

**Migration.**<sup>1</sup> Three data sources for the U.S.:

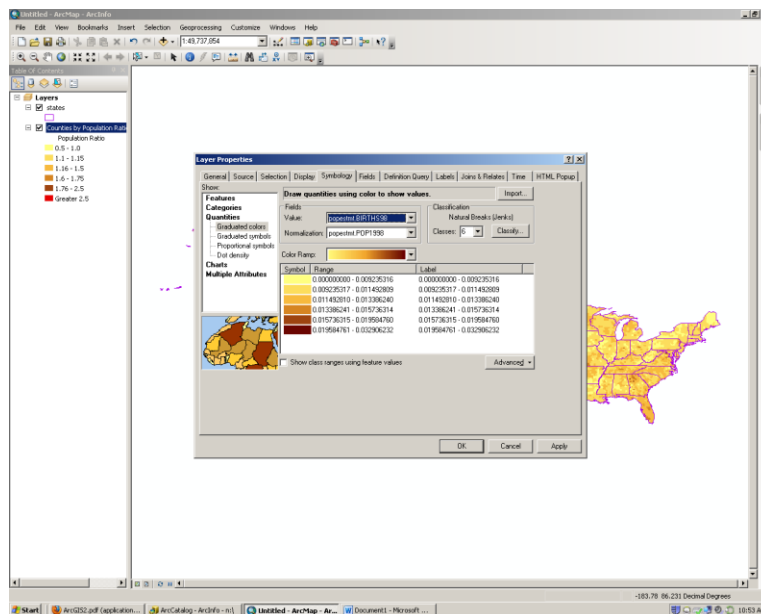
- 1) Special tabulations during decennial censuses.<sup>2</sup> The 1990 file is called the STP-28; it gives inter-county migration counts for persons by age, sex, race, educational attainment, nativity, and poverty status; these data can be aggregated to identify the migration patterns of particular kinds of migrants—e.g., college-educated persons of foreign birth between the ages of 25 and 35. The data can be downloaded *gratis* from the Web.
- 2) IRS County-to-County Migration Files. By comparing tax IDs in two consecutive years, the IRS is able to determine the number of returns that have changed location. The data are attractive since they are gathered annually. They report flows between county pairs, and contain some information about household size and household income. They only capture, however, about 80% of the U.S. population. The IRS sells these data.
- 3) Annual estimates of total net migration for each county in the country. The data do not give source and destination counties, but they give net migration totals and this figure is often very useful. A version of these data is given in the map data: *Counties by Population Ratio 2000 to 1990.lyr* found in `s:\teff\450\arcview\usa`.

### National Migration Patterns

Your first assignment is very similar to what you did last week, so please review those instructions for assistance. Go to the directory `s:\teff\450\arcview\usa` and select *Counties by Population Ratio 2000 to 1990.lyr*, and *states.shp*. The various components of population growth are deaths, births, net domestic migration, and net international migration. Produce maps for each of the following:

1. Births as a percentage of the 1998 population.
2. Deaths as a percentage of the 1998 population.
3. Net Domestic Migration as a percentage of the 1998 population.
4. Net International Migration as a percentage of the 1998 population.

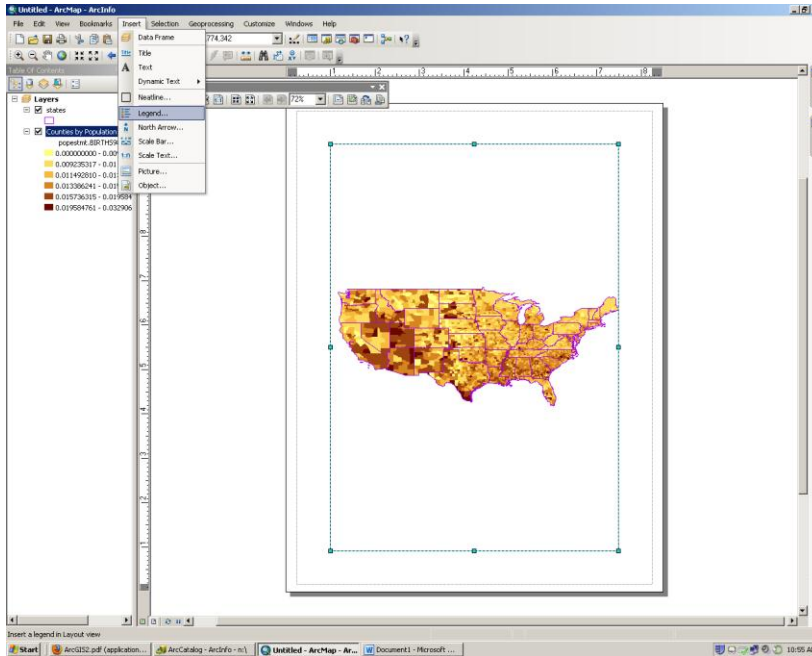
Take care that the maps effectively communicate information: remove county outlines, overlay with state outlines, etc. Go to *View* on the top menu bar and click *Layout View* on the drop-down menu:



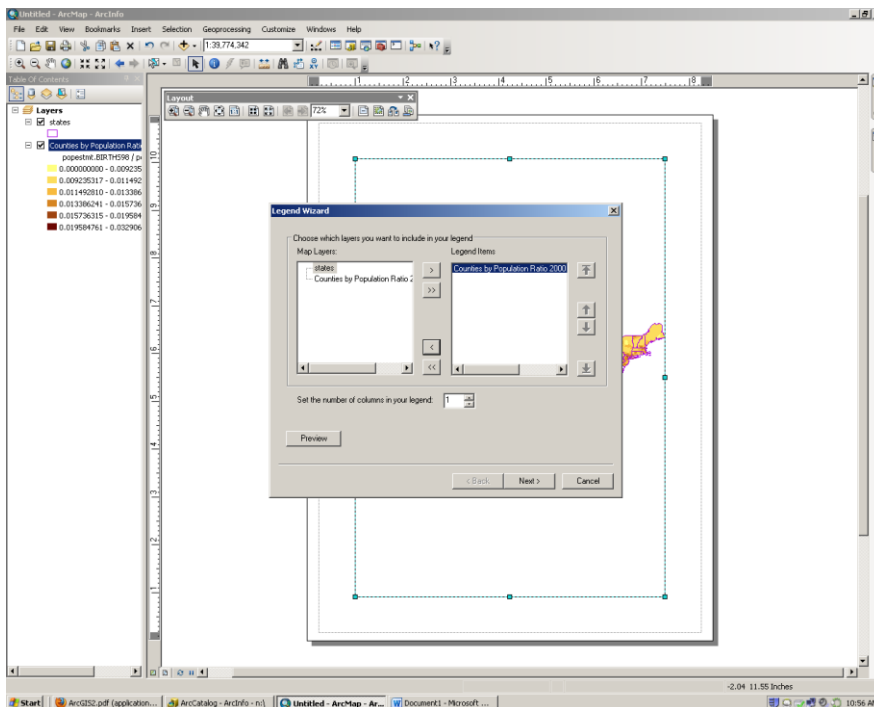
<sup>1</sup> For some background, please see [http://frank.mtsu.edu/%7Eaeaff/downloads/srsa\\_eff.pdf](http://frank.mtsu.edu/%7Eaeaff/downloads/srsa_eff.pdf)

<sup>2</sup> One can also create migration data from the Public Use Microdata Series (PUMS) from the decennial census, though this requires some expertise with SAS. The best current source for PUMS data, both for the U.S. and other countries, is <http://www.ipums.umn.edu/>.

Once in layout view, click *Insert* on the top menu bar and click *Legend* on the drop-down menu.



In the *Legend Wizard* click the arrows so that only *Counties by Population Ratio 2000 to 1990* is in the box on the right-hand side.



Click *Next* and *Next* again. You might wish to change the background of the legend box—experiment a bit to see what the different options do. Click *Finish* to exit the wizard. You will probably need to change the page layout to landscape (click *File* and then *Page and Print Setup* on the top menu), reposition the legend box, and resize the outline on the map. Keep working with this until you produce a decent-looking map.

Export the four maps and place them in a PowerPoint presentation. Then do the following:

1. Join *Counties by Population Ratio 2000 to 1990.lyr* to the file *s:\teff\450\ethnic.dbf* using the field “counties.FIPS” (it may appear simply as “FIPS”) as the join field in *Counties by Population Ratio 2000 to 1990.lyr* and the field “FIPS” as the join field in *s:\teff\450\ethnic.dbf*.
2. Now join this file (still called *Counties by Population Ratio 2000 to 1990.lyr* even though it now contains data from two files) with the file *s:\teff\450\pop1090.dbf*. Use the field “ethnic.SFIPS” (it may appear simply as “SFIPS”) as the join field in *Counties by Population Ratio 2000 to 1990.lyr* and the field “FIPS” as the join field in *s:\teff\450\pop1090.dbf*.
3. Now join this file (still called *Counties by Population Ratio 2000 to 1990.lyr* even though it now contains data from three files) with the file *s:\teff\450\priceacrefarmland.dbf*. Use the field “pop1090.FIPS” (it may appear simply as “FIPS”, at the bottom of the field list) as the join field in *Counties by Population Ratio 2000 to 1990.lyr* and the field “FIPS” as the join field in *s:\teff\450\priceacrefarmland.dbf*.

Now produce the following four maps:

1. A map showing how the population has changed for each county between 1930 and 2000.
2. A map showing how the population changed within any 20 year interval between 1930 and 2000.
3. A map showing how the price of farmland has changed for each county between 1930 and 1992.
4. A map showing how the price of farmland changed within any 20 year interval between 1930 and 1992.

As before, take care that the maps effectively communicate information: remove county outlines, overlay with state outlines, etc. Export the four maps and add them to your PowerPoint presentation. Write up a half page summary of what you observe and what your observations mean.

### Local Population Patterns

Population has moved around in the Mid-State so as to create distinctive local clusters, based primarily on income and ethnicity. Davidson County attracts long-distance migrants, typically relatively low income singles. One might call this type of migration “opportunity migration” since it consists of people looking for economic opportunity. Davidson County loses short-distance migrants, typically middle class families, who move to suburban counties. These families are searching for better housing values and better environments in which to raise their children (see *S:\TEFF\450\LN\_Eff.ppt*).

We will use the following files from the directory *s:\teff\450\arcview\tn* to examine the way in which population is distributed in the Mid-State:

- *tnblkgrp.shp*
- *tntrct.shp*
- *tnzip.shp*
- *Major Roads.lyr*

From the directory *s:\teff\450\arcview\usa* we will use the following three files:

- *airports.shp*
- *counties.shp*
- *mjwater.shp*

Compare the size of Census tracts (*tntrct.shp*) with the size of Census block groups (*tnblkgrp.shp*). Which is larger? Do these appear to be nested (that is the smaller one always inside exactly one larger one?). Does a Census tract ever lie in more than one county? Does a zip code (*tnzip.shp*) ever lie in more than one county?

The file *s:\teff\450\arcview\cn.dbf* contains crime data from the Metro Nashville police, by zipcode. Join these with the *tnzip.shp* file using “ZIP” as the join field in each of the files. Make a map that you think is visually meaningful. Use airports, major highways, major bodies of water, and county lines as landmarks so that the viewer can instantly understand where the areas of high and low values occur. Try removing or

adding labels, widening or narrowing lines (such as county outlines or major roads), or removing outlines or small roads. Try to use a color scheme that intuitively reveals the areas of highest values.

Export your crime map to your PowerPoint presentation, and then create two additional maps:

1. Using the *mblkgrp.shp* layer, show the spatial distribution of one of the following demographic groups:
  - a. Black (normalize by Pop2000)
  - b. White (normalize by Pop2000)
  - c. Asian (normalize by Pop2000)
  - d. Hispanic (normalize by Pop2000)
  - e. Age\_5\_17 (normalize by Pop2000)
  - f. Med\_age (do not normalize)
  - g. Age\_65up (normalize by Pop2000)
  - h. Females (normalize by Pop2000)
2. Using the same *mblkgrp.shp* theme, show the spatial distribution of one of the following characteristics of households:
  - a. Hsehld\_1\_m (normalize by Households)
  - b. Hsehld\_1\_f (normalize by Households)
  - c. Marhh\_chd (normalize by Households)
  - d. Marhh\_no\_c (normalize by Households)
  - e. Fhh\_child (normalize by Households)
  - f. Renter\_Occ (normalize by Hse\_Units)
  - g. Families (normalize by Households)
  - h. Ave\_hh\_sz (do not normalize)

Write up a half page summary of what you observe and what your observations mean.