**Digital Cartographic Design Using QGIS**

*Making Great Maps*

Facilitator: Matthew McKitrick

*For optimal viewing in Microsoft Word, use ‘Web Layout’ by going* ***View > Web Layout***

Data & Setup

1. Download data from:
   1. <https://drive.google.com/drive/folders/1Hw8raki8bHzaBt_Tyy-PT_varWwQGDVk?usp=sharing>
2. Save it in a location you will remember
3. Open QGIS
   1. Select ‘New Project’
4. Set your data folder as a favourite
   1. A screenshot of a computer

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5. Review the different data folders.
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   2. To start, open the ‘Canada Political’ folder and add the .shp file by dragging it into the map area.
      1. **NOTE:** There are two different file types in this dataset: .shp and .geoJSON.
      2. When adding files to QGIS, you only need to drag these files.
      3. However, you must ensure all the other files (.dbf, .prj, etc.) remain in the same folder with the same names, or you risk losing the integrity of your shapefile.

**Selecting Desired Data**

1. Suppose we want a specific British Columbia shapefile in addition to the Canada shapefile
   1. Use the selection tool to select the BC polygon
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      2. A close up of a map

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   2. Export the selected attributes as a shapefile.
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      2. Select a save location and a filename and click ok.
2. Now you have a separate BC shapefile. This technique can be used to isolate any features that you can select.

**Adding Features: BC Parks**

1. Let’s assume we want to make a map for those interested in BC’s provincial parks, for a brochure being made by Parks Canada.
2. Start adding in features to give the map some more definition.
   1. Start with the ‘Provincial Parks’, ‘Water Bodies’, and ‘Transportation Network’ files.
   2. Think back to the cartographic design imperatives.
   3. Ensure that your layers are in the proper hierarchy by dragging and dropping them into the proper drawing order in the layers tab in the bottom left.
      1. The main thing you want to make sure of is that no layers are obscured by other layers.
3. Adjusting colors
   1. Make sure the colors make sense. For example, ensure that the ‘water bodies’ layer is blue.
      1. Open the ‘layer stylings’ panel using the View > Panels
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   2. To change the color, select ‘simple fill’, and then adjust the fill color and style, as well as the stroke (outline) color, width, and style.
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   3. Make the parks layer green, and the underlying BC layer a suitable background color.
      1. **Tip:** when viewing features from a broad scale (i.e. viewing the entire province), removing the stroke (outline) can make features look more natural and blend together better.

**Adjusting Layer Symbology**

1. Open the ‘Population Centres’ folder and add the .GeoJSON file to the map.
2. In the layer styling panel, click ‘Single Symbol’ and inspect the dropdown menu
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   2. These are the options for symbolizing your data.
3. Select ‘Graduated’
   1. Select ‘POP\_2000’ from the Value drop down menu
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   2. For method, choose ‘Size’
   3. Pick your desired color ramp
   4. Click ‘Classify’ at the bottom
      1. Adjust the ‘Mode’. ‘Natural breaks’ is usually a safe bet, but play around with the other modes to see which breaks and number of classes work best for the data.
   5. Click the ‘Layer Rendering’ button at the bottom of the layer styling panel
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      2. Play with the opacity and the blending modes.
4. Switch from ‘Graduated’ to ‘Heat map’
   1. Weigh points by: POP\_2000
      1. This creates a population heat map. Although. For this data and scale, it doesn’t work very well because of the huge density in the Vancouver area.
   2. Hide the population and roads layer by unselecting them in the layer panel.
5. Add the ‘population zones detailed’ to the map
   1. Make sure it is the top layer
   2. Select graduated symbology and play around with the different values.
   3. To see all the values, right click on the layer and select ‘open attribute table’

**Create your Map**

1. Stage your map
   1. Finalize your parks map. Decide which layers aren’t necessary
   2. Ensure layers are in the correct hierarchy
   3. Centre your screen on the desired map area with the desired level of zoom.
2. Create a new **map layout** by opening the layout manager
   1. Project > Layout Manager
   2. A screenshot of a computer

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   3. Select ‘*Create’* and enter a name for your map layout.
3. Design your layout
   1. Use the  icon to add your map to the layout
      1. This tool adds the current extent in your **Project View** to a user-drawn area in the current **Map Layout View.**
   2. Now, there are a few things you need to add to make your map *Cartographically Correct*
      1. Add a north arrow using the  tool
      2. Add a legend using the  tool
         1. Adjust the item text and remove unneeded items using the  and  buttons.
         2. Uncheck ‘Auto Update’ if the options are greyed out. Auto-update ensures that the layers present in the project view will be present in the layout view.
      3. Add a title using the  button.
      4. Add a scale bar using the  button.
   3. Export your map.
      1. Select your desired export format from the top toolbar in the map layout view.
         1.  (Image, SVG File, PDF File).
            1. **.PNG** Images are usually an appropriate map export format.
      2. Give your map a name and save it in an accessible location.
         1. Set desired image resolution and size
4. **Locate the file and view your map. You’re done!**