OpenFurther: Federating and Generating OMOP Datasets

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Background

- Multiple disparate data sources are using methods provided by the Observational Medical Outcomes Partnership (OMOP) data community to generate datasets in the common data model (CDM).
- These generated datasets often need to be assembled in a centralized repository before they can be used in any comparative effectiveness research (CER) analysis.

OpenFurther

- OpenFurther\textsuperscript{1,2} is an open-source informatics platform that supports federation and integration of data from heterogeneous and disparate data sources.
- By using pre-programmed data source metadata and adaptors, it is able to provide semantic and syntactic interoperability for federating health information on-the-fly and in real-time. It requires neither data extraction nor homogenization by data source partners, facilitating integration by retaining data in their native format and in their originating systems.
- It resolves identities of unique individuals from these sources\textsuperscript{3} and assesses the data quality of a data source\textsuperscript{4}.
- It supports distributed and centralized governance models and controls access to data based on institutional review board approvals.

Objective

- To extend the capabilities of OpenFurther to federate OMOP datasets generated from disparate data sources.
- To generate OMOP datasets from multiple disparate data sources.

Methods

- We mapped OMOP’s CDMs to the OpenFurther model and stored them within a metadata repository for consumption by the translation processes\textsuperscript{10}.
- OMOP common vocabularies were analyzed, mapped to the standard terminologies used by OpenFurther, and then loaded into a terminology server.
- OMOP data source adapters were developed to facilitate interoperability among OMOP and other datasets\textsuperscript{5}.
- These translational and terminology mappings provide the ability to export non-OMOP data source into any version of the OMOP CDM.
- Finally, we updated OpenFurther’s User Query Tool to support querying of OMOP datasets\textsuperscript{6}.

Conclusion

- OpenFurther can federate OMOP datasets in different versions of the CDM with other heterogeneous clinical, public health and biospecimen data from multiple data sources.

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