

# Data Visualization - 1.

# Looking at Data (part 2)

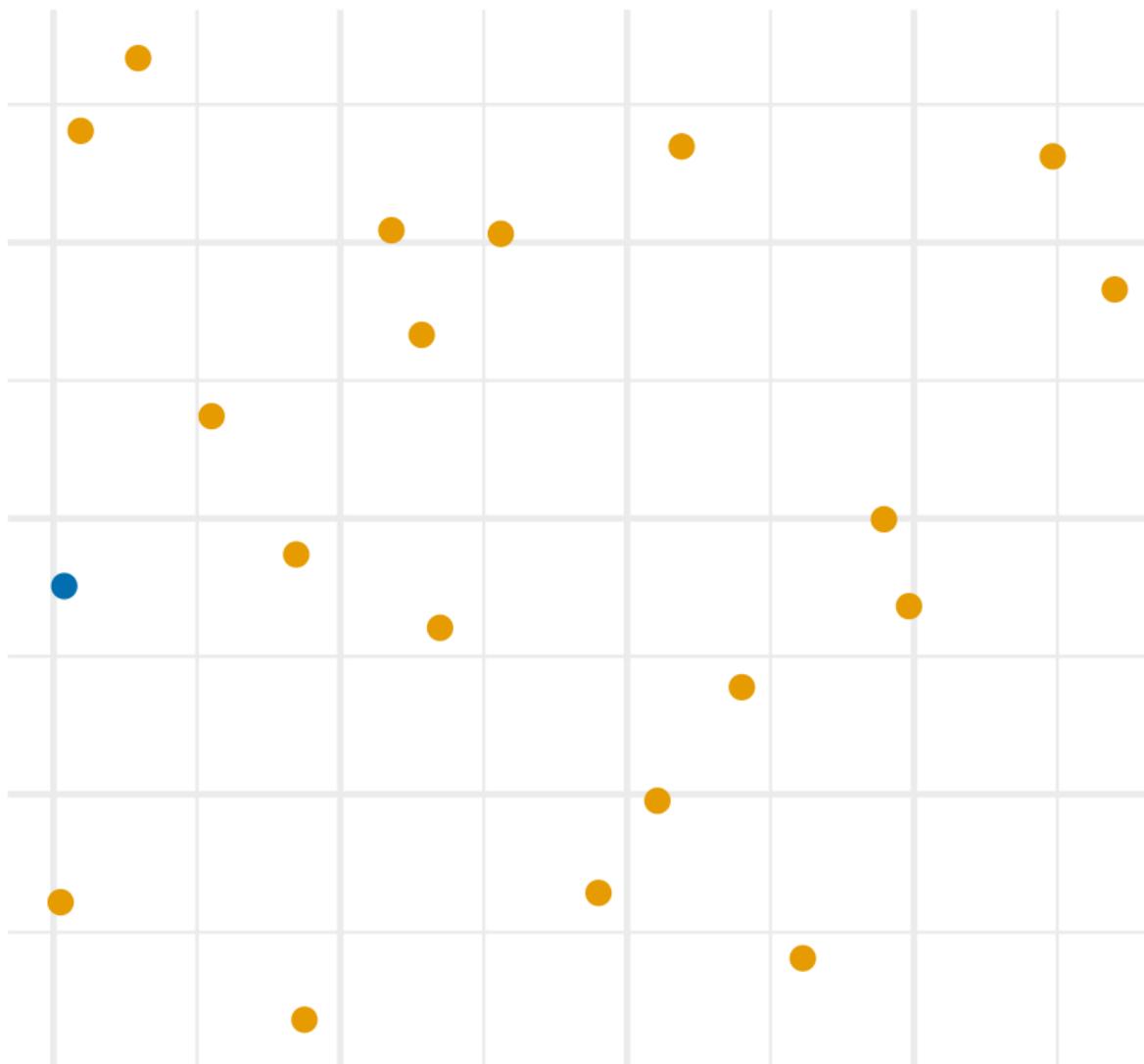
Kieran Healy  
Code Horizons

October 2024

# Looking at Data (part 2)

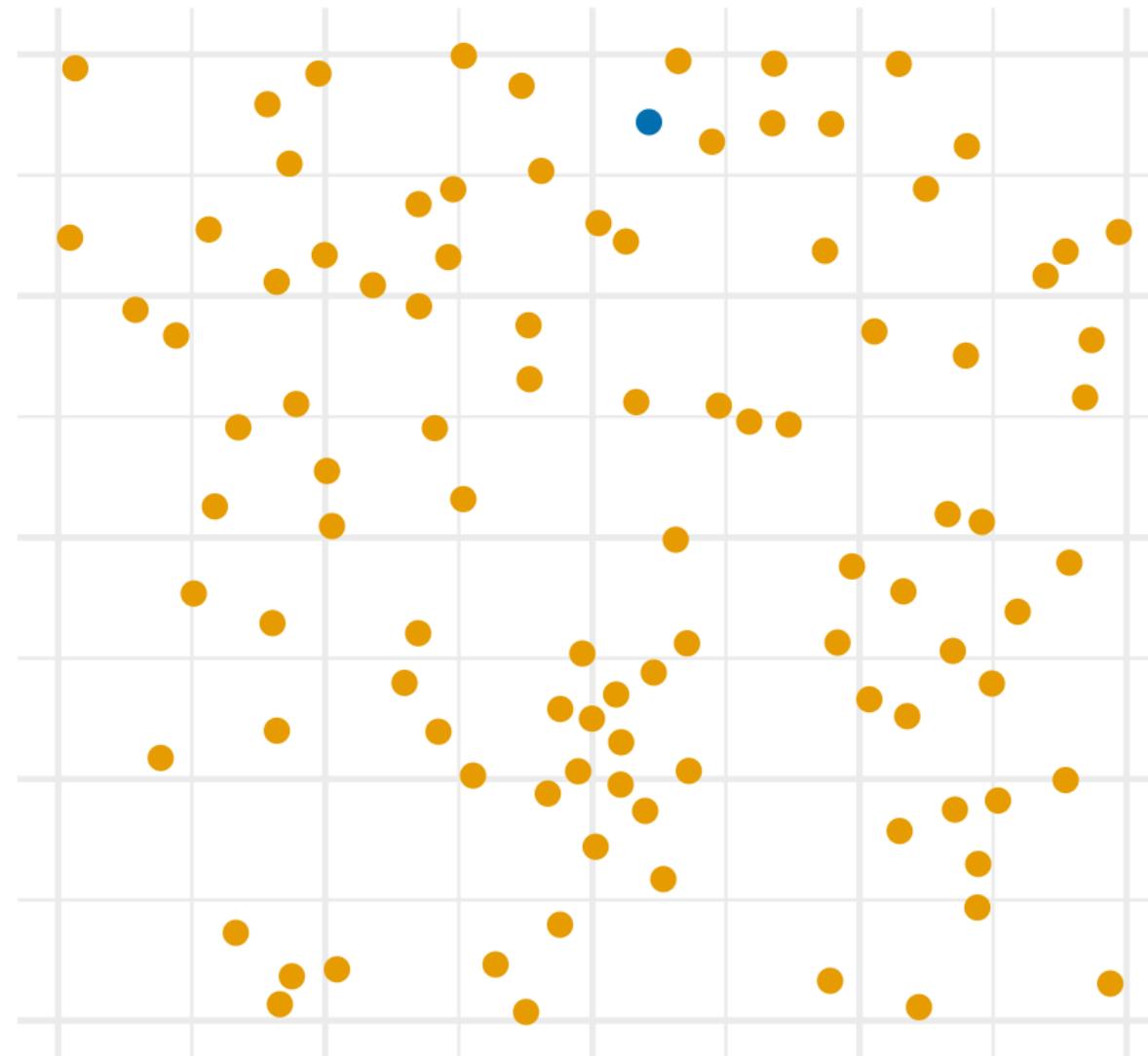
# Pre-Attentive Processing

# Color only, N = 20



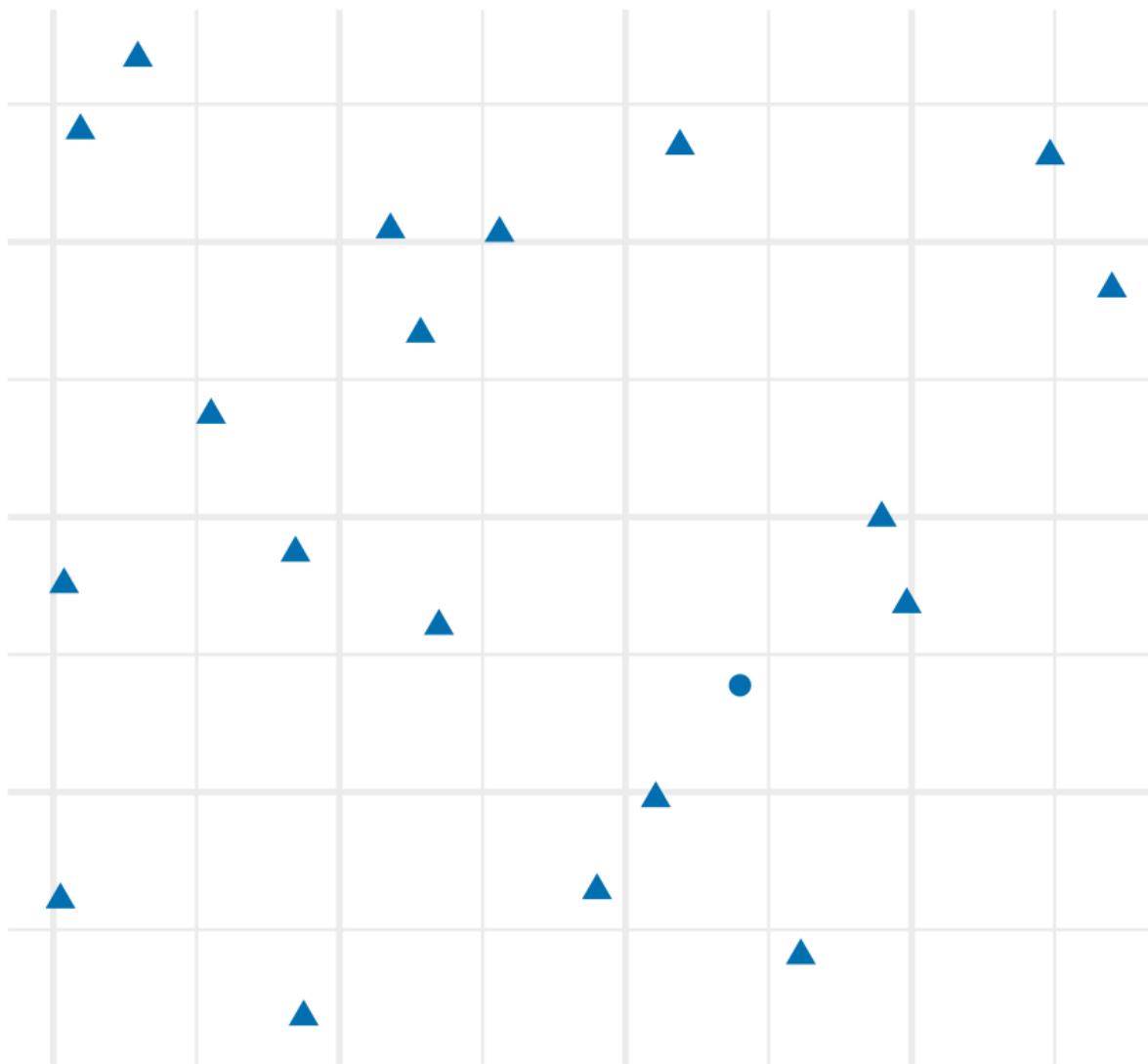
Color only, N = 20

# Color only, N = 100



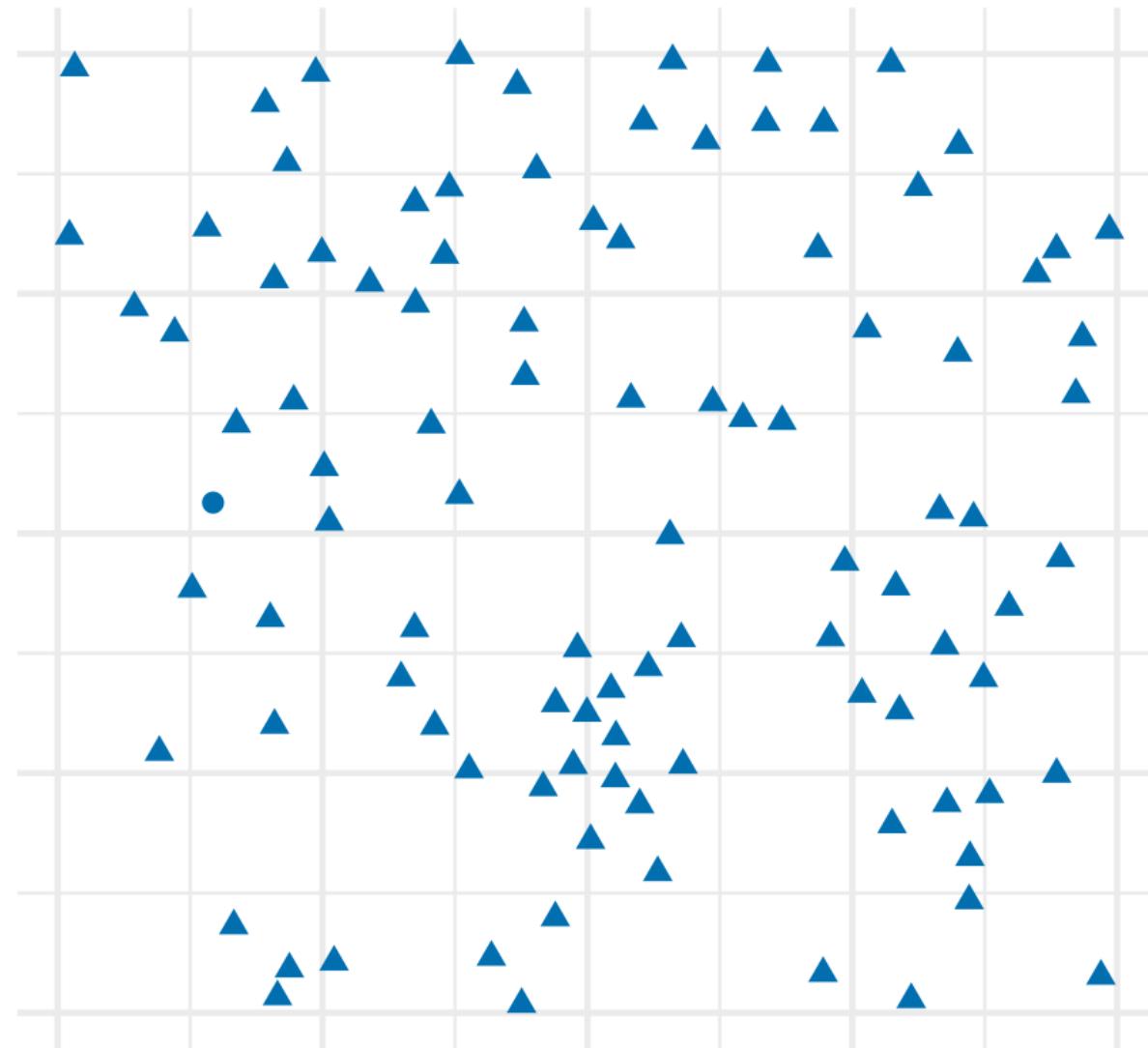
Color only, N = 100

# Shape only, N = 20



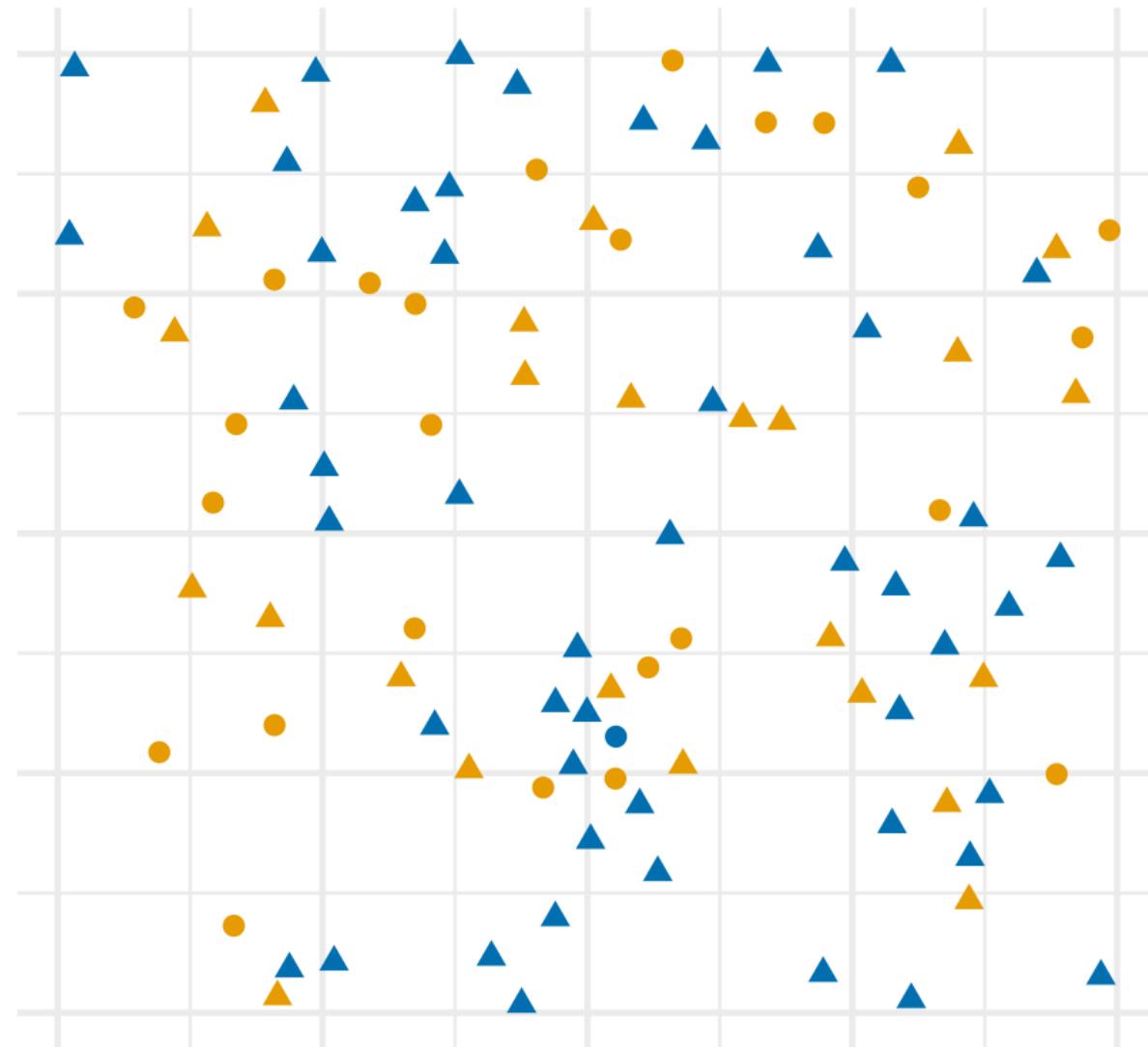
Shape only, N = 20

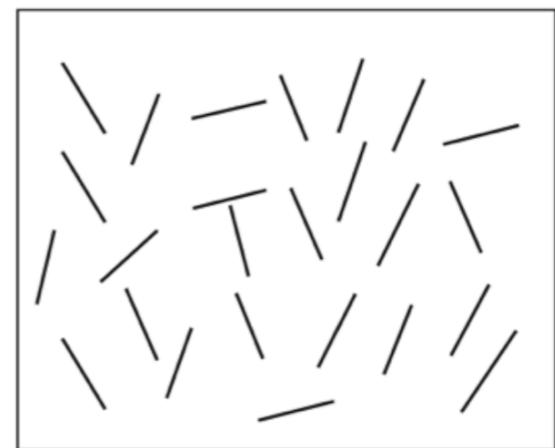
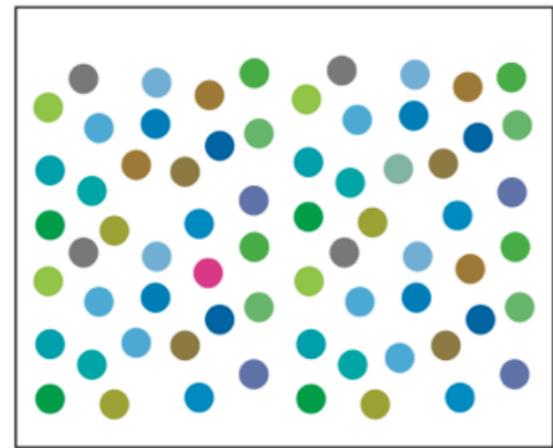
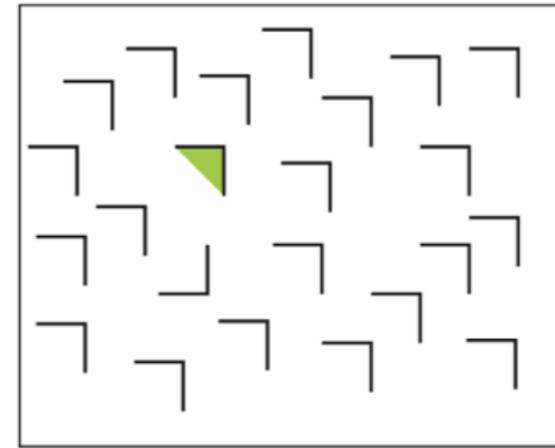
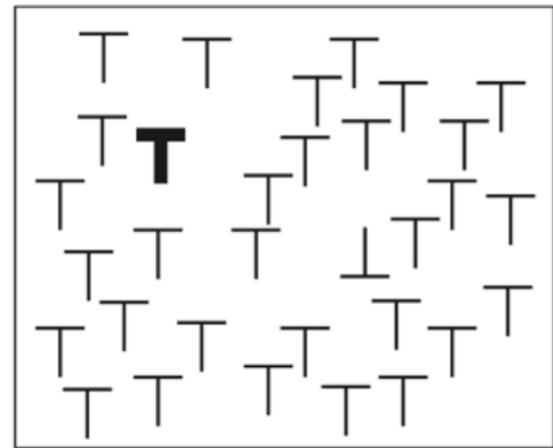
# Shape only, N = 100

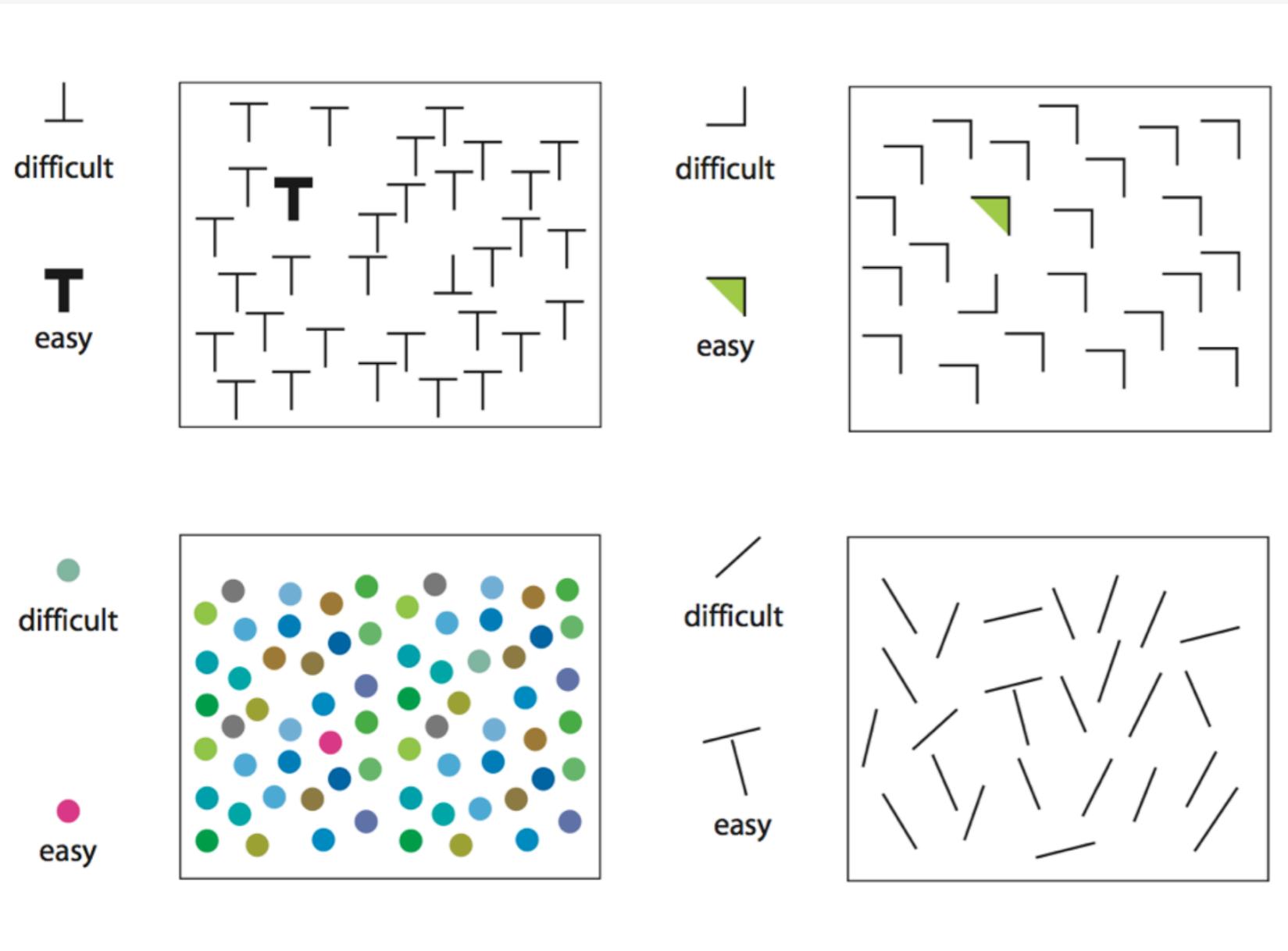


Shape only, N = 100

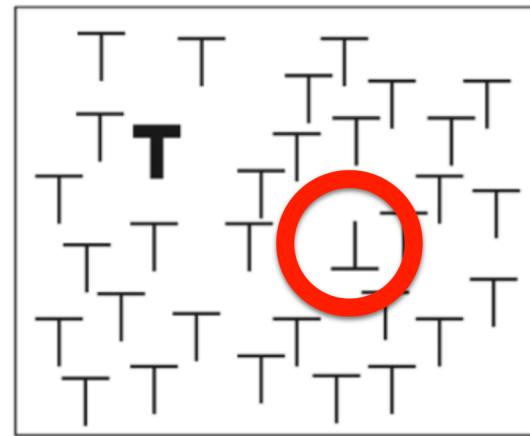
# Color and Shape, N = 100



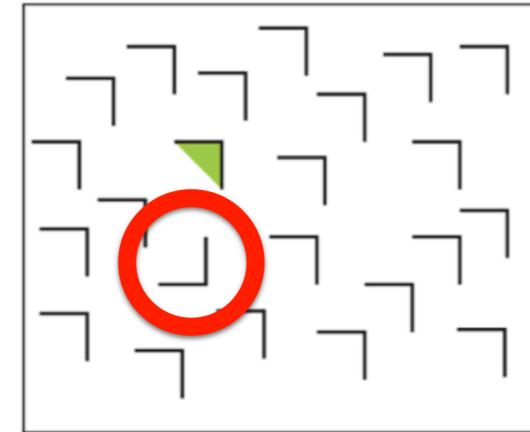




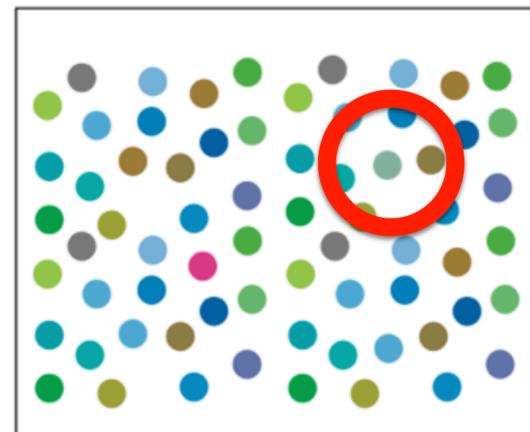
$\perp$   
difficult  
**T**  
easy



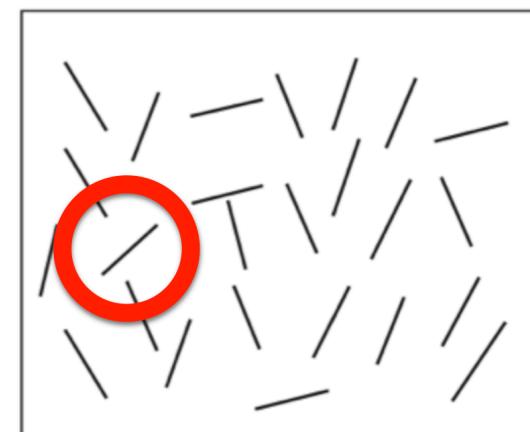
$\perp$   
difficult  
△  
easy



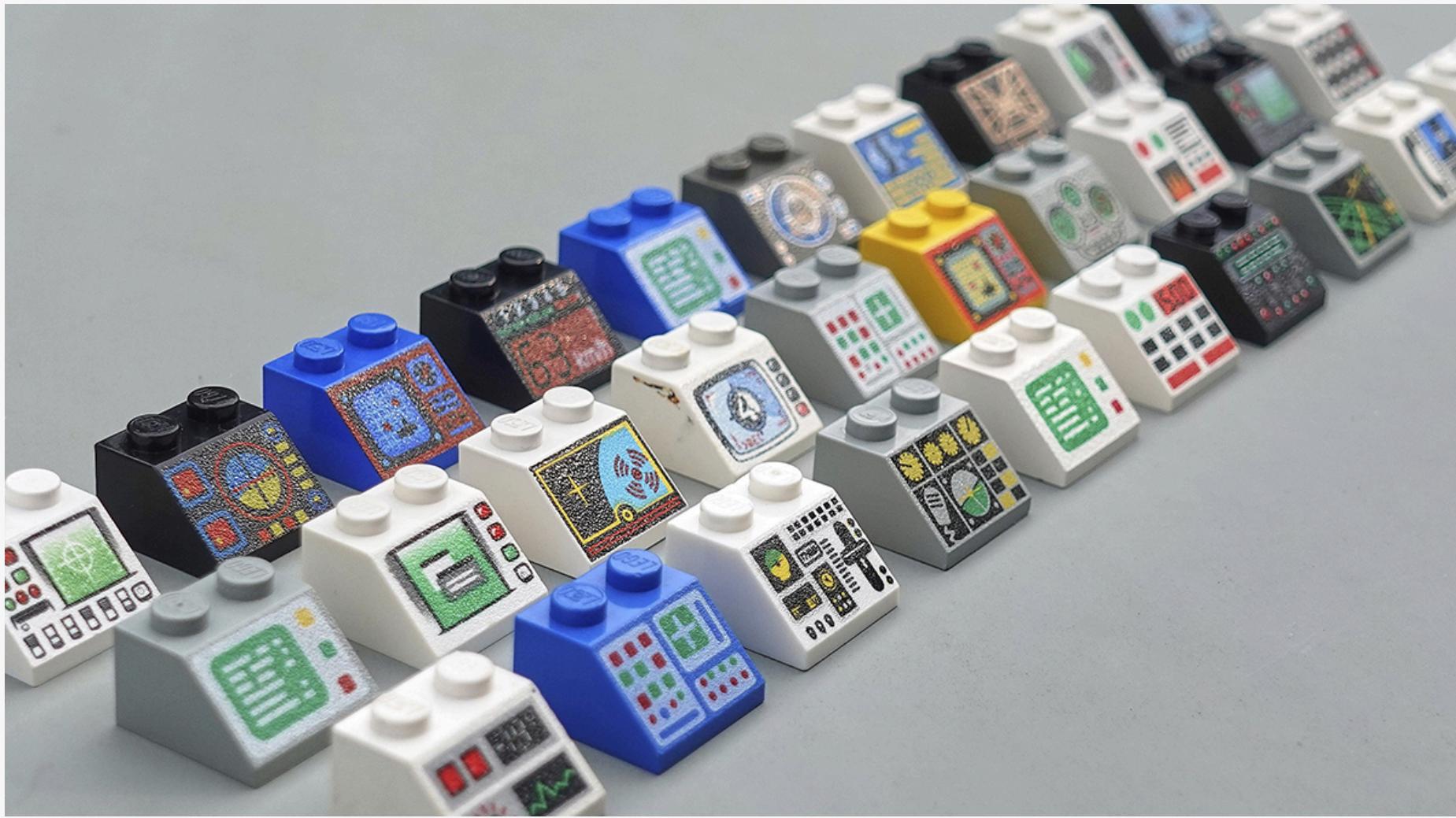
●  
difficult  
●  
easy



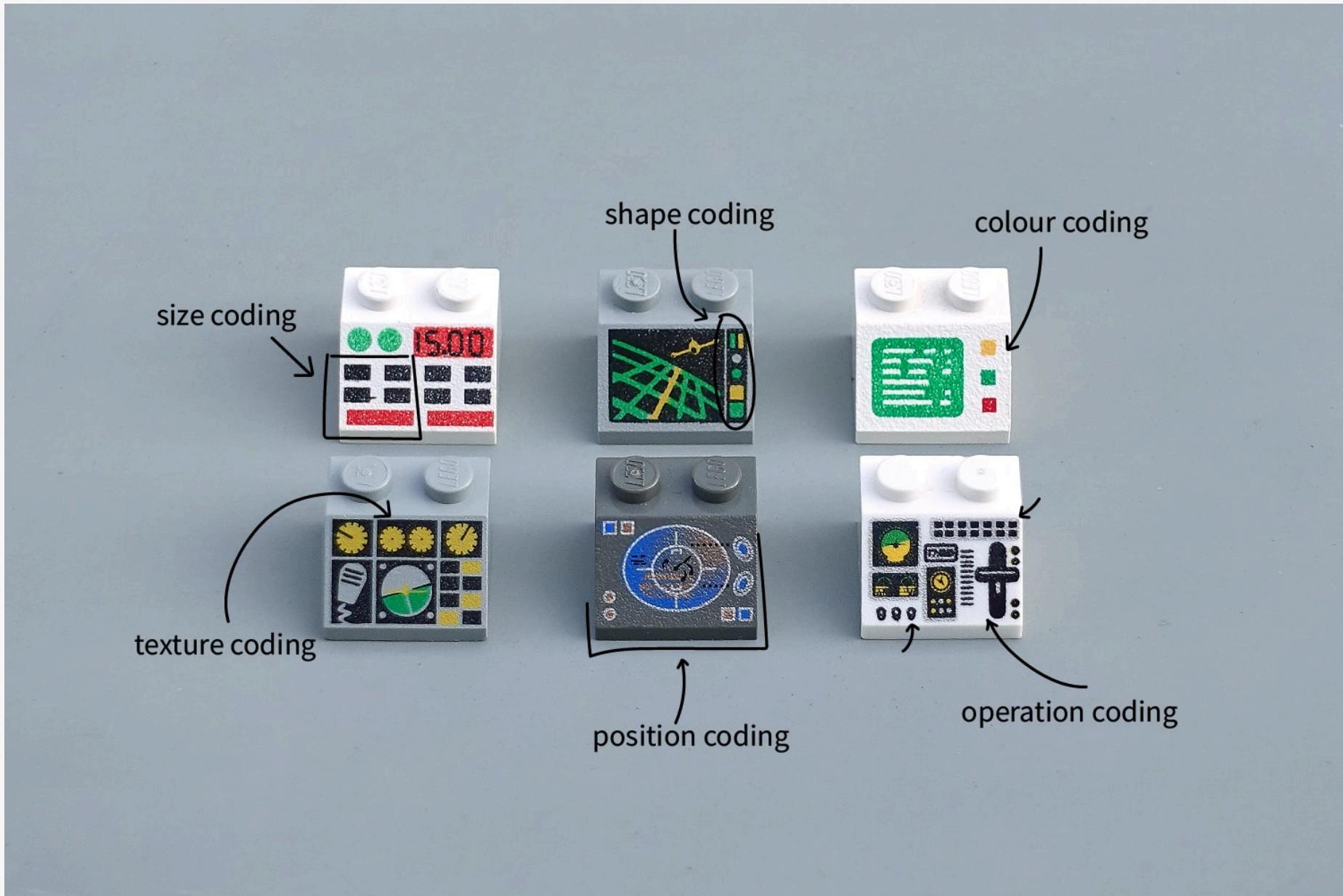
/  
difficult  
—\br/>easy

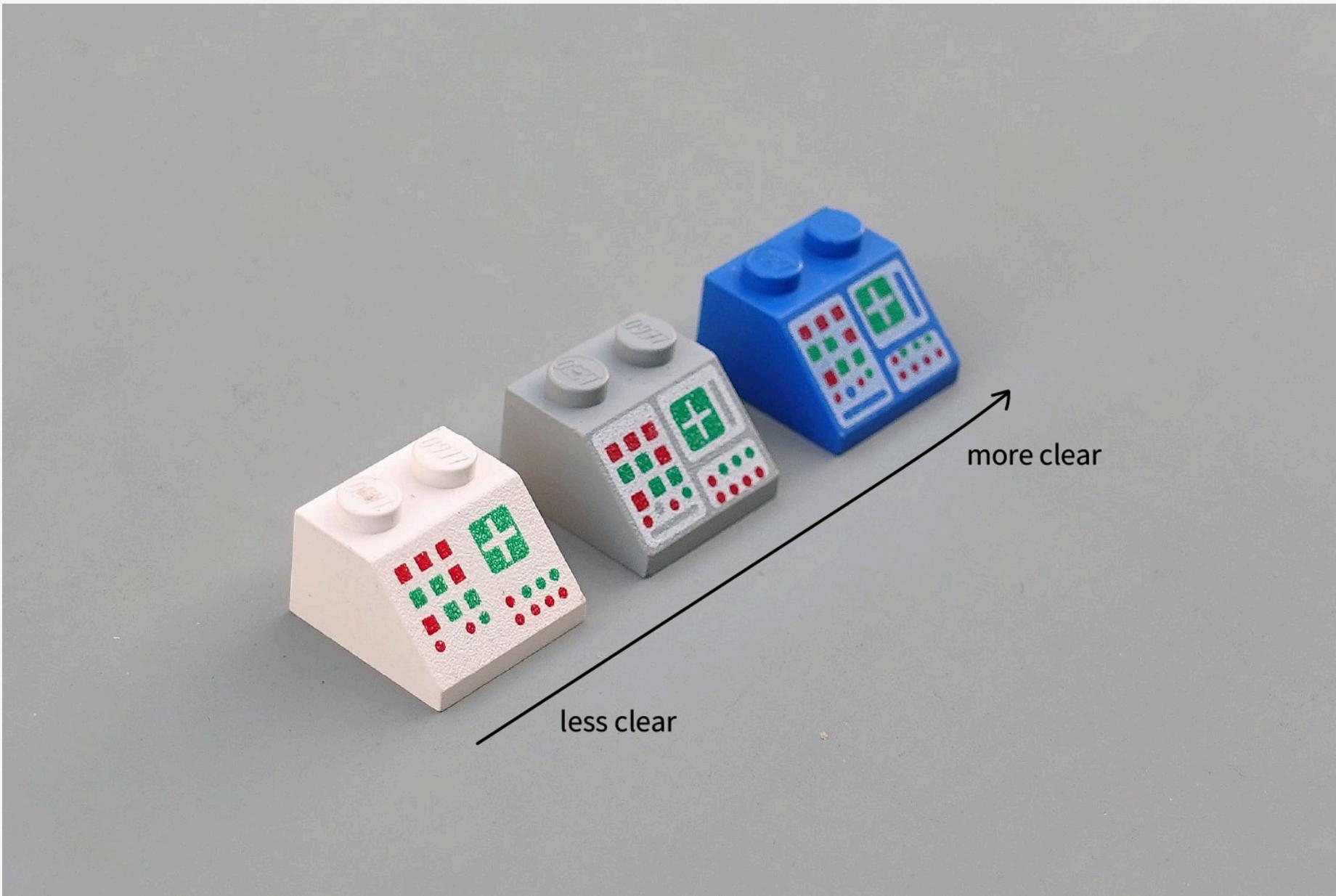


# Gestalt Inferences and Design

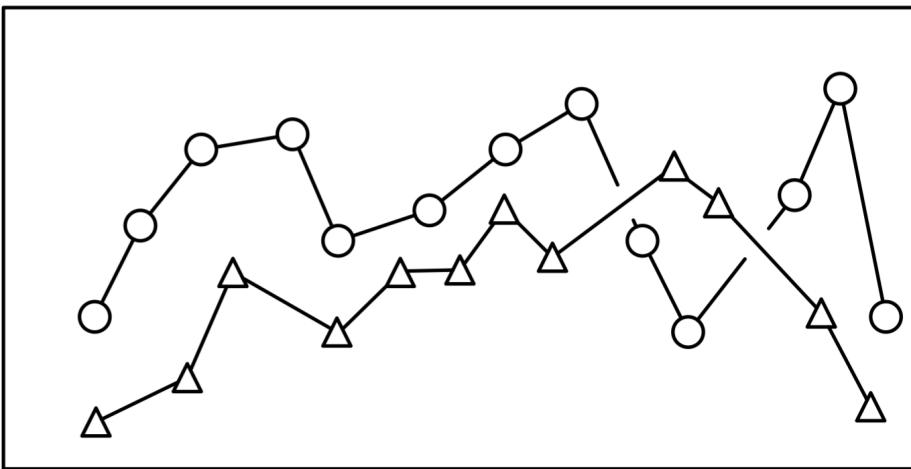
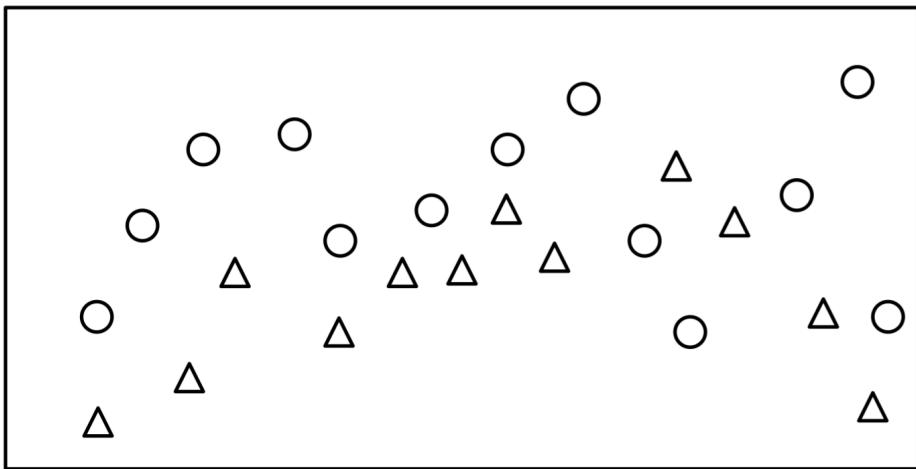
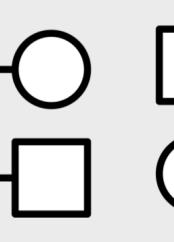
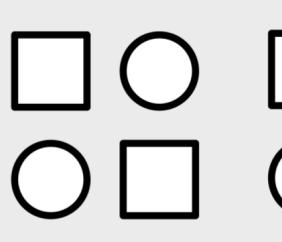
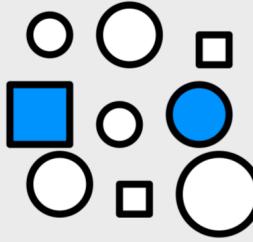
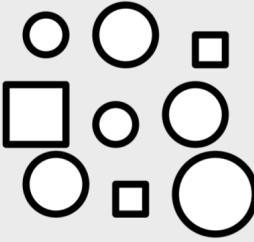
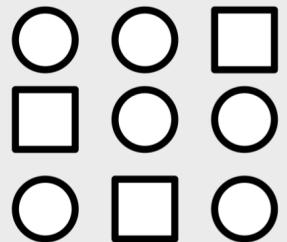
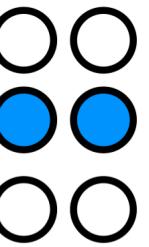
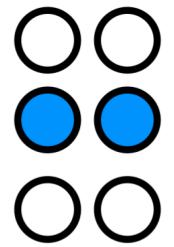
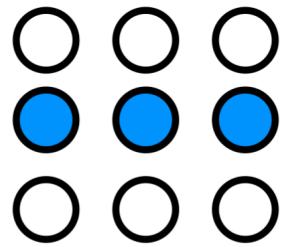
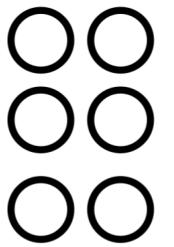
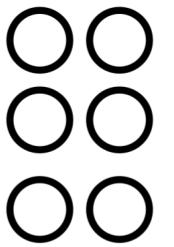
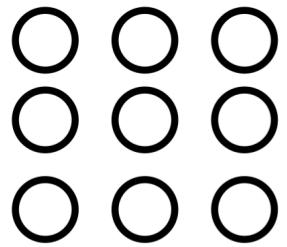


George Cave





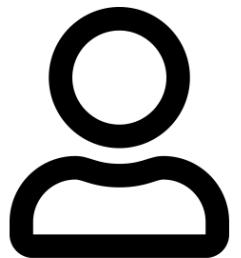
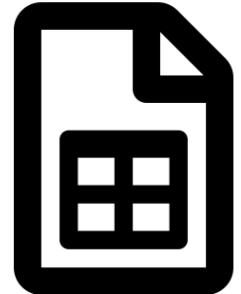
George Cave



Encodings or mappings for  
data

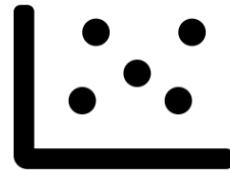
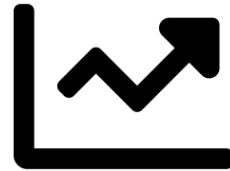
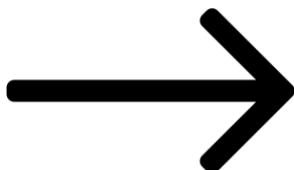
What's a graph,  
anyway?

Data

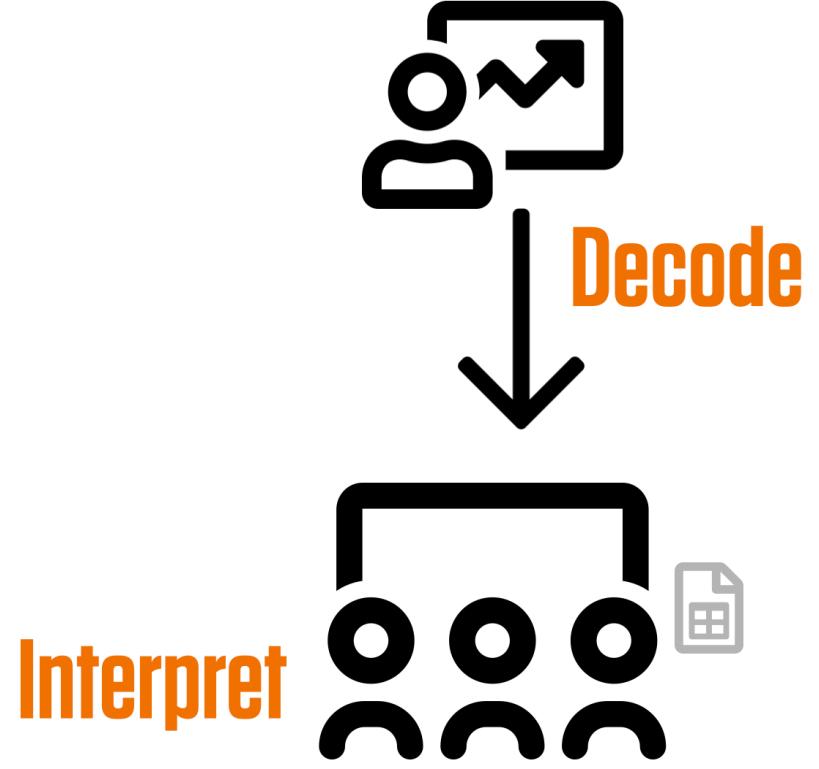


Encoded

or mapped

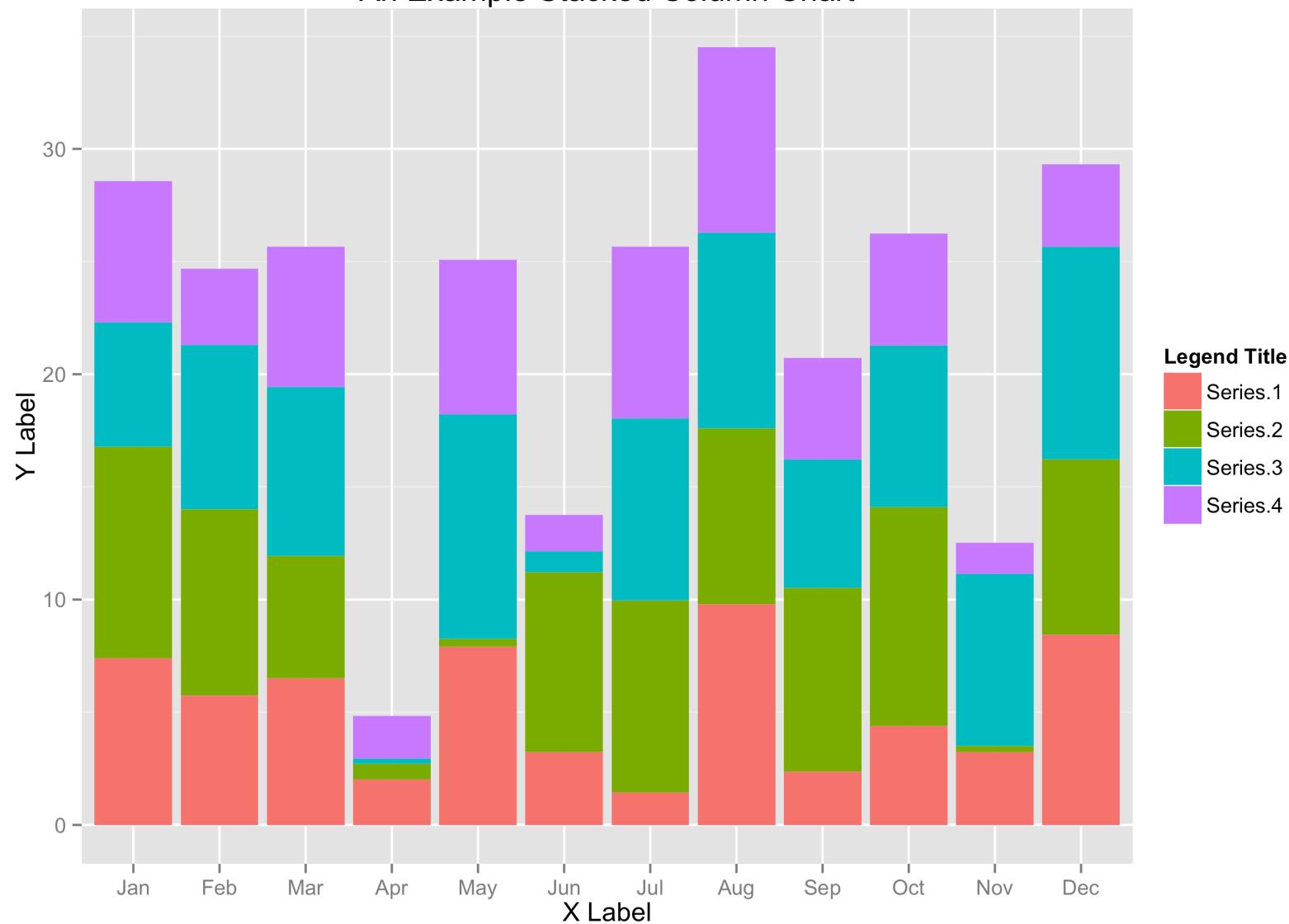


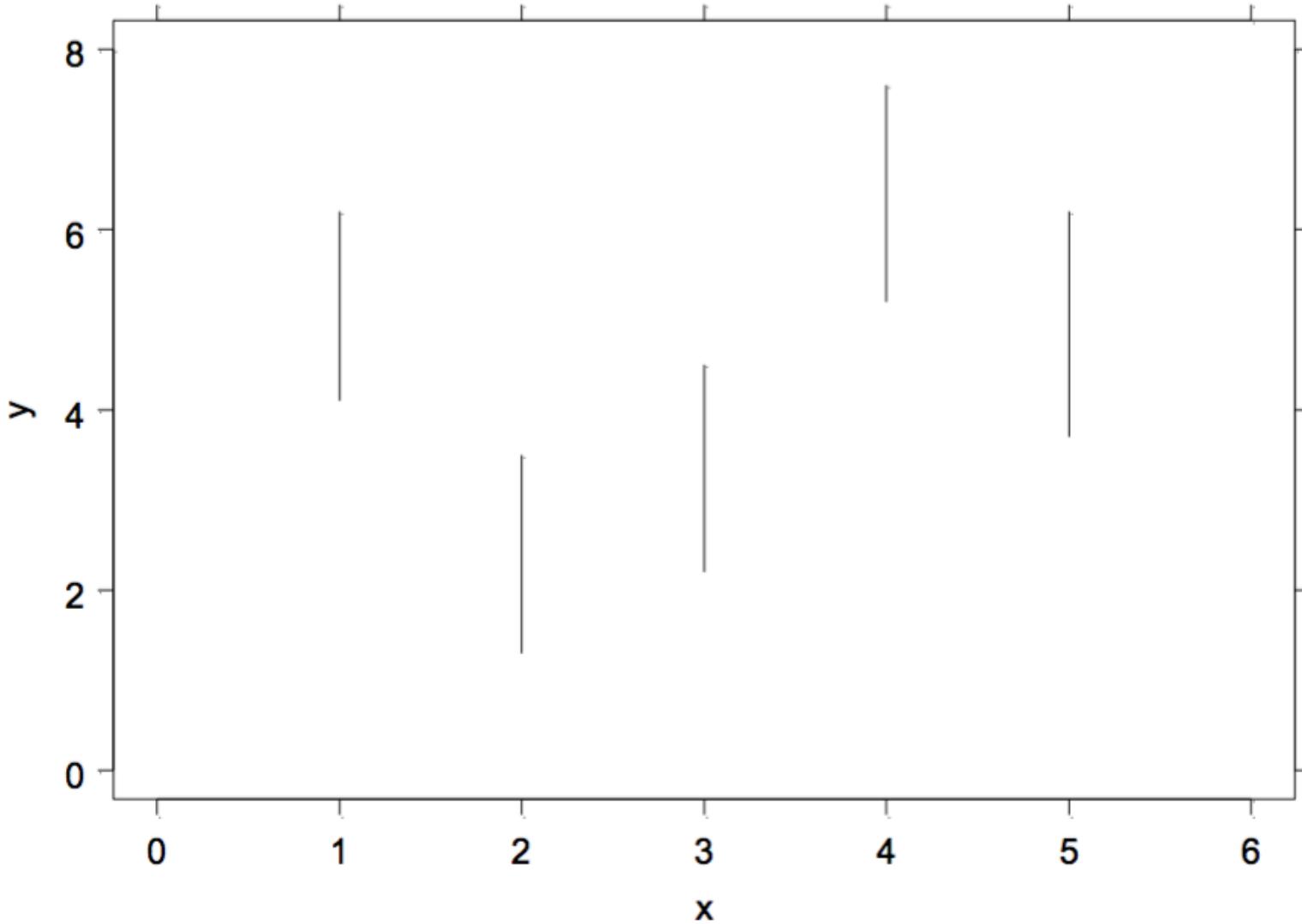
Some sort of  
faithful visual  
representation



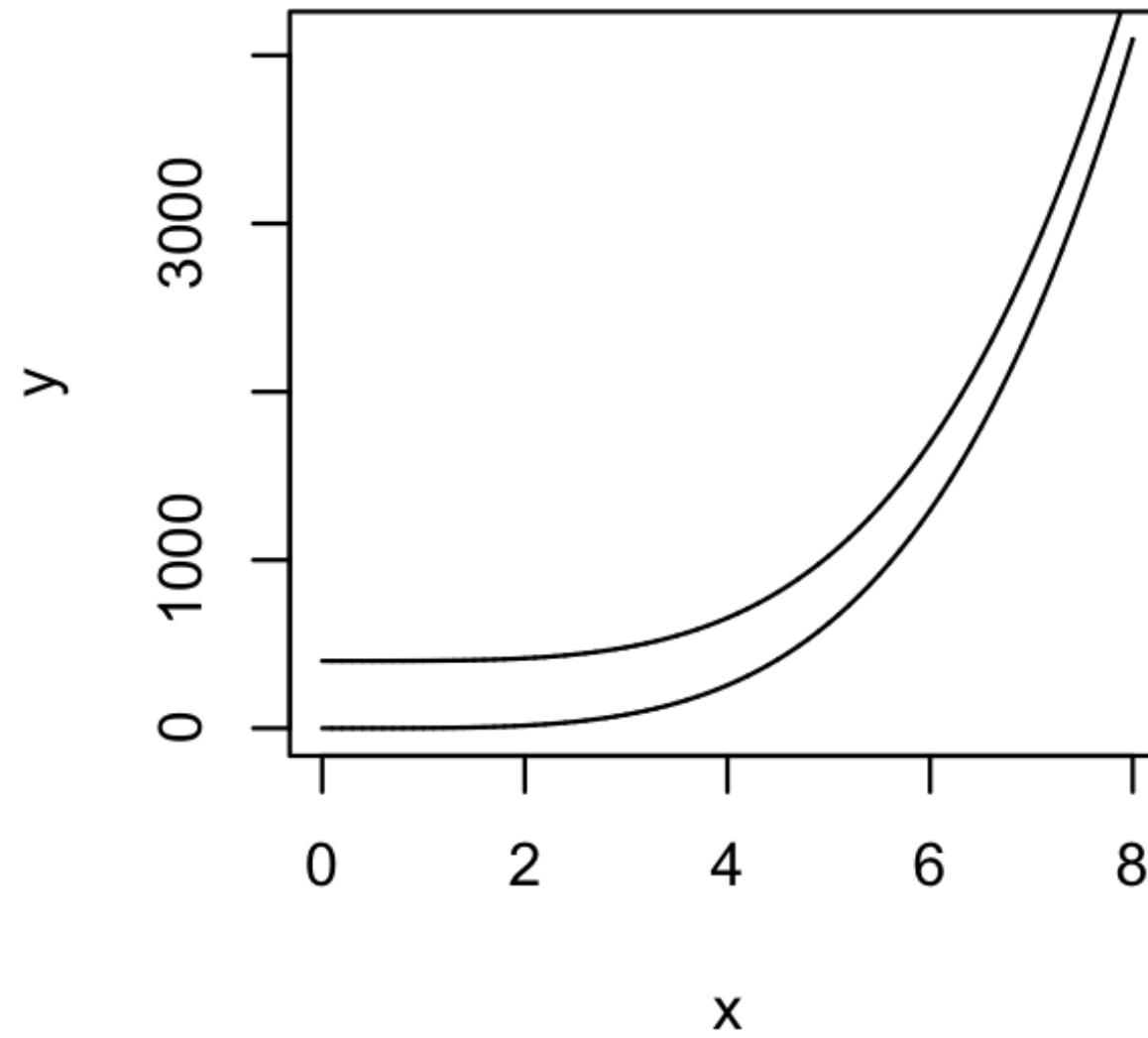
# Visual tasks in decoding graphs

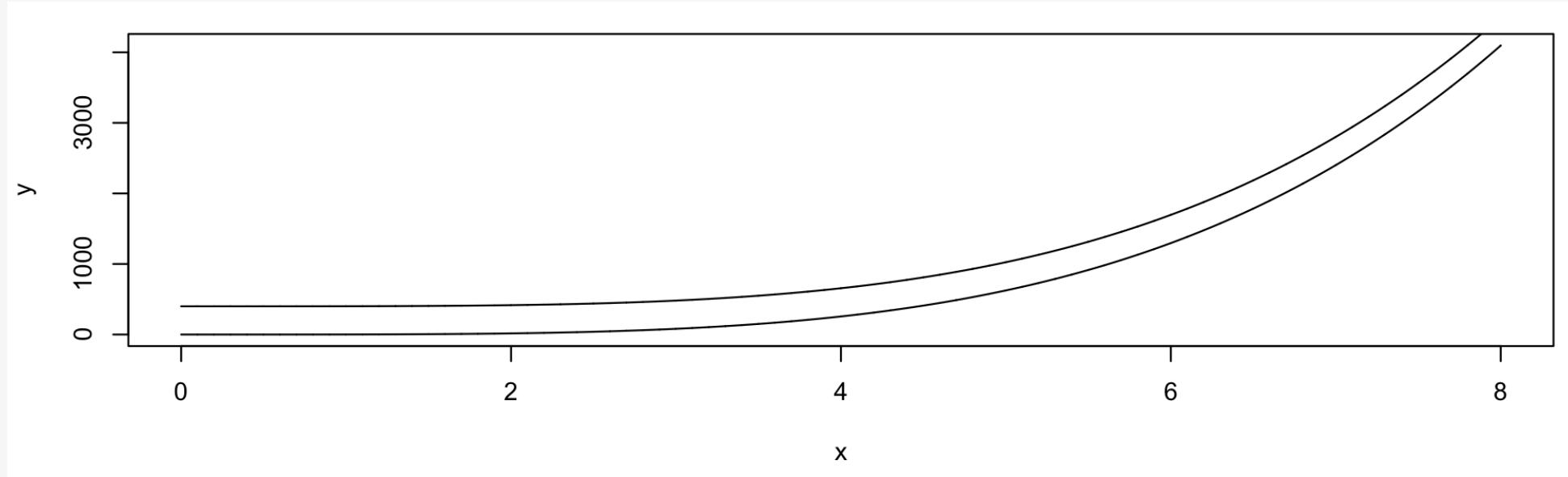
### An Example Stacked Column Chart



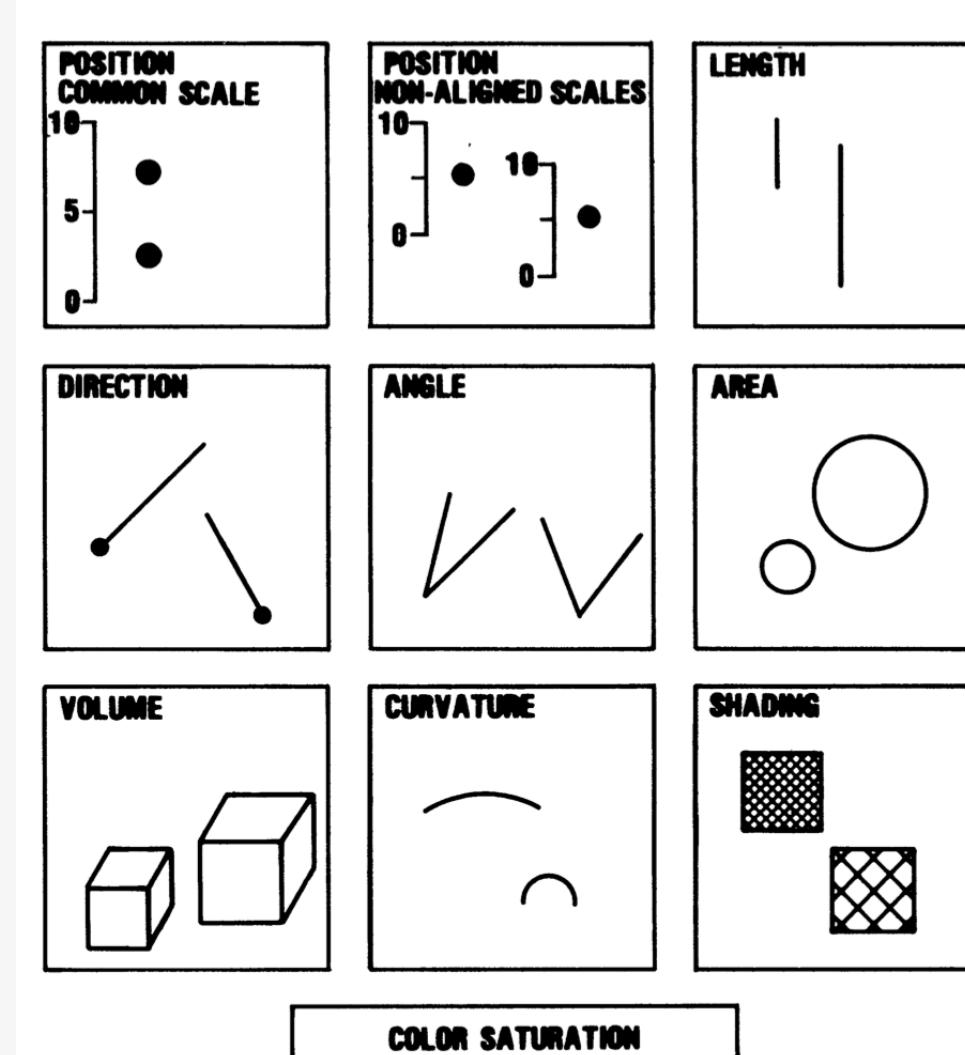


William Cleveland

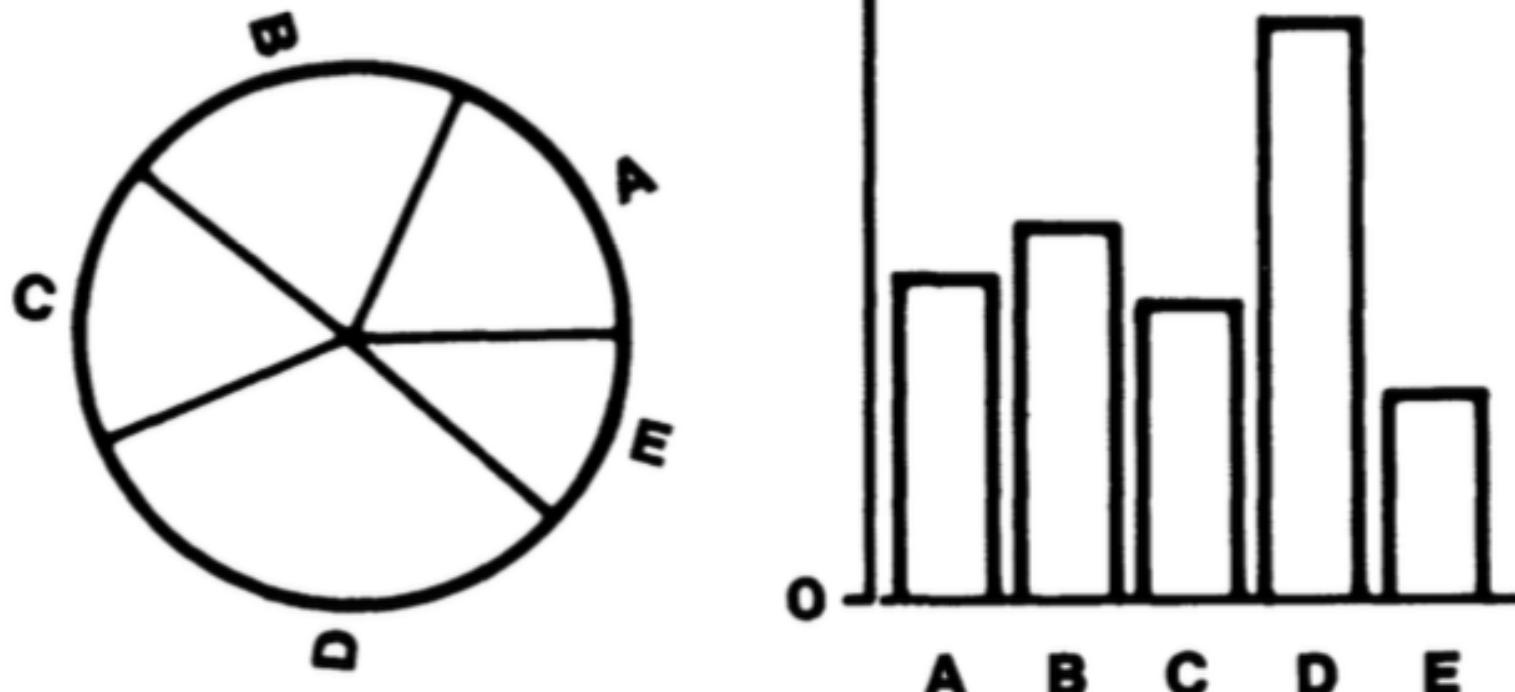




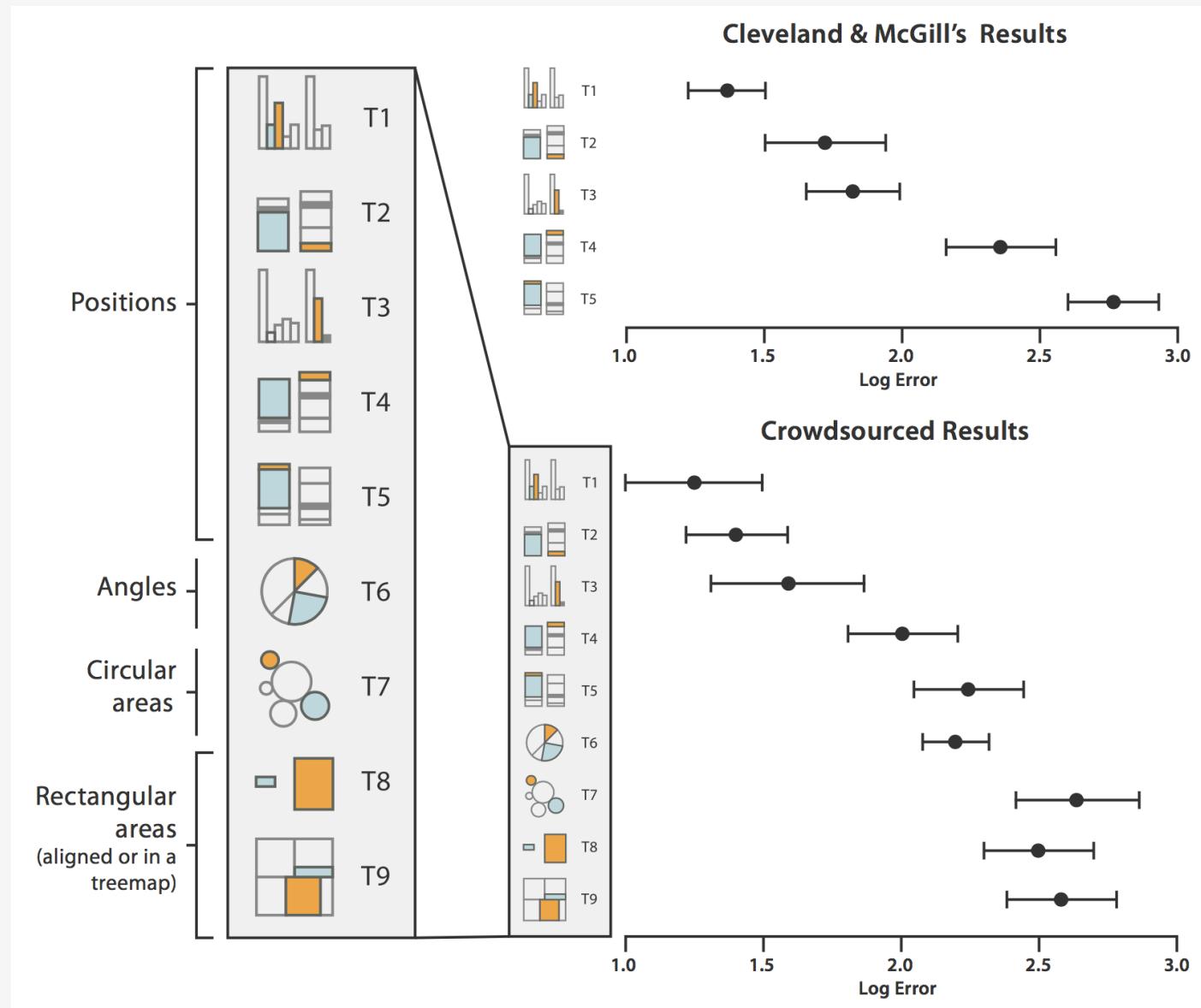
William Cleveland



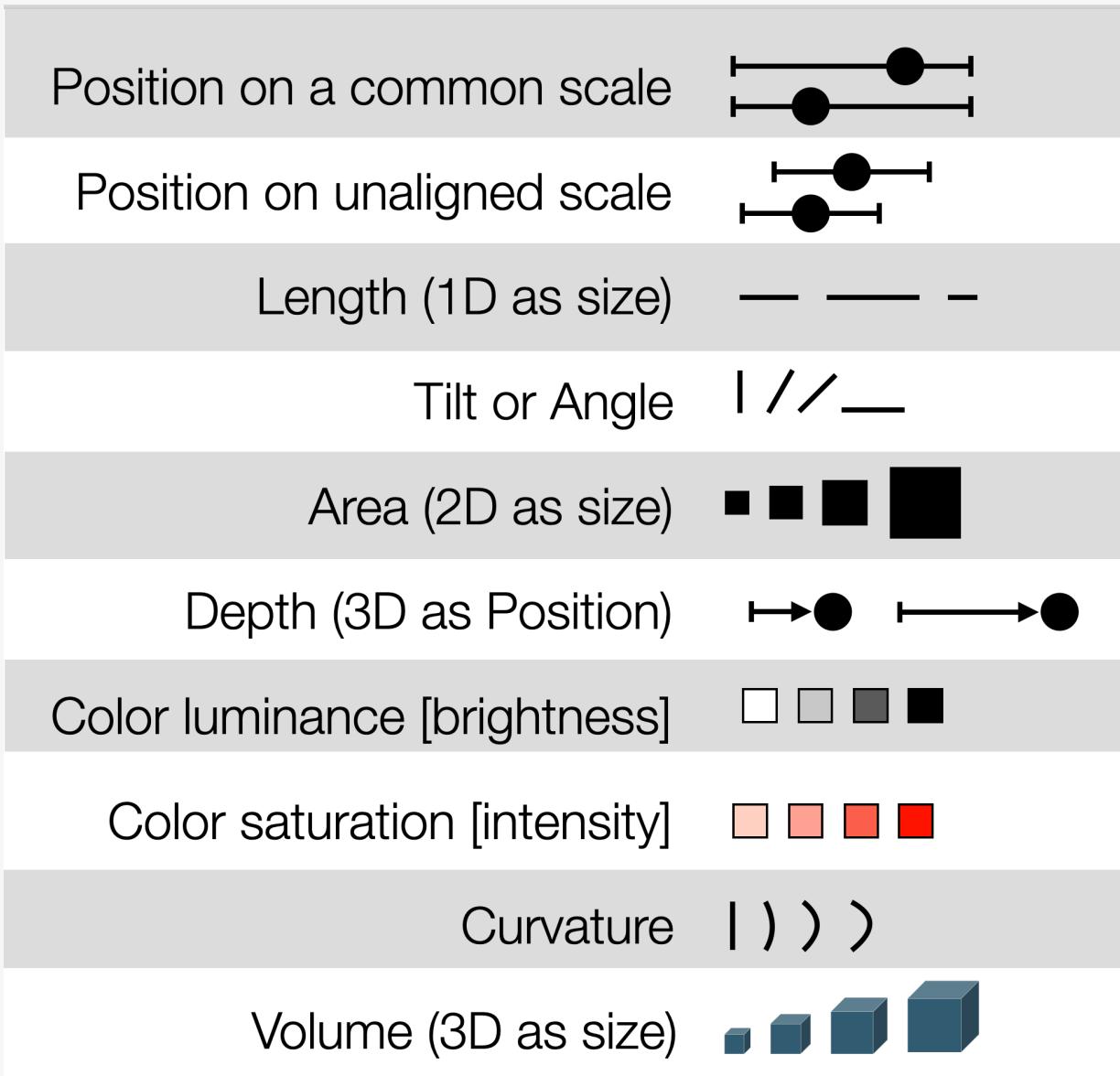
*Figure 1. Elementary perceptual tasks.*



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



A rough hierarchy of  
mappings for data



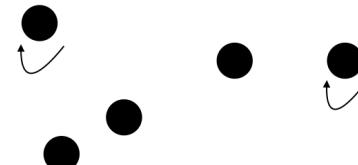
Spatial Region



Color [hue]



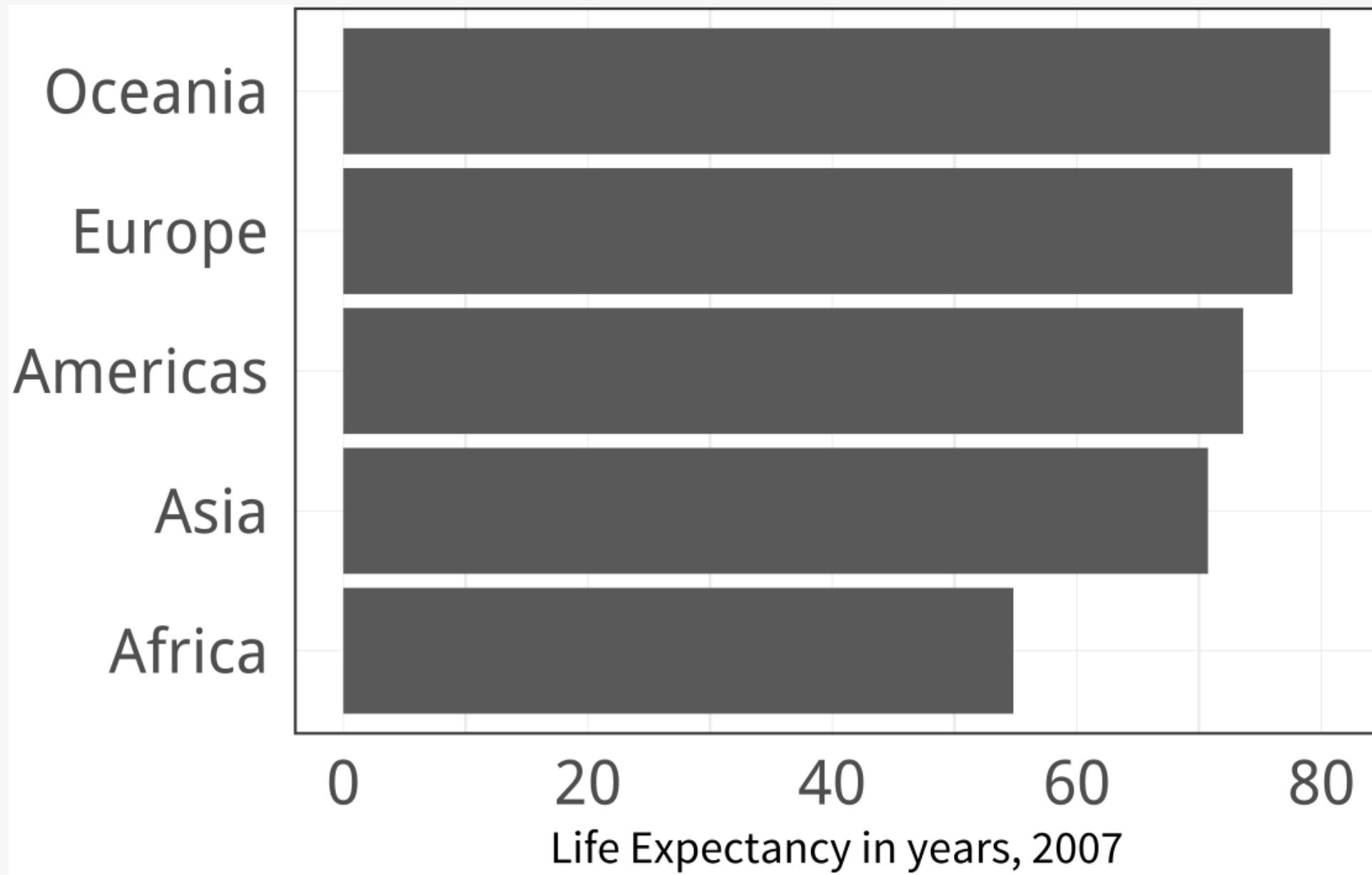
Motion



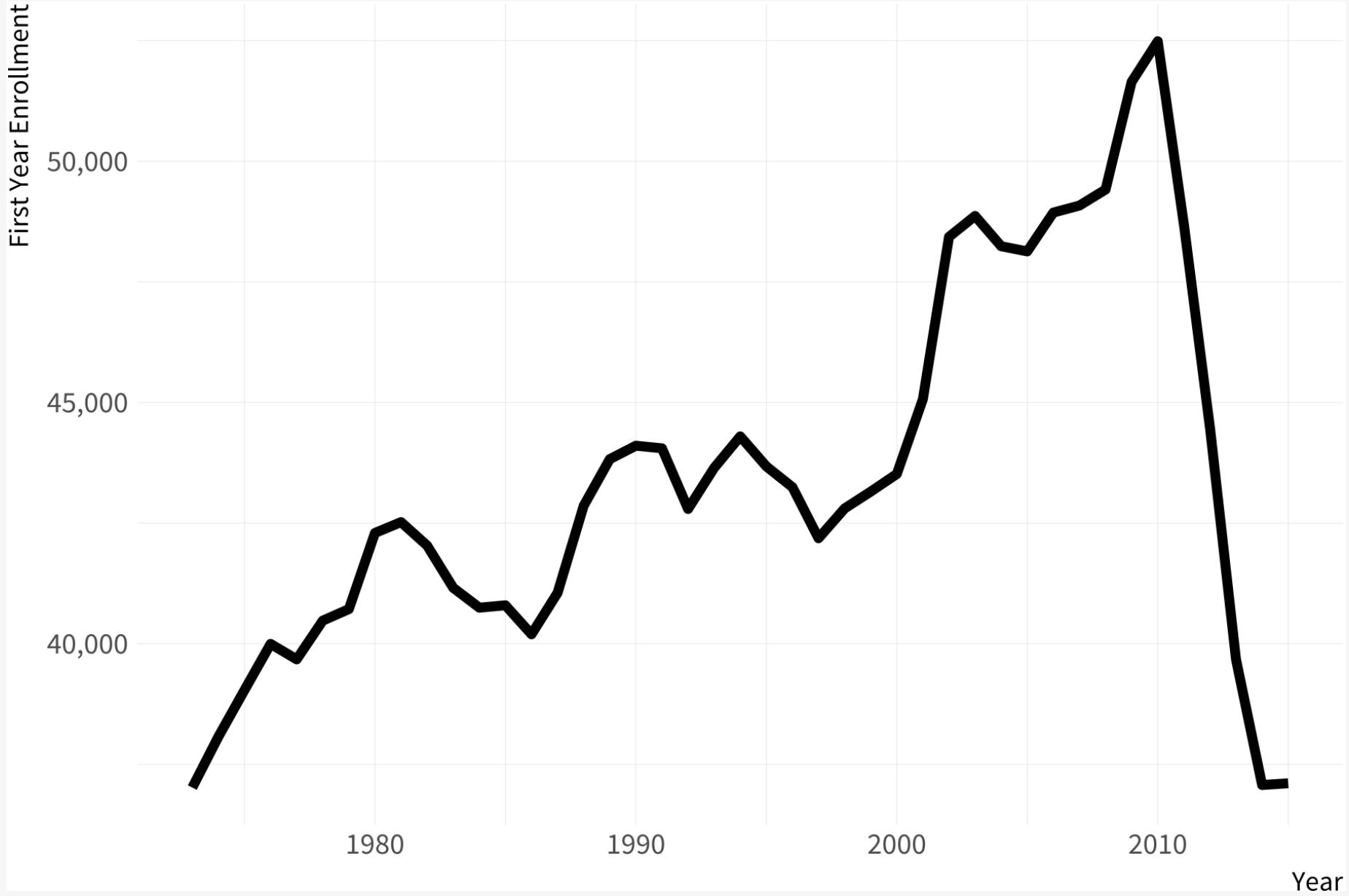
Shape

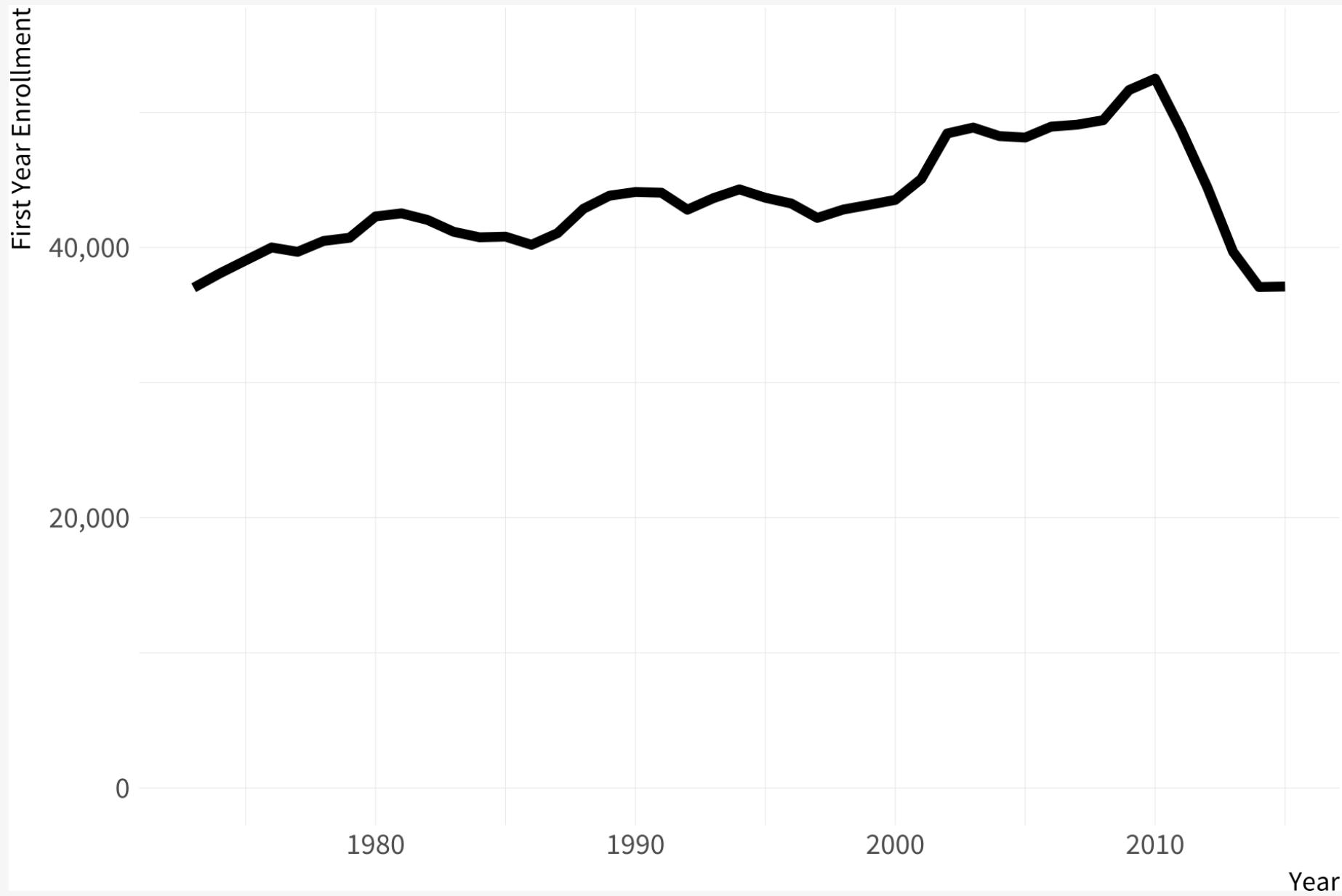


Honesty & judgment









# CLARITY

**CLARITY**  
**HONESTY**

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

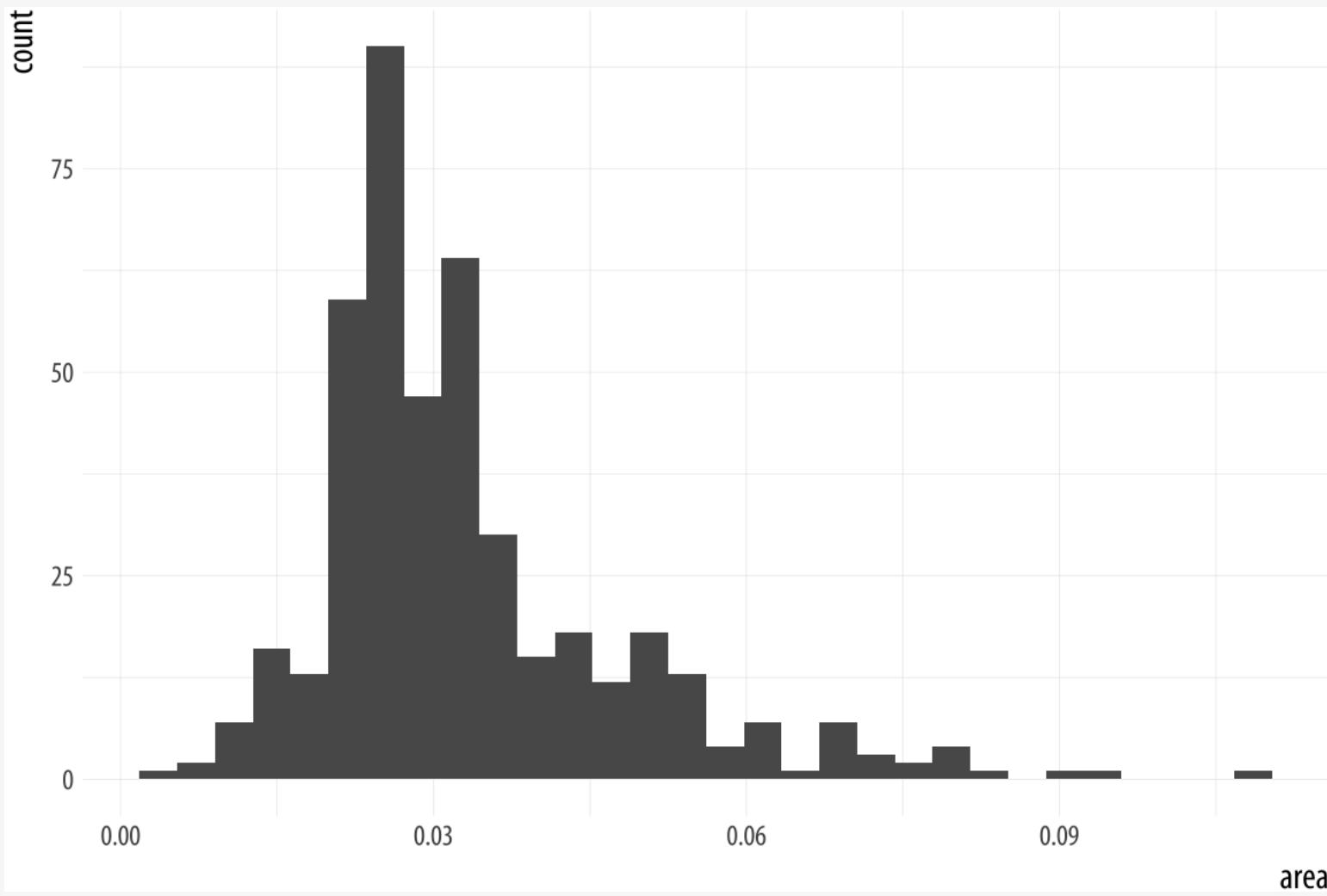
# CONTEXT

# CONTEXT CONVENTION

**CONTEXT  
CONVENTION  
MEANING**

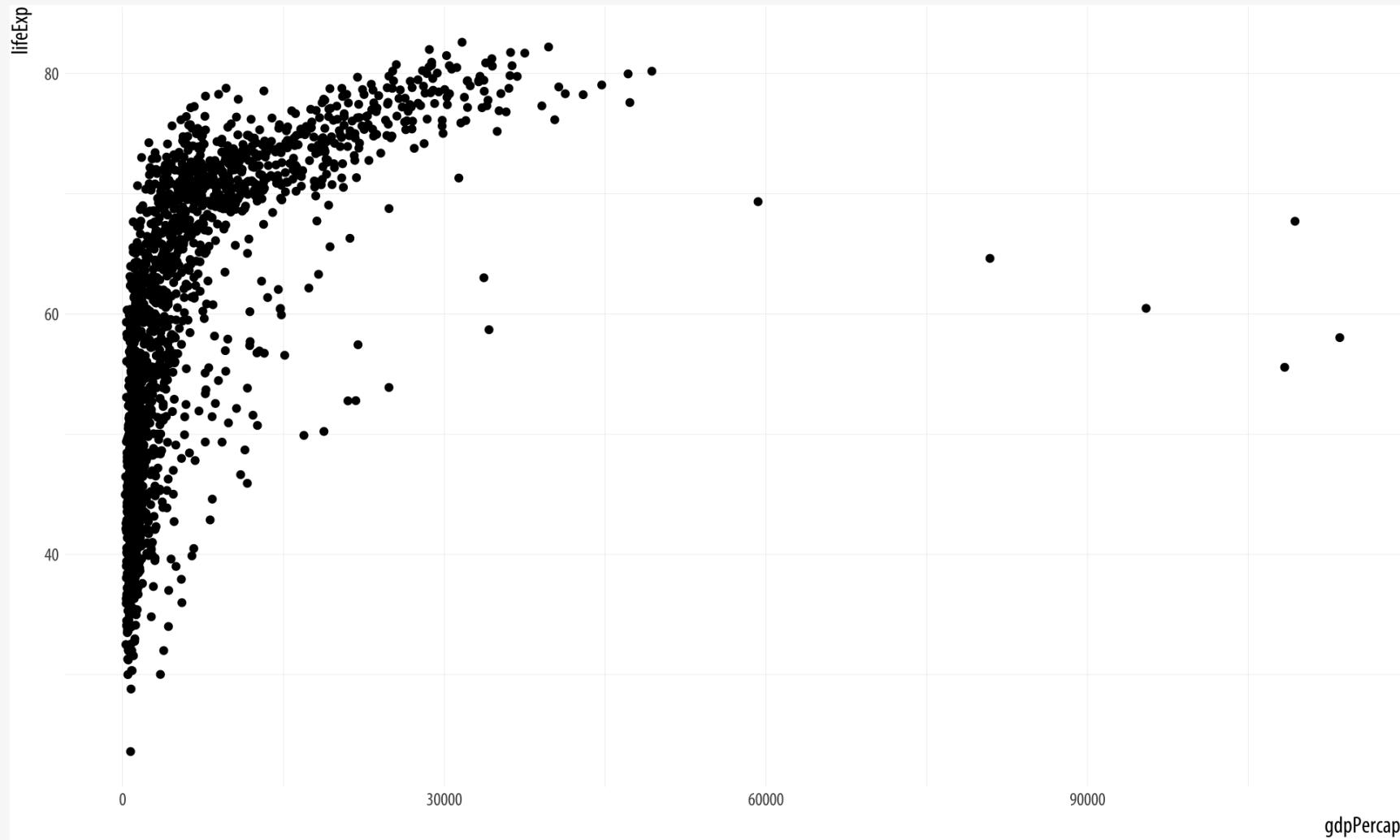
# Graphing in practice

# Workhorses



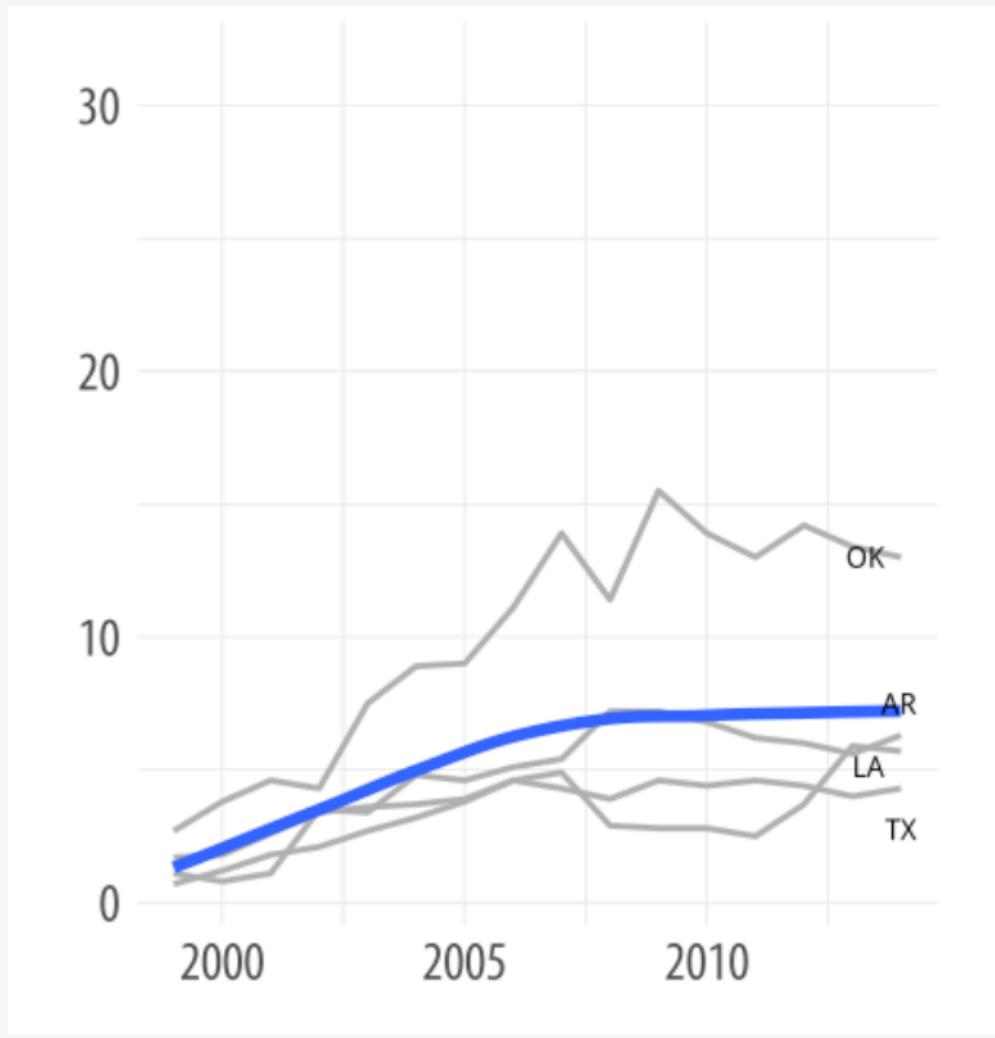
Histogram

# Workhorses



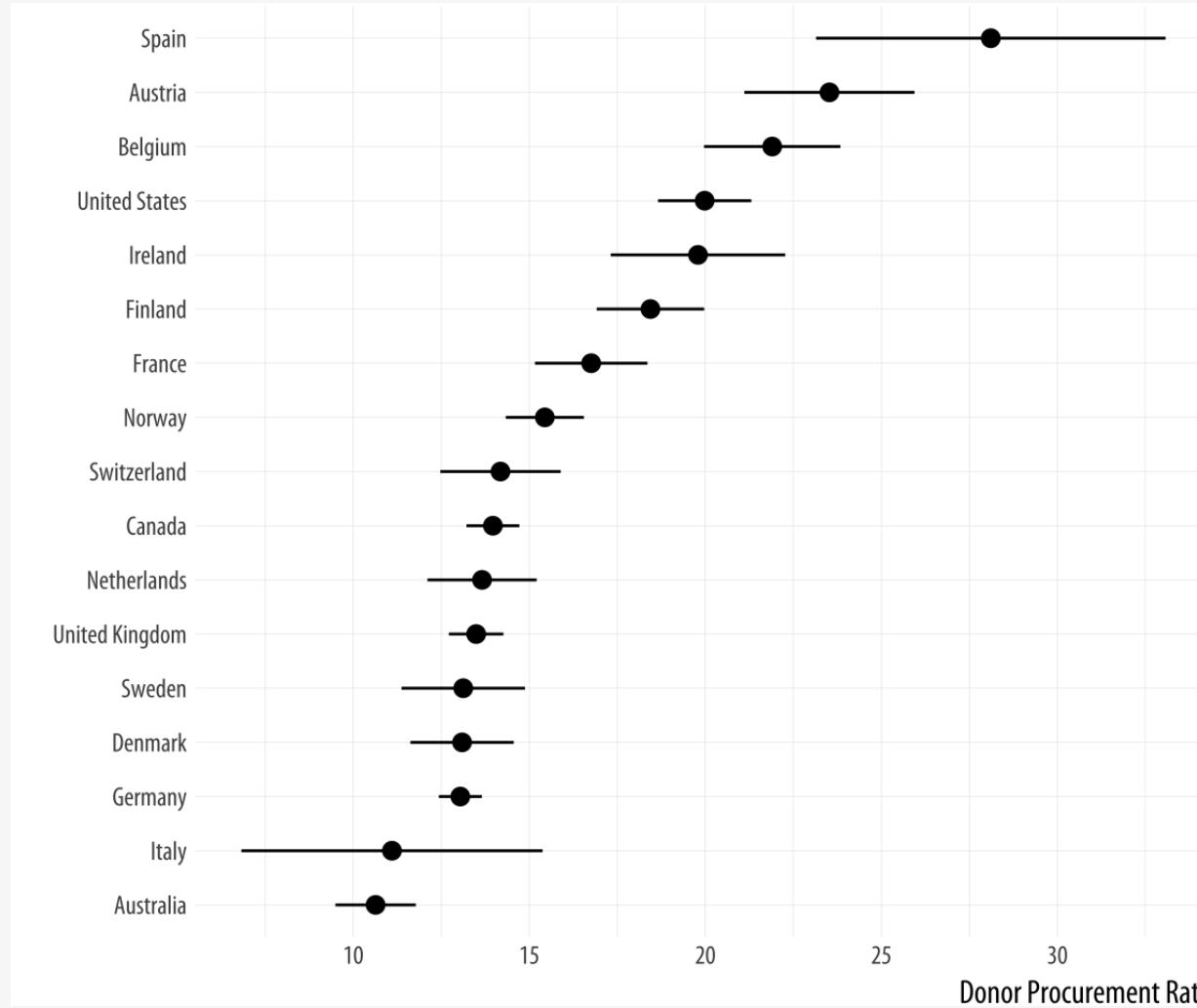
Scatterplot

# Workhorses



Trend

# Workhorses

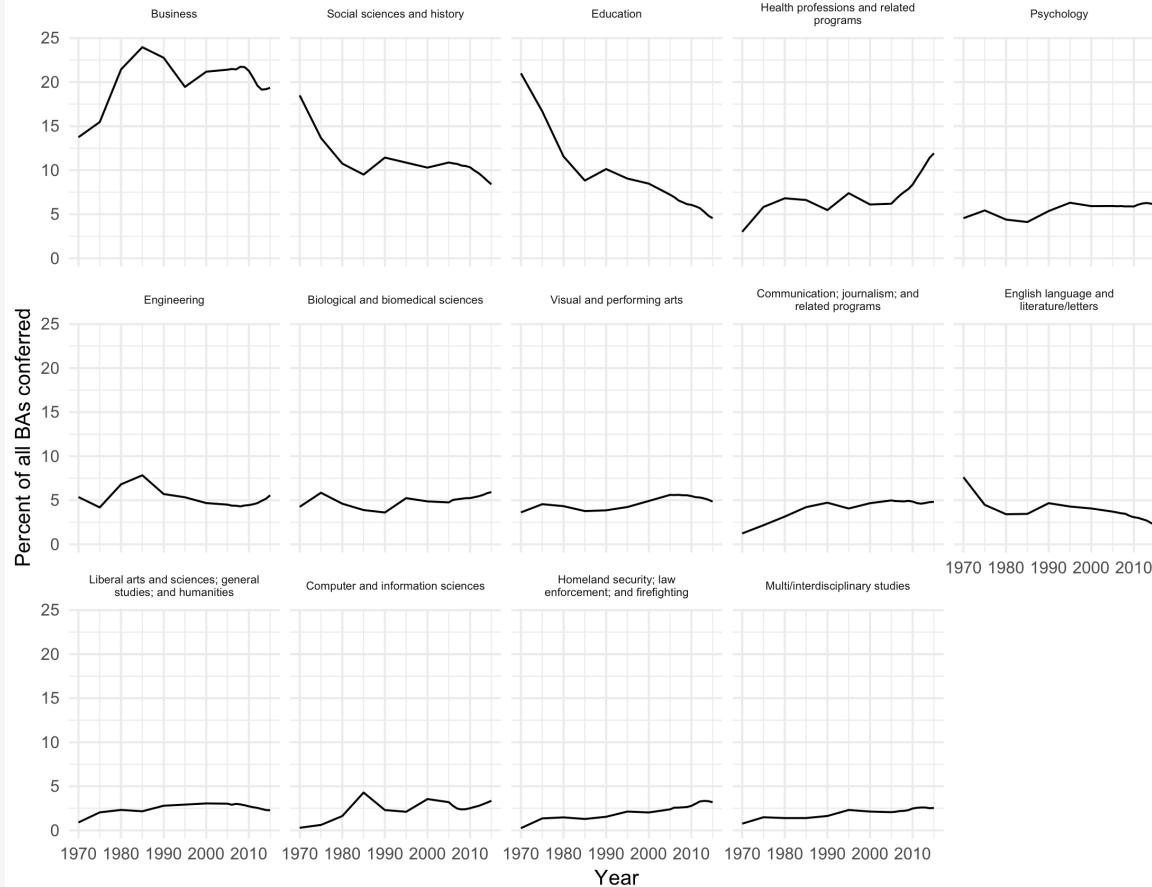


Point-and-range

# Workhorses

US Trends in Bachelor's Degrees Conferred, 1970-2015,  
for Areas averaging more than 2% of all degrees

Observations are every 5 years from 1970-1995, and annually thereafter



Data from NCES Digest 2017, Table 322.10.

Faceting

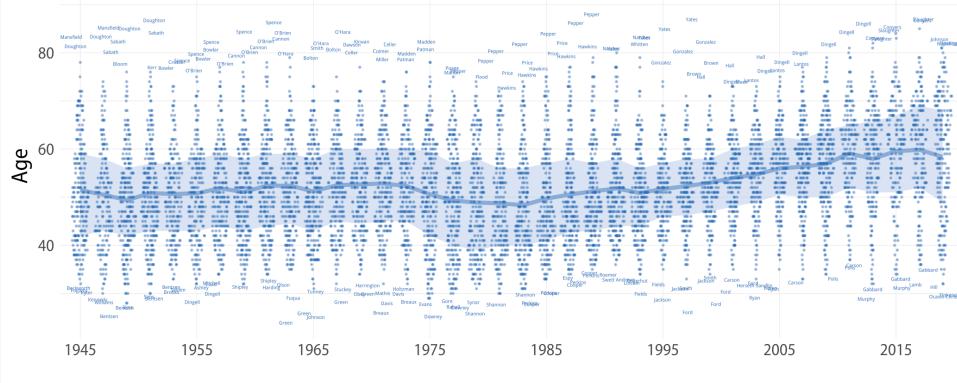
# Show Ponies

## Age Distribution of Congressional Representatives, 1945-2019

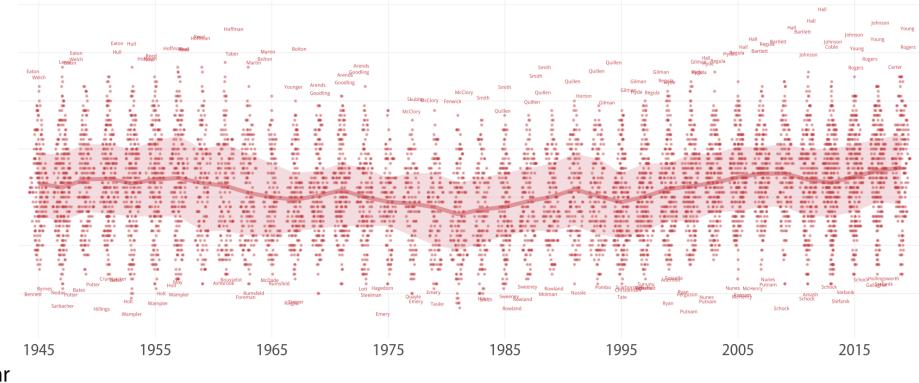
Trend line is mean age; bands are 25th and 75th percentiles of the range.

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

Democrats



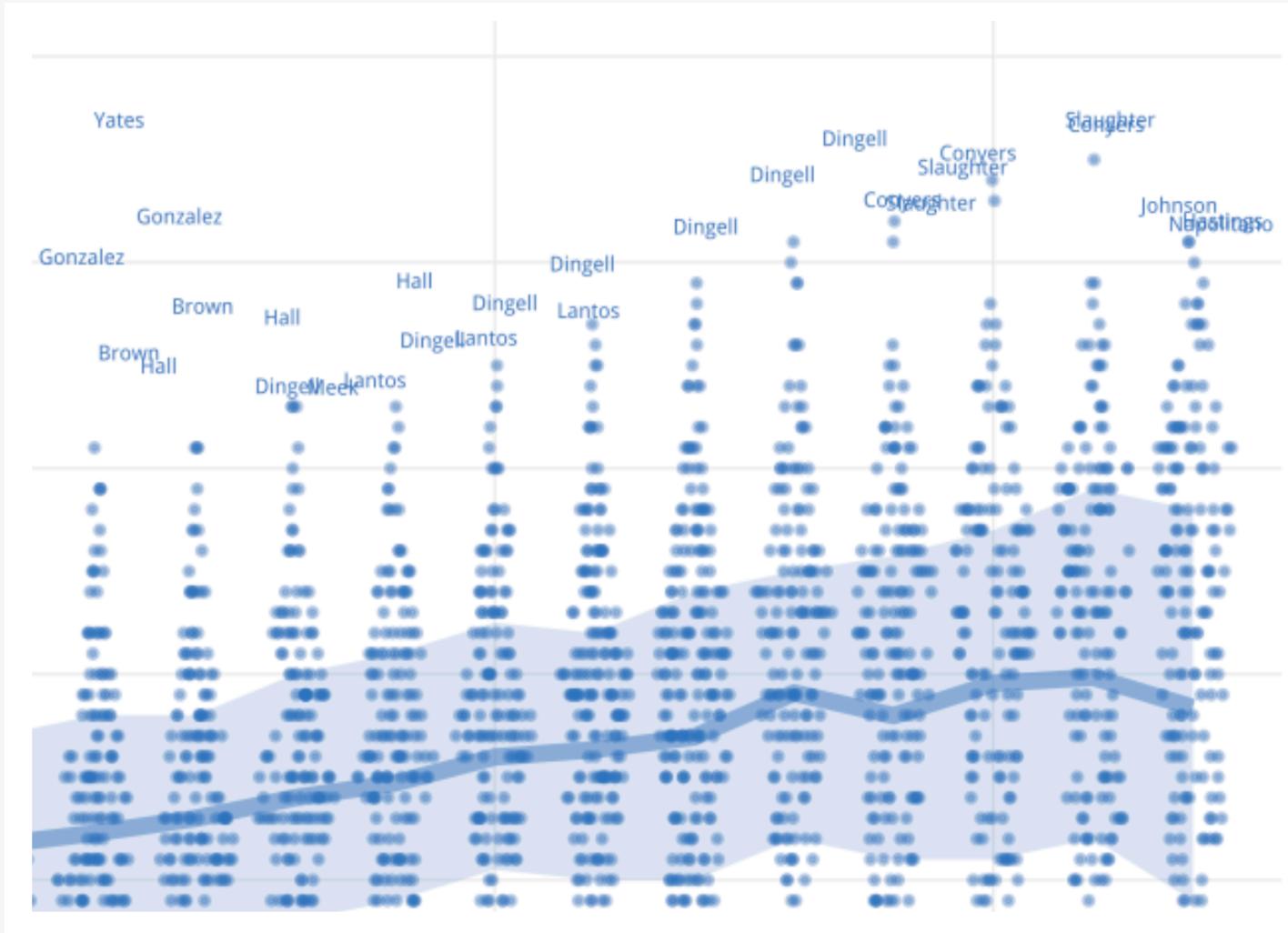
Republicans



@kjhealy <http://socviz.co> Data: Congressional Quarterly

Congressional comparison

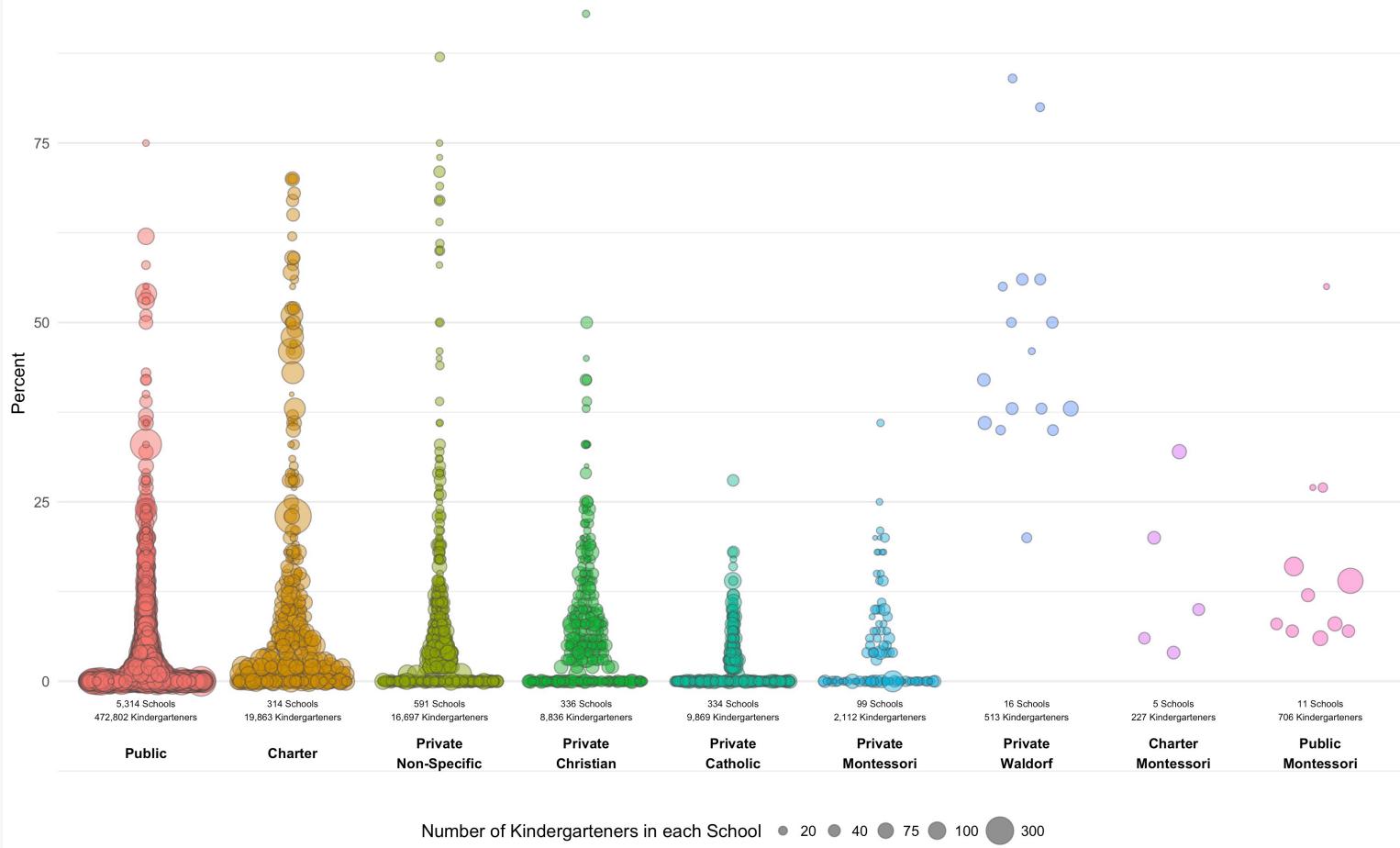
# Show Ponies



Several plots at once

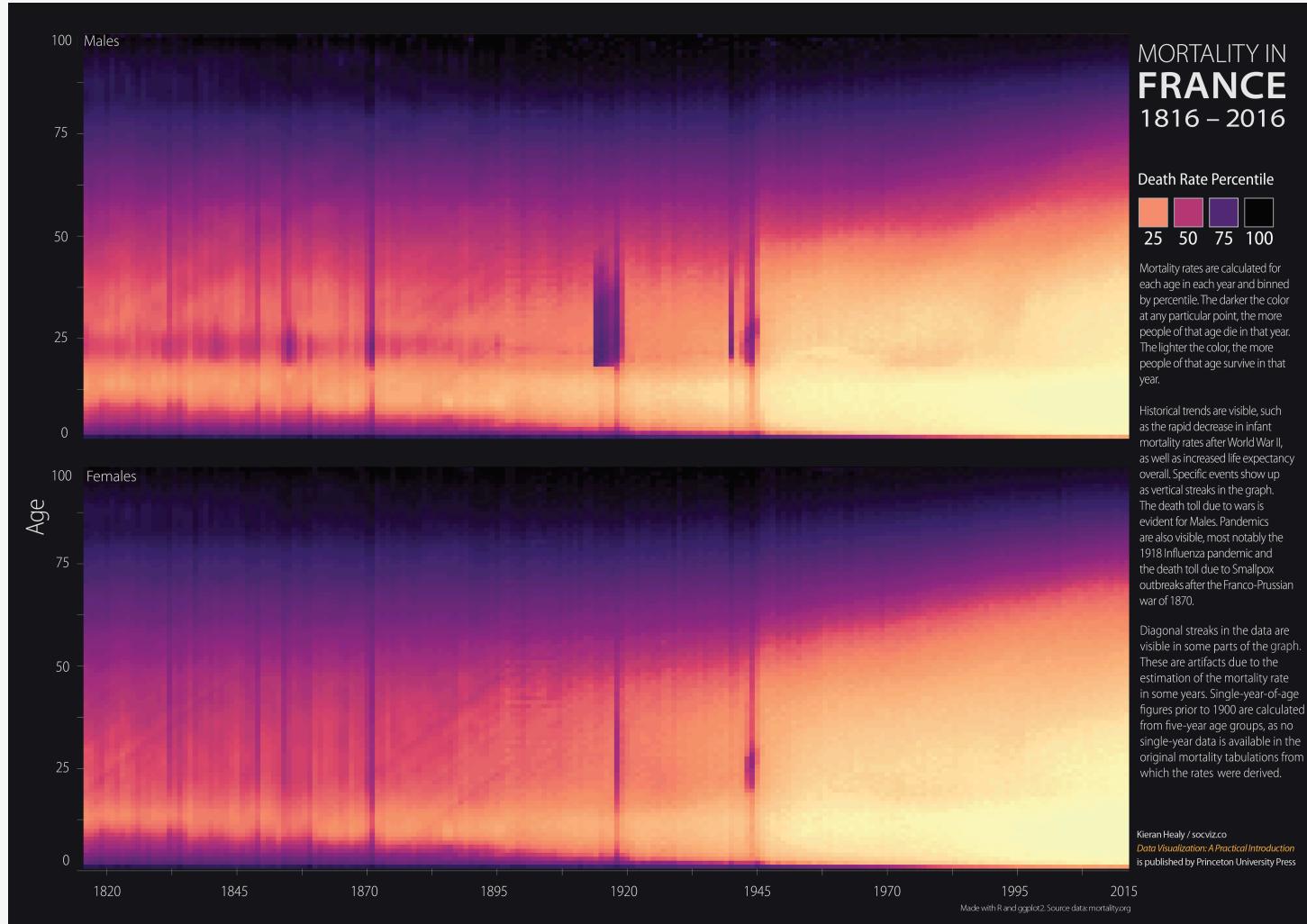
# Show Ponies

Vaccination Exemption Rates in California Kindergartens  
Percent of Kindergarteners with a Personal Belief Exemption, by Type and Size of School.



Beeswarm plot

# Show Ponies

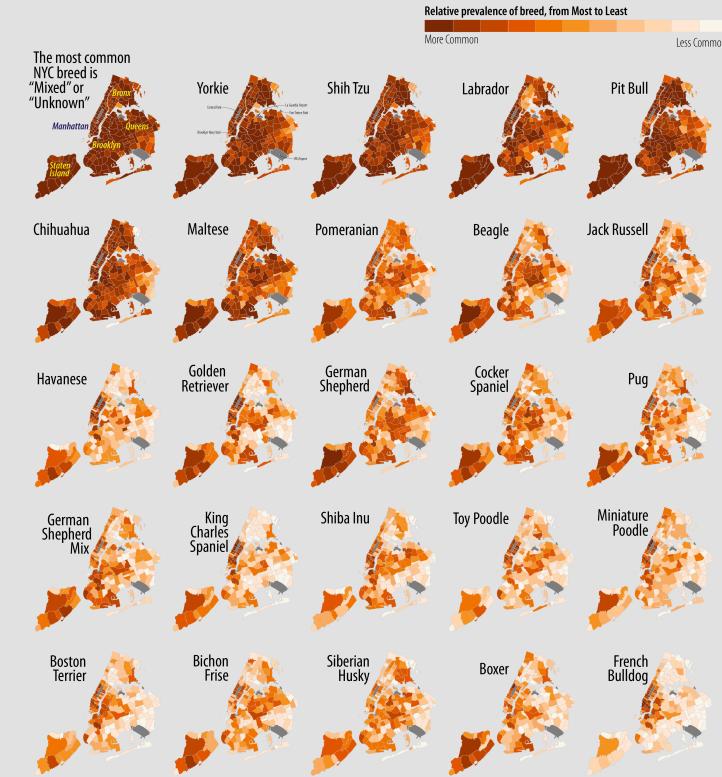


Lexis Surface

# Show Ponies

## Dogs of New York

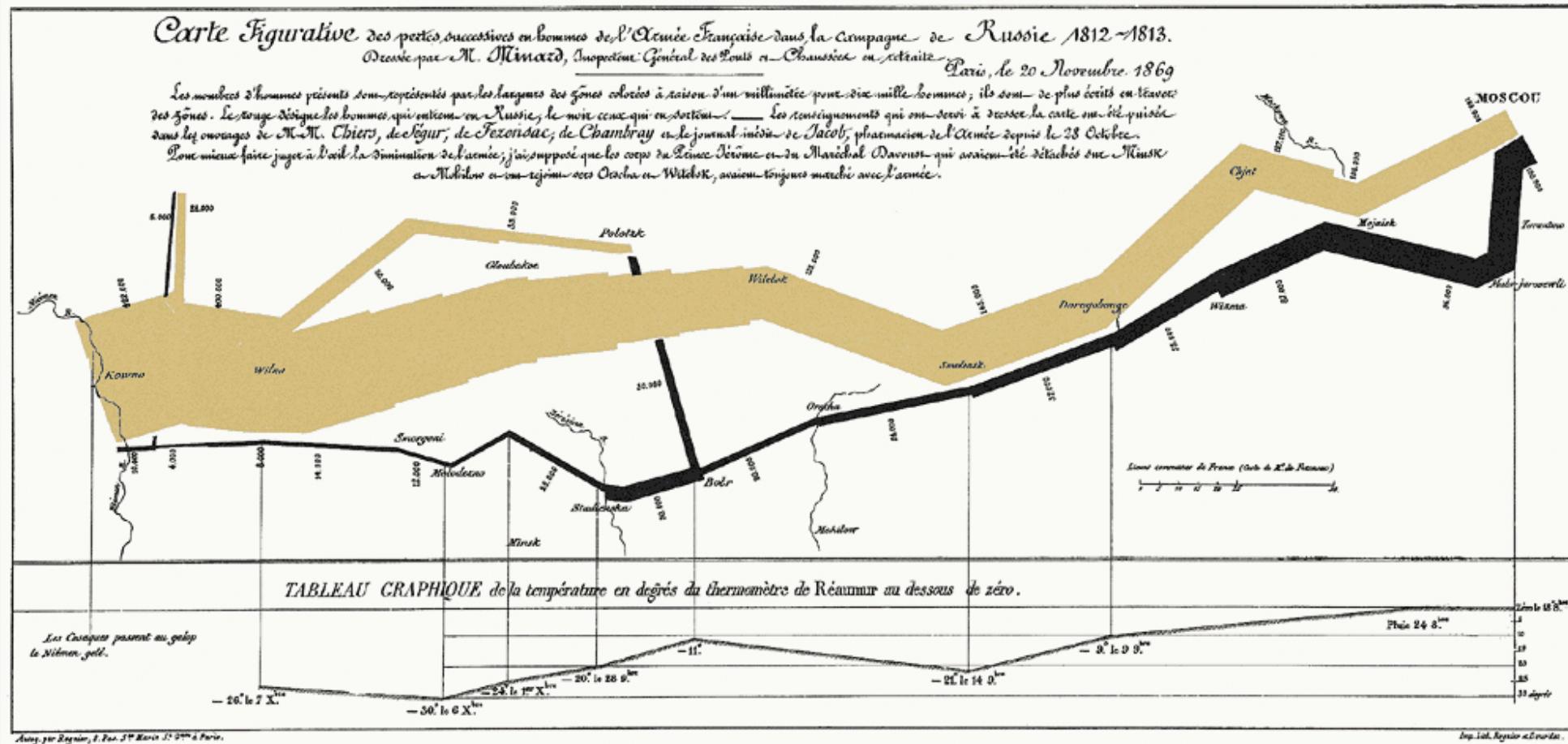
Based on data from New York City's Dog Licensing System, these maps show the relative prevalence of the twenty five most common breeds of dog, by zip code.



Kieran Healy / socvizco / Data Visualization: A Practical Introduction is published by Princeton University Press

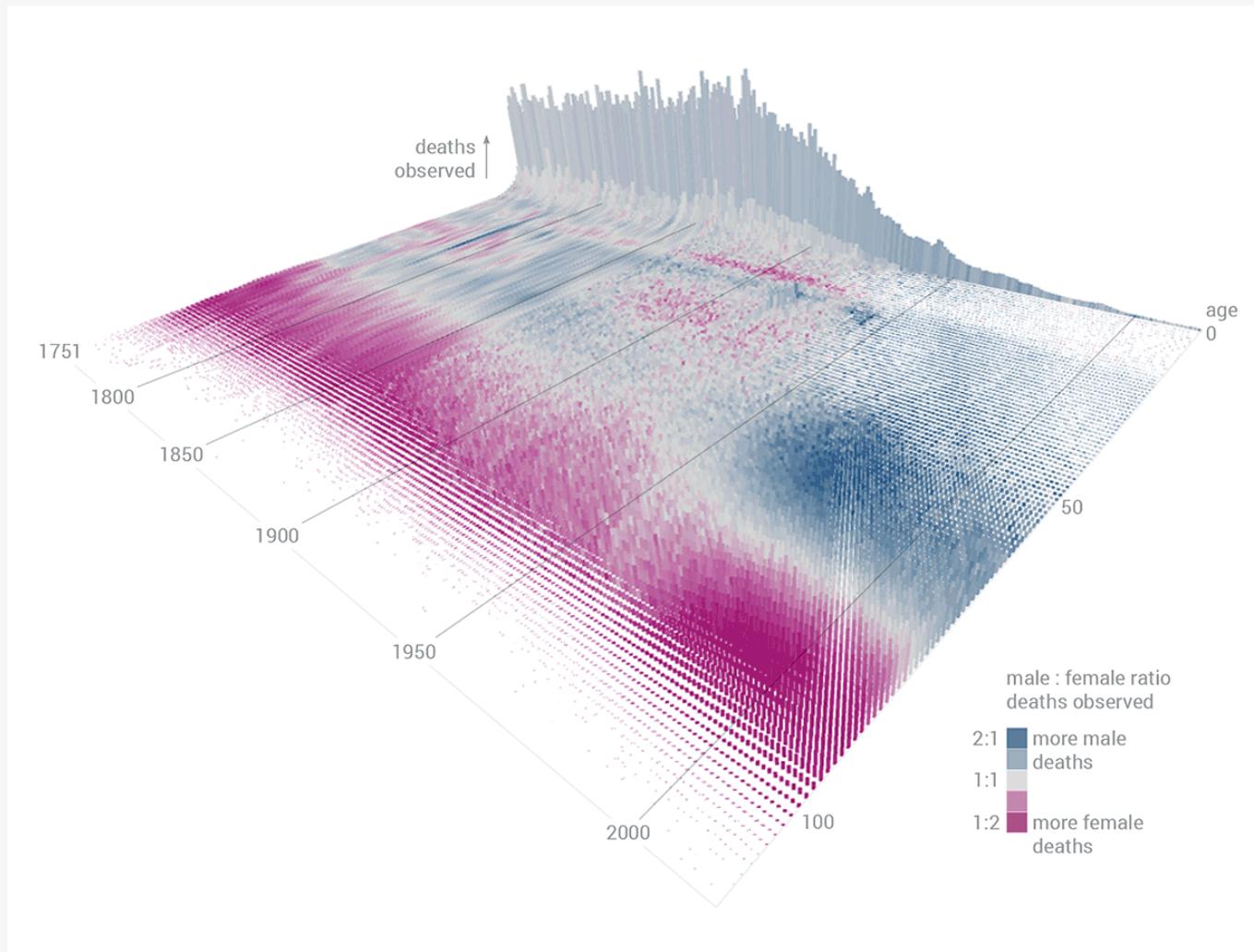
Faceted maps

# Unicorns ...



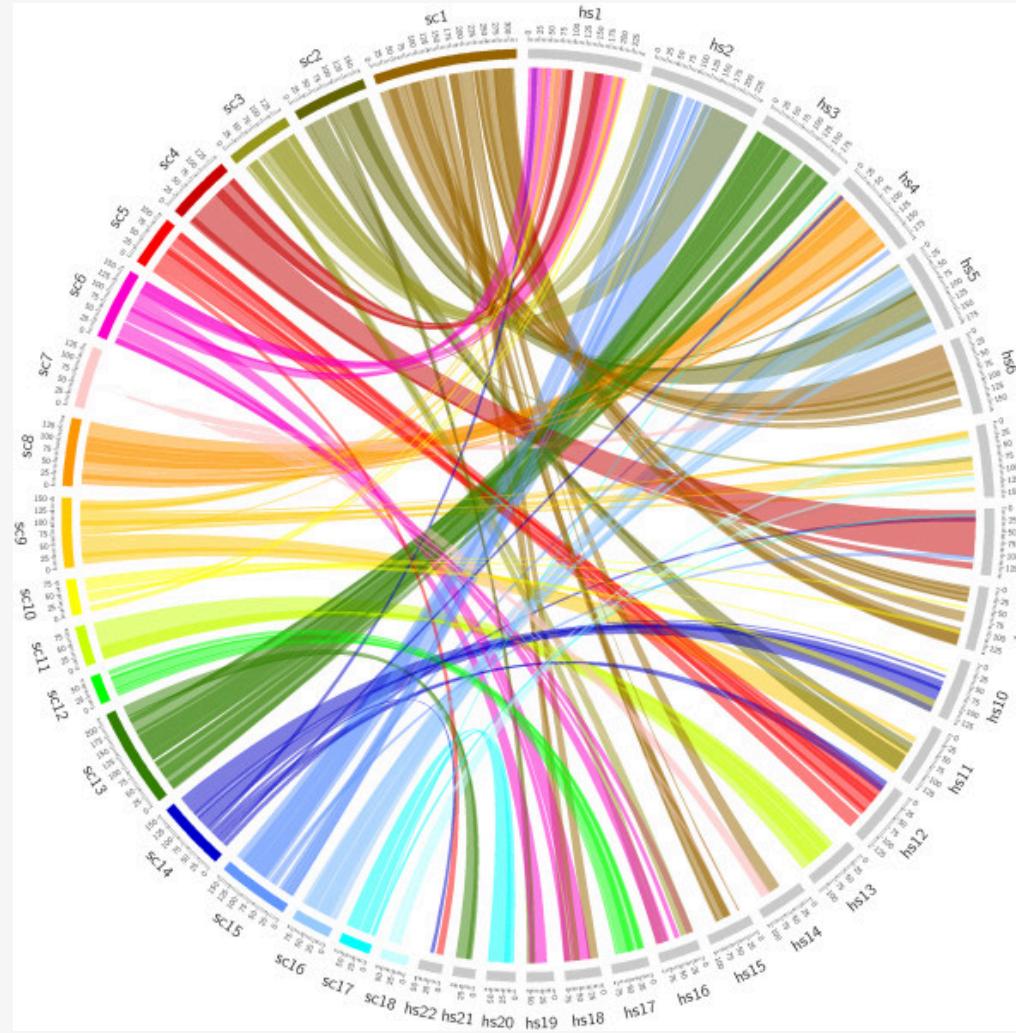
The inevitable Minard

# Unicorns ...



Swedish mortality

# ... or monsters



Network chords