

## Previously in MIS473

- The importance of context in Data Visualization
- How should we tell a story: the big idea
- Tableau hands on examples

# Coming up...



Identify and create various types of visualizations in Tableau



The role ethics play in visualizations



Improve ineffective visuals

A photograph of a young woman with long brown hair, seen from the side and slightly from behind. She is wearing a white collared shirt. Her gaze is directed upwards and to the right, a thoughtful expression. She holds a blue pen in her right hand, which is resting near her chin. The background is softly blurred, showing what appears to be an office environment.

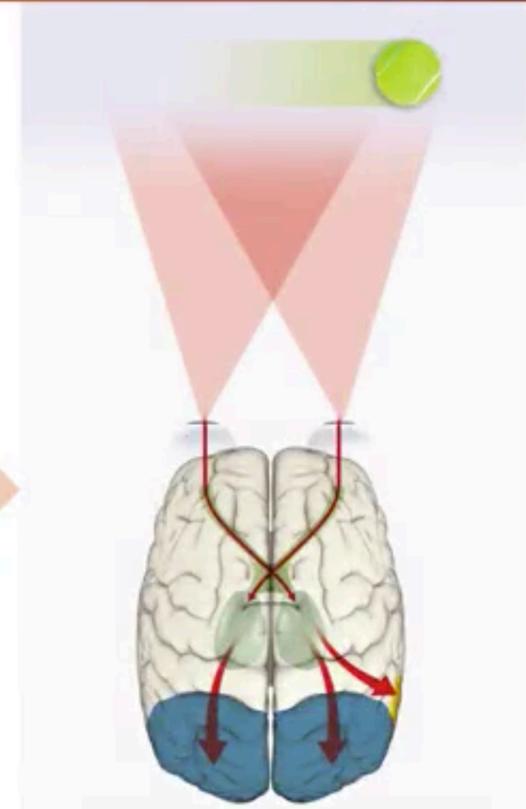
"The purpose of  
visualization is  
insight, not pictures."

-- Ben Shneiderman

Turn data into  
something clear and  
meaningful in minds  
of audience



10 Million Bits  
Per Second



Most of human brain is devoted to visual processing  
Fast visual processing



This need for speed could tip the balance between life and death



Detect, match and make sense of patterns

Source of play

Data visualization helps adapt to data-flooded world

## Child vaccination rates

Measles, % of children, 1980 – 2013

Source: OECD Health Statistics : OECD Health Data: Health care utilisation

Show: Chart

Table

fullscreen

share

download

add to pinboard

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1'
France	--	--	--	15.0	26.0	35.0	39.0	45.0	51.0	58.0	71.0	74.0	76.0	78.0	80.0	83.0	84.0	83.0	82.0	8
Turkey	27.0	52.0	64.0	63.0	62.0	61.0	64.0	67.0	82.0	71.0	78.0	73.0	78.0	72.0	76.0	65.0	72.0	79.0	81.0	8
United States	86.0	97.0	97.0	98.0	98.0	97.0	97.0	82.0	98.0	94.0	90.0	87.0	83.0	84.0	89.0	88.0	91.0	91.0	92.0	5

Information on data for Israel: <http://oe.cd/israel-disclaimer>

-- Not available; | Break in series; C Confidential data; E Estimated value; F Forecast value; X Not applicable





Unlock the power of  
data visualization

Assign visual attributes:  
Color  
Shape

Translates data into  
visual code

Find the right tools  
in your toolbox

Clarify data for users



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# RDUPZRZLBFIawezyrgk

See the benefits of encoding

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# **RDUPZRZLBFIAWEZYRGK**

## **RDUPZRZ**L**BFIAWEZYRGK**

### **R**D**U**P**Z**R**Z**L**BFIAWEZYRGK**

See the benefits of encoding



COLOR HUE



ORIENTATION



TEXTURE



POSITION & ALIGNMENT



COLOR BRIGHTNESS



COLOR SATURATION



SIZE



SHAPE

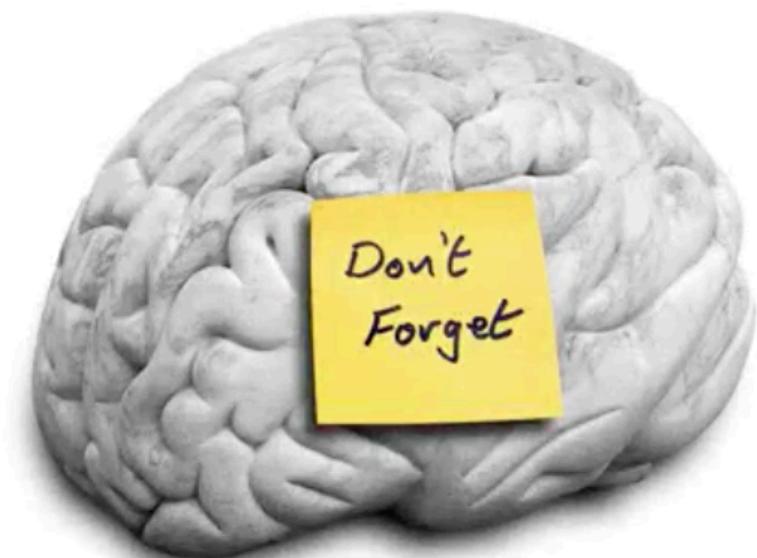
Pre-attentive attributes

Assemble elements  
to help people:

Think clearly  
Accurately

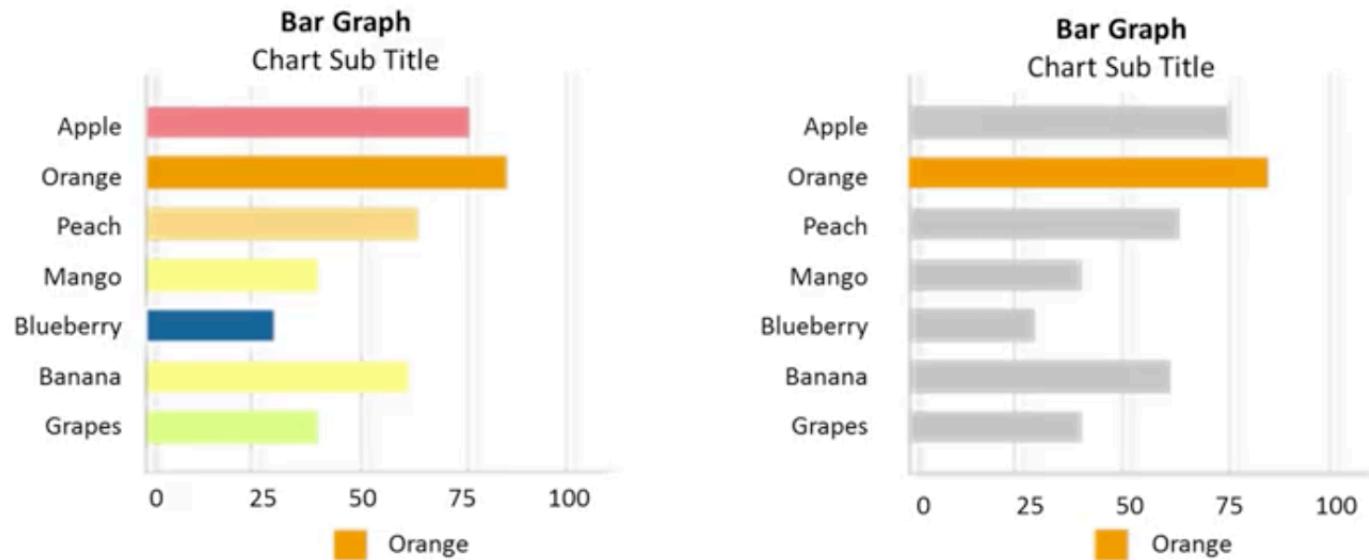


RDUPZRZLBFIAWEZYRGK

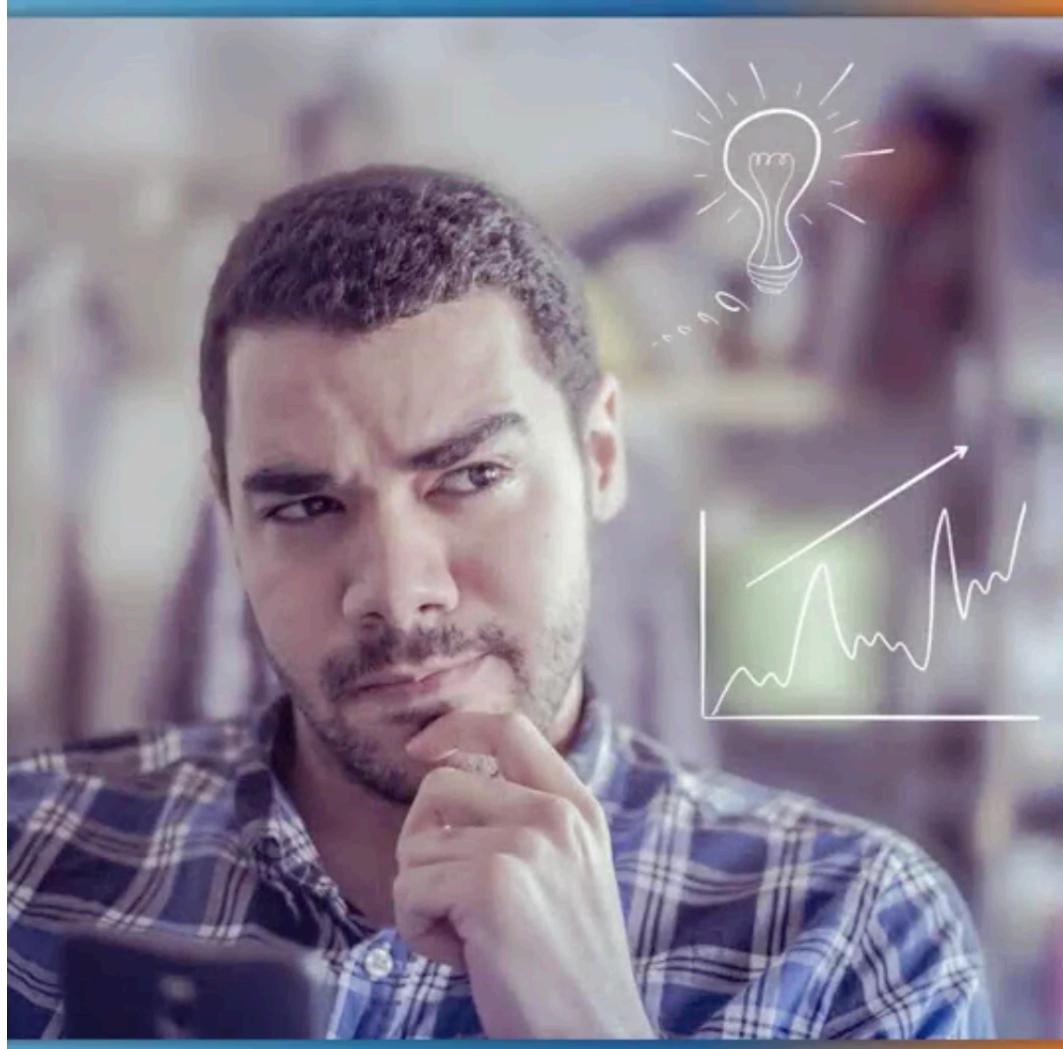


Two systems that drive thinking

Apply to design work



Visual encoding basics

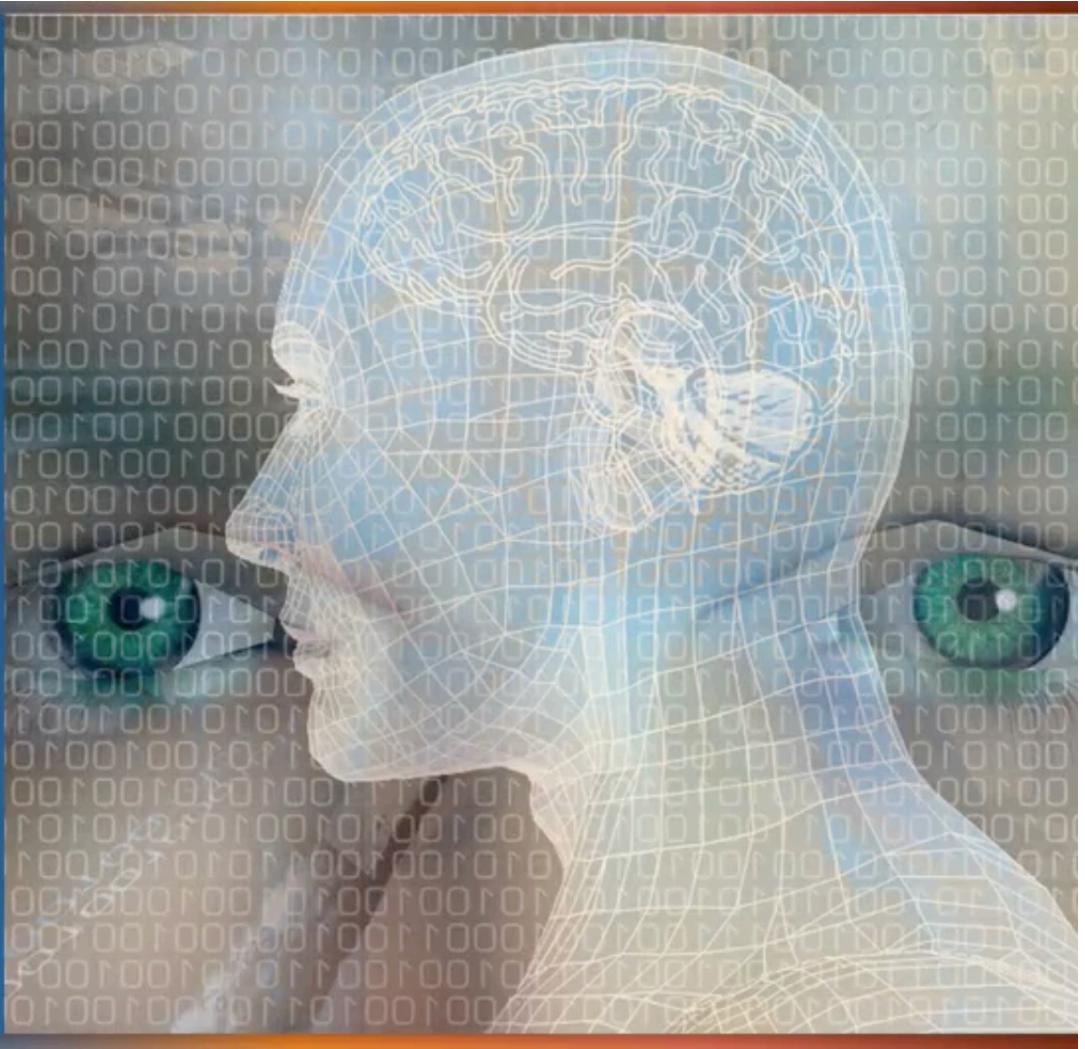


Help people:  
Make clear, accurate  
interpretations  
Gain useful insights

Driving how we think  
and make judgments

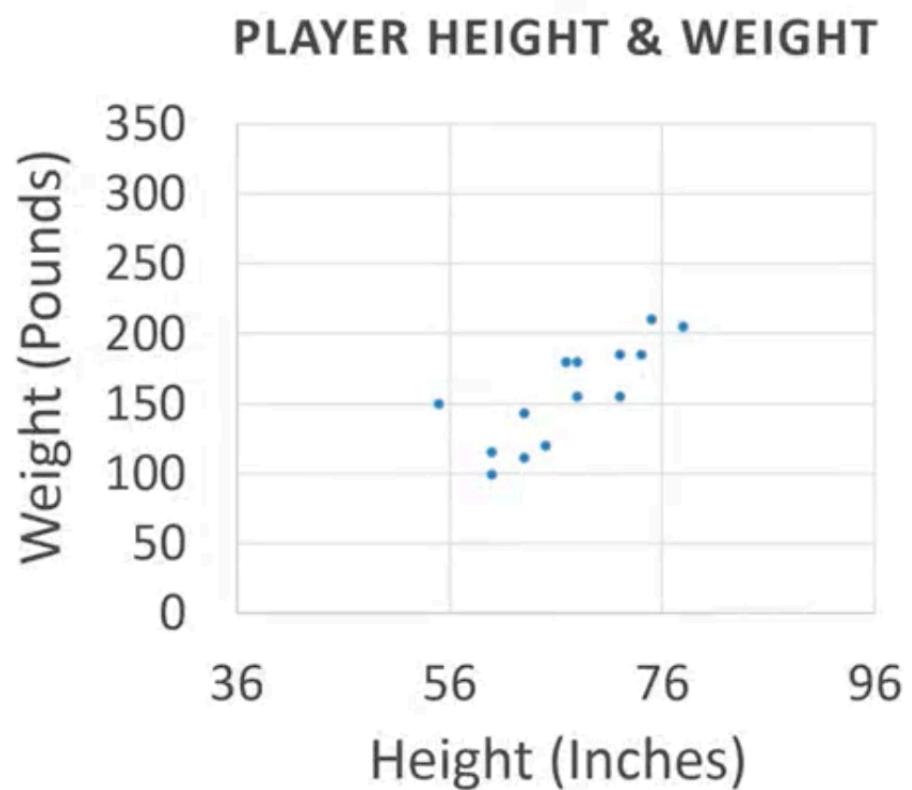
First:  
Automatic and  
immediate perception

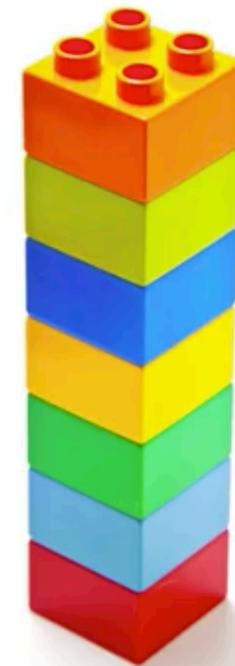
Second:  
Slower and more  
deliberate cognition



System 1:  
Notice dot near  
cluster of other dots

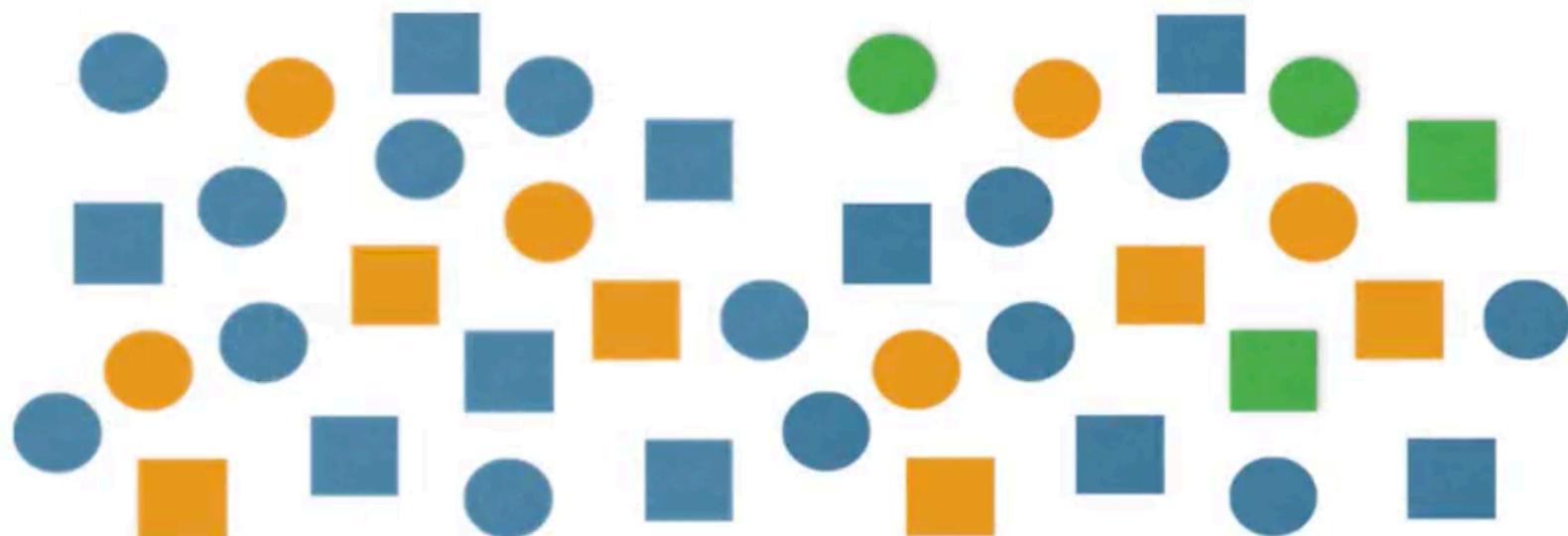
System 2:  
Hmmm...  
is that dot an outlier  
worthy of investigation?



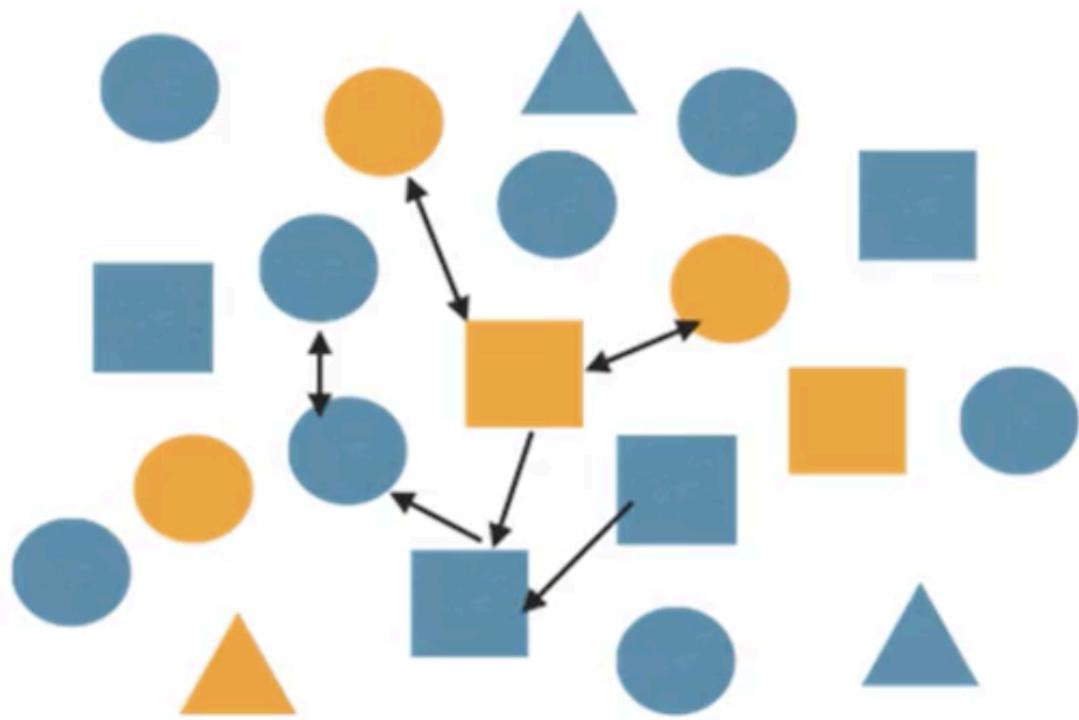


Overwhelming jumble

## Choosing visual encoding options

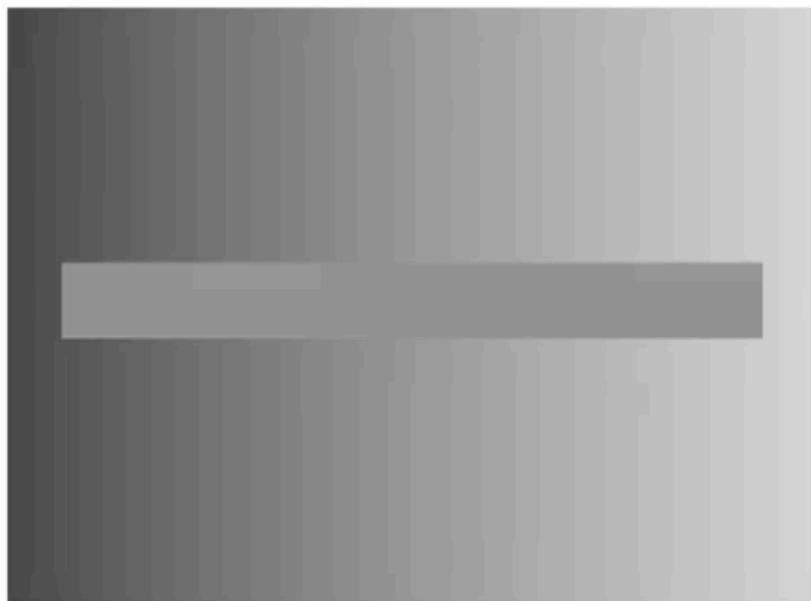


When is it too much?





Speed vs. accuracy

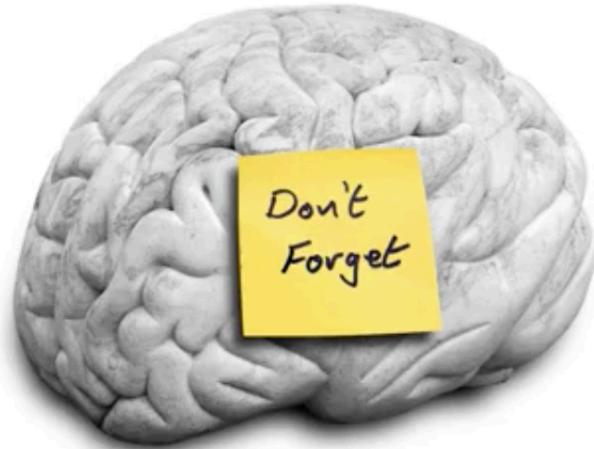


Example

What effect does design  
have on perception?

On interpretations?





Explore design  
strategies from  
systems one and two

Bear this in mind...

...as basis for good visualization design



# Essential Design Principles for Tableau

*Types of Visualizations*

Text or number  
visualization

High-level information  
and dashboards

Page Views:

5,567

	Right Handed	Left Handed
Male	67	8
Female	65	14

Tables convey a lot  
of information

Convey comparisons  
across categories

Too big = less effective

A 2x2 table has  
a lot of power

## Cross-tabulation or heat maps

Uses color to visually emphasize information



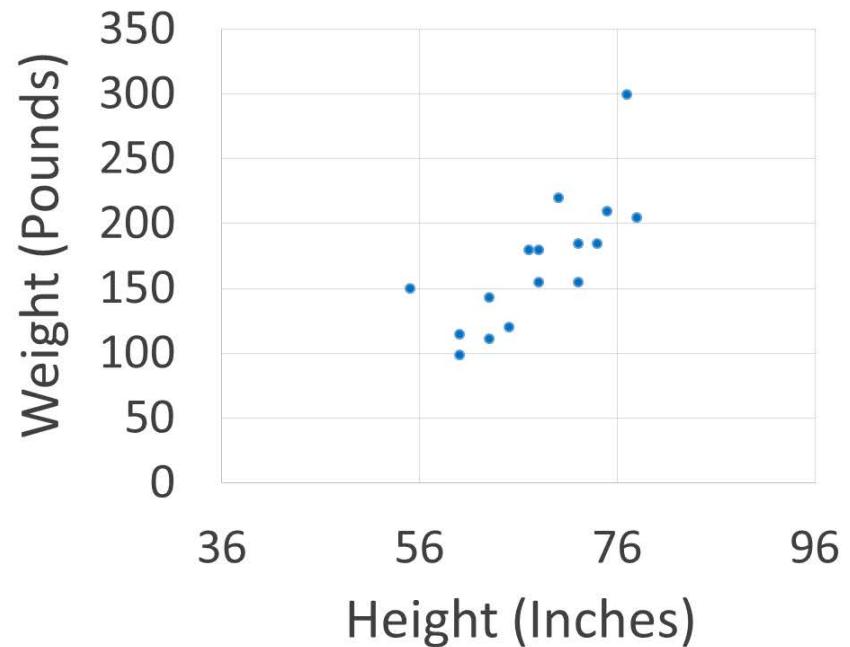
Scatter plots

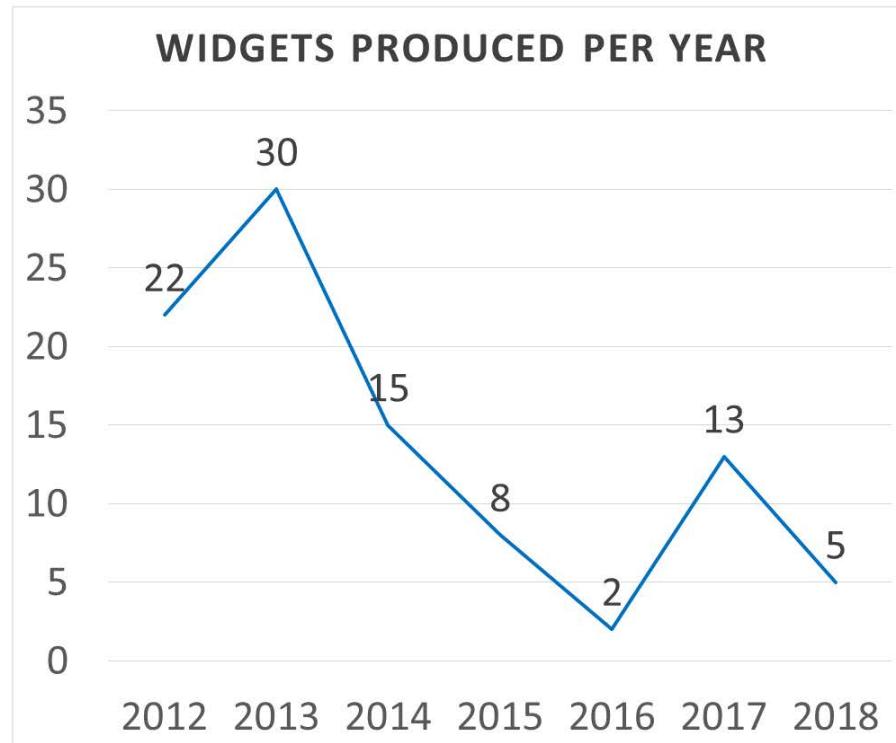
Best for continuous  
variable information

Discover inferences

View potential  
data relationships

### PLAYER HEIGHT & WEIGHT





Line graphs visualize data across time

Spot trends from with time variables

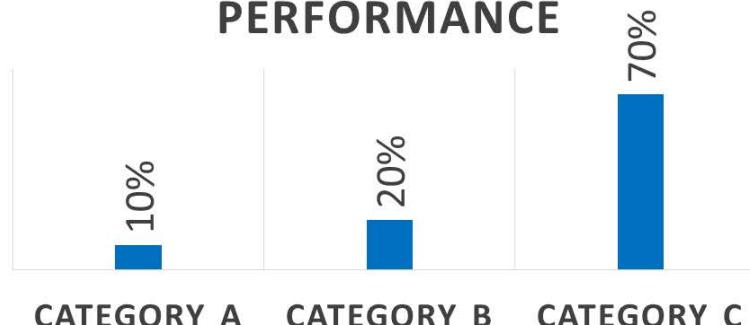
Allows for potential forecasting

Most effective: bar graphs

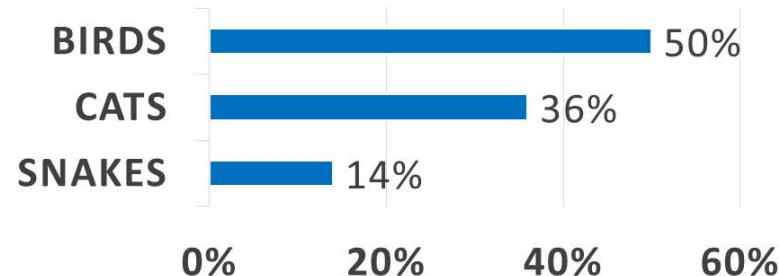
Vertical, horizontal  
and stacked are three  
common types of  
bar graphs

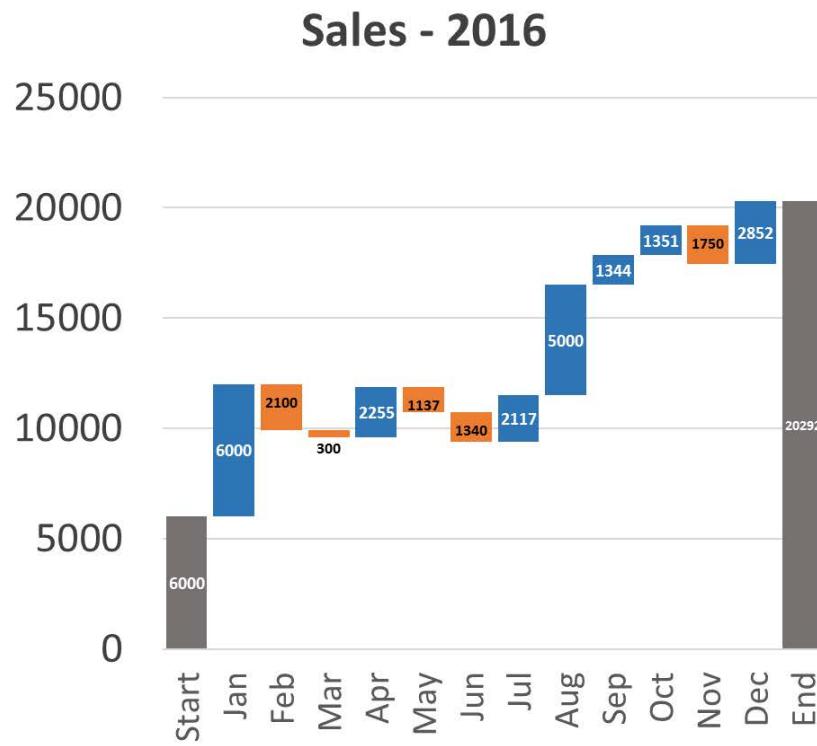
Horizontal or vertical  
depends on the amount  
of information needed

## PERFORMANCE



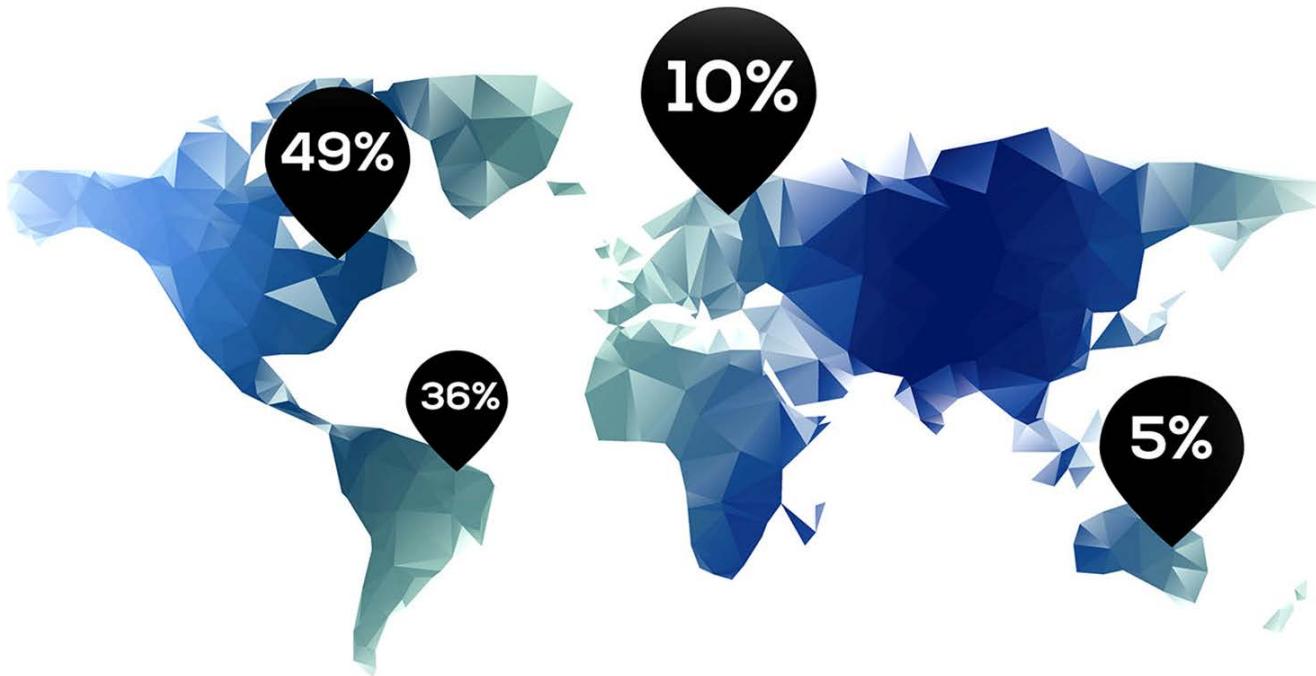
## HOUSEHOLD PETS





Waterfall graphs are  
a type of bar graph

Used to see  
answers quickly



Maps crucial for spatial analysis

Use with spatial components, geography, latitude and longitude data

Pie charts are not  
“easy as pie” and have  
a bad reputation

Useful in certain  
specific instances

