Jacob Budnick

Capstone 1 Proposal

1. Question: Are the majority of developed countries transitioning to cleaner energy? I am curious to see how common throughout the world it is for countries to be concerned with climate change and the depletion of nonrenewable resources.

2. I plan on using the electricity generation data here (https://www.eia.gov/international/data/world columns: 1980-2017) to investigate several countries (cutoff depending on a certain population value - will be found here: https://data.worldbank.org/indicator/sp.pop.totl columns 1980-2017) and use the breakdown of electricity type data by country and compare renewable energy versus the other forms of energy. My null hypothesis will be that less than or equal to 50% of the countries selected will show a positive change in proportion of renewable energy to other sources, and my alternative hypothesis will be that more than 50% of the countries selected will show a positive change. I will tentatively be using years 2000/2017 to make the comparisons, or an average of electricity generated per year subset if I find that there is unexplained variability of a specific energy type. A quick scan of the data reveals a few NA values and some unexplained (s) values. I assume these are missing data and can be cleaned and replaced with 0.

3. MVP: A conclusion on my hypothesis test and a representation of which countries in the world have had the greatest change in transition to renewable energy. Ability to determine if there is a specific trend in certain countries or regions of the world.

   MVP+: Determine if the transition rates are correlated with population count/growth in recent years. Consider developing countries as well. Cross reference the data with other statistics such as education levels, GDP, wealth, etc to observe possible correlations to a greater use of renewable energy. Present findings in plots

   MVP++: Plot a color coded world map with color gradients based on proportion of renewable energy produced

Backup Ideas		
Interesting Data	Question	Datasets Found
Intensity of hurricanes, natural disasters, etc	Are hurricanes getting more intense over the years or is there just more media hype?	https://www.kaggle.com/noaa/hurricane-database
Denver Greenhouse gas emission per person	Increased or decreased over the years? Is the city becoming more environmentally conscious?	https://www.denvergov.org/opendata/dataset/greenhouse-gas-inventories https://www.macrotrends.net/cities/22972/denver/population
Cybersecurity breaches	Are breaches in digital information affecting more people or getting more contained within the last few years?	https://datadryad.org/stash/dataset/doi:10.5061/dryad.24275c6
Snowfall in mountains over the years	Has snowfall been decreasing in the mountains over the years?	
Public Transit usage / Traffic Data	Does growth of mass transit encourage more to take transit?	

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Miles of Bike paths / Traffic	Does the construction of bike paths/lanes lead to less cars on road?	
Food prices	Has climate change affected crop prices/quality?	
Online class outcomes vs Traditional classes	Does online education offer the same educational value as traditional education?	
Housing prices in Denver	Have housing prices in Denver risen more than other major cities?	