

Udacity Data Analyst Project 1: Explore Weather Trends

Cities: Abuja, Kano, Lagos (Nigeria)

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Data Extraction

SQL was used to extract the data from the database on Udacity classroom. Investigating the data reveals that there were a couple of missing rows for the selected cities before 1873, hence the query was written to extract data from 1873 upwards.

First query to extract 3 cities in Nigeria:

```
SELECT year, city, avg_temp
FROM city_data
WHERE year >= 1873 AND year <= 2013
AND city IN ('Abuja','Lagos','Kano');
```

Second query to extract global data:

```
SELECT *
FROM global_data
WHERE year >= 1873 and year <= 2013;
```

Data Exploration

For better visualization, a 7-year moving average was calculated using excel formula, below is the snippet for the analysis:

Kano				Lagos				Global data	
year	city	avg_temp	m_avg_temp	year	city	avg_temp	m_avg_temp	year	avg_temp
1873	Kano	26.55		1873	Lagos	26.46		1873	8.35
1874	Kano	25.55		1874	Lagos	26.08		1874	8.43
1875	Kano	25.41		1875	Lagos	25.82		1875	7.86
1876	Kano	25.38		1876	Lagos	25.82		1876	8.08
1877	Kano	25.96		1877	Lagos	26.35		1877	8.54
1878	Kano	26.13		1878	Lagos	26.26		1878	8.83
1879	Kano	25.48	25.78	1879	Lagos	25.67	26.06571429	1879	8.17
1880	Kano	25.57	25.64	1880	Lagos	26.14	26.02	1880	8.12
1881	Kano	26.01	25.70571	1881	Lagos	26.39	26.06428571	1881	8.27
1882	Kano	25.52	25.72143	1882	Lagos	26.01	26.09142857	1882	8.13
1883	Kano	25.86	25.79	1883	Lagos	26.42	26.17714286	1883	7.98
1884	Kano	26.06	25.80429	1884	Lagos	26.43	26.18857143	1884	7.77
1885	Kano	22.6	25.3	1885	Lagos	26.01	26.15285714	1885	7.92
1886	Kano	25.28	25.27143	1886	Lagos	25.87	26.18142857	1886	7.95
1887	Kano	24.95	25.18286	1887	Lagos	25.09	26.03142857	1887	7.91
1888	Kano	25.22	25.07	1888	Lagos	25.42	25.89285714	1888	8.09
1889	Kano	25.31	25.04	1889	Lagos	25.34	25.79714286	1889	8.32
1890	Kano	24.51	24.84714	1890	Lagos	24.86	25.57428571	1890	7.97
1891	Kano	25.06	24.70429	1891	Lagos	25.29	25.41142857	1891	8.02
1892	Kano	25.33	25.09429	1892	Lagos	25.49	25.33714286	1892	8.07

Data Visualization

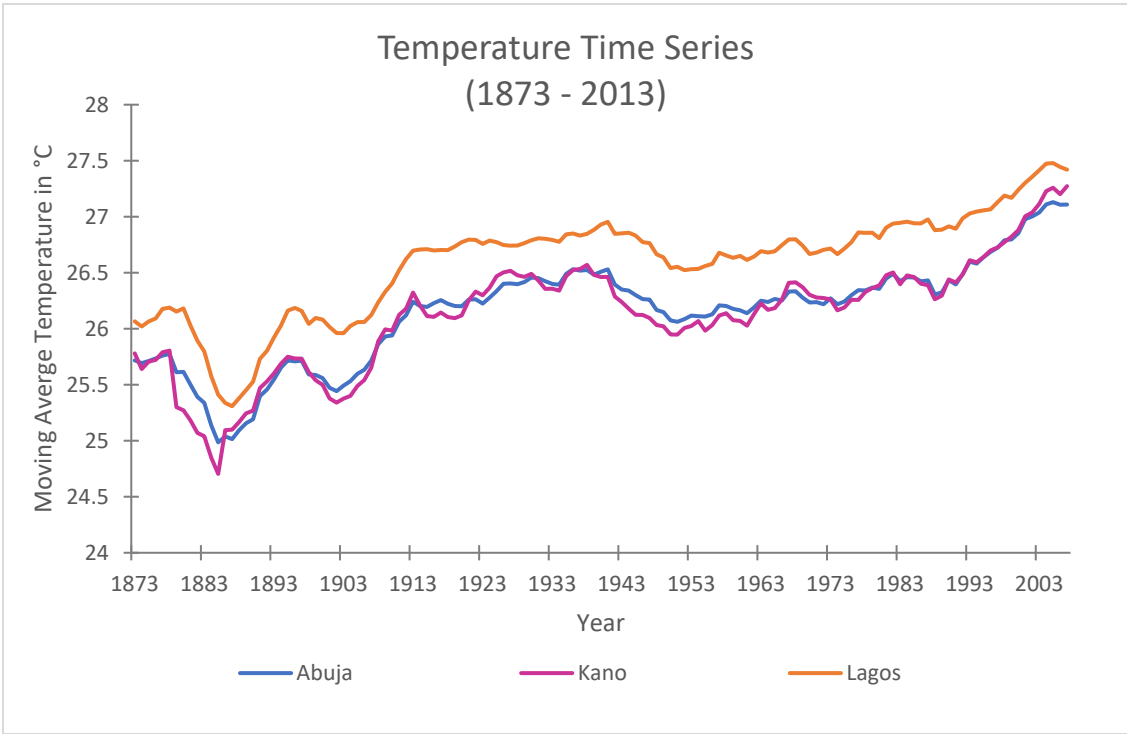


Figure 1: Temperature time series line chart for Abuja, Kano, and Lagos

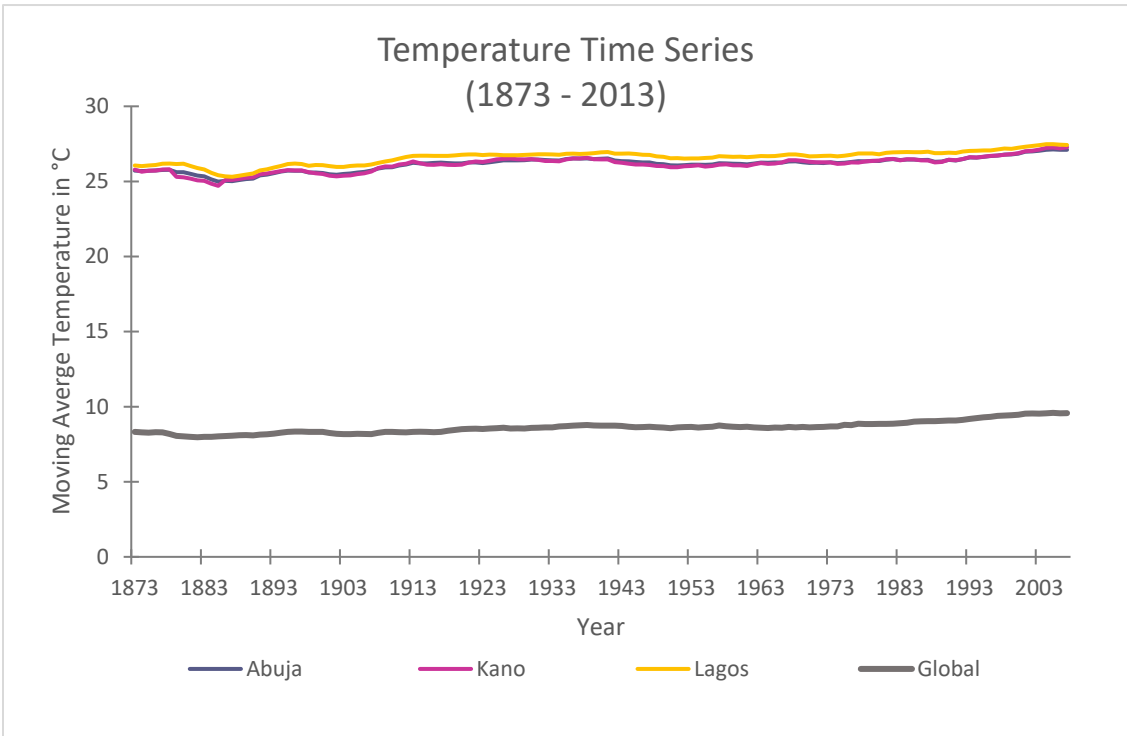


Figure 2: Comparison between average global temperatures and average temperatures of selected cities

Data Analysis

1. **Increasing Temperature:** Analysis shows that there is a general increase in temperature, with Lagos recording the highest temperature at 27.47°C.
2. **Temperature Spike:** There is a downward surge in temperature between 1878 and 1895 in all the cities as well as the global dataset
3. Lagos is relatively hotter than other cities in Nigeria
4. Cities in Nigeria have higher temperatures than the global average, primarily because Nigeria is located within the tropical equator, with high temperature.