

## GEOG 2017EL

### Lab 6 February 8, 2010 Comparing Classification Methods and Class Breaks (15 points)

#### **Purpose:**

The purpose of this lab is to learn different classification methods for ranged-data.

You will also learn how to add new data frames in ArcMap to allow you to create insets, extent maps or compare various classifications of the same mapped data.

#### **Part 1 Setting up Multiple Data Frames**

The last lab asked you to save your map document (mxd) file. You will re-use this file to complete this lab.

1. Open the file you saved in Lab 5.
2. Make sure that you have the following layers (your names might vary)
  - a. Ontario
  - b. OntarioCD (mine is called Ontario\_CD)
  - c. OnCDdata (tabular data)
3. The “Join” that you created in the last lab should still be active.
  - a. Check this by Opening the Attribute table of your OntarioCD file. (Right-click on layer name > Open Attribute Table)
    - i. You should see the joined fields from the tabular data at the end (scroll to the far right end) of the attribute table
  - b. You can also do this by checking the Properties of the OntarioCD file. (Right-click layer name > Properties or double-click on the layer name – this has to become second nature to you).
    - i. Select the **Joins & Relates tab**. You should see OnCDdata in the Joins list. This confirms that your joins are intact.

#### **Changing Field Names**

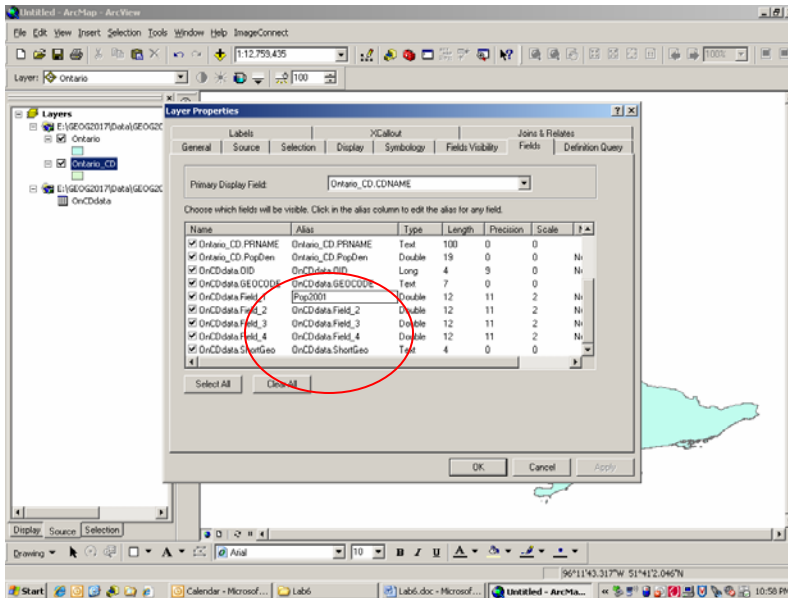
When you joined the OnCDdata tabular file to the OntarioCD shape file, some columns had Field\_1, Field\_2, etc. as headers. These are the variables, or “Characteristics,” we imported from E-Stat. Unfortunately, exporting to dbf causes this automatic cryptic naming of variables. We need to change the field names (column headers).

1. Right-click on the OntarioCD layer name
2. Select Properties.
3. In the Table Properties window, make sure the **Fields tab** is selected.
4. Next to each field name is an **Alias** column. You cannot change the field name but you can change its Alias. You will have to scroll down towards the bottom because Joined fields are added to the end of a file’s field list.

Notice in the Field Name column that the table of origin always precedes the actual field name Eg. CDUID reads as Ontario\_CD.CDIUD, while ShortGeo reads as OnCDdata.ShortGeo (remember the dbf table)

5. Type in an appropriate alias for each field by simply clicking on the existing Alias name (by default, it's the same as the field Name).

Name	Alias
Field_1	Pop2001
Field_2	Pop2006
Field_3	PopChg
Field_4	LandArea



6. Close the Table Properties window.

**Q1. What table or shapefile does the GEOCODE variable come from (1 point)**

### Adding New Data Frames

A data frame is represented by stacked yellow sheets. The default name for a data frame is "Layers" (there's a different default name when adding a new data frame).



Much like a layer, a data frame can be renamed, removed, copied, pasted, etc. Also, there are many Properties associated with a data frame, the most important of which is Coordinate System/projection, which we will address in a later lab.

You can have many Data Frames in your map document. Each data frame will appear in your layout. This may not be obvious right away since a data frame can be hidden by another data frame on top of it.

## Add multiple data frames to your map document

1. Make sure you are in Data View (though technically this can also be done from the layout view)
2. Adding a new data frame
  - a. From the Main Menu >Insert >Data Frame
  - b. This will add an empty data frame called **New Data Frame**. The data frame has NO layers, no data.  
You can add data to this data frame using the add data icon, but in our case we want to copy data from an existing data frame, in this case the “**Layers**” data frame.
  - c. To do this, simply click on the Ontario layer name to highlight it, then drag it to the New Data Frame (just below the **New Data Frame** title)  
You can also copy and paste layers between data frames
  - d. Right-click on OntarioCD layer in the Layers data frame > Copy
  - e. Now Right-click on **New Data Frame** title>Paste Layer(s)
3. Copying a data frame.  
If the data frame you want to copy has all the layers you want to duplicate, you can
  - a. Right-click on the **Layers** data frame name>Copy
  - b. Then from Main Menu Edit>Paste (or you can simply click the usual Paste icon)
4. Copy the **Layers** data frame one more time. You need a total of four data frames.

**Q2. What is the name of the data frame you just created using this last technique (step 4 above)? (1 point)**

**Q3. Are your Joins intact in all your copied OntarioCD layers? (1 point)**

## Changing Data Frame Names

This is getting confusing - too many data frames with the same or similar names. We are going to use these data frames to compare Classification methods, so we'll name each data frame after a particular technique. To change a Data Frame's name, simply

1. Right-click on the name>Properties
2. Make sure the **General** tab is selected and type in: **Natural Breaks**

Note (you can bring up Data Frame Properties by simply double clicking on the data frame name – same as a layer)

You can also change a Data Frame name by clicking on it once, then wait a moment and click on it again (same as changing a file name). Change the rest of the data frames to the following:

- **Equal Interval**
- **Quantile**
- **Manual**

## Active Data Frame

Notice that of all the new data frames you created or copied, only one has its name in **bold lettering**. This is to tell you which data frame is **Active**. Anything you do with the Tools happens to layers on the **Active** Data Frame only.

1. Zoom-in to southern Ontario in your currently active data frame.
2. Now **Activate** another data frame. To do this, Right-click on the data frame name which you want to activate, then click Activate on the context menu.

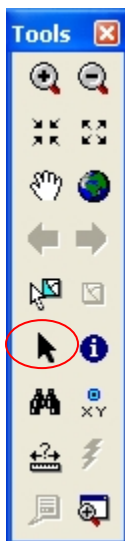
## Q4. Is this newly activated data frame zoomed in to the same extent as the one you zoomed-in to southern Ontario? (1point)

3. Go back to the data frame that you zoomed in to southern Ontario and make sure you zoom back to the previous extent (or full Extent) so that the whole province is showing.

## Managing your data frames in Layout View

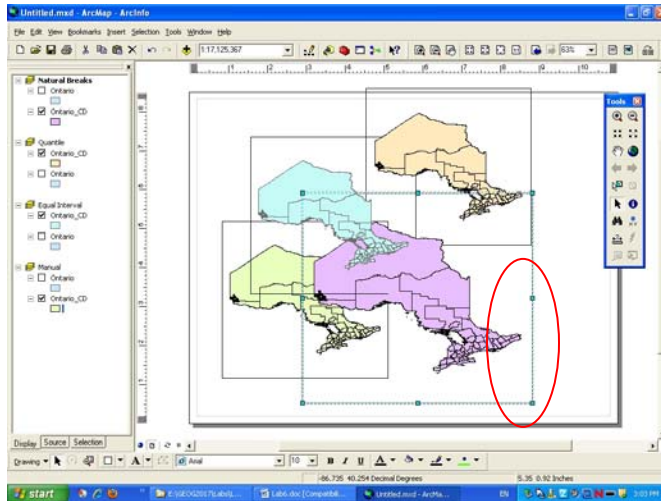
1. Go to Layout View.

It may not appear that all your data frames are in your layout because they are stacked. The key to managing your data frames in the Layout View is your Select Elements Tool in the Tools menu.



2. You need to change your page layout to Landscape (File>Page & Print set up...)

3. Select one data frame at a time with the Select Elements tool and move them to the four corners of your page. A data frame is selected when it has a dashed line around it and blue (sometimes green depending on whether you've selected multiple elements) "handles"



We are going to pre-size one of your data frames and make all the others the same size; to do this:

4. Select one of your data frames in Layout View
5. Right-Click>properties
6. Select the Size and Position Tab
7. In the Size box  
Type in 4 for Width  
Type in 4 for Height
8. Leave As Percentage and Preserve Aspect Ratio unchecked.

Now you have one data frame that will take up one quarter of your layout. It's easy now to make all data frames the same size. This step has to be done very carefully in exactly the right order.

9. Select all the data frames **one at a time** holding down the shift key (or Ctrl will do too) **but MAKE SURE THE DATA FRAME YOU SIZED TO 4"x4" IS THE LAST ONE SELECTED**

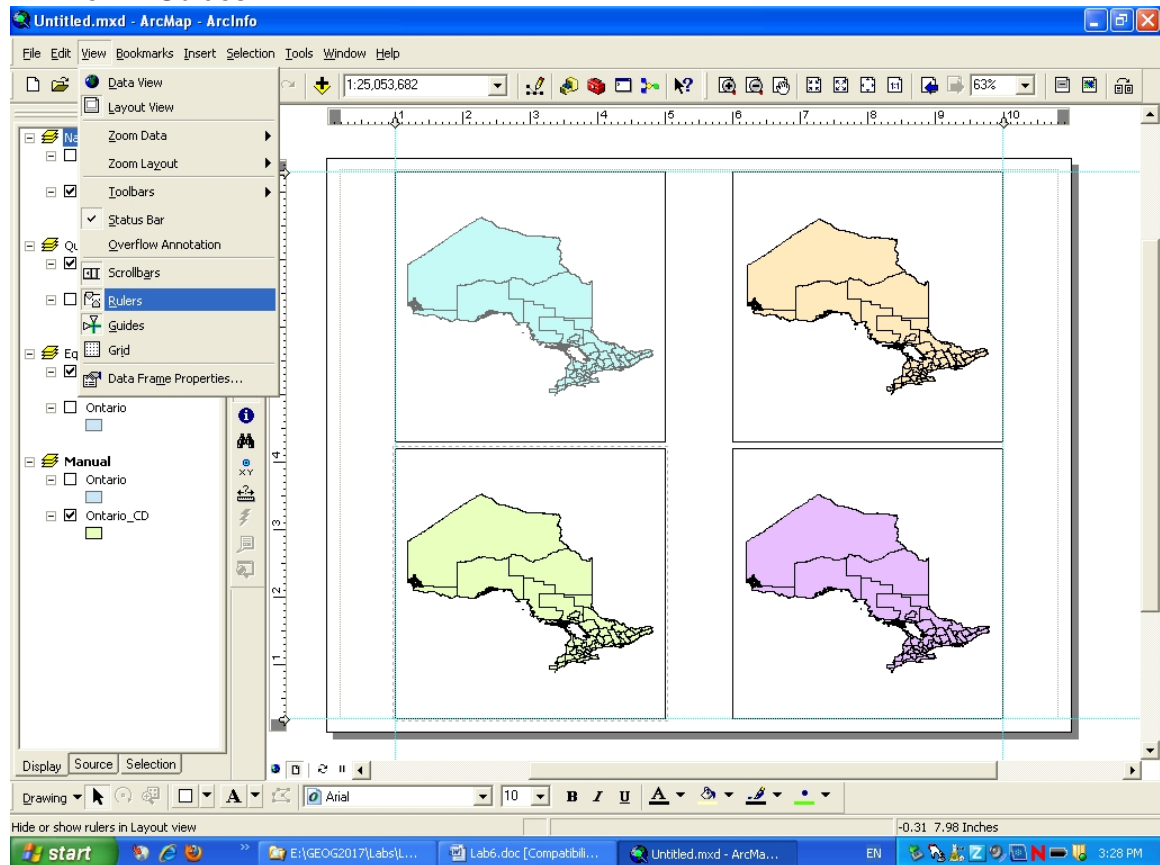
ALL the data frames should have dashed outlines with blue or green "handles" on them (the blue handles are reserved for the last one that you picked –WHICH SHOULD BE YOUR "PRE-SIZED" ONE.

10. Right-click on any of the data frames (it doesn't have to be the pre-sized one) in the Layout View for the context menu
11. Select **Distribute>Make Same Size. All data frames in the layout view should now be the same size.**
12. Use your Select Elements tool to move the data frames as needed to fit all four onto the page.

Hint: There's a way to better control how your layout is prepared using **Guides** to which you can snap objects.

From the Main menu make sure the following are selected (they appear as depressed)

- View > Rulers
- View > Guides



13. You can then add a guide (dashed line) to which you can snap objects. Because of the size of the data frames, I had to place my guides at the very top and bottom of the pages.

**Q5. How far from the left and right edges of the page are my data frames above (the ruler is in inches)?**

### **Part 2 Comparing Classification Methods (5 points)**

1. SAVE your work as Lab6\_ClassType.mxd
2. Go back to Data View
3. For each of the four data frames, create a thematic map based on the classification scheme name of that layer using the Population Change (PopChg) variable
4. E.g. for the Natural Breaks Data Frame double click on the OntarioCD layer >Symbology>Quantities>Graduated Color

Values: PopChg (or Field\_3) (check to see if that's the right field name)  
Classification: Natural Breaks

5. For the Quantile and Equal Interval data frames:
  - a. Repeat the steps except at Classification, click the **Classify** button which takes you to the Classification window.
  - b. In the Classification box, select the appropriate method (based on your data frame name)
6. **Make sure you still use only 5 classes for each method.**
7. Click Ok to close the classification window. Do not change the color ramp – use the same one for all your maps here,
8. then Ok to apply the classification scheme to the data frame.

## 9. Important For Manual Classification

- a. Repeat the same steps except at Method in the Classification window, select Manual,
  - b. **THEN RIGHT CLICK ON THE WORD “Manual” TO GET CONTEXT HELP and click on “What’s This?”.** This will teach you how to create manual breaks using the histogram in the window.
- If you make a mistake while doing a manual classification (or you want to start over) simply Cancel in the Classification window, and hit Classify button again in the Layer Properties >Symbology window.

## Adding legends

1. Go to the layout view  
You need to add a legend for each data frame
2. Activate a data frame (you can do this in the table of contents on the left, OR, just click on a data frame in your layout view with the Select elements tool, this will activate that data frame
3. While in Layout View, go to the main menu and **Insert** a legend for each data frame. In the Legend Wizard:
  - a. Make sure only Ontario CD layer is in the Legend Items  
**IMPORTANT**
  - b. IN LEGEND TITLE change the default title from “Legend” to the type of classification you are mapping, E.g. Natural Breaks, Quantile.
4. You'll need to activate each data frame one at a time and Insert>Legend one at a time. Be careful where you place each legend, you want the right legend with the right data frame.

**YOU DO NOT NEED A NORTH ARROW OR SCALE BAR FOR THIS EXERCISE, but you still need a title with your name.**

5. SAVE Your work as Lab6\_ClassType.mxd

## 6. Export your layout as

**Lab6\_Part2\_ClassType\_Fname\_Lname.pdf and send to Holly and I**

### ***Part 3 Comparing number of classes (5 points)***

1. Open Lab6\_ClassType.mxd
2. Now save it immediately as
3. Lab6\_ClassNumber.mxd
4. Make 4 Natural Breaks data frames to put on a single layout (in same way as above) This time you will compare 4 maps that use the same classification method (natural breaks) but each using a different number of class breaks. Use 4, 5, 6, and 7 class breaks.

Again, YOU DO NOT NEED A NORTH ARROW OR SCALE BAR FOR THIS EXERCISE but you still need a title with your name.

5. Don't forget a legend (and legend title) for each data frame.
6. Export your layout as **Lab6\_Part3\_ClassNumber\_Fname\_Lname.pdf** and send to Holly and I