

The creation and study of **Data Visualization** w Anna O'Connell

Agenda

1. Course milestones.
2. What is Data Visualization? Is it the same as Infographic?
3. Charles Joseph Minard's 1869 diagram.
4. 'Storytelling with Data' by Cole Knafllic (Intro and Chapter 1).

What is Data Visualization?

Graphic representation of data. It involves producing images that communicate relationships among the represented data to viewers of the images.

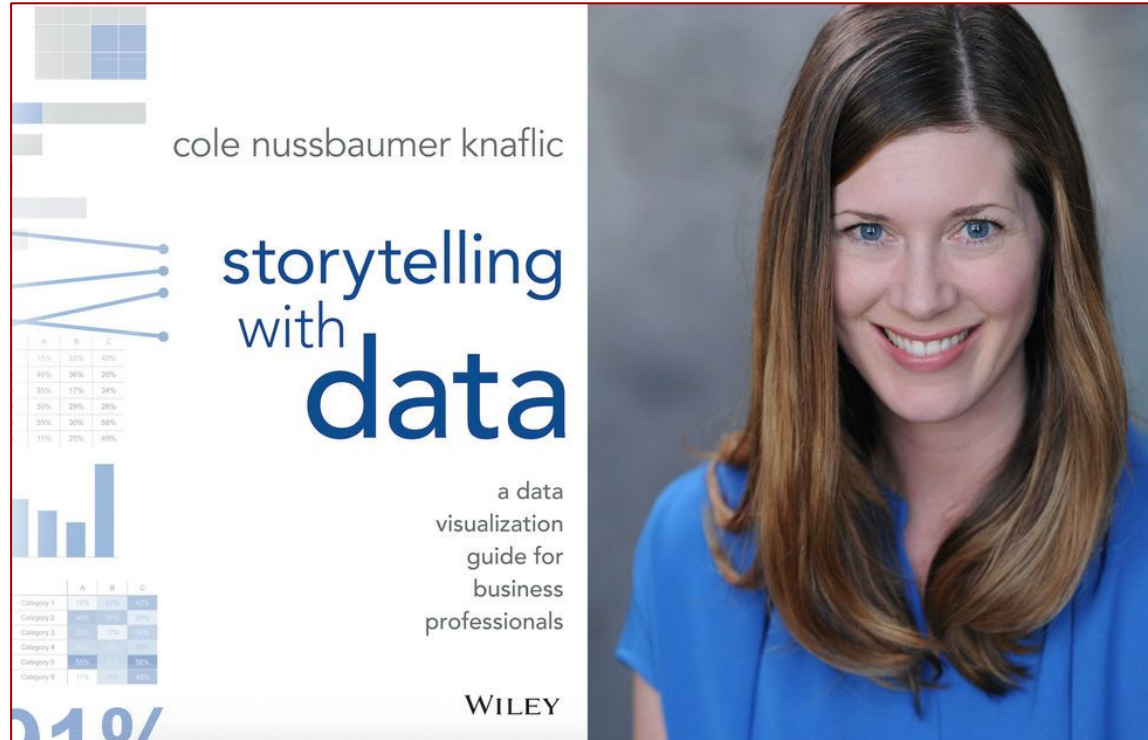
https://en.wikipedia.org/wiki/Data_visualization

Both a Data Map & Time Series

The space-time story is **multivariate**. Six variables are plotted:

- **Size** of the Army: 422,000 on the Polish-Russian border - 10,000 remaining.
- **Direction** of the army's movement.
- **Location** of the army on a **two-dimensional** surface.
- **Temperature** on various **dates** during the retreat from Moscow.

'Storytelling With Data' by Cole Knafl



Cole Nussbaumer Knafl

In 2007, worked for **Google People Analytics Team** to make data-driven people decisions:

- How to build productive teams
- What makes a manager effective

Today, specializes in teaching data visualization courses:

<http://www.storytellingwithdata.com/>

[How to Access Safari Database](#)

[‘Storytelling with Data’ book on Safari](#)



Introduction.

A Grouped Bar Chart vs Line Charts.

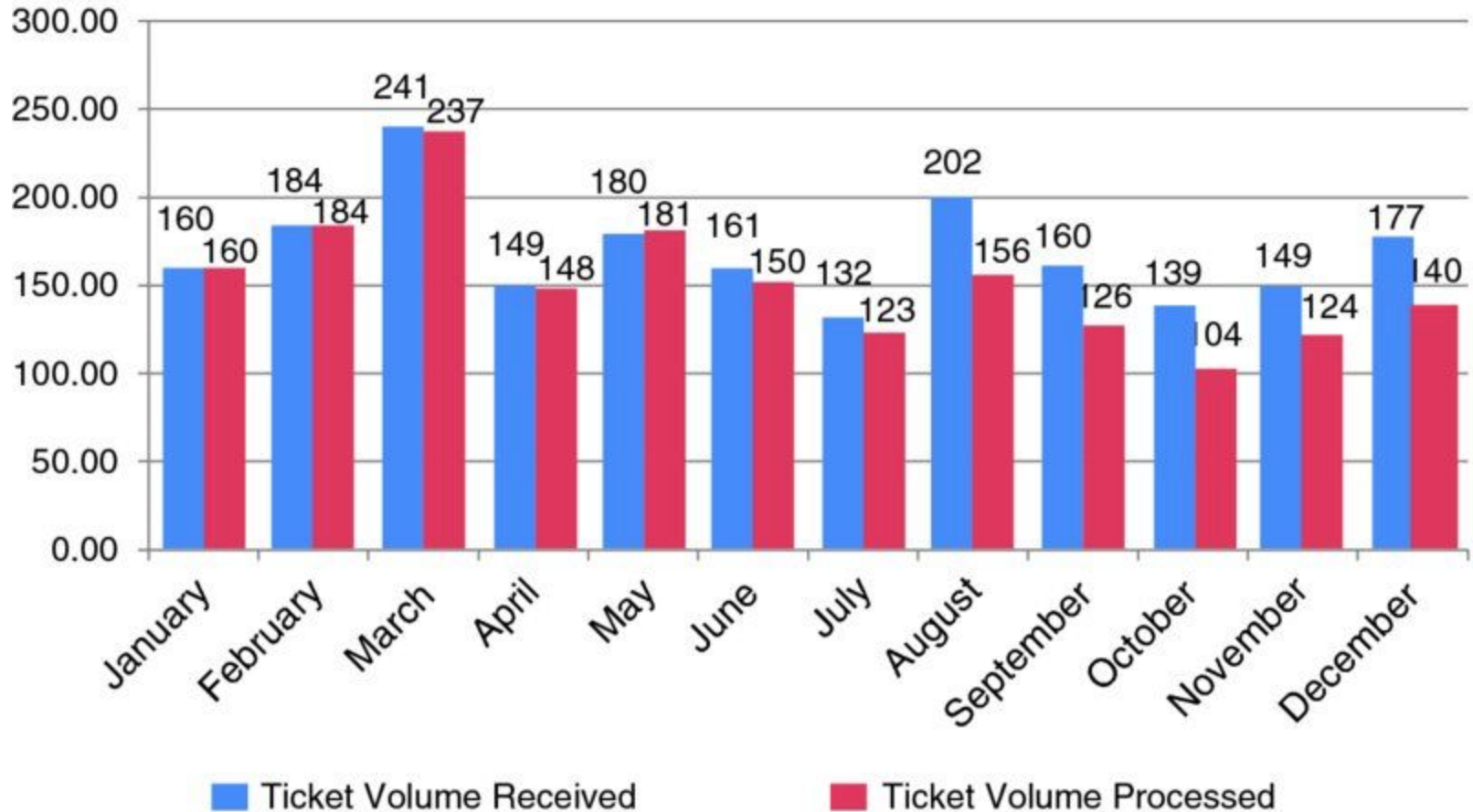


In a **Grouped Bar Chart**

(or a grouped column chart
or a clustered chart)

bars are clustered in groups of more than one.

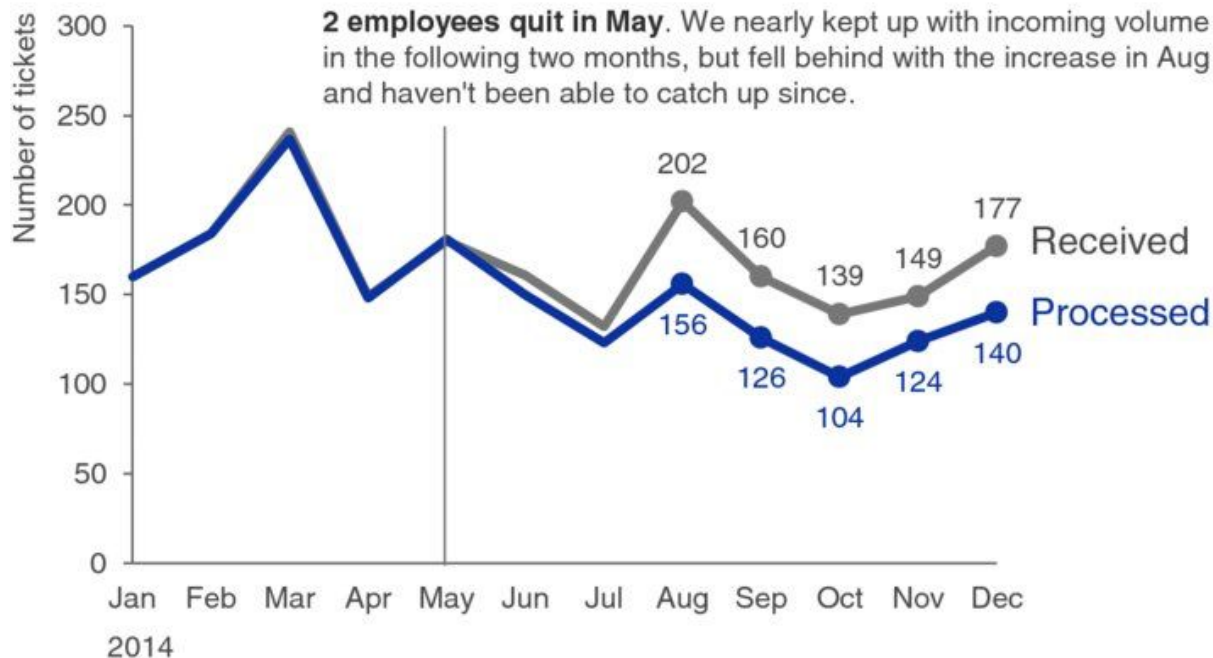
Ticket Trend



Please approve the hire of 2 FTEs

to backfill those who quit in the past year

Ticket volume over time



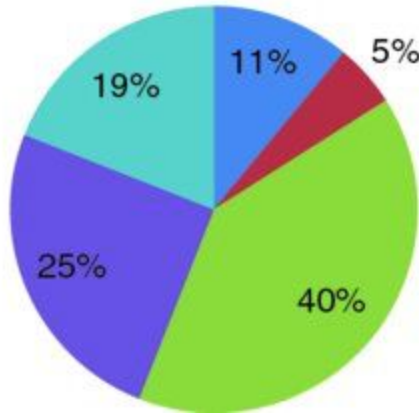
Data source: XYZ Dashboard, as of 12/31/2014 | A detailed analysis on tickets processed per person and time to resolve issues was undertaken to inform this request and can be provided if needed.

Pie Charts vs Bar Charts.

Survey Results

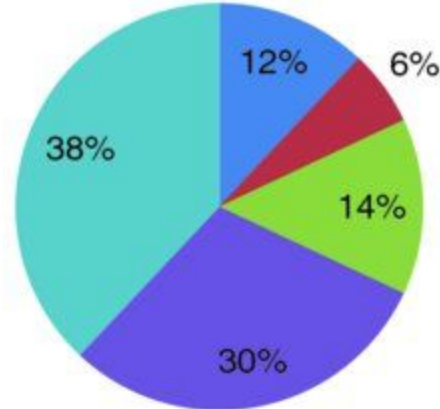
PRE: How do you feel about doing science?

■ Bored ■ Not great ■ OK ■ Kind of interested ■ Excited



POST: How do you feel about doing science?

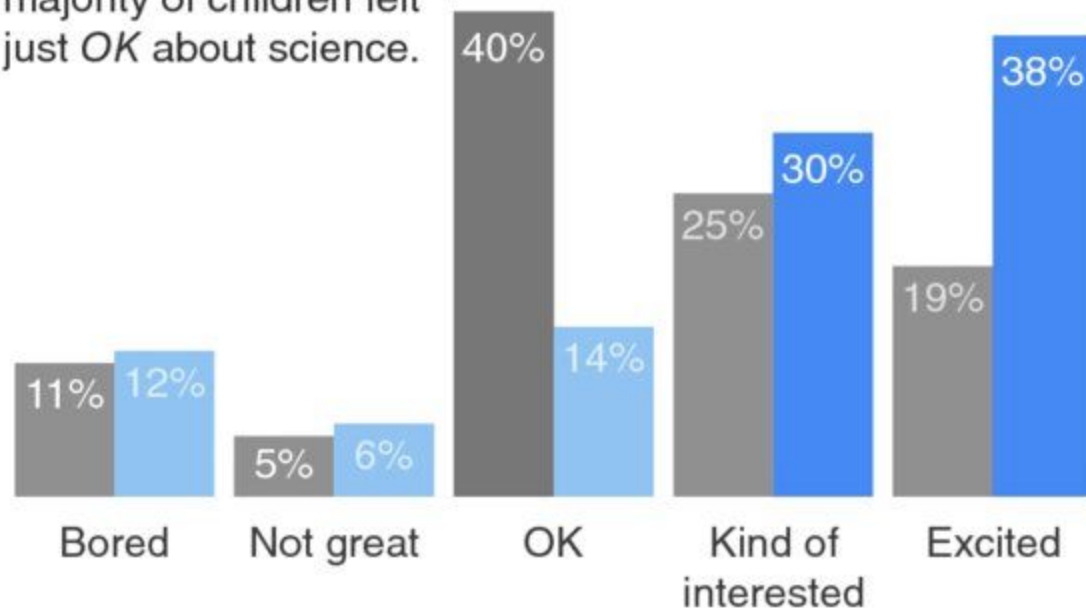
■ Bored ■ Not great ■ OK ■ Kind of interested ■ Excited



Pilot program was a success

How do you feel about science?

BEFORE program, the majority of children felt just OK about science.



AFTER program, more children were *Kind of interested & Excited* about science.

Based on survey of 100 students conducted before and after pilot program (100% response rate on both surveys).

Conclusion

Effective Data Visualization:

- tells a clear story / a call to action
- the choice of visual aid makes the story obvious
- title contains the summary of findings
- text reinforces the message

The importance of context.

Chapter 1.



Exploratory vs.



Don't just present all data...

Explanatory analysis



What story would you like to tell?

WHO: The **budget committee** that can approve funding for continuation of the summer learning program.

WHAT: The summer learning program on science was a success; **please approve the budget** to continue.

HOW: Illustrate success with the data collected through the **survey** conducted before and after the pilot season.



3-minute story

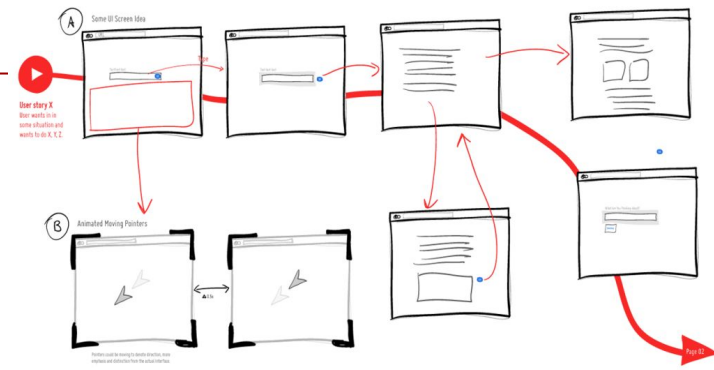
What would you say **if you only had three minutes** to tell your audience what they need to know?

vs. Big Idea

One Sentence:

*"The pilot summer learning program was successful at improving students' perceptions of science and, because of this success, we recommend continuing to offer it going forward; **please approve our budget** for this program."*

The **storyboard** establishes the structure for your communication. It's a visual outline of the content you plan to create.



Issue:

Kids have bad
attitudes about
science

Demonstrate Issue:

show student
assignment grades
over course of year

Ideas for
overcoming issue,
including
pilot program

Describe pilot
program -
goals, etc.

Show before &
after survey
data to
demonstrate
success of program

RECOMMENDATION:
pilot was a success
let's expand it
we need \$\$\$

To summarize...

Before you start creating content:

- Arrive with **explanatory** analysis.
- Decide **who** is your client and **what** you want to convey.
- The 3-minute story and the Big Idea will help you tell your story clearly.
- **Storyboarding** will help to narrow down the desired story.

Have a solid understanding of your story.



List the components of understanding the context:

Explanatory Analysis

Who - Who is the audience?

What - what do you need your audience to know or do?

Mechanism - Live presentation / written doc / email / slideument.

Tone

How - what data is available?

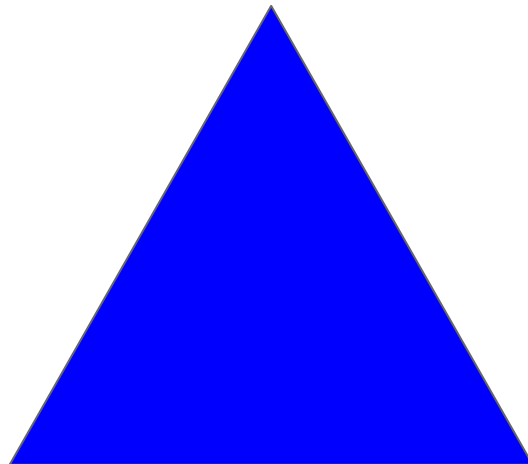
The 3-minute story and big idea

The **storyboard** establishes the structure for your communication.

YOUR PRESENTATION: THE TRIANGLE OF RHETORIC



ETHOS
credibility - trust



PATHOS
emotion - imagination

LOGOS
consistency - logic

DataViz Videos

[Ted Talks - Ideas about visualizations - Making sense of too much data](#)

[Ted-Ed - How to spot a misleading graph](#)

[Ted Talk - Stunning data visualization in the AlloSphere](#)

[Ted Collection](#)

Tableau Top 10:

<https://www.tableau.com/learn/articles/best-beautiful-data-visualization-examples>