Data Visualization

ACE 592 SAE

Back to Data Visualization

We've gone over data visualization in the course quite a bit already.

Now that we have done a bit of exploring and are more comfortable with Python, we can dive it to some general principles of making graphs.

What are the goals of data visualization?

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    a. Requires you to think carefully about what sort of story you are telling.
    b. What do you want to tell your audience in one sentence?

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   b. What do you want to tell your audience in one sentence?

2. Succinctly summarize data.
   a. Tables sometimes do not intuitively communicate results.
   b. Our brains are geared to sometimes take in information visually.

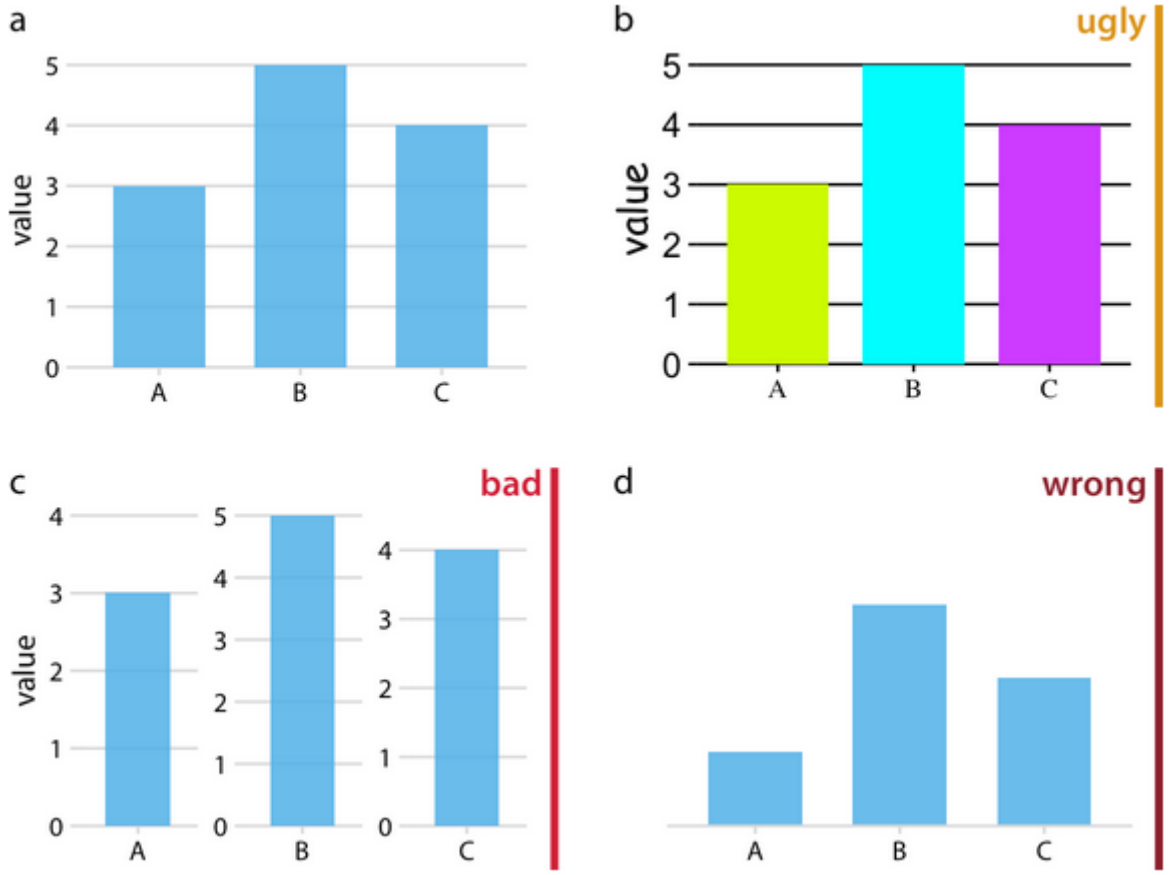
The Cardinal Sins of Data Visualization

What are some?

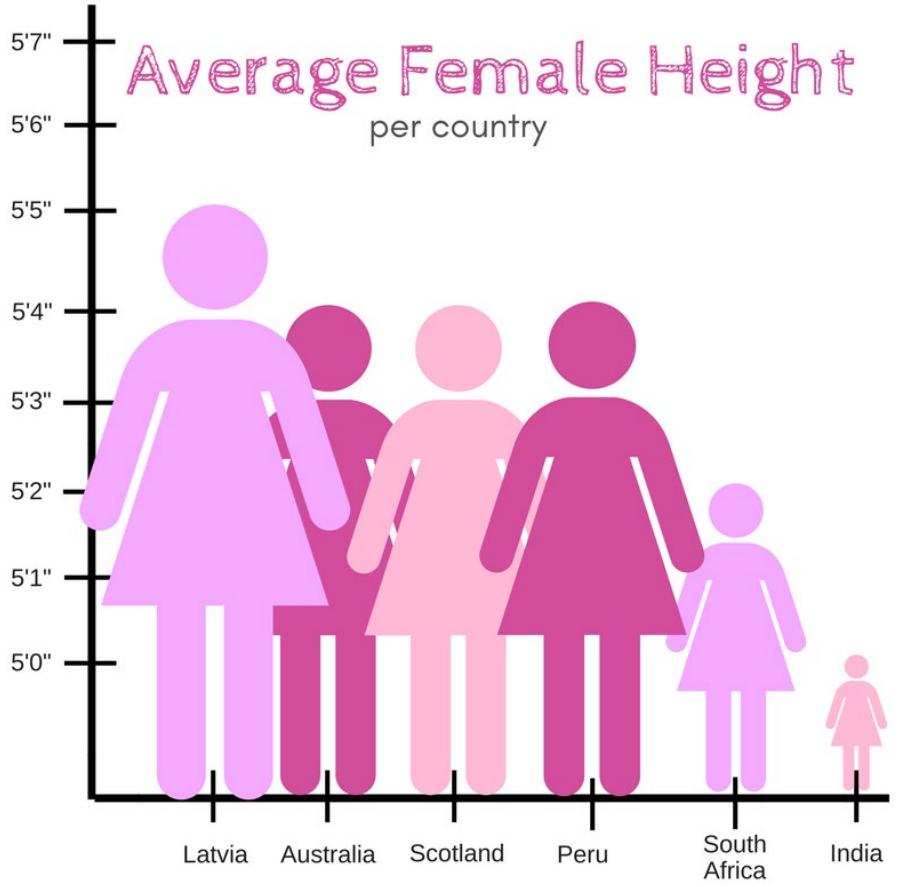
The Cardinal Sins of Data Visualization

From the book *Fundamentals of Data Visualization:*

- ***Ugly**: bad colors or aesthetically displeasing elements.*
- ***Bad:** not incorrect, but actively misleading.*
- ***Wrong:** contains incorrect information.*



Categorizing Bad Graphs:
Good, bad, ugly, or wrong?



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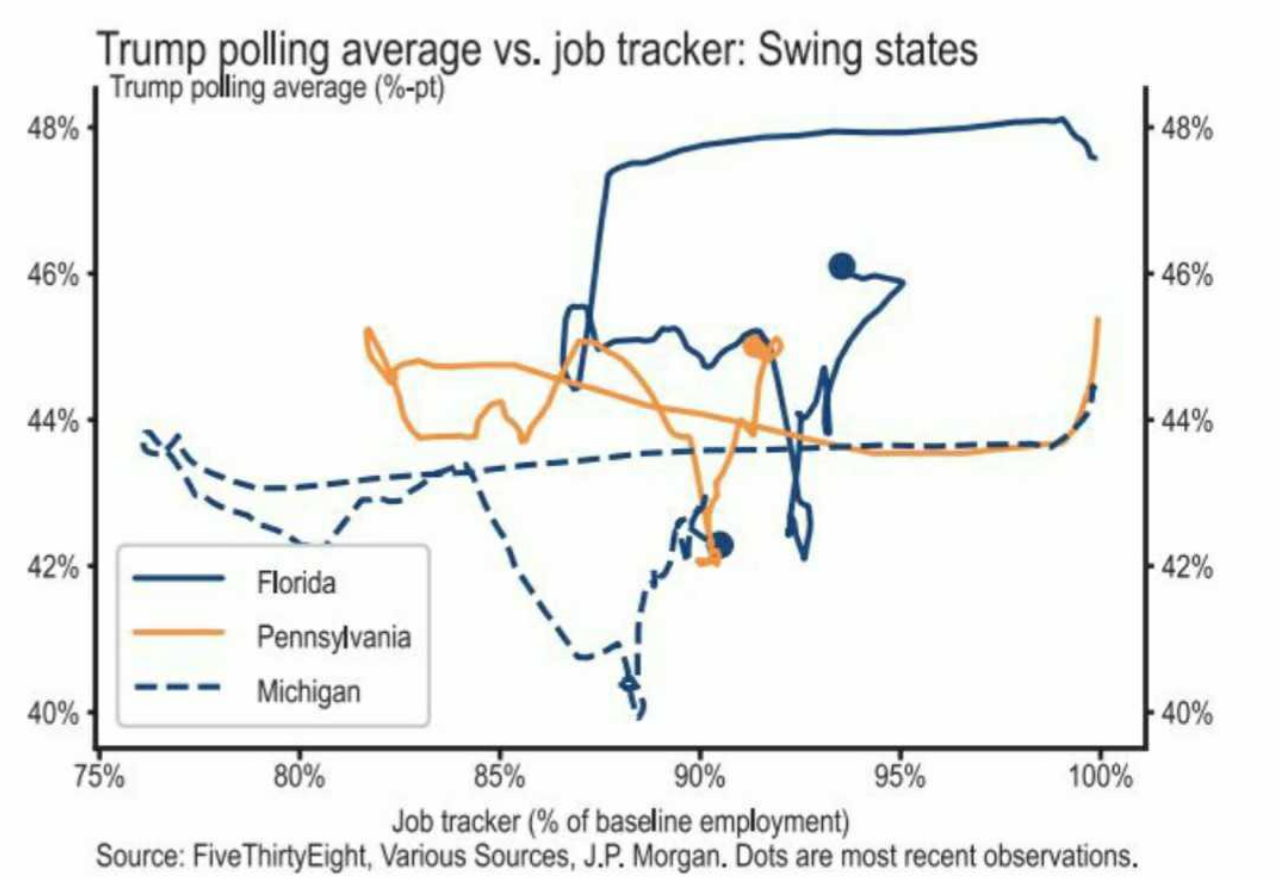

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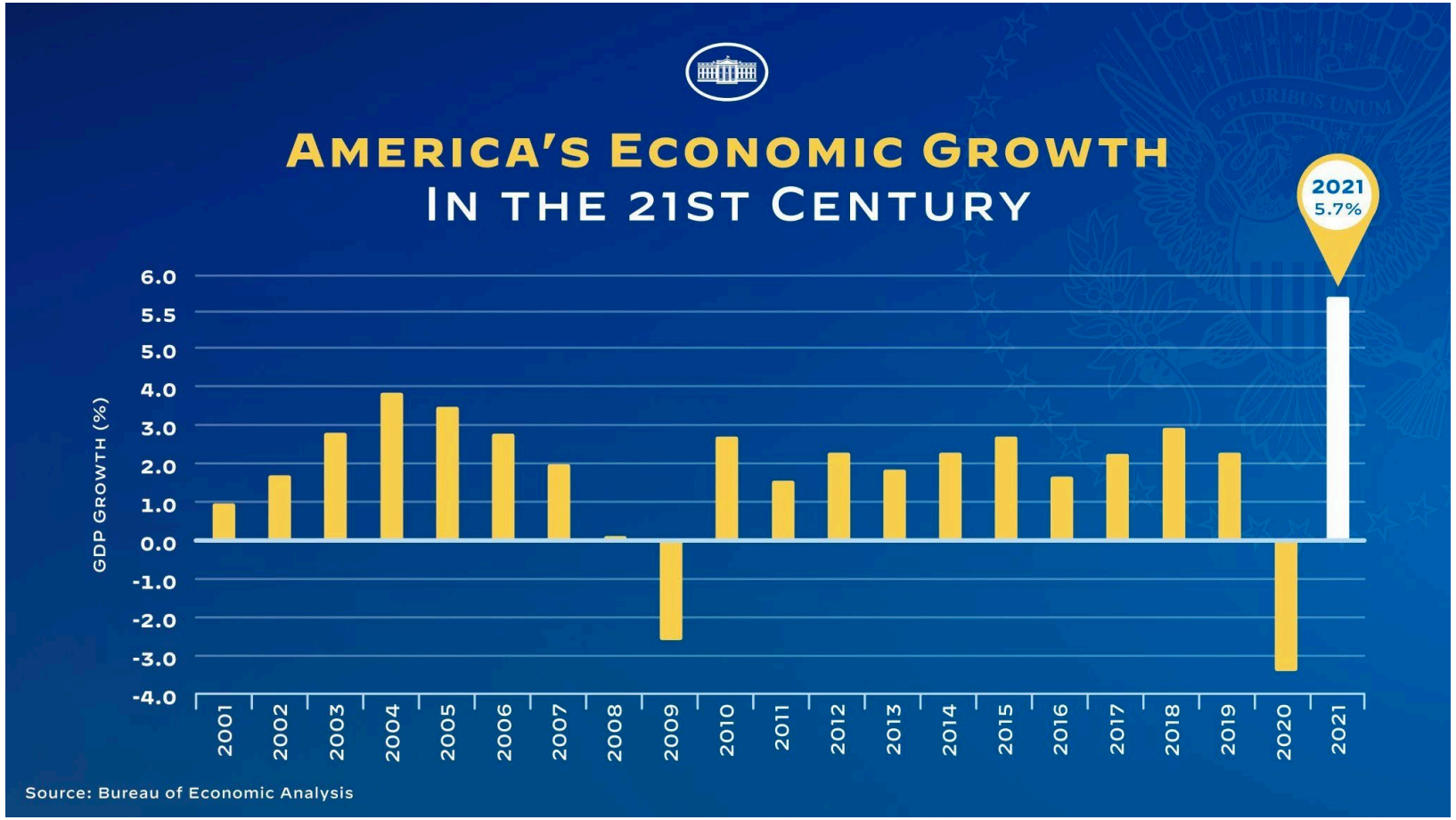

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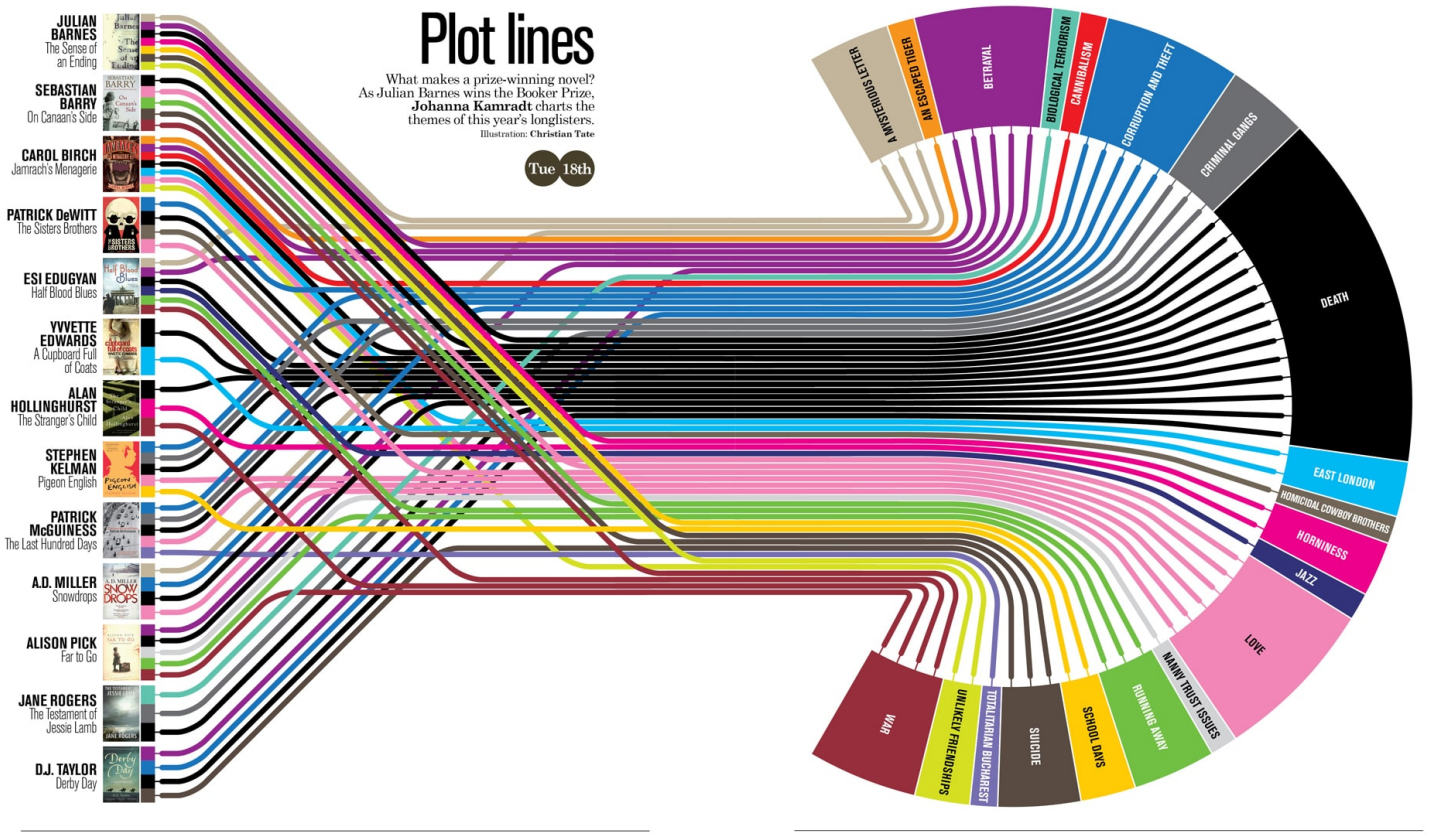

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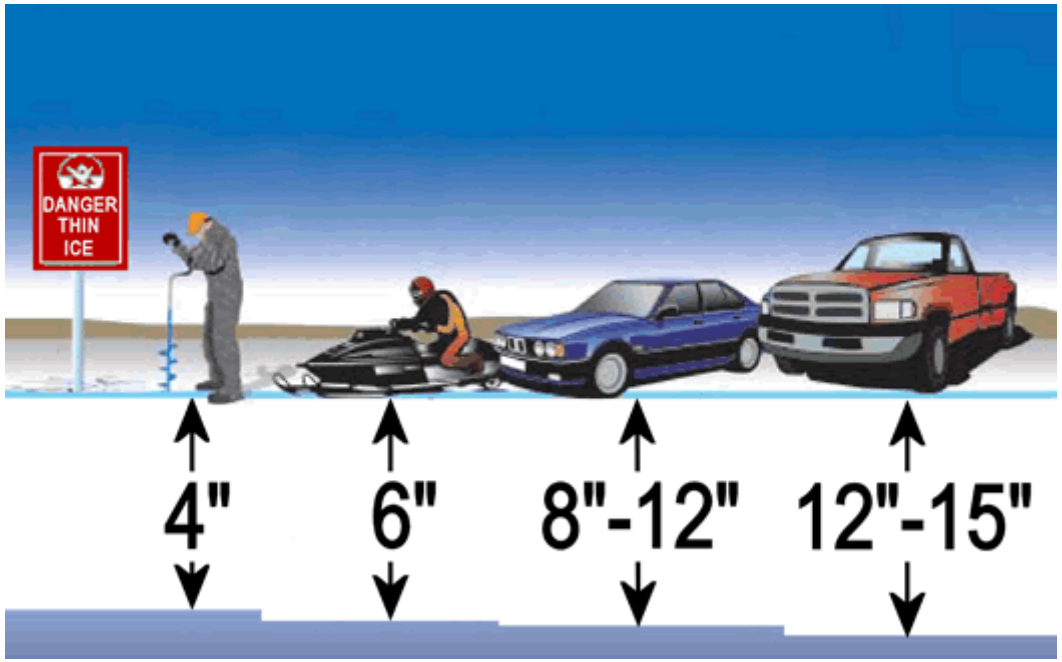

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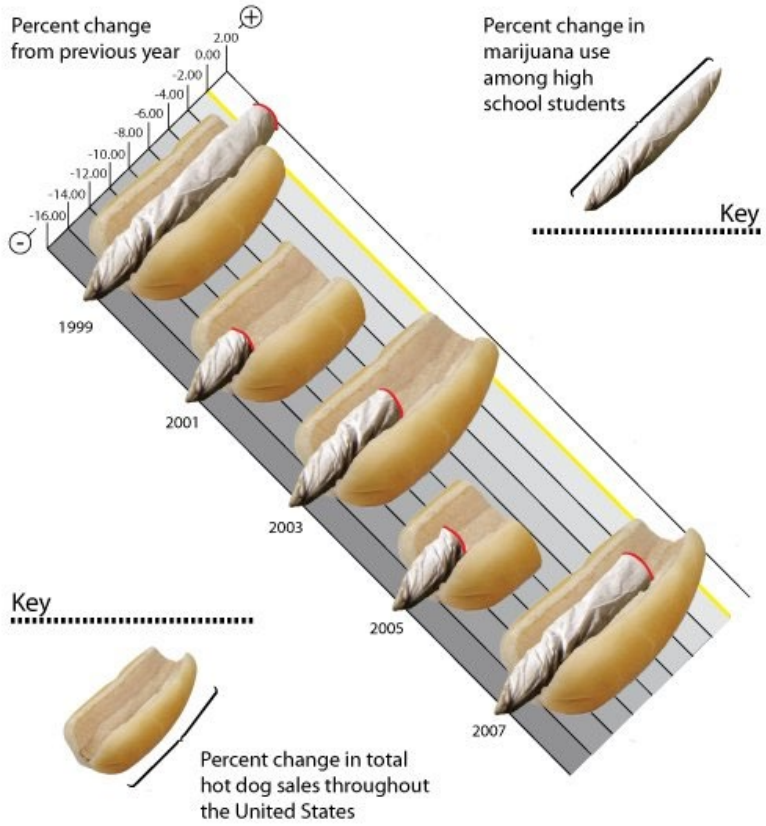

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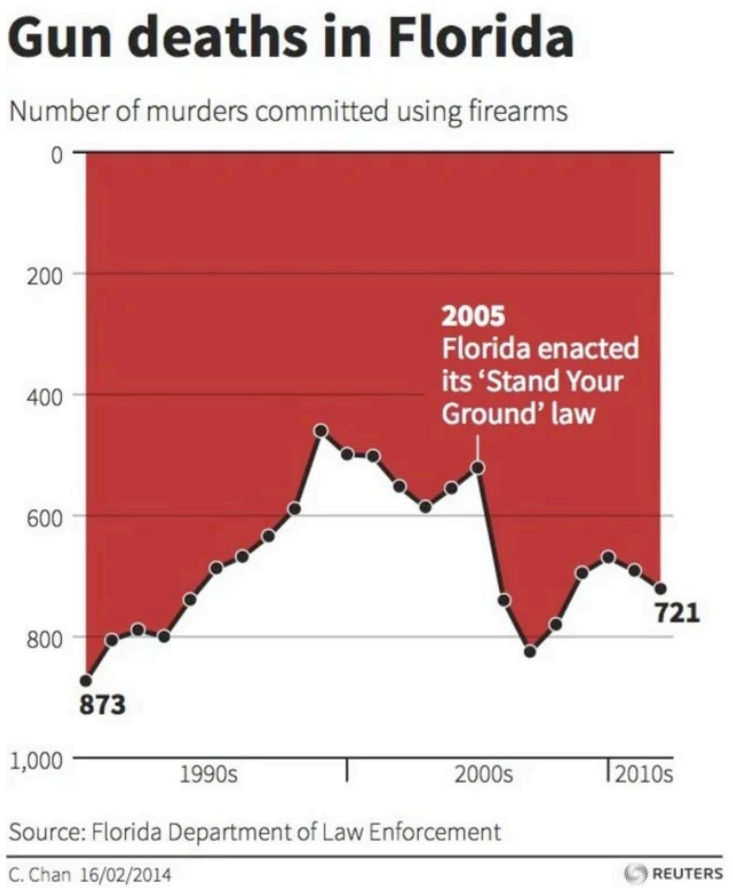
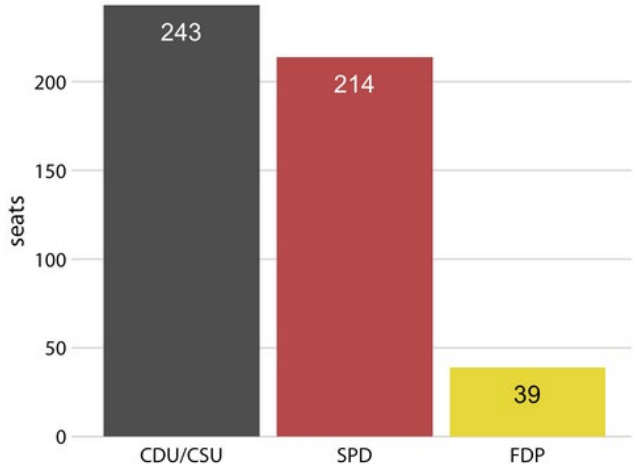
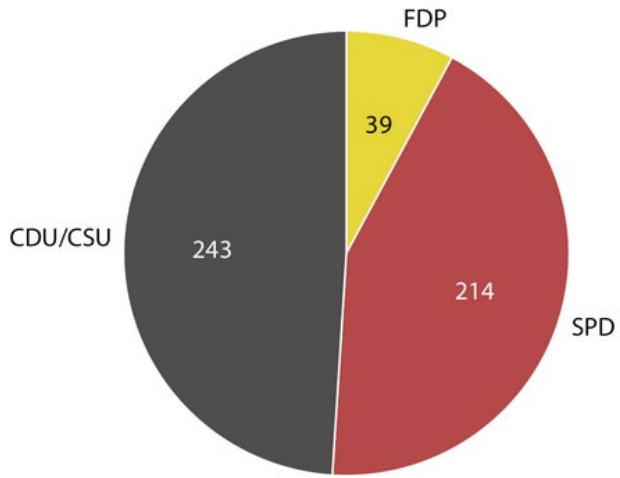


Principles of Good Visualization

1. ***Use graph types that are appropriate for the type of data.***

Example: visualizing proportions should usually be done with a pie chart instead of a bar chart.

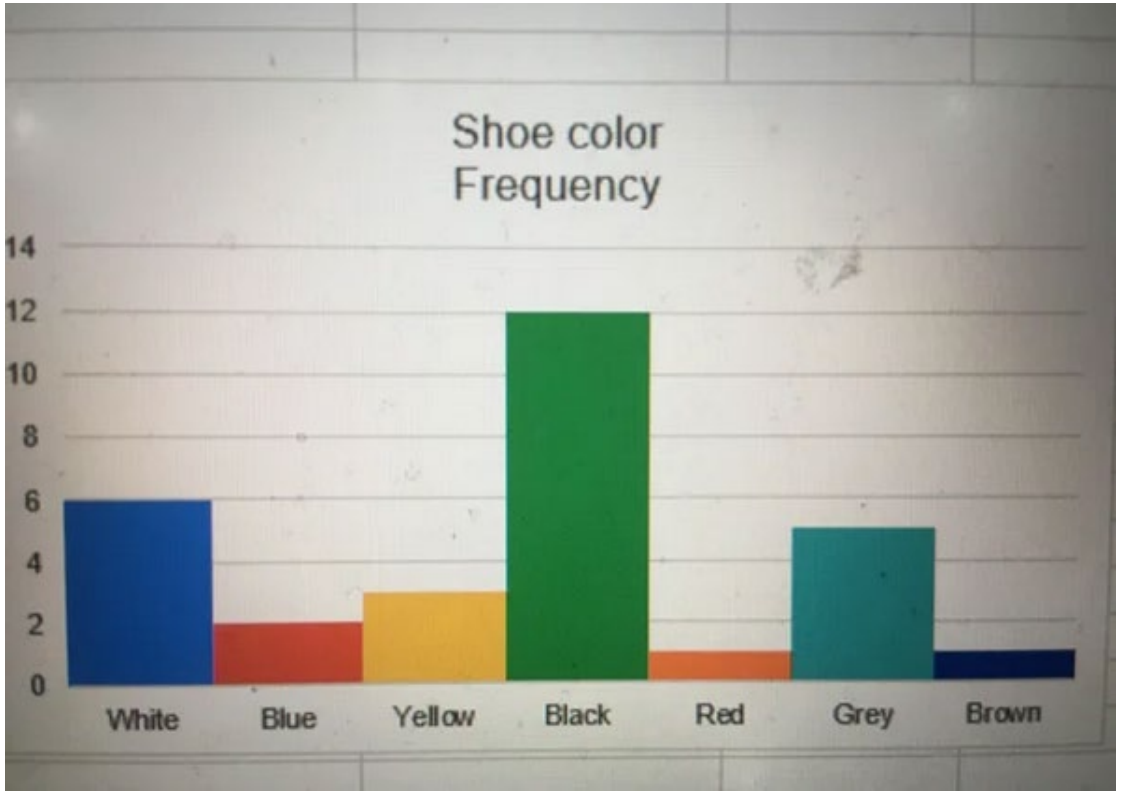




Principles of Good Visualization

2. Colors should be intuitive and meaningful.

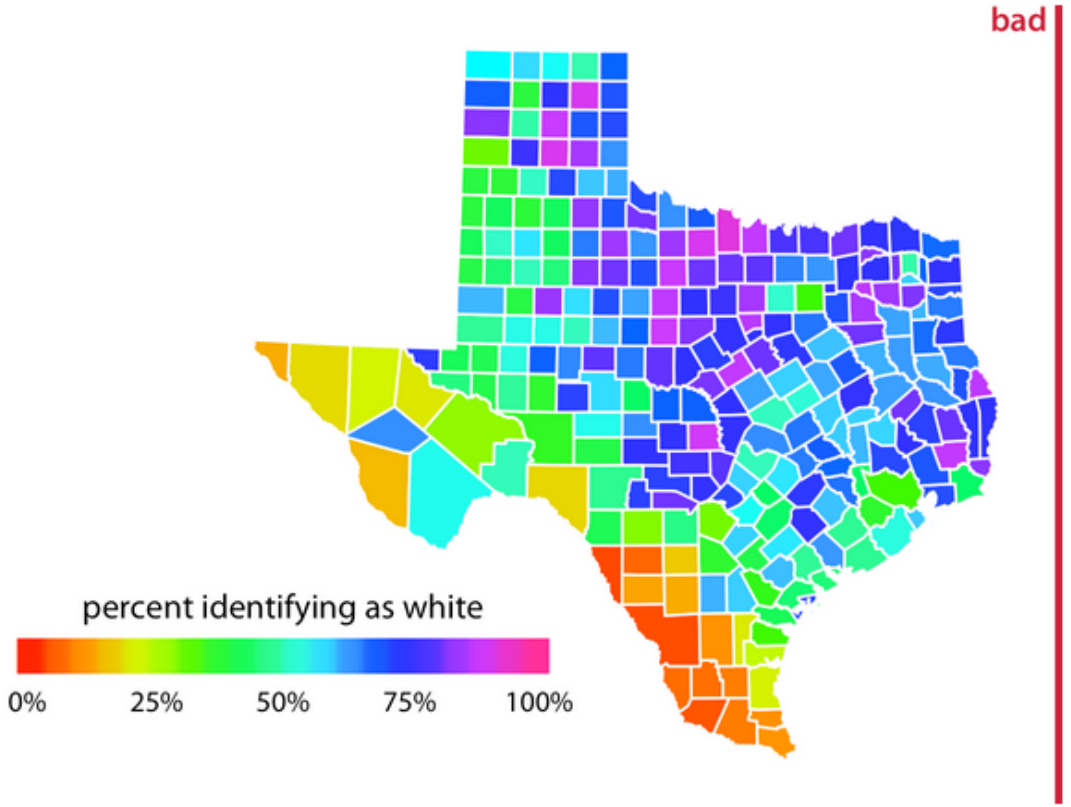
- Does darker mean higher values? Lower values?
- Does green = good? Does red = bad?



Principles of Good Visualization

2. Colors should be intuitive and meaningful.

- Is the colormap diverging because there is a point of divergence?
- If the colormap is a spectrum can the variable be interpreted on a spectrum?



Principles of Good Visualization

2. Colors should be intuitive and meaningful.

- Can someone who is colorblind determine your values?
- Are you using appropriate color maps?

Figure 19.7: A red–green contrast becomes indistinguishable under red–green cvd (deuteranomaly or protanomaly).

Figure 19.8: A blue–green contrast becomes indistinguishable under blue–yellow cvd (tritanomaly).

Principles of Good Visualization

3. The Proportional Ink Principle: the amount of ink you use should reflect its value

- Our eyes tend to interpret graphs this way.
- Linear axes should always start from 0; log axes should start from 1.