



Udacity 

Exploring Weather Trends

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Preparing Data For the Analysis

Overview: The goal of this project is to analyse Melbourne's data and global temperature data and compare the temperature trends where you live to overall global temperature trends.

As a first step I've extracted data from the databases by using SQL query. Please see the code below

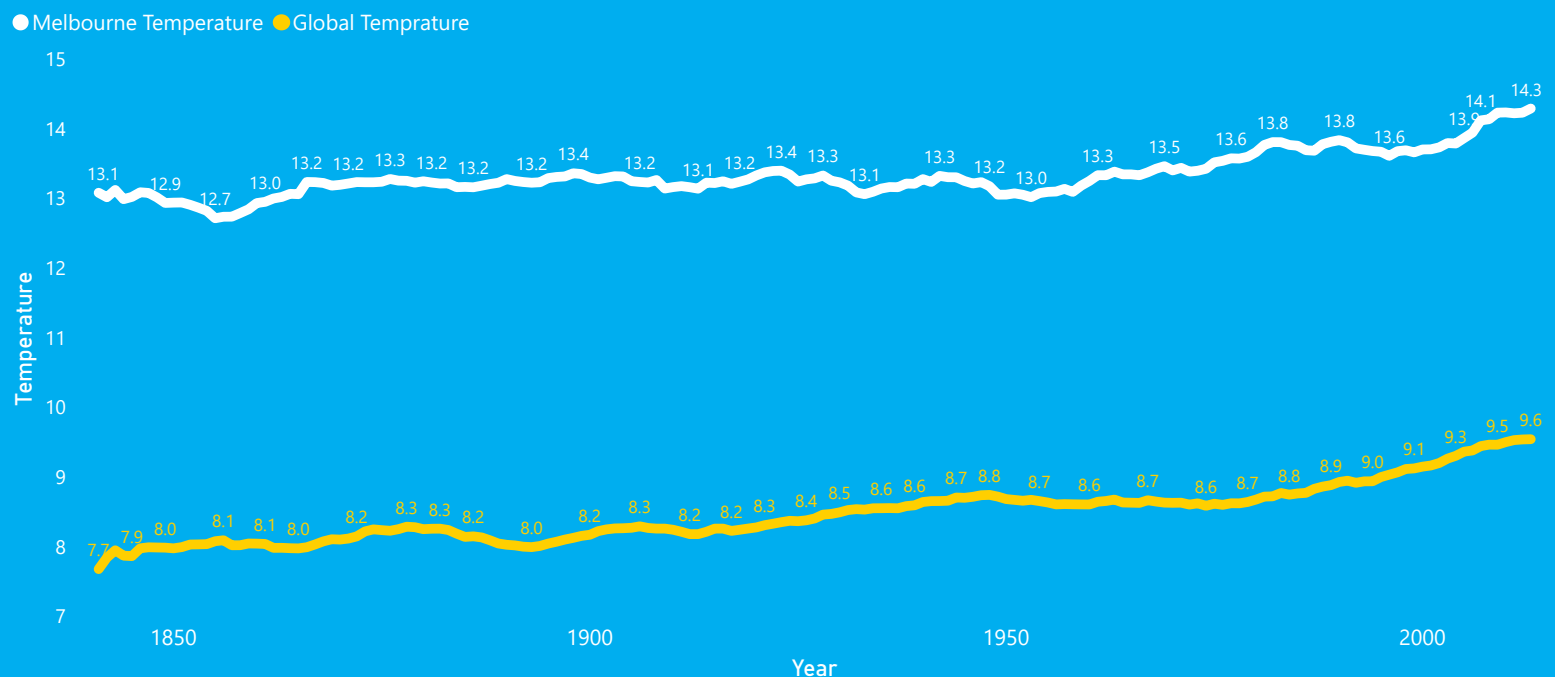
```
-- In order to join city_data with global_data we
-- have to rename a column "avg_temparatue"
ALTER TABLE global_data
RENAME COLUMN avg_temp TO avg_temp_global;
-- Now, we will simply get all data we need for
-- city Melbounre in Australia (ther is a similary named city in the US
as well)
SELECT * FROM city_data
JOIN global_data ON city_data.year = global_data.year
WHERE city LIKE 'Melbourne' AND country LIKE 'Australia'
```

After all the data have been saved in CSV I've decided to use Power Bi in order to calculate moving averages and create a line graph as well. Below is a DAX code I used for moving averages (for every 10 years).

```
avg_temp_global rolling average =
IF(
    ISFILTERED('results'[year]),
    VAR __LAST_DATE = ENDOFYEAR('results'[year].[Date])
    VAR __DATE_PERIOD =
        DATESBETWEEN(
            'results'[year].[Date],
            STARTOFYEAR(DATEADD(__LAST_DATE, -10, YEAR)),
            __LAST_DATE
        )
    RETURN
        AVERAGEX(
            CALCULATETABLE(
                SUMMARIZE(VALUES('results'), 'results'[year].[Year]),
                __DATE_PERIOD
            ),
            CALCULATE(
                SUM('results'[avg_temp_global]),
                ALL(
                    'results'[year].[QuarterNo],
                    'results'[year].[Quarter],
                    'results'[year].[MonthNo],
                    'results'[year].[Month],
                    'results'[year].[Day]
                )
            )
        )
)
```

Analysing Data

Melbourne & Global Rolling Average Temperature



The chart above illustrates Melbourne & Global rolling average temperatures for a period from 1841 to 2013.

Insight 1: It's clear that global temperature was going up quite steadily all the way from 1841 when it was 7.9 up to 9.61 in 2013 which is a staggering **25%** increase. Also, the graph clearly indicates an upward trend.

Insight 2: As for the temperature in Melbourne, Australia first of all it's on average 50% hotter than the rest of the world due to its oceanic climate¹. Secondly, the growing temperature was not that evident until late 1980 which can be explained by the economic changes² that happened at that time. Overall, temperature grew by **13%** comparing 1841 to 2013.

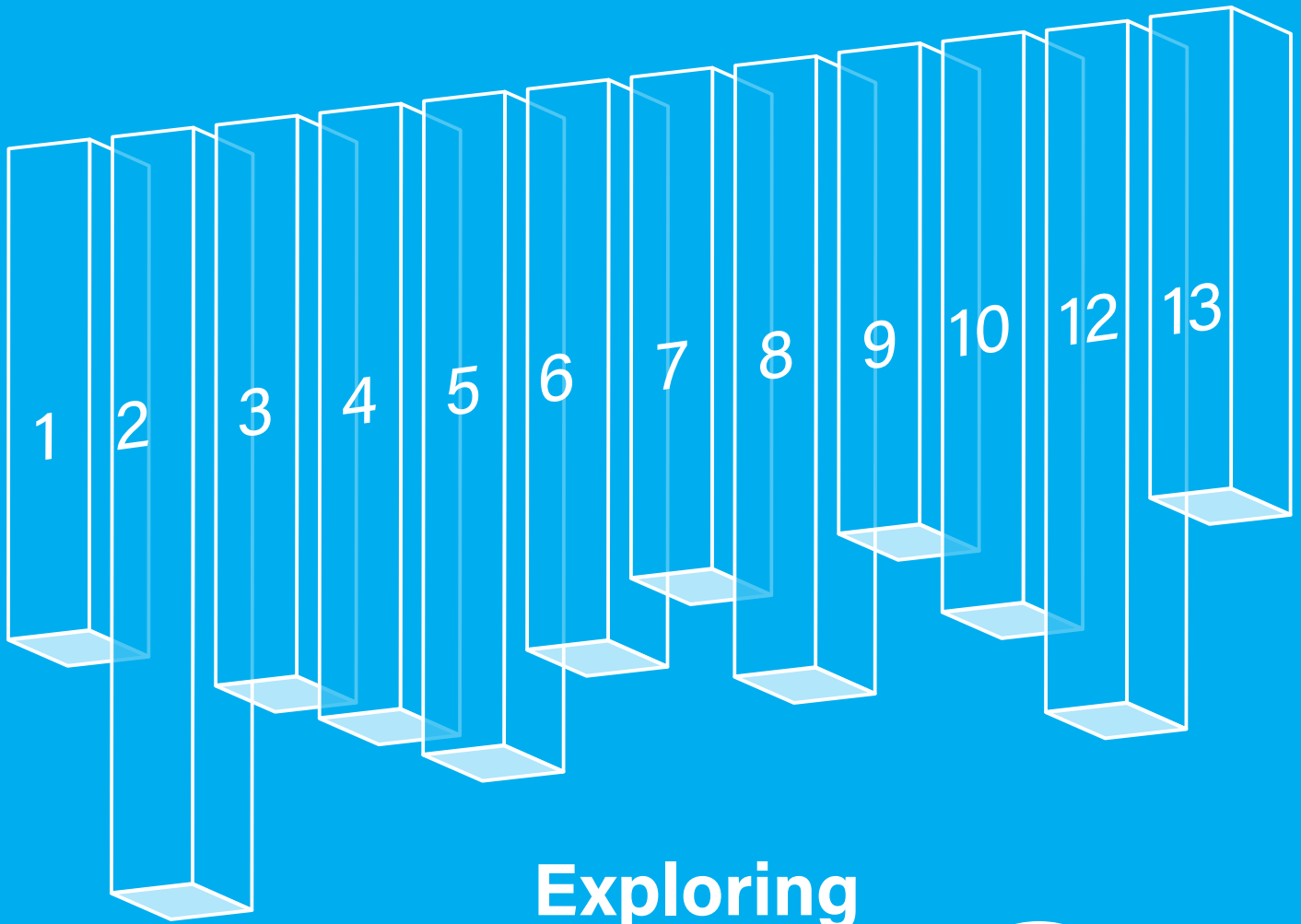
Insight 3: Two data sets have a correlation of around **0.627** which is a moderate positive correlation. This is telling us that Melbourne was affected by global warming as well.

Insight 4: Finally, we can see that Melbourne was not as strongly affected by global warming since we have only moderate correlation and lower temperatures increase. This can be explained by the innovative environmental policies³ implemented by the Australian Government.

1 https://en.wikipedia.org/wiki/Climate_of_Melbourne

2 https://en.wikipedia.org/wiki/Economic_history_of_Australia#1983%E2%80%93present

3 <https://www.servicesaustralia.gov.au/organisations/about-us/publications-and-resources/environmental-sustainability-policy>



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