**DATA ANALYSIS PROJECT**

**Unit Chair: Dr Musa Mammadov**

**Submission Date: 5:00PM Friday of Week 6**

**Table of Contents**

[**Section 1: Introduction and Data Description**](#_k1td6m53ikm0) **2**

[**Section 2: Exploratory Data Analysis and Results**](#_apfts8lpkmyd) **3**

[**Section 3: Conclusion**](#_iecfvi4z0ppz) **4**

[**Section 4: References**](#_3cm7bptggzp1) **5**

**Dataset Name**: Rain in Australia

**Group Name**: Mon-13 (FANH) **On Campus/Cloud**: On Campus

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3 - Partial contribution, attended few meetings

2 - No contribution, attended few meetings

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| **Section 1: Introduction and Data Description** |

Your initial observations and plans for Exploratory Data Analysis

The Australian weather broadcast or the appropriate agencies comprehends the tomorrow weather, specifically whether it will be raining or not, to deliver updated weather news to citizens or propose proper plans for social activities respectively. Therefore, the dataset of day-to-day weather was collected across various stations over a period of 10 years. The observations extracted from the Australian weather dataset aim to return prediction of tomorrow rain by producing the possibilities of it or two binary labels (Yes and No, 1 and 0 in that order).

The “Rain in Australia” dataset consists of 24 variables in total. Among these variables, there are two variable types, categorical variable and numerical variable.

For the categorical variable, five variables are normal, including “Date”, “Location”, “WindGustDir”, “WindDir9am” and “WindDir3pm” while the remaining two binary variables are “RainToday” and “RainTomorrow”, especially “RainTomorrow” is a target variable. Also, these categorical variables are defined with nominal type. In addition, the “WindDir9am” and “WindGustDir” variables experience the biggest percentages of missing value with around 7 percent (Young 2017). Furthermore, the variable having the highest cardinality, which means that a variable has the largest number of labels, is “Date” with 3436 labels and the second is “Location” with 49.

For the numerical variable, there are seventeen variables, which refer to continuous type, namely “MinTemp”, “MaxTemp”, “Rainfall”, “Evaporation”, “Sunshine”, “WindGustSpeed”, “WindSpeed9am”, “WindSpeed3pm”, “Humidity9am”, “Humidity3pm”, “Pressure9am”, “Pressure3pm”, “Cloud9am”, “Cloud3pm”, “Temp9am”, “Temp3pm” and “RISK\_MM”. According the figures in the table indicated the dataset provided by Young (2017), the variables witnessing the most missing values are “Evaporation” and “Sunshine” with roughly 43 and 48 percent respectively, followed by “Cloud9am” and “Cloud3pm” with nearly 38 and 40 percent in that order. Also, the “RISK\_MM” variable is in consideration of dropping out of the dataset because according to Young (2017), this variable should be eliminated if aiming to train a regression model instead of a classification one because including the variable to solve a classification problem impacts negatively to the predicted values of the trained model.

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| **Section 2: Exploratory Data Analysis and Results** |

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| **Section 3: Conclusion** |

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| **Section 4: References** |

Bureau of Meteorology n.d., *Note to accompany Daily Weather Observations*, Australian Government, retrieved 18 April 2020, <<http://www.bom.gov.au/climate/dwo/IDCJDW0000.shtml>>.

Young, J 2017, *Rain in Australia*, Kaggle, retrieved 18 April 2020, <<https://www.kaggle.com/jsphyg/weather-dataset-rattle-package>>.