Targeting Climate Change With Data Science

In the 21st century, climate change is undeniably one of the most hotly debated topics in science and politics. From halting deforestation to reducing greenhouse gas emissions, scientists across the world are working to find different solutions for preserving our beautiful planet. Due to the various type of air pollutants though (ie. carbon dioxide, nitrous oxide, etc.), the most effective methods of slowing climate change are up for debate.

Prompt:

For this project, I challenge you to step into the shoes of a climate scientist and determine what kinds of air pollutants contribute the most to climate change. You will pick data from five countries (two of which must be the United States and China), and use their data from 2020 to run a machine learning algorithm on variables of your choosing (the target variable must be total greenhouse gasses). You can also choose as many or as few variables as you would like. As a climate data scientist, your analysis would help organizations determine which policies to implement in relation to what type of pollution hurts our planet the most, so choose your variables carefully.

[1]

Deliverable:

Please deliver an annotated .rmd and github page showing your data cleaning process, with explanations for why you chose your countries and variables for analysis. These files should also include a successful demonstration of your machine learning algorithm, with at least one visualization displaying the results. Additionally, comment on the success of your model and which variable contributes the most to total greenhouse gas emissions.

***Note on ML model decisions:**

For this project, I recommend using either a decision tree or random forest model for classifying the variables, but you may choose any machine learning model at your convenience. I will include some information on decision trees and random forest in the materials section for help as well.

[1] Voosen, Paul, "In a paradox, cleaner air is now adding to global warming" *Science,* 20 July, 2022. [Online]. Available at: https://www.science.org/content/article/paradox-cleaner-air-now-adding-global-warming [Accessed 27 April, 2023]