Open ArcCatalog (Start, Programs, ArcGIS, ArcCatalog).

ArcCatalog allows one to browse through map files. There are two locations where this class can find map data for use in ArcGIS. The first is s:\teff\ In the catalog menu on the left hand side of the screen, navigate to this directory, and open the folder for 450\arcview\usa. (If you don’t see a link to the s:\ drive, you can activate one by writing “s:\" in the location box at the top.) Within the 450\arcview\usa folder, click on the shapefile Counties by Population Ratio 2000 to 1990.shp. On the right hand side of the screen, note the three tabs: Contents, Preview, and Description. Click on each of these to see the information they provide; Preview gives a look at how the file will appear in ArcMap.

The other location with map data for this class is the drive N\. Browse for a few moments in this drive, to learn a little about its contents.

Now, open ArcMap by clicking the icon on the top menu that looks like a blue ball with a superimposed magnifying glass.

A dialogue box will open. Click OK.
Add data to the map by clicking on the icon at the top that looks like a yellow triangle superimposed by a black plus sign. Go to the directory s:\veeff\M50\arcview\usa and select Counties by Population Ratio 2000 to 1990.lyr, states.shp and counties.shp.
Double-click on the *states* layer. A tabbed box called *Layer Properties* opens. Click along the tabs to see what each of them reveal. Click on the *symbology* tab. Double-click on the *Symbol* shown toward the top center of the box.
Activate the drop-down menu for Fill Color, and select the option No Color. Next, in the drop-down menu for Outline Color, activate a color you like (I usually choose violet), click OK, and then OK again to close the Layer Properties box.
Double-click on the name of the layer Counties by Population Ratio 2000 to 1990, so that its Layer Properties box appears. Click on the Symbology tab, and then right-click in the middle of the highlighted range; in the resulting pop-up box, select the option Properties for All Symbols. In the Symbol Selector box that opens up next, change Outline Width to 0, click OK, then click Apply, and OK again.
The map will now be easy to read—the states are outlined, and the county boundaries are erased so that the colors actually mean something. Try to understand what the map is depicting (hint: look at the image above; each of the six categories is a range for a fraction whose numerator is given as Value, and whose denominator is given as Normalization).

Use the icon resembling a magnifying glass with a plus sign to zoom in on an area. You can return to your previous view by clicking the icons resembling blue arrows.

Experiment with removing the check mark in the box next to the layer name. Move first one layer, then the other to the top of the list. What happens? Click on the icons at the top of the list of layers. What happens now?

One of the most useful things to do with a GIS is to join data—that is, to take data that you have collected elsewhere, and merge it with a GIS layer so that you display it. A file format suitable for joining is *.dbf. We will join the file S:\teff\450\ethnic.dbf to the layer Counties by Population Ratio 2000 to 1990. Place the cursor atop the name of the layer Counties by Population Ratio 2000 to 1990 and right-click. Choose the option Joins and Relates and then the option Join. In both files, use the field FIPS as the field upon which to base the join.
Now any of the data in the file *ethnic.dbf* can be displayed in ArcMap. For example, change the field name under *Values* to Hmong. Continue to use the 1990 county population as the normalization (the numbers from *ethnic.dbf* come from the 1990 census). What does the resulting map show?
Now click on *File* on the menu bar, and then click on *Export Map*. Save the map as type *JPEG* in your *My Documents* directory. Give it the name *Hmong.jpg*. The map looks as follows:
Play around with your new layer a little. Try to get a sense of the fields included. Two of the fields can only be viewed by using Categories/Unique Values” in the Symbology tab of the Layer Properties box (rather than Quantities/Graduated Colors). These are “Winner” and “Topgrp.”

If you have time, join the county-level data in the spreadsheet s:\TEFF\450\arcview\usa\Election2016.xls to the counties.shp layer. Produce one map showing election results and include this in your assignment below.

Your assignment is to produce five maps that say something meaningful and important about the spatial population distribution of the U.S. I will be disappointed if all groups come up with something too similar, so make sure that a couple of your maps are perhaps a bit off-beat. Normalization should be meaningful: for variables denominated in numbers of persons, it would be appropriate to normalize by “Pop2000”; for variables denominated by number of households, it would be appropriate to normalize by “Households”; for variables denominated by number of housing units, it would be appropriate to normalize by “Hse_units.” Next Monday, your group will display the maps and you should be prepared to explain what your maps mean and take some questions from the class.