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#Pop Health Lab

Benefits and challenges of communicating long-term data in public health

Final Report

SSPH+ Workshop at the Federal Office of Public Health

Bern, June 6th 2025

SSPH+ SWISS SCHOOL OF PUBLIC HEALTH

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Context and funding
The workshop “Benefits & challenges of communicating long-term data in public health” was held on June 6th, 2025 at the Federal Office of Public Health in Bern. The funding was provided by the Swiss School of Public Health (SSPH+).

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Summary

Over the past 150 years, there have been major improvements in the health and wealth of populations across the world, supported partly by progress in public health. In the context of recent crises (COVID-19 pandemic, climate change, …) and infodemic, pessimistic narratives about the population health status are spreading, overshadowing these achievements and weakening trust in scientific and evidence-based institutions.

We gathered population health scientists, policymakers and communication experts to demonstrate the benefits of using and communicating long-term data in population health surveillance, and to discuss the challenges arising from such data.

The benefits of communicating long-term public health data include illustrating sustained progress across populations and time, revealing trends, identifying emerging problems, uncovering disparities and guiding resources.

Participants of the workshop discussed many challenges encountered when communicating long-term data in public health: the uncertainty and missing values inherent to these data, the dynamic nature of such data, the current era of infodemic and the need to tailor messages for different audiences with different levels of expertise.

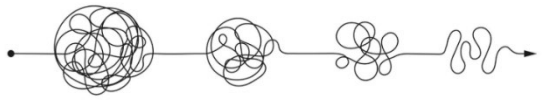
To tackle these challenges, we discussed the importance of transparency, of building and maintaining trust in scientific and evidence-based institutions, and of communicating adequately by tailoring messages to the target audience, providing context, and delivering clear key messages.

1. Context

Over the past 150 years, there have been major improvements in the health and wealth of populations across the world (1,2). In Switzerland, GDP per capita, real wages, and life expectancy have increased, underlaid with a decline of infectious diseases and the rise of chronic diseases (3). Among other factors, progress in the public health sector were also responsible for this achievement (4).

Yet, major challenges remain as some population's strata have benefited less from these improvements and health inequalities persist. In the context of multiple recent crises (COVID-19 pandemic, war in Ukraine, climate change, etc.), pessimistic narratives about the state of population health and the healthcare system are spreading widely, and in the public discourse and the media the public health successes have been somewhat forgotten (5,6). Why is it, that the experiences gained, the awareness and collective remembrance of where we have come from, and what we have achieved seem to be fading? (5–7) Moreover, misinformation and infodemics are on the rise (8)

Fostering a network of population health scientists, communication experts and



policy makers is an important way of countering this development. Rational optimism and a reasonable sense of the situation and its historical context might provide an alternative to pessimistic narratives (9). There is a need for a long-term population-health surveillance, across all populations' strata. This approach will not only enhance data-informed and evidence-based perspectives for policy-making and the public, but also ensure health equity (5,6,10). We propose, therefore, to dialogue with partners from research, public health authorities, and media on how to achieve that and counter pessimism and eroding trust.

2. Objectives and expected outcomes

The goal of this one-day symposium was to gather multi-disciplinary scientists (population health, history, epidemiology, etc.), policymakers, data scientists, and data journalists at the FOPH in Bern to address how to foster a long-term, data-informed, and evidence-based population-health surveillance perspective. The specific aims and expected outcomes are described in Table 1.

Table 1 - Aims and outcomes of the workshop

Aims	Outcomes
1. Gather health data scientists, policymakers, and data journalists to discuss the value of long-term population health monitoring.	→ Fostering the network between the people involved and identifying issues at stake.
2.1. To demonstrate the value of long-term population health surveillance, including through visualizations, with data that can be disaggregated (by sex, age, socioeconomic status), to enable nuanced reporting.	→ Identification of opportunities and challenges around data access, visualization, and disaggregation.
2.2. To discuss the potential and challenges of collaboration between data scientists, media, and public health authorities to counter eroding trust in institutions.	→ Increase understanding and awareness of the issues, and proposals to solve them. → Products: One summary report for stakeholders.

3. Keynote talk and snapshot-perspectives

Presenters from various disciplines presented their perspectives on the benefits and challenges of using and communicating long-term data in public health. The titles, names of presenters and their affiliations are listed in Table 2.

39 participants attended the workshop, including the organizers and the speakers. Participants came from the Federal Office of Public Health and similar institutions such as the National Agency for Cancer Registration, and from various universities across Switzerland.

Table 2 – List of the presentations held during the workshop

Title	Presenter(s)	Affiliations
A long view of public health data*	Dr. Saloni Dattani[1,2]	[1]Our World in Data, University of Oxford, United Kingdom [2]Works in Progress, London, United Kingdom
Public health catastrophism	Prof. Arnaud. Chiolero[1,2,3] Dr. Axelle Braggion[1,2]	[1] Population Health Laboratory (#PopHealthLab), University of Fribourg, Switzerland [2] Swiss School of Public Health (SSPH+), Zurich [3] School of Population and Global Health, McGill University, Montreal, Canada
Trust & data	Francesca Zavattaro[1]	[1] Institute for Implementation Science in Health Care, University of Zurich, Switzerland
Communication & journalism	Prof. Wibke Weber[1]	[1]School of Applied Linguistics, Zurich University of Applied Sciences, Switzerland
Public health authorities & dissemination	Dr. Sebastian Mader[1]	[1]Federal Office of Public Health, Bern, Switzerland
Data visualization & dashboards	Reto Jörg[1]	[1]Swiss Health Observatory, Neuchâtel, Switzerland
The overall societal perspective	Prof. Dina Pomeranz[1]	[1]Department of Economics, University of Zurich, Switzerland

*Keynote talk

4. Benefits and challenges

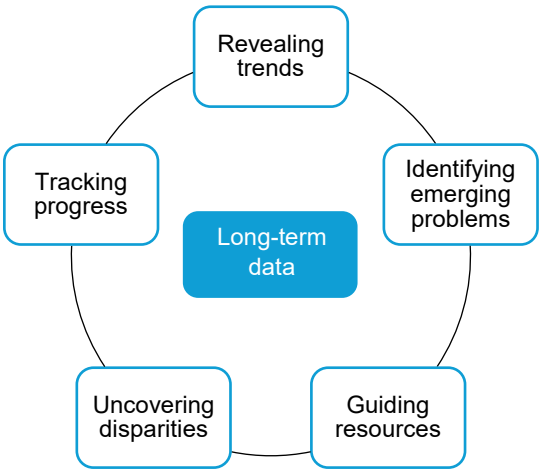
Benefits

The communication of long-term public health data plays a critical role in identifying trends, evaluating interventions, and illustrating sustained **progress** across populations and time.

The use and adequate communication of long-term data plays key roles in public health, including (Figure 1):

- Revealing trends, e.g., long-term shifts in mortality or in the cancer burden.
- Tracking progress to assess levels of improvement, e.g. decline in death rates from smoking in recent decades.
- Identifying emerging problems, e.g. antibiotic resistance or rising rates of obesity.
- Uncovering disparities to identify possible areas for public health interventions, e.g. differences in life expectancy according to socioeconomic position.
- Guiding resources to evaluate where they are needed, e.g. the ageing of the population and investment in geriatric care.

Figure 1 - Benefits of using long-term data in public health



Challenges

During this workshop, we discussed many challenges encountered by population health scientists, communication experts, and policy makers, that arise when communicating long-term data in public health.

First, we discussed how to handle historical data (i.e. very long-term data) as they are often highly **uncertain or missing**. We argued that other data sources could be used to roughly assess the outcome of interest, such as the death toll estimated using tax and church records in the example of the Black Death. However, these other sources were limited in demographic, geographical, and frequency coverage as they were not primarily designed to monitor mortality.

Another methodological issue arising when working with long-term data is that it is often **dynamic**, evolving in response to updates in classification systems and data collection practices. Bringing together data from multiple systems and sources – sometimes with differing participation rates, standards, case definitions, or structures – adds an additional layer of complexity, as it requires interoperability at both technical and conceptual levels. Such changes and inconsistencies present a challenge to methodological consistency as they can lead to breaks in time series, affecting comparability over time and space. Therefore, distinguishing between genuine real-world changes and those caused by changes in measurement or data integration issues can be a challenging task when analyzing long-term data.

Additionally, we live in an era of **infodemic**, where an overload of information makes it increasingly difficult to discern relevant from misleading information and to identify trustworthy sources. This environment contributes to the erosion of public trust, reinforced by growing skepticism toward scientific and institutions, and conspiracy theories. This misuse of data cannot be solved by providing more or longer-term data but underscores the need for simpler and perhaps fewer messages in public health.

The **communication** of long-term data in public health presents several challenges. First, it requires summarizing extensive and complex data into a single clear and concise message. At the same time, this message needs to be **tailored for different audiences** such as the public, policymakers, and health professionals, each having varying levels of expertise and interest. Furthermore, a major difficulty with communicating long-term data is conveying the **uncertainty**. While transparency about these uncertainties is essential, they are often met with discomfort as people tend to find uncertainty unsettling. This can complicate efforts **to build trust** and support evidence-based decision-making.

5. From challenges to solutions

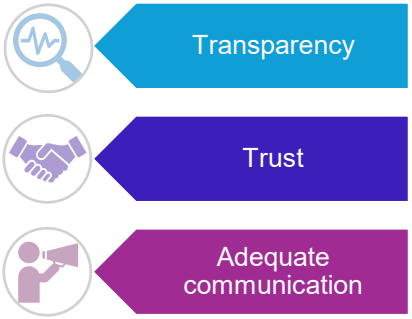
When using long-term data, we discussed the importance of transparency, trust and adequate communication (Figure 2). In this context, **transparency** implies describing how data was collected, acknowledging limitations, uncertainties and missing data, using precise definitions, and explicitly communicating underlying assumptions. On one hand, transparency enables

researchers to interpret the data more accurately and potentially uncover new insights. On the other hand, it can help to build and keep trust among the public.

As presented in the challenges section, **trust** in public health highlights the need to understand how it is established and maintained. Trust in public health is essential because it is linked to both public participation (e.g., the COVID tracing app was used by the population because they trusted the health authorities about the aim of the app) and the legitimacy of public health interventions (e.g. public trust in health authorities gave policymakers the legitimacy to impose lockdowns during the COVID-19 pandemic). Trust is built through a combination of factors, including the public's level of health literacy and the credibility of the source. When individuals understand the information presented and when it comes from a trustworthy source, they are more likely to engage with public health guidance and maintain trust in the institutions behind it.

Finally, **adequate communication** is also essential when working with long-term data in public health. Whether the information is conveyed by health authorities, scientists, or clinicians, it must be tailored to the specific needs and understanding of the target audience. Furthermore, effective communication goes beyond presenting data—it involves thoughtful visual design, intuitive language, providing context, delivering clear and concise key messages, and ensuring transparency and accountability. These elements help build trust and enable the audience to interpret data appropriately, and might strengthen resilience against misinformation.

Figure 2 - Key features of addressing challenges in using long-term data in public health



6. Conclusion

Working with long-term data allows us to illustrate progress overtime as well as identify emerging public health problems. However, long-term data bring many challenges, including methodological issues, uncertainty and communication difficulties, especially in the infodemic era we live in. It is, therefore, essential to ensure transparency, foster trust, and communicate long-term data adequately and effectively by tailoring clear and concise public health messages to specific target audiences.

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Acknowledgments

We thank the Swiss School of Public Health for providing funding for this workshop and all the participants for their contributions during the workshop.

Appendix 1 – Picture

Appendix 2 – Presentations

June 2025

A long view of public health data

Saloni Dattani
Researcher, Our World in Data
Founding editor, Works in Progress

Try to place yourself in the 14th century, at the eve of the Black Death

***The plague of Florence in 1348**, as described in Boccaccio's Decameron. Etching by Luigi Sabatelli.*

Little idea of how to protect yourself and your family.

No germ theory. No antibiotics. No record-keeping.

Fear, chaos, and mass death.

***Map of the advance of the Black Death.** Wikimedia based on Natural Earth; Cesana, D.; Benedictow O.J., Bianucci R. (2017).*

The Black Death spread relentlessly across Europe.

➢ Within seven years, it's estimated to have killed around roughly half of Europe's population.

But censuses, population registries, and cause-of-death records weren't used widely until centuries later.

So how do we have estimates of the death toll?

Parish and church records

Dioceses recorded when priests died or were replaced. Can be used as a proxy of mortality rates.

- Some priests resigned or fled.
- Many replacements went unrecorded.
- Priests weren't representative of the population.

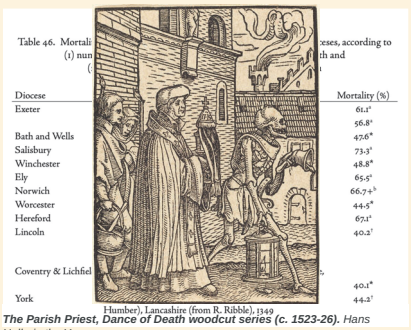


Table 46. Mortali … (1) nun … (… ses, according to … th and …

Diocese	Mortality (%)
Exeter	61.1[a]
	56.8[a]
Bath and Wells	47.6[a]
Salisbury	73.3[a]
Winchester	48.8[a]
Ely	65.5[a]
Norwich	66.7+[b]
Worcester	44.5[a]
Hereford	67.1[a]
Lincoln	40.2[c]
Coventry & Lichfiel	40.1[a]
York	44.2[c]

Humber), Lancashire (from R. Ribble), 1349

***The Parish Priest, Dance of Death woodcut series (c. 1523-26).** Hans Holbein the Younger*

***Mortality rates among parish clergy in English dioceses.** Benedictow O.J. (2021), pp 818.*

Tax records

Taxes paid by household heads:

- Poor, women, children, clergy often excluded.

Based on other estimates of average household size.

Labor shocks and migration post-plague complicate estimates.

Table 23. Mortality among householders holding tenancies of the royal estates in areas of northern Navarre in the year of crisis 1347 and in the Black Death, 1347–9

Natural zones	Localities	Hearths in 1346[a]	Disappeared in 1349 %	Impoverished in 1349 %	Decline of taxpayers, %
Húmeda, north-west	85	1,735	42	6	53
Cantabrian valleys[c]	26	518	35	5	47
Southern valleys	55	1,007	49	7	58
Comarca de la Sakana	10	210	30	0	37
Pyrenean valleys	46	944	42	12	41
Pre-Pyrenean basins[b]	66	764	43	10	45
Pamplona basin	36	451	48	9	44
Aóiz-Lumbier basin	30	313	36	11	48
Navarre, Central	8	170	48	16	32
Totals	205	3,613	43	9	47

[a] Estimates
[c] The term Cantabrian valleys are associated with the eastern part of the Cantabrian mountains situated near the town of Santander, the centre of the historical regions of Cantabria.
[b] Basin is here a translation of the Spanish *Cuenca*.

***Mortality rates among households of royal estates in Navarre, Spain.** Benedictow O.J. (2021), pp 691.*

Census-like data

San Gimignano's 1350 survey instituted a "salt tax" on all citizens except children aged under seven.

Suggests 52–60% death toll.

- Affected by urban migration
- Avoided for servants and maids, or older children claimed to be under seven years old

'Ink-and-wash drawing of men and women producing salt from brine. *The well-dressed man at right may be a government official responsible for collecting the salt tax known as the "gabelle di sale.'"*
National Museum of American History.

Historical sources

Not intended to be mortality records
Limited in demographics, geographical coverage, and frequency

Parish and church records

Dioceses recorded when priests died or were replaced.

Suggests mortality of 40–73% in some regions. But:

- Some priests resigned or fled.
- Many replacements went unrecorded.
- Priests weren't representative of the population.

Tax records

Taxes paid by household heads:

- Poor, women, children, clergy often excluded.

Based on other estimates of average household size.

Labor shocks and migration post-plague complicate estimates.

Census-like data

San Gimignano's 1350 survey to institute a "salt tax" on all citizens except children under seven years old.

Suggests 52–60% death toll. But:

- Affected by urban migration
- Avoided for servants and maids, or older children claimed to be under seven years old

Overall mortality estimates

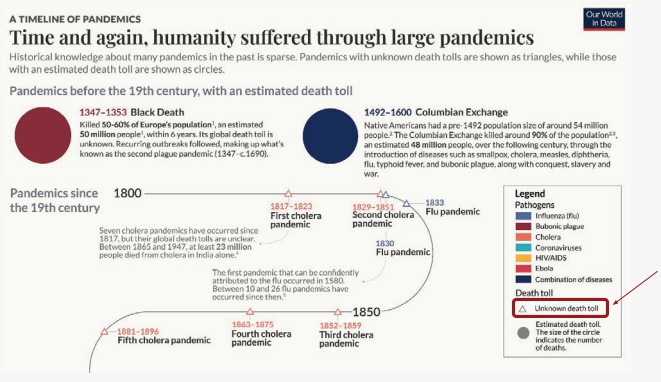
Strong assumptions, sparse data, large variation.

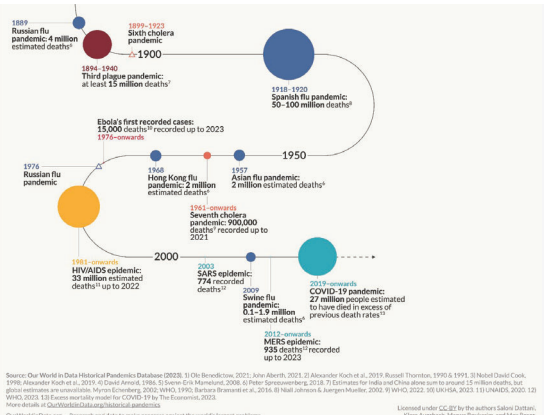
Source	Estimate of Europe's mortality rate in the Black Death
Benedictow (2021)	Upwards of 60 percent
Aberth (2021)	51–58 percent
Jedwab, Johnson, and Koyama (2019)	38.75 percent
Aberth (2010)	Up to 50 percent
Benedictow (2005)	60 percent
Horrox (1994)	47–48 percent
Gottfried (1983)	40–50 percent
Ziegler (1969)	30–40 per cent

Comparison of estimates of Europe's mortality rate in the Black Death. *Saloni Dattani adapted from Arthur (2023).*

What might they have learnt with better data?

- That bubonic plague spread from rats, not between humans
- How long the optimal quarantine period needed to be
- If there were environmental conditions that reduced spread of plague from infected rats
- How effective antibiotic-like compounds were against the disease





Timeline of pandemics' death tolls. *Saloni Dattani, Klara Auerbach, Marwa Boukarim and Max Roser (2023).*

What can we do when historical data is highly uncertain, or missing?

The value of transparency

Describe how data is collected.

Show limitations and uncertainties.

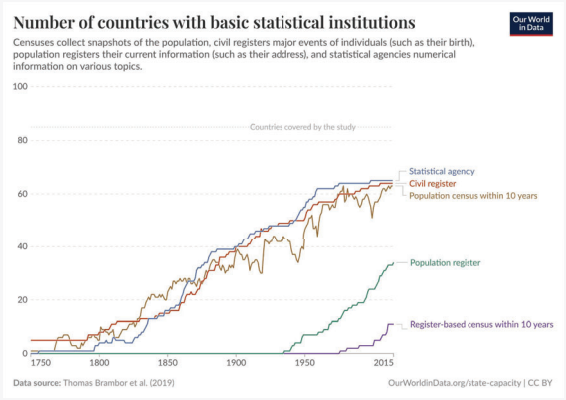
Use clear units, definitions, and labels.

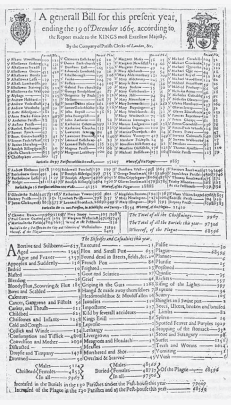
Say what is unknown, or missing.

Communicate assumptions clearly.

- ➢ Build public understanding and trust
- ➢ Allow researchers and other readers to better interpret data, and potentially spot errors or identify new insights from the data

Our tools today — registries, surveys, cause-of-death data — are recent and valuable achievements.




A generall Bill for this present year, ending the 19 of December 1665. according to the Report made to the KINGS most Excellent Majesty.

By the Company of the Clerks of London, &c.

The Diseases and Casualties this year.

Abortive and Stilborne	617	Executed	21
Aged	1545	Flox and Small Pox	655
Ague and Feaver	5257	Found dead in ſtreets, fields, &c.	20
Appoplex and Suddenly	116	French Pox	86
Bedrid	10	Frighted	23
Blaſted	5	Gout and Sciatica	27
Bleeding	16	Grief	46
Bloody Flux, Scowring & Flux	185	Griping in the Guts	1288
Burnt and Scalded	8	Hangd & made away themſelves	7
Calenture	3	Headmouldſhot & Mouldſ allen	16
Cancer, Gangrene and Fiſtula	56	Jaundice	110
Canker, and Thruſh	111	Impoſtume	227
Childbed	625	Kild by ſeverall accidents	46
Chriſomes and Infants	1258	Kings Evill	86
Cold and Cough	68	Leproſie	3
Collick and Winde	134	Lethargy	14
Conſumption and Tiſſick	4808	Livergrown	26
Convulſion and Mother	2036	Meagrom and Headach	12
Diſtracted	5	Meaſles	3
Dropſie and Timpany	1478	Murthered and Shot	8
Drowned	50	Overlaid & Starved	45
		Palſie	30
		Plague	68596
		Plannet	6
		Pliruſie	15
		Poyſoned	1
		Quinſie	35
		Rickets	557
		Riſing of the Lights	397
		Rupture	34
		Scurvy	105
		Shingles and Swine pox	2
		Sores, Ulcers, broken and bruiſed Limbs	82
		Spleen	14
		Spotted Feaver and Purples	1929
		Stopping of the ſtomack	232
		Stone and Strangury	98
		Surfet	1251
		Teeth and Worms	2614
		Vomiting	51
		Wenn	5

Chriſtned: Males 4114, Females 4853, In all 9967
Buried: Males 48568, Females 48737, In all 97306
Of the Plague 68596

Increaſed in the Burials in the 130 Parishes at the Peſt-houſe this year 7009
Increaſed of the Plague in the 130 Parishes and at the Peſt-houſe this year 68559

London’s Bills of Mortality: 16th century
England-wide civil registration: 1830s

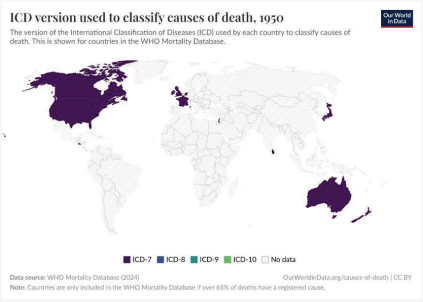
Often introduced after epidemics (e.g. cholera).

One of London’s Bills of Mortality, showing recorded mortality statistics in the year 1665, during the great plague of London.

One of London’s Bills of Mortality, showing recorded mortality statistics in the year 1665, during the great plague of London.

This data isn’t static

Classification systems and coding practices change over time, and coverage is incomplete



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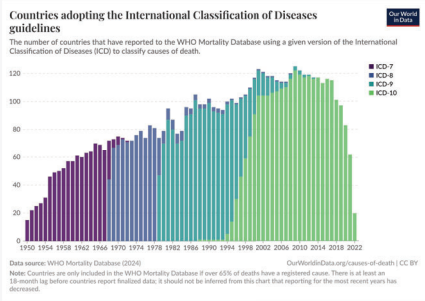
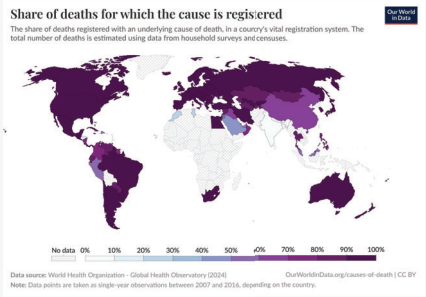


Much of the world is still in the dark

Many countries still lack reliable death registration.
Global health metrics rely on modeling, assumptions, and proxies.



But we shouldn’t lose sight of what historical data can bring

Data enabled major public health advances

- 1842: Edwin Chadwick’s analyses of sanitary conditions, driving Britain’s 1848 Public Health Act
- 1847: Ignaz Semmelweis' identification of hand-washing to reduce pregnancy deaths
- 1854: John Snow’s identification of the epidemic spread of cholera
- 1858: Florence Nightingale’s hospital mortality charts, prompting military hospital sanitary reforms
- 1893–1906: Pasteurisation to curb summer spikes in infant diarrhoeal deaths from contaminated milk

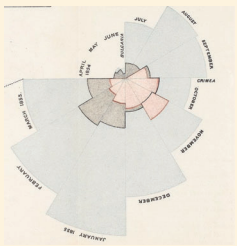
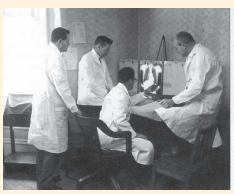


Diagram of the causes of mortality in the army; blue represents preventable diseases; red represents wounds; black represents all other deaths. Florence Nightingale (1858).

Data enabled major public health advances

- 1948 – 1961: The Framingham Heart Study revealing blood-pressure and cholesterol as key cardiac risk factors, guiding preventive cardiology
- 1950s: Doll & Hill’s studies linking tobacco to lung cancer and heart disease, underpinning modern tobacco control
- 1966 – 1980: WHO smallpox surveillance and ring-vaccination that eradicated the disease
- 1976 – 1990s: Nationwide blood lead surveillance in the US showing toxic levels in children, leading to bans on leaded petrol and paint and steep falls in lead poisoning



Doctors involved in the Framingham Heart Study in 1948. *NIH.*

What can long-term data bring?

1. **Directly impact individuals**
   Early screening and diagnosis, timely treatment.
2. **Reveal trends**
   Long-term shifts in mortality, disease burden.
3. **Identify emerging problems**
   Such as antibiotic resistance, opioid crisis.
4. **Uncover disparities**
   Identify gaps for public health interventions.
5. **Track progress**
   Evaluate levels and rates of improvement.
6. **Answer empirical questions**
   Measure the impact of interventions and policy.
7. **Guide resources**
   Evaluate where they're needed more or less.
8. **Shape perception**
   Combat misinterpretation of trends and crises.

Good data doesn't have to be perfect data

Be honest about limitations, but don't lose sight of the power of data to clarify the world.

Closing thoughts

We've come a long way since the 14th century. But there are still many challenges.

The better we communicate long-term public health data, the better our understanding, and the better equipped we are to face the future.

Thank you!

Acknowledgements

Works in Progress

Our World in Data

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Bluesky:
@scientificdiscovery.dev

X:
@salonium

Do you remember?
How to Prevent Public Health Catastrophism

Arnaud Chiolero, MD PhD, Prof of Public Health[1,2]
Axelle Braggion, MD, research assistant and PhD student[1]
1) Population Health Laboratory (#PopHealthLab), University of Fribourg, Switzerland; 2) School of Global and Population Health, McGill University, Montreal

June 2025

Public health progress still possible?

5 years ago…
Do you remember?

#PopHealthLab

Plan of the presentation

- Population health
  - is awful
  - is much better
  - can be much better
- No more progress?
  - Prevalence induced bias & progress
  - Obscurantism & romanticism
- How to fight public health catastrophism

#PopHealthLab

Population health is awful

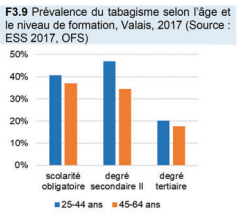
- In the world
  - In 2023, 15'000 children <5 years died every day, 800'000 people committed suicide, there were 10'000'000 new cases of dementia, 1 in 10 of adults had diabetes
  - In 2022, there were 10 million cancer deaths; between 1990 and 2019, the number of cancer deaths among people aged 14-49 years increased by +27%

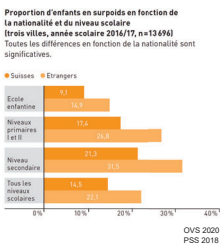
Ourworldindata.org
International Diabetes Federation
WHO Dementia
International Agency for Research on Cancer
Zhao et al. BMJ Oncology 2023

#PopHealthLab

Population health is awful

- Health inequalities are substantial

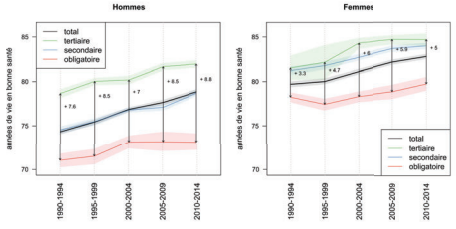




#PopHealthLab

Population health is awful

- Health inequalities are growing?



Remund & Cullati
Social Change 2022

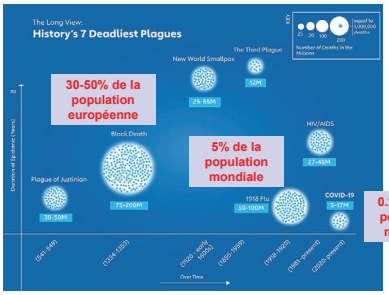
#PopHealthLab

QUESTIONS

Which health problem has killed ci 10'000 people in 2020/21 in Switzerland?

Which health problem kills ci 10'000 people every year in Switzerland

Population health is awful AND is much better



From gavi.org 2022

Population health is much better

PUBLIC HEALTH

What would have happened if we would not have had the COVID vaccination?

14.08.2022

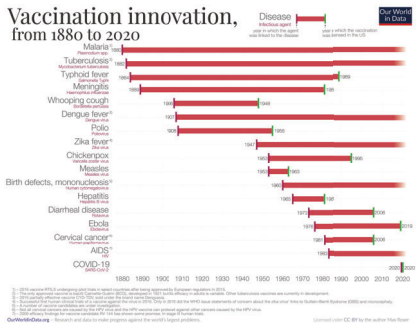
Number of deaths
With 13'400
Without 55'000

Table 1. Comparison of absolute and relative numbers of deaths between the COVID-19 pandemic in 2020/21 and the influenza pandemic 1918/1919.

	Years	Population (n)	Official deaths (n)	Deaths per 100,000 inhabitants
COVID-19	2020–2022	8,637,000	13,400 [1]	155.1
COVID-19 without vaccination	2020–2022	8,637,000	55,230 [2]	639.5
1918 influenza pandemic	1918–1919	3,753,000 [3]	25,000	666.1

Zwahlen et al SMW 2022

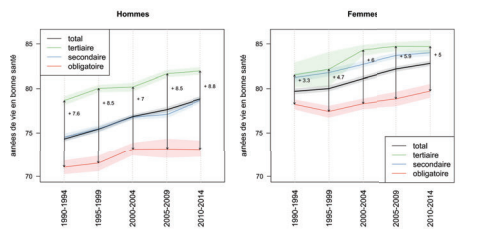
Population health is much better



Ourworldindata

Population health is much better

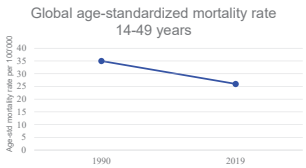
- Look at the black line!



Remund & Cullati Social Change 2022

Population health is much better

- Decline in cancer mortality



- Between 1990 and 2019, globally, age-standardized mortality rate among 14-49 years decreased by -25%

Zhao et al. BMJ Oncology 2023

Biased against progress?

- Information bias, selection bias, confounding
- Cognitive biases
  - In processing and interpreting information
  - Priming, anchoring
  - Confirmation bias
  - Framing
- Prevalence-induced concept changes

Rothman 2023

Prevalence-induced concept change bias

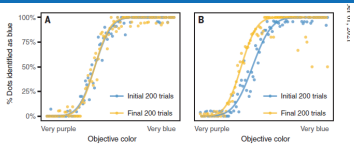


Fig. 1. Results for Study 1. (**A**) shows the stable prevalence condition, and (**B**) shows the decreasing prevalence condition. The *x* axes show the dot's objective color, and the *y* axes show the percentage of trials on which participants identified that dot as blue.

- Prevalence changes how thinks are perceived
  - Blue vs purple dots
  - Threatening face, unethical research proposals
- "Social problems may seem intractable in part because reductions in their prevalence lead people to see more of them" [Levari et al Science 2018]

Obscurantism, romanticism & progress

TABLEAU 1 Caractéristiques de l'obscurantisme sanitaire

Caractéristiques	Exemples en lien avec la vaccination
Déni du progrès et de l'expertise	• Refus de reconnaître que les vaccins ont eu historiquement un rôle majeur dans le contrôle de nombreuses maladies infectieuses • Attaques virulentes et menaces contre les experts qui parlent des bénéfices des vaccins
Rejet des biotechnologies	• Refus de reconnaître l'efficacité d'un vaccin considéré comme un produit biotechnologique
Déni de la méthode scientifique	• Non-reconnaissance de la manière dont sont développés et testés les vaccins • Confusion entre association et causalité conduisant à croire qu'un problème apparaissant suite à une vaccination est causé par le vaccin
Cynisme quant aux intérêts des acteurs à qui profiterait la crise sanitaire et complotisme affirmé	• Procès d'intention envers les entreprises pharmaceutiques, médecins et pharmaciens qui profiteraient financièrement de vacciner beaucoup de personnes • Procès d'intention envers les gouvernements soutenant la vaccination car ils auraient un agenda caché
Romantisme écologique	• Refus de la vaccination et volonté de renforcer son immunité sanitaire exclusivement via des approches naturelles, mais n'ayant pas fait leurs preuves

Chiolero, Cullati et al RMS 2021

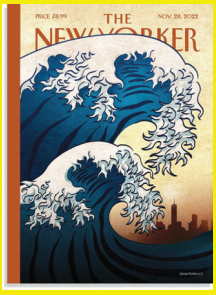
Evidence-based & data-informed public health to fight catastrophism

Tableau 1: Mesures visant à réduire le catastrophisme sanitaire [7].

Principe	Exemple de mesures
Renforcer la culture et les moyens de la santé publique fondée sur les preuves et guidée par les données	• Renforcer le monitoring de la santé des populations • Renforcer les connaissances des responsables de santé publique, des journalistes et des citoyens dans le domaine de la santé et de la statistique
Mettre en perspective les problèmes de santé, en balançant risques et bénéfices et en tenant compte du contexte	• Mesurer l'impact de la Covid à l'aune d'autres problèmes de santé et en le comparant historiquement à d'autres pandémies • Evaluer l'impact du vieillissement de la population en tenant compte non seulement de la capacité de réponse du système socio-sanitaire mais aussi des progrès technologiques et médicaux
Contrer la désinformation	• Diffuser les informations sanitaires de sources fiables (OMS, Centers for Disease Control nationaux, Our World in Data, etc.) • Contrer les rumeurs par des informations crédibles *(see something, say something)* et modérer les contenus sur les réseaux sociaux *(fact checking)*
Améliorer les modes de communication des scientifiques	• Distinguer l'activité scientifique de l'activité politique et militante • Eviter la dramatisation dans la communication de résultats de recherche, reconnaître explicitement les limites et incertitudes et que la connaissance va évoluer

Chiolero, BMS 2021

Take home messages



Population health is awful (at least relatively)

Take home messages

Population health is much better (but we need to monitor and remember)

Take home messages

Population health can be much better (but we need to be evidence-based & data-informed)

Thank you for your interest

Arnaud Chiolero, MD PhD, Prof of Public Health[1,2]
Axelle Braggion, MD, research assistant and PhD student[1]
1) Population Health Laboratory (#PopHealthLab), University of Fribourg, Switzerland; 2) School of Global and Population Health, McGill University, Montreal

June 2025

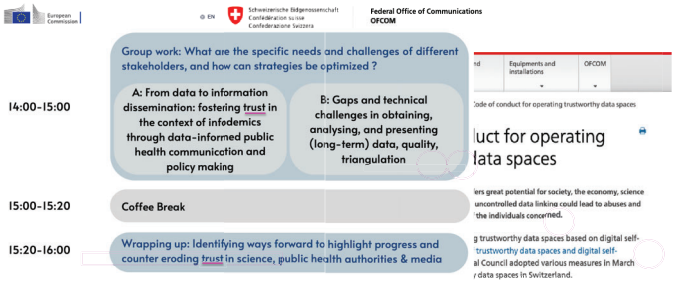
To Trust or Not to Trust?
Using Long-Term Data for Trustworthy Public Health Communication

Workshop - Benefits & challenges of communicating long-term data in public health

Federica Zavattaro, PhD Candidate in Digital and Mobile Health (UZH)

University of Zurich[UZH]
Digital Society Initiative & Institute for Implementation Science in Healthcare

Is 'Trust' a buzzword?



University of Zurich[UZH]
Digital Society Initiative & Institute for Implementation Science in Healthcare

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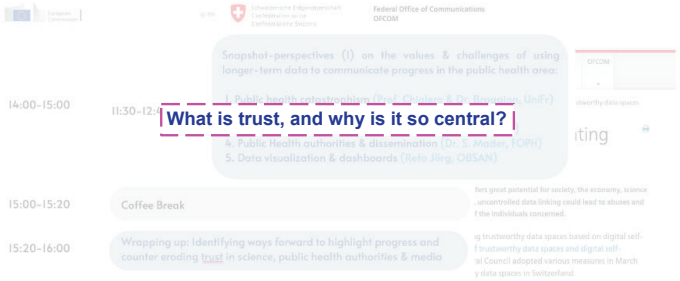

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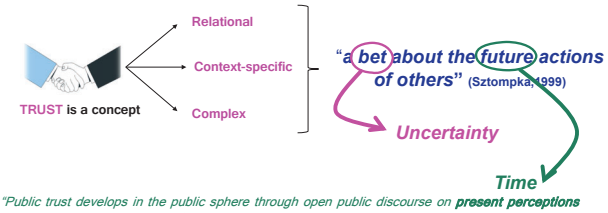
Digital Society Initiative & Institute for Implementation Science in Healthcare

What is Trust?



*"Public trust develops in the public sphere through open public discourse on **present perceptions** of system trustworthiness and **future expectations** of potential benefits, with familiarity and **shared past experiences** considered significant determinants of present public trust" (Gille, 2023)*

University of Zurich[UZH]
Digital Society Initiative & Institute for Implementation Science in Healthcare

Why is Trust so central?

Participation (e.g. **Use of Health Apps or Contact Tracing Tools:** People downloaded a COVID tracing app because they trusted that their data would be used responsibly and kept private)

Legitimacy (e.g. During COVID-19, public trust in health authorities gave policymakers the **legitimacy to impose lockdowns**, which were accepted without coercion)

University of Zurich[UZH]

Digital Society Initiative & Institute for Implementation Science in Healthcare

What Fosters Trust?

Agencies of Accountability	Autonomy of Choice	Benefit in Health Data Sharing	Communication with Data Subjects	Data Traceability
Agencies providing insurance of trustworthiness	Data subjects exercise autonomy over their health data and determine the permissions for accessing it	Personal/public benefits in health data sharing	Data subjects are actively informed on use of their health data	All actions on health data are trasparent and traceable

De-identification of Health Data	Privacy Protection	Public Information	Security	Time
Before being shared, health data is adjusted to ensure it is no longer possible to identify the data subject	Protection of data subject's health data confidentiality	Government-directed efforts to inform citizens on the initiative	Measures to keep health data secure from breaches and misuse	Period of reflection before giving consent/enforce the regulation

Tell the Truth and Let Me Choose—I Might Trust You

Trustworthy Communication

University of Zurich[UZH]

Digital Society Initiative & Institute for Implementation Science in Healthcare

Trustworthy communication & long-term data visualisation

Principles	Trustworthy Communication	Use of long-term data visualisation
Truthfulness	Provide accurate, evidence-based information	✓ Shows accurate trends over time, reducing the risk of misleading snapshots
Accountability	Ensure that someone -or an institution- takes responsibility for what is communicated	✓ Links outcomes to institutional actions across time
Timeliness	Communicate promptly. Delayed communication creates space for speculation and misinformation	✓ Regular updates signal responsiveness and reduce misinformation
Tailoring	Share information that is understandable, relatable, and meaningful to the target audience (consider literacy levels!)	✓ Helps people understand complex issues when clearly visualized

University of Zurich[UZH]

Digital Society Initiative & Institute for Implementation Science in Healthcare

Trustworthy communication & long-term data visualisation

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University of Zurich[UZH]

Digital Society Initiative & Institute for Implementation Science in Healthcare

Trustworthy communication & long-term data visualisation

Challenges
- **Hard to interpret:** Complex trends can confuse non-experts
- **Information overload:** Too much data can obscure key messages
- **Lacks context:** Without framing, trends may be misunderstood

Principles	Trustworthy Communication	Use of long-term data visualisation
Tailoring	Share information that is understandable, relatable, and meaningful to the target audience (consider literacy levels!)	✓ Helps people understand complex issues when clearly visualized

University of Zurich[UZH]

Digital Society Initiative & Institute for Implementation Science in Healthcare

Q&A

Let's Connect!

Key Considerations for Data Visualization in Public Communication

Wibke Weber

Data visualization is the only way to make data accessible and understandable.

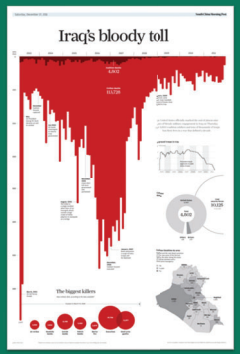
Key Considerations

- Objectivity
- Trustworthiness & Credibility
- Ethics & Accountability
- Transparency
- Uncertainties
- Literacies
- Contextualization

Objectivity

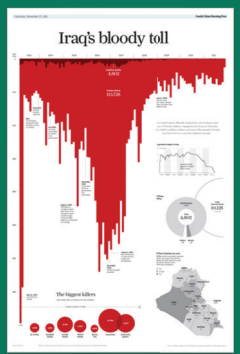
- Presenting data without bias or distortion
- Avoiding manipulative techniques such as truncated axes or cherry-picked data.

Objective or biased?
Trustworthy or eye-catching?



Simon Scarr, South China Morning Post, Dec 17, 2011

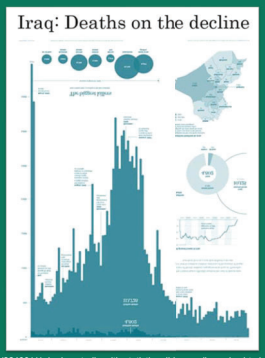
- Color
- Direction
- Rounded ends of the bars
- Lack of white space
- Title



Simon Scarr, South China Morning Post, Dec 17, 2011

> One deliberate design choice with this graphic was the visual metaphor of blood. This striking visual would hopefully draw the reader into the graphic. (Simon Scarr, n.d.)

Same dataset – same message?



https://www.infoworld.com/article/2246011/why-how-to-lie-with-statistics-did-us-a-disservice.html

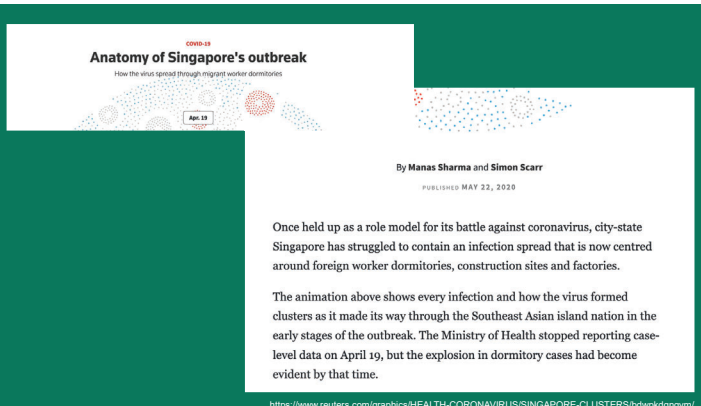
It's a fine line between presenting the data correctly and the act of interpreting the data visually.

Seeming Objectivity

Using a data visualization – e.g., in health crisis communication – carries rhetorical weight. Its mere presence seems to say, 'Look, we have data.'

And that message alone can be powerful.

Engebretsen, M., & Kennedy, H. (Eds.). (2020). *Data Visualization in Society*. Amsterdam University Press. https://doi.org/10.2307/j.ctvzgb8c7


COVID-19

Anatomy of Singapore's outbreak

How the virus spread through migrant worker dormitories

Apr. 19

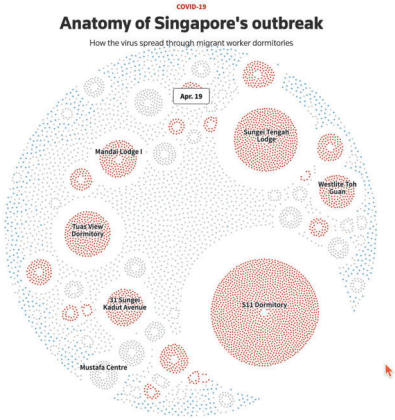
By **Manas Sharma** and **Simon Scarr**

PUBLISHED MAY 22, 2020

Once held up as a role model for its battle against coronavirus, city-state Singapore has struggled to contain an infection spread that is now centred around foreign worker dormitories, construction sites and factories.

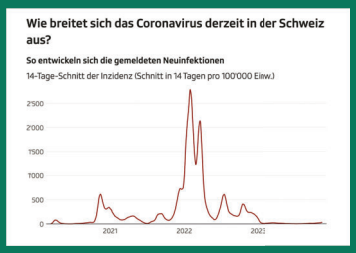
The animation above shows every infection and how the virus formed clusters as it made its way through the Southeast Asian island nation in the early stages of the outbreak. The Ministry of Health stopped reporting case-level data on April 19, but the explosion in dormitory cases had become evident by that time.

https://www.reuters.com/graphics/HEALTH-CORONAVIRUS/SINGAPORE-CLUSTERS/bdwpkdgngvm/



Trustworthiness & Credibility

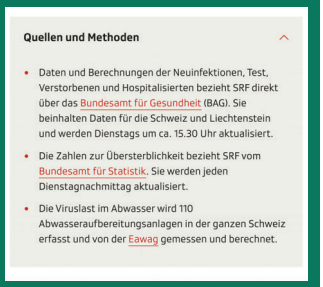
- Trustworthiness: handling and presenting data ethically and with integrity.
- Credibility depends on how the audience perceives the data visualization.



https://www.srf.ch/news/schweiz/corona-dashboard-so-entwickeln-sich-die-corona-zahlen-in-der-schweiz

Transparency

https://leaddata.ch/de/data/influenza-zh-1910-1970



https://www.srf.ch/news/schweiz/corona-dashboard-so-entwickeln-sich-die-corona-zahlen-in-der-schweiz

Ethics & Accountability

- Ethics: avoiding misleading data visualization.
- Accountability: producers are responsible for the consequences of their data visualizations.
- Ethical guidelines help avoid manipulation or exploitation of sensitive data.

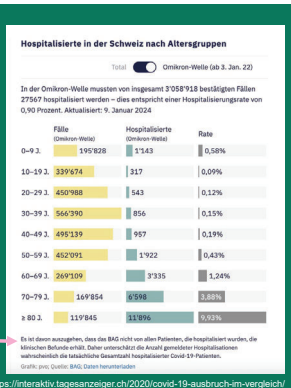
Ethics & Accountability

- Ethics: avoiding misleading data visualization
- Accountability: producers are responsible for the consequences of their data visualizations.
- Ethical guidelines help avoid manipulation or exploitation of sensitive data.

→ Transparency is a key ethical principle in journalism.

Uncertainties

- In long-term data, uncertainty may arise from gaps in historical records, estimation methods, or data quality.
- Visualizing uncertainty – using techniques like error bars or confidence intervals – helps users interpret the data correctly.



https://interaktiv.tagesanzeiger.ch/2020/covid-19-ausbruch-im-vergleich/

Literacies

https://leaddata.ch/de/stories/story-1

https://www.srf.ch/news/schweiz/corona-dashboard-so-entwickeln-sich-die-corona-zahlen-in-der-schweiz

Contextualization

- Without context, even accurate data can lead to incorrect conclusions.

https://www.zeit.de/gesellschaft/2020-04/corona-alltag-konsum-stromverbrauch-wasserverbrauch-schlafverhalten-grafiken

Conclusion

- Objectivity
- Trustworthiness & Credibility
- Ethics & Accountability
- Transparency
- Uncertainties
- Literacies
- Contextualization

Wibke Weber
PhD | Professor of Media Linguistics: Visual Communication
Program Director, BA Communication and Media Studies
IAM Institute of Applied Media Studies
ZHAW Zurich University of Applied Sciences

Bridging the gap: Dialogues between scientists and the public, policymakers, and journalists about lost past pandemic experiences. Kaspar Staub (UZH), Wibke Weber (ZHAW).
Funded by SNSF. Grant number 215863.

Public Health authorities and dissemination: The example of MonAM

Workshop
«Benefits & challenges of communicating long-term data in public health»

Sebastian Mader

Bern, 06.06.2025

Public Health Monitoring at the FOPH

- **Monitoring and indicator systems are systematic collections of (long-term) data.**
- They make a **fundamental contribution to evidence-based health policy**.
- **Overview of monitorings and surveillances at the FOPH in fulfilment of its tasks:**
  - *NCD, addiction, mental health, prevention and health promotion:* e.g. www.monam.ch, Indikatoren | Obsan
  - *Communicable diseases:* e.g. IDD - Infectious Diseases Dashboard, Infektionskrankheiten: Zahlen
  - *Biomedicine:* e.g. Kennzahlen zur Transplantationsmedizin in der Schweiz
  - *Radiation protection:* e.g. Radenviro; Diagnostische Strahlenexposition in der Medizin
  - *Health and accident insurance:* e.g. Dashboard de l'assurance-maladie - Vue d'ensemble, Monitorage du transfert de prestations et de l'impact financier | Obsan
  - *Health professions / Health services:* e.g. Monitoring nazionale del personale infermieristico | Obsan, Home | Swiss Health Care Atlas
- Forms: mostly static reports / websites or dynamic interactive websites / dashboards comprising various data sources.

MonAM.ch

The Swiss Monitoring System of Addiction and Non-Communicable Diseases

The opportunities of a low-threshold, needs-based approach, and the use of synergies

MonAM.ch

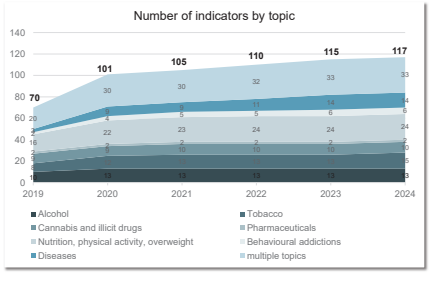
1. What is MonAM?

- **MonAM provides indicators on** various topics related to non-communicable diseases (**NCD**), **addiction** and **mental health**.
- **Prevalence, mortality, treatment, social aspects and regulation are addressed** amongst other topics for all age groups available.
- **More than 110 indicators** have been available since October 2018.
- It is **jointly realised** by the **FOPH** and the **Obsan**.

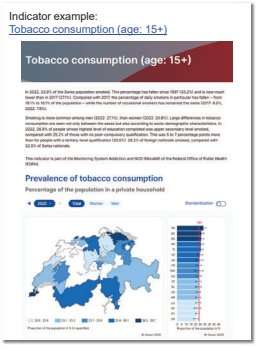
2. Goals of MonAM

- MonAM serves as a **neutral information gateway**: It **consolidates existing information from many different sources in one format and in a simple way.**
- Thus, it **facilitates access to well-founded figures** for central stakeholders and a broad public. Thereby, **MonAM fosters the transfer of knowledge into practice.**
- MonAM has been developed **in connection with the National Strategies on Addiction and NCD**. Hence, it provides information on the **achievement of** the **goals** of the strategies.

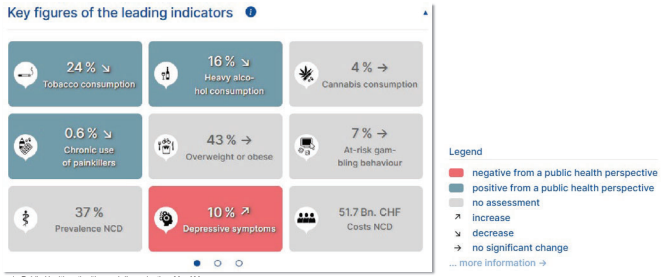
3. Indicators on MonAM



Indicator example:
Tobacco consumption (age: 15+)

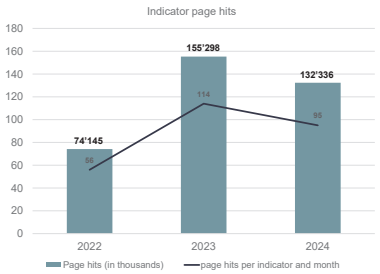


3. Indicators on MonAM



4. Success of MonAM

- MonAM is actively used (>130'000 page hits in 2024).
- Most of the users find what they need on MonAM (user survey 2021).
- MonAM is mainly used to deepen expertise, for strategic and (self-) educational purposes, politics, and journalism.



4. Success of MonAM: SWOT-Analysis

Strengths	Weaknesses
• Low-threshold, interactive platform. • Needs-oriented service (e.g. expert review). • Use of synergies through close collaboration with more than 30 data partners.	• Time lag between publication of data and implementation in MonAM is to be optimized.
Opportunities	**Threats/Challenges**
• Needs for monitoring of key figures grow. • Digitalisation enables triangulation.	• Continuity and topicality of time series.

5. Outlook

MonAM will further establish and extend its position as national reference addressing these challenges and emerging developments. It will also seize the opportunities of growing needs for monitoring and transfer of knowledge.

Thank you very much for your attention!

MonAM.ch

Contact: MonAM@bag.admin.ch

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Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation
Federal Department of Home Affairs FDHA
Federal Office of Public Health FOPH

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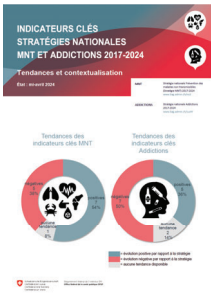
Schweizerisches Gesundheitsobservatorium
Observatoire suisse de la santé
Osservatorio svizzero della salute
Swiss Health Observatory

NEW Publication

Key Indicators of the National Strategies on NCDs and Addiction

Trends and contextualization

AVAILABLE on MonAM.ch



Schweizerisches Gesundheitsobservatorium
Observatoire suisse de la santé
Osservatorio svizzero della salute
Swiss Health Observatory

Espace de l'Europe 10
CH-2010 Neuchâtel
obsan@bfs.admin.ch
www.obsan.ch

Workshop BAG, SSPH+, UZH, UNIFR
Benefits & challenges of communicating long-term data in public health

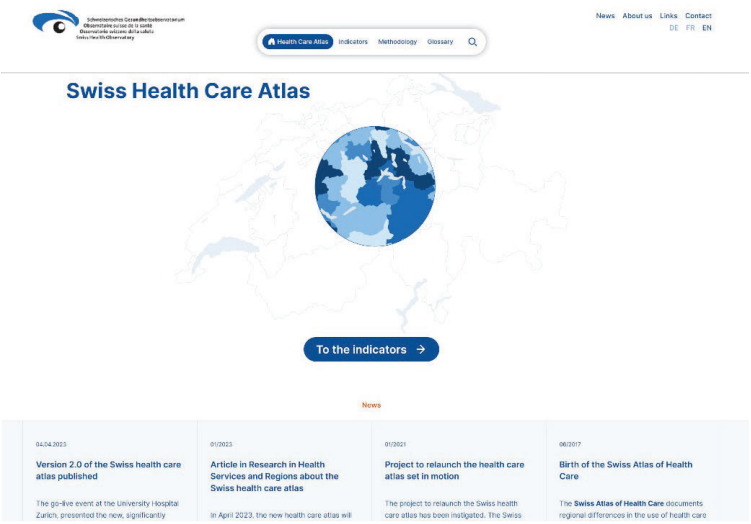
Swiss Atlas of Health Care
Between Adequacy and Comprehensibility

Reto Jörg
Bern, 06.06.2025

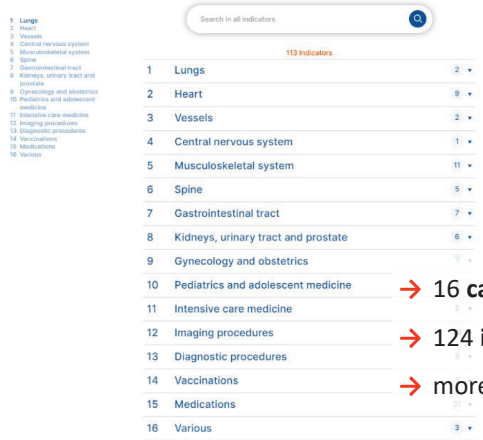
Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Eidgenössisches Departement des Innern EDI

C GDK S
Konferenz der kantonalen Gesundheitsdirektorinnen und -direktoren
Conférence des directrices et directeurs cantonaux de la santé
Conferenza delle direttrici e dei direttori cantonali della sanità



Set of indicators

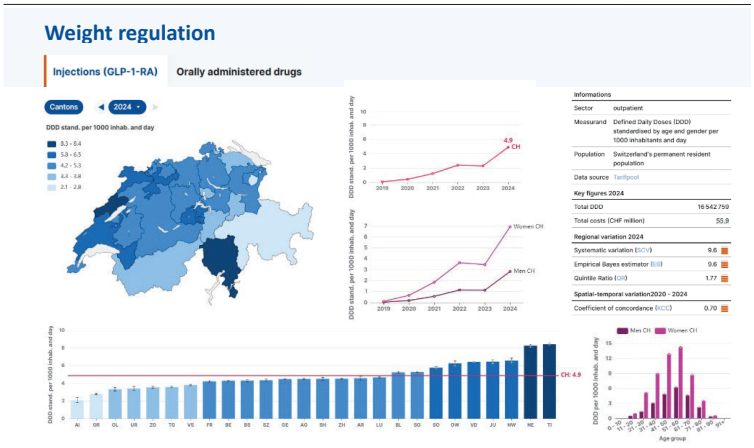


→ 16 **categories**

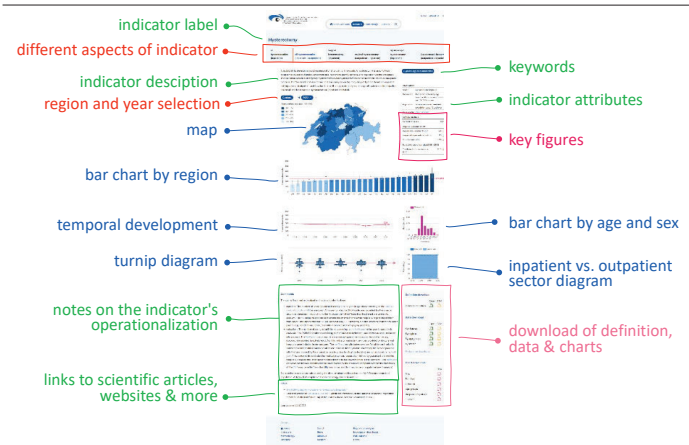
→ 124 **indicators**

→ more than 250 **aspects**

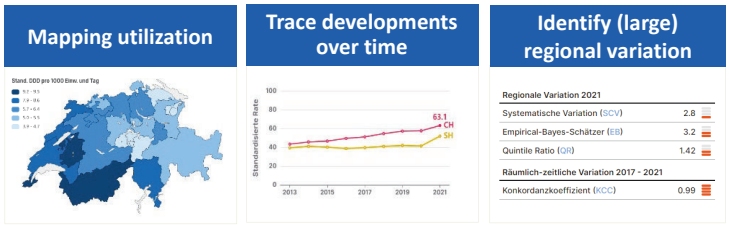
example



Elements of indicator page



What's the point?

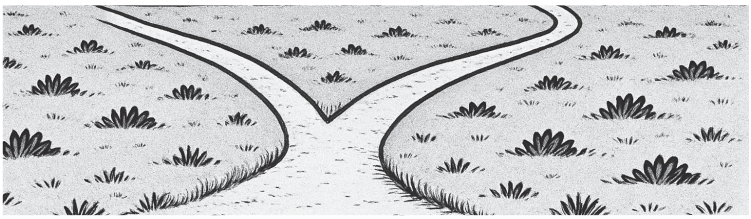


Why does regional variation matter?

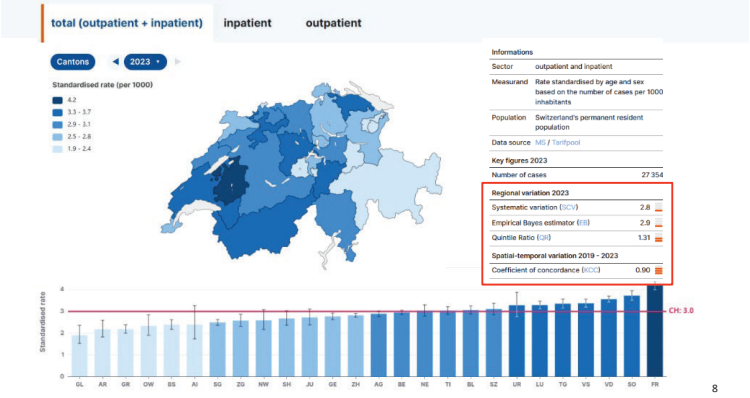
effectiveness, appropriateness & efficency

How to measure and visualize regional variation?

Adequacy **Comprehensibility**



Coronary angioplasty (PTCA)



Systematic Component of Variation (SCV)

(McPherson et al., 1982)

- \+ widely used and accepted measure
- \+ threshold values defined (McPherson et al., 1996)
- – methodological criticism (e.g. Diehr et al., 1990; Shwartz et al., 1994)

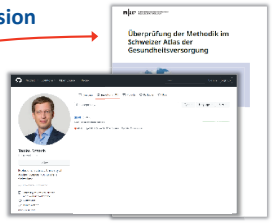
Key indicator	low	moderate	high	very high
SCV	<3	3 - 5.4	5.4 - 10	>10

Regional variation 2023	
Systematic variation (SCV)	2.8

Empirical Bayes (EB) estimate of overdispersion

(Clayton & Kaldor, 1987; Martuzzi & Hills, 1995)

- \+ better theoretical basis
- \+ technical advantages (efficency, robustness etc.)
- – complex (theory & application)
  - → external support (T. Schoch, FHNW): methods report, R-Package «sava»
- – concept of "overdispersion" hard to grasp
  - → Quintile ratio (QR): ratio between high (80% quantile) and low rate (20% quantile)
- – no threshold values defined
  - → We defined threshold values ourselves based on empirical data

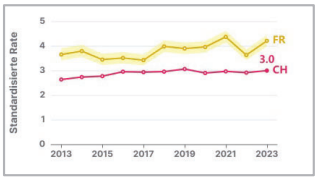


Regional variation 2023	
Systematic variation (SCV)	2.8
Empirical Bayes estimator (EB)	2.9
Quintile Ratio (QR)	1.31

Kendall's coefficient of concordance (KCC)

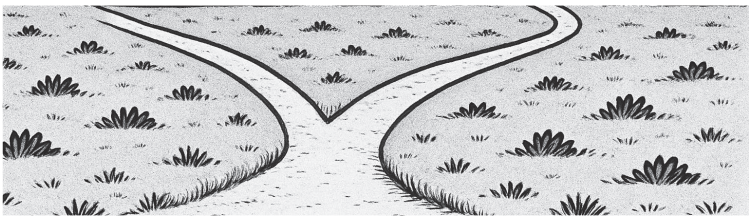
(Kendall & Gibbons, 1990)

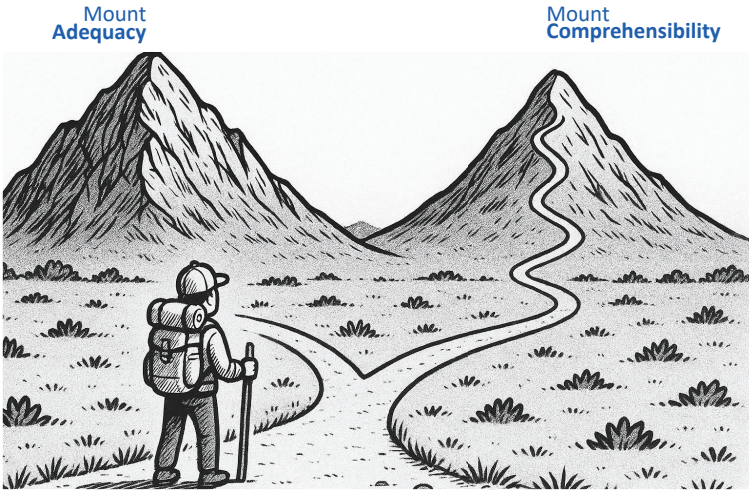
- \+ **Does not consider each year by itself**
- \+ Conceptually easy to understand (always same regions on top / at the bottom?)
- – no threshold values defined
  - → We defined threshold values ourselves values commonly used in correlation analysis

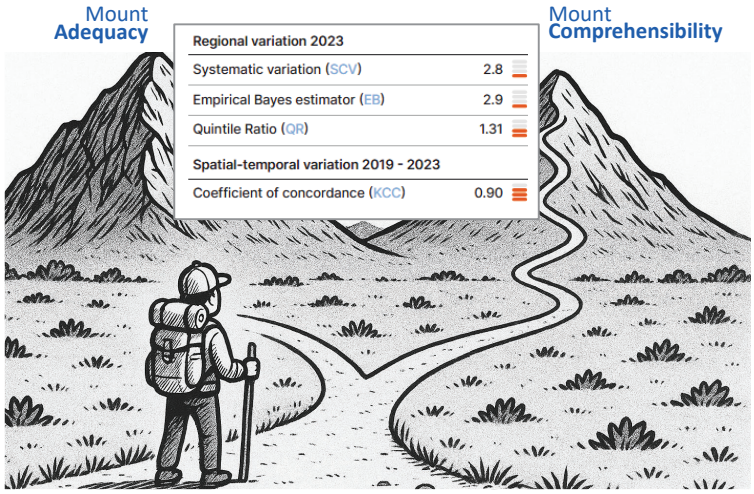


Regional variation 2023	
Systematic variation (SCV)	2.8
Empirical Bayes estimator (EB)	2.9
Quintile Ratio (QR)	1.31
Spatial-temporal variation 2019 - 2023	
Coefficient of concordance (KCC)	0.90

Adequacy **Comprehensibility**




Mount
Adequacy
Mount
Comprehensibility


Mount
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Regional variation 2023
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Spatial-temporal variation 2019 - 2023
Coefficient of concordance (KCC) 0.90

Challenges in communication long-term improvements of global health

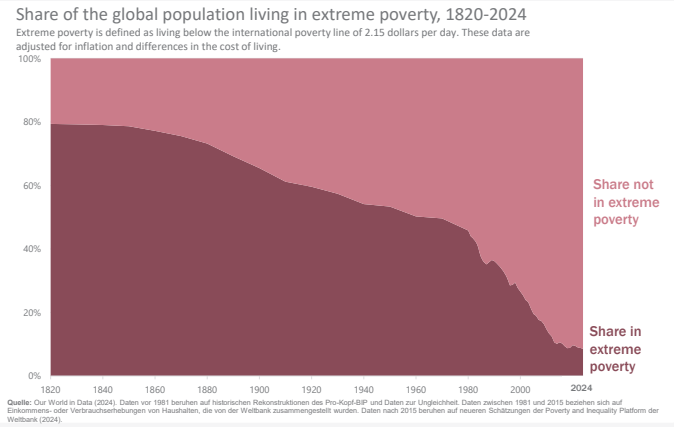
Dina Pomeranz, University of Zurich

1

The world has experienced unprecedented improvements in poverty reduction and health

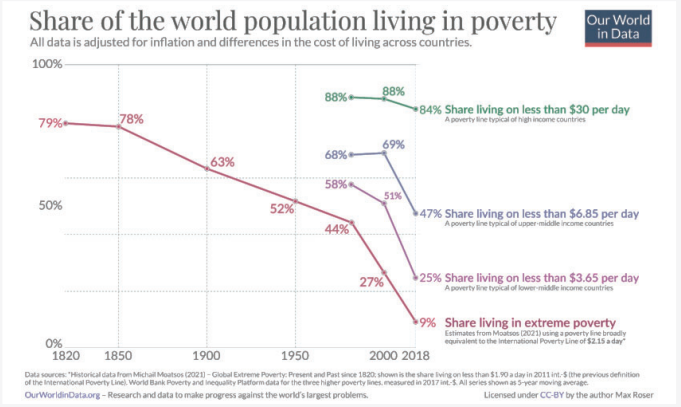
2

Share of people in extreme poverty



3

At higher poverty lines

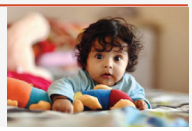


Dina Pomeranz

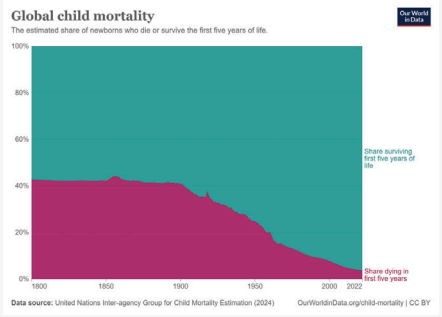
4

Infant mortality

- The decline in infant mortality is one of the greatest revolutions of the last century



- Children that die before the age of 5:
- 1800: >4 in 10
- 1990: ~0.9 in 10
- 2022: <0.4 in 10



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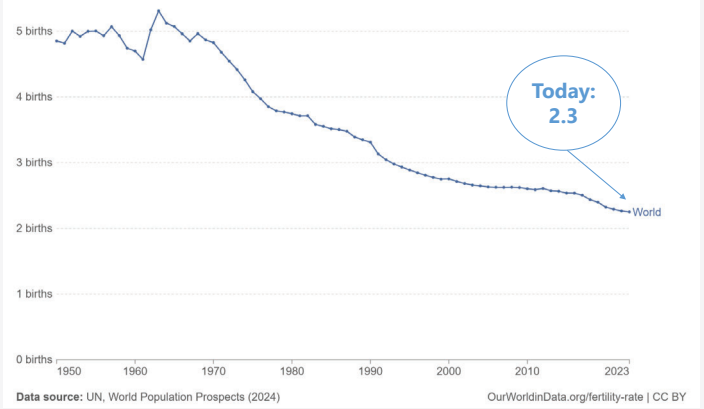
5

Number of children per woman halved



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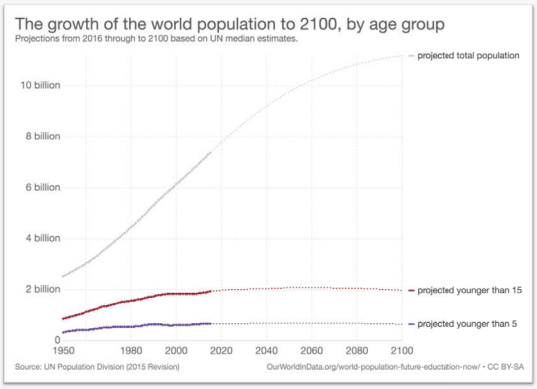
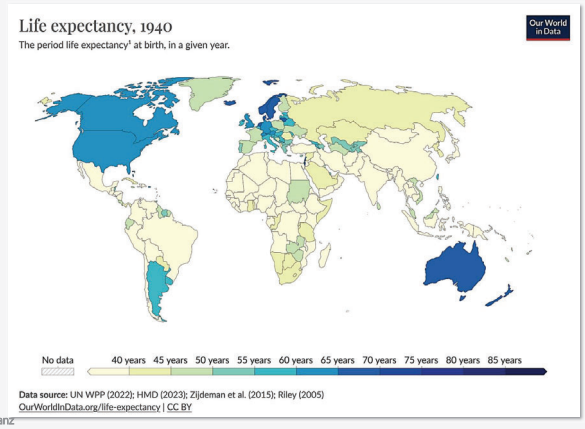
6

The "population bomb" is over



- Today, some countries are still growing, others are already shrinking
  → Switzerland would shrink without immigration

Life expectancy: amazing increase in all countries



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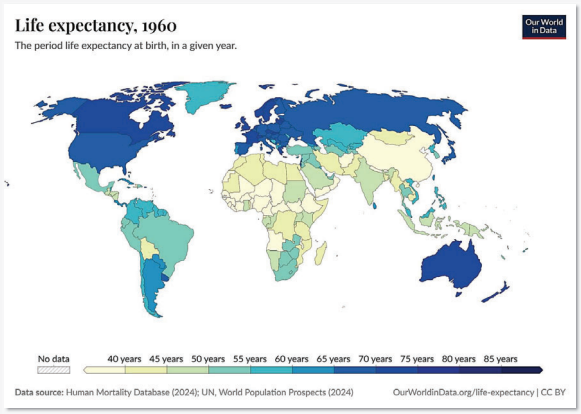
Life expectancy: amazing increase in all countries



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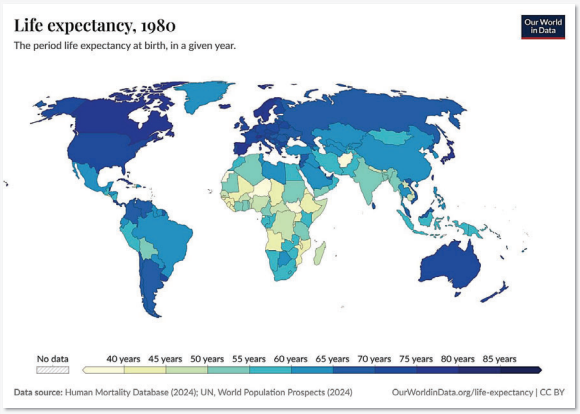
Life expectancy: amazing increase in all countries



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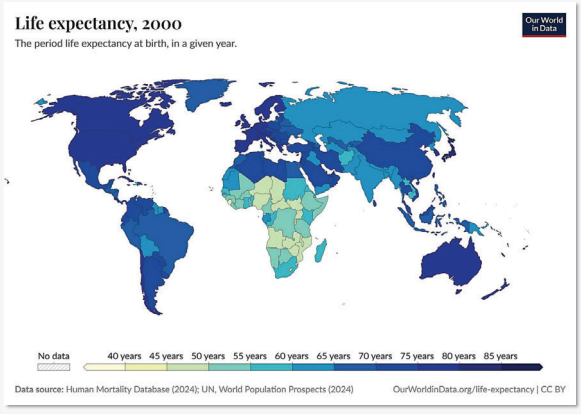
Life expectancy: amazing increase in all countries



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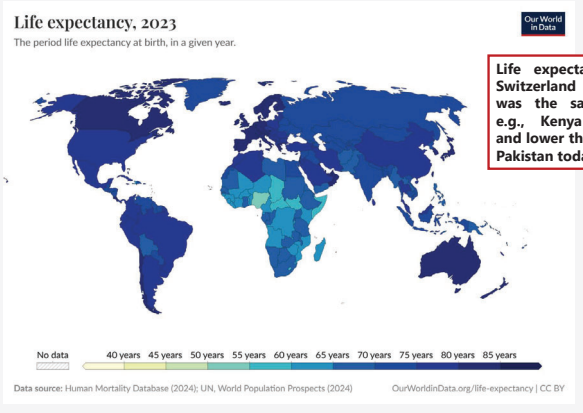
Life expectancy: amazing increase in all countries



Life expectancy in Switzerland in 1940 was the same as, e.g., Kenya today and lower than, e.g., Pakistan today.

Dina Pomeranz

Challenges in communication

Most people are not aware of this progress

- The majority believes that poverty has *increased*
  - Only around 20% of respondents across 28 countries know that it fell.
  - Very few know it fell more than half
- One in 4 believe that child mortality *increased*
  - Only around 39% know that it is falling
  - In reality, over the last 20 years, child mortality was halved

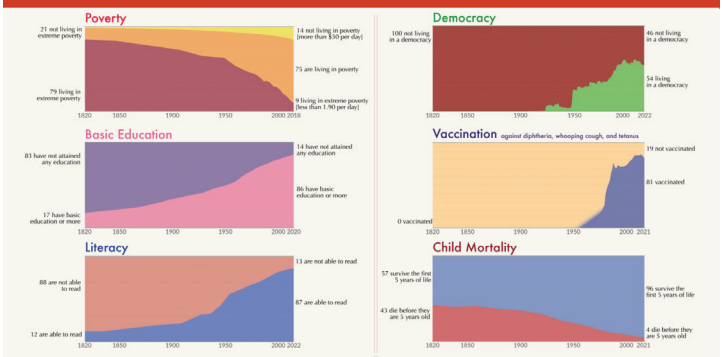
What might be the reasons?

- Human nature? Negativity bias?
  - Evolutionary tendency to react more strongly to danger than to positive, non-threatening information
  - Potentially exacerbated by media amplifying this tendency
- Positive developments usually happen slowly, while bad events are often abrupt
  - Slow developments are less newsworthy
- Local optimism - global pessimism:
  - We tend to assess the situation in our locality as better the whole country, and own country better than the world
- Other?

Why does it matter?

- Misinformation can lead to hopelessness, resignation, cynicism
  → Increase in extremism and political forces that advocate "tearing down the system"?
- May have contributed e.g., to recent election in the US
  - Many believed that the economy deteriorated and crime rose during Biden years
  - Data show the opposite
- Finding ways to share information about the huge improvements in human welfare of recent decades may be key to democracy and stability

Thank you for listening!



Thank you

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