

Telling stories with data

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PEBBLEROAD

www.pebbleroad.com

PM mentions data visualization at **National Day Rally 2016**

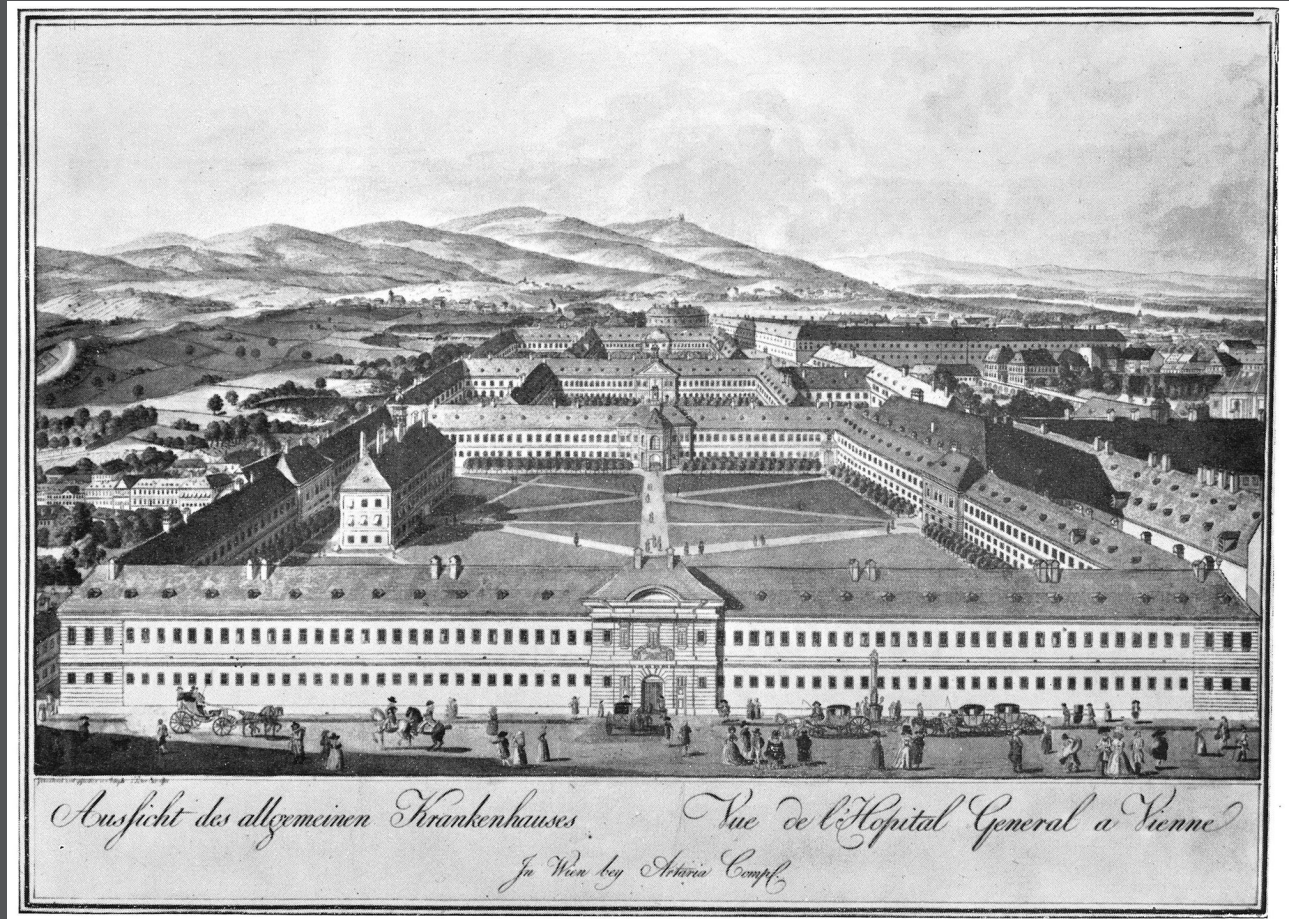


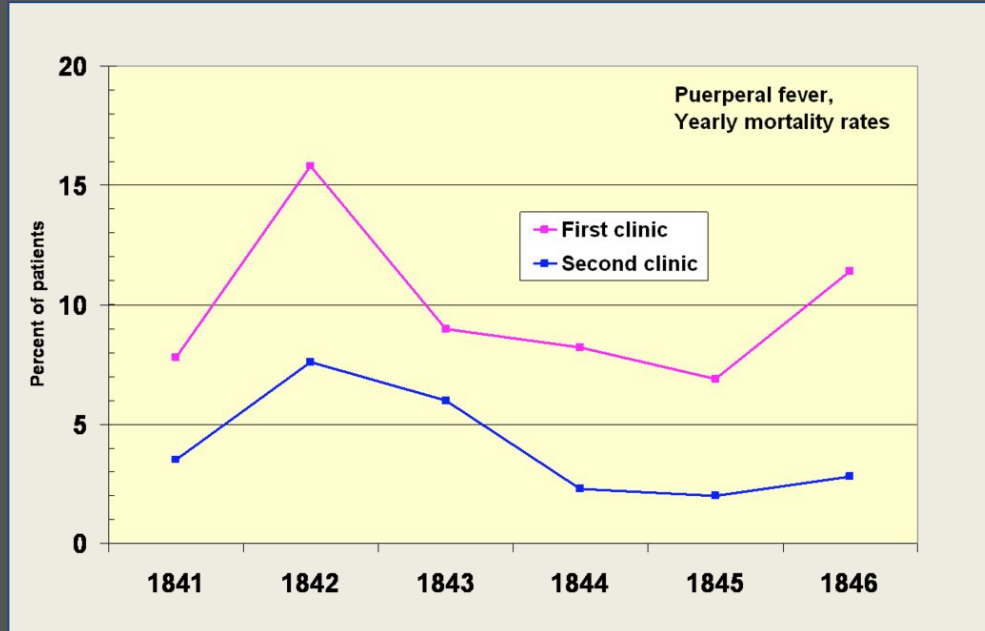
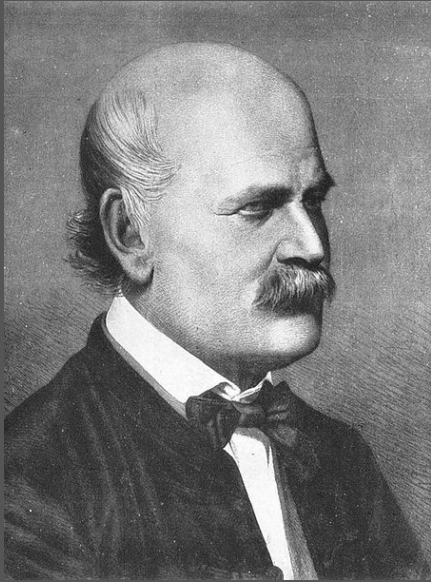
Ignaz Semmelweis

1818- 1865

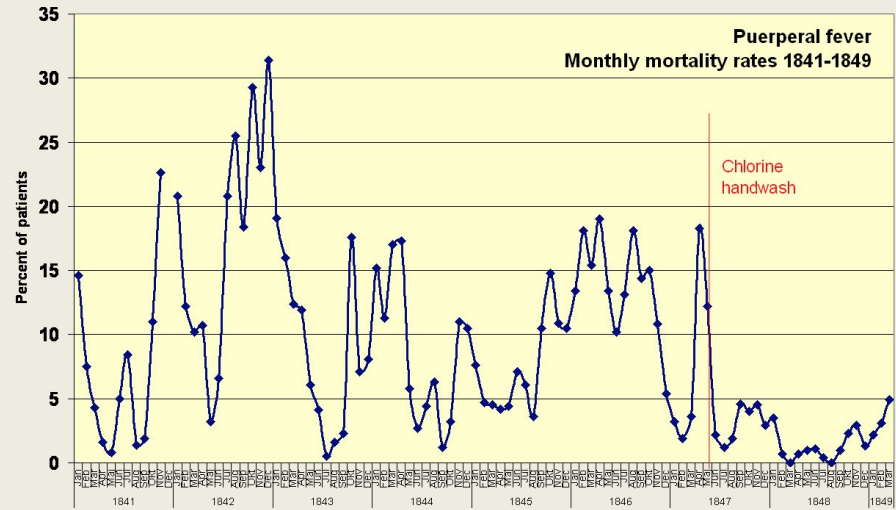
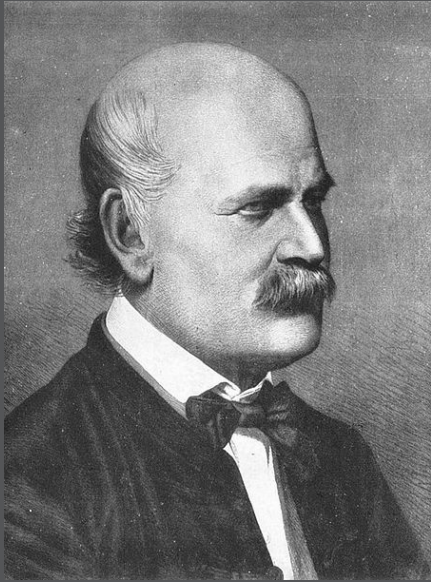


https://en.wikipedia.org/wiki/Ignaz_Semmelweis

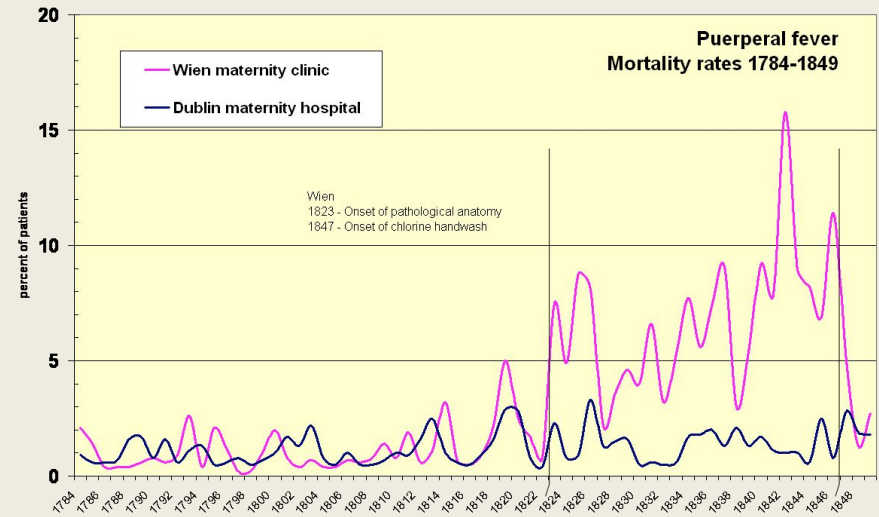
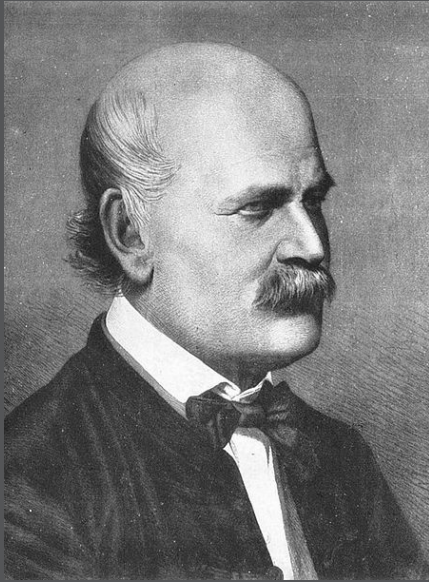




https://en.wikipedia.org/wiki/Historical_mortality_rates_of_puerperal_fever



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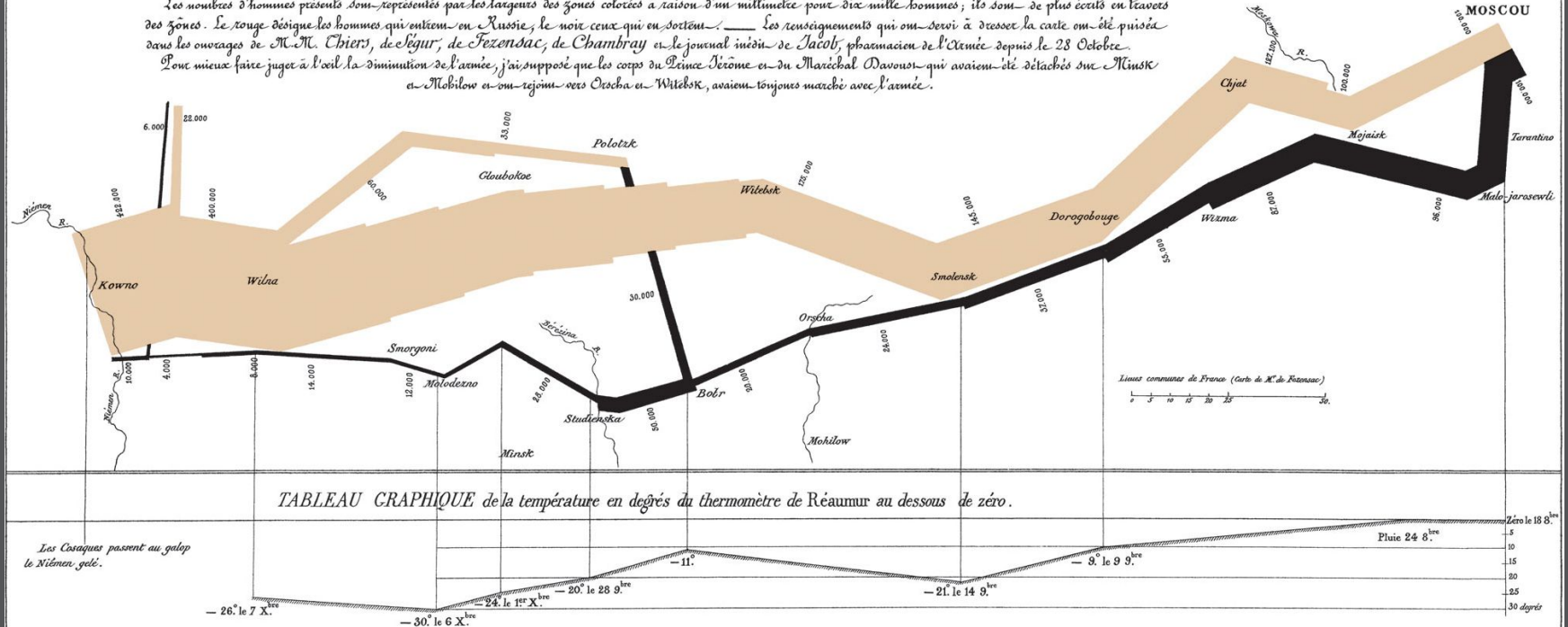
Statue of Semmelweis in
front of Szent Rókus
Hospital, Budapest,
Hungary.



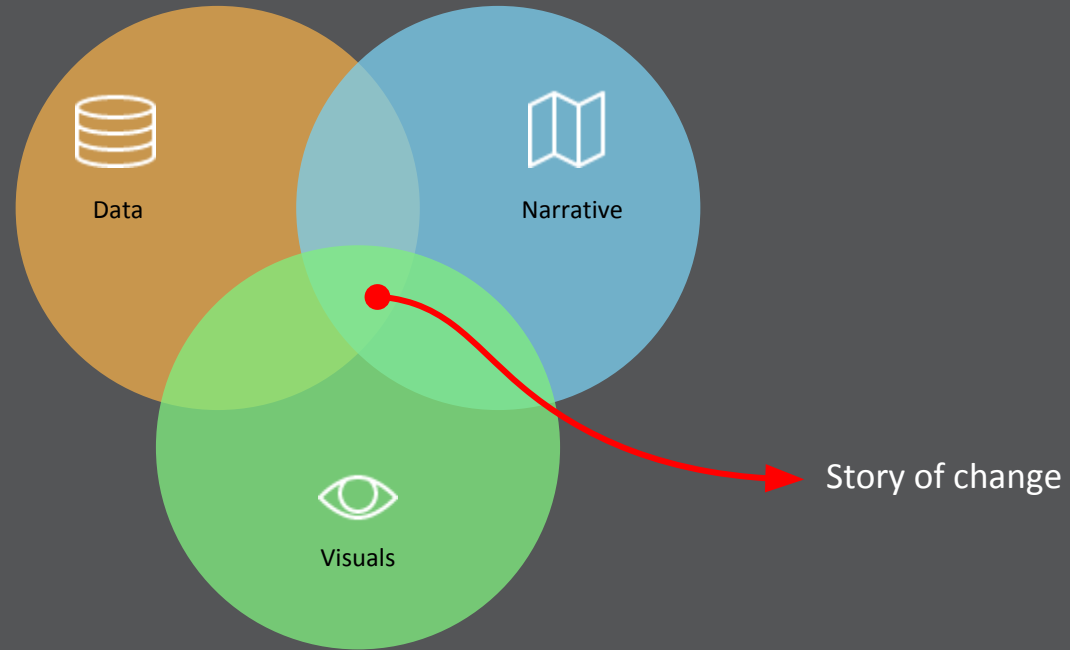
Napoleon's ill-fated march to Moscow

Carte Figurative des pertes successives en hommes de l'Armée Française dans la campagne de Russie 1812-1813.
Dressée par M. MINARD, Inspecteur Général des Ponts et Chaussées en retraite Paris, le 20 Novembre 1869.

Les nombres d'hommes présents sont représentés par les largeurs des zones colorées à raison d'un millimètre pour dix mille hommes; ils sont de plus écrits en travers des zones. Le rouge désigne les hommes qui entrent en Russie, le noir ceux qui en sortent. — Les renseignements qui ont servi à dresser la carte ont été puisés dans les ouvrages de M. M. Thiers, de Ségur, de Fezensac, de Chambray et le journal inédit de Jacob, pharmacien de l'Armée depuis le 28 Octobre. Pour mieux faire juger à l'œil la diminution de l'armée, j'ai supposé que les corps du Prince Némoï et du Maréchal Davout, qui avaient été détachés sur Minsk et Mohilow et qui rejoignent vers Orscha et Witebsk, avaient toujours marché avec l'armée.



3 elements of data storytelling



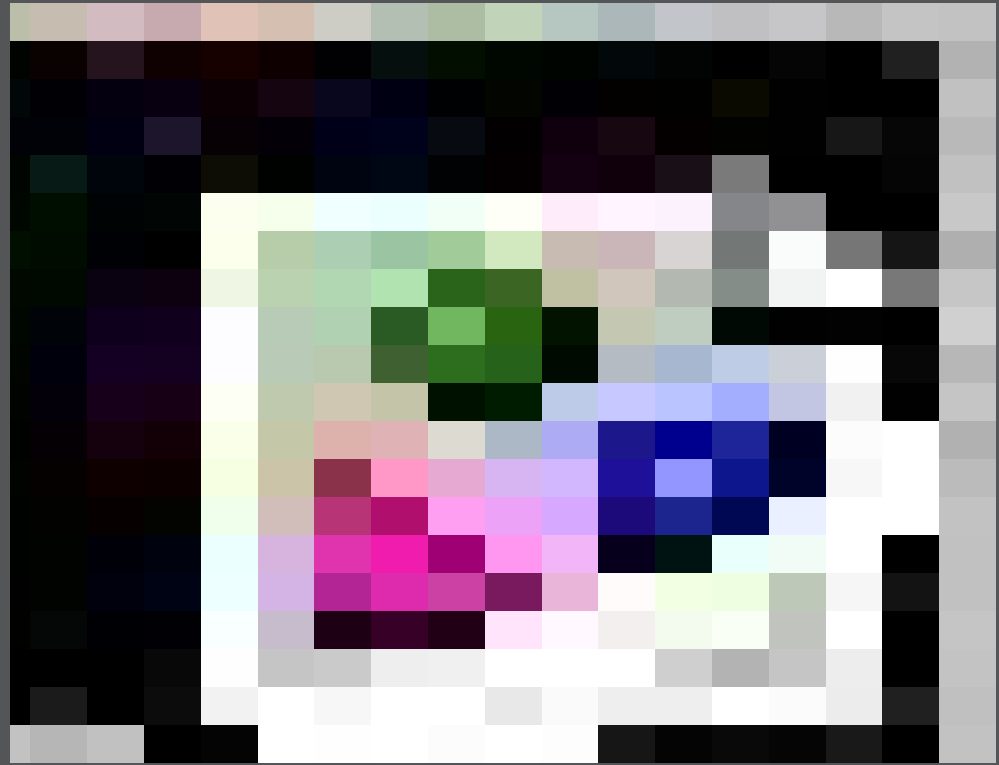
Story of change



“The purpose of visualisation is insight, not pictures.”

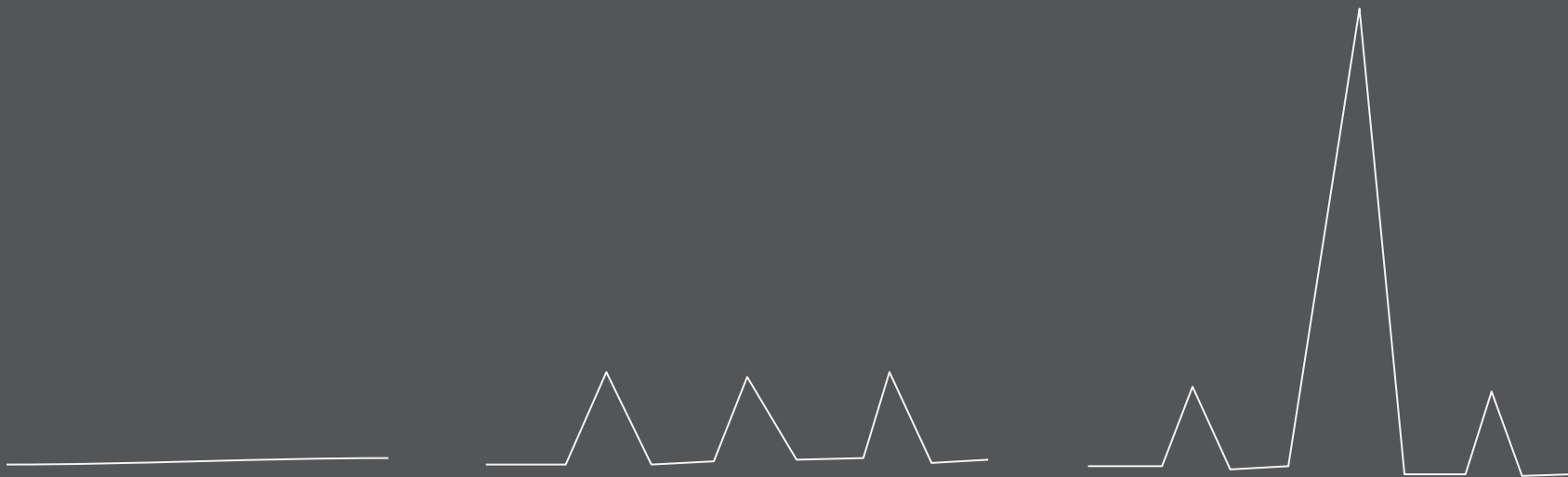
- Ben Shneiderman
Pioneer in human-computer interaction

- Who is your audience
- What are you trying to communicate
- Why should they care

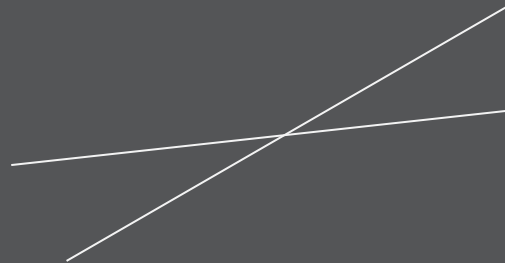


Credit: Unsplash

Where's the story?



Where's the story?





1. Know your audience
2. Pick one or two points that matter
3. Pick a perspective or angle that will create interest or spur curiosity



Data

Which country won the most medals?

Olympic Games Rio 2016



OVERVIEWSPORTSSCHEDULEATHLETESMEDALS COUNTRIES

Medal standings

Country				
1  United States	46	37	38	121
2  Great Britain	27	23	17	67
3  China	26	18	26	70
4  Russia	19	18	19	56
5  Germany	17	10	15	42
54  Singapore	1	0	0	1



All countries

Data shows that the usual suspects will be on the top of the table: United States, China, Britain and Russia. Population and money are two factors that put those countries on top of all others. But, what would happen if we measure all nations equally?

BY GROSS DOMESTIC PRODUCT

Medals per \$100 million of GDP

Grenada (1)		10.48	
Jamaica (11)		7.90	
Georgia (7)		5.00	
Armenia (4)		3.78	
Burundi (1)		3.47	
Azerbaijan (18)		3.33	
North Korea (7)		2.50	
Bahamas (2)		2.30	
Serbia (8)		2.19	
Kenya (13)		2.12	

BY GDP PER CAPITA

Medals per \$1,000 of GDP per capita

China (70)		4.96	
Ethiopia (8)		4.44	
Kenya (13)		4.06	
North Korea (7)		3.89	
Russia (56)		2.20	
United States (121)		2.17	
Uzbekistan (13)		2.13	
Britain (67)		1.63	
Ukraine (11)		1.47	
Jamaica (11)		1.25	

BY POPULATION

Medals per 1 million inhabitants

Grenada (1)		9.03	
Bahamas (2)		6.16	
New Zealand (18)		4.06	
Jamaica (11)		3.73	
Denmark (15)		2.69	
Croatia (10)		2.24	
Slovenia (4)		2.02	
Azerbaijan (18)		1.84	
Hungary (15)		1.52	
Bahrain (2)		1.49	



People are asking why it is so difficult to locate the backbox of the crashed Malaysian Airlines flight MH370?

You have one data point. The black box could be as deep as 15,000 feet.

How would you explain this story?

The depth of the problem



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After an Australian vessel, Ocean Shield, again detected deep-sea signals consistent with those from an airplane's black box, the official leading a multinational search expressed hope Wednesday that crews will begin to find wreckage of a missing Malaysian airliner "within a matter of days."

"I believe we're searching in the right area," Retired Air Chief Marshal Angus Houston said.

All commercial transport aircraft are fitted with underwater locator beacons to assist in the relocation of black box flight data recorders and cockpit voice recorders. These beacons are free-running pingers that transmit signals at an acoustic frequency of 37.5 kilohertz and have an expected battery life of 30 days. The scale of the challenge in locating the black boxes is immense.

200 feet — the width
of a Boeing 777-200



1. Look for interesting perspectives
2. Gather the right core data
3. Mashup with relevant data



Nigel Holmes

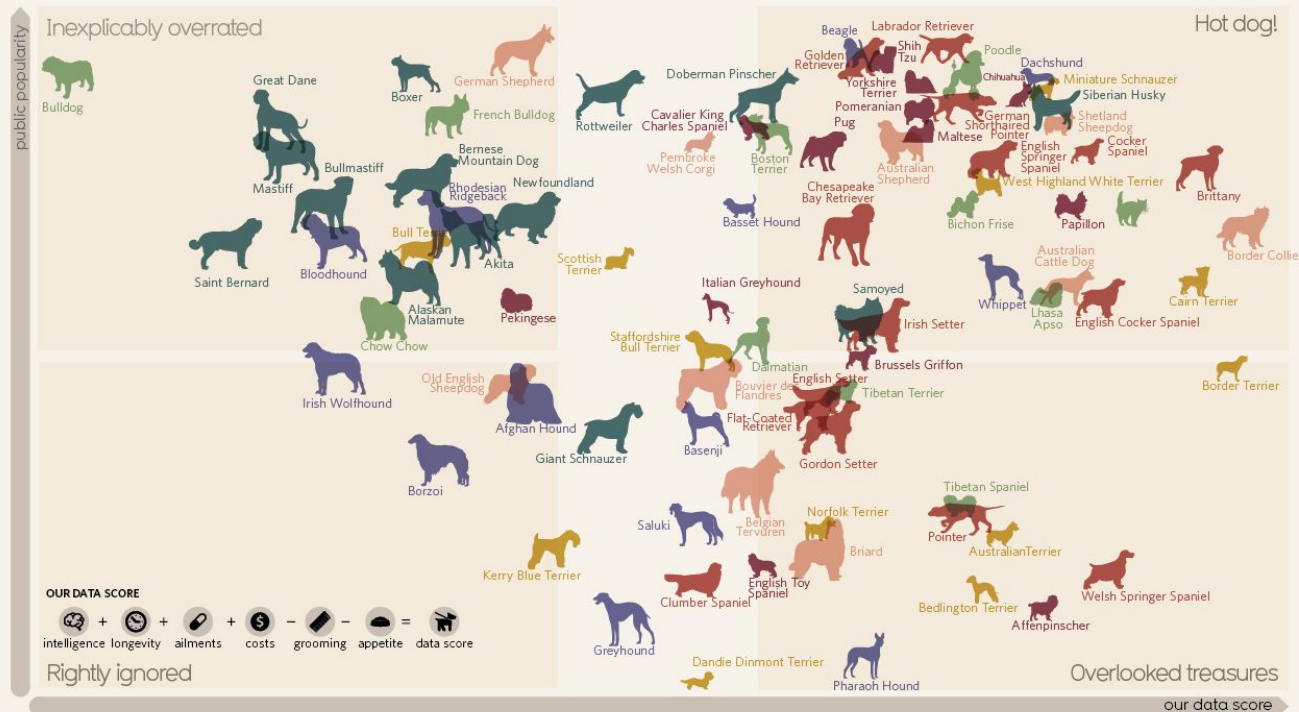
Edward Tufte



The Functional Art by Alberto Cairo

Best in Show

The ultimate data-dog



by David McCandless
research: @MiriamQuick / dogs: Andrew Park @illustrationkid
informationisbeautiful.net

taken from the new, infographic mega-book
Knowledge is Beautiful
bit.ly/KIB_books

sources: American Kennel Club,
Canine Inherited Disorders Database,
data: bit.ly/KIB_BestDogs



READING, WRITING, AND EARNING MONEY

Researchers discovered that if a household's educational attainment, literacy skills, or household income is in the lowest 25th percentile, the household's income is likely to be in the lowest 25th percentile. And if the household's income is in the lowest 25th percentile, the household's literacy skills are likely to be in the lowest 25th percentile.



① HIGH SCHOOL GRADUATES



② COLLEGE GRADUATES

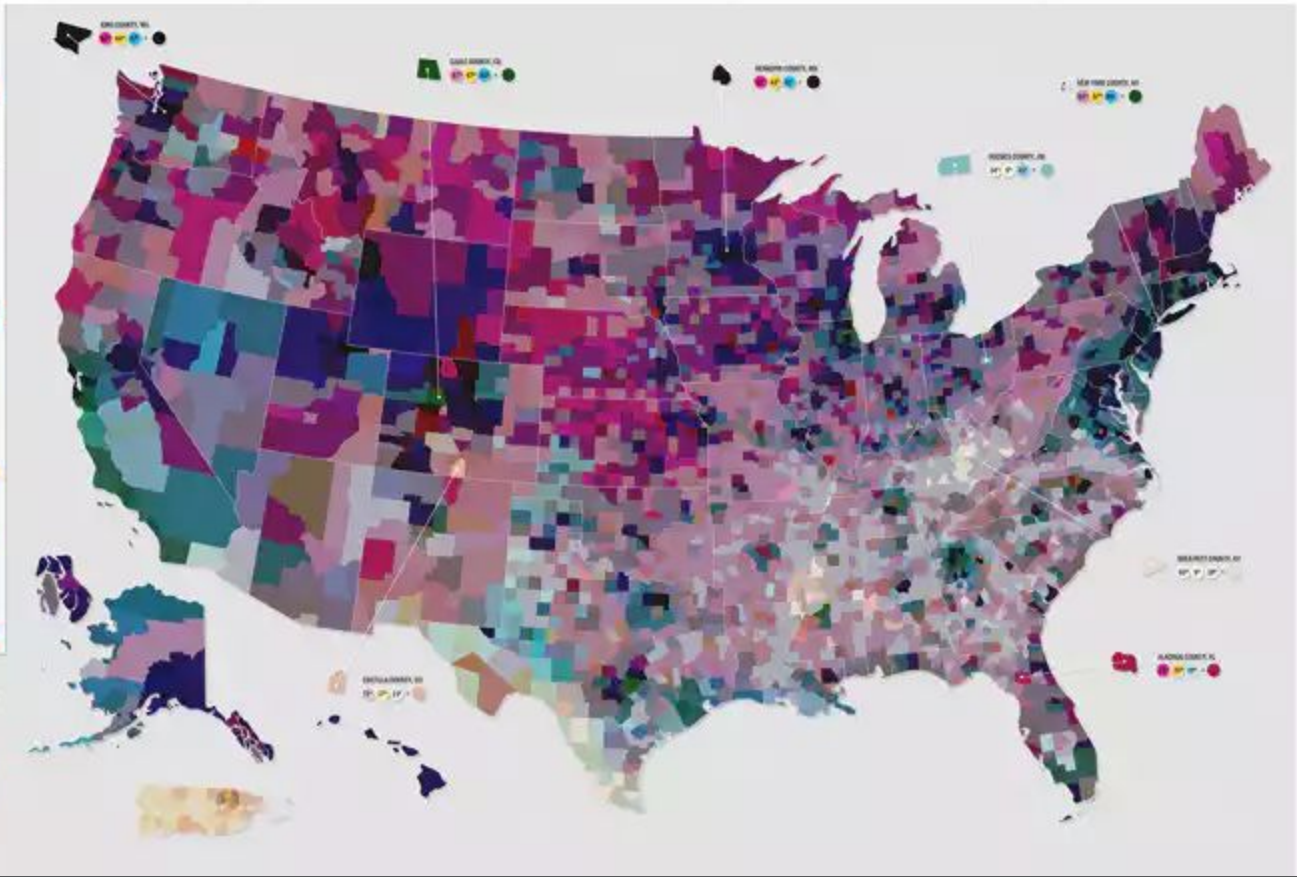


③ MEDIAN HOUSEHOLD INCOME

The links of high school graduation, literacy skills, and income are shown in the map. The correlation between high school graduation and literacy skills is shown in the map. The correlation between literacy skills and income is shown in the map. The correlation between high school graduation and income is shown in the map.

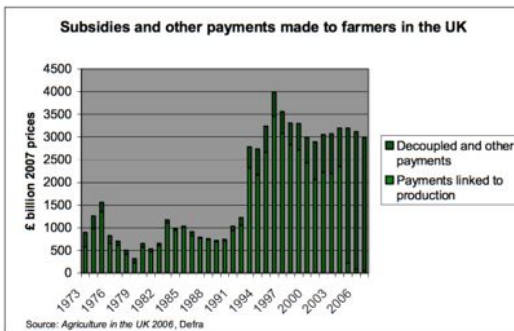
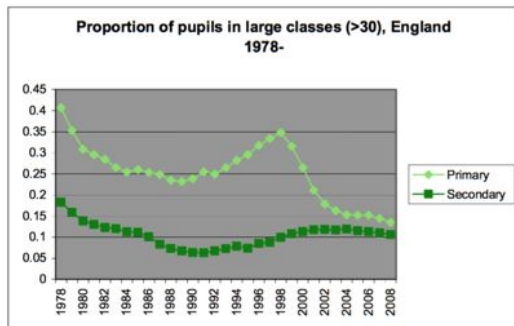


A correlation coefficient (C) of 0.70 and a p-value of 0.0001.

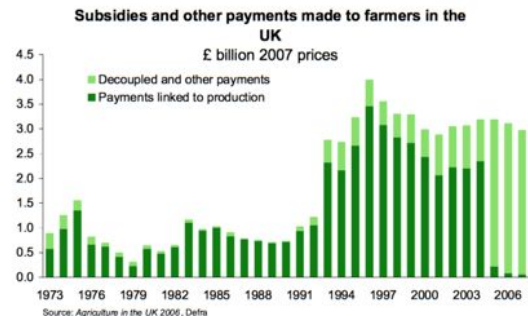
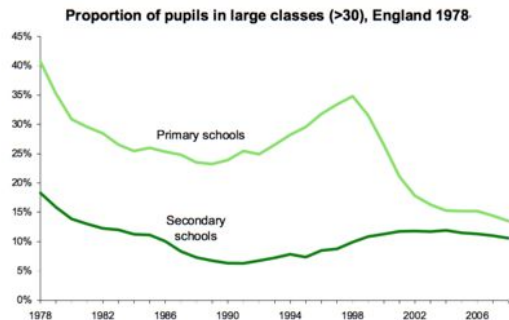




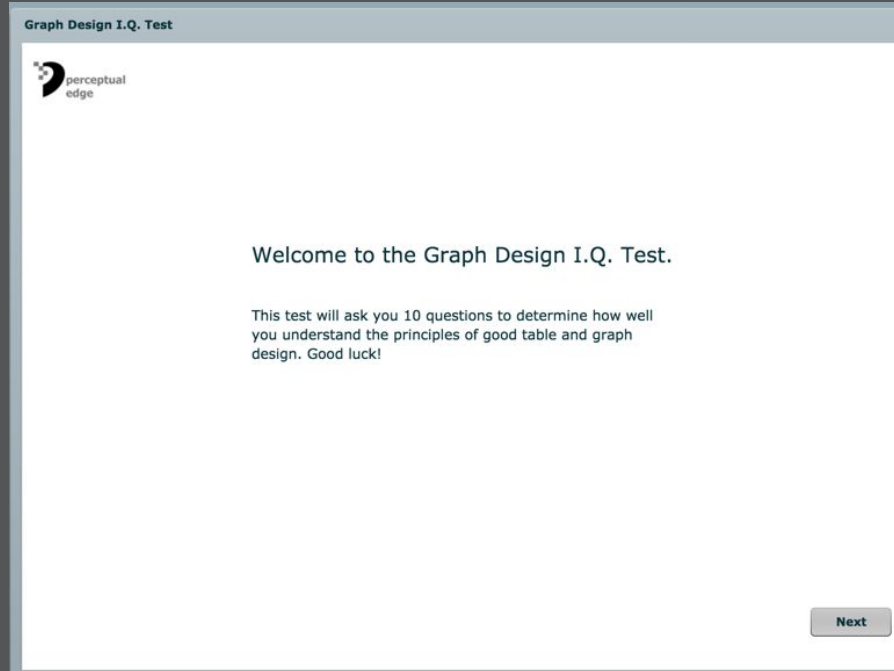
Before



After



Test time





Narrative

Kurt Vonnegut on the **Shapes of Stories**



A statistical story conveys a message that tells readers what happened, who did it, when and where it happened, and hopefully, why and how it happened.

A statistical story can

- provide general awareness/perspective/context;
- inform debate on specific issues.

Making Data Meaningful, United Nations Economic Commission for Europe, Part 1: A guide to writing stories about numbers.

Headline

Lead
paragraph

Visual
(interactive)

Published: February 26, 2010

Fractions of a Second: An Olympic Musical

At the Olympics, the blink of an eye can be all that separates the gold medalist from the 10th-place finisher. In some events, this is obvious. But in others, with athletes racing one by one, the closeness of the race is harder to perceive. Listen to the differences below.



Alpine skiing

The women's downhill course was extremely tiring, and, because it was more challenging than the men's course, it ended up separating the skiers by much larger margins. This pattern appears in the two speed events: the downhill and the super-G.



Headline	Make them compelling	Readers are most likely to read the headline before deciding to read the full story. Therefore, it should capture their attention. The headline should be short and make people want to read on. It should say something about the findings presented in the article, not just the theme.
Lead paragraph	Unpack the story	It summarizes the story line concisely, clearly and simply. It should contain few numbers. In fact, try writing the first sentence of the lead using no figures at all.



Prices up in domestic and import markets



Gasoline prices hit 10-year low



A new study probes the relationship between parental education and income and participation in post-secondary education from 1993 to 2001.



Despite mounting financial challenges during the 1990s, young people from moderate and low-income families were no less likely to attend university in 2001 than they were in 1993, according to a new study.



The largest contributor to the monthly increase in the CPI was a 0.5% rise in the transportation index.



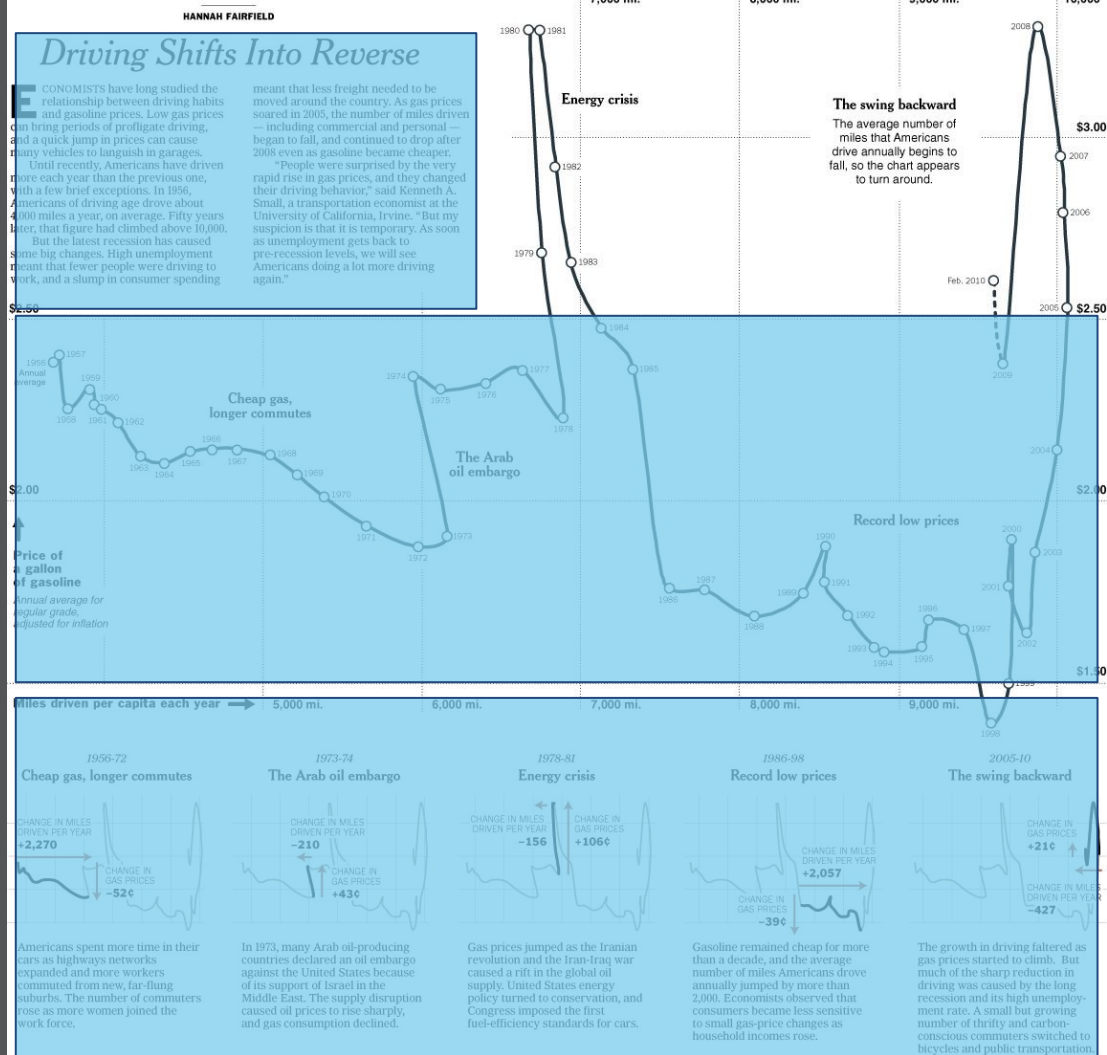
Higher auto insurance premiums and air fares helped push up consumer prices this month.

Title

Summary

Visual
(interactive)

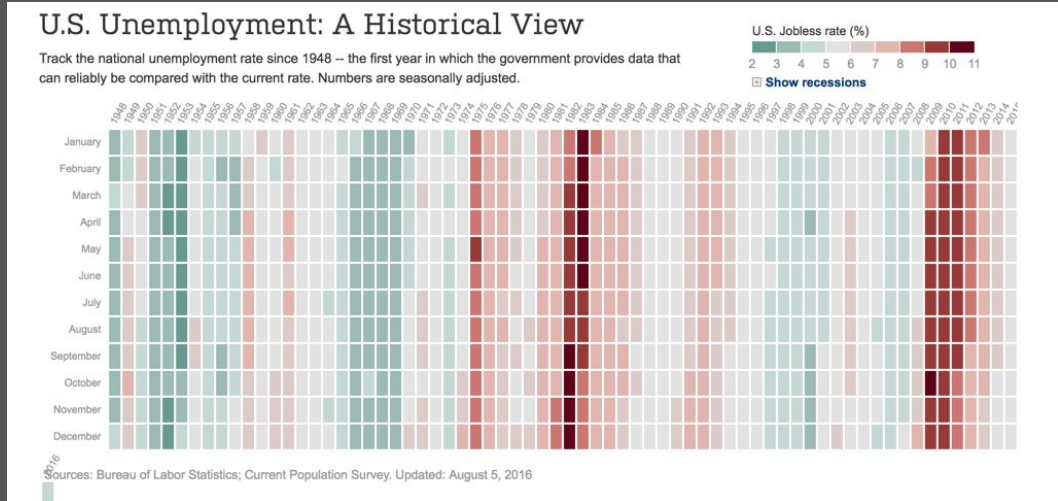
Drill down



- Image from "Iraq's Bloody Toll", published in the South China Morning Post on Saturday, December 13, 2011*

[illegible]

- What is the objective?
- Who is the audience?
- Why should they care?
- How is the story composed?



<http://www.wsj.com/articles/SB10001424052748703338004575230041742556522>



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