



Get Study-Ready with Strategus & HADES

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Agenda

- Overview & Updates on Strategus
- Running the OHDSI Sample Study
- Designing your network study with Strategus & HADES



Strategus Overview

- *How do you pronounce “Strategus”?*
stra·te·gus (strə'tēgəs)
- *What does the word “Strategus” mean?*
A leader of an ancient Greek army

Strategus: an R package for coordinating and executing analytics using OHDSI HADES modules.



| Package | Version | Maintainer(s) | Availability |
|--|---------|---------------------------------|--------------|
| Achilles | v1.7.2 | Frank DeFalco | CRAN |
| Andromeda | v0.6.7 | Martijn Schuemie | CRAN |
| BigKnn | v1.0.2 | Martijn Schuemie | GitHub |
| BrokenAdaptiveRidge | v1.0.0 | Marc Suchard | CRAN |
| Caqr | v2.0.8 | Martin Lavallee | GitHub |
| Characterization | v2.0.1 | Jenna Reps | GitHub |
| CirceR | v1.3.3 | Chris Knoll | CRAN |
| CohortDiagnostics | v3.3.0 | Jamie Gilbert | GitHub |
| CohortExplorer | v0.1.0 | Gowtham Rao | CRAN |
| CohortGenerator | v0.11.2 | Anthony Sena | GitHub |
| CohortIncidence | v4.0.0 | Chris Knoll | GitHub |
| CohortMethod | v5.4.0 | Martijn Schuemie | GitHub |
| Cyclops | v3.4.1 | Marc Suchard | CRAN |
| DatabaseConnector | v6.3.2 | Martijn Schuemie | CRAN |
| DataQualityDashboard | v2.6.1 | Katy Sadowksi | GitHub |
| DeepPatientLevelPrediction | v2.1.0 | Egill Fridgeirsson | GitHub |
| EmpiricalCalibration | v3.1.3 | Martijn Schuemie | CRAN |
| EnsemblePatientLevelPrediction | v1.0.2 | Jenna Reps | GitHub |
| Eunomia | v2.0.0 | Frank DeFalco | CRAN |
| EvidenceSynthesis | v0.5.0 | Martijn Schuemie | CRAN |
| FeatureExtraction | v3.7.1 | Ger Inberg | CRAN |
| Hydra | v0.4.0 | Anthony Sena | GitHub |
| IterativeHardThresholding | v1.0.2 | Marc Suchard | CRAN |
| Keeper | v0.2.0 | Anna Ostroplets | GitHub |
| MethodEvaluation | v2.3.0 | Martijn Schuemie | GitHub |
| OhdsiSharing | v0.2.2 | Lee Evans | GitHub |
| OhdsiShinyModules | v3.0.2 | Jenna Reps | GitHub |
| ParallelLogger | v3.3.1 | Martijn Schuemie | CRAN |
| PatientLevelPrediction | v6.3.9 | Egill Friogeirsson & Jenna Reps | GitHub |
| PhenotypeLibrary | v3.34.0 | Gowtham Rao | GitHub |
| PheValuator | v2.2.11 | Joel Swerdel | GitHub |
| ResultModelManager | v0.5.11 | Jamie Gilbert | GitHub |
| ROhdsiWebApi | v1.3.3 | Gowtham Rao | GitHub |
| SelfControlledCaseSeries | v5.3.0 | Martijn Schuemie | GitHub |
| SelfControlledCohort | v1.6.0 | Jamie Gilbert | GitHub |
| ShinyAppBuilder | v3.1.0 | Jenna Reps | GitHub |
| SqlRender | v1.18.1 | Martijn Schuemie | CRAN |

The open-source tools that empower OHDSI research are not only available to the community, but they are **DEVELOPED** by the community. We thank the many developers and maintainers who empower our research initiatives around the world!





Strategus Overview

- Strategus was added to HADES in October 2024 and continues to improve based on user feedback.



Strategus v0.x



Strategus v1.x



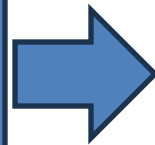
Strategus Overview



Standardized Input

A JSON document that captures all design elements and choices.

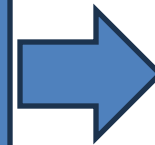
- Phenotypes from Phenotype Phebruary
- HADES analytical choices



Standardized Execution

Strategus executes all HADES packages as defined in the standardized input.

- Renv for reproducibility



Standardized Output

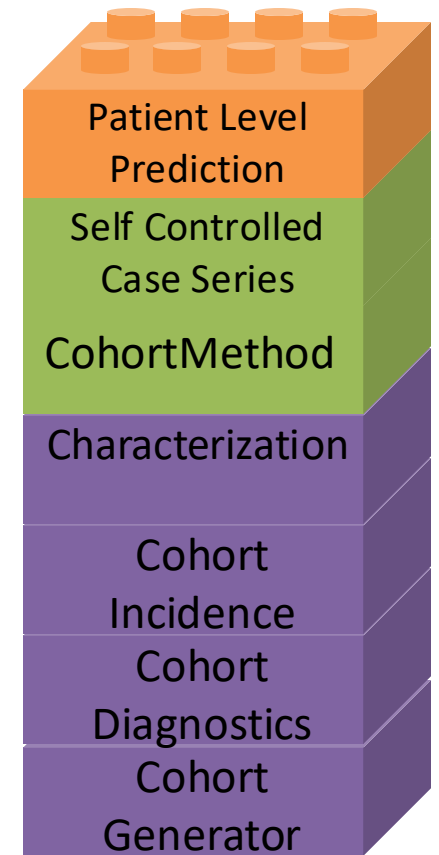
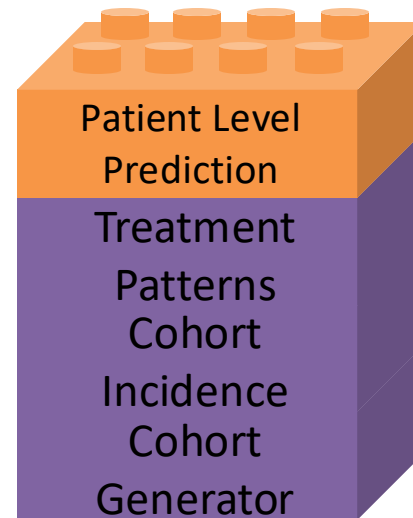
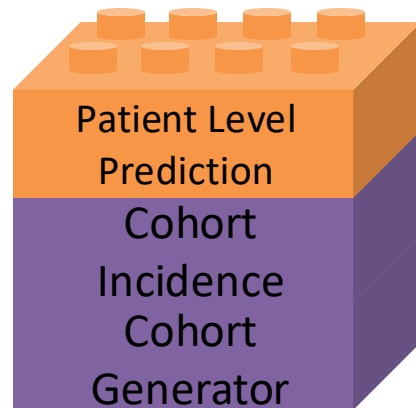
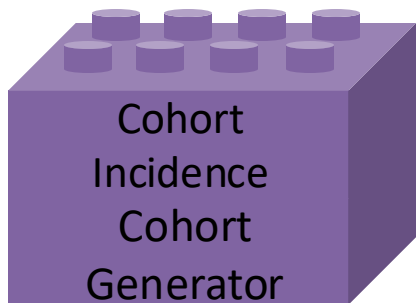
All output is created in comma separated value (csv) providing transparency with the results generated.



Strategus Overview – Standardized Inputs



- HADES modules can be combined to accommodate various study designs.
- Every study design is captured as an **analysis specification JSON** document





Strategus Overview – Standardized Execution

- We use **renv** for reproducible R/Python environments for our OHDSI Network Studies.
- The **renv.lock** file is a standardized JSON document that contains the full set of HADES packages (including Strategus).
- Using the **analysis specification** and **renv** provides a reproducible, standardized execution environment for running OHDSI studies using HADES.





Strategus Overview – Standardized Output



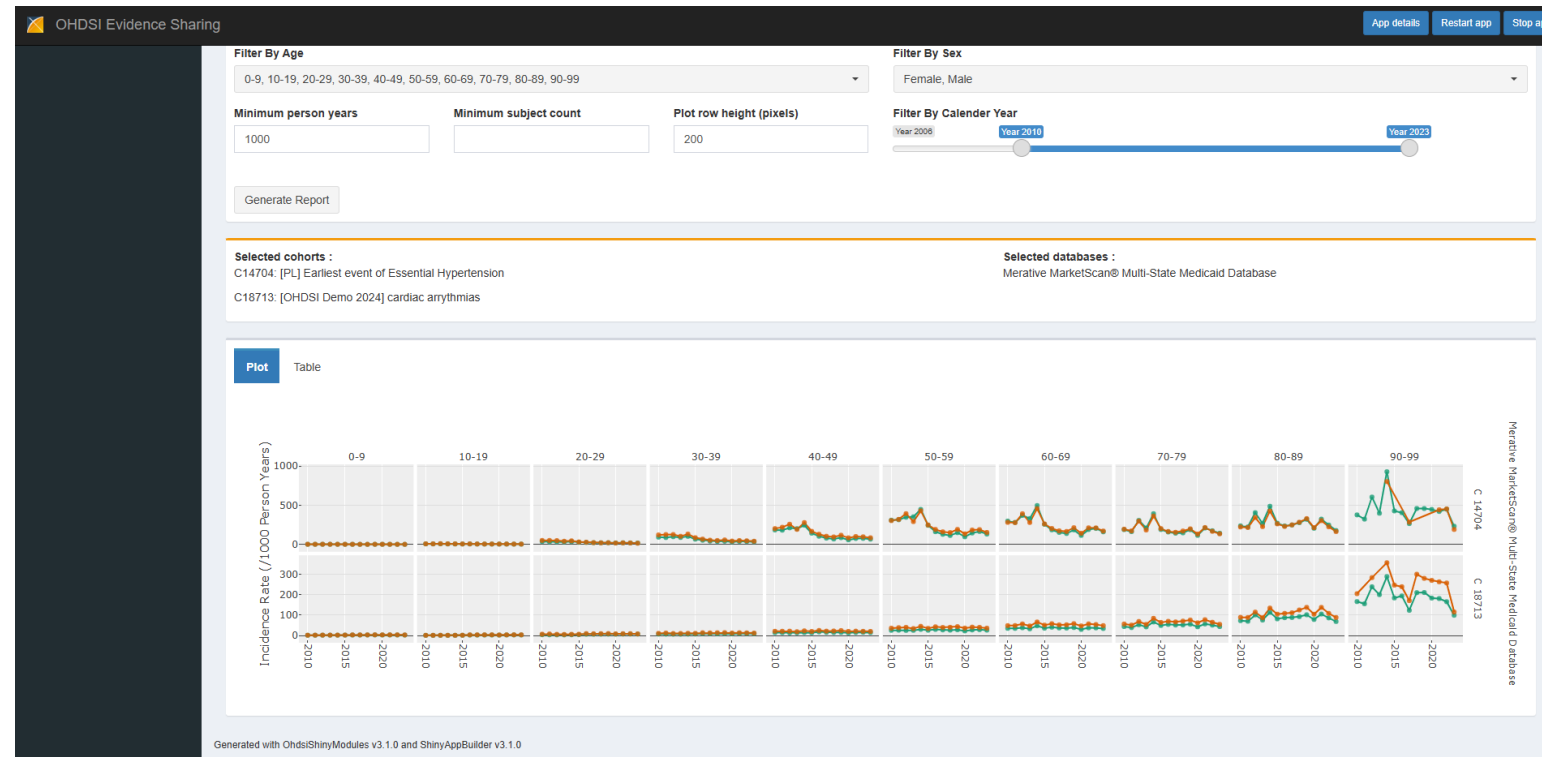
- HADES modules produce results in .csv format for transparency.
- Strategus provides functions for loading results into a results database.

```
File Edit Selection View Go Run ... [Extension Development Host] rainbow...
movies.csv X
C: > wsl_share > movies.csv > data
1 original_title,year,duration,genre,director,avg_vote
16 Titanic,1997,194,"Drama, Romance",James Cameron,7.8
17 Blade Runner,1982,117,"Action, Sci-Fi, Thriller",Ridley Scott,8.1
18 The Matrix,1999,136,"Action, Sci-Fi","Lana Wachowski, Lilly Wachowski",8.7
19 Equilibrium,2002,107,"Action, Drama, Sci-Fi",Kurt Wimmer,7.4
20 Groundhog Day,1993,101,"Comedy, Fantasy, Romance",Harold Ramis,8.0
21 Indiana Jones and the Last Crusade,1989,127,"Action, Adventure",Steven Spielberg,8.2
22 Alien,1979,117,"Horror, Sci-Fi",Ridley Scott,8.4
23 Back to the Future,1985,116,"Adventure, Comedy, Sci-Fi",Robert Zemeckis,8.5
24 Judge Dredd,1995,96,"Action, Crime, Sci-Fi",Danny Cannon,5.6
25 Corpse Bride,2005,77,"Animation, Drama, Family","Tim Burton, Mike Johnson",7.3
26 Men in Black,1997,98,"Action, Adventure, Comedy",Barry Sonnenfeld,7.3
27 Star Wars: Episode VI,1983,131,"Action, Adventure, Fantasy",Richard Marquand,8.3
28 Star Wars: Episode III,2005,140,"Action, Adventure, Fantasy",George Lucas,7.5
29 Saving Private Ryan,1998,169,"Drama, War",Steven Spielberg,8.6
30 Desperado,1995,104,"Action, Crime, Thriller",Robert Rodriguez,7.2
31 Alita: Battle Angel,2019,122,"Action, Adventure, Sci-Fi",Robert Rodriguez,7.3
32 The Prestige,2006,130,"Drama, Mystery, Sci-Fi",Christopher Nolan,8.5
33 Dumb and Dumber,1994,107,Comedy,"Peter Farrelly, Bobby Farrelly",7.3
34 The Dark Knight,2008,152,"Action, Crime, Drama",Christopher Nolan,9.0
35 Casino Royale,2006,144,"Action, Adventure, Thriller",Martin Campbell,8.0
36 From Dusk Till Dawn,1996,108,"Action, Crime, Horror",Robert Rodriguez,7.2
37 Match Point,2005,124,"Drama, Romance, Thriller",Woody Allen,7.6
master* CSVlint Query Align Rainbow OFF Col 3: duration Ln 17, Col 21 Spaces: 4 UTF-8 LF CSV
```




Strategus Overview – Standardized Output

- HADES includes an OHDSI Shiny results viewer packages to review the standardized output for studies executed through Strategus.

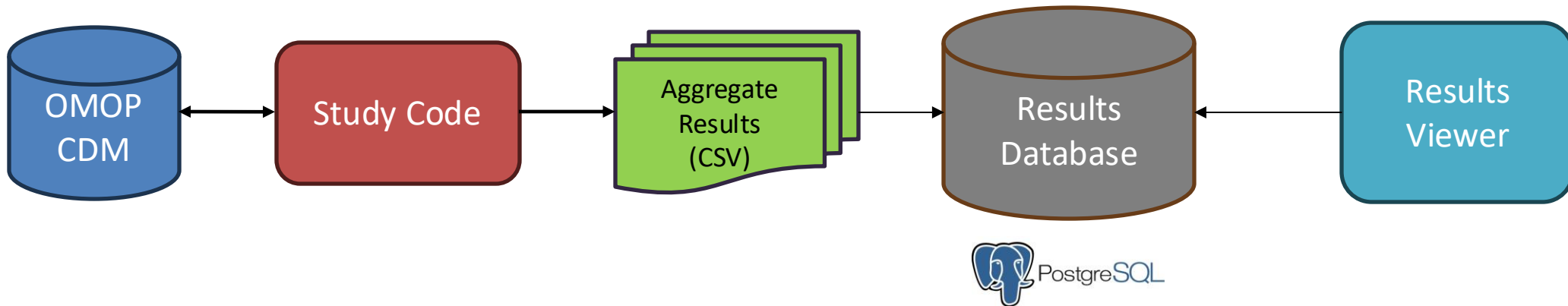




Strategus Overview – Study Scenarios



- Single OHDSI site with 1 OMOP CDM

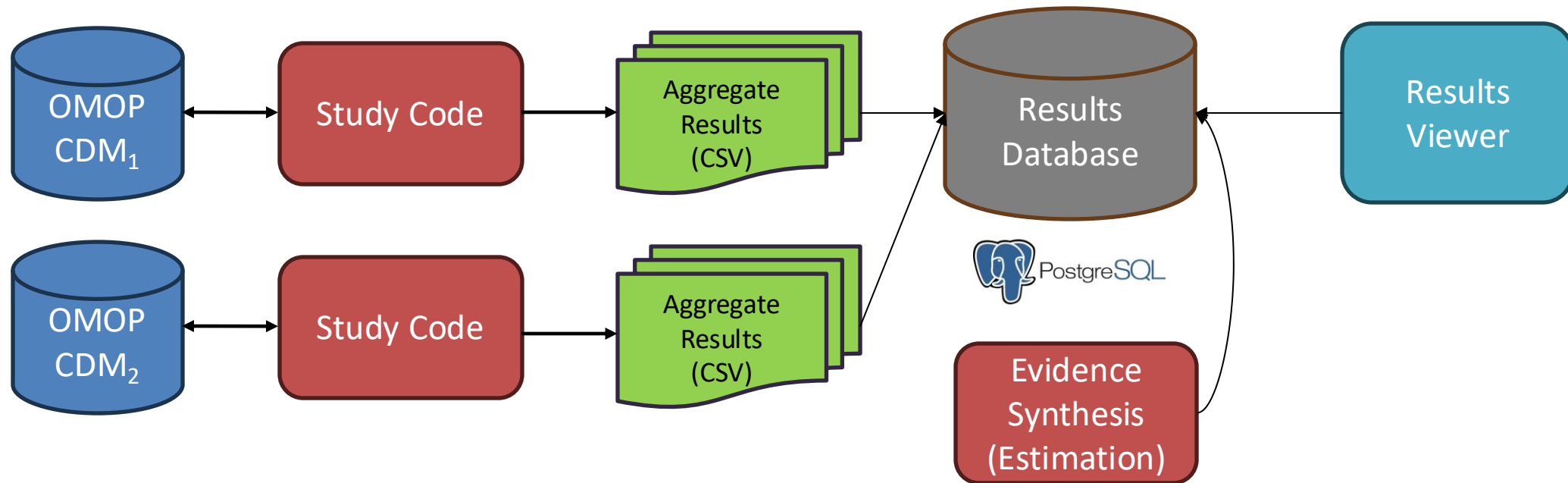




Strategus Overview – Study Scenarios



- Single OHDSI site with multiple OMOP CDMs

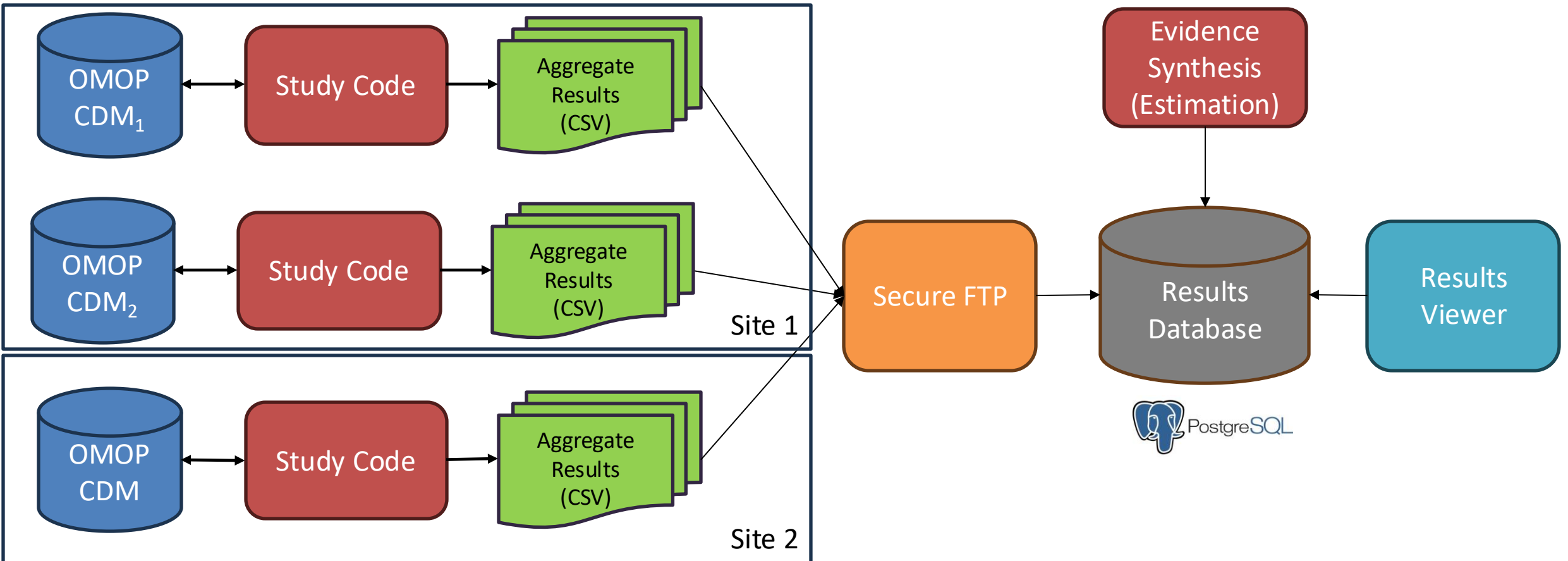




Strategus Overview – Study Scenarios



- OHDSI Network study example





Running the OHDSI Sample Study



Running the OHDSI Test Study



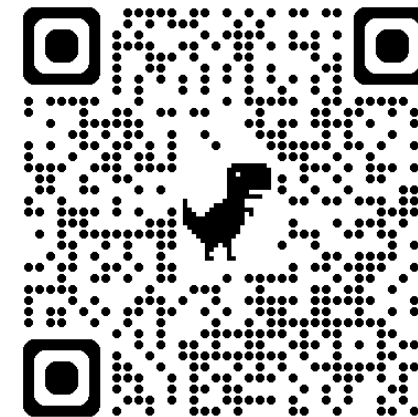
- A new, sample study was developed that is designed to run on all OHDSI sites based on information from the OHDSI Evidence Network.
- We're asking all sites to run this sample study on their OMOP CDMs as part of Analysis April
- We're not looking for results but rather a verification that the study executed successfully at your site





Running the OHDSI Test Study

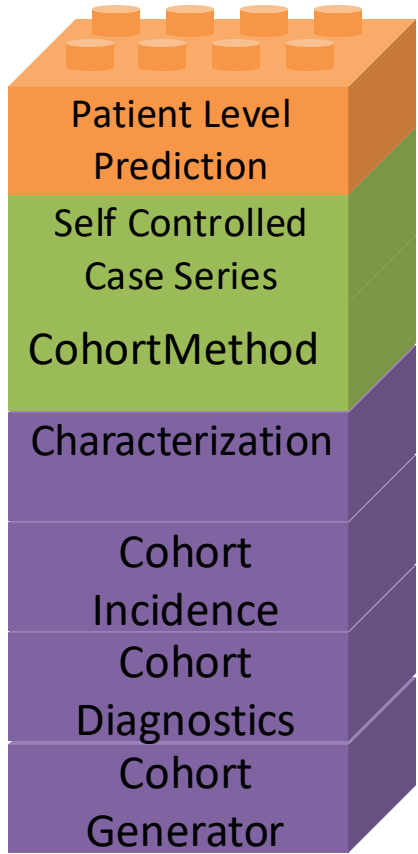
- Install your R environment by following the instructions found on the HADES website:
 - R
 - Rtools
 - Rstudio
 - Java JDK
- Make sure to set up a GitHub Personal Access Token (also detailed on HADES site)



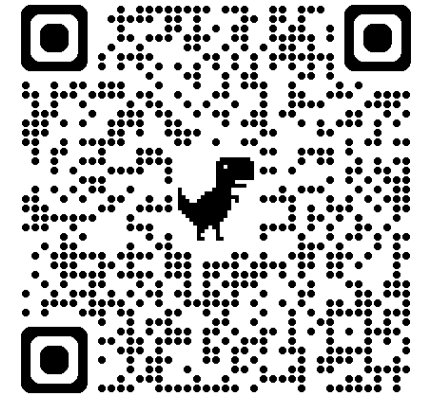
<https://ohdsi.github.io/Hades/rSetup.html>



Demo



Together we'll walk through the process of downloading the Strategus template and executing the sample study.



StudyExecution.md



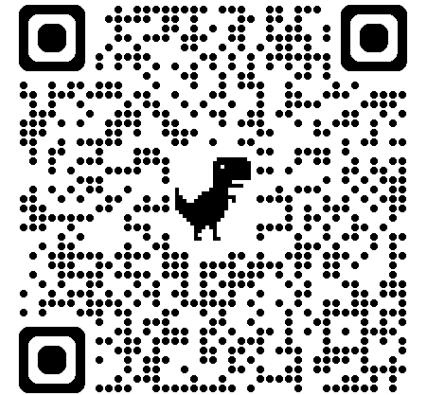


Getting Help



Any/all of the following ways:

- Email: evidencenetwork@ohdsi.org, sena@ohdsi.org
- Post issues to the StrategusStudyRepoTemplate issue tracker
- OHDSI Evidence Network Office Hours: Fridays, 9-10AM EST



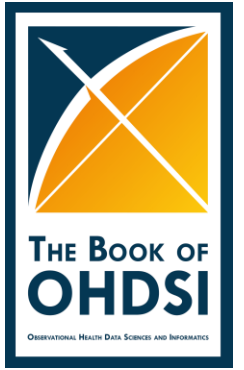
StudyExecution.md



Designing your network study with Strategus & HADES

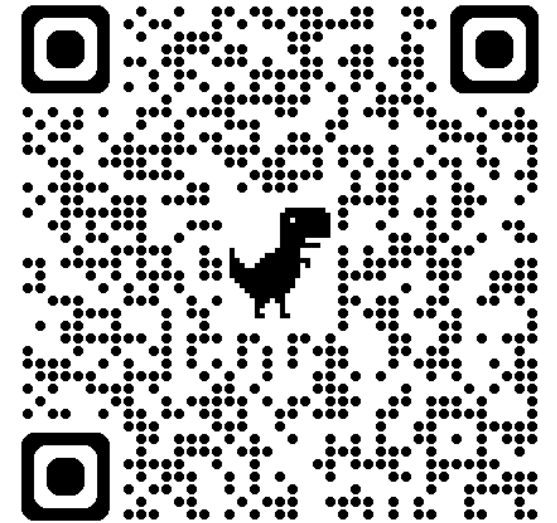


Getting your network study started



Elements of an Open OHDSI Network Study*

- All documentation, study code and subsequent results are made publicly available on the OHDSI GitHub.
- Investigators must create and publish a public study protocol detailing the scope and intent of the analysis to be performed.
- **Investigators must create a study package (typically with R or SQL) with code that is CDM compliant.**
- Investigators are encouraged to attend OHDSI Community Calls to promote and recruit collaborators for their OHDSI network study.
- At the end of the analysis, aggregate study results are made available in the OHDSI GitHub.
- Where possible, investigators are encouraged to publish study R Shiny Applications to data.ohdsi.org.

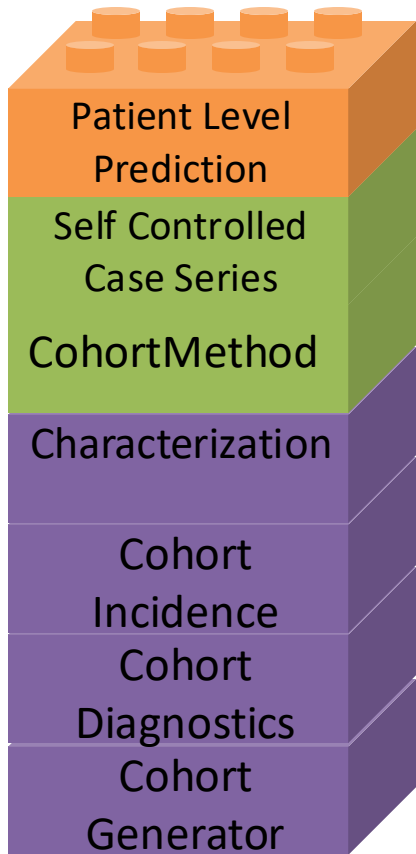


<https://ohdsi.github.io/TheBookOfOhdsi>

* *Book of OHDSI – Chapter 20*



Demo



Using the StrategusStudyRepoTemplate to design your study with Strategus & HADES



Upcoming Community Calls

| Date | Topic |
|---------|---|
| Apr. 8 | Strategus Update & Review |
| Apr. 15 | Treatment Patterns |
| Apr. 22 | Current Practices in Estimation and Prediction |
| Apr. 29 | DevCon 2025 Review |
| May 6 | Evidence Synthesis |
| May 13 | Maternal Health Fellowship Review |
| May 20 | Guideline-Driven Evidence Study Review |
| May 27 | Collaborator Showcase Brainstorm (Deadline is July 1) |



Thank you!



BACKUPS



Creating a study package (project)



OHDSI Network Studies: <https://github.com/ohdsi-studies>

ohdsi-studies

Overview Repositories 159 Projects Packages Teams People 14

OHDSI Studies Unfollow

Pinned

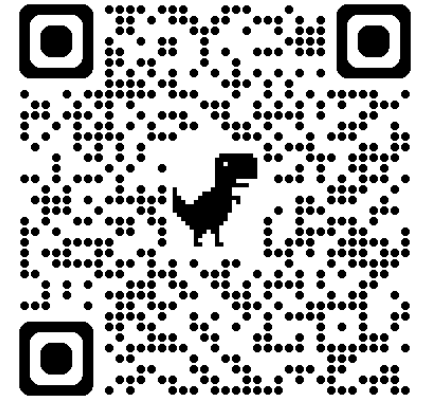
StudyRepoTemplate Public template
A template for new study repositories
TeX 6 25

StrategusStudyRepoTemplate Public template
Strategus study repository template
R 1

View as: Public

You are viewing the README and pinned repositories as a public user.
You can [create a README file](#) visible to anyone.

People



<https://github.com/ohdsi-studies>



Creating a study package (project)



Creating a new study repository with the Strategus template

The screenshot shows the GitHub interface for the repository 'ohdsi-studies / StrategusStudyRepoTemplate'. The repository is a public template. The 'Use this template' button is highlighted with a red box. The repository contains a release v1.0 (#5) by anthonyseena, 3 days ago, with 4 commits. The repository structure is as follows:

| File/Folder | Release v1.0 (#5) | 3 days ago |
|------------------|-------------------|------------|
| extras | Release v1.0 (#5) | 3 days ago |
| inst/sampleStudy | Release v1.0 (#5) | 3 days ago |
| renv | Release v1.0 (#5) | 3 days ago |
| template_docs | Release v1.0 (#5) | 3 days ago |
| .Rprofile | Release v1.0 (#5) | 3 days ago |
| .gitignore | Release v1.0 (#5) | 3 days ago |

The right sidebar shows the repository details: 'Strategus study repository template', 'Readme', 'Apache-2.0 license', 'Activity', 'Custom properties', '0 stars', '7 watching', '1 fork', and 'Releases 1'.



Creating a study package (project)




Create a new repository

A repository contains all project files, including the revision history. Already have a project repository elsewhere?

[Import a repository.](#)

Required fields are marked with an asterisk (*).

Repository template

 ohdsi-studies/StrategusStudyRepoTemplate ▾

Start your repository with a template repository's contents.

Include all branches

Copy all branches from ohdsi-studies/StrategusStudyRepoTemplate and not just the default branch.

Owner *

 anthonyseña ▾

Repository name *

OhdsiNetworkStudyTutori

✔ OhdsiNetworkStudyTutorial2024 is available.

Great repository names are short and memorable. Need inspiration? How about [musical-robot](#) ?

Description (optional)

This is an example repository for the 2024 OHDSI Network Study Tutorial

 **Public**

Anyone on the internet can see this repository. You choose who can commit.

 **Private**

You choose who can see and commit to this repository.

 You are creating a public repository in your personal account.

Create repository

Specify the name of the study, provide a description and the template contents are copied to your new repository to get started.

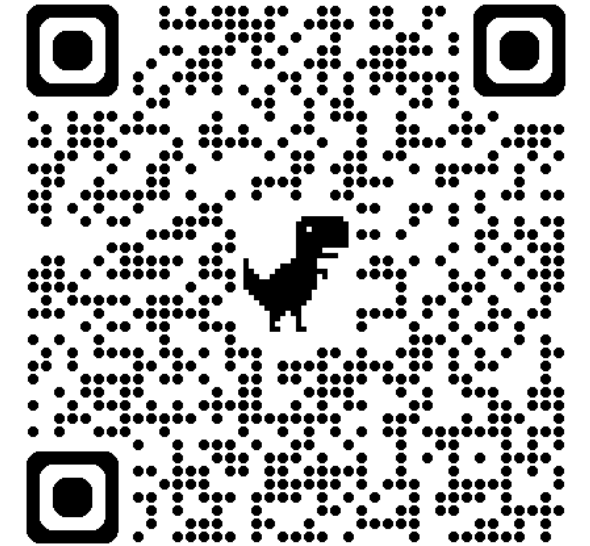


Using the study package template



Once your GitHub project is created:

- Clone the repository code to your machine
- Follow the instructions to provide the details of your study in the README.md. This is important since this information is used to list your new study in the list of OHDSI Network Studies.
- Rename the “StrategusStudyRepoTemplate.Rproj” to reflect the name of your study.
- Review the UsingThisTemplate.md documentation for the template.



[StrategusStudyRepoTemplate/template_docs/UsingThisTemplate.md](https://github.com/StrategusStudyRepoTemplate/template_docs/UsingThisTemplate.md)