Visualization

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4. Good Data into Great Visualizations

1. Data Visualization

- *Data visualization is a graphical representation of quantitative information and data by using visual elements like graphs, charts, and maps.*
- *Data visualization convert large and small data sets into visuals, which is easy to understand and process for humans.*
- *Data visualization tools provide accessible ways to understand outliers, patterns, and trends in the data*

1. Data Visualization

Importance of Data Visualization

- To make easier in understand and remember.

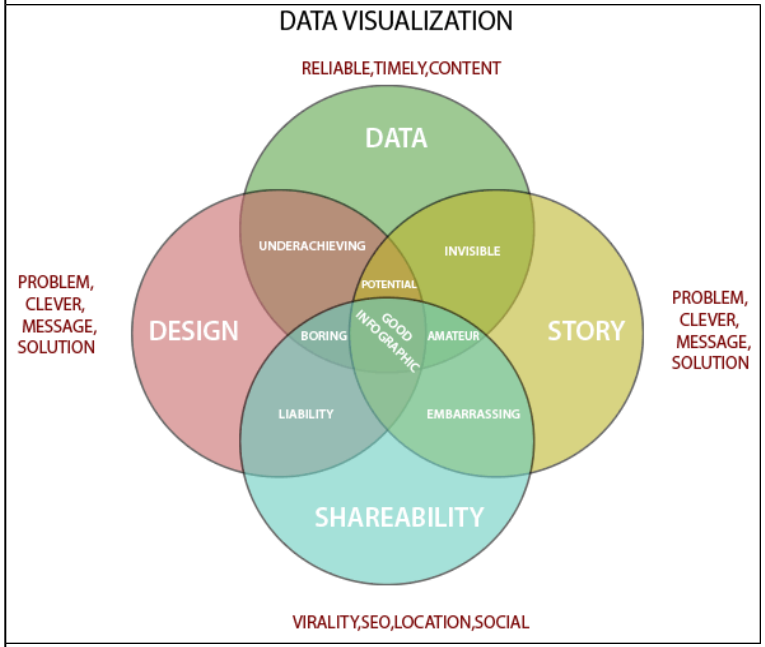
- To discover unknown facts, outliers, and trends.

- To visualize relationships and patterns quickly.

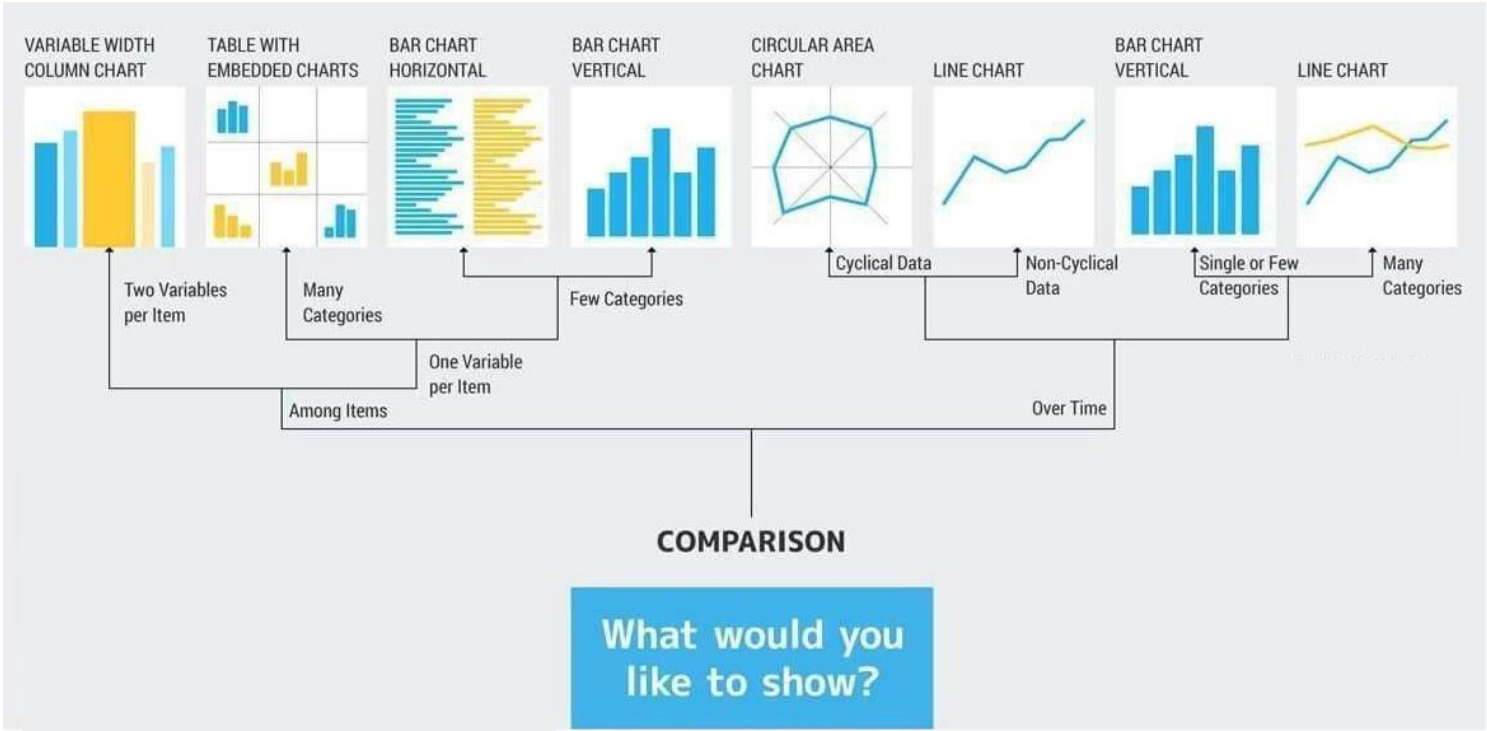
- To ask a better question and make better decisions.

- To competitive analyze.

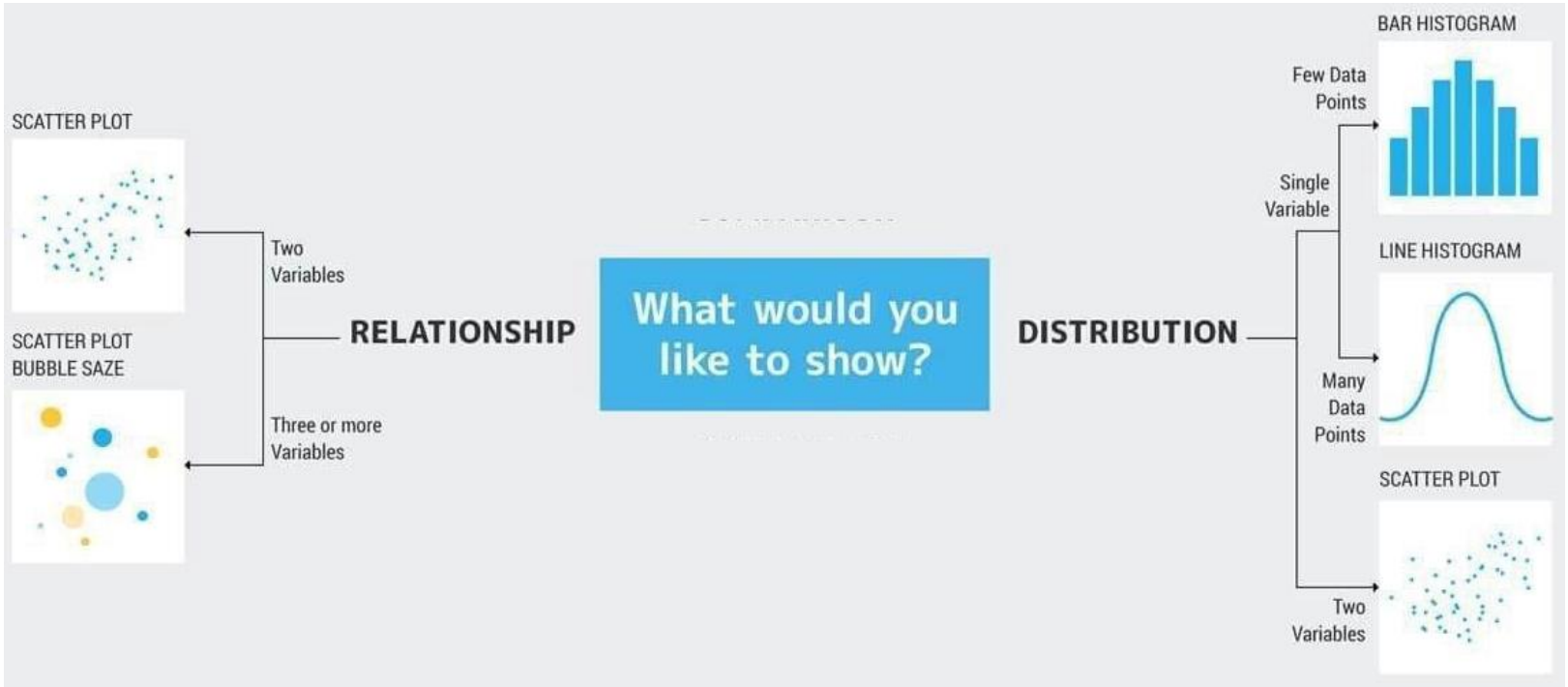
- To improve insights.



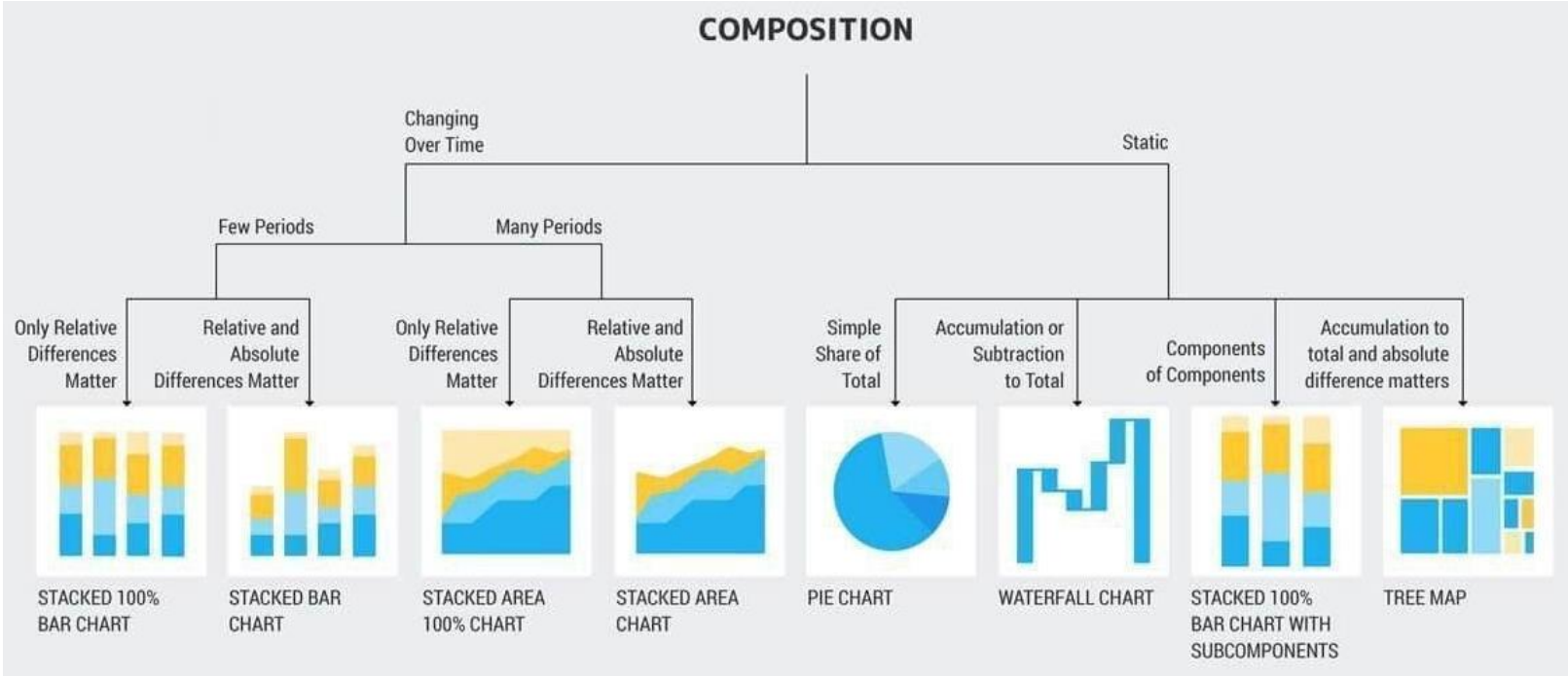
1. Data Visualization



1. Data Visualization



1. Data Visualization

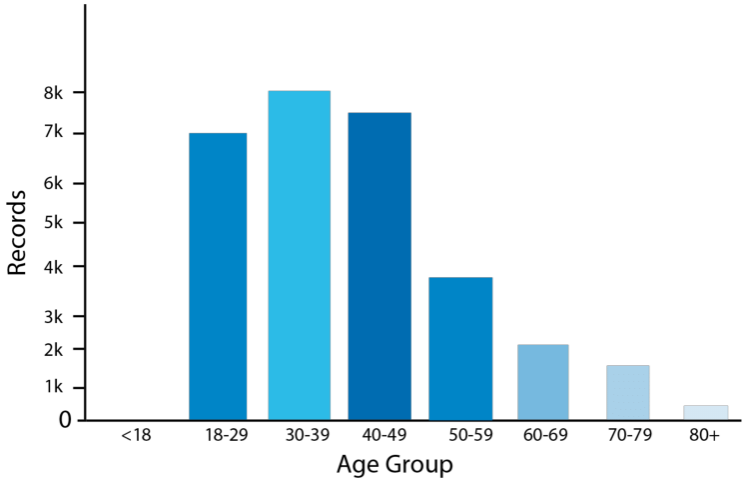


2. Univariate Data Visualization

- *Univariate data visualization plots help us comprehend the enumerative properties as well as a descriptive summary of the particular data variable.*
- *These plots help in understanding the location/position of observations in the data variable, its distribution, and dispersion. Univariate plots are of two types:*
- *1) Enumerative plots and*
- *2) Summary plots*

2. Univariate Data Visualization

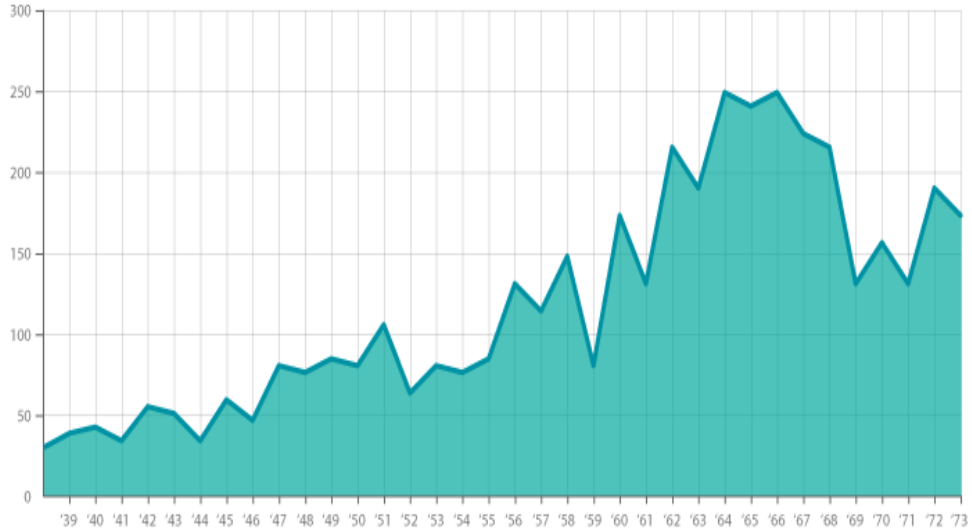
Bar Chart



Similar Charts

2. Univariate Data Visualization

Area Graph



Similar Charts

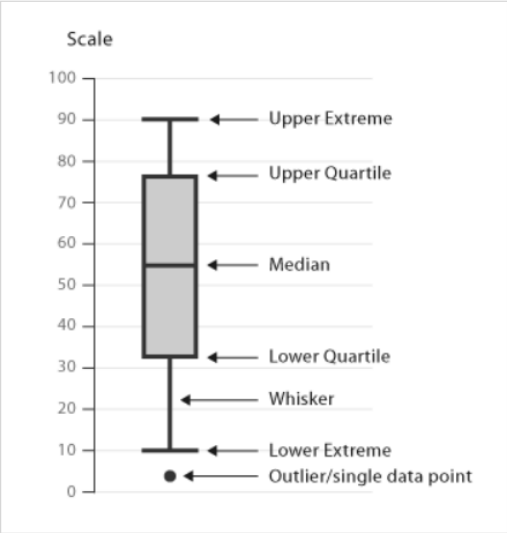
Line Graph

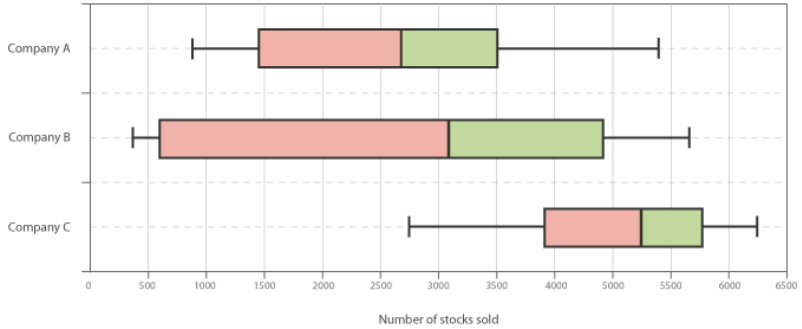
Stacked Area Graph

2. Univariate Data Visualization

Box and Whisker Plot

Anatomy





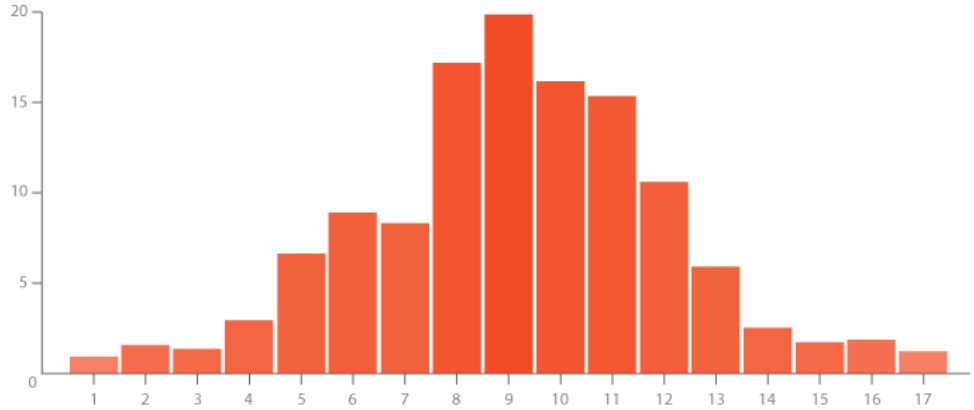
Similar Charts

Span Chart

Violin Plot

2. Univariate Data Visualization

Histogram



Similar Charts

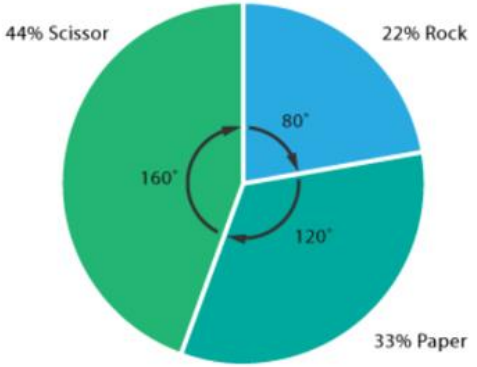
Bar Chart Density Plot Population Pyramid

2. Univariate Data Visualization

Pie Charts

Similar Charts

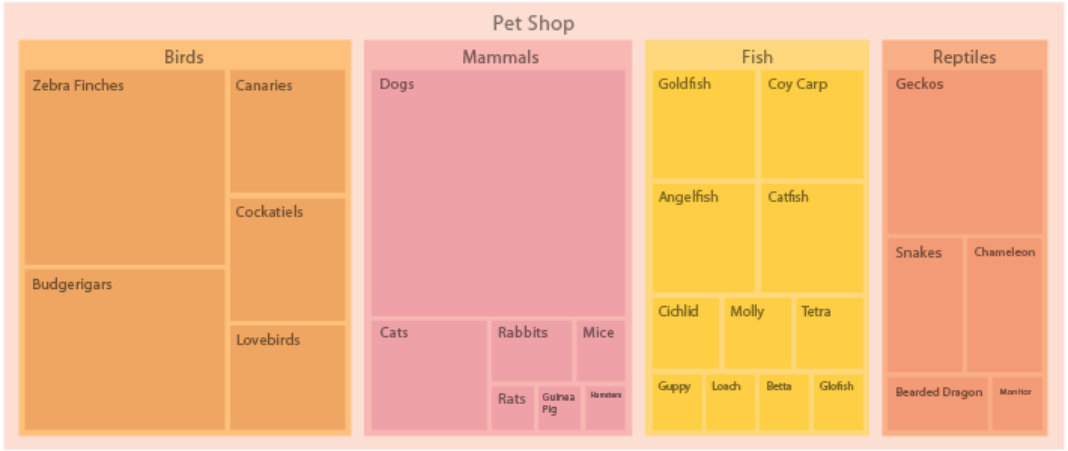
Donut Chart | Nightingale Rose Chart | Sunburst Diagram

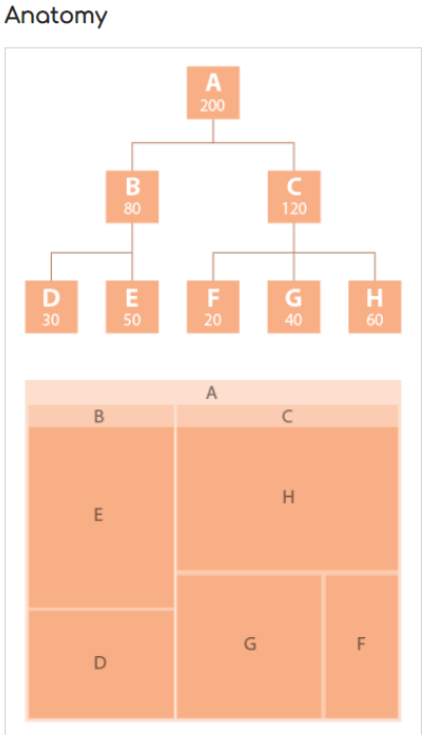


Data			
Rock	Paper	Scissor	TOTAL
2	3	4	9
To calculate percentages			
2/9=22%	3/9=33%	4/9=44%	100%
Degrees for each "pie slice"			
(2/9) x 360 = 80°	(3/9) x 360 = 120°	(4/9) x 360 = 160°	360°

2. Univariate Data Visualization

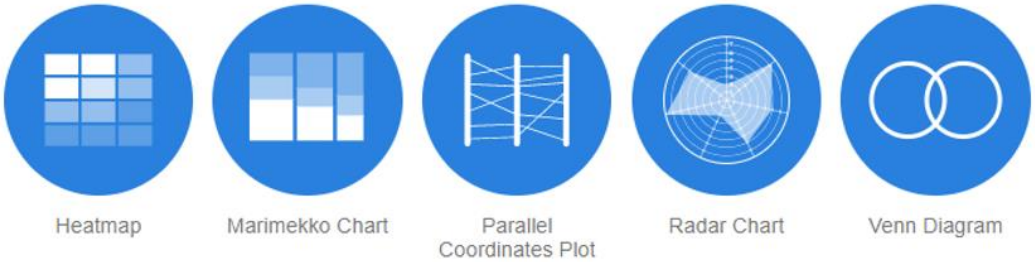
Treemap





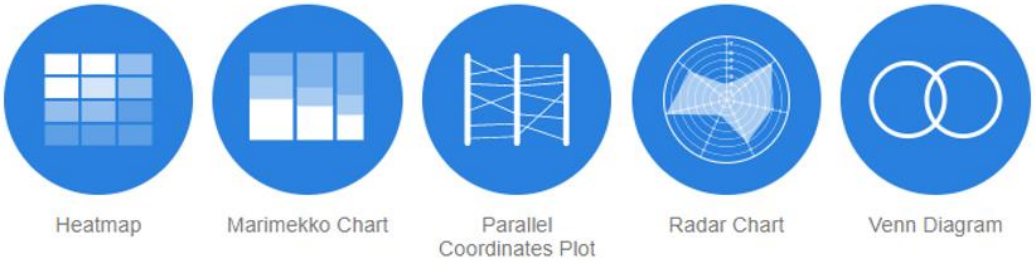
3. Bivariate/Multivariate Data Visualization

- *Multivariate datasets contain much information.*
- *Multivariate data visualization, as a specific type of information visualization, is an active research field with numerous applications in diverse areas ranging from science communities and engineering design to industry and financial markets, in which the correlations between many attributes are of vital interest.*

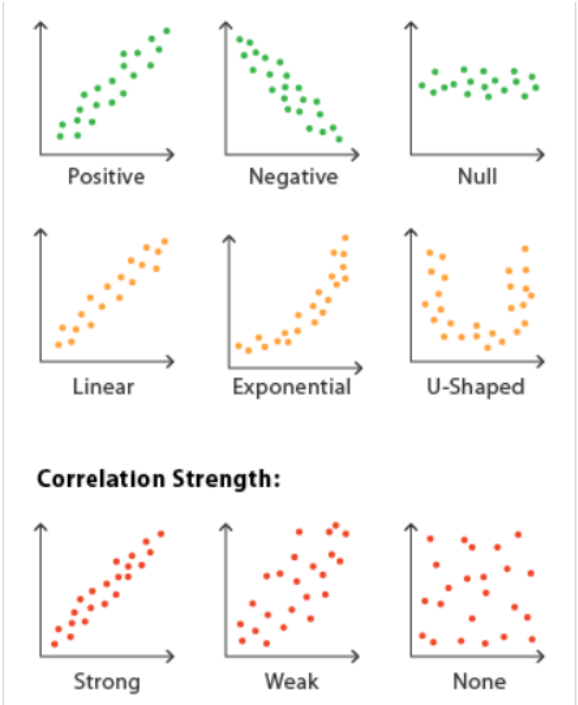


3. Bivariate/Multivariate Data Visualization

- *One- and two-dimensional displays can reveal some of this, but complex pieces of information need more sophisticated displays that visualize several dimensions of the data simultaneously.*
- *Usually several displays are needed.*

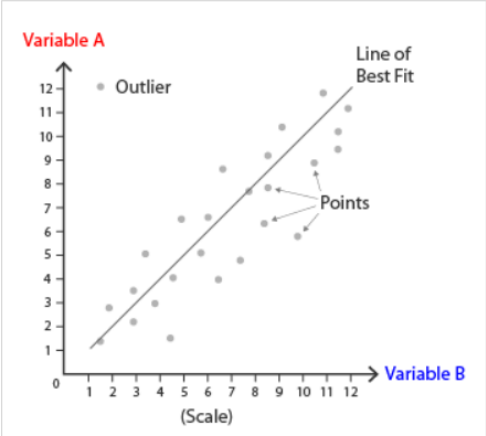


3. Bivariate/Multivariate Data Visualization



Scatterplot

Anatomy

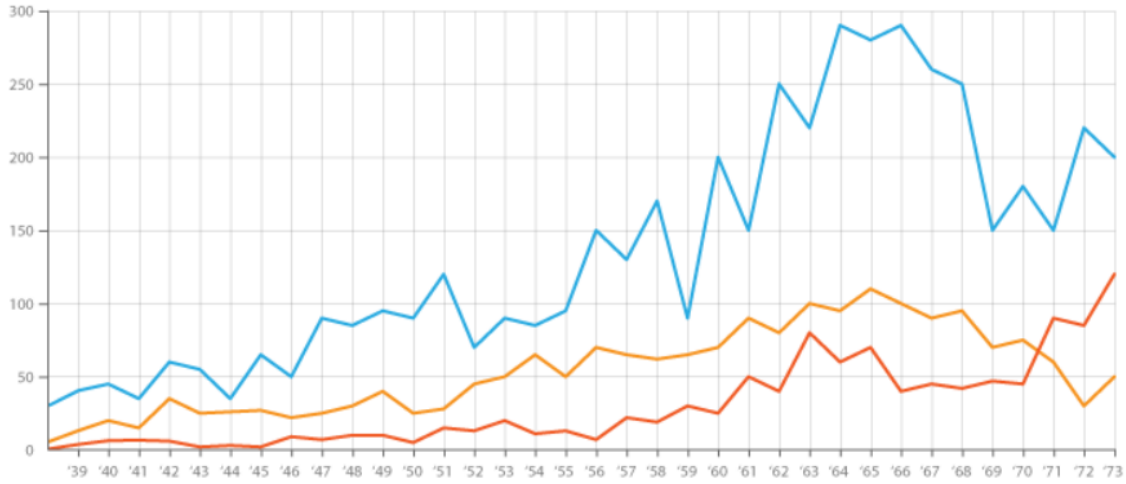


Similar Charts

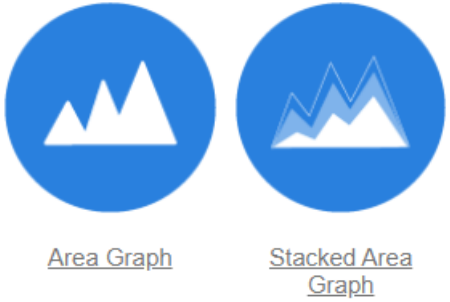
Bubble Chart

3. Bivariate/Multivariate Data Visualization

Line Graph



Similar Charts

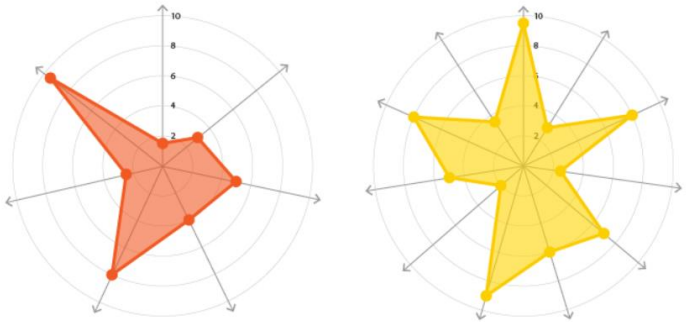


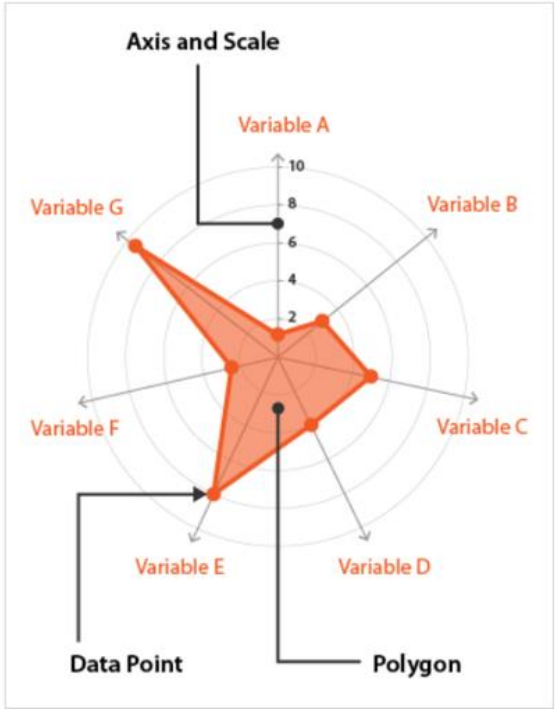
Area Graph

Stacked Area Graph

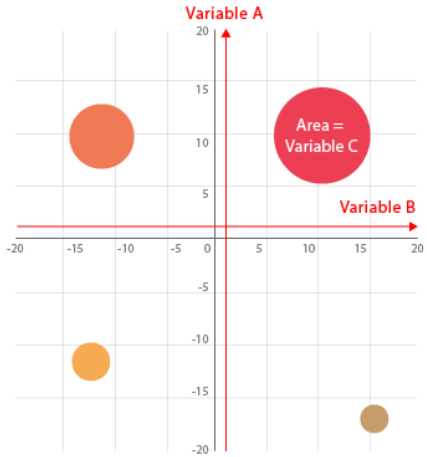
3. Bivariate/Multivariate Data Visualization

Radar Chart





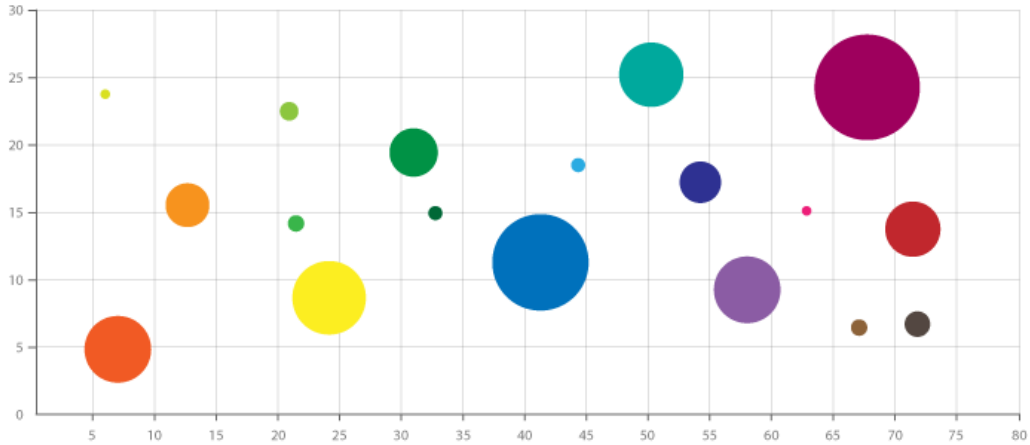
3. Bivariate/Multivariate Data Visualization



Circle Area = $\pi \times \text{Radius}^2$

Circle Diameter = (SQRT(Area / π)) x 2

Bubble Chart



4. Good Data into Great Visualizations

1. Know What You Want to Say

- *Mixed messages on the same dashboard leave your audience confused.*
- *Don't make people 'interpret' your message.*
- *Deliver ONE strong message by focusing the data you present to ensure a central theme emerges.*
- *Are your dashboards telling the right story?*

4. Good Data into Great Visualizations

1. Know What You Want to Say

In this example, it's unclear what question is being answered.

Recent One Time Campaigns Cohort View

DATE DIMENSION (CAMPAIGN START)

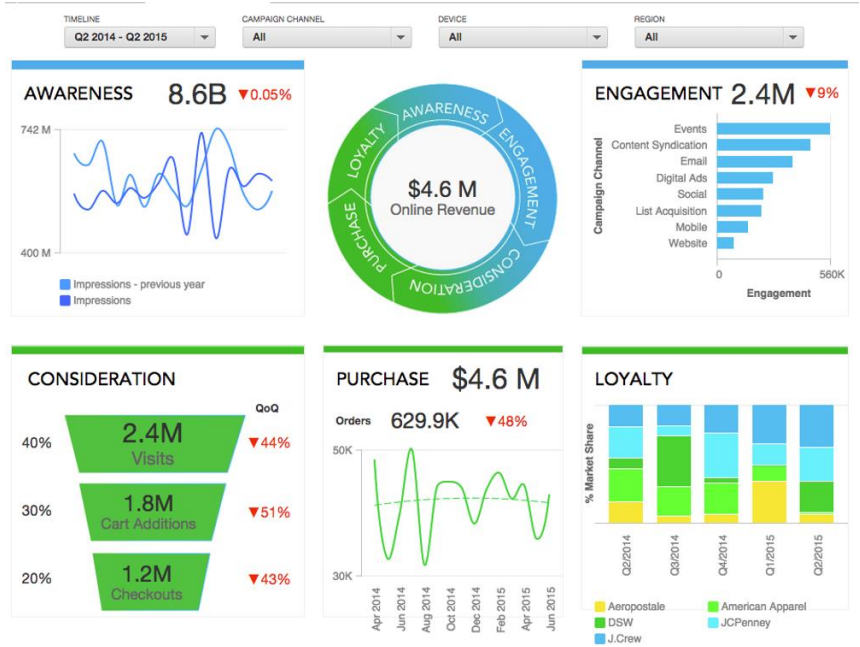
Q1 2015 - Q3 2015

Channel	Start Dt	Members	Responses	# of SQLs	# of S2O	S2O $	Cost $
Field Marketing	08/20/2015	0	0			--	
	08/19/2015	0	0			--	
	08/12/2015	0	0			--	
Tradeshow	08/10/2015	0	0			--	
	08/10/2015	0	0			--	
	08/10/2015	0	0			--	
	08/10/2015	0	0			--	
	08/03/2015	0	0			--	
	08/03/2015	0	0			--	

4. Good Data into Great Visualizations

2. Construct a Good Story

- *The way you organize and present your content can facilitate a clearer understanding.*
- *Group your visualizations so that each element within a dashboard reinforces your overall message.*

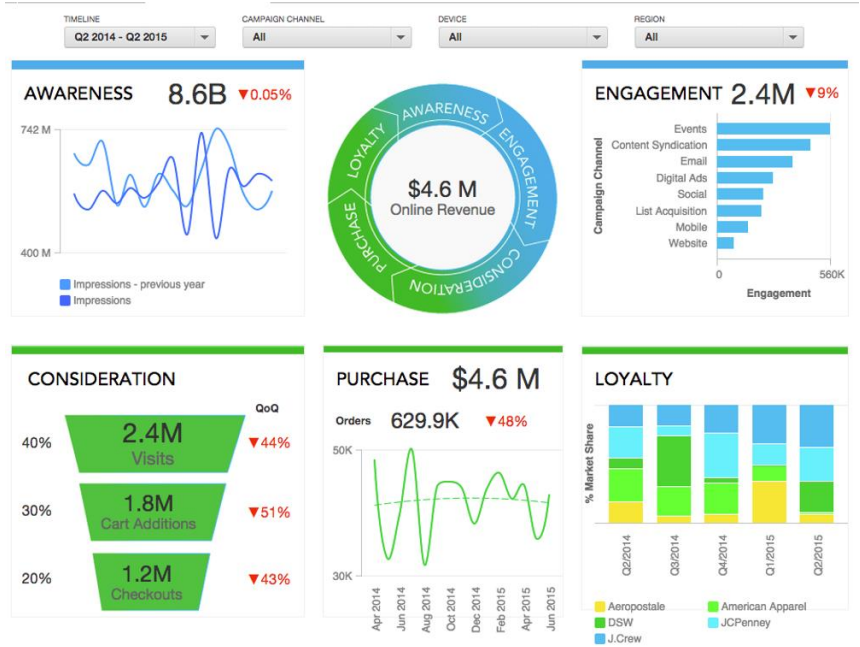


Progress towards goals are clearly presented

4. Good Data into Great Visualizations

2. Construct a Good Story

- *Ensure every metric and visualization is relevant, so viewers can easily draw the conclusion you wish to illustrate.*
- *If you're not sure how intuitively your graphic is communicating, test it with several people on your team for feedback before publishing*

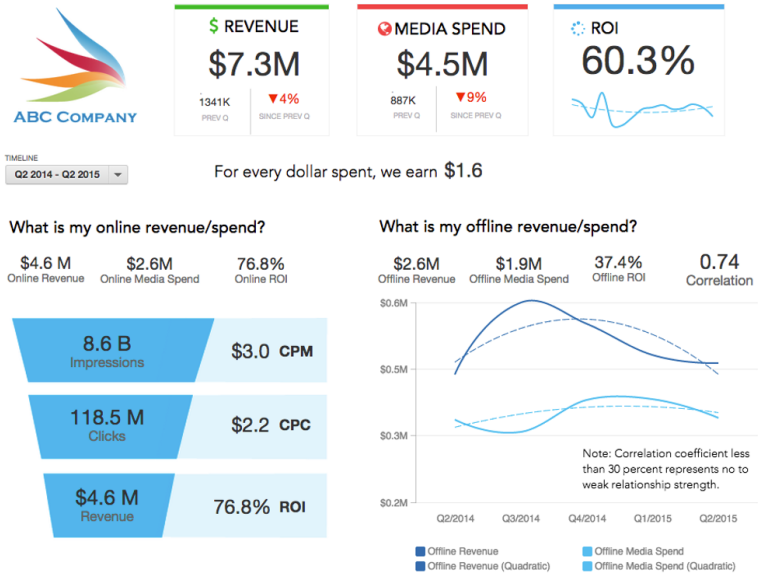


Progress towards goals are clearly presented

4. Good Data into Great Visualizations

3. Design for the Viewer's Eye

- *Organize visuals in a manner that builds understanding, naturally. Make sure your visualization facilitates natural eye movement.*
- *As the audience follows the narrative flow of your dashboard, ensure they are following a logical sequence of layered data; start with broader information and allow users to explore.*



This data hierarchy places high-level visualizations at the top followed by detailed visualizations at the bottom.

4. Good Data into Great Visualizations

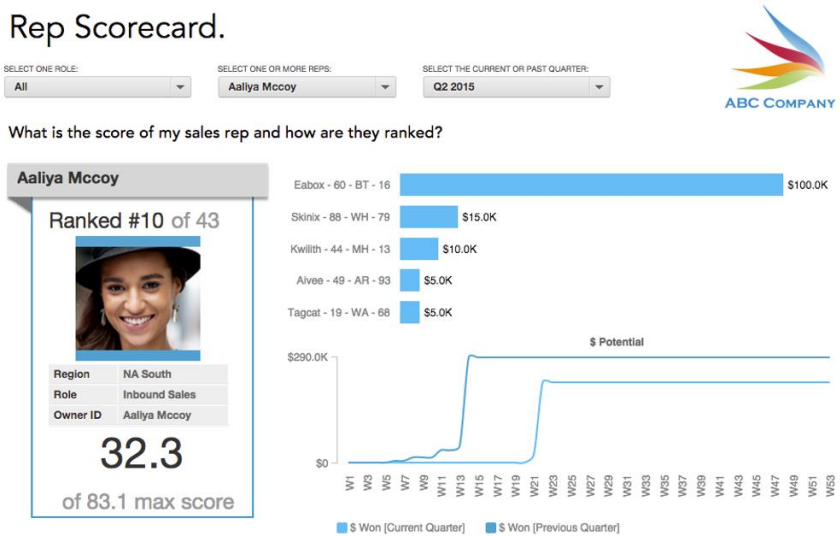
4. Add Color to the Story

- *In data visualizations, color should not be used for decorative or non-informational purposes. Instead, use color to show your audience what question you are answering.*
- *Use it to clarify and make your specific business insight pop, like whether performance is good or bad. Most people associate green with positive or above-goal measurements, while judicial use of red generally indicates peril or numbers that need improvement.*

4. Good Data into Great Visualizations

5. Don't Crowd Your Audience

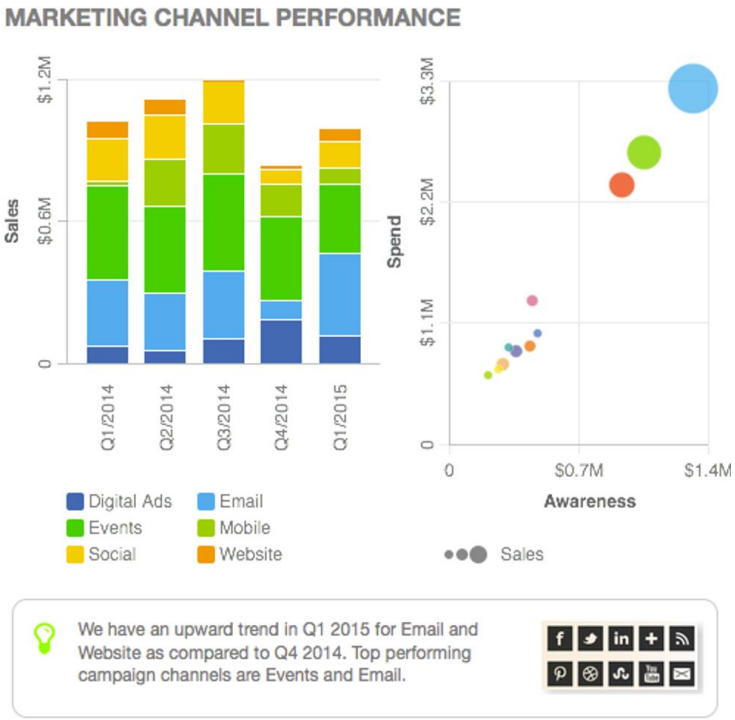
- *You will want to give your audience room to breathe and process what you're presenting. So just think 'less is more.' Reduce redundant chart labels. Remove excessive boxes or lines that separate data.*
- *Avoid visual clutter by utilizing white space to encourage people to clearly see and really absorb your message.*



4. Good Data into Great Visualizations

6. Establish Context

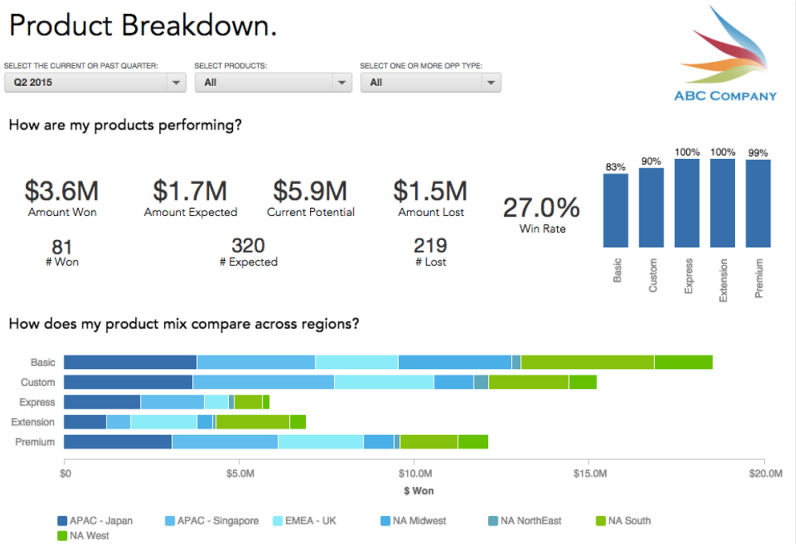
- *Often, a clear picture can say a thousand words. But are they the ones you want? Every viewer may not have the appropriate context to draw your desired conclusions.*
- *A little bit of text annotation can go a long way to ground the viewer in the appropriate frame of reference.*



4. Good Data into Great Visualizations

7. Combine Text with Tables & Charts

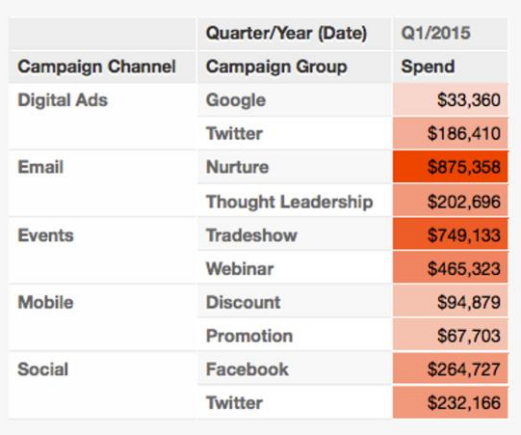
- *Don't overwhelm users with too much information out of the gate.*
- *First, enable them to recognize patterns easily by choosing the proper visual for your message.*
- *Then, make it easy for people to get interactive and dig in at their own pace for more details. Non-intrusive text helps to increase understanding without detracting from a visual's meaning*



4. Good Data into Great Visualizations

8. Make Your Visual Actionable

- *When a visual naturally transforms data into knowledge, it is telling a specific story. It's been found effective to use a one-visual-to-one-story ratio so each data viz is focused and clear.*
- *But you want to do more than just present information, right? To inspire questions, encourage dialogue or incite specific action, guide your audience with visual clues.*
- *The more easily understood your call-to-action, the more people will willingly interact with your insight, brainstorm solutions and implement recommendations.*



	Quarter/Year (Date)	Q1/2015
Campaign Channel	Campaign Group	Spend
Digital Ads	Google	$33,360
	Twitter	$186,410
Email	Nurture	$875,358
	Thought Leadership	$202,696
Events	Tradeshow	$749,133
	Webinar	$465,323
Mobile	Discount	$94,879
	Promotion	$67,703
Social	Facebook	$264,727
	Twitter	$232,166