

# Results schema of the CohortMethod package

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## 1 Introduction

This document describes the data model of the output of the CohortMethod package, generated by the `exportToCsv()` function. This vignette assumes you are already familiar with the CohortMethod package, and have read all other vignettes.

### 1.1 Fields with minimum values

Some fields contain patient counts or fractions that can easily be converted to patient counts. To prevent identifiability, these fields are subject to a minimum value. When the value falls below this minimum, it is replaced with the negative value of the minimum. For example, if the minimum subject count is 5, and the actual count is 2, the value stored in the data model will be -5, which could be represented as '<5' to the user. Note that the value 0 is permissible, as it identifies no persons. These fields are identified below as having `Min. count = 'Yes'`.

## 2 Tables

In this section you will find the list of tables and their fields.

## 2.1 Table cm\_analysis

Field	Type	Key	Min. count	Deprecated	Description
analysis_id	int	Yes	No	No	A unique identifier for an analysis.
description	varchar	No	No	No	A description for an analysis, e.g. ‘On-treatment’.
definition	varchar	No	No	No	A CohortMethod JSON object specifying the analysis.

## 2.2 Table cm\_attrition

Field	Type	Key	Min. count	Deprecated	Description
sequence_number	int	Yes	No	No	The place in the sequence of steps defining the final analysis.
description	varchar	No	No	No	A description of the last restriction, e.g. “Removing persons with missing values”.
subjects	int	No	Yes	No	The number of subjects in the cohort.
exposure_id	bigint	Yes	No	No	The identifier of the exposure cohort to which the attrition applies.
target_id	bigint	Yes	No	No	The identifier for the target cohort.
comparator_id	bigint	Yes	No	No	The identifier for the comparator cohort.
analysis_id	int	Yes	No	No	The identifier for the outcome cohort.
outcome_id	bigint	Yes	No	No	Foreign key referencing the cm_analysis table.
database_id	varchar	Yes	No	No	Foreign key referencing the database.

## 2.3 Table cm\_covariate

Field	Type	Key	Min. count	Deprecated	Description
covariate_id	bigint	Yes	No	No	A unique identifier for a covariate.
covariate_name	varchar	No	No	No	A name for a covariate, e.g. ‘Age group: 20-25 years’.
analysis_id	int	Yes	No	No	Foreign key referencing the cm_analysis table.
covariate_analysis_id	int	No	No	No	Foreign key referencing the cm_covariate_analysis table.
database_id	varchar	Yes	No	No	Foreign key referencing the database.

## 2.4 Table cm\_covariate\_analysis

Field	Type	Key	Min. count	Deprecated	Description
covariate_analysis_id	int	Yes	No	No	A unique identifier for a covariate analysis (only given for the target cohort).
covariate_analysis_name	varchar	No	No	No	A name for a covariate analysis, e.g. ‘Demographic’.
analysis_id	int	Yes	No	No	A foreign key referencing the cm_analysis table.

## 2.5 Table cm\_covariate\_balance

Field	Type	Key	Min. count	Deprecated	Description
database_id	varchar	Yes	No	No	Foreign key referencing the database.
target_id	bigint	Yes	No	No	The identifier for the target cohort.
comparator_id	bigint	Yes	No	No	The identifier for the comparator cohort.
outcome_id	bigint	Yes	No	No	The identifier for the outcome cohort.
analysis_id	int	Yes	No	No	A foreign key referencing the cm_analysis table.
covariate_id	bigint	Yes	No	No	A foreign key referencing the cm_covariate table.
target_mean_before	float	No	Yes	No	The mean value of the covariate in the target cohort.

Field	Type	Key	Min. count	Deprecated	Description
comparator_mean_before	float	No	Yes	No	The mean value of the covariate in the comparator cohort.
mean_before	float	No	Yes	No	The mean value of the covariate in the union of comparator and target cohorts.
std_diff_before	float	No	No	No	The standardized difference of the means between comparator and target cohorts.
mean_after	float	No	Yes	No	The mean value of the covariate in the union of comparator and target cohorts.
target_mean_after	float	No	Yes	No	The mean value of the covariate in the target cohort.
comparator_mean_after	float	No	Yes	No	The mean value of the covariate in the comparator cohort.
std_diff_after	float	No	No	No	The standardized difference of the means between comparator and target cohorts.
target_std_diff	float	No	No	No	The standardized difference of the means before treatment.
comparator_std_diff	float	No	No	No	The standardized difference of the means before treatment.
target_comparator_std_diff	float	No	No	No	The standardized difference of the means before treatment.

## 2.6 Table cm\_diagnostics\_summary

Field	Type	Key	Min. count	Deprecated	Description
analysis_id	int	Yes	No	No	A foreign key referencing the cm_analysis table.
target_id	bigint	Yes	No	No	The identifier for the target cohort.
comparator_id	bigint	Yes	No	No	The identifier for the comparator cohort.
outcome_id	bigint	Yes	No	No	The identifier for the outcome cohort.
database_id	varchar	Yes	No	No	Foreign key referencing the database.
max_sdm	float	No	No	No	The maximum absolute standardized difference.
shared_max_sdm	float	No	No	No	The maximum absolute standardized difference.
equipoise	float	No	No	No	The fraction of the study population with no treatment effect.
mdrr	float	No	No	No	The minimum detectable relative risk.
attrition_fraction	float	No	No	Yes	DEPRECATED: The fraction of the target cohort that attrited.
generalizability_max_sdm	float	No	No	No	The maximum absolute standardized difference.
ease	float	No	No	No	The expected absolute systematic error.
balance_diagnostic	varchar(20)	No	No	No	Pass / warning / fail classification of the balance diagnostic.
shared_balance_diagnostic	varchar(20)	No	No	No	Pass / warning / fail classification of the balance diagnostic.
equipoise_diagnostic	varchar(20)	No	No	No	Pass / warning / fail classification of the equipoise diagnostic.
mdrr_diagnostic	varchar(20)	No	No	No	Pass / warning / fail classification of the mdrr diagnostic.
attrition_diagnostic	varchar(20)	No	No	Yes	DEPRECATED: Pass / warning / fail classification of the attrition diagnostic.
generalizability_diagnostic	varchar(20)	No	No	No	Pass / warning / fail classification of the generalizability diagnostic.
ease_diagnostic	varchar(20)	No	No	No	Pass / warning / fail classification of the ease diagnostic.
unblind	int	No	No	No	Is unblinding the result recommended?
unblind_for_evidence_synthesis	int	No	No	No	Is unblinding the result for inclusion in the evidence synthesis?

## 2.7 Table cm\_follow\_up\_dist

Field	Type	Key	Min. count	Deprecated	Description
target_id	bigint	Yes	No	No	The identifier for the target cohort.
comparator_id	bigint	Yes	No	No	The identifier for the comparator cohort.
outcome_id	bigint	Yes	No	No	The identifier for the outcome cohort.
analysis_id	int	Yes	No	No	Foreign key referencing the cm_analysis table.
target_min_days	float	No	No	No	The minimum number of observation days for a patient.
target_p_10_days	float	No	No	No	The 10 <sup>th</sup> percentile of number of observation days for a patient.
target_p_25_days	float	No	No	No	The 25 <sup>th</sup> percentile of number of observation days for a patient.
target_median_days	float	No	No	No	The median number of observation days for a patient.
target_p_75_days	float	No	No	No	The 75 <sup>th</sup> percentile of number of observation days for a patient.
target_p_90_days	float	No	No	No	The 90 <sup>th</sup> percentile of number of observation days for a patient.

Field	Type	Key	Min. count	Deprecated	Description
target_max_days	float	No	No	No	The maximum number of observation days for a person.
comparator_min_days	float	No	No	No	The minimum number of observation days for a person.
comparator_p_10_days	float	No	No	No	The 10 <sup>th</sup> percentile of number of observation days.
comparator_p_25_days	float	No	No	No	The 25 <sup>th</sup> percentile of number of observation days.
comparator_median_days	float	No	No	No	The median number of observation days for a person.
comparator_p_75_days	float	No	No	No	The 75 <sup>th</sup> percentile of number of observation days.
comparator_p_90_days	float	No	No	No	The 90 <sup>th</sup> percentile of number of observation days.
comparator_max_days	float	No	No	No	The maximum number of observation days for a person.
target_min_date	Date	No	No	No	The first start date of the target cohort observed.
target_max_date	Date	No	No	No	The last start date of the target cohort observed.
comparator_min_date	Date	No	No	No	The first start date of the comparator cohort observed.
comparator_max_date	Date	No	No	No	The last start date of the comparator cohort observed.
database_id	varchar	Yes	No	No	Foreign key referencing the database.

## 2.8 Table cm\_interaction\_result

Field	Type	Key	Min. count	Deprecated	Description
analysis_id	int	Yes	No	No	Foreign key referencing the cm_analysis table.
target_id	bigint	Yes	No	No	The identifier for the target cohort.
comparator_id	bigint	Yes	No	No	The identifier for the comparator cohort.
outcome_id	bigint	Yes	No	No	The identifier for the outcome cohort.
interaction_covariate_id	int	Yes	No	No	Foreign key referencing the cm_covariate table.
rr	float	No	No	No	The estimated relative risk (e.g. the ratio of hazard rates).
ci_95_lb	float	No	No	No	The lower bound of the 95% confidence interval of the relative risk.
ci_95_ub	float	No	No	No	The upper bound of the 95% confidence interval of the relative risk.
p	float	No	No	No	The two-sided p-value considering the null hypothesis.
target_subjects	int	No	Yes	No	The number of subject in the target cohort.
comparator_subjects	int	No	Yes	No	The number of subject in the comparator cohort.
target_days	int	No	No	No	The number of days observed in the target cohort.
comparator_days	int	No	No	No	The number of days observed in the comparator cohort.
target_outcomes	int	No	Yes	No	The number of outcomes observed in the target cohort.
comparator_outcomes	int	No	Yes	No	The number of outcomes observed in the comparator cohort.
log_rr	float	No	No	No	The log of the relative risk.
se_log_rr	float	No	No	No	The standard error of the log of the relative risk.
calibrated_rr	float	No	No	No	The calibrated relative risk.
calibrated_ci_95_lb	float	No	No	No	The lower bound of the calibrated 95% confidence interval.
calibrated_ci_95_ub	float	No	No	No	The upper bound of the calibrated 95% confidence interval.
calibrated_p	float	No	No	No	The calibrated two-sided p-value.
calibrated_log_rr	float	No	No	No	The log of the calibrated relative risk.
calibrated_se_log_rr	float	No	No	No	The standard error of the log of the calibrated relative risk.
target_estimator	varchar	No	No	No	The target estimator, for example “att”, “ate”, “atu”.
database_id	varchar	Yes	No	No	Foreign key referencing the database.

## 2.9 Table cm\_kaplan\_meier\_dist

Field	Type	Key	Min. count	Deprecated	Description
time_day	int	Yes	No	No	Time in days since cohort start.
target_survival	float	No	No	No	The estimated survival fraction in the target cohort.
target_survival_lb	float	No	No	No	The lower bound of the 95% confidence interval of the survival fraction.

Field	Type	Key	Min. count	Deprecated	Description
target_survival_ub	float	No	No	No	The upper bound of the 95% confidence interval of
comparator_survival	float	No	No	No	The estimated survival fraction in the comparator c
comparator_survival_lb	float	No	No	No	The lower bound of the 95% confidence interval of
comparator_survival_ub	float	No	No	No	The upper bound of the 95% confidence interval of
target_at_risk	int	No	Yes	No	The number of subjects still at risk in the target co
comparator_at_risk	int	No	Yes	No	The number of subjects still at risk in the compara
target_id	bigint	Yes	No	No	The identifier for the target cohort.
comparator_id	bigint	Yes	No	No	The identifier for the comparator cohort.
outcome_id	bigint	Yes	No	No	The identifier for the outcome cohort.
analysis_id	int	Yes	No	No	A foreign key referencing the cm_analysis table.
database_id	varchar	Yes	No	No	Foreign key referencing the database.

## 2.10 Table cm\_likelihood\_profile

Field	Type	Key	Min. count	Deprecated	Description
log_rr	float	Yes	No	No	The log of the relative risk where the likelihood is sampled.
log_likelihood	float	No	No	No	The normalized log likelihood.
gradient	float	No	No	No	The gradient of the log likelihood.
target_id	bigint	Yes	No	No	The identifier for the target cohort.
comparator_id	bigint	Yes	No	No	The identifier for the comparator cohort.
outcome_id	bigint	Yes	No	No	The identifier for the outcome cohort.
analysis_id	int	Yes	No	No	A foreign key referencing the cm_analysis table.
database_id	varchar	Yes	No	No	Foreign key referencing the database.

## 2.11 Table cm\_preference\_score\_dist

Field	Type	Key	Min. count	Deprecated	Description
analysis_id	int	Yes	No	No	A foreign key referencing the cm_analysis table.
target_id	bigint	Yes	No	No	The identifier for the target cohort.
comparator_id	bigint	Yes	No	No	The identifier for the comparator cohort.
database_id	varchar	Yes	No	No	Foreign key referencing the database.
preference_score	float	Yes	No	No	A preference score value.
target_density	float	No	No	No	The distribution density for the target cohort at the giv
comparator_density	float	No	No	No	The distribution density for the comparator cohort at th

## 2.12 Table cm\_propensity\_model

Field	Type	Key	Min. count	Deprecated	Description
target_id	bigint	Yes	No	No	The identifier for the target cohort.
comparator_id	bigint	Yes	No	No	The identifier for the comparator cohort.
analysis_id	int	Yes	No	No	A foreign key referencing the cm_analysis table.
database_id	varchar	Yes	No	No	Foreign key referencing the database.
covariate_id	bigint	Yes	No	No	Foreign key referencing the cm_covariate table. 0 is reserved
coefficient	float	No	No	No	The coefficient (beta) for the covariate in the propensity mod

### 2.13 Table cm\_result

Field	Type	Key	Min. count	Deprecated	Description
analysis_id	int	Yes	No	No	Foreign key referencing the cm_analysis table.
target_id	bigint	Yes	No	No	The identifier for the target cohort.
comparator_id	bigint	Yes	No	No	The identifier for the comparator cohort.
outcome_id	bigint	Yes	No	No	The identifier for the outcome cohort.
rr	float	No	No	No	The estimated relative risk (e.g. the hazard ratio).
ci_95_lb	float	No	No	No	The lower bound of the 95% confidence interval of t
ci_95_ub	float	No	No	No	The upper bound of the 95% confidence interval of t
p	float	No	No	No	The two-sided p-value considering the null hypothesis
one_sided_p	float	No	No	No	The one-sided p-value considering the null hypothesis
target_subjects	int	No	Yes	No	The number of subject in the target cohort.
comparator_subjects	int	No	Yes	No	The number of subject in the comparator cohort.
target_days	int	No	No	No	The number of days observed in the target cohort.
comparator_days	int	No	No	No	The number of days observed in the comparator cohort.
target_outcomes	int	No	Yes	No	The number of outcomes observed in the target cohort.
comparator_outcomes	int	No	Yes	No	The number of outcomes observed in the comparator cohort.
log_rr	float	No	No	No	The log of the relative risk.
se_log_rr	float	No	No	No	The standard error of the log of the relative risk.
llr	float	No	No	No	The log of the likelihood ratio (of the MLE vs the null hypothesis)
calibrated_rr	float	No	No	No	The calibrated relative risk.
calibrated_ci_95_lb	float	No	No	No	The lower bound of the calibrated 95% confidence interval
calibrated_ci_95_ub	float	No	No	No	The upper bound of the calibrated 95% confidence interval
calibrated_p	float	No	No	No	The calibrated two-sided p-value.
calibrated_one_sided_p	float	No	No	No	The calibrated one-sided p-value considering the null hypothesis
calibrated_log_rr	float	No	No	No	The log of the calibrated relative risk.
calibrated_se_log_rr	float	No	No	No	The standard error of the log of the calibrated relative risk.
target_estimator	varchar	No	No	No	The target estimator, for example “att”, “ate”, “atut”.
database_id	varchar	Yes	No	No	Foreign key referencing the database.

### 2.14 Table cm\_shared\_covariate\_balance

Field	Type	Key	Min. count	Deprecated	Description
database_id	varchar	Yes	No	No	Foreign key referencing the database.
target_id	bigint	Yes	No	No	The identifier for the target cohort.
comparator_id	bigint	Yes	No	No	The identifier for the comparator cohort.
analysis_id	int	Yes	No	No	A foreign key referencing the cm_analysis table.
covariate_id	bigint	Yes	No	No	A foreign key referencing the cm_covariate table.
mean_before	float	No	Yes	No	The mean value of the covariate in the union of the target and comparator cohorts before treatment.
target_mean_before	float	No	Yes	No	The mean value of the covariate in the target cohort before treatment.
comparator_mean_before	float	No	Yes	No	The mean value of the covariate in the comparator cohort before treatment.
std_diff_before	float	No	No	No	The standardized difference of the means between the target and comparator cohorts before treatment.
mean_after	float	No	Yes	No	The mean value of the covariate in the union of the target and comparator cohorts after treatment.
target_mean_after	float	No	Yes	No	The mean value of the covariate in the target cohort after treatment.
comparator_mean_after	float	No	Yes	No	The mean value of the covariate in the comparator cohort after treatment.
std_diff_after	float	No	No	No	The standardized difference of the means between the target and comparator cohorts after treatment.
target_std_diff	float	No	No	No	The standardized difference of the means before and after treatment in the target cohort.
comparator_std_diff	float	No	No	No	The standardized difference of the means before and after treatment in the comparator cohort.
target_comparator_std_diff	float	No	No	No	The standardized difference of the means before and after treatment between the target and comparator cohorts.

## 2.15 Table cm\_target\_comparator\_outcome

Field	Type	Key	Min. count	Deprecated	Description
outcome_id	bigint	Yes	No	No	The identifier for the outcome cohort.
outcome_of_interest	int	No	No	No	Is the outcome of interest (1 = yes, 0 = no)
true_effect_size	float	No	No	No	The true effect size for the target-comparator-outcome. If
target_id	bigint	Yes	No	No	The identifier for the target cohort.
comparator_id	bigint	Yes	No	No	The identifier for the comparator cohort.