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Monitoring Antimicrobial Use and Perception in the Context of One Health on Polish and German Internet

Andrzej Jarynowski^{1,2} Vitaly Belik¹

- 1) System Modeling Group, Institute of Veterinary Epidemiology and Biostatistics,
Freie Universität Berlin, Germany
- 2) Interdisciplinary Research Institute, Wrocław, Poland

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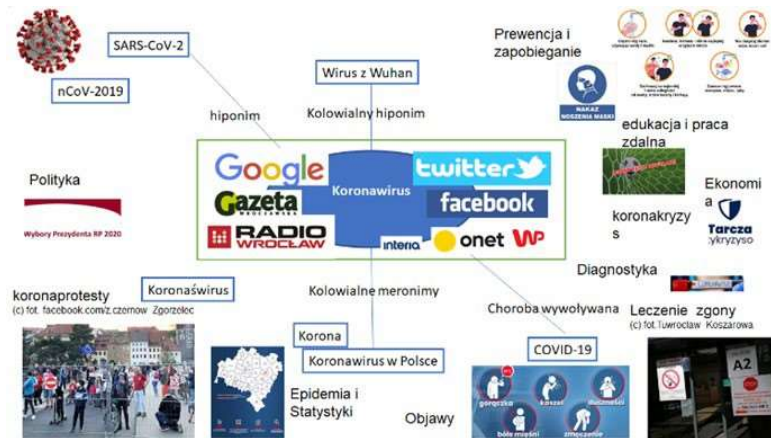
Outline



- 1) Introduction to infodemiology and infoveillance (the traditional and social-content media on the Internet)**
 - 2) Examples then infodemiological supporting and supplementing traditional ONE public health repertoire as well could suppress traditional medical research methods.
 - AMU in Poland and Germany in last 4 years
 - Pesticides in grains in April 2023 in Poland
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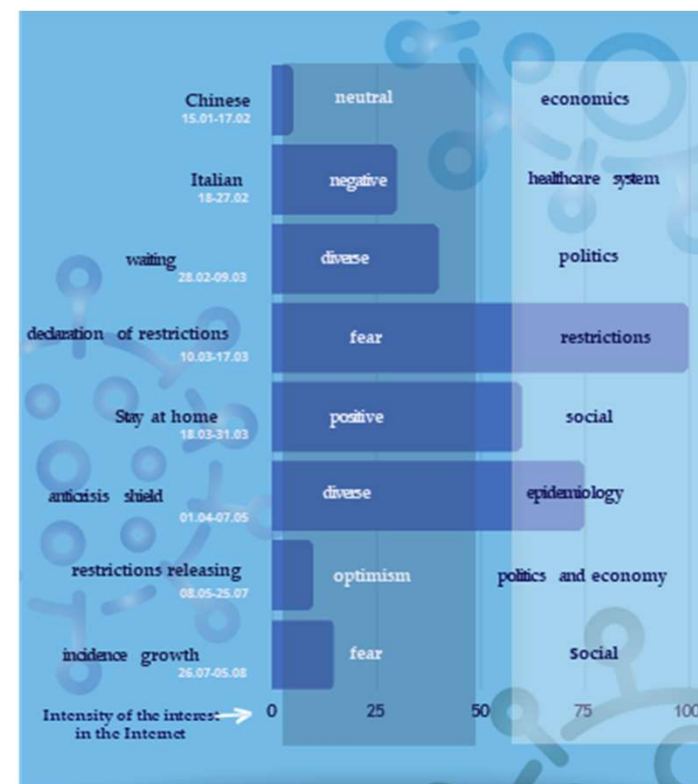
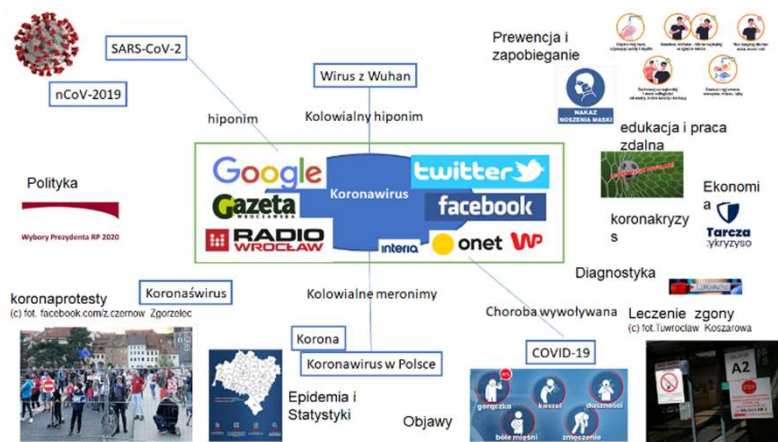
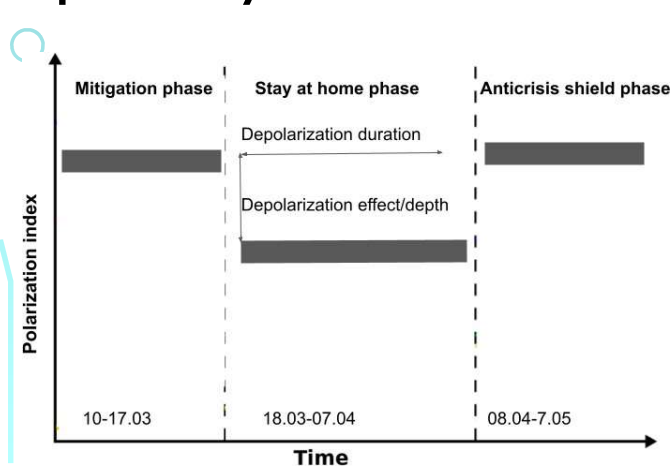
INTRODUCTION TO INFODEMIOLOGY AND INFOVEILLANCE (THE TRADITIONAL AND SOCIAL-CONTENT MEDIA ON THE INTERNET IN FIELD OF EPIDEMIOLOGY)



INFODEMIOLOGY

Infodemiology is concerned with the study of the demand (e.g. search engine queries) and supply (social media content creation or commenting) trajectory of information, which was strongly articulated during the COVID-19 pandemic.

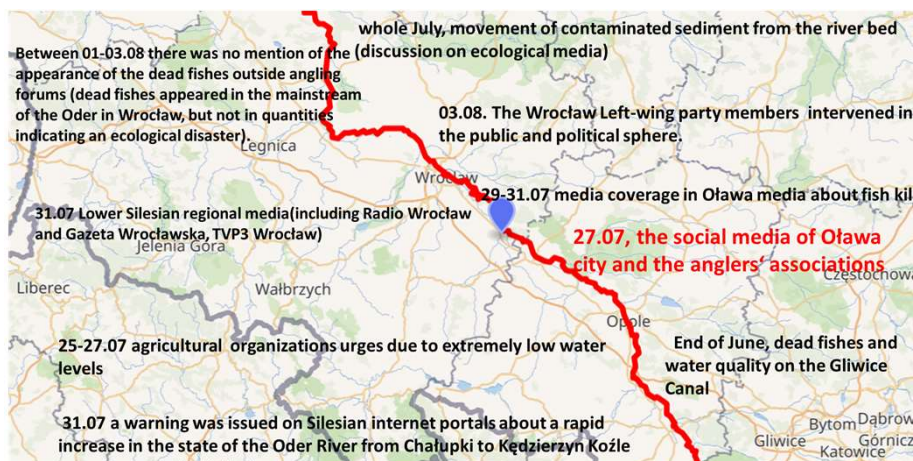
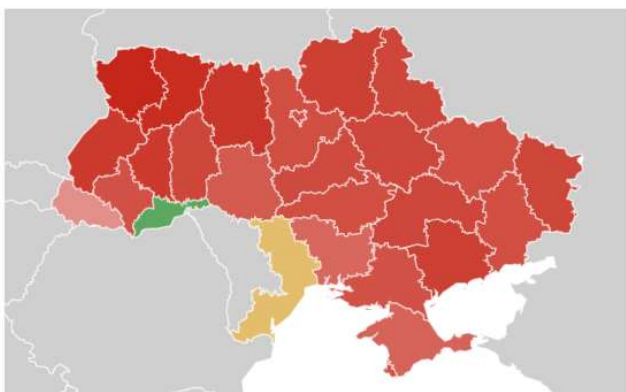
Monitoring actual (real-time) and declarative attitudes should, in the WHO's view, be a priority for local decision-makers.



INFOVEILLANCE

Epidemiological surveillance deals with the analysis of web content to predict medical phenomena. Its most important advantage is the possibility of early warning (e.g. participatory reporting), or forecasting or improving estimators of incidence, prevalence or complications. Moving syndromic surveillance to the internet has great relevance (estimating the scale of health problems, early warning of events).



● Slovakia ● Poland ● Moldova ● Romania ● Hungary





INFODEMIOLOGY AS SUPPORTING TOOL FOR PUBLIC HEALTH



- ▶ Measuring the social interest in/around SARS-CoV-2 and COVID-19 in the Internet media during the epidemic
 - ▶ Quantifying dynamics of interest (demand and supply of content) and discourse patterns
 - ▶ Internet as a digital footprint of social activities (secondary document analysis)
 - ▶ Media Analysis of the social processes. SEO-marketing solutions as Brand24, SentiOne, SoTrender (used by Infodemic management by WHO)
 - ▶ World Organisation for Animal Health and JRC use MedSYS, FAO uses PadiWeb mining engines
 - ▶ Influence of foreign intelligence
 - ▶ Serves as a complement to longitudinal surveys monitoring public perception (and other socio-economic methods) in REAL TIME
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TOOLS



Using content in Polish with the help of monitors:

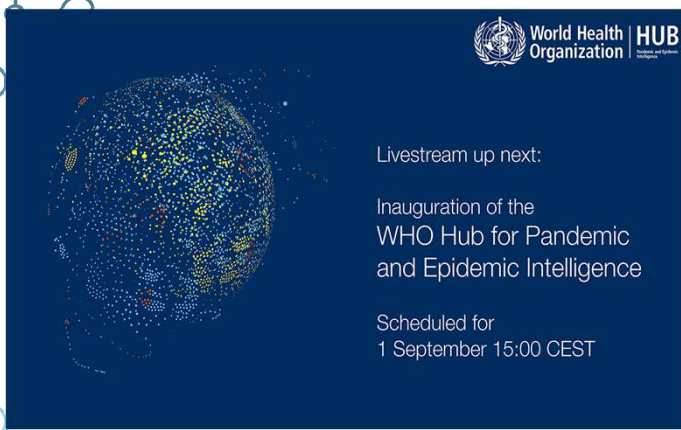
- Buzzsumo, **EventRegistry**, Medisys, Frazeo (language corpus) – traditional media
- **Brand24**/SentiOne (**Facebook**, Instagram, Tiktok, Telegram, local media)
- **Twitter API**, EPITweetr-ECDC
- **Google trends**
- Youtube stats/comments
- Wikipedia stats

some aspects of One Health importance are discussed.

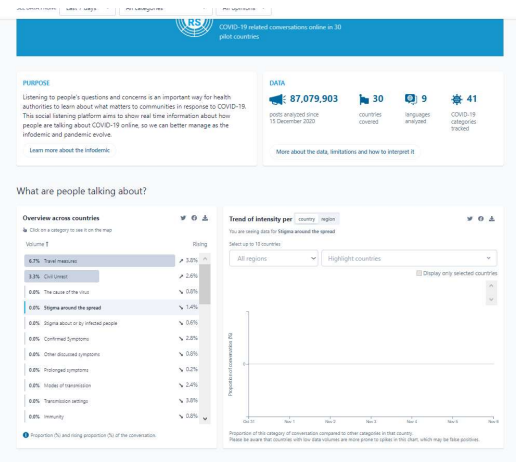


WHO Infodemiological intelligence

Part of Hub for Pandemic and Epidemic Intelligence in Berlin



Livestream up next:
Inauguration of the WHO Hub for Pandemic and Epidemic Intelligence
Scheduled for 1 September 15:00 CEST



COVID-19 related conversations online by 10 pilot countries

PURPOSE
Listening to people's questions and concerns is an important way for health authorities to learn about what matters to communities in response to COVID-19. This social listening platform aims to show real-time information about how people are talking about COVID-19 online, so we can better manage as the infodemic and pandemic evolve.

DATA
posts engaged since 15 December 2020: 87,079,903
countries covered: 30
languages analyzed: 9
COVID-19 categories tracked: 41

Learn more about the infodemic. | More about the data, limitations and how to interpret it.

What are people talking about?

Overview across countries

Topic	Volume %	Rating
Trend: measles	5.7%	3.8%
Chikungunya	3.3%	2.6%
The value of the virus	0.6%	0.5%
Stigma around the spread	0.5%	1.4%
Stigma about or by infected people	0.5%	0.5%
Confirmed symptoms	0.5%	2.2%
Over-discussed symptoms	0.5%	0.5%
Prolonged symptoms	0.5%	0.2%
Mode of transmission	0.5%	2.4%
Transmission settings	0.5%	3.6%
Innately	0.5%	0.5%

Trend of intensity per country, region

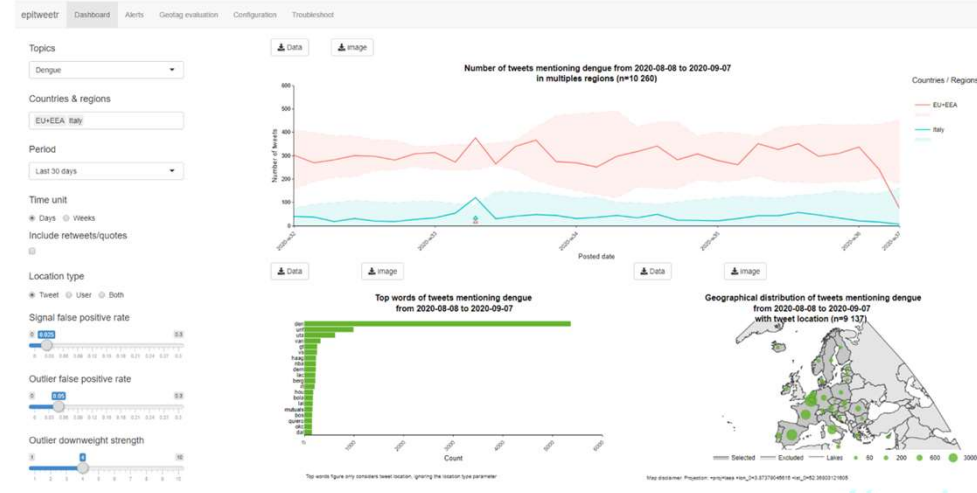
Proportion of this category of conversations compared to other categories in that country. Please be aware that country with low data volume are more prone to appear in this chart, which may be false positive.

ECDC Infodemiological intelligence

<https://joinup.ec.europa.eu/collection/open-source-observatory/news/searching-infectious-diseases-open-source>

<https://www.who.int/news/item/01-09-2021-who-germany-open-hub-for-pandemic-and-epidemic-intelligence-in-berlin>

<https://www.who-ears.com/#/>



epitwitter Dashboard Alerts Geotag evaluation Configuration Troubleshoot

Topics: Dengue

Countries & regions: EU+EEA, Italy

Period: Last 30 days

Time unit: Days, Weeks

Include retweets/quotes: []

Location type: Tweet, User, Both

Signal false positive rate: 0.88

Outlier false positive rate: 0.88

Outlier downweight strength: 16

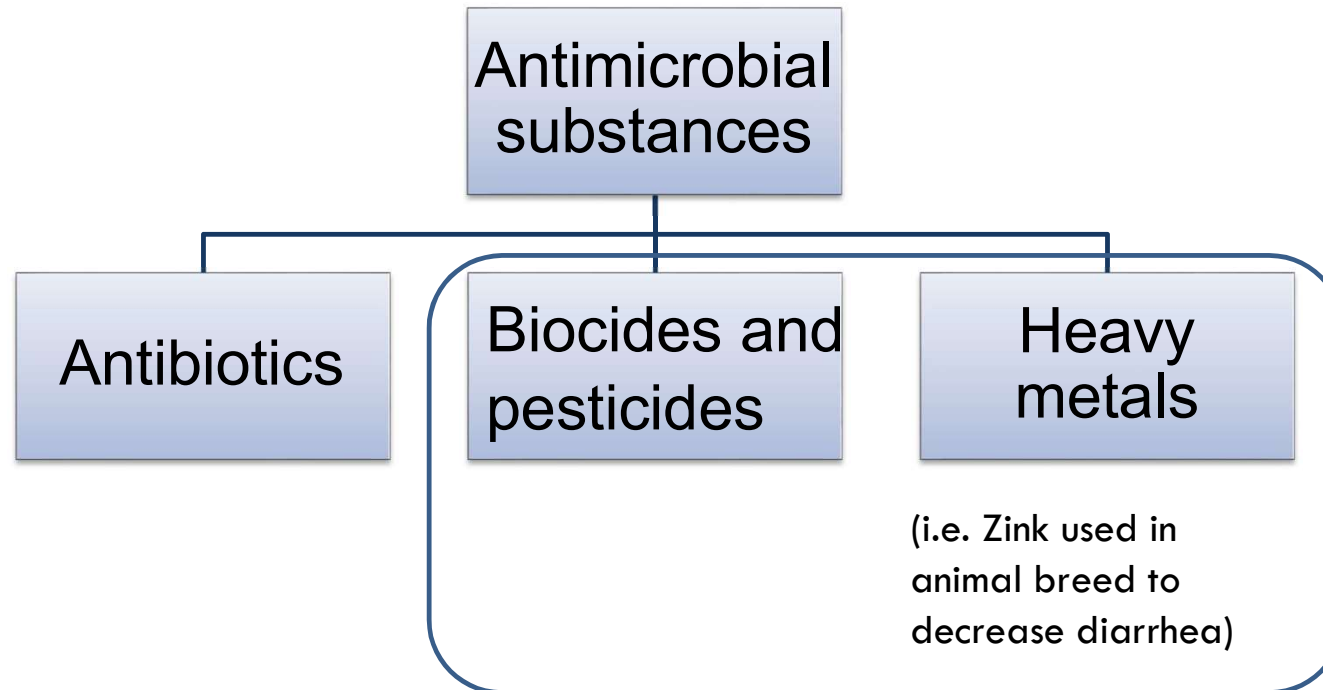
Number of tweets mentioning dengue from 2020-08-08 to 2020-09-07 in multiples regions (n=10 260)

Number of tweets mentioning dengue from 2020-08-08 to 2020-09-07 with target location (n=9 137)

Top words of tweets mentioning dengue from 2020-08-08 to 2020-09-07

Geographical distribution of tweets mentioning dengue from 2020-08-08 to 2020-09-07 with target location (n=9 137)

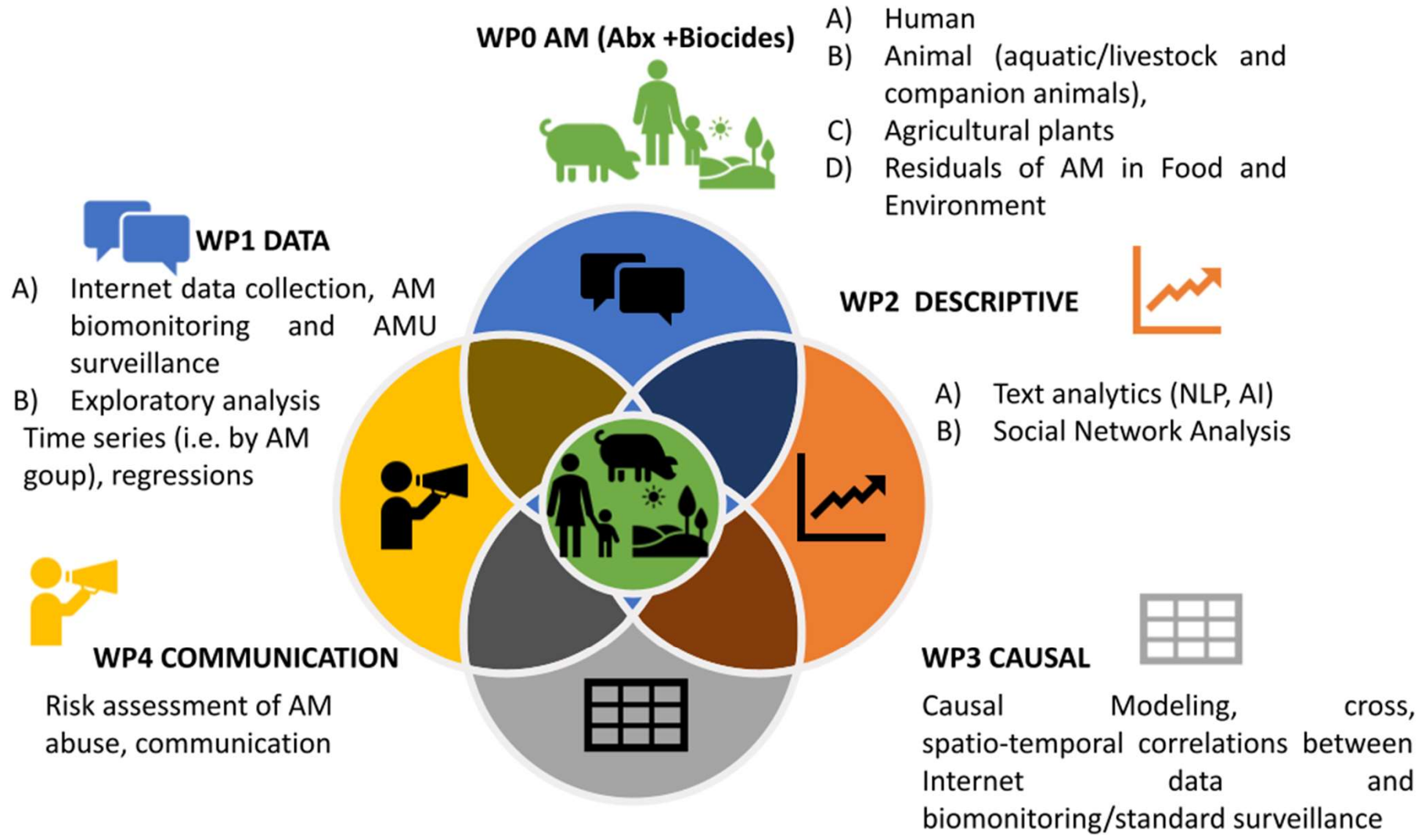
ANTIMICROBIAL SUBSTANCES

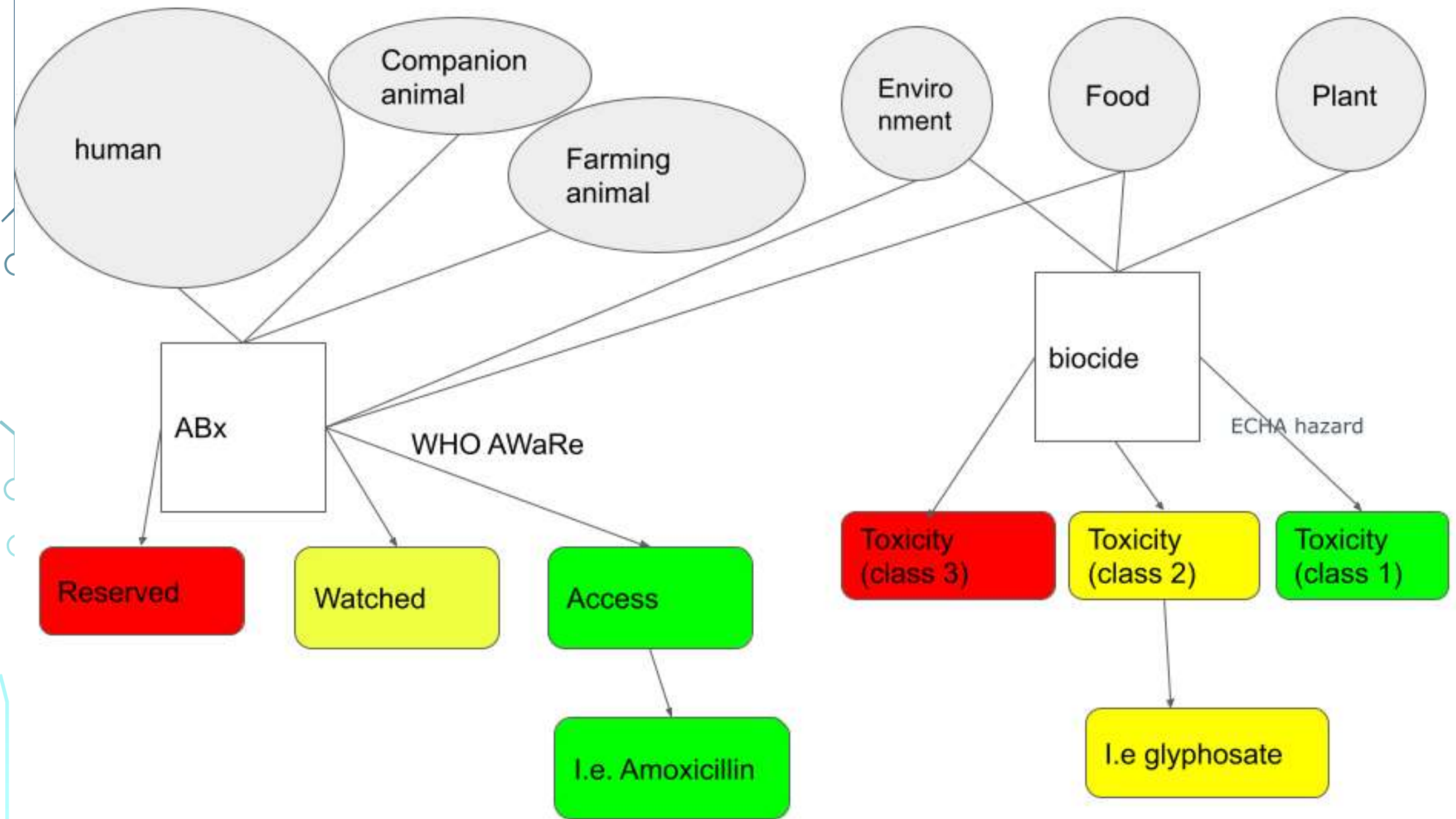


- a chemical that inactivates or inhibits microorganisms
- used therapeutically

- a chemical that usually inactivates Microorganisms)
- NOT used therapeutically, but in profilaxis and metalaxies
- Used for disinfections

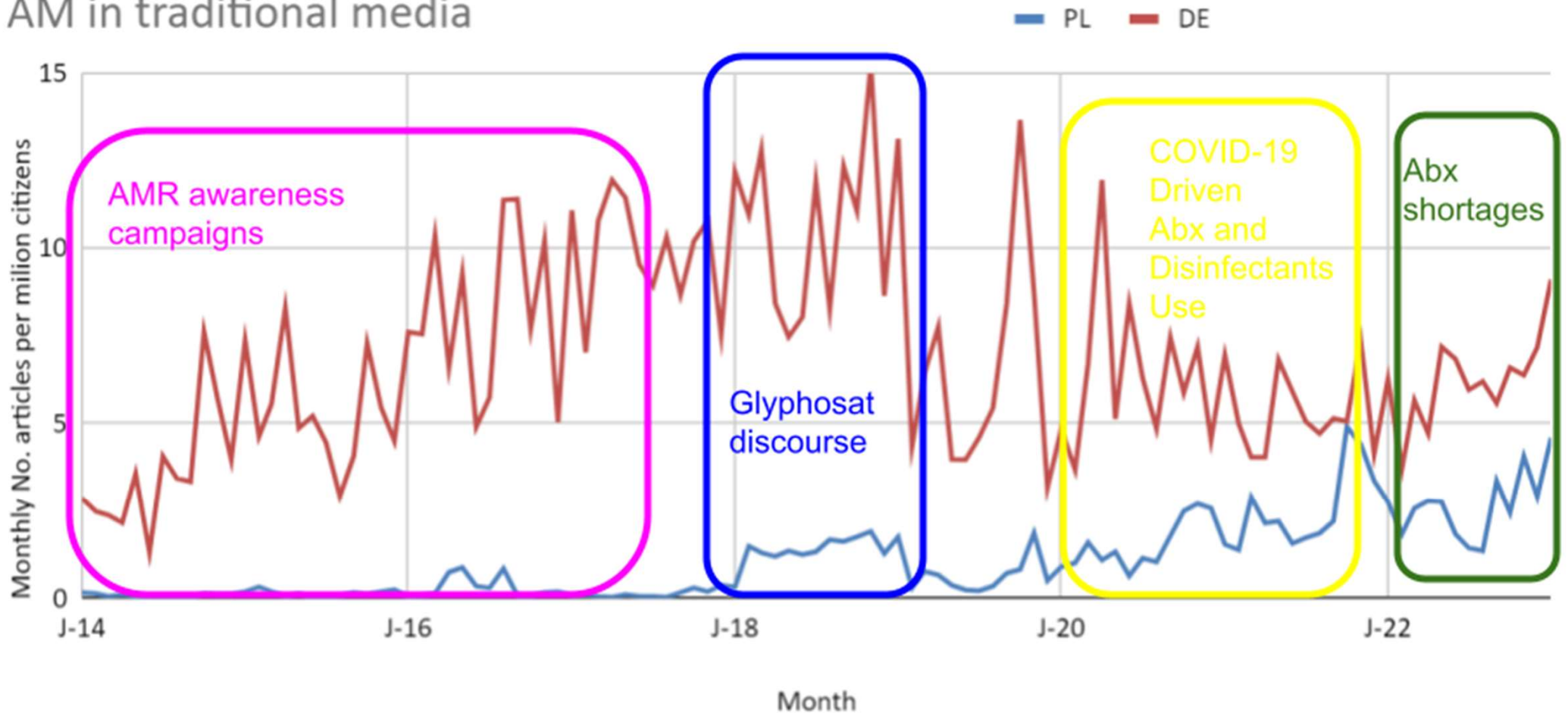
Monitoring Antimicrobial Use and Perception via the Internet in One Health Context



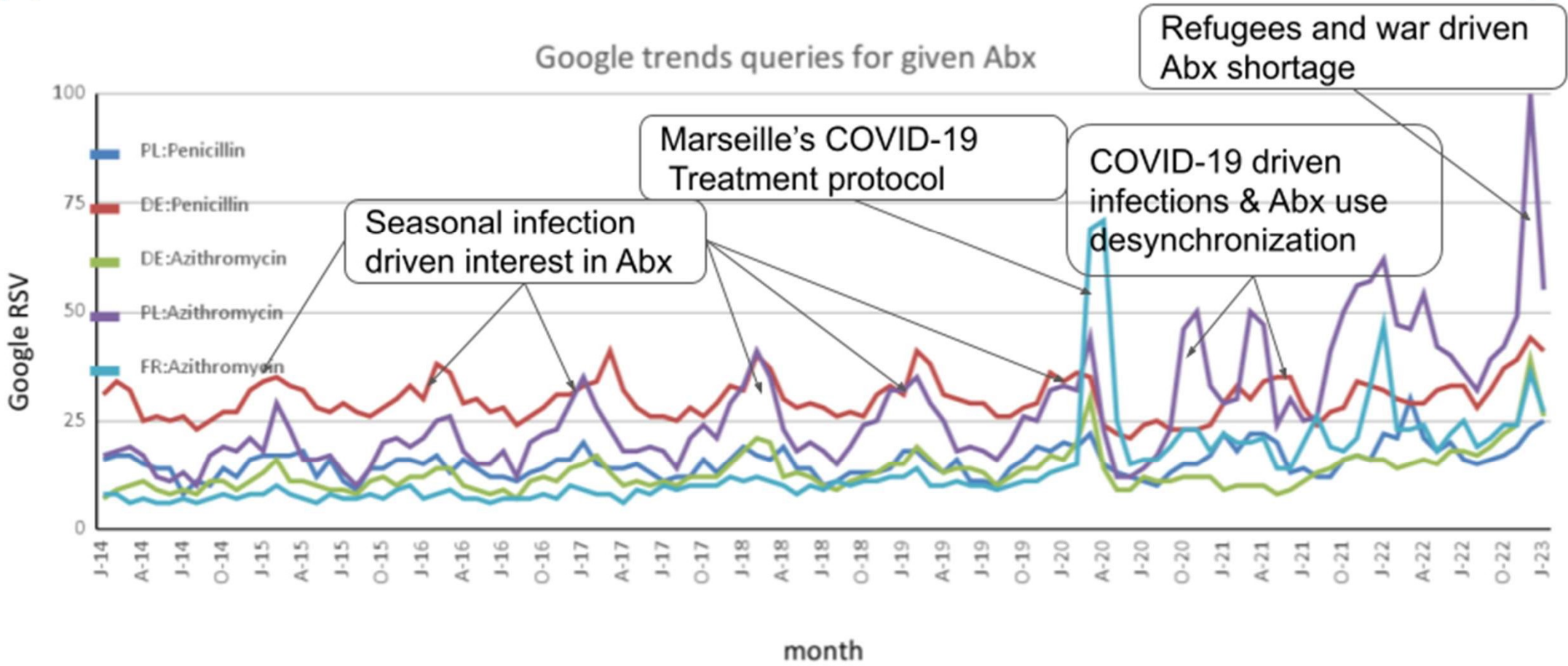


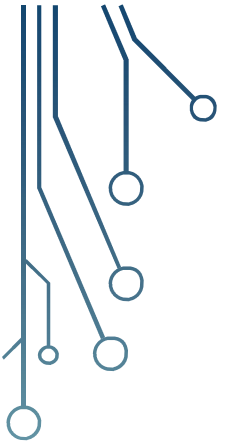
Comparison of intensity and topics dynamics between Poland and Germany in traditional media based on Event Registry data. ABX resistance is more often discussed in Germany than Poland. The peak of interest in 2018 in Germany is driven by the biocide-glyphosat topic).

AM in traditional media

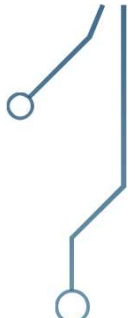


Google trends for various groups of ABX in different countries


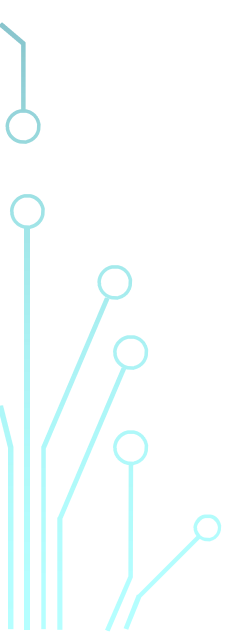




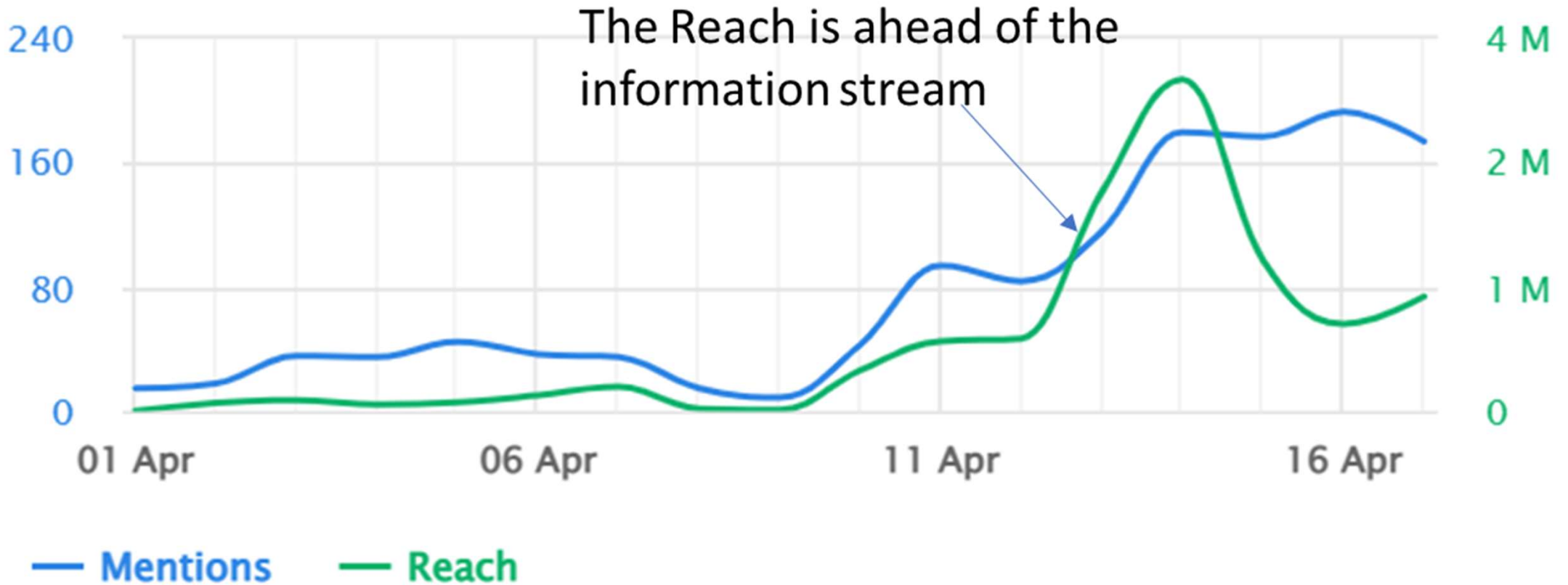
Let's look "ad hoc" at the course of interest in the phrases "food security", "poisoned grain" or "pesticides" in the Polish Internet in the context of food.



It's necessary to separate the layer of the real problem of Polish farmers from polarizing information activities. We focus only on the media coverage in the context of food security. In addition, it should be emphasized that it was the period of Orthodox Easter (April 14-17), which on the one hand explained the slowdown of negotiations on the Ukrainian side, but also Russian propaganda relatively limited disinformation activities regarding Poland or Eastern Europe and focused on the issue of Ukrainian grain (including pesticides residual and its health consequences).

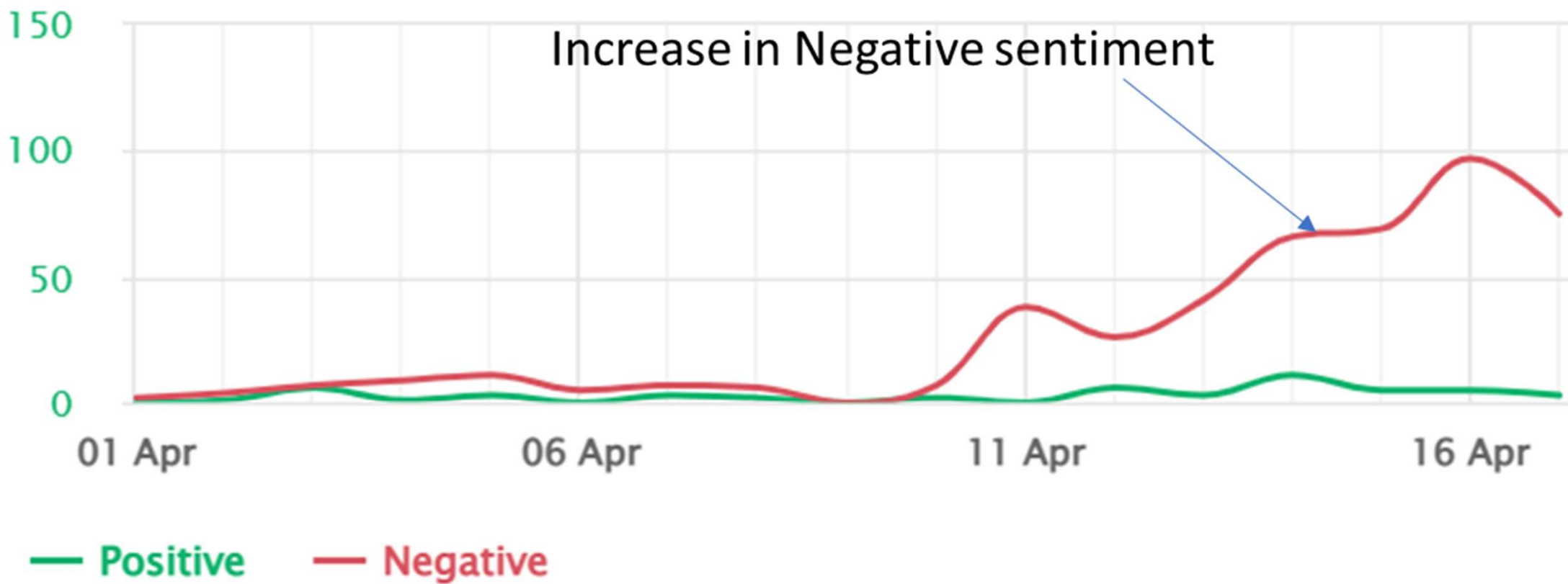


Course of interest in cereal food security in social media. Reach peak unnaturally around 14.04. the situation evolved rapidly and the topic quickly gained very large reach around 14.04, which then returned to the starting level on 16.04. Therefore, the involvement of bots, troll farms and agents of influence and other resonance tools in promoting the threat can be suspected.



Emotions in social media. Strong share of emotions with accumulation on April 14 and 16.

A particular concentration of negative emotions can be seen on April 14, i.e. before the express closure of borders for many food products from Ukraine to Poland, and again on April 16.



CONCLUSIONS



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► **Infodemiology is very useful** in understanding social dynamics during events a supplementary role to standard tools as surveys; The approach combines microbiology, veterinary, medical, plant research, sociological, political science, media research, and computational techniques to understand antimicrobial stewardship and the importance of listening to the media as crisis management tool.

► **Infoveillance could be useful** for ONE public health decision makers in some specific areas too (early detection of outbeaks, shortage of AM, or misuses of them)