LAB 4: CHARTS IN EXCEL

Background Info

- This week, you'll be working with political data from a 2018 survey of Twitter users. For more information about the dataset, there is a codebook / methods document posted on Canvas titled "Pew Twitter Survey 2018 questionnaire and methods statement."

- The variables we'll work with are: *PARTY, THERMOe, THERMOd, FAIRTRT.*
    - *Note: THERMOe is a "feeling thermometer" variable that ranges from 0 to 100, where 0 represents feeling as cold and negative as possible, and 100 represents feeling as warm and positive as possible. A rating of 50 represents not feeling particularly positive or negative toward a group.*

- **The main purpose of this assignment is to practice making clear, well-labeled, intuitive charts and tables to visualize descriptive statistics. Apply what was mentioned in lecture and lab this week about charts and data visualization (distortions, data labels, axes labels, title) to each question in this assignment.**

- Type your answers directly into this Word document, and submit this Word document along with your Excel workbook on Canvas.

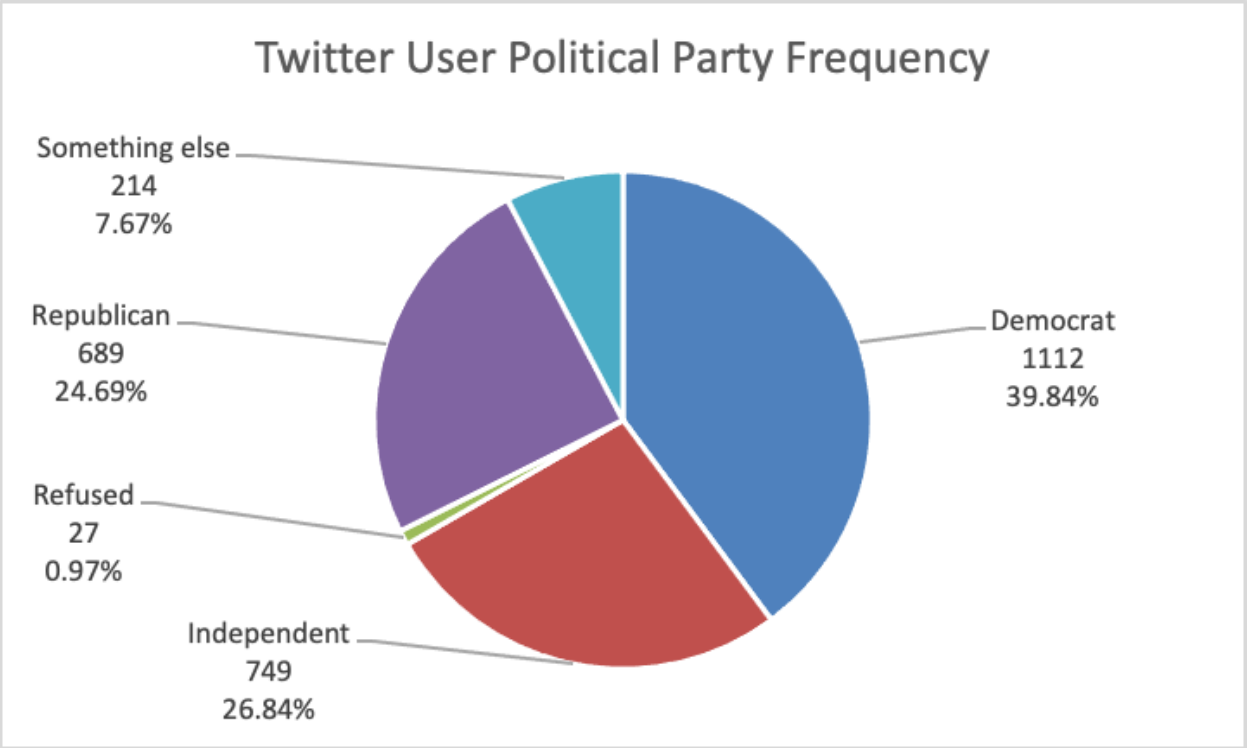
Assignment

1. First we'll explore what the political party (*PARTY)* of the survey respondents is.

    a. Keep all the data, and create a frequency distribution using a pivot table to get counts for each party category. Make sure your column headers have useful titles. Paste the table below.

Twitter User Political Party	Party Frequency	Party Relative Frequency
Democrat	1112	39.84%
Independent	749	26.84%
Refused	27	0.97%
Republican	689	24.69%
Something else	214	7.67%
Grand Total	**2791**	**100.00%**

    b. Create a pie chart to depict the variable. Add labels to the outside of each pie slice for: category, n-size, and percentage. Each label should be on a new line (change the "separator"). Paste the pie chart – with appropriate labels and titles! – below.

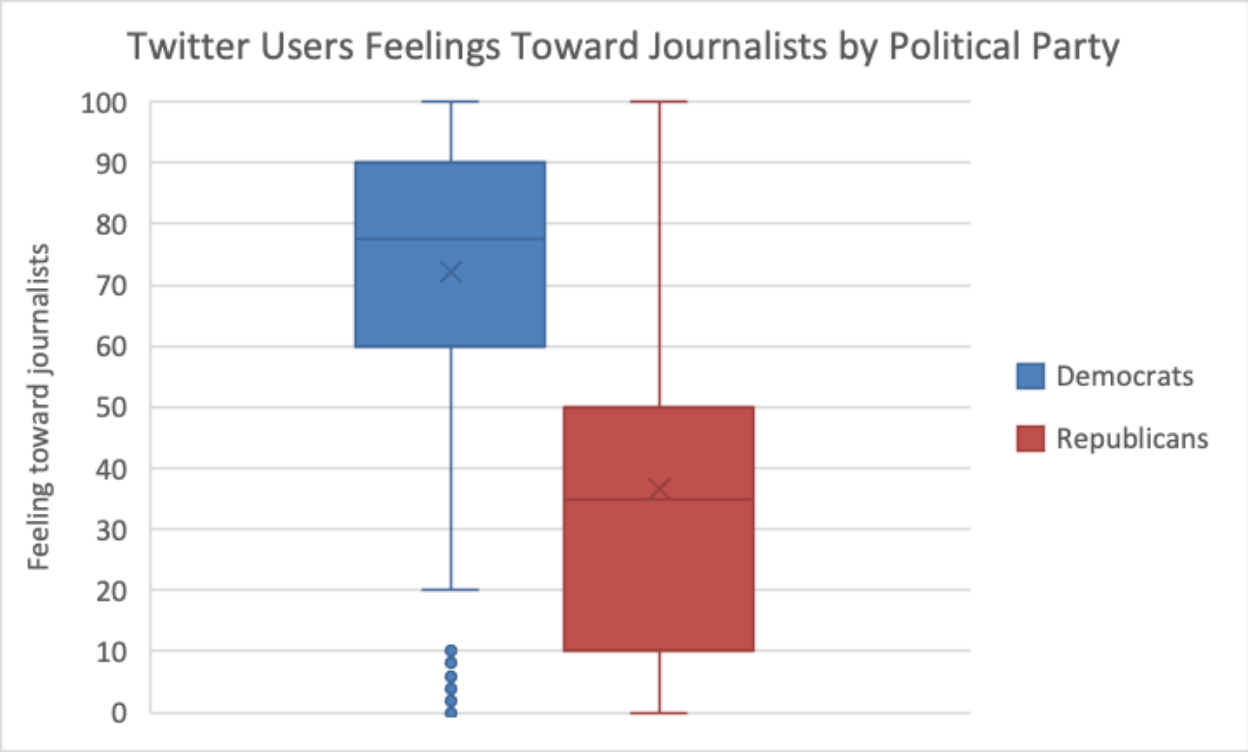


2. Is there a difference between Democrat and Republican Twitter users *(PARTY)* in how they feel about journalists *(THERMOe)*? On a new sheet, paste the 2 variables and delete the rows where *THERMOe = Refused.* Then only keep the rows where *PARTY = Republican* or *Democrat*, and delete the rest of the rows. Then:

a. Report how much data you have left (what is your N?)
   N = **1791**

b. This data is "ordinal" because it is a likert scale that represents feelings (and there are no objective units of feelings that can be quantified). However, we are going to treat the variable as if it is interval-ratio level. At the bottom of the column, use the formula function for mean to calculate the mean. Below that use the formula function for standard deviation to calculate standard deviation. Report those.
   MEAN ≈ **58.6705751**
   STDEV ≈ **29.8056614**

c. Create side-by-side boxplots to compare the summary statistics of Democrat vs. Republican feelings toward journalists. You will first need to reshape the data to have Democrat *THERMOe* in one column, and Republican *THERMOe* in the column next to it. Add a legend to your plot, make sure the y-axis goes from 0-100, and paste your plot below.

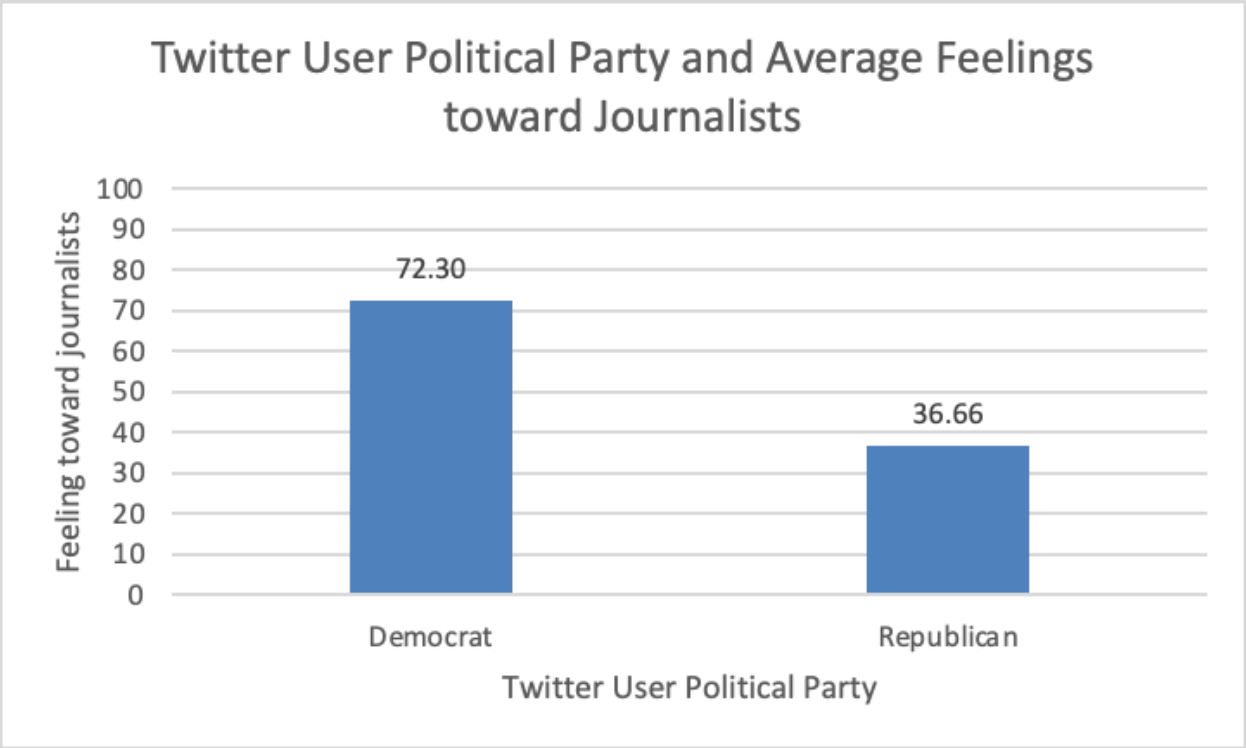


d. Write 2-3 sentences comparing the summary statistics depicted by the two boxplots in part (b).
The median of Democrat feelings is more than double the average feelings towards journalists of Republicans, however, Democrats have many outliers with low feelings towards journalists. Additionally, Republicans have a larger range of variability regarding their feelings and the interquartile range of Republicans is larger than Democrats which is also indicative of more scattered data. The boxes also have no overlapping interquartile range which reveals a strong difference in feelings between the two groups.

3. Now you'll work with the same data as Question 2 to create a bar chart.
   a. Using a pivot table, calculate the averages for how Democrats and Republicans feel toward journalists. Paste the pivot table below with appropriate column headers.

Twitter User Political Party	**Average Feelings toward Journalists**
Democrat	72.30108499
Republican	36.66277372
Grand Total	**58.6705751**

   b. Using your pivot table, create a bar chart to show how average feeling toward journalists differs by party. Include data labels above the bars, axis labels, a clear title, and a y-axis that ranges from 0-100. Feeling toward journalists should be on the y-axis. Paste it below.



c. Write 2-3 sentences summarizing the sample data. Give 1 reason that you think could account for the trends you see.
The average feelings towards journalists from democrats is almost double that of republicans. The average of the two is almost 60, however, which shows that most Twitter users lean towards positive feelings. One reason that accounts for this trend however could be that more Twitter users are democrats and democrats, in general and outside of Twitter, tend to favor journalism more.

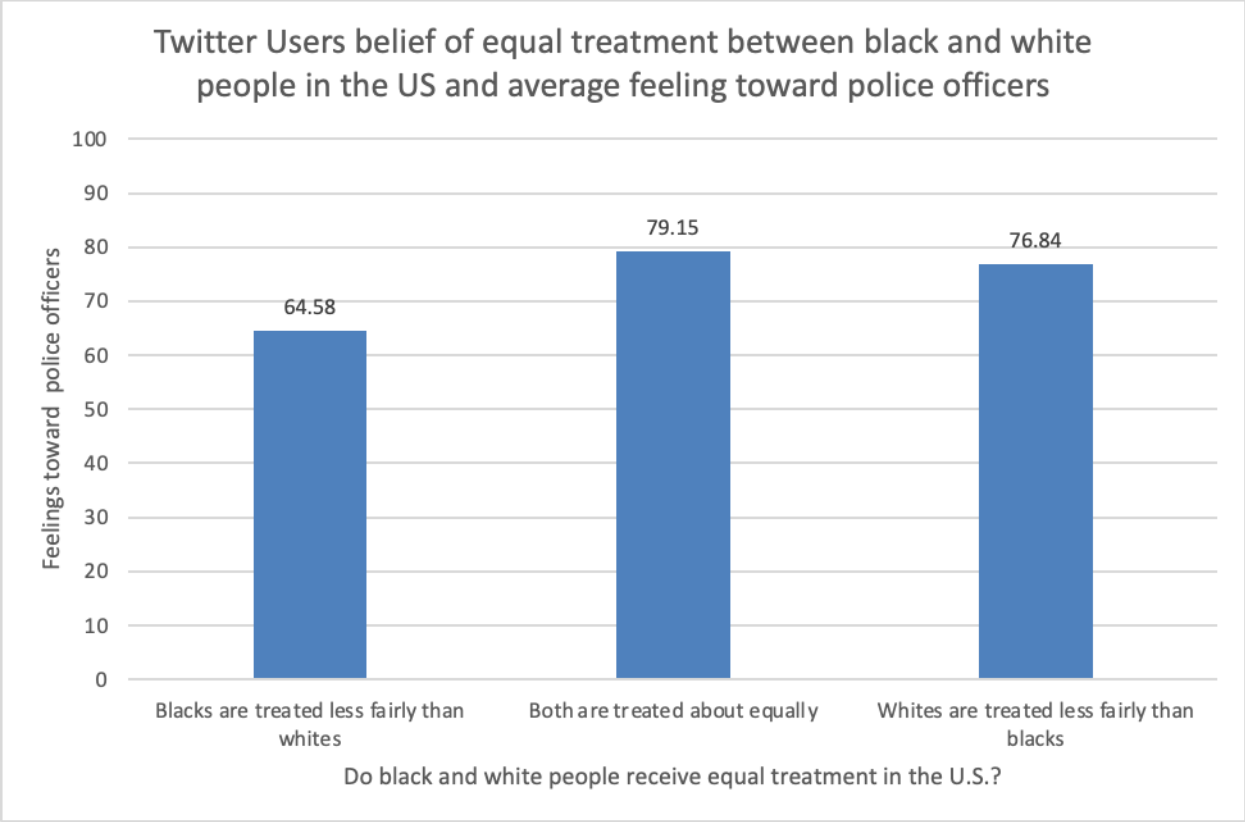
4. How does someone's feelings toward police officers (*THERMOd)* relate to whether they believe black and white people are treated equally in the U.S. (*FAIRTRT*)? Paste the two variables on a new sheet. Remove rows where *FAIRTRT* or *THERMOd = Refused*. Then:

a. Report how much data you have left (what is your N?)
N= 2744
b. Using a pivot table, calculate the average feeling toward police officers for the 3 different responses to *FAIRTRT*. Paste your pivot table below with the 3 averages and good column labels.

Twitter User belief of equal treatment between black and white people in the U.S.	**Average feeling toward police officers**
Blacks are treated less fairly than whites	64.57716224
Both are treated about equally	79.14848883
Whites are treated less fairly than blacks	76.8364486

Grand Total	69.57434402

c. Create a bar chart to depict the averages, with feelings toward police officers on the y-axis, data labels above the bars, axes labels, a title, and the y-axis ranging from 0-100. Paste the bar chart below.



d. Write 2-3 sentences summarizing the sample data. Give 1 reason that you think could account for the trends you see.
Twitter users generally have positive feelings towards police officers regardless of their belief of equal treatment between black and white people in the US. However, the belief that white and black people are treated about equally has the highest average feelings which could be a result of previous data which shows Twitter users are mostly democrats who have a higher favorability of journalists. Additionally, the wide variability of republican perceptions of journalists and the outliers in democrat feelings of journalists may play into this trend of believing both are treated about equally and not one more than the other.

5. Check over your work: do you have useful column headers for each pivot table (you didn't just leave the default headers in)? Chart titles? Axes labels? Data labels over bars in bar charts? Did you remove "blank" rows from frequency tables? *(No answers are needed in response – this is just to remind you to that it's important to make sure your tables and charts look polished and are easy to interpret!*

Submit this Word Document and your Excel workbook to Canvas.