1. In your own words, explain three principles of effective data communication from the lecture material.
    - Show the data
    - Avoiding distorting what the data has to say
    - Encourage the eye to compare different pieces of data

2. In your own words, summarize the following concepts as they relate to visual perception:
    - Order:
        - No agreed standard by which we follow. Each person will read in a different order and pace and come to an understanding about what it means.
    - Hierarchy:
        - All well designed data visualizations make deliberate color choices to draw the audience's attention to what the author intends. You want to draw their attention to the focus of the visualization, to guide their understanding and not distract from it.
    - Relationships:
        - Data visualizations must be focused, what's presented is crucial to the clarity and impact of the chart. Therefore if you present something there should be a relationship between what's being presented.
    - Convention:
        - Components arranged in the right order and the visualization itself should also be correct. Standard composition of data to be followed, embraced and conformed to have a well understanding visualized data. It's clear understood and the common norm.

    Answer the following:

    How will an understanding of these concepts help you create better data visualizations?

    It'll help highlight the important components and create a simple, accurate narrative. It helps clearly present ideas and conform to

convention. Also that it's not confusing for the intended audience and they trust the data itself.

3. Review Section 5 of the Data Storytelling and Data Visualization udemy course.

   Given the scenarios below, write which graph would be best to use for the data and what makes it an effective choice:

   - Comparison between values
     - Bar chart: It's very easy to see the difference between values.
   - Comparison to the whole
     - Stacked column: You want to make sure no segment is too small to be seen and that there also aren't many segments.
   - Change over time
     - Time Series/Line Graph: I feel that the line graph is very effective for showing change over time, just make sure there aren't too many lines or it can look like spaghetti.
   - Ranking data
     - Bar Chart: By using a horizontal bar chart you can display your data in order of ranking very easily.
   - Correlation
     - Scatter Plot: If you want to show the relationship between two continuous variables this is the chart for you!
   - Geographical charts
     - Not recommended when communicating with data, they are not effective at communicating data accurately.
   - Measuring a target
     - Simple gauge: a simple and elegant way to communicate how far a single measure is to a target. It looks simple but contains a ton of information!
   - Showing Outliers
     - Table: really good if you have to communicate several varying pieces of data about a particular series.

Answer the following:

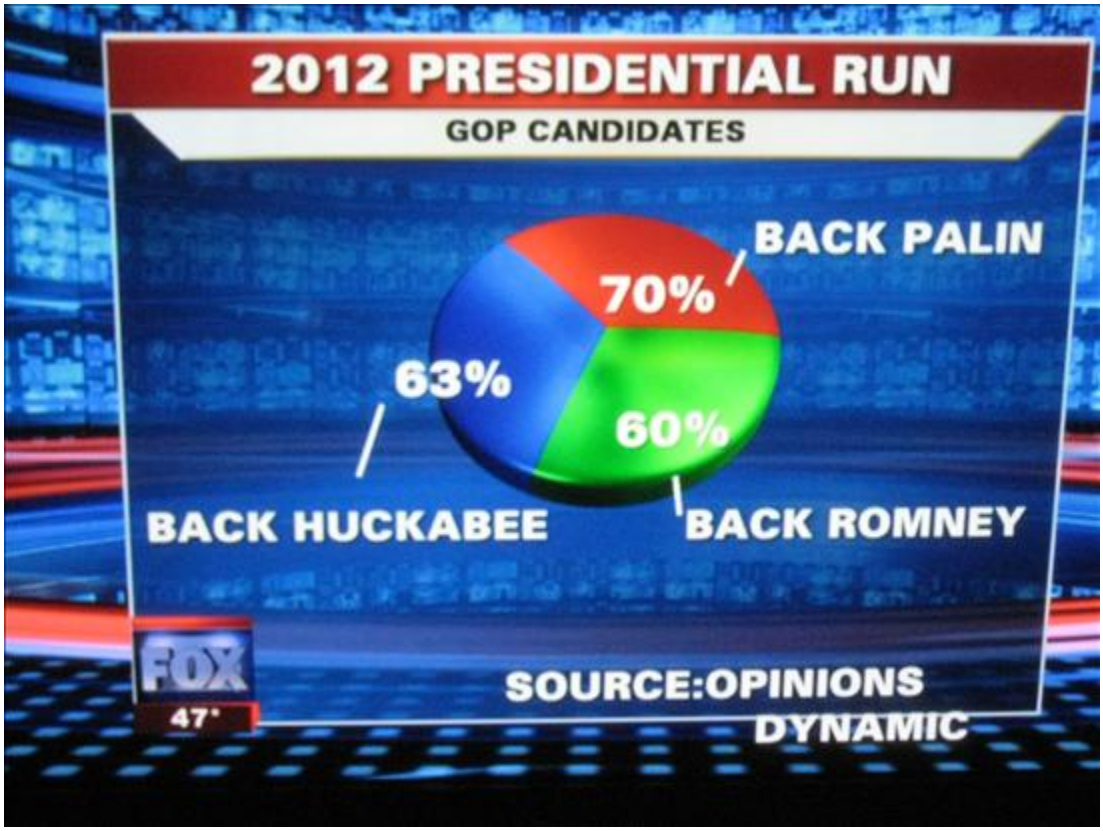
How will an understanding of these concepts help you create better data visualizations? It will help ensure that you're using the right chart for visualization of your data for clear and easy understanding of the story.

4. Consider the following quote:

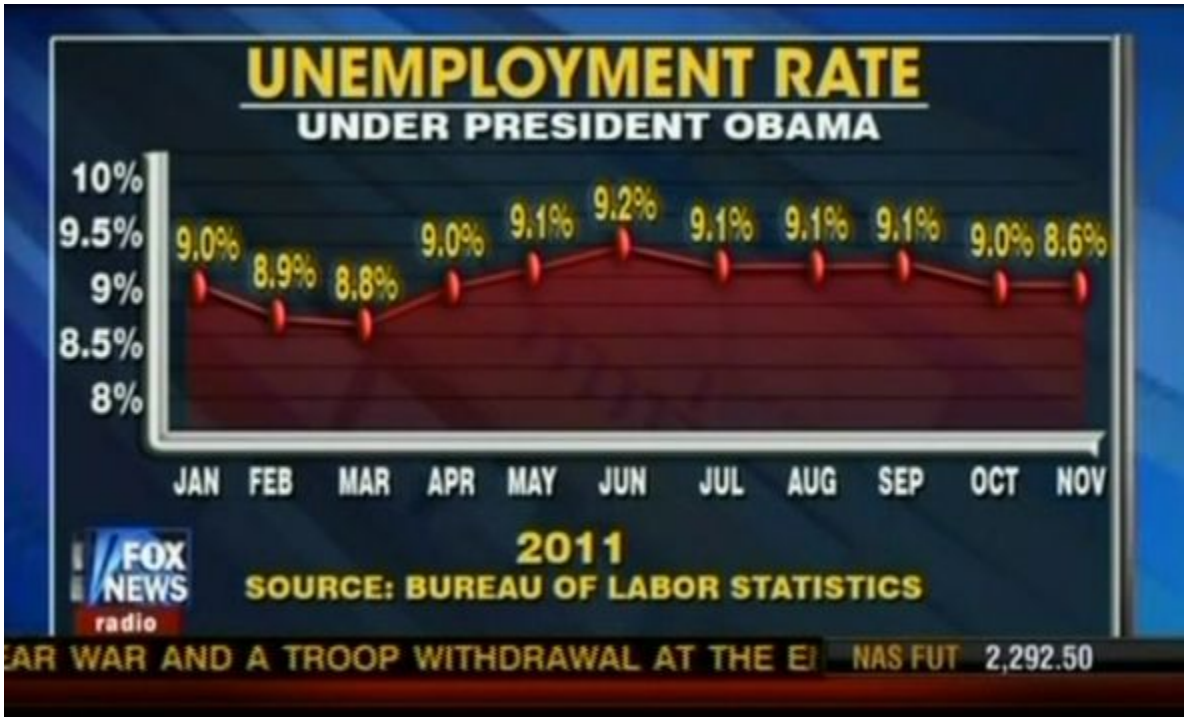
"It is easy to lie with statistics. It is hard to tell the truth without it." - Andrejs Dunkels

What do you think is meant by this statement?

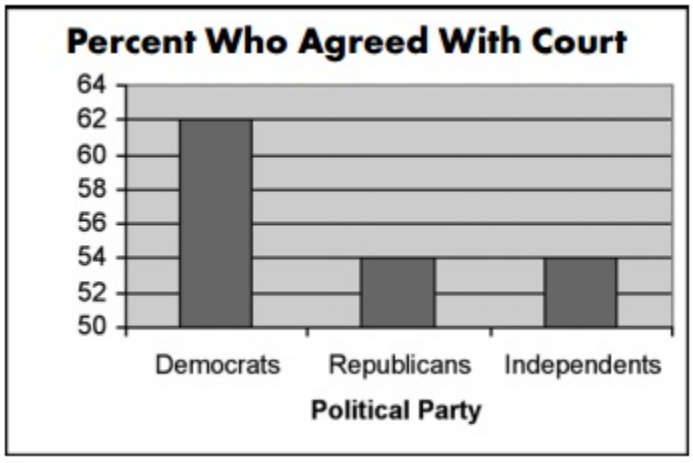
It's easy for people to manipulate data to fit their narrative but it's hard to prove a point without visualizations and data.



This one is crazy cause a pie chart is supposed to only add up to a 100! Throw the chart away and come up with a different way to visualize this like a bar chart!



They chose to not include December on this list and somehow 9.0 & 8.6 are at the same spot on the chart. To fix it we'd need to change the baseline.



This one should have a baseline that started at 0, because of that it looks like over half the democrats agreed over republicans and independents when in reality it was 8%.

5.

In your own words, answer the following questions:

- What is “visualization clutter?”
    - Too many elements that distract viewers from what needs to be communicated.
- What are the main components of a graph?
    - Title
    - Legend
    - Source
    - Data labels
    - Axis
- What are three techniques you learned to make data visualizations more clear?
    - Grouping similar objects
    - Having a question and purpose
    - Proximity
- How can the use of color affect the way your visualizations are understood?
    - The right amount is okay but too many colors or similar colors can confuse or mislead readers.

Part 2

1. How salary is impacted by education level, industry experience and gender.
2. Outline:
    a. How salary is affected by education level
    b. How salary is affected by industry experience
    c. How salary is affected by gender.

d. What is the most impactful element to salary?

Findings

e. This was based on an exploration of salary data for managers. There's an even number of men and women and it's spread across four different industries.
f. There was a high correlation between having a higher salary and the years of industry experience. You could say the same for education level.
g. The data showed that an equal number of men and women completed the survey but despite having the same education level and industry experience they were paid lower salaries.