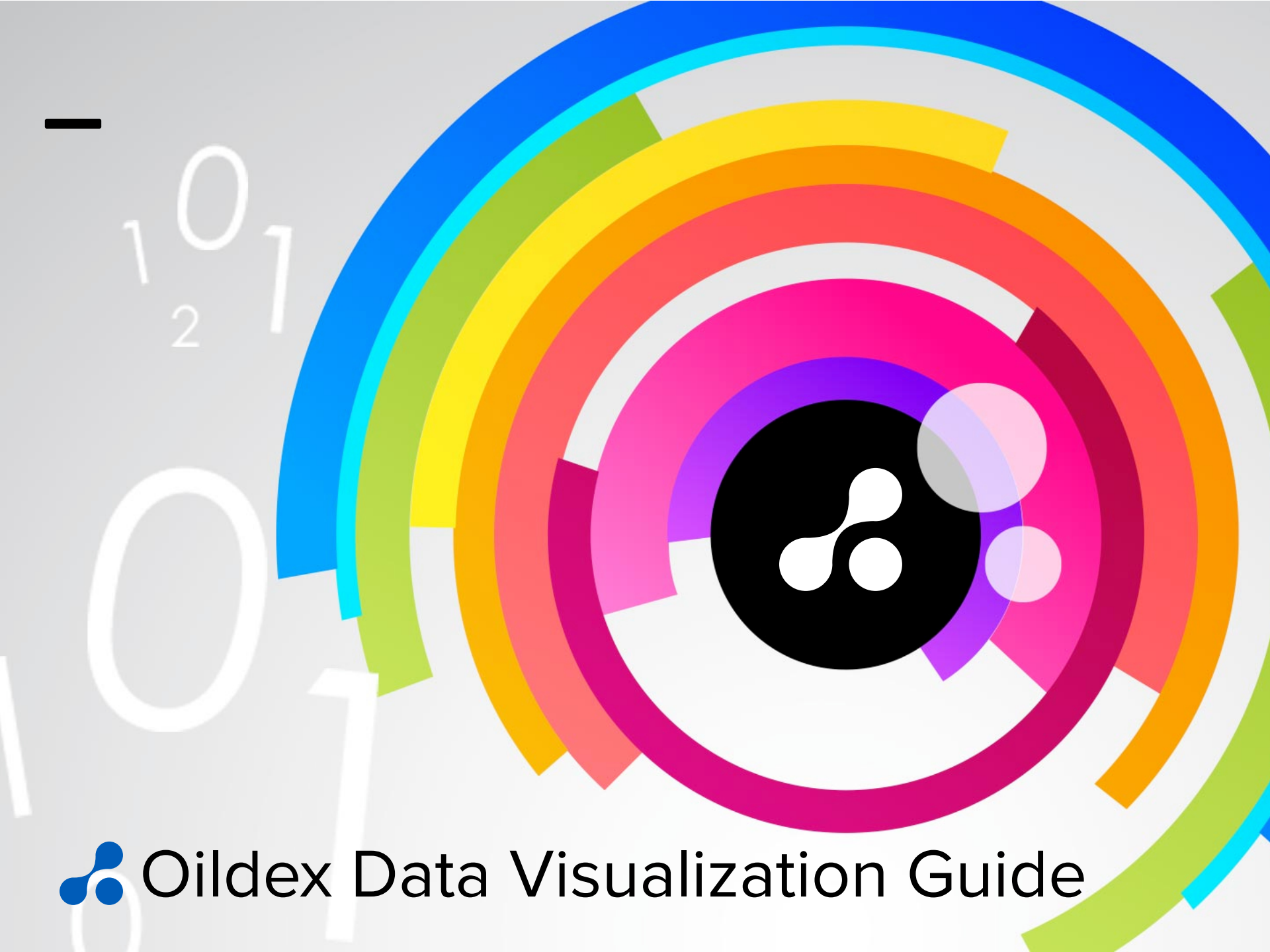


Oildex Data Visualization Guide

CONTENTS

V1.0 WELCOME

GOALS

Identify, define, prioritize strategic requirements and user stories with Data Visualizations that need to be supported as part of the evolution of the our visual design language.

SIMPLIFY YOUR DATA

What is Data Visualization

A graphical presentation of information, with the goal of providing the viewer with a qualitative understanding of the information contents.

Words alone are not enough. As humans, we are biologically wired to process the world visually.

We understand images instantly—long before we learn the language to describe them.

Visual communication is the most powerful medium for transferring volumes of information.

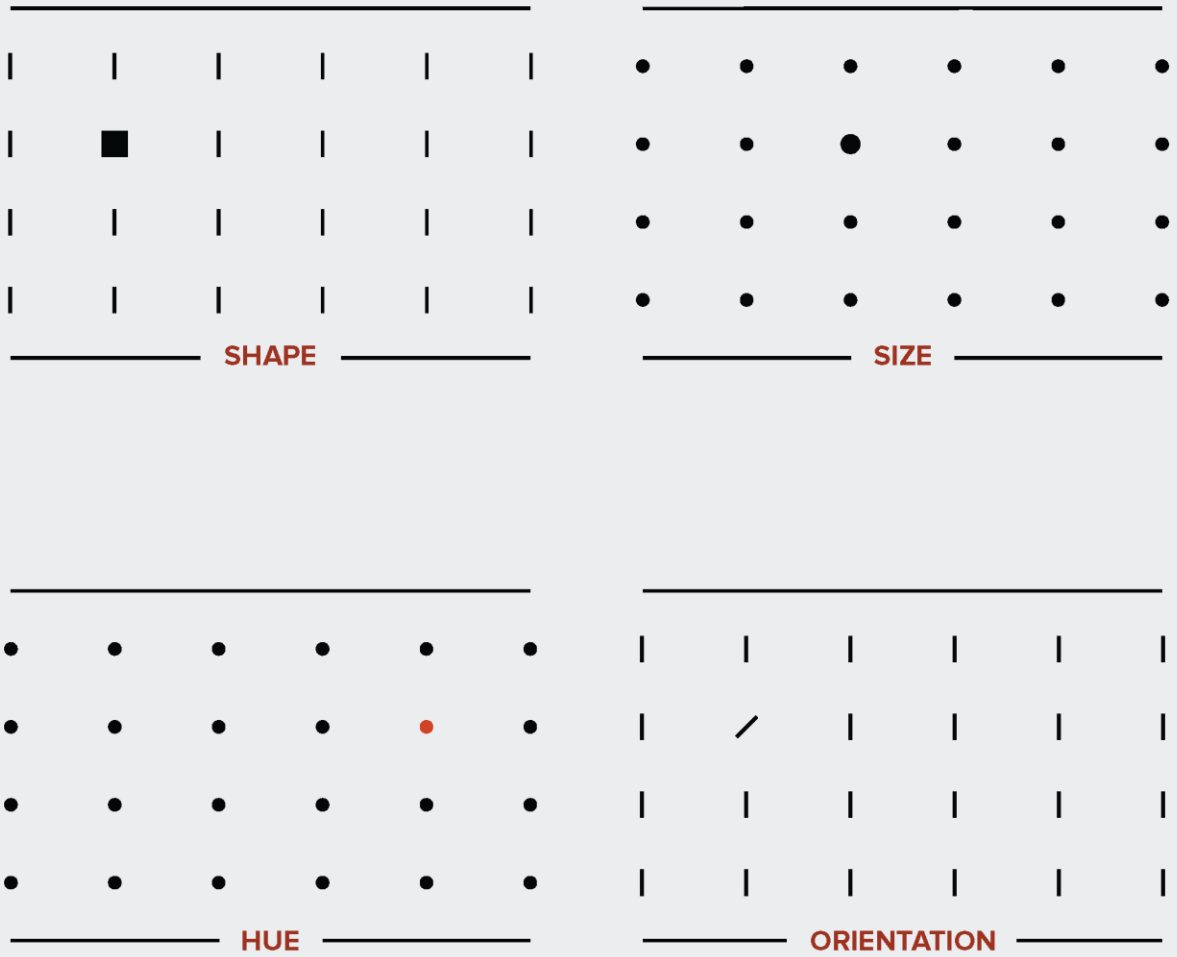
WHY WE LOVE VISUALS

Visually, the human brain quickly recognizes, stores and recalls images, seamlessly and subconsciously cementing ideas in long-term memory.

Using visualization to synthesize ideas is not only an effective medium, it's the type of communication our brains crave.

AVERAGE CONSUMER ATTENTION SPAN

= 8 seconds



IT'S ABOUT THE BRAIN

Our brain gathers information through pre-attentive processing of visual cues in our environment, which we unconsciously absorb and filter—within 250 milliseconds.

Notice that your eye is naturally drawn to these variations on the left.

Watch the video on the value of data visualization

TURN VISUALS INTO LANGUAGE

Communication, as a whole, is becoming increasingly visual. But successful content is not simply created from words and pictures thrown together. It is crafted with intent, understanding and a solid framework.

When we communicate visually, we are communicating in many ways, not only in the content we present, but how it is presented. Everything we design is a reflection of our business, which is why adhering to a consistent visual style is vital to establishing and preserving our brand identity.

APPEAL

Well-designed information is stimulating, attractive and engaging. These qualities pique interest even before information is processed.

RETENTION

Visualizations trigger us to pull information from our long-term memory, allowing for rapid connections to already stored information, which help to cement the concept in the brain.

COMPREHENSION

The brain is pre-wired to automatically interpret relationships between objects, allowing for instant comprehension with minimal effort.

THE SCIENCE

Our brain gathers information through pre-attentive processing of visual cues in our environment, which we unconsciously absorb and filter—within 250 milliseconds.

COMPARISONS

Our brain gathers information through pre-attentive processing of visual cues in our environment, which we unconsciously absorb and filter—within 250 milliseconds.

CORRELATIONS

Reveal hidden patterns and trends within data. Turn the data into information people can understand.

FINDING THE STORY IN YOUR DATA

DATA RELATIONSHIPS

NOMINAL COMPARISON

This is a simple comparison of the quantitative values of subcategories.

Example: Number of visitors to various websites.

DEVIATION

This examines how data points relate to each other, particularly how far any given data point differs from the mean.

CORRELATION

This is data with two or more variables that may demonstrate a positive or negative correlation to each other. Example: Salaries according to education level.

TIME-SERIES

This tracks changes in values of a consistent metric over time.

Example: Monthly sales.

RANKING

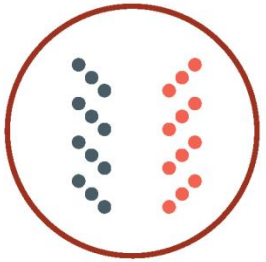
This is a simple comparison of the quantitative values of subcategories. Example: Number of visitors to various websites.

DISTRIBUTION

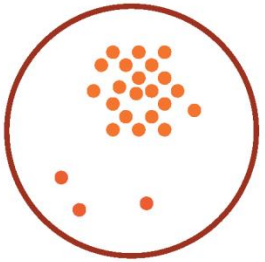
This shows data distribution, often around a central value. Example: Heights of players on a basketball team.

PART-TO-WHOLE RELATIONSHIPS

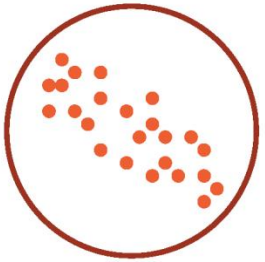
This shows a subset of data compared to the larger whole.



CORRELATIONS



OUTLIERS



TRENDS

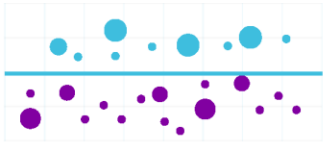
PATTERNS AND INSIGHTS

Certain elements will help serve your story. In business, it is common to use data comparisons to uncover interesting and useful Insights, such as:

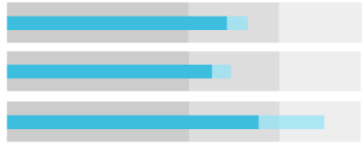
TYPES OF CHARTS

Area

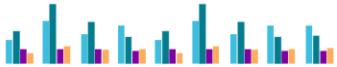
Bar



Bubble



Bullet



Column

Donut

Heat Map

Line

Pie

Scatter

Step

Tree

What type of chart should I use?

Comparison

This is a simple comparison of the quantitative values of subcategories.

Distribution

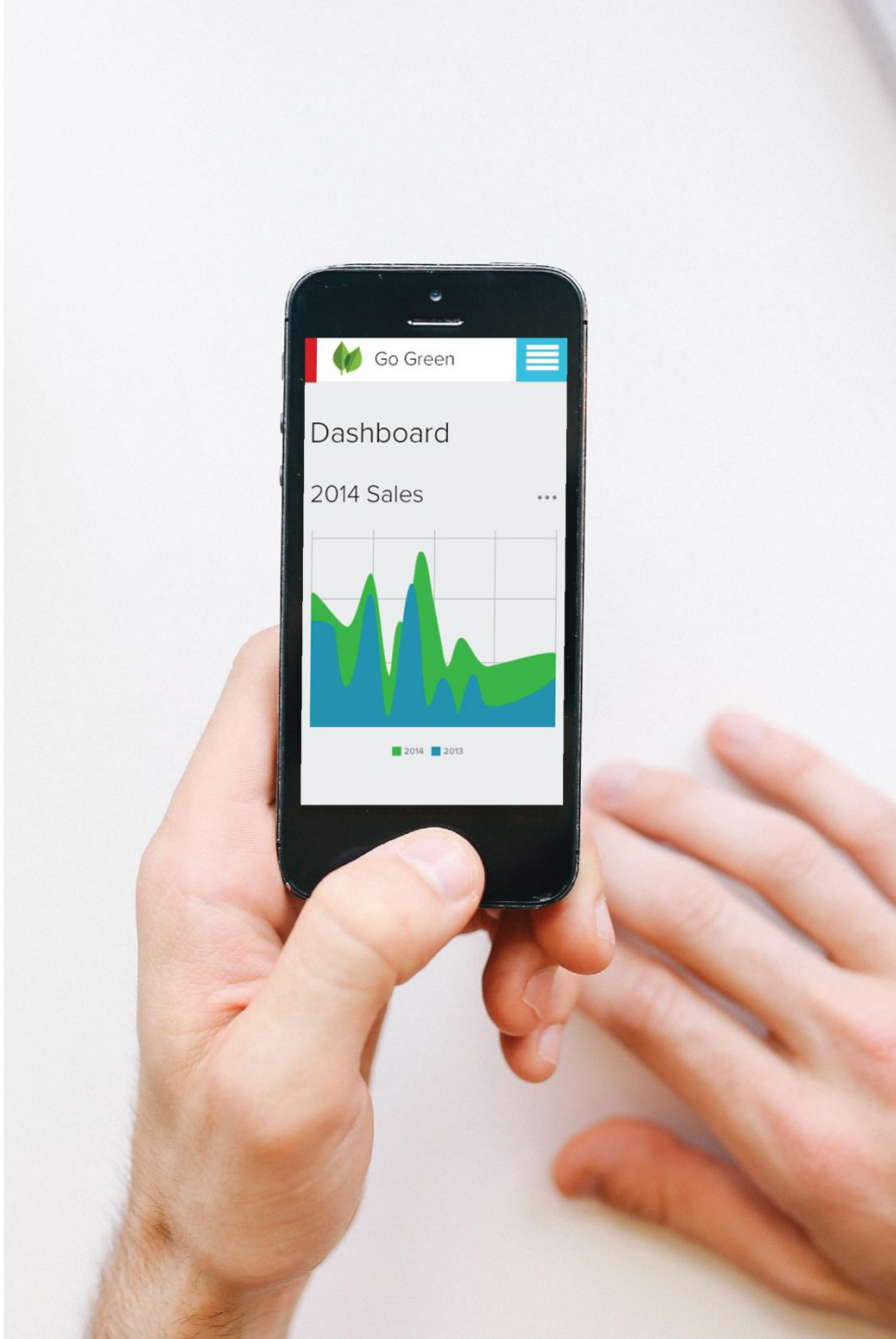
This is a simple comparison of the quantitative values of subcategories.

Relationship Correlation

Data with two or more variables that demonstrate a positive or negative correlation to each other.

Composition

Static values measured on a scale or variable data measured over time.



Comparison

Among Items

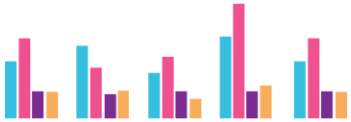
One Variable per Item

Few Categories

Many Items

Bar Chart

Few Items



Column Chart

Over Time

Many Periods

Line Chart

Few Periods

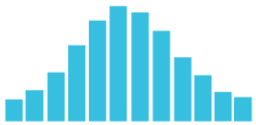
Column Chart

Line Chart

Distribution

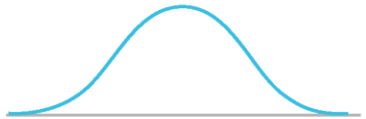
Single Variables

Few Data Points



Column Histogram

Many Data Points



Line Histogram

Two Variables

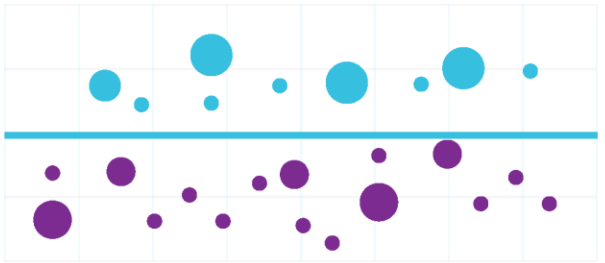
Scatter Chart

Relationship-Correlation

Two Variables

Three Variables

Scatter Chart



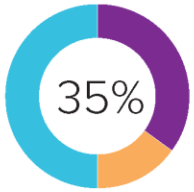
Bubble Chart

Composition

Static

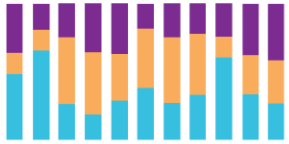
Simple Share of Total

Pie Chart



Donut Chart

Components of Components



Stacked 100% Column Chart
with Subcomponents

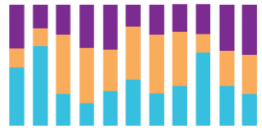
Changing Over Time

Many Periods

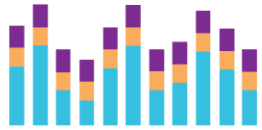
Stacked 100% Area Chart
Only Relative Differences Matter

Stacked Area Chart
Relative and Absolute Differences Matter

Few Periods



Stacked 100% Column Chart
Only Relative Differences Matter



Stacked Column Chart
Relative and Absolute Differences Matter

CHARTING GUIDELINES

There are no hard rules...

...there are general guidelines to make the right chart determination.

A table works best when:

- It is used to look up individual values
- The values must be expressed precisely

A graph works best when:

- the message is contained in the shape of the data (patterns, trends, exceptions to the norm)
- entire sets of values must be compared

GENERAL PRINCIPLES

Choose carefully
Select the optimal type of visualization, based on the descriptions in this guide.

Be honest
Make sure the visualization conveys an accurate picture of real data.

Use good labels
Include a descriptive title (and subtitle if needed), axis labels, and units for numeric values.

Explain encodings
Use a legend and/or definitions to describe the meaning of elements such as colors, shapes or icons.

Use appropriate colors
Follow recommended color palette, provide clear differentiation between colors, avoid eye strain, addresses color-blindness, and consider color psychology.

Avoid "Chart Junk"
This often includes busy patterns, dramatic gradients, 3D effects, etc.

Don't make them squint
Make elements large enough to be easily seen and read from a reasonable viewing distance.

Consider "Why a chart?"
Charts are intended to show relationships or patterns in data. They should convey ideas about the data that would not be readily apparent if they were displayed in a table or as text

Consider order of the data
If data occurs naturally in an order, present it that way (dates, rankings, etc.) Otherwise, order the data from largest to smallest.

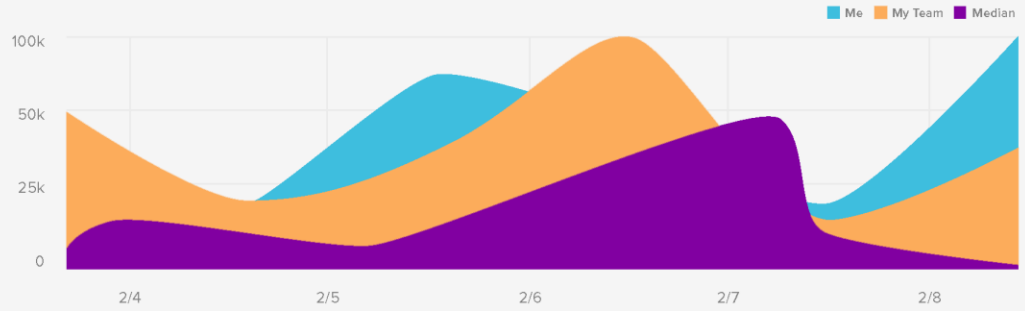
Mute axes and grids
These elements are important for interpreting the data, but introduce unnecessary noise if they are visually equal.

Avoid duplicating information
If information must be presented in the chart, do it in one place only. If a legend is presented, there may be no need to name the data point elsewhere

Area Chart

When to use

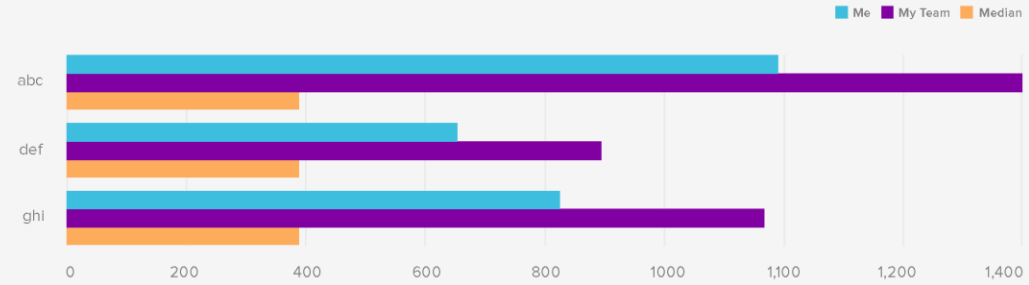
- Display over time
- Data set adds up to a whole
- Cumulated totals
- Color indicates data set volume



Bar Chart

When to use

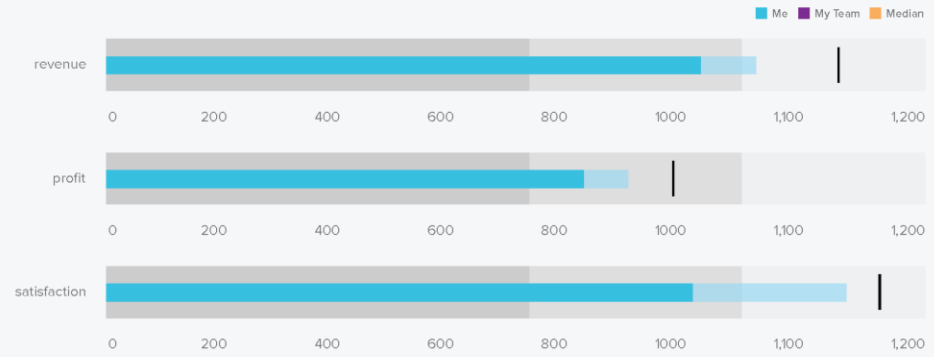
- Compare between groups
- Track changes over time
- Measure changes over time
- Small data sets are best



Bullet Chart

When to use

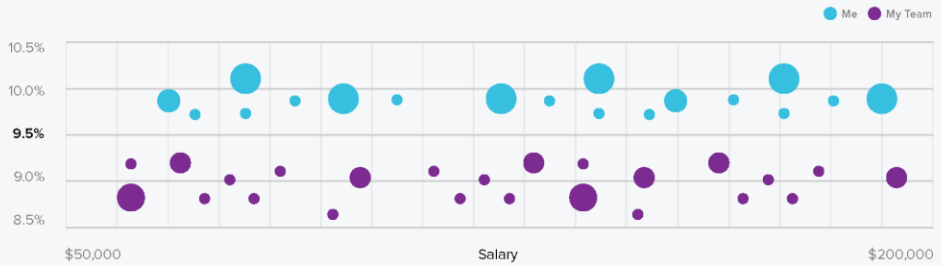
- Compare a primary measure to one or more other measures
- Displays in the context of qualitative ranges of performance
- Replace the meters and gauges charts



Bubble Chart

When to use

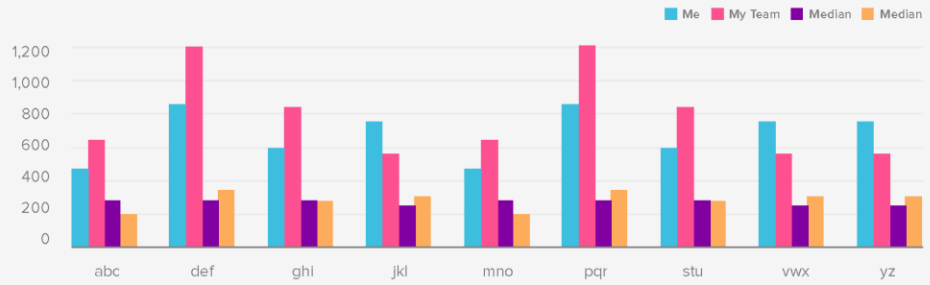
- Data sets with 2 to 4 dimensions
- First two dimensions are coordinates
- 3rd dimension as color
- 4th dimension as size



Column Chart

When to use

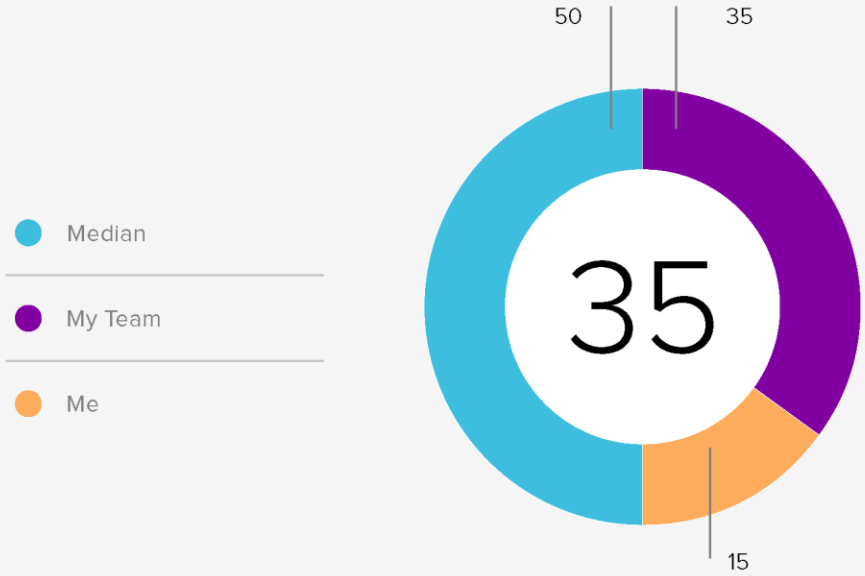
- Fit a maximum of 10 to 12 data sets
- Display both positive & negative values
- Negative values represent downard direction
- Display contrasting trends between variables



Donut Chart

When to use

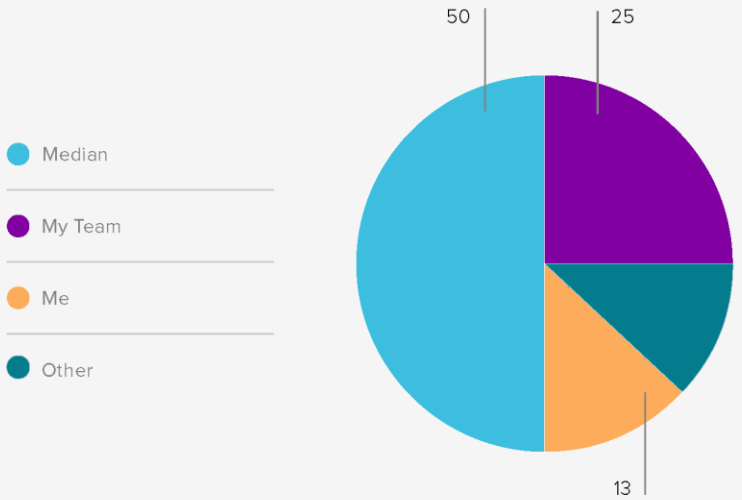
- Display pertinent text or numbers
- One value is primary
- Primary value displayed in center



Pie Chart

When to use

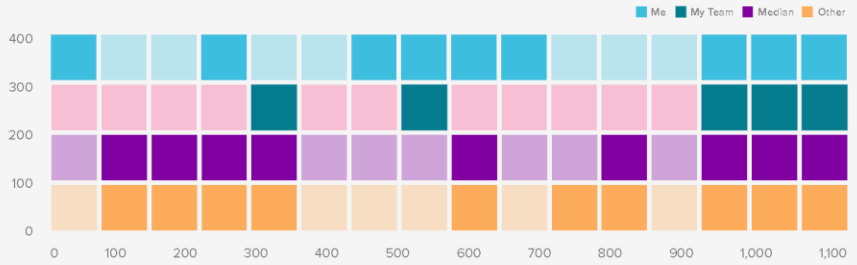
- Compare single data set
- Part of a whole data set
- All items equal a 100%



Heat Chart

When to use

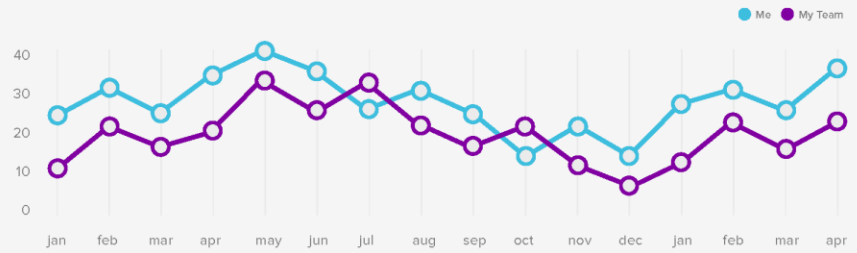
- Data sets are contained in a color driven matrix
- Display scalable differences between items
- Color shows gradation in value differences



Line Chart

When to use

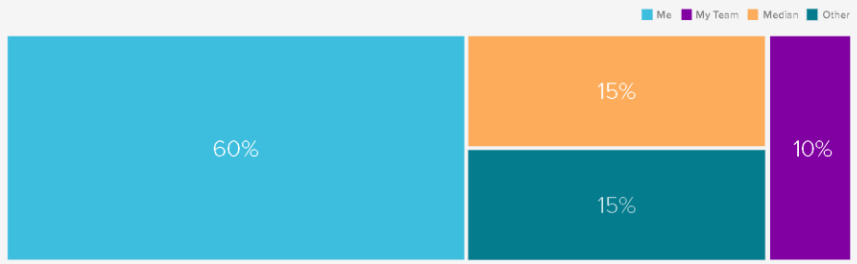
- Straight line shows a connection between two discrete points
- straight line presents an exact picture of measured data
- Curve line present continous data or imply continuity of the data



Tree Chart

When to use

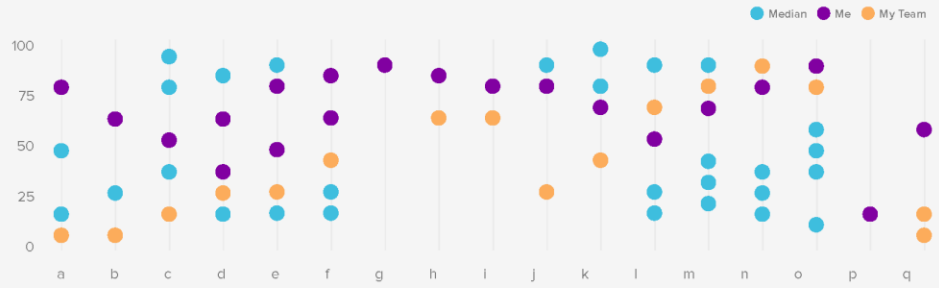
- Compare nodes at varying depth spotting patterns and exceptions
- Each node can have zero or more children and one parent
- Nodes are displayed as rectangles
- Nodes are sized and colored according to values



Scatter Chart

When to use

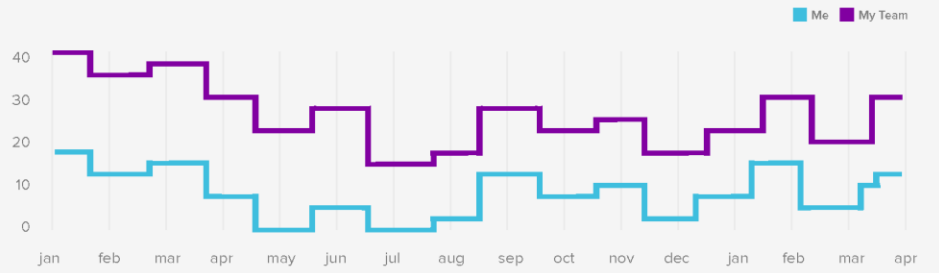
- Map correlation between data sets
- plotted points showing relationships between data sets
- Show measurements over time



Step Chart

When to use

- Display pertinent text or numbers (FPO)
- One value is primary(FPO)
- Primary value displayed in center (FPO)



HOW DO I GET STARTED?

More details and psd kits are available on Panorama...

Click on any of the chart thumbnails below to link to redlines and more charting specifics or visit http://panorama/guides/dataviz


Area


Bar


Bubble


Bullet

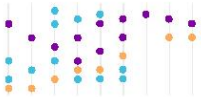

Column


Donut


Heat Map


Line


Pie


Scatter


Step


Tree