.gov and Microdata Access?



Pros and Cons of Using Tables found in data.census.gov	
Pros: • Provides more precise estimates • Wider range of datasets • Fewer limitations to available geographies • No in-depth knowledge of variables required	Cons: • Limited to crosstabulations and tables that are predetermined by data providers • Limited ability to customize tables

Pros and Cons of Creating Tables in Microdata Access	
Pros: • Provides custom estimates when a pre-tabulated Census table is not available • More historical data available • Includes datasets not available in data.census.gov	Cons: • Limited geographies • Provides less precise estimates • Requires in-depth knowledge of variables • No margins of error provided

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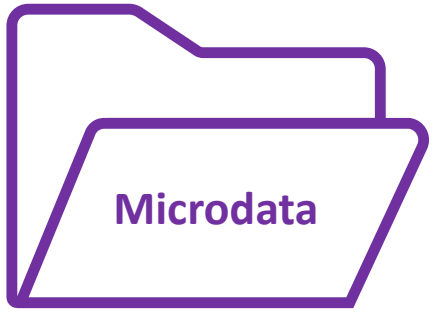
What's the difference between tabulated data and microdata?

	Maryland	
Label	Estimate	Margin of Error
Total:	3,098,870	±17,785
Male:	1,565,561	±11,667
Management, business, science, and arts occupations:	682,858	±11,323
Management, business, and financial occupations:	286,831	±7,906
Management occupations	195,401	±6,483
Business and financial operations occupations	91,430	±5,335
Computer, engineering, and science occupations:	212,203	±6,790
Computer and mathematical occupations	121,160	±5,830
Architecture and engineering occupations	54,967	±3,693

data.census.gov

Aggregated tables for a geography:

"In 2019 in Maryland, approximately 121,160 males worked in computer and mathematical occupations."



SERIALNO	SPORDER	ST	SEX	OCCP
2019HU0045422	4	24	1	4710
2019HU0045422	5	24	2	9
2019HU0045422	6	24	2	9
2019HU0045644	1	24	1	2100
2019HU0045764	1	24	2	5740
2019HU0045764	2	24	1	1031
2019HU0046210	1	24	1	150

Microdata Access (MDAT)

Microdata (a set of edited survey responses):

"This male in Maryland is a web developer."

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Data Dictionaries

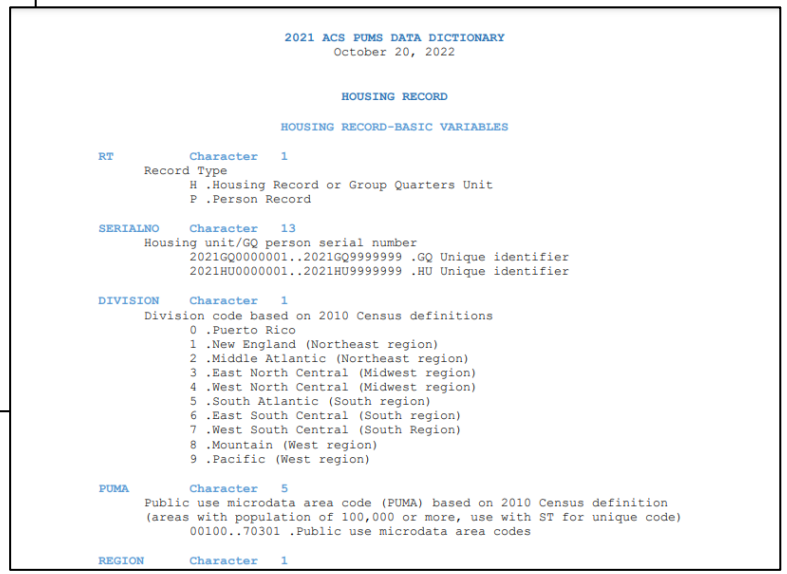
American Community Survey

https://www.census.gov/programs-surveys/acs/microdata/documentation.html

Data Dictionaries for PUMS Files

Includes variables available for each release of PUMS files on the Census Bureau FTP site, and how each variable is coded.

- 2021 ACS 1-year PUMS Data Dictionary [PDF] [<1.0 MB]
- 2021 ACS 1-year PUMS Data Dictionary [TXT] [<1.0 MB]
- 2021 ACS 1-year PUMS Data Dictionary [CSV] [<1.0 MB]
- 2017-2021 ACS 5-year PUMS Data Dictionary [PDF] [<1.0 MB]
- 2017-2021 ACS 5-year PUMS Data Dictionary [TXT] [<1.0 MB]
- 2017-2021 ACS 5-year PUMS Data Dictionary [CSV] [<1.0 MB]



2021 ACS PUMS DATA DICTIONARY
October 20, 2022

HOUSING RECORD

HOUSING RECORD-BASIC VARIABLES

RT Character 1
Record Type
H .Housing Record or Group Quarters Unit
P .Person Record

SERIALNO Character 13
Housing unit/GQ person serial number
2021GQ0000001..2021GQ9999999 .GQ Unique identifier
2021HU0000001..2021HU9999999 .HU Unique identifier

DIVISION Character 1
Division code based on 2010 Census definitions
0 .Puerto Rico
1 .New England (Northeast region)
2 .Middle Atlantic (Northeast region)
3 .East North Central (Midwest region)
4 .West North Central (Midwest region)
5 .South Atlantic (South region)
6 .East South Central (South region)
7 .West South Central (South Region)
8 .Mountain (West region)
9 .Pacific (West region)

PUMA Character 5
Public use microdata area code (PUMA) based on 2010 Census definition
(areas with population of 100,000 or more, use with ST for unique code)
00100..70301 .Public use microdata area codes

REGION Character 1

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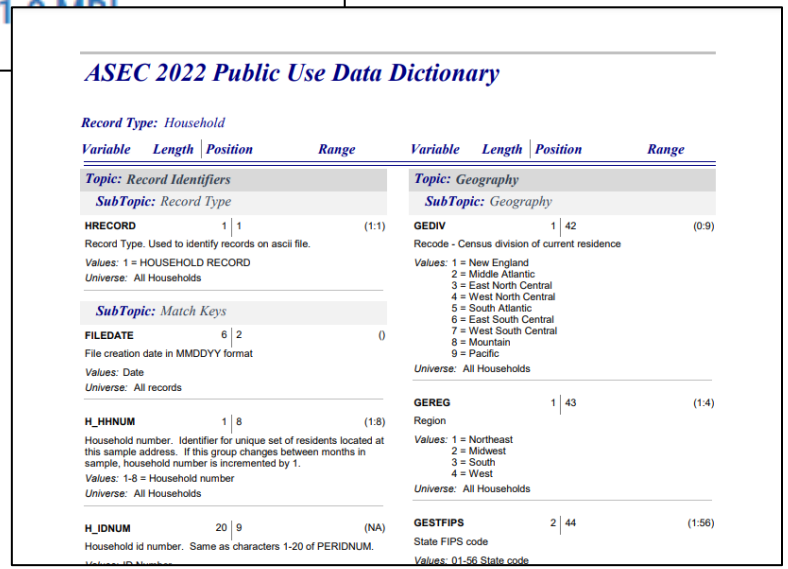
Current Population Survey Annual Social and Economic Supplement (CPS ASEC)

https://www.census.gov/data/datasets/2022/demo/cps/cps-asec-2022.html

Data and Documents

Data Dictionary [1



ASEC 2022 Public Use Data Dictionary

Record Type: Household

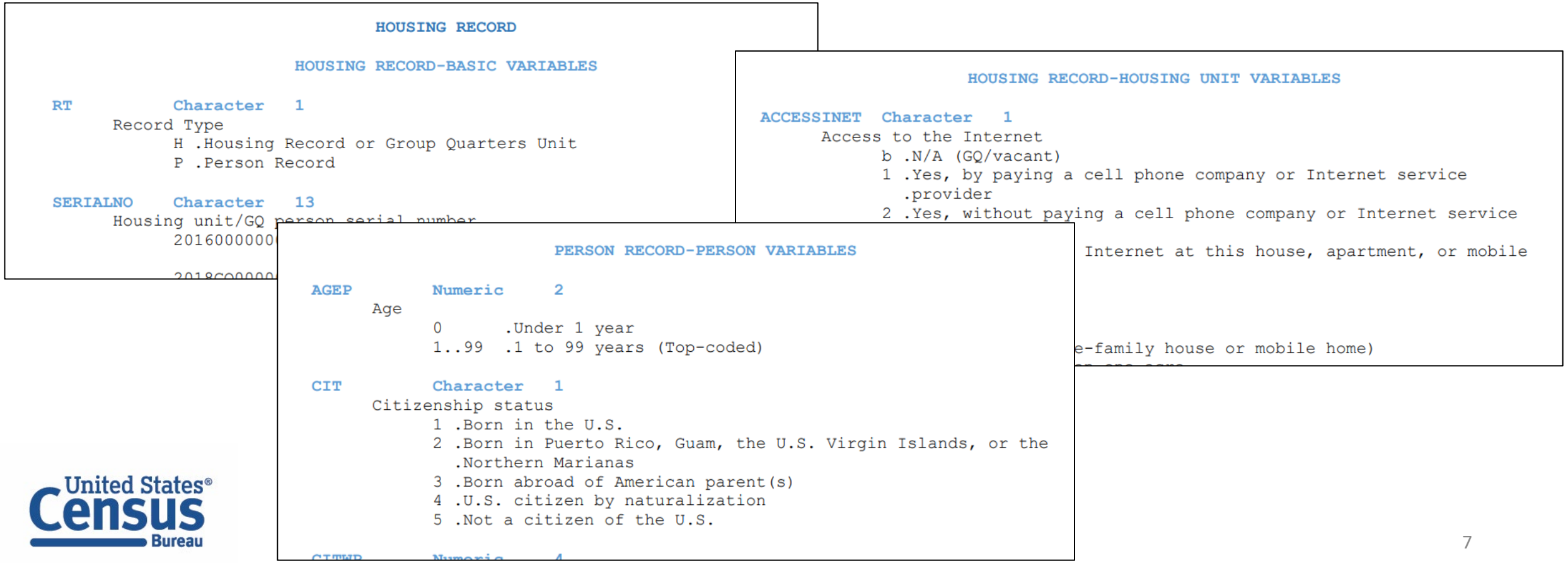
Variable	Length	Position	Range	Variable	Length	Position	Range
Topic: Record Identifiers				*Topic:* Geography			
SubTopic: Record Type				*SubTopic:* Geography			
HRECORD	1	1	(1:1)	GEDIV	1	42	(0:9)
Record Type. Used to identify records on ascii file.				Recode - Census division of current residence			
Values: 1 = HOUSEHOLD RECORD				*Values:* 1 = New England 2 = Middle Atlantic 3 = East North Central 4 = West North Central 5 = South Atlantic 6 = East South Central 7 = West South Central 8 = Mountain 9 = Pacific			
Universe: All Households				*Universe:* All Households			
SubTopic: Match Keys							
FILEDATE	6	2	()	GEREG	1	43	(1:4)
File creation date in MMDDYY format				Region			
Values: Date				*Values:* 1 = Northeast 2 = Midwest 3 = South 4 = West			
Universe: All records				*Universe:* All Households			
H_HHNUM	1	8	(1:8)				
Household number. Identifier for unique set of residents located at this sample address. If this group changes between months in sample, household number is incremented by 1.							
Values: 1-8 = Household number							
Universe: All Households							
H_IDNUM	20	9	(NA)	GESTFIPS	2	44	(1:56)
Household id number. Same as characters 1-20 of PERIDNUM.				State FIPS code			
				Values: 01-56 State code			

Data Dictionaries

American Community Survey

https://www.census.gov/programs-surveys/acs/microdata/documentation.html

The ACS PUMS data dictionary is broken out into different sections of variables, including basic variables, housing unit variables, and person variables.



HOUSING RECORD

HOUSING RECORD-BASIC VARIABLES

RT Character 1
Record Type
H .Housing Record or Group Quarters Unit
P .Person Record

SERIALNO Character 13
Housing unit/GQ person serial number
2016000000
2018GQ00000

HOUSING RECORD-HOUSING UNIT VARIABLES

ACCESSINET Character 1
Access to the Internet
b .N/A (GQ/vacant)
1 .Yes, by paying a cell phone company or Internet service
.provider
2 .Yes, without paying a cell phone company or Internet service

Internet at this house, apartment, or mobile

e-family house or mobile home)

PERSON RECORD-PERSON VARIABLES

AGEP Numeric 2
Age
0 .Under 1 year
1..99 .1 to 99 years (Top-coded)

CIT Character 1
Citizenship status
1 .Born in the U.S.
2 .Born in Puerto Rico, Guam, the U.S. Virgin Islands, or the
.Northern Marianas
3 .Born abroad of American parent(s)
4 .U.S. citizen by naturalization
5 .Not a citizen of the U.S.

CITWP Numeric 4

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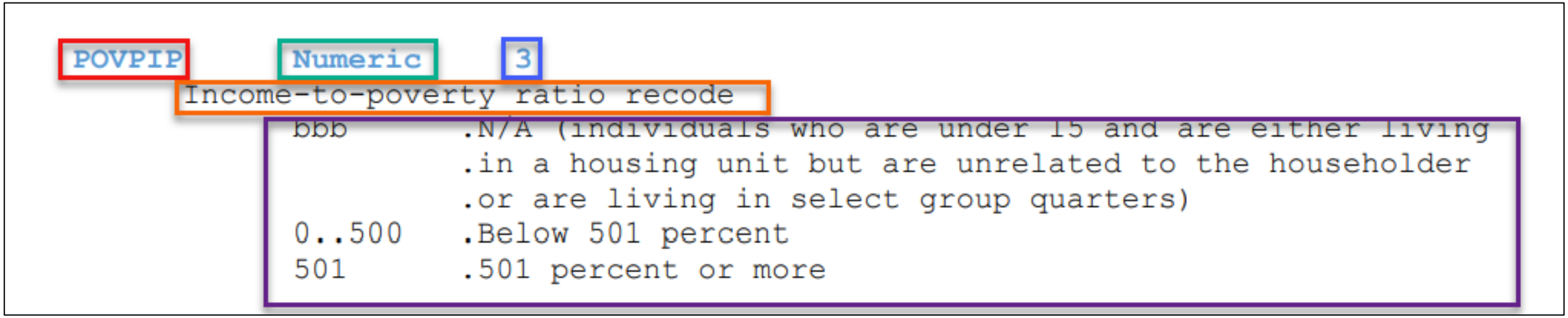
Data Dictionaries

American Community Survey
https://www.census.gov/programs-surveys/acs/microdata/documentation.html

Find all the variables that are available in the PUMS dataset for any given year.

The dictionary will give you the name of the variable, whether it's a character or numeric variable, the length of the variable, a brief description of the variable, and the possible response options or recoded values.



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Demo

Example 1:

Poverty by disability status for the United States

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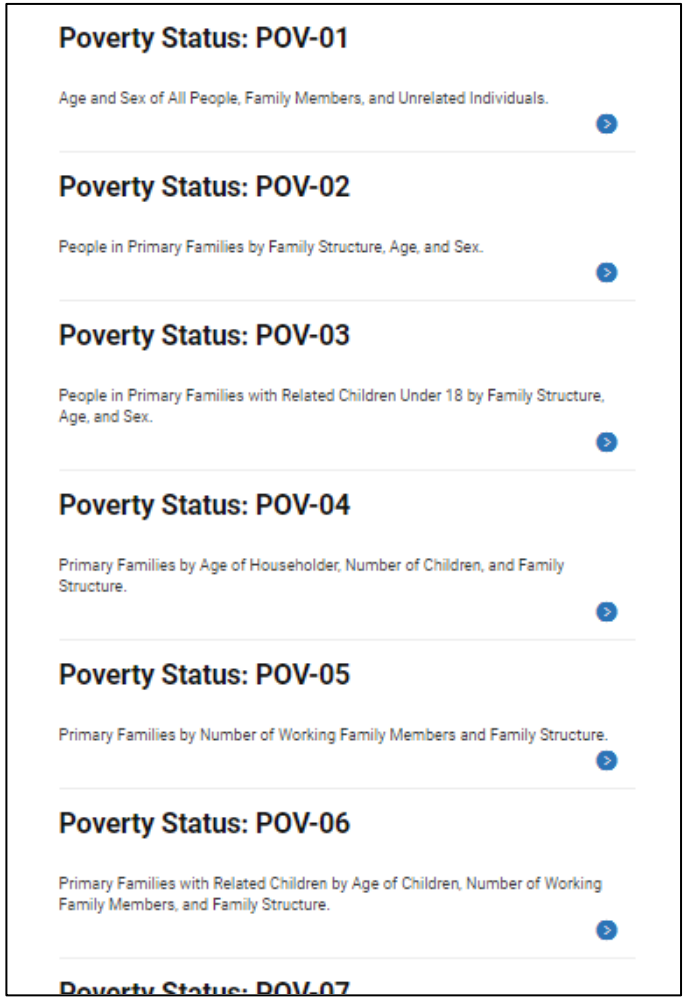
Problem: We need poverty status crossed with disability status for the US, but none of the published CPS ASEC poverty tables have this cross of characteristics available

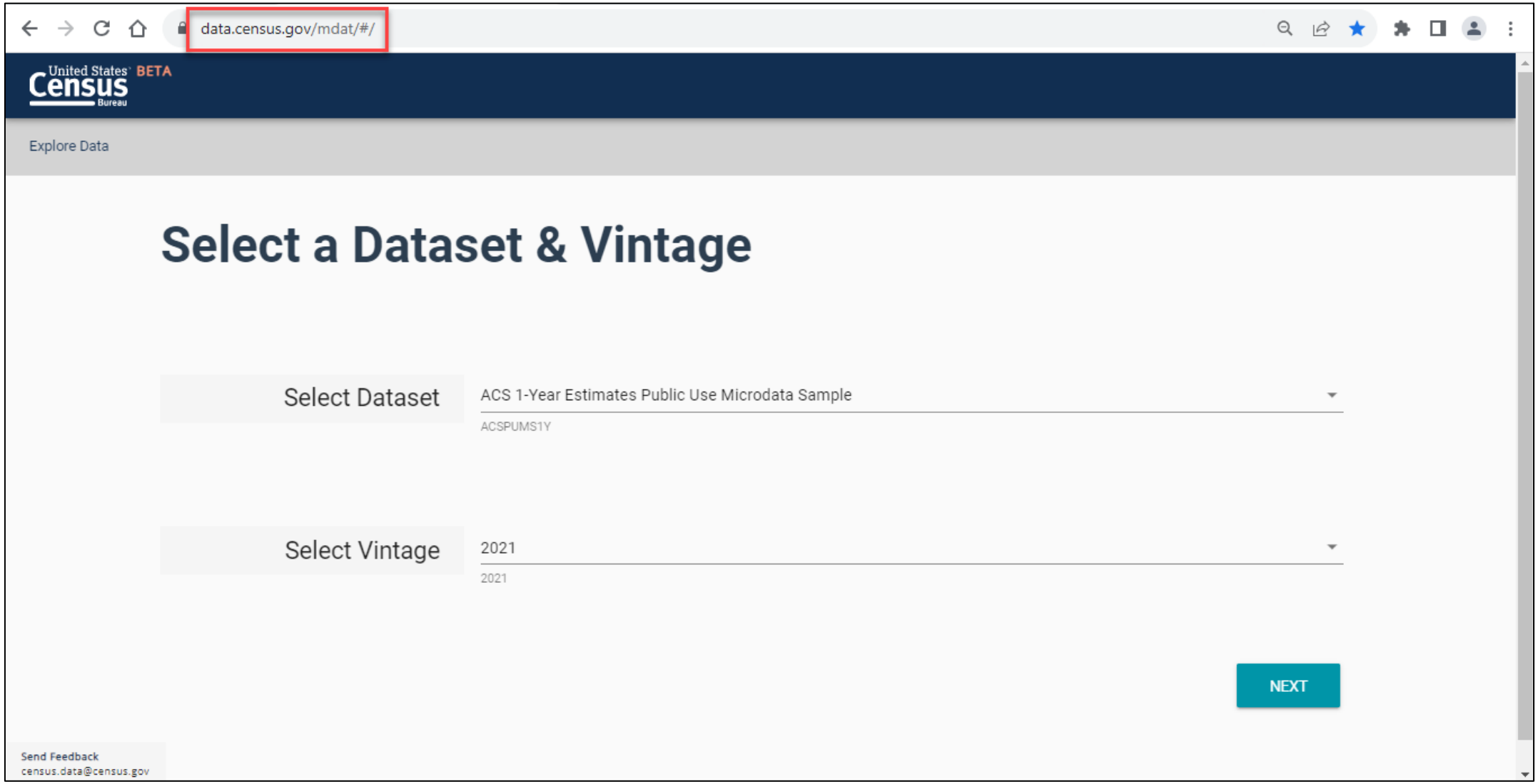
Solution: Use Microdata Access (MDAT)

Official Poverty Measure

- Poverty Thresholds: 2022 [<1.0 MB]
- Table A-1. People in Poverty by Selected Characteristics: 2021 and 2022 [<1.0 MB]
- Table A-2. Families and People in Poverty by Type of Family: 2021 and 2022 [<1.0 MB]
- Table A-3. Poverty Status of People by Age, Race, and Hispanic Origin: 1959 to 2022 [<1.0 MB]
- HSTPOV2. Poverty Status of People by Family Relationship, Race, and Hispanic Origin: 1959 to 2022 [<1.0 MB]
- HSTPOV4. Poverty Status of Families by Type of Family, Presence of Related Children, Race, and Hispanic Origin: 1959 to 2022 [<1.0 MB]
- People With Income Below Specified Ratios of Their Poverty Thresholds by Selected Characteristics: 2022 [<1.0 MB]
- Impact on Poverty of Alternative Resource Measures by Age: 1981 to 2022 [<1.0 MB]
- Interrelationships of Three-Year Average State Poverty Rates: 2020 – 2022 [<1.0 MB]



- Visit Microdata Access at data.census.gov/mdat



data.census.gov/mdat

- Choose Dataset and Vintage:
  - Dataset – **CPS Annual Social and Economic (March) Supplement**
  - Vintage – **MAR 2023**
  - Click **Next** in the lower right

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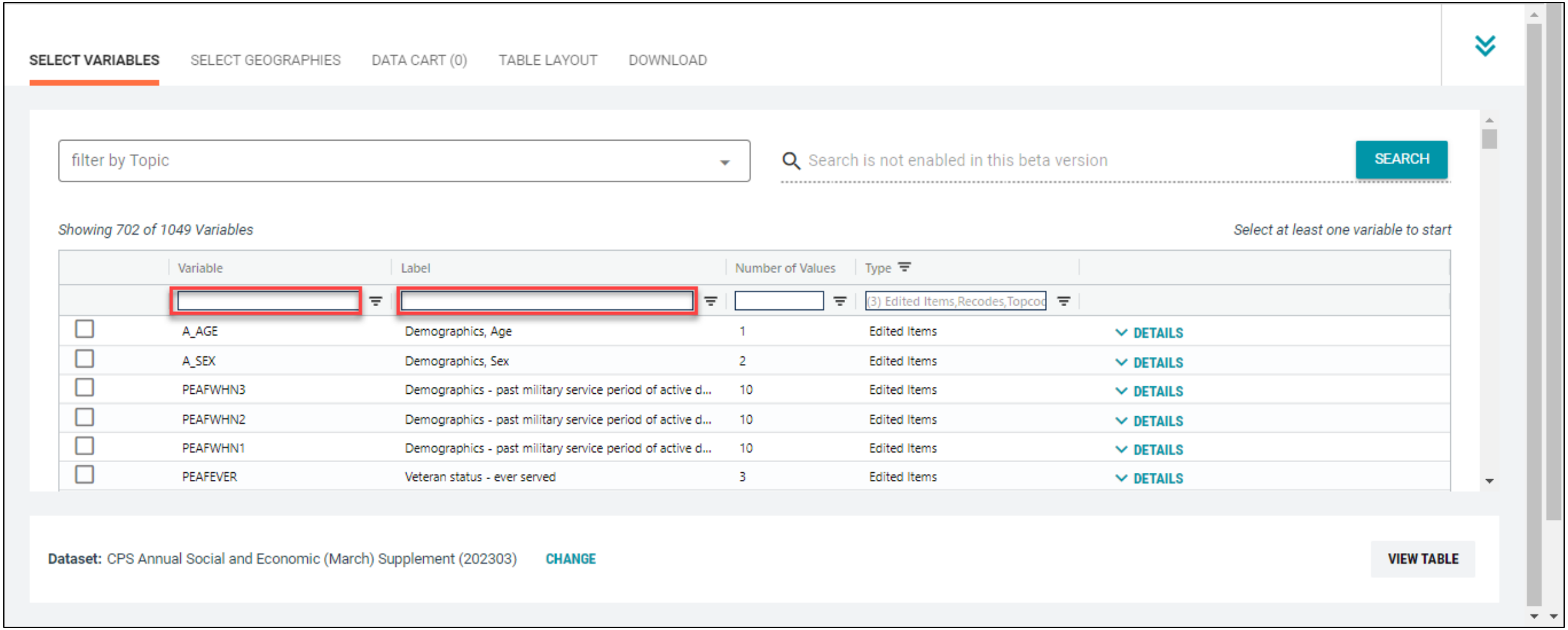
- **Search for Variables** – Use the search box below “Variable” or “Label” to find your variables of interest



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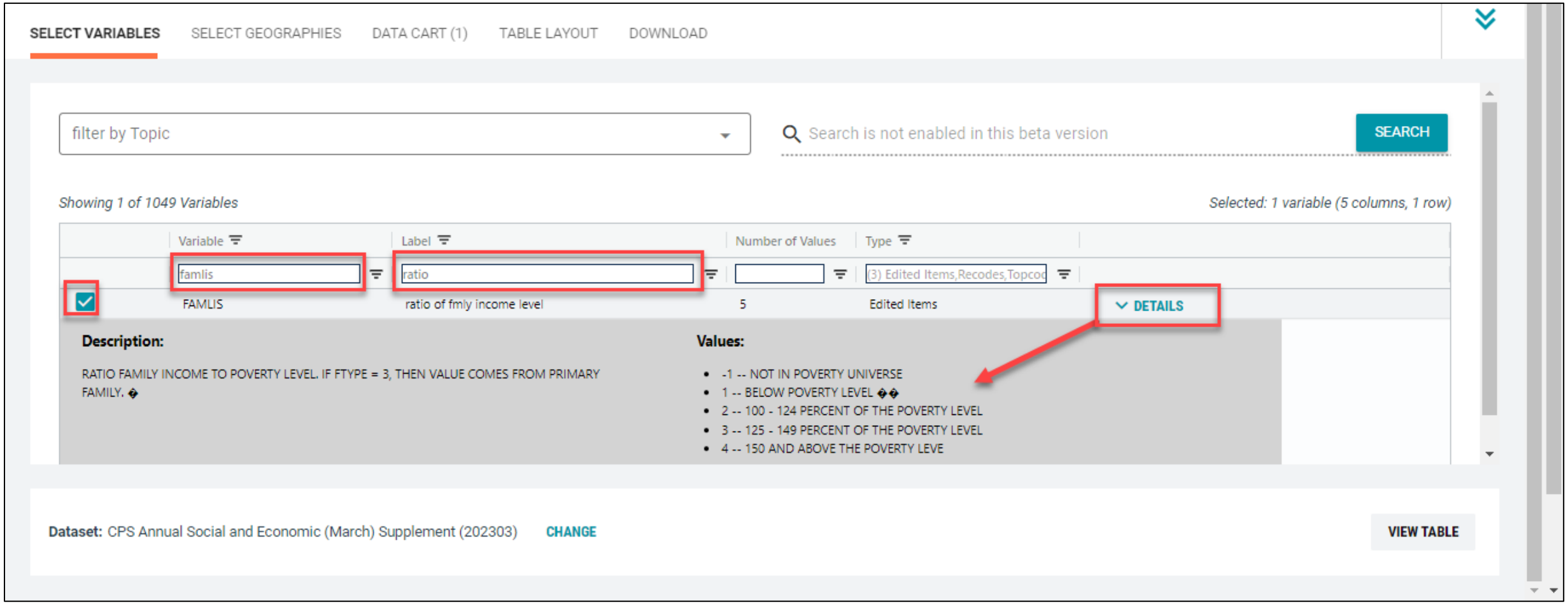
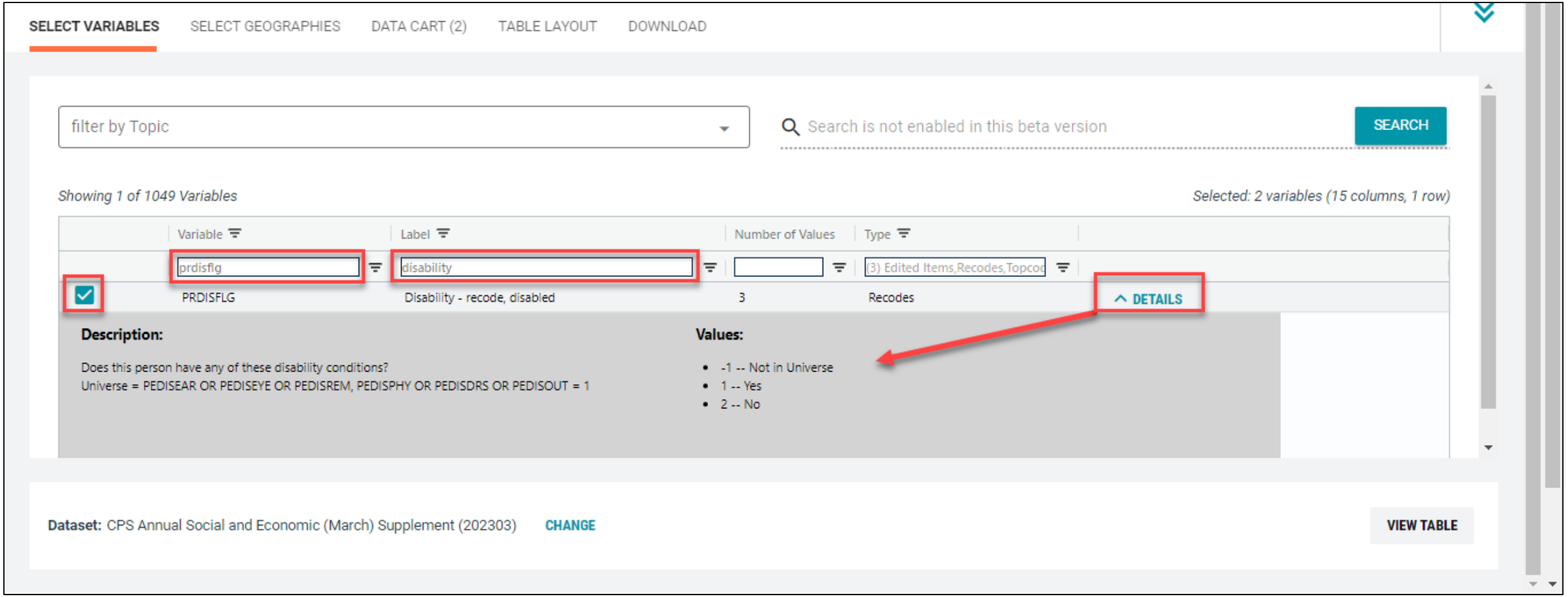
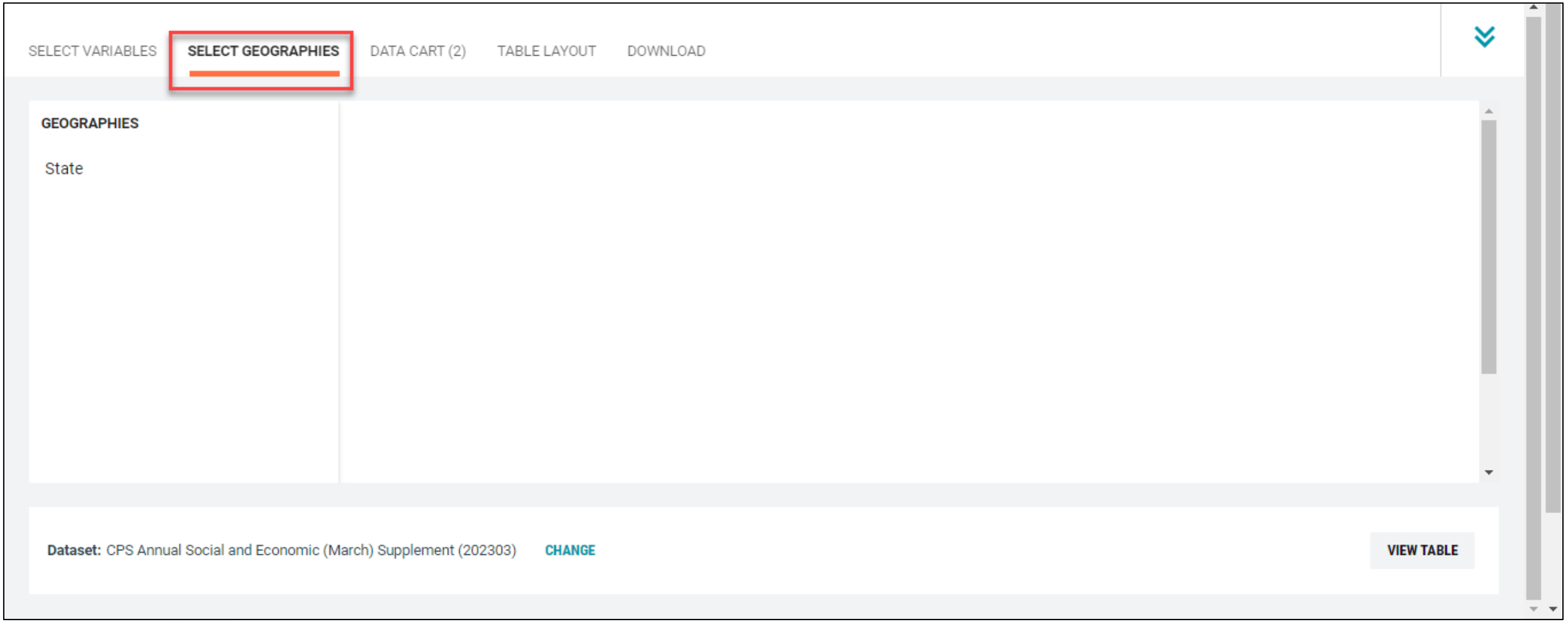
- **Select variable for Poverty Ratio for Family Income**:
  - Type “FAMLIS” in the Variable search box or type “ratio” in the label search box
  - Click **Details** to browse information about this variable
  - Check the box to the left of FAMLIS to add the variable to your data cart



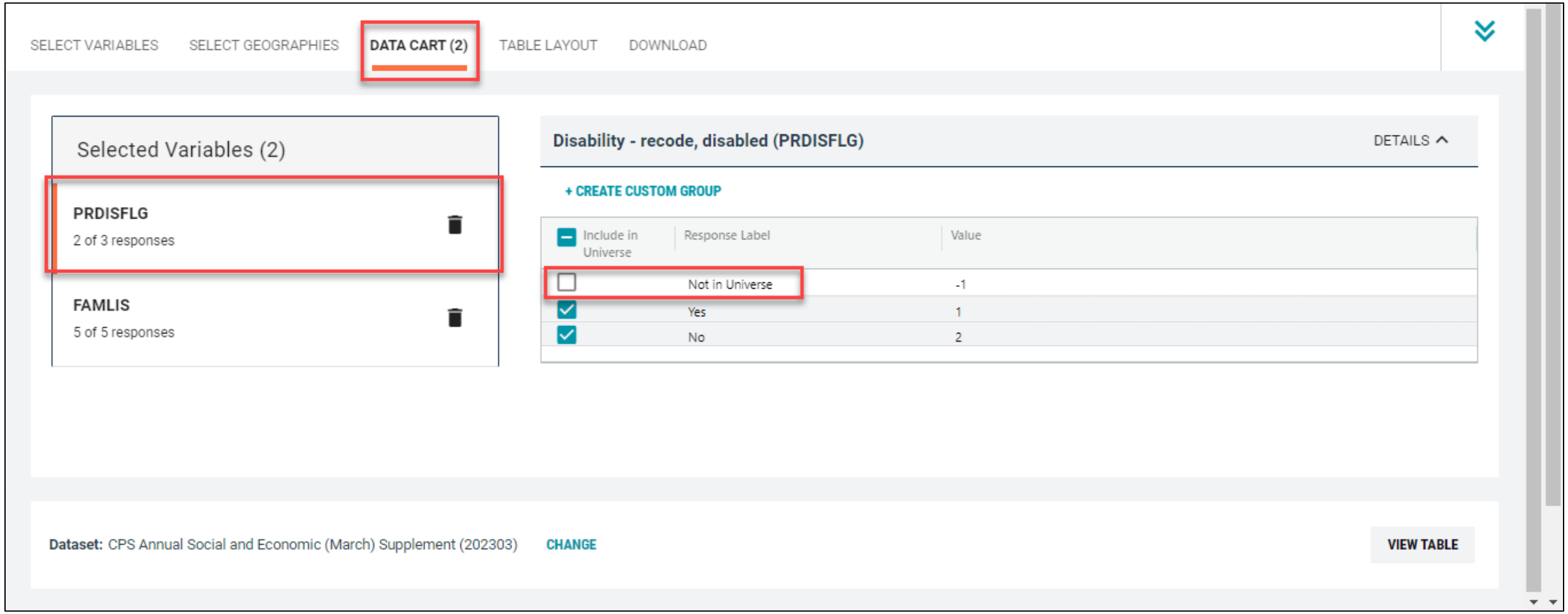
- **Select variable for Disability Status:**
  - Type “PRDISFLG” in the Variable search box or type “disability” in the label search box
  - Check the box to the left of PRDISFLG to add the variable to your data cart



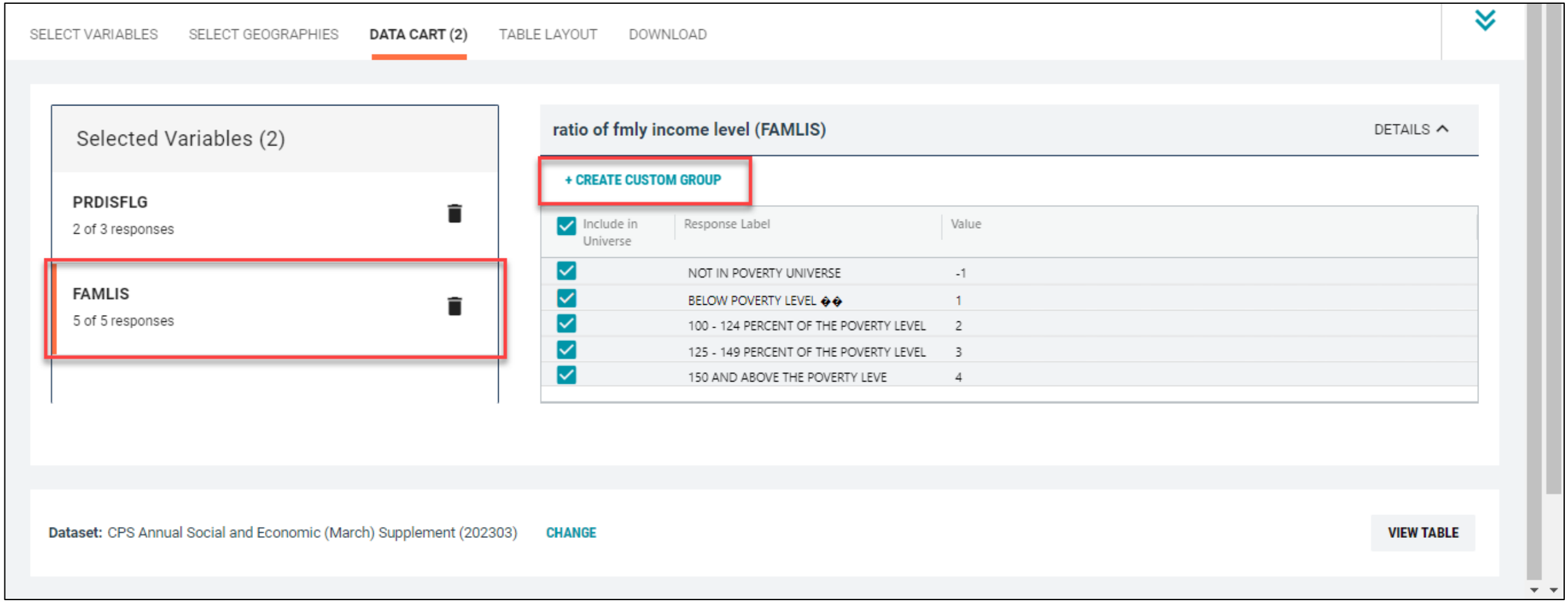
- Select geography:
  - Move to the **Select Geographies** tab
  - Since we are getting the estimates for the United States, there is no need to make a selection. If no selection is made, the geography will automatically default to the United States



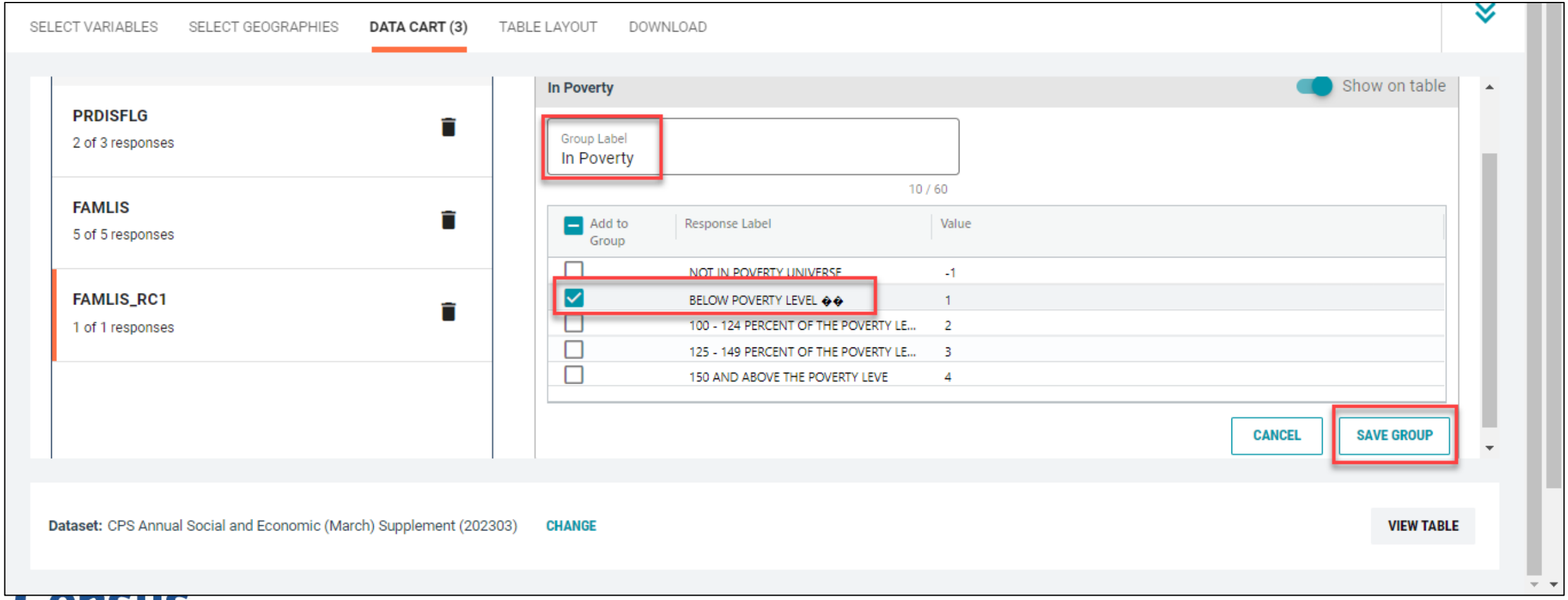
- Categorize your variable:
  - Move to the **Data Cart** tab
  - Click the **PRDISFLG** variable on the left
  - Uncheck the box for Not in Universe



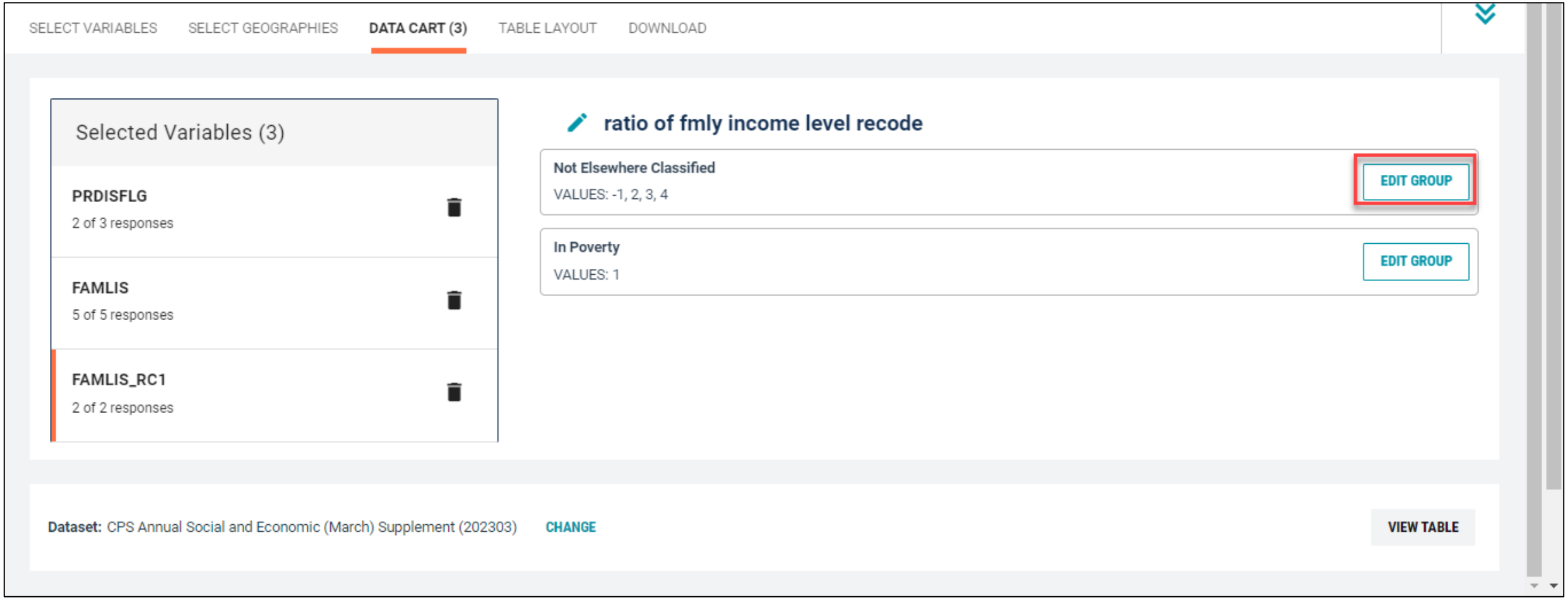
- **Categorize (recode) your variable**:
  - Click the **FAMLIS** variable on the left
  - Click **Create Custom Group** to begin specifying your poverty breakdown (e.g. In Poverty and Not in Poverty)



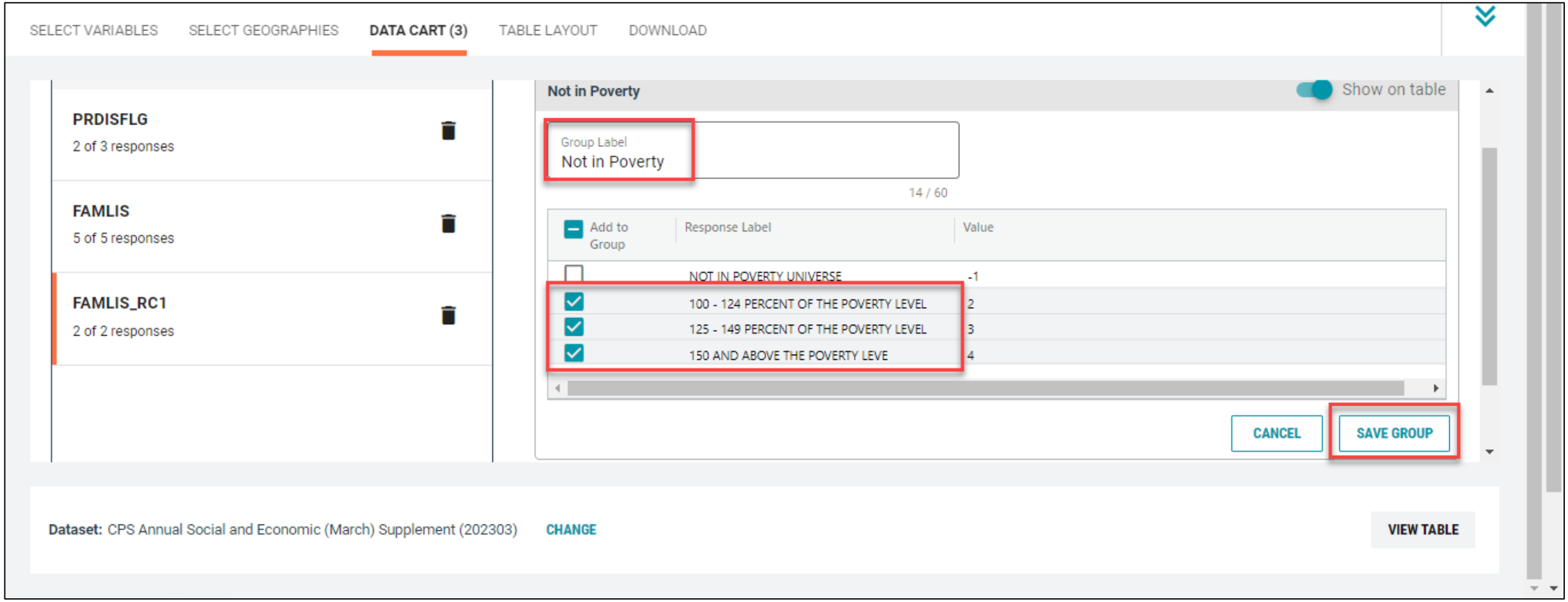
- Categorize (recode) your variable:
  - Click into **Group label** and type a label for the first category you want to create (e.g. In Poverty)
  - Check the box next to the response category for this code (Below Poverty Level)
  - Click **Save Group**



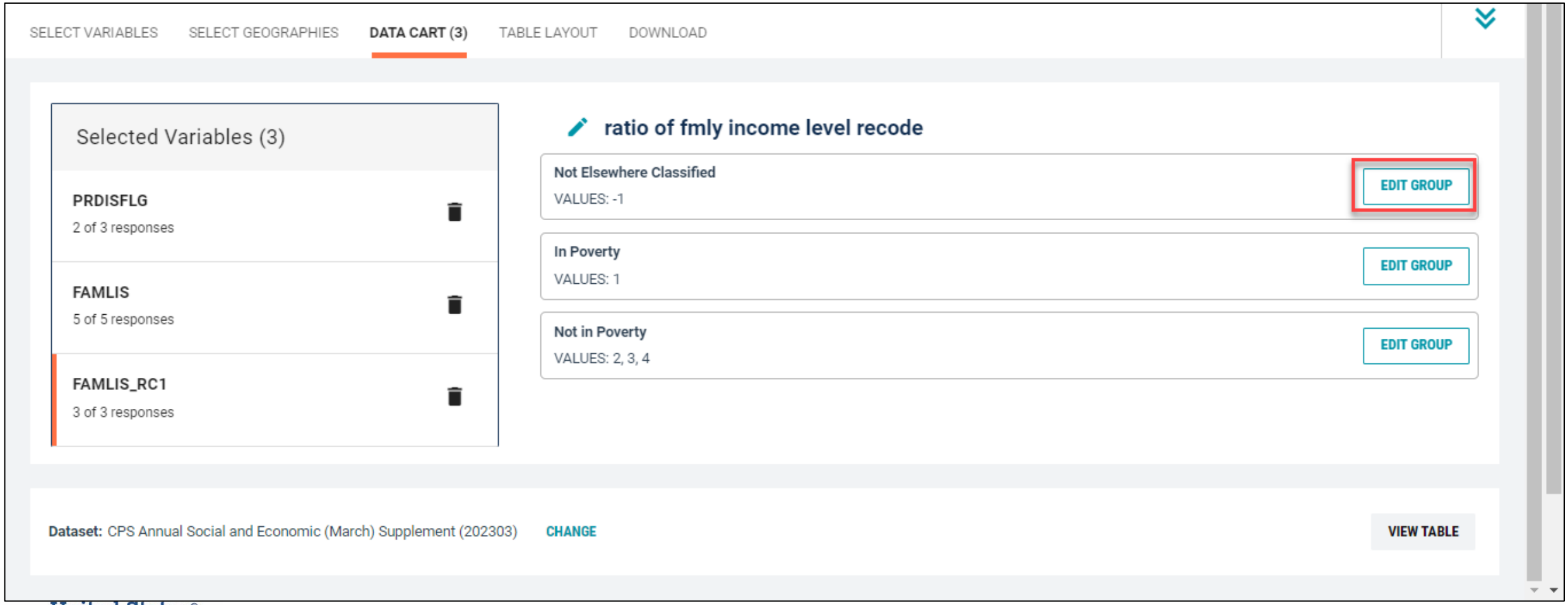
- Categorize (recode) your variable:
  - Your first category, In Poverty, appears just below “Not Elsewhere Classified”
  - Click **Edit Group** for “Not Elsewhere Classified” to verify and rename the category



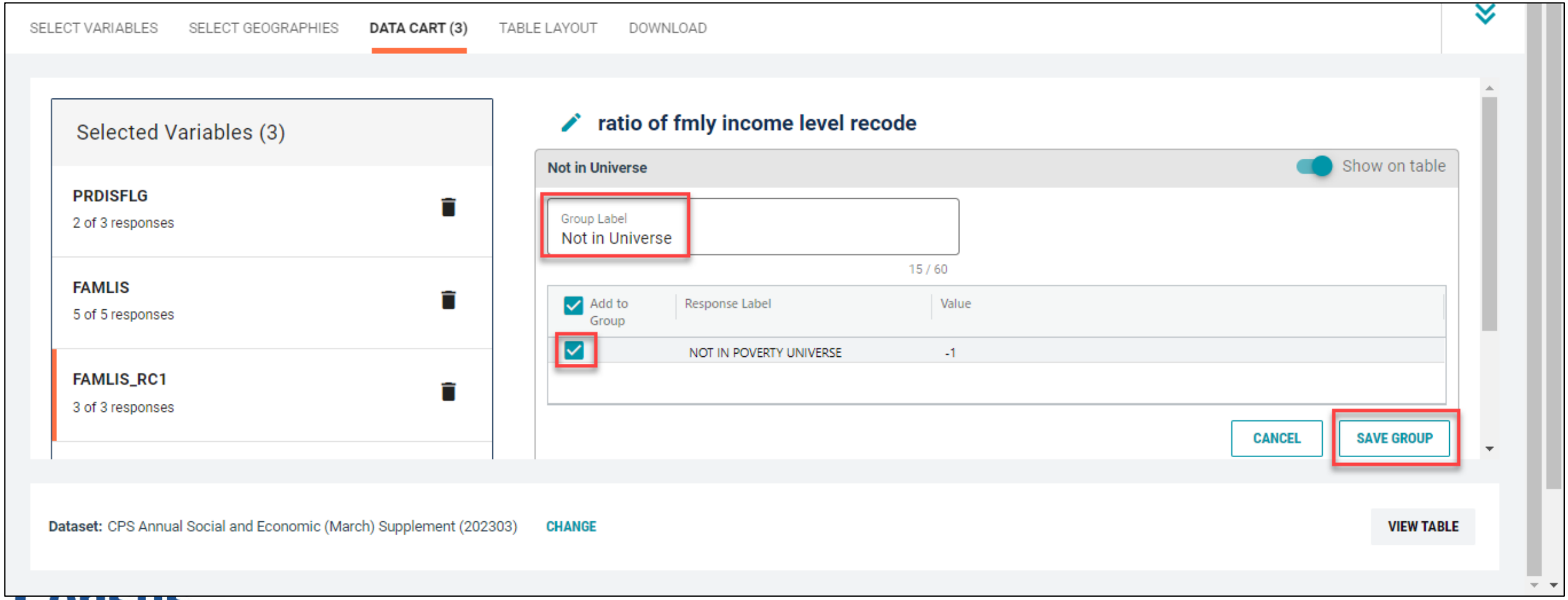
- **Categorize (recode) your variable**:
  - Click into **Group label** and type a label for the next category you want to create (e.g. Not in Poverty)
  - Check the boxes next to the response categories for this (100-124 Percent of the Poverty Level, 125-149 Percent of the Poverty Level, and 150 and Above the Poverty Level)
  - Click **Save Group**



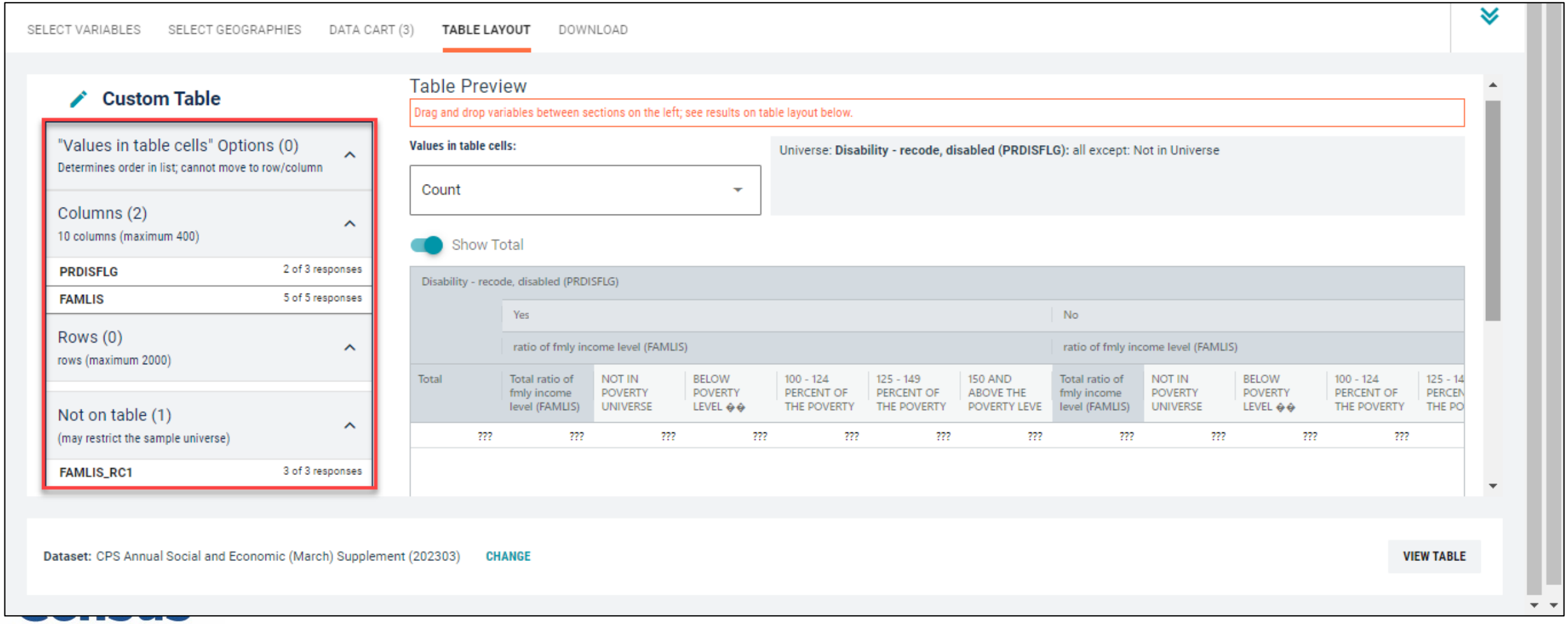
- **Categorize (recode) your variable**:
  - This next category, Not in Poverty, appears just below “In Poverty”
  - Click **Edit Group** for “Not Elsewhere Classified” to verify and rename the category



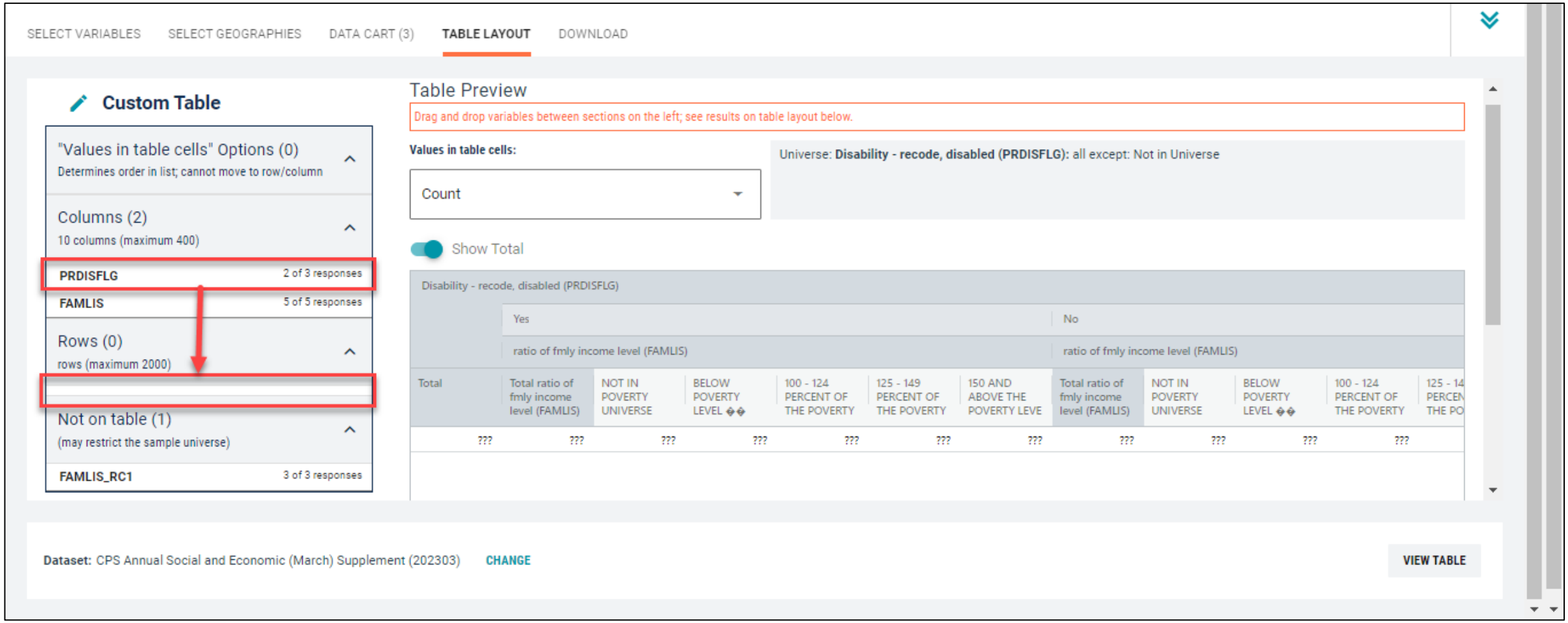
- Categorize (recode) your variable:
  - Click into **Group label** and type a label for the last category you want to create (e.g. Not in Universe)
  - Check the box next to the response category for this (Not in Poverty Universe)
  - Click **Save Group**



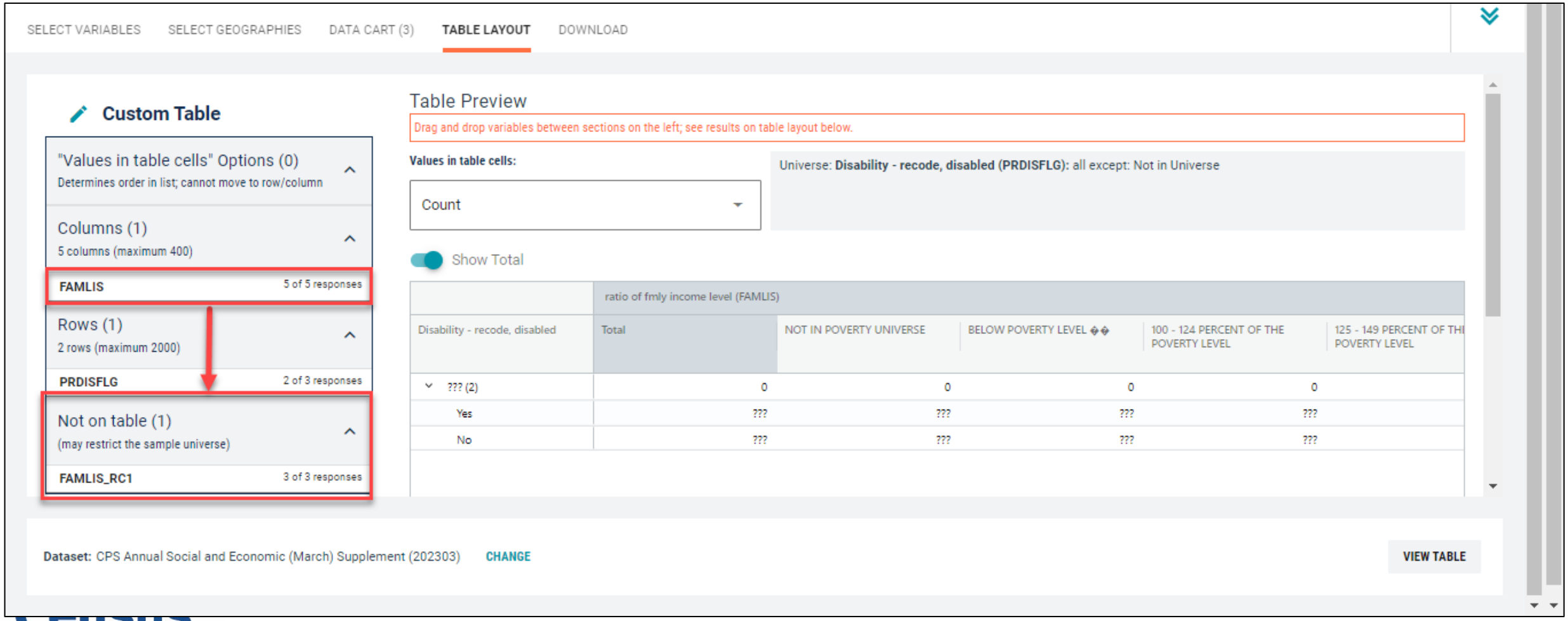
- View variable placement in the default table layout:
  - Move to the **Table Layout** tab
  - **Columns/Rows – Variables will be shown in the table.** By default, the table is providing disability and poverty in the columns.



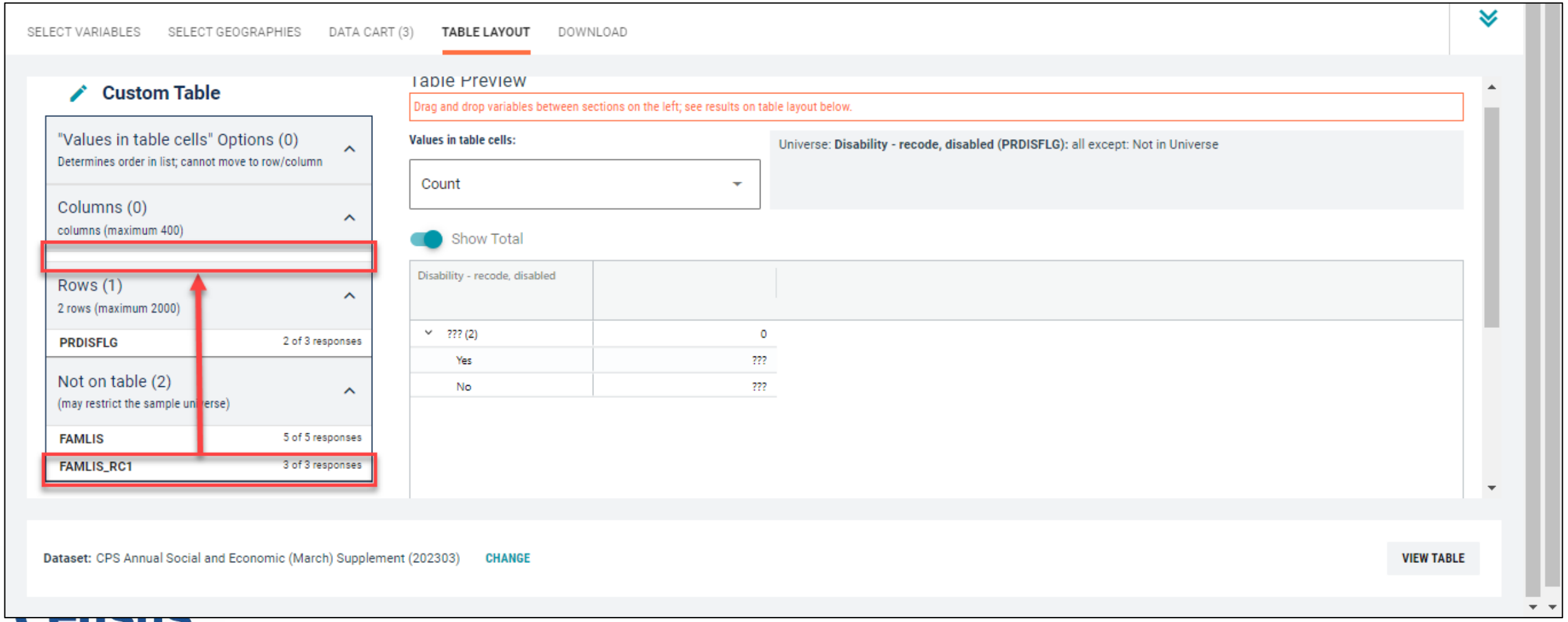
- Edit Table Layout:
  - **Move Disability to Rows:**
    - **Click, hold and drag PRDISFLG on the left side of the page down to the rows heading.** This will give you a table layout with disability status as the rows.



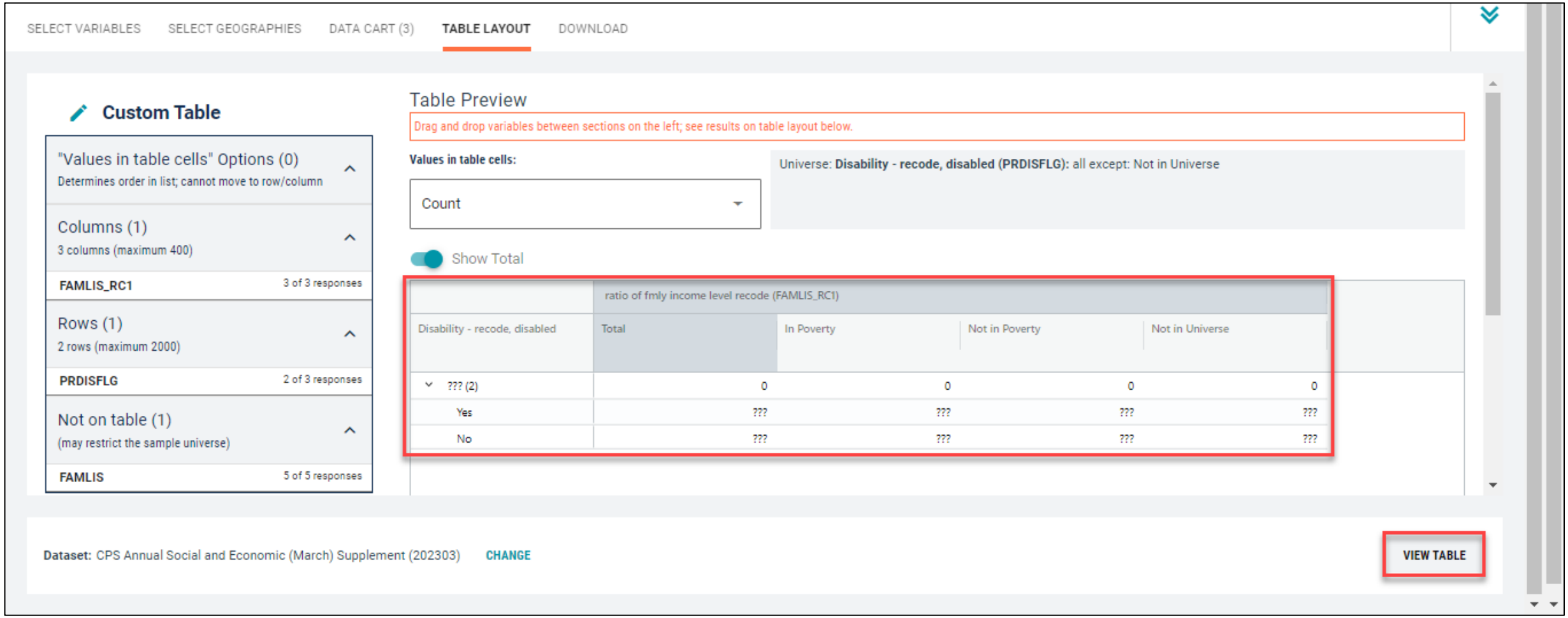
- Edit Table Layout:
  - Move Poverty to Columns:
    - **Click, hold and drag FAMLIS down to the Not on table section.** This will remove these categories from the table.



- Edit Table Layout:
  - Move Poverty Recode to Columns:
    - **Click, hold and drag FAMLIS_RC1 up to the columns heading.** This will display the recoded categories that were created earlier as the columns.

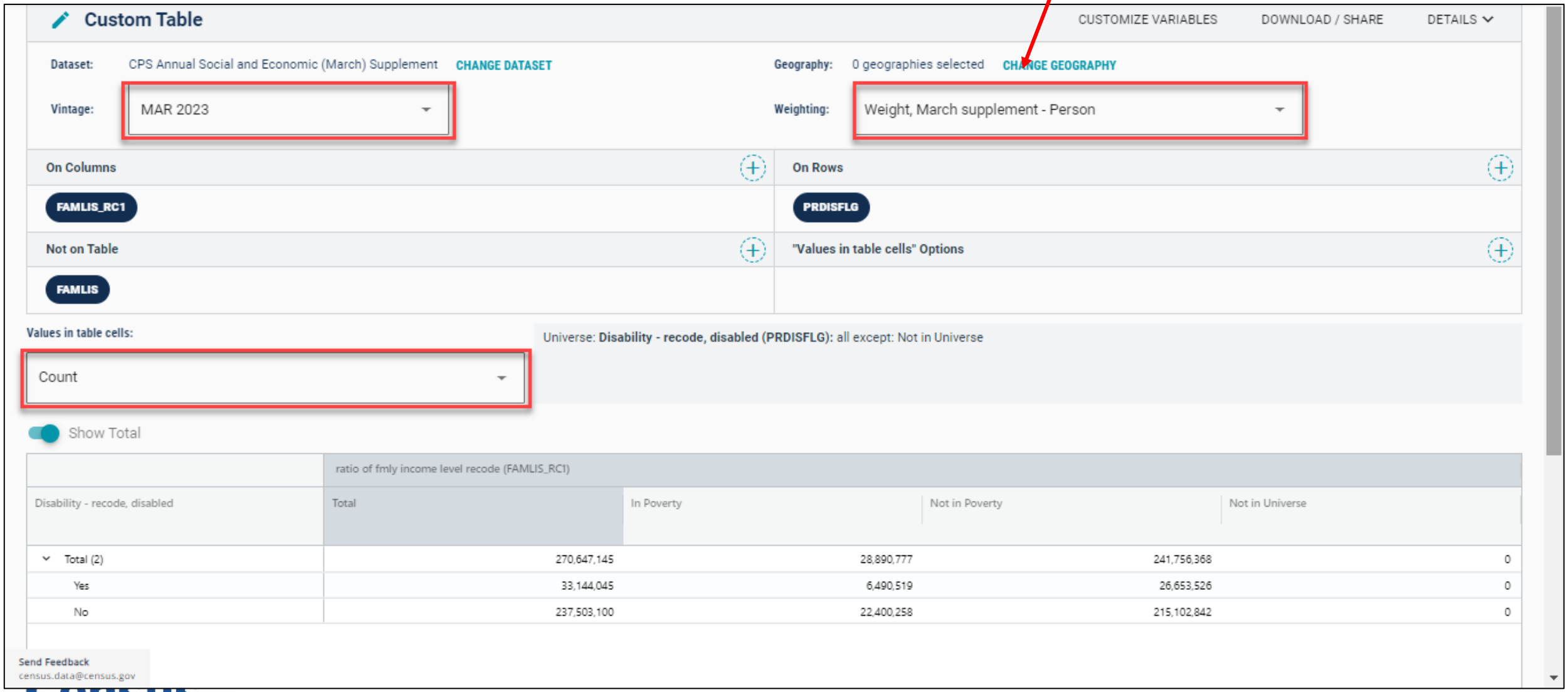


- Confirm Table Layout:
  - Confirm table layout and click **View Table** in the lower right



View Table

Note that the site automatically chooses a weight for you. You do have the option to change the weight if you want.



Demo

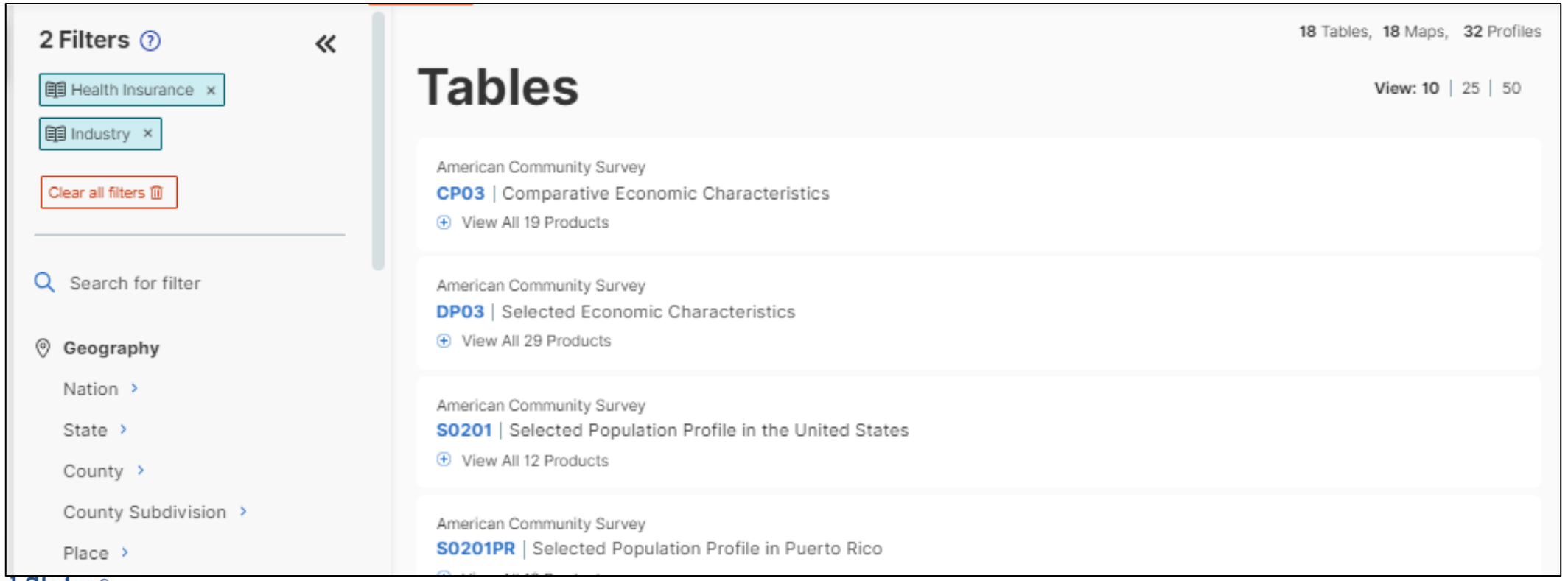
Example 2:

Health insurance coverage by industry for New Jersey

United States® Census Bureau

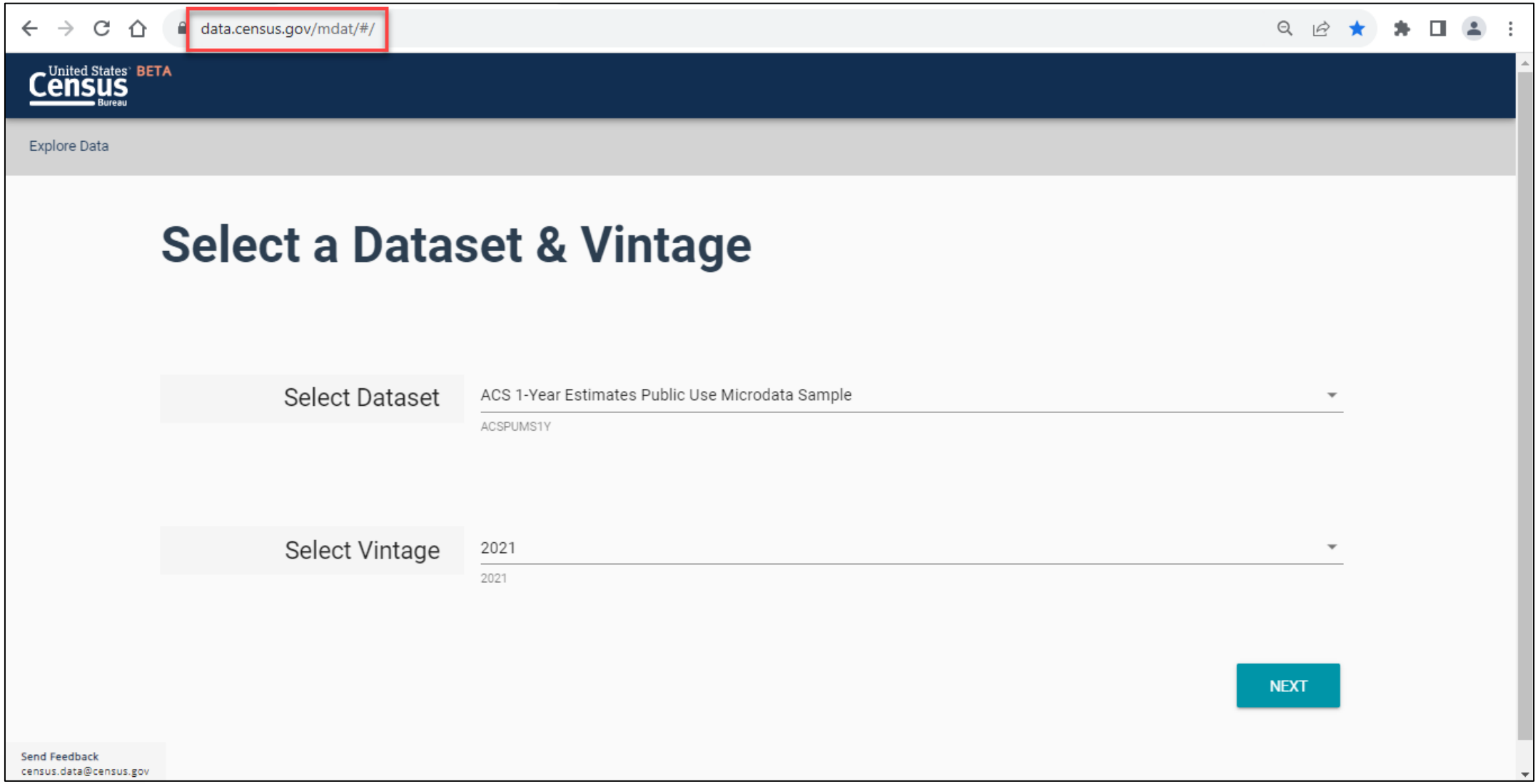
Problem: We need health insurance coverage crossed with specific industries for New Jersey, but none of the published ACS tables have this cross of characteristics available

Solution: Use Microdata Access (MDAT)



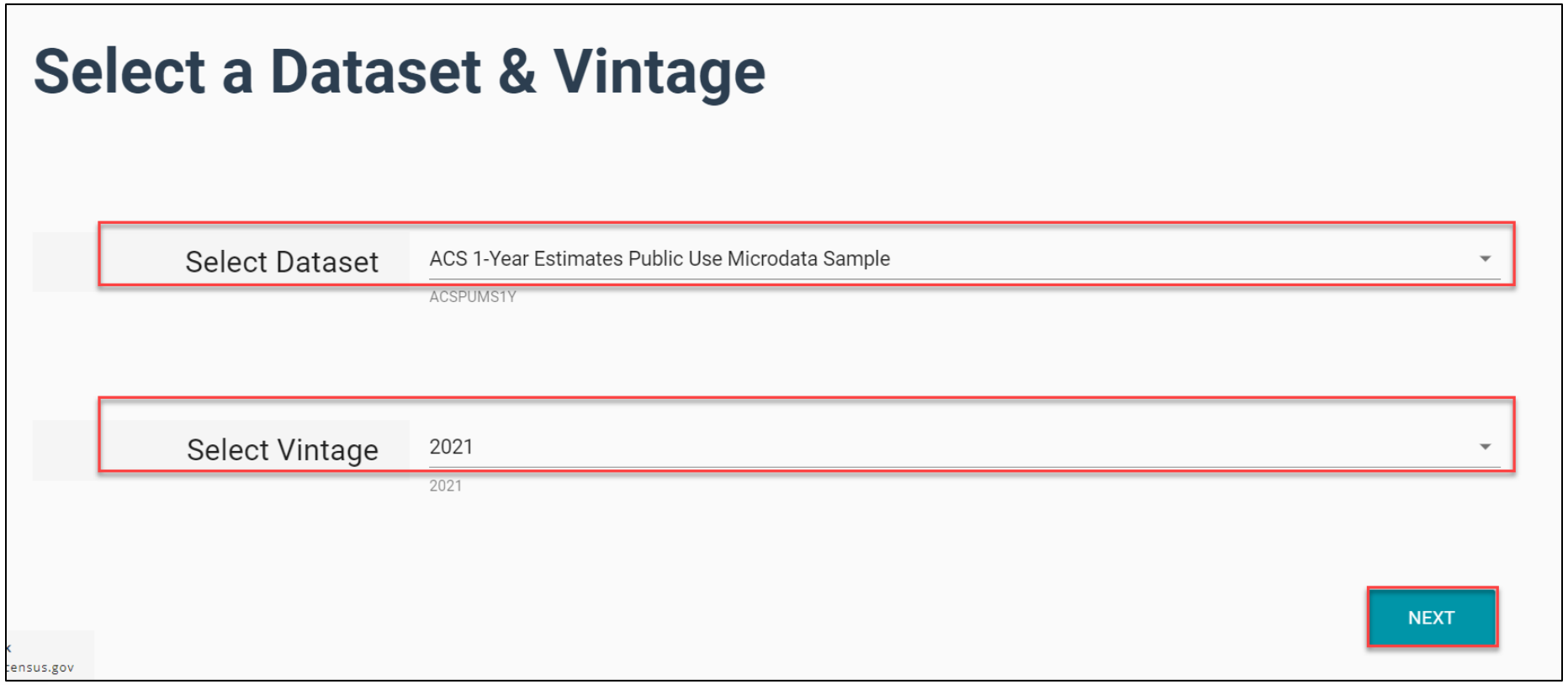
United States® Census Bureau

- Visit Microdata Access at data.census.gov/mdat



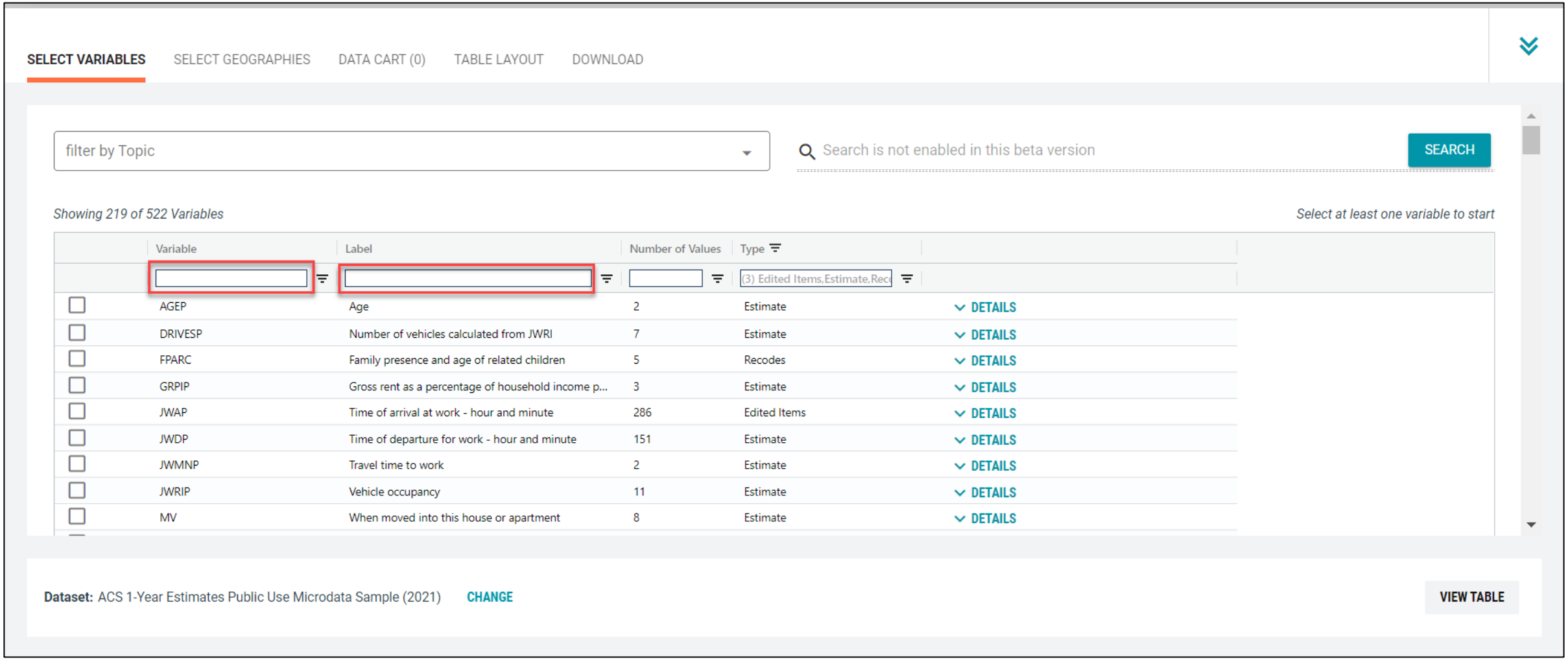
data.census.gov/mdat

- Choose Dataset and Vintage:
  - Dataset – **ACS 1-Year Estimates – Public Use Microdata Sample**
  - Vintage – **2021**
  - Click **Next** in the lower right

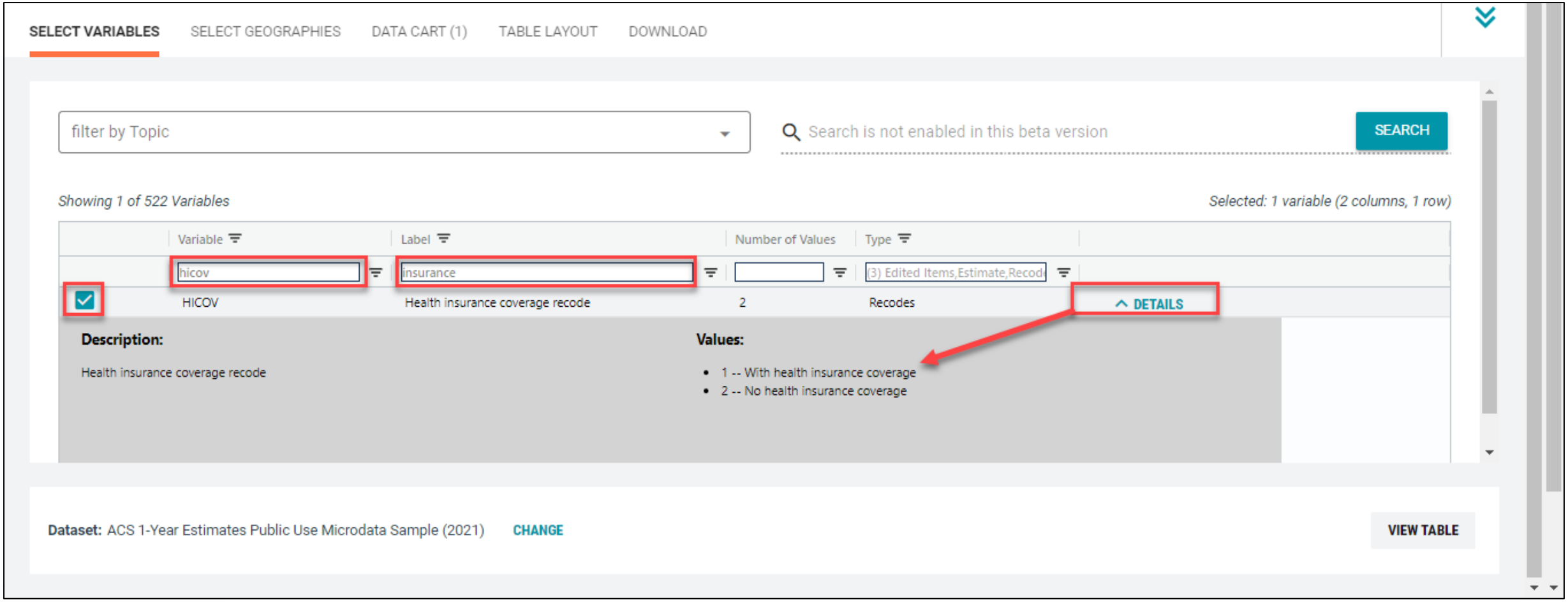


United States® Census Bureau

- **Search for Variables**: Use the search box below “Variable” or “Label” to find your variables of interest

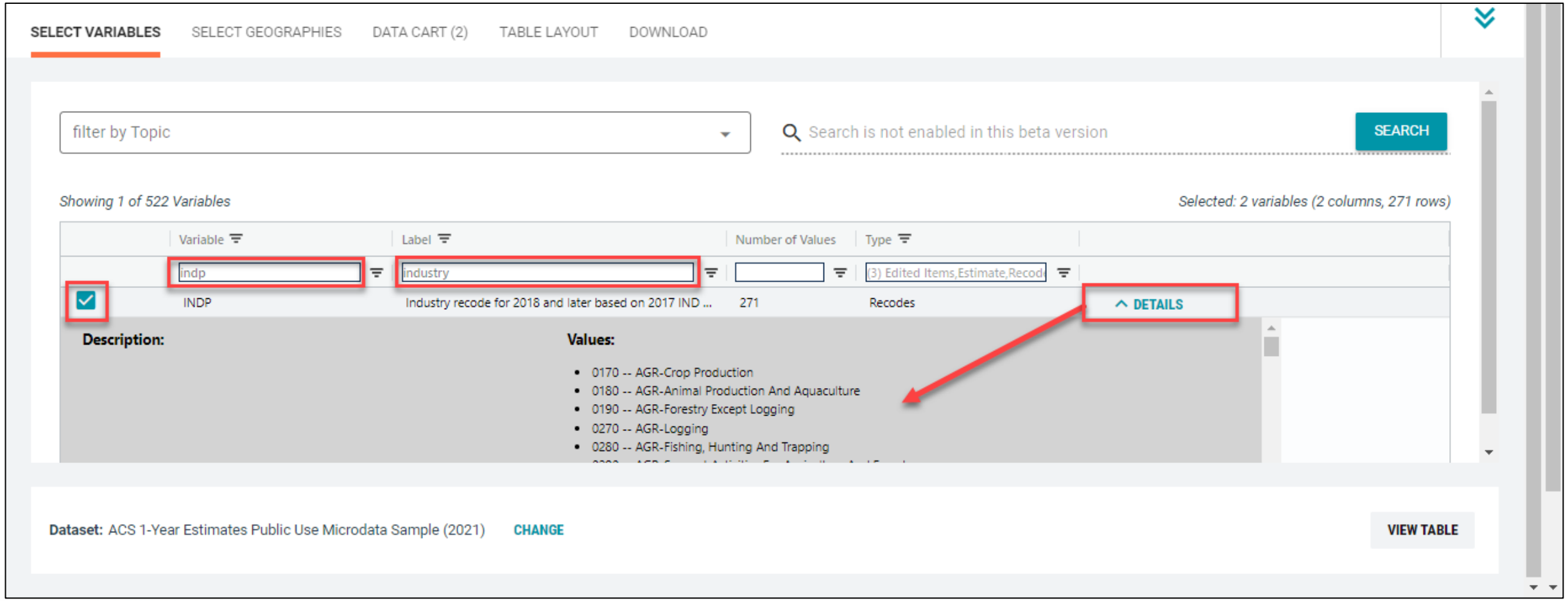


- **Select variable for Health Insurance Coverage Status**:
  - Type “HICOV” in the Variable search box or type “insurance” in the label search box
  - Check the box to the left of HICOV to add the variable to your data cart

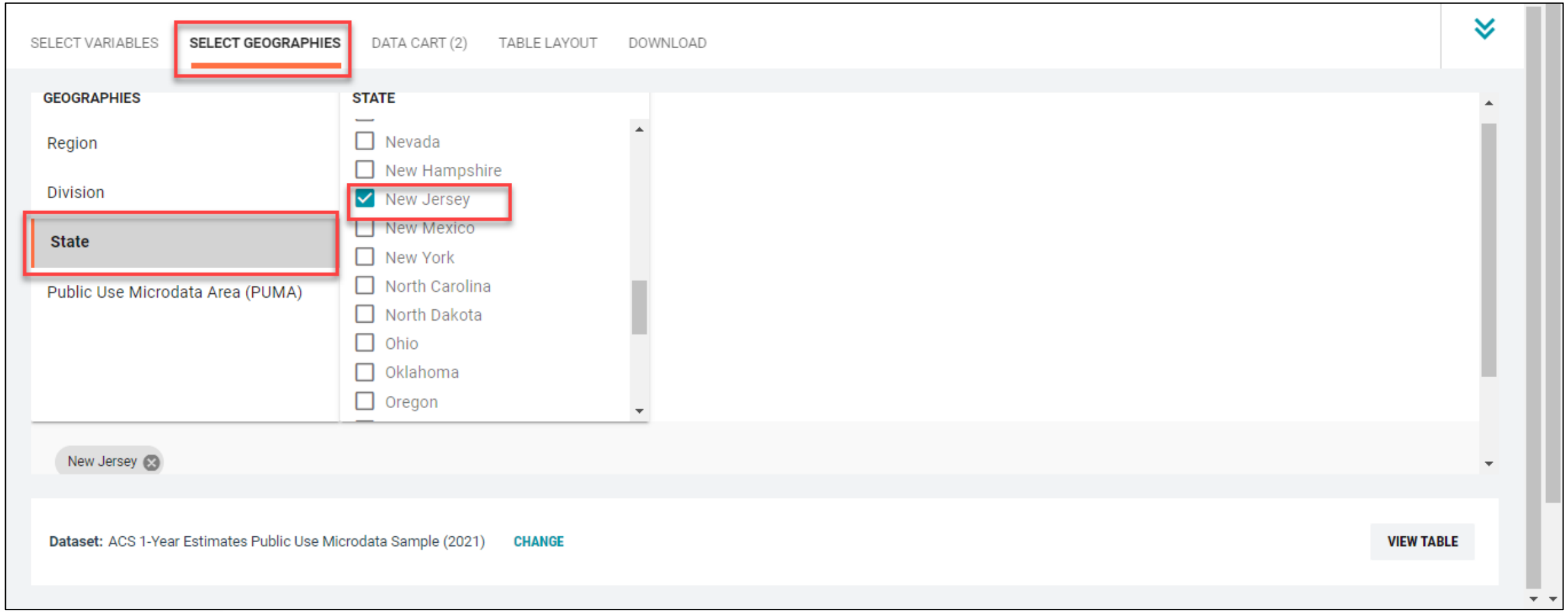


United States® Census Bureau

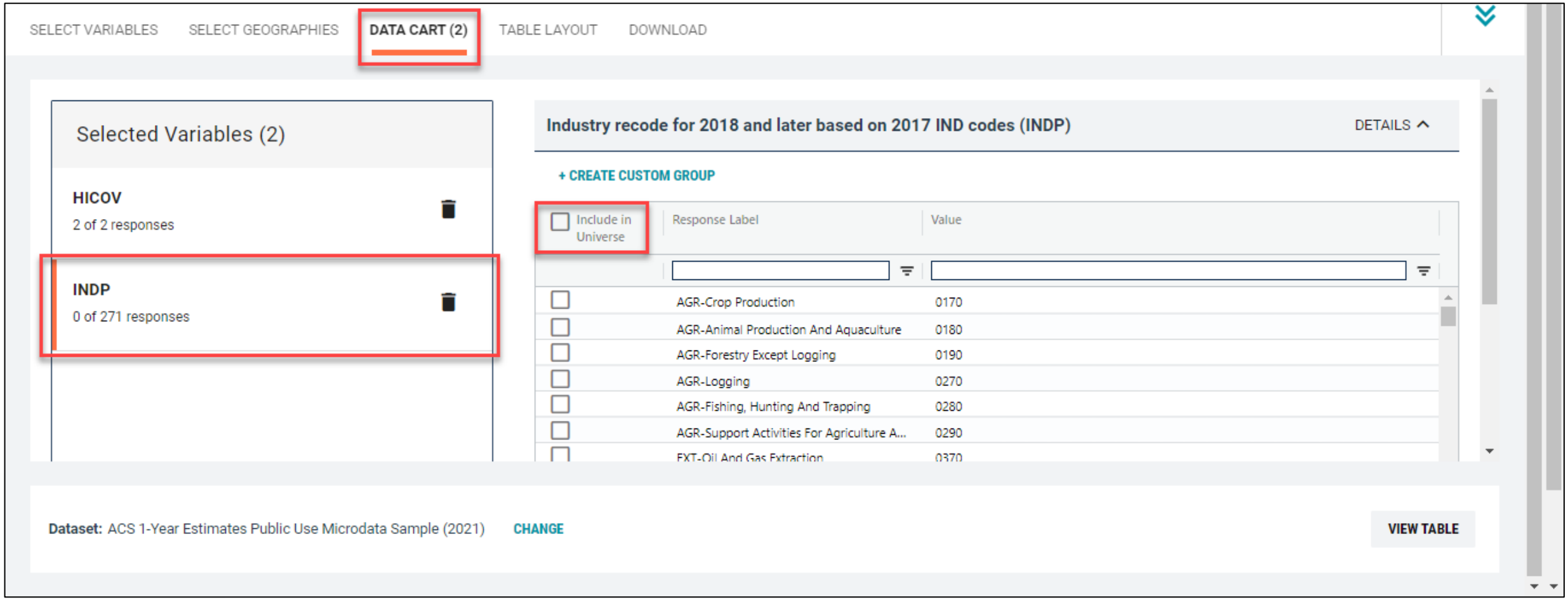
- **Select variable for Industry**:
  - Type “INDP” in the Variable search box or type “industry” in the label search box
  - Check the box to the left of INDP to add the variable to data cart



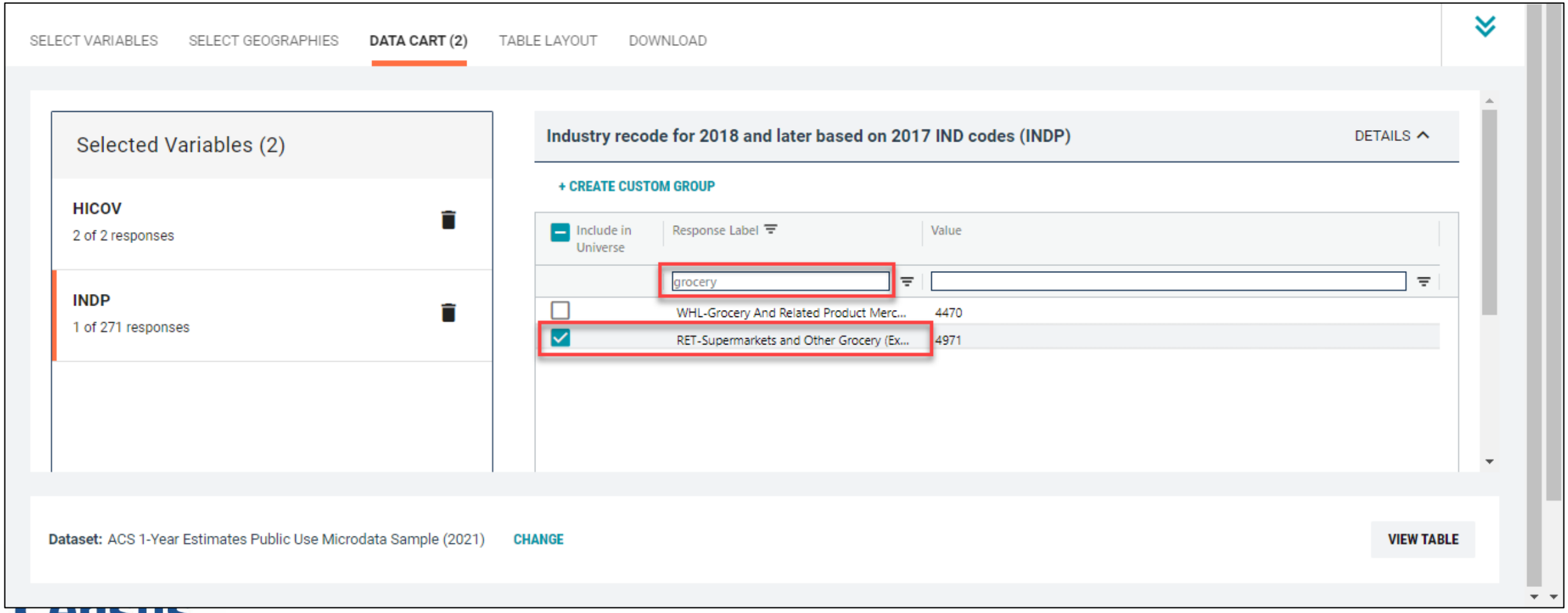
- Select geography:
  - Move to the **Select Geographies** tab
  - Click **State** and click on **New Jersey**



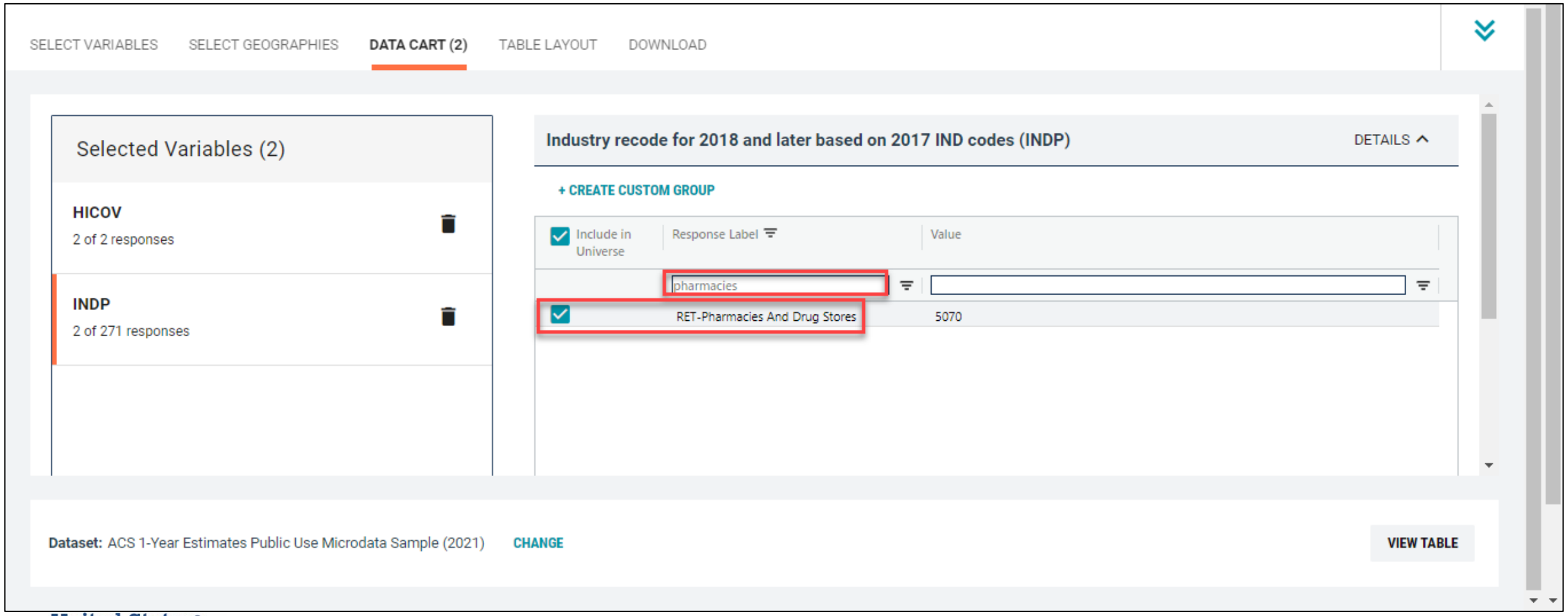
- Categorize your variable:
  - Move to the **Data Cart** tab
  - Click the **INDP** variable on the left
  - We want data specifically for grocery stores and pharmacies/drug stores.
  - Uncheck the box next to Include in Universe



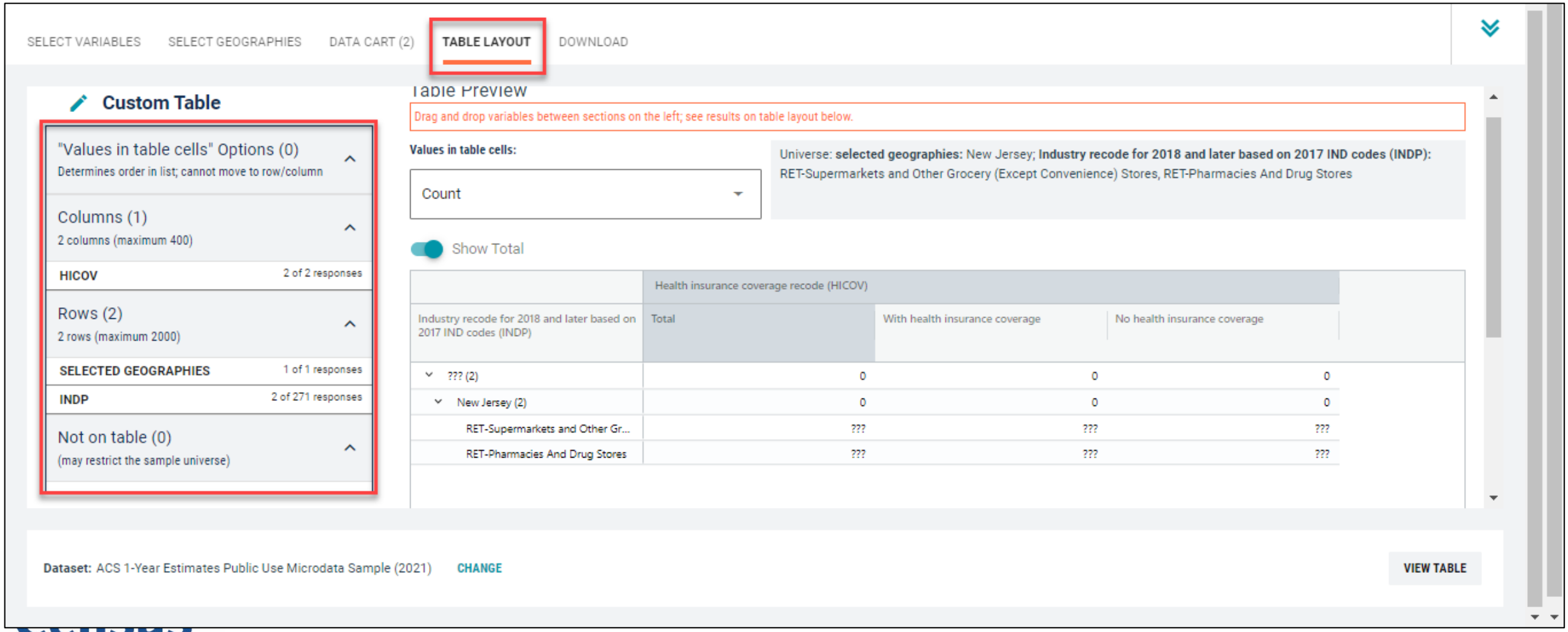
- Categorize your variable:
  - Click into the box for **Response Label** and enter ‘grocery’
  - Check the box next to the response category of ‘**RET-Supermarkets and Other Grocery (Except Convenience) Stores**’



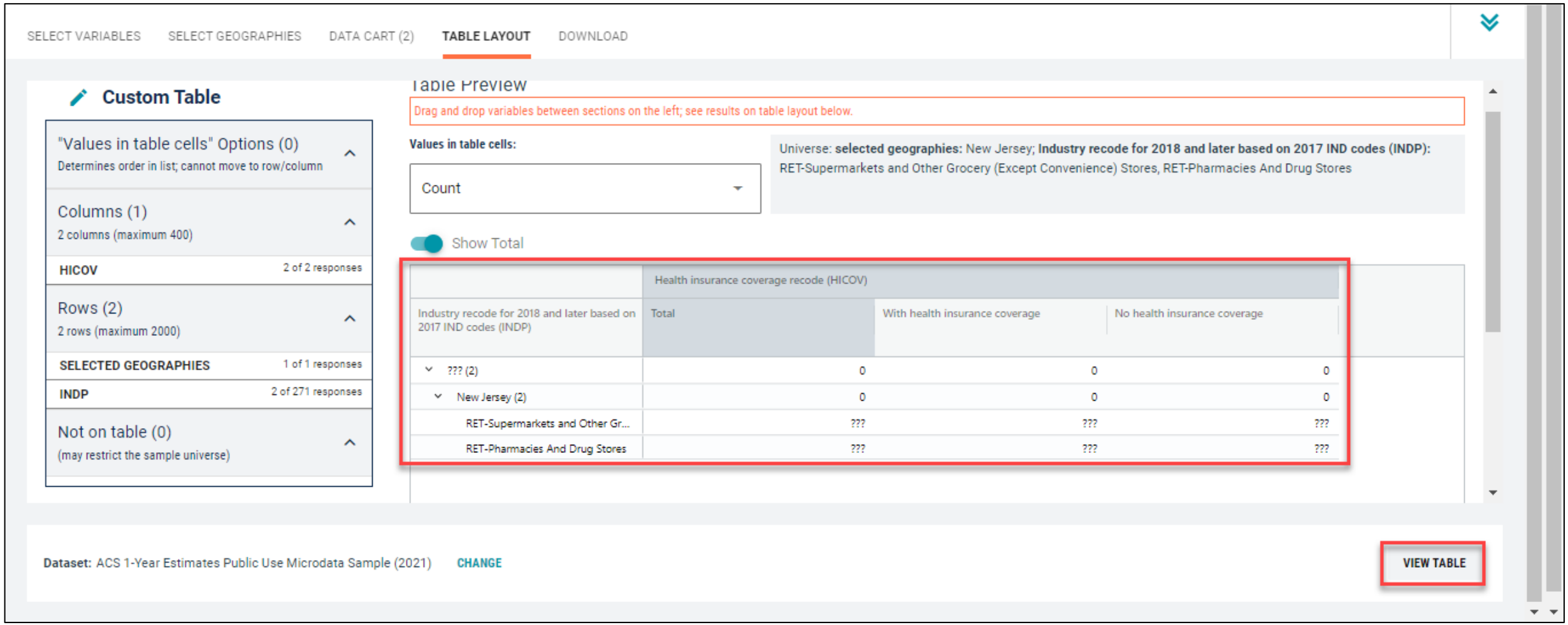
- **Categorize your variable**:
  - Delete ‘grocery’ from the **Response Label** box and enter ‘pharmacies’
  - Check the box next to the response category of ‘**Pharmacies And Drug Stores**’



- View variable placement in the default table layout:
  - Move to the **Table Layout** tab
  - **Columns/Rows – Variables will be shown in the table.** By default, the table is providing the count of people with health insurance coverage status in the columns and the industries in the rows.

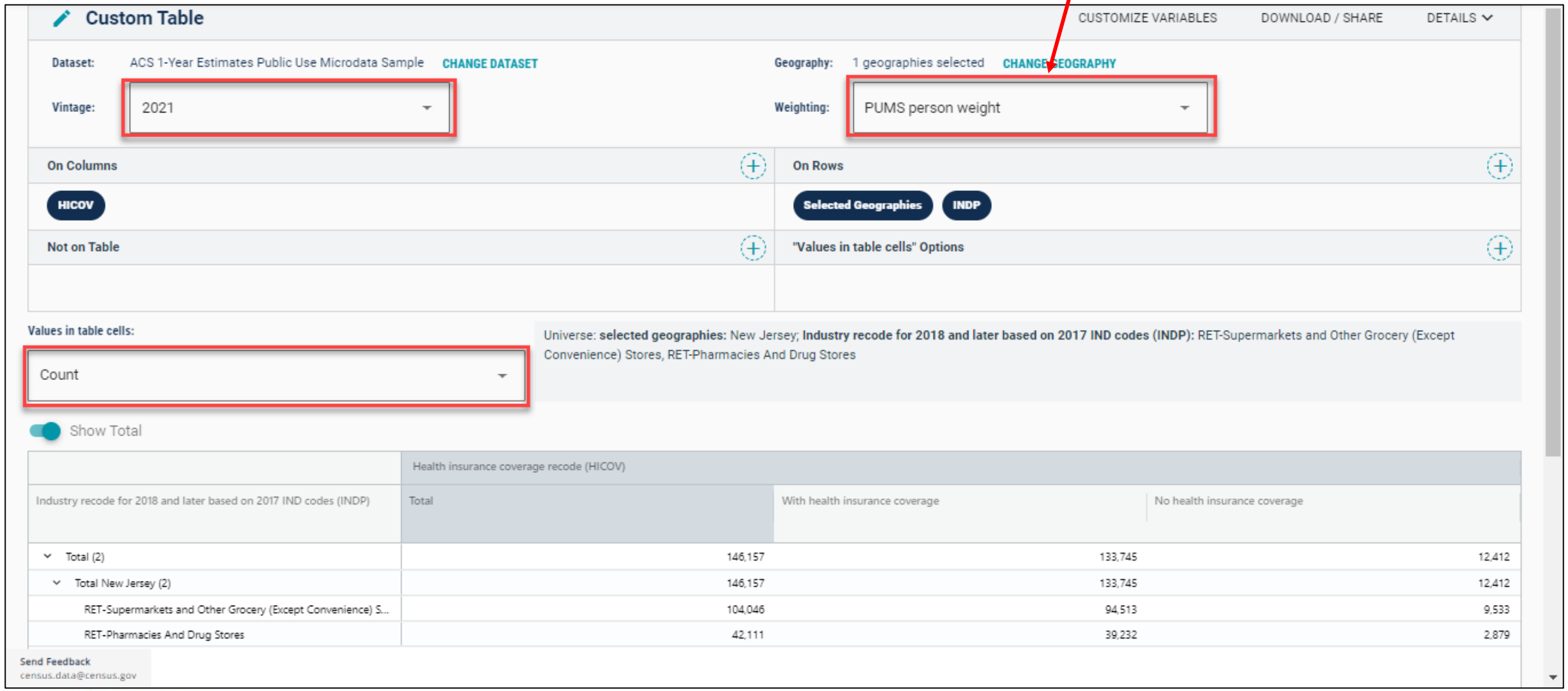


- Confirm Table Layout:
  - Confirm table layout and click **View Table** in the lower right

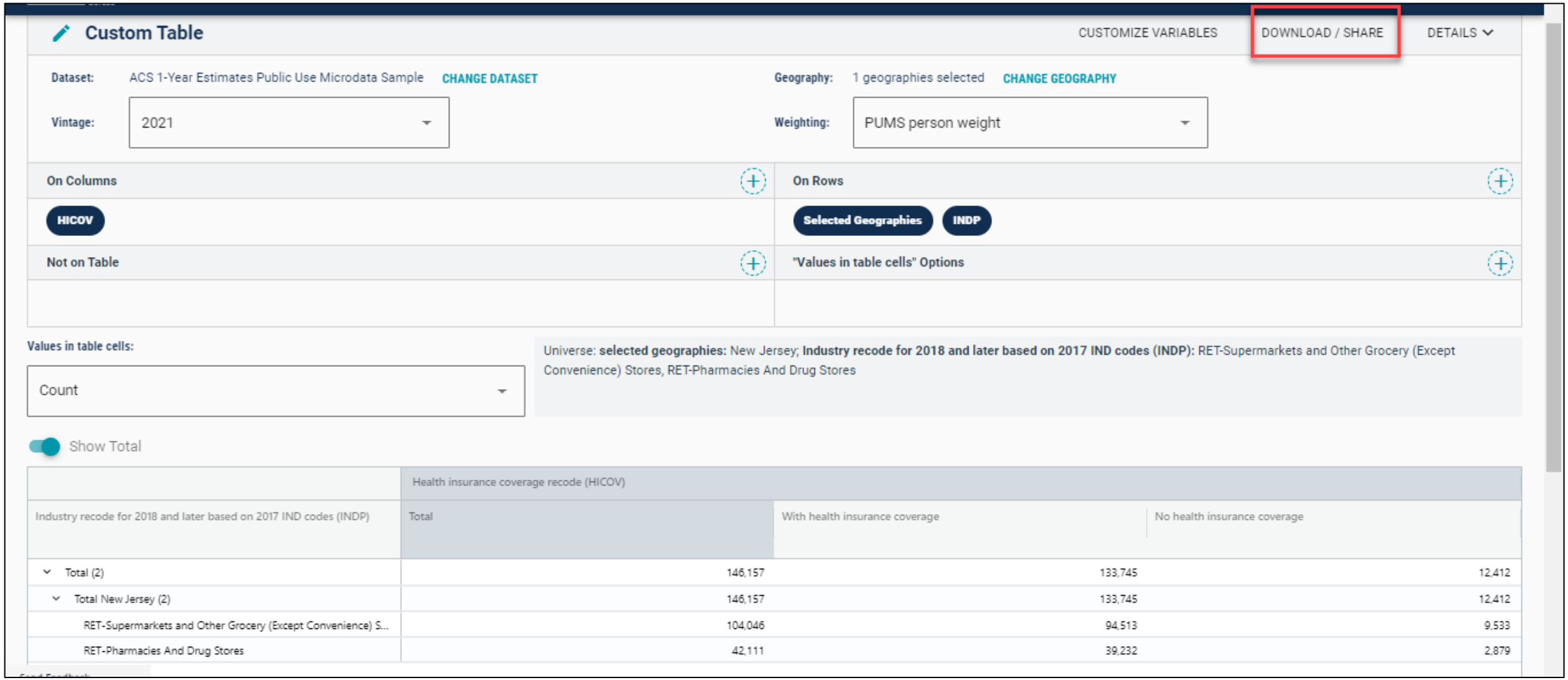


View Table

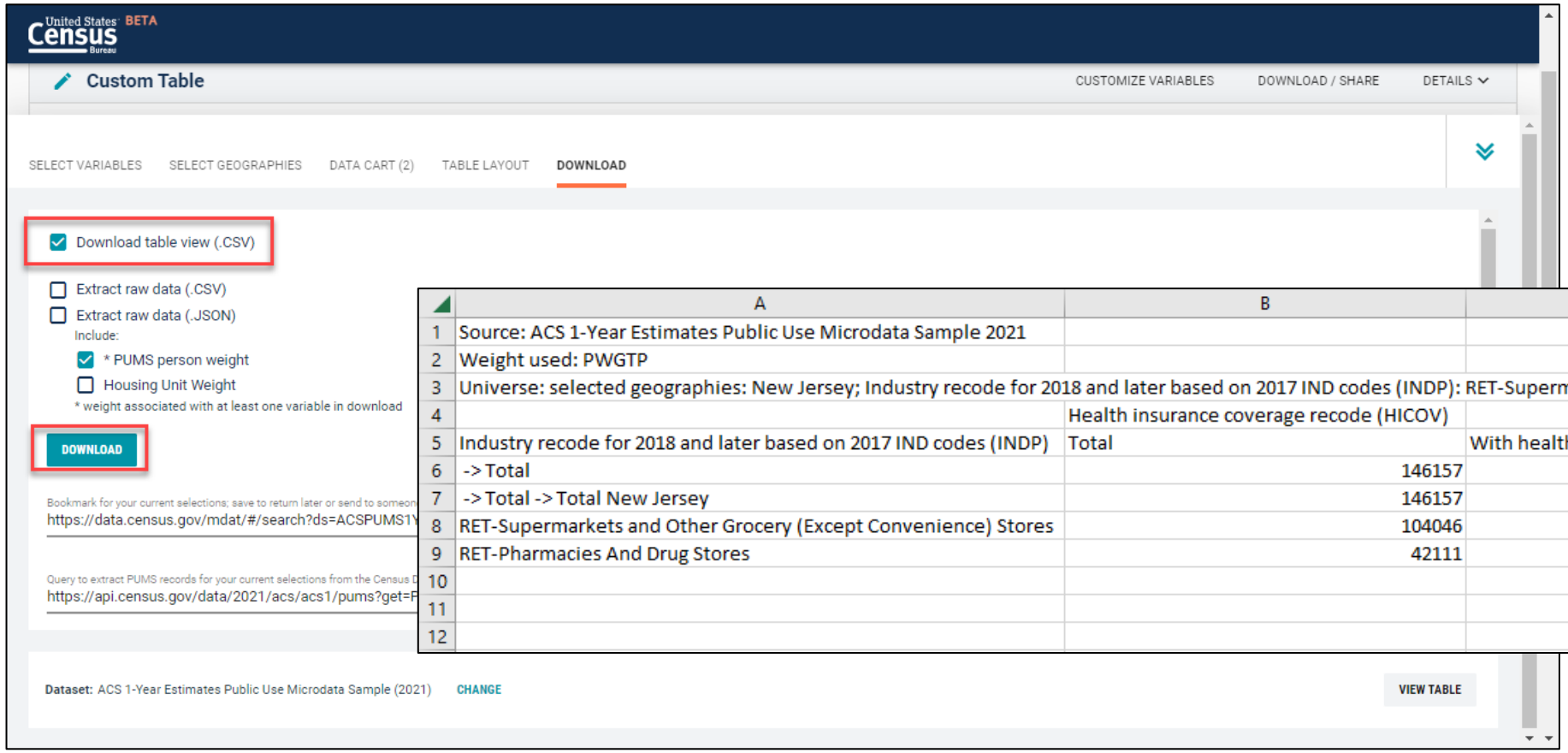
Note that the site automatically chooses a weight for you. You do have the option to change the weight if you want.



- Download:
  - Click **Download/Share** at the top of the table



- Download:
  - Select **Download table view (.CSV),** then click **DOWNLOAD**
  - Click on **export.csv** to view your downloaded table



	A	B	C	D	E
1	Source: ACS 1-Year Estimates Public Use Microdata Sample 2021				
2	Weight used: PWGTP				
3	Universe: selected geographies: New Jersey; Industry recode for 2018 and later based on 2017 IND codes (INDP): RET-Supermarkets and Other Grocery (Except Convenience) Stores, RET-				
4		Health insurance coverage recode (HICOV)			
5	Industry recode for 2018 and later based on 2017 IND codes (INDP)	Total	With health insurance coverage	No health insurance coverage	
6	-> Total	146157	133745	12412	
7	-> Total -> Total New Jersey	146157	133745	12412	
8	RET-Supermarkets and Other Grocery (Except Convenience) Stores	104046	94513	9533	
9	RET-Pharmacies And Drug Stores	42111	39232	2879	
10					
11					
12					

Demo

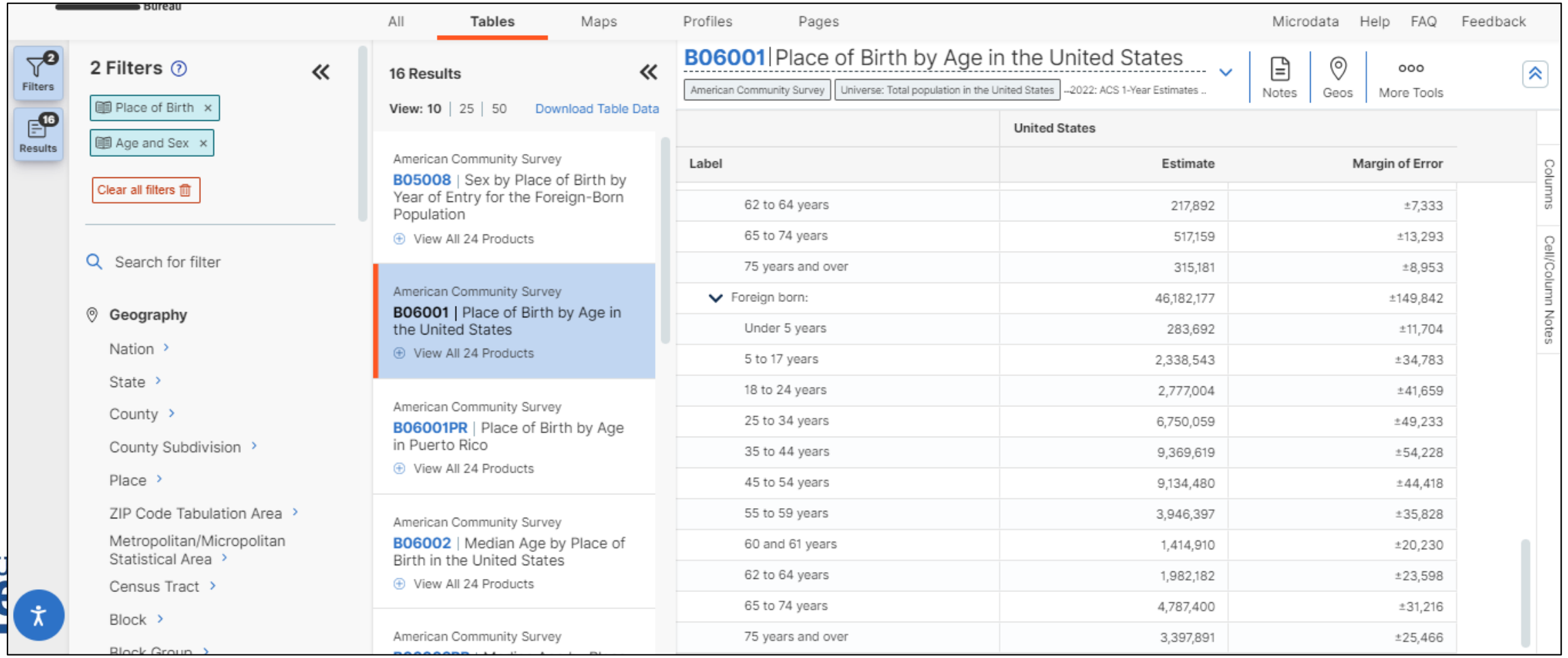
Example 3:

Place of birth by single year of age in New Jersey

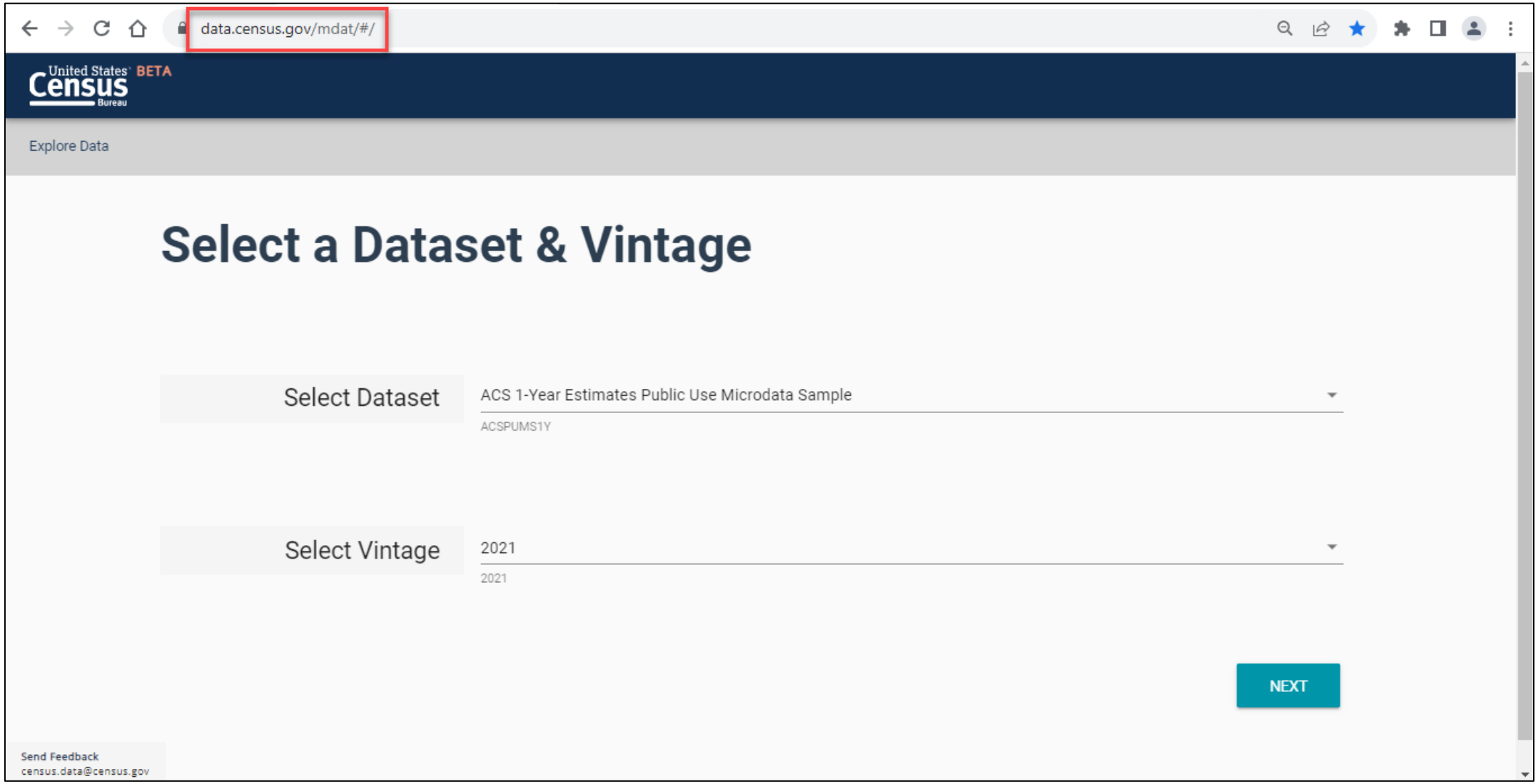
United States® Census Bureau

Problem: We need detailed place of birth for single years of age for New Jersey, but none of the published ACS tables have this cross of characteristics available for detailed places of birth and single years of age

Solution: Use Microdata Access (MDAT)



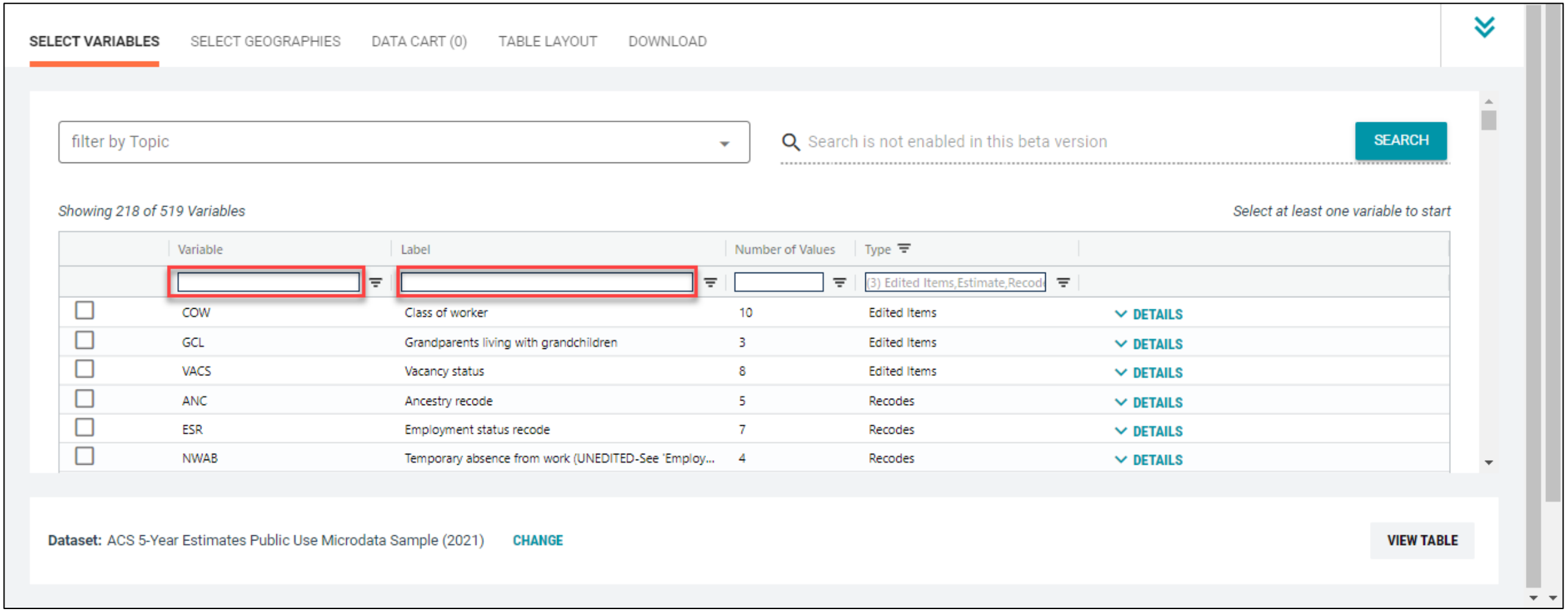
- Visit Microdata Access at data.census.gov/mdat



data.census.gov/mdat

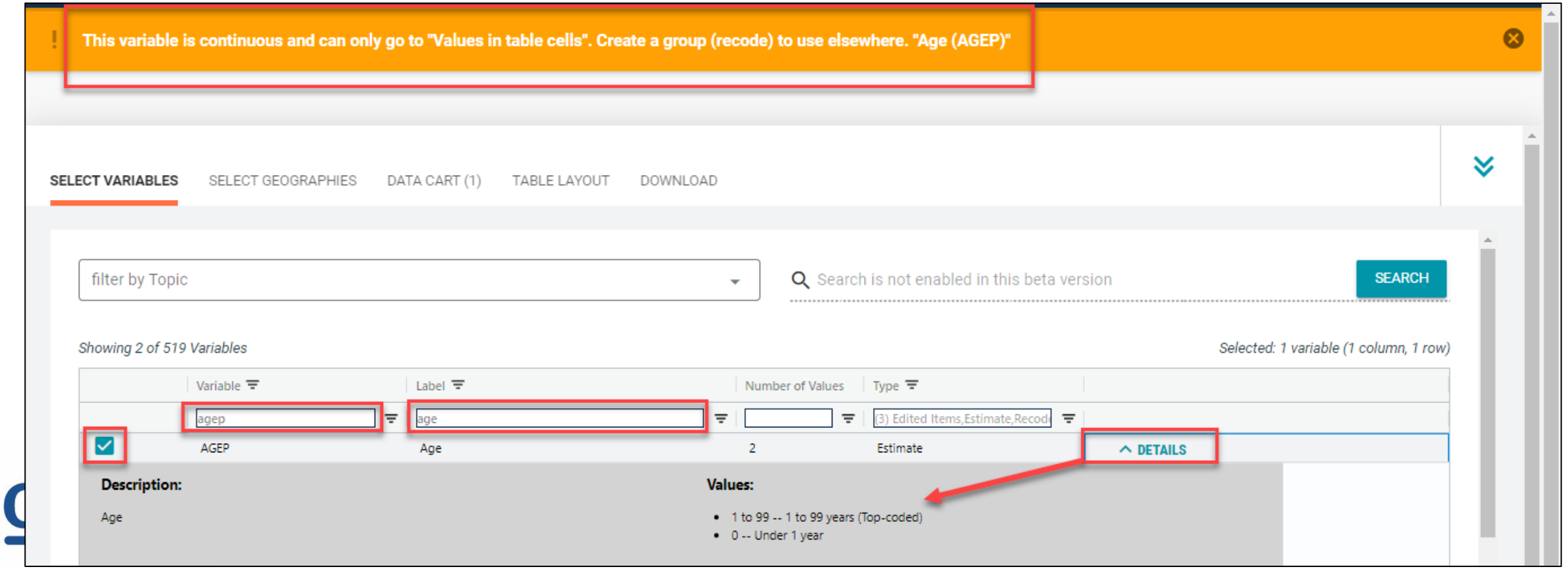
- Choose Dataset and Vintage:
  - Dataset – **ACS 5-Year Estimates – Public Use Microdata Sample**
  - Vintage – **2021**
  - Click **Next** in the lower right

- **Search for Variables**: Use the search box below “Variable” or “Label” to find your variables of interest

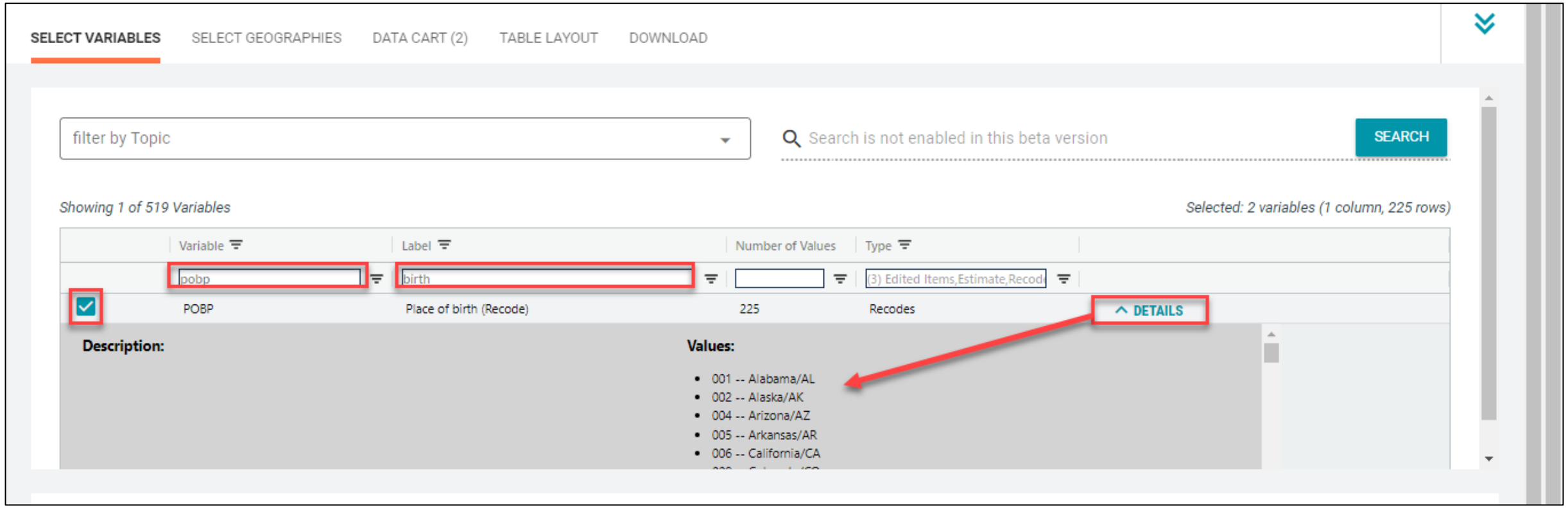


United States® Census Bureau

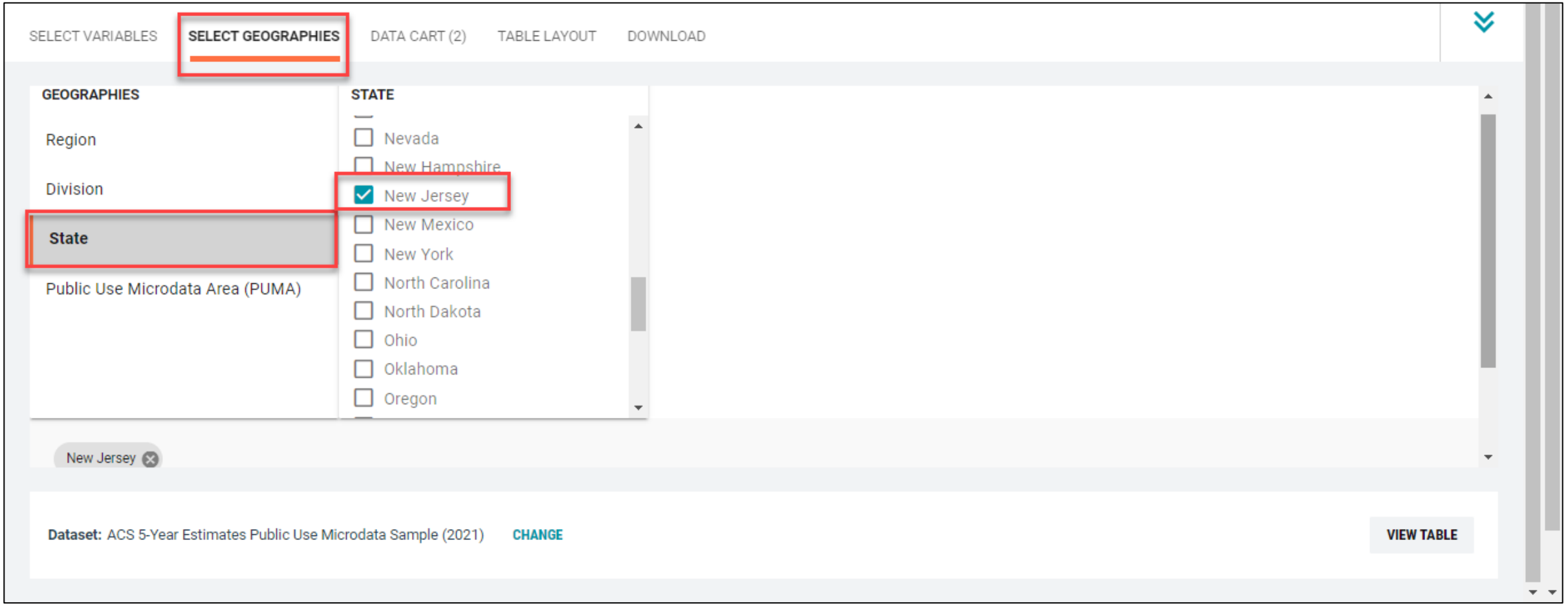
- Select variable for Age:
  - Type “AGEP” in the Variable search box or type “Age” in the label search box
  - Check the box to the left of AGEP to add the variable to your data cart
  - Notice the message at the top of the screen saying you will need to create your own categories (or recodes) for this variable if you want it shown in the table. (You will do this action in the Data Cart)



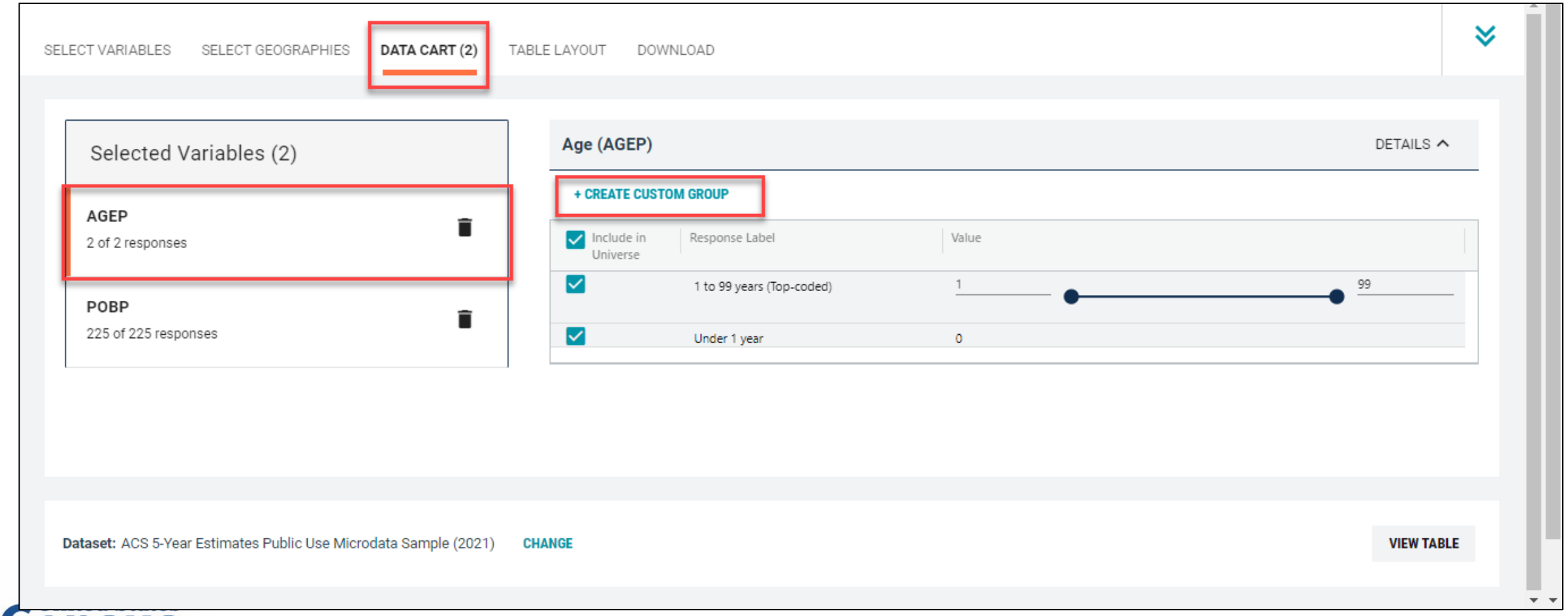
- **Select variable for the Place of Birth**:
  - Type “POBP” in the Variable search box or type “birth” in the label search box
  - Check the box to the left of POBP to add the variable to data cart



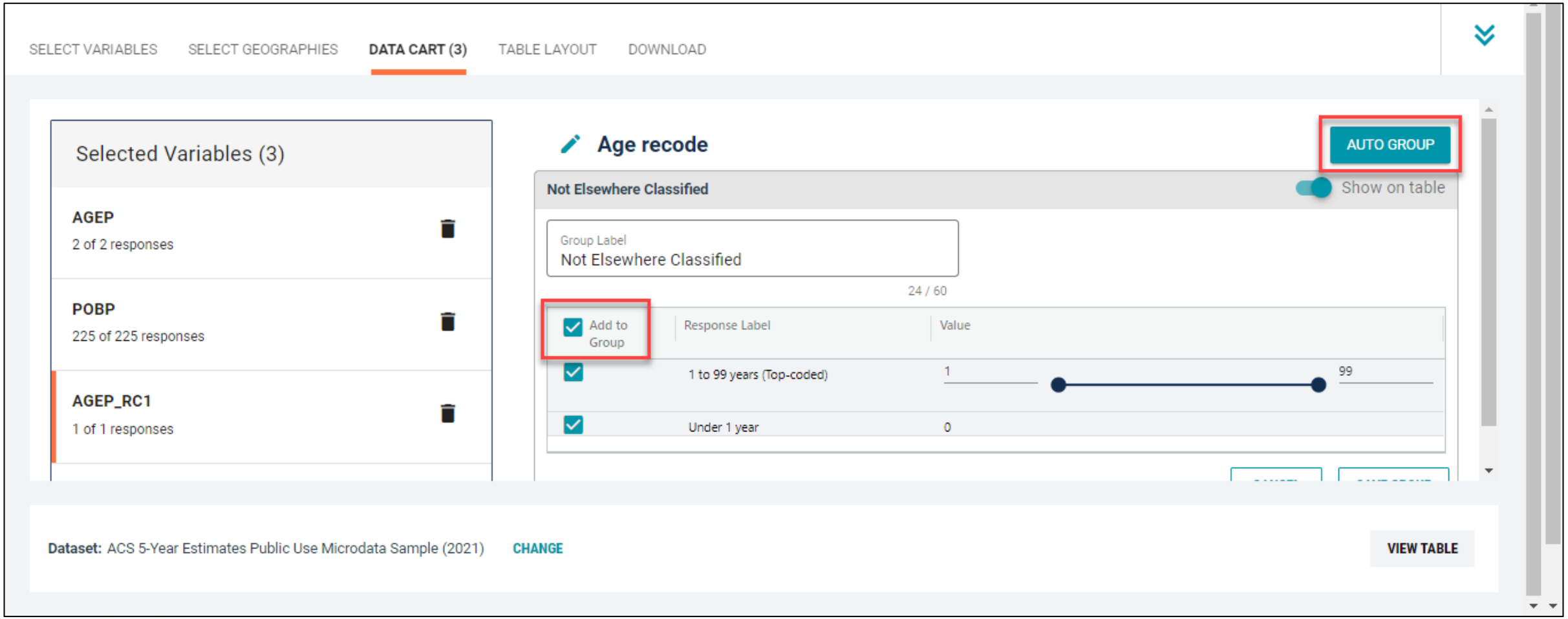
- Select geography:
  - Move to the **Select Geographies** tab
  - Click **State** and click on **New Jersey**



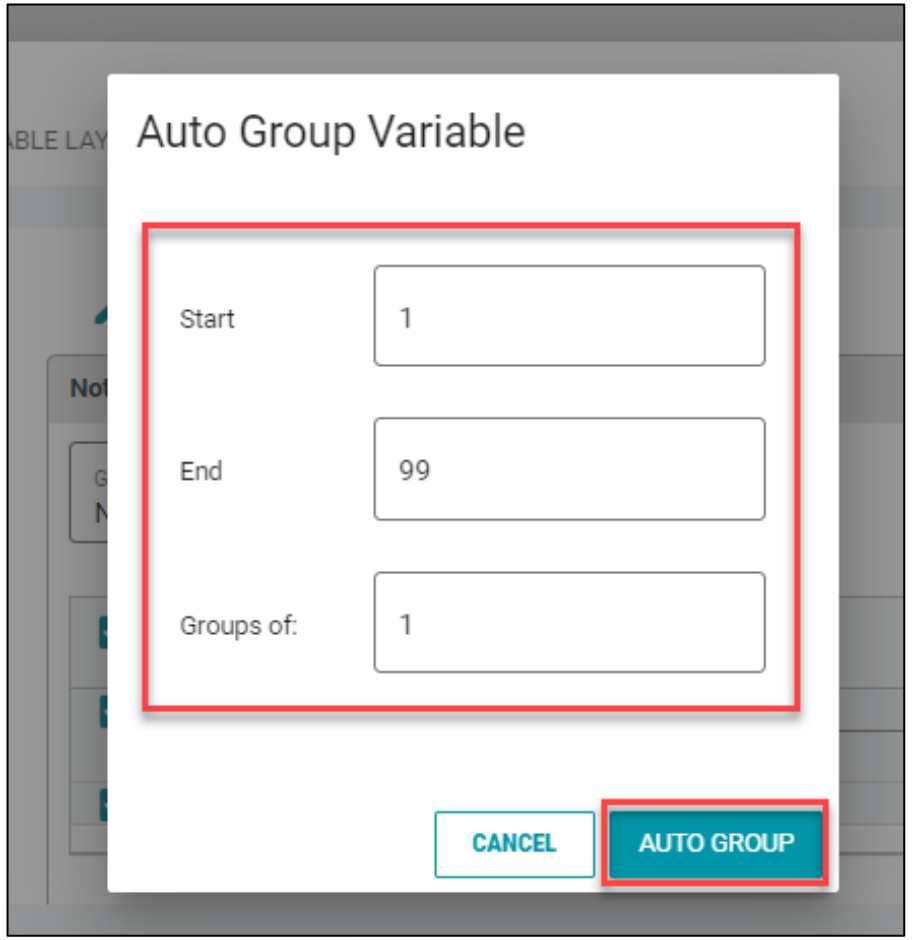
- **Categorize (recode) your variable**:
  - Move to the **Data Cart** tab
  - Click the **AGEP** variable on the left
  - Click **Create Custom Group** to begin specifying your age groups (e.g. single years of age)

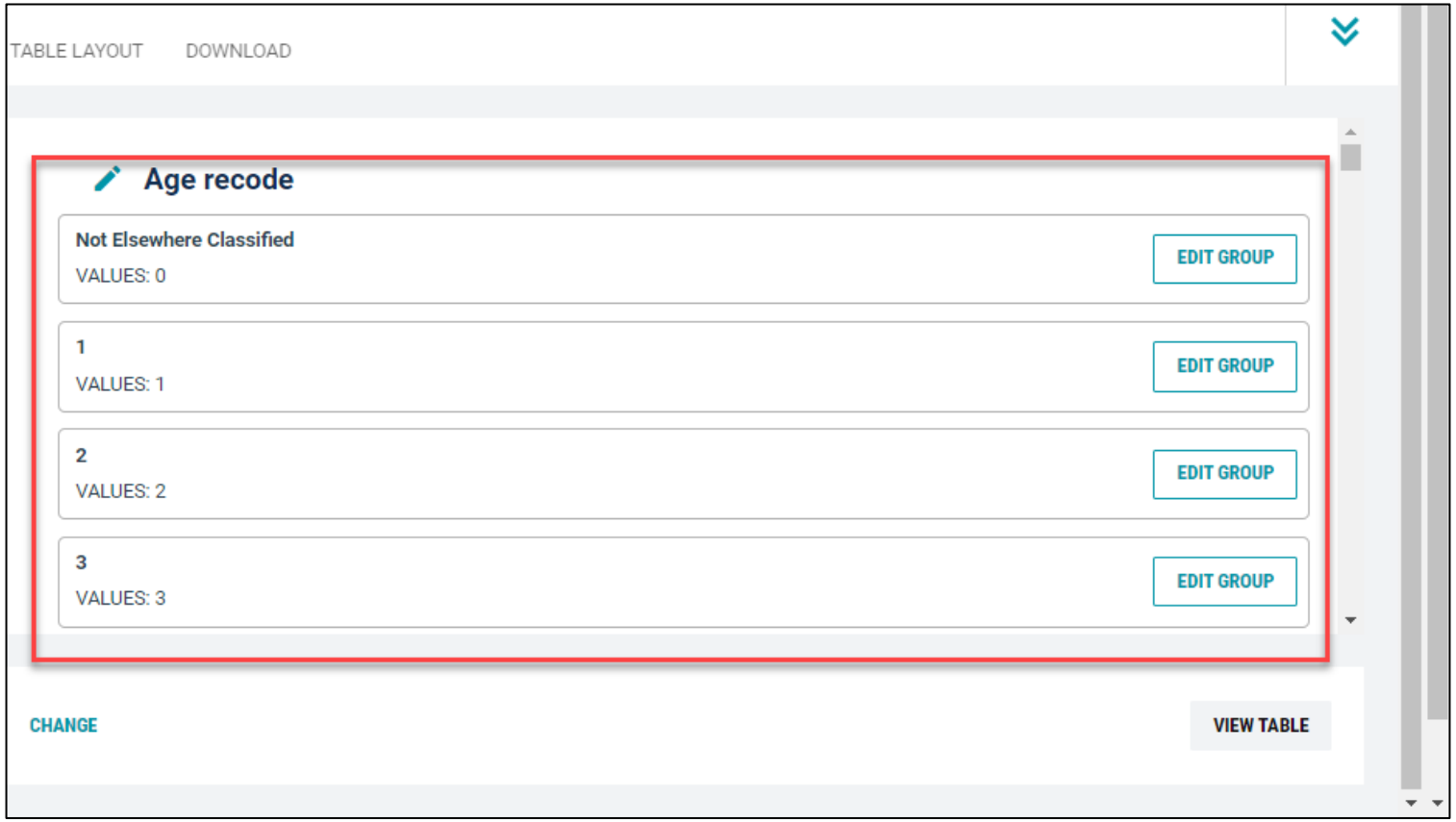


- Categorize (recode) your variable:
  - Check the box next to Add to Group to add both categories to the recode
  - Click on **Auto Group**

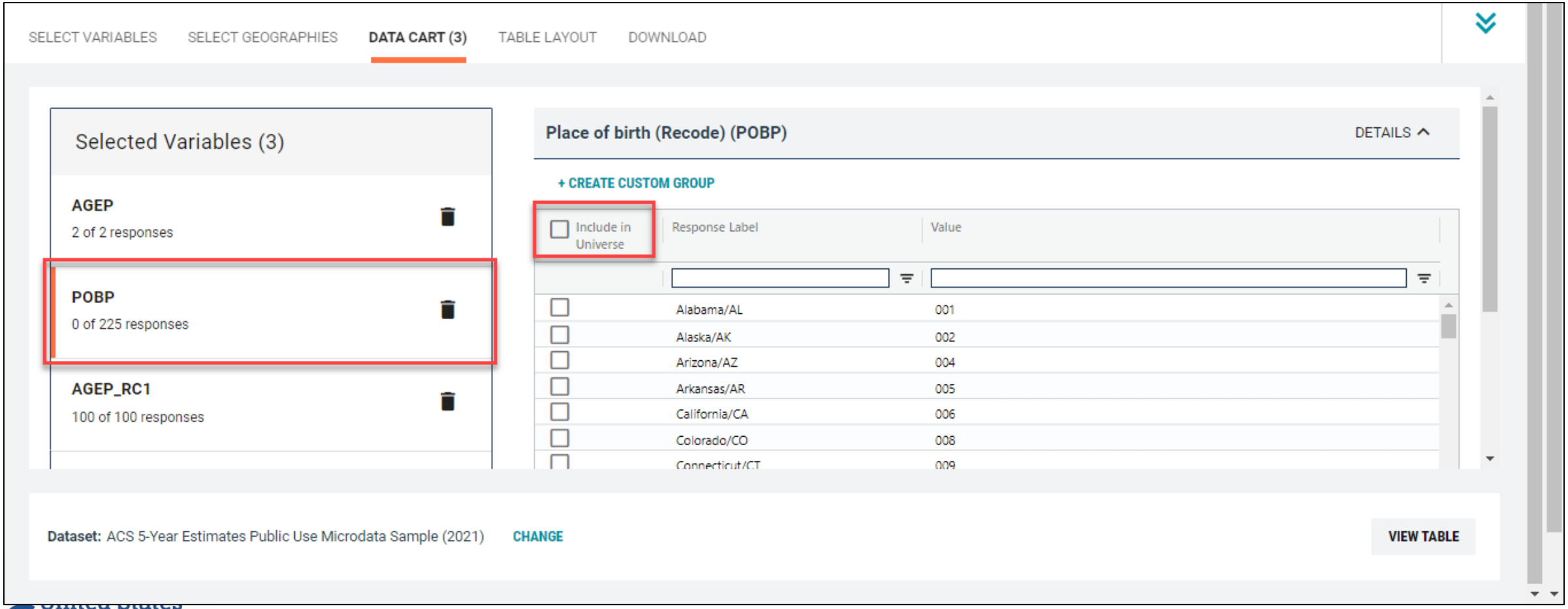


- **Categorize (recode) your variable**:
  - Confirm that the Start value is ‘1’, the End value is ‘99’, and the Groups of value is ‘1’
  - Click **Auto Group**. This will automatically create each year of age as its own group.

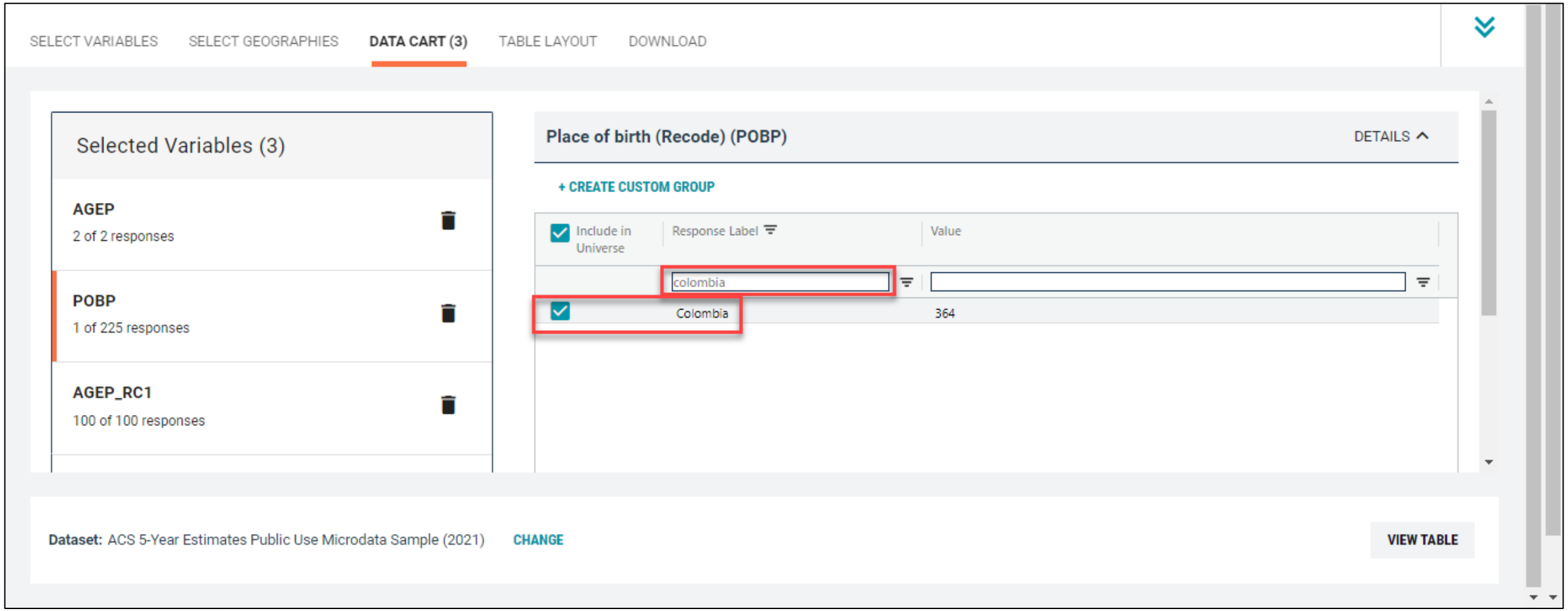




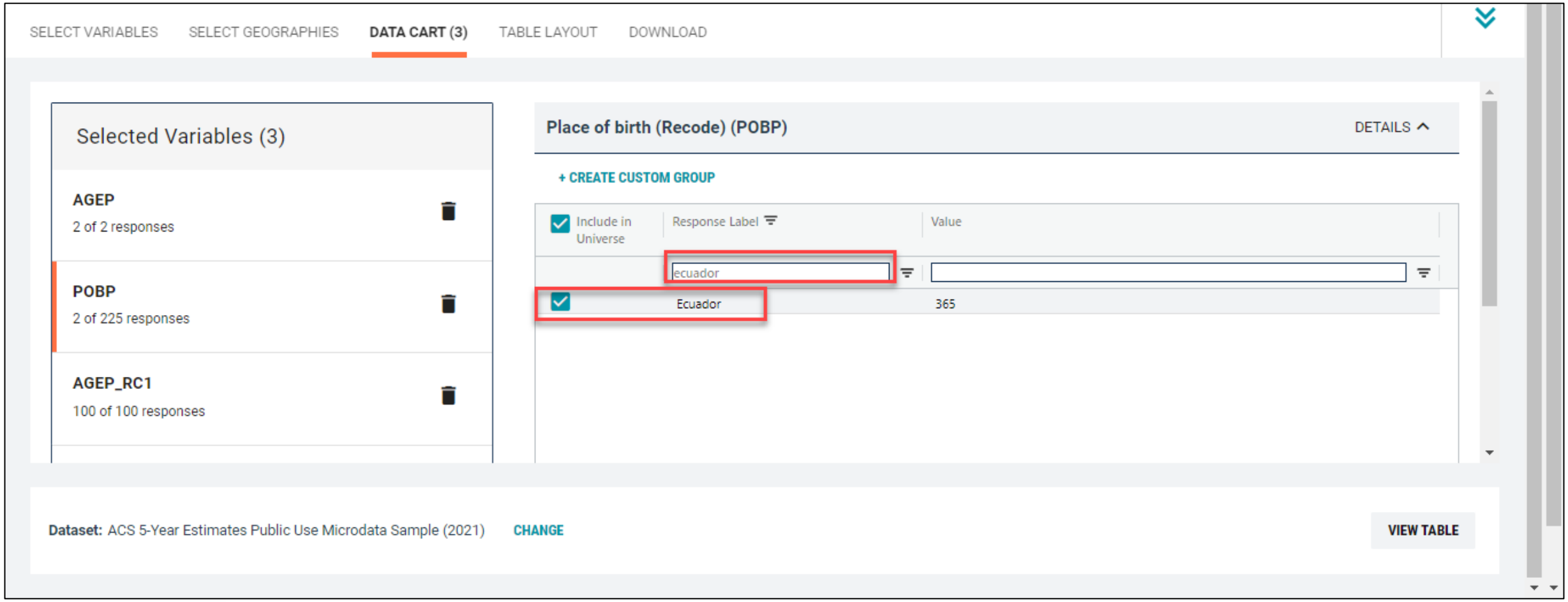
- **Categorize your variable**:
  - Click the **POBP** variable on the left
  - We want data specifically for people who were born in Colombia or Ecuador
  - Uncheck the box next to Include in Universe



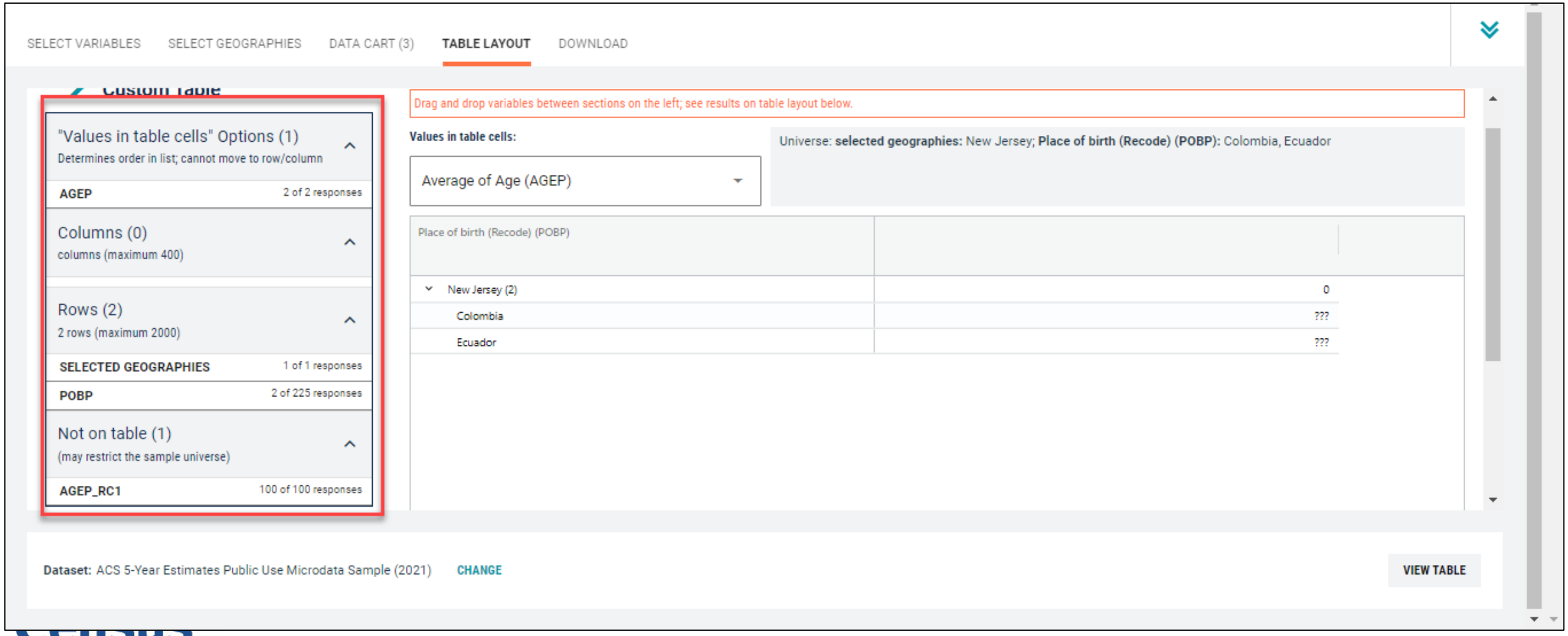
- Categorize your variable:
  - Click into the box for **Response Label** and enter ‘Colombia’
  - Check the box next to the response category of ‘**Colombia**’



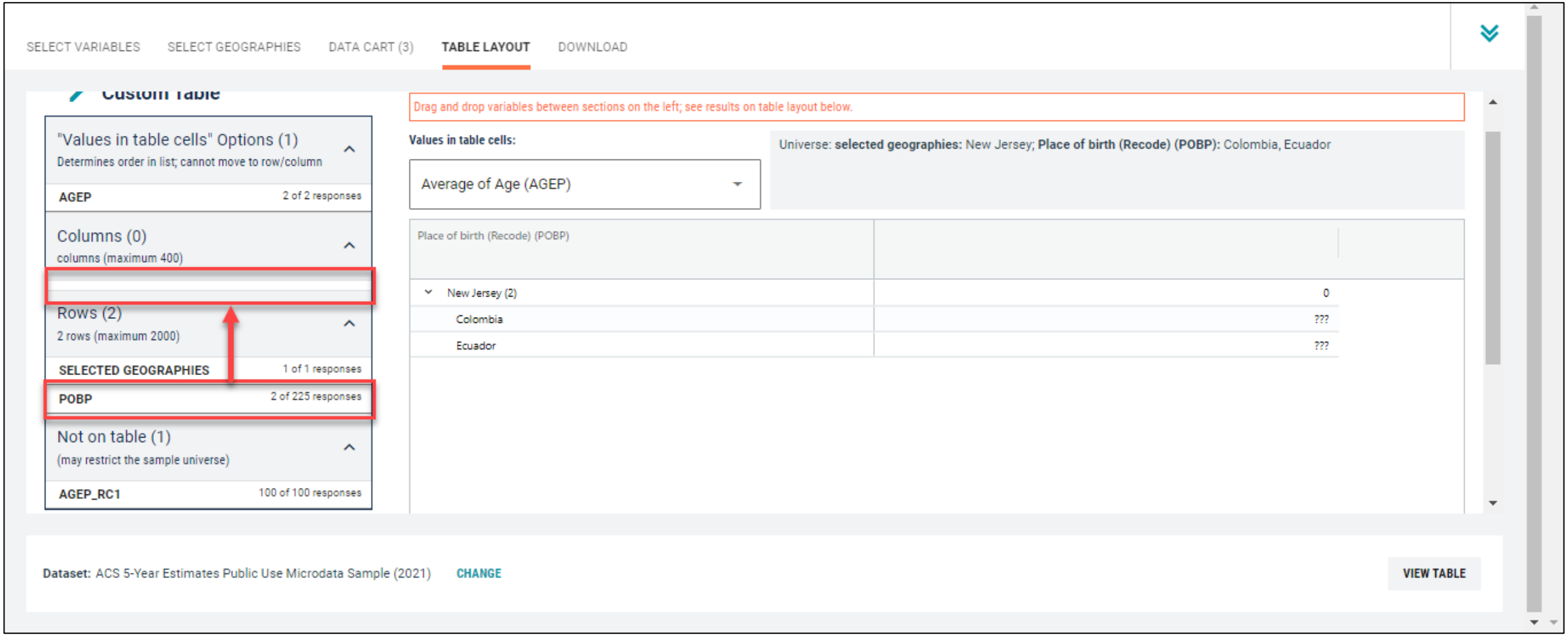
- Categorize your variable:
  - Delete ‘Colombia’ from the **Response Label** box and enter ‘Ecuador’
  - Check the box next to the response category of ‘**Ecuador**’



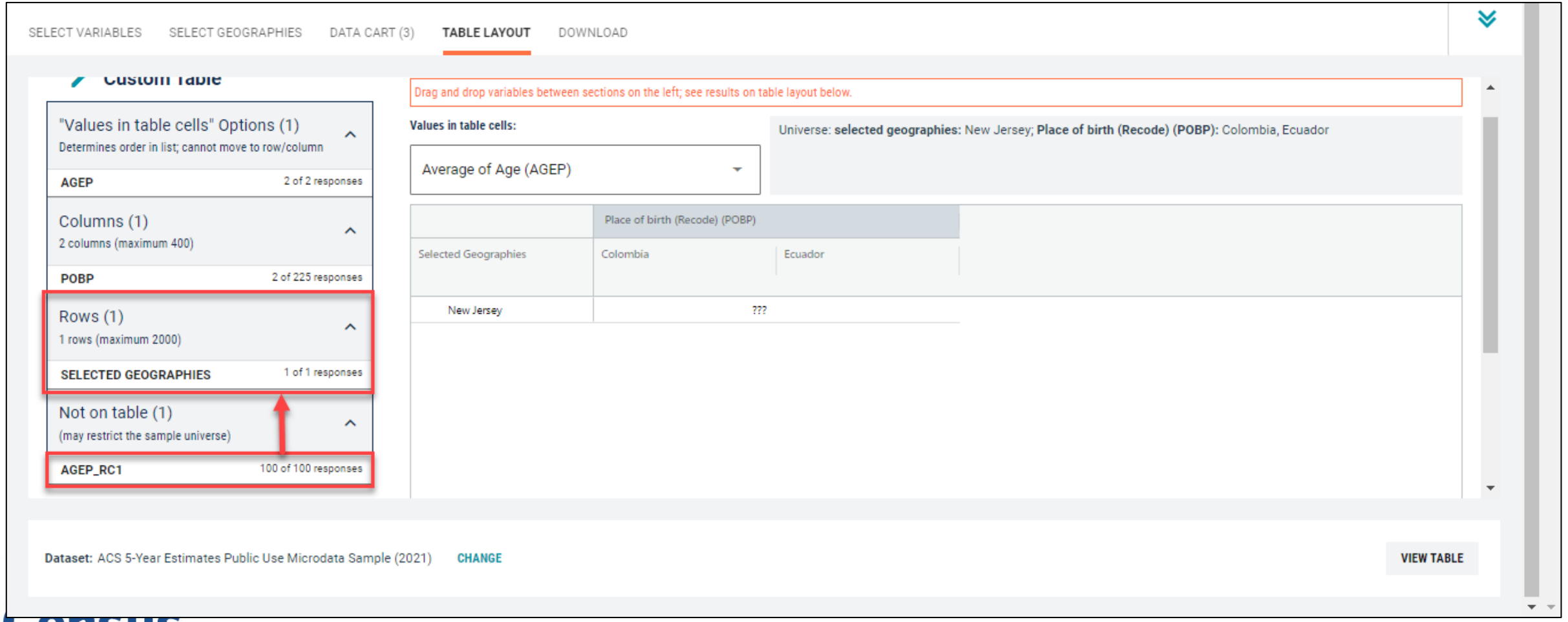
- View variable placement in the default table layout:
  - Move to the **Table Layout** tab
  - **Columns/Rows – Variables will be shown in the table.** By default, the table is providing the average age with place of birth in the rows.



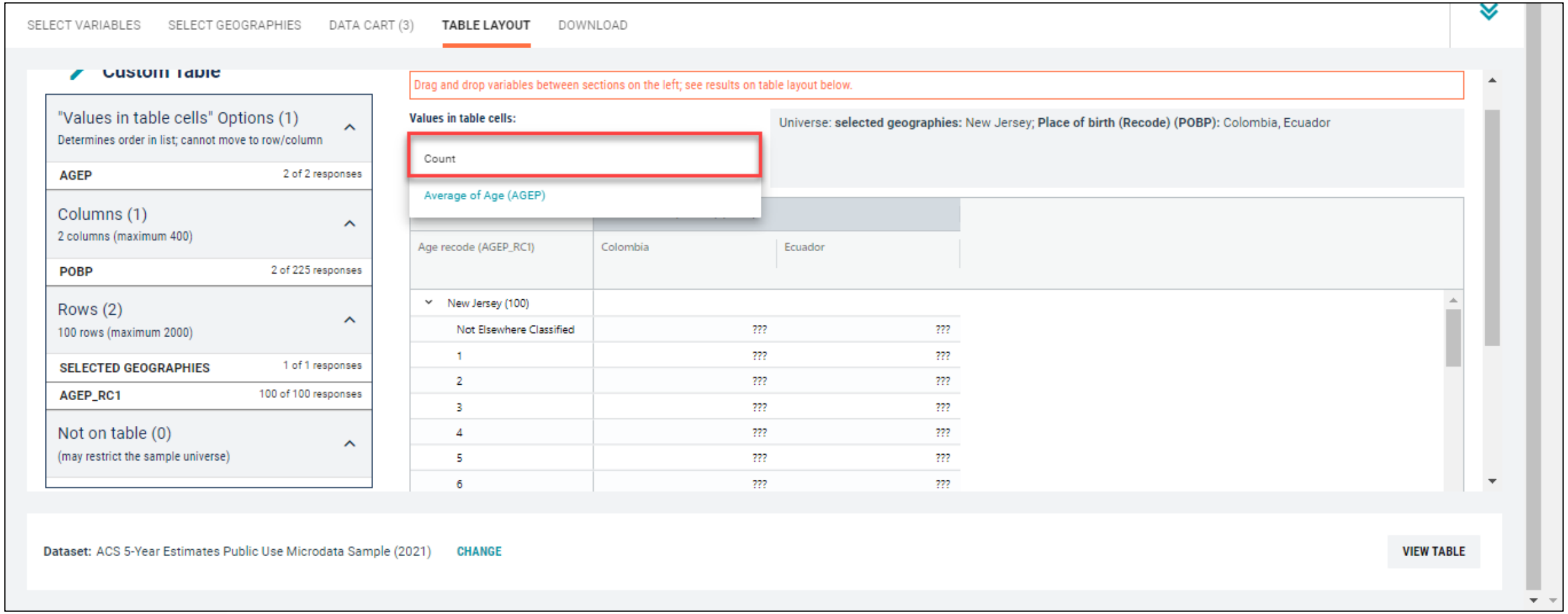
- Edit Table Layout:
  - **Move Place of Birth to Columns:**
    - **Click, hold and drag POBP on the left side of the page up to the columns heading.** This will give you a table layout that includes the places of birth categories as the columns.



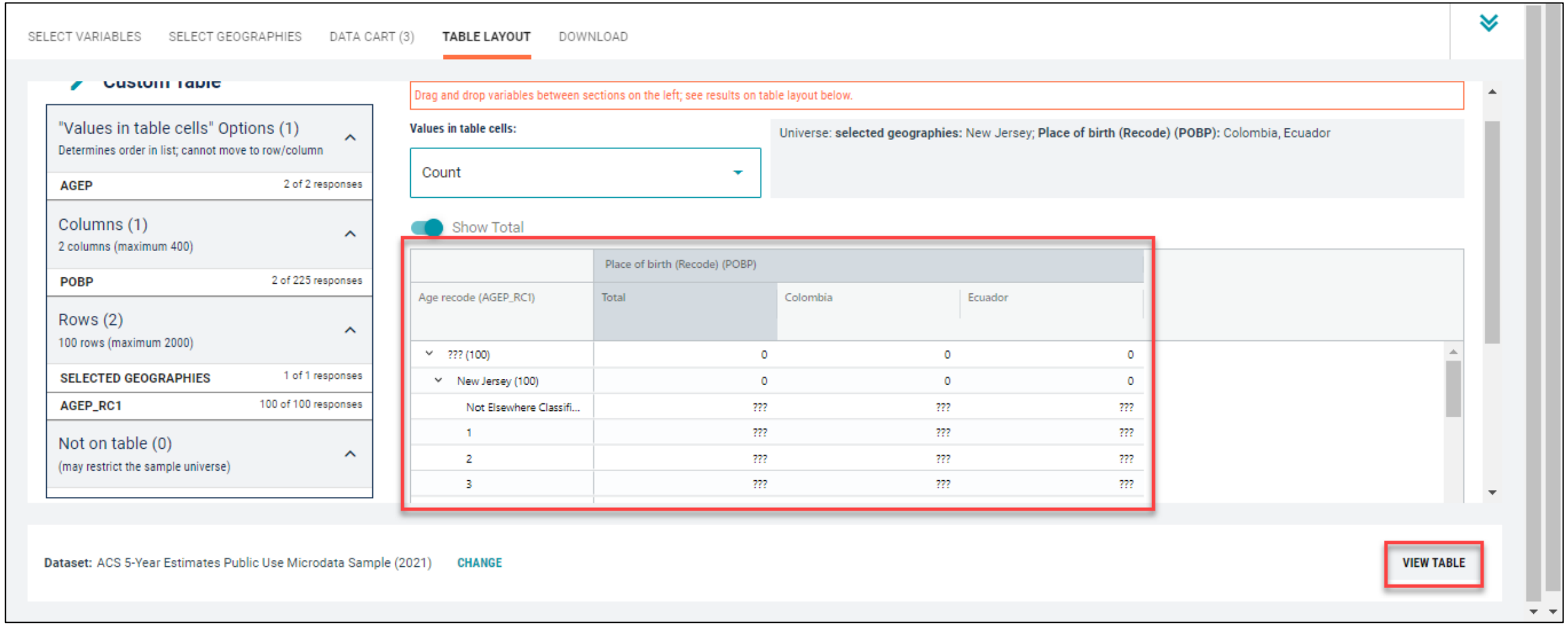
- Edit Table Layout:
  - Move Age Recode to Rows:
    - **Click, hold and drag AGEP_RC1 on the left side of the page up to the rows heading.** This will give you a table layout that includes the age categories that were created as the rows.



- Choose type of values in table cells
  - Change the “Value in table cells” option from Average of Age (AGEP) to **Count.** This will give you data for the total number of people within the requested categories.

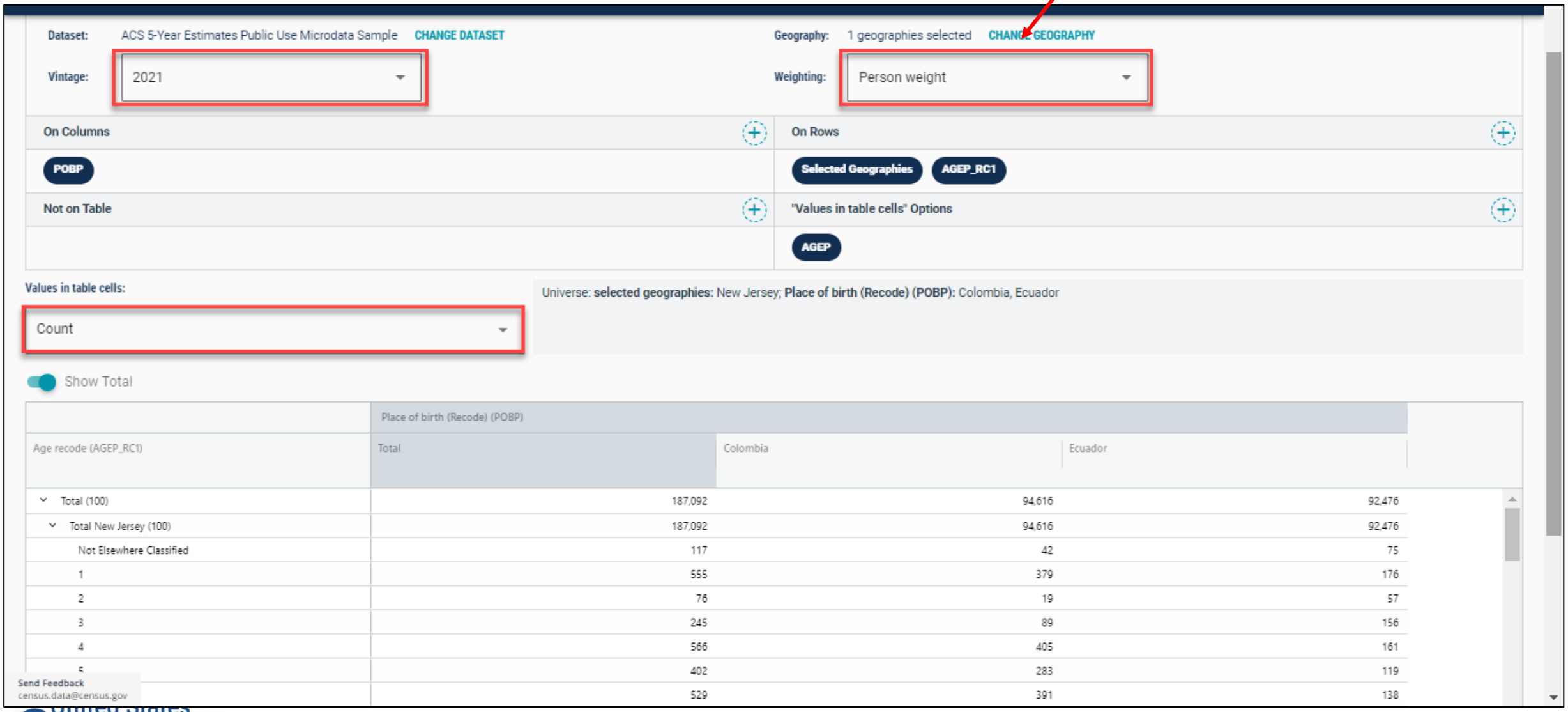


- Confirm Table Layout:
  - Confirm table layout and click **View Table** in the lower right



View Table

Note that the site automatically chooses a weight for you. You do have the option to change the weight if you want.



- Sort Table:
  - Click the column header to sort the column in ascending or descending order

Age recode (AGEP_RC1)	Place of birth (Recode) (POBP) Total	Colombia	Ecuador ↓
Total (100)	187,092	94,616	92,476
Total New Jersey (100)	187,092	94,616	92,476
40	4,943	2,079	2,864
46	4,519	1,894	2,625
45	4,515	1,903	2,612
38	4,896	2,328	2,568
36	4,333	1,808	2,525
39	3,799	1,399	2,400
33	3,555	1,184	2,371
47	4,143	1,849	2,294
50	4,116	1,826	2,290
43	3,941	1,687	2,254
48	3,836	1,602	2,234
35	4,509	2,292	2,217
54	3,830	1,787	2,043
44	4,029	2,005	2,024

Demo

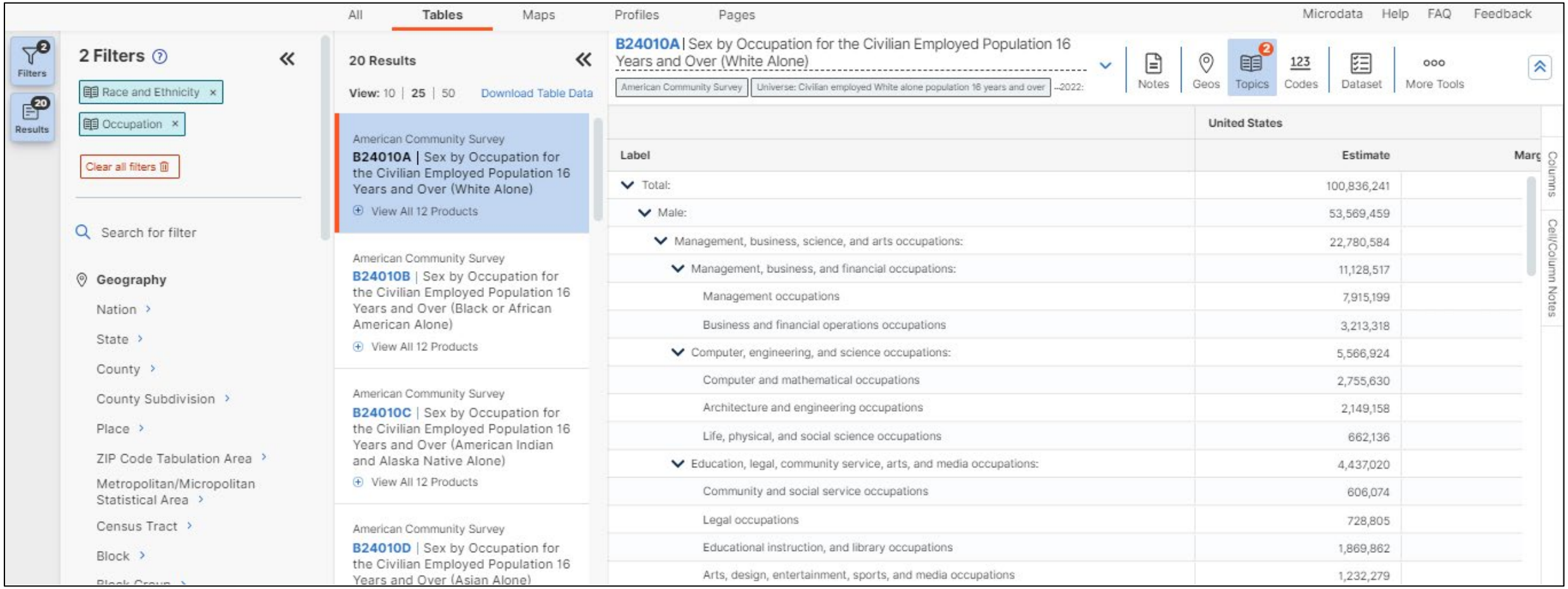
Example 4:

Race and Detailed Occupation in New Jersey PUMAs

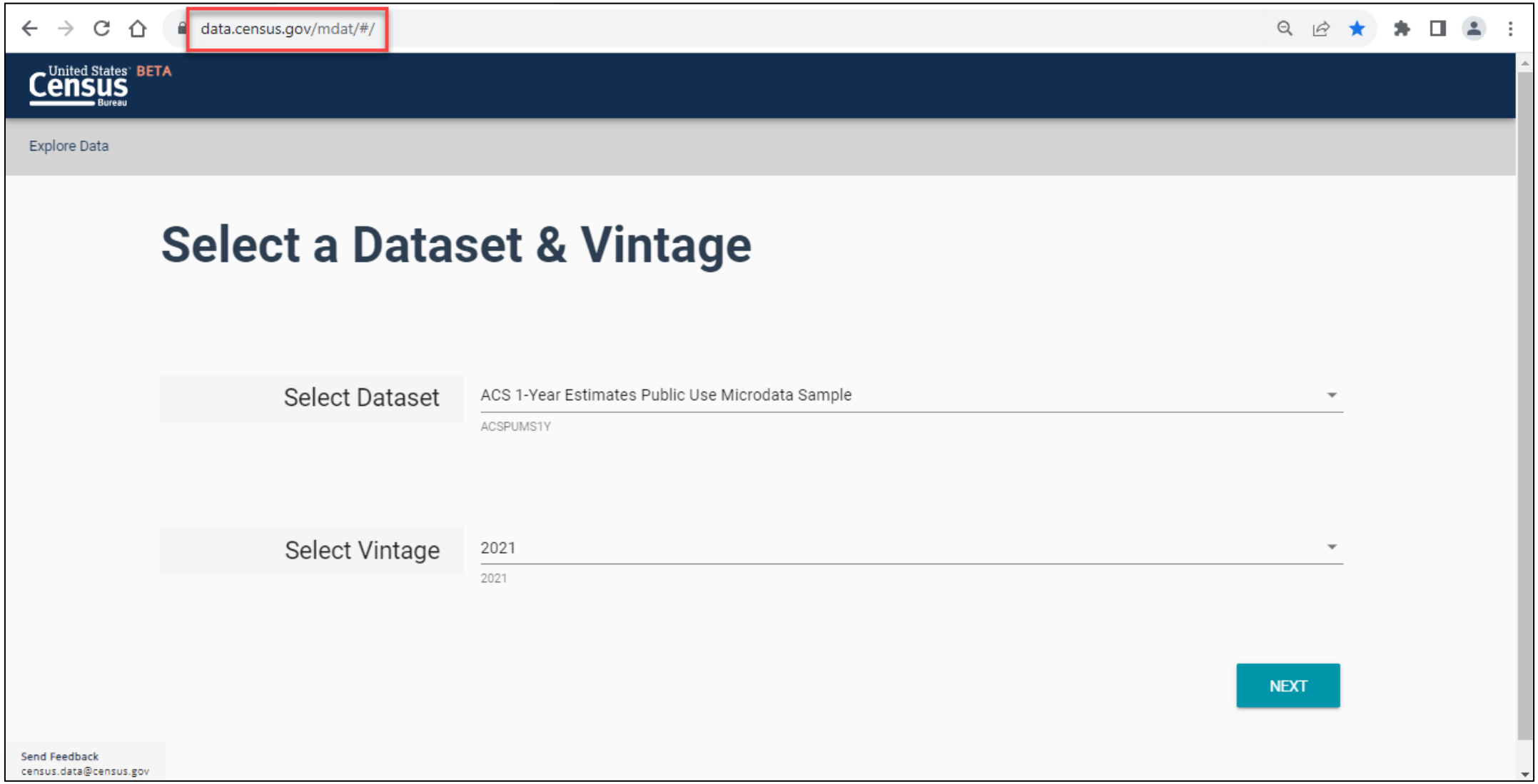
United States® Census Bureau

Problem: We need detailed occupations by race for PUMAs in New Jersey, but none of the published ACS tables have this cross of characteristics available for detailed occupations

Solution: Use Microdata Access (MDAT)



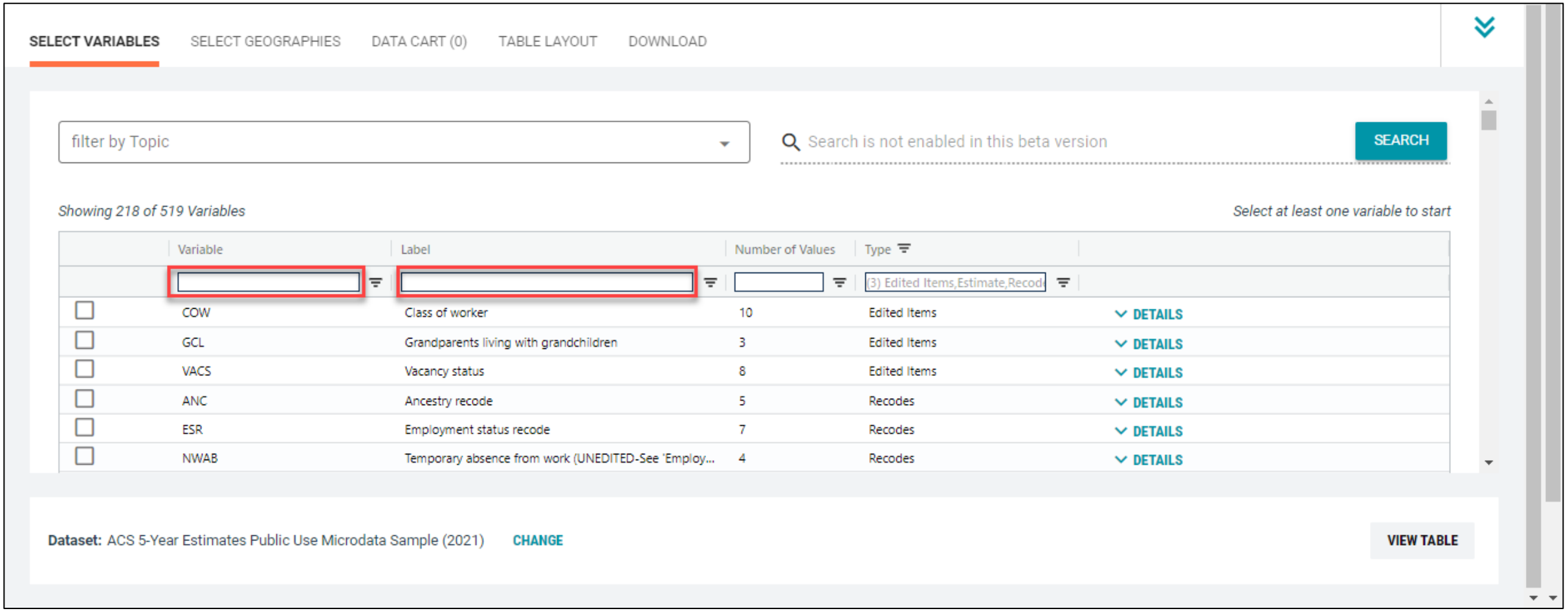
- Visit Microdata Access at data.census.gov/mdat



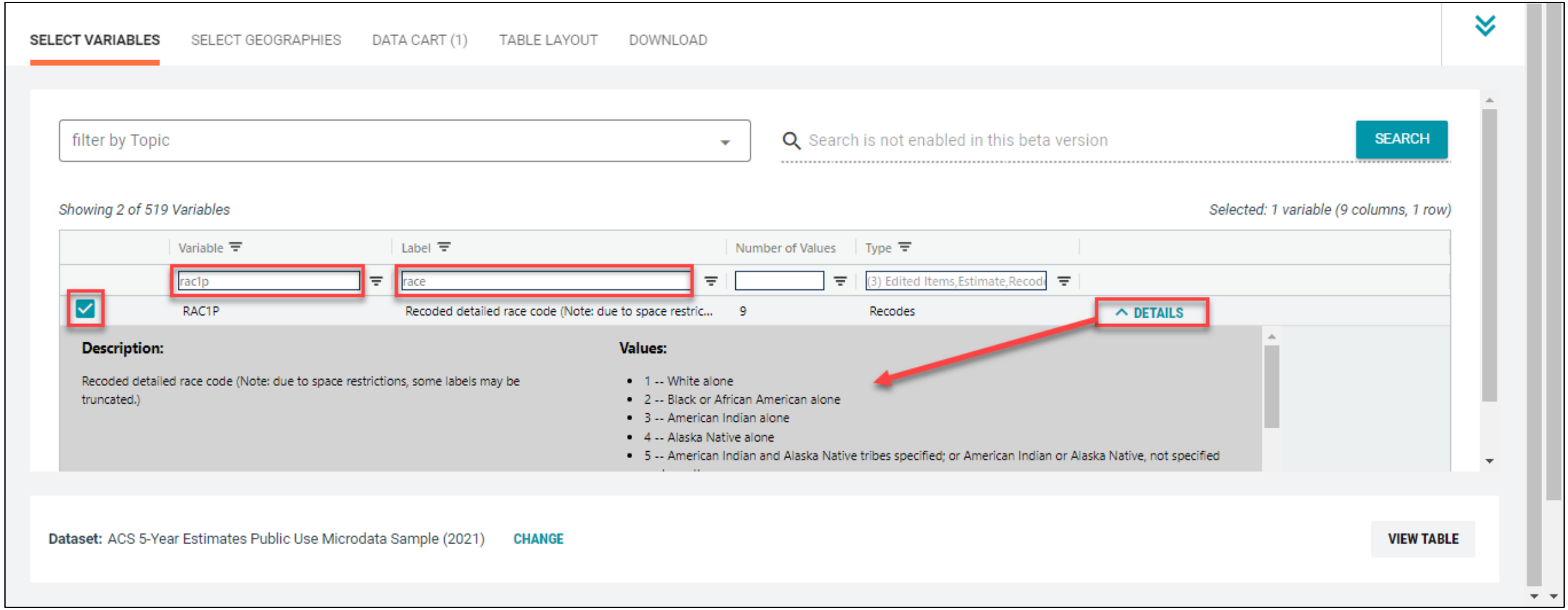
data.census.gov/mdat

- Choose Dataset and Vintage:
  - Dataset – **ACS 5-Year Estimates – Public Use Microdata Sample**
  - Vintage – **2021**
  - Click **Next** in the lower right

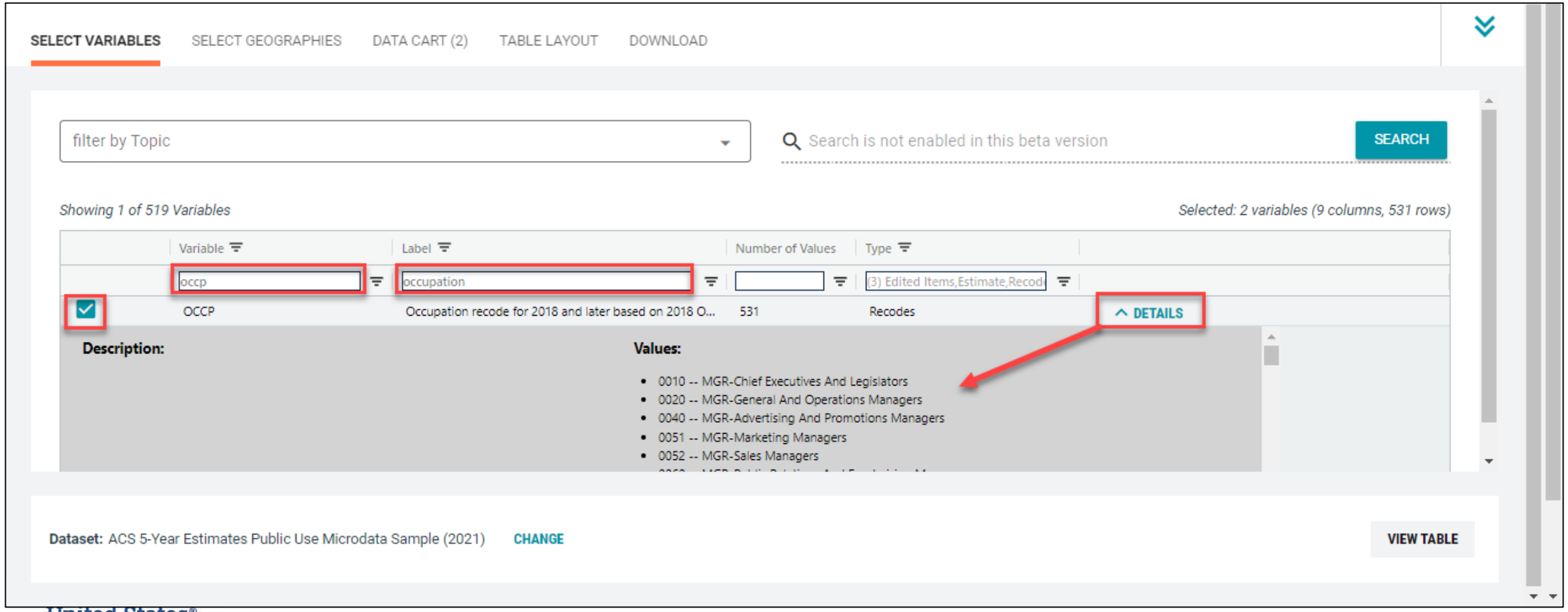
- **Search for Variables**: Use the search box below “Variable” or “Label” to find your variables of interest



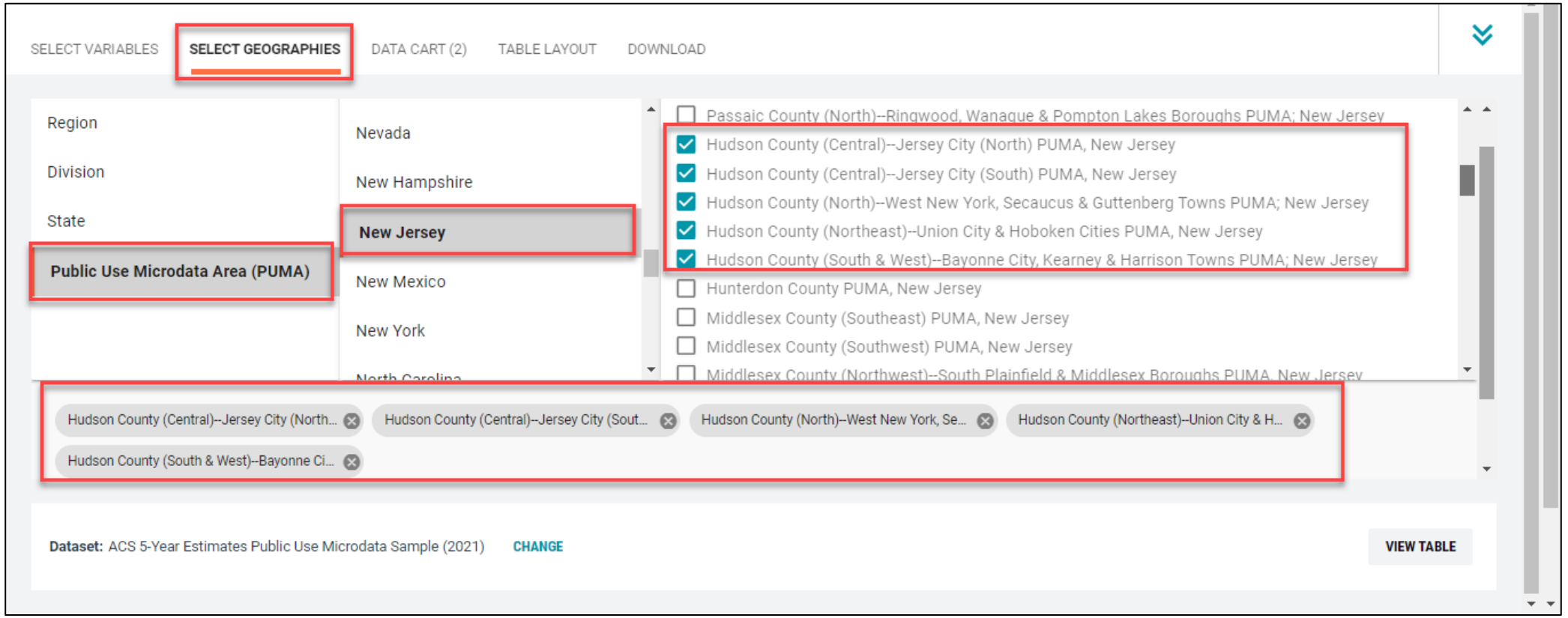
- **Select variable for Race**:
  - Type “RAC1P” in the Variable search box or type “race” in the label search box
  - Click **Details** to browse information about this variable
  - Check the box to the left of RAC1P to add the variable to your data cart



- **Select variable for Occupation**:
  - Type “OCCP” in the Variable search box or type “occupation” in the label search box
  - Check the box to the left of OCCP to add the variable to your data cart



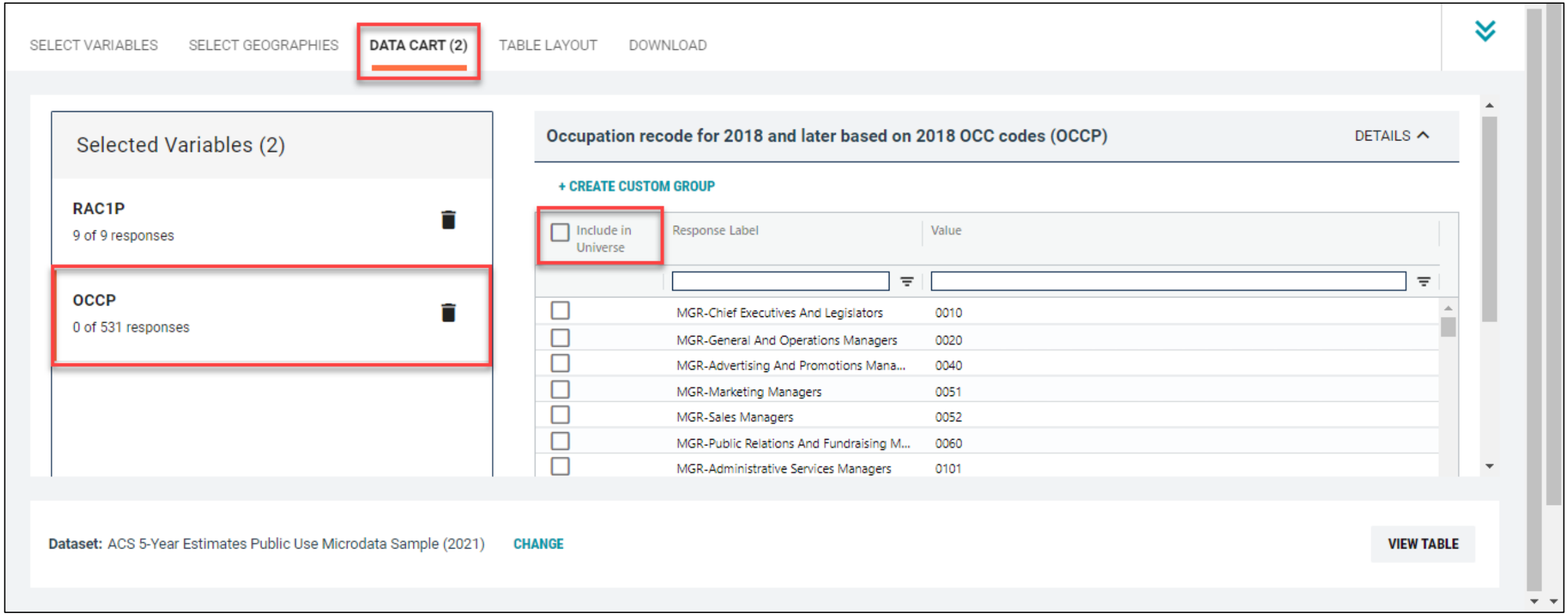
- Select geography:
  - Click the **SELECT GEOGRAPHIES** tab
  - Click **Public Use Microdata Area (PUMA)** and click on **New Jersey**
  - Check the boxes for the five **Hudson County PUMAs**



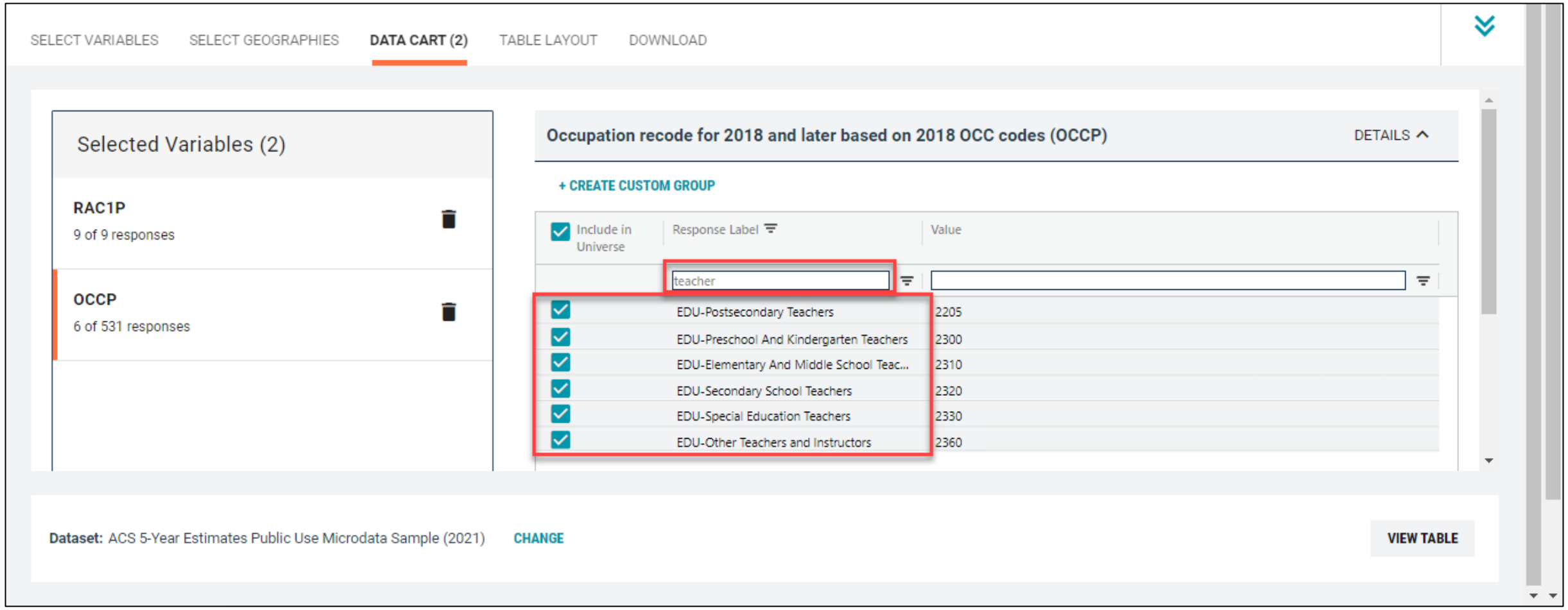
Note that there is currently no way to combine PUMAs into a single geography.

There are also no options for selecting collections of PUMAs (for example, a one-click selection for all the PUMAs in any given county). If you frequently use these same collections of PUMAs (or other geographies), add them to a search and save the URL. You can then use this same URL for future searches; your geographies will already be there and you can add or remove variables as needed.

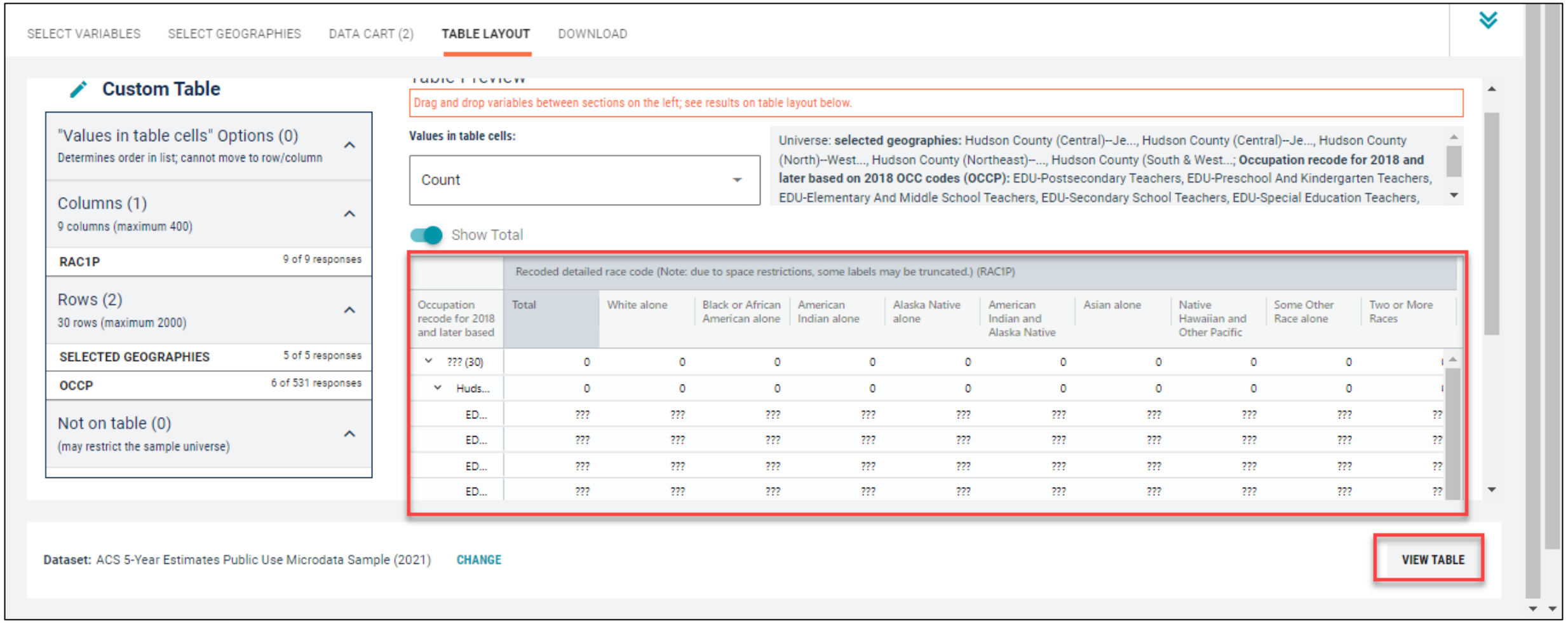
- Categorize your variable:
  - Click the **Data Cart** tab
  - Click the **OCCP** variable on the left
  - We want data specifically for teachers. To get started with selecting only the relevant options, uncheck the box next to Include in Universe



- Categorize your variable:
  - Click into the box for **Response Label** and enter ‘teacher’
  - Check the box next to all six response categories for ‘teacher’

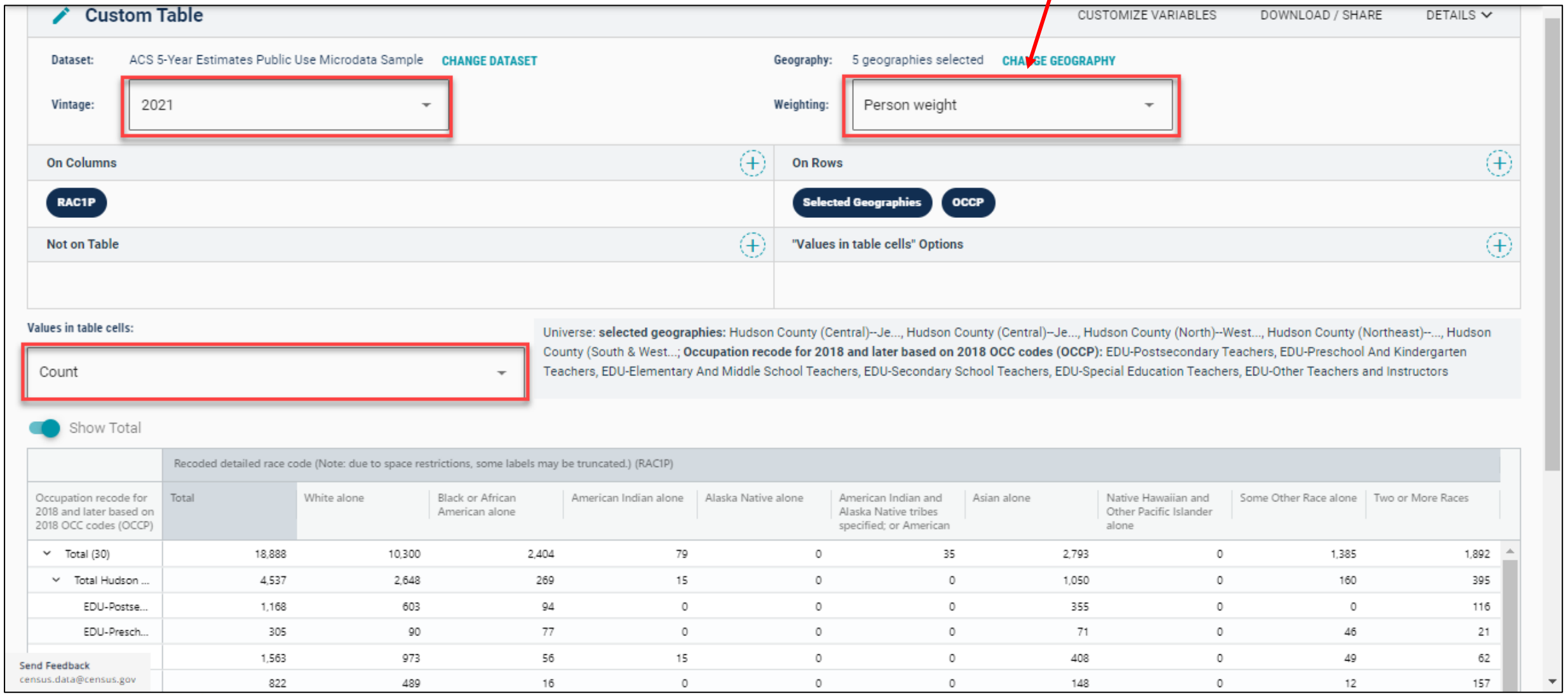


- Confirm Table Layout:
  - Confirm table layout and click **View Table** in the lower right



View Table

Note that the site automatically chooses a weight for you. You do have the option to change the weight if you want.



United States® Census Bureau

Guidance for Data Users

// Census.gov / Data / data.census.gov Resources / Guidance for Data Users / How-to Materials for Using the Microdata Access

Within Guidance for Data Users

- Frequently Asked Questions
- How-to Materials for Using data.census.gov
- How-to Materials for Using the Census API
- **How-to Materials for Using the Microdata Access**
- Video Tutorials
- Webinars

How-to Materials for Using the Microdata Access

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Do you have questions on how to use Microdata Access? Check out ou
Access to create your own tabulations.

- Using Microdata Access: With ACS 1-Year Estimates – Public Use Microd
- Using Microdata Access: How To Create Poverty Estimates From The CPS

Building a Custom Table Using Microdata Access (MDAT)

January 09, 2023

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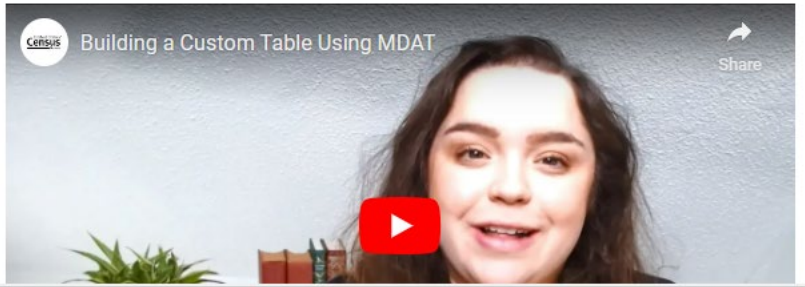
Watch this video to learn how to use Microdata Access (MDAT) through data.census.gov, and create customized tabulation without the need for special programming or statistical software.



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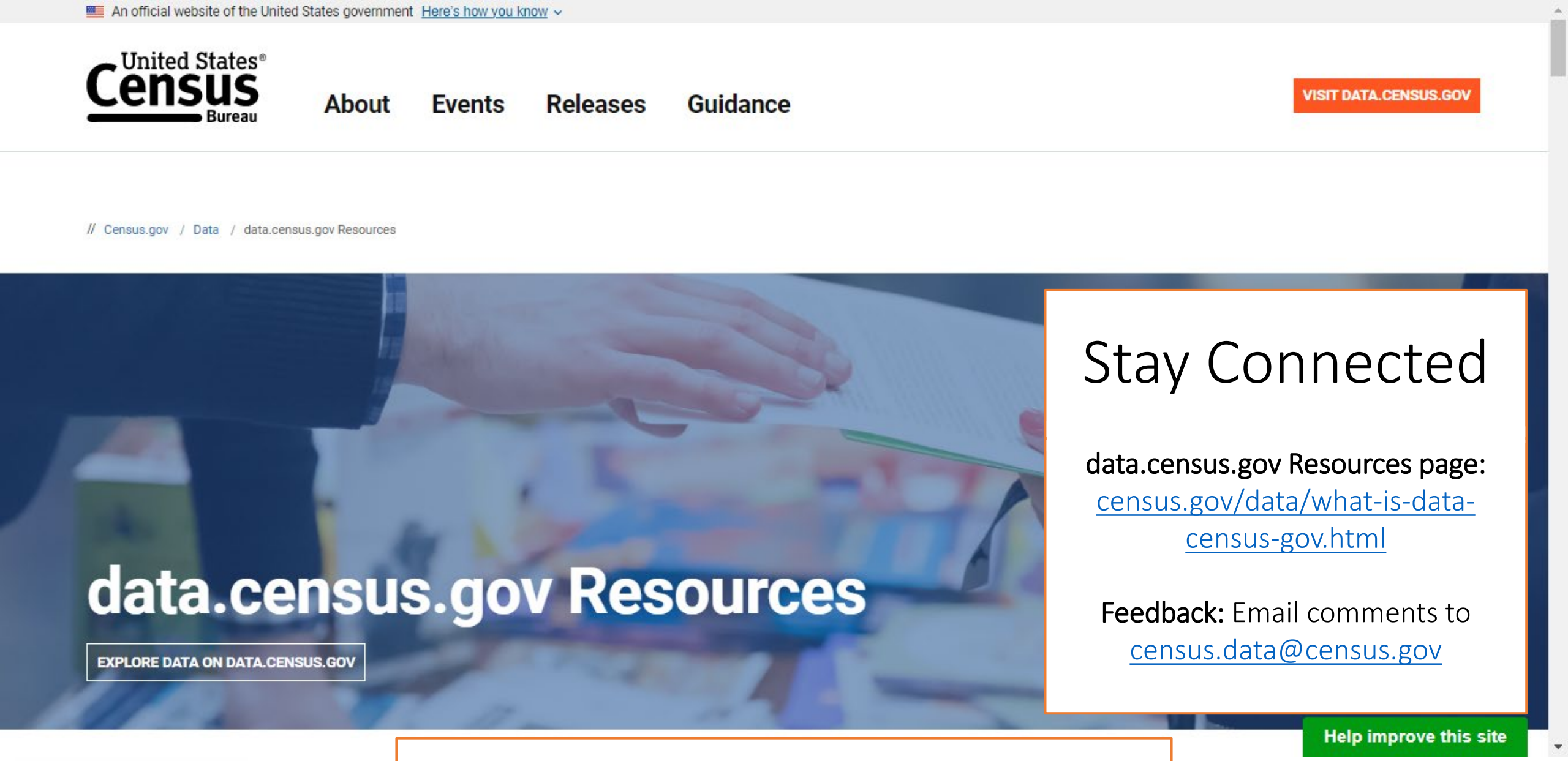

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