**GEOB 472: Assignment 3**

**Data Journalism: Infographic**

**CO2 emissions**

**Due**: Tuesday Oct. 17th at the beginning of class

Background Scenario

You are a data visualization ‘project lead’ working at Canada’s national newspaper, *The Globe and Mail*. You have been asked to work with a reporter on an article related to the recent meetings in Montreal of **46th session of the Intergovernmental Panel on Climate Change**.

<https://beta.theglobeandmail.com/news/world/china-strengthens-climate-pledge-as-white-house-creates-confusion/article36287198/?ref=http://www.theglobeandmail.com&>

The news story will feature data in an infographic to supplement the news story: China, the US and their diverging commitments and policies regarding climate science, GHG emissions generally and CO2 emissions specifically (under Trump the US have withdrawn from the Paris Accord, as compared to   
China who has demonstrated commitment to reducing GHG emissions, and this was featured at the meetings in Montreal).

The objective of this infographic is to:

* communicate total and per capita CO2 emissions for 2014 for the top 20 countries in each category (where do the US and China - and Canada as this is a Canadian newspaper after all - rank in each of these datasets);
* communicate trends over the last x (you decide relevant time series) number of years/decades in per capital emissions;
* communicate a country's overall historical contribution to climate change by calculating the cumulative emissions over time,
* assist the (mostly Canadian) readers of this newspaper to compare and contrast the US and China, and where these countries are situated with respect to the top 20 countries, with respect to GHG/CO2 emissions, historically and currently.

Assignment Steps and Deliverables

**Acquire** data

There are many datasets available on GHG emissions and climate change science, global warming etc. As a data journalist, you would have to search the internet to find the most relevant, accurate, ethical, up-to-date data. This Acquire step is crucial to the success of any data visualisation project. For our assignment, Dr. Simon Donner has done this work for us, and provided a link to this dataset which you are all to use.

The CDIAC (Carbon Dioxide Information Analysis Centre) has emissions from fossil fuels by year by country:   
  
<http://cdiac.ornl.gov/trends/emis/tre_coun.html>

This is not a complex web site or dataset – you should be able to view and download to Excel or other formats the data for all countries (time series) and the 2 files that rank the countries by emissions and by emissions/capital. There are three files you will be downloading.

Ensure that you UNDERSTAND the data – you may feel it necessary to explain this in your infographic. What data is being collected? By whom? What is the difference between CO2 emissions and total emissions? Do you want to visualize all types of emissions? Or total emissions? What does per capita emissions mean? Or per capita emission rate? What is a rate? What does it mean to standardize data?

As is the case for any data visualisation project, you need to understand the data, what exactly you want to pull from these datasets to visualize to support your narrative, how to convey this complex information to the public, how to compare and contrast appropriately.

While examining the data, and the current outcomes from the Montreal meeting, and policy statements from the US and China, you should start to think about your visuals, and how you are going to build them to tell the ‘story’ or narrative of the current climate emissions policy, specifically the US and China.

Question 1. In a short paragraph, describe the datasets.

Download (export) data into an excel spread sheet (or software of your choice to work with the data).

Question 2: save and post your original data download to your blog.

**Parse and Filter data**

Look at data in Excel or Access (ArcGIS) or QGIS or whatever program you use to read and edit data. You have downloaded all the possible data for this project; now you need to review the data, and modify it to create your visuals - as per some suggestions above.

Question 3: Save your modified data set with metadata (comments) about how you modified the data for your visualizations (maps and plots). Post to your blog in an excel-like format that I can open and review your metadata.

**Mine data**

In GIS or Excel, etc conduct any analysis of the data – summary statistics, tables, map classifications.

**Represent Data**

Create maps and plots and graphs etc that visualize the data and provide the ‘narrative’ of your infographic that will accompany the newspaper article.

Your infographic should present your data clearly, concisely, and creatively and should include a variety of visual formats. The infographic MUST include (a) map(s), (a) graph(s) and a minimal amount of supplementary text; optional would be a photo(s) and/or illustration(s). Your visuals will be published in the print version and digital version of the paper as a 11 x 5 inch infographic. It is your choice whether landscape or portrait. You have full use of colour.

Question 4: post the .jpg of your final visual to your blog and print out a hard copy version of the infographic using the 11x17 inch printer in the geog building, or elsewhere.

**Tentative data visualization pipeline project plan:**

Week after Sept 26th – review background information on narrative; *acquire, parse, filter, mine* tabular and spatial data

2 Weeks after Oct 3rd – (lectures on the 3rd feature infographic design and graphing) *represent, refine* Infographic, set up blog site.

Other Tabular Data sources

I have given you one data source from Dr. Donner; you can use and find any other data you feel is pertinent to this project. Ensure you source any data you use.

Base maps

In the g:\course\data\basemaps\_gis\World there are ESRI shapefiles for the world. (They are 2006).

As mentioned above, there is a shapefile from natural earth:

<http://www.naturalearthdata.com/downloads/10m-cultural-vectors/> )

Jose also suggests these opendata sites:

* UBC Library Abacus Dataverse Network  
  <http://dvn.library.ubc.ca/dvn/>   
  Use key words: ESRI data maps. There are 5 DVD—worth of layers for different areas of the world or the world as a whole. They can download just what they need
* Global Administrative Areas  
  <http://www.gadm.org/version2>   
  They can download by country or the whole world. It has multiple administrative area layers (country, province,county, etc…) depending on the country.

Software

ArcGIS and Adobe Illustrator CS4 are available in the geography labs. To access them:

* Lab fee is $20 payable at the main office between 10 & 2. It is optional since many are working on their own laptops. If using our labs, you need to buy printing credits from the main office as well. This is different from the Pay for Print system the library uses.
* There is GIS installed in Koerner Room 217 (<http://koerner.library.ubc.ca/services/gis-services/koerner-217/> ). Open same hours as library.
* Ike Barber Learning Commons also has Mac stations with CS6 suite installed.  
  <http://learningcommons.ubc.ca/tech-support-2/computers/>

Hand in:

- print version of infographic  
- send link to your wordpress blog site by 2:00 the day it is due. Post at the link:

* Question 4: your infographic
* Question 1 and 2: paragraph describing data and original datafile
* Question 3: modified datafile with metadata

Readings

Please use the teachings of Edward Tufte and Alberto Cairo for inspiration and guidance in making design decisions to best communicate to your audience. See particularly:

* Tufte E (2001). *Visual Display of Quantitative Information*. Graphics Press. pp. 74-75, 91-91, 126-129, 142, 177, 183.
* Review readings from week one in Tufte’s books.
* Cairo*: a functional art* is all about infographics – see his examples (copies in the GIC if you have not bought a copy).
* We will discuss infographics in lecture, and Dawn Mooney is coming to class on Oct. 3rd