

# Understanding PUMAs and Creating Custom Tables with MDAT

April 17, 2024

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# Outline

- Microdata Basics
- Visualizing PUMAs on TIGERweb
- Microdata Access Tool (MDAT) Demo

# What is Public Use Microdata?

## Public Use Microdata

A diagram consisting of a horizontal line with two downward-pointing brackets underneath it. The left bracket is positioned under the word 'Anonymized' and the right bracket is positioned under the words 'Individual Responses'. This diagram visually separates the two categories of public use microdata.

### Anonymized

- No personally identifiable information
- Edits to protect confidentiality

### Individual Responses

- Must be tabulated and weighted by user

### Accessible

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

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



Label	Maryland	
	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](https://data.census.gov)

**Aggregated tables for a geography:**

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



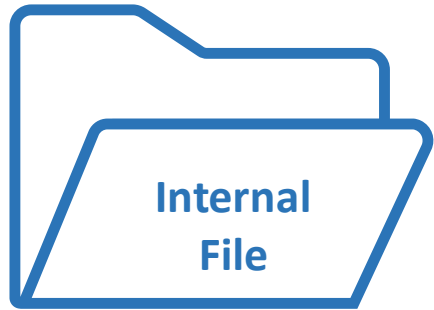
SERIALNO	SPORDER	ST	SEX	OCCP
2019HU0045422	4	24	1	4710
2019HU0045422	5	24	2	9
2019HU0045422	6	24	2	9
2019HU0045644	1	24	1	2100
2019HU0045764	1	24	2	5740
2019HU0045764	2	24	1	1031
2019HU0046210	1	24	1	150
2019HU0046210	2	24	2	5740

[Microdata Access Tool \(MDAT\)](#)

**Microdata (a set of edited survey responses):**

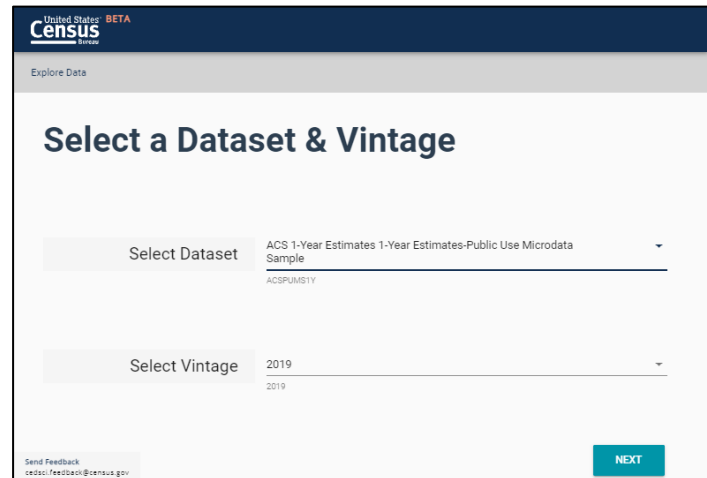
“This male in Maryland is a web developer.”

# 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

# Surveys in the Microdata Access Tool

- **American Community Survey (ACS)**
  - 1- Year and 5-Year Estimates
  - 2002-2005
- **Puerto Rico American Community Survey (PRCS)**
  - 1- Year and 5-Year Estimates
  - 2002-2009
- **Current Population Survey (CPS)**
  - Vintages of data dependent on supplement
- **Survey of Income and Program Participation (SIPP)**
  - Vintages of data dependent on panel

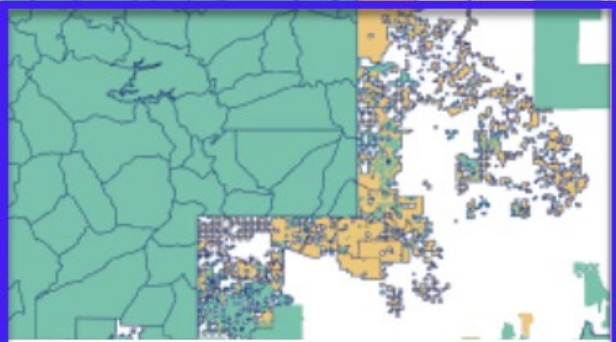
[What data are available in Microdata Access?](#)

# Available Geographies

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

CPS Available Geographies
Nation
State
Selected Counties (in CPS Basic)

SIPP Available Geographies
Nation
State



## TIGERweb

The TIGERweb viewer visualizes TIGER data, including legal and statistical boundaries and features like transportation and hydrography.



# TIGERweb Exercise: How to find PUMAs in Honolulu



# What are Public Use Microdata Areas (PUMAS)?

- Non-overlapping
- **Statistical** geographic areas
- Partition each state or equivalent entity into geographic areas containing **no fewer than 100,000 people each**
- Cover the **entirety** of the United States, Puerto Rico and Guam
- Created for the tabulation and dissemination of
  - Decennial Census and American Community Survey (ACS) Public Use Microdata Sample (PUMS)
  - ACS and Puerto Rico Community Survey (PRCS)

# What are Public Use Microdata Areas (PUMAS)?

- Delineation of new PUMAs occurs **after** the completion of the decennial census as part of a program involving the State Data Centers (SDCs)
- Created by using the latest decennial census population counts/census tracts

<https://www.census.gov/programs-surveys/geography/guidance/geo-areas/pumas.html>

# TIGERweb

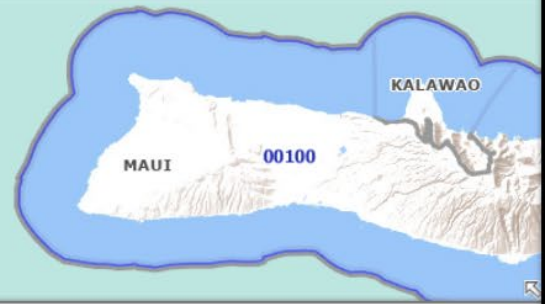
The **TIGERweb** application provides a simple way to **view** TIGER data without Geographic Information System (GIS) software and without downloading data

This application allows users to:

- Select features and view their attributes
- To search for features by name or geocode
- To identify features by selecting them from a map

- Select Vintage: Current
- Labels
  - Transportation (Roads and Railroads)
  - PUMAs, UGAs, and ZCTAs
    - 2020 Census Public Use Microdata Areas
    - 2020 Census ZIP Code Tabulation Areas
  - Tribal Census Tracts and Block Groups
  - Census Tracts and Blocks
  - Military and Other Special Land Use Areas
  - School Districts
  - Places and County Subdivisions
  - American Indian, Alaska Native, and Native Hawaiian Areas
    - Legislative Areas
    - Census Regions and Divisions
    - Urban Areas
    - Metropolitan and Micropolitan Statistical Areas and Related Statistical Areas
  - Hydrography
  - States and Counties

Map navigation controls: Home, X, Zoom in (+), Zoom out (-)



Zoom: 10  
1:577,791      10mi      20km

Current Extent (degs):  
[-158.8067, 21.0120] [-156.8470, 21.9448]

Map Loaded.

# Table B16002 – Detailed Household Language by Household Limited English

**B16002** | Detailed Household Language by Household Limited English Speaking Status

American Community Survey | Universe: Households | 2022: ACS 1-Year Estimates Detailed Tables

Notes | Geos | Topics | Codes | Dataset | Year | Hide | Transpose

United States		
Label	Estimate	Margin of Error
▼ Total:	129,870,928	±136,261
English only	100,177,882	±148,759
▼ Spanish:	16,893,857	±57,591
Limited English speaking household	3,231,270	±38,323
Not a limited English speaking household	13,662,587	±59,705
▼ French, Haitian, or Cajun:	1,131,373	±21,436
Limited English speaking household	131,556	±7,866
Not a limited English speaking household	999,817	±19,932
▼ German or other West Germanic languages:	808,727	±14,812
Limited English speaking household	53,984	±4,209
Not a limited English speaking household	754,743	±14,664
▼ Russian, Polish, or other Slavic languages:	1,083,150	±20,469
Limited English speaking household	254,097	±8,793

Pre-tabulated **B16002** has data on household languages but the data is limited. What if we wanted to look at more languages?

# MDAT Demonstration

- Detailed household languages for limited English-speaking households by PUMA
  - Tagalog
  - Ilocano
  - Japanese
  - Spanish
  - Chinese

# Limitations of the Microdata Access Tool

The site does not currently have the functionality to:

- Calculate medians, percentages, or margins of error
- Show data over time in a single view
- Calculate an average over time for monthly CPS datasets
- Create new variables from existing variables, including:
  - Applying inflation-adjustment variables like ADJINC to dollar values

# Benefits of the Microdata Access Tool

## Benefits of the Microdata Access Tool:

- Create custom tables that provide more topic detail compared to a pre-tabulated table on [data.census.gov](https://data.census.gov)
- Save or download your results easily
- No need to purchase or learn complex statistical software



# Where can I find more information?

- MDAT (Microdata Access Tool)
  - <https://data.census.gov/mdat/#/>
- PUMA Main Page/Guidance
  - <https://www.census.gov/programs-surveys/geography/guidance/geo-areas/pumas.html>
- Microdata from 1980-present
  - [PUMS Files \(census.gov\)](#)

# Stay Connected

Microdata Access Tool (MDAT)  
Resources Page:

[census.gov/data/what-is-data-census-gov/guidance-for-data-users/how-to-materials-for-using-the-microdata-access.html](https://www.census.gov/data/what-is-data-census-gov/guidance-for-data-users/how-to-materials-for-using-the-microdata-access.html)

Feedback/Data Questions:  
[census.data@census.gov](mailto:census.data@census.gov)

data.census.gov Training Requests:  
[ced.cedsci.outreach@census.gov](mailto:ced.cedsci.outreach@census.gov)



The screenshot shows a webpage with a blue header featuring a QR code and the text "data.census.gov Resources" and "EXPLORE DATA ON DATA.CENSUS.GOV". The main content area has a breadcrumb trail: "// Census.gov / Data / data.census.gov Resources / Guidance for Data Users / How-to Materials for Using the Microdata Access". The page title is "How-to Materials for Using the Microdata Access". A sidebar on the left lists navigation options: "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" (highlighted), "Video Tutorials", and "Webinars". The main text asks if the user has questions on how to use Microdata Access and provides two links: "Using Microdata Access: With ACS 1-Year Estimates – Public Use Microdata Sample [1.5 MB]" and "Using Microdata Access: How To Create Poverty Estimates From The CPS ASEC [2.4 MB]". A "Share" button with Facebook, Twitter, and LinkedIn icons is also present. A "Top" button is in the bottom right corner.