3. ACCESSING ACS DATA

Data.census.gov is the U.S. Census Bureau's primary tool for accessing population, housing, and economic data from the American Community Survey (ACS), the decennial census, and many other Census Bureau data sets.[13] Data.census.gov provides access to ACS data for a wide range of geographic areas including states, cities, counties, American Indian and Alaska Native areas, census tracts, and block groups. Data users interested in accessing data for these geographic areas are encouraged to refer to the section on "Accessing ACS Data" in the Census Bureau's handbook on *Understanding and Using American Community Survey Data: What All Data Users Need to Know*.[14]

Data users can access pretabulated data for urban/rural areas as well as metropolitan statistical areas, micropolitan statistical areas, and areas outside of metropolitan and micropolitan statistical areas

through the "Geographic Components" option in data.census.gov. A geographic component is the portion of a geographic area that meets certain criteria such as "in a metropolitan statistical area" or "in a rural area." Geographic components are available for the nation, regions, divisions, and for each of the 50 states, the District of Columbia, and Puerto Rico.

ACS data are tabulated for 15 different geographic components, including urban, rural, in metropolitan statistical area, in micropolitan statistical area, in metropolitan or micropolitan statistical area, not in metropolitan or micropolitan statistical area, and several others.

In the example below, we use the geographic components in data.census.gov to compare the median value of owner-occupied housing in urban and rural areas in Alabama in 2018.[15]

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[13] U.S. Census Bureau, data.census.gov, <https://data.census.gov>.
[14] U.S. Census Bureau, Understanding and Using American Community Survey Data: What All Data Users Need to Know, <www.census.gov/programs-surveys/acs/guidance/handbooks /general.html>.

[15] For more tips on how to select geographic components and for quick links for collections of geographies (e.g., rural areas for all states in the United States), visit the "How do I select geographic components such as urban/rural FAQ" at <https://ask.census.gov/prweb /PRServletCustom?pyActivity=pyMobileSnapStart&ArticleID=KCP -5943>.
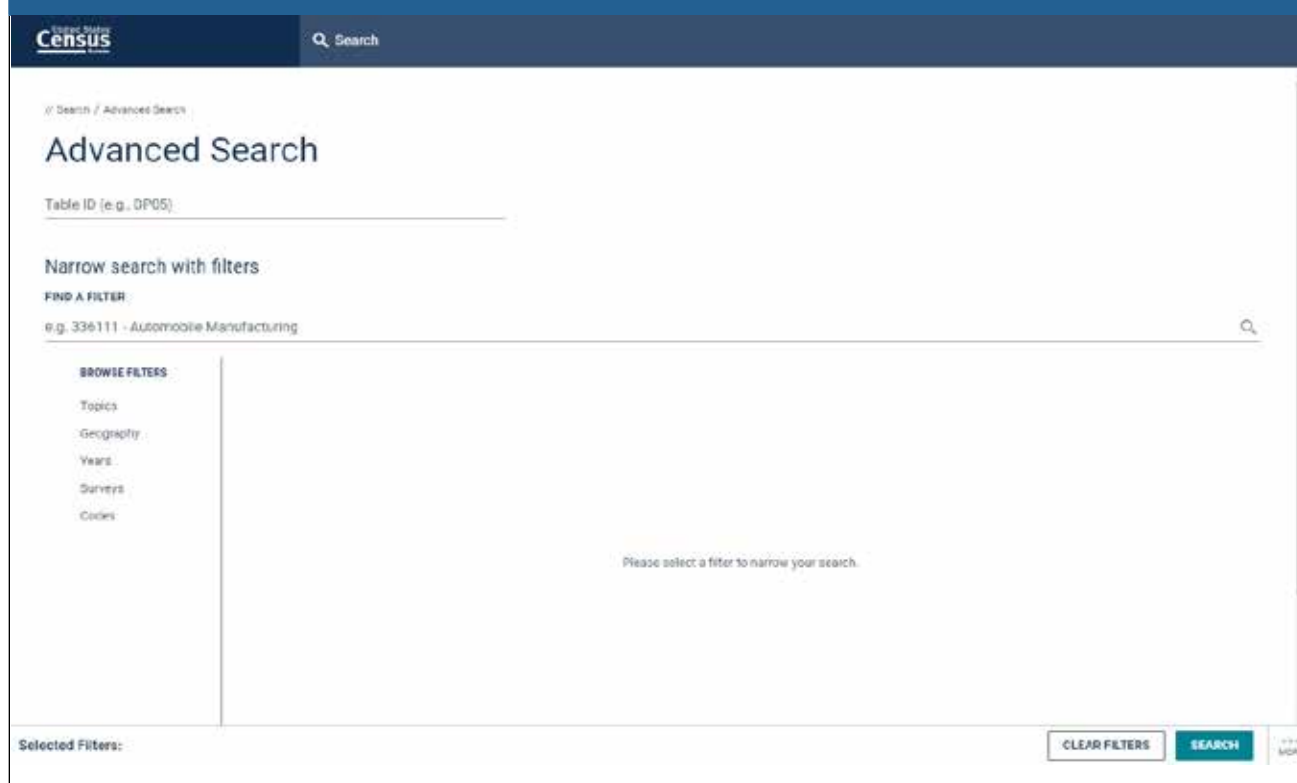
To select a geographic component:

- Click on "Advanced Search" under the search bar. This brings you to the Advanced Search window (see Figures 3.1 and 3.2).

Figure 3.1. Starting an Advanced Search in Data.census.gov

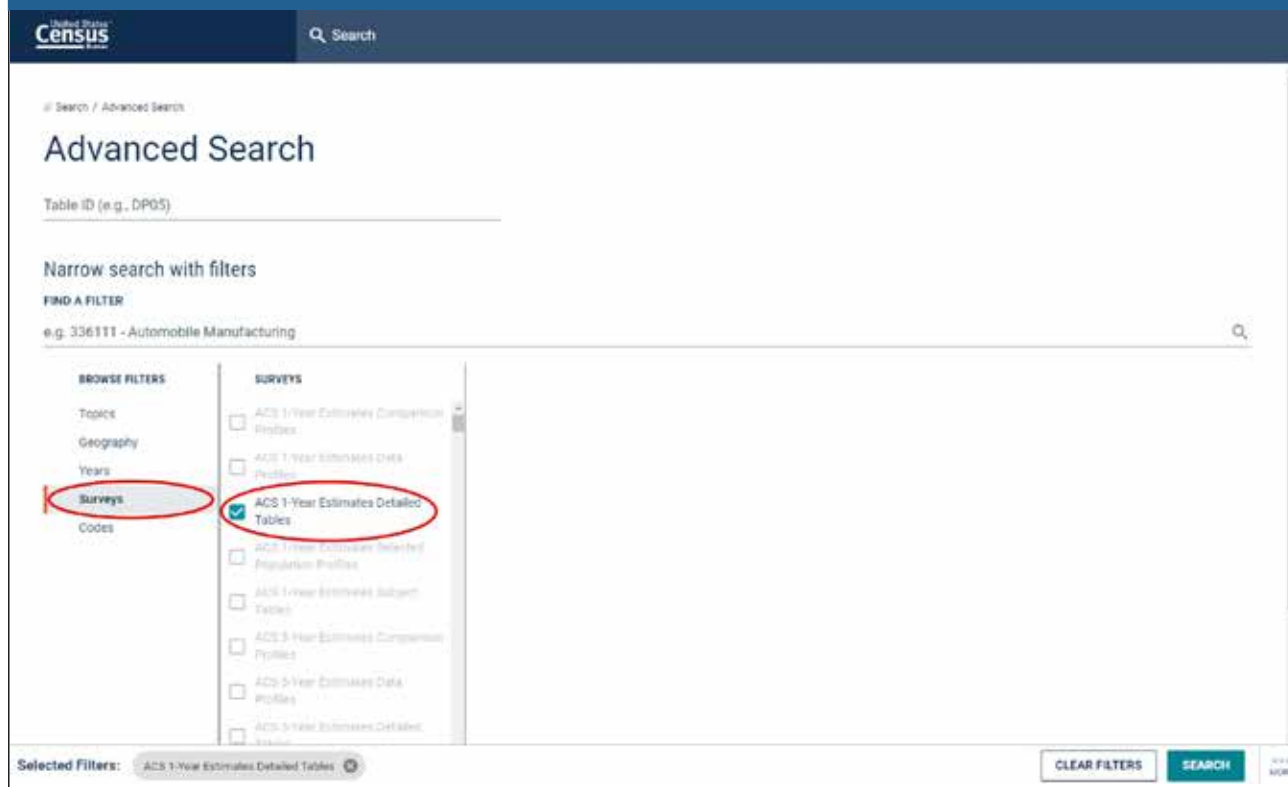Source: U.S. Census Bureau, data.census.gov, <https://data.census.gov>.

Figure 3.2. Starting an Advanced Search in Data.census.gov

Source: U.S. Census Bureau, data.census.gov, <https://data.census.gov>.

- Click on "Surveys" to display a list of available data products. Then, select "ACS 1-Year Estimates Detailed Tables" (see Figure 3.3). By selecting the survey first, it's easier to select the geography later because data.census.gov will only display the geographic components available for the selected survey.

Figure 3.3. **Selecting a Survey in Data.census.gov**

Source: U.S. Census Bureau, data.census.gov, <https://data.census.gov>.

- To find information for rural and urban areas, select the "Geography" filter and click "State." Then turn on the "Show Geographic Components" toggle switch and scroll to select "Alabama," "Alabama - Rural," and "Alabama - Urban."

- Verify that your survey and geography selections appear in the "Selected Filters" at the bottom of the window (see Figure 3.4).

Figure 3.4. Selecting Geographic Components in Data.census.gov
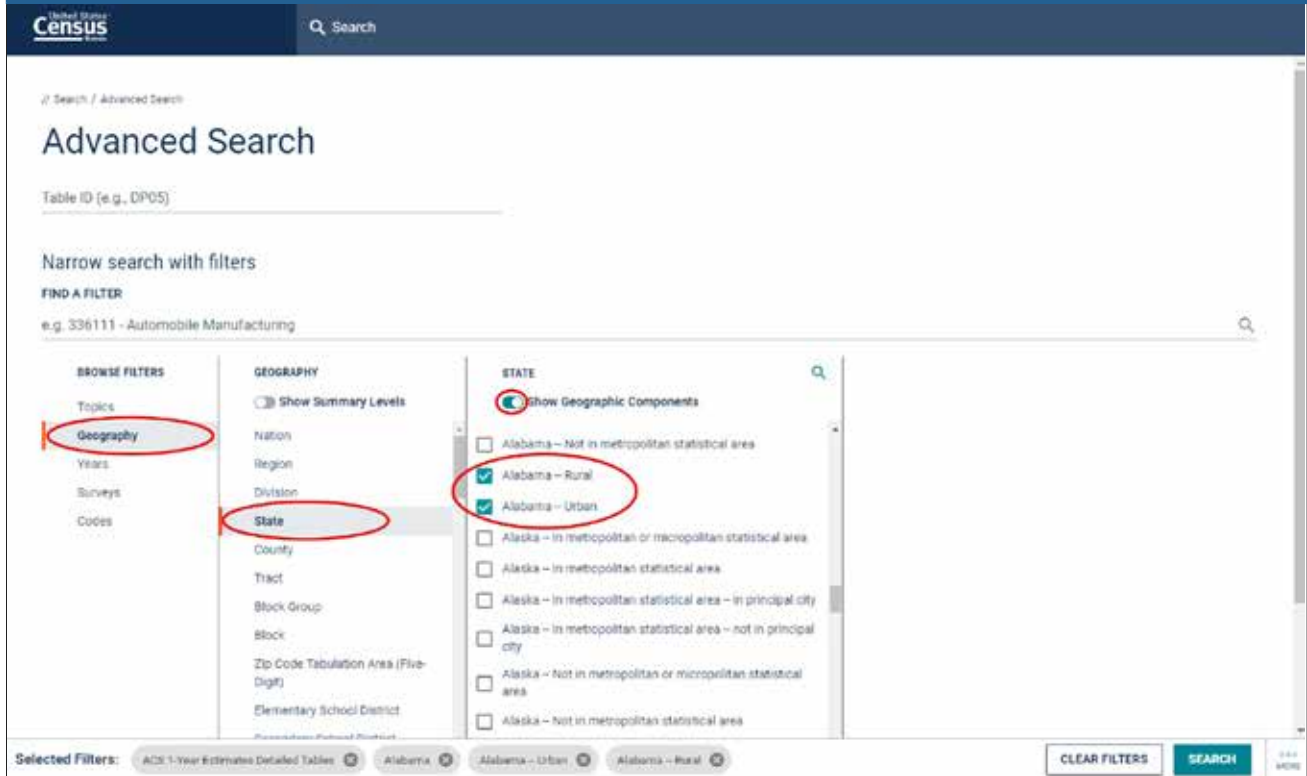
Source: U.S. Census Bureau, data.census.gov, <https://data.census.gov>.

- For this example, we already know the desired table ID: Table B25077: "Median Value (Dollars)."

- Type "B25077" into the first text box directly under the Advanced Search heading. Then click "Search" in the lower right corner (see Figure 3.5).

Figure 3.5. **Selecting Tables in Data.census.gov**

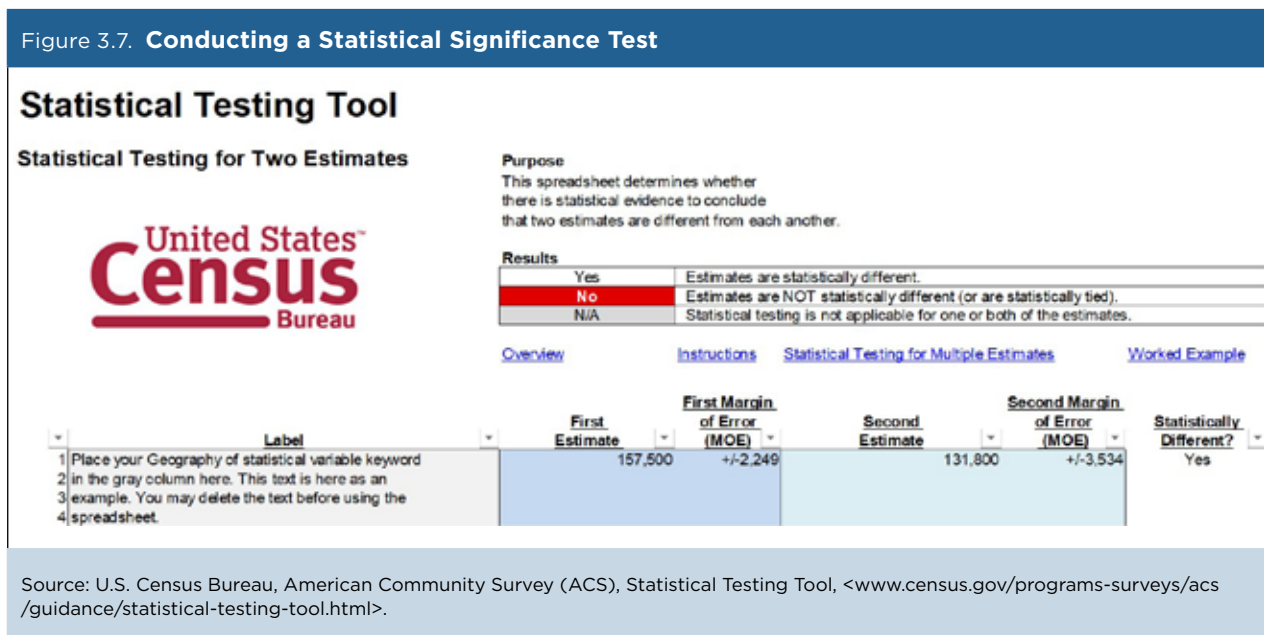Source: U.S. Census Bureau, data.census.gov, <https://data.census.gov>.

- Click on the table title corresponding to Table B25077 and select it to view the results.

- The results indicate that in Alabama, the median value of owner-occupied housing units in 2018 was higher in urban areas ($157,500) than rural areas ($131,800) (see Figure 3.6).

Figure 3.6. **Viewing Results in Data.census.gov**

Source: U.S. Census Bureau, data.census.gov, <https://data.census.gov>.
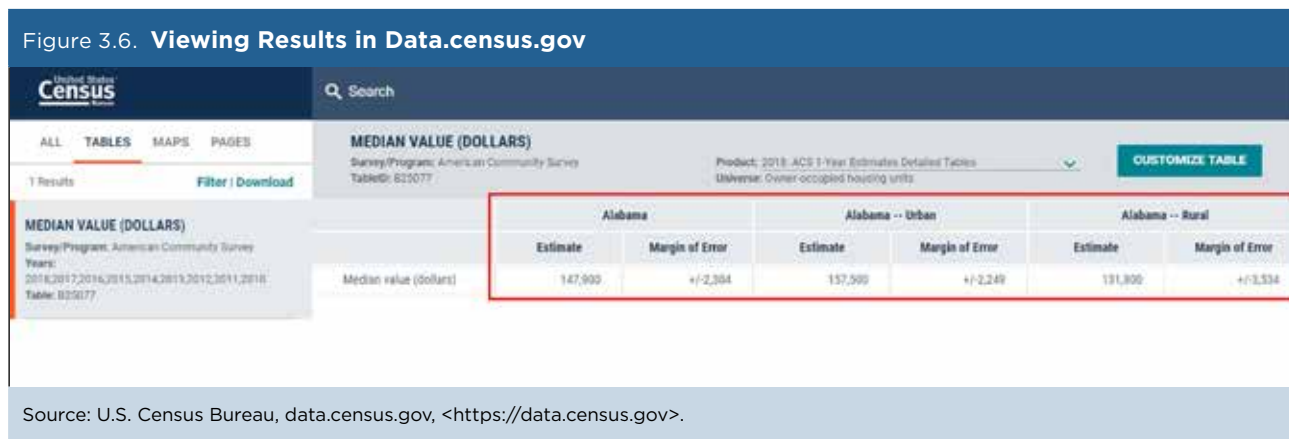
However, data users need to conduct a test to determine whether this difference is statistically significant. The Census Bureau's Statistical Testing Tool consists of an Excel spreadsheet that will automatically calculate statistical significance when data users are comparing two ACS estimates or multiple estimates. The results are calculated automatically. In this example, the result "Yes" indicates that the median household income estimates are statistically different (see Figure 3.7).

Figure 3.7. **Conducting a Statistical Significance Test**

Source: U.S. Census Bureau, American Community Survey (ACS), Statistical Testing Tool, <www.census.gov/programs-surveys/acs/guidance/statistical-testing-tool.html>.

Public Use Microdata Areas

Data users interested in custom ACS estimates for rural areas often use the Census Bureau's Public Use Microdata Sample (PUMS) files, which contain a sample of individual records of people and households that responded to the survey (stripped of all identifying information). In general, the PUMS files are more difficult to work with than published tables from data.census.gov because data users need to use a statistical package to access the data. Also, the responsibility for producing estimates from PUMS and judging their statistical significance is up to the user.

The main advantage of the PUMS files is that they permit analysis of specific population groups and custom variables that are not available through the pretabulated tables in data.census.gov. For example, PUMS data users could compare the poverty status of veterans and nonveterans by level of education, which is not available in the Census Bureau's published tables.

PUMS data are available for regions, divisions, states, and Public Use Microdata Areas, or PUMAs—geographic areas with a minimum population of 100,000. In addition to the 100,000-population threshold, PUMAs are constructed based on census tract or county boundaries.[16] PUMAs do not cross state lines. PUMAs are updated after each decennial census.

[16] U.S. Census Bureau, Geography, Public Use Microdata Areas (PUMAs), <www.census.gov/programs-surveys/geography/guidance /geo-areas/pumas.html>.

> *TIP: PUMAs are especially useful for looking at characteristics in rural areas because, unlike many of the geographic units in these areas (such as small towns), PUMAs all surpass the 65,000-population threshold that is needed to provide ACS 1-year estimates.*

Counties with populations greater than 200,000 are generally subdivided into multiple PUMAs, while less populous counties are grouped with adjacent counties to form PUMAs. On the other hand, because of the requirement that each PUMA encompass at least 100,000 people, few are predominantly rural. (For more information about ACS population thresholds, see the section on "Considerations When Working With ACS Data").

Figure 3.8 shows an example of a PUMA consisting of five adjacent counties in eastern Kentucky that comprise the Big Sandy Area Development District (Kentucky PUMA 01100). In this case, all of the counties making up the PUMA are outside of metropolitan and micropolitan statistical areas, but other PUMAs may be located entirely within metropolitan statistical areas, or include combinations of metropolitan counties, micropolitan counties, and counties outside of metropolitan and micropolitan statistical areas.

Figure 3.8. Big Sandy Area Development District (Kentucky PUMA 01100)
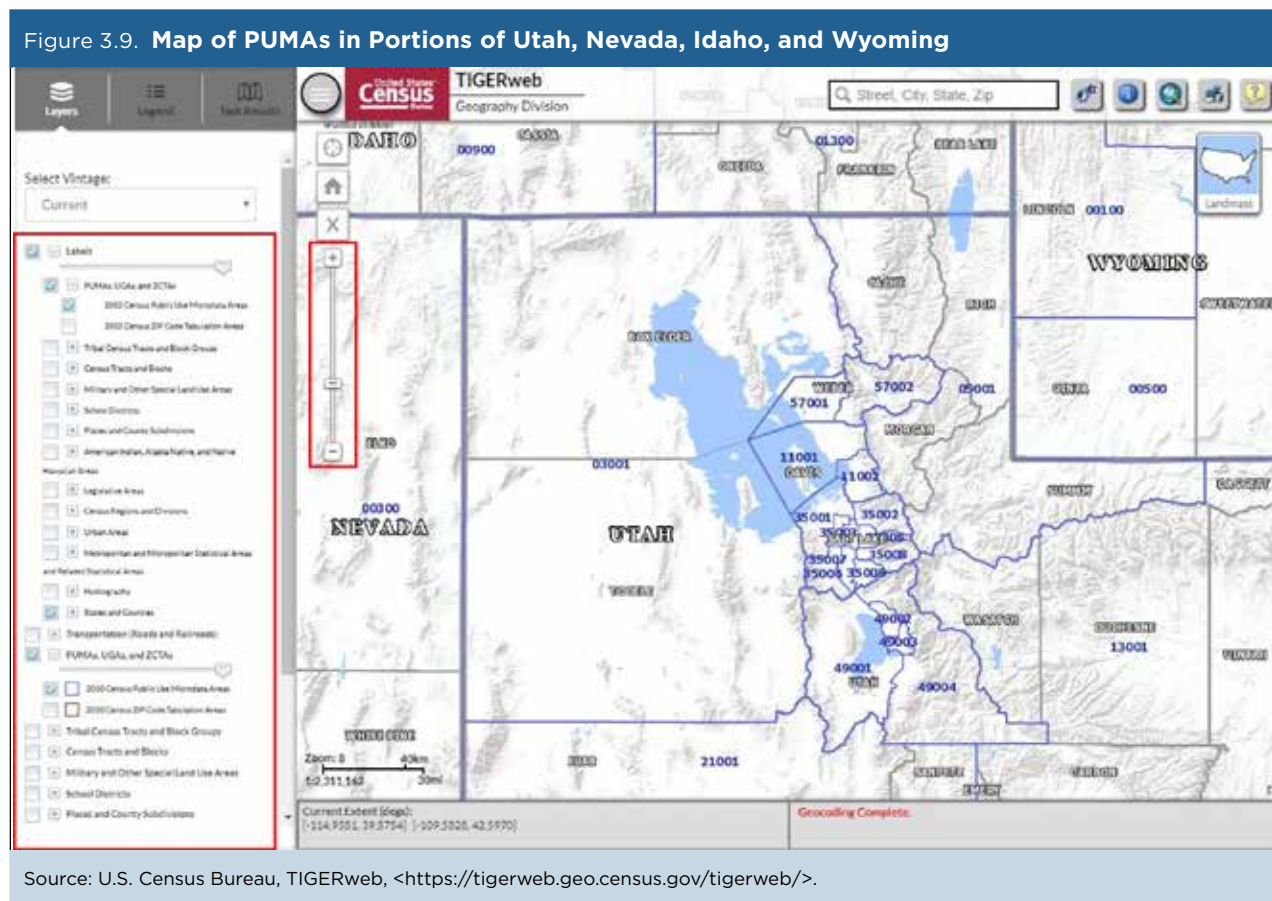

Source: U.S. Census Bureau.

What Users of Data for Rural Areas Need to Know
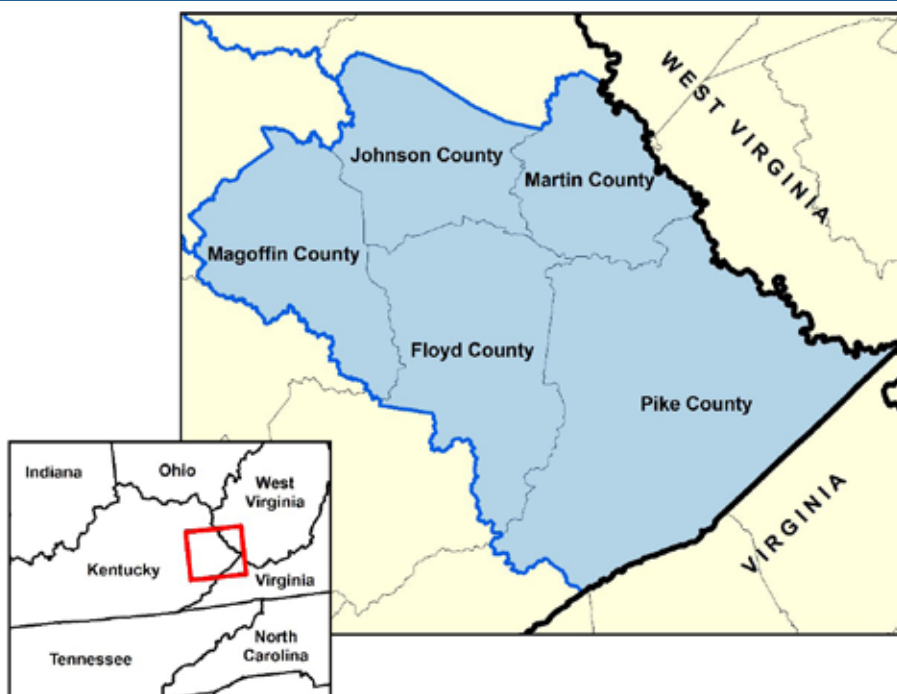
Data users can visualize PUMAs online using the Census Bureau's TIGERweb application.[17]

- Go to the TIGERweb Web site at <https://tigerweb.geo.census.gov/tigerweb/>.

- Use the Zoom In feature on the map—by clicking on the individual plus sign or using the slide bar—to display a geographic area of interest.

- Then use the "Layers" menu to select "2010 Census Public Use Microdata Areas." Figure 3.9 shows a TIGERweb map of PUMA boundaries in portions of Utah and other states in the Mountain West.

For more information about using TIGERweb, see the Census Bureau's TIGERweb User Guide.[18]

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[17] U.S. Census Bureau, Geography Division, TIGERweb, <https://tigerweb.geo.census.gov/tigerweb/>.

[18] U.S. Census Bureau, TIGERweb User Guide, <https://tigerweb.geo.census.gov/tigerwebmain/TIGERweb_User_Guide.pdf>.

Figure 3.9. **Map of PUMAs in Portions of Utah, Nevada, Idaho, and Wyoming**

Source: U.S. Census Bureau, TIGERweb, <https://tigerweb.geo.census.gov/tigerweb/>.

User-Defined Areas

Beyond the standard legal and statistical geographic entities created by the Census Bureau, there are instances where analysts might want to show data for a custom, user-defined geographic area. For example, many states have regional planning commissions designed to foster cooperation among contiguous counties with similar needs. Figure 3.10 shows an image of the Eastern Upper Peninsula Regional Planning and Development Commission, 1 of 14 regional agencies in Michigan that serves the needs of the three easternmost counties of the state's Upper Peninsula (Luce, Chippewa, and Mackinac Counties).
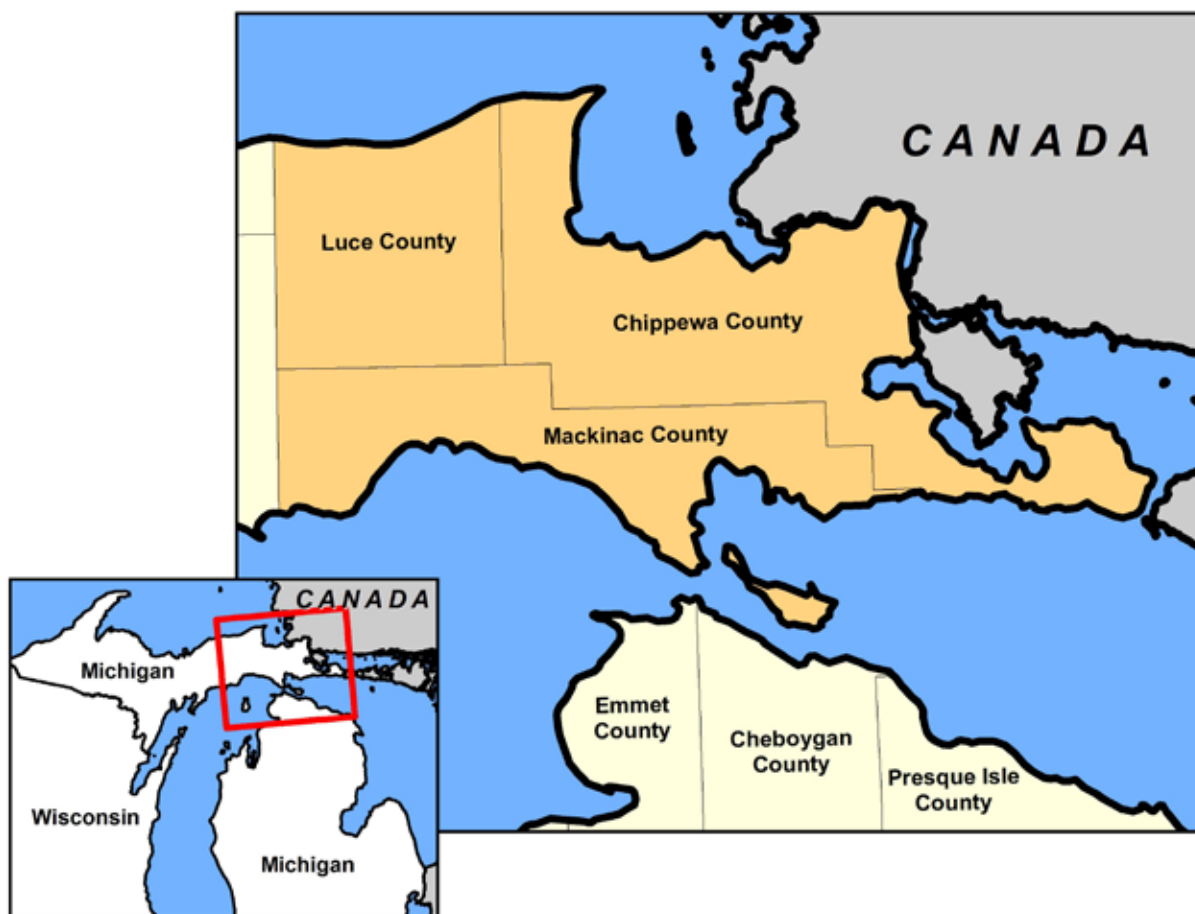
Examples of multistate agencies with similar aims are the Appalachian Regional Commission, consisting of more than 400 counties in 13 states, and the Delta Regional Authority, which serves the needs of residents of 252 counties in 8 states.[19]

When aggregating ACS estimates across different geographic areas or population subgroups, data users should avoid combining ACS single-year estimates with ACS 5-year estimates. That is, 1-year estimates should only be combined with other 1-year estimates, and 5-year estimates should only be combined with other 5-year estimates. When such derived estimates are generated, the user must also calculate the associated margins of error. For more information about creating ACS estimates for custom geographic areas, see the section on "Calculating Measures of Error for Derived Estimates" in the Census Bureau's handbook on Understanding and Using American Community Survey Data: What All Data Users Need to Know.[20]

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[19] Appalachian Regional Commission, <http://arc.gov>; and Delta Regional Authority, <http://dra.gov>.

[20] U.S. Census Bureau, Understanding and Using American Community Survey Data: What All Data Users Need to Know, <www.census.gov/programs-surveys/acs/guidance/handbooks/general.html>.

Figure 3.10. Eastern Upper Peninsula Regional Planning and Development Commission, Michigan

Source: Eastern Upper Peninsula Regional Planning and Development Commission.