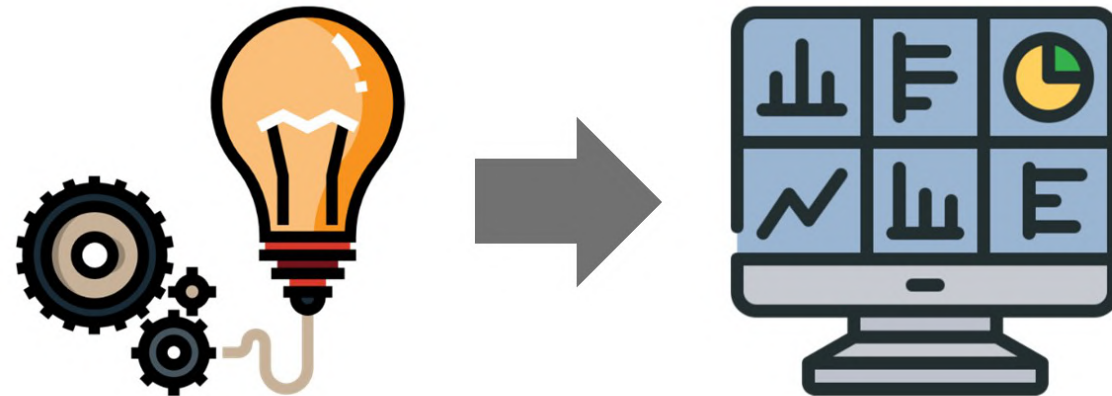




# HAVENS

CONSULTING



## Designing **Impactful Reports** in **Power BI** (One Hour Webinar)



# Presenter Introduction

- **Reid Havens**

- Founder | BI Evangelist | Consultant
- Microsoft MVP
- PBI User Group Co-Organizer – Redmond, WA
- Nickname: “The Viz Wiz”
- Specializes in teaching, consulting, and design

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# Session Agenda



## Design Principles

- Practices for designing more effective reports



## Data Visualizations

- Methodologies for creating impactful visualizations



## Applying Methodology Practices

- Implementing design principles in a Power BI report



## Designing Advanced Reports

- Adding and configuring advanced reporting features



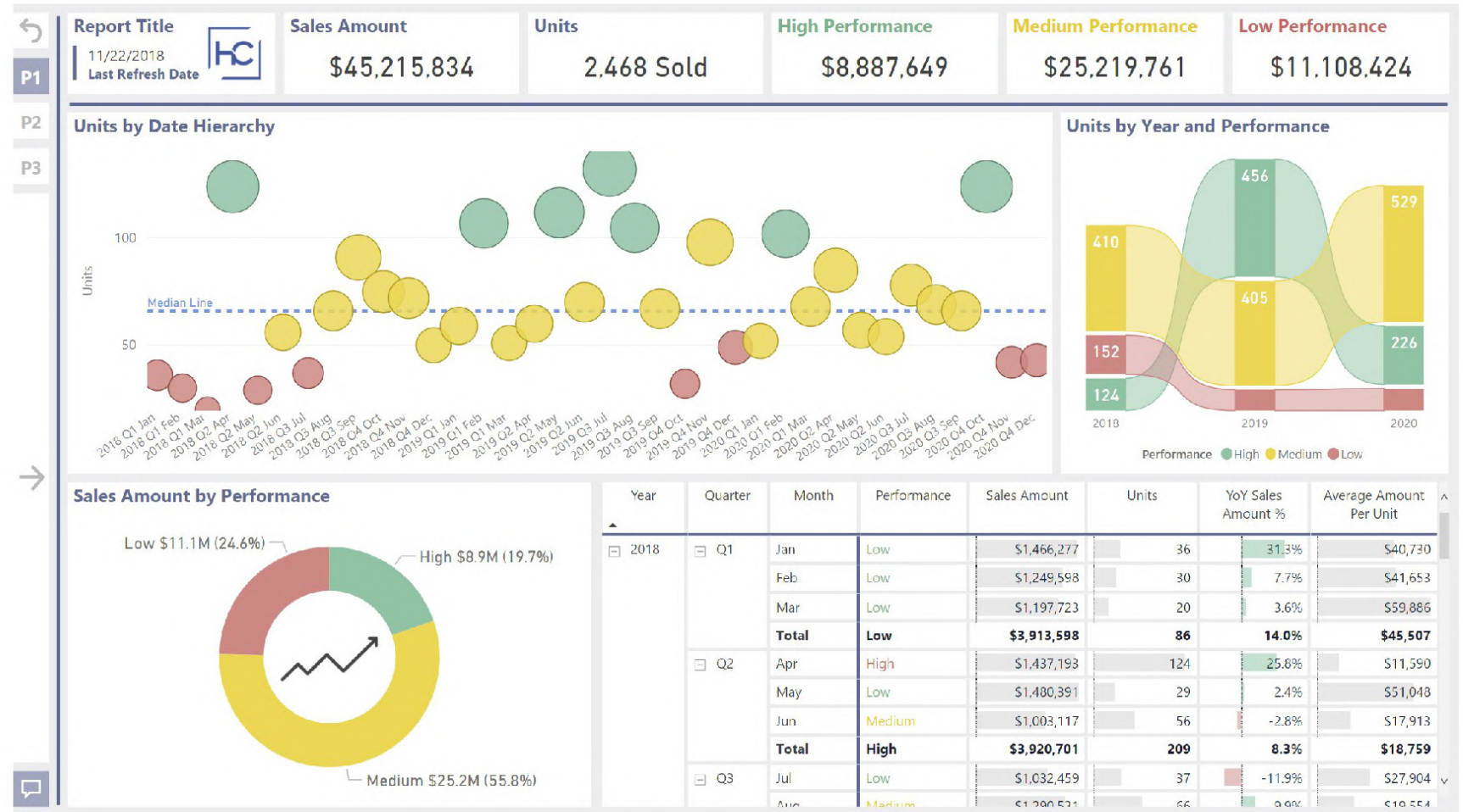


# Design Principles

- Practices for designing more effective reports

# Defining a Report

“A report is a visual display of the most important information needed to achieve one or more objectives; consolidated and arranged...so the information can be monitored at a glance.”  
~Stephen Few

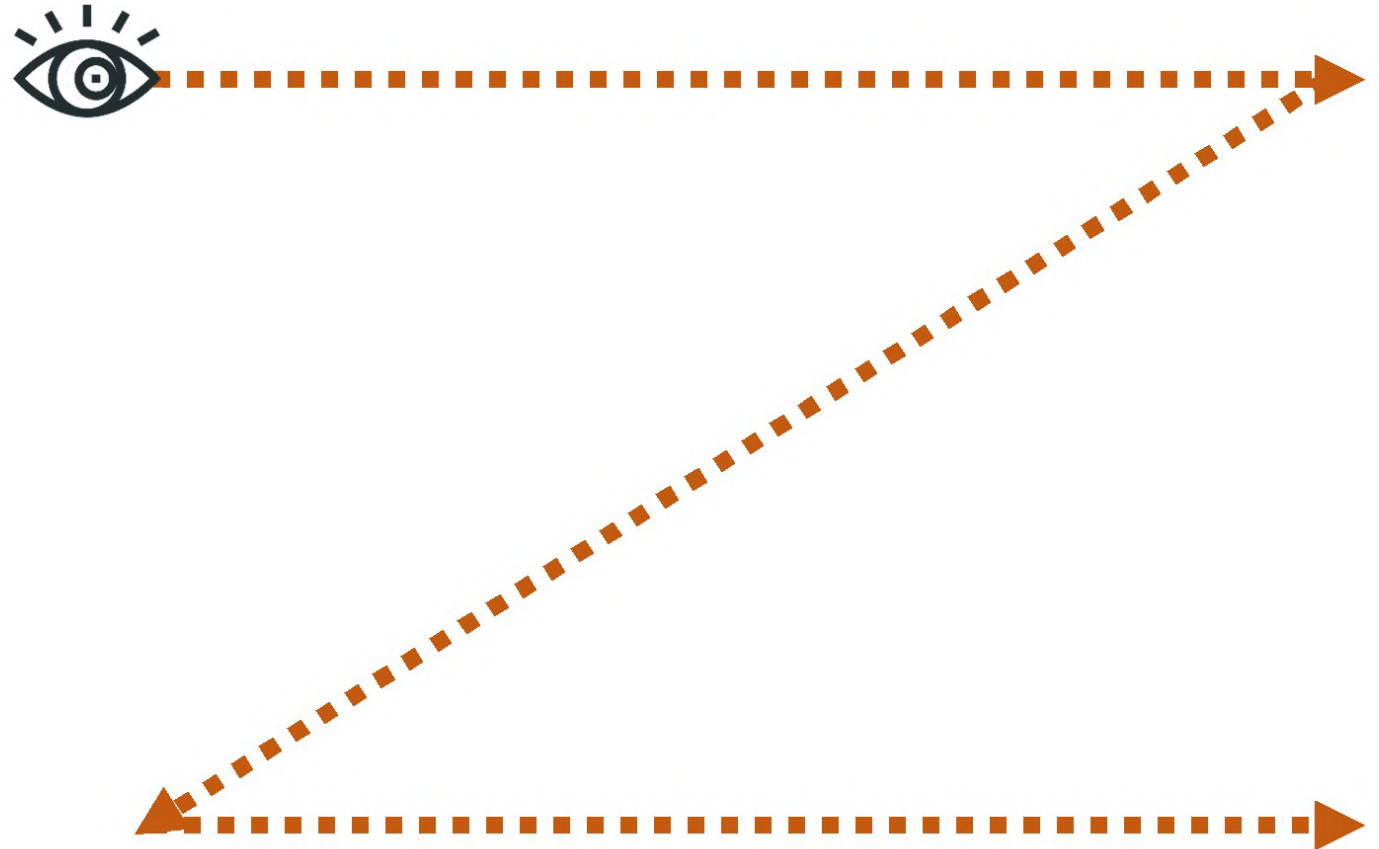


# Design Principles

## Information Processing

### How we process information

- ⇒ Information is read left to right
  - Most people are accustomed to read in the direction of **left to right**.

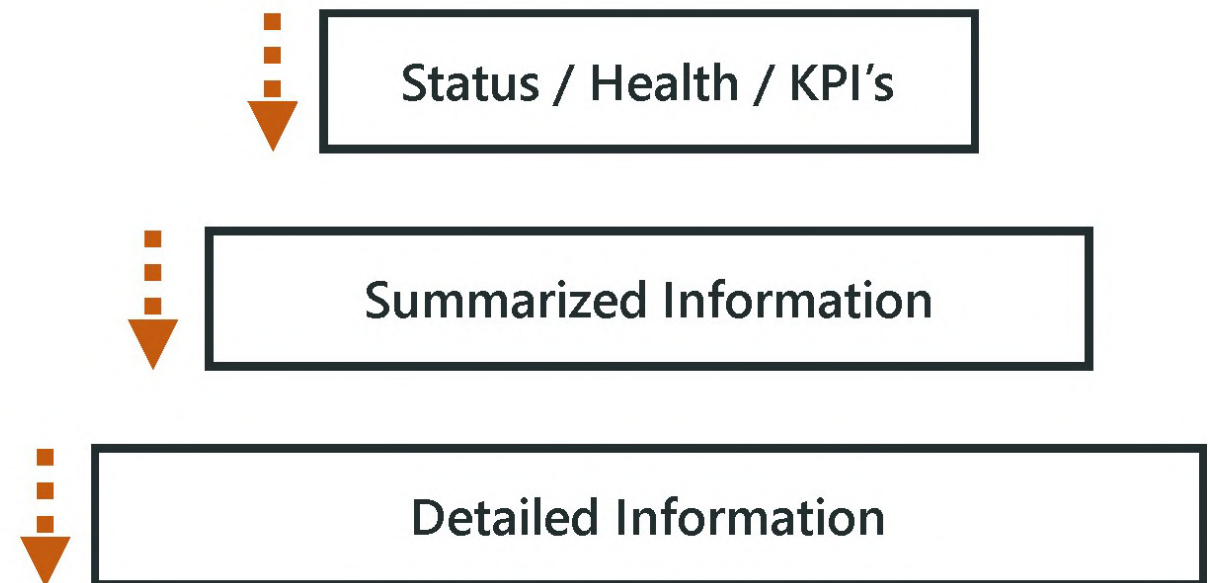


# Design Principles

## Information Processing

### How we process information

- ⇒ Information is read left to right
  - Most people are accustomed to read in the direction of **left to right**
- ⇩ Data is analyzed from the top down
  - People typically look at summarized data **first**, before seeking further information
- 🎯 Application of Principles
  - Leveraging these two principles in report design will create more **effective reports**

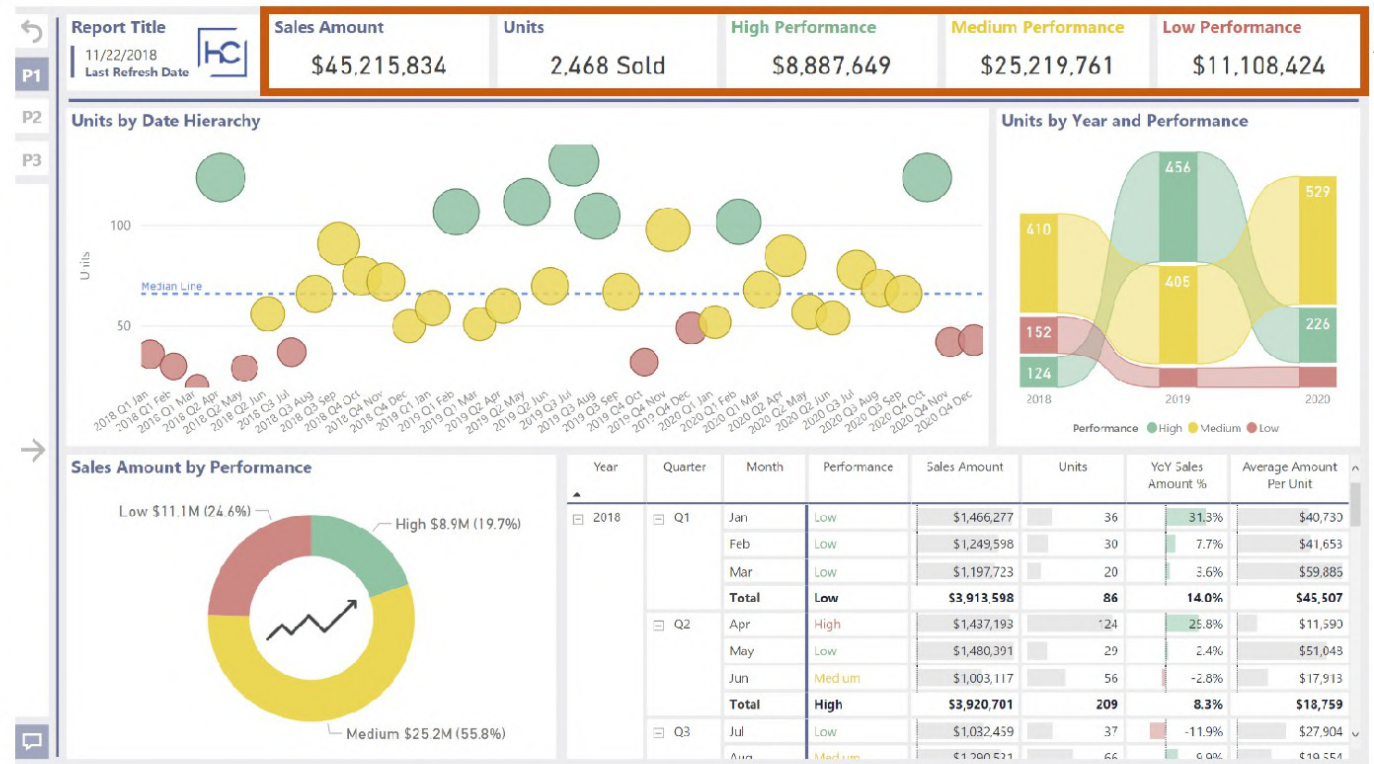


# Design Principles

## Information Processing ► Effective Report Organization

### The data processing flow

1. Key Performance Indicators (KPI's)
  - Information pertaining to the **status**, **performance**, or **health** of the organization



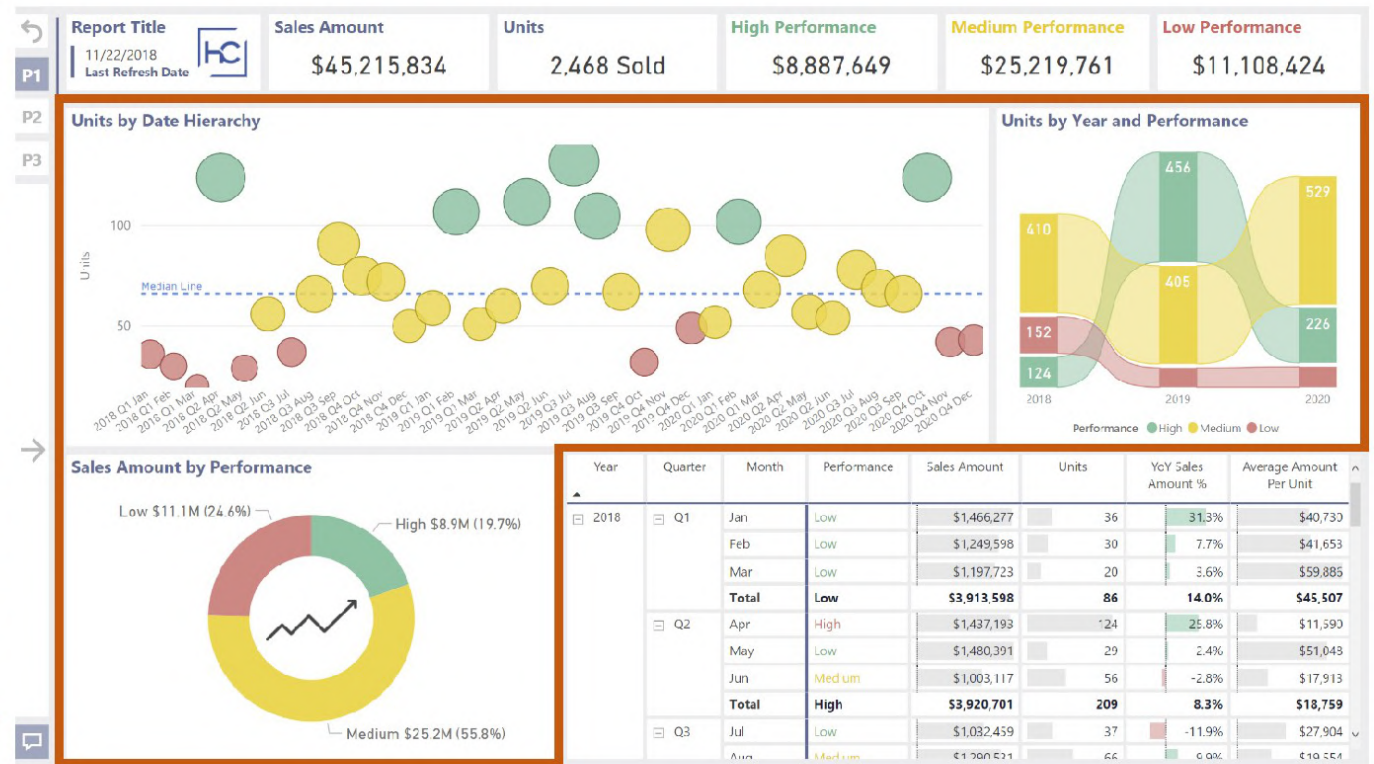


# Design Principles

## Information Processing ► Effective Report Organization

### The data processing flow

1. Key Performance Indicators (KPI's)
  - Information pertaining to the **status**, **performance**, or **health** of the organization
2. Summarized Information
  - Visuals displaying **patterns** or **trends** in the data. Allowing additional insights to the KPI's

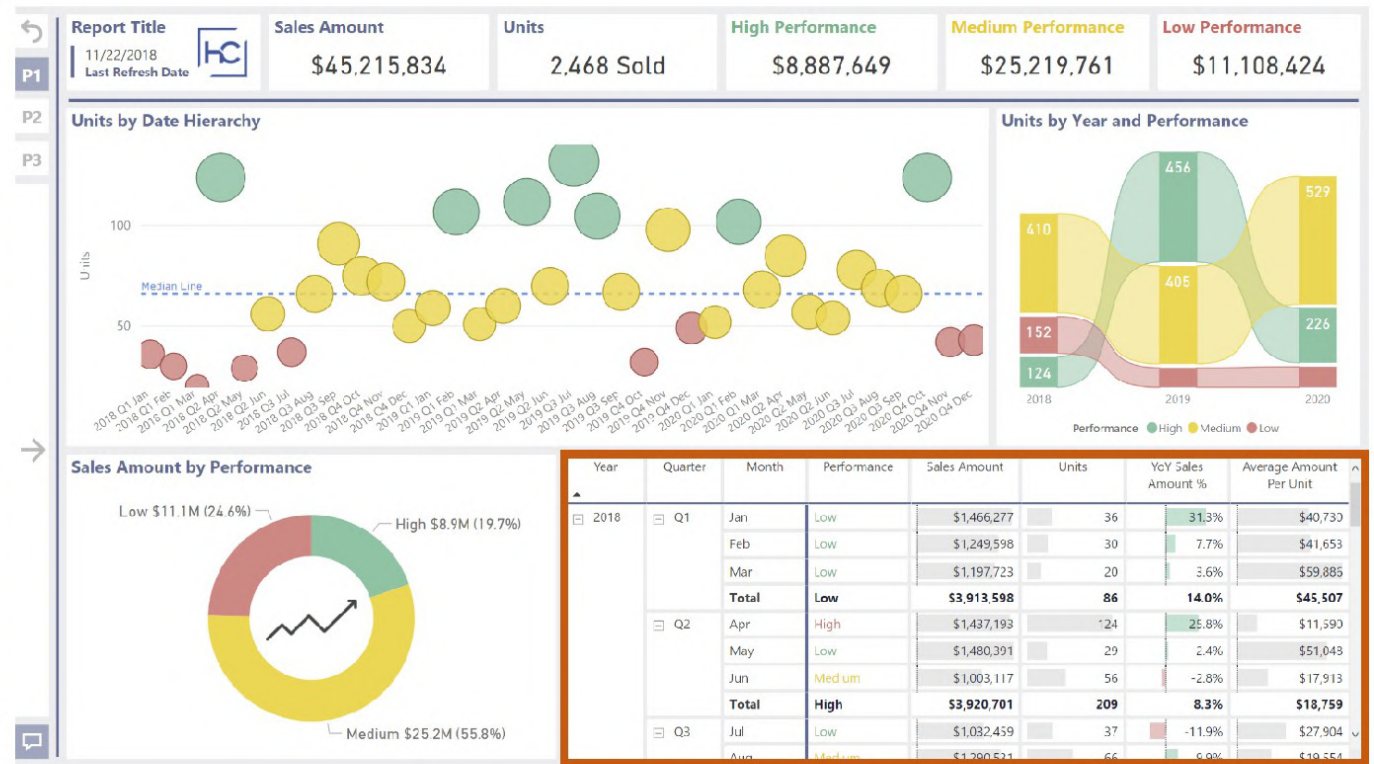


# Design Principles

## Information Processing ► Effective Report Organization

### The data processing flow

1. Key Performance Indicators (KPI's)
  - Information pertaining to the **status**, **performance**, or **health** of the organization
2. Summarized Information
  - Visuals displaying **patterns** or **trends** in the data. Allowing additional insights to the KPI's
3. Detailed Information
  - Tables containing **specific detail** about the patterns or trends. Providing **explanation** to variances in the data




# Design Principles

## The S.C.R.A.P Methodology



Spacing

Contrast

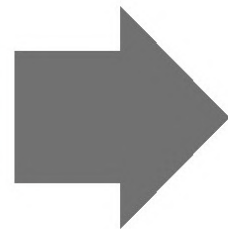



Repetition

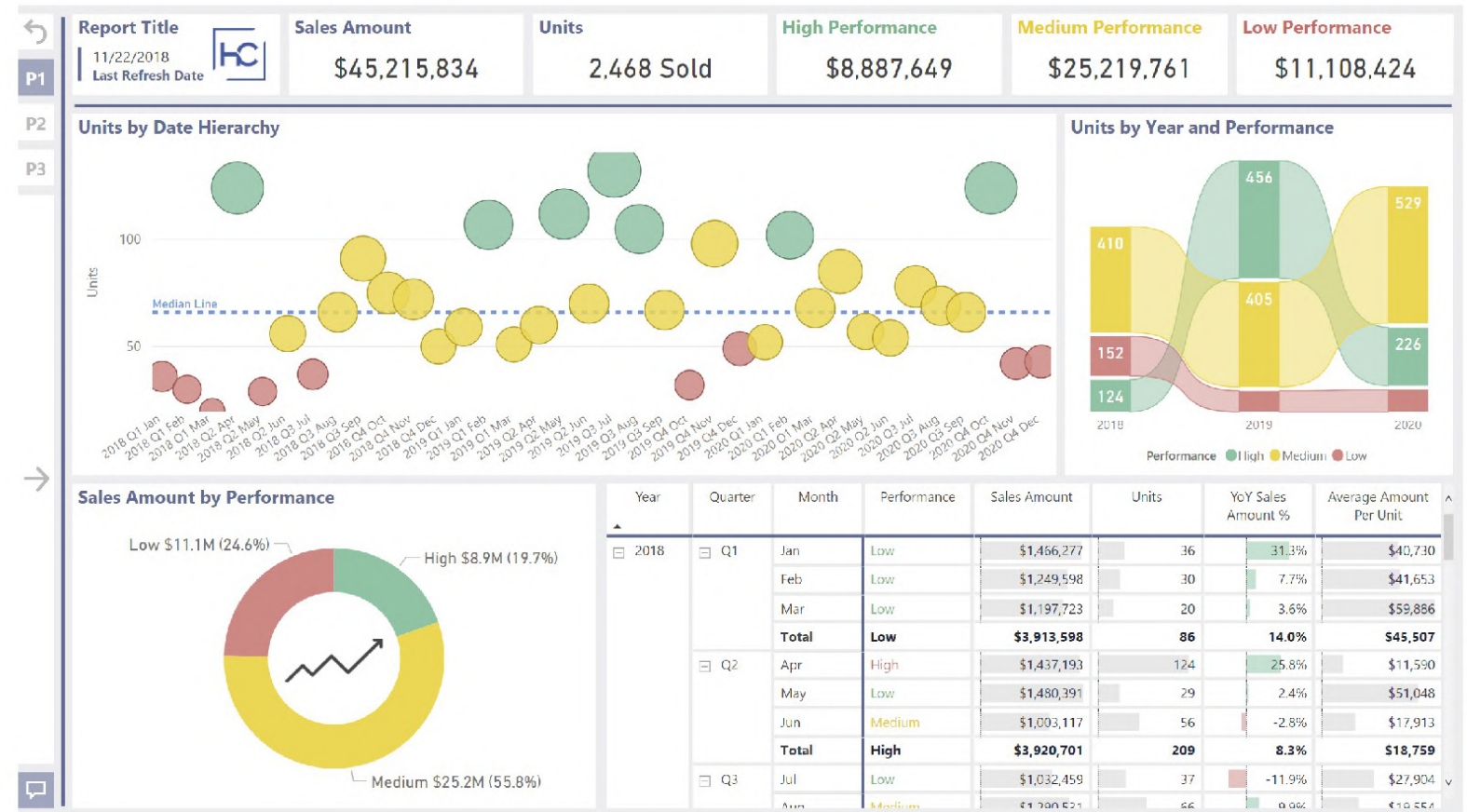
Alignment




Proximity

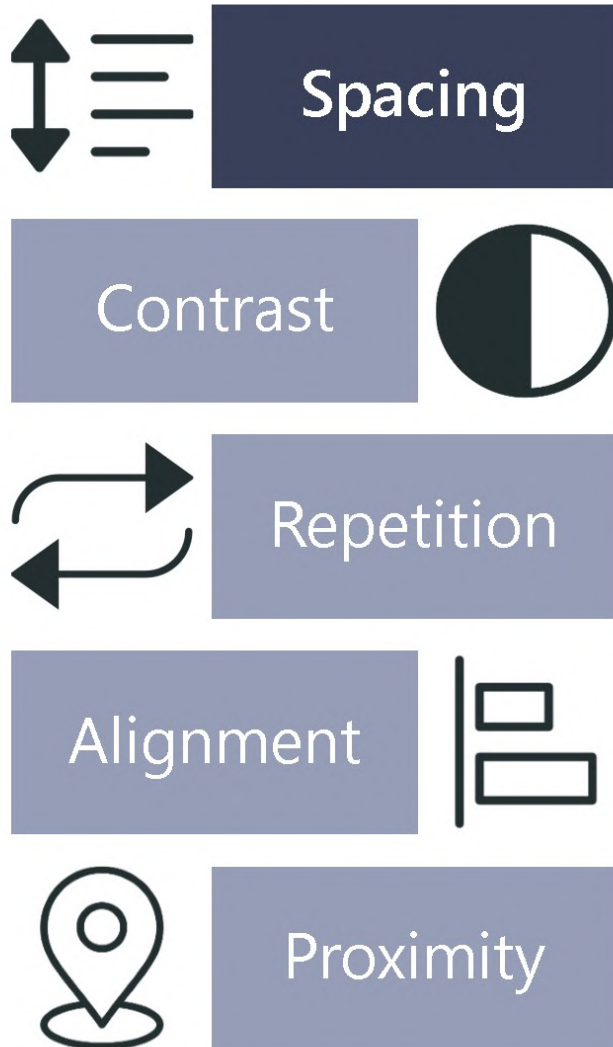


## Report with applied methodologies



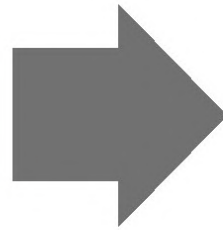
# Design Principles

## The S.C.R.A.P Methodology ▶ Spacing



### General concept

- **Space surrounding** or **between** the objects. Also known as **negative space**
- **Increases readability** by showing boundaries within objects



### Spacing

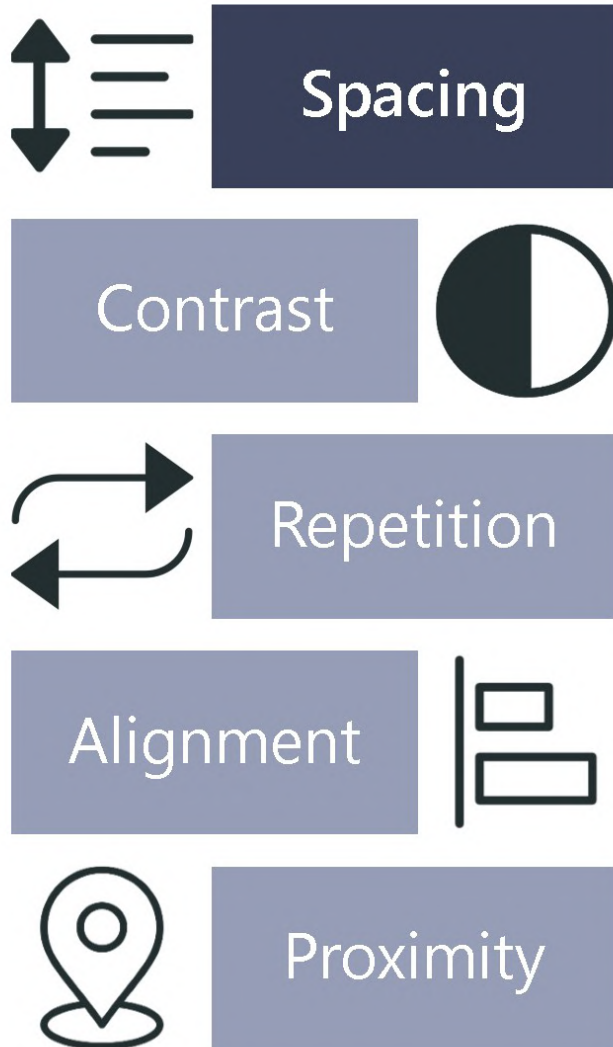


### No Spacing



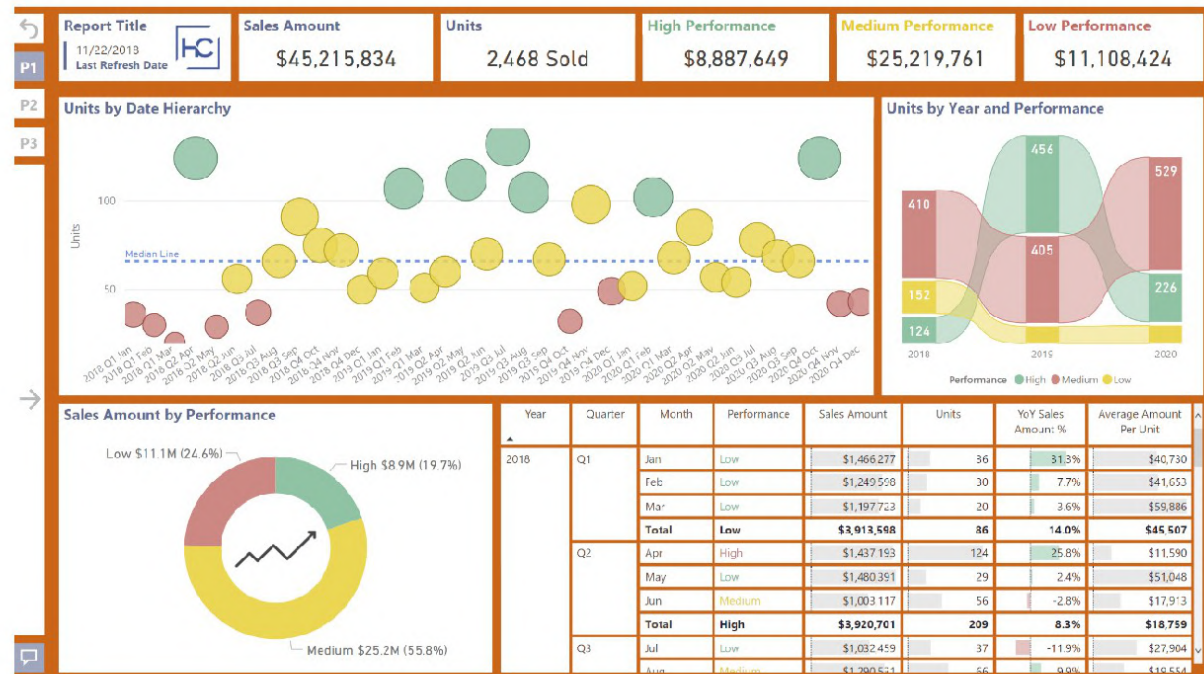
# Design Principles

## The S.C.R.A.P Methodology ▶ Spacing



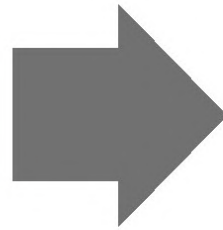
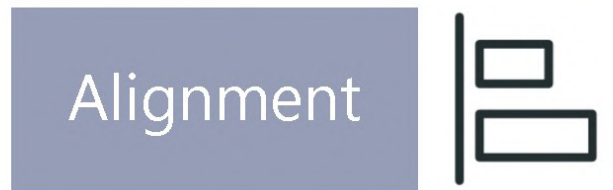
## General concept

- **Space surrounding** or **between** the objects. Also known as **negative space**
- **Increases readability** by showing boundaries within objects
- Creates **clear boundaries** between objects



# Design Principles

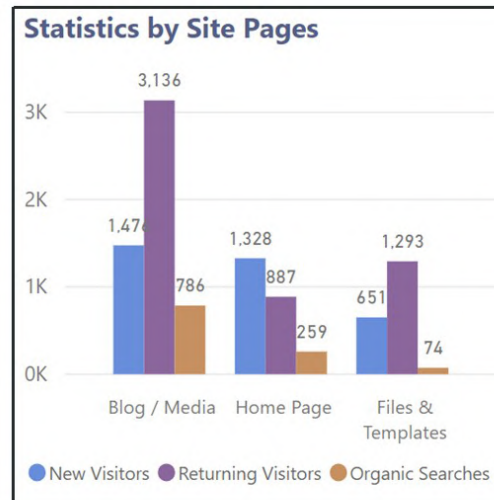
The S.C.R.A.P Methodology ▶ Contrast



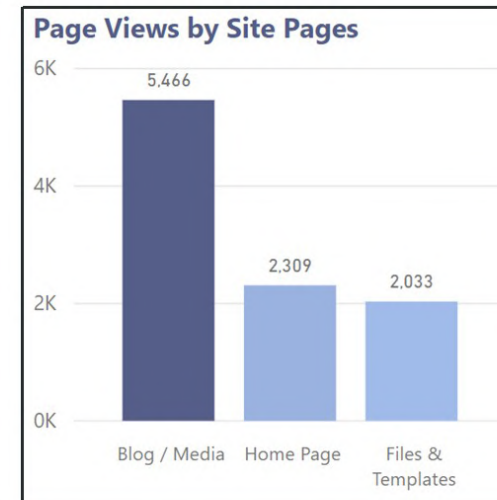
## General concept

- Distinguishes elements to help **identify categories** or emphasize **key findings**

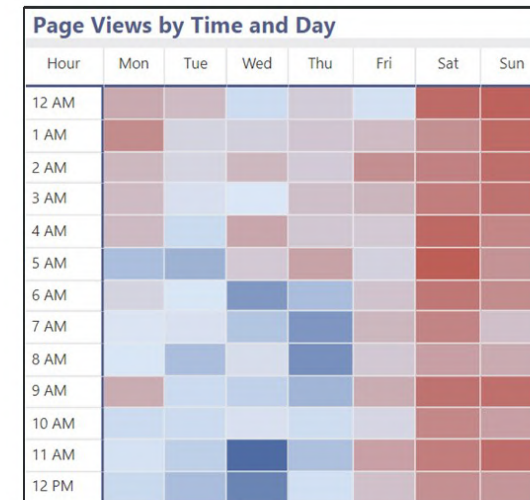
### Categorical Colors



### Sequential Colors

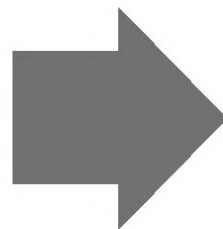
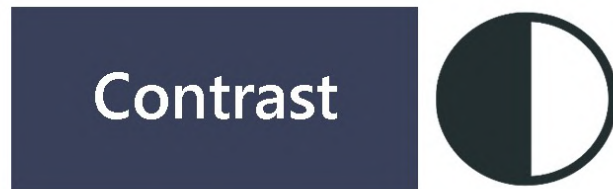


### Diverging Colors



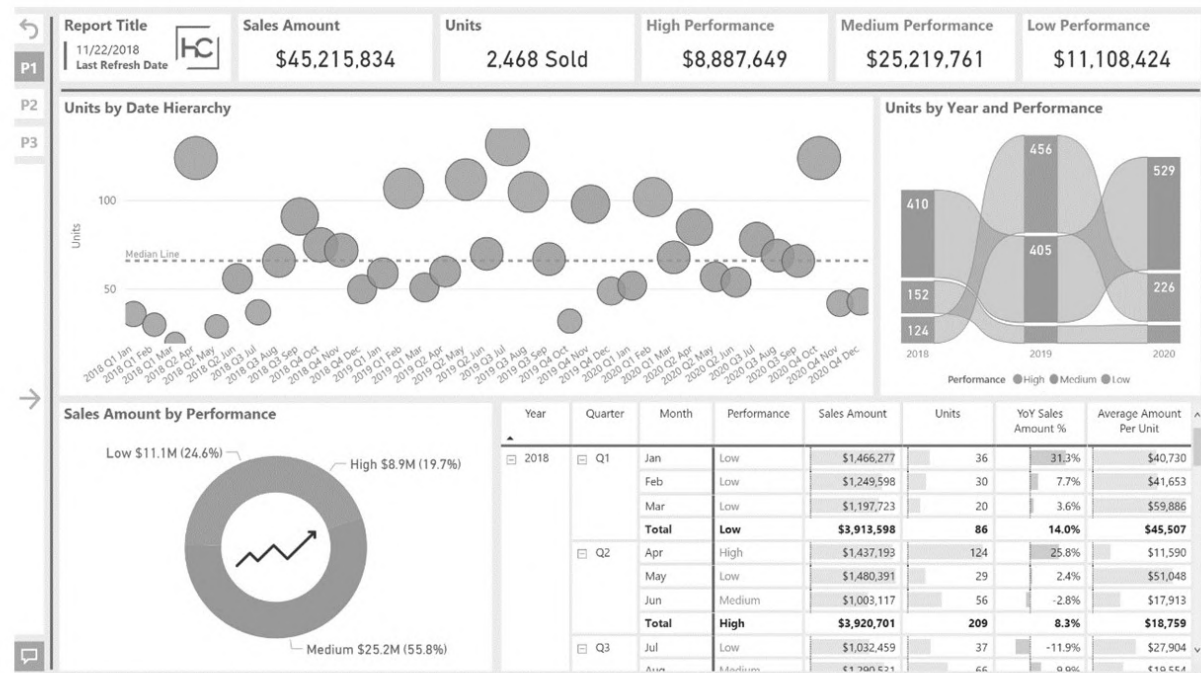
# Design Principles

## The S.C.R.A.P Methodology ▶ Contrast



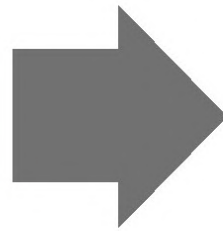
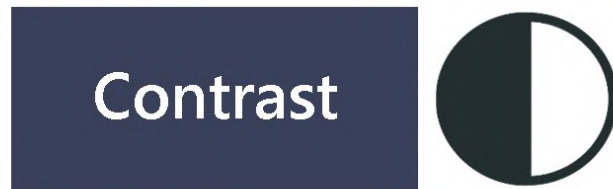
## General concept

- Distinguishes elements to help **identify categories** or emphasize **key findings**
- **Color** is one of the most common forms of contrast



# Design Principles

The S.C.R.A.P Methodology ► Contrast



## General concept

- Distinguishes elements to help **identify categories** or emphasize **key findings**
- **Color** is one of the most common forms of contrast
- Contributes to the **squint test** requirements





# Design Principles

The S.C.R.A.P Methodology ▶ Repetition



Spacing



Contrast



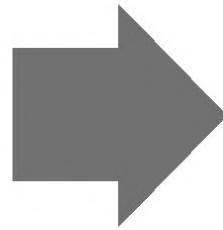
Repetition



Alignment



Proximity



## General concept

- Applying a **consistent pattern** or elements throughout the report design

Repetition



Repetition

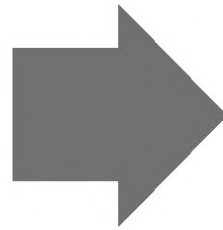
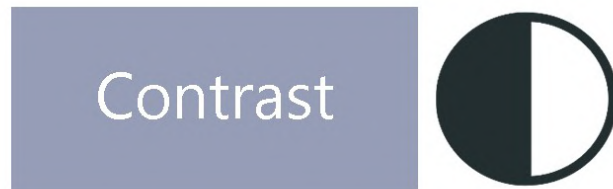


No Repetition



# Design Principles

## The S.C.R.A.P Methodology ▶ Repetition



### General concept

- Applying a **consistent pattern** or elements throughout the report design

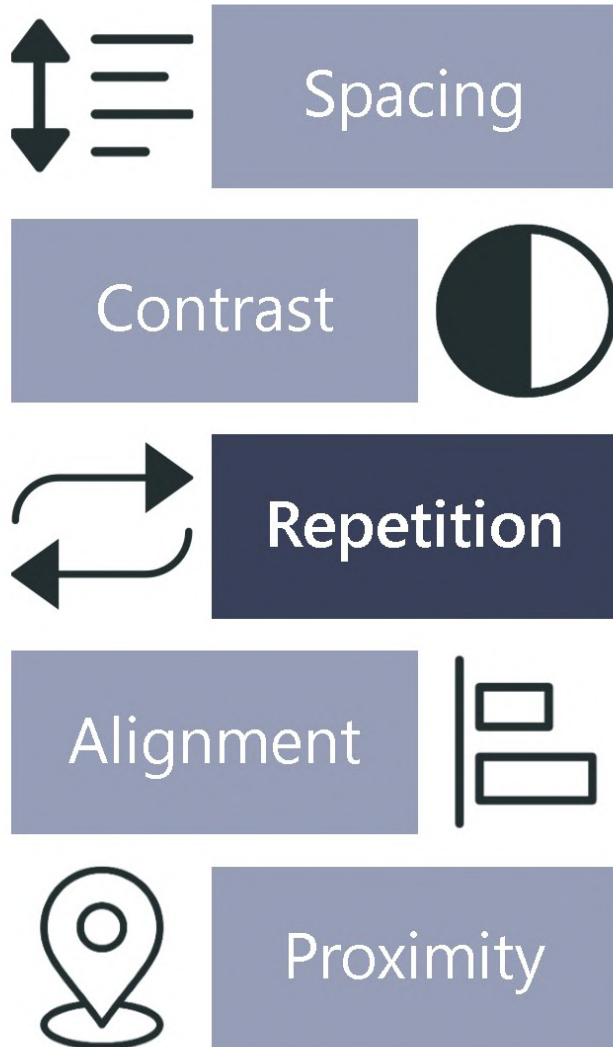
### No Repetition



Site Pages	Page Views	Unique Views	Searches	New Visitors	Returning Visitors
Blog / Media	5,466	4,550	786.0	1,476	3,136
Home Page	2,309	1,932	259.0	1,328	887
Files & Templates	2,033	1,644	74.0	651	1,293
Power BI Vs. Excel	1,658	1,535	1,123.0	1,193	434
About Us	786	673	324.0	358	404
What Is Power BI?	501	412	129.0	178	300
Consulting Services	313	267	10.0	25	275
Contact & Support	210	187	2.0	18	184
Online Courses	129	120	1.0	13	116
<b>Total</b>	<b>13,405</b>	<b>11,320</b>	<b>2,708.0</b>	<b>5,240</b>	<b>7,029</b>

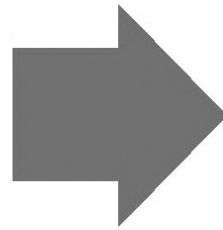
# Design Principles

## The S.C.R.A.P Methodology ▶ Repetition



### General concept

- Applying a **consistent pattern** or elements throughout the report design
- Repetition can also **increase readability** by applying a specific pattern to groups, categories, or areas of a report



### Repetition

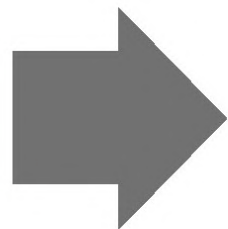
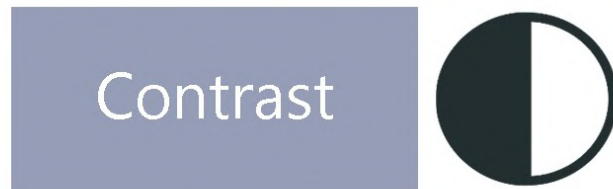
Year All	State All
Quarter All	City All

### No Repetition

Year All	State All
Quarter All	City All

# Design Principles

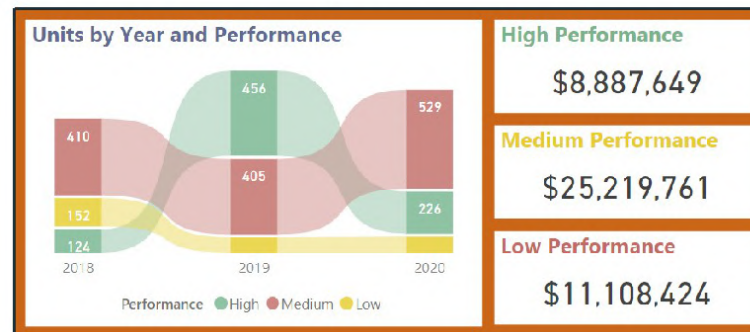
The S.C.R.A.P Methodology ▶ Alignment



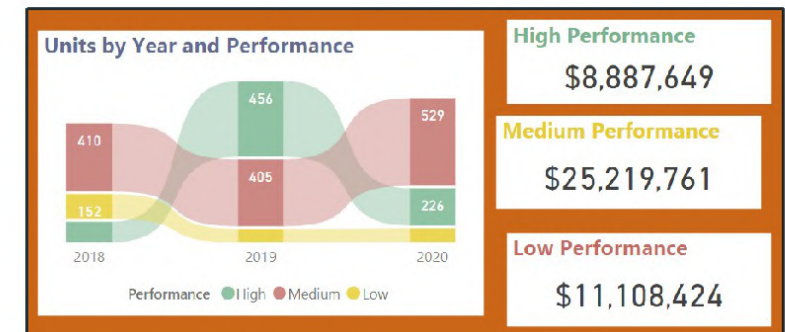
## General concept

- **Edges of objects** are aligned with the edges of other objects
- Creates the perception that every object is **connected via an invisible line**, and that nothing is placed at random

### Alignment

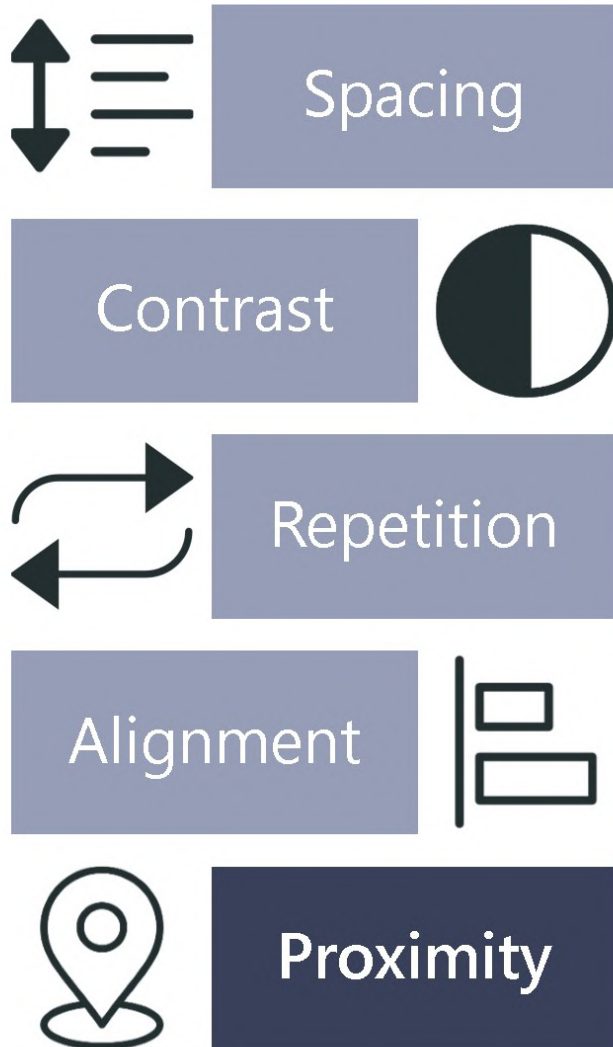


### No Alignment



# Design Principles

The S.C.R.A.P Methodology ▶ Proximity



## General concept

- **Group related objects** together to show a relationship
- Applicable to **objects within a report**

### Proximity

New Site Visitors 5,268	Returning Visitors 7,317	<b>Total Visitors</b> 12,585	Organic Searches 2,712
----------------------------	-----------------------------	---------------------------------	---------------------------



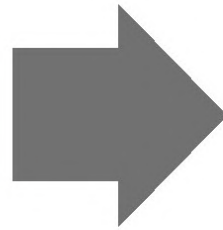
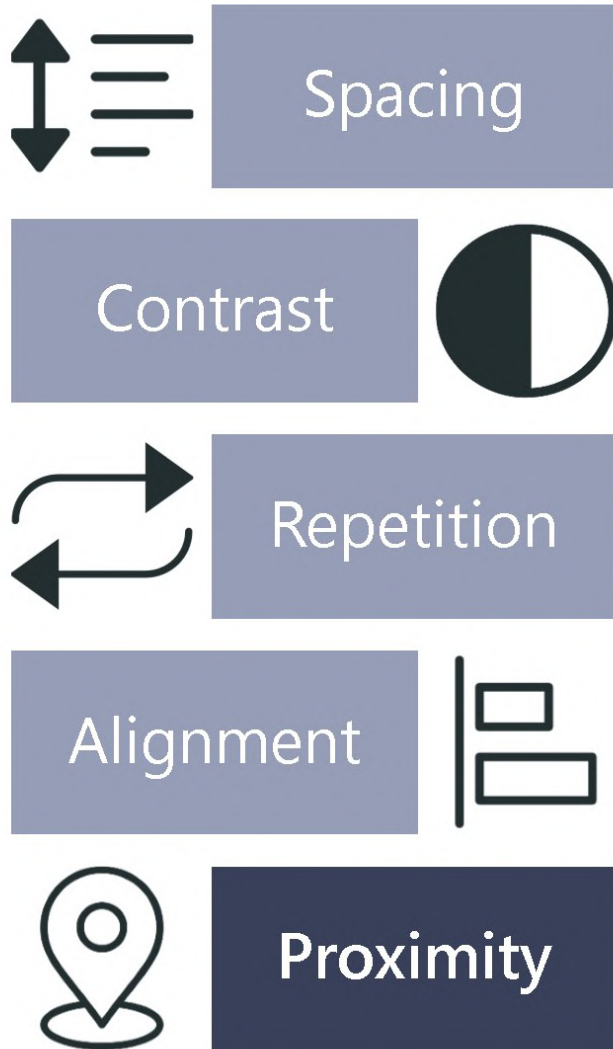
### No Proximity

New Site Visitors 5,268	Returning Visitors 7,317	Organic Searches 2,712	<b>Total Visitors</b> 12,585
----------------------------	-----------------------------	---------------------------	---------------------------------



# Design Principles

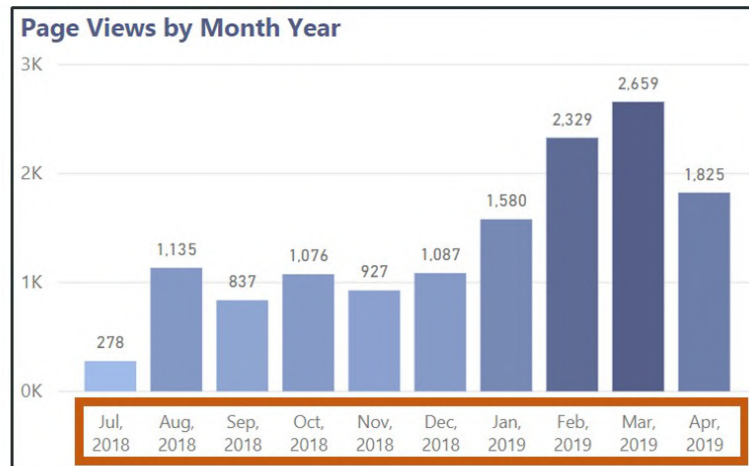
The S.C.R.A.P Methodology ▶ Proximity



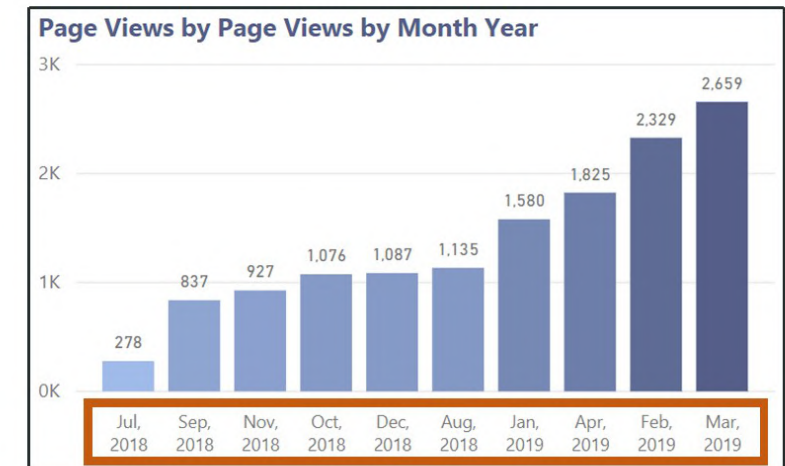
## General concept

- **Group related objects** together to show a relationship
- Applicable to **objects within a report**
- Applicable to **elements within an object**

Proximity



No Proximity



# Design Principles

How do we **process** information?

Left to Right

Top to Bottom



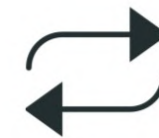
## Knowledge Check

What does **S.C.R.A.P** stand for?



Spacing

Contrast



Repetition

Alignment



Proximity

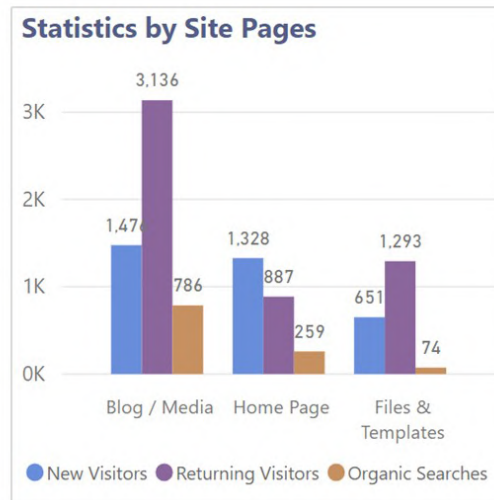
# S.C.R.A.P Methodology

What are the **three types** of **color contrast** that can be used to distinguish elements?

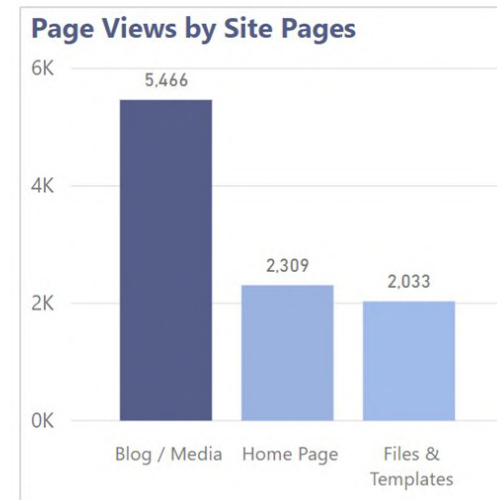


## Knowledge Check

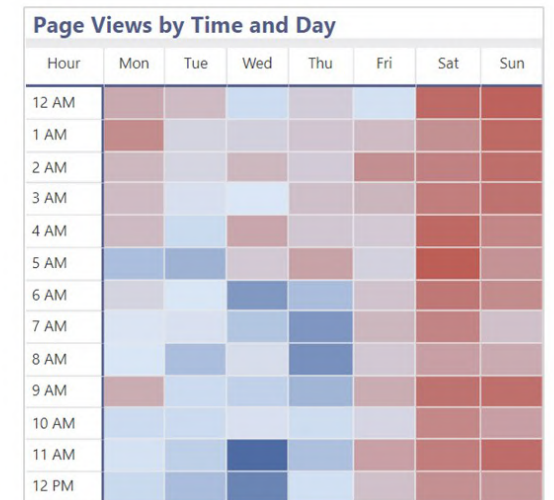
Categorical



Sequential



Diverging







# Data Visualization

- Methodologies for creating impactful visualizations

# Design Principles

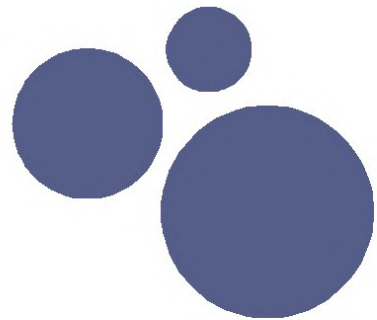
## Visual Cues

### General methodology

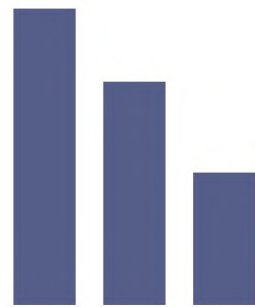
- Visualizations **translate** variances in data by utilizing different visual cues
- Each visual cue is **interpreted** differently by the human brain



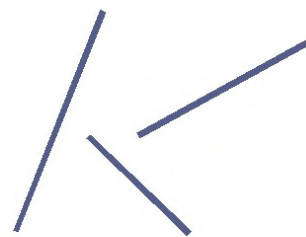
### Types of visual cues



Area



Length



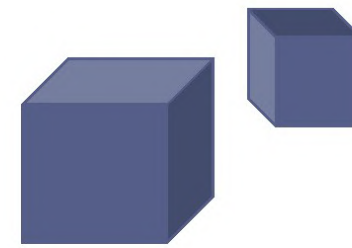
Slope



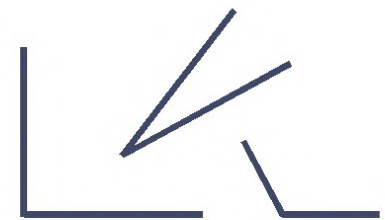
Color  
Hue



Color  
Intensity



Volume



Angle

**VISUAL CUES ARE NOT CREATED EQUAL**

# Design Principles

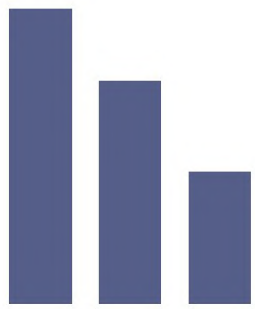
Visual Cues ▶ Ranked

## General methodology

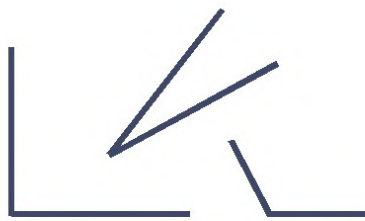
- Visualizations **translate** variances in data by utilizing different visual cues
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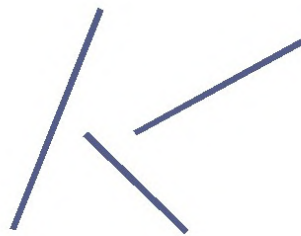
## Visual cues ranked by accuracy



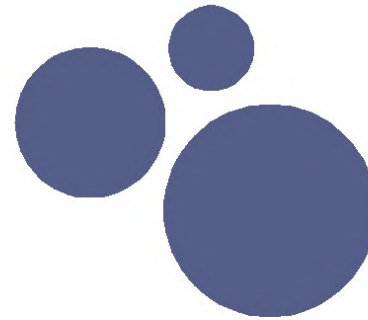
Length



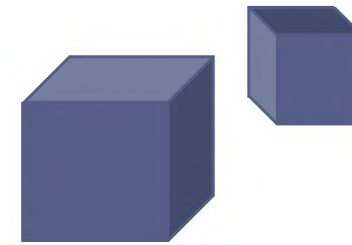
Angle



Slope



Area



Volume



Color Intensity



Color Hue

More Accurate

Less Accurate



# Design Principles

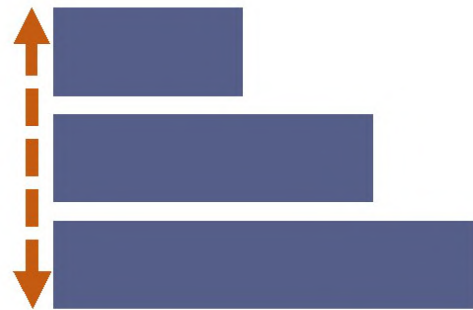
Visual Cues ► Accuracy Influencers

## What influences accuracy?



### Alignment

- Objects on an **aligned scale** increase accuracy when comparing values
- Studies show length aligned on a single axis is the most accurate representation of data



Length  
(Aligned)

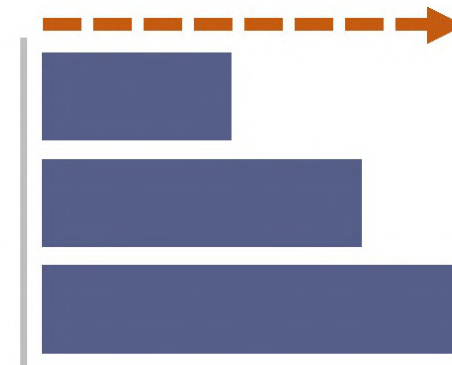


Tree Map

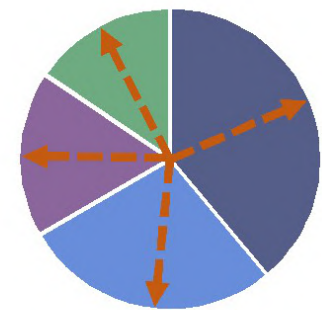


### Direction

- Objects on an axis that follow a **single direction** also increase accuracy, when comparing values



Bar  
Chart



Pie  
Chart

# Design Principles

## Visual Categories



# THE VISUALS REFERENCE

— FOR MICROSOFT POWER BI —

SEP. 2018  
<http://sql.bi/visual-reference>

### PART-TO-WHOLE

Display the parts of a measure

Clustered bar chart	Clustered column chart	100% Stacked bar chart	100% Stacked column chart	Stacked bar chart
Stacked column chart	Line & clustered column chart	Drill-down column chart	KPI Column by MAQ	KPI Chart by Akvelon
Rotating Chart by MAQ	Horizontal bar chart	Table Sorter	Line & stacked column chart	Ribbon chart
Waterfall chart	Stacked area chart	Treemap	Pie chart	Donut chart
Sunburst	Aster Plot	Ring Chart by MAQ	Drill-down donut chart	Brick Chart by MAQ
Enlighten Waffle Chart	Waffle Chart			

### DISTRIBUTION

Display the distribution of a measure

Clustered column chart	Line chart	Histogram Chart	Box & Whisker chart by MAQ
Candlestick by OKViz	Dot Plot by MAQ	Outliers Detection	Box and Whisker chart
Histogram with points by MAQ	Tornado chart		

### CORRELATION

Display relations between measures

Scatter chart	Enhanced Scatter	Line & clustered column chart	Quadrant Chart by MAQ
Venn Diagram by MAQ	Impact Bubble Chart	Correlation plot	Clustering
Clustering With Outliers	Funnel plot	Spline chart	KPI Chart by Akvelon
KPI Column by MAQ	Scatter Chart by Akvelon	Hexbin Scatterplot	Clustering using OPTICS...
Line & stacked column chart	Cluster Map		

### SINGLE

Display single values

Card with Status by OKViz	Card	KPI	Multi-row card
Table	Matrix	KPI Ticker by MAQ	Scroller
User List by CloudScope	Timeline by CloudScope	Multi KPI	Collage by CloudScope
Count Down Timer	KPI Indicator	Advance Card	Rotation Tile by MAQ
Acterys Matrix Light	Data Insights by MAQ	Gauge	Tachometer
Dial Gauge	Circle KPI Gauge		

### FILTER

Control report filters

Slicer	Smart Filter Pro by OKViz	Smart Filter by OKViz	Chiclet Slicer
Timeline Slicer	Time Brush Slicer	Attribute Slicer	Facet Key
Play Axis (Dynamic Slicer)	Hierarchy Slicer	Enlighten World Flag Slicer	Text Filter
Enlighten Slicer	Image Grid	Image by CloudScope	Filter by List by Devscope
Pivot Slicer			

### NARRATIVE

Tell a story with data

Narrative for Business Int...	Timeline Storyteller	Add Natural Language Su...	DataText Box
ChartAccent BarChart	ChartAccent LineChart	Strippets Browser	Card Browser
Overview by CloudScope	Enlighten Data Story		

### MISCELLANEOUS

PowerApps (Preview)	D3.js Visual	HTML Viewer	Dynamic Tooltip by MAQ
Text Wrapper by MAQ	Text Enhancer by MAQ		

Recommended

There is a better alternative

Don't use in the category

Built-in visual

Certified visual

R required



# Design Principles

## Visual Categories



# THE VISUALS REFERENCE

— FOR MICROSOFT POWER BI —

SEP. 2018  
<http://sql.bi/visual-reference>

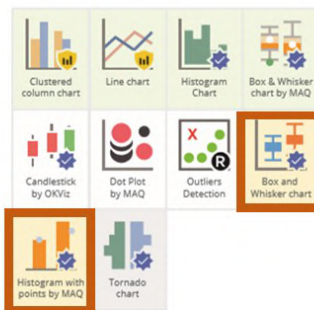
### PART-TO-WHOLE

Display the parts of a measure



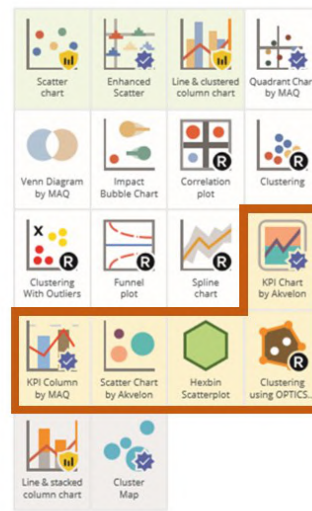
### DISTRIBUTION

Display the distribution of a measure



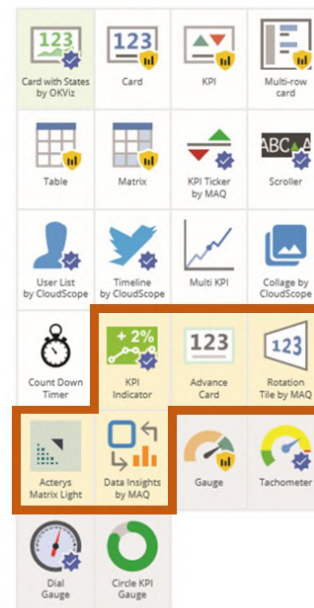
### CORRELATION

Display relations between measures



### SINGLE

Display single values



### FILTER

Control report filters

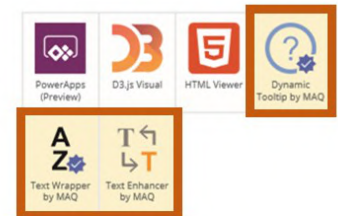


### NARRATIVE

Tell a story with data



### MISCELLANEOUS



Recommended

There is a better alternative

Don't use in the category

Built-in visual

Certified visual

R required



# Design Principles

## Visual Categories



# THE VISUALS REFERENCE

— FOR MICROSOFT POWER BI —

SEP. 2018  
<http://sql.bi/visual-reference>

### PART-TO-WHOLE

Display the parts of a measure

Clustered bar chart	Clustered column chart	100% Stacked bar chart	100% Stacked column chart	Stacked bar chart
Stacked column chart	Line & clustered column chart	Drill-down column chart	KPI Column by MAQ	KPI Chart by Akvelon
Rotating Chart by MAQ	Horizontal bar chart	Table Sorter	Line & stacked column chart	Ribbon chart
Waterfall chart	Stacked area chart	Treemap	Pie chart	Donut chart
Sunburst	Aster Plot	Ring Chart by MAQ	Drill-down donut chart	Brick Chart by MAQ
Enlighten Waffle Chart	Waffle Chart			

### DISTRIBUTION

Display the distribution of a measure

Clustered column chart	Line chart	Histogram Chart	Box & Whisker chart by MAQ
Candlestick by OKViz	Dot Plot by MAQ	Outliers Detection	Box and Whisker chart
Histogram with points by MAQ	Tornado chart		

### CORRELATION

Display relations between measures

Scatter chart	Enhanced Scatter	Line & clustered column chart	Quadrant Chart by MAQ
Venn Diagram by MAQ	Impact Bubble Chart	Correlation plot	Clustering
Clustering With Outliers	Funnel plot	Spline chart	KPI Chart by Akvelon
KPI Column by MAQ	Scatter Chart by Akvelon	Hexbin Scatterplot	Clustering using OPTICS...
Line & stacked column chart	Cluster Map		

### SINGLE

Display single values

Card with Status by OKViz	Card	KPI	Multi-row card
Table	Matrix	KPI Ticker by MAQ	Scroller
User List by CloudScope	Timeline by CloudScope	Multi KPI	Collage by CloudScope
Count Down Timer	KPI Indicator	Advance Card	Rotation Tile by MAQ
Acerys Matrix Light	Data Insights by MAQ	Gauge	Tachometer
Dial Gauge	Circle KPI Gauge		

### FILTER

Control report filters

Slicer	Smart Filter Pro by OKViz	Smart Filter by OKViz	Chiclet Slicer
Timeline Slicer	Time Brush Slicer	Attribute Slicer	Facet Key
Play Axis (Dynamic Slicer)	Hierarchy Slicer	Enlighten World Flag Slicer	Text Filter
Enlighten Slicer	Image Grid	Image by CloudScope	Filter by List by Devscope
Pivot Slicer			

### NARRATIVE

Tell a story with data

Narrative for Business Int...	Timeline Storyteller	Add Natural Language Su...	DataText Box
ChartAccent BarChart	ChartAccent LineChart	Strippets Browser	Card Browser
Overview by CloudScope	Enlighten Data Story		

### MISCELLANEOUS

PowerApps (Preview)	D3.js Visual	HTML Viewer	Dynamic Tooltip by MAQ
Text Wrapper by MAQ	Text Enhancer by MAQ		

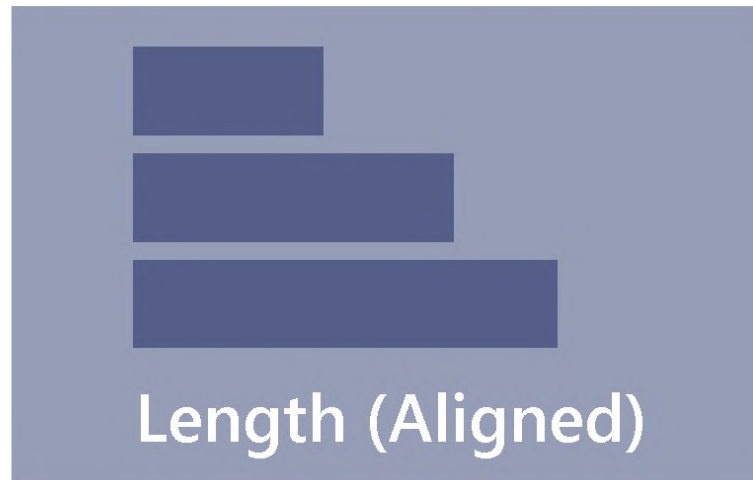
  Recommended
   There is a better alternative
   Don't use in the category

■ Built-in visual
 ■ Certified visual
 R R required

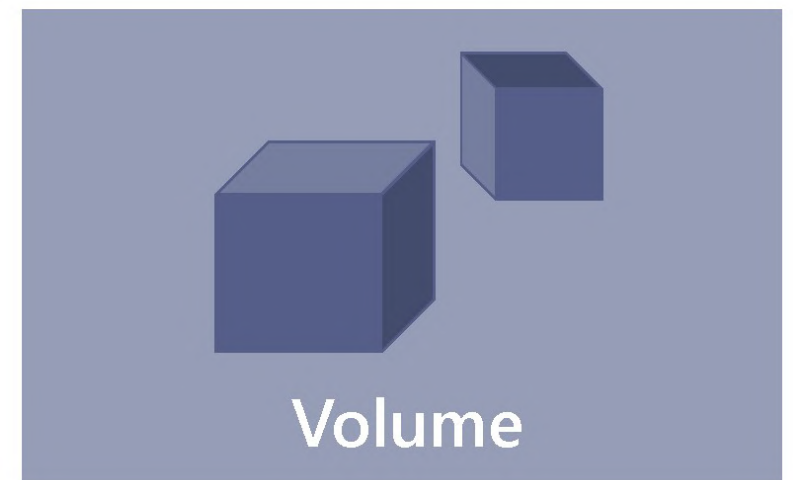


# Visual Cues

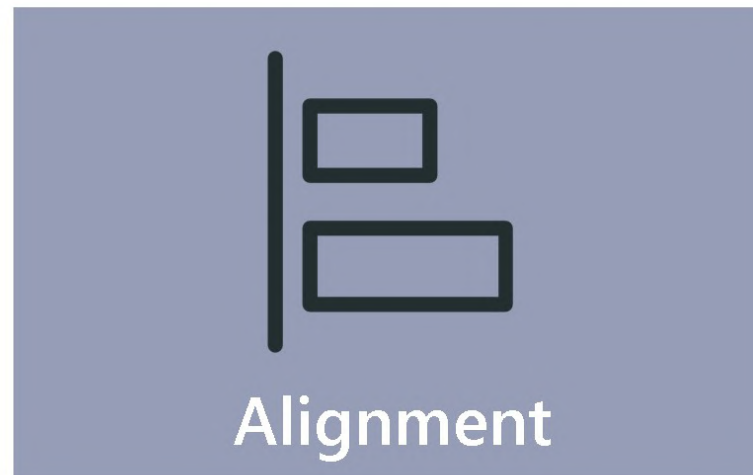
**Easiest** visual cue to process?



**Hardest** visual cue to process?



What influences **accuracy**?

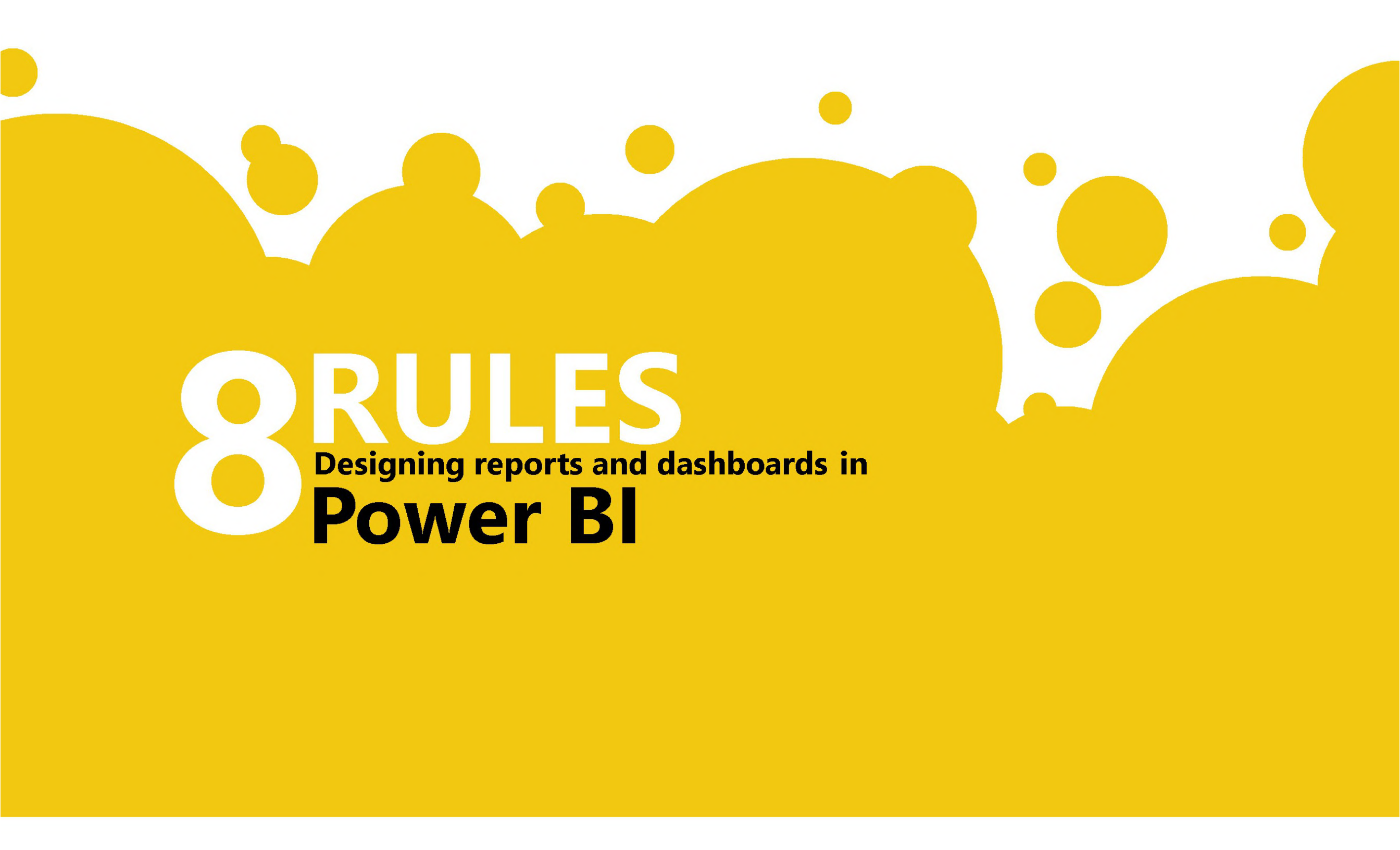


What influences **accuracy**?



## Knowledge Check

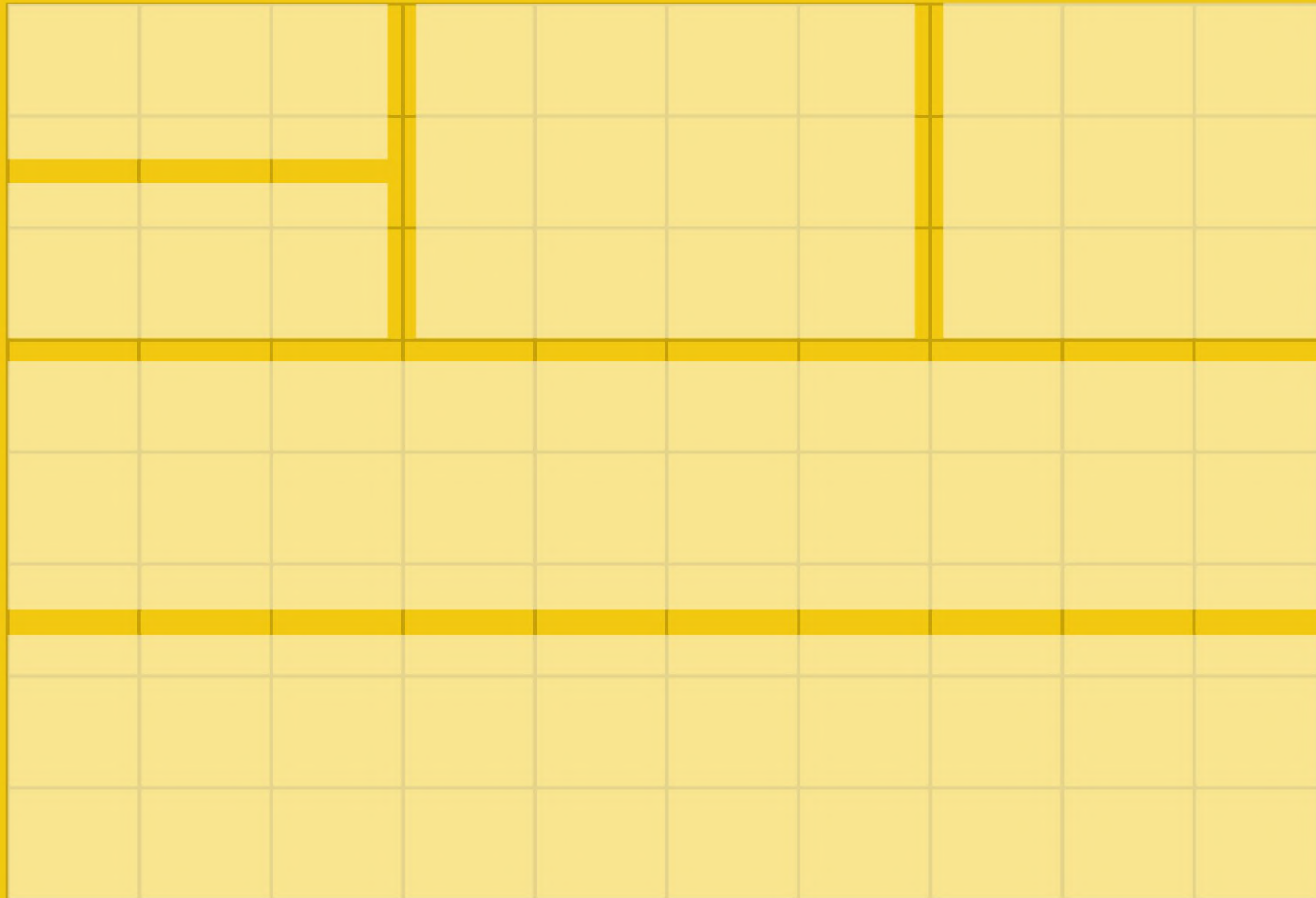


The background is a solid yellow color. It features several abstract, organic shapes and circles of various sizes, some overlapping, creating a dynamic and modern aesthetic. The shapes are primarily in the upper half of the image, with some extending towards the center.

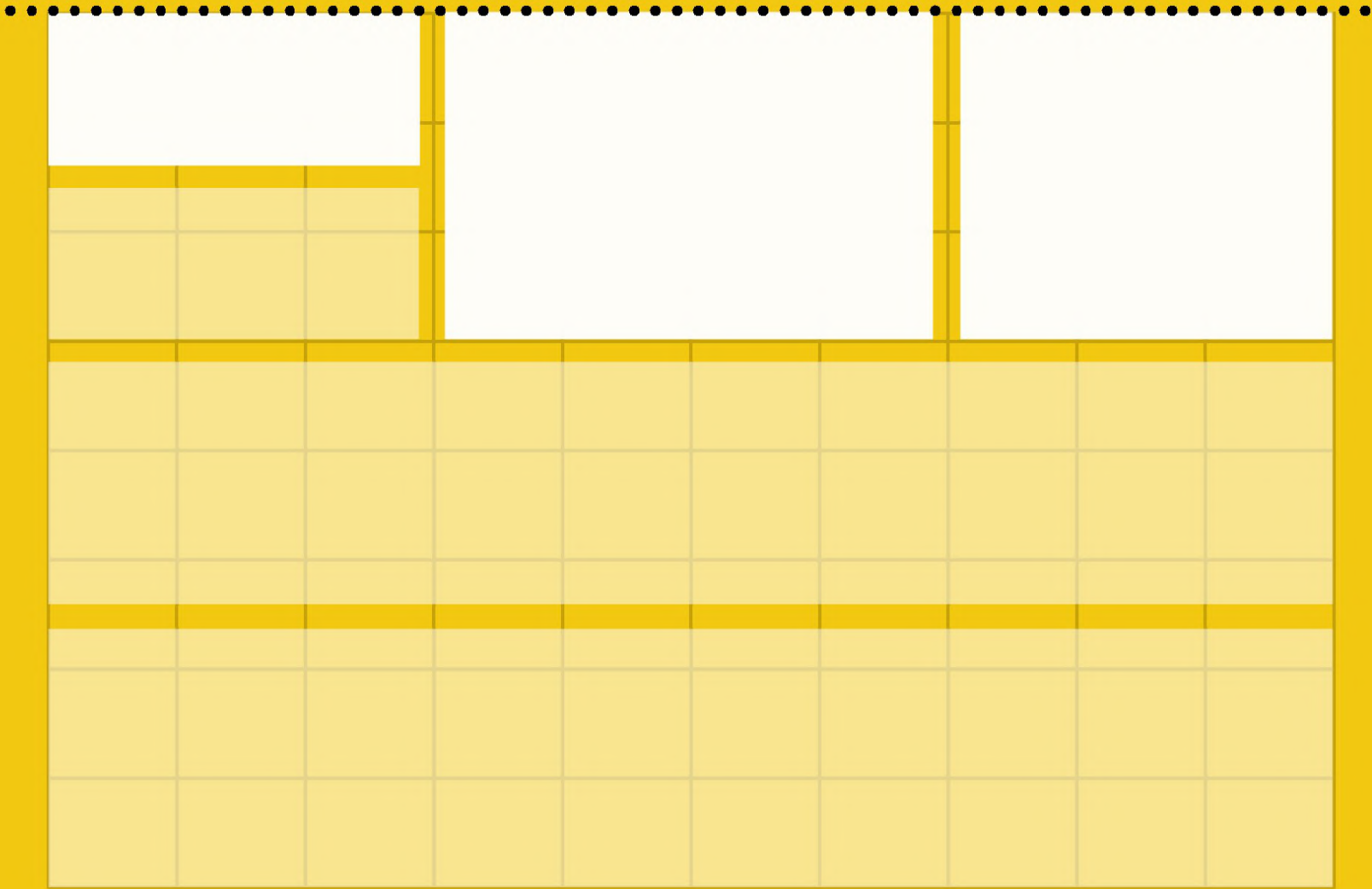
# 8 RULES

Designing reports and dashboards in

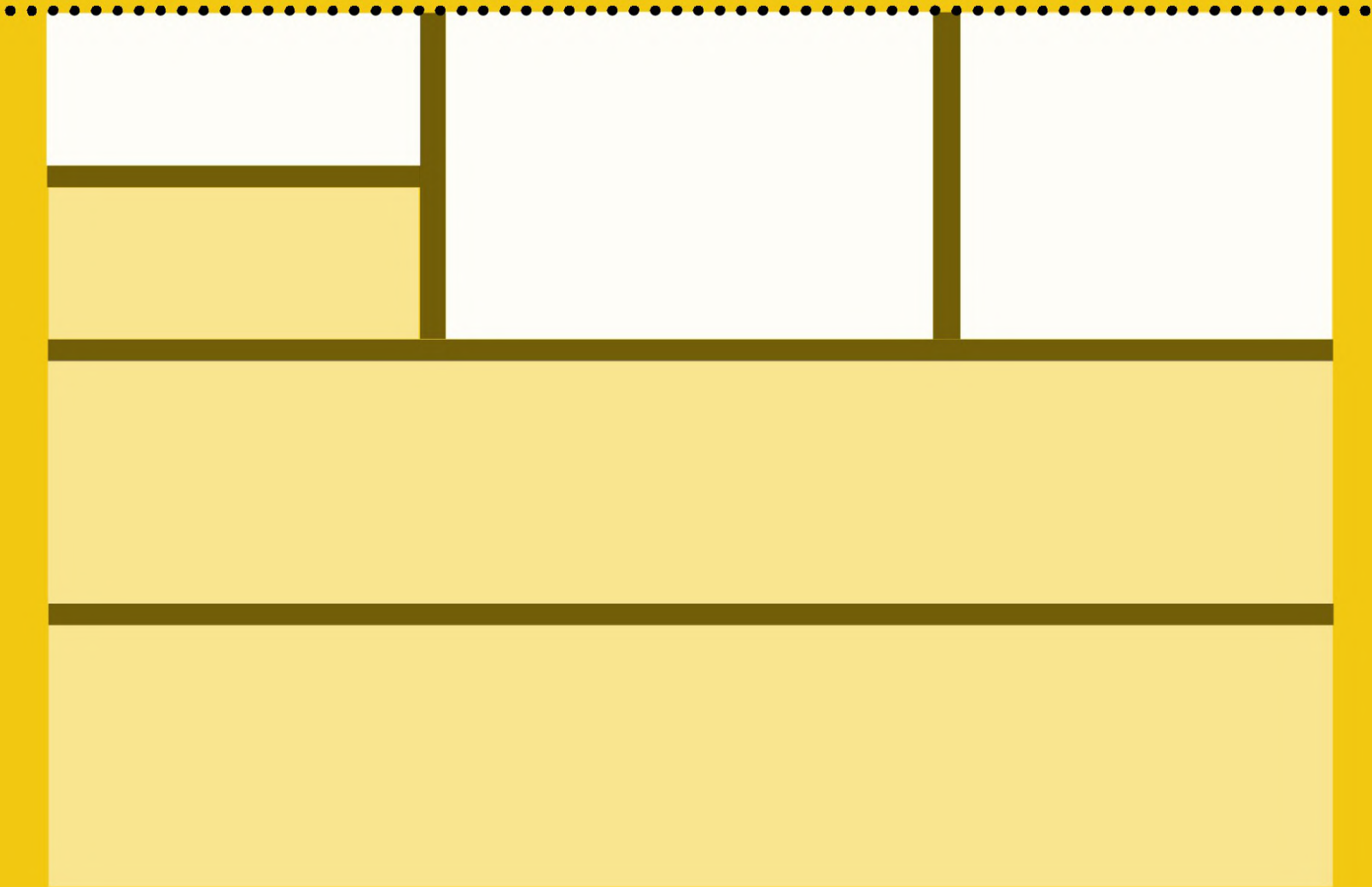
**Power BI**



**1.**  
**Always use a**  
**Grid**




**2.**  
Use a correct  
**Alignment**

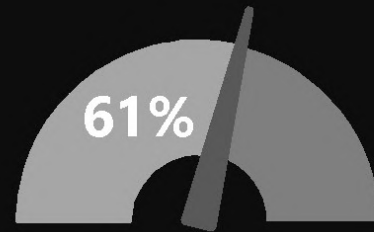


### **3.** **Appropriate** **Spacing**

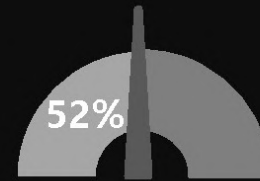

**4.**  
**Select the right**  
**Background**

- consectetur
- consectetur
- consectetur
- consectetur

42  -30%



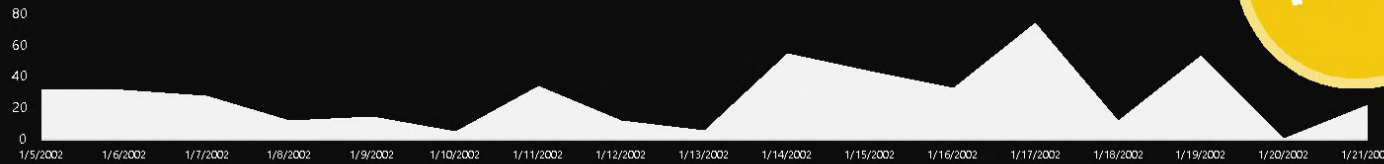
ADIPIBSCING  
Lorem ipsum dolor



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Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod

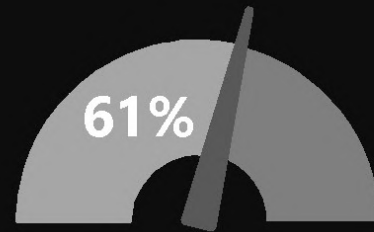


Category A	Category B	Category C	Category D	Category E
fugiat nulla	87	87	87	87
fugiat nulla	87	87	87	87
fugiat nulla	87	87	87	87
fugiat nulla	87	87	87	87

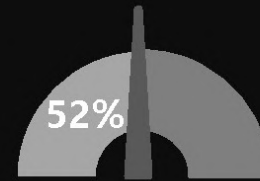
5.  
Simpler  
Is better!

- consectetur
- consectetur
- consectetur
- consectetur

42  -30%

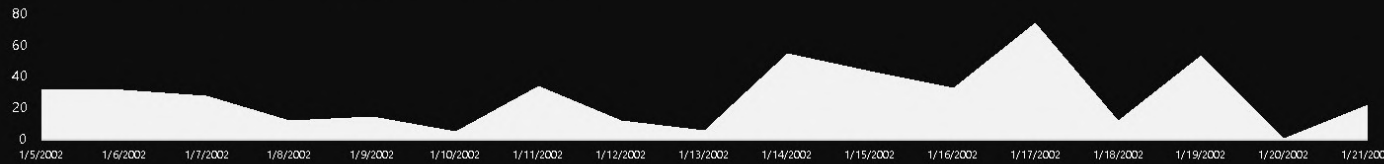


ADIPIBSCING  
Lorem ipsum dolor



ADIPIBSCING  
Lorem ipsum dolor

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod



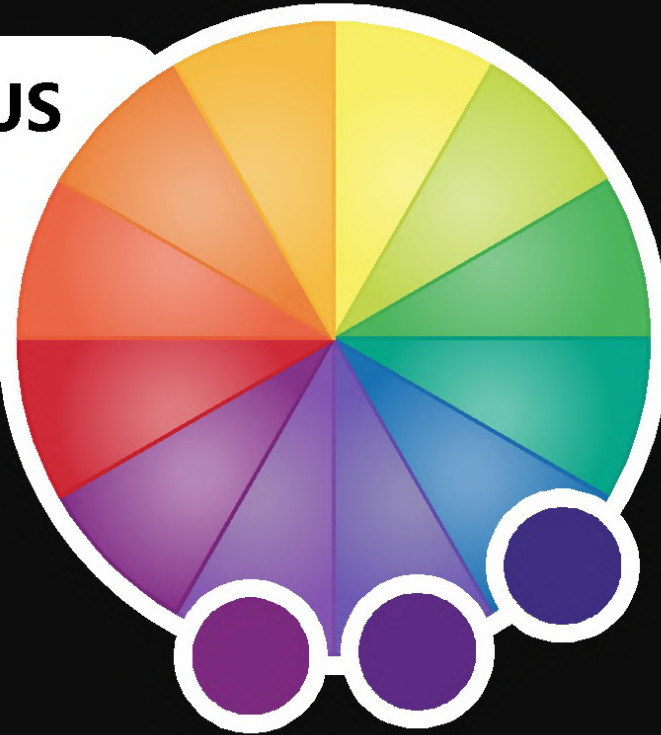
Category A	Category B	Category C	Category D	Category E
fugiat nulla	87	87	87	87
fugiat nulla	87	87	87	87
fugiat nulla	87	87	87	87
fugiat nulla	87	87	87	87

**6.**  
Use  
Negative Space  
wisely

## ANALOGOUS

Colors

<4



**7.**  
Choose your  
**Color**  
palette



## TRIADIC

Color

<4

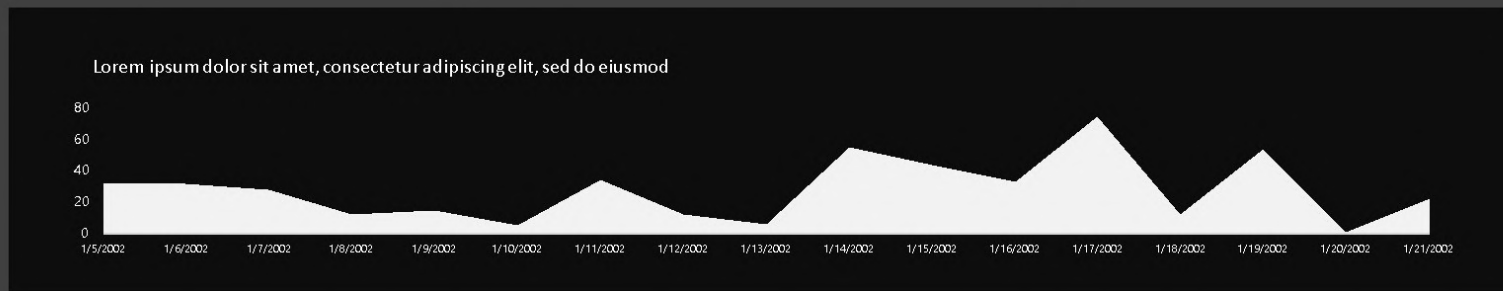
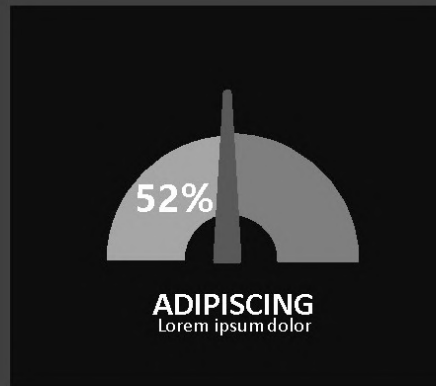
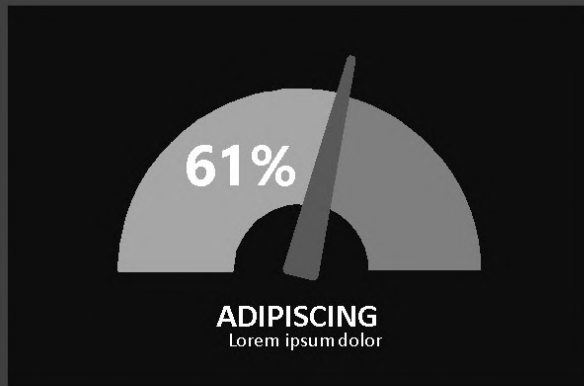
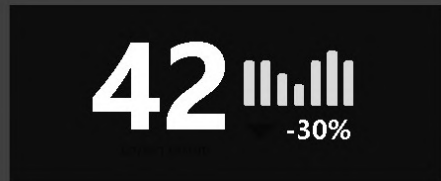
**MONOCHROMATIC**  
Color

<6





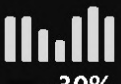
- consectetur
- consectetur
- consectetur
- consectetur

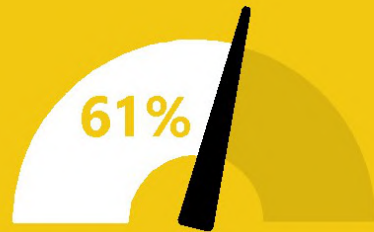


Category A	Category B	Category C	Category D	Category E
fugiat nulla	87	87	87	87
fugiat nulla	87	87	87	87
fugiat nulla	87	87	87	87
fugiat nulla	87	87	87	87

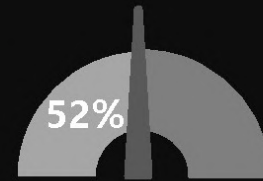
**8.**  
Enhance  
the important  
parts of a page

- consectetur
- consectetur
- consectetur
- consectetur

42  -30%

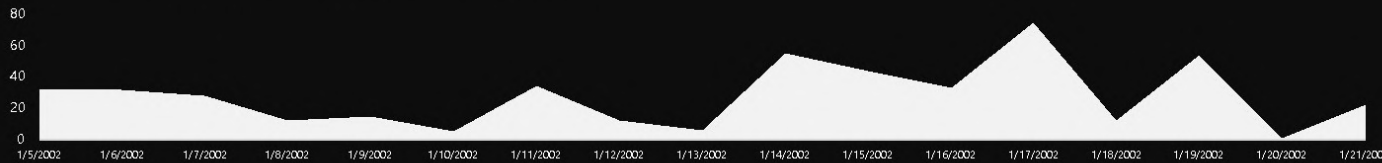


ADIPIBING  
Lorem ipsum dolor



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Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod

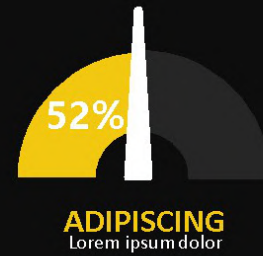
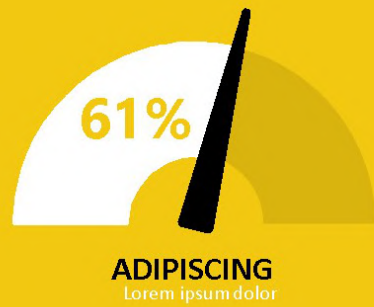


Category A	Category B	Category C	Category D	Category E
fugiat nulla	87 ↑	87 ↓	87 ↑	87 ↑
fugiat nulla	87 ↑	87 ↑	87 ↑	87 ↓
fugiat nulla	87 ↓	87 ↑	87 ↓	87 ↓
fugiat nulla	87 ↑	87 ↓	87 ↓	87 ↓

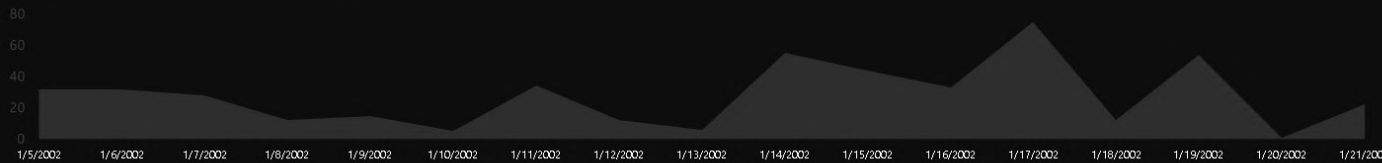
8.  
Enhance  
the important  
parts of a page

- consectetur
- consectetur
- consectetur
- consectetur

42  
Lorem ipsum  
-30%



Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod



Category A	Category B	Category C	Category D	Category E
fugiat nulla	87 ↑	87 ↓	87 ↑	87 ↑
fugiat nulla	87 ↑	87 ↑	87 ↑	87 ↓
fugiat nulla	87 ↓	87 ↑	87 ↓	87 ↓
fugiat nulla	87 ↑	87 ↓	87 ↓	87 ↓

Success!!!

Thanks!

# Slides

By Miguel Myers

Questions? @HavensBI





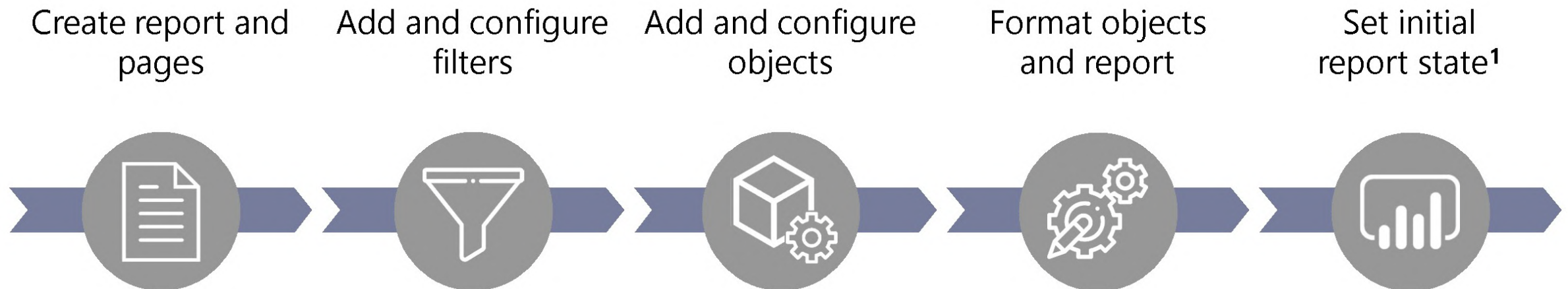
# Demonstration

## Applying Report Design Principles

- Exercise 1 – Background Color
- Exercise 2 – Alignment and Spacing
- Exercise 3 – Removing Object Elements
- Exercise 4 – Selecting Visual Types

# Developing Reports

## Methodology

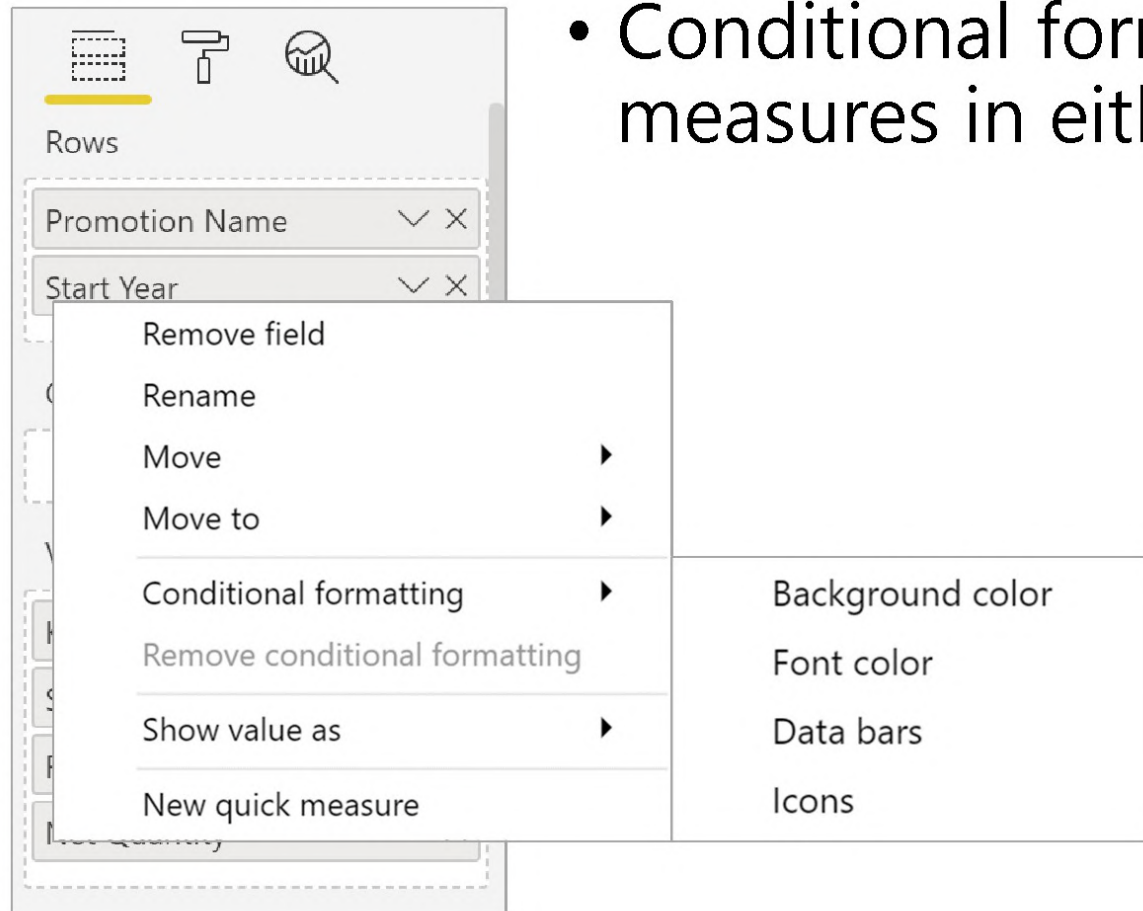


**1:** E.g. Filter values, drill mode, sort order

# Designing Advanced Reports

## Conditional Formatting

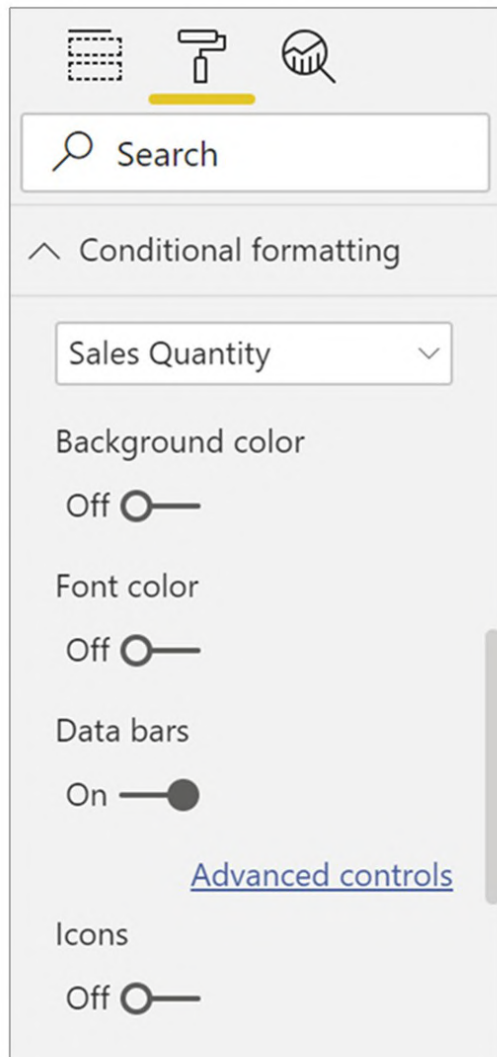
- Conditional formatting can be applied to calculated measures in either the *table* or *matrix* visuals



Page Title & Geo	Page Views	Unique Views	Searches	Bounce Rate
Havens Consulting	4,326	3,587	546	47.6%
Files & Templates — Hav...	4,270	3,424	225	72.8%
Blog / Media — Havens ...	3,464	2,921	35	73.2%
Blog Posts — Havens Co...	2,695	2,050	33	63.6%
Power BI Vs. Excel — Hav...	2,367	2,202	1,540	91.2%
Havens Consulting — Se...	1,403	1,034	0	37.9%
About Us — Havens Con...	1,226	1,049	455	47.1%
What Is Power BI? — Hav...	855	723	241	57.5%
Creating a Slicer Pop-Out...	800	679	9	80.1%
Google Analytics Report	786	710	20	80.8%
<b>Total</b>	<b>29,936</b>	<b>24,836</b>	<b>4,512</b>	<b>70.0%</b>

# Designing Advanced Reports

## Conditional Formatting



- Conditional formatting can be applied to calculated measures in either the *table* or *matrix* visuals
- Settings can be accessed:
  - In the **Fields** well of the **Visualizations** pane<sup>1</sup>
  - From the sub-menu under the Formatting pane

Calculated measures is covered during the DAX module on day 3



# Designing Advanced Reports

## Conditional Formatting ► Background and Font Colors

- **Background** and **font color** share the same *format by* settings
- Formatting logic can be based on:
  - **Color scale**
    - Applies a gradient between *min* and *max*
    - Min/Max can be set to *lowest value* or *fixed absolute value*
    - *Diverging* enables a third middle color

The screenshot shows the 'Conditional Formatting' dialog box for a 'Color scale'. The 'Format by' dropdown is set to 'Color scale'. The 'Based on field' dropdown is set to 'Total Sales Quantity'. The 'Minimum' dropdown is set to 'Lowest value' with a red color swatch. The 'Maximum' dropdown is set to 'Highest value' with a teal color swatch. The 'Diverging' checkbox is unchecked. A horizontal color gradient bar is shown below the settings, transitioning from red on the left to teal on the right. The 'Default formatting' dropdown is set to 'As zero'. The 'OK' button is highlighted in yellow, and the 'Cancel' button is greyed out.

# Designing Advanced Reports

## Conditional Formatting ► Background and Font Colors

- **Background** and **font color** share the same *format by* settings
- Formatting logic can be based on:
  - **Rules**
    - Applies colors based on one or more value ranges, each with a set color
    - Each value range starts with:
      - An **If** value condition
      - An **and** value condition
      - And a **color**

The screenshot shows the 'Conditional Formatting Rules Manager' dialog box. At the top, 'Format by' is set to 'Rules' with a 'Learn more' link. Below, 'Based on field' is set to 'Total Sales Quantity'. The 'Rules' section contains three rules:

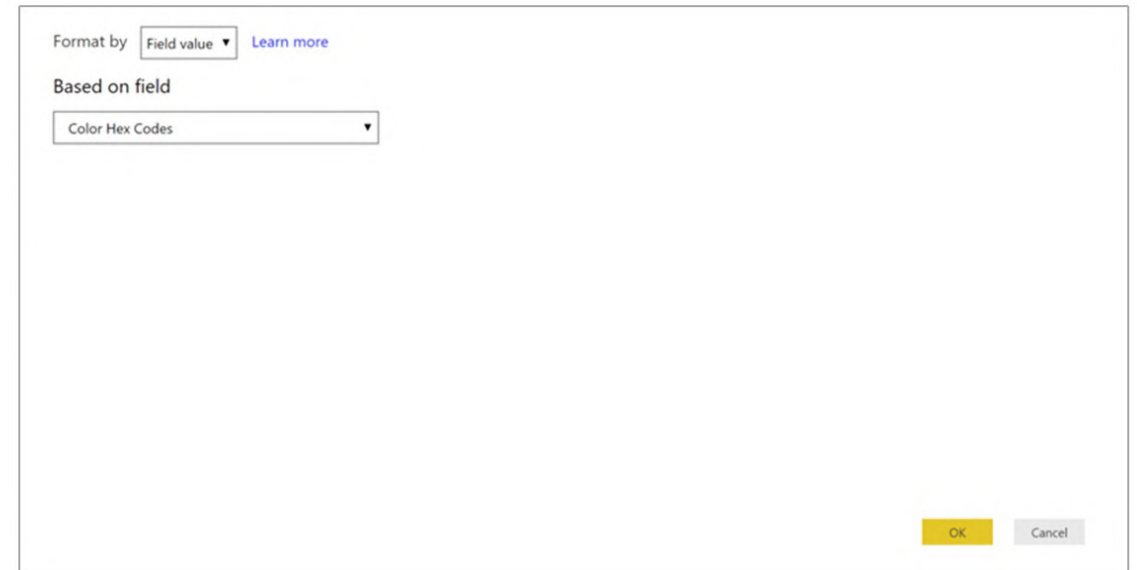
Rule	Condition 1	Operator	Condition 2	Operator	Value	Unit	Color	Actions
1	is greater than or equal to	and	is less than	and	0	Percent	Red	↑ ↓ ×
2	is greater than or equal to	and	is less than	and	33	Percent	Orange	↑ ↓ ×
3	is greater than or equal to	and	is less than	and	66	Number	Green	↑ ↓ ×

Buttons for 'Reverse color order' and '+ New rule' are visible. At the bottom right, there are 'OK' and 'Cancel' buttons.

# Designing Advanced Reports

## Conditional Formatting ► Background and Font Colors

- **Background** and **font color** share the same *format by* settings
- Formatting logic can be based on:
  - **Field value**
    - Applies colors by using a *calculated measure* or a *column* that specifies a color – either using a *text value* or a *hex code*
    - Custom logic can be created inside a calculated measure to apply the desired color



The image shows a dialog box for conditional formatting. At the top, it says 'Format by' with a dropdown menu set to 'Field value' and a 'Learn more' link. Below that, it says 'Based on field' with a dropdown menu set to 'Color Hex Codes'. At the bottom right, there are 'OK' and 'Cancel' buttons.

Field value formatting will be outside the scope of this training

# Designing Advanced Reports

## Conditional Formatting ► Data Bars

- **Data bars** can be set to *lowest value* or *fixed absolute value*
- **Other data Bar properties:**
  - Positive/negative bar (*color*)
  - Axis (*color*)
  - Bar direction
  - Show bar only – *hides the value*

Data bars

Format cells with bars based on their values.

Base value

Sales Quantity

Show bar only

Minimum: Lowest value (Lowest value)

Maximum: Highest value (Highest value)

Positive bar: [Teal color]

Negative bar: [Red color]

Bar direction: Left to right

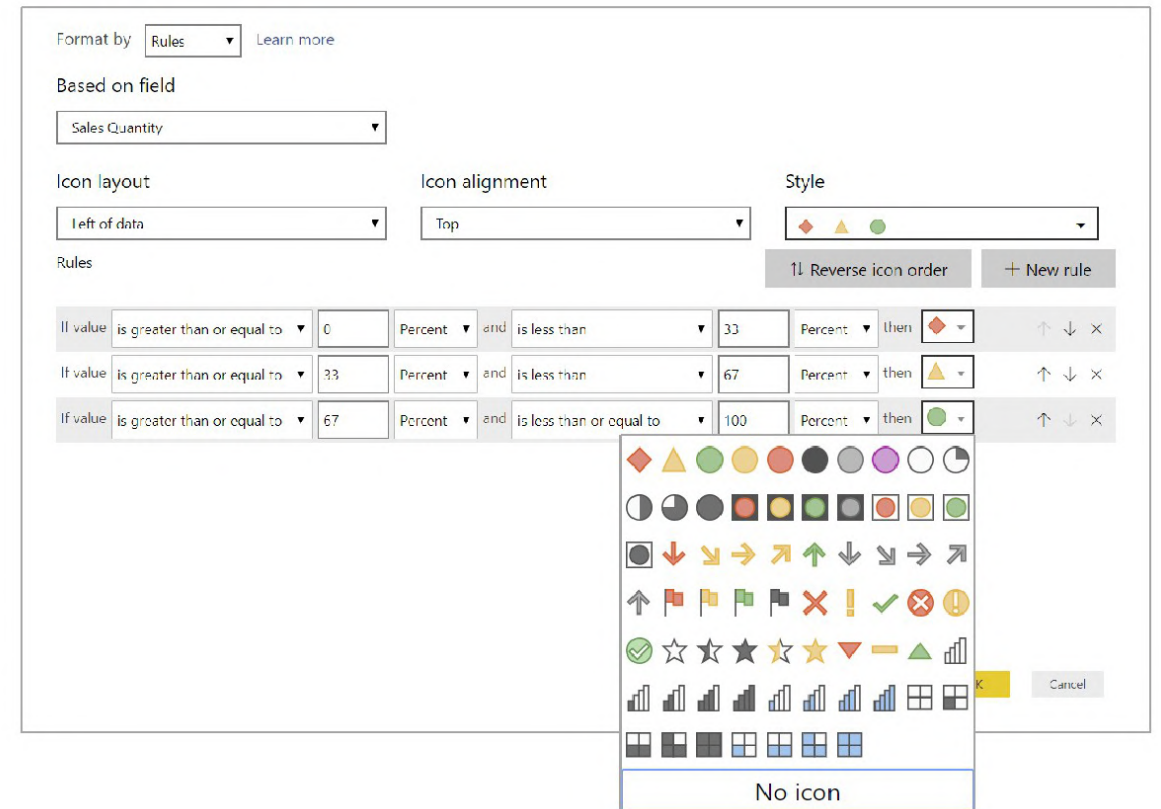
Axis: [Black color]

OK Cancel

# Designing Advanced Reports

## Conditional Formatting ► Icons

- **Icon sets** in Power BI are *very similar* to the ones found in *Excel*
- Formatting logic can be based on **Rules** or **Field Value**
- By default, icon rules will apply:
  - Red diamond to the *lower 33%*
  - Yellow triangle to the *middle 33%*
  - Green circle to the *upper 33%*
- *Custom* icon sets can be imported in Power BI Desktop

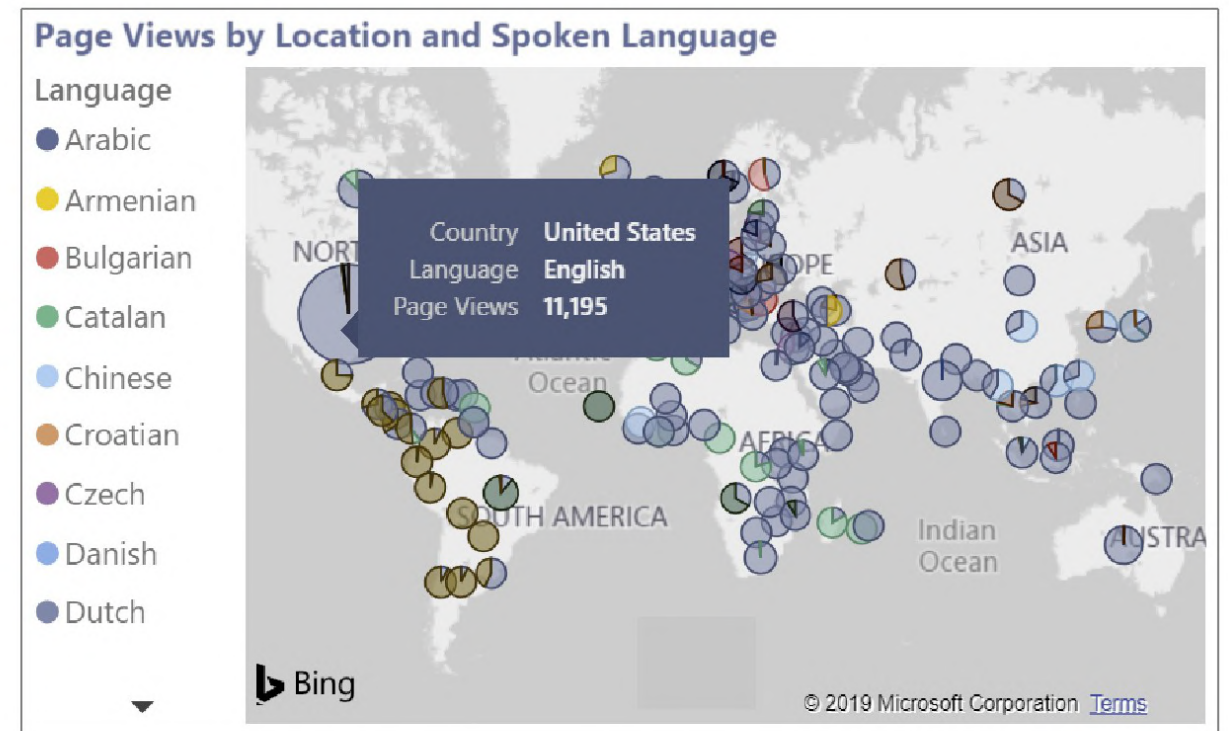


# Designing Advanced Reports

## Tooltips

- Tooltips can be configured by adding fields to the **Tooltips** well of most visuals
- Fields added to this well display filtered data when hovering over any data points on the visual

Tooltips can also be disabled for specific visuals

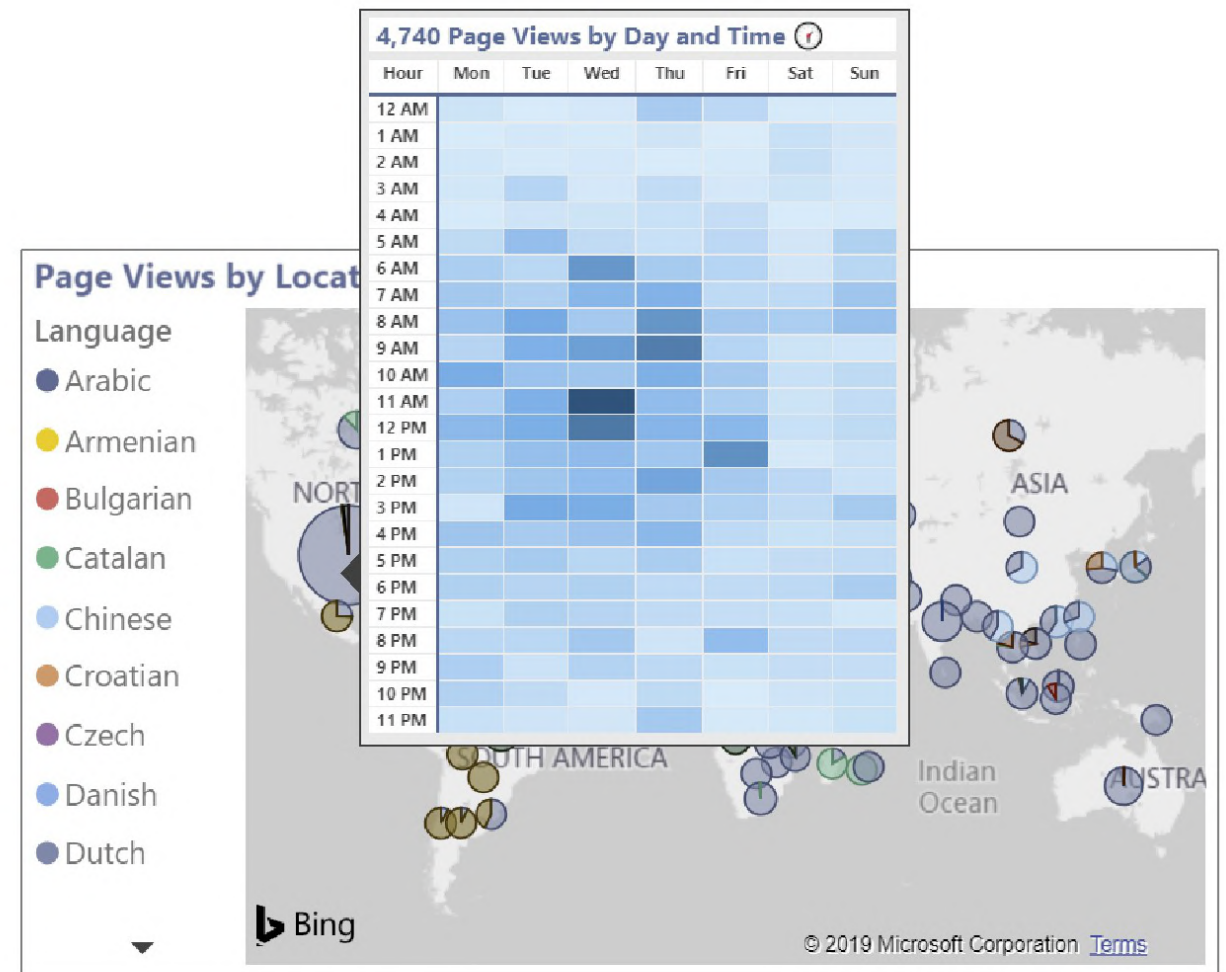


# Designing Advanced Reports

## Tooltips ► Report Tooltips

- Additionally, **report tooltip pages** can be created to display visuals as a tooltip
- Tooltip pages:
  - Can be set to any height or width
  - Can include any visual or object
  - Cannot be interacted with inside the tooltip<sup>1</sup>

**1:** Elements such as slicers, hierarchy controls, drillthrough, etc. cannot be clicked

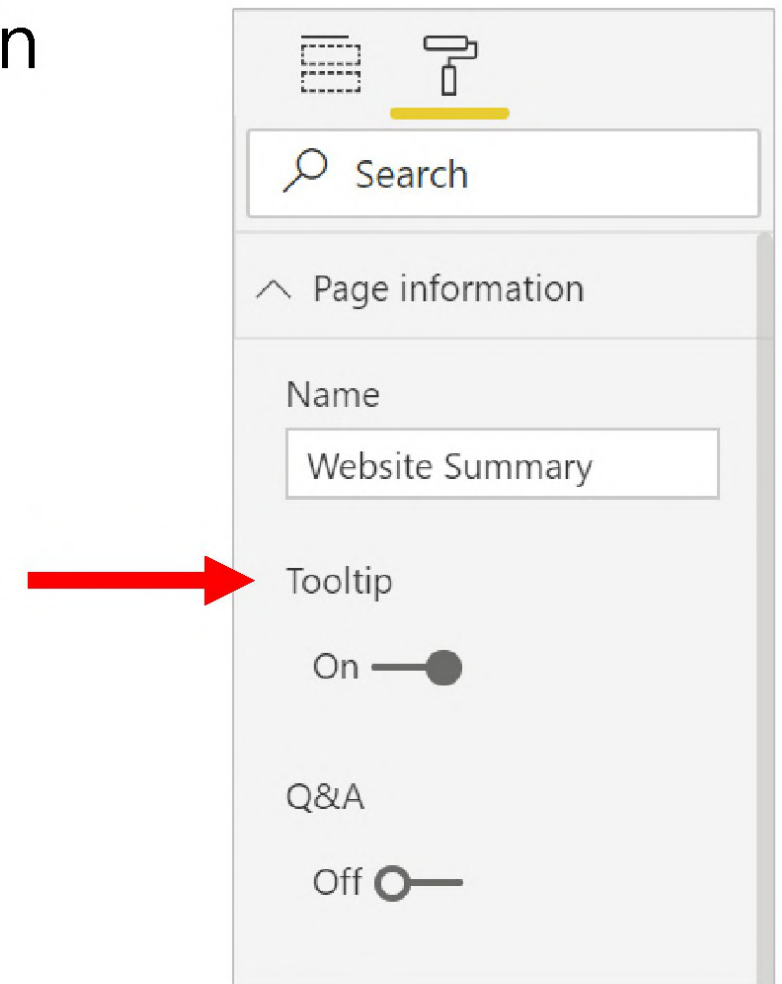


# Designing Advanced Reports

Tooltips ► Report Tooltips ► Configuration

- Configurations for report tooltips are accessed in the *format pane* for the *report page*<sup>1</sup>
- **Report tooltip settings:**
  - **Tooltip** (*toggle*) – enables this page to be used as a tooltip by other page visuals

**1:** page formatting is only accessible if there is not an active page visual selected





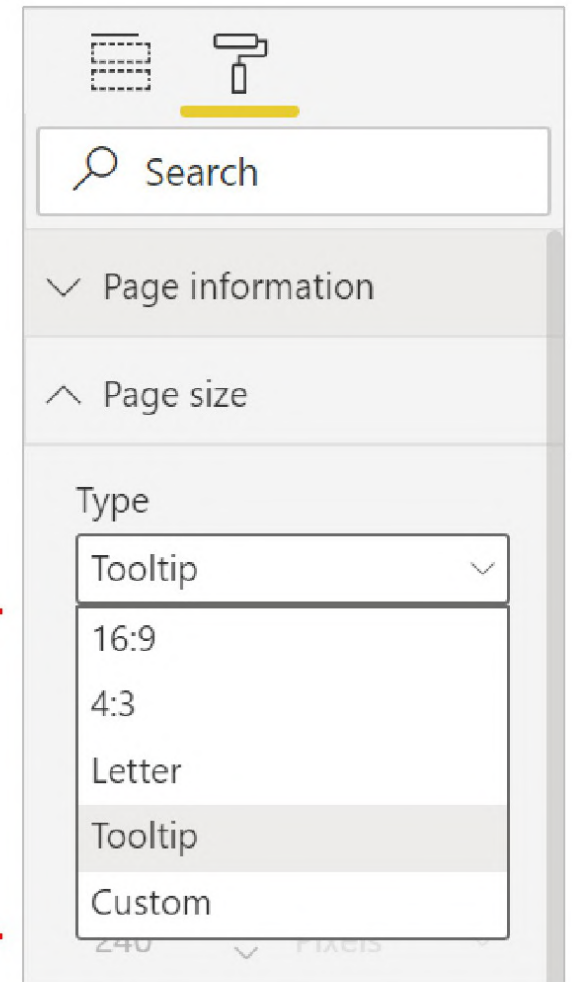
# Designing Advanced Reports

Tooltips ► Report Tooltips ► Configuration

- Configurations for report tooltips are accessed in the *format pane* for the *report page*<sup>1</sup>
- **Report tooltip settings:**
  - **Tooltip** (*toggle*) – enables this page to be used as a tooltip by other page visuals
  - **Page size** – configuration of the pixel size and width, common configurations include:
    - *Tooltip* – 320 x 240 pixels
    - *Custom* – User defined pixel width and height

**1:** page formatting is only accessible if there is not an active page visual selected

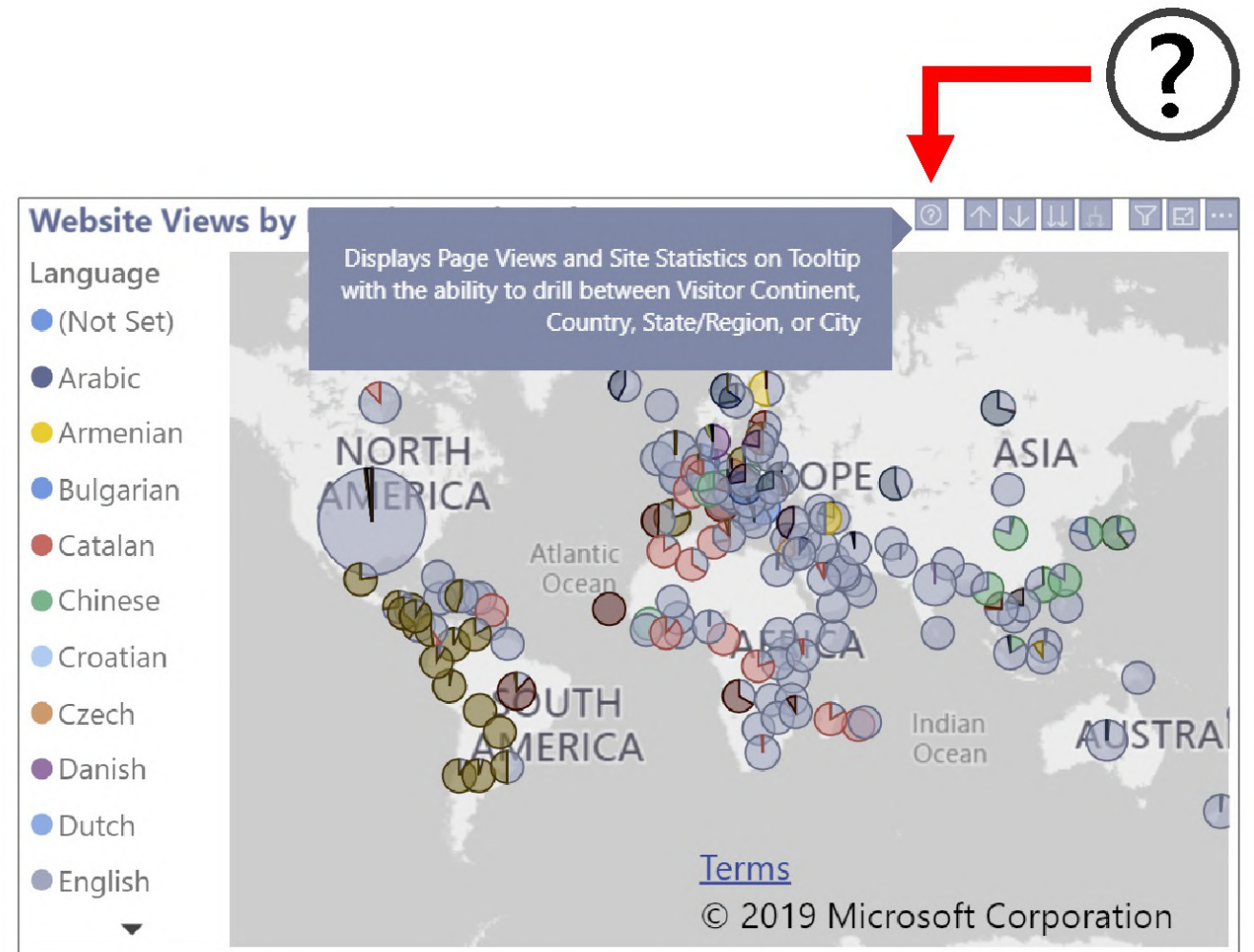
Page sizes



# Designing Advanced Reports

## Tooltips ► Visual Header Tooltips

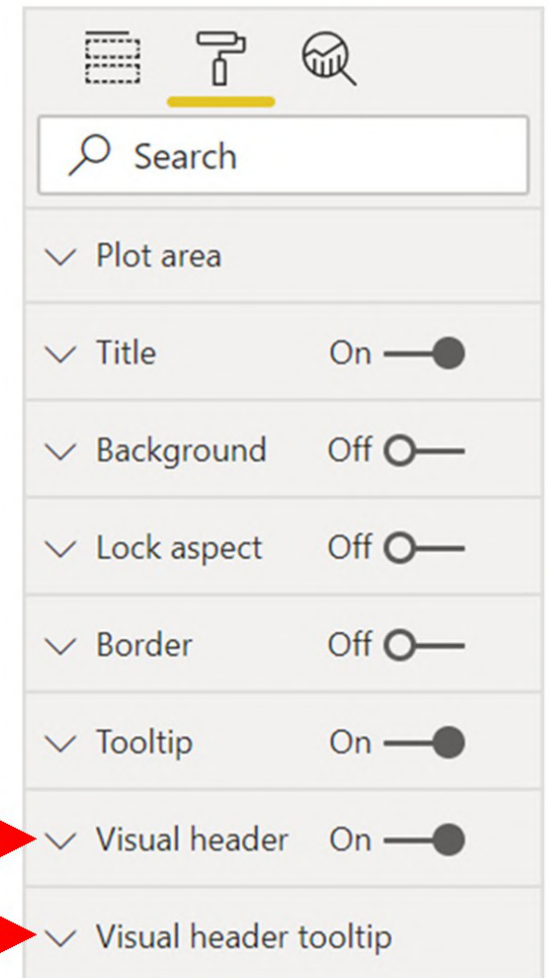
- **Tooltips** can also be created *inside* the *visual header* to display information relevant to a visual
- **Visual Header Tooltips:**
  - Can be configured to be either a *standard Tooltip* or a *Report Tooltip*
  - Can be customized for each visual



# Designing Advanced Reports

Tooltips ► Visual Header Tooltips ► Configuration

- Configurations for visual header report tooltips are accessed in the *visual header* for the *visual*
- **Visual header tooltip settings:**
  - **Visual header tooltip icon (toggle)** – enables the tooltip icon and toggles visibility of the configuration menu for the visual header tooltip



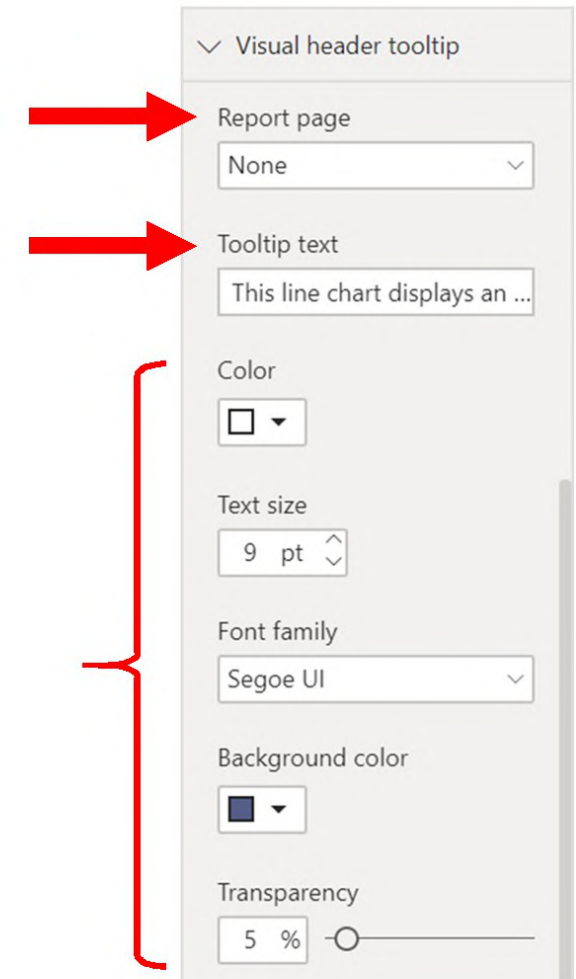
Visual header tooltip toggle →

Displays when toggle is on →

# Designing Advanced Reports

Tooltips ► Visual Header Tooltips ► Configuration

- Configurations for visual header report tooltips are accessed in the *visual header* for the *visual*
- **Visual header tooltip settings:**
  - **Visual header tooltip icon** (*toggle*) – enables the tooltip icon and toggles visibility of the configuration menu for the visual header tooltip
  - **Visual header tooltip** (*menu*) – contains all configuration options, such as:
    - *Report Page* – which page to assign to tooltip (if desired)
    - *Tooltip Text* – text to display inside tooltip
      - Up to 250 characters
    - *Formatting options*
      - E.g. font size, color, background, transparency





# Recommended Practices

- **Design principle practices:**

- Commonly, people look at the *upper-left of report* pages first – consider carefully what to place there as that is the first thing users will see
- Develop reports from a *blank canvas perspective* – start with nothing and add one element at a time until requirements are met
  - This will help minimize unnecessary elements and prevent the report from becoming “noisy”
- Consider using a *light page background* and *white backgrounds for objects* – this creates soft borders between page elements
- Choose carefully the type of color contrast (*categorical, sequential, diverging*) applied to visuals – as each one tells a different story with the data
- Repetition (*e.g. font, color, location, naming, etc.*) can be used to indicate relationships or *lack thereof* – so choose carefully when to apply



# Recommended Practices

- **Design principle practices:**

- Apply alignment to *every object* – no exceptions
  - Borders between objects should be able to follow a *natural line* throughout the report page
  - *Enabling Gridlines* in Power BI Desktop will help create consistent borders between visuals
- Have feedback sessions with users to determine *logical proximity* of report objects and the “flow” of the report page
- Reports should be built to *minimize eye and mouse travel* on the screen



# Recommended Practices

- **Data visualization practices:**

- Have feedback sessions with users to determine what type of story needs to be told for each visualization – and make a visual type selection based on this
  - E.g. Part-to-whole, correlation, distribution, etc.
- *Forced variation* between visual types does not always add value – choose carefully the type of visual if *data accuracy* is important



# References

- Power BI Visualization Best Practices
  - <https://docs.microsoft.com/en-us/power-bi/visuals/power-bi-visualization-best-practices>
- Design Concepts for Better Power BI Reports
  - <https://datasavvy.me/design-concepts-for-better-power-bi-reports>
- Adobe Color Wheel
  - <https://color.adobe.com>
- Color Blindness Resources
  - <https://www.color-blindness.com/>
- Visuals Reference
  - <https://www.sqlbi.com/ref/power-bi-visuals-reference>



# Online Resources



Presentation PDF

- <http://www.havensconsulting.net/speaking-events>



Consulting Services

- <http://www.havensconsulting.net/consulting-services>



Files & Templates

- <http://www.havensconsulting.net/files-and-templates>



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YouTube Channel

- <https://www.youtube.com/c/HavensConsulting>

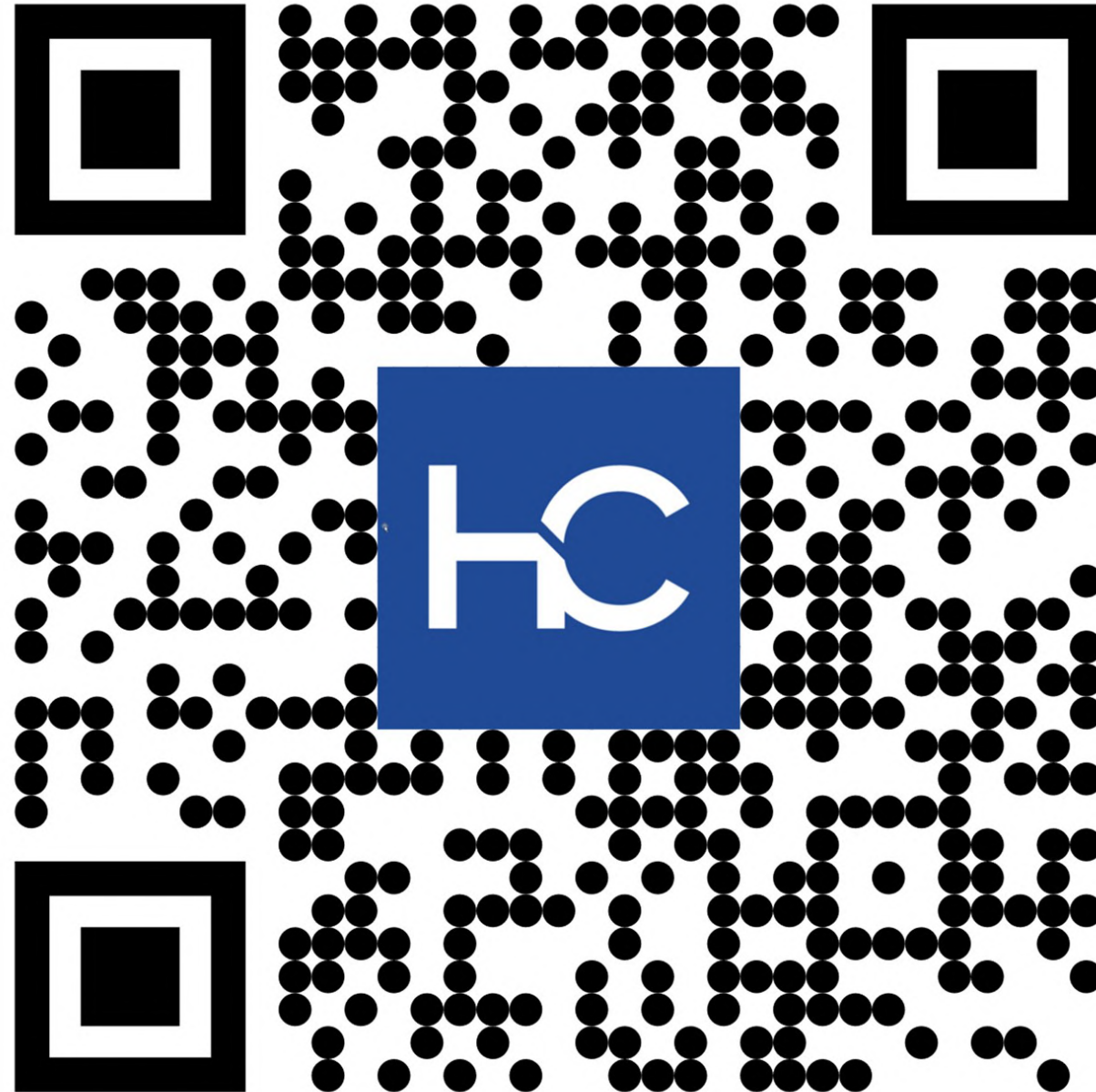


LinkedIn Page

- <https://www.linkedin.com/in/reidhavens>



# Company Website



# Blog Signup Raffle

