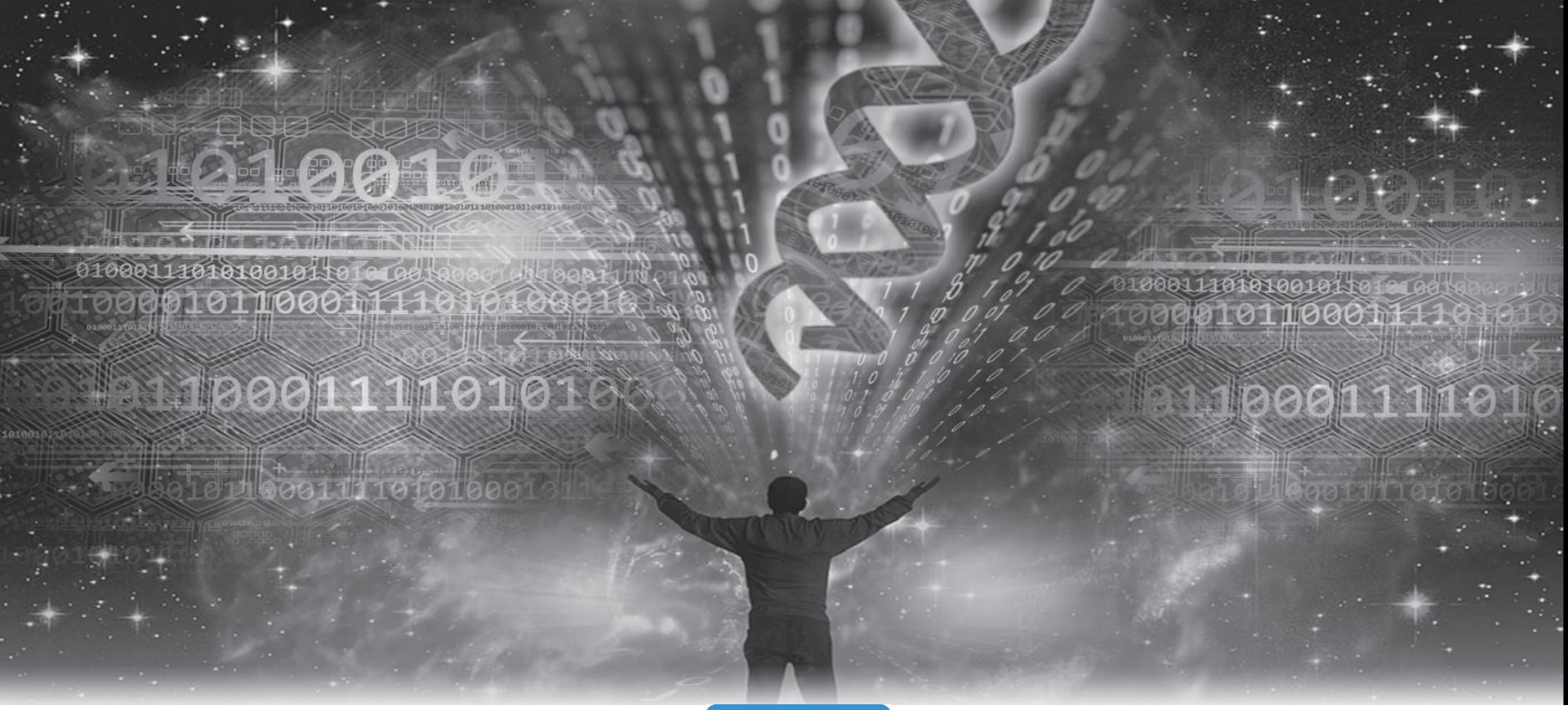
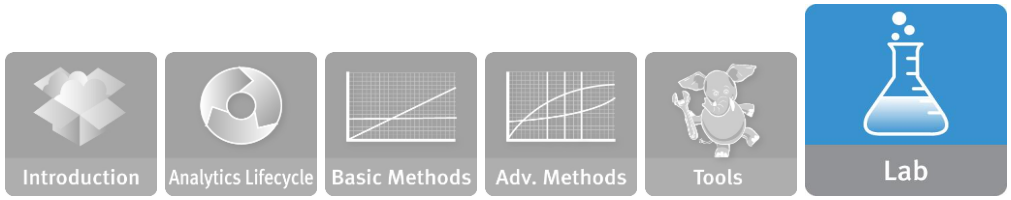


Lab

Module 8 – Visualization

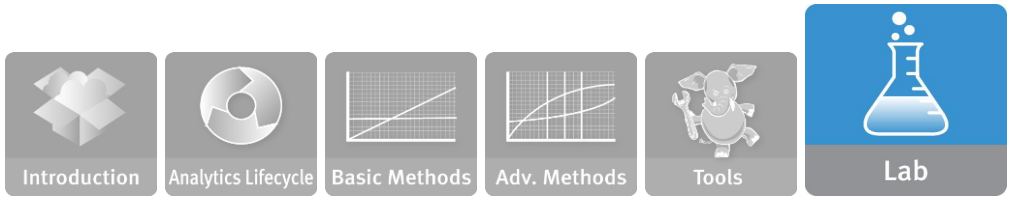
EMC^2 PROVEN PROFESSIONAL



Module 8 – Visualization

Upon completion of this module, you should be able to:

- Evaluate a data visualization and identify ways to improve it



Module 8:

Lesson: Data Visualization Techniques

During this lesson the following topics are covered:

- Survey of data visualization tools
- Creating different visualizations for sponsors and analysts
- Developing visuals to support your key points
- How to clean up a chart or visualization
- Tips and tricks

Key Points Supported With Data
Overview of Visualization Tools

Open Source

- **R**
  - **Base package**
  - ggplot
  - Lattice
- Ggobi/Rggobi
- Inkscape
- Processing
- Modest Maps
- GnuPlot

Commercial Tools

- Tableau
- Spotfire
- Qlikview
- Adobe Illustrator

Key Points Supported With Data
Tables of Information

44 years of BigBox stores data

Year	1962 1964	1965	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Grand Total
SuperBox	1 1	1	1	5	4	4	14	13	14	20	14	17	29	24	37	33	117	42	65	79	81	90	92	82	86	106	72	62	62	40	49	22	26	33	47	78	71	67	64	91	91	33	1980
BigBox			1		1	1	1	4	5	5	5	10	10	10	6	21	33	21	22	20	29	31	50	43	45	72	91	76	94	67	80	31	34	33	33	27	35	47	32	39	27	4	1196
Grand Total	1 1	1	2	5	5	5	15	17	19	25	19	27	39	34	43	54	150	63	87	99	110	121	142	125	131	178	163	138	156	107	129	53	60	66	80	105	106	114	96	130	118	37	3176

34 years of BigBox stores data

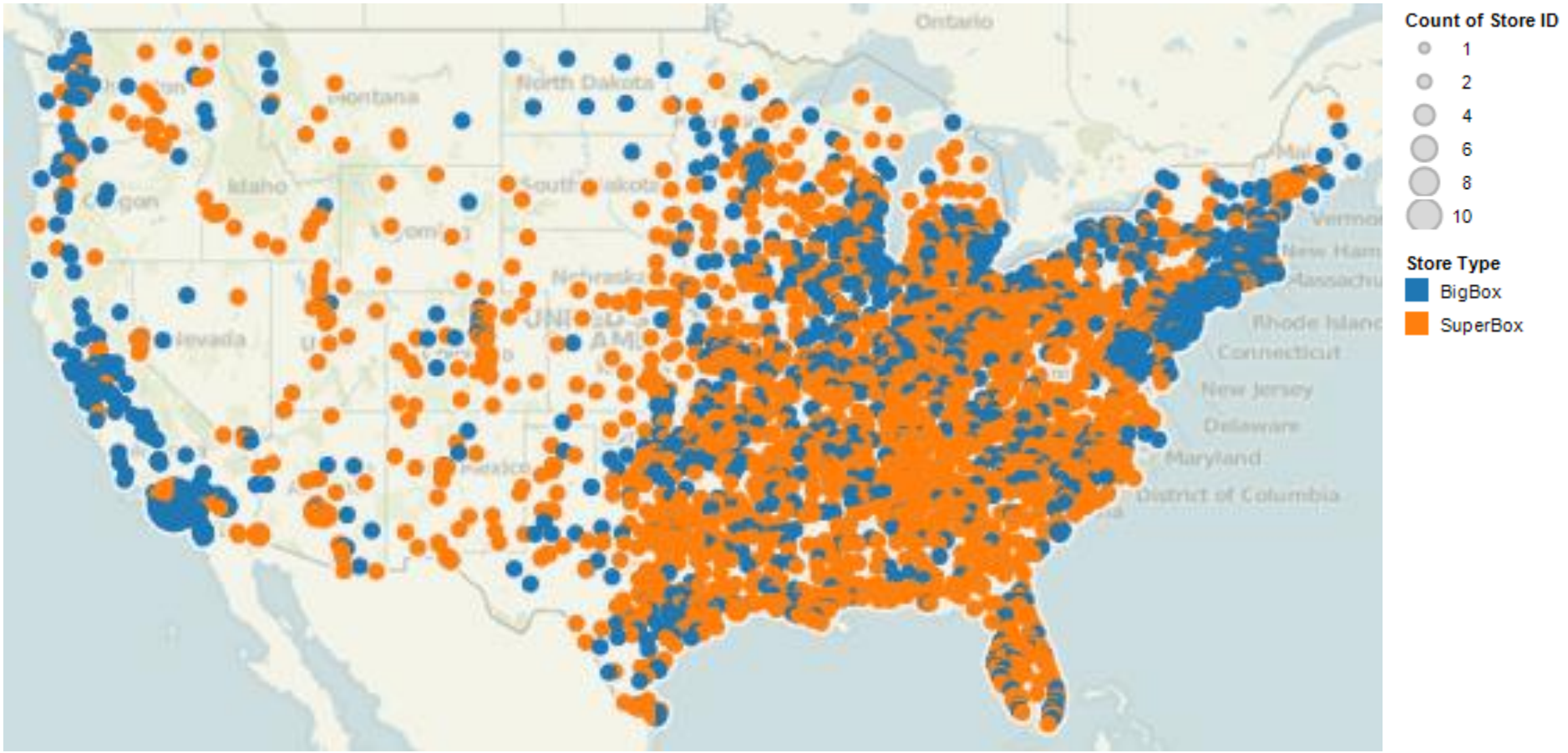
Year	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Grand Total
SuperBox	13	14	20	14	17	29	24	37	33	117	42	65	79	81	90	92	82	86	106	72	62	62	40	49	22	26	33	47	78	71	67	64	91	91	33	1980
BigBox	4	5	5	5	10	10	10	6	21	33	21	22	20	29	31	50	43	45	72	91	76	94	67	80	31	34	33	33	27	35	47	32	39	27	4	1196
Grand Total	17	19	25	19	27	39	34	43	54	150	63	87	99	110	121	142	125	131	178	163	138	156	107	129	53	60	66	80	105	106	114	96	130	118	37	3176

- What do you observe from this data?
- What's the main message?
- What is the author trying to emphasize with the data?
- Tailor outputs to the audience

Key Points Supported With Data

Using Visuals to Illustrate Key Points

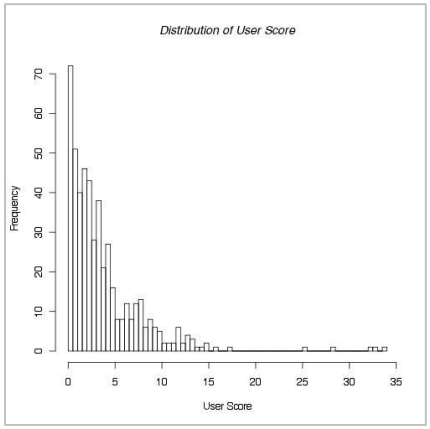
Example of a Visual to help tell a story to a <u>Sponsor</u>

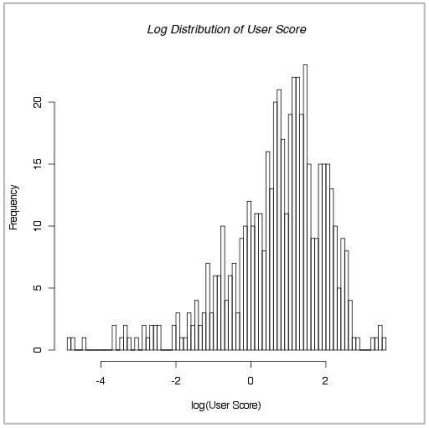


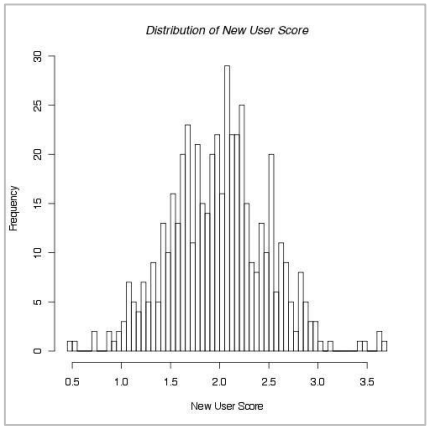
Evolution of a Graph

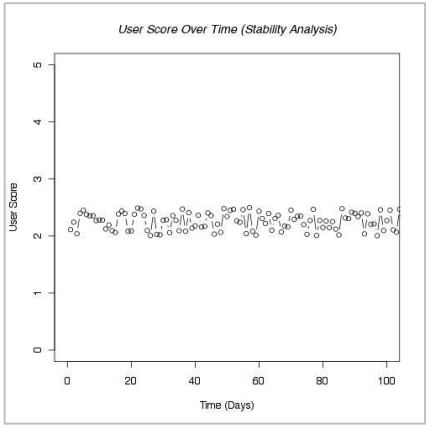
Hypothetical Example: Exploring Pricing Data

Example of exploring customer price data, price distributions and stability over time

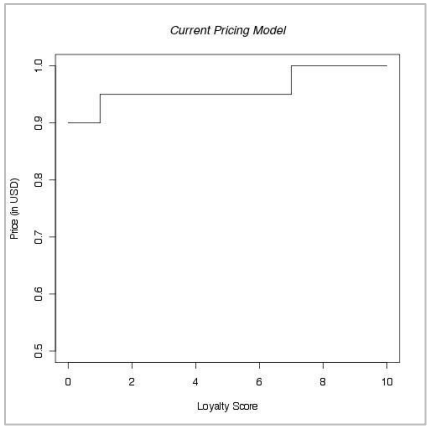


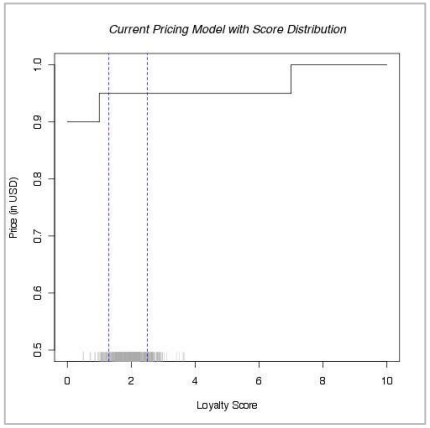


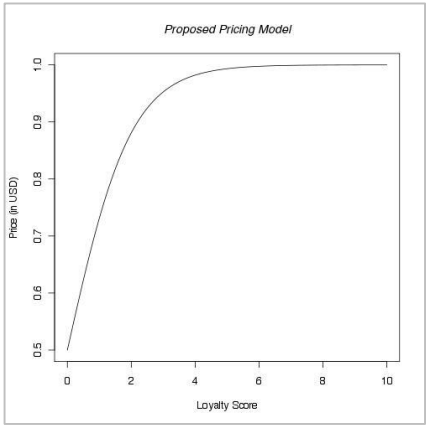


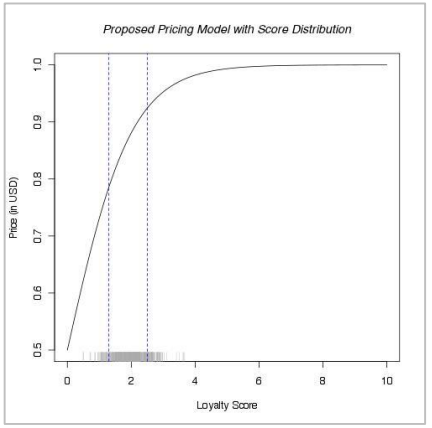


Example of exploring price tiering for most and least loyal customers

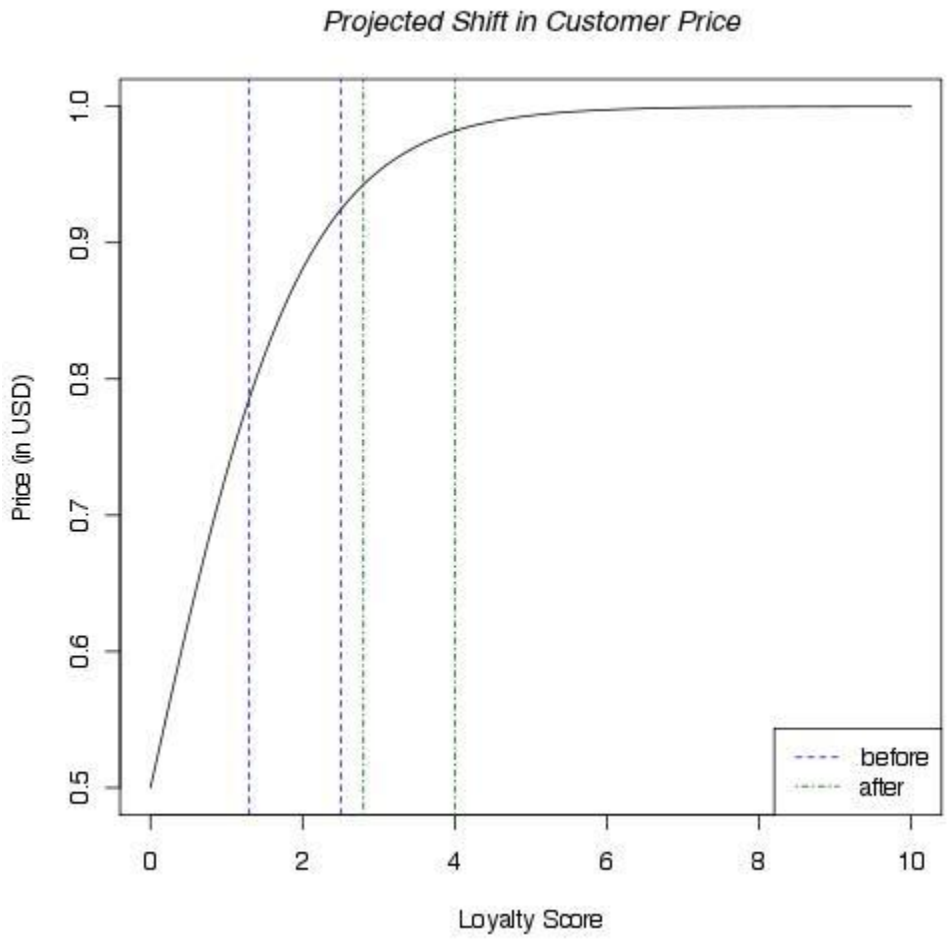






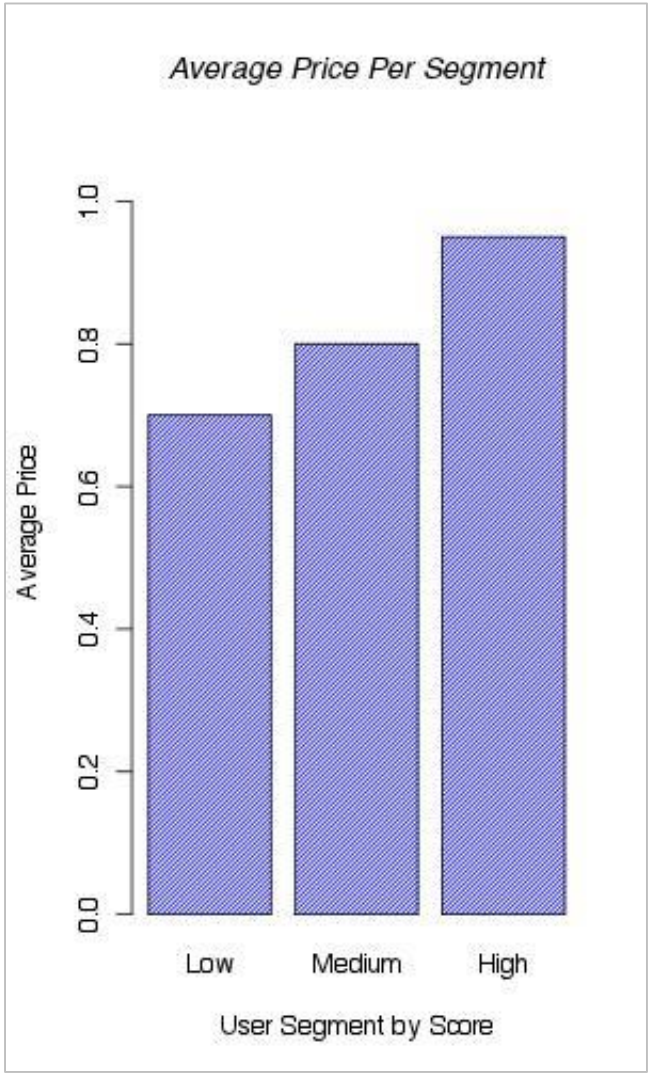


Evolution of a Graph, Analyst Example



- *Implementing new price tiering approach increases the precision of price promotions by 23%*
- *Price optimization model explains 92% of customer behavior*
- *Model can be run in production environment on daily basis, if needed, to tailor changes to direct mail campaigns and web promotional offers*

Evolution of a Graph, Sponsor Example



- *Before the project, pricing promotions were offered to all customers equally*
- *With the new approach:*
  - *Highly loyal customers do not receive as many price promotions, since their loyalty is not strongly influenced by price*
  - *Customers with low loyalty are influenced by price, and we can now target them for this purpose better*
- *We project multiple cost savings with this approach*
  - *$2M in lost customers*
  - *$1.5M in new customer acquisition costs*
  - *$1M in reductions for pricing promotions*

Key Points Supported With Data
Common Representation Methods

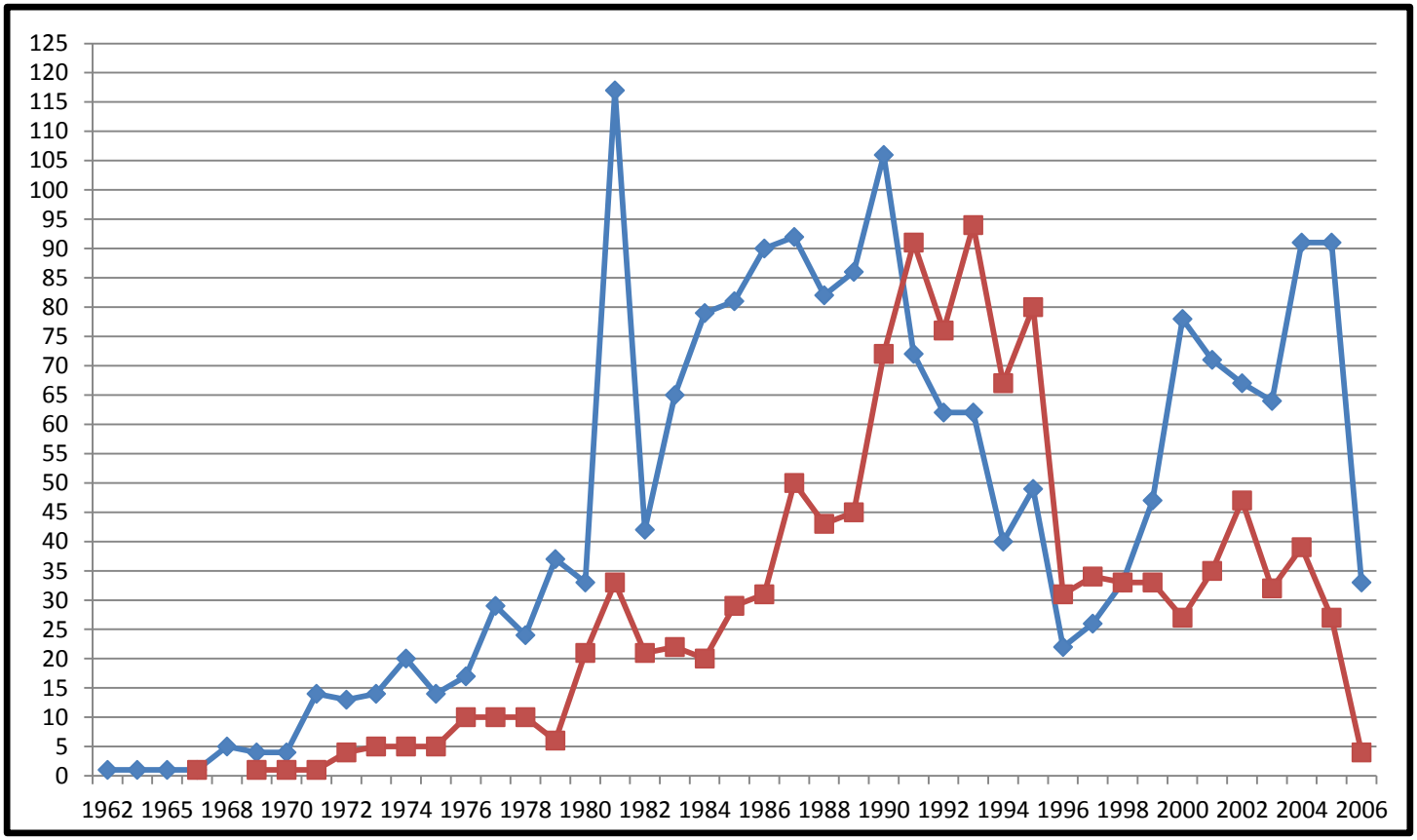
If you want to compare this kind of information….	…consider this kind of chart
Components	Pie chart
Item	Bar chart
Time Series	Line chart
Frequency	Line charts, histograms
Correlation	Scatterplot, side-by-side bar charts

How to Clean Up a Graphic, Example 1
The Before Picture

- What are the main messages here? What is the author trying to emphasize?
- What's wrong with this picture?

Chart junk

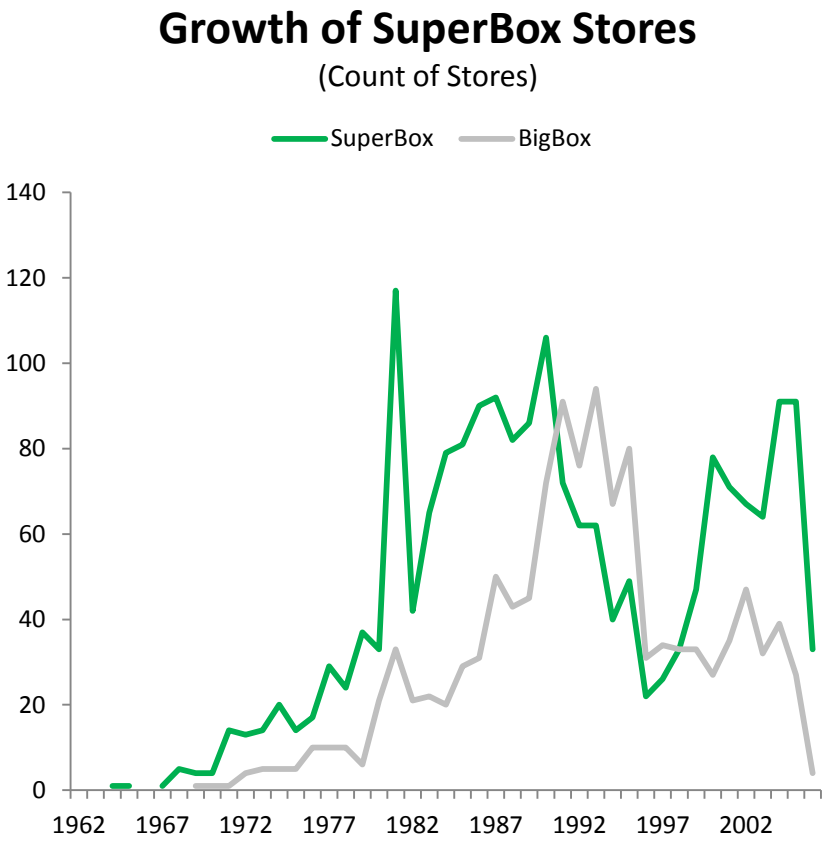
1. Horizontal Grid Lines
2. Chunky data points
3. Overuse of emphasis colors; lines & border
4. No context or labels
5. Crowded axis labels

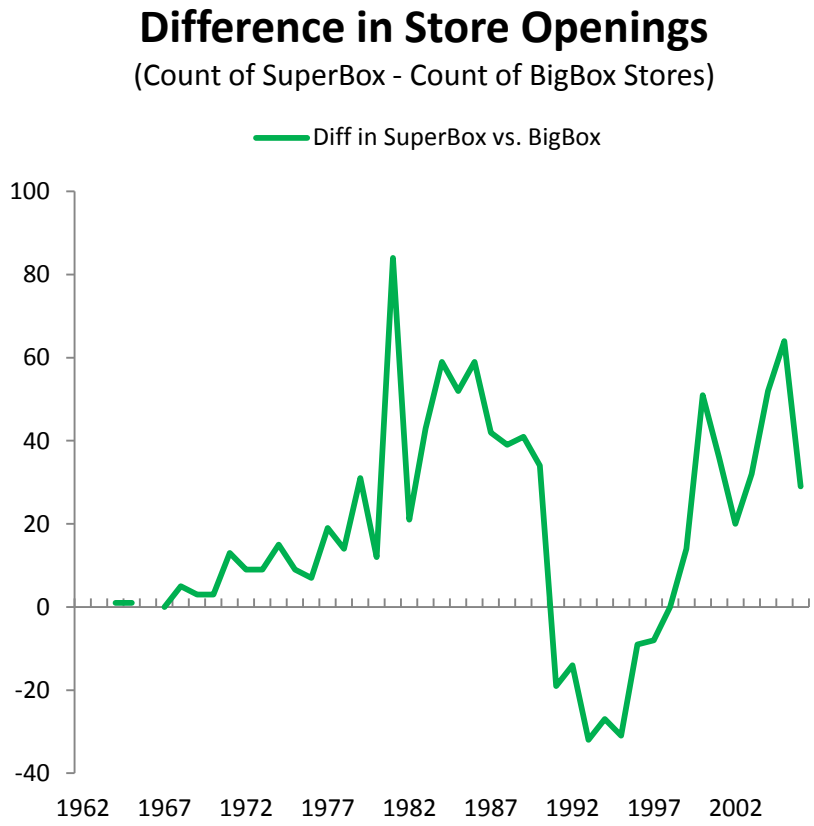


How to Clean Up a Graphic, Example 1

After

- What are the main messages here?
- What is the author trying to emphasize?



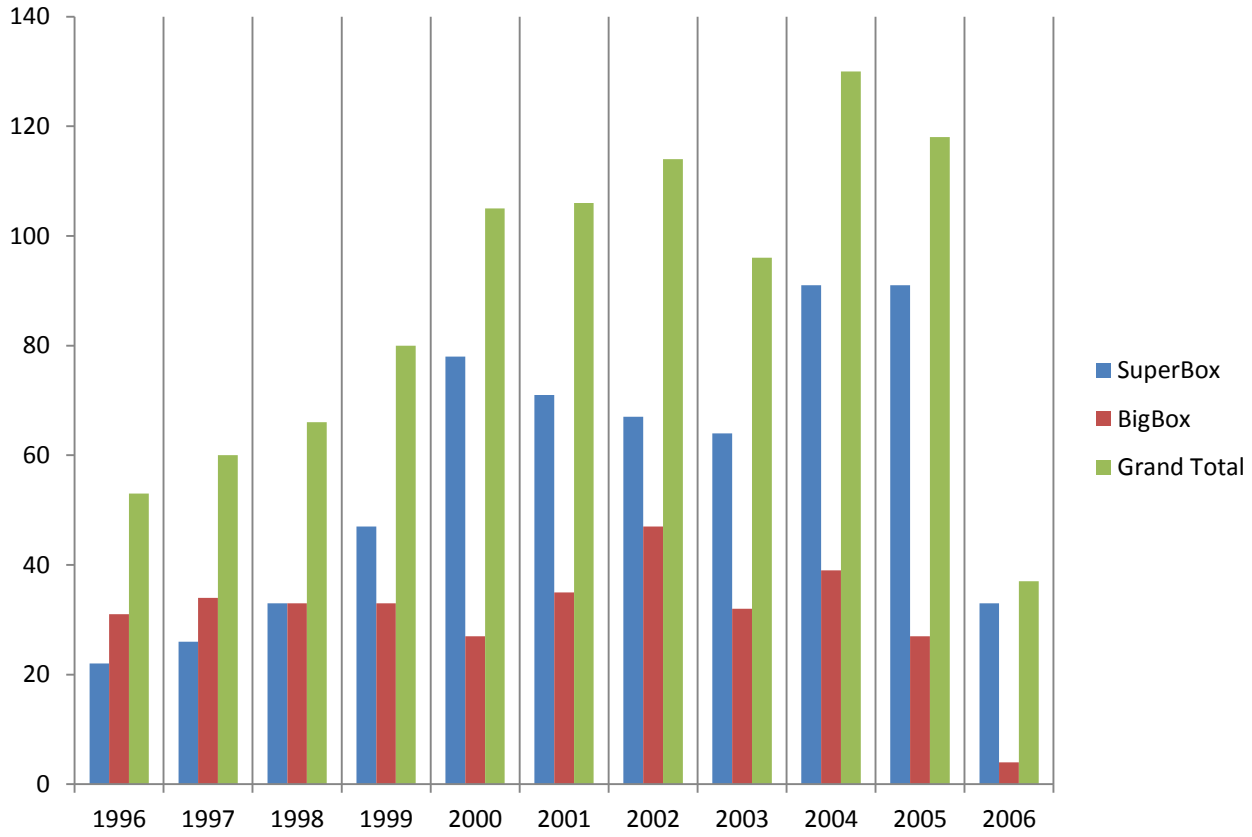


How to Clean Up a Graphic, Example 2
The Before Picture

- What are the main messages here? What is the author trying to emphasize?
- What's wrong with this picture?

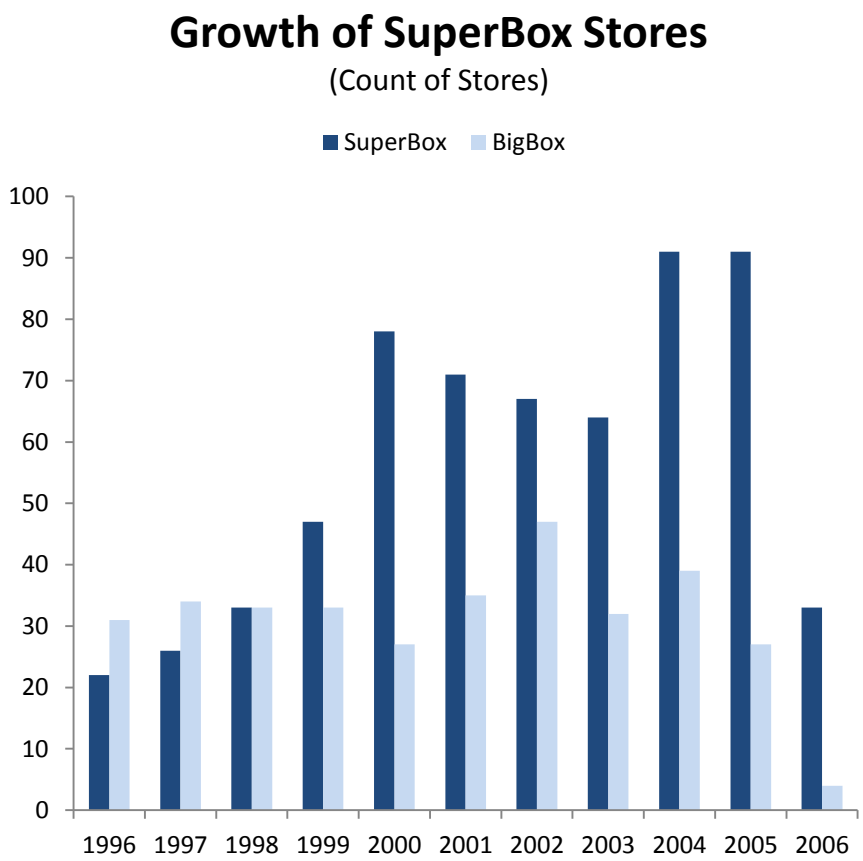
Chart junk

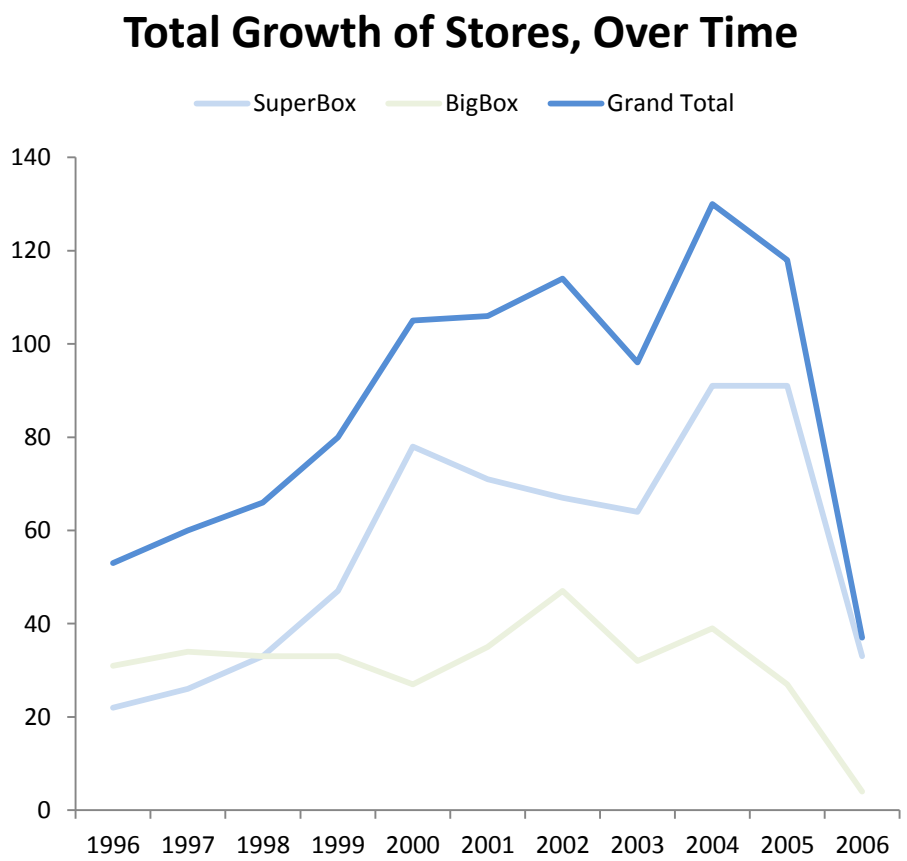
1. Vertical Grid Lines
2. Too much emphasis colors
3. No chart title
4. Legend at right restricts chart space
5. Labels are too small



How to Clean Up a Graphic, Example 2
After

- What are the main messages here?
- What is the author trying to emphasize?





A Quick Word About Using 3D Charts: Avoid Them!

2-Dimensional Charts

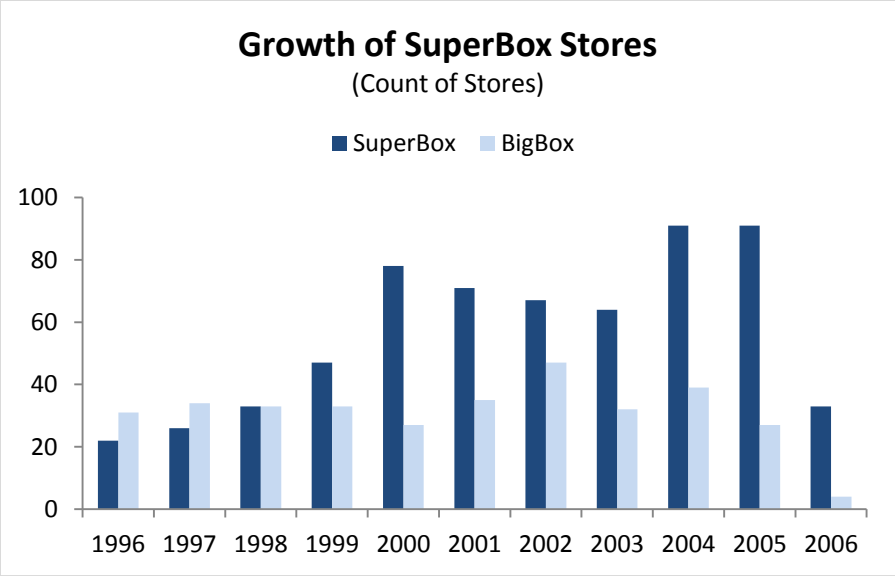


Chart A: 2-Dimensional

- Simple
- Easy to understand
- Focus on the data, not the graphics

3-Dimensional Charts

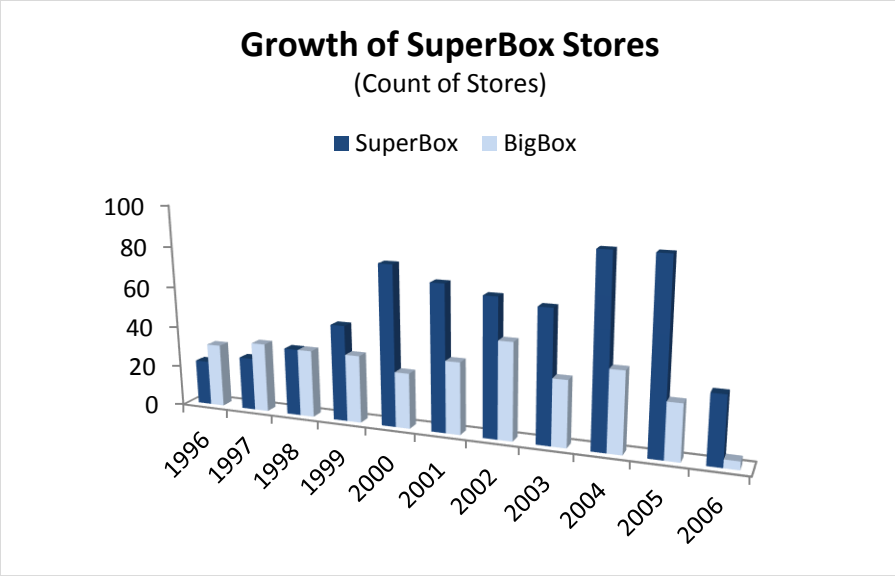


Chart B: 3-Dimensional

- Difficult to gauge actual data
- Scaling becomes deceptive
- Does not make graphic fancier, just harder to understand

Key Points with Data Visualizations

- **Remove distractions**
  - Minimize “chart junk”
  - Data-Ink Ratio
- **Choose the simplest, clearest visual for the situation**
  - Strive to illustrate your points
  - Charts should serve to reinforce your key points
  - Charts vs. Data Art
- **Use color deliberately**
  - Emphasis Colors vs. Standard Colors
  - In most cases, less is more
  - Focus on the contrast
- **Context**
  - Consistent scales, labels, axes
  - Using logs vs. raw values to show differences

Module 8: Visualizations

Lesson: Summary

During this lesson the following topics were covered:

- Survey of data visualization tools.
- Creating different visualizations for sponsors and analysts.
- Developing visuals to support your key points.
- How to clean up a chart or visualization.
- Tips and tricks

Check Your Knowledge

- Give an example of an appropriate data visualization for an analyst presentation and one for a sponsor?
- What is chart junk? What are some ways to address it in a visualization?

Thank You!