Observational Medical Outcomes Partnership Common Data Model (OMOP CDM)

The Observational Medical Outcomes Partnership Common Data Model (OMOP CDM) is a data standard designed to harmonize the structure and content of different types of health data such as electronic health records, insurance claims data, health surveys, and other clinical data sources for federated health research and reporting. Developed by the Observational Health Data Sciences and Informatics (OHDSI) community, the OMOP CDM organizes data into domains or tables representing patient demographics, visits, diagnoses, drugs, measurements (lab tests), procedures, and clinical notes. Interoperability is achieved by sharing computer programs written for the OMOP CDM without the need to share the source data, thereby ensuring patient privacy, and allowing data owners to retain control over their data.

The primary function of OMOP CDM is to standardize health data that are in different formats to promote interoperability and collaboration. Analytical tools written for the OMOP CDM can be shared among collaborators without the need to exchange the source data, thus provenance and governance of the data remain with the data owner. Open source OHDSI tools have been created to check the quality of data in an OMOP CDM (consistency, conformance, and plausibility) and to visualize the data according to common subgroups (e.g., sex, year of birth, primary diagnoses, medication usage). Programs can be reused when new data partners join a collaborative effort or when additional data from the same partner becomes available. Results among different data partners can be aggregated to increase statistical power of an analysis, make comparisons of data from different partners, test validity in different contexts, and assess generalizability and the like.

General Details

PRIMARY USERS:

Health informaticians, computer scientists, clinicians, hospital administrators, public health officials, health product regulators, epidemiologists, biostatisticians, health care students, interns, residents, and fellows

REACH OF TECHNOLOGY:

The OHDSI community consists of 3,758 collaborators in 83 countries and 6 continents.

LANGUAGES:

The OMOP CDM Table Names and Column Headings are in English. Supporting documentation in the Book of OHDSI is currently available in 3 languages: English, Korean and Chinese.

TYPE:

Content

OPEN SOURCE LICENSE:

The Book of OHDSI is licensed under the Creative Commons Zero v1.0 Universal license.

Access Information

WEBSITE

www.ohdsi.org

CONTACT

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WHO System Classification

PRIMARY

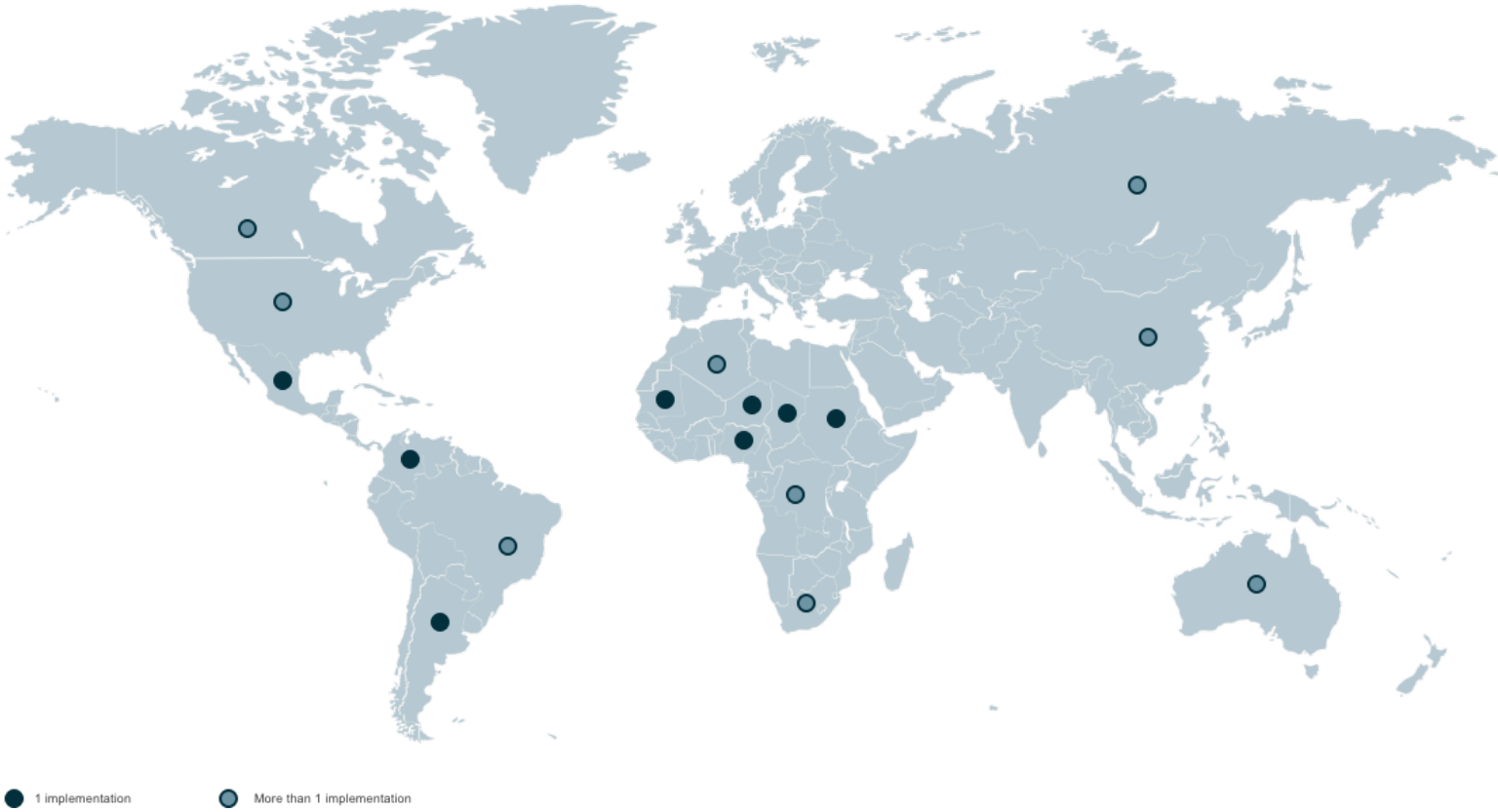
D2 | D2 Data interchange and interoperability

ADDITIONAL

C11 | C11 Terminology and classification systems
D1 | D1 Analytics systems
D3 | D3 Data warehouse

Geographic Reach & Impact

534 data sources are configured in an OMOP CDM in more than 50 countries in North and South American, Eur ope, Latin America, Asia, and Africa. Approximately one billion unique individuals, or 12% of the world\'s population, are estimated to have a health record in an OMOP CDM. Reference: 2023 OHDSI Annual Report.



Standards & Interoperability

Common data model conventions.

ETL - Documentation best practices

OPENHIE COMPONENT

Not Applicable

Maturity

All maturity model assessments are self-reported by the funded organization leading the software development of the global good.

Maturity Matrix: 2023

Global Utility

Country Utilization	Medium
Country strategy	Medium
Digital Health Interventions Mapping DIIG	Medium
Content accessibility	High
Sustainability and ongoing support	High

Community Support

Organization and community engagement	High
Content governance	High
Content roadmap	High
Resources to support use	High
Multilingual support	High

Software Maturity

Content productization	High
Content re-use and adaptability	High
Content alignment to global normative agencies	Low

Resources

Documentation URL
https://www.ohdsi.org/web/wiki/doku.php?id=documentation:overview

Community

The OHDSI community maintains the OMOP CDM. The purpose of OHDSI is to improve health by empowering a community to collaboratively generate evidence that promotes better health decisions and better care. OHDSI strives to make all community assets open and publicly accessible, including the methods, tools, and evidence generated. Key values for the community are to innovate, welcome participants from a diverse community, ensure reproducibility, and encourage collaboration, openness, and beneficence.

OHDSI is also committed to the FAIR (Findable, Accessible, Interoperable, Reusable) principles of data science research. The global representation of the OHDSI community is illustrated on a map here.

The OHDSI Forums is a web space where questions about the OMOP CDM or other OHDSI related topics can be submitted. A best practice guideline for use of the Forums is posted here.

COMMUNITY CALLS / FORUMS

All members are invited to attend the Global Community Call virtually (every Tuesday at 11 a.m. ET). Publications related to the OMOP CDM are highlighted, and noteworthy developments, job postings, and training opportunities are announced. Community polls are frequently taken during Community Calls. There are >30 Work Groups (e.g., Common Data Model, THEMIS, Oncology, Genomics, GIS, Imaging) led by volunteer members that meet weekly, biweekly, or monthly, which any member is welcome to join. The Common Data Model Working Group meets the first and third Tuesday of each month and the THEMIS (CDM conventions) Working Group meets the first and third Thursday of each month.

Sustainability

The OMOP CDM is maintained by the OHDSI CDM Working Group (https://www.youtube.com/watch?v=m9iyfLKKN28&t=1s) and the THEMIS Working Group (https://www.youtube.com/watch?v=icuEQo8eOEQ&t=42s). The OMOP CDM and THEMIS Working Groups comprise volunteers from many countries and organizations in the OHDSI Community and take place virtually in Teams meetings, not anchored to a particular host organization. Anyone is welcome to join these Working Groups. US, Columbia University, Department of Biomedical Informatics is the coordinating center for the Global OHDSI Community. Netherlands, Erasmus Medical Center Department of Medical Informatics and UK, Oxford University Medical Sciences Division are coordinating institutions for the European OHDSI community. The OHDSI Coordinating Center at Columbia University Department of Biomedical Informatics is a registered 501(c)(3) non-profit, which has received funding from the US National Institutes of Health (NIH), National Science Foundation (NSF), Food and Drug Administration (FDA), the Bill & Melinda Gates Foundation, Wellcome Trust, Mastercard, the European Union Innovative Medicines Initiative, and the European Medicines Agency. Among the companies that have made charitable contributions to OHDSI are Johnson & Johnson, Amgen, Odysseus, Boehringer Ingelheim, Gilead, and Bayer.