The American Community Survey Public Use Microdata Sample (PUMS) & the Microdata Access Tool (MDAT)

- **October 21, 2022**

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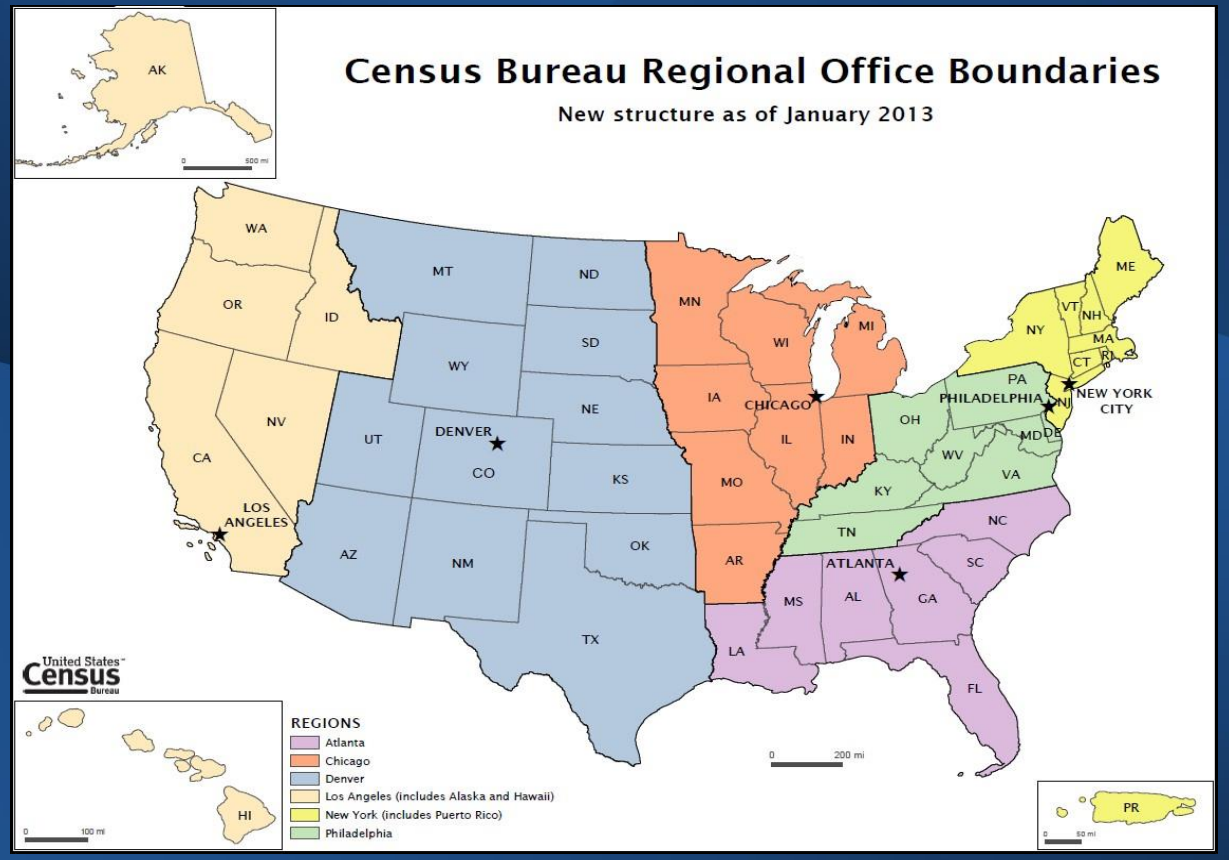
Outline

- ✓ American Community Survey (ACS) basics
- ✓ ACS Public Use Microdata Sample (PUMS)
- ✓ Public Use Microdata Areas (PUMAs)
- ✓ Microdata Access Tool (MDAT) walk-through
- ✓ Data.census.gov demo
- ✓ Questions



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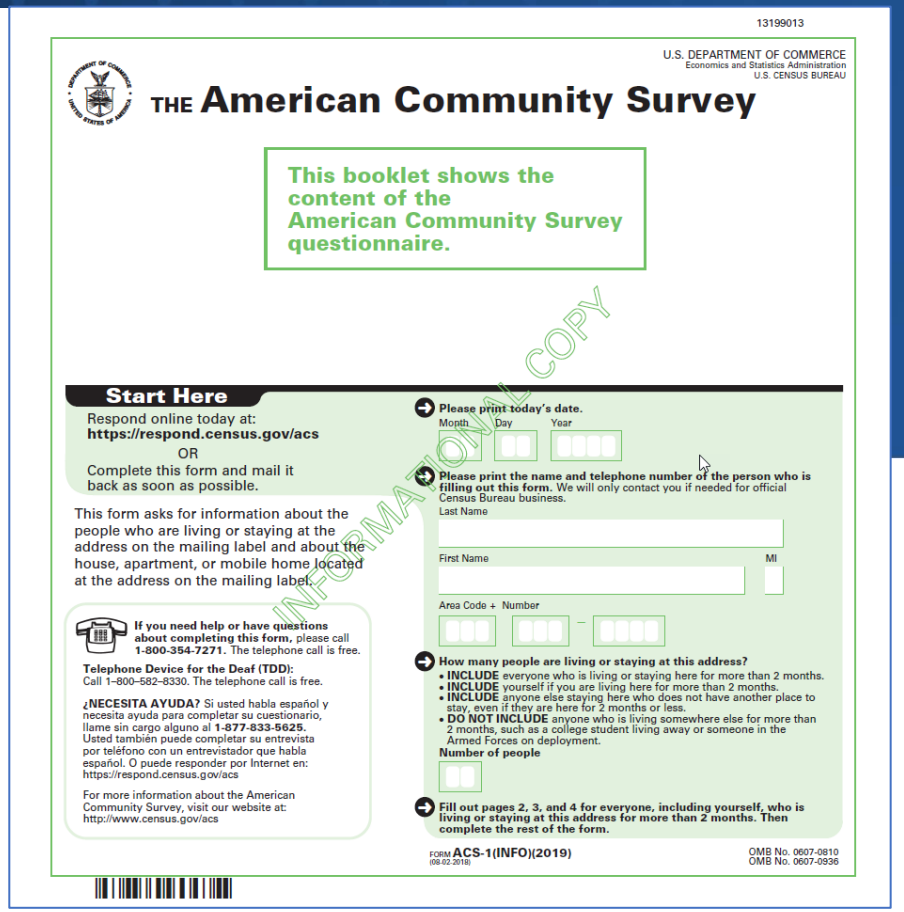
American Community Survey (ACS) Basics

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

- ✓ The nation's most current, reliable, and accessible data source for local statistics on critical planning topics such as age, children, veterans, commuting, education, income, and employment
- ✓ Surveys **3.5 million** addresses and informs over **$675 billion** of Federal government spending each year
- ✓ Covers **40+ topics**, supports over **300** evidence-based Federal government uses, and produces **11 billion** estimates each year
- ✓ Key annual data releases:
  - ✓ 1-year Estimates (for large populations)
  - ✓ 5-year Estimates (for very small populations)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U.S. DEPARTMENT OF COMMERCE
Economics and Statistics Administration
U.S. CENSUS BUREAU

THE American Community Survey

This booklet shows the content of the American Community Survey questionnaire.

INFORMATIONAL COPY

Start Here

Respond online today at:
https://respond.census.gov/acs
OR
Complete this form and mail it back as soon as possible.

This form asks for information about the people who are living or staying at the address on the mailing label and about the house, apartment, or mobile home located at the address on the mailing label.

If you need help or have questions about completing this form, please call 1-800-354-7271. The telephone call is free.

Telephone Device for the Deaf (TDD):
Call 1–800–582–8330. The telephone call is free.

¿NECESITA AYUDA? Si usted habla español y necesita ayuda para completar su cuestionario, llame sin cargo alguno al 1-877-833-5625. Usted también puede completar su entrevista por teléfono con un entrevistador que habla español. O puede responder por Internet en: https://respond.census.gov/acs

For more information about the American Community Survey, visit our website at: http://www.census.gov/acs

Please print today's date.
Month Day Year

Please print the name and telephone number of the person who is filling out this form. We will only contact you if needed for official Census Bureau business.
Last Name
First Name MI
Area Code + Number

How many people are living or staying at this address?
- INCLUDE everyone who is living or staying here for more than 2 months.
- INCLUDE yourself if you are living here for more than 2 months.
- INCLUDE anyone else staying here who does not have another place to stay, even if they are here for 2 months or less.
- DO NOT INCLUDE anyone who is living somewhere else for more than 2 months, such as a college student living away or someone in the Armed Forces on deployment.

Number of people

Fill out pages 2, 3, and 4 for everyone, including yourself, who is living or staying at this address for more than 2 months. Then complete the rest of the form.

FORM ACS-1(INFO)(2019)
(08.02.2018)
OMB No. 0607-0810
OMB No. 0607-0936

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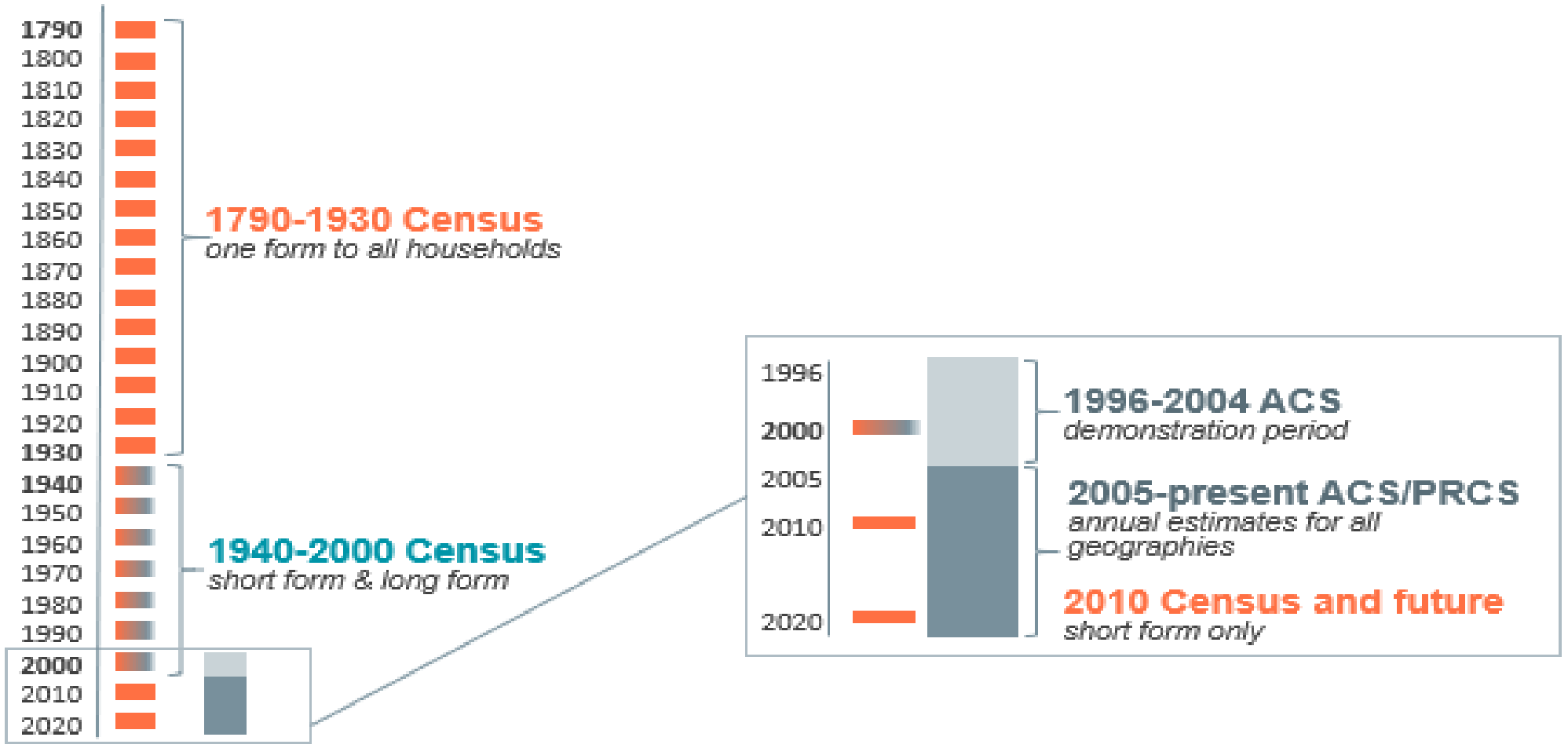
American Community Survey (ACS) & the Census



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American Community Survey (ACS) Differences

	ACS	Census
Purpose	Sample estimates	Official counts
Collects	Detailed social, economic, housing and demographic characteristics	Basic demographics
Produces	Population and housing characteristics	Population and housing totals
New Data Every	Year	10 years
Data Reflect	Period of time	Point in time

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American Community Survey (ACS) Data

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

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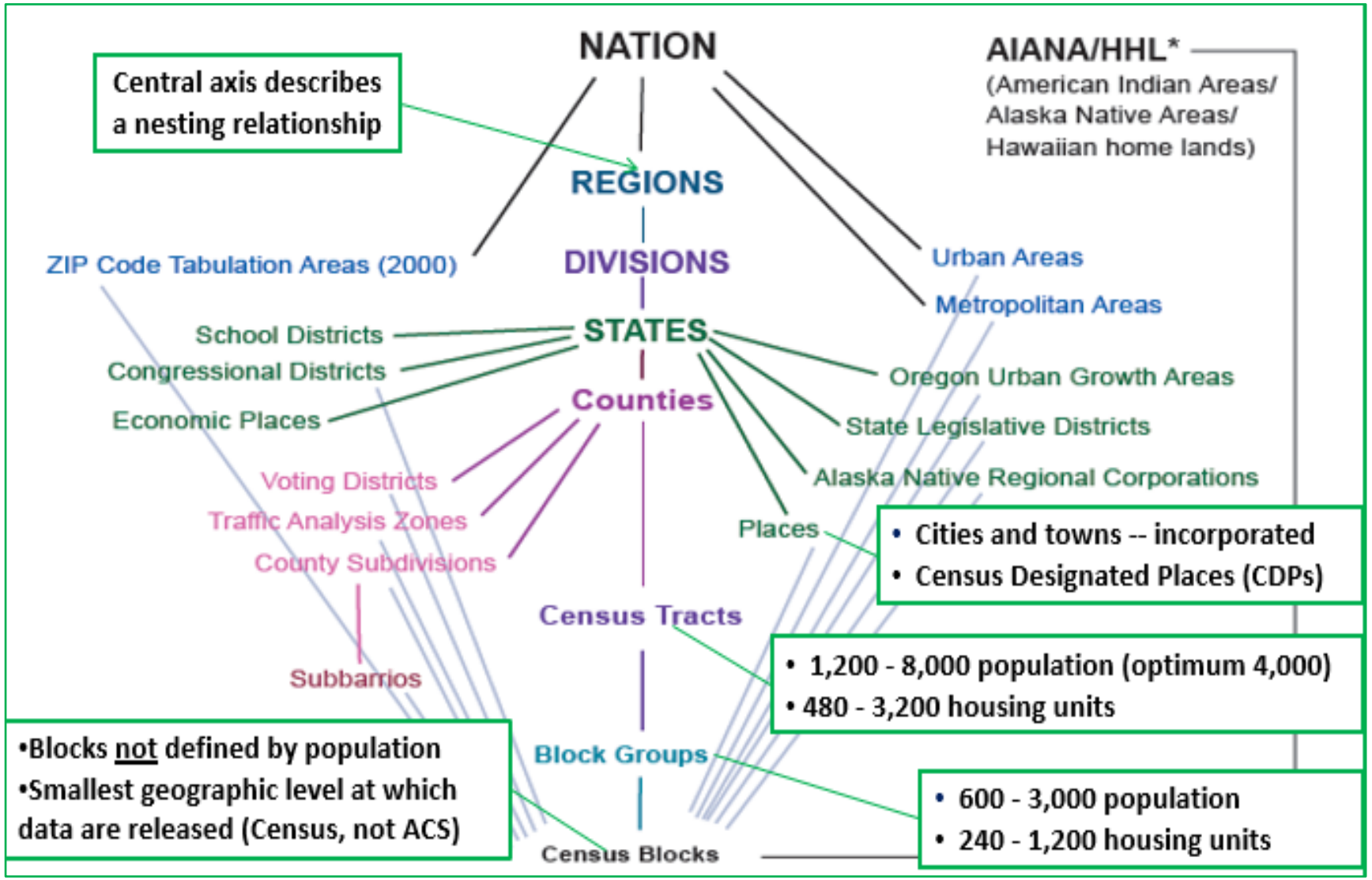
Availability of ACS Data Products

Period Estimates

1-Year Estimates	1-Year Supplemental Estimates	3-Year Estimates*	5-Year Estimates
12 months of collected data Example: 2016 ACS 1-year estimates Date collected between: January 1, 2016 and December 31, 2016	12 months of collected data Example: 2016 ACS 1-year supplemental estimates Date collected between: January 1, 2016 and December 31, 2016	36 months of collected data Example: 2011-2013 ACS 3-year estimates Date collected between: January 1, 2011 and December 31, 2013	60 months of collected data Example: 2012-2016 ACS 5-year estimates Date collected between: January 1, 2012 and December 31, 2016
Data for areas with populations of 65,000 +	Data for areas with populations of 20,000 +	Data for areas with populations of 20,000 +	Data for all areas
Smallest sample size	Smallest sample size	Larger sample size than 1-year	Largest sample size
Less reliable than 3-year or 5-year	Less reliable than 5-year	More reliable than 1-year; less reliable than 5-year	Most reliable
Most current data	Most current data	Less current than 1-year estimates; more current than 5-year estimates	Least Current
Annually released 2005-present	Annually released 2014-present	Annually released 2007-2013	Annually released 2009-present
Best used when	**Best used when**	**Best used when**	**Best used when**
Currency is more important than precision Analyzing large populations	Currency is more important than precision Analyzing smaller populations Examining smaller geographies because the standard 1-year estimates are not available	More precise than the 1-year Analyzing smaller populations Examining smaller geographies because the standard 1-year estimates are not available	Precision is more important than currency Analyzing very small populations Examining tracts and other smaller geographies because 1-year estimates are not available

*** ACS 3-YEAR Estimates were discontinued in 2013**

American Community Survey (ACS) Select Geographies



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American Community Survey (ACS) Public Use Microdata Sample (PUMS)

- The ACS PUMS files enable data users to create custom estimates and tables that are not available through ACS pre-tabulated data products.
- The ACS PUMS files are a set of records from individual people or housing units, with disclosure protection enabled so that individuals or housing units cannot be identified.
- The PUMS represents about two-thirds of the responses collected in the ACS in a specific 1-year or 5-year period.
- There are two types of PUMS files, one for persons and one for housing units.

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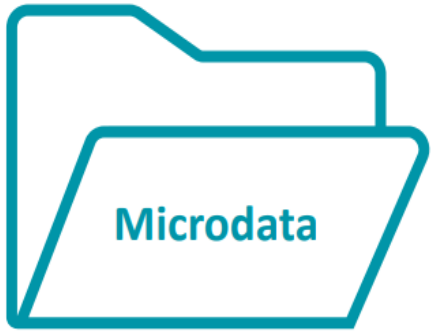
ACS Tabulated Data vs. Microdata: What's the Difference?

	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, 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
2019HU0046210	2	24	2	5740

Microdata Access Tool (MDAT)

Microdata (a set of edited survey responses):

"This male in Maryland is a web developer."

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ACS Tabulated Data and Microdata

American Community Survey

B15001 | SEX BY AGE BY EDUCATIONAL ATTAINMENT FOR THE POPULATION 18 YEARS AND OVER

2020: ACS 5-Year Estimates Detailed Tables | Universe: Population 18 years and over

Notes | Geos (1) | Years | Topics | Surveys | Codes | Hide | Transpose | Margin of Error | Restore | Excel | CSV | ZIP | Print | Map

	Napa County, California	
Label	**Estimate**	**Margin of Error**
Total:	110,017	±73
Male:	54,359	±89
18 to 24 years:	6,096	±74
Less than 9th grade	88	±52
9th to 12th grade, no diploma	433	±117
High school graduate (includes equivalency)	2,420	±244
Some college, no degree	2,503	±261
Associate's degree	269	±109
Bachelor's degree	367	±150

Napa County, California - Working Age Population (18 to 64) Without a High School Credential

ACS tabulated data: **12,158**

ACS microdata: **11,578**

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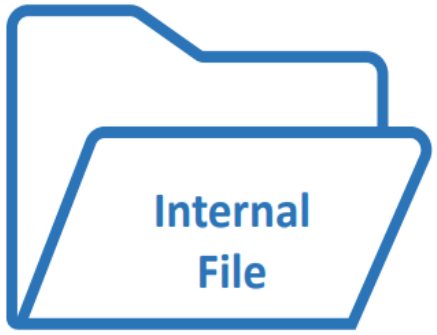
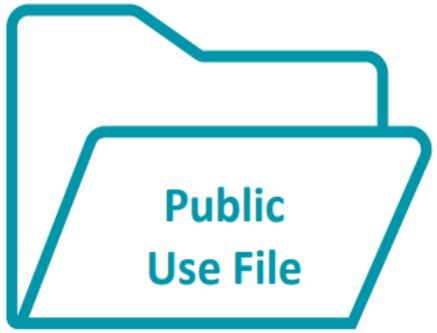
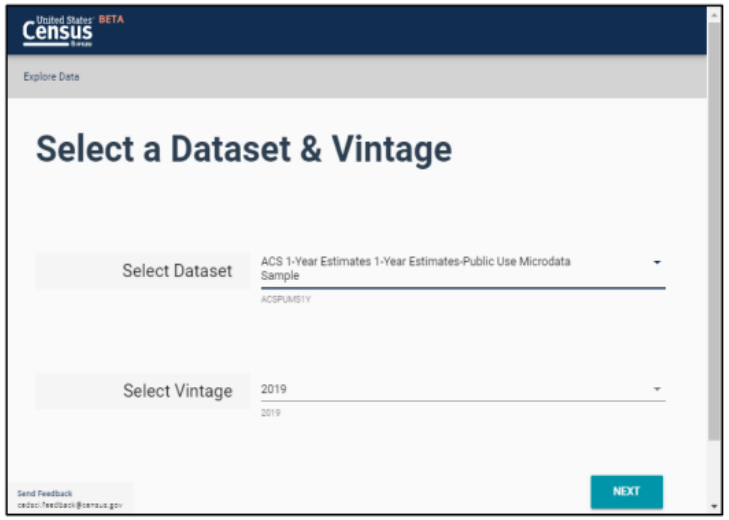
Data.census.gov vs. Microdata Access Tool



data.census.gov

- Provides pre-tabulated tables
- More geographic detail, less topic detail
- More precise data





Microdata Access Tool (MDAT)

- Provides access to create custom tables
- More topic detail, less geographic detail

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ACS Microdata Available Geographies

ACS Available Geographies
Nation
Region
Division
State
Public Use Microdata Area (PUMA)

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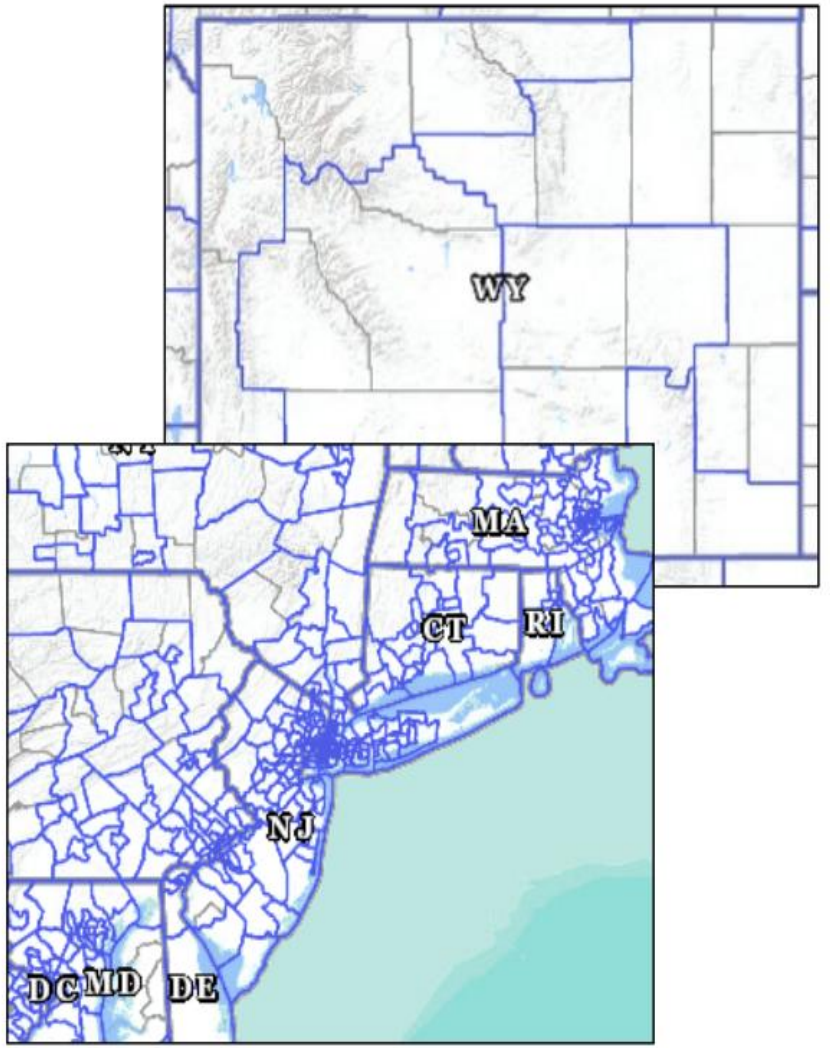
Public Use Microdata Areas (PUMAs)

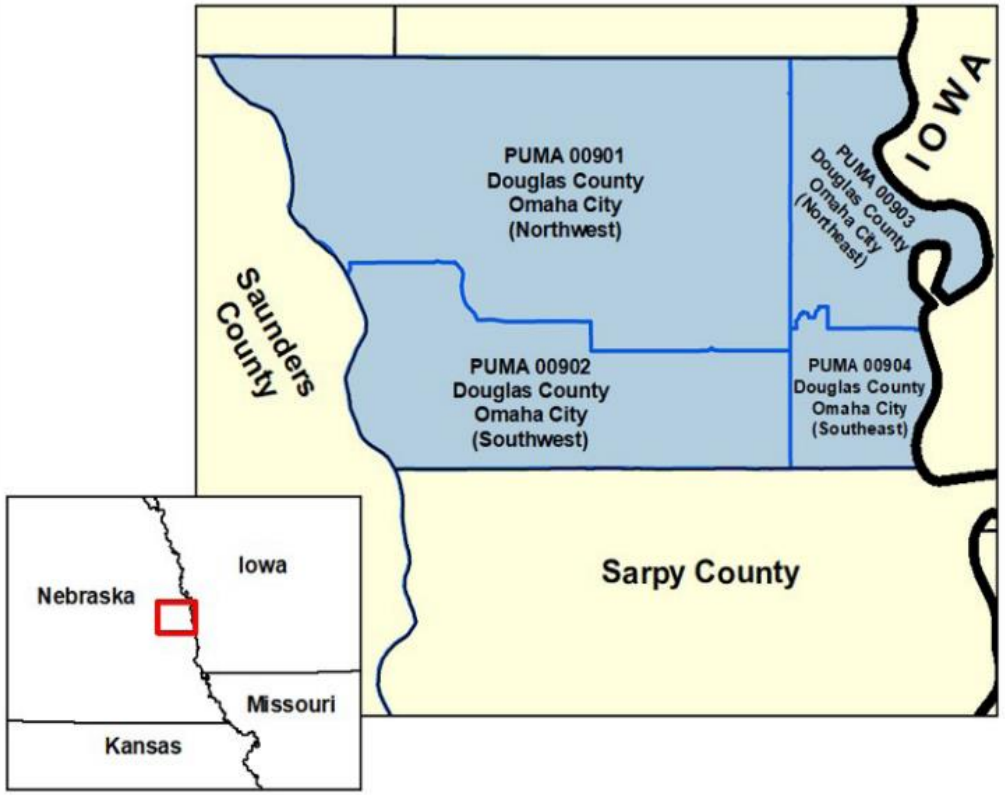
Defined area with 100,000+ population:

- PUMAs (or collections of PUMAS) can be used to identify most cities of 100,000+ and many metro areas, but not all
- Identified by five-digit code (unique within each state)
- Nest within states and cover the entire nation
- Defined after each decennial census
- Census tracts and counties are the building blocks



Public Use Microdata Areas (PUMAs)

PUMAs in Douglas County, Nebraska



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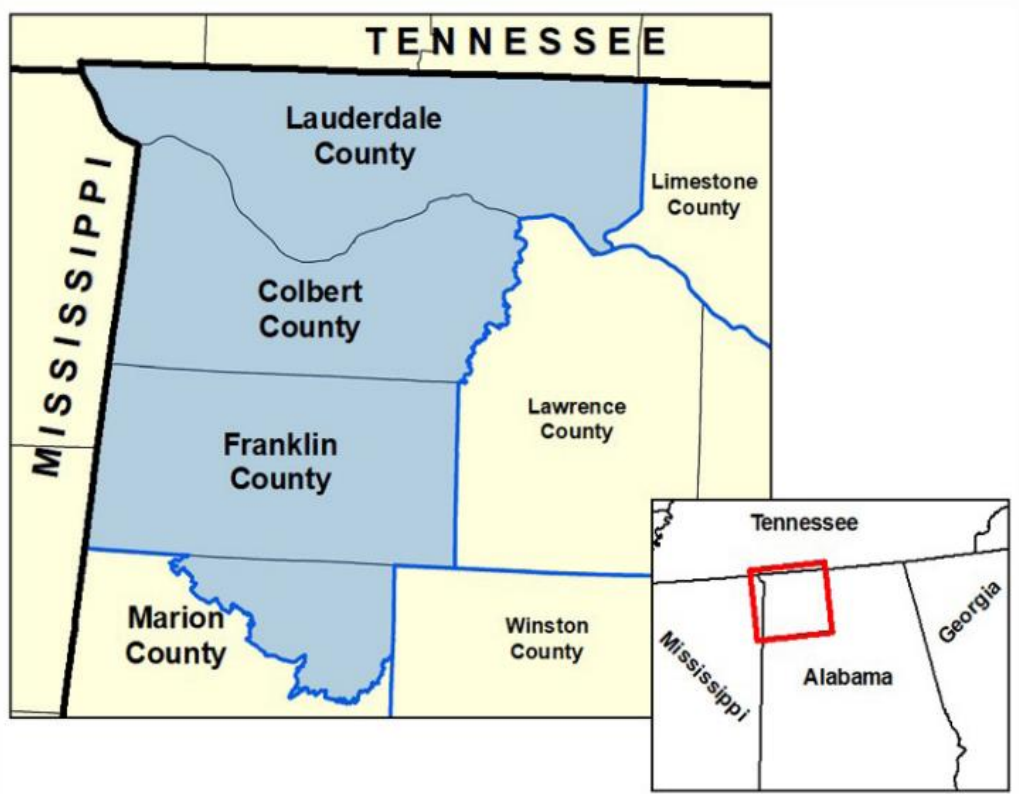
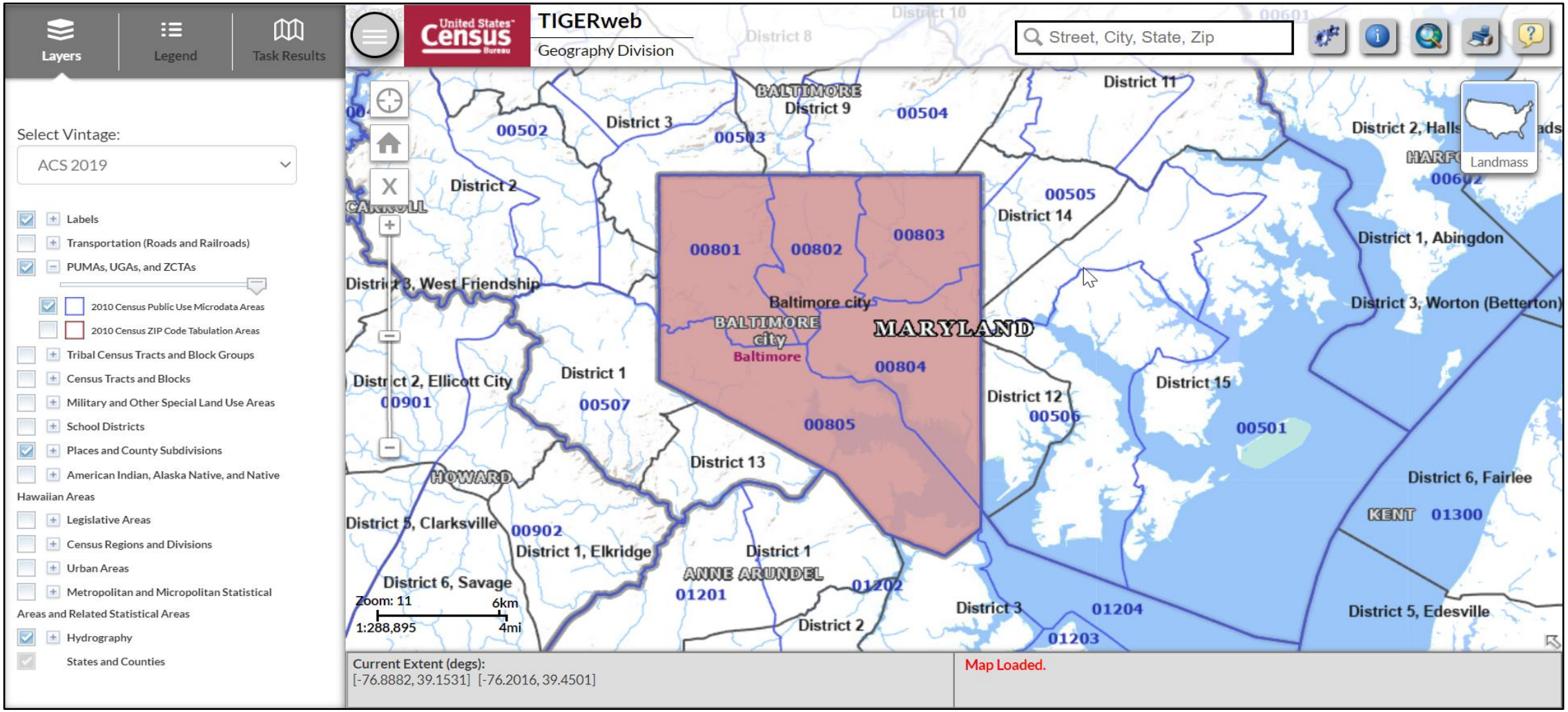
Alabama PUMA 00100 (Lauderdale, Colbert, Franklin and Northeast Marion Counties



Visualize PUMA Boundaries for Your Area Using TIGERweb



tigerweb.geo.census.gov

National Association of State Directors of Adult Education

Select a State or Territory: Maryland

2019 1-Year PUMS Edition

Adult Education Program Fact Sheet

Reporting Period: Program Year 2019-2020
July 1, 2019 to June 30, 2020

Maryland

(Change State/Territory Above)

PURPOSE: Adult education programs in all 50 states, DC, and U.S. territories are authorized under Title II of the Workforce Innovation and Opportunity Act to assist adults in building skills and earning credentials that lead to postsecondary education, sustainable employment, and economic self-sufficiency.

THE ECONOMY AHEAD: There is a massive reallocation underway in the economy that is triggering a great reassessment of work in America from both the employer and employee perspectives (The Washington Post, 04 Sept. 2021). Adult Education aligns education and job training to employer needs and provides learner-workers with essential skills to be future-ready for the new normal.

OUR ADULT EDUCATION POPULATION

WORKING AGE POPULATION (18 TO 64)

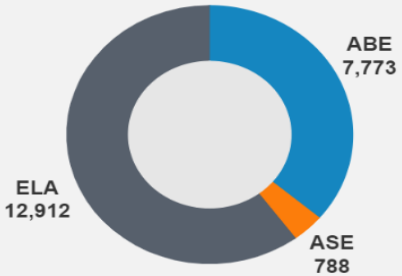
331,740
Without a High School Credential

309,094
Do Not Speak English Very Well or at All

112,152
Without a High School Credential & Do Not Speak English Very Well or At All

OUR ENROLLMENT

Total: 21,473



Adult student populations, as defined by the National Reporting System (NRS):

Adult Basic Education (ABE): Grade Levels 0 to 8.9

Adult Secondary Education (ASE): Grade Levels 9 to 12

English Language Acquisition (ELA): For those adults whose native language is not English

Number of enrolled students served in **correctional educational programs:** **2,692**

CHALLENGES

17,183
Adults 18 to 64 Without High School Diploma and Unemployed

127,880
Adults 18 to 64 Without High School Diploma and Not in Labor Force

66,187
Adults 18 to 64 Without High School Diploma and on Public Assistance

3,278
Youth 16 to 24 Without High School Diploma, Not Enrolled in School, and Unemployed

10%
Percentage of Children Living in Household Headed by Adult Without High School Diploma

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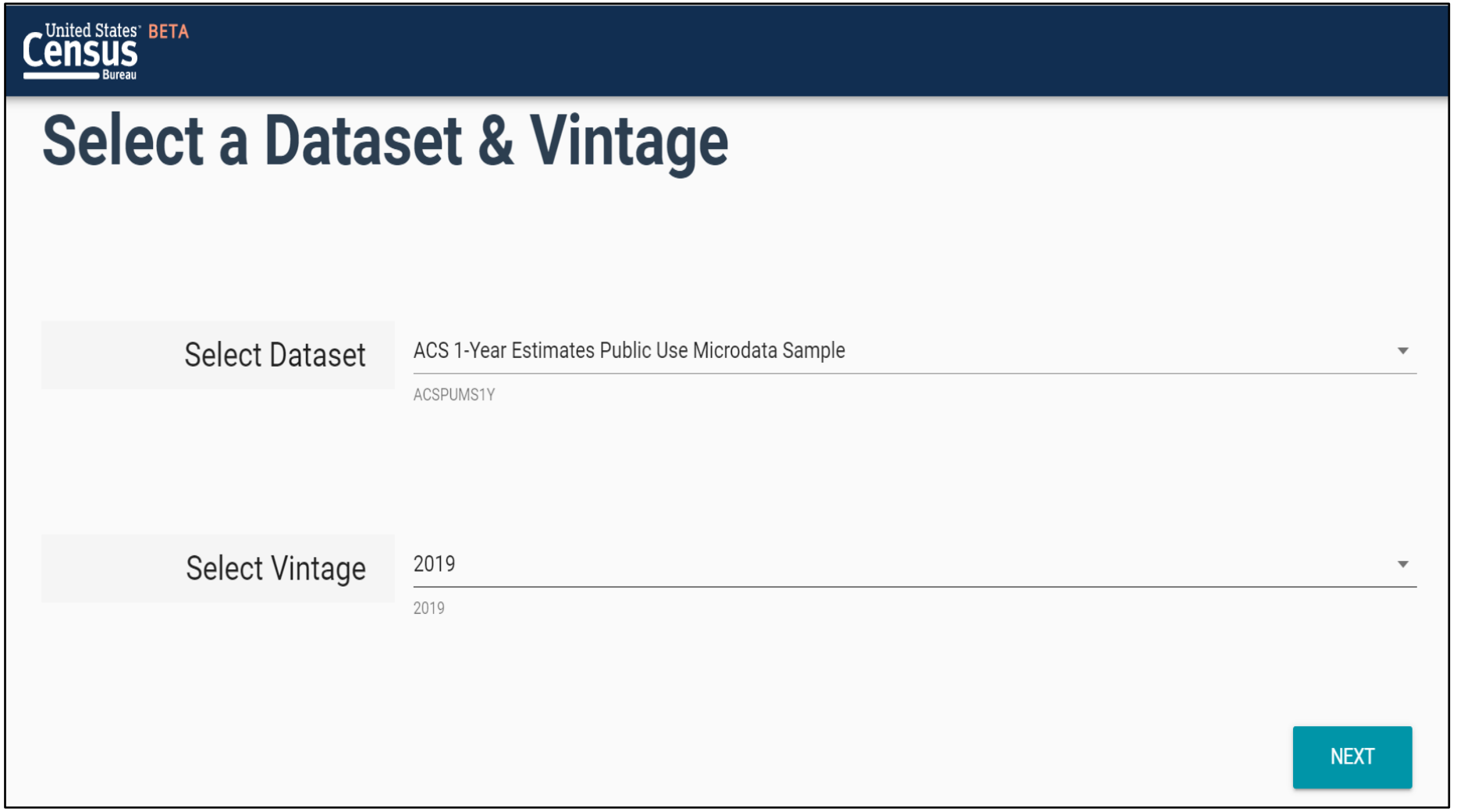
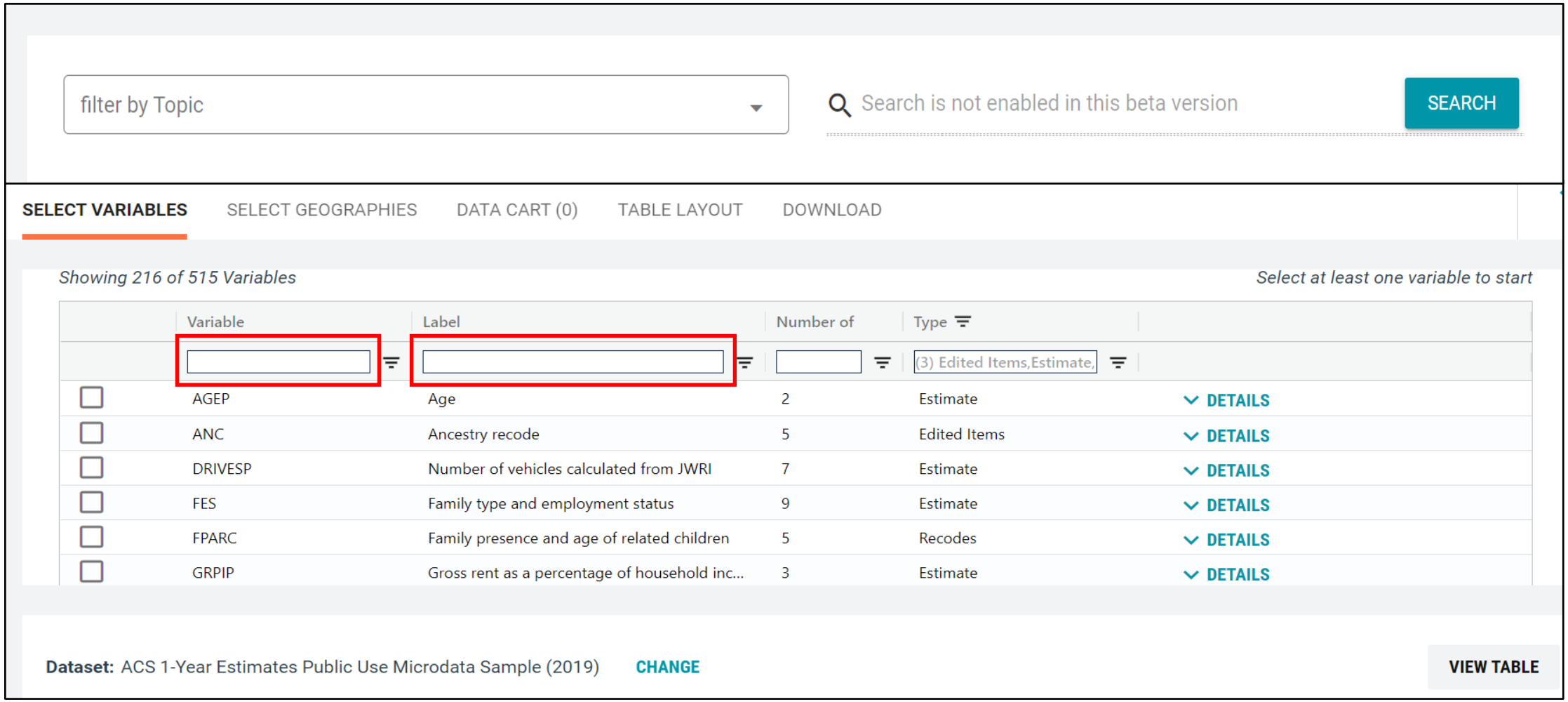
Microdata Access Tool (MDAT) – Select Your Dataset and Vintage

- Dataset – **ACS 1-Year Estimates Public Use Microdata Sample**
- Vintage – **2019**
- Click **Next** in the Lower Right



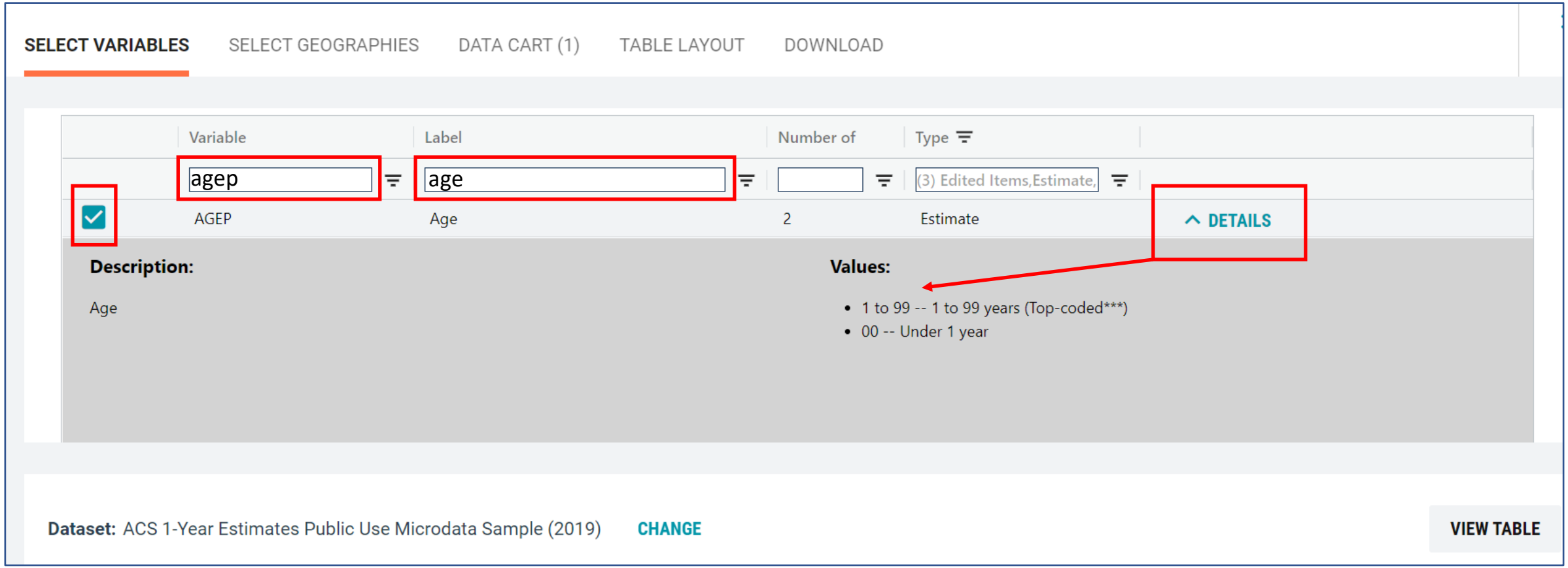
Search for Variables

Search for Variables: Use the search box below ‘Variable’ or ‘Label’ to find your variables of interest



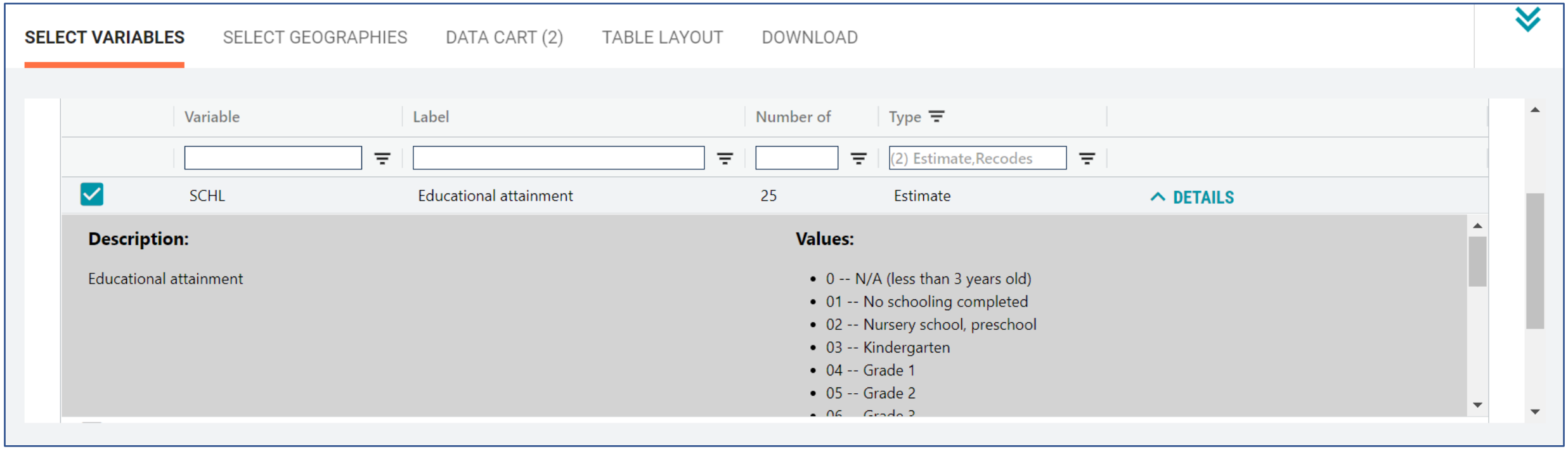
Select Your Variables of Interest

- Select AGEP variable for age to add it to your cart
- Click the Details link to view possible values for this variable



Select Additional Variables

- Select the variable SCHL for educational attainment



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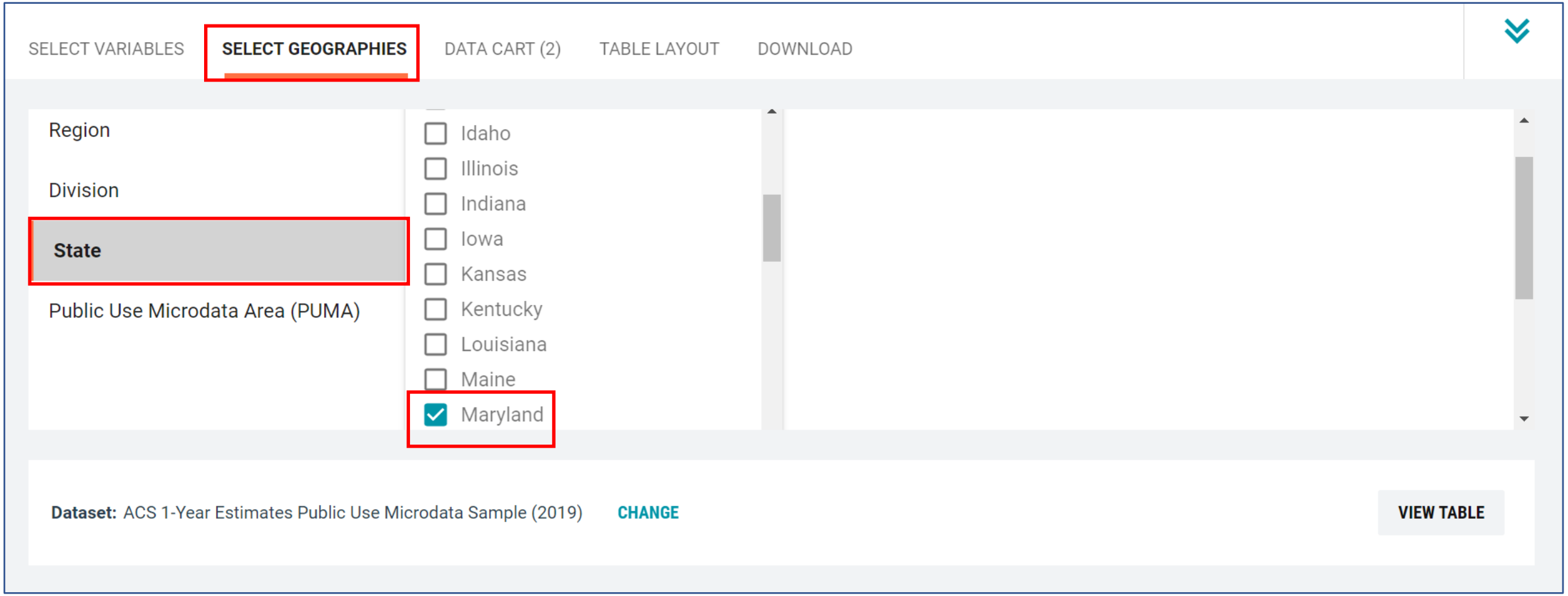
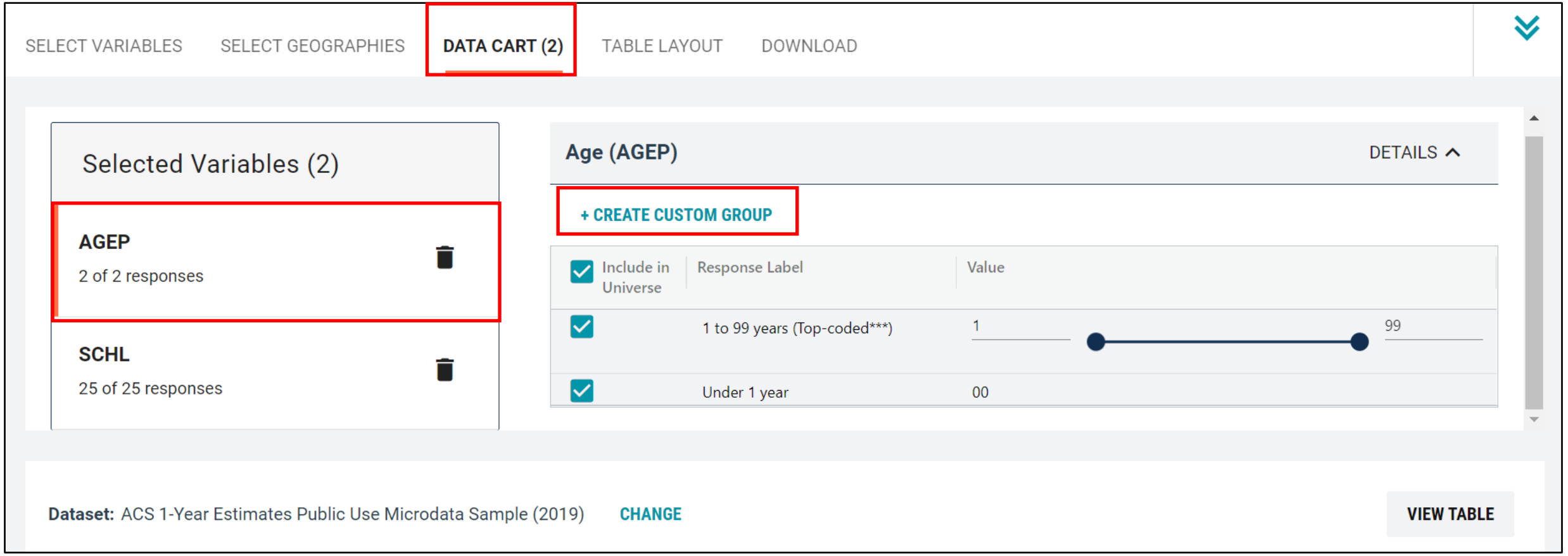
Select Geography

- Click the **SELECT GEOGRAPHIES** tab
- Click **State** and check the box for **Maryland**



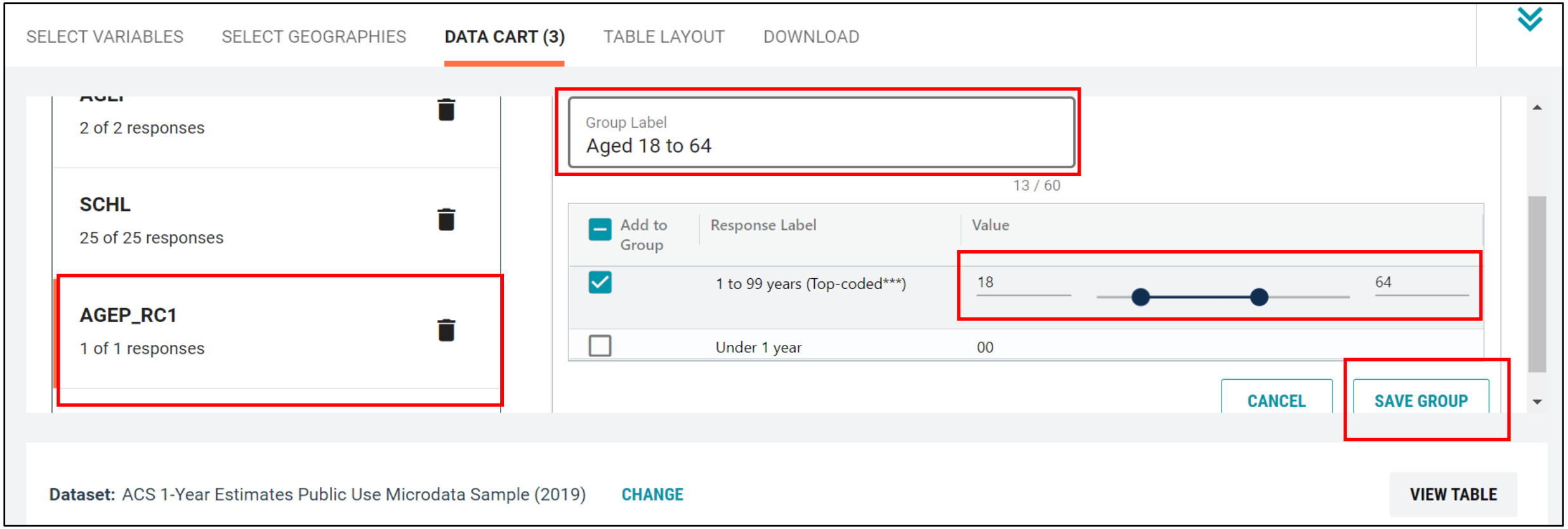
Data Cart

- Click on the **DATA CART** tab
- Recode to **AGEP** variable to include only 18 to 64 year olds
- Click on **CREATE CUSTOM GROUP** to recode the AGEP variable



Recode the AGEP Variable to 18 to 64 Years Old

- Name the new group in the **Group Label** box – '**Aged 18 to 64**'
- Move the AGEP value slider to include 18 to 64 only
- Click on SAVE GROUP
- You will see the new recoded variable for age – **AGEP_RC1**



Limit the Universe of the SCHL Variable

- Select the **SCHL** variable and uncheck all the boxes for education levels higher than high school graduate

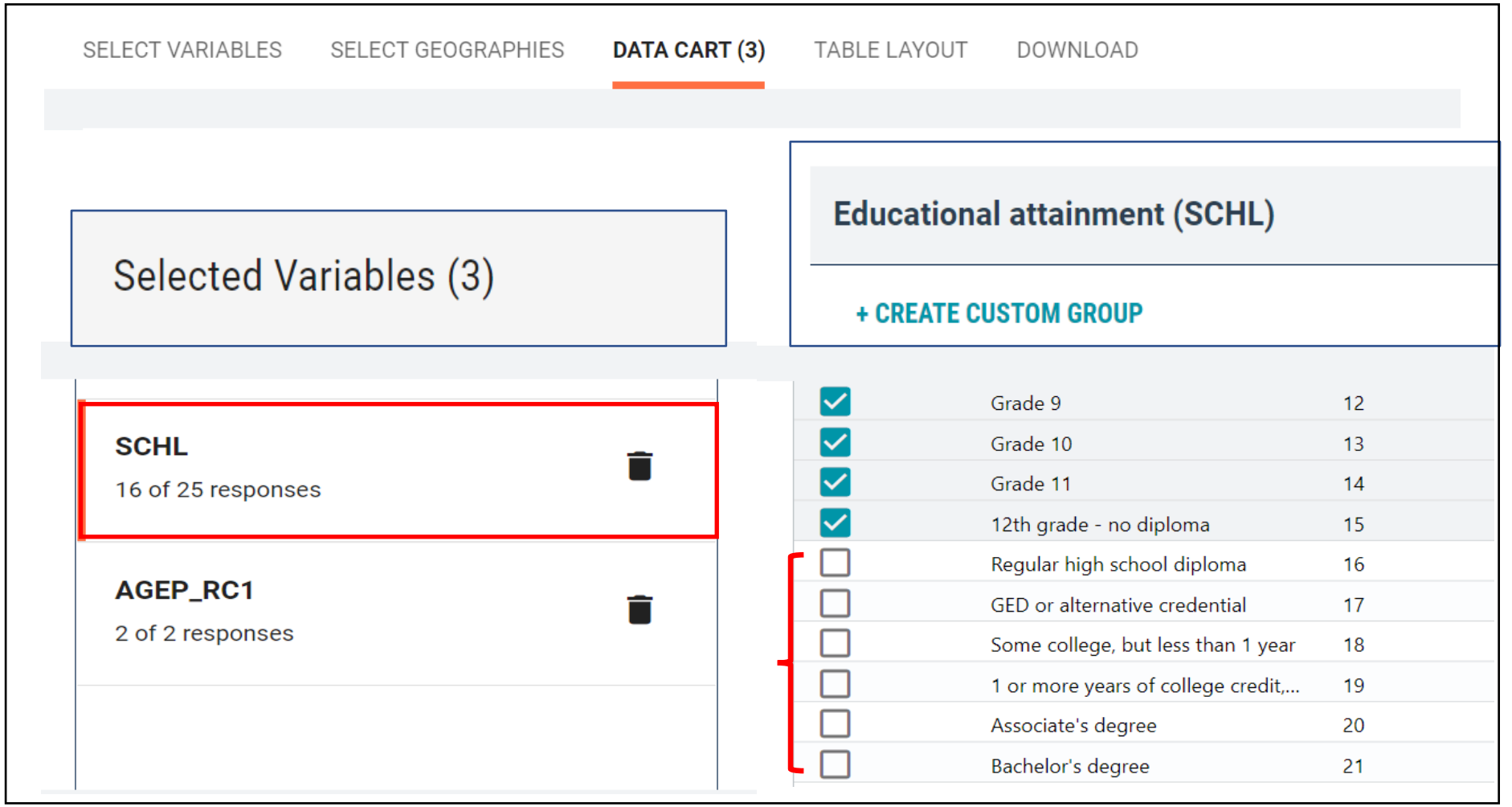


Table View

- Click on **VIEW TABLE**
- Drag variables to desired columns or rows.
- Drag **Selected Geographies** to Not on Table
- Make sure Weighting is on **PUMS person weight**
- Make sure the Values in table cells is on **Count** (not Average)

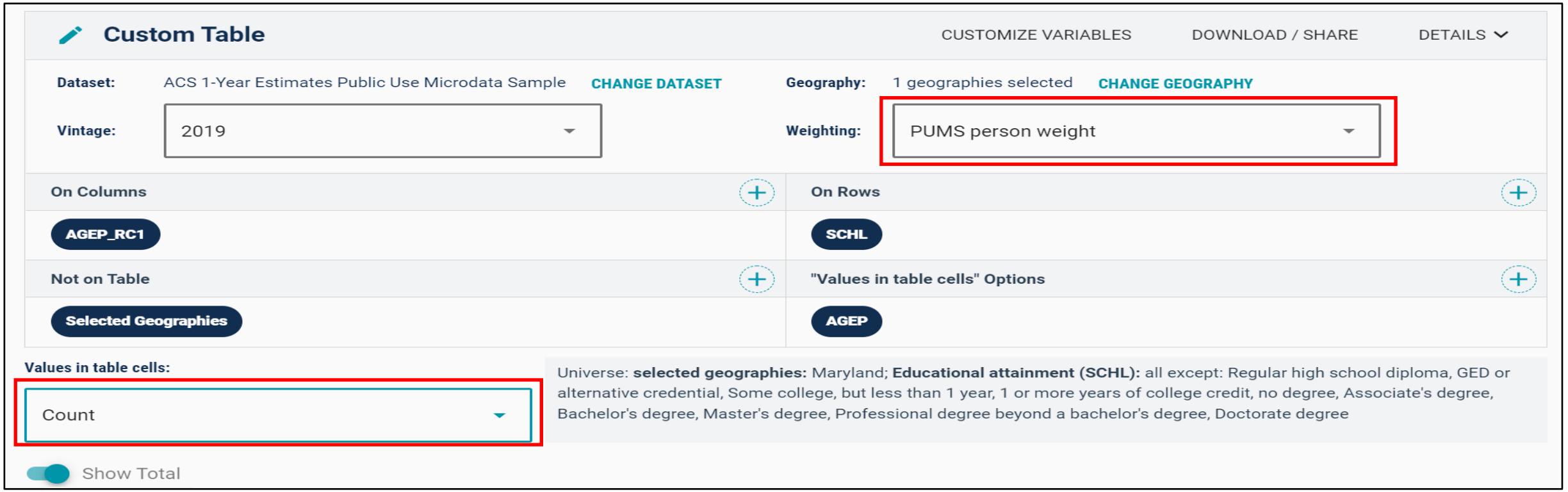
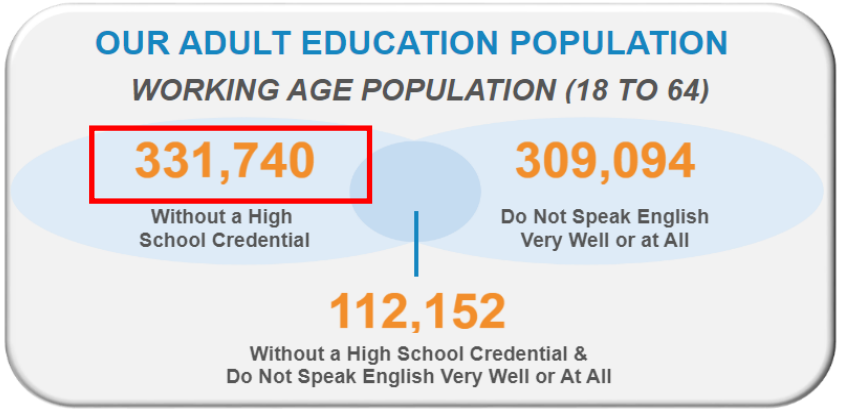


Table View

	Age recode (AGEP_RC1)		
Educational attainment	Total	Not Elsewhere Classified	Aged 18 to 64
Total (16)	1,784,400	1,452,660	331,740
N/A (less than 3 years ol...	202,009	202,009	0
No schooling completed	200,688	156,199	44,489
Nursery school, preschool	97,958	97,497	461
Kindergarten	72,232	71,885	347
Grade 1	72,643	71,324	1,319
Grade 2	74,111	71,337	2,774
Grade 3	76,929	73,079	3,850
Grade 4	81,428	77,123	4,305
Grade 5	92,232	84,392	7,840
Grade 6	112,811	86,240	26,571
Grade 7	99,399	86,876	12,523
Grade 8	119,765	98,377	21,388
Grade 9	114,756	79,822	34,934



Download

Custom Table

CUSTOMIZE VARIABLES | DOWNLOAD / SHARE | DETAILS

SELECT VARIABLES | SELECT GEOGRAPHIES | DATA CART (3) | TABLE LAYOUT | **DOWNLOAD**

- [x] Download table view (.CSV)
- [ ] Extract raw data (.CSV)
- [ ] Extract raw data (.JSON)

Include:

- [x] * PUMS person weight
- [ ] Housing Unit Weight

* weight associated with at least one variable in download

DOWNLOAD

	Age recode (AGEP_RC1)		
Educational attainment	Total	Not Elsewhere Classified	Aged 18 to 64
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Kindergarten	72,232	71,885	347
Grade 1	72,643	71,324	1,319
Grade 2	74,111	71,337	2,774
Grade 3	76,929	73,079	3,850
Grade 4	81,428	77,123	4,305
Grade 5	92,232	84,392	7,840
Grade 6	112,811	86,240	26,571
Grade 7	99,399	86,876	12,523
Grade 8	119,765	98,377	21,388
Grade 9	114,756	79,822	34,934

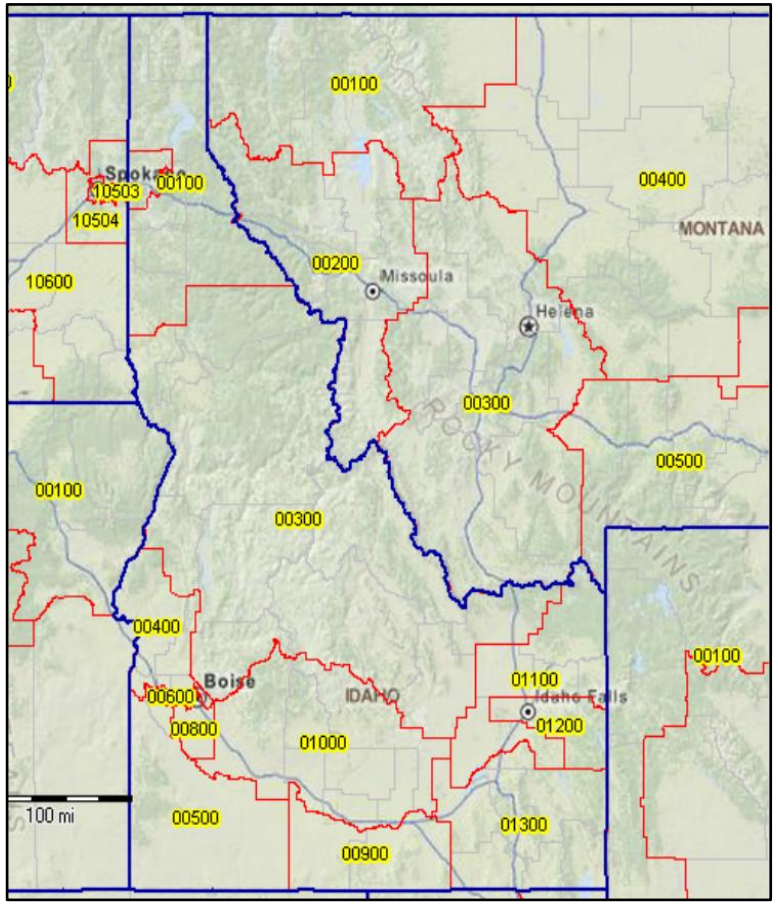
Dataset: ACS 1-Year Estimates Public Use Microdata Sample (2019) **CHANGE**

VIEW TABLE

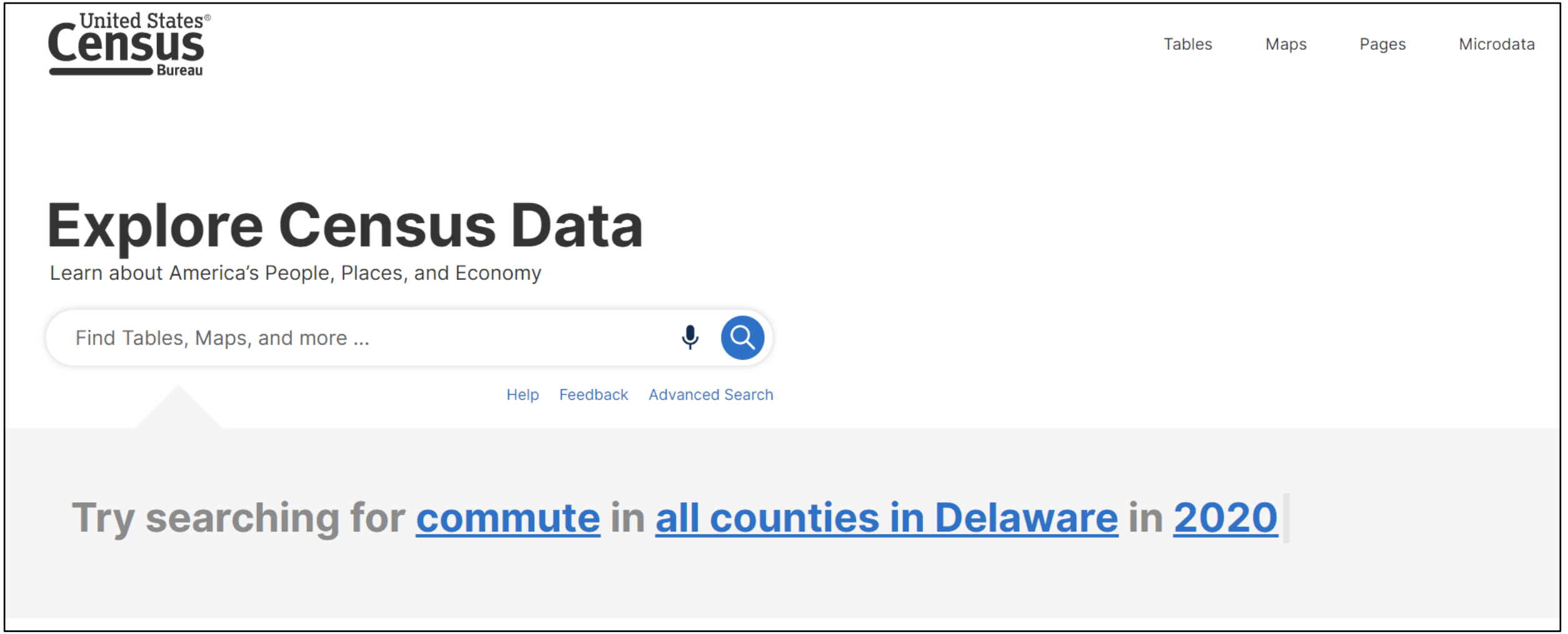
ACS PUMS Data by Idaho PUMAs

Total Without a High School Credential & Do Not Speak English Very Well or At All (Age 18 – 64): Idaho PUMAs

Idaho PUMAs	PUMA Code	Estimate
Idaho Total		21,236
Bonner, Latah, Shoshone, Boundary, Benewah & Kootenai (Southeast) Counties PUMA; Idaho	100	245
Kootenai County (Northwest)Coeur d'Alene, Post Falls & Hayden Cities PUMA; Idaho	200	0
Central Idaho, Lewiston City & Nez Perce Reservation PUMA, Idaho	300	363
Ada (North), Payette, Canyon (North), Gem & Washington CountiesEagle City PUMA; Idaho	400	1,432
Canyon (South) & Owyhee CountiesCaldwell & Nampa (South & West) Cities PUMA, Idaho	500	4,428
Canyon (East) & Ada (West) CountiesNampa (Central & East) & Meridian (West) Cities PUMA, Idaho	600	2,133
Ada County (Central)Meridian (Northeast) & Boise (Far West) Cities PUMA, Idaho	701	579
Ada County (Northeast)Boise (North & West) & Garden City Cities PUMA, Idaho	702	2,643
Ada County (South)Boise (South) & Kuna Cities PUMA, Idaho	800	863
Twin Falls & Cassia CountiesTwin Falls City PUMA, Idaho	900	357
Elmore, Jerome, Blaine, Minidoka, Gooding, Lincoln & Camas Counties PUMA; Idaho	1000	5,470
Bingham (Outside Fort Hall AIR), Madison, Jefferson, Fremont & Teton Counties PUMA; Idaho	1100	1,331
Bonneville County, Idaho Falls City PUMA, Idaho	1200	1,364
Southeast Idaho, Pocatello, Chubbuck Cities & Fort Hall Reservation PUMA; Idaho	1300	28



Accessing ACS Estimates With Data.census.gov



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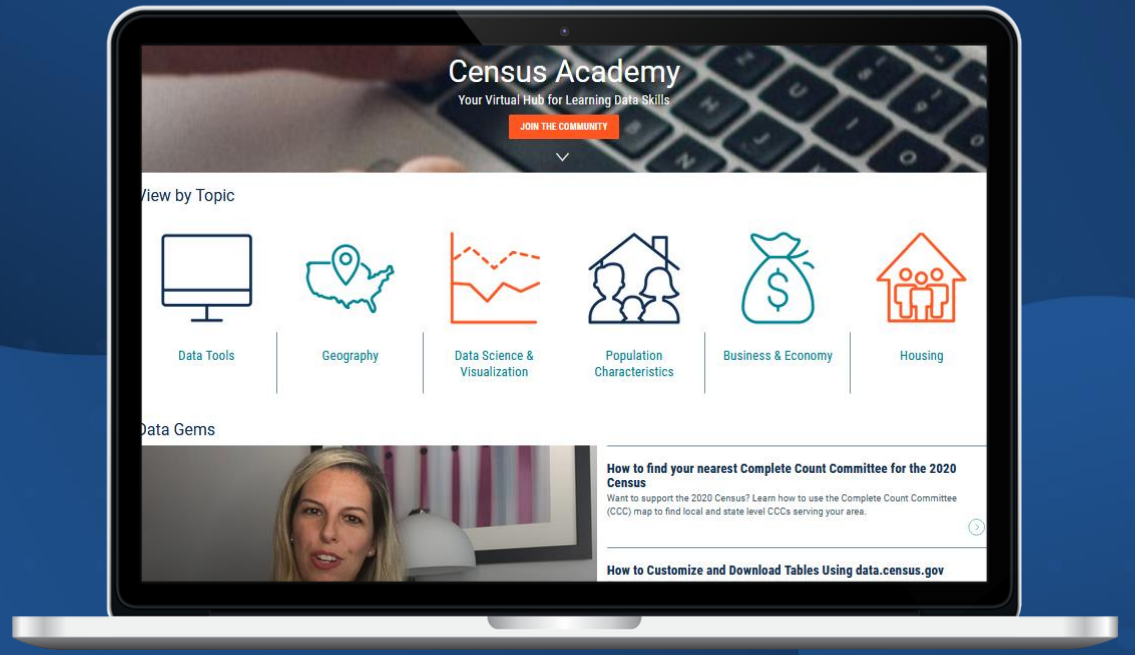

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THANK YOU