

# More Than Words: Illustrating Data

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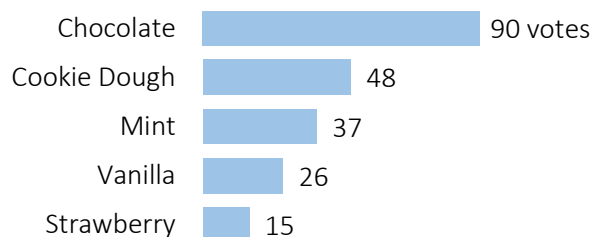


## Who's My Audience?

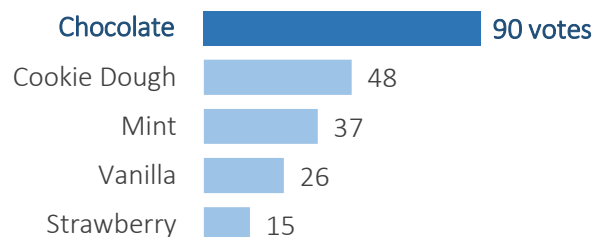
Questions to discuss with colleagues during your planning phase include:

1. Who's my audience?
2. Are my audiences technical or non-technical?
3. What's worth visualizing within the body of the report, and what gets pushed to the appendix?
4. How many points in time do our viewers need to see?
5. Do our viewers need to see aggregate or disaggregate data (or both)?
6. How many decimal places are useful?
7. How much comparison data is needed?
8. Will we present the data as-is, or tell a story?

Ice cream flavor preferences based on 2014 survey of elementary school students (n=216)



**Chocolate was most popular flavor** among elementary students surveyed



## How Will I Share My Charts?

How will your completed chart ultimately be shared? Inside of a longer report? As the star of a one-page handout? Common dissemination modes include:

- Journal articles
- Standalone summaries
- Slide reports
- Appendices
- Transmittal letters
- Dashboards
- Traditional reports
- Press releases
- Infographics
- Executive summaries
- Verbal presentations

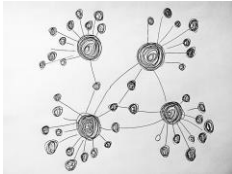


# Which Chart Matches My Message?

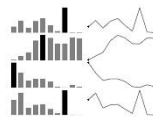
A fuller listing of essential charts is available at [annkemery.com/essentials](http://annkemery.com/essentials).

## Exploratory techniques

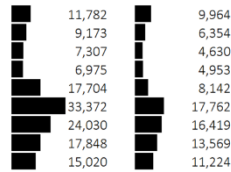
Sketching



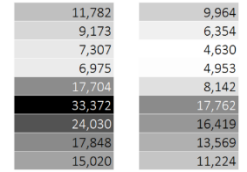
Spark Lines



Data Bars

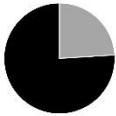


Heat Tables



## 1 point in time

Pie



Donut



Bar



Clustered



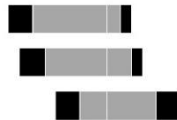
Small Multiples



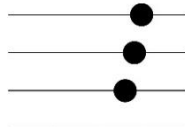
Stacked



Diverging Stacked



Dot Plots



Scatter Plots

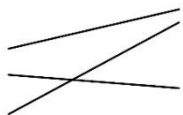


Geographic Maps

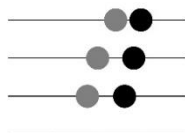


## 2 points in time

Slope

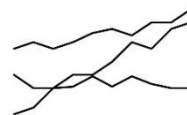


Dumbbell Dots



## 3+ points in time

Line



Small Multiples Line

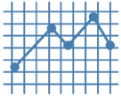




## Which Software Tool Should I Use?

Among the hundreds of tools on the market, Excel, Tableau, and R are the some of the most popular. These multitasking software programs allow you to both crunch your numbers and design your graphs, and their default graphing settings—while imperfect—are highly customizable with just a few clicks.

Tool	Pros	Cons	Tips for Getting Started
<b>Excel</b>	<ul style="list-style-type: none"> <li>• Virtually free.</li> <li>• Minimal learning curve to produce standard graphs (bar, line, scatter, etc.).</li> <li>• Additional graph types possible through workarounds (dot, slope, small multiples, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Interactive graphs possible but require advanced spreadsheet skills to produce.</li> <li>• Not ideal for real-time analysis of big datasets.</li> <li>• Typically slows down when using datasets containing more than 20,000 rows of data.</li> </ul>	<p>Watch 50+ video tutorials on time-saving spreadsheet strategies and graphing basics: <a href="http://annekmerly.com/excel">annekmerly.com/excel</a></p>
<b>Tableau</b> Tableau Public (free version) and Tableau Desktop (full paid version).	<ul style="list-style-type: none"> <li>• Its built-in library of charts contains more layouts than Excel; e.g., geographic maps available.</li> <li>• Drag-and-drop design allows users to explore which chart type might work best in just a few clicks.</li> <li>• Can create static or interactive visualizations.</li> <li>• Minimal learning curve.</li> </ul>	<ul style="list-style-type: none"> <li>• Free version: Uploaded data is publicly available; do not upload sensitive information such as names or addresses.</li> <li>• Paid version: Can be cost-prohibitive.</li> </ul>	<p>Download a trial version: <a href="http://tableau.com">tableau.com</a></p> <p>Watch screencasts from Tableau staff: <a href="http://youtube.com/tableausoftware">youtube.com/tableausoftware</a></p>
<b>R</b> Open source tool that can be used for data management, data analysis, and data visualization.	<ul style="list-style-type: none"> <li>• Free.</li> <li>• Vibrant learning community of R users who develop tutorials and freely share code with others.</li> <li>• Ideal for large datasets.</li> <li>• Can create static or interactive visualizations.</li> </ul>	<ul style="list-style-type: none"> <li>• R is a coding program; not ideal for users without a coding or computer science background.</li> <li>• Expect a learning curve.</li> </ul>	<p>Download R: <a href="http://r-project.org">r-project.org</a></p> <p>Follow the step-by-step learning plan outlined in <i>How to Climb the R Learning Curve Without Falling Off the Cliff</i>: <a href="http://annekemery.com/portfolio/r">annekemery.com/portfolio/r</a></p>

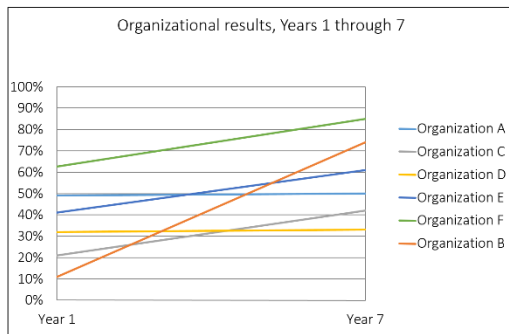


# Which Formatting Edits Are Needed?

Data visualization best practices come down to two techniques: simplification and emphasis. First, simplify by removing unnecessary ink. Then, emphasize your message with text and color.

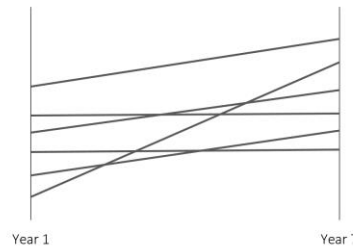
## The Default Graph

Default settings involve too much unnecessary ink and too little explanatory text, which hides the data from our viewers.



## Simplify

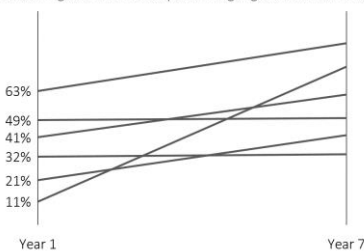
- Remove or lighten the border, grid lines, tick marks, and leader lines
- Remove bevels and 3D
- Remove clip-art used solely for decoration



## Emphasize Your Message with Text

- Write a descriptive title, subtitle, and/or annotation
- Label the data directly and use labels sparingly
- Make sure the text is horizontal, hierarchical, and matches branding

**Organization B had the greatest gains**  
 Over the course of the 7-year project, Organization B increased from 11% to 74%, transforming from the lowest-performing organization to the second-highest.



## Emphasize Your Message with Color

- Match colors to branding
- Guide viewers' eyes with saturation
- Reinforce the nature of the data
- Contrast against the background
- Make sure the colors are legible when printed in black and white and for people with colorblindness

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