

Introduction

Your company, Aggieland Cartographics, Inc., has been requested by the U.S. Census Bureau to produce a color, non-contiguous cartogram of the **Hispanic Population of the Contiguous United States** based on 2000 Census data.

Before the age of the computer, the construction of non-contiguous cartograms (much less contiguous) were laborious at best. It required photo enlargement or reduction of each enumeration unit and then the re-compilation of the enumeration units back into a base map. Today, enlargements and reductions can be easily performed in any illustration software. Production of both contiguous and non-contiguous cartograms can be done in GIS software as well. And compilation, well that only requires moving the individual enumeration units around until you achieve the "best fit." And while, there still is no perfect, easy solution to creating a contiguous cartogram, the construction process is still less "painful" on a computer than on a drafting table. **Aren't you lucky to be doing this assignment on a computer than by hand in the old drafting room!**

As usual, Excel should be used for the calculations and Adobe Illustrator should be used to produce the actual map.

Producing the Non-Contiguous Cartogram

1. Begin by processing the data in file called **project10_data** to determine the amount of enlargement and reduction necessary for each state. The following steps will help you arrive at the correct solution:
 - a. Compute the TOTAL AREA (in square miles) of the United States using the **SUM** function.
 - b. Compute the TOTAL HISPANIC POPULATION of the contiguous United States.
 - c. Determine the HISPANIC POPULATION REPRESENTED BY ONE SQUARE MILE on the map by dividing the total HISPANIC POPULATION by the total square miles of the contiguous United States.
 - d. Compute the CARTOGRAM AREA of each state based upon its Hispanic Population. To achieve this, divide each states Hispanic population by the Hispanic Population represented by one square mile on the map (solved for in step c).
 - e. At this point you are faced with the dilemma of how to change the states to their new area without resorting to a "trial and error" method. The problem resides in the fact that the states are represented by areas (sq miles) while, the enlargement and reduction percentages are based upon linear measurements.

The solution: Take the square root of the existing state areas and also the new computed areas (solved for in step d). Now you have linear relationships. By dividing the original state areas into the newly computed state areas based upon the population you will determine the relative amount of enlargement or reduction necessary to change the states to their proper proportions based upon their population values.

If you have any questions do not hesitate to contact me

- f. Since the computer requires you to enter the percent enlargement or reduction, you must multiply the results obtained in step e by 100 to get percentages.
2. Now that you have the appropriate percentages of enlargement or reduction for each state, you can easily change the states by using scaling each state.

NOTE: Make sure scale each object uniformly in the X and Y directions. You may want to shade each state as you complete its percentage change so you will know which states you have changed and which you haven't changed.
3. Now, closely arrange the states, while at the same time preserving the general shape of the country.
4. Add all appropriate elements such as title, legend, etc. This map, as always, should reflect your best overall cartographic effort.
5. **Creating a legend.** You now must create a legend showing a size range of Hispanic population for your map percipient to judge the states by. From step 1c, you know the Hispanic population represented in 1 square mile. I have also provided you with a square exactly 100 miles on a side. With the square and the information you have been provided you should be able to be create to create rectangles, squares, or circles whose area represents a certain population using simple geometry.

Computer Directions

Simply download the files from the server into your home directory and begin work

- 1) usa_basemap.ai (Adobe Illustrator File)
- 2) project10_data.xls (Excel File)

Turn In

A hardcopy map on an 8.5 x 11 inch sheet of paper. The sheet should be oriented in *Landscape Mode* so that the map occupies the largest possible area (e.g. the paper should be 11 inches wide by 8.5 inches tall). All map elements should be enclosed by a neatline with 0.5 inches between the neatline and the edge of the paper along all sides. If you choose to break the neatline, then all items must still fit a 7.5" x 10" area. You should include all the necessary elements on your basemap. You should have a good color scheme and can print out the color map on the GeogColor printer.

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