

Data Visualization - 1.

Looking at Data (part 2)

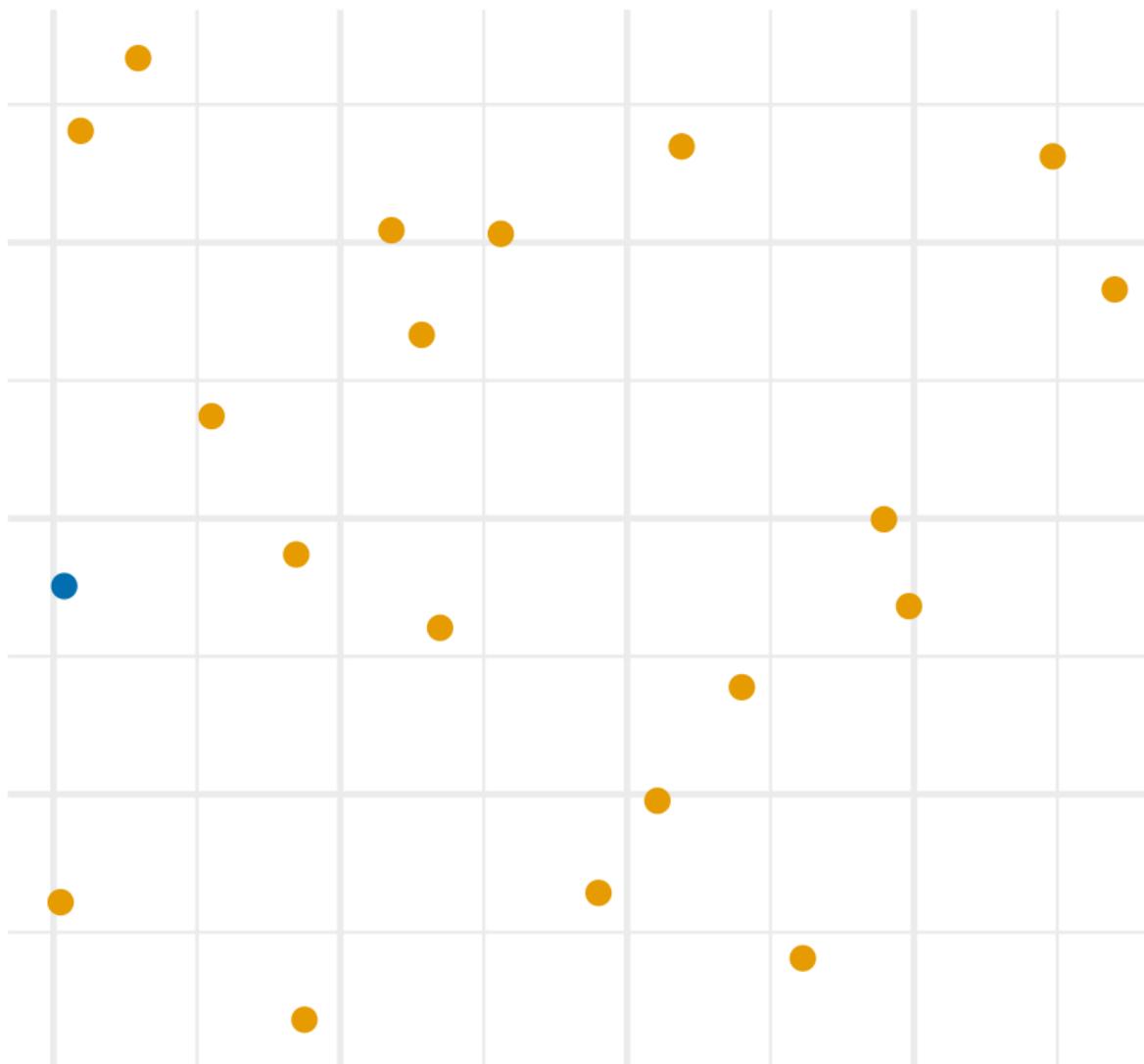
Kieran Healy
Code Horizons

October 2024

Looking at Data (part 2)

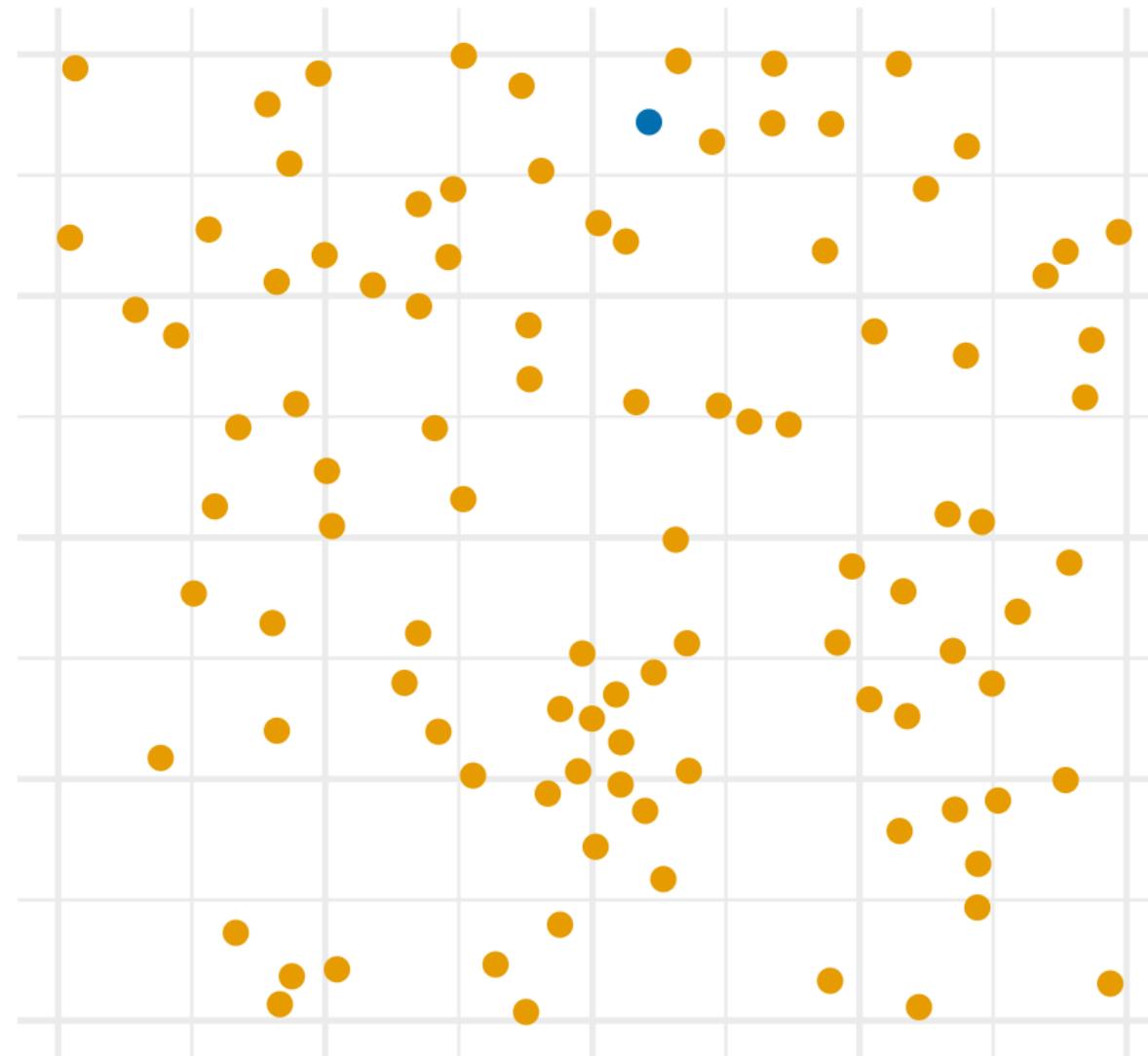
Pre-Attentive Processing

Color only, N = 20



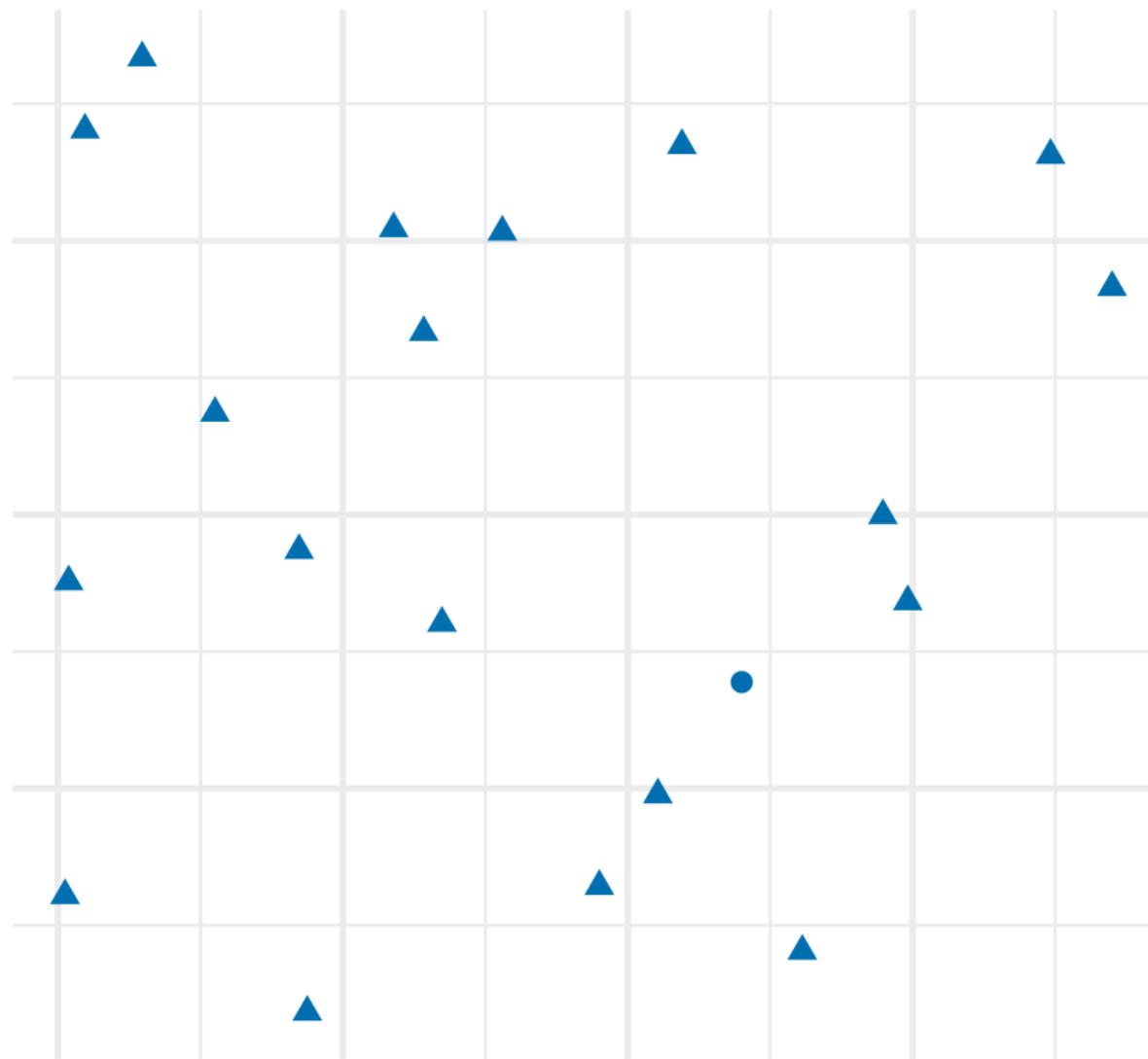
Color only, N = 20

Color only, N = 100



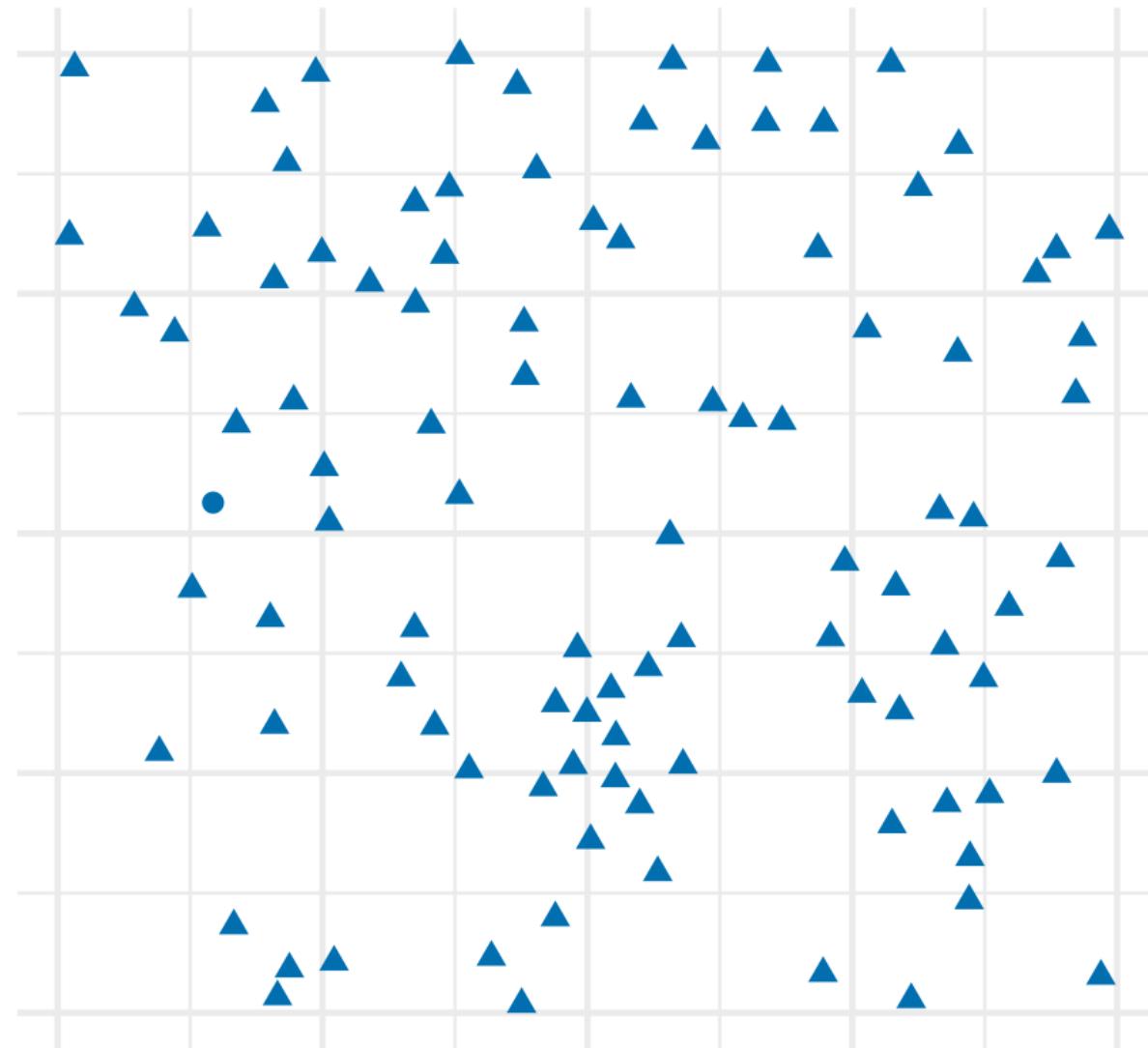
Color only, N = 100

Shape only, N = 20



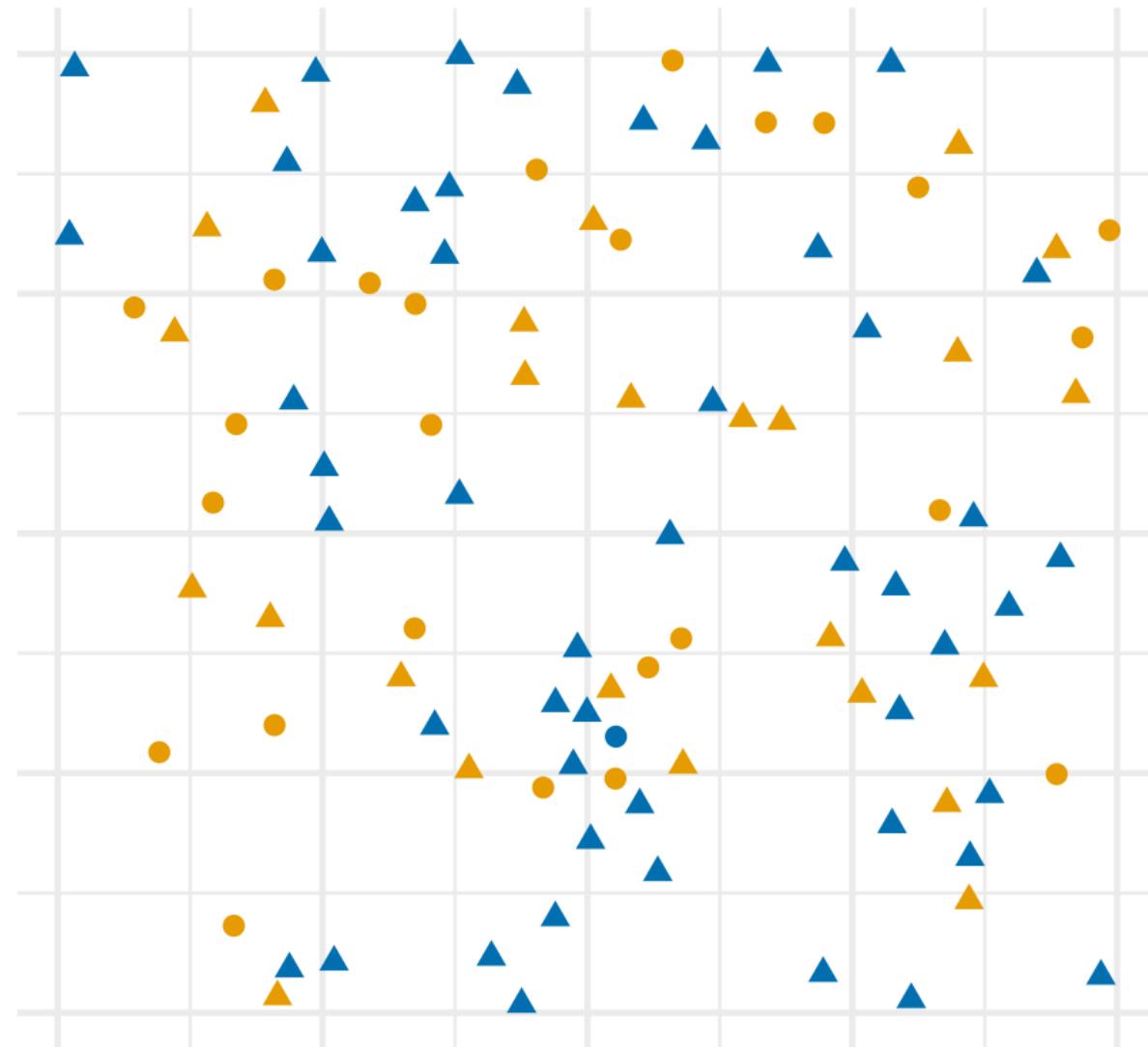
Shape only, N = 20

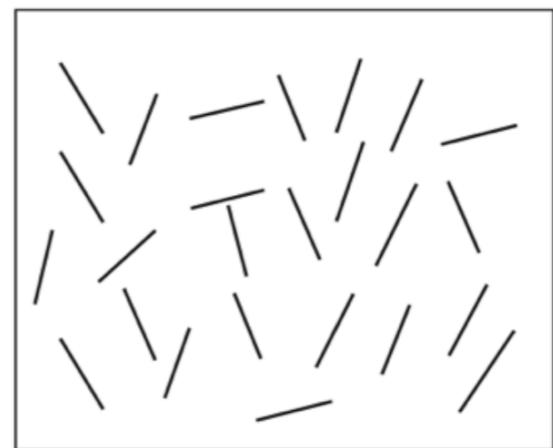
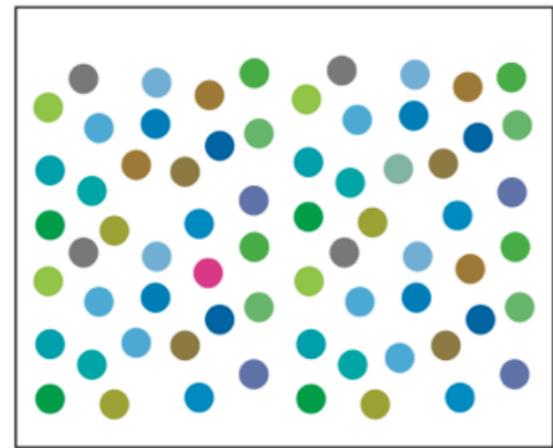
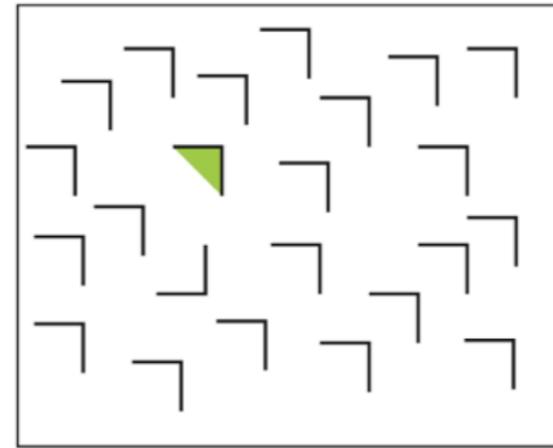
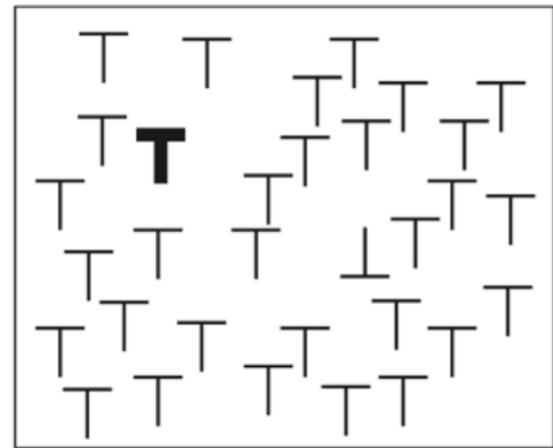
Shape only, N = 100

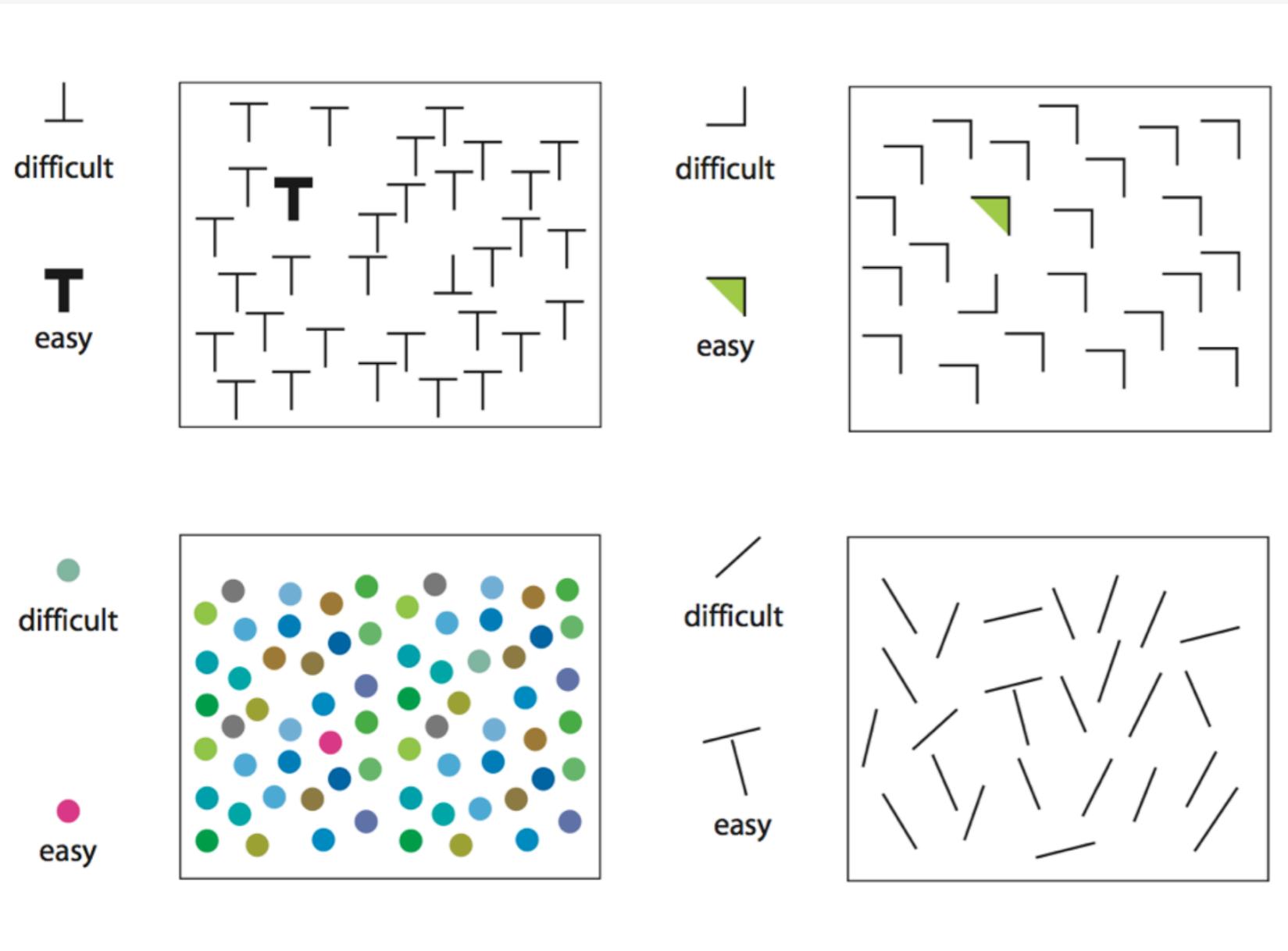


Shape only, N = 100

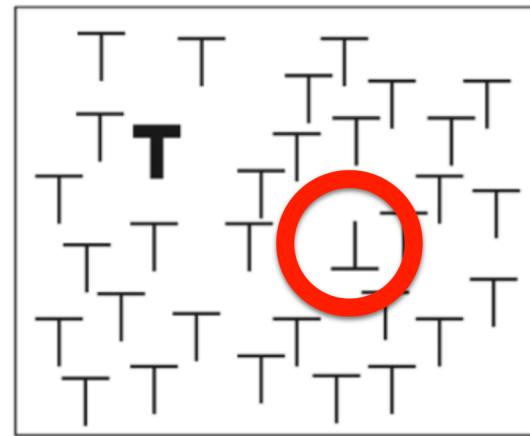
Color and Shape, N = 100



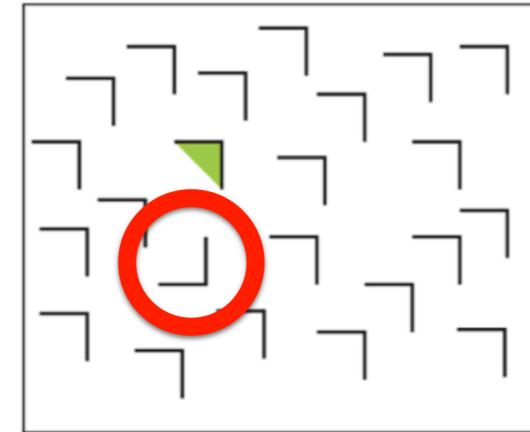




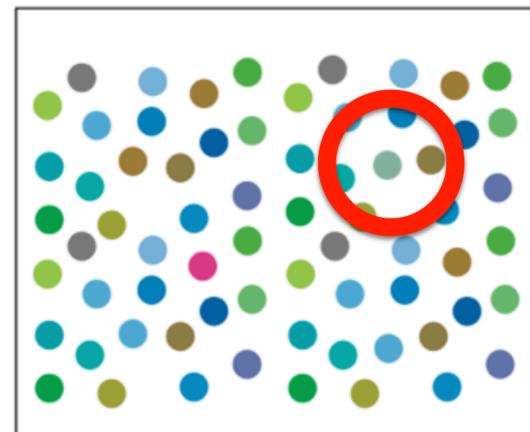
\perp
difficult
T
easy



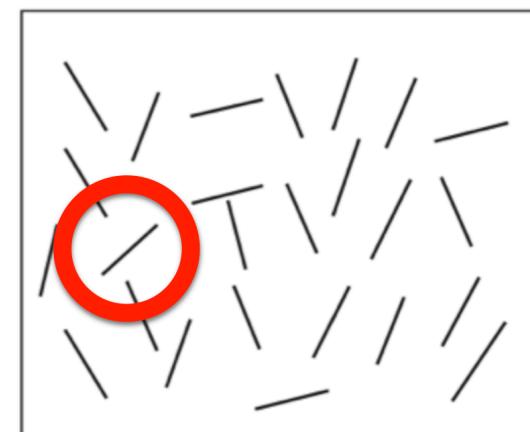
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difficult
△
easy



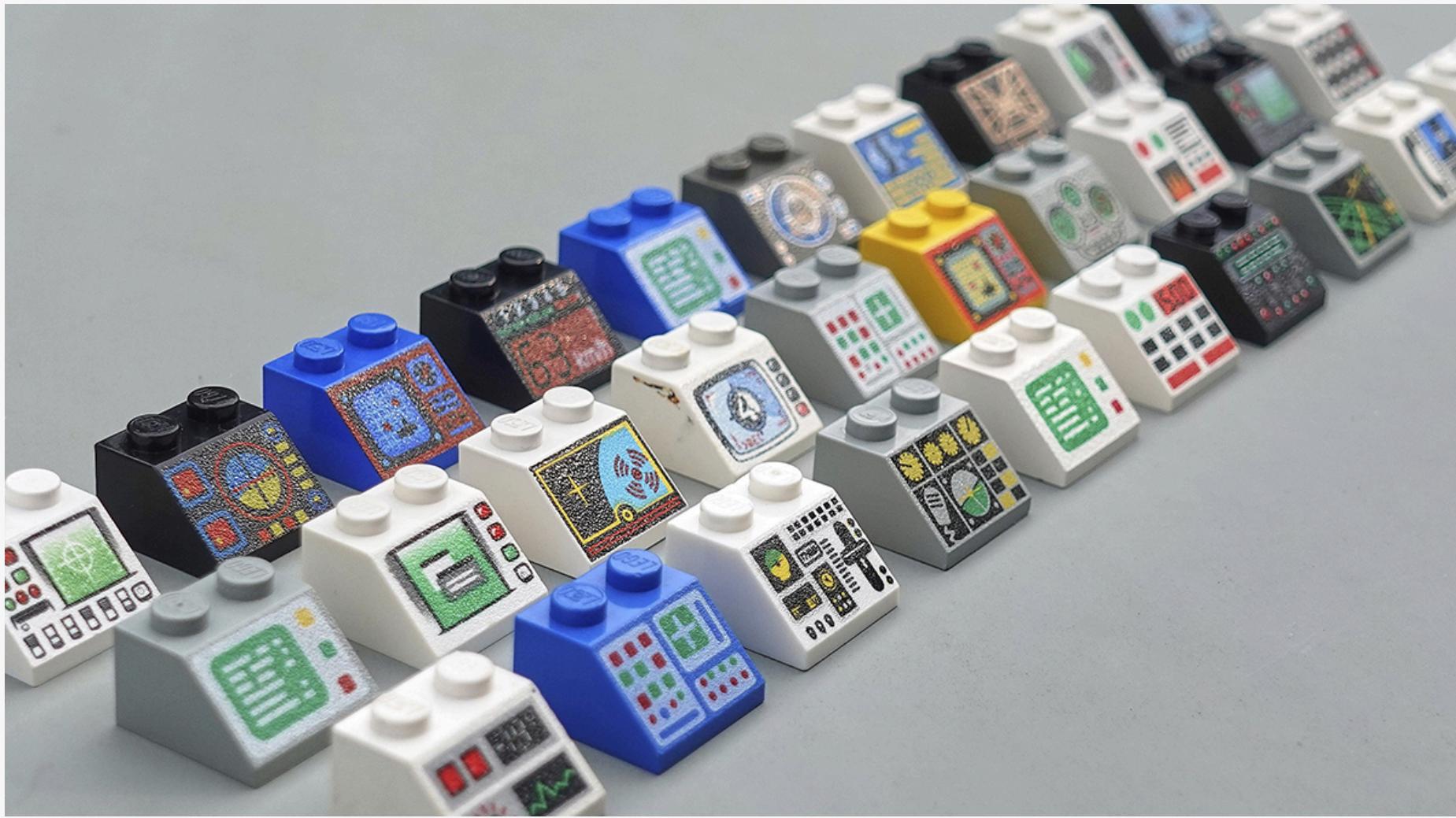
●
difficult
●
easy



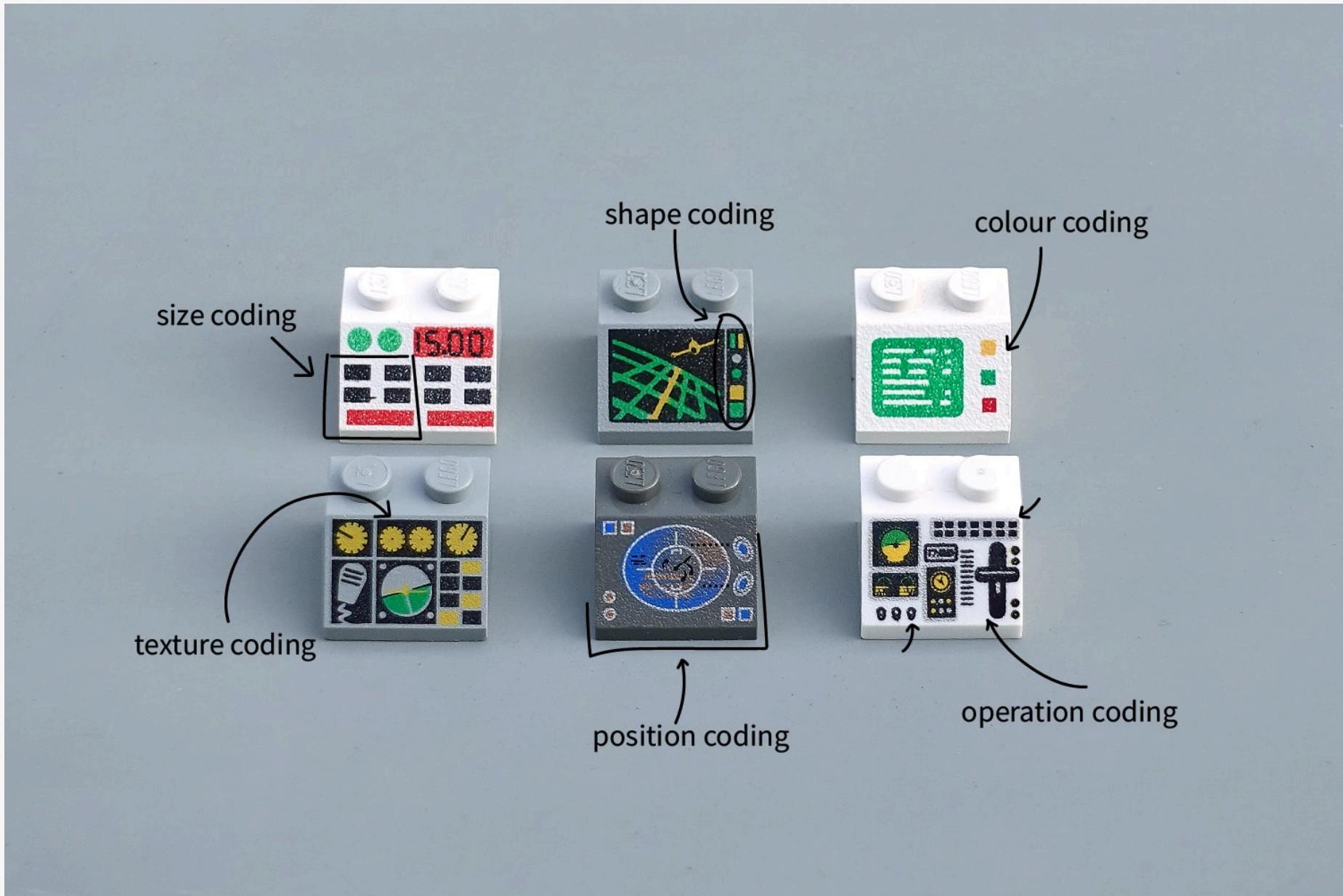
/
difficult
—\br/>easy

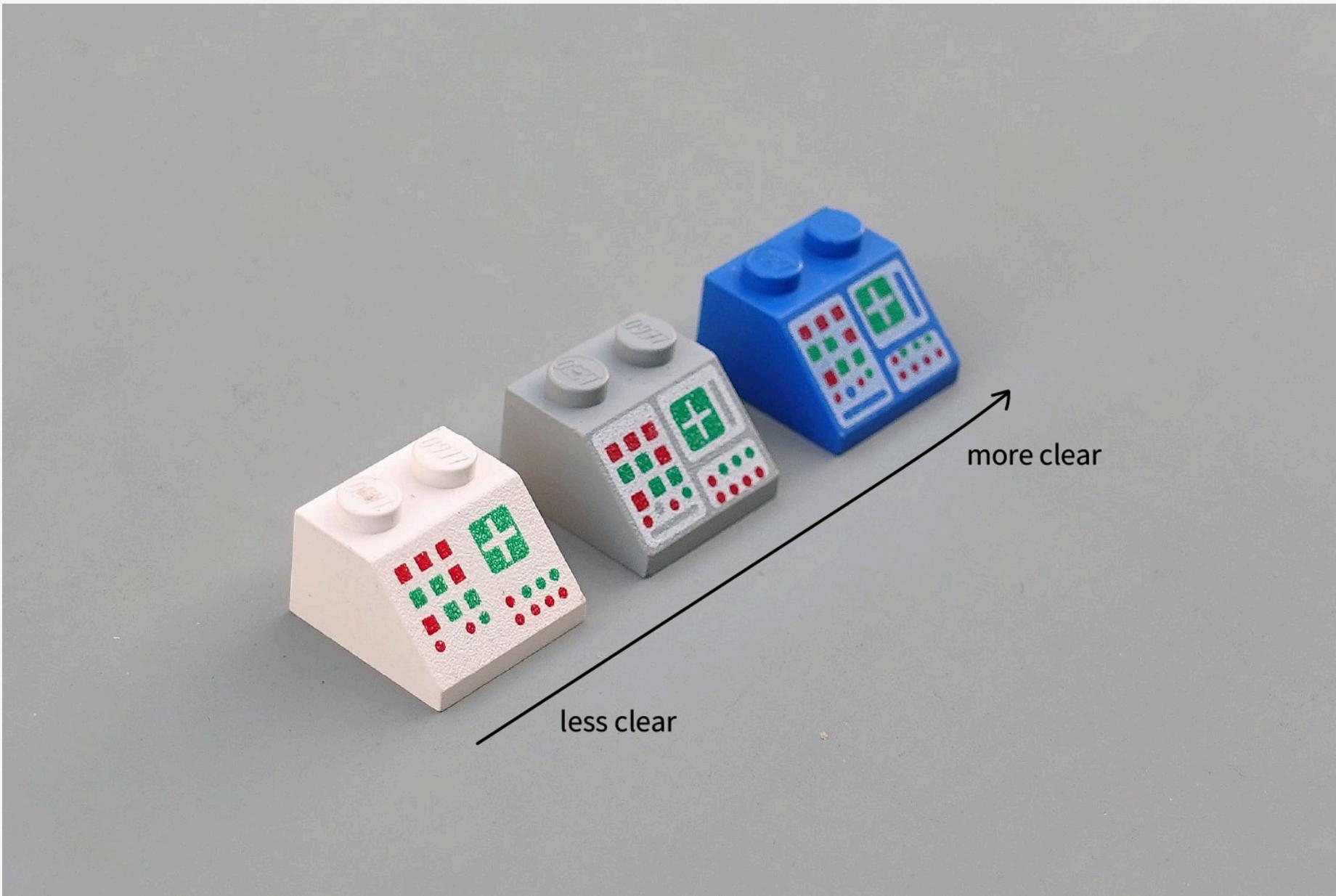


Gestalt Inferences and Design

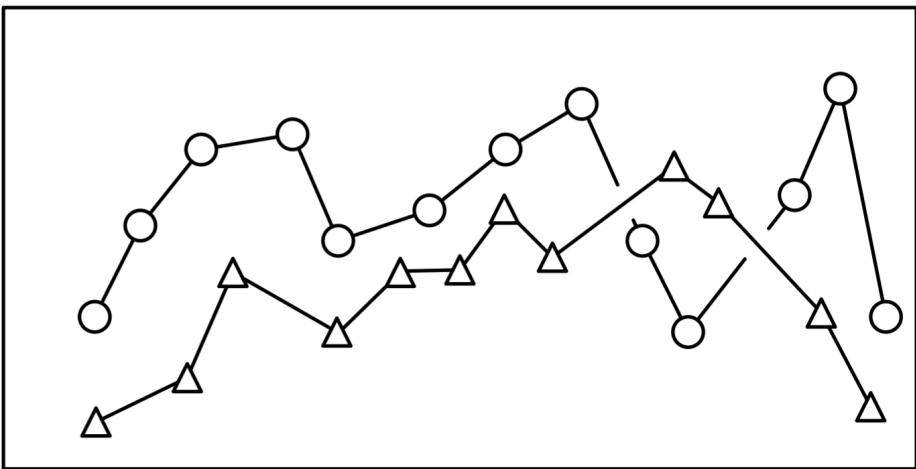
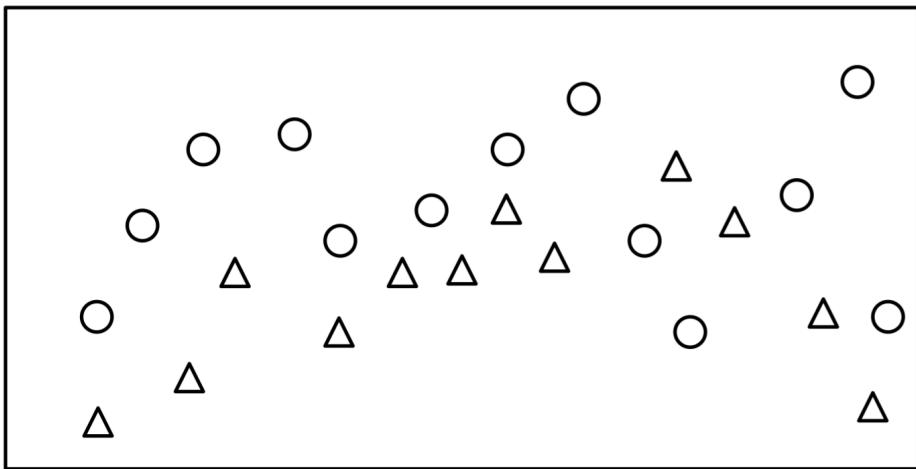
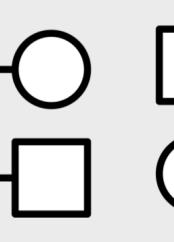
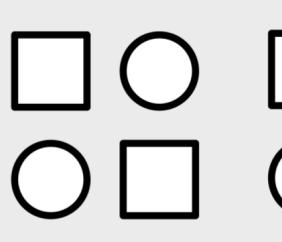
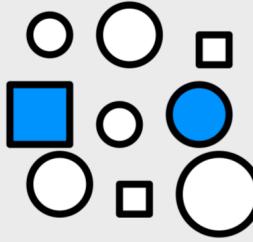
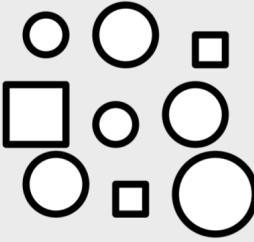
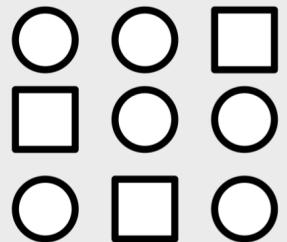
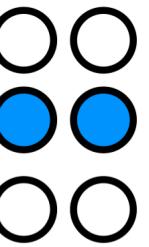
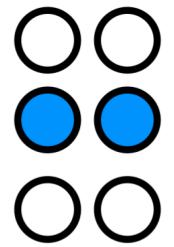
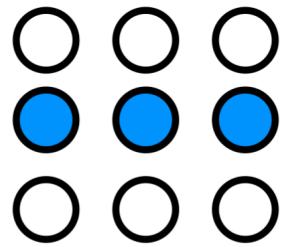
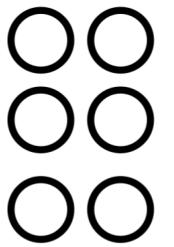
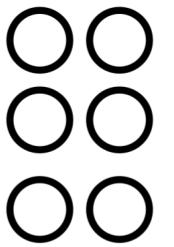
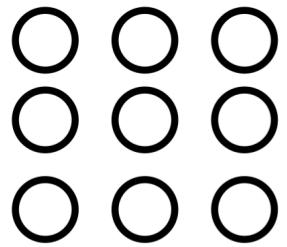


George Cave





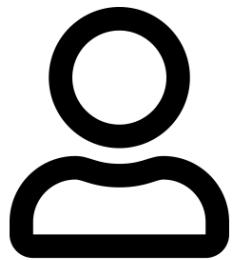
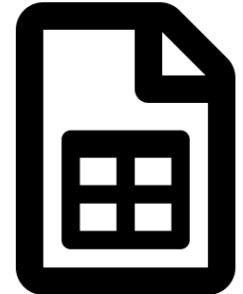
George Cave



Encodings or mappings for
data

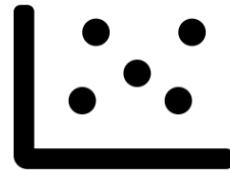
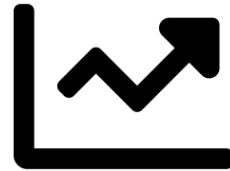
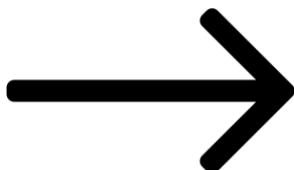
What's a graph,
anyway?

Data

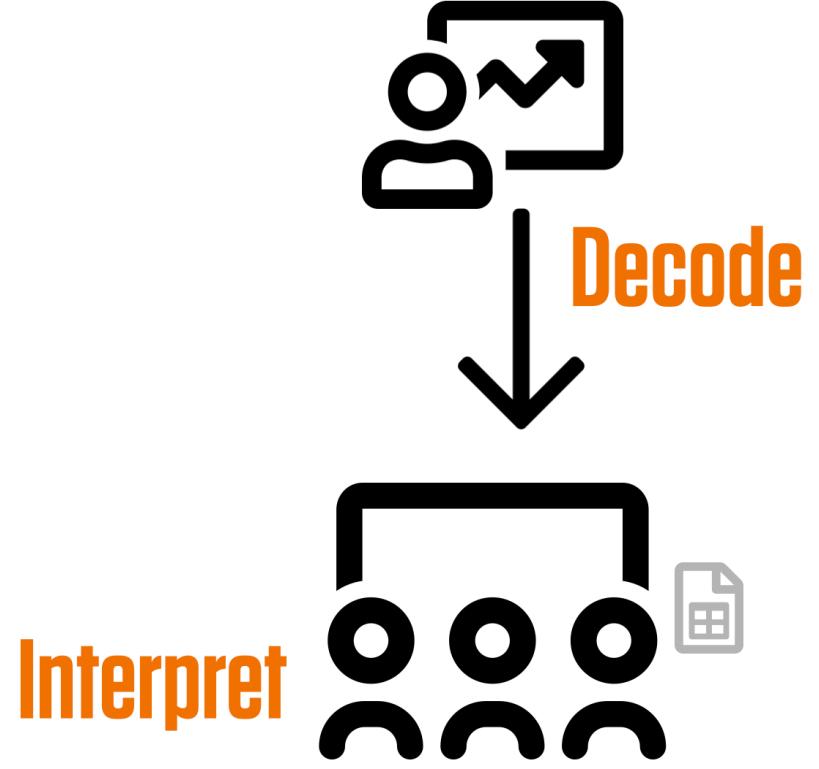


Encoded

or mapped

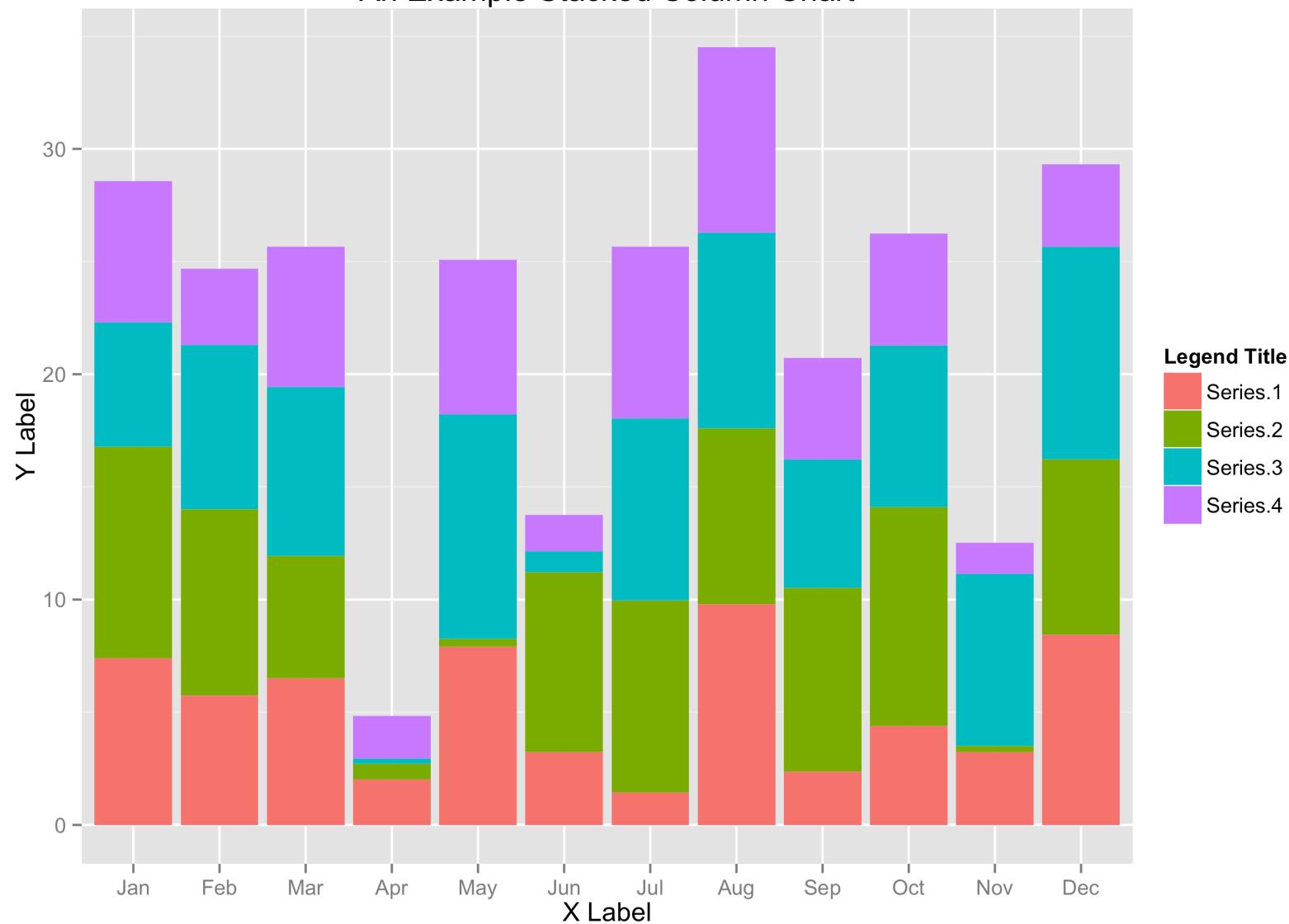


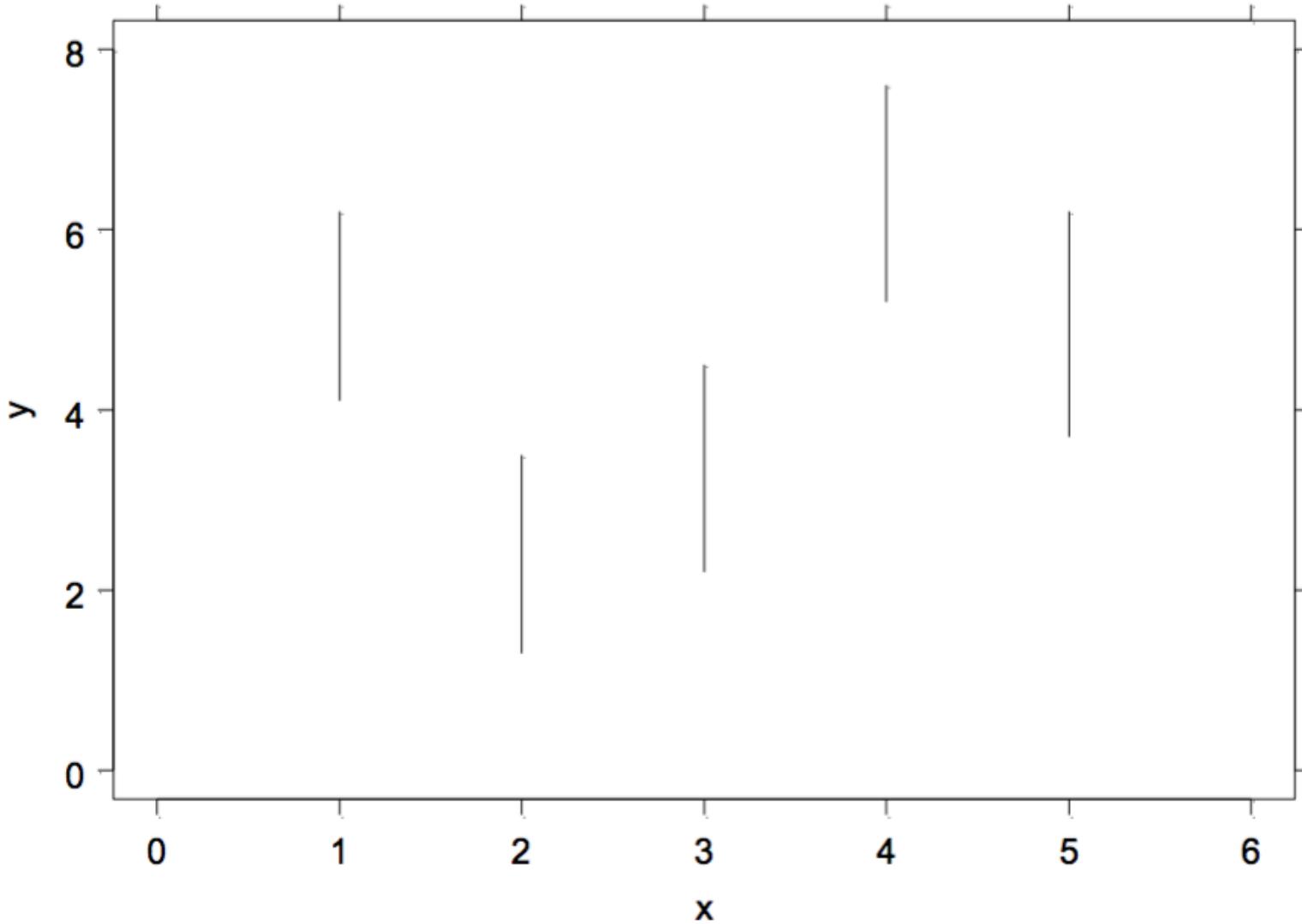
Some sort of
faithful visual
representation



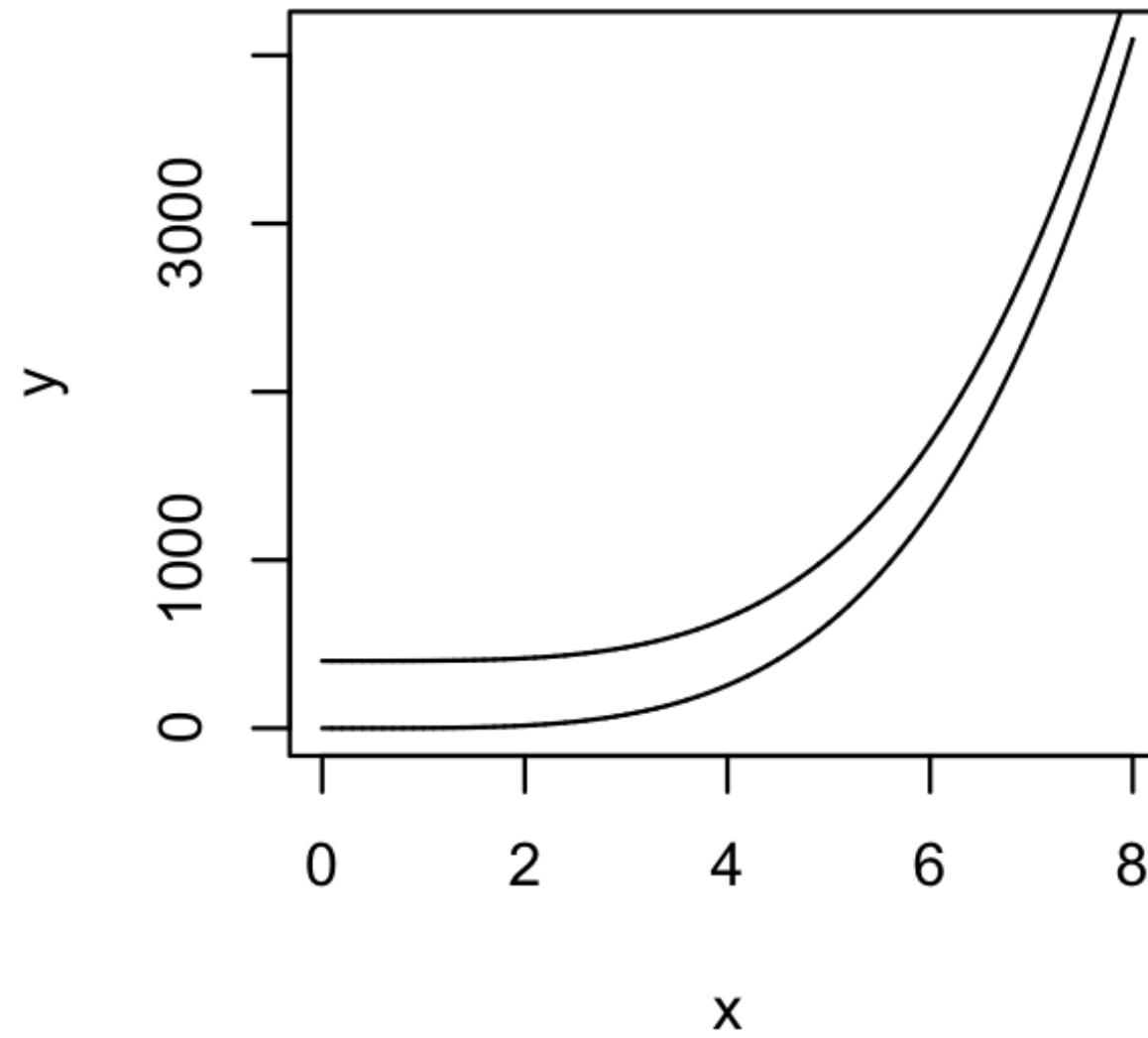
Visual tasks in decoding graphs

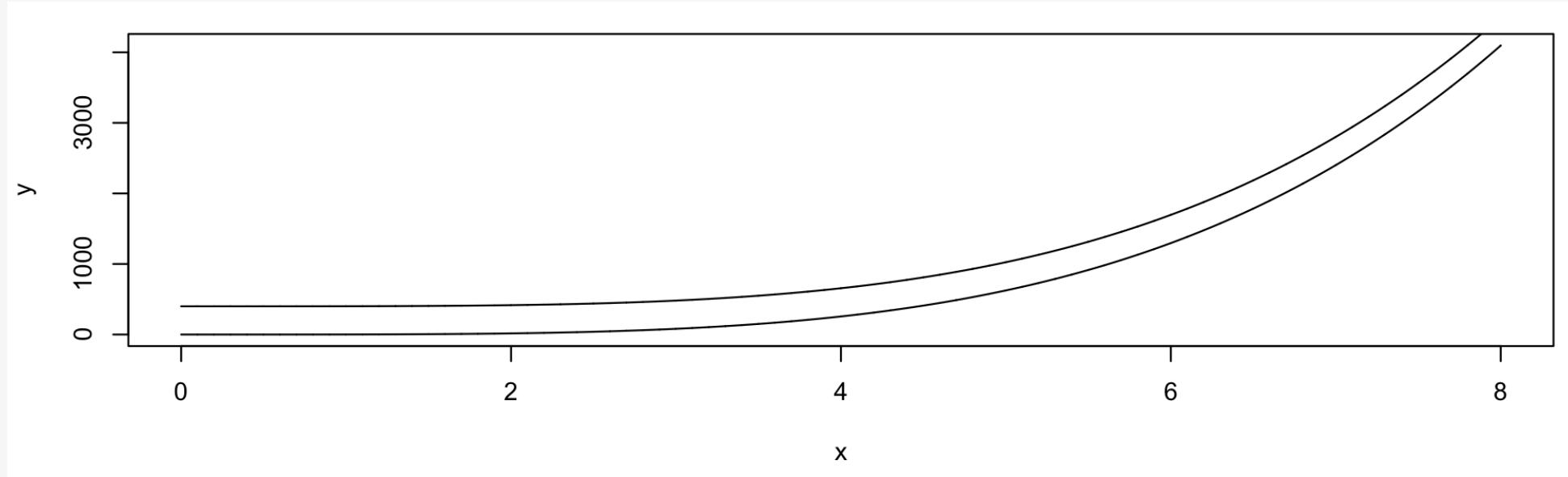
An Example Stacked Column Chart





William Cleveland





William Cleveland

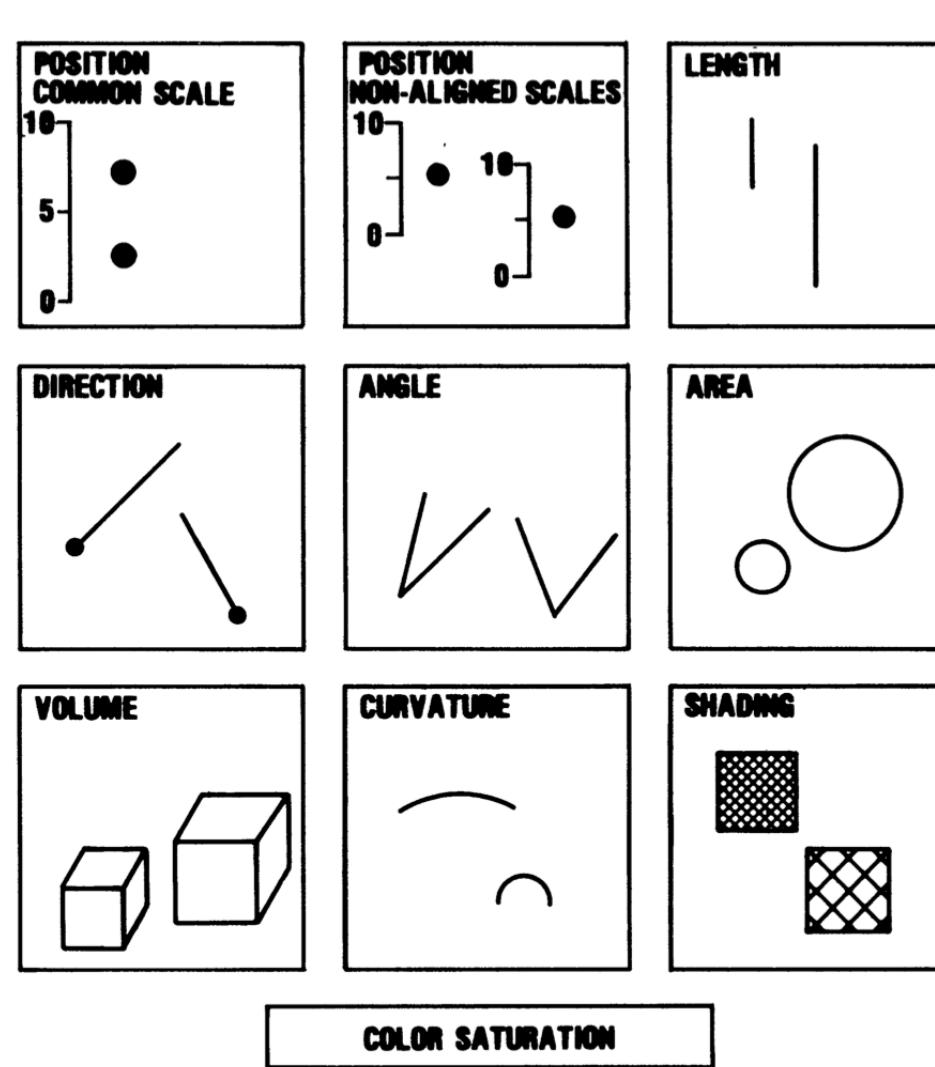


Figure 1. Elementary perceptual tasks.

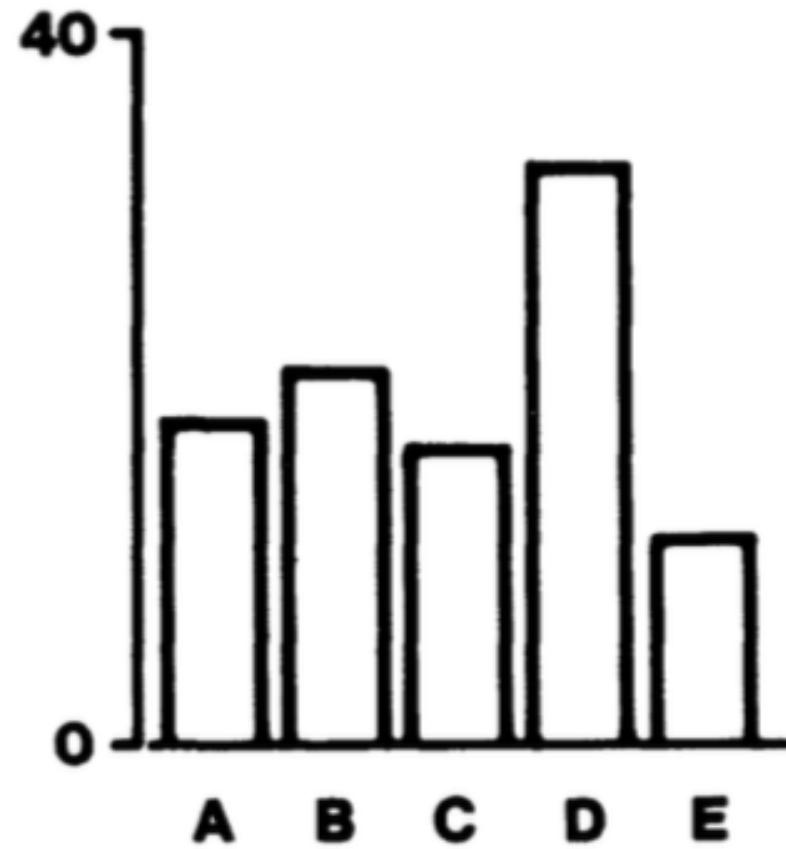
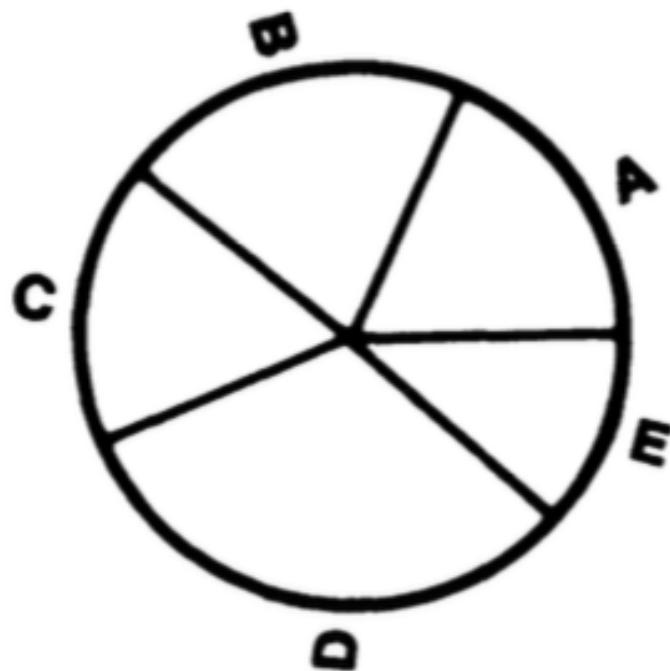
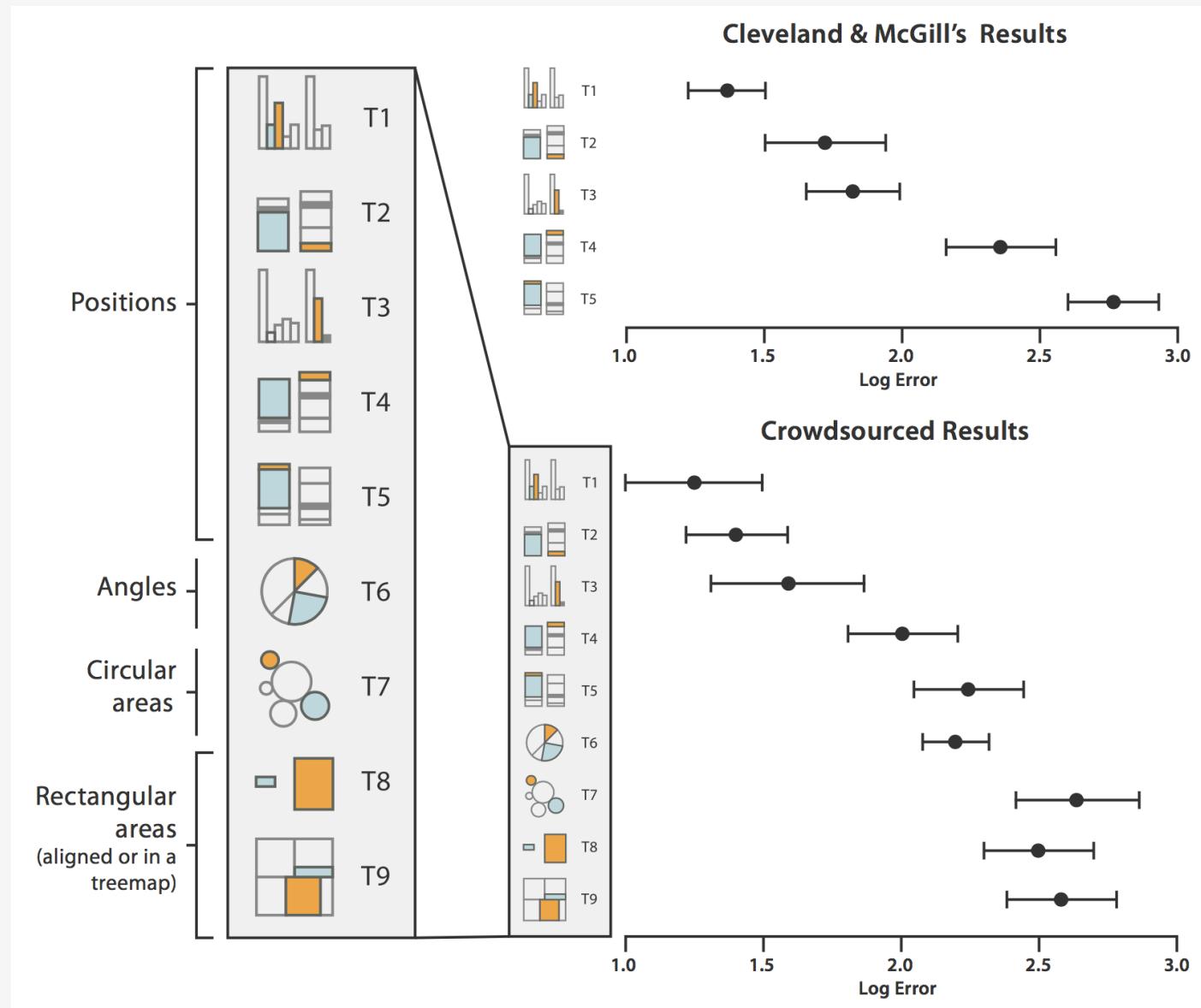
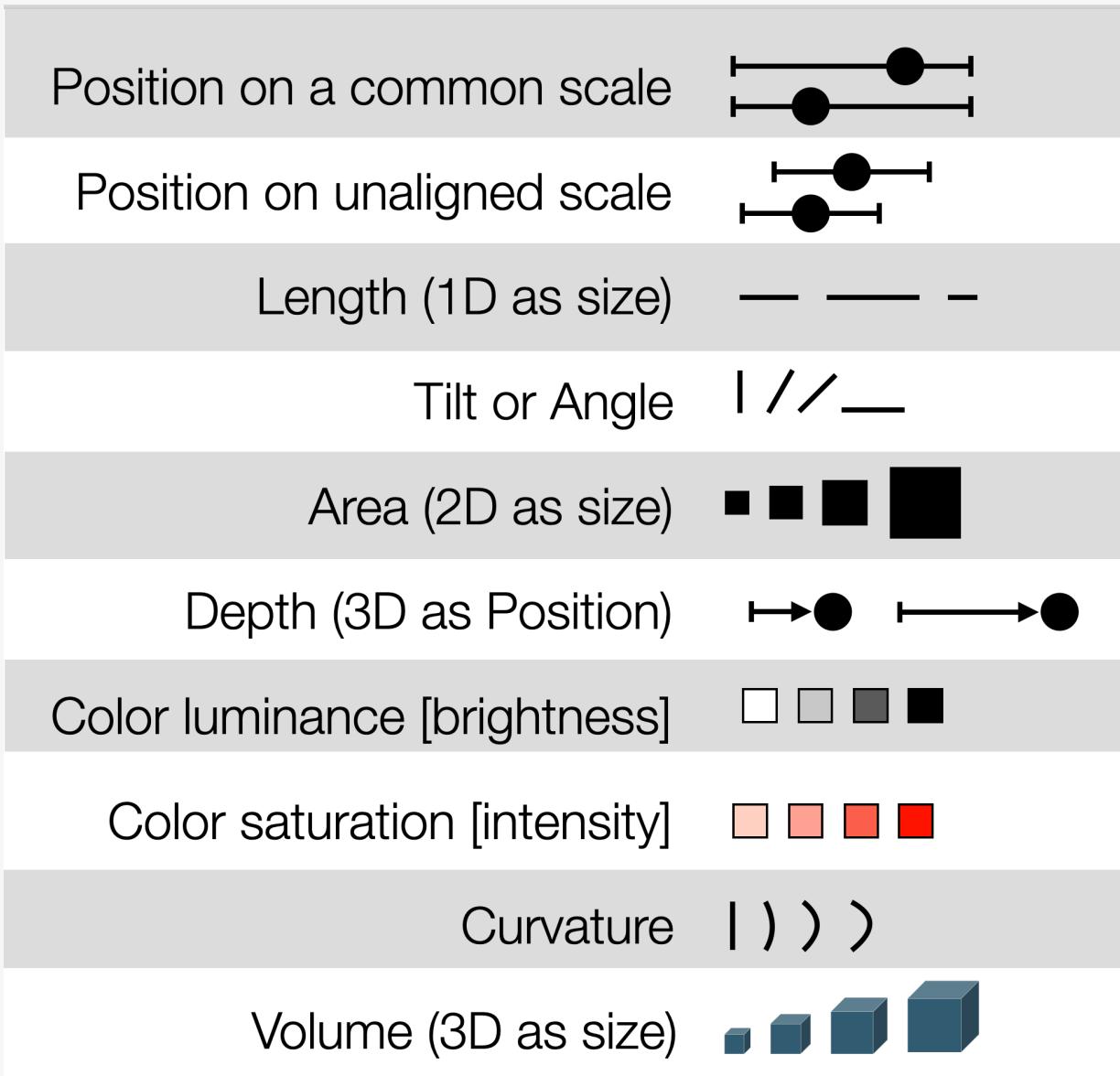


Figure 3. Graphs from position-angle experiment.



A rough hierarchy of
mappings for data



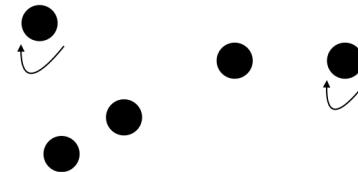
Spatial Region



Color [hue]



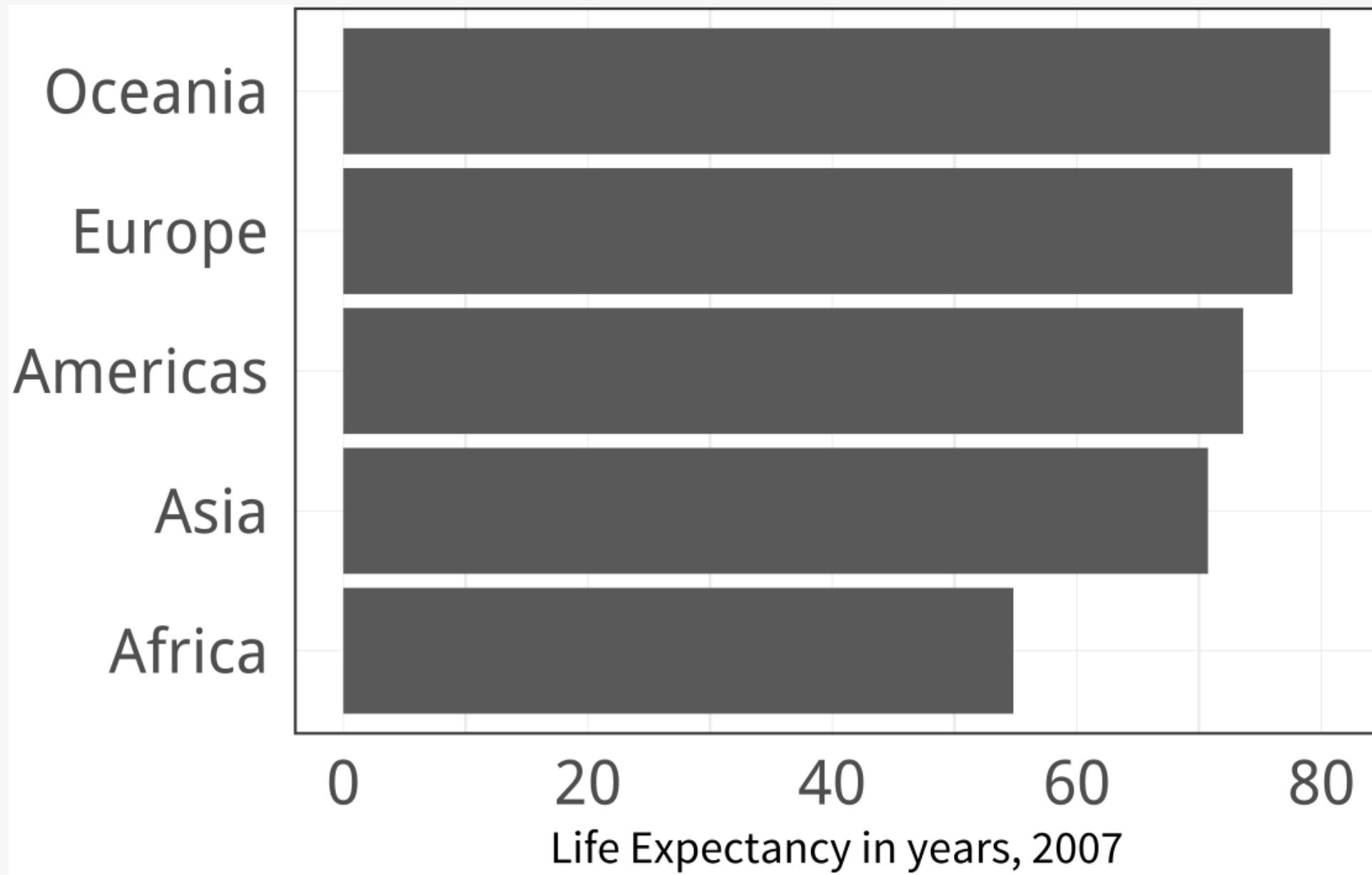
Motion



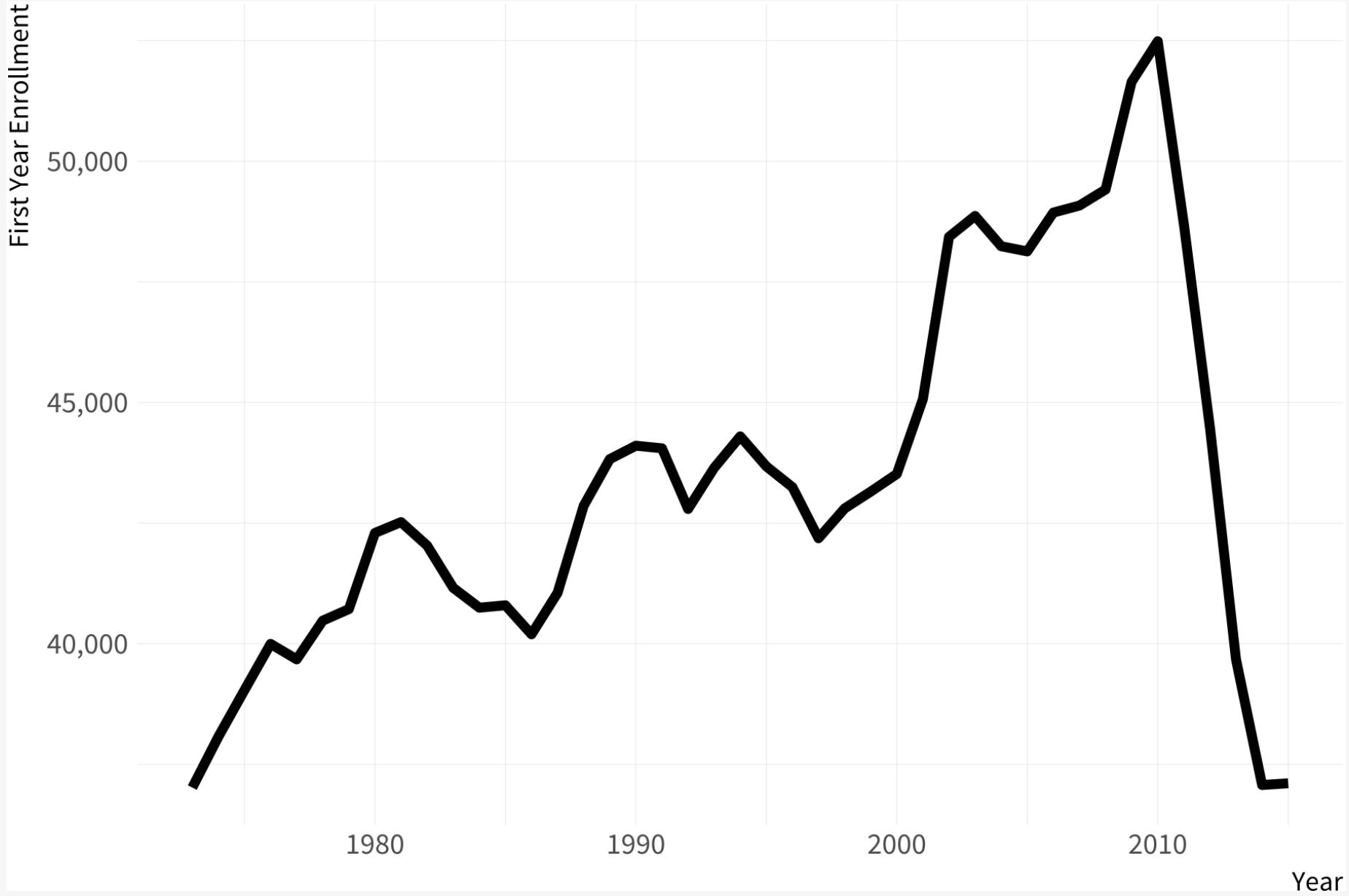
Shape

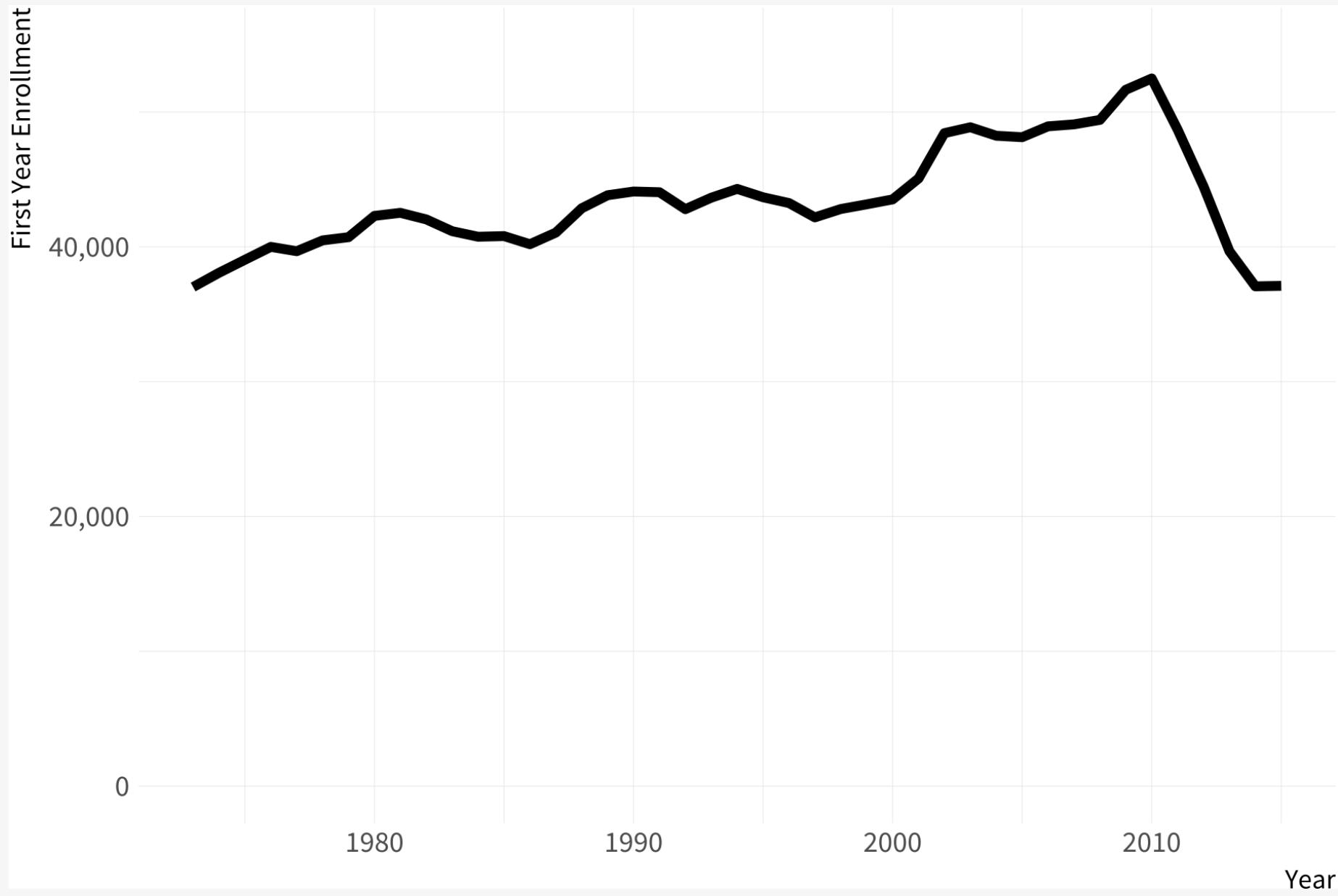


Honesty & judgment









CLARITY

CLARITY
HONESTY

CLARITY
HONESTY
TRUTH

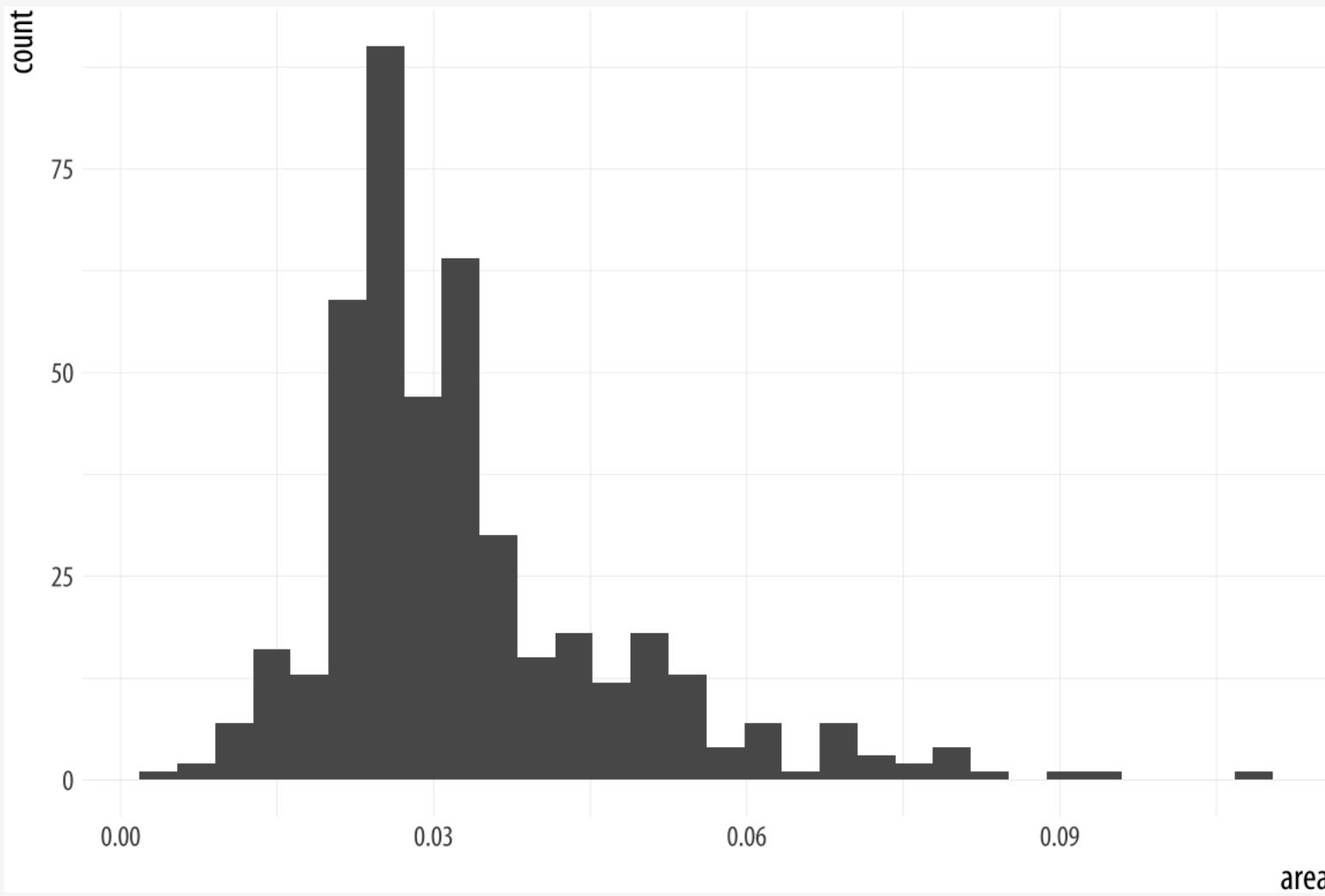
CONTEXT

CONTEXT CONVENTION

**CONTEXT
CONVENTION
MEANING**

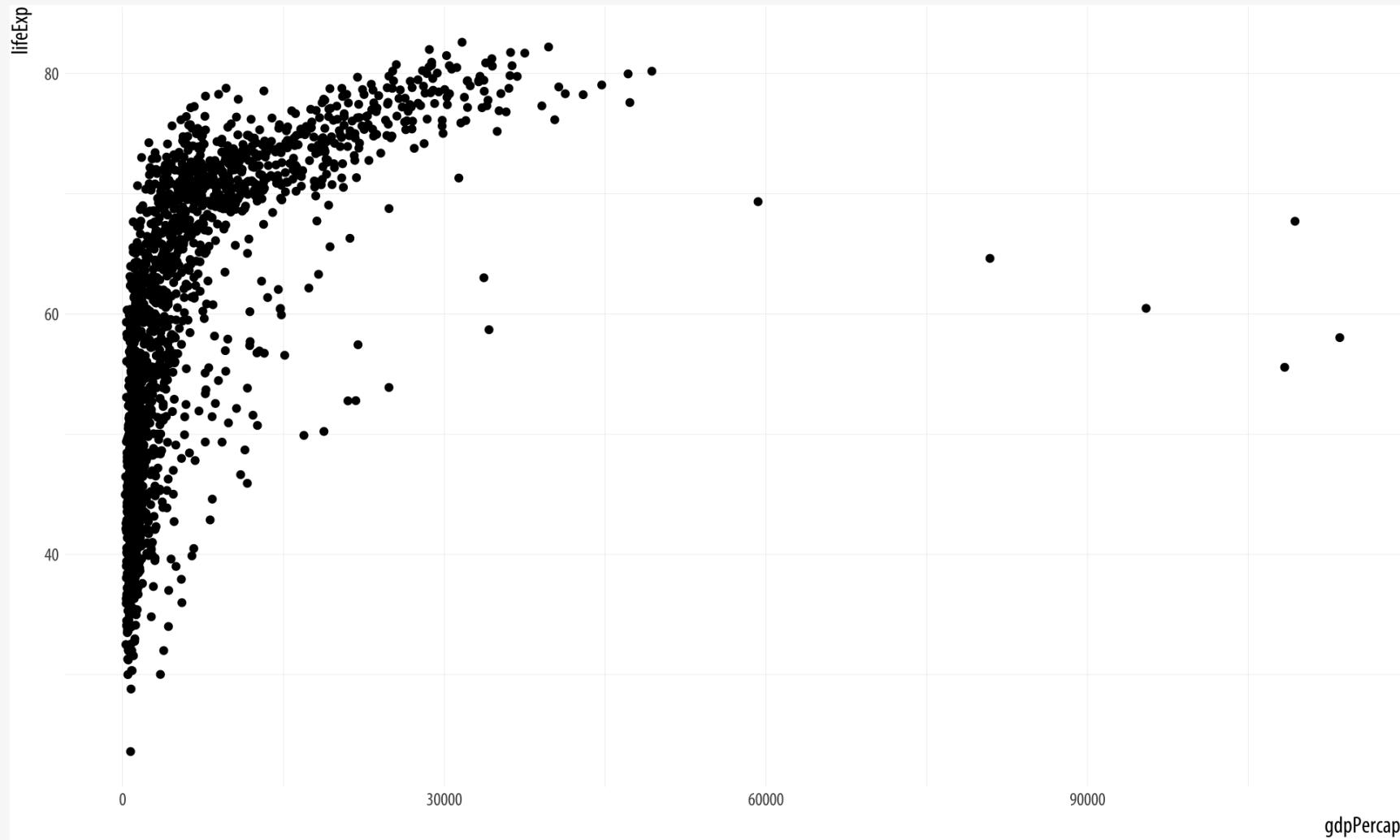
Graphing in practice

Workhorses



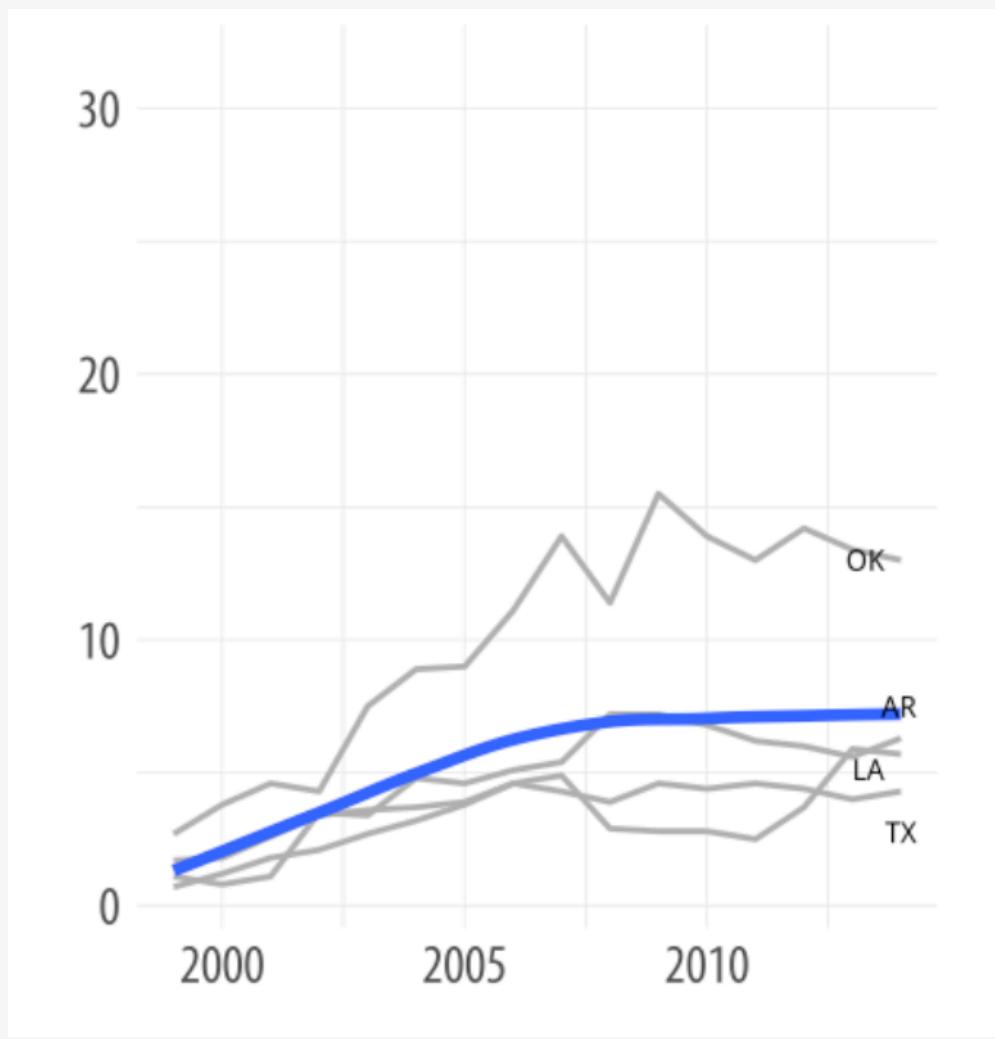
Histogram

Workhorses



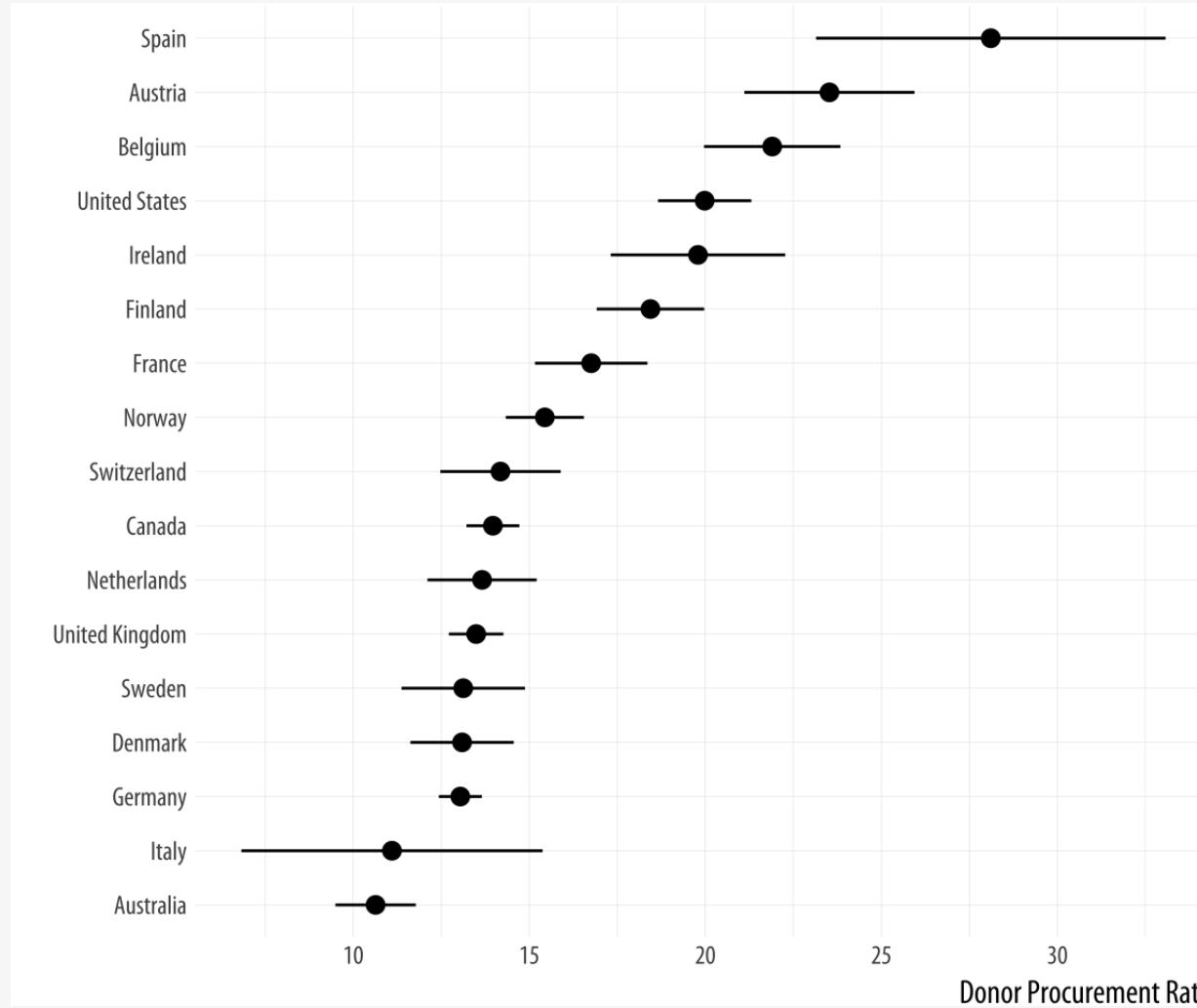
Scatterplot

Workhorses



Trend

Workhorses

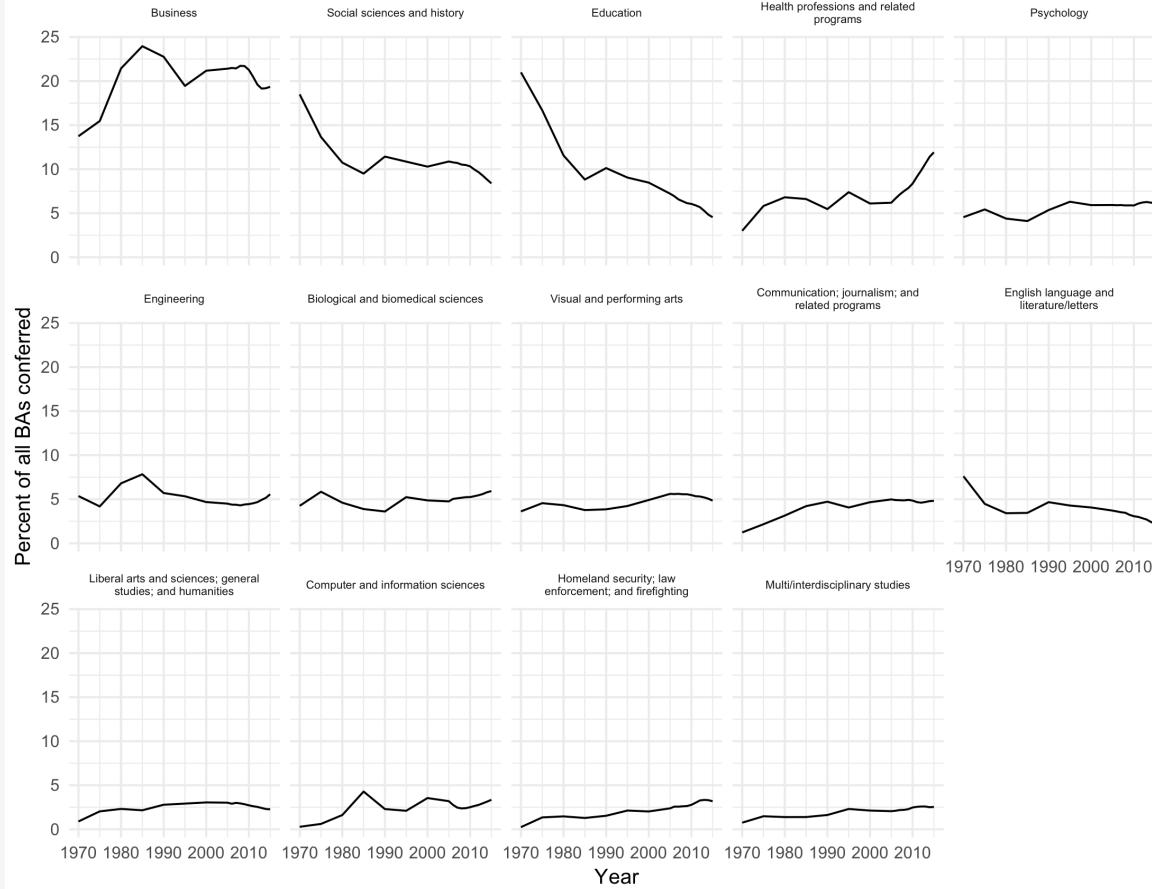


Point-and-range

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

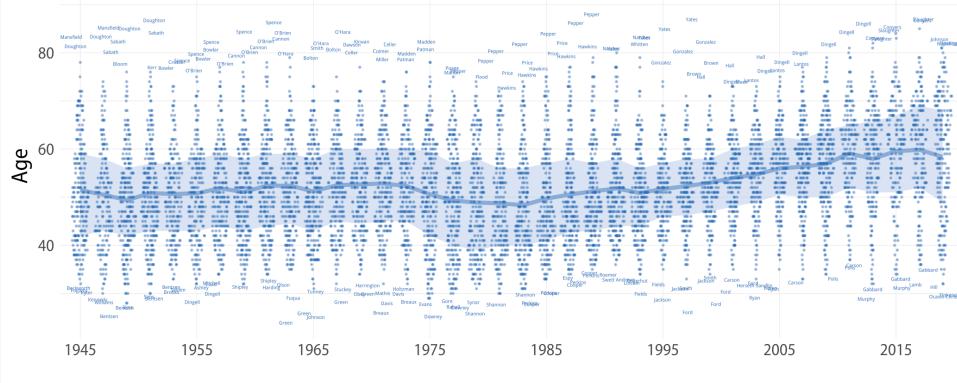
Show Ponies

Age Distribution of Congressional Representatives, 1945-2019

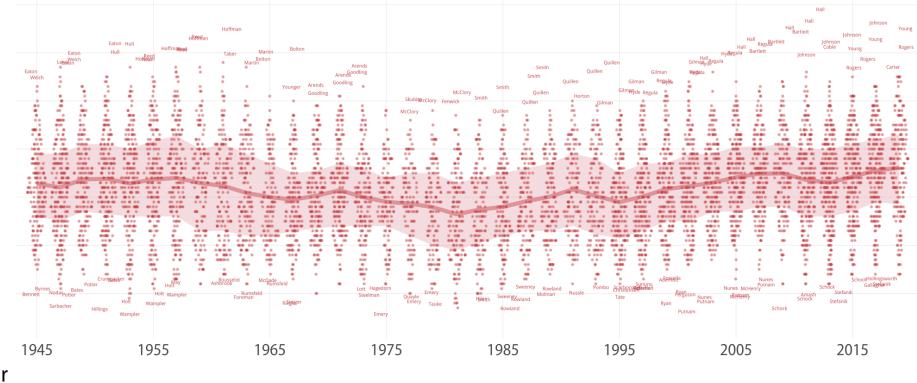
Trend line is mean age; bands are 25th and 75th percentiles of the range.

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

Democrats



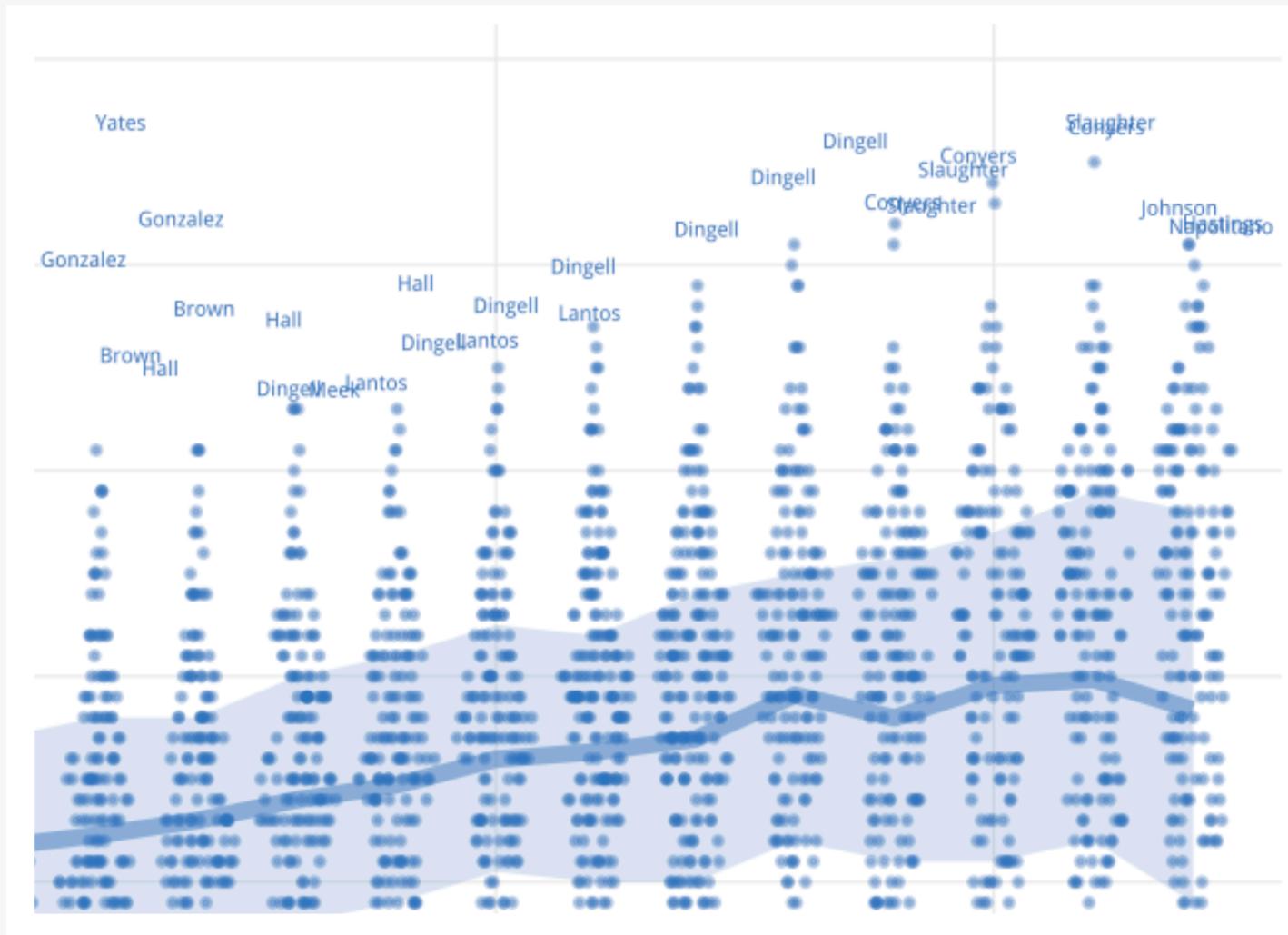
Republicans



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

Congressional comparison

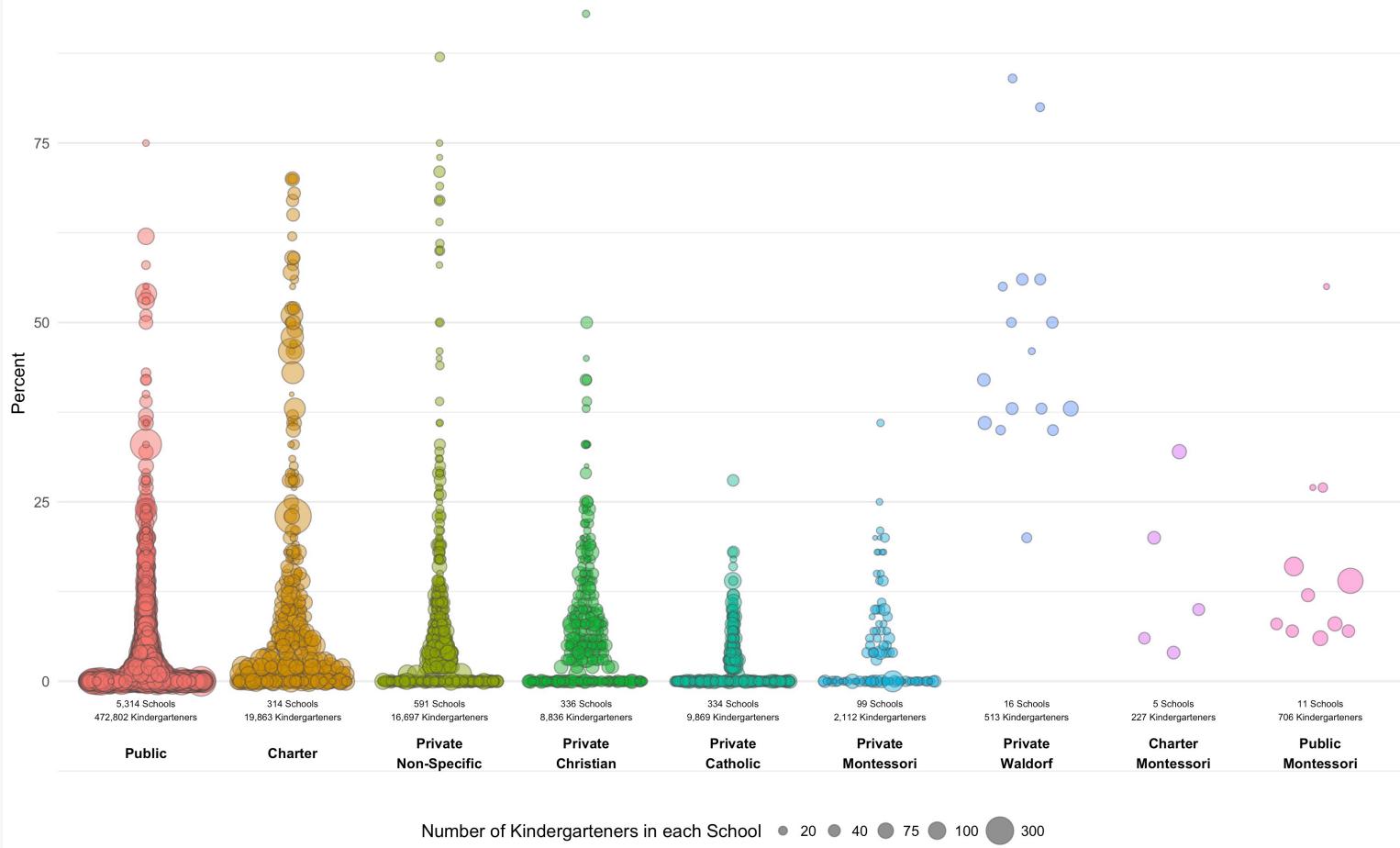
Show Ponies



Several plots at once

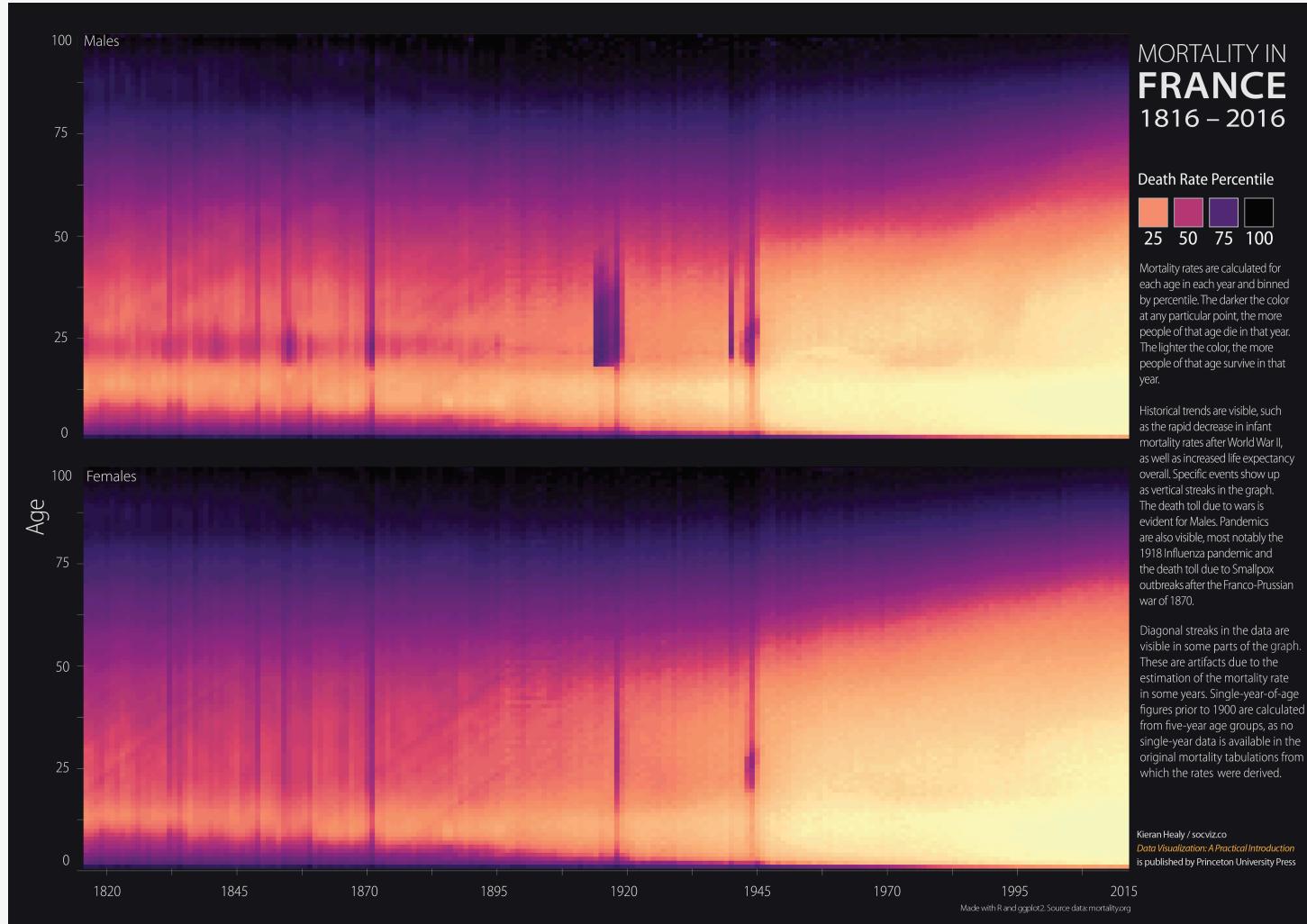
Show Ponies

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



Beeswarm plot

Show Ponies

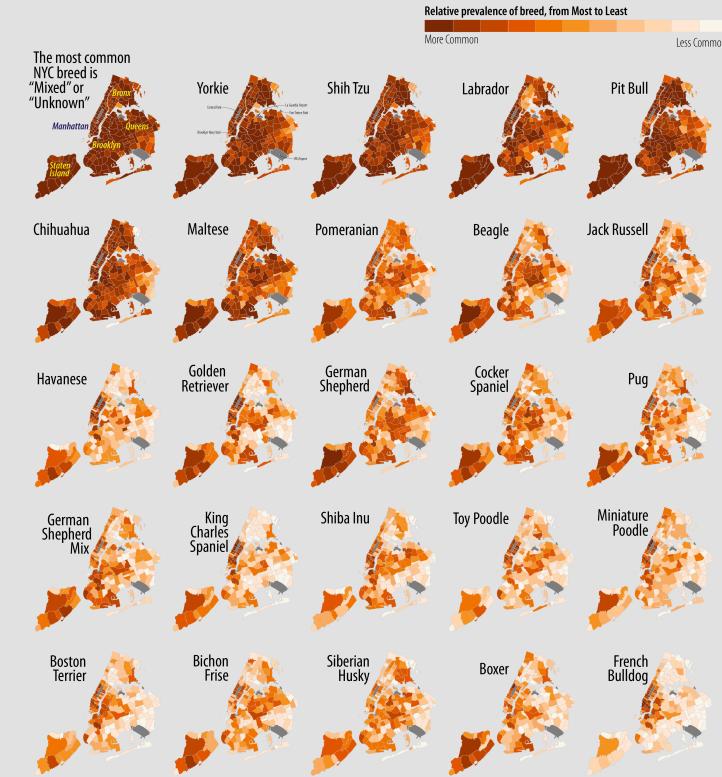


Lexis Surface

Show Ponies

Dogs of New York

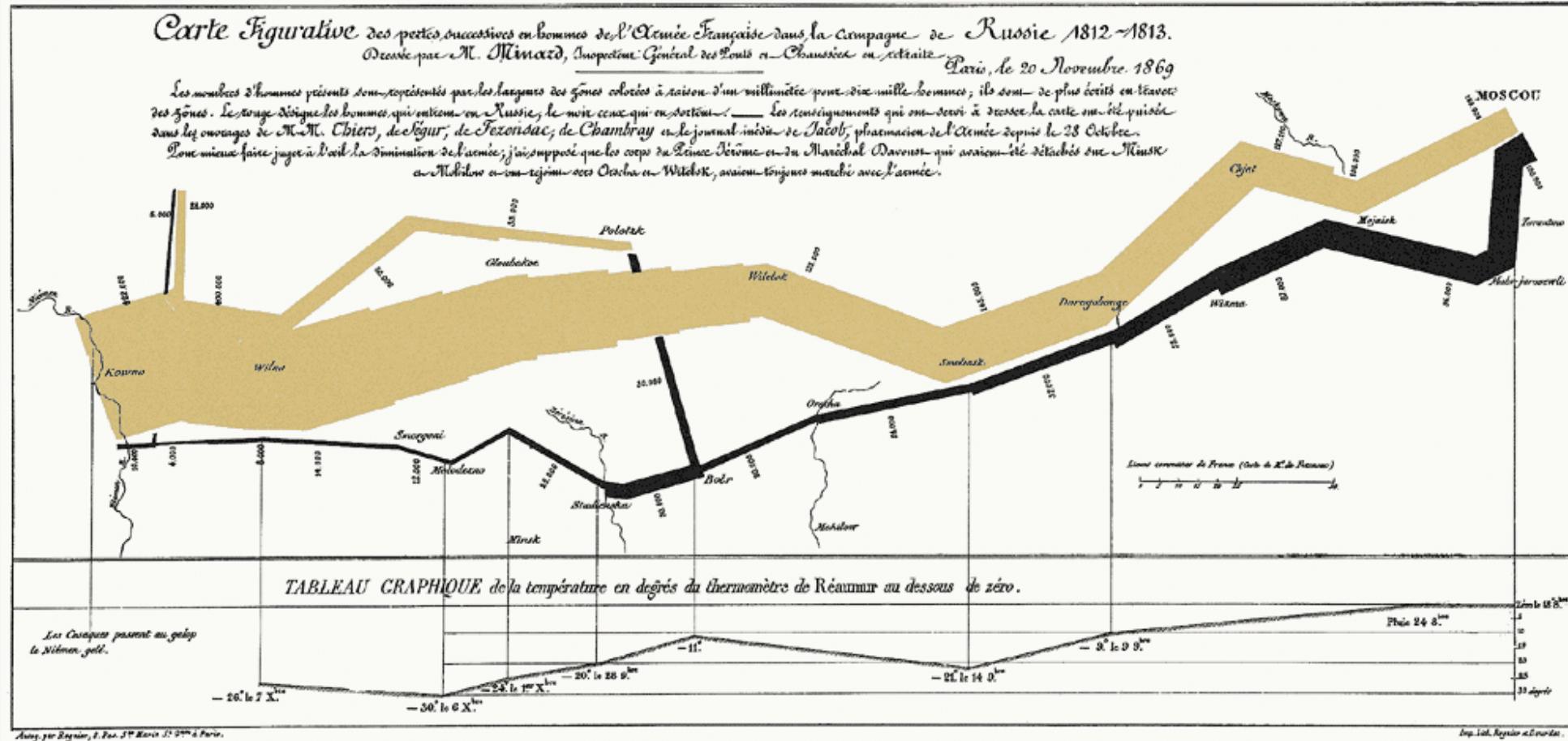
Based on data from New York City's Dog Licensing System, these maps show the relative prevalence of the twenty five most common breeds of dog, by zip code.



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

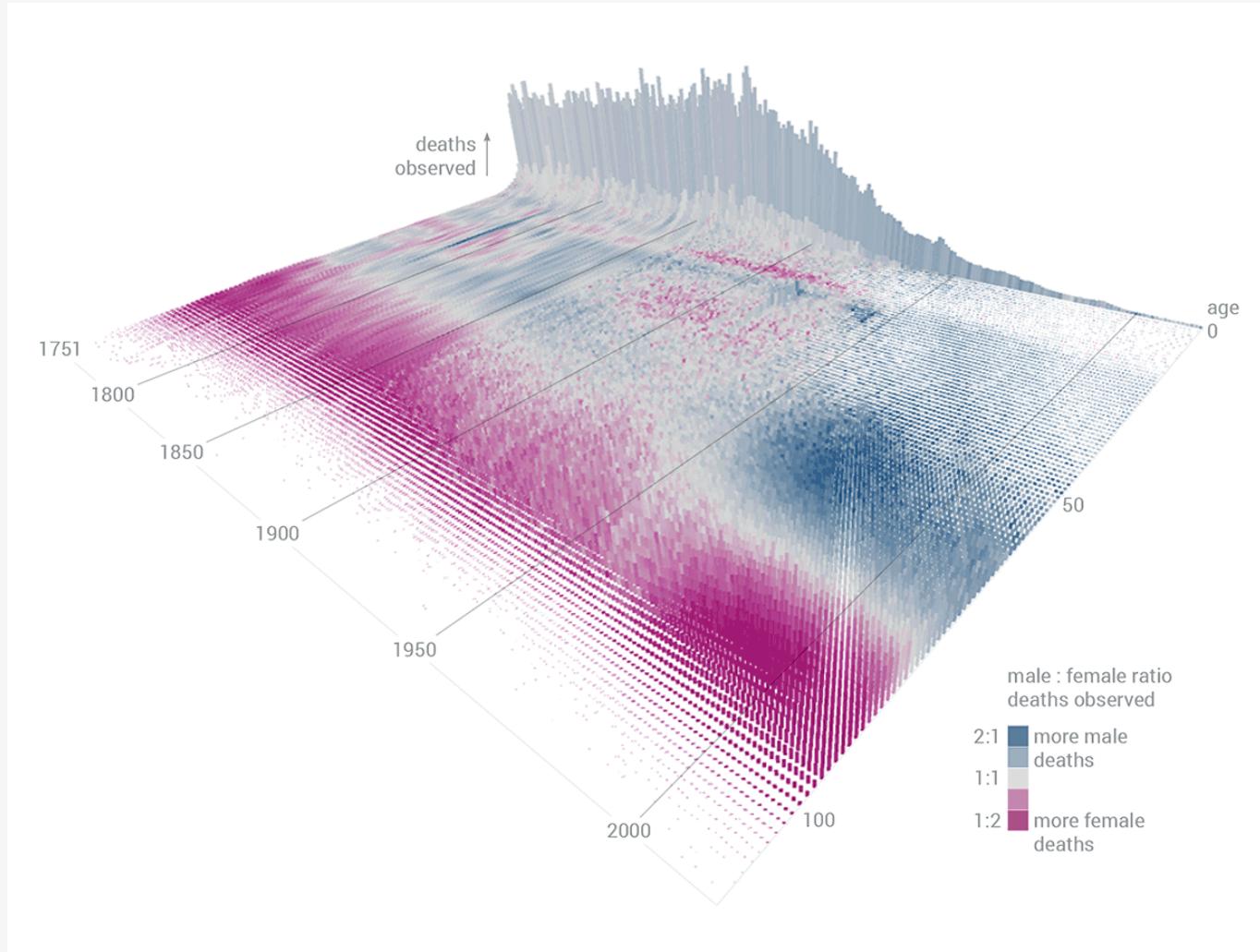
Faceted maps

Unicorns ...



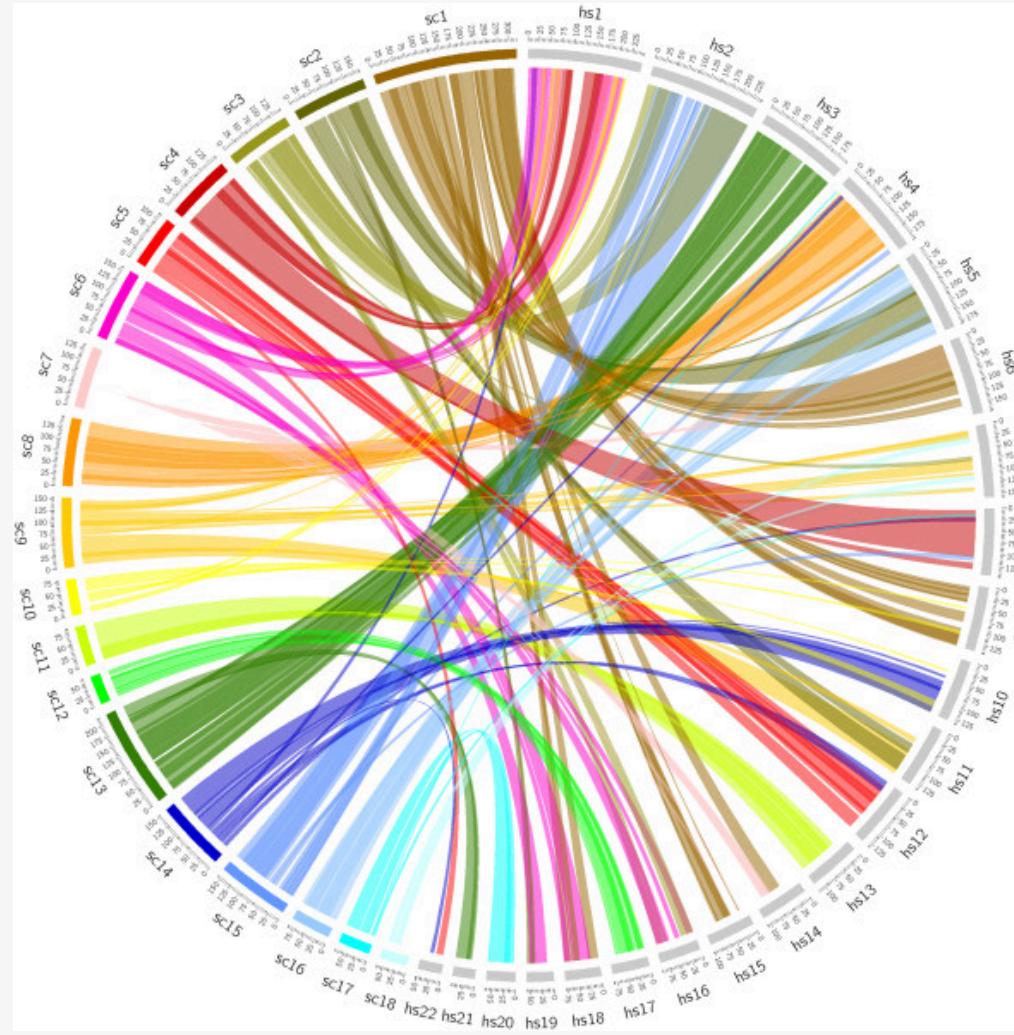
The inevitable Minard

Unicorns ...



Swedish mortality

... or monsters



Network chords