Data in public communications

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Giuseppe Sollazzo

Battistini Lecture

Institute of Advanced Studies, University of Bologna

1 December 2020

Some definitions

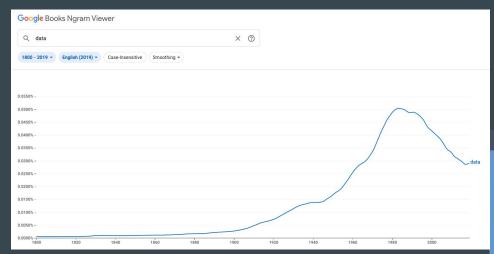
Data can be stored in a digital form processed on a computer

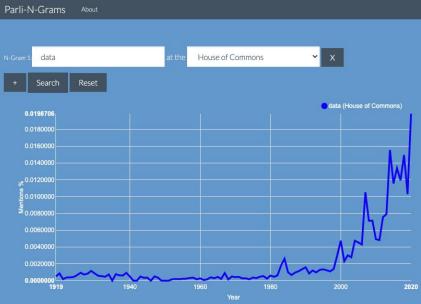
"Public" means intended for the broadest audience possible

Aims

- 1. Historical and technical elements of data in public communications
- 2. The advent of official statistics in public communications
- 3. Data in the recent pandemic
- 4. Common problems of data communications

"Data"





"Di più avrei potuto fare, specialmente nel campo statistico, se non ci fosse nel nostro paese, e nei privati e negli enti morali, una tal quale ritrosia a confidare al dominio del pubblico dati, fatti e notizie."



"I could have done more, especially in the statistical field, if there was not in our country, and in private individuals and moral bodies, such a reluctance to confide in the public domain data, facts and news."

Cesare Battisti Wikipedia, Public Domain

(II Trentino, 1898)

"Non tutta la regione compresa fra i limiti dell'Italia fisica coincide coi confini dell'Italia linguistica."

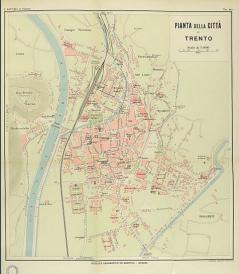


"Only part of the region within the geographic borders of Italy coincides with the borders of linguistic Italy"

(II **Trentino**, 1898)

Cesare Battisti Wikipedia, Public Domain







Cesare Battisti, II Trentino (1915)
Wikipedia Commons



Trento, today and in 1915 "Trento nel 1915", Labmod



Year Provinces					
1861	59				
1866	68				
1870	69				
1923	75				
1924	76				
1927	92				
1934	93				
1935	94				
1941	95				
1944	94				
1945	93				
1947	91				
1954	92				
1968	93				
1970	94				
1974	95				
1992	103				
2001	107				
2004	110				
2016	107				

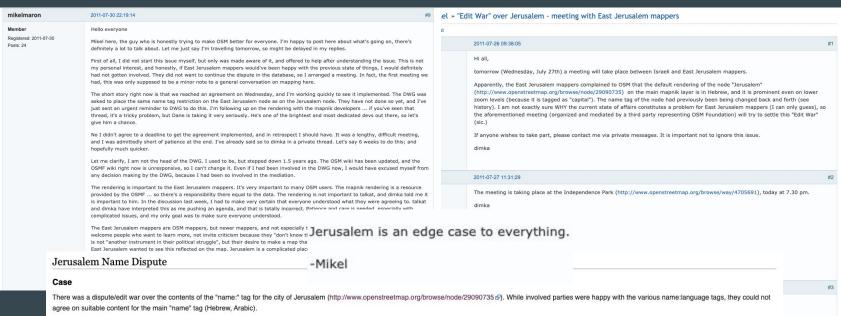


Provinces of Italy 1942 vs 2020

1942, Wikipedia 2020, Wikipedia

Crimea	Russia Ukraine	45.159/34.634륜	In 2014, Russian forces occupied and annexed the Crimean peninsula, seizing it from Ukrainian territories. Russian claims to Crimea are not internationally recognized. The United Nations, through General Assembly Resolution 68/262, affirmed that Crimea was part of Ukraine and that Russia's annexation is invalid. Several nations imposed international sanctions on Russia in reaction to its action.
Aegean dispute, Imia/Kardak	Greece Turkey		Broad number of delimitation disputes about a.o. national airspace, territorial waters and exclusive economic zones. Includes Imia/Kardak dispute.
Mont Blanc summit dispute	France Italy		France asserts that the principal peaks on the Mont Blanc massif—Dôme du Goûter, Punta Helbronner, and Mont Blanc lie in French territory, while Italy asserts that the summits are shared.
Carlingford Lough and Lough Foyle boundary dispute	Ireland United Kingdom		Lough Foyle divides County Donegal, Republic of Ireland, and County Londonderry, Northern Ireland. Carlingford Lough divides County Louth, Republic of Ireland, and County Down, Northern Ireland.
Gibraltar	United Kingdom Spain		Dispute over the interpretation of the Treaty of Utrecht and the location of the border.
Dollart/Dollard bay	Germany Netherlands		The exact course of the border through this bay is disputed, yet the countries have agreed to disagree by signing a treaty in 1960.
Lake Constance	Germany Austria Switzerland		Switzerland holds the view that the border runs through the middle of the lake. Austria is of the opinion that the contentious area belongs to all the states on its banks. Germany holds an ambiguous opinion.
Olivenza and Vila Real(including the municipality of Táliga)	Spain Portugal		In 1801, during the War of the Oranges, Spain, with French military support, occupied the territory of Olivenza (in Portuguese Olivença). During the Treaty of Vienna (1815), the signatory powers (including Spain) agreed with the Portuguese arguments concerning its claim on Olivença but Spain never fulfilled its duty of giving the city of Olivença and its territory back to Portugal.
Croatia-Serbia border dispute	Croatia Serbia		Limited areas along the Danube Parts of Osljek-Baranja and Vukovar-Syrmia Counties and West and South Bačka Districts
Gulf of Piran	Slovenia Croatia		An agreement was signed (and ratified by Croatia's parliament on 20 November 2009) to pursue binding arbitration to both the land and maritime portions of this continuing dispute. In 2015 collusion between the Slovenian judge on the arbitration panel and a representative from the Slovenian government was uncovered. The Croatian Sabor voted to withdraw from the arbitration, citing allegations of significant breaches of arbitration rules by Slovenia as the reason. Despite this the arbitration tribunal continued its work, issuing a ruling in 2017.
Prevlaka	Croatia Montenegro		

Disputed territories OpenStreetMap



Resolution

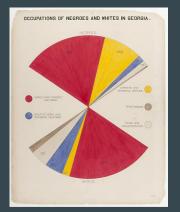
Data Working Group decided that the node shall not have a name tag at all until involved parties can agree on something. Specialist maps can still render the language-specific name:language tags if desired, and it is not unusual even for large cities not to be named on the main OSM map (due to name collisions etc) so the downside of not having a name on the main map is acceptable. DWG hopes that involved parties will come to a resolution. **Until that time, please** refrain from re-adding a name tag to this node (or creating a new city node for Jerusalem). Data Working Group has added a "note" tag explaining the situation and will remove that once an amicable resolution has been reached.

In addition, the name tag of the place=suburb node for East Jerusalem (http://www.openstreetmap.org/browse/node/299937491 🗹) has been converted to name:ar so that neither Jerusalem nor East Jerusalem now have a name tag.

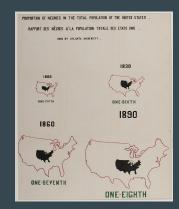
Edit war over Jerusalem

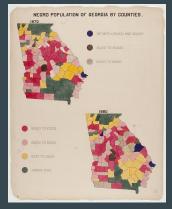
OpenStreetMap Forum
OpenStreetMap Data Working Group Disputes

Historical elements



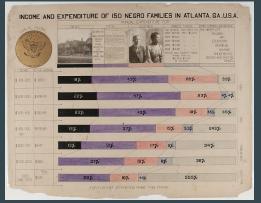






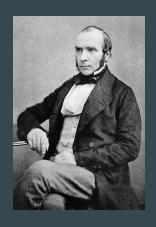


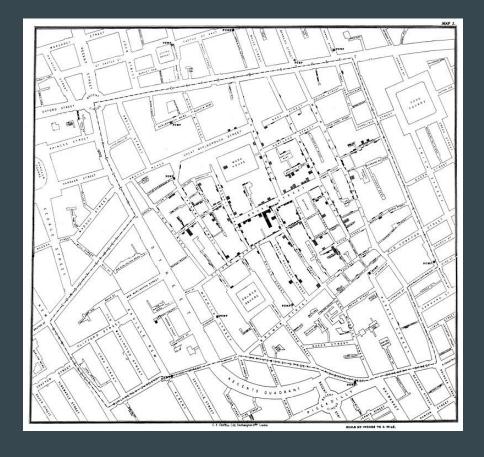






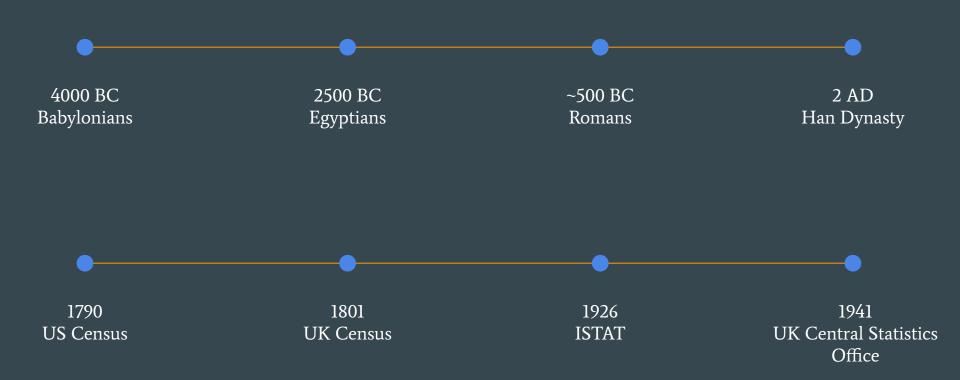
William Edward Burghardt Du Bois Wikipedia Library of Congress





John Snow
Wikipedia (portrait)
Wikipedia (map)

Official statistics

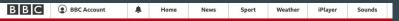


Timeline of census history

Process Definitions

How is the data collected?

How are common sense concepts translated into data?



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UK unemployment falls to 1.44 million

O 24 January 2018



UK unemployment fell by 3,000 to 1.44 million in the three months to November, official figures show.

The number of those in work increased sharply and wages rose at their fastest rate in almost a year, the Office for National Statistics said.

Misreporting of survey data BBC ONS

As well as calculating precision measures around the numbers and rates obtained from the survey, we can also calculate them for changes in the numbers. For example, for September to November 2017, the estimated change in the number of unemployed people since June to August 2017 was a small fall of 3.000, with a 95% confidence interval of plus or minus 77,000. This means that we are 95% confident the actual change in unemployment was somewhere between an increase of 74,000 and a fall of 80,000, with the best estimate being a small fall of 3,000. As the estimated fall in unemployment of 3,000 is smaller than 77,000, the estimated fall in unemployment is said to be "not statistically significant".

"Anyone aged 16, or over, who has completed at least one hour of work per week"

Definition of employment used in official UK statistics ons

4.3 House of Commons Library claimant rates

As stated above, the House of Commons Library has amended the denominator it will use to produce claimant rates from December 2019:

- From December 2019, the Library will calculate the rate as the number of claimants divided by the total population aged 16-64. This is also how the ONS calculate their claimant rate, meaning that the figures on the <u>Library dashboard</u> will be the same as the figures provided on the <u>ONS Nomis website</u>.
- Prior to December 2019, the Library calculated the claimant rate as the number of claimants divided by the economically active population aged 16-64.

Why has the library changed its denominator?

The claimant rate provides useful information for tracking changes in the labour market over time, and for comparing different areas.

Analysis of the claimant rate using the two different denominators has shown that both rates provide similar trends, and therefore switching from one denominator to the other will have limited impact.

The library has previously calculated its own denominator as the ONS does not publish data showing the number of economically active people aged 16-64 in each constituency. The ONS do, however, publish the total number of people aged 16-64 in each constituency.

Example of changing definition

House of Commons Library

- 1. Does anyone in this household have a business or a farm?
- Last week, did you do any work for (either) pay (or profit)?
 If the answer to question 1 is "yes" and the answer to question 2 is "no," the next question is:
- 3. Last week, did you do any unpaid work in the family business or farm?

 For those who reply "no" to both questions 2 and 3, the next key questions used to determine employment status are:
- Last week, (in addition to the business) did you have a job, either full or part time? Include any job from which you were temporarily
 absent.
- 5. Last week, were you on layoff from a job?
- 6. What was the main reason you were absent from work last week?
 For those who respond "yes" to question 5 about being on layoff, the following questions are asked:
- 7. Has your employer given you a date to return to work? If "no," the next question is:
- 8. Have you been given any indication that you will be recalled to work within the next 6 months?

 If the responses to either question 7 or 8 indicate that the person expects to be recalled from layoff, he or she is counted as unemployed. For those who were reported as having no job or business from which they were absent or on layoff, the next question is:
- Have you been doing anything to find work during the last 4 weeks?For those who say "yes," the next question is:
- 10. What are all of the things you have done to find work during the last 4 weeks?

 If an active method of looking for work, such as those listed at the beginning of this section, is mentioned, the following question is asked:
- 11. Last week, could you have started a job if one had been offered?
 If there is no reason, except temporary illness, that the person could not take a job, he or she is considered to be not only looking but also available for work and is counted as unemployed.

Questions used in interviews of the employment panel

US Bureau of Labor Statistics

HOUSEHOLD DATA

Table A-15. Alternative measures of labor underutilization

[Percent]

	Not seasonally adjusted			Seasonally adjusted					
Measure	Oct. 2019	Sept. 2020	Oct. 2020	Oct. 2019	June 2020	July 2020	Aug. 2020	Sept. 2020	Oct. 2020
U-1 Persons unemployed 15 weeks or longer, as a percent of the civilian labor force	1.3	4.5	3.8	1.3	2.1	5.0	5.1	4.6	3.8
U-2 Job losers and persons who completed temporary jobs, as a percent of the civilian labor force	1.4	5.5	4.5	1.6	8.9	8.1	6.4	5.7	4.8
U-3 Total unemployed, as a percent of the civilian labor force (official unemployment rate).	3.3	7.7	6.6	3.6	11.1	10.2	8.4	7.9	6.9
U-4 Total unemployed plus discouraged workers, as a percent of the civilian labor force plus discouraged workers	3.5	8.0	6.9	3.8	11.5	10.6	8.7	8.2	7.2
U-5 Total unemployed, plus discouraged workers, plus all other persons marginally attached to the labor force, as a percent of the civilian labor force plus all persons marginally attached to the labor force	4.1	8.8	7.7	4.3	12.5	11.3	9.6	8.9	8.0
U-6 Total unemployed, plus all persons marginally attached to the labor force, plus total employed part time for economic reasons, as a percent of the civilian labor force plus all persons marginally attached to		X 901503	15000	1 0000000	65/37000	0.0000000	55536	000000	
the labor force	6.5	12.4	11.6	6.9	18.0	16.5	14.2	12.8	12.1

NOTE: Persons marginally attached to the labor force are those who currently are neither working nor looking for work but indicate that they want and are available for a job and have looked for work sometime in the past 12 months. Discouraged workers, a subset of the marginally attached, have given a job-market related reason for not currently looking for work. Persons employed part time for economic reasons are those who want and are available for full-time work but have had to settle for a part-time schedule. Updated population controls are introduced annually with the release of January data.

Alternative measures of labor underutilization

US Bureau of Labor Statistics

Examples of mathematical concepts of "average"

Mean

Median

Mode

Mid-range

•••

$$oxed{\mathrm{AM}(x_1,\;\ldots,\;x_n)=rac{1}{n}\left(x_1+\;\cdots\;+x_n
ight)}$$

If using a mean, which mean?

$$ext{HM}(x_1, \ \ldots, \ x_n) = rac{n}{\dfrac{1}{x_1} + \ \cdots \ + \dfrac{1}{x_n}}$$

 $\mathrm{GM}(x_1,\;\ldots,\;x_n)=\sqrt[n]{|x_1 imes\cdots imes x_n|}$

Chair [...] if "good" requires pupil performance to exceed the national average, and if all schools must be good, how is this mathematically possible?

Gove By getting better all the time.

Chair So it is possible, is it?

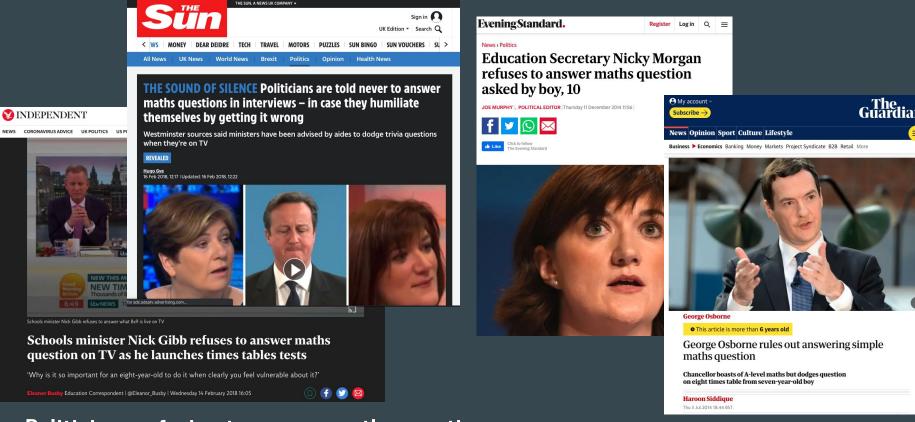
Gove It is possible to get better all the time.

Chair Were you better at literacy than numeracy, Secretary of

State?

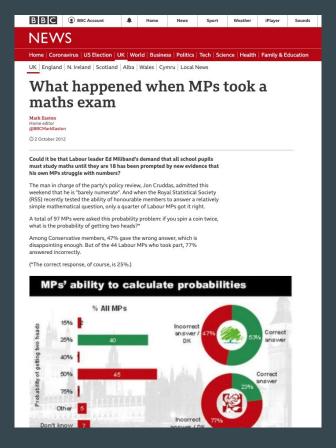
Gove I cannot remember.

Michael Gove and the "average" Hansard

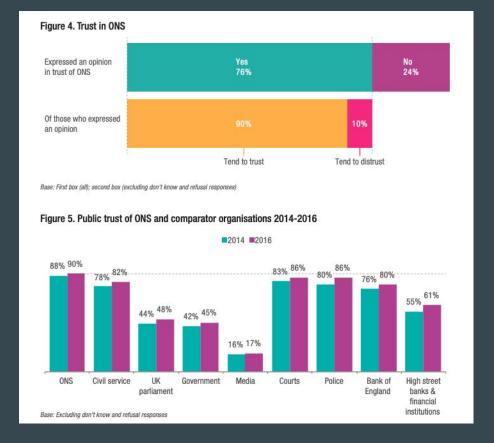


Politicians refusing to answer maths questions

Independent
The Sun
Evening Standard
The Guardian

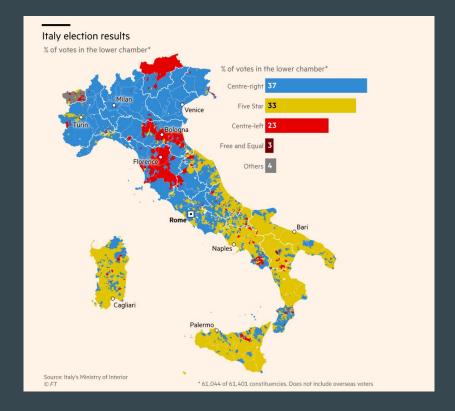


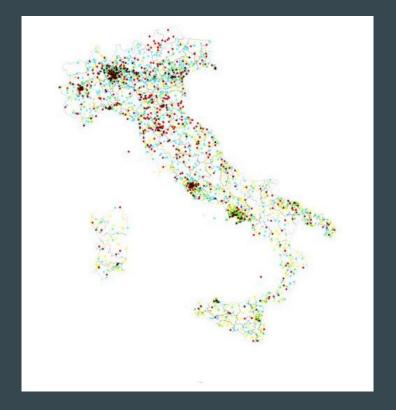
MPs and probability **BBC**



Trust in UK National Statistics (2016) NatCen

Data journalism





Electoral maps tell a story

Financial Times Giuseppe Sollazzo

"The map is not the territory"

(Alfred Korzybski, Science and Sanity, Wikipedia)

How The Washington Post Estimates Outstanding Votes for the 2020 Presidential Election

John Cherian, Lenny Bronner

October 2020

1 Introduction

On November 3rd, 2020, Americans will be closely watching The Washington Post as results pour in from across the country. Making sense of election results as they arrive is no simple task. Careful observers of previous elections recognize that early leads do not necessarily translate to ultimate victories. The same patterns often seem to recur: In some states, a Democratic-leaning early vote is buried by a tidal wave of Republican election day votes. In others, a Republican lead is slowly whittled down as slower-counting and Democratic-leaning metropolitan counties report their tallies. To address this, The Washington Post, in collaboration with our friends at Decision Desk HQ/0ptimus Analytics, has developed a election night model that will make sense of live vote totals by delivering reliable inferences regarding what those early votes imply about the final results. For this election in particular, we think that our model is vitally important. It bridges the gap between what the results are showing at any given moment and the likely true underlying result.

Based on the votes reported, our model will estimate three quantities for each state: The overall turnout, the number of Democratic votes, and the number of Republican votes. For each of these outputs, we want to display the uncertainty in the prediction via a prediction interval. Accurate estimation of these intervals is critically important. An overly confident forecast could mislead readers relying on these figures, while being too conservative runs the risk of not being honest about what we know.

We'd like to provide a technical overview of how and why this model can provide forecasts and prediction intervals for unseen votes in each state.

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Washington Post

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2020 ELECTION

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Psychic cancels live show due to 'unforeseen circumstances'

A second night was cancelled for the same reasons

Christopher Hooton | @christophhooton | Thursday 20 March 2014 12:17



Predictive journalism?

Independent

"Since when is it our job to predict?"

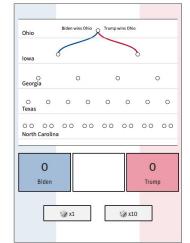
Mona Chalabi, Guardian US Data Editor

Today in Focus



Usually solid Republican territory, these reddish states look like they could be in play for Biden in 2020. If he can win one of the three, it could be curtains for Trump.





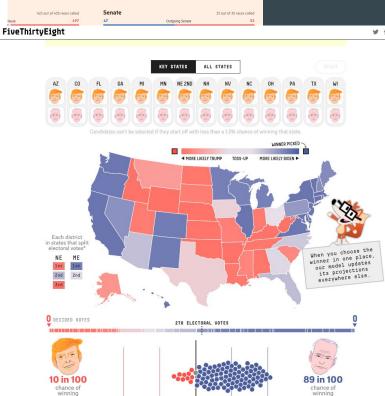
Uncertainty in data visualization

FiveThirtyEight Financial Times New Statesman The Guardian



Biden vs Trump: live results 2020





f s

30 Jahre Deutsche Einheit

Ost-West? Nord-Süd? Oder ganz anders?

Teile Deutschland und entdecke die Unterschiede

30 Jahre nach der Wiedervereinigung bleibt Deutschland in vielen Belangen ein geteiltes Land. Doch die Grenzen verlaufen nicht nur zwischen Ost und West.

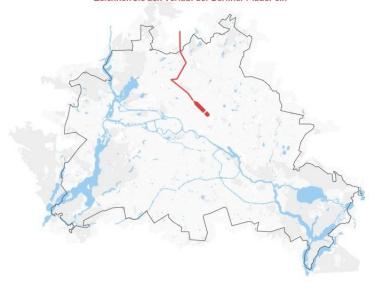
Zerschneide die Deutschlandkarte in zwei beliebige Teile und entdecke die Unterschiede bei 30 Merkmalen von Millionärsdichte bis Graffiti!



Wissen Sie noch, wo die Mauer Berlin teilte?

Genau 10.315 Tage trennte die Mauer die Berliner, 43 Kilometer verliefen direkt durch das Stadtgebiet. Können Sie zeigen, wo das war?

Zeichnen Sie den Verlauf der Berliner Mauer ein



Letting readers explore their (lack of) knowledge

<u>Berliner Morgenpost (left)</u> Berliner Morgenpost (right)

Data in the pandemic

What data?

Number of COVID-19 positives

Number of tests

Number of admissions

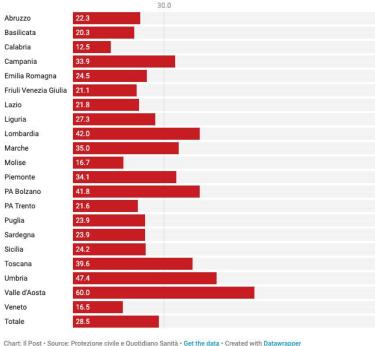
Number of cases in intensive therapy units

Number of hospital beds available

Number of deaths

Pazienti covid in terapia intensiva

Percentuale di occupazione dei posti letto di malati covid sul totale dei posti disponibili. La soglia di allerta è al 30%. Dati aggiornati al 2 novembre.



Counting intensive therapy unit beds II Post

Anche questo dato, seppur molto affidabile, presenta dei problemi, soprattutto perché non è sempre chiaro quanti posti di terapia intensiva siano disponibili per ciascuna regione. Dall'inizio dell'emergenza, infatti, molti ospedali hanno aumentato il numero di posti letto in rianimazione, spesso inglobando reparti finora considerati di terapia "sub intensiva", altre volte riconvertendo reparti con ventilatori idonei. Sono i posti chiamati "attivabili".

Public Health England has changed its definition of deaths: here's what it means August 12, 2020 Carl Heneghan, Jason Oke Public Health England has changed its definition of deaths. The new definition is now death in a person with a laboratory-confirmed positive COVID-19 test and died within (equal to or less than) 28 days of the first positive specimen date will now be reported The new data can be accessed here. What this means is that England has had 36,695 deaths using this definition as opposed to the previous reported 42,072 - a difference of 5,377. Number of COVID-19 related deaths in England, by death report date using 7-day moving average Restriction - 60 days - 28 days

Changing the definition of death

Centre for Evidence Based Medicine, University of Oxford



Tragedy of stillbirths in Europe underestimated due to statistical guidelines, study suggests

Differing national standards on when baby is considered stillborn

Jon Sharman | Thursday 27 September 2018 23:33

THE LANCET

ARTICLES | VOLUME 392, ISSUE 10158, P1639-1646, NOVEMBER 03, 2018

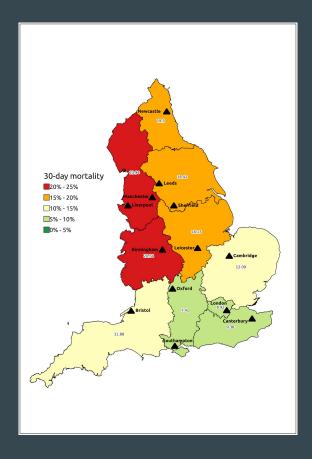
Quantifying the burden of stillbirths before 28 weeks of completed gestational age in high-income countries: a population-based study of 19 European countries

Lucy K Smith, PhD Ashna D Hindori-Mohangoo, PhD Marie Delnord, PhD Mélanie Durox, MSc

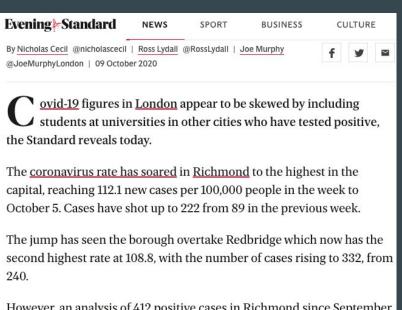
Prof Katarzyna Szamotulska, PhD Prof Alison Macfarlane, CStat et al. Show all authors Show footnotes

"Miscarriage" or "death"?

<u>Independent</u> The Lancet



Surgery mortality rates PLOS One

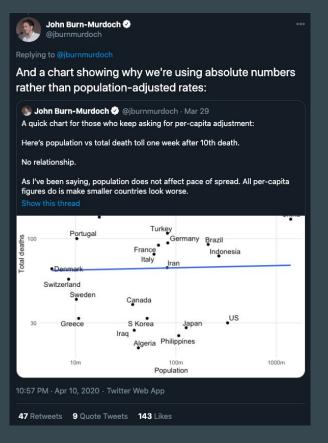


However, an analysis of 412 positive cases in Richmond since September 20 found that out of 212 for which the council has postcodes, 49 of them were for places including Leeds, Exeter, Manchester and Durham.

They were nearly all in the 17-21 age group. The assumption is that these are London students whose cases have been recorded using their home addresses, possibly through details given of their GP.

Attributing cases to the right context

Evening Standard



Data presentation is a conscious choice John Burn-Murdoch

Trust and engagement



The Care.Data Programme closed in 2016

Only happy with opt

out if public

awareness is

COLLECTING INFORMATION FOR THE HEALTH OF THE NATION

Why not opt-in?

system for opt-out,

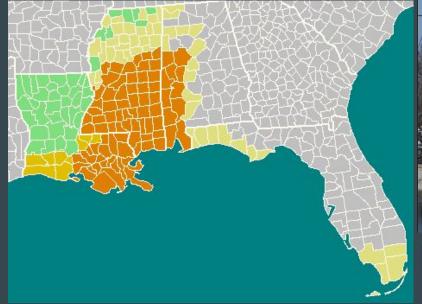
opted-out of

Open data

Open data is data that can be freely used, re-used and redistributed by anyone - subject only, at most, to the requirement to attribute and sharealike

Open Data Definition

Open Knowledge Foundation







Hurricane Katrina

Federal distaster areas, FEMA EPA US Coast Guard

Executive Office of the USA President

"Just imagine the effect that an army of armchair auditors is going to have on those expense claims"

David Cameron (2009)

"Armchair auditors"
BBC News

Open data—public information and shared data from private sources—can help create \$3 trillion a year of value in seven areas of the global economy.

The Open Data Economy?

McKinsey

Vast data reserves from Defra are set to transform the world of food and farming in the single biggest government data giveaway the UK has ever seen, Environment Secretary Elizabeth Truss will announce today.

Outlining her vision for the future of British food, farming and the natural environment, the Environment Secretary will say that over the next year, virtually all the data Defra holds—at least 8,000 sets—will be made freely available to the public, putting Britain at the forefront of the data revolution.

Harnessing this open data will help food and farming achieve its full potential and enable the UK to become a one-nation economy, where the productivity of the countryside will be brought up to the level of our towns and cities.

Environment Secretary Liz Truss announces a dataset release target (2015) Gov.Uk



"Opening our data was at most half the issue. More important was the effect it had on open working among colleagues across many organisations in the DEFRA group, and with a range of external partners from universities to charities to commercial organisations.

That led to interesting discussions about how open government relates to accountability, and also to user-centred design. It took us into how we can be more open as individuals, sharing a bit more about ourselves as a way of making connections with others: building respect and trust.

Open has all sorts of dimensions. It encompasses being open to challenge, open to new experiences, open to new ideas and to difference".

Permanent Secretary Clare Moriarty on Open Data (2019)

<u>Wikipedia</u> FDA

A few final points

Communicating with data

- 1. ...is difficult
- 2. ...requires users to challenge assumptions
- 3. ...requires understanding that common sense concepts may differ from their definition in data
- 4. ...requires a multidisciplinary approach
- 5. ...is badly impacted by lack of scientific education in the public
- 6. ...needs data stewardship/leadership

Thank you

Giuseppe Sollazzo

@puntofisso



References, slides, and transcript (soon) at

http://www.puntofisso.net/battistini

#datibenecomune

AMA 12 January, 5pm, Rome time

Chiediamo al Governo dati aperti e machine readable sull'emergenza Covid-19 per monitorare realmente la situazione e poterla gestire al meglio. Siamo 38238 firmatari e 154 organizzazioni promotrici.

La nostra lettera aperta

Viviamo una grave crisi. La società civile italiana, una delle più mature e competenti del mondo, è pronta a supportare le Istituzioni nel farvi fronte.



