GIS LAB 1

MY FIRST MAP

Age and Drinking Locations in Westwood

Overview

In this first lab, you will

Add data to a map

Classify and symbolize the data

Label features

Use Basic Layout skills

GIS projects can be broken down into four parts:

1. *Assembling data*

In most cases you will have to download data, or gather data from surveys. However, in this lab the data is prepared for you.

2. *Managing data*

Tabular data must be linked to spatial files. For this lab, data are already joined to layers.

3. *Spatial processing, analyzing, editing*

Using GIS to display or analyze information

4. *Layout*

Create a GIS layout

This lab will take you through each stage, allowing you to sample each step of the process but also providing you with some pre-completed tasks.

PART I: PRELIMINARIES

ASSEMBLING DATA

In this lab we will use the prepared data Lab1_PreparedFiles. Download this zip file and put it in your Lab 1 Folder. (When you download these files they are usually put in your "download" folder) Unzip it by right clicking on it and select "Extract To C:\...\Lab1_PreparedFiles." The following parts for the files will appear:

- Westwood Bars
- Westwood Neighborhood Council District
- LA Census Tracts
- LA County Roads
- LA County Highways
- Los Angeles Neighborhood Councils

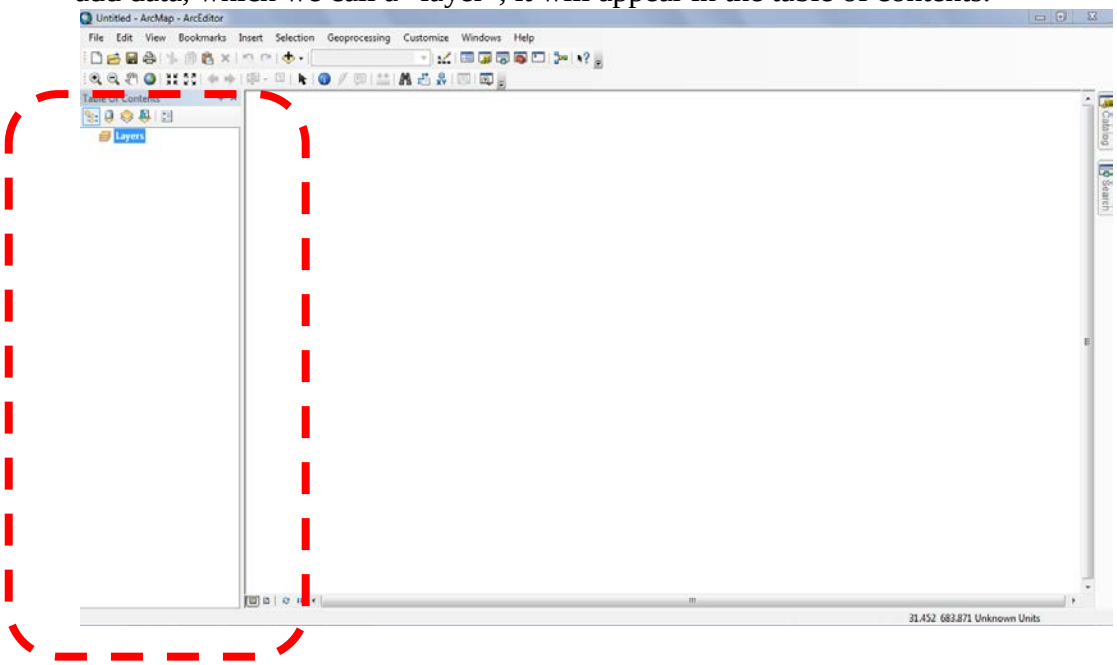
OPENING ARCGIS

Start>Programs>ArcGIS>ArcMap10

Save the Project as "**Lab1_YourLastName**" in your **Lab1** folder.

BEWARE: Please remember to save early and often. Computers crash and it is possible to lose the work that you've done since the last time you saved. ArcGIS does not autosave like many other programs.

1. The white box on the left-hand side of ArcMap is your Table of Contents. When you add data, which we call a "layer", it will appear in the table of contents.



ADDING DATA TO THE MAP

1. Click on the "**add data**" icon  on the top toolbar, featuring a plus sign atop a yellow diamond. *When you roll your cursor over the icon, a note should appear that reads "add data."*
2. A dialogue box will open featuring a group of folders. You need to connect to your lab1 folder, where you stored your downloaded data. Click on the "**connect to folder**" icon,  featuring a right-facing arrow over a green circle atop a folder. *When you roll your cursor over the icon, a note should appear that reads "connect to folder."*

A new dialogue box will open. You will see a list of folders. One will be the drive/folder where you stored the lab1 folder.

3. Click on the plus next to that folder to expand it in the file tree. Then expand your labs folder. Finally **select your lab1** folder and click. "**OK**." (You are only making a connection to the folder – "connect to folder" does NOT add data)

The add data folder will now show the files in your lab1 folder.

4. Select the "Westwood Bars" shapefile and **add** it to your map.
5. Click "**add data**", select the following 3 shapefiles, and then click "**Add**":

- LA_Census_Tracts
- Westwood NC
- All_nc43 (Los Angeles Neighborhood Councils)

Note: you can add multiple files at a time by holding down control as you click each file. When you have selected all your files, release the control key and click "Add".

6. Click ok on the error messages (we will ignore it for now).

PART III: SHOWING DATA ON A MAP

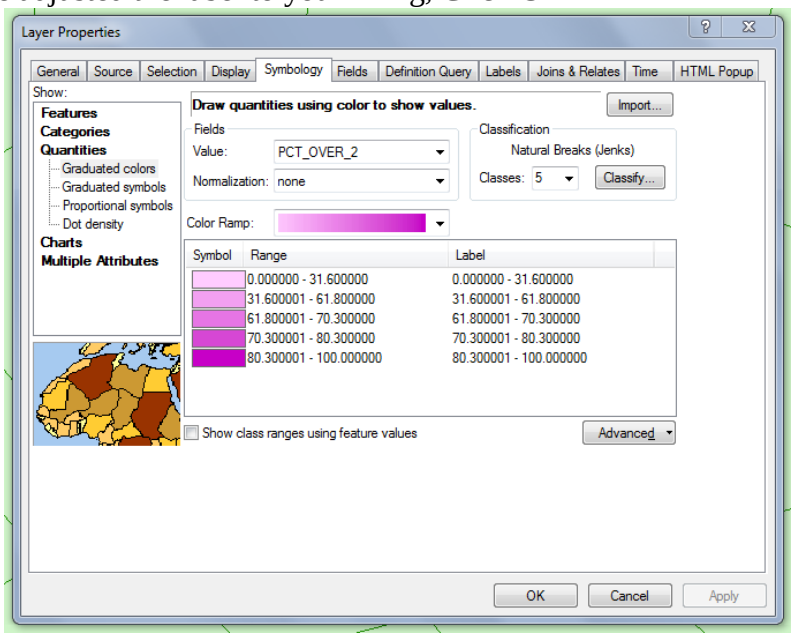
The "**LA_Census_Tracts**" layer has pre-joined data, assigning census data to each census tract.

1. Right click on "**LA_Census_Tracts**" file in the Table of Contents. Select "**Properties**" from the drop down menu.

Note: Remember that ***PROPERTIES*** *is the magic word in the land of GIS.*

2. If you are not in the **Symbology** tab then click on that tab at the top of the screen. In the "**Show**" pane on the upper left, click on the word "**Quantities**" to expand the menu.
3. "**Graduated Colors**" should already be selected. From the Value drop down menu, you will be able to select a demographic topic of interest. This data can include census data, such as, **Median Income** or **Population Density** or any of the race population data. In this example we have simplified these options and have limited you to two options: "PctM18_29" (percentage of male between 18 and 29).
4. From the **Color Ramp** drop down, select a color ramp to your liking.
5. You can adjust the labeling of the symbols by right clicking in the "Label" column and selecting the "Format Labels" Tab. This is a very important part of creating a successful map. Often GIS will automatically populate the label ranges with numbers that do not make sense in terms of the data that you are showing. So, it is important to use this tool and the "Classify" tool (where you can change the ranges. It is not necessary to do it now, we will be covering it later, but you might want to check out the options).

Once you have adjusted the label to your liking, Click **OK**



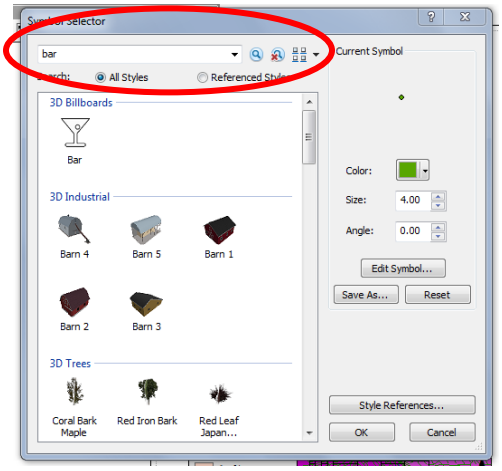
6. Once you have labels that make sense Click **OK** on the layer properties box.

Labeling Features

1. Right click on the "**all_nc34"** layer and select Properties. Then select the "Labels" tab.
2. Click on the check box next to the "Label features in this layer"
3. On the Label Field feature select "Name".
4. You can change the font on the Text Symbol section. Increase and decrease the size to the appropriate size. You may also want to change the color of the text so that is clear.
5. Click OK.

You may notice that you are far away from the location, in this case Westwood, that you want to focus in on. There are various ways to zoom into an area in ArcGIS. You can right click on the layer you want to zoom to (use the **Westwood_NC**) in the Table of Contents box. Choose the option of zoom to layer. Now your view will just be focused on that particular layer. You can zoom out and in using the usual Magnifying glass tool from the tool bar.

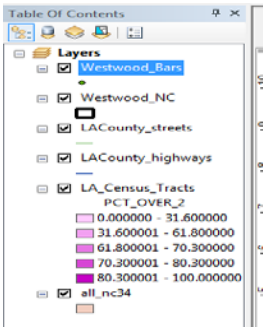
6. Now, we can change the symbol of the **Westwood_Bars** layers. Double-click on the colored dot in the Table of Contents. A long list of symbols appears. You can search this list by key words. In the case below we have searched for "bar"



Ordering Features:

In order to see the shapefiles that you want, you need to order them correctly. Think of each layer as a sheet of paper. If the sheet of paper on top is larger than the one underneath it, then you won't be able to see those below. You can move the shapefiles up and down in the table of contents to make them go on top and below other layers

Your order should look something like this:



PART IV: CREATING A LAYOUT

1. From the View menu, choose "**Layout View**." A layout toolbar should appear, and your screen shot will show your map in the middle of a piece of paper.

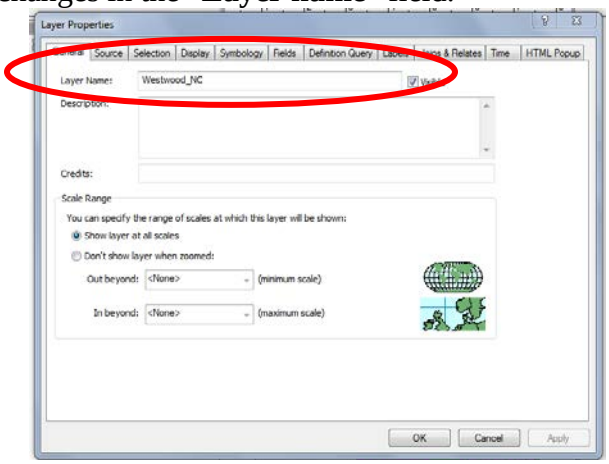
   Note: The map will appear as you have it displayed in the View frame. If you wish to change it, use the tools in the Layout toolbox to pan, zoom-in, zoom-out, etc.

2. **Add a title** by clicking on "**Insert**" from the menu bar and then clicking and selecting "**Title**" from the drop down menu. Type a title that describes your map. You can change the font and font size by double-clicking on your title and using the tools in the dialog box.

   Note: If you make a mistake, click on the Black arrow in the Layout tool, then click on the text box and when highlighted with a rectangle, DELETE and then try again. This also applies to the Legend, North Arrow and Scale Bar.

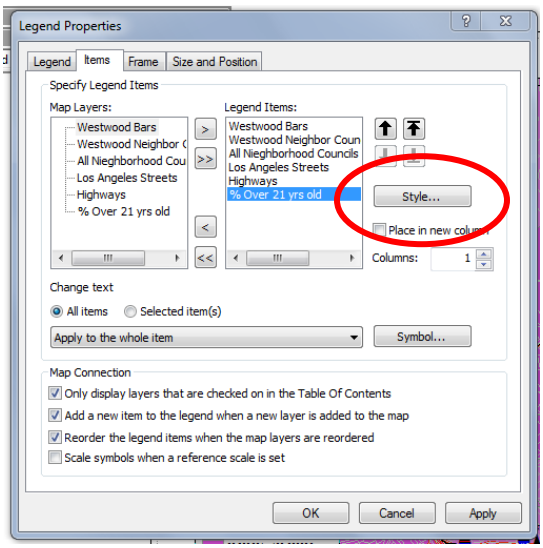
3. Insert a text box (usually at the bottom of the map or under the map's boarder) Type in **Produced by: your name** or **Prepared by: your name** using the text tool.
4. From the **Insert** menu, choose "**Legend**"
5. Click inside the Legend Items box. Items on the left are your options. Items on the right are those that you wish to display in the Legend. (If your legend doesn't come out exactly like you want you can double click on the legend and make adjustments)
6. Click the double left-arrow button and all the items go into the options box.
7. Click on an item you want displayed in the Map Layers box and then click the single right arrow.
8. When you have selected the items you want, click next until the window closes.

   If you legend has odd titling like "all_nc34" you can change how the final map shows these layers in the legend. You can right click on the shapefile that you want to change the name of and the select "**Properties**". Select the "General" tab and make any changes in the "**Layer name**" field.



You can also change the name in the Table of contents by slow left clicking the shapefile and then renaming it when it is highlighted.

9. If your legend still isn't how you want it double click on it to get this menu:



Click on the style button. You can also use the "Place in new column" option. This splits your legend into two or more columns starting with the shapefile that was selected to start a new column. The "columns" option puts that layer in the determined number of columns.

10. From the **Insert** menu, choose "**North Arrow**." Select a north arrow and click **OK**. It will appear in your layout but you will need to position the north arrow and size it by dragging on the corners of the rectangle.
11. From the Insert menu, choose "**Scale Bar**" Select a scale bar and click **OK**. It will appear in your layout but you will need to position the scale bar and size it by dragging on the corners of the rectangle. Right click on the scale bar and click on **Properties** in the menu box that opens. In the "**Scale and Units**" tab, make sure the "**Division Units**" are miles (you can change them to kilometers**.)**
12. Take time to improve the look of the layout.
    If you map is near water then the background color should be blue and labeled. There are water labels for lakes and rivers, but for large bodies of water many people find changing the background color and making a label, such as "**Pacific Ocean"** works best. To change the background color right click on the map in layout view and go to Properties>Frame and choose a background color from the drop down menu.

If you have finish early you may want to play around with the labels and sizing of the additional shapefiles.

PART V: EXPORTING YOUR LAYOUT

1. When you have completed your layout, Click on **File>Export Data**. Change the File Type to "**JPG**" and then name your map **lab1** save it in your Lab 1 folder. Make sure to keep things organized with simple clear names, such as Lab_1.jpg
2. Submit the jpg file on CCLE. (week 3 -> lab assignment)