Final Project - Predicting Individual GHG Emissions Based on GDP Per Capita

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Overview and Research Question

With international climate change commitments like the Paris Agreement and Sustainable Development Goals being so controversial, we used national GHG and GDP data to gain insight into this question:

Can you have a flourishing country/economy (increase GDP) while simultaneously reducing GHG emissions?

Data

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CAIT - Country Greenhouse Gas Emissions

The Climate Analysis Indicators Tool (CAIT) Country GHG emissions collection applies a consistent methodology to create a six-gas, multi-sector, and internationally comparable data set for 186 countries.

Analyzed data from 1990-2012 and normalized for US dollars in 2005

Data Here

Methodology

https://ghg-gdp-analyzer.herokuapp.com/

- Cleaning and normalizing the data - Andrew
  - All in excel, filled in missing values using supplemental research
- Initial HTML - Brian
  - Added images, descriptive text
- Machine Learning and Flask app - Kanishka
  - Built the machine learning algo inside scikit learn
  - Built the base HTML with the functioning nav bar and linked to flask app
  - Pushed all through Heroku
- Tableau and Data visualization - Mark (Project Manager)
  - Developed Tableau visualizations, including machine learning analysis and used embed code to incorporate tableau story into HTML
- Presentation and Analysis - Kwasi
  - Created slideshow, developed findings, and conducted supplemental research

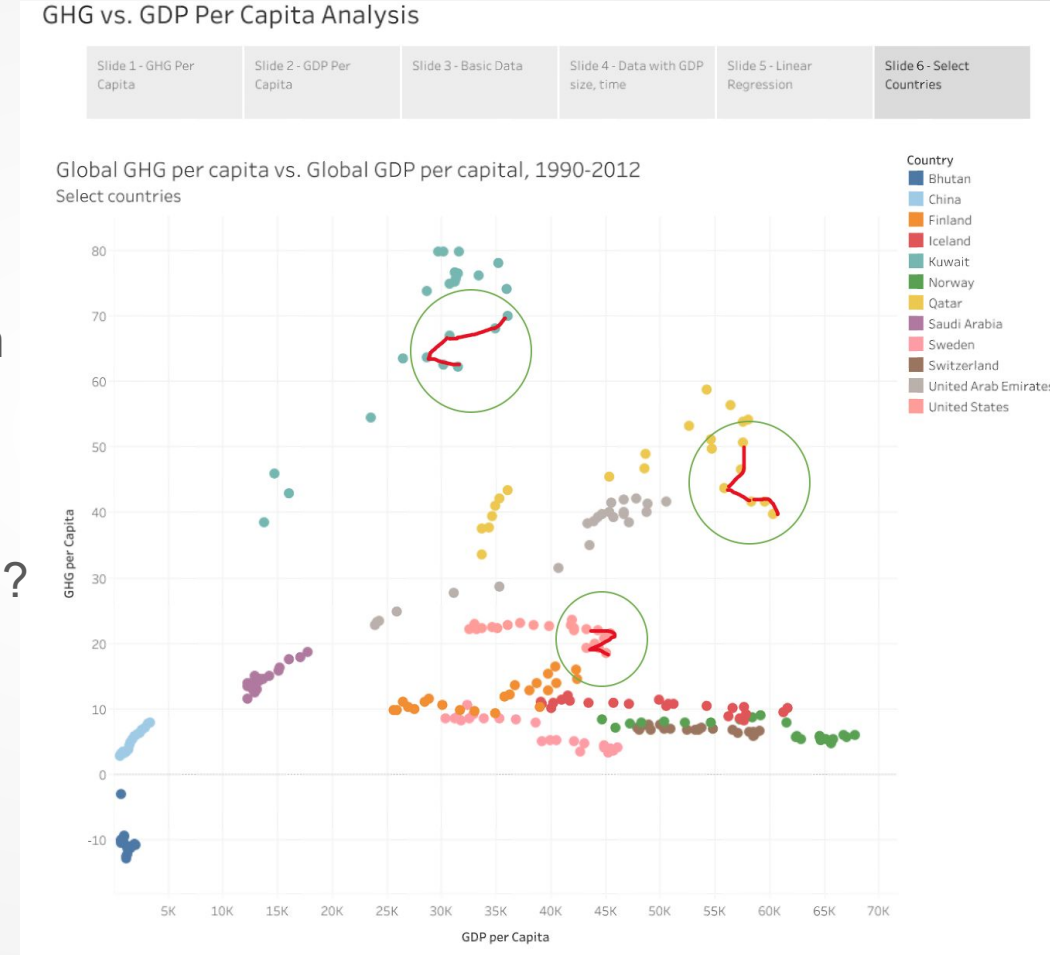
Findings

Oil producing countries had highest GHG and GDP

Countries that are highly dependent on natural resources generally show an increase in GDP and GHG

Bouncing back from a global recession?

It is possible!!!



Challenges

Heroku -

- Hosting it on Github account that was a different user than the Heroku account
- Requirement vs RequireMENTS.txt

Polynomial regression (scikit learn)-

- Trying to figure out how to transform a single value into the correct data format
- Not very much documentation online on how to do it which made it challenging

Tableau -

- Number formatting with tool tips

Next Steps

- More up-to-date data
- Combining with country economic data, i.e. leading industries, predominant agriculture, and primary sources of GHG emissions
- Updating the value of the dollar from 2005 to the current year
- What are the risks of continued GHG emissions in each country in relation to global commitments
- Population growth would be another factor to incorporate
- Add animations to show change over time

Questions?