**Excel Data Analysis:**

1. Set-up
   1. Open Snapchat ‘PoliticalAds’ for 2021
   2. Label initial sheet “Raw Data”
   3. Select Data, select Analysis Tools, enable Analysis ToolPak
   4. Select Data, filter Spend to descending
   5. Select Data, filter Impressions to descending
2. Date formatting
   1. Select start date column (choose letter at top or select ctrl+shift+down)
   2. Select text to columns, select delimited, next, select tab, space, and treat consecutive delimiters as one, next
   3. Select do not import column (skip) and select the right column with times, change date to MDY, finish
   4. Remaining data will now be in MDY format with no times or ending z values
   5. Repeat for end date
   6. Enter end-date for all rows without end-date, enter 03/02/2021 as end-date
   7. Copy and paste the following columns into a new sheet in the following order
      1. Start-date, End-date, empty column, Spend, Impressions
      2. Label sheet “Regression Data and Visualizations”
3. Date duration calculation - in “Regression Data and Visualizations”
   1. Label empty column “Duration”
   2. Enter arithmetic formula: =(end-date column)-(start-date column)
      1. =(G2-F2) \*\*if column G is end-date and column F is start-date)
   3. Drag formula down to apply to all rows
4. Linear regression
   1. Select data analysis
   2. Select regression
   3. Select “Impressions” column as Y range, select “Spend” column as X range
   4. Select labels, select new worksheet (label “Impressions vs Duration SR”), select residuals
   5. The simple linear regression will open into the new worksheet.
   6. Repeat steps a,b,c and select “Duration” column as X range
   7. Select labels, select new worksheet (label “Impressions vs Duration SR”), select residuals
   8. The simple linear regression will open into the new worksheet.
5. Data visualizations
   1. Select insert, select scatter chart type
   2. Select data and select “Impressions” column as Y range, select “Spend” column as X range
   3. Select ‘add chart element’ and add axis labels (X: Advertising Expenditures, Y: Impressions), add trendline-linear, select trendline, select display equation and R^2 value on graph, select chart title (Impressions vs Advertising Expenditures)
   4. Repeat steps a,b,c but for Duration (similar to step 4)
      1. Axis labels: (X: Advertising Duration, Y: Impressions)
      2. Chart title: (Impressions vs Advertising Duration)
6. Multiple linear regression
   1. Select data analysis
   2. Select regression
   3. Select “Impressions” column as Y range, select both “Spend” column and “Duration” column as X range
   4. Select labels, select new worksheet (label “Multiple Regression”), select residuals
   5. The linear regression will open into the new worksheet.
   6. Repeat steps a,b,c and select “Duration” column as X range
   7. Select labels, select new worksheet (label “Impressions vs Duration SR”), select residuals
   8. The multiple linear regression will open into the new worksheet.