***BUS 347.01 Introduction to Business Analytics***

***Homework 1 (60 Points)***

**Homework Description:**

The attached file “HW1 Data.csv” contains the statewide consensus information for the year of 2016.

* *Income* is the median income by each state
* *House.Value* is the median house price by each state
* *Foreign.Born* is the proportion of foreigners by each state
* *HS.Diploma*  is the proportion of people having at least high school degree by each state
* *Presidential.Election*  is the political stance by each state as measured by the 2016 presidential election result.

Now you need to create a descriptive analytics report in the word format generated by RMarkdown to answer the following questions. In your analytics report, you need clearly label the following items:

* Question Number
* R Code
* R Output
* Conclusion, if applicable

You need to submit the knitted descriptive analytics report on Blackboard. Please carefully check your work before the submission, as you can only submit your work once. Late submissions will not be accepted.

**Homework Questions (Each Question has 10 point)**

**Q1.** Show the proportion of Republic States and Democratic States in the year of 2016. Discuss which political stance has an advantage in the 2016 presidential election.

**Q2.** Use a scatterplot to show the relationship between the median state income and median house price (put house price in the y-axis). Discuss the relationship pattern (positive/negative, linear/nonlinear, weak/strong).

**Q3.** Use a boxplot and histogram to show the distribution of median state income. Discuss whether there is any outlier for the *Income* and whether median state income exhibits a symmetric distribution.

**Q4.** Repeat the same analysis in Q3 for the variable *House.Value.*

**Q5.** Use a boxplot by categories to show whether political stances affect the distribution of proportions of foreigners and the distribution of high-school degree holders. Discuss which political stance is associated with a higher proportion of foreigners and which political stance is associated with a higher proportion of high school degree holders.

**Q6.**  Use a scatterplot to show whether proportion of foreigners is associated with the proportion of high-school degree holders (put high-school degree proportion in the y-axis). Use a conditional scatterplot to illustrate whether this relationship is affected by the political stance. Draw your conclusions explicitly.