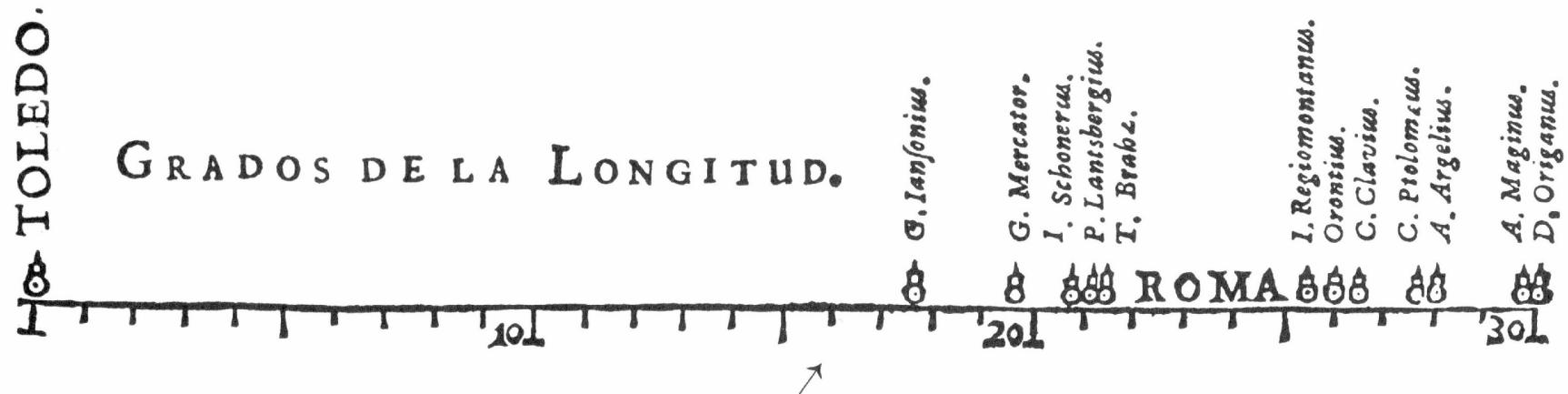


Gráficos

Representação de dados

- Distância entre Toledo e Roma (van Langren, 1644)



- Estimativas das distâncias entre Toledo e Roma feitas por diferentes pessoas. A seta marca a verdadeira (16.5°).

Representação de dados

- Lambert é considerado como um dos primeiros cientistas a utilizar métodos gráficos para representar seus dados (em especial, a teoria dos erros).



Johann Heinrich Lambert (1728–1777)

Visible things appear to our eyes often in a different form than they really are. [Lambert, 1752/1943, p. 161]⁷

Researchers on optics [...] have, with the invention of perspective, provided a means to draw the appearance of visible things, [...] thus enabling to imprint both the thing itself and its representation from specific viewpoints on the retina. [...] We remark this especially because, if we view phenomenology as a transcendent optics, we also think of a transcendent perspective, and the language of appearances. [Lambert, 1764, *Phänomenologie*, §5]⁸

Representação de dados

- Taxa de evaporação de água (Lambert, 1765)

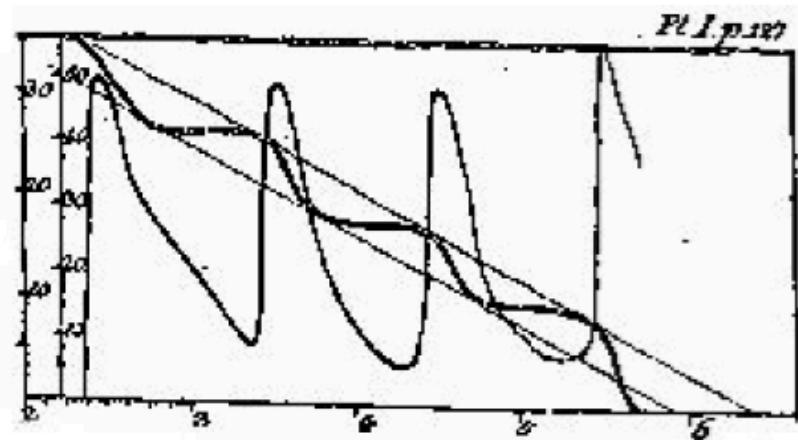
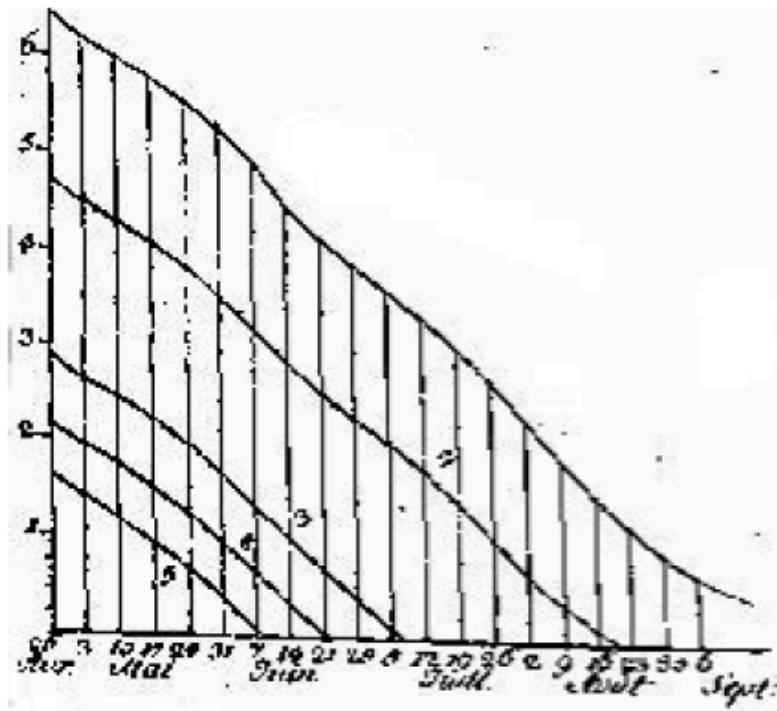
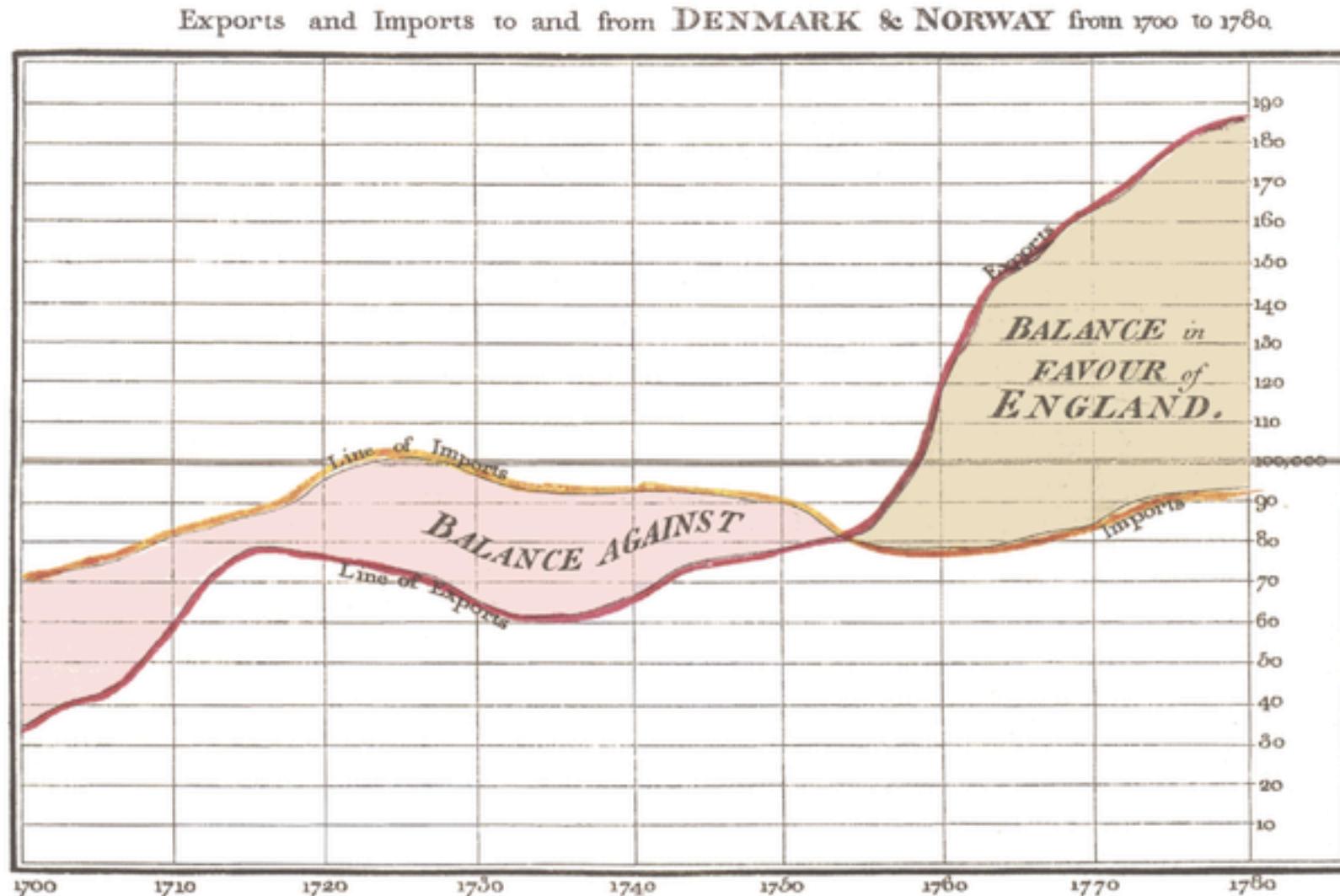


Figure 3: left: Graphs of the Evaporation of Water in 5 Cylinders with different diameter; right: Graphs of Temperature (oscillating) and Evaporation (decreasing)

Playfair's trade-balance time-series chart, published in his *Commercial and Political Atlas*. 1786

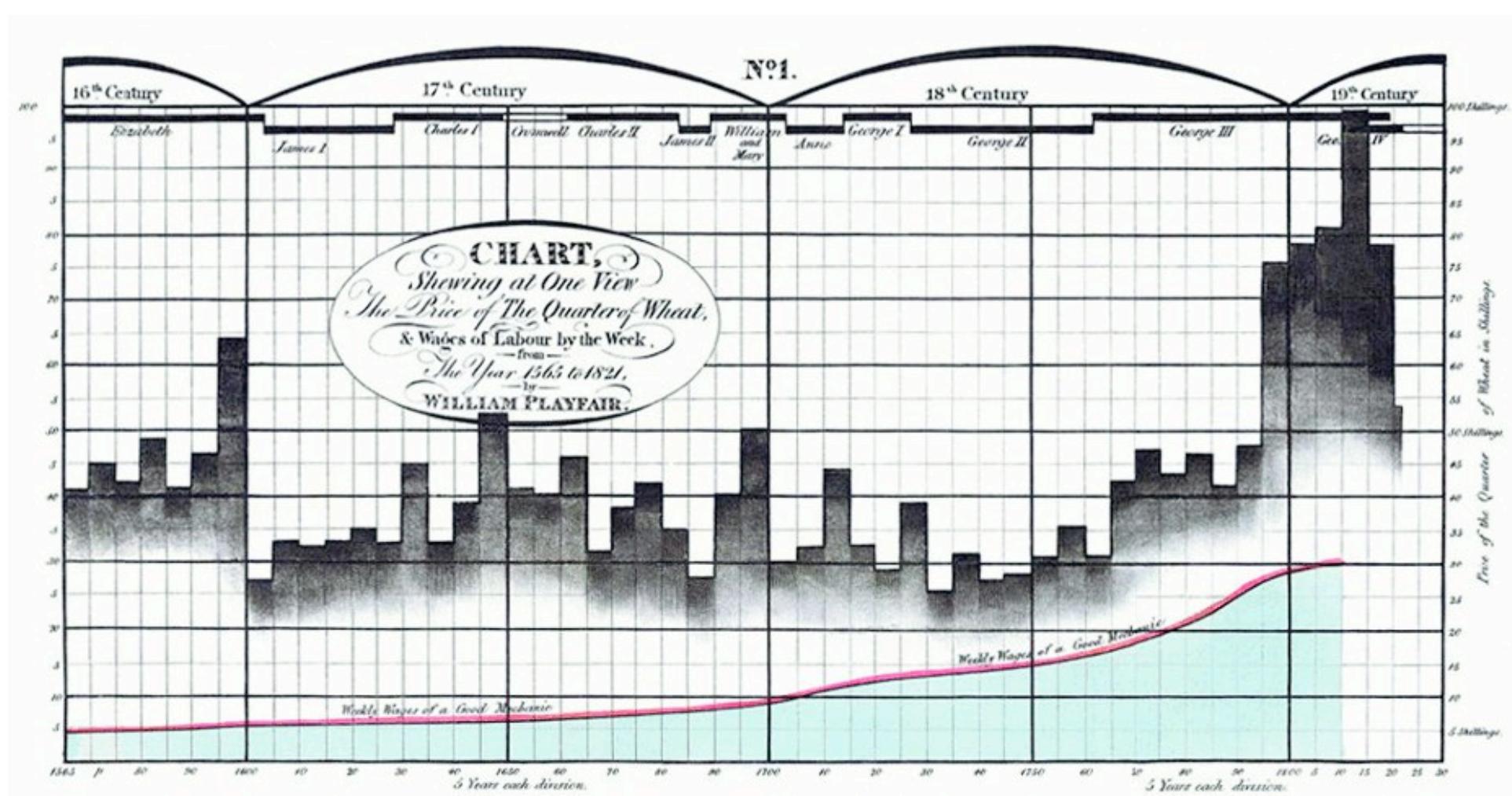


Published on the 1st May 1786, by W^m Playfair

The Bottom line is divided into Years, the Right hand line into £10,000 each.

No. 10, and 12, Strand, London.

William Playfair's Price of Wheat (1822)



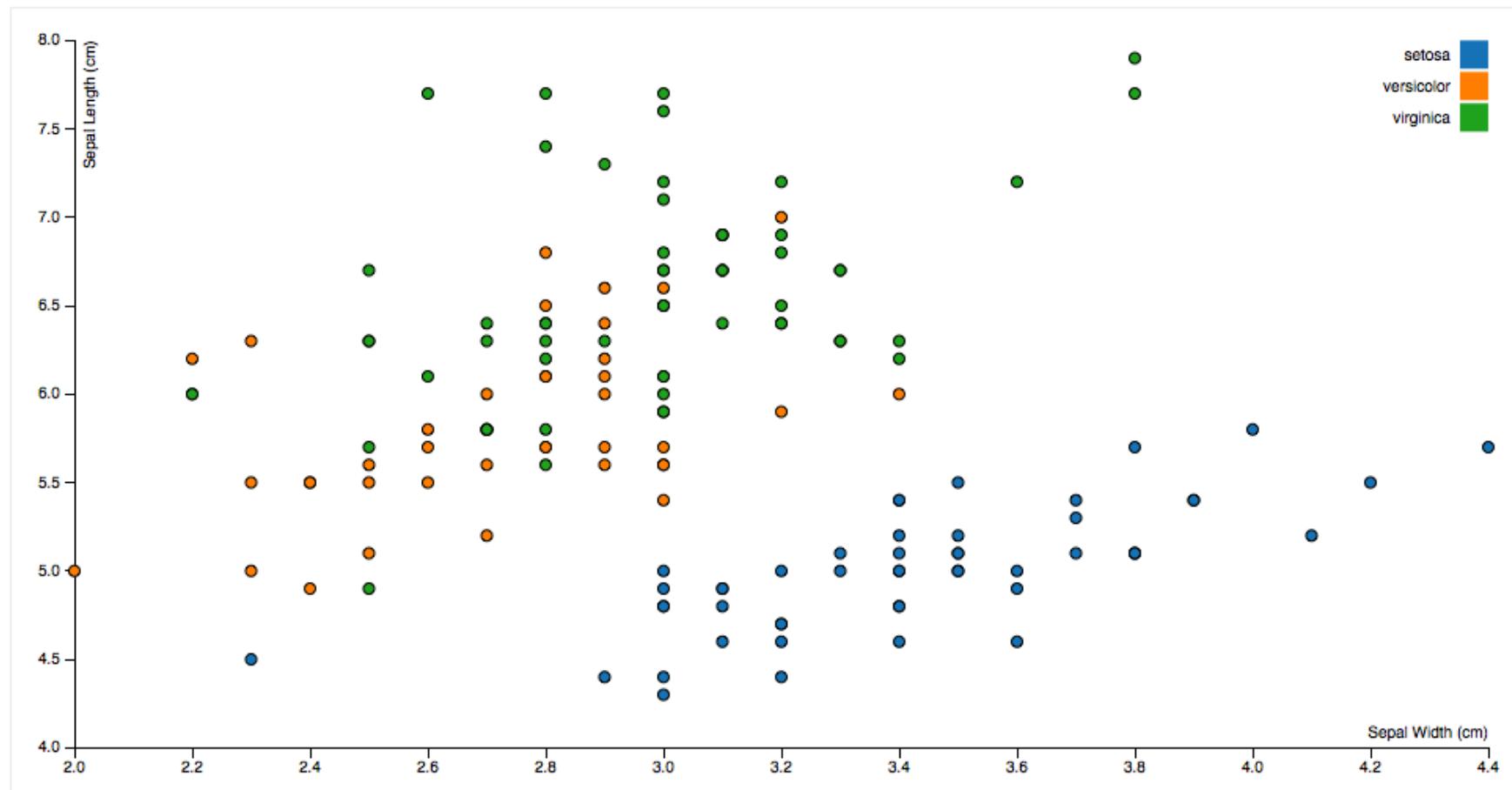
Representação de dados

“The first sign that a visualization is good is that it shows you a problem in your data...
...every successful visualization that I've been involved with has had this stage where you realize, "Oh my God, this data is not what I thought it would be!" So already, you've discovered something.”

- Martin Wattenberg

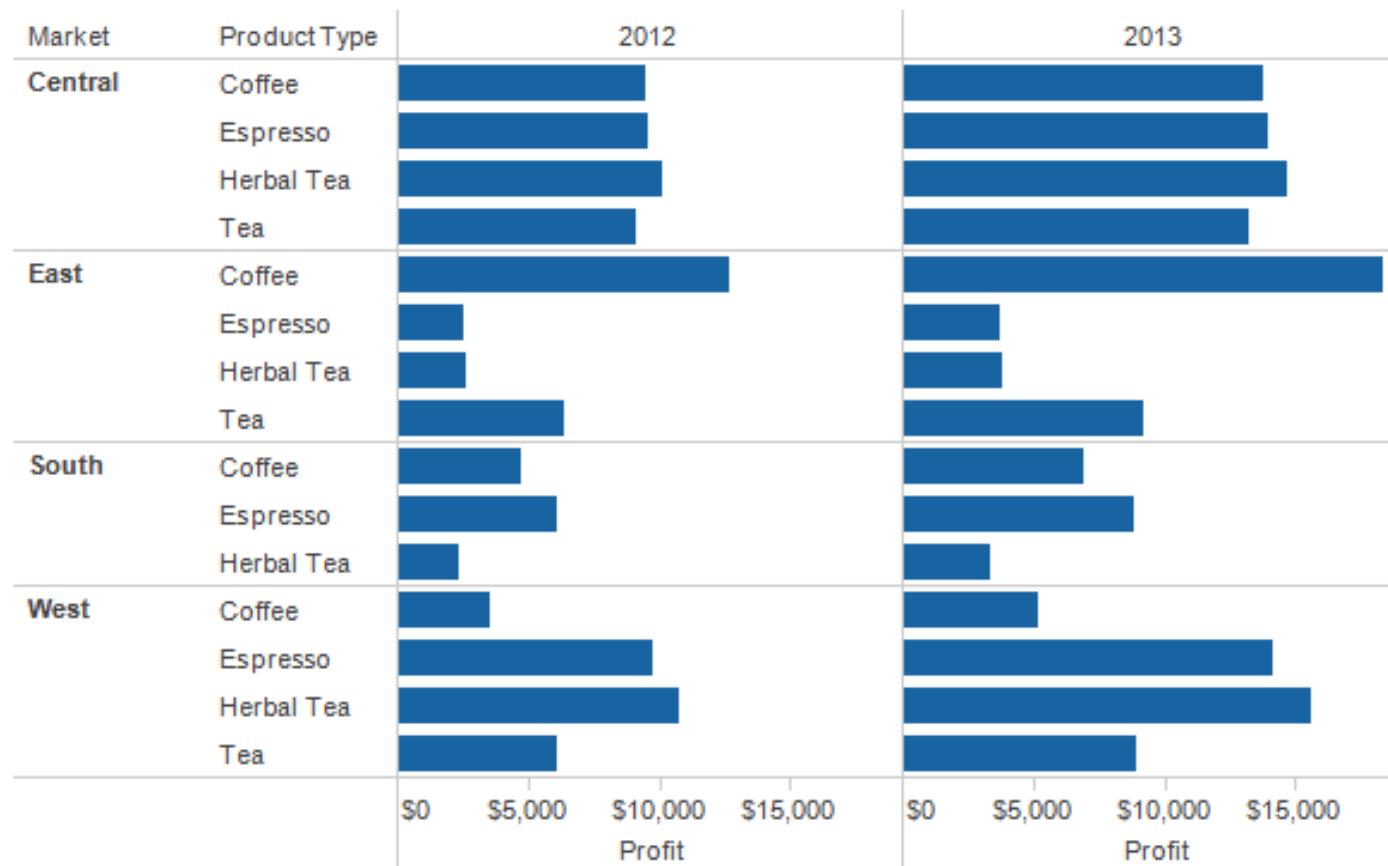
Representação de dados

- Dados brutos (overview)



Representação de dados

- Dados brutos (overview)



Representação de dados

- Dados brutos (overview)

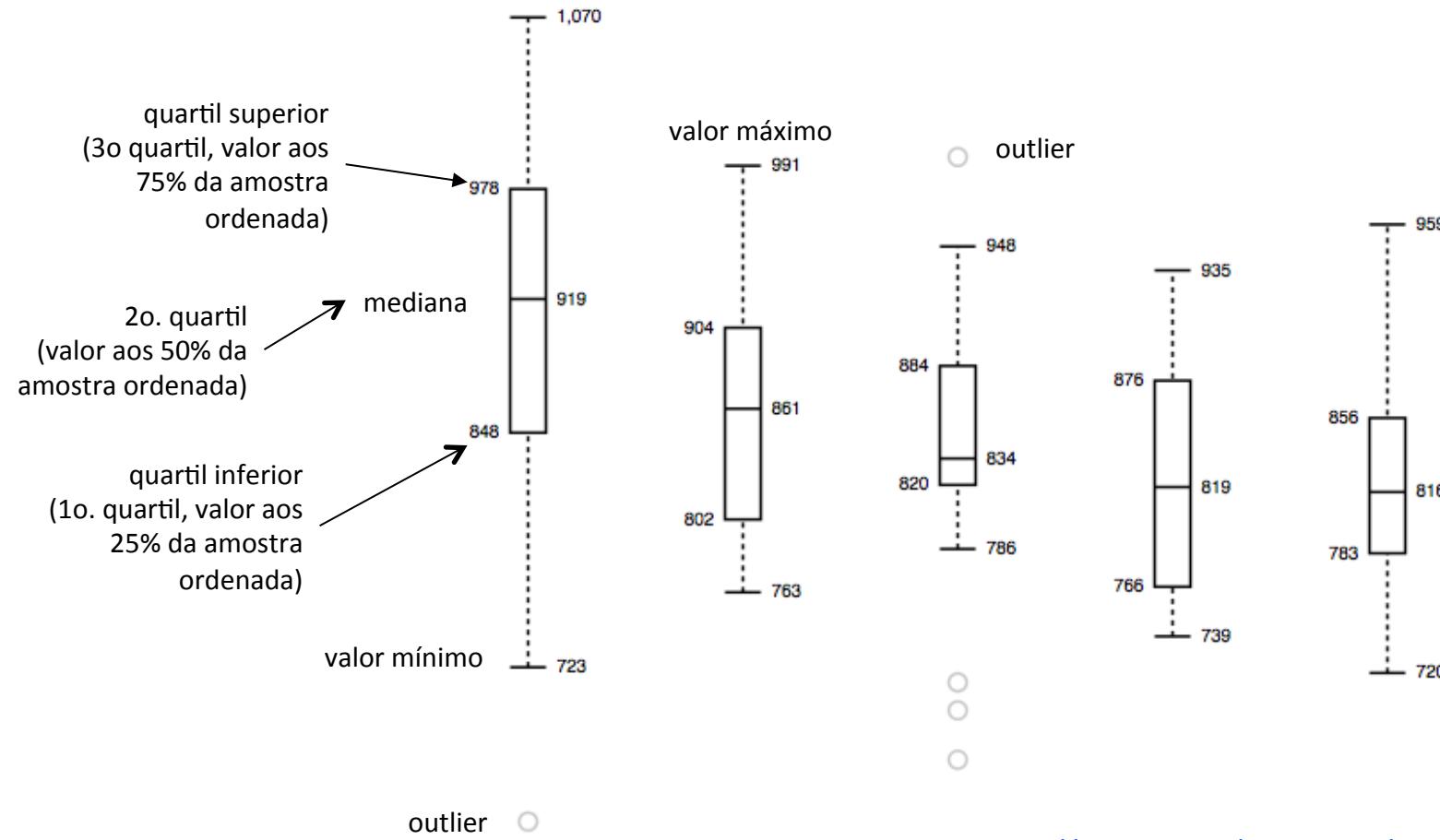


10

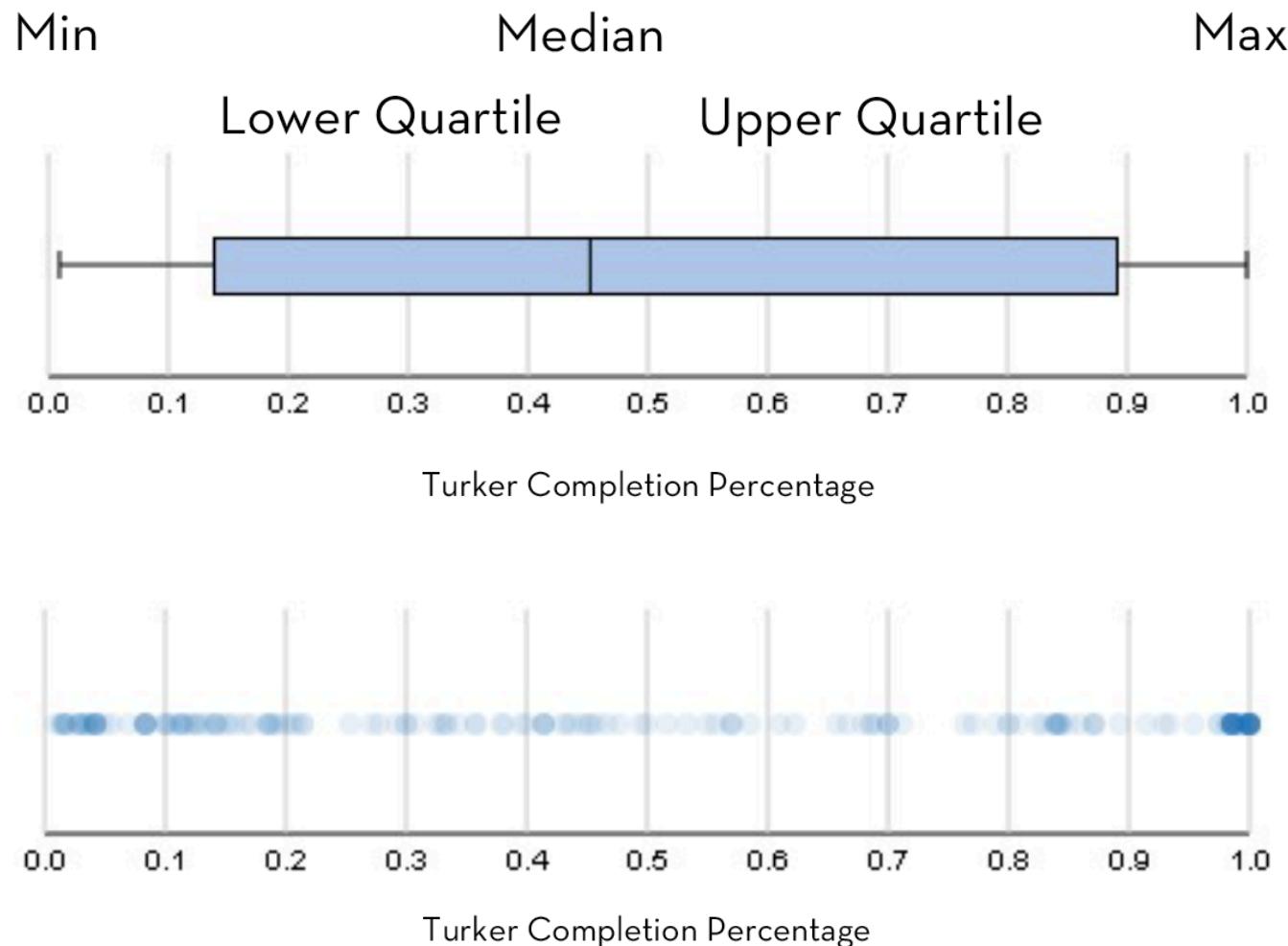
<https://eagereyes.org/basics/data-continuous-vs-categorical>

Representação de dados

- Dados derivados (overview)
 - Estatística descritiva
 - Box-and-whisker plot (box-plot)



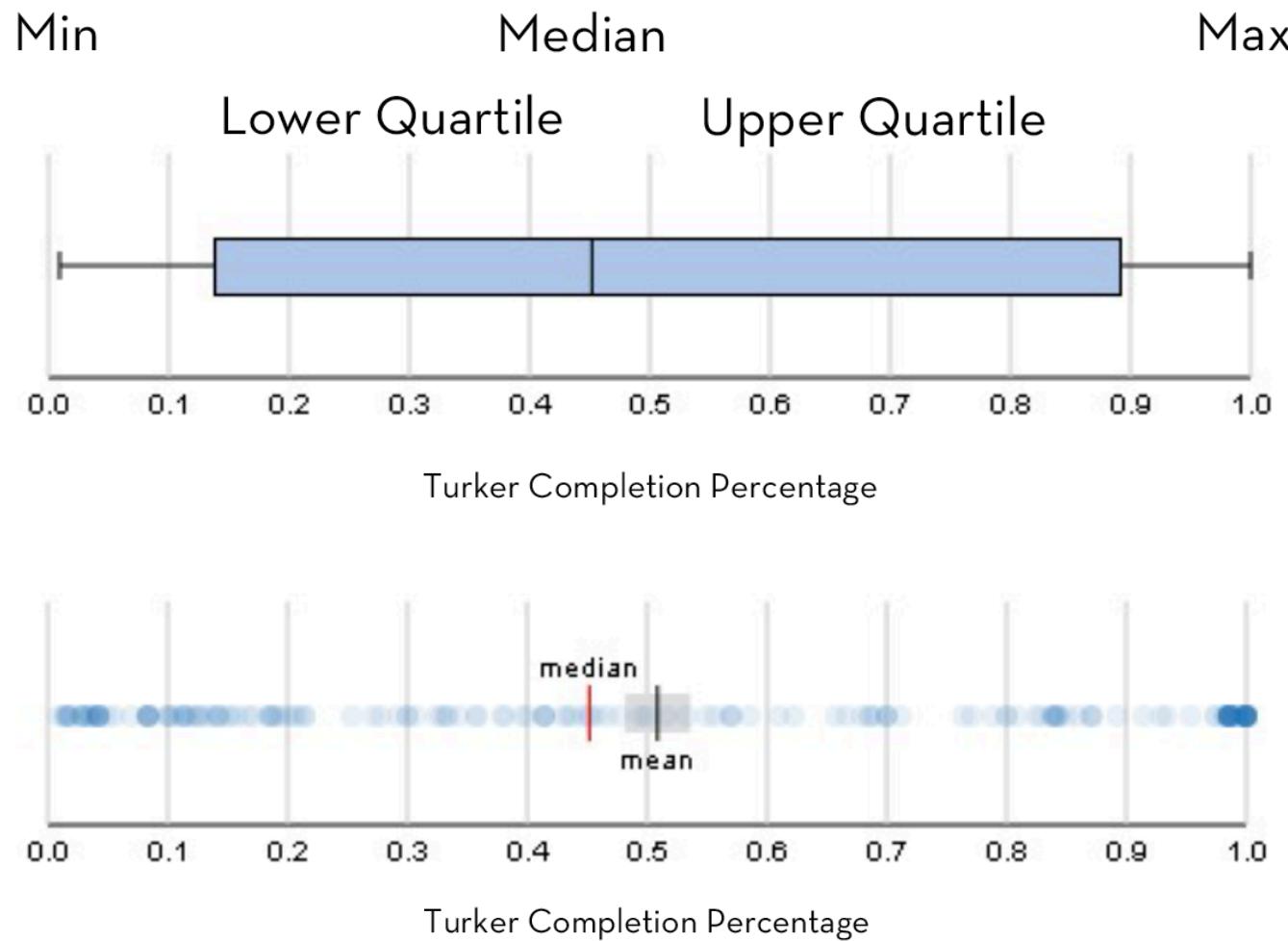
Representação de dados



12

Para saber mais sobre o conceito de Turker, [leia aqui.](#)

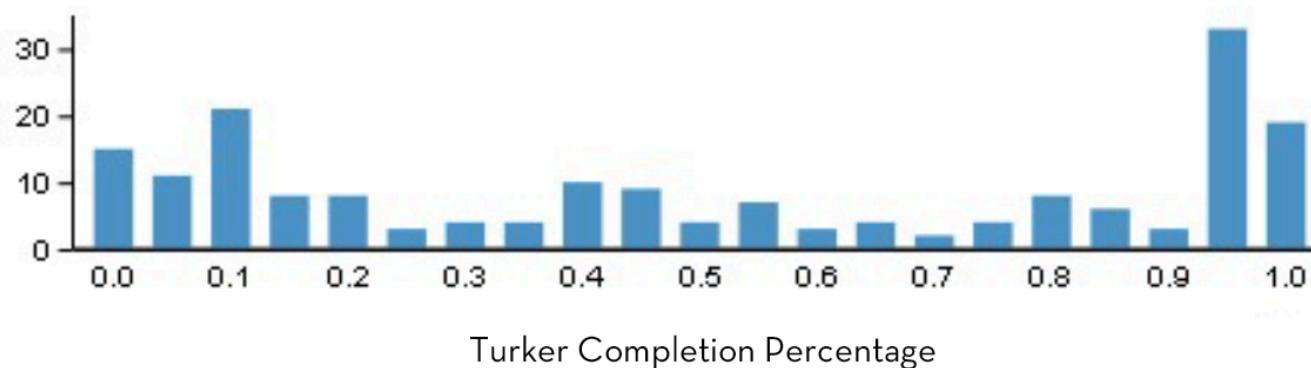
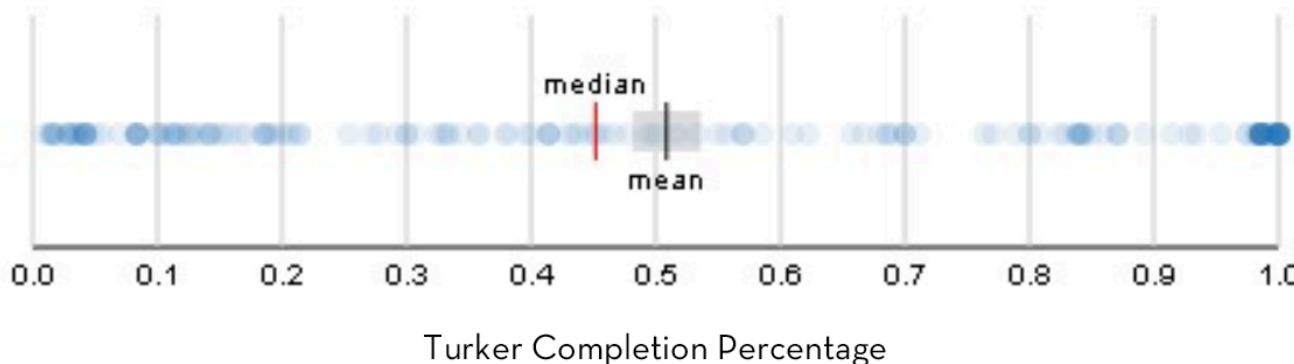
Representação de dados



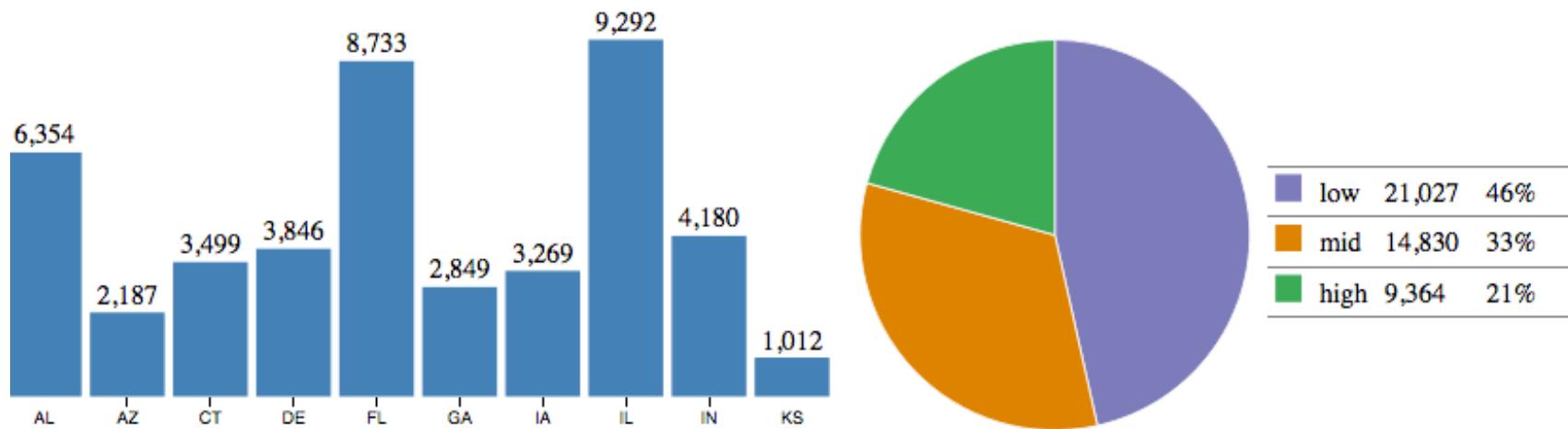
13

Para saber mais sobre o conceito de Turker, [leia aqui](#).

Representação de dados

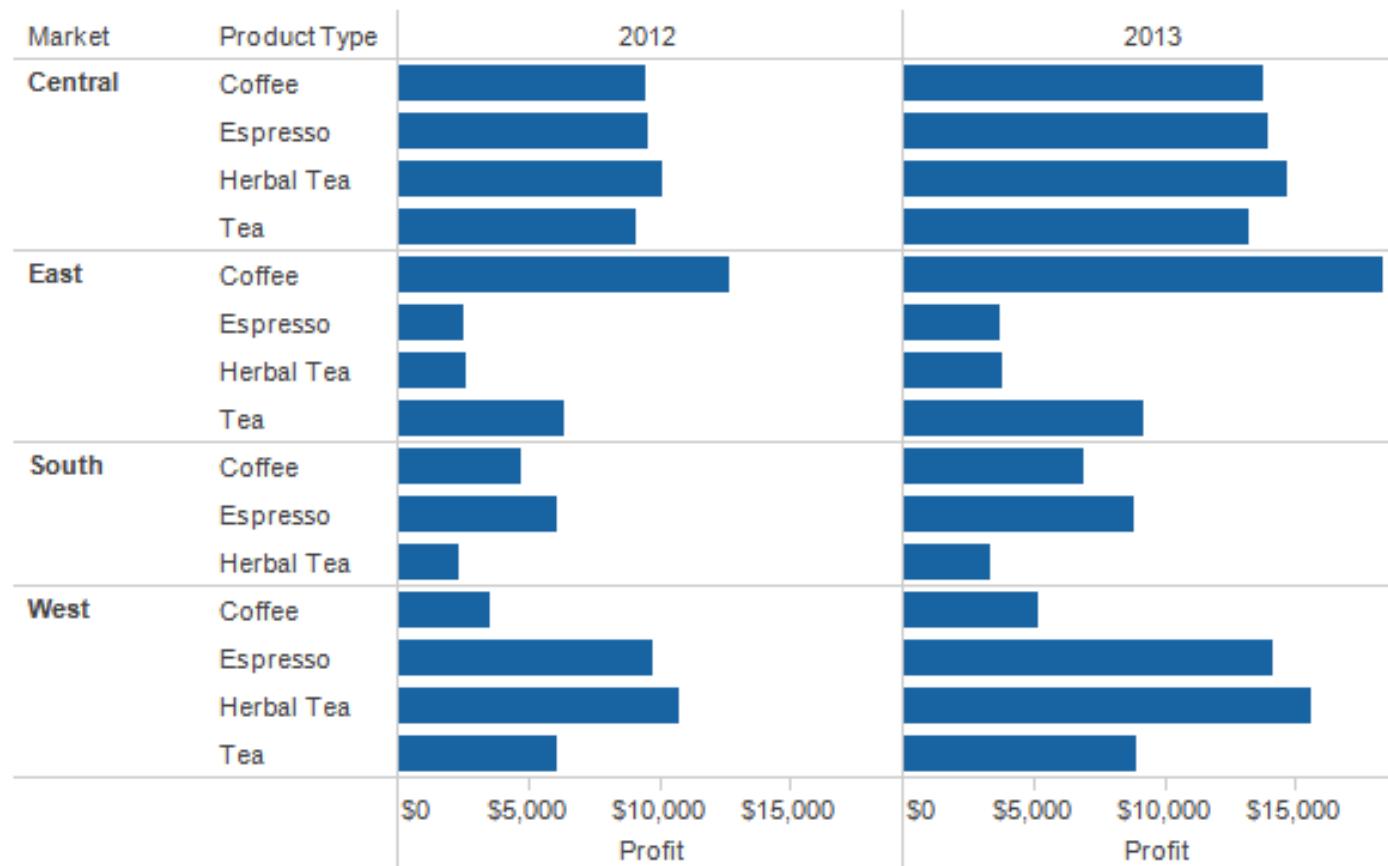


Representação de dados



Representação de dados

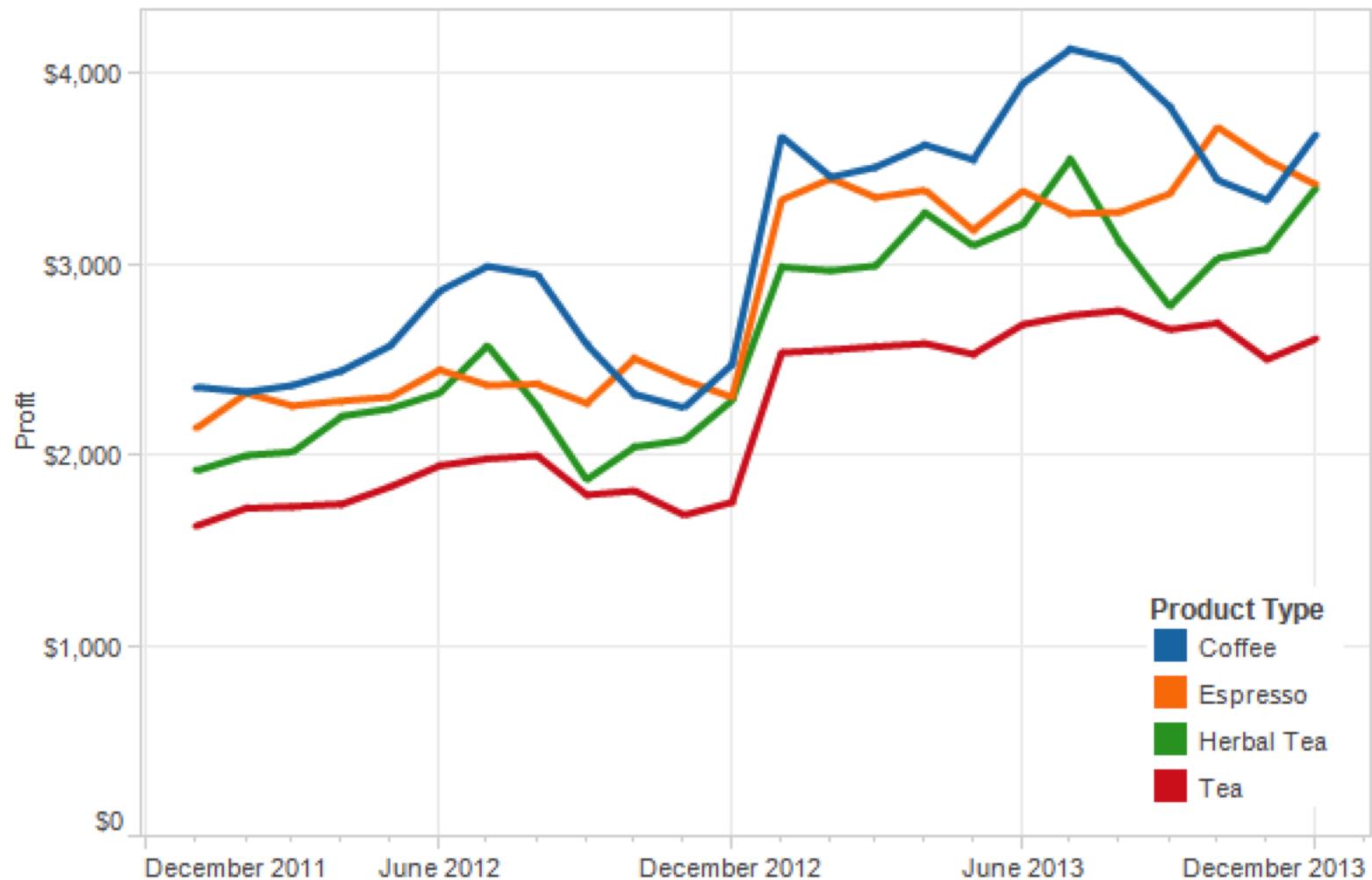
- Dados brutos (overview)



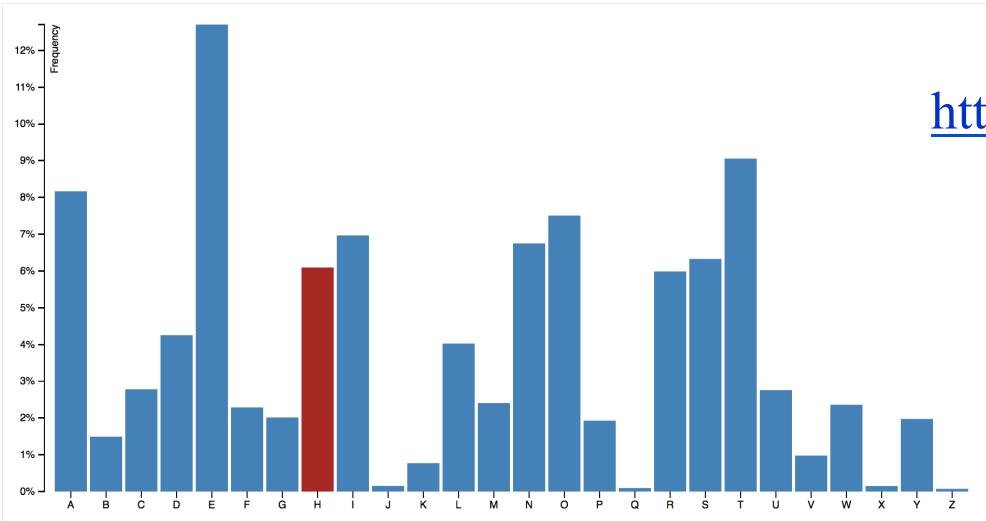
Restringindo atributos



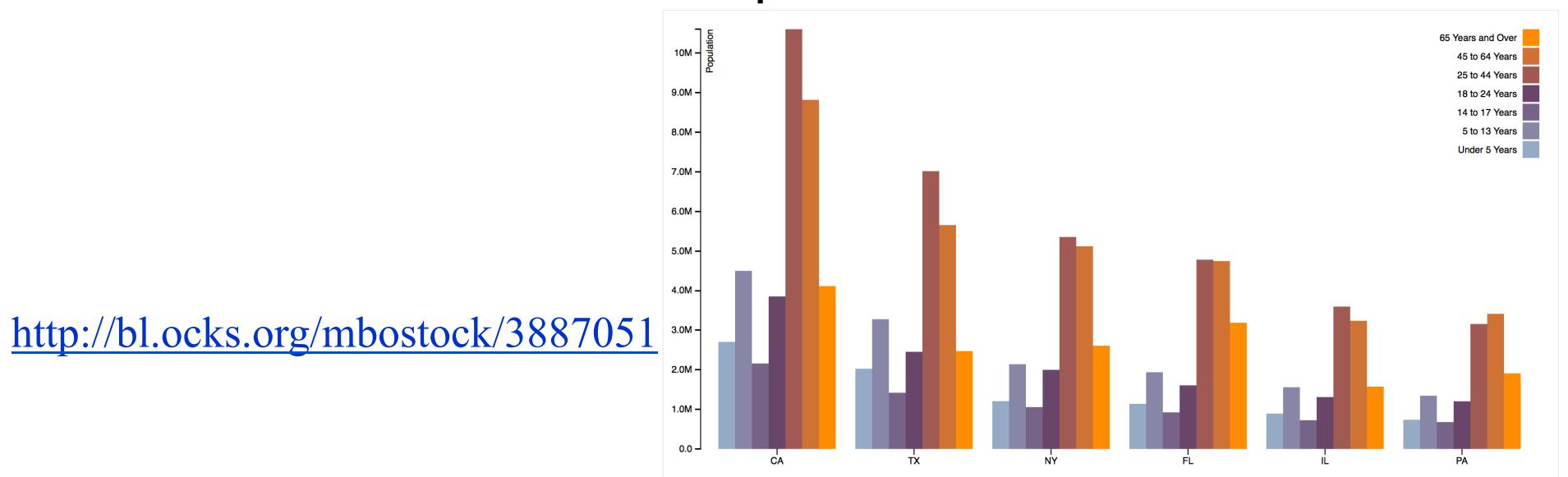
Restringindo atributos



Gráficos de barras

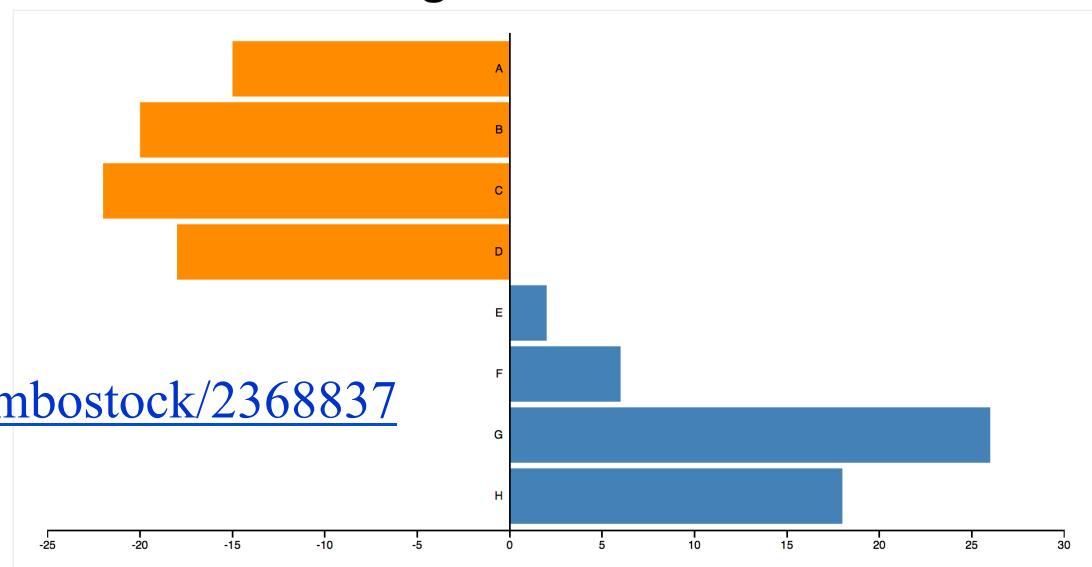


<http://bl.ocks.org/mbostock/3885304>

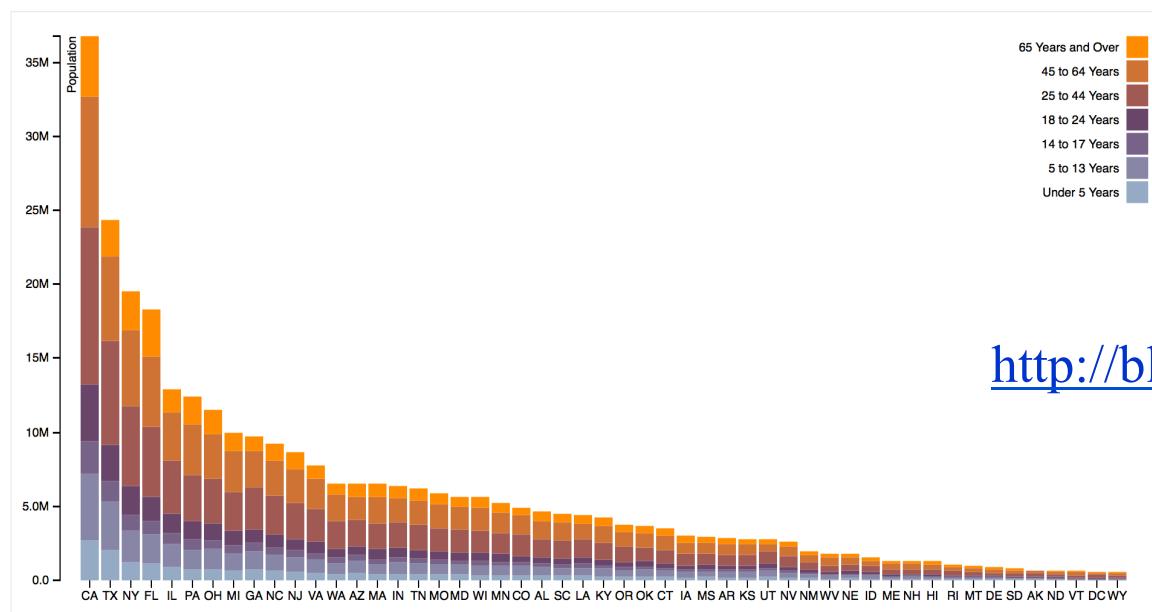


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Gráficos de barras



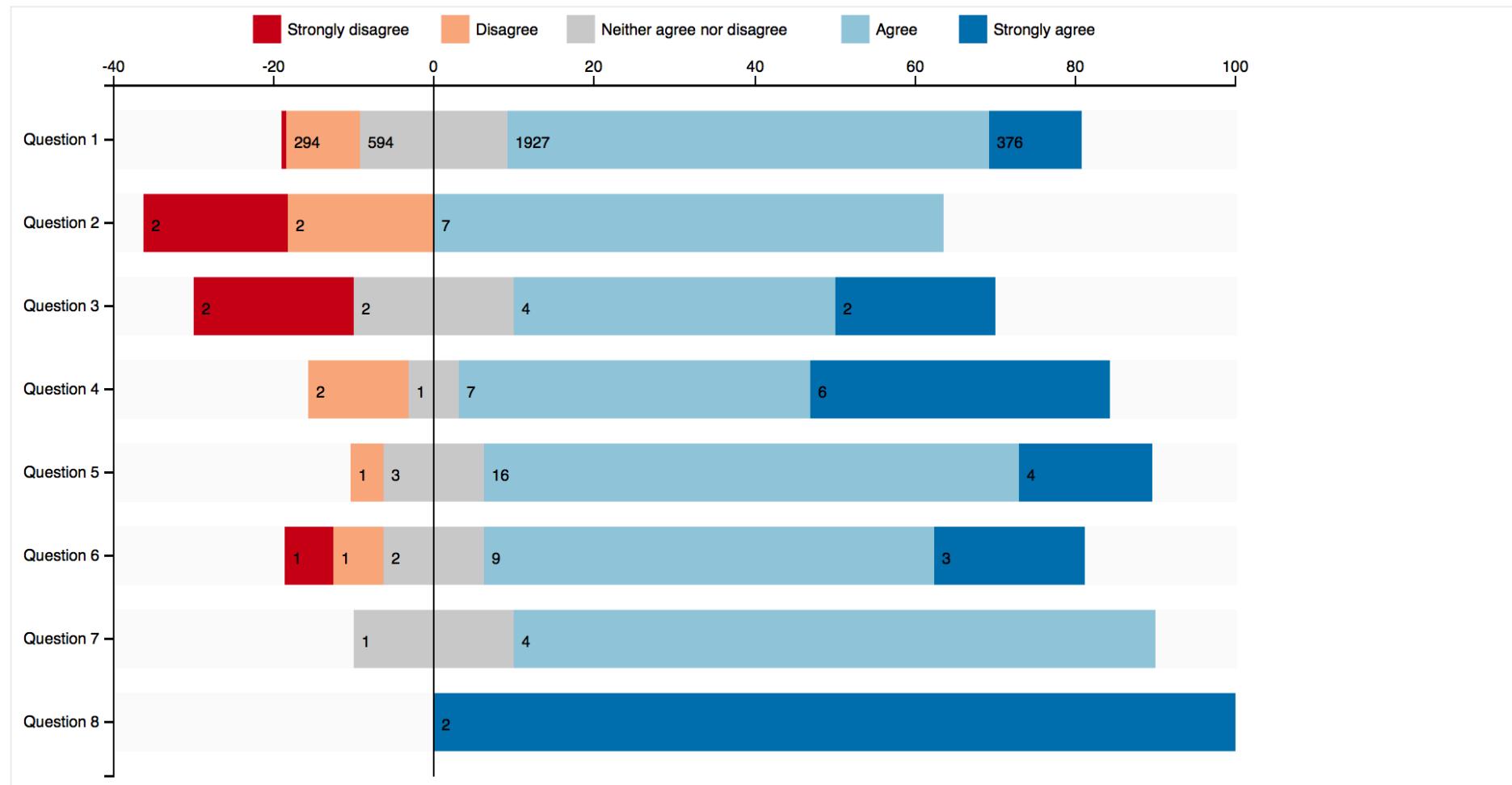
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20

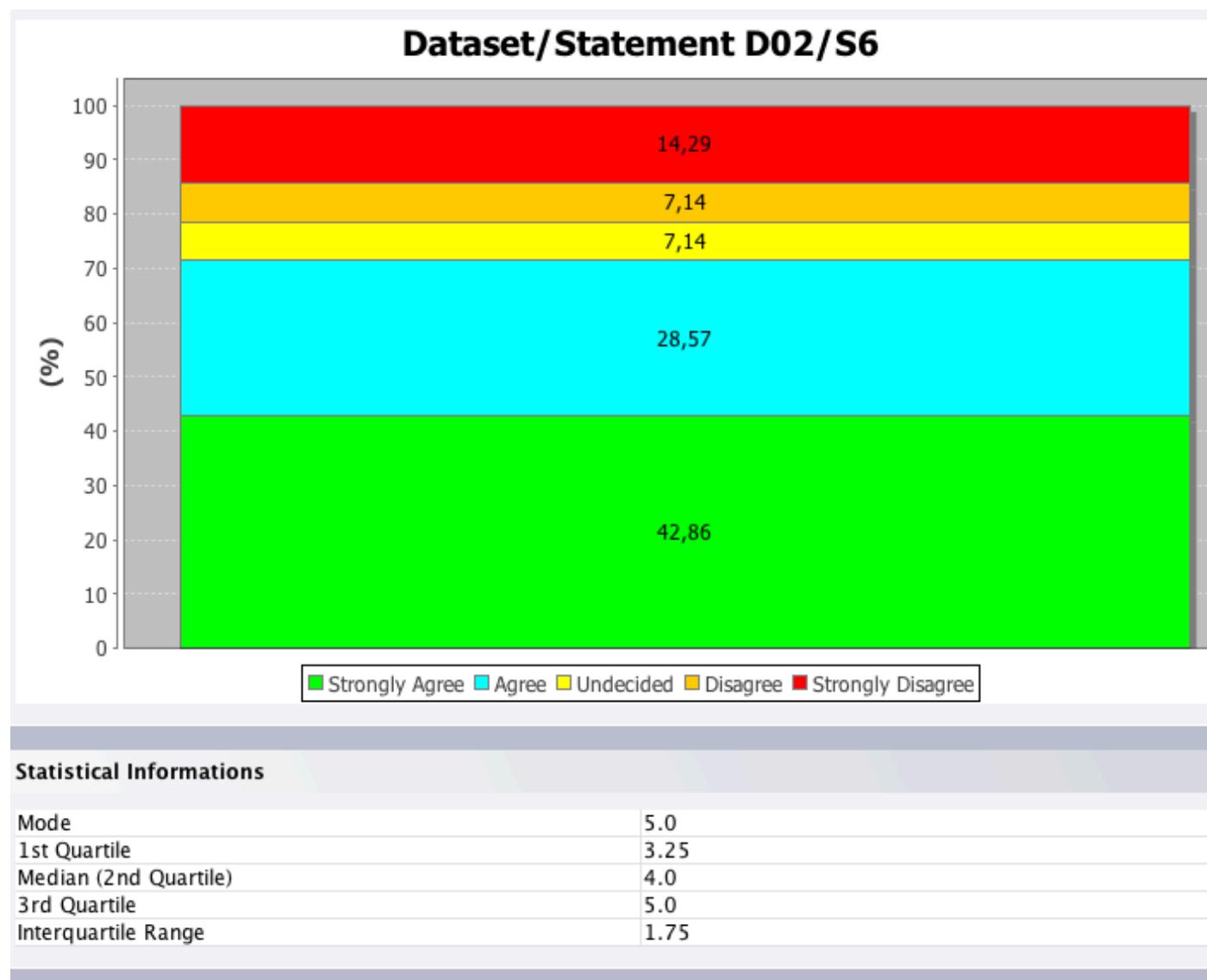
Gráficos de barras



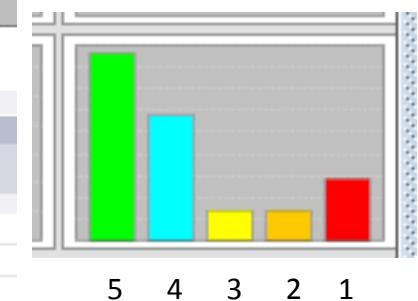
21

<http://blocks.org/wpoely86/e285b8e4c7b84710e463>

Gráfico de barras x “stacked bar chart”

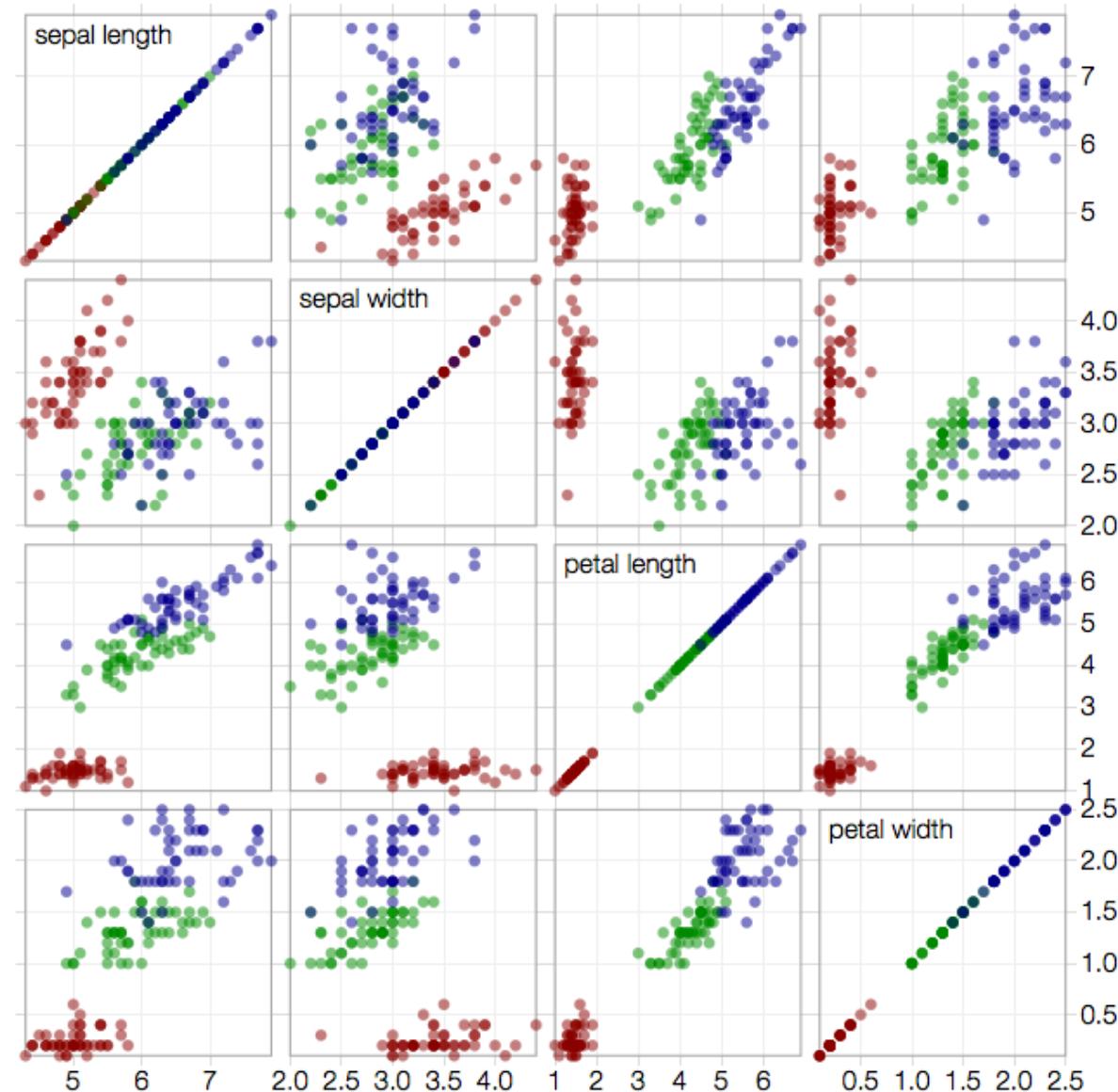


Dados brutos	Amostra ordenada
5	5
3	5
5	5
4	5
2	5
1	5
5	4
5	4
4	4
5	4
5	3
1	2
4	1
4	1



22

Matriz de scatter plots



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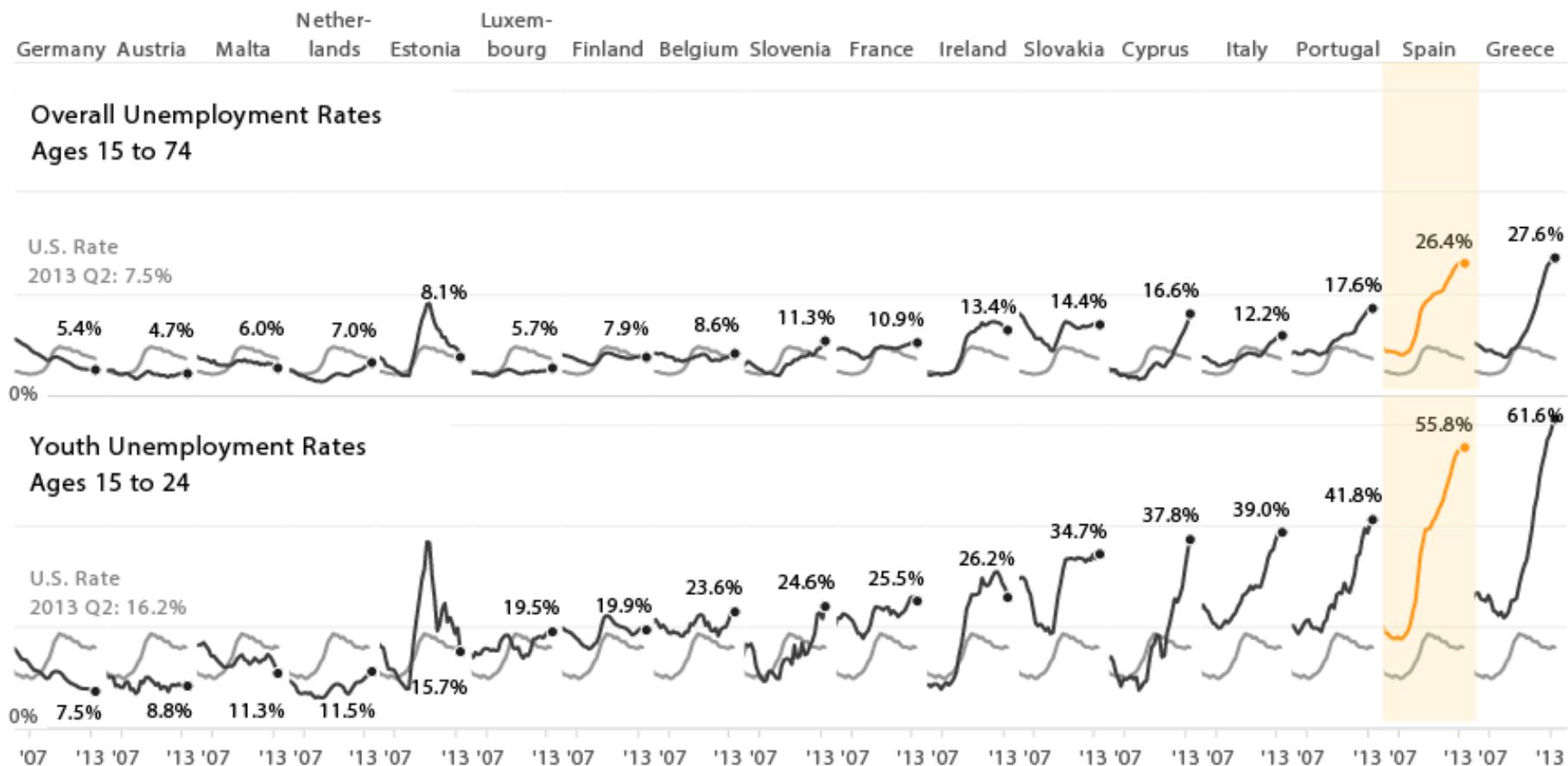
video ScatterDice

Small multiples

"Illustrations of postage-stamp size are indexed by category or a label, sequenced over time like the frames of a movie, or ordered by a quantitative variable not used in the single image itself." (Edward Tufte)

Unemployment in the euro zone

Spain's unemployment rate is one of the highest in Europe, although it fell slightly in the second quarter, the first drop in about two years.



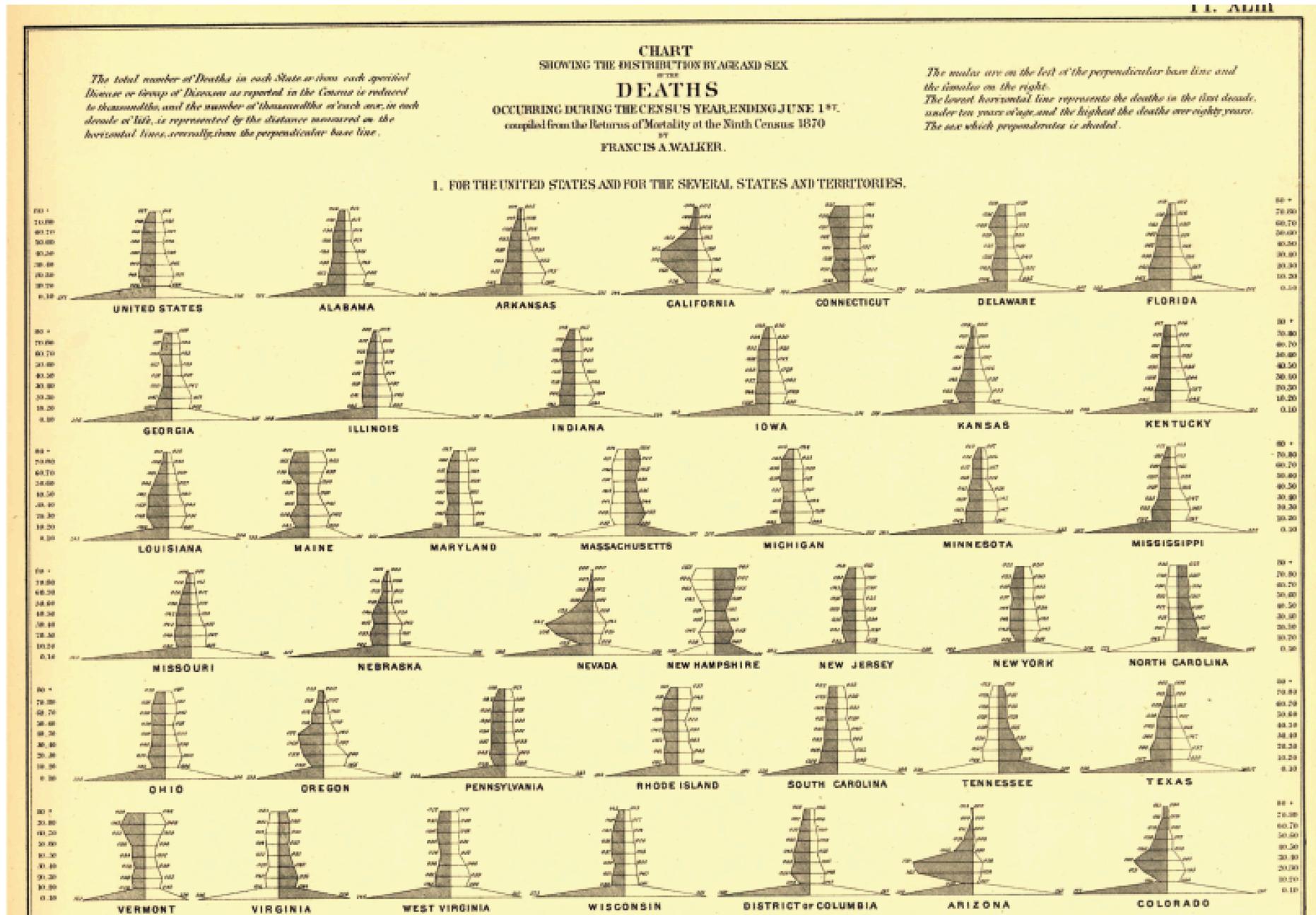
Note: U.S. data starts at age 16. | Source: Eurostat, European Commission.

This graphic is based on an original by The Washington Post. Published on August 11, 2013 (see jimw.me/wpmult).

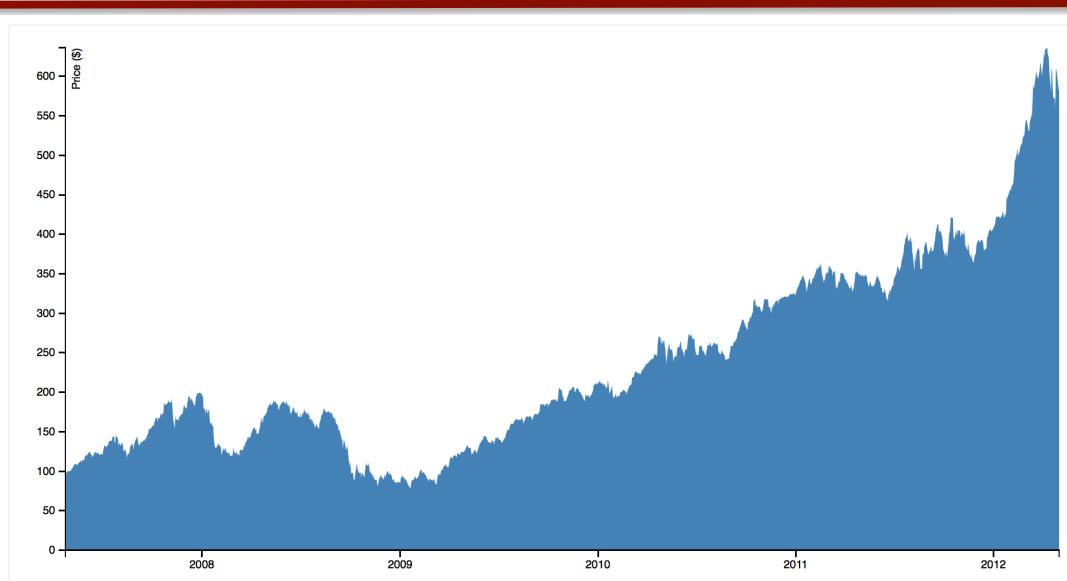
[original](#)

Óbitos por estado, por faixa etária e sexo (censo 1870)

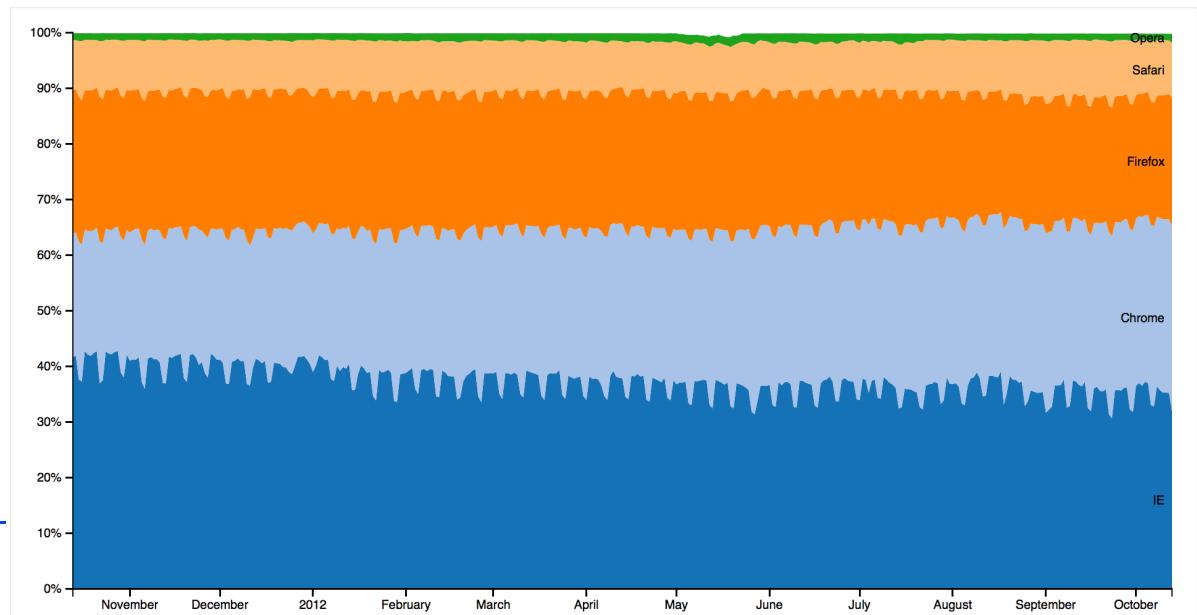
11. ANEXO



Gráficos de área



<http://bl.ocks.org/mbostock/3883195>



<http://bl.ocks.org/mbostock/3885211>

Theme River (streamgraph) Havre et al. 2009

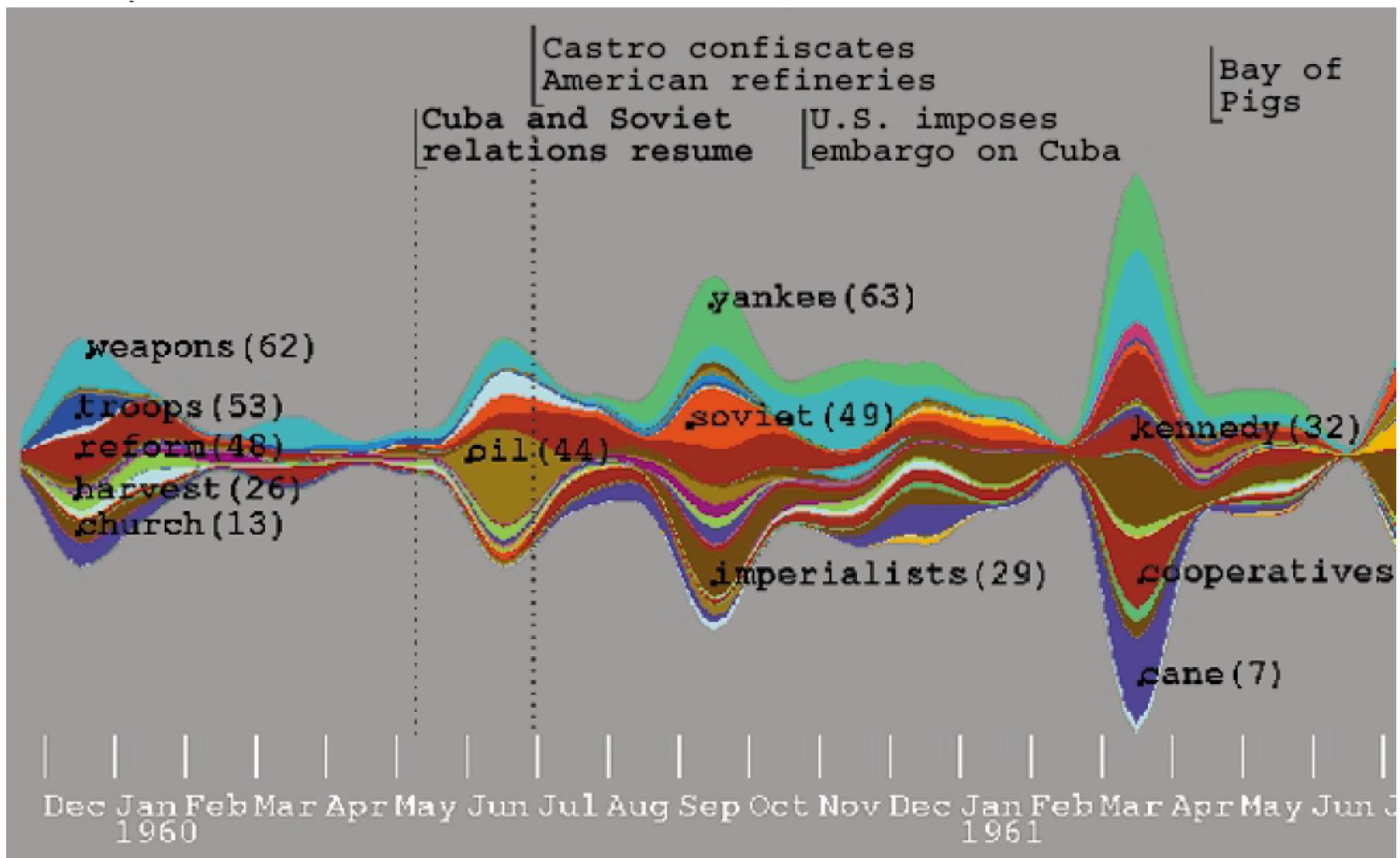
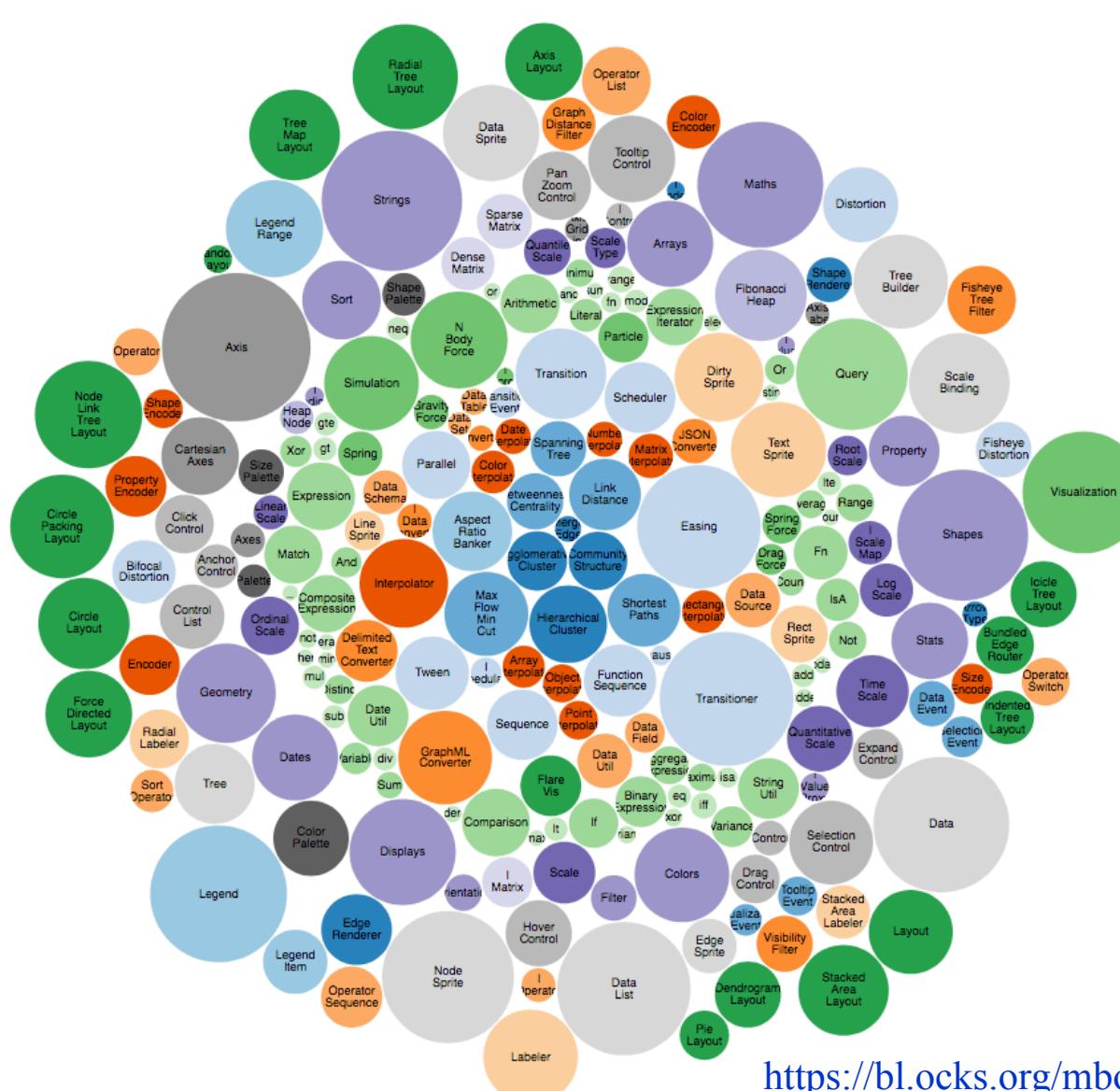


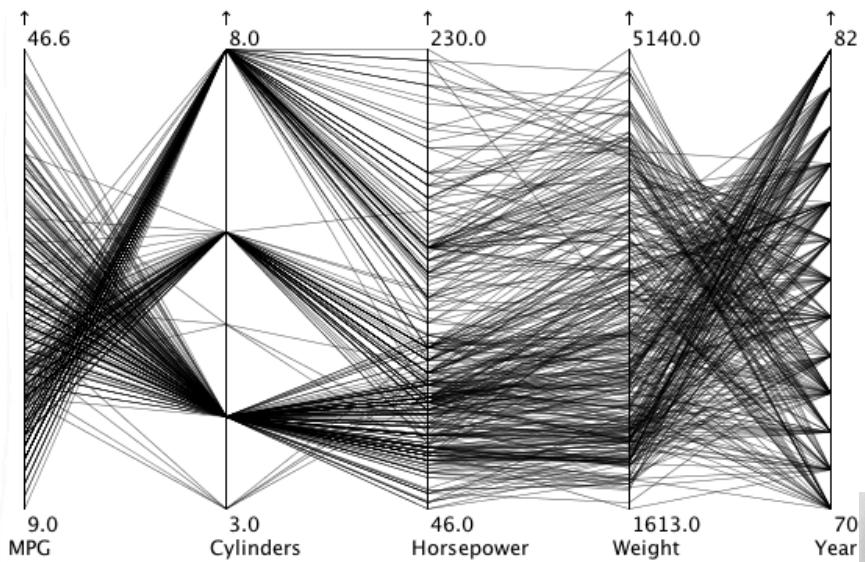
Figure 1: ThemeRiver™ uses a river metaphor to represent theme changes over time.

Bubble chart



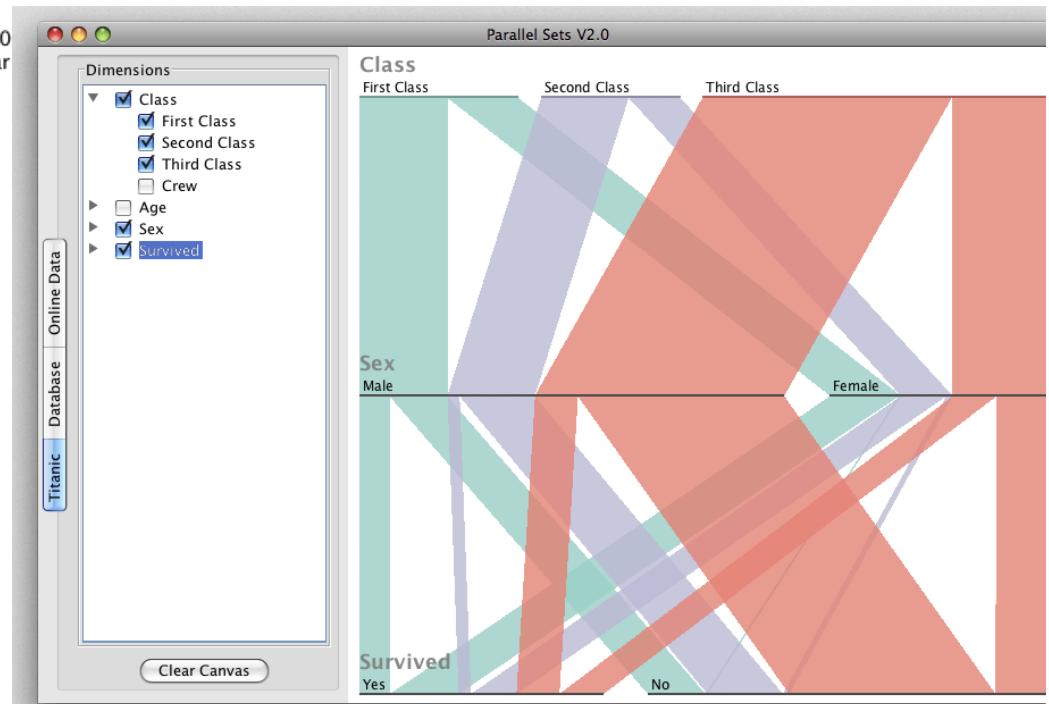
<https://bl.ocks.org/mbostock/4063269>

Coordenadas paralelas



<https://eagereyes.org/parallel-sets>

<https://eagereyes.org/techniques/parallel-coordinates>



Exemplos D3

Deconstructing Charts and Graphs - Maneesh Agrawala

https://youtu.be/qAh_dcq_S_M