

GEOG 2017EL

Lab 4 January 25, 2010 Selecting and Exporting Spatial Data (15 points)

Purpose:

The purpose of this lab is to learn to select spatial data and export the selection to a new shapefile. You will also review some of the main tools used in Arcview.

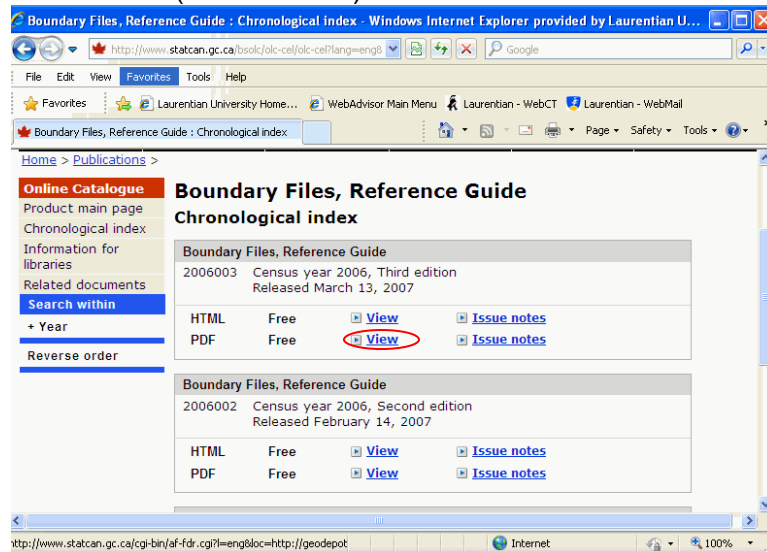
You will be creating a subset of the national Province and Census Divisions files for the province of Ontario.

Part 1 Download the 2006 Census Boundary Files Reference Guide

1. Google Statistics Canada. You'll have a number of choices from the first hit. Select "Census"
2. In the left hand table of contents, under 2006 census, select Geography
3. From the Census Geography page, scroll down to **Reference Products** and select "Geography Reference Guides"
4. At the Geography Reference Guides page, scroll down to Geographic Products and select

[Boundary Files, Reference Guide \(92-160-G\)](#)

5. From the Boundary Files, Reference Guide page, select to View the 3rd edition March 2007 (circled below).



6. This will bring you to a page that looks like:

Alternative format - PDF documents

The following document is available for downloading or viewing:

[Boundary Files, Reference Guide \(PDF Version, Unknown file size\)](#)

7. Click on the Boundary Files... link, this will open the document in Adobe Reader.

8. Save a copy of the document to your flashdrive.

Review the document and answer the following questions (pay attention to appendices D, E and F)

- Q1. How many Census Subdivisions are there in Ontario (ignore dissolutions and incorporations)? (1 point)**
- Q2. What’s the minimum total population for a Census Metropolitan Area (CMA)? (1 point)**
- Q3. Name the components of the Census Subdivision (CSD) unique identifier (CSDUID). (3 points)**


Review of main tools (use this section as a reference if needed when you start Part 2. Create a new map document below)

The “Tools” toolbar


This is the main toolbar that you will need when in the Data View in ArcMap (there is also a similar toolbar in ArcCatalog when you are in the Geography Preview mode). If the toolbar is not visible, you might have to click the following from the Main Menu: View>Toolbars>Tools (need to scroll to bottom).


- To select a tool, just click on it and it will show as slightly depressed, that's how you know which tool is selected. If you hover your mouse pointer over an icon for a few seconds, a tooltip comes up telling you the name of the tool.




The first two icons are Zoom In and Zoom Out tools . To zoom in you can select the Zoom-In tool and just click somewhere on the province of Ontario - you will gradually zoom in, but this is tedious. The best way to use the Zoom-In tool is to:

- 1. click one corner of the region you want to zoom into,**
- 2. hold the mouse button, and**
- 3. drag to the opposite end of the extent you want to zoom to.**


- You can go back to the last extent you were looking at with the Back Button  (you can go forward too if you've been zooming in and out or panning back and forth a lot).

- Also, if you want to zoom to the full extent  of your spatial data (e.g. all of Canada in this case) click on the Full Extent tool (the globe icon). This is useful when you found you're lost because you've zoomed in so tight that there are no recognizable features.

- The hand icon to the left of the globe is a pan button and allows you to move the map left/right/up/down.

- The Select Element tool  (the black arrow) is very important mostly in Layout View. You used this tool to prepare your layout (resize and move your map, legend and titles) in the ArcView tutorial.

Part 2 Create a new map document (mxd)

1. Open ArcMap, and at the splash screen (the screen that pops up when you start the program), click “A New Empty Map”, then OK
- Add data
2. Add the Census boundaries from your data on your flash drive that you saved in the previous lab. This should be the provinces (gpr_000b06a_e.shp) and Census Division Files (gcd_000b06a_e.shp). You can do this from ArcCatalog or from ArcView using the Add Data button  (last lab)
 3. Just for clarity, rename your layers. The Statistics Canada (StatCan) naming convention (gpr_000...) will become very familiar to you but it still helps to use more meaningful names. Use Census divisions for your CD layer.
 4. For now, it's best if you make your national Census Division (CD) not visible by unchecking the box next to the layer name.
5. Zoom in to Ontario using the Zoom-In tool

Q4 What do the icons in the Tools toolbar allow you to do? (2 points)

Part 3 Selecting and Exporting data

We don't need all the Provinces and Census Divisions form across Canada because our data files might take up more space than necessary on our flash drives. We will extract the data we want in two ways.

- First we will select the Province of Ontario using the Select Features Tool, then
- we will select the Ontario Census Divisions by Attributes

A. Setting the selectable features

By default, you can select features from all layers in you map. This means when you click on a feature in a layer to select it, features directly beneath it in another layer will also be selected. It's easier to know which features you've selected if you limit the layers from which you can select.

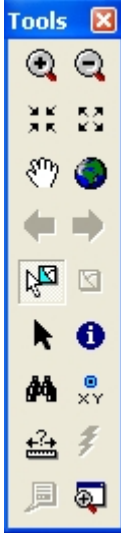
- To limit the “selectable layers”, from the Main Menu click
 - Selection>Set Selectable Layers
 - Then make sure only your Provinces box is checked


- You can also do this from the Selection Tab in your ToC on the left. Again, simply click on the layer names that you want to make “selectable”.

B. Selecting Features

Select with Select Tool

Selecting Ontario from the Provinces file



The Select Features tool  is found on the main tools toolbar that pops up when you start ArcMap

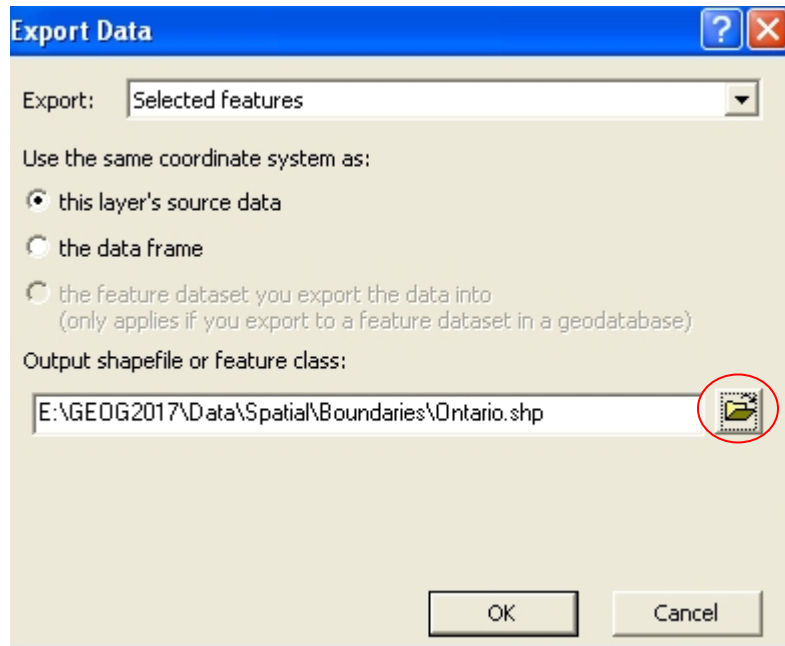
1. Click on the Select Features tool from the Tools toolbar (it will appear slightly depressed, that’s how you know which tool is active)
2. Click anywhere on the province of Ontario in your data view window. This should highlight the province of Ontario in bright blue. This means your Ontario is selected from your Provinces shapefile.

Exporting the selected Ontario data

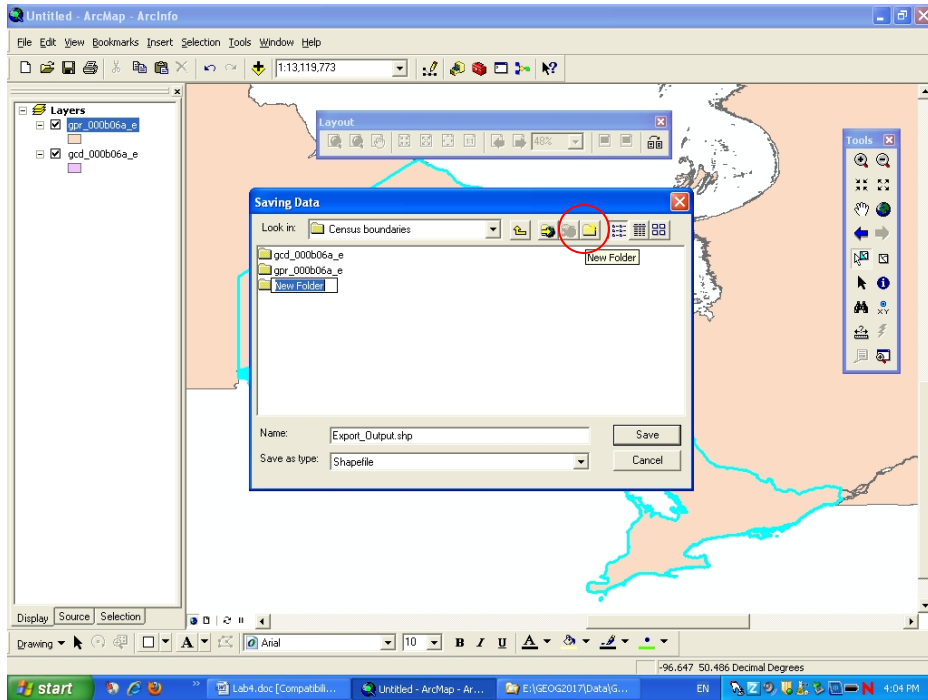
1. Right click on the Provinces layer name in the ToC.
2. Click on Data>Export Data
3. In the Export Data window Make sure “Selected features” is next to Export (see below)
4. Leave the coordinate system as “this layer’s source data”

Then save your file to the appropriate location:

5. Click on the folder icon (circled below) to the right. This will allow you to navigate to whatever location you want. You want to put this data on your Flash Drive (E:)



6. Create a new folder under your Census boundaries folder in your E: drive. To do this:
 - a. Click on the New Folder button (circled below) in the Saving Data Window
 - b. Change the New Folder name (highlighted in blue) to Ontario
 - c. Change the name from Export_Output (this is the default name created by ArcView) to Ontario



7. You will be asked if you want to include the exported data as a new layer in your map. Click Yes

We're finished with selecting features (Ontario) from the national provinces file.

We now want to clear our selected features

The "Clear Selected Features" button  is next to the Select Features button.

Click on the Clear Selectable Feature. There should be no highlighted features now.

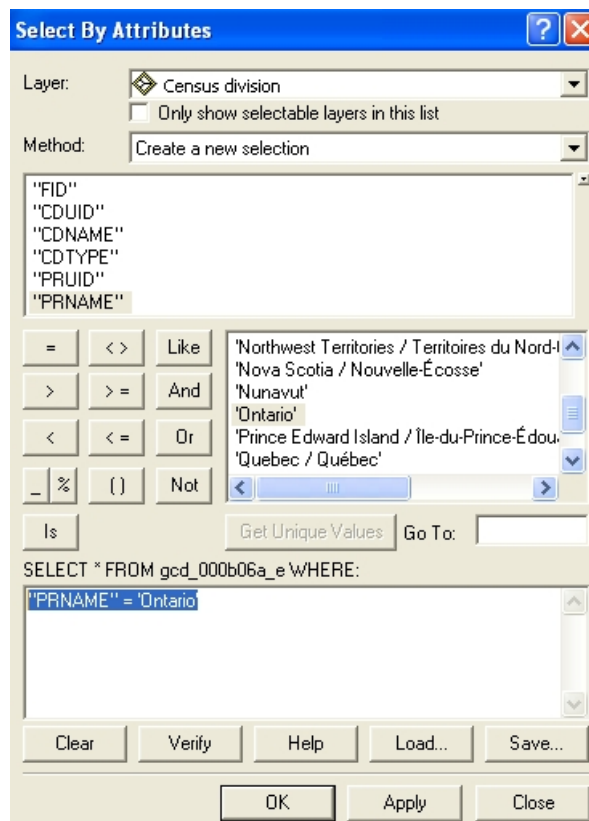
Selecting by Attribute

Selecting Ontario Census Divisions

1. From the Main Menu click
Selection>Select by Attribute
2. This will bring up the “Select by Attributes” window (e.g. below. We’re about to fill in all the criteria necessary to extract the Ontario CDs)
3. In “Layer”, use the drop down list to select Census division
4. Make sure the “Only show selectable layers in this list” box is unchecked
5. In “Method” it should read Create a new selection (you should not have to change this)
6. Double click on “PRNAME” from the list of variables. That will enter the same in the summary of your selection criteria automatically.
7. Click once on the = sign
8. Click on the Get Unique Values. This will bring up the list of possible PRNAMEs
9. Scroll down and double click on ‘Ontario’
10. This should result in criteria WHERE:
 - i. "PRNAME" = 'Ontario'

The quotes – double around PRNAME and single around Ontario - will appear on their own, but you should know that they are critical.

11. Click OK



12. Then, Export the selected Census Divisions in the same way you exported the province of Ontario and add it to your map as well.
13. Call it OntarioCD
14. You can add the Ontario Census Divisions shapefile to the Ontario folder you created above, OR, you can create a new folder for Ontario Census Divisions. This is up to you. As you progress with the labs, you will be more responsible for your own directory and file structure.

Q5. How many Census Divisions are there in Ontario? Hint: use ArcCatalog OR, Open the Attribute Table in the new Ontario only Census Division file you created (Search for “Viewing tables in ArcMap” in Help). **(3 points)**

Deleting the National Census Divisions File

Now that you’ve created a Census Division File for Ontario, you can delete the larger national file on your flash drive.

First, remove the national version of the census division layer.

Q6. Describe the steps needed to Remove a layer from a map document in ArcMap. (2 points)

Now delete the national census division file. Do this **carefully** using ArcCatalog or Windows Explorer. You only want to delete the gcd_000b06a_e files (should be just under 60MB), not the New OntarioCD files you just created.

Final map (3 points)

1. Make sure only your new Ontario and Census Division layers are visible, with the CD layer on top of province of Ontario layer.
2. Make the CD layer symbol Hollow.
3. Go to Layout View and add necessary cartographic elements to send me and Holly (TA) a pfd (Adobe) version of your layout.
GEOG2017E_Lab4_Fname_Lname.pdf (3 points)
4. SAVE your map document on your FLASH DRIVE – this is very important for future labs and your term project.