

# Design Principles

## Visual encoding



# Objectives

After completing this section of the course you should make good use of:

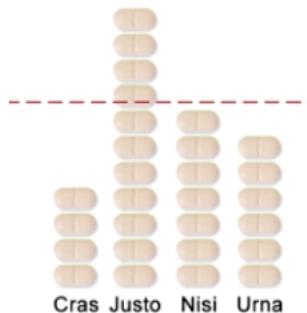
- » Illustration and Iconography
  - » Typography
  - » Position, size, color, contrast
  - » The importance of scale
  - » Legends and sources
- 

Right Paradigm: selecting the right chart type

# Why do we communicate visually?

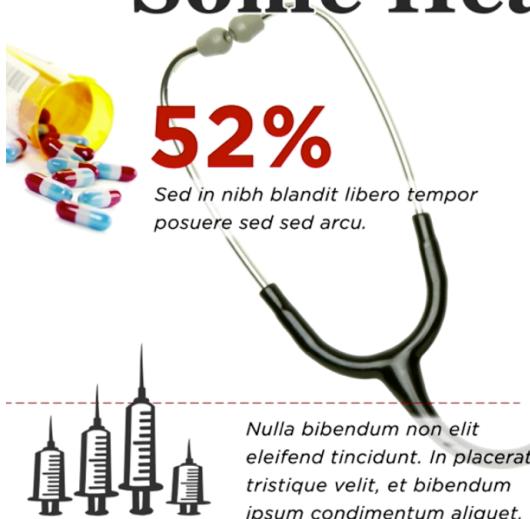
## ILLUSTRATION AND ICONOGRAPHY

- » Tangibility
- » Simplification
- » Context Setting



**"A picture is worth a thousand words"**

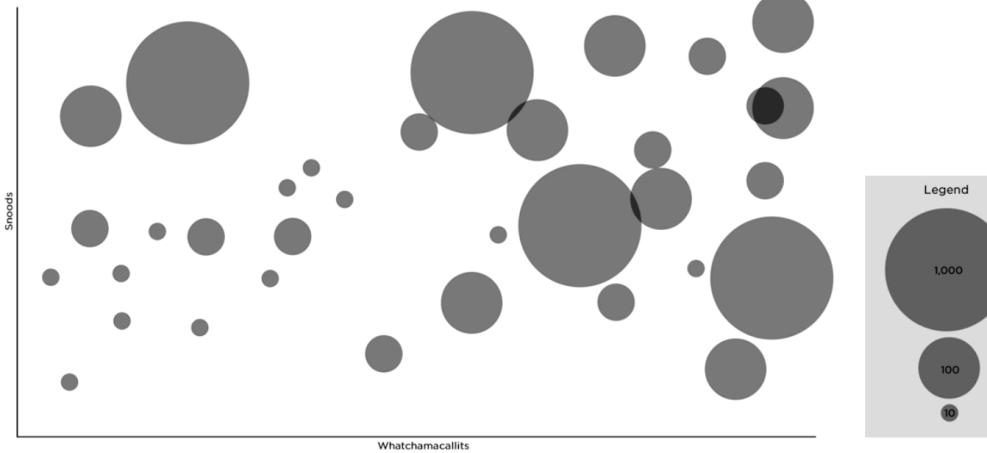
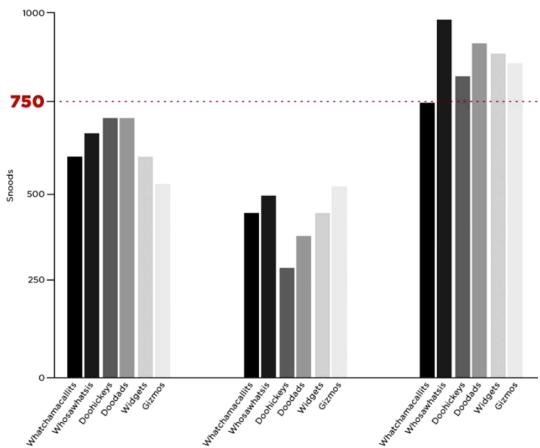
## Some Healthcare Infographic



# Typography

## Basic Type

- » Axes and Legends
- » Labels
- » Callouts
- » Infographics

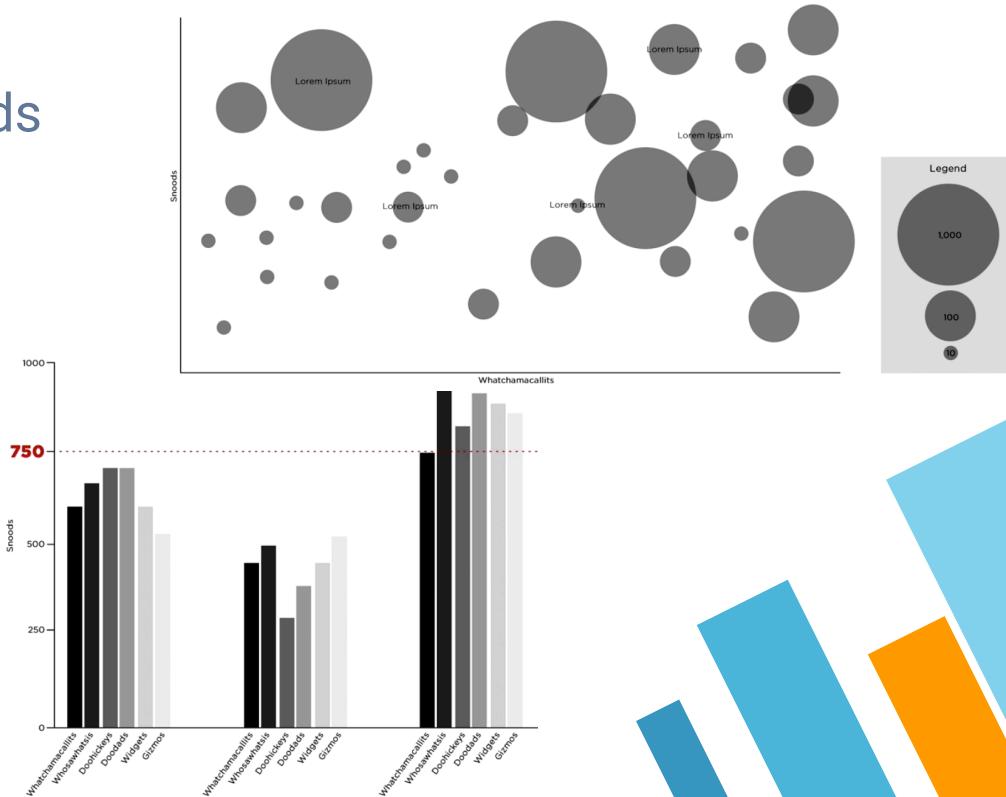


# Typography

## Basic Type

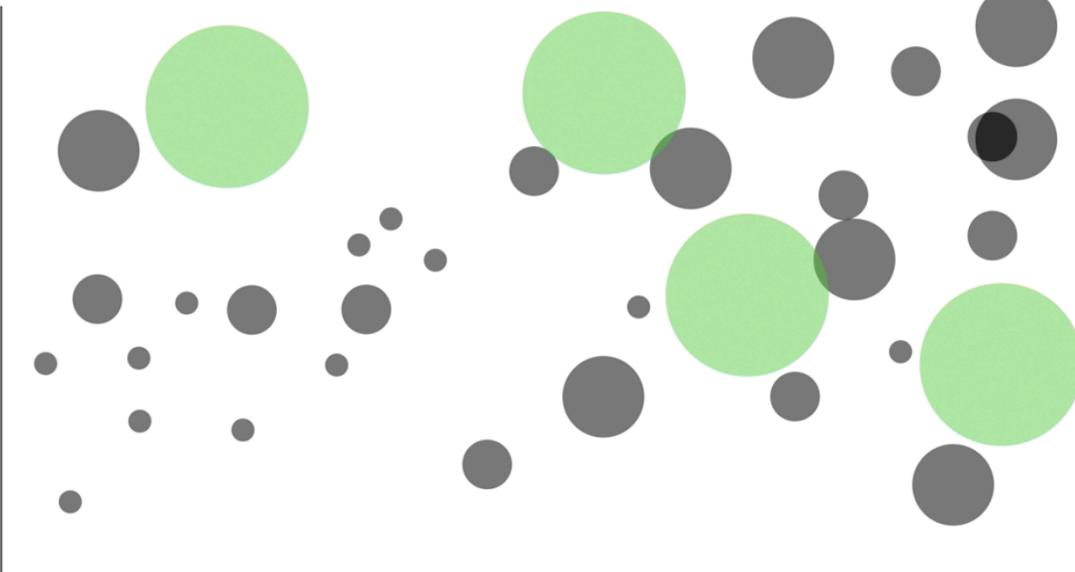
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“Designer vs. Data Analyst”



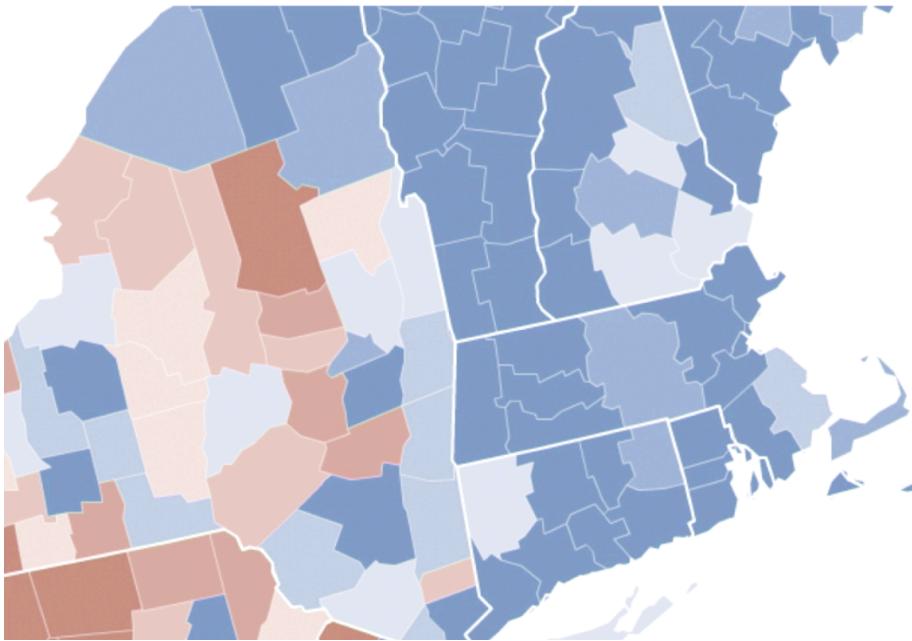
# Position, size, colors , contrast, shape

“The new graphic designer no longer creates visualizations by choosing a rigid collection of shapes, positions and colors but rather by choosing the rules needed for data to breathe form into geometric abstractions”

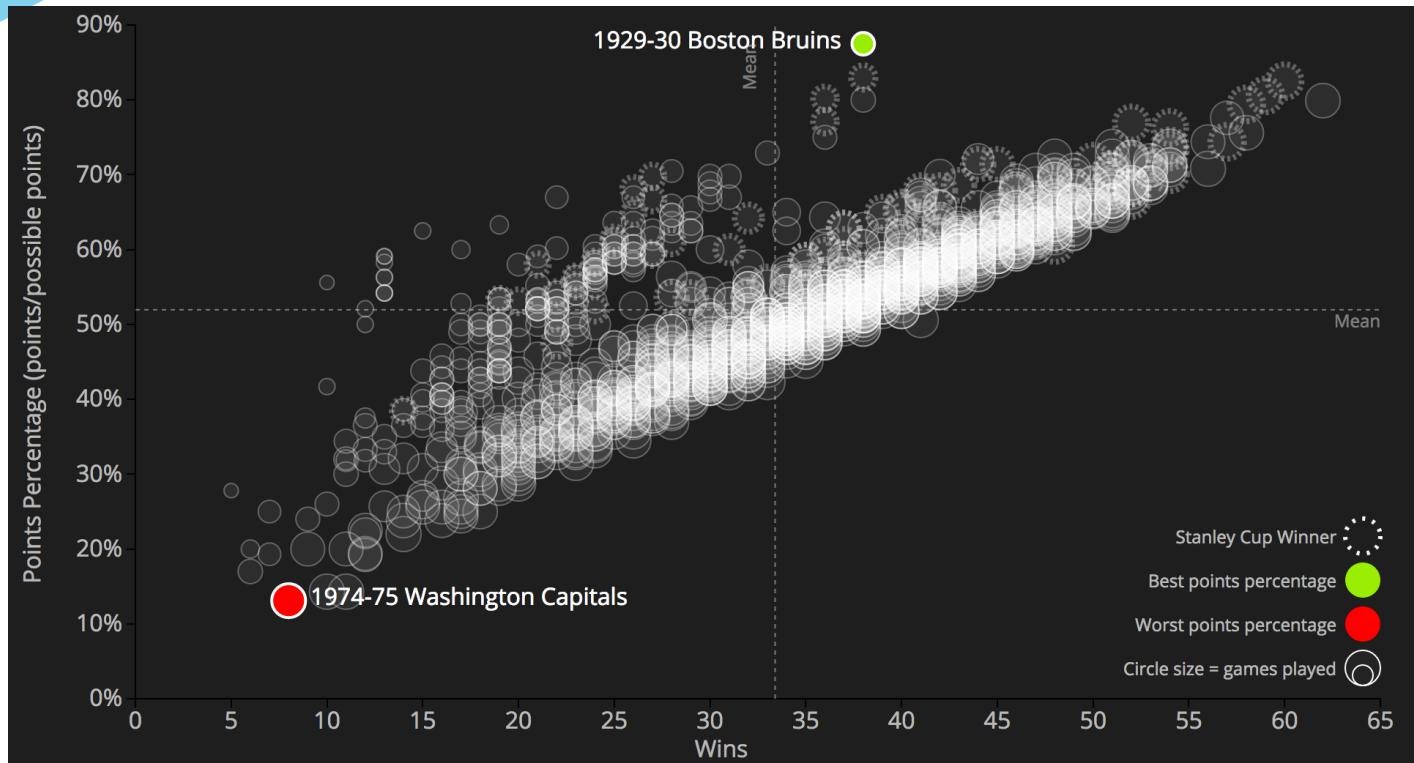


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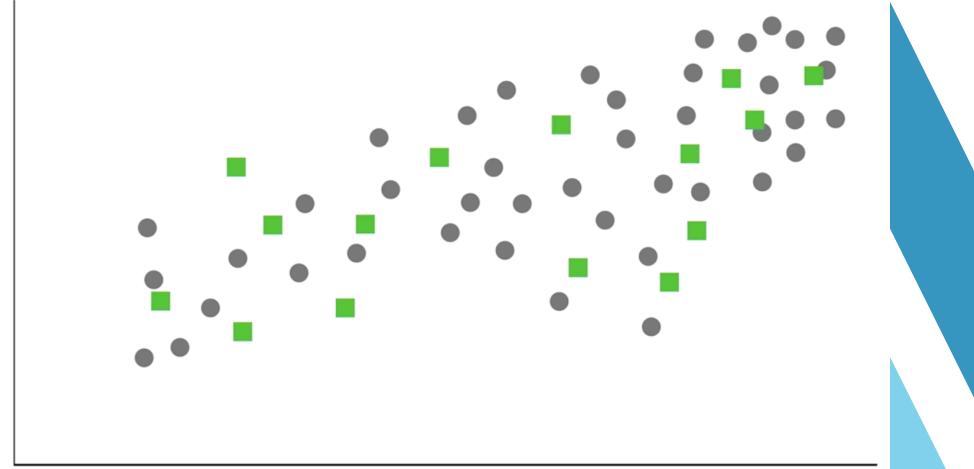
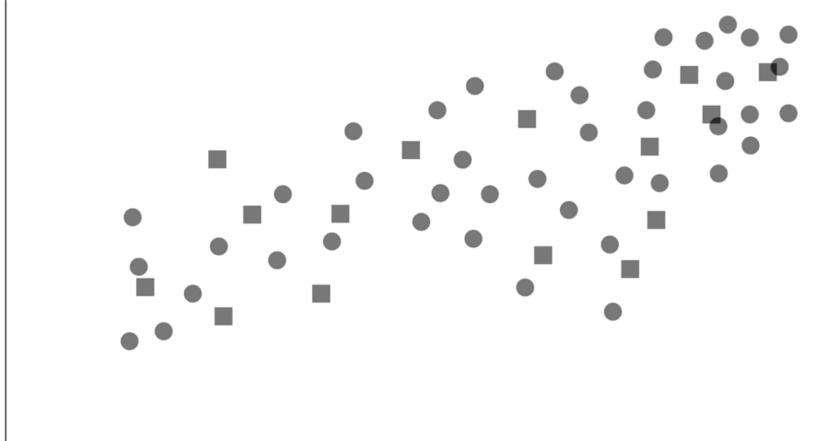
**"The new graphic designer no longer creates visualizations by choosing a rigid collection of shapes, positions and colors but rather by choosing the rules needed for data to breathe form into geometric abstractions"**



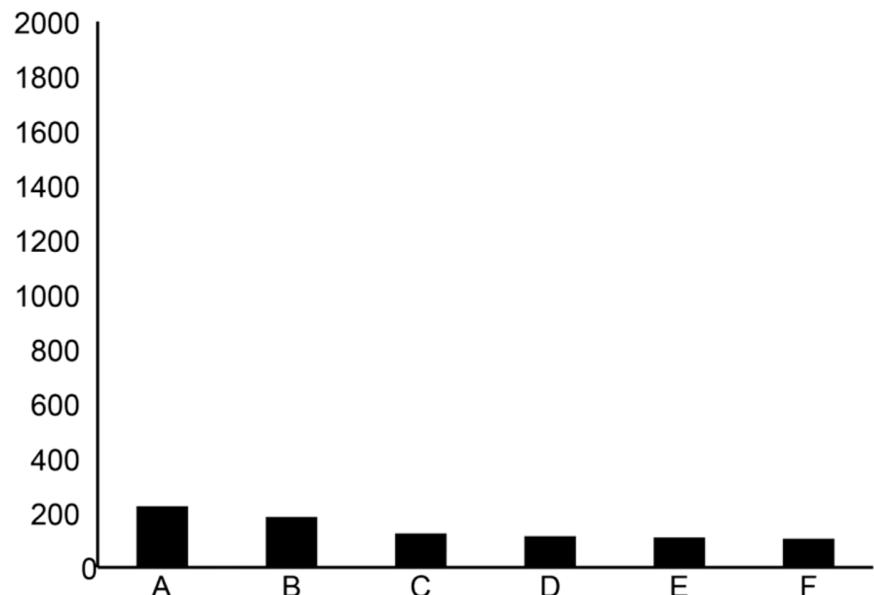
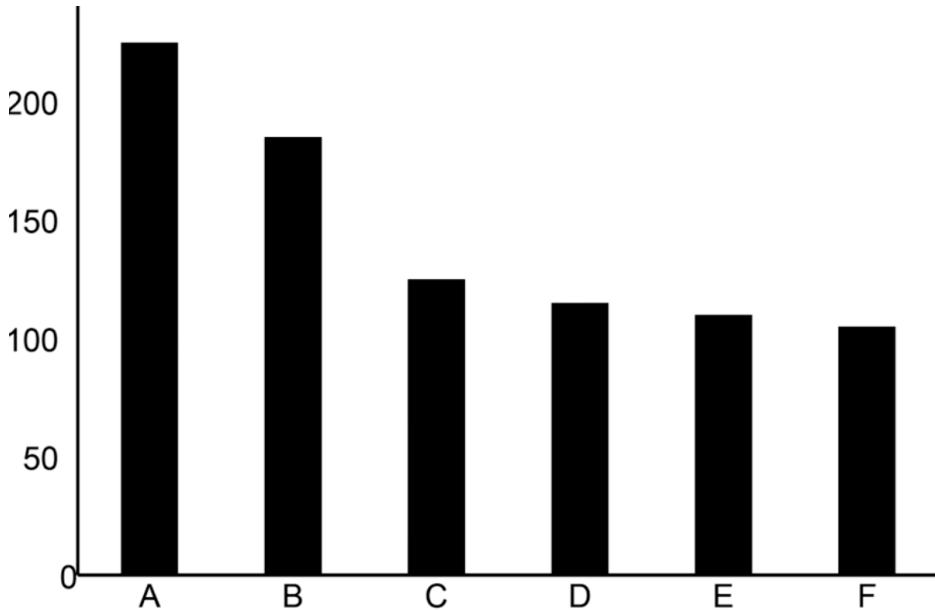
# Position, size, colors , contrast, shape



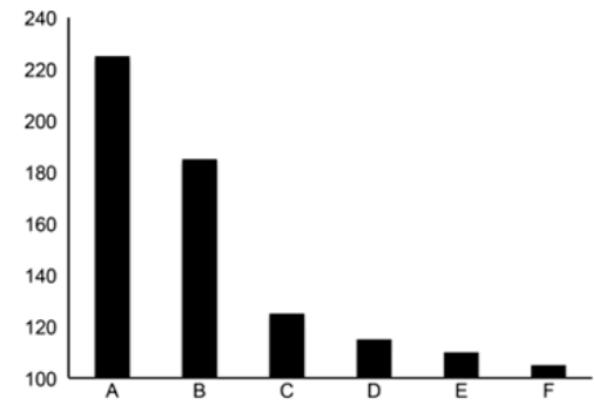
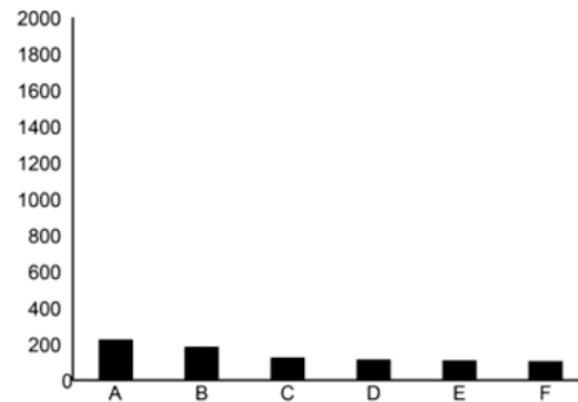
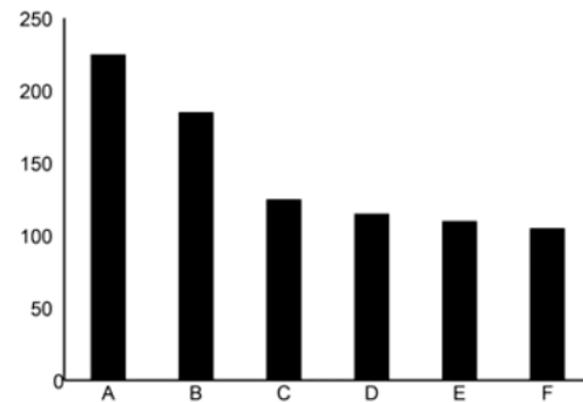
# Position, size, colors , contrast, shape



# The importance of scale

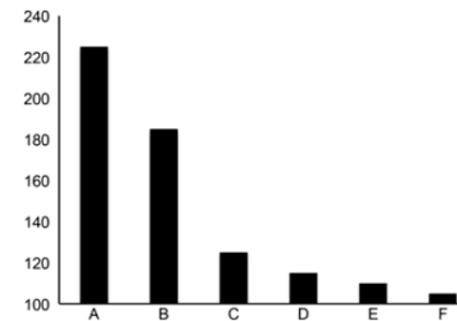
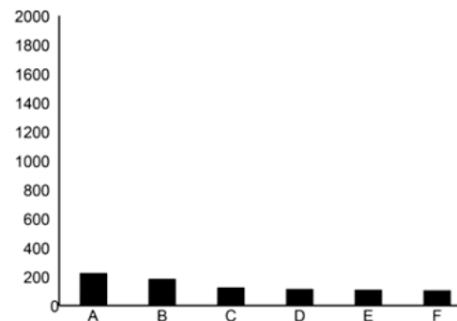
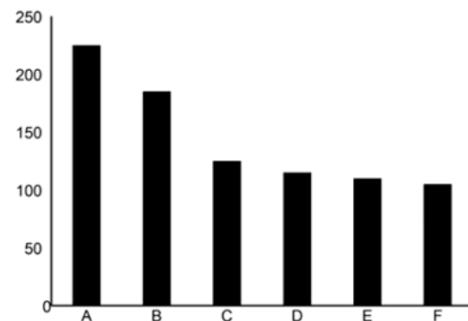


# The importance of scale



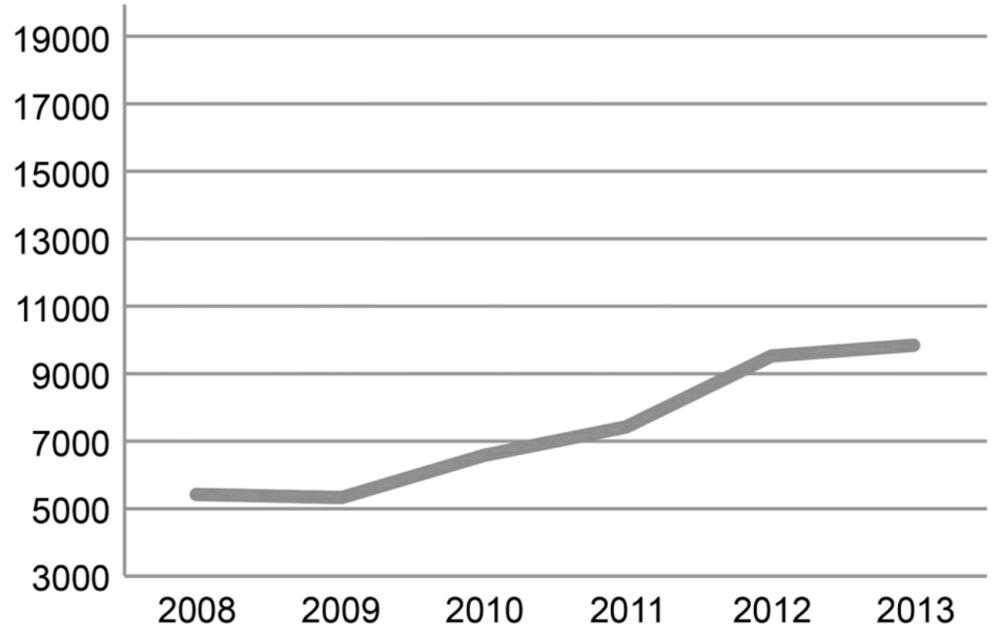
# The importance of scale

- » Q: Are there any specific rules to follow?
- » A: No, it all depends on the chart type you're using.
  
- » Y-axes start at 0



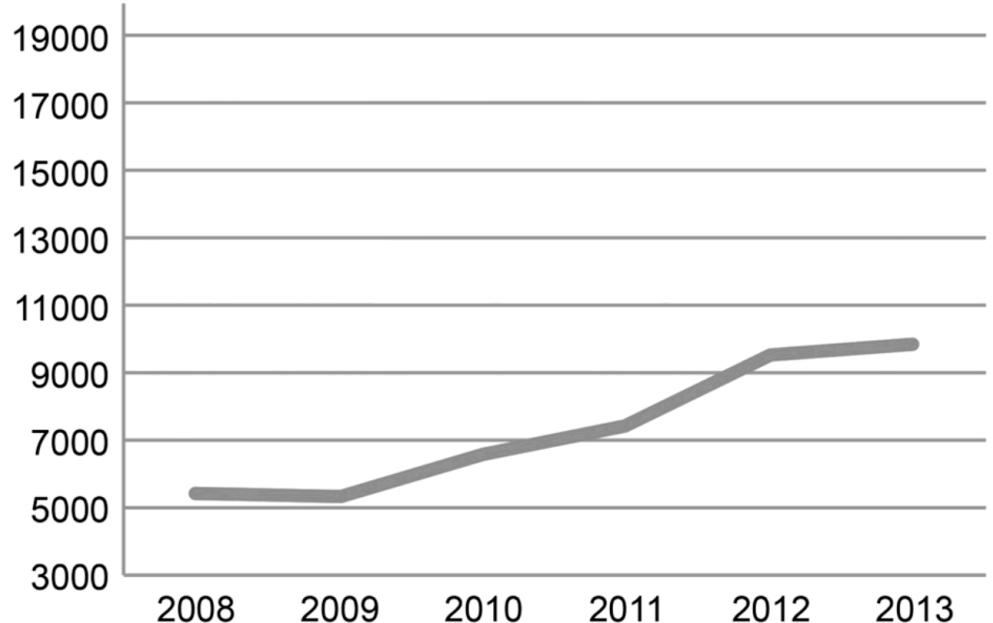
# The importance of scale

- » Internal Reference
- » Comparison to other number?
- » Is entire scale needed?
- » Does it need to be "centered"?
- » Is there a specific business outcome?



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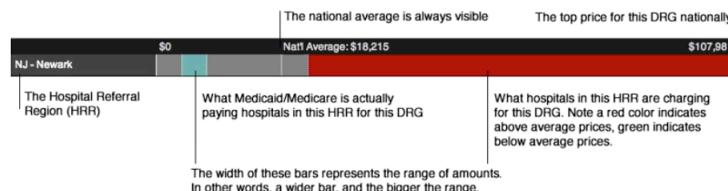


# Legends and sources, and notes

- » The more data the more important legends are
- » On complex visualization a good practice is to include a **How to Read**

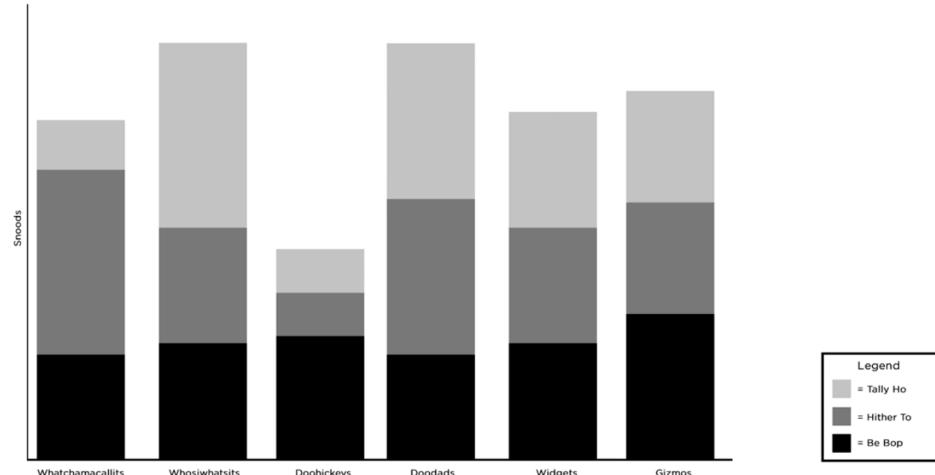
## How to Read the Data

There are two data interfaces with which to become familiar. First is the national view of all Hospital Referral Regions (HRRs). The legend below explains how to read the data in this view.



The second view is visible when you click on a HRR bar. The legend below explains what you'll see.

Everywhere we use the word "quality" we are referring to the Hospital Value Based Pricing Total Quality Score from Centers for



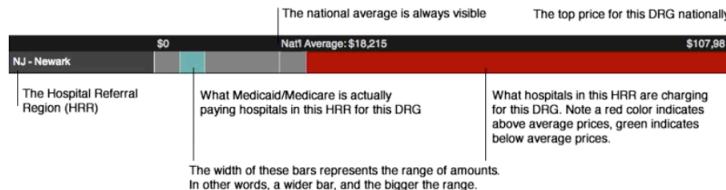
<https://beehivemedia.com/dataviz/hospitalpricing>

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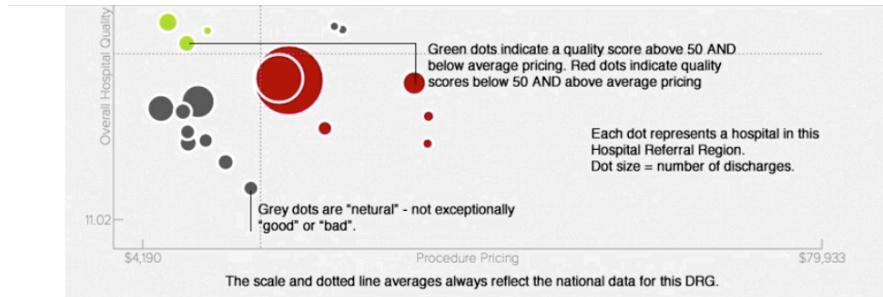
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## Notes on the Data

The hospital pricing data comes from Centers for Medicare and Medicaid Services (CMS) and was provided in the context of [a data visualization contest](#) put on by [The Robert Wood Johnson Foundation](#), [Health 2.0](#), and [visualizing.org](#). The hospital quality data is also from CMS and uses their Hospital Value Based Purchasing Total Performance Scores, which are combining multiple measures of hospital quality and affect the amount CMS pays hospitals for their services. Income data comes from the United States Census.

## Notes on the Technology

This visualization was built using [D3](#) for the front-end and PHP/MySQL on the back-end to handle the large amount of data. D3 renders graphics in SVG, which does not work for some older browsers. Users of those browsers will be redirected to a page suggesting they try a different browser. (SORRY!)

<https://beehivemedia.com/dataviz/hospitalpricing>

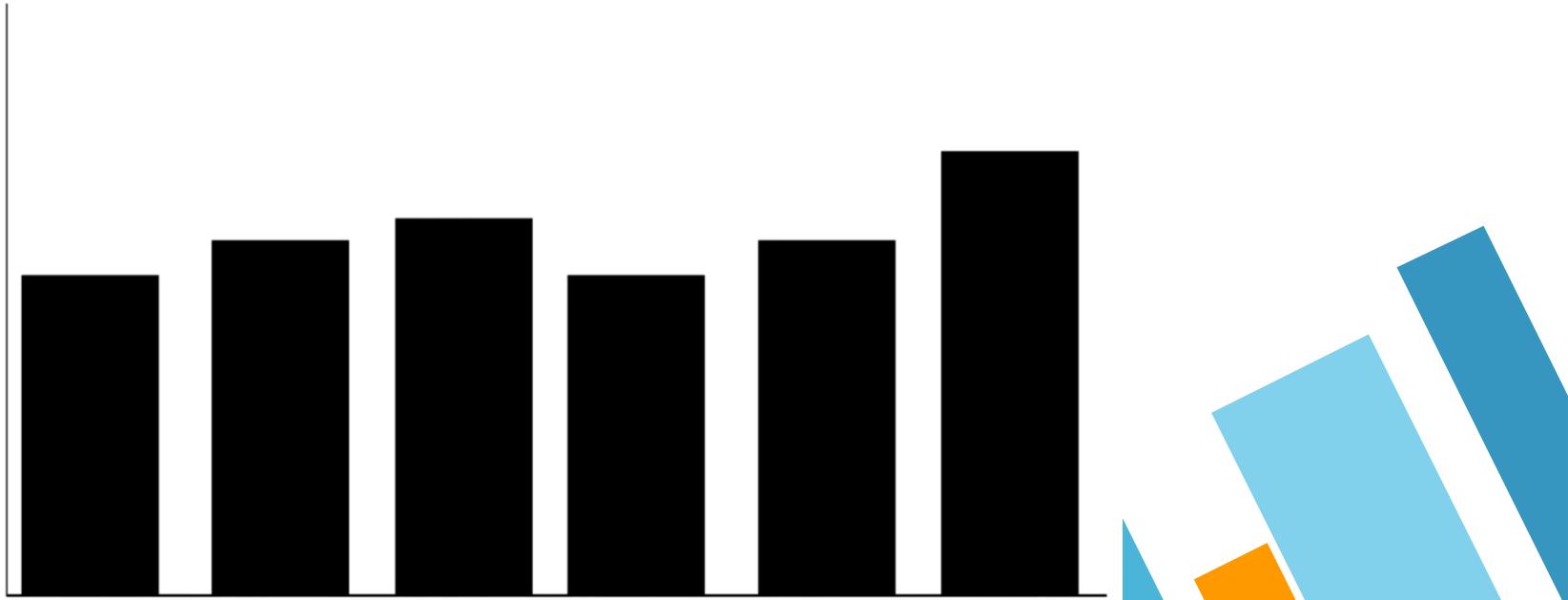
# The right Paradigm



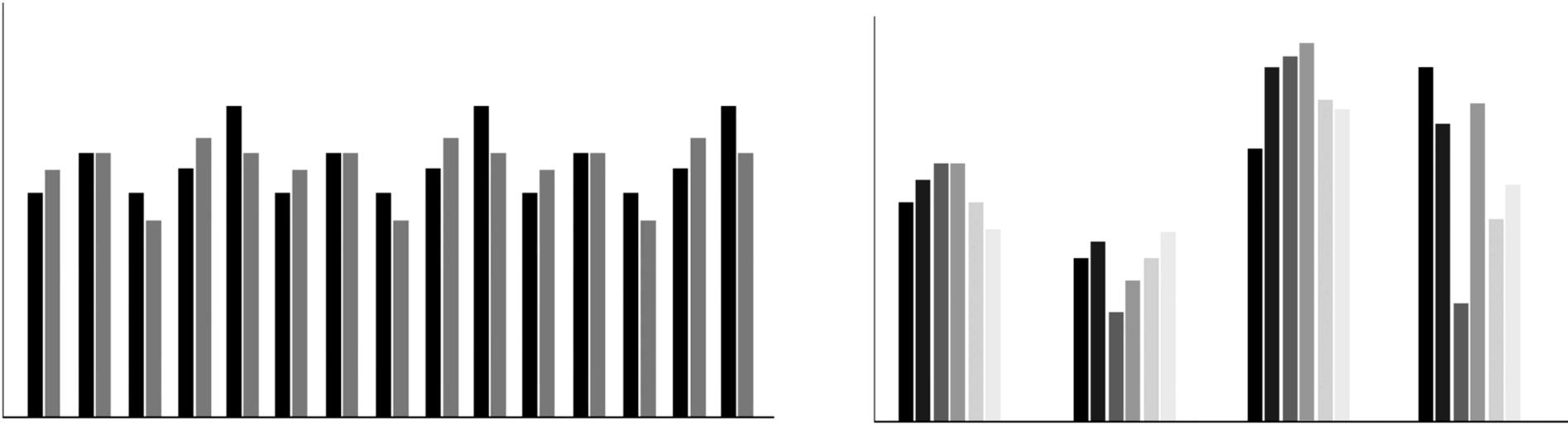
# The right Paradigm

- » Basic charts
  - » Alternative Charts
  - » Hierarchical Charts
  - » Maps
- 

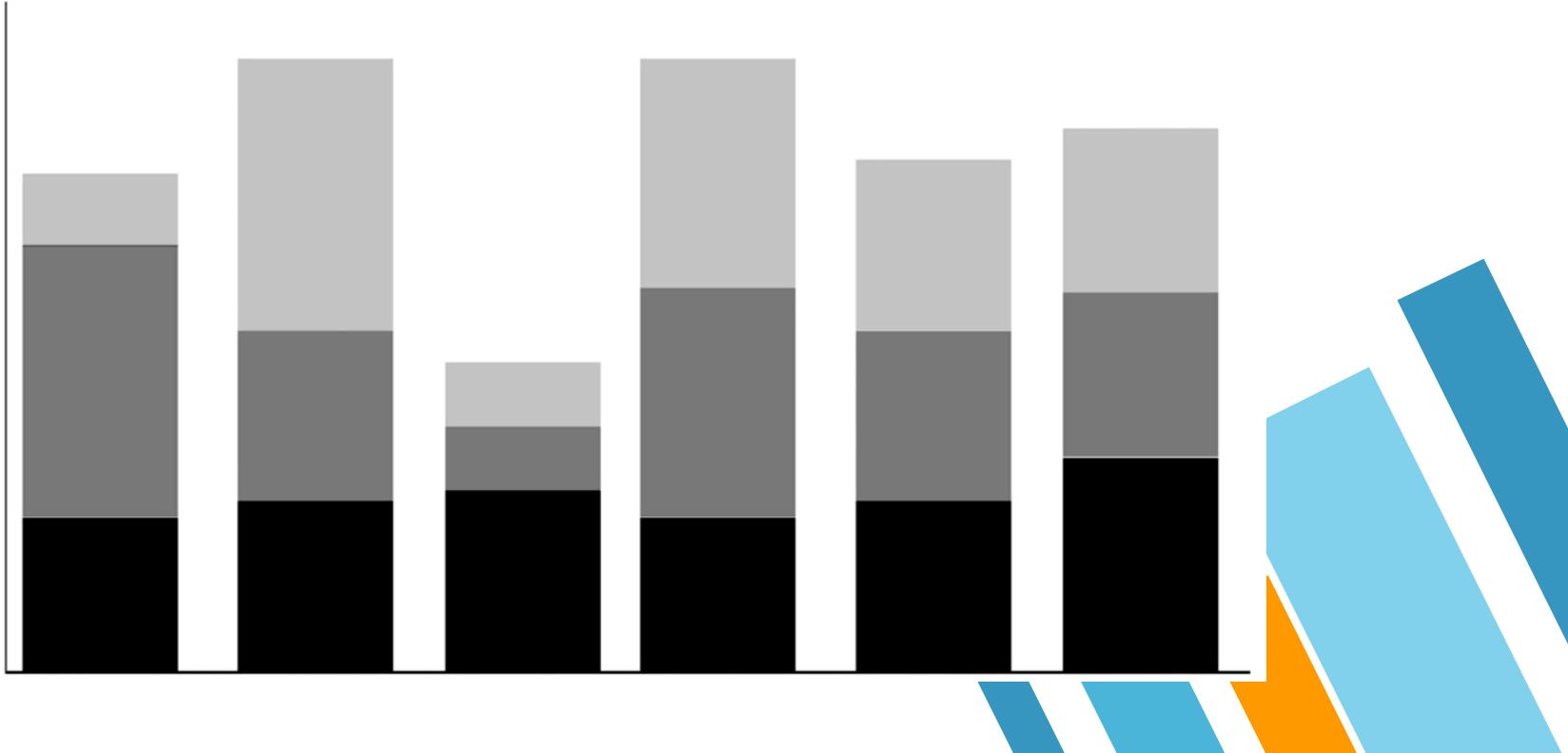
# Bar Chart



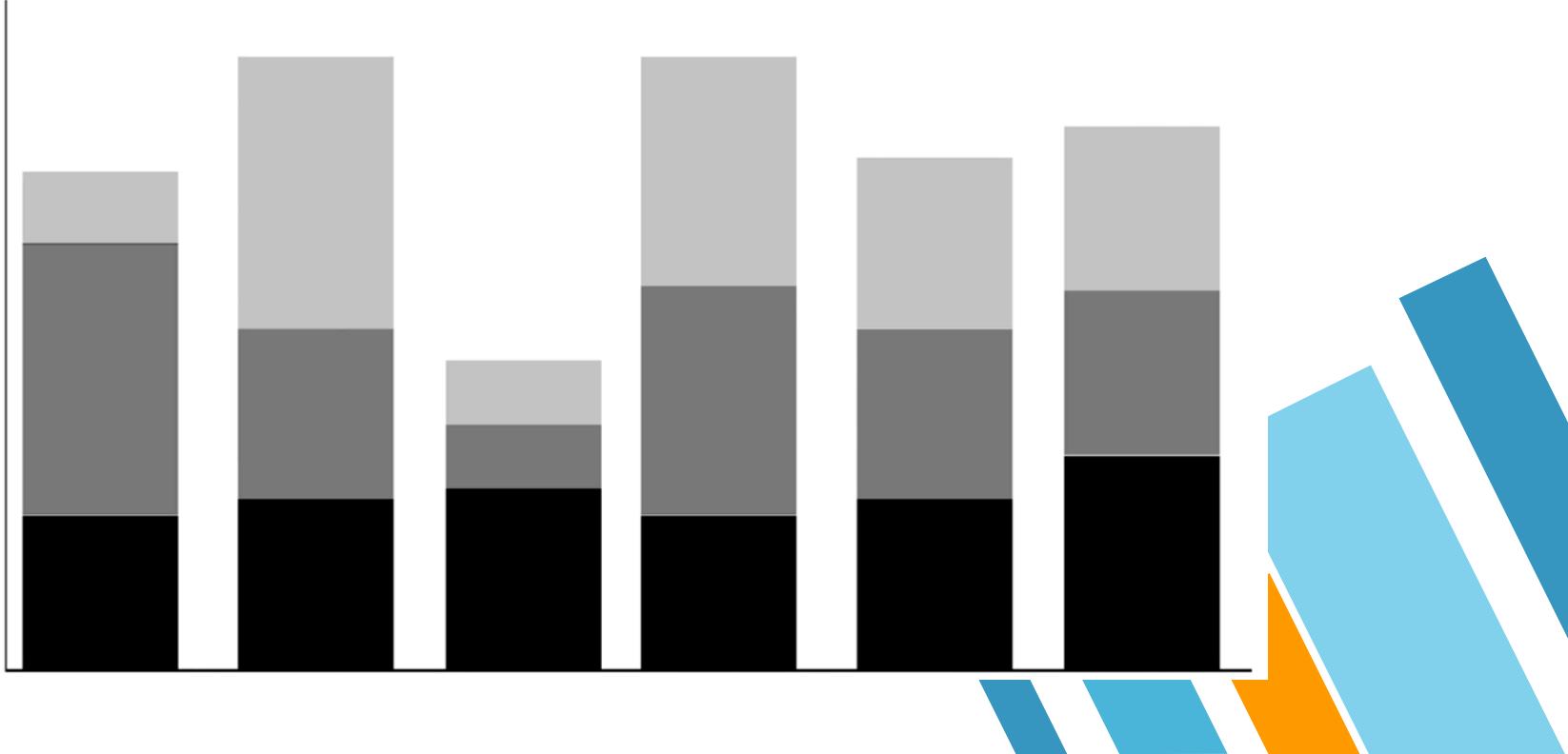
# Clustered Bar Chart



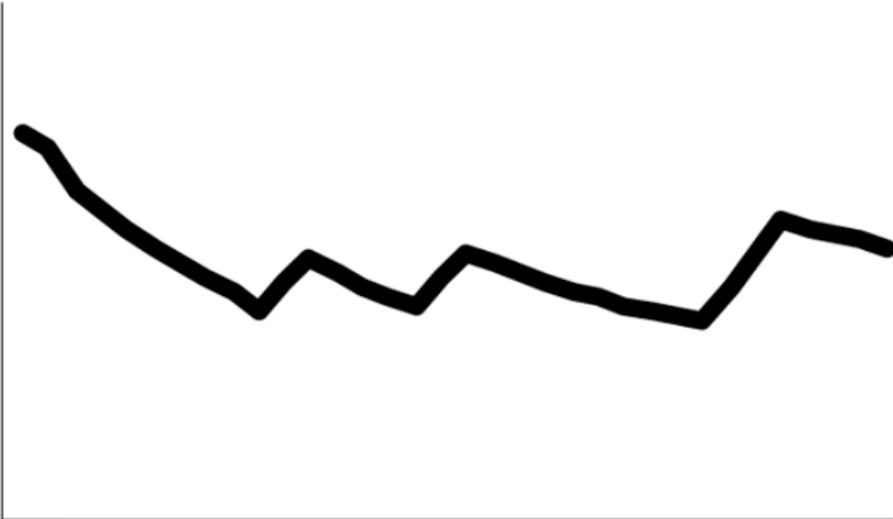
# Stacked Bar Chart



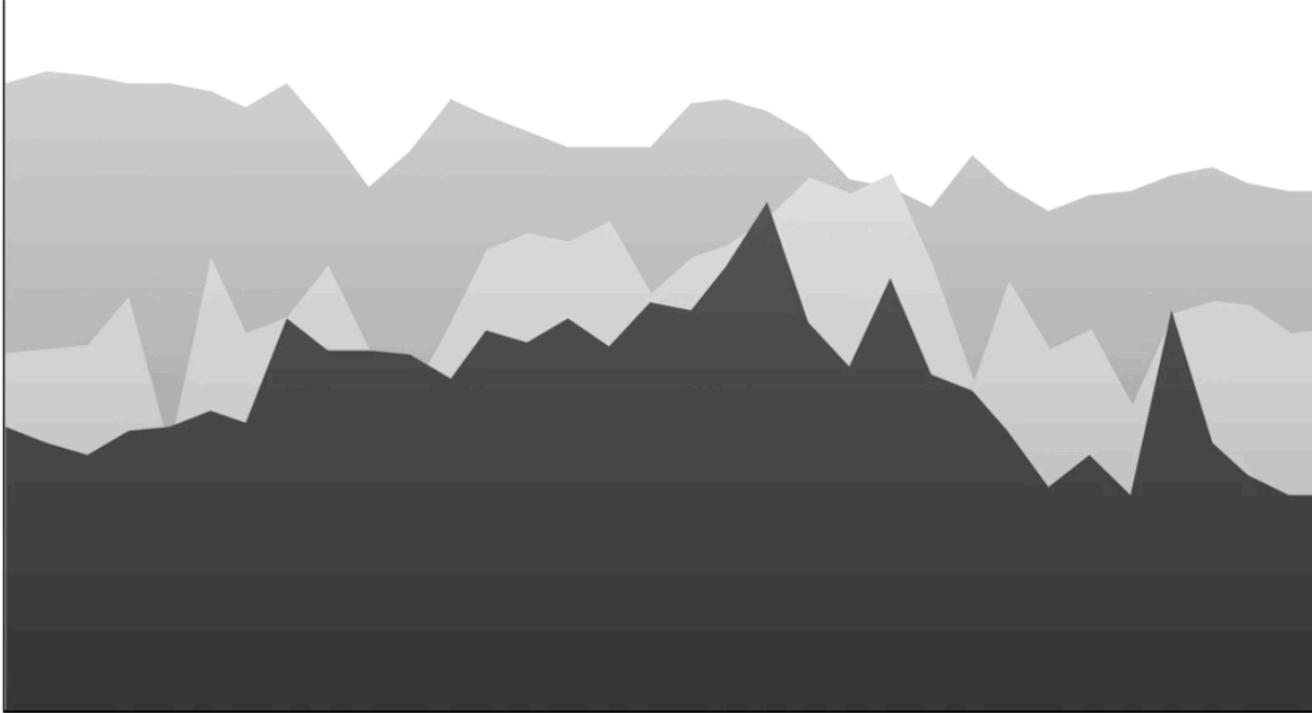
# Stacked Percentage Bar Chart



# Bar chart can't convey all types of data

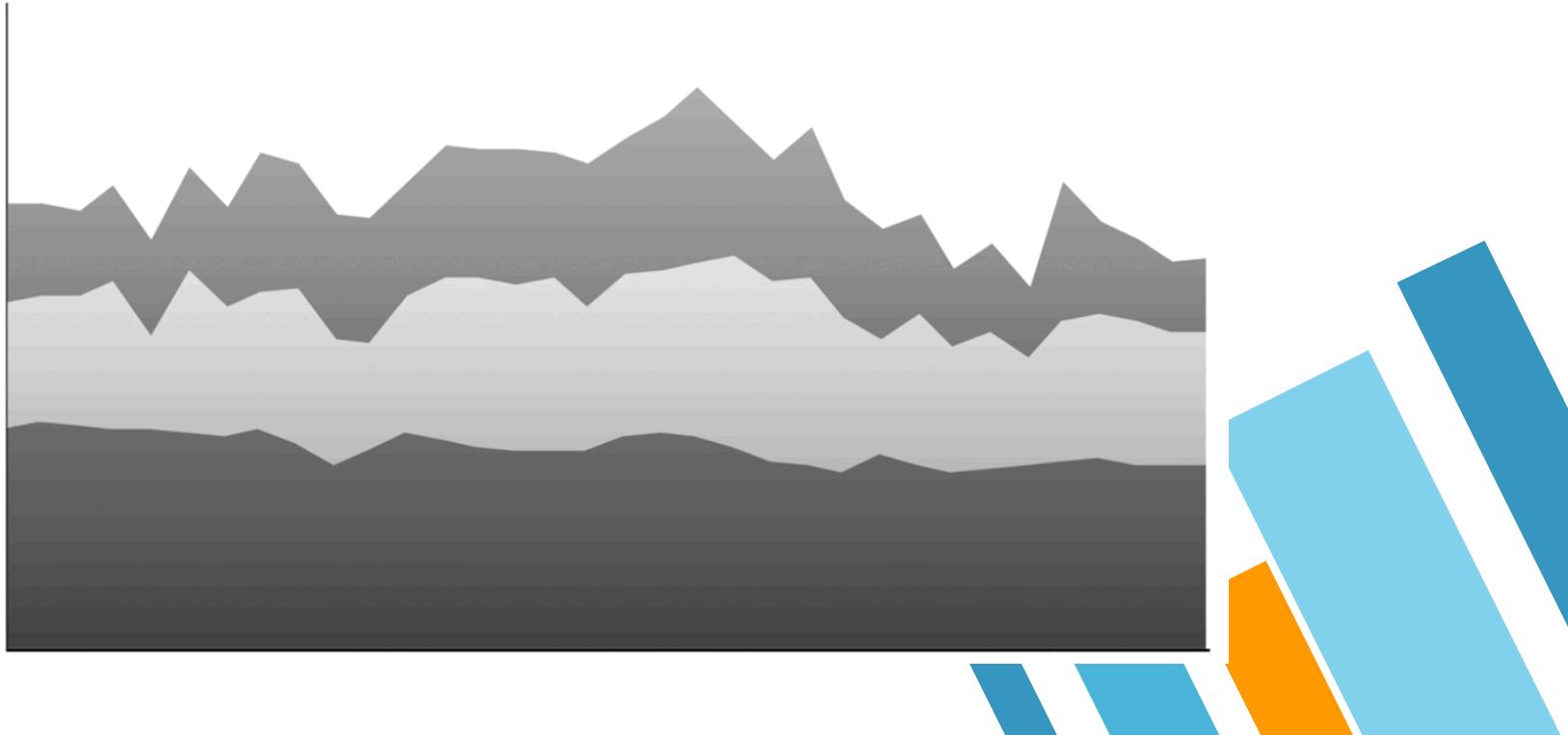


# Area Chart

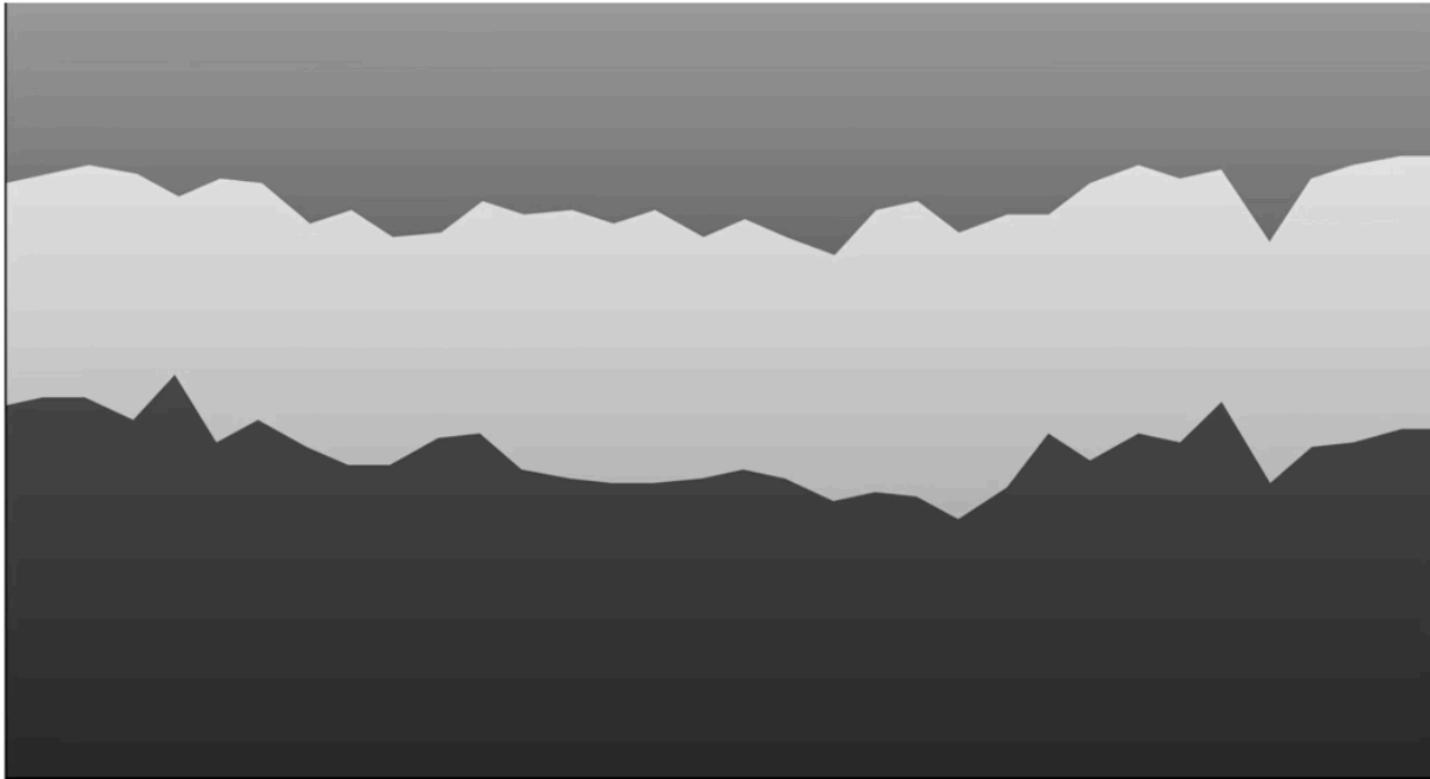




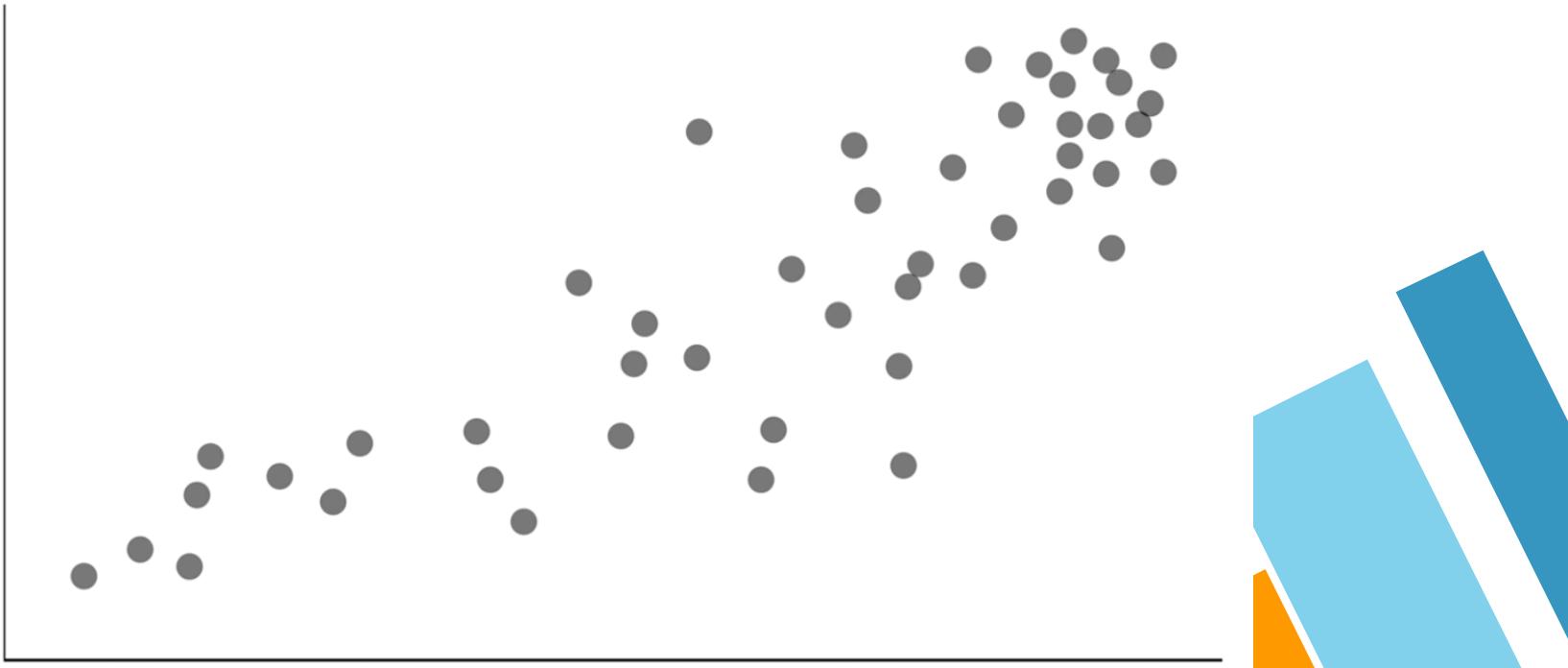
# Stacked Area Chart



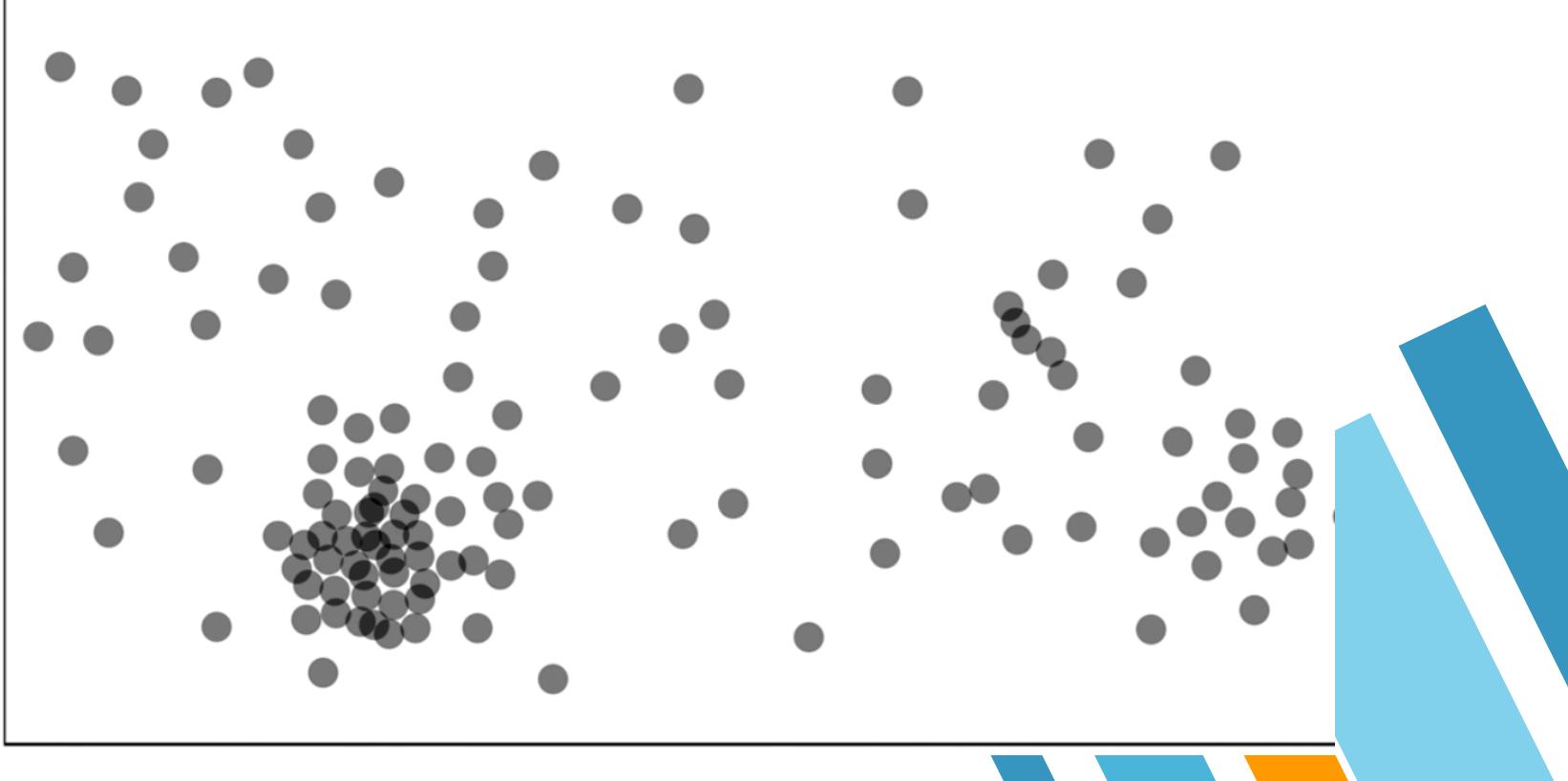
# Stacked Percentage Area Chart



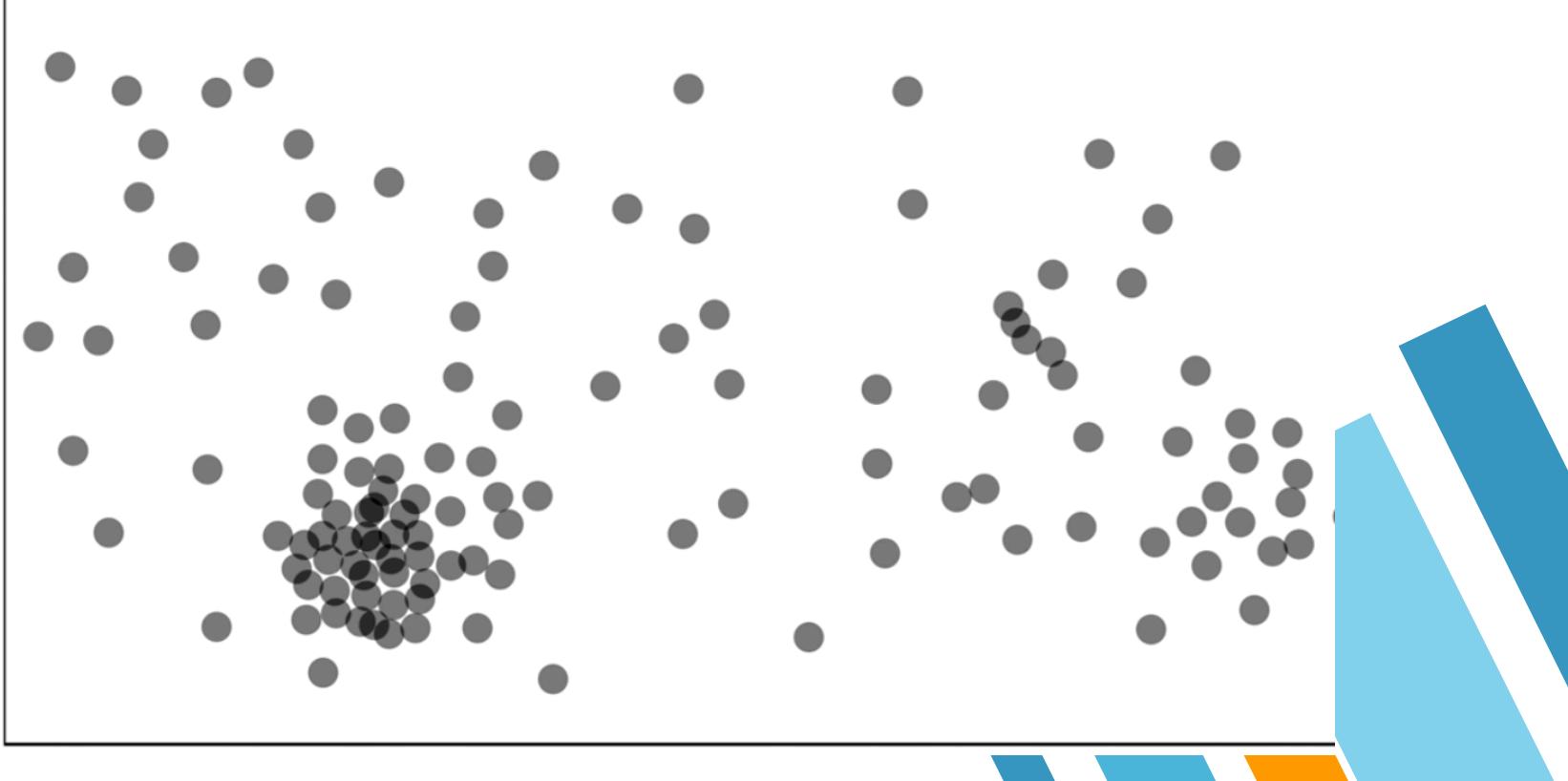
# Scatterplot



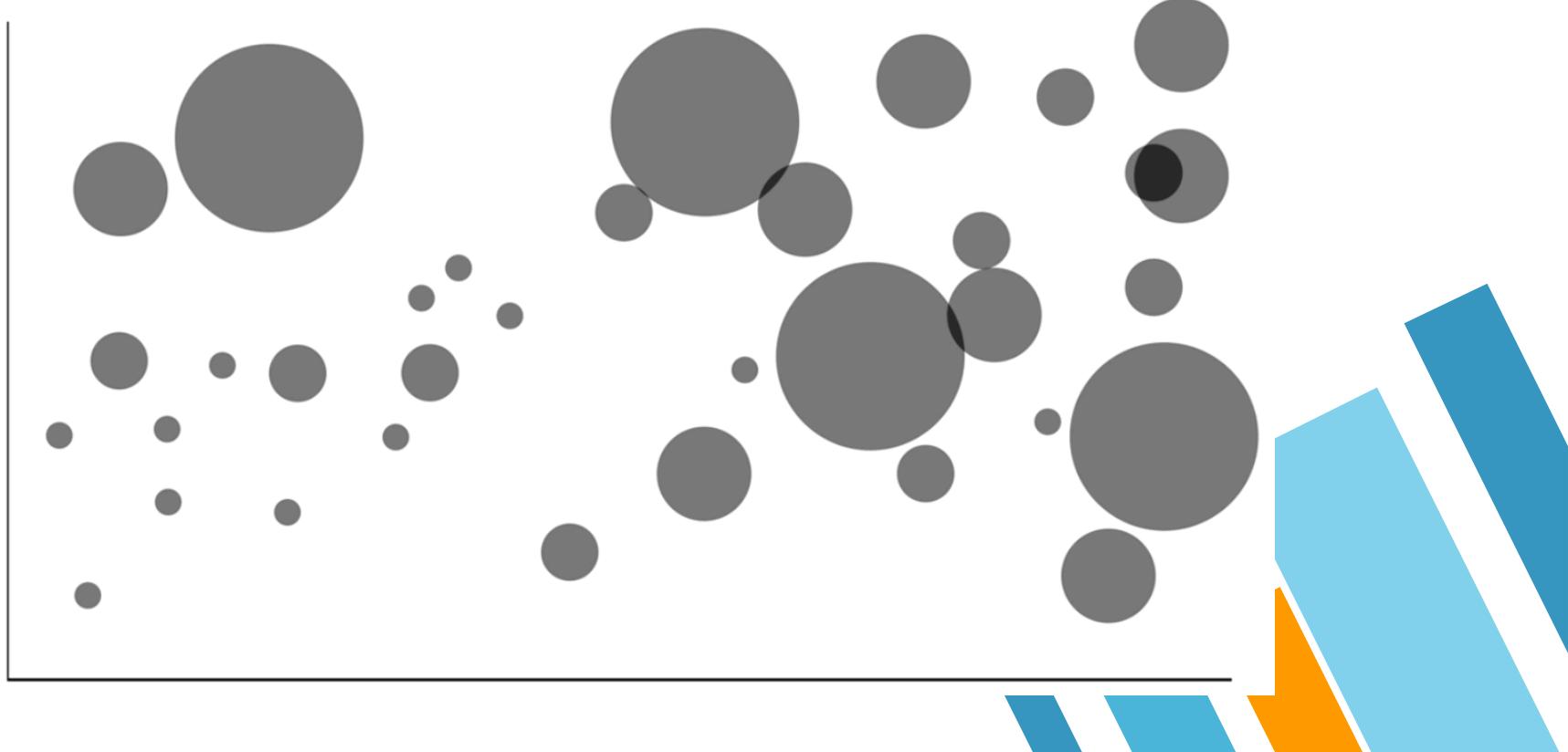
# Scatterplot



# Scatterplot



# Bubble Chart



# Pie Chart



# Pie Chart

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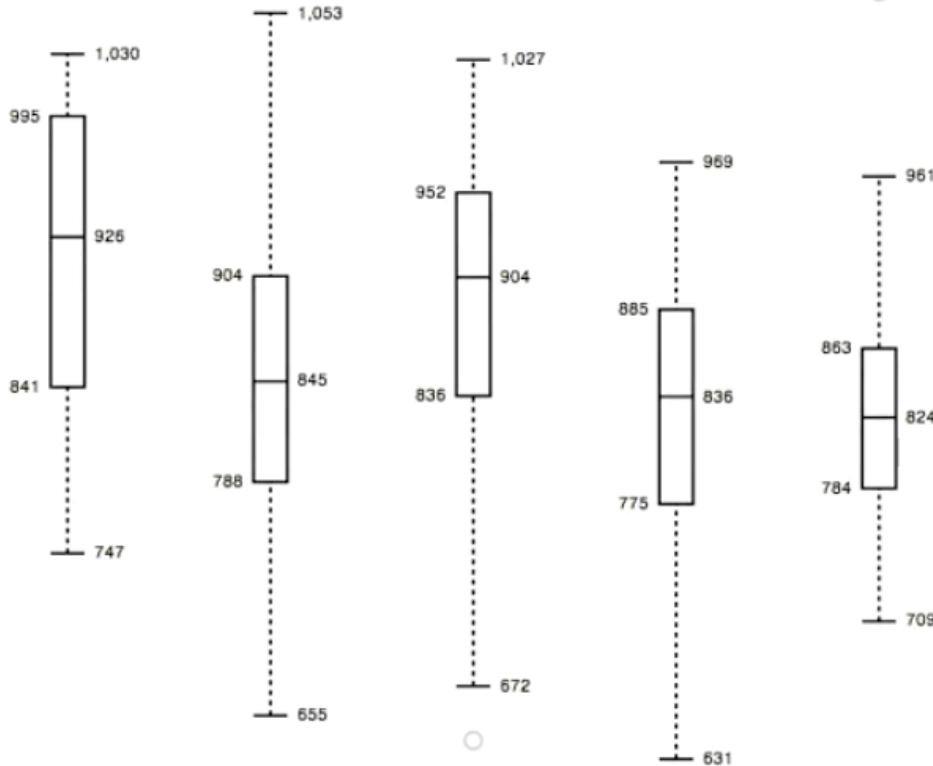




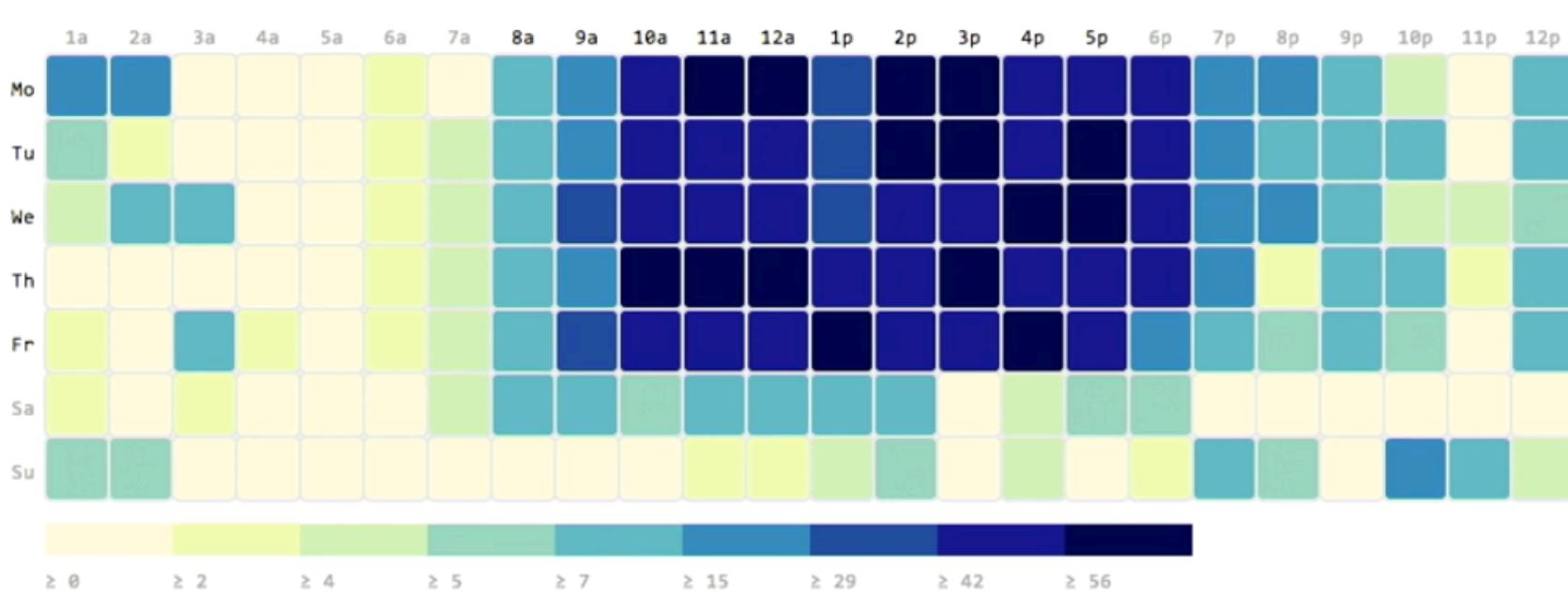
# The right Paradigm

- » Basic charts
  - » **Alternative Charts**
  - » Hierarchical Charts
  - » Maps
- 

# Box Plot Chart

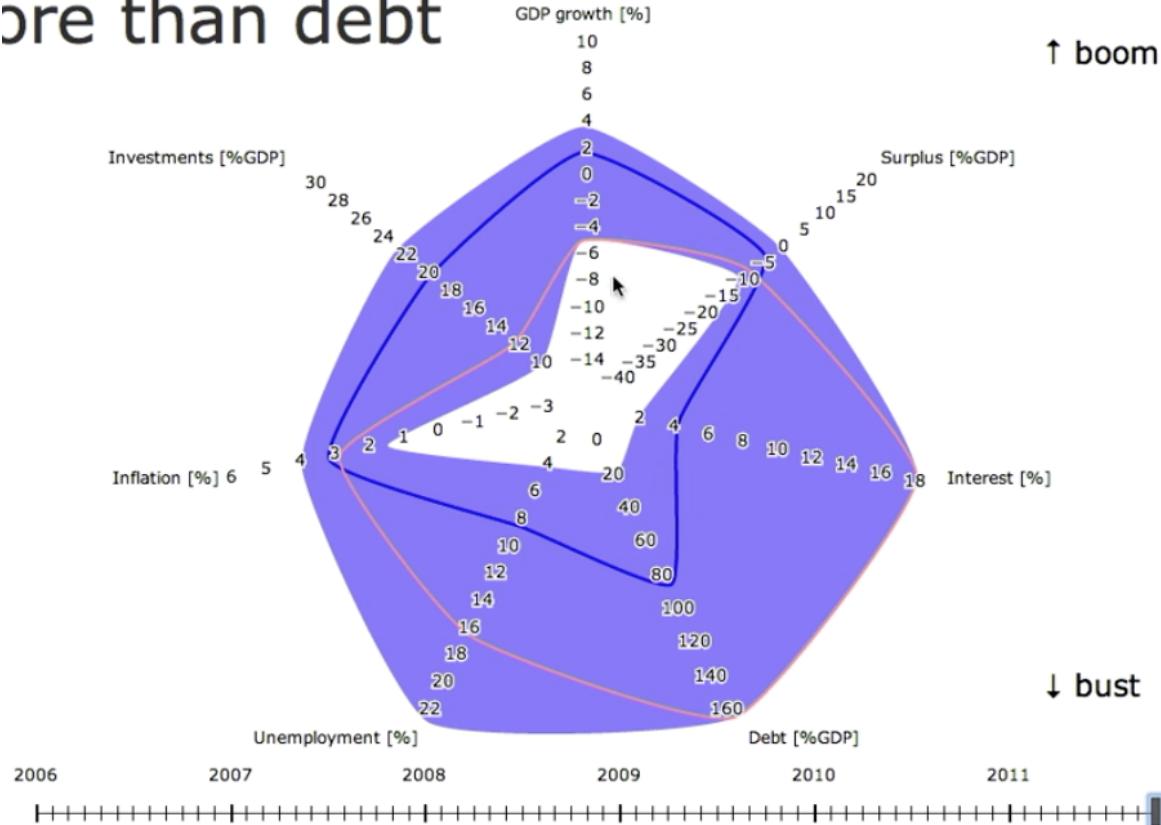


# Heat Map

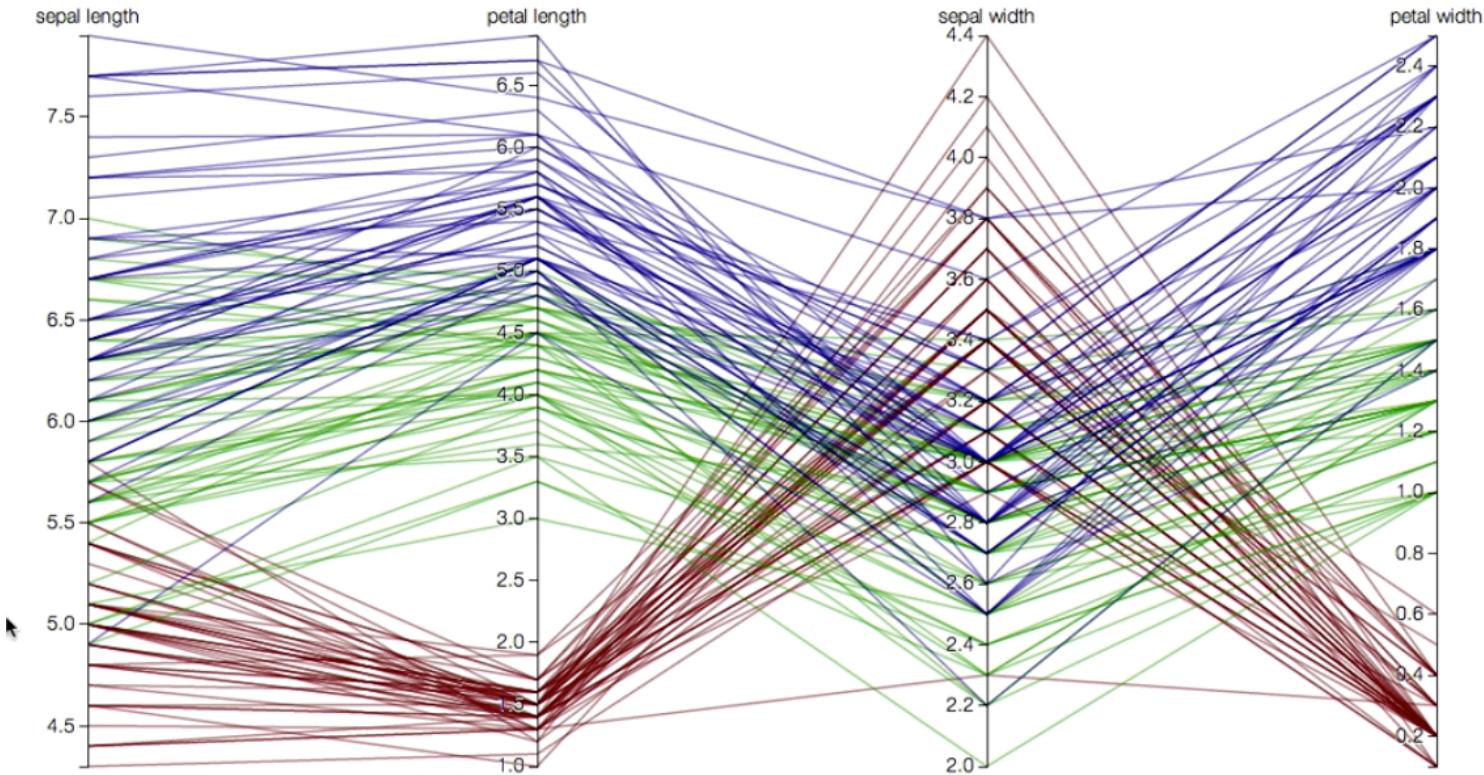


# Radars and Spider

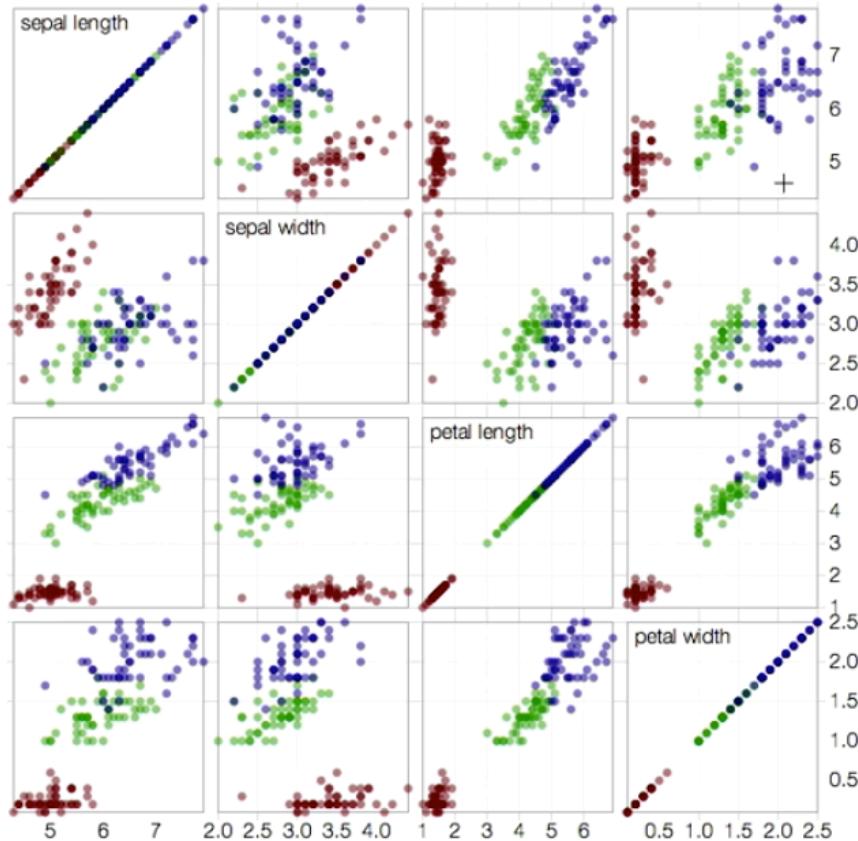
## more than debt



# Parallel Coordinates



# Scatterplot Matrices





# THANKS!

## Any questions?

You can find me at

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  - » [genard@fr.ibm.com](mailto:genard@fr.ibm.com)
- 