Real World Evidence

Table of Contents

Applying Advanced Data Privacy Methods to Real World Data (RWD)

Description

This project aims to develop a comprehensive, cross-disciplinary resource to support the application of advanced privacy-pressing techniques to real-world data (RWD). It addresses the growing complexity of integrating diverse data sources and the increasing use of machine learning (ML), artificial intelligence (AI) and large language models (LLMs) within healthcare.

RWD presents significant privacy risks due to its sensitivity, high dimensionality, and potential for re-identification. While methods such as differential privacy, federated learning and synthetic data generation exist, there is limited consolidated guidance on their practical implementation, particularly in AI-driven contexts.

The project will provide actionable guidance on applying these techniques in compliant, scalable and scientifically robust ways. It will leverage open-source datasets (e.g. MIMIC-IV, UK Biobank, ADNI) for validation and demonstration. The resulting resource will support researchers, developers and regulators in advancing privacy-preserving data integration and responsible AI adoption.

Q4 2026

Proposed End Date

White paper/ guideline

Deliverable

Draft white paper progressed up to the technical parts.

Key Achievements This Quarter:

Draft white paper completion.

Deliverables & Targets Planned for the Next Quarter:

Abhishek Mishra & Elena Valkanova

Lead

Project Status: Green
Accepting New Members

- Draft white paper in progress.

Project Status

phuse

Estimands for RWD/RWE

Description

This project focuses on establishing best practices for defining estimands in real-world data (RWD) and real-world evidence (RWE), rather than their implementation using data standards. The team brings together expertise from across PHUSE initiatives, including the Implementation of Estimands (ICH E9 (R1)) project, the Estimands Implementation Working Group (EIWG) HTA and the RWE sub-team, and contributors from the RWE Working Group, representing regulators, statisticians, epidemiologists and health economists.

Currently, there is limited guidance on constructing estimands for RWD/RWE and how these differ from or align with those used in randomised clinical trials (RCTs). Existing regulatory guidance, such as the FDA's February 2023 publication on externally controlled trials, provides an initial foundation but lacks detailed practical direction.

This project aims to address these gaps by developing clear, practical guidance and examples, supporting consistent and appropriate use of estimands across RWD/RWE studies and benefiting stakeholders across the pharmaceutical and biotech industries.

Q2 2027

Proposed End Date

White paper & webinar series

Deliverable

- Fifth webinar planning.
- White paper final draft for internal review.

Key Achievements This Quarter:

- Final white paper for public review.
- Fourth and last webinar planning and execution.

Deliverables & Targets Planned for the Next Quarter:

Ksenia Titorenko, Matt Baldwin & Paramita Chakraborty

Leads

Project Status: Green

- White paper final draft
- Webinar series planning almost completed

Project Status

Missing Data Imputation in RWD Exploration of Multiple Techniques on Open-Source Data

Description

This project aims to evaluate and compare multiple missing data imputation methods for real-world data (RWD) using a single open-source simulated dataset (Synthea). The goal is to produce a white paper assessing the strengths, limitations and efficiency of different techniques across varying missing data scenarios.

Handling missing data is critical to ensuring RWD is fit to generate reliable real-world evidence (RWE) and meet regulatory expectations, as outlined in ICH E9 and FDA guidance. However, practical guidance on selecting appropriate imputation strategies remains limited.

By systematically comparing models, this project will provide clear, evidence-based recommendations on which approaches are best suited to different types of missingness. It will also identify key challenges and limitations in current methods. The use of open-source tools ensures accessibility and cost-effectiveness, supporting broader industry adoption and improved data quality for regulatory submissions.

Proposed End Date

Q1 2027

Deliverable

White paper

Key Achievements This Quarter:

Ongoing discussions on content and variation of methods that can be used. New Project Leads will take this further into the actual white paper.

Deliverables & Targets Planned for the Next Quarter:

Drafting of white paper.

Leads

Likhita Kolli, Sujith Mididoddi & Tuhin James Paul

Project Status

Project Status: Green
Accepting New Members

- Start of draft white paper.

Quality and Reusability of Real World Data

Description

This project focuses on evaluating real-world data (RWD) sources for regulatory use and identifying the documentation needed to support FDA pre-alignment discussions. It will assess available data sources, summarise their advantages and limitations, and outline the requirements for demonstrating data quality, traceability, appropriateness and regulatory readiness.

RWD has long supported research planning, site and patient selection, safety follow-up and market access, but its use in regulatory submissions requires a more rigorous and structured approach. Sponsors must be able to justify their choice of data source, confirm its representativeness and reliability, and provide robust evidence to support study assumptions.

The project will develop practical guidance on selecting suitable data sources, evaluating quality, and preparing key supporting documents for regulatory engagement. Where possible, it will seek alignment with FDA expectations. The outputs will help organisations strengthen study design early, reduce the risk of rejection, and improve readiness for RWD-based regulatory submissions.

Q3 2026

Proposed End Date

- Guideline review blog posts
- Data vendor feasibility blog posts
- White paper

Deliverable

Public review comments reviewed and aligned with the project team.

Key Achievements This Quarter:

Final white paper to be published.

Deliverables & Targets Planned for the Next Quarter:

Ashwin Rai & Berber Snoeijer

Leads

Project Status: Green

- Aligned updates based on review comments to be included in the white paper. Expected final version in July.

Project Status

phuse

Real World Evidence (RWE) in Japan

Description

This project focuses on sharing real-world evidence (RWE) use cases relevant to the Japanese regulatory and industry context, including applications in accelerating drug development, post-marketing surveillance (PMS), and preventative healthcare strategies.

There is currently a significant gap in awareness, understanding and practical experience with RWE among pharmaceutical professionals in Japan. This initiative aims to address that gap by creating opportunities to share practical, region-specific examples aligned with Japanese regulatory requirements and expectations. By highlighting relevant use cases, the project will support stakeholders in better understanding how RWE can be effectively applied across the product lifecycle. It will also promote knowledge exchange and encourage more consistent and informed use of RWE within Japan. Ultimately, this work will help build capability, improve decision-making, and strengthen the integration of RWE into regulatory and industry practices.

Q4 2026

Proposed End Date

Sessions at the Japan SDE
- Plan detailed contents: June
- Deliver the session at the Japan SDE: November

Deliverable

Draft plan for the PHUSE SDE in Japan Discussion on the contents for the webinar in Japanese.

Key Achievements This Quarter:

Detailed plan for the PHUSE SDE in Japan Preparation of the webinar in Japanese.

Deliverables & Targets Planned for the Next Quarter:

William Kuan, Yasunari Sadatsuki & Yosuke Nishida

Leads

Project Status: Green

- We are planning for the PHUSE SDE in Japan, and we will proceed with more detailed planning based on the SDE chairs and themes.
- We are also preparing a presentation for the PHUSE webinar in October 2026 in Japanese. Presentation confirmed and logistical details to be discussed.

Project Status

Using OMOP and Other Real World Data Standards to Support Regulatory Submissions

Description

This project aims to raise awareness of data standards for real-world data (RWD) to support regulatory use, with a focus on commonly used data sources such as electronic health records, claims data, patient-reported outcomes, and other observational datasets. It will evaluate common data models (CDMs), including OMOP and the OHDSI ecosystem, alongside alternatives such as PCORnet, Sentinel and CDISC standards.

Differences in regulatory guidance and preferred standards across global agencies can lead to inefficiencies, as data may need to be transformed multiple times to meet varying requirements. OMOP, endorsed by the EMA and supported by a mature community, provides a strong reference point for comparison.

The project will deliver a white paper assessing the strengths, limitations and maturity of key data standards, their suitability for different data types and use cases, and the supporting communities and tools. It aims to promote greater alignment, improve data quality and interoperability, and initiate industry dialogue on the use of these standards for regulatory submissions.

Q4 2026

Proposed End Date

Collated draft white paper. White paper being reviewed and aligned by subteam.

Key Achievements This Quarter:

Draft white paper for internal review.

Deliverables & Targets Planned for the Next Quarter:

White paper

Deliverable

Alexa Parliyan, Berber Snoeijer & Sanket Kalyankar

Leads

Project Status: Green

- Initial draft white paper.

Project Status