OHDSI

OBSERVATIONAL HEALTH DATA SCIENCES AND INFORMATICS

11/11/2025

A CRASH COURSE IN OHDSI

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In the next 20 minutes…

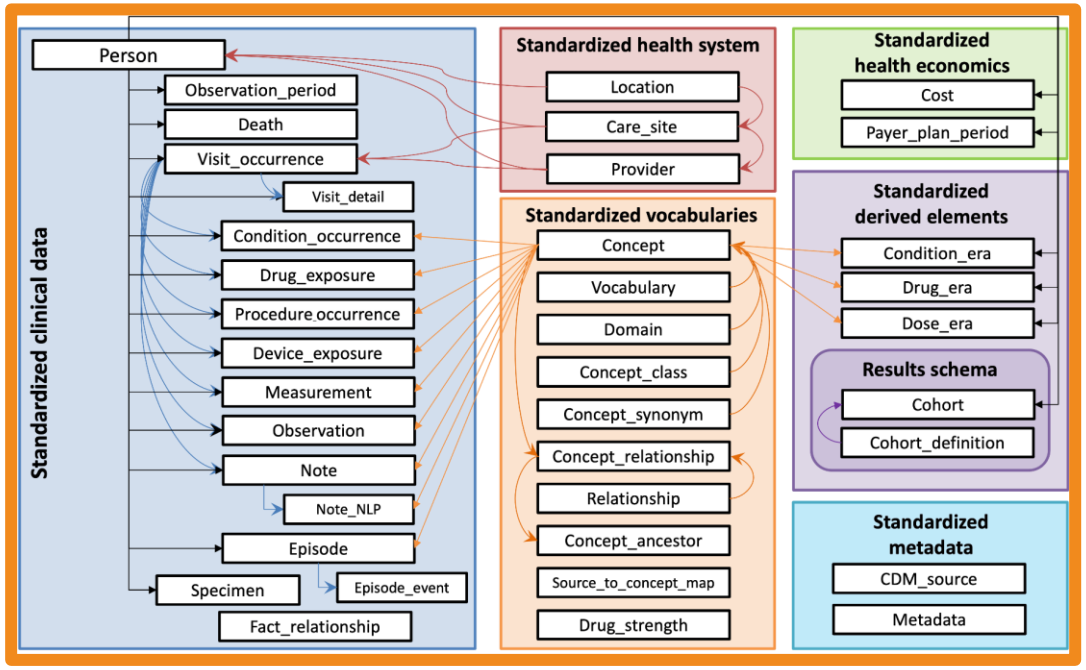
WHAT IS OHDSI?
WHAT IS OMOP?

WHAT'S IN IT FOR YOU?

HOW TO GET INVOLVED

WHAT IS OHDSI?

EUROPE



OMOP Common Data Model

Standard analytics

ATLAS

HADES

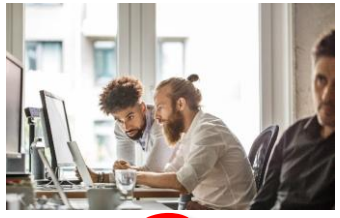
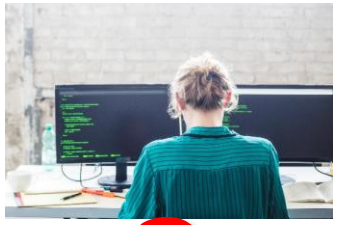
Active global community

*OHDSI is a **fun** way to collaborate with an amazing community across the globe to collectively advance science and improve the lives of patients around the world.*

IF YOU DO NOT HAVE OMOP, RESEARCH BE LIKE...





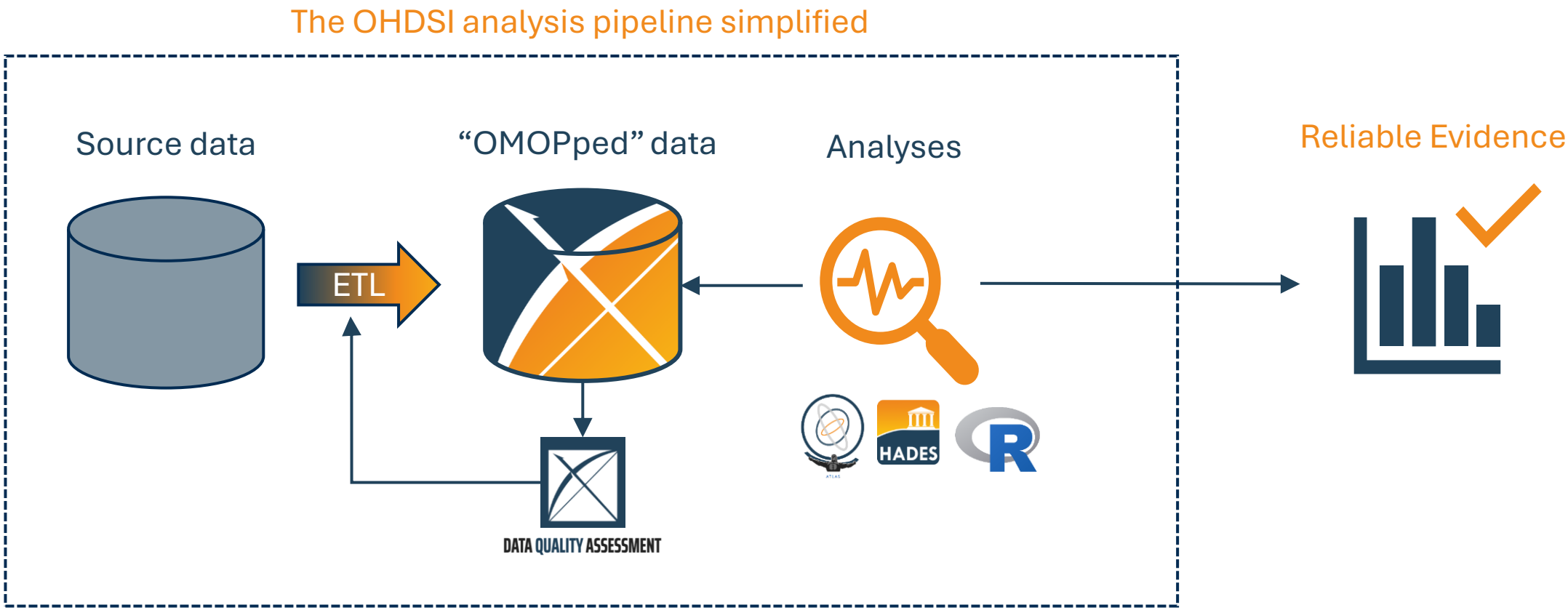
survey | cohort | PDMS | ... | claims | hospital | GP



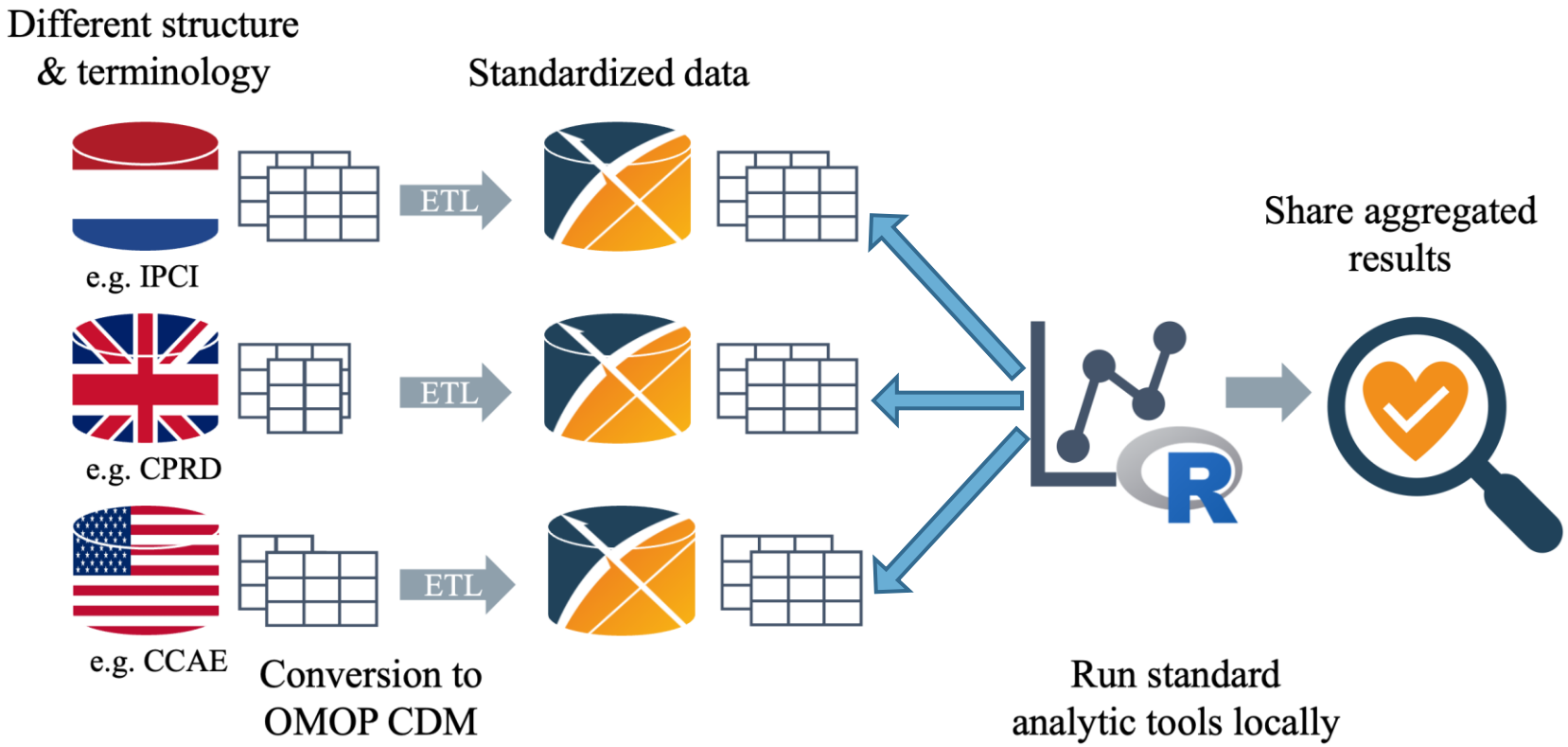




IF YOU HAVE OMOP, RESEARCH BE LIKE...



REAL-WORLD EVIDENCE GENERATION USING OMOP CDM



Standardized data enables standardized analytics!

Common format
& terminology
Single curation,
multiple use

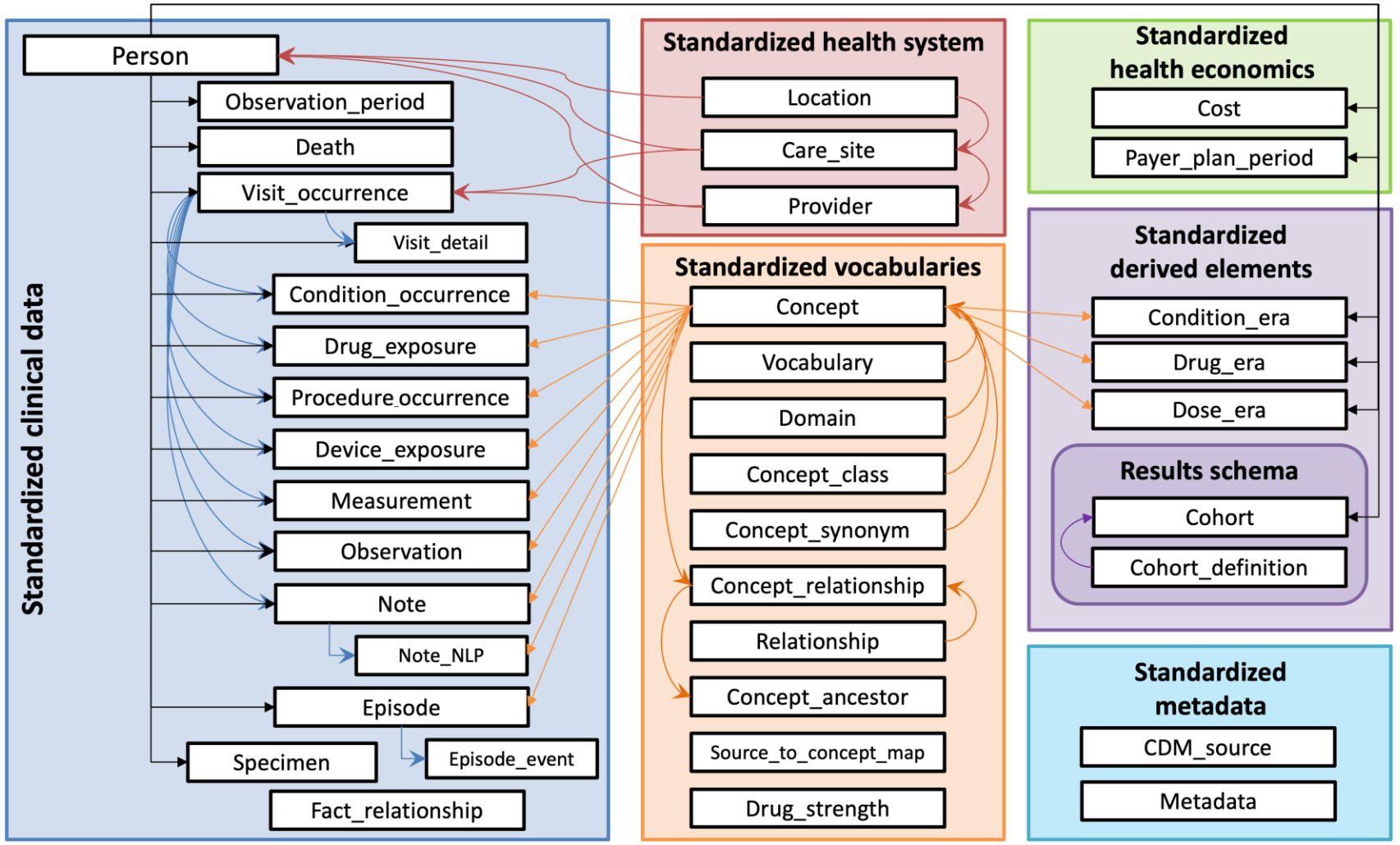
Standard input & output
Parametrized choices

OMOP Common Data Model (CDM) v5.4

EUROPE

Syntactic interoperability

OMOP CDM



Semantic interoperability

BENEFITS OF STANDARDIZED DATA & ANALYTICS

1. Large-scale evidence

Federated analysis allows multi-database studies without compromising privacy

2. Rapid response

Large time savings through data readiness and pre-developed tooling

3. Scalable & reproducible

Tooling can be reused across databases and disease domains

→ **Reliable evidence**

OHDSI Tools (Open-source)

EUROPE

Source data

Summarize the source data

WhiteRabbit

Create ETL design

Rabbit In A Hat

Semi-automated vocabulary mapping

Usagi

OMOP-CDM data

Analyses

HADES

R

Reliable Evidence

ARES

Generate descriptive statistics on OMOP CDM

ACHILLES

Perform data quality checks

DATA QUALITY ASSESSMENT

Phenotype development

PHOEBE

Codelist Generator

Exploring vocabulary

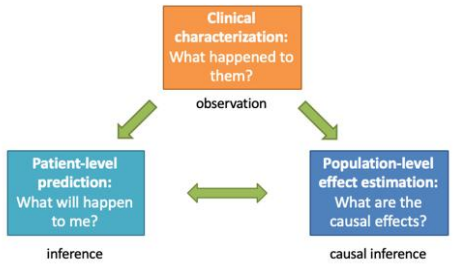
ATHENA

Cohort Diagnostics R package

PheValuator

Phenotype Library

+



Study design

Characterization R package

PatientLevel Prediction R package

CohortMethodR package

ATLAS

ATLAS: An open-source software tool for data exploration and scientific analyses on OMOP CDM data

WHAT'S IN IT FOR YOU?

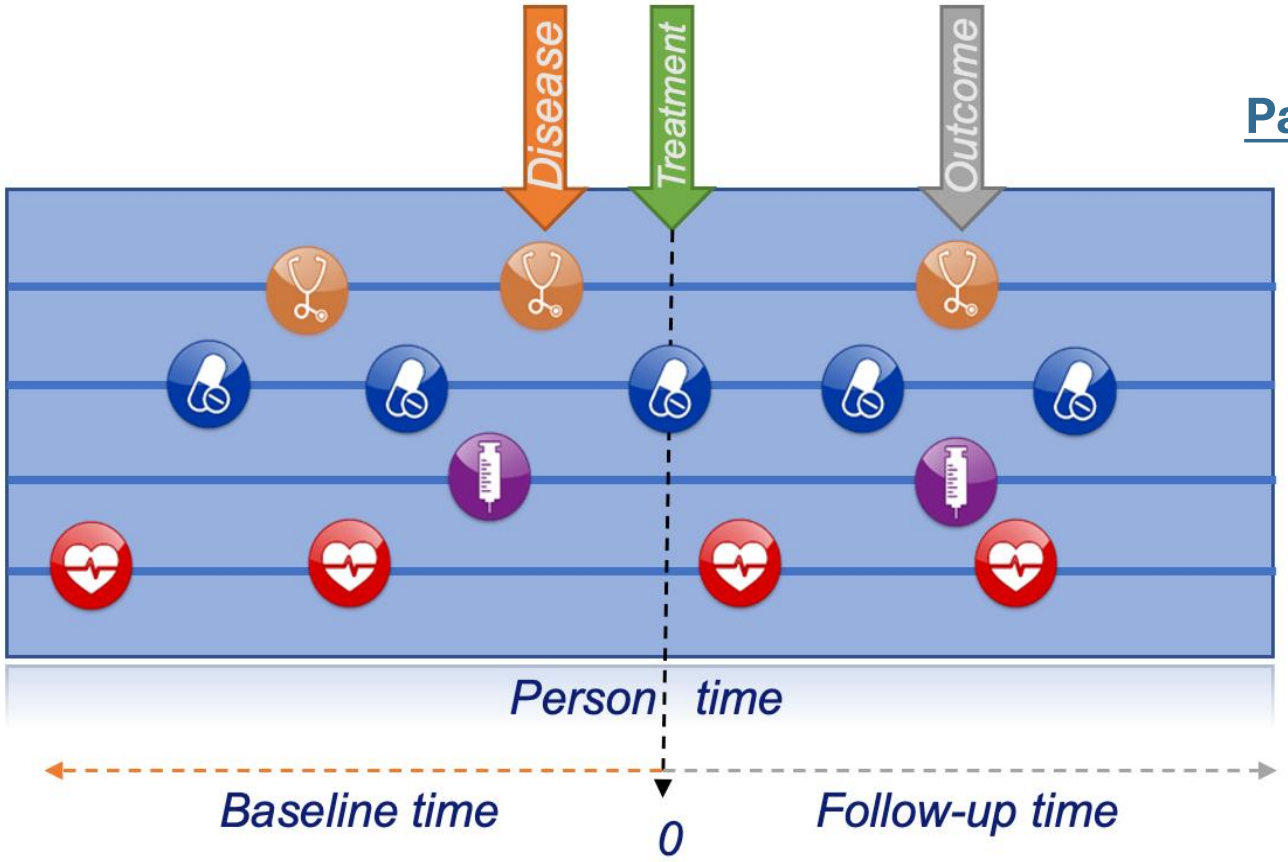
QUESTIONS ASKED ACROSS THE PATIENT JOURNEY

EUROPE

Clinical characterization

Which patients take which treatments?

How many patients experienced complications?



Patient-level prediction

What is the probability that I will develop a given disease?

What is the probability that I will experience an (adverse) outcome?

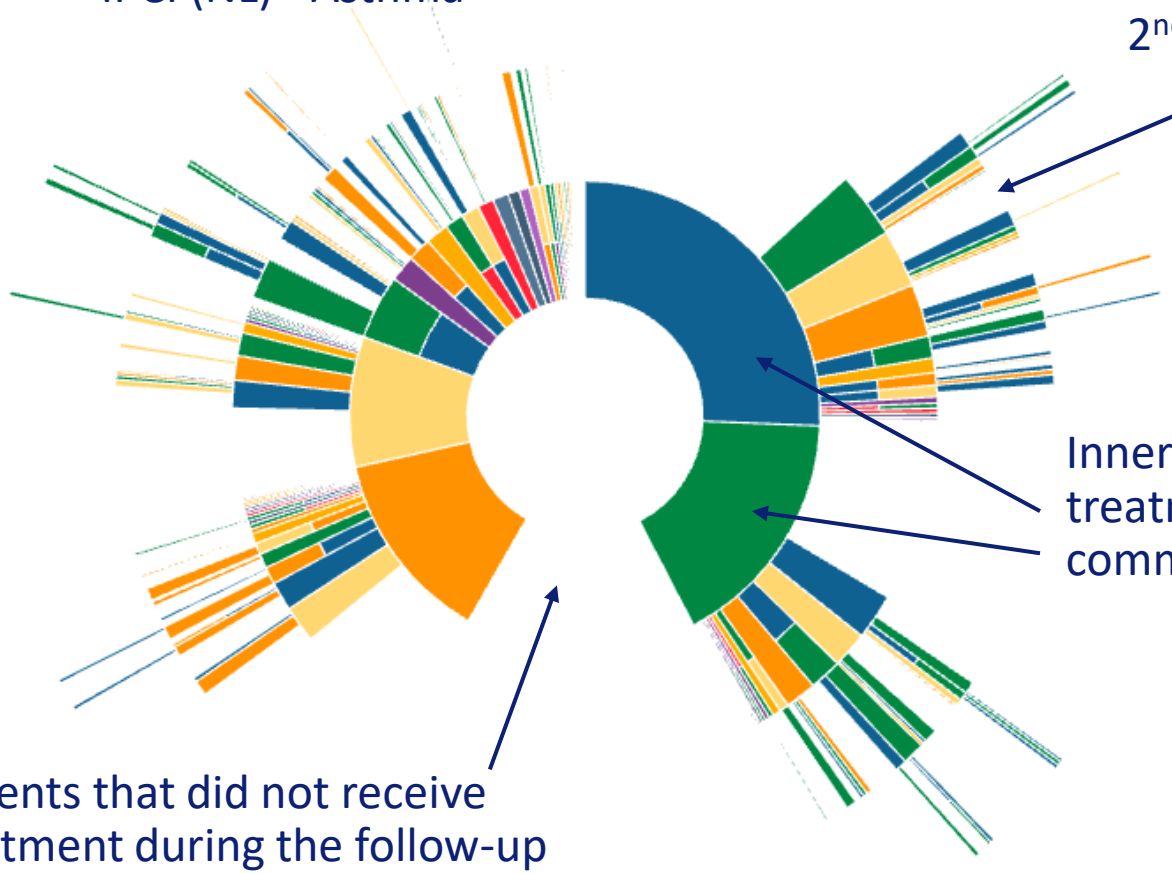
Population-level effect estimation

Does treatment cause an outcome?

Does one treatment lead to a better outcome than the alternative?

Treatment Patterns

IPCI (NL) - Asthma



Outer layers show 2nd and 3rd treatment

Inner circle shows 1st treatment, SABA most common, followed by ICS

Patients that did not receive treatment during the follow-up time (> 3 years)

- ICS
- LABA
- LABA&ICS
- LABA&LAMA
- LABA&LAMA&ICS
- LAMA
- LTRA
- SABA
- SABA&SAMA
- SAMA
- Systemic glucocorticoids (acute)
- Systemic glucocorticoids (therapy)
- Xanthines
- Anti IgE
- Anti IL5
- Systemic B2 agonist
- PDE4
- Other combinations

Treatment Patterns Across Disease Domains

- Growing number of studies (also used in DARWIN EU® now)

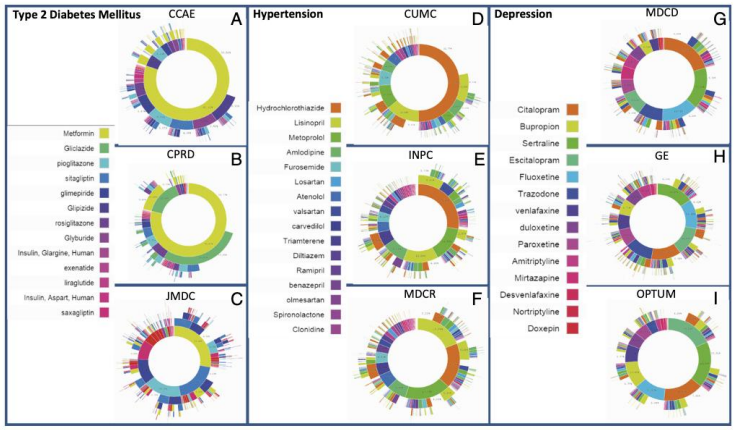


Fig. 3. For each disease, diabetes (*A–C*), hypertension (*D–F*), and depression (*G–I*), the inner circle shows the first relevant medication that the patient took, the second circle shows the second medication, and so forth. Three data sources are shown for each disease; the data source abbreviations are defined in Table 2.

Hripcsak et al. (2016)

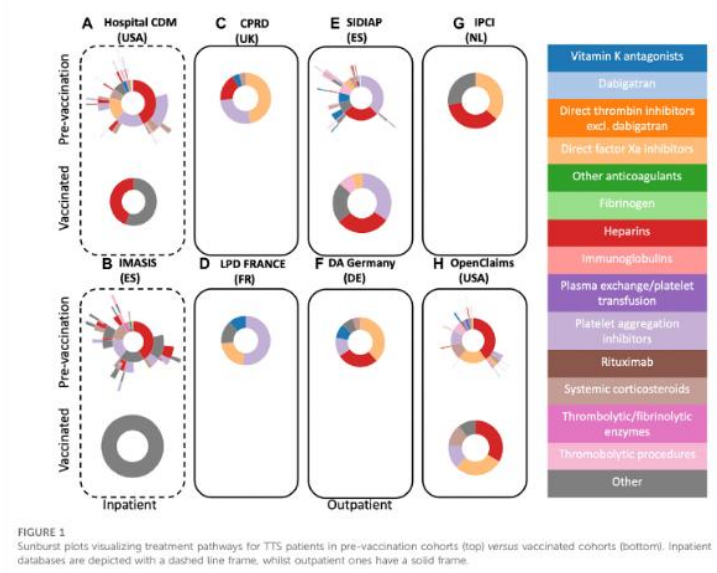
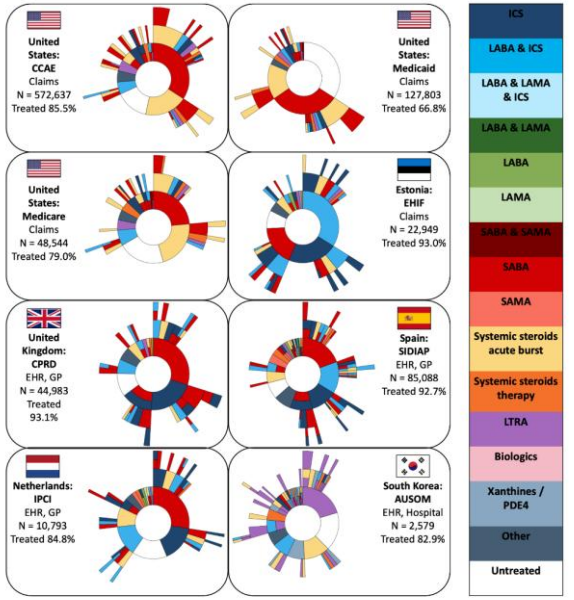


FIGURE 1
Sunburst plots visualizing treatment pathways for TTS patients in pre-vaccination cohorts (top) versus vaccinated cohorts (bottom). Inpatient databases are depicted with a dashed line frame, whilst outpatient ones have a solid frame.

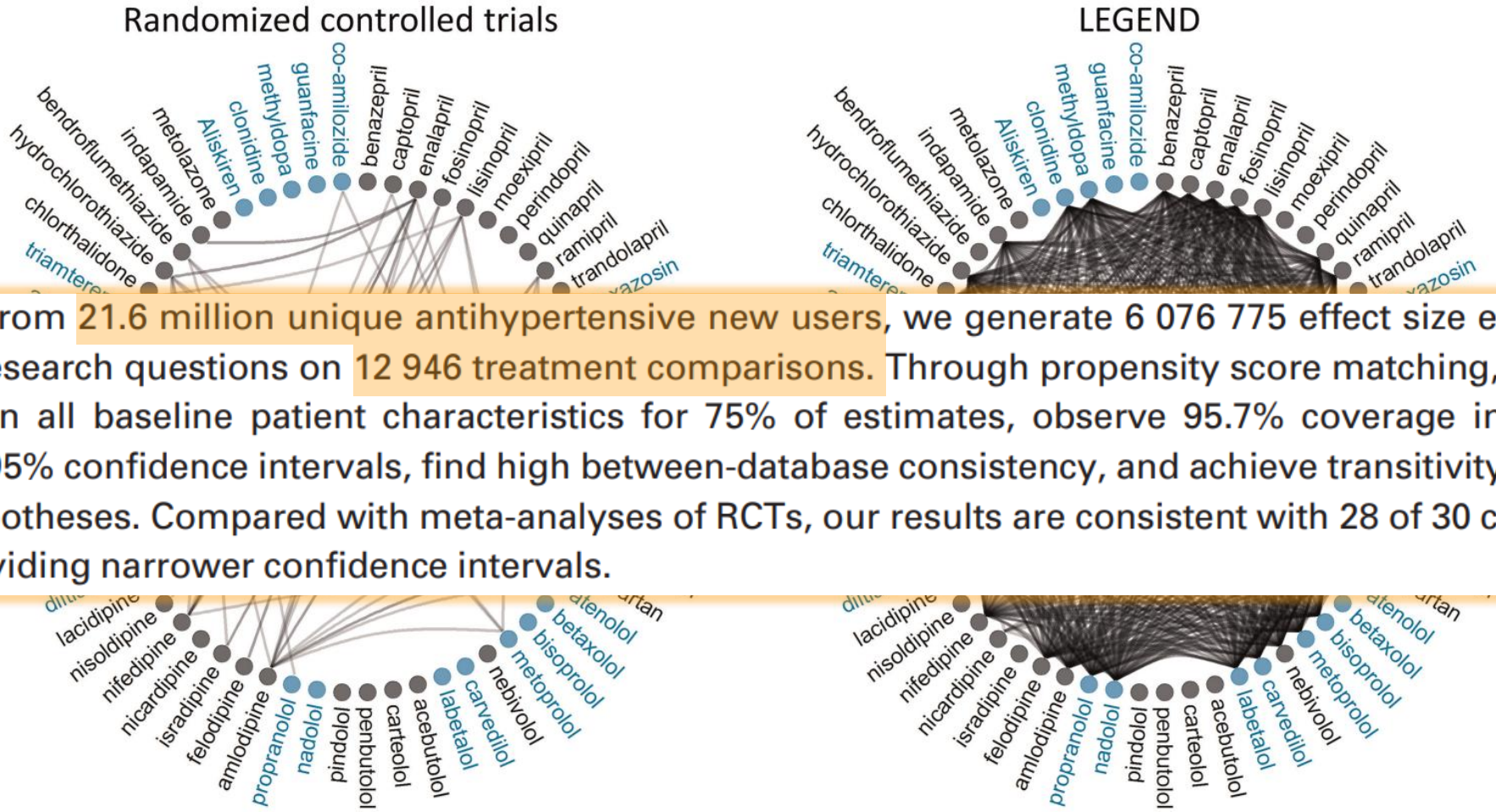
Markus et al. (2023)



Markus et al. (2024)

- **A lot of potential:** use the OHDSI data network to get high-level insight in current treatment practices across different *patient populations*, *care settings*, and *countries* in Europe (and globally)

OHDSI LEGEND HYPERTENSION STUDY



Results: From 21.6 million unique antihypertensive new users, we generate 6 076 775 effect size estimates for 699 872 research questions on 12 946 treatment comparisons. Through propensity score matching, we achieve balance on all baseline patient characteristics for 75% of estimates, observe 95.7% coverage in our effect-estimate 95% confidence intervals, find high between-database consistency, and achieve transitivity in 84.8% of triplet hypotheses. Compared with meta-analyses of RCTs, our results are consistent with 28 of 30 comparisons while providing narrower confidence intervals.

Figure 3. Comparisons of single-drug hypertension treatments in randomized controlled trials (left) and in LEGEND (right). Each circle represents an ingredient. Color groupings indicate drug classes. A line between circles indicates the 2 drugs are compared in at least 1 study.

Schuemie MJ, et al. Large-scale evidence generation and evaluation across a network of databases (LEGEND): assessing validity using hypertension as a case study. J Am Med Inform Assoc. 2020 Aug 1;27(8):1268-1277. doi: 10.1093/jamia/ocaa124. Erratum in: J Am Med Inform Assoc. 2021 Jan 15;28(1):196.

A GLOBAL NETWORK

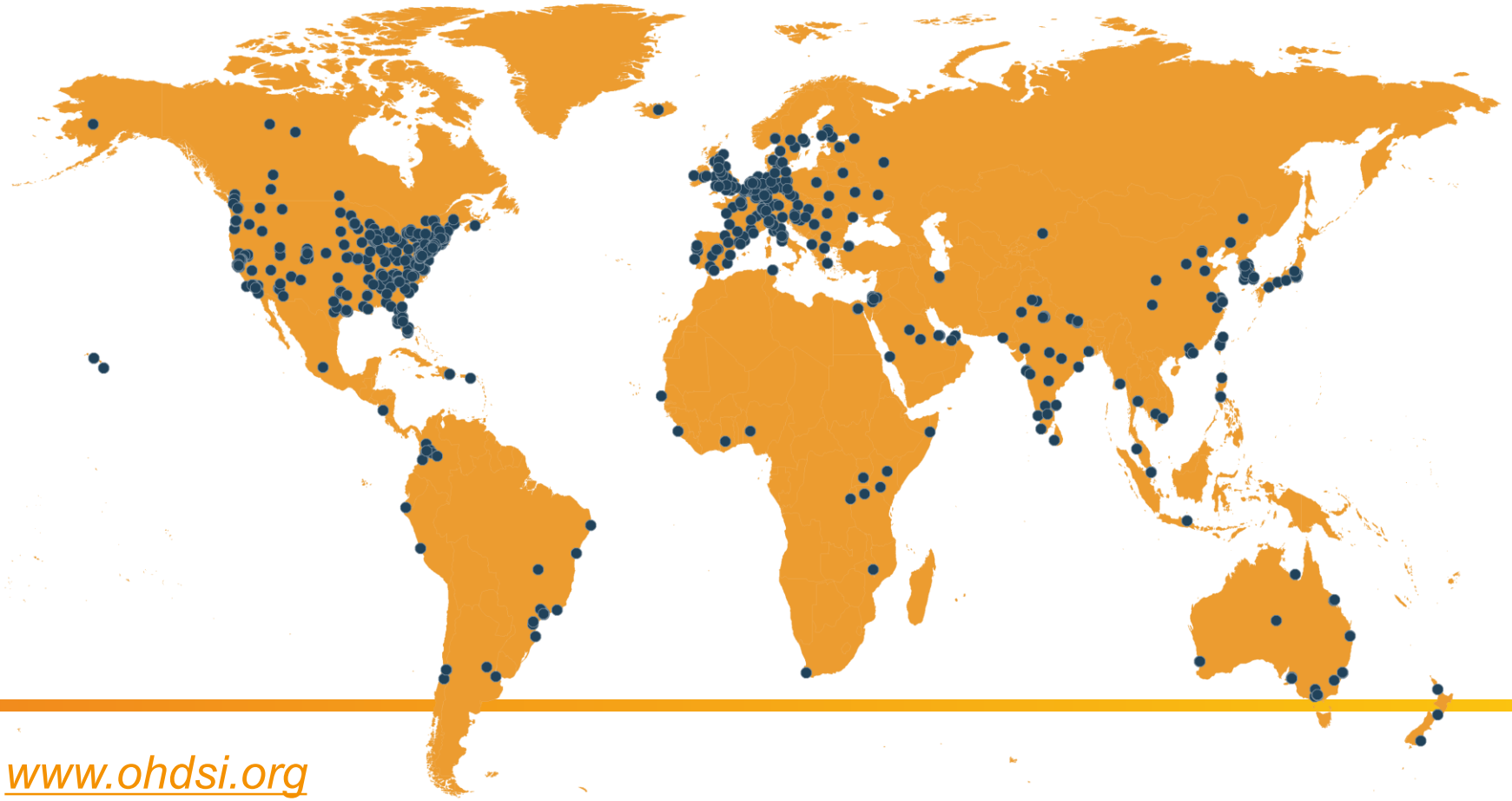
To improve health by empowering a community to collaboratively generate the evidence that promotes better health decisions and better care

OHDSI Collaborators

- 4,294 collaborators
- 83 countries
- 21 time zones
- 6 continents

OMOP CDM Users By The Numbers

- 544 data sources
- 54 countries
- 974 million unique patient records (12% of world's population)

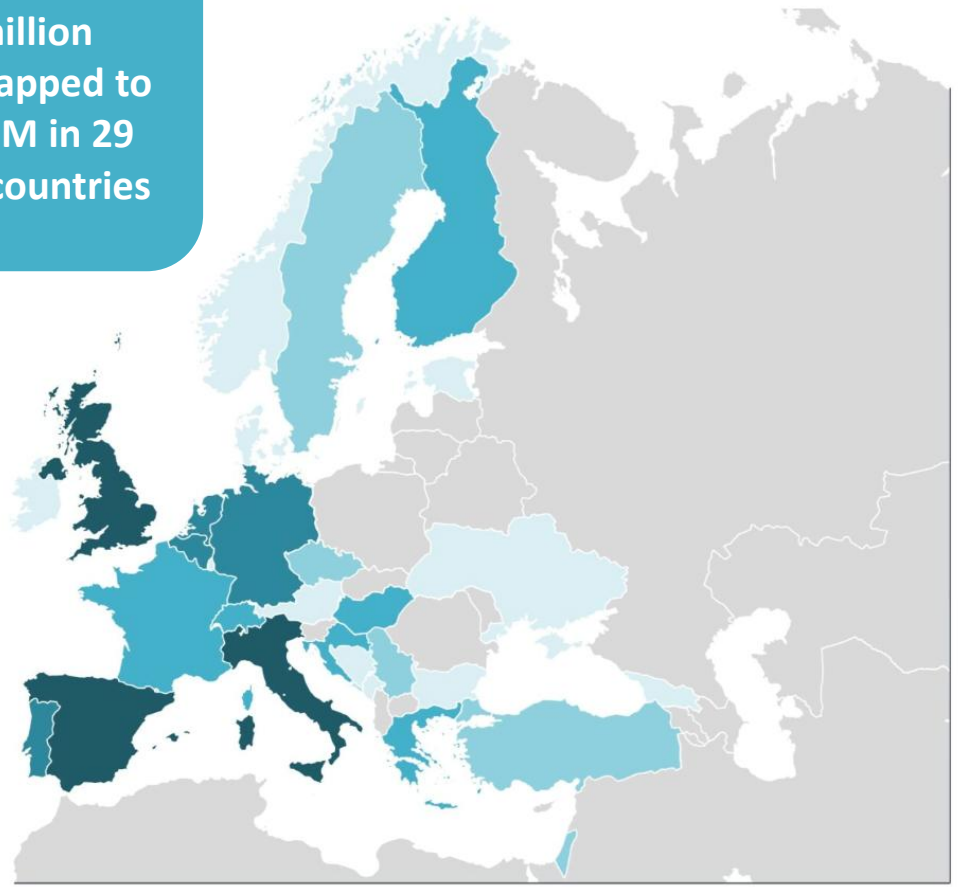


www.ohdsi.org

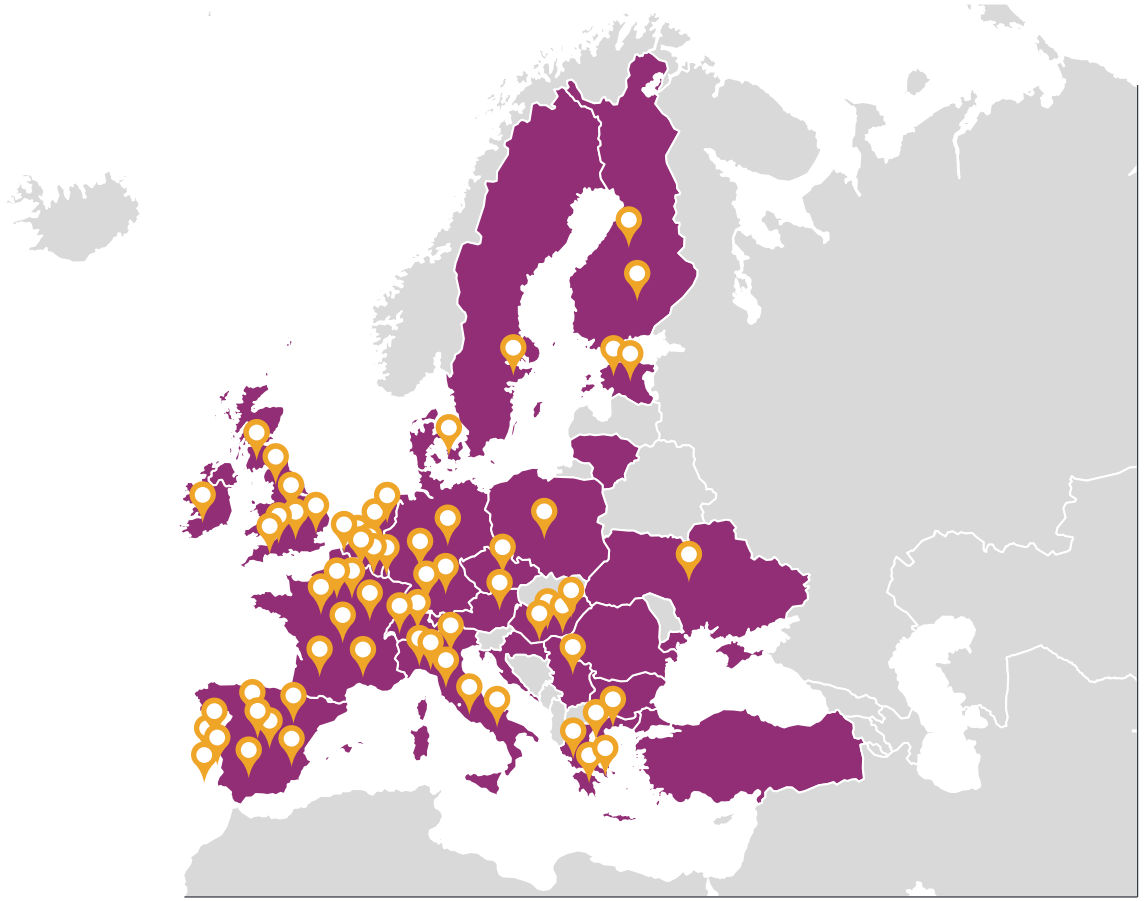
NETWORK DATA PARTNERS & SERVICE PROVIDERS

187 Data partners

≈ 370 million patients mapped to OMOP CDM in 29 European countries



64 'EHDEN-certified' SMEs across Europe



https://www.ehden.eu/business-directory/

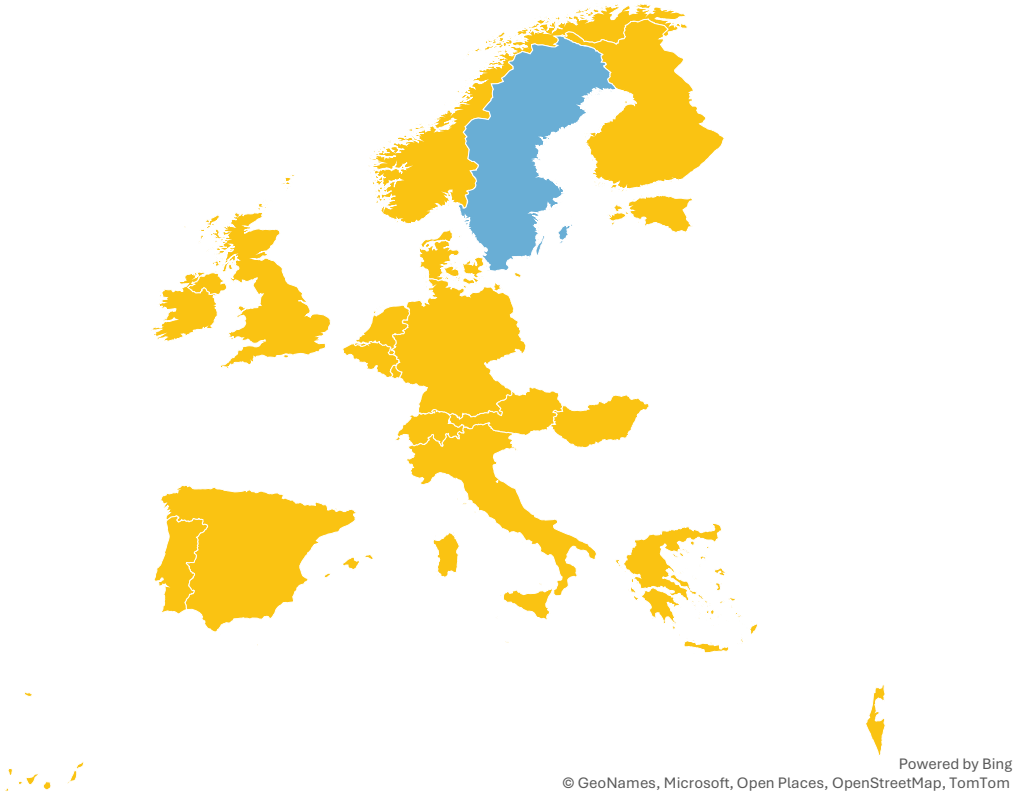
How to get involved or learn more

EU National Nodes

An OHDSI Europe National Node is a collection of organizations within a member country.

The Node builds on the strengths of the stakeholders and scientific communities of that country.

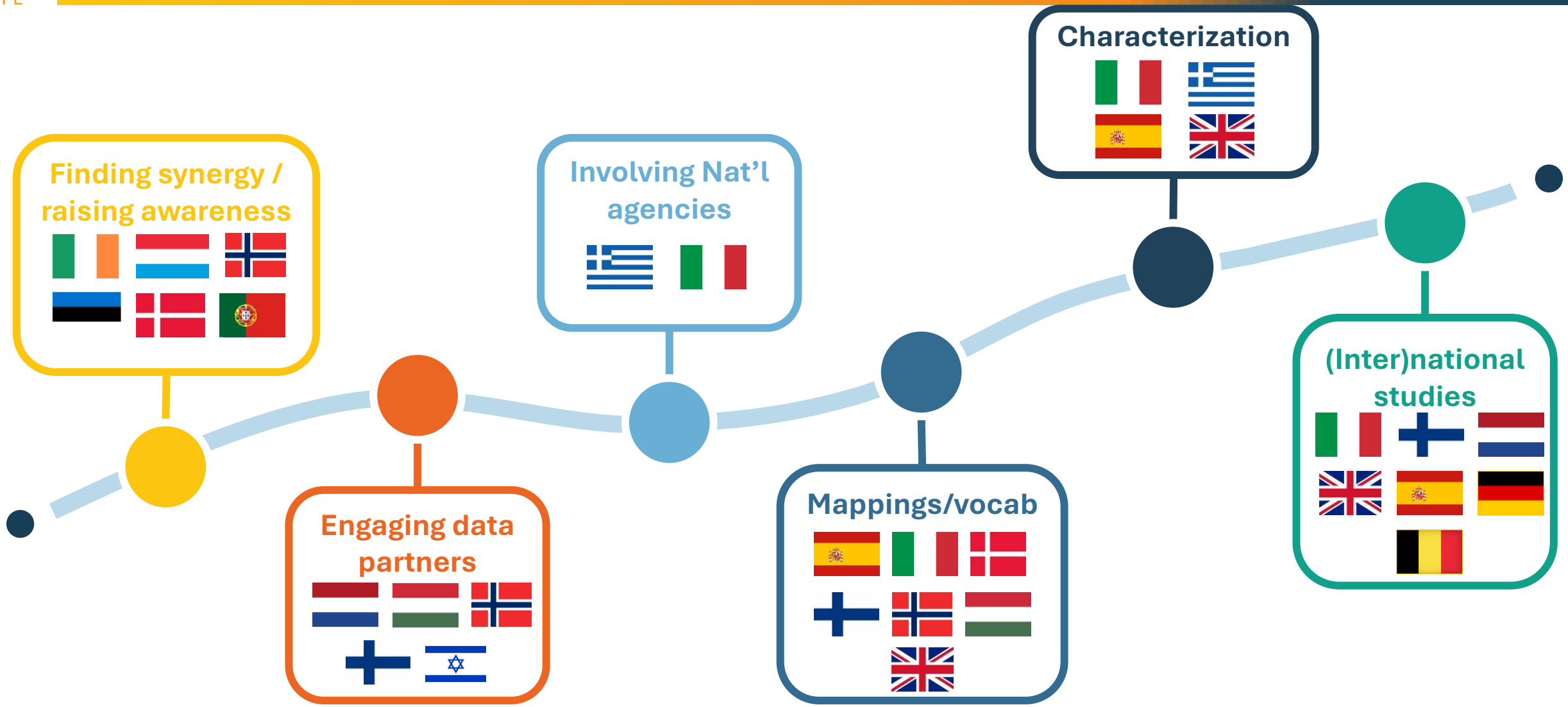
The goal of national nodes is to facilitate national and international collaborations.



National nodes were started as part of the EHDEN project and in collaboration with the OHDSI Europe Chapter.

https://ohdsi-europe.org/index.php/national-nodes

WHATS GOING ON IN THE NODES



OHDSI WORKGROUPS

See an area where you want to contribute? Please Join The Journey!

Join A Workgroup | Meeting Schedule | Workgroup Tips

Get to Know the OHDSI Workgroups

- Africa Chapter
- APAC
- ATLAS/WebAPI
- Clinical Trials
- Common Data Model
- CDM Survey Subgroup
- CDM Vocabulary Subgroup
- Dentistry
- Early-Stage Researchers
- Electronic Animal Health Records
- Eye Care & Vision Research
- FHIR and OMOP
- Generative AI & Analytics in Healthcare (GAIA)
- GIS – Geographic Information System
- HADES
- Health Equity
- Healthcare Systems
- Industry
- Latin America
- Medical Devices
- Medical Imaging
- Methods Research
- Natural Language Processing
- Network Data Quality
- Oncology
- Open-Source Community
- Patient-Level Prediction
- Perinatal and Reproductive Health
- Phenotype Development & Evaluation
- Psychiatry
- Rehabilitation
- Registry
- Steering Group
- Surgery and Perioperative Medicine
- Themis
- Vaccine Vocabulary

COMMUNITY CALLS

EUROPE

Online

Global: Every Tuesday @ 17:00 CET

Europe: Every 2nd Thursday @ 13:00 CET

Upcoming Europe Community Calls

Date	Topic
Sept. 11	Europe Community Call Introduction / DARWIN EU Update
Oct. 9	Meet the New National Nodes
Nov. 13	Patient-Reported Outcome Measures (PROMs)
Dec. 11	Vocabularies in Europe

LEARNING MORE – EHDEN ACADEMY

- Free online educational resource
- More than 5,350 active learners across 108 countries

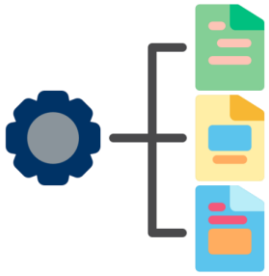
Getting Started	EHDEN Foundation	Patient Organizations: Real World Data and Real World Research	OMOP CDM and Standardized Vocabularies	ATLAS	Infrastructure
Extract, Transform and Load	Introduction to Usagi & Code Mappings for an ETL	OHDSI-in-a-Box	ETL Learning Pathway: Data Partner & SME Real World Use Cases	10 Minute Tutorial: PheValuator	10 Minute Tutorial: ATHENA
Open Science & FAIR Principles	Introduction to Data Quality	Phenotype Definition, Characterisation and Evaluation	Population-level Effect Estimation	Patient-Level Prediction	R for Patient-level Prediction
Applied Cost-Effectiveness Modeling with R	Assessing healthcare using outcomes that matter to patients	OHDSI2022 Tutorial - Creating Cohort Definitions	OHDSI2022 Tutorial - OMOP Common Data Model/Vocabulary	One hour of your time: The Phenotyping Problem	Health Technology Assessment

https://academy.ehden.eu

LEARNING MORE – THE BOOK OF OHDSI

A comprehensive guide to

The OHDSI Community

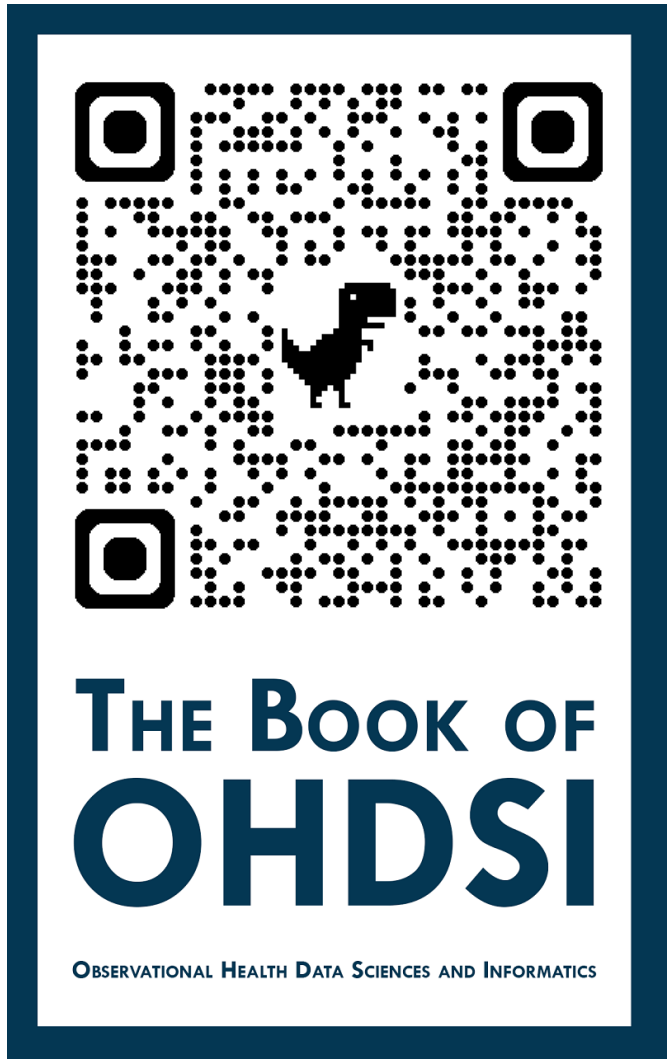


Uniform Data Representation

Data Analytics

Evidence Quality

OHDSI studies



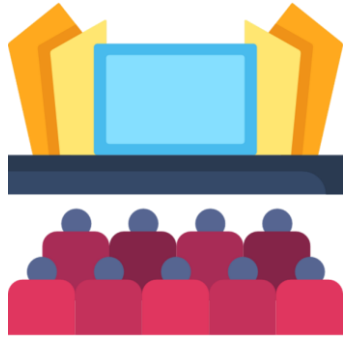
https://ohdsi.github.io/TheBookOfOhdsi/

LEARNING MORE – YOUTUBE CHANNEL

Community call meetings

Tool tutorials

Workshops



Previous events

YouTube

https://www.youtube.com/@OHDSI


EUROPEAN OHDSI
SYMPOSIUM
Rotterdam
EUROPE
18 - 20 April 2026