

Results schema of the CohortMethod package

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Contents

| | | |
|----------|--|----------|
| 1 | Introduction | 1 |
| 1.1 | Fields with minimum values | 1 |
| 2 | Tables | 1 |
| 2.1 | Table cm_analysis | 2 |
| 2.2 | Table cm_attrition | 2 |
| 2.3 | Table cm_covariate | 2 |
| 2.4 | Table cm_covariate_analysis | 2 |
| 2.5 | Table cm_covariate_balance | 2 |
| 2.6 | Table cm_diagnostics_summary | 3 |
| 2.7 | Table cm_follow_up_dist | 3 |
| 2.8 | Table cm_interaction_result | 4 |
| 2.9 | Table cm_kaplan_meier_dist | 4 |
| 2.10 | Table cm_likelihood_profile | 5 |
| 2.11 | Table cm_preference_score_dist | 5 |
| 2.12 | Table cm_propensity_model | 5 |
| 2.13 | Table cm_result | 6 |
| 2.14 | Table cm_shared_covariate_balance | 6 |
| 2.15 | Table cm_target_comparator_outcome | 7 |

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 data”. |
| 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 guaranteed to be unique within a covariate). |
| covariate_analysis_name | varchar | No | No | No | A name for a covariate analysis, e.g. ‘Demographic analysis’. |
| 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 the target and comparator cohorts. |
| std_diff_before | float | No | No | No | The standardized difference of the means before. |
| mean_after | float | No | Yes | No | The mean value of the covariate in the union of the target and comparator 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 after. |
| target_std_diff | float | No | No | No | The standardized difference of the means before. |
| comparator_std_diff | float | No | No | No | The standardized difference of the means before. |
| target_comparator_std_diff | float | No | No | No | The standardized difference of the means before. |

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 equipoise. |
| mdrr | float | No | No | No | The minimum detectable relative risk. |
| attrition_fraction | float | No | No | Yes | DEPRECATED: The fraction of the target cohort lost to attrition. |
| 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 shared 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 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 person. |
| target_p_10_days | float | No | No | No | The 10 th percentile of number of observation days. |
| target_p_25_days | float | No | No | No | The 25 th percentile of number of observation days. |
| target_median_days | float | No | No | No | The median number of observation days for a person. |
| target_p_75_days | float | No | No | No | The 75 th percentile of number of observation days. |
| target_p_90_days | float | No | No | No | The 90 th percentile of number of observation days. |

| Field | Type | Key | Min. count | Deprecated | Description |
|------------------------|---------|-----|------------|------------|---|
| target_max_days | float | No | No | No | The maximum number of observation days for a p |
| comparator_min_days | float | No | No | No | The minimum number of observation days for a p |
| comparator_p_10_days | float | No | No | No | The 10 th percentile of number of observation days |
| comparator_p_25_days | float | No | No | No | The 25 th percentile of number of observation days |
| comparator_median_days | float | No | No | No | The median number of observation days for a per |
| comparator_p_75_days | float | No | No | No | The 75 th percentile of number of observation days |
| comparator_p_90_days | float | No | No | No | The 90 th percentile of number of observation days |
| comparator_max_days | float | No | No | No | The maximum number of observation days for a p |
| 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 i |
| comparator_min_date | Date | No | No | No | The first start date of the comparator cohort obse |
| comparator_max_date | Date | No | No | No | The last start date of the comparator cohort obse |
| 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 |
| 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 |
| 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 of the relative risk. |
| calibrated_ci_95_ub | float | No | No | No | The upper bound of the calibrated 95% confidence interval of the relative risk. |
| 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 estimated survival fraction in the target cohort. |

| Field | Type | Key | Min. count | Deprecated | Description |
|------------------------|---------|-----|------------|------------|--|
| target_survival_ub | float | No | No | No | The upper bound of the 95% confidence interval of the estimated survival fraction. |
| comparator_survival | float | No | No | No | The estimated survival fraction in the comparator cohort. |
| comparator_survival_lb | float | No | No | No | The lower bound of the 95% confidence interval of the estimated survival fraction. |
| comparator_survival_ub | float | No | No | No | The upper bound of the 95% confidence interval of the estimated survival fraction. |
| target_at_risk | int | No | Yes | No | The number of subjects still at risk in the target cohort. |
| comparator_at_risk | int | No | Yes | No | The number of subjects still at risk in the comparator cohort. |
| 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 given point. |
| comparator_density | float | No | No | No | The distribution density for the comparator cohort at the given point. |

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 for the intercept. |
| coefficient | float | No | No | No | The coefficient (beta) for the covariate in the propensity model. |

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 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. |
| 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 subjects in the target cohort. |
| comparator_subjects | int | No | Yes | No | The number of subjects 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 of the relative risk. |
| calibrated_ci_95_ub | float | No | No | No | The upper bound of the calibrated 95% confidence interval of the relative risk. |
| 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", "atua". |
| 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. |
| target_mean_before | float | No | Yes | No | The mean value of the covariate in the target cohort. |
| comparator_mean_before | float | No | Yes | No | The mean value of the covariate in the comparator cohort. |
| std_diff_before | float | No | No | No | The standardized difference of the means before the intervention. |
| mean_after | float | No | Yes | No | The mean value of the covariate in the union of the target and comparator 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 before the intervention. |
| target_std_diff | float | No | No | No | The standardized difference of the means before the intervention. |
| comparator_std_diff | float | No | No | No | The standardized difference of the means before the intervention. |
| target_comparator_std_diff | float | No | No | No | The standardized difference of the means before the intervention. |

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. I |
| target_id | bigint | Yes | No | No | The identifier for the target cohort. |
| comparator_id | bigint | Yes | No | No | The identifier for the comparator cohort. |