

What

Data Visualization (Dataviz)

=

Visual representation of data

Who sells more weapons ?

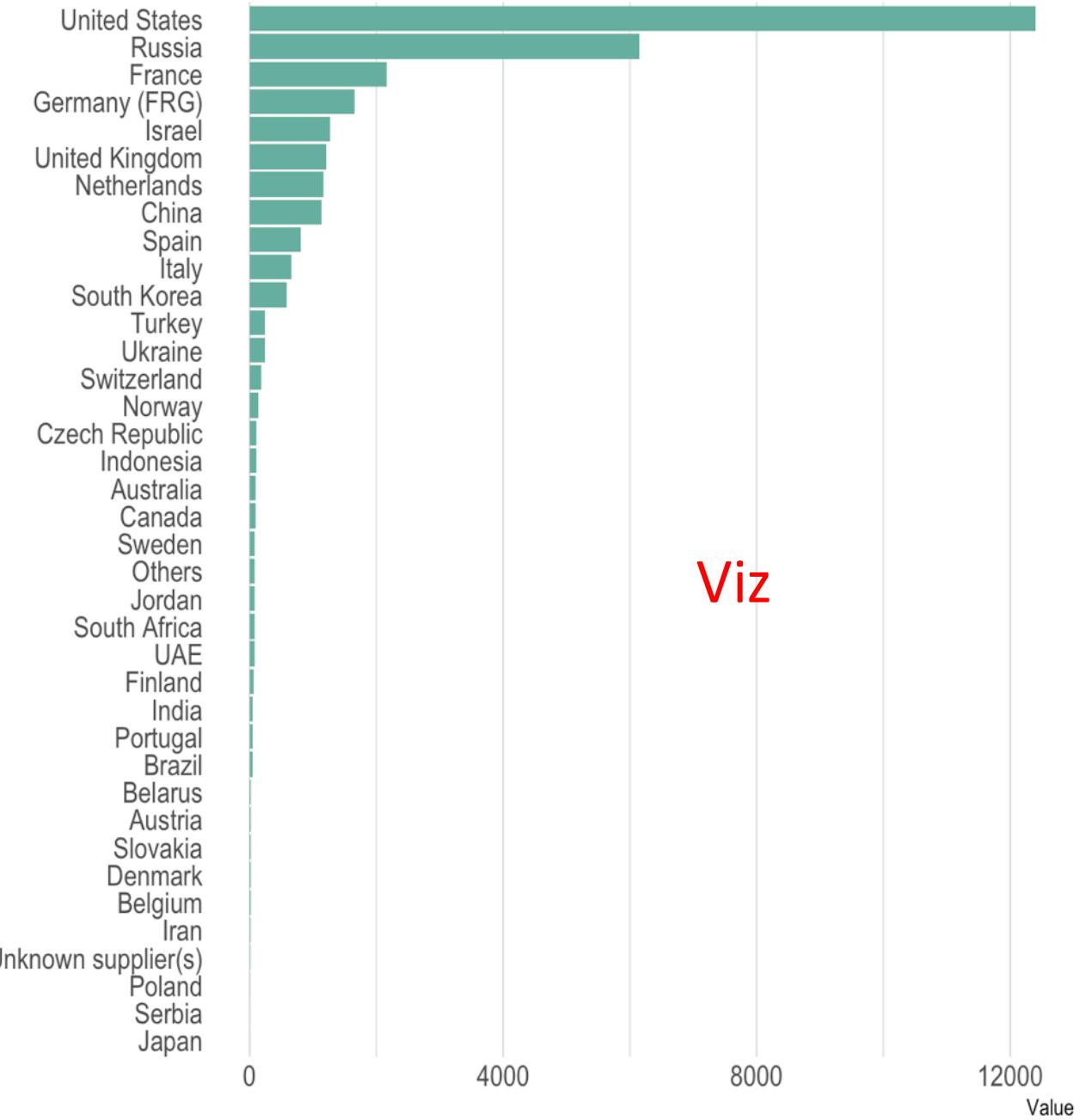
Country	Value
United States	12394
Russia	6148
Germany (FRG)	1653
France	2162
United Kingdom	1214
China	1131

Data

Who sells more weapons ?

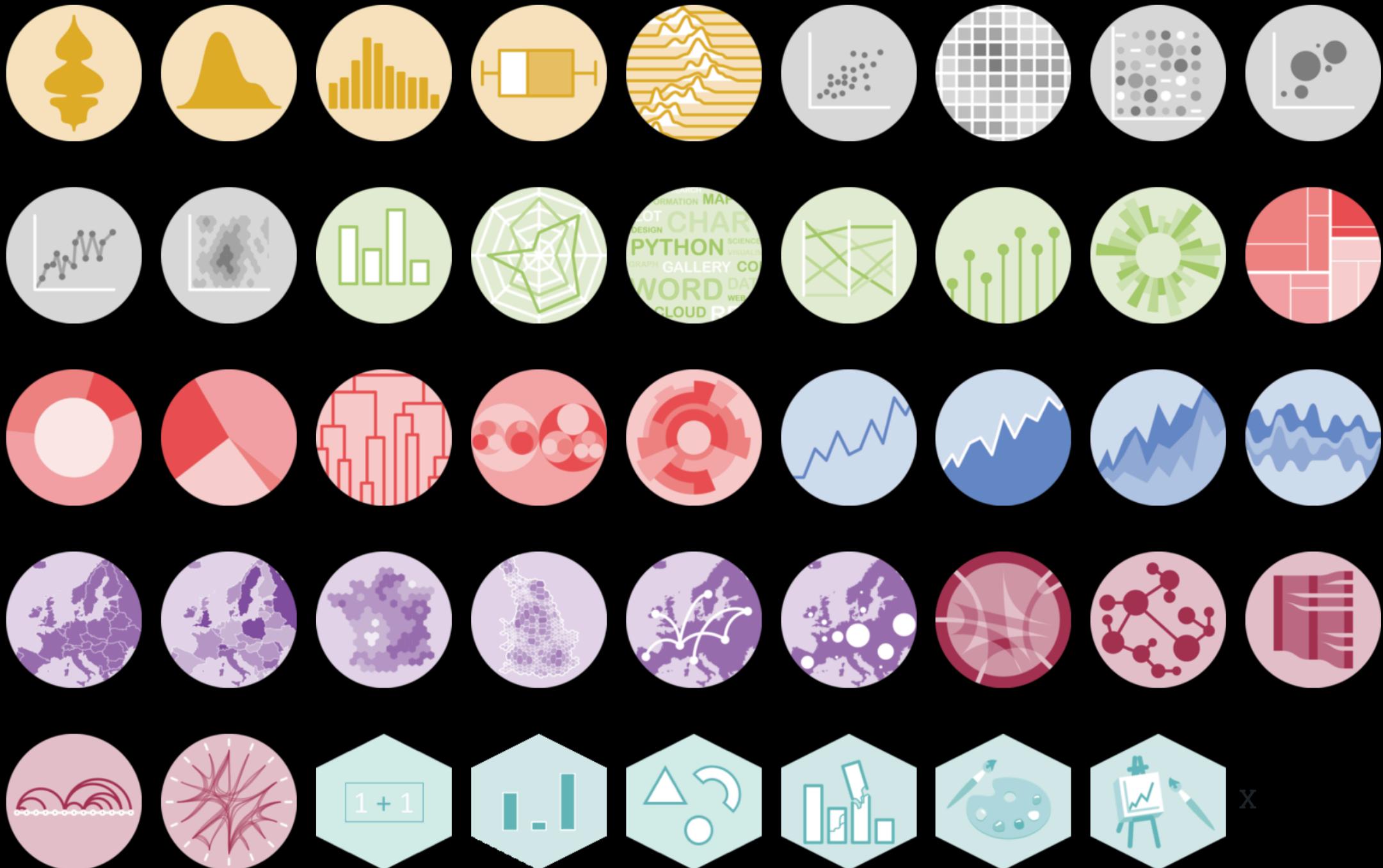
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Data



Dataviz = diversity

What kind of chart do you know?



x

Dataviz > chart

Chart < Infographic < Interactivity < Dashboard < Story Telling

What Could Disappear

Maps show coastal and low-lying areas that would be permanently flooded, without engineered protection, in three levels of higher seas. Percentages are the portion of dry, habitable land within the city limits of places listed that would be permanently submerged.

● Today's waterways

● Land submerged by rising oceans

Select sea level rise over current level:

25 feet: Potential level in coming centuries, based on historical climate data.

12 feet: Potential level in about 2300 if nations make only moderate pollution cuts.

5 feet: Probable level in about 100 to 300 years.

0 feet: Today's sea levels and land area.

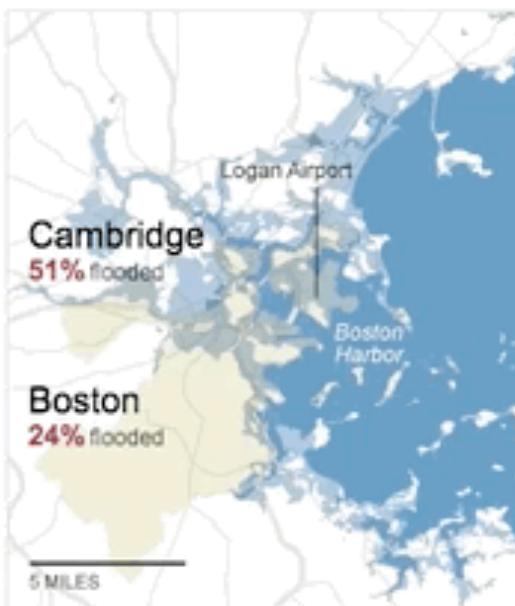
Notes on sea level estimates

Baltimore 5% flooded



Fells Point and the city's ports are submerged.

Boston



Back Bay, the South End and the airport are permanently submerged. What's left of downtown is an island.

Charleston, S.C. 42% flooded



Much of the original city and its ports are flooded.

Real-Time Active Users by Channel

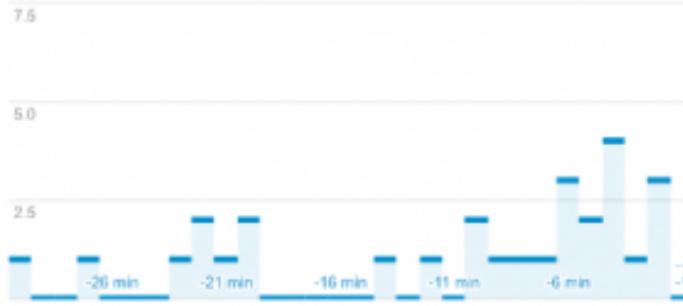
Right now
10

active users on site

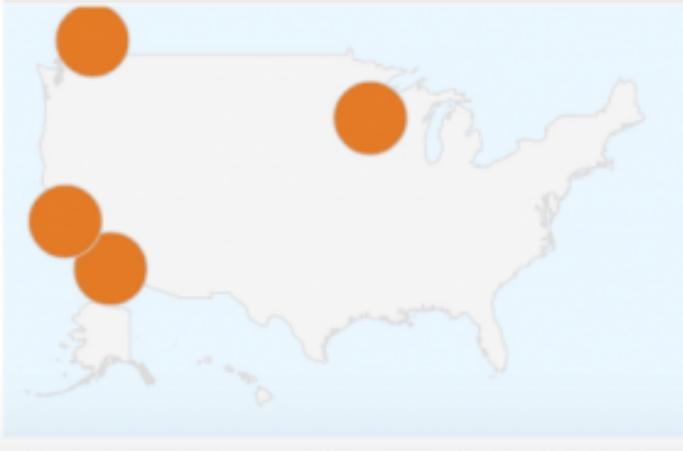
ORGANIC DIRECT REFERRAL SOCIAL

50% 30% 10% 10%

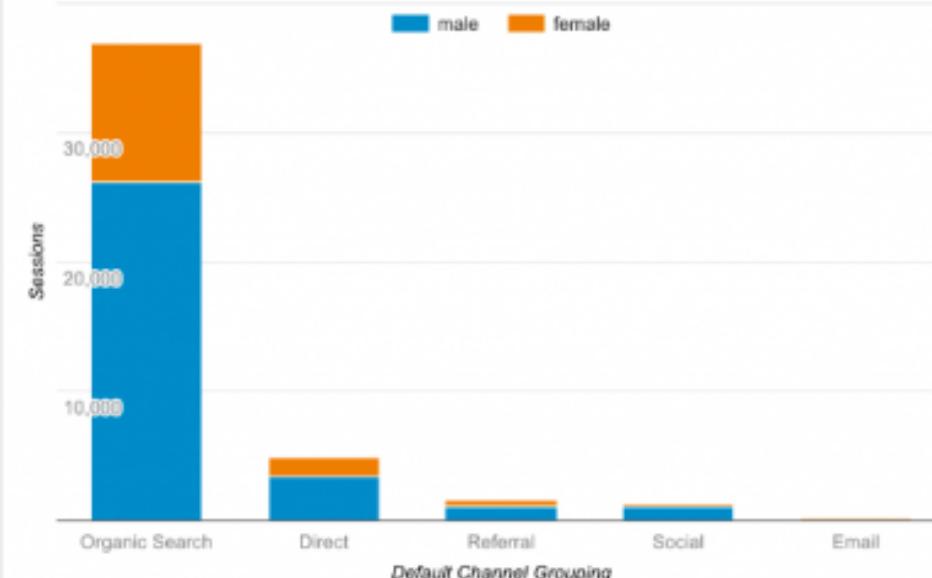
Real-Time Pageviews (Last 30 Min)



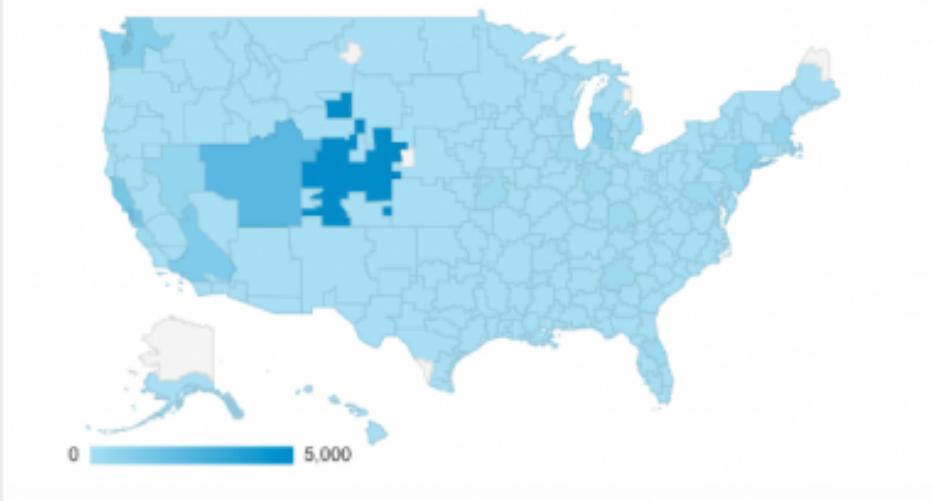
Real-Time Active Users (US Cities Only)



Sessions by Channel Pivoted by Gender (Stacked)



Revenue by Metro (US Only)



Revenue

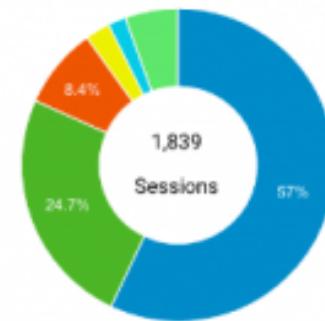
\$27,570.00

% of Total: 100.00% (\$27,570.00)

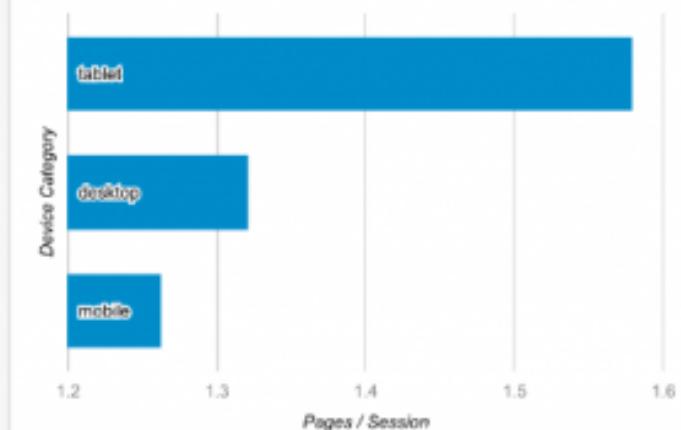


Sessions by Social Network

Twitter Facebook Google+ LinkedIn
Stack Overflow Other



Pages / Session by Device Category



Story Telling with data: The Pudding

<https://padding.cool/2018/08/wiki-death/>

Why

« A picture is worth a thousand words »

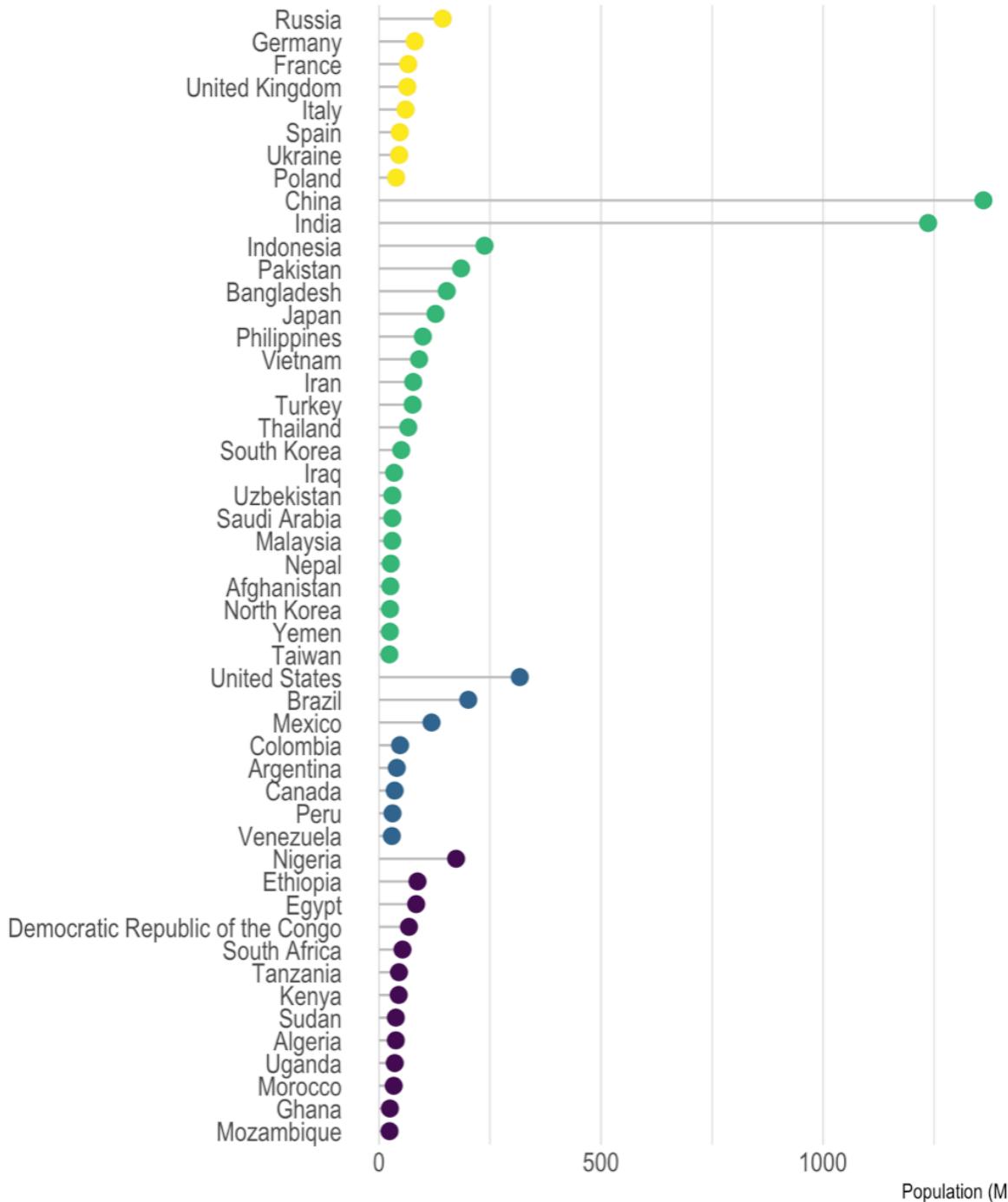
World population distribution

A	B	C	D
1	region	subregion	key
2	Asia	Southern Asia	Afghanistan
3	Europe	Northern Europe	Åland Islands
4	Europe	Southern Europe	Albania
5	Africa	Northern Africa	Algeria
6	Oceania	Polynesia	American Samoa
7	Europe	Southern Europe	Andorra
8	Africa	Middle Africa	Angola
9	Americas	Caribbean	Anguilla
10			Antarctica
11	Americas	Caribbean	Antigua and Barbuda
12	Americas	South America	Argentina
13	Asia	Western Asia	Armenia
14	Americas	Caribbean	Aruba
15	Oceania	Australia and New Zealand	Australia
16	Europe	Western Europe	Austria
17	Asia	Western Asia	Azerbaijan
18	Americas	Caribbean	Bahamas
19	Asia	Western Asia	Bahrain
20	Asia	Southern Asia	Bangladesh
21	Americas	Caribbean	Barbados
22	Europe	Eastern Europe	Belarus
23	Europe	Western Europe	Belgium
24	Americas	Central America	Belize
25	Africa	Western Africa	Benin
26	Americas	Northern America	Bermuda
27	Asia	Southern Asia	Bhutan
28	Americas	South America	Bolivia
29	Americas	Caribbean	Bonaire
30	Europe	Southern Europe	Bosnia and Herzegovina
31	Africa	Southern Africa	Botswana
32			Bouvet Island
33	Americas	South America	Brazil
34	Africa	Eastern Africa	British Indian Ocean Territory
35	Americas	Caribbean	British Virgin Islands

- Biggest country?
- Rank?
- Distribution by continent?



“Picture superiority effect”

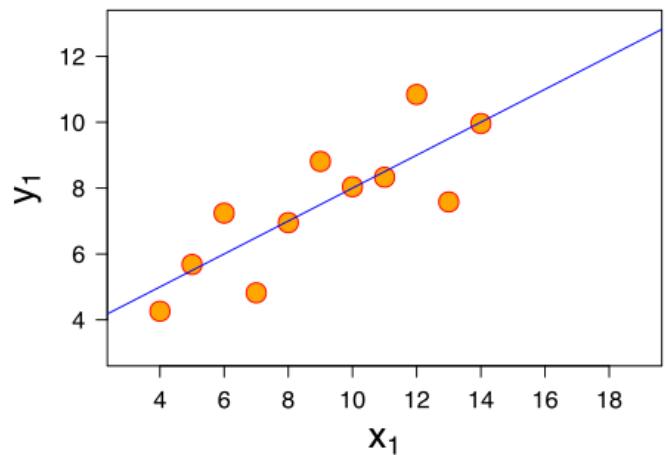


$$Y = 3 + 0.5x$$
$$\text{Cor} = 0.8$$

OK, but we have
summary statistics!

$$\text{Mean}(x) = 9$$
$$\text{Var}(x) = 11$$

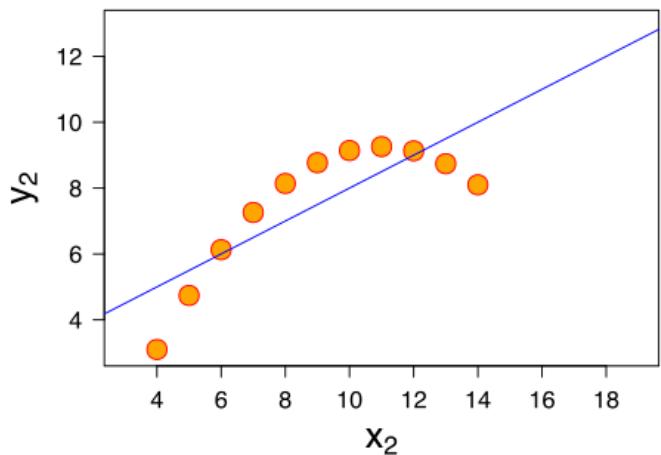
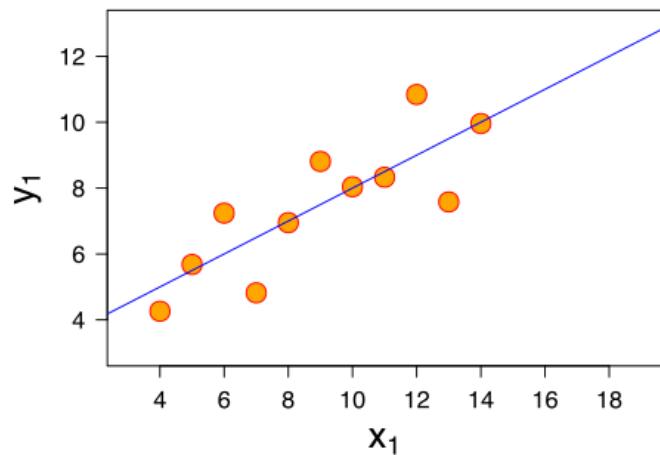
$$\text{Mean}(Y) = 7.5$$
$$\text{Var}(Y) = 4.1$$



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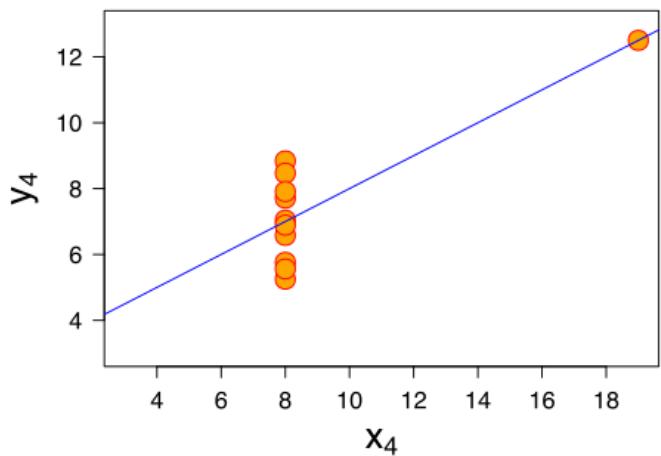
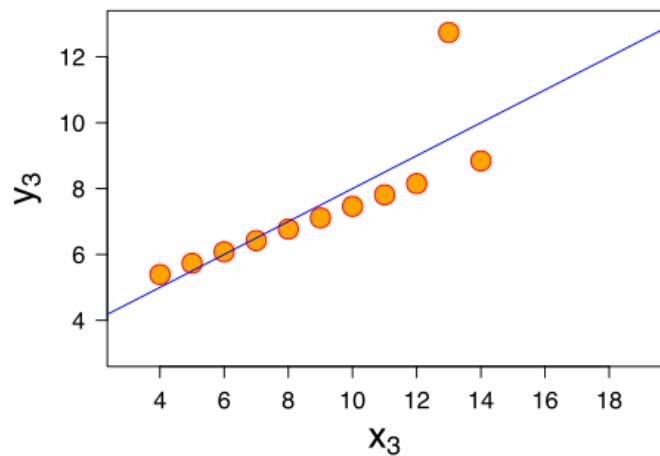
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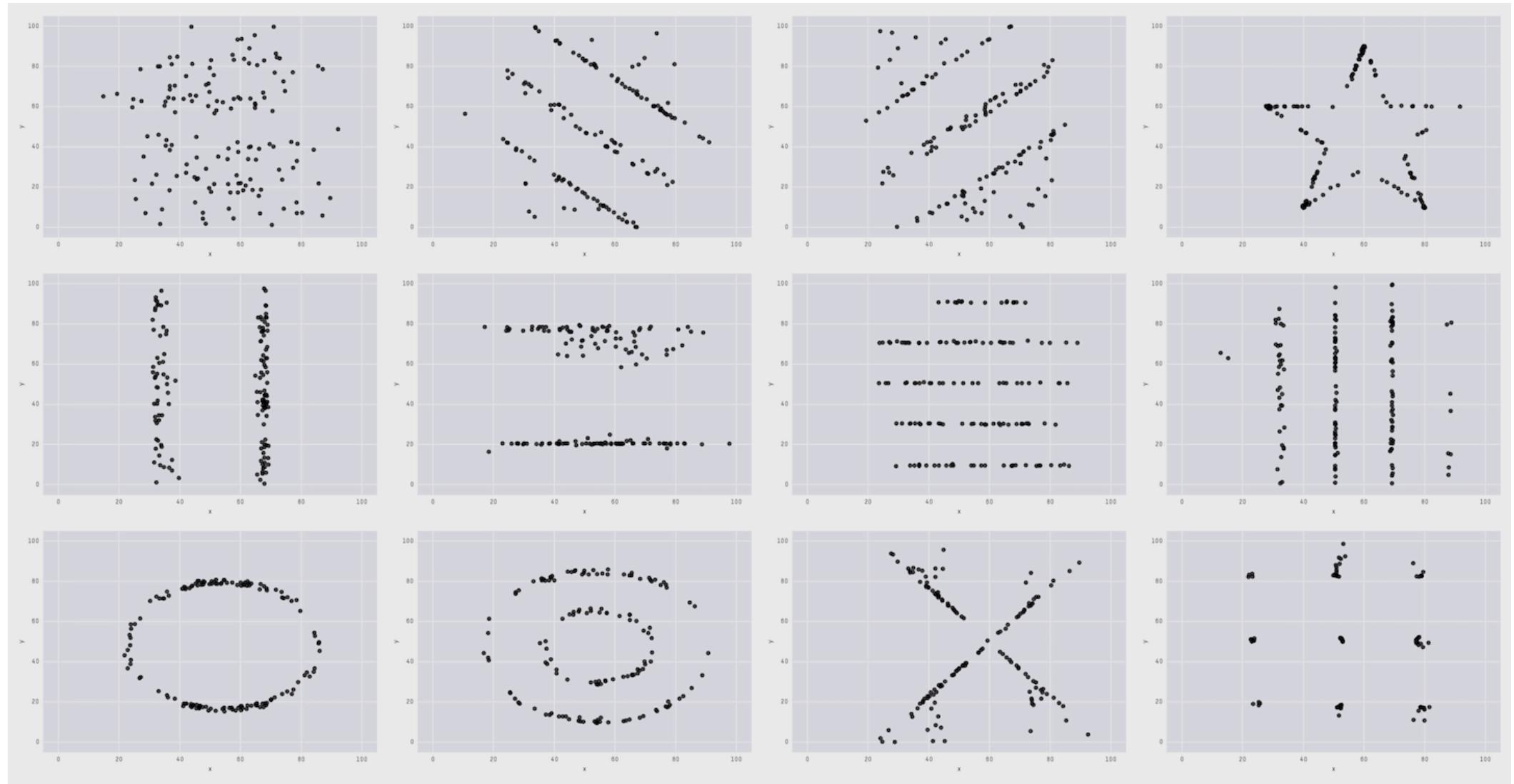
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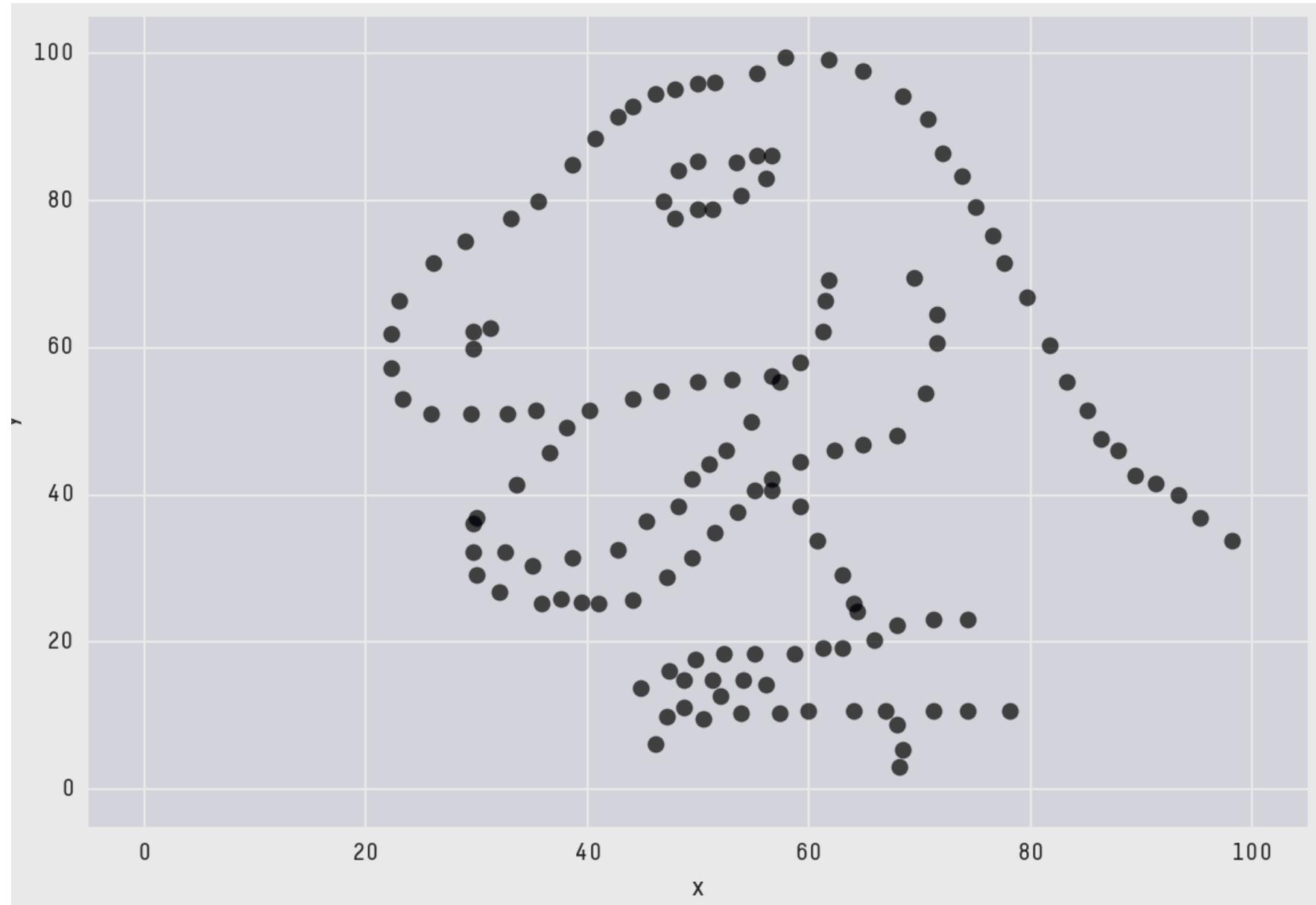


Anscombe's quartet



The Datasaurus Dozen

Cairo, 2017
Matejka & Fitzmaurice, 2017

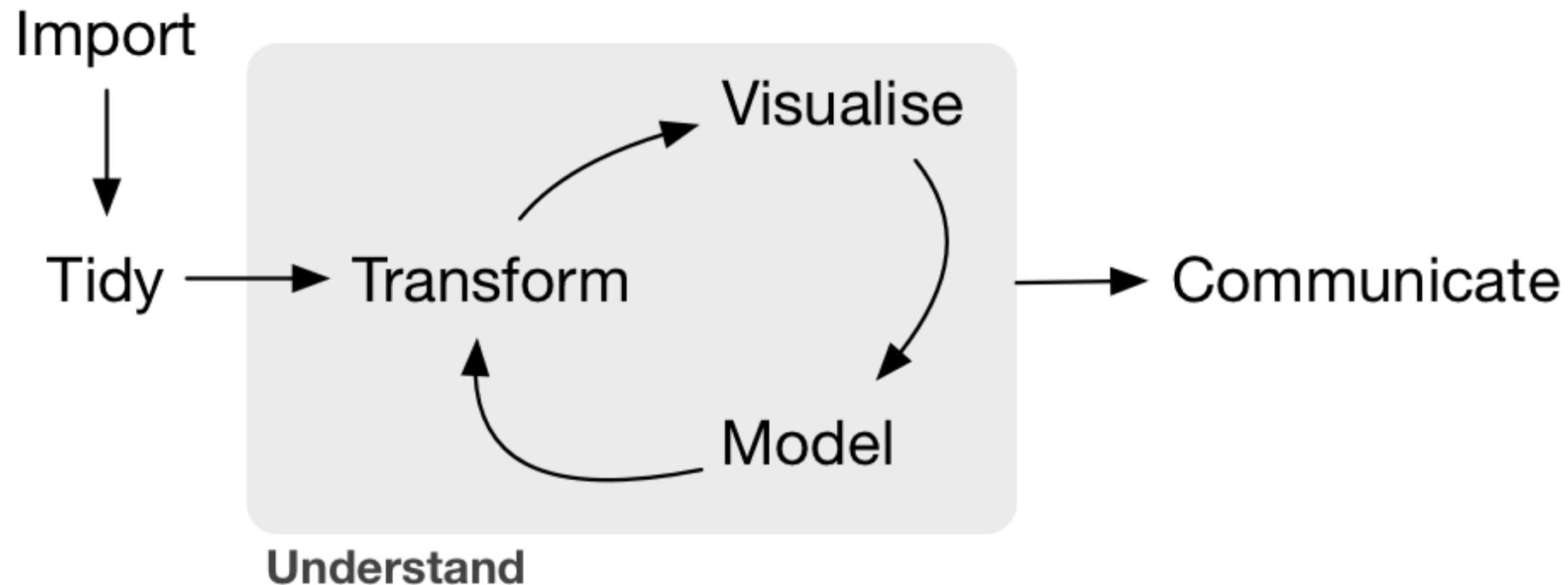


The Datasaurus Dozen

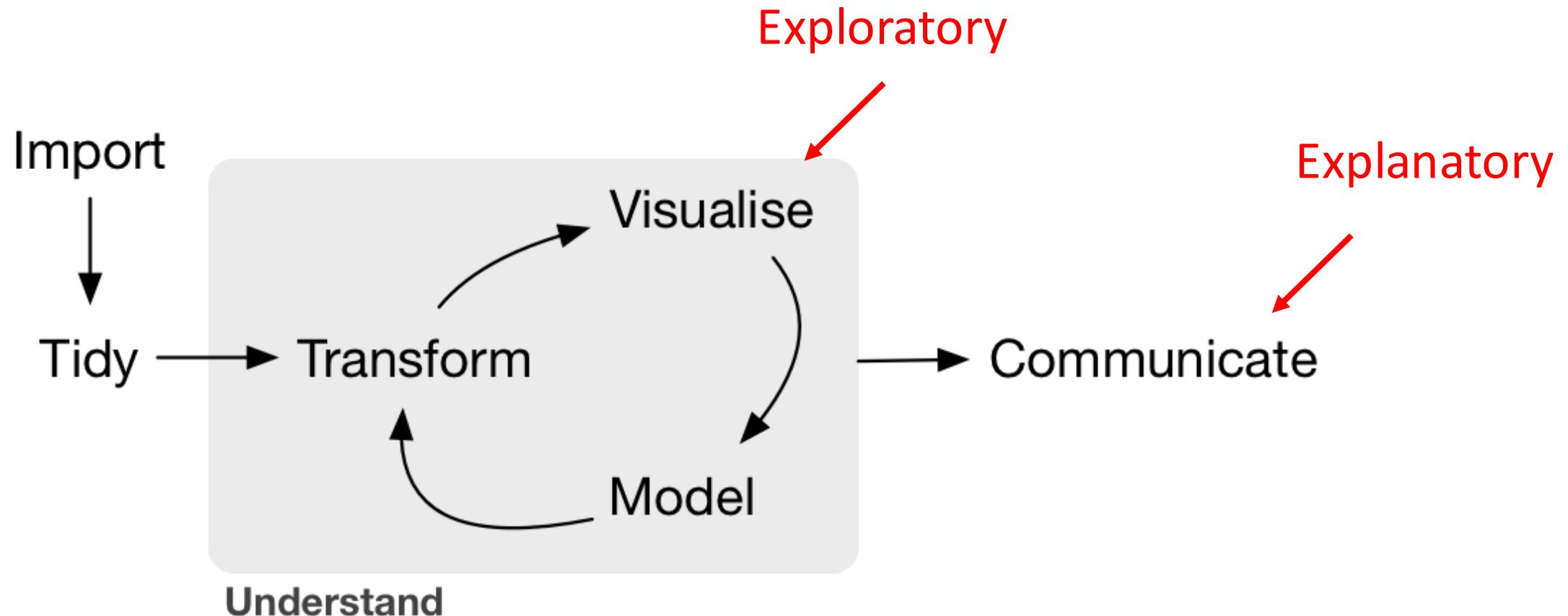
Cairo, 2017

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The Data Science Pipeline

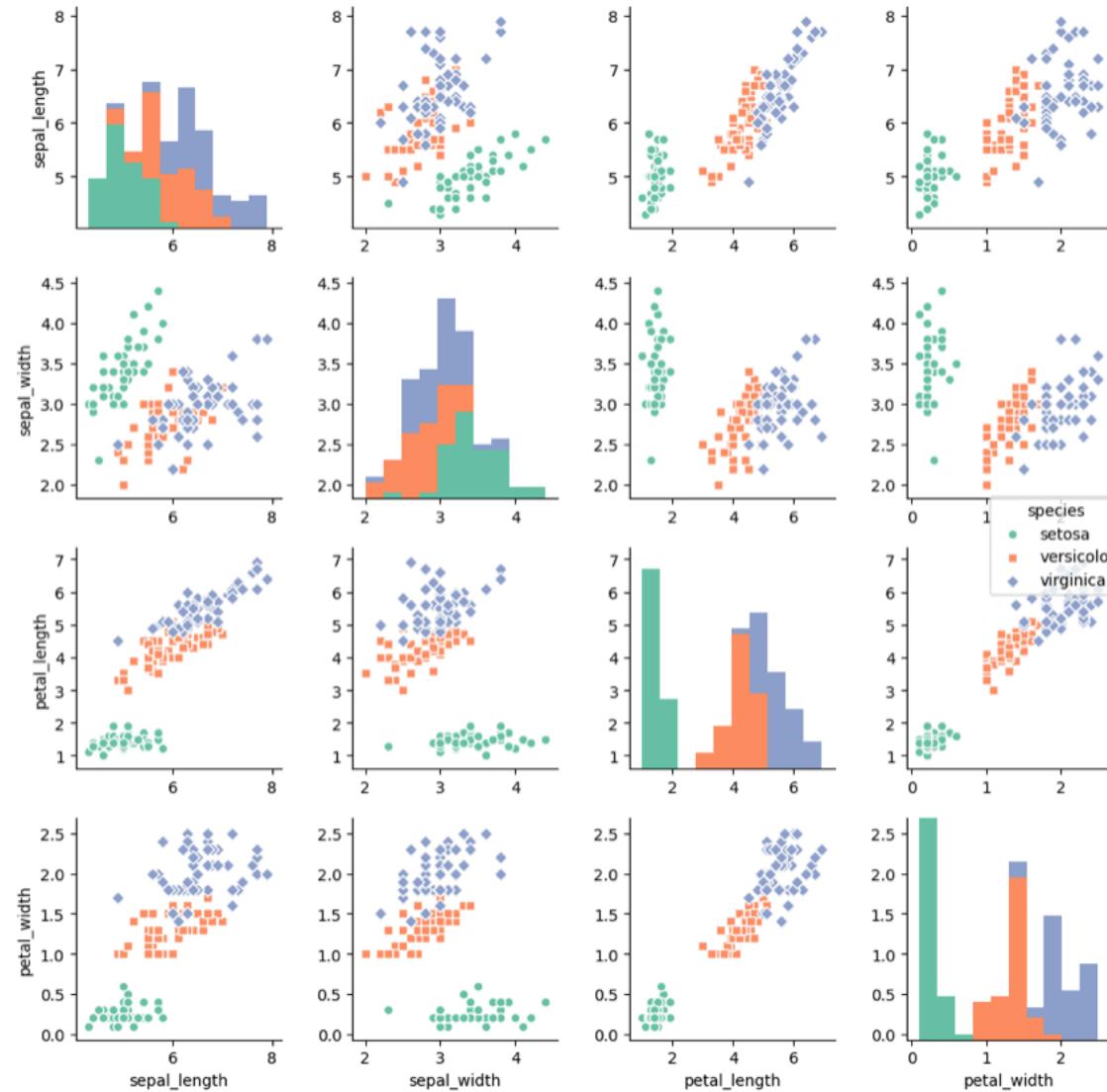


2 main types of dataviz:



Exploratory

- Understand data
- Test hypothesis
- Find results

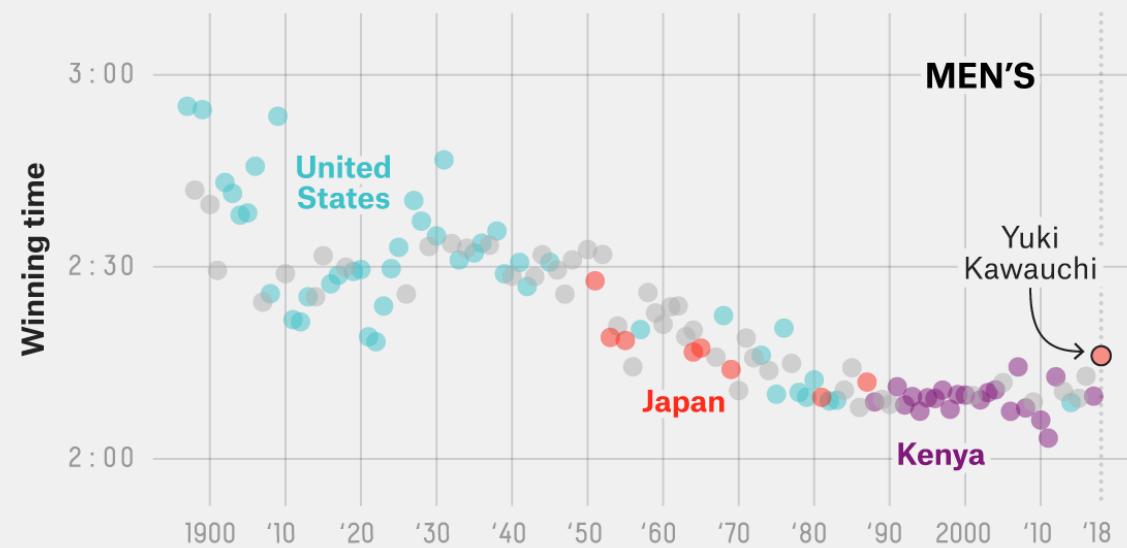
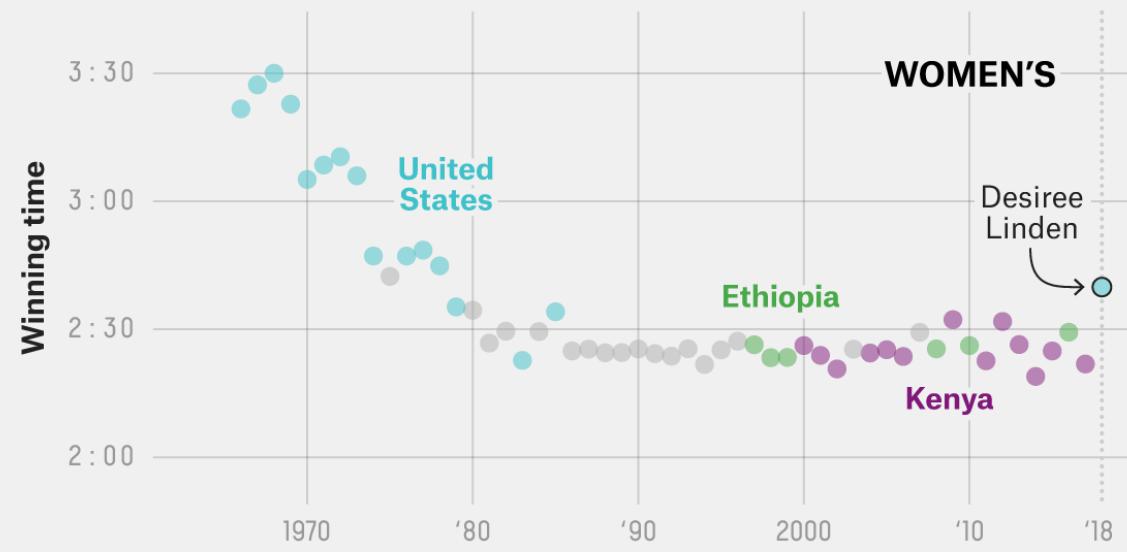


A slower field at this year's Boston Marathon

Finish time for winners of the Boston Marathon, by country

Explanatory

- Communicate result
- Show something specific
- Tells a story



Using unofficial times for 2018 winners.

Building the right Viz

Looking for a chart ?

What you
can do

What you
should do

Caveats to
avoid

How to
build it

Who sells more weapons ?

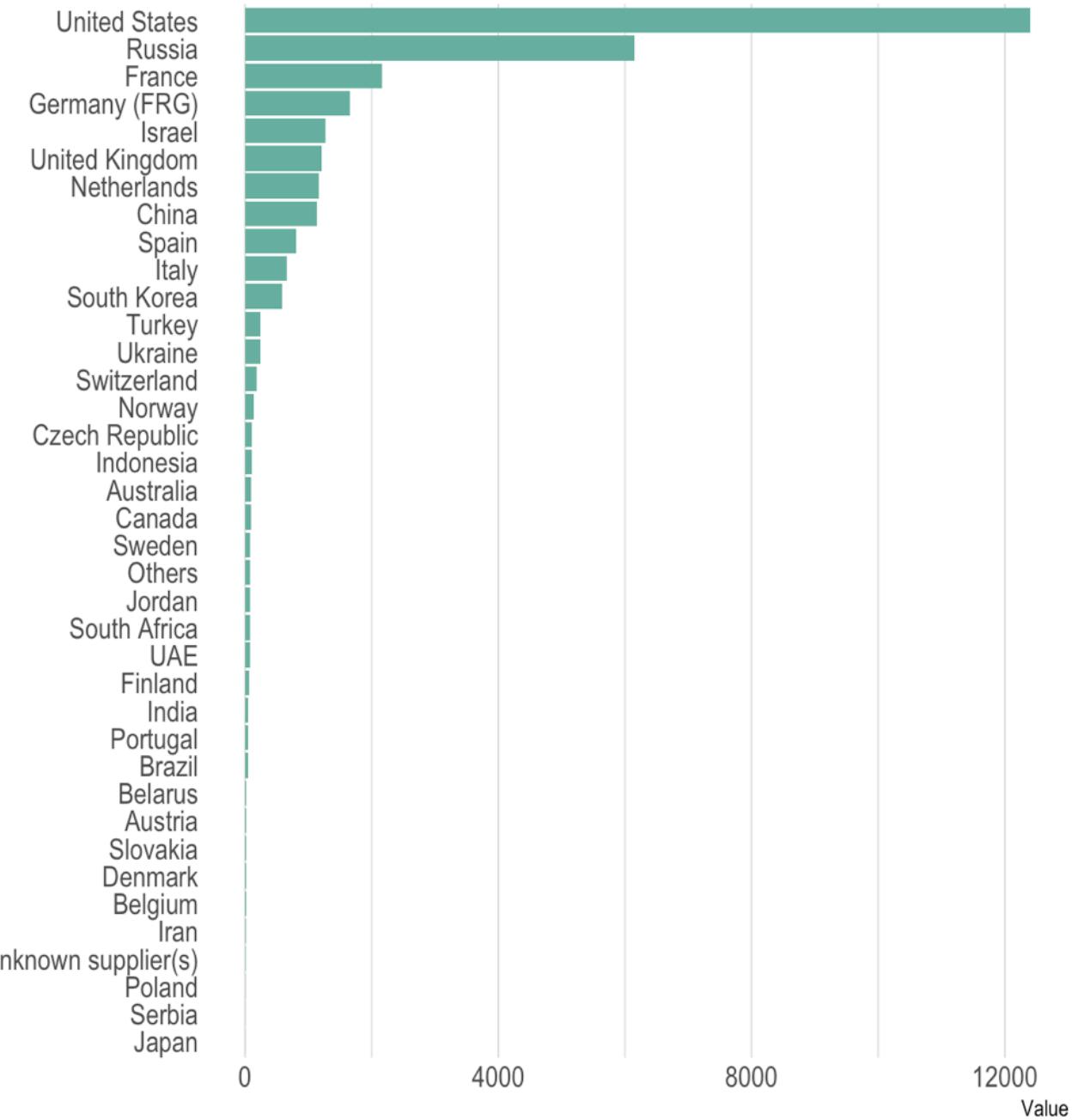
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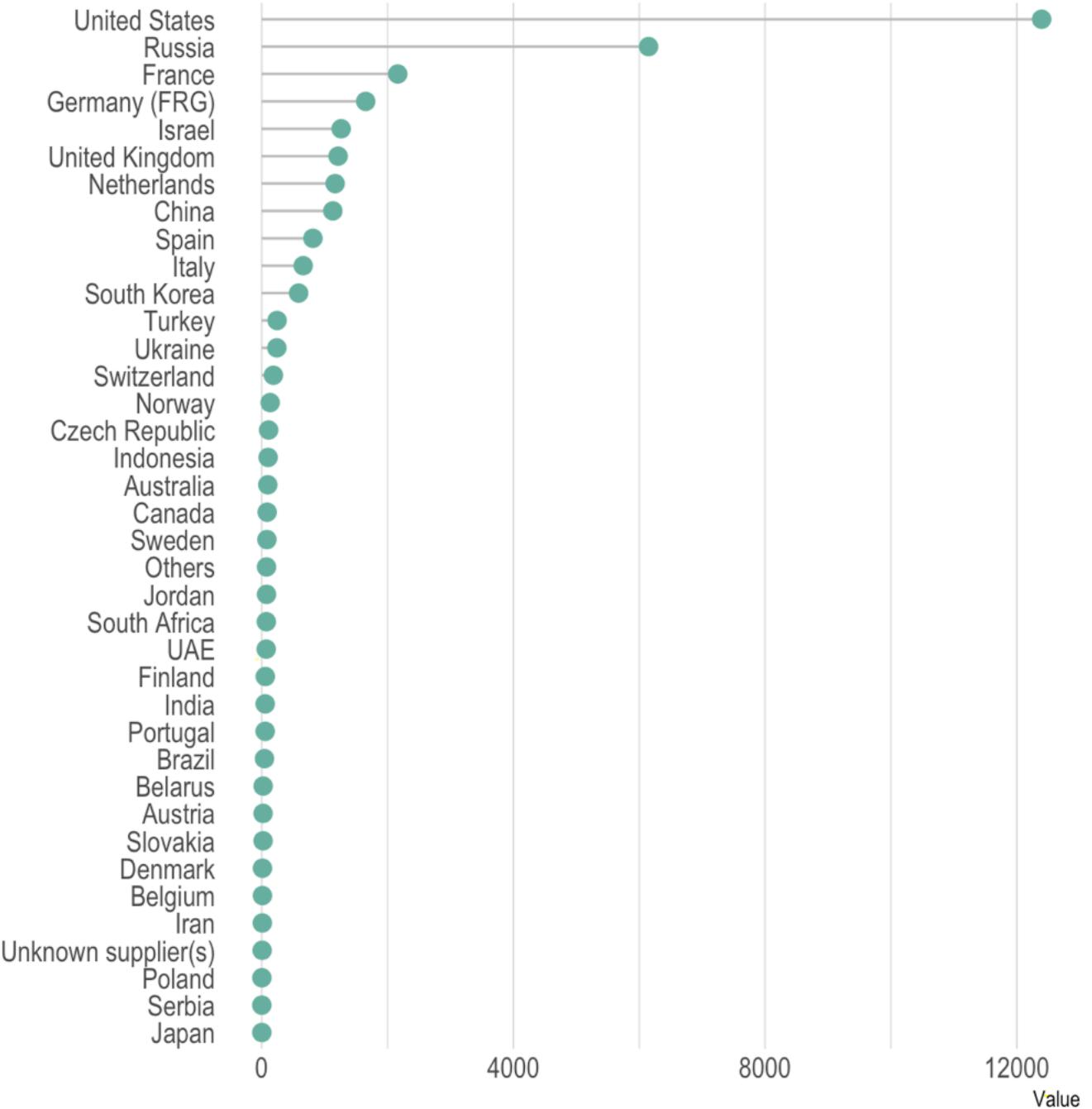
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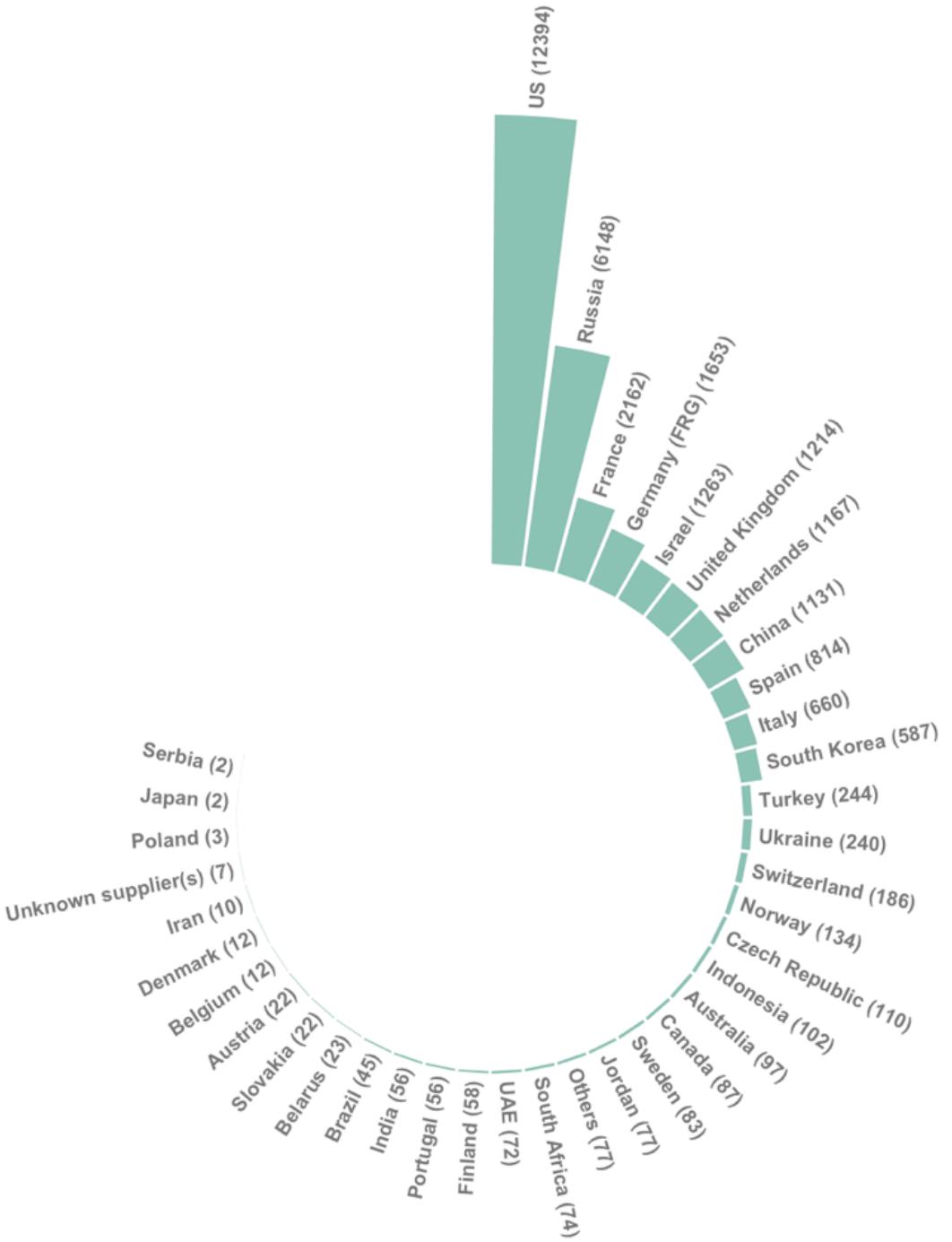
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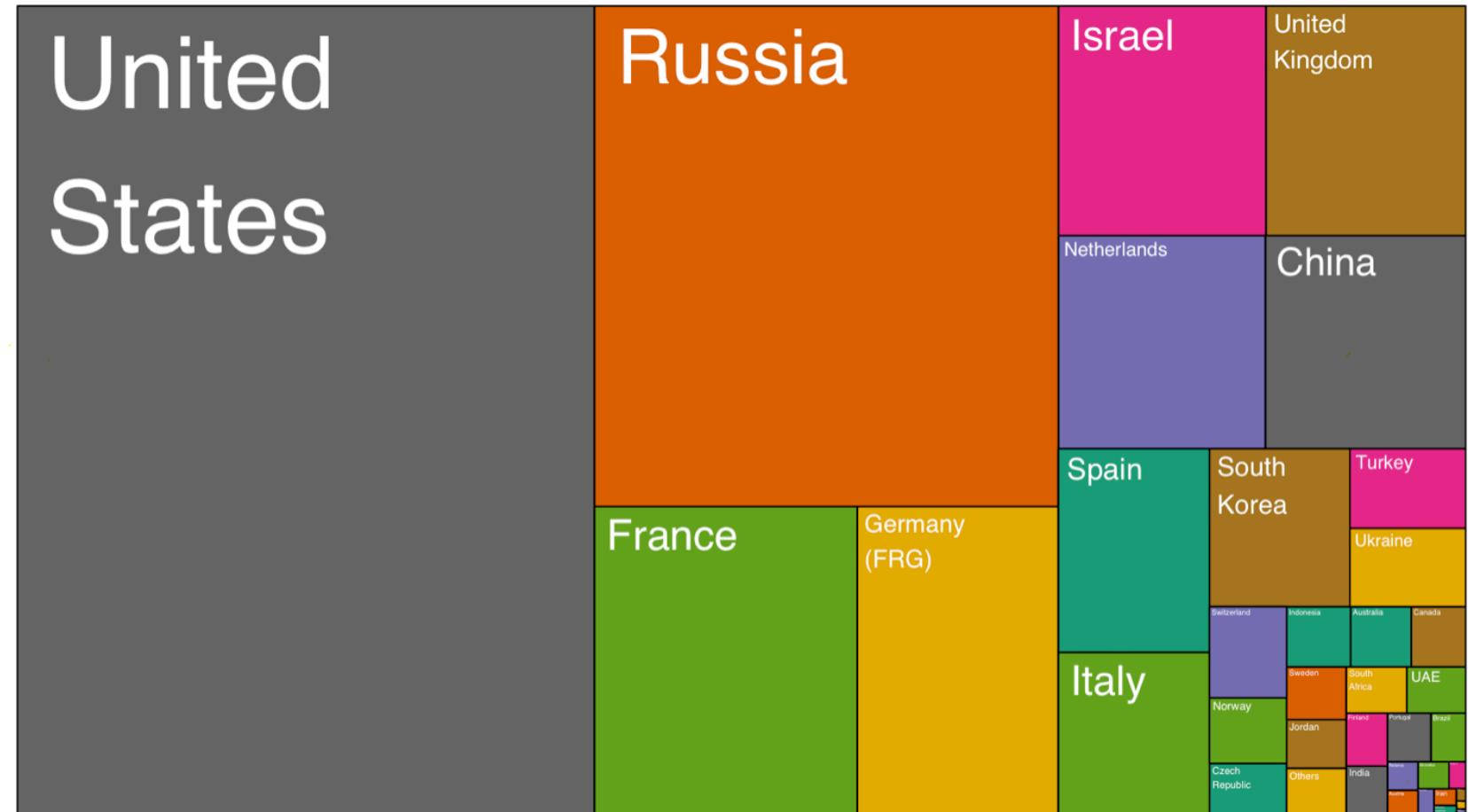
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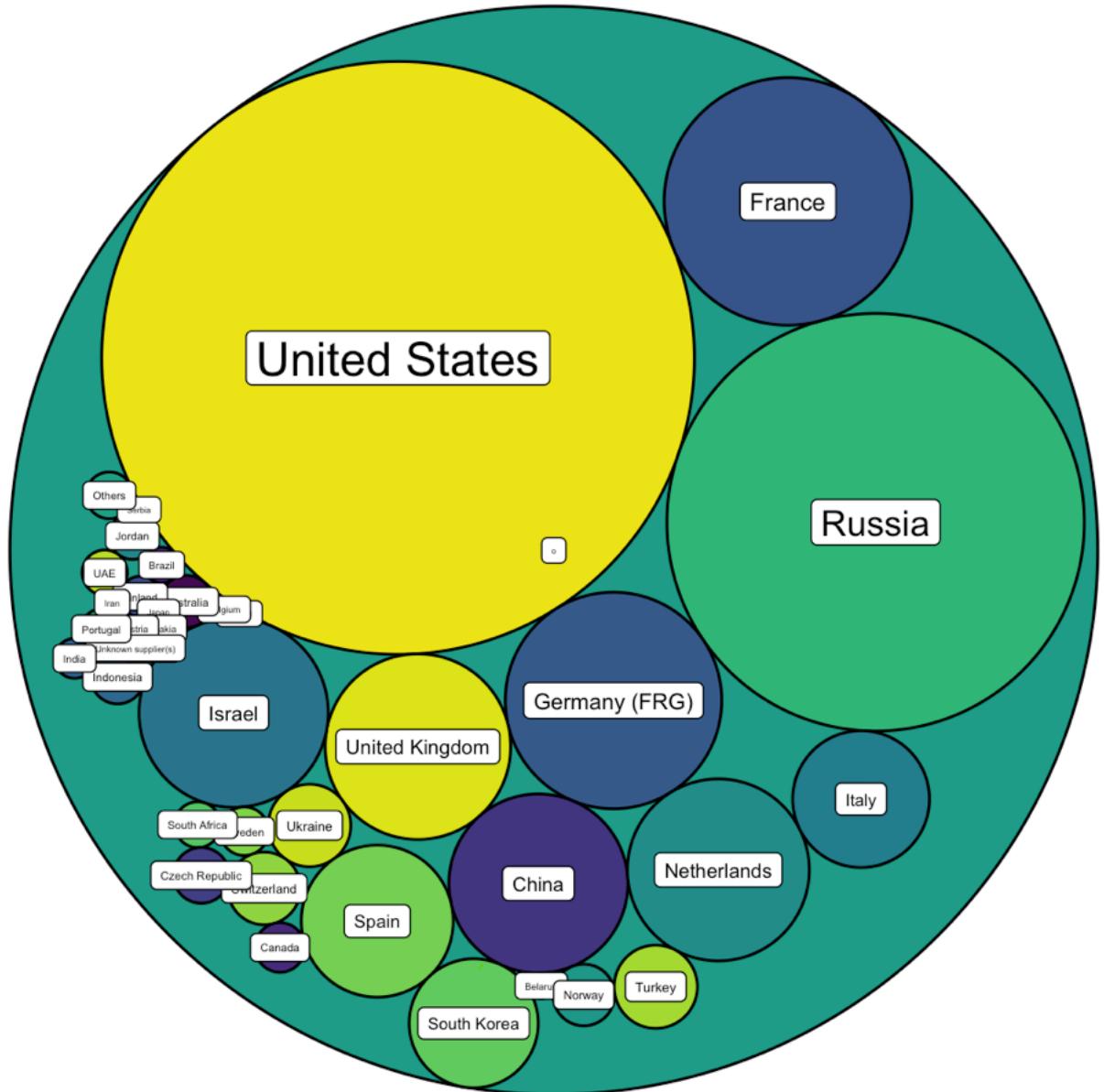
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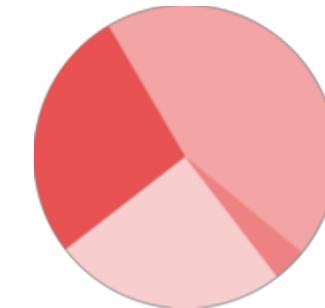
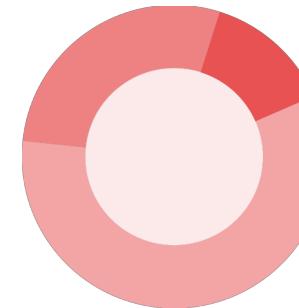
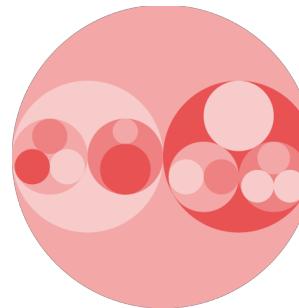
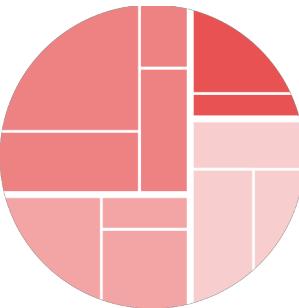
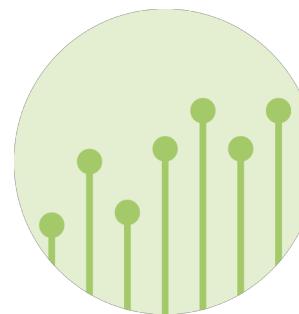
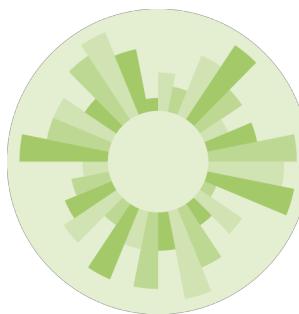
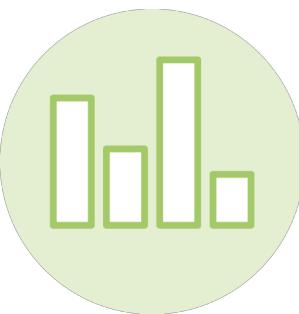
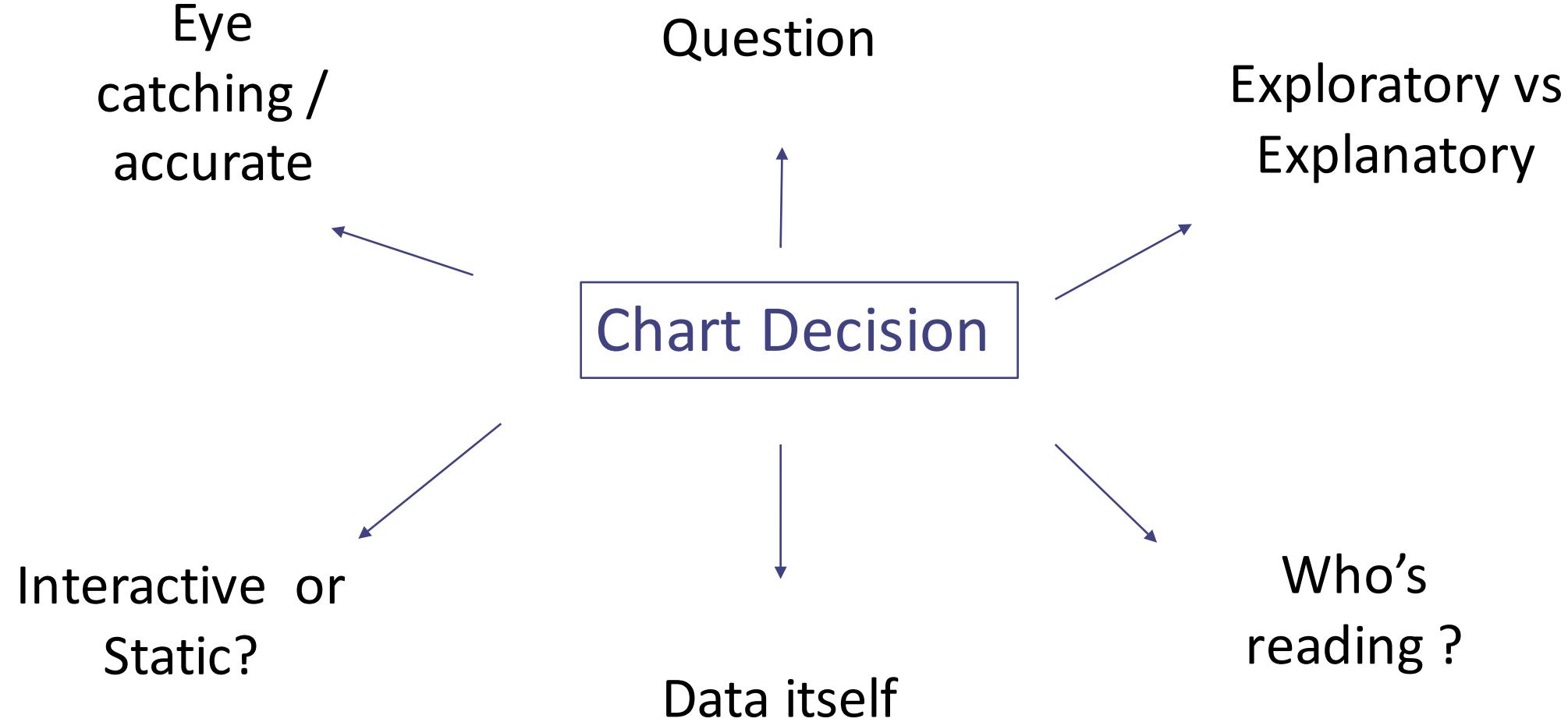


Chart Decision

?

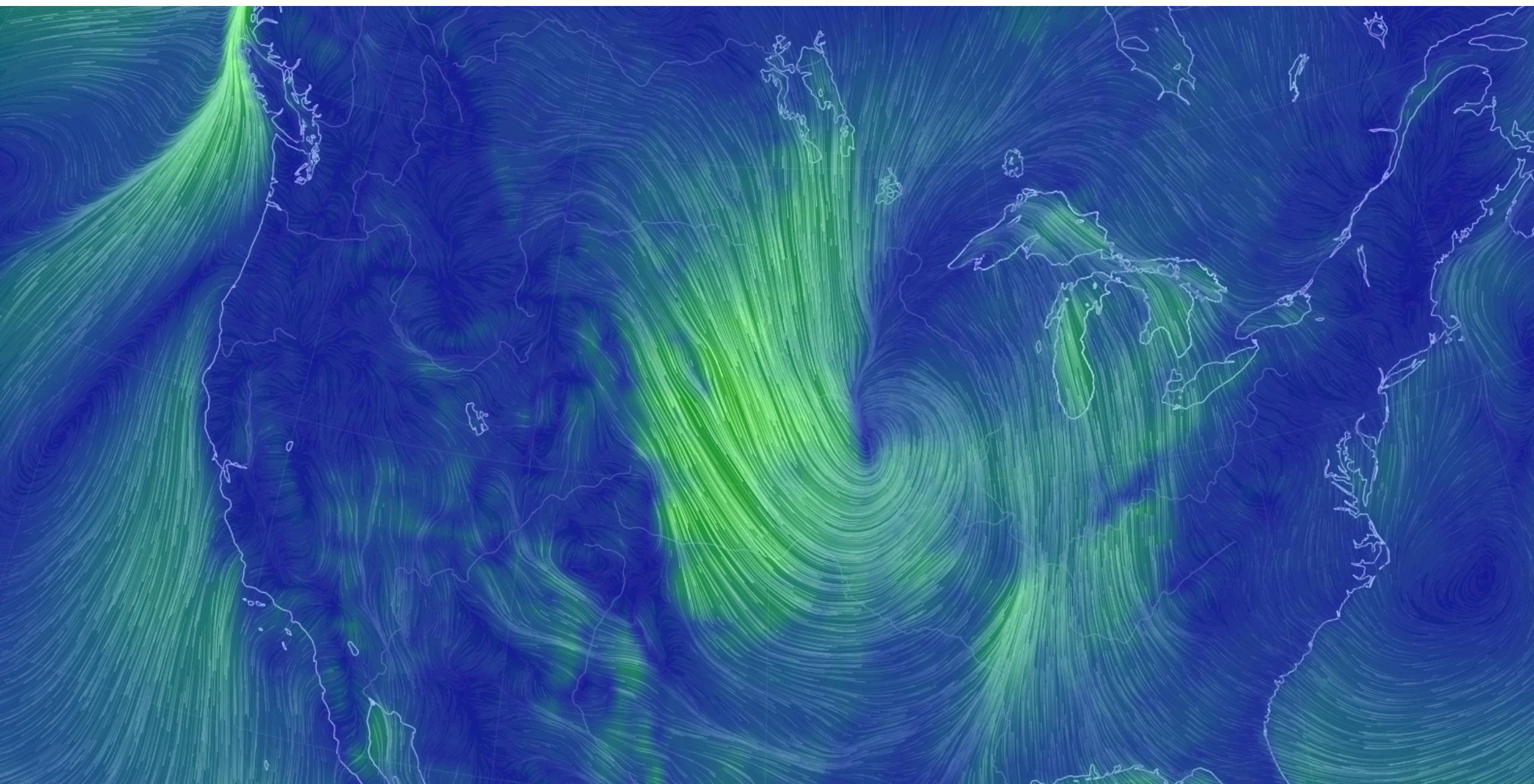


Examples



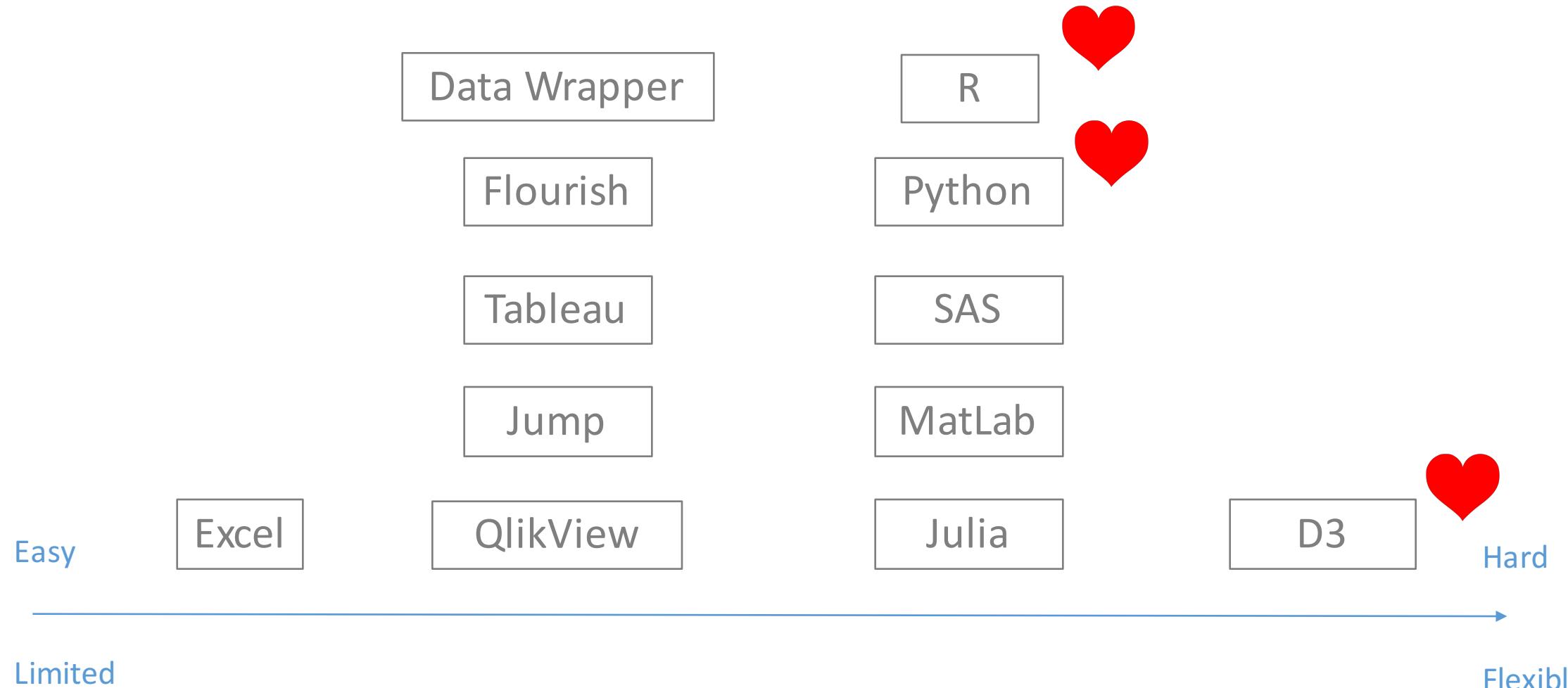
Where surfers travel.

data-to-viz.com | NASA.gov | 10,000 #surf tweets recovered



How







from Data to *Viz*



[**R-graph-gallery.com**](#)

[**Python-graph-gallery.com**](#)

[**D3-graph-gallery.com**](#)