

Data Visualization

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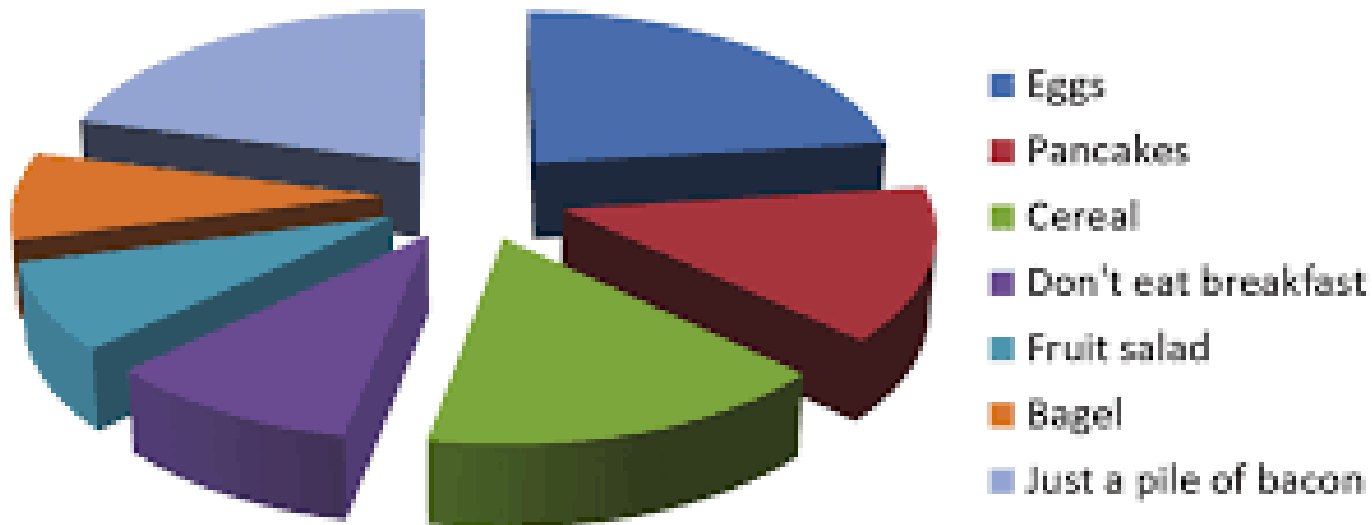
Before we start...



Look at this visual

1. What's the point of the graphic?
2. What can you tell me about how many people eat what?

Attendee Breakfast Preferences



Turns out humans are super bad at interpreting area, volume, and curvature... pie charts produce the most errors.

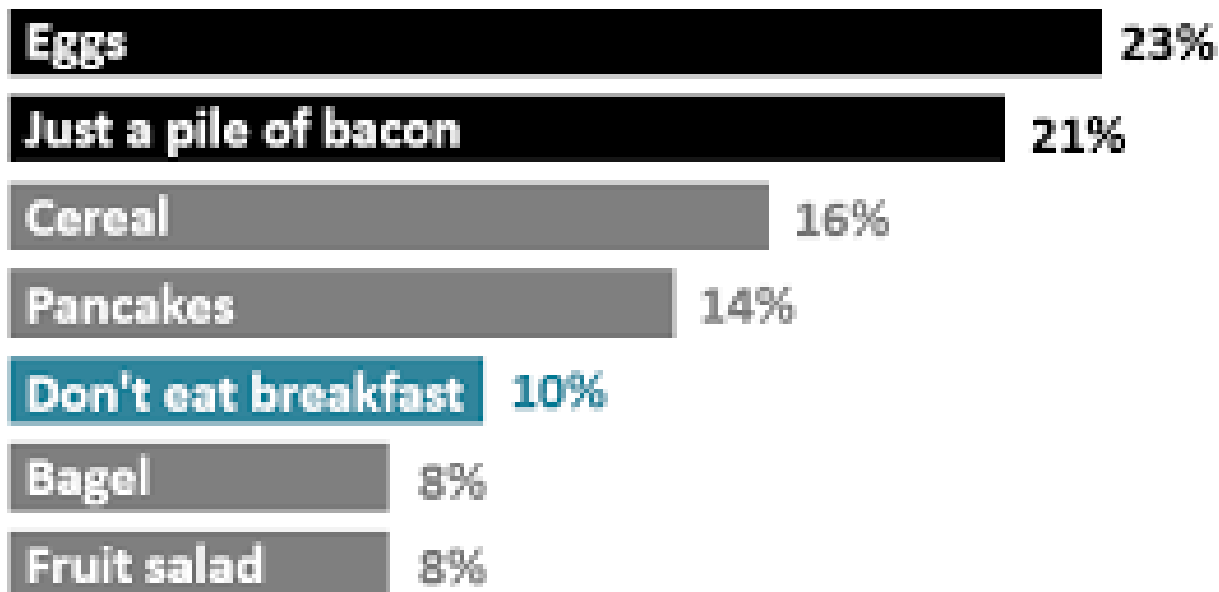


Dr. Stephanie Evergreen
Visualization Expert



Breakfast preferences focus on protein.

One in ten fellow attendees **do not consume** adequate energy for their first meal of the day.



Now this
one

Data Visualization Best Practices



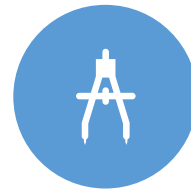
TEXT



ARRANGEMENT



COLOR



LINES



OTHER

Text

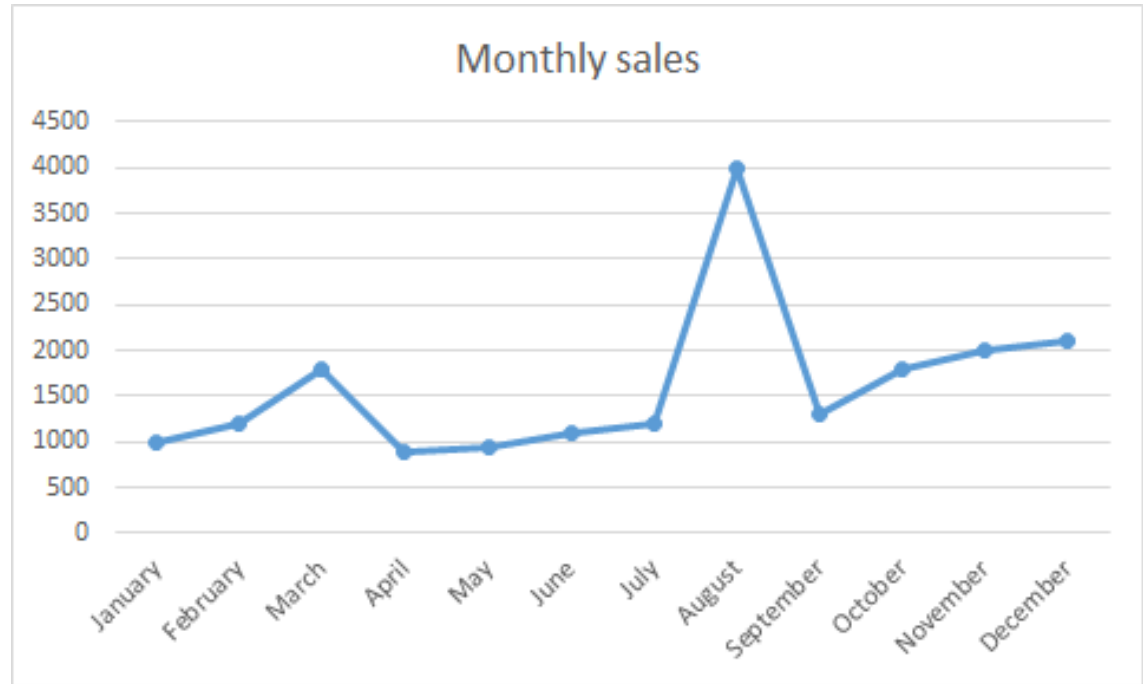
Graphs don't contain **much** text

Any text must **highlight a message**

“Pack a **punch**”

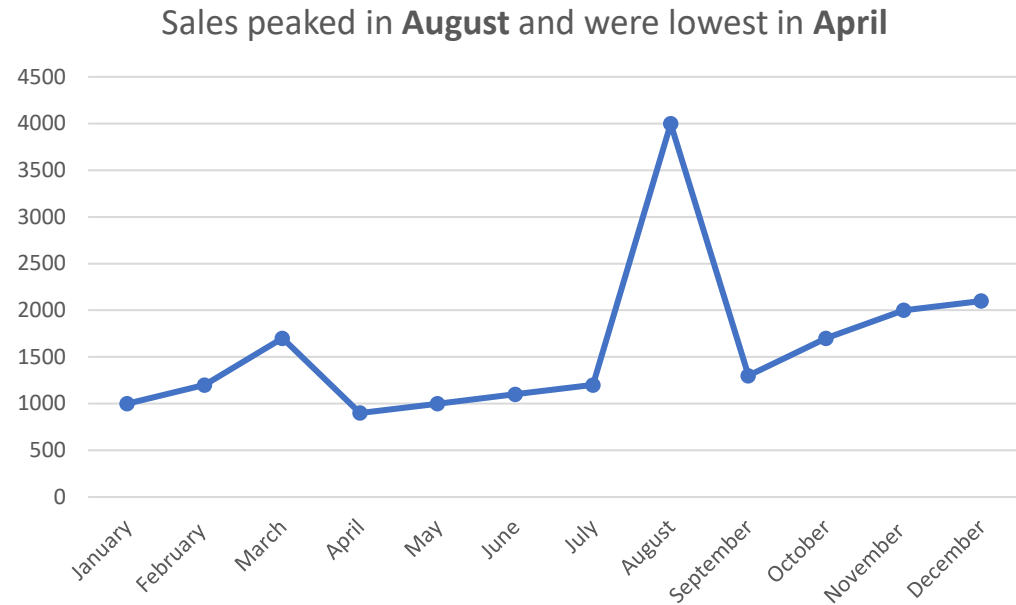


Example



- What can you discern from the text on this graphic?
- What does the title tell you?
- What's the point?

Example with
a better title



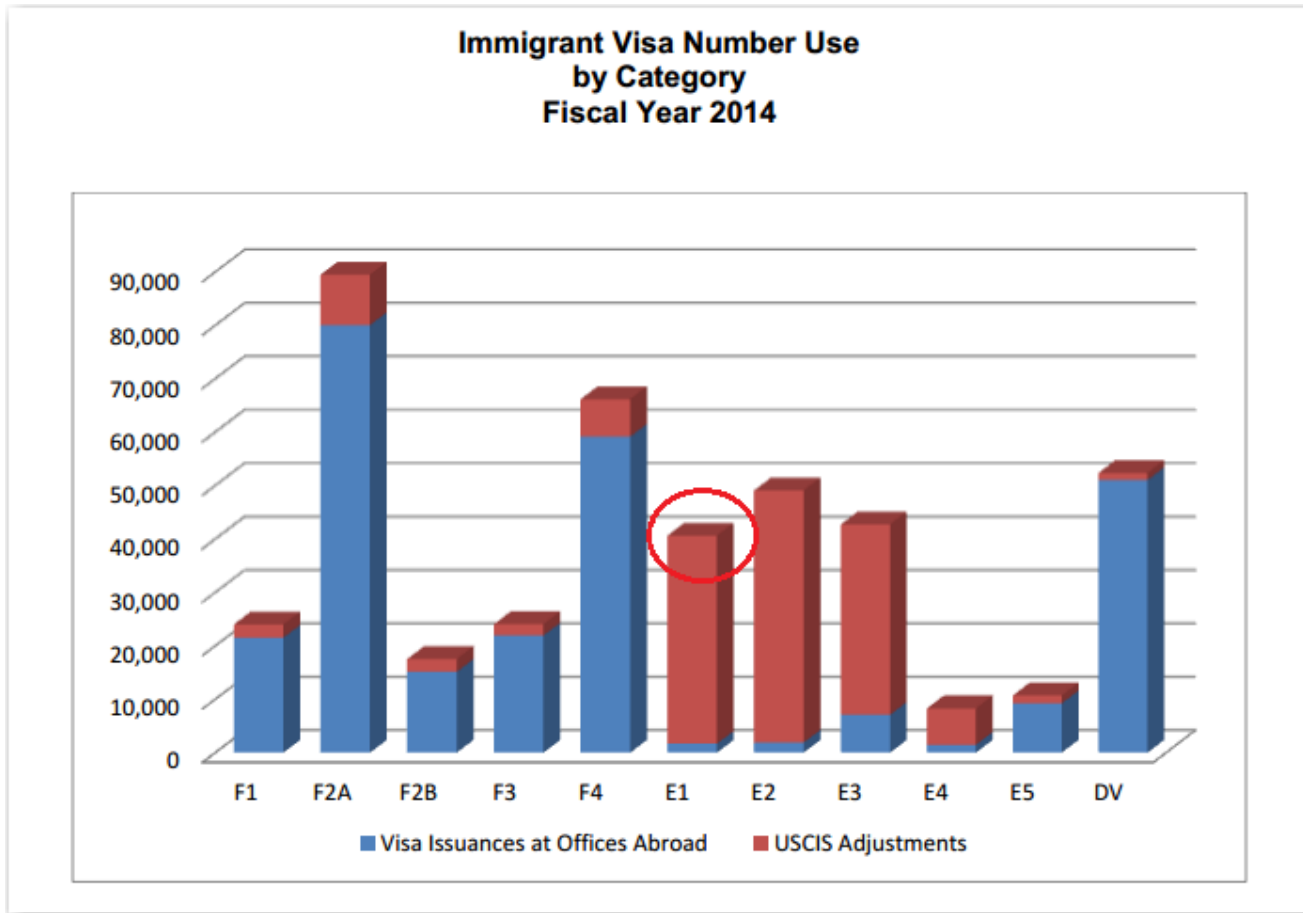
- What can you discern from the text on this graphic?
- What does the title tell you?
- What's the point?



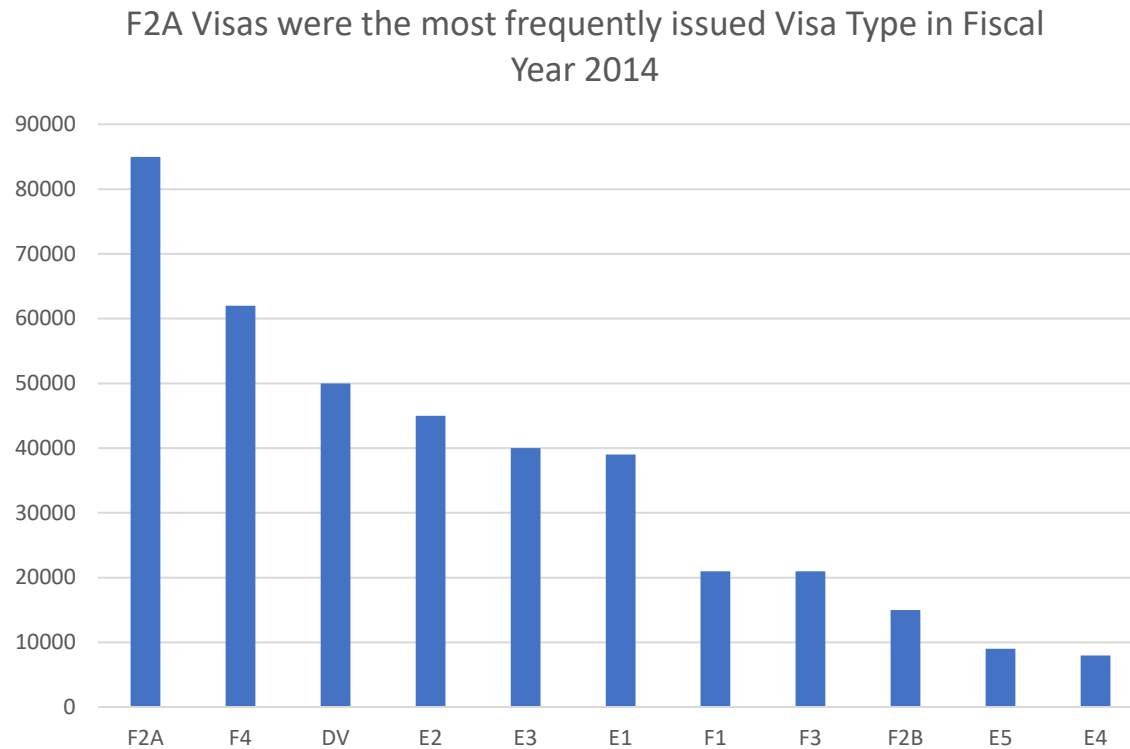
Arrangement

- Improper arrangement
 - Is **confusing**
 - Can be **misleading**
- Thoughtful arrangement = **easy interpretation**

Example – Poorly arranged data points



Example – Poorly arranged data points - fixed





Color

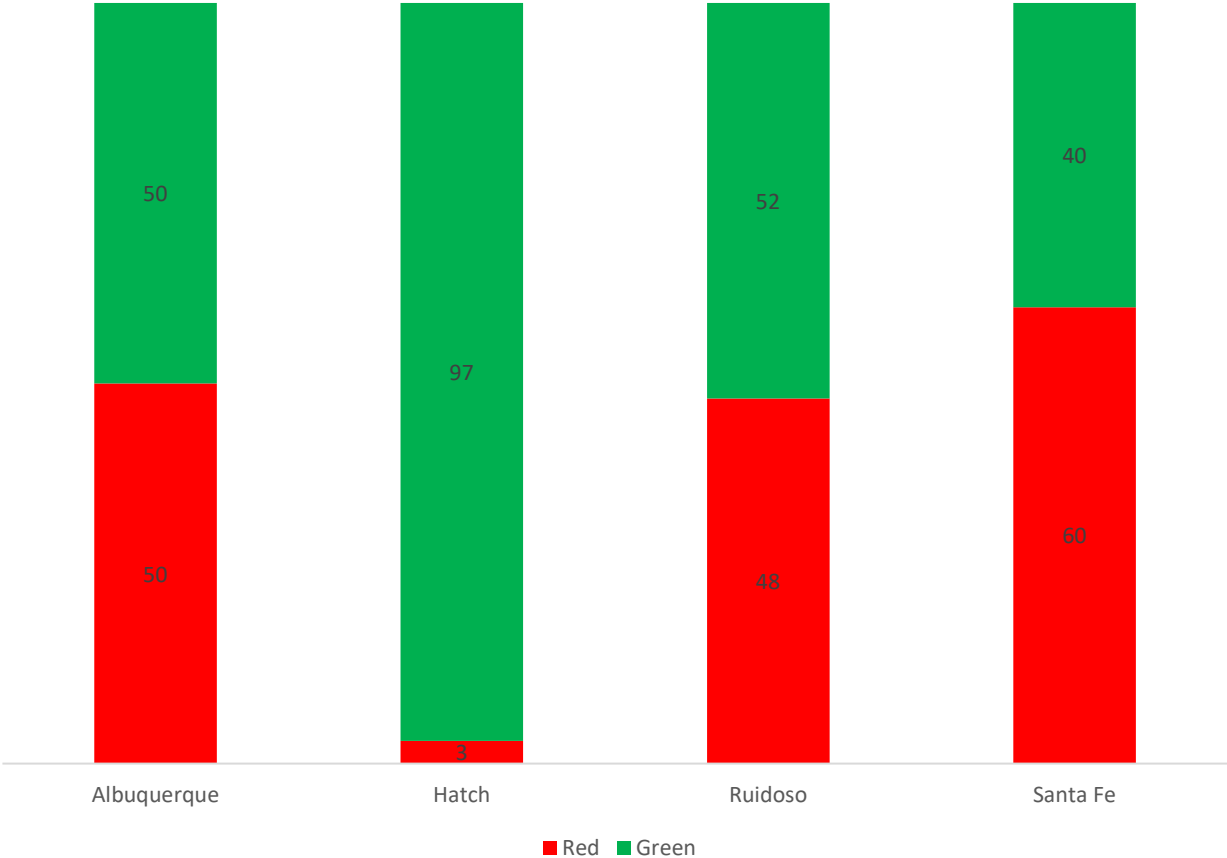
Use sites like [Color Brewer](#) to find color schemes suitable for reprinting in black-and-white and for colorblindness

Consider **cultural connotations** for colors:

- Pink & Blue (gendered)
- Red & Green (holidays or in NM – food!)

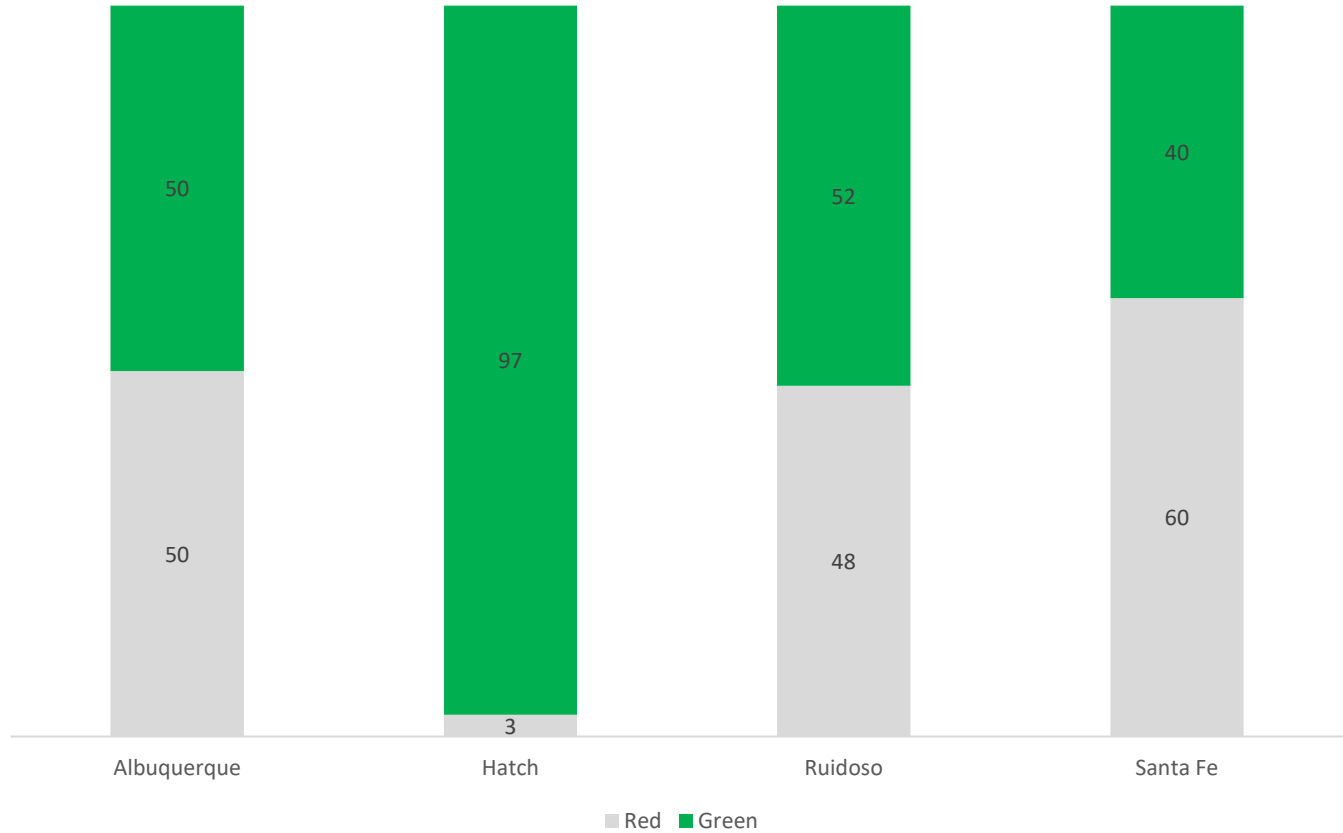
Example

New Mexican Chile Preferences



New Mexicans mostly prefer Green Chile, except in Santa Fe

Example



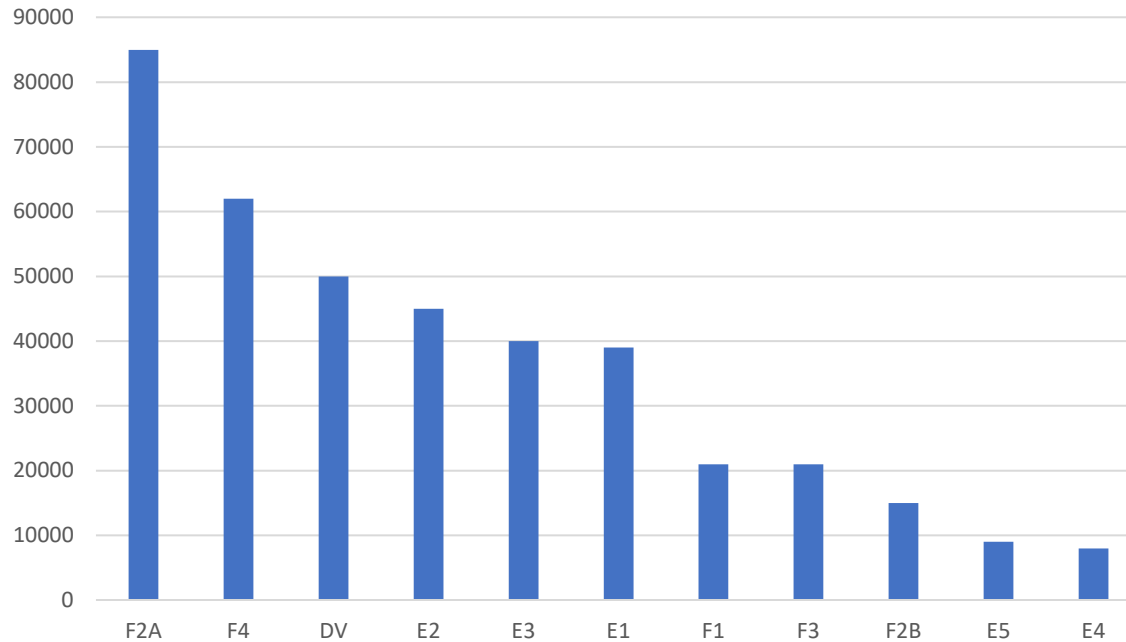


Lines – no unnecessary lines!

Gridlines, borders, tick marks, and axes **add clutter or noise to a graph** → Eliminate whenever they aren't useful for interpreting the data

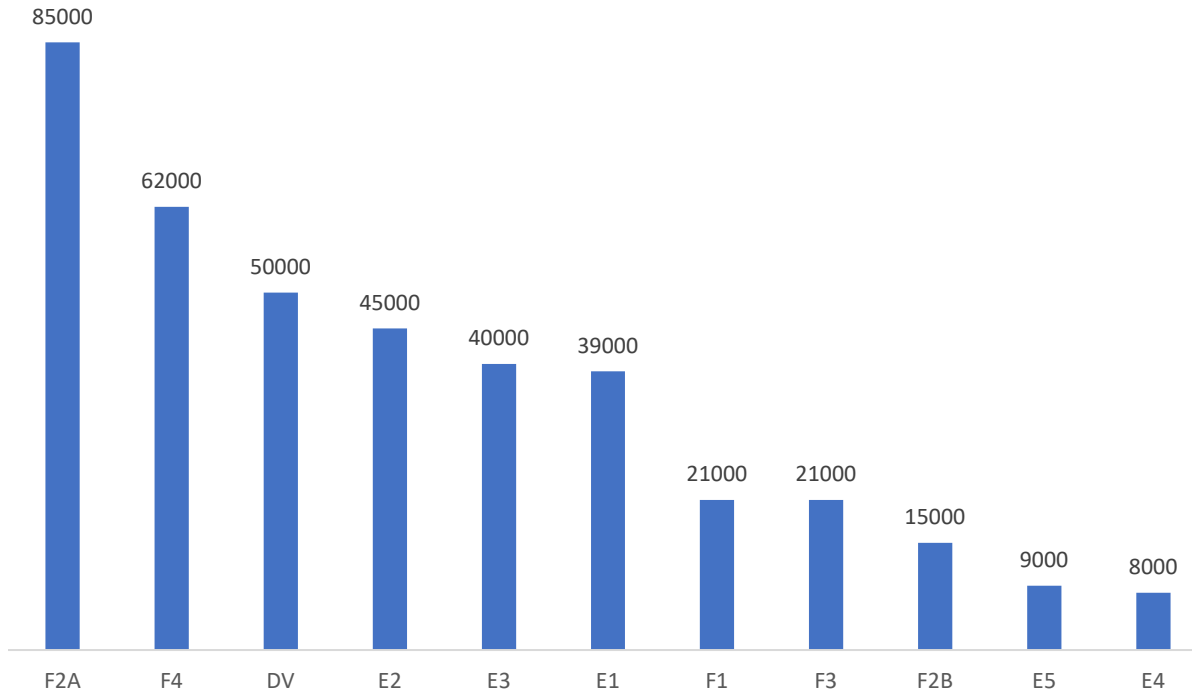
Example – unnecessary lines

F2A Visas were the most frequently issued Visa Type in Fiscal Year 2014



Example – unnecessary lines - fixed

F2A Visas were the most frequently issued Visa Type in Fiscal Year 2014





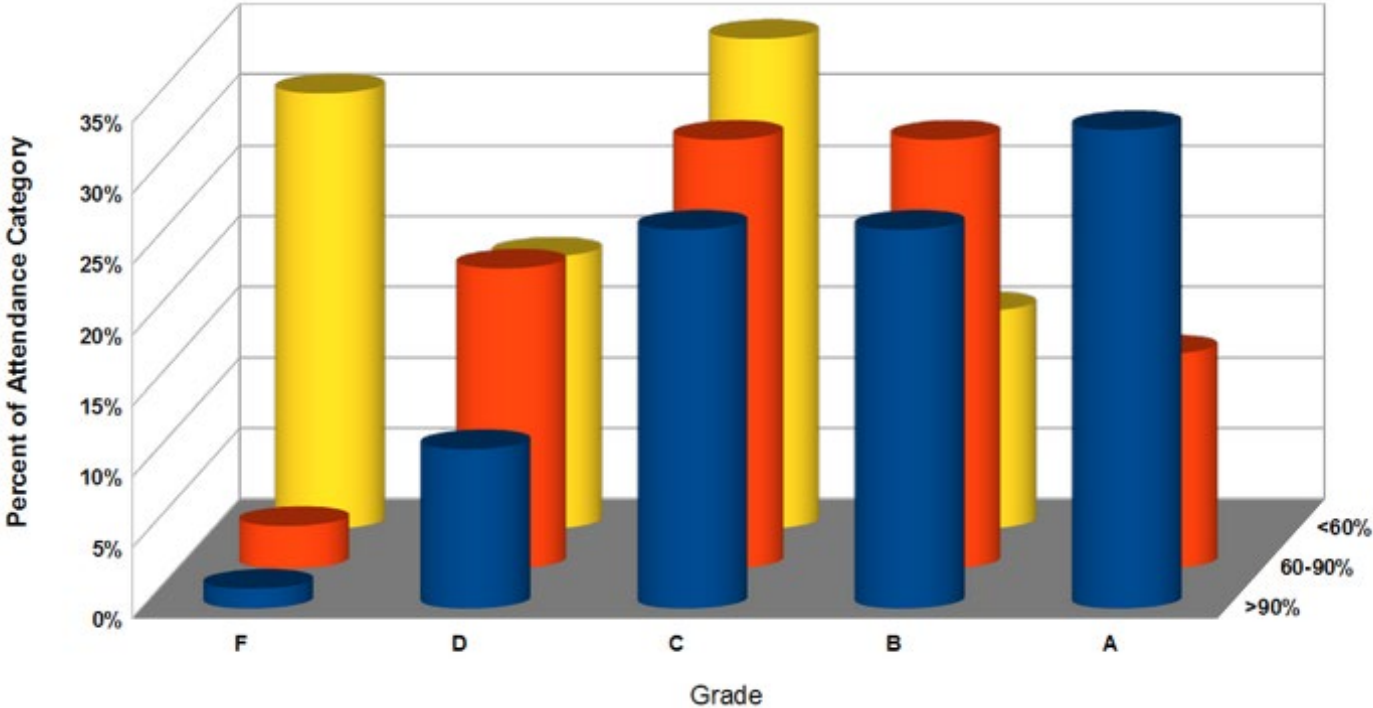
Only visualize data that needs attention

Too many graphics of
unimportant information
dilute the power of
visualization

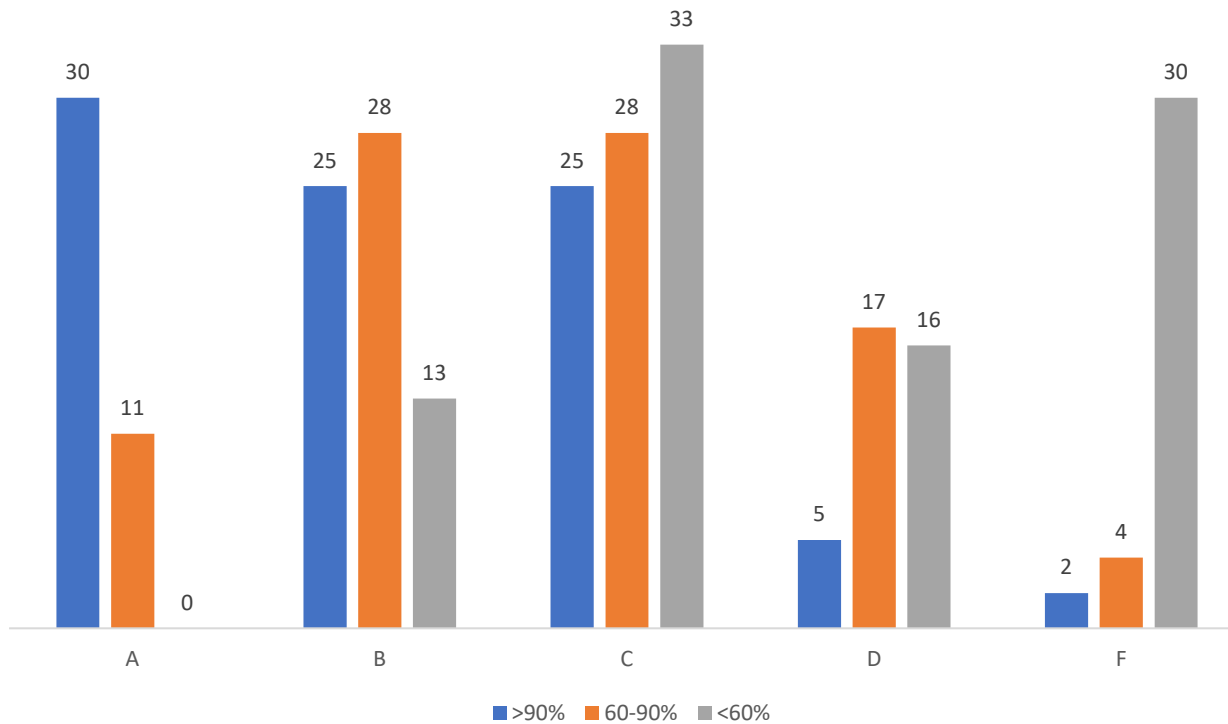




Attendance Matters



Attendance Matters: Those who were present less than 60% of the time were more likely to receive a failing grade





How can I tell if it's just right?

Use Dr. Evergreen's checklist

Data Visualization Checklist

by Stephanie Evergreen & Ann K. Emery
May 2016

This checklist is meant to be used as a guide for the development of high impact data visualizations. Rate each aspect of the data visualization by circling the most appropriate number, where 2 points means the guideline was fully met, 1 means it was partially met, and 0 means it was not met at all. n/a should not be used frequently, but reserved for when the guideline truly does not apply. For example, a pie chart has no axes lines or tick marks to rate. If the guidelines has been broken intentionally to make a point, rate it n/a and deduct those points from the total possible. Refer to the Data Visualization Anatomy Chart on the last page for guidance on vocabulary and the Resources at the end for more details.

Text	Guideline	Rating
Graphs don't contain much text, so existing text must encapsulate your message and pack a punch.	6-12 word descriptive title is left-justified in upper left corner Short titles enable readers to comprehend takeaway messages even while quickly skimming the graph. Rather than a generic phrase, use a descriptive sentence that encapsulates the graph's finding or "so what?" Western cultures start reading in the upper left, so locate the title there.	2 1 0 n/a
	Subtitle and/or annotations provide additional information Subtitles and annotations (call-out text within the graph) can add explanatory and interpretive power to a graph. Use them to answer questions a viewer might have or to highlight specific data points.	2 1 0 n/a
	Text size is hierarchical and readable Titles are in a larger size than subtitles or annotations, which are larger than labels, which are larger than axis labels, which are larger than source information. The smallest text - axis labels - are at least 9 point font size on paper, at least 20 on screen.	2 1 0 n/a
	Text is horizontal Titles, subtitles, annotations, and data labels are horizontal (not vertical or diagonal). Line labels and axis labels can deviate from this rule and still receive full points. Consider switching graph orientation (e.g., from column to bar chart) to make text horizontal.	2 1 0 n/a
	Data are labeled directly Position data labels near the data rather than in a separate legend (e.g., on top of or next to bars and next to lines). Eliminate/embed legends when possible because eye movement back and forth between the legend and the data can interrupt the brain's attempts to interpret the graph.	2 1 0 n/a

Applying
these
practices!

