

Data Visualizations

Read Chapter 5 (Data Visualization)
of the Textbook

Pictures worth a thousand word

Human brain is good at understanding information
conveyed through visualizations than just text and
numbers

Principle of good Data Visualizations

- Serve a reasonably one single clear purpose
- don't over-complicated your graphs
- Encourage viewer to compare different pieces of data
- Induce viewer to think of the substance of data
- Avoid distorting what the data have to say
- Show the data with easy to understand scale
- Reveal the data at several levels of detail

Data Visualizations Toolbox

Libaries

- Matplot lib
- Pandas plot
- **Seaborn**
- Plotly
- Geographic plots

Type of Plots

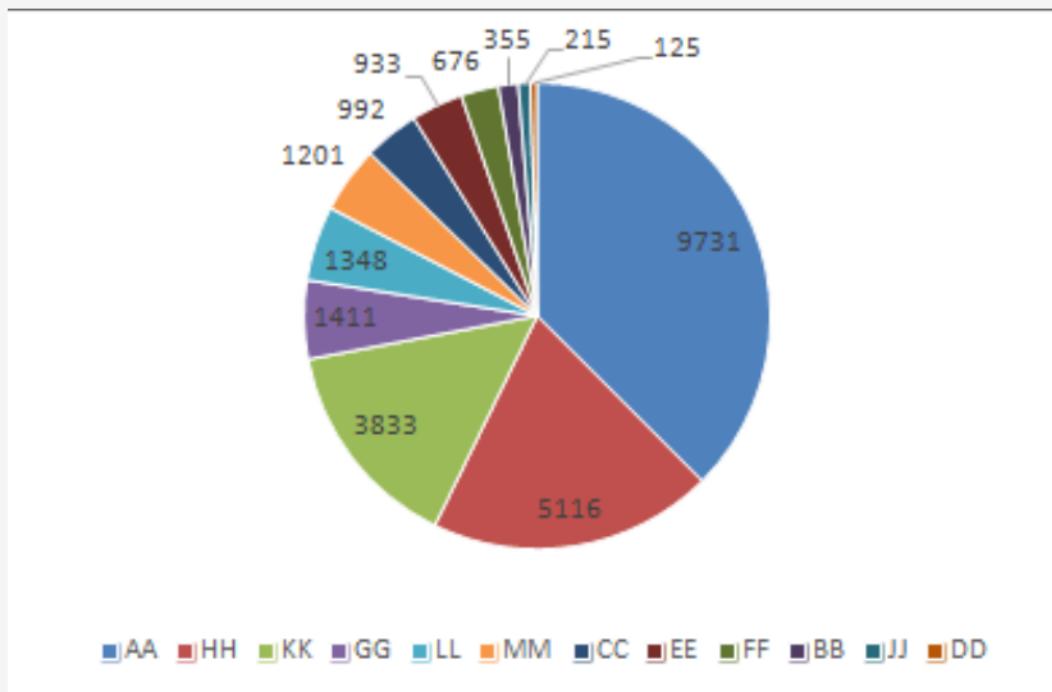
- Pie Chart / Bar Chart
- Scatter Plots
- Distribution Plots
- Box Plots
- **FacetGrid**
- Heatmap

More Advanced visualizations

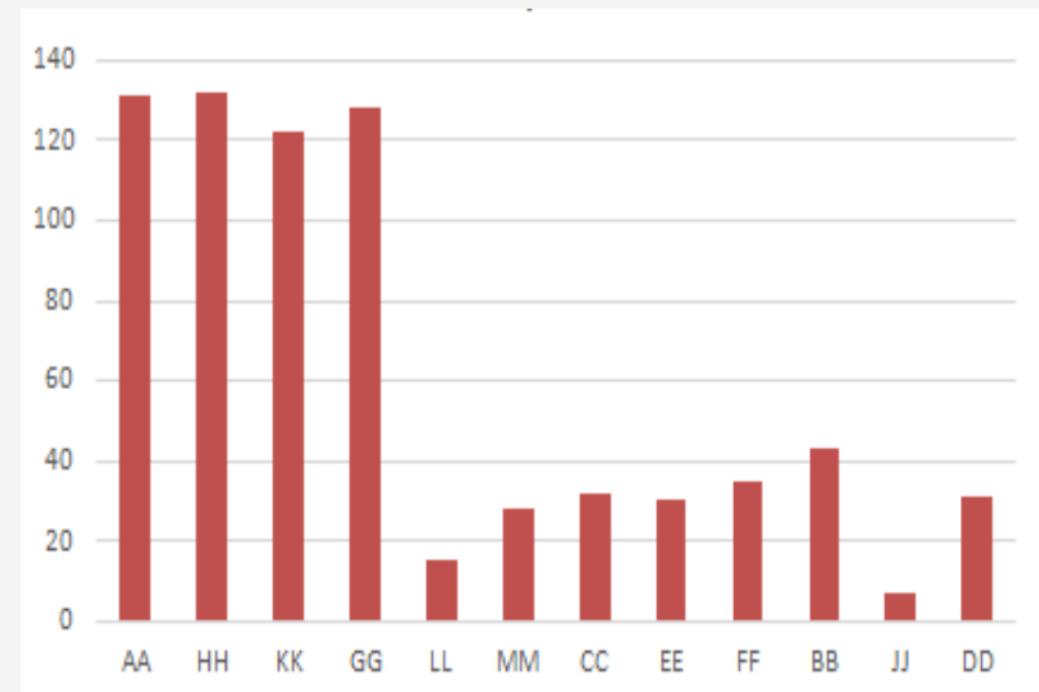
- Geographical Maps (KML)
- Interactive Plots
- Dash
- D3
- 3D plots
- **Folium**

Basic Business Data Visualization

Revenue by Products

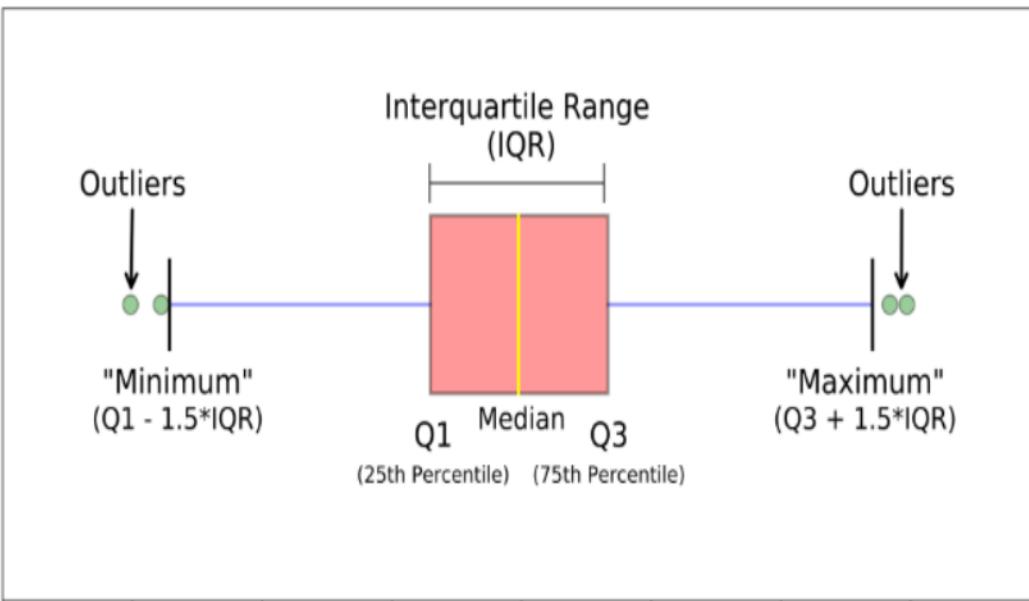


Orders by Products

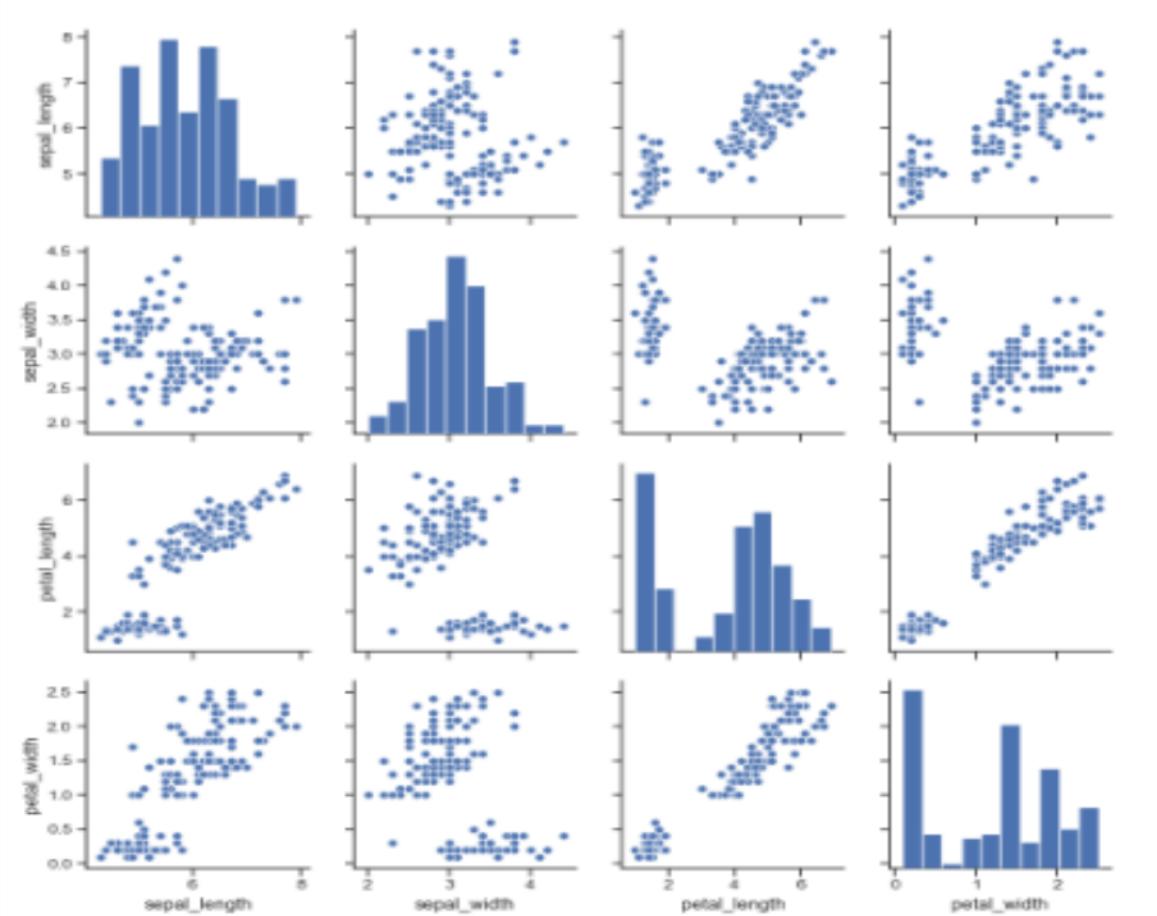


Common Plot type

Box Plot



Pairs Plot



Common Plot type

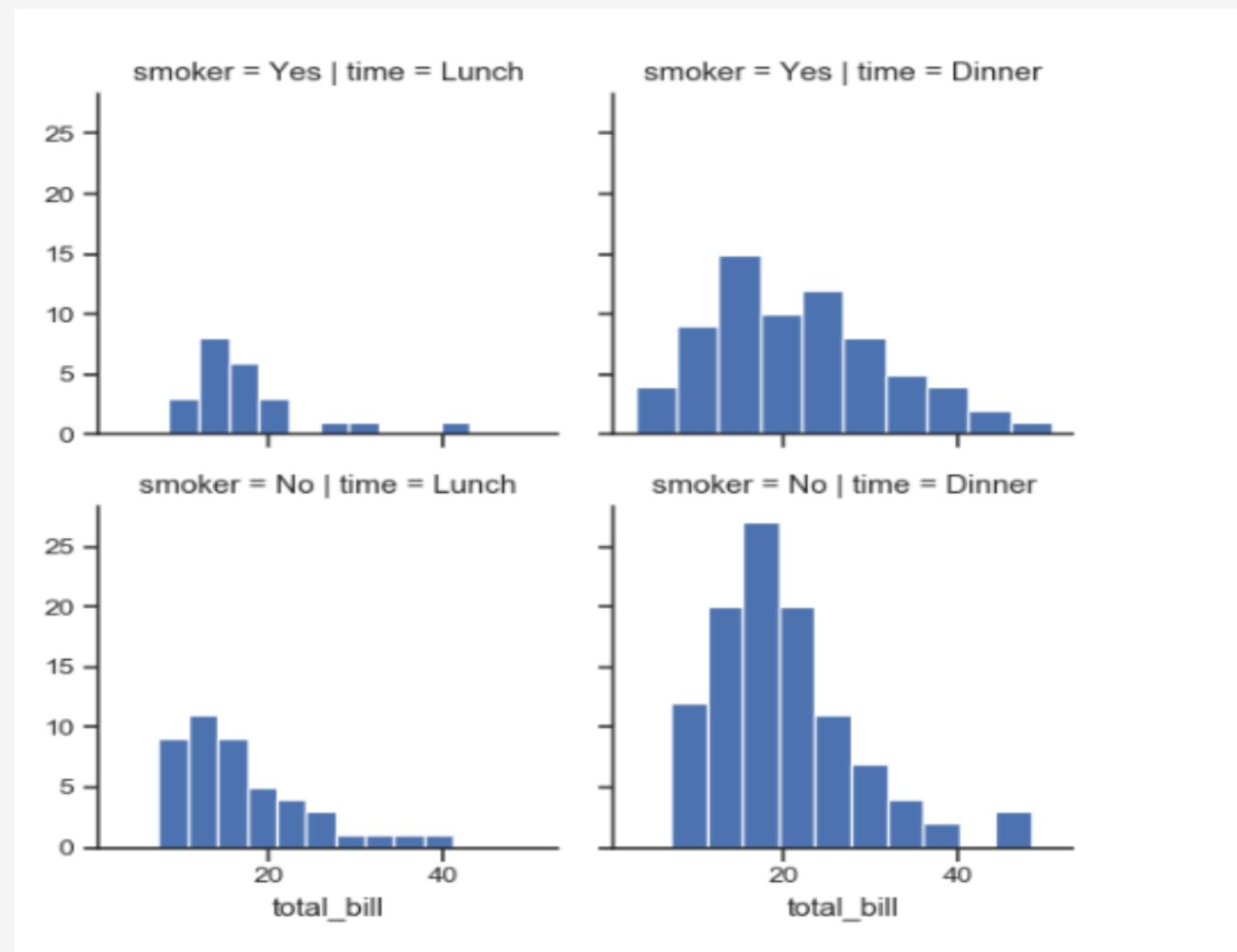
FacetGrid

Tips data set

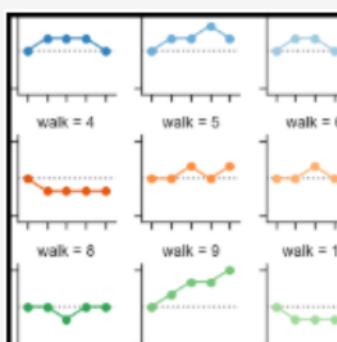
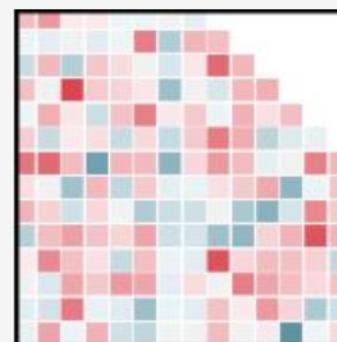
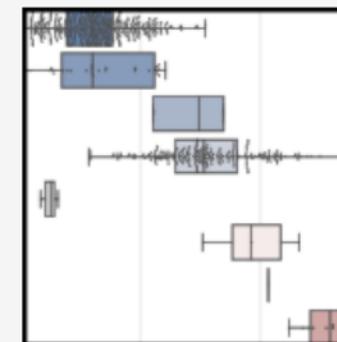
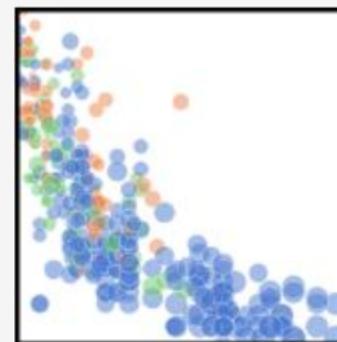
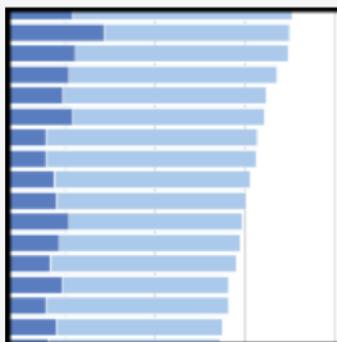
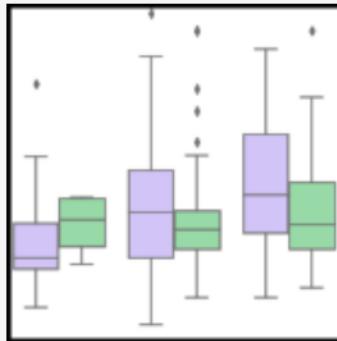
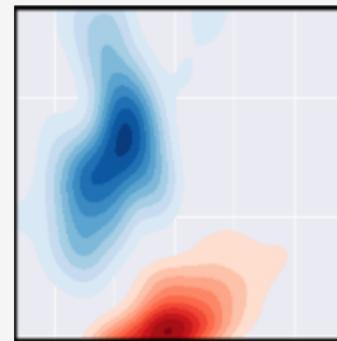
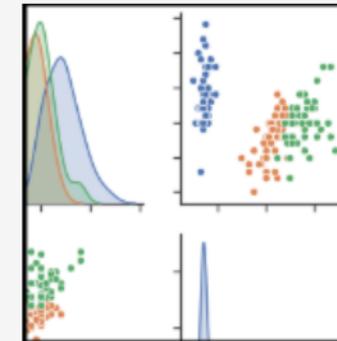
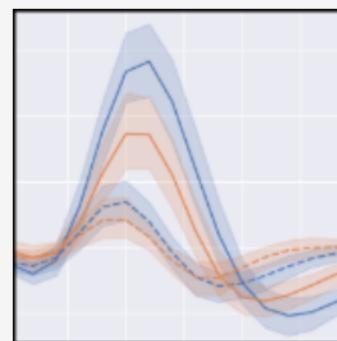
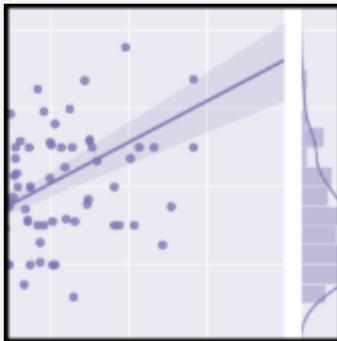
Total_bill

Smoker = Yes or No

Time = Dinner or Lunch



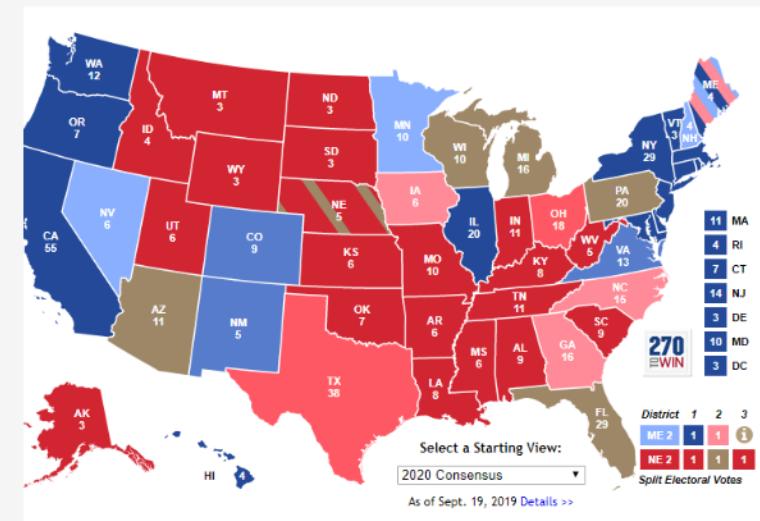
More advanced Types of Visualizations



More advanced Types of Visualizations

Geographical Data Visualizations

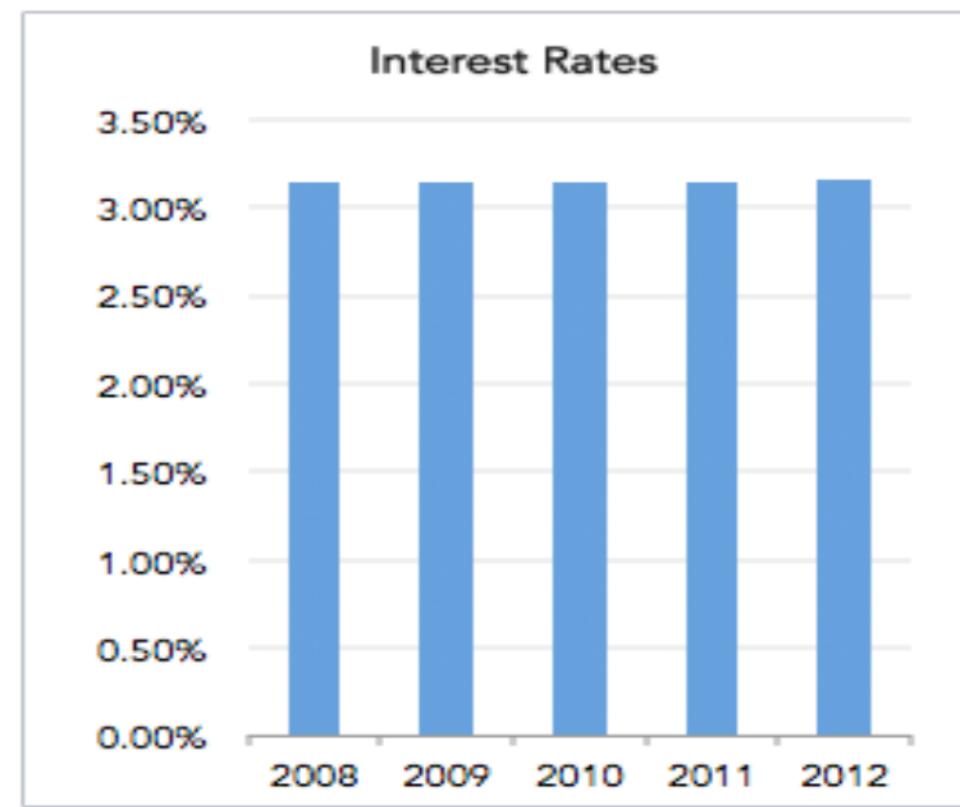
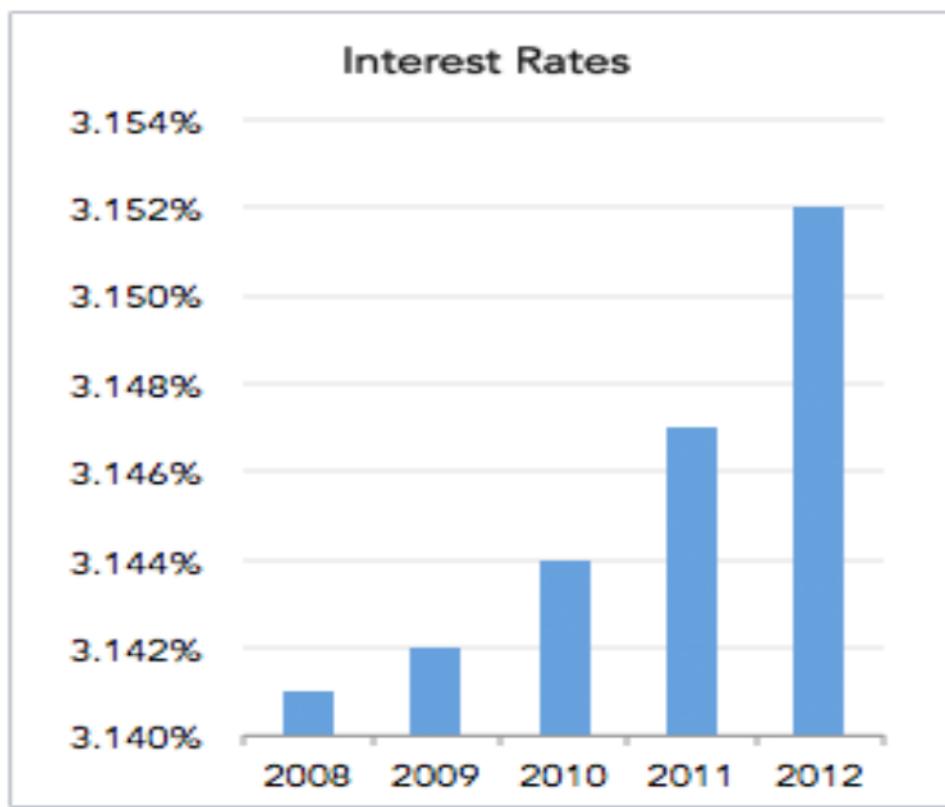
- Google Map
- Folium Python library (pip install folium)
<https://python-visualization.github.io/folium/quickstart.html>
- KML (pip install simplekml)
<https://pypi.org/project/simplekml/>
- Google Earth
<https://www.google.com/earth/versions/#earth-pro>



How to misuse or even lie Data Visualization

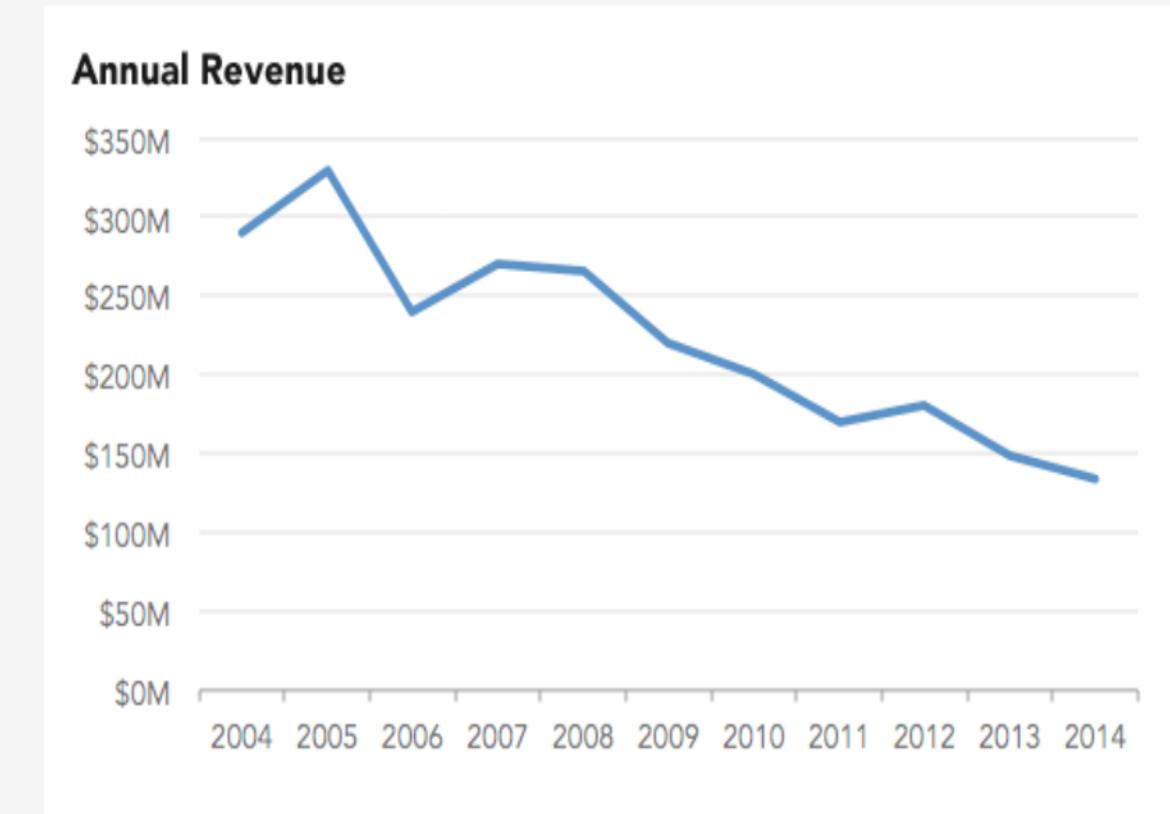
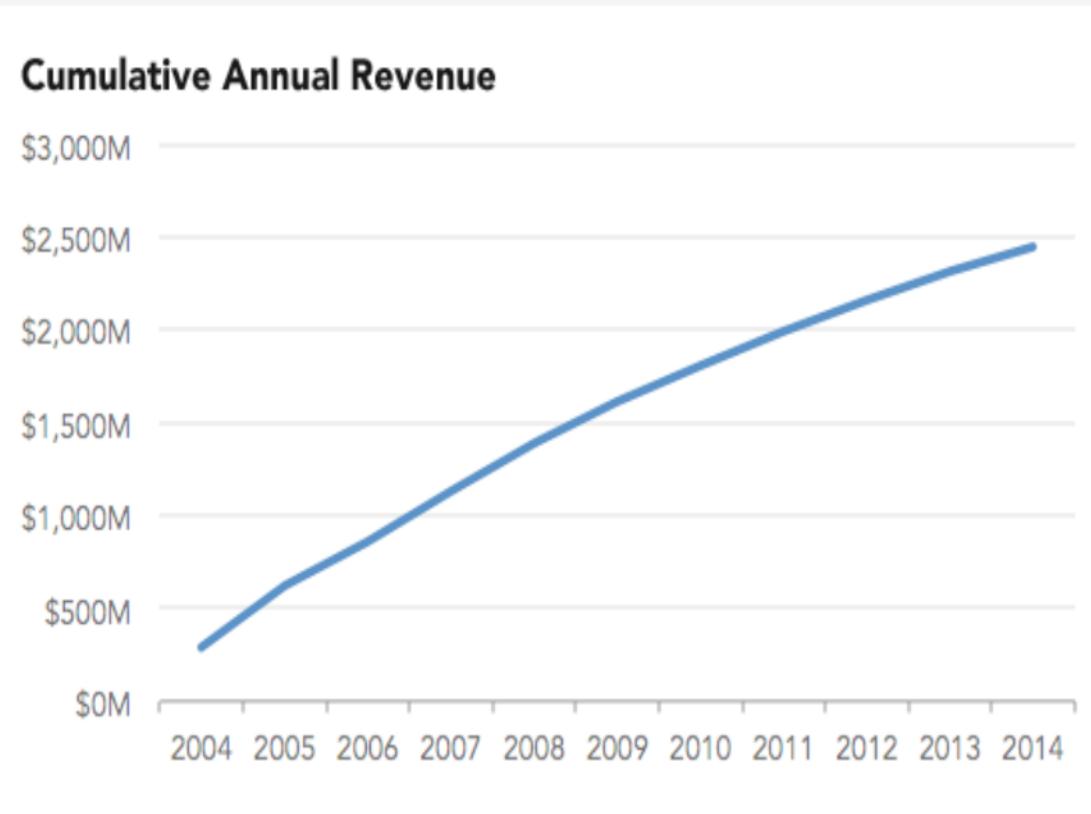
Mess around with your scale in the axis

Same Data, Different Y-Axis



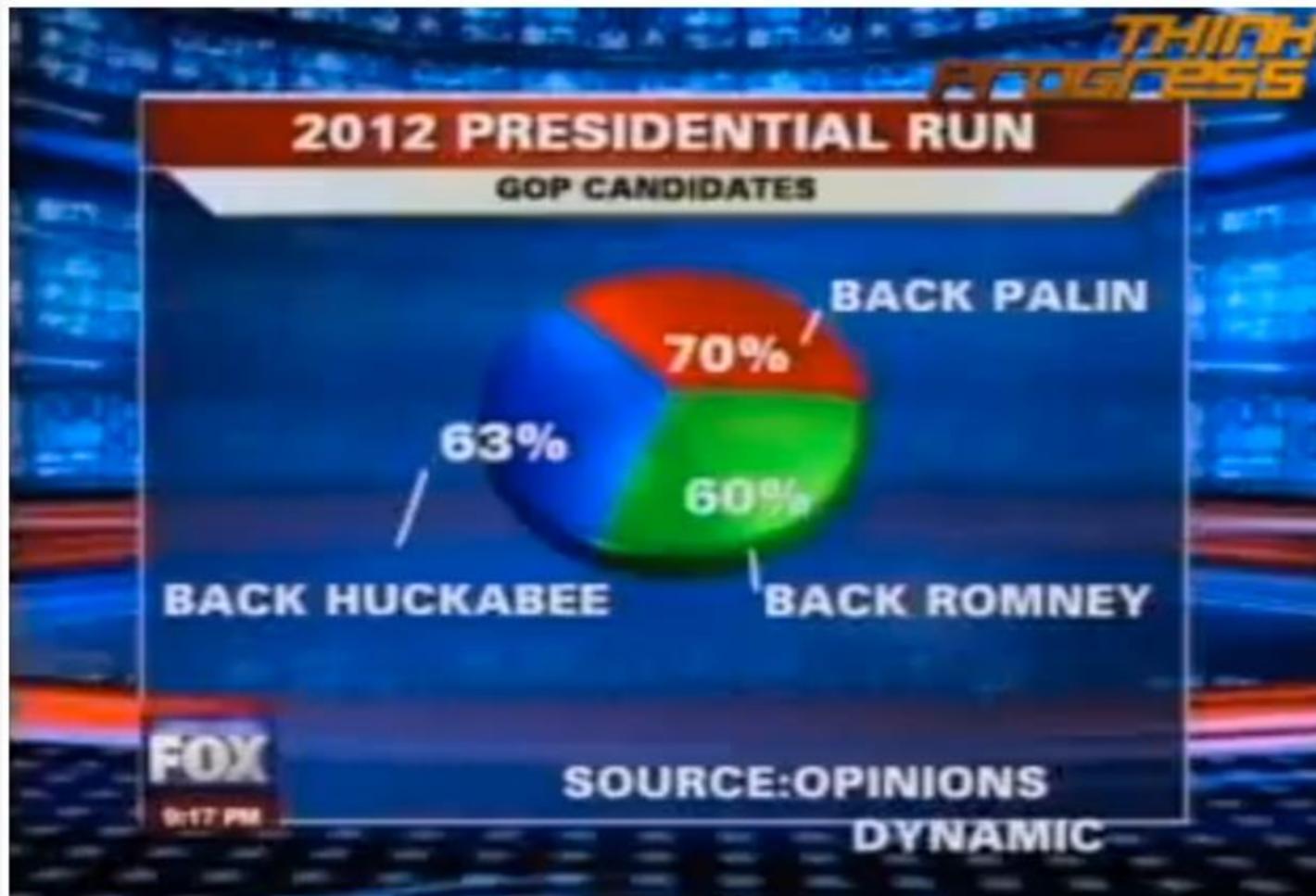
How to misuse or even lie with Data Visualization

Use Cumulative graph



How to misuse or even lie with Data Visualization

Ignore convention



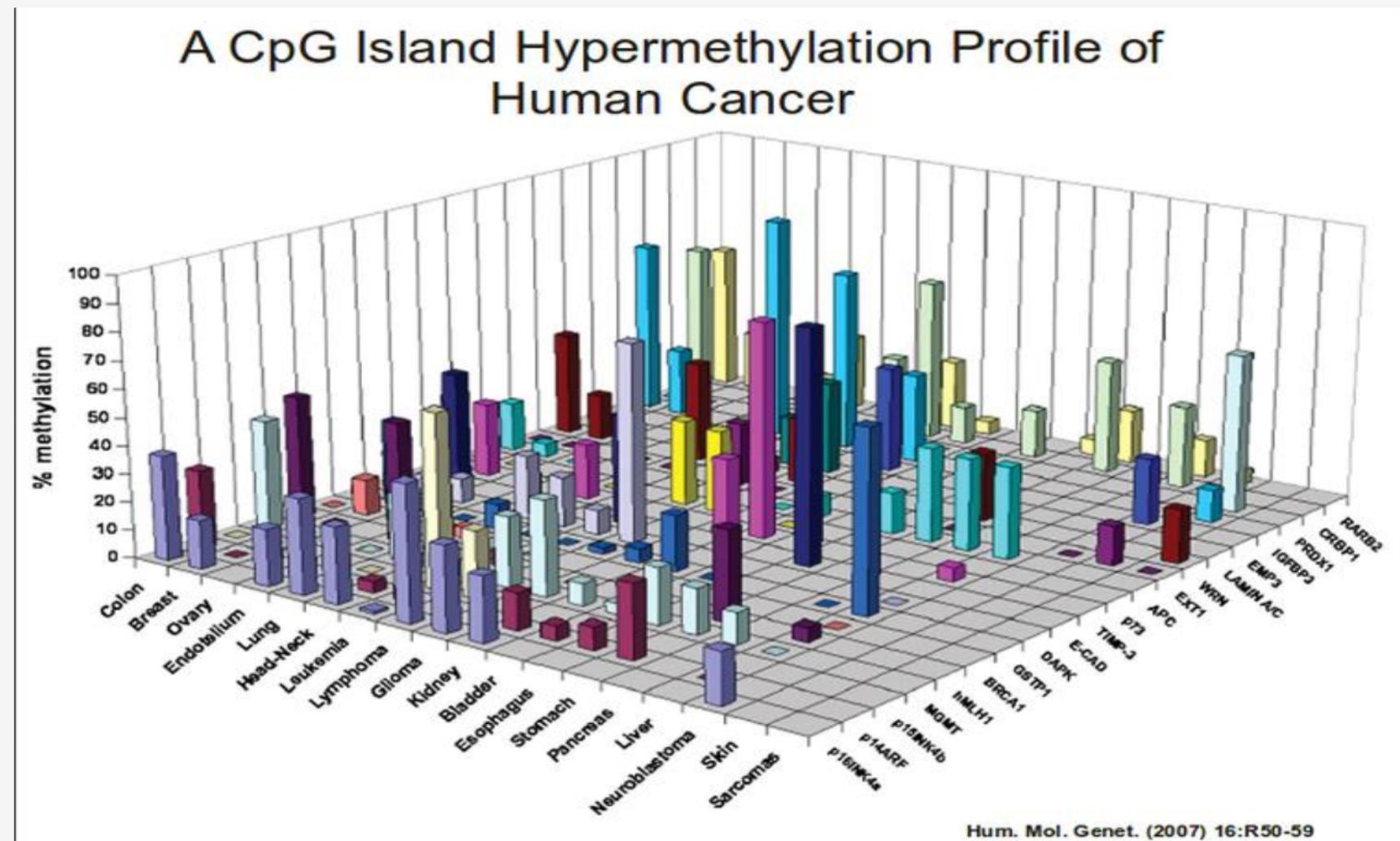
Bad way to tell a story from Data Visualization

Criteria for a bad plot:

Take more than 10 min
to understand and get
the takeaway from the
plot

Storytelling with Data

<https://www.amazon.com/Storytelling-Data-Visualization-Business-Professionals-ebook/dp/B016DHQS M2>



The other extreme

Tim Cook and other Apple leaders use this clever presentation hack to make their slides memorable — and they borrowed it from Steve Jobs

When Apple CEO Tim Cook began talking about a new release of Apple's mobile operating system (iOS 13), he said: "iOS has the highest customer satisfaction in the industry, with an incredible 97%." The slide had one number in large font — 97%. In smaller font beneath the number, a sentence read: "Customer satisfaction for iOS 12." That's it. One number and one sentence.



https://www.businessinsider.com/apples-leaders-use-this-presentation-hack-to-make-slides-memorable-2019-6?utm_content=buffer5934a&utm_medium=social&utm_source=facebook.com&utm_campaign=buffer-bi

Best showcase of how to use Data Visualization

Hans Rosling: Master of Data Visualizations

[TED talk on Public health and longevity](#)

<https://www.youtube.com/watch?v=hVimVzgtD6w>

[Income disparities](#)

<https://www.youtube.com/watch?v=DoSTNRhoceY>

<https://www.youtube.com/watch?v=AdSZJzb-aX8Ed/PBS>

Accenture talk at CWRU

<http://www.youtube.com/watch?v=qprHllzhgUk> .

Data Visualizations Toolbox

Learning by doing