University of Macau

CISC7204 – Data Science and Data Visualization

Assignment 1, 2019/2020

(Due date: *10 September 2019*)

The Macao Weather

This assignment is to create a data visualization using the meteorological data of Macao that collected from the *Macao Meteorological and Geophysical Bureau* (*SMG*).[1] This can be a single chart, a collection of charts or a dashboard, whatever is necessary in the story or analysis that is shown in the class.

The Data

- The dataset consists of the meteorological data of Macao SAR from January 1999 to August 2019. There are 7,538 records in total.
- The data are collected from the website of *Macao Meteorological and Geophysical Bureau*[2] and is available in Microsoft Excel format.[3]
- The data consist of the daily temperature, humidity, Insolation duration and rainfall. The following shows the samples.

Date	Mean maximum (ºC)	Mean (ºC)	Mean minimum (ºC)	Mean relative humidity (%)	Insolation duration (hour)	Total rainfall (mm)
01/01/1999	21.8	18.5	16.2	74	7	0
02/01/1999	18.3	16	12.9	69	7.8	0
09/01/1999	17	15	12.9	71	1.2	0
10/01/1999	16.6	14.9	12.9	63	2.3	0
11/01/1999	15.3	14	12.3	56	0.3	VST
12/01/1999	13.3	8.7	6.9	86	0	3.4
13/01/1999	10.7	9	6.9	90	0	3
14/01/1999	12.4	10.6	8.6	88	0	0.2
15/01/1999	11.9	9.6	6.8	66	0	0
16/01/1999	13.4	11.1	7.7	54	1	0
17/01/1999	15.4	12.4	9.6	62	0	1

***Note**: VST indicates the trace of rainfall is less than 0.2mm.*

The Assignment

1. Determine a story or goal for the visualization:
   Examples:
   - Dashboard summarizing the weather of Macao

[1] http://www.smg.gov.mo/smg/database/e_db_meteo.htm
[2] http://www.smg.gov.mo/smg/database/e_db_meteo.htm
[3] https://ummoodle.um.edu.mo/mod/resource/view.php?id=1338852

- Forecast future weather of Macao such as temperature, humidity, rainfall, etc.
- Explore variation of the change of weather year by year.

2. The is a simple data set. There are only aggregated values of the meteorological information. Think broadly about the data.
   Examples:
   - The data are time series data – any additional choices?
   - What comparisons can you make?
   - What table calculations can be made?
   - What additional data can be appended from other sources to help tell the story or complete an analysis?
3. Build a data visualization

The Submissions

You need to submit:

- The visualization Workbook
- The snapshots of Dashboards or Story.

Reference

1. The Shaffer 4 C's of Data Visualization.