

# Castor EDC, R format factor variables

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## Installing from source

Set the appropriate path and run this command:

```
devtools::install_github("erikerhardt/CastorR")
```

## Strategy for labeling factor variables

1. Read data
    - Read all `CRF_export.xlsx` file sheets and construct the structures to produce an Rdata file with (1) variable question labels, (2) correct factor levels with labels, and (3) correct data and numeric data types.
    - Data in `Study results` has labels in `Study variable list`
    - Data in other data sheets (between `Study results` and `Study variable list`) has labels in `Report variable list`
    - All factor groups with labels and levels are in `Field options`
  2. Collect Option group names, levels, and labels
    - `Field options` gives the factor variable levels and labels
    - `Option group name`
    - `Option name labels list` with `Option value list`
  3. Assign variable question labels, Factor variables with Option groups, assign variable class data types
    - `Study variable list` gives the question names for `Study results`
    - `Report variable list` gives the question names for other data sheets (between `Study results` and `Study variable list`)
    - `Variable name`
    - `Field label` is the question name
1. Use `library(labelled)` with `var_label()`
  2. For each variable, label it.
    - `Optiongroup name`
  1. Use `factor()` for each variable using `Option group name` labels and levels
    - `Field type` variable data class, useful for date, datetime, and numeric.

## Format Castor CRF data

```
library(CastorR)
dat <- castor_format_R(fn = "CRF_export_2.xlsx")
str(dat)
```

List of 11

```
$ Study results          :Classes 'tbl_df', 'tbl' and 'data.frame': 1 obs. of  80 variables:
..$ Record Id           : chr "TES005"
..$ Institute Abbreviation : chr "TES"
..$ Record Creation Date  : POSIXct[1:1], format: "2018-05-29 17:04:54"
..$ pat_hospital_ID       : chr "TES005"
.. ..- attr(*, "label")= chr "Patient Hospital ID"
..$ pat_birthdate         : Date[1:1], format: "1974-12-01"
..$ admit_datetime       : POSIXct[1:1], format: "2018-05-29 09:00:00"
..$ pat_age               : int 43
..$ pat_gender            : Ord.factor w/ 2 levels "Male"<"Female": 1
..$ pat_height            : num 180
..$ pat_weight_dry        : num 72.5
..$ pat_bmi               : num 22.4
..$ inc_age               : chr "Yes"
..$ inc_ADHF              : Ord.factor w/ 2 levels "Yes"<"No": 1
..$ inc_IV_diuretic       : Ord.factor w/ 2 levels "Yes"<"No": 1
..$ inc_volume_overload   : Ord.factor w/ 2 levels "Yes"<"No": 1
..$ inc_able              : Ord.factor w/ 2 levels "Yes"<"No": 1
..$ inc_ALL               : chr "Yes"
..$ exc_age               : chr "No"
..$ exc_bmi               : chr "No"
..$ exc_prior_treatment   : Ord.factor w/ 2 levels "Yes"<"No": 2
..$ exc_ventilation       : Ord.factor w/ 2 levels "Yes"<"No": 2
..$ exc_dialysis          : Ord.factor w/ 2 levels "Yes"<"No": 2
..$ exc_pregnant          : Ord.factor w/ 2 levels "Yes"<"No": NA
..$ exc_skin_damage       : Ord.factor w/ 2 levels "Yes"<"No": 2
..$ exc_compromised_veins : Ord.factor w/ 2 levels "Yes"<"No": 2
..$ exc_IV                : Ord.factor w/ 2 levels "Yes"<"No": 2
..$ exc_stand             : Ord.factor w/ 2 levels "Yes"<"No": 2
..$ exc_hand_enclosure    : Ord.factor w/ 2 levels "Yes"<"No": 2
..$ exc_fingers           : Ord.factor w/ 2 levels "Yes"<"No": 2
..$ exc_prisoner          : Ord.factor w/ 2 levels "Yes"<"No": 2
..$ exc_major_condition   : Ord.factor w/ 2 levels "Yes"<"No": 2
..$ exc_refuse            : Ord.factor w/ 2 levels "Yes"<"No": 2
..$ exc_ALL               : chr "Yes"
..$ ic_name               : chr "Fahimeh Salehpour"
.. ..- attr(*, "label")= chr "Name of person reviewing documents with subject"
..$ ic_reviewed           : Ord.factor w/ 2 levels "Yes"<"No": 1
..$ ic_signed             : Ord.factor w/ 2 levels "Yes"<"No": 1
..$ ic_copy_provided      : Ord.factor w/ 2 levels "Yes"<"No": 1
..$ ic_datetime           : POSIXct[1:1], format: "2018-05-29 10:00:00"
..$ ic_after_admission    : int 1
..$ pat_NYHA              : Ord.factor w/ 4 levels "I"<"II"<"III"<...: 1
..$ pat_has_echo          : chr "Yes"
..$ pat_EF_type           : Ord.factor w/ 3 levels "Preserved (HFpEF)"<...: 1
..$ pat_afib              : Ord.factor w/ 3 levels "Yes"<"No"<"Unknown": 2
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..$ pat_pacemaker           : Ord.factor w/ 4 levels "None"<"Defibrillator"<...: 1
..$ pat_prior_admissions    : num 0
..$ pat_CAD                 : Ord.factor w/ 2 levels "Yes"<"No": 2
..$ pat_PAD                 : Ord.factor w/ 2 levels "Yes"<"No": 2
..$ pat_diabetes            : Ord.factor w/ 4 levels "Type I"<"Type II"<...: 3
..$ pat_diabetes_other      : logi NA
.. ..- attr(*, "label")= chr "Diabetes type"
..$ pat_diabetes_duration   : num NA
..$ pat_COPD                : Ord.factor w/ 2 levels "Yes"<"No": 2
..$ pat_COPD_duration       : num NA
..$ pat_apnea               : Ord.factor w/ 2 levels "Yes"<"No": 2
..$ pat_hypertension        : Ord.factor w/ 2 levels "Yes"<"No": 2
..$ pat_hypertension_duration: num NA
..$ pat_smoking             : Ord.factor w/ 3 levels "Never smoked"<...: 1
..$ pat_smoking_years       : num NA
..$ pat_cig_perday          : num NA
..$ pat_smoking_packyears   : logi NA
..$ pat_fz_eye              : Ord.factor w/ 5 levels "Light blue, light gray, or light green"<...: 2
..$ pat_fz_hair              : Ord.factor w/ 5 levels "Red or light blonde"<...: 3
..$ pat_fz_skin              : Ord.factor w/ 5 levels "Ivory white"<...: 3
..$ pat_fz_freckles         : Ord.factor w/ 5 levels "Many"<"Several"<...: 4
..$ pat_fz_geneticscore     : int 8
..$ pat_fz_sun              : Ord.factor w/ 5 levels "Always burns, blisters, and peels"<...: 3
..$ pat_fz_tanfreq          : Ord.factor w/ 5 levels "Never, always burns"<...: 3
..$ pat_fz_tandepth         : Ord.factor w/ 5 levels "Not at all or very little"<...: 3
..$ pat_fz_face             : Ord.factor w/ 5 levels "Very sensitive"<...: 3
..$ pat_fz_sunscore         : int 8
..$ pat_fz_score            : int 16
..$ pat_fz_type             : int 3
..$ conclude_datetime       : POSIXct[1:1], format: "2018-05-30 17:15:00"
..$ conclude_reason         : Ord.factor w/ 4 levels "Subject-Initiated Withdrawal (Incomplete)"<...:
..$ conclude_PI_reason      : Ord.factor w/ 7 levels "Failure to follow procedures"<...: NA
..$ conclude_pat_reason     : Ord.factor w/ 4 levels "Takes too much time / too many tests"<...: NA
..$ conclude_duration       : int 32
..$ conclude_n_v            : int 2
..$ conclude_n_b            : int 1
..$ conclude_success        : chr "No"
..$ X_1                     : logi NA
$ Adverse_Event             :Classes 'tbl_df', 'tbl' and 'data.frame': 0 obs. of 20 variables:
..$ Record Id               : logi(0)
..$ Report Creation Date    : 'POSIXct' num(0)
- attr(*, "tzone")= chr "UTC"
..$ Report Name Custom      : logi(0)
..$ Report Parent           : logi(0)
..$ ae_description          : logi(0)
.. ..- attr(*, "label")= chr "Description"
..$ ae_onset                : 'POSIXct' num(0)
- attr(*, "tzone")= chr "UTC"
..$ ae_ongoing              : Ord.factor w/ 2 levels "Yes"<"No":
..$ ae_end                  : 'POSIXct' num(0)
- attr(*, "tzone")= chr "UTC"
..$ ae_expected             : Ord.factor w/ 2 levels "Yes"<"No":
..$ ae_severity             : Ord.factor w/ 4 levels "Mild"<"Moderate"<...:
..$ ae_product              : Ord.factor w/ 5 levels "Not related"<...:

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..$ ae_action#No_action_taken          : logi(0)
..$ ae_action#Symptomatic_treatment_given : logi(0)
..$ ae_action#Use_of_products_discontinued: logi(0)
..$ ae_action#Subject_withdrawn_from_study: logi(0)
..$ ae_action#Other                    : logi(0)
..$ ae_other_action                    : logi(0)
.. ..- attr(*, "label")= chr "Other Action Taken"
..$ ae_outcome                          : Ord.factor w/ 6 levels "Resolved"<"Recovered with sequela
..$ ae_serious                          : Ord.factor w/ 2 levels "Yes"<"No":
..$ ae_serious_valid                    : logi(0)
$ Blood_Work                           :Classes 'tbl_df', 'tbl' and 'data.frame': 1 obs. of  10 variables:
..$ Record Id                          : chr "TES005"
..$ Report Creation Date: POSIXct[1:1], format: "2018-06-01 21:23:40"
..$ Report Name Custom  : chr "Blood Work - 01-06-2018 13:23:39"
..$ Report Parent       : chr "Study Procedures"
..$ b_datetime          : POSIXct[1:1], format: "2018-05-29 13:21:00"
..$ b_n                 : num 1
..$ b_bnp               : num 335
..$ b_hgb               : num 13.6
..$ b_creatinine        : num 1.15
..$ X_1                 : logi NA
$ Echocardiogram         :Classes 'tbl_df', 'tbl' and 'data.frame': 1 obs. of  8 variables:
..$ Record Id            : chr "TES005"
..$ Report Creation Date: POSIXct[1:1], format: "2018-06-01 22:15:22"
..$ Report Name Custom  : chr "Echocardiogram - 01-06-2018 14:15:20"
..$ Report Parent       : chr "Enrollment"
..$ echo_datetime       : POSIXct[1:1], format: "2018-05-27 08:45:00"
..$ echo_EF             : num 45
..$ echo_SV             : num 68
..$ X_1                 : logi NA
$ Medication              :Classes 'tbl_df', 'tbl' and 'data.frame': 0 obs. of  10 variables:
..$ Record Id            : logi(0)
..$ Report Creation Date: 'POSIXct' num(0)
- attr(*, "tzone")= chr "UTC"
..$ Report Name Custom  : logi(0)
..$ Report Parent       : logi(0)
..$ med_name            : logi(0)
.. ..- attr(*, "label")= chr "Medication Name"
..$ med_dose            : logi(0)
.. ..- attr(*, "label")= chr "Dosage"
..$ med_type            : Ord.factor w/ 9 levels "Beta-Blocker"<...:
..$ med_start           : 'Date' num(0)
..$ med_ongoing         : Ord.factor w/ 2 levels "Yes"<"No":
..$ med_stop            : 'Date' num(0)
$ Serious_Adverse_Event   :Classes 'tbl_df', 'tbl' and 'data.frame': 0 obs. of  37 variables:
..$ Record Id           : logi(0)
..$ Report Creation Date : 'POSIXct' num(0)
- attr(*, "tzone")= chr "UTC"
..$ Report Name Custom   : logi(0)
..$ Report Parent        : logi(0)
..$ sae_date             : 'Date' num(0)
..$ sae_description      : logi(0)
.. ..- attr(*, "label")= chr "Provide a brief description of the event"
..$ sae_desc#Unexpected   : logi(0)

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..$ sae_desc#Related_to_study_procedures           : logi(0)
..$ sae_desc#Related_to_a_medical_device            : logi(0)
..$ sae_desc#Related_to_failure_of_equipment        : logi(0)
..$ sae_classification#Fatal                        : logi(0)
..$ sae_classification#Lifethreatening              : logi(0)
..$ sae_classification#Prolonged_hospitalization     : logi(0)
..$ sae_classification#Congenital_abnormalities     : logi(0)
..$ sae_classification#Permanent_disability_or_incapacity_for_w0: logi(0)
..$ sae_classification#Loss_of_confidentiality_resulting_in_dam0: logi(0)
..$ sae_classification#Other                        : logi(0)
..$ sae_severity                                    : Ord.factor w/ 4 levels "Mild"<"Moderate"
..$ sae_datetime_start                             : 'POSIXct' num(0)
- attr(*, "tzone")= chr "UTC"
..$ sae_datetime_reported                           : 'POSIXct' num(0)
- attr(*, "tzone")= chr "UTC"
..$ sae_datetime_end                                : 'POSIXct' num(0)
- attr(*, "tzone")= chr "UTC"
..$ sae_outcome                                     : Ord.factor w/ 6 levels "Resolved"<"Unresolved"
..$ sae_actions#No_action_taken                    : logi(0)
..$ sae_actions#Symptomatic_treatment_given        : logi(0)
..$ sae_actions#Use_of_products_discontinued       : logi(0)
..$ sae_actions#Subject_withdrawn_from_study       : logi(0)
..$ sae_actions#Other                              : logi(0)
..$ sae_other_action                               : logi(0)
.. ..- attr(*, "label")= chr "Actions taken"
..$ sae_attribution                                : Ord.factor w/ 5 levels "Not related"
..$ sae_implications#None                          : logi(0)
..$ sae_implications#Adapt_information_for_participants : logi(0)
..$ sae_implications#Adjust_inclusion_and_exclusion_criteria : logi(0)
..$ sae_implications#Suspend_investigationput_research_on_hold : logi(0)
..$ sae_implications#Terminate_the_research        : logi(0)
..$ sae_implications#Other                         : logi(0)
..$ sae_consequences_other                         : logi(0)
.. ..- attr(*, "label")= chr "Consequences"
..$ sae_remarks                                    : logi(0)
.. ..- attr(*, "label")= chr "Additional remarks"
$ Volume_Assessment      :Classes 'tbl_df', 'tbl' and 'data.frame': 2 obs. of  27 variables:
..$ Record Id            : chr [1:2] "TES005" "TES005"
..$ Report_Creation_Date : POSIXct[1:2], format: "2018-05-29 17:14:08" ...
..$ Report_Name_Custom   : chr [1:2] "Volume Assessment - 29-05-2018 09:14:00" "Volume Assessment - 29-05-2018 09:14:00"
..$ Report_Parent        : chr [1:2] "Study Procedures" "Study Procedures"
..$ v_n                  : num [1:2] 2 1
..$ v_datetime_start     : POSIXct[1:2], format: "2018-05-30 10:00:00" ...
..$ v_datetime_stop      : POSIXct[1:2], format: "2018-05-30 11:16:00" ...
..$ v_duration           : int [1:2] 76 45
..$ v_weight             : num [1:2] 60.5 63.2
..$ v_mesepere#Completed : chr [1:2] "1" "0"
..$ v_mesepere_pi        : num [1:2] 2.3 NA
..$ v_mesepere_cvp       : num [1:2] 5 NA
..$ v_pressurebox#Rep_1_Completed : chr [1:2] "1" "1"
..$ v_pressurebox#Rep_2_Completed : chr [1:2] "1" "1"
..$ v_ortho_sensors#Rodin_Ring    : chr [1:2] "1" "1"
..$ v_ortho_sensors#Rodin_Fingertip : chr [1:2] "1" "1"
..$ v_ortho_sensors#Finapres_NOVA : chr [1:2] "1" "1"

```

```

..$ v_ortho_sensors#Synergen_Ring      : chr [1:2] "0" "0"
..$ v_ortho_positions#Supine_1_Completed : chr [1:2] "1" "1"
..$ v_ortho_positions#Sitting_1_Completed : chr [1:2] "1" "1"
..$ v_ortho_positions#Standing_1_Completed: chr [1:2] "1" "1"
..$ v_ortho_positions#Supine_2_Completed : chr [1:2] "1" "1"
..$ v_ortho_positions#Sitting_2_Completed : chr [1:2] "1" "1"
..$ v_ortho_positions#Standing_2_Completed: chr [1:2] "1" "1"
..$ v_complete                          : chr [1:2] "Yes" "No"
..$ v_comment                           : chr [1:2] "Good pulse" "Couldn't do Mespere, ran out of a
.. ..- attr(*, "label")= chr "Comments"
..$ X__1                                : logi [1:2] NA NA
$ Study variable list                   :Classes 'tbl_df', 'tbl' and 'data.frame': 142 obs. of  18 variables:
..$ Phase name                          : chr [1:142] "Eligibility" "Eligibility" "Eligibility" "Eligibility"
..$ Step name                           : chr [1:142] "Demographics" "Demographics" "Demographics" "Demograph
..$ Step number                         : chr [1:142] "1" "1" "1" "1" ...
..$ Field number                        : chr [1:142] "1" "2" "3" "4" ...
..$ Field type                          : chr [1:142] "string" "date" "datetime" "calculation" ...
..$ Variable name                       : chr [1:142] "pat_hospital_ID" "pat_birthdate" "admit_datetime" "pat
..$ Field label                         : chr [1:142] "Patient Hospital ID" "Date of Birth" "Admission Date a
..$ Optiongroup name                    : chr [1:142] NA NA NA NA ...
..$ Field required                      : chr [1:142] "1" "1" "1" "0" ...
..$ Field min                           : chr [1:142] NA "1947" NA NA ...
..$ Field max                           : chr [1:142] NA "2012" NA NA ...
..$ Field units                         : chr [1:142] NA NA NA "years" ...
..$ Field info                          : chr [1:142] "ID used for the patient within the hospital system." NA
..$ Calculation/summary template: chr [1:142] NA NA NA "getDateDiff('{admit_datetime}','{pat_birthdate
..$ Field hidden                        : chr [1:142] "0" "0" "0" NA ...
..$ Dependency parent name              : chr [1:142] NA NA NA "0" ...
..$ Field dependency operator            : chr [1:142] NA NA NA NA ...
..$ Field dependency value              : chr [1:142] NA NA NA NA ...
$ Report variable list                  :Classes 'tbl_df', 'tbl' and 'data.frame': 84 obs. of  19 variables:
..$ Report name                         : chr [1:84] "Adverse Event" "Adverse Event" "Adverse Event" "Adverse
..$ Step name                           : chr [1:84] "AE" "AE" "AE" "AE" ...
..$ Step number                         : chr [1:84] "1" "1" "1" "1" ...
..$ Field number                        : chr [1:84] "1" "2" "3" "4" ...
..$ Field type                          : chr [1:84] "summary" "string" "datetime" "radio" ...
..$ Variable name                       : chr [1:84] NA "ae_description" "ae_onset" "ae_ongoing" ...
..$ Field label                         : chr [1:84] "Patient ID" "Description" "Onset" "Ongoing?" ...
..$ Optiongroup name                    : chr [1:84] NA NA NA "Yes/No" ...
..$ Field required                      : chr [1:84] "0" "1" "1" "1" ...
..$ Field min                           : chr [1:84] NA NA NA NA ...
..$ Field max                           : chr [1:84] NA NA NA NA ...
..$ Field units                         : chr [1:84] NA NA NA NA ...
..$ Field info                          : chr [1:84] NA "Description of sign or symptom. Enter diagnosis if a
..$ Calculation/summary template: chr [1:84] "{recordId}" NA NA NA ...
..$ Field hidden                        : chr [1:84] "0" "0" "0" "0" ...
..$ Dependency parent name              : chr [1:84] NA NA NA NA ...
..$ Field dependency operator            : chr [1:84] NA NA NA NA ...
..$ Field dependency value              : chr [1:84] NA NA NA NA ...
..$ X__1                                : chr [1:84] NA NA NA NA ...
$ Field options                         :Classes 'tbl_df', 'tbl' and 'data.frame': 158 obs. of  3 variables:
..$ Option group name: chr [1:158] "AE Action" "AE Action" "AE Action" "AE Action" ...
..$ Option name      : chr [1:158] "No action taken" "Symptomatic treatment given" "Use of product(s)
..$ Option value     : chr [1:158] "0" "1" "2" "3" ...

```

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$ factor_group_labels_levels:List of 36
..$ AE Action          :Classes 'tbl_df', 'tbl' and 'data.frame': 5 obs. of 2 variables:
.. ..$ Option name : chr [1:5] "No action taken" "Symptomatic treatment given" "Use of product(s) dis
.. ..$ Option value: chr [1:5] "0" "1" "2" "3" ...
..$ AE Outcome         :Classes 'tbl_df', 'tbl' and 'data.frame': 6 obs. of 2 variables:
.. ..$ Option name : chr [1:6] "Resolved" "Recovered with sequelae" "Ongoing treatment" "Prolonged Ho
.. ..$ Option value: chr [1:6] "1" "2" "3" "4" ...
..$ AE Severity        :Classes 'tbl_df', 'tbl' and 'data.frame': 4 obs. of 2 variables:
.. ..$ Option name : chr [1:4] "Mild" "Moderate" "Severe" "Life-threatening"
.. ..$ Option value: chr [1:4] "1" "2" "3" "4"
..$ Blood Draw Type    :Classes 'tbl_df', 'tbl' and 'data.frame': 3 obs. of 2 variables:
.. ..$ Option name : chr [1:3] "Study Enrollment" "Study Completion" "Other"
.. ..$ Option value: chr [1:3] "1" "2" "3"
..$ Category SAE       :Classes 'tbl_df', 'tbl' and 'data.frame': 4 obs. of 2 variables:
.. ..$ Option name : chr [1:4] "Unexpected" "Related to study procedures" "Related to a medical device
.. ..$ Option value: chr [1:4] "0" "1" "2" "3"
..$ Category_Event_SAE :Classes 'tbl_df', 'tbl' and 'data.frame': 7 obs. of 2 variables:
.. ..$ Option name : chr [1:7] "Fatal" "Life-threatening" "Prolonged hospitalization" "Congenital abn
.. ..$ Option value: chr [1:7] "1" "2" "3" "4" ...
..$ Completed          :Classes 'tbl_df', 'tbl' and 'data.frame': 1 obs. of 2 variables:
.. ..$ Option name : chr "Completed"
.. ..$ Option value: chr "1"
..$ Completion Reason   :Classes 'tbl_df', 'tbl' and 'data.frame': 4 obs. of 2 variables:
.. ..$ Option name : chr [1:4] "Subject-Initiated Withdrawal (Incomplete)" "PI-initiated Withdrawal (
.. ..$ Option value: chr [1:4] "1" "2" "3" "4"
..$ Consent            :Classes 'tbl_df', 'tbl' and 'data.frame': 2 obs. of 2 variables:
.. ..$ Option name : chr [1:2] "Obtained" "Refused"
.. ..$ Option value: chr [1:2] "1" "0"
..$ Diabetes           :Classes 'tbl_df', 'tbl' and 'data.frame': 4 obs. of 2 variables:
.. ..$ Option name : chr [1:4] "Type I" "Type II" "None" "Other"
.. ..$ Option value: chr [1:4] "1" "2" "0" "3"
..$ Fitzpatrick Eye     :Classes 'tbl_df', 'tbl' and 'data.frame': 5 obs. of 2 variables:
.. ..$ Option name : chr [1:5] "Light blue, light gray, or light green" "Blue, gray, or green" "Hazel
.. ..$ Option value: chr [1:5] "0" "1" "2" "3" ...
..$ Fitzpatrick Face    :Classes 'tbl_df', 'tbl' and 'data.frame': 5 obs. of 2 variables:
.. ..$ Option name : chr [1:5] "Very sensitive" "Sensitive" "Normal" "Resistant" ...
.. ..$ Option value: chr [1:5] "0" "1" "2" "3" ...
..$ Fitzpatrick Freckles :Classes 'tbl_df', 'tbl' and 'data.frame': 5 obs. of 2 variables:
.. ..$ Option name : chr [1:5] "Many" "Several" "A few" "Very few" ...
.. ..$ Option value: chr [1:5] "0" "1" "2" "3" ...
..$ Fitzpatrick Hair    :Classes 'tbl_df', 'tbl' and 'data.frame': 5 obs. of 2 variables:
.. ..$ Option name : chr [1:5] "Red or light blonde" "Blonde" "Dark blonde or light brown" "Dark brow
.. ..$ Option value: chr [1:5] "0" "1" "2" "3" ...
..$ Fitzpatrick Skin Color :Classes 'tbl_df', 'tbl' and 'data.frame': 5 obs. of 2 variables:
.. ..$ Option name : chr [1:5] "Ivory white" "Fair or pale" "Fair to beige, with golden undertone" "O
.. ..$ Option value: chr [1:5] "0" "1" "2" "3" ...
..$ Fitzpatrick Skin Type :Classes 'tbl_df', 'tbl' and 'data.frame': 6 obs. of 2 variables:
.. ..$ Option name : chr [1:6] "Type I (0-6 points)" "Type II (7-12 points)" "Type III (13-18 points)
.. ..$ Option value: chr [1:6] "1" "2" "3" "4" ...
..$ Fitzpatrick Sun     :Classes 'tbl_df', 'tbl' and 'data.frame': 5 obs. of 2 variables:
.. ..$ Option name : chr [1:5] "Always burns, blisters, and peels" "Often burns, blisters, and peels"
.. ..$ Option value: chr [1:5] "0" "1" "2" "3" ...
..$ Fitzpatrick Tan Depth :Classes 'tbl_df', 'tbl' and 'data.frame': 5 obs. of 2 variables:
.. ..$ Option name : chr [1:5] "Not at all or very little" "Lightly" "Moderately" "Deeply" ...

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.. ..$ Option value: chr [1:5] "0" "1" "2" "3" ...
..$ Fitzpatrick Tan Frequency :Classes 'tbl_df', 'tbl' and 'data.frame': 5 obs. of 2 variables:
.. ..$ Option name : chr [1:5] "Never, always burns" "Seldom" "Sometimes" "Often" ...
.. ..$ Option value: chr [1:5] "0" "1" "2" "3" ...
..$ Gender :Classes 'tbl_df', 'tbl' and 'data.frame': 2 obs. of 2 variables:
.. ..$ Option name : chr [1:2] "Male" "Female"
.. ..$ Option value: chr [1:2] "1" "2"
..$ Heart Failure Type :Classes 'tbl_df', 'tbl' and 'data.frame': 3 obs. of 2 variables:
.. ..$ Option name : chr [1:3] "Preserved (HFpEF)" "Reduced (HFrEF)" "Unknown"
.. ..$ Option value: chr [1:3] "1" "2" "3"
..$ implications_SAE :Classes 'tbl_df', 'tbl' and 'data.frame': 6 obs. of 2 variables:
.. ..$ Option name : chr [1:6] "None" "Adapt information for participants" "Adjust inclusion and excl
.. ..$ Option value: chr [1:6] "0" "1" "2" "3" ...
..$ Man/Woman :Classes 'tbl_df', 'tbl' and 'data.frame': 2 obs. of 2 variables:
.. ..$ Option name : chr [1:2] "Man" "Woman"
.. ..$ Option value: chr [1:2] "0" "1"
..$ Medications :Classes 'tbl_df', 'tbl' and 'data.frame': 9 obs. of 2 variables:
.. ..$ Option name : chr [1:9] "Beta-Blocker" "ACE Inhibitor" "Aldosterone Inhibitor" "Diuretic" ...
.. ..$ Option value: chr [1:9] "1" "2" "3" "4" ...
..$ Number Of Reps :Classes 'tbl_df', 'tbl' and 'data.frame': 2 obs. of 2 variables:
.. ..$ Option name : chr [1:2] "Rep 1 Completed" "Rep 2 Completed"
.. ..$ Option value: chr [1:2] "1" "2"
..$ NYHA :Classes 'tbl_df', 'tbl' and 'data.frame': 4 obs. of 2 variables:
.. ..$ Option name : chr [1:4] "I" "II" "III" "IV"
.. ..$ Option value: chr [1:4] "1" "2" "3" "4"
..$ Pacemaker :Classes 'tbl_df', 'tbl' and 'data.frame': 4 obs. of 2 variables:
.. ..$ Option name : chr [1:4] "None" "Defibrillator" "Synchronization (CRT)" "Pacing"
.. ..$ Option value: chr [1:4] "0" "1" "2" "3"
..$ PI-withdrawal reason :Classes 'tbl_df', 'tbl' and 'data.frame': 7 obs. of 2 variables:
.. ..$ Option name : chr [1:7] "Failure to follow procedures" "Mechanical ventilation required" "IV 1
.. ..$ Option value: chr [1:7] "1" "2" "3" "4" ...
..$ Positions :Classes 'tbl_df', 'tbl' and 'data.frame': 6 obs. of 2 variables:
.. ..$ Option name : chr [1:6] "Supine 1 Completed" "Sitting 1 Completed" "Standing 1 Completed" "Sup
.. ..$ Option value: chr [1:6] "1" "2" "3" "4" ...
..$ Product Relationship :Classes 'tbl_df', 'tbl' and 'data.frame': 5 obs. of 2 variables:
.. ..$ Option name : chr [1:5] "Not related" "Unlikely to be related" "Possibly related" "Probably re
.. ..$ Option value: chr [1:5] "0" "1" "2" "3" ...
..$ Recovery SAE :Classes 'tbl_df', 'tbl' and 'data.frame': 6 obs. of 2 variables:
.. ..$ Option name : chr [1:6] "Yes" "Is recovering" "No" "Recovered with residual symptoms" ...
.. ..$ Option value: chr [1:6] "0" "1" "2" "3" ...
..$ Sensors :Classes 'tbl_df', 'tbl' and 'data.frame': 4 obs. of 2 variables:
.. ..$ Option name : chr [1:4] "Rodin Ring" "Rodin Fingertip" "Finapres NOVA" "Synergen Ring"
.. ..$ Option value: chr [1:4] "0" "1" "2" "3"
..$ Smoking History :Classes 'tbl_df', 'tbl' and 'data.frame': 3 obs. of 2 variables:
.. ..$ Option name : chr [1:3] "Never smoked" "Past smoker" "Current smoker"
.. ..$ Option value: chr [1:3] "0" "1" "2"
..$ Subject Withdrawal Reasons:Classes 'tbl_df', 'tbl' and 'data.frame': 4 obs. of 2 variables:
.. ..$ Option name : chr [1:4] "Takes too much time / too many tests" "Painful or uncomfortable" "Tes
.. ..$ Option value: chr [1:4] "1" "2" "3" "4"
..$ Yes/No :Classes 'tbl_df', 'tbl' and 'data.frame': 2 obs. of 2 variables:
.. ..$ Option name : chr [1:2] "Yes" "No"
.. ..$ Option value: chr [1:2] "1" "0"
..$ Yes/No/Unkown :Classes 'tbl_df', 'tbl' and 'data.frame': 3 obs. of 2 variables:
.. ..$ Option name : chr [1:3] "Yes" "No" "Unknown"

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.. ..$ Option value: chr [1:3] "1" "0" "2"
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