



OHDSI Evidence Network

Erica A Voss, PhD, MPH, PMP
Johnson & Johnson

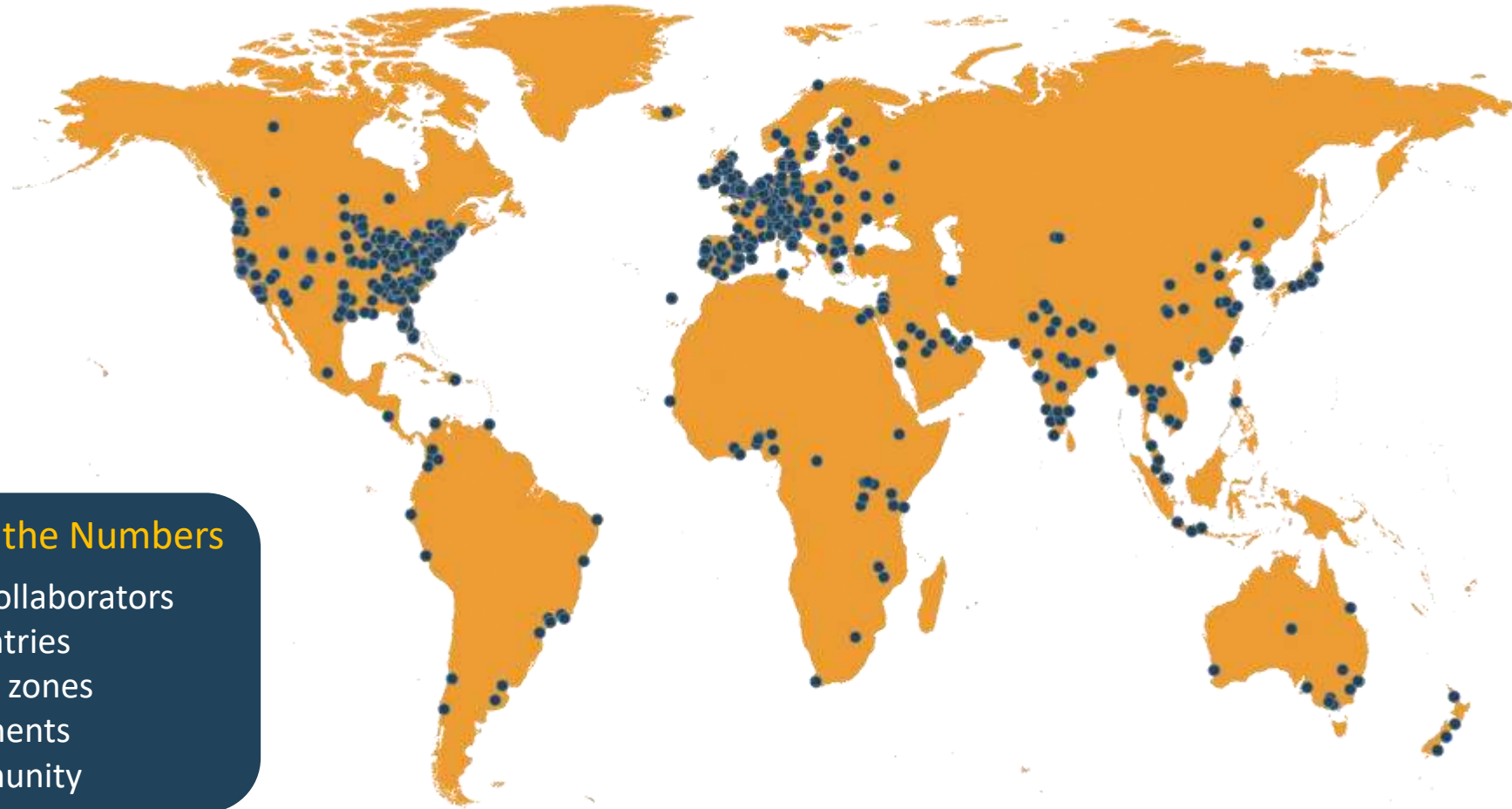


Today's Topics

- Understanding the need
- What is the OHDSI Evidence Network
- How to Get Involved



Collaborators around the world

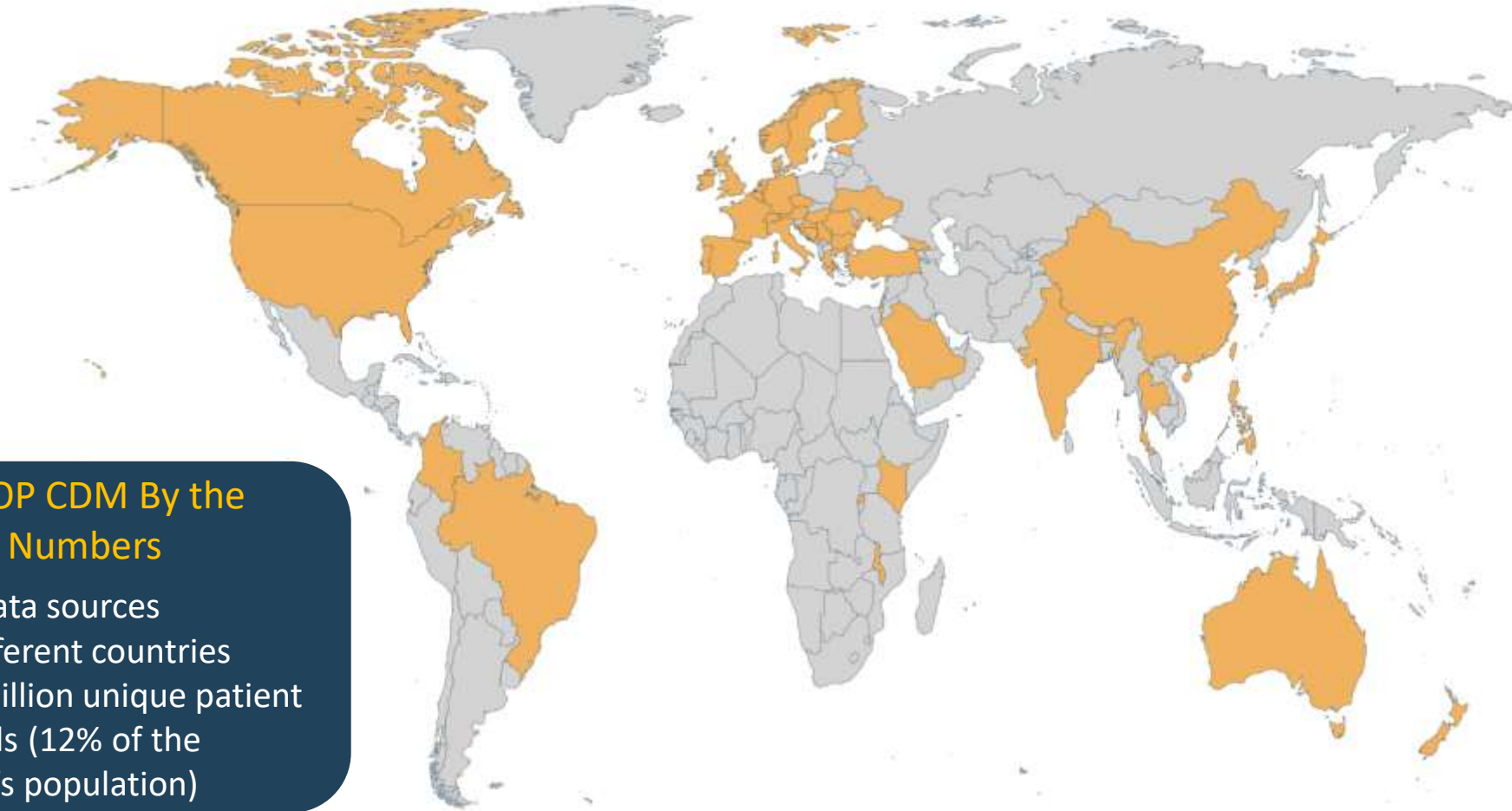


OHDSI By the Numbers

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



OMOP Common Data Model adoption



OMOP CDM By the Numbers

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



Current largest published OHDSI network study

eClinicalMedicine

Part of THE LANCET *Discovery Science*

[This journal](#) [Journals](#) [Publish](#) [Clinical](#) [Global health](#) [Multimedia](#) [Events](#) [About](#)

ARTICLES · Volume 58, 101932, April 2023 · [Open Access](#)

[Download Full Issue](#)

Contextualising adverse events of special interest to characterise the baseline incidence rates in 24 million patients with COVID-19 across 26 databases: a multinational retrospective cohort study

[Erica A. Voss](#)^{a,b,c} [✉](#) · [Azza Shoaibi](#)^{a,c} · [Lana Yin Hui Lai](#)^{a,d} · [Clair Blacketer](#)^{a,b,c} · [Thamir Alshammari](#)^{a,e} · [Rupa Makadia](#)^{a,c} · [Kevin Haynes](#)^c · [Anthony G. Sena](#)^{a,b,c} · [Gowtham Rao](#)^{a,c} · [Sebastiaan van Sandijk](#)^{a,f} · [Clement Fraboulet](#)^g · [Laurent Boyer](#)^g · [Tanguy Le Carrou](#)^h · [Scott Horban](#)ⁱ · [Daniel R. Morales](#)^{j,k} · [Jordi Martínez Roldán](#)^l · [Juan Manuel Ramírez-Anguita](#)^{m,n} · [Miguel A. Mayer](#)^{m,n} · [Marcel de Wilde](#)^{a,b} · [Luis H. John](#)^{a,b} · [Talita Duarte-Salles](#)^{a,o} · [Elena Roel](#)^o · [Andrea Pistillo](#)^o · [Raivo Kolde](#)^p · [Filip Maljković](#)^q · [Spiros Denaxas](#)^{r,s,t} · [Vaclav Papez](#)^{r,s} · [Michael G. Kahn](#)^{u,v} · [Karthik Natarajan](#)^{a,v,w} · [Christian Reich](#)^{a,x} · [Alex Secora](#)^x · [Evan P. Minty](#)^{a,y} · [Nigam H. Shah](#)^{a,z} · [Jose D. Posada](#)^{a,aa} · [Maria Teresa Garcia Morales](#)^{ab} · [Diego Bosca](#)^{ao} · [Honorio Cadenas Juanino](#)^{ac} · [Antonio Diaz Holgado](#)^{ac} · [Miguel Pedrera Jiménez](#)^{ap} · [Pablo Serrano Balazote](#)^{ap} · [Noelia García Barrio](#)^{ap} · [Selçuk Şen](#)^{ad} · [Ali Yağız Üresin](#)^{ad} · [Baris Erdogan](#)^{ae} · [Luc Belmans](#)^{af} · [Geert Byttebier](#)^{af} · [Manu L.N.G. Malbrain](#)^{af,ag} · [Daniel J. Dedman](#)^{ah} · [Zara Cuccu](#)^{ah} · [Rohit Vashisht](#)^{a,ai} · [Atul J. Butte](#)^{a,ai,aj} · [Ayan Patel](#)^{a,ai} · [Lisa Dahm](#)^{a,aj} · [Cora Han](#)^{a,aj} · [Fan Bu](#)^{ak} · [Faaizah Arshad](#)^{a,ak} · [Anna Ostropolets](#)^{a,v} · [Fredrik Nyberg](#)^{al} · [George Hripcsak](#)^{a,v,w} · [Marc A. Suchard](#)^{a,ak,am} · [Dani Prieto-Alhambra](#)^{a,b,an} · [Peter R. Rijnbeek](#)^{a,b} · [Martijn J. Schuemie](#)^{a,c,ak} · [Patrick B. Ryan](#)^{a,c,v} [Show less](#)

[Affiliations & Notes](#) [Article Info](#)

Publication History: Received December 11, 2022; Revised February 24, 2023; Accepted March 13, 2023; Published April 4, 2023

DOI: [10.1016/j.eclinm.2023.101932](https://doi.org/10.1016/j.eclinm.2023.101932) Also available on [ScienceDirect](#)

Methods

Data sources

Rates were obtained from 26 databases, which included 8 administrative claims databases, 12 EHRs, 1 EHR with a registry, and 5 general practitioner (GP) databases. These databases represented 11 countries: Belgium, Estonia, France, Germany, Japan, the Netherlands, Serbia, Spain, Turkey, the United Kingdom (UK), and the United States of America (US). All of these databases represent subsets of the total population from which they originate.



Researchers



Data Partner



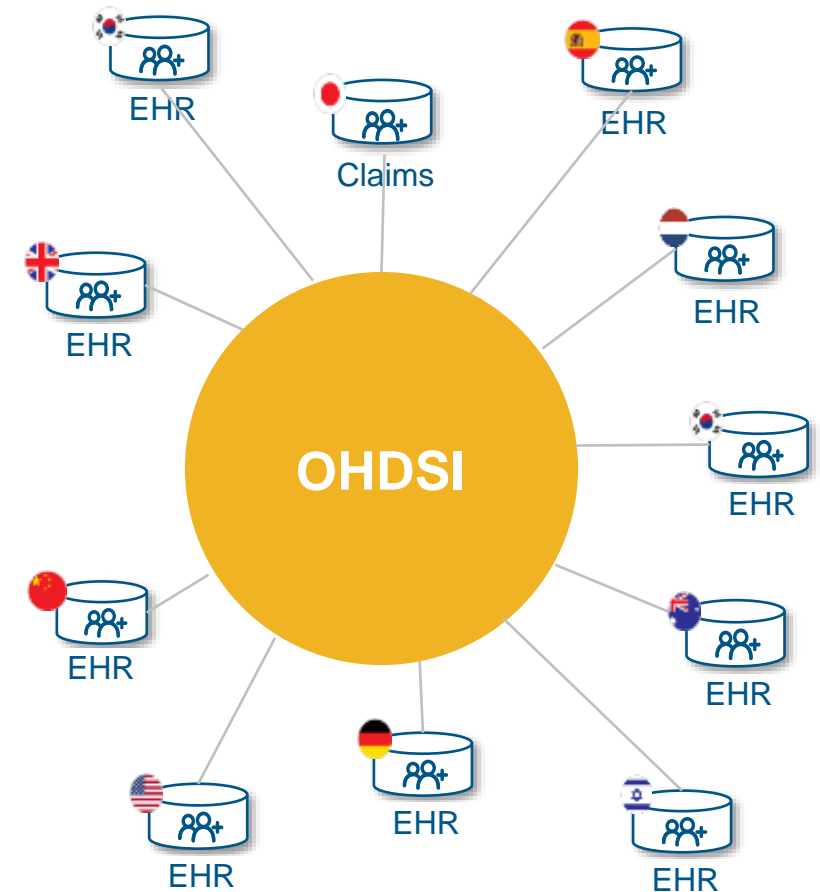
OHDSI Evidence Network

To facilitate **collaborative** research efforts
and **ensure** the quality and integrity
of data across the OHDSI network



What is it?

- Resource comprised of summary statistics of databases within the OHDSI network
 - Held securely at the OHDSI Coordinating Center (OCC)
 - Used to inform network studies
- Patient level data does not leave participating site
- Compliance with privacy and IRB regulations





Inaugural Data Sources of the OHDSI Evidence Network Pilot

Ajou University • Ajou University
Casa di Cura Igea • Casa di Cura Igea
Clinical Center of Montenegro • Clinical Center of Montenegro
Columbia University Medical Center • Columbia University Medical Center
Hong Kong University • UK THIN
IQVIA • Australia EMR
IQVIA • Disease Analyzer France
IQVIA • Disease Analyzer Germany
IQVIA • Japan Claims
IQVIA • Japan HIS
IQVIA • Longitudinal Patient Database (LPD) in Belgium
IQVIA • Longitudinal Patient Database (LPD) in France
IQVIA • Longitudinal Patient Database (LPD) in Italy
IQVIA • Longitudinal Patient Database (LPD) in Spain
IQVIA • OMOP US Hospital Data Master
IQVIA • Pharmetrics Plus
IQVIA • UK Medical Research Data EMIS
IQVIA • UK Medical Research Data THIN
IQVIA • US Open Claims
Janssen Research & Development • JMDC
Janssen Research & Development • Merative®
Marketscan® Commercial Claims and Encounters
Janssen Research & Development • Merative®
Marketscan® Medicare Supplemental

Janssen Research & Development • Merative®
Marketscan® Multi-State Medicaid
Janssen Research & Development • Optum's
Clinformatics® Data Mart - Date of Death
Janssen Research & Development • Optum's
Clinformatics® Data Mart - Socio-Economic Status
Janssen Research & Development • Optum's
Longitudinal EHR Repository
Janssen Research & Development • Premier Healthcare
Database
Johns Hopkins University • Johns Hopkins University
National University of Singapore • National University of
Singapore
Northeastern • IQVIA Pharmetrics Plus
Organization Name • Data Source Name
Taipei Medical University • Taipei Medical University
Tufts University Medical Center • Tufts University
Medical Center
University of Nebraska Medical Center • University of
Nebraska Medical Center
University of Southern California • Keck Medical Center
US Department of Veteran's Affairs • US Department of
Veteran's Affairs
Yinzhou Bigdata Platform • Yinzhou Bigdata Platform

International Medicare Supplemental

International Commercial Claims and Encounters

International Medicare Supplemental



Current State

37

Data
sources



17

Data Partner
Organizations



45+

Data Partners
Onboarding





OHDSI Coordinating Center (OCC)

- Refers to the **central hub** of the OHDSI Initiative
- Currently based at **Department of Biomedical Informatics at Columbia University**
- **manages and facilitates collaborative research** efforts across the OHDSI community by providing **infrastructure, coordinating activities, and promoting open-source tools and data standards** to generate real-world evidence from observational health data



Data Partner Organizations (DPO)



An institution



That owns or licenses data



That has been converted to the OMOP CDM
v5.3+



Willingness to generate evidence and participate in
network studies



Joining Network as a DPO

- What do you need to have in place?
- What do you need to do?
- What information will be held privately?
- What information will be public?



What do DPOs need to have in place?

- Observational health data standardized to the **OMOP CDM v5.3** or higher
- Data held in a **relational database** accessible by the organization
 - List of supported SQL environments here:
<https://ohdsi.github.io/SqlRender/articles/UsingSqlRender.html#translation-to-other-sql-dialects>
- **Approval from governance entity** (i.e., IRB) to share metadata and concept counts with the OHDSI Coordinating Center (OCC)
 - Note: It is up to each individual DPO as owner or licensee of data to ensure all appropriate governance requirements are followed.
- The ability to run the **DbDiagnostics R** package against the data



Data Network Protocol



5 Rationale and Background

The Observational Health Data Sciences and Informatics (OHDSI) federated network is a collaborative effort aimed at leveraging healthcare data from multiple institutions for large-scale federated observational research. In its current state there are over 500 data sources from over 49 countries mapped to the OMOP Common Data Model, the standard that enables such ambitious evidence generation. One major challenge of federated network studies is the assessment of network data study feasibility and data fitness-for-use across these data sources in such a way that does not strain time and resources of data holders while still supporting rigorous evidence generation that engenders trust and buy-in from the larger research community.

To facilitate collaborative research efforts and ensure the quality and integrity of the data across OHDSI network, it is imperative to understand the characteristics and variability of the databases in the network. This study aims to collect summary statistics from participating sites to describe the databases and learn about the network as a whole. The output of the study will inform and enhance the research capabilities of the OHDSI community by enabling rapid data quality and fitness-for-use assessments.

5.1 Research Questions

The main research question of this study is:

What are the population-level characteristics of the databases within the OHDSI federated network?

- This study aims to **summarize data profile counts and concept distribution patterns** across different OHDSI datasets and investigate their impact on study feasibility to facilitate cross-institutional and network studies.
- The **aggregate statistics** collected will inform the similarities between federated network data partners, what a typical OHDSI dataset looks like, and allow for rapid feasibility assessments for across the network.
- This study has **no plans nor requirements for sharing individual-level data**. Any data shared/disseminated will only consist of aggregate or **summary-level data and results**.







What do DPOs need to do to join?

- Run the [DbDiagnostics package](#) `executeDbProfile` function to generate metadata and high-level concept counts about each data source submitted to the network
 - The aggregate information gathered by the package is listed here:
<https://ohdsi.github.io/DbDiagnostics/articles/SummaryStatistics.html>
 - If the [Achilles](#) package was run previously and the results stored this step will take approximately 15-30 minutes, depending on the environment
 - If the Achilles package was not run previously or if the results were not stored this step will take approximately 1-8 hours, depending on the environment
- Send the resulting information to the OCC via SFTP. Please contact evidencenetwork@ohdsi.org for the key file when you are ready



What information is held privately?

- Data source and site-specific metadata will be held securely at the OHDSI Coordinating Center and **will not** be shared openly.

	cdm_source_name character varying (255) 	statistic text 	concept_id character varying (255) 	person_count integer 
1	Synthea_v54_OHDSI_Example	Number of persons with at least one condition occurrence, by condition_concept_id	28060	10
2	Synthea_v54_OHDSI_Example	Number of persons with at least one condition occurrence, by condition_concept_id	77074	10
3	Synthea_v54_OHDSI_Example	Number of persons with at least one condition occurrence, by condition_concept_id	81151	10
4	Synthea_v54_OHDSI_Example	Number of persons with at least one condition occurrence, by condition_concept_id	132797	10
5	Synthea_v54_OHDSI_Example	Number of persons with at least one condition occurrence, by condition_concept_id	201826	10
6	Synthea_v54_OHDSI_Example	Number of persons with at least one condition occurrence, by condition_concept_id	254761	60
7	Synthea_v54_OHDSI_Example	Number of persons with at least one condition occurrence, by condition_concept_id	255848	20
8	Synthea_v54_OHDSI_Example	Number of persons with at least one condition occurrence, by condition_concept_id	257012	20
9	Synthea_v54_OHDSI_Example	Number of persons with at least one condition occurrence, by condition_concept_id	260139	40
10	Synthea_v54_OHDSI_Example	Number of persons with at least one condition occurrence, by condition_concept_id	312437	10
11	Synthea_v54_OHDSI_Example	Number of persons with at least one condition occurrence, by condition_concept_id	313217	10
12	Synthea_v54_OHDSI_Example	Number of persons with at least one condition occurrence, by condition_concept_id	314754	10



What information is held publicly?

- **Only aggregate concept counts** and the total number of data sources with a record of each concept will be shared as a public resource.

	statistic text	concept_id character varying (255)	total_person_count numeric	num_data_sources bigint
1	Number of data sources with at least one condition occurrence, by condition_concept...	0	118600921	26
2	Number of data sources with at least one condition occurrence, by condition_concept...	132238	1651	13
3	Number of data sources with at least one condition occurrence, by condition_concept...	132258	6710	20
4	Number of data sources with at least one condition occurrence, by condition_concept...	132277	573790	20
5	Number of data sources with at least one condition occurrence, by condition_concept...	132321	26210	19
6	Number of data sources with at least one condition occurrence, by condition_concept...	132333	88330	20
7	Number of data sources with at least one condition occurrence, by condition_concept...	132342	342294	28
8	Number of data sources with at least one condition occurrence, by condition_concept...	132344	1460714	33
9	Number of data sources with at least one condition occurrence, by condition_concept...	132356	198620	18
10	Number of data sources with at least one condition occurrence, by condition_concept...	132391	414550	21
11	Number of data sources with at least one condition occurrence, by condition_concept...	132392	47668	27
12	Number of data sources with at least one condition occurrence, by condition_concept...	132393	2106730	27
13	Number of data sources with at least one condition occurrence, by condition_concept...	132397	1310	3



What happens after you send you DbProfile to the OCC?

1. Your organization will receive an @ohdsi.org account
 - i.e. VA@ohdsi.org to be used to notify you of potential network studies and other internal communications
2. Your organization will be listed as an OHDSI Evidence Network DPO on the OHDSI.org website
3. You will receive a report from the OCC putting your data source in the context of network*

*Once there are enough participating data partner organizations



We are here to help

- We host office hours every Friday from 9am-10am EST / 22PM-23PM SGT in the Evidence Network teams channel for researchers and data partners.
- Data Partners join our Evidence Network Working Group at OHDSI.org. Meets 2x/month on Thursdays at 10AM EST / 23PM SGT.
- Email us at evidencenetwork@ohdsi.org

This times are not great for APAC,
just contact us and we will set up
something separate.

JOIN THE OHDSI EVIDENCE NETWORK

Interest Form →



Study Page →

