

# COMMUNITY ENGAGEMENT FOR PUBLIC HEALTH INTELLIGENCE

**Daniela Paolotti**

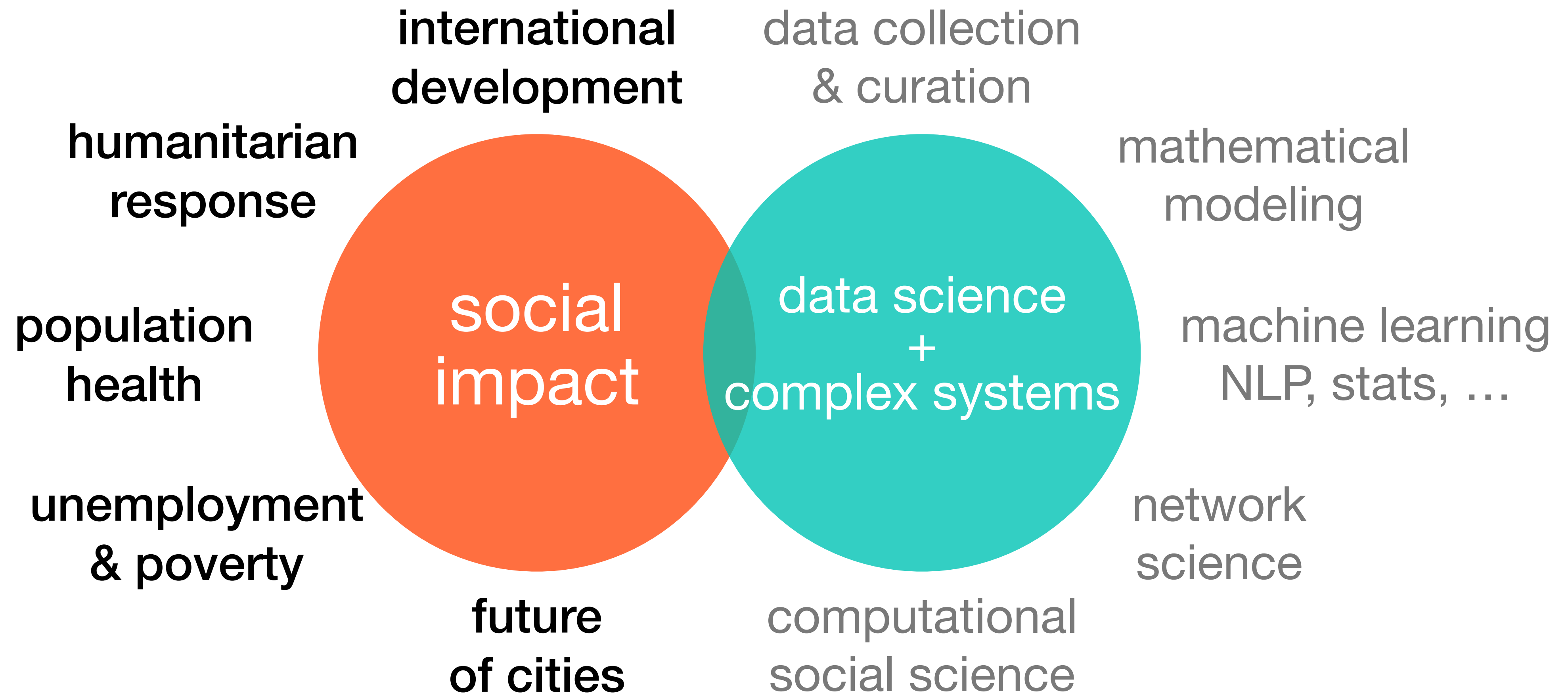
**ISI Foundation, Turin, Italy**

**[daniela.paolotti@isi.it](mailto:daniela.paolotti@isi.it)**

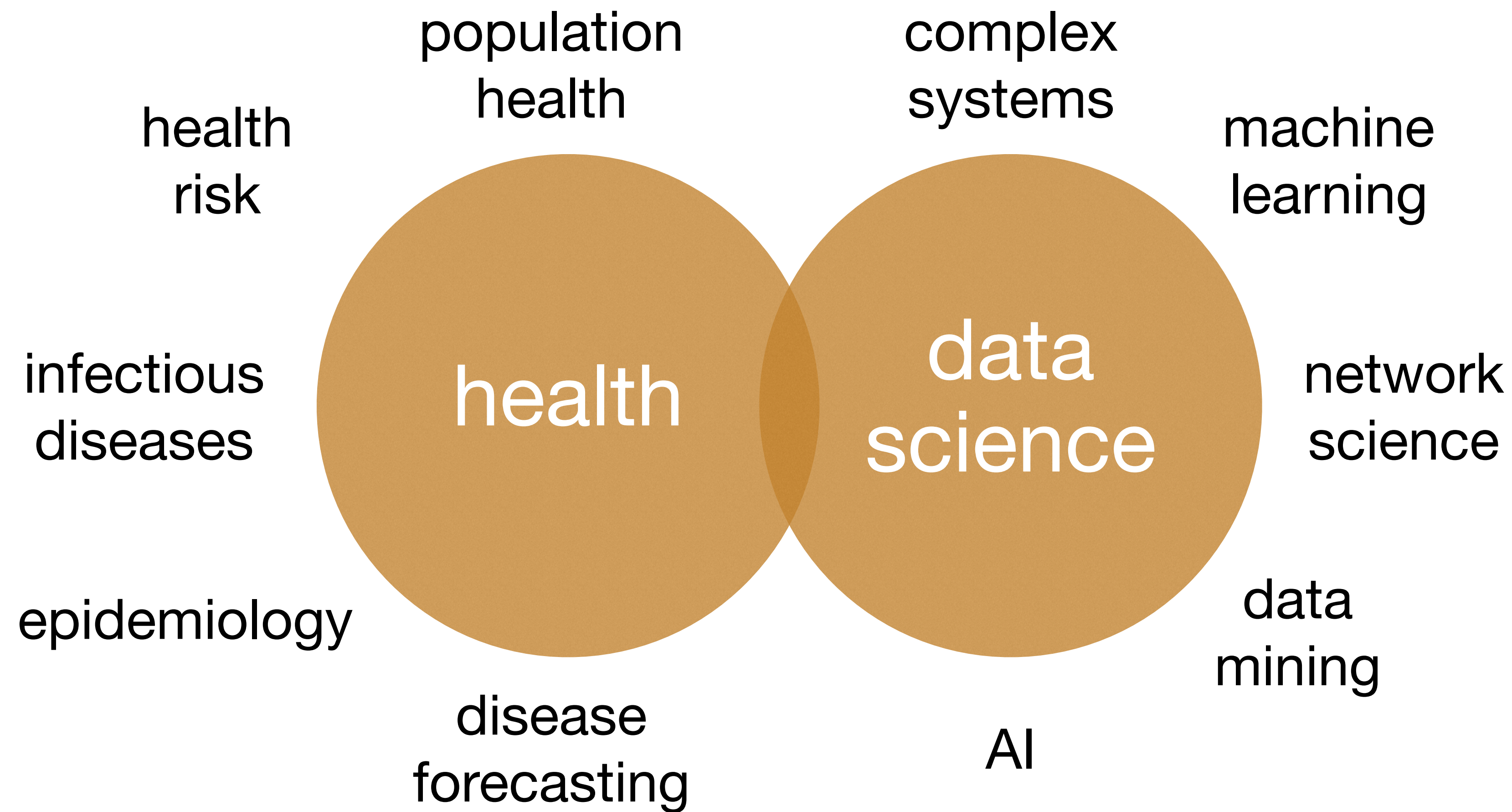
EIOS - GTM, December 11th 2024



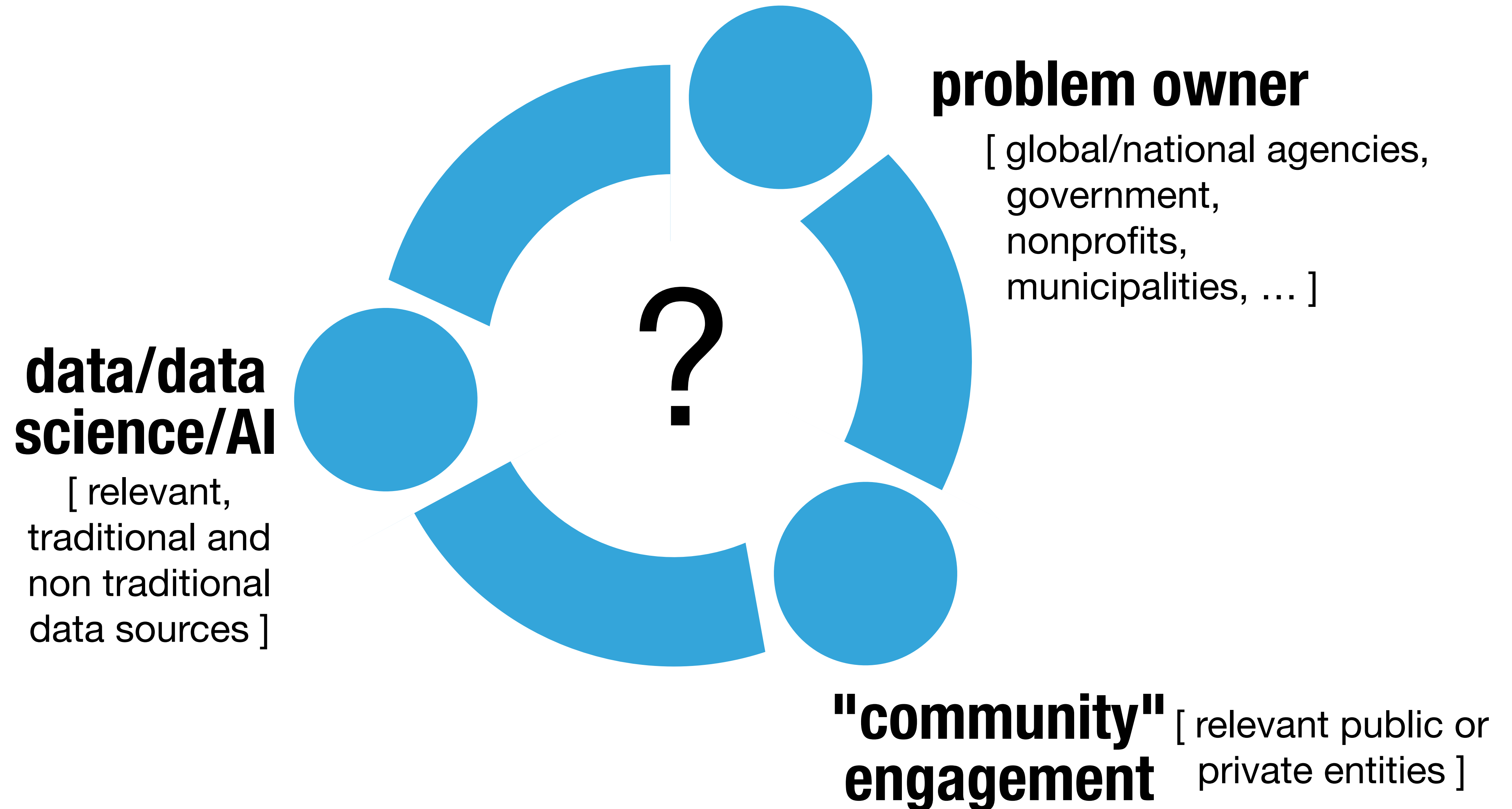
# AI AND DATA SCIENCE FOR SOCIAL IMPACT



# AI AND DATA SCIENCE FOR PUBLIC HEALTH

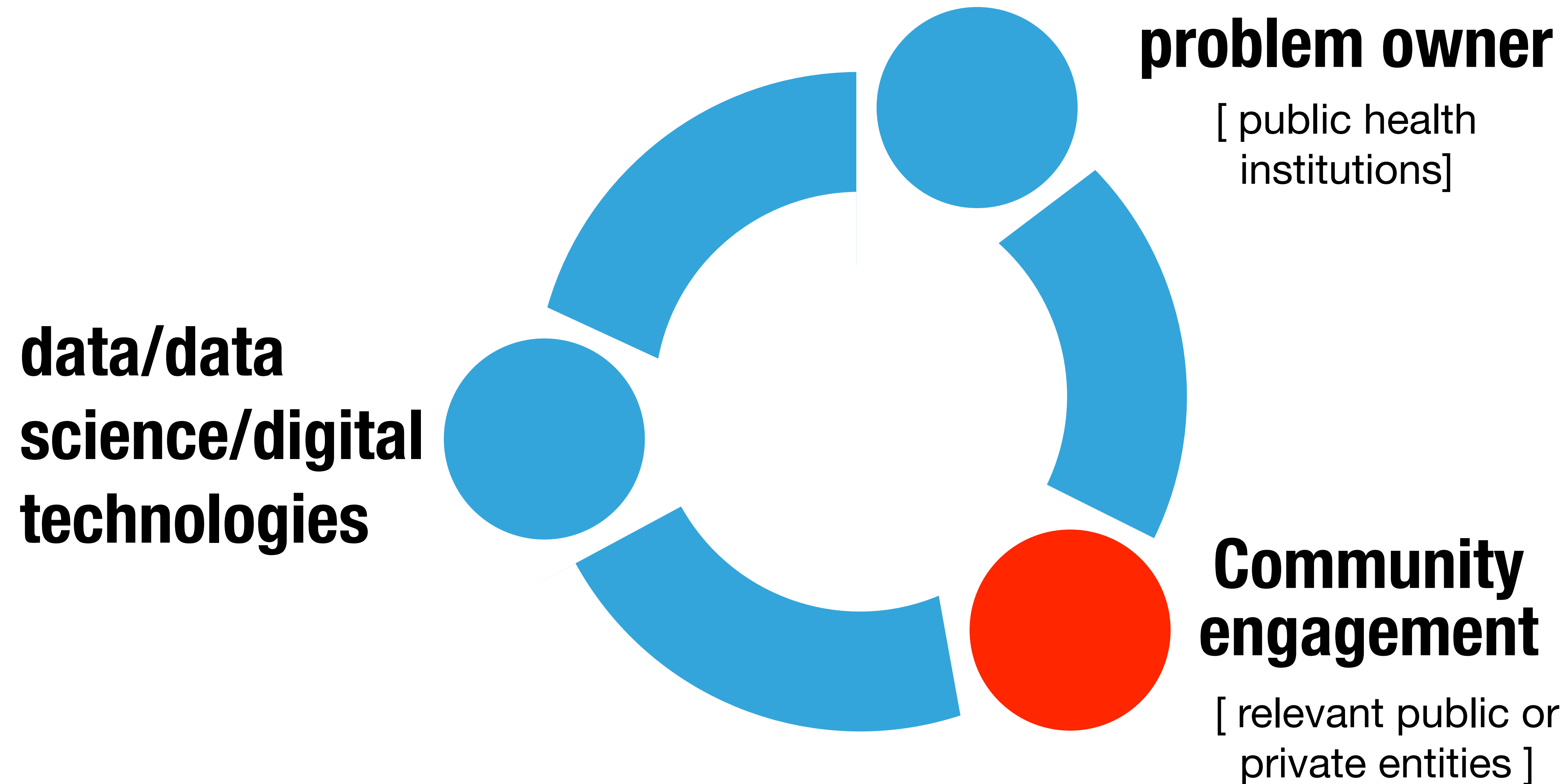


# CHALLENGE: COLLABORATION FOR SOCIAL IMPACT



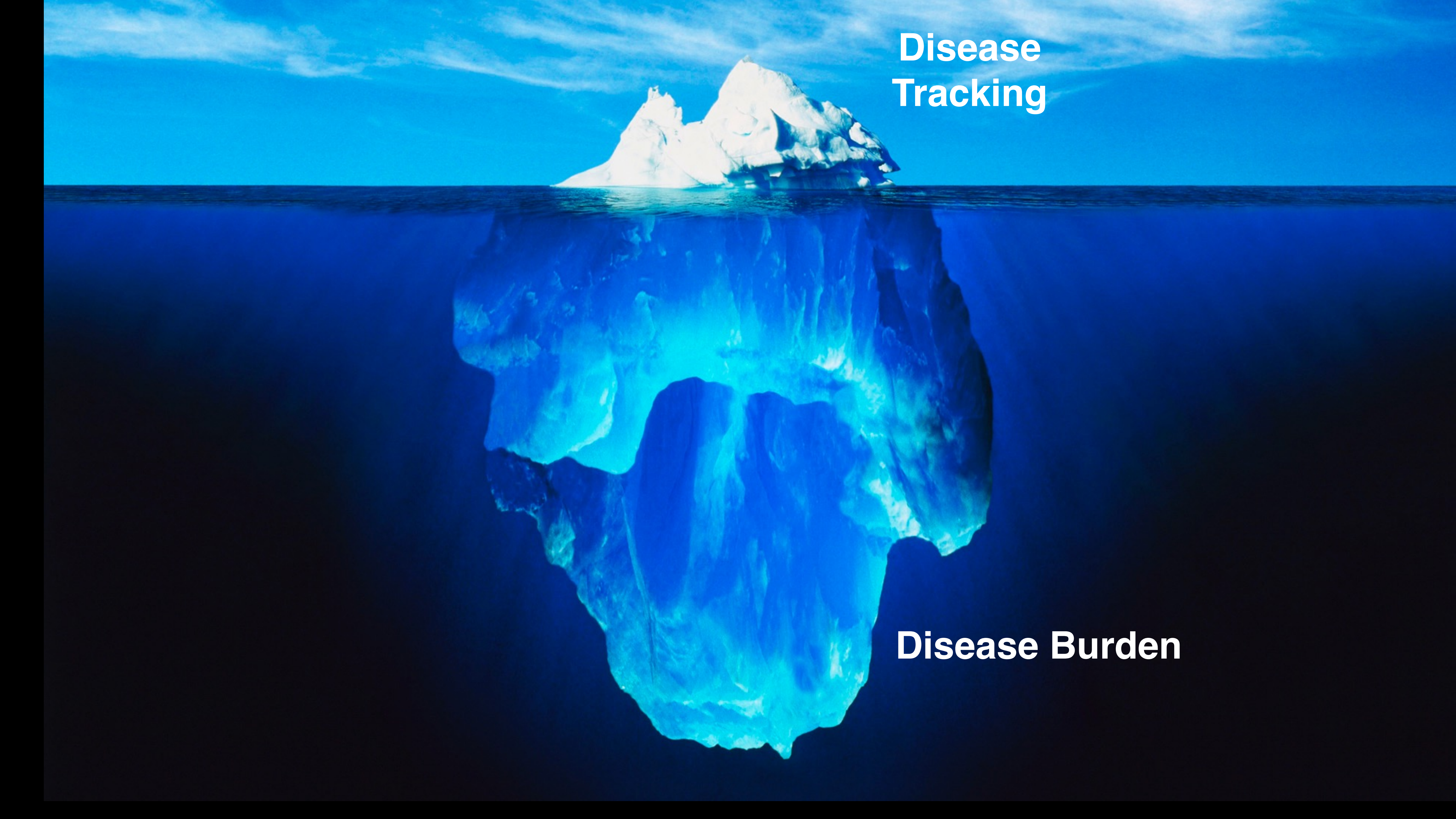


# @ ISI FOUNDATION - 2 CASE STUDIES







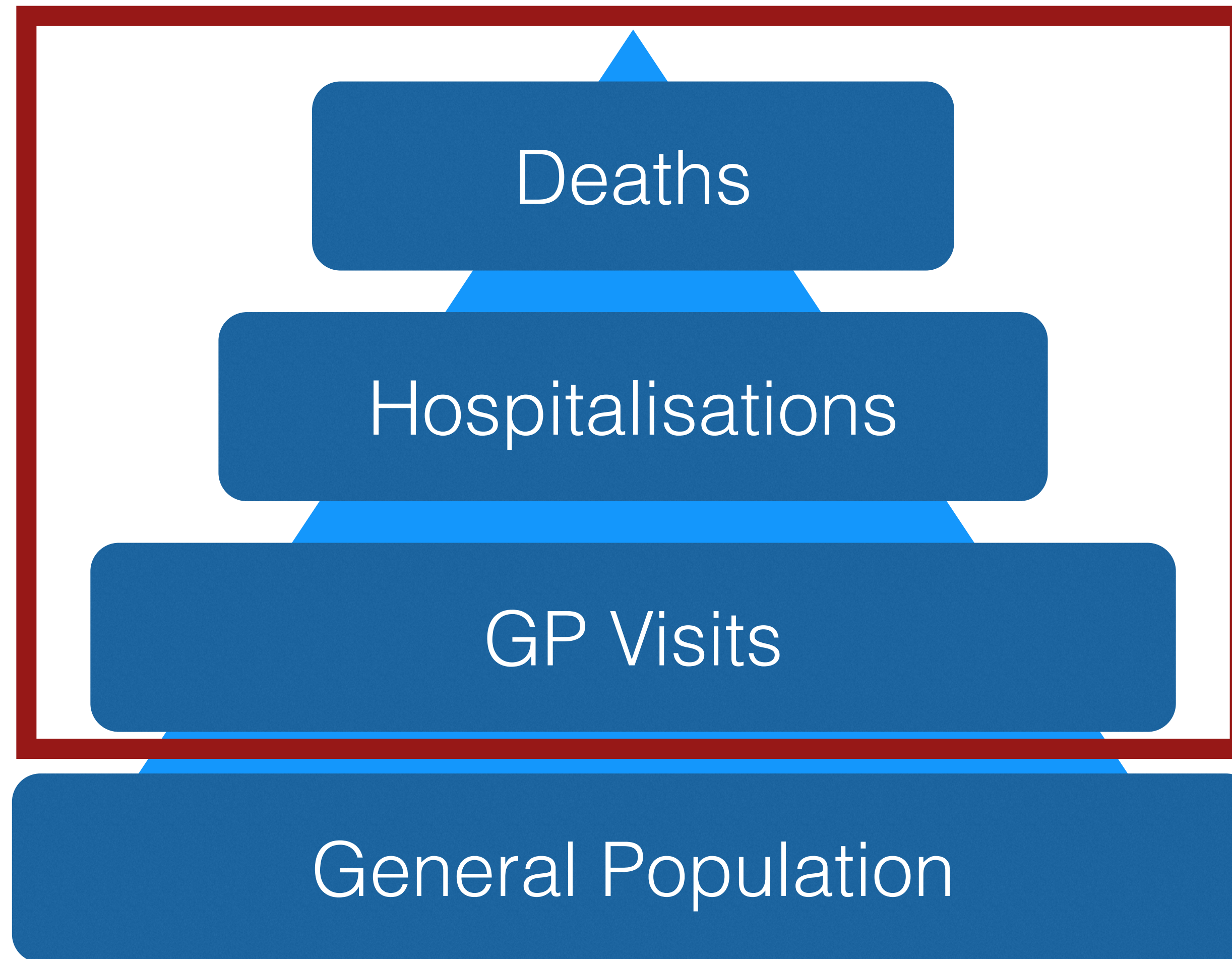
An iceberg floating in a dark blue ocean under a bright blue sky with wispy clouds. The visible tip of the iceberg is small and jagged, while the submerged portion is much larger and more complex in shape. The text 'Disease Tracking' is positioned above the water line, and 'Disease Burden' is positioned below the water line, both in white sans-serif font.

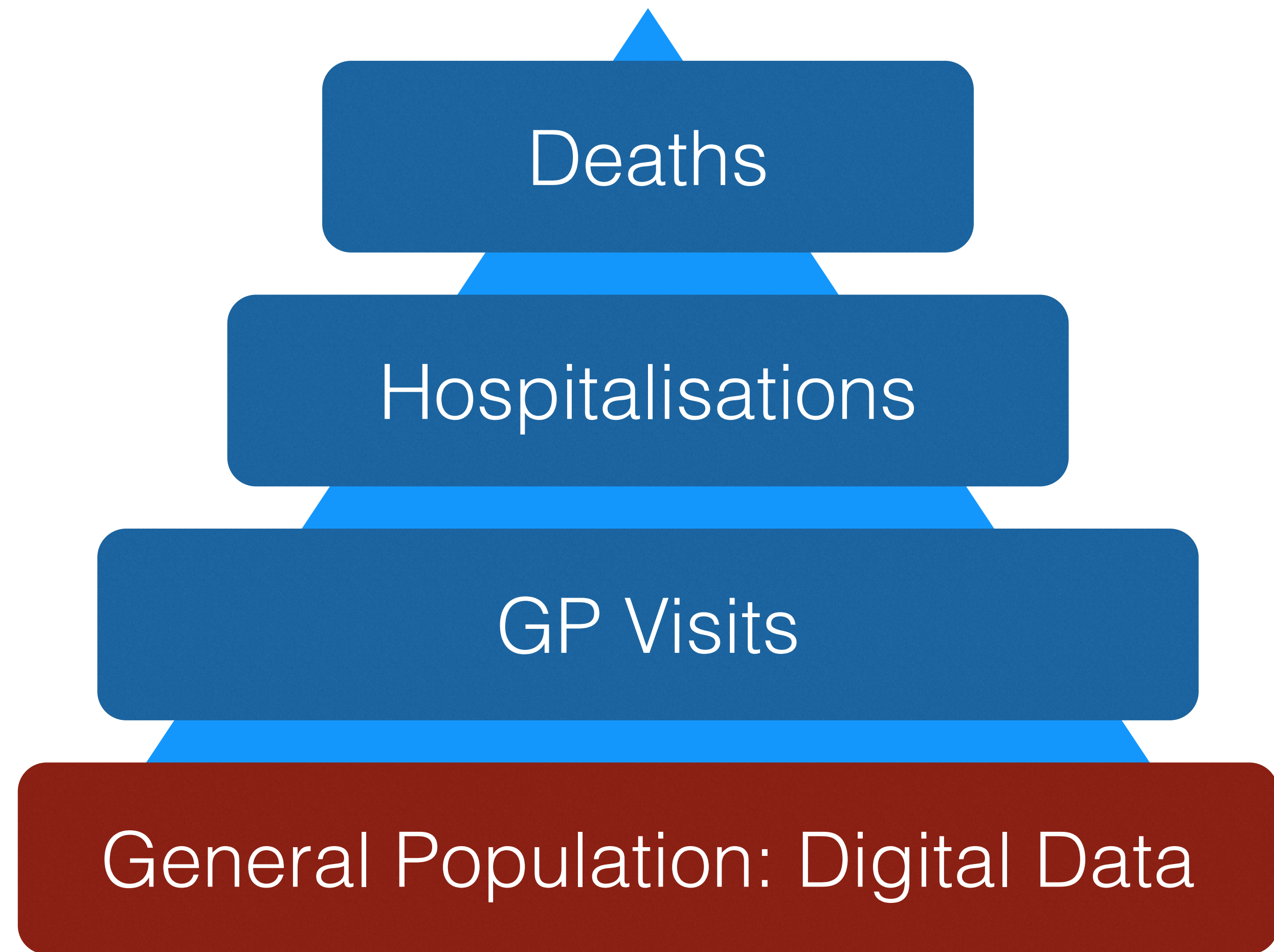
**Disease  
Tracking**

**Disease Burden**

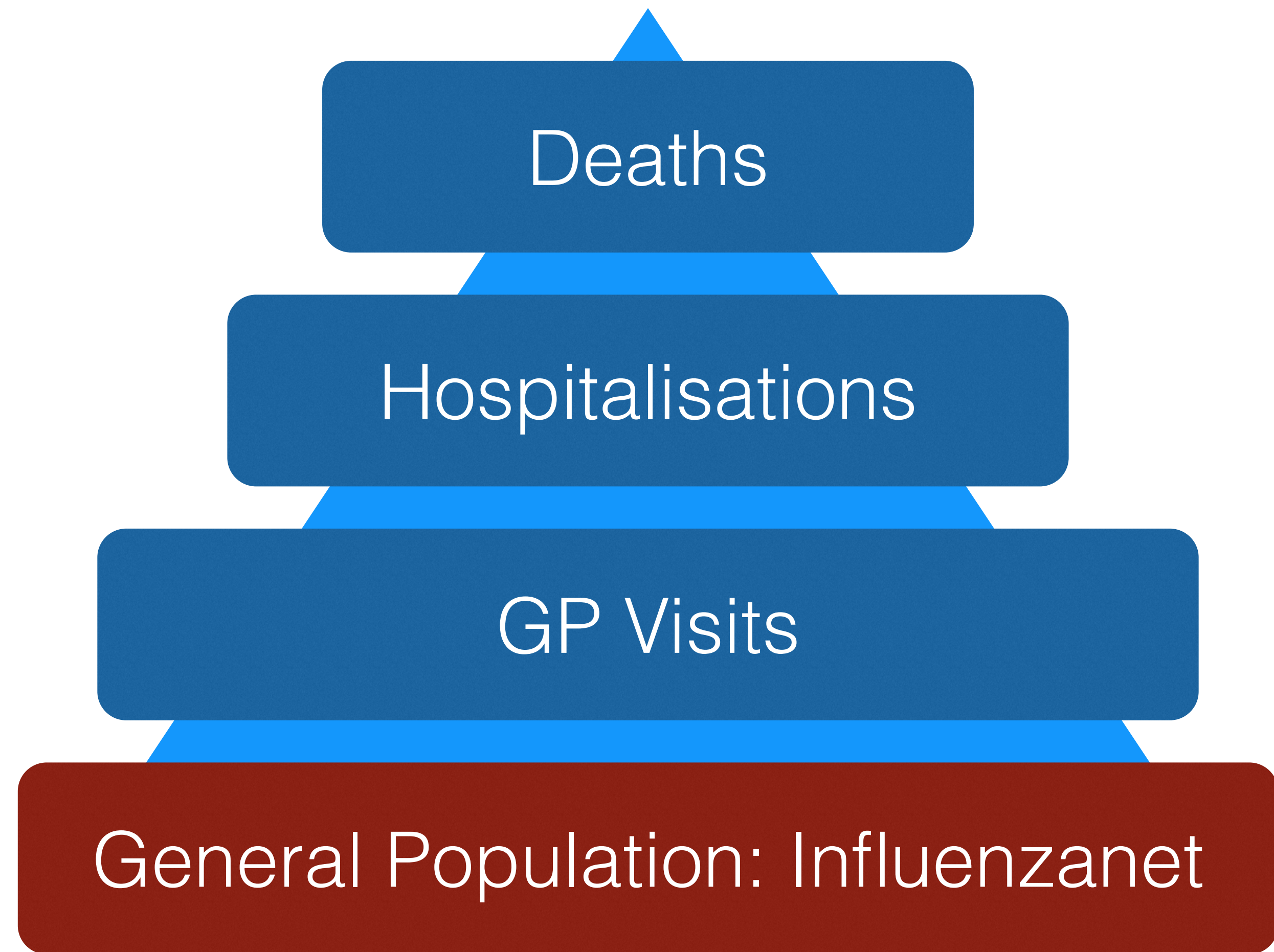


# Public Health Surveillance









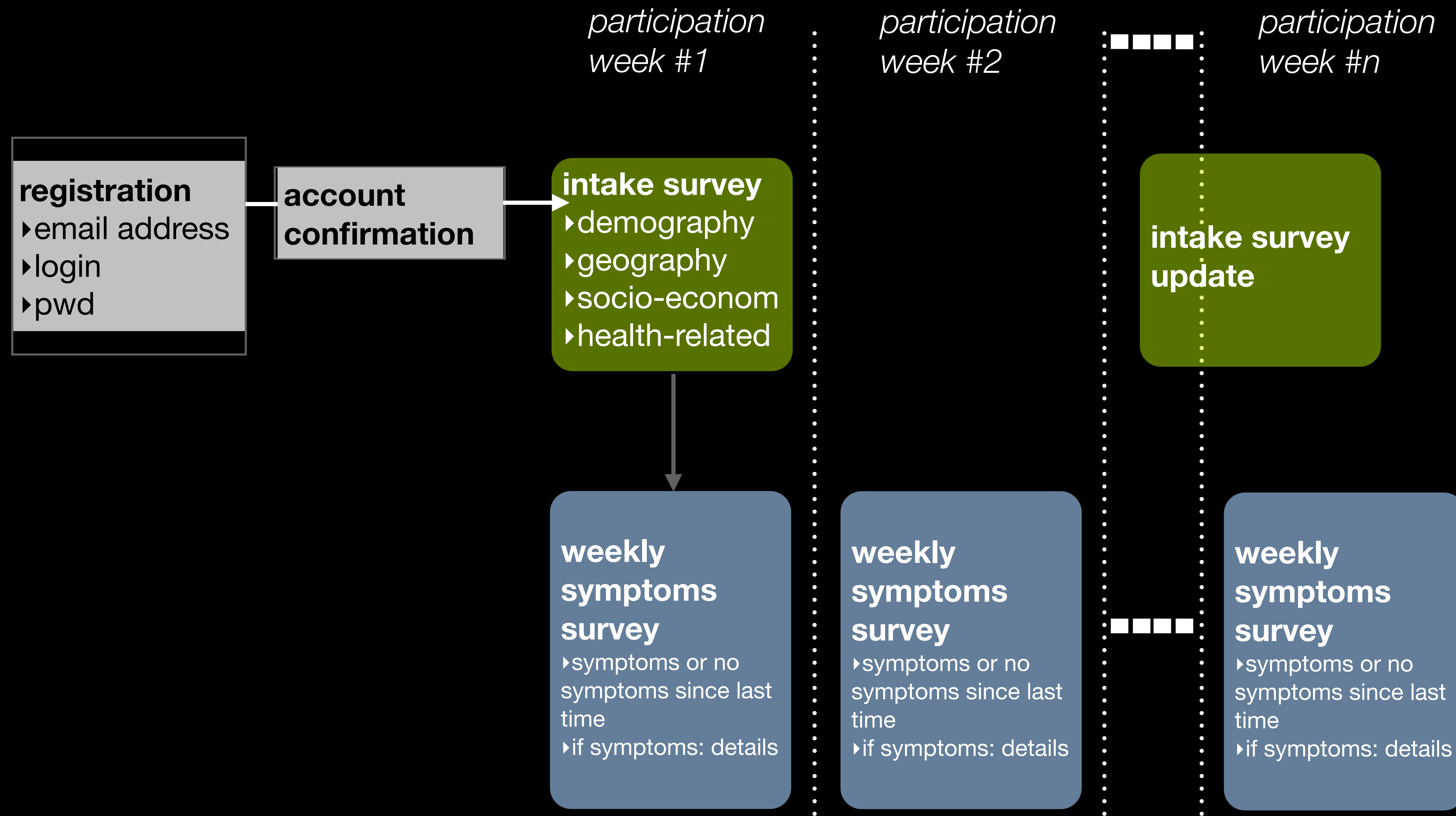


# INFLUENZANET.INFO





# INFLUENZANET study design

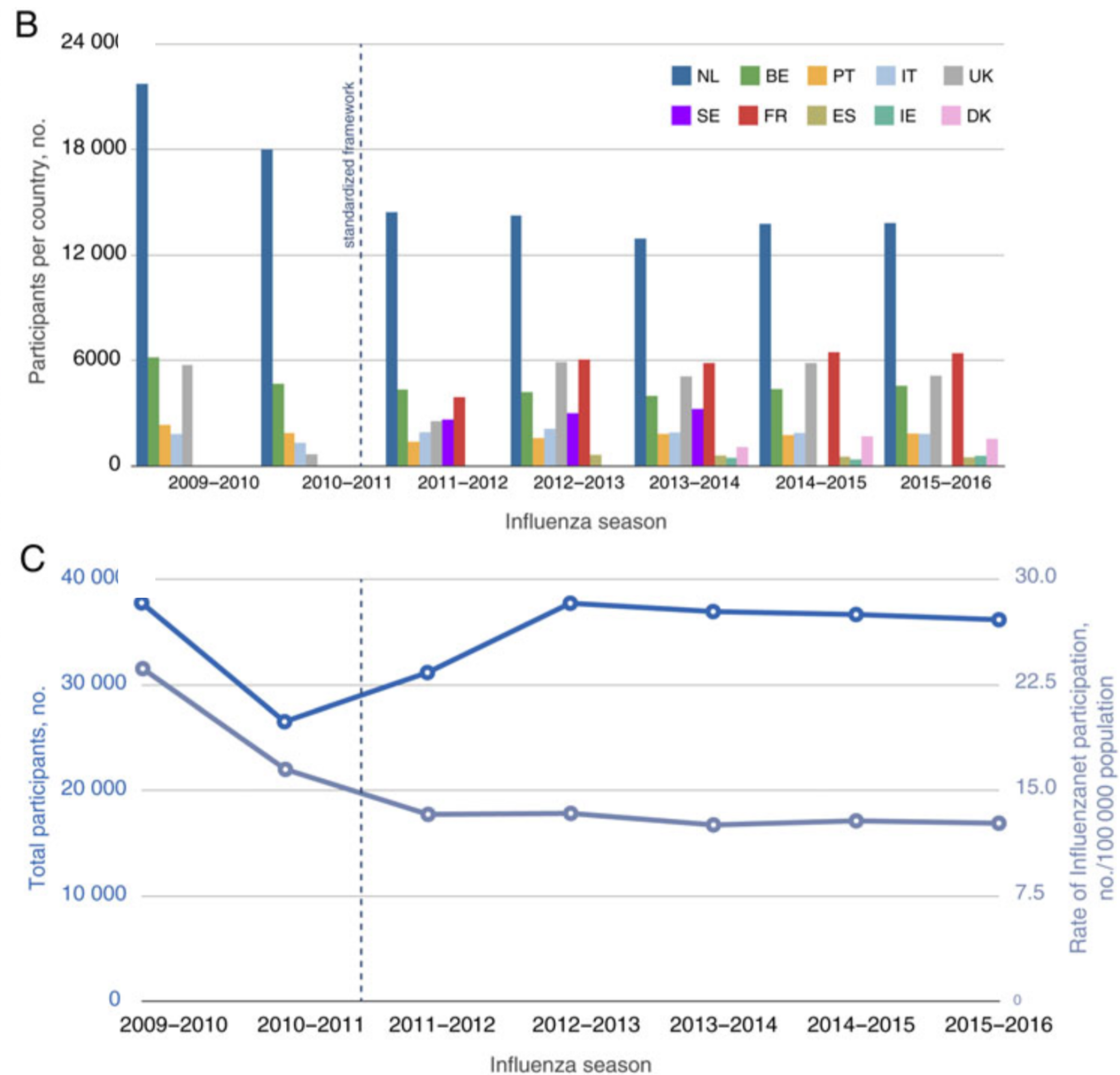


uniform data collection across countries

# study design: key questions

- ☒ weekly individual symptoms (or lack thereof)
- ☒ vaccine coverage
- ☒ healthcare seeking
- ☒ drugs uptake (including antibiotics)
- ☒ perceived severity
- ☒ duration of the symptoms
- ☒ absenteeism
- ☒ Behavioural information (contacts, NPIs adoption)

C. Guerrisi et al,  
*Participatory  
 Syndromic  
 Surveillance of  
 Influenza in Europe*  
 Journal of Infectious  
 Diseases (2016) 214  
 (suppl 4): S386-  
 S392.





# INFLUENZANET.INFO

**influweb.it** - ISI Foundation

**grippenet.fr** - INSERM, France

**flusurvey.net** - UK Health Security Agency

**halsorapport.se** - Public Health Agency of Sweden

**influmeter.dk** - Staten Serum Institute, Denmark

**grippenet.ch** - University of Bern, Switzerland

**infectieradar.nl** - RIVM, The Netherlands

**infectieradar.be** - UHasselt, Belgium

**grippeweb.de** - Robert Koch Institute, Germany

**gripiradar.ut.ee** - University of Tartu, Estonia

**epidemiradar.es** - IFISC, Baleari University, Spain

**influweb**

**grippenet.fr**

**FluSurvey**

**Hälsorapport**

**influmeter.dk**  
Kortlægger forekomst og spredning af influenza i Danmark

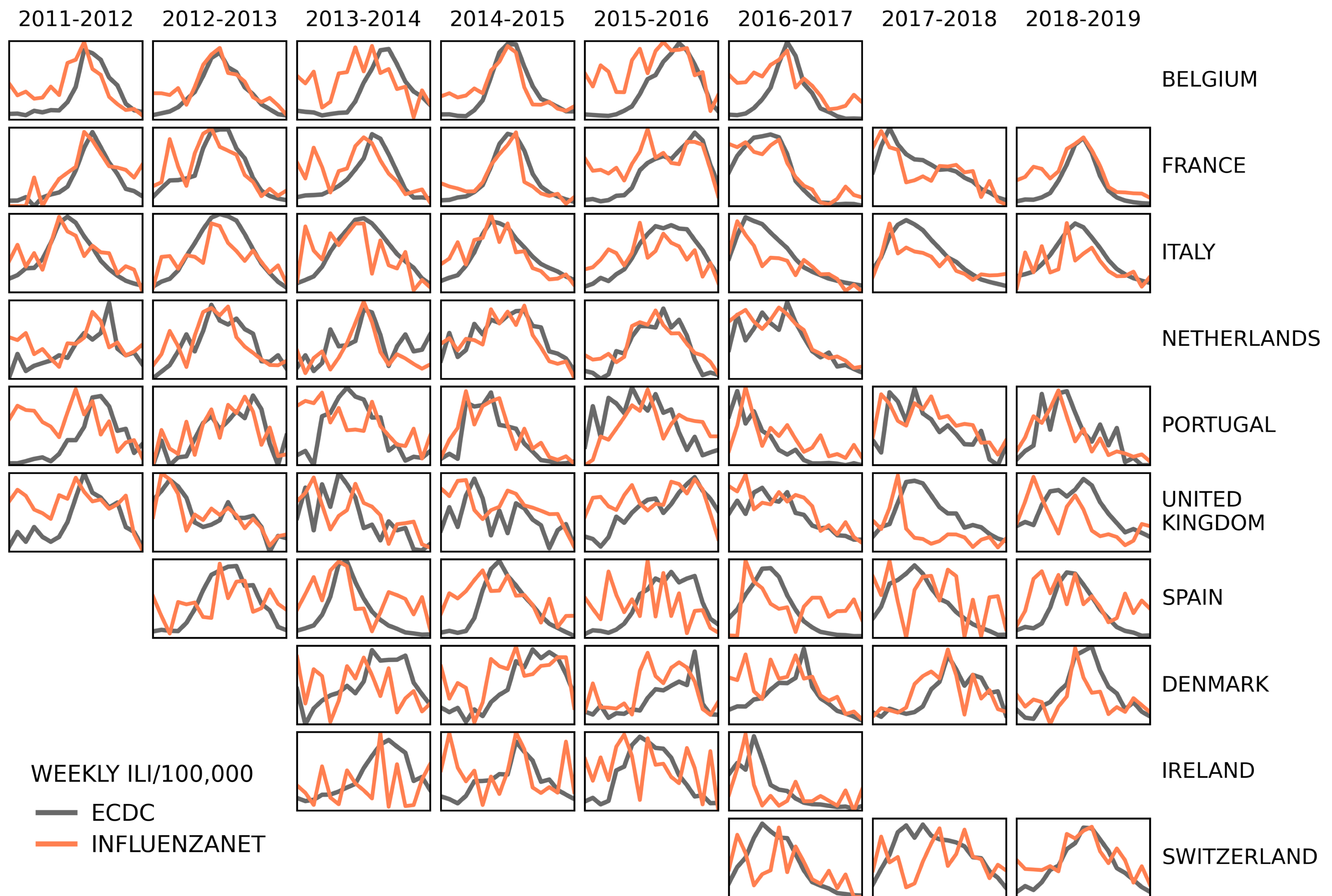
**grippenet**

**Infectieradar**

**GrippeWeb**



**Gripiradar**





# influenzanet.info

[The project](#)[Explore data](#)[About data](#)[Our team](#)[News](#)[Publications](#)

INFLUENZANET IS

a **Europe-wide community of volunteers** for tracking flu and COVID-19

[View the project](#)

INFLUENZANET IS

a **syndromic surveillance platform** and centralized database

[Explore the data](#)

## ON GOING RESEARCH ACTIVITIES

---

- Influenza and COVID-19 population-based surveillance
- Contact matrices (multi-country: Italy, the Netherlands, Belgium)
- Healthcare seeking behaviour (multi-country: Italy, France, UK, the Netherlands, Belgium, Switzerland)
- Dengue awareness (multi-country: Italy, France)
- Influenza Vaccine uptake before and after the COVID-19 pandemic (Italy)





VaccinesWork series

Disease Detectives

RSV

COVID-19

# CoughWatch: Meet the South African researchers tracking COVID-19

Mvuyo Makhasi is leading a team tracking the pandemic via a novel digital platform – CoughWatchSA.

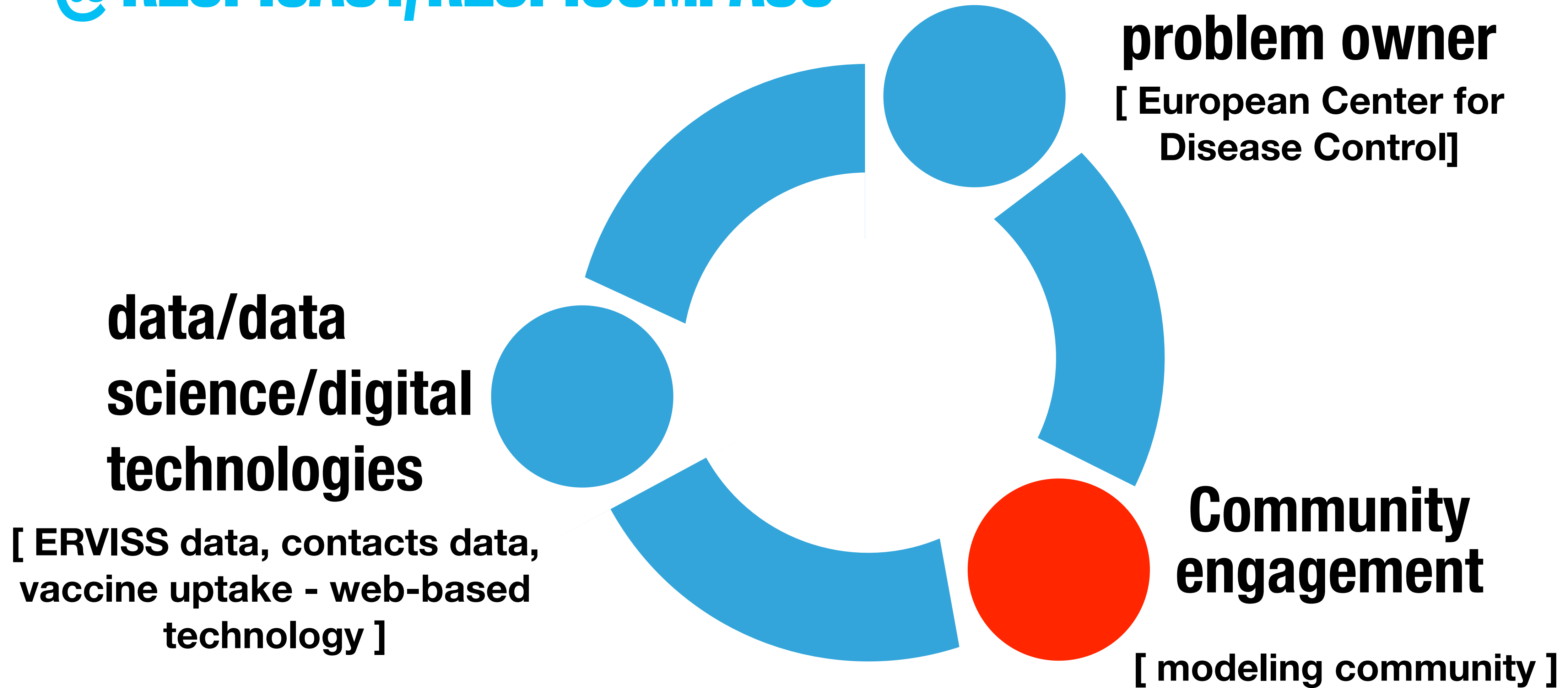
23 May 2022 • 6 min read • by [Linda Geddes](#)

[Republish this article](#)



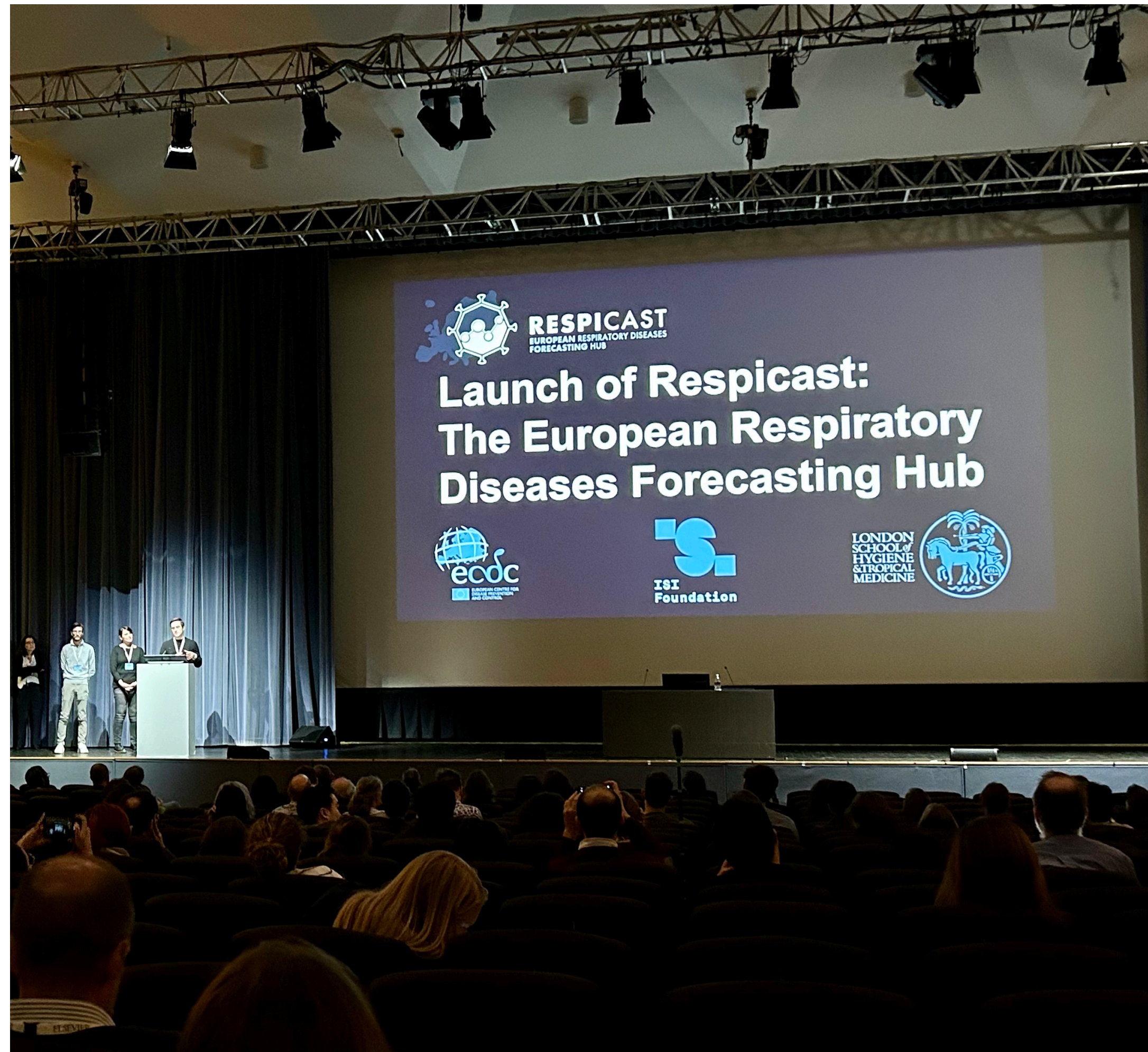


# @RESPICAST/RESPICOMPASS





# EUROPEAN HUB FOR RESPIRATORY DISEASE FORECASTING




<https://respicast.ecdc.europa.eu/>



# EUROPEAN HUB FOR RESPIRATORY DISEASE FORECASTING



**RESPICAST**  
ECDC RESPIRATORY DISEASES  
FORECASTING HUB

 [Forecasts](#)

 [Evaluations](#)

 [Background](#)

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## RESPICAST

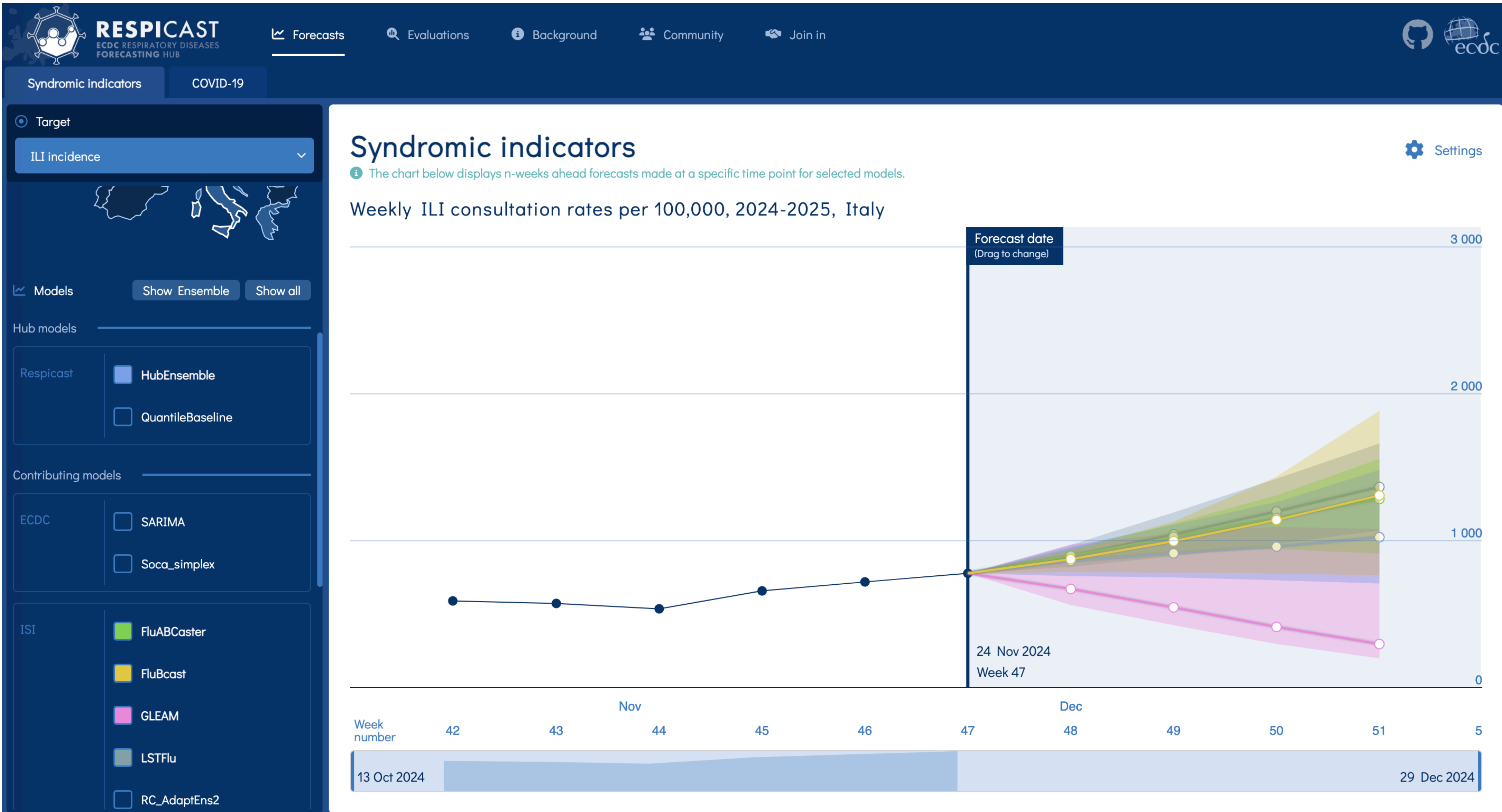
ECDC RESPIRATORY DISEASES  
FORECASTING HUB

RespiCast is a platform dedicated to hosting and sharing forecasts for respiratory disease surveillance indicators. This initiative is funded and led by the European Centre for Disease Prevention and Control (ECDC). RespiCast generates ensemble forecasts through international modelling collaboration. We acknowledge the ISI Foundation and the London School of Hygiene & Tropical Medicine, whose technical expertise has been essential for the execution of this project.

For further insights into respiratory virus surveillance data visit the  
[ERVISS website](#)

[View forecasts](#)

# EUROPEAN HUB FOR RESPIRATORY DISEASE FORECASTING



# EUROPEAN HUB FOR RESPIRATORY DISEASE FORECASTING



**RESPICAST**  
ECDC RESPIRATORY DISEASES  
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 Forecasts Evaluations

## Background

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## Syndromic indicators

COVID-19

 Target

## ILI incidence

 Metric

## Weighted Interval Score

 Season

2024-2025

## Summary

Weekly View

## Syndromic indicators

**i** Average rank score for: Weekly ILI incidence, Weighted Interval Score, 2024-2025

What are forecast evaluations?

Worst performer Best performer

Austria		0.60								
Belgium	0.83	0.89			0.51	0.74		0.79	0.88	
Czech Republic	0.82	0.92						0.39	0.94	
Denmark	0.82	0.80						0.65	0.79	
England	0.80	0.68	0.76	0.67				0.29		
Estonia	0.70	0.95						0.68		
France	0.78	0.88						0.50	0.83	
Greece	0.92	0.91			0.74	0.75		0.95	0.89	
Hungary	0.87	0.85				0.66		0.86	0.43	
Iceland		0.23								
Ireland	0.76	0.87			0.39	0.70	0.47		0.84	0.82
Italy		0.15								
Lithuania	0.95	0.68							0.88	0.71
Luxembourg	0.98	0.96						0.97		0.97
Malta	0.82	0.66								
Netherlands	0.75	0.85			0.54	0.74	0.38		0.83	0.85
Northern Ireland	0.88	0.55					0.69		0.47	
Norway	0.86	0.72				0.93	0.69	0.84	0.72	0.71
Poland	0.91	0.89			0.82	0.93		0.89	0.39	0.85
Romania	0.79	0.55			0.57				0.68	
Scotland	0.84	0.57							0.85	
Slovenia	0.86	0.91			0.83				0.56	0.89
Switzerland	0.86	0.81					0.71		0.60	
Wales		0.16								

respicast-hubEnsemble

Ensemble  
respicast-quantileBaseline

ECDC-SARIMA

ECDC-soca\_simplex

ISI-FluBcast

ISI-RC\_AdaptEns2

ISI-SEIR\_BRW

QMUL-ARIMA

RIVM-KFdIm

fjordhest-ensemble




# EUROPEAN HUB FOR RESPIRATORY DISEASE FORECASTING



**RESPICAST**  
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## Join in

## How to submit your forecasts

To submit your forecasts to RespiCast please follow the guidelines outlined in the GitHub repositories for each surveillance indicator:

- [Syndromic indicators](#) ILI and ARI
- [COVID-19 indicators](#)

If you have any questions, please refer to the [FAQs](#) in the above links or contact us at [european.modelling.hub@ecdc.europa.eu](mailto:european.modelling.hub@ecdc.europa.eu). For updates, including upcoming meetings and new research, all are welcome to join the [European Forecast Hub mailing list](#). Please include your name and a brief sentence about your interest in the Hub (so that we can exclude bots).

## Research & Development Teams

RespiCast is funded and led by the European Centre for Disease Prevention and Control (ECDC). This project is possible thanks to the technical contributions of the ISI Foundation and the London School of Hygiene & Tropical Medicine.




LONDON  
SCHOOL of  
HYGIENE  
& TROPICAL  
MEDICINE




# EUROPEAN HUB FOR RESPIRATORY DISEASE SCENARIO MODELLING




**RESPICOMPASS**  
ECDC RESPIRATORY DISEASES  
SCENARIO MODELLING HUB

 [Executive Summary](#)

 [Insights](#)

 [Background](#)

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**RESPICOMPASS**  
ECDC RESPIRATORY DISEASES  
SCENARIO MODELLING HUB

RespiCompass is a platform dedicated to hosting and sharing scenario modelling results for respiratory pathogens. This initiative is funded and led by the European Centre for Disease Prevention and Control (ECDC). RespiCompass develops and applies multi-model analyses through international modelling collaboration.

[Explore the Executive Summary](#)

# EUROPEAN HUB FOR RESPIRATORY DISEASE SCENARIO MODELLING



**RESPICOMPASS**  
ECDC RESPIRATORY DISEASES  
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2024-2025 | 1 - Published on 18/10/2024

Influenza

Scenarios and data

Projected burden

Impact of vaccination

COVID-19

Scenarios and data

Projected burden

Impact of vaccination

## Scenarios and data

### Scenarios

Teams were invited to submit modelling projections according to six scenarios. The scenarios varied according to the vaccination coverage in individuals aged 65 years and older, and the transmission potential of the virus. More information on the scenarios can be found on [GitHub](#).

Vaccination axis

	Optimistic vaccination Coverage in 65+yrs is 15% higher than in last season	Pessimistic vaccination Coverage in 65+yrs is 15% lower than in last season	No vaccination counterfactual Coverage in 65+yrs is zero
Typical transmission potential Influenza transmission potential is <b>similar</b> to the last three seasons, excluding COVID-19 pandemic years.	Scenario A	Scenario C	Scenario E
Pessimistic transmission potential Influenza transmission potential is <b>10% higher</b> relative to the last three seasons, excluding COVID-19 pandemic years.	Scenario B	Scenario D	Scenario F


The scenarios differed with respect to two axes. The vertical (biological) scenario axis varied the transmission potential. Teams were asked to estimate an average transmission potential (e.g.  $R_t$ ) based on the last three influenza seasons, excluding pandemic years (the seasons considered were 2017-2018, 2018-2019, and 2023-2024). This was assumed to be the 'typical' transmission potential. The pessimistic





# EUROPEAN HUB FOR RESPIRATORY DISEASE SCENARIO MODELLING



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## Join in

For updates, including upcoming scenario rounds, meetings and new research, please join the [European Scenario Hub mailing list](#). Please include your name and a brief sentence about your interest in the Hub (so that we can exclude bots).

## Research & Development Teams

RespiCompass is funded and led by the [European Centre for Disease Prevention and Control \(ECDC\)](#). This project is possible thanks to the technical contributions of the [EU-SMIND consortium](#) ([ISI foundation](#), [Hasselt University](#), [University of Antwerp](#), [Safinea Ltd.](#), [Helmholtz Centre for Infection Research](#) and the [London School of Hygiene & Tropical Medicine](#)).





## Influenza Modelling Mongolia

Influenza\_Mongolia

 Leave

 Message

This group will bring together collaborators on the Mongolian Influenza data and the analysis of it.

Influenza\_Mongolia ▸

 Members (12)

Activity

Permissions

### Posts


Topics

Mentions



[Follow-up Workshop on Epidemiological Data Pipelines \[9th Dec. 2024 - doodle link for](#)

Nov 27


 Epidemiological Pipelines  
finlaycampbell

This is something we're really interested in at the Hub, so I'd recommend anybody working in this space to attend!



[Virtual consultation: Preparing for containment and mitigation of pandemic H5N1 influenza, Uses of statistical and mathematical modelling on 14 Nov 2024 @ 13:00 \(CET\)](#)

▼ Nov 11

 Influenza H5N1 Modelling  
Julia\_Fitzner

Influenza H5 pathogens have been included in the list of priority pathogens by the WHO R&D Blueprint. To coordinate efforts for containment and mitigation of H5N1, and especially to evaluate the efficacy of vaccines and therapeutics, a mathematical modelling group has been created in the R&D Bluepri...



# CHALLENGES AND OPPORTUNITIES

- how do these collaborations impact society ?
  - how can **we** guide these developments ?
- 
- “last mile” to decisions and policies ?
  - access to relevant data sources ?
  - cross-sector partnerships ?
  - how to make this systematic, sustainable, responsible ?
  - how to communicate to the general public ?





# INFLUENZANET.INFO

**Daniela Paolotti (IT)**

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**Chinelo Obi (UK)**

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**Charlotte Kjelsø (DK)**

**Christian Althaus (CH)**

**Albert Jan van Hoek (NL)**

**Niel Hens, Lisa Hermans (BE)**

**Udo Bucholz (RKI)**

**inluweb**

**grippenet.fr**

**FluSurvey**

**Hälsorapport**

**influmeter.dk**  
Kortlægger forekomst og spredning af influenza i Danmark

**grippenet**

**Infectieradar**

**GrippeWeb**



**Gripiradar**

# **RESPICAST/RESPICOMPASS**

**Nicolò Gozzi, Corrado Gioannini, Stefania Fiandrino, Ivan Vismara, Paolo Milano, Luca Rossi (ISI)**

**Sebastian Funk (LSHMT)**

**Helen Johnson (SAFINEA)**

**Niel Hens (University of Hasselt)**

**Nicola Perra (Queen Mary University)**

**Rene Niehus, Rok Grah, Jose Canevari, Eva Bons**

**THANK YOU ! QUESTIONS ?**

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