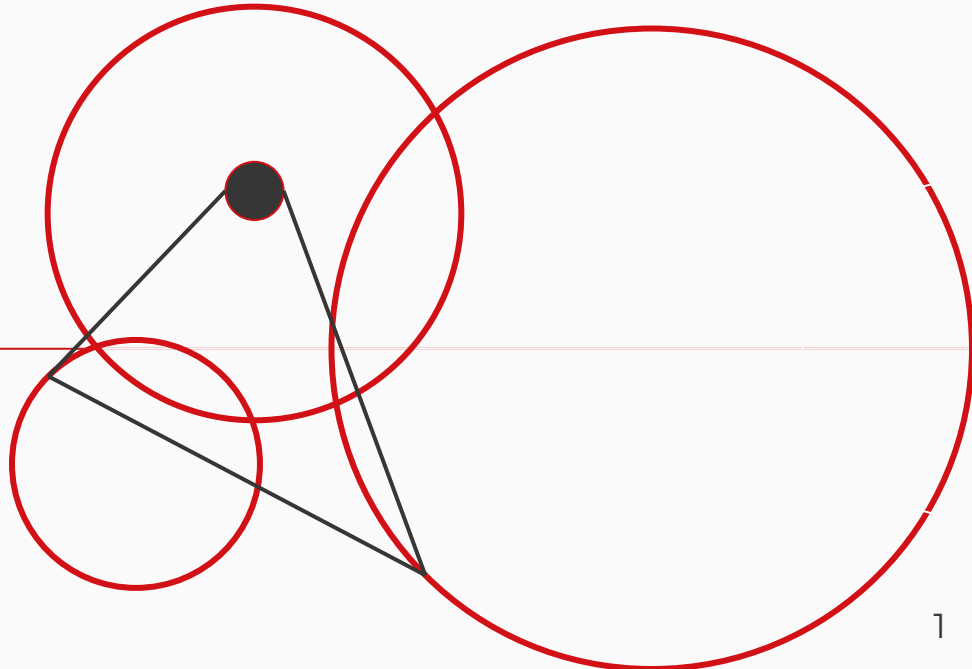
Introduction to Data Visualization

Fall 2025



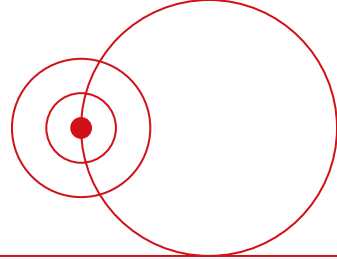
Written by Jessica Huynh-Westfall, PhD
SJSU CS 133

Agenda

CS 133 - Data visualization

- Storytelling with data
- Different data plots

What is the purpose of visualizing data?

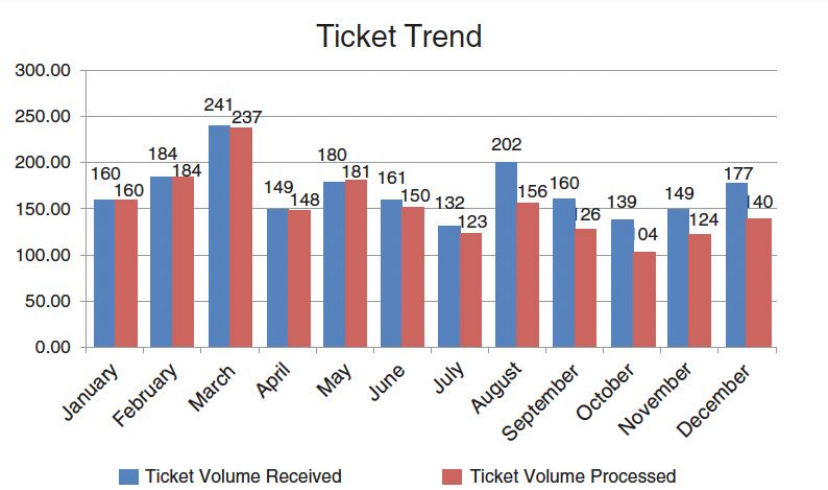


We can use visualization to communicate

- To communicate using data
  - Analysts sharing results of their statistical models
  - Business communicating profit results in a data-driven way
  - Researcher sharing scientific findings
- Communicate stories with data to make data-driven decisions
- Poorly communicated data can lead to confusion, lost of revenue, poor decision making

How would you convey this data?

Two employees quit in May. Based on the volume of tickets received versus processing …



Think (1 min), Pair (3 mins), Share (3 mins)

- Was there any affect on employees workload?
- Are there any trends in the amount of tickets received or processed?
- Could this data better be communicated?

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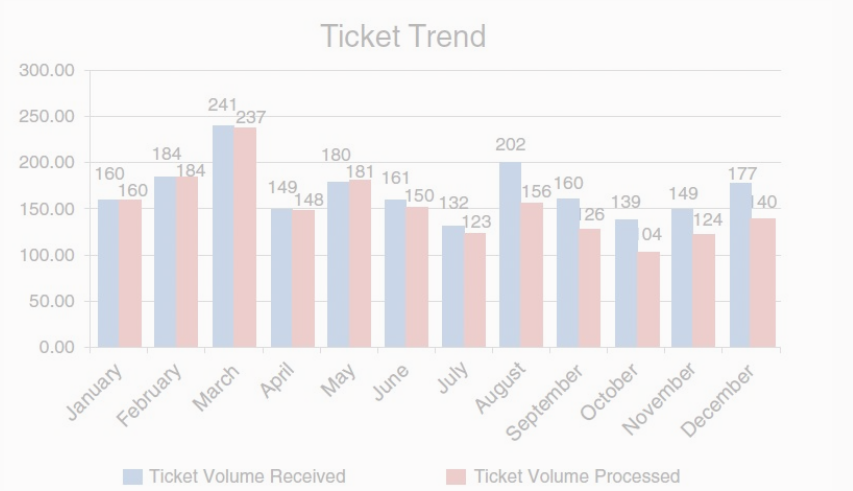
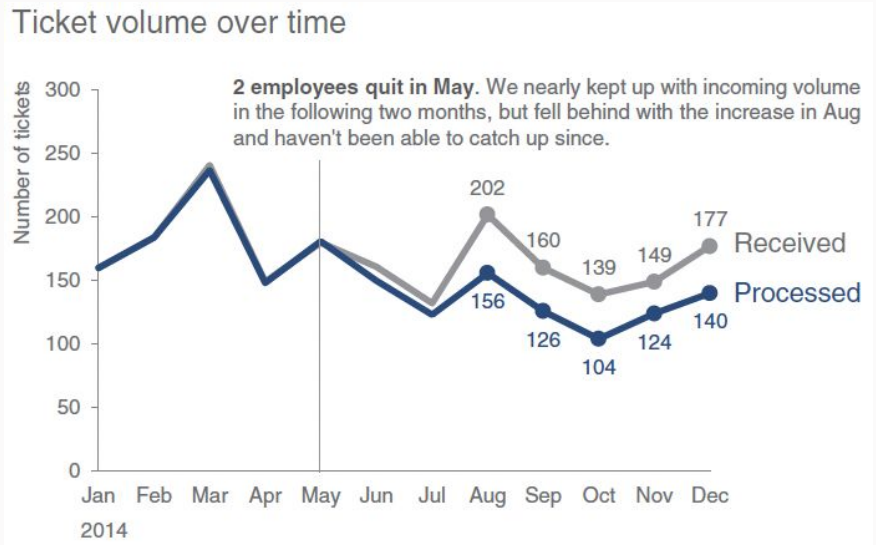
Use line graph to emphasize trend

Two employees quit in May. Based on the volume of tickets received versus processing, was there any affect on employees workload? Are there any trends in the amount of tickets received or processed?





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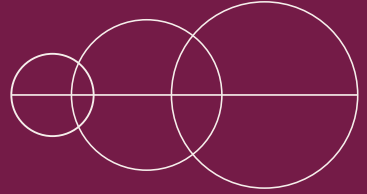
Using GitHub to store files and code

Use GitHub to manage your code and changes

- Store, change, merge and collaborate on files or code
- Use Git for version control
- Visibly tracking iterative changes
- Team can look back at previous versions of the code to track changes and reverse if necessary
- Work with unlimited collaborators on project

Key consideration to communicate visually with data



- Understand the context
- Select an appropriate visual display
- Remove unnecessary clutter
- Focus attention on the data you want to communicate with
- Tell a story with the data

The importance of context

Consider your target audience

- Who is your audience?
- What do you want your audience to know or do?
- How will the information be communicated with your audience?
- Data becomes supporting evidence to the story you want to tell

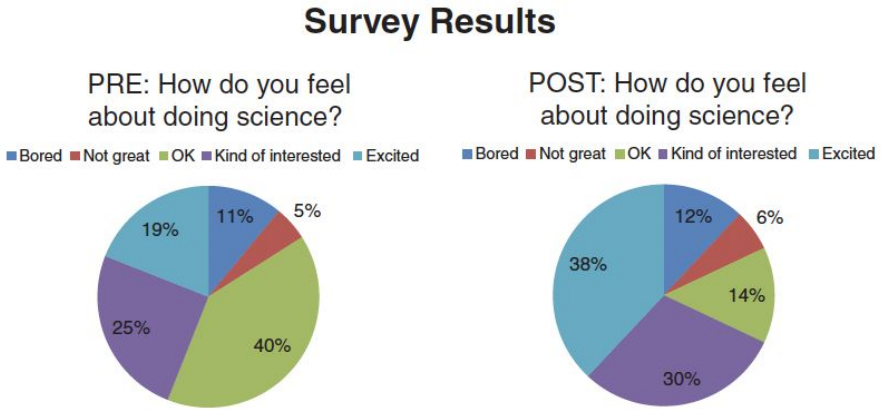
Example to illustrate concept

You are a grade school teacher and you are finishing up an experimental pilot summer program on science.

- Kids are survey at onset and end of program to understand their perception toward science
- Who is our audience?
- What is your “Call of action”?

What do these charts convey to you?

Survey asked students in a pilot program their thoughts on doing science



Think (1 min), Pair (3 mins), Share (3 mins)

Your goal is to communicate whether the pilot science program was a success and if it should be further funded.

- What is the main take-away from these plots?
- Was the program a success?
- What message do you want to communicate?
- How would you change these plots to better communicate your message?

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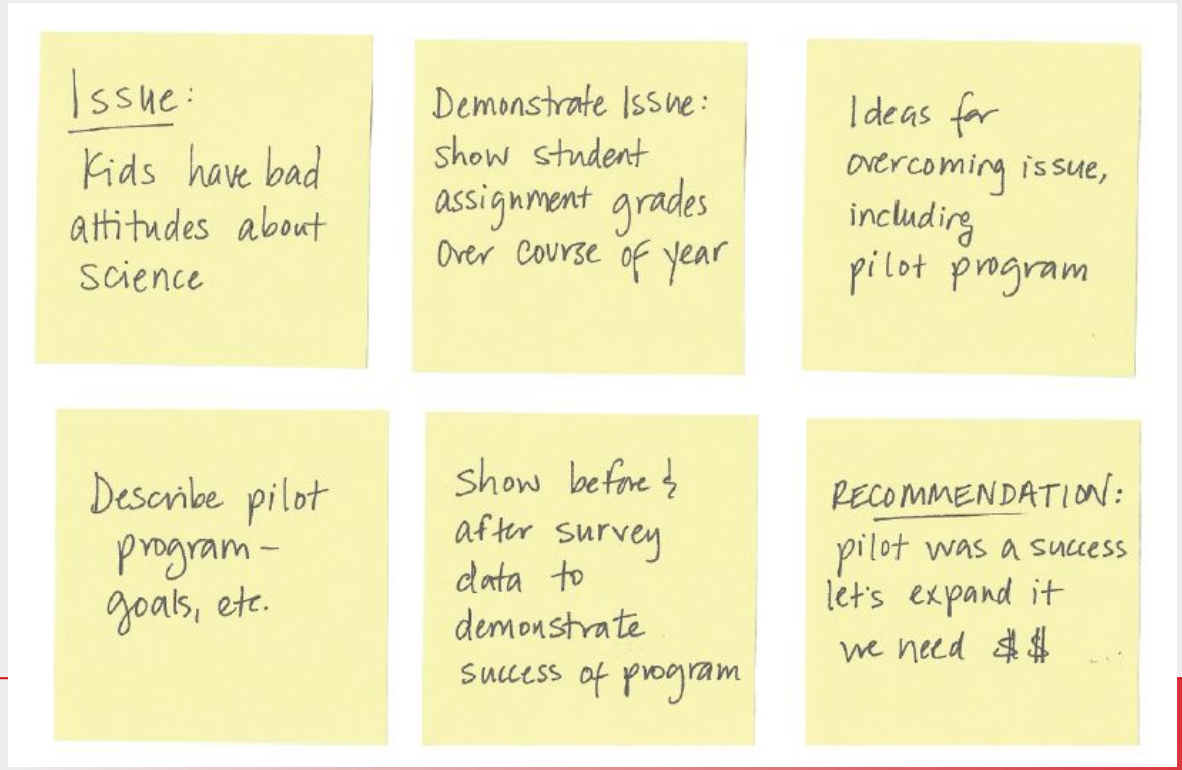
Storyboarding what we want to communicate



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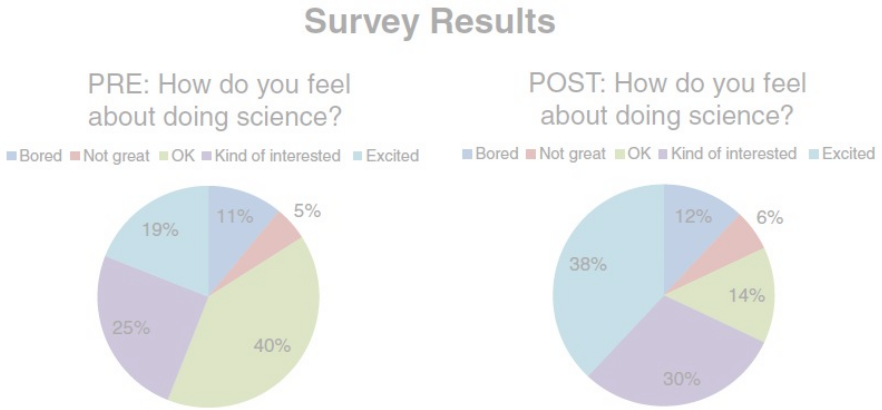

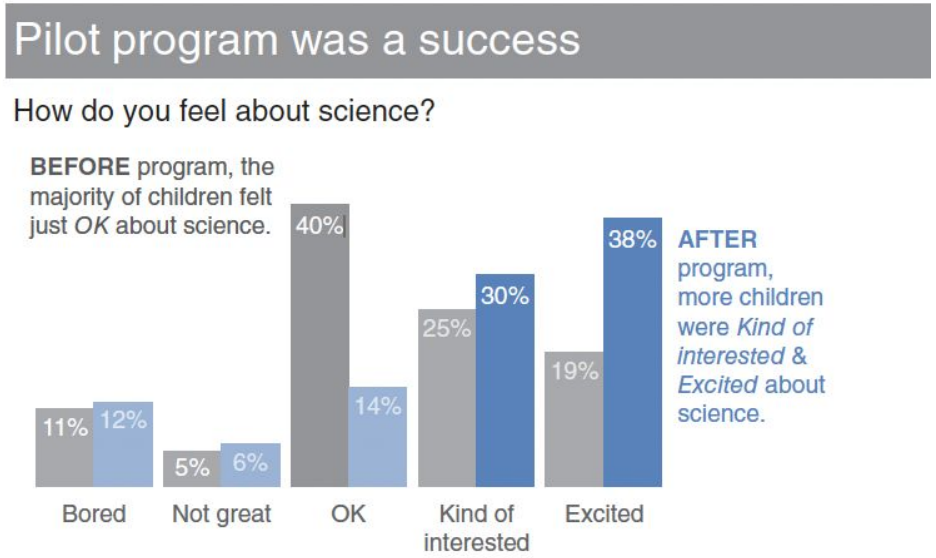

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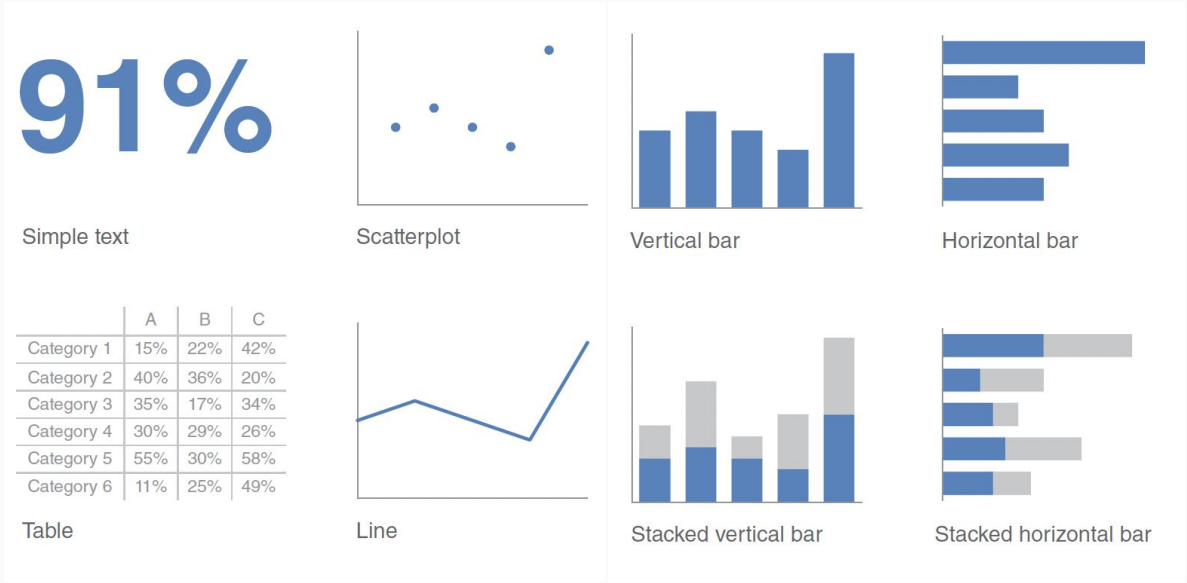
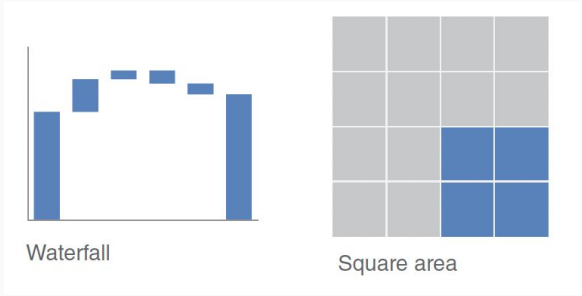
Choose an effective visual





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