

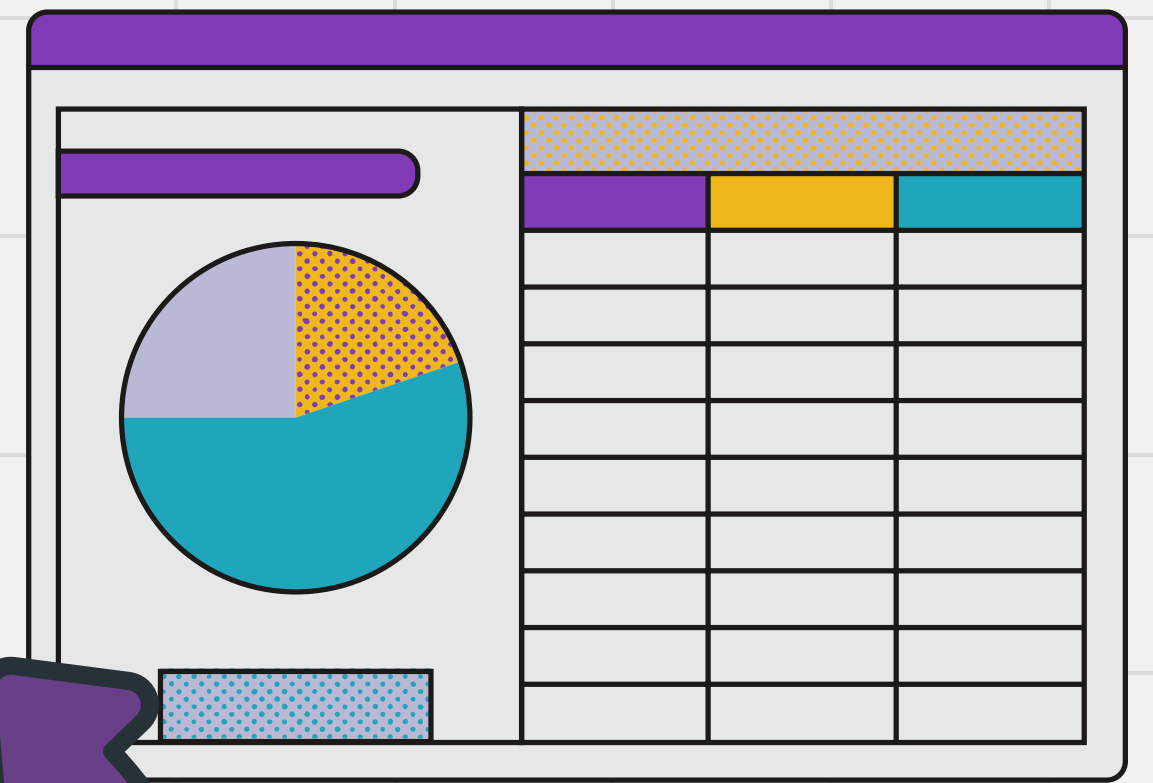
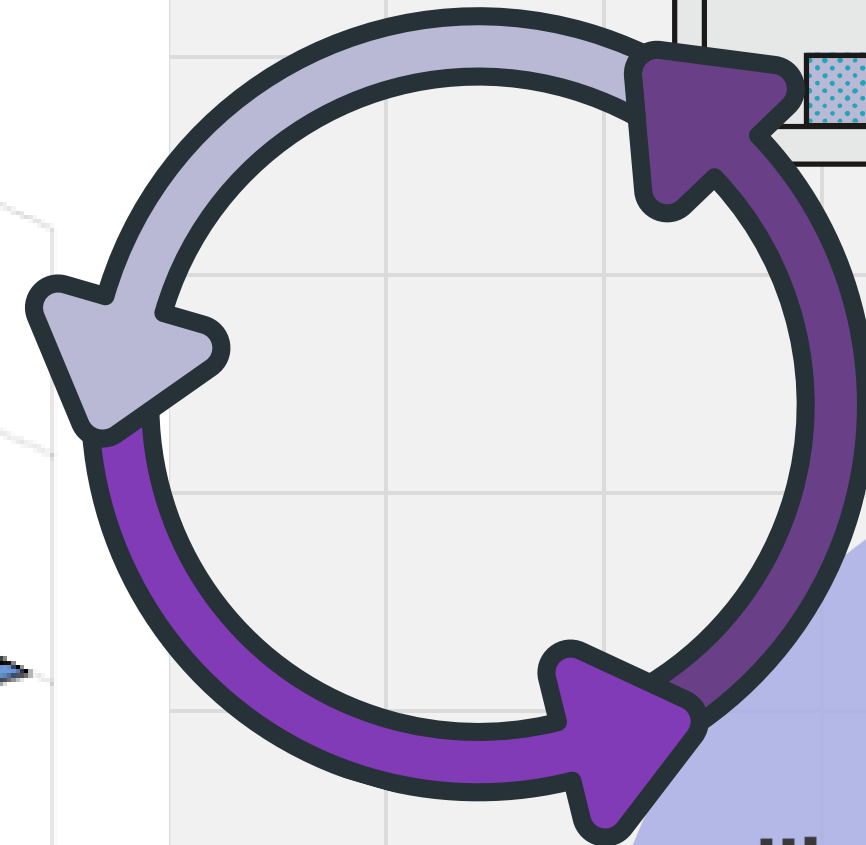
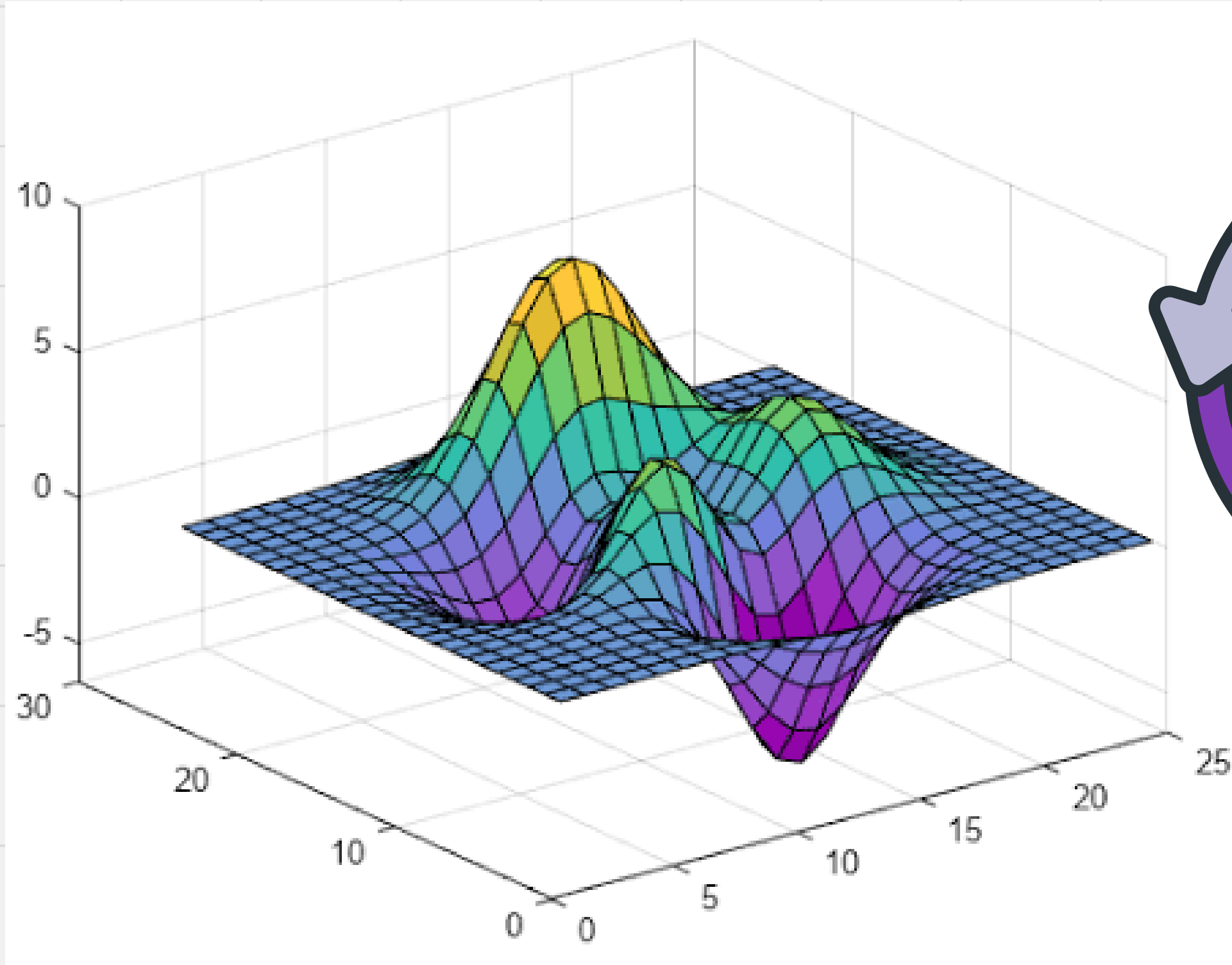
FINALE INDIVIDUALE KANGOUROU 2026

20/09/2026

**"È VERO CHE LE ARTI LIBERALI
FANNO VENIRE IL MAL DI PANCIA?"**

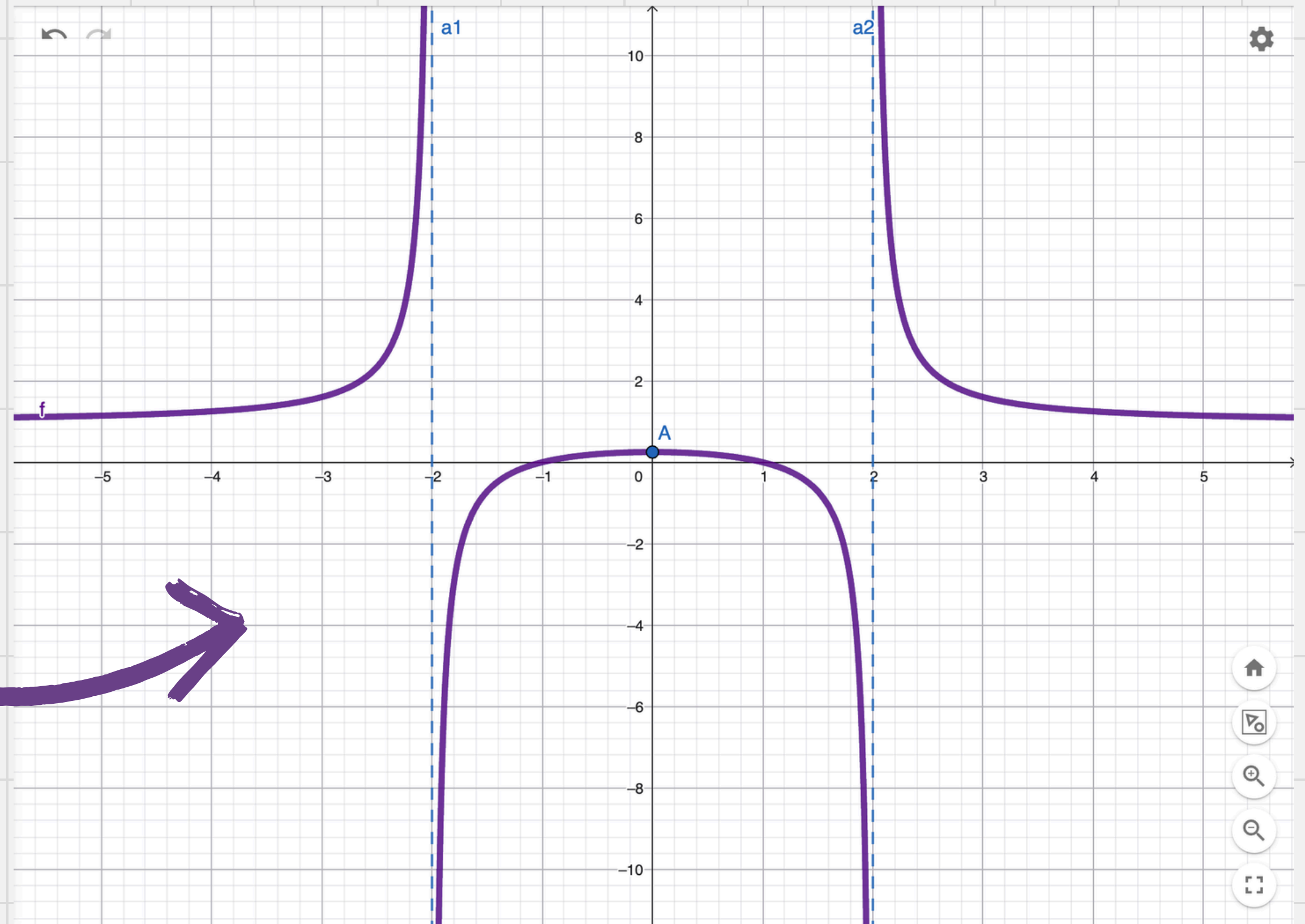
DATI E COME (NON) VISUALIZZARLI

MICHELA BARBETTA
LORENZO FERRARIS



PARLIAMO DI GRAFICI

$$f: y = \frac{x^2 - 1}{x^2 - 4}$$



**PARLIAMO DI
GRAFICI**

PRESENTATION
ANALYSIS
VISUAL
COMMUNICATION
DATA
STATISTICAL
VISUALIZATION
PERCEPTION
INFORMATION
UNDERSTANDABLE
SCIENCE
DIAGRAMS
GRAPHICS
PLOT
DISPLAY
PROCESSING
OBJECTS
USABLE

MA COME?

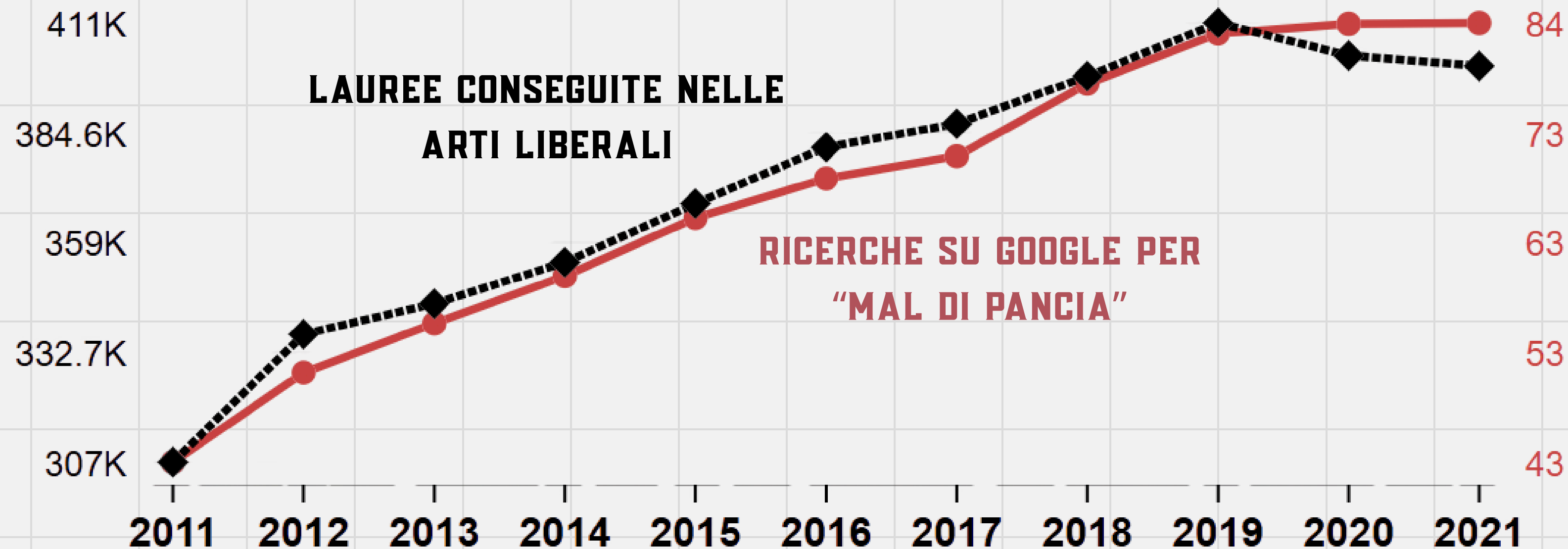
**MA QUINDI È VERO CHE
LE ARTI LIBERALI...**



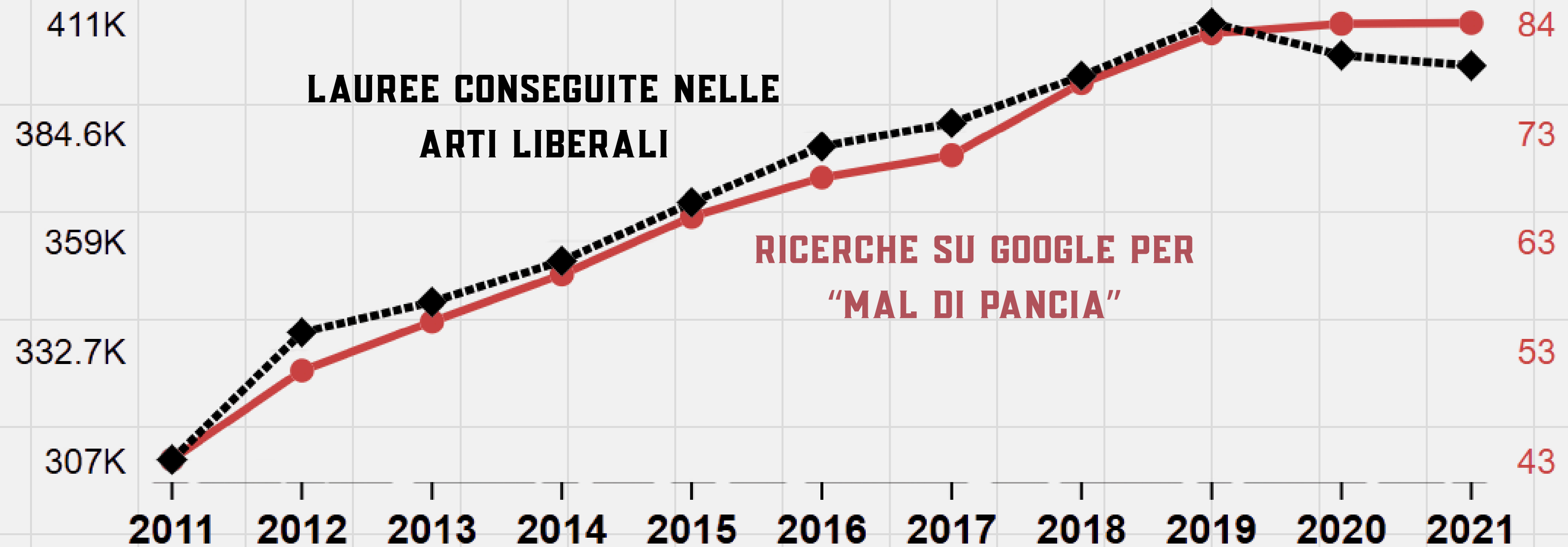
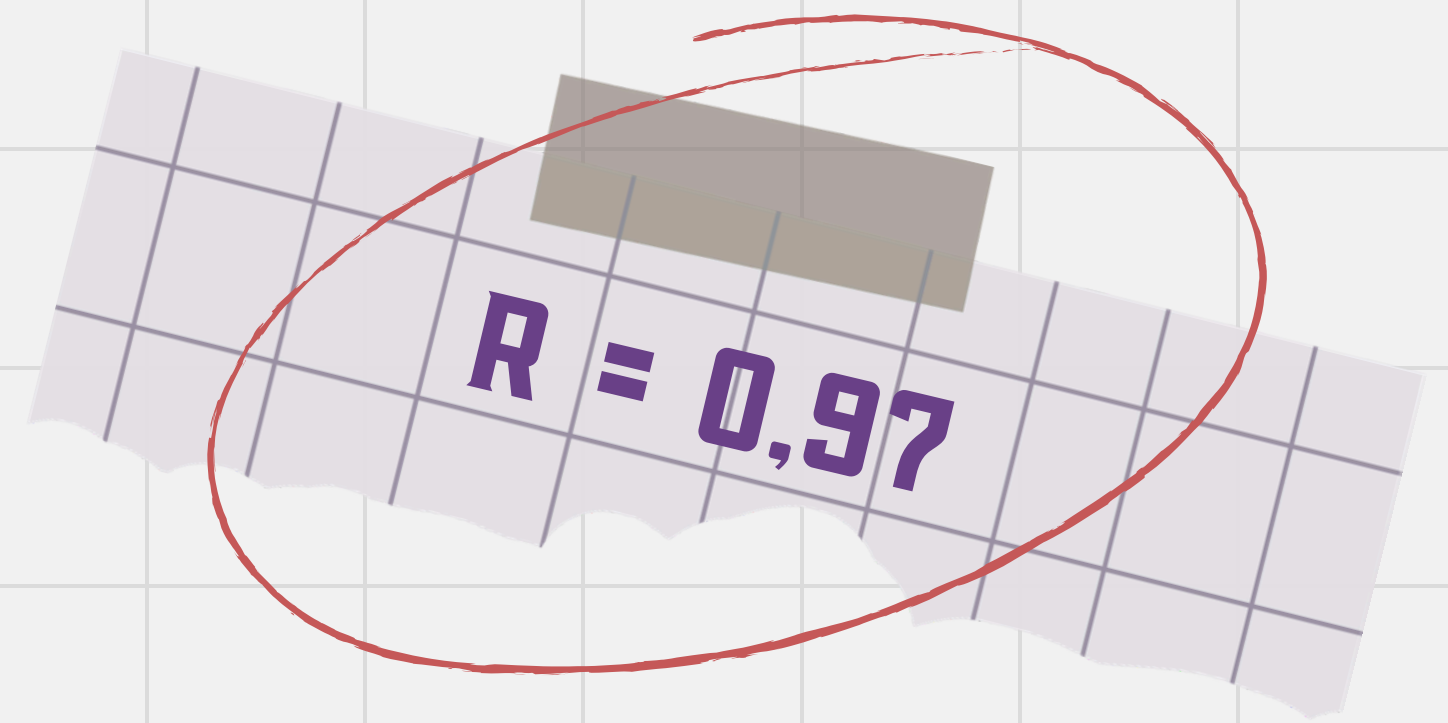


**...FANNO VENIRE
IL MAL DI
PANCIA?**

TROVA LA CORRELAZIONE



TROVA LA CORRELAZIONE



Divorce

[D. Allen Johnson, Attorney at Law]
[Law Offices of Johnson & Keyes]
[123 Red Rock Road]
[Columbus, OH 42366]
Tel: [(555)555-5555]

Petitioner:

Petitioner: _____ **Respondent:** _____

The petitioner is filing for dissolution of the marriage, which was begun on June _____.

I, _____ (both parties) hereby agree to the following:

_____ and they intend to live separately.
_____ its and duties concerning the
_____ by choice, without

Respondent:

Petitioner: _____

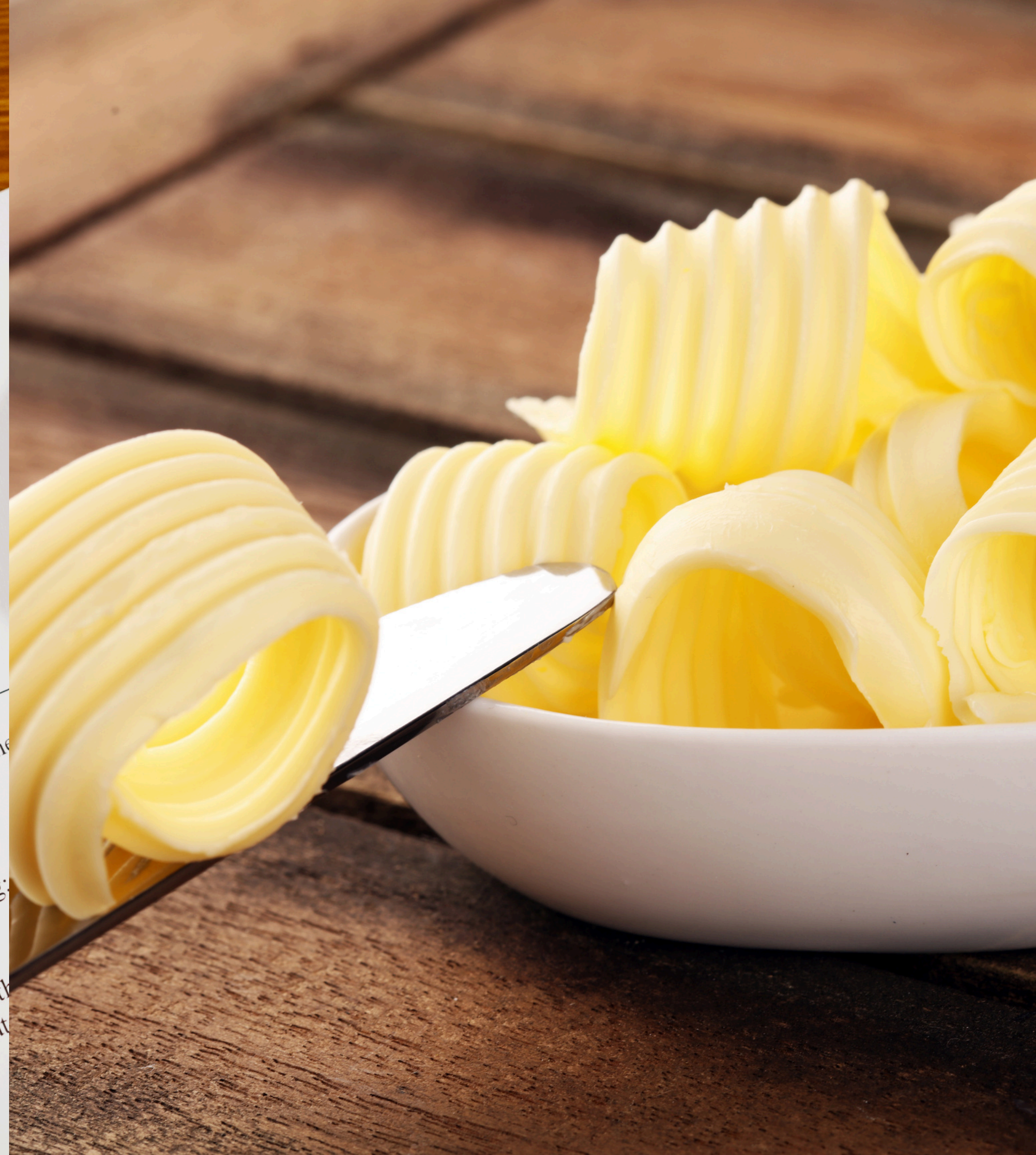
The petitioner is filing for dissolution of the marriage;

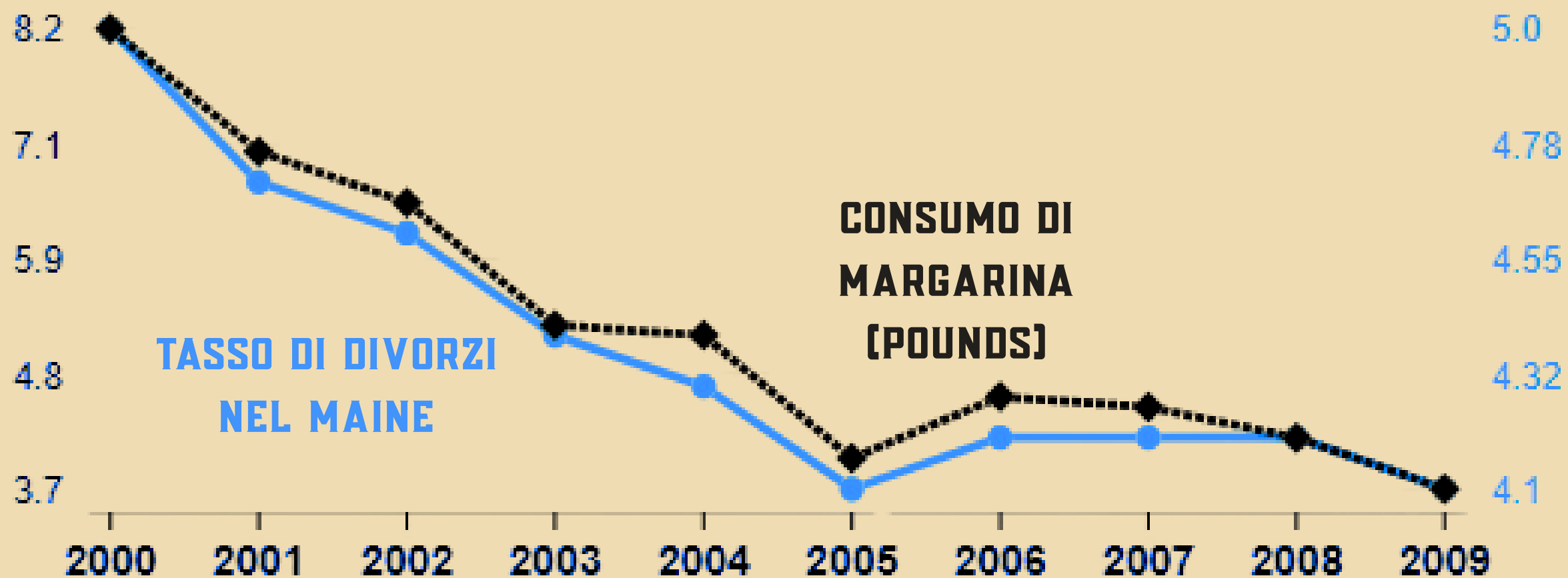
This agreement is hereby entered into on this date: [Date here]

Petitioner and respondent (both parties) hereby agree to the following:

1. The parties acknowledge that no legal grounds exist and they intend to live separately.

2. The parties acknowledge their respective rights and duties concerning the marriage and have agreed to it by choice, without





[D. Allen Joh
[Law Offices
[123 Red R
[Columbus
Tel: [(555

Petitioner: _____

The petitioner is filing for diss

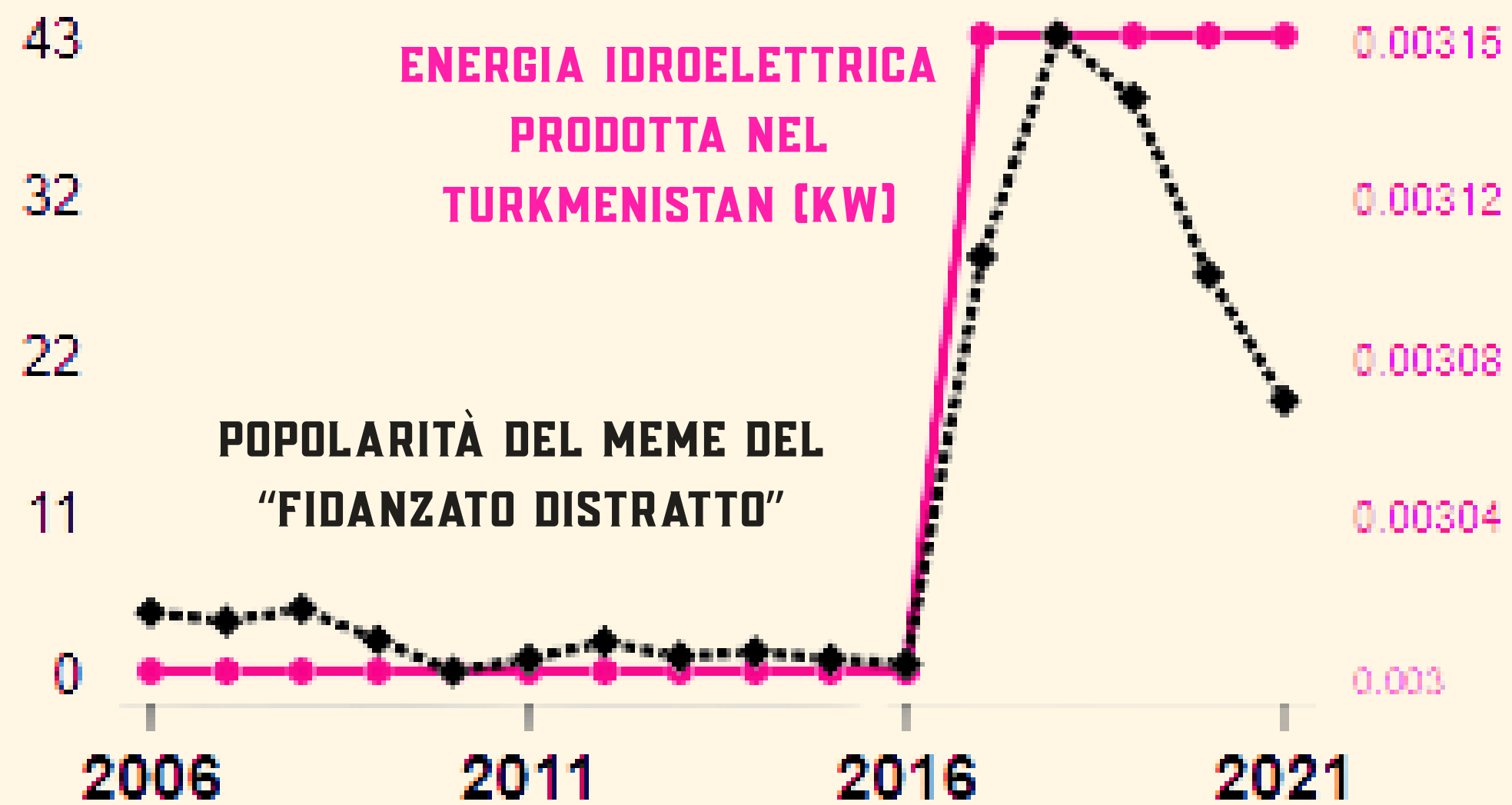
This agreement is hereby entered in

ner and respondent (both parties) he

ances exist and they intend to live

pective rights and duties conce

and agreed to it by choice, withou



etiche
ali

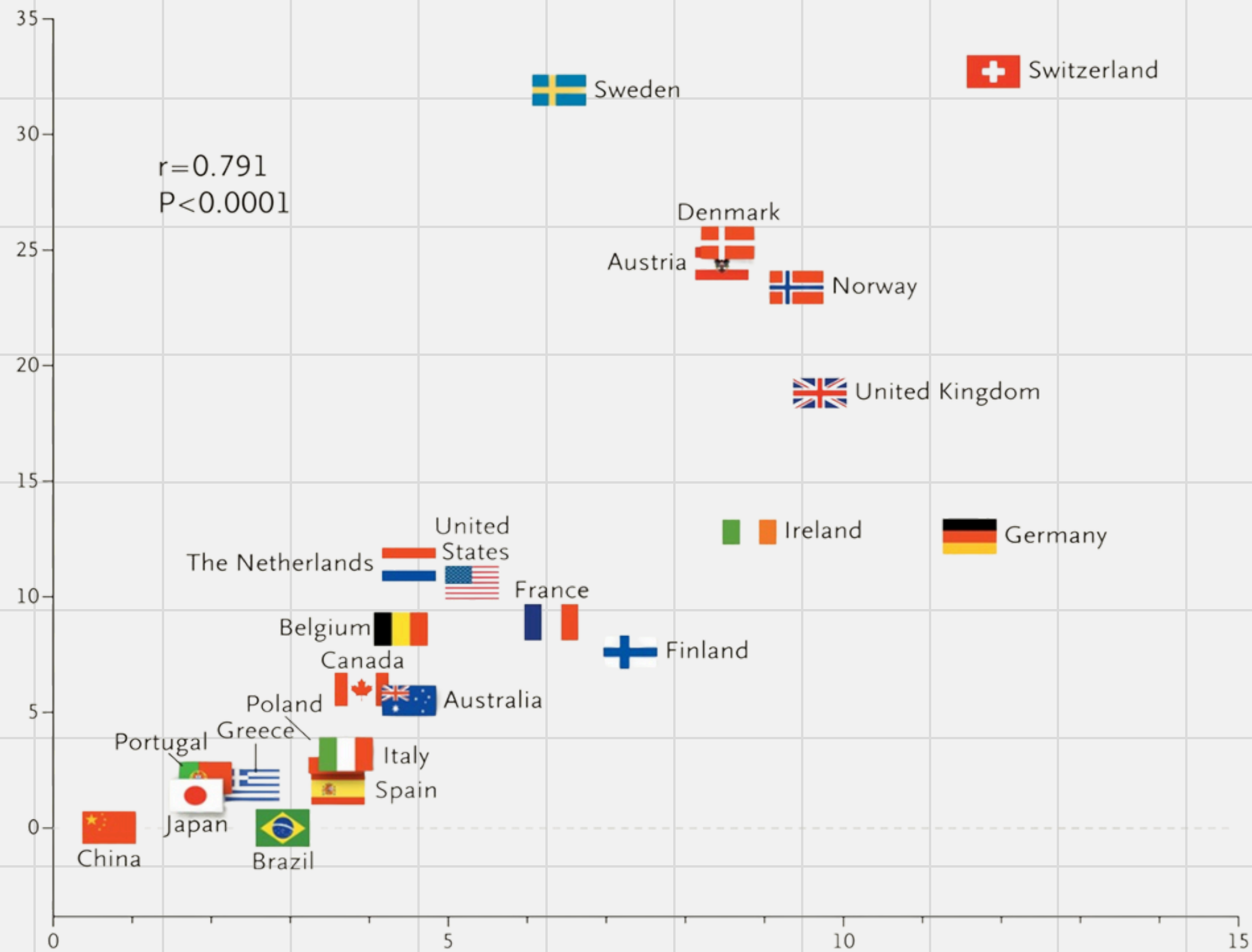


Energia idroelettrica

Turkmenistan

**Fonti energetiche
tradizionali**

PREMI NOBEL VINTI



CONSUMO DI CIOCCOLATO



Il cioccolato fa vincere premi Nobel

23 gennaio 2015, a cura della redazione

Nei Paesi in cui si mangia più cioccolato si vincono più premi Nobel. È il risultato di una ricerca pubblicata sul New England Journal Of Medicine.

Mangiare il cioccolato può aiutare a vincere un Premio Nobel?

CACAO & CIOCCOLATO CURIOSITÀ DATI

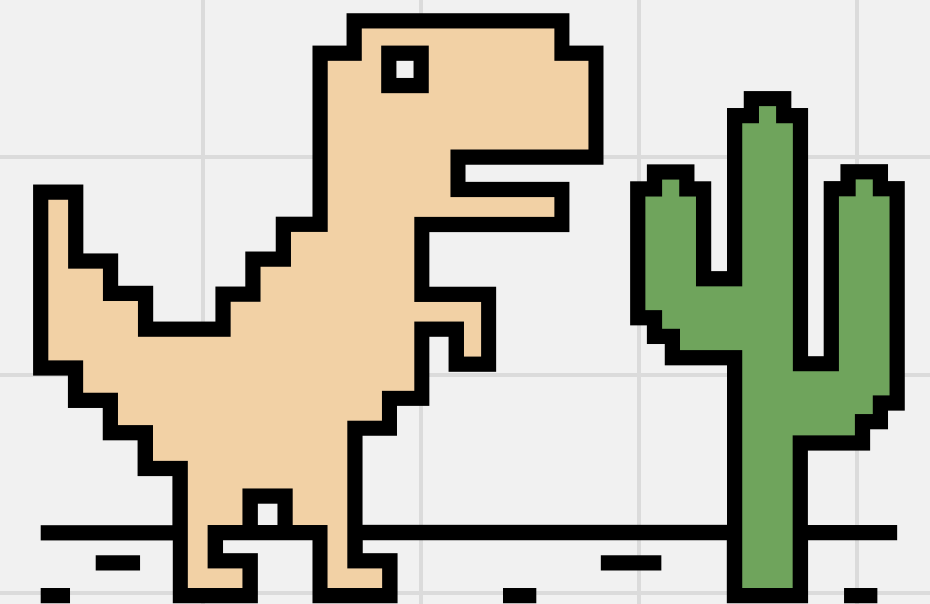
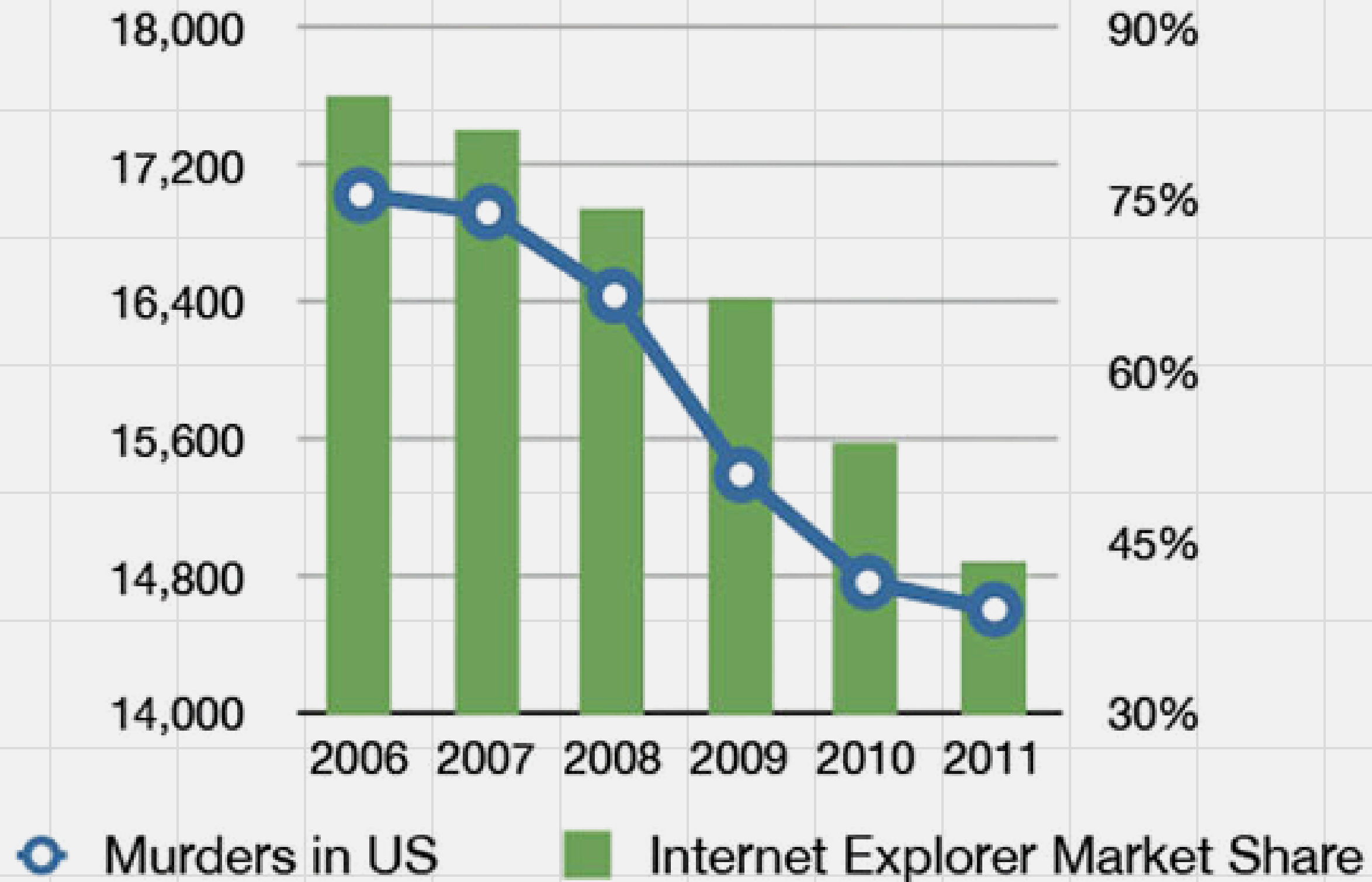
Cioccolato: nei paesi dove si consuma molto, come in Svizzera, ci sono più vincitori del Premio Nobel

Trovato legame tra consumo di cioccolata e numero di Premi Nobel vinti

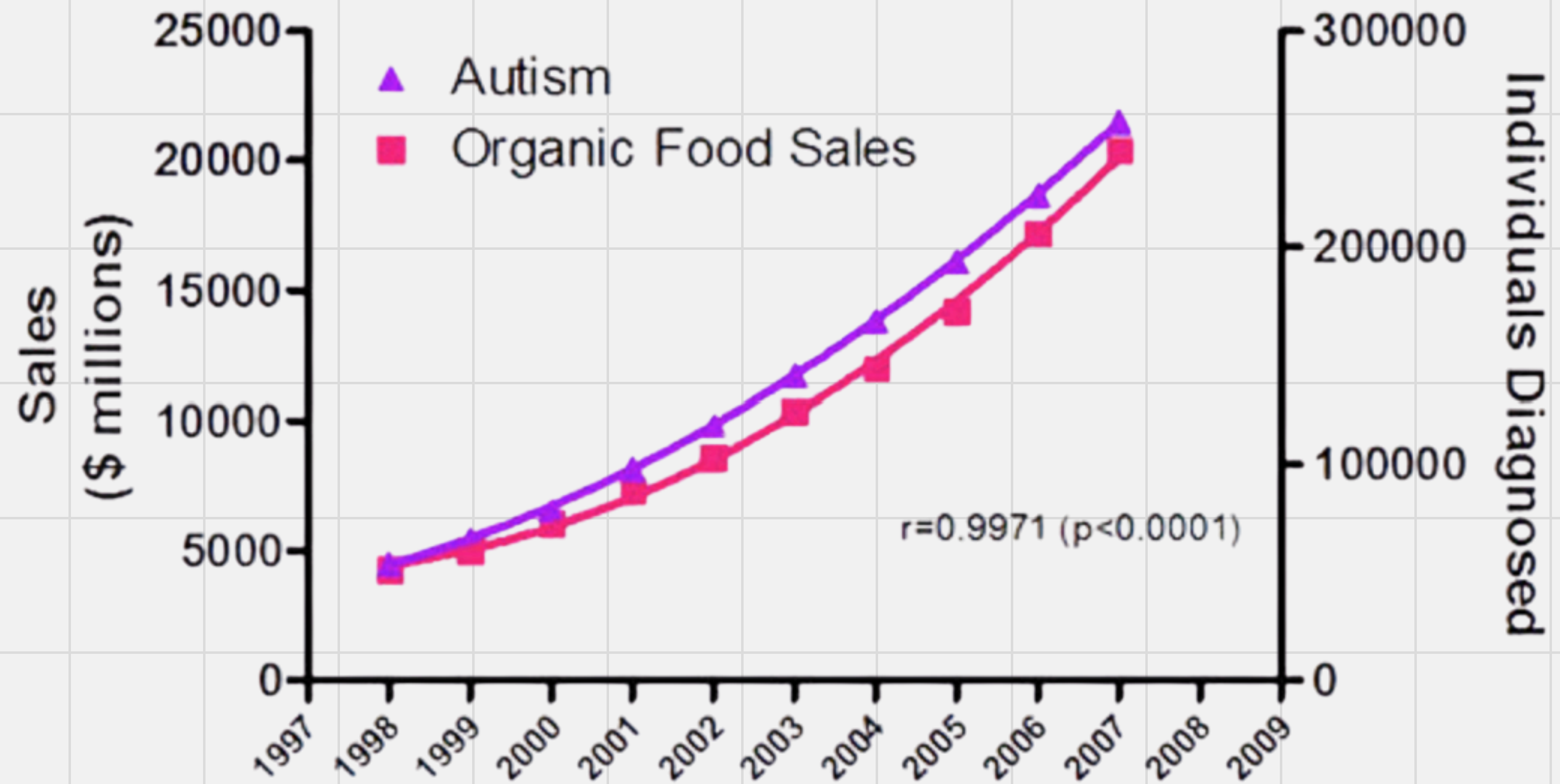
C'è una correlazione ben definita tra il consumo di cioccolato nei diversi paesi del mondo e il numero di premi Nobel vinti dai loro cittadini. Unica eccezione: la Svezia



QUALCOSA FA RIDERE



QUALCOSA È PIÙ RISCHIOSO





CORRELAZIONE $\nRightarrow$ CAUSALITÀ



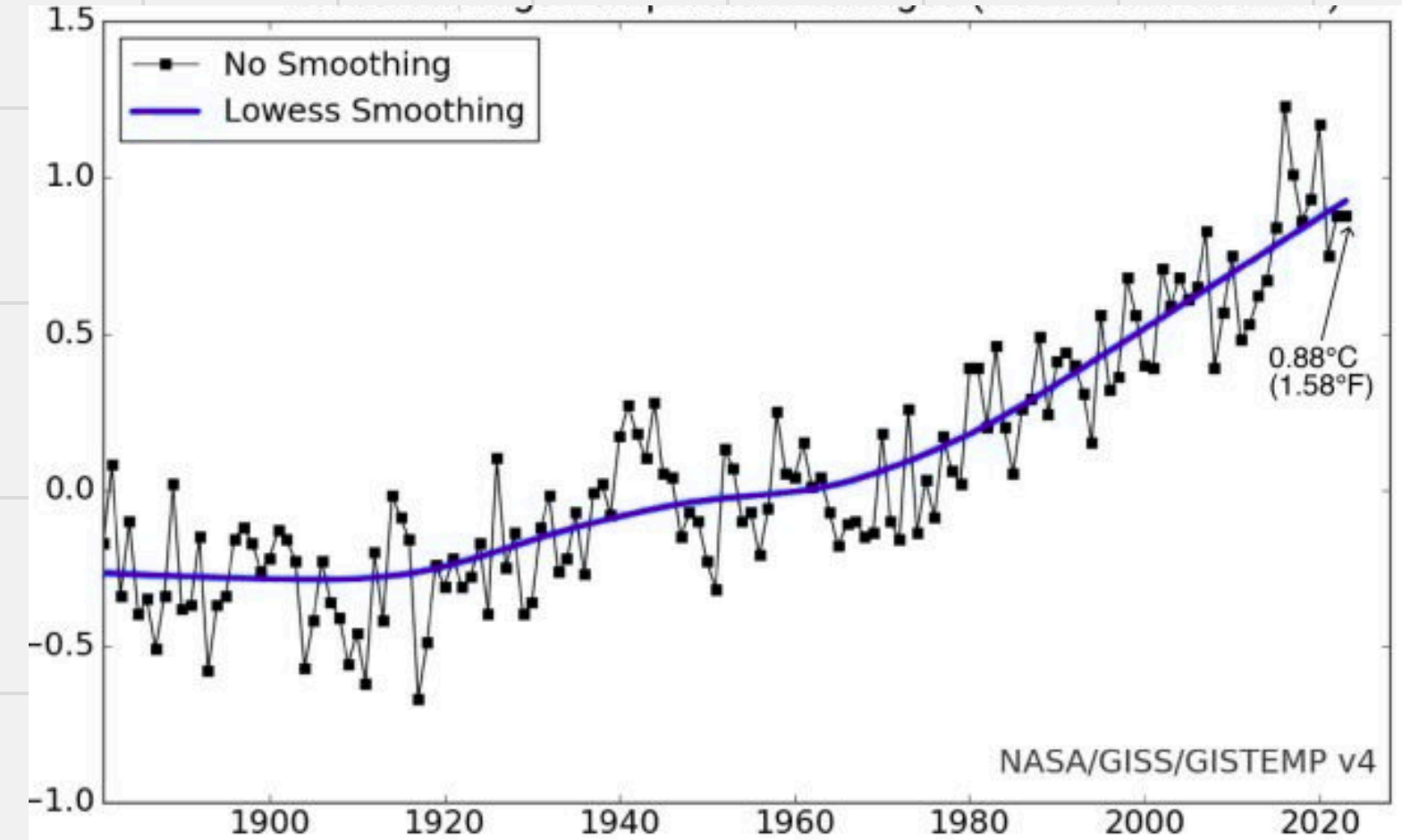
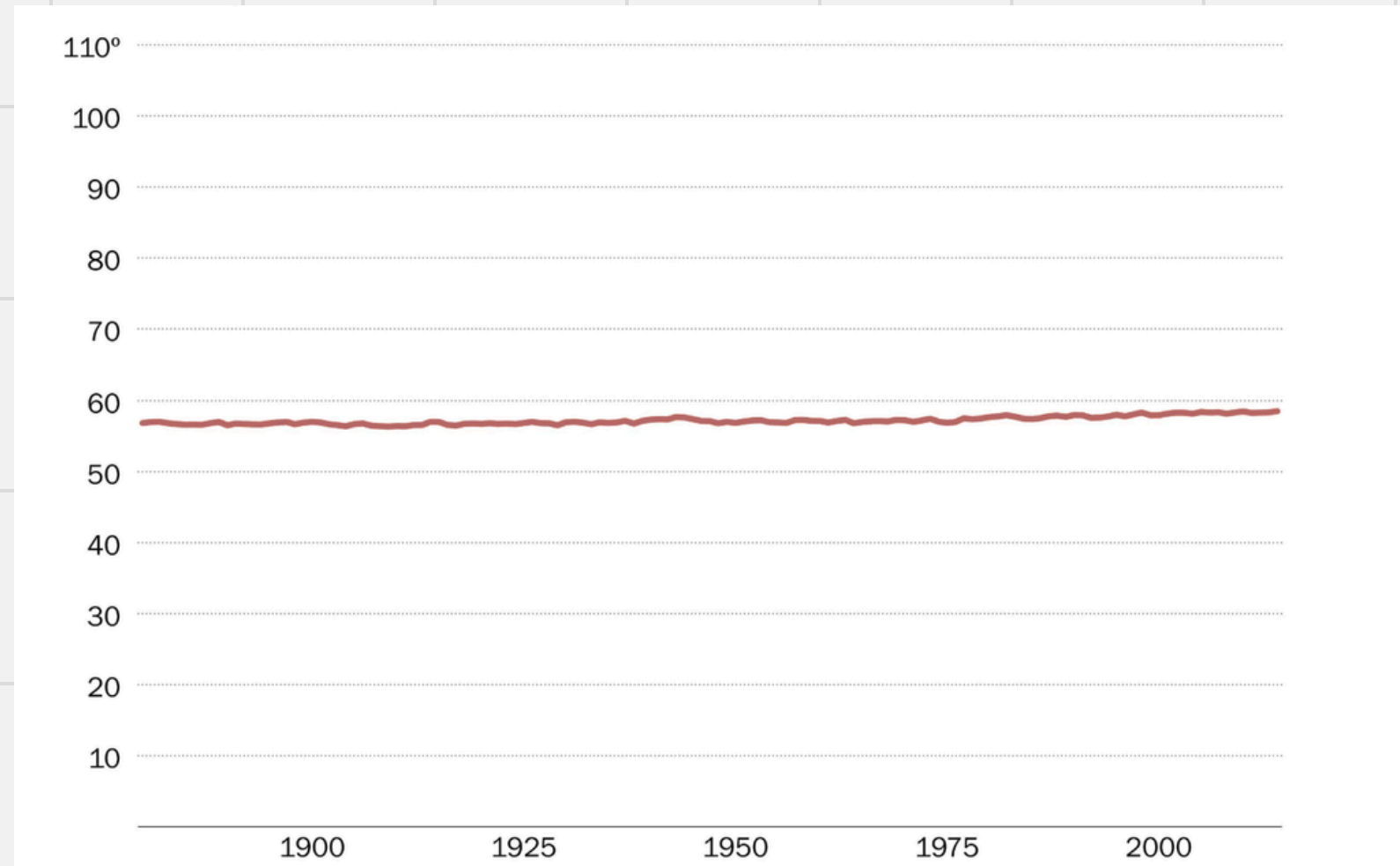
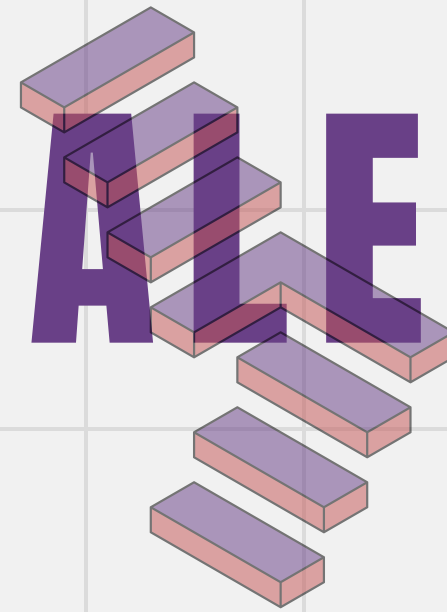
***Ma non ti eri
messo a dieta?***



Stai zitto Carl

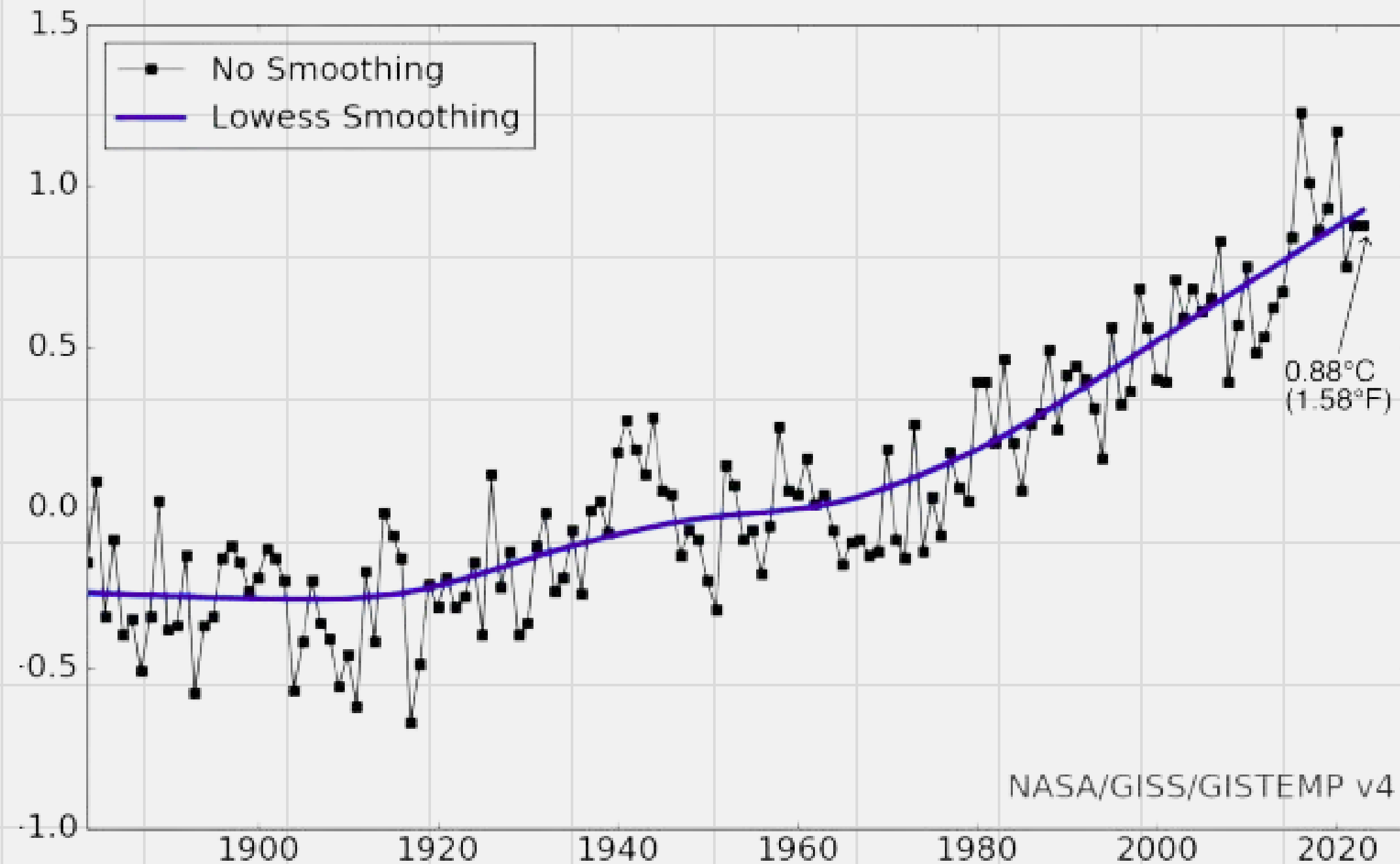
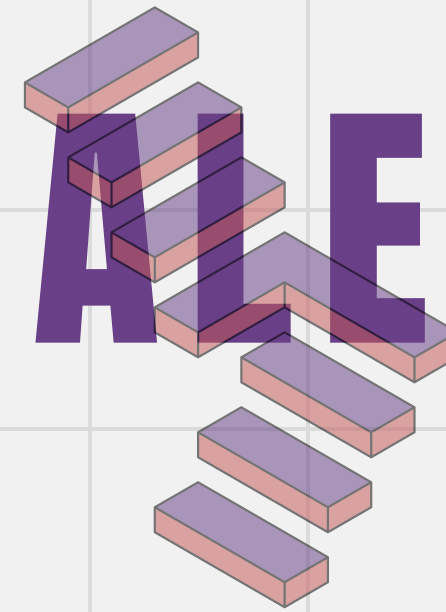
CORRELAZIONE $\nRightarrow$ CAUSALITÀ

PARLIAMO DI SCALE



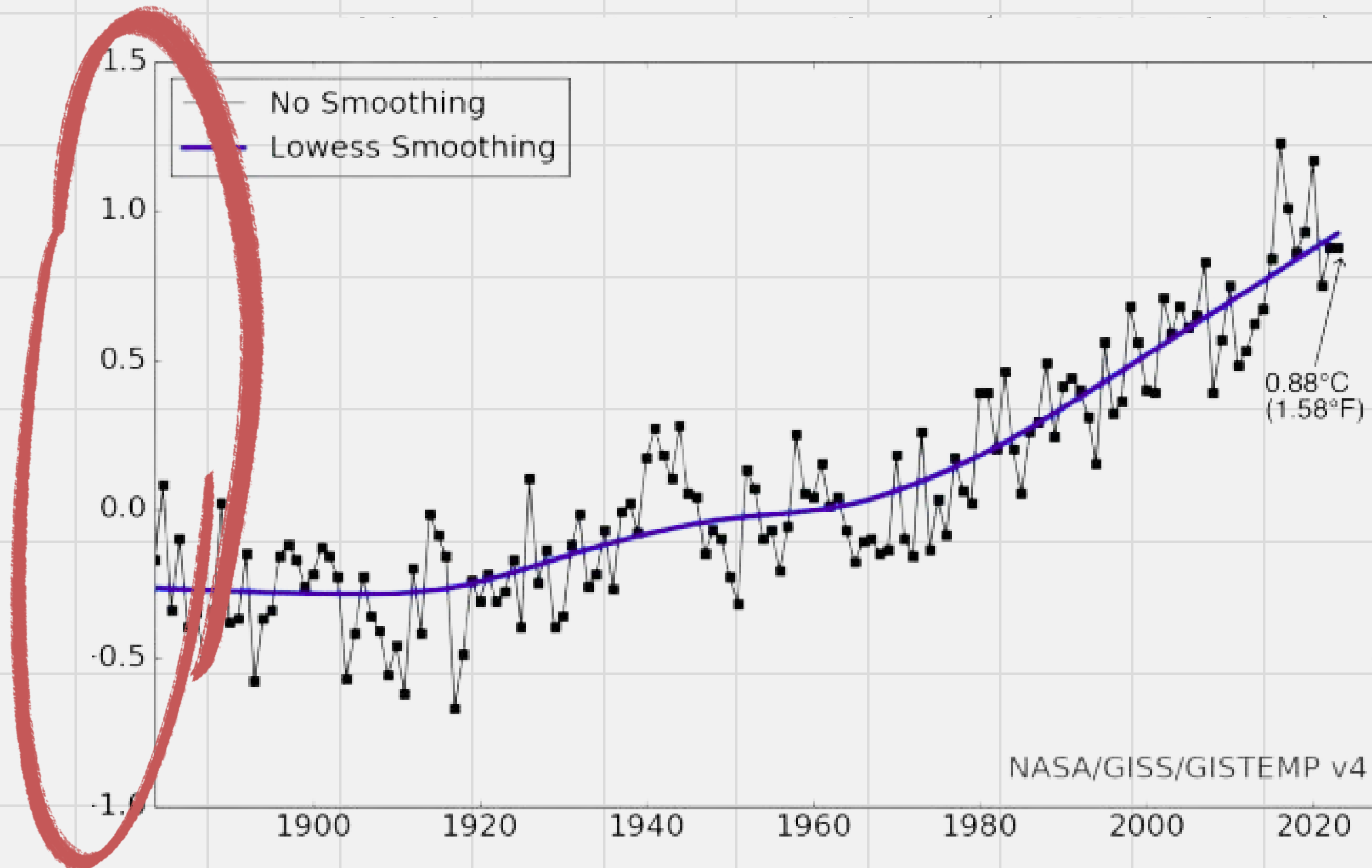
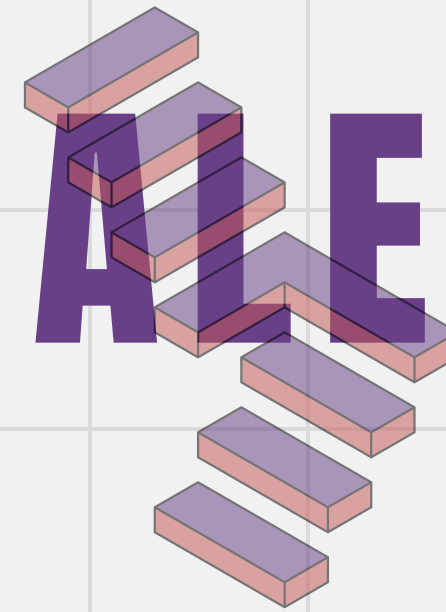
PARLIAMO DI SCALE

CAMBIAMENTO DI TEMPERATURA GLOBALE MEDIA



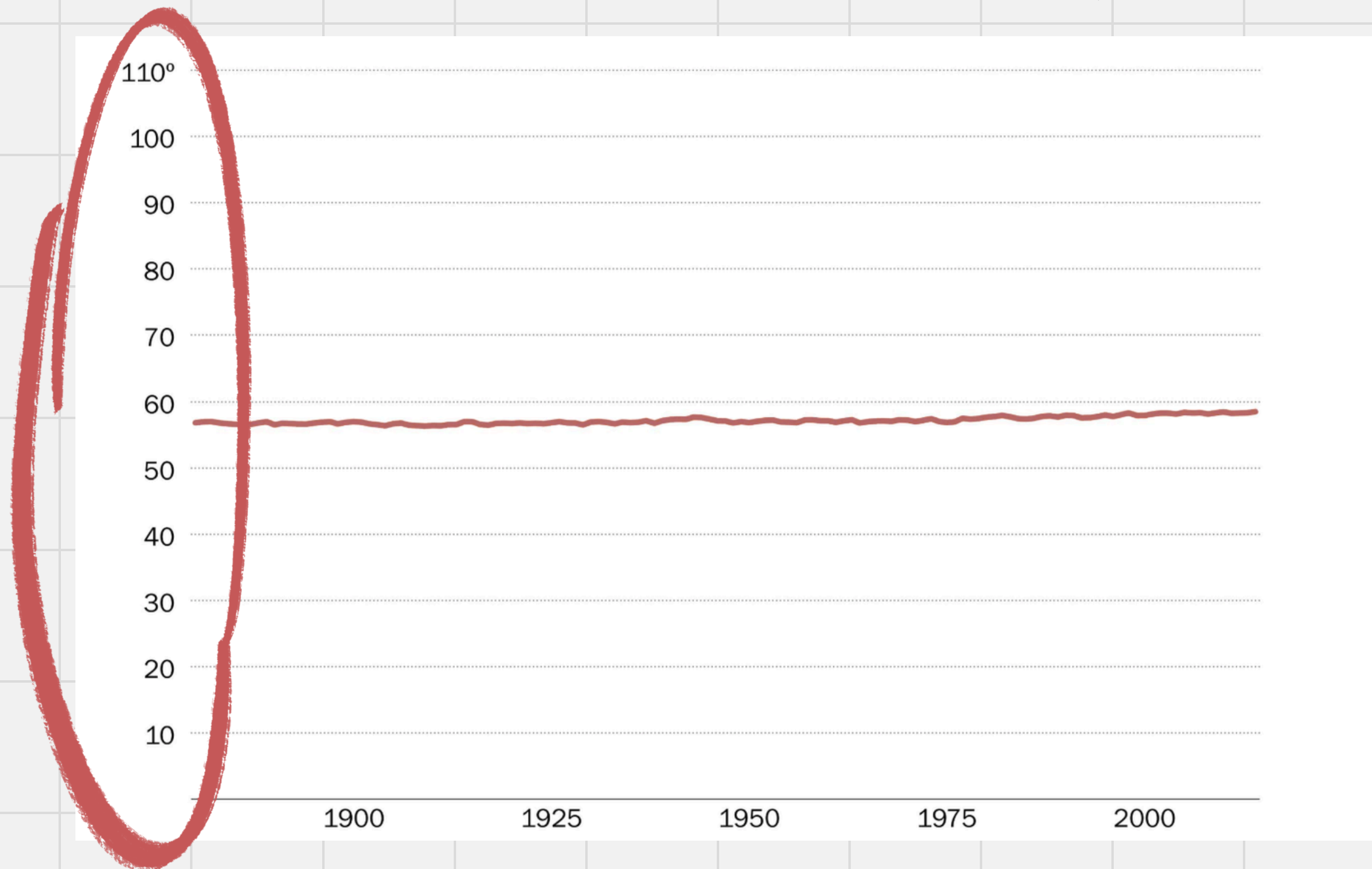
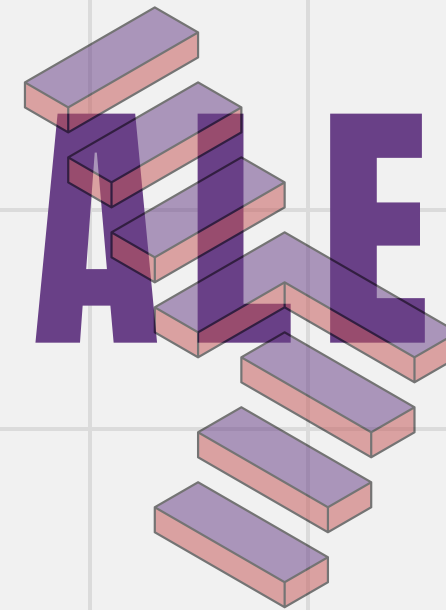
PARLIAMO DI SCALE

CAMBIAMENTO DI TEMPERATURA GLOBALE MEDIA



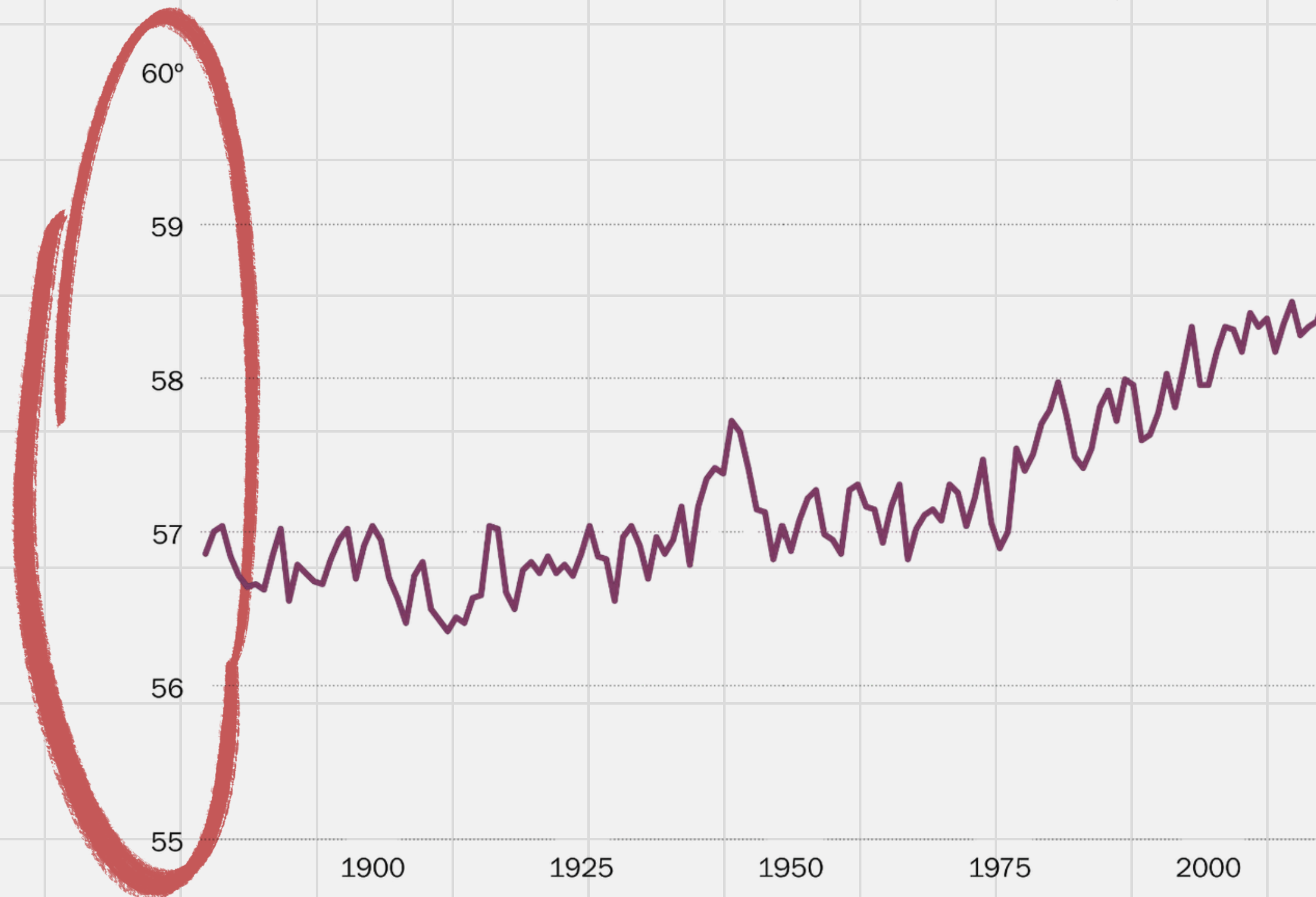
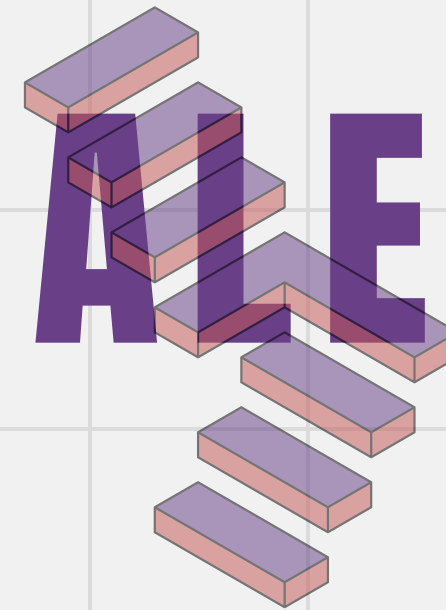
PARLIAMO DI SCALE

TEMPERATURA GLOBALE MEDIA (SCALA 0-110 °C)



PARLIAMO DI SCALE

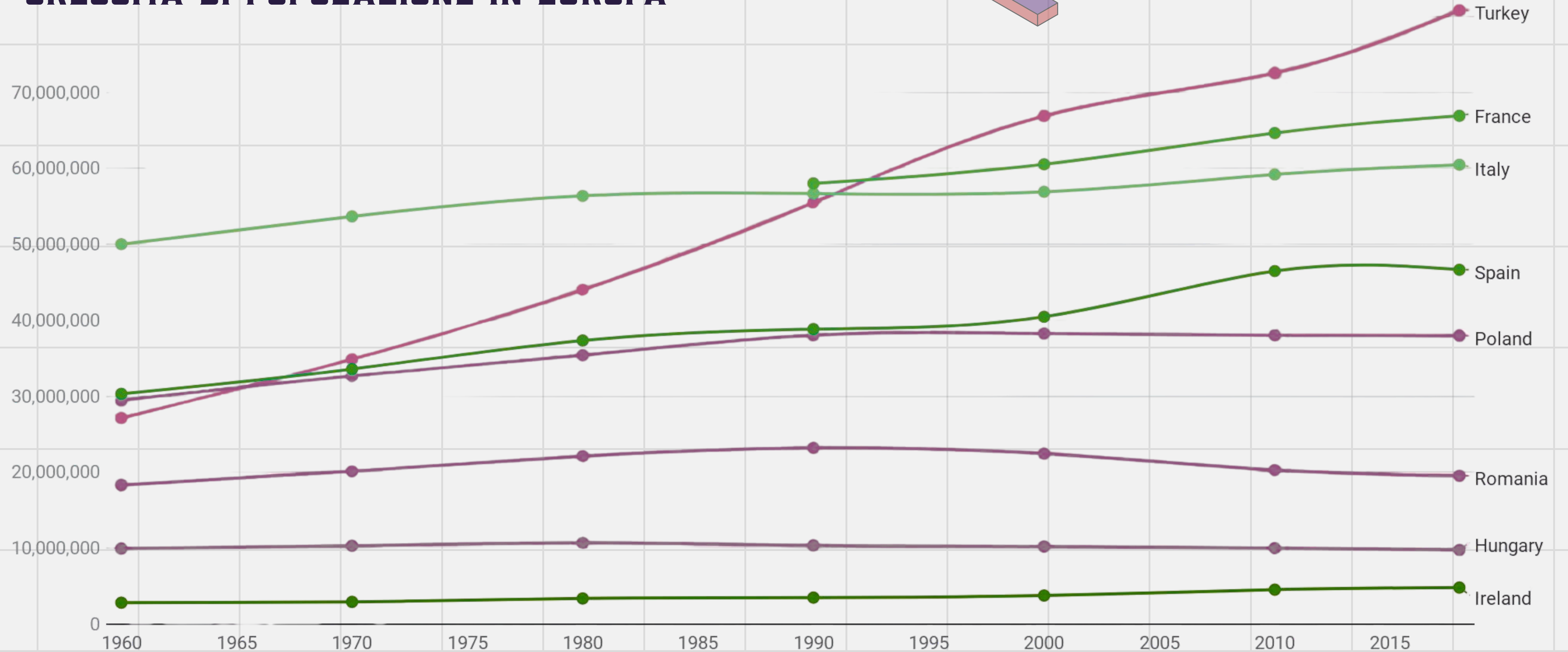
TEMPERATURA GLOBALE MEDIA [SCALA 55-60 °C]



PARLIAMO DI SCALE



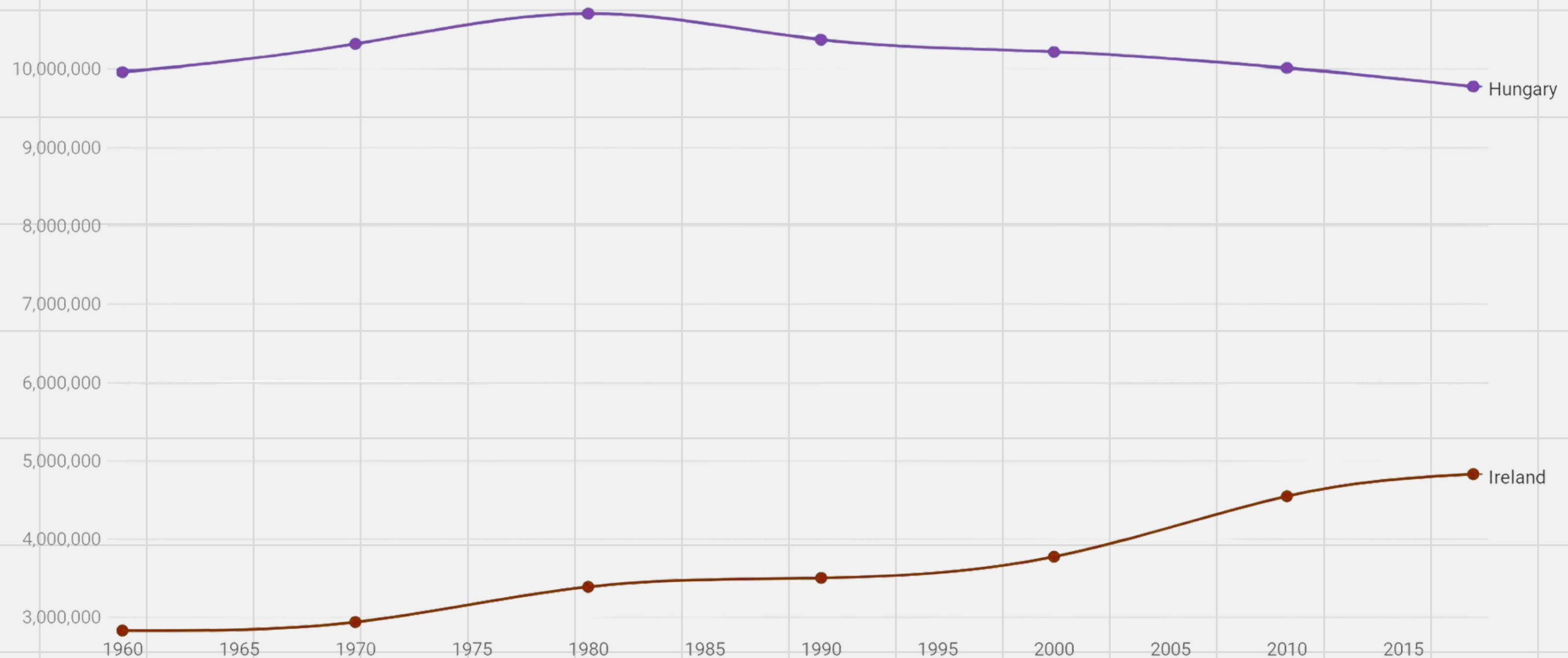
CRESCITA DI POPOLAZIONE IN EUROPA



PARLIAMO DI SCALE

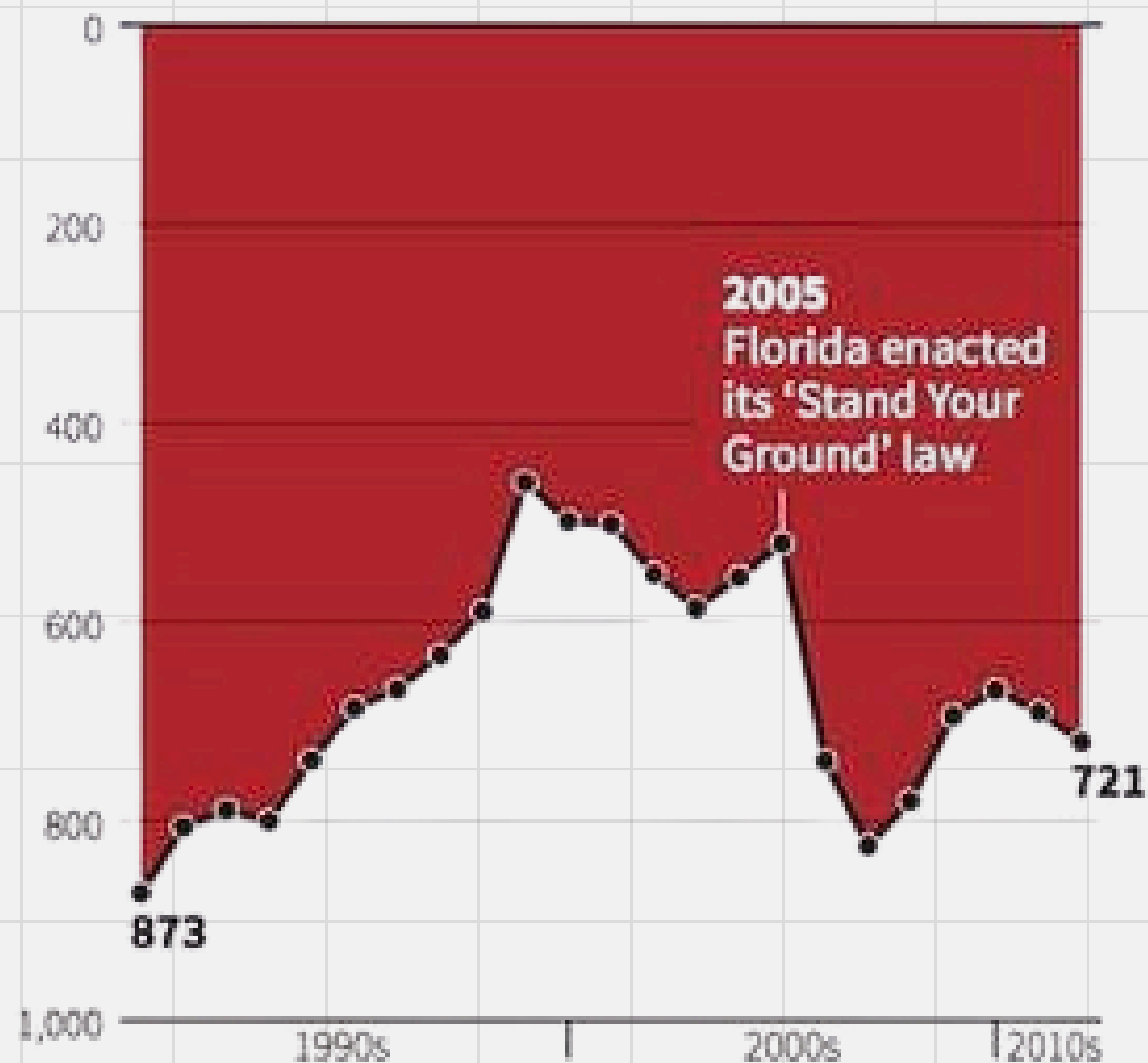


CRESCITA DI POPOLAZIONE IN IRLANDA E UNGHERIA



Gun deaths in Florida

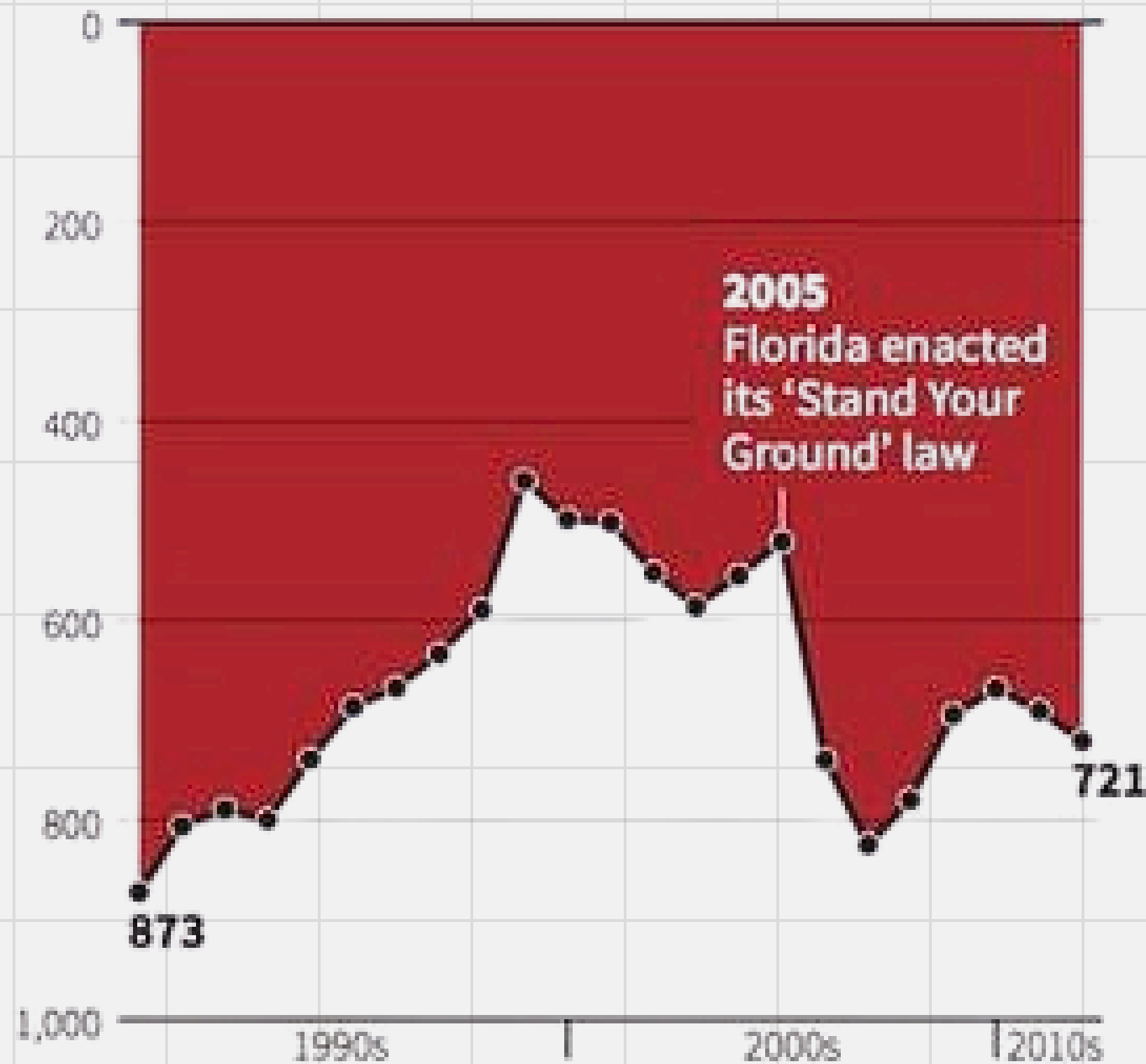
Number of murders committed using firearms



**RAPPRESENTAZIONE
VS
SIGNIFICATO**

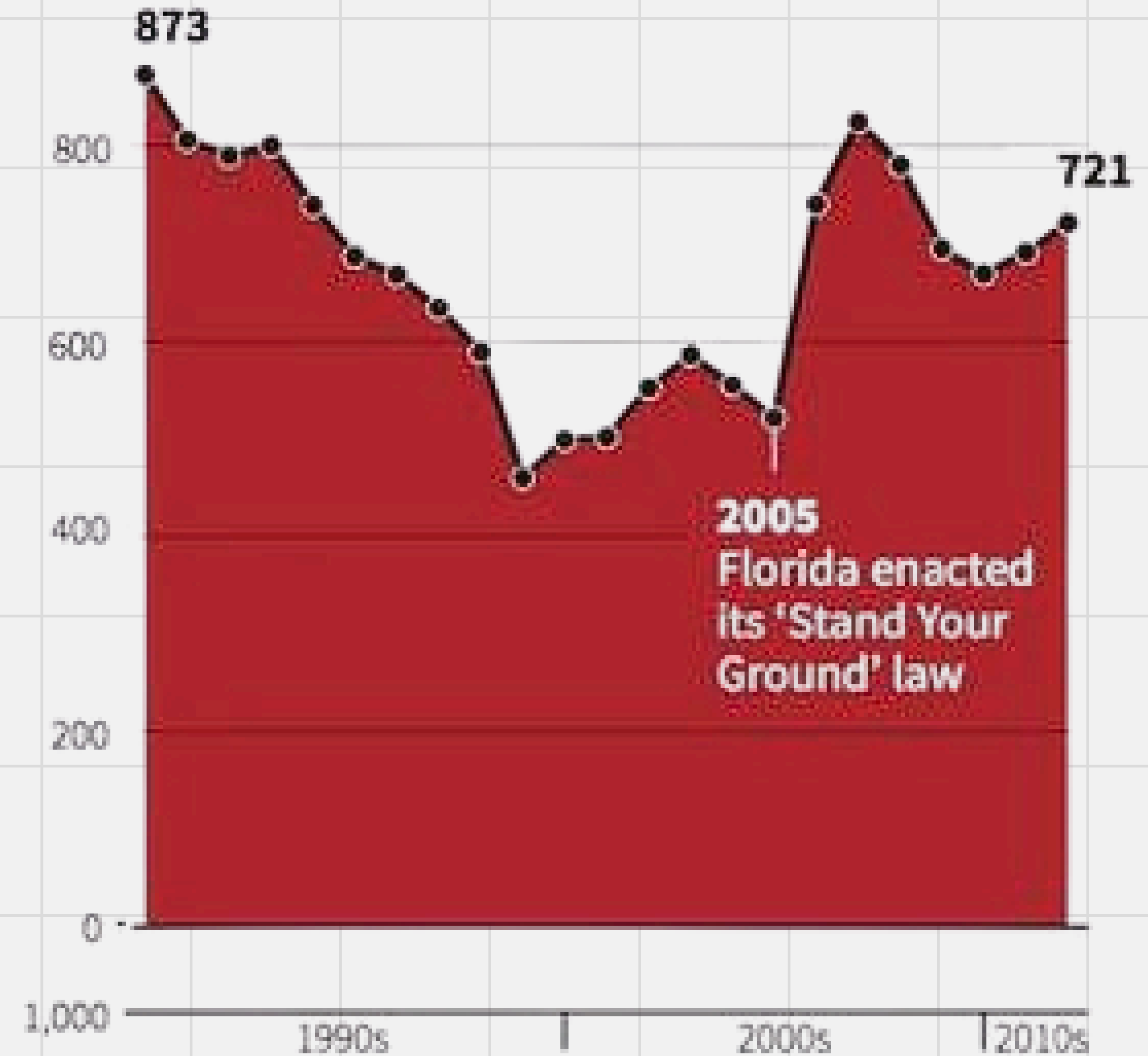
Gun deaths in Florida

Number of murders committed using firearms



Gun deaths in Florida

Number of murders committed using firearms



OBAMACARE ENROLLMENT

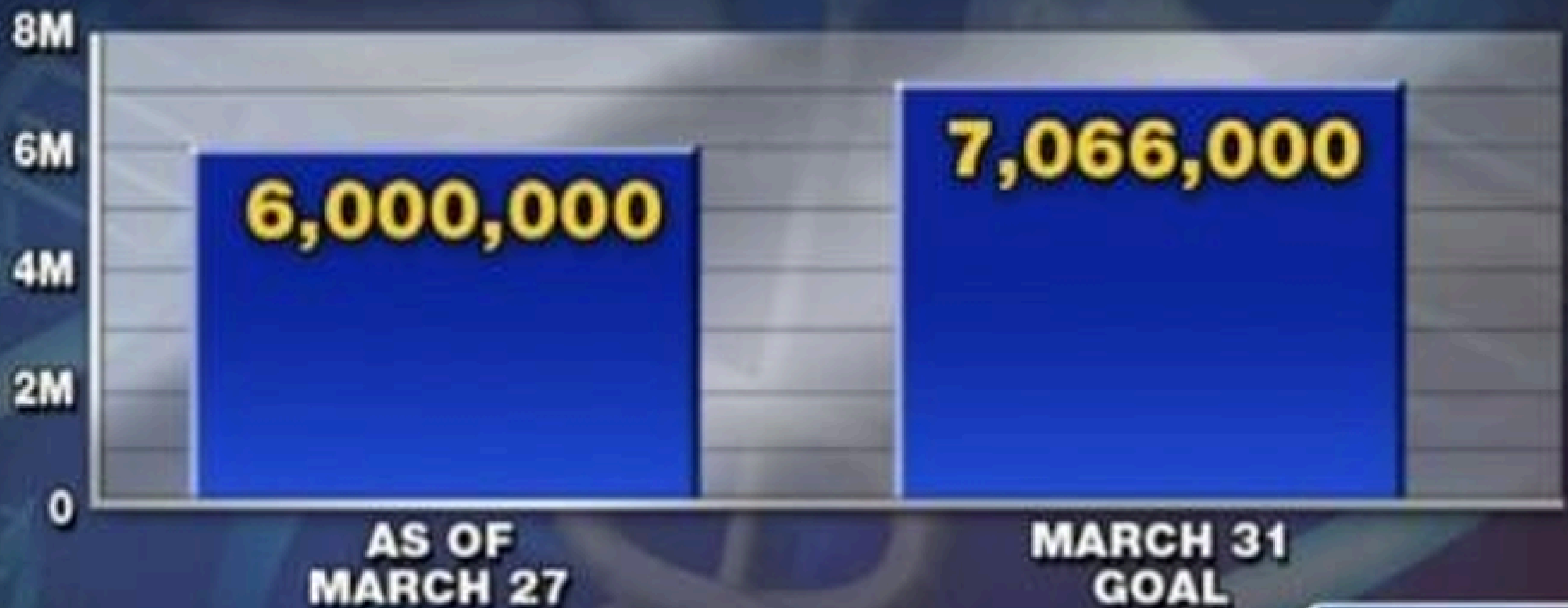


AS OF
MARCH 27

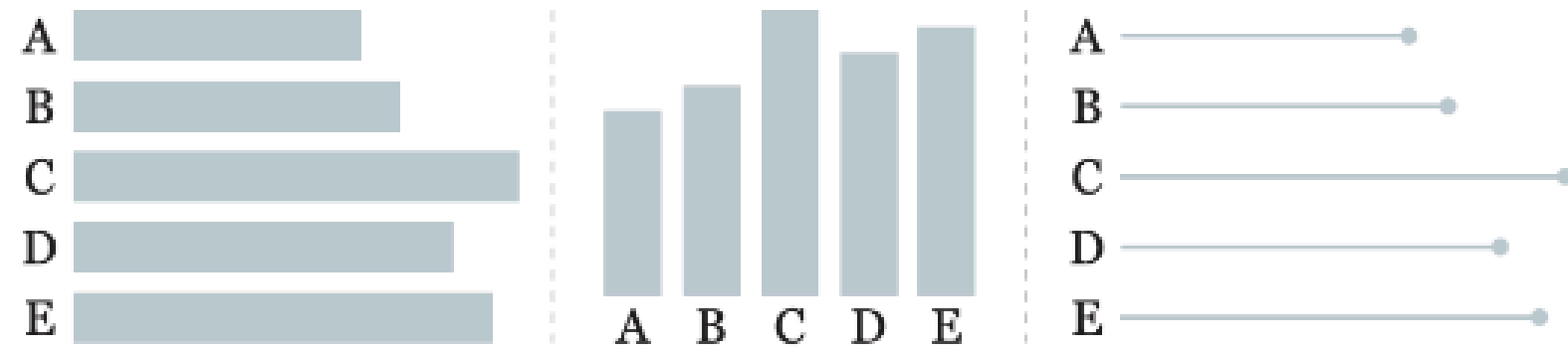
MARCH 31
GOAL

SOURCE: HHS

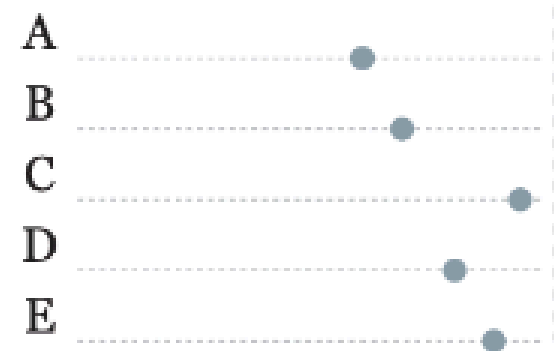
OBAMACARE ENROLLMENT



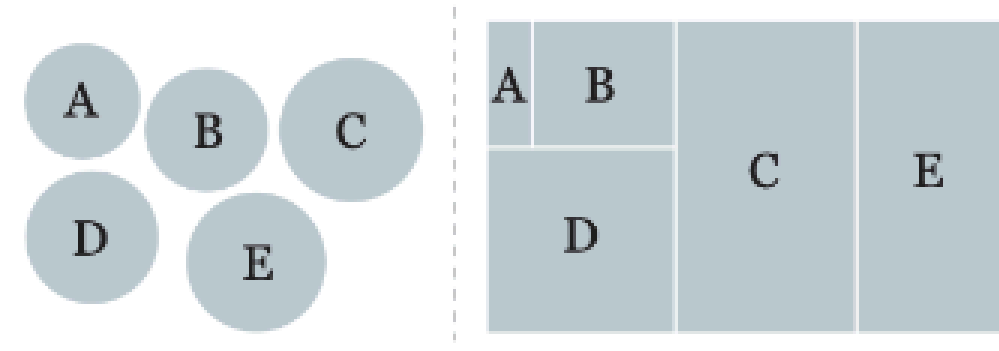
Length or height



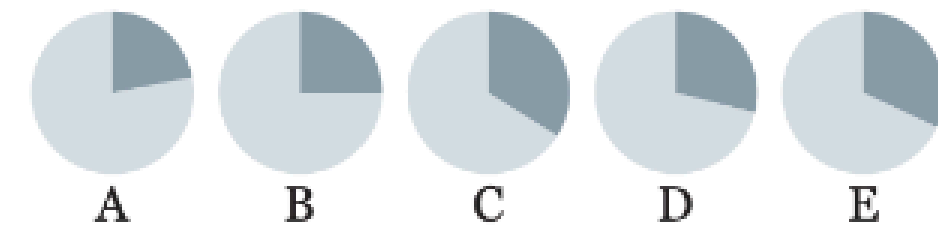
Position



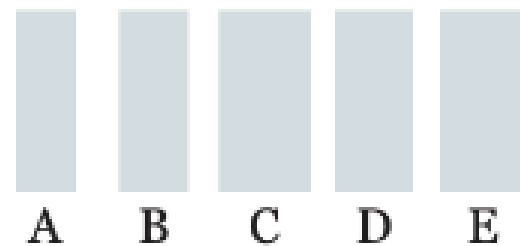
Area



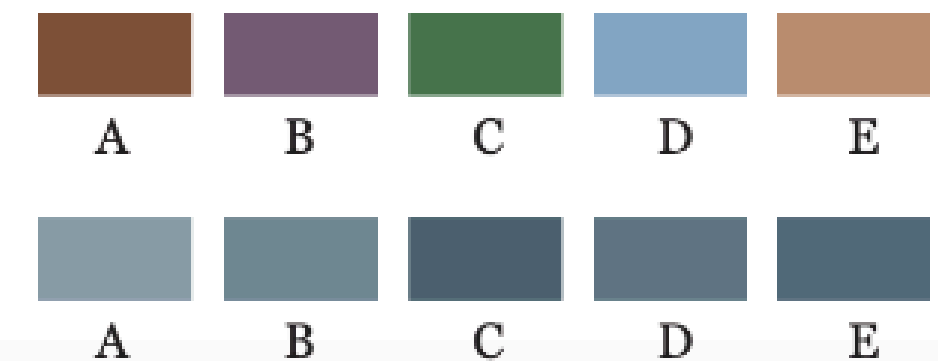
Angle/area



Line weight



Hue and shade



Figures represented
in all these graphics:
22%, 25%, 34%, 29%, 32%

VISUAL ENCODING

(ALBERTO CAIRO)

Può
consentire
stime
generali

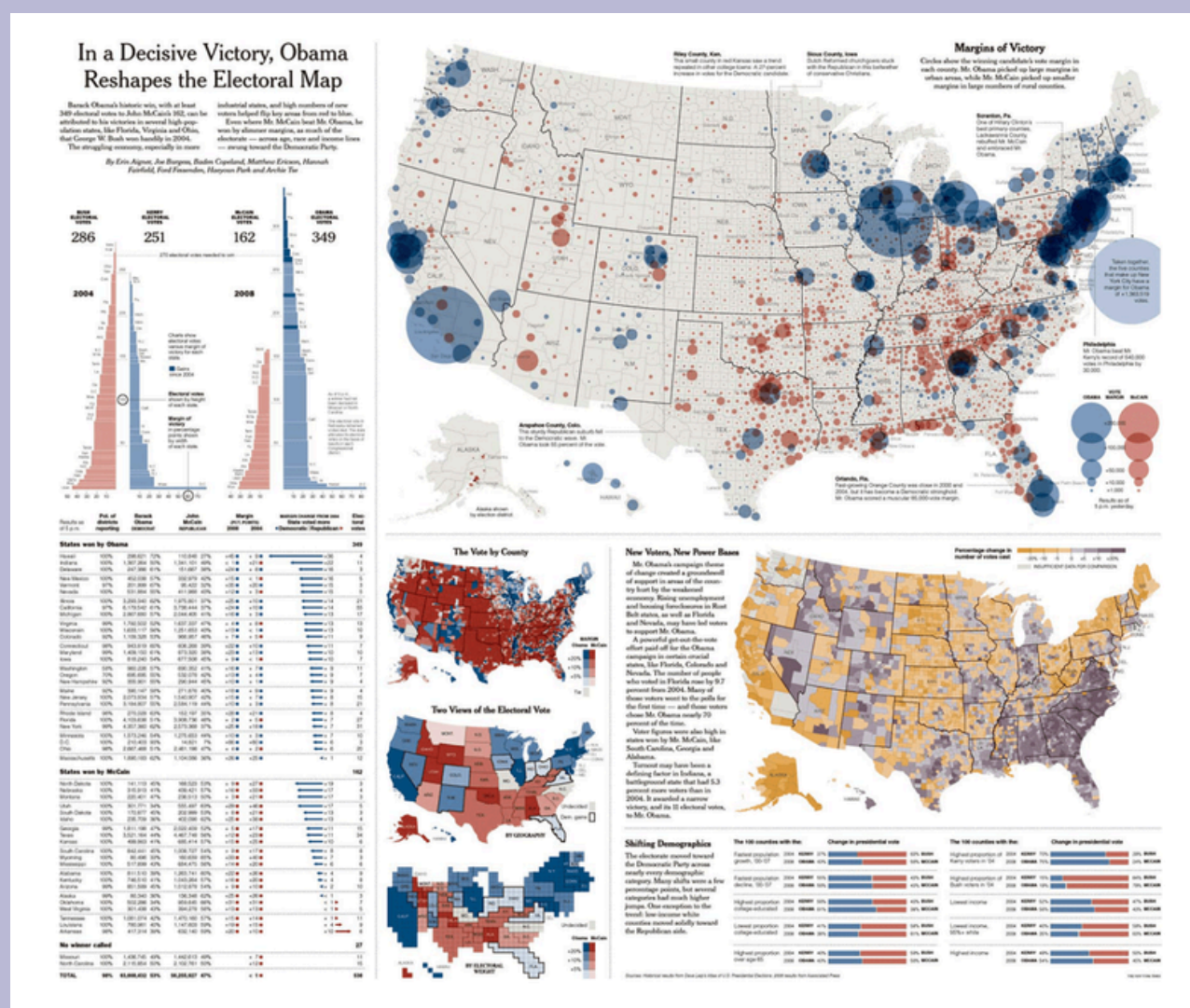
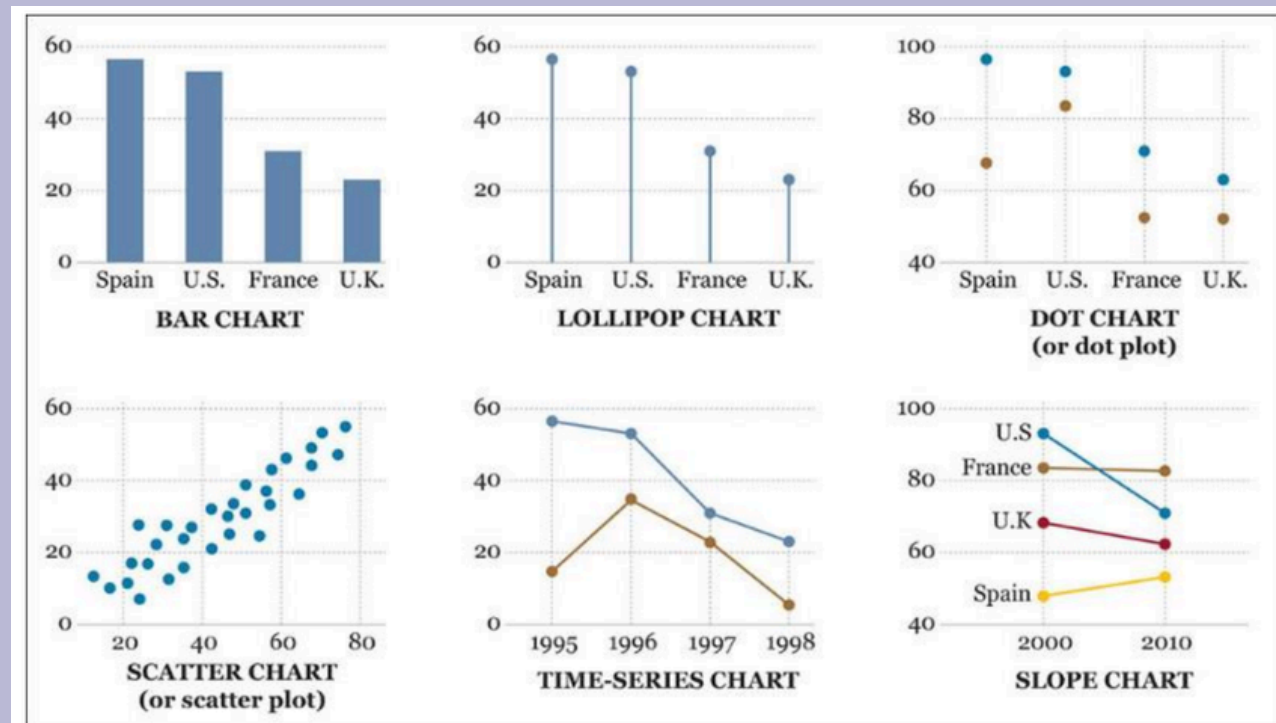


L L L

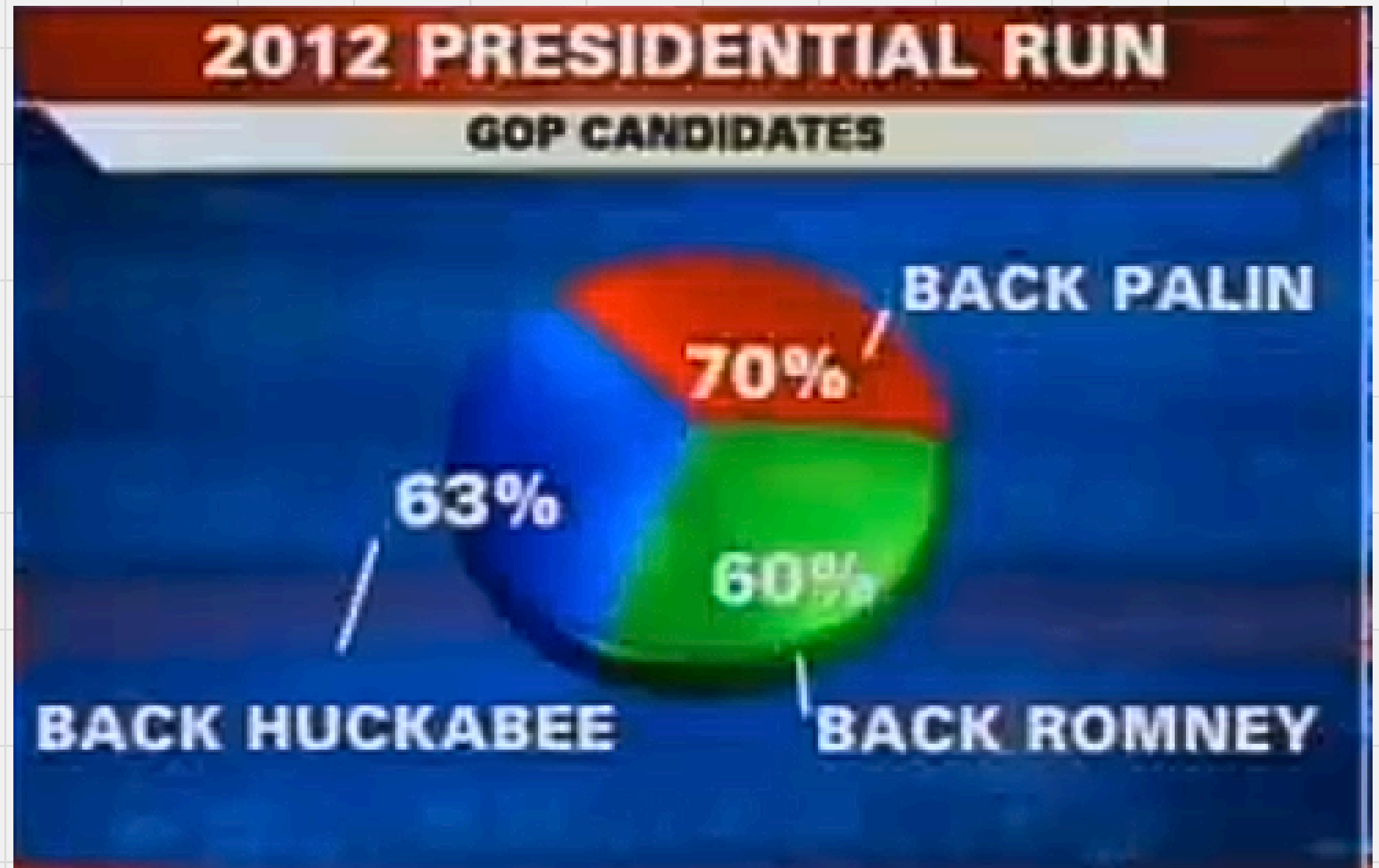




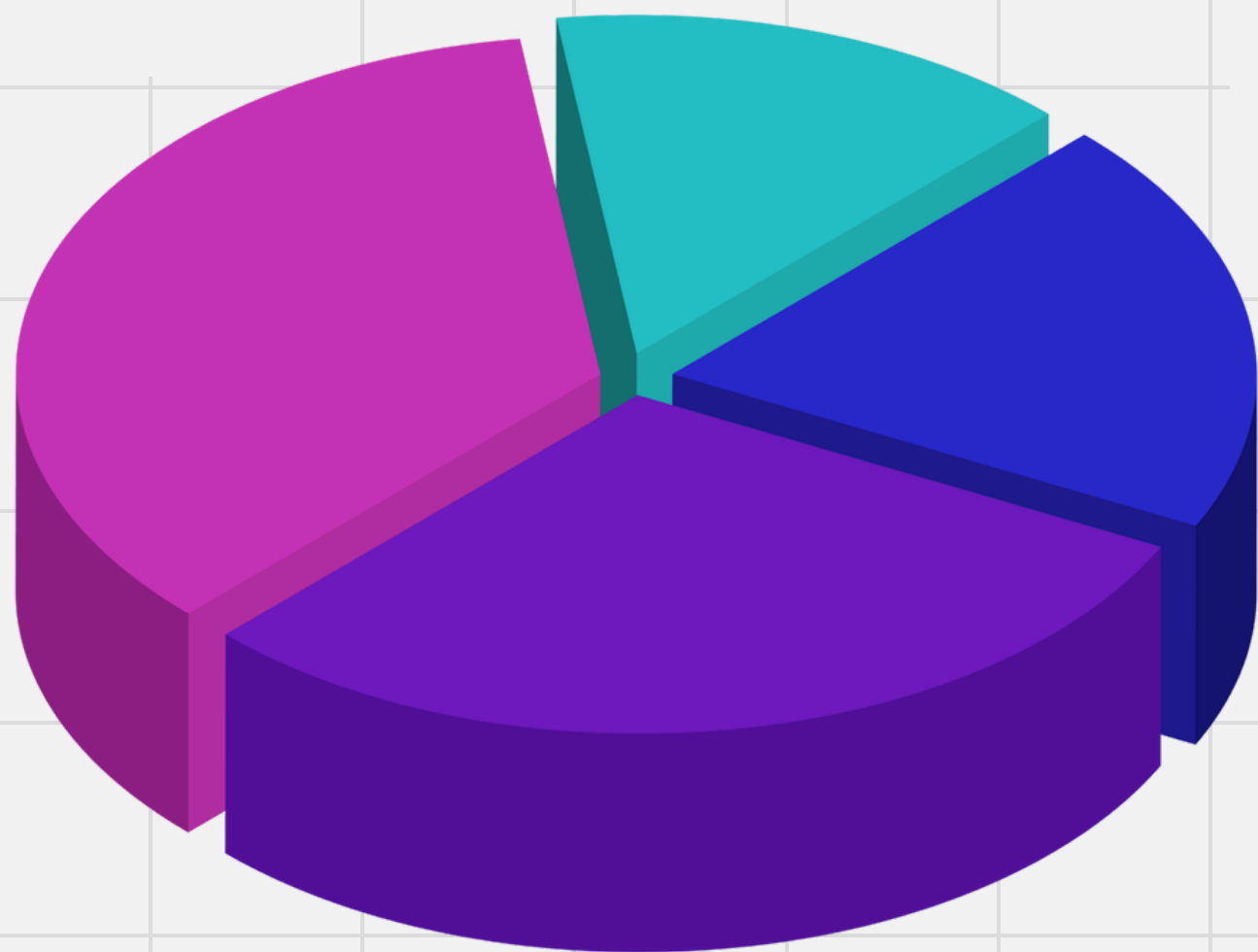
**INSPIRED BY
CLEVELAND & MCGILL
(1984)**



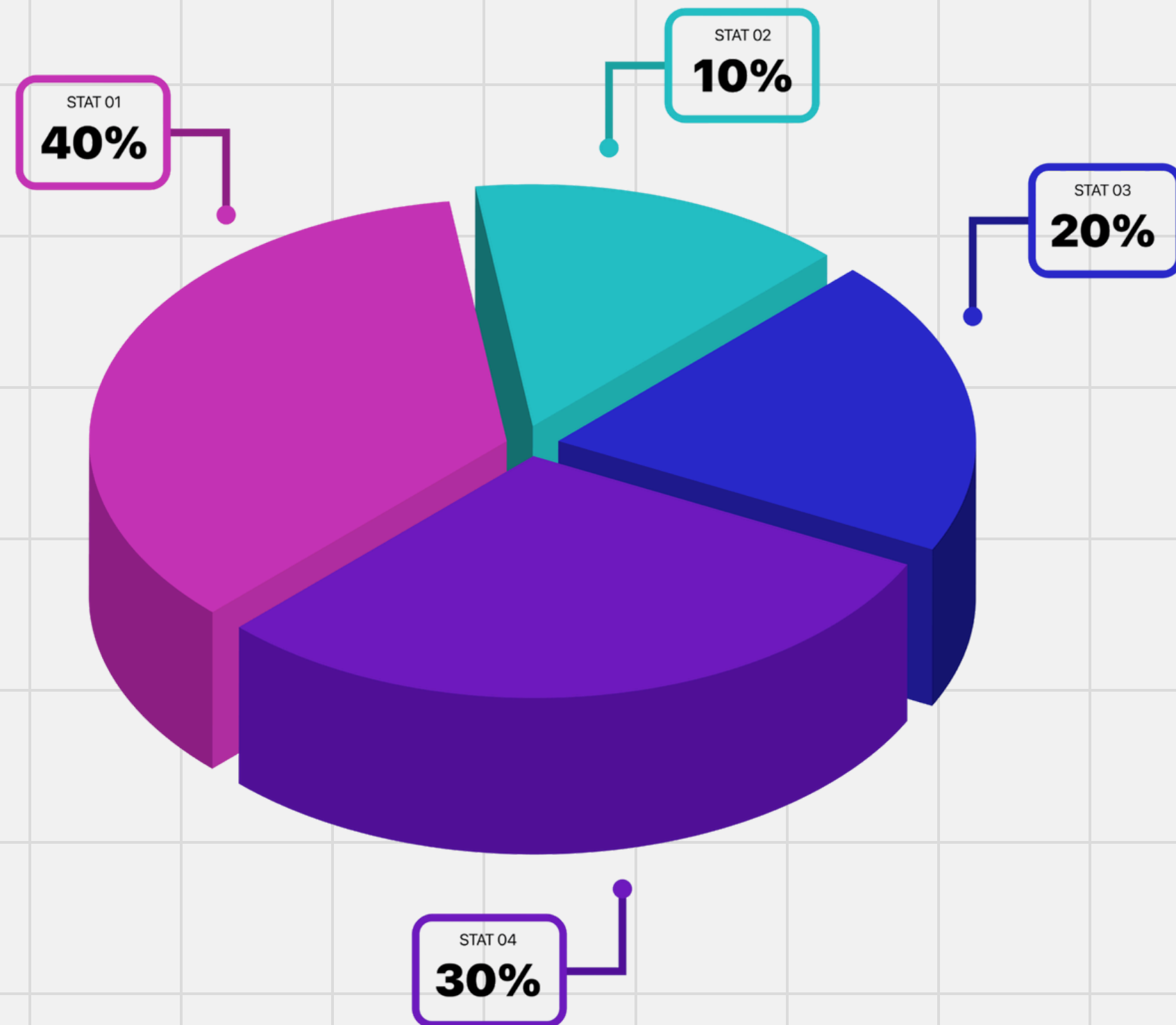
PROSPETTIVA E PERCENTUALI



PROSPETTIVA E PERCENTUALI



PROSPETTIVA E PERCENTUALI



**CHE PERCENTUALI RAPPRESENTANO
I SETTORI DI QUESTO GRAFICO?**

Joe Biden

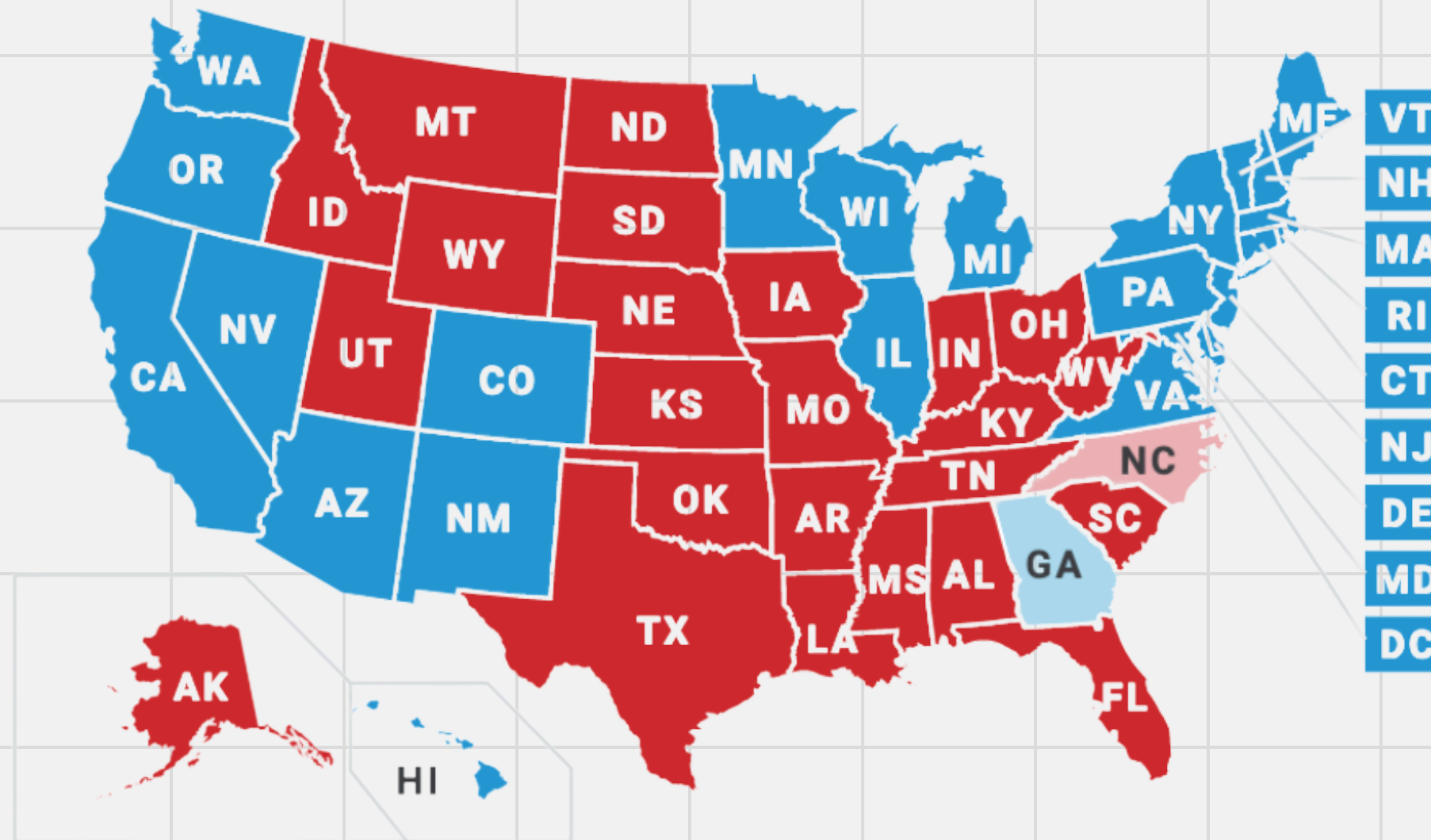
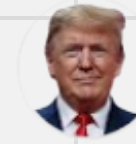


290

270 per vincere

Donald Trump

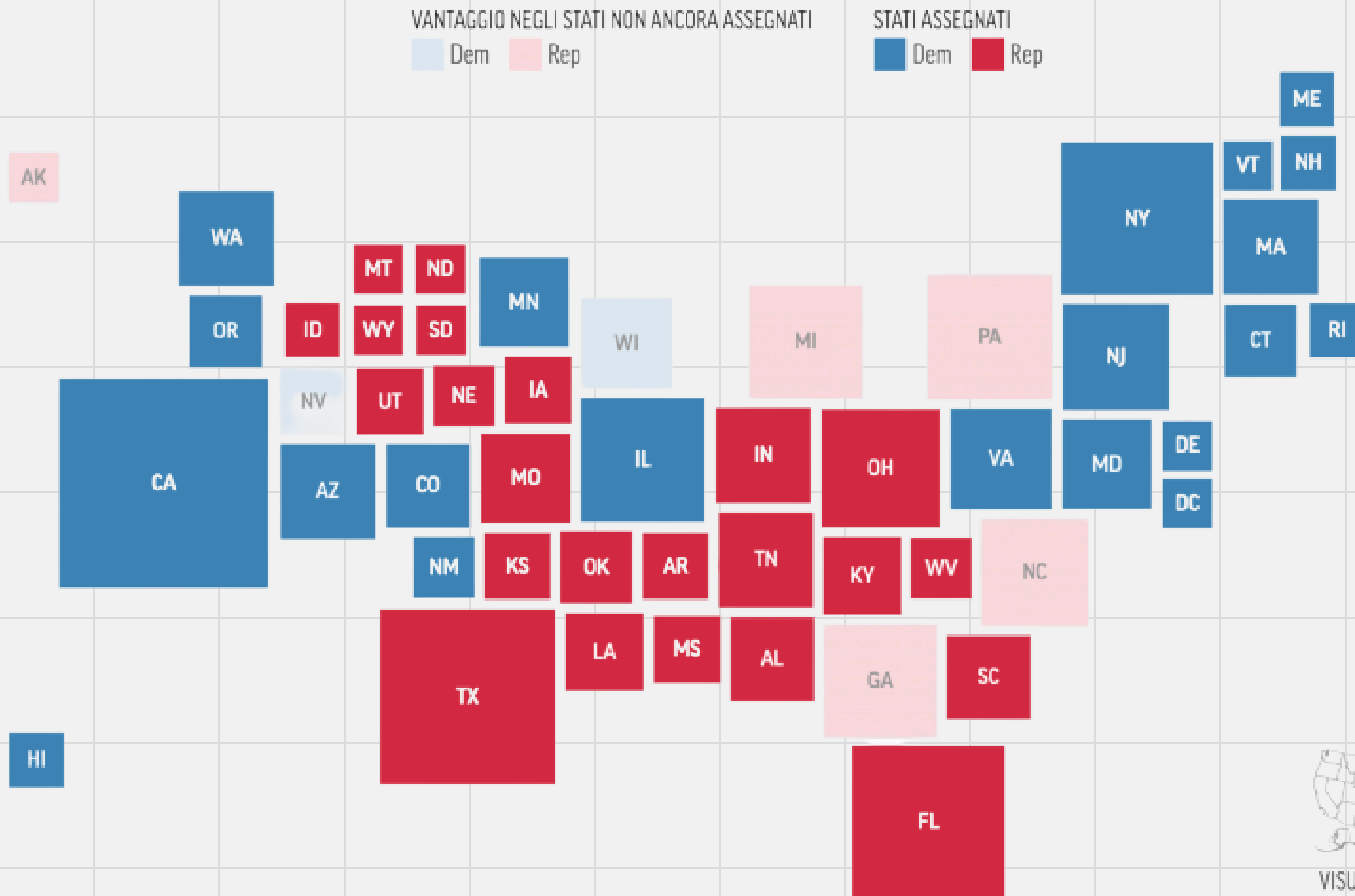
217

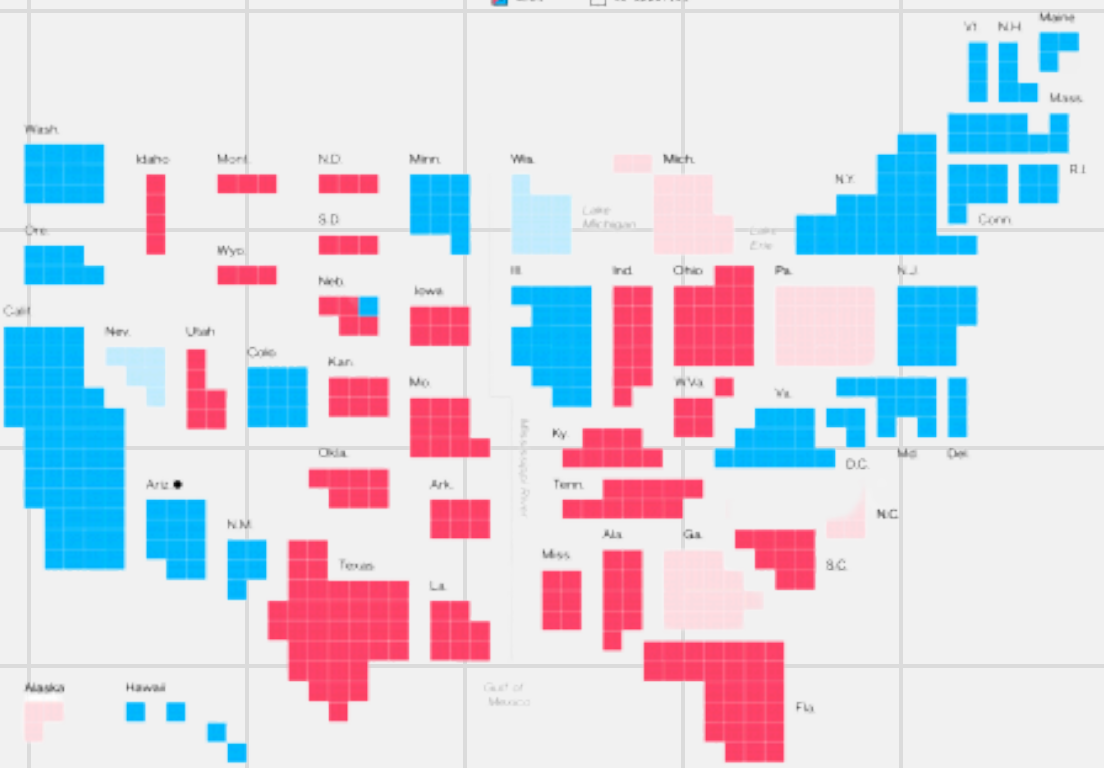
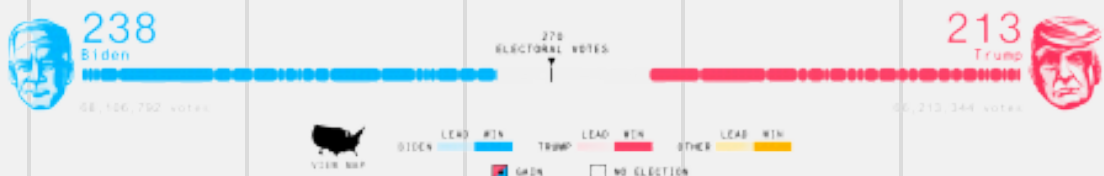


MAPPA COROPLETICA

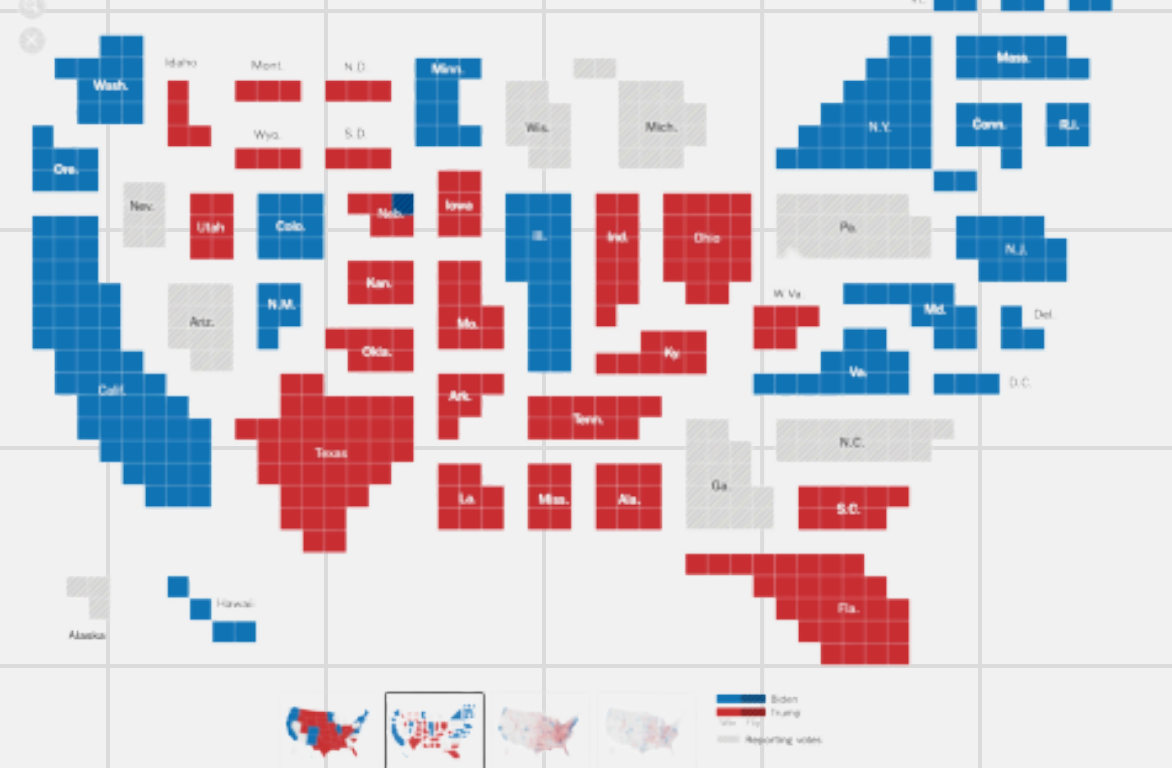
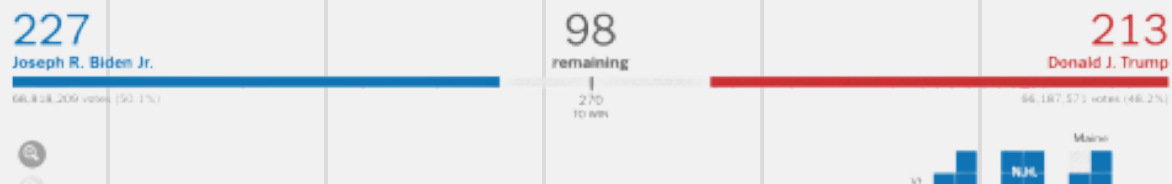
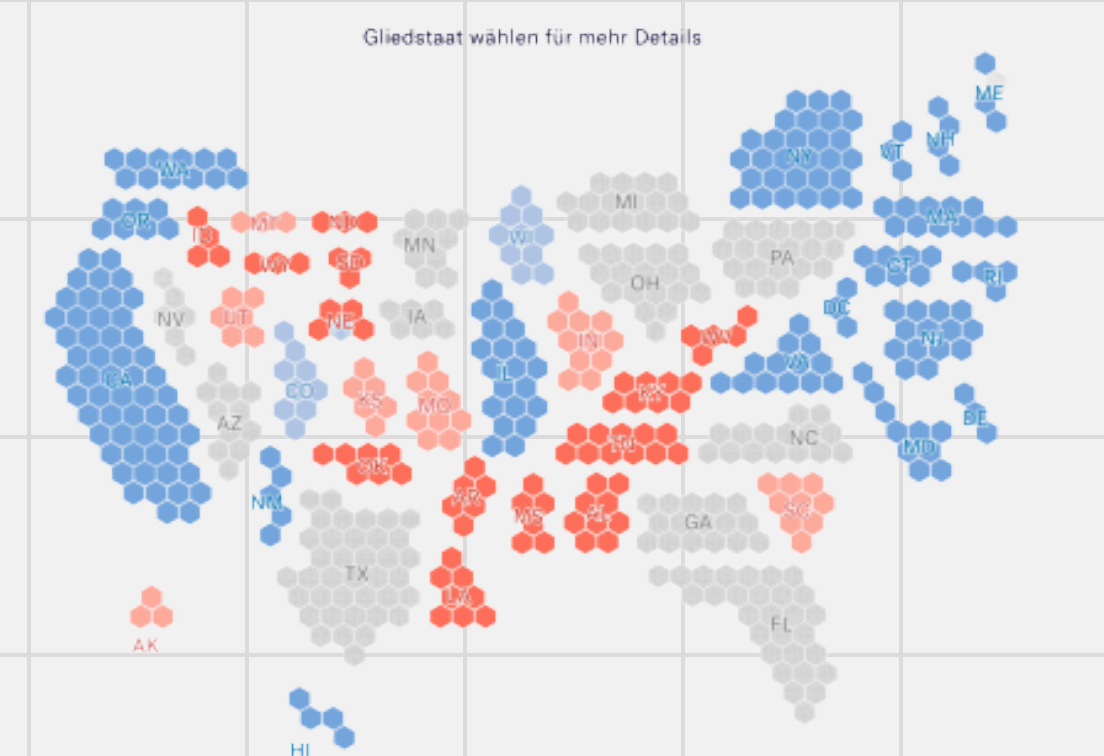
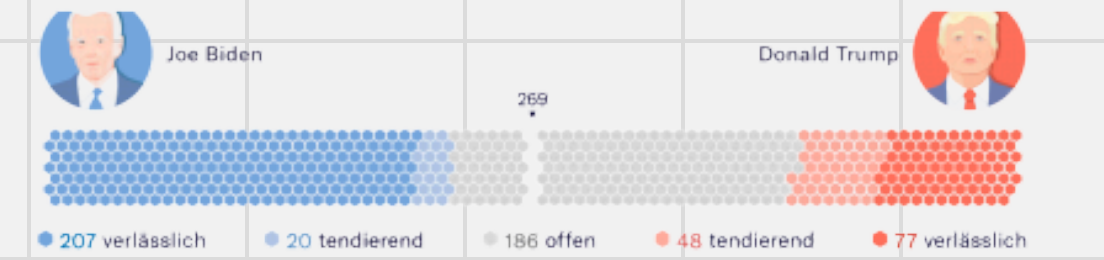
**AREE PIÙ VASTE SONO
VISIVAMENTE PREPONDERANTI**

METODI ALTERNATIVI: CARTOGRAMMI

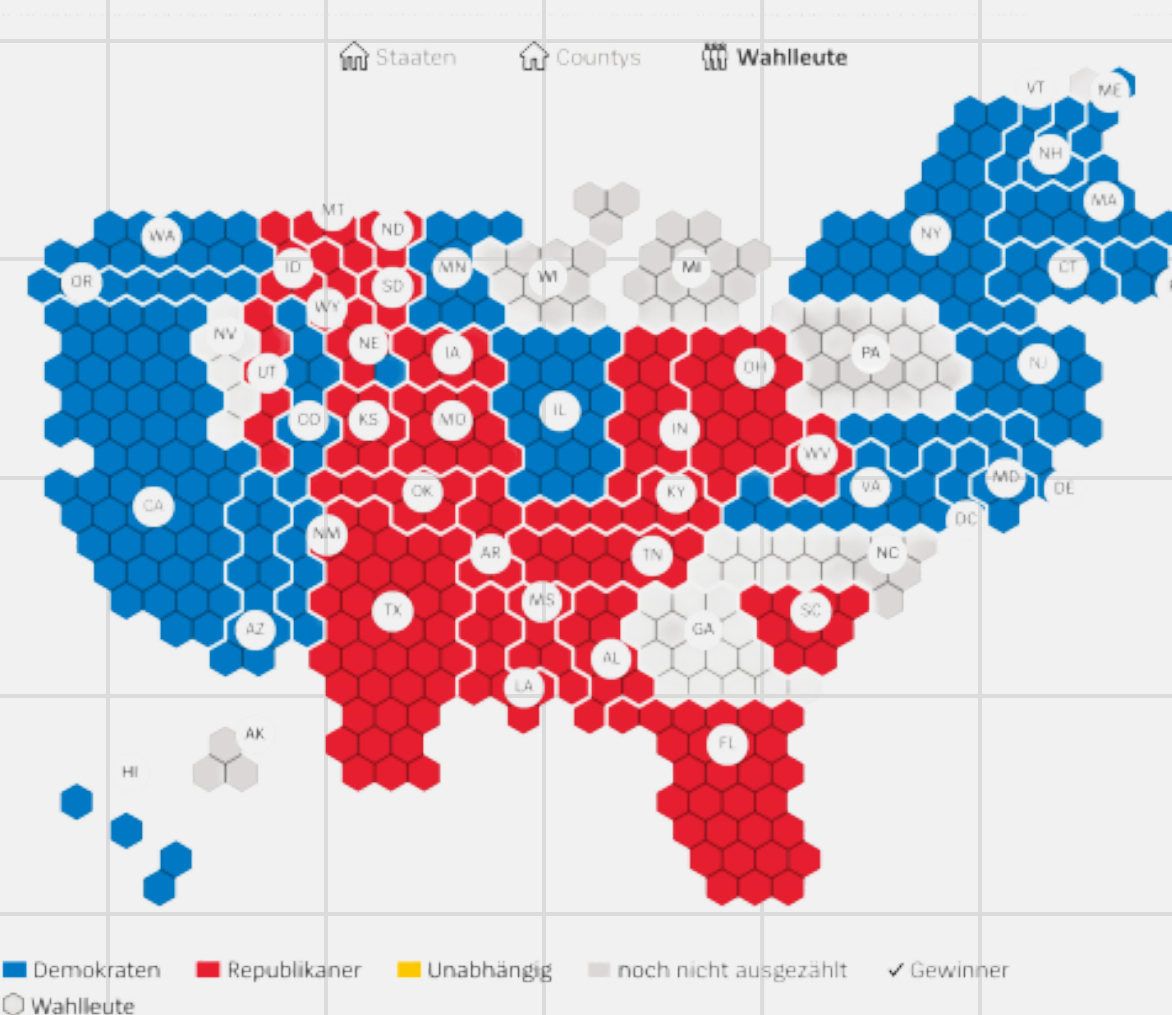




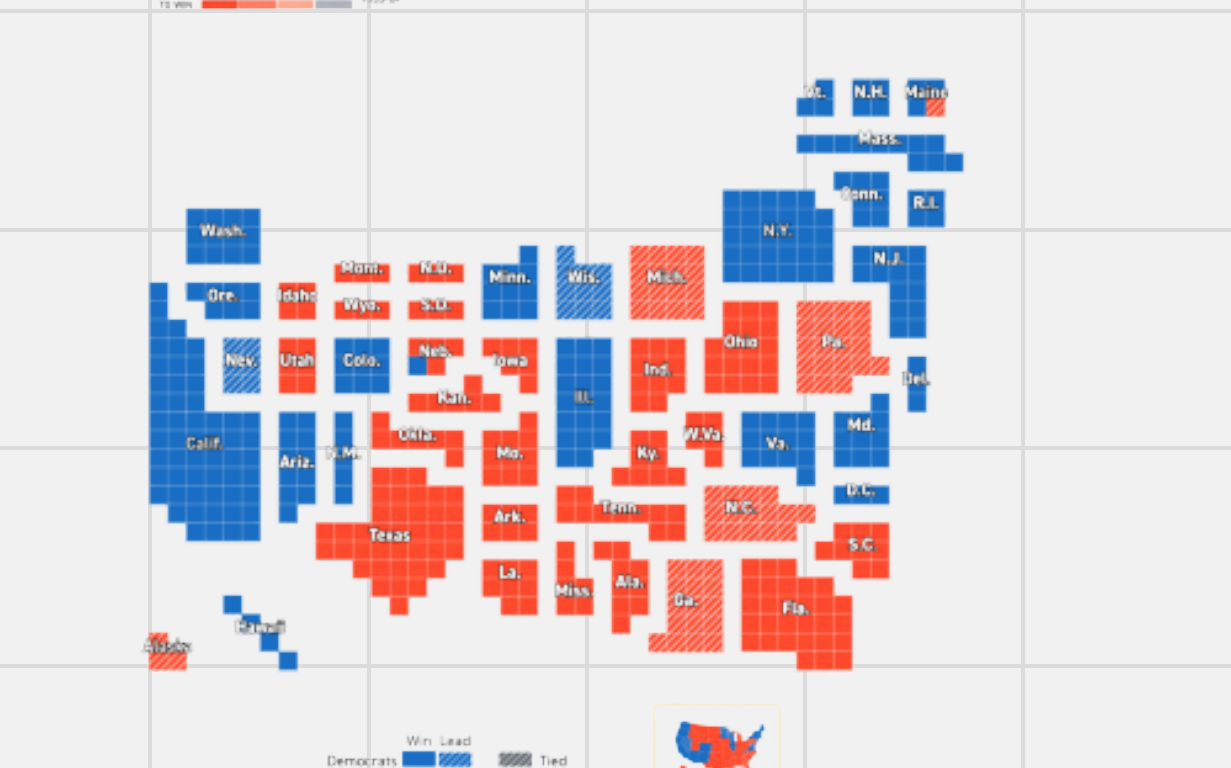
Note: In addition to awarding electoral votes to the winner statewide, Maine and Nebraska award an electoral vote to the winner in each congressional district.



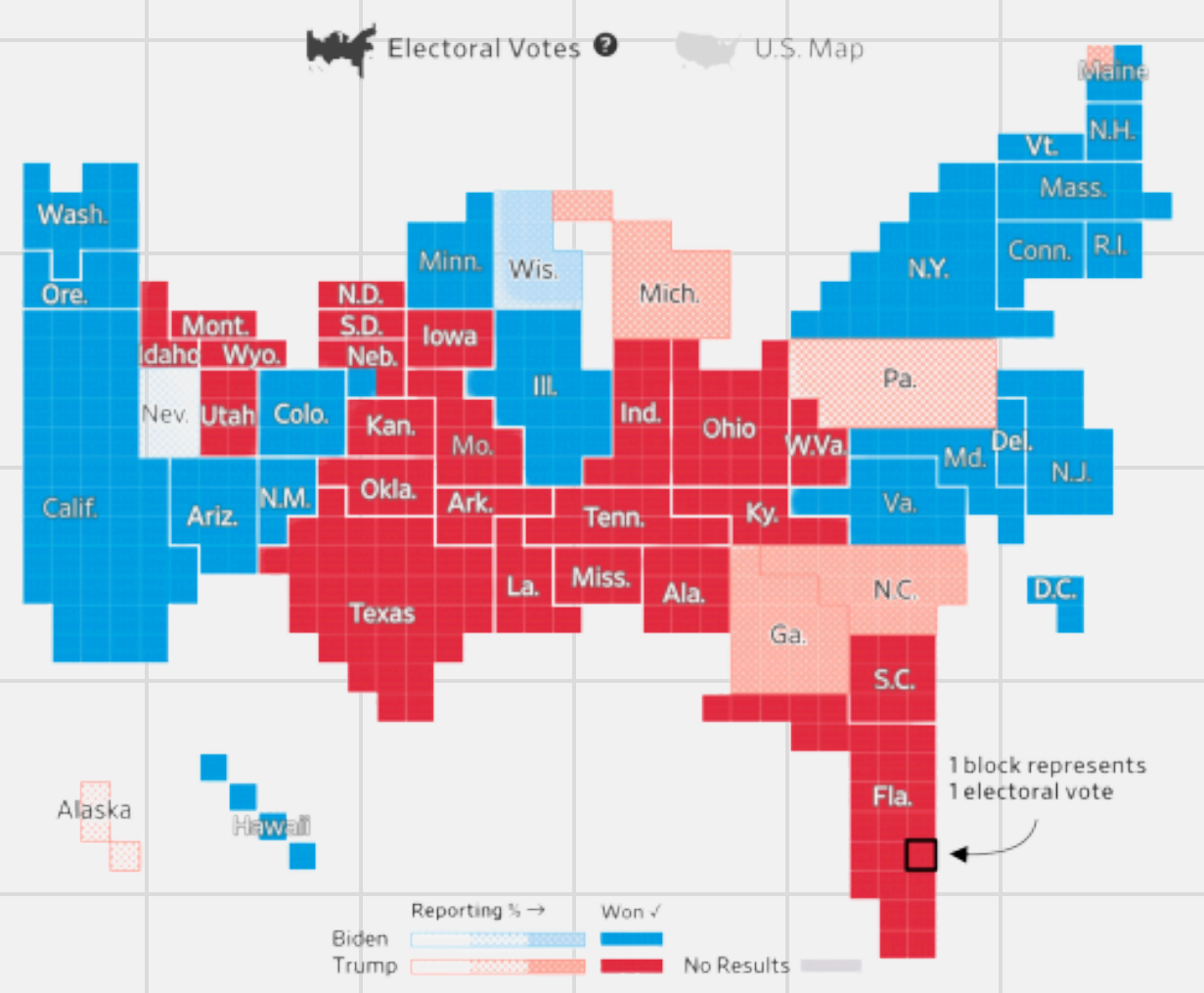
By winner Electoral votes Size of lead Shift from 2016



Demokraten Republikaner Unabhängig noch nicht ausgezählt Gewinner
Wahlleute

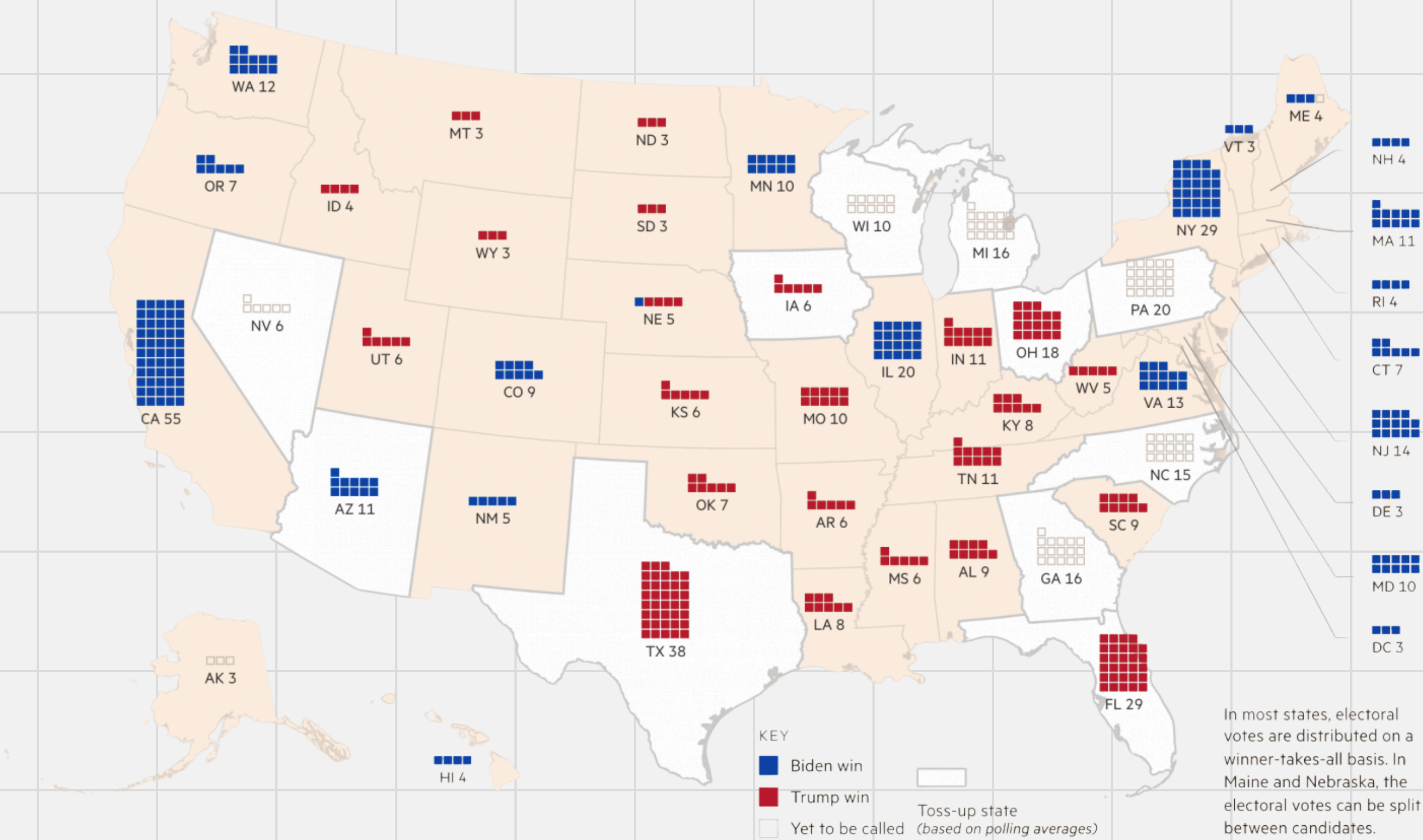


Win Lead Tied No results yet
Democrats Republicans Others
Switch to states



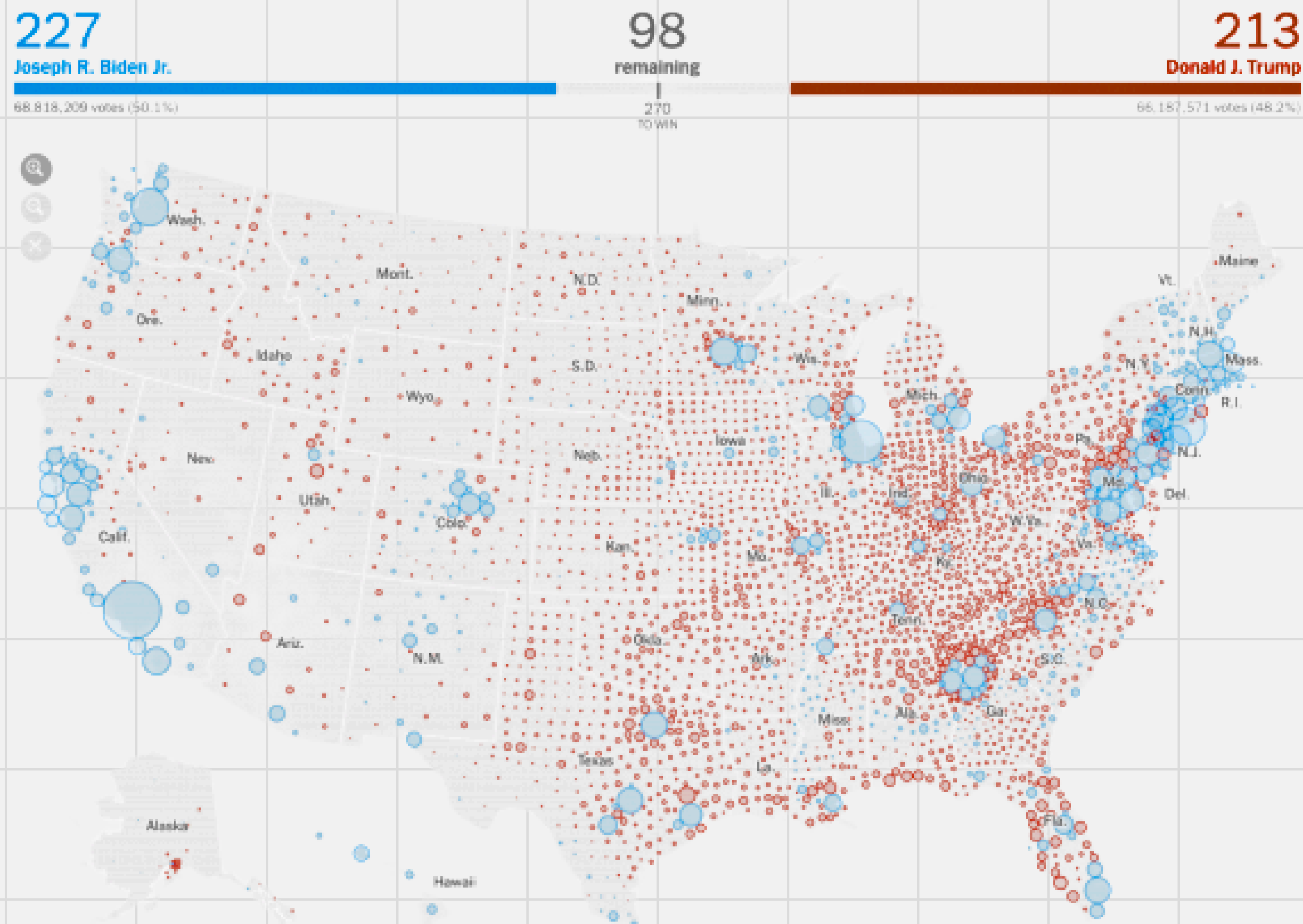
Reporting % → Won ✓ No Results
Biden Trump

UN BUON COMPROMESSO



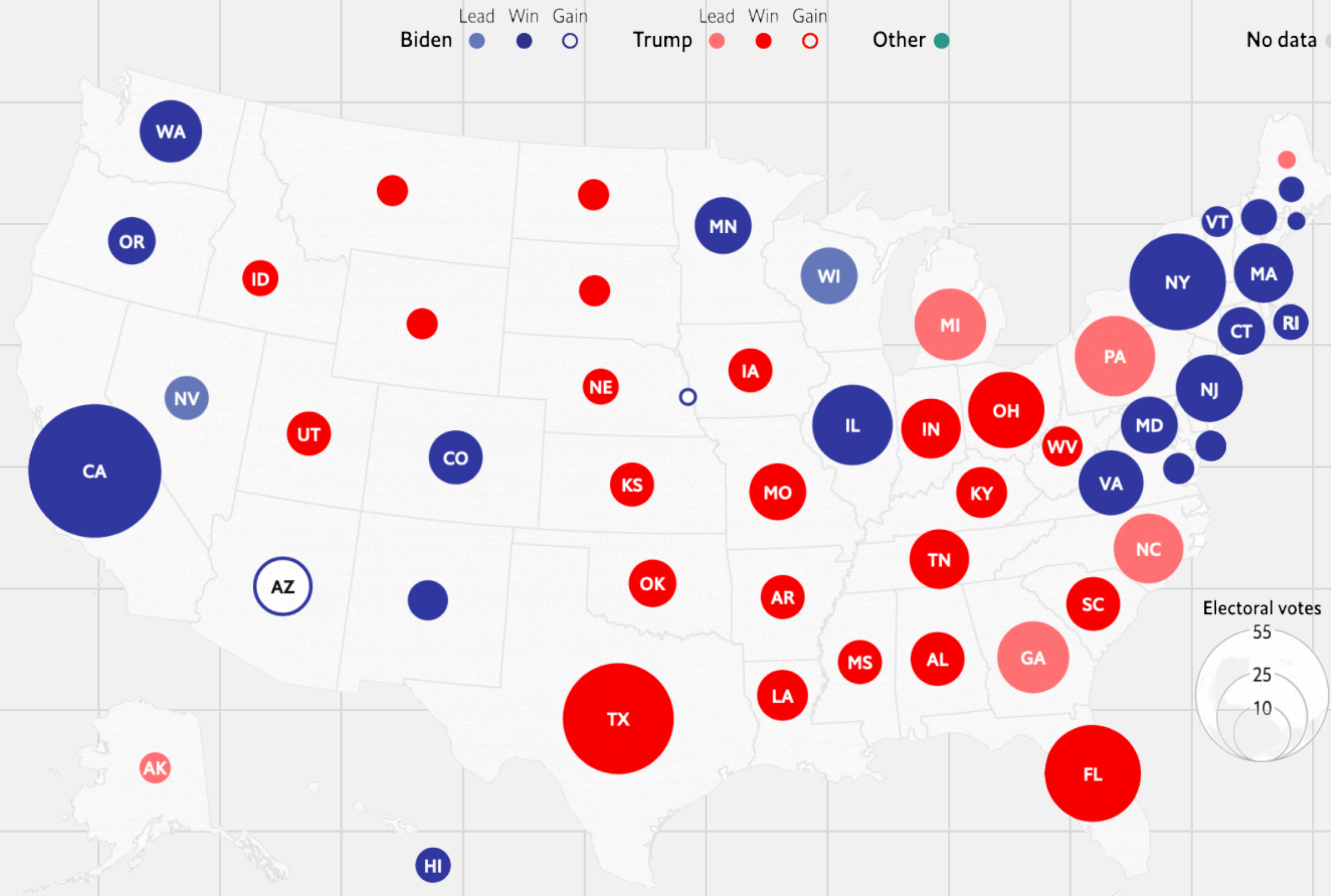
METODI ALTERNATIVI?

MAPPA A SIMBOLI PROPORZIONALI



METODI ALTERNATIVI?

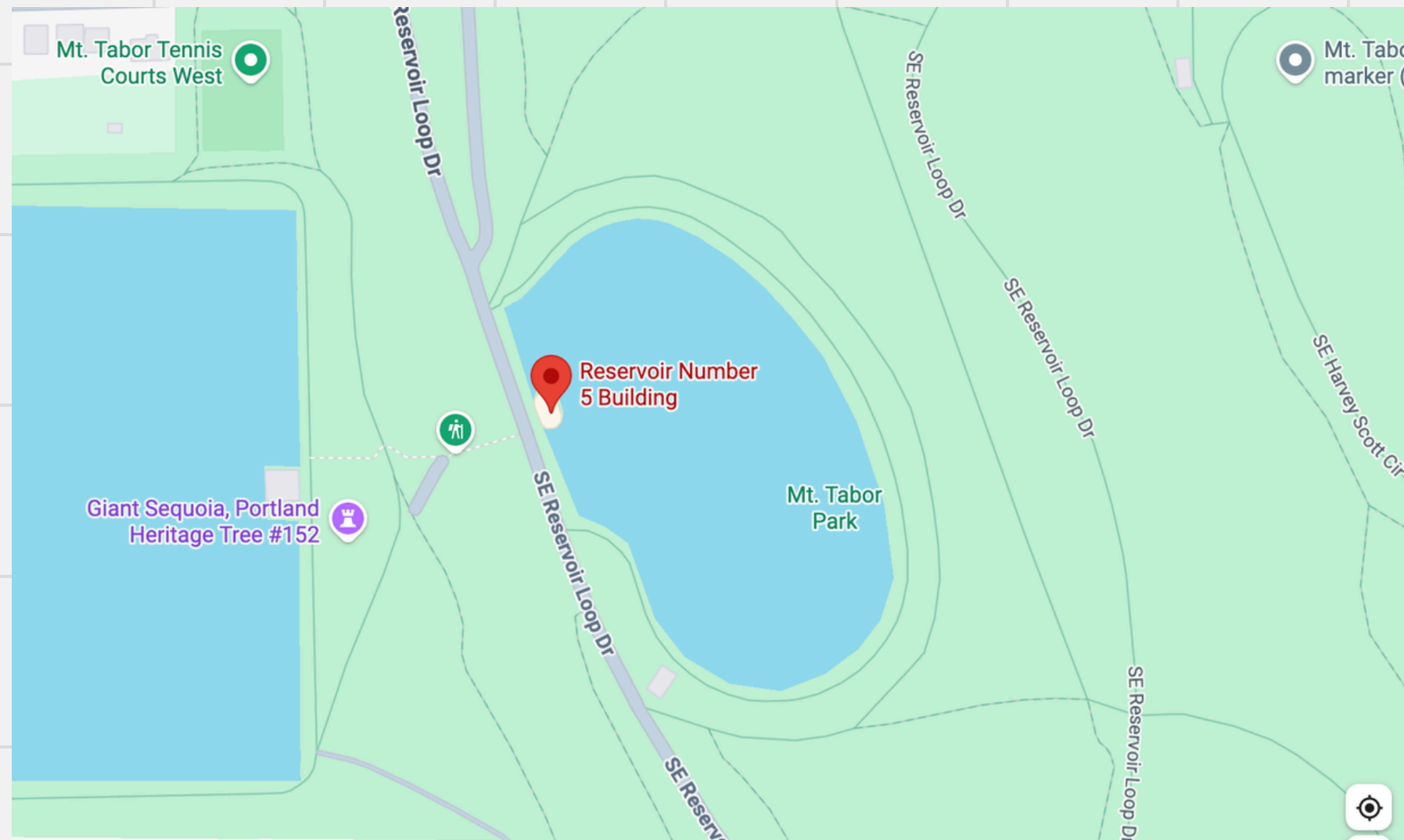
MAPPA A SIMBOLI PROPORZIONALI



**SIMBOLI GRADUATI SULLA BASE
DEI GRANDI ELETTORI**

PARLIAMO DI ORDINI DI GRANDEZZA

IL BACINO DI MOUNT TABOR (PORTLAND, OREGON)

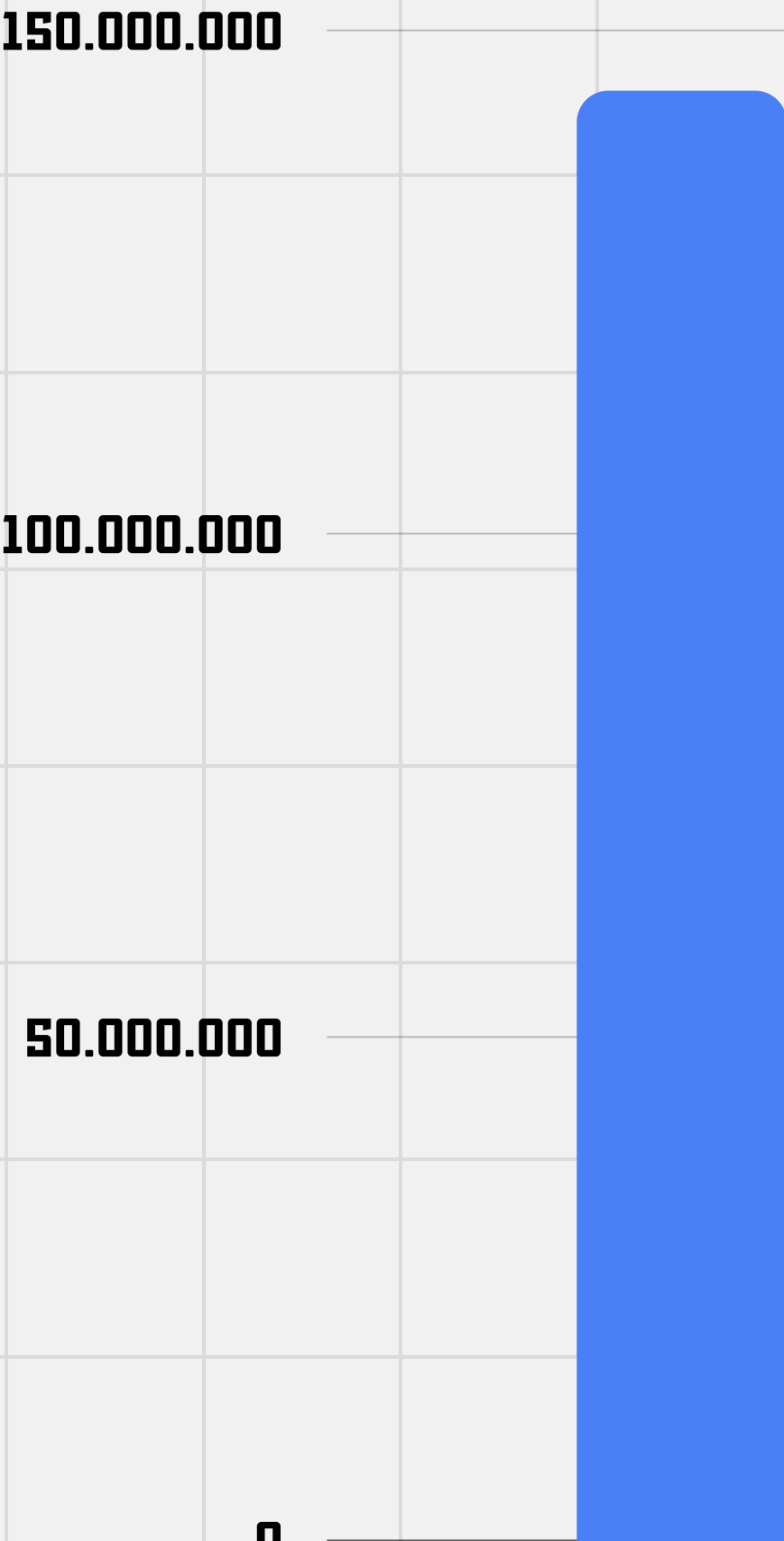


100M



RAPPRESENTAZIONI

IL BACINO DI MOUNT TABOR (PORTLAND, OREGON)



PIPÌ ACQUA

~0,5 L 144 GL

RAPPRESENTAZIONI

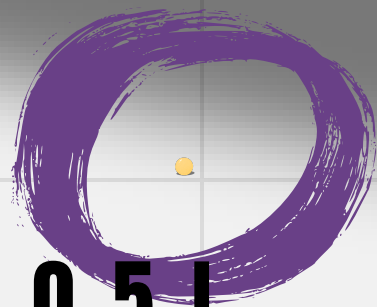
IL BACINO DI MOUNT TABOR (PORTLAND, OREGON)

0,5 L
 $R \simeq 0.049$ M

144000000 L
 $R \simeq 3250$ M

RAPPRESENTAZIONI

IL BACINO DI MOUNT TABOR (PORTLAND, OREGON)

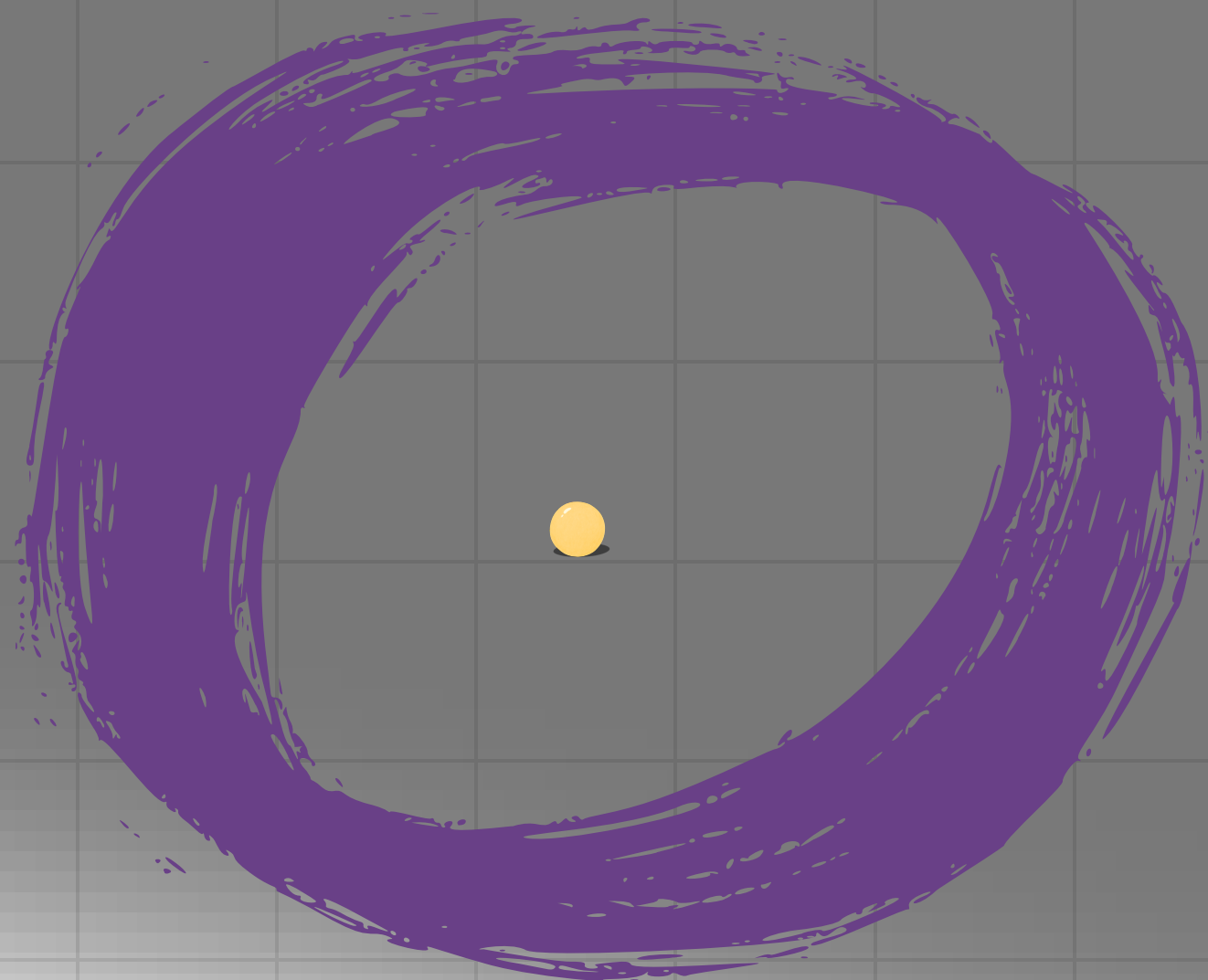


0,5 L
 $R \simeq 0.049$ M

144000000 L
 $R \simeq 3250$ M

RAPPRESL

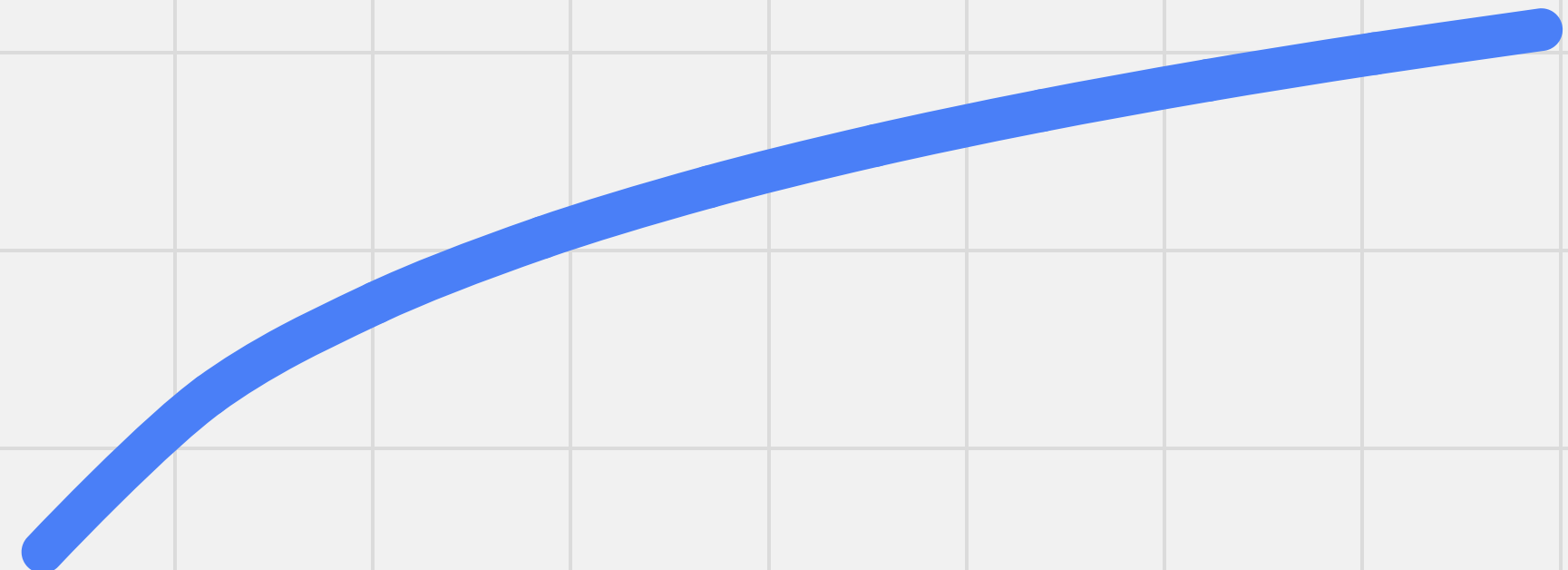
IL BACINO DI MOUNT TABOR (PORTA)



LOGARITMI E SCALA LOGARITMICA

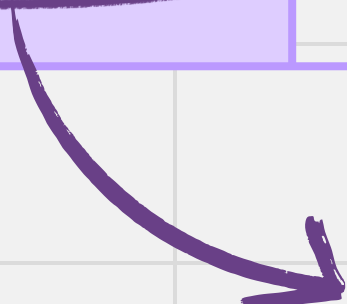
p

Potenza di 10	$10^0=1$	$10^1=10$	$10^2=100$	$10^3=1000$	$10^4=10\ 000$	...
Esponente	0	1	2	3	4	...

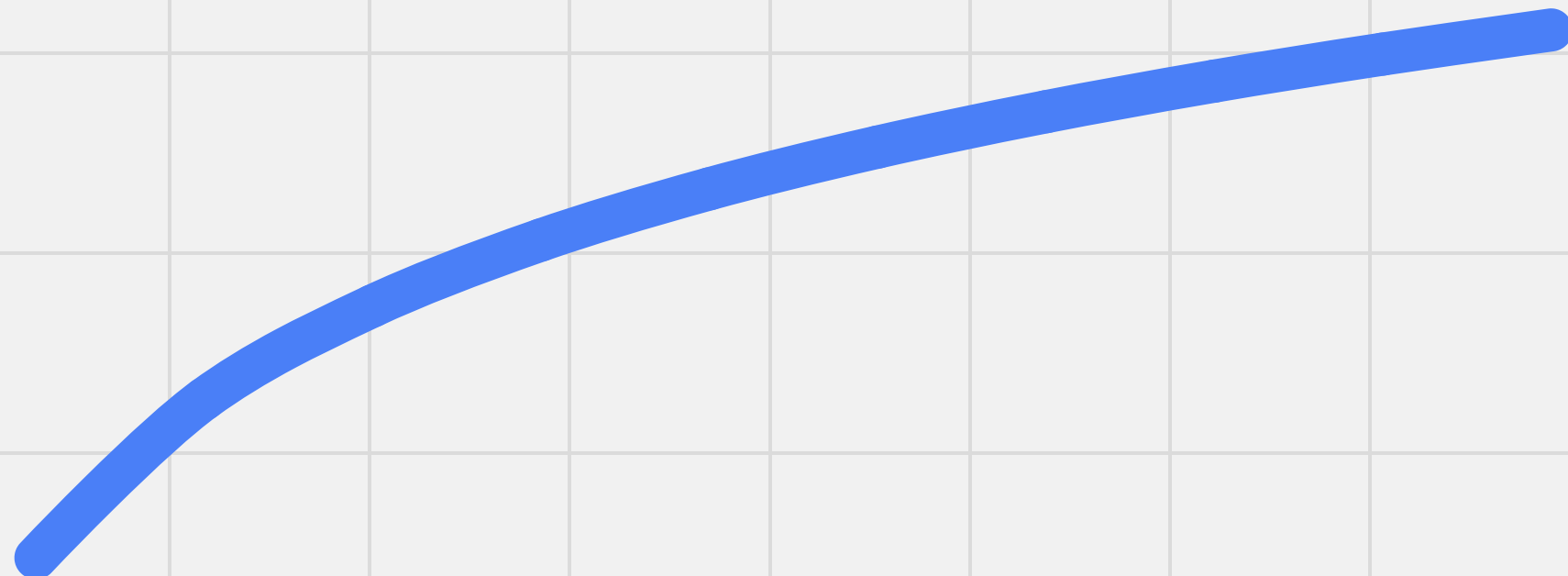


LOGARITMI E SCALA LOGARITMICA

p	Potenza di 10	$10^0=1$	$10^1=10$	$10^2=100$	$10^3=1000$	$10^4=10\ 000$	...
	Esponente	0	1	2	3	4	...

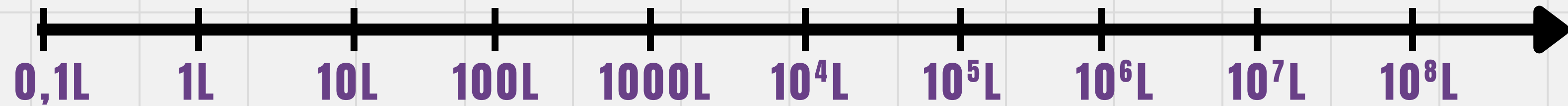


$= \log_{10} p$



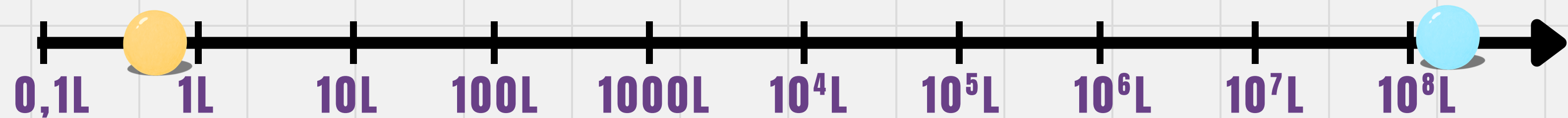
LOGARITMI E SCALA LOGARITMICA

IL BACINO DI MOUNT TABOR (PORTLAND, OREGON)



LOGARITMI E SCALA LOGARITMICA

IL BACINO DI MOUNT TABOR (PORTLAND, OREGON)



ESEMPIO: PH

[H⁺] (M)

1

10^{-2}

10^{-4}

10^{-6}

10^{-8}

10^{-10}

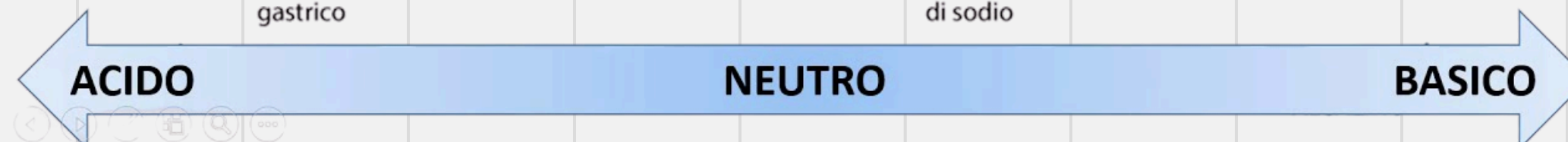
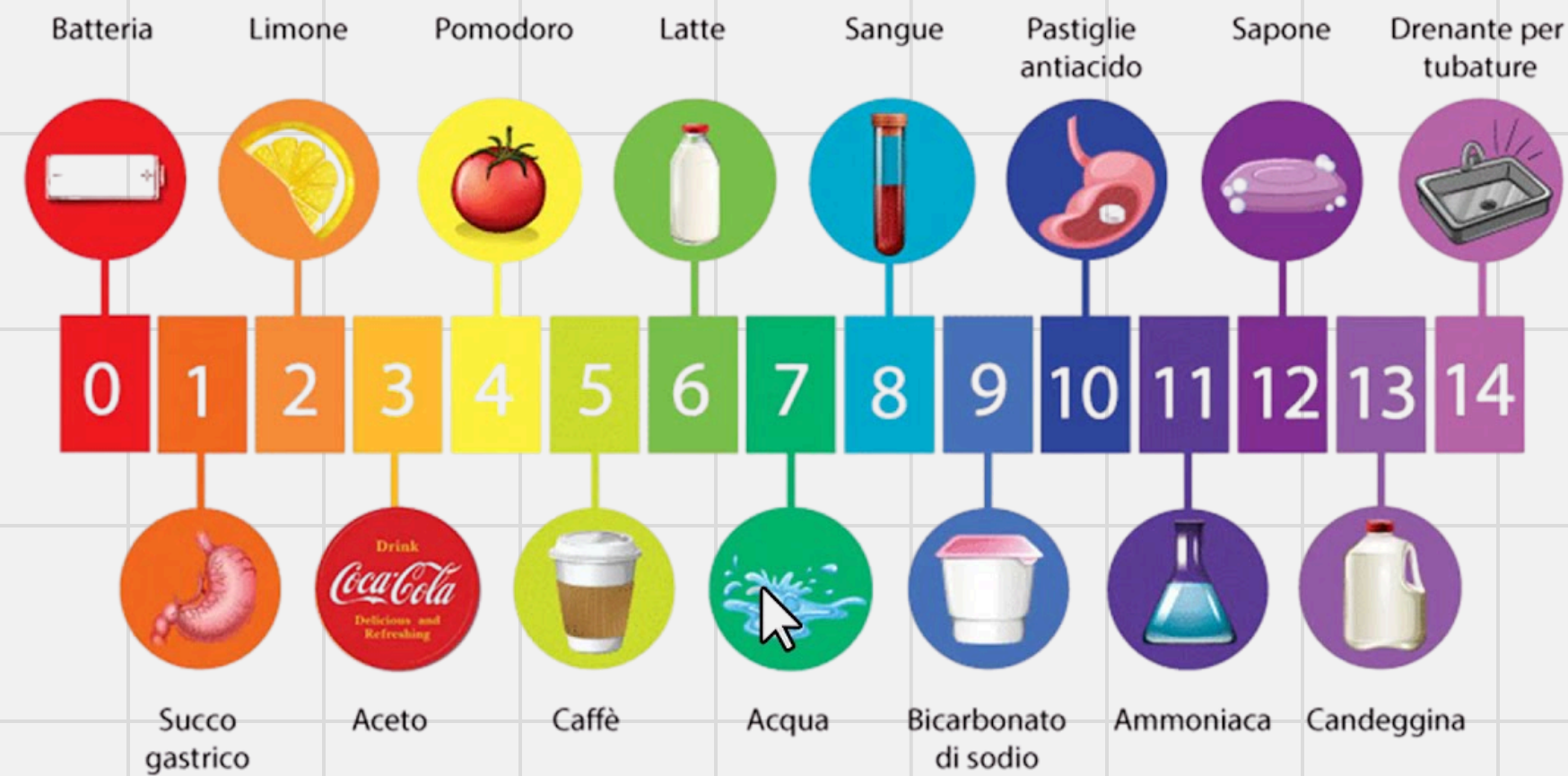
10^{-12}

10^{-14}

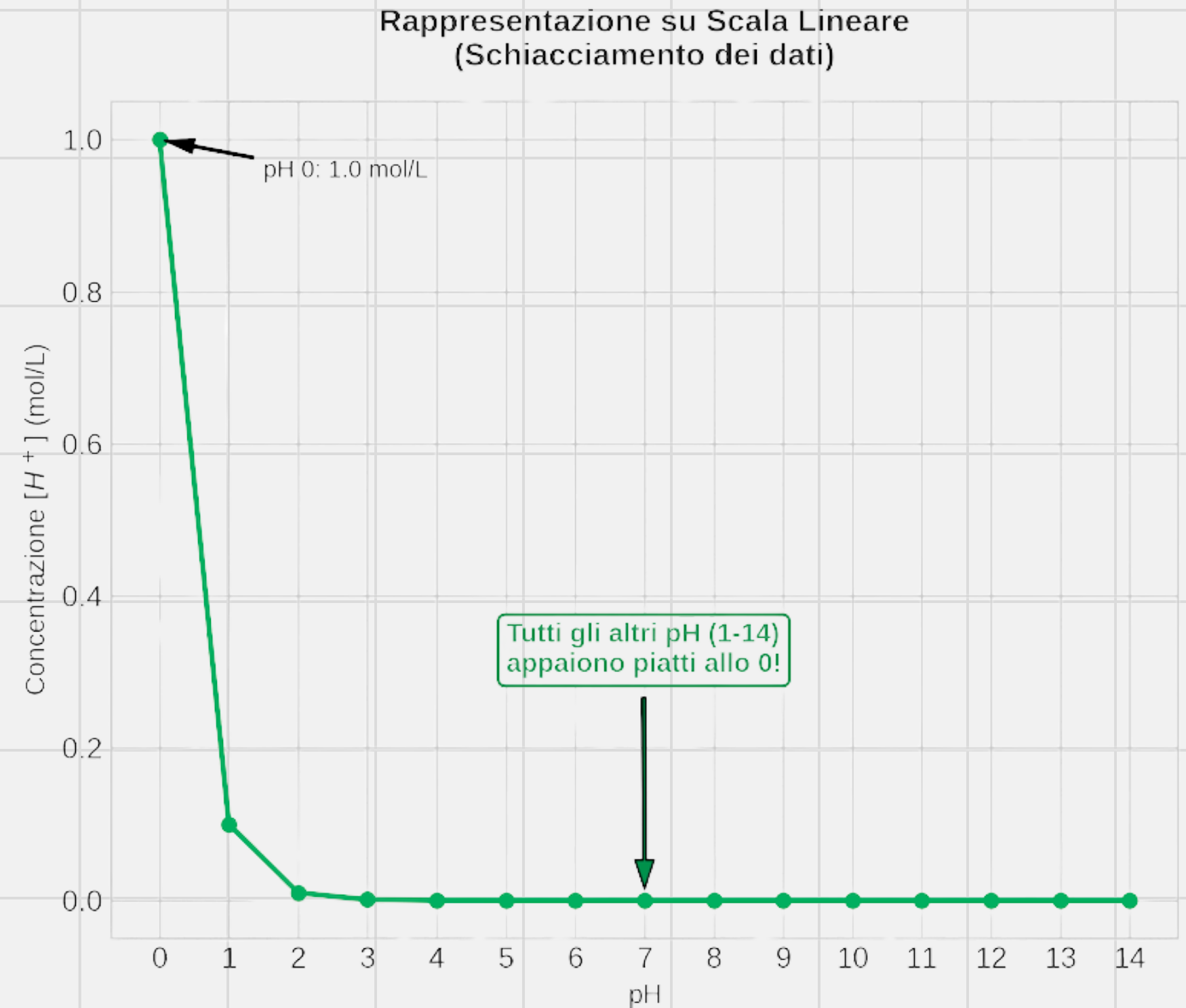
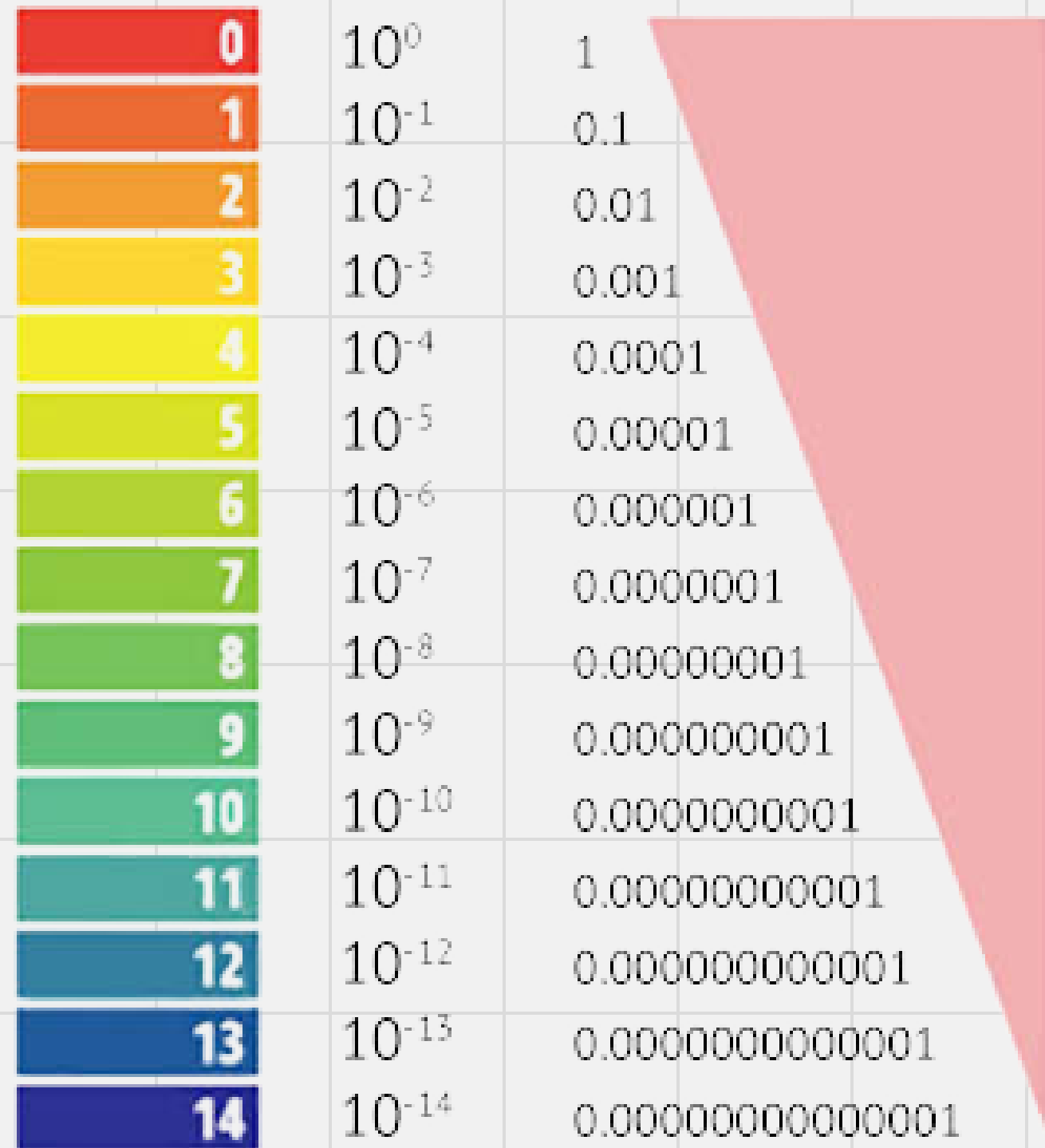


ESEMPIO: PH

[H⁺] (M) 1 10⁻² 10⁻⁴ 10⁻⁶ 10⁻⁸ 10⁻¹⁰ 10⁻¹² 10⁻¹⁴

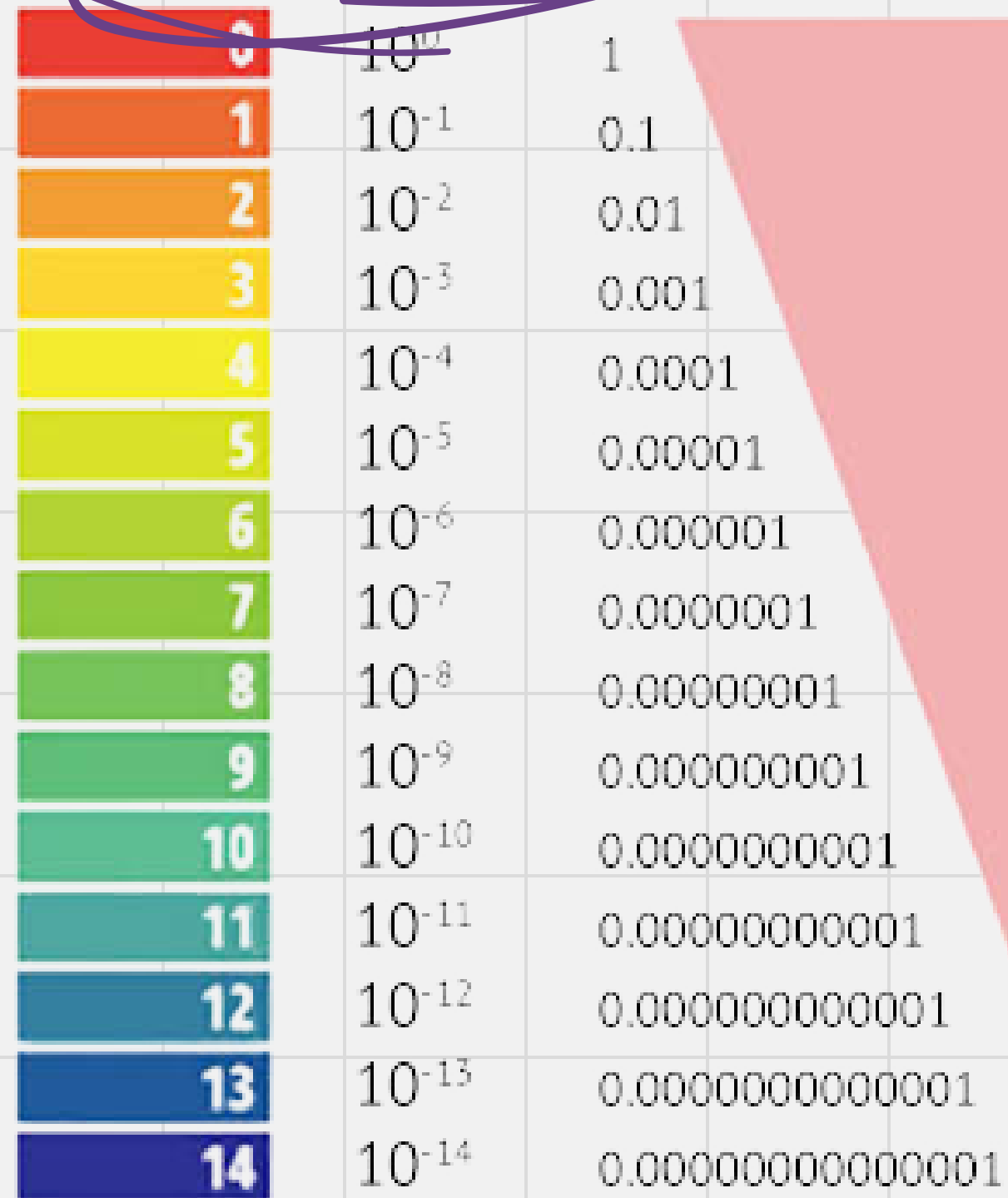


ESEMPIO: PH

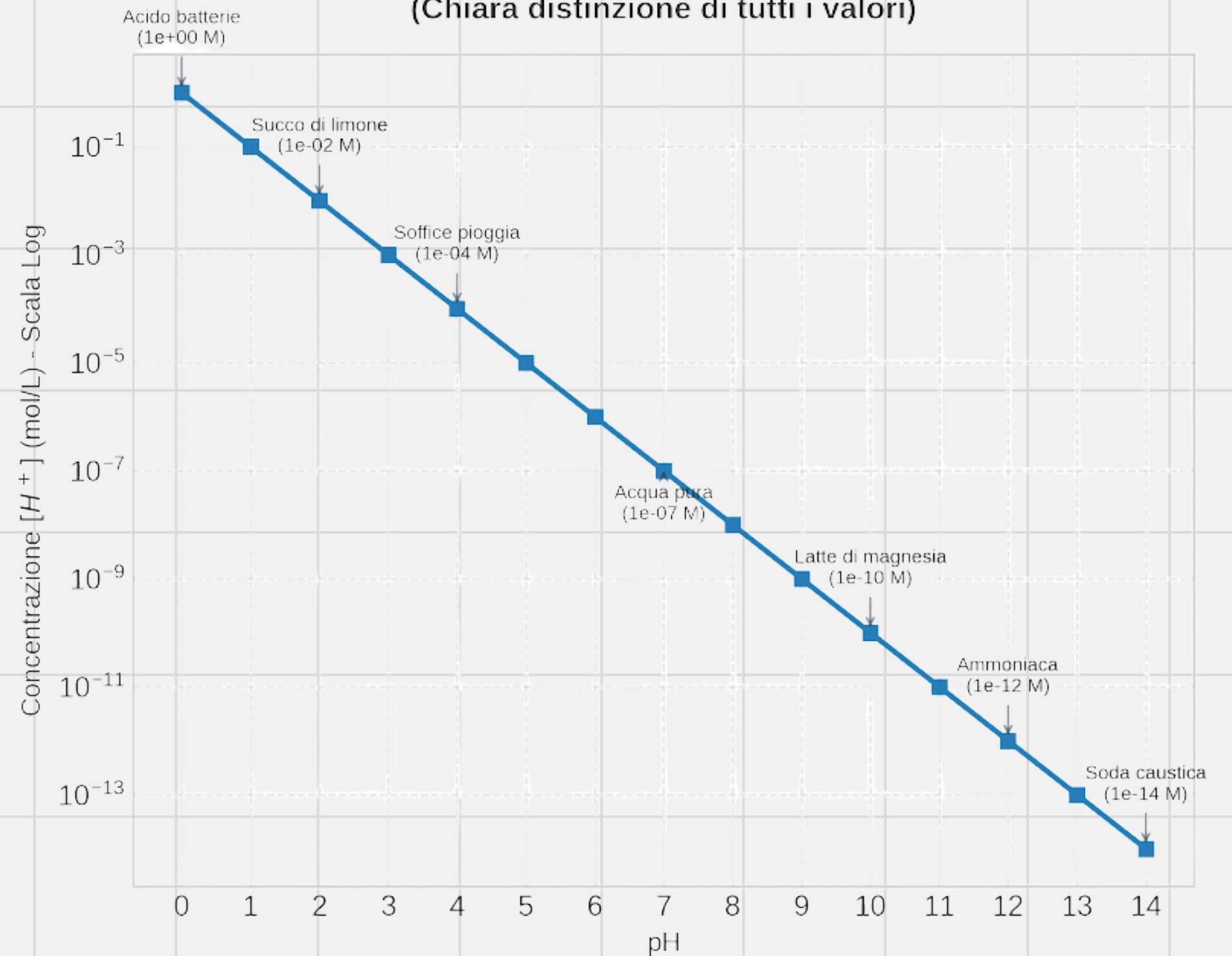


ESEMPIO: PH

$$\text{pH} = -\log [\text{H}^+]$$



Rappresentazione su Scala Logaritmica
(Chiara distinzione di tutti i valori)



FACCIAMO UN PO' DI PRATICA

**MOSTRARE LA DIFFUSIONE
DEI PANNELLI SOLARI
DOMESTICI PER
EVIDENZIARE LE REGIONI
PIÙ VIRTUOSE**



COME?



FACCIAMO UN PO' DI PRATICA

**UN'AZIENDA DEVE
MOSTRARE LA QUOTA DI
MERCATO DI 6 DIVERSI
SMARTPHONE CONCORRENTI,
CON DIFFERENZE MINIME**



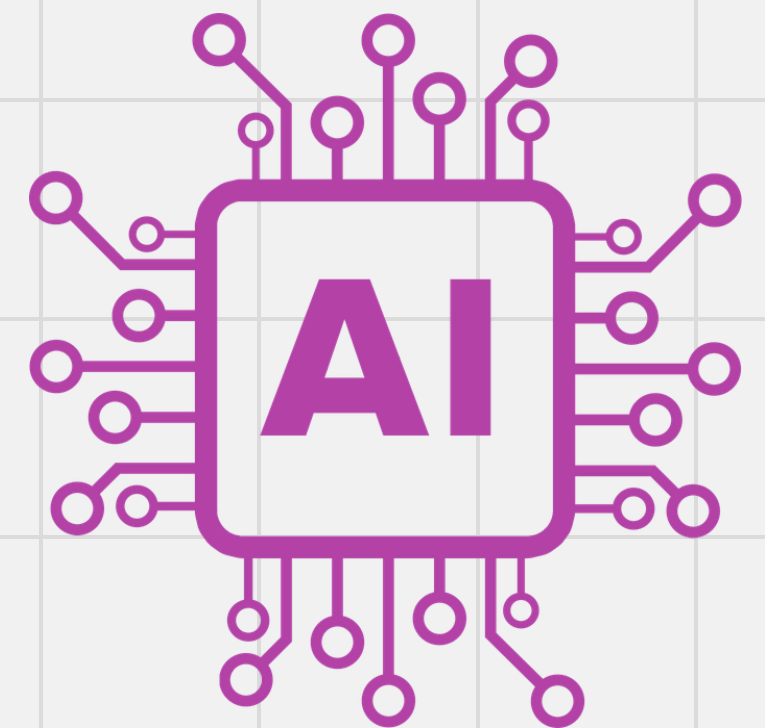
COME?



FACCIAMO UN PO' DI PRATICA

L'USO DI UN NUOVO MODELLO DI INTELLIGENZA ARTIFICIALE PASSA DA 1.000 UTENTI A 10.000 NEL PRIMO ANNO, 100.000 NEL SECONDO E 10.000.000 NEL TERZO. VOGLIAMO MOSTRARE QUESTA EVOLUZIONE NEL TEMPO.

COME?



FINALE INDIVIDUALE KANGOUROU 2026

20/09/2026

GRAZIE!

PER DOMANDE E/O INFORMAZIONI,
SCRIVETECI!!

michela.barbetta99@gmail.com
lorenzo.ferraris99@gmail.com

BIBLIOGRAFIA

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- Correlazioni spurie
- Tanti modi di rappresentare i dati
- Tipi di grafici e quando usarli
- Sulle mappe delle elezioni negli Stati Uniti
- Sul bacino di Mount Tabor

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