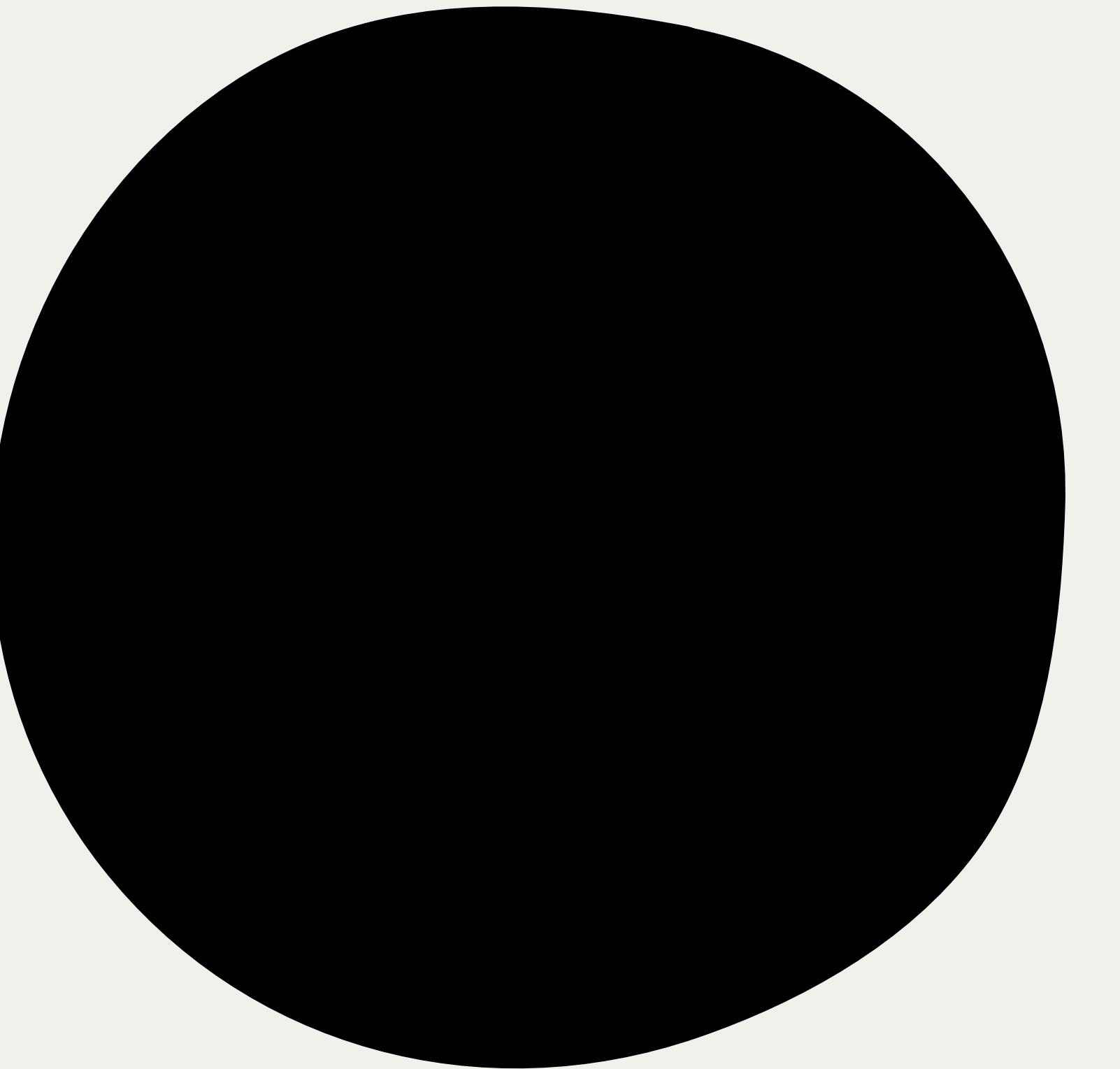


Lisa Charlotte Rost

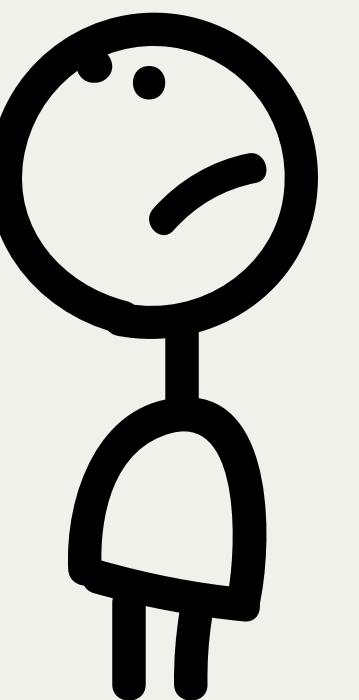
# Complexity for the experts, simplicity for everyone else?



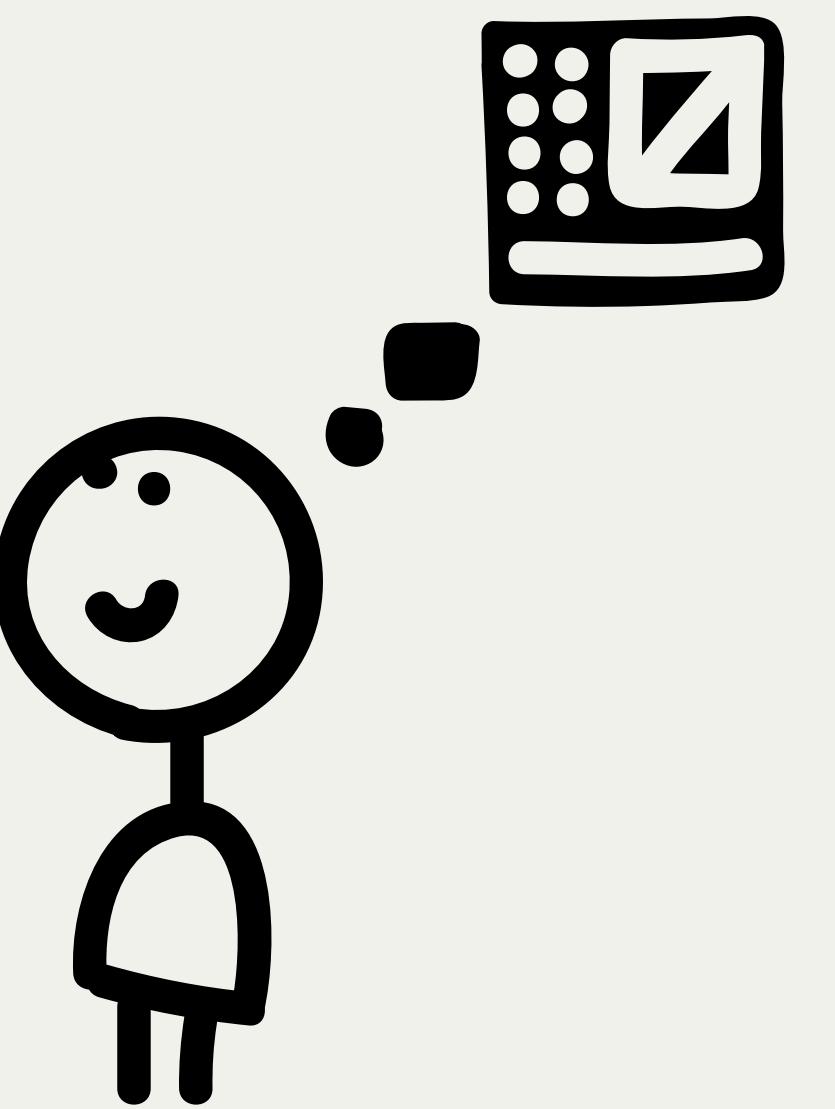
@lisacrost



The world.



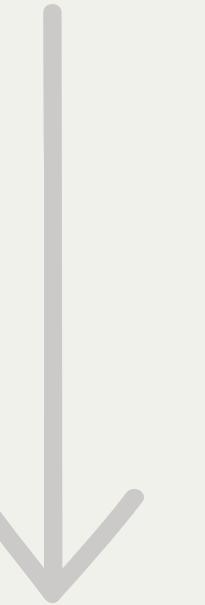
@lisacrost



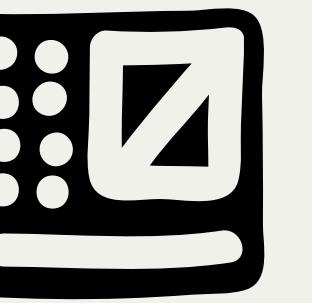
Dmitri Mendeleev



suuuper complex

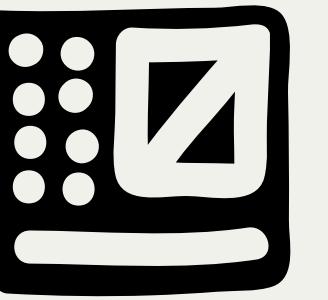


far less complex



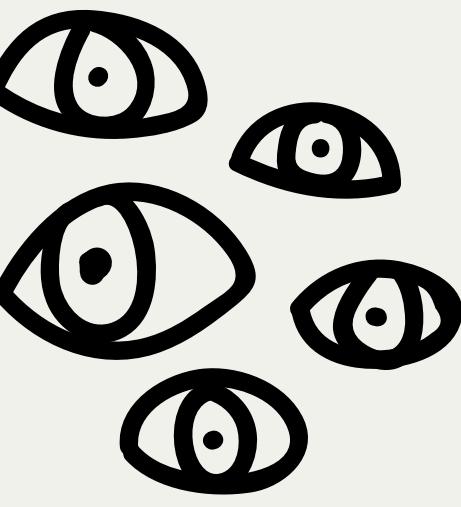
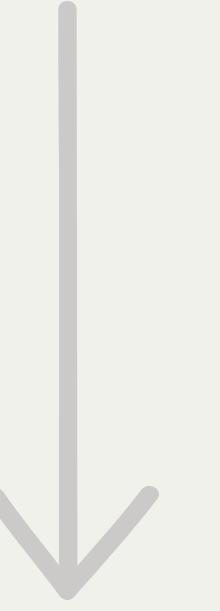
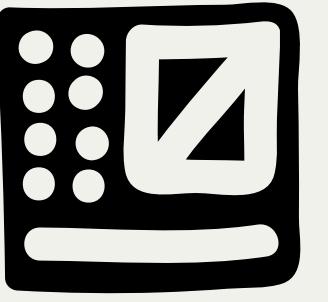


"I understand  
this!"





"I understand  
this!"



"We don't."

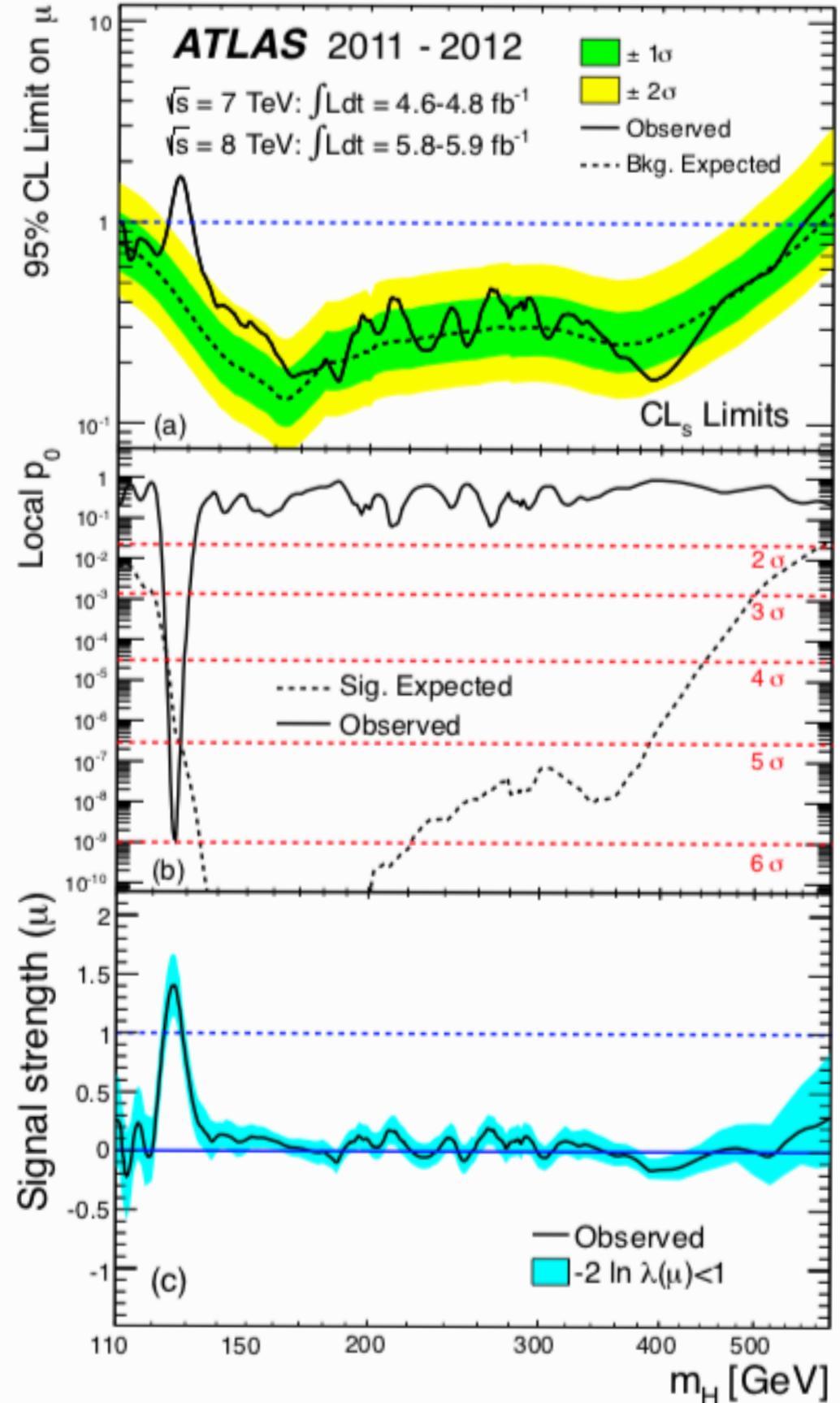


Figure 7: Combined search results: (a) The observed (solid) 95% CL limits on the signal strength as a function of  $m_H$  and the expectation (dashed) under the background-only hypothesis. The dark and light shaded bands show the  $\pm 1\sigma$  and  $\pm 2\sigma$  uncertainties on the background-only expectation. (b) The observed (solid) local  $p_0$  as a function of  $m_H$  and the expectation (dashed) for a SM Higgs boson signal hypothesis ( $\mu = 1$ ) at the given mass. (c) The best-fit signal strength  $\hat{\mu}$  as a function of  $m_H$ . The band indicates the approximate 68% CL interval around the fitted value.

are excluded at 99% CL, 113–114, 117–121 and 132–527 GeV, while the expected exclusion range at 99% CL is 113–532 GeV.

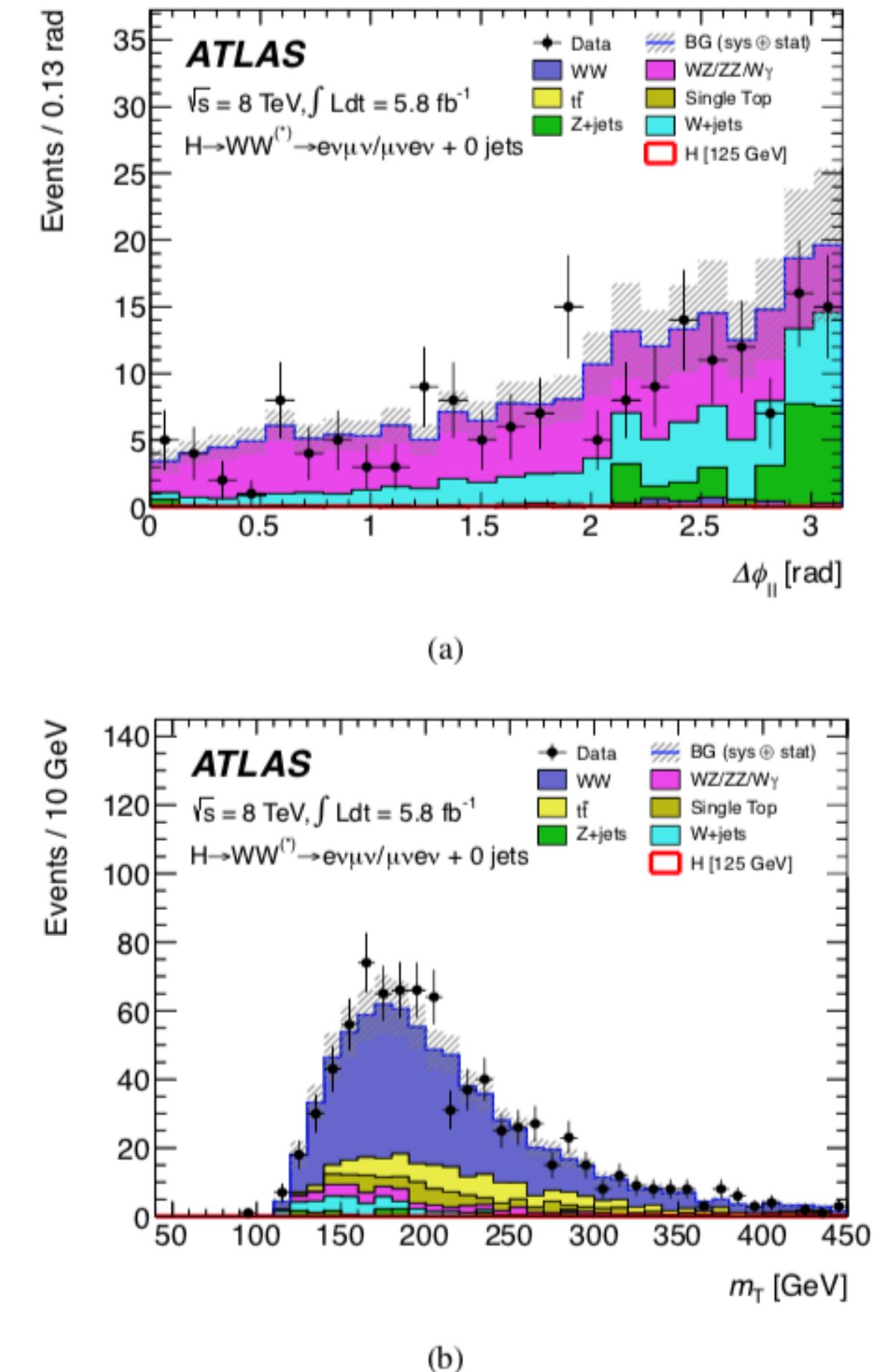


Figure 5: Validation and control distributions for the  $H \rightarrow WW^{(*)} \rightarrow e\bar{e}\mu\bar{\mu}$  analysis. a)  $\Delta\phi_{ll}$  distribution in the same-charge validation region after the  $E_{T,\text{rel}}^{\text{miss}}$  and zero-jet requirements. b)  $m_T$  distribution in the  $WW$  control region for the 0-jet channel. The  $e\mu$  and  $\mu e$  final states are combined. The hashed area indicates the total uncertainty on the background prediction. The expected signal for  $m_H = 125$  GeV is negligible and therefore not visible.

mass hypothesis of  $m_H=126.5$  GeV, where it reaches  $6.0\sigma$ , with an expected value in the presence of a SM Higgs boson signal at that mass of  $4.9\sigma$  (see also Table 7). For the 2012 data alone, the maximum local significance for the  $H \rightarrow ZZ^{(*)} \rightarrow 4\ell$ ,  $H \rightarrow ee\mu\mu$  and

leading lepton pair are removed, is presented in Fig. 11.

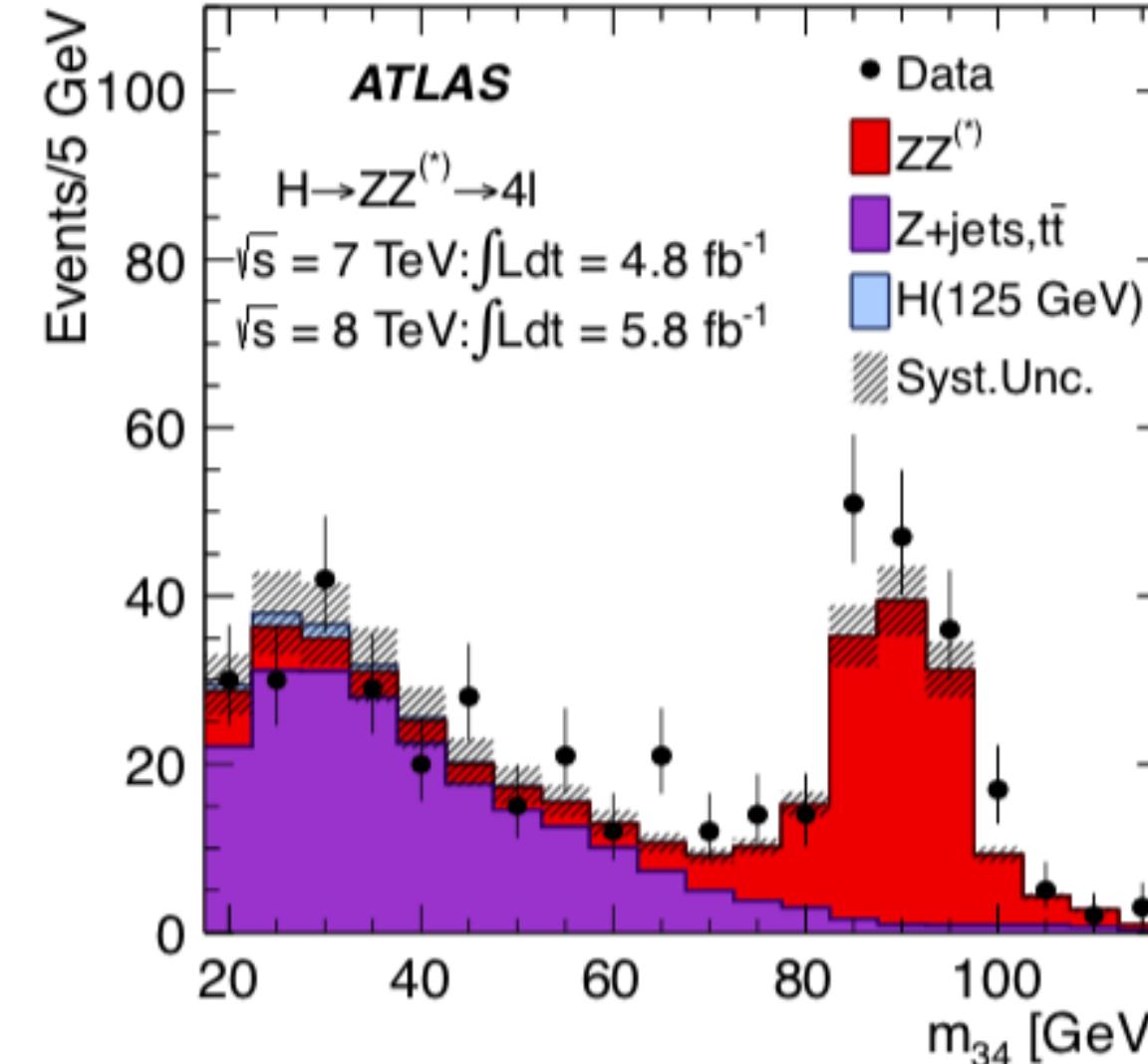


Figure 1: Invariant mass distribution of the sub-leading lepton pair ( $m_{34}$ ) for a sample defined by the presence of a  $Z$  boson candidate and an additional same-flavour electron or muon pair, for the combination of  $\sqrt{s} = 7$  TeV and  $\sqrt{s} = 8$  TeV data in the entire phase-space of the analysis after the kinematic selections described in the text. Isolation and transverse impact parameter significance requirements are applied to the leading lepton pair only. The MC is normalised to the data-driven background estimations. The relatively small contribution of a SM Higgs with  $m_H = 125$  GeV in this sample is also shown.

#### 4.3. Systematic uncertainties

The uncertainties on the integrated luminosities are determined to be 1.8% for the 7 TeV data and 3.6% for the 8 TeV data using the techniques described in Ref. [92].

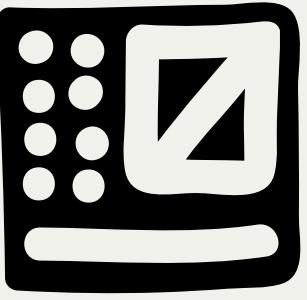
The uncertainties on the lepton reconstruction and identification efficiencies and on the momentum scale and resolution are determined using samples of  $W$ ,  $Z$  and  $J/\psi$  decays [84, 85]. The relative uncertainty on the signal acceptance due to the uncertainty on the muon reconstruction and identification efficiency is  $\pm 0.7\%$  ( $\pm 0.5\%/\pm 0.5\%$ ) for the  $4\mu$  ( $2e2\mu/2\mu2e$ ) chan-

“Observation of a New Particle in the Search for the Standard Model Higgs Boson with the ATLAS Detector at the LHC”

@lisacrost

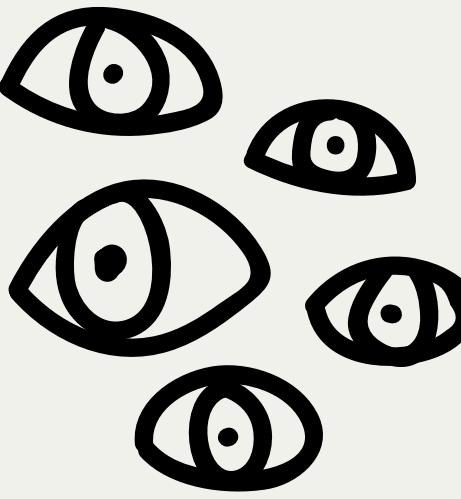


“I understand  
this!”

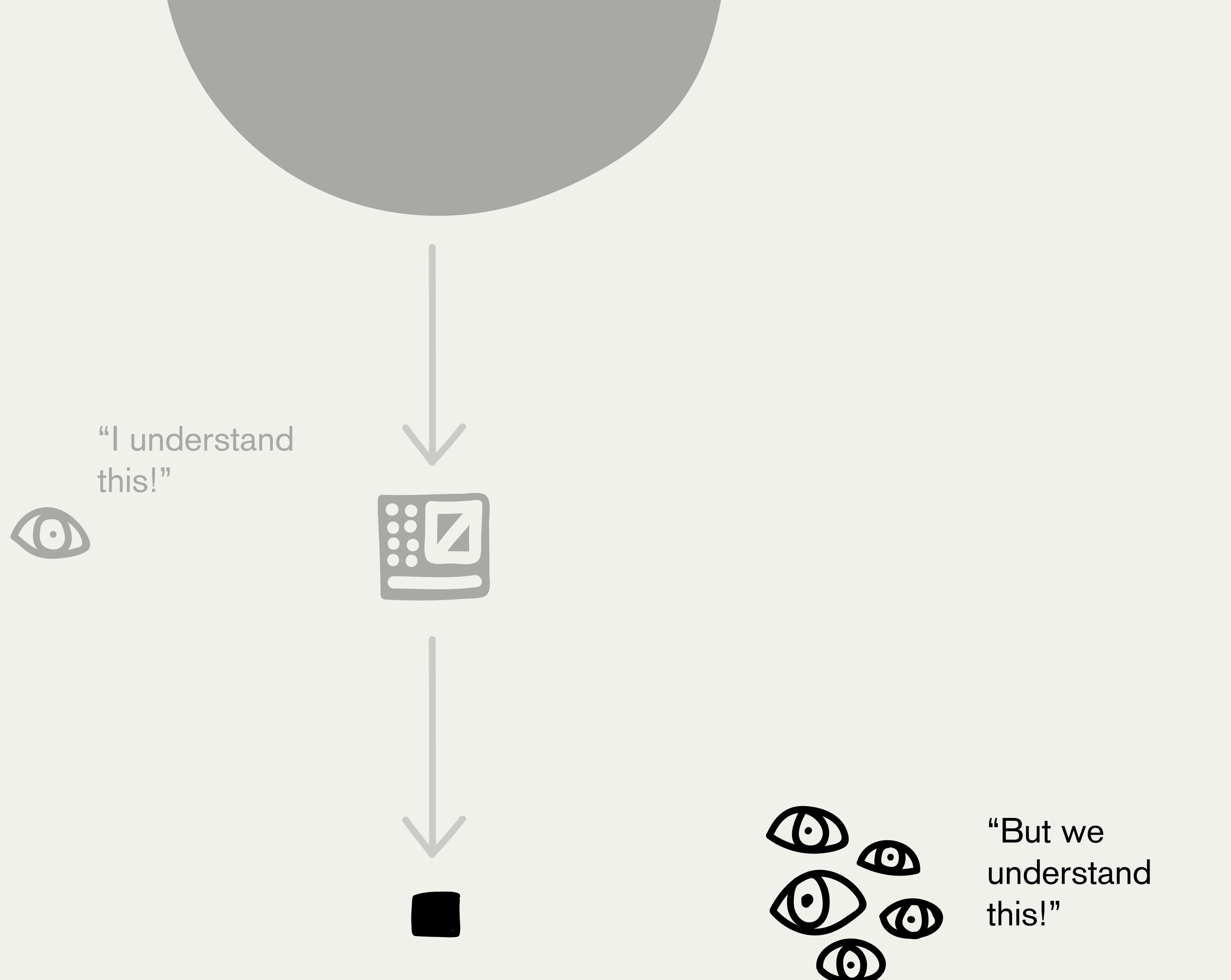


“I don’t  
have time  
for that.”

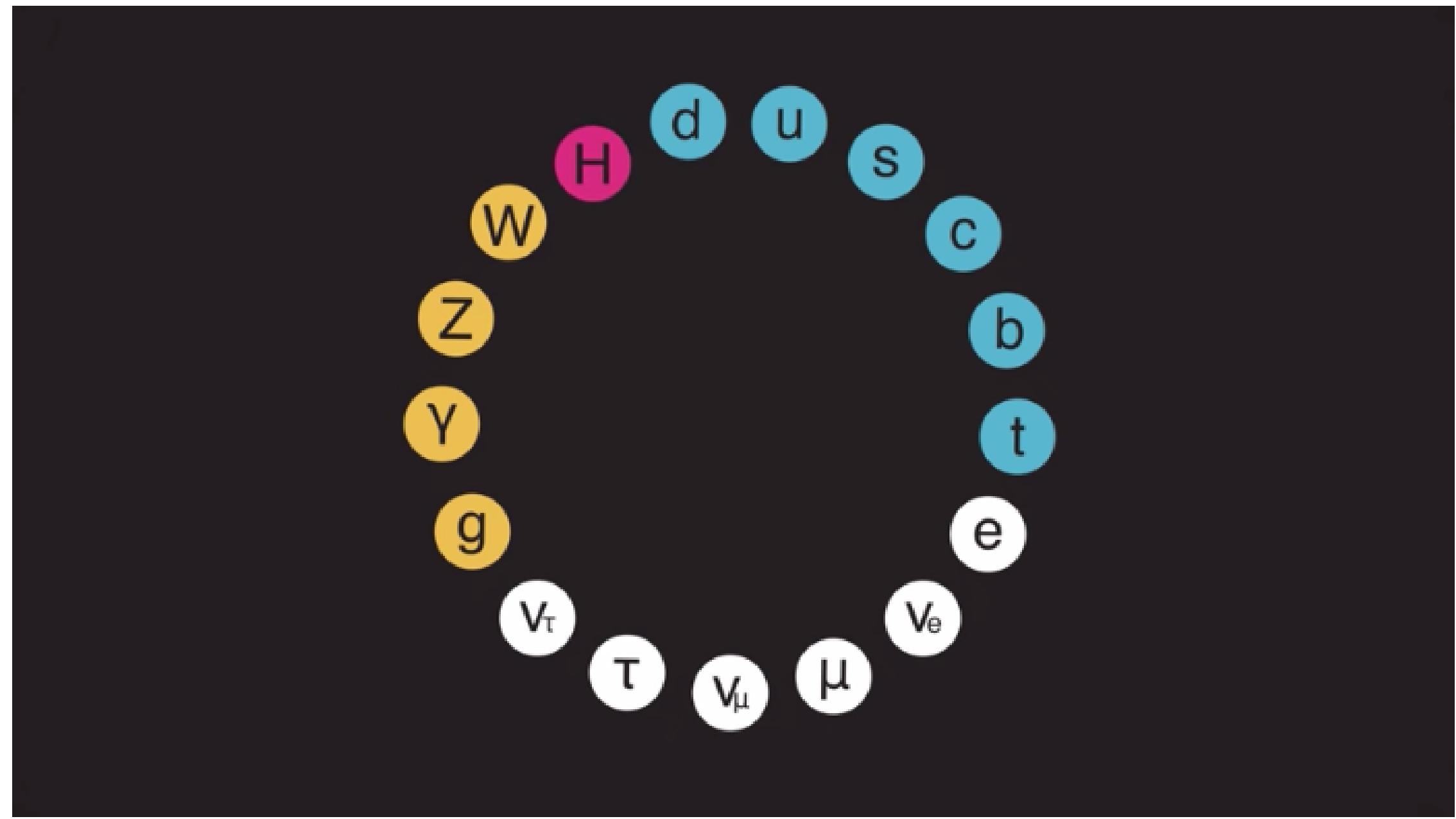
“I don’t know  
this word.”



“It looks like work  
to decipher that.”



@lisacroft



The Higgs Boson Simplified Through Animation

486,912 views

4K

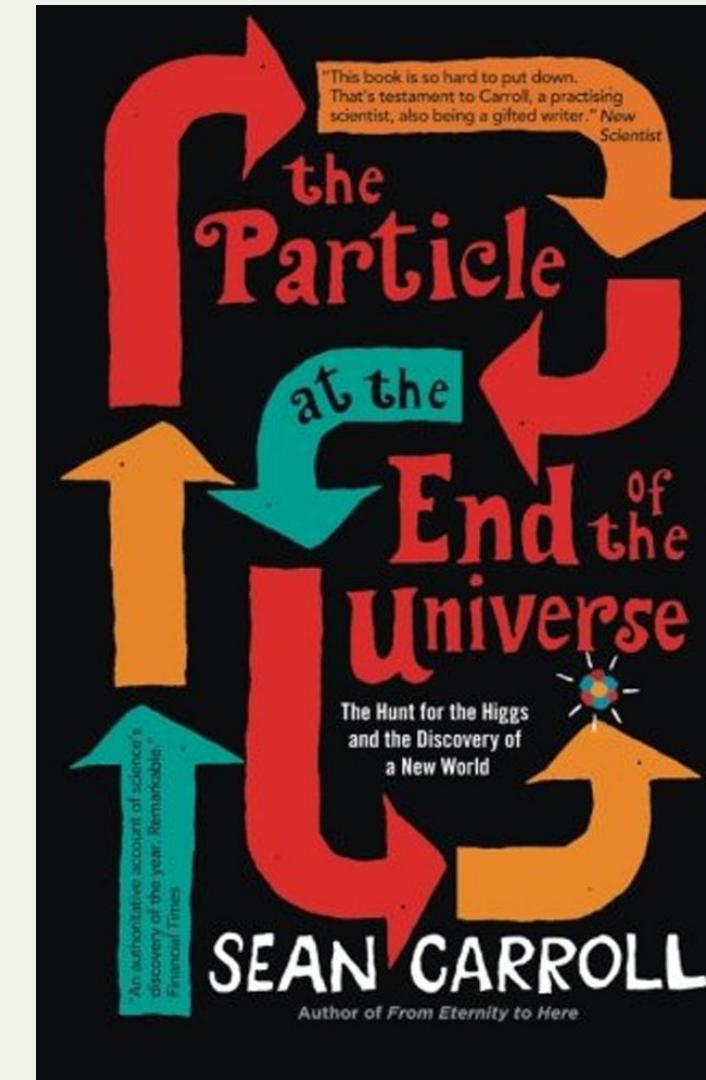
314

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THE SCIENCES

What exactly is the Higgs boson?  
Have physicists proved that it really  
exists?

Popular Science

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News ▶ Technology & Science ▶ God particle

# Oh my God! Scientists finally find the particle which holds the universe together

The new particle is thought to be a crucial building block which decides why some things have substance - but lots do not

SHARE

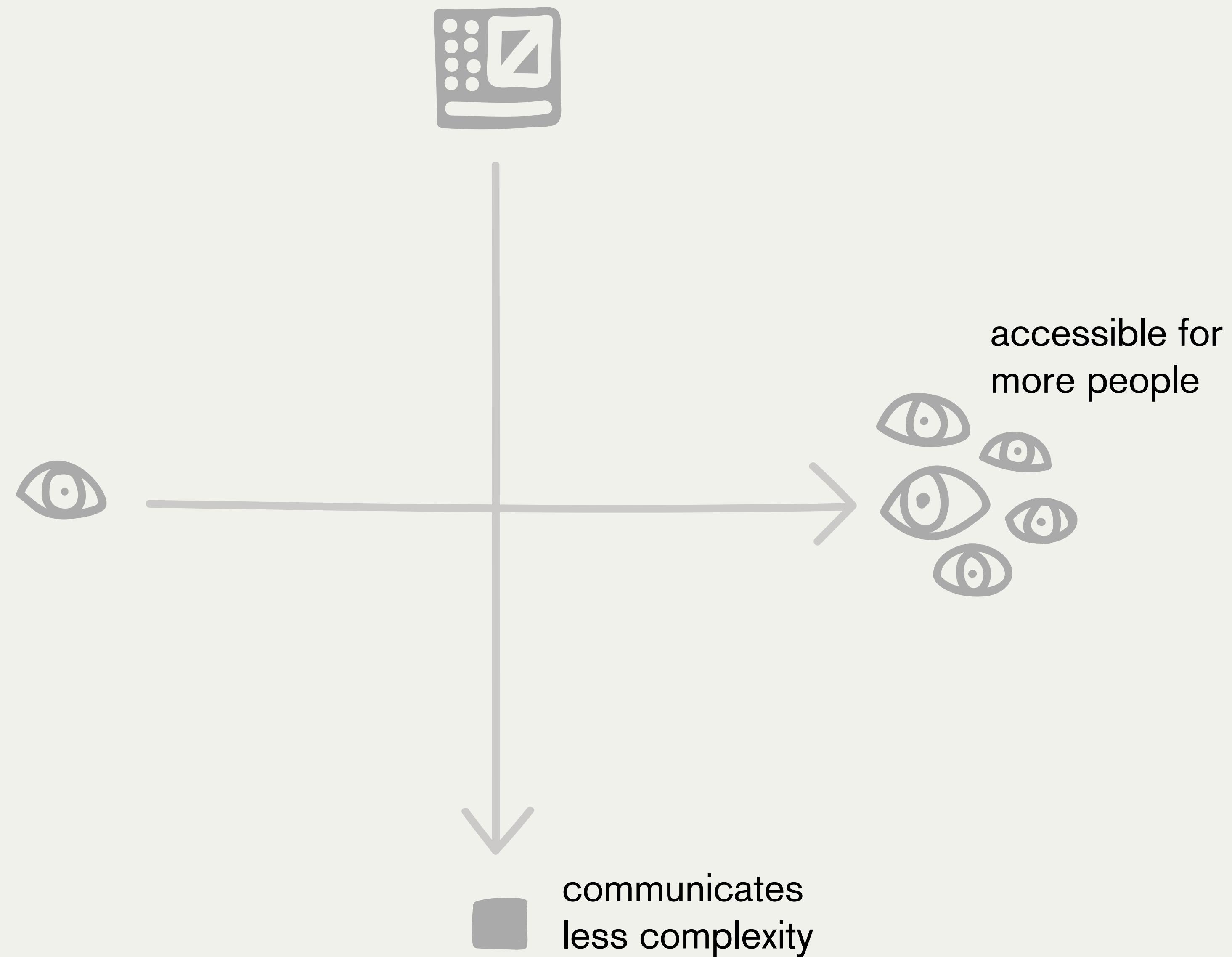
By [Mike Swain](#)

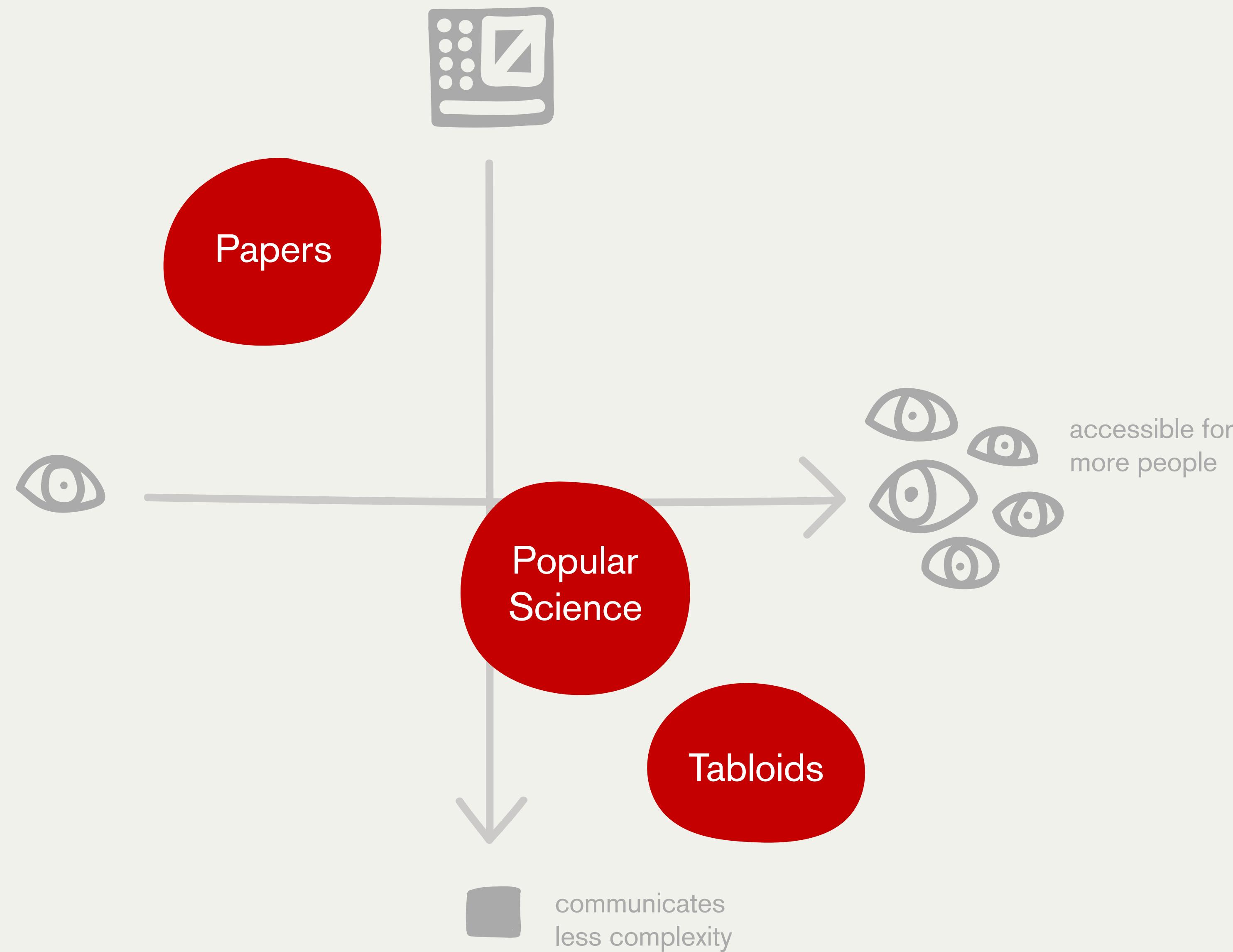
18:59, 4 JUL 2012 | UPDATED 19:18, 4 JUL 2012

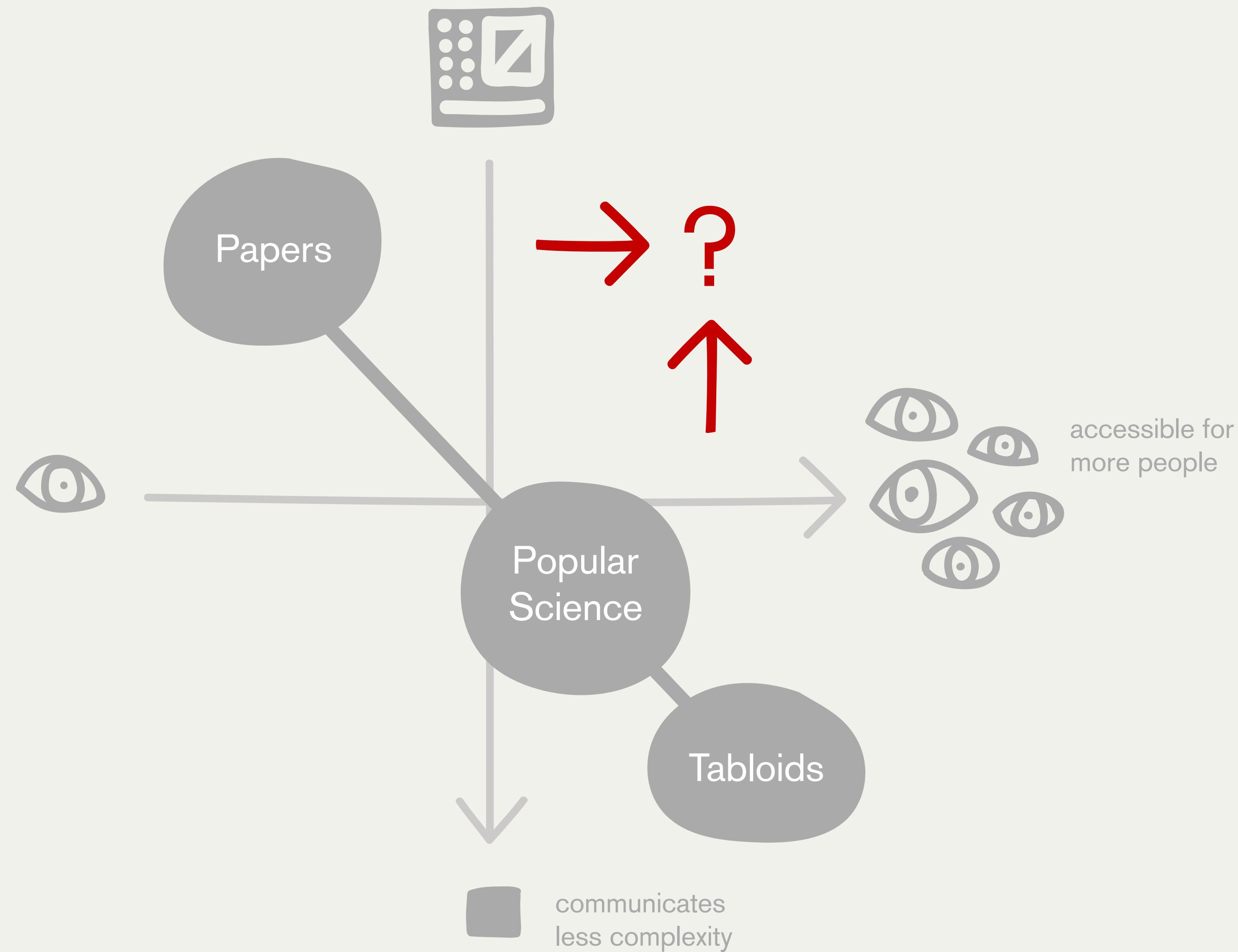
NEWS



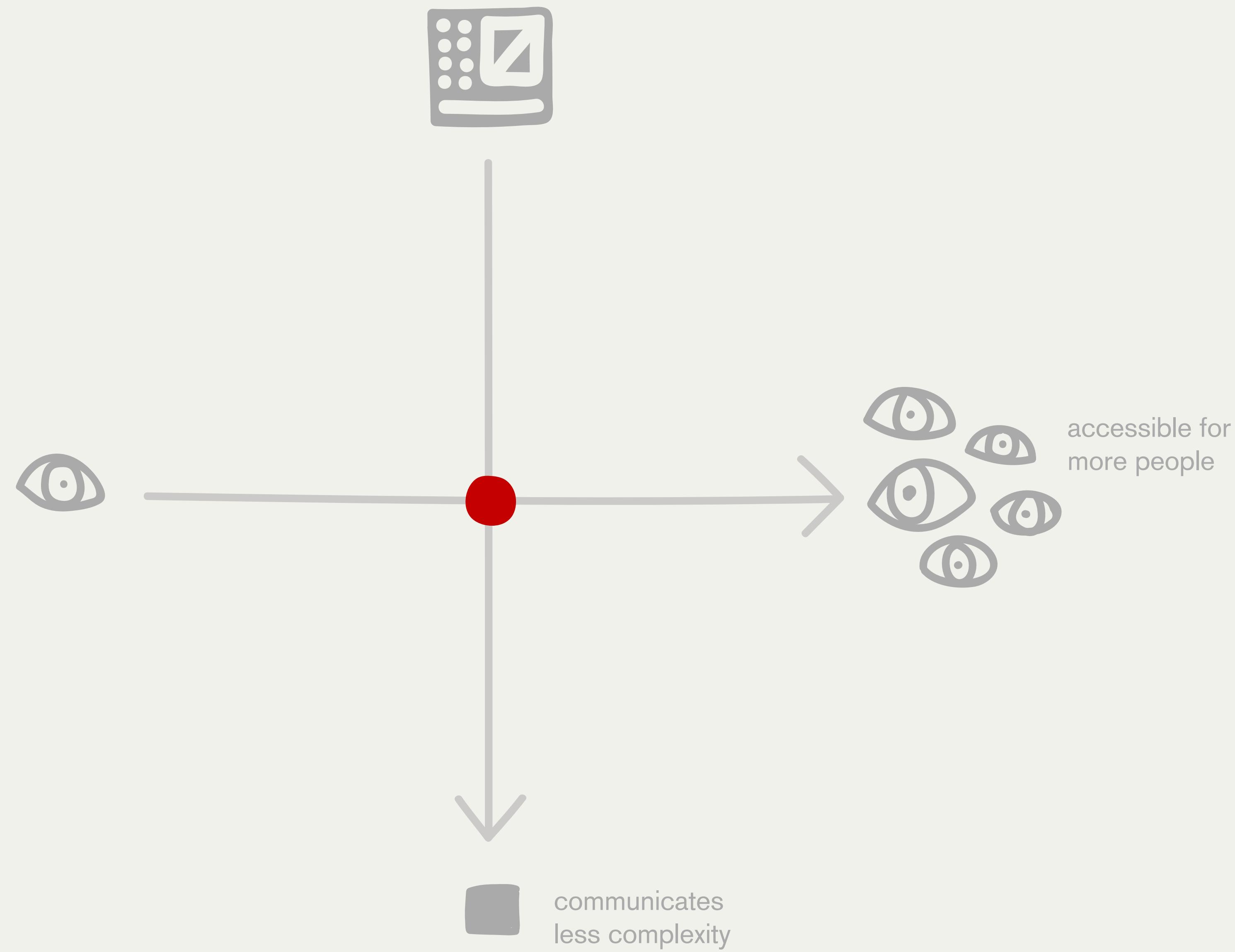
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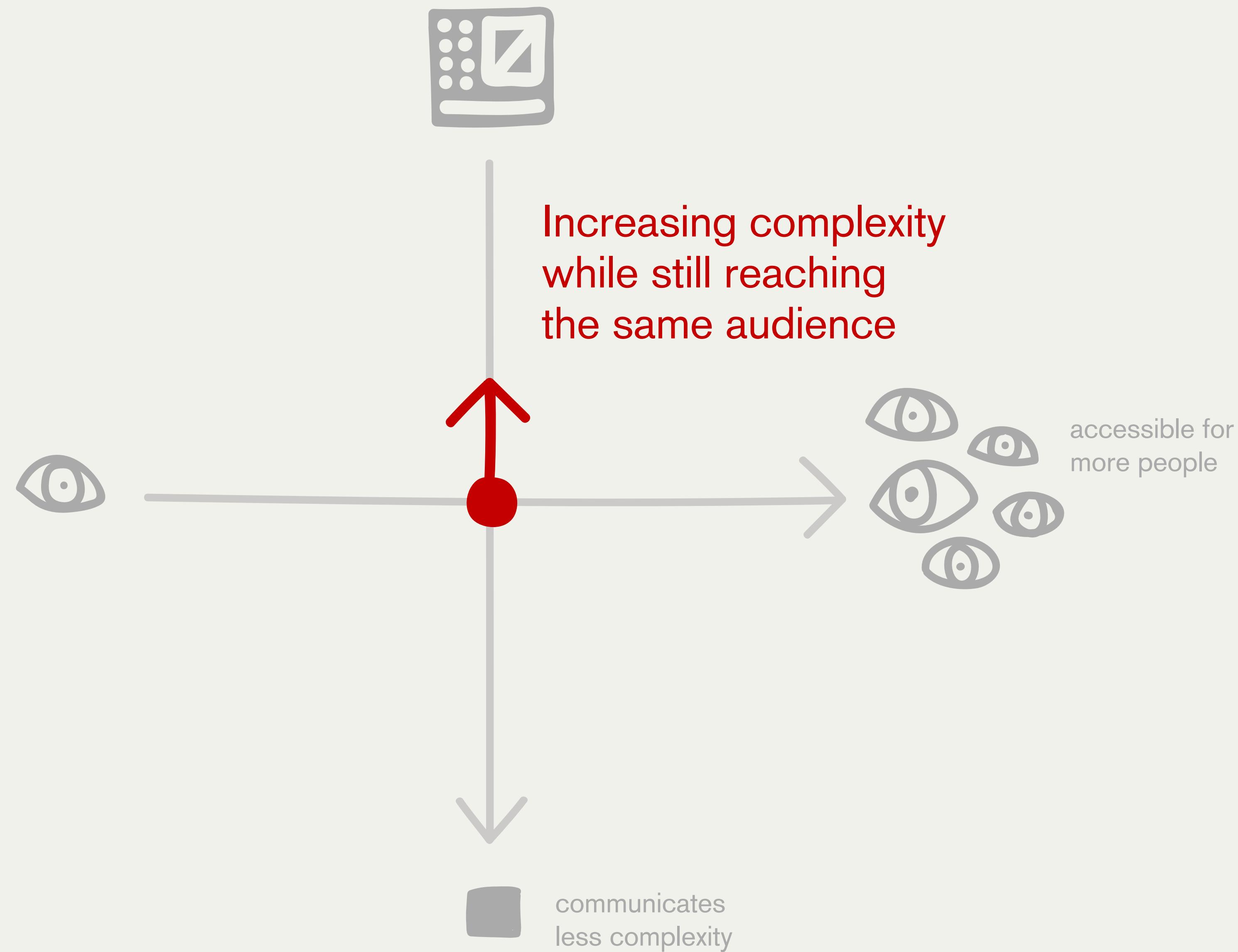




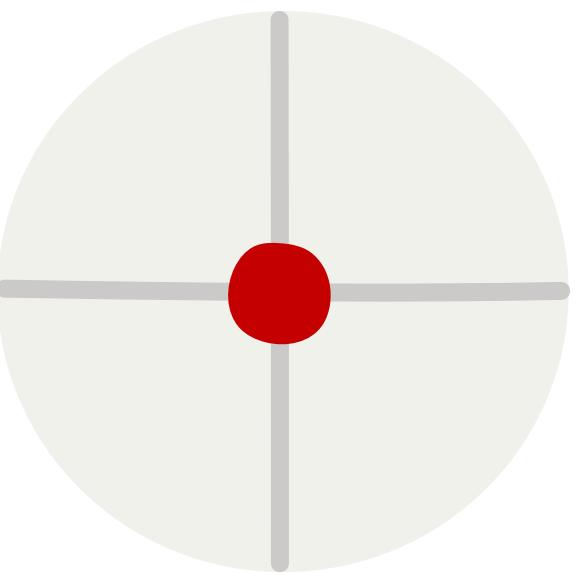
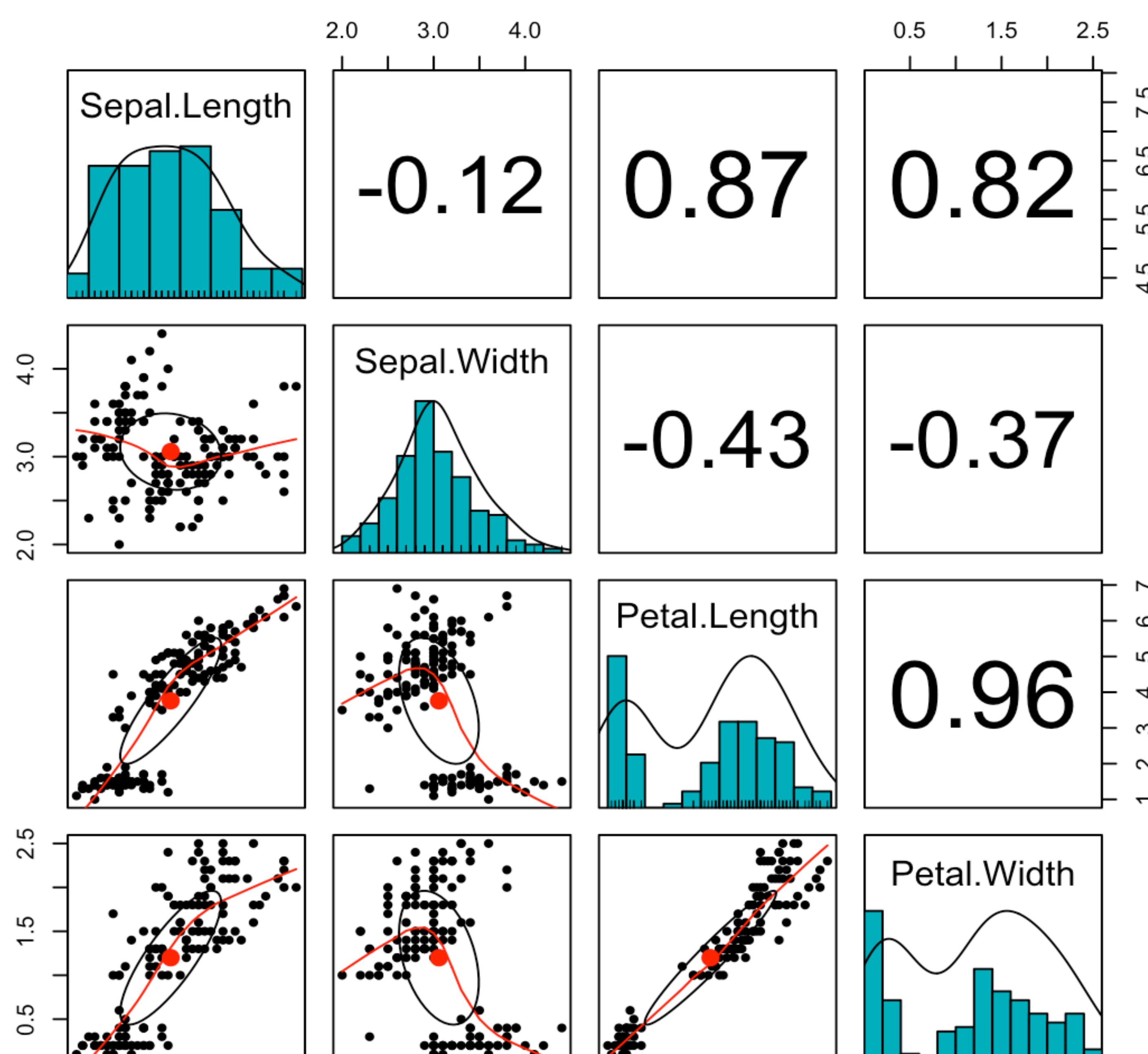








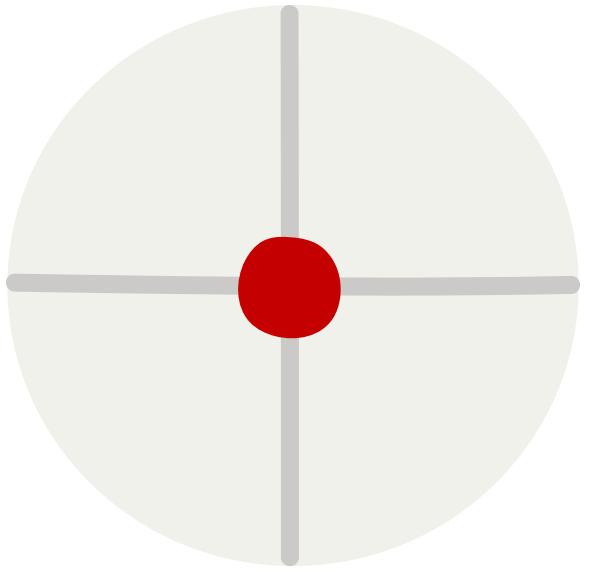




Scatterplot  
matrices,  
built with the R  
library “psych”

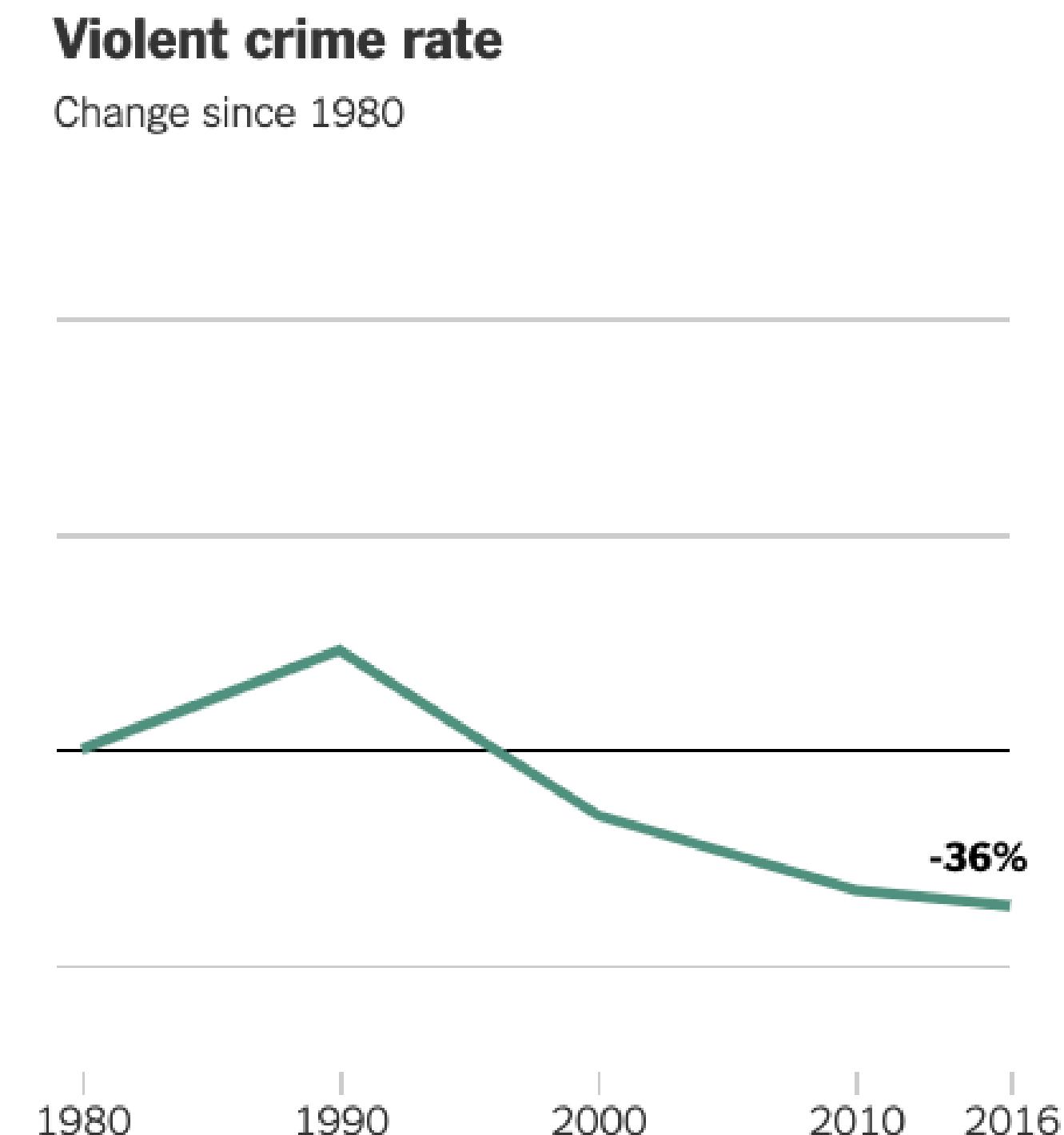
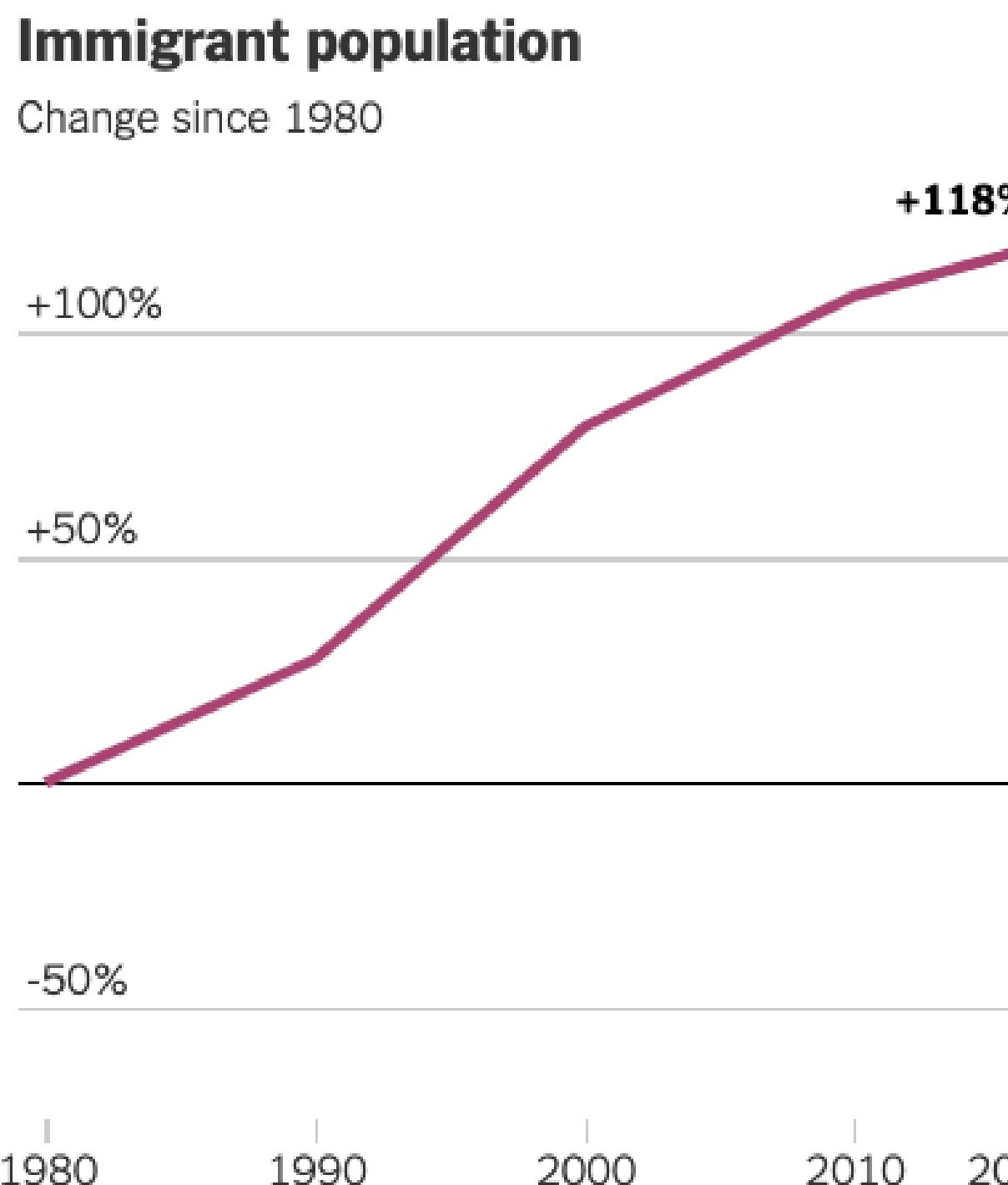
<http://www.sthda.com/english/wiki/scatter-plot-matrices-r-base-graphs>

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# *The Myth of the Criminal Immigrant*

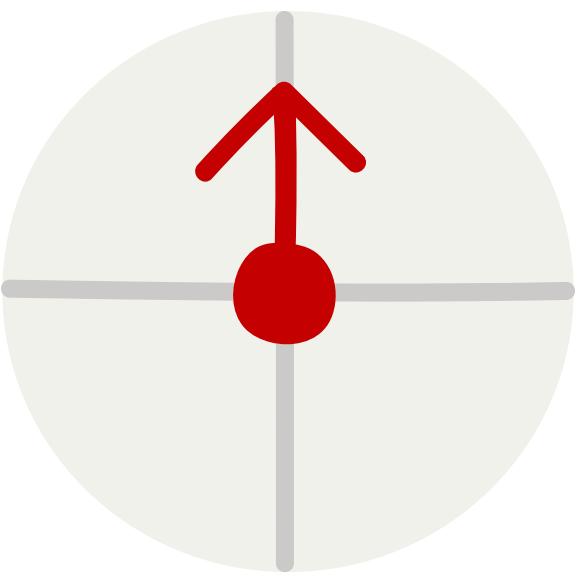
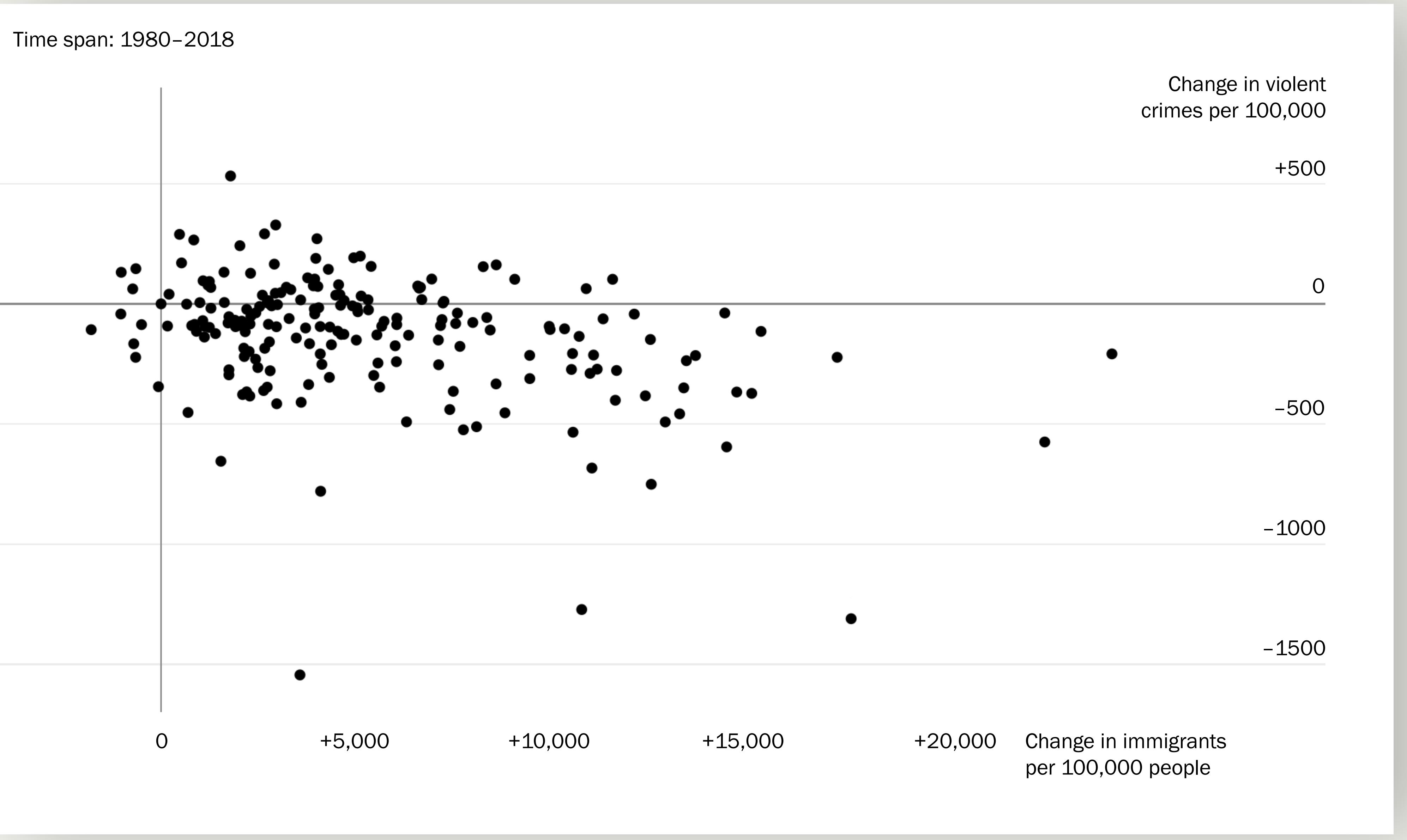
By ANNA FLAGG MARCH 30, 2018



The Trump administration's first year of immigration policy has relied on claims that immigrants bring crime into America. President Trump's latest target is sanctuary cities.

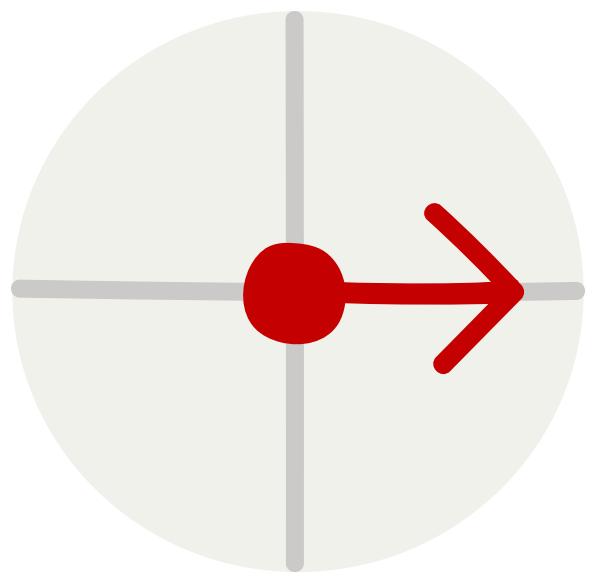
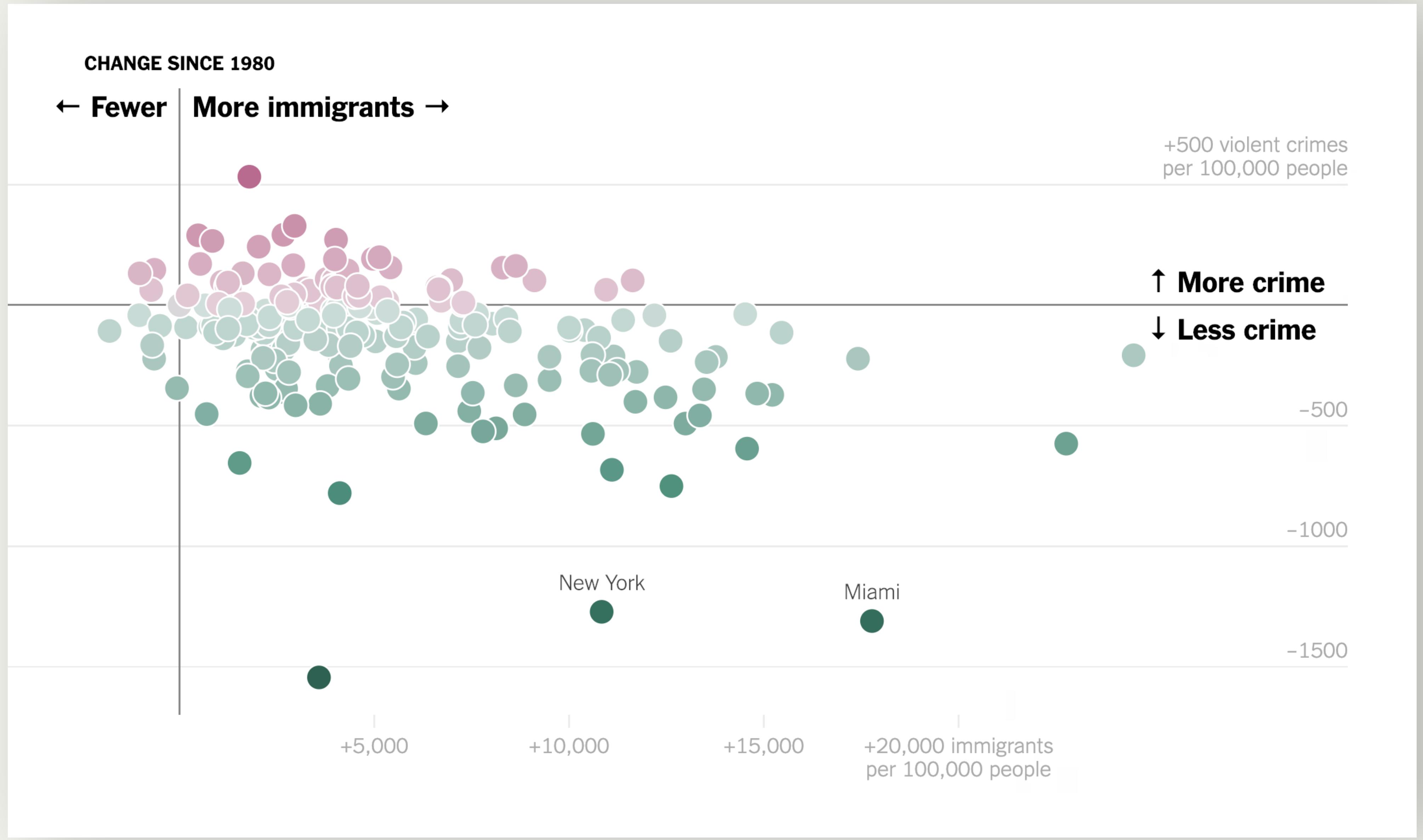
"The Myth of the Criminal Immigrant",  
NYT, March 2018

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“The Myth of the Criminal Immigrant”,  
NYT, March 2018

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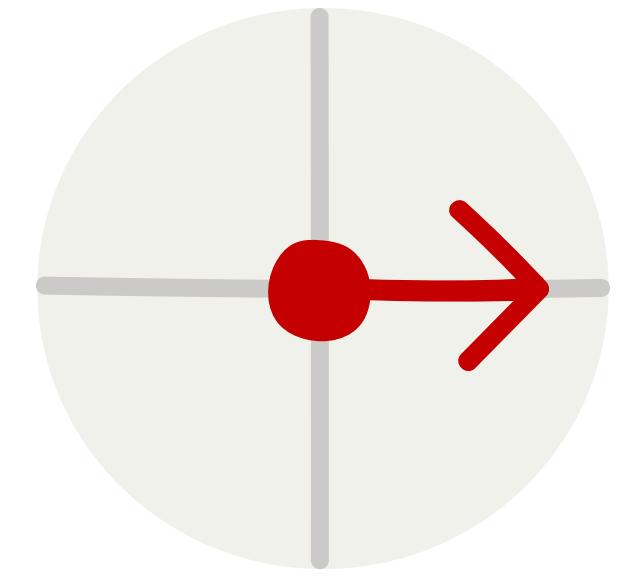
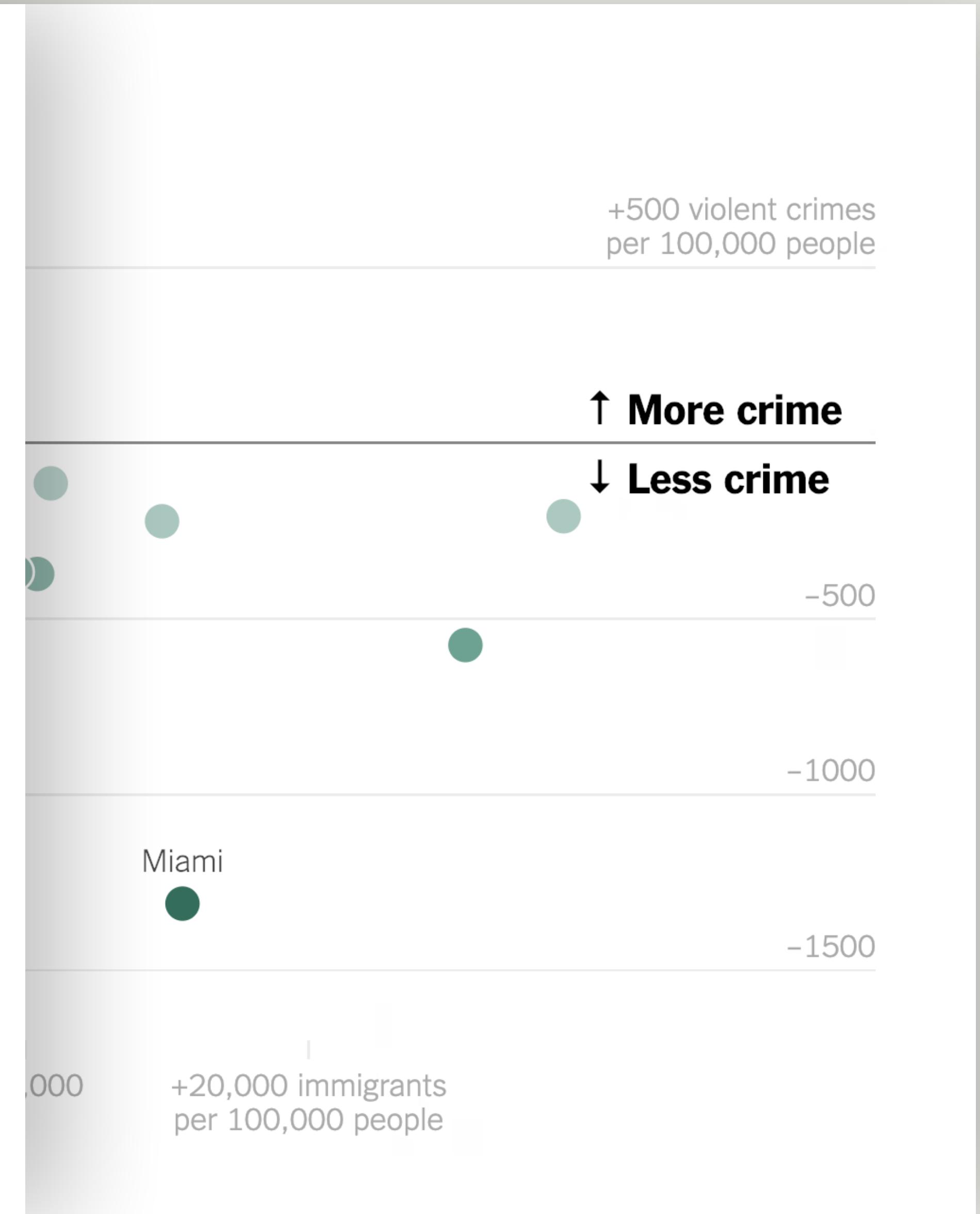
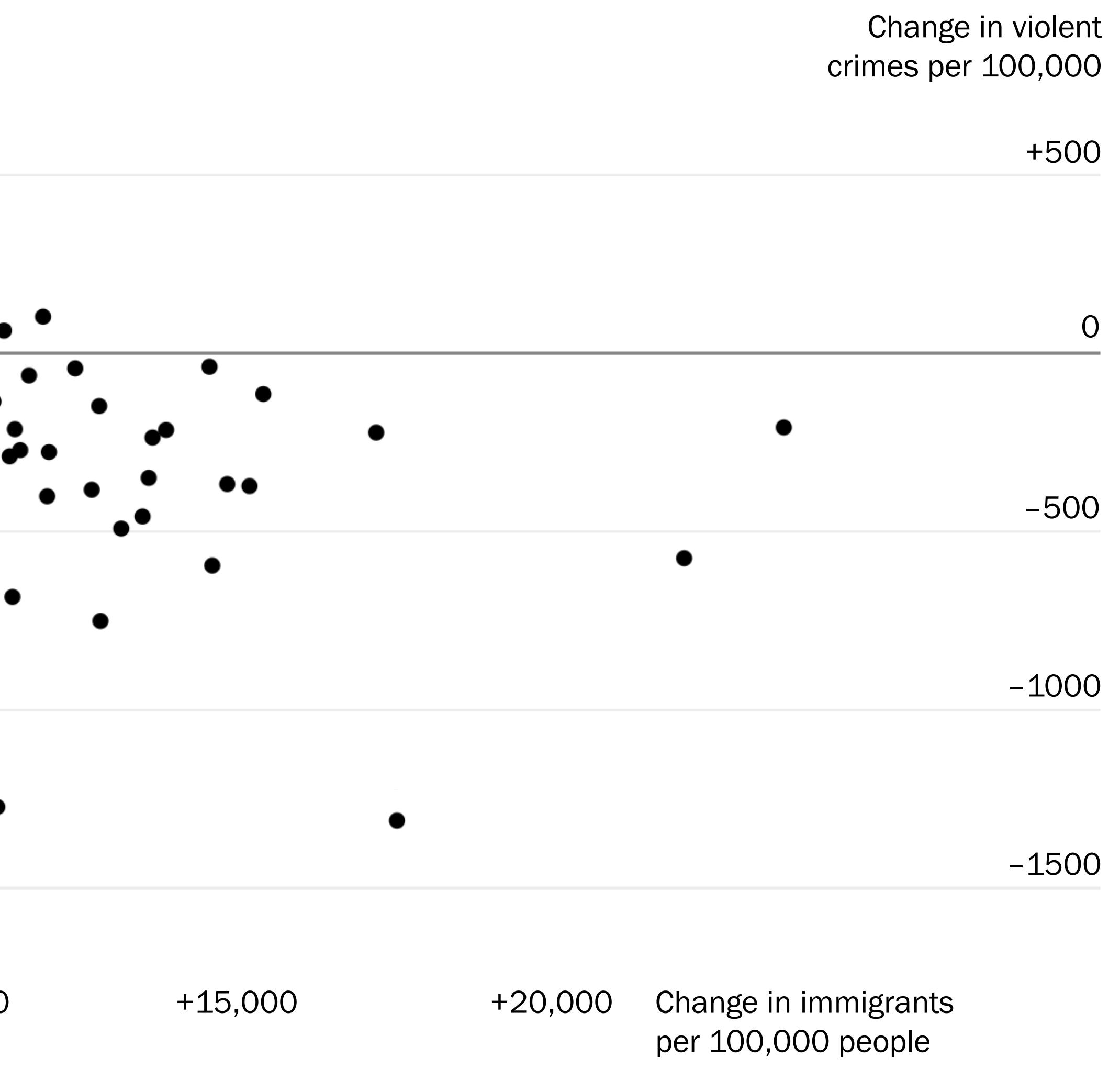


"The Myth of the Criminal Immigrant",  
NYT, March 2018

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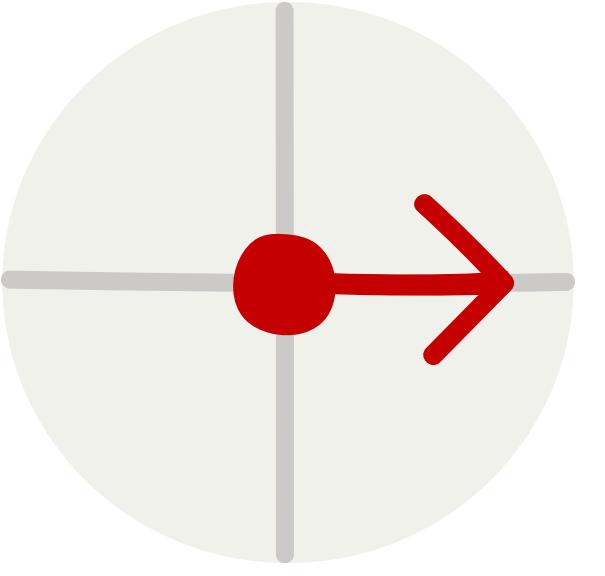
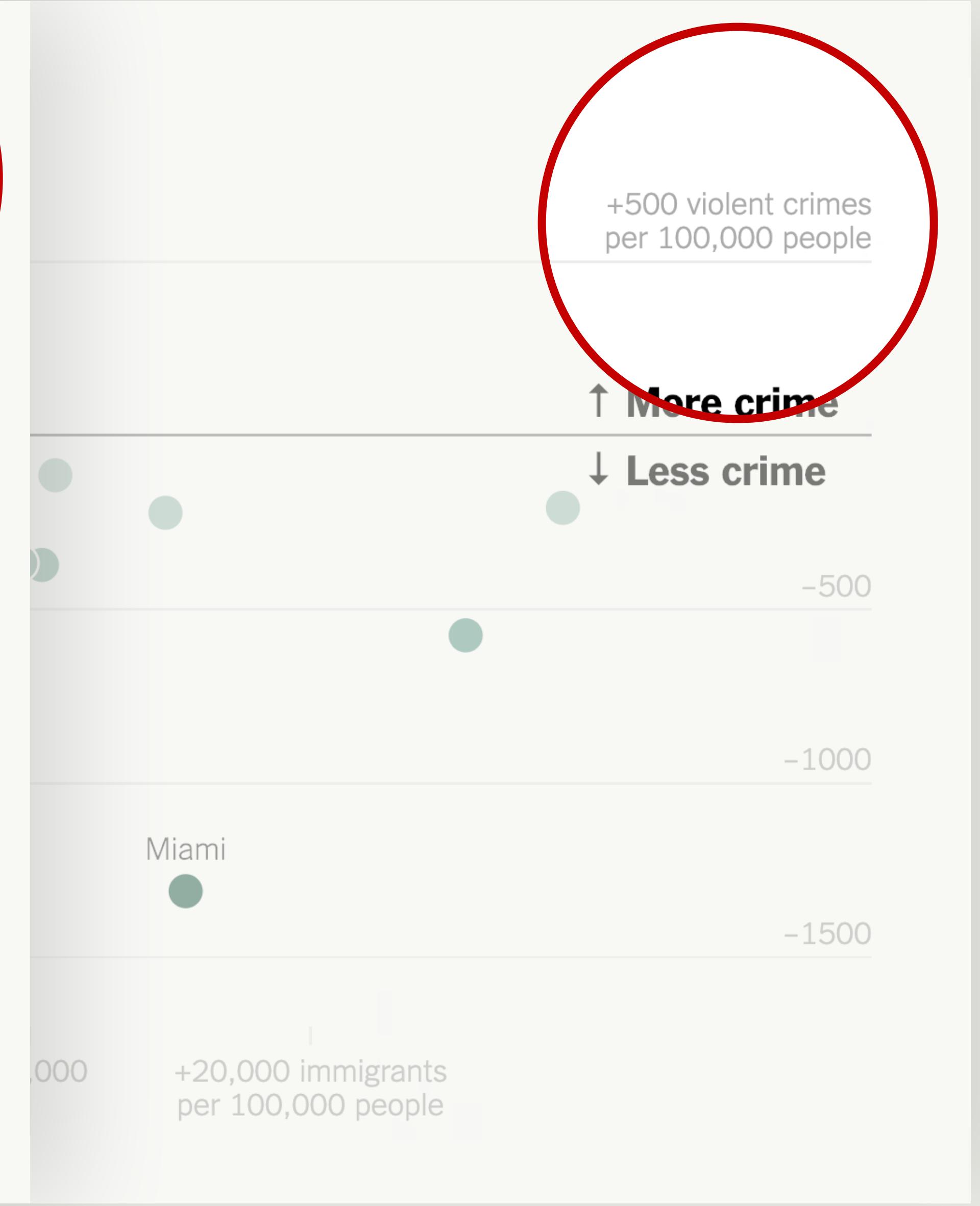
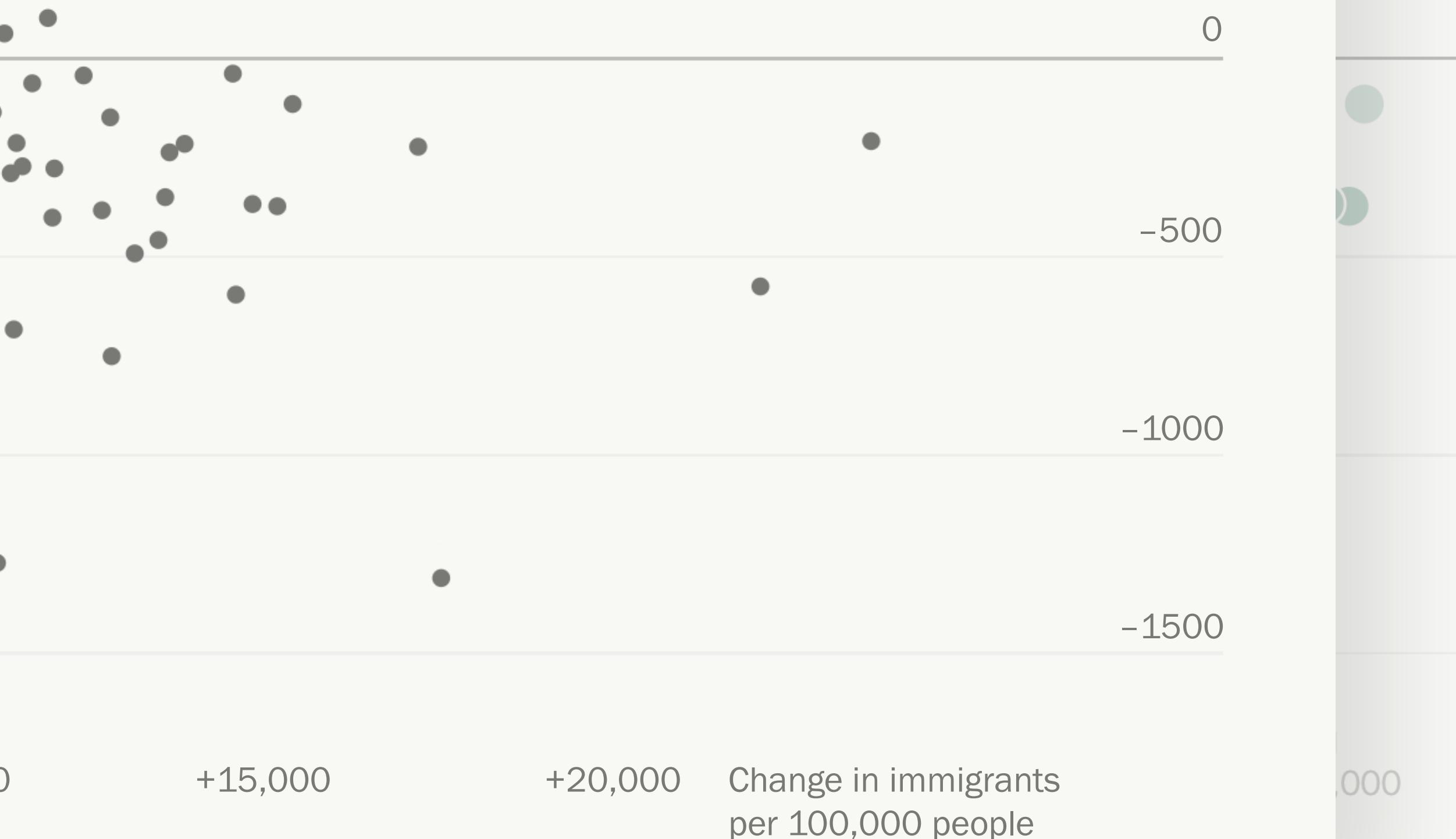
# Design can decrease the effort to understand.

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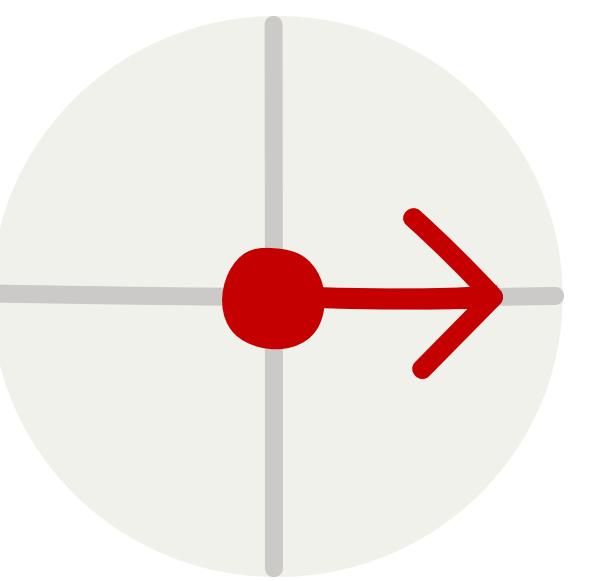
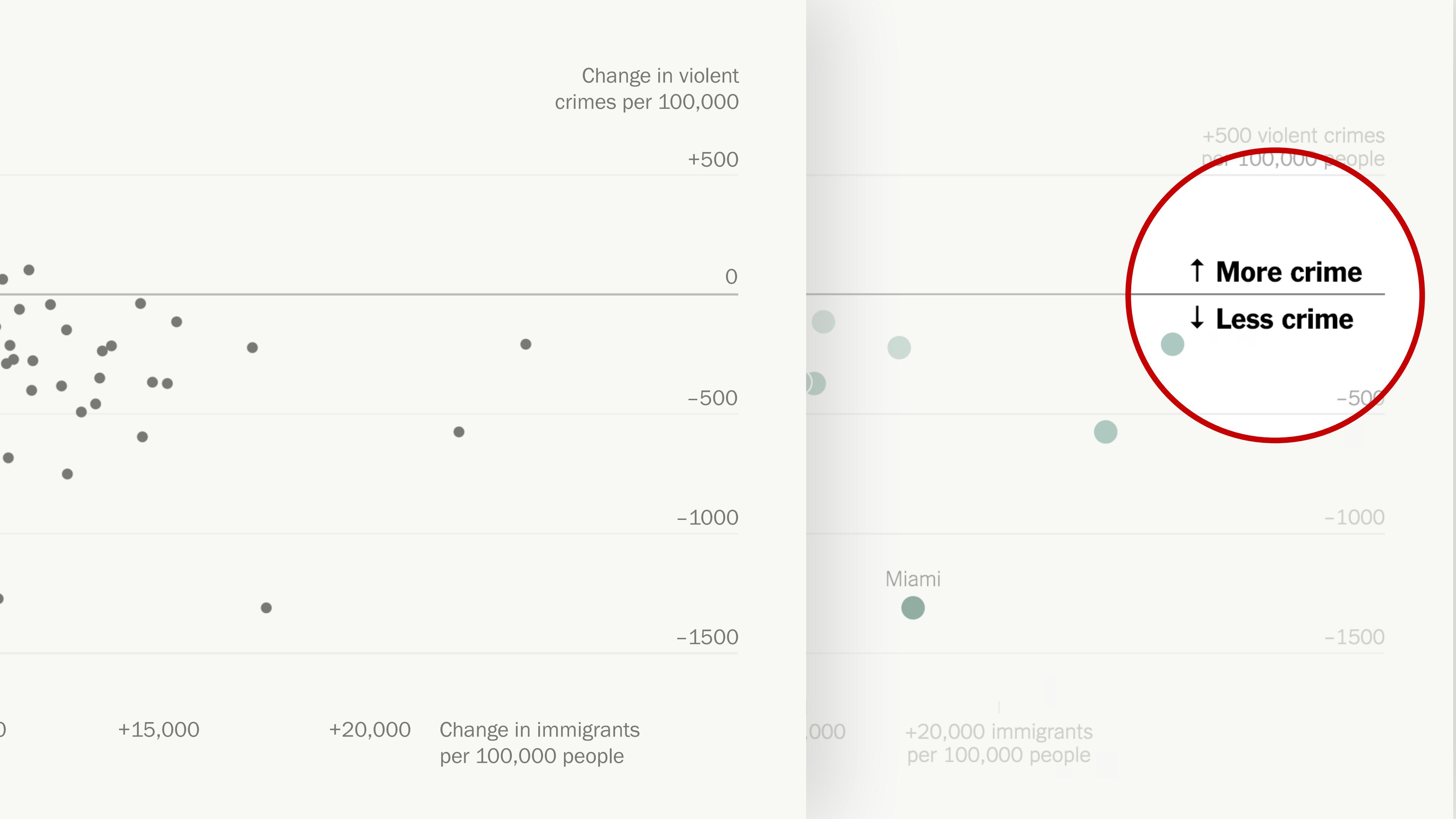
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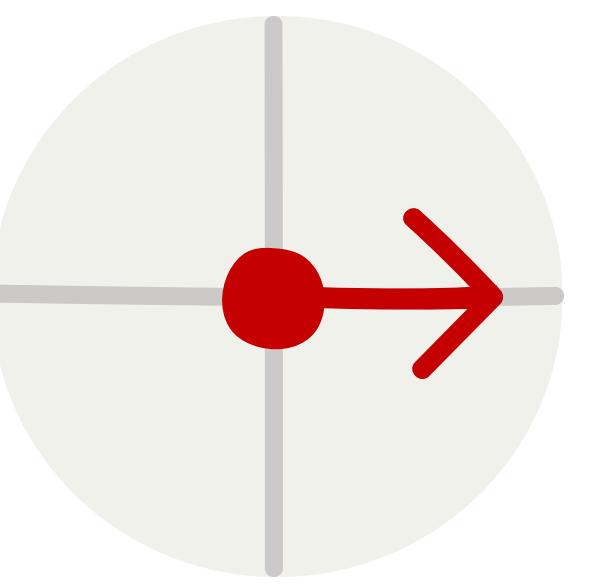
"The Myth of the  
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the effort to understand.

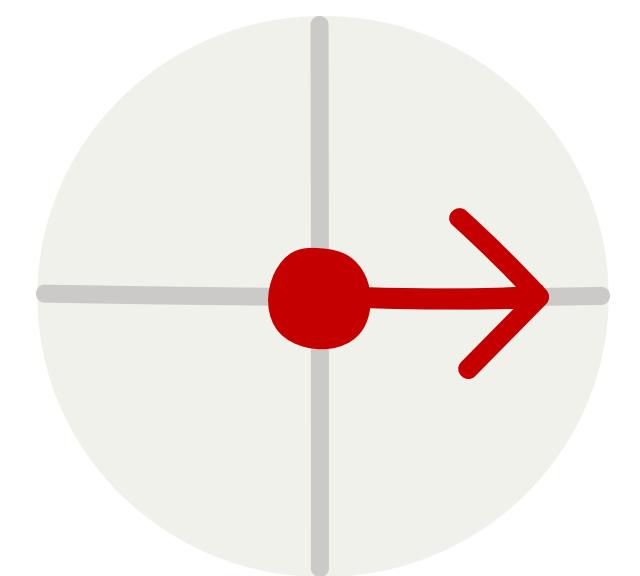
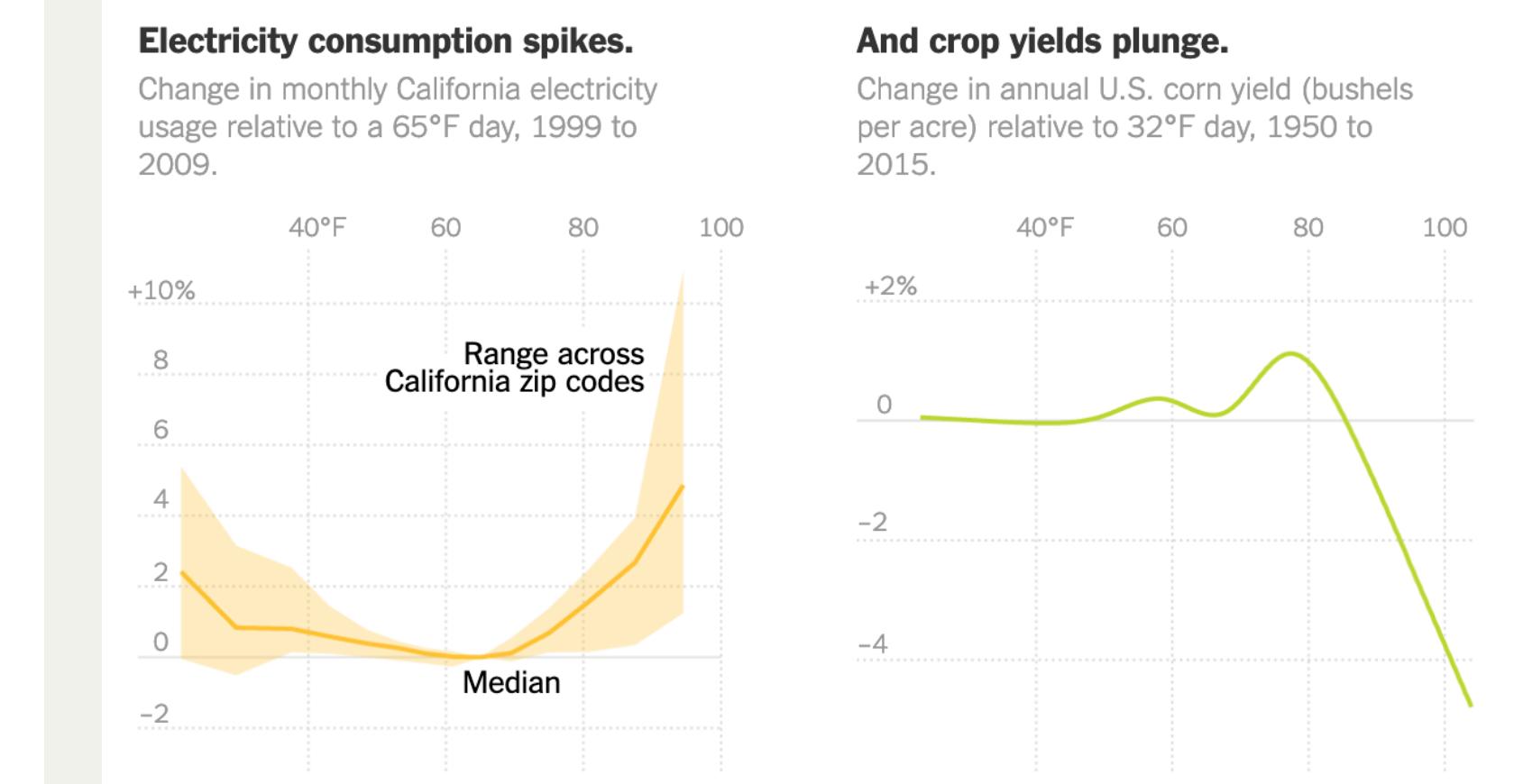
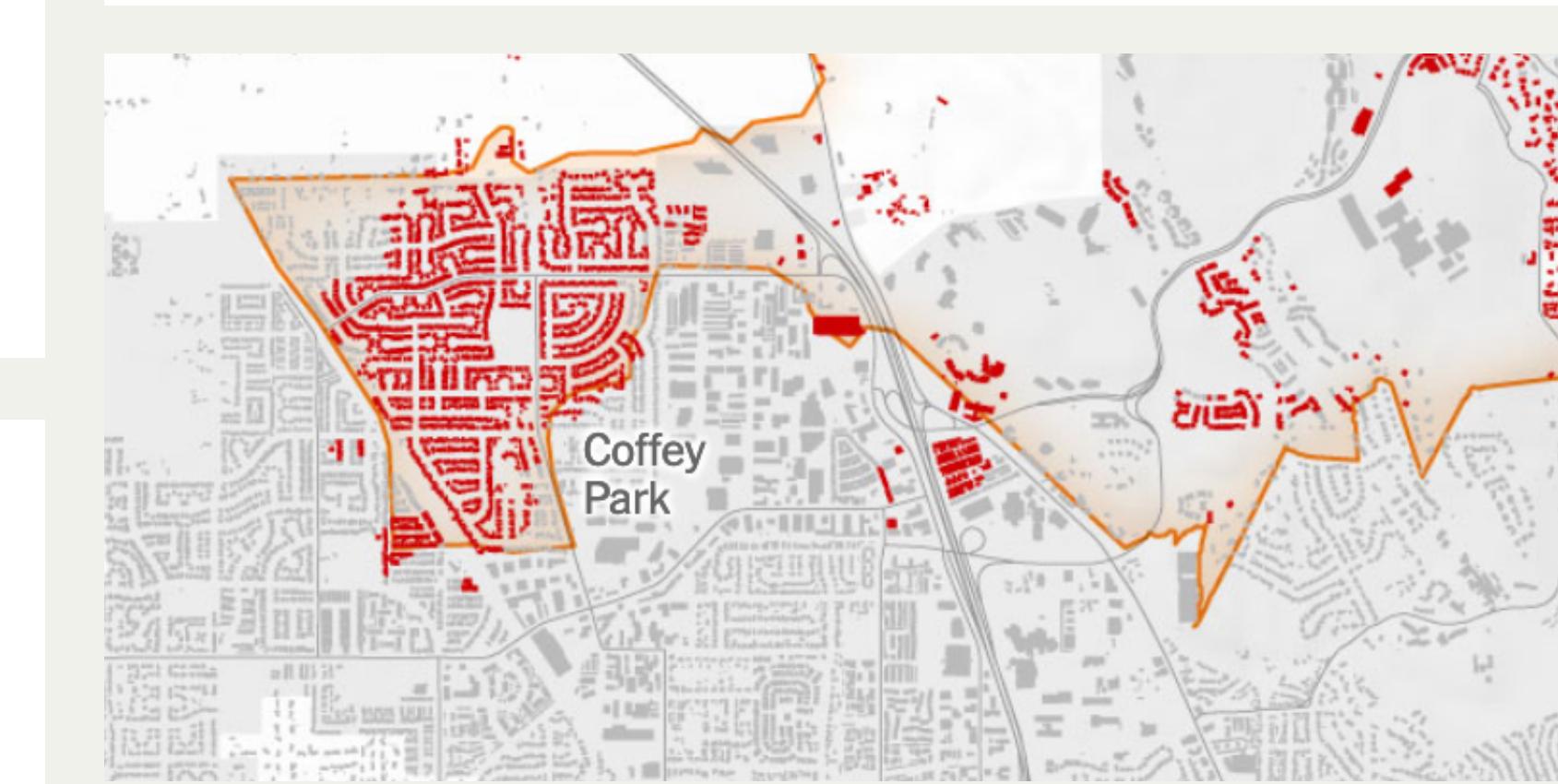
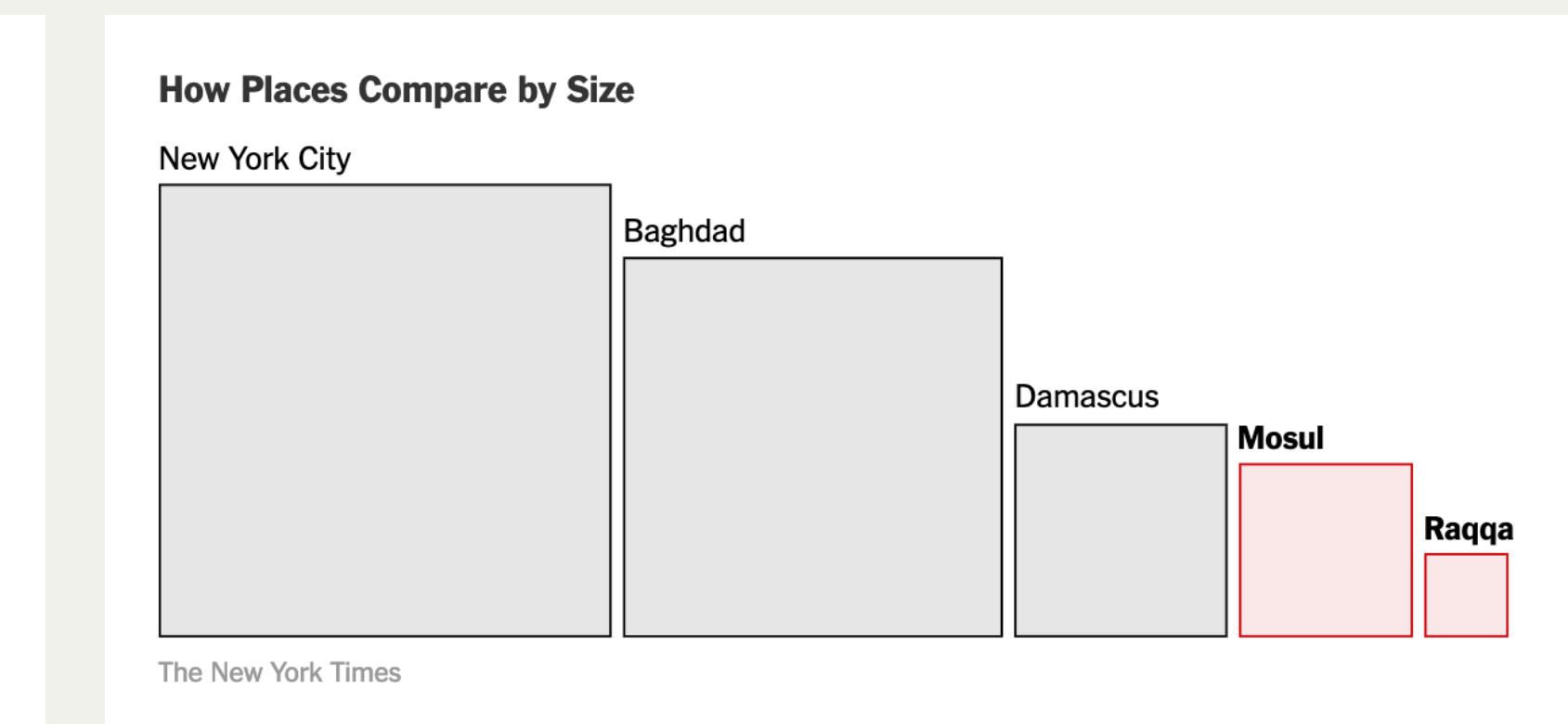
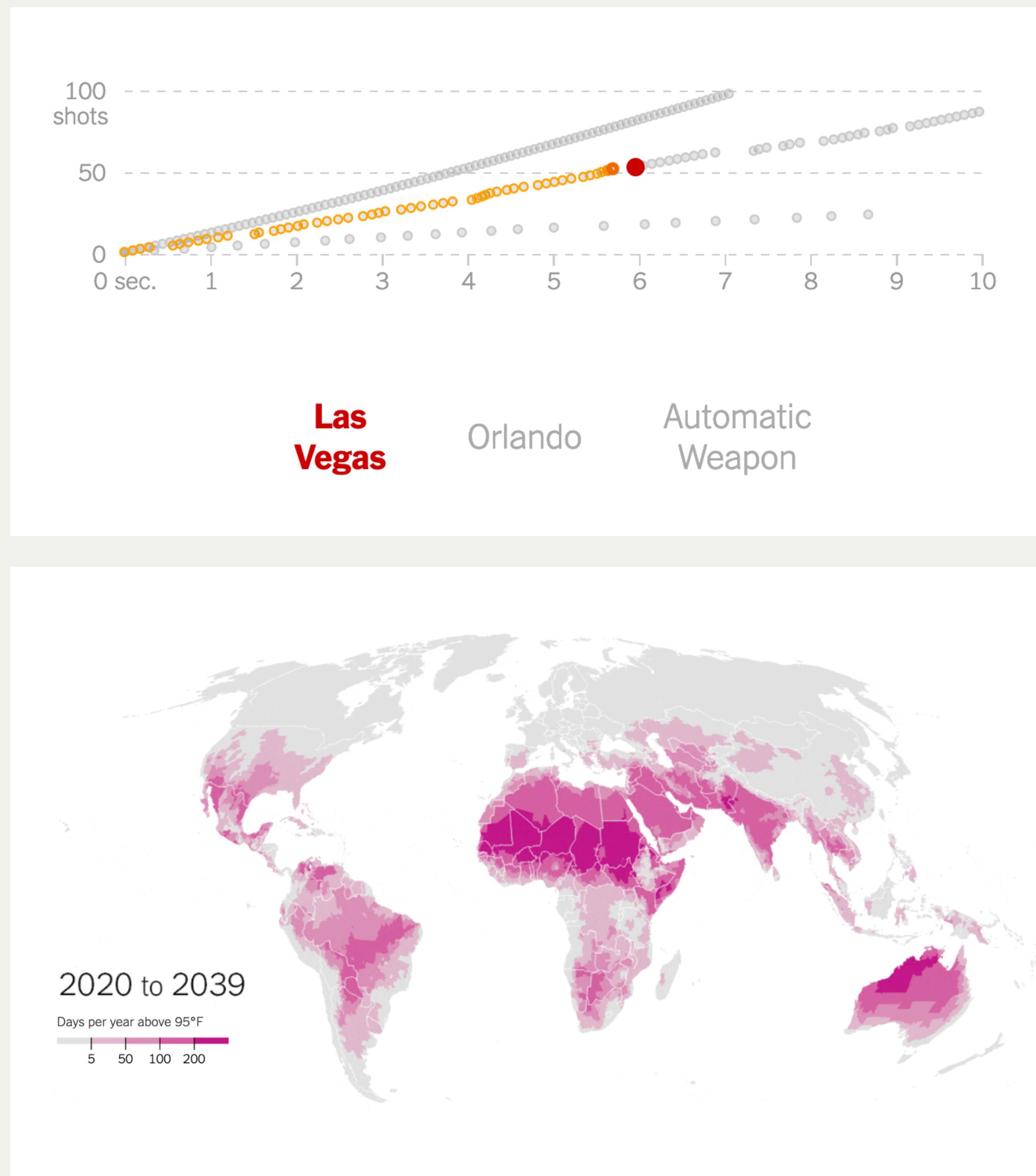
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– Make text a priority.

# Design can decrease the effort to understand.

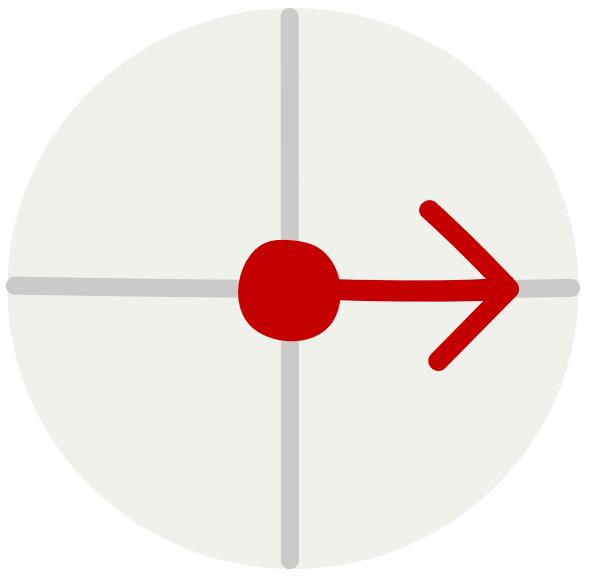
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- Make text a priority.
- Decide what readers should see first. Grey everything else out.



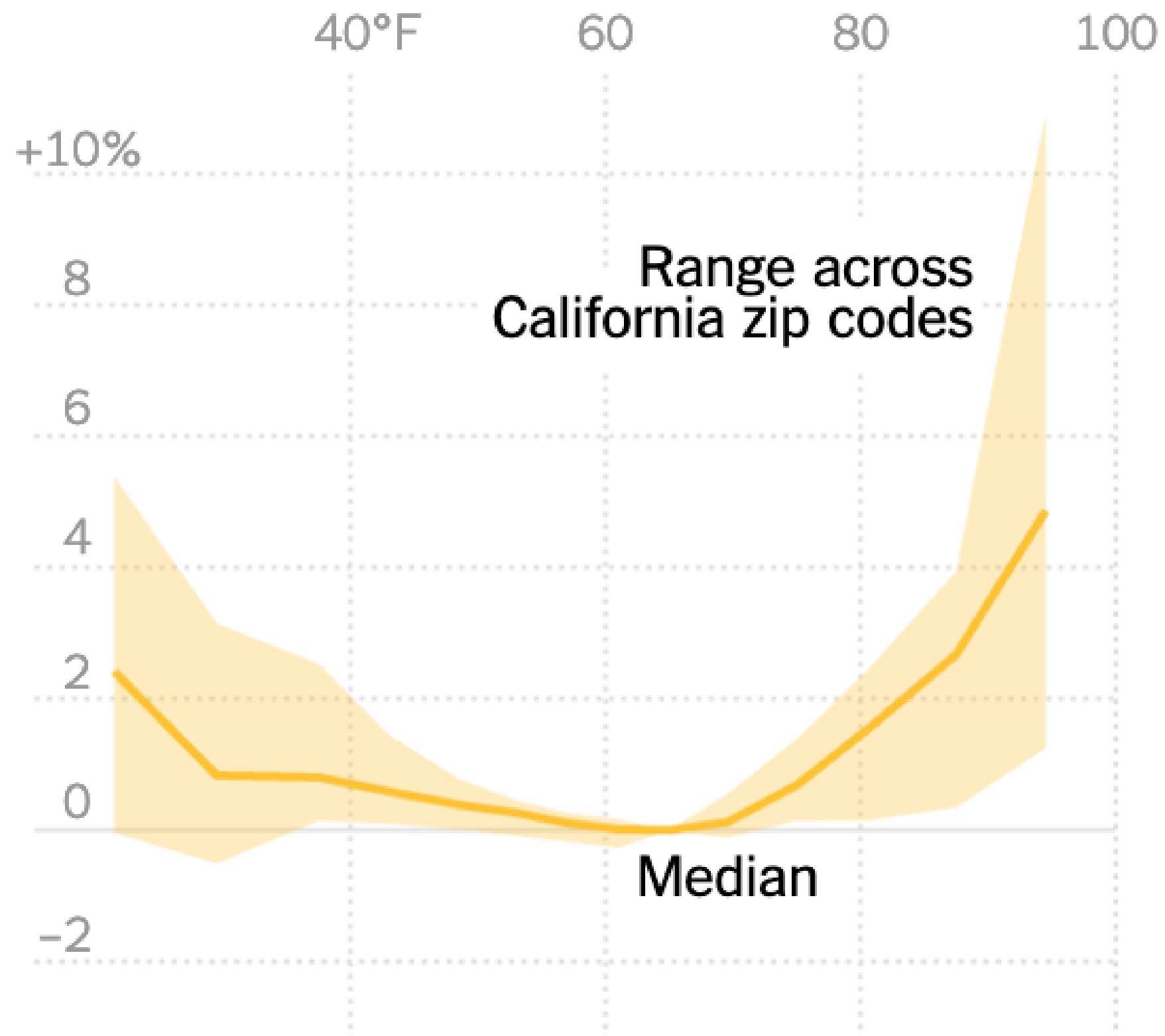
Different graphics by the New York Times, making use of grey

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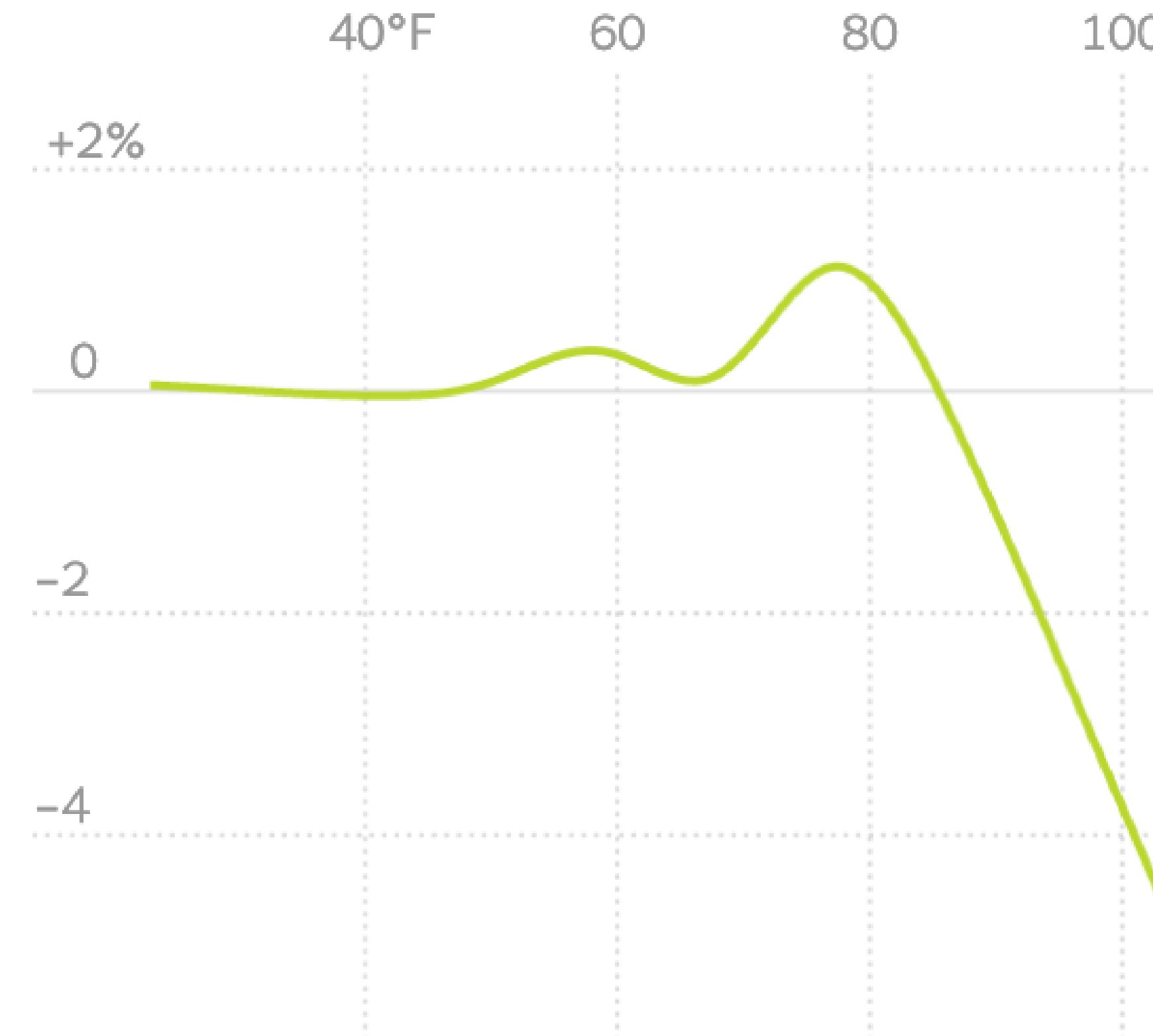
## Electricity consumption spikes.

Change in monthly California electricity usage relative to a 65°F day, 1999 to 2009.



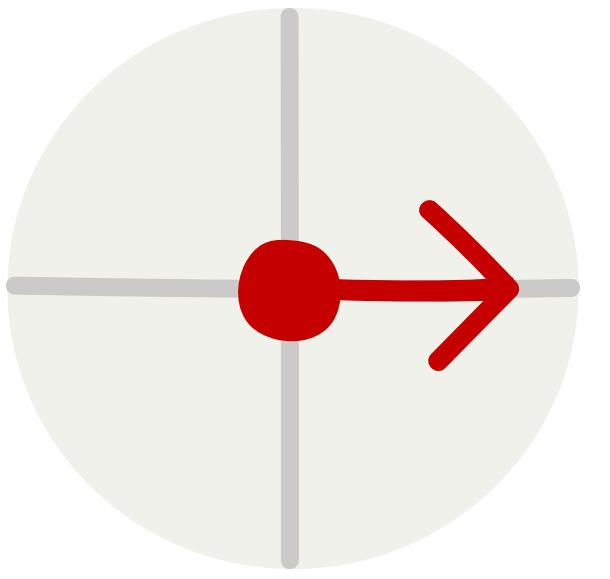
## And crop yields plunge.

Change in annual U.S. corn yield (bushels per acre) relative to 32°F day, 1950 to 2015.



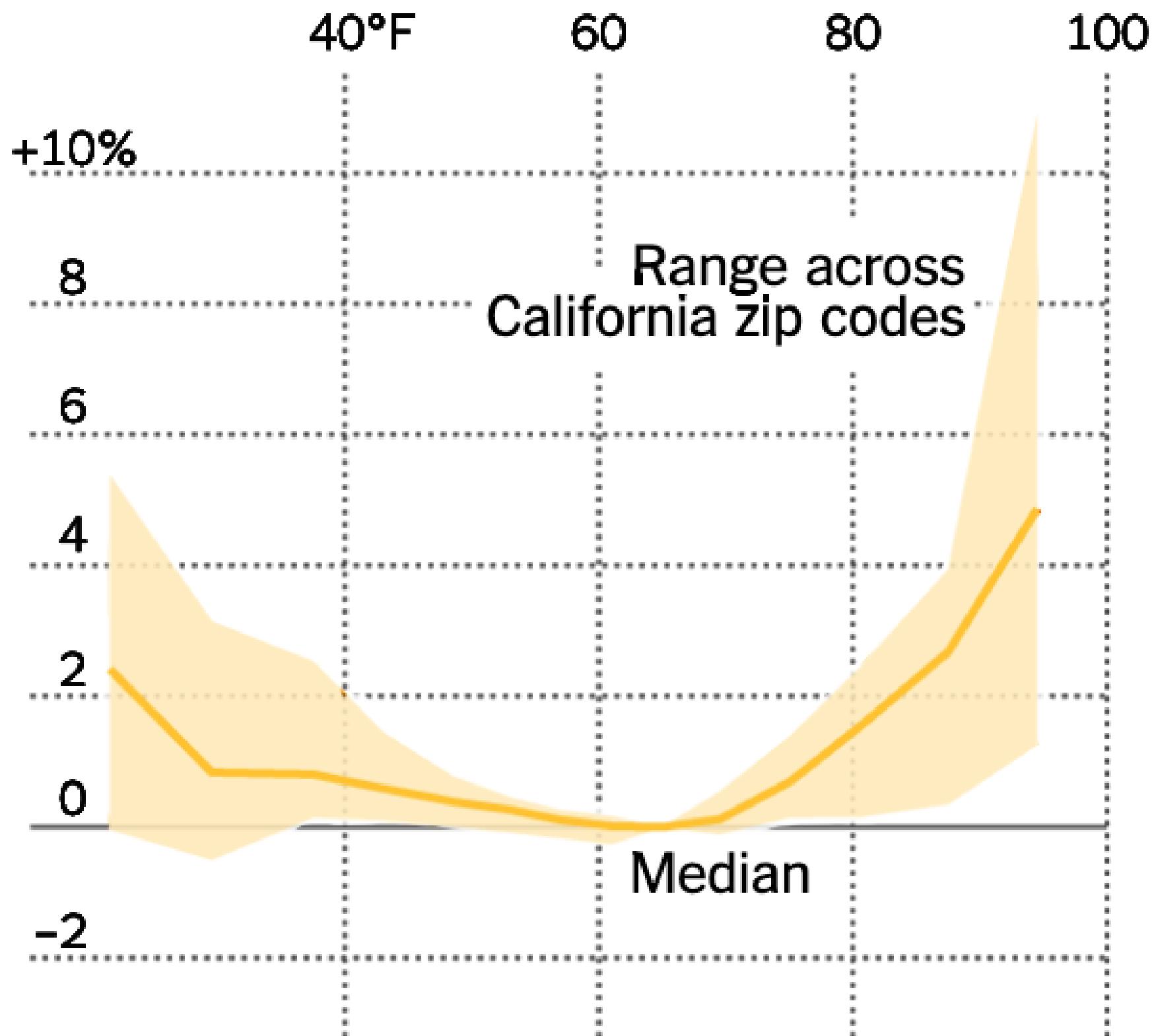
“95-Degree Days:  
How Extreme Heat  
Could Spread  
Across the World”,  
NYT, June 2017

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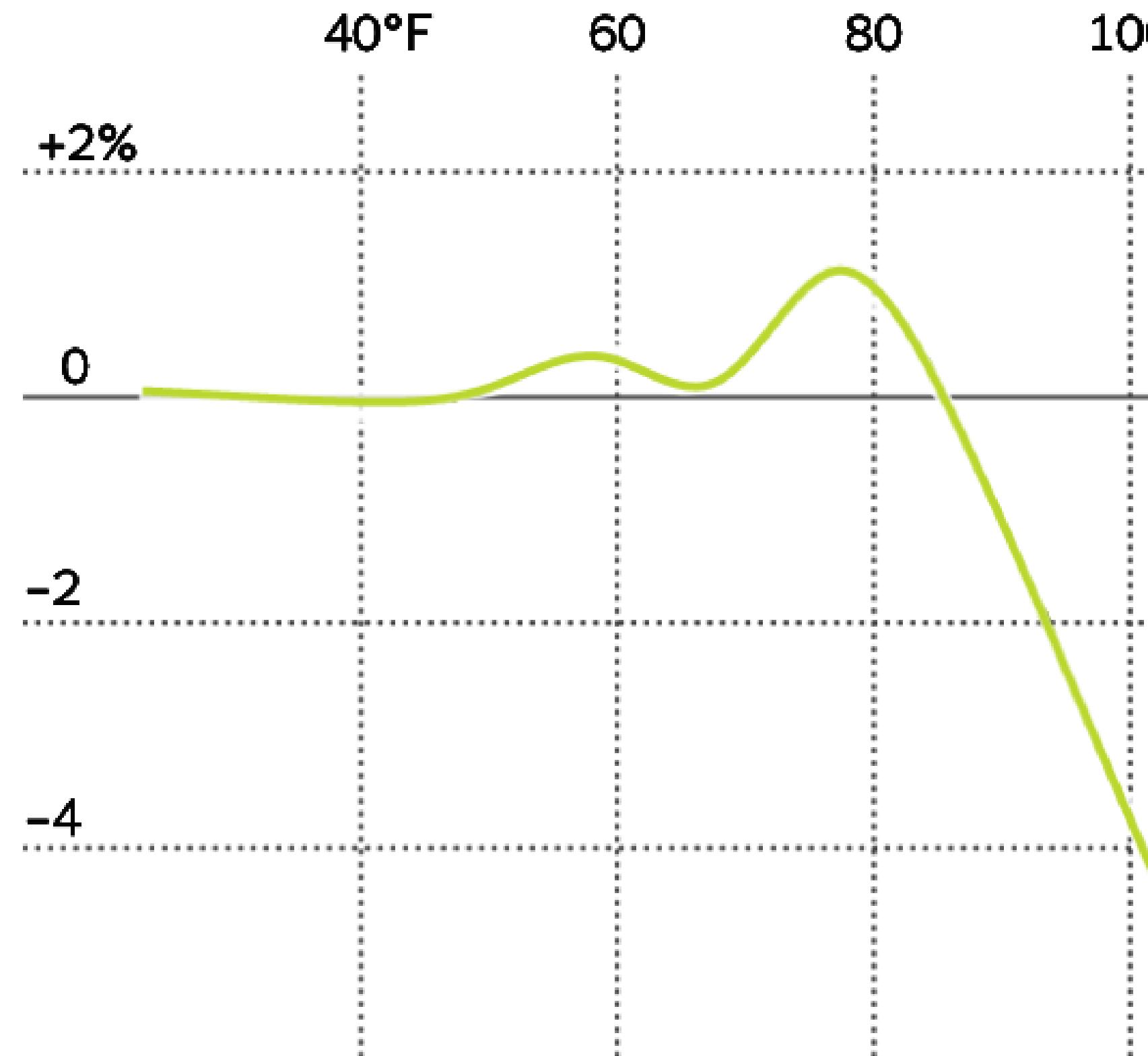
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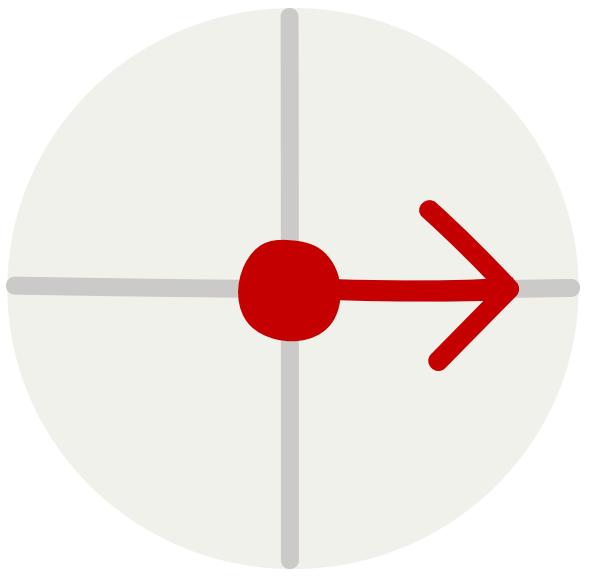
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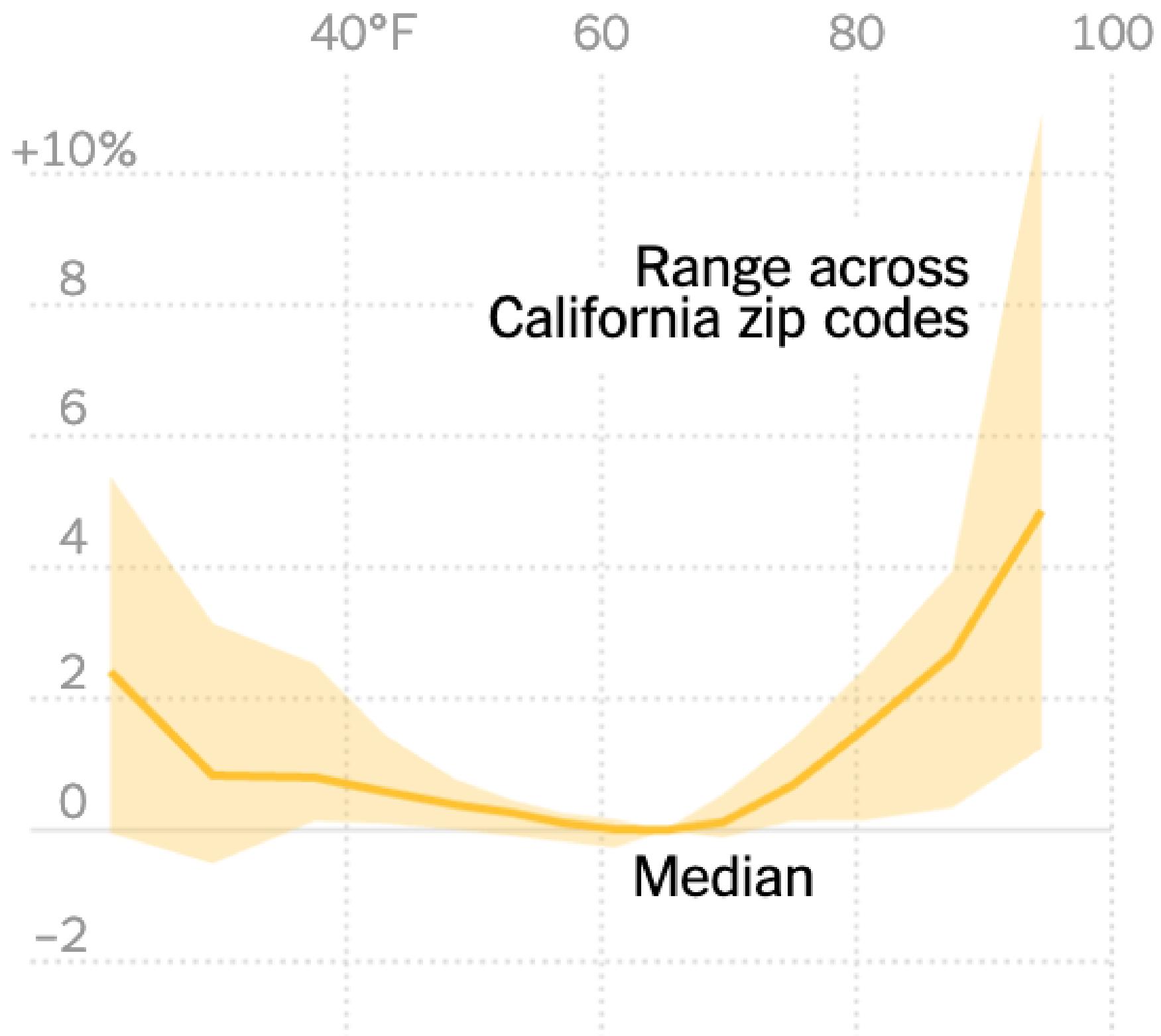
"95-Degree Days:  
How Extreme Heat  
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NYT, June 2017

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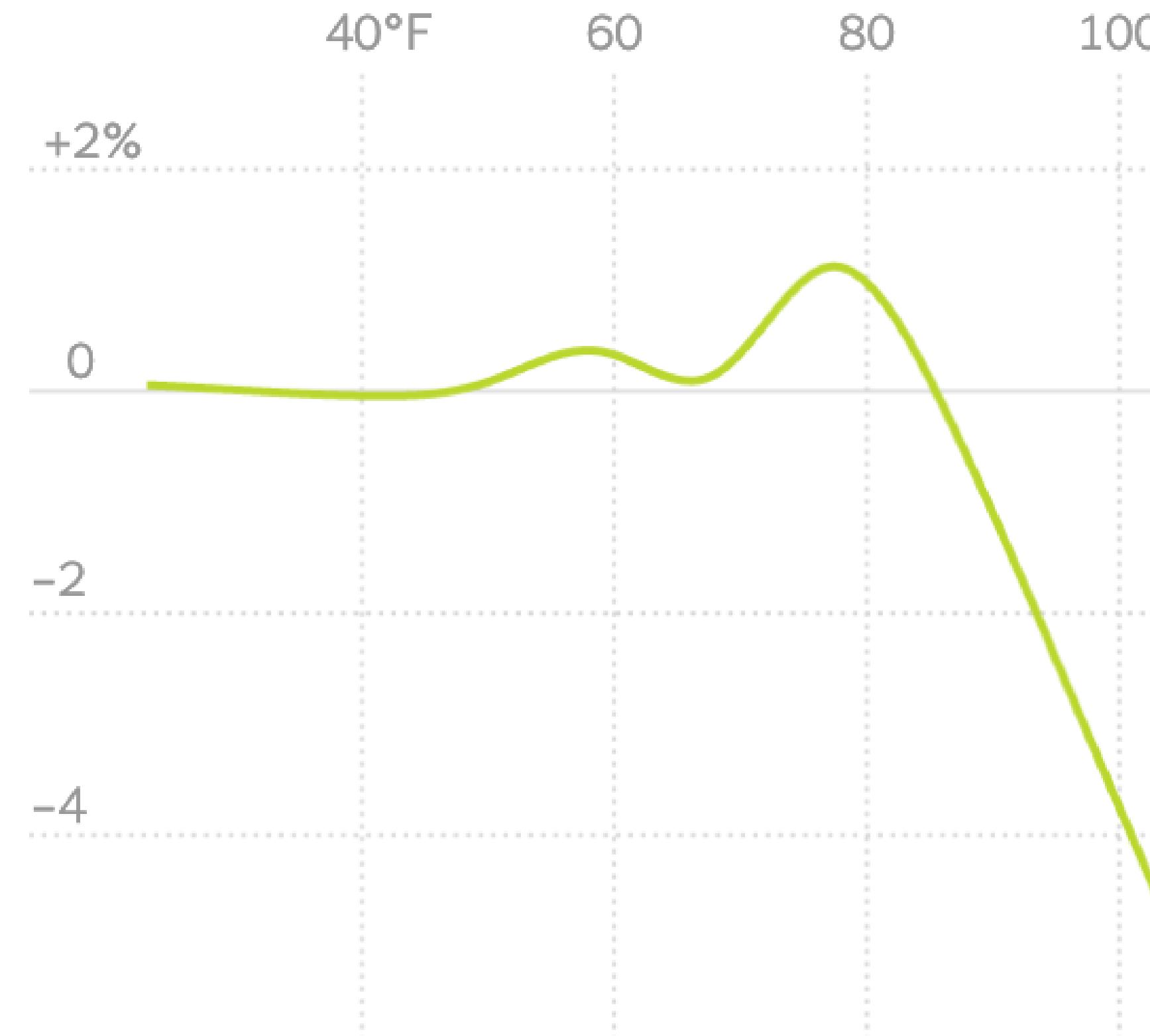
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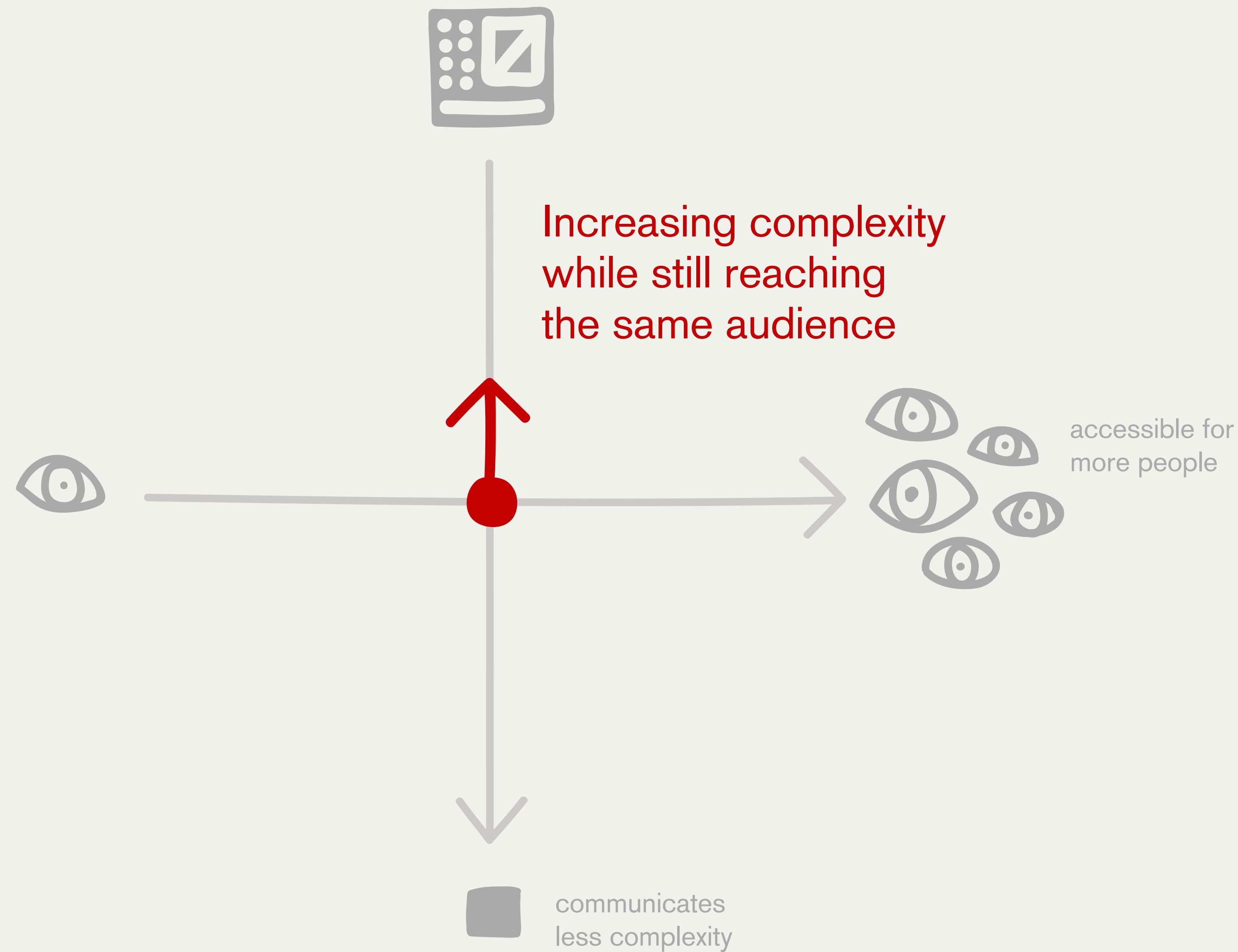
“95-Degree Days:  
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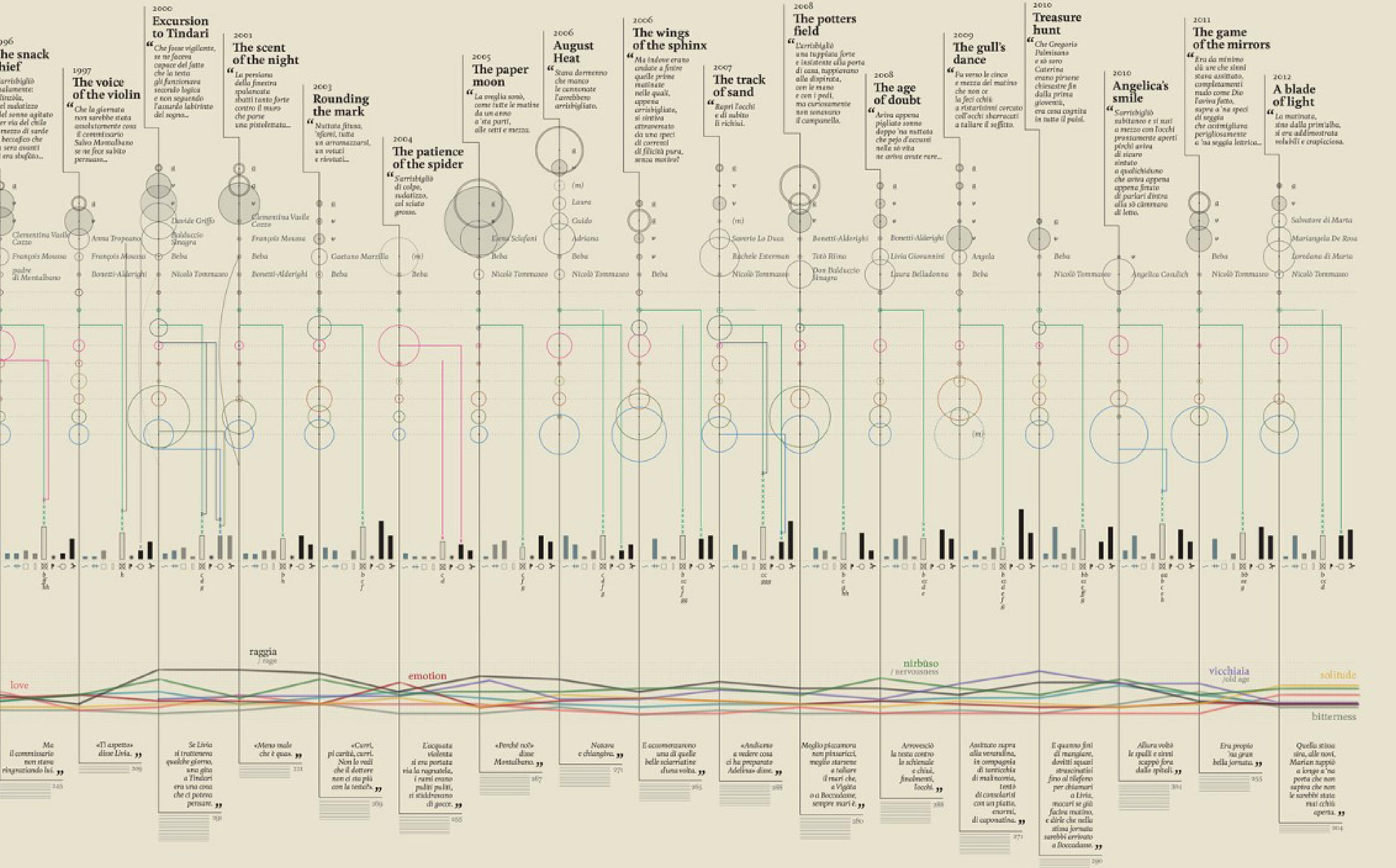
# Design can decrease the effort to understand.

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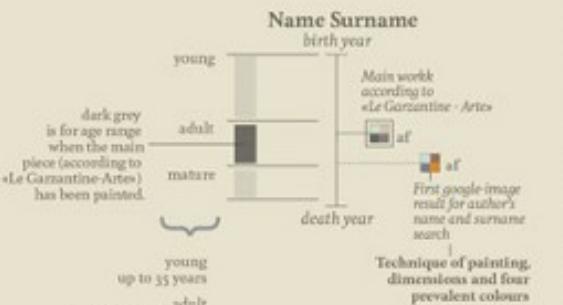
## Painters in the making

The visualization explores eight centuries of art and artists, displaying the most important 90 painters. 40 of 90, are then represented through their main pieces. Each piece is located within the author's life at the date of painting, and is analyzed through the main colors used, its size, and the painting technique.

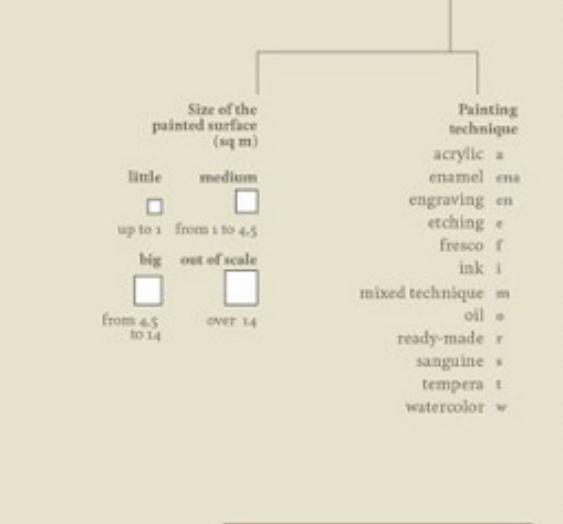
A further analysis represents the way painting has changed over the past eight hundred years

### How to read it?

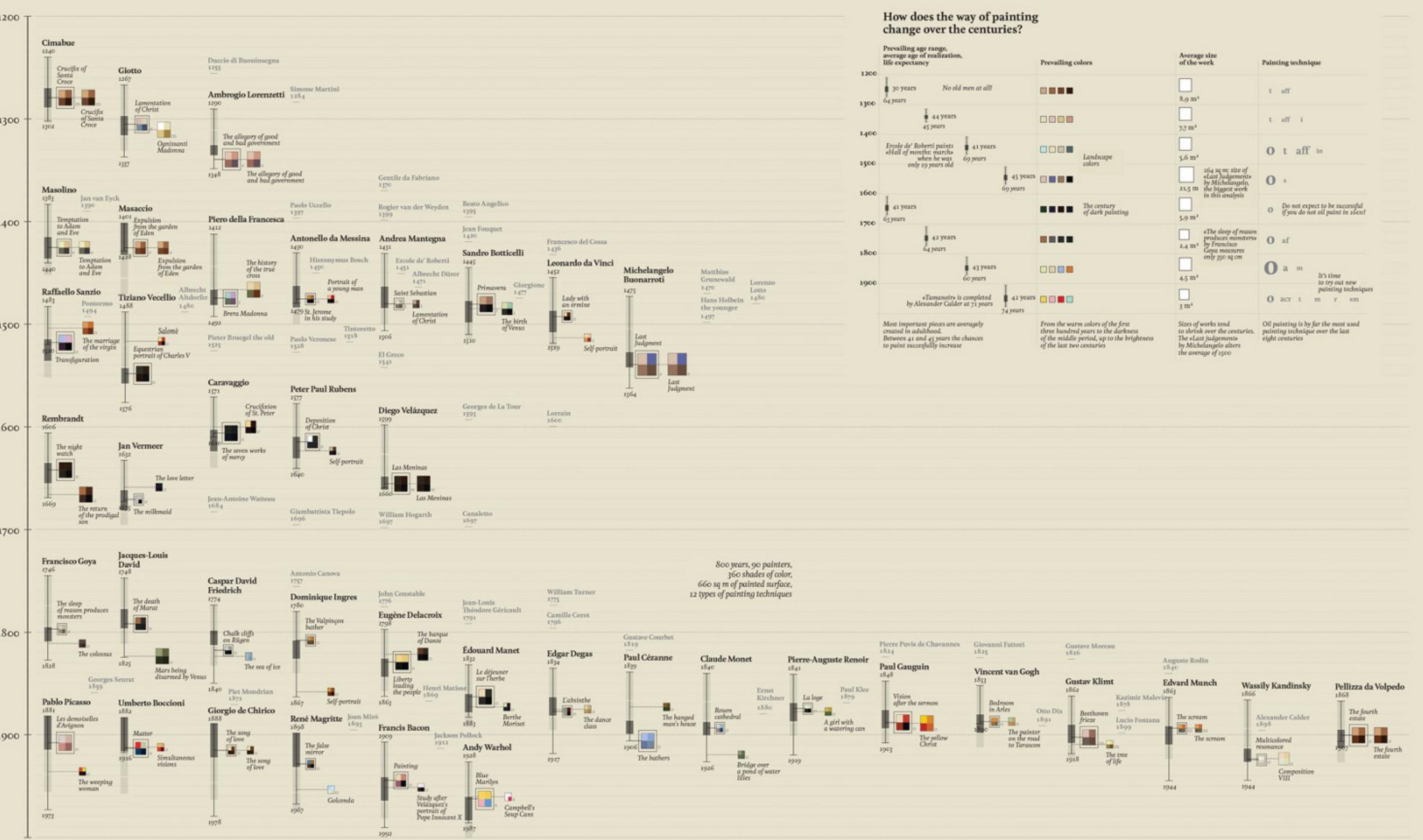
The age range is normalized according to life expectancy in each century. The legend displays 1900.



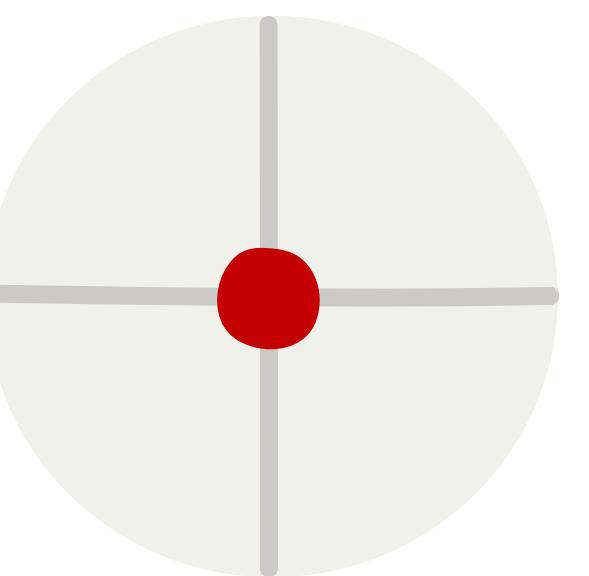
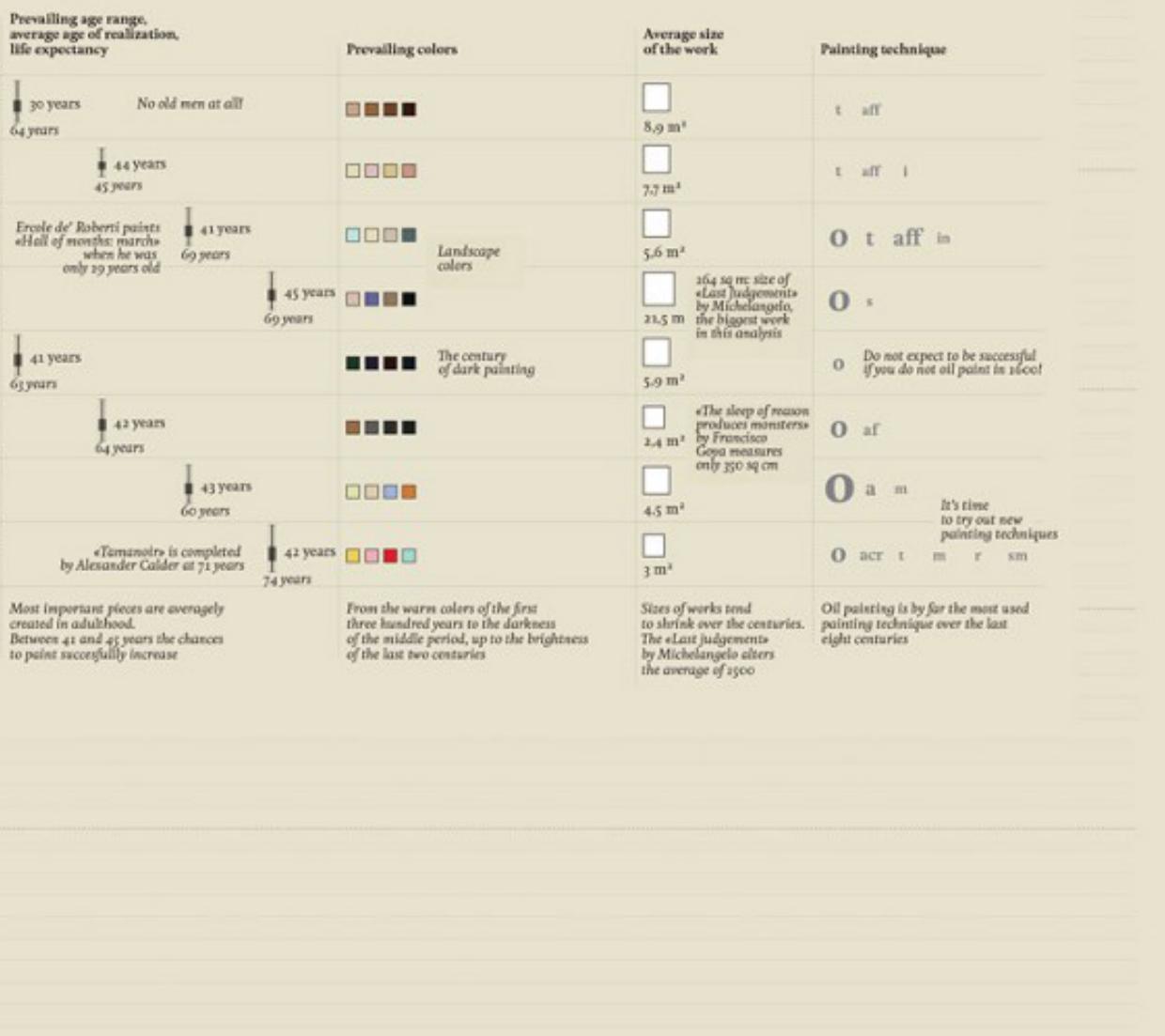
Technique of painting, dimensions and four prevalent colors of each piece



The visualization has been designed and produced by Lisacrost (lisacrost.it) and was originally published in Italian on La Lettura the sunday cultural supplement of Corriere della Sera.

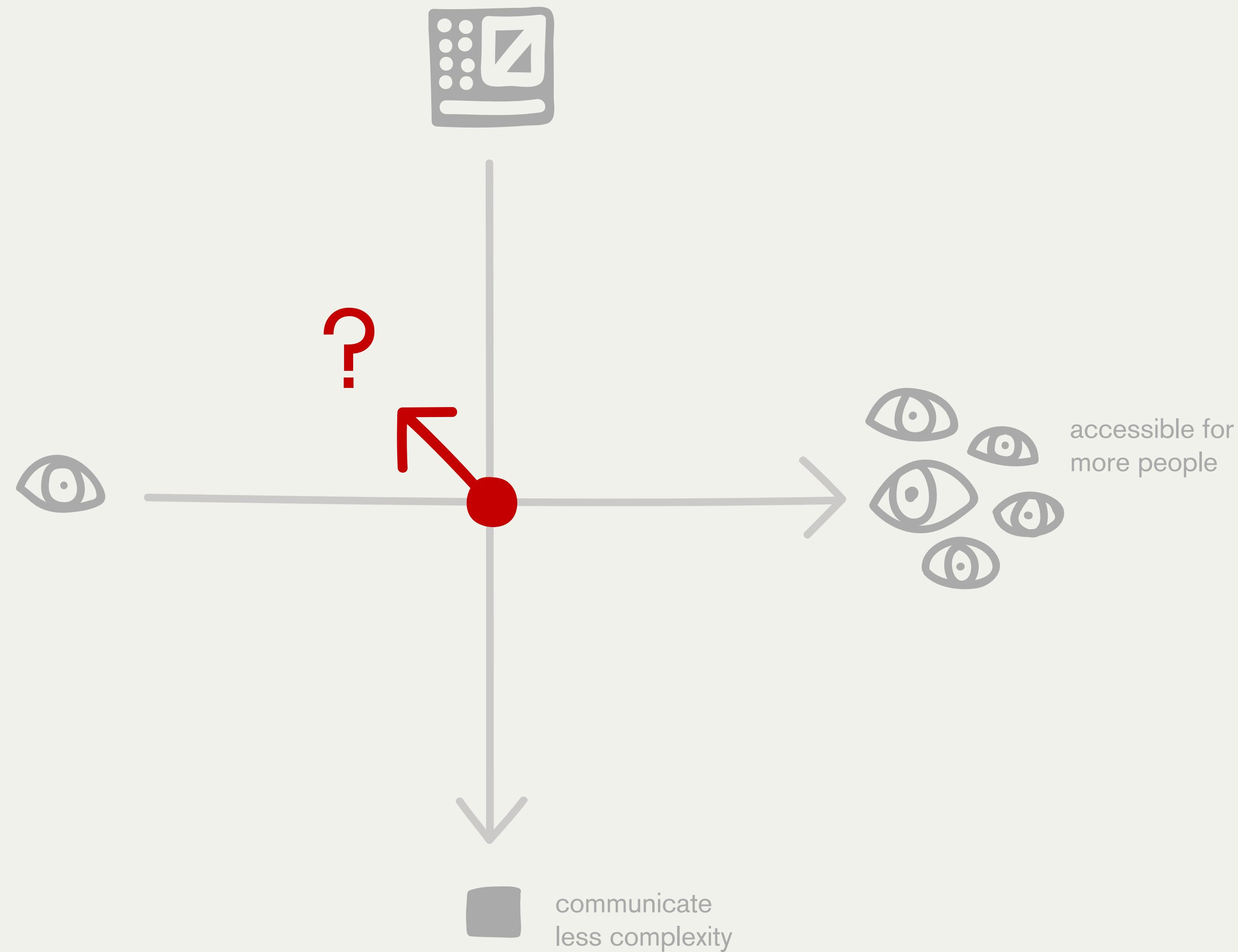


### How does the way of painting change over the centuries?



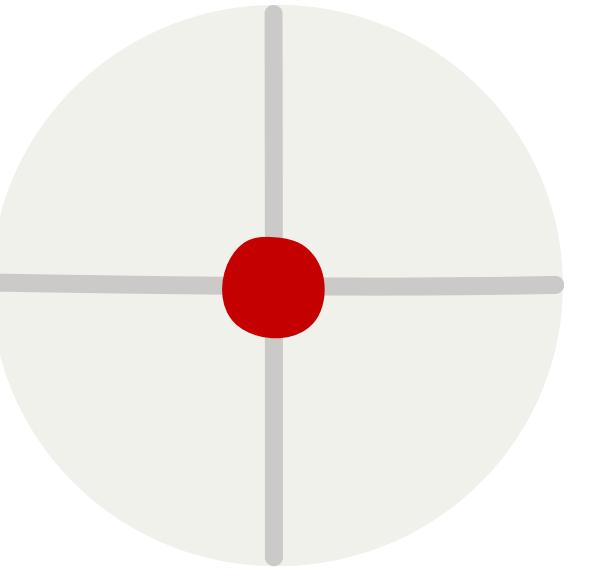
"Painters in the making", Akkurat

@lisacrost



“We are not going for simple diagrams to express basic concepts, we somehow instead embrace complexity.

...but still making all this [...] more accessible and understandable.”

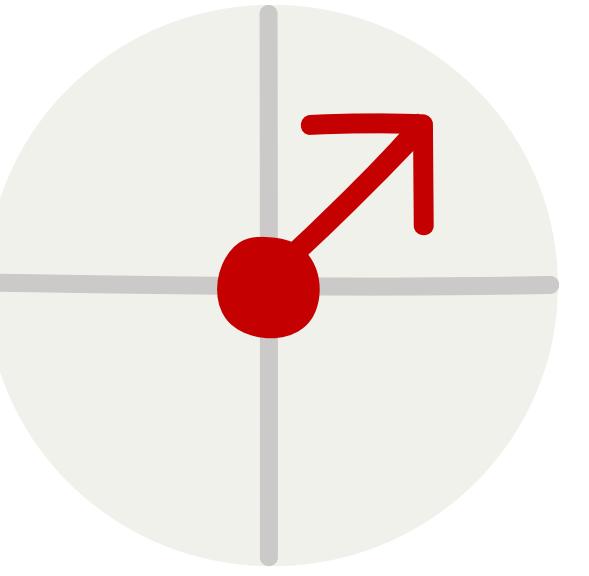


“The Architecture of  
a Data Visualization”,  
Giorgia Lupi,  
February 2015

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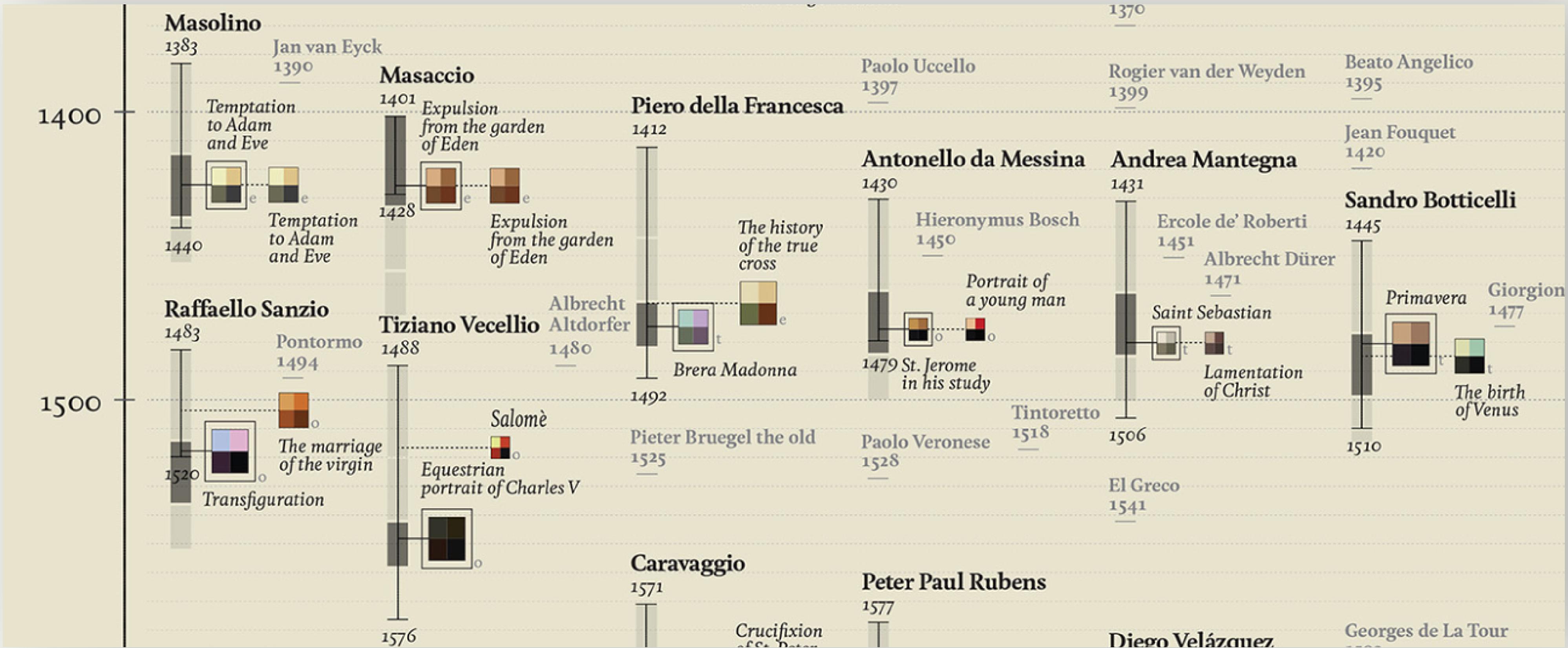
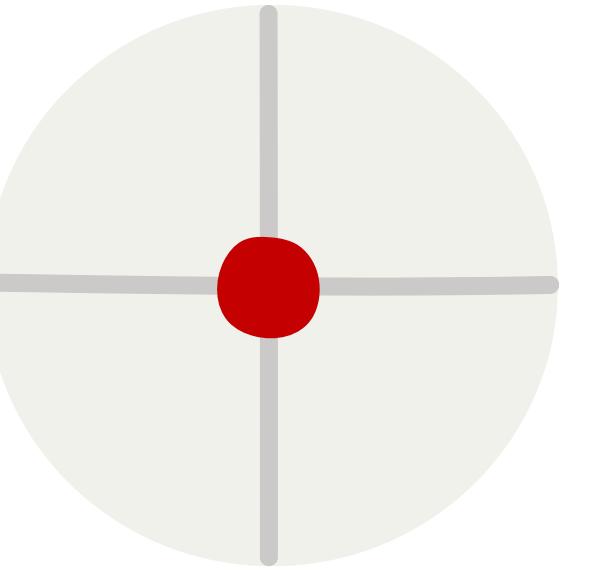
“We are not going for simple diagrams to express basic concepts, we somehow instead embrace complexity.

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“The Architecture of  
a Data Visualization”,  
Giorgia Lupi,  
February 2015

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"Painters in the making", Akkurat

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Design can decrease  
the effort to understand.

---

- Make text a priority.
- Decide what readers  
should see first. Grey  
everything else out.

Design can make  
things beautiful.

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Design can decrease  
the effort to understand.

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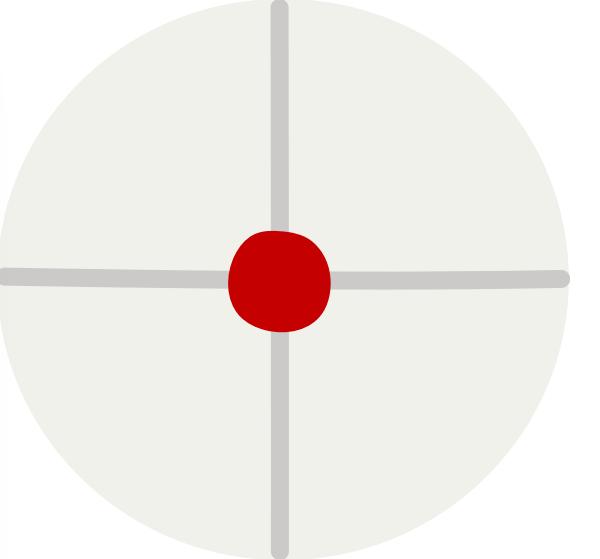
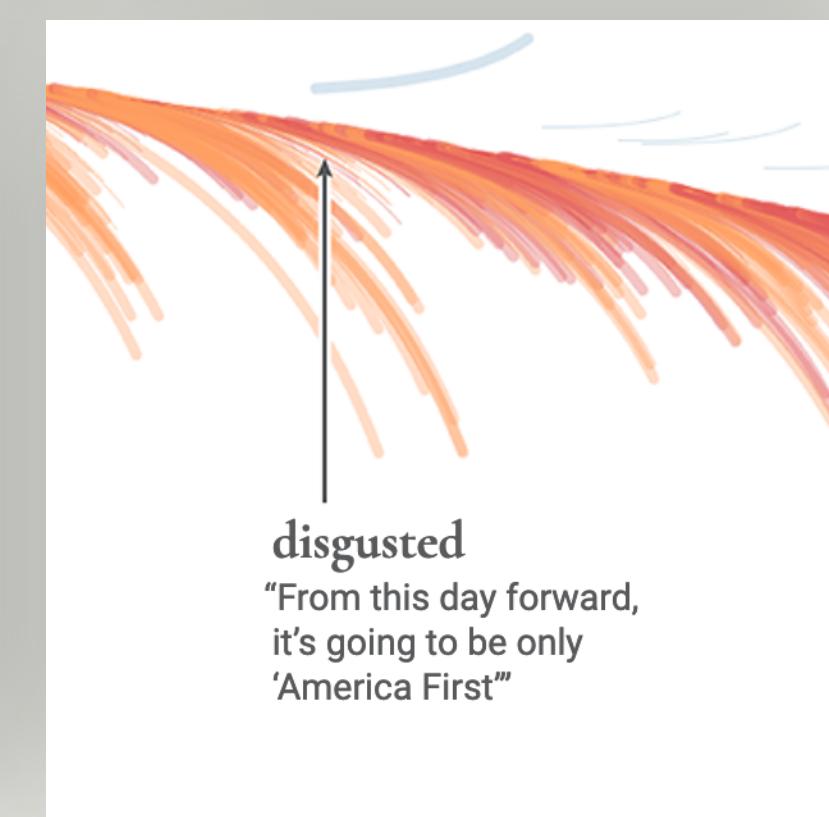
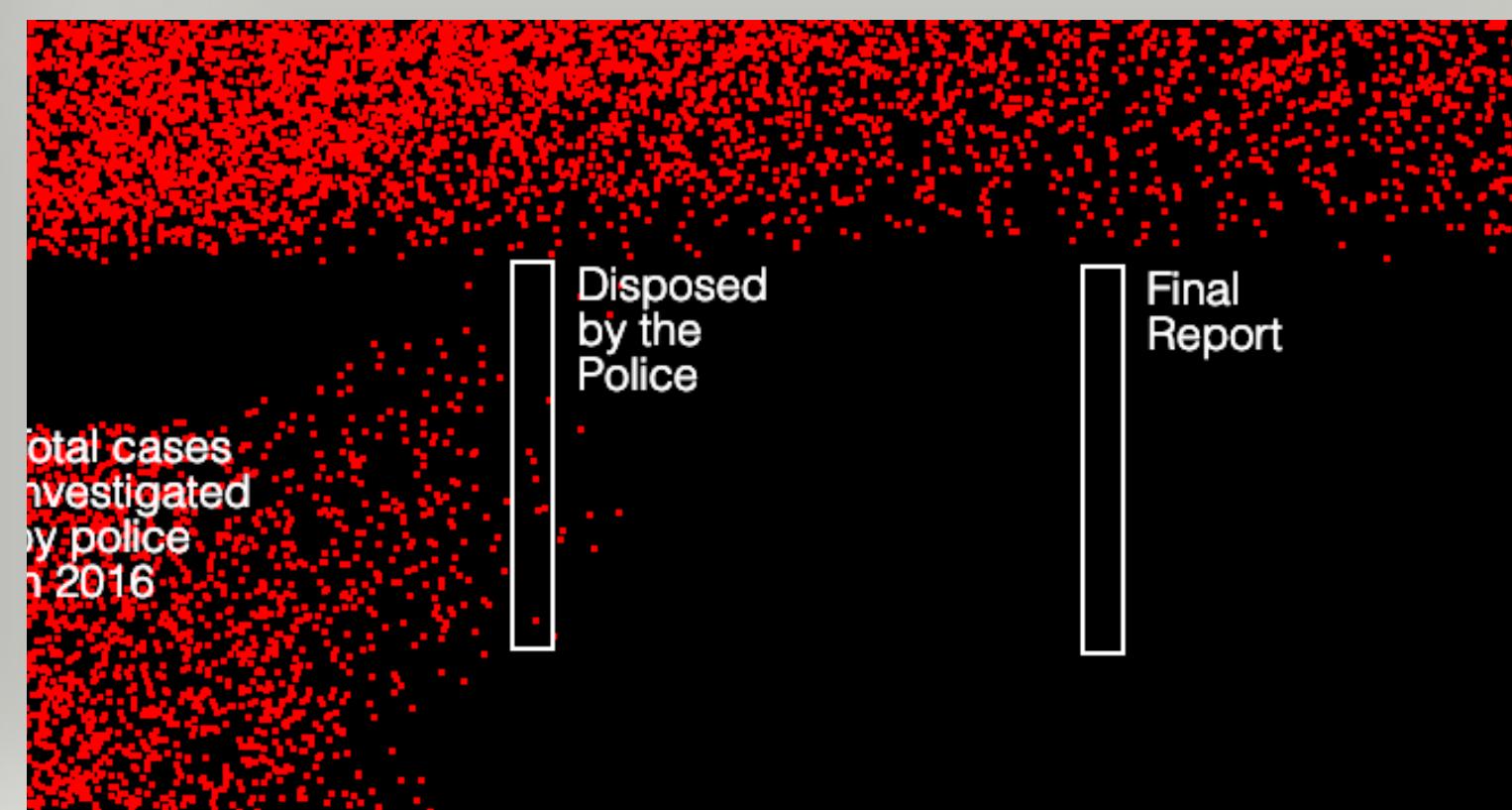
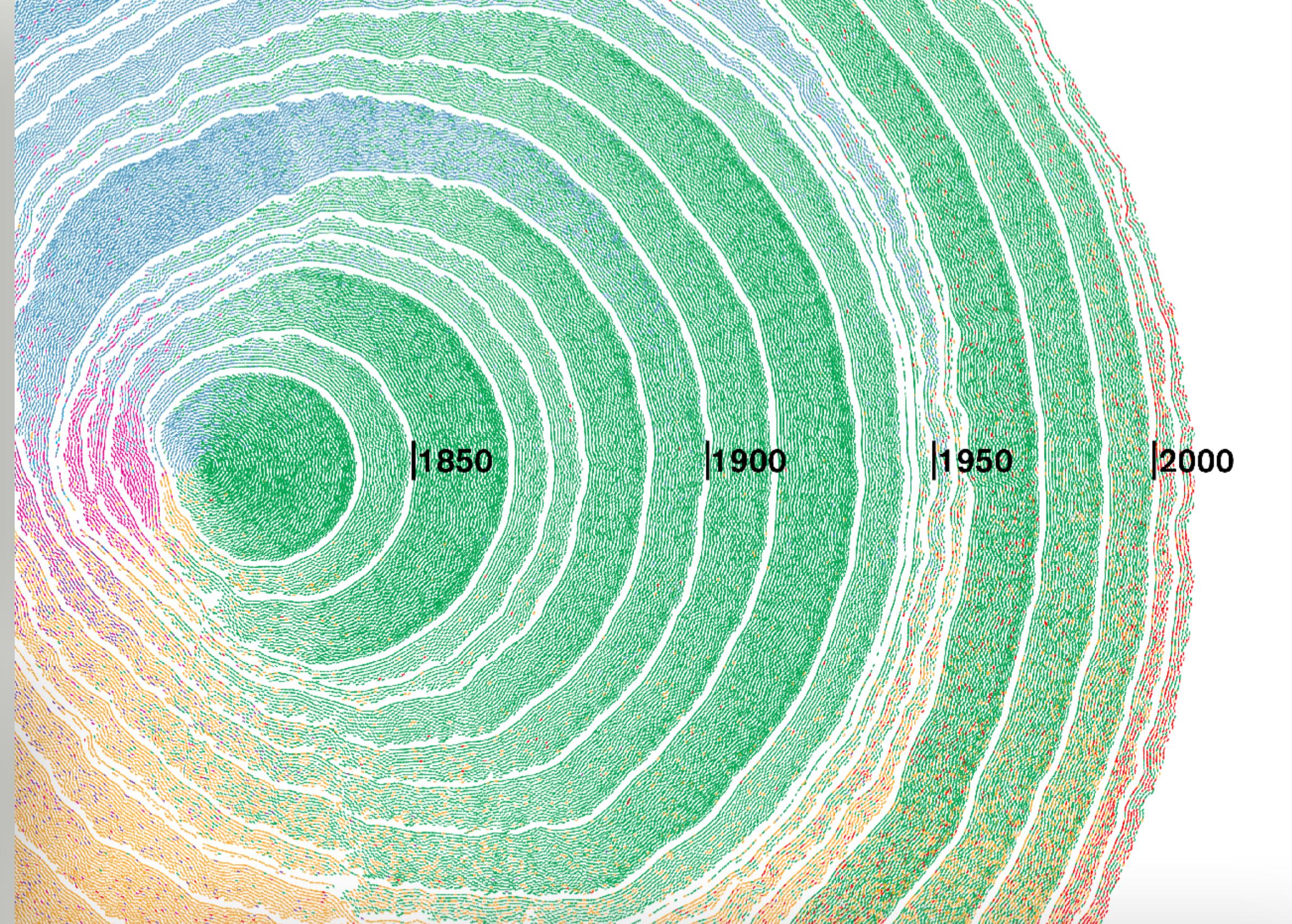
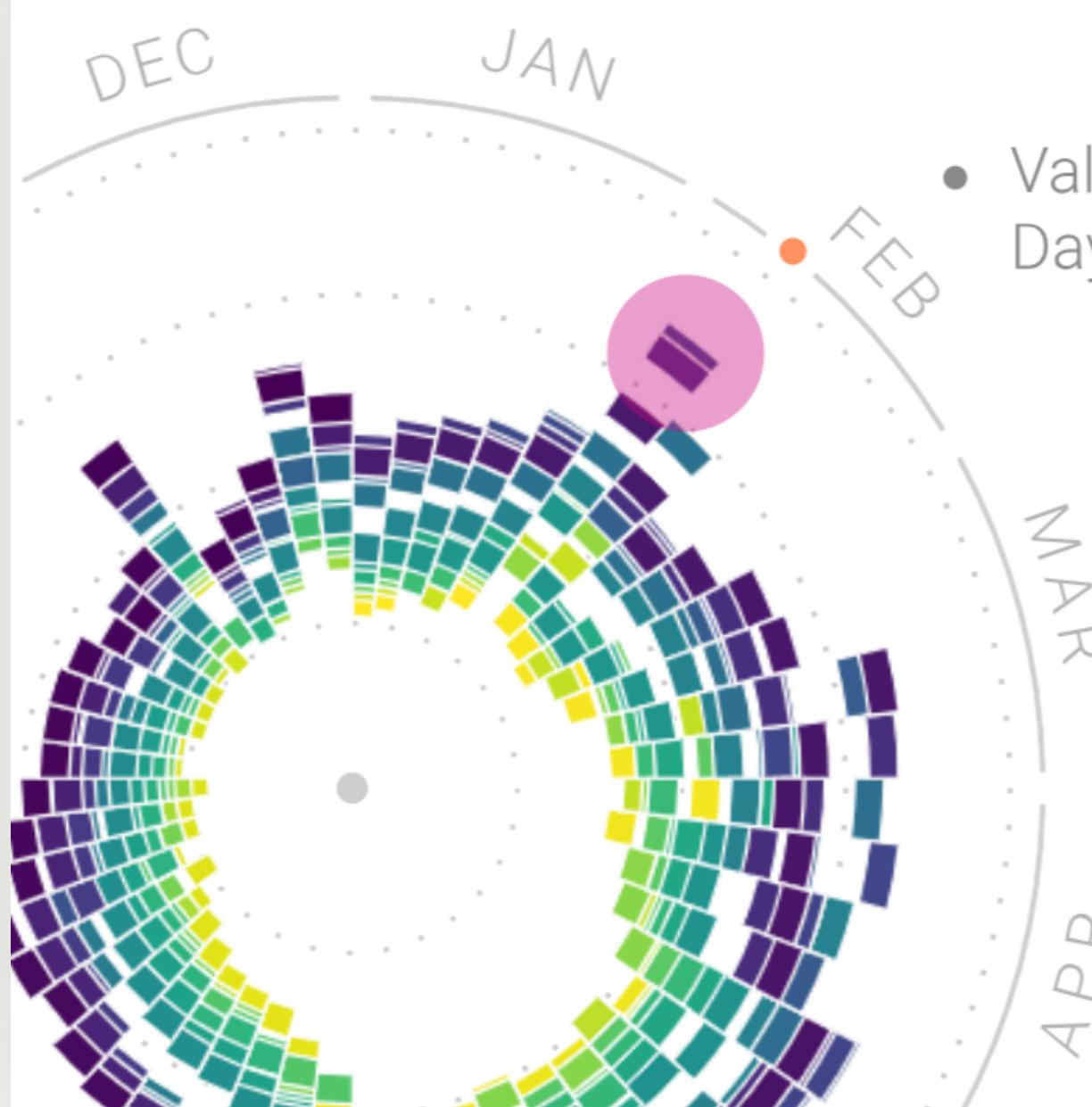
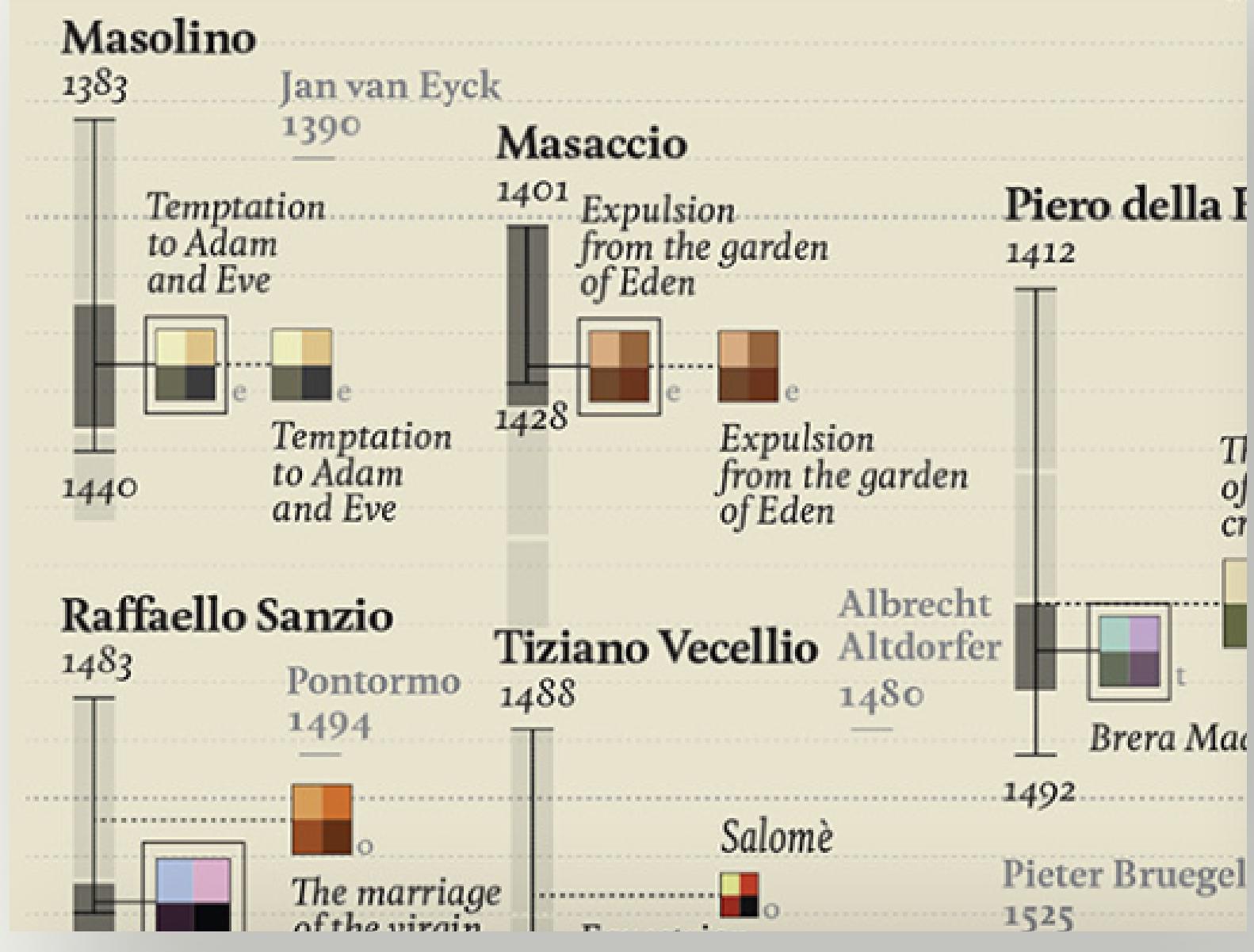
- Make text a priority.
- Decide what readers should see first. Grey everything else out.

Design can make  
things beautiful.

---

**Beauty can make things:**

- more interesting
- more engaging
- more memorable



Selected winners of  
the “Information is  
Beautiful” award,  
2015-2018

@lisacrost

Design can decrease  
the effort to understand.

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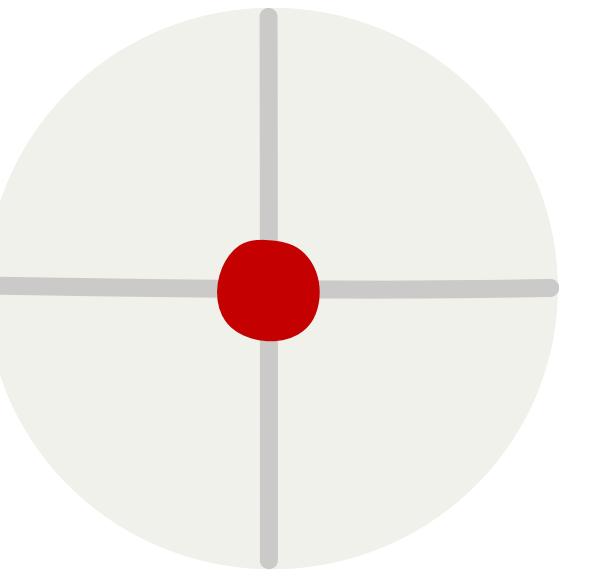
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**Beauty is transferable.**



1	<b>H</b> Hydrogen 1.00794	2	<b>He</b> Helium 4.002602
3	<b>Li</b> Lithium 6.941	4	<b>Be</b> Beryllium 9.012182
11	<b>Na</b> Sodium 22.98976928	12	<b>Mg</b> Magnesium 24.3050
19	<b>K</b> Potassium 39.0983	20	<b>Ca</b> Calcium 40.078
21	<b>Sc</b> Scandium 44.955912	22	<b>Ti</b> Titanium 47.867
23	<b>V</b> Vanadium 50.9415	24	<b>Cr</b> Chromium 51.9961
25	<b>Mn</b> Manganese 54.938045	26	<b>Fe</b> Iron 55.845
27	<b>Co</b> Cobalt 58.933195	28	<b>Ni</b> Nickel 58.6934
29	<b>Cu</b> Copper 63.546	30	<b>Zn</b> Zinc 65.38
31	<b>Ga</b> Gallium 69.723	32	<b>Ge</b> Germanium 72.64
33	<b>As</b> Arsenic 74.92160	34	<b>Se</b> Selenium 78.96
35	<b>Br</b> Bromine 79.904	36	<b>Kr</b> Krypton 83.798
37	<b>Rb</b> Rubidium 85.4678	38	<b>Sr</b> Strontium 87.62
39	<b>Y</b> Yttrium 88.90585	40	<b>Zr</b> Zirconium 91.224
41	<b>Nb</b> Niobium 92.90638	42	<b>Mo</b> Molybdenum 95.96
43	<b>Tc</b> Technetium (97.9072)	44	<b>Ru</b> Ruthenium 101.07
45	<b>Rh</b> Rhodium 102.90550	46	<b>Pd</b> Palladium 106.42
47	<b>Ag</b> Silver 107.8682	48	<b>Cd</b> Cadmium 112.411
49	<b>In</b> Indium 114.818	50	<b>Sn</b> Tin 118.710
51	<b>Sb</b> Antimony 121.760	52	<b>Te</b> Tellurium 127.60
53	<b>I</b> Iodine 126.90447	54	<b>Xe</b> Xenon 131.293
55	<b>Cs</b> Cesium 132.9054519	56	<b>Ba</b> Barium 137.327
57-71	<b>La-Lu</b> Lanthanides (132.9054519 - 144.242)	72	<b>Ta</b> Tantalum 180.94788
73	<b>W</b> Tungsten 183.84	74	<b>Re</b> Rhenium 186.207
75	<b>Os</b> Osmium 190.23	76	<b>Ir</b> Iridium 192.217
77	<b>Pt</b> Platinum 195.084	78	<b>Au</b> Gold 196.96569
79	<b>Hg</b> Mercury 200.59	80	<b>Tl</b> Thallium 204.3833
81	<b>Pb</b> Lead 207.2	82	<b>Bi</b> Bismuth 208.98040
83	<b>Po</b> Polonium (208.9824)	84	<b>At</b> Astatine (209.9871)
85	<b>Rn</b> Radon (222.0176)	86	
87	<b>Fr</b> Francium (223)	88	<b>Ra</b> Radium (226)
89-103	<b>Ac-Lr</b> Actinides (227 - 258)	104	<b>Rf</b> Rutherfordium (261)
105	<b>Db</b> Dubnium (262)	106	<b>Sg</b> Seaborgium (266)
107	<b>Bh</b> Bohrium (264)	108	<b>Hs</b> Hassium (277)
109	<b>Mt</b> Meitnerium (268)	110	<b>Ds</b> Darmstadtium (271)
111	<b>Rg</b> Roentgenium (272)	112	<b>Cn</b> Copernicium (285)
113	<b>Uut</b> Ununtrium (284)	114	<b>Fl</b> Flerovium (289)
115	<b>Uup</b> Ununpentium (288)	116	<b>Lv</b> Livermorium (292)
117	<b>Uus</b> Ununseptium (294)	118	<b>Uuo</b> Ununoctium (294)
57	<b>La</b> Lanthanum 138.90547	58	<b>Ce</b> Cerium 140.116
59	<b>Pr</b> Praseodymium 140.90765	60	<b>Nd</b> Neodymium 144.242
61	<b>Pm</b> Promethium (145)	62	<b>Sm</b> Samarium 150.36
63	<b>Eu</b> Europium 151.964	64	<b>Gd</b> Gadolinium 157.25
65	<b>Tb</b> Terbium 158.92535	66	<b>Dy</b> Dysprosium 162.5
67	<b>Ho</b> Holmium 164.93032	68	<b>Er</b> Erbium 167.259
69	<b>Tm</b> Thulium 168.93421	70	<b>Yb</b> Ytterbium 173.054
71	<b>Lu</b> Lutetium 174.9668		
89	<b>Ac</b> Actinium (227)	90	<b>Th</b> Thorium 232.03806
91	<b>Pa</b> Protactinium 231.03588	92	<b>U</b> Uranium 238.02891
93	<b>Np</b> Neptunium (237)	94	<b>Pu</b> Plutonium (244)
95	<b>Am</b> Americium (243)	96	<b>Cm</b> Curium (247)
97	<b>Bk</b> Berkelium (247)	98	<b>Cf</b> Californium (251)
99	<b>Es</b> Einsteinium (252)	100	<b>Fm</b> Fermium (257)
101	<b>Md</b> Mendelevium (258)	102	<b>No</b> Nobelium (259)
103	<b>Lr</b> Lawrencium (262)		

The Periodic Table

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Design can decrease  
the effort to understand.

---

- Make text a priority.
- Decide what readers should see first. Grey everything else out.

Design can make  
things beautiful.

---

- Beauty can make things:
- more interesting
  - more engaging
  - more memorable

Beauty is transferable.  
**Beautiful things seem simpler.**

Design can decrease  
the effort to understand.

---

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---

Beauty can make things:

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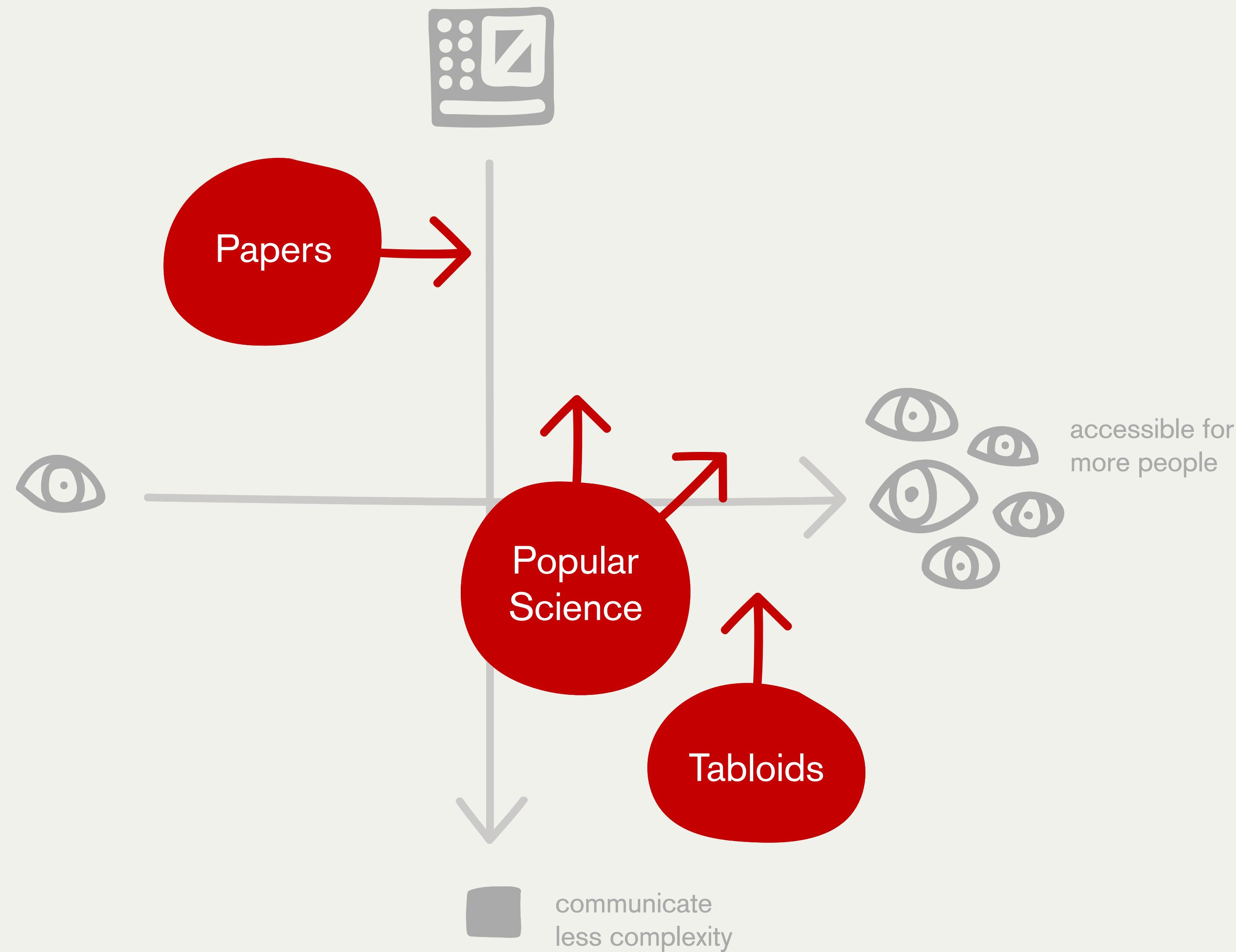
Beauty is transferable.  
Beautiful things **seem** simpler.

Design can decrease  
the effort to understand.

Design can make  
things beautiful.

---

Design can make  
things feel simpler.





This talk.

Lisa Charlotte Rost

[lisacharlotterost.de](http://lisacharlotterost.de)  
lisacharlotterost@gmail.com

Thanks to  
Jonathan Muth  
for helping  
me make  
my ideas feel  
simpler.

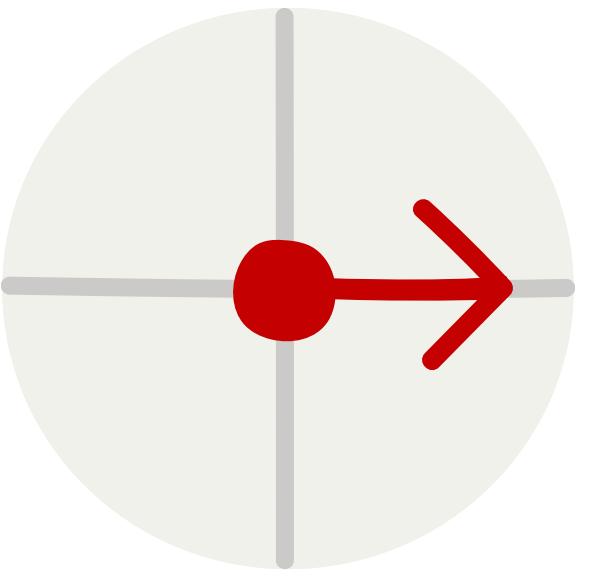
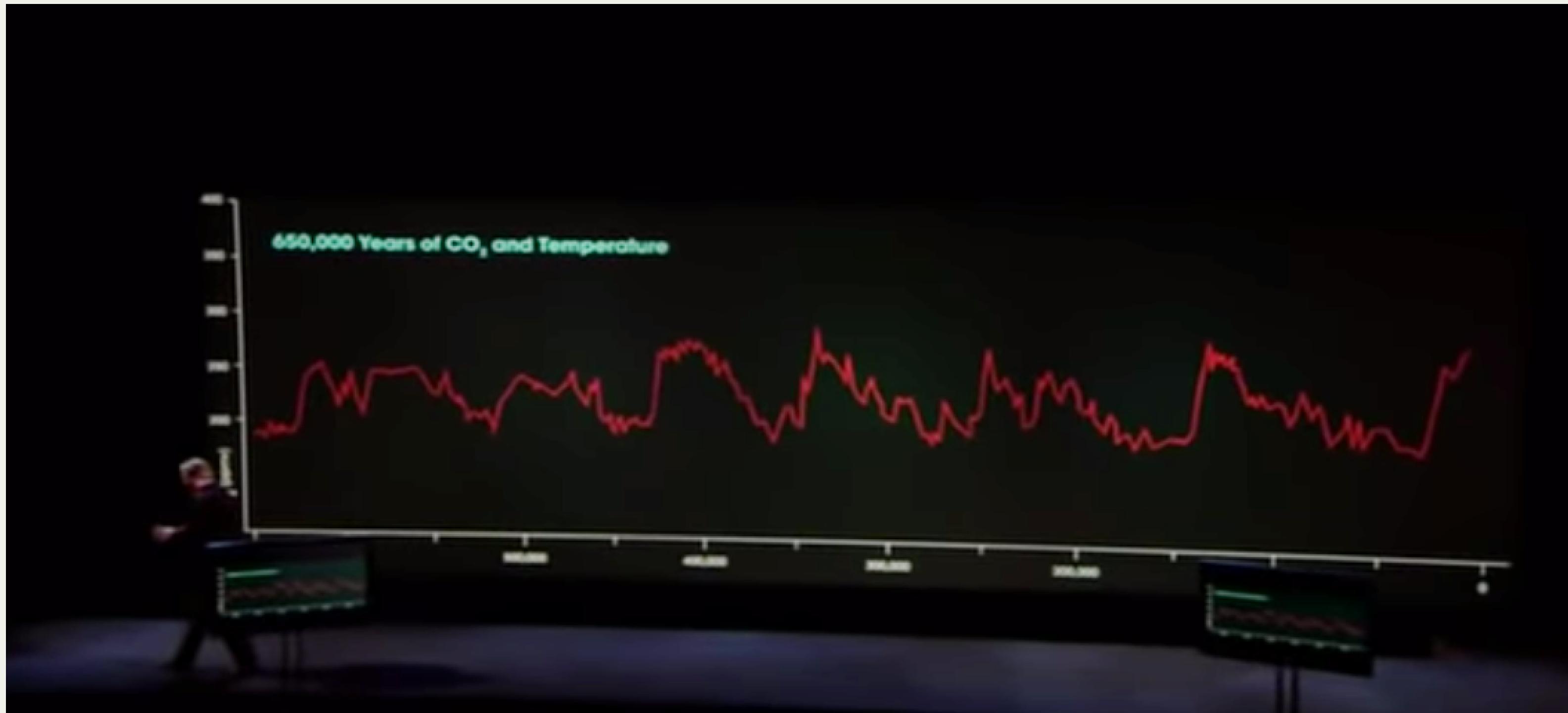
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# The power of design, no.2:

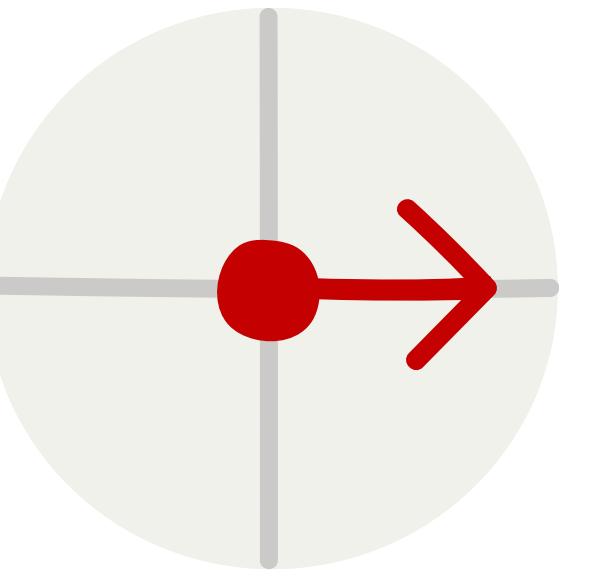
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Teach it.



"An Inconvenient  
Truth", Al Gore,  
2006

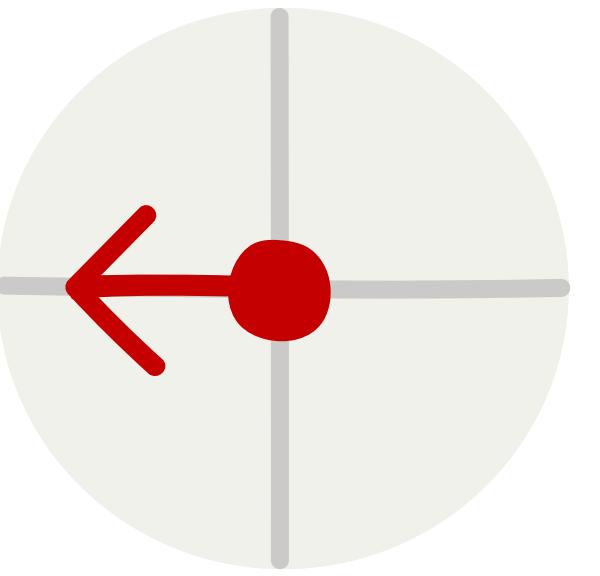
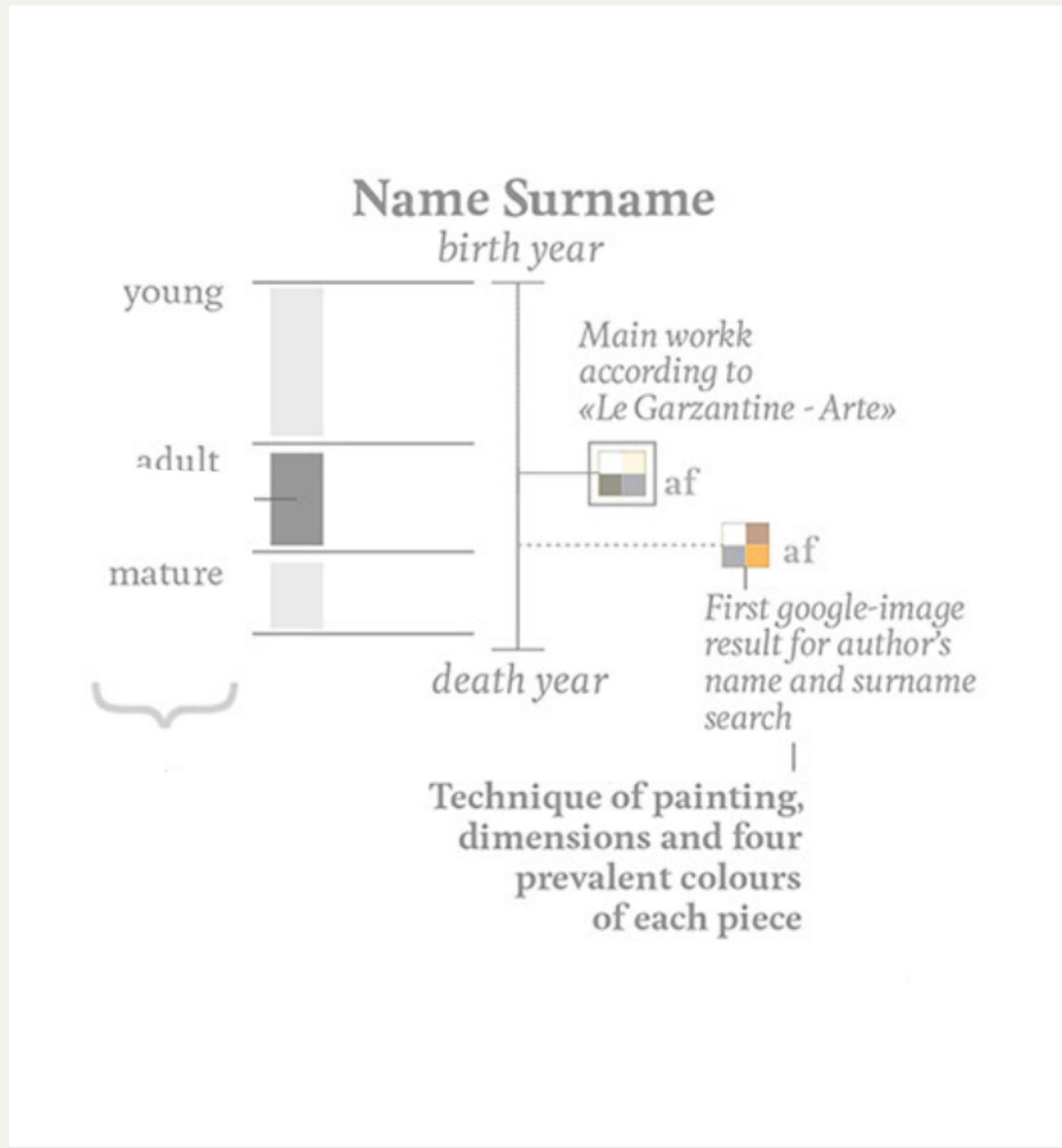
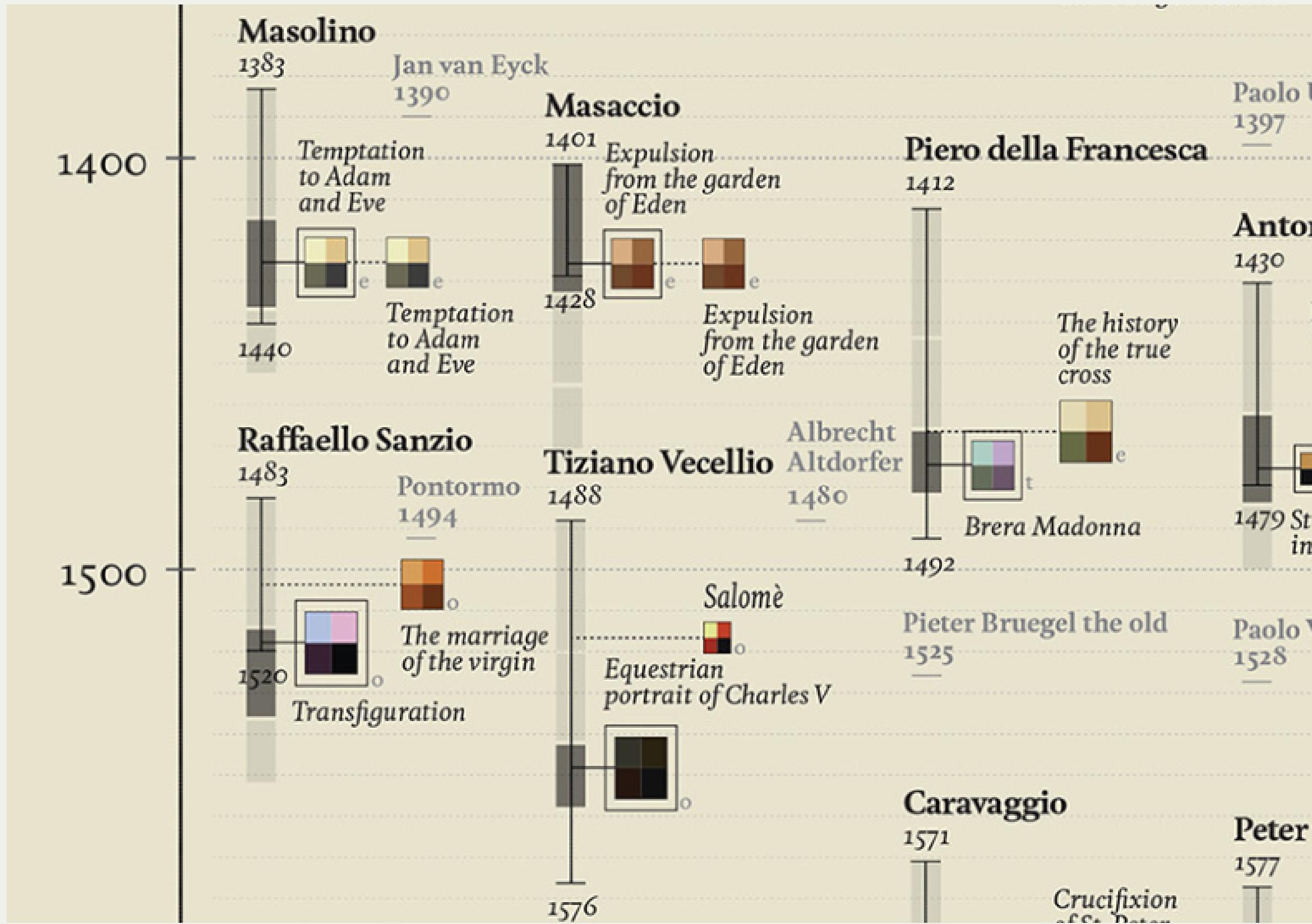
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"An Inconvenient  
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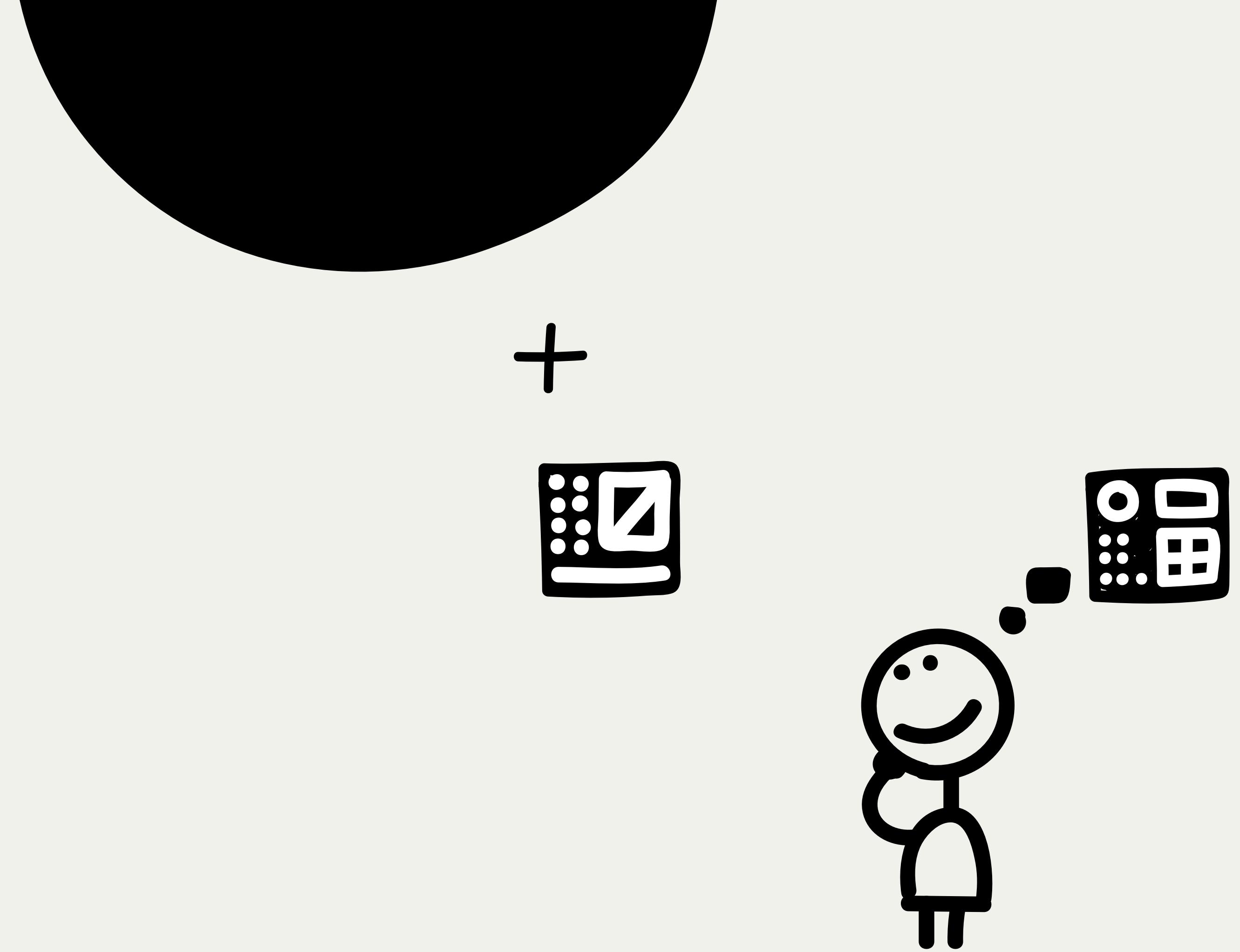


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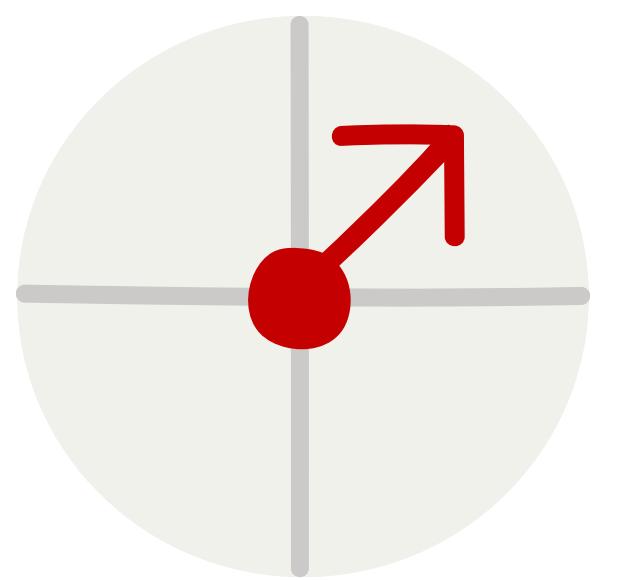
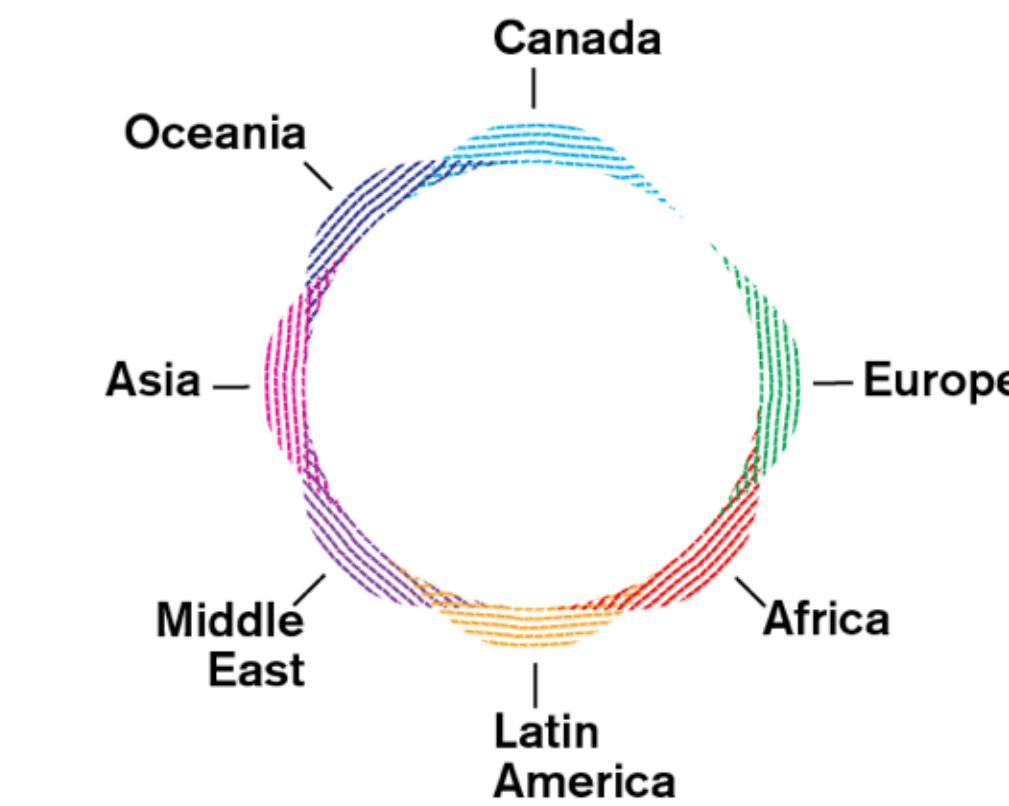
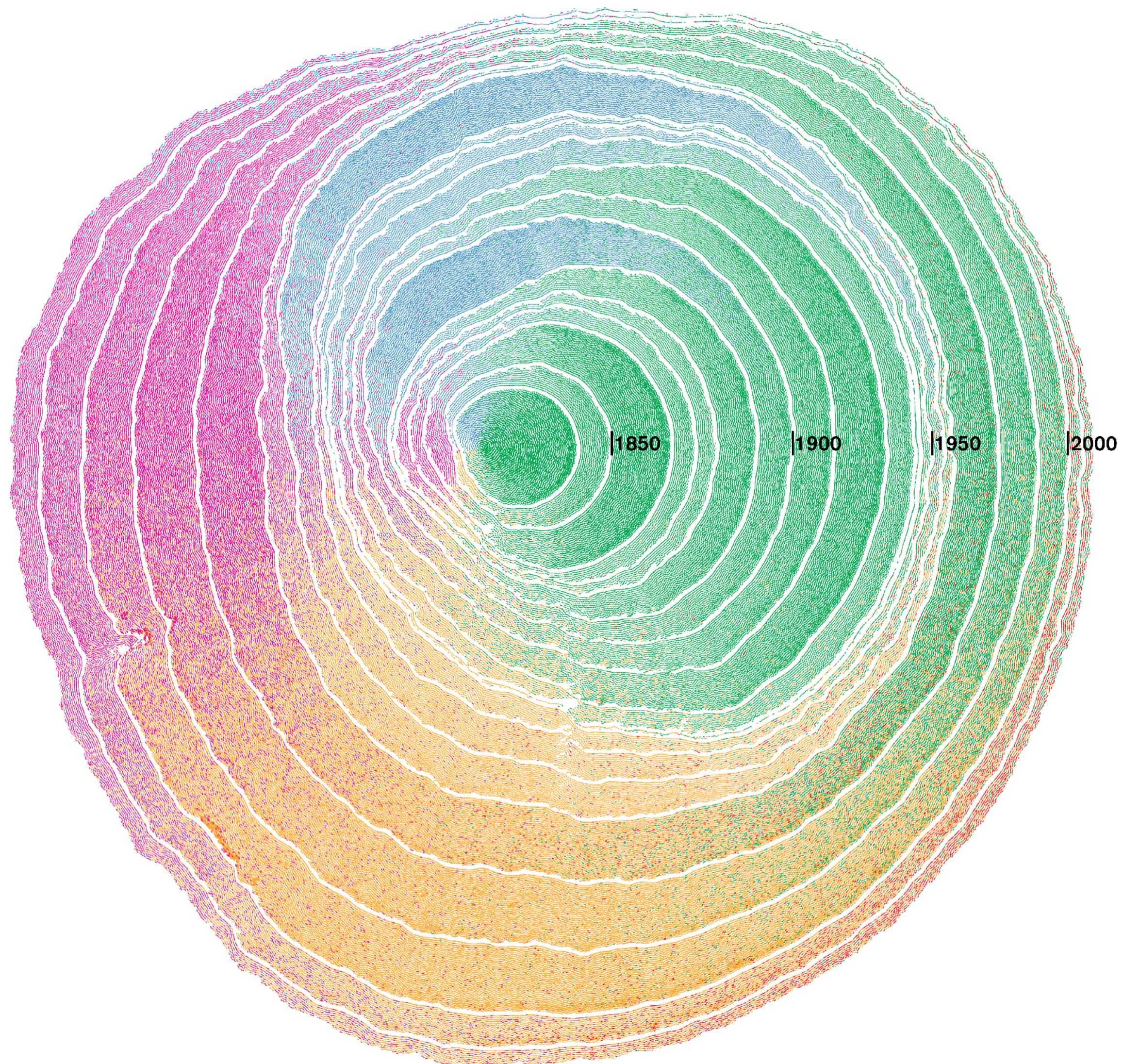


"Painters in the making", Akkurat

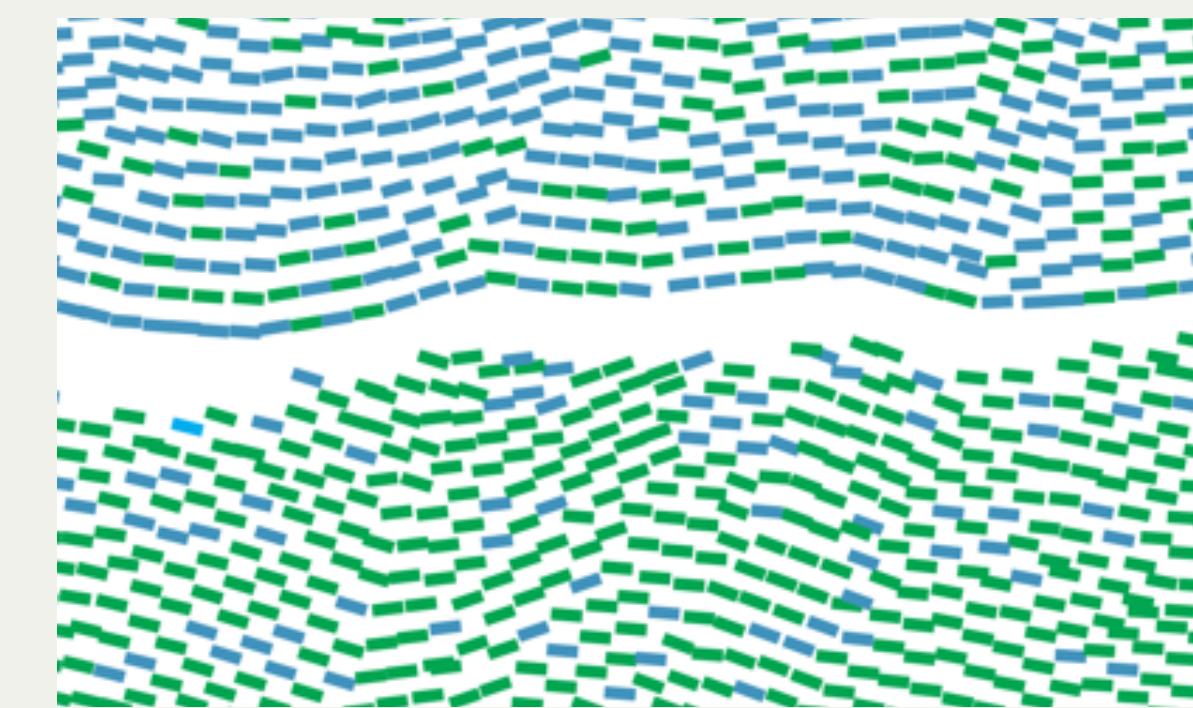
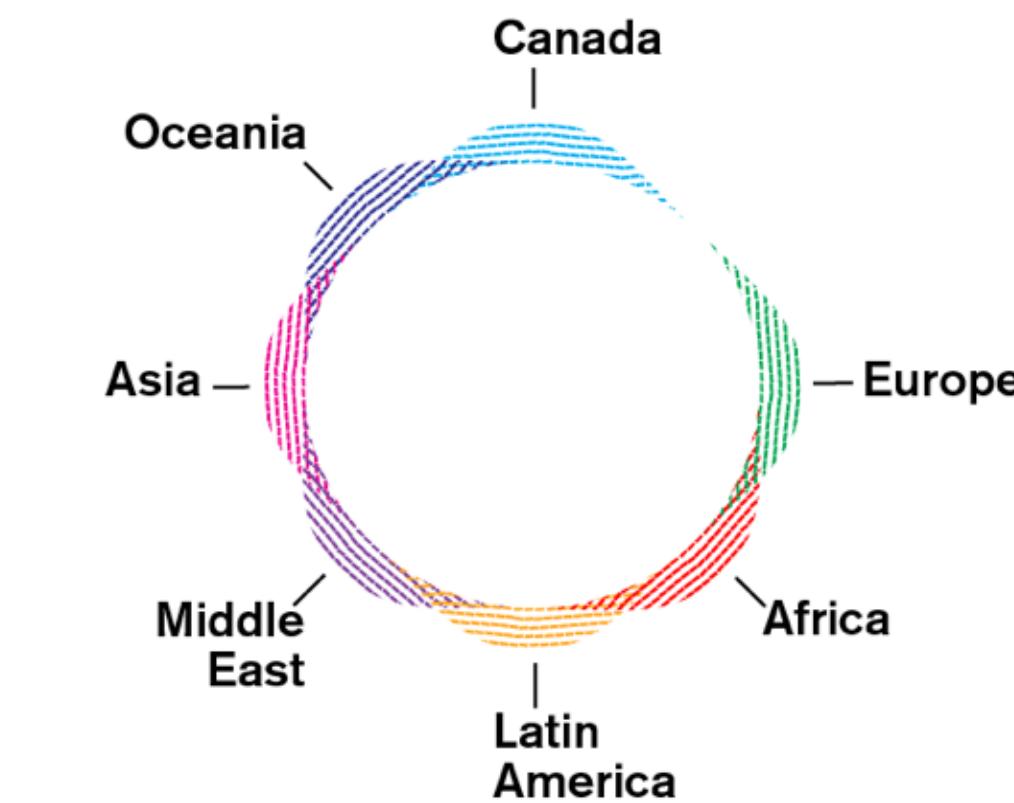
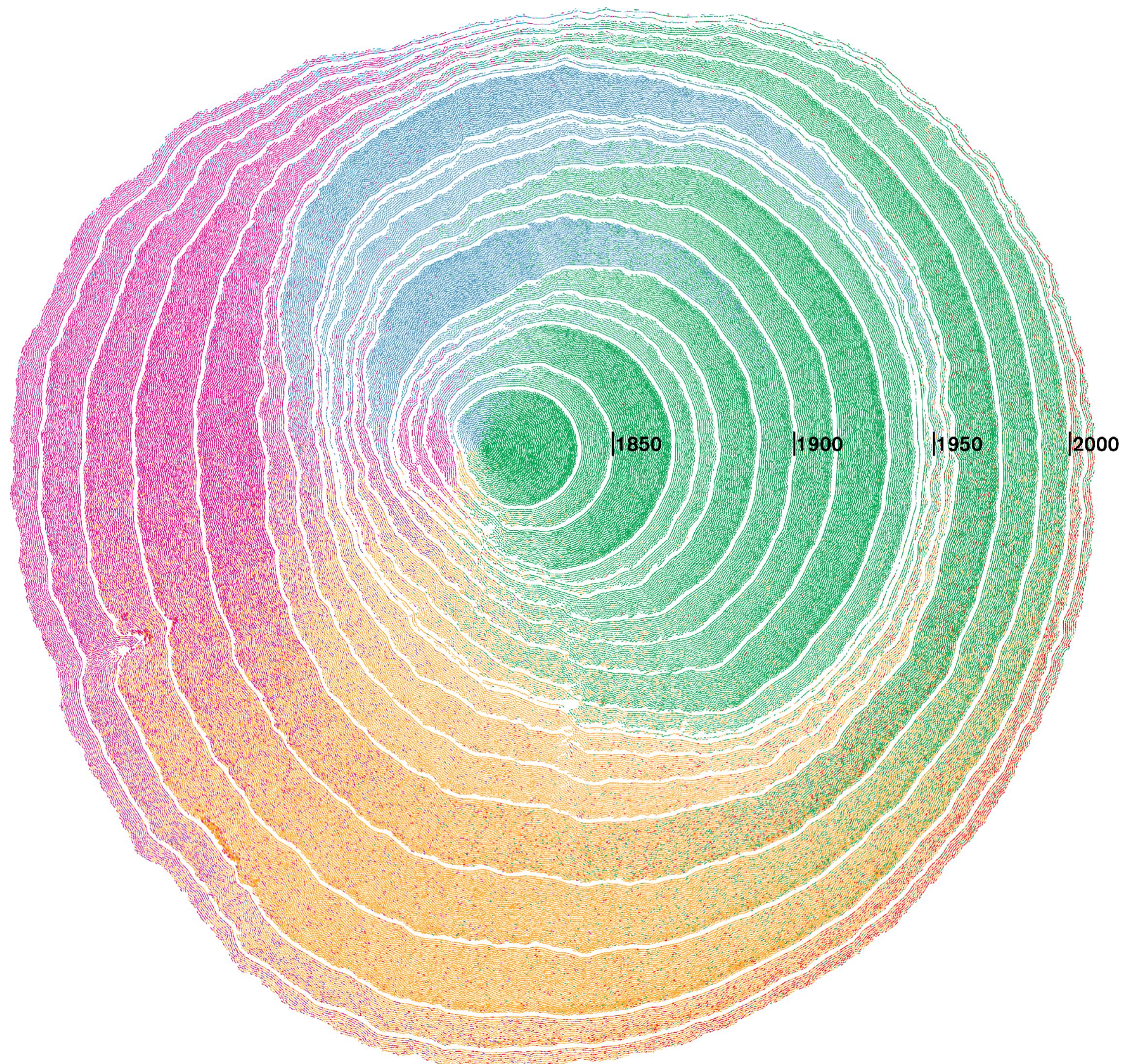
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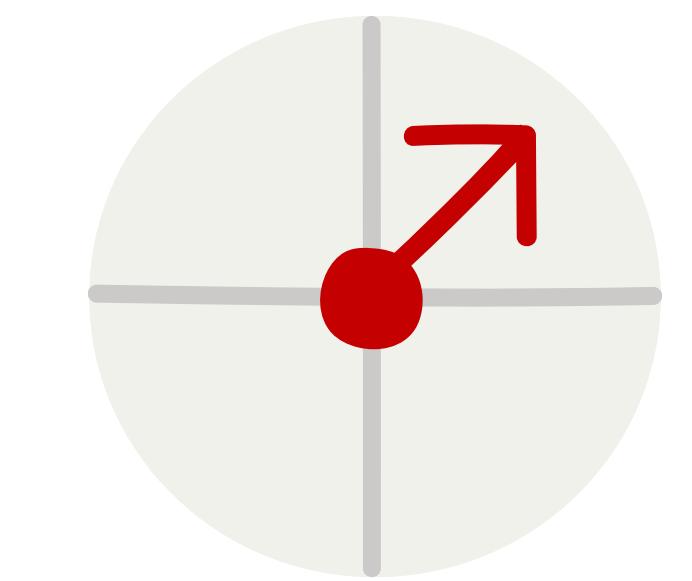
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“Simulated  
Dendrochronology  
of U.S.  
Immigration”,  
Pedro Cruz



“Simulated  
Dendrochronology  
of U.S.  
Immigration”,  
Pedro Cruz



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1 Upload Data ✓

2 Check &amp; Describe ✓

3 Visualize

4 Publish &amp; Embed

Chart type

Refine

Annotate

Design



Bar Chart



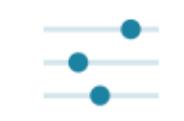
Split Bars



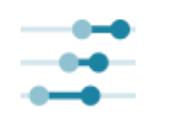
Stacked Bars



Bullet Bars



Dot Plot



Range Plot



Arrow Plot



Column Chart



Grouped Column Chart



Stacked Column Chart



Area Chart



Lines



Pie Chart



Donut Chart



Multiple Pies



Multiple Donuts



Scatter Plot



Election Donut



Short Table



Long Table

## The rise and fall of cigarette consumption

Sales of cigarettes per adult per day, in selected countries. Figures include manufactured cigarettes, as well as an estimated number of hand-rolled cigarettes, per adult (ages 15+) per day.

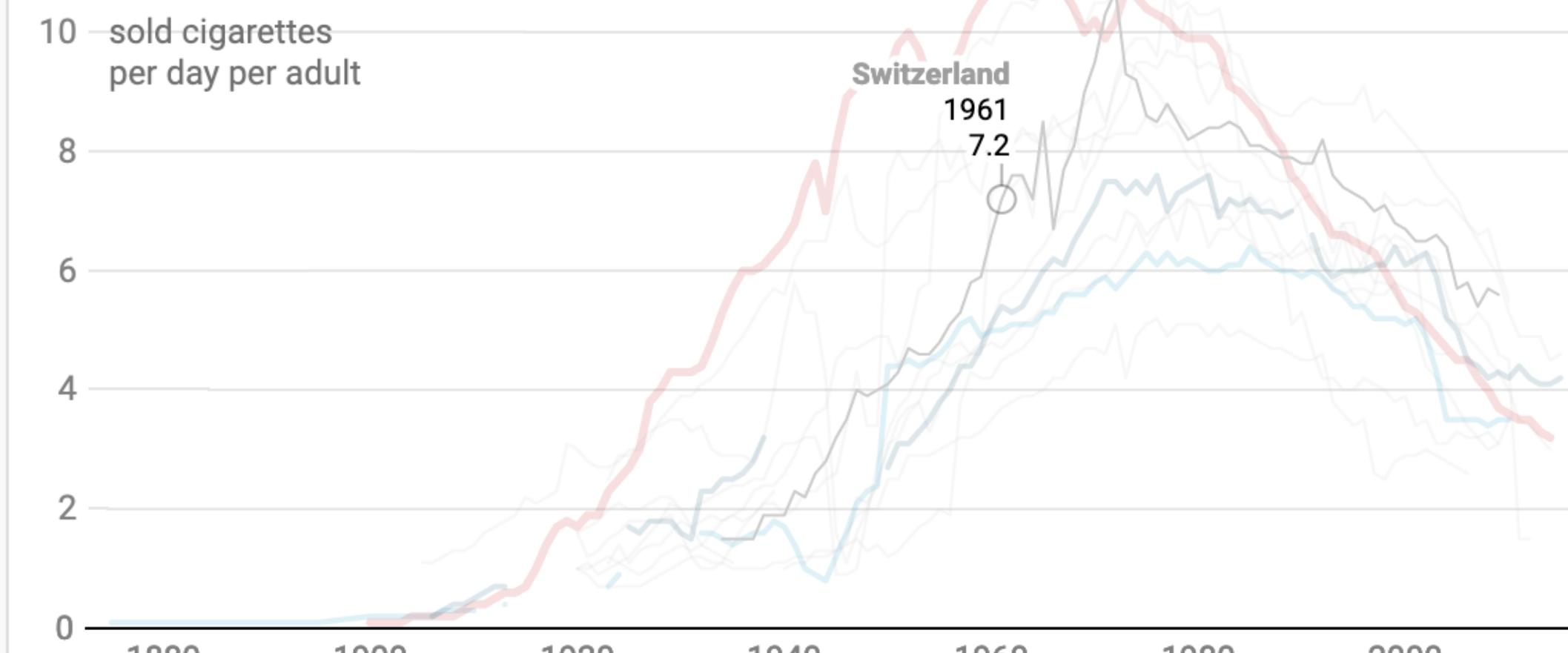
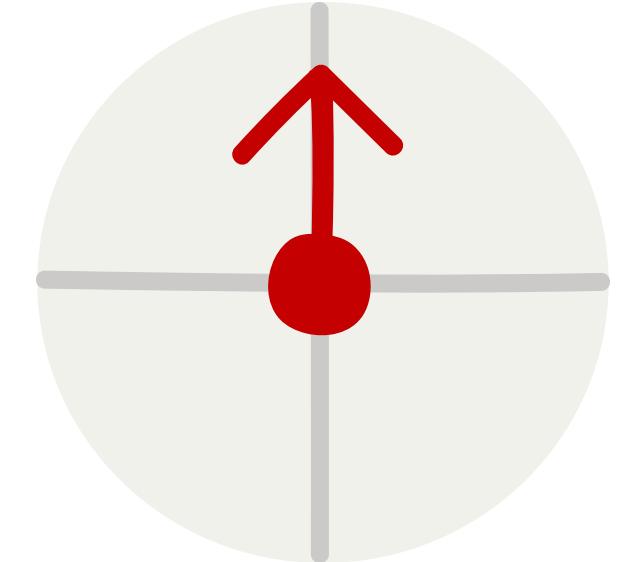
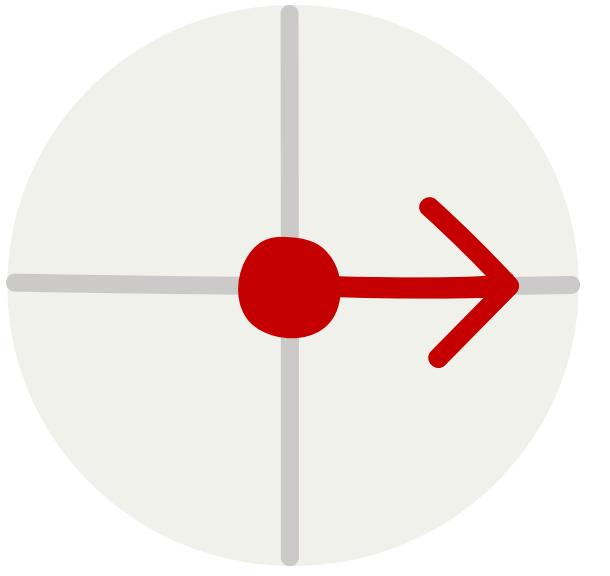


Chart: Lisa Charlotte Rost • Source: National statistics, via Our World in Data • Get the data



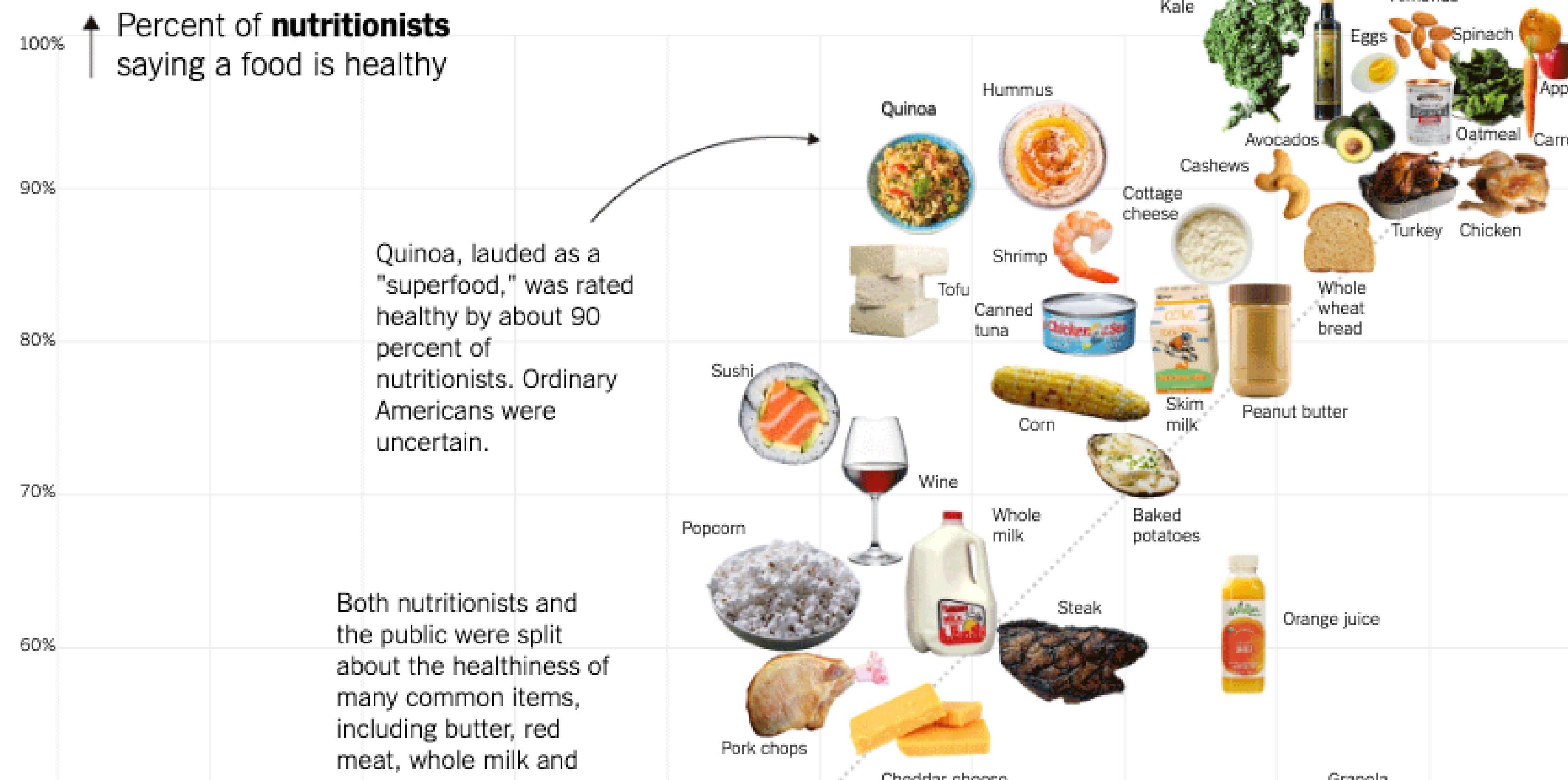


# Is Sushi ‘Healthy’? What About Granola? Where Americans and Nutritionists Disagree

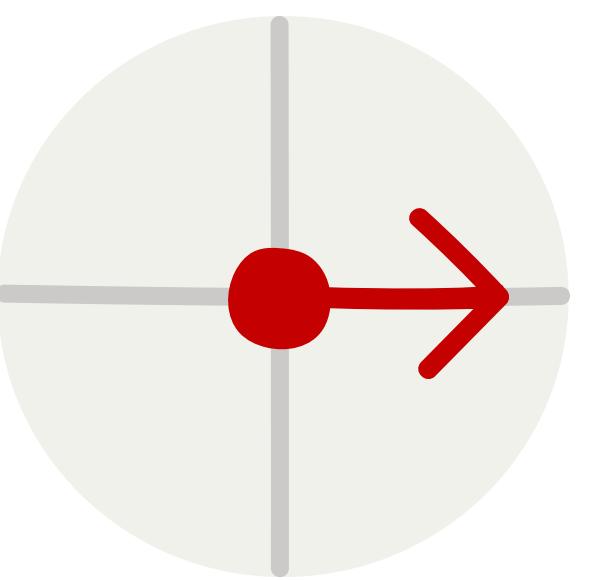
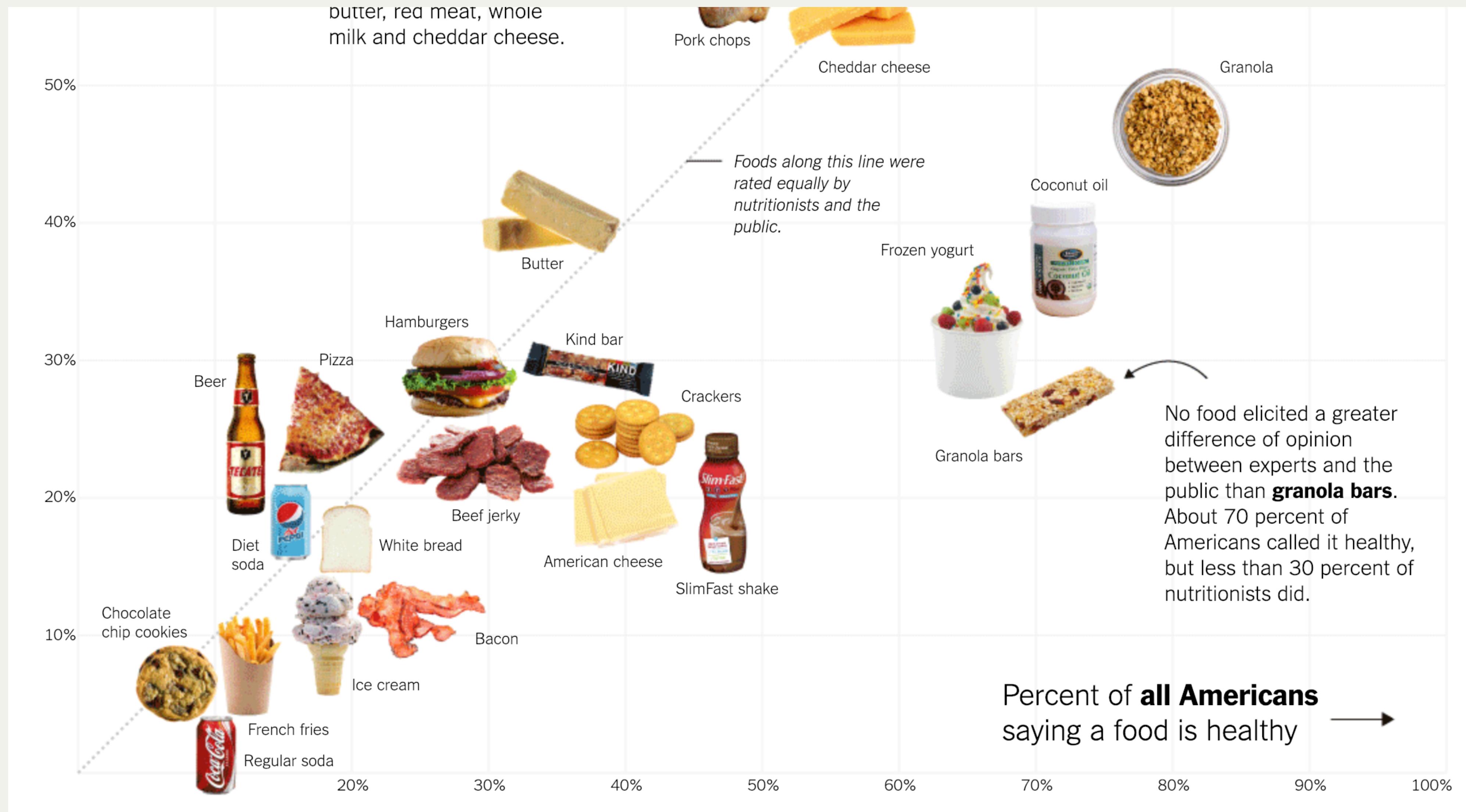
By KEVIN QUEALY and MARGOT SANGER-KATZ JULY 5, 2016

We surveyed Americans and a panel of nutrition experts about which foods they thought were good or bad for you.

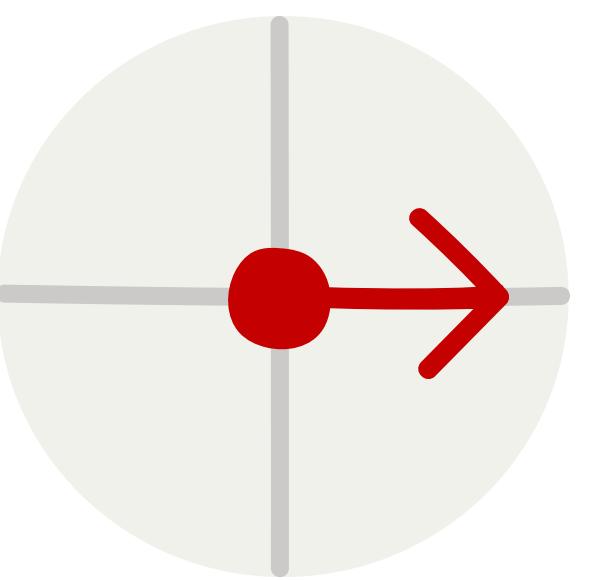
“Is Sushi ‘Healthy’? What About Granola? Where Americans and Nutritionists Disagree”, NYT, July 2016



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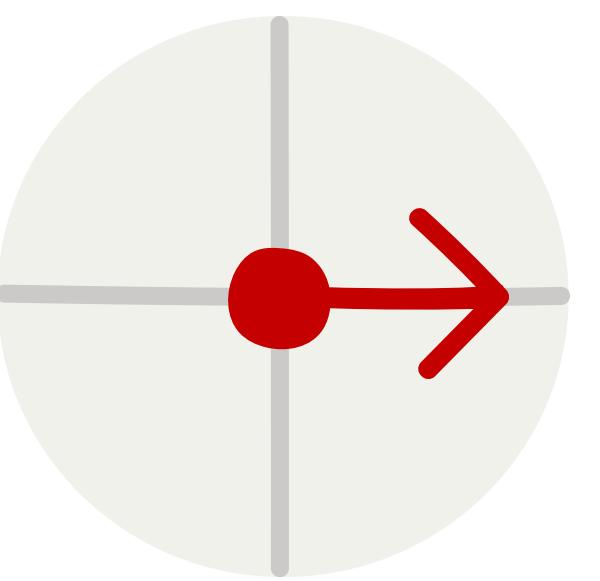
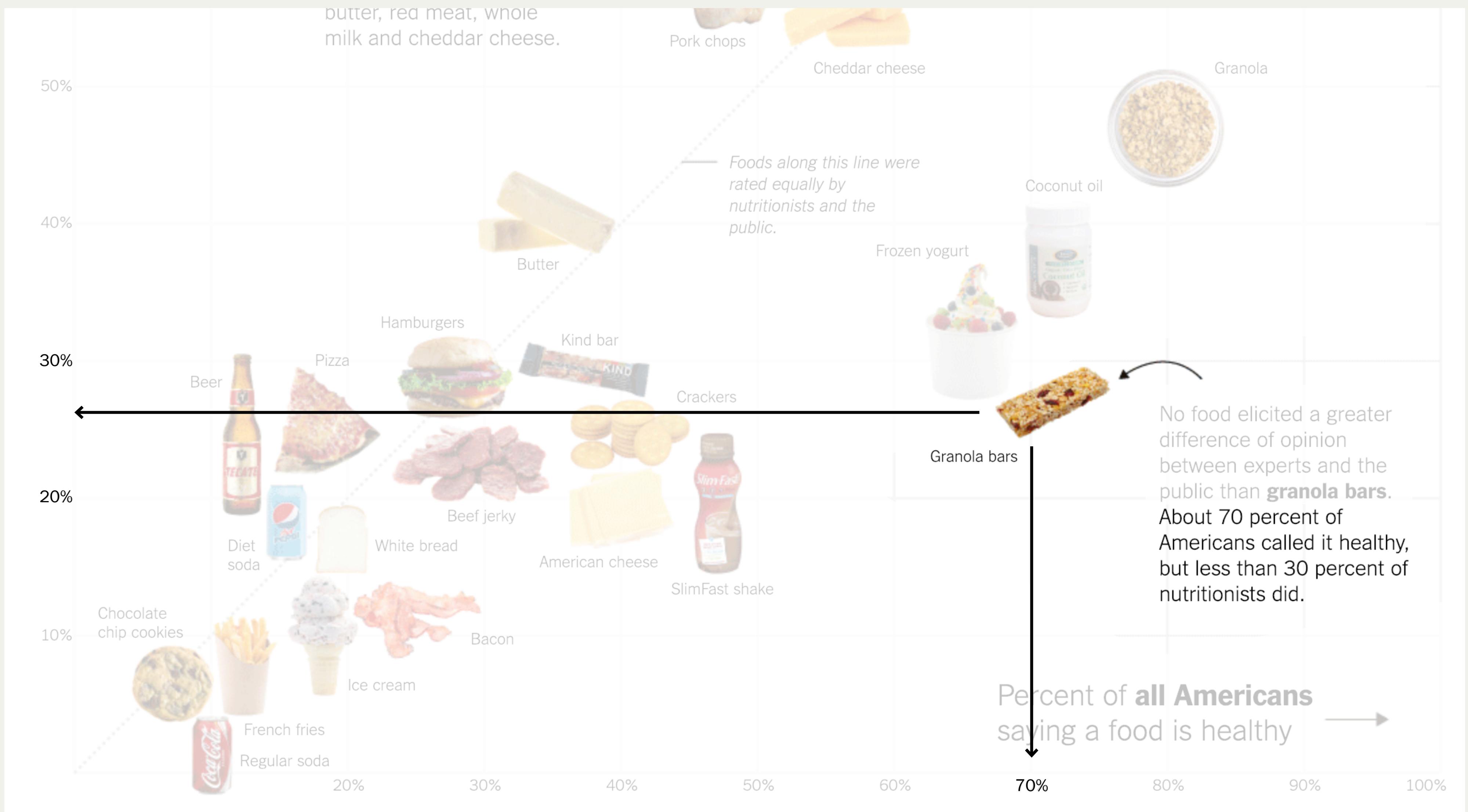


"Is Sushi 'Healthy'? What About Granola? Where Americans and Nutritionists Disagree", NYT, July 2016



**"Is Sushi 'Healthy'? What About Granola? Where Americans and Nutritionists Disagree", NYT, July 2016**

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**"Is Sushi 'Healthy'? What About Granola? Where Americans and Nutritionists Disagree", NYT, July 2016**

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