GIS Intro (john hartwick, sept. 2016... based on screenshots of Erin Forward): CREATE A MAP OF CENSUS TRACTS FOR A CANADIAN CITY (CMA), DEFINED BY A QUALITY (eg. percent public transit users per census tract in Vancouver. (eg. Toronto is about 1010 Census Tracts))

The process involves THREE "modules". (1) Create a "shape file" or "boundary file". (2) Create a "Data file". (Drag the data file into the shape file to create a combined single file.) (3) Create a "Census tract map" with the desired qualities shaded in colour per census tract with ArcMap.

Module I: Create the "Shapefile"

1) Queen's Library homepage. Hit Search at top of page... then hit "Geospatial Data".

2) hit Scholars Geoportal.

3) Type ... census tracts. Hit Search.

4) "Cenus Tracts and Cartographic Boundary File, 2011 Census", Hit "Add".

5) In Downloads list, find "Census Tracts", hit add.

6) Zoom on City of interest. eg. Vancouver. (First double click on map of Canada and cities should

appear in RED. Then double click on selected city for Zoom to work on the selected city.)

7) Hit "Download", upper left.

Select "Download by Area of Interest".

Select "Select a Predefined area".

Select "Census Metropolitan Area (CMA)" from drop down (no hit necessary).

8) Left click ONCE on map, PAUSE. (City map turns pale yellow. Maybe try again.)

New page appears. Pause.

OBSERVE ONLY, the options "Choose output options", "Select datasets to include". No hitting.

Hit "Download" in lower left. PAUSE. Zipfile is generated and indicated at bottom left.

9) Hit new Zipfile and open "Save as". Use "Save as" to your USB key and "Save".

Hit "Open folder". Hit zipfile that is highlighted.

Hit "Extract all" in upper left.

10) Relabel new un-zipped file, which has appeared.

eg. ....\Vancouver.

Hit "Extract".

11) New unzipped file (the SHAPE FILE) will be on USB key. (The zipped file is there also.)

Module II: Create the Data File

1) Queen's Library homepage. Type "Canadian Census Analyser" in open search box.

2) New page... hit on "Canadian Census Analyser".

3) Hit "Access Now".

4) Hit "Census Tract".

5) Hit "2011 NHS (cumulative)" at top.

6) Click on V (for Vancouver). Remove other checks for other cities in boxes.
hit also on "Vancouver"
hit below "Trans" (for eg. research on public transit use)
tick "total employed pop" in Trans
tick also "total public transit, both sexes" (subset of "total employed")
move down to "Step 3" for 4 ticks: one on each of
"province code", "CMA code", "Census tract name", "CT GNR (%)".
hit "columns"
hit "none"
Move below and hit "dBase (DBF) file".
hit "Submit Query".

7) DATA file is generated from "Submit Query". Hit data file and "Save as" to USB key
and "Save".

8) In your USB key, drag the new datafile into the earlier Shape file (unzipped).

We now have a single file on the USB key to apply ArcMap software package to.

Module III: Mapping with ArcMap 10.3

1) On a Library computer, select "Microsoft and Other"

2) Move to ArcMap and then to "ArcMap 10.3". Hit and pause.

3) Hit "OK" in lower right.

4) Hit "diamond and plus" icon in upper toolbar, for "add data".

5) Hit "rectangle and plus" icon in new toolbar and hit on the new "Vancouver" file. Get the
data file and shape file names to appear. Hold control key down and hit on
the shape file and the data (dbf) file and hit "Add".
Map of Vancouver should appear now.

6) RIGHT click on shape file. Hit "open attribute Table".

7) Right click on data file. Hit "open".

8) Right click on Shape file. Select "Joins and relates". Hit "Join".

9) Select "CTUID" from middle dropdown (this has census tract numbers for Vancouver).
Select "COL0" (column zero) from the dropdown (3rd down of 3 "options":
COL0 has census tract numbers for Vancouver.) ... Hit "OK".

10) ... Given our research is "public transit use", our data are in columns 5 and 6. Col 6
has total public transit users per census tract and Col 5 has total employed per
census tract. We want percentages, not raw numbers.[1] We detour into calculator mode
to solve for data in col 6 divided by data in col 5.... With data file
on the screen... RIGHT click on Col 5 heading and select "Field Calculator".

11) In open space that has appeared, hit on COL6 and then COL5, above to get:
"(COL6/COL5)*100" in the new open box. OK. Percentage values (% pub transit per census
tract) now appear in COL6.

12) Right click on shape file name and select "Properties". We use "General" tab now.

13) Rename "layer name" box to "Census Tracts" or "Public Transit". DO NOT HIT OK below.

14) Hit "Symbology" on toolbar. Hit "Quantities".
In "Value" dropdown menu, select "COL6" (or new name PubTrans). Hit "OK".

15) Hit "View" in toolbar.

[1] (To get a nice Legend on your map later, at this point, right click on Col 6 and hit properties. Relabel Col 6 "PubTrans".)

"Data View" allows one to move the map around in its frame and adjust zoom.

16) Hit "Layout view" in "View" and then "Insert" in upper toolbar; then hit

"Legend" to move map's numerical scale indicator to the map.... While in "Insert"

there are options to add to one's "scale indicator" that will appear on the map.

17) "Save as" to USB key and "save" will save the final map to your USB key.