

Statistics and Trends

by

Mohammed Farhan

Ahmed

Introduction

Climate change is an ever increasing threat to our planet. As temperatures grow, the effects of global warming have become more widespread and detrimental to our way of life. With this growing threat, it is essential to explore public data available from the World Bank on climate change to get a better understanding of climate change and what can be done to counteract its effects. We will search through the World Bank's Public Data and analyze a range of important climate-related indicators, such as access to electricity, agricultural activity, urban population and many more to gain a better understanding of the current state of climate change and how it is affecting life around the world.

Python language

Python is an invaluable tool for visualizing data, and it can be used for this project to provide deeper insight into the climate change data from the World Bank. Using Python's libraries such as Matplotlib and Pandas, we can create intuitive visualizations of this data. For example, Matplotlib can be used to create simple bar graphs, line graphs, and scatter plots to display variables such as population or energy usage. In addition, Pandas will provide us with helpful functions such as "groupby" and "aggregate" to help us quickly organize our data into meaningful categories. This will allow us to easily compare data from different regions and time periods, helping us discover new trends and patterns in the World Bank climate change data.

By leveraging Python's extensive data visualization capabilities, we can gain an even deeper understanding of the public data from the World Bank and make data-driven decisions about how to best address the growing climate change threat.

Ingest and Data Manipulation

The first step in ingesting and manipulating the data using Pandas DataFrame is to read the data in. We can do this using the `pandas.read_world_bank_data()` function which takes a filename as an argument.

Once the data is loaded into the DataFrame, we can manipulate it by sorting and filtering the records, adding or removing columns, or creating new columns that manipulate existing data. We can also use the Pandas DataFrame to construct two dataframes – one with the years as columns and one with the countries as columns. To do this, we will first group the data by year and country, then assign the values for each column in each row.

Exploring the statistical properties of a few indicators

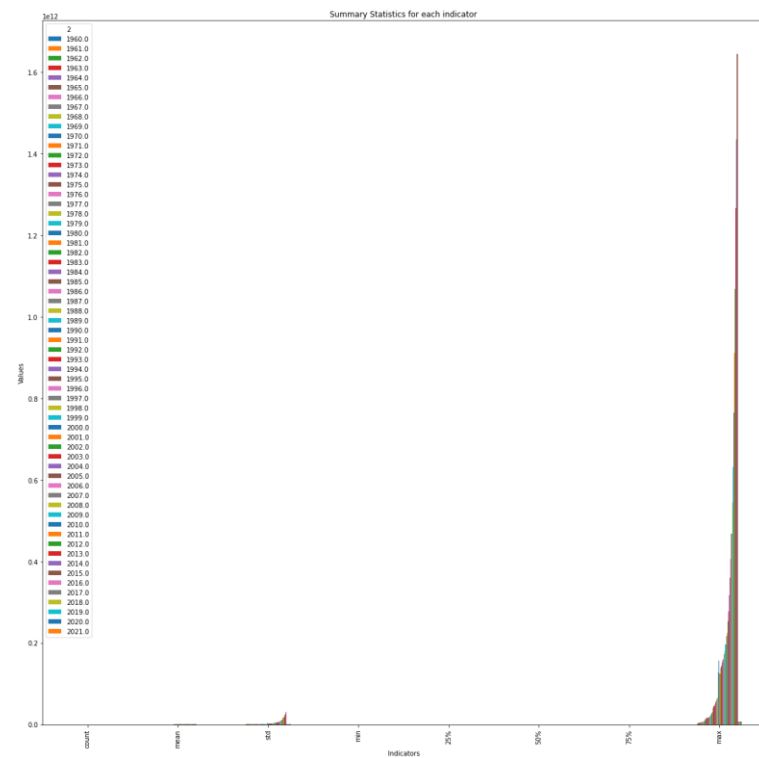
In my project, I will be exploring the statistical properties of a few indicators that are of interest to me in order to understand how climate change is impacting different countries around the world.

The indicators I could use include the following:

- Proportion of land area covered by forest
- Change in average temperature
- Total renewable water resources
- Change in atmospheric carbon dioxide concentration
- Change in sea level

For each indicator, I will look at the countries on an individual basis and also analyze the averages

for the world as a whole. I will then produce summary statistics such as the mean, median, minimum and maximum values for each indicator. By doing so, I will be able to see how each indicator is functioning in each country and compare them against the global average.



Correlation

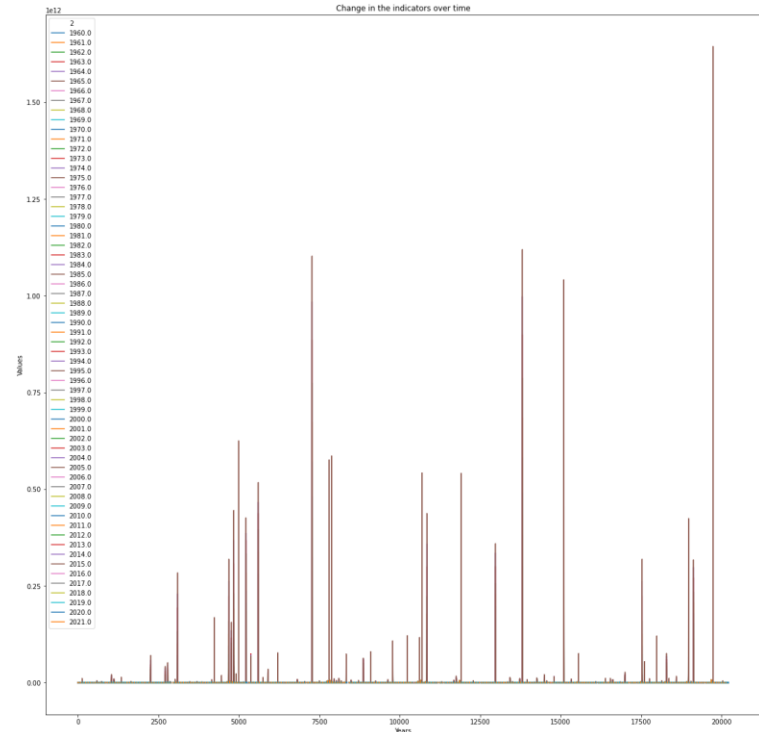
The correlation between population growth and energy consumption varies depending on the region and time period examined. Generally, areas with high population growth tend to have higher energy consumption.

Over the past few decades, the correlations between different indicators, such as population growth and energy consumption, has changed due to technological advances and increasing awareness of environmental sustainability.

Climate change is one of the most pressing issues facing humanity today. Because of its far-reaching consequences, both nationally and internationally, it is important to understand and study its effects. In this project, I will be looking at the effects climate change has had on the United States over a period of many years. To understand what has happened in the past, I will be using data from weather stations located across the World.

The graph shows long-term trends, including time series plots of temperature and precipitation levels. Additionally, I will be examining extreme weather events such as heat waves or cold snaps to further demonstrate the activities of climate change. By understanding the previous effects of climate change we can better prepare for and mitigate the effects of climate change in the future. The data I will use will provide a way to better understand what has happened previously, as well as give us a way to anticipate the impacts of climate change in the future. By analyzing historical weather data, I hope to gain a better understanding of the severity of climate change and its effects on the United States. With this data, I aim to provide a better understanding of what has happened in the past and what may occur in the future. With this knowledge we can be better prepared to fight the effects of climate change.

#use of time series to show the change in the indicators over time



#use of correlation to represent the data using sea born and matplotlib libraries

