WARSAW econometric CHALLENGE

WELCOME EVERYONE

ON WEC 2024 !

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Agenda for today

- 11:00 – general introduction by **Piotr Wójcik**
- 11:10 – warm welcome by **Gabriela Grotkowska**, Dean of our Faculty
- 11:20 – description of the contest rules by **Marcin Chlebus**
- 11:30 – Econometric Hackathon 101 by **Marcin Chlebus**
- 11:50 – description of the contest problem by **Jacek Lewkowicz**
- 12:10 – presentation of the data by **Piotr Wójcik**
- 12:20 – mini-lecture by **Katarzyna Peryt-Kowalska**
- 12:40 – the 24-hour **competition begins**!
- – 14:00 – time for potential **confidential** questions sent via email to wec@wne.uw.edu.pl

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GENERAL INTRODUCTION

by Piotr Wójcik

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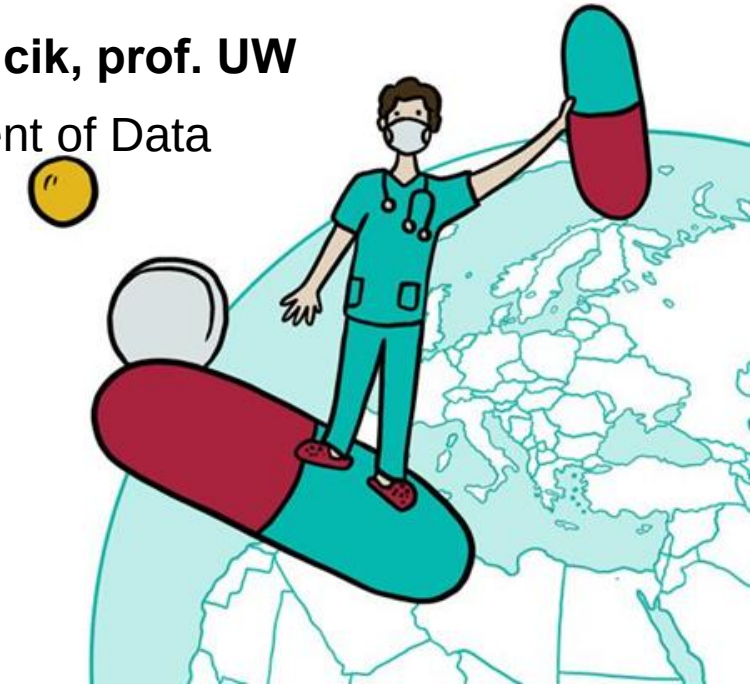
Organizing Commitee

- **Marcin Chlebus, PhD**
- Department of Data Science

- **Jacek Lewkowicz, PhD mult.**
- Department of Political Economy

- **Rafał Woźniak, PhD**
- Department of Statistics and Econometrics

- **Piotr Wójcik, prof. UW**
- Department of Data Science



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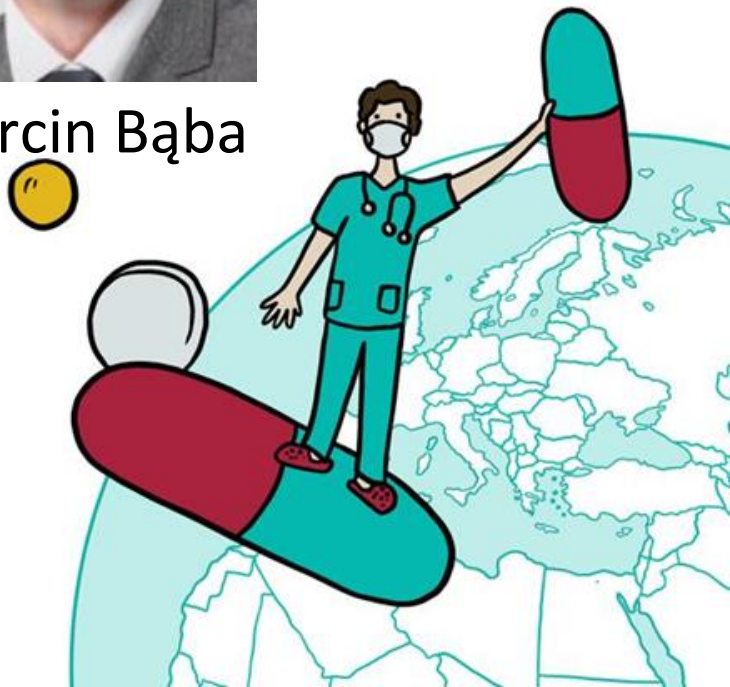
Office of Communication and IT support

Dominika Huczek

Krystyna Paczoska

Monika Kożuchowska

Marcin Bąba



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Participants

- 1st edition (2021)
  - local at the Faculty of Economic Sciences
  - 5 teams
  - 16 participants
- 2nd edition (2022) - co-organized by LOT Polish Airlines
  - students from 6 Polish universities
  - 28 teams
  - 93 participants
- 3rd edition (2023) - co-organized by the High Tech Foundation
  - students from 23 countries representing 21 European universities
  - 46 teams
  - 134 participants
- 4th edition (2024)
  - students from **19 countries** representing **21 European and 1 US university**
  - **36 teams**
  - **107 participants**

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Participants 2024 – all participating universities

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WARM WELCOME

by Gabriela Grotkowska,
Dean of the Faculty of Economic Sciences, University of Warsaw

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DESCRIPTION OF THE CONTEST RULES

by Marcin Chlebus

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What we expect from you?

- Your **core goal** is to prepare a **research paper** in which you describe your solution to the task
  - Present some background and brief literature review
  - Define research questions/hypotheses
  - Describe the data
  - Comment on the methodology
  - Present your results
  - Draw conclusions and provide discussion

Criteria for evaluation

adequacy	comprehensivity
interpretability	predictive power

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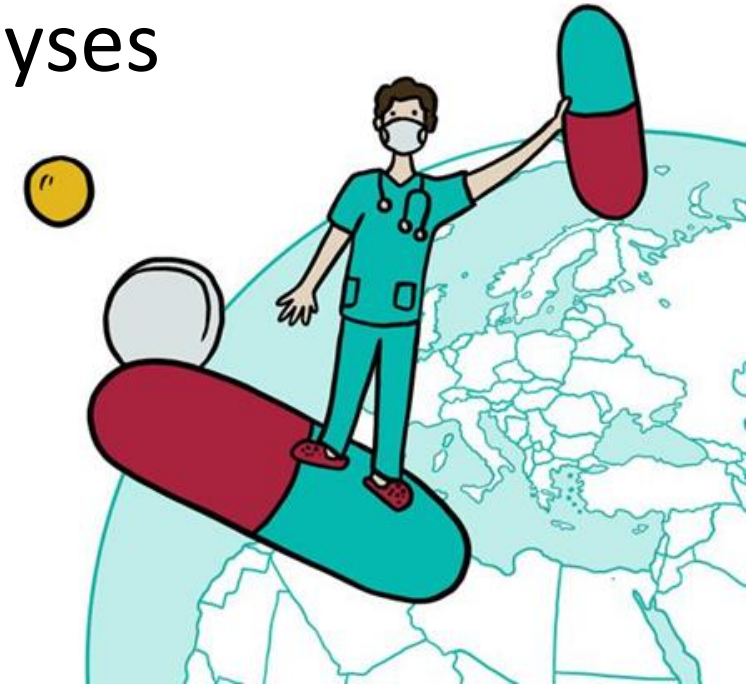
How to submit your works?

- Send them via **email** to wec@wne.uw.edu.pl
- Do it before **16:00** CET on Sunday, May 12th 2024
- Submit the **article**, full **codes** and all the **additional data** used, so that we can **reproduce** your analyses



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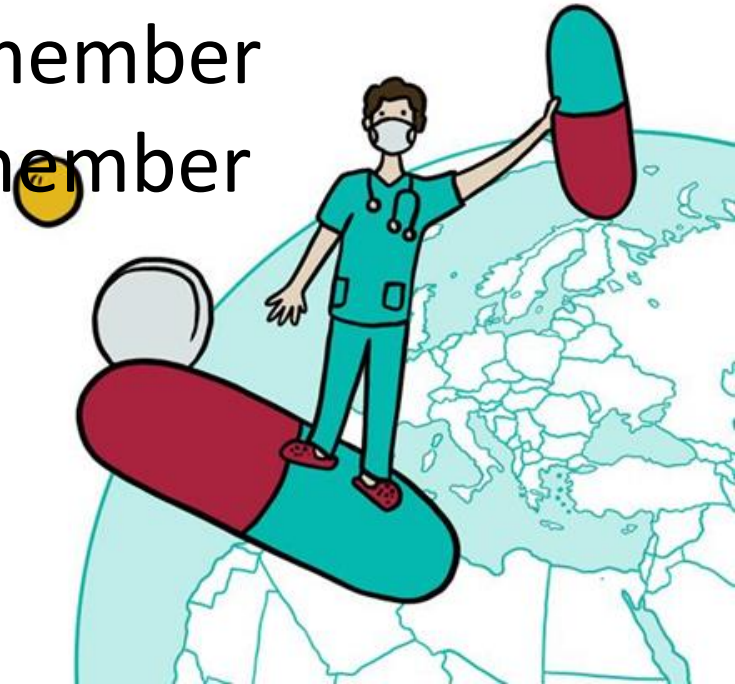
Prizes

- Satisfaction and glory – priceless ☺
- Prizes
  - 1st place: PLN 2500 PLN for each team member
  - 2nd place: PLN 1500 PLN for each team member
  - 3rd place: PLN 1000 PLN for each team member



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ECONOMETRIC HACKATHON 101

by Marcin Chlebus

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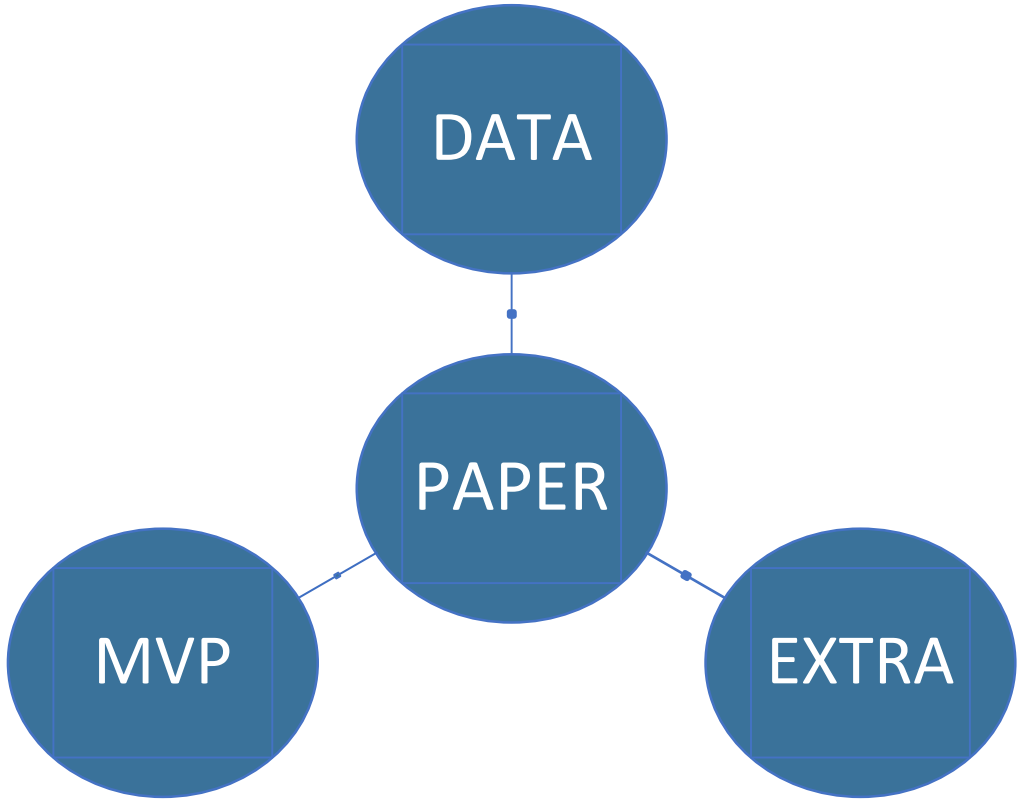
A few words about the competition strategy (1/3)



TEAMS OF 4 MEMBERS:

- DATA PREPARATION
- MVP SOLUTION
- EXTRA SOLUTION
- PAPER WRITING

TEAMS OF 3 MEMBERS:

- DATA PREPARATION
- MVP SOLUTION
- PAPER WRITING

<u>TASKS LEADERS ARE NOT DEDICATED TO JUST ONE TASK</u>

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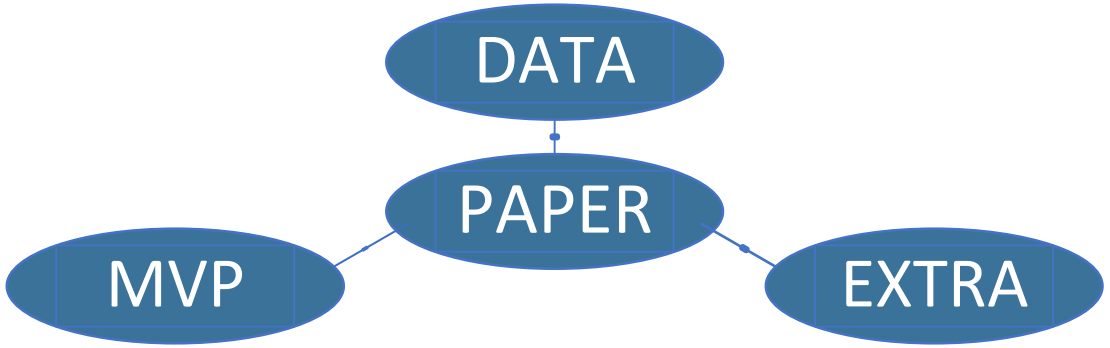
A few words about the competition strategy (2/3)

PAPER:

1. USE ONLINE TOOLS, WHERE ALL TEAM MEMBERS MAY JOINTLY UPDATE THEIR PARTS
2. ALL TEAM MEMBERS SUPPORT PAPER WRITING
3. KEEP ALL PARTS OF THE ARTICLE AND THE ABSTRACT IN MIND



DATA:

1. START WITH PREPARING THE DATA
2. TRY TO BE FAST AND PRECISE (DO NOT FORGET ABOUT DATA PREPROCESSING)
3. PREPARE THE DATA IN A TRANSFERABLE FORMAT

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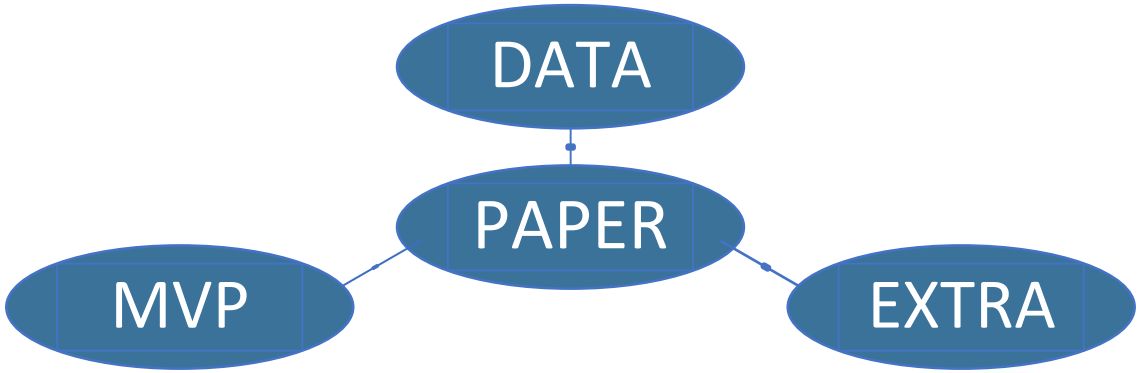
A few words about the competition strategy (3/3)

MVP – MOST VIABLE PRODUCT

1. DO NOT START WITH THE MOST SOPHISTICATED SOLUTION, TRY TO DELIVER A WORKING SOLUTION
2. ADDRESS ALL MAIN RESEARCH QUESTIONS, CONSIDER THE ADDITIONAL ONES, AND AFTER THAT EXTEND YOUR APPROACH



EXTRA SOLUTIONS

1. LOOK FOR SOLUTIONS WHICH COULD BE POTENTIALLY UNEXPECTED, SURPRISING BUT APPROPRIATE
2. TRY TO APPLY A FEW OF SUCH SOLUTIONS
3. CONCENTRATE ON THEIR VALUE ADDED

MOST IMPORTANTLY:

NEVER GIVE UP & ALWAYS ENJOY ☺

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DESCRIPTION OF THE CONTEST PROBLEM

by Jacek Lewkowicz

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VACCINATION AS A RESPONSE TO THE COVID-19 PANDEMIC

THE CASE

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Background

economy

social order

COVID-19

politics

public health

Background

Common pandemic measures:

- quarantine
- social distancing
- fiscal support
- vaccination campaigns

Drivers of vaccination uptake:

- personal characteristics
- housing conditions
- population density
- culture
- political preferences

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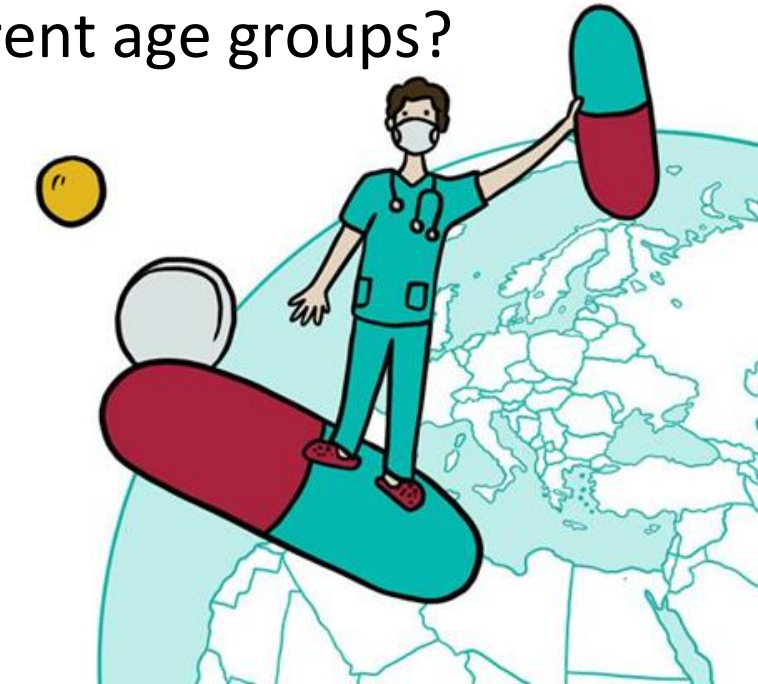
General question

What were the drivers of the level of COVID-19 vaccination in Poland?

Main questions

1. Does the size of municipalities/cities matter?
2. Do we see a division between eastern and western Poland? Consider i.a. the partitions or Vistula river as borders?
3. Do we see variation in vaccination rates among different age groups?

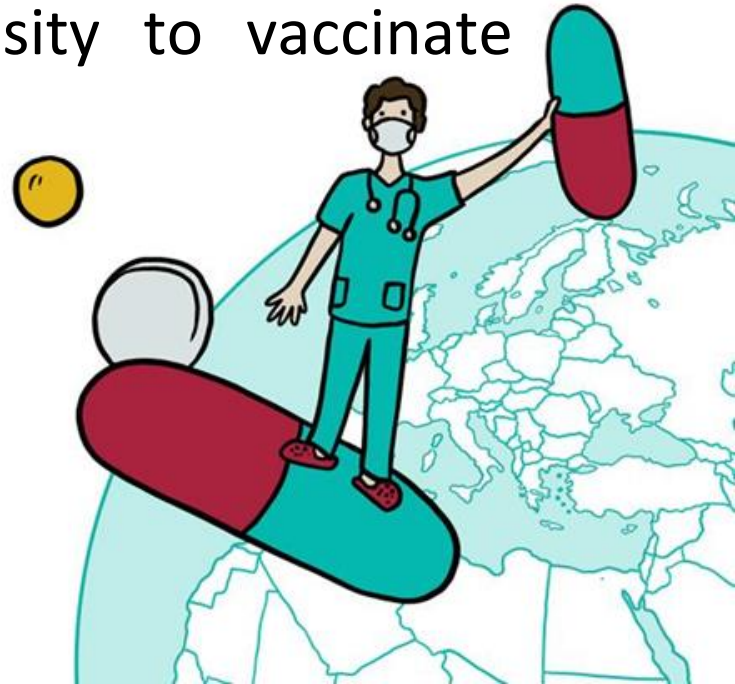


Additional questions

4. What makes us best in class? Approach this question in the context of big cities, small cities and rural areas.

5. Are there any links between vaccination rate and political views?

6. Is there a neighborhood effect? Is the propensity to vaccinate contagious? ☺



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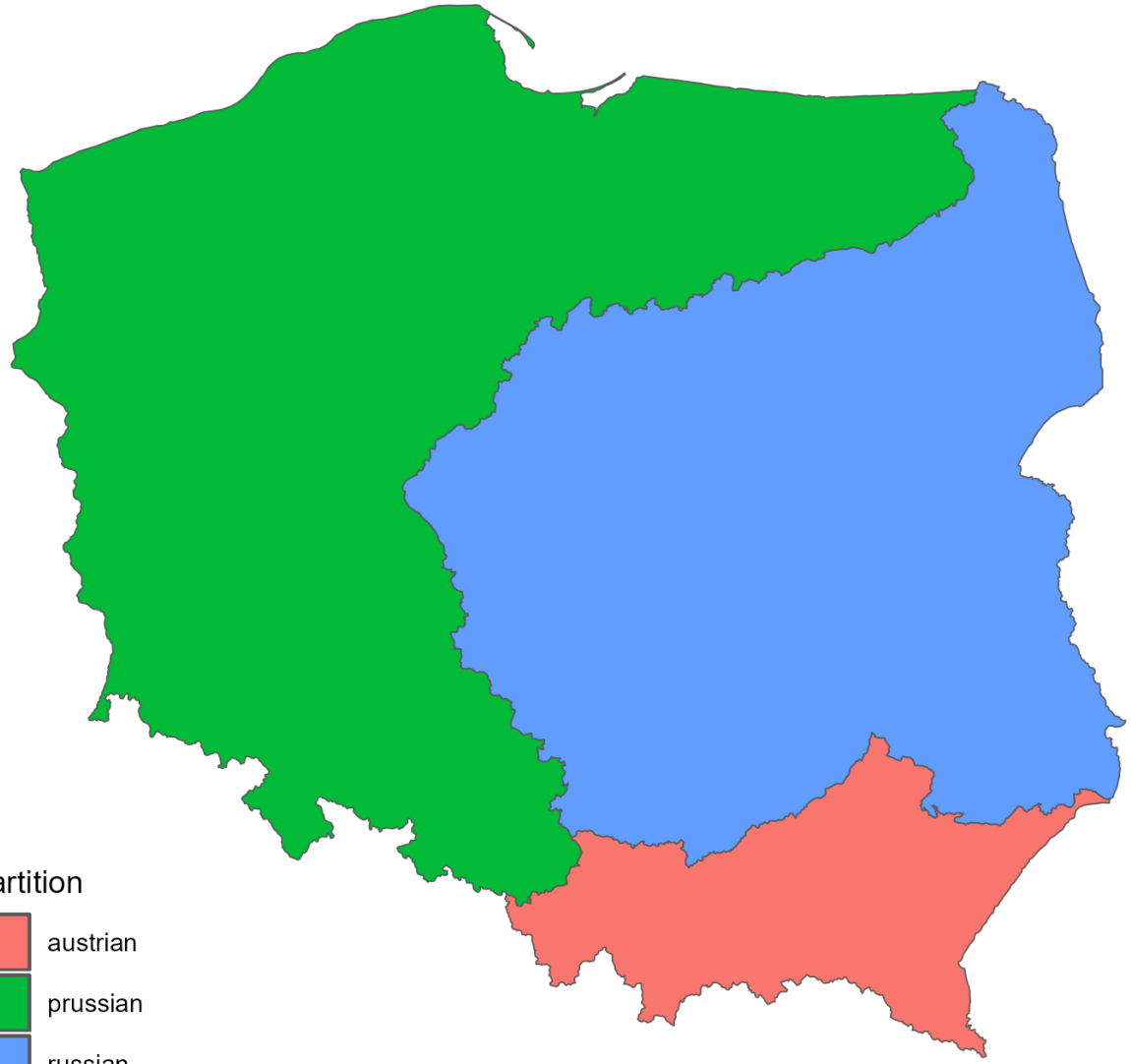
Historical partitions of Poland



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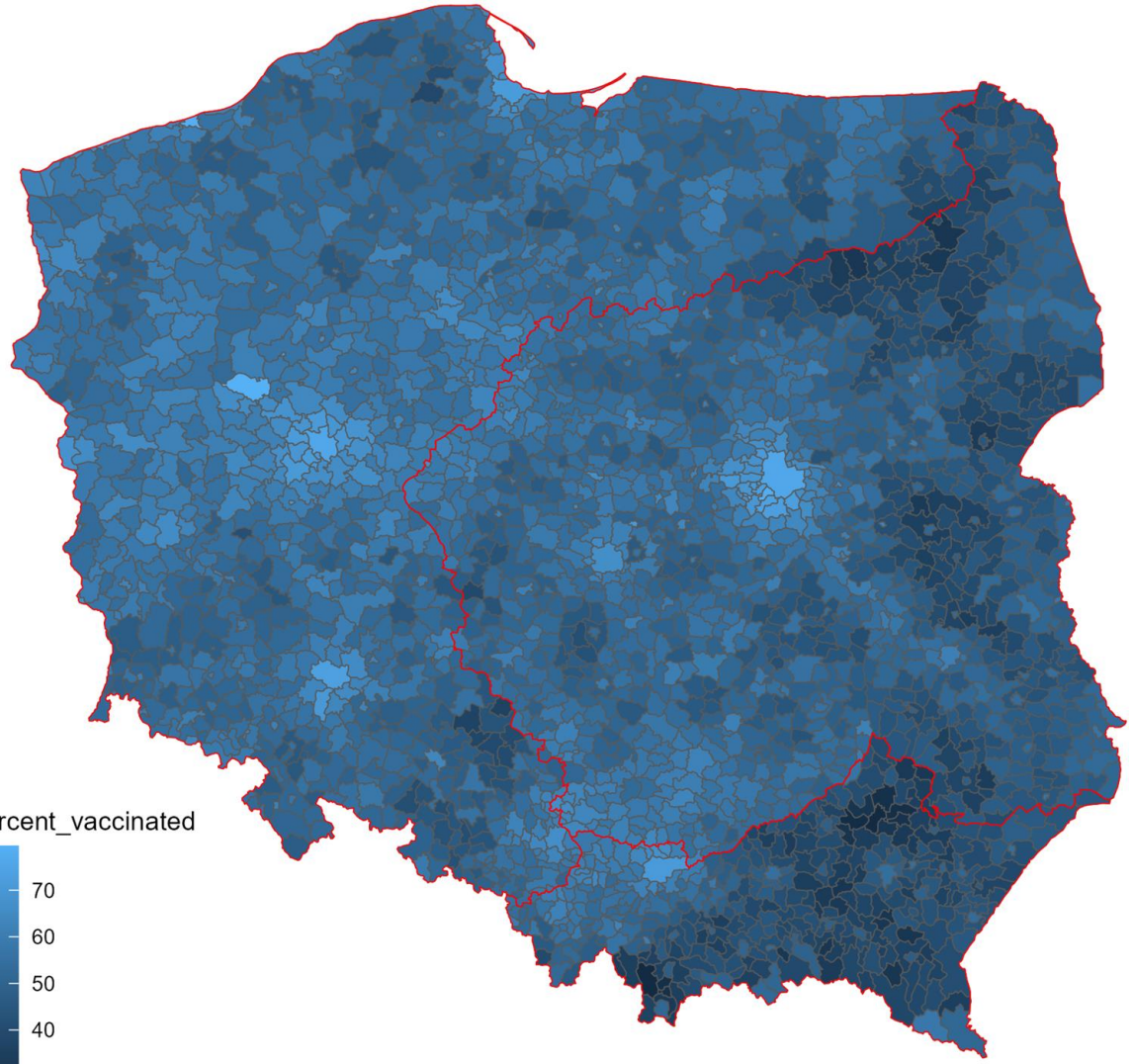
Percent fully vaccinated against historical partitions of Poland



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DATA DESCRIPTION

by Piotr Wójcik

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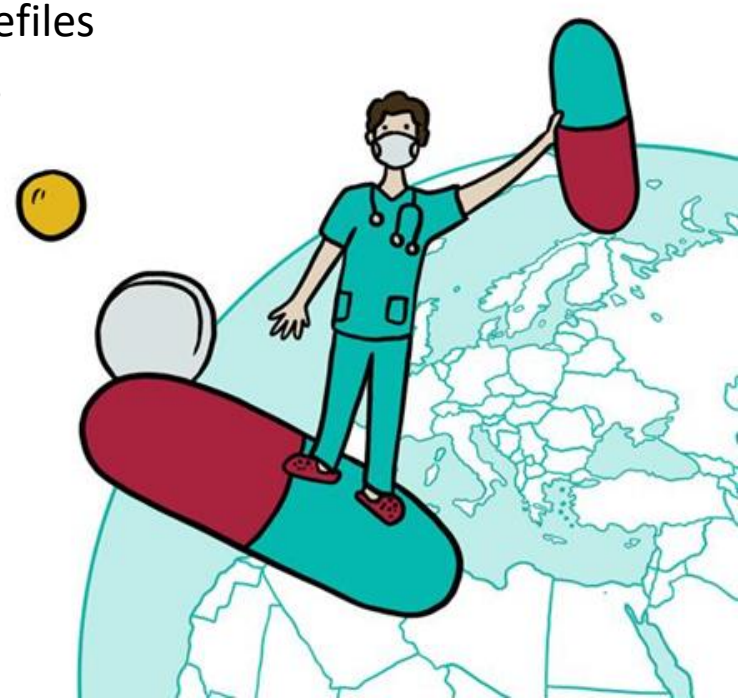
Files

- **_data/data_municipalities.csv** – data for 2477 Polish municipalities (pl. *gmina*), 100 variables, source: Ministry of Health, Local Data Bank Statistics Poland (https://bdl.stat.gov.pl)
- **_data/ data_counties.csv** – data for 380 Polish counties (pl. *powiat*), 12 variables, source: Local Data Bank Statistics Poland (https://bdl.stat.gov.pl)
- **_data/ data_description.pdf** – description of all variables from the above mentioned files
- **_data/map_municipalities** – shapefile for Polish municipalities
- **_tutorials/Local_Data_Bank_tutorial.mp4** – tutorial on accessing Local Data Bank Statistics Poland
- **_tutorial/map_spatial_tutorial.mp4** – recording of the tutorial on using shapefiles
- **_tutorial/map_spatial_tutorial.R**– R codes for the tutorial on using shapefiles

Suggested additional data sources

- Local Data Bank Statistics Poland: https://bdl.stat.gov.pl/
- Results of 2023 parliamentary elections: https://sejmsenat2023.pkw.gov.pl/sejmsenat2023/en
- https://ourworldindata.org/coronavirus/country/poland



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MINI-LECTURE

by Katarzyna Peryt-Kowalska

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Strengtening the resilience of the health systems

Strategy no 17 – implementing effective Covid-19 vaccination programmes

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Health economics

- J. Kenneth ARROW (1972) → complexity of health care (#1963)
- Joseph STIGLITZ (1991)

„We note with concern the rising costs of the healthcare system. Generally, an increase in the price of a commodity is not in itself sufficient reason for state intervention" (paraphrase)

- Why does the increase in healthcare spending raise widespread concern?
  - the scale and pace of spending growth,
  - tax base is shrinking… (+ demographic trends…)
  - distinctive features of health care

Four distinctive features of health care

1. Derived demand for health care
2. Uncertainty and risk
3. Incomplete and asymmetric information
4. Externalities (external effects)

Distinctive features of health care
ad. (4) **Externalities**

- ✓ Some actions have a positive (+) or negative (-) impact on the situation of other exchange parties.
- ✓ Beneficiaries (+) of the existence of positive effects do not pay for them.
- ✓ Losers (-) feel aggrieved because no one compensates them for losses.

Distinctive features of health care
(4) **Infectious diseases and externalities**

- Pandemics: COVID-19, plague, Spanish flu, leprosy, tuberculosis, SARS, AIDS, jaundice, venereal diseases, tropical diseases
- Epidemics and public health
- External effect in infectious disease
- How to reduce external costs?

Externalities historically: What institutional solutions?

- Forcing the "internalization" of costs (e.g., leprosaria)

- Shifting costs onto individuals who do not directly create externalities, but whose actions may impact limiting their occurrence (quarantines, day care centers for children)

- Vaccinations
  - Mandatory vaccinations at school
  - Funding primary care physicians according to thresholds of vaccinated population
  - Subsidies (financing vaccines)

Covid-19 and vaccination rollout

- December 2020: first COVID-19 vaccine; 50% uptake app.
- The number of people unwilling to get vaccinated remains very high.
- The anti-vaccination movement - a hobby or a dangerous trend?
- Influence of misinformation on vaccination acceptance (*historically*…)
- Compulsory Vaccination Act 1853
- Religious and freedom-based arguments

The Cow-Pock — or — the Wonderful Effects of the New Inoculation! — Vide. the Publications of ye Anti-Vaccine Society.

Influence of misinformation on vaccination acceptance - contemporary context

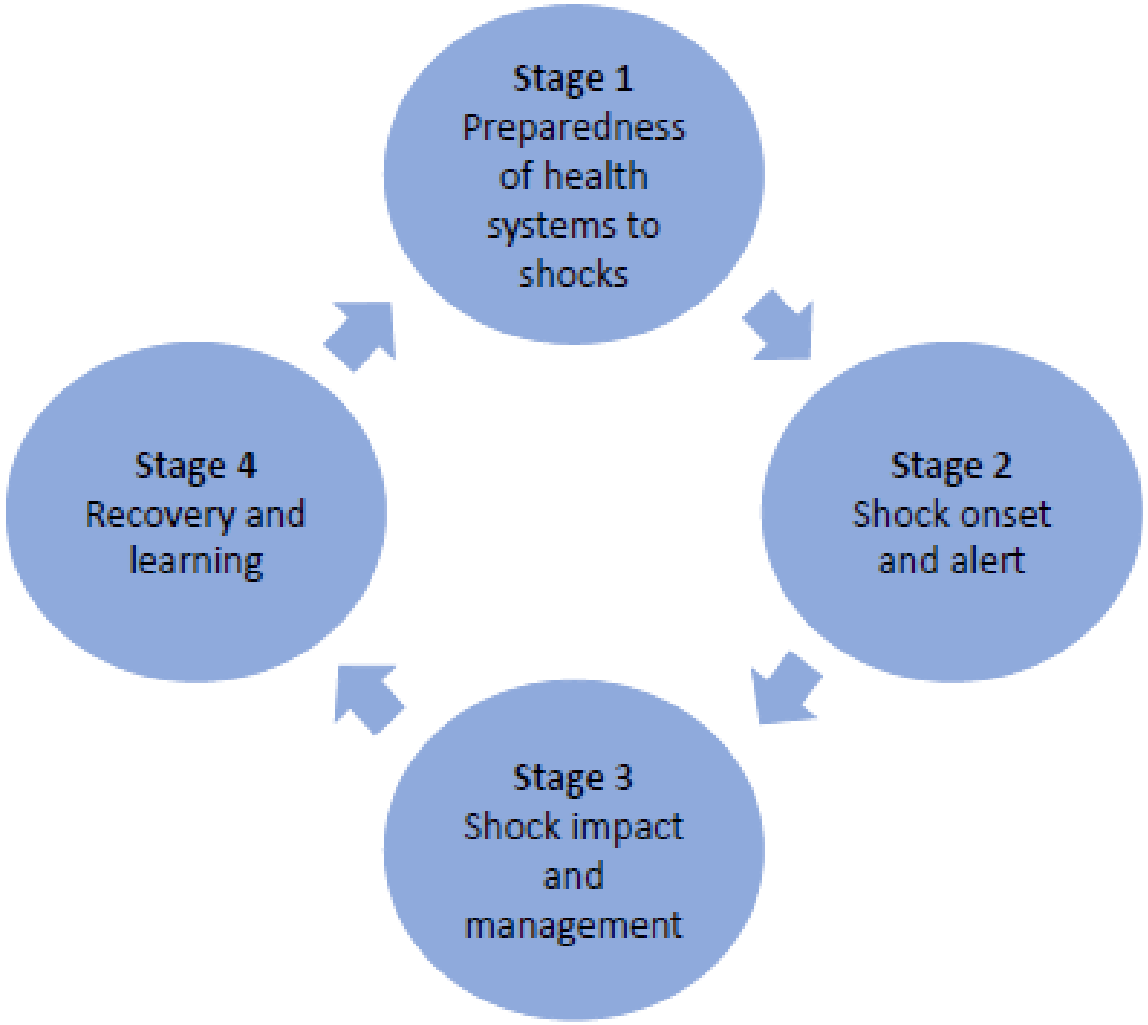
- Nanochips and GPS in human body?
- DPT and encephalopathy (diphtheria, tetanus, and pertussis)
- Decrease in DPT vaccination from 70 to 30% (U.S.)
- Pertussis epidemic
- MMR and autism (measles, mumps, and rubella)
- Measles cases
- The cyclical nature of anti-vaccination movements (Robert T. Chen & Beth Hibbs)

Influence of misinformation on vaccination acceptance – COVID-19 context

- Extreme conspiracy theories on nonexistence of coronaviruses and Covid-19
- Reluctancy to verify fake news
- Mayfly phenomenon (Israeli operation)
- Trolling
- Hybrid warfare
  (Institute for Internet and Social Media Research, 2022)
- Viewing anti-vaccination movements through the lens of the ongoing hybrid warfare

How do health systems respond to a shock?

The four stages of a shock cycle



Source: Sagan A. et al., *Health systems resilience during COVID-19: Lessons for building back better…*

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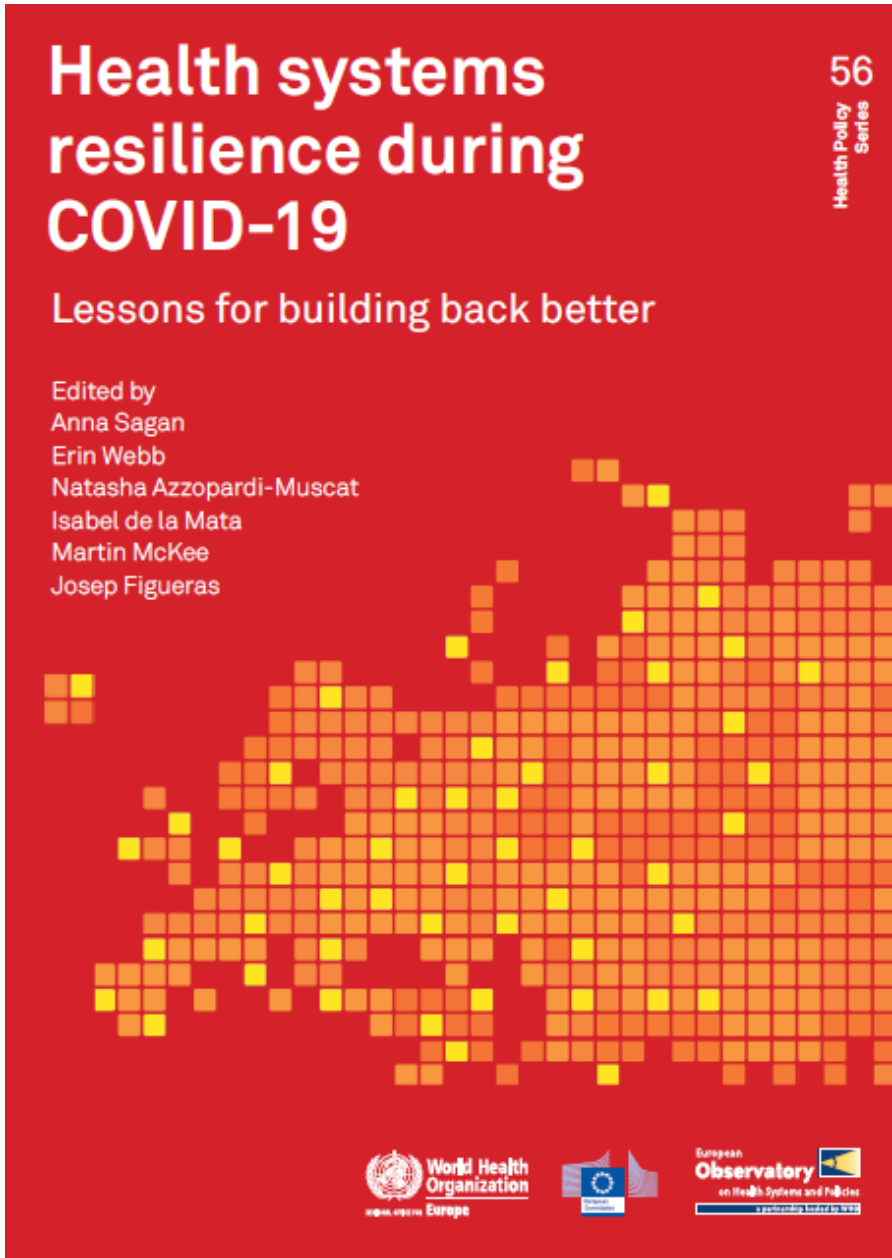
Table 1.1 *Responding to COVID-19: 20 key strategies to enhance resilience*

LEADING AND GOVERNING THE COVID-19 RESPONSE	
Strategy 1	Steering the response through effective political leadership
Strategy 2	Delivering a clear and timely COVID-19 response strategy
Strategy 3	Strengthening monitoring, surveillance and early warning systems
Strategy 4	Transferring the best available evidence from research to policy
Strategy 5	Coordinating effectively within (horizontally) and across (vertically) levels of government
Strategy 6	Ensuring transparency, legitimacy and accountability
Strategy 7	Communicating clearly and transparently with the population and stakeholders
Strategy 8	Involving nongovernmental stakeholders including the health workforce, civil society and communities
Strategy 9	Coordinating the COVID-19 response beyond national borders
FINANCING COVID-19 SERVICES	
Strategy 10	Ensuring sufficient and stable funds to meet needs
Strategy 11	Adapting purchasing, procurement and payment systems to meet changing needs and balance economic incentives
Strategy 12	Supporting universal health coverage and reducing barriers to services
MOBILIZING AND SUPPORTING THE HEALTH WORKFORCE	
Strategy 13	Ensuring an adequate health workforce by scaling-up existing capacity and recruiting additional health workers
Strategy 14	Implementing flexible and effective approaches to using the workforce
Strategy 15	Ensuring physical, mental health and financial support for health workers
STRENGTHENING PUBLIC HEALTH INTERVENTIONS	
Strategy 16	Implementing appropriate nonpharmaceutical interventions and Find, Test, Trace, Isolate and Support (FTTIS) services to control or mitigate transmission
Strategy 17	Implementing effective COVID-19 vaccination programmes
Strategy 18	Maintaining routine public health services
TRANSFORMING DELIVERY OF HEALTH SERVICES TO ADDRESS COVID-19 AND OTHER NEEDS	
Strategy 19	Scaling-up, repurposing and (re)distributing existing capacity to cope with sudden surges in COVID-19 demand
Strategy 20	Adapting or transforming service delivery by implementing alternative and flexible patient care pathways and interventions and recognizing the key role of primary health care



Strategy no 17 – implementing effective Covid-19 vaccination programmes

- 20 strategies (overlapping)
- Quantitative and qualitative analyses – a perfect tandem
- Remember the meaning of context and quality of resources
- Success of C19 vacc. campaigns in other countries:
  - strong government guidance
  - good distribution systems
  - trust in vaccines
  - clear communication on the vaccine importance
  - different vaccine choices
  - good health care system etc. etc.

… GOOD LUCK!!!

References

- Sagan A. et al., *Health systems resilience during COVID-19: Lessons for building back better*, WHO Regional Office for Europe on behalf of the European Observatory on Health Systems and Policies, 2021. Available at: https://eurohealthobservatory.who.int/publications/i/health-systems-resilience-during-covid-19-lessons-for-building-back-better
- Thomas S, Sagan A, Larkin J, Cylus J, Figueras J, Karanikolos M. *Strengthening health systems resilience: Key concepts and strategies*. Policy Brief 36. Copenhagen: WHO Regional Office for Europe on behalf of the European Observatory on Health Systems and Policies, 2020. Available at: https://apps.who.int/iris/handle/10665/332441
- Davies P., Chapman S., Leask J. (2002*). Antivaccination activists on the world wide web*. Archives of Disease in Childhood, 87(1): 22–25.
- Regional Committee for Europe, 71st session. (2021). Seventy-first Regional Committee for Europe: virtual session, 13–15 September 2021: response to the COVID-19 pandemic: lessons learned to date from the WHO European Region. World Health Organization. Regional Office for Europe. https://iris.who.int/handle/10665/343157
- Kenneth J. Arrow, *Uncertainty and the Welfare Economics of Healthcare*, AER vo. 53 (5), 1963, p. 941-973
- May be helpful:
  - https://eurohealthobservatory.who.int/publications/studies
  - https://eurohealthobservatory.who.int/monitors/hsrm/

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All solutions have to be sent to wec@wne.uw.edu.pl

Before 16:00 Sunday 12th of May 2024

GOOD LUCK!!!

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LET THE COMPETITION BEGIN!

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