# MAT5314 Project 1: Data Visualization

Teng Li(7373086)
Shiya Gao(300381032)
Chuhan Yue(300376046)
Yang Lyu(8701121)

## Introduction

A data set of the 2016 US election polls was given. In this project we aim to understand the data structure by creating various visualizations.

## Method

We use various R packages to present the data set and to plot the graphs.

## Result

We first take a look at the raw data set:

```
##   state startdate   enddate
## 1  U.S. 2016/11/3 2016/11/6
## 2  U.S. 2016/11/1 2016/11/7
## 3  U.S. 2016/11/2 2016/11/6
## 4  U.S. 2016/11/4 2016/11/7
## 5  U.S. 2016/11/3 2016/11/6
## 6  U.S. 2016/11/3 2016/11/6
##                                                    pollster grade samplesize
## 1                                ABC News/Washington Post    A+       2220
## 2                                 Google Consumer Surveys     B      26574
## 3                                                   Ipsos    A-       2195
## 4                                                  YouGov     B       3677
## 5                                          Gravis Marketing    B-      16639
## 6 Fox News/Anderson Robbins Research/Shaw & Company Research     A       1295
##   population rawpoll_clinton rawpoll_trump rawpoll_johnson rawpoll_mcmullin
## 1         lv           47.00         43.00            4.00               NA
## 2         lv           38.03         35.69            5.46               NA
## 3         lv           42.00         39.00            6.00               NA
## 4         lv           45.00         41.00            5.00               NA
## 5         rv           47.00         43.00            3.00               NA
## 6         lv           48.00         44.00            3.00               NA
##   adjpoll_clinton adjpoll_trump adjpoll_johnson adjpoll_mcmullin
## 1        45.20163      41.72430        4.626221               NA
## 2        43.34557      41.21439        5.175792               NA
## 3        42.02638      38.81620        6.844734               NA
## 4        45.65676      40.92004        6.069454               NA
## 5        46.84089      42.33184        3.726098               NA
```

```
## 6        49.02208      43.95631        3.057876               NA
```

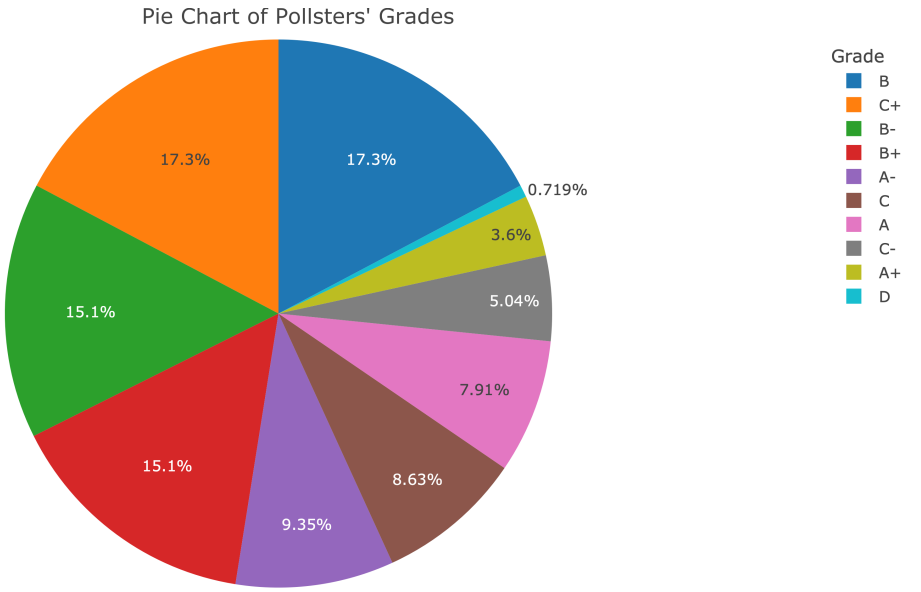
As we can see, there are a few variables with missing values:

```
##     state             startdate           enddate            pollster
##  Length:4208        Length:4208        Length:4208        Length:4208
##  Class :character   Class :character   Class :character   Class :character
##  Mode  :character   Mode  :character   Mode  :character   Mode  :character
##
##
##
##
##     grade              samplesize       population        rawpoll_clinton
##  Length:4208        Min.   :   35.0   Length:4208        Min.   :11.04
##  Class :character   1st Qu.:  447.5   Class :character   1st Qu.:38.00
##  Mode  :character   Median :  772.0   Mode  :character   Median :43.00
##                     Mean   : 1148.2                      Mean   :41.99
##                     3rd Qu.: 1236.5                      3rd Qu.:46.20
##                     Max.   :84292.0                      Max.   :88.00
##                     NA's   :1
##  rawpoll_trump   rawpoll_johnson  rawpoll_mcmullin adjpoll_clinton
##  Min.   : 4.00   Min.   : 0.000   Min.   : 9.0     Min.   :17.06
##  1st Qu.:35.00   1st Qu.: 5.400   1st Qu.:22.5     1st Qu.:40.21
##  Median :40.00   Median : 7.000   Median :25.0     Median :44.15
##  Mean   :39.83   Mean   : 7.382   Mean   :24.0     Mean   :43.32
##  3rd Qu.:45.00   3rd Qu.: 9.000   3rd Qu.:27.9     3rd Qu.:46.92
##  Max.   :68.00   Max.   :25.000   Max.   :31.0     Max.   :86.77
##                  NA's   :1409     NA's   :4178
##  adjpoll_trump    adjpoll_johnson  adjpoll_mcmullin
##  Min.   : 4.373   Min.   :-3.668   Min.   :11.03
##  1st Qu.:38.429   1st Qu.: 3.145   1st Qu.:23.11
##  Median :42.765   Median : 4.384   Median :25.14
##  Mean   :42.674   Mean   : 4.660   Mean   :24.51
##  3rd Qu.:46.290   3rd Qu.: 5.756   3rd Qu.:27.98
##  Max.   :72.433   Max.   :20.367   Max.   :31.57
##                   NA's   :1409     NA's   :4178
```

In the second step, we want to look at the percentage of different grades of pollsters. Therefore, we extract the "pollster" and "grade" columns from the original data frame, merge the duplicate rows and re-sort the data according to the grade.

```
## # A tibble: 139 x 2
##    grade pollster
##    <chr> <chr>
##  1 A     Behavior Research Center (Rocky Mountain)
##  2 A     Fairleigh Dickinson University (PublicMind)
##  3 A     Fox News/Anderson Robbins Research/Shaw & Company Research
##  4 A     Marist College
##  5 A     Marquette University
##  6 A     Muhlenberg College
##  7 A     National Journal
##  8 A     Public Policy Institute of California
##  9 A     Research & Polling, Inc.
## 10 A     Siena College
## # i 129 more rows
```

From the "Pie Chart of Grades" below, we could see that the pollsters with B grades account for nearly 50% of the total, C and A grades account for about 30% and 25% respectively. Pollsters rated D only account for less than 1%. Furthermore, grade B and C+ have the largest proportions, at about 17.3%, followed by B+ and B-, both at about 15.1%.




## Discussion

## Conclusion