

Introduction

Your company, *Fly-By-Night Cartographics* has been contracted by the US Census Bureau to create two population change maps of the United States of America using census data. These maps will illustrate the percentage change in population of each state for the period of April 1st, 1990 to April 1st, 2000.

Your Pointy-Haired Boss has determined that you as the companies' premier cartographer will produce the two maps. The first map will be at the **state level** and the second map will be at the level of **US Census regions**. Since your company hopes that this will lead to more lucrative contracts with the Federal Government in the future you must do a very good job.

In order to accomplish this task you decide to take the following approach.

- 1) You determine a choropleth map is the most appropriate map type for the project
- 2) You determine each map will fit on a single 8.5 x 11 piece of paper for easy reproduction.
- 3) You will include Alaska and Hawaii on the map, but may need to adjust their size for a better fit.
- 4) You decide to use ArcMap to produce the choropleth map showing changes in population at the state level, but think it will be easiest simply to adjust the state map in Adobe Illustrator to create the Regional map using calculations you do in a spreadsheet.
- 5) Both maps will be touched up in Adobe Illustrator, as often the maps produced in ArcMap do not meet your high cartographic standards.

In creating your final maps you need to consider both the scientific and artistic aspects of choropleth map production. You must decide on what data values are appropriate for a choropleth map and what visual properties go into creating a choropleth map that will successfully convey the information to your audience.

Basic Instructions

- 1) You need to decide on the map projection you will use as your basemap. Alaska and Hawaii need to be included but on the final map can have a different scale.
- 2) The map should fit on an 8.5 by 11 piece of paper in LANDSCAPE format with a neatline 0.5 inches from each edge.
- 3) You will need to provide a type-written justification of your cartographic decision making process.

Map 1 – Percentage Change in Population by State

1. You will create the map in ArcMap. The file you need to use is called **state_population.shp** and the field you will map is called **pchange**. Your TA will provide help if you need in getting things set up.
2. You will select an appropriate map projection for the basemap
3. You will create all the basic items you deem necessary (e.g. legend) for the map in ARCGIS.
4. The first map you make will have utilize a **5 CLASS NATURAL BREAK** classification. However, this does not mean you simply let the computer select the natural breaks – you need to put some thought into your classes. One nice feature about ArcMap is that it lets you easily visualize and select natural breaks so use it to your advantage!!!
5. The first map will employ a **NON-CONTINUOUS** legend design.
6. The first map will be in **COLOR**
7. Once you have all the components as you like them, export the map as an Adobe Illustrator (AI), Encapsulated Postscript (EPS) or Acrobat (PDF) file. I found that Adobe Illustrator worked nicely in my trial run.
8. Import the map into Adobe Illustrator and prepare the finalized version of your map. Use Adobe to be artistic...
9. You will need to provide a typed justification of your choice of map projection and the other cartographic decisions you made along the way in producing this map

Map 2 – Percentage Change in Population by Regions

Once you have completed your first map, it will serve as the basis for the second you need to produce. However, in this map you will aggregate states up into Census Regions at the division level (a list of the regions is included below). You will find it easiest if you use the first map you created and then use Excel to aggregate the state data up to Census regions and then use Adobe Illustrator to make the necessary modifications to the first map to create the second.

The percentage change in population from 1990 to 2000 for each region using the following equation:

$$populationchange = \frac{(pop2000 - pop1999)}{pop1999}$$

I will leave it up to you to determine how to do this in a spreadsheet. Once you have your classes you will need to construct a map with the following properties...

1. The second map will have **5 EQUAL INTERVAL CLASSES**
2. The second map will employ a **CONTINUOUS** legend design.
3. The second map will be in **BLACK AND WHITE** and the approach used should employ a mix of **BOTH PATTERNS** and **GRAY TONES**.
4. You will need to provide a typed justification the cartographic decisions you made along the way in producing this map

Here are the U.S. Census Bureau's regions. For the 2nd map you should aggregate the data at the **DIVISION LEVEL**. This means that you should calculate the percentage change in population for each region from the Period April 1st, 1990 to April 1st, 2000. I will leave it up to you to determine how to accomplish this in Excel.

Northeast Region

New England Division:

Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut

Middle Atlantic Division:

New York, New Jersey, Pennsylvania

Midwest Region

East North Central Division:

Ohio, Indiana, Illinois, Michigan, Wisconsin

West North Central Division:

Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas

South Region

South Atlantic Division:

Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida

East South Central Division:

Kentucky, Tennessee, Alabama, Mississippi

West South Central Division:

Arkansas, Louisiana, Oklahoma, Texas

West Region

Mountain Division:

Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada

Pacific Division:

Washington, Oregon, California, Alaska, Hawaii

If you have any problems do not hesitate to see the TA or me.