Devanshi Jackson
February Cohort
T1-Project 1 Weather Trends

Outline

Data was extracted using SQL queries run on the Explore Weather Trends Database Schema environment provided in Udacity Project 1. The SQL statements for each of the queries are included in the SQL Statements section below. The csv files from the Database Schema were downloaded to local computer and further analyzed using MS Excel. Query1 was run to find the available cities in the United States. Upon browsing through the city names 'New York' was identified as the closest city. Query2 was run against city_data table to extract data for New York where the values for average temperature were not null (as null values could lead to calculation error in excel). Finally query3 was run to extract global temperature data. Data from query2 and query3 were merged into city_global_analysis sheet in weathertrends.xlsx excel file for moving average (MA) calculations and visualization. I first used Excel Average function on the first 10 rows and then dragged column down to calculate 10-year MA. The similar process (first 2 and 5 rows) was carried out for 2 and 5 year MA calculations. Three line charts were inserted and 2, 5 and 10 –Year MA data were selected to check for long-term trends. Moving averages are used in the weather data analysis to smooth out data and show any possible trends. Line chart is used in this analysis because the data is temporal. The charts are appropriately titled, 2, 5 and 10-Year Moving Average Weather Trends Comparison, showing blue trend line for New York and red trend line for global data.

SQL Statements:

Query1:

```
SELECT *
FROM city_list
WHERE country LIKE 'United States%';
```

Query2:

```
SELECT year, avg_temp
FROM city_data
WHERE city = 'New York' AND avg_temp IS NOT NULL;
```

Query3:

Query data from global_data

```
SELECT  year, avg_temp
FROM global_data
WHERE avg_temp  IS NOT NULL;
```

Observations

The New York City (NYC) on average is hotter than the global averages, consistently over time based on 2-year MA calculations. However both NYC and global data looks similar in 5-year MA and 10-year MA illustrations with both getting hotter. There are less variations (based on 2-year MA) in global data compare to NYC, which can be attributed to various different factors. These factors include higher thermal capacity on the whole for the globe vs. NYC, and NYC on average may be producing more greenhouse gases than on global scale. Both NYC and global data show increase in temperature from early 1800's, concurrent with the advent of industrial revolution. Based on the few hundred years of data analyzed, overall trend suggests the world is getting hotter since early 1800s. It is further striking that the temperature is rising at an accelerated rate since 1980's.

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