

Package ‘CohortDiagnostics’

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Type Package

Title Diagnostics for OHDSI Studies

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Description

Diagnostics for studies that use the OMOP Common Data Model and the OHDSI tools.

Depends DatabaseConnector (≥ 3.0.0),

R (≥ 3.5.0)

Imports Andromeda,

checkmate,

digest,

dplyr (≥ 1.0.0),

DT,

FeatureExtraction (≥ 3.1.0),

ggplot2,

lubridate,

ParallelLogger (≥ 2.0.0),

plotly,

readr,

rlang,

RJSONIO,

ROhdsiWebApi (≥ 1.1.2),

RSQlite (≥ 2.2.0),

shiny,

shinydashboard,

SqlRender (≥ 1.6.7),

stringr,

tidyselect,

tibble (≥ 3.0.0),

tidyr (≥ 1.0.0),

VennDiagram

Suggests Eunomia,

htmltools,

knitr,

RColorBrewer,

rmarkdown,

scales,

stringi,
testthat

Remotes ohdsi/Eunomia,
ohdsi/FeatureExtraction,
ohdsi/ROhdsiWebApi,
ohdsi/DatabaseConnector,
r-dbi/RSQLite

License Apache License

VignetteBuilder knitr

URL <https://ohdsi.github.io/CohortDiagnostics>, <https://github.com/OHDSI/CohortDiagnostics>

BugReports <https://github.com/OHDSI/CohortDiagnostics/issues>

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R topics documented:

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| | |
|----------------------|--------------------------------|
| breakDownIndexEvents | <i>Break down index events</i> |
|----------------------|--------------------------------|

Description

For the concepts included in the index event definition, count how often they are encountered at the cohort index date.

Usage

```
breakDownIndexEvents(
  connectionDetails = NULL,
  connection = NULL,
  cdmDatabaseSchema,
  oracleTempSchema = NULL,
  cohortDatabaseSchema = cdmDatabaseSchema,
  cohortTable = "cohort",
  baseUrl = NULL,
  webApiCohortId = NULL,
  cohortJson = NULL,
  cohortSql = NULL,
  cohortId = cohortId
)
```

Arguments

connectionDetails

An object of type `connectionDetails` as created using the [createConnectionDetails](#) function in the DatabaseConnector package. Can be left NULL if `connection` is provided.

| | |
|----------------------|--|
| connection | An object of type <code>connection</code> as created using the <code>connect</code> function in the <code>DatabaseConnector</code> package. Can be left NULL if <code>connectionDetails</code> is provided, in which case a new connection will be opened at the start of the function, and closed when the function finishes. |
| cdmDatabaseSchema | Schema name where your patient-level data in OMOP CDM format resides. Note that for SQL Server, this should include both the database and schema name, for example 'cdm_data.dbo'. |
| oracleTempSchema | Should be used in Oracle to specify a schema where the user has write privileges for storing temporary tables. |
| cohortDatabaseSchema | Schema name where your cohort table resides. Note that for SQL Server, this should include both the database and schema name, for example 'scratch.dbo'. |
| cohortTable | Name of the cohort table. |
| baseUrl | The base URL for the WebApi instance, for example: "http://server.org:80/WebAPI". Needn't be provided if <code>cohortJson</code> and <code>cohortSql</code> are provided. |
| webApiCohortId | A vector of one Cohort Ids as in the source webApi/Atlas. |
| cohortJson | A character string containing the JSON of a cohort definition. Needn't be provided if <code>baseUrl</code> and <code>cohortId</code> are provided. |
| cohortSql | The OHDSI SQL representation of the same cohort definition. Needn't be provided if <code>baseUrl</code> and <code>cohortId</code> are provided. |
| cohortId | The cohort ID used to reference the cohort in the cohort table. |

Value

A data frame with concepts, and per concept the count of how often the concept was encountered at the index date.

```
buildPostgresDatabaseSchema
```

Create postgres database schema for cohort diagnostics results storage

Description

Builds full schema for Diagnostics Explorer

Usage

```
buildPostgresDatabaseSchema(connectionDetails, schemaName, overwrite = FALSE)
```

Arguments

| | |
|-------------------|---|
| connectionDetails | DatabaseConnector connection details compatible object. Must be dbms="postgres" |
| schemaName | Schema to install to |
| overwrite | Bool optionally delete and create entire schema again if it exists |

`combineResultsDataModelCsvFiles`*Combine CSVs that are part of Cohort Diagnostics results data model*

Description

Combine CSVs that are part of Cohort Diagnostics results data model

Usage

```
combineResultsDataModelCsvFiles(  
  inputLocation,  
  outputLocation = file.path(inputLocation, "combined"),  
  recursive = TRUE,  
  reportLocation = NULL  
)
```

Arguments

`inputLocation` Input location for files
`outputLocation` Output location for files
`recursive` Search for files recursively
`reportLocation` (Optional) Output data quality report to this location.

Value

This function searches for csv files that conforms to the Cohort Diagnostics results data model, parses them, does quality checks, appends files and makes them ready for upload into a dbms. Note: the files are expected to be in snake.case format.

Examples

```
## Not run:  
combineResultsDataModelCsvFiles()  
  
## End(Not run)
```

`compareCohortCharacteristics`*Compare cohort characteristics*

Description

Compare the characteristics of two cohorts, computing the standardized difference of the mean.

Usage

```
compareCohortCharacteristics(characteristics1, characteristics2)
```

Arguments

- characteristics1**
Characteristics of the first cohort, as created using the [getCohortCharacteristics](#) function.
- characteristics2**
Characteristics of the second cohort, as created using the [getCohortCharacteristics](#) function.

Value

A data frame comparing the characteristics of the two cohorts.

`compareCovariateValueResult`

Get cohort covariate comparison (including temporal)

Description

Get cohort covariate value comparison data for cohorts stored in cohort diagnostics results data model. The output of this function may be used, together with covariate ref to create tables/plots regarding a cohort characteristics comparison diagnostics. Because of the large volume of covariates, this function allows to filter range of covariate_value by providing the minimum and maximum proportion. Its important to note that all covariates are expected to output proportions that are between the values 0.0 to 1.0

Usage

```
compareCovariateValueResult(
  connection = NULL,
  connectionDetails = NULL,
  targetCohortIds,
  comparatorCohortIds,
  databaseIds,
  minProportion = 0.01,
  maxProportion = 1,
  isTemporal = TRUE,
  timeIds = NULL,
  resultsDatabaseSchema = NULL
)
```

Arguments

- connection** (optional) An object of type `connection` as created using the [connect](#) function in the DatabaseConnector package. Can be left NULL if `connectionDetails` is provided, in which case a new connection will be opened at the start of the function, and closed when the function finishes.
- connectionDetails** (optional) An object of type `connectionDetails` as created using the [createConnectionDetails](#) function in the DatabaseConnector package. Can be left NULL if `connection` is provided.

| | |
|------------------------------------|--|
| <code>targetCohortIds</code> | A vector of one or more Cohort Ids. |
| <code>comparatorCohortIds</code> | A vector of one or more Cohort Ids. |
| <code>databaseIds</code> | A vector one or more databaseIds to retrieve the results for. This is a character field values from the 'databaseId' field of the 'database' table of the results data model. |
| <code>minProportion</code> | Do you want to limit the data returned by a lower threshold. Enter a number between 0.00 to 1.00. Be default the value is 0.01. |
| <code>maxProportion</code> | Do you want to limit the data returned by a upper threshold. Enter a number between 0.00 to 1.00. Be default the value is 1. |
| <code>isTemporal</code> | (optional) Get temporal covariate values? |
| <code>timeIds</code> | (optional) Used only if <code>isTemporal = TRUE</code> . Do you want to limit to certain 'time ids'. By default all time ids are returned. |
| <code>resultsDatabaseSchema</code> | (optional) The databaseSchema where the results data model of cohort diagnostics is stored. This is only required when <code>connectionDetails</code> or <code>connect</code> is provided. |

Details

Note: The output of this function may be used to create plots or tables. This function relies on data available in Cohort Diagnostics results data model. The function will use one of the two methods to connect to the results data model, 1) database mode, and 2) in-memory mode.

Database mode: In this mode, R will look for the results data model in a remote relational dbms. The database system should be one of the databases supported by DatabaseConnector package. If either `connectionDetails` or `connect` parameters are populated with an argument during a function call, the connection gets set to database mode.

In-memory mode: If both `connectionDetails` and `connect` are parameters have a NULL argument then query will be in-memory mode. R will now expect and check for a data frame object available in R's memory, as required for the function. The object should be an object specified in Cohort Diagnostics results data model.

Objects in R's memory are expected to follow camelCase naming conventions (see HADES), while objects in a relational database system are expected to follow snake-case naming conventions.

Value

The function will return a tibble data frame object.

Examples

```
## Not run:
covariateValue <- compareCovariateValueResult(targetCohortIds = c(342432,432423),
                                              comparatorCohortIds = c(34243, 342432),
                                              databaseIds = c('eunomia', 'hcup'))

## End(Not run)
```

| | |
|----------------------|--|
| computeCohortOverlap | <i>Compute overlap between two cohorts</i> |
|----------------------|--|

Description

Computes the overlap between a target and a comparator cohort.

Usage

```
computeCohortOverlap(
  connectionDetails = NULL,
  connection = NULL,
  cohortDatabaseSchema,
  cohortTable = "cohort",
  targetCohortId,
  comparatorCohortId
)
```

Arguments

- | | |
|----------------------|--|
| connectionDetails | An object of type <code>connectionDetails</code> as created using the createConnectionDetails function in the DatabaseConnector package. Can be left NULL if <code>connection</code> is provided. |
| connection | An object of type <code>connection</code> as created using the connect function in the DatabaseConnector package. Can be left NULL if <code>connectionDetails</code> is provided, in which case a new connection will be opened at the start of the function, and closed when the function finishes. |
| cohortDatabaseSchema | Schema name where your cohort table resides. Note that for SQL Server, this should include both the database and schema name, for example 'scratch.dbo'. |
| cohortTable | Name of the cohort table. |
| targetCohortId | The cohort ID used to reference the target cohort in the cohort table. |
| comparatorCohortId | The cohort ID used to reference the comparator cohort in the cohort table. |

Value

A data frame with overlap statistics.

| | |
|-------------------|------------------------|
| createCohortTable | Create cohort table(s) |
|-------------------|------------------------|

Description

This function creates an empty cohort table. Optionally, additional empty tables are created to store statistics on the various inclusion criteria.

Usage

```
createCohortTable(
  connectionDetails = NULL,
  connection = NULL,
  cohortDatabaseSchema,
  cohortTable = "cohort",
  createInclusionStatsTables = FALSE,
  resultsDatabaseSchema = cohortDatabaseSchema,
  cohortInclusionTable = paste0(cohortTable, "_inclusion"),
  cohortInclusionResultTable = paste0(cohortTable, "_inclusion_result"),
  cohortInclusionStatsTable = paste0(cohortTable, "_inclusion_stats"),
  cohortSummaryStatsTable = paste0(cohortTable, "_summary_stats")
)
```

Arguments

| | |
|----------------------------|--|
| connectionDetails | An object of type <code>connectionDetails</code> as created using the createConnectionDetails function in the DatabaseConnector package. Can be left NULL if <code>connection</code> is provided. |
| connection | An object of type <code>connection</code> as created using the connect function in the DatabaseConnector package. Can be left NULL if <code>connectionDetails</code> is provided, in which case a new connection will be opened at the start of the function, and closed when the function finishes. |
| cohortDatabaseSchema | Schema name where your cohort table resides. Note that for SQL Server, this should include both the database and schema name, for example 'scratch.dbo'. |
| cohortTable | Name of the cohort table. |
| createInclusionStatsTables | Create the four additional tables for storing inclusion rule statistics? |
| resultsDatabaseSchema | Schema name where the statistics tables reside. Note that for SQL Server, this should include both the database and schema name, for example 'scratch.dbo'. |
| cohortInclusionTable | Name of the inclusion table, one of the tables for storing inclusion rule statistics. |
| cohortInclusionResultTable | Name of the inclusion result table, one of the tables for storing inclusion rule statistics. |

cohortInclusionStatsTable

Name of the inclusion stats table, one of the tables for storing inclusion rule statistics.

cohortSummaryStatsTable

Name of the summary stats table, one of the tables for storing inclusion rule statistics.

createConceptCountsTable

Create concept counts table

Description

Create a table with counts of how often each concept ID occurs in the CDM.

Usage

```
createConceptCountsTable(
  connectionDetails = NULL,
  connection = NULL,
  cdmDatabaseSchema,
  oracleTempSchema = NULL,
  conceptCountsDatabaseSchema = cdmDatabaseSchema,
  conceptCountsTable = "concept_counts",
  conceptCountsTableIsTemp = FALSE,
  getConceptCountsTableAsDataFrame = FALSE
)
```

Arguments**connectionDetails**

An object of type `connectionDetails` as created using the [createConnectionDetails](#) function in the DatabaseConnector package. Can be left NULL if `connection` is provided.

connection

An object of type `connection` as created using the [connect](#) function in the DatabaseConnector package. Can be left NULL if `connectionDetails` is provided, in which case a new connection will be opened at the start of the function, and closed when the function finishes.

cdmDatabaseSchema

Schema name where your patient-level data in OMOP CDM format resides. Note that for SQL Server, this should include both the database and schema name, for example 'cdm_data.dbo'.

oracleTempSchema

Should be used in Oracle to specify a schema where the user has write privileges for storing temporary tables.

conceptCountsDatabaseSchema

Schema name where your concept counts table resides. Note that for SQL Server, this should include both the database and schema name, for example 'scratch.dbo'. Ignored if `conceptCountsTableIsTemp = TRUE`.

`conceptCountsTable`
 Name of the concept counts table. This table can be created using the [createConceptCountsTable](#).

`conceptCountsTableIsTemp`
 Is the concept counts table a temp table?

`getConceptCountsTable`
 Do you want to return a copy of the concept count from dbms into R memory? If not NULL is returned

Value

The function will by default return `DatabaseConnector::executeSql` output, by attempting to create a table on dbms. In addition, if `getConceptCountsTable = TRUE` then a tibble data frame copy of the created table will be returned back to R.

| | |
|------------------------|---|
| <code>createDdl</code> | <i>Create a DDL script for results data model from specification csv.</i> |
|------------------------|---|

Description

Create a DDL script for results data model from specification csv.

Usage

```
createDdl(packageName, packageVersion, modelVersion, specification)
```

Arguments

`packageName` The name of the R package whose output model we are documenting.

`packageVersion` The version number of cohort diagnostics

`modelVersion` The version of the results data model

`specification` The location of the csv file with the high-level results table specification.

| | |
|-------------------------------------|------------------------------------|
| <code>createDdlPkConstraints</code> | <i>Create DDL with primary key</i> |
|-------------------------------------|------------------------------------|

Description

Create DDL with primary key

Usage

```
createDdlPkConstraints(  
  packageName,  
  packageVersion,  
  modelVersion,  
  specification  
)
```

Arguments

| | |
|----------------|---|
| packageName | The name of the R package whose output model we are documenting. |
| packageVersion | The version number of cohort diagnostics |
| modelVersion | The version of the results data model |
| specification | The location of the csv file with the high-level results table specification. |

| | |
|---------|--|
| dropDdl | <i>Create DDL that drops all results table</i> |
|---------|--|

Description

Create DDL that drops all results table

Usage

```
dropDdl(packageName, packageVersion, modelVersion, specification)
```

Arguments

| | |
|----------------|---|
| packageName | The name of the R package whose output model we are documenting. |
| packageVersion | The version number of cohort diagnostics |
| modelVersion | The version of the results data model |
| specification | The location of the csv file with the high-level results table specification. |

| | |
|--------------------------------------|--|
| extractConceptSetsJsonFromCohortJson | <i>Extract concept set json from cohort json</i> |
|--------------------------------------|--|

Description

Extracts json that corresponds to the conceptset definition in a cohort json definition

Usage

```
extractConceptSetsJsonFromCohortJson(cohortJson)
```

Arguments

| | |
|------------|---|
| cohortJson | Complete JSON specification of cohort definition. The standard form is generated by <code>WebApi</code> |
|------------|---|

Value

The function will return a tibble data frame object with one row per conceptSet id in cohort definition.

Examples

```
## Not run:
conceptSetsJson <- extractConceptSetsJsonFromCohortJson(cohortJson = json)

## End(Not run)
```

```
extractConceptSetsSqlFromCohortSql
```

Extract concept set sql from cohort generation SQL

Description

Extracts SQL that corresponds to the conceptset (codeset) part from cohort generation SQL used to instantiated conceptSets during cohort construction.

Usage

```
extractConceptSetsSqlFromCohortSql(cohortSql)
```

Arguments

| | |
|-----------|--|
| cohortSql | Complete SQL specification of cohort definition in OHDSI SQL dialect. May contain parameters designed to be replaced by SqlRender. The standard form SQL is generated using circe-be by WebApi and Atlas |
|-----------|--|

Value

The function will return a tibble data frame object with one row per concept id and concept set combination in cohort definition.

Examples

```
## Not run:
conceptSetSql <- extractConceptSetsSqlFromCohortSql(cohortSql = sql)

## End(Not run)
```

```
findCohortIncludedSourceConcepts
```

Check source codes used in a cohort definition

Description

This function first extracts all concept sets used in a cohort definition. Then, for each concept set the concept found in the CDM database the contributing source codes are identified.

Usage

```

findCohortIncludedSourceConcepts(
  connectionDetails = NULL,
  connection = NULL,
  cdmDatabaseSchema,
  oracleTempSchema = NULL,
  baseUrl = NULL,
  webApiCohortId = NULL,
  cohortJson = NULL,
  cohortSql = NULL,
  byMonth = FALSE,
  useSourceValues = FALSE
)

```

Arguments

| | |
|--------------------------|--|
| connectionDetails | An object of type <code>connectionDetails</code> as created using the createConnectionDetails function in the DatabaseConnector package. Can be left NULL if <code>connection</code> is provided. |
| connection | An object of type <code>connection</code> as created using the connect function in the DatabaseConnector package. Can be left NULL if <code>connectionDetails</code> is provided, in which case a new connection will be opened at the start of the function, and closed when the function finishes. |
| cdmDatabaseSchema | Schema name where your patient-level data in OMOP CDM format resides. Note that for SQL Server, this should include both the database and schema name, for example 'cdm_data.dbo'. |
| oracleTempSchema | Should be used in Oracle to specify a schema where the user has write privileges for storing temporary tables. |
| baseUrl | The base URL for the WebApi instance, for example: "http://server.org:80/WebAPI". Needn't be provided if <code>cohortJson</code> and <code>cohortSql</code> are provided. |
| webApiCohortId | A vector of one Cohort Ids as in the source webApi/Atlas. |
| cohortJson | A character string containing the JSON of a cohort definition. Needn't be provided if <code>baseUrl</code> and <code>cohortId</code> are provided. |
| cohortSql | The OHDSI SQL representation of the same cohort definition. Needn't be provided if <code>baseUrl</code> and <code>cohortId</code> are provided. |
| byMonth | Compute counts by month? If FALSE, only overall counts are computed. |
| useSourceValues | Use the source_value fields to find the codes used in the data? If not, this analysis will rely entirely on the source_concept_id fields instead. Note that, depending on the source data and ETL, it might be possible for the source_value fields to contain patient-identifiable information by accident. |

Value

A data frame with source codes, with counts per domain how often the code was encountered in the CDM.

findCohortOrphanConcepts

Find orphan concepts for all concept sets in a cohort

Description

Searches for concepts that should belong to the concept sets in a cohort definition but don't, for example because of missing source-to-standard concept maps, or erroneous hierarchical relationships.

Usage

```
findCohortOrphanConcepts(
  connectionDetails = NULL,
  connection = NULL,
  cdmDatabaseSchema,
  oracleTempSchema = NULL,
  baseUrl = NULL,
  webApiCohortId = NULL,
  cohortJson = NULL,
  conceptCountsDatabaseSchema = cdmDatabaseSchema,
  conceptCountsTable = "concept_counts",
  conceptCountsTableIsTemp = FALSE
)
```

Arguments

| | |
|-------------------|--|
| connectionDetails | An object of type <code>connectionDetails</code> as created using the createConnectionDetails function in the DatabaseConnector package. Can be left NULL if <code>connection</code> is provided. |
| connection | An object of type <code>connection</code> as created using the connect function in the DatabaseConnector package. Can be left NULL if <code>connectionDetails</code> is provided, in which case a new connection will be opened at the start of the function, and closed when the function finishes. |
| cdmDatabaseSchema | Schema name where your patient-level data in OMOP CDM format resides. Note that for SQL Server, this should include both the database and schema name, for example 'cdm_data.dbo'. |
| oracleTempSchema | Should be used in Oracle to specify a schema where the user has write privileges for storing temporary tables. |
| baseUrl | The base URL for the WebApi instance, for example: "http://server.org:80/WebAPI". Needn't be provided if <code>cohortJson</code> is provided. |
| webApiCohortId | The ID of the cohort in the WebAPI instance. Needn't be provided if <code>cohortJson</code> is provided. |
| cohortJson | A character string containing the JSON of a cohort definition. Needn't be provided if <code>baseUrl</code> and <code>webApiCohortId</code> are provided. |

conceptCountsDatabaseSchema

Schema name where your concept counts table resides. Note that for SQL Server, this should include both the database and schema name, for example 'scratch.dbo'. Ignored if conceptCountsTableIsTemp = TRUE.

conceptCountsTable

Name of the concept counts table. This table can be created using the [createConceptCountsTable](#).

conceptCountsTableIsTemp

Is the concept counts table a temp table?

Details

Logically, this function performs the following steps for each concept set expression in the cohort definition:

- Given the concept set expression, find all included concepts.
- Find all names of the input concepts, including synonyms, and the names of source concepts that map to them.
- Search for concepts (standard and source) that contain any of those names as substring.
- Filter those concepts to those that are not in the original set of concepts (i.e. orphans).
- Restrict the set of orphan concepts to those that appear in the CDM database and across network concept prevalence (as either source concept or standard concept).

Value

A data frame with orphan concepts, with counts how often the code was encountered in the CDM.

| | |
|--------------------|--|
| findOrphanConcepts | <i>Find (source) concepts that do not roll up to their ancestor(s)</i> |
|--------------------|--|

Description

Searches for concepts that should belong to the set of concepts but don't, for example because of missing source-to-standard concept maps, or erroneous hierarchical relationships.

Usage

```
findOrphanConcepts(
  connectionDetails = NULL,
  connection = NULL,
  cdmDatabaseSchema,
  oracleTempSchema = NULL,
  conceptIds,
  conceptCountsDatabaseSchema = cdmDatabaseSchema,
  conceptCountsTable = "concept_counts",
  conceptCountsTableIsTemp = FALSE
)
```


Arguments

| | |
|--|--|
| <code>connectionDetails</code> | An object of type <code>connectionDetails</code> as created using the createConnectionDetails function in the DatabaseConnector package. Can be left NULL if <code>connection</code> is provided. |
| <code>connection</code> | An object of type <code>connection</code> as created using the connect function in the DatabaseConnector package. Can be left NULL if <code>connectionDetails</code> is provided, in which case a new connection will be opened at the start of the function, and closed when the function finishes. |
| <code>cdmDatabaseSchema</code> | Schema name where your patient-level data in OMOP CDM format resides. Note that for SQL Server, this should include both the database and schema name, for example 'cdm_data.dbo'. |
| <code>oracleTempSchema</code> | Should be used in Oracle to specify a schema where the user has write privileges for storing temporary tables. |
| <code>conceptIds</code> | A vector of concept IDs for which we want to find orphans. |
| <code>conceptCountsDatabaseSchema</code> | Schema name where your concept counts table resides. Note that for SQL Server, this should include both the database and schema name, for example 'scratch.dbo'. Ignored if <code>conceptCountsTableIsTemp</code> = TRUE. |
| <code>conceptCountsTable</code> | Name of the concept counts table. This table can be created using the createConceptCountsTable . |
| <code>conceptCountsTableIsTemp</code> | Is the concept counts table a temp table? |

Details

Logically, this function performs the following steps for the input set of concept IDs:

- Find all names of the input concepts, including synonyms, and the names of source concepts that map to them.
- Search for concepts (standard and source) that contain any of those names as substring.
- Filter those concepts to those that are not in the original set of concepts (i.e. orphans).
- Restrict the set of orphan concepts to those that appear in the CDM database and across network concept prevalence (as either source concept or standard concept).

Value

A data frame with orphan concepts, with counts how often the code was encountered in the CDM.

getCohortCharacteristics*Create characterization of a cohort*

Description

Computes features using all drugs, conditions, procedures, etc. observed on or prior to the cohort index date.

Usage

```
getCohortCharacteristics(
  connectionDetails = NULL,
  connection = NULL,
  cdmDatabaseSchema,
  oracleTempSchema = NULL,
  cohortDatabaseSchema = cdmDatabaseSchema,
  cohortTable = "cohort",
  cohortIds,
  cdmVersion = 5,
  covariateSettings
)
```

Arguments

- | | |
|-----------------------------|--|
| connectionDetails | An object of type <code>connectionDetails</code> as created using the createConnectionDetails function in the DatabaseConnector package. Can be left NULL if <code>connection</code> is provided. |
| connection | An object of type <code>connection</code> as created using the connect function in the DatabaseConnector package. Can be left NULL if <code>connectionDetails</code> is provided, in which case a new connection will be opened at the start of the function, and closed when the function finishes. |
| cdmDatabaseSchema | Schema name where your patient-level data in OMOP CDM format resides. Note that for SQL Server, this should include both the database and schema name, for example 'cdm_data.dbo'. |
| oracleTempSchema | Should be used in Oracle to specify a schema where the user has write privileges for storing temporary tables. |
| cohortDatabaseSchema | Schema name where your cohort table resides. Note that for SQL Server, this should include both the database and schema name, for example 'scratch.dbo'. |
| cohortTable | Name of the cohort table. |
| cohortIds | A vector of <code>cohortIds</code> (1 or more) used to reference the cohort in the cohort table. |
| cdmVersion | The version of the OMOP CDM. Default 5. (Note: only 5 is supported.) |

covariateSettings

Either an object of type `covariateSettings` as created using one of the `createCovariate` functions in the `FeatureExtraction` package, or a list of such objects.

Value

A list object with tibbles returned from Feature Extraction

`getCohortCountResult` *Get cohort counts*

Description

Get cohort counts

Usage

```
getCohortCountResult(
  connection = NULL,
  connectionDetails = NULL,
  databaseIds = NULL,
  resultsDatabaseSchema = NULL
)
```

Arguments

- connection** (optional) An object of type `connection` as created using the [connect](#) function in the `DatabaseConnector` package. Can be left `NULL` if `connectionDetails` is provided, in which case a new connection will be opened at the start of the function, and closed when the function finishes.
- connectionDetails** (optional) An object of type `connectionDetails` as created using the [createConnectionDetails](#) function in the `DatabaseConnector` package. Can be left `NULL` if `connection` is provided.
- databaseIds** A vector one or more `databaseIds` to retrieve the results for. This is a character field values from the 'databaseId' field of the 'database' table of the results data model.
- resultsDatabaseSchema** (optional) The `databaseSchema` where the results data model of cohort diagnostics is stored. This is only required when `connectionDetails` or [connect](#) is provided.

Details

Note: The output of this function may be used to create plots or tables. This function relies on data available in Cohort Diagnostics results data model. The function will use one of the two methods to connect to the results data model, 1) database mode, and 2) in-memory mode.

Database mode: In this mode, R will look for the results data model in a remote relational dbms. The database system should be one of the databases supported by DatabaseConnector package. If either `connectionDetails` or `connect` parameters are populated with an argument during a function call, the connection gets set to database mode.

In-memory mode: If both `connectionDetails` and `connect` are parameters have a NULL argument then query will be in-memory mode. R will now expect and check for a data frame object available in R's memory, as required for the function. The object should be an object specified in Cohort Diagnostics results data model.

Objects in R's memory are expected to follow camelCase naming conventions (see HADES), while objects in a relational database system are expected to follow snake-case naming conventions.

Value

The function will return a tibble data frame object.

Examples

```
## Not run:
cohortCounts <- getCohortCountResult(databaseIds = c('eunomia', 'hcup'))

## End(Not run)
```

| | |
|------------------------------|----------------------------|
| <code>getCohortCounts</code> | <i>Count the cohort(s)</i> |
|------------------------------|----------------------------|

Description

Computes the subject and entry count per cohort

Usage

```
getCohortCounts(
  connectionDetails = NULL,
  connection = NULL,
  cohortDatabaseSchema,
  cohortTable = "cohort",
  cohortIds = c()
)
```

Arguments

- | | |
|--------------------------------|---|
| <code>connectionDetails</code> | An object of type <code>connectionDetails</code> as created using the <code>createConnectionDetails</code> function in the DatabaseConnector package. Can be left NULL if <code>connection</code> is provided. |
| <code>connection</code> | An object of type <code>connection</code> as created using the <code>connect</code> function in the DatabaseConnector package. Can be left NULL if <code>connectionDetails</code> is provided, in which case a new connection will be opened at the start of the function, and closed when the function finishes. |

| | |
|----------------------|--|
| cohortDatabaseSchema | Schema name where your cohort table resides. Note that for SQL Server, this should include both the database and schema name, for example 'scratch.dbo'. |
| cohortTable | Name of the cohort table. |
| cohortIds | The cohort Id(s) used to reference the cohort in the cohort table. If left empty, all cohorts in the table will be included. |

Value

A tibble with cohort counts

| | |
|------------------------|---------------------------|
| getCohortOverlapResult | <i>Get cohort overlap</i> |
|------------------------|---------------------------|

Description

Get cohort overlap data

Usage

```
getCohortOverlapResult(
  connection = NULL,
  connectionDetails = NULL,
  targetCohortIds,
  comparatorCohortIds,
  databaseIds,
  resultsDatabaseSchema = NULL
)
```

Arguments

| | |
|-----------------------|---|
| connection | (optional) An object of type <code>connection</code> as created using the connect function in the DatabaseConnector package. Can be left NULL if <code>connectionDetails</code> is provided, in which case a new connection will be opened at the start of the function, and closed when the function finishes. |
| connectionDetails | (optional) An object of type <code>connectionDetails</code> as created using the createConnectionDetails function in the DatabaseConnector package. Can be left NULL if <code>connection</code> is provided. |
| targetCohortIds | A vector of one or more Cohort Ids. |
| comparatorCohortIds | A vector of one or more Cohort Ids. |
| databaseIds | A vector one or more databaseIds to retrieve the results for. This is a character field values from the 'databaseId' field of the 'database' table of the results data model. |
| resultsDatabaseSchema | (optional) The databaseSchema where the results data model of cohort diagnostics is stored. This is only required when <code>connectionDetails</code> or connect is provided. |

Details

Note: The output of this function may be used to create plots or tables. This function relies on data available in Cohort Diagnostics results data model. The function will use one of the two methods to connect to the results data model, 1) database mode, and 2) in-memory mode.

Database mode: In this mode, R will look for the results data model in a remote relational dbms. The database system should be one of the databases supported by DatabaseConnector package. If either `connectionDetails` or `connect` parameters are populated with an argument during a function call, the connection gets set to database mode.

In-memory mode: If both `connectionDetails` and `connect` are parameters have a NULL argument then query will be in-memory mode. R will now expect and check for a data frame object available in R's memory, as required for the function. The object should be an object specified in Cohort Diagnostics results data model.

Objects in R's memory are expected to follow camelCase naming conventions (see HADES), while objects in a relational database system are expected to follow snake-case naming conventions.

Value

The function will return a tibble data frame object.

Examples

```
## Not run:
cohortOverlap <- getCohortOverlapResult(targetCohortIds = 342432,
                                       comparatorCohortIds = c(432423, 34234),
                                       databaseIds = c('eunomia', 'hcup'))

## End(Not run)
```

| | |
|--------------------|-------------------------------|
| getCohortReference | <i>Get cohort information</i> |
|--------------------|-------------------------------|

Description

Get cohort information

Usage

```
getCohortReference(
  connection = NULL,
  connectionDetails = NULL,
  cohortIds = NULL,
  resultsDatabaseSchema = NULL,
  getJson = FALSE,
  getSql = FALSE
)
```

Arguments

- connection** (optional) An object of type `connection` as created using the `connect` function in the DatabaseConnector package. Can be left NULL if `connectionDetails` is provided, in which case a new connection will be opened at the start of the function, and closed when the function finishes.
- connectionDetails** (optional) An object of type `connectionDetails` as created using the `createConnectionDetails` function in the DatabaseConnector package. Can be left NULL if `connection` is provided.
- cohortIds** A vector of one or more Cohort Ids.
- resultsDatabaseSchema** (optional) The databaseSchema where the results data model of cohort diagnostics is stored. This is only required when `connectionDetails` or `connect` is provided.
- getJson** Do you want the JSON expression of cohort?
- getSql** Do you want the Sql expression of cohort?

Details

Note: The output of this function may be used to create plots or tables. This function relies on data available in Cohort Diagnostics results data model. The function will use one of the two methods to connect to the results data model, 1) database mode, and 2) in-memory mode.

Database mode: In this mode, R will look for the results data model in a remote relational dbms. The database system should be one of the databases supported by DatabaseConnector package. If either `connectionDetails` or `connect` parameters are populated with an argument during a function call, the connection gets set to database mode.

In-memory mode: If both `connectionDetails` and `connect` are parameters have a NULL argument then query will be in-memory mode. R will now expect and check for a data frame object available in R's memory, as required for the function. The object should be an object specified in Cohort Diagnostics results data model.

Objects in R's memory are expected to follow camelCase naming conventions (see HADES), while objects in a relational database system are expected to follow snake-case naming conventions.

Value

The function will return a tibble data frame object.

Examples

```
## Not run:
cohortReference <- getCohortReference()

## End(Not run)
```

`getCohortsJsonAndSql` *Get cohorts JSON and parameterized OHDSI SQL*

Description

This function may be used to collect a cohorts JSON and OHDSI SQL. Based on whether a `baseUrl` is available, the function will collect the specifications from either from WebApi or a Package.

Usage

```
getCohortsJsonAndSql(
  packageName = NULL,
  cohortToCreateFile = "settings/CohortsToCreate.csv",
  baseUrl = NULL,
  cohortSetReference = NULL,
  cohortIds = NULL
)
```

Arguments

| | |
|---------------------------------|--|
| <code>packageName</code> | The name of the package containing the cohort definitions. Can be left NULL if <code>baseUrl</code> and <code>cohortSetReference</code> have been specified. |
| <code>cohortToCreateFile</code> | The location of the <code>cohortToCreate</code> file within the package. Is ignored if <code>baseUrl</code> and <code>cohortSetReference</code> have been specified. The <code>cohortToCreateFile</code> must be .csv file that is expected to be read into a dataframe object identical to requirements for <code>cohortSetReference</code> argument. |
| <code>baseUrl</code> | The base URL for the WebApi instance, for example: "http://server.org:80/WebAPI". Can be left NULL if <code>packageName</code> and <code>cohortToCreateFile</code> have been specified. |
| <code>cohortSetReference</code> | A data frame with four columns, as described in the details. Can be left NULL if <code>packageName</code> and <code>cohortToCreateFile</code> have been specified. |
| <code>cohortIds</code> | Optionally, provide a subset of cohort IDs to restrict the diagnostics to. |

Details

Currently two ways of executing this function are supported, either (1) [Package Mode] embedded in a study package, assuming the cohort definitions are stored in that package using the `ROhdsiWebApi::insertCohortDefinitionSetInPackage`, or (2) [WebApi Mode] By using a WebApi interface to retrieve the cohort definitions.

When using this function in Package Mode: Use the `packageName` and `cohortToCreateFile` to specify the name of the study package, and the name of the `cohortToCreate` file within that package, respectively

When using this function in WebApi Mode: use the `baseUrl` and `cohortSetReference` to specify how to connect to the WebApi, and which cohorts to fetch, respectively.

Note: if the parameters for both Package Mode and WebApi Mode are provided, then Package mode is preferred.

The `cohortSetReference` argument must be a data frame with the following columns:

referentConceptId A standard omop concept id that serves as the referant phenotype definition for the cohort Id.

cohortId The cohort Id is the id used to identify a cohort definition. This is required to be unique. It will be used to create file names. It is recommended to be (referent-ConceptId * 1000) + a number between 3 to 999

webApiCohortId Cohort Id in the webApi/atlas instance. It is a required field to run Cohort Diagnostics in WebApi mode. It is discarded in package mode.

cohortName The full name of the cohort. This will be shown in the Shiny app.

logicDescription A human understandable brief description of the cohort definition. This logic does not have to a fully specified description of the cohort definition, but should provide enough context to help user understand the meaning of the cohort definition

Value

The function will return a R list object with cohort information including specifications such as JSON and SQL.

Examples

```
## Not run:
cohorts <- getCohortsJsonAndSql(packageName = 'cohortDiagnostics',
                                baseUrl = "http://server.org:80/WebAPI")

## End(Not run)
```

| | |
|---------------------|--------------------------------|
| getConceptReference | <i>Get concept information</i> |
|---------------------|--------------------------------|

Description

Get concept information

Usage

```
getConceptReference(
  connection = NULL,
  connectionDetails = NULL,
  conceptIds = NULL,
  resultsDatabaseSchema = NULL
)
```

Arguments

connection (optional) An object of type `connection` as created using the [connect](#) function in the DatabaseConnector package. Can be left NULL if `connectionDetails` is provided, in which case a new connection will be opened at the start of the function, and closed when the function finishes.

connectionDetails (optional) An object of type `connectionDetails` as created using the [createConnectionDetails](#) function in the DatabaseConnector package. Can be left NULL if `connection` is provided.

conceptIds (optional) A vector of integers corresponding to conceptids of interest.

resultsDatabaseSchema (optional) The databaseSchema where the results data model of cohort diagnostics is stored. This is only required when **connectionDetails** or **connect** is provided.

Details

Note: The output of this function may be used to create plots or tables. This function relies on data available in Cohort Diagnostics results data model. The function will use one of the two methods to connect to the results data model, 1) database mode, and 2) in-memory mode.

Database mode: In this mode, R will look for the results data model in a remote relational dbms. The database system should be one of the databases supported by DatabaseConnector package. If either **connectionDetails** or **connect** parameters are populated with an argument during a function call, the connection gets set to database mode.

In-memory mode: If both **connectionDetails** and **connect** are parameters have a NULL argument then query will be in-memory mode. R will now expect and check for a data frame object available in R's memory, as required for the function. The object should be an object specified in Cohort Diagnostics results data model.

Objects in R's memory are expected to follow camelCase naming conventions (see HADES), while objects in a relational database system are expected to follow snake-case naming conventions.

Value

The function will return a tibble data frame object.

Examples

```
## Not run:
conceptReference <- getConceptReference()

## End(Not run)
```

getConceptSetDiagnosticsResults

Get concept set data diagnostics

Description

Get concept set data diagnostics data

Usage

```
getConceptSetDiagnosticsResults(
  connection = NULL,
  connectionDetails = NULL,
  cohortIds = NULL,
  databaseIds = NULL,
  resultsDatabaseSchema = NULL
)
```

Arguments

- connection** (optional) An object of type `connection` as created using the `connect` function in the DatabaseConnector package. Can be left NULL if `connectionDetails` is provided, in which case a new connection will be opened at the start of the function, and closed when the function finishes.
- connectionDetails** (optional) An object of type `connectionDetails` as created using the `createConnectionDetails` function in the DatabaseConnector package. Can be left NULL if `connection` is provided.
- cohortIds** A vector of one or more Cohort Ids.
- databaseIds** A vector one or more databaseIds to retrieve the results for. This is a character field values from the 'databaseId' field of the 'database' table of the results data model.
- resultsDatabaseSchema** (optional) The databaseSchema where the results data model of cohort diagnostics is stored. This is only required when `connectionDetails` or `connect` is provided.

Details

Note: The output of this function may be used to create plots or tables. This function relies on data available in Cohort Diagnostics results data model. The function will use one of the two methods to connect to the results data model, 1) database mode, and 2) in-memory mode.

Database mode: In this mode, R will look for the results data model in a remote relational dbms. The database system should be one of the databases supported by DatabaseConnector package. If either `connectionDetails` or `connect` parameters are populated with an argument during a function call, the connection gets set to database mode.

In-memory mode: If both `connectionDetails` and `connect` are parameters have a NULL argument then query will be in-memory mode. R will now expect and check for a data frame object available in R's memory, as required for the function. The object should be an object specified in Cohort Diagnostics results data model.

Objects in R's memory are expected to follow camelCase naming conventions (see HADES), while objects in a relational database system are expected to follow snake-case naming conventions.

Value

The function will return a tibble data frame object.

Examples

```
## Not run:
conceptSetDataDiagnostics <- getConceptSetDiagnosticsResults()

## End(Not run)
```

`getCovariateReference` *Get cohort covariate reference (including temporal)*

Description

Get cohort covariate reference (including temporal).

Usage

```
getCovariateReference(
  connection = NULL,
  connectionDetails = NULL,
  covariateIds = NULL,
  isTemporal = TRUE,
  resultsDatabaseSchema = NULL
)
```

Arguments

connection (optional) An object of type `connection` as created using the `connect` function in the `DatabaseConnector` package. Can be left `NULL` if `connectionDetails` is provided, in which case a new connection will be opened at the start of the function, and closed when the function finishes.

connectionDetails (optional) An object of type `connectionDetails` as created using the `createConnectionDetails` function in the `DatabaseConnector` package. Can be left `NULL` if `connection` is provided.

covariateIds (optional) A vector of covariateIds to subset the results

isTemporal Get temporal covariate references?

resultsDatabaseSchema (optional) The databaseSchema where the results data model of cohort diagnostics is stored. This is only required when `connectionDetails` or `connect` is provided.

Details

Note: The output of this function may be used to create plots or tables. This function relies on data available in Cohort Diagnostics results data model. The function will use one of the two methods to connect to the results data model, 1) database mode, and 2) in-memory mode.

Database mode: In this mode, R will look for the results data model in a remote relational dbms. The database system should be one of the databases supported by `DatabaseConnector` package. If either `connectionDetails` or `connect` parameters are populated with an argument during a function call, the connection gets set to database mode.

In-memory mode: If both `connectionDetails` and `connect` are parameters have a `NULL` argument then query will be in-memory mode. R will now expect and check for a data frame object available in R's memory, as required for the function. The object should be an object specified in Cohort Diagnostics results data model.

Objects in R's memory are expected to follow camelCase naming conventions (see HADES), while objects in a relational database system are expected to follow snake-case naming conventions.

Value

The function will return a tibble data frame object.

Examples

```
## Not run:
covariateReference <- getCovariateReference(isTemporal = FALSE)

## End(Not run)
```

getCovariateValueResult

Get cohort covariate (including temporal)

Description

Get cohort covariate value data from data stored in cohort diagnostics results data model. The output of this function may be used, together with covariate ref (temporal covariate ref and time ref if temporal) for cohorts characterization diagnostics. Because of the large volume of covariates, this function allows to filter range of covariate_value by providing the minimum and maximum proportion. Its important to note that all covariates are expected to output proportions that are between the values 0.0 to 1.0

Usage

```
getCovariateValueResult(
  connection = NULL,
  connectionDetails = NULL,
  cohortIds,
  databaseIds,
  minProportion = 0.01,
  maxProportion = 1,
  isTemporal = TRUE,
  timeIds = c(1, 2, 3, 4, 5),
  resultsDatabaseSchema = NULL
)
```

Arguments

- | | |
|-------------------|---|
| connection | (optional) An object of type <code>connection</code> as created using the connect function in the DatabaseConnector package. Can be left NULL if <code>connectionDetails</code> is provided, in which case a new connection will be opened at the start of the function, and closed when the function finishes. |
| connectionDetails | (optional) An object of type <code>connectionDetails</code> as created using the createConnectionDetails function in the DatabaseConnector package. Can be left NULL if <code>connection</code> is provided. |
| cohortIds | A vector of one or more Cohort Ids. |

| | |
|------------------------------------|--|
| <code>databaseIds</code> | A vector one or more <code>databaseIds</code> to retrieve the results for. This is a character field values from the 'databaseId' field of the 'database' table of the results data model. |
| <code>minProportion</code> | Do you want to limit the data returned by a lower threshold. Enter a number between 0.00 to 1.00. Be default the value is 0.01. |
| <code>maxProportion</code> | Do you want to limit the data returned by a upper threshold. Enter a number between 0.00 to 1.00. Be default the value is 1. |
| <code>isTemporal</code> | (optional) Get temporal covariate values? |
| <code>timeIds</code> | (optional) Will only be used if <code>isTemporal = TRUE</code> . Do you want to limit to certain 'time ids'. By default <code>timeId = c(1,2,3,4,5)</code> are returned. These correspond to -365 to -31, -30 to -1, 0 to 0, 1 to 30, 31 to 365. If any of <code>timeId</code> value = 0, all <code>timeIds</code> are returned. If any of <code>timeId</code> value = -1, will return all <code>timeIds</code> ; 5 (for time series analysis) |
| <code>resultsDatabaseSchema</code> | (optional) The <code>databaseSchema</code> where the results data model of cohort diagnostics is stored. This is only required when <code>connectionDetails</code> or <code>connect</code> is provided. |

Details

Note: The output of this function may be used to create plots or tables. This function relies on data available in Cohort Diagnostics results data model. The function will use one of the two methods to connect to the results data model, 1) database mode, and 2) in-memory mode.

Database mode: In this mode, R will look for the results data model in a remote relational dbms. The database system should be one of the databases supported by DatabaseConnector package. If either `connectionDetails` or `connect` parameters are populated with an argument during a function call, the connection gets set to database mode.

In-memory mode: If both `connectionDetails` and `connect` are parameters have a NULL argument then query will be in-memory mode. R will now expect and check for a data frame object available in R's memory, as required for the function. The object should be an object specified in Cohort Diagnostics results data model.

Objects in R's memory are expected to follow camelCase naming conventions (see HADES), while objects in a relational database system are expected to follow snake-case naming conventions.

Value

The function will return a tibble data frame object.

Examples

```
## Not run:
covariateValue <- getCovariateValueResult(cohortIds = c(342432,432423),
                                           databaseIds = c('eunomia', 'hcup'))

## End(Not run)
```

getDatabaseReference *Get database information*

Description

Get database information

Usage

```
getDatabaseReference(  
  connection = NULL,  
  connectionDetails = NULL,  
  databaseIds = NULL,  
  resultsDatabaseSchema = NULL  
)
```

Arguments

- connection** (optional) An object of type `connection` as created using the [connect](#) function in the DatabaseConnector package. Can be left NULL if `connectionDetails` is provided, in which case a new connection will be opened at the start of the function, and closed when the function finishes.
- connectionDetails** (optional) An object of type `connectionDetails` as created using the [createConnectionDetails](#) function in the DatabaseConnector package. Can be left NULL if `connection` is provided.
- databaseIds** (optional) A vector of character string to identify database.
- resultsDatabaseSchema** (optional) The databaseSchema where the results data model of cohort diagnostics is stored. This is only required when `connectionDetails` or [connect](#) is provided.

Details

Note: The output of this function may be used to create plots or tables. This function relies on data available in Cohort Diagnostics results data model. The function will use one of the two methods to connect to the results data model, 1) database mode, and 2) in-memory mode.

Database mode: In this mode, R will look for the results data model in a remote relational dbms. The database system should be one of the databases supported by DatabaseConnector package. If either `connectionDetails` or [connect](#) parameters are populated with an argument during a function call, the connection gets set to database mode.

In-memory mode: If both `connectionDetails` and [connect](#) are parameters have a NULL argument then query will be in-memory mode. R will now expect and check for a data frame object available in R's memory, as required for the function. The object should be an object specified in Cohort Diagnostics results data model.

Objects in R's memory are expected to follow camelCase naming conventions (see HADES), while objects in a relational database system are expected to follow snake-case naming conventions.

Value

The function will return a tibble data frame object.

Examples

```
## Not run:
databaseReference <- getDatabaseReference()

## End(Not run)
```

| | |
|------------------|--|
| getIncidenceRate | <i>Compute incidence rate for a cohort</i> |
|------------------|--|

Description

Returns yearly incidence rate stratified by age and gender

Usage

```
getIncidenceRate(
  connectionDetails = NULL,
  connection = NULL,
  cohortDatabaseSchema,
  cohortTable,
  cdmDatabaseSchema,
  cdmVersion = 5,
  oracleTempSchema = oracleTempSchema,
  firstOccurrenceOnly = TRUE,
  washoutPeriod = 365,
  cohortId
)
```

Arguments

| | |
|----------------------|--|
| connectionDetails | An object of type <code>connectionDetails</code> as created using the createConnectionDetails function in the DatabaseConnector package. Can be left NULL if <code>connection</code> is provided. |
| connection | An object of type <code>connection</code> as created using the connect function in the DatabaseConnector package. Can be left NULL if <code>connectionDetails</code> is provided, in which case a new connection will be opened at the start of the function, and closed when the function finishes. |
| cohortDatabaseSchema | Schema name where your cohort table resides. Note that for SQL Server, this should include both the database and schema name, for example 'scratch.dbo'. |
| cohortTable | Name of the cohort table. |
| cdmDatabaseSchema | Schema name where your patient-level data in OMOP CDM format resides. Note that for SQL Server, this should include both the database and schema name, for example 'cdm_data.dbo'. |

| | |
|---------------------|---|
| cdmVersion | The version of the OMOP CDM. Default 5. (Note: only 5 is supported.) |
| oracleTempSchema | Should be used in Oracle to specify a schema where the user has write privileges for storing temporary tables. |
| firstOccurrenceOnly | Use only the first occurrence of the cohort per person? |
| washoutPeriod | The minimum amount of observation time required before the occurrence of a cohort entry. This is also used to eliminate immortal time from the denominator. |
| cohortId | The cohort Id used to reference the cohort in the cohort table. |

Value

Returns a data frame of cohort count, person year count, and incidence rate per 1000 persons years with the following stratifications: 1) no stratification, 2) gender stratification, 3) age (10-year) stratification, 4) calendar year and age (10-year) stratification, 5) calendar year and gender stratification, 6) calendar year, age (10-year), and gender stratification with option to save dataframes.

```
getIncidenceRateResult
```

Get incidence rate results

Description

Get incidence rate results.

Usage

```
getIncidenceRateResult(
  connection = NULL,
  connectionDetails = NULL,
  cohortIds,
  databaseIds,
  stratifyByGender = c(TRUE, FALSE),
  stratifyByAgeGroup = c(TRUE, FALSE),
  stratifyByCalendarYear = c(TRUE, FALSE),
  minPersonYears = 1000,
  resultsDatabaseSchema = NULL
)
```

Arguments

| | |
|-------------------|---|
| connection | (optional) An object of type <code>connection</code> as created using the connect function in the DatabaseConnector package. Can be left NULL if <code>connectionDetails</code> is provided, in which case a new connection will be opened at the start of the function, and closed when the function finishes. |
| connectionDetails | (optional) An object of type <code>connectionDetails</code> as created using the createConnectionDetails function in the DatabaseConnector package. Can be left NULL if <code>connection</code> is provided. |

cohortIds A vector of one or more Cohort Ids.

databaseIds A vector one or more databaseIds to retrieve the results for. This is a character field values from the 'databaseId' field of the 'database' table of the results data model.

stratifyByGender
(optional) Do you want to stratify by gender.

stratifyByAgeGroup
(optional) Do you want to stratify by age group.

stratifyByCalendarYear
(optional) Do you want to stratify by calendar year.

minPersonYears (optional) Default value = 1000. Minimum person years needed to create plot.

resultsDatabaseSchema
(optional) The databaseSchema where the results data model of cohort diagnostics is stored. This is only required when **connectionDetails** or **connect** is provided.

Details

Note: The output of this function may be used to create plots or tables. This function relies on data available in Cohort Diagnostics results data model. The function will use one of the two methods to connect to the results data model, 1) database mode, and 2) in-memory mode.

Database mode: In this mode, R will look for the results data model in a remote relational dbms. The database system should be one of the databases supported by DatabaseConnector package. If either **connectionDetails** or **connect** parameters are populated with an argument during a function call, the connection gets set to database mode.

In-memory mode: If both **connectionDetails** and **connect** are parameters have a NULL argument then query will be in-memory mode. R will now expect and check for a data frame object available in R's memory, as required for the function. The object should be an object specified in Cohort Diagnostics results data model.

Objects in R's memory are expected to follow camelCase naming conventions (see HADES), while objects in a relational database system are expected to follow snake-case naming conventions.

Value

The function will return a tibble data frame object.

Examples

```
## Not run:
incidenceRate <- getIncidenceRateResult(cohortIds = 343242,
                                         databaseIds = c('eunomia', 'hcup'))

## End(Not run)
```

getInclusionStatistics

Get statistics on cohort inclusion criteria

Description

Get statistics on cohort inclusion criteria

Usage

```
getInclusionStatistics(
  connectionDetails = NULL,
  connection = NULL,
  resultsDatabaseSchema,
  cohortId,
  simplify = TRUE,
  cohortTable = "cohort",
  cohortInclusionTable = paste0(cohortTable, "_inclusion"),
  cohortInclusionResultTable = paste0(cohortTable, "_inclusion_result"),
  cohortInclusionStatsTable = paste0(cohortTable, "_inclusion_stats"),
  cohortSummaryStatsTable = paste0(cohortTable, "_summary_stats")
)
```

Arguments

- | | |
|----------------------------|--|
| connectionDetails | An object of type <code>connectionDetails</code> as created using the createConnectionDetails function in the DatabaseConnector package. Can be left NULL if <code>connection</code> is provided. |
| connection | An object of type <code>connection</code> as created using the connect function in the DatabaseConnector package. Can be left NULL if <code>connectionDetails</code> is provided, in which case a new connection will be opened at the start of the function, and closed when the function finishes. |
| resultsDatabaseSchema | Schema name where the statistics tables reside. Note that for SQL Server, this should include both the database and schema name, for example 'scratch.dbo'. |
| cohortId | The cohort definition ID used to reference the cohort in the cohort table. |
| simplify | Simply output the attrition table? |
| cohortTable | Name of the cohort table. Used only to conveniently derive names of the four rule statistics tables. |
| cohortInclusionTable | Name of the inclusion table, one of the tables for storing inclusion rule statistics. |
| cohortInclusionResultTable | Name of the inclusion result table, one of the tables for storing inclusion rule statistics. |
| cohortInclusionStatsTable | Name of the inclusion stats table, one of the tables for storing inclusion rule statistics. |

cohortSummaryStatsTable

Name of the summary stats table, one of the tables for storing inclusion rule statistics.

Value

If 'simplify = TRUE', this function returns a single data frame. Else a list of data frames is returned.

getInclusionStatisticsFromFiles

Get inclusion criteria statistics from files

Description

Gets inclusion criteria statistics from files, as stored when using the `ROhdsiWebApi::insertCohortDefinitionSe` function with `generateStats = TRUE`.

Usage

```
getInclusionStatisticsFromFiles(
  cohortId,
  folder,
  cohortInclusionFile = file.path(folder, "cohortInclusion.csv"),
  cohortInclusionResultFile = file.path(folder, "cohortIncResult.csv"),
  cohortInclusionStatsFile = file.path(folder, "cohortIncStats.csv"),
  cohortSummaryStatsFile = file.path(folder, "cohortSummaryStats.csv"),
  simplify = TRUE
)
```

Arguments

| | |
|--|--|
| <code>cohortId</code> | The cohort definition ID used to reference the cohort in the cohort table. |
| <code>folder</code> | The path to the folder where the inclusion statistics are stored. |
| <code>cohortInclusionFile</code> | Name of the inclusion table, one of the tables for storing inclusion rule statistics. |
| <code>cohortInclusionResultFile</code> | Name of the inclusion result table, one of the tables for storing inclusion rule statistics. |
| <code>cohortInclusionStatsFile</code> | Name of the inclusion stats table, one of the tables for storing inclusion rule statistics. |
| <code>cohortSummaryStatsFile</code> | Name of the summary stats table, one of the tables for storing inclusion rule statistics. |
| <code>simplify</code> | Simply output the attrition table? |

Value

If 'simplify = TRUE', this function returns a single data frame. Else a list of data frames is returned.

getRecordCountOfInstantiatedCohorts

Get record counts for a set of cohort

Description

This function get record count for a set of cohorts in the cohort table.

Usage

```
getRecordCountOfInstantiatedCohorts(
  connection = NULL,
  connectionDetails = NULL,
  cohortDatabaseSchema,
  cohortTable,
  cohortIds
)
```

Arguments

- | | |
|----------------------|--|
| connection | An object of type <code>connection</code> as created using the connect function in the DatabaseConnector package. Can be left NULL if <code>connectionDetails</code> is provided, in which case a new connection will be opened at the start of the function, and closed when the function finishes. |
| connectionDetails | An object of type <code>connectionDetails</code> as created using the createConnectionDetails function in the DatabaseConnector package. Can be left NULL if <code>connection</code> is provided. |
| cohortDatabaseSchema | Schema name where your cohort table resides. Note that for SQL Server, this should include both the database and schema name, for example 'scratch.dbo'. |
| cohortTable | Name of the cohort table. |
| cohortIds | A vector of cohortIds to get counts for. |

Value

A tibble data frame object

getResultsDataModelSpecification

Get specification for Cohort Diagnostics results data model

Description

Get specification for Cohort Diagnostics results data model

Usage

```
getResultsDataModelSpecification()
```

Value

A tibble data frame object with specifications

Examples

```
## Not run:
resultsDataModelSpecification <- getResultsDataModelSpecification()

## End(Not run)
```

```
getTimeDistributionResult
```

Get time distribution results

Description

Get time distribution results

Usage

```
getTimeDistributionResult(
  connection = NULL,
  connectionDetails = NULL,
  cohortIds,
  databaseIds,
  resultsDatabaseSchema = NULL
)
```

Arguments

| | |
|------------------------------------|---|
| <code>connection</code> | (optional) An object of type <code>connection</code> as created using the connect function in the DatabaseConnector package. Can be left NULL if <code>connectionDetails</code> is provided, in which case a new connection will be opened at the start of the function, and closed when the function finishes. |
| <code>connectionDetails</code> | (optional) An object of type <code>connectionDetails</code> as created using the createConnectionDetails function in the DatabaseConnector package. Can be left NULL if <code>connection</code> is provided. |
| <code>cohortIds</code> | A vector of one or more Cohort Ids. |
| <code>databaseIds</code> | A vector one or more databaseIds to retrieve the results for. This is a character field values from the 'databaseId' field of the 'database' table of the results data model. |
| <code>resultsDatabaseSchema</code> | (optional) The databaseSchema where the results data model of cohort diagnostics is stored. This is only required when <code>connectionDetails</code> or connect is provided. |

Details

Note: The output of this function may be used to create plots or tables. This function relies on data available in Cohort Diagnostics results data model. The function will use one of the two methods to connect to the results data model, 1) database mode, and 2) in-memory mode.

Database mode: In this mode, R will look for the results data model in a remote relational dbms. The database system should be one of the databases supported by DatabaseConnector package. If either `connectionDetails` or `connect` parameters are populated with an argument during a function call, the connection gets set to database mode.

In-memory mode: If both `connectionDetails` and `connect` parameters have a NULL argument then query will be in-memory mode. R will now expect and check for a data frame object available in R's memory, as required for the function. The object should be an object specified in Cohort Diagnostics results data model.

Objects in R's memory are expected to follow camelCase naming conventions (see HADES), while objects in a relational database system are expected to follow snake-case naming conventions.

Value

The function will return a tibble data frame object.

Examples

```
## Not run:
timeDistribution <- getTimeDistributionResult(cohortIds = 343242,
                                             databaseIds = 'eunomia')

## End(Not run)
```

`getTimeDistributions` *Get time distributions for a set of cohorts*

Description

Computes the distribution of the observation time before and after index, and time within a cohort.

Usage

```
getTimeDistributions(
  connectionDetails = NULL,
  connection = NULL,
  cdmDatabaseSchema,
  oracleTempSchema = NULL,
  cohortDatabaseSchema = cdmDatabaseSchema,
  cohortTable = "cohort",
  cohortIds,
  cdmVersion = 5
)
```

Arguments

| | |
|----------------------|---|
| connectionDetails | An object of type <code>connectionDetails</code> as created using the <code>createConnectionDetails</code> function in the <code>DatabaseConnector</code> package. Can be left <code>NULL</code> if <code>connection</code> is provided. |
| connection | An object of type <code>connection</code> as created using the <code>connect</code> function in the <code>DatabaseConnector</code> package. Can be left <code>NULL</code> if <code>connectionDetails</code> is provided, in which case a new connection will be opened at the start of the function, and closed when the function finishes. |
| cdmDatabaseSchema | Schema name where your patient-level data in OMOP CDM format resides. Note that for SQL Server, this should include both the database and schema name, for example <code>'cdm_data.dbo'</code> . |
| oracleTempSchema | Should be used in Oracle to specify a schema where the user has write privileges for storing temporary tables. |
| cohortDatabaseSchema | Schema name where your cohort table resides. Note that for SQL Server, this should include both the database and schema name, for example <code>'scratch.dbo'</code> . |
| cohortTable | Name of the cohort table. |
| cohortIds | A vector of <code>cohortIds</code> (1 or more) used to reference the cohort in the cohort table. |
| cdmVersion | The version of the OMOP CDM. Default 5. (Note: only 5 is supported.) |

Value

A list object with tibbles returned from Feature Extraction

| | |
|------------------|---|
| getTimeReference | <i>Get time reference for temporal covariates</i> |
|------------------|---|

Description

Get time reference for temporal covariates

Usage

```
getTimeReference(
  connection = NULL,
  connectionDetails = NULL,
  resultsDatabaseSchema = NULL
)
```


Arguments

- `connection` (optional) An object of type `connection` as created using the `connect` function in the DatabaseConnector package. Can be left NULL if `connectionDetails` is provided, in which case a new connection will be opened at the start of the function, and closed when the function finishes.
- `connectionDetails` (optional) An object of type `connectionDetails` as created using the `createConnectionDetails` function in the DatabaseConnector package. Can be left NULL if `connection` is provided.
- `resultsDatabaseSchema` (optional) The databaseSchema where the results data model of cohort diagnostics is stored. This is only required when `connectionDetails` or `connect` is provided.

Details

Note: The output of this function may be used to create plots or tables. This function relies on data available in Cohort Diagnostics results data model. The function will use one of the two methods to connect to the results data model, 1) database mode, and 2) in-memory mode.

Database mode: In this mode, R will look for the results data model in a remote relational dbms. The database system should be one of the databases supported by DatabaseConnector package. If either `connectionDetails` or `connect` parameters are populated with an argument during a function call, the connection gets set to database mode.

In-memory mode: If both `connectionDetails` and `connect` are parameters have a NULL argument then query will be in-memory mode. R will now expect and check for a data frame object available in R's memory, as required for the function. The object should be an object specified in Cohort Diagnostics results data model.

Objects in R's memory are expected to follow camelCase naming conventions (see HADES), while objects in a relational database system are expected to follow snake-case naming conventions.

Value

The function will return a tibble data frame object.

Examples

```
## Not run:
timeReference <- getTimeReference()

## End(Not run)
```

guessCsvFileSpecification

Guesses data model specification from multiple csv files.

Description

Guesses data model specification from multiple csv files.

Usage

```
guessCsvFileSpecification(pathToCsvFile)
```

Arguments

pathToCsvFile file system path to csv file

Value

A tibble data frame object with specifications

Examples

```
## Not run:
csvFileSpecification <- guessCsvFileSpecification(path)

## End(Not run)
```

```
importCsvFilesToPostgres
```

Import csv files in to postgres database instance

Description

This utility is a wrapper around the psql command to allow uploading large datasets to a postgres database

Usage

```
importCsvFilesToPostgres(
  connectionDetails,
  schemaName,
  pathToCsvFiles,
  winPsqlPath = ""
)
```

Arguments

| | |
|-------------------|--|
| connectionDetails | DatabaseConnector connection details compatible object. Must be dbms="postgres" |
| schemaName | Path to cohort diagnostics csv files to import |
| winPsqlPath | Path to folder containing postgres executables e.g. "C:/Program Files/PostgreSQL/12/bin" |

| | |
|-------------------|-----------------------------|
| instantiateCohort | <i>Instantiate a cohort</i> |
|-------------------|-----------------------------|

Description

This function instantiates the cohort in the cohort table. Optionally, the inclusion rule statistics are computed and stored in the inclusion rule statistics tables described in [createCohortTable](#)).

Usage

```
instantiateCohort(
  connectionDetails = NULL,
  connection = NULL,
  cdmDatabaseSchema,
  oracleTempSchema = NULL,
  cohortDatabaseSchema = cdmDatabaseSchema,
  cohortTable = "cohort",
  baseUrl = NULL,
  cohortJson = NULL,
  cohortSql = NULL,
  cohortId = NULL,
  generateInclusionStats = FALSE,
  resultsDatabaseSchema = cohortDatabaseSchema,
  cohortInclusionTable = paste0(cohortTable, "_inclusion"),
  cohortInclusionResultTable = paste0(cohortTable, "_inclusion_result"),
  cohortInclusionStatsTable = paste0(cohortTable, "_inclusion_stats"),
  cohortSummaryStatsTable = paste0(cohortTable, "_summary_stats")
)
```

Arguments

- | | |
|-----------------------------|--|
| connectionDetails | An object of type <code>connectionDetails</code> as created using the createConnectionDetails function in the DatabaseConnector package. Can be left NULL if <code>connection</code> is provided. |
| connection | An object of type <code>connection</code> as created using the connect function in the DatabaseConnector package. Can be left NULL if <code>connectionDetails</code> is provided, in which case a new connection will be opened at the start of the function, and closed when the function finishes. |
| cdmDatabaseSchema | Schema name where your patient-level data in OMOP CDM format resides. Note that for SQL Server, this should include both the database and schema name, for example 'cdm_data.dbo'. |
| oracleTempSchema | Should be used in Oracle to specify a schema where the user has write privileges for storing temporary tables. |
| cohortDatabaseSchema | Schema name where your cohort table resides. Note that for SQL Server, this should include both the database and schema name, for example 'scratch.dbo'. |

| | |
|----------------------------|---|
| cohortTable | Name of the cohort table. |
| baseUrl | The base URL for the WebApi instance, for example: "http://server.org:80/WebAPI". Needn't be provided if cohortJson and cohortSql are provided. |
| cohortJson | A character string containing the JSON of a cohort definition. Needn't be provided if baseUrl and cohortId are provided. |
| cohortSql | The OHDSI SQL representation of the same cohort definition. Needn't be provided if baseUrl and cohortId are provided. |
| cohortId | The cohort ID used to reference the cohort in the cohort table. |
| generateInclusionStats | Compute and store inclusion rule statistics? |
| resultsDatabaseSchema | Schema name where the statistics tables reside. Note that for SQL Server, this should include both the database and schema name, for example 'scratch.dbo'. |
| cohortInclusionTable | Name of the inclusion table, one of the tables for storing inclusion rule statistics. |
| cohortInclusionResultTable | Name of the inclusion result table, one of the tables for storing inclusion rule statistics. |
| cohortInclusionStatsTable | Name of the inclusion stats table, one of the tables for storing inclusion rule statistics. |
| cohortSummaryStatsTable | Name of the summary stats table, one of the tables for storing inclusion rule statistics. |

| | |
|----------------------|------------------------------------|
| instantiateCohortSet | <i>Instantiate a set of cohort</i> |
|----------------------|------------------------------------|

Description

This function instantiates a set of cohort in the cohort table, using definitions that are fetched from a WebApi interface. Optionally, the inclusion rule statistics are computed and stored in the inclusionStatisticsFolder.

Usage

```
instantiateCohortSet(
  connectionDetails = NULL,
  connection = NULL,
  cdmDatabaseSchema,
  oracleTempSchema = NULL,
  cohortDatabaseSchema = cdmDatabaseSchema,
  cohortTable = "cohort",
  cohortIds = NULL,
  packageName = NULL,
  cohortToFile = "settings/CohortsToCreate.csv",
  baseUrl = NULL,
```

```

    cohortSetReference = NULL,
    generateInclusionStats = FALSE,
    inclusionStatisticsFolder = NULL,
    createCohortTable = FALSE,
    incremental = FALSE,
    incrementalFolder = NULL
)

```

Arguments

connectionDetails

An object of type `connectionDetails` as created using the [createConnectionDetails](#) function in the `DatabaseConnector` package. Can be left `NULL` if `connection` is provided.

connection

An object of type `connection` as created using the [connect](#) function in the `DatabaseConnector` package. Can be left `NULL` if `connectionDetails` is provided, in which case a new connection will be opened at the start of the function, and closed when the function finishes.

cdmDatabaseSchema

Schema name where your patient-level data in OMOP CDM format resides. Note that for SQL Server, this should include both the database and schema name, for example `'cdm_data.dbo'`.

oracleTempSchema

Should be used in Oracle to specify a schema where the user has write privileges for storing temporary tables.

cohortDatabaseSchema

Schema name where your cohort table resides. Note that for SQL Server, this should include both the database and schema name, for example `'scratch.dbo'`.

cohortTable

Name of the cohort table.

cohortIds

Optionally, provide a subset of cohort IDs to restrict the construction to.

packageName

The name of the package containing the cohort definitions. Can be left `NULL` if `baseUrl` and `cohortSetReference` have been specified.

cohortToCreateFile

The location of the `cohortToCreate` file within the package. Is ignored if `baseUrl` and `cohortSetReference` have been specified. The `cohortToCreateFile` must be `.csv` file that is expected to be read into a dataframe object identical to requirements for `cohortSetReference` argument.

baseUrl

The base URL for the WebApi instance, for example: `"http://server.org:80/WebAPI"`. Can be left `NULL` if `packageName` and `cohortToCreateFile` have been specified.

cohortSetReference

A data frame with four columns, as described in the details. Can be left `NULL` if `packageName` and `cohortToCreateFile` have been specified.

generateInclusionStats

Compute and store inclusion rule statistics?

inclusionStatisticsFolder

The folder where the inclusion rule statistics are stored. Can be left `NULL` if `generateInclusionStats = FALSE`.

createCohortTable Create the cohort table? If `incremental = TRUE` and the table already exists this will be skipped.

incremental Create only cohorts that haven't been created before?

incrementalFolder If `incremental = TRUE`, specify a folder where records are kept of which definition has been executed.

Details

Currently two ways of executing this function are supported, either (1) [Package Mode] embedded in a study package, assuming the cohort definitions are stored in that package using the `ROhdsiWebApi::insertCohortDefinitionSetInPackage`, or (2) [WebApi Mode] By using a WebApi interface to retrieve the cohort definitions.

When using this function in Package Mode: Use the `packageName` and `cohortToCreateFile` to specify the name of the study package, and the name of the cohortToCreate file within that package, respectively

When using this function in WebApi Mode: use the `baseUrl` and `cohortSetReference` to specify how to connect to the WebApi, and which cohorts to fetch, respectively.

Note: if the parameters for both Package Mode and WebApi Mode are provided, then Package mode is preferred.

The `cohortSetReference` argument must be a data frame with the following columns:

referentConceptId A standard omop concept id that serves as the referant phenotype definition for the cohort Id.

cohortId The cohort Id is the id used to identify a cohort definition. This is required to be unique. It will be used to create file names. It is recommended to be $(\text{referentConceptId} * 1000) + \text{a number between 3 to 999}$

webApiCohortId Cohort Id in the webApi/atlas instance. It is a required field to run Cohort Diagnostics in WebApi mode. It is discarded in package mode.

cohortName The full name of the cohort. This will be shown in the Shiny app.

logicDescription A human understandable brief description of the cohort definition. This logic does not have to a fully specified description of the cohort definition, but should provide enough context to help user understand the meaning of the cohort definition

Value

A data frame with cohort counts

`launchCohortExplorer` *Launch the CohortExplorer Shiny app*

Description

Launch the CohortExplorer Shiny app

Usage

```
launchCohortExplorer(
  connectionDetails,
  cdmDatabaseSchema,
  cohortDatabaseSchema,
  cohortTable,
  cohortId,
  sampleSize = 100,
  subjectIds = NULL
)
```

Arguments

| | |
|-----------------------------------|--|
| <code>connectionDetails</code> | An object of type <code>connectionDetails</code> as created using the createConnectionDetails function in the DatabaseConnector package. |
| <code>cdmDatabaseSchema</code> | Schema name where your patient-level data in OMOP CDM format resides. Note that for SQL Server, this should include both the database and schema name, for example 'cdm_data.dbo'. |
| <code>cohortDatabaseSchema</code> | Schema name where your cohort table resides. Note that for SQL Server, this should include both the database and schema name, for example 'scratch.dbo'. |
| <code>cohortTable</code> | Name of the cohort table. |
| <code>cohortId</code> | The ID of the cohort. |
| <code>sampleSize</code> | Number of subjects to sample from the cohort. Ignored if <code>subjectIds</code> is specified. |
| <code>subjectIds</code> | A vector of subject IDs to view. |

Details

Launches a Shiny app that allows the user to explore a cohort of interest.

```
launchDiagnosticsExplorer
```

Launch the Diagnostics Explorer Shiny app

Description

Launch the Diagnostics Explorer Shiny app

Usage

```
launchDiagnosticsExplorer(dataFolder, launch.browser = FALSE)
```

Arguments

- dataFolder** A folder where the exported zip files for the diagnostics are stored. Use the [runCohortDiagnostics](#) function to generate these zip files. Zip files containing results from multiple databases can be placed in the same folder.
- launch.browser** Should the app be launched in your default browser, or in a Shiny window. Note: copying to clipboard will not work in a Shiny window.

Details

Launches a Shiny app that allows the user to explore the diagnostics

`plotCohortComparisonStandardizedDifference`

Get Plotly object with cohort comparison plot.

Description

Get Plotly object with cohort comparison plot.

Usage

```
plotCohortComparisonStandardizedDifference(
  data,
  targetCohortIds = NULL,
  comparatorCohortIds = NULL,
  cohortReference = NULL,
  covariateReference = NULL,
  concept = NULL,
  absoluteStandardizedDifferenceLowerThreshold = 0.001,
  absoluteStandardizedDifferenceUpperThreshold = 1,
  databaseIds = NULL
)
```

Arguments

- data** A tibble data frame object that is the output of [compareCovariateValueResult](#) function.
- targetCohortIds** (optional) A vector of one or more Cohort Ids.
- comparatorCohortIds** (optional) A vector of one or more Cohort Ids.
- cohortReference** (optional) A tibble data frame object returned from [getCohortReference](#) function.
- covariateReference** (optional) A tibble data frame object returned from [getCovariateReference](#) function.
- concept** (optional) A tibble data frame object returned from [getConceptReference](#) function.

absoluteStandardizedDifferenceLowerThreshold
 (optional) Do you want to keep a lower threshold of absolute standardized difference for plotting

absoluteStandardizedDifferenceUpperThreshold
 (optional) Do you want to keep a lower threshold of absolute standardized difference for plotting

databaseIds A vector one or more databaseIds to retrieve the results for. This is a character field values from the 'databaseId' field of the 'database' table of the results data model.

Value

A Plotly object.

Examples

```
## Not run:
plotCohortCompare <- plotCohortComparisonStandardizedDifference(data = data)

## End(Not run)
```

plotCohortOverlapVennDiagram

Get Vendiagram object with cohort Overlap plot.

Description

Get Vendiagram object with cohort Overlap plot.

Usage

```
plotCohortOverlapVennDiagram(
  data,
  targetCohortIds,
  comparatorCohortIds,
  databaseIds
)
```

Arguments

data A tibble data frame object that is the output of [getCohortOverlapResult](#) function.

targetCohortIds
 (optional) A vector of one or more Cohort Ids.

comparatorCohortIds
 (optional) A vector of one or more Cohort Ids.

databaseIds A vector one or more databaseIds to retrieve the results for. This is a character field values from the 'databaseId' field of the 'database' table of the results data model.

Value

A Vendiagram object.

Examples

```
## Not run:
plotCohortOverlapVennDiagram <- plotCohortOverlapVennDiagram(data = data)

## End(Not run)
```

| | |
|-------------------|--|
| plotIncidenceRate | <i>Get ggplot object with incidence rate plot.</i> |
|-------------------|--|

Description

Get ggplot object with incidence rate plot.

Usage

```
plotIncidenceRate(
  data,
  cohortIds = NULL,
  databaseIds = NULL,
  stratifyByAgeGroup = TRUE,
  stratifyByGender = TRUE,
  stratifyByCalendarYear = TRUE,
  yscaleFixed = FALSE
)
```

Arguments

| | |
|------------------------|---|
| data | A tibble data frame object that is the output of getIncidenceRate function. |
| cohortIds | A vector of one or more integer (bigint) to plot. |
| databaseIds | A vector of one or more databaseIds to plot. |
| stratifyByAgeGroup | Do you want to stratify by age? |
| stratifyByGender | Do you want to stratify by gender? |
| stratifyByCalendarYear | Do you want to stratify by calendar year? |
| yscaleFixed | Do you want to rescale y-axis? |

Value

A ggplot object.

Examples

```
## Not run:
incidenceRatePlot <- plotIncidenceRate(data = data)

## End(Not run)
```

`plotTimeDistribution` *Get ggplot object with time distribution plot.*

Description

Get ggplot object with time distribution plot.

Usage

```
plotTimeDistribution(
  data,
  cohortIds = NULL,
  databaseIds = NULL,
  xAxis = "database"
)
```

Arguments

| | |
|--------------------------|---|
| <code>data</code> | A tibble data frame object that is the output of <code>getTimeDistributionResult</code> function. |
| <code>cohortIds</code> | A vector of one or more integer (bigint) to plot. |
| <code>databaseIds</code> | A vector of one or more databaseIds to plot. |
| <code>xAxis</code> | (optional) By default 'database' will be plotted on x-axis. Alternative is 'cohortId'. |

Value

A ggplot object.

Examples

```
## Not run:
timeDistributionPlot <- getTimeDistributionPlot(data = data)

## End(Not run)
```

```
preMergeDiagnosticsFiles
```

Premerge Shiny diagnostics files

Description

If there are many diagnostics files, starting the Shiny app may take a very long time. This function already does most of the preprocessing, increasing loading speed.

The merged data will be stored in the same folder, and will automatically be recognized by the Shiny app.

Usage

```
preMergeDiagnosticsFiles(dataFolder, minCovariateProportion = 0)
```

Arguments

dataFolder folder where the exported zip files for the diagnostics are stored. Use the [runCohortDiagnostics](#) function to generate these zip files. Zip files containing results from multiple databases can be placed in the same folder.

minCovariateProportion minimum value threshold for covariates to be included in premerged file (valid number (maybe decimal) between 0 to 1)

```
resolveCohortSqlToConceptIds
```

Resolves cohort sql to concept_ids

Description

Resolves cohort sql to concept_ids

Usage

```
resolveCohortSqlToConceptIds(
  connection = NULL,
  connectionDetails = NULL,
  cdmDatabaseSchema,
  databaseId,
  conceptSetsConceptId = "#resolved_concept_set",
  oracleTempSchema = NULL,
  cohort
)
```

Arguments

| | |
|----------------------|---|
| connection | An object of type <code>connection</code> as created using the <code>connect</code> function in the DatabaseConnector package. Can be left NULL if <code>connectionDetails</code> is provided, in which case a new connection will be opened at the start of the function, and closed when the function finishes. |
| connectionDetails | An object of type <code>connectionDetails</code> as created using the <code>createConnectionDetails</code> function in the DatabaseConnector package. Can be left NULL if <code>connection</code> is provided. |
| cdmDatabaseSchema | DatabaseSchema where the omop vocabulary files are located. |
| databaseId | A text string corresponding to the id of the database. |
| conceptSetsConceptId | Table to store the output on the database system. This is a temporary table. |
| oracleTempSchema | Should be used in Oracle to specify a schema where the user has write privileges for storing temporary tables. |
| cohort | A tibble data frame object with atleast two columns. <code>cohortId</code> referring to the integer id that identifies a cohort definition. And <code>sql</code> , which is the cohort definition in OHDSI SQL dialect. It may contain parameters designed to be replaced by <code>SqlRender</code> . The standard form the cohort definition SQL is generated is using <code>circe-be</code> by <code>WebApi</code> and <code>Atlas</code> . The 'cohort' table in Cohort Diagnostics results data model satisfies this requirement. |

Value

Tibble Data Frame object

| | |
|----------------------|-------------------------------|
| runCohortDiagnostics | <i>Run cohort diagnostics</i> |
|----------------------|-------------------------------|

Description

Runs the cohort diagnostics on all (or a subset of) the cohorts instantiated using the `ROhdsiWebApi::insertCohortDefinitionSetInPackage` function. Assumes the cohorts have already been instantiated.

Characterization: If `runTemporalCohortCharacterization` argument is TRUE, then the following default covariateSettings object will be created using `RFeatureExtraction::createTemporalCovariates`. Alternatively, a covariate setting object may be created using the above as an example.

Usage

```
runCohortDiagnostics(
  packageName = NULL,
  cohortToCreateFile = "settings/CohortsToCreate.csv",
  baseUrl = NULL,
  cohortSetReference = NULL,
```

```

phenotypeDescriptionCsv = NULL,
connectionDetails = NULL,
connection = NULL,
cdmDatabaseSchema,
oracleTempSchema = NULL,
cohortDatabaseSchema,
cohortTable = "cohort",
cohortIds = NULL,
inclusionStatisticsFolder = file.path(exportFolder, "inclusionStatistics"),
exportFolder,
databaseId,
databaseName = databaseId,
databaseDescription = "",
cdmVersion = 5,
runInclusionStatistics = TRUE,
runIncludedSourceConcepts = TRUE,
runOrphanConcepts = TRUE,
exportConceptCountTableForDatabase = TRUE,
runTimeDistributions = TRUE,
runBreakdownIndexEvents = TRUE,
runIncidenceRate = TRUE,
runCohortOverlap = TRUE,
runCohortCharacterization = TRUE,
covariateSettings = FeatureExtraction::createDefaultCovariateSettings(),
runTemporalCohortCharacterization = TRUE,

temporalCovariateSettings = FeatureExtraction::createTemporalCovariateSettings(useConditionOccurrence
= TRUE, useDrugEraStart = TRUE, useProcedureOccurrence = TRUE, useMeasurement = TRUE,
temporalStartDays = c(-365, -30, 0, 1, 31, seq(from = -30, to = -420, by = -30),
seq(from = 1, to = 390, by = 30)), temporalEndDays = c(-31, -1, 0, 30, 365, seq(from
= 0, to = -390, by = -30), seq(from = 31, to = 420, by = 30))),
runSubsetOmpVocabularyTables = TRUE,
uniqueConceptIdTable = "unique_concept_id_table",
minCellCount = 5,
incremental = FALSE,
incrementalFolder = file.path(exportFolder, "incremental")
)

```

Arguments

- | | |
|--------------------|---|
| packageName | The name of the package containing the cohort definitions. Can be left NULL if baseUrl and cohortSetReference have been specified. |
| cohortToCreateFile | The location of the cohortToCreate file within the package. Is ignored if baseUrl and cohortSetReference have been specified. The cohortToCreateFile must be .csv file that is expected to be read into a dataframe object identical to requirements for cohortSetReference argument. |
| baseUrl | The base URL for the WebApi instance, for example: "http://server.org:80/WebAPI". Can be left NULL if packageName and cohortToCreateFile have been specified. |
| cohortSetReference | A data frame with four columns, as described in the details. Can be left |

NULL if `packageName` and `cohortToCreateFile` have been specified.

phenotypeDescriptionCsv

(Optional) Path for the location of the `phenotype_description.csv` file. This file should have the following columns that may be read into following data types: `phenotype_id` (double), `phenotype_name` (character), `referent_concept_id` (double), `clinical_description` (character), `literature_review` (character), `phenotype_notes` (character). Note: the field names are in snake_case. Also, character fields should not have 'NA' in it. 'NA's are commonly added by R when R functions exports data from dataframe into CSV. Instead please use " (empty string) to represent absence of data. The `literature_review` field is expected to be a html link to page that contains resources related to literature review for the phenotype, and will be used to create link-out object.

connectionDetails

An object of type `connectionDetails` as created using the [createConnectionDetails](#) function in the DatabaseConnector package. Can be left NULL if `connection` is provided.

connection

An object of type `connection` as created using the [connect](#) function in the DatabaseConnector package. Can be left NULL if `connectionDetails` is provided, in which case a new connection will be opened at the start of the function, and closed when the function finishes.

cdmDatabaseSchema

Schema name where your patient-level data in OMOP CDM format resides. Note that for SQL Server, this should include both the database and schema name, for example 'cdm_data.dbo'.

oracleTempSchema

Should be used in Oracle to specify a schema where the user has write privileges for storing temporary tables.

cohortDatabaseSchema

Schema name where your cohort table resides. Note that for SQL Server, this should include both the database and schema name, for example 'scratch.dbo'.

cohortTable Name of the cohort table.

cohortIds Optionally, provide a subset of cohort IDs to restrict the diagnostics to.

inclusionStatisticsFolder

The folder where the inclusion rule statistics are stored. Can be left NULL if `runInclusionStatistics = FALSE`.

exportFolder The folder where the output will be exported to. If this folder does not exist it will be created.

databaseId A short string for identifying the database (e.g. 'Synpuf').

databaseName The full name of the database.

databaseDescription

A short description (several sentences) of the database.

cdmVersion The version of the OMOP CDM. Default 5. (Note: only 5 is supported.)

runInclusionStatistics

Generate and export statistic on the cohort inclusion rules?

runIncludedSourceConcepts

Generate and export the source concepts included in the cohorts?

runOrphanConcepts
Generate and export potential orphan concepts?

exportConceptCountTableForDatabase
Do you want to export concept count table for the database?

runTimeDistributions
Generate and export cohort time distributions?

runBreakdownIndexEvents
Generate and export the breakdown of index events?

runIncidenceRate
Generate and export the cohort incidence rates?

runCohortOverlap
Generate and export the cohort overlap? Overlaps are checked within cohortIds that have the same referent conceptId sourced from the CohortSetReference or cohortToCreateFile.

runCohortCharacterization
Generate and export the cohort characterization? Only records with values greater than 0.0001 are returned.

covariateSettings
Either an object of type `covariateSettings` as created using one of the `createCovariateSettings` function in the FeatureExtraction package, or a list of such objects.

runTemporalCohortCharacterization
Generate and export the temporal cohort characterization? Only records with values greater than 0.001 are returned.

temporalCovariateSettings
Either an object of type `covariateSettings` as created using one of the `createTemporalCovariateSettings` function in the FeatureExtraction package, or a list of such objects.

runSubsetOmopVocabularyTables
Do you want to retrieve a copy of the OMOP vocabulary, but subset to the unique conceptId used in the diagnosis?

uniqueConceptIdTable
Table to store unique concept_ids.

minCellCount The minimum cell count for fields contains person counts or fractions.

incremental Create only cohort diagnostics that haven't been created before?

incrementalFolder
If `incremental = TRUE`, specify a folder where records are kept of which cohort diagnostics has been executed.

vocabularyDatabaseSchema
(optional) Schema name where your vocabulary resides. Most commonly it is the same as CDM databaseSchema. Note that for SQL Server, this should include both the database and schema name, for example 'cdm_data.dbo'.

Details

Currently two ways of executing this function are supported, either (1) [Package Mode] embedded in a study package, assuming the cohort definitions are stored in that package using the `ROhdsiWebApi::insertCohortDefinitionSetInPackage`, or (2) [WebApi Mode] By using a WebApi interface to retrieve the cohort definitions.

When using this function in Package Mode: Use the `packageName` and `cohortToCreateFile` to specify the name of the study package, and the name of the cohortToCreate file within that package, respectively

When using this function in WebApi Mode: use the `baseUrl` and `cohortSetReference` to specify how to connect to the WebApi, and which cohorts to fetch, respectively.

Note: if the parameters for both Package Mode and WebApi Mode are provided, then Package mode is preferred.

The `cohortSetReference` argument must be a data frame with the following columns:

referentConceptId A standard omop concept id that serves as the referant phenotype definition for the cohort Id.

cohortId The cohort Id is the id used to identify a cohort definition. This is required to be unique. It will be used to create file names. It is recommended to be (`referentConceptId * 1000`) + a number between 3 to 999

webApiCohortId Cohort Id in the webApi/atlas instance. It is a required field to run Cohort Diagnostics in WebApi mode. It is discarded in package mode.

cohortName The full name of the cohort. This will be shown in the Shiny app.

logicDescription A human understandable brief description of the cohort definition. This logic does not have to a fully specified description of the cohort definition, but should provide enough context to help user understand the meaning of the cohort definition

runCohortDiagnosticsUsingExternalCounts

Run cohort diagnostics using external concept counts

Description

Runs cohort diagnostics on all (or a subset of) the cohorts, but using external concept counts. The external counts must have the following columns:

concept_id The source or target concept ID.

concept_count The number of records having the concept.

concept_subjects The number of unique persons having the concept.

Usage

```
runCohortDiagnosticsUsingExternalCounts(
  packageName = NULL,
  cohortToCreateFile = "settings/CohortsToCreate.csv",
  baseUrl = NULL,
  cohortSetReference = NULL,
  connectionDetails = NULL,
  connection = NULL,
  cdmDatabaseSchema,
  oracleTempSchema = NULL,
  cohortIds = NULL,
  conceptCountsDatabaseSchema = cdmDatabaseSchema,
  conceptCountsTable = "concept_counts",
  conceptCountsTableIsTemp = FALSE,
```

```

exportFolder,
databaseId,
databaseName = databaseId,
databaseDescription = "",
runIncludedSourceConcepts = TRUE,
runOrphanConcepts = TRUE,
minCellCount = 5
)

```

Arguments

- packageName** The name of the package containing the cohort definitions. Can be left NULL if **baseUrl** and **cohortSetReference** have been specified.
- cohortToCreateFile** The location of the cohortToCreate file within the package. Is ignored if **baseUrl** and **cohortSetReference** have been specified. The cohortToCreateFile must be .csv file that is expected to be read into a dataframe object identical to requirements for **cohortSetReference** argument.
- baseUrl** The base URL for the WebApi instance, for example: "http://server.org:80/WebAPI". Can be left NULL if **packageName** and **cohortToCreateFile** have been specified.
- cohortSetReference** A data frame with four columns, as described in the details. Can be left NULL if **packageName** and **cohortToCreateFile** have been specified.
- connectionDetails** An object of type **connectionDetails** as created using the [createConnectionDetails](#) function in the DatabaseConnector package. Can be left NULL if **connection** is provided.
- connection** An object of type **connection** as created using the [connect](#) function in the DatabaseConnector package. Can be left NULL if **connectionDetails** is provided, in which case a new connection will be opened at the start of the function, and closed when the function finishes.
- cdmDatabaseSchema** Schema name where your patient-level data in OMOP CDM format resides. Note that for SQL Server, this should include both the database and schema name, for example 'cdm_data.dbo'.
- oracleTempSchema** Should be used in Oracle to specify a schema where the user has write privileges for storing temporary tables.
- cohortIds** Optionally, provide a subset of cohort IDs to restrict the diagnostics to.
- conceptCountsDatabaseSchema** Schema name where your concept counts table resides. Note that for SQL Server, this should include both the database and schema name, for example 'scratch.dbo'. Ignored if **conceptCountsTableIsTemp** = TRUE.
- conceptCountsTable** Name of the concept counts table. This table can be created using the [createConceptCountsTable](#).
- conceptCountsTableIsTemp** Is the concept counts table a temp table?
- exportFolder** The folder where the output will be exported to. If this folder does not exist it will be created.

databaseId A short string for identifying the database (e.g. 'Synpuf').

databaseName The full name of the database.

databaseDescription
A short description (several sentences) of the database.

runIncludedSourceConcepts
Generate and export the source concepts included in the cohorts?

runOrphanConcepts
Generate and export potential orphan concepts?

minCellCount The minimum cell count for fields contains person counts or fractions.

Details

Currently two ways of executing this function are supported, either (1) [Package Mode] embedded in a study package, assuming the cohort definitions are stored in that package using the `ROhdsiWebApi::insertCohortDefinitionSetInPackage`, or (2) [WebApi Mode] By using a WebApi interface to retrieve the cohort definitions.

When using this function in Package Mode: Use the **packageName** and **cohortToCreateFile** to specify the name of the study package, and the name of the cohortToCreate file within that package, respectively

When using this function in WebApi Mode: use the **baseUrl** and **cohortSetReference** to specify how to connect to the WebApi, and which cohorts to fetch, respectively.

Note: if the parameters for both Package Mode and WebApi Mode are provided, then Package mode is preferred.

The **cohortSetReference** argument must be a data frame with the following columns:

referentConceptId A standard omop concept id that serves as the referant phenotype definition for the cohort Id.

cohortId The cohort Id is the id used to identify a cohort definition. This is required to be unique. It will be used to create file names. It is recommended to be (referent-ConceptId * 1000) + a number between 3 to 999

webApiCohortId Cohort Id in the webApi/atlas instance. It is a required field to run Cohort Diagnostics in WebApi mode. It is discarded in package mode.

cohortName The full name of the cohort. This will be shown in the Shiny app.

logicDescription A human understandable brief description of the cohort definition. This logic does not have to a fully specified description of the cohort definition, but should provide enough context to help user understand the meaning of the cohort definition

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