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Comparative Cohort Analysis Demonstration

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Abstract

Performing a comparative cohort analysis generates evidence to predict the relative risk of an outcome between cohorts receiving two independent treatments. While methods exist for performing these analyses they are generally inaccessible to researchers that lack independent programming resources. ATLAS¹, a web based interface developed as part of the OHDSI initiative, now provides a user-friendly interface that enables comparative cohort analyses. We will demonstrate how this new interface can perform a comparative cohort analysis along with various diagnostic reports and visualization tools to review the results.

Discussion

Performing a comparative cohort analysis is a multi-step process that requires a high level of expertise in a variety of areas including medical terminology, cohort definition, propensity model development, matched cohort design and a variety of statistical methods. Using a new interface in ATLAS (figure 1) we will demonstrate how a user can execute a comparative cohort analysis that leverages the CohortMethod² R package to perform a new user propensity matched cohort comparison. This workflow will enable empirical calibration by providing estimates of negative controls in addition to outcome of interest. This workflow has standardized predefined diagnostics at a priori stopping points throughout the process to enforce best practice methodology. This workflow builds off existing capabilities in ATLAS, including vocabulary exploration, concept set generation, cohort definition, and cohort characterization.

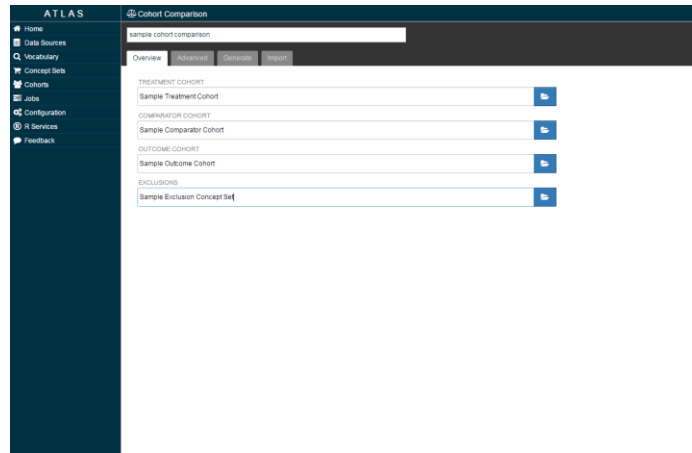


figure 1

The demonstration will include:

- Review of cohort definitions
- Selection of treatment, comparator and outcome cohorts
- Selection of concepts for covariate exclusion
- Execution of a comparative cohort analysis leveraging an asynchronous R processing module available through the OHDSI architecture
- Review of propensity model diagnostics and selected model covariates
- Review of point estimates, confidence intervals and empirical calibration as outputs of the processing of a parameterized outcome model

References

1. ATLAS – A unified interface for the OHDSI tools (2016). (<http://www.ohdsi.org/atlas-a-unified-interface-for-the-ohdsi-tools/>)
2. Martijn J. Schuemie, Marc A. Suchard and Patrick B. Ryan (2015). CohortMethod: New-user cohort method with large scale propensity and outcome models. (<https://github.com/OHDSI/CohortMethod>)