

# The Big Book of Dashboard



The Big Bo ...  
[REDACTED].pdf



Đăng nhập

A primer ?

Chunks of data , Trends

{ Preattentive Attributes  
Types of Data

Color = hue

Preattentive attributes that make the most sense of

all attributes

Size and hue.

{ Data type  
Encoding .

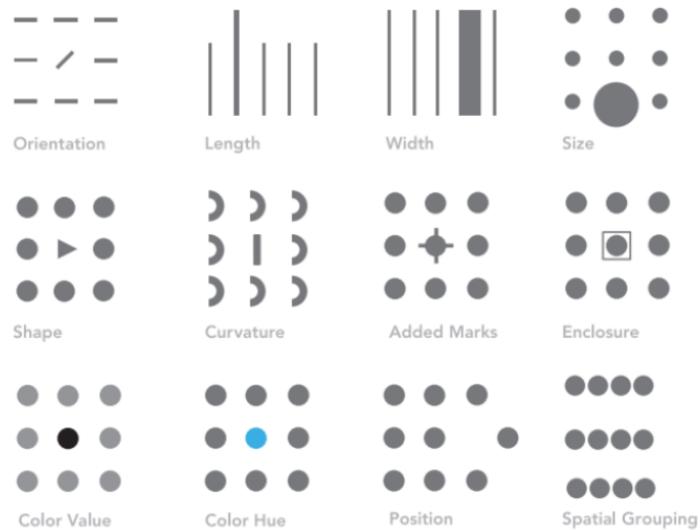


FIGURE 1.10 Preattentive features.

→ Categorical  
Data Type ← Quantitative  
Ordinal .

Color (purposefully , distinguish categories )

## USE OF COLOR IN DATA VISUALIZATION

Use of colors

+ Sequential

+ Diverging

+ Categorical

SEQUENTIAL  
color is ordered from low to high



DIVERGING  
two sequential colors with a neutral midpoint



CATEGORICAL  
contrasting colors for individual comparison



HIGHLIGHT  
color used to highlight something



ALERT  
color used to alert or warn reader



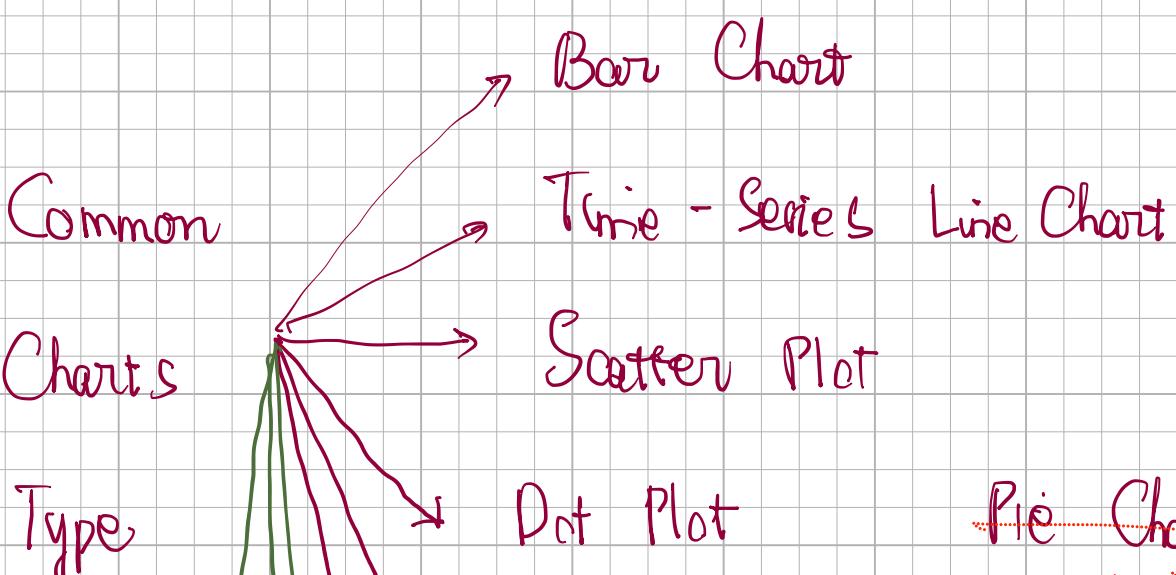
FIGURE 1.16 Use of color in data visualization.

# Color Vision Deficiency (Color Blindness) - CVD

There are three types of CVD:

3 types  
of CVD

1. Protanopia is the lack of long-wave cones (red weak).
2. Deutanopia is the lack of medium-wave cones (green weak).
3. Tritanopia is the lack of short-wave cones (blue). (This is very rare, affecting less than 0.5 percent of the population.)



Pie Chart  
G, Don't recommend

⇒ Select Dashboard

# What - Why - How in Visualization

## What?

### Datasets

#### → Data Types

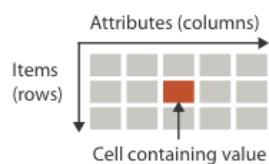
- Items      → Attributes      → Links      → Positions      → Grids

#### → Data and Dataset Types

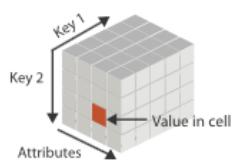
Tables	Networks & Trees	Fields	Geometry	Clusters, Sets, Lists	
Items	Items (nodes)	Grids	Items	Clusters, Sets, Lists	
Attributes	Links	Positions	Positions	Items	

#### → Dataset Types

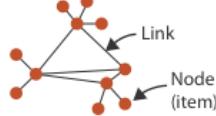
- Tables



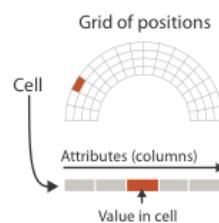
- Multidimensional Table



- Networks



- Fields (Continuous)



- Trees



- Geometry (Spatial)



#### → Dataset Availability

- Static



- Dynamic



### Attributes

#### → Attribute Types

- Categorical



- Ordered

- Ordinal



- Quantitative



#### → Ordering Direction

- Sequential



- Diverging



- Cyclic



What?

Why?

How?

**Figure 2.1.** What can be visualized: data, datasets, and attributes.

# What - Why - How in Visualization

## Why?

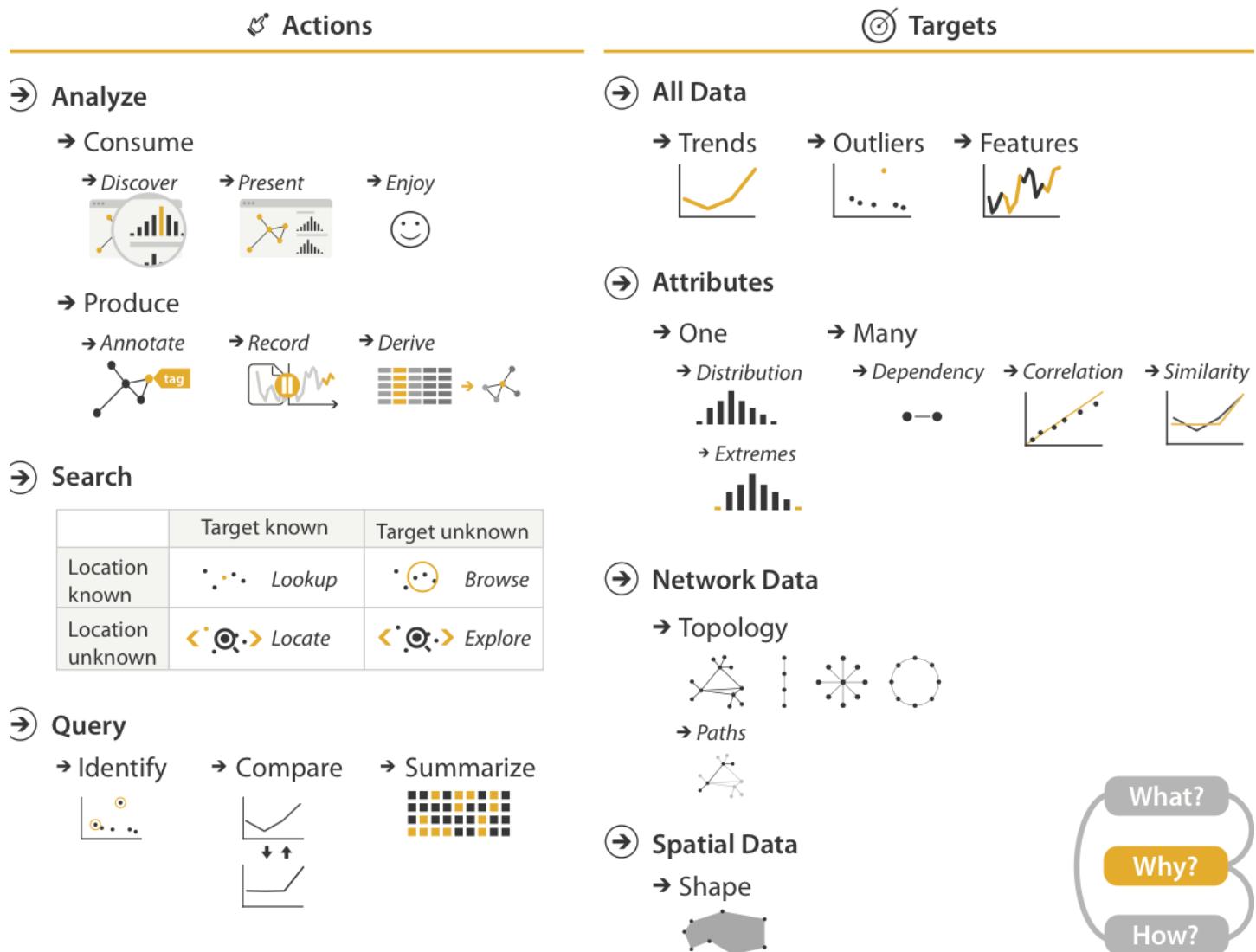


Figure 3.1. Why people are using vis in terms of actions and targets.

# What - Why - How in Visualization

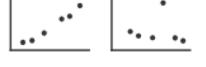
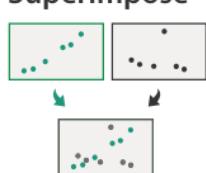
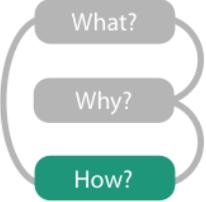
How?			
Encode	Manipulate	Facet	Reduce
<ul style="list-style-type: none"> <li>④ <b>Arrange</b></li> <li>→ Express → Separate  </li> <li>→ Order → Align  </li> <li>→ Use  </li> </ul>	<ul style="list-style-type: none"> <li>④ <b>Change</b>  </li> <li>④ <b>Select</b>  </li> <li>④ <b>Navigate</b>  </li> </ul>	<ul style="list-style-type: none"> <li>④ <b>Juxtapose</b>  </li> <li>④ <b>Partition</b>  </li> <li>④ <b>Superimpose</b>  </li> </ul>	<ul style="list-style-type: none"> <li>④ <b>Filter</b>  </li> <li>④ <b>Aggregate</b>  </li> <li>④ <b>Embed</b>  </li> </ul>
<ul style="list-style-type: none"> <li>④ <b>Map</b> from <b>categorical</b> and <b>ordered</b> attributes</li> <li>→ Color  <ul style="list-style-type: none"> <li>→ Hue</li> <li>→ Saturation</li> <li>→ Luminance</li> </ul> </li> <li>→ Size, Angle, Curvature, ...  </li> <li>→ Shape  </li> <li>→ Motion <i>Direction, Rate, Frequency, ...</i>  </li> </ul>			

Figure 3.7. How to design vis idioms: encode, manipulate, facet, and reduce.

- Describe the nature of information within the values assigned to variables

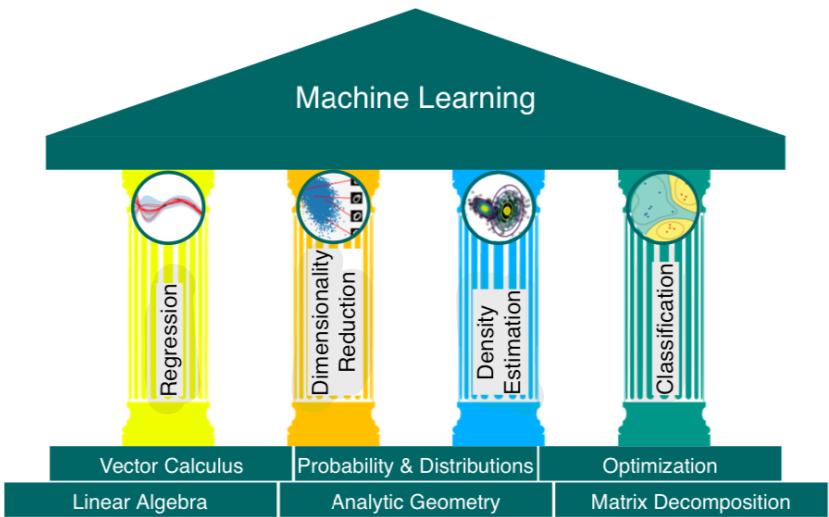
Type	Measure property	Mathematical operators	Advanced operations	Central tendency	Variability
Nominal	Classification, membership	$=, \neq$	Grouping	Mode	Qualitative variation
Ordinal	Comparison, level	$>, <$	Sorting	Median	Range, interquartile range
Interval	Difference, affinity	$+, -$	Comparison to a standard	Arithmetic mean	Deviation
Ratio	Magnitude, amount	$*, /$	Ratio	Geometric mean, harmonic mean	Coefficient of variation, studentized range

Ordered data can be

- **sequential**, where there is a homogeneous range from a minimum to a maximum value,
- **diverging**, which can be deconstructed into two sequences pointing in opposite directions that meet at a common zero point
- **cyclic**, where the values wrap around back to a starting point rather than continuing to increase indefinitely.

## Mathematics for Machine Learning

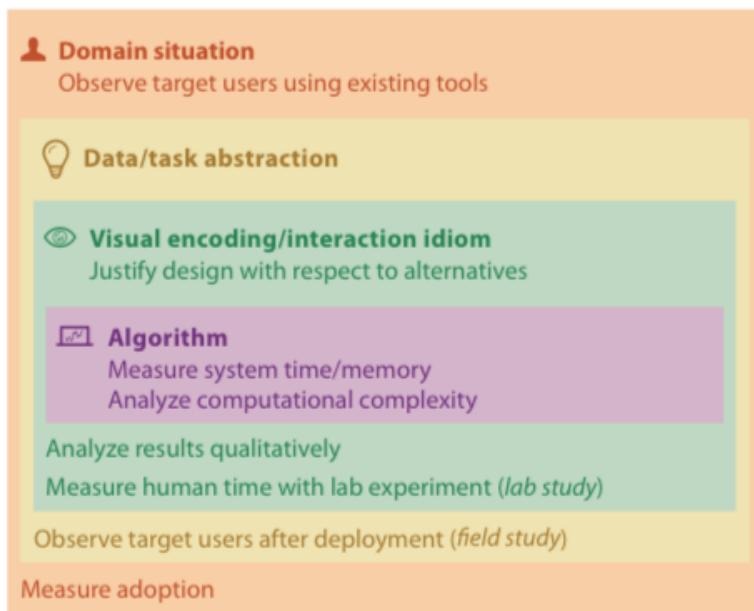
**Figure 1.2** The foundations and four pillars of machine learning.



+ ) Density Estimation: Tính suất xác suất

## Why is validation difficult? (cont.)

- solution: use methods from different fields at each level

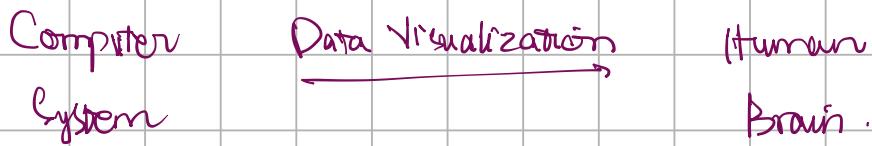


	✓	✗	Total
HT	256	551	807
QK	233	600	833
$\Sigma$	489	1151	1640
	261,4652	615,9348	0,535
	227,2548	535,3452	0,465
	0,298	0,702	1

Illinois

# DATA VISUALIZATION

Week 1: The Computer and The Human



To understand how the computer display data and how user perceives and processes it.

- { Kinds of Charts  
Layout and display relational data  
Dash board and provide vital info from DV.

Design Principles, Topics and Tools.

• Visualization Analysis and Design.

- { Mathematical Visualization  
Scientific Visualization  
Information Visualization.  
Domain Specific Visualization .

Modes of Visualization { Interactive  
Presentation

⇒ Interactive Storytelling .  
Presentation via Interaction .

Modes of Visualization				
Visualization Mode	User Interaction	Graphics Rendering	Target	Medium
Interactive Visualization	User controls everything, including dataset	Real-time rendering	Individual or collaborators	Software or internet
Interactive Storytelling	User can filter or inspect details of preset datasets	Real-time rendering	Mass audience	Internet or kiosk
Presentation Visualization	User only observes	Precomputed rendering	Colleagues, mass audience	Slide shows, video