

Creating custom covariate builders (Korean)

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1

condition_occurrence 1 .
, .
:
, R cohort_attribute . creating covariates using cohort attributes

2

1. covariateSettings .
2. .

3

1. covariateSettings .
2. fun .

3.1

```
createLooCovariateSettings <- function(useLengthOfObs = TRUE) {  
  covariateSettings <- list(useLengthOfObs = useLengthOfObs)  
  attr(covariateSettings, "fun") <- "getDbLooCovariateData"  
  class(covariateSettings) <- "covariateSettings"  
  return(covariateSettings)  
}
```

useLengthOfObs . covariateSettings . getDbLooCovariateData

4

4.1

:

- connection : DatabaseConnector connect .
- oracleTempSchema :
- cdmDatabaseSchema : OMOP CDM . SQL SQL (:
- cdmVersion : OMOP CDM : "4" "5"
- cohortTable : . (: '#cohort_table') (:
- cohortIds : ID. -1 .
- cdmVersion :
- rowIdField : row_id . 1 1 .
- covariateSettings :
- targetCovariateTable :
- targetCovariateContinuousTable :
- targetCovariateRefTable :
- targetAnalysisRefTable :
- targetTimeRefTable :
- aggregated : 1 , ?
- minCharacterizationMean : characterization
- minCharacterizationCount : characterization

cohort
cohort_definition_id). 1 (, cohort_start_date) (subject_id,cohort_start_date, and
rowIdField subject_id-cohort_start_date

4.2

covariateData .

- covariates : ID ffd . 0 (rowId,covariateId, and covariateValue)
- covariateRef : ffd (covariateId, covariateName, analysisId, conceptId)
- analysisRef : ffd (analysisId,analysisName,domainIdsta,startDay,endDay,isBinary,missingMe
- metaData : covariateData

4.3

```
getDbLooCovariateData <- function(connection,  
  oracleTempSchema = NULL,  
  cdmDatabaseSchema,  
  cohortTable = "#cohort_person",  
  cohortIds = c(-1),  
  cdmVersion = "5",  
  rowIdField = "subject_id",  
  covariateSettings,  
  targetCovariateTable = NULL,
```

```

        targetCovariateContinuousTable = NULL,
        targetCovariateRefTable = NULL,
        targetAnalysisRefTable = NULL,
        targetTimeRefTable = NULL,
        aggregated = FALSE,
        minCharacterizationMean = 0,
        minCharacterizationCount = 0) {
writeLines("Constructing length of observation covariates")
if (covariateSettings$useLengthOfObs == FALSE) {
  return(NULL)
}
if (aggregated) {
  stop("Aggregation not supported")
}

# Some SQL to construct the covariate:
sql <- paste(
  "SELECT @row_id_field AS row_id, 1 AS covariate_id,",
  "DATEDIFF(DAY, observation_period_start_date, cohort_start_date)",
  "AS covariate_value",
  "FROM @cohort_table c",
  "INNER JOIN @cdm_database_schema.observation_period op",
  "ON op.person_id = c.subject_id",
  "WHERE cohort_start_date >= observation_period_start_date",
  "AND cohort_start_date <= observation_period_end_date",
  "{@cohort_ids != -1} ? {AND cohort_definition_id IN @cohort_ids}"
)
sql <- SqlRender::render(sql,
  cohort_table = cohortTable,
  cohort_ids = cohortIds,
  row_id_field = rowIdField,
  cdm_database_schema = cdmDatabaseSchema
)
sql <- SqlRender::translate(sql, targetDialect = attr(connection, "dbms"))

# Retrieve the covariate:
covariates <- DatabaseConnector::querySql.ffdf(connection, sql)

# Convert column names to camelCase:
colnames(covariates) <- SqlRender::snakeCaseToCamelCase(colnames(covariates))

# Construct covariate reference:
covariateRef <- data.frame(
  covariateId = 1,
  covariateName = "Length of observation",
  analysisId = 1,
  conceptId = 0
)
covariateRef <- ff::as.ffdf(covariateRef)

# Construct analysis reference:
analysisRef <- data.frame(
  analysisId = 1,

```

```

    analysisName = "Length of observation",
    domainId = "Demographics",
    startDay = 0,
    endDay = 0,
    isBinary = "N",
    missingMeansZero = "Y"
  )
analysisRef <- ff::as.ffdf(analysisRef)

# Construct analysis reference:
metaData <- list(sql = sql, call = match.call())
result <- list(
  covariates = covariates,
  covariateRef = covariateRef,
  analysisRef = analysisRef,
  metaData = metaData
)
class(result) <- "covariateData"
return(result)
}

```

```

    observation_period_start_date      ,      ,      SQL   SqlRender
    SQL      . DatabaseConnector      ffd      .      ,
    covariate, covariateRef  analysisRef      .

```

5

```

PatientLevelPrediction      cohortMethod      FeatureExtraction
,
:

```

```

looCovSet <- createLooCovariateSettings(useLengthOfObs = TRUE)

covariates <- getDbCovariateData(
  connectionDetails = connectionDetails,
  cdmDatabaseSchema = cdmDatabaseSchema,
  cohortDatabaseSchema = resultsDatabaseSchema,
  cohortTable = "rehospitalization",
  cohortIds = c(1),
  covariateSettings = looCovSet
)

```

```

covariateSettings <- createCovariateSettings(
  useDemographicsGender = TRUE,
  useDemographicsAgeGroup = TRUE,
  useDemographicsRace = TRUE,
  useDemographicsEthnicity = TRUE,
  useDemographicsIndexYear = TRUE,
  useDemographicsIndexMonth = TRUE
)

```

```
)  
  
looCovSet <- createLooCovariateSettings(useLengthOfObs = TRUE)  
  
covariateSettingsList <- list(covariateSettings, looCovSet)  
  
covariates <- getDbCovariateData(  
  connectionDetails = connectionDetails,  
  cdmDatabaseSchema = cdmDatabaseSchema,  
  cohortDatabaseSchema = resultsDatabaseSchema,  
  cohortTable = "rehospitalization",  
  cohortIds = c(1),  
  covariateSettings = covariateSettingsList  
)
```