Data Analyst Nanodegree Program with Udacity

Explore Weather Trends

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1st Project

Definition:

In this project, I will analyze local (Riyadh) and global temperature data and compare the temperature trends in Riyadh to overall global temperature trends. I used Excel to explore and analyze data. I decided to compare the temperature trends in Riyadh to overall global temperature trends from 1843 to 2013 years that provided in data.

Tools:

First, I’ll describe the tools I used in to implement this project. First one is, database using SQL the database contains 3 tables **city\_list** where you can check your city or nearest city of you to analyze data, **city\_data** contains the average temperatures for each city by year (ºC) and **global\_data** it contains the average global temperatures by year (ºC). After that, I extract data from a database based in the city I live in which is Riyadh city as shown in the picture below

Graphical user interface, application, Teams

Description automatically generated

Then continuing extract data from global data table as shown below

Graphical user interface, application

Description automatically generated

The next step is downloading data as CSV file so the next step is excel to analyzing and exploring data then merge both file in one file as shown below that contains Year, Average temperature in global and Average temperature in Riyadh. There is a lot of missing data, so we address this problem by dropping the rows.

Graphical user interface, application, table, Excel

Description automatically generated

Then, I am calculating Moving averages (MA) which used to smooth out data to make it easier to observe long term trends and not get lost in daily fluctuations. So, I calculated MA in every 5 years from 1843 to 2013.

First, I calculated MA on Global Temperature Trends as shown below

Graphical user interface, chart

Description automatically generated

The next step is calculating it on Riyadh Temperature Trends as shown below

Graphical user interface, chart, line chart

Description automatically generated

The last one is comparing Global with Riyadh Temperature Trends to making observations and answering questions.

Chart, line chart

Description automatically generated

Observations and Answering Questions:

To better understand data and make it clear we must answer some questions that comes to our mind from observations. The first one is the Riyadh city hotter or cooler on average compared to the global average? As we can see above from the line chart that represent comparing between Riyadh city and Global temperature trends the Riyadh is hotter than the Global the lowest temperature in Riyadh is above 15 ºC comparing with the highest temperature in Global that tend to 10 ºC and there is some data fluctuation in Riyadh than Global.

The second question is how do the changes in Riyadh’s temperatures over time compare to the changes in the global average? Well, the changes of temperatures over time in Riyadh is unsuitable it goes around 20 ºC to 27 ºC and the differences it almost 7 degrees comparing with the changes in the global average it goes from 6 ºC to 10 ºC the differences almost 4 degrees so Riyadh has many changes comparing with Global. Furthermore, from observations I asked these questions What does the overall trend look like? Is the world getting hotter or cooler? Overall, from the line chart we can observe that the line continues to go up in the Global in 1843 it started from 6 ºC and goes up to almost 10 ºC in 2013 so we can say that the world going to be hotter comparing to the previous years, so the trend has been inconsistent specially over the last few hundred years it oscillates and goes up in temperature.

References:

<https://www.youtube.com/watch?v=zsisAyzLzDs>