

Downloading and Preparing U.S. Census Bureau Data for Mapping ArcGIS 10.4+

Welcome to the Essential ArcGIS Task Sheet Series. This series supplements the Iowa State University GIS Geospatial Technology Training Program short course series, "Essential ArcGIS Tutorial Series." The task sheets are designed to provide quick, easy instructions for performing specific tasks in GIS.

The U.S. Census Bureau provides many different datasets on topics such as population, demographics, housing and income. The American Fact Finder website allows users to find and download data collected through the decennial census and other surveys. This task sheet will take you through the steps of downloading U.S. Census Bureau data from the American Fact Finder website, and preparing the file for mapping in ArcGIS.

1. Getting Started

- a. To download the data used in this task sheet, navigate to www.extension.iastate.edu/communities/gis/ guicktasksheets/data and click on the publication number: PM2082-160.
- b. When the download is complete, unzip the folder in order to access the files in ArcGIS. The folder contains a shapefile of counties in Iowa, as well as the U.S. Census data used in this task sheet. Follow steps 2a - 2f to go through the Census data download process.

2. Downloading data from American Fact Finder

- In a web browser, navigate to the American Fact Finder website at http://factfinder.census.gov/.
- b. Select Advanced Search and click on Show Me All. Use the search filters on the left to narrow data searches by topics, datasets, geography and more. Click on the Geographies filter, select County - 050 as the geographic type, select **lowa** as the state, and All Counties within lowa as the geographic area. Click Add To Your Selections, you should now see All **Counties in Iowa** listed under the **Your Selection** box. Close the **Select Geographies** window.
- In the search bar at the top of the page, type **income** С. and click **Go**. All the search results that meet your two selection criteria are displayed in the search results. Each result will show you the table ID, table name, and the dataset with which is providing the data.
- d. Select the result with table ID **S1901**, and Dataset **2014** ACS 5-year estimates. After selecting S1901 you will see a table showing income data for all counties in Iowa. Note: New ACS 5-year estimates are available in early Dec.





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- e. Click **Download**, from the actions listed above the table. In the **Download** window, keep default options and click **OK**. Then click **Download** to save the file.
- f. The data is downloaded in a zipped folder called ACS_14_5YR_S1901.zip. The zip file contains a number of documents related to the downloaded table, including:
 1. ACS_14_5YR_S1901.txt (notes file)
 - 2. ACS_14_5YR_S1901_metadata.csv (metadata file)
 - 3. ACS 14 5YR S1901 with ann.csv (data file)
 - 4. **aff_download_readme_ann.txt** (download info)

3. Preparing Census Data to be Joined

- a. Open ACS_14_5YR_S1901_with_ann.csv in Excel, or other spreadsheet program. Notice the GEO.id2 field, this is the county FIPS code and is a unique identifier that can be used to join the data to a shapefile for mapping. Before this can happen, the second (header) row in the table that shows the data descriptors needs to be deleted. Highlight row 2 in the table, right-click, and select Delete. Before you save and close the file, remove all . and - characters from row 1. *Note: The . and - are considered invalid characters and will make the join fail.*
- b. Open a blank ArcMap document. Add counties.shp, and ACS_14_5YR_S1901_with_ann.csv. Right-click on counties.shp and select Open Attribute Table, right-click on ACS_14_5YR_S1901_with_ann.csv and select Open. In the counties.shp attribute table right-click on the FIPS field and select Properties. You will see Type listed as String. Right-click on the GEOid2 field from the census data table, and select Properties. You will see Type listed as Long. These field types need to match exactly in order for a join to be successful, and in this case they don't match. The following steps will fix this.
- c. In the counties.shp attribute table, click on the Table
 Options icon in the top left corner and select Add Field.
 Name the field FIPS2, set the type as Long Integer and click OK.
- d. Right-click on the **FIPS2** field, and select **Field Calculator**. Double-click **FIPS** and click **OK**. *Note: The FIPS2 and GEOid2 fields will now match in unique values and field type. The join between counties.shp and is now ready* ACS_14_5YR_S1901_with_ann.csv.

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Name	Туре	Compressed size
ACS_14_5YR_S1901.txt	Text Document	2 KB
ACS_14_5YR_S1901_metadata.csv	Microsoft Excel Comma S	2 KB
ACS_14_5YR_S1901_with_ann.csv	Microsoft Excel Comma S	21 KB
aff_download_readme_ann.txt	Text Document	1 KB

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FID	Shape	FIPS	COUNTY	ST	*	GEO.id	GEO.id2	GEO.display-la
0	Polygon	19119	Lyon	А		0500000US19001	19001	Adair County, Iowa
1	Polygon	19143	Osceola	A	-	0500000US19003	19003	Adams County, Iowa
2	Polygon	19059	Dickinson	A	-	0500000US19005	19005	Aliamakee County, Iowa
3	Polygon	19083	Emmet	A		0500000US19007	19007	Appanoose County, low
4	Polygon	19005	Allamakee	A		0500000US19009	19009	Audubon County, Iowa
5	Polygon	19109	Kossuth	A		0500000US19011	19011	Benton County, Iowa
6	Polygon	19191	Winneshiek	A		0500000US19013	19013	Black Hawk County, low
7	Polygon	19089	Howard	A		0500000US19015	19015	Boone County, Iowa
8	Polygon	19189	Winnebago	A		0500000US19017	19017	Bremer County, Iowa
9	Polygon	19131	Mitchel	A		0500000US19019	19019	Buchanan County, Iowa
10	Polygon	19195	Worth	A		0500000US19021	19021	Buena Vista County, low
11	Polygon	19187	Sioux	A		0500000US19023	19023	Butler County, lowa
12	Polygon	19141	Obrien	A		0500000US19025	19025	Calhoun County, Iowa
13	Polygon	19041	Clay	A		0500000US19027	19027	Carroll County, Iowa
14	Polygon	19147	Palo Alto	A		0500000US19029	19029	Cass County, Iowa
15	Polygon	19081	Hancock	A		0500000US19031	19031	Cedar County, low a
16	Polygon	19033	Cerro Gordo	A		0500000US19033	19033	Cerro Gordo County, lov
17	Polygon	19037	Chickasaw	A		0500000US19035	19035	Cherokee County, Iowa
18	Polygon	19067	Floyd	A		0500000US19037	19037	Chickasaw County, low
19	Polygon	19043	Clayton	A		05000000519039	19039	Clarke County, Iowa
20	Polygon	19065	Fayette	A	-	1		
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Name:	FIPS2				
Туре:	Long Integer				•
Field Prop	erties				
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Contact:

Bailey Hanson bahanson@iastate.edu, 515-520-1436 or Professor Christopher J. Seeger, ASLA, GISP cjseeger@iastate.edu, 515-509-0651 for more information about the Geospatial Technology Program. This task sheet and more are available at www.extension.iastate.edu/communities/gis

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