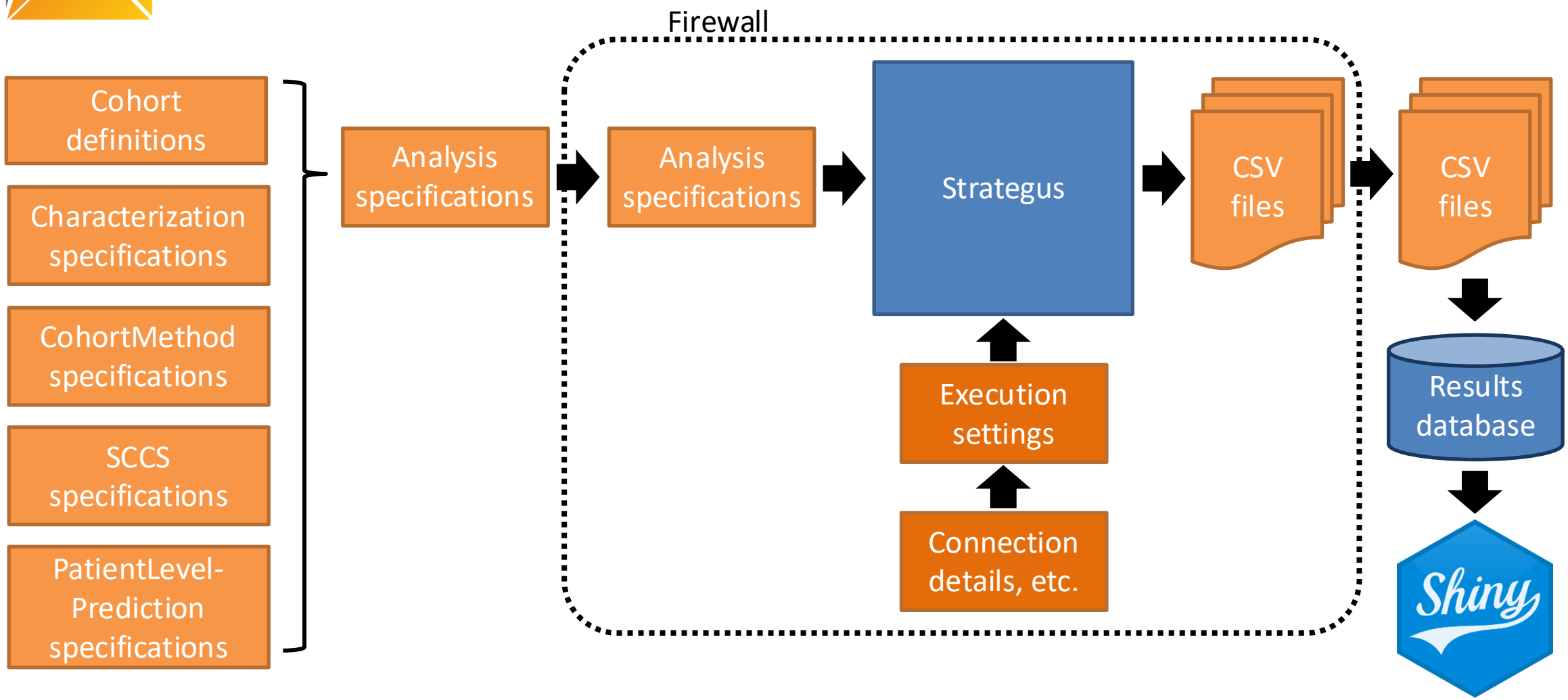
Interpreting the Evidence

Nicole Pratt PhD

University of South Australia

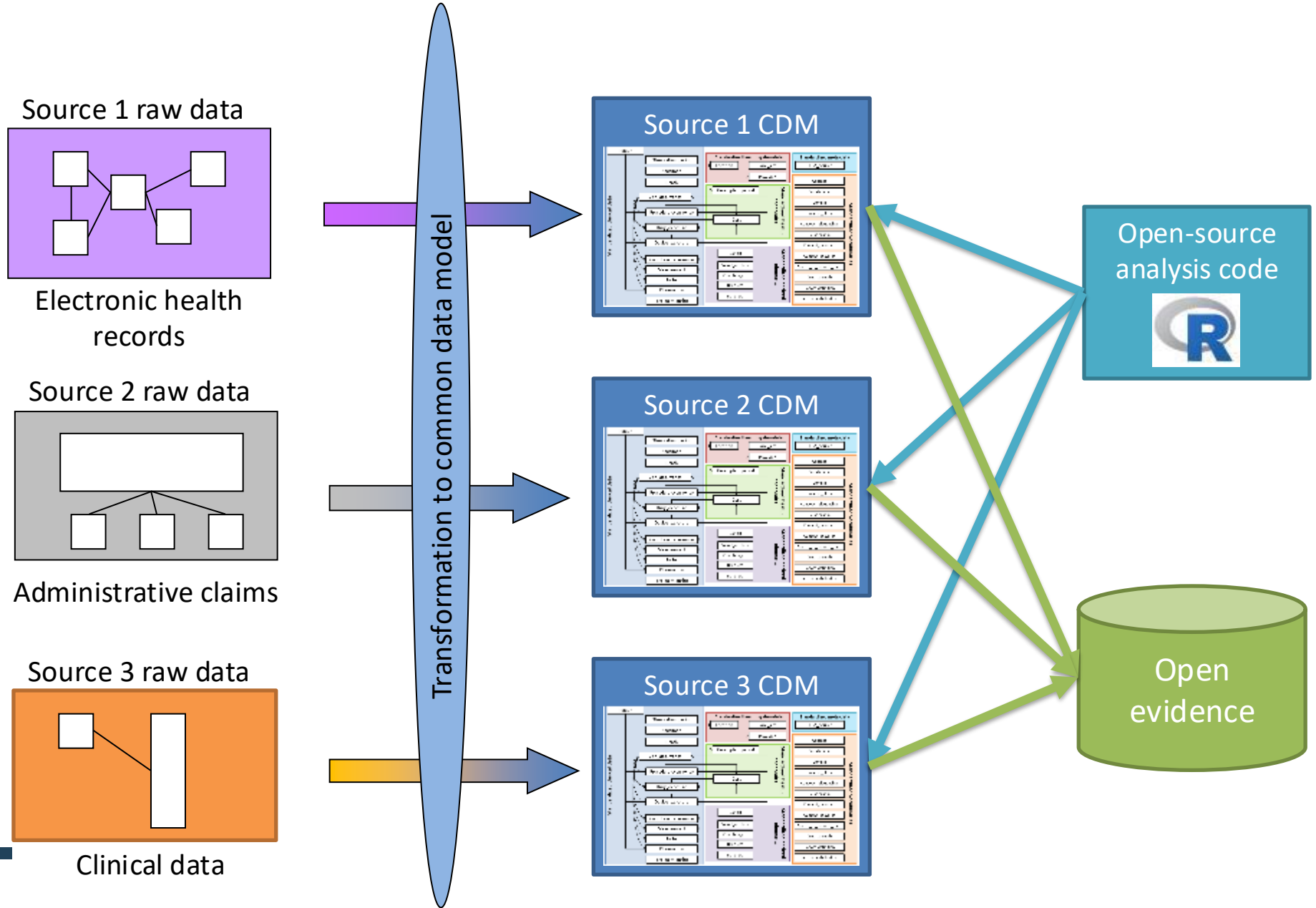
Strategus for study execution



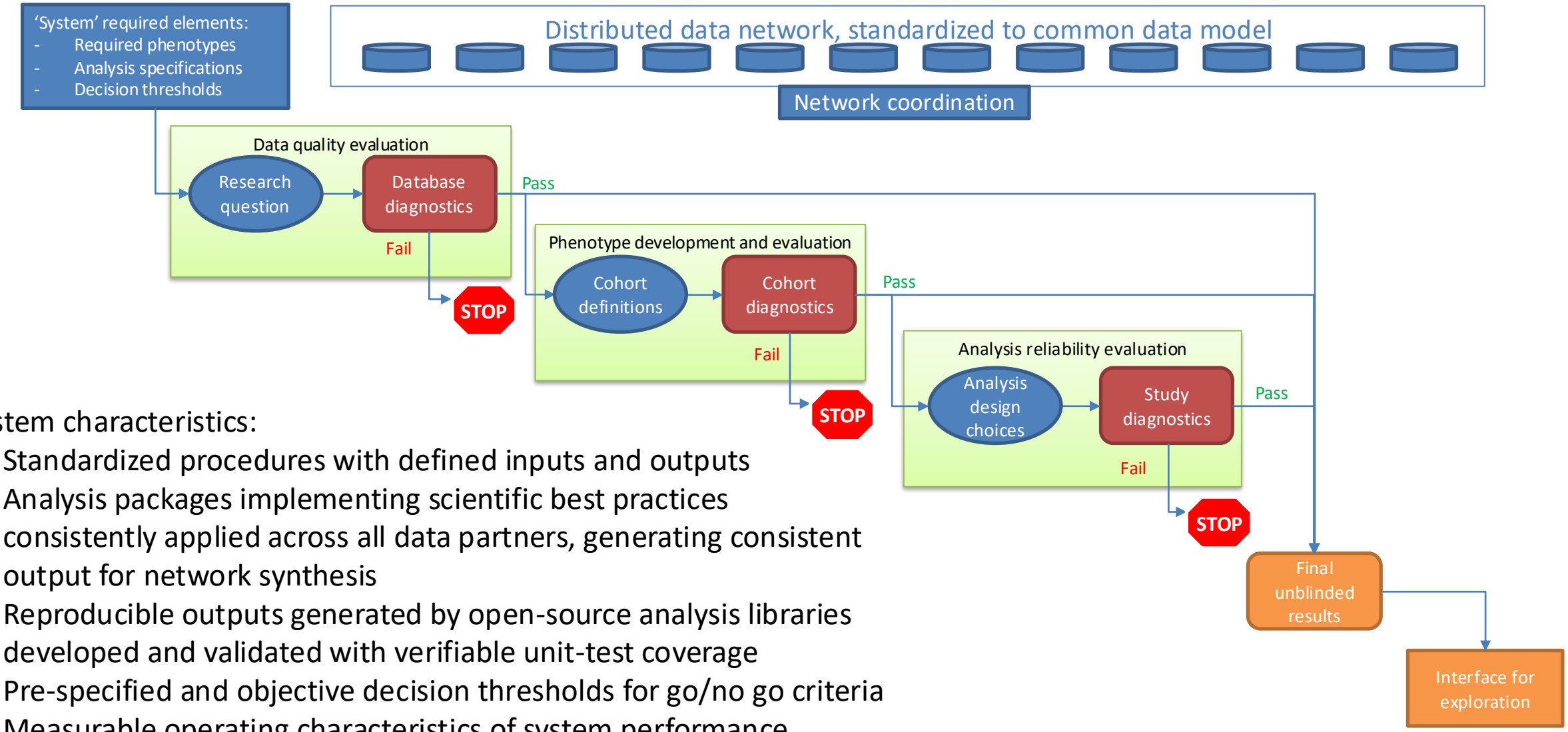
Disclosure

- I have no disclosures

Common data model can enable standardized analytics across a distributed data network



Engineering open science systems that build trust into the real-world evidence generation and dissemination process

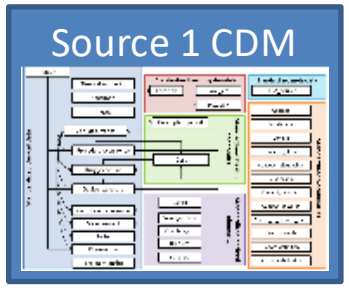


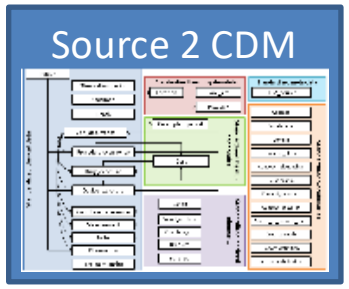
System characteristics:

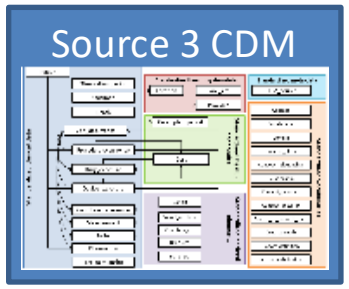
- Standardized procedures with defined inputs and outputs
- Analysis packages implementing scientific best practices consistently applied across all data partners, generating consistent output for network synthesis
- Reproducible outputs generated by open-source analysis libraries developed and validated with verifiable unit-test coverage
- Pre-specified and objective decision thresholds for go/no go criteria
- Measurable operating characteristics of system performance

The journey to evidence

Standardized data







Cohort definition: a specification to identify the set of persons satisfying one or more criteria for a duration of time

Standardized analytics

T, {E} → Treatment pathways

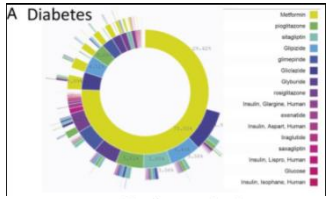
T, O → Incidence rate analysis

T, C, I, O → Comparative cohort design

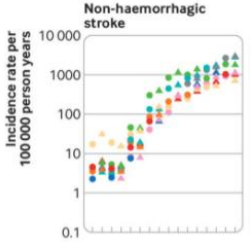
T, I, O → Self-controlled case series

T, O → Patient-level prediction

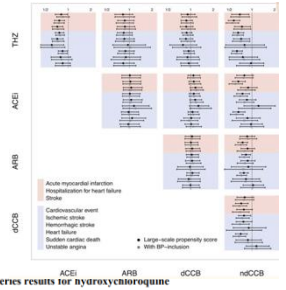
Impactful results



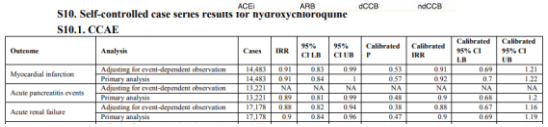
Hripcsak et al
PNAS 2016



Li et al
BMJ 2021



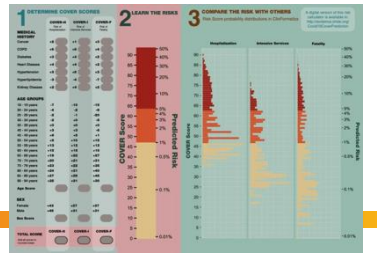
Suchard et al
Lancet 2019



S10. Self-controlled case series results for hydroxychloroquine
S10.1. CCAE

Outcome	Analysis	Cases	IRR	95% CI LB	95% CI UB	Calibrated P	Calibrated IRR	Calibrated 95% CI LB	Calibrated 95% CI UB
Myocardial infarction	Adjusting for event-dependent observation	14,483	0.91	0.83	0.99	0.53	0.91	0.69	1.21
	Primary analysis	14,483	0.91	0.84	1	0.57	0.92	0.7	1.22
Acute pancreatitis events	Adjusting for event-dependent observation	13,221	NA	NA	NA	NA	NA	NA	NA
	Primary analysis	13,221	0.89	0.81	0.99	0.48	0.9	0.68	1.2
Acute renal failure	Adjusting for event-dependent observation	17,178	0.88	0.82	0.94	0.38	0.88	0.67	1.16
	Primary analysis	17,178	0.9	0.84	0.96	0.47	0.9	0.69	1.19

Lane et al Lancet Rheumatology 2020



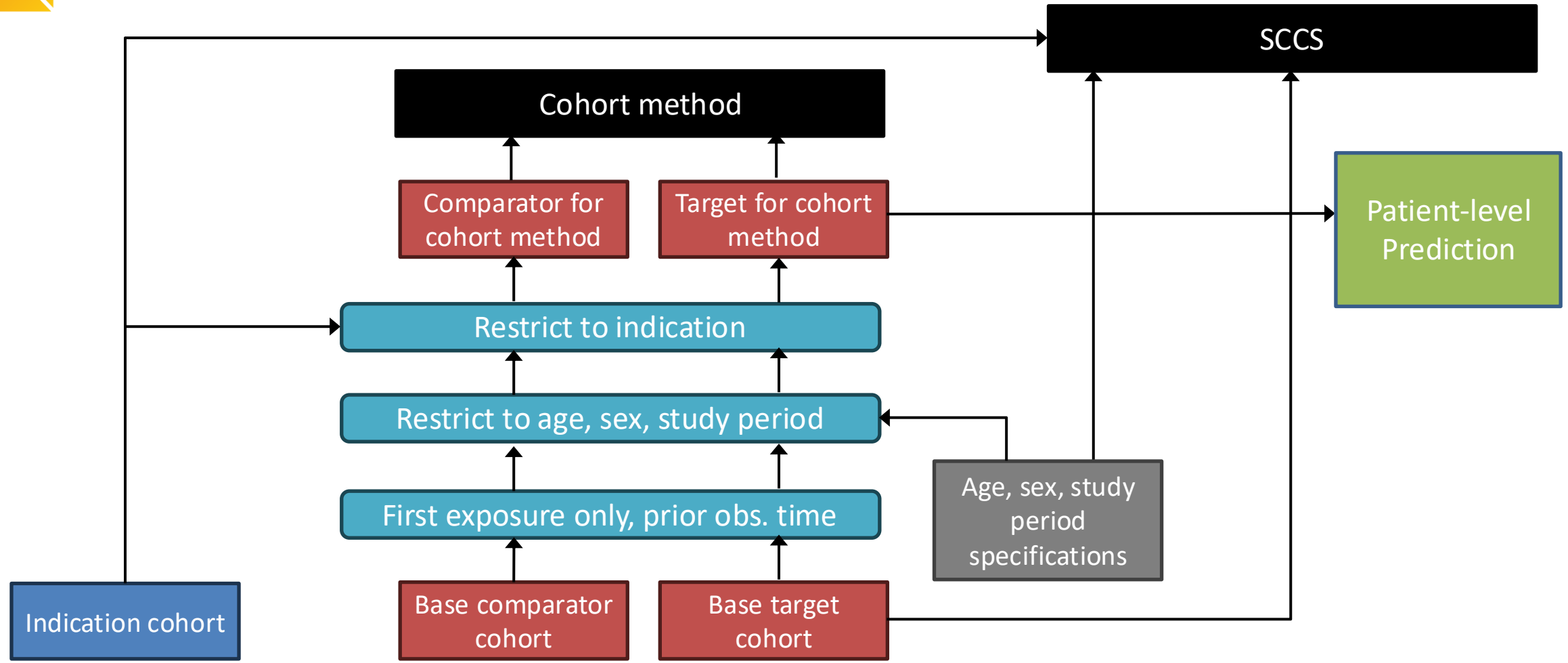
Williams et al
BMC MRM 2022

The cohort you all built…..

- Target: GLP1RA exposures
- Comparator: DPP4i exposures

- Indication: Type 2 diabetes mellitus
- Outcome 1: Acute myocardial infarction
- Outcome 2: Diarrhea

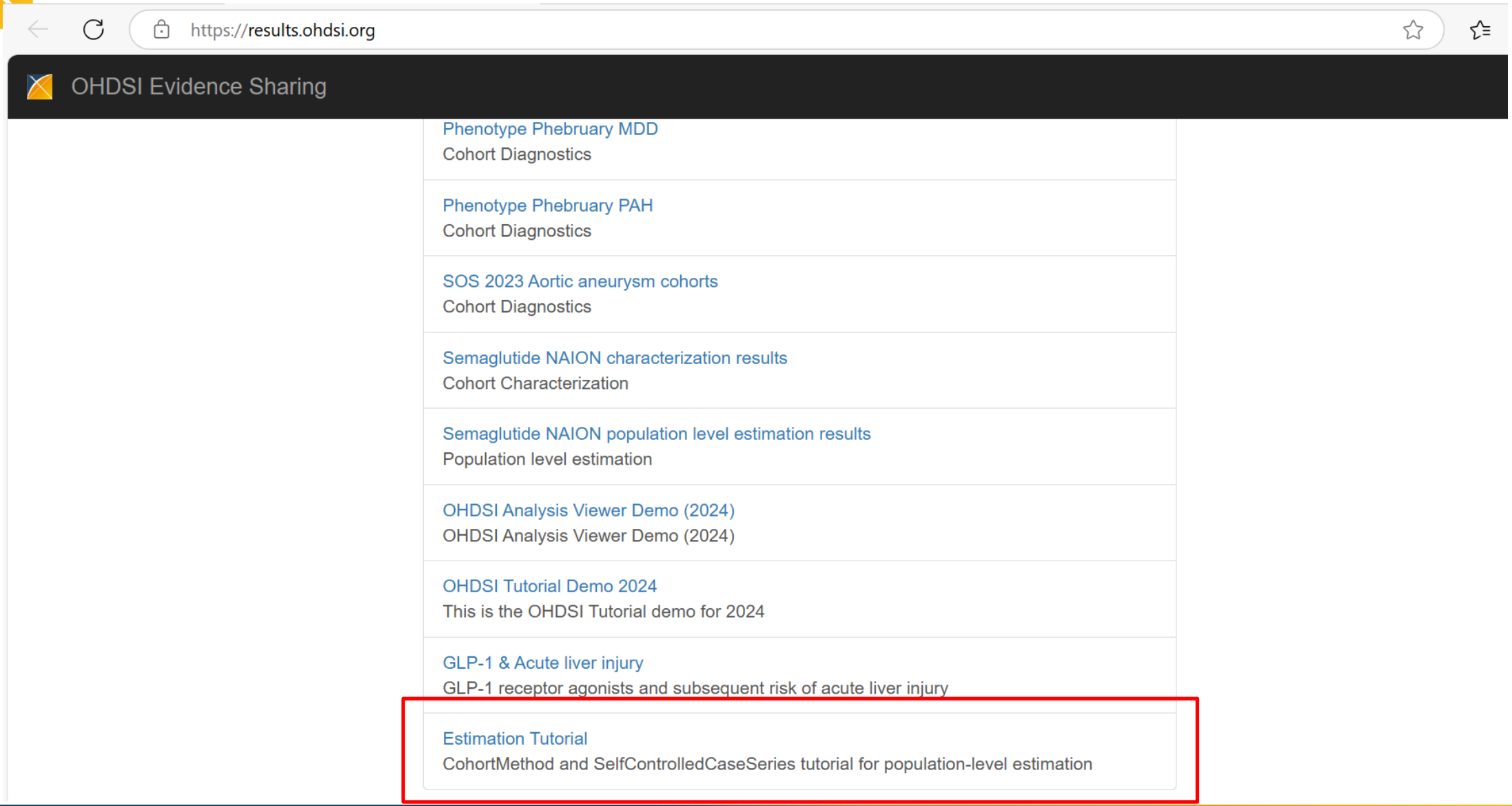
We can now use those cohorts to make the magic happen



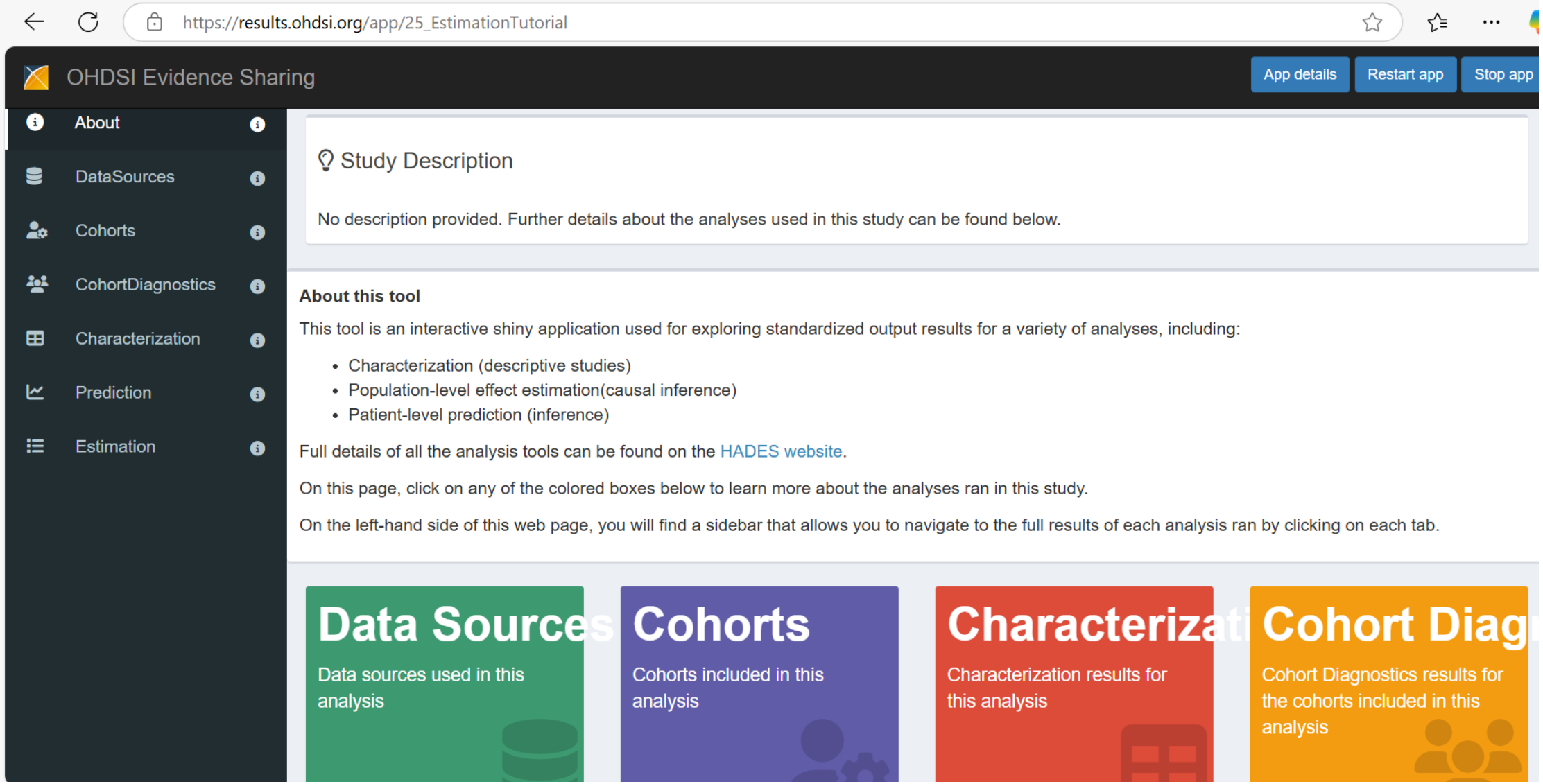
Indication cohort is usually first diagnosis to end of observation

Target and comparator cohort contain any exposure, no restrictions

https://results.ohdsi.org



https://results.ohdsi.org/app/25_EstimationTutorial



https://ohdsi.github.io/OhdsiShinyModules/articles/Characterization.html

OhdsiShinyModules 3.1.0.9000 | Reference | Contribute | Articles | Changelog | HADES

Characterization

Nathan Hall and Jenna Reps

2024-10-22

Contents

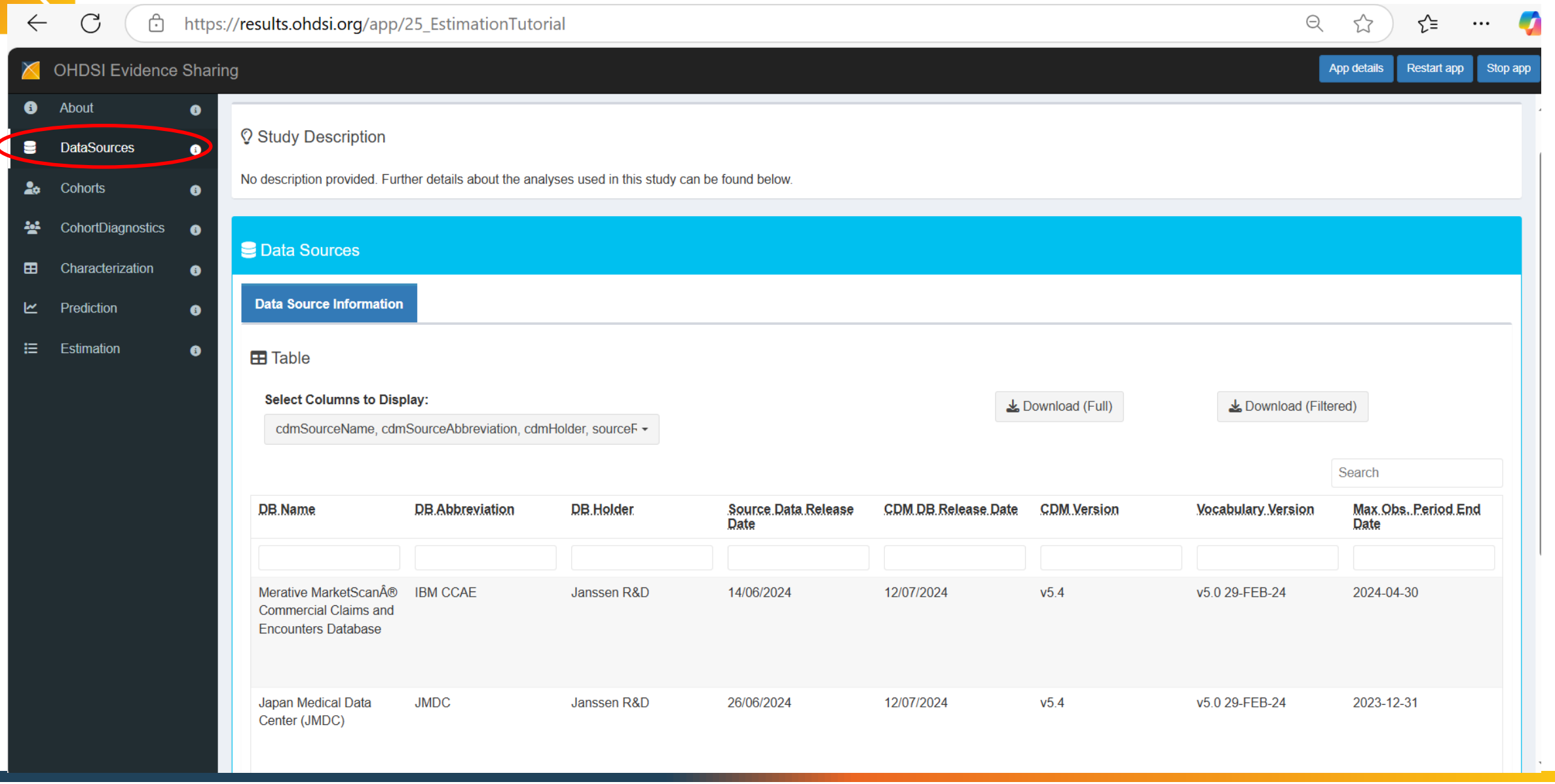
Introduction

The OHDSI Characterization package lets users extract descriptive analyses from observational healthcare data sets mapped to the OMOP CDM. There are currently four different types of characterizations analyses (incidence rates, time-to-event, dechallenge-rechallenge and various aggregate covariate cohort comparisons).

The Characterization package currently lets users answer the following questions:

- **Incidence Rate**: How often does `<add outcome>` occur within `<add time-at-risk>` after first record of `<add exposure/indication>` ?
- **Time-to-event**: When does `<add outcome>` occur relative to the first recorded of `<add exposure/indication>` ? Is it more common before or after `<add exposure>` ?
- **Dechallenge-rechallenge**: Is there any evidence of `<add outcome>` causing `<add exposure>` to be discontinued and then `<add outcome>` re-occurring once `<add exposure>` restarts?
- **Cohort Comparison**: What is different at index between patients in `<add exposure/outcome/indication>` and patients in `<add indication>` ?

https://ohdsi.github.io/OhdsiShinyModules/index.html


https://results.ohdsi.org/app/25_EstimationTutorial
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No description provided. Further details about the analyses used in this study can be found below.
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Select Columns to Display:
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Download (Full)
Download (Filtered)
Search
DB Name
DB Abbreviation
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Source Data Release Date
CDM DB Release Date
CDM Version
Vocabulary Version
Max Obs. Period End Date
Merative MarketScanÂ® Commercial Claims and Encounters Database
IBM CCAE
Janssen R&D
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12/07/2024
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v5.0 29-FEB-24
2024-04-30
Japan Medical Data Center (JMDC)
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26/06/2024
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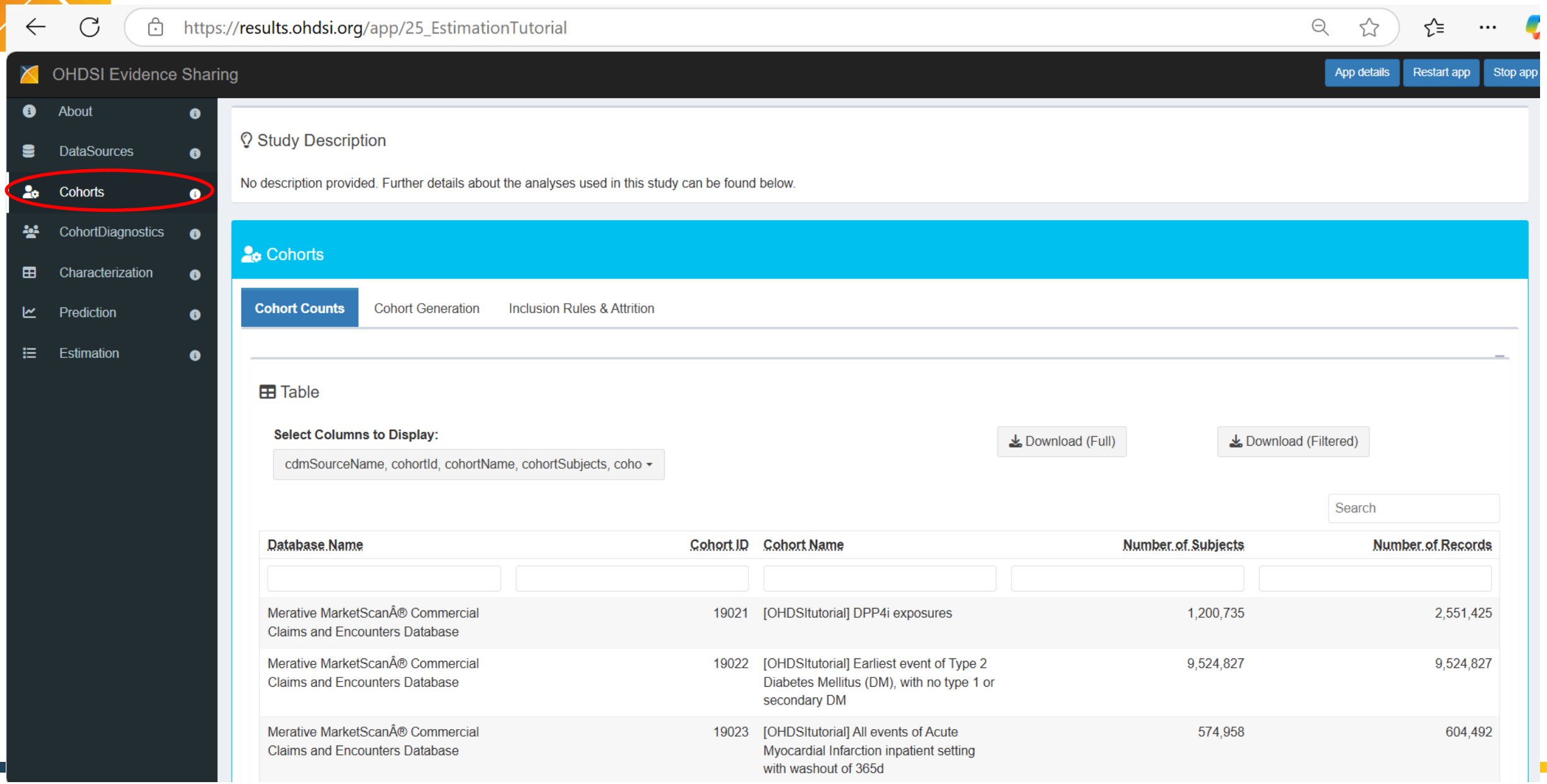
v5.4
v5.0 29-FEB-24
2023-12-31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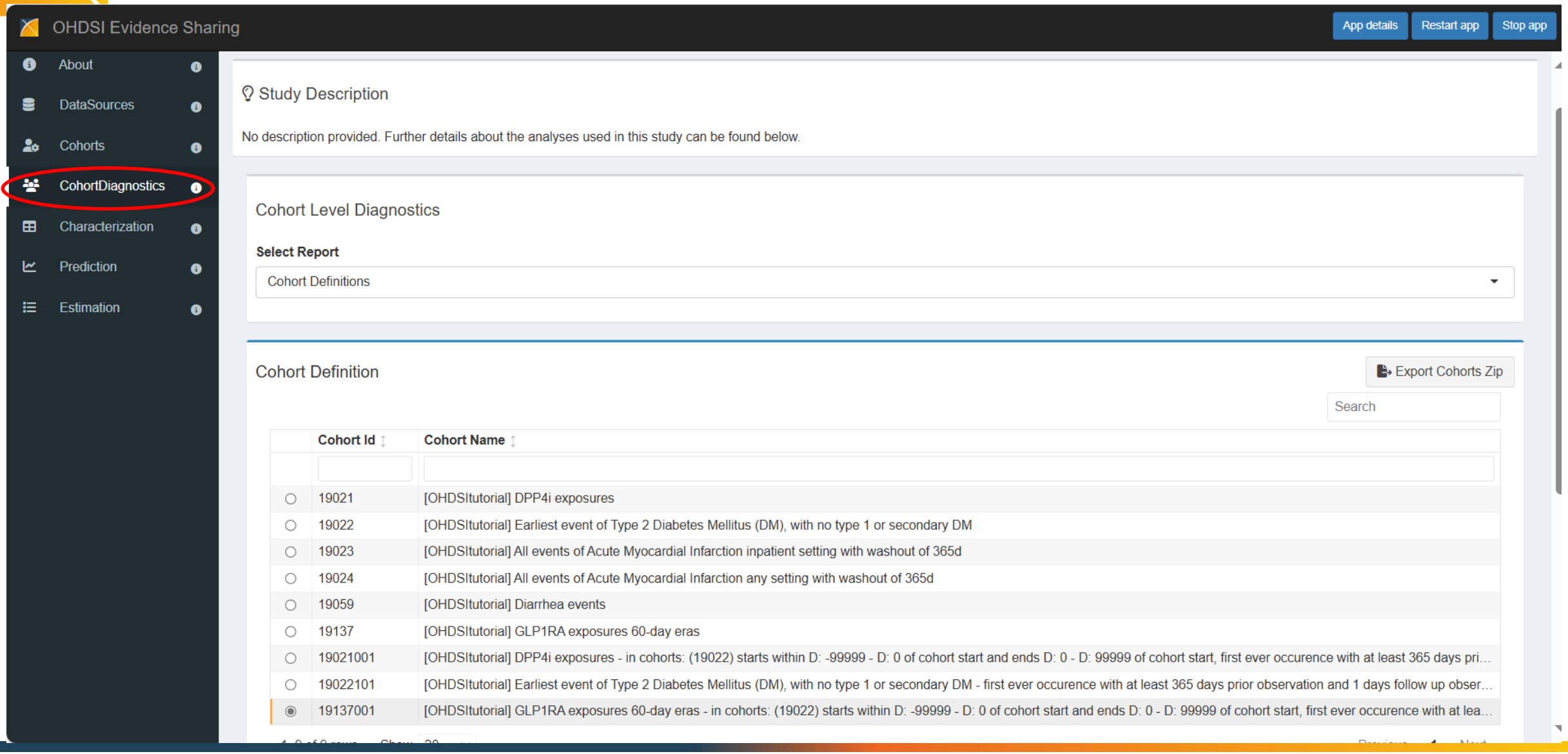
cdmSourceName, cohortId, cohortName, cohortSubjects, coho
Download (Full)
Download (Filtered)
Search
Database Name
Cohort ID
Cohort Name
Number of Subjects
Number of Records
Merative MarketScanÂ® Commercial Claims and Encounters Database
19021
[OHDSItutorial] DPP4i exposures
1,200,735
2,551,425
Merative MarketScanÂ® Commercial Claims and Encounters Database
19022
[OHDSItutorial] Earliest event of Type 2 Diabetes Mellitus (DM), with no type 1 or secondary DM
9,524,827
9,524,827
Merative MarketScanÂ® Commercial Claims and Encounters Database
19023
[OHDSItutorial] All events of Acute Myocardial Infarction inpatient setting with washout of 365d
574,958
604,492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19021 [OHDSItutorial] DPP4i exposures
19022 [OHDSItutorial] Earliest event of Type 2 Diabetes Mellitus (DM), with no type 1 or secondary DM
19023 [OHDSItutorial] All events of Acute Myocardial Infarction inpatient setting with washout of 365d
19024 [OHDSItutorial] All events of Acute Myocardial Infarction any setting with washout of 365d
19059 [OHDSItutorial] Diarrhea events
19137 [OHDSItutorial] GLP1RA exposures 60-day eras
19021001 [OHDSItutorial] DPP4i exposures - in cohorts: (19022) starts within D: -99999 - D: 0 of cohort start and ends D: 0 - D: 99999 of cohort start, first ever occurence with at least 365 days pri…
19022101 [OHDSItutorial] Earliest event of Type 2 Diabetes Mellitus (DM), with no type 1 or secondary DM - first ever occurence with at least 365 days prior observation and 1 days follow up obser…
19137001 [OHDSItutorial] GLP1RA exposures 60-day eras - in cohorts: (19022) starts within D: -99999 - D: 0 of cohort start and ends D: 0 - D: 99999 of cohort start, first ever occurence with at lea…

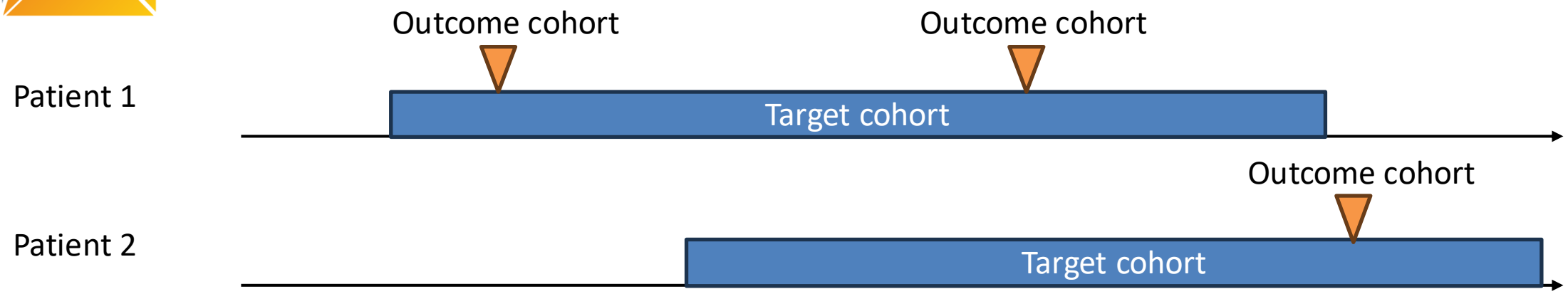
Example **characterization** questions

- How did the rate of AMI in patients with T2DM change over time?
- What other drugs to DPP-4 users use?

Can be answered using:

- CohortIncidence package
- CohortCharacterization

CohortIncidence package



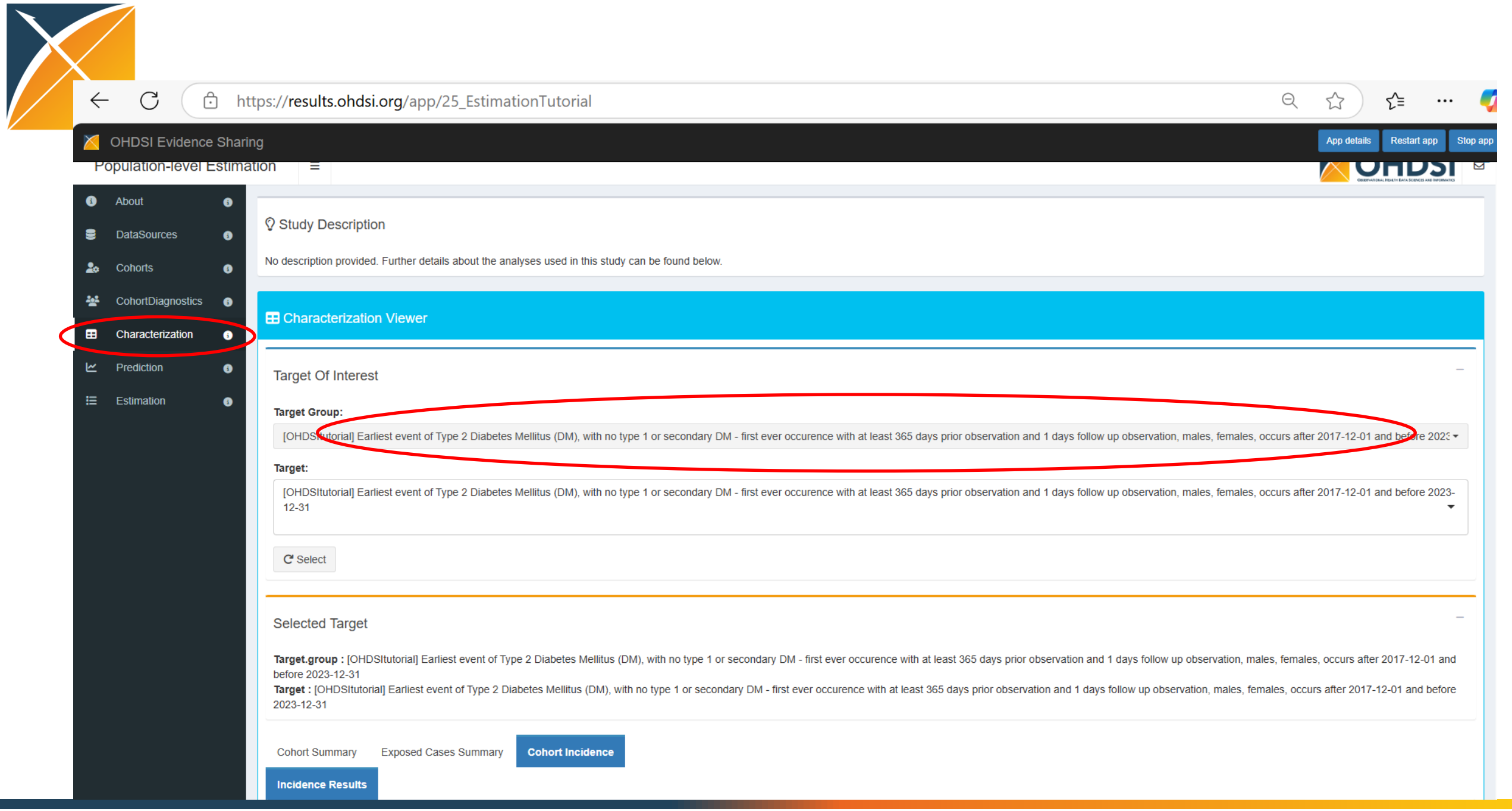
Computes the incidence rate of the Outcome cohort in some Target cohort

- Standardized computation of incidence rates
- Default: overall and stratified by age, sex, and calendar time

- How did the rate of AMI in patients with T2DM change over time?
  - Target: **T2DM**
  - Outcome: **AMI**

- Has the rate of AMI changed over time?

Let’s find out!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Characterization Viewer
Target Of Interest
Target Group:
[OHDSItutorial] Earliest event of Type 2 Diabetes Mellitus (DM), with no type 1 or secondary DM - first ever occurence with at least 365 days prior observation and 1 days follow up observation, males, females, occurs after 2017-12-01 and before 2023
Target:
[OHDSItutorial] Earliest event of Type 2 Diabetes Mellitus (DM), with no type 1 or secondary DM - first ever occurence with at least 365 days prior observation and 1 days follow up observation, males, females, occurs after 2017-12-01 and before 2023-12-31
Select
Selected Target
Target.group : [OHDSItutorial] Earliest event of Type 2 Diabetes Mellitus (DM), with no type 1 or secondary DM - first ever occurence with at least 365 days prior observation and 1 days follow up observation, males, females, occurs after 2017-12-01 and before 2023-12-31
Target : [OHDSItutorial] Earliest event of Type 2 Diabetes Mellitus (DM), with no type 1 or secondary DM - first ever occurence with at least 365 days prior observation and 1 days follow up observation, males, females, occurs after 2017-12-01 and before 2023-12-31
Cohort Summary
Exposed Cases Summary
Cohort Incidence
Incidence Results

Selected Target

Target.group : [OHDSItutorial] Earliest event of Type 2 Diabetes Mellitus (DM), with no type 1 or secondary DM - first ever occurence with at least 365 days prior observation and 1 days follow up observation, males, females, occurs after 2017-12-01 and before 2023-12-31
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Cohort Summary | Exposed Cases Summary | **Cohort Incidence**

Incidence Results

Type here to search

Select All | Deselect All

[OHDSItutorial] All events of Acute Myocardial Infarction any setting with washout of 365d ✔
[OHDSItutorial] All events of Acute Myocardial Infarction inpatient setting with washout of 365d
[OHDSItutorial] Diarrhea events

[OHDSItutorial] All events of Acute Myocardial Infarction any setting with washout of 365d

Filter By Database:

IBM CCAE, IBM MDCR, JMDC, Optum EHR

Filter By Age Group:

Any, 20 - 29, 60 - 69, 80 - 89, 40 - 49, 10 - 19, 70 - 79, >=110, <0, 90 - 99, 100 - 109, 50 - 59, 30 - 39, 0 - 9

Filter By Sex:

Male, Female, Any

Filter By Start Year:

Any, 2024, 2023, 2022, 2021, 2020, 2019, 2018, 2017, 2016, 2015, 2014, 2013, 2012, 2011, 2010, 2009, 2008, 2007, 2006, 2005, 2004, 2003, 2002, 2001, 2000, 1999, 1998, 1997, 1996, 1995, 1994, 1993, 1992, 1991, 1990

Select Time at risk (TAR)

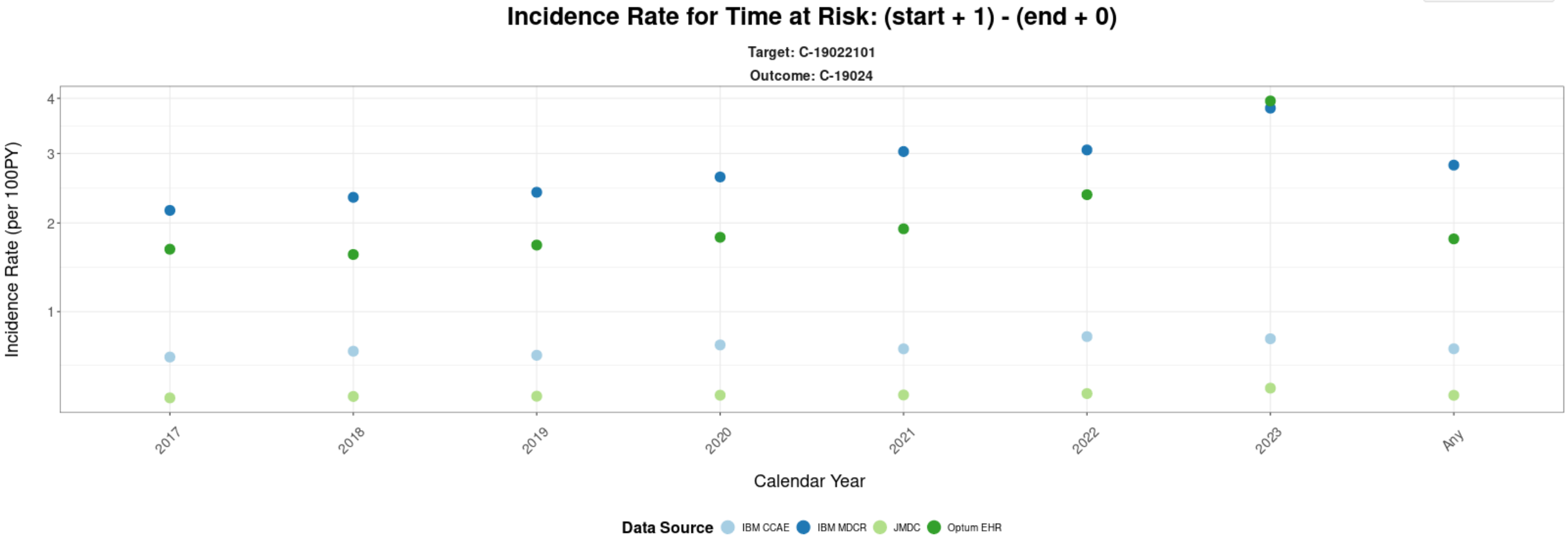
(start + 1) - (end + 0)

Generate

Incidence Rate Table | **Incidence Rate Plots**

Standard Plot (Age Differences) | Standard Plot (Age & Sex Differences) | Standard Plot (Yearly Differences) | **Standard Plot (Aggregate)** | Custom Plot

Download Plot



C-19022101 = [OHDSItutorial] Earliest event of Type 2 Diabetes Mellitus (DM), with no type 1 or secondary DM - first ever occurence with at least 365 days prior observation and 1 days follow up observation, males, females, occurs after 2017-12-01 and before 2023-12-31
C-19024 = [OHDSItutorial] All events of Acute Myocardial Infarction any setting with washout of 365d

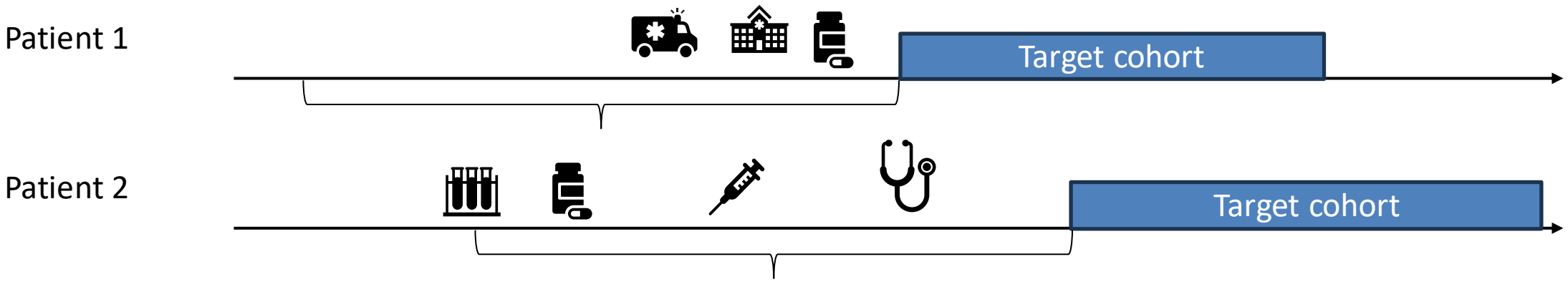
Example **characterization** questions

- How did the rate of AMI in patients with T2DM change over time?
- What other drugs do DPP-4 users use?

Can be answered using:

- CohortIncidence package
- CohortCharacterization

CohortCharacterization package



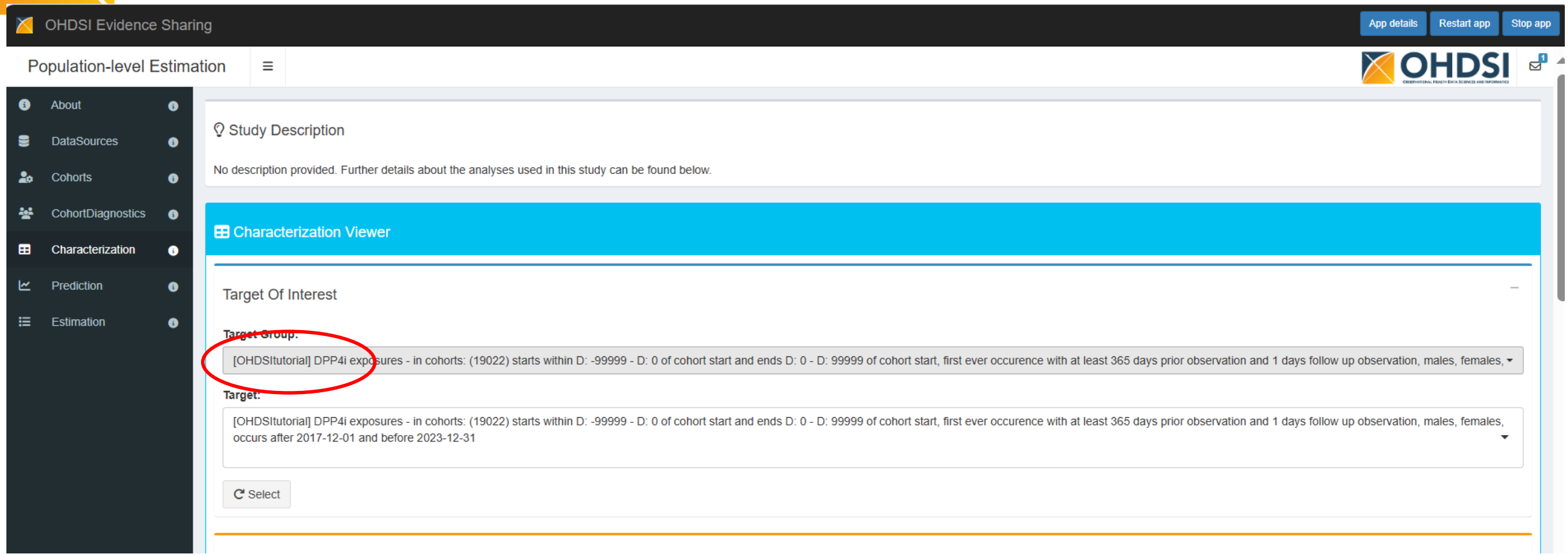
Counts all observed events (concepts) relative to Target cohort start, etc.

- Additional analyses include time-to-event, risk factors, case series

- What other drugs to DPP-4 users use?
  - Target: **T2DM**

- What other drugs to DPP-4 users use?

Let’s find out!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Target:
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Select

Selected Target

Target.group : [OHDSItutorial] DPP4i exposures - in cohorts: (19022) starts within D: -99999 - D: 0 of cohort start and ends D: 0 - D: 99999 of cohort start, first ever occurence with at least 365 days prior observation and 1 days follow up observation, males, females, occurs after 2017-12-01 and before 2023-12-31

Target : [OHDSItutorial] DPP4i exposures - in cohorts: (19022) starts within D: -99999 - D: 0 of cohort start and ends D: 0 - D: 99999 of cohort start, first ever occurence with at least 365 days prior observation and 1 days follow up observation, males, females, occurs after 2017-12-01 and before 2023-12-31

Type here to search

Select All | Deselect All

- Optum EHR ✓
- IBM CCAE ✓
- JMDC ✓
- IBM MDCR ✓

Optum EHR, IBM CCAE, JMDC, IBM MDCR

Covariate Threshold

0.01 — 1

Generate

Generated with OhdsiShinyModules v3.1.0 and ShinyAppBuilder v3.1.0

Selected

Databases : Optum EHR,IBM CCAE,JMDC,IBM MDCR
Minimum.Covariate.Threshold : 0.01

Counts | **Binary** | Continuous

Table | Plot

Binary

Select Columns to Display:

covariateName, minPriorObservation, sumValue_1, sumValue_4, sumValue

Download (Full) Download (Filtered)

Search

Covariate Name	Min Prior Obs	Optum EHR Count	IBM MDCR Count	IBM CCAE Count	JMDC Count	Optum EHR %	IBM MDCR %	IBM CCAE %	JMDC %
drug_era	All								
drug_era group (DrugGroupEraShortTerm) during day -30 through 0 days relative to index: ANTIBIOTICS AND CHEMOTHERAPEUTICS FOR DERMATOLOGICAL USE	365	24619	829	7958	584	5.361 %	2.907 %	2.597 %	3.797 %
drug_era group (DrugGroupEraOverlapping) during day 0 through 0 days relative to index: bisacodyl	365	8141	< min threshold	< min threshold	< min threshold	1.773 %	< min threshold	< min threshold	< min threshold
drug_era group (DrugGroupEraOverlapping) during day 0 through 0 days relative to index: Antiinfectives	365	126449	3983	34658	1672	27.533 %	13.966 %	11.309 %	10.871 %
drug_era group (DrugGroupEraOverlapping) during day 0 through 0 days relative to index: OTHER OPHTHALMOLOGICALS	365	65303	375	< min threshold	1112	14.219 %	1.315 %	< min threshold	7.23 %
drug_era group (DrugGroupEraOverlapping) during day 0 through 0 days relative to index: CONTRACEPTIVES FOR	365	19971	485	14930	< min threshold	4.348 %	1.701 %	4.872 %	< min threshold

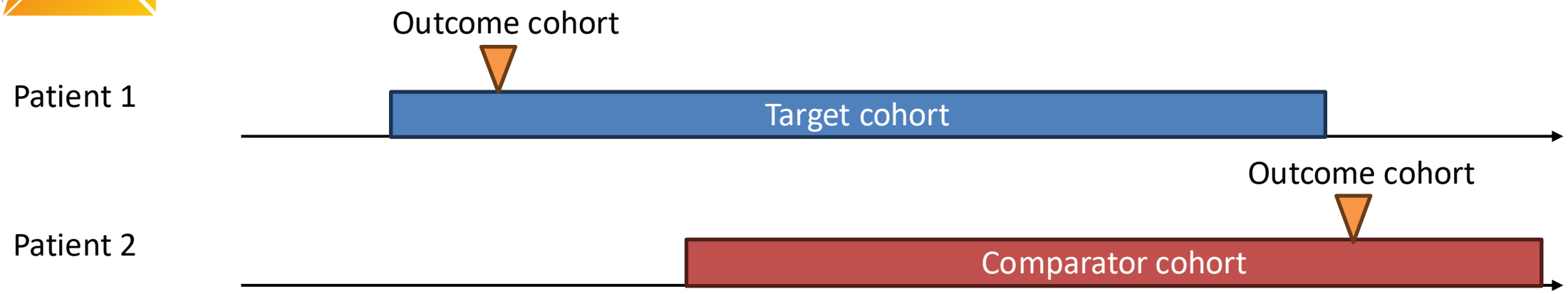
Example causal **effect estimation** questions

- Does exposure to GLP-1 antagonists decrease the risk of AMI?
- Does exposure to GLP-1 antagonists decrease the risk of AMI compared to DPP-4 inhibitors?

Can be answered using

- SelfControlledCaseSeries package
- CohortMethod package

CohortMethod package

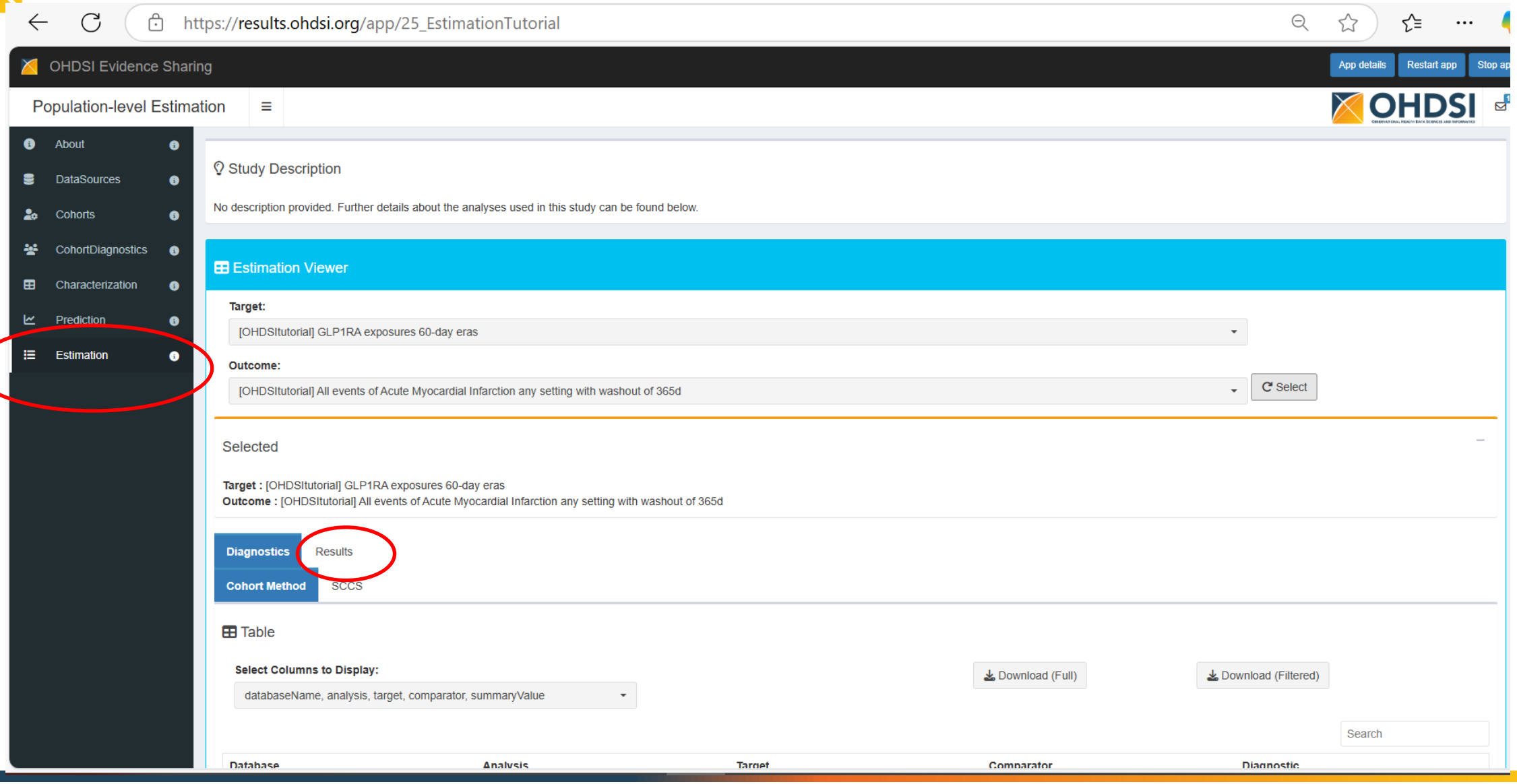


Computes the hazard of the Outcome cohort in the Target cohort compared to the Comparator

- Does exposure to GLP-1 antagonists decrease the risk of AMI compared to DPP-4 inhibitors?
  - Target: **GLP-1**, restricted to those with **T2DM** (and first use only)
  - Comparator: **DPP-4**, restricted to those with **T2DM** (and first use only)
  - Outcome: **AMI**

- Does exposure to GLP-1 antagonists decrease the risk of AMI compared to DPP-4 inhibitors?

Let’s find out!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Estimation Viewer
Target:
[OHDSItutorial] GLP1RA exposures 60-day eras
Outcome:
[OHDSItutorial] All events of Acute Myocardial Infarction any setting with washout of 365d
Select
Selected
Target : [OHDSItutorial] GLP1RA exposures 60-day eras
Outcome : [OHDSItutorial] All events of Acute Myocardial Infarction any setting with washout of 365d
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SCCS
Table
Select Columns to Display:
databaseName, analysis, target, comparator, summaryValue
Download (Full)
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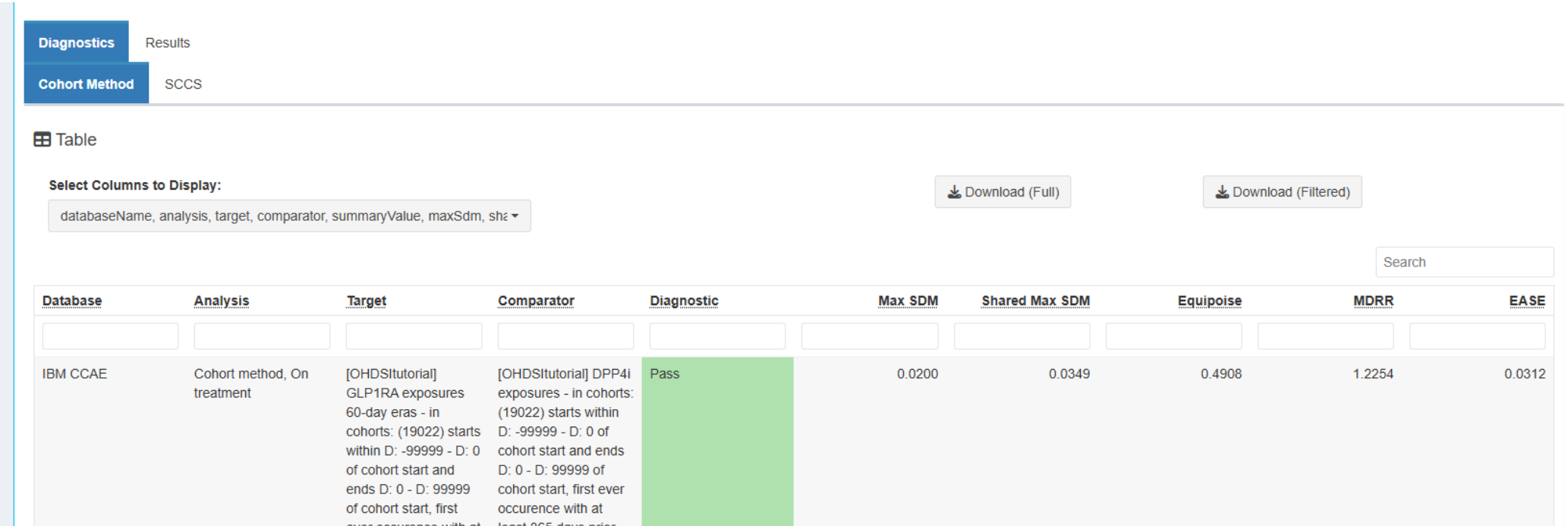
Search
Database
Analysis
Target
Comparator
Diagnostic

Wait….let's check the objective diagnostics

Objective diagnostics

1. Covariate balance
2. Equipoise (PS overlap)
3. Systematic Error



Diagnostics | **Results**

Cohort Method Table | Cohort Method Plot | SCCS Table | SCCS Plot

Table

Select Columns to Display:

actions, description, cdmSourceAbbreviation, targetId, target, outcomeId, o

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Search

	Analysis	Database	Target ID	Target	Outcome ID	Outcome	Comparator ID	Comparator
Actions • View results	Cohort method, On treatment	IBM CCAE	19137001	[OHDSItutorial] GLP1RA exposures 60-day eras - in cohorts: (19022) starts within D: -99999 - D: 0 of cohort start and ends D: 0 - D: 99999 of cohort start, first ever occurence with at least 365 days prior observation and 1 days follow up observation, males, females, occurs after 2017-12-01 and before 2023-12-31	19024	[OHDSItutorial] All events of Acute Myocardial Infarction any setting with washout of 365d	19021001	[OHDSItutorial] DPP4i exposures - in cohorts: (19022) starts within D: -99999 - D: 0 of cohort start and ends D: 0 - D: 99999 of cohort start, first ever occurence with at least 365 days prior observation and 1 days follow up observation, males, females, occurs after 2017-12-01 and before 2023-12-31
Actions • View results	Cohort method, On treatment	JMDC	19137001	[OHDSItutorial] GLP1RA exposures 60-day eras - in cohorts: (19022) starts within D: -99999 - D: 0 of cohort start and ends D: 0 - D: 99999 of cohort start, first ever occurence with at least 365 days prior observation and 1 days follow up observation, males, females, occurs after 2017-12-01 and before 2023-12-31	19024	[OHDSItutorial] All events of Acute Myocardial Infarction any setting with washout of 365d	19021001	[OHDSItutorial] DPP4i exposures - in cohorts: (19022) starts within D: -99999 - D: 0 of cohort start and ends D: 0 - D: 99999 of cohort start, first ever occurence with at least 365 days prior observation and 1 days follow up observation, males, females, occurs after 2017-12-01 and before 2023-12-31
Actions • View results	Cohort method, On treatment	IBM MDCR	19137001	[OHDSItutorial] GLP1RA exposures 60-day eras - in cohorts: (19022) starts within D: -99999 - D: 0 of cohort start and ends D: 0 - D: 99999 of cohort start, first ever occurence	19024	[OHDSItutorial] All events of Acute Myocardial Infarction any setting with washout of 365d	19021001	[OHDSItutorial] DPP4i exposures - in cohorts: (19022) starts within D: -99999 - D: 0 of cohort start and ends D: 0 - D: 99999 of cohort start, first ever occurence with at least

Diagnostics | **Results**

Cohort Method Table | Cohort Method Plot | SCCS Table | SCCS Plot

← Back To Result Summary

Result Selected:

Target : [OHDSItutorial] GLP1RA exposures 60-day eras - in cohorts: (19022) starts within D: -99999 - D: 0 of cohort start and ends D: 0 - D: 99999 of cohort start, first ever occurence with at least 365 days prior observation and 1 days follow up observation, males, females, occurs after 2017-12-01 and before 2023-12-31
Outcome : [OHDSItutorial] All events of Acute Myocardial Infarction any setting with washout of 365d
Database : IBM CCAE

Comparator : [OHDSItutorial] DPP4i exposures - in cohorts: (19022) starts within D: -99999 - D: 0 of cohort start and ends D: 0 - D: 99999 of cohort start, first ever occurence with at least 365 days prior observation and 1 days follow up observation, males, females, occurs after 2017-12-01 and before 2023-12-31
Analysis : Cohort method, On treatment

Power | Attrition | Population characteristics | Propensity model | Propensity scores | Covariate balance | Systematic error | Kaplan-Meier

Power Table | TAR Table

Table

Select Columns to Display:

targetSubjects, comparatorSubjects, targetYears, comparatorYears, targetE

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Search

Target Subjects	Comparator Subjects	Target Years	Comparator Years	Target Events	Comparator Events	Target IR (per 1,000 PY)	Comparator IR (per 1,000 PY)	MDRR
72,490	72,490	76,292	52,938	460	300	6.03	5.67	1.23

Covariate balance: standardized difference of means

We use a **prespecified** SDM threshold (SMD < 0.1) for go – no go decisions for our studies

Target : [OHDSItutorial] GLP1RA exposures 60-day eras
Outcome : [OHDSItutorial] All events of Acute Myocardial Infarction any setting with washout of 365d

Diagnostics | **Results**

Cohort Method Table | Cohort Method Plot | SCCS Table | SCCS Plot

← Back To Result Summary

Result Selected:

Target : [OHDSItutorial] GLP1RA exposures 60-day eras - in cohorts: (19022) starts within D: -99999 - D: 0 of cohort start and ends D: 0 - D: 99999 of cohort start, first ever occurence with at least 365 days prior observation and 1 days follow up observation, males, females, occurs after 2017-12-01 and before 2023-12-31
Outcome : [OHDSItutorial] All events of Acute Myocardial Infarction any setting with washout of 365d
Database : IBM CCAE

Comparator : [OHDSItutorial] DPP4i exposures - in cohorts: (1902 with at least 365 days prior observation and 1 days follow up obser
Analysis : Cohort method, On treatment

Power | Attrition | Population characteristics | Propensity model | Propensity scores | **Covariate balance** | Systematic error | Kaplan-Meier

Covariate Balance Table | **Covariate Balance Plot**

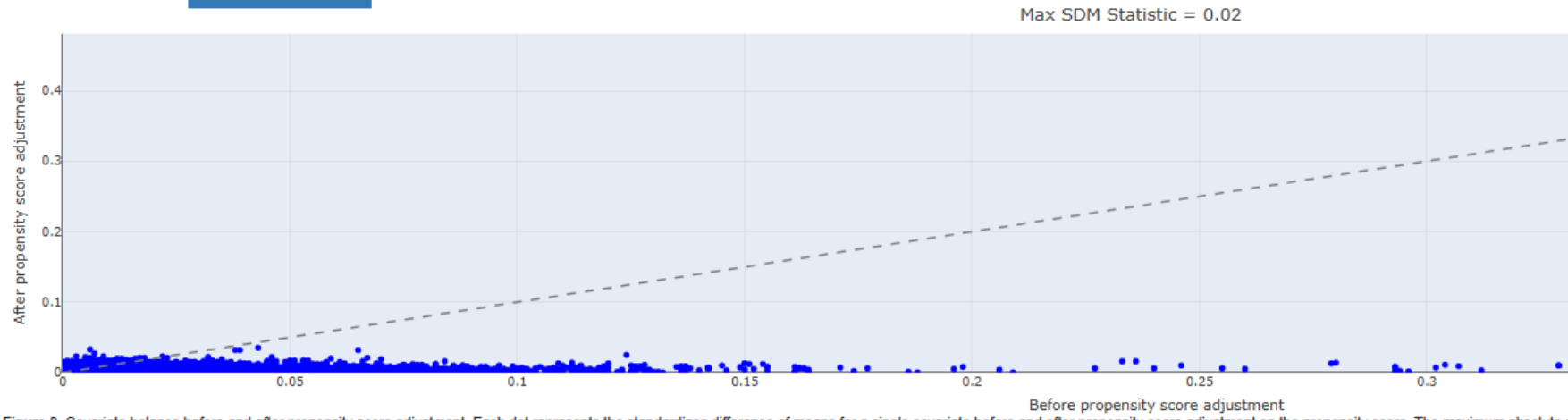


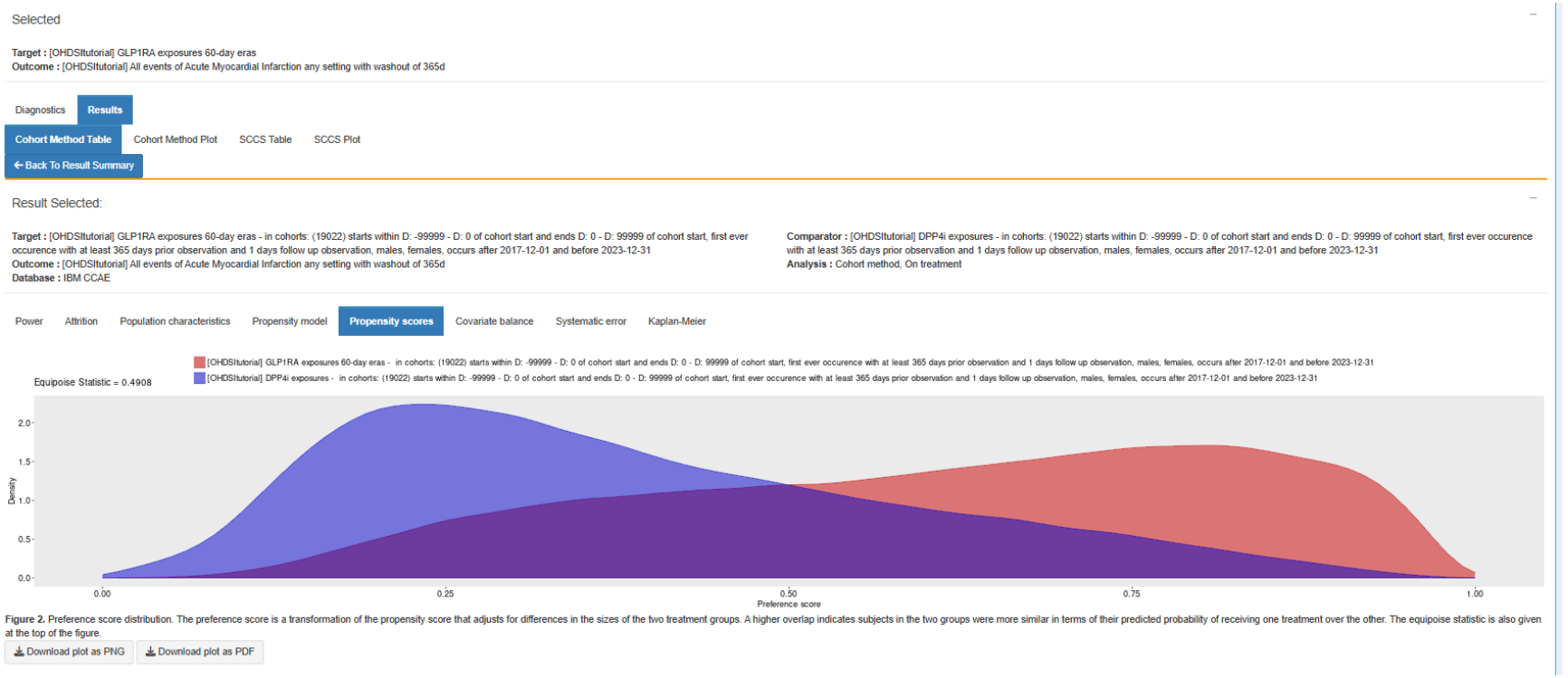
Figure 3. Covariate balance before and after propensity score adjustment. Each dot represents the standardizes difference of means for a single covariate before and after propensity score adjustment on the propensity score. The maximum absolute s
dot for more details.

Download

Highlight covariates containing:

Equipoise (PS overlap)

We use a **prespecified** PS overlap threshold (>20% PS distribution between 0.3 and 0.7) for go – no go decisions for our studies



Quantifying systematic error

Expected Absolute Systematic Error (**EASE**) summarizes this distribution

We use a **prespecified** EASE threshold (EASE < 0.25) for go – no go decisions for our studies

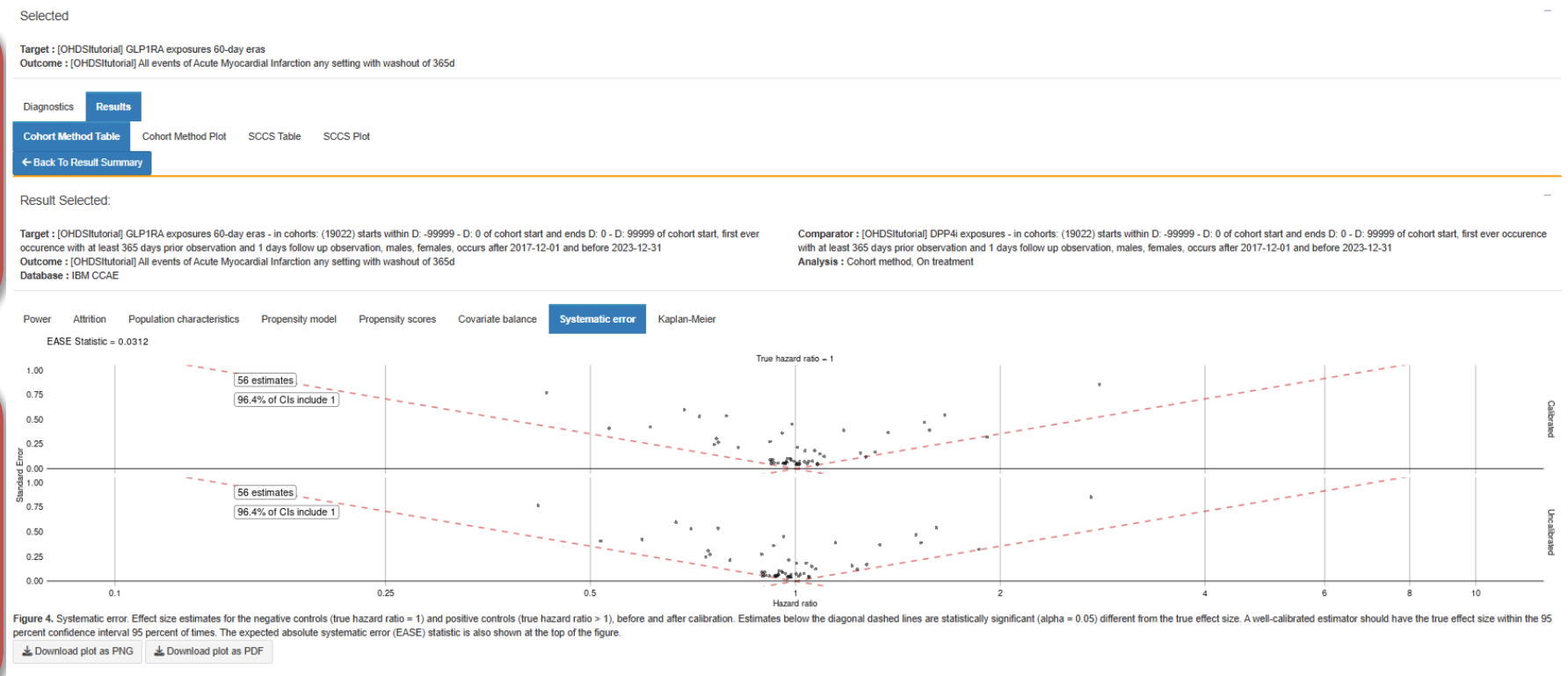


Figure 4. Systematic error. Effect size estimates for the negative controls (true hazard ratio = 1) and positive controls (true hazard ratio > 1), before and after calibration. Estimates below the diagonal dashed lines are statistically significant (alpha = 0.05) different from the true effect size. A well-calibrated estimator should have the true effect size within the 95 percent confidence interval 95 percent of times. The expected absolute systematic error (EASE) statistic is also shown at the top of the figure.

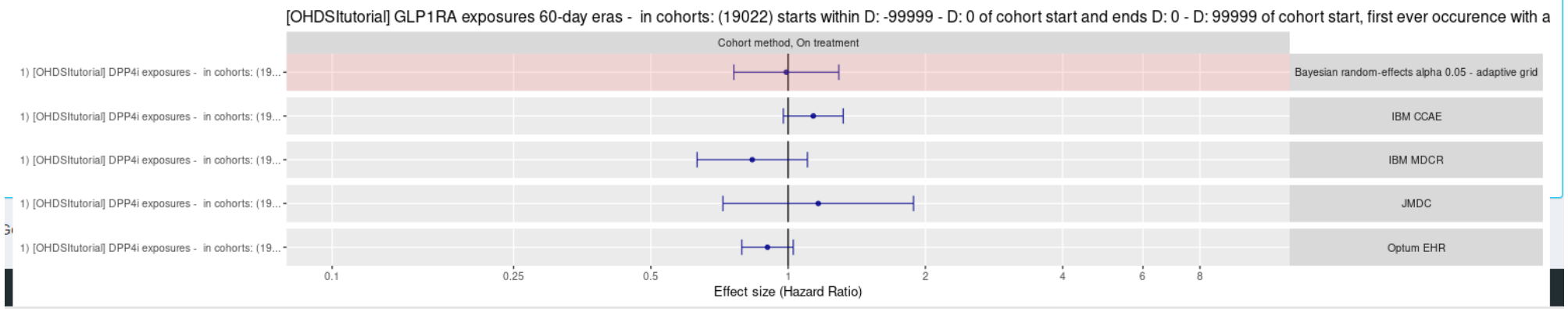
Meta-analysis – OK now we can look at the results!

Target : [OHDSItutorial] GLP1RA exposures 60-day eras
Outcome : [OHDSItutorial] All events of Acute Myocardial Infarction any setting with washout of 365d

Diagnostics | **Results**

Cohort Method Table | **Cohort Method Plot** | SCCS Table | SCCS Plot

shortName	comparator
1) [OHDSItutorial] DPP4i exposures - in cohorts: (19...	[OHDSItutorial] DPP4i exposures - in cohorts: (19022) starts within D: -99999 - D: 0 of cohort start and ends D: 0 - D: 99999 of cohort start, first ever occurence with at least 365 days prior observation and 1 days follow up observation, males, females, occurs after 2017-12-01 and before 2023-12-31



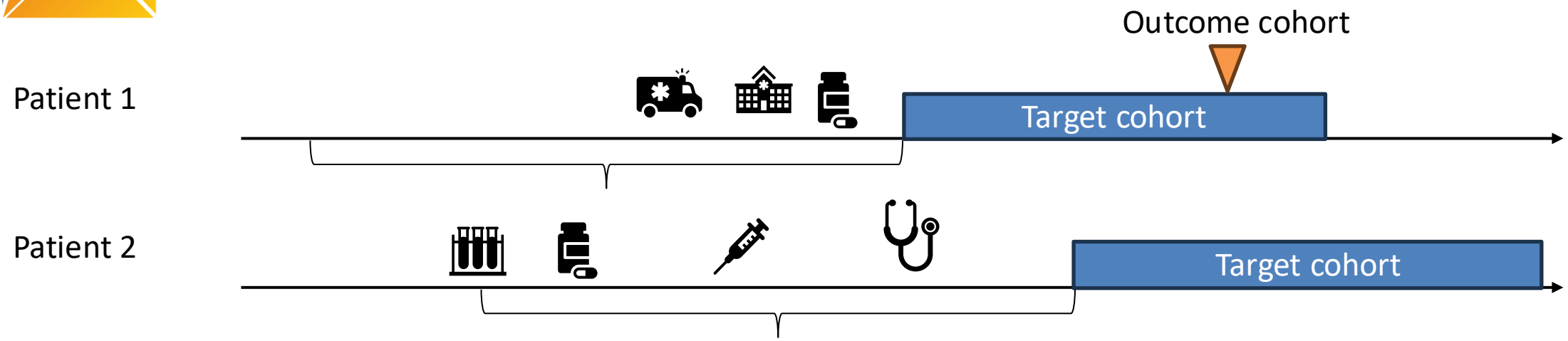
Patient-level **prediction** questions

- Of people initiating GLP-1 antagonists, can we predict who will experience acute myocardial infarction?

Can be answered using

- PatientLevelPrediction package

PatientLevelPrediction package



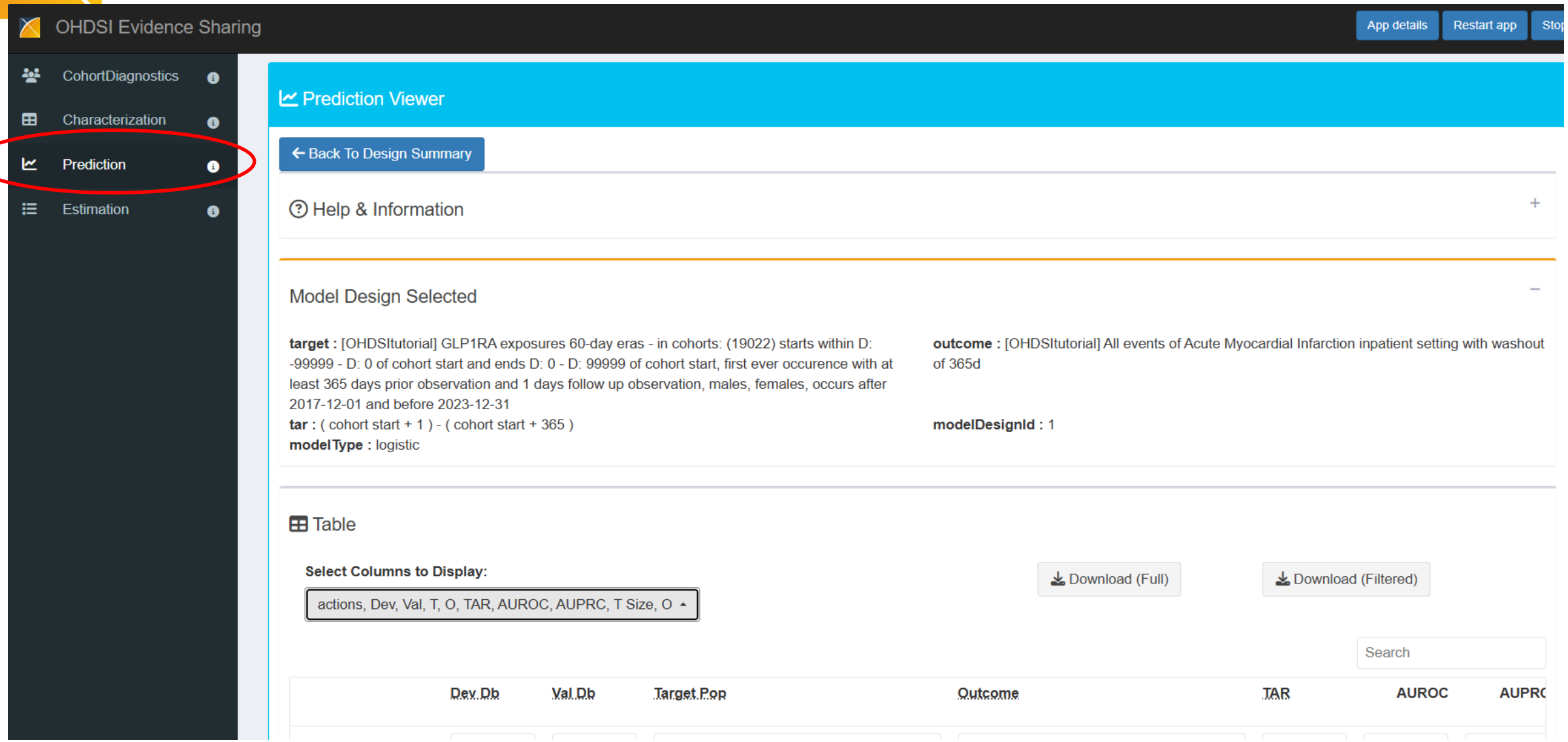
Builds a model to predict who in the Target will have the Outcome

- Uses all observed data up to Target start
- Implements many machine learning / deep learning algorithms

- Of people initiating GLP-1 antagonists, can we predict who will experience AMI?
  - Target: **GLP-1**, restricted to those with **T2DM** (and first use only)
  - Outcome: **AMI**

- Of people initiating GLP-1 antagonists, can we predict who will experience AMI?

Let’s find out!


OHDSI Evidence Sharing
App details
Restart app
CohortDiagnostics
Characterization
Prediction
Estimation
Prediction Viewer
Back To Design Summary
Help & Information
Model Design Selected
target : [OHDSItutorial] GLP1RA exposures 60-day eras - in cohorts: (19022) starts within D: -99999 - D: 0 of cohort start and ends D: 0 - D: 99999 of cohort start, first ever occurence with at least 365 days prior observation and 1 days follow up observation, males, females, occurs after 2017-12-01 and before 2023-12-31
tar : (cohort start + 1) - (cohort start + 365)
modelType : logistic
outcome : [OHDSItutorial] All events of Acute Myocardial Infarction inpatient setting with washout of 365d
modelDesignId : 1
Table
Select Columns to Display:
actions, Dev, Val, T, O, TAR, AUROC, AUPRC, T Size, O
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Search
Dev Db
Val Db
Target Pop
Outcome
TAR
AUROC
AUPRC

Table

Select Columns to Display:

actions, Dev, Val, T, O, TAR, AUROC, AUPRC, T Size, O

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	Dev Db	Val Db	Target Pop	Outcome	TAR	AUROC	AUPRC
Actions • View results • View attrition	IBM CCAE	IBM CCAE	[OHDSItutorial] GLP1RA exposures 60-day eras - in cohorts: (19022) starts within D: -99999 - D: 0 of cohort start and ends D: 0 - D: 99999 of cohort start, first ever occurence with at least 365 days prior observation and 1 days follow up observation, males, females, occurs after 2017-12-01 and before 2023-12-31	[OHDSItutorial] All events of Acute Myocardial Infarction inpatient setting with washout of 365d	(cohort start + 1) - (cohort start + 365)	0.7	0.014
Actions • View results • View attrition	JMDC	JMDC	[OHDSItutorial] GLP1RA exposures 60-day eras - in cohorts: (19022) starts within D: -99999 - D: 0 of cohort start and ends D: 0 - D: 99999 of cohort start, first ever occurence with at least 365 days prior observation and 1 days follow up observation, males, females, occurs after 2017-12-01 and before 2023-12-31	[OHDSItutorial] All events of Acute Myocardial Infarction inpatient setting with washout of 365d	(cohort start + 1) - (cohort start + 365)	0.695	0.008
Actions • View results • View attrition	IBM MDCR	IBM MDCR	[OHDSItutorial] GLP1RA exposures 60-day eras - in cohorts: (19022) starts within D: -99999 - D: 0 of cohort start and ends D: 0 - D: 99999 of cohort start, first ever occurence	[OHDSItutorial] All events of Acute Myocardial Infarction inpatient setting with washout of 365d	(cohort start + 1) - (cohort start + 365)	0.685	0.02

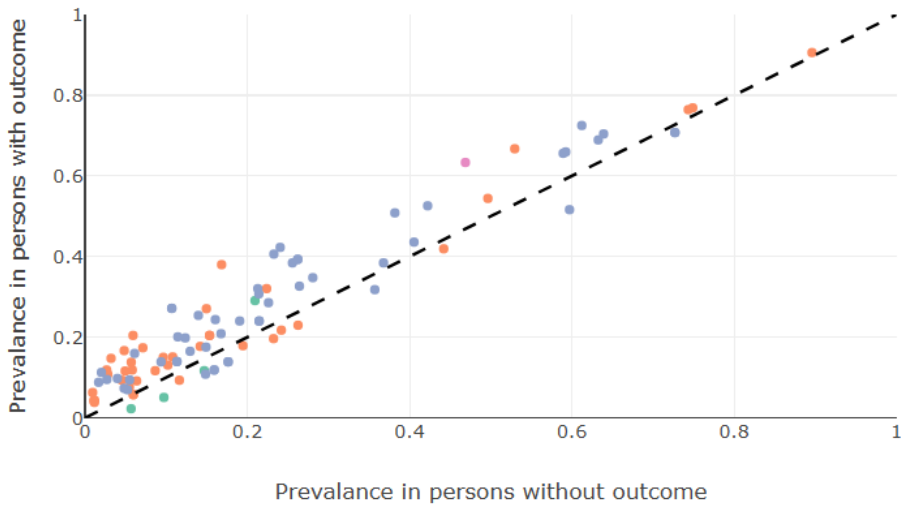
Result Selected

developmentDb : IBM CCAE
validationTarget : [OHDSItutorial] GLP1RA exposures 60-day eras - in cohorts: (19022) starts within D: -99999 - D: 0 of cohort start and ends D: 0 - D: 99999 of cohort start, first ever occurence with at least 365 days prior observation and 1 days follow up observation, males, females, occurs after 2017-12-01 and before 2023-12-31
validationTar : (cohort start + 1) - (cohort start + 365)

validationDb : IBM CCAE
validationOutcome : [OHDSItutorial] All events of Acute Myocardial Infarction inpatient setting with washout of 365d

Model | Discrimination | Calibration | Threshold Dependant | Net Benefit | Validation | Design Settings

Binary



Measurements

Details

COVARIATES
98

NON-ZERO COVARIATES
95

INTERCEPT
-6.46

HYPER-PARAMETERS
View

Table

Select Columns to Display:

covariateName, covariateValue, covariateCount, withOut

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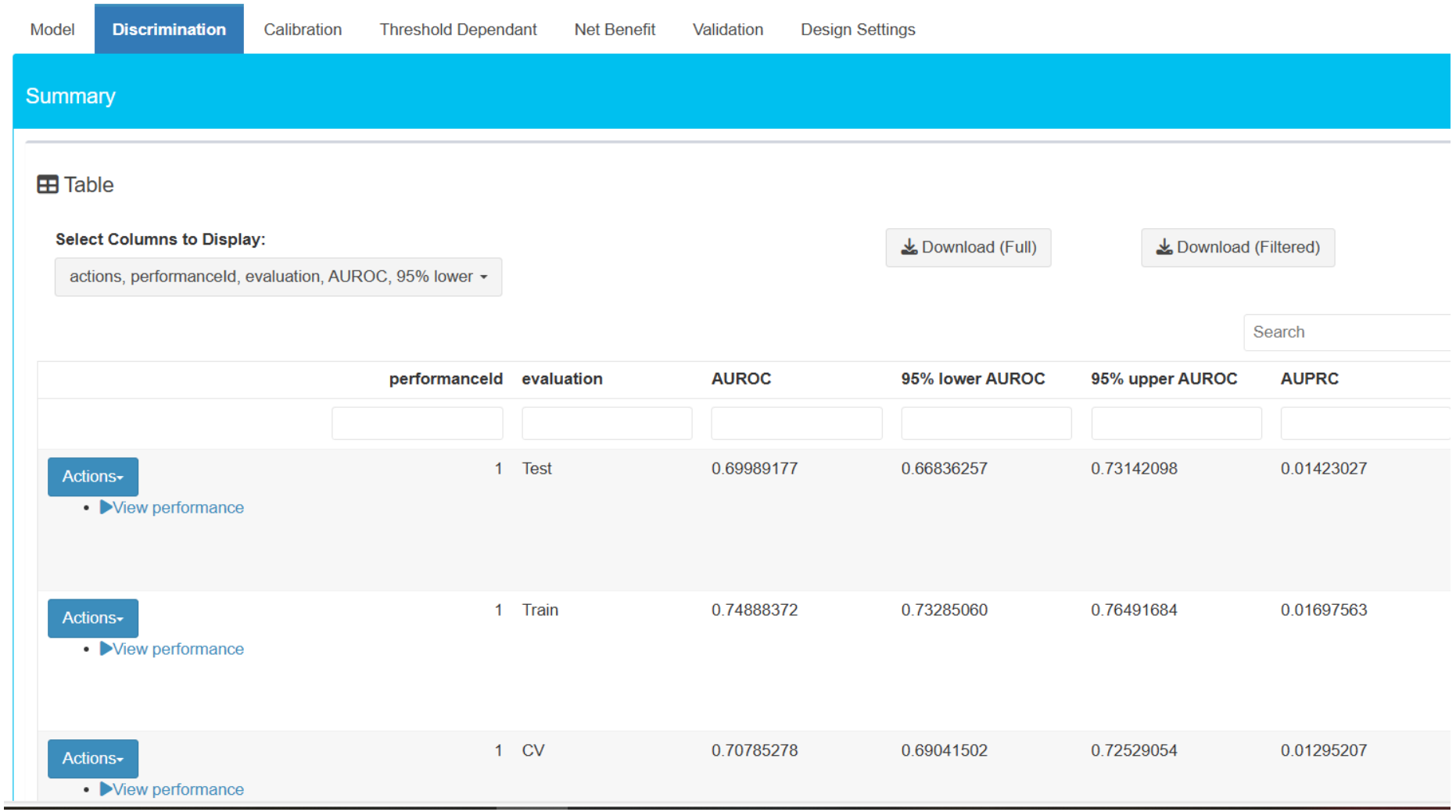
Search

Covariate Name	value	Count	Outcome Mean	Non-outcome Mean	Std Mean Diff
drug_era group (DrugGroupEraLongTerm) during day -365 through 0 days relative to index: dulaglutide	0.0675	84059	0.3476	0.2807	0.1445
drug_era group (DrugGroupEraLongTerm) during day -365 through 0 days relative to index: VARIOUS	0.0731	28097	0.1389	0.0937	0.1411



Model | **Discrimination** | Calibration | Threshold Dependant | Net Benefit | Validation | Design Settings

Summary

Table

Select Columns to Display:

actions, performanceId, evaluation, AUROC, 95% lower

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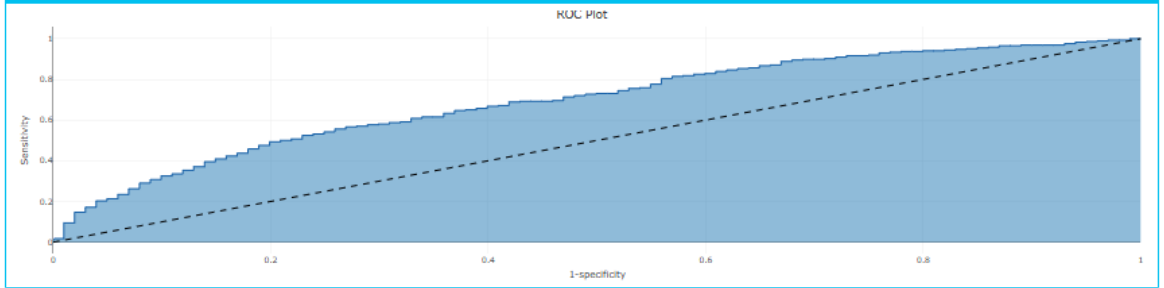
Search

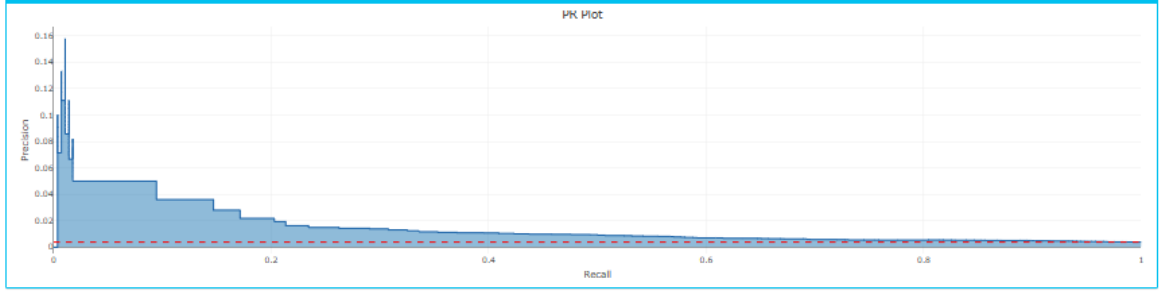
	performanceId	evaluation	AUROC	95% lower AUROC	95% upper AUROC	AUPRC
Actions • View performance	1	Test	0.69989177	0.66836257	0.73142098	0.01423027
Actions • View performance	1	Train	0.74888372	0.73285060	0.76491684	0.01697563
Actions • View performance	1	CV	0.70785278	0.69041502	0.72529054	0.01295207

Discrimination: differentiates between those with and without the event ie predicts higher probabilities for those with the event compared to those who don’t experience the event

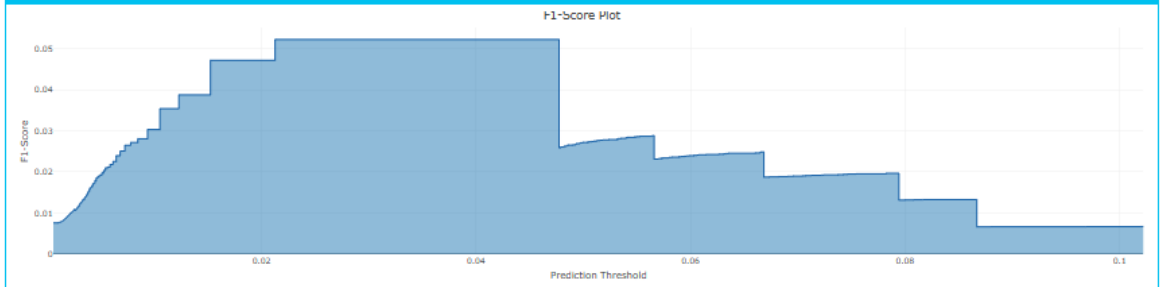
ROC Plot



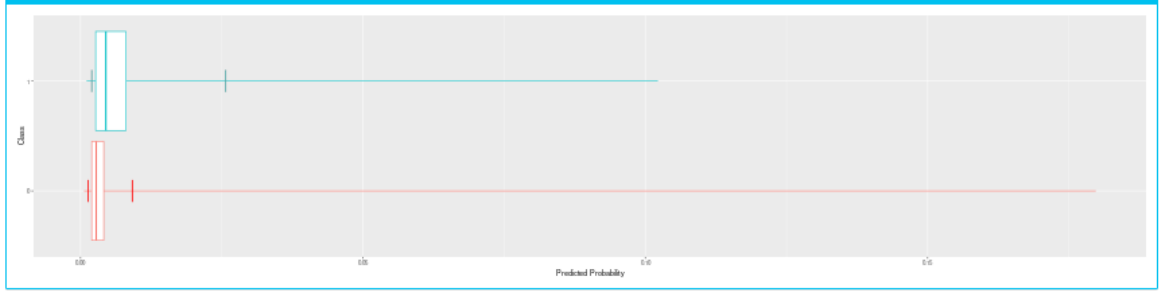
Precision recall plot



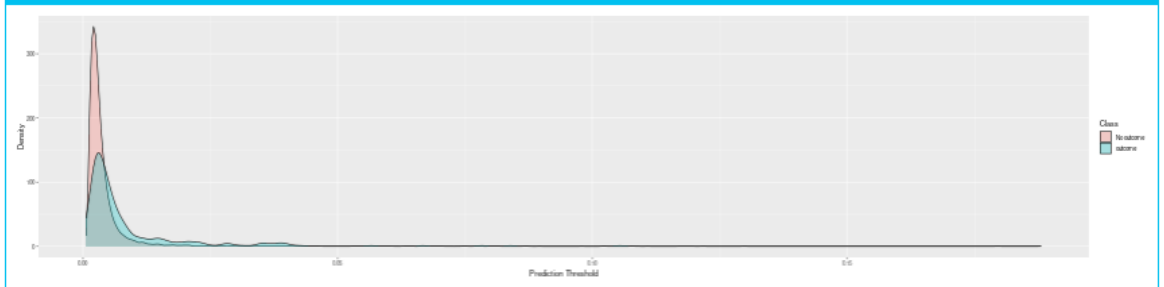
F1 Score Plot



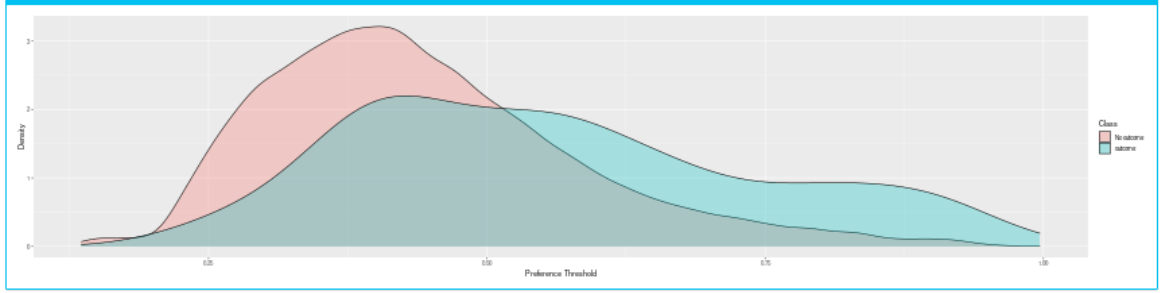
Box Plot

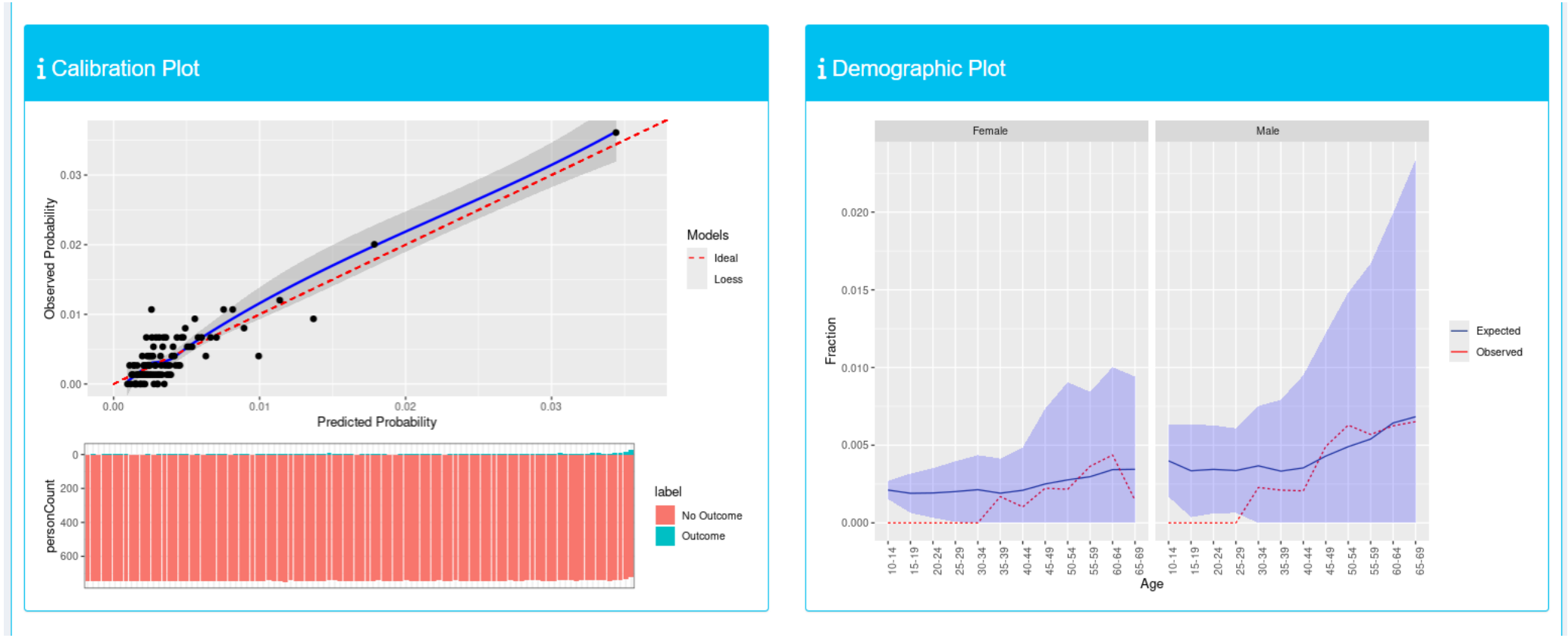


Prediction Score Distribution



Preference Score Distribution





Calibration: estimated probabilities are close to the observed frequency

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- EuSymposiumPhenotypeTutorial12/
- EuSymposiumPhenotypeTutorial13/
- EuSymposiumPhenotypeTutorial14/
- EuSymposiumPhenotypeTutorial15/
- FluoroquinoloneAorticAneurysm/
- GLP1Generalizability/
- GLP1ReproducibilityExacerbation/
- GLP1ReproducibilityHospitalization/
- GLP1ReproducibilityHospitalizationSulf/
- GrahamReplicationDemo/
- HERACharacterization/
- HSCohortDiagnostics/
- HSModel/
- HSPathwaysCohortDiagnostics/
- IbdCharacterization/
- IbdTable1/
- IcariusSusceptibility/
- icpe_2023_designated_medical_events/
- icpe_2023_designated_medical_events_old/
- LegendBasicViewer/
- LegendMedCentral/
- LegendT2dmClassCohortExplorer/
- LegendT2dmClassEvidenceExplorer/
- LegendT2dmClassEvidenceExplorer_v2/
- LegendT2dmDrugCohortExplorer/
- LegendT2dmDrugEvidenceExplorer/
- LegendT2dmOutcomeCohortExplorer/
- MDDinBipolar/
- MethodEvalViewer/
- MotherInfantLinkEval/