

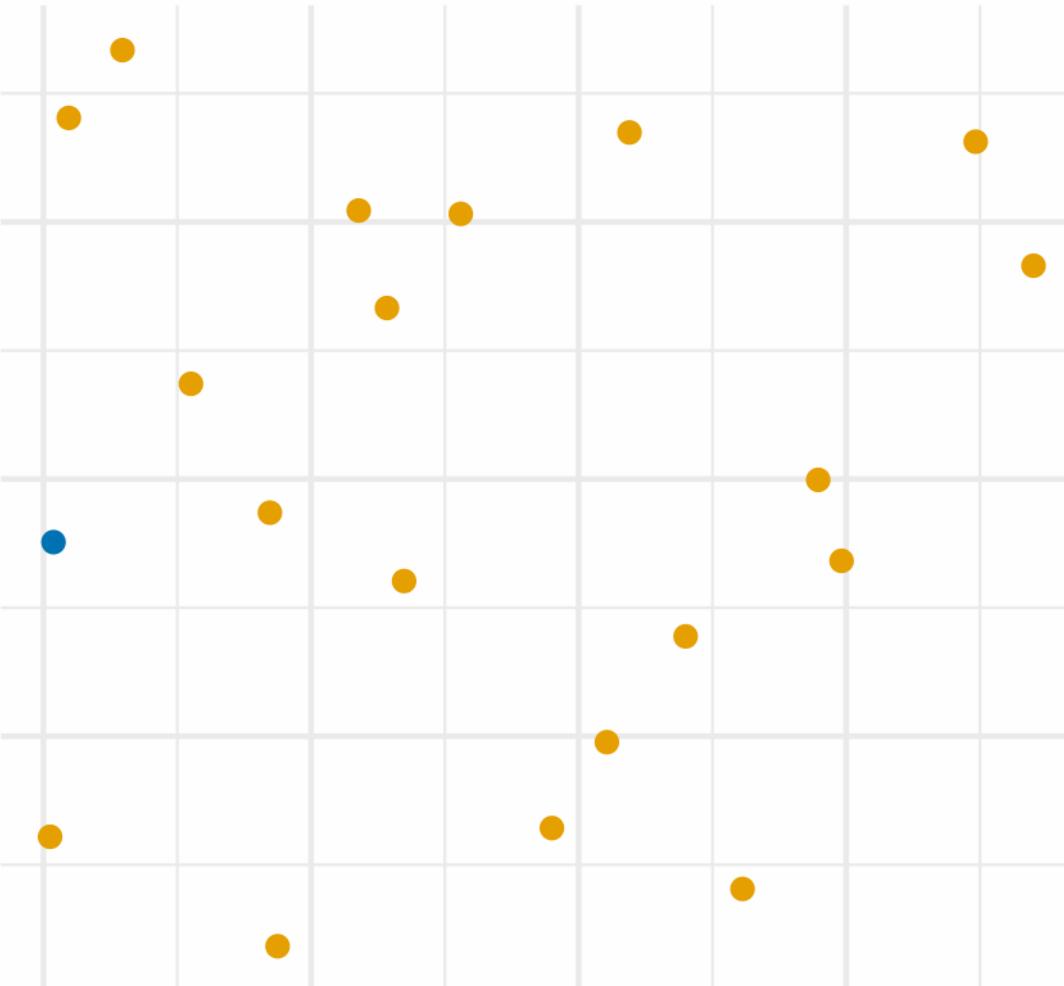
Data Visualization with R and `ggplot2`

Data Visualization: Session 1

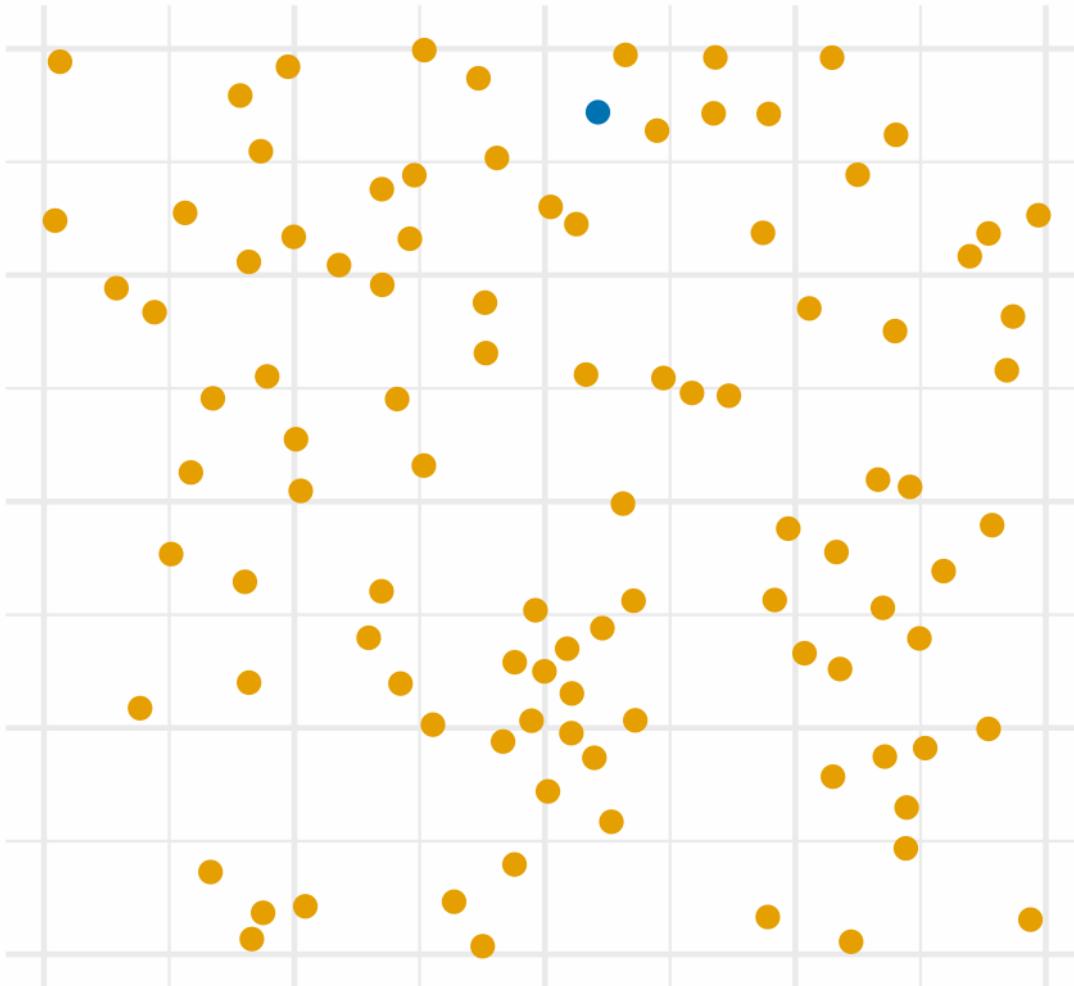
Kieran Healy
Code Horizons, May 2022

Pre-Attentive Processing

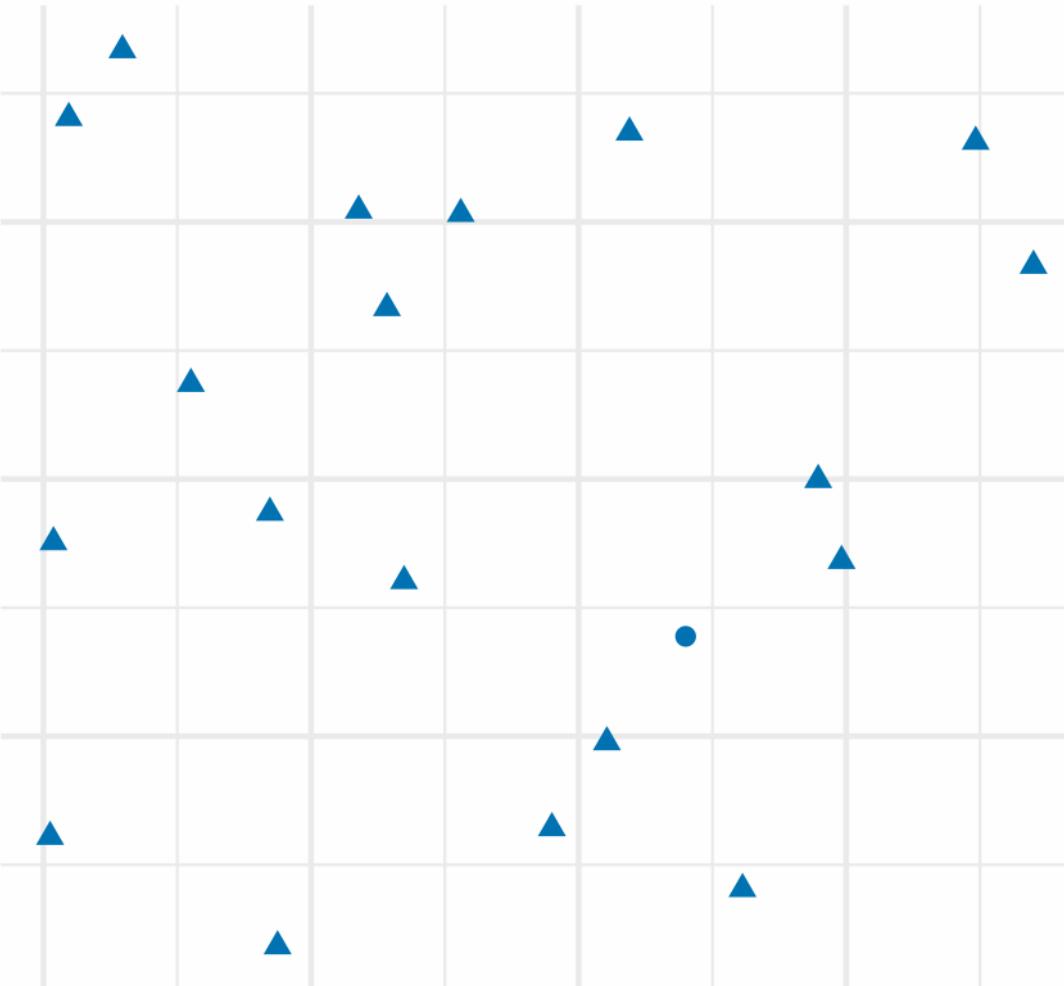
Color only, N = 20



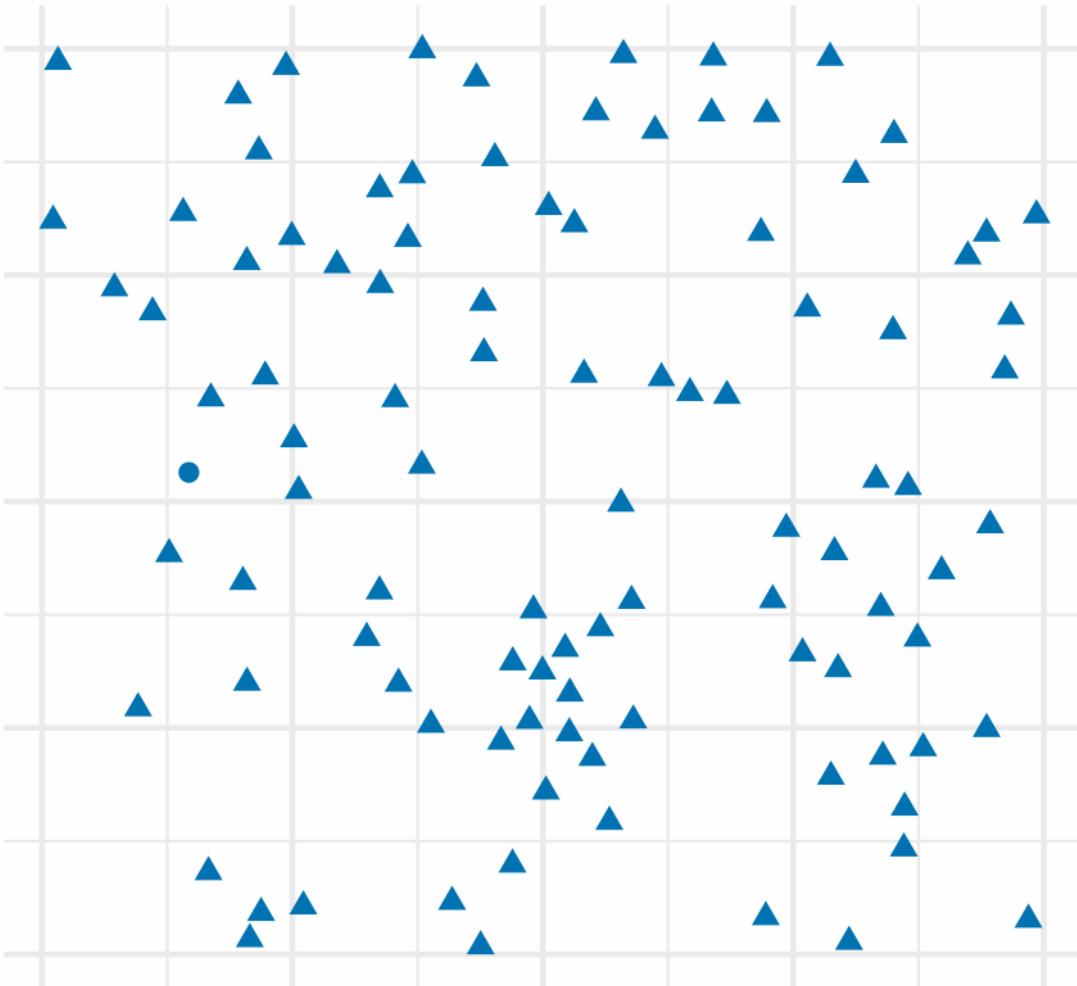
Color only, N = 100



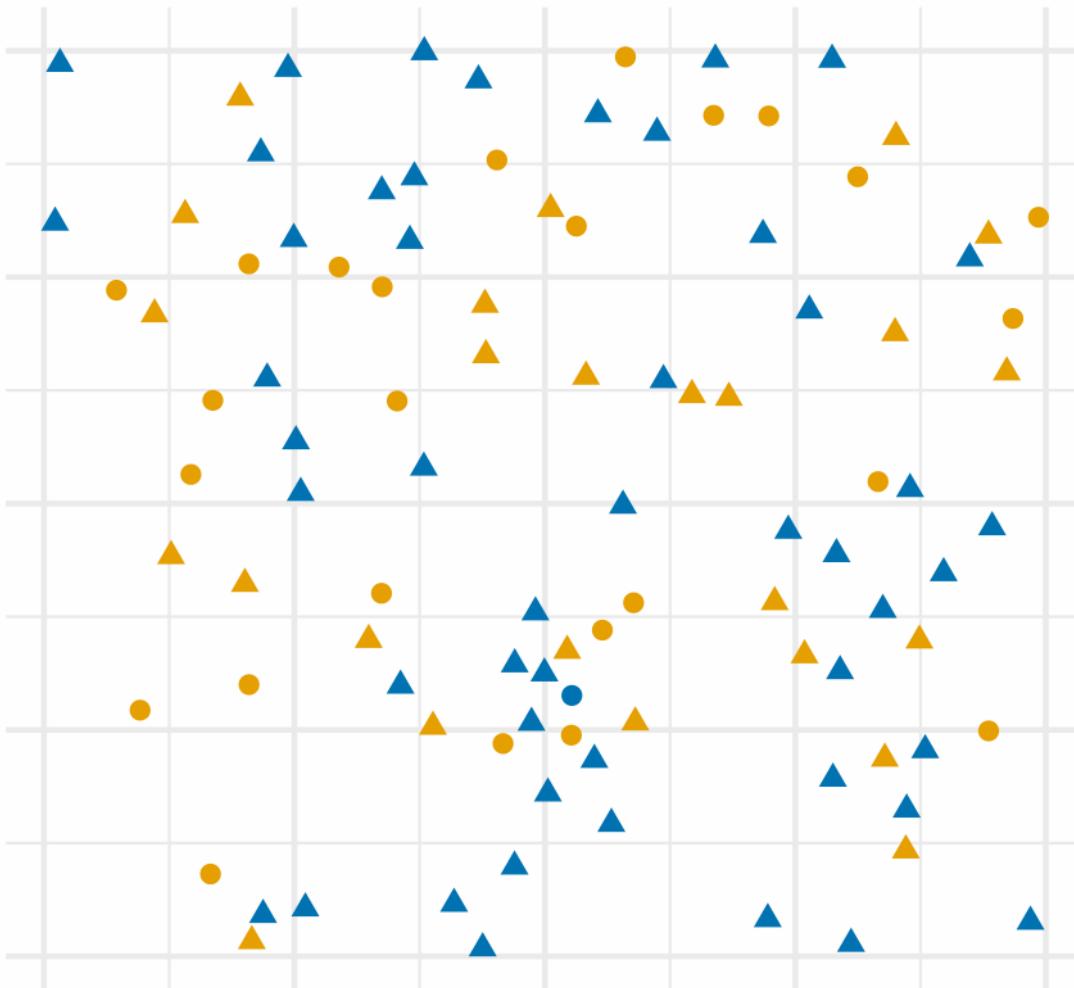
Shape only, N = 20

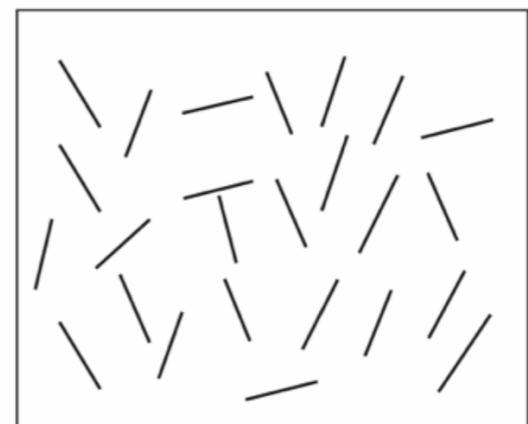
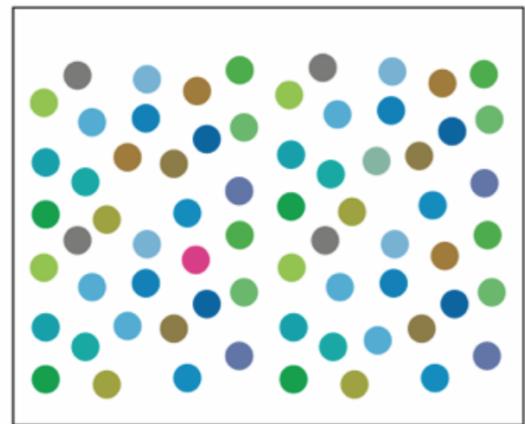
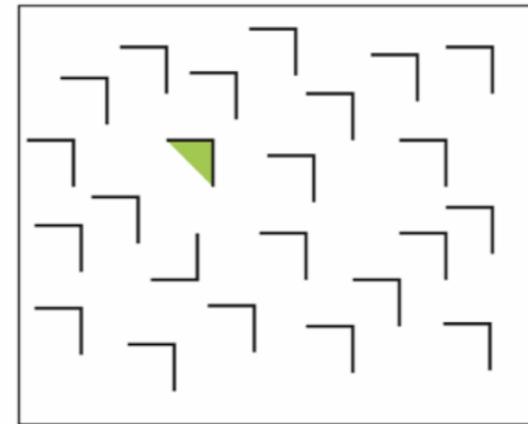
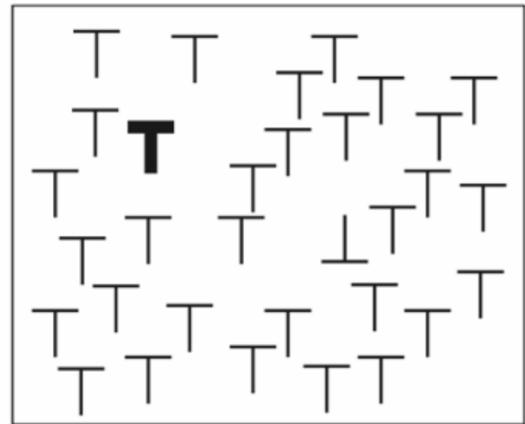


Shape only, N = 100



Color and Shape, N = 100



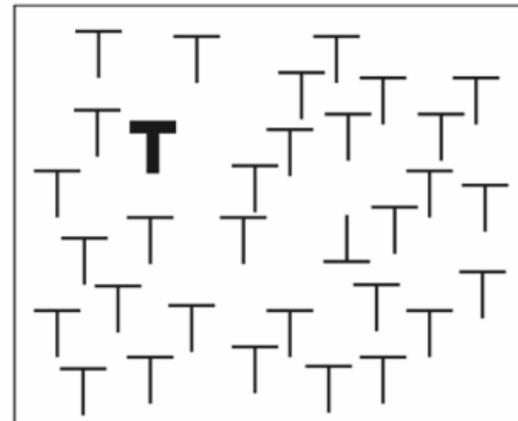


⊥

difficult

T

easy

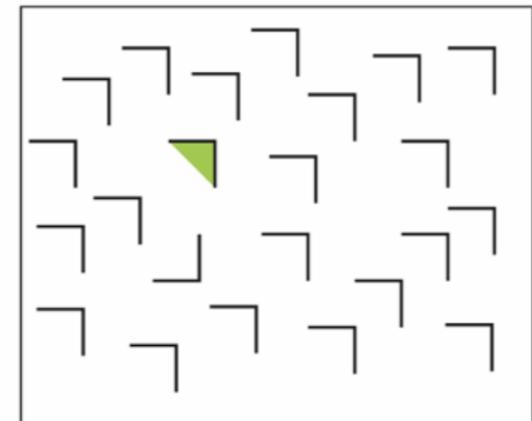


⊜

difficult



easy

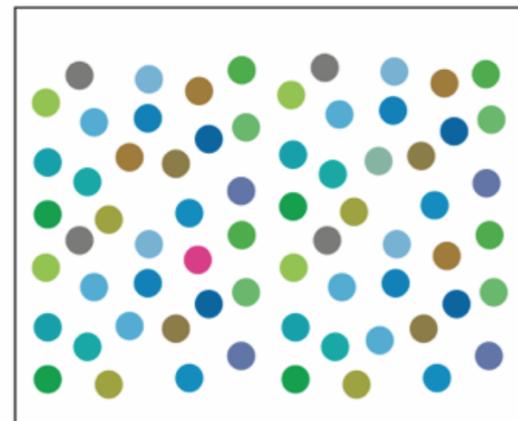


●

difficult

●

easy

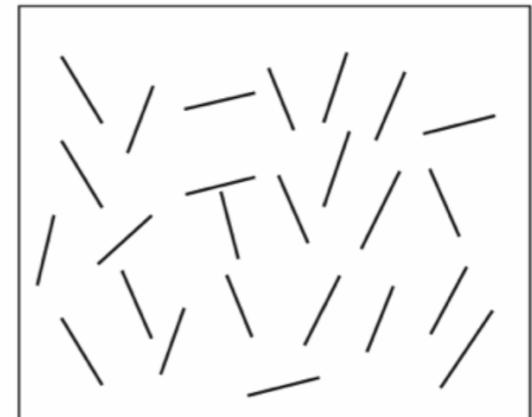


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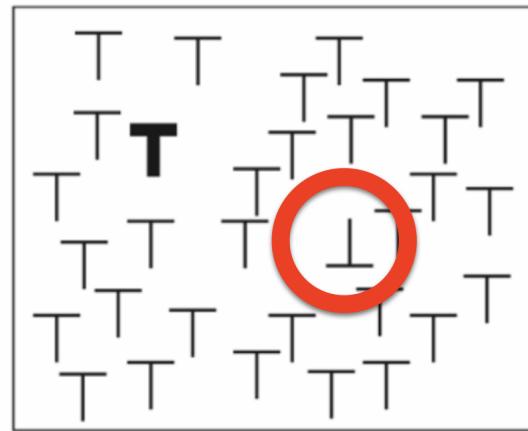
difficult



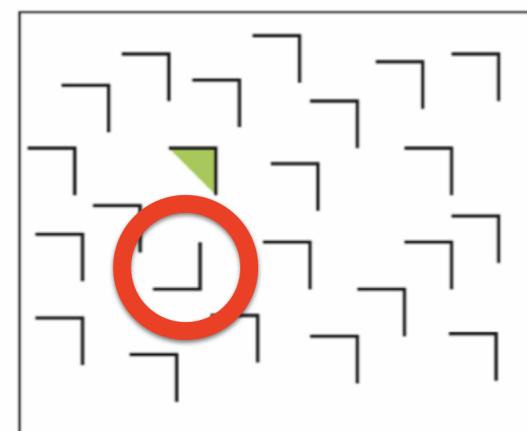
easy



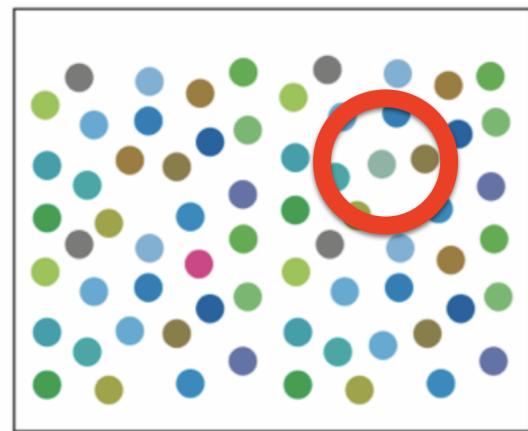
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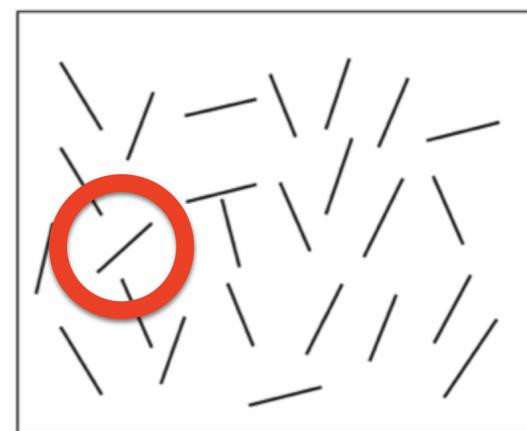
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difficult
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easy



●
difficult
●
easy



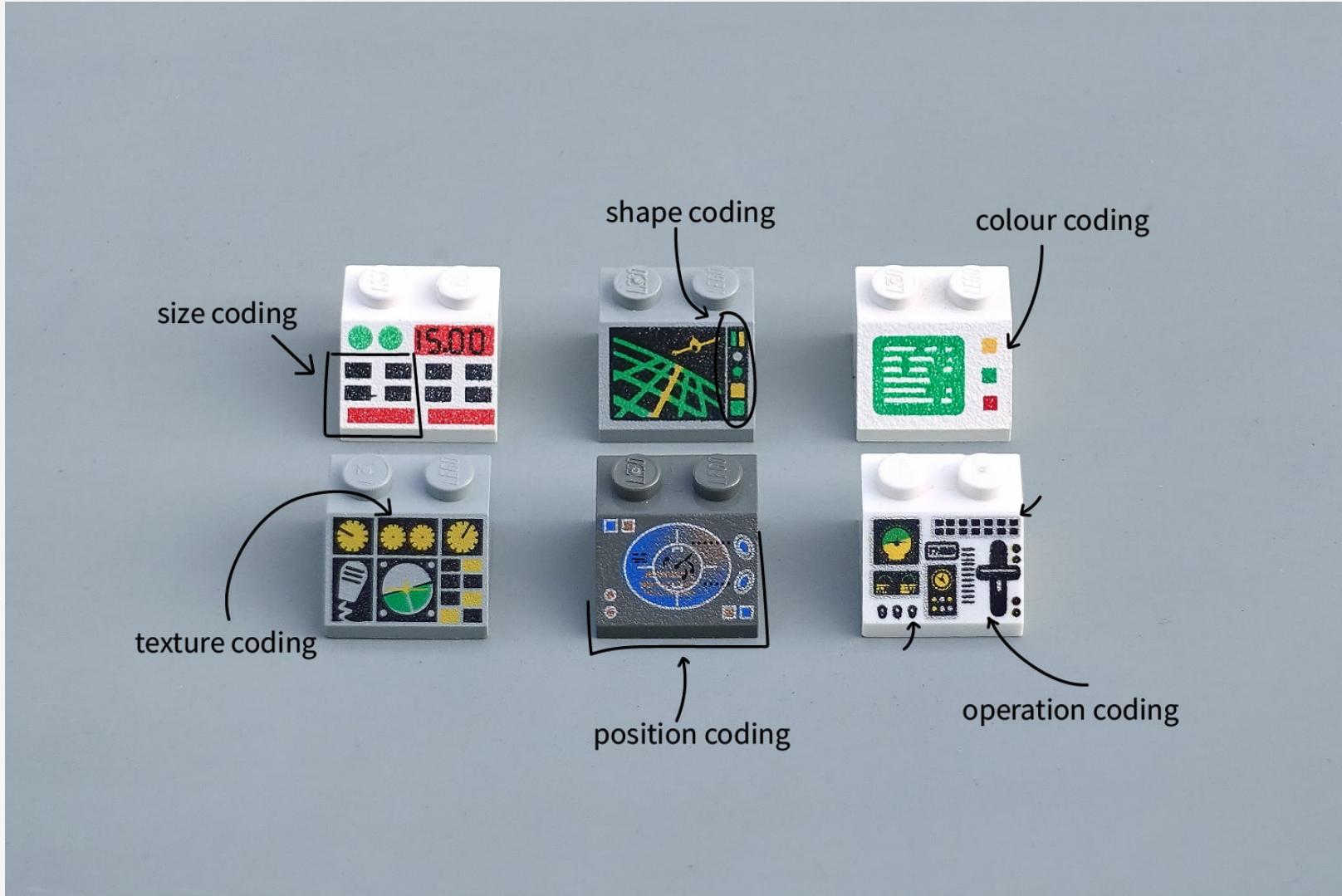
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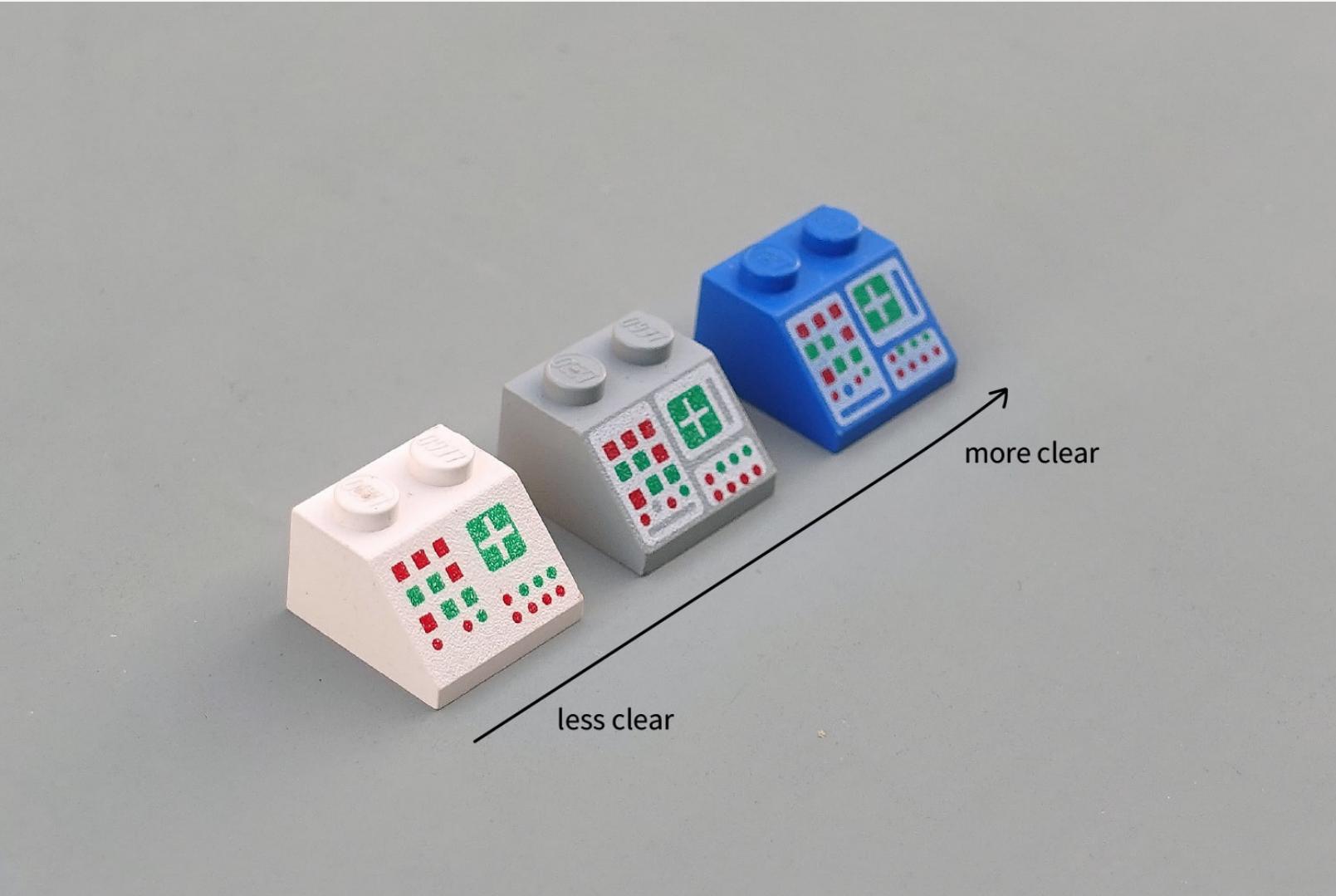
Gestalt Inferences and Design



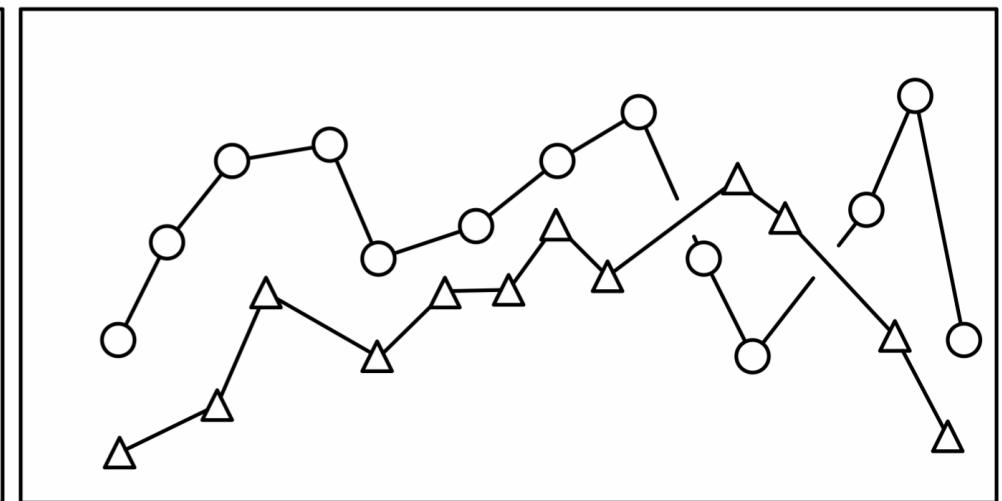
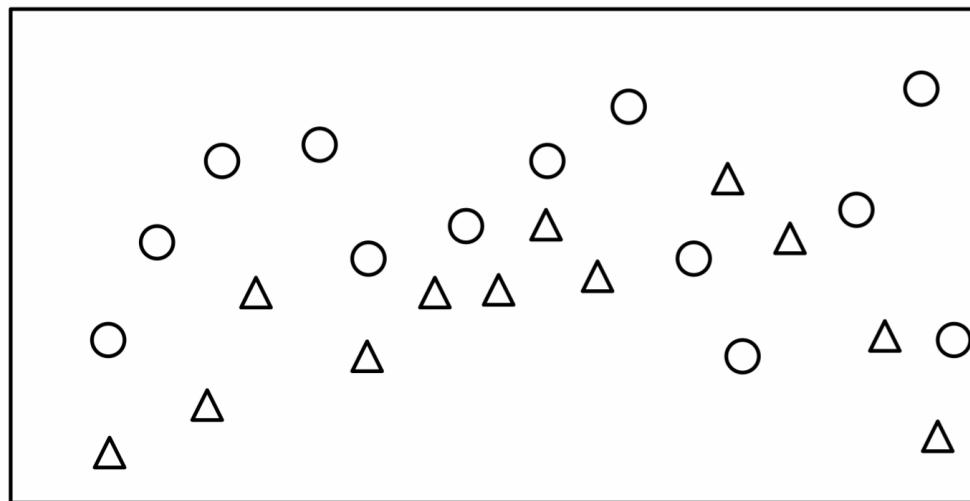
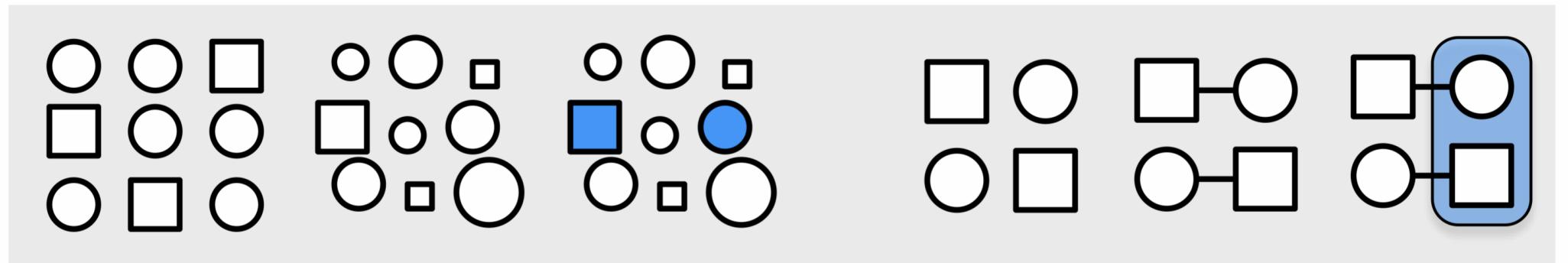
George Cave



George Cave



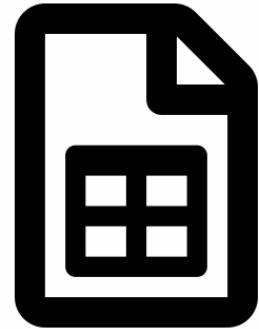
George Cave



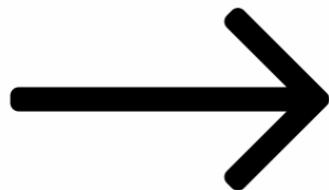
**Encodings
or mappings
for data**

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

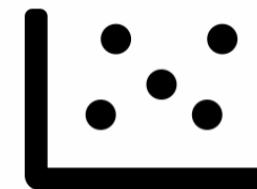
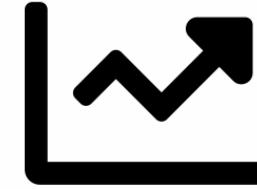
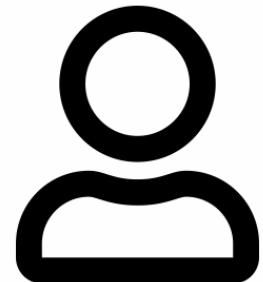
Data



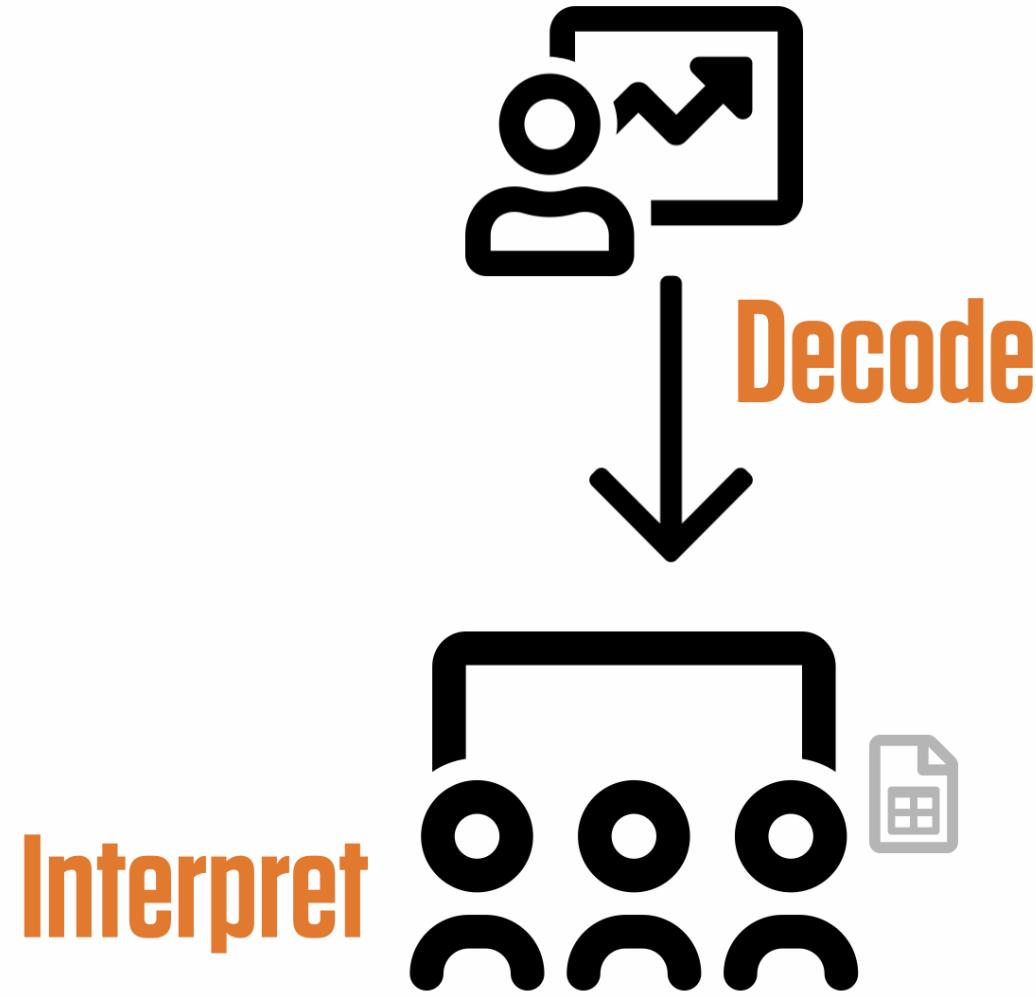
Encoded



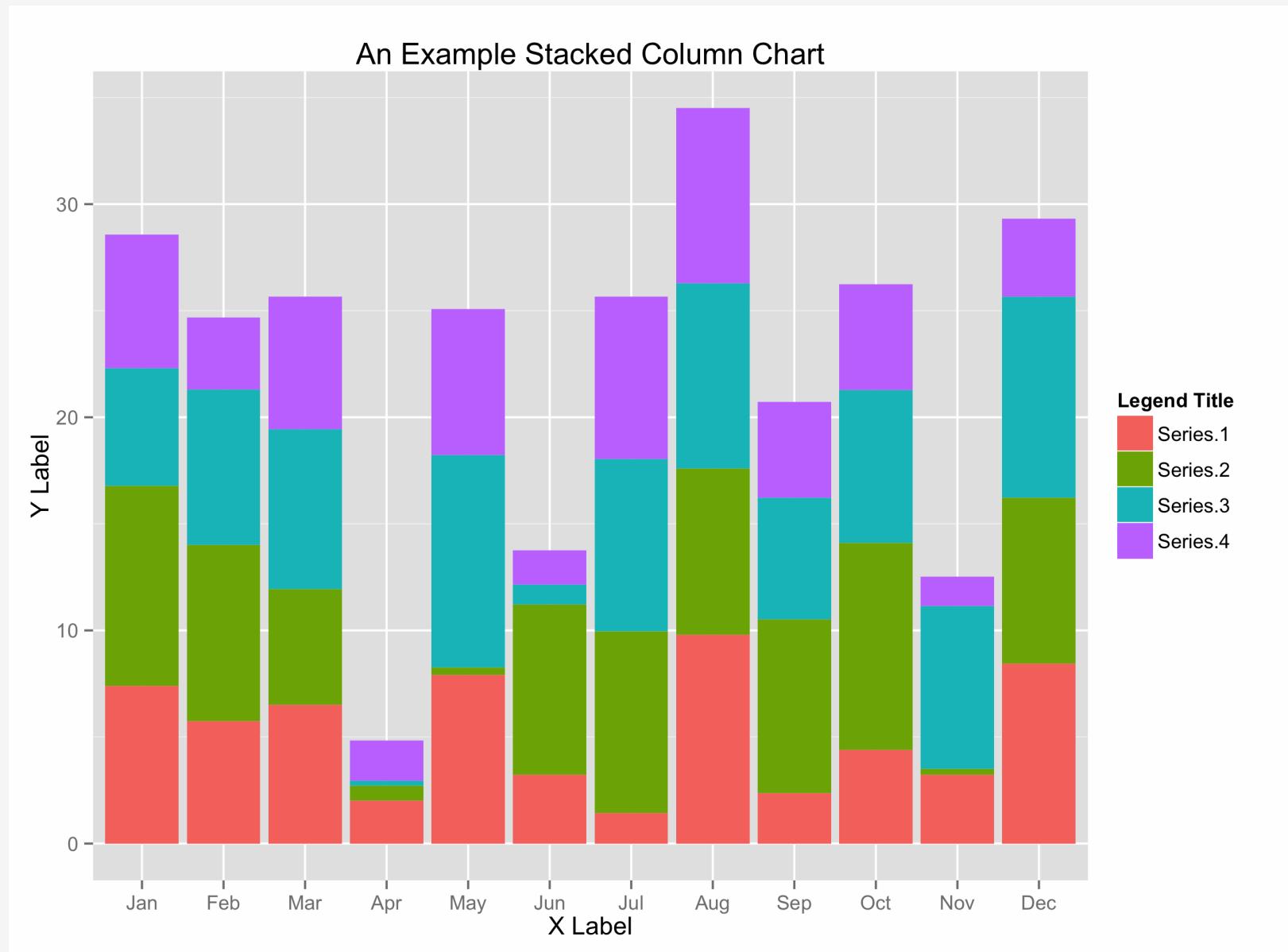
or mapped

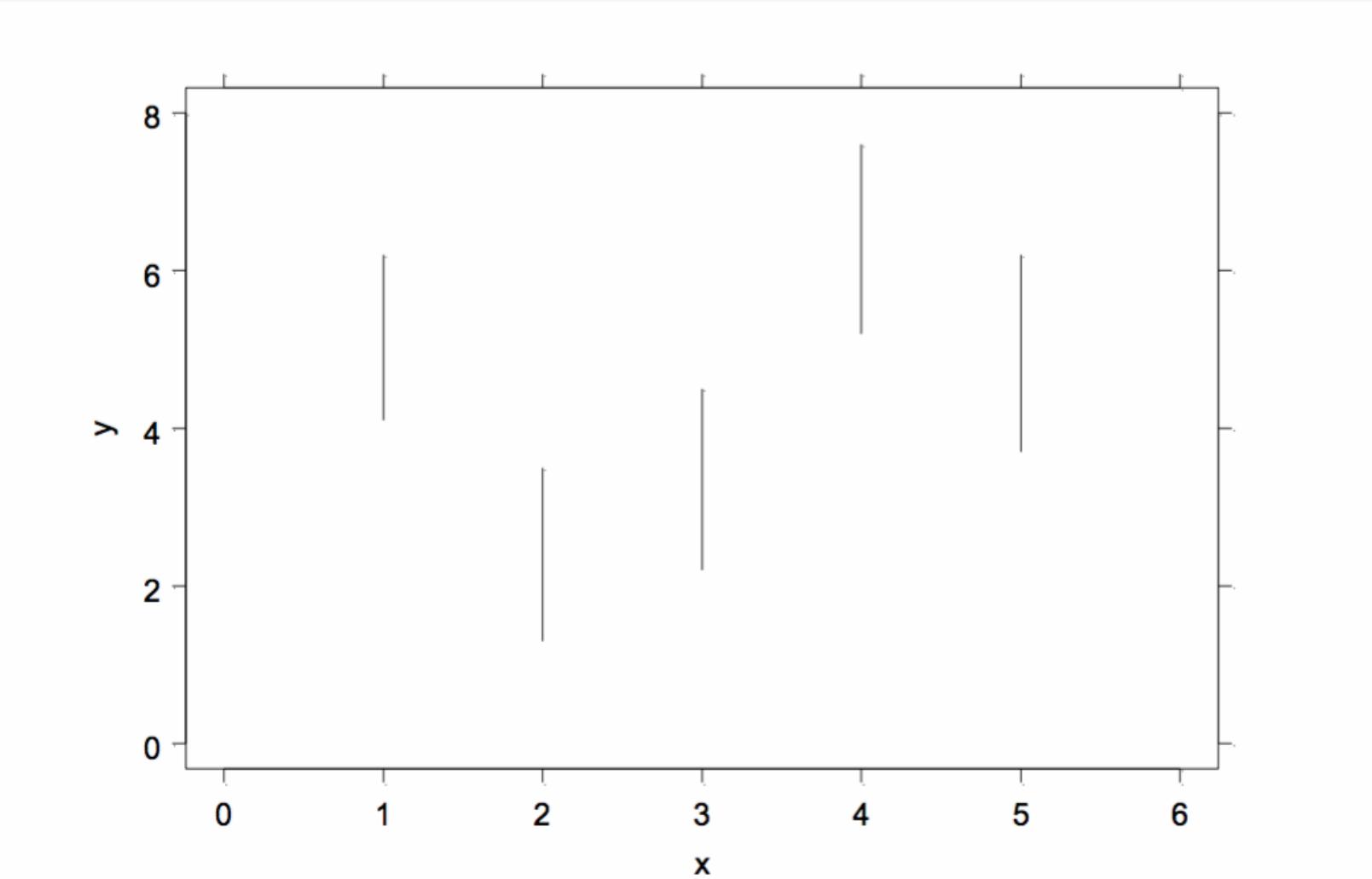


Some sort of
faithful visual
representation

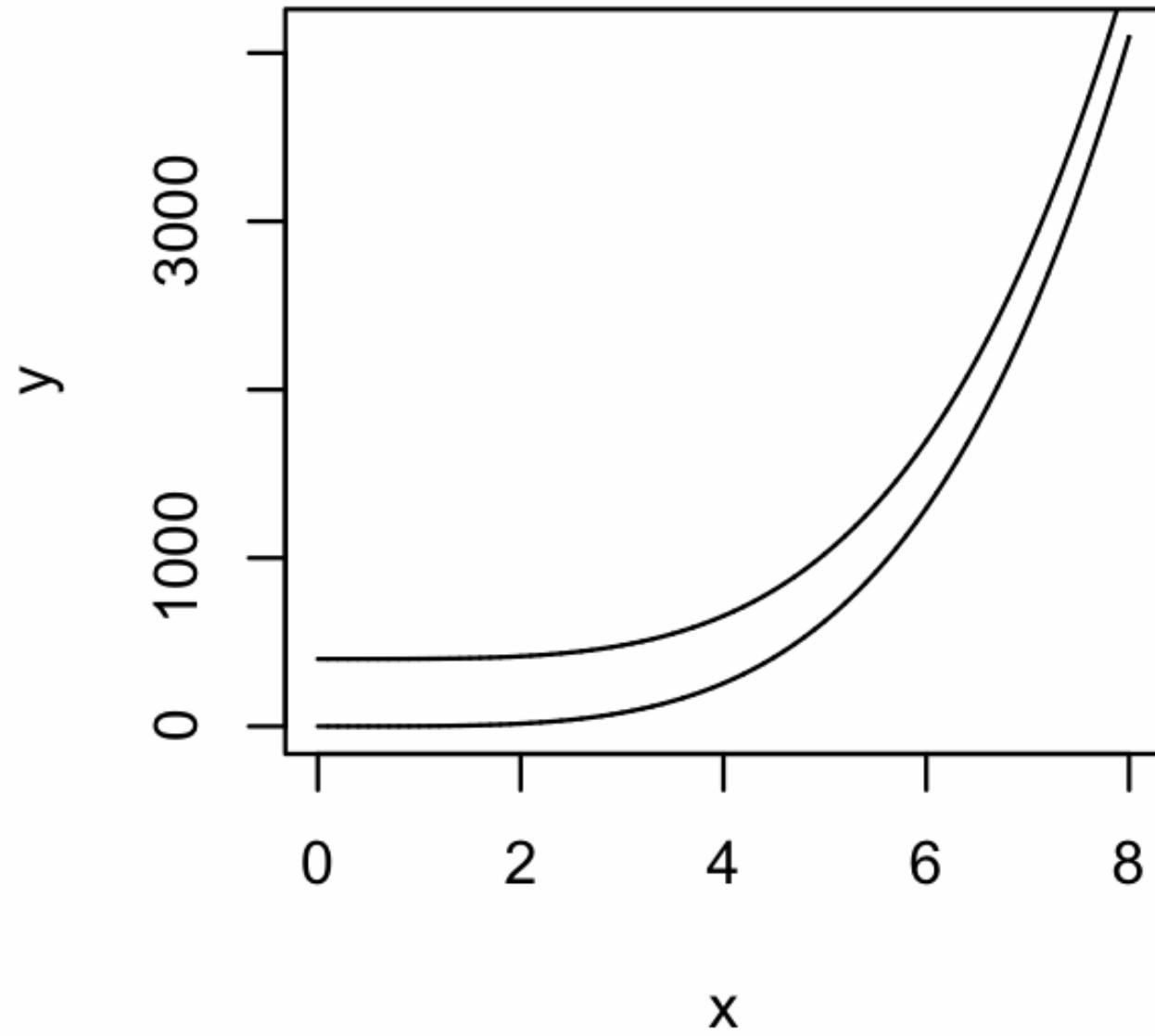


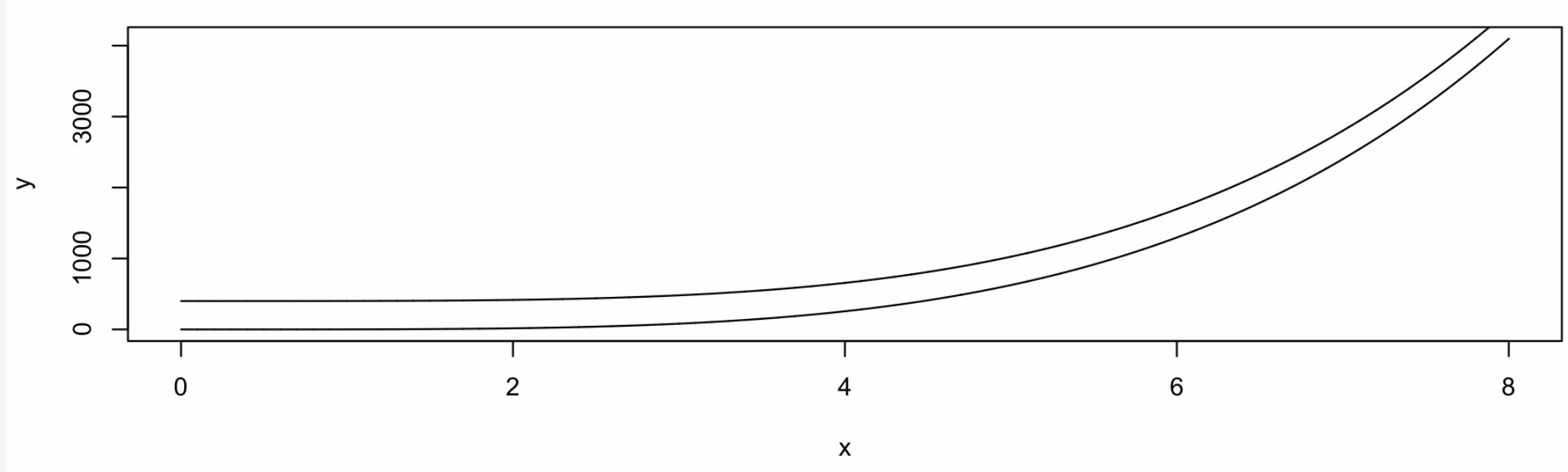
Visual tasks in decoding graphs





William Cleveland





William Cleveland

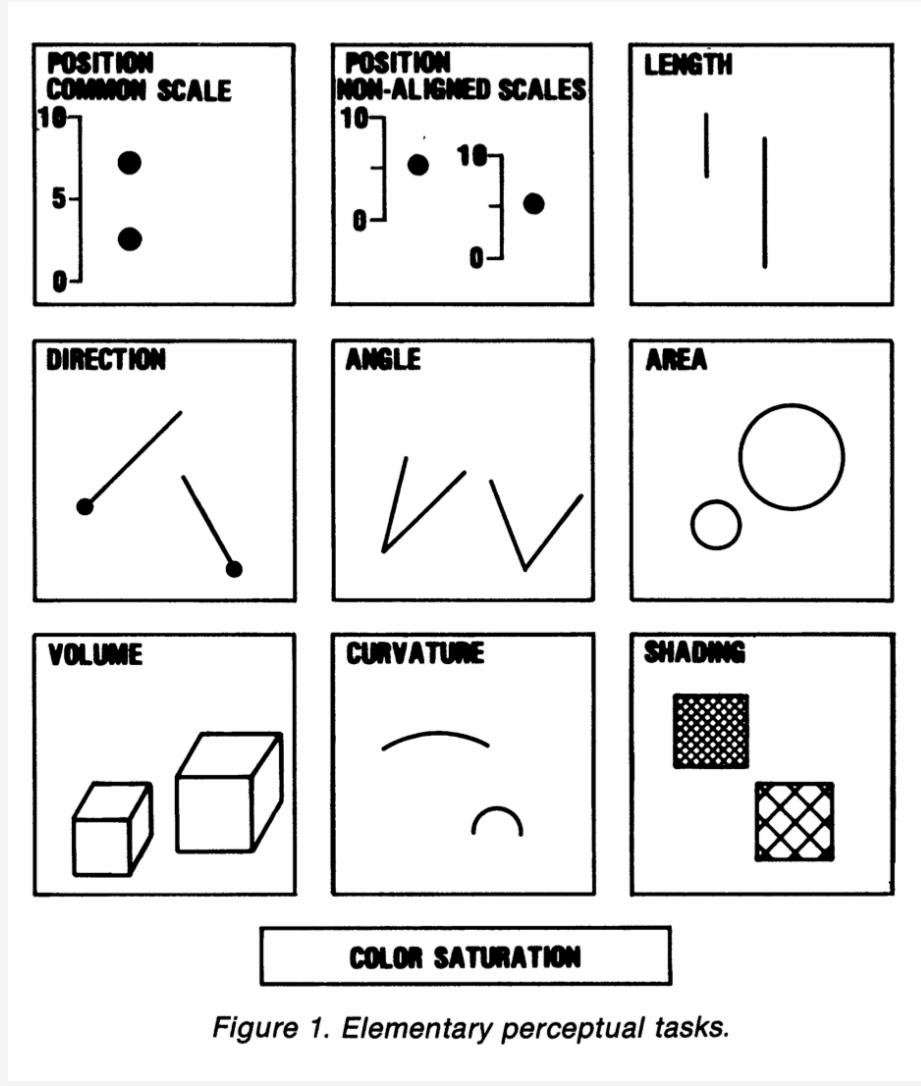


Figure 1. Elementary perceptual tasks.

William Cleveland

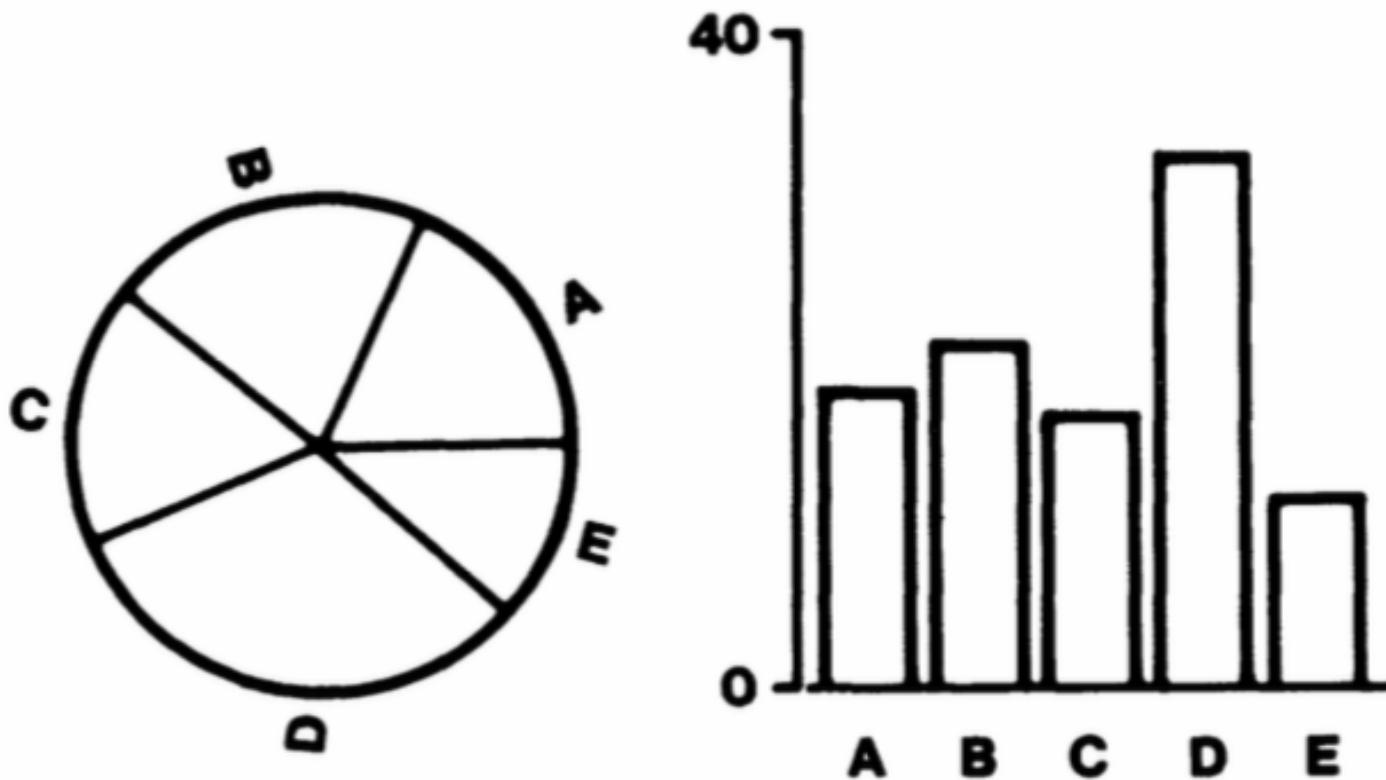
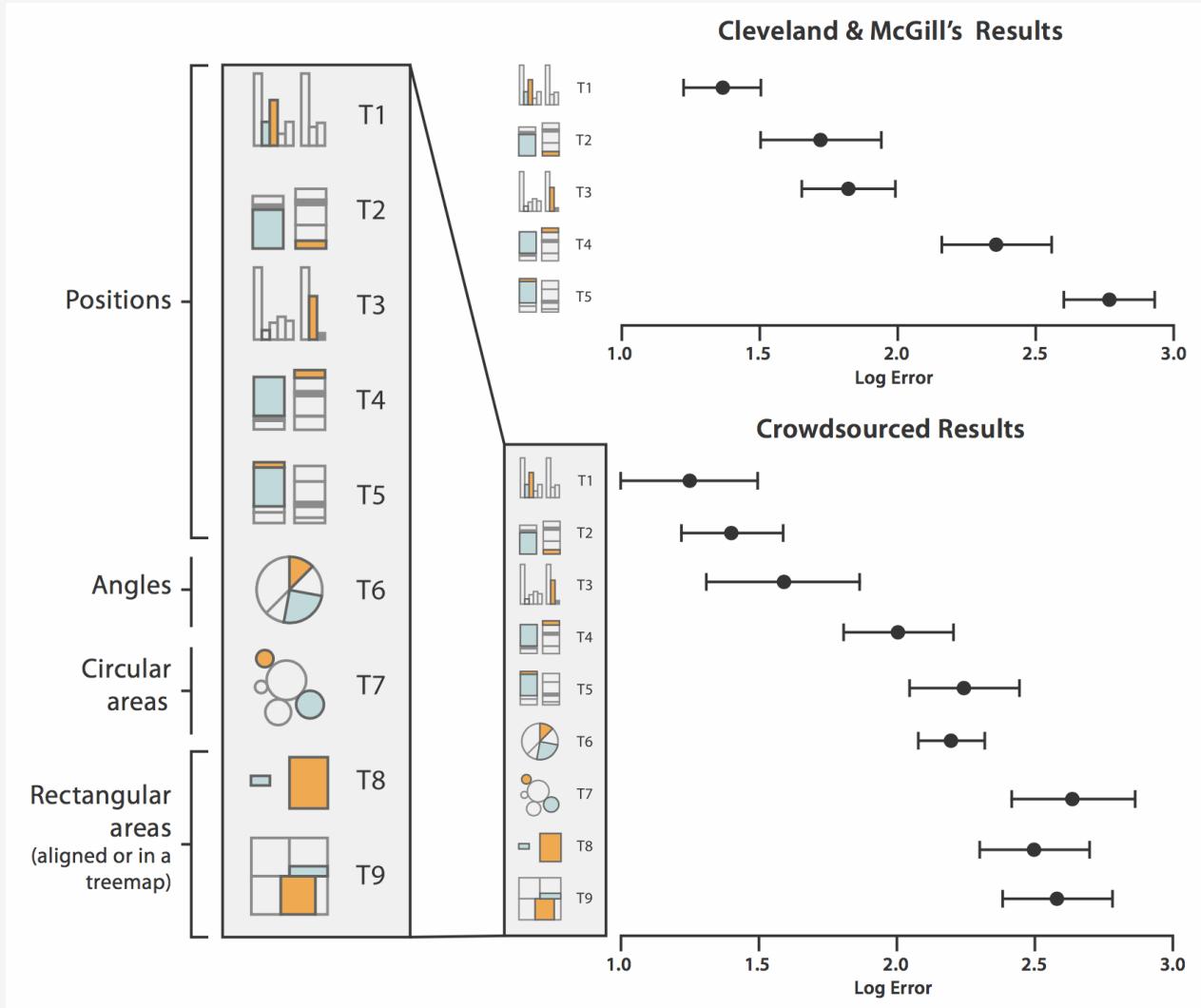


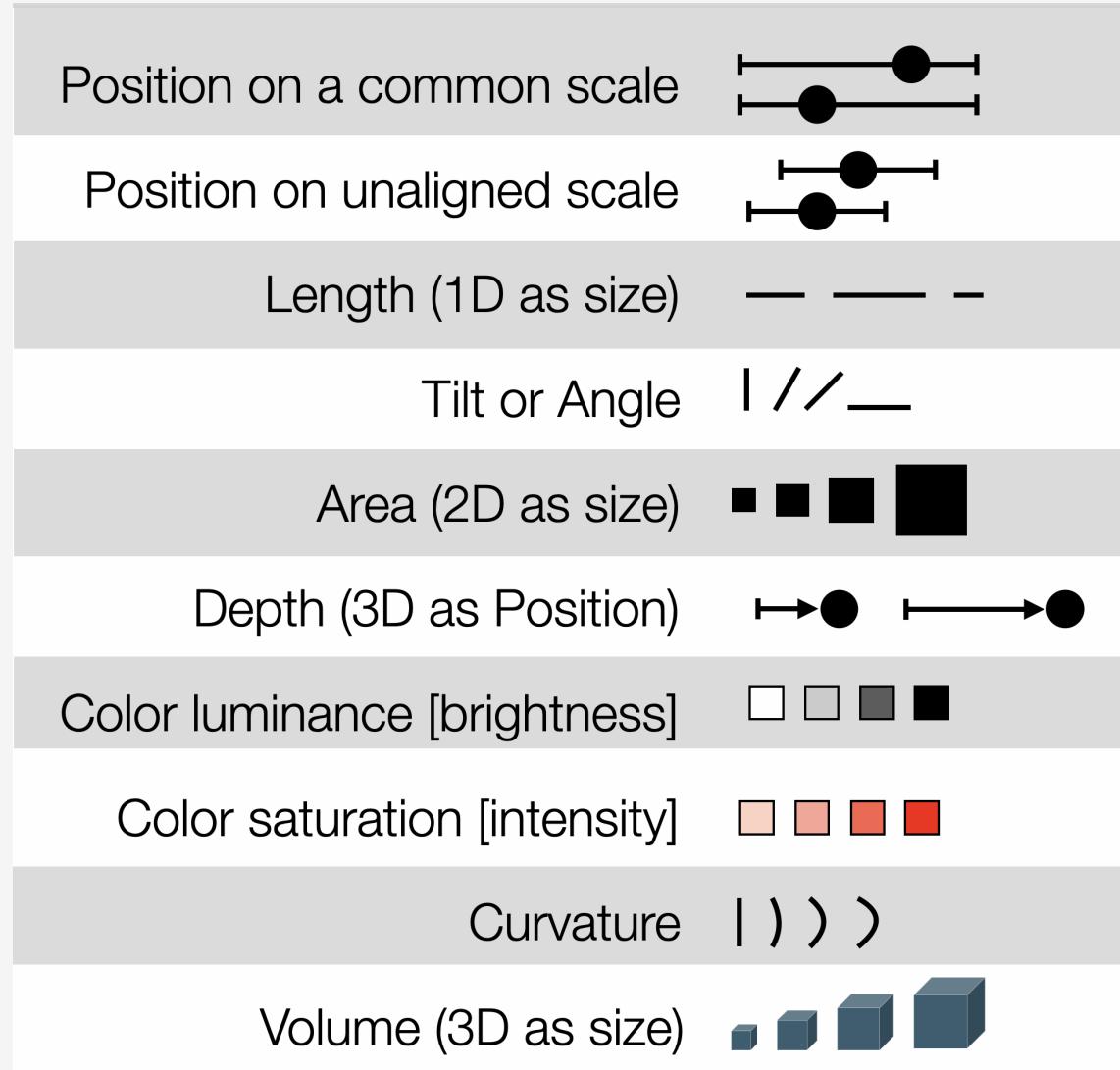
Figure 3. Graphs from position-angle experiment.

William Cleveland

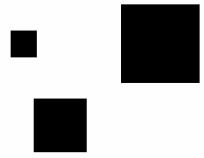


William Cleveland and Michael Bostock

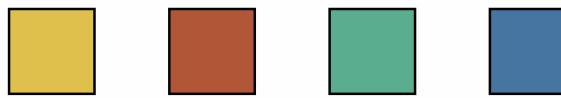
**A rough hierarchy
of mappings for data**



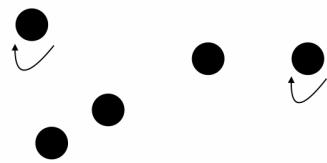
Spatial Region



Color [hue]



Motion

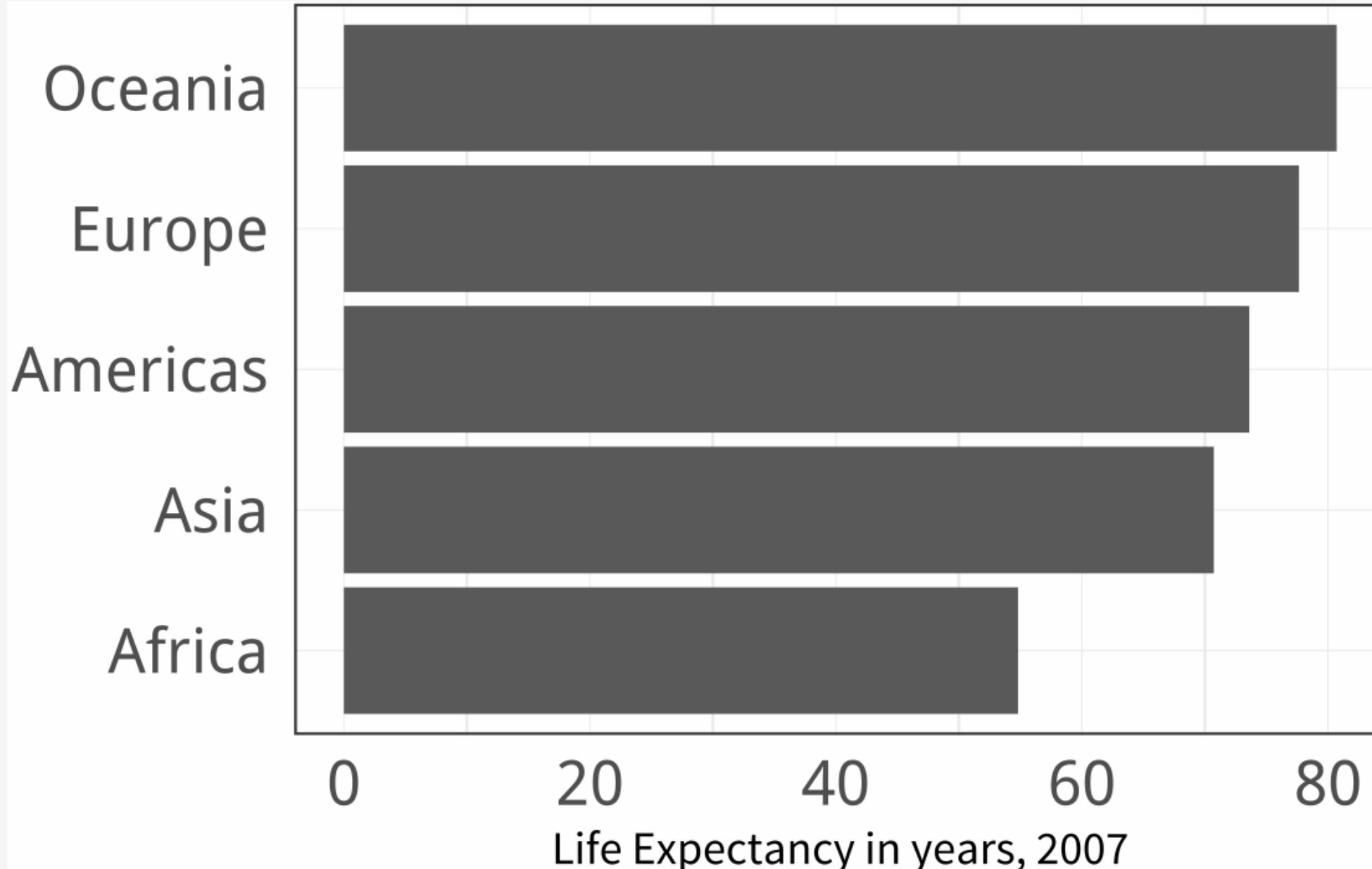


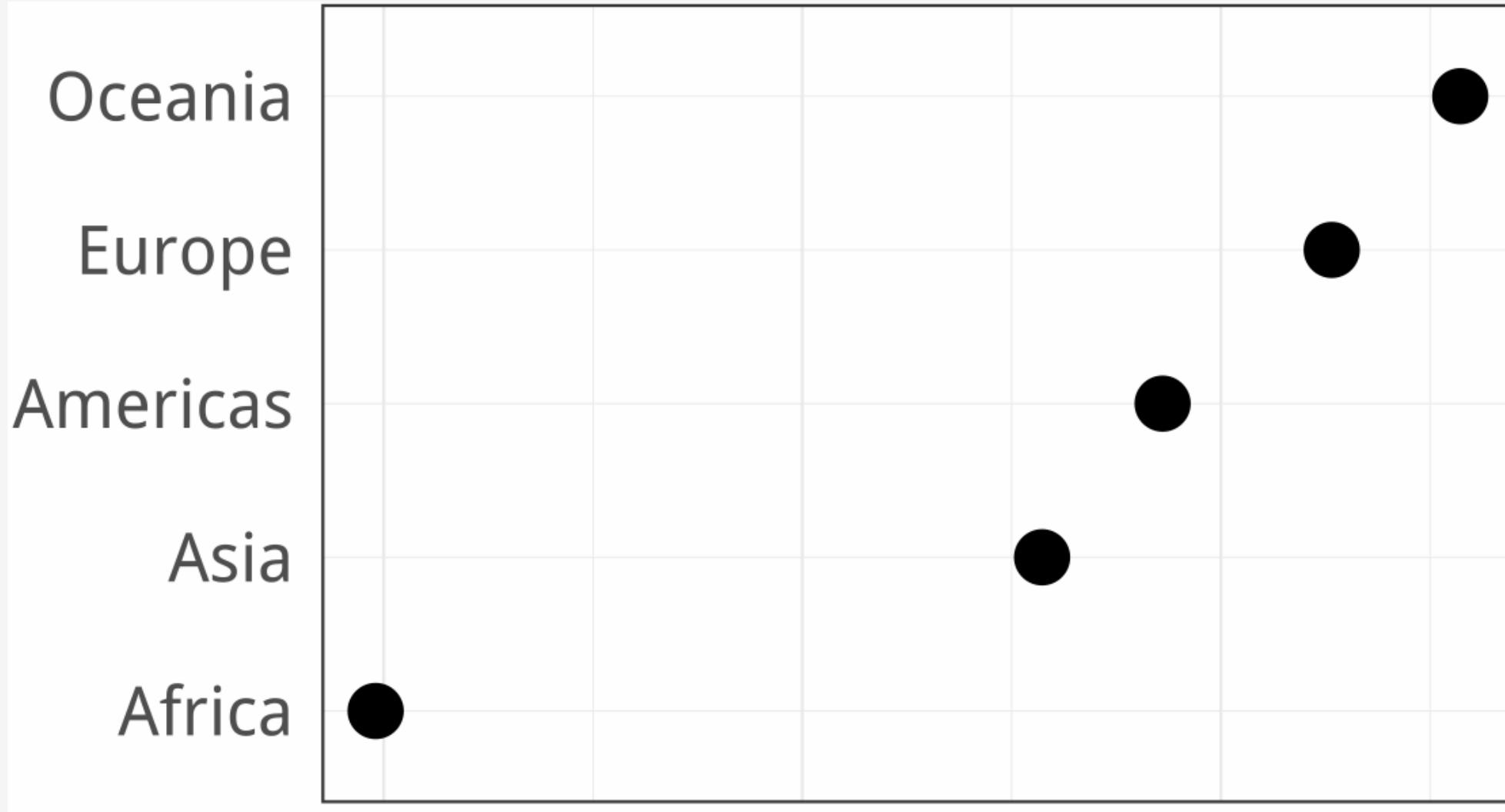
Shape



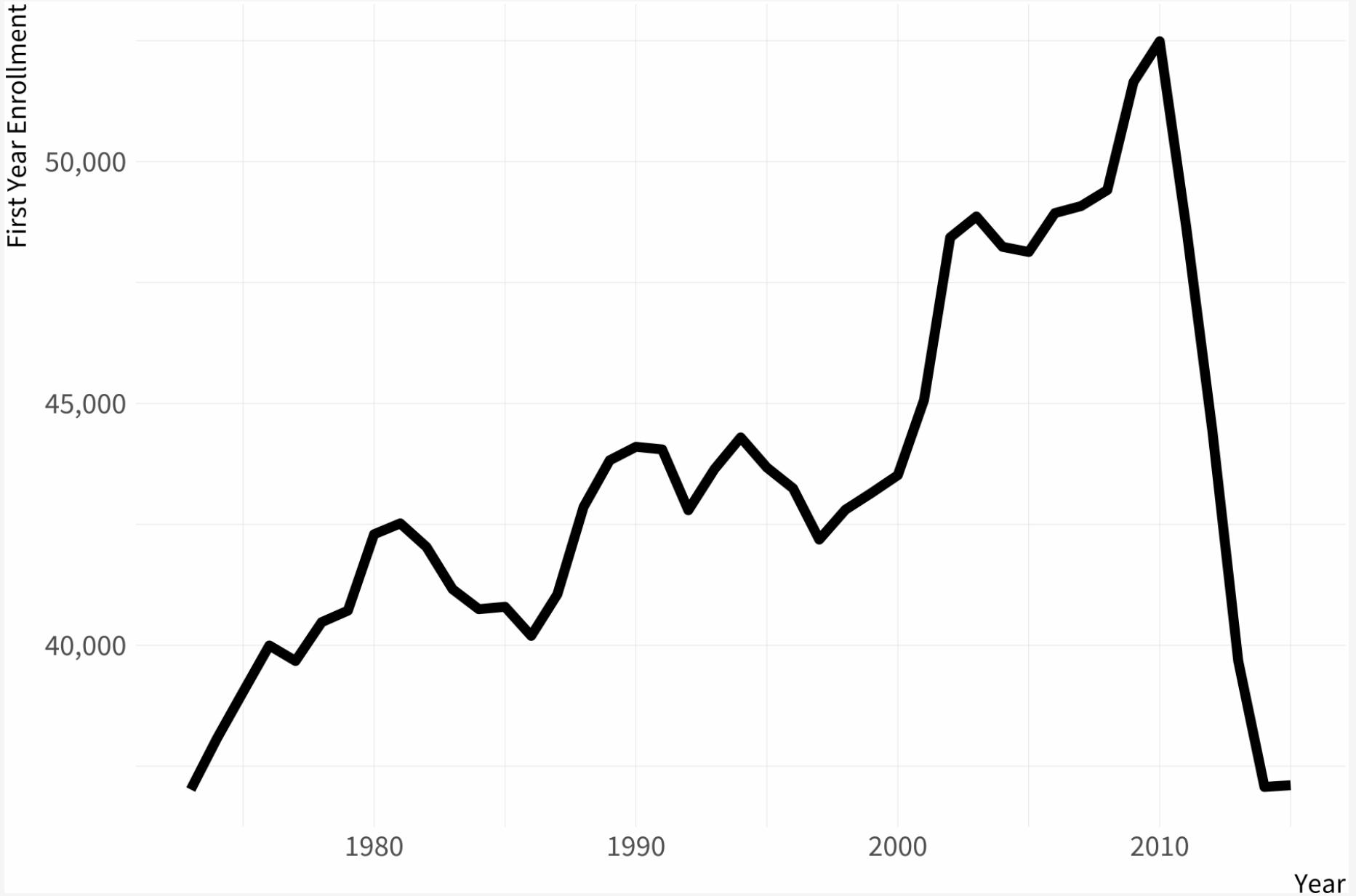
Tamara Munzer

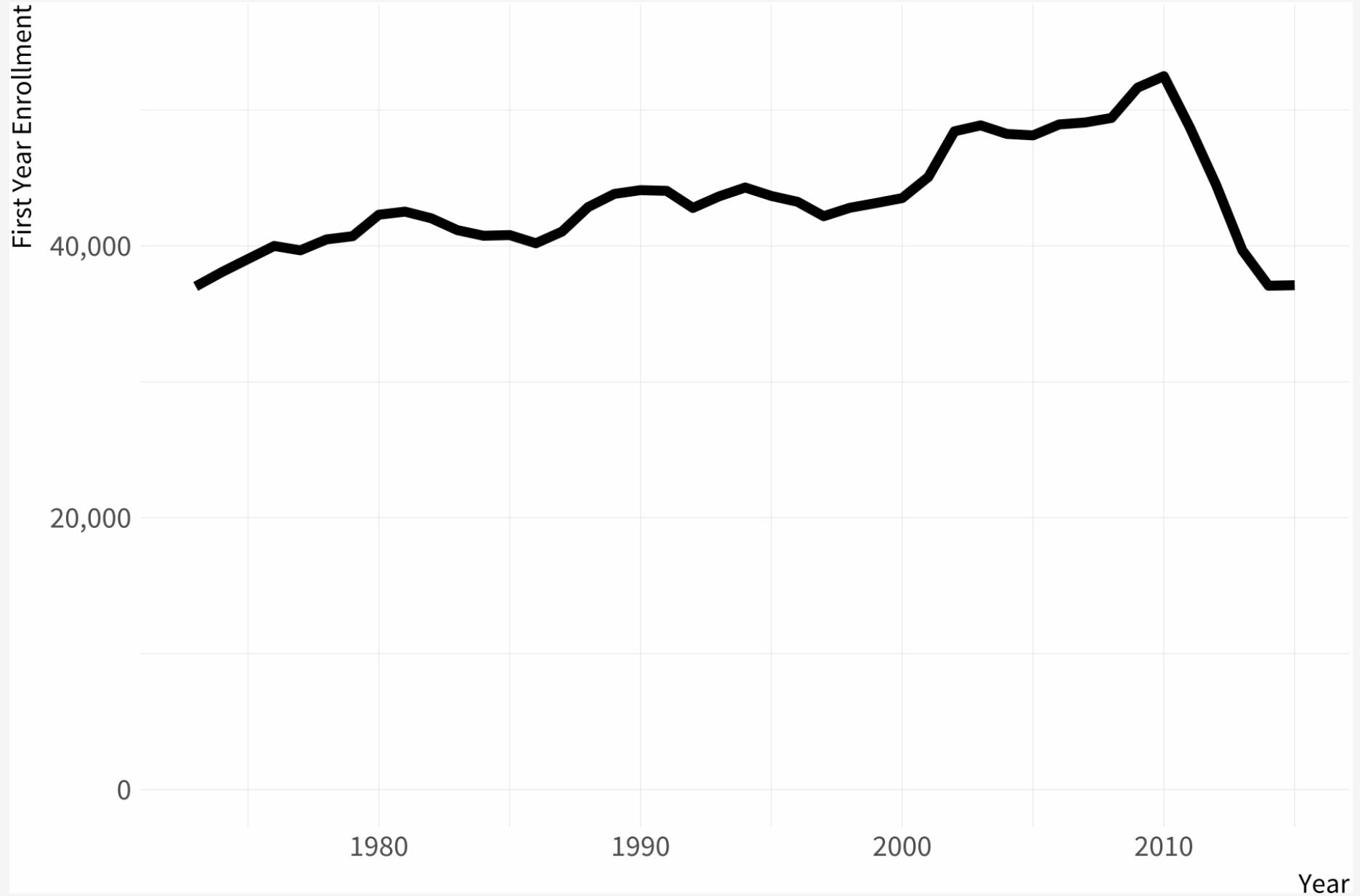
Honesty & judgment





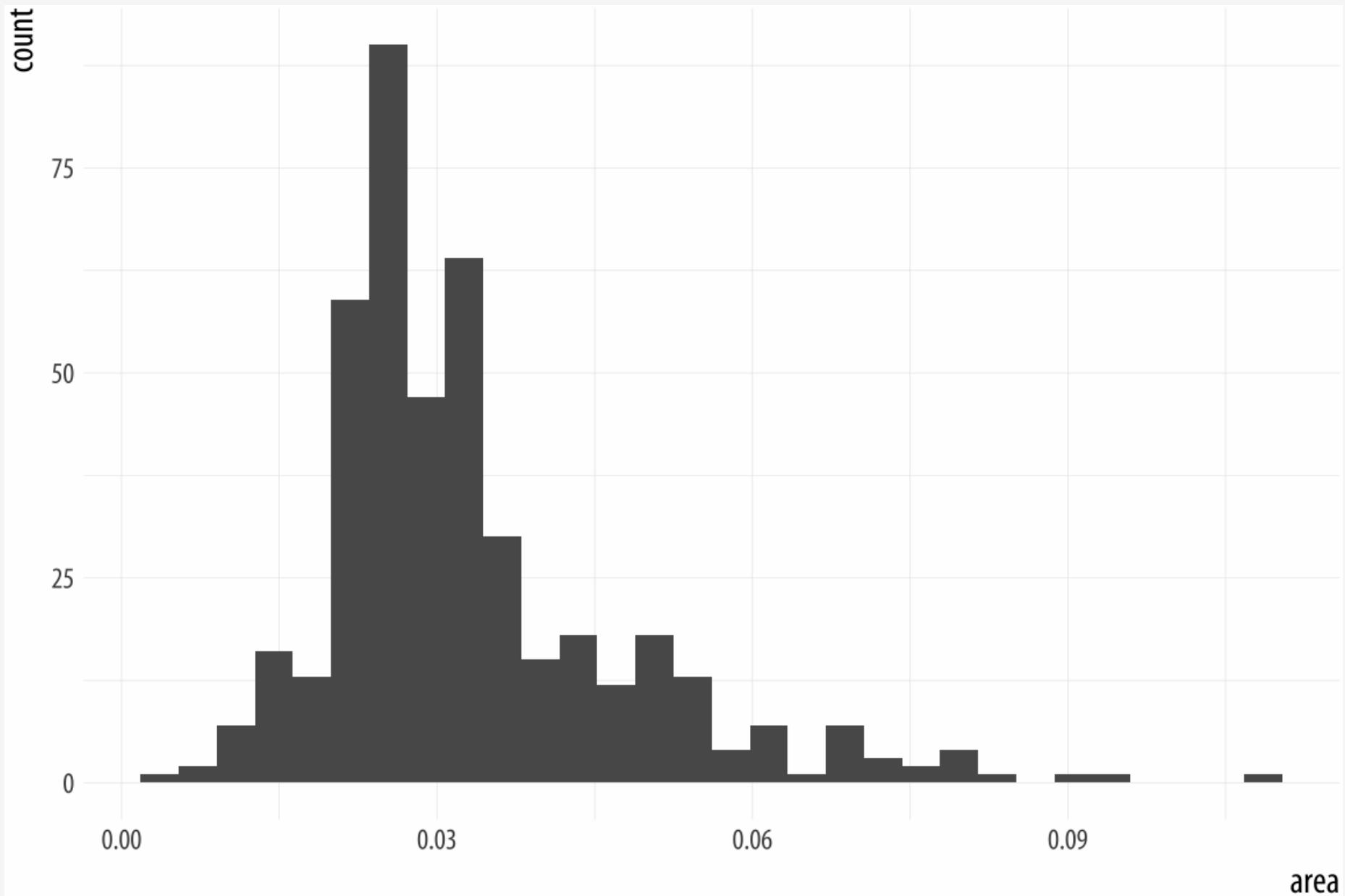
Life Expectancy in years, 2007

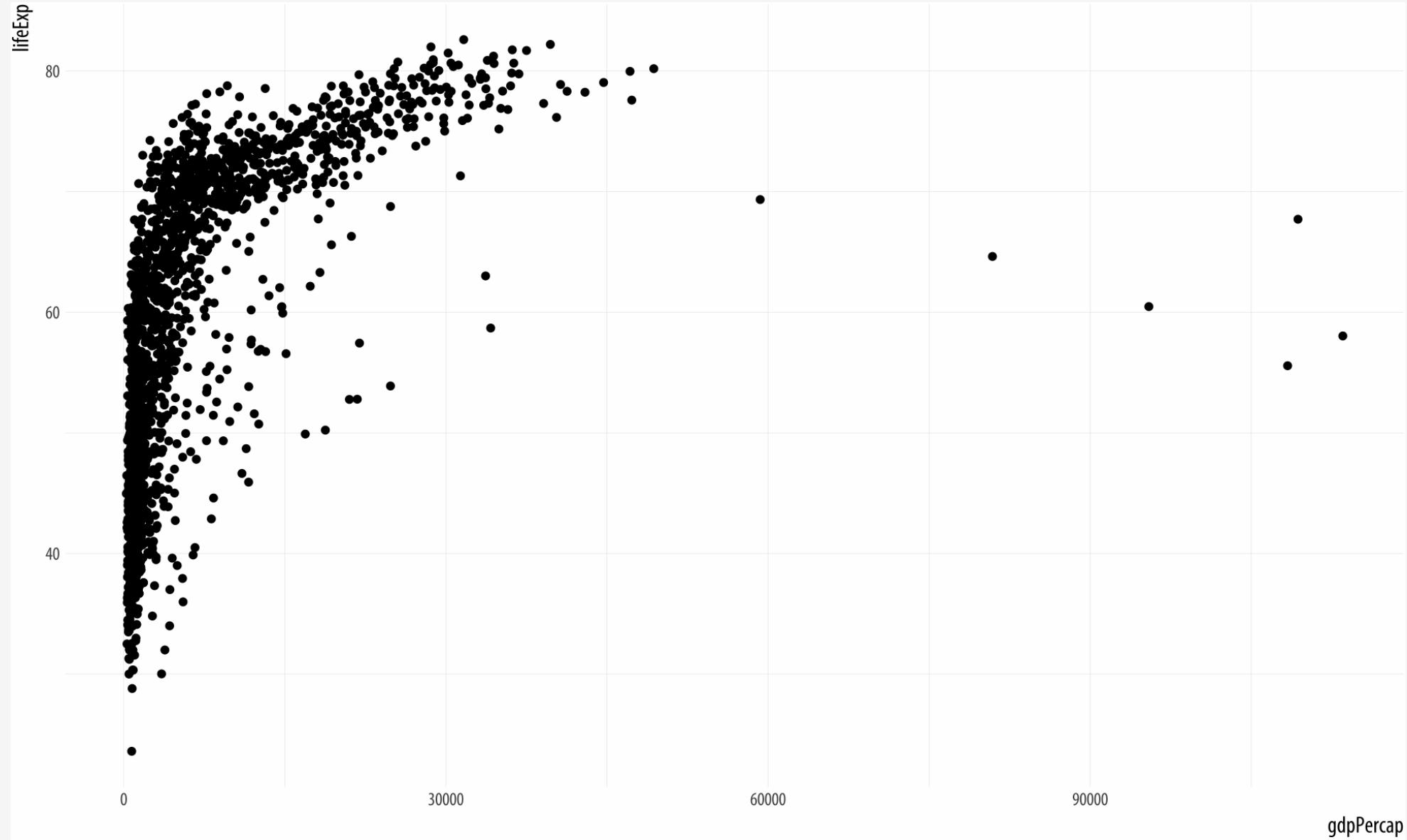


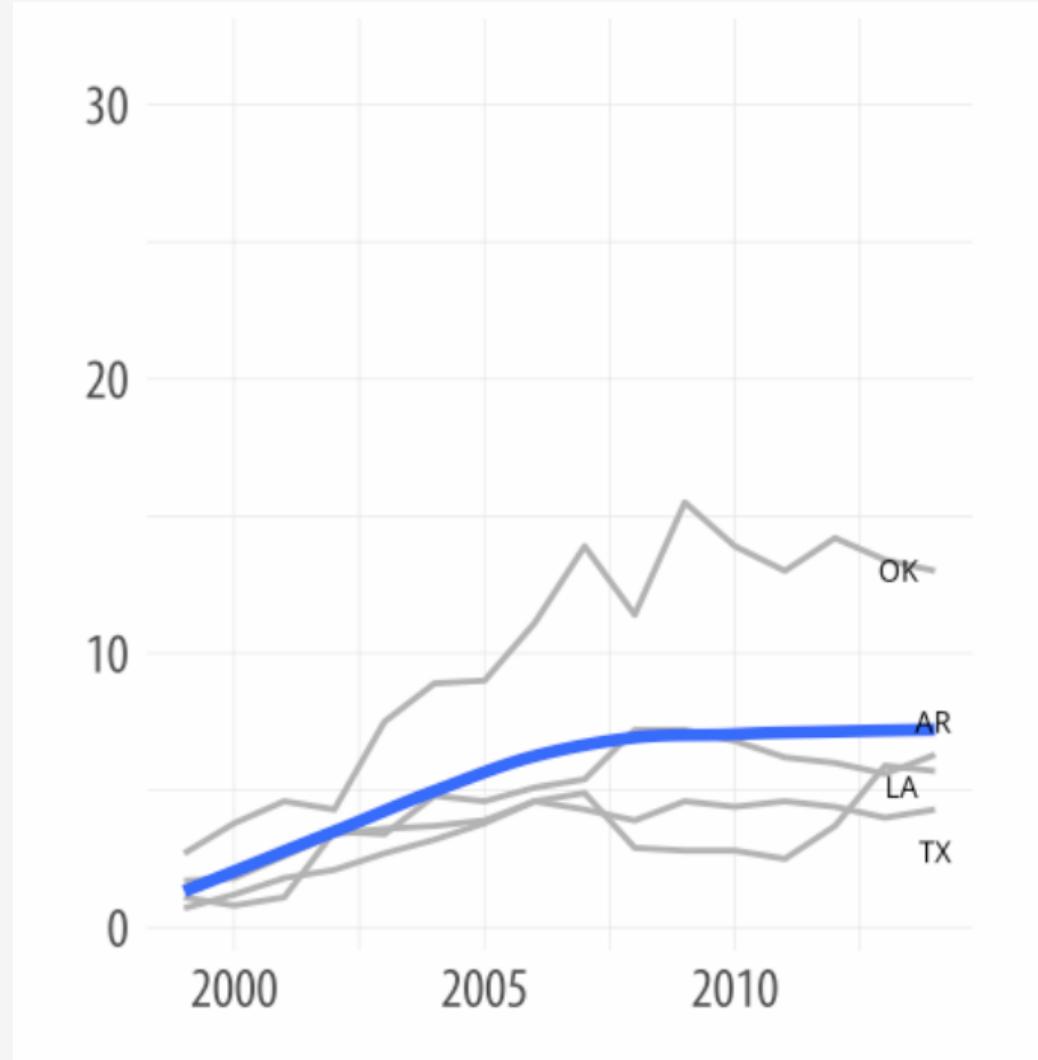


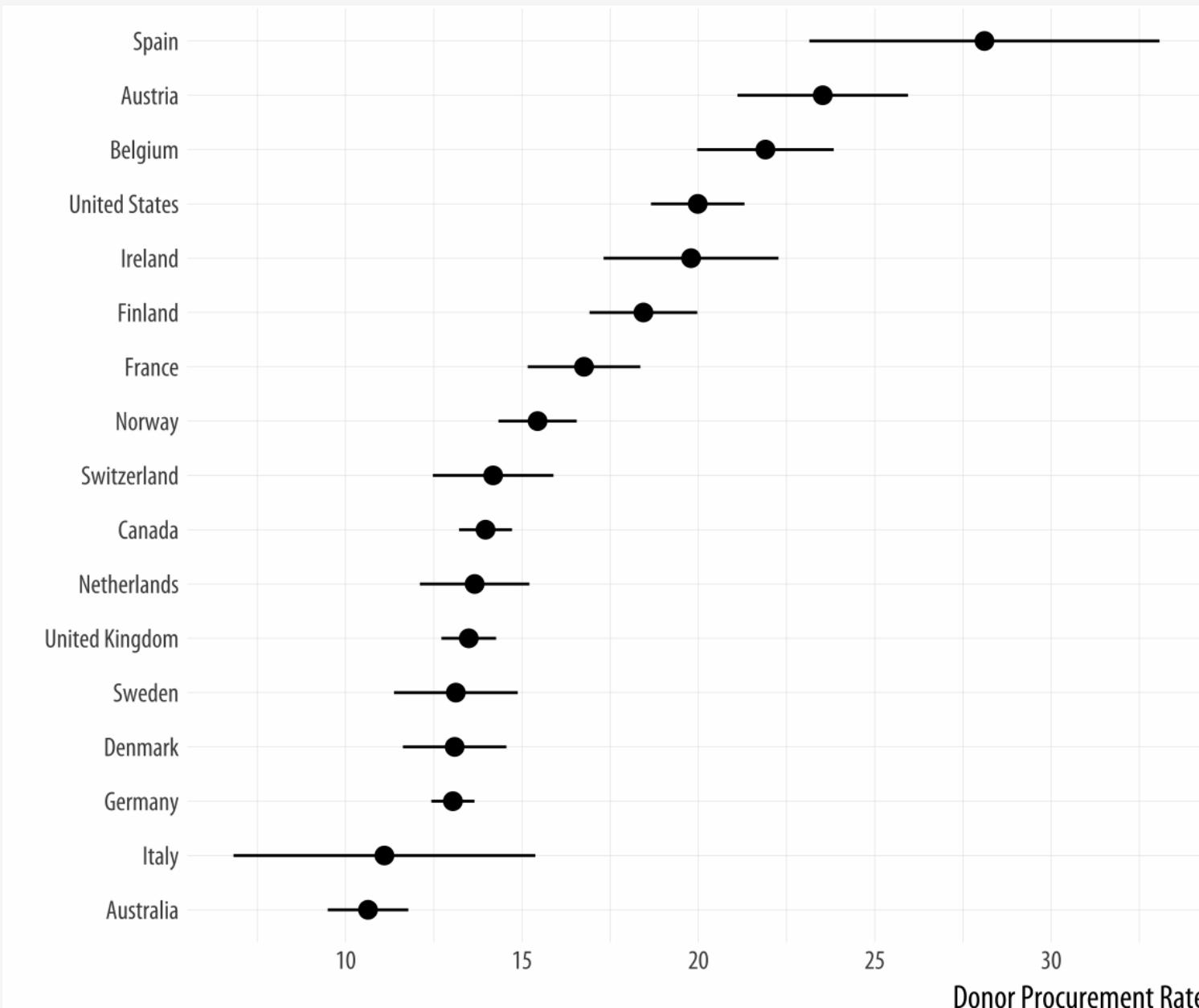
Graphing in practice

Workhorses



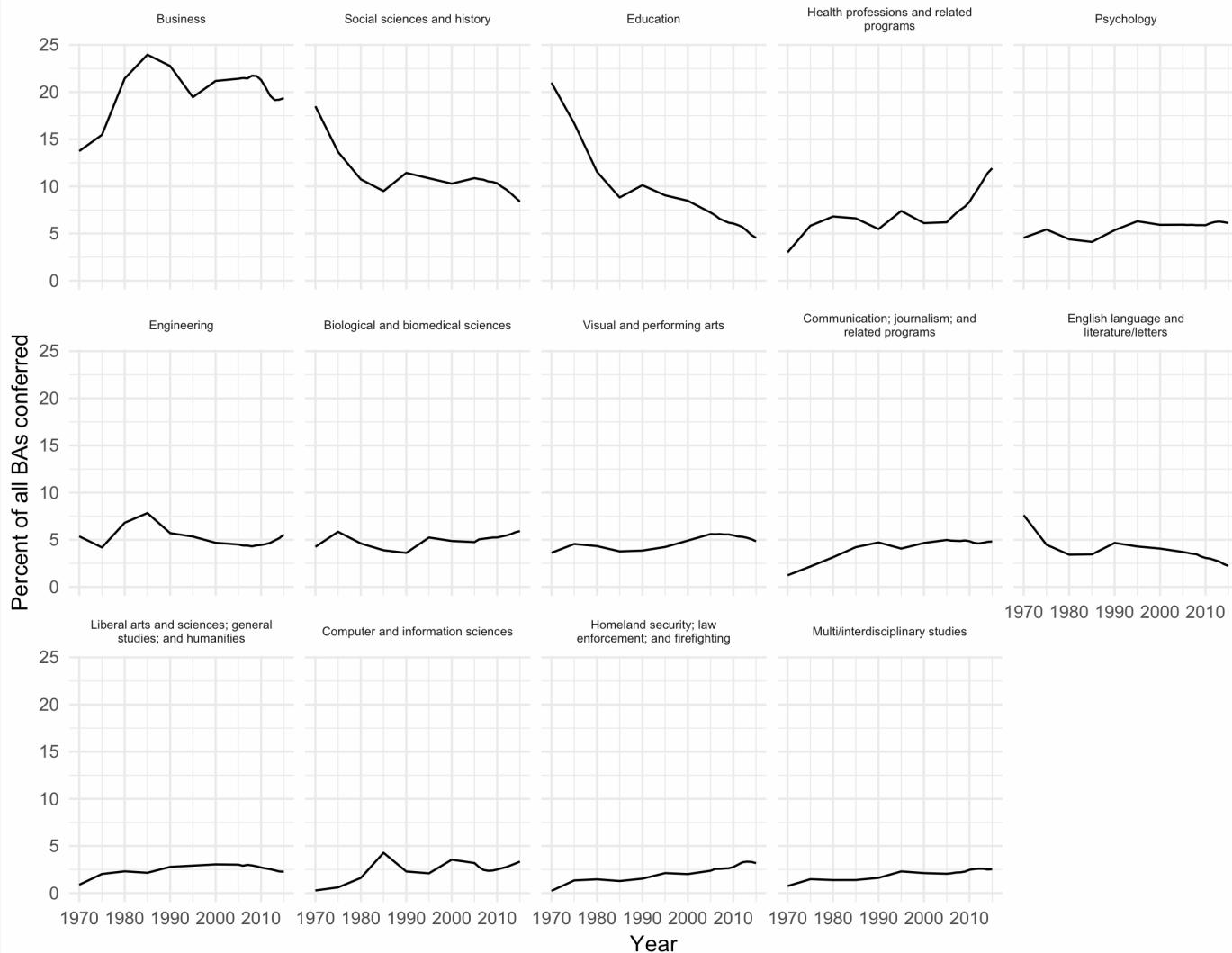






US Trends in Bachelor's Degrees Conferred, 1970-2015, for Areas averaging more than 2% of all degrees

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



Data from NCES Digest 2017, Table 322.10.

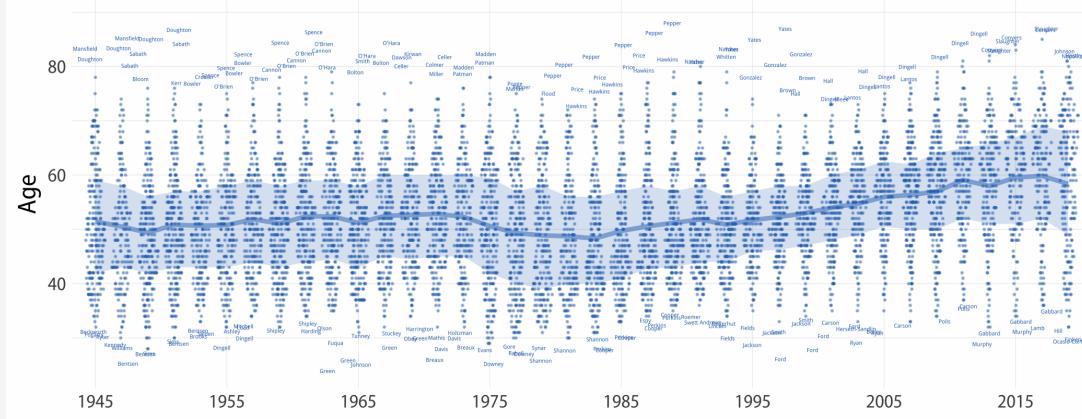
Show Ponies

Age Distribution of Congressional Representatives, 1945-2019

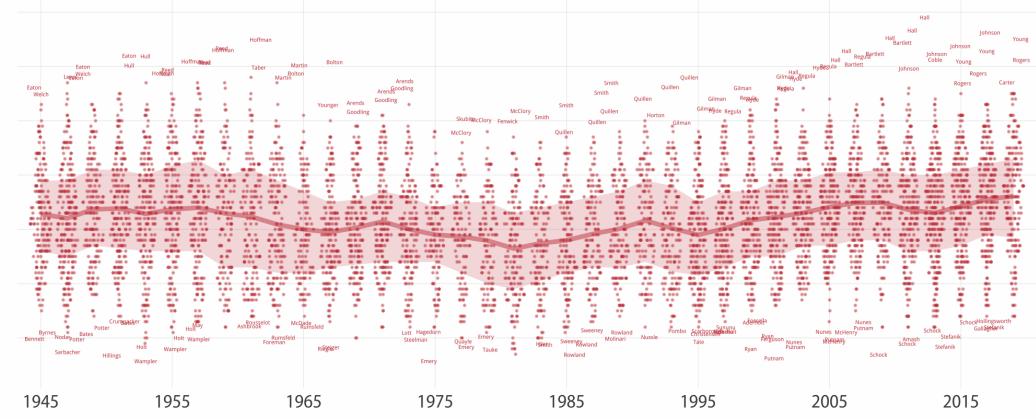
Trend line is mean age; bands are 25th and 75th percentiles of the range.

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

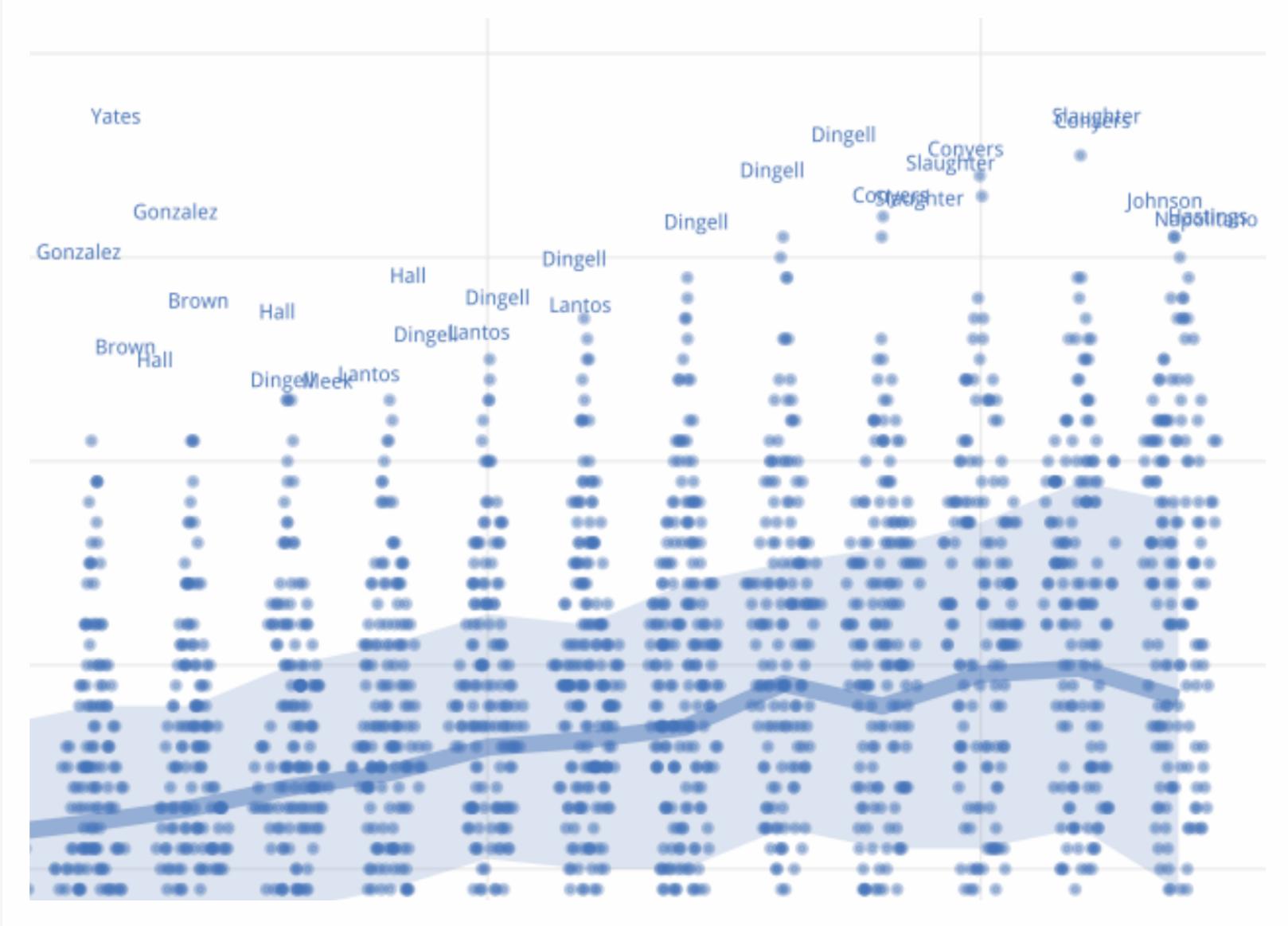
Democrats



Republicans

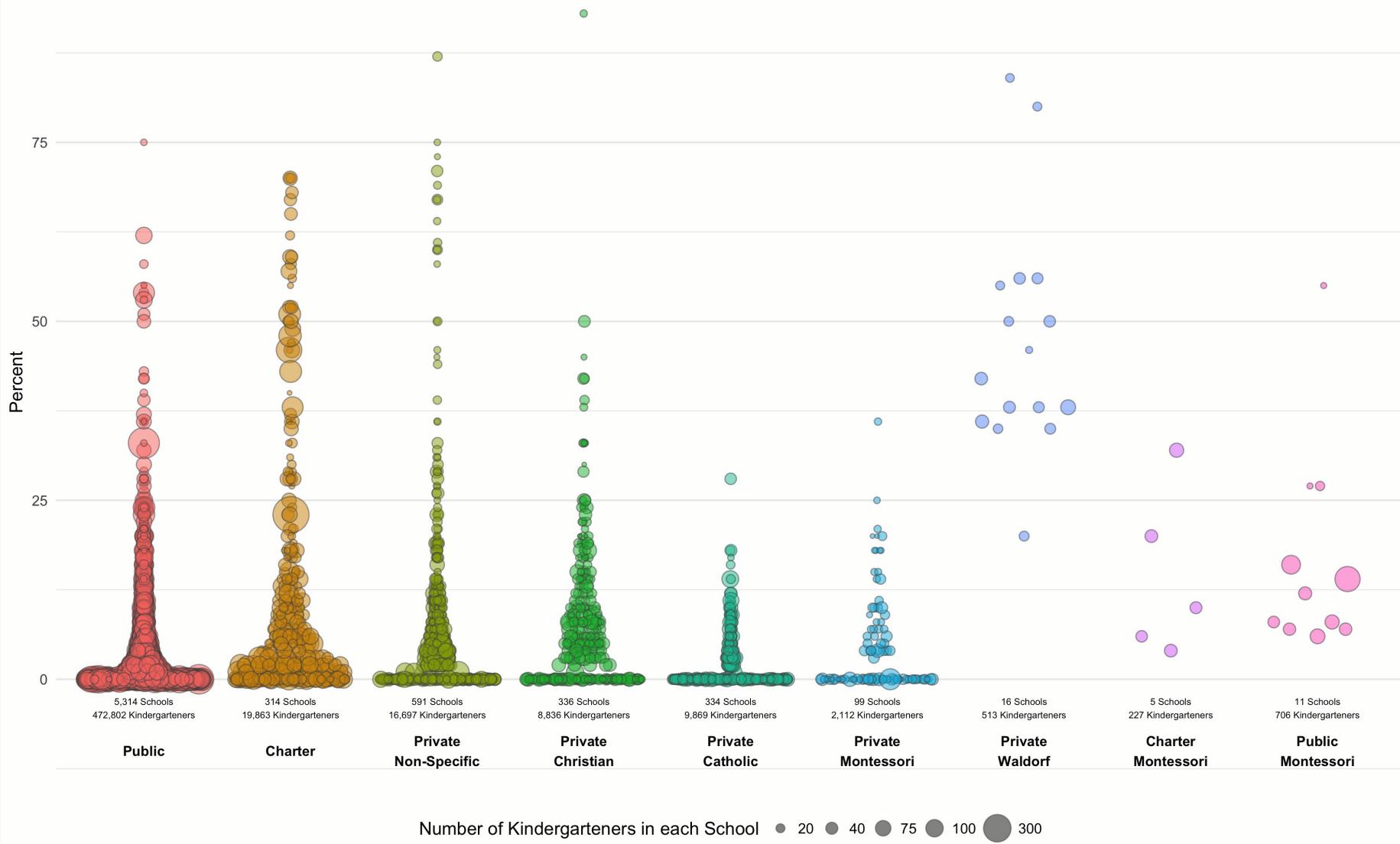


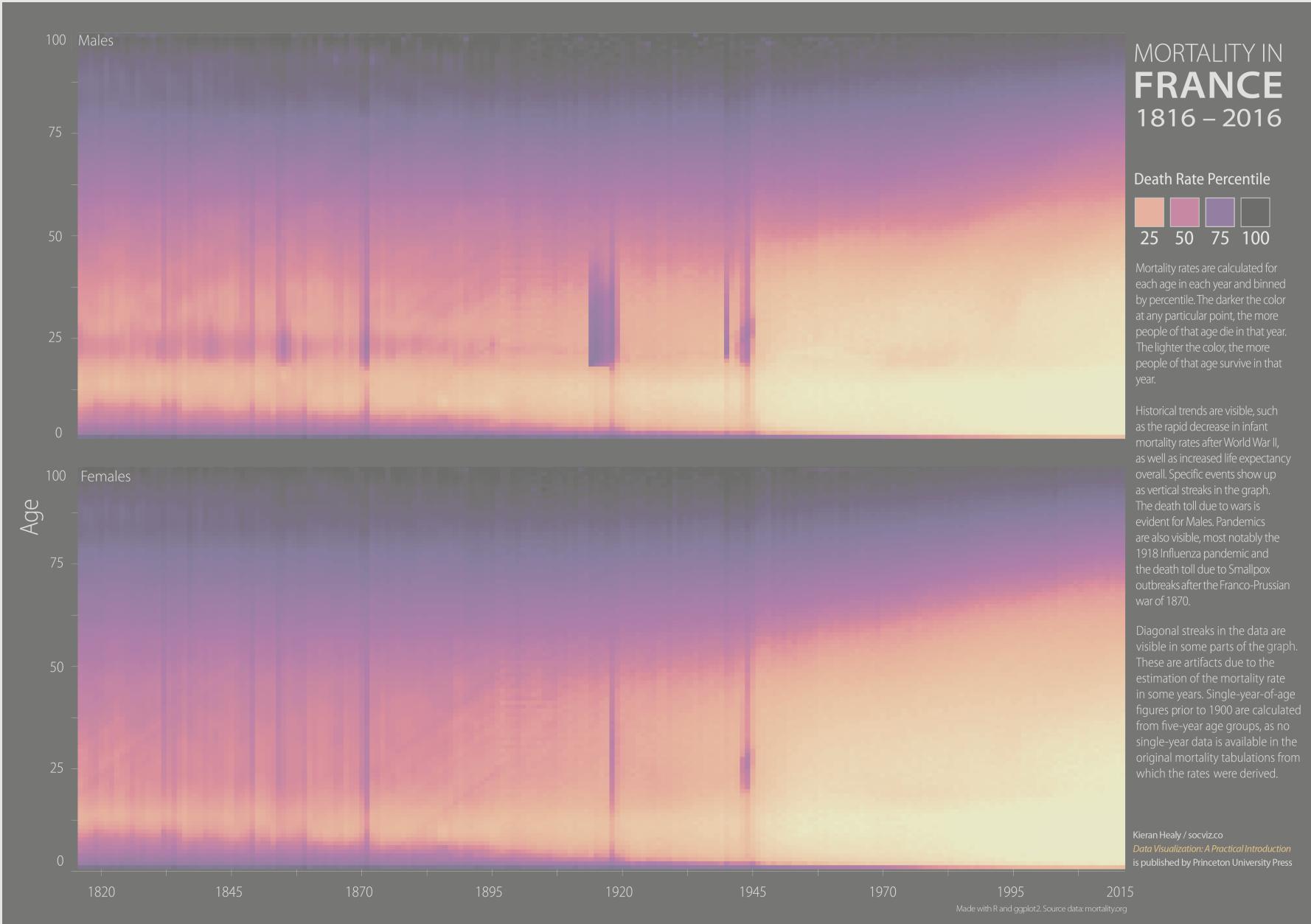
@kjhealy http://socviz.co Data: Congressional Quarterly



Vaccination Exemption Rates in California Kindergartens

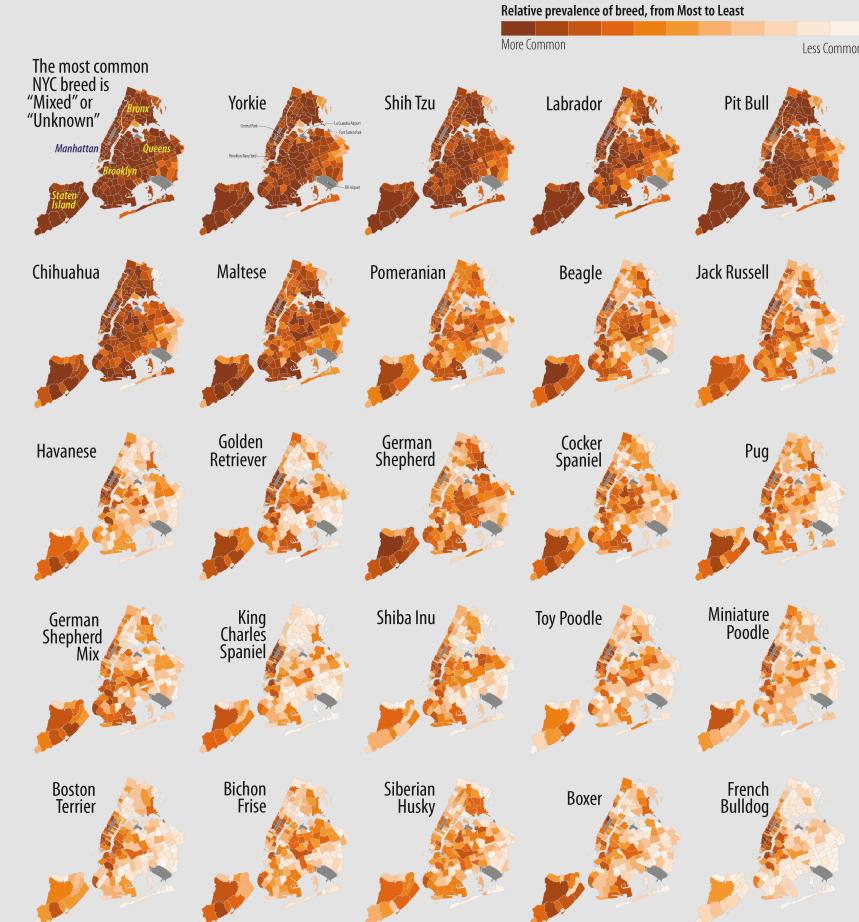
Percent of Kindergarteners with a Personal Belief Exemption, by Type and Size of School.





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.



Unicorns ...

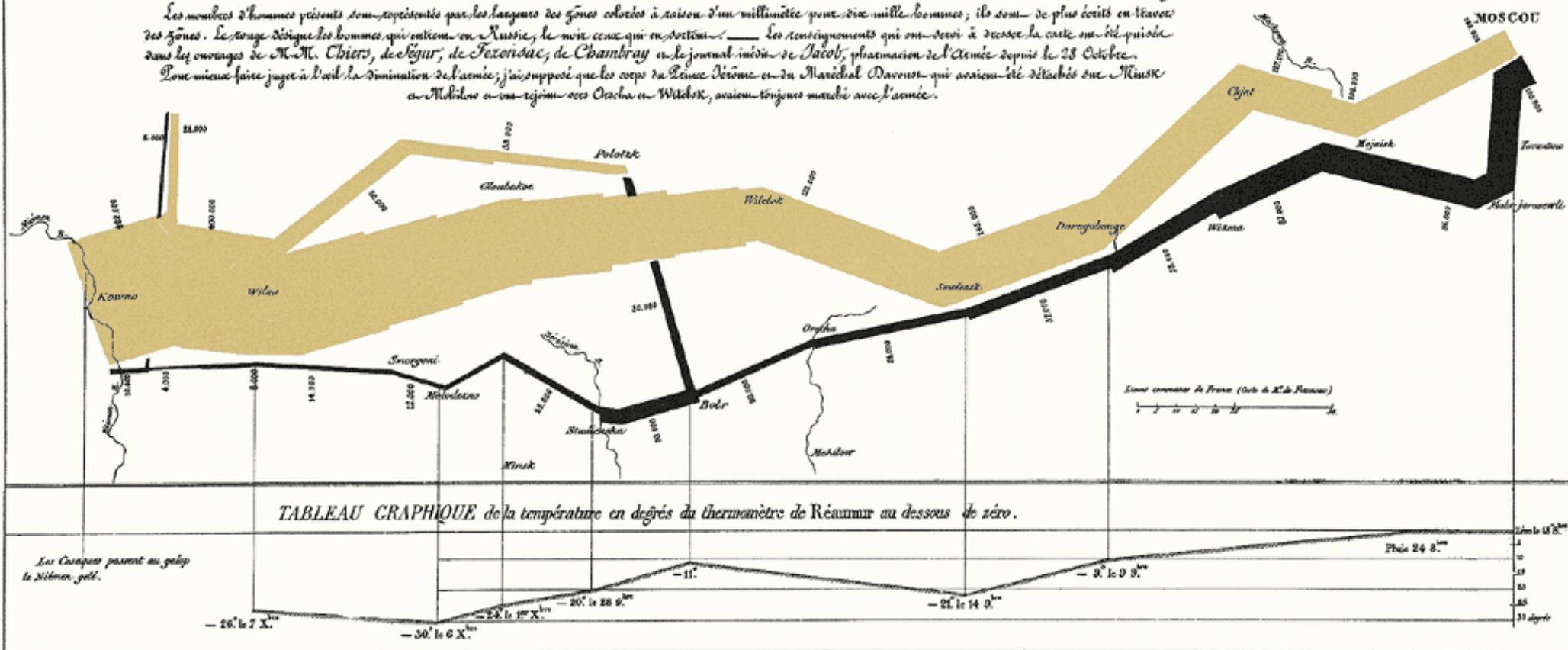
Carte Figurative des pertes successives en hommes de l'Armée Française dans la Campagne de Russie 1812-1813.

Conçue par M. Minard, Inspecteur Général des Ponts et Chaussées en activité.

Paris, le 20 Novembre 1869

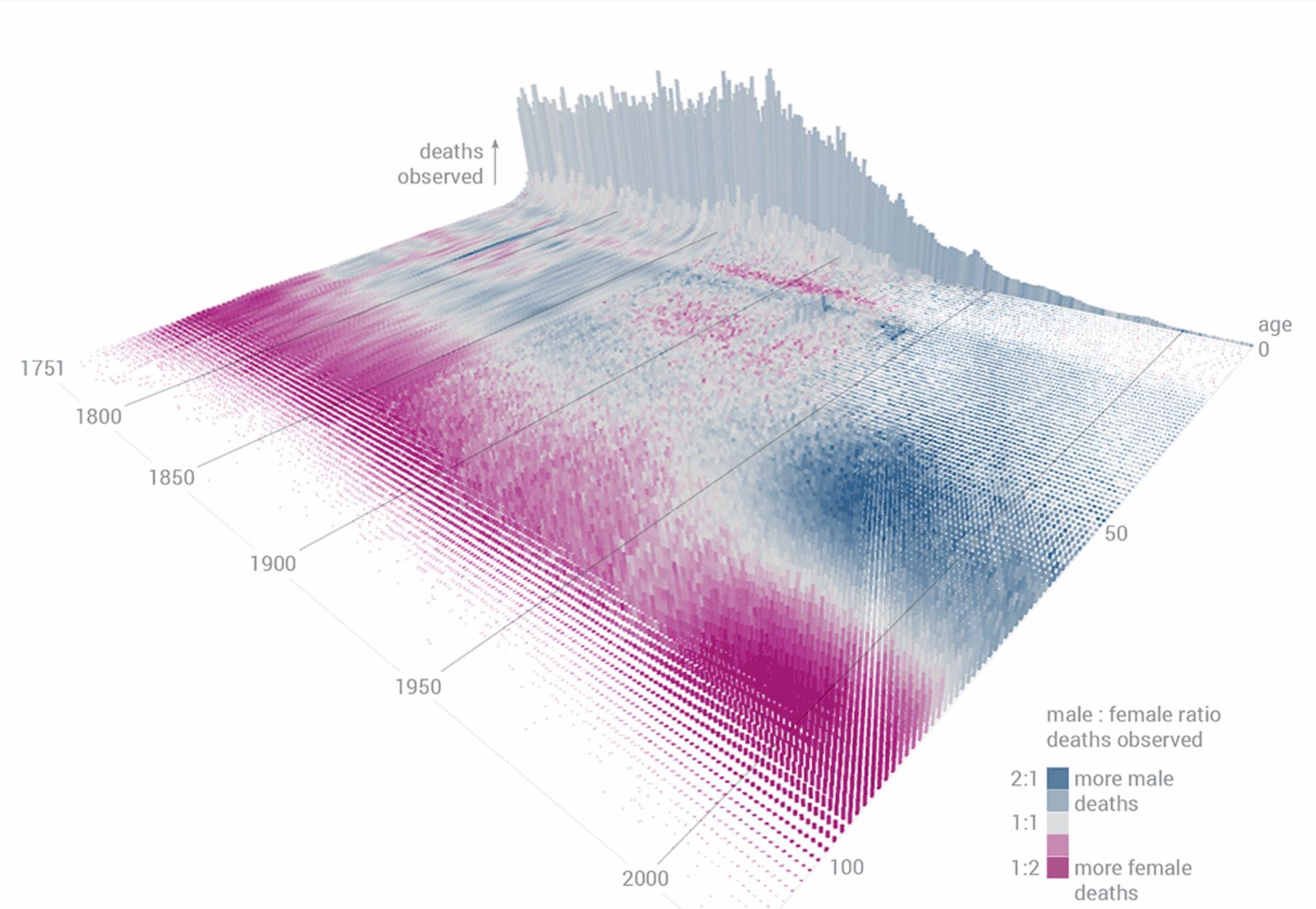
Les nombres d'hommes perdus sont représentés par les largeurs des bandes colorées à raison d'un millimètre pour dix-mille hommes ; ils sont de plus écrits en lettres des zones. Le rouge désigne les hommes qui ont été en Russie, le noir ceux qui en sortent. — Les renseignements qui ont servi à dresser la carte sont pris dans les ouvrages de M. M. Chiers, de Léger, de Tessonac, de Chambray et le journal intime de Jacob, pharmacien de l'Armée depuis le 28 Octobre.

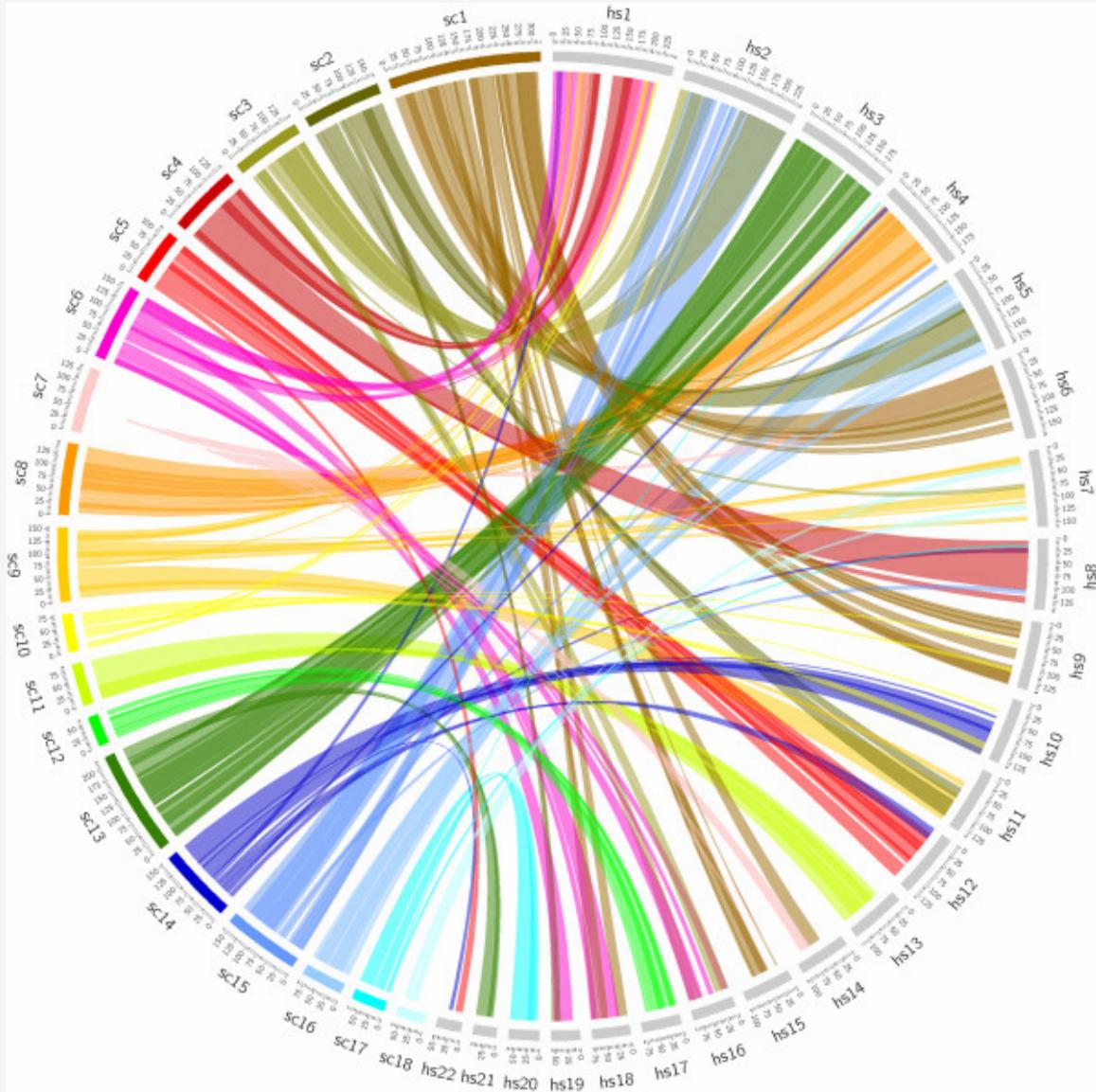
Pour mieux faire juger à l'œil la dimension de l'armée, j'ai superposé que les corps de l'Armée et du Maréchal Davout qui avaient été détachés une Moscou à Malakof et qui rejoignirent l'armée au Witebsk, n'aient toujours marché avec l'armée.



Imprimé par Bony, 1. Rue J. Marais. 3^e étage à Paris.

Dep. Int. Registry n^o 2202.





... or monsters