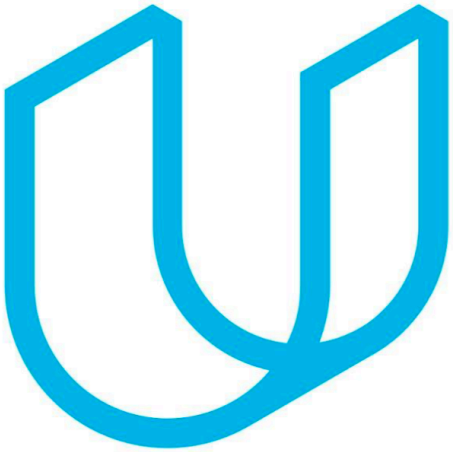

UDACITY

# DATA ANALYST NANO DEGREE

## Explore Weather Trends

- By

Shefali Mishra

## Data Extraction :

| S.No. | Purpose | SQL Query for Data Extraction |
|---|---|---|
| | | |
| 1 | To find Ahmadabad city from city list of India | SELECT *<br>FROM city_list<br>WHERE country = 'India' ; |
| | | |
| 2 | To get Ahmadabad's data along with global data | SELECT S.year, S.avg_temp AS ADI_temp,<br>G.avg_temp AS global_temp<br>FROM<br>(<br>SELECT city_data.year, city_data.avg_temp<br>FROM city_data<br>WHERE city = 'Ahmadabad'<br>) S<br>JOIN global_data G<br>ON S.year = G.year ; |

## Approach Used :

- Downloaded the csv file obtained from Query 2 from above table for analysis.
- Used Numbers for further analysis.

## Moving Averages:

- I calculated Moving Average of 10 years to observe the trend in temperature
- Excel command for finding moving average : = Average(B2:B11)
- Excel Command for finding temp. difference between Ahmadabad and world every year : = C11 - E11

# Line Chart for Ahmadabad and Global

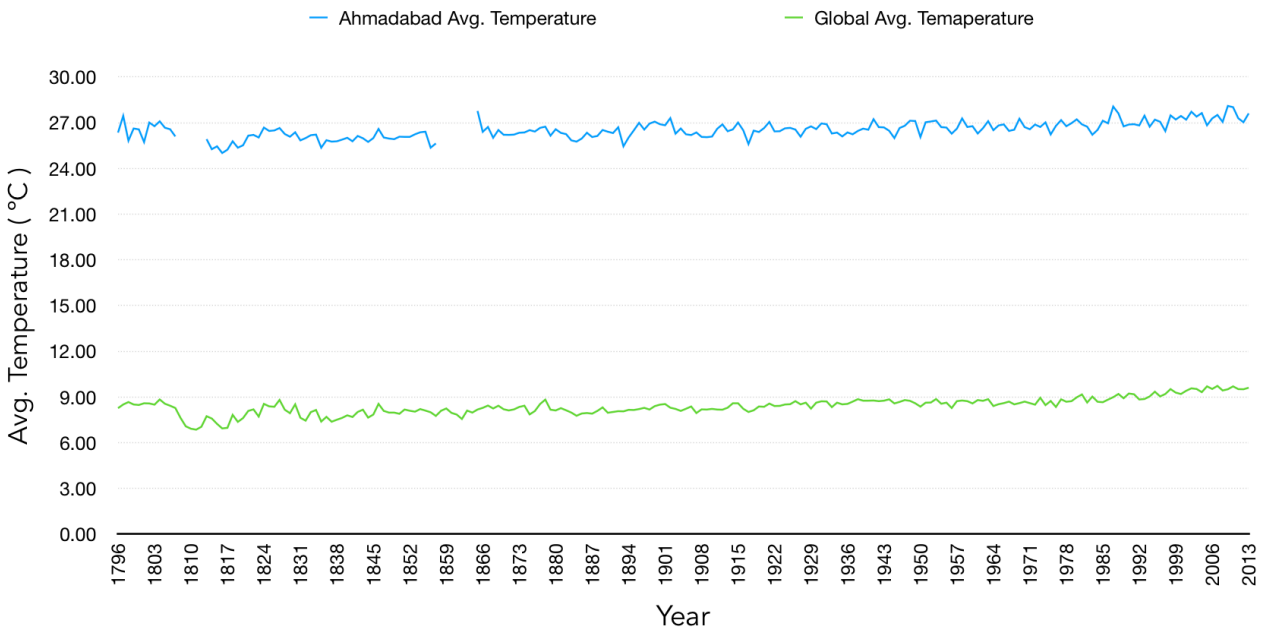


Fig 1: Without Moving Average

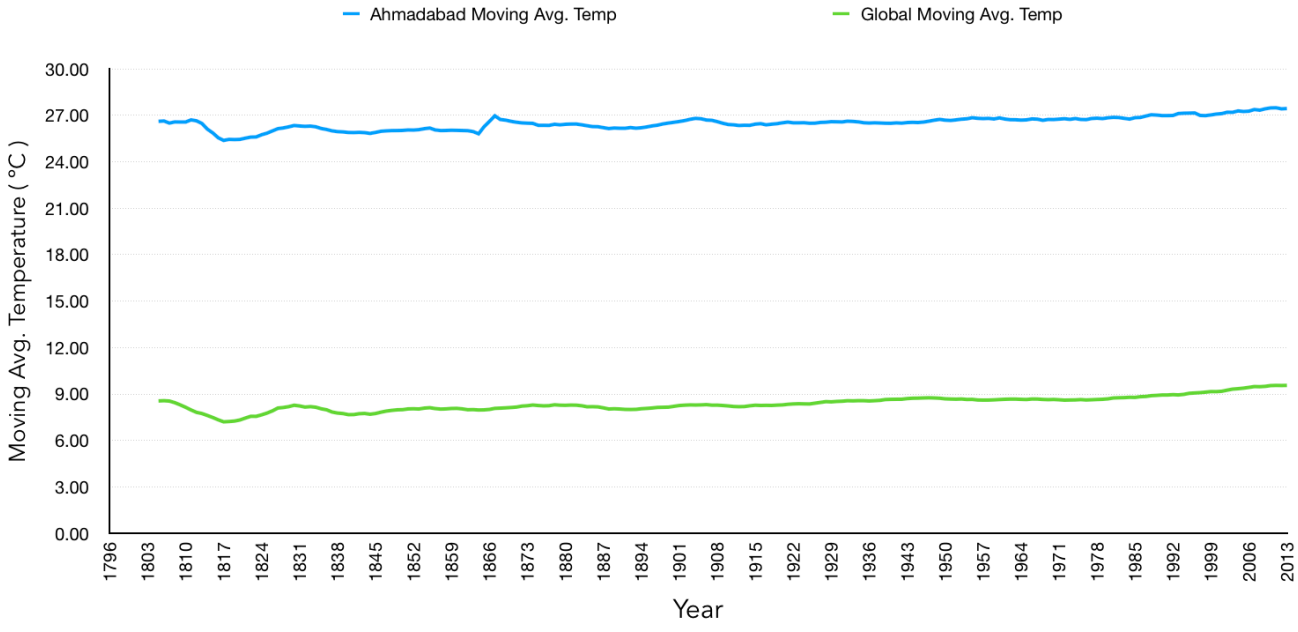


Fig 2: With Moving Average

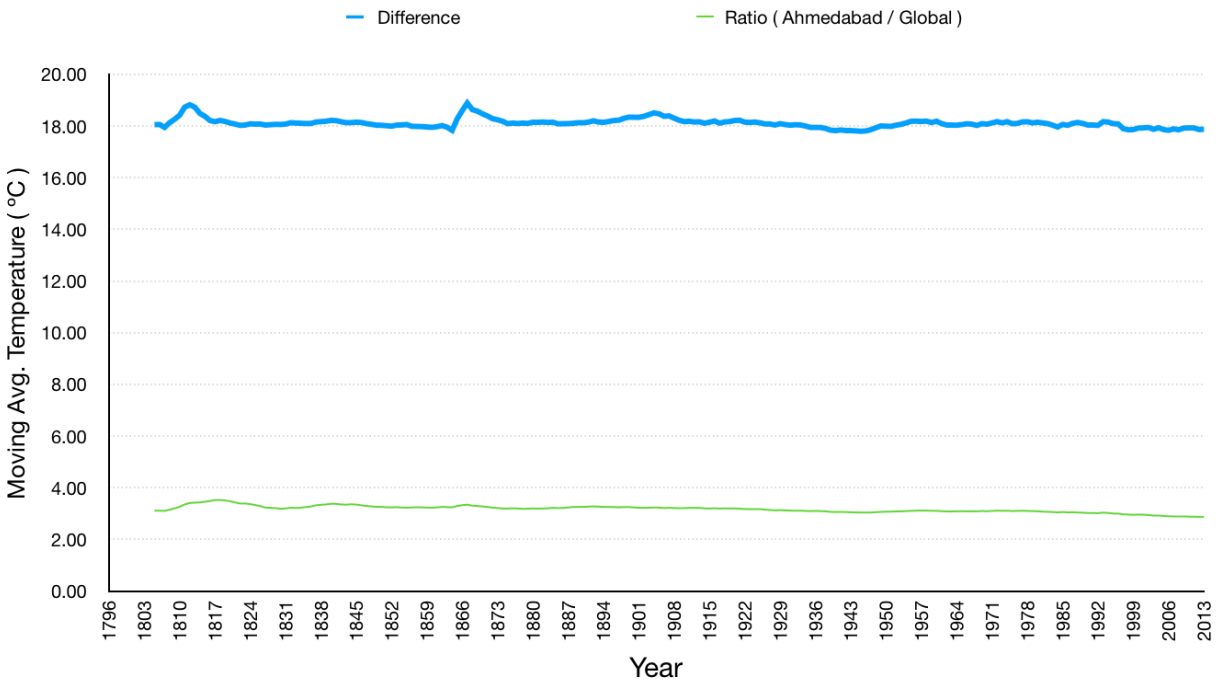


Fig 3: Few Derived Properties

# Observations:

- By taking Moving Average the line chart smoothens and thus, data visualisation becomes easier.
- Average Temperature Range -

  **Gobal :** 7.20 - 9.56

  **Ahmadabad :** 25.37 - 27.48

- From Fig-3, average Difference in ahmedabad and global temperature is around 18°C ( 18.12 °C to be precise )
- The ratio of Ahmadabad avg. temp. to Global avg. temp. is almost constant with value of approx. 3 ( 3.17 to be precise ). So if we are given either of the temp. for given year, we can identify the approx. value of unknown temp. using the following equation :

**Ahmadabad Moving Avg. Temp. = 3.2 x Global Moving Avg. Temp.**

- By looking at the line chart, it is clearly visible that Ahmadabad is hotter than global average temperature

| Year | Change in Global Avg. Temp. | Trend | Change in Ahmadabad Avg. Temp. | Trend |
|---|---|---|---|---|
| | | | | |
| 1805 - 1817 | 8.55 - 7.20 | Decreasing | 26.61 - 25.37 | Decreasing |
| 1818 - 1864 | 7.22 - 7.97 | Increasing | 25.44 - 25.8 | Increasing |
| 1864 - 1893 | 7.97 - 8.01 | Increasing | 25.8 - 26.96 (1864 - 67) | Increasing |
| | | | 26.96 - 26.17(1867 -93) | Decreasing |
| 1896 - 2013 | 8.1 - 9.56 | Increasing | 26.31 - 27.44 | Increasing |

Fig 4 : Table for trend with time

- From Fig-3 , it is clear that the difference between Global average temperature and Bangalore average temperature has been almost **consistent over time except for the range of 1864 - 1873** where a peak appears in otherwise uniform graph **.**

- Ahmadabad and Global average temperature seems to have ups and downs then approx. around **1908** the moving average temperature starts to **increase** .

- Line chart and the above table clearly tells that the world (including Ahmadabad) is getting hotter with time because of increase in temperature .