**UNIT 5**

**Part 1**

1. Three principles of effective data communication
    - Clean – only contains relevant information and is not distracting
    - Clear – Obvious intended message – the titles and captions explain what the graph is showing
    - Balance between form and function – the visual design element reinforce the story

2. Definitions as they relate to visual perception
    - Order – how the viewer looks at the visualization – everyone is different
    - Hierarchy – guide the order by design choices using colors – what do you want the viewer to notice first? – does it help tell the story?
    - Clarity – highlight the part of the story that is most important – keep it simple
    - Relationships – how the data displayed correlates
    - Convention – how things are usually viewed, expected

    How understanding the concepts helps create better data visualization:

    - If you keep visual perception in mind, your story will be clearer, understandable, and seem more trustworthy. You can/should create:
        - Similarity
        - Continuation
        - Closure
        - Proximity
        - Figure/Ground
        - Symmetry & Order

3. Which graphs are best to use for:

    - Comparison between values – bar chart
    - Comparison to the whole – bar chart with stacked columns, tree map(grid map, area map)
    - Change over time – line chart, area chart, bar or column chart, slope chart
    - Ranking data – bar chart, slope chart
    - Correlation – scatter plot, bubble chart
    - Geographical charts - map
    - Measuring a target – simple gauge
    - Showing Outliers – table with color highlights

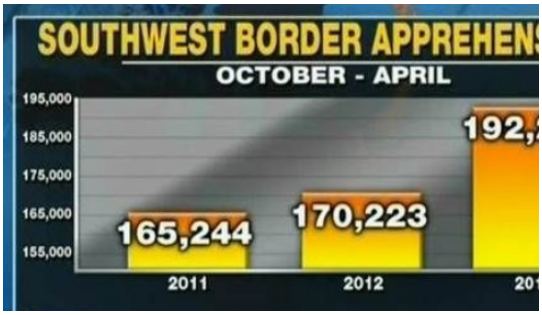
    How understanding the concepts helps create better data visualization:

    - Selecting the correct graph to display the data will help the viewer better understand the information and keep you from being misleading

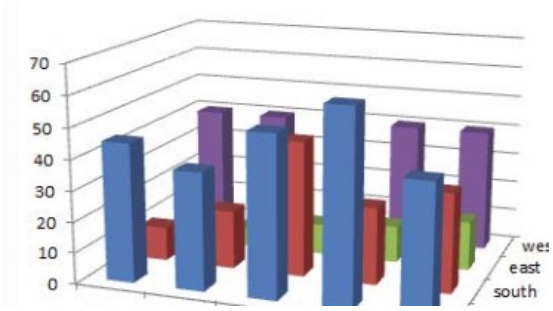
4. "It is easy to lie with statistics. It is hard to tell the truth without it." - Andrejs Dunkels
    - This means that numbers can be displayed incorrectly to show what you want, not necessarily what is accurate. It misrepresents the data and tells the wrong story

Three examples of misleading graphs, why they are misleading and how to fix them:

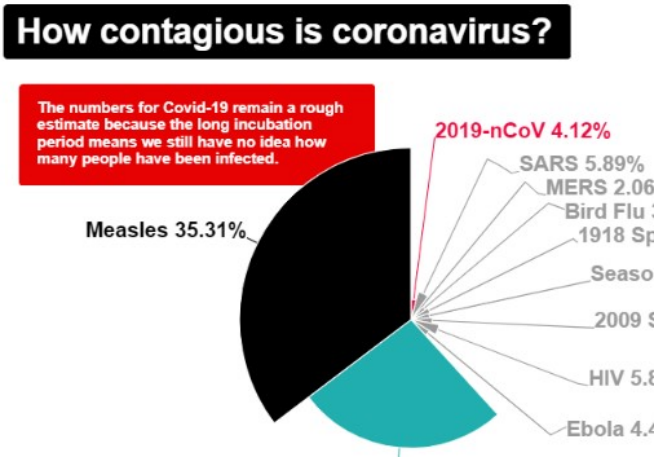
- Bar graphs not starting at 0




    - Shows a much bigger gap between data than it actually is
    - Fix: start the graph at 0
- 3d bar graph




    - Clutters the visualization and adds unneeded information, makes it hard to get an accurate reading
    - Fix: use a 2d graph
- Pie chart




    - Hard to get an accurate reading, takes a lot of space and can only use a few data points. Can get cluttered easily.
    - Fix: don't use one…try a bar chart instead

5. What is "visualization clutter?"
    - Anything that distracts from the key message of a visualization

    What are the main components of a graph?

    - Axis labels, key, data labels, grid lines, legend

    What are three techniques you learned to make data visualizations more clear?

    - If you have data labels, you may not need axis labels
    - Your axis labels may eliminate the need for a key
    - If you need grid lines, keep them muted so they stay as part of the background

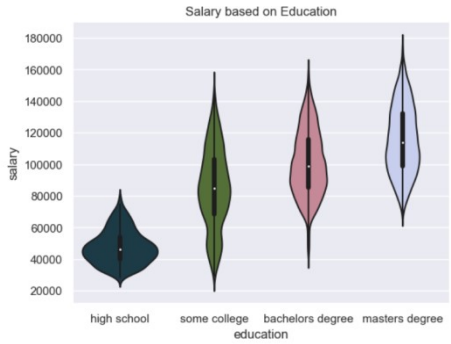
    How can the use of color affect the way your visualizations are understood?

    - It adds a third dimension to the chart such as good and bad. It highlights important features and can create order. Can be used to add hierarchy, communicate convention and indicate relationships. Also, helps you know what to compare.

**Part 2**

1. What's your point:
    - Salary is effected by education level, industry, and age
2. Outline questions, main points, and necessary visualizations
    - Which industry has the highest salary?
    - Does education affect salary in the long run?
    - Does salary increase with age?
3. 3 visualizations:
    - Salary by industry


    - Salary by education




- Salary vs age


- What needs to be fixed:
    i. change to same colors
    ii. put salary on y-axis for all graphs
    iii. barplot for salary vs age?

4. Slide presentation
    - https://docs.google.com/presentation/d/1oK2ssQSm2HVRkPGRaJMnMBr0SOGTQ_kTolDoJ9yth7k/edit?usp=sharing
5. Brief report
    - Salary Brief Report PDF

**Part 3**

- I studied Tableau and Microsoft BI. I decided to use Tableau for this project

**Part 4**

- Interactive Dashboard
    - https://public.tableau.com/views/Unit5_16679447528830/Top10?:language=en-US&:display_count=n&:origin=viz_share_link

**Part 5**

- Video of salary slideshow
    - https://youtu.be/gyTXMf0Rag0
- Video of supermarket dashboard
    - https://youtu.be/TLLWkls9xOw