Agenda

• CaRROT-Mapper Introduction and Demo by Esmond Urwin
• Re-executing an Outdated OHDSI R Package by Mengyuan Shang
CaRROT-Mapper Introduction and Demo

https://youtu.be/eAv-9lt20bM?si=1y9DvBVvFY-kcei-
Re-executing an Outdated OHDSI R Package

Learning experience share from re-executing an OHDSI R package from 2021
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Overview of the outdated OHDSI R package

- A three years’ old OHDSI R package from 2021 replicate tutorial for the Korea Society of Health Informatics and Statistics (KOSHIS)
  - A study case on Clopidogrel versus Ticagrelor for how to use Common Data Model (CDM) in clinical research
  - Purpose of re-executing: to be presented by Seng Chan You (package owner) in OHDSI Japan event on April 17, 2024
Overview of the outdated OHDSI R package

- “R” folder: R scripts to be called when executing the package, **code modified**
- “extras” folder: execute the package, **code modified**
- “inst” folder:
  - “cohorts” folder: json files for cohorts used in the package, **file renamed**
  - “settings” folder: json files and csv files for cohort generation, **code modified**
  - “shiny/EvidenceExplorer” folder: R scripts for presenting results in Shiny dashboard, **code modified**
  - “sql/sql_server” folder: sql files for executing the package, **file renamed**
Versions of dependencies

- Required R: version 3.5.0 or newer
- Required OHDSI dependencies:
  - ParallelLogger: version 1.1.1
  - SqlRender: version 1.6.3
  - DatabaseConnector: version 2.4.1
  - OhdsiSharing: version 0.1.3
  - FeatureExtraction: version 2.2.5
  - CohortMethod: version 3.1.0
  - EmpiricalCalibration: version 2.0.0
  - MethodEvaluation: version 1.1.0
- Latest R: version 4.3.2
- Latest OHDSI dependencies:
  - ParallelLogger: version 3.3.0
  - SqlRender: version 1.17.0
  - DatabaseConnector: version 6.3.2
  - OhdsiSharing: version 0.2.2
  - FeatureExtraction: version 3.5.1
  - CohortMethod: version 5.2.1
  - EmpiricalCalibration: version 3.1.2
  - MethodEvaluation: version 2.3.0
Versions of dependencies

R version 3.5.0 or newer
On Windows: RTools
Java
25 GB of free disk space

See these instructions on how to set up the R environment on Windows.

How to run

1. In R, use the following code to install the dependencies:

```r
install.packages("devtools")
library(devtools)
install_github("ohdsi/Parallelogger", ref = "v1.1.1")
install_github("ohdsi/SqlRender", ref = "v1.6.3")
install_github("ohdsi/DatabaseConnector", ref = "v2.4.1")
install_github("ohdsi/OhdsiSharing", ref = "v0.1.3")
install_github("ohdsi/FeatureExtraction", ref = "v2.2.5")
install_github("ohdsi/CohortMethod", ref = "v3.1.0")
install_github("ohdsi/EmpiricalCalibration", ref = "v2.0.8")
install_github("ohdsi/MethodEvaluation", ref = "v1.1.0")
```
Issue 1 - SQL translation

- Installing the exact versions of dependencies from Github page
- R version: 4.3.2
- Modified database connection information in “DatabaseConnector::createConnectionDetails” function
- Filled in the schema information
- IQVIA internal databases are migrated to SnowFlake platform, which is not supported by “SqlRender”: version 1.6.3

```
Creating exposure and outcome cohorts
Error in .jcall("RJavaTools", "Ljava/lang/Object;", "invokeMethod", cl, :
java.lang.RuntimeException: Don't know how to translate from sql server to null. Valid target dialects are sql server
```

- Updated “SqlRender” to the latest version: version 1.17.0
Issue 2 - Conflicts of dependencies’ versions

- “SqlRender” package was up-to-date
- “DatabaseConnector” version outdated: version 2.4.1
- Updated “DatabaseConnector” to the latest version: version 6.3.2

Creating exposure and outcome cohorts

Error in execute(connectionDetails = connectionDetails, cdmDatabaseSchema = cdmDatabaseSchema, :
  2 assertions failed:
* Variable 'dbms': Must be of type 'character', not 'NULL'.
* Variable 'dbms': Must be a subset of {'sql
  * server','oracle','postgresql','pdw','impala','netezza','bigquery','spark','sqlite','redshift','hive','sqlite
  * extended','duckdb','snowflake','synapse'}, not 'NULL'.

- Some updated dependencies required updated version of other dependencies

Error: package or namespace load failed for ‘CohortMethod’ in loadNamespace(j <- i[[1L]], c(lib.loc,
  .libPaths()), versionCheck = vI[[j]]):
  namespace ‘SqlRender’ 1.6.3 is already loaded, but >= 1.12.0 is required

- Need to make sure the correct dependencies’ versions were installed and selected
  - Remove unwanted versions of dependencies
  -Restart R session
Issue 3 - “CohortMethod” package

• Not all latest versions of dependencies work
• “CohortMethod”: version 5.2.1

Error in CohortMethod::createTargetComparatorOutcomes(targetId = targetId, : unused argument (outcomeIds = outcomeIds)

• Options and resources for debugging:
  – Modify the outdated study package and make it accommodate to the selected version of “CohortMethod” package
  – Track down in what version the argument had been updated from Github page of the certain function referred in the error message, and use that version instead
  – Mix and match above two options
Issue 3 - “CohortMethod” package

- Modify the outdated study package
  - New “createOutcome()” function added to be used with “createTargetComparatorOutcomes”
  - More error messages came up
    - “CohortMethod::createPs”
    - “CohortMethod::computeCovariateBalance”
Issue 3 - “CohortMethod” package

- Track down in what version the argument had been updated from Github page
Issue 3 - “CohortMethod” package

• Mix and match above two options
Resources for debugging

• Github repository

• Example package from more recent OHDSI studies:
  – E.g. ComparativeEffectStudy
    • May need to rename json files and table names in the code
Summary

• Major issue:
  – Limited resource/instruction/shared experience of debugging an outdated OHDSI study package

• Key takeaways:
  – The same R environment settings, including versions of dependencies, as well as similar database platform will significantly shorten and smoothen the re-execution process
  – Experience with OHDSI package is a major benefit, especially with a relatively tight timeline
  – Recommend to have the creator of package re-create the study input to meet their original input and be compatible with updated packages
Thank you!