Data Analysis Nanodegree

Project:

Exploring Weather Trends

Presented by:

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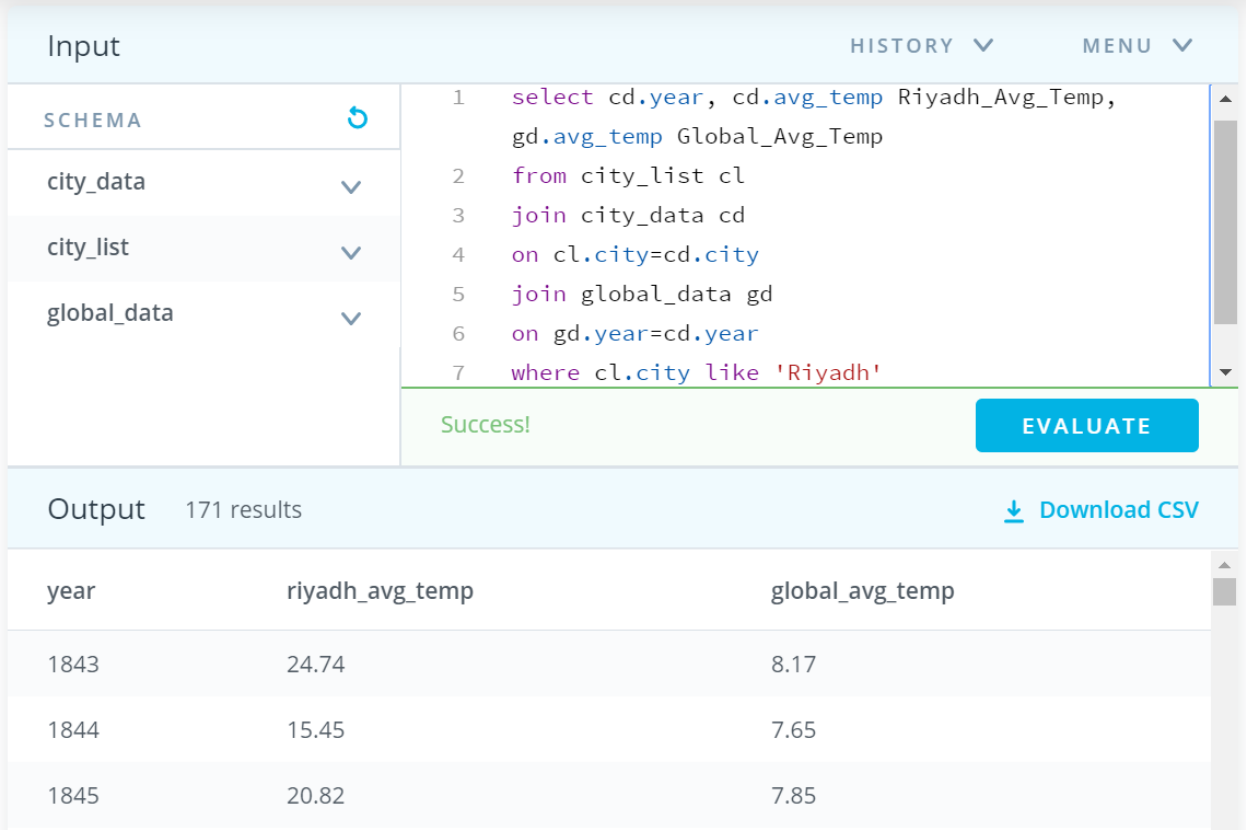
Introduction:

From the Exploring Weather Trends dataset schema, I selected Riyadh city which is the nearest city to my city that I live in. The steps below show how I got reached the observations.

Step 1:

I extracted the data from the database schema by writing this SQL query in SQL workspace provided.



SQL query:

```
select cd.year, cd.avg_temp Riyadh_Avg_Temp, gd.avg_temp Global_Avg_Temp
from city_list cl
join city_data cd
on cl.city=cd.city
join global_data gd
on gd.year=cd.year
where cl.city like 'Riyadh'
```

Step 2:

I exported the results to worksheet, I used Excel worksheet.

	A	B	C	D
1	year	riyadh_avg_temp	global_avg_temp	
2	1843	24.74	8.17	
3	1844	15.45	7.65	
4	1845	20.82	7.85	
5	1846		8.55	
6	1847		8.09	
7	1848	24.56	7.98	
8	1849	24.8	7.98	
9	1850	24.34	7.9	
10	1851	25.03	8.18	
11	1852	24.85	8.1	
12	1853	24.93	8.04	
13	1854	24.72	8.21	
14	1855	24.92	8.11	
15	1856	24.57	8	
16	1857	24.26	7.76	
17	1858	25.01	8.1	
18	1859	24.95	8.25	
19	1860	24.94	7.96	
20	1861	24.13	7.85	
21	1862	23.77	7.56	
22	1863	24.28	8.11	
23	1864	25.03	7.98	

As we see, there are some data is missing in Riyadh_Avg_Temp column in years 1846 and 1847. I decided to calculate Moving Average for 10 years for both, Riyadh_Avg_Temp and Global_Avg_Temp.

Step 3:

This screenshot below shows how I calculated the Moving Average for Riyadh_Avg_Temp and Global_Avg_Temp. I added two columns for that. I calculated the average from 1843 to 1853 by writing this formula =AVERAGE(B2:B12)

Then, I clicked on this cell and scroll down to implement this formula for all rows of years.

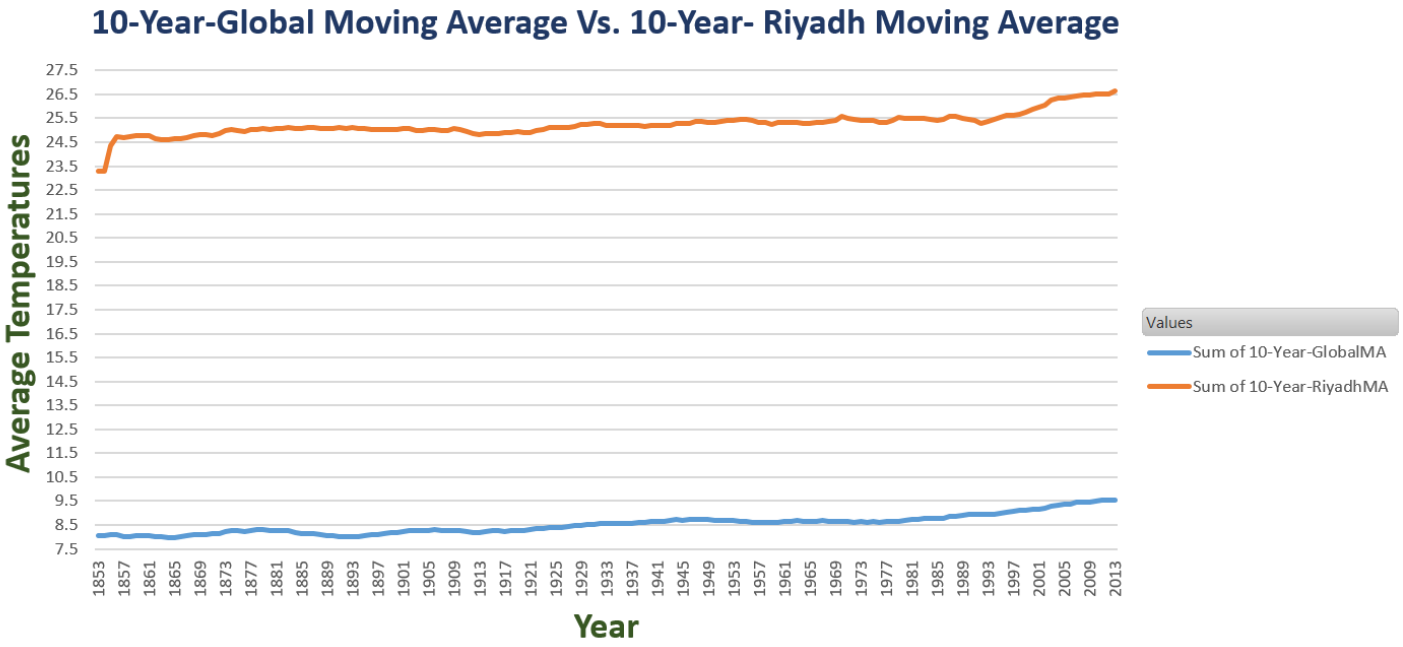
	A	B	C	D	E
1	year	Riyadh_Avg_Temp	10_Year_RiyadhMA	Global_Avg_Temp	10_Year_GlobalMA
2	1843	24.74		8.17	
3	1844	15.45		7.65	
4	1845	20.82		7.85	
5	1846			8.55	
6	1847			8.09	
7	1848	24.56		7.98	
8	1849	24.8		7.98	
9	1850	24.34		7.9	
10	1851	25.03		8.18	
11	1852	24.85		8.1	
12	1853	24.93	=AVERAGE(B2:B12)	8.04	
13	1854	24.72	23.28	8.21	
14	1855	24.92	24.33	8.11	
15	1856	24.57	24.75	8	

I did the same thing that I did in Step 3 for calculating Moving Average for Global_Avg_Temp.

	A	B	C	D	E
1	year	Riyadh_Avg_Temp	10_Year_RiyadhMA	Global_Avg_Temp	10_Year_GlobalMA
2	1843	24.74		8.17	
3	1844	15.45		7.65	
4	1845	20.82		7.85	
5	1846			8.55	
6	1847			8.09	
7	1848	24.56		7.98	
8	1849	24.8		7.98	
9	1850	24.34		7.9	
10	1851	25.03		8.18	
11	1852	24.85		8.1	
12	1853	24.93	23.28	)4	8.04
13	1854	24.72	23.28	8.21	8.05
14	1855	24.92	24.33	8.11	8.09
15	1856	24.57	24.75	8	8.10

Step 4:

I made a line chart which showed 10 years Global Moving Average vs. 10 years Riyadh Moving Average from 1853 to 2013.



From the 10 years Global Moving Average vs. 10 years Riyadh Moving Average line chart above, we conclude the similarities and differences in the trends.

Observation	10 year-Global Moving Average	10 year-Riyadh Moving Average
1	It is colder by margin about 15.5°C in the year 1853.	It is hotter than Global Moving Average.
2	It is getting cooler over the years, from 1853 to 2013.	It is getting hotter over the years, from 1853 to 2013.
3	The height cool of Global Moving Average is by a little percentage. It is about 1.5°C for 171 years.	The height hot of Riyadh Moving Average is the higher than the height cool of Global Moving Average. It is about 3.5°C for 171 years.
4	The difference between global temperature and Riyadh temperature in 2013 is about 17°C	