A Case for Combatting the Climate Crisis:

Predictive Trends in U.S.A. Greenhouse Gas Emissions

A UVA Data Science Case Study by Victoria Feist (Spring 2023)

Prompt: Climate change, the international phenomenon of rapidly changing temperatures and weather patterns, can be largely attributed to the emission of greenhouse gases (GHGs). GHG impacts on the environment are quite worrisome (severe storms, rising sea levels, ecological disasters). However, it has become increasingly obvious that the solution to halting climate change is based on implementing environmentally-friendly public policies. Current policies are proving to be unsatisfactory. In order to push for new changes, you must prove the inefficiency of these current plans and communicate absolute urgency. You, a newly-hired environmental data consultant for the Environmental Protection Agency, are tasked with predicting US GHG emissions for the next 8 years (based on the Climate Clock) and proving that current policies will not reach their emission goals. You can help; act now!

Deliverable: You'll be presenting your findings to other government officials in order to communicate the pressing need for change. In order to support your conclusions, you will need to create (1) a github repository for accessibility, (2) a brief presentation.

Hints: You will be using the "CO2 and Greenhouse Gas Emissions" dataset from our World in Data. This dataset includes information about hundreds of countries across an alarming number of variables. You will need to filter through this dataset to include only relevant information (which will likely be only based on the USA). It's up to you to determine which columns are most essential to your purpose, but I would suggest prioritizing the "Total Greenhouse Gas Emissions" variable. For analysis, I recommend starting with an ARIMA (auto-regressive integrated moving average) model.