

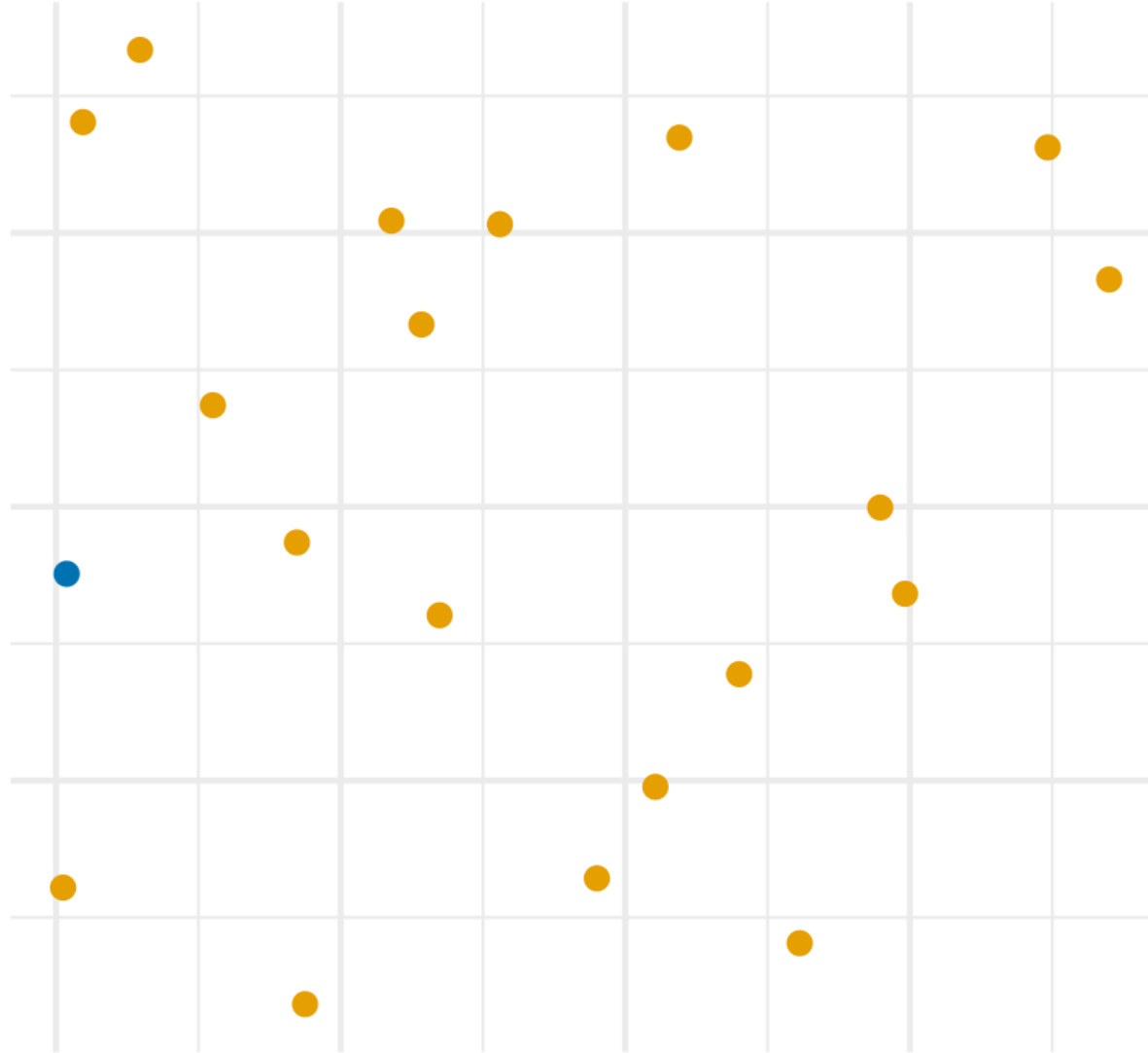
# 03 — Ways of Seeing (2)

Kieran Healy

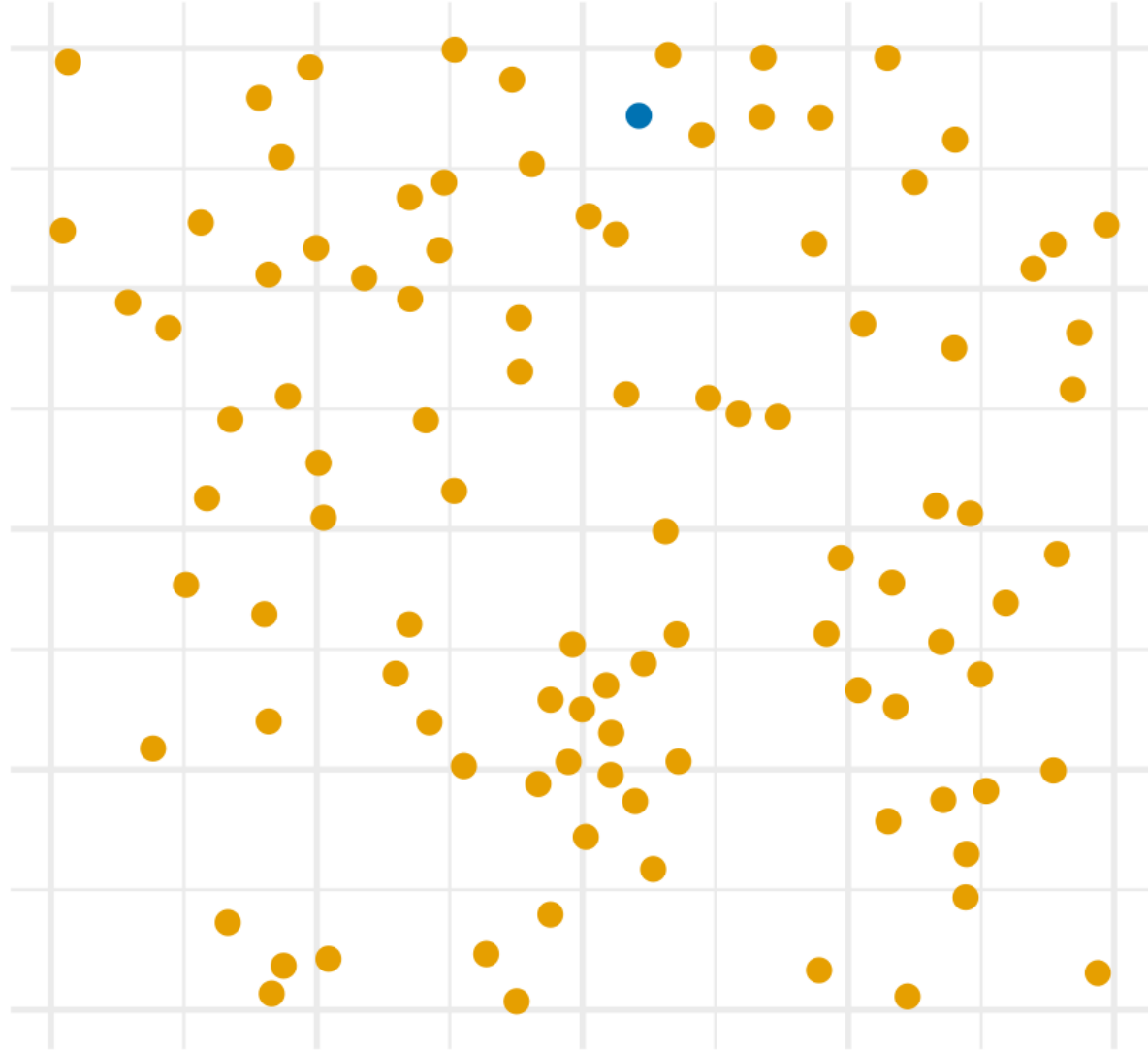
January 23, 2024

# Pre-Attentive Processing

Color only,  $N = 20$

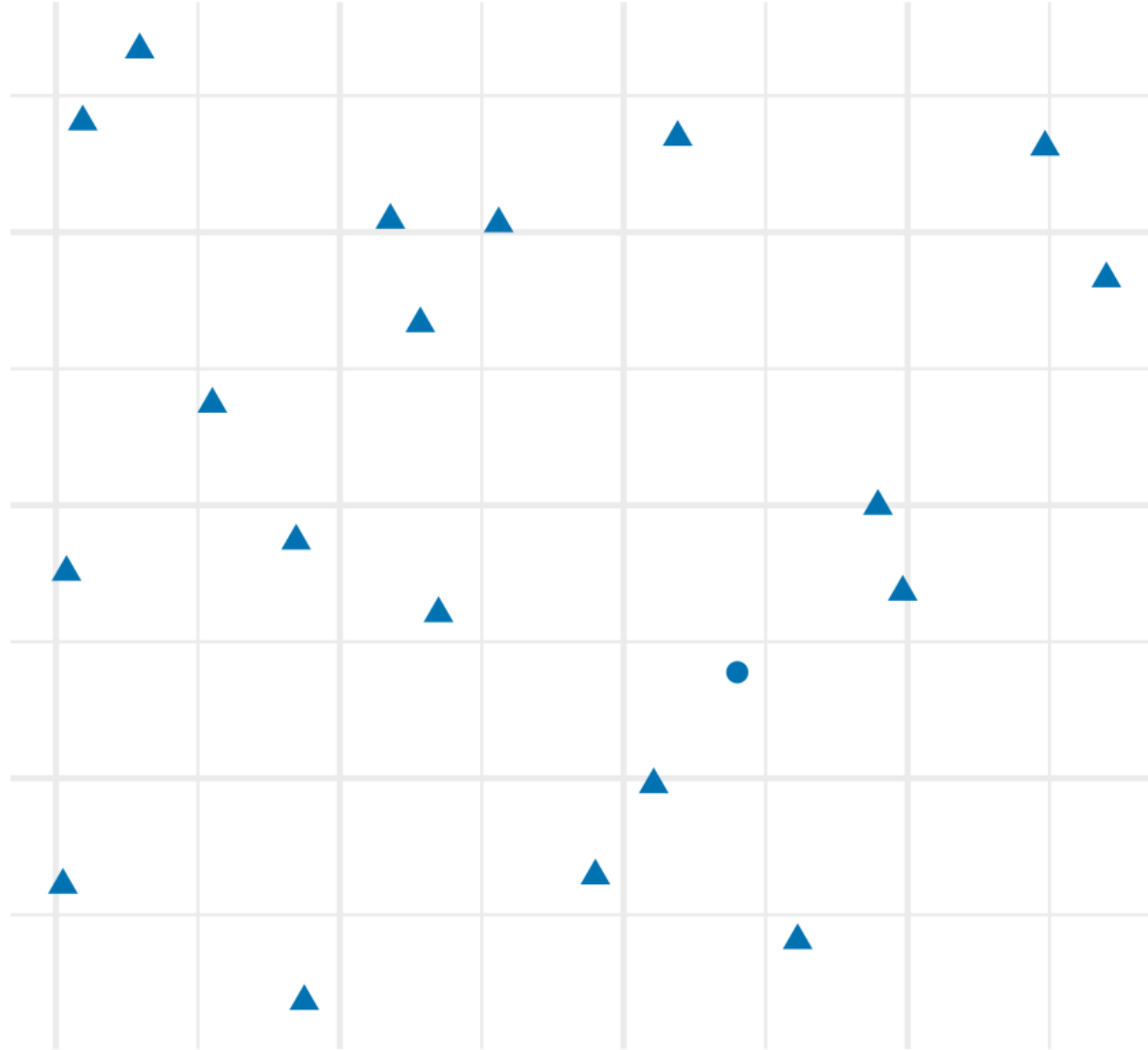


Color only,  $N = 100$

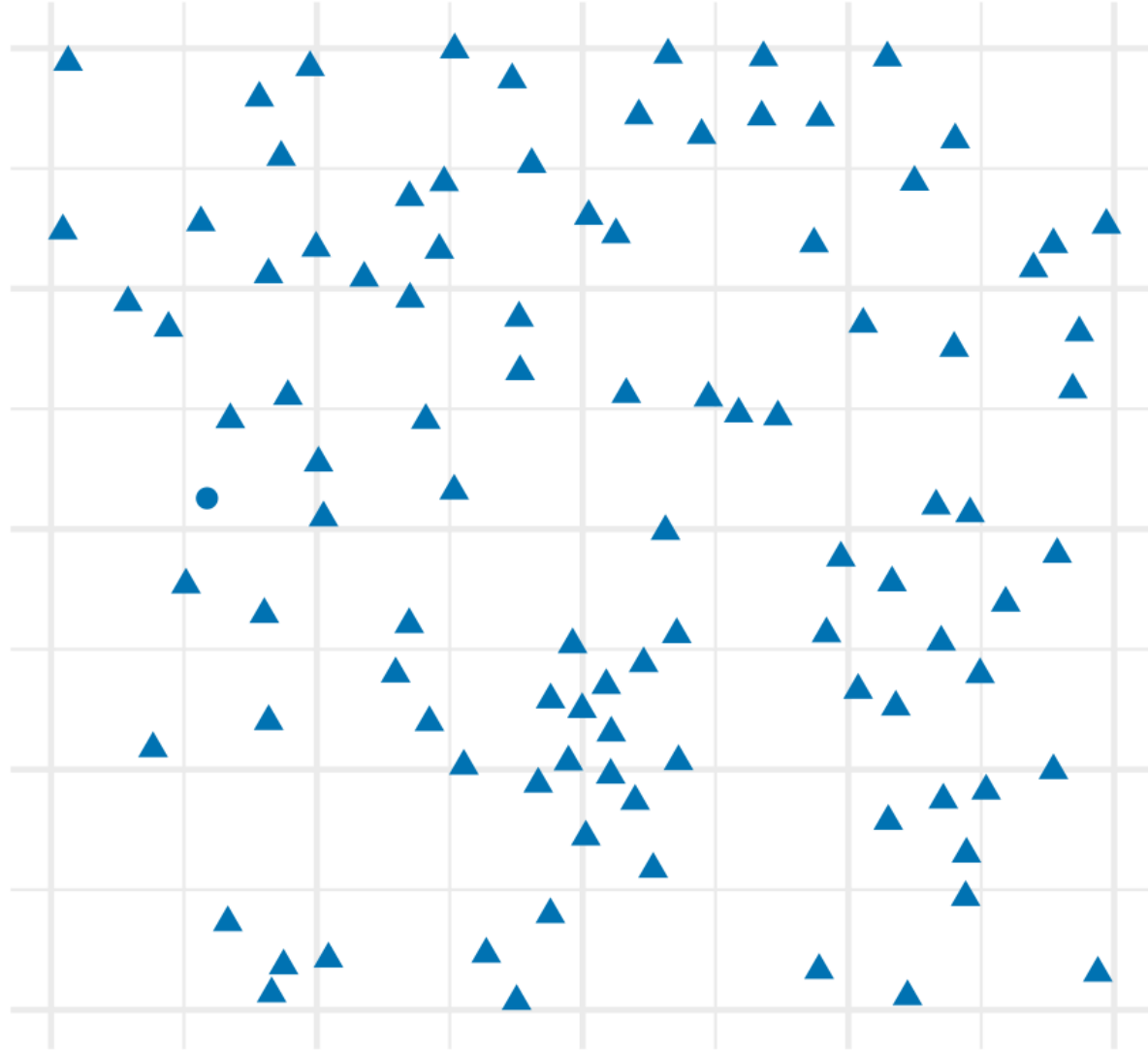




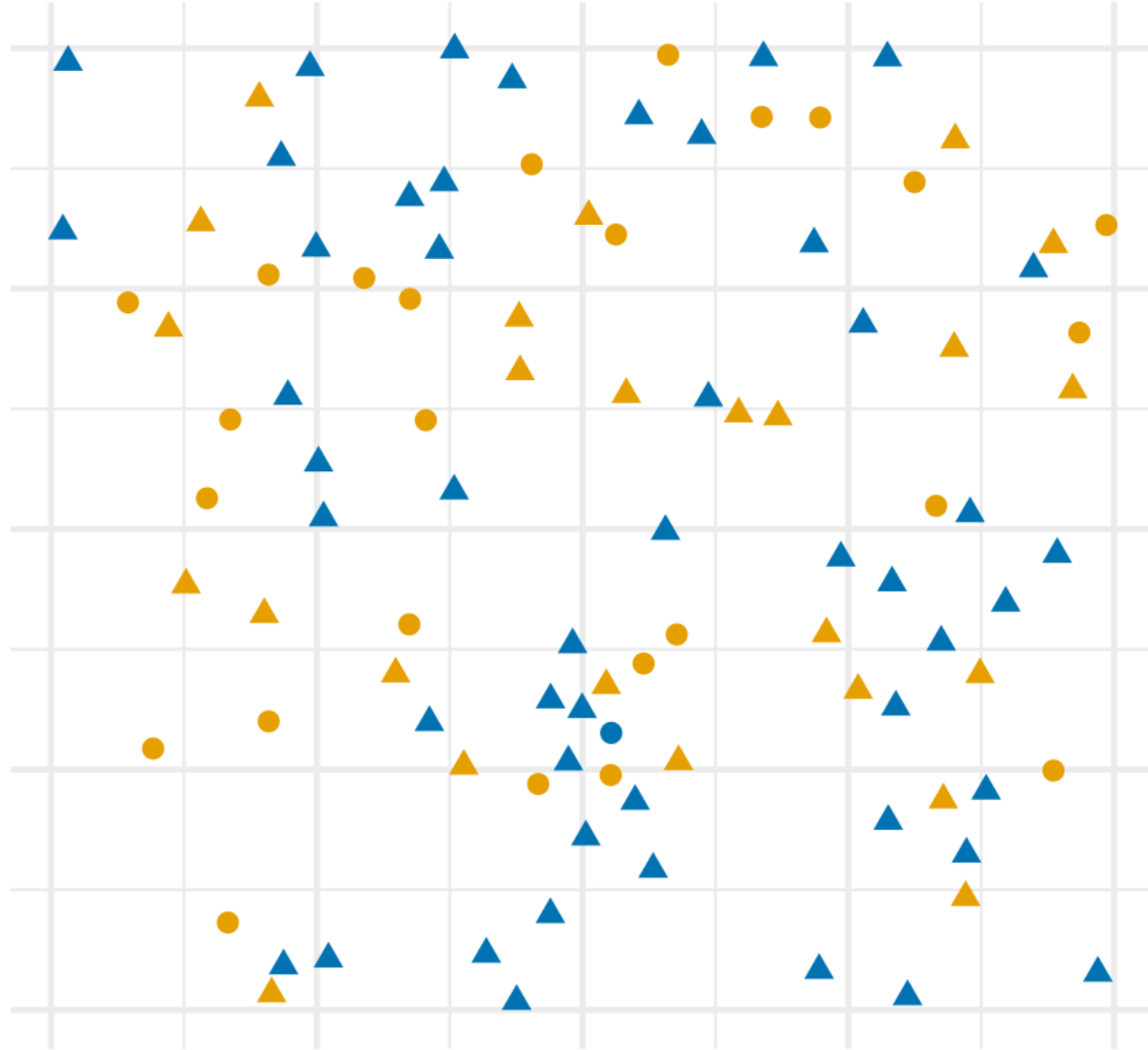
Shape only,  $N = 20$

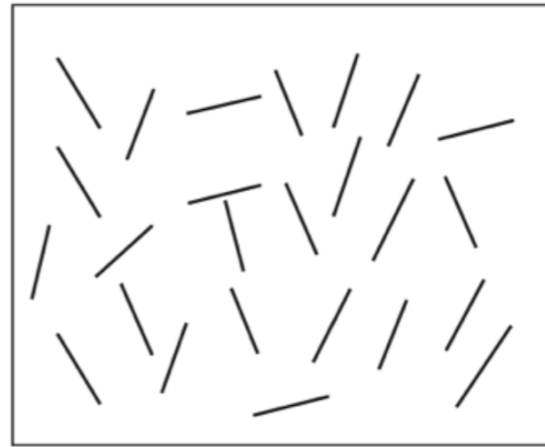
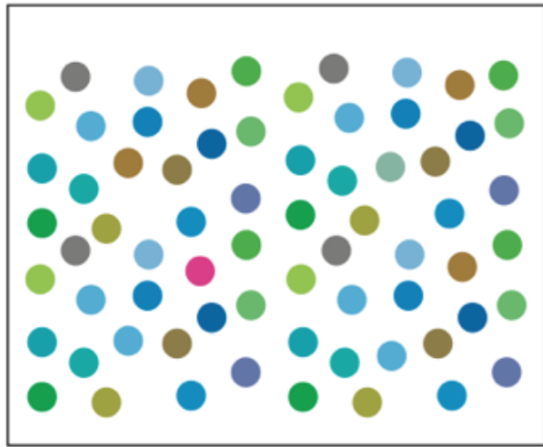
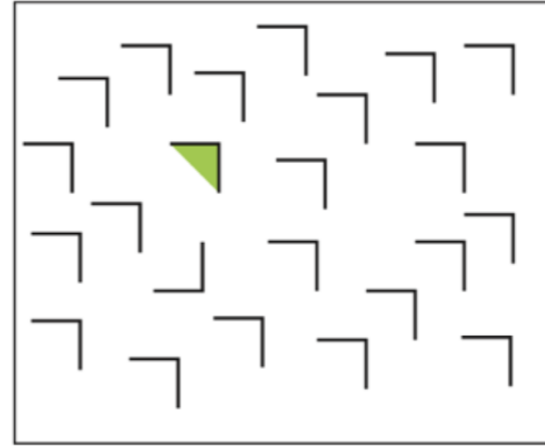
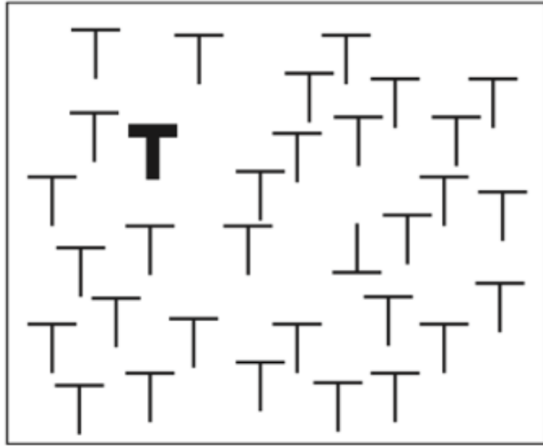


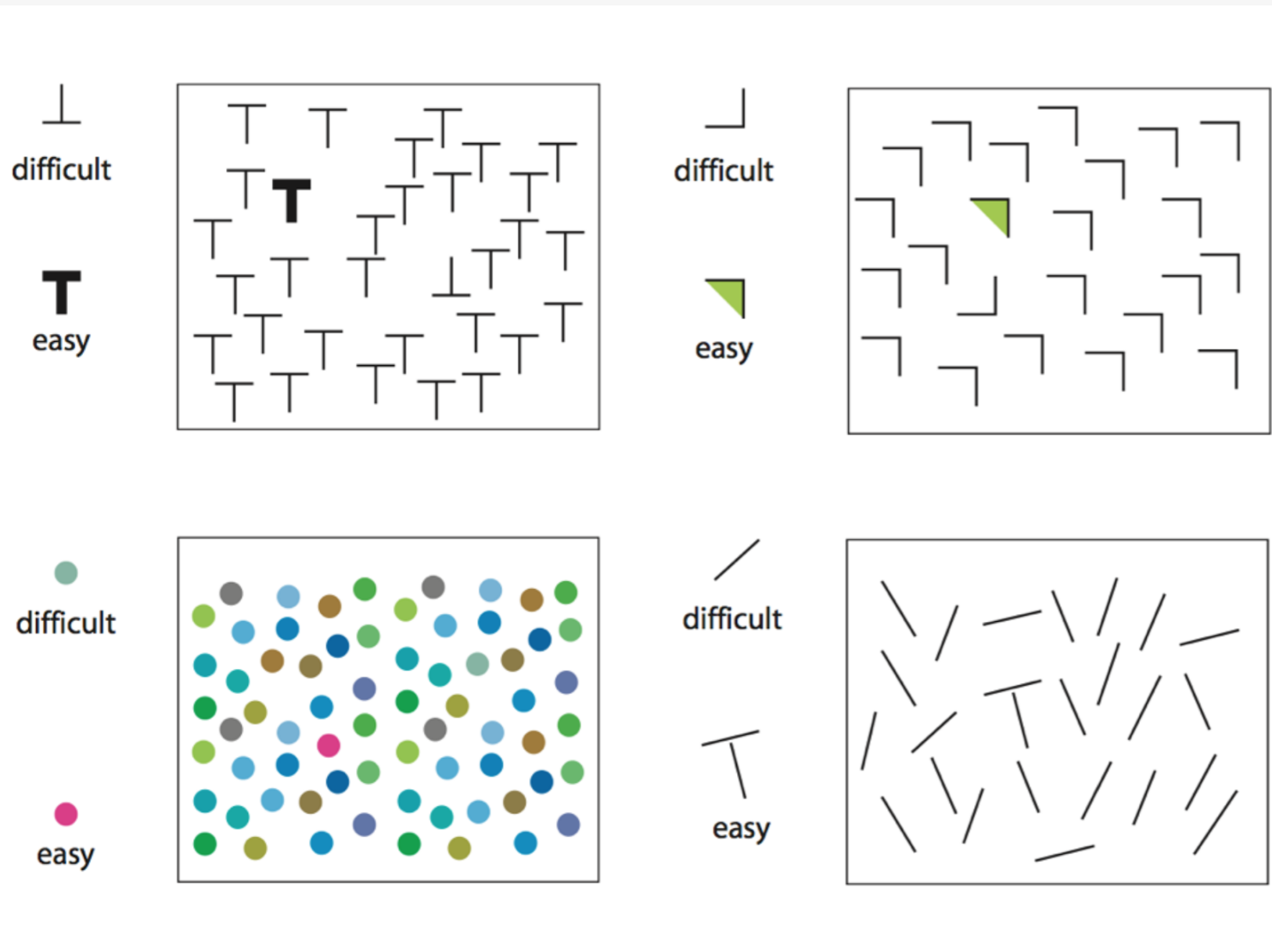
Shape only,  $N = 100$



## Color and Shape, N = 100

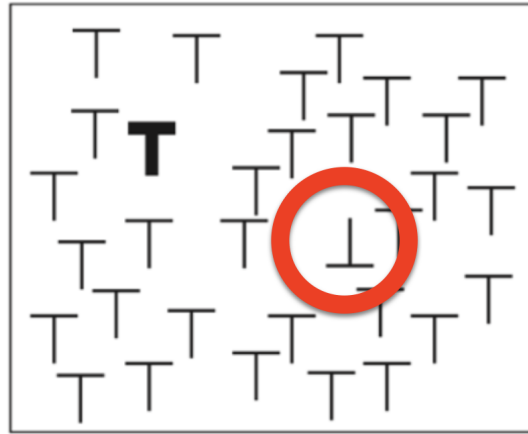






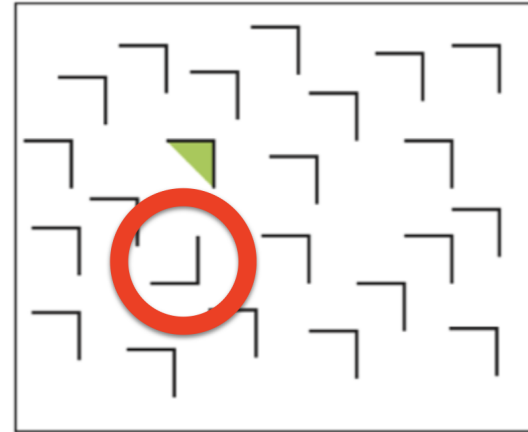
⊥  
difficult

**T**  
easy



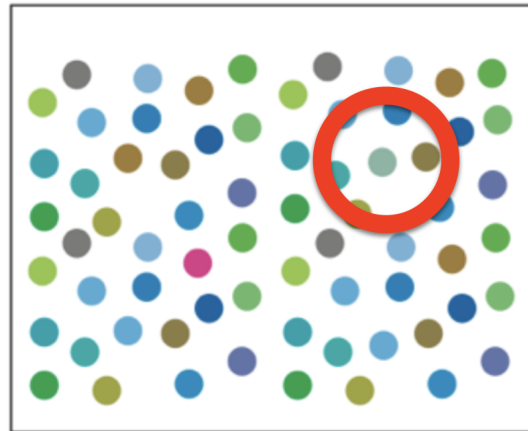
└  
difficult

└  
easy



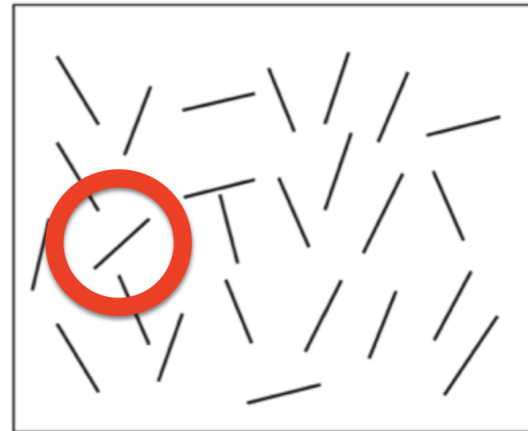
●  
difficult

●  
easy

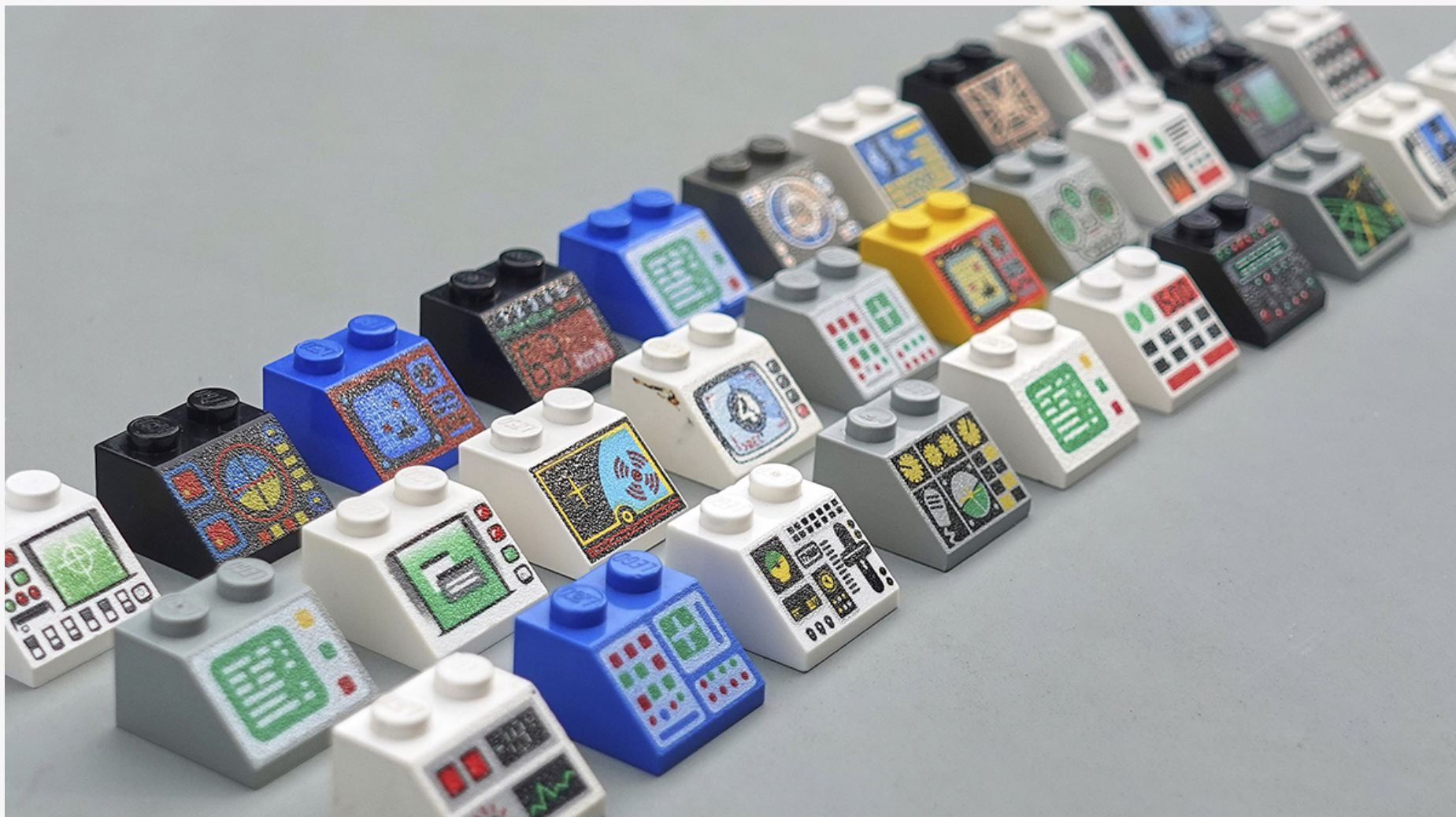


/  
difficult

└  
easy

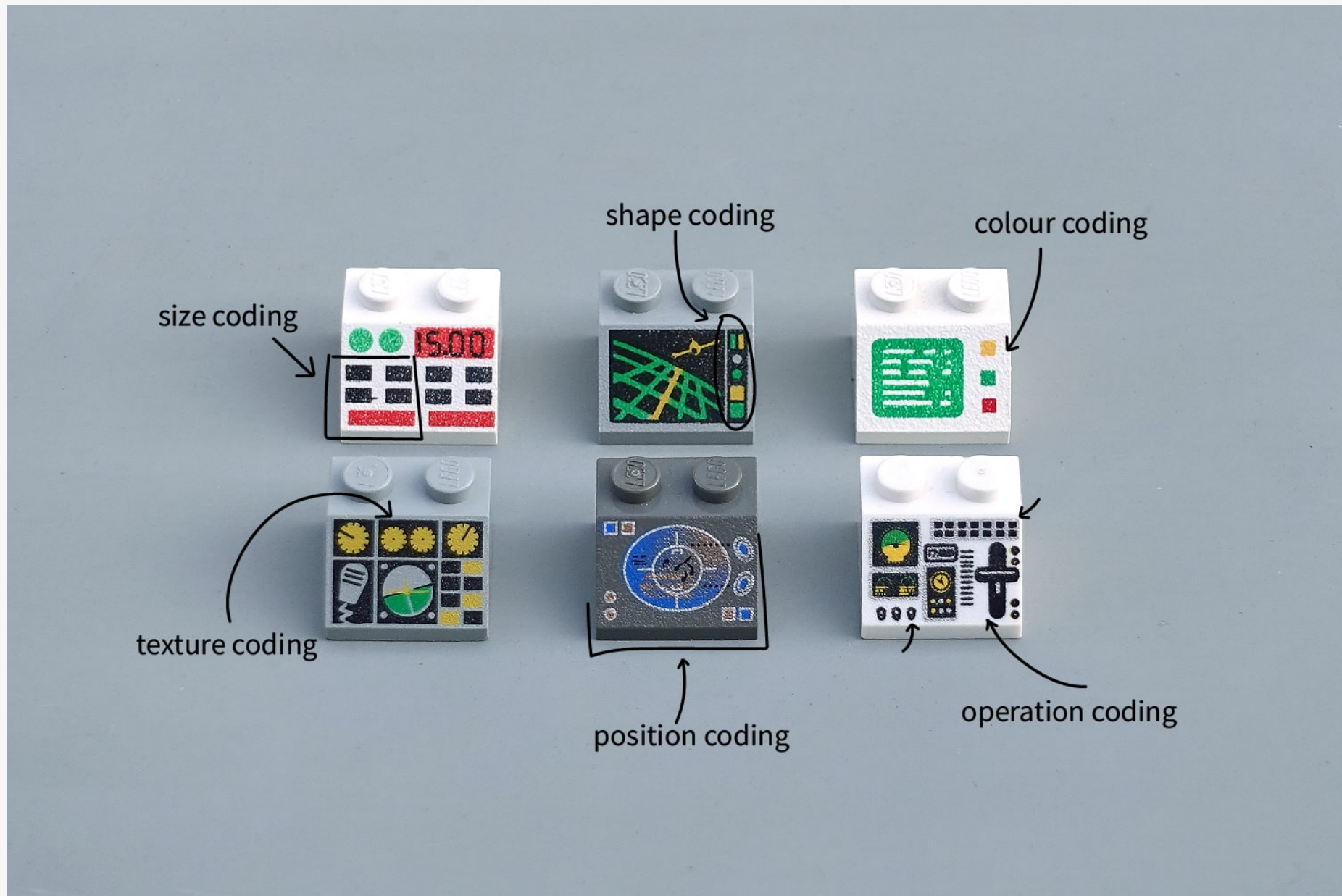


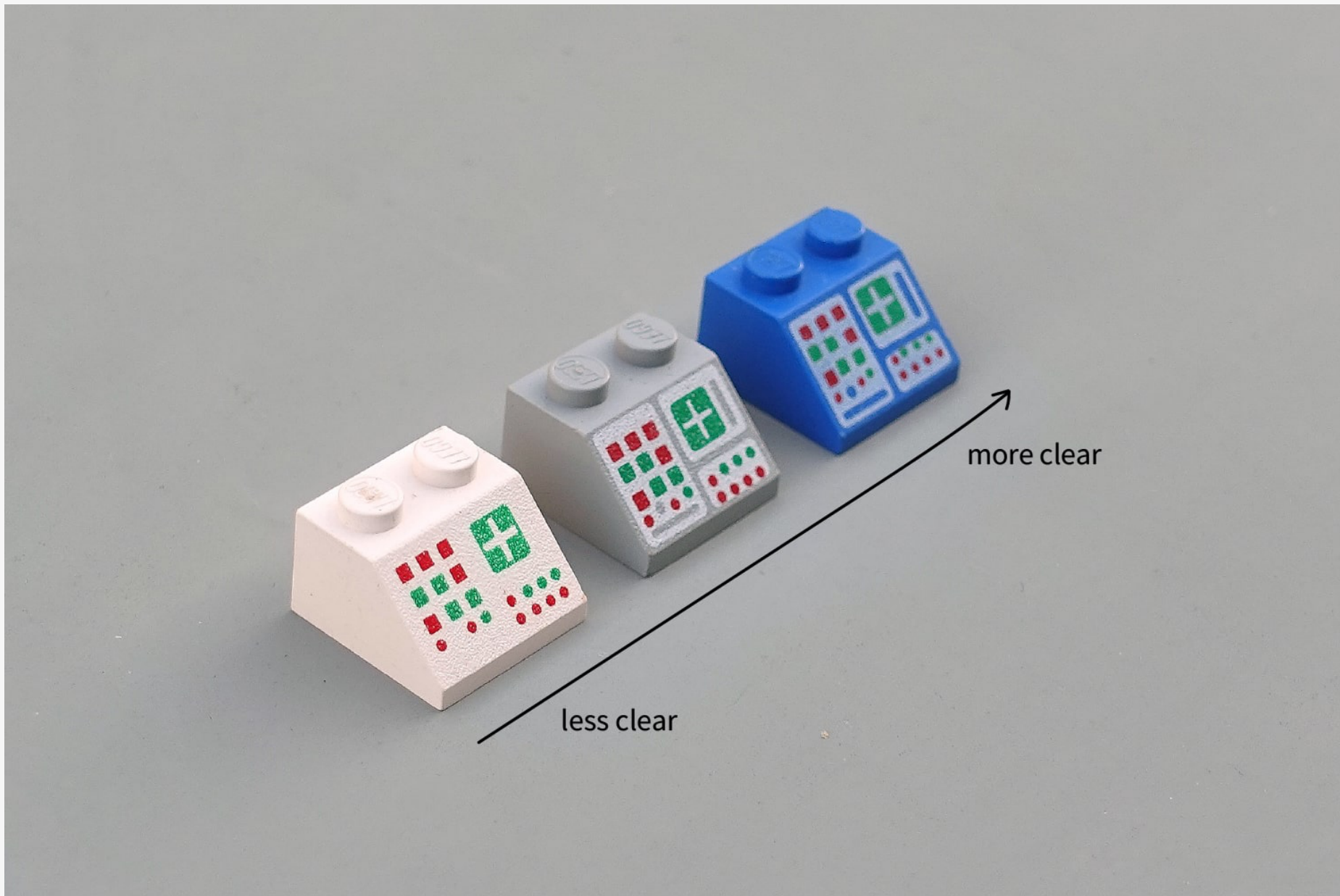
# Gestalt Inferences and Design

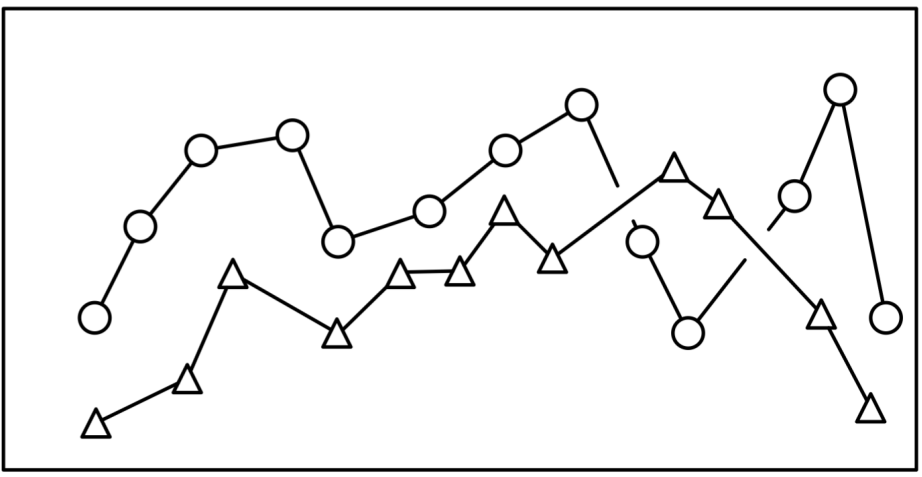
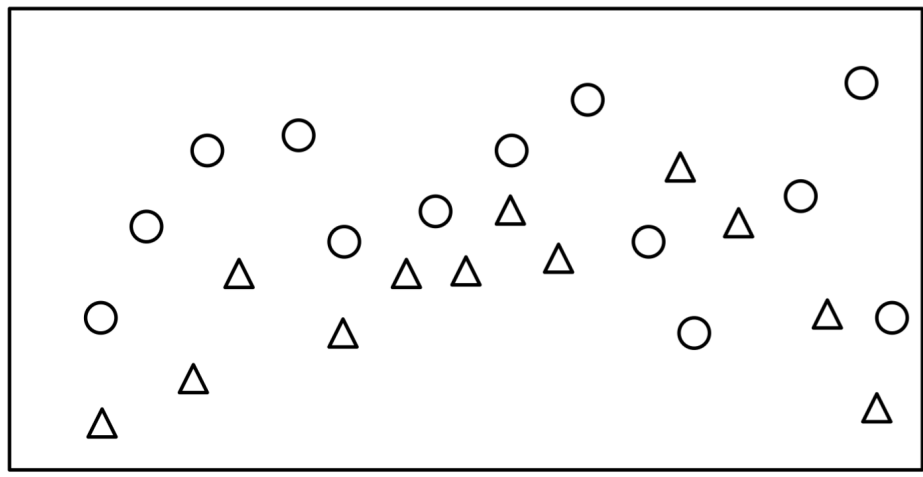
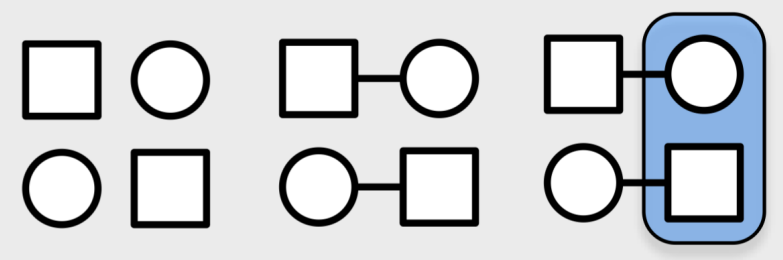
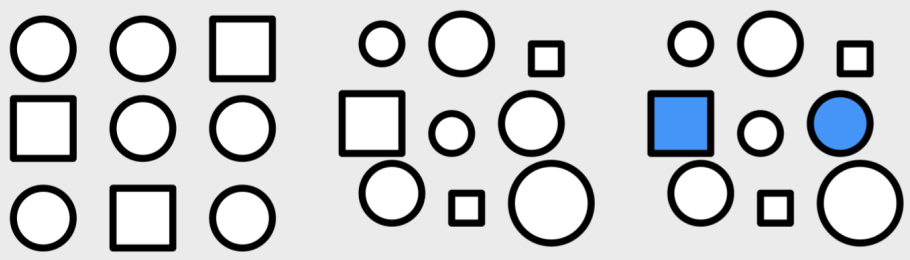
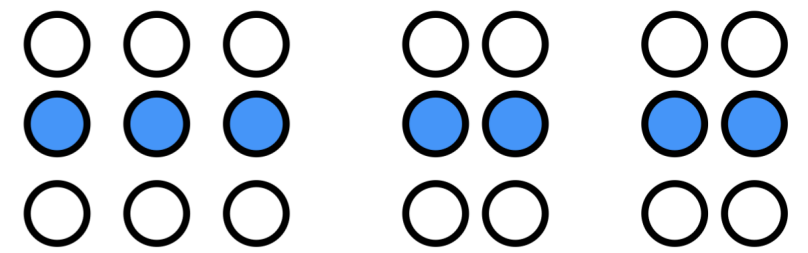
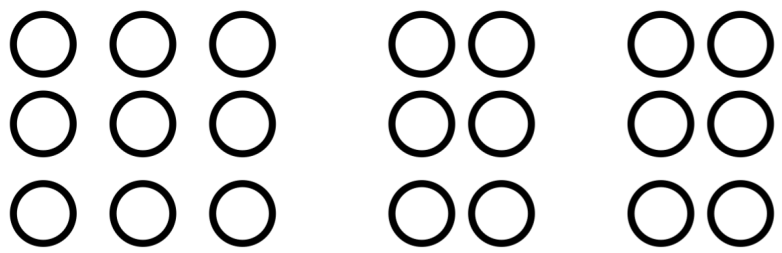


George Cave





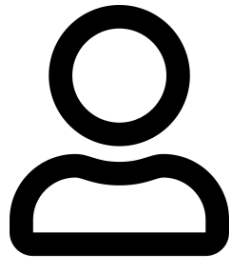
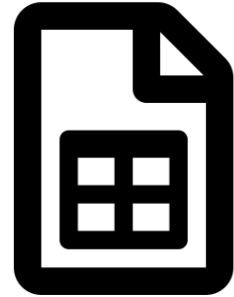




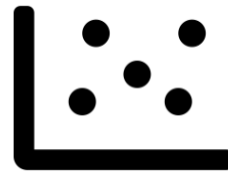
# Encodings or mappings for data

**What's a graph,  
anyway?**

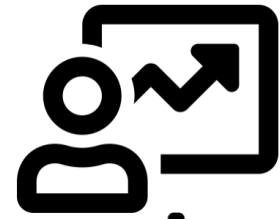
**Data**



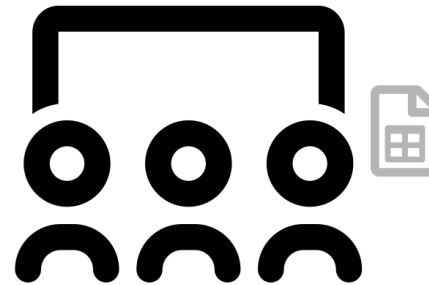
**Encoded  
→  
or mapped**



**Some sort of  
faithful visual  
representation**



Decode

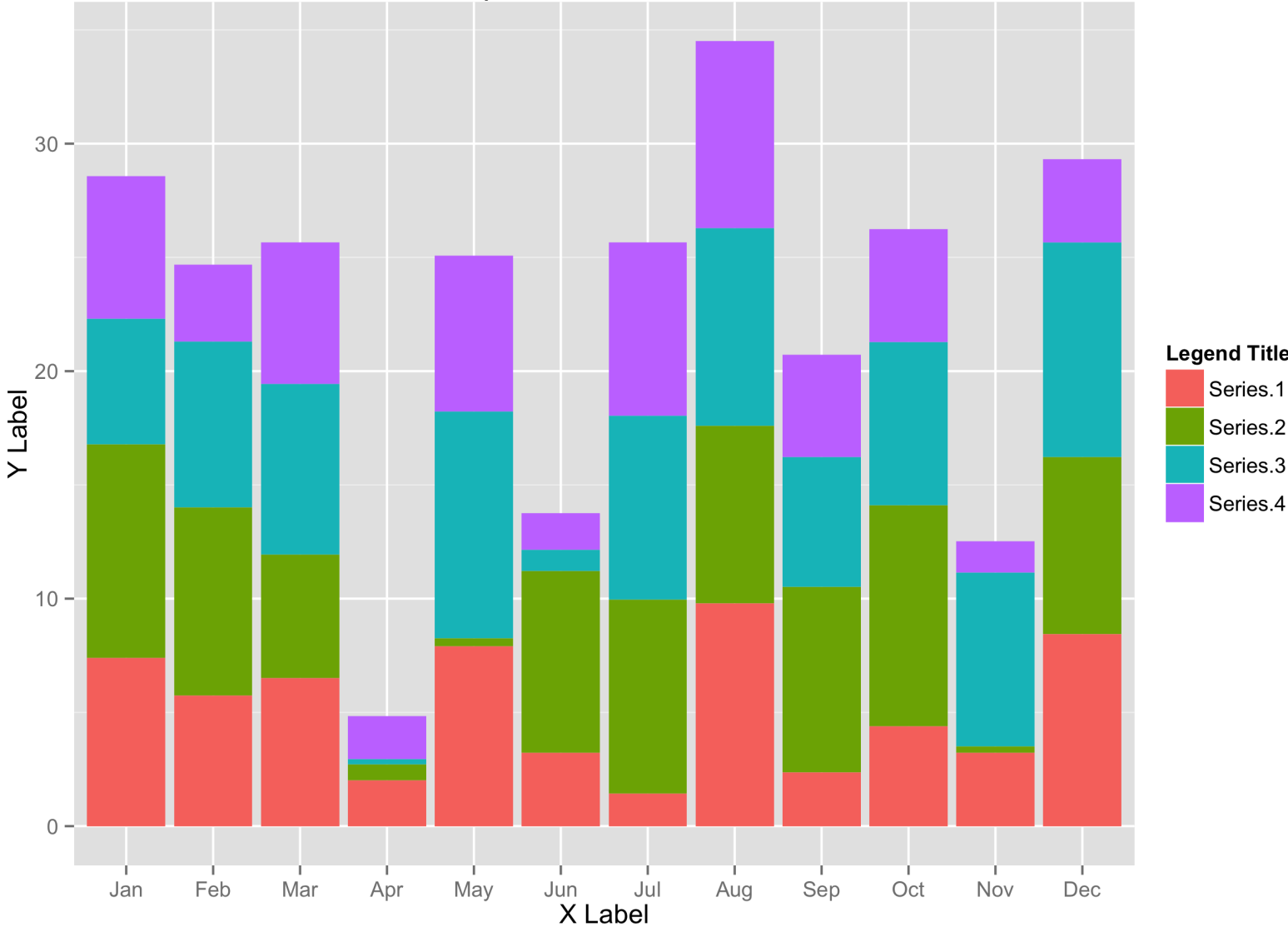


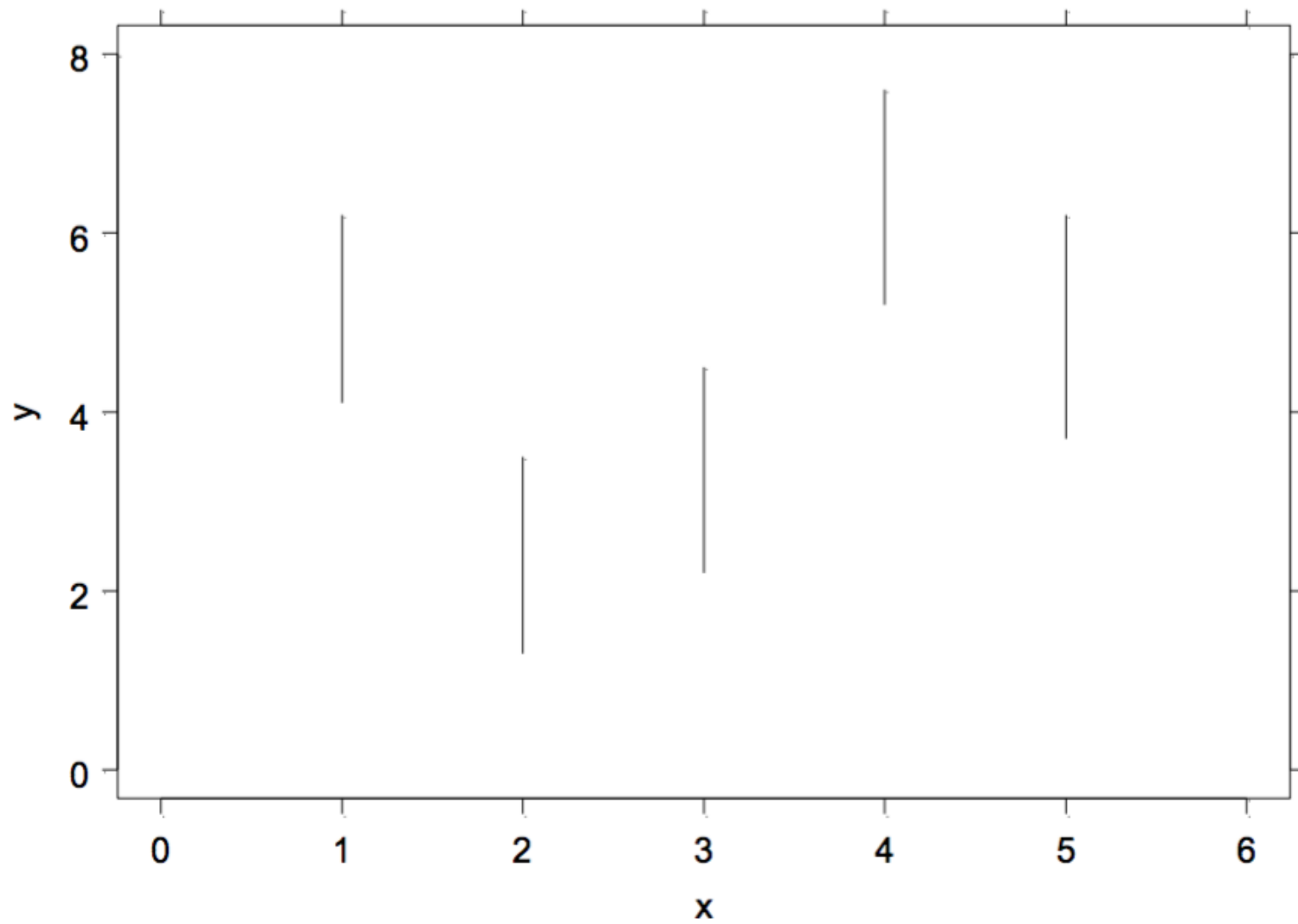
Interpret

# Visual tasks in decoding graphs

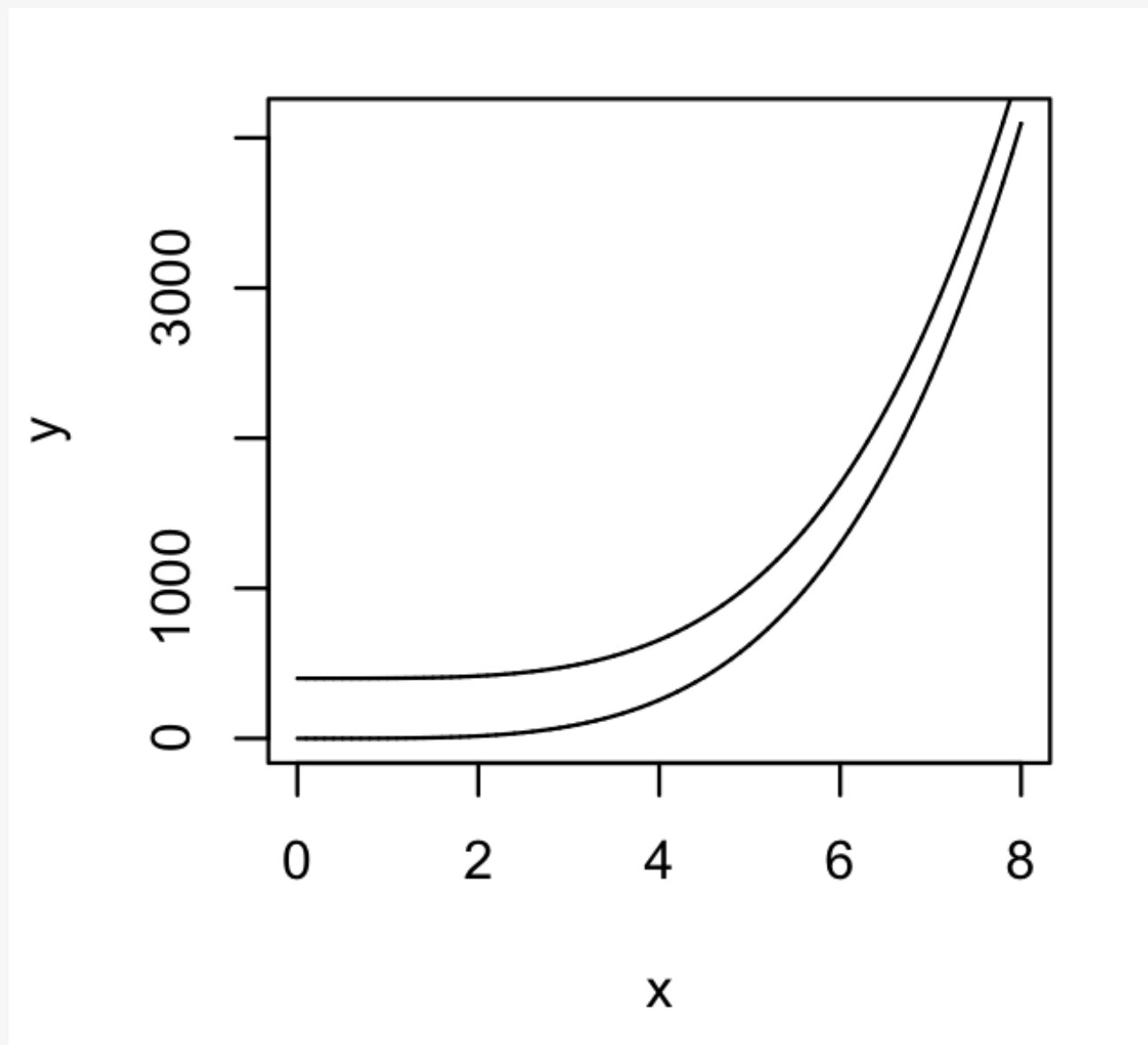


An Example Stacked Column Chart

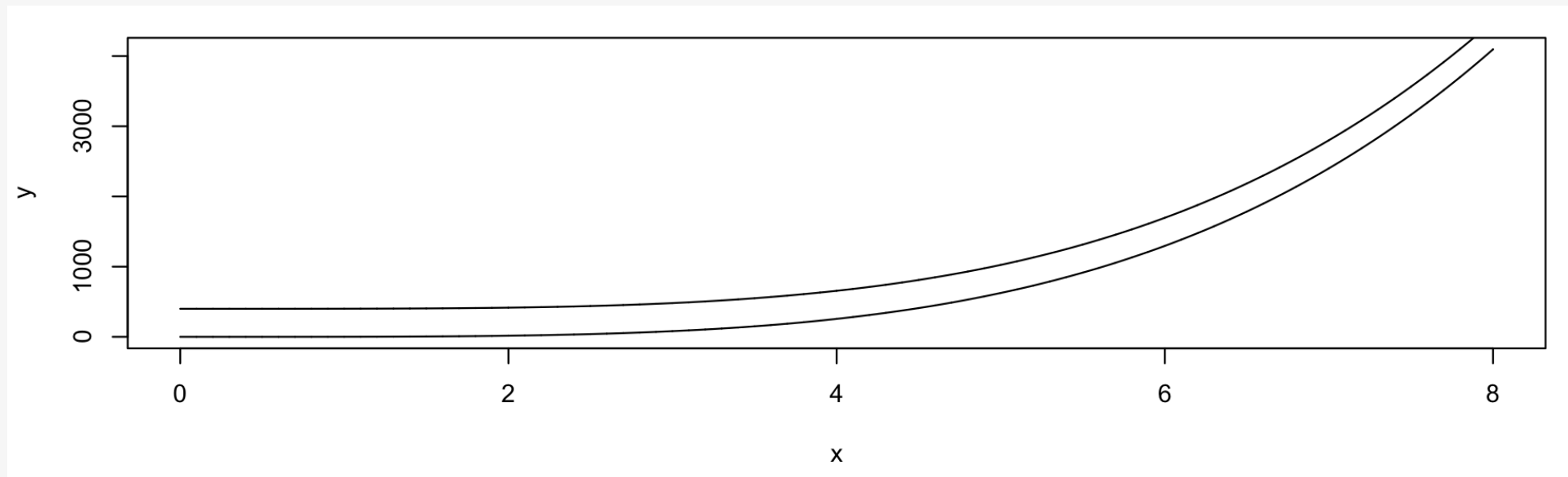




William Cleveland



William Cleveland



William Cleveland

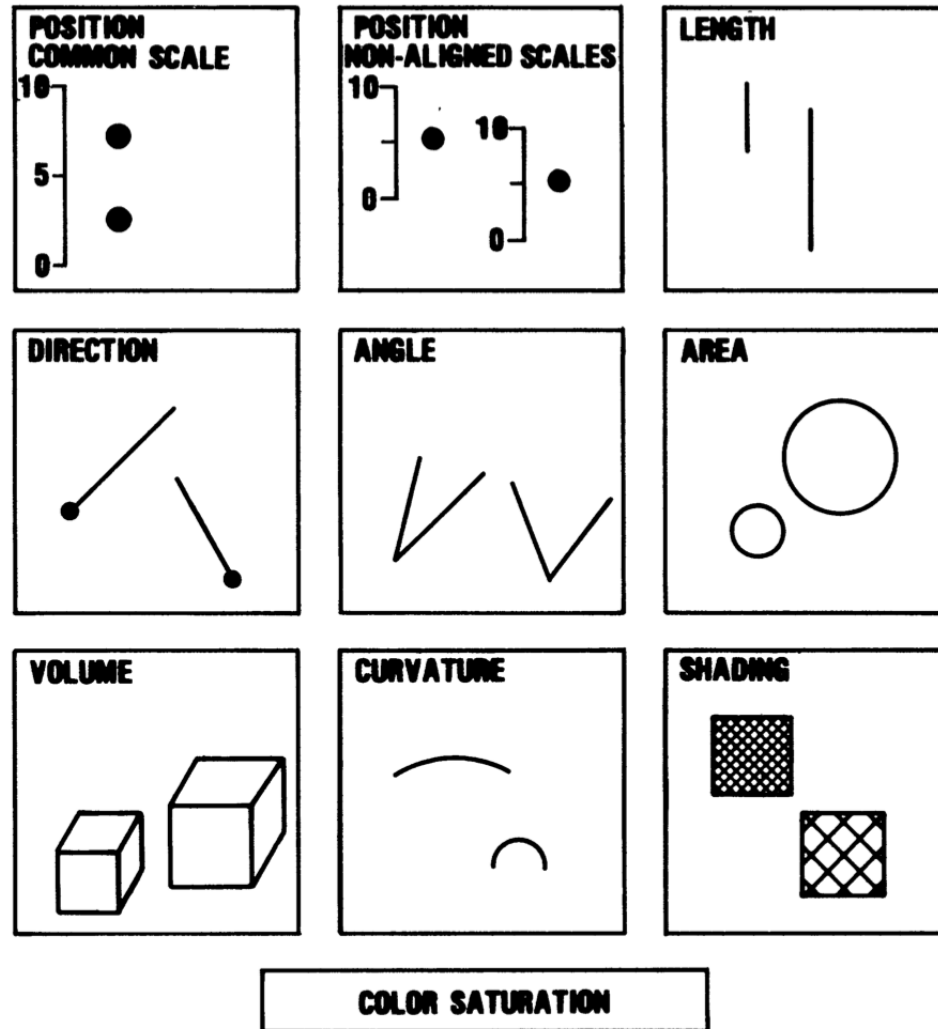
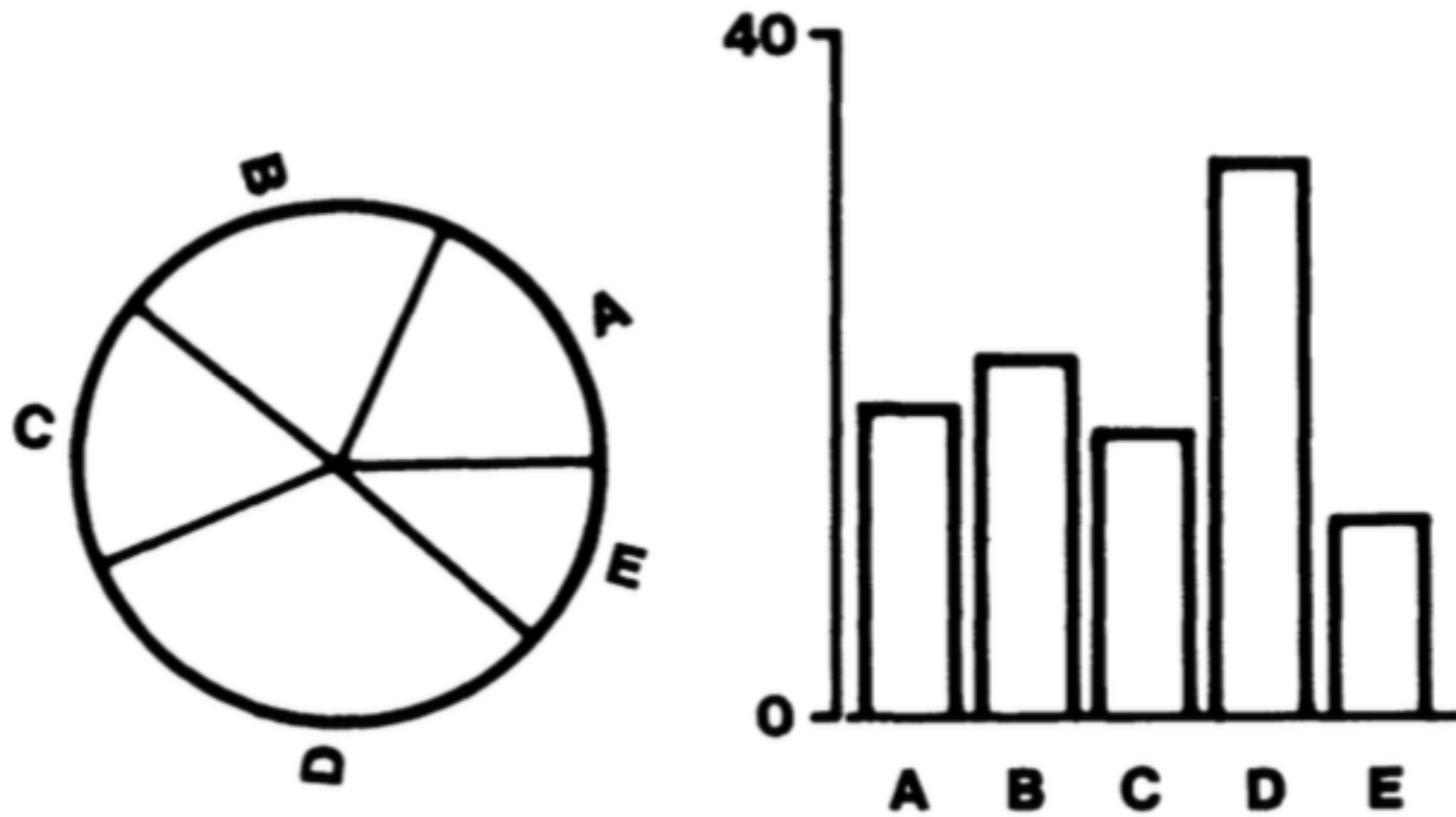
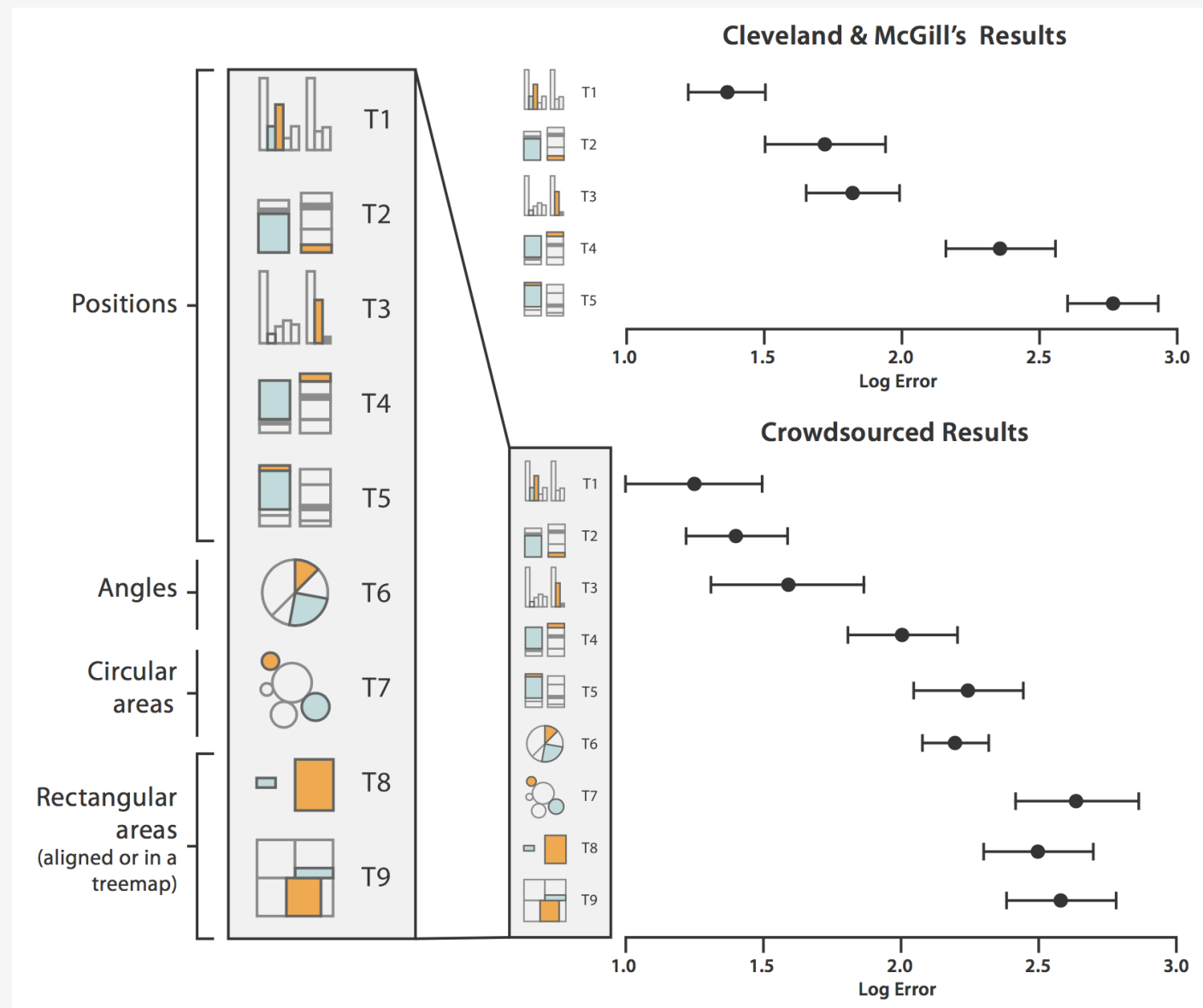


Figure 1. Elementary perceptual tasks.



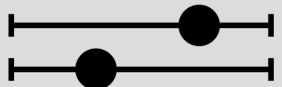
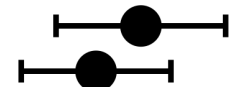

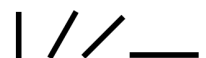



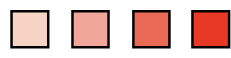


*Figure 3. Graphs from position-angle experiment.*



William Cleveland and Michael Bostock

**A rough hierarchy of  
mappings for data**



Position on a common scale	
Position on unaligned scale	
Length (1D as size)	
Tilt or Angle	
Area (2D as size)	
Depth (3D as Position)	
Color luminance [brightness]	
Color saturation [intensity]	
Curvature	
Volume (3D as size)	

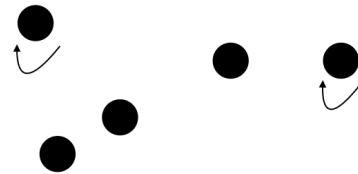
Spatial Region



Color [hue]



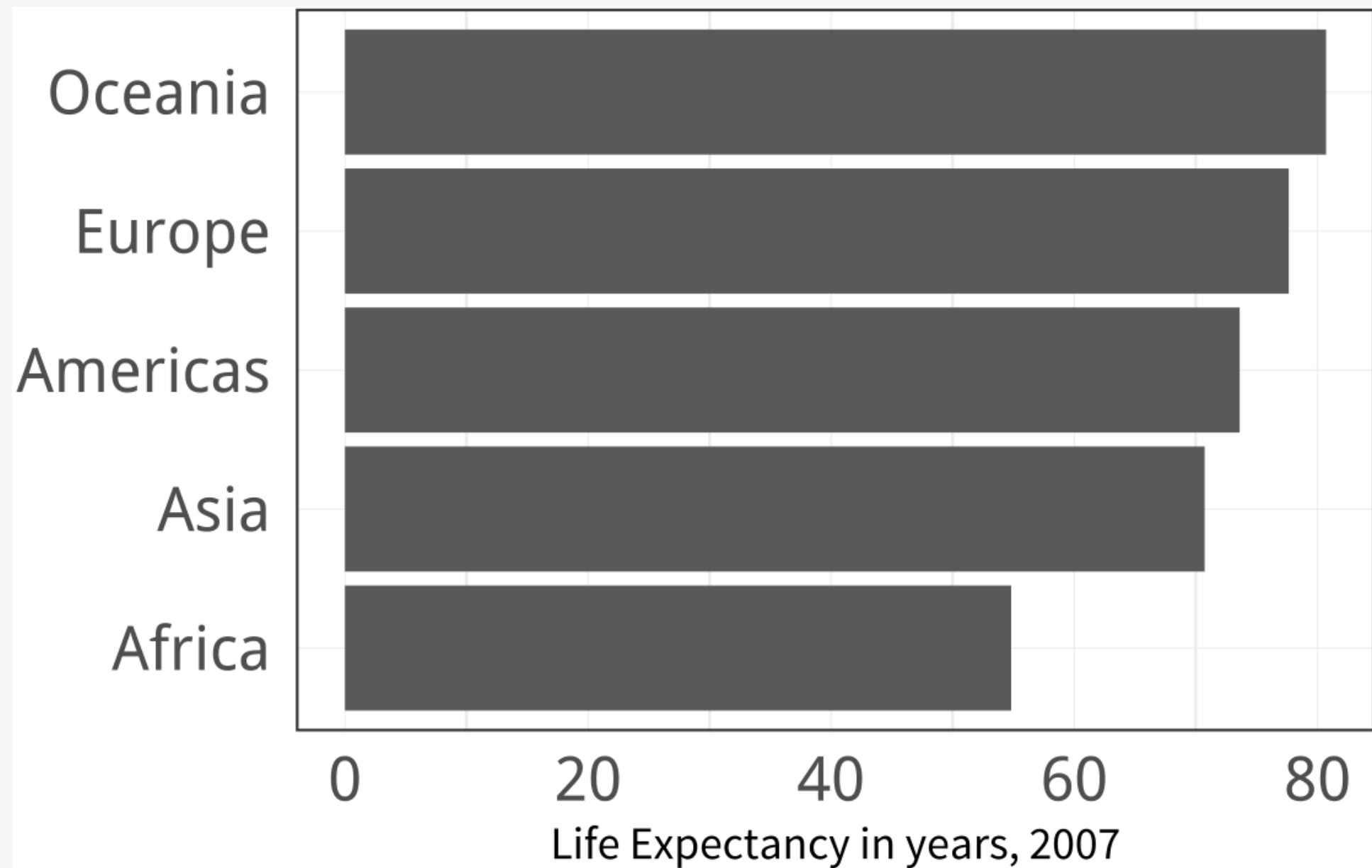
Motion



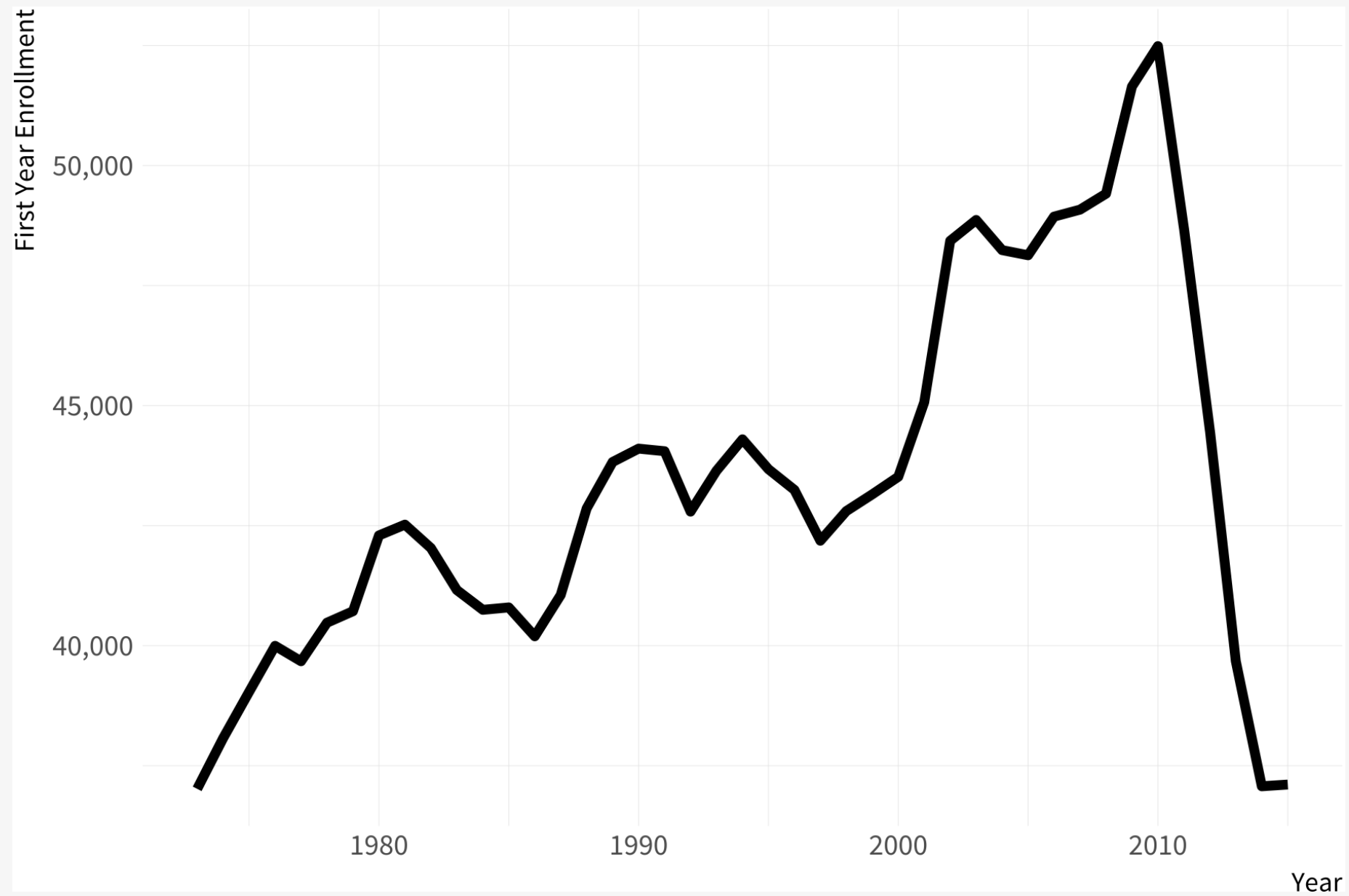
Shape

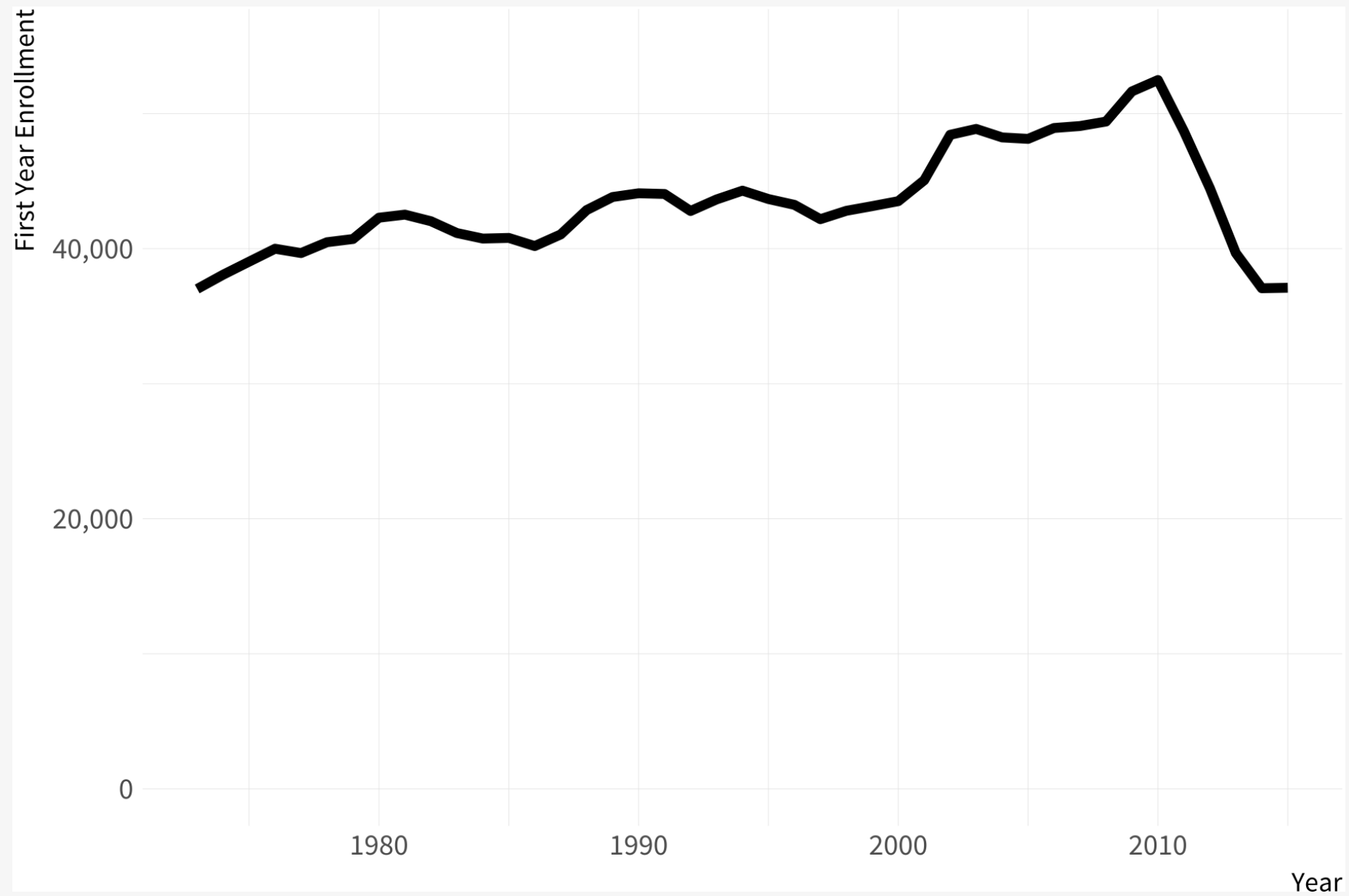


**Honesty & judgment**









# CLARITY



**CLARITY**  
**HONESTY**

**CLARITY**  
**HONESTY**  
**TRUTH**

# CONTEXT

# CONTEXT CONVENTION

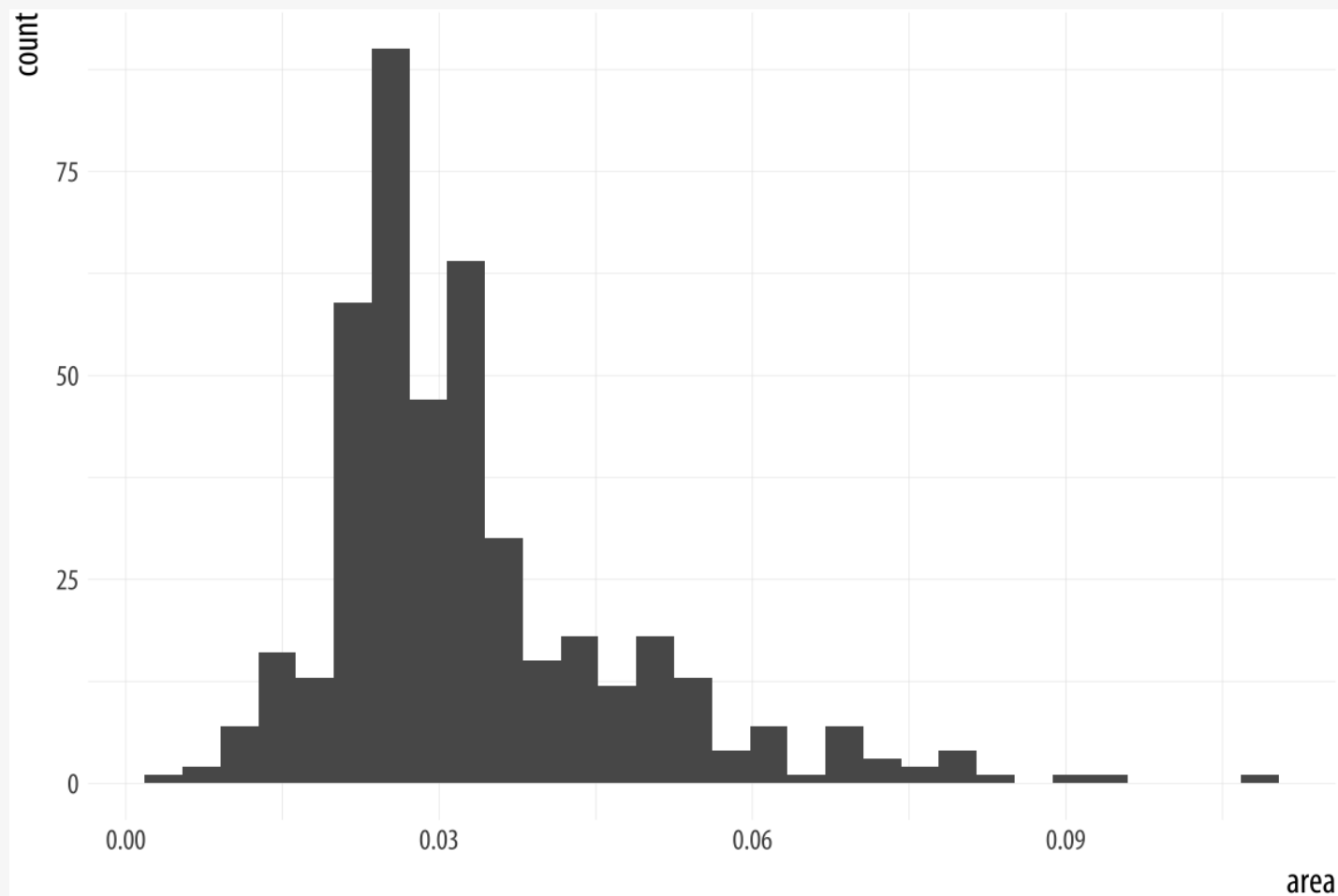
**CONTEXT**

**CONVENTION**

**MEANING**

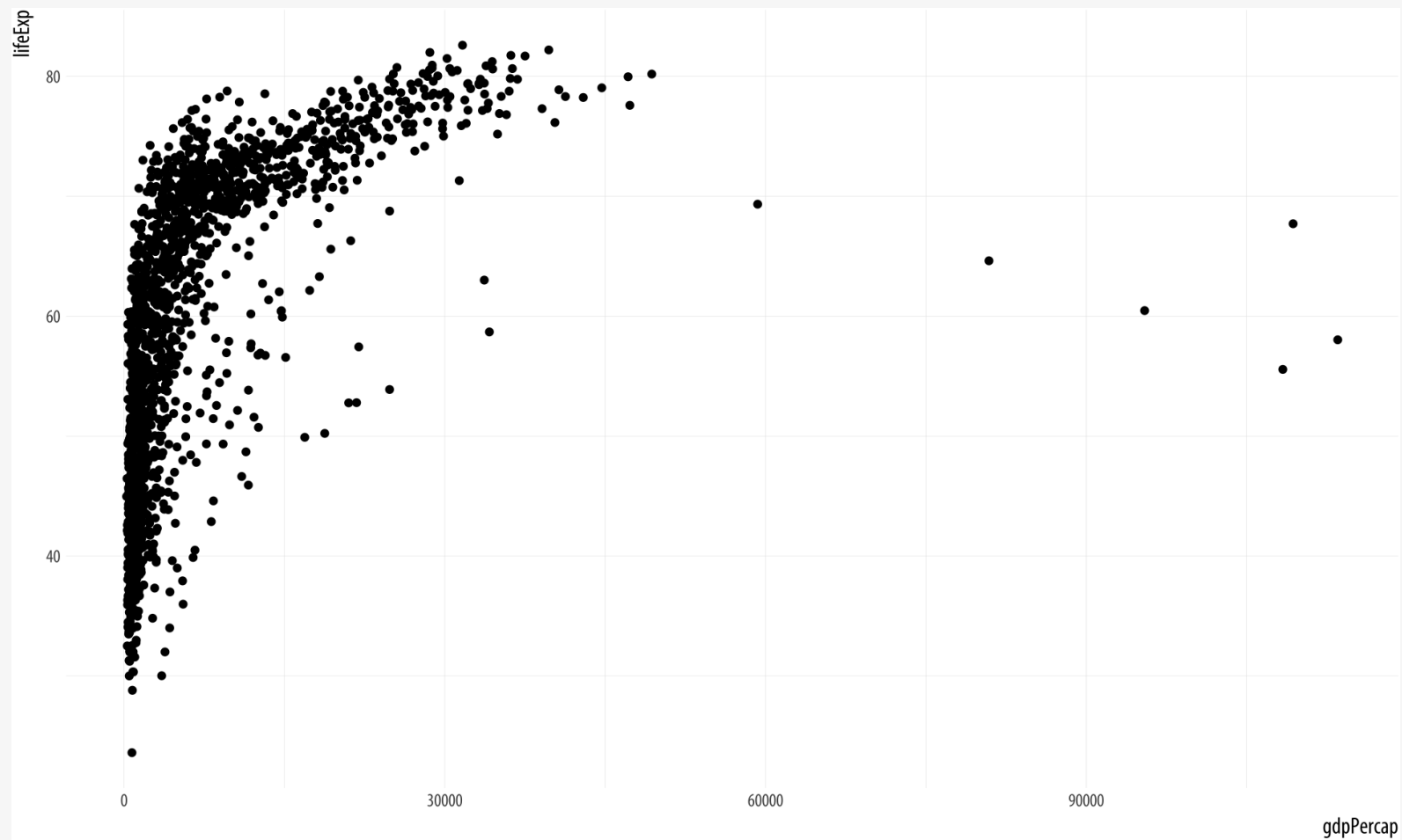
# Graphing in practice

# Workhorses



Histogram

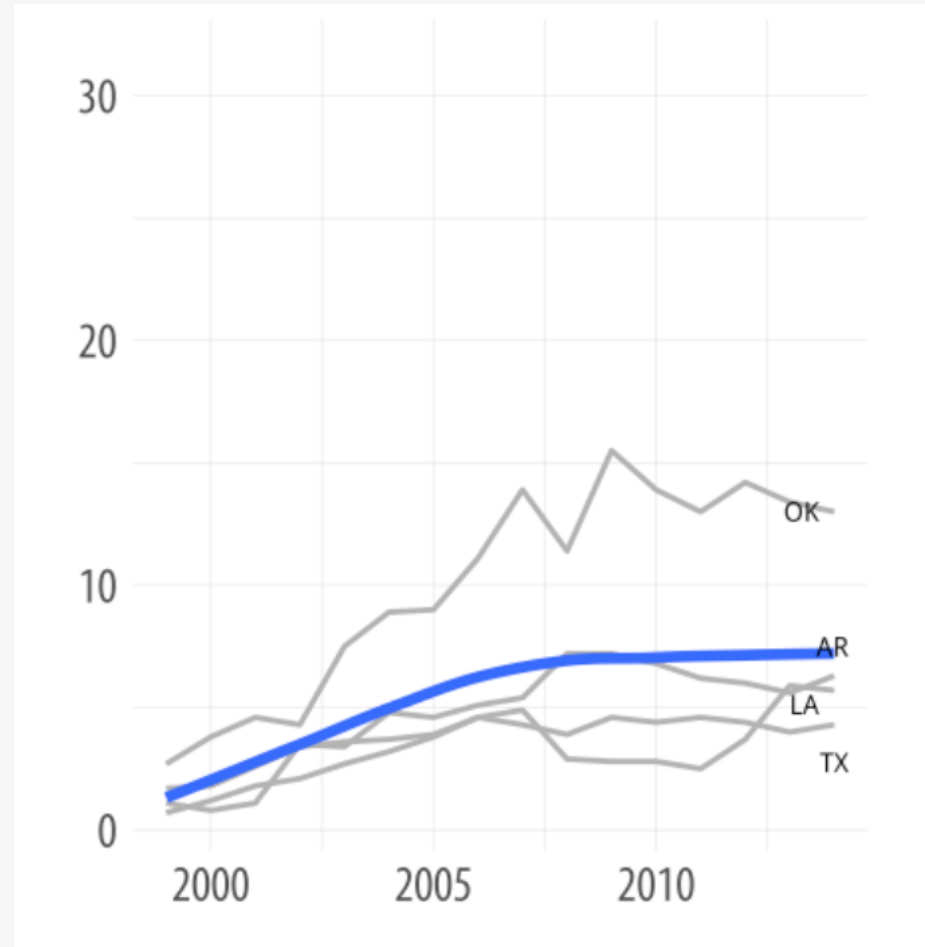
# Workhorses



Scatterplot

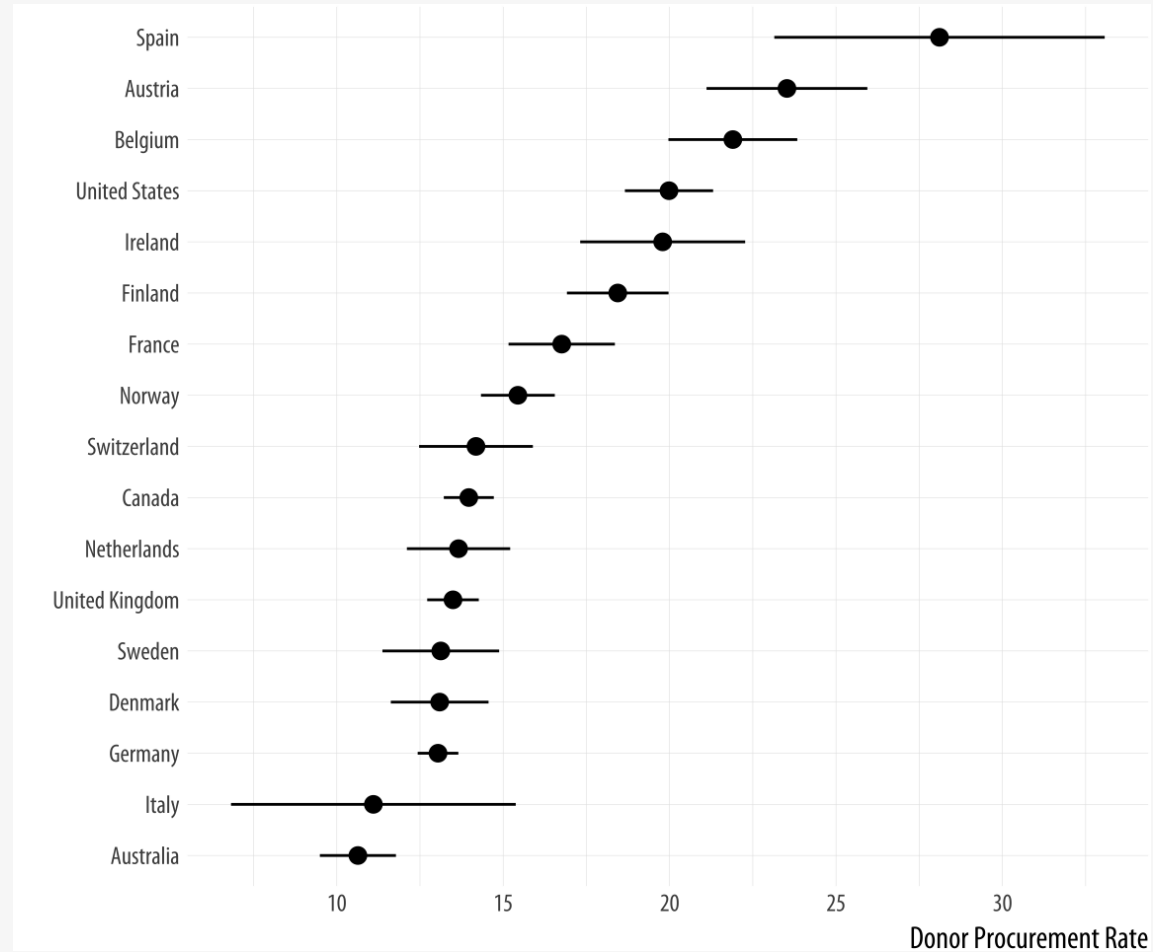


# Workhorses



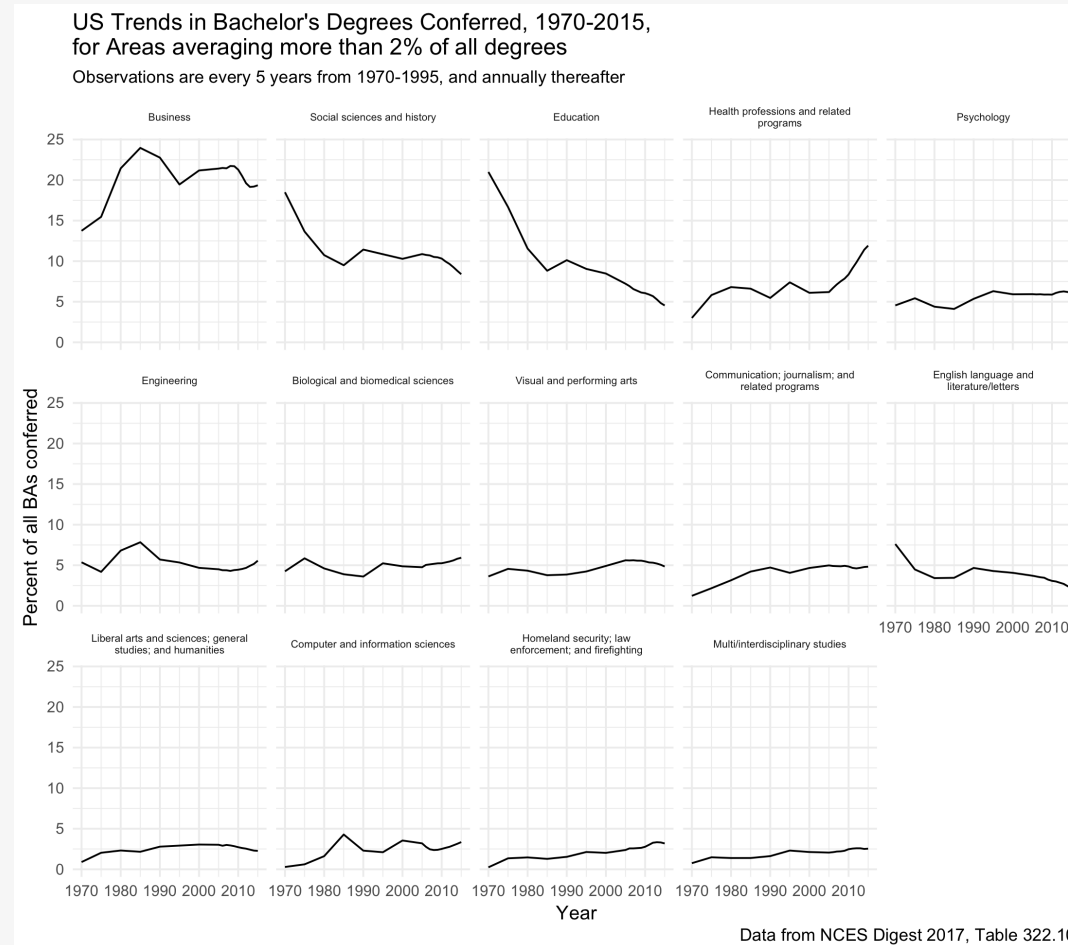
Trend

# Workhorses



Point-and-range

# Workhorses



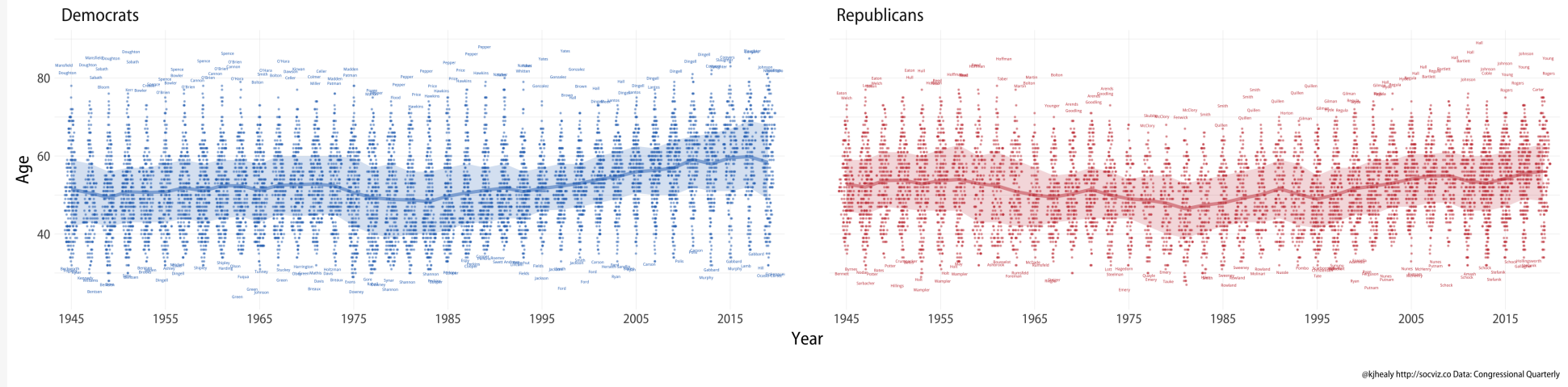
Faceting

# Show Ponies

## Age Distribution of Congressional Representatives, 1945-2019

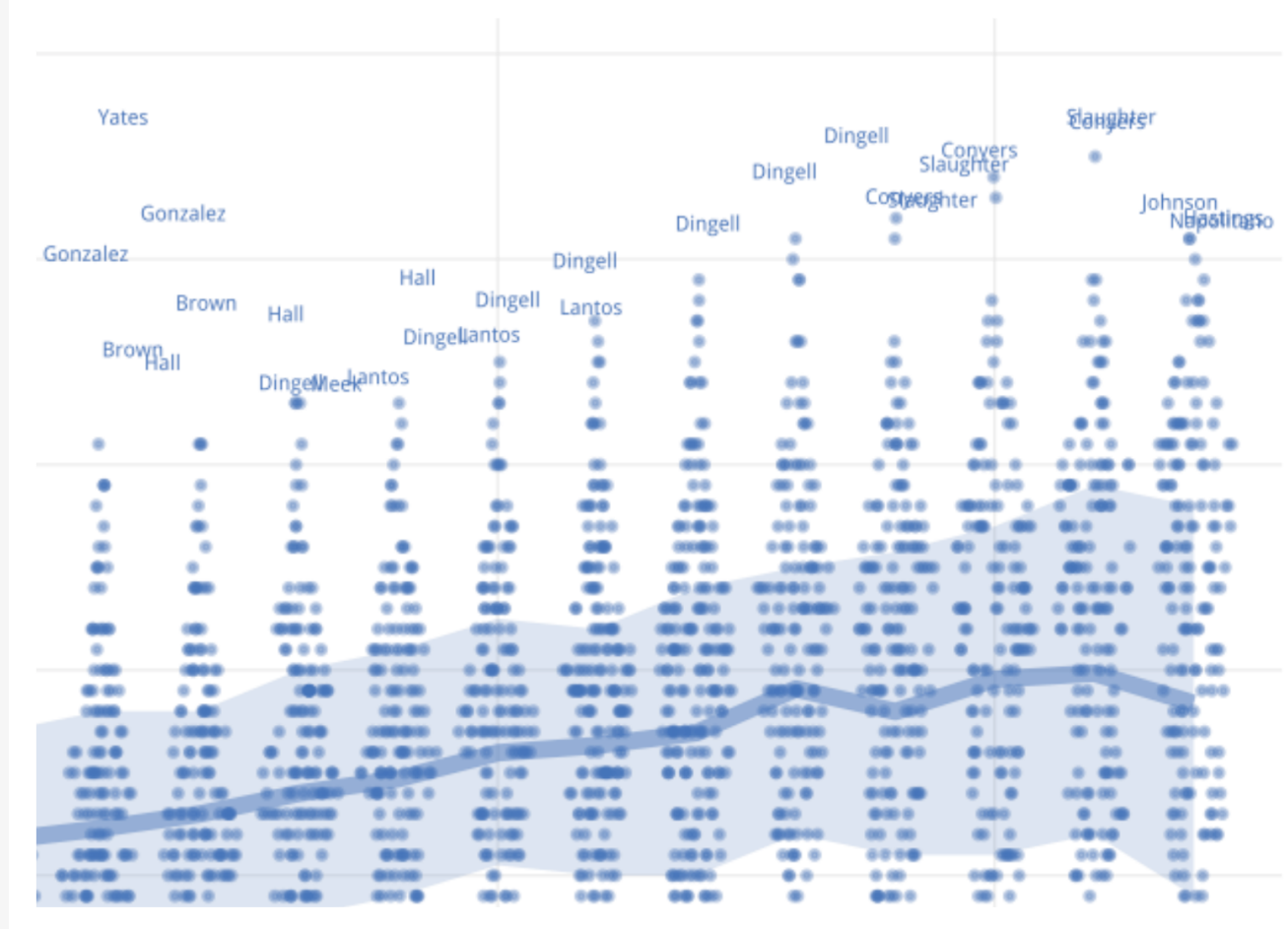
Trend line is mean age; bands are 25th and 75th percentiles of the range.

Youngest and oldest percentiles are named instead of being shown by points.



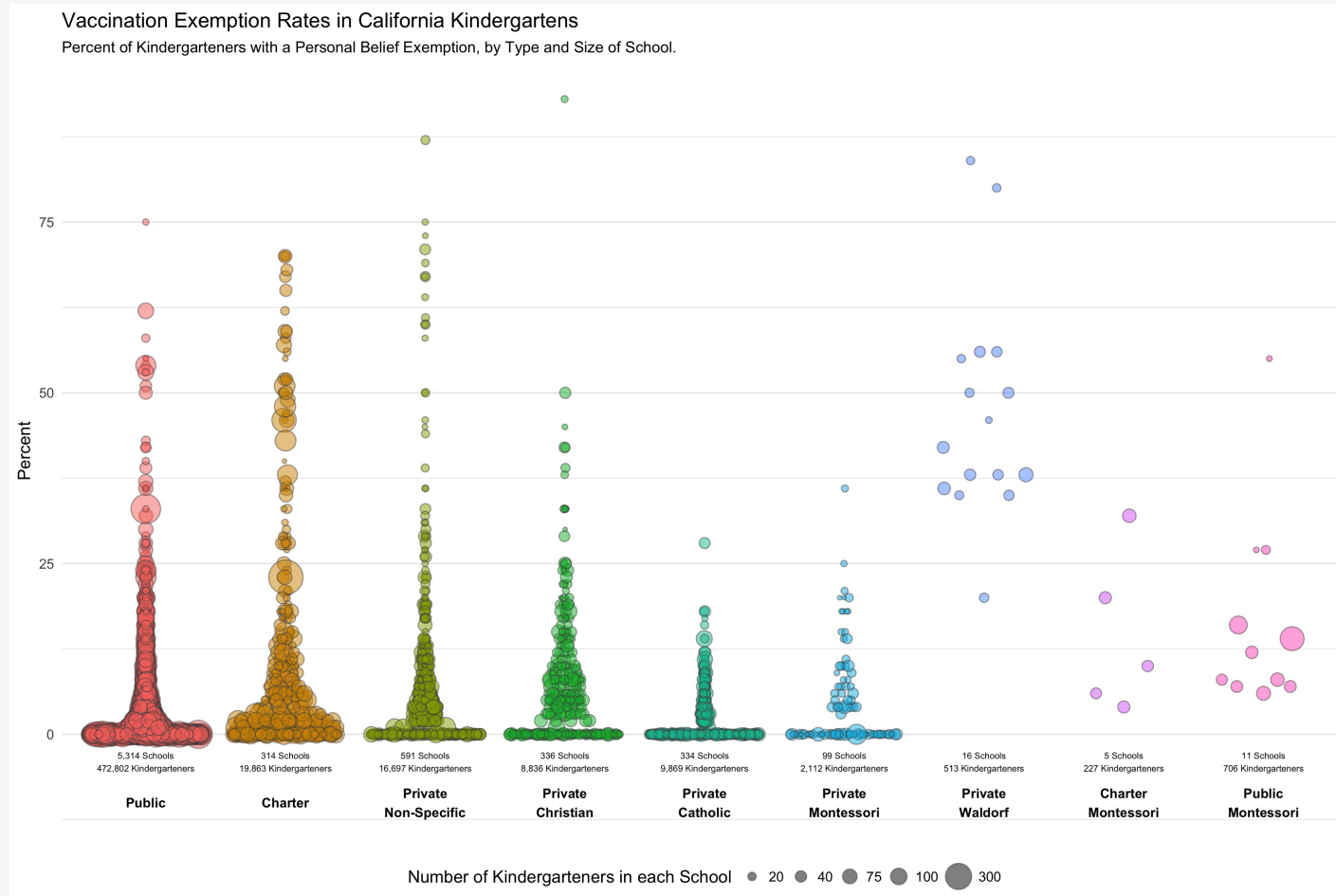
Congressional comparison

# Show Ponies



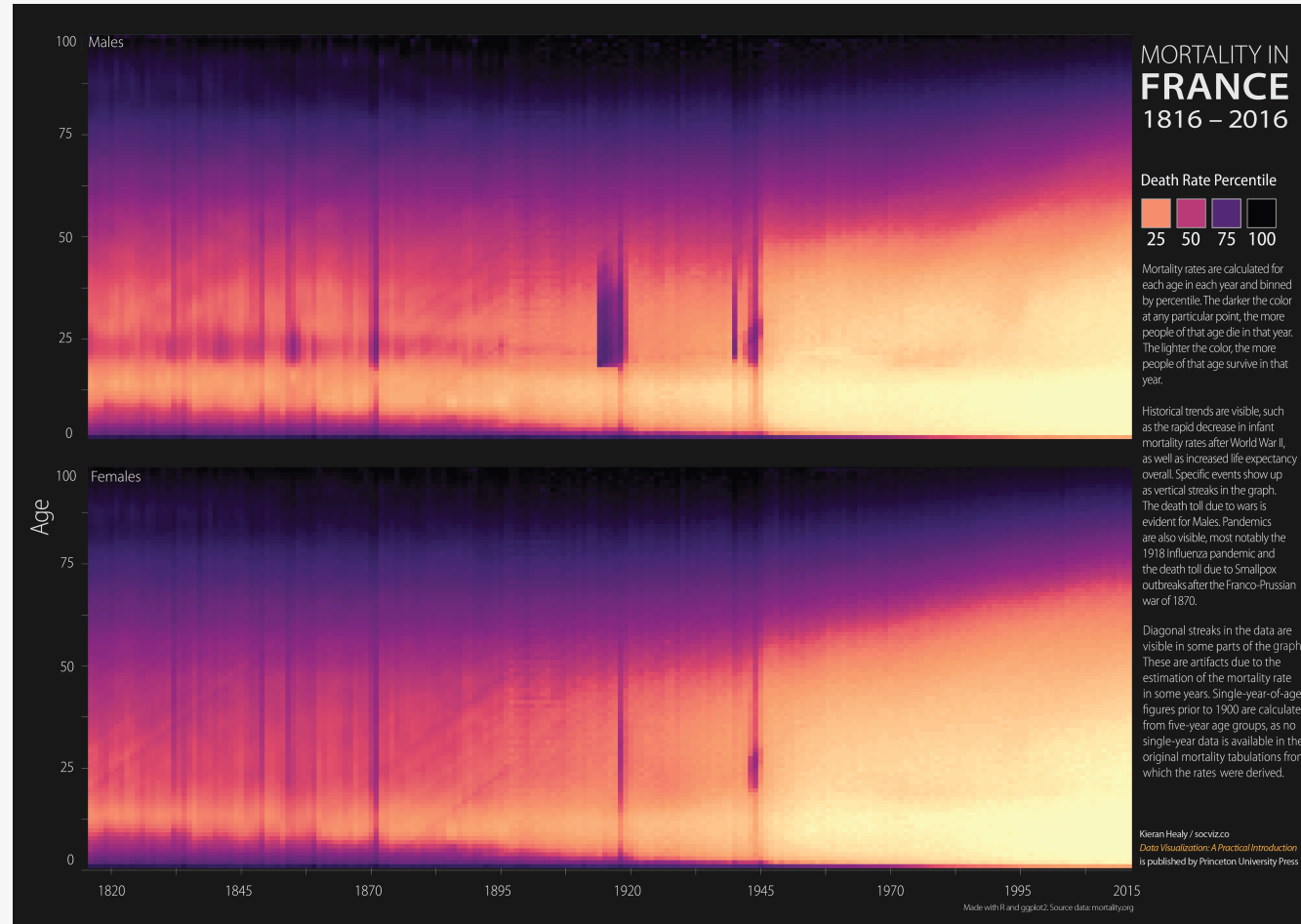
Several plots at once

# Show Ponies



Beeswarm plot

# Show Ponies

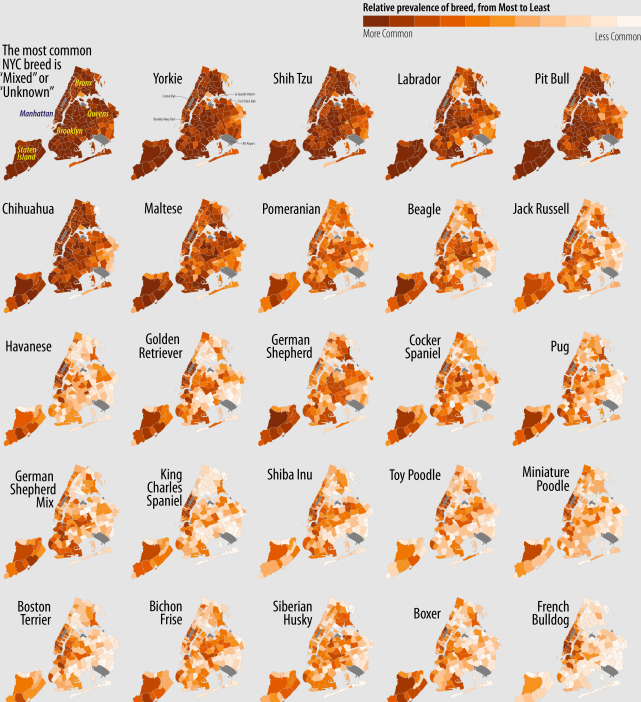


Lexis Surface

## Show Ponies

# Dogs of New York

Based on data from New York City's Dog Licensing System, these maps show the relative prevalence of the twenty five most common breeds of dog, by zip code.

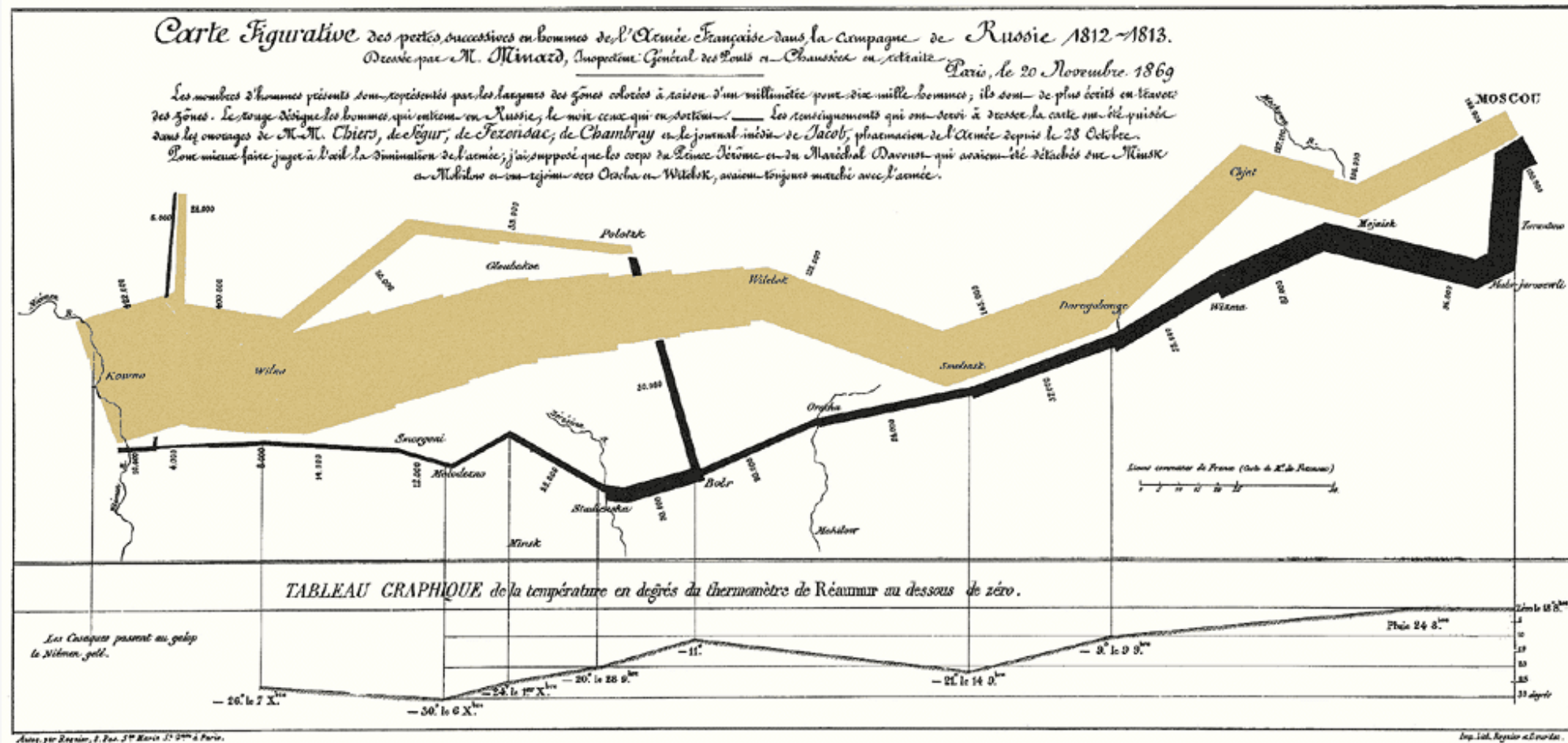


Kieran Healy / socviz.co / *Data Visualization: A Practical Introduction* is published by Princeton University Press

## Faceted maps

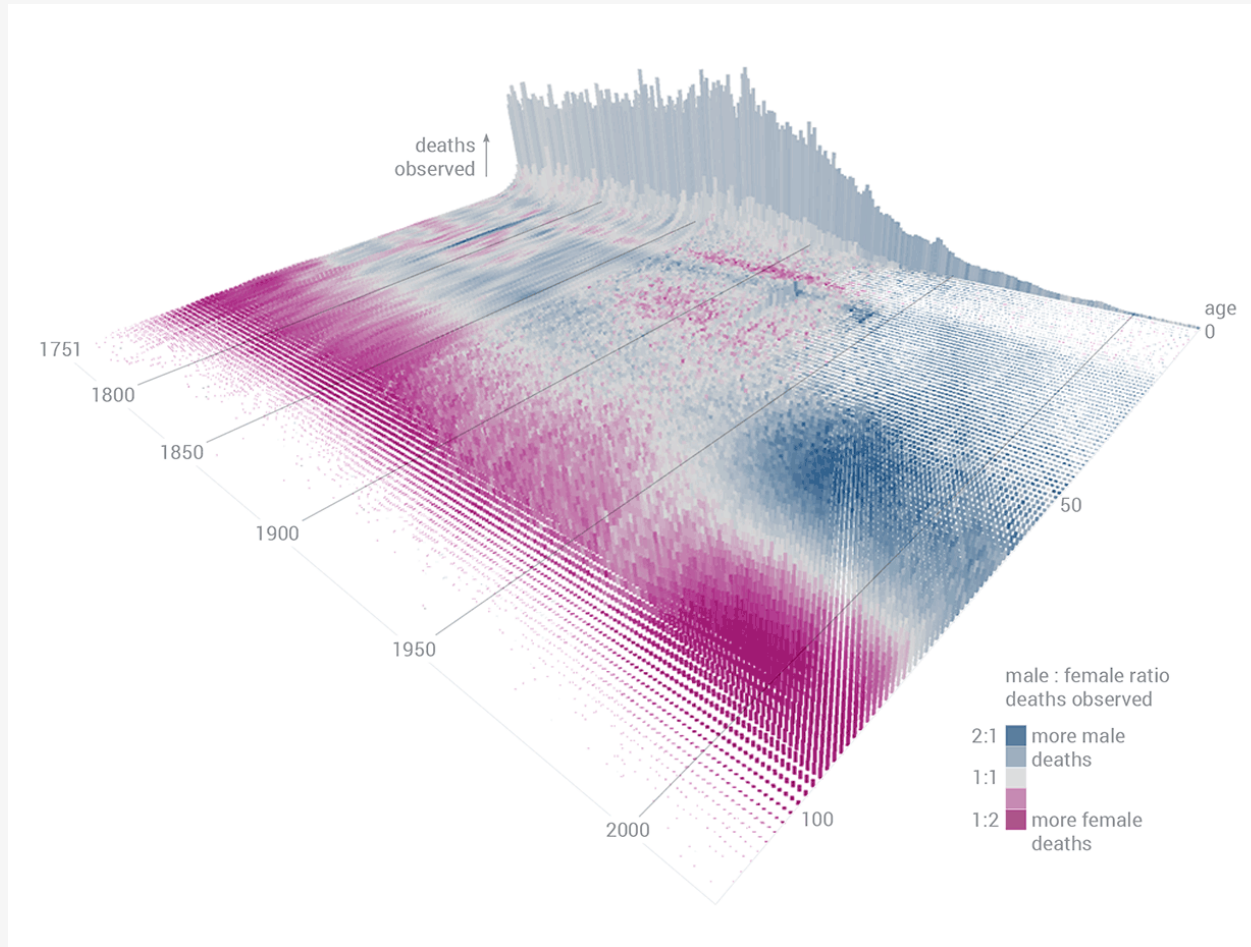


# Unicorns ...



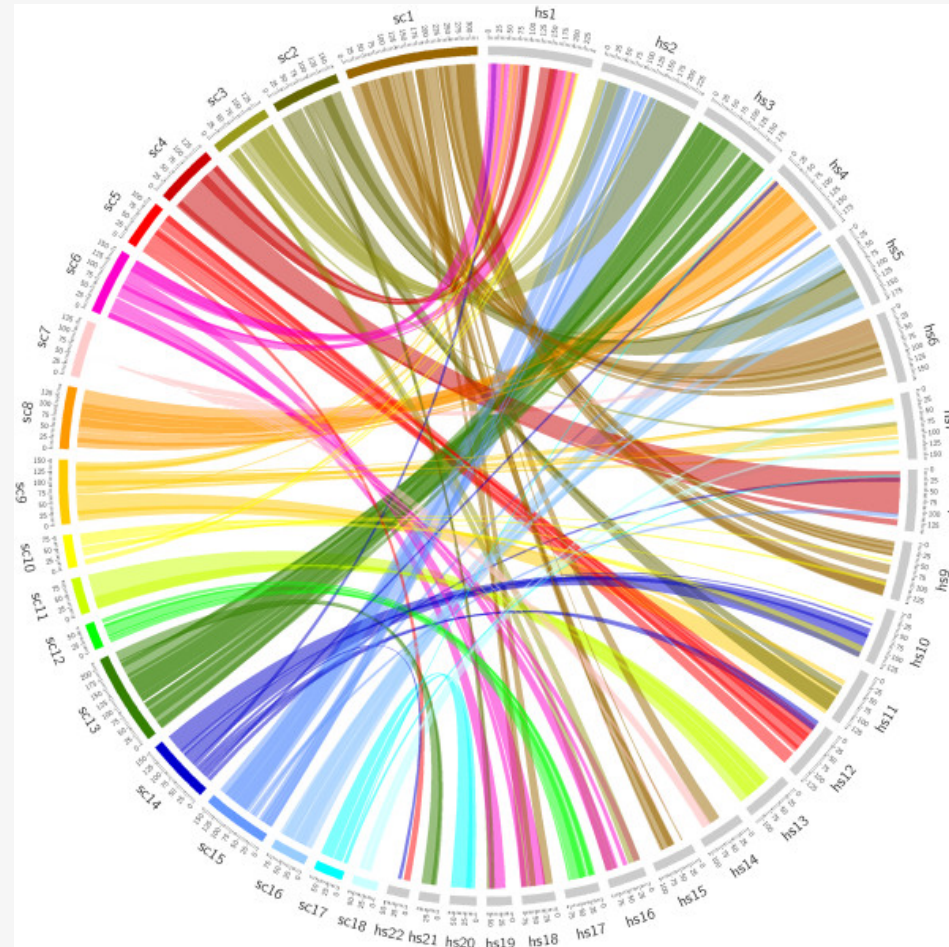
The inevitable Minard

# Unicorns ...



Swedish mortality

# ... or monsters



Network chords