SFU SIMON FRASER UNIVERSITY LIBRARY

GIS and Maps WAC Bennett Library Procedure Guide
Lesson 3: Working with CHASS Census Data in an ArcGIS Environment

Created by: Sarah E. Pearce, Peer Graduate GIS Resource Facilitator,
Bennett Map Library, SFU 2012

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  First, Total population 25-64 years by highest certificate, diploma or degree- 20% sample → University certificate or degree

  Secondly, Population 25 years and over- Labour force activity →Unemployment Rate

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Introduction

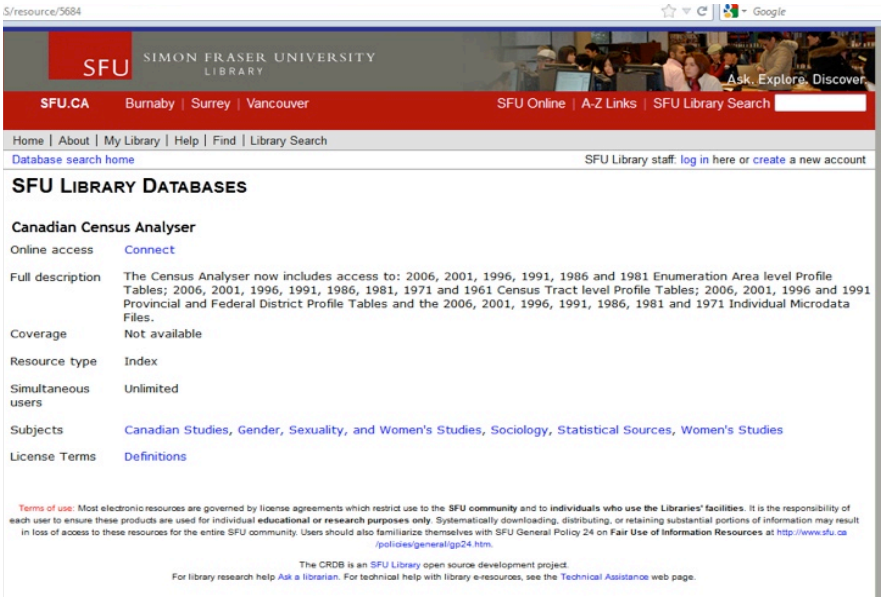
The following guide demonstrates to SFU GIS and Maps library users how to create a thematic maps working with CHASS generated Census data tables imported into ArcGIS software.

Before you begin, ensure that you have the following software programs installed on your computer:

1. ArcGIS 10
2. SFU Computing ID and internet connection

Step 1: Go to the SFU library website and connect to CHASS.

http://cufts2.lib.sfu.ca/CRDB/BVAS/resource/5684



Sign in with your SFU computing ID connect to → CHASS

Step 2- Choosing data query parameters for your project

Create a new folder for Lesson 3 data downloads and outputs on your local disk drive (C-drive for example)

Right click→ new→ Folder→ Lesson 3

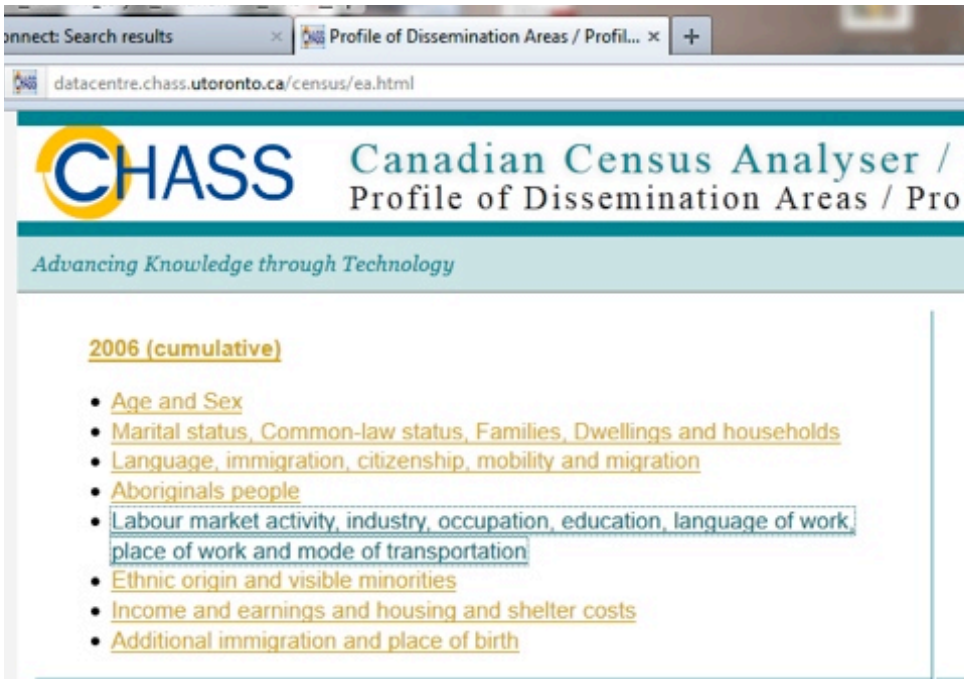
We will now choose the data parameters for our query in CHASS. Next we go to **the 2006 Profile of Dissemination Areas / Labour market activity, industry, occupation, education, language of work, place of work and mode of transportation data for the Greater Vancouver Census Division.**

Starting Points:

1. **Census Profile Tables → by Census Geography→ Enumeration area/Dissemination area**

2. **Profile of Dissemination Areas (2006 cumulative)**

   → Labour market activity, industry, occupation, education, language of work, place of work and mode of transportation



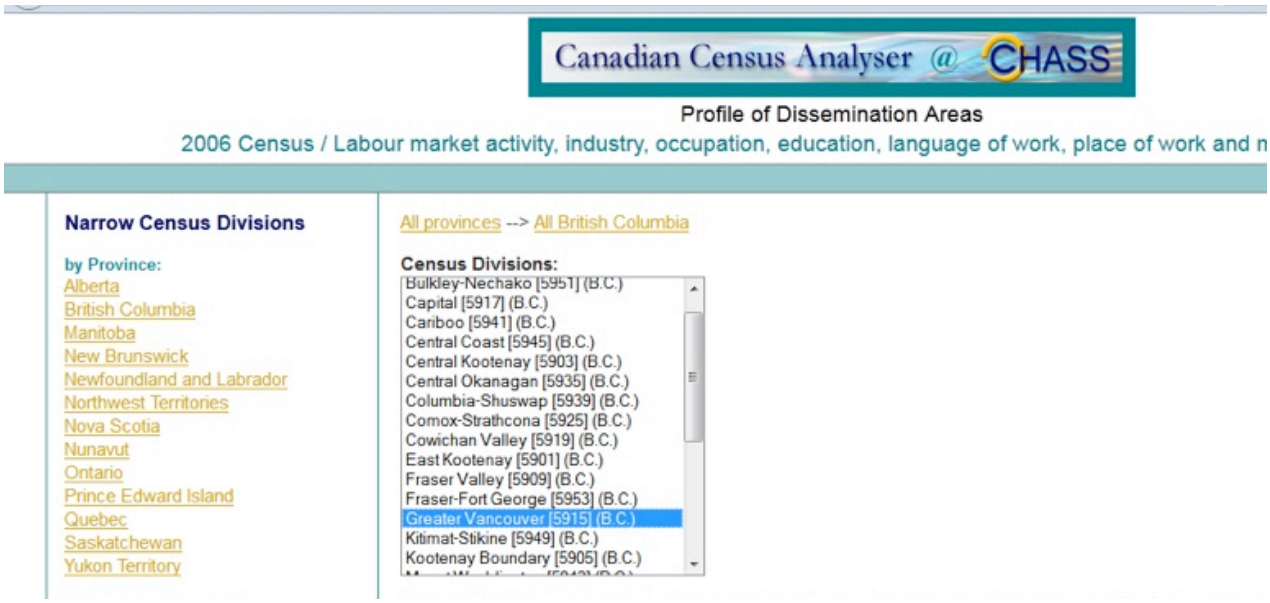
Highlight the Census Categories we are interested in (make sure you are *certain* you are highlighting *the data you want to work with*)

Firstly, narrow the Census Divisions

Choose the following parameters →

By Province: British Columbia

Census Division → Greater Vancouver [5915] (BC)



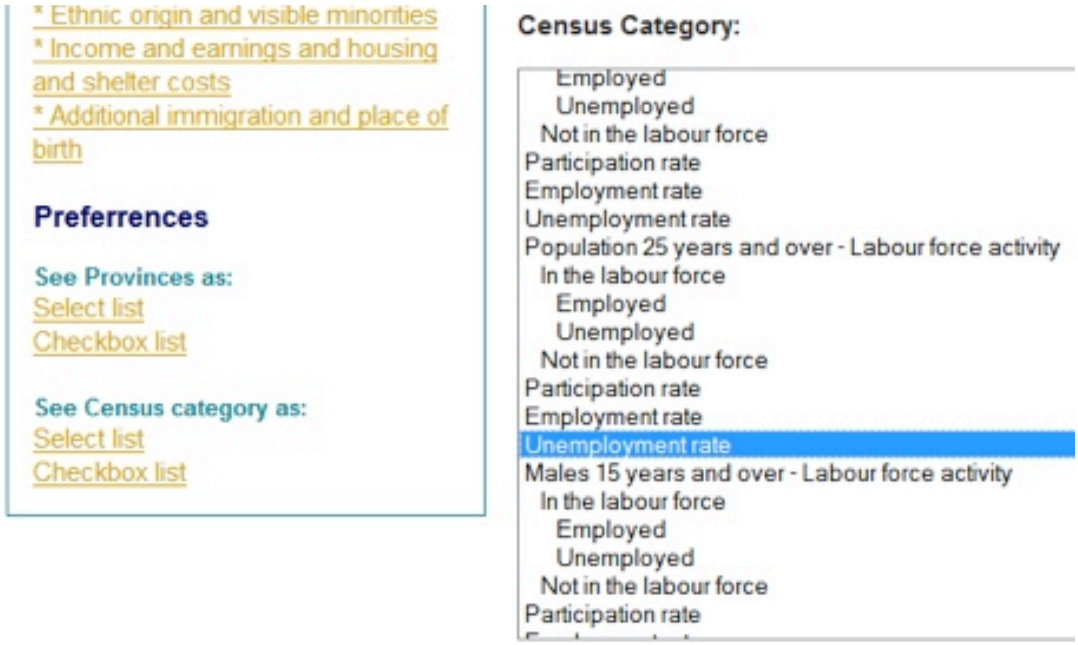
For this lesson be sure to select/highlight the following two census data fields:

Population 25 years and over- Labour force activity → Unemployment Rate

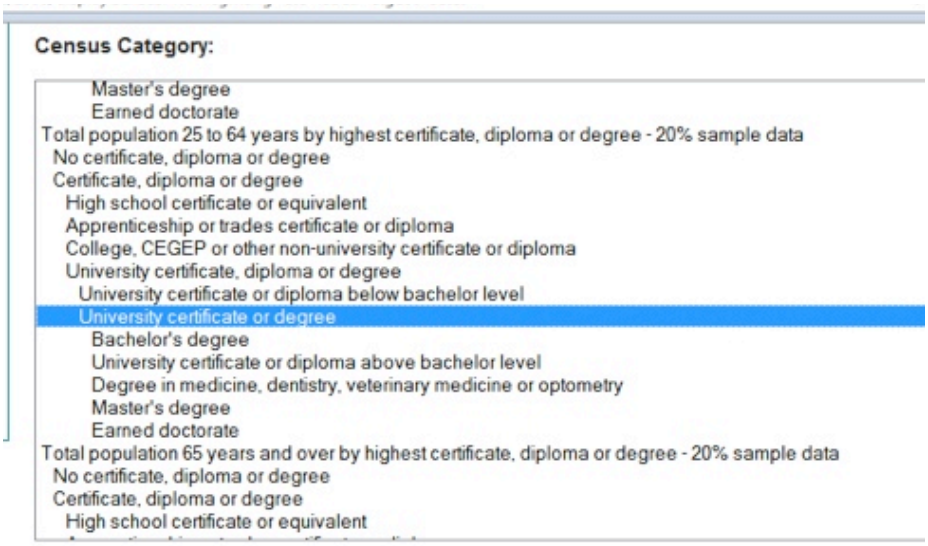
AND

(you can select/highlight multiple fields in the Census Category box by holding down the **ctrl** key and navigating the list category options by scrolling down)

Total population 25-64 years by highest certificate, diploma or degree- 20% sample → University certificate or degree



You will have to scroll way down the list to find the Census education field to highlight.



Next step: **Make sure** the following parameters/check **boxes are checked**

1. **Include in the result (check all of the following boxes)**

A) → DAuid,

B) →Division code

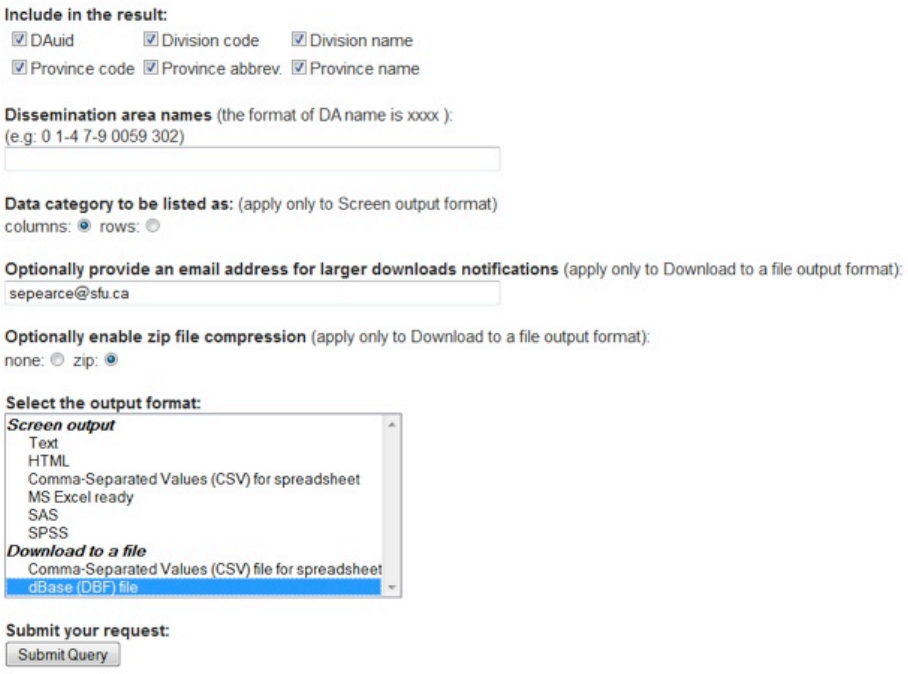
C) →Division name

D) →Province code

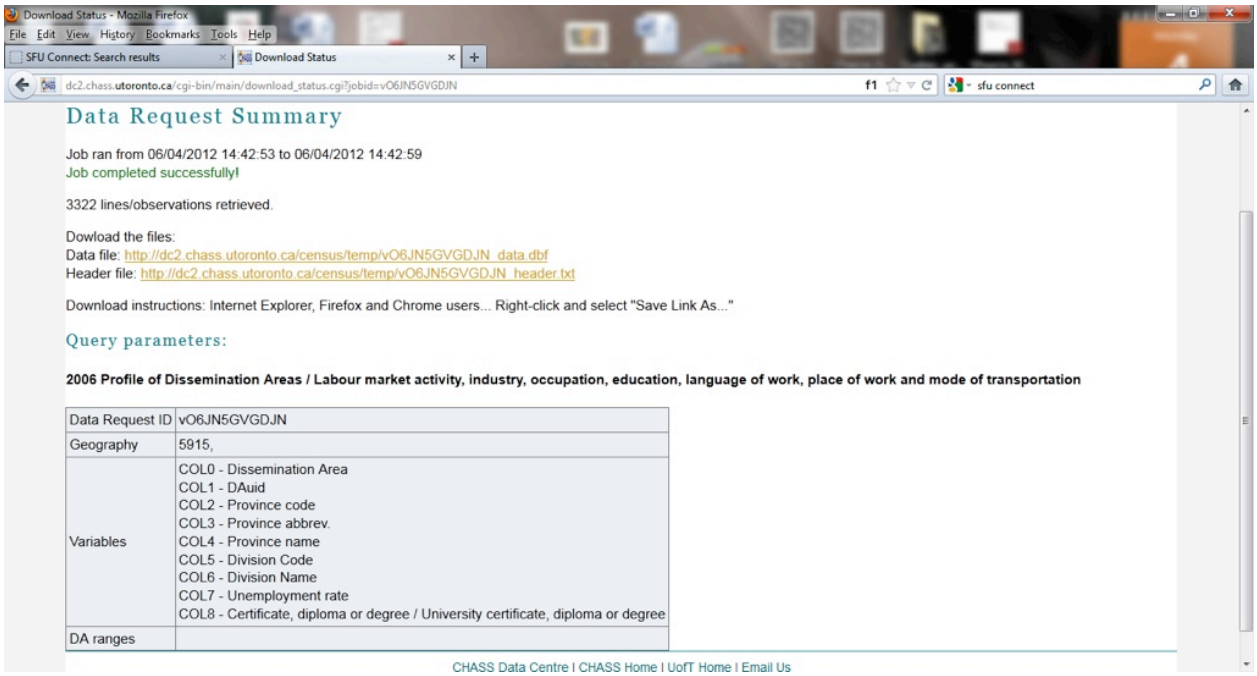
E) →Province abbrev.

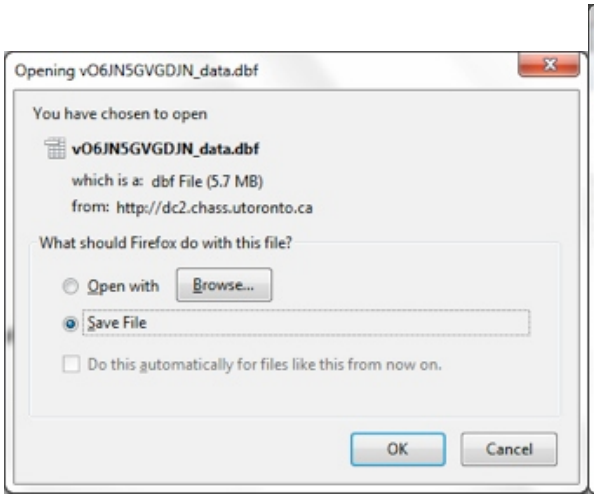
F) → Province name

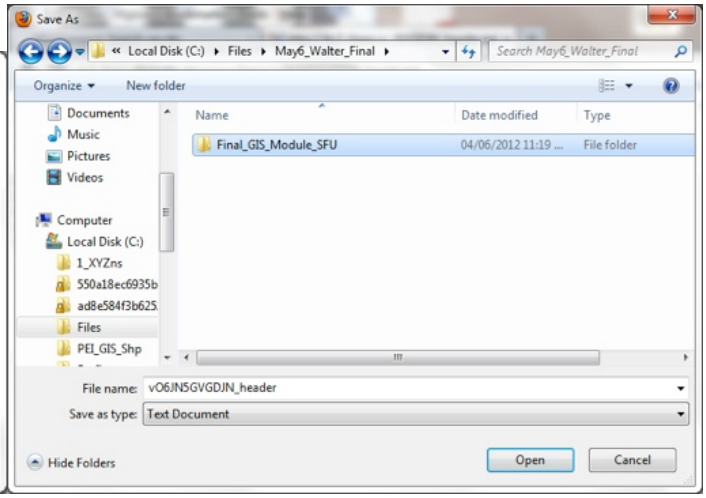
2. **Data category to be listed as→ colums**
3. **Optionally enable zip file compression (yes)**
4. **Select the output format as→ (Download to a file) → dBase (DBF) file → Submit Query**
5. Wait for CHASS to process, it will give you two files to download.



Right click on the two seperate files (.dbf.zip and header.txt) save in your Lesson 3 folder, right click on the zipped file → extract all







Step 3- Download the Census boundary file from the Statistics Canada website following the link below

http://geodepot.statcan.gc.ca/2006/040120011618150421032019/021521140401182506091205 19/021521140401182519011205_05-eng.jsp?lang=eng&catno=92-169-XWE2006011&Submit=Download

Choose→ Cartographic boundary file (ArcInfo)

Save this boundary file in your lesson 3 folder, right click → extract all

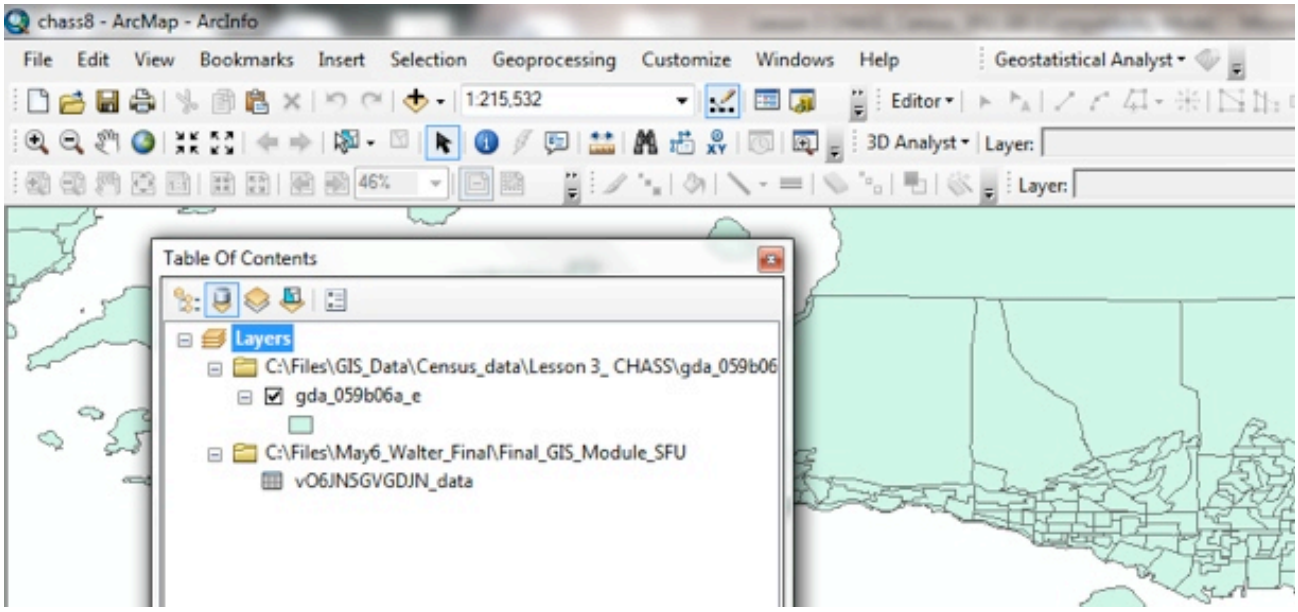
Step 4- The next step in ArcMap

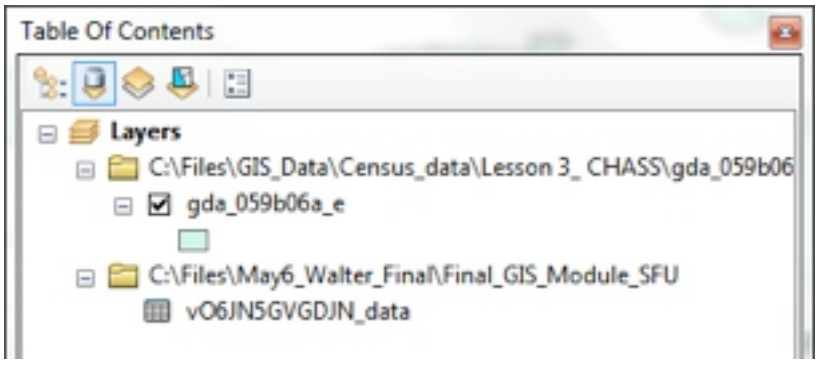
Open Census boundary file and "your_CHASS_database_table.dbf" file in ArcMap

Open ArcMap→ add data→ (connect to folder button then navigate to your Folder 3) → select *gda_059b06a_e.shp*

Open ArcMap→ add data→ (navigate to your Folder 3) → select v06JN5GVGDJN_data.*dbf*

(your file name will vary slightly to this example)

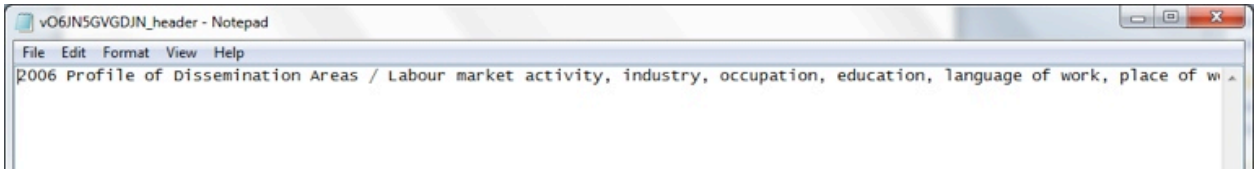




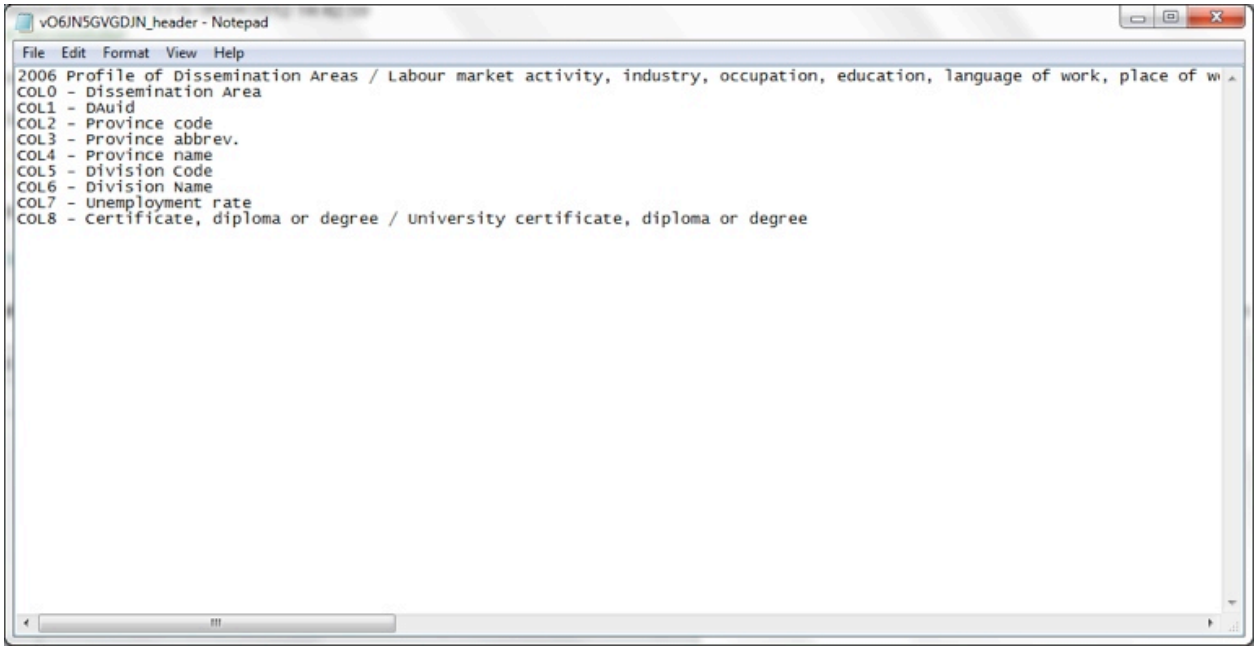
Step 5- Open the CHASS data header file with →*Notepad* software and reformat it for easy viewing of column numbers and associated labels

Re-format (by moving your cursor and hitting return, look for COL 0- Dissemination Area) so that the Colum numbers and associated labels are justified left down the side of the notepad document and save your edits.

Keep the header file open, you will need to refer back to it later on in this lesson.

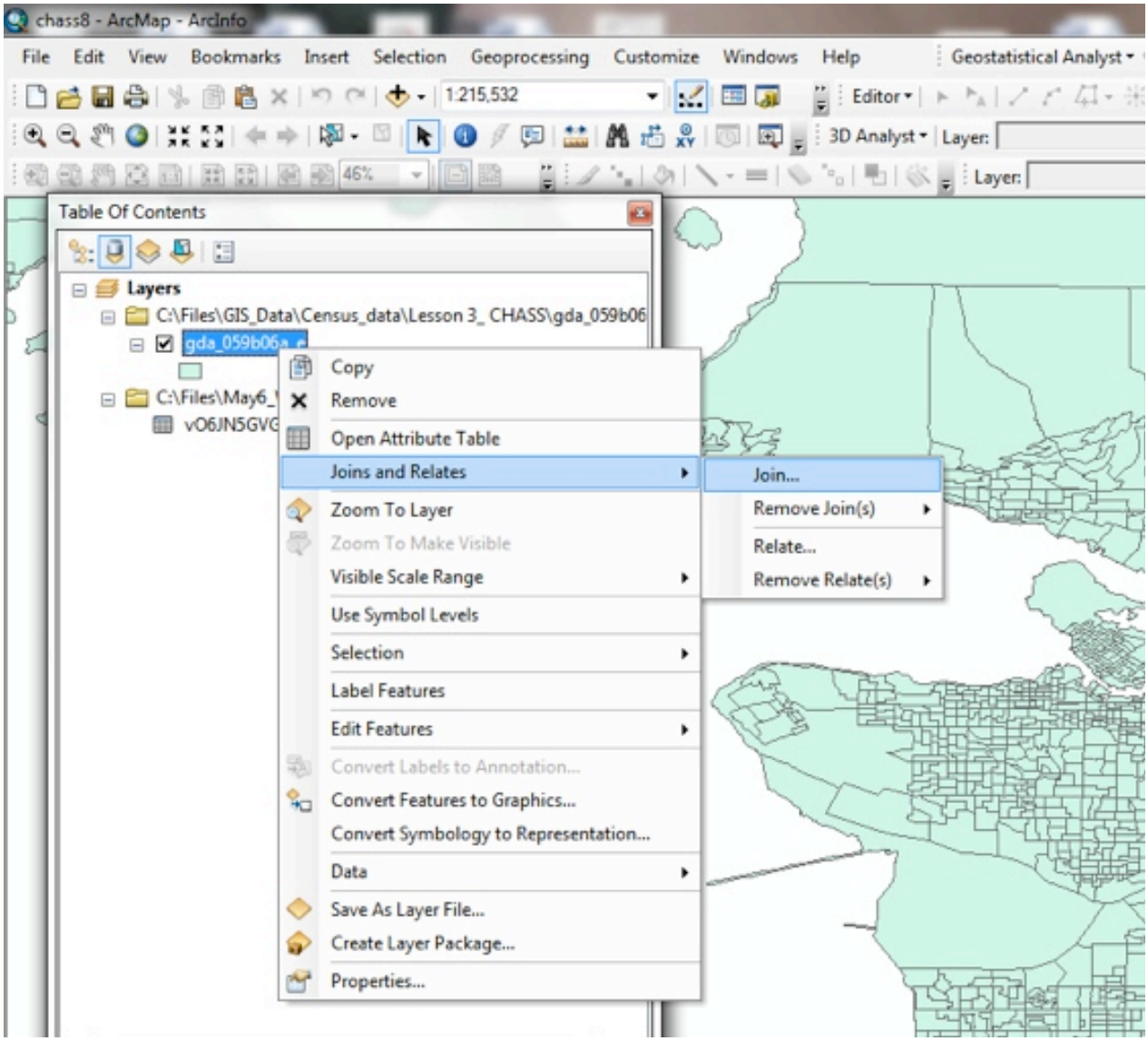


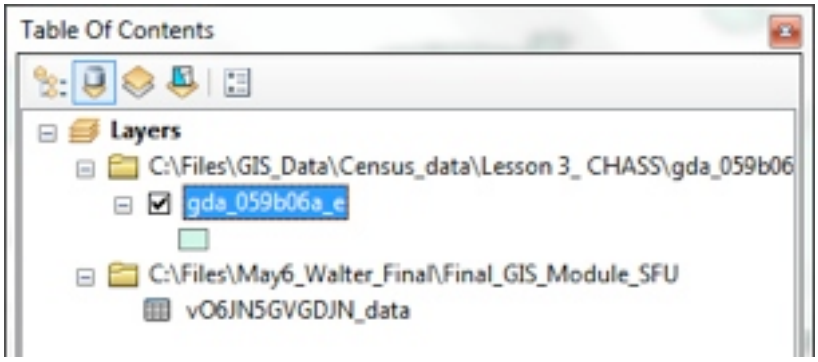
Your re-formatted notepad text document will now look like the one below, with the COL 0- COL 8 numers and labels matched up in an easy to read format.

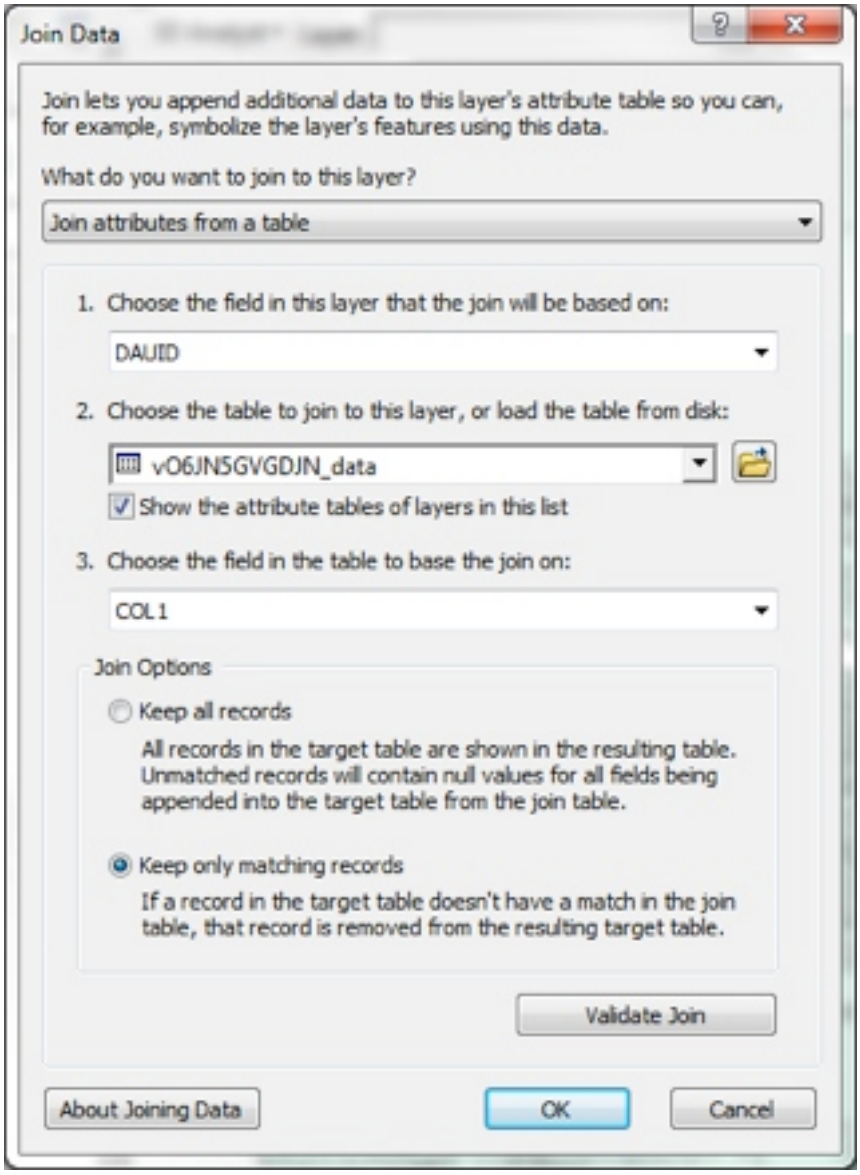


Step 6-Return to the ArcMap program and→ Preform a spatial join, joining the CHASS database table file to the Census Boundary file <u>using the common DAuid field</u>

Right Click on your boundary file → Joins and Relates →Join

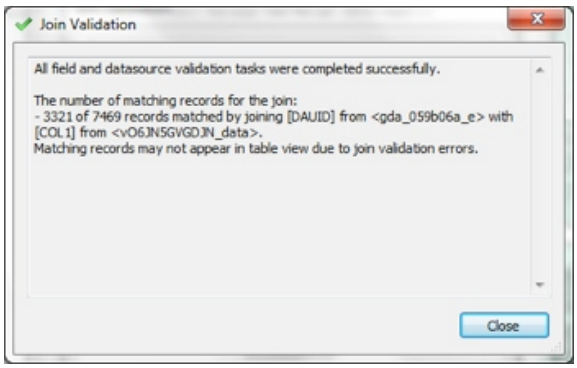






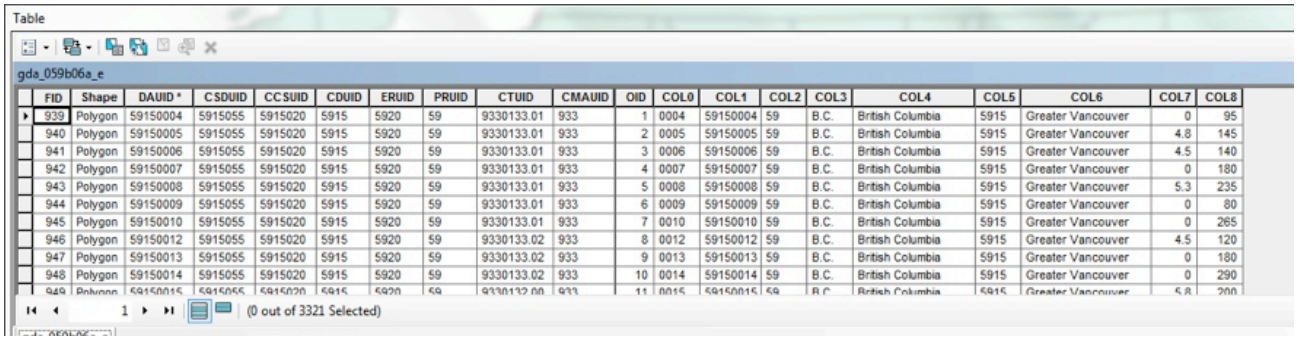
The Join is based on DAuid and **check your header file for the correct colum number (in this case it is COL - 1)** to choose in the Join data dialogue box.

Join Options→ Keep only matching records→ Validate Join→OK



To confirm that the join has been successful, right click on the shapefile in the table of contents and select→ open attribute table

Notice that your .dbf table columns have now been appended into your boundary shapefile.

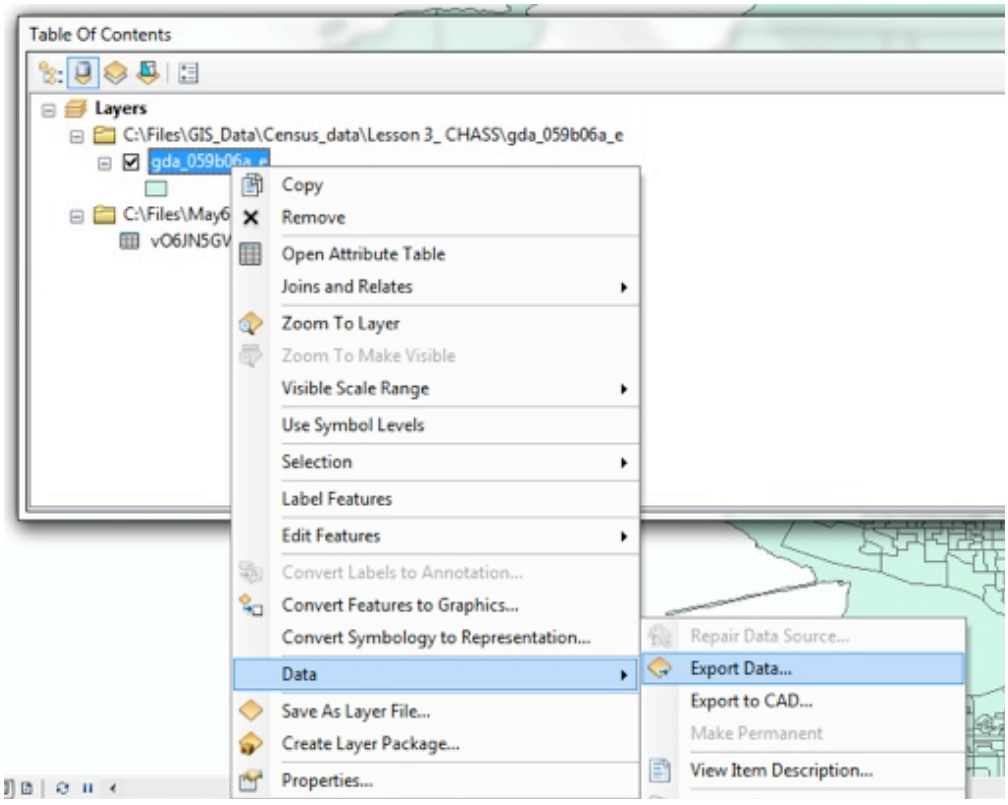


FID	Shape	DAUID *	CSDUID	CCSUID	CDUID	ERUID	PRUID	CTUID	CMAUID	OID	COL0	COL1	COL2	COL3	COL4	COL5	COL6	COL7	COL8
939	Polygon	59150004	5915055	5915020	5915	5920	59	9330133.01	933	1	0004	59150004	59	B.C.	British Columbia	5915	Greater Vancouver	0	95
940	Polygon	59150005	5915055	5915020	5915	5920	59	9330133.01	933	2	0005	59150005	59	B.C.	British Columbia	5915	Greater Vancouver	4.8	145
941	Polygon	59150006	5915055	5915020	5915	5920	59	9330133.01	933	3	0006	59150006	59	B.C.	British Columbia	5915	Greater Vancouver	4.5	140
942	Polygon	59150007	5915055	5915020	5915	5920	59	9330133.01	933	4	0007	59150007	59	B.C.	British Columbia	5915	Greater Vancouver	0	180
943	Polygon	59150008	5915055	5915020	5915	5920	59	9330133.01	933	5	0008	59150008	59	B.C.	British Columbia	5915	Greater Vancouver	5.3	235
944	Polygon	59150009	5915055	5915020	5915	5920	59	9330133.01	933	6	0009	59150009	59	B.C.	British Columbia	5915	Greater Vancouver	0	80
945	Polygon	59150010	5915055	5915020	5915	5920	59	9330133.01	933	7	0010	59150010	59	B.C.	British Columbia	5915	Greater Vancouver	0	265
946	Polygon	59150012	5915055	5915020	5915	5920	59	9330133.02	933	8	0012	59150012	59	B.C.	British Columbia	5915	Greater Vancouver	4.5	120
947	Polygon	59150013	5915055	5915020	5915	5920	59	9330133.02	933	9	0013	59150013	59	B.C.	British Columbia	5915	Greater Vancouver	0	180
948	Polygon	59150014	5915055	5915020	5915	5920	59	9330133.02	933	10	0014	59150014	59	B.C.	British Columbia	5915	Greater Vancouver	0	290

Step 7- Save the spatial join by saving the Census Boundary shapefile with appended 2006 Census data as a new file

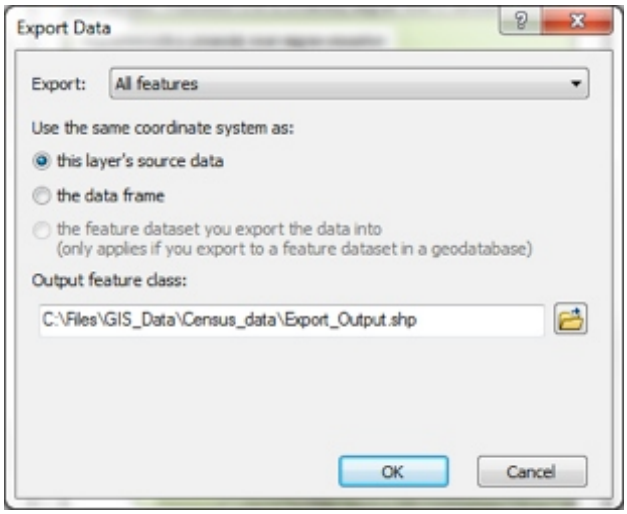
We can make a permanent copy of a layer with joined data by exporting the layer. To export the layer:

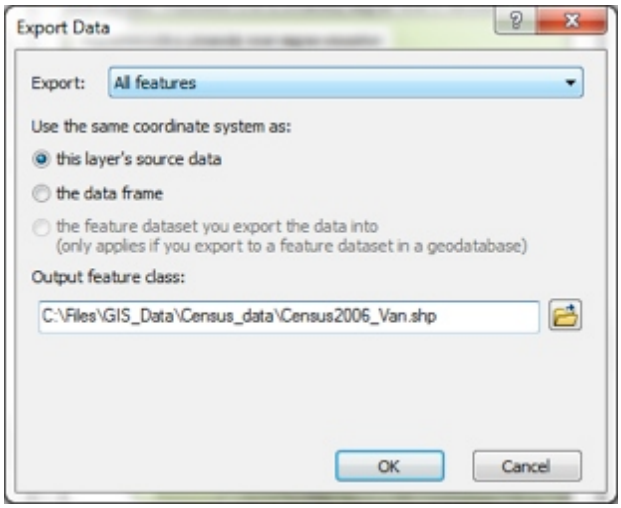
Right-click your boundary shapefile in the table of contents→scroll to Data→ click Export Data



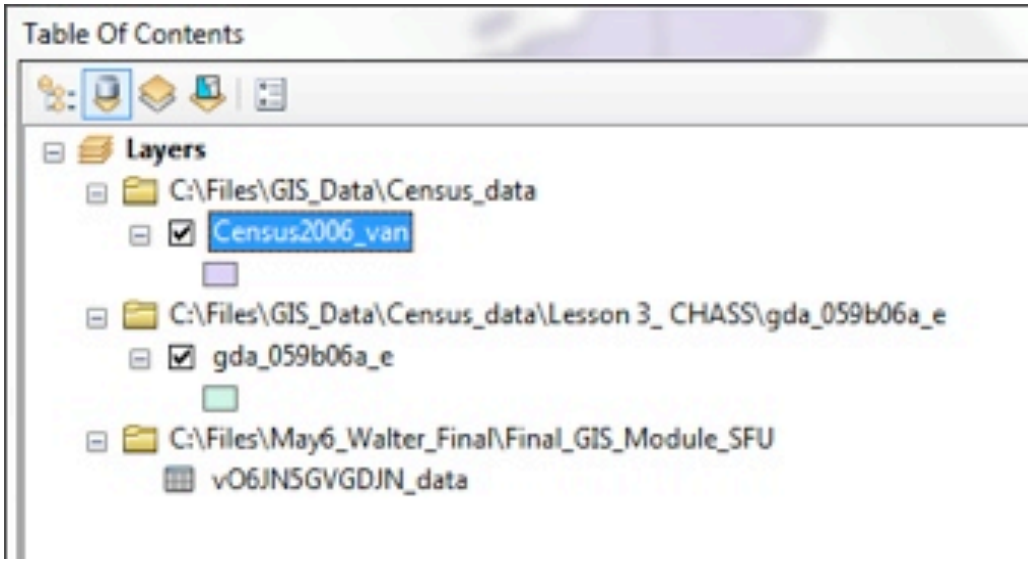
Rename the Output feature class to something meaningful such as ***Census2006_Van.shp***

Save the new shapefile in your lesson 3 folder



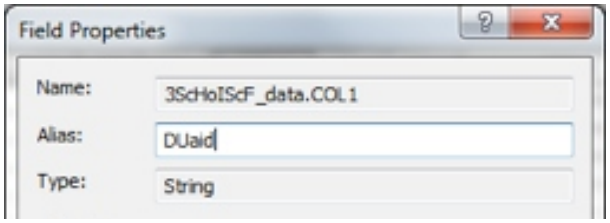


Yes (to add the layer to the map)



- **Optional step: you can re-name your field headings from COL 0, COL 1, COL 2, etc to something more meaningful by right clicking on the field label → properties→ Alias**

  (check your header file as a legend)



Step 8- We will produce two maps (steps 8-9 will have to be followed twice, one time for each map we want to create)

1 :

Total population 25-64 years by highest certificate, diploma or degree -20% sample- University certificate or degree, by Dissemination Area, 2006 Census

2:

Population 25 years and over- Labour force activity- Unemployment rate, by Dissemination Area, 2006 Census

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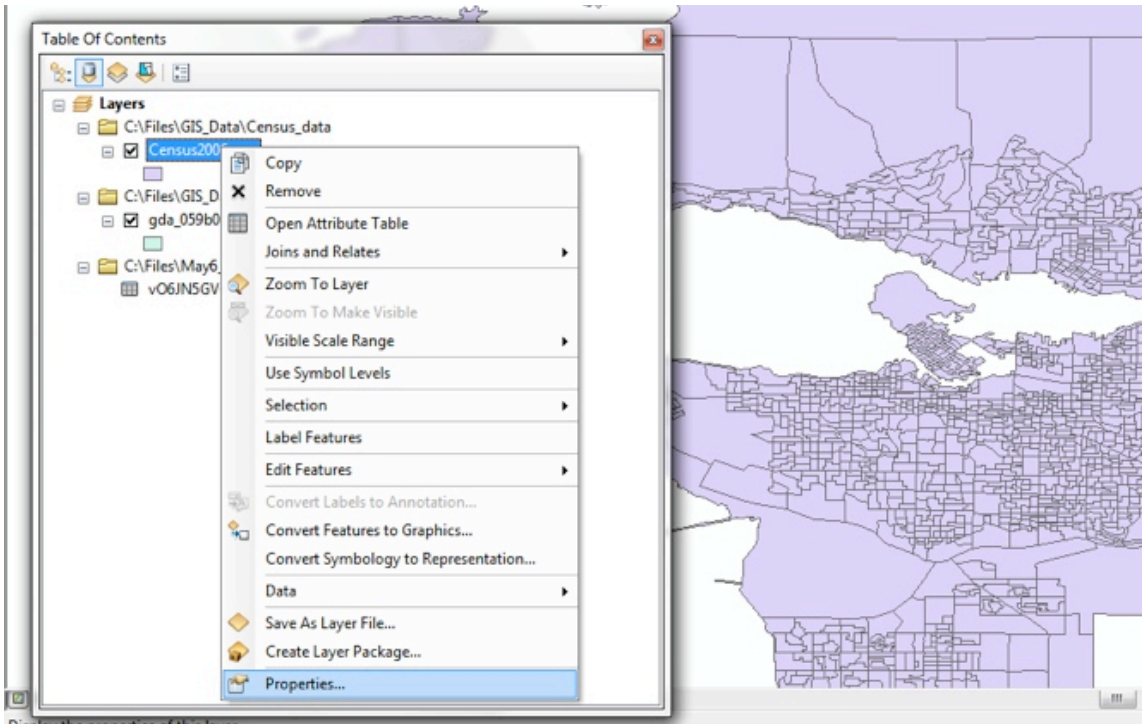
Choose a Census data column to display spatially, first Total population 25-64 years by highest certificate, diploma or degree -20% sample- University certificate or degree then Population 25 years and over- Labour force activity- Unemployment rate

In the table of contents**, right click on the *Census2006_Van.shp*→ properties**



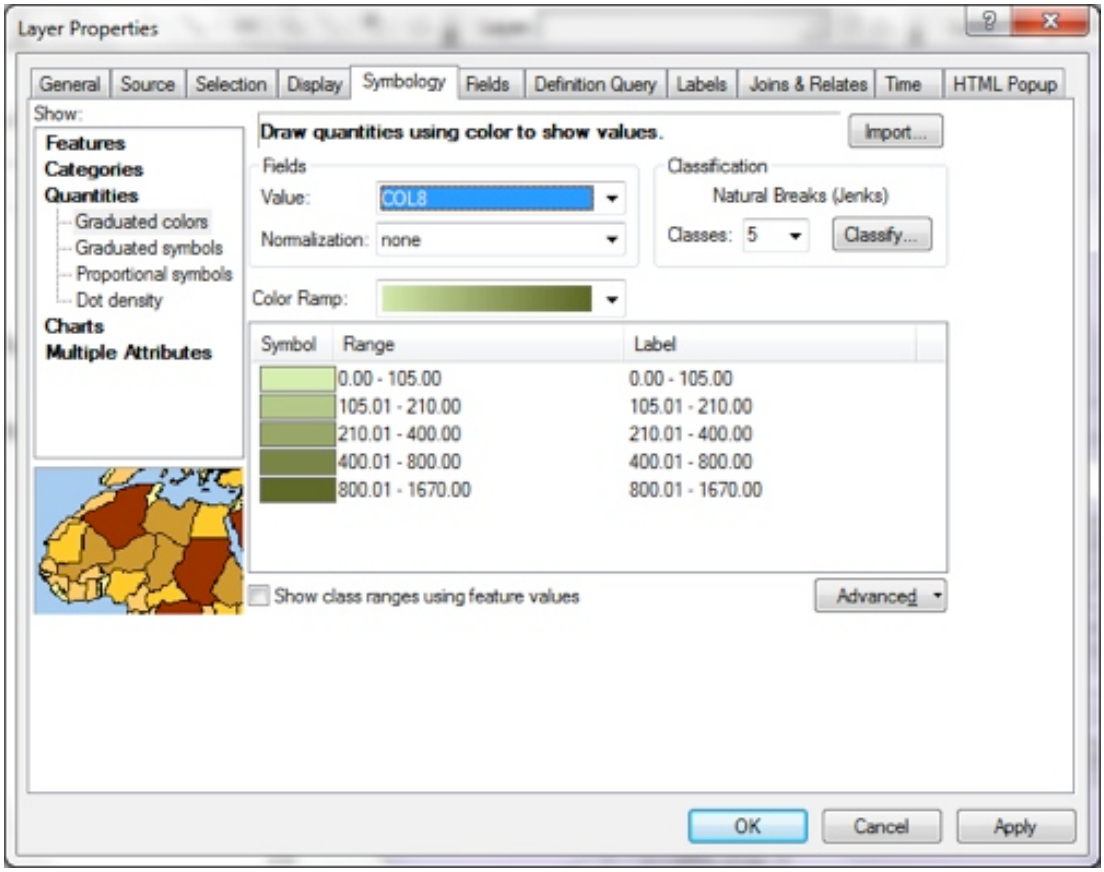
Click →the Symbology tab → click on Show: Quantities

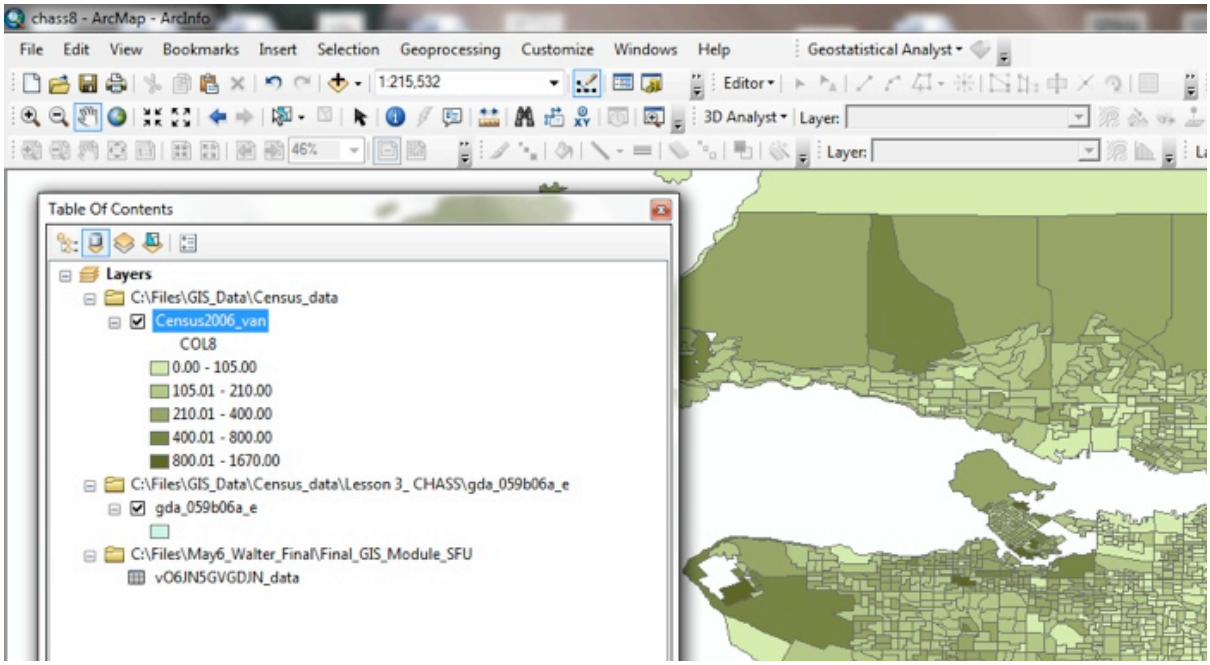
(COL7 - Unemployment rate;

COL8 - Certificate, diploma or degree / University certificate, diploma or degree)

Under the Fields Value→ choose COL 8 (consult your notepad header file to confirm you are choosing the correct column to display)

Change the Colour Ramp to a single colour gradient scale, similar to the one shown in the screen grab below→ OK

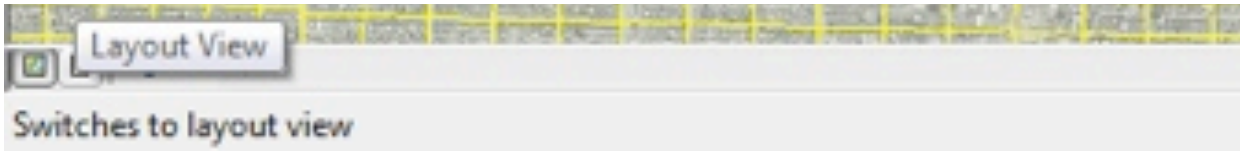




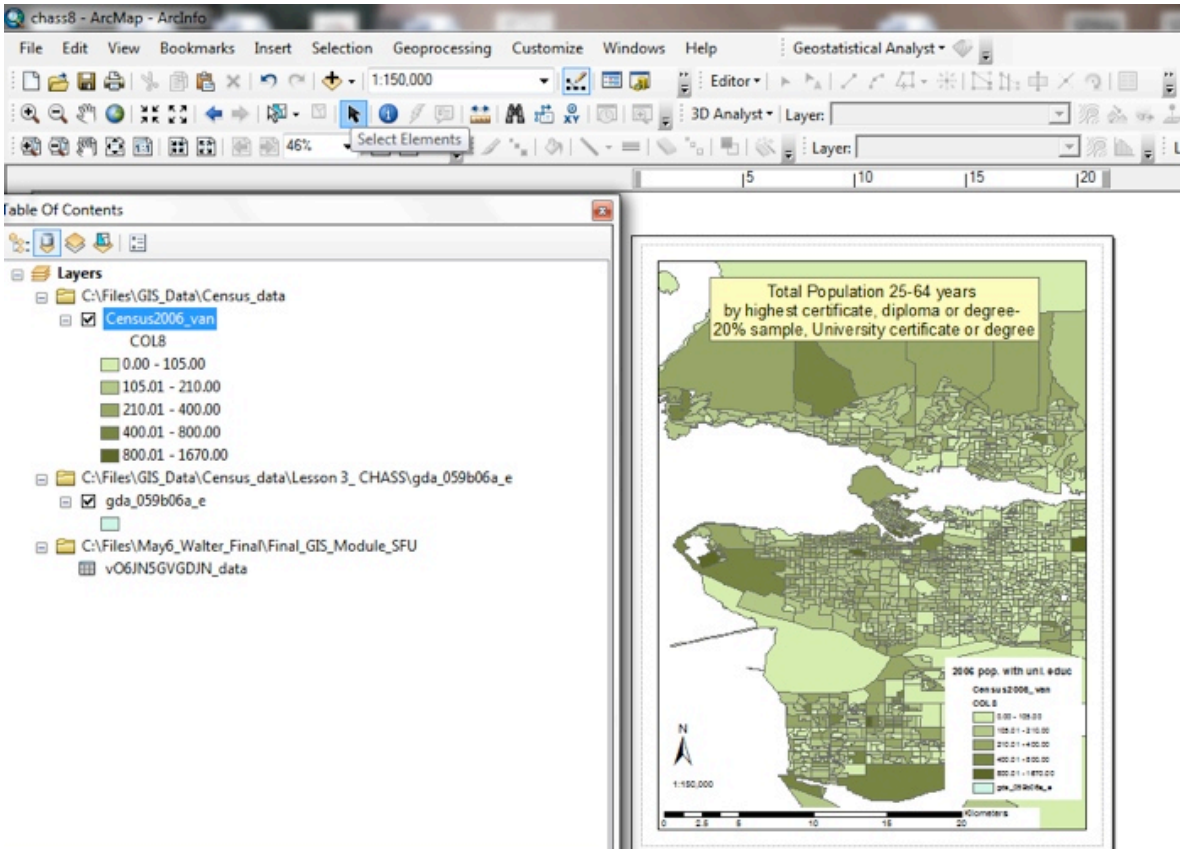
Step 9- Create and export two separate thematic maps from the ArcMap environment as a .JPEG files at 300 DPI. (you can also save and export your maps as 500 DPI .tiff files if you desire a higher resolution output, but the resulting file will be much larger). One map showing the population in Vancouver with a University Degree level of education and second, a map showing the Vancouver Unemployment Rate in the 2006 Census.

In the bottom left of the ArcMap screen there is a small square symbol for switching to the layout view. **Click → layout view**

After we switch to layout view in ArcMap, we will insert a map legend, a north arrow, a map scale statement and a map scale bar to include all the necessary cartographic elements.



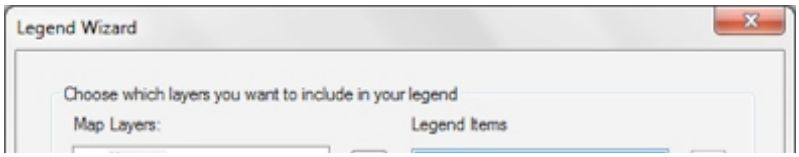
Now we will Insert our north arrow, legend, scale bar and scale text symbols to our map

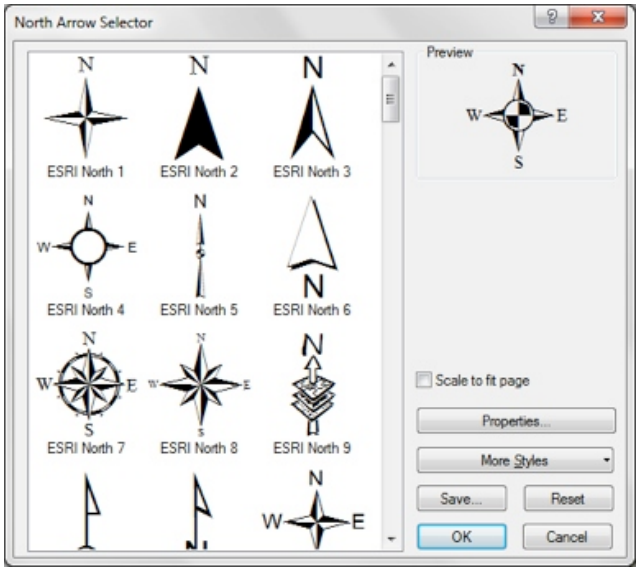


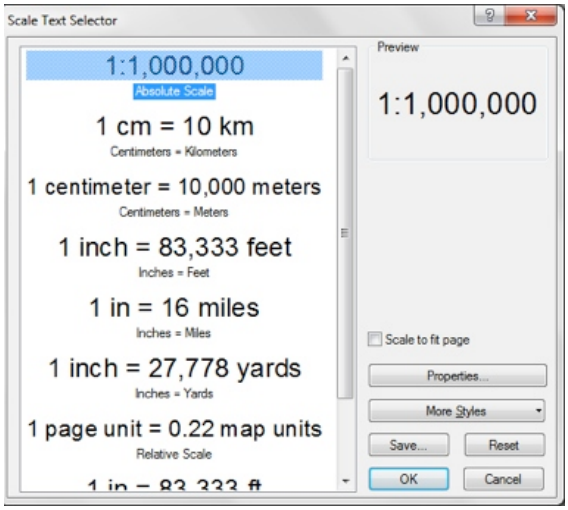
Insert→ Legend (choose which layers you wish to display in your map legend)

Insert→ Scale Bar (if needed change the display units: properties → Kilometers)

Insert → Scale Text → Absolute scale

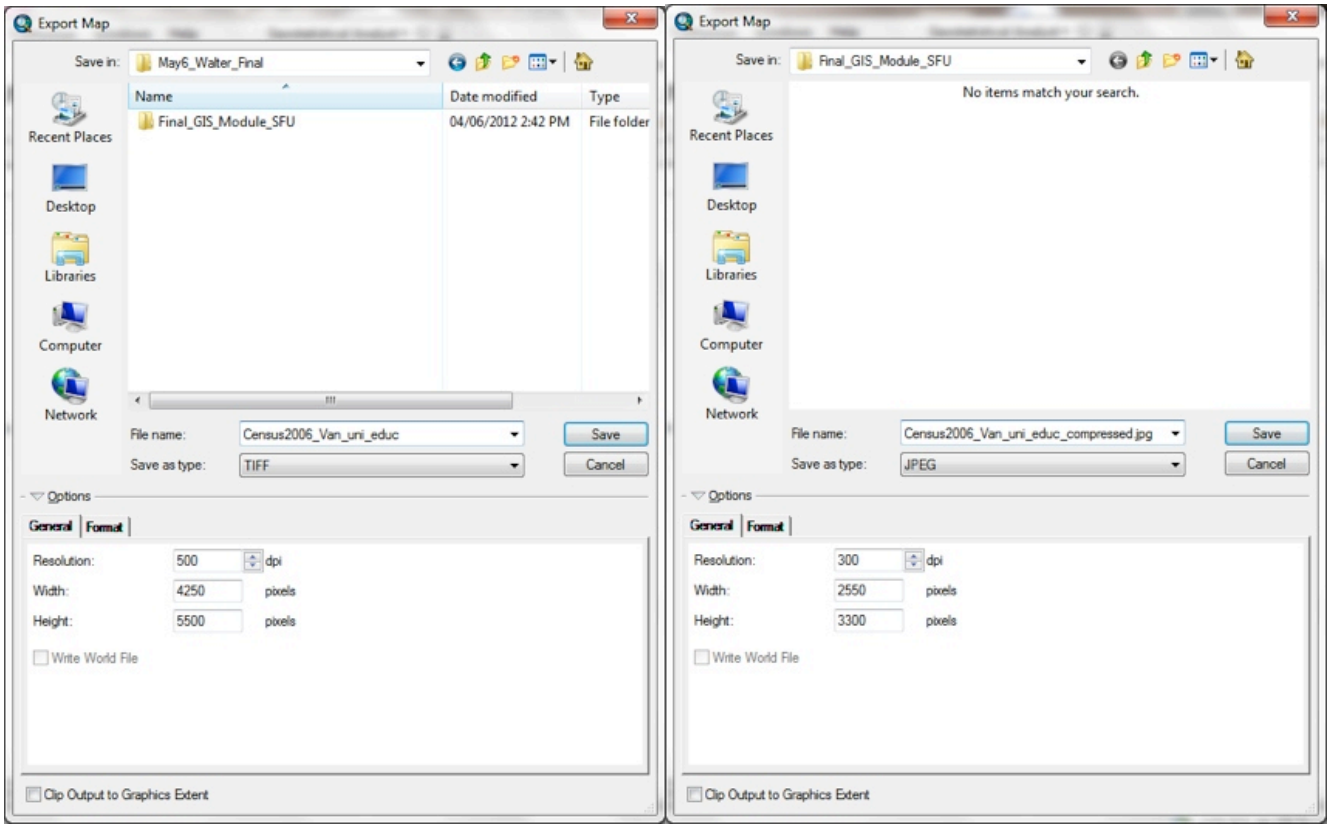




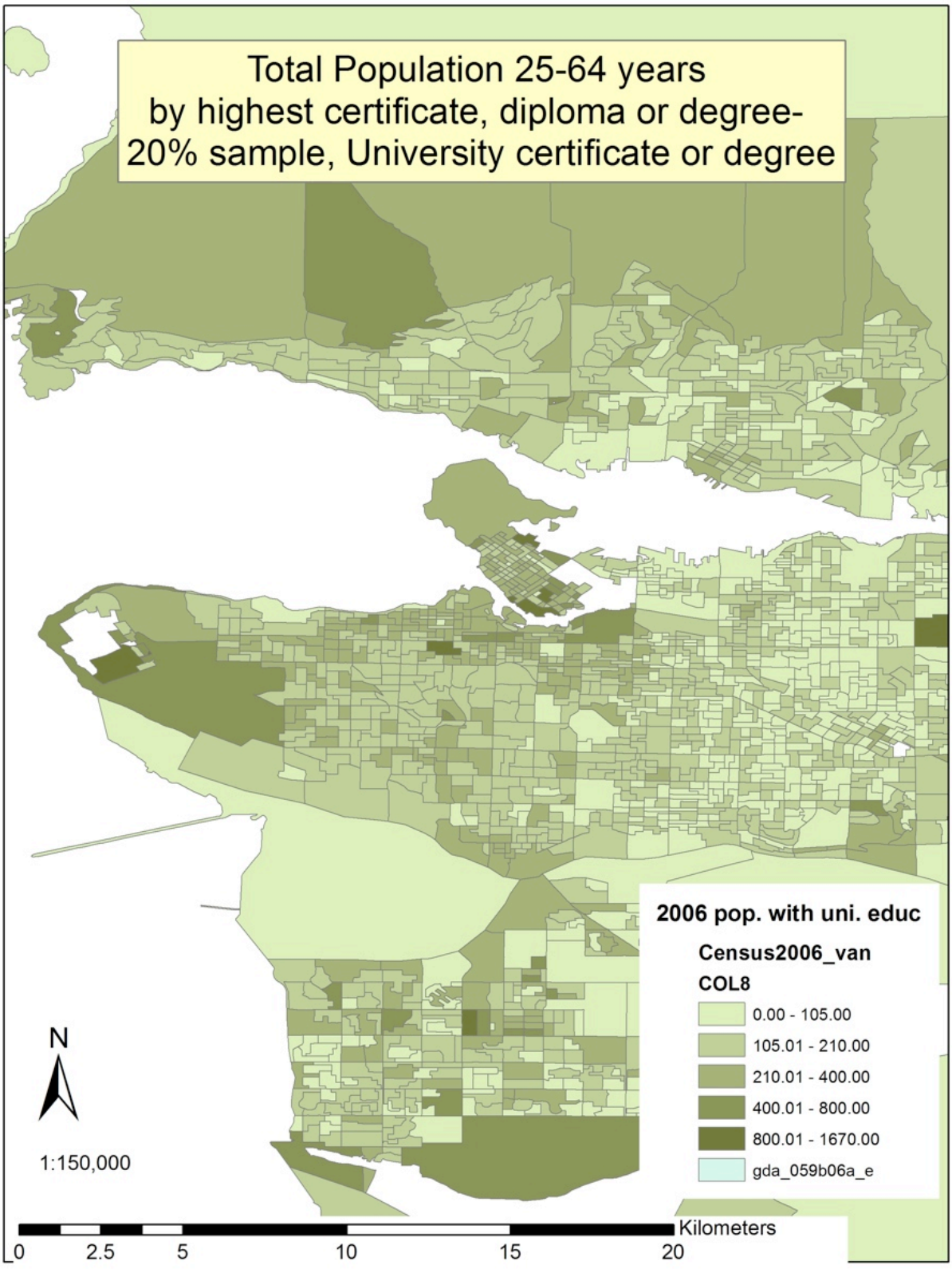


From the main toolbar at the top of the ArcMap page, click on

File→ Export Map

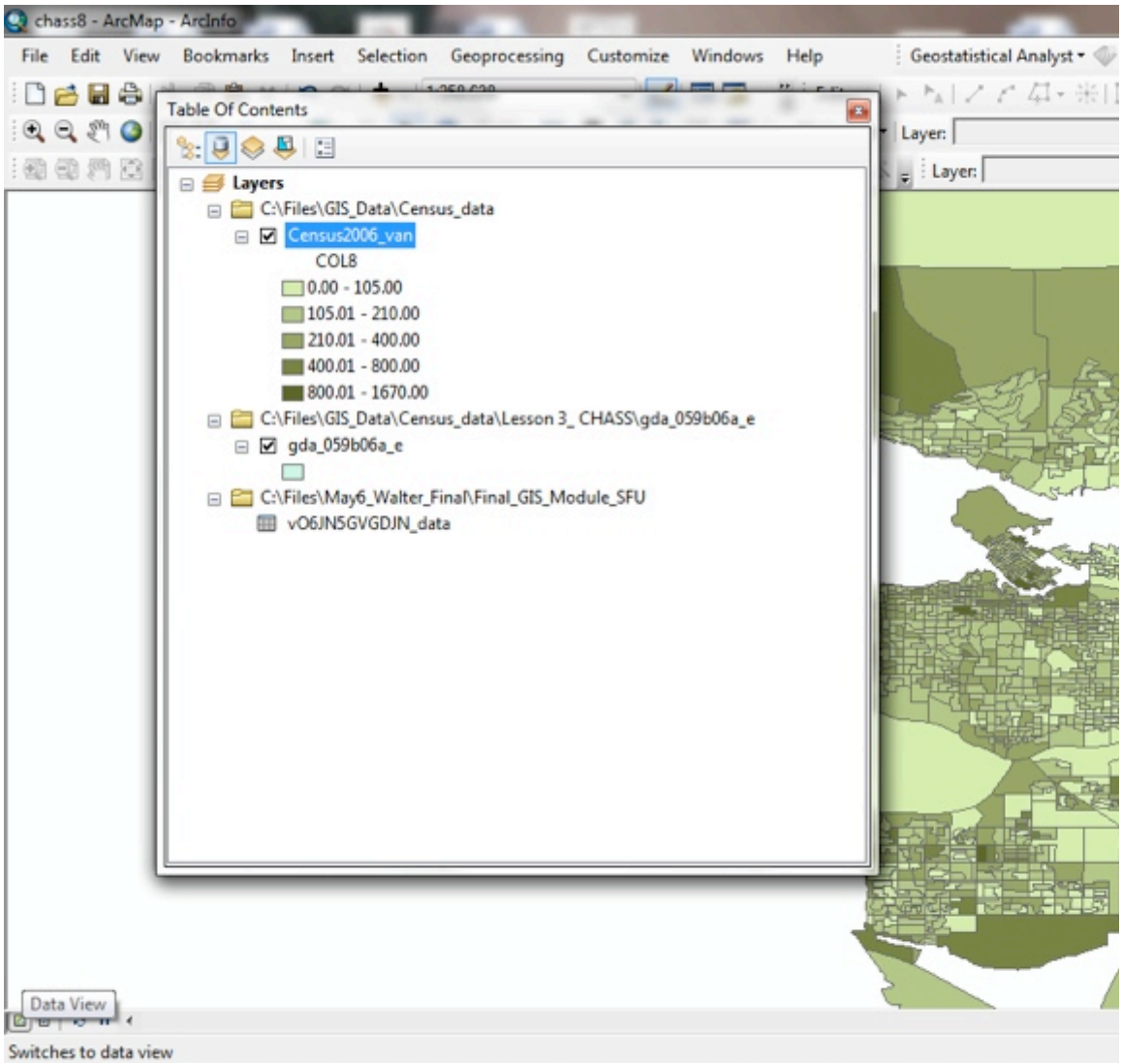


Save in: Lesson 3 folder, choose an appropriate file name for your map, save as .JPEG and set the output resolution to 300 dpi (or the 500 DPI .TIFF option) → Save


Total Population 25-64 years
by highest certificate, diploma or degree-
20% sample, University certificate or degree
2006 pop. with uni. educ
Census2006_van
COL8
0.00 - 105.00
105.01 - 210.00
210.01 - 400.00
400.01 - 800.00
800.01 - 1670.00
gda_059b06a_e
N
1:150,000
Kilometers
0
2.5
5
10
15
20

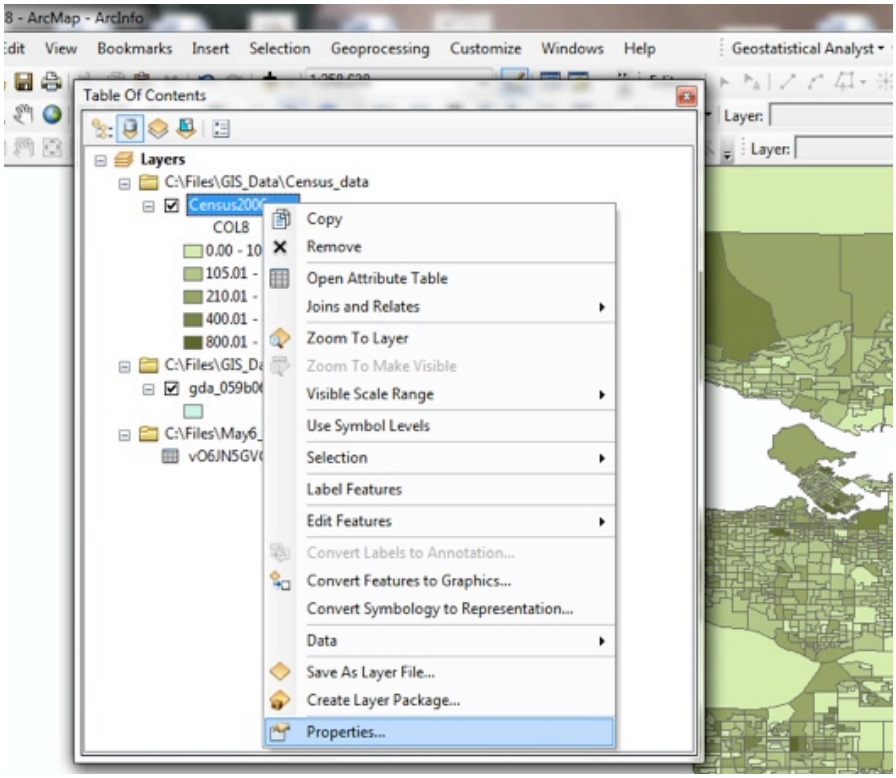
Final Step:

We will now produce the second map. Toggle back from the Layout view screen to the Data View screen using the small symbol in the bottom left of the ArcMap screen.



Return to STEPS 8-10

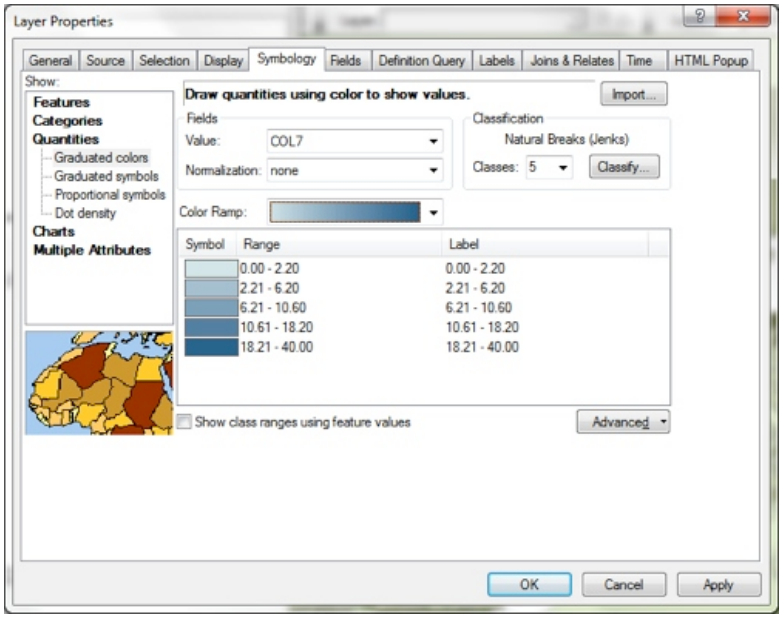
Change to Step 8 to produce the second map:

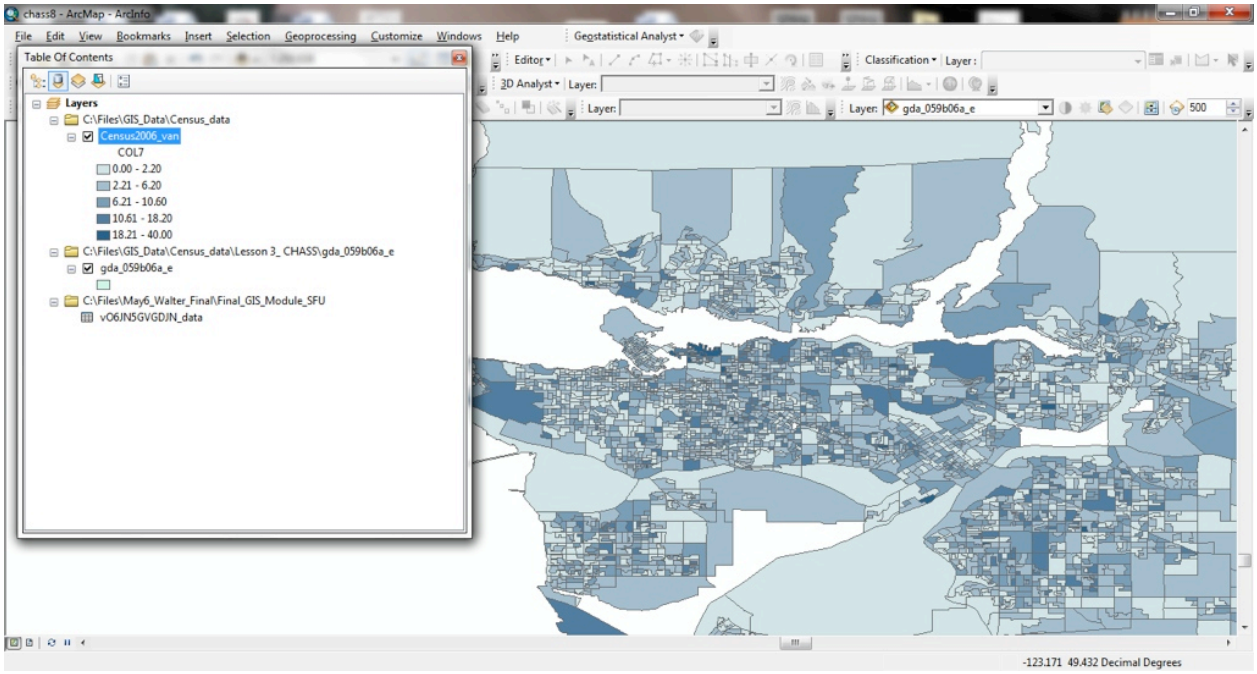


Change the field value of the Layer Properties → Symbology→ Fields → COL 7

(Representing Population 25 years and over –Labour force activity- Unemployment rate)

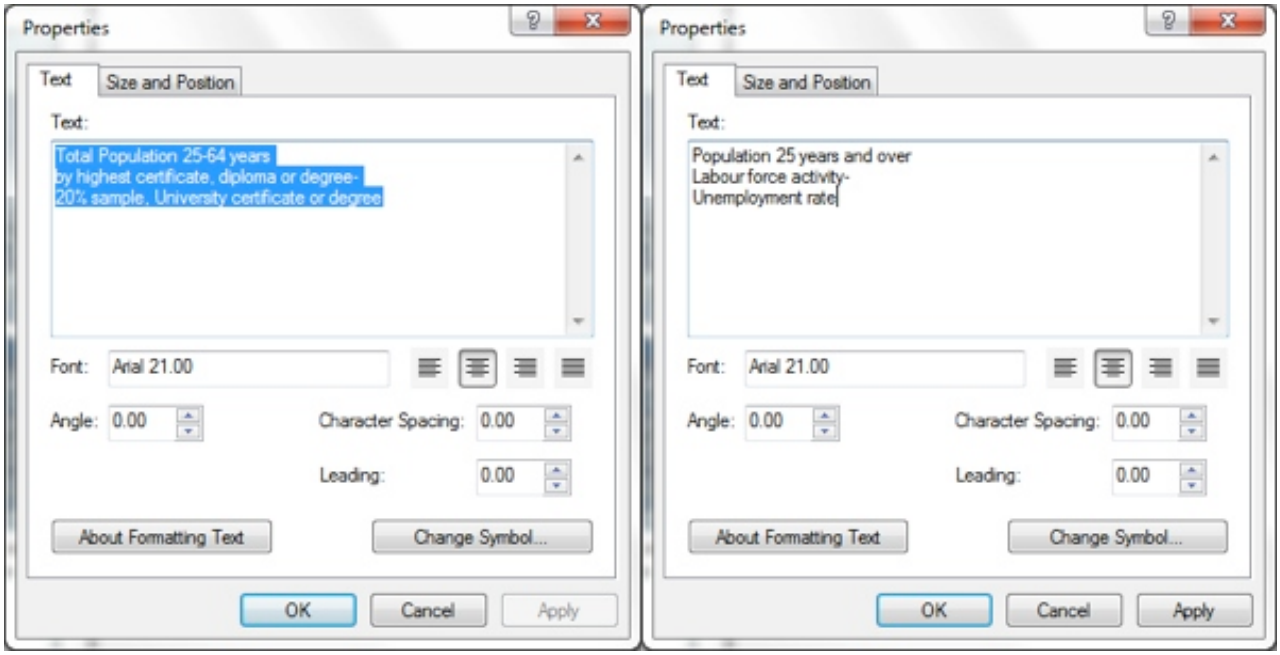
Change the Colour ramp for the second output map under the Symbology tab→Apply



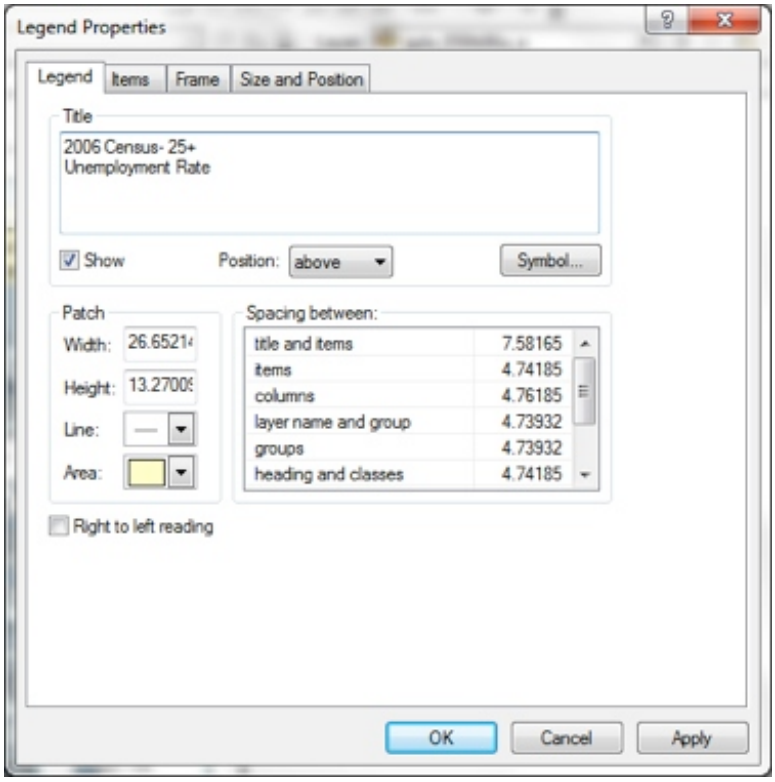


Return to step 9 to complete and export your second map.

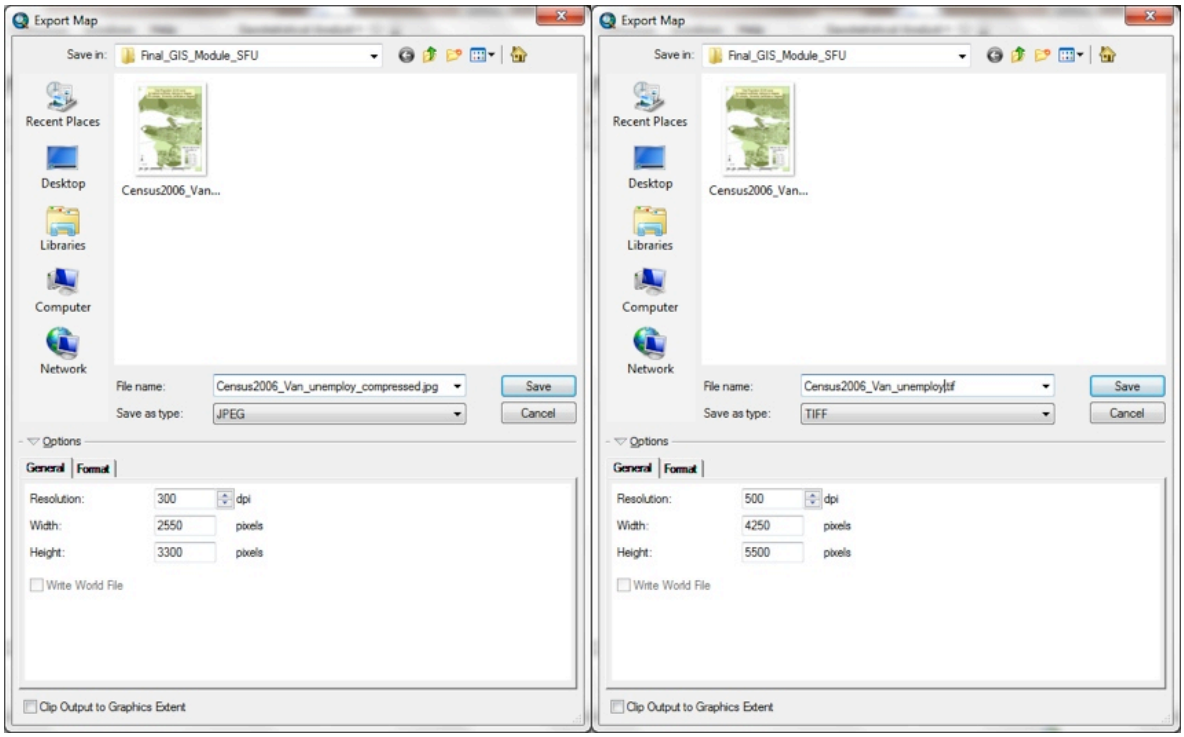
The labels from your first map will show up in the layout view, the title and map legend title will need to changed to reflect the data displayed on the second map. To accomplish this you will need to double click on the map title and then the legend

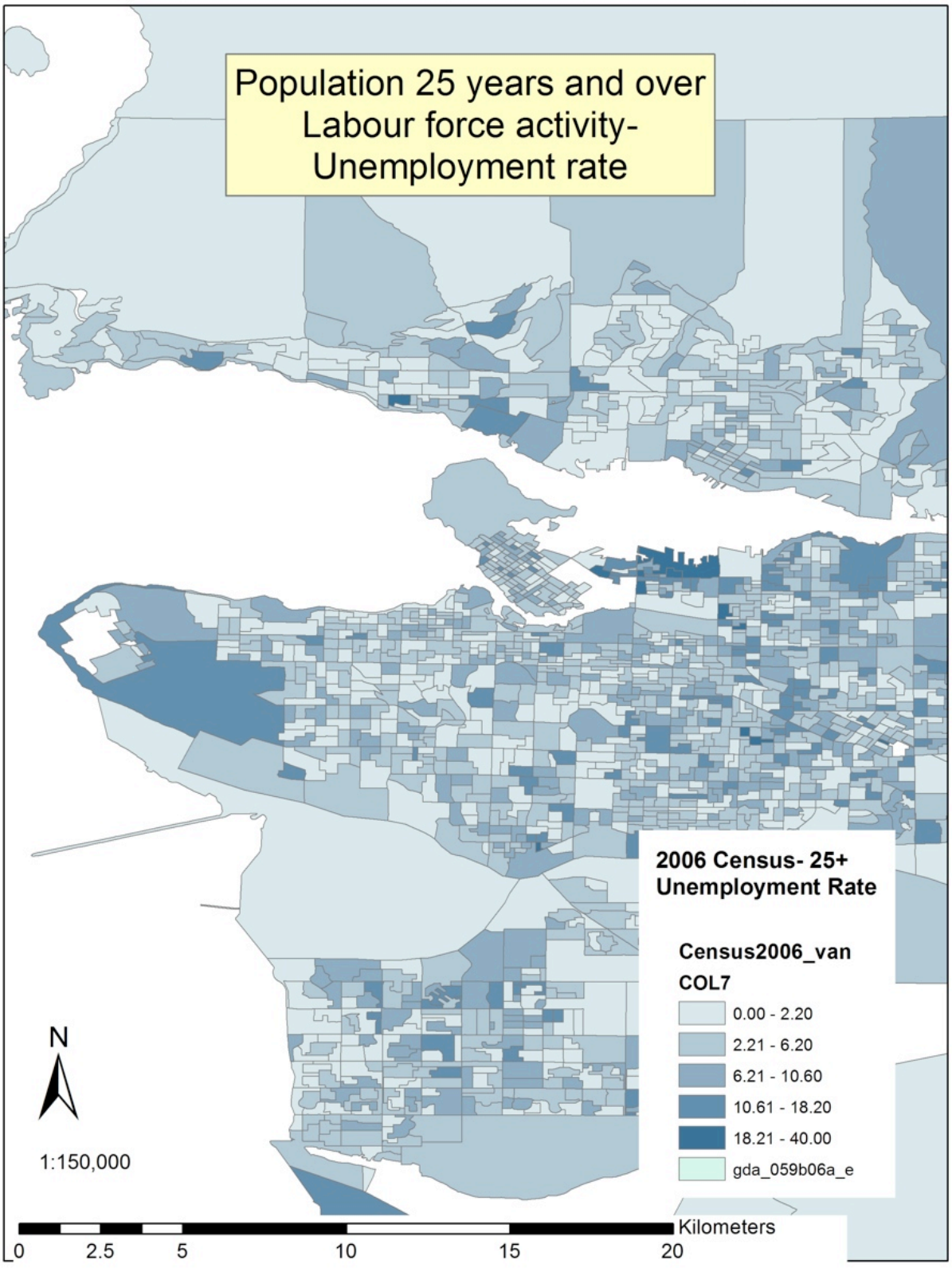


➔ Apply


Legend Properties
Legend
Items
Frame
Size and Position
Title
2006 Census- 25+
Unemployment Rate
Show
Position:
above
Symbol...
Patch
Width:
26.65214
Height:
13.27008
Line:
Area:
Spacing between:
title and items 7.58165
items 4.74185
columns 4.76185
layer name and group 4.73932
groups 4.73932
heading and classes 4.74185
Right to left reading
OK
Cancel
Apply

➔ Apply


Export Map
Save in:
Final_GIS_Module_SFU
Recent Places
Desktop
Libraries
Computer
Network
Census2006_Van...
File name:
Census2006_Van_unemploy_compressed.jpg
Save as type:
JPEG
Save
Cancel
Options
General
Format
Resolution:
300
dpi
Width:
2550
pixels
Height:
3300
pixels
Write World File
Clip Output to Graphics Extent
Export Map
Save in:
Final_GIS_Module_SFU
Census2006_Van...
File name:
Census2006_Van_unemploy.tif
Save as type:
TIFF
Save
Cancel
Options
General
Format
Resolution:
500
dpi
Width:
4250
pixels
Height:
5500
pixels
Write World File
Clip Output to Graphics Extent


Population 25 years and over
Labour force activity-
Unemployment rate
2006 Census- 25+
Unemployment Rate
Census2006_van
COL7
0.00 - 2.20
2.21 - 6.20
6.21 - 10.60
10.61 - 18.20
18.21 - 40.00
gda_059b06a_e
N
1:150,000
Kilometers
0
2.5
5
10
15
20