**Module 9 Challenge Report**

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**Background**

This project provides a statistical analysis of a typical seasonal weather data for middle and end of the year as well in a designated region. Ideally, the conclusion of the analysis will provide guidance for business decision making for the area.

**Objective**

Our objective is to determine key statistical data for the month of June and December, otherwise known as summer and winter seasons. We will compare the result of the findings for the two seasons and provide recommendations for further analysis.

**Code Plan**

1. Prepare and setup Visual Studio Code development environment for Python, Pandas, SQLAlchemy and SQLite. Ensure that FLASK web server is operational and integrated using Localhost:5000.
2. Create the appy.py app with the routes to:
3. Weather API data for precipitation for the month of June and December
4. Weather API data to temperature for he month of June and December
5. Determine minimum, maximum, average, standard deviation, percentiles and count using the pandas describe() function.

**Approach**

The app.py application is used to retrieve and display the weather data for the stations based on the date and period of interest. In this case, the month of June and December.

The Jupyter Notebook development and data analysis application will be used to perform SQL coding and data analysis.

**Conclusion/Visualization of Observation**

**June 2016 Precipitation** **Temperature**

**Count** 2484.000000 2753.000000

**Mean** 0.199300 75.010171

**Std** 0.536388 4.463992

**Min** 0.000000 58.000000

**25%** 0.000000 72.000000

**50%** 0.020000 76.000000

**75%** 0.150000 78.000000

**Max** 9.640000 87.000000

**Dec 2016 Precipitation Temperature**

**Coun**t 1445.000000 1597.000000

**Mean** 0.170062 73.766437

**Std** 0.441790 4.867794

**Min** 0.000000 58.000000

**25%** 0.000000 70.000000

**50%** 0.010000 74.000000

**75%** 0.120000 77.000000

**Max** 6.250000 87.000000

1. The statistical data for the months of June and December are relatively close with little or insignificant differences. That suggests an area or region with extended summer weather condition. Typically, the data for the seasons with 6 months apart will be significantly different.
2. Minimum Temperature for the month of June is at 58 degrees Farheinheit, which is the same as that of the month of December.
3. Counts are significantly higher in the month of June compared to December. Almost twice as much.
4. Also, we should note that the average temperature edged slightly higher by a couple of points in June.

**Recommendation**

1. We didn’t invest time into cleaning and transformation in this project. There are few NANs in the data, but we considered that insignificant for the purpose our investigation.
2. The display of information could be modified for improved visualization in HTML and JavaScript, however, that’s outside the premises of this project.
3. Overall, the result of the weather data retrieval is suitable for the both summer season and end of the year with temperature in upper mid-range. Nothing to the extreme.