

# IDENTIFYING THE GENDER GAP THROUGH DATA VISUALIZATION

VALÈNCIA

GSMA™



VNIVERSITAT  
DE VALÈNCIA



OSLOMET



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# IDENTIFYING THE GENDER GAP THROUGH DATA VISUALIZATION

Cristina Portalés & Laya Targa

# IDENTIFYING THE GENDER GAP THROUGH DATA VISUALIZATION

1. SCHEDULE
2. ONLINE QUESTIONNAIRE – PRE
3. INTRODUCTION TO DATA VISUALIZATION (GRAPHS AND MAPS)
4. EXAMPLES OF VISUALIZING THE GENDER GAP
5. THE EU GENDER EQUALITY INDEX
6. WORKSHOP: EXPLORE THE EU GENDER EQUALITY INDEX DATA AND PROPOSE SOME VISUALIZATIONS
7. WORKSHOP: A THEMATIC MAP ON 'NOBEL PRIZE AWARDED WOMEN'
8. RESULTS AND DISCUSSION
9. ONLINE QUESTIONNAIRE – POST



# SCHEDULE

13:30 – 15:00

- Online questionnaire – pre
- Introduction to data visualization (graphs and maps)
- Examples of visualizing the gender gap
- The EU gender equality index

15:15 – 16:45

- Workshop: Explore the EU gender equality index data and propose some visualizations
- Workshop: A thematic map on 'Nobel Prize Awarded Women'
- Results and discussion
- Online questionnaire – post

# INTRODUCTION TO DATA VISUALIZATION: GRAPHS & MAPS



The following examples have been extracted from:

Claus O. Wilke. Fundamentals of Data Visualization,

<https://clauswilke.com/dataviz/index.html>

# INTRODUCTION TO DATA VISUALIZATION: GRAPHS & MAPS



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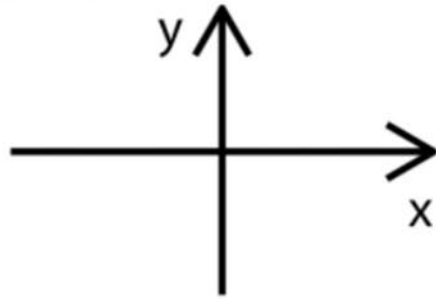
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# INTRODUCTION TO DATA VISUALIZATION: GRAPHS & MAPS

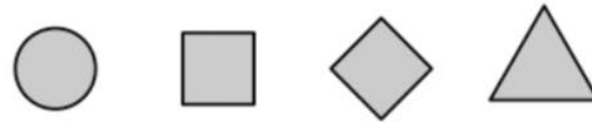


## VISUALIZING DATA: MAPPING DATA ONTO AESTHETICS

position



shape



size



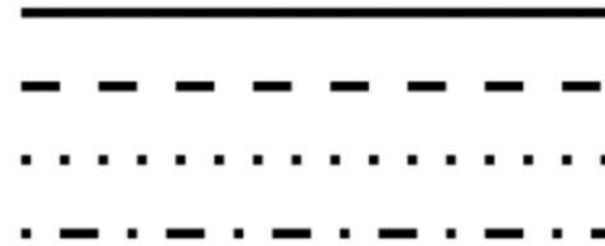
color



line width



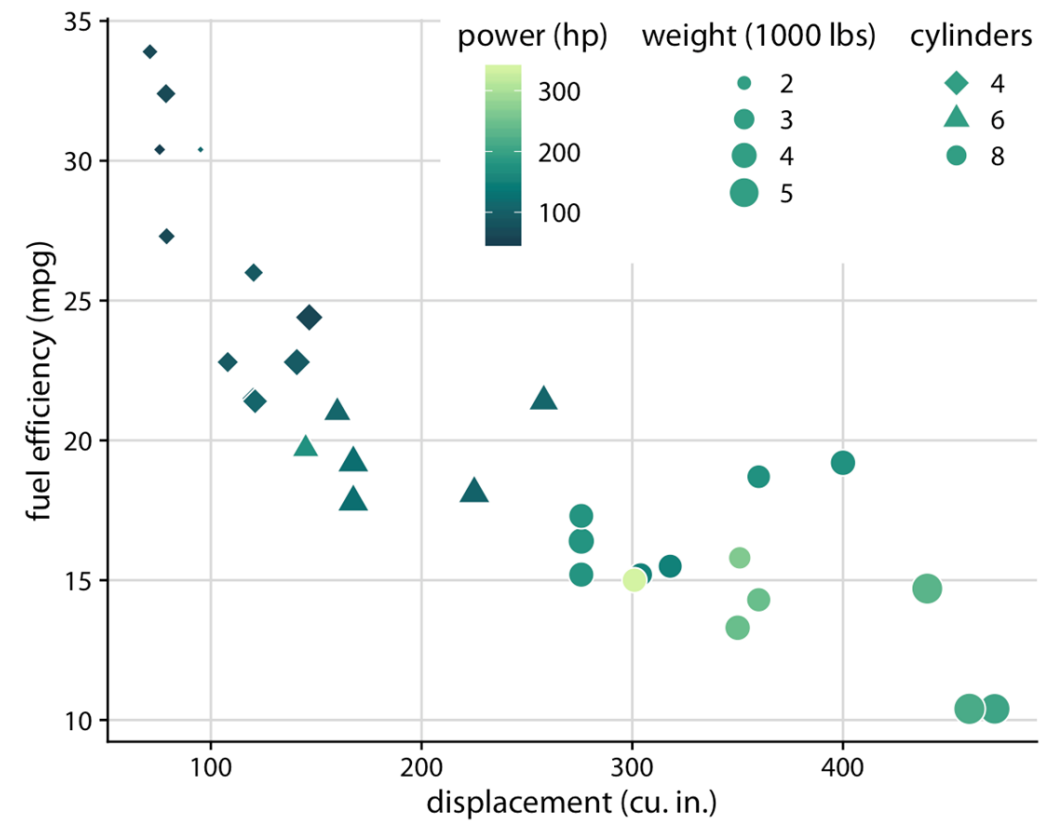
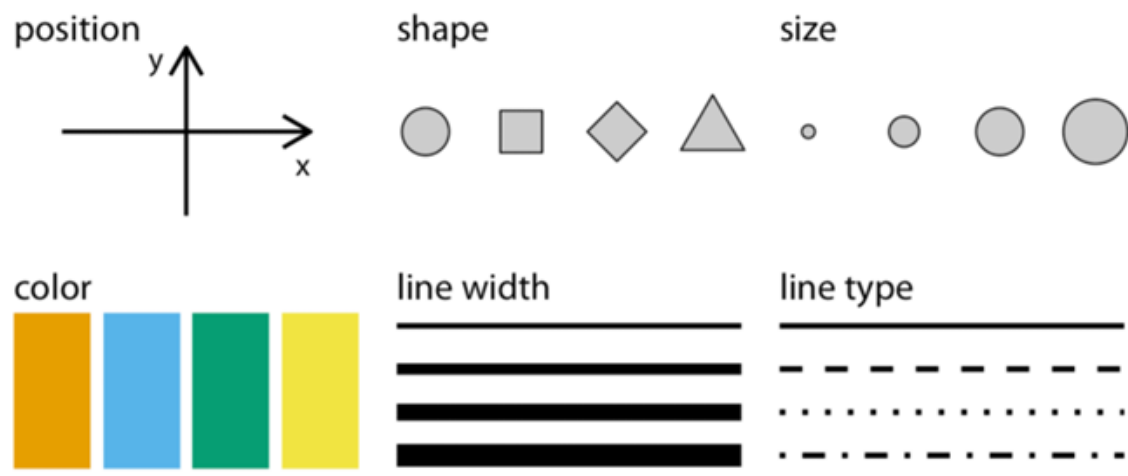
line type



# INTRODUCTION TO DATA VISUALIZATION: GRAPHS & MAPS



## VISUALIZING DATA: MAPPING DATA ONTO AESTHETICS

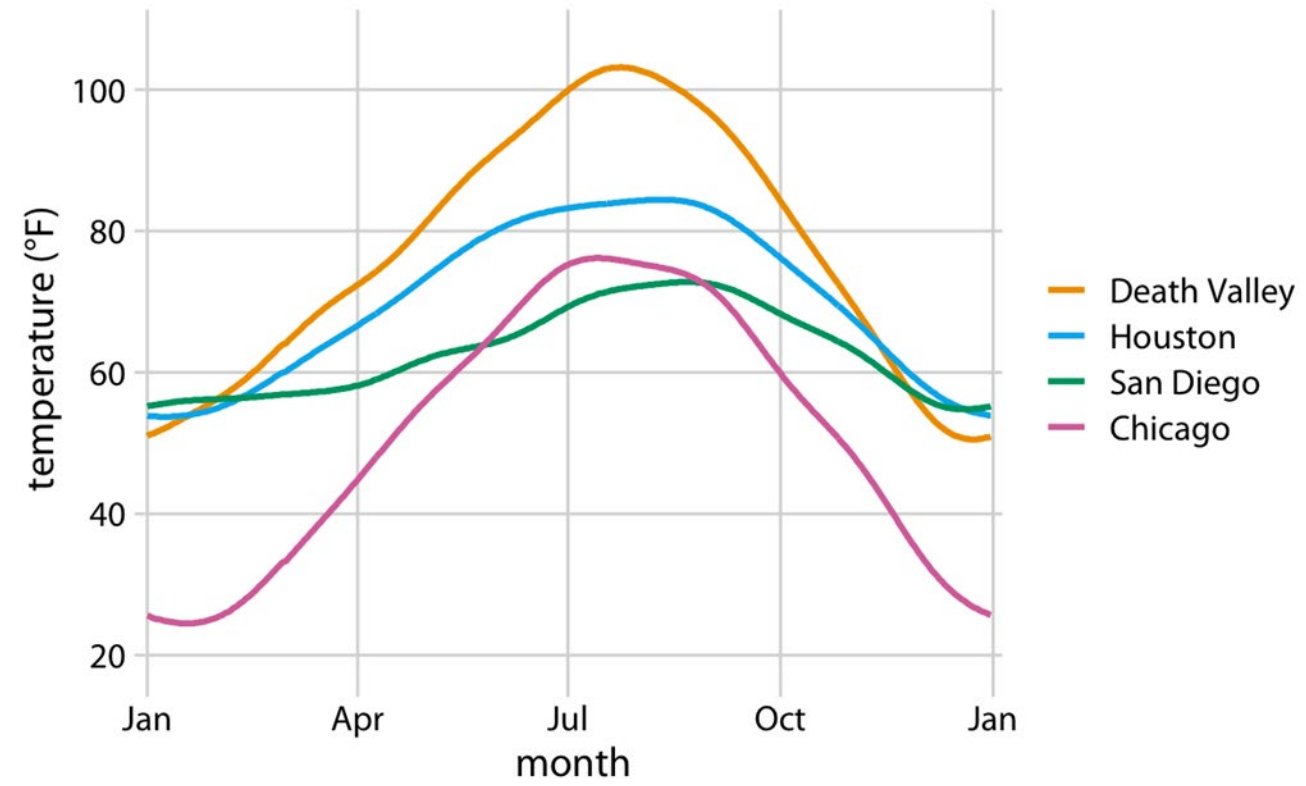
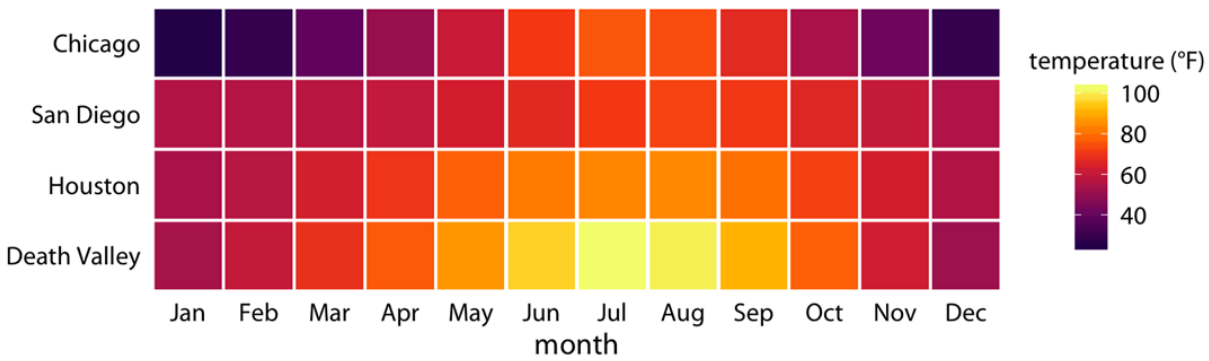




# INTRODUCTION TO DATA VISUALIZATION: GRAPHS & MAPS



## VISUALIZING DATA: MAPPING DATA ONTO AESTHETICS

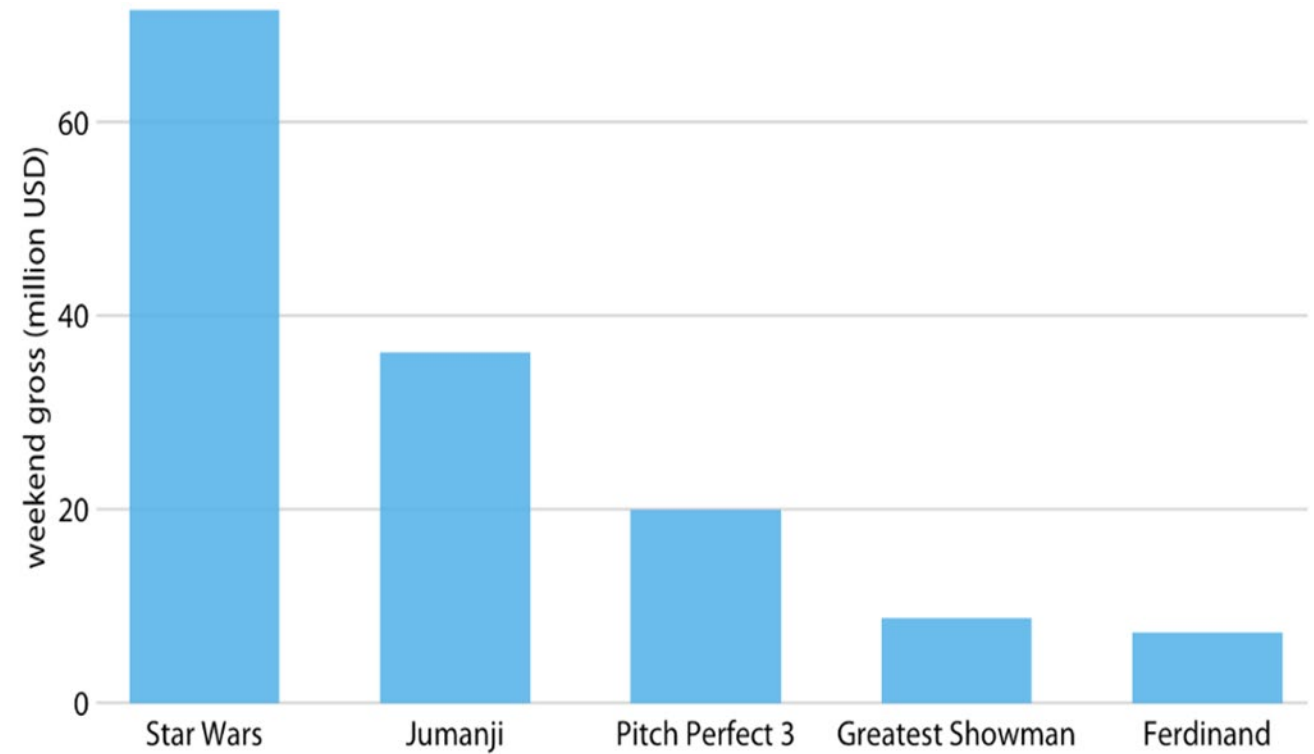


# INTRODUCTION TO DATA VISUALIZATION: GRAPHS & MAPS



## VISUALIZING AMOUNTS

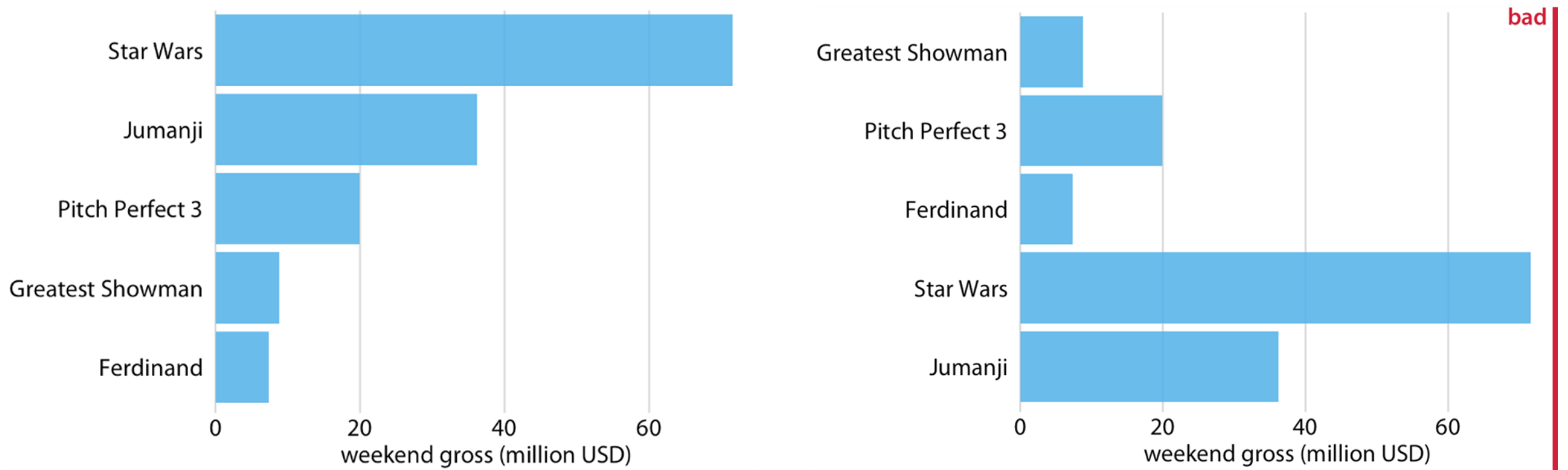
Rank	Title	Weekend gross
1	Star Wars: The Last Jedi	\$71,565,498
2	Jumanji: Welcome to the Jungle	\$36,169,328
3	Pitch Perfect 3	\$19,928,525
4	The Greatest Showman	\$8,805,843
5	Ferdinand	\$7,316,746



# INTRODUCTION TO DATA VISUALIZATION: GRAPHS & MAPS



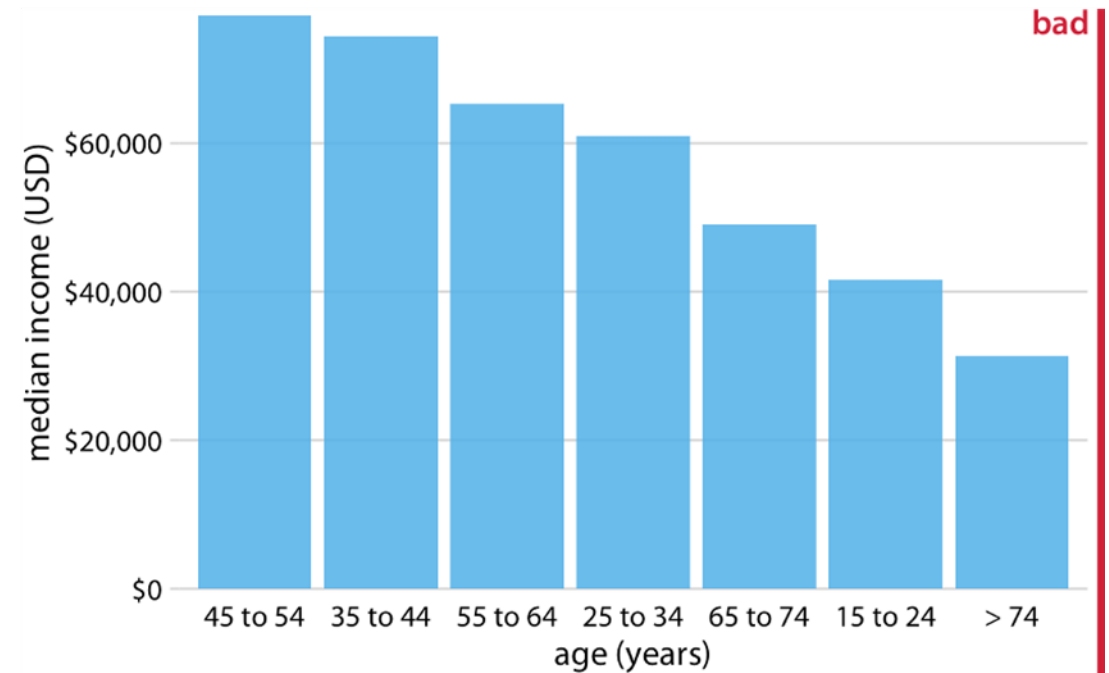
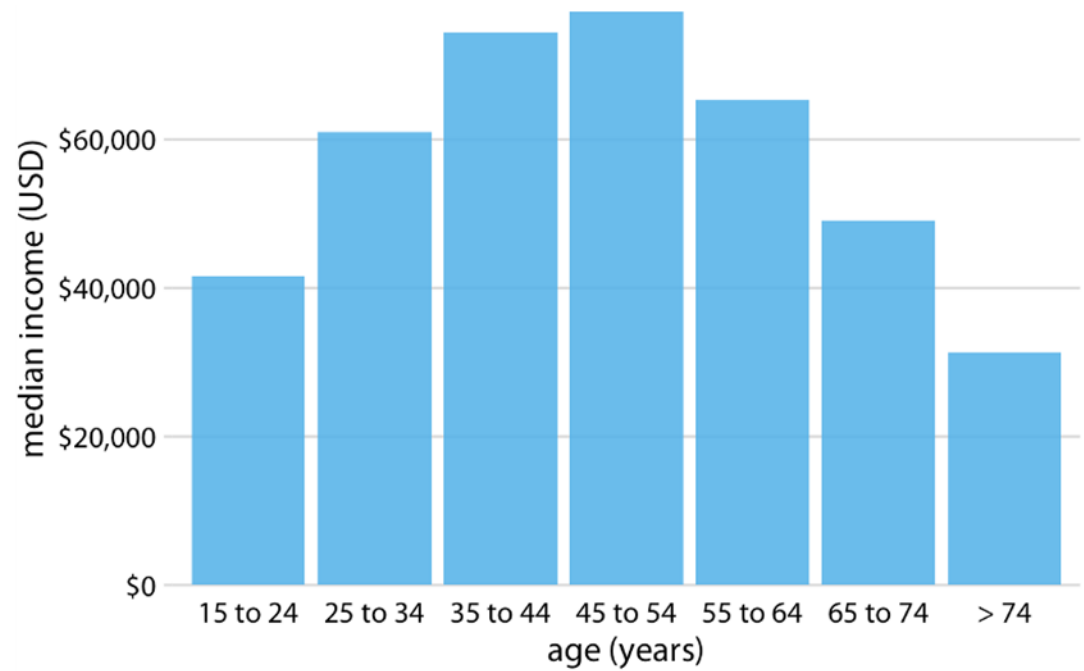
## VISUALIZING AMOUNTS



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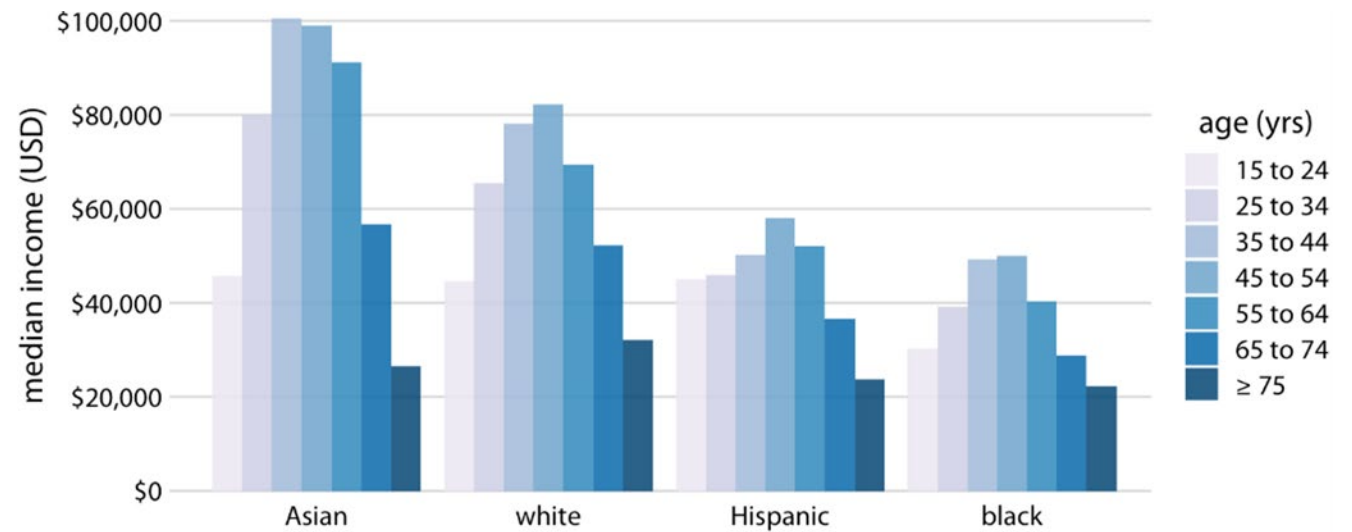
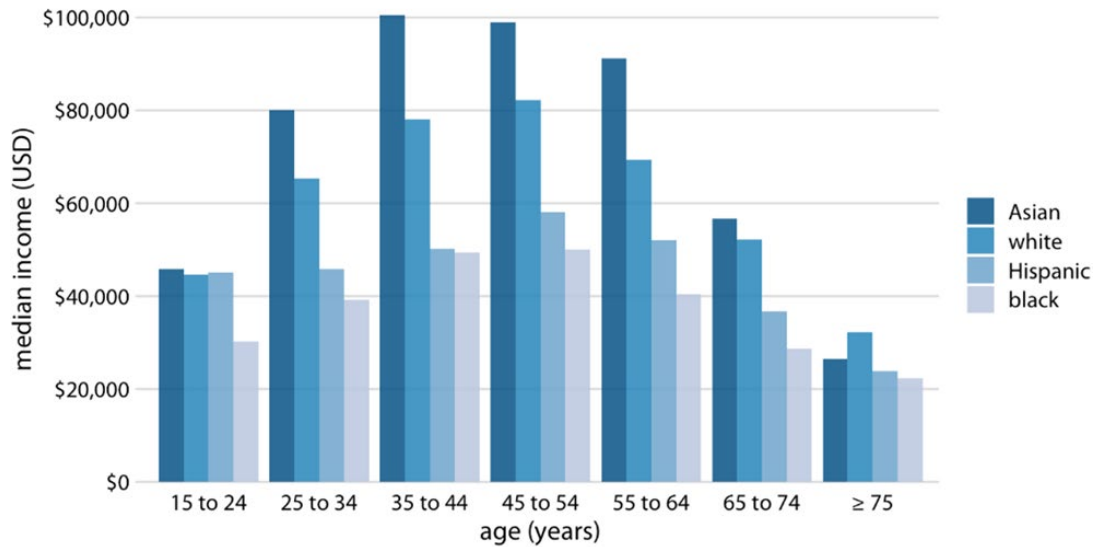
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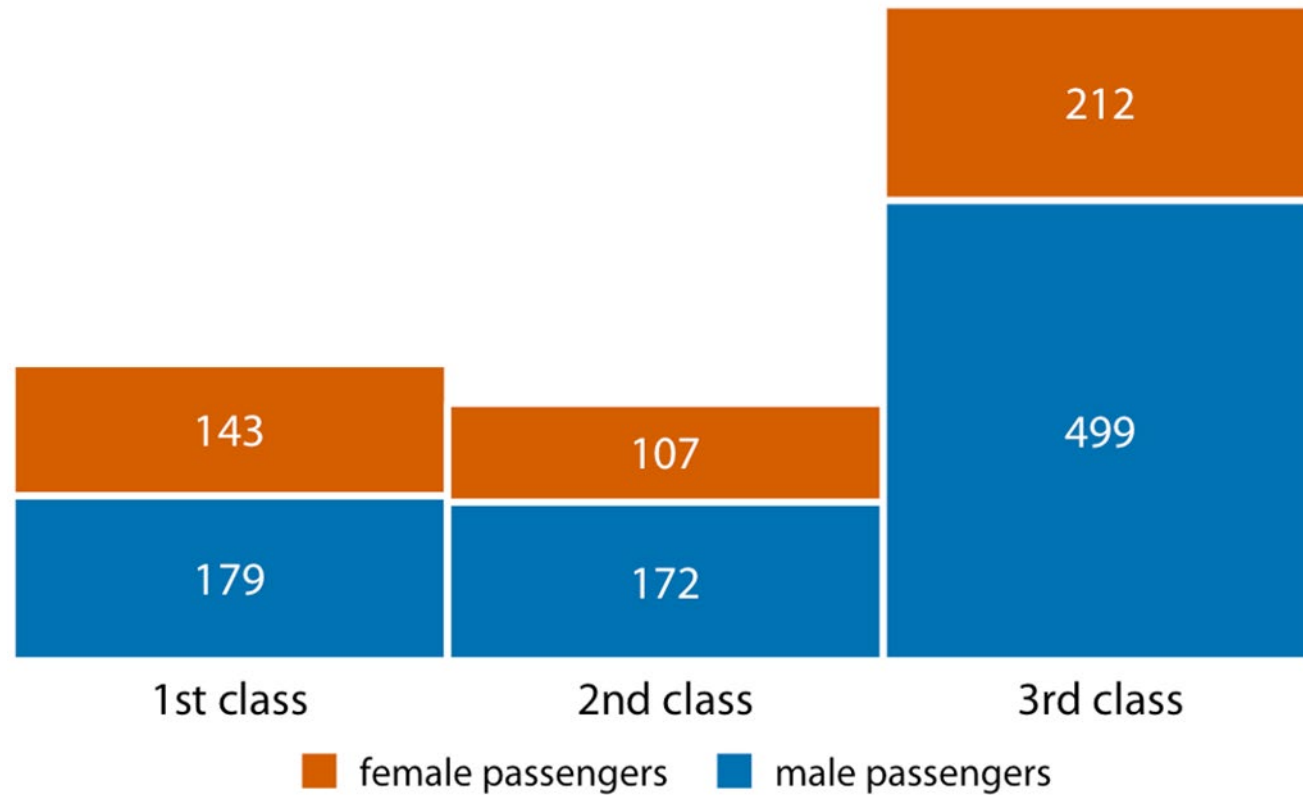
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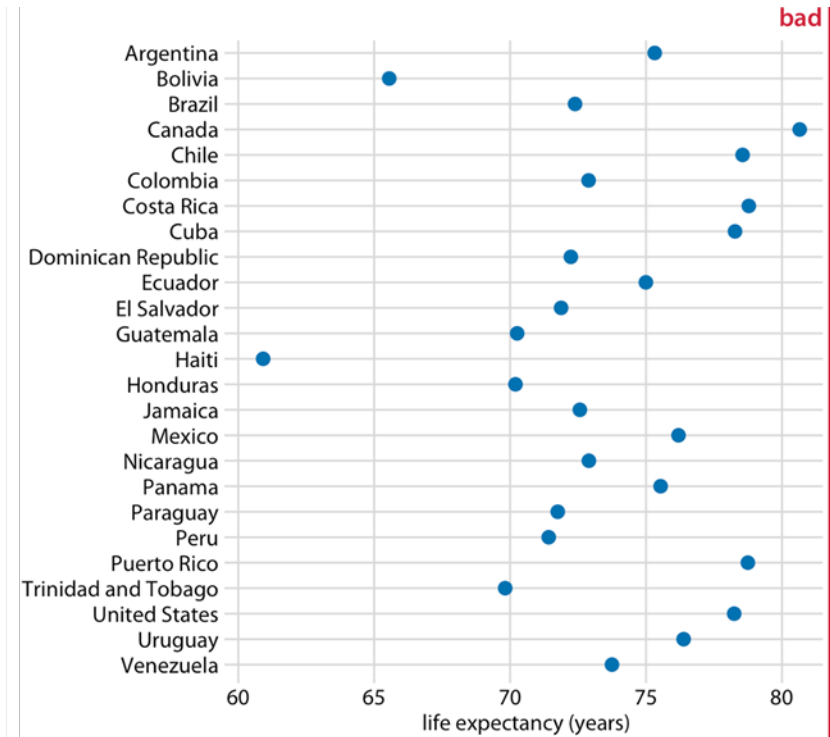
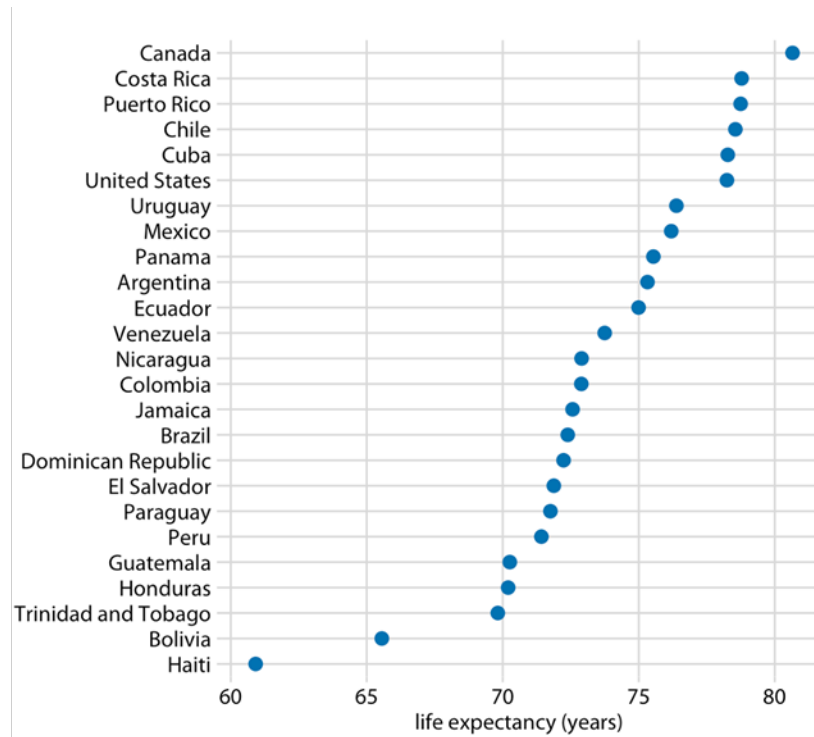
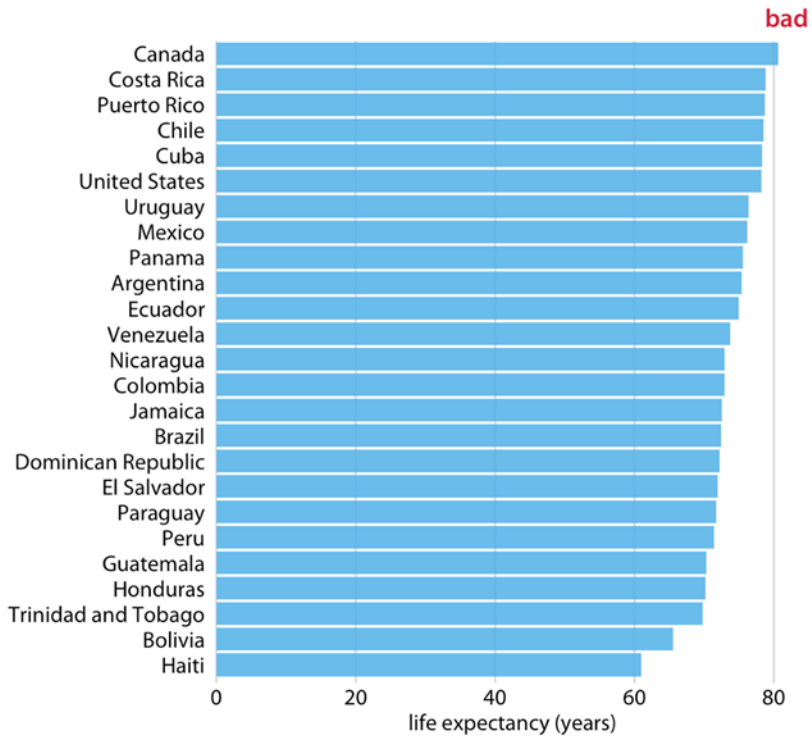
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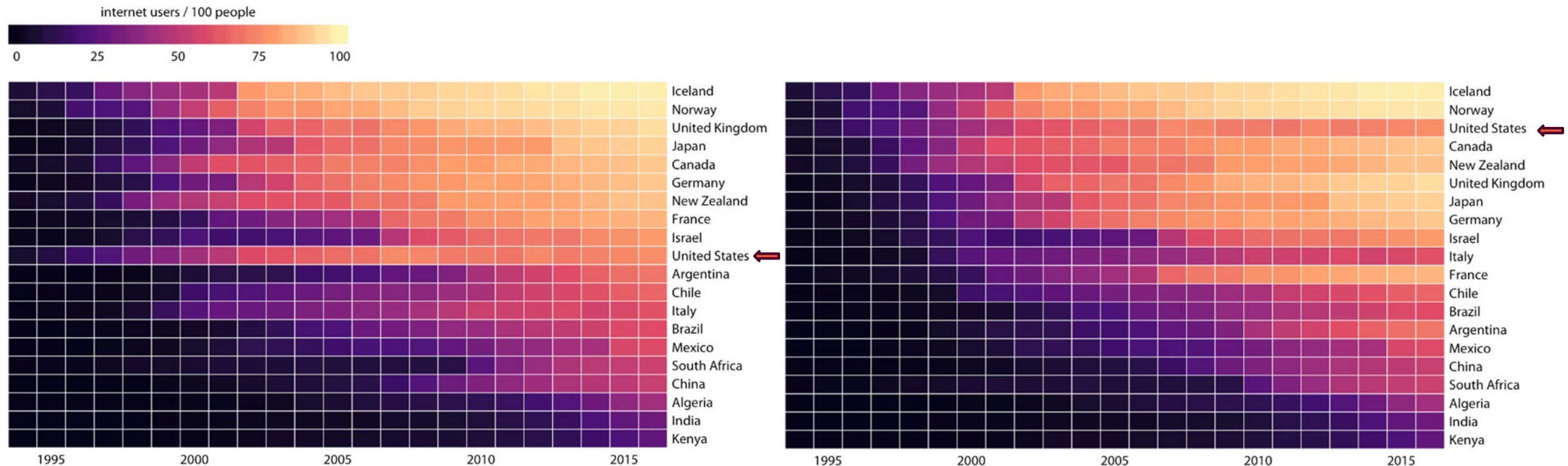
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# INTRODUCTION TO DATA VISUALIZATION: GRAPHS & MAPS



## VISUALIZING AMOUNTS

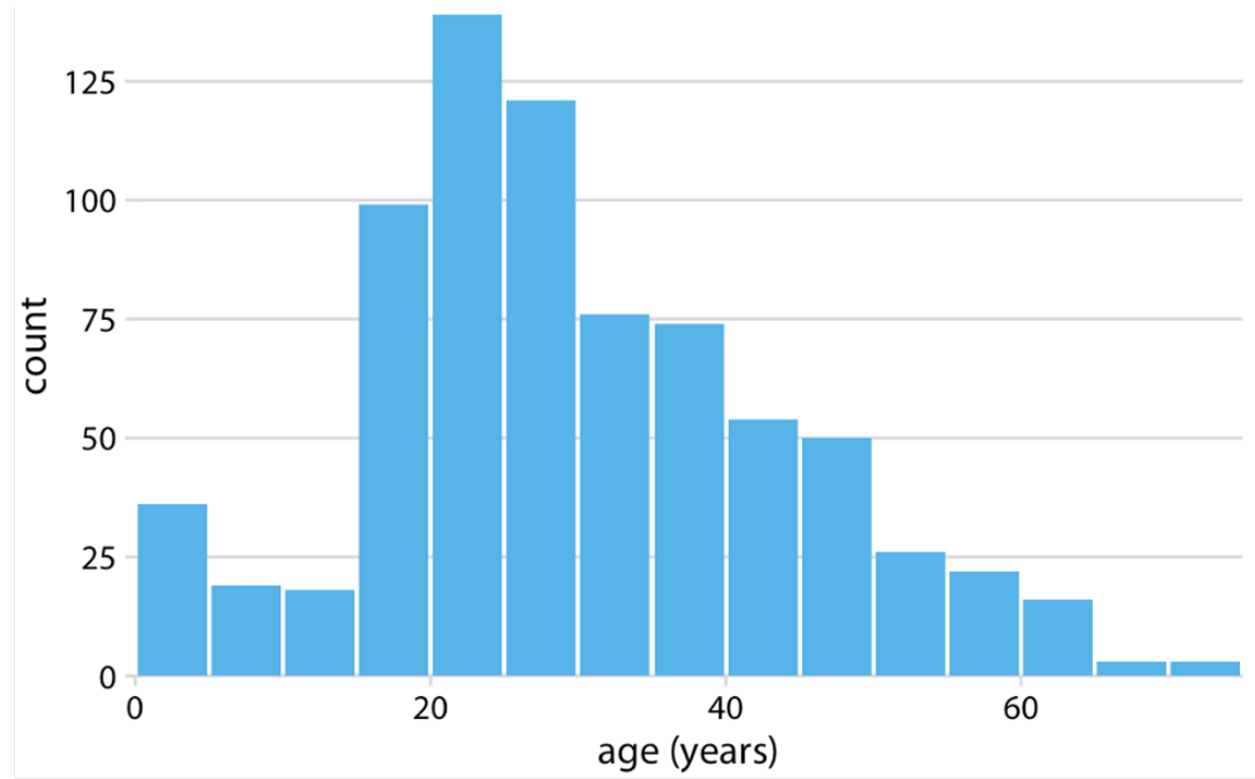




# INTRODUCTION TO DATA VISUALIZATION: GRAPHS & MAPS



## VISUALIZING DISTRIBUTIONS

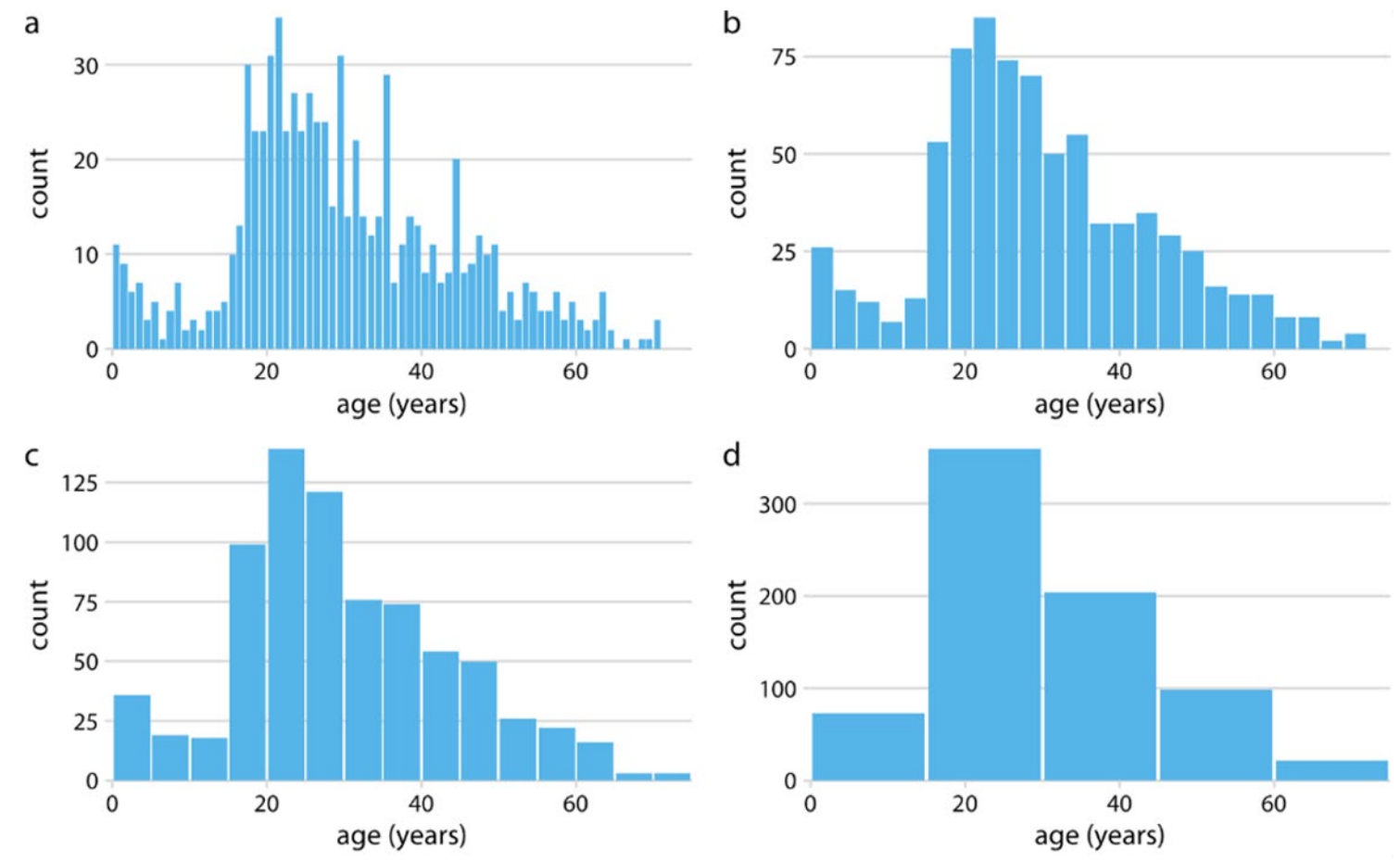


Age range	Count
0-5	36
6-10	19
11-15	18
16-20	99
21-25	139
26-30	121
31-35	76
36-40	74
41-45	54
46-50	50
51-55	26
56-60	22
61-65	16
66-70	3
71-75	3

# INTRODUCTION TO DATA VISUALIZATION: GRAPHS & MAPS



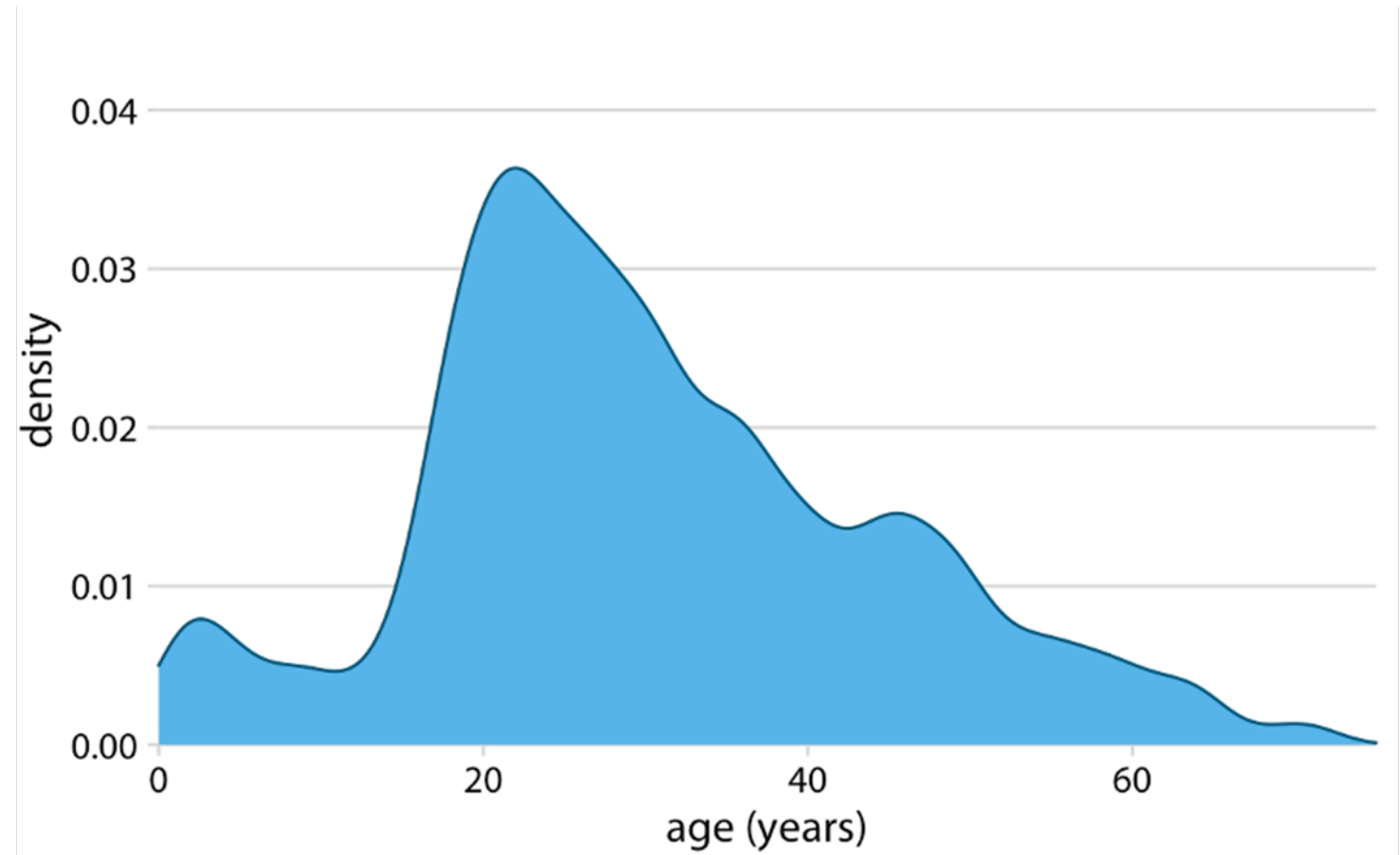
## VISUALIZING DISTRIBUTIONS



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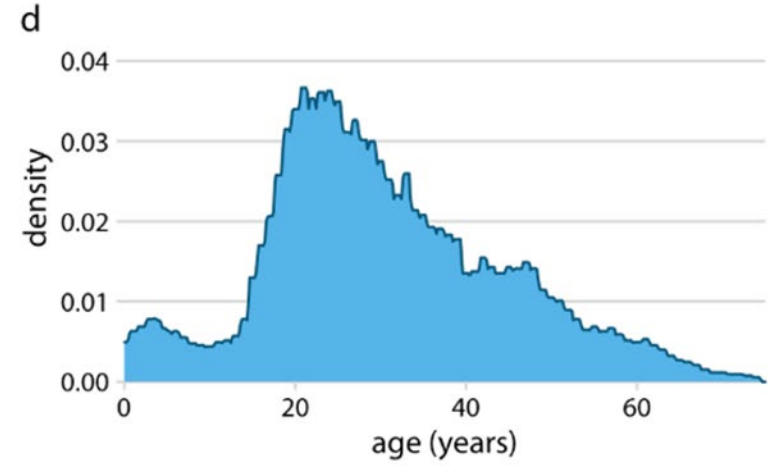
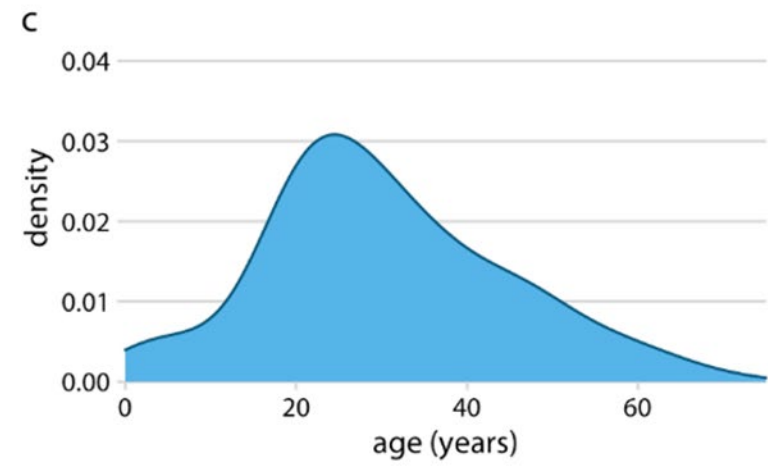
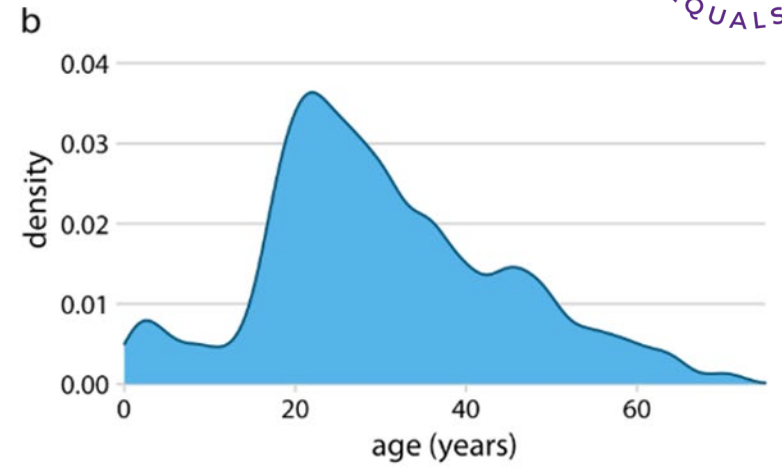
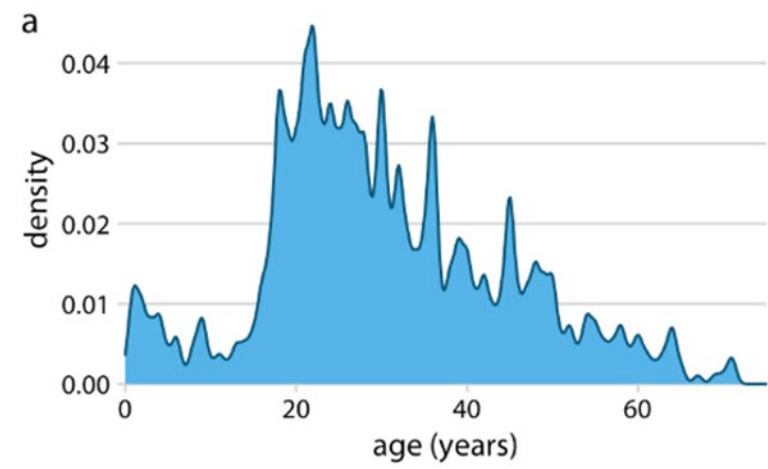
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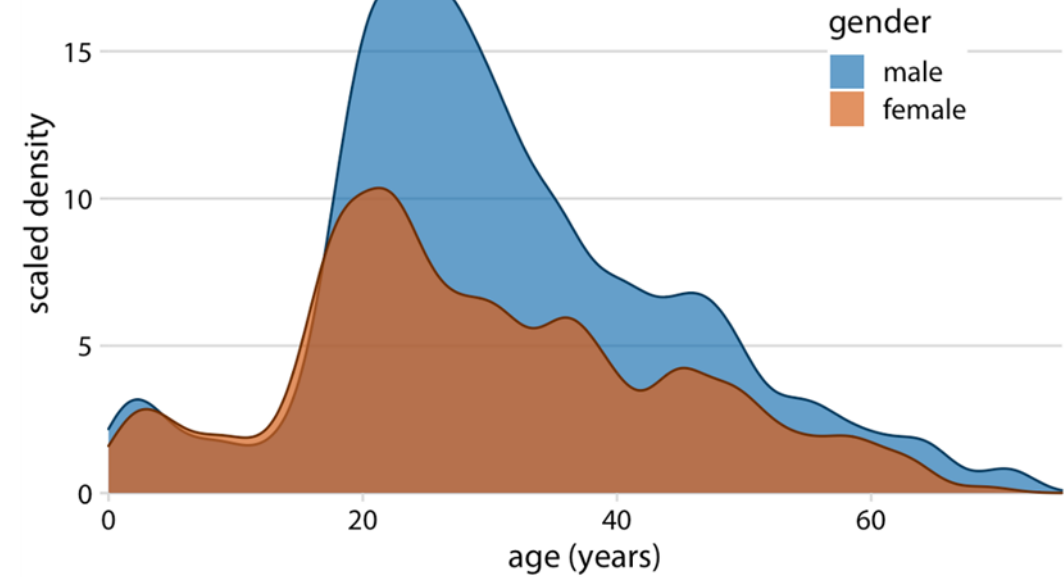
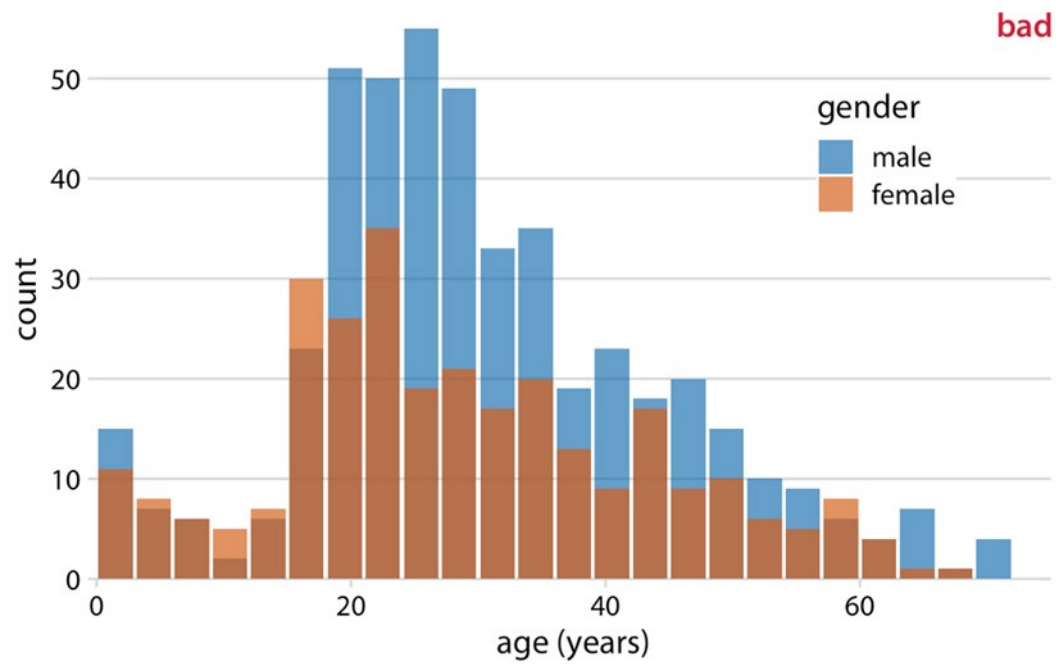
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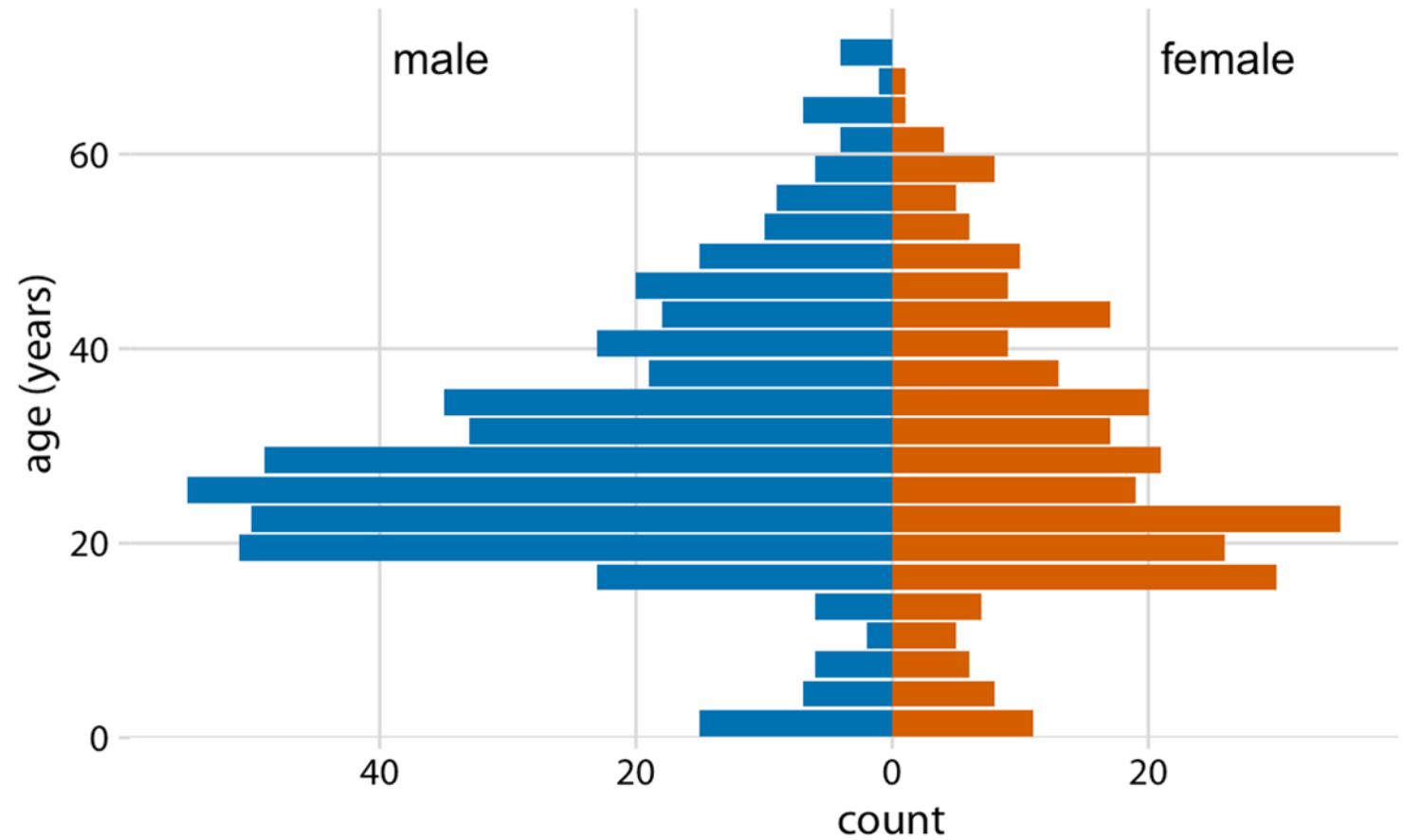
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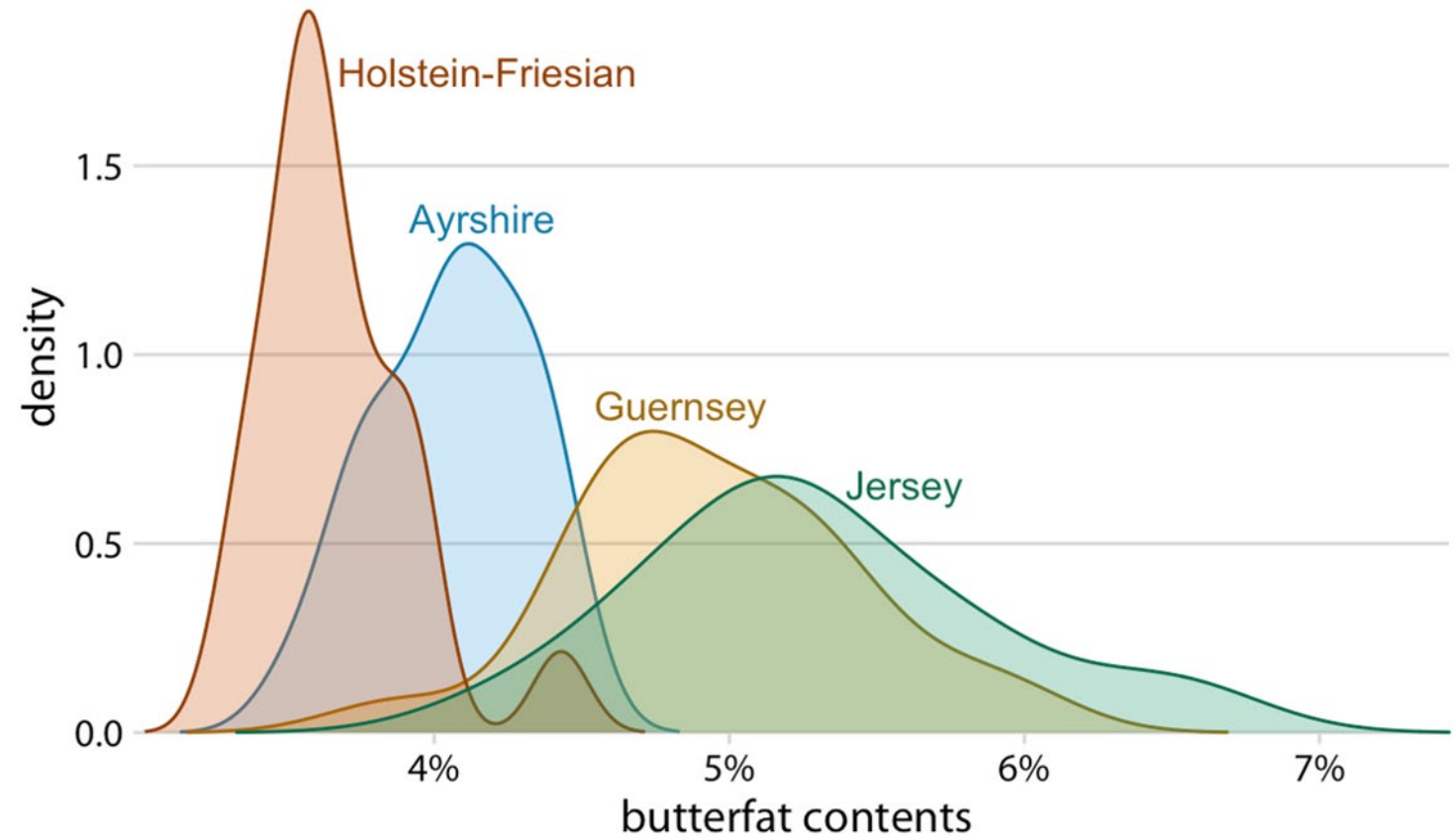
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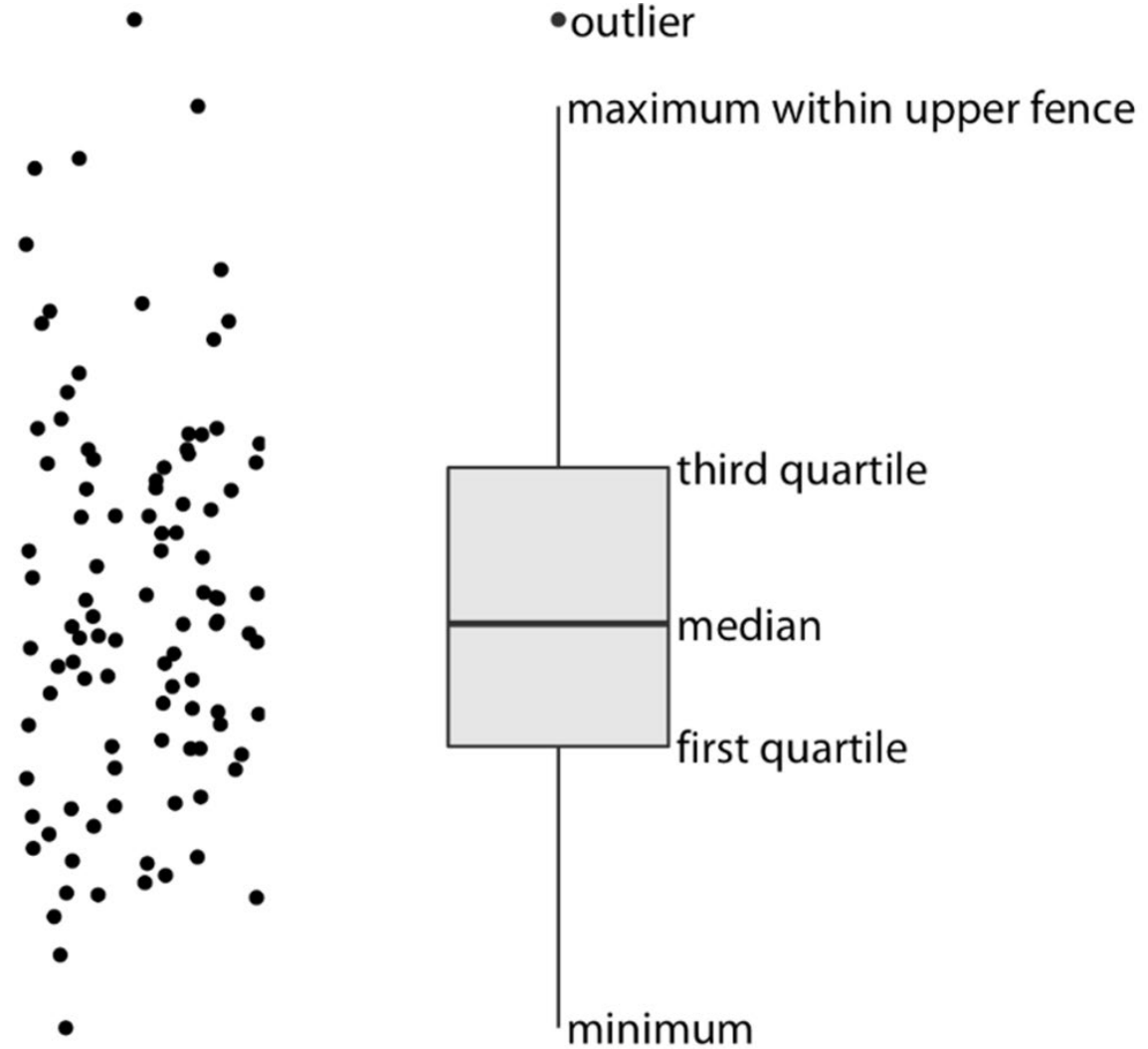
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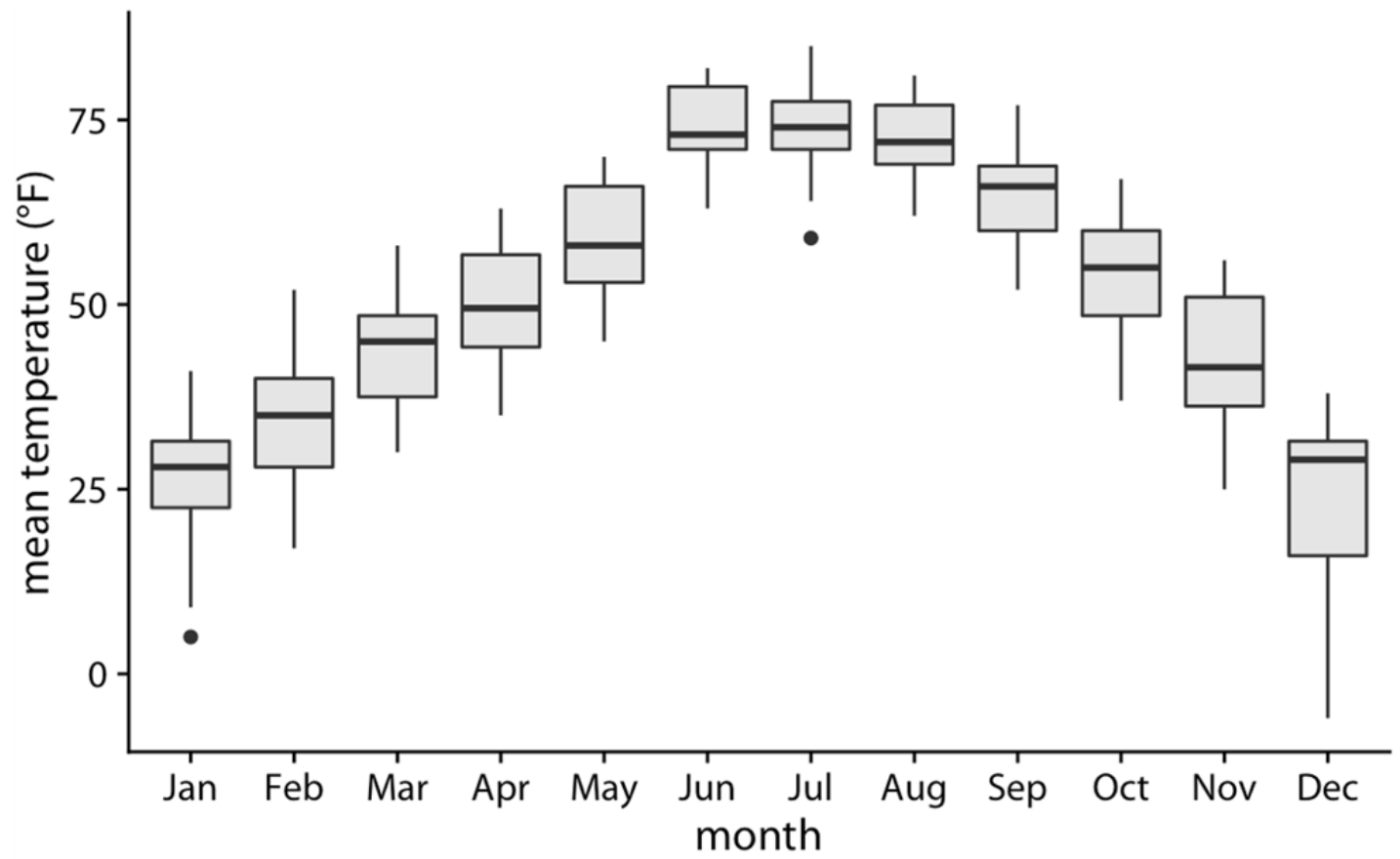




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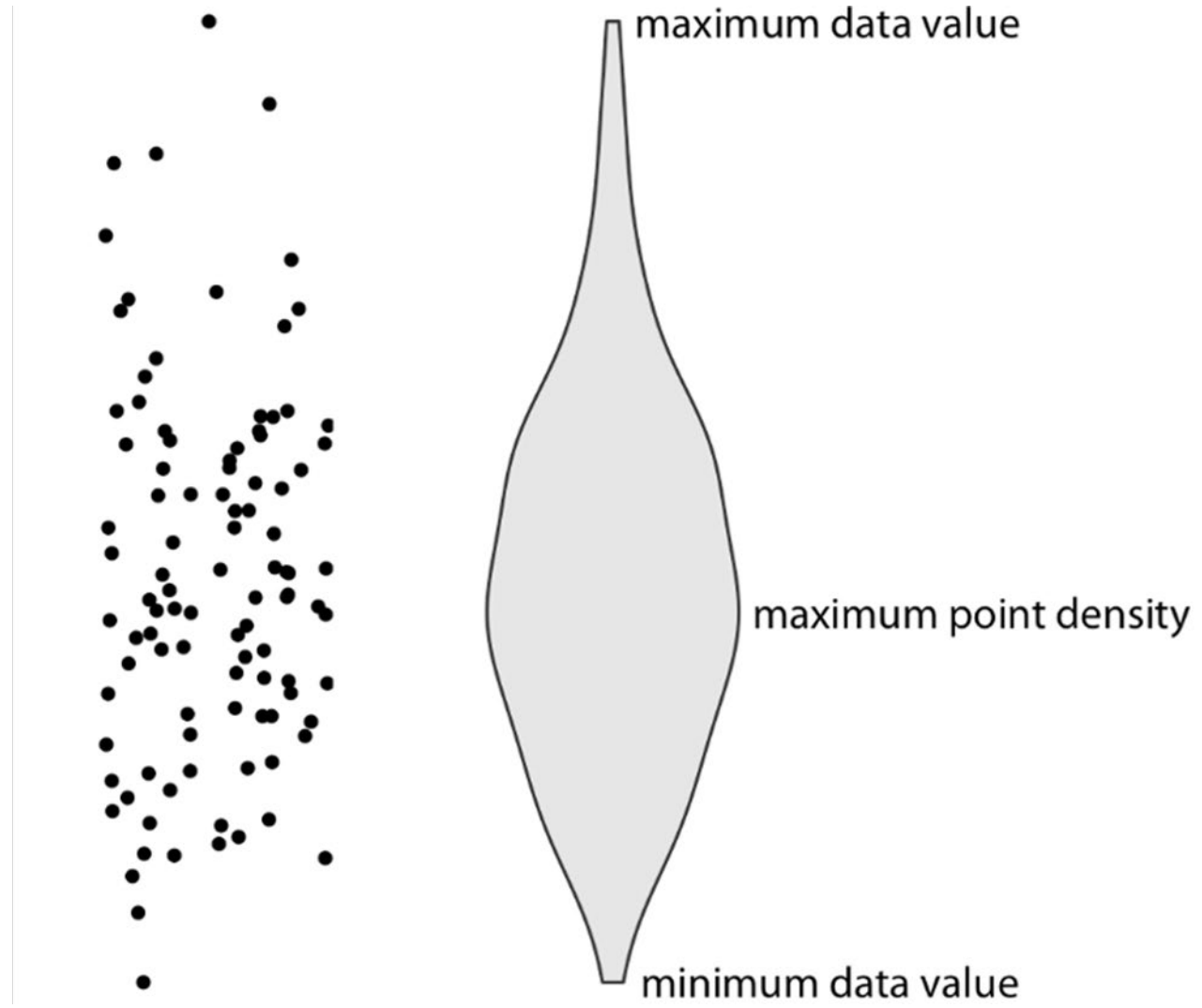
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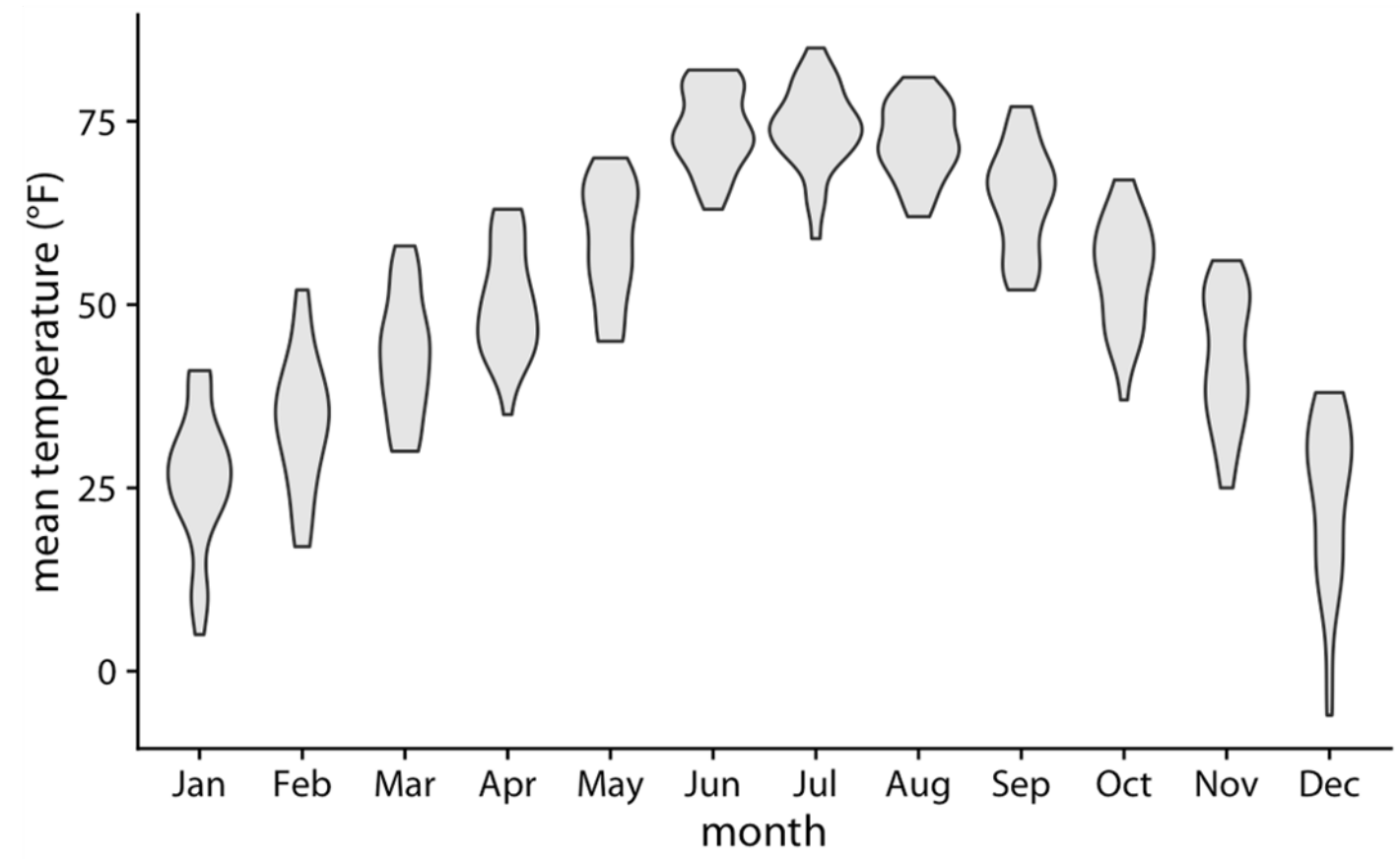
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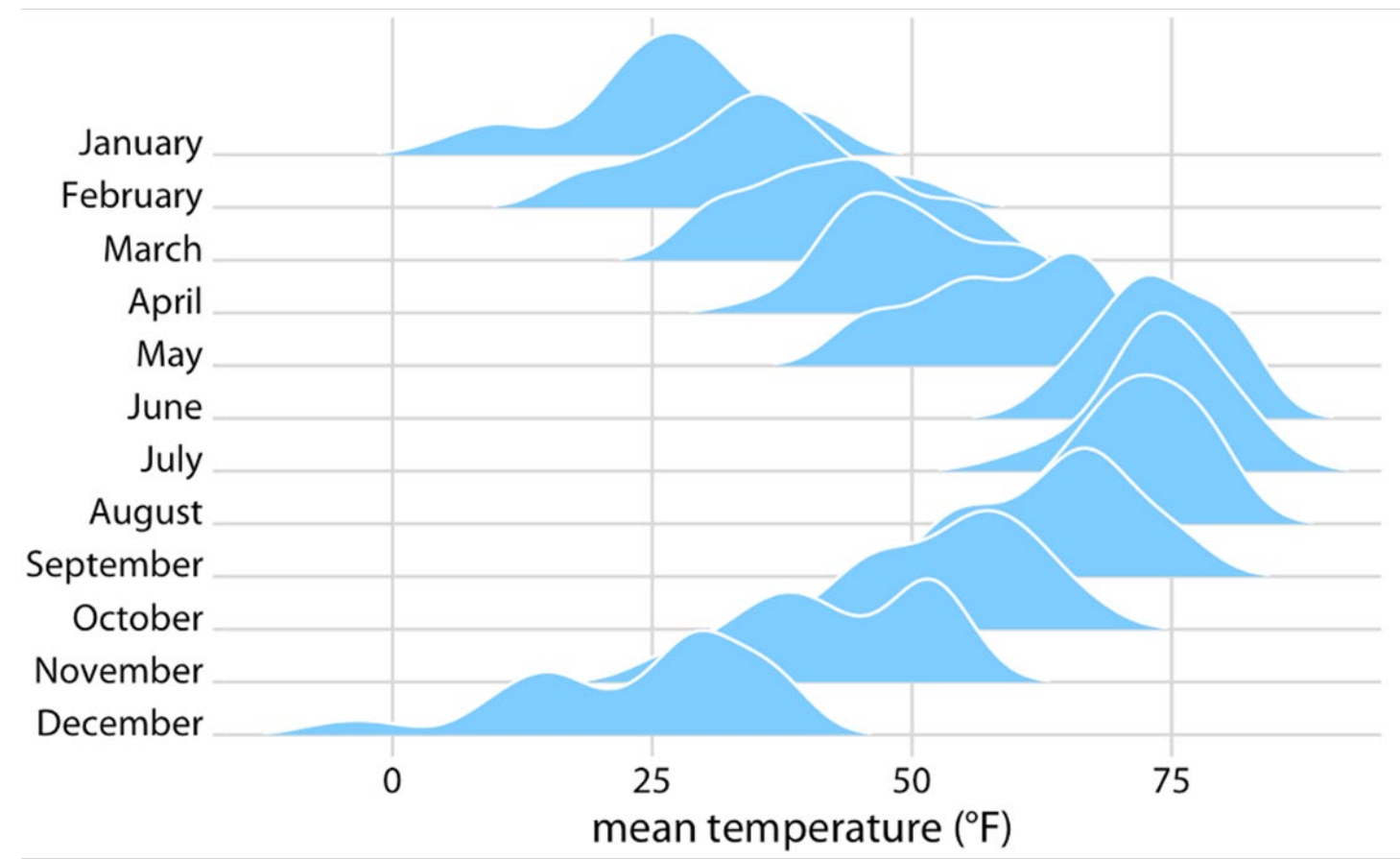
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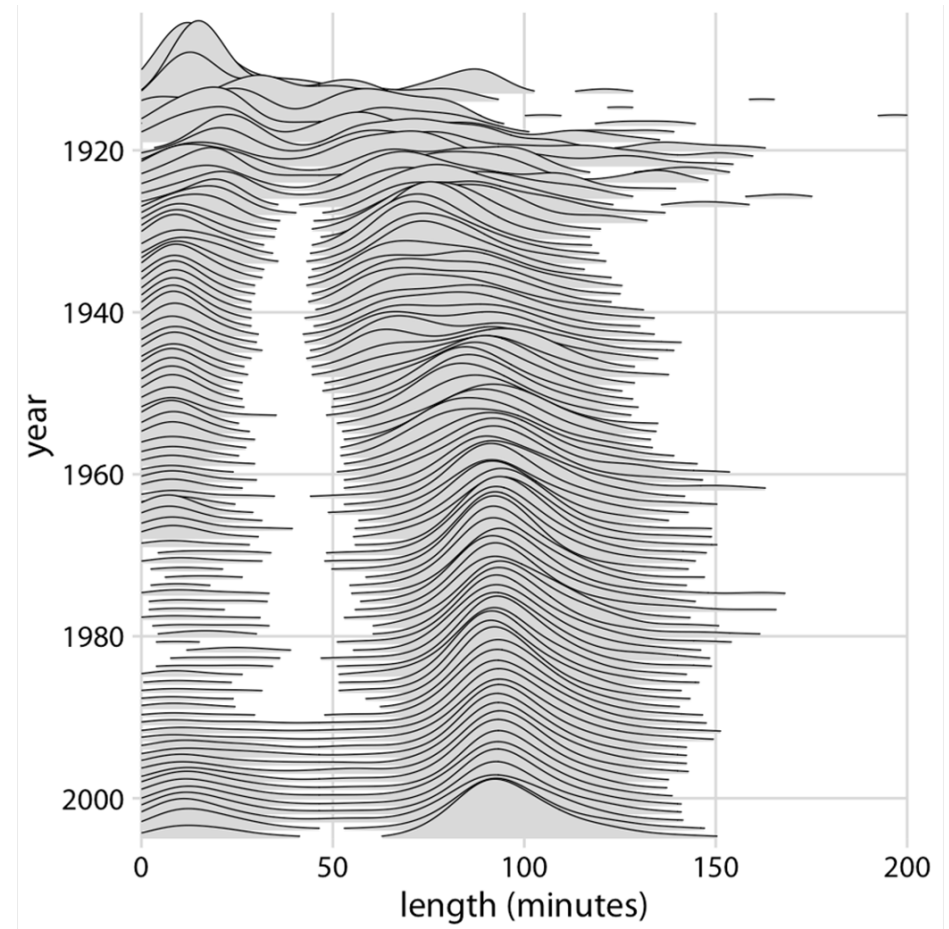




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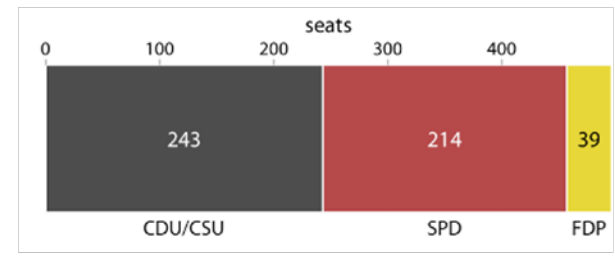
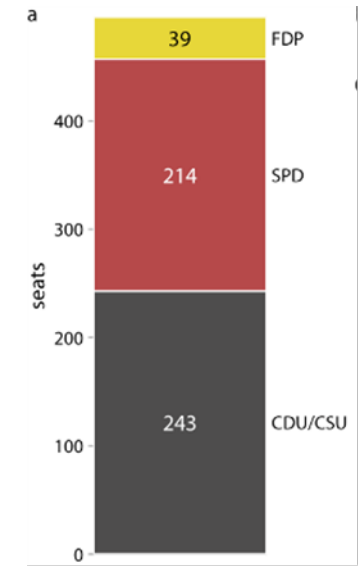
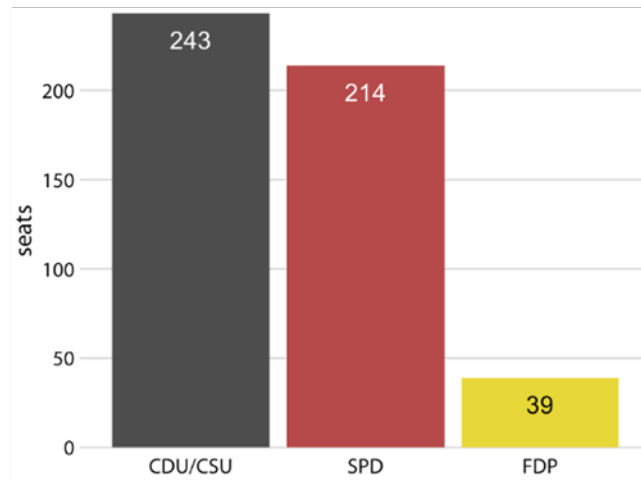
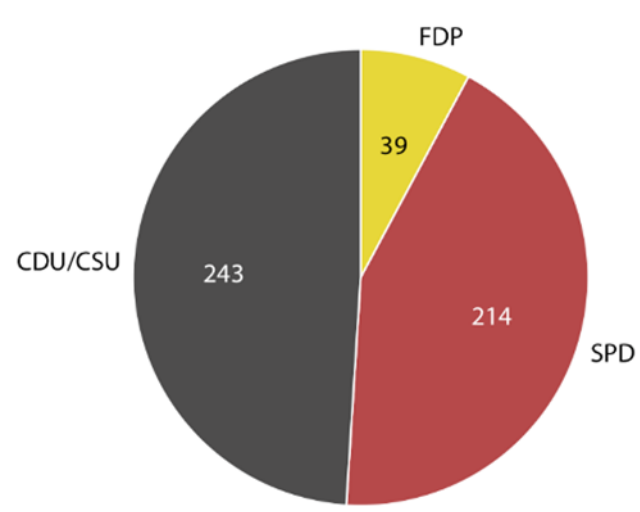
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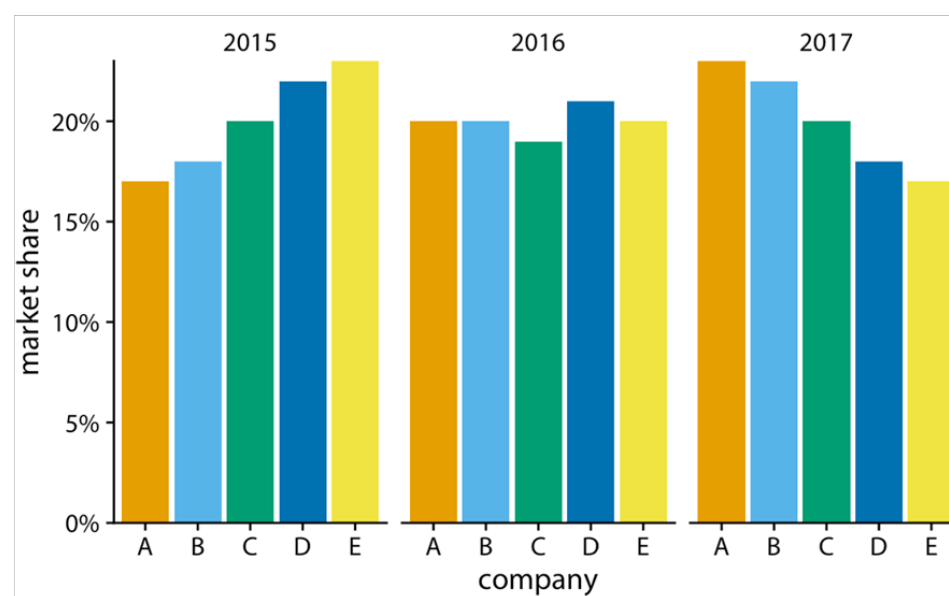
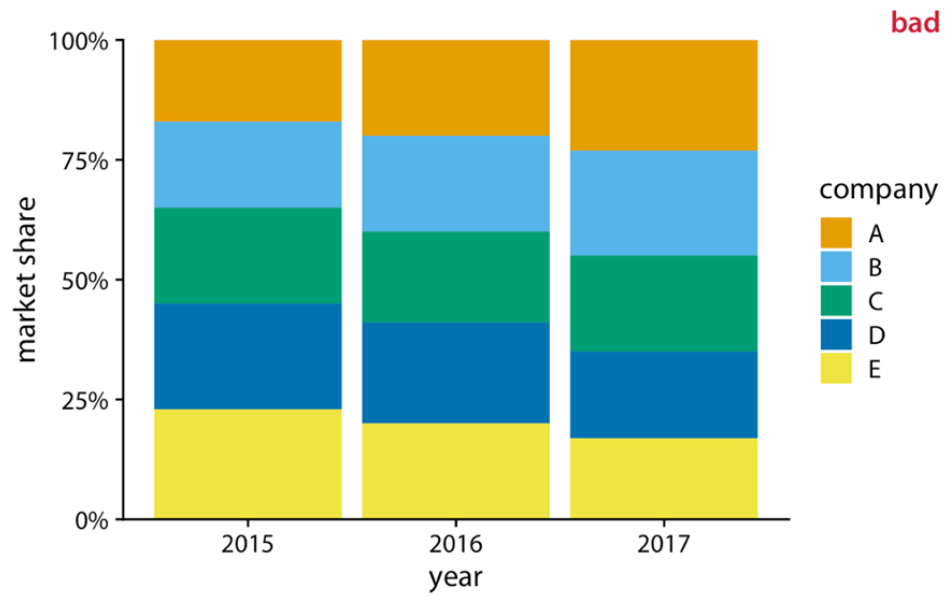
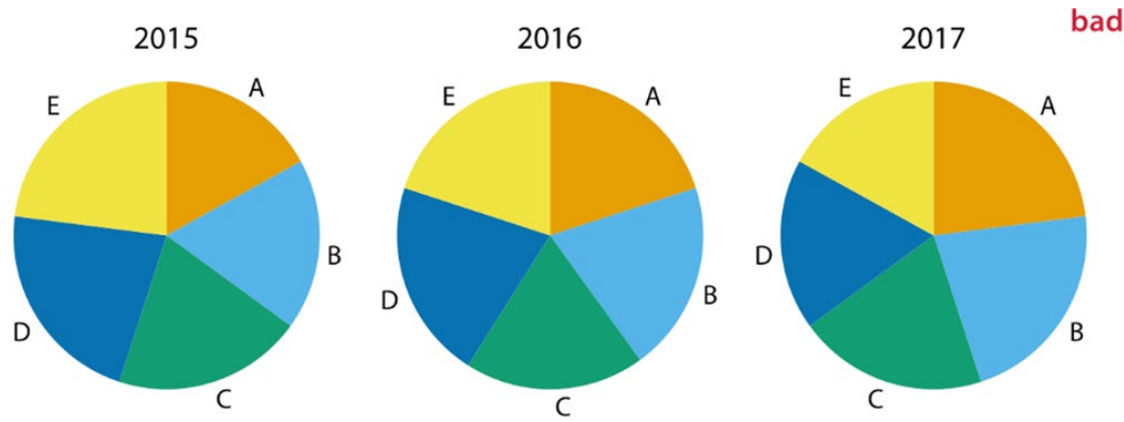
## VISUALIZING PROPORTIONS



# INTRODUCTION TO DATA VISUALIZATION: GRAPHS & MAPS



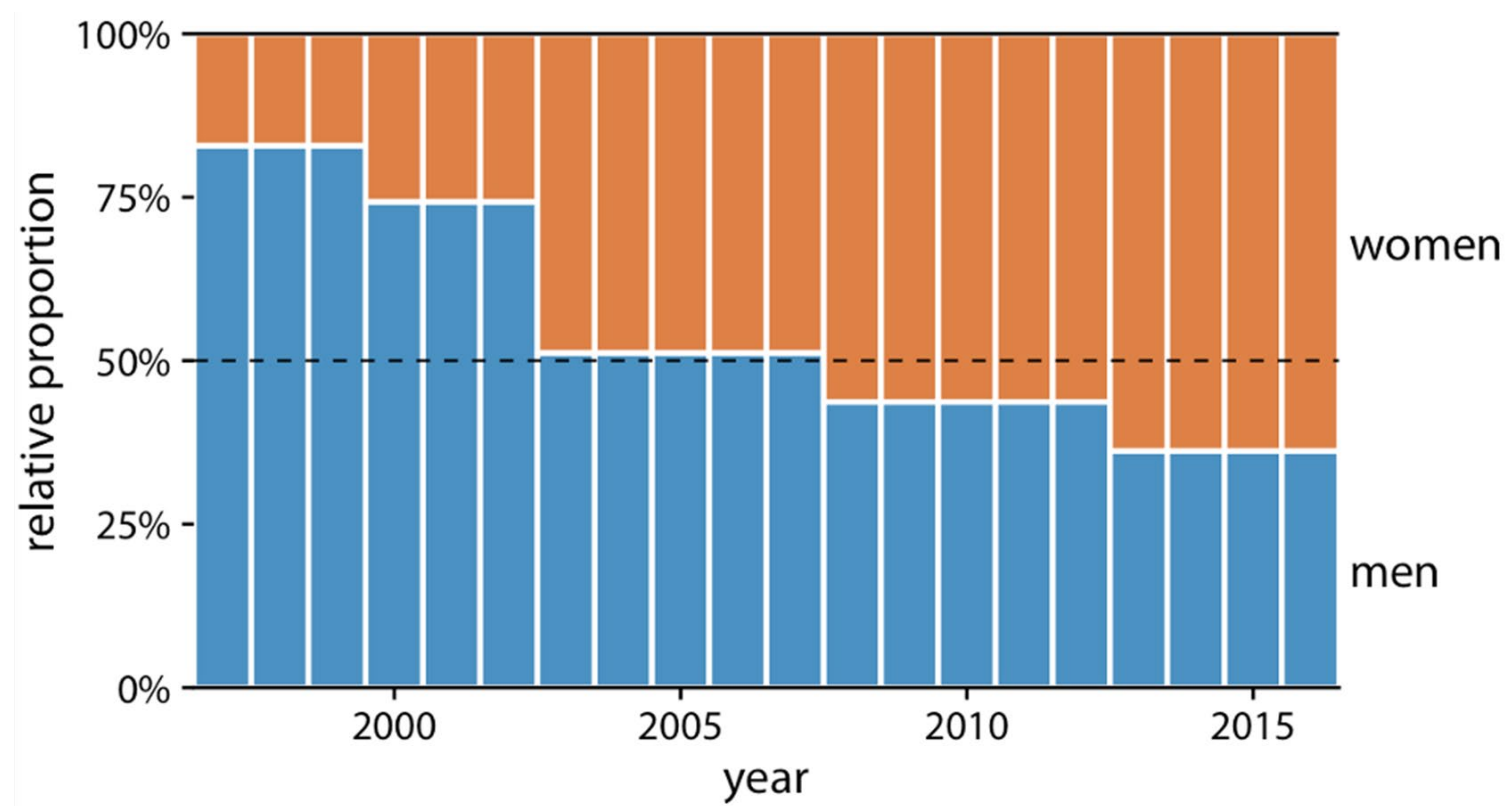
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# INTRODUCTION TO DATA VISUALIZATION: GRAPHS & MAPS



## VISUALIZING PROPORTIONS

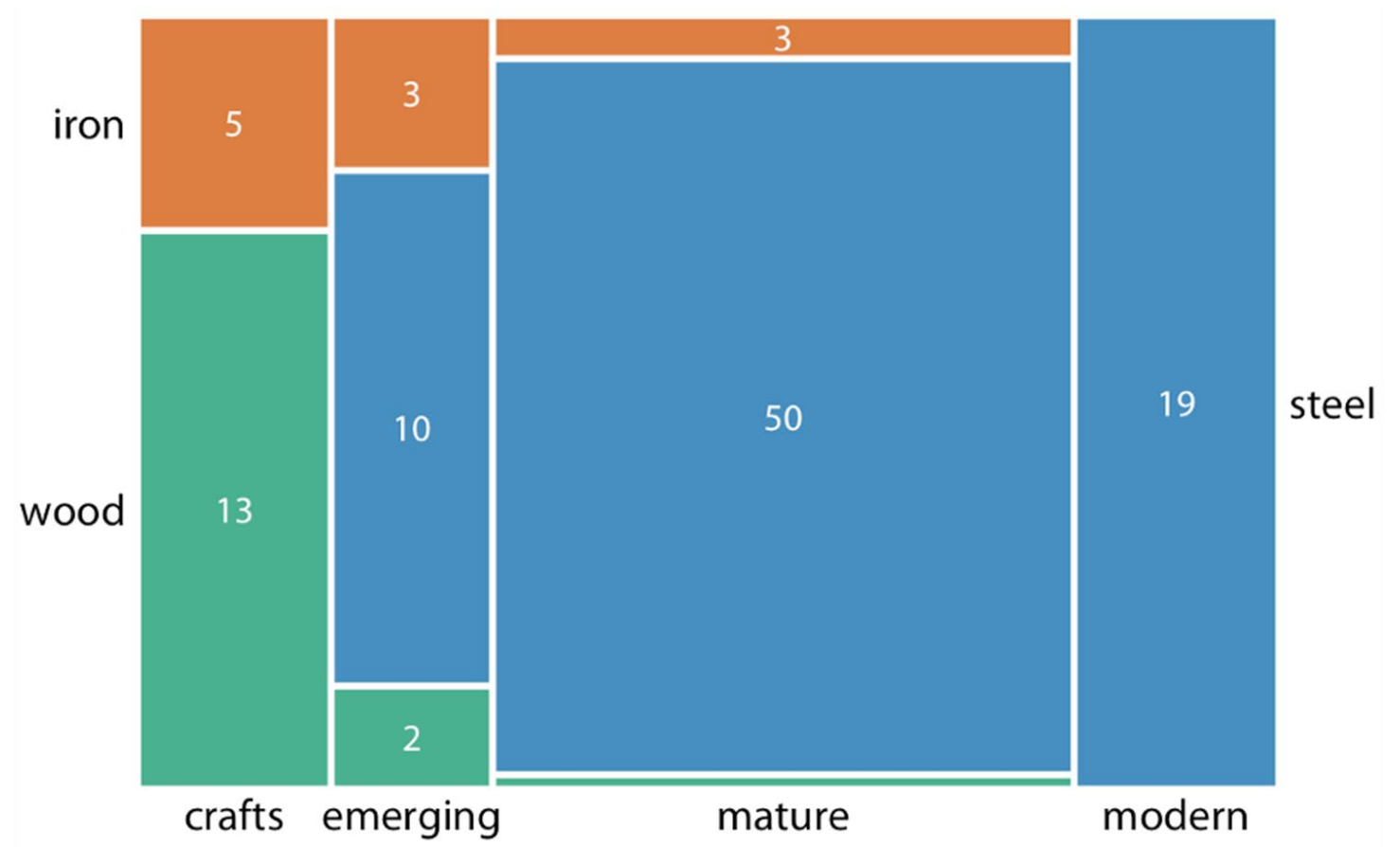




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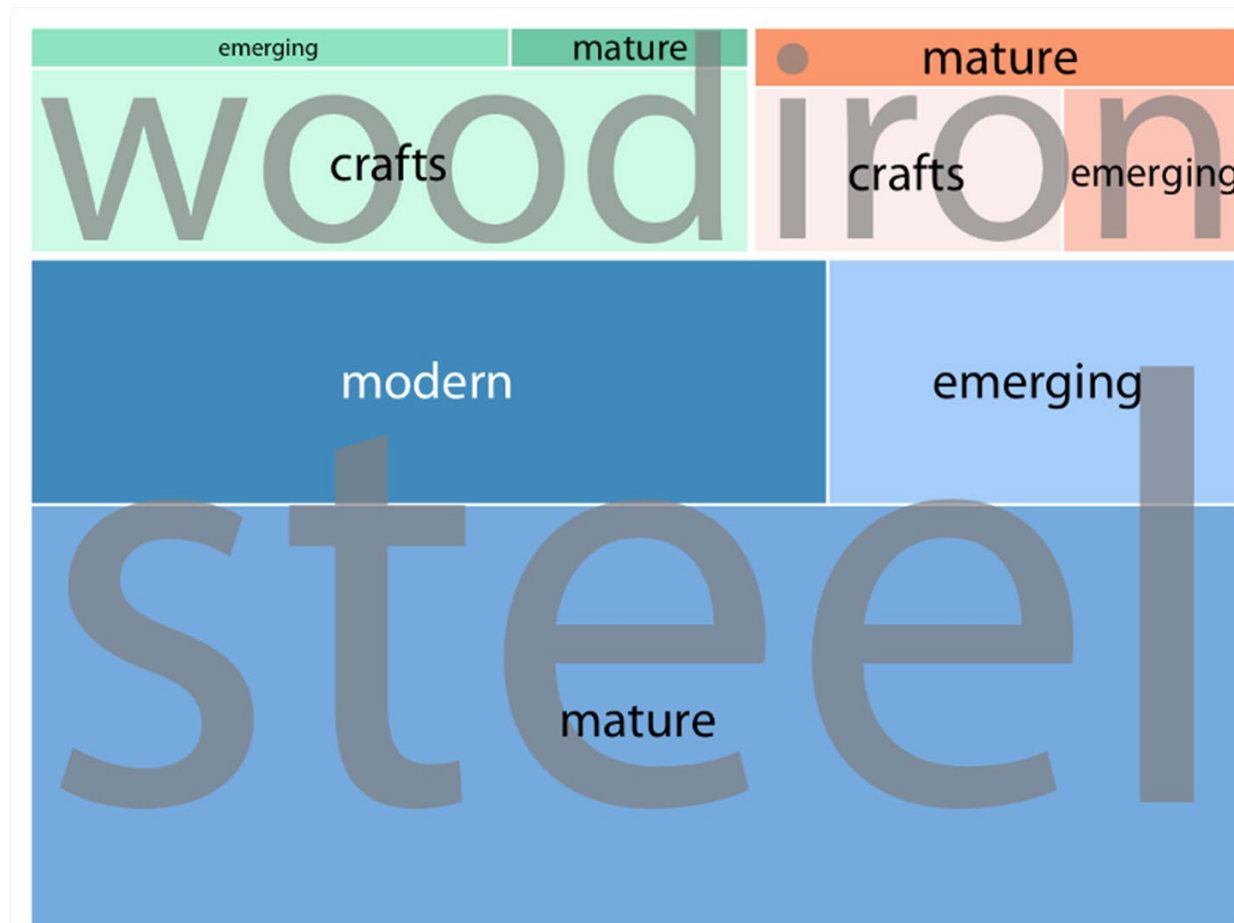
## VISUALIZING NESTED PROPORTIONS



# INTRODUCTION TO DATA VISUALIZATION: GRAPHS & MAPS



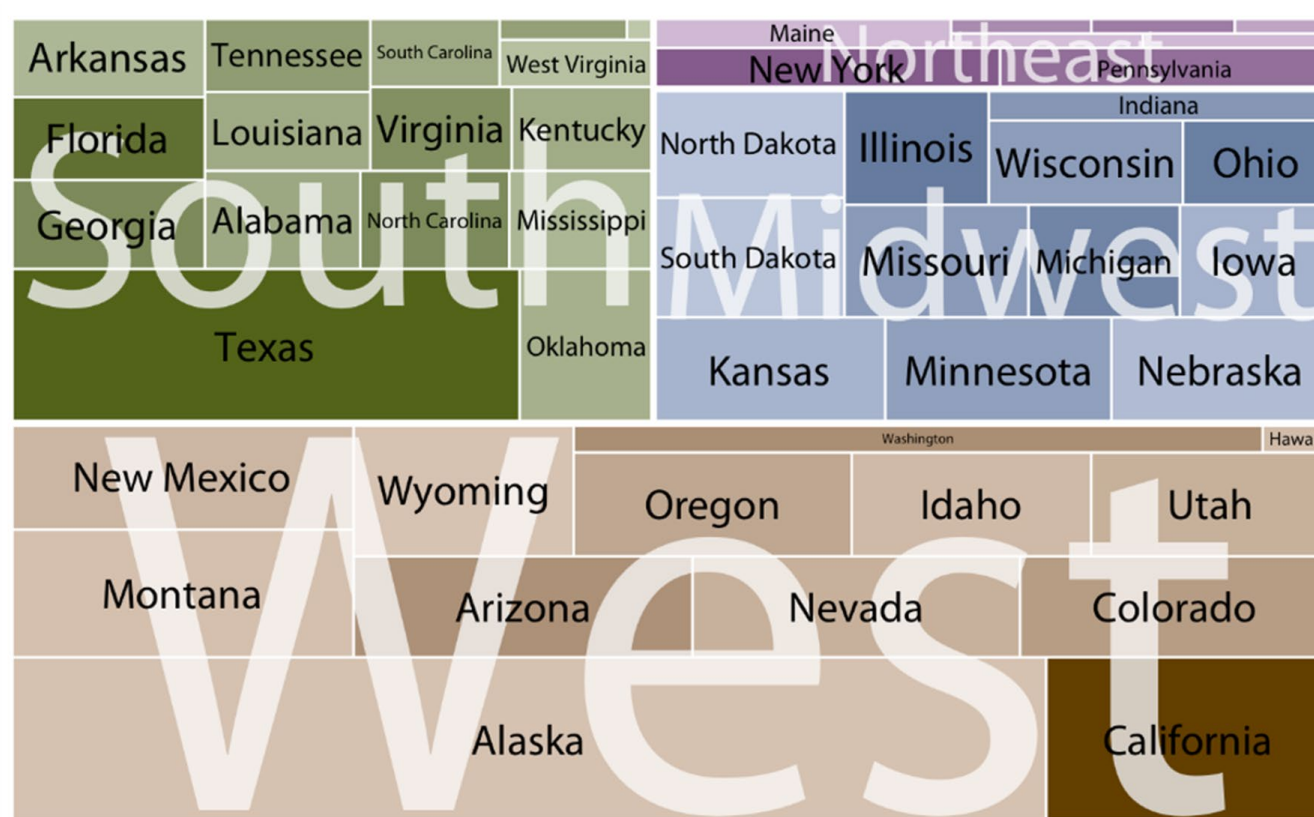
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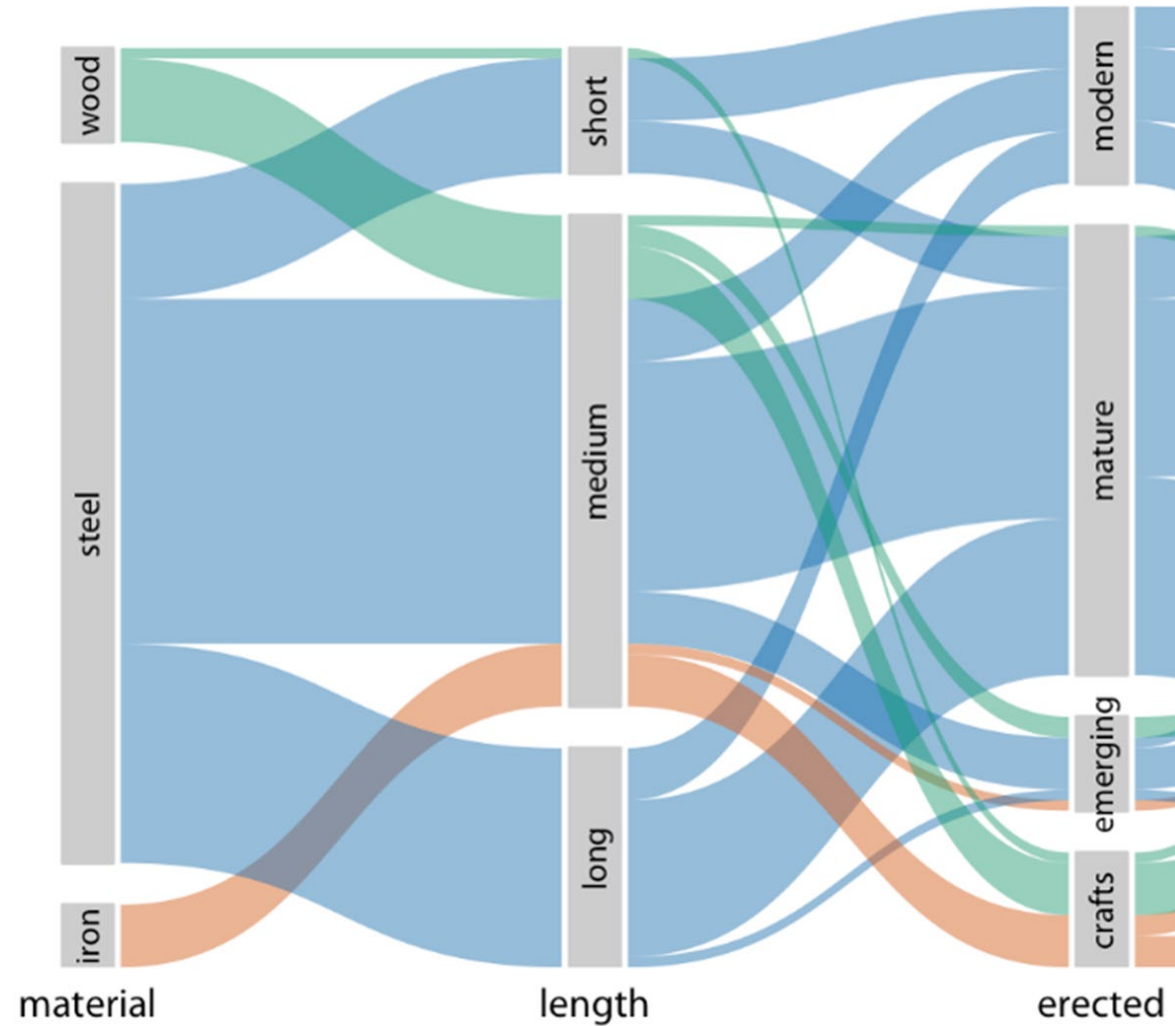
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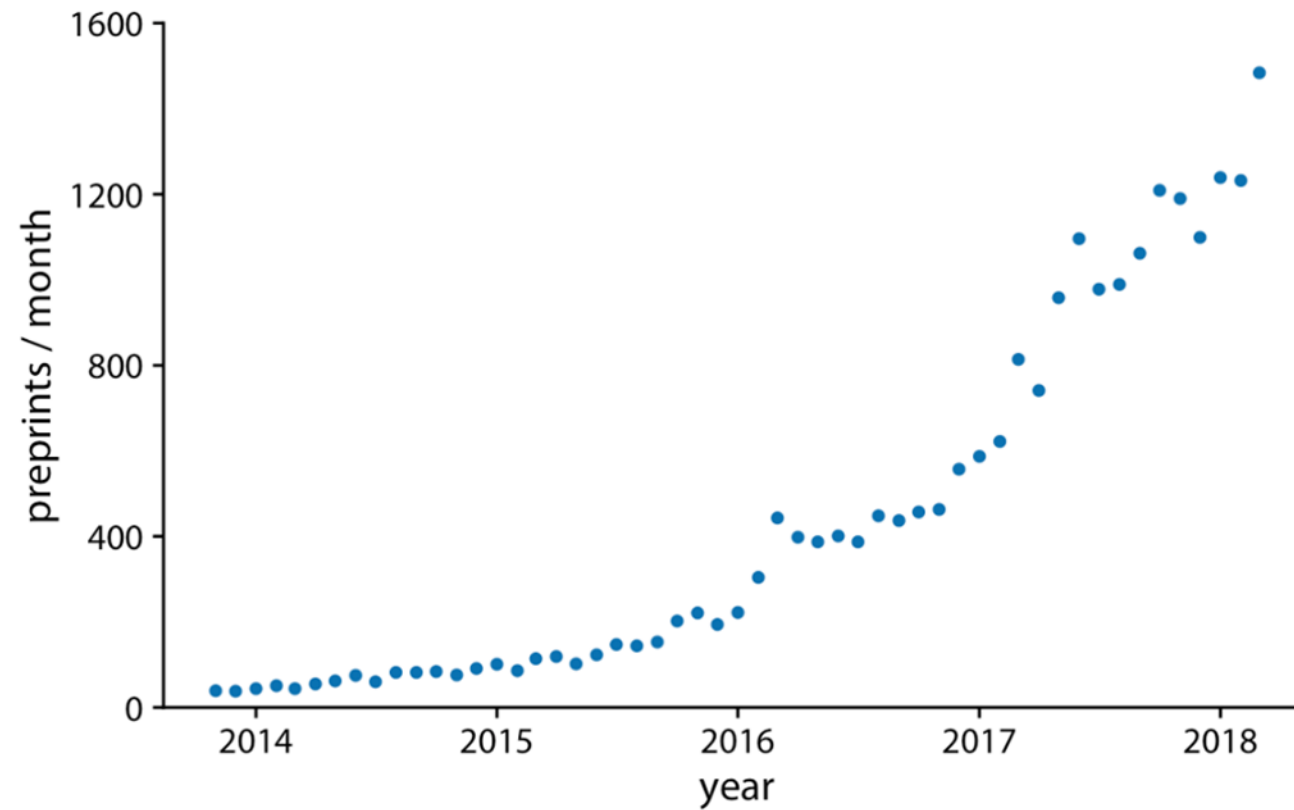
VISUALIZING NESTED PROPORTIONS



# INTRODUCTION TO DATA VISUALIZATION: GRAPHS & MAPS



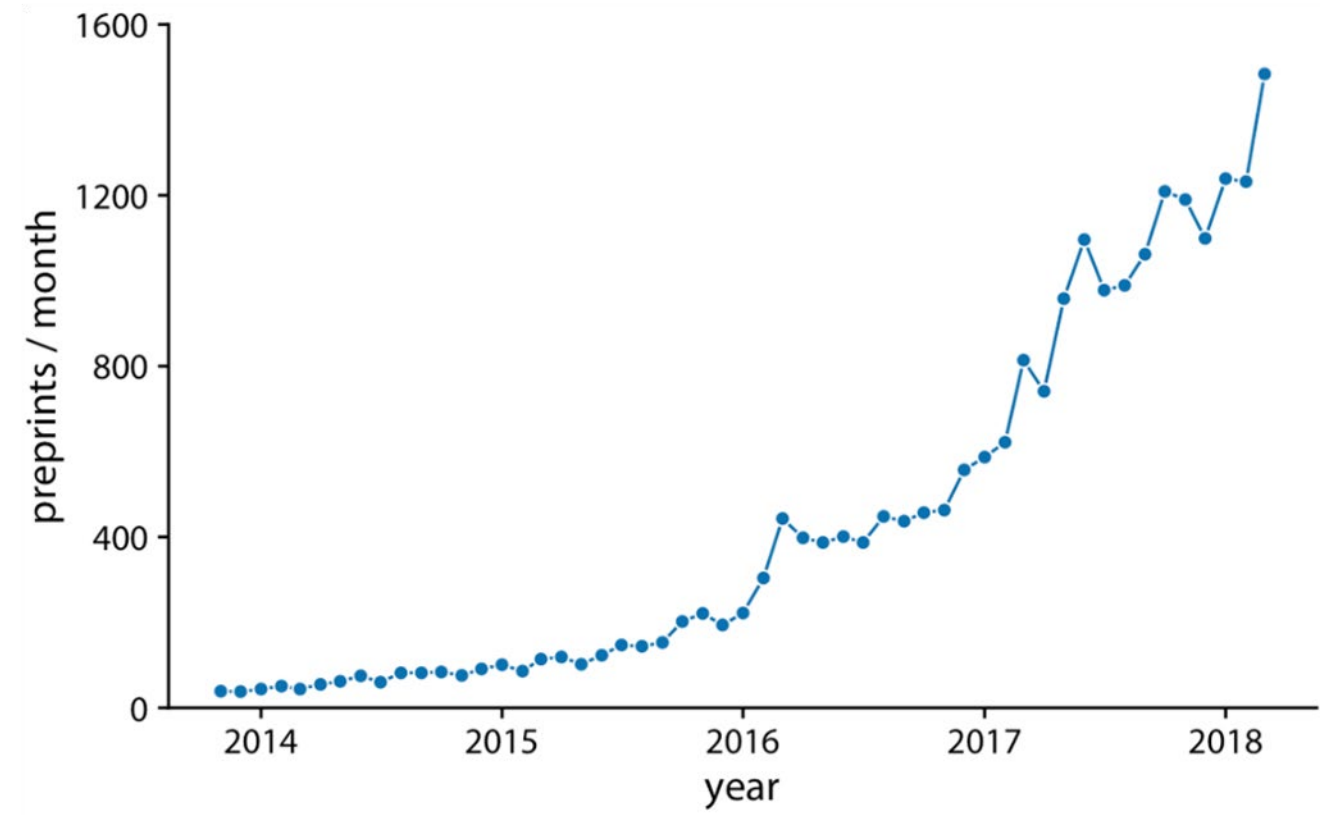
## VISUALIZING TIME SERIES



# INTRODUCTION TO DATA VISUALIZATION: GRAPHS & MAPS



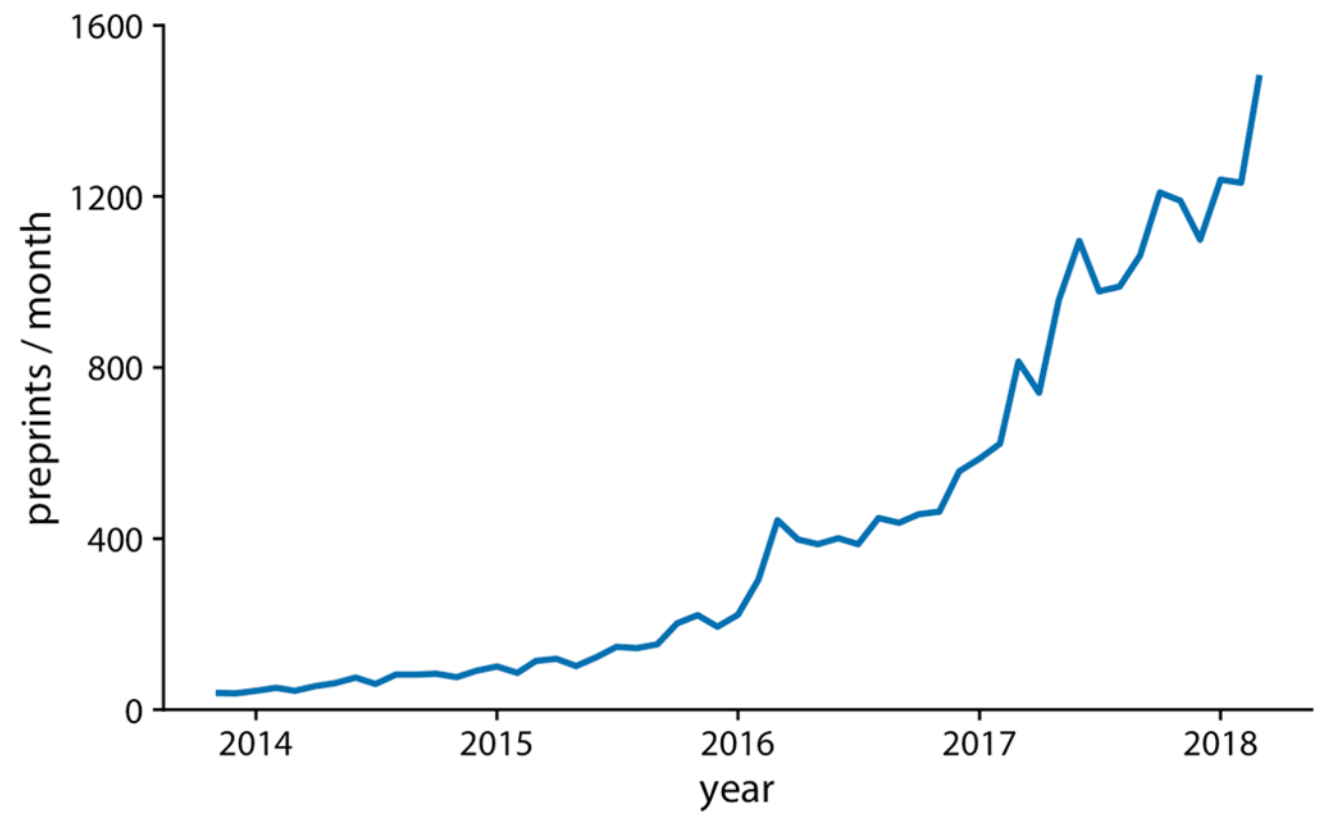
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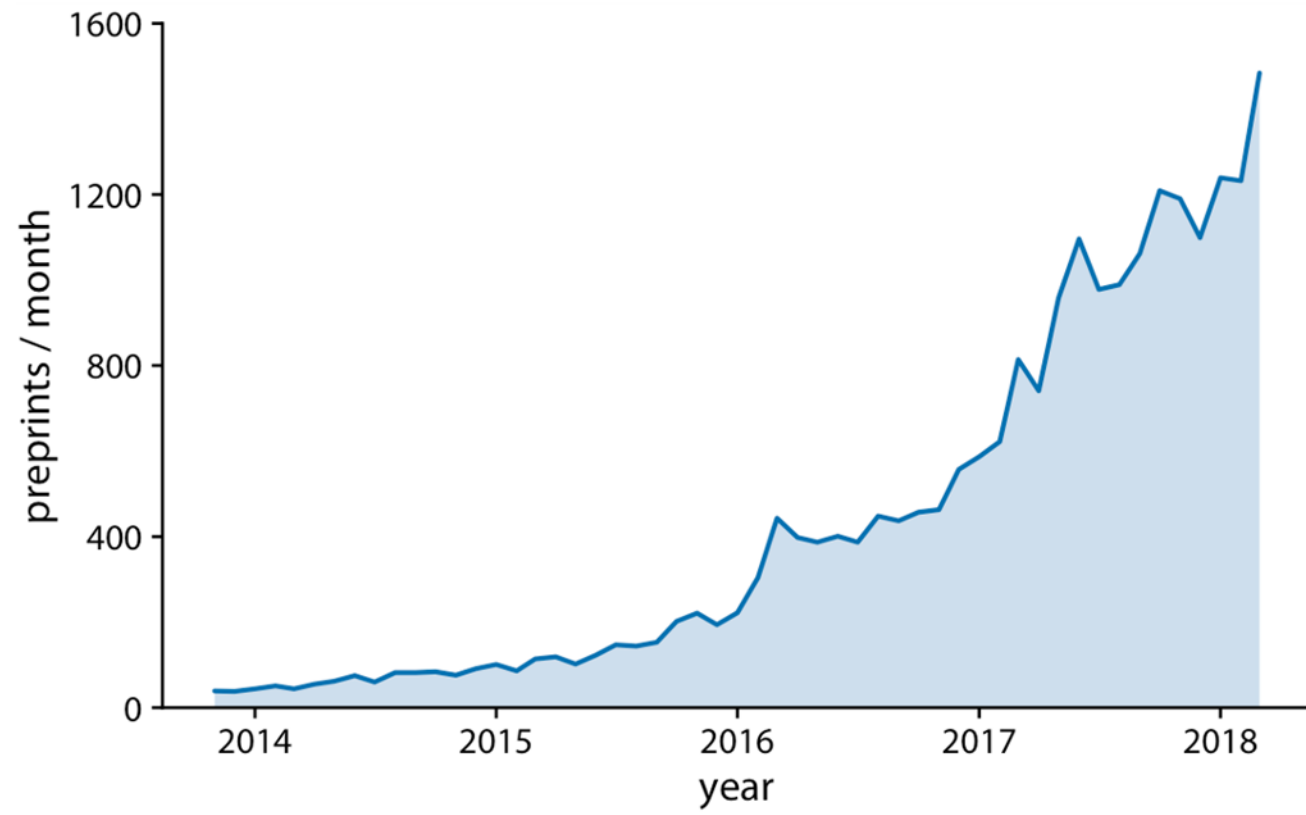
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# INTRODUCTION TO DATA VISUALIZATION: GRAPHS & MAPS



## VISUALIZING TIME SERIES

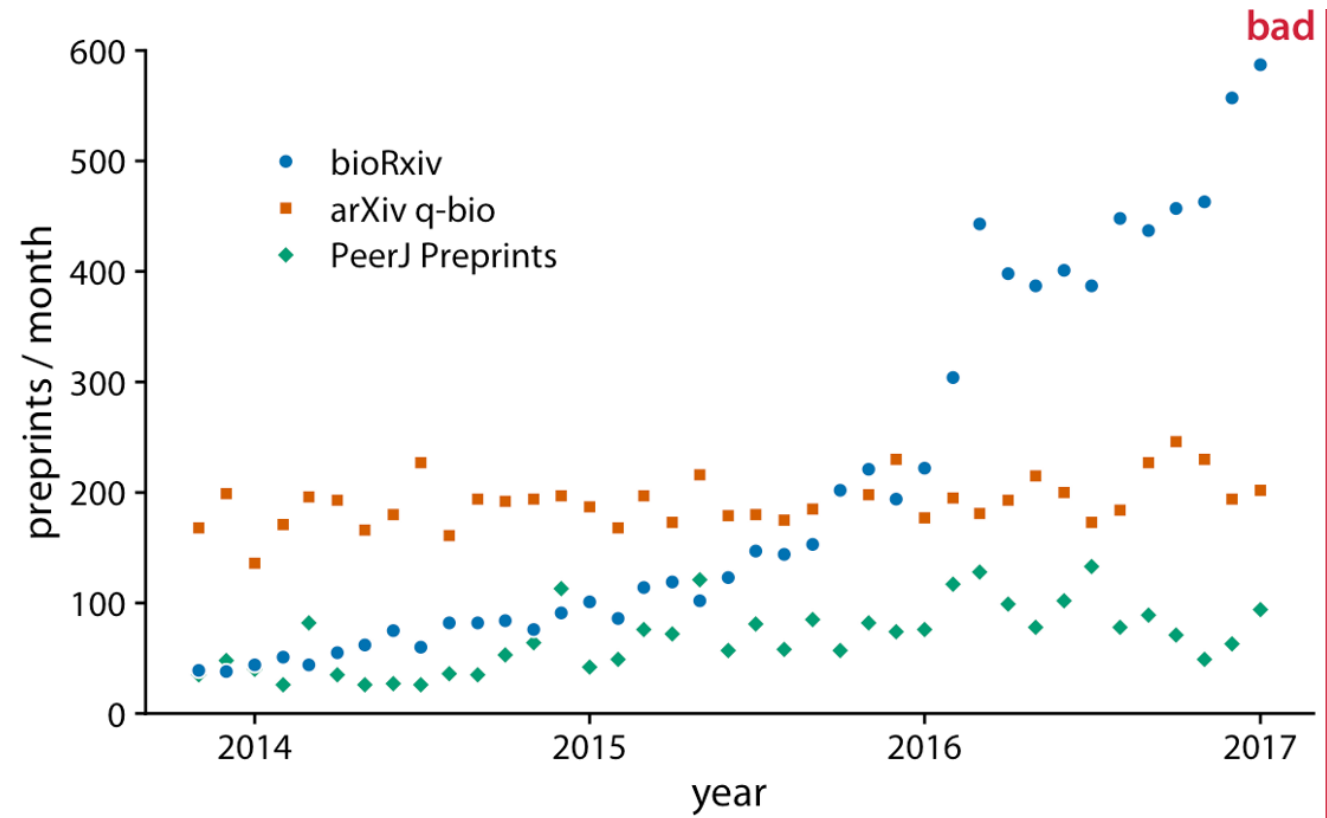




# INTRODUCTION TO DATA VISUALIZATION: GRAPHS & MAPS



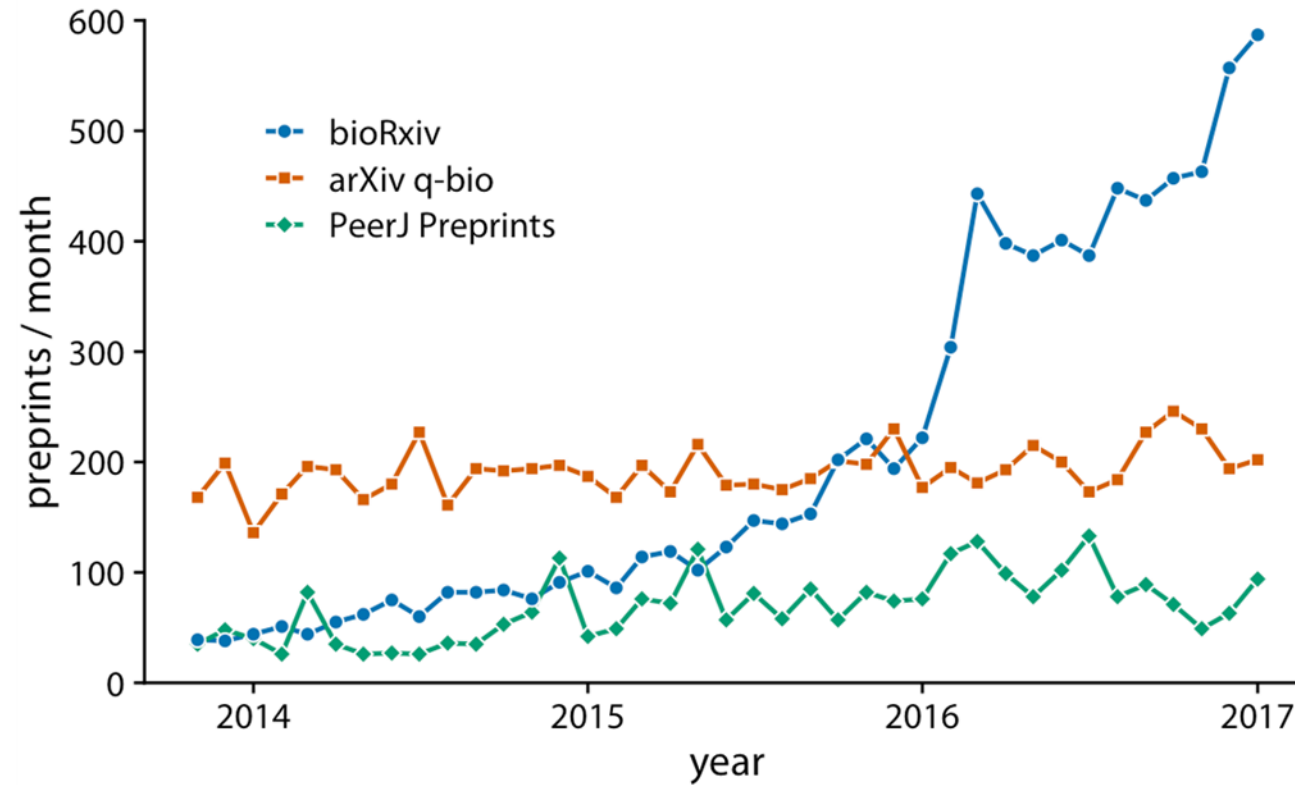
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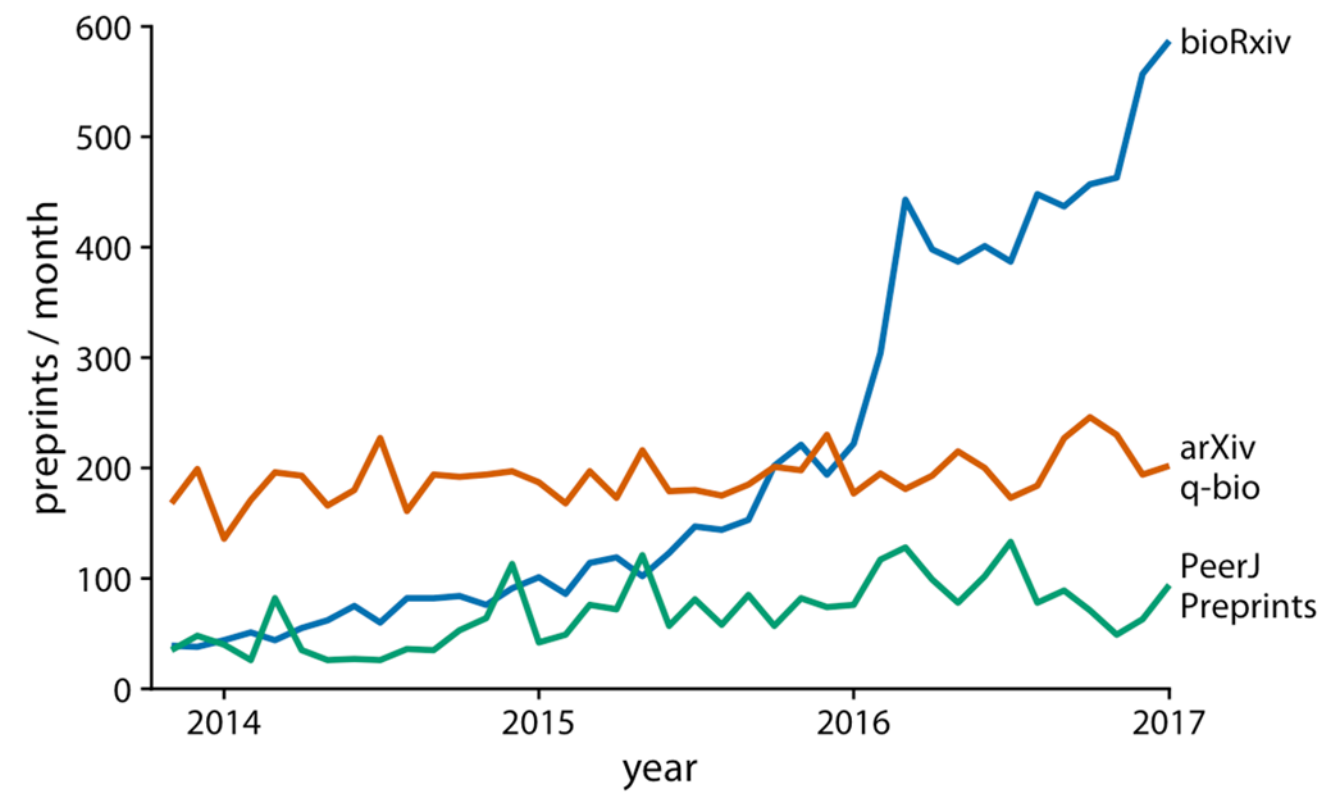
## VISUALIZING TIME SERIES



# INTRODUCTION TO DATA VISUALIZATION: GRAPHS & MAPS



## VISUALIZING TIME SERIES



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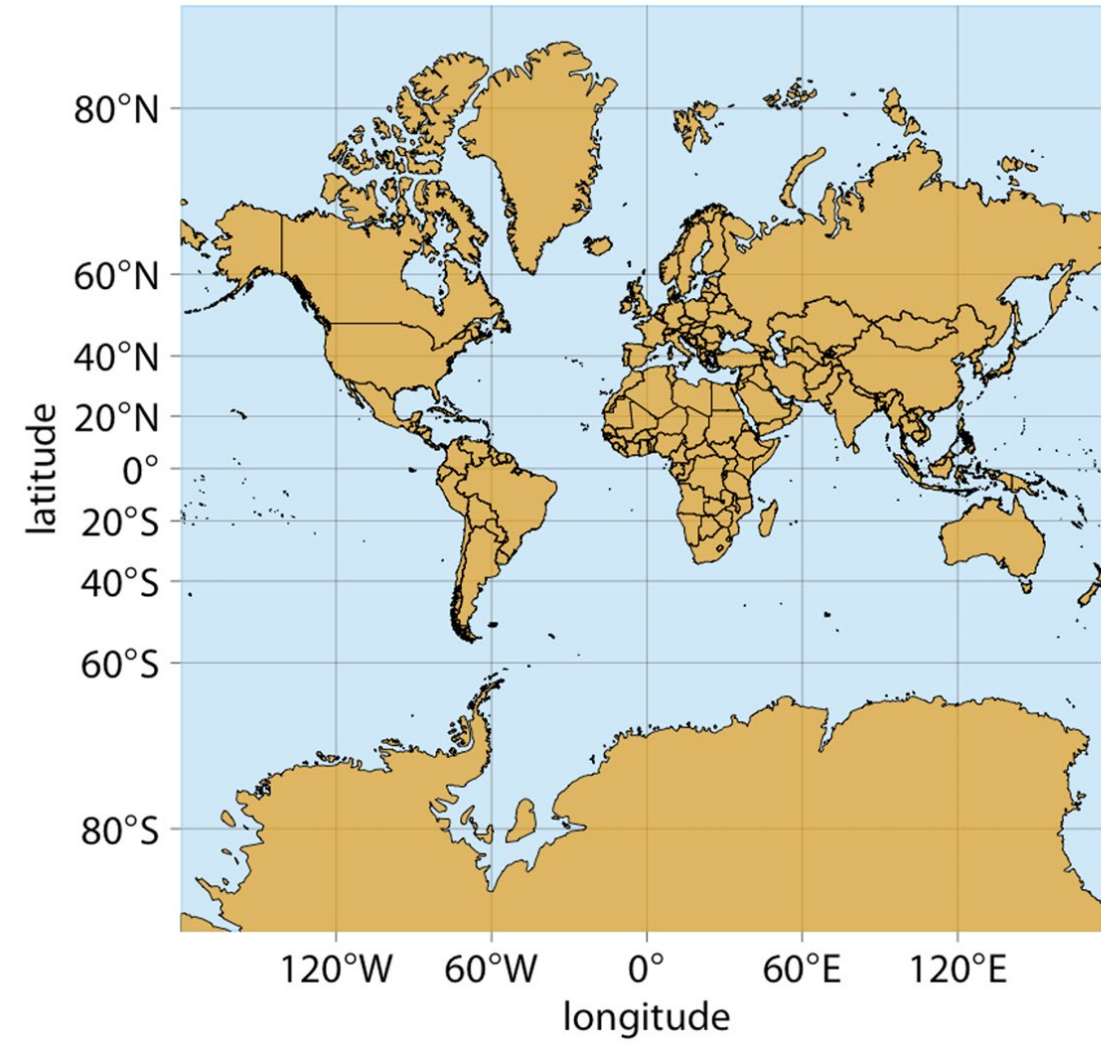
## VISUALIZING GEOSPATIAL DATA



# INTRODUCTION TO DATA VISUALIZATION: GRAPHS & MAPS



## VISUALIZING GEOSPATIAL DATA

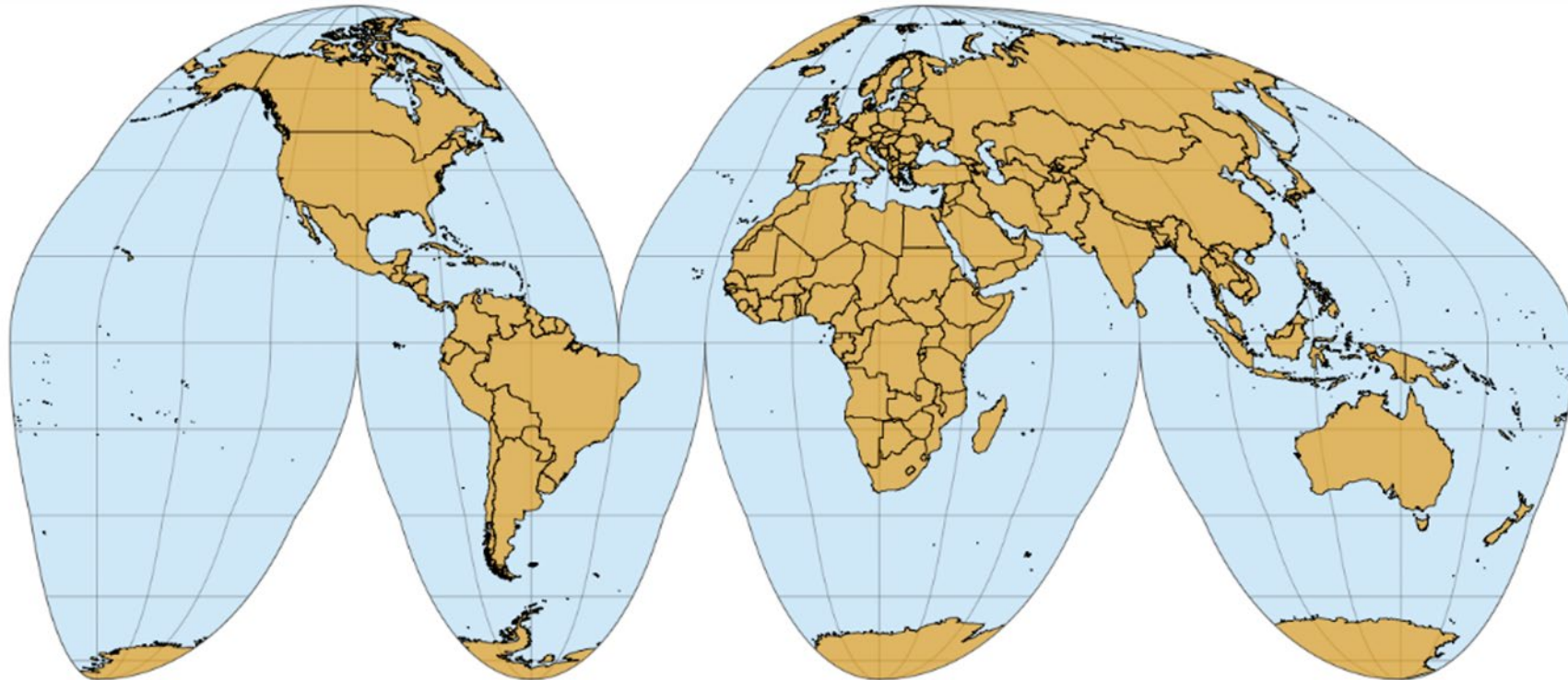




# INTRODUCTION TO DATA VISUALIZATION: GRAPHS & MAPS



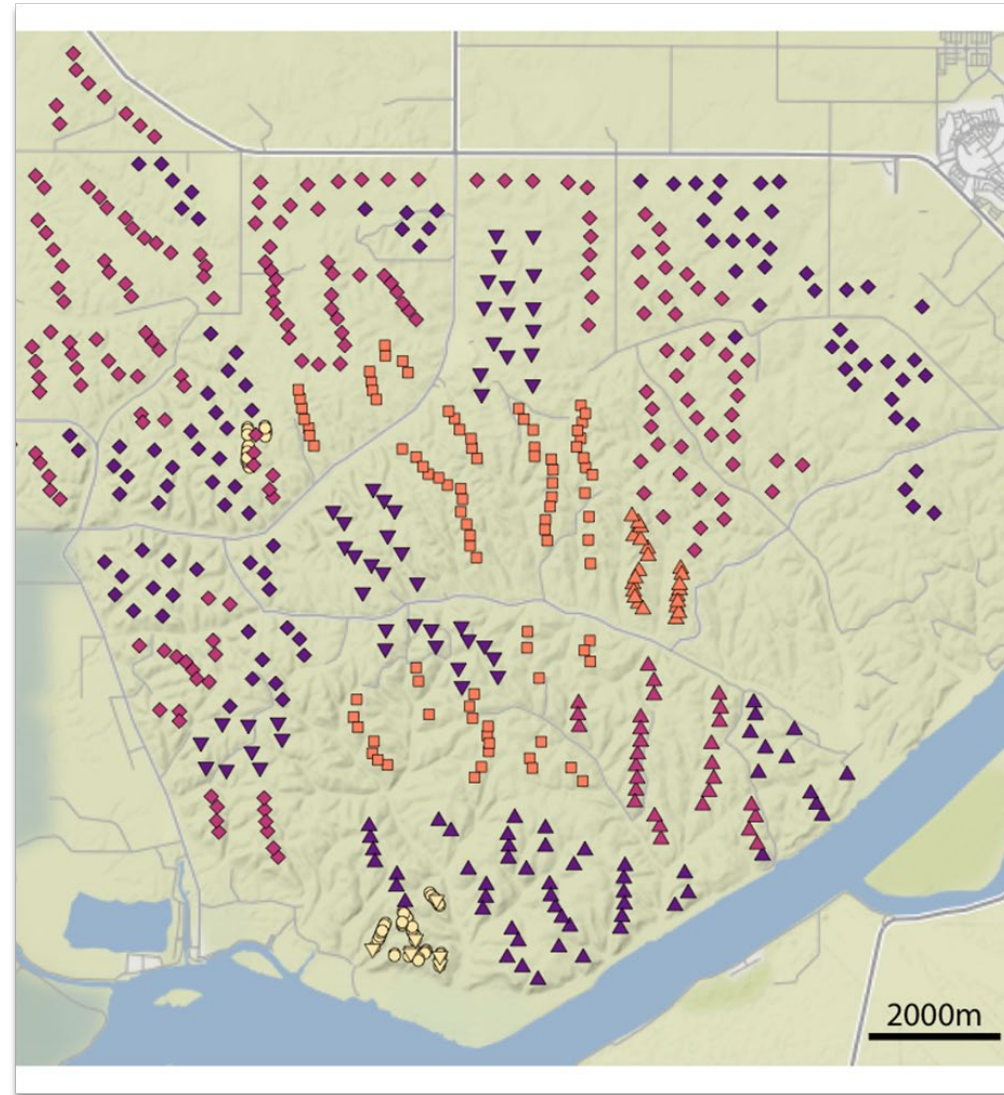
## VISUALIZING GEOSPATIAL DATA



# INTRODUCTION TO DATA VISUALIZATION: GRAPHS & MAPS



## VISUALIZING GEOSPATIAL DATA



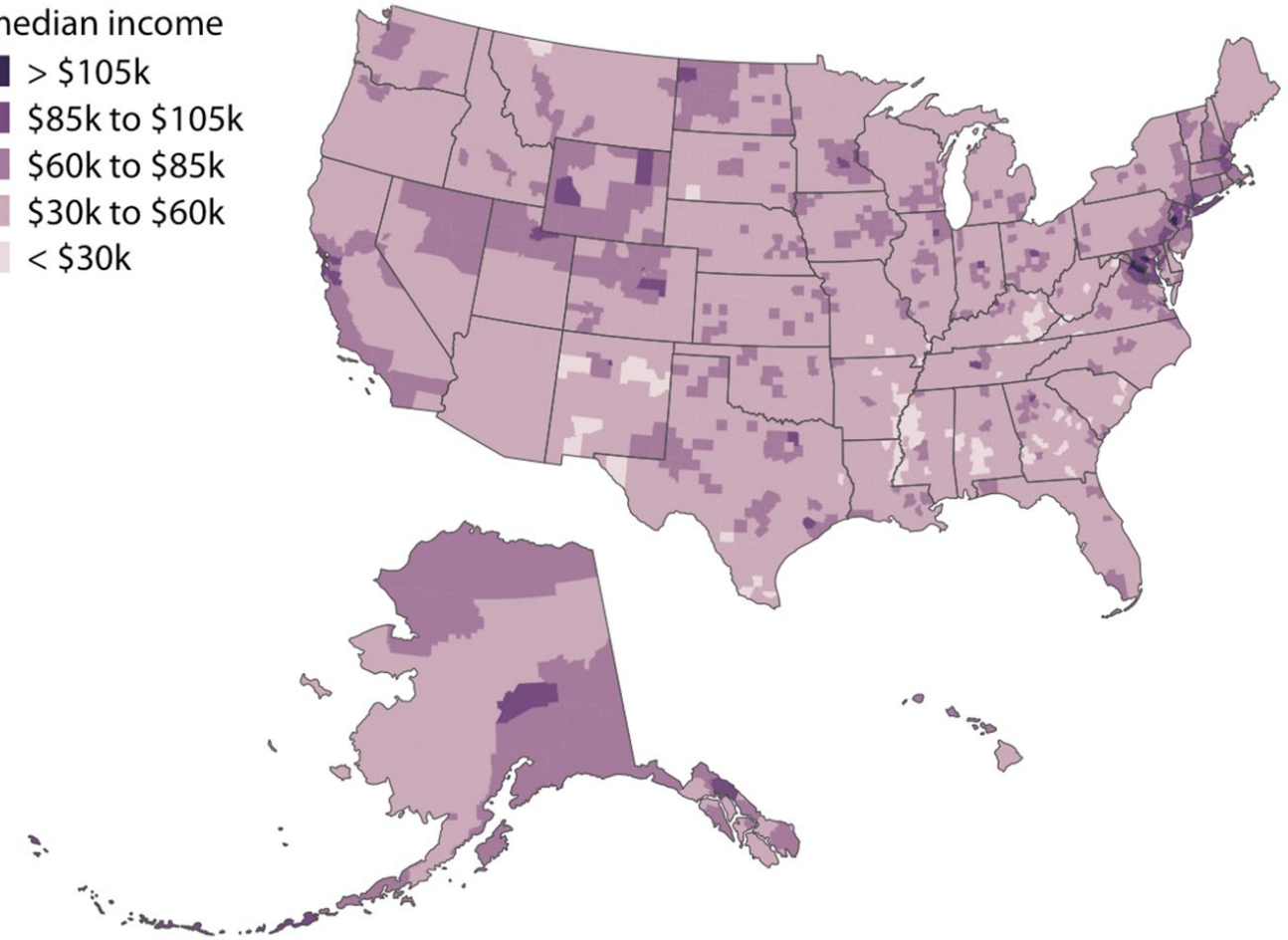
- project name
- EDF Renewables
  - High Winds
  - ◆ Shiloh
  - ▲ Solano
  - ▼ other
- year built
- before 2000
  - 2000 to 2004
  - 2005 to 2009
  - 2010 to 2014

# INTRODUCTION TO DATA VISUALIZATION: GRAPHS & MAPS



## VISUALIZING GEOSPATIAL DATA

- median income
- > \$105k
  - \$85k to \$105k
  - \$60k to \$85k
  - \$30k to \$60k
  - < \$30k





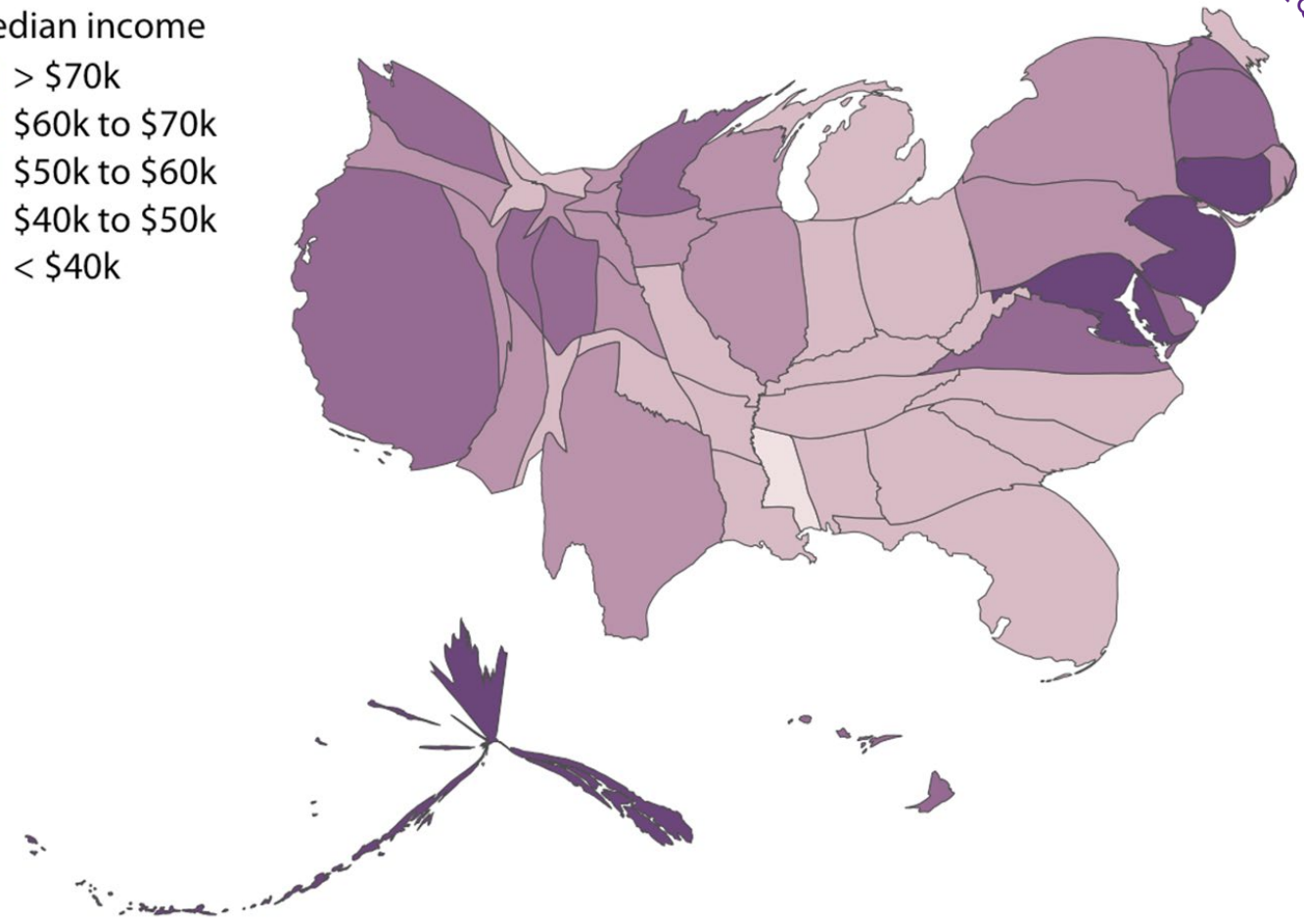
# INTRODUCTION TO DATA VISUALIZATION: GRAPHS & MAPS



## VISUALIZING GEOSPATIAL DATA

median income

- > \$70k
- \$60k to \$70k
- \$50k to \$60k
- \$40k to \$50k
- < \$40k



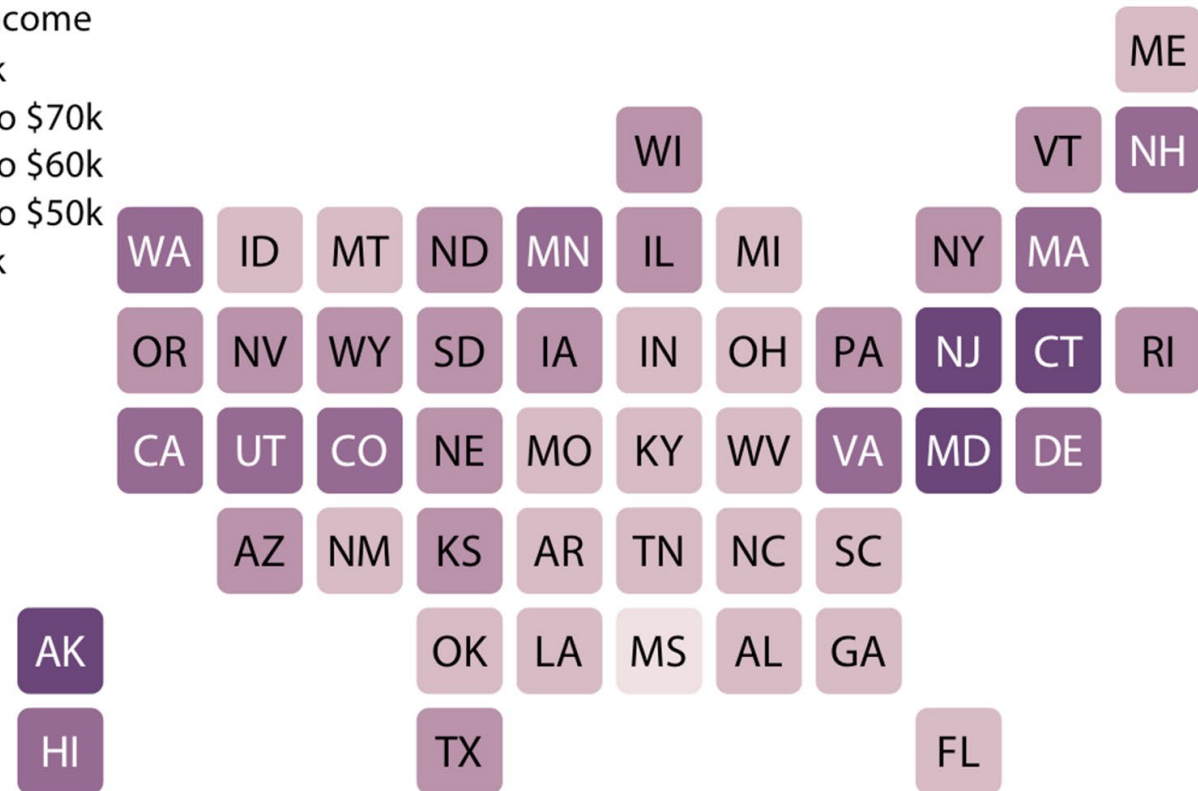
# INTRODUCTION TO DATA VISUALIZATION: GRAPHS & MAPS



## VISUALIZING GEOSPATIAL DATA

median income

- > \$70k
- \$60k to \$70k
- \$50k to \$60k
- \$40k to \$50k
- < \$40k



# EXAMPLES OF VISUALIZING THE GENDER GAP



## FLOWINGDATA – GENDER

A web page with links to a variety of projects that make use of data visualizations (graphs/maps) for evidencing gender inequalities

<https://flowingdata.com/tag/gender/>

## GENDER DATA PORTAL – THE WORLD BANK

The World Bank's Gender Data Portal makes the latest gender statistics accessible through compelling narratives and data visualizations to improve the understanding of gender data and facilitate analyses that inform policy choices.

<https://genderdata.worldbank.org/>

# EXAMPLES OF VISUALIZING THE GENDER GAP



## 7 DATA VISUALIZATIONS THAT OPENED THE WORLD'S EYES TO GENDER INEQUALITY

Blog that shows a selection of seven projects that visualize gender inequality

[https://medium.com/@Katja\\_Iversen/7-data-visualizations-that-opened-the-worlds-eyes-to-gender-inequality-75ee03b60589](https://medium.com/@Katja_Iversen/7-data-visualizations-that-opened-the-worlds-eyes-to-gender-inequality-75ee03b60589)

# THE EU GENDER EQUALITY INDEX



## GENDER EQUALITY INDEX

The Gender Equality Index is a tool to measure the progress of gender equality in the EU, developed by the European Institute of Gender Equality (EIGE).

It gives more visibility to areas that need improvement and ultimately supports policy makers to design more effective gender equality measures.

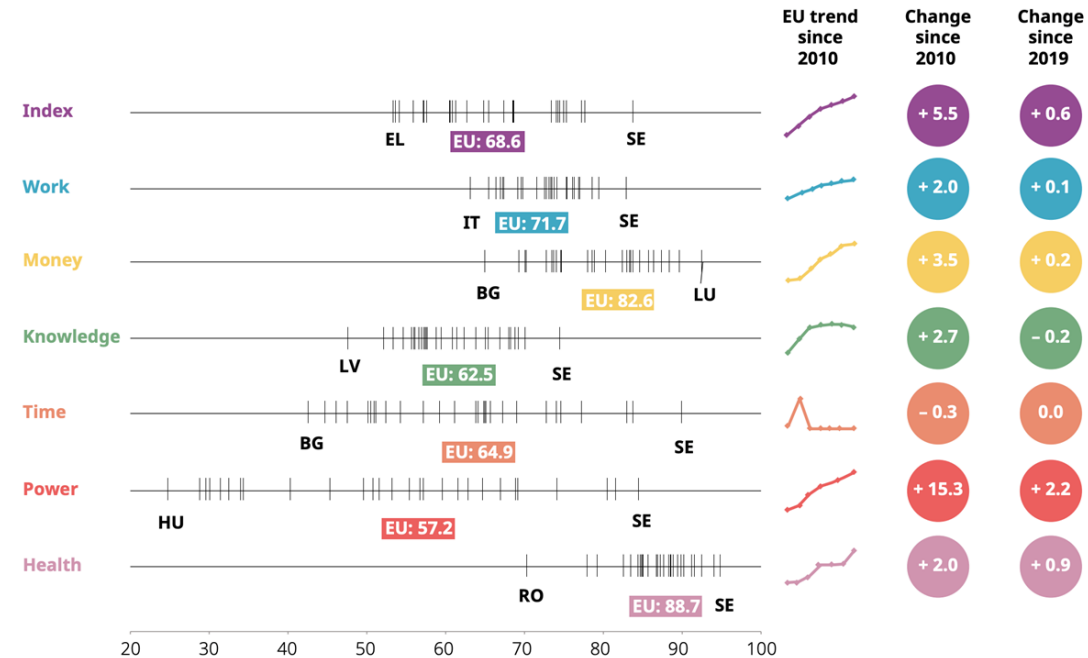
# THE EU GENDER EQUALITY INDEX



Find out the complete 2022 EIGE report at:

[https://eige.europa.eu/sites/default/files/documents/gender\\_equality\\_index\\_2022\\_corr.pdf](https://eige.europa.eu/sites/default/files/documents/gender_equality_index_2022_corr.pdf)

Figure 1. Ranges of Gender Equality Index 2022 (\*) scores for Member States, and changes over time



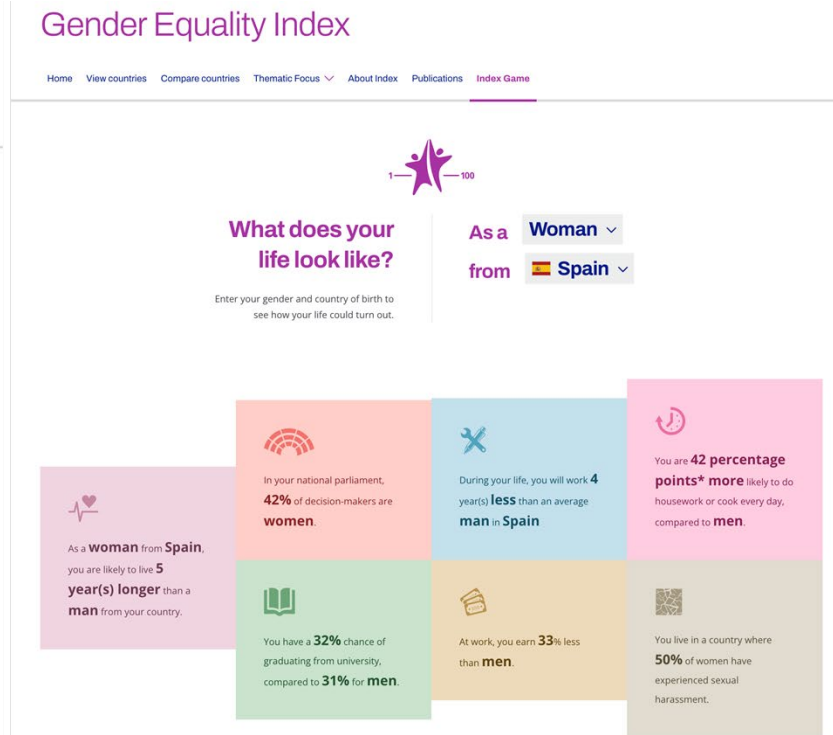
Source: Authors' calculation.  
 (\*) The 2022 Index for the most part uses data from 2020 and traces progress over the shorter term (2019–2020) and the longer term (2010–2020).

# THE EU GENDER EQUALITY INDEX



Explore the EIGE's proposed visualizations at:

<https://eige.europa.eu/gender-equality-index/2021/EU>

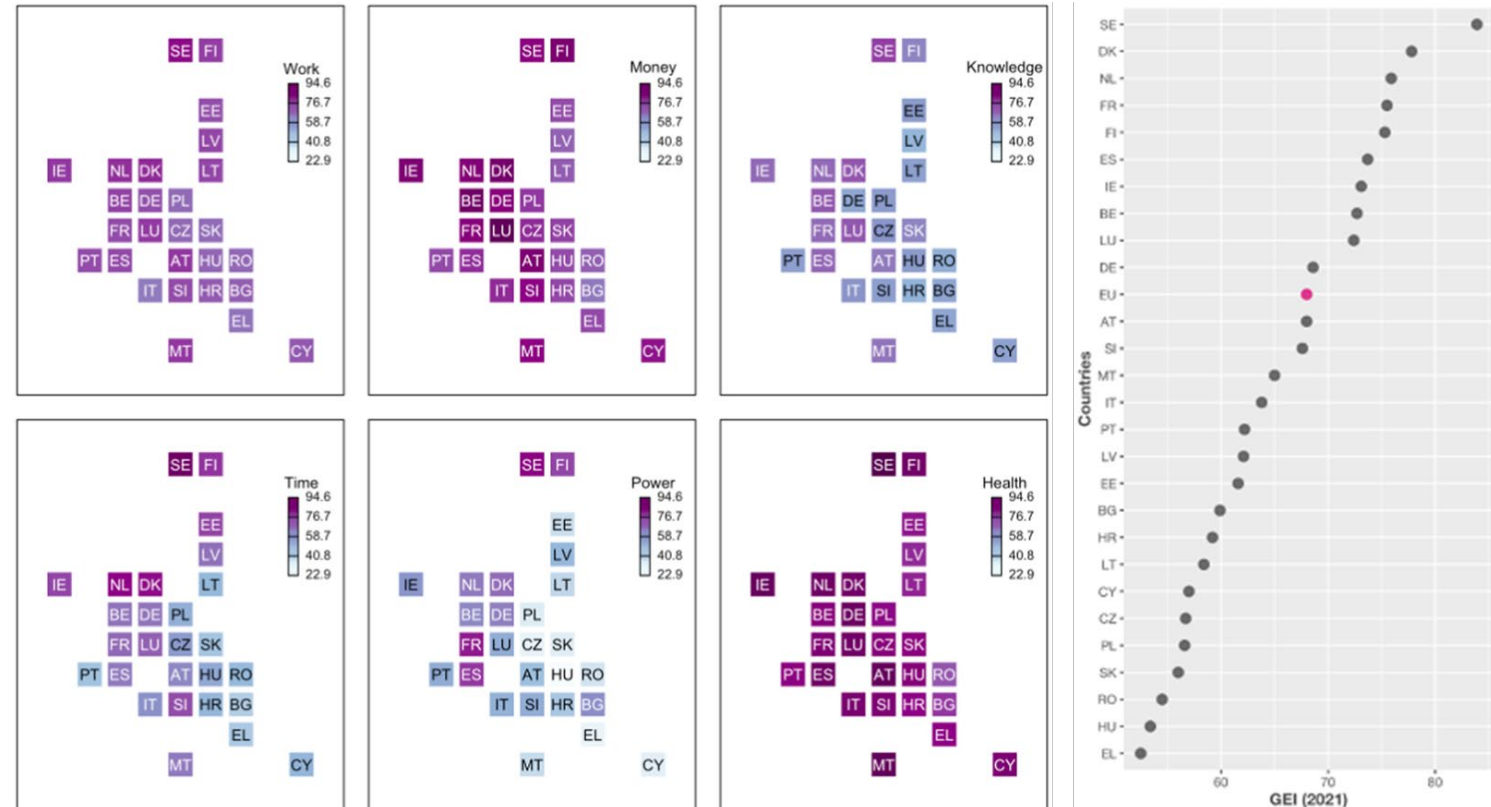


# THE EU GENDER EQUALITY INDEX



See other proposed visualizations at (chapter 5):

<https://omp.uv.es/index.php/PUV/catalog/book/460>





# THE EU GENDER EQUALITY INDEX



Explore the raw data at:

[https://eige.europa.eu/modules/custom/eige\\_gei/app/content/downloads/gender-equality-index-2013-2015-2017-2019-2020-2021-2022.xlsx](https://eige.europa.eu/modules/custom/eige_gei/app/content/downloads/gender-equality-index-2013-2015-2017-2019-2020-2021-2022.xlsx)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Scores (Index, domains, sub-domains, indicators)														
	Index year	Reference year (main)	Protocol order	Country	Gender Equality Index	WORK	Participation	Segregation and quality of work	MONEY	Financial resources	Economic situation	KNOWLEDGE	Attainment and participation	Segregation	TIME
2															
3	2022	2020	0	EU27	68.6	71.7	81.1	63.3	82.6	77.2	88.3	62.5	72.1	54.1	64.9
4	2022	2020	1	BE	74.2	75.5	80.4	70.9	89.8	84.9	95.1	70.1	73.8	66.6	65.3
5	2022	2020	2	BG	60.7	69.3	83.6	57.4	65.0	55.3	76.5	56.2	57.0	55.4	42.7
6	2022	2020	3	CZ	57.2	67.1	83.5	53.8	79.0	64.2	97.1	58.9	65.3	53.1	57.3
7	2022	2020	4	DK	77.8	79.5	88.4	71.5	88.5	84.9	92.3	69.3	79.3	60.6	83.1
8	2022	2020	5	DE	68.7	72.9	84.9	62.5	83.5	85.2	81.8	54.7	64.8	46.1	65.0
9	2022	2020	6	EE	61.0	72.7	90.4	58.5	73.6	64.0	84.7	57.4	71.9	45.8	74.7
10	2022	2020	7	IE	74.3	76.5	82.5	70.9	87.5	82.3	93.1	68.1	79.7	58.2	74.2
11	2022	2020	8	EL	53.4	65.6	72.8	59.1	72.8	61.2	86.7	55.8	67.1	46.4	44.7
12	2022	2020	9	ES	74.6	73.6	79.4	68.2	78.7	73.5	84.3	68.3	77.0	60.6	64.0
13	2022	2020	10	FR	75.1	73.2	83.5	64.2	84.7	78.5	91.4	65.5	78.8	54.5	67.3
14	2022	2020	11	HR	60.7	69.7	79.1	61.3	74.1	62.3	88.3	53.4	59.0	48.4	51.0
15	2022	2020	12	IT	65.0	63.2	68.1	58.7	80.5	76.6	84.6	59.5	57.7	61.4	59.3
16	2022	2020	13	CY	57.3	69.9	85.0	57.5	83.1	75.2	91.7	57.8	71.6	46.7	51.3
17	2022	2020	14	LV	61.4	74.2	89.9	61.3	69.4	60.0	80.3	47.7	61.1	37.2	65.8
18	2022	2020	15	LT	60.6	73.9	90.8	60.1	70.4	61.6	80.4	57.6	71.6	46.3	50.6
19	2022	2020	16	LU	73.5	76.3	84.7	68.7	92.6	98.0	87.5	68.9	86.1	55.2	69.1
20	2022	2020	17	HU	54.2	67.5	80.7	56.4	73.8	58.8	92.6	57.1	63.7	51.1	54.3
21	2022	2020	18	MT	65.6	77.0	81.2	73.0	83.6	78.8	88.6	65.2	68.2	62.3	64.2
22	2022	2020	19	NL	77.3	78.7	83.0	74.5	86.6	81.4	92.1	67.0	86.7	51.7	83.9
23	2022	2020	20	AT	68.8	77.2	83.0	71.7	87.5	82.5	92.8	64.0	72.7	56.4	61.2
24	2022	2020	21	PL	57.7	67.3	80.4	56.4	78.1	65.9	92.6	57.5	61.9	53.4	52.5
25	2022	2020	22	PT	62.8	73.4	87.8	61.4	74.7	63.1	88.4	56.7	63.2	50.9	47.5
26	2022	2020	23	RO	53.7	67.3	78.4	57.7	70.2	60.8	80.9	52.2	53.1	51.3	50.3
27	2022	2020	24	SI	67.5	73.4	87.3	61.7	83.9	71.8	98.0	56.0	68.2	46.0	72.9
28	2022	2020	25	SK	56.0	66.5	82.7	53.5	74.8	56.8	98.6	60.9	59.5	62.3	46.3
29	2022	2020	26	FI	75.4	75.4	89.7	63.4	87.5	80.2	95.4	61.5	83.8	45.1	77.4
30	2022	2020	27	SE	83.9	83.0	95.4	72.2	85.9	81.4	90.7	74.6	80.5	69.1	90.1

# WORKSHOP: A THEMATIC MAP ON 'NOBEL PRIZE AWARDED WOMEN'



A thematic map is a kind of map which depicts information on a particular topic or theme

We would like to build a thematic map for the 'Nobel Prize Awarded Woman' in collaboration with you

To do that, we just need to fulfill an online Excel file with some data...

# WORKSHOP: A THEMATIC MAP ON 'NOBEL PRIZE AWARDED WOMEN



NAME:

Just write the name of the woman in the excel file, e.g.:

Marie Curie

You can access the full list of Nobel Prize Awarded Women at:

<https://www.nobelprize.org/prizes/lists/nobel-prize-awarded-women/>

# WORKSHOP: A THEMATIC MAP ON 'NOBEL PRIZE AWARDED WOMEN



## WIKIADDRESS:

Look for the Wikipedia profile of the woman, copy the URL and paste it in the excel file, e.g.:

[https://en.wikipedia.org/wiki/Marie\\_Curie](https://en.wikipedia.org/wiki/Marie_Curie)

# WORKSHOP: A THEMATIC MAP ON 'NOBEL PRIZE AWARDED WOMEN



## WIKIPICTURE:

At the Wikipedia, copy/paste the complete URL of the given picture. Just put your mouse on top of the picture, then right click, and select 'copiar dirección de imagen', as seen in example. Then, you'll have to paste the copied link in the excel file, e.g.:

[https://upload.wikimedia.org/wikipedia/commons/thumb/c/c8/Marie\\_Curie\\_c.\\_1920s.jpg/440px-Marie\\_Curie\\_c.\\_1920s.jpg](https://upload.wikimedia.org/wikipedia/commons/thumb/c/c8/Marie_Curie_c._1920s.jpg/440px-Marie_Curie_c._1920s.jpg)

Just write the name of the woman in the excel file, e.g.:

Marie Curie

You can access the full list of Nobel Prize Awarded Women at:

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# WORKSHOP: A THEMATIC MAP ON 'NOBEL PRIZE AWARDED WOMEN



BORNYEAR:

Write the year of birth of the woman in the excel file, e.g.:

1867

# WORKSHOP: A THEMATIC MAP ON 'NOBEL PRIZE AWARDED WOMEN



## BORNPLACE:

Write the place of birth (city, country) of the woman in the excel file, e.g.:

**Warsaw, Poland**

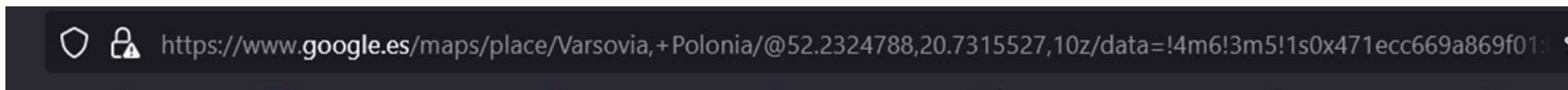
# WORKSHOP: A THEMATIC MAP ON 'NOBEL PRIZE AWARDED WOMEN



## IATBORN:

In Google Maps, search the place of birth, then right click, and select the first option (latitude and longitude numbers). Then, you'll have to paste the first number in the excel file, e.g.:

52.196217





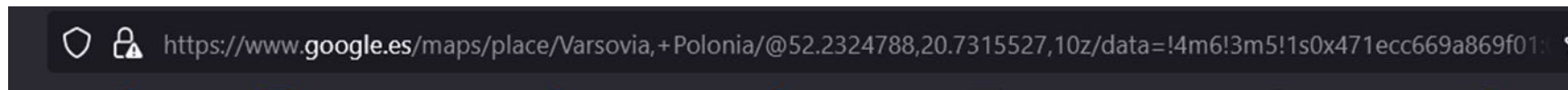
# WORKSHOP: A THEMATIC MAP ON 'NOBEL PRIZE AWARDED WOMEN



## IGBORN:

In Google Maps, search the place of birth, then right click, and select the first option (latitude and longitude numbers). Then, you'll have to paste the second number in the excel file, e.g.:

21.178225



# WORKSHOP: A THEMATIC MAP ON 'NOBEL PRIZE AWARDED WOMEN



## STUDYWORKPLACE:

Write the place of work (city, country) of the woman (at the time of being awarded) in the excel file, e.g.:

**Warsaw, Poland**

# WORKSHOP: A THEMATIC MAP ON 'NOBEL PRIZE AWARDED WOMEN



## PHYSICS, CHEMISTRY, PHYSIOLOGY OR MEDICINE, LITERATURE, PEACE, ECONOMIC SCIENCES

At the Wikipedia, identify on the “Award” field any category of Nobel Prize. Then, you'll have to paste year in the corresponding field of excel file.

Fill the empty cells with zeros (0)

<b>Awards</b>	Nobel Prize in Physics (1903)
	Davy Medal (1903)
	Matteucci Medal (1904)
	Actonian Prize (1907)
	Elliott Cresson Medal (1909)
	Albert Medal (1910)
	Nobel Prize in Chemistry (1911)
	Willard Gibbs Award (1921)
	Cameron Prize for Therapeutics of the University of Edinburgh (1931)

# WORKSHOP: A THEMATIC MAP ON 'NOBEL PRIZE AWARDED WOMEN



Now it's time for you to collaborate in feeding the map with data. **Please, enter in the following link and follow the indications given by the teachers:**

[https://docs.google.com/spreadsheets/d/1aFztOjNvzocxM-dRqnUWxG3ytGQnUOwHA0e6nOJW-XQ/edit?usp=drive\\_link](https://docs.google.com/spreadsheets/d/1aFztOjNvzocxM-dRqnUWxG3ytGQnUOwHA0e6nOJW-XQ/edit?usp=drive_link)

# RESULTS & DISCUSSION



Look at the map and comment on, e.g.:

Do you see any pattern that relates the place of birth and the place of work of the Nobel Prize-winning women?

Are all the EU countries well represented in relation to Nobel Prize-winning women?

Taking in consideration the EU gender equality index and the resulting map, do you think that woman might have more professional opportunities depending on the born place?

How would you improve/complete the map?

Are there other kind of thematic maps that could be useful to visualize gender inequalities?

# ONLINE QUESTIONNAIRE - POST



How much have you learned about data visualization during the workshop?... we'd like to know it...

**Please, enter in the following link and fulfill the questionnaire:**

<https://forms.gle/jXyjJ8ciLWfDfJdU7>



# THANKS FOR YOUR PARTICIPATION!



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# EQUALS EU

[www.equals-eu.org](http://www.equals-eu.org)

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DE VALÈNCIA



**OSLOMET**



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