

Creating Geodatabases in ArcGIS Pro

Introduction:

Geodatabases serve as a filing structure for GIS data, usually containing many different datasets and aspects of a topic. These geodatabases can be shared, edited, and provide an organizational structure that can improve workflow. There are three main types in Esri systems, the first of which being a file geodatabase. A file geodatabase is intended for personal use, and can hold up to a terabyte of data. Mobile geodatabases are another implementation, being stored in an SQLite database and appear in a single file. Finally, an enterprise geodatabase is the largest and the only one that can be concurrently used by many users at once, making it ideal for large businesses.

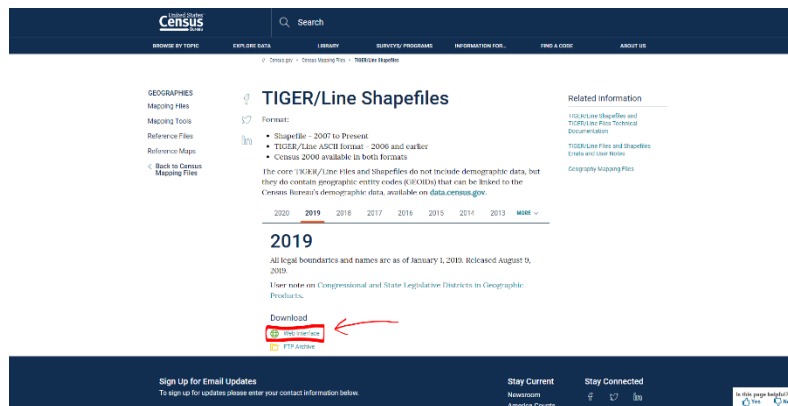
Geodatabases typically have an associated schema or structure to the data stored within them. Within a geodatabase, there may be several feature datasets containing even more feature classes, rasters, or tables. In this tutorial, you will download and create a basic file geodatabase.

Part 1: Preparing the Data

Before we begin, we will download some data for our geodatabase to hold. Go to the following link below:

<https://www.census.gov/geographies/mapping-files/time-series/geo/tiger-line-file.2019.html>

1. Click on “Web Interface.”

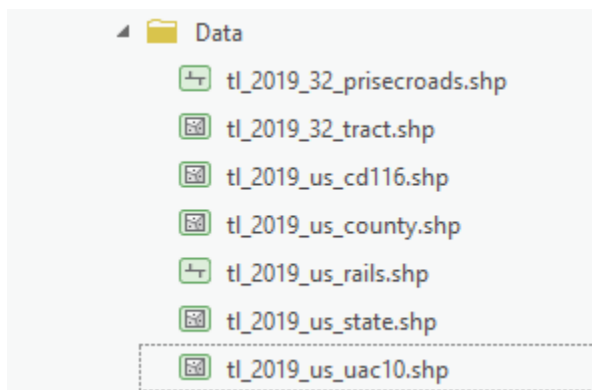


2. Set the year to 2019, the layer type to “Counties,” and click “Submit.”
3. Click “Download national file” and save it where you want it to be stored.

4. Click the “back” button on your browser, typically in the upper left corner, and repeat steps 2 and 3, instead downloading the following layer types:
 - a. Census Tracts
 - b. Congressional Districts
 - c. States
 - d. Roads
 - e. Rails
 - f. Urban Areas

When prompted, set the layer state to “Nevada.”

5. Once all the files are downloaded, create a new folder to contain all the data. Move all of the downloaded data into the new folder, and unzip them.
6. Open ArcGIS Pro, and open a blank project with no template.
7. Create a new map using the new “Map Button” at the top left of the screen.
8. Add the following layers to the map document:

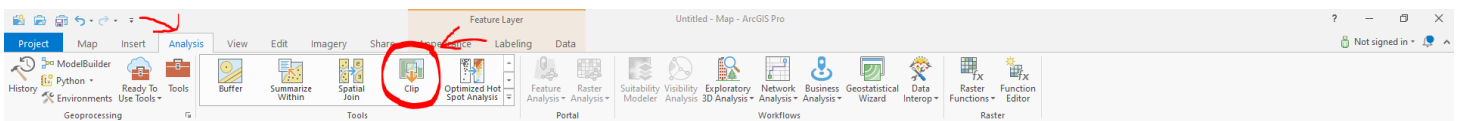


9. Turn off all the layers visibility by unchecking the box next to the layers, except for the states.

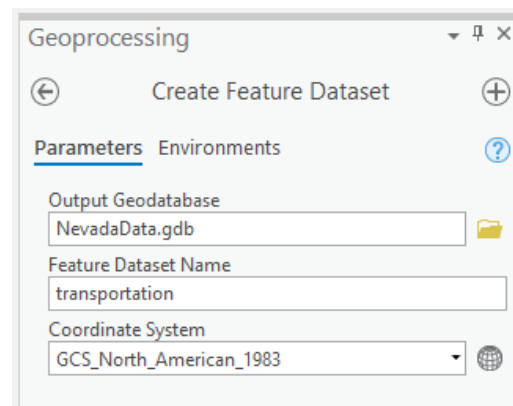
Part 2: Creating the Geodatabase

10. In the Catalog on the right side of the screen, right click on the folder name of where your data is stored.
11. From the menu, select “New,” and then “File Geodatabase.”
12. Name the file geodatabase “NevadaData.”

13. Our layers have various extents, covering a range of U.S. data, while typically geodatabases are more focused. In order to trim it down, we will have to use the “Clip” function.
14. First, using the “Select” button under the “Map” tab, select the state of Nevada.
15. Right click on the states layer, then “Selection,” then “Make Layer from Selected Features.”
16. Right click on the new layer and select “Data,” then “Export Data.”
17. Specify the “Output Location” to your geodatabase, then set the name to “stateborder.”
18. The tract layer is also already set to the state, so we can export that easily. Repeat steps 16 and 17 with the tract data, instead naming it “censustracts.”
19. We now will start clipping some of the data. Go to the “Analysis” tab on the top of the page, and then select “Clip” in the “Tools” window.

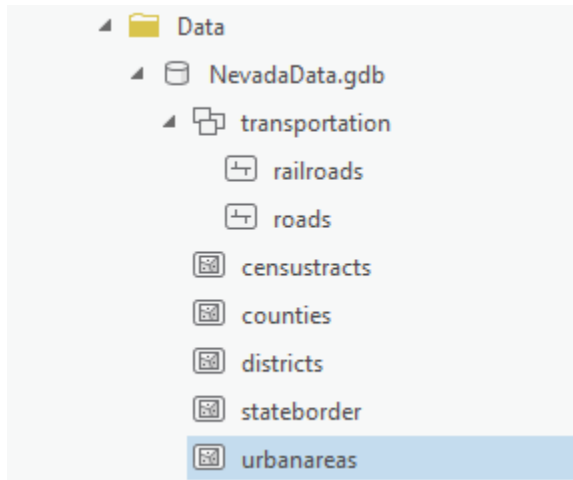


20. Set the input features to the counties layer, and the clip features to the stateborder layer.
21. Specify the output in your geodatabase, naming it “counties.” Then run the operation.
22. Repeat steps 19 – 21 for the congressional districts and the urban areas layer (uac), naming them “districts” and “urbanareas” respectively.
23. Geodatabases also use feature datasets, which are groupings of feature classes as a way of further organizing feature classes. We can create one in our Nevada geodatabase, by right clicking on the geodatabase and selecting “New” and then “Feature Dataset.”
24. Name the dataset “transportation” and set the Coordinate System to NAD 1983. We do this because feature classes within a feature dataset have to share the same coordinate system.
25. Run the operation.
26. Repeat steps 19-21 for the rails layer, placing it under the “transportation” feature dataset we just created, named “railroads.”
27. Finally, the roads layer already matches the extent of the state, so we can move that in



directly. Right click on the layer, then “Data,” then “Export Features.” Name it “roads” and put it under the “transportation” feature dataset.

28. Fully expanded, your geodatabase should look like this:



Congratulations! You have made your first geodatabase in ArcGIS Pro!