

## 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.

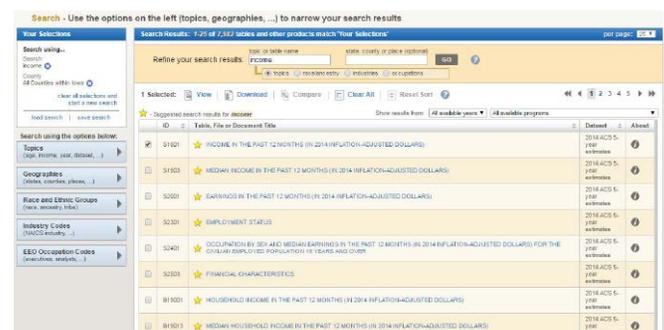
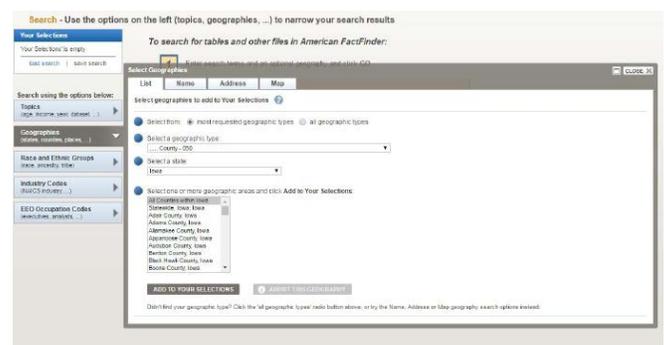
### 1. Getting Started

- To download the data used in this task sheet, navigate to [www.extension.iastate.edu/communities/gis/quicktasksheets/data](http://www.extension.iastate.edu/communities/gis/quicktasksheets/data) and click on the publication number: **PM2082-16o**.
- 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.

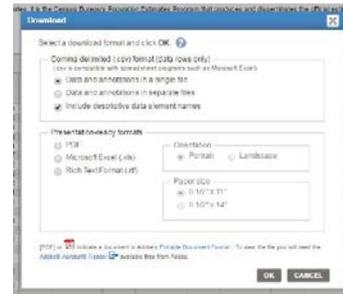


### 2. Downloading data from American Fact Finder

- In a web browser, navigate to the American Fact Finder website at <http://factfinder.census.gov/>.
- 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 **Iowa** as the state, and **All Counties within Iowa** 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** 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.
- 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.*



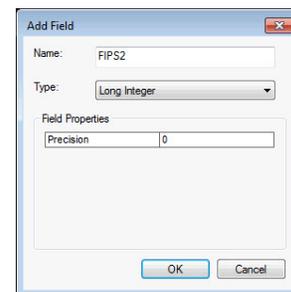
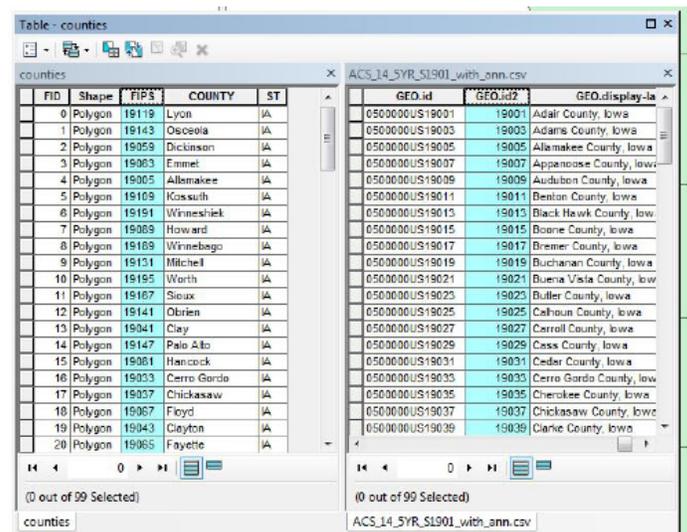
- e. Click **Download**, from the actions listed above the table. In the **Download** window, keep default options and click **OK**. Then click **Download** to save the file.
- f. The data is downloaded in a zipped folder called **ACS\_14\_5YR\_S1901.zip**. The zip file contains a number of documents 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)



Name	Type	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

### 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**.*



### Contact:

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