Package ‘admiralonco’

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The package is an extension package of the 'admiral' package.

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Author  Stefan Bundfuss [aut, cre],
        Ross Farrugia [aut],
        Amit Jain [aut],
        Andrew Smith [aut],
        Teckla Akinyi [aut],
        Samia Kabi [aut],
        Stephen Gormley [aut],
        Hinal Patel [aut],
        Vinh Nguyen [aut],
        Olga Starostecka [aut],
        Uwe Bader [ctb],
        Karl Kennedy [ctb],
        Edoardo Mancini [ctb],
        Matt Marino [ctb],
        Gopi Vegesna [ctb],
        Thomas Neitmann [ctb],
        Annie Yang [ctb],
        Konstantina Koukourikou [ctb],
        Pavan Kumar [ctb],
        Liming Jin [ctb],
        Yirong Cao [ctb],
        Zhang Kangjie [ctb],
        F. Hoffmann-La Roche AG [cph, fnd],
        GlaxoSmithKline LLC [cph, fnd],
        Amgen Inc. [cph, fnd],
        Bristol Myers Squibb [cph, fnd]

Maintainer  Stefan Bundfuss <stefan.bundfuss@roche.com>

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Contents

  admiral_adrs .................................................. 3
  aval_resp ....................................................... 3
  death_event ..................................................... 4
  derive_param_bor ............................................... 5
  derive_param_clinbenefit .................................... 10
  derive_param_confirmed_bor .................................. 13
  derive_param_confirmed_resp ................................ 19
  derive_param_response ....................................... 24
  filter_pd ....................................................... 28
  get_crpr_dataset ............................................. 32
  rsp_y .......................................................... 33
  signal_crpr ................................................... 34

Index  36
**admiral_adrs**

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**Response Analysis Dataset**

**Description**

An example response analysis dataset

**Usage**

`admiral_adrs`

**Format**

An object of class `tbl_df` (inherits from `tbl, data.frame`) with 3694 rows and 75 columns.

**Source**


---

**aval_resp**

**Map Character Response Values to Numeric Values**

**Description**

Map character response values like "PR" or "SD" to numeric values.

**Usage**

`aval_resp(arg)`

**Arguments**

- `arg` Character vector

**Value**

- 1 if `arg` equals "CR",
- 2 if `arg` equals "PR",
- 3 if `arg` equals "SD",
- 4 if `arg` equals "NON-CR/NON-PD",
- 5 if `arg` equals "PD",
- 6 if `arg` equals "NE",
- 7 if `arg` equals "MISSING",
- NA_real_ otherwise
Author(s)
Stefan Bundfuss

Examples

```r
aval_resp(c("CR", "PR", "SD", "NON-CR/NON-PD", "PD", "NE", "MISSING", "ND", NA_character_))
```

---

**death_event**  
Pre-Defined Time-to-Event Source Objects

**Description**
These pre-defined `tte_source` objects can be used as input to `admiral::derive_param_tte()`.

**Usage**

```r
default_event
lastalive_censor
pd_event
laster_censor
rand_censor
trts_censor
```

**Details**
To see the definition of the various objects simply print the object in the R console, e.g. `print(death_event)`.
For details of how to use these objects please refer to `admiral::derive_param_tte()`.
Printing an object will display input dataset_name, filter (if applicable), date variable, and appropriate values for `EVNTDESC`, `CNSDTDSC`, `SRCDOM`, `SRCVAR`, and `SRCSEQ`.

**See Also**

`admiral::derive_param_tte()`, `admiral::tte_source()`, `admiral::event_source()`, `admiral::censor_source()`

**Examples**

```r
# This shows the definition of all pre-defined 'tte_source' objects that ship
# with {admiralonco}
for (obj in admiral::list_tte_source_objects(package = "admiralonco")$object) {
  cat(obj, "\n")
  print(get(obj))
  cat("\n")
}
```
derive_param_bor

Add a Parameter for Best Overall Response (without confirmation)

Description

[Superseded] The derive_param_bor() function has been superseded in favor of derive_extreme_event(). Adds a parameter for best overall response, without confirmation, optionally up to first progressive disease.

Usage

derive_param_bor(
    dataset,
    dataset_adsl,
    filter_source,
    source_pd = NULL,
    source_datasets = NULL,
    reference_date,
    ref_start_window,
    missing_as_ne = FALSE,
    aval_fun,
    set_values_to,
    subject_keys = get_admiral_option("subject_keys")
)

Arguments

dataset The input dataframe from which the Best Overall Response will be derived from and added to.

The columns PARAMCD, ADT, and AVALCand the columns specified in subject_keys and reference_date are expected. After applying filter_source and/or source_pd the column ADT and the columns specified by subject_keys must be a unique key of the dataframe.

Permitted Values: a data.frame() object

dataset_adsl ADSL input dataset.

The columns specified in the subject_keys argument are expected. For each subject in the passed dataset a new row is added to the input dataset. Columns in dataset_adsl that also appear in dataset will be populated with the appropriate subject-specific value for these new rows.

Permitted Values: a data.frame() object

filter_source Filter to be applied to dataset to derive the Best Overall Response

source_pd Date of first progressive disease (PD)

If the parameter is specified, the observations of the input dataset for deriving the new parameter are restricted to observations up to the specified date. Observations at the specified date are included. For subjects without first PD date all observations are take into account.
**Permitted Values:** a date_source object (see date_source() for details)

**source_datasets**

Source dataframe to be used to calculate the first PD date

A named list of dataframes is expected (although for BOR) only one dataframe is needed. It links the dataset_name from source_pd with an existing dataframe. For example if source_pd = pd_date with

```r
pd_date <- date_source(
  dataset_name = "adrs",
  date = ADT,
  filter = PARAMCD == PD
)
```

and the actual response dataframe in the script is myadrs, source_datasets = list(adrs = myadrs) should be specified.

**reference_date**

Reference date

The reference date is used along with ref_start_window to determine those records that occur before and after ADT (see Details section for further information). Usually it is treatment start date (TRTSDT) or randomization date (RANDDT).

*Permitted Values:* a numeric date column

**ref_start_window**

Stable disease time window

The ref_start_window is used along with reference_date to determine those records that occur before and after ADT (i.e. for a record determine whether ADT >= reference_date + ref_start_window), see Details section for further information.

*Permitted Values:* a non-negative numeric scalar

**missing_as_ne**

Consider no assessments as "NE"?

If the argument is set to TRUE, the response is set to "NE" for subjects in dataset_adsl without an assessment in the dataset after the filter has been applied. Otherwise, the response is set to "MISSING" for these subjects.

*Permitted Values:* a logical scalar

**aval_fun**

*Deprecated*, please use set_values_to instead.

Function to map character analysis value (AVALC) to numeric analysis value (AVAL)

The (first) argument of the function must expect a character vector and the function must return a numeric vector.

**set_values_to**

New columns to set

A named list returned by exprs() defining the columns to be set for the new parameter, e.g. exprs(PARAMCD = "BOR", PARAM = "Best Overall Response") is expected. The values must be symbols, character strings, numeric values, or NA.

**subject_keys**

Columns to uniquely identify a subject

*Permitted Values:* A list of symbols created using exprs().
**derive_param_bor**

**Details**

Calculates the best overall response (BOR) parameter, as detailed below.

Records after PD can be removed using the `source_pd` and `source_datasets` arguments.

**Note:**

1. All CR, PR and PD response records are considered for Best Overall Response.
2. All SD or NON-CR/NON-PD records where ADT >= reference_date + ref_start_window are also considered for Best Overall Response.
3. Subjects with **ONLY** an SD or NON-CR/NON-PD records where ADT < reference_date + ref_start_window are assigned a Best Overall Response of NE.
4. The Best Response, from the records in steps 1 to 3, is then selected in the following order of preference: CR, PR, SD, NON-CR/NON-PD, PD, NE, MISSING
5. The `AVAL` column is added and set using the `aval_fun(AVALC)` function
6. The columns specified by the `set_values_to` parameter and records are added to the dataframe passed into the `dataset` argument

**Value**

The dataframe passed in the `dataset` argument with additional columns and/or rows as set in the `set_values_to` argument.

**Author(s)**

Stephen Gormley

**See Also**

Other superseded: `derive_param_clinbenefit()`, `derive_param_confirmed_bor()`, `derive_param_confirmed_resp()`, `derive_param_response()`, `filter_pd()`

**Examples**

```r
library(magrittr)
library(dplyr)
library(tibble)
library(lubridate)
library(admiral)

# Create ADSL dataset
```
derive_param_bor

adsl <- tribble(
  ~USUBJID, ~TRTSDTC,
  "1", "2020-01-01",
  "2", "2019-12-12",
  "3", "2019-11-11",
  "4", "2019-12-30",
  "5", "2020-01-01",
  "6", "2020-02-02",
  "7", "2020-02-02",
  "8", "2020-04-01"
) %>%
  mutate(
    TRTSDT = ymd(TRTSDTC),
    STUDYID = "XX1234"
  )

# Create ADRS dataset
ovr_obs <- tribble(
  ~USUBJID, ~ADTC, ~AVALC, ~ANL01FL,
  "1", "2020-01-01", "PR", "Y",
  "1", "2020-02-01", "CR", "Y",
  "1", "2020-02-16", "NE", "Y",
  "1", "2020-03-01", "CR", "Y",
  "1", "2020-04-01", "SD", "Y",
  "2", "2020-01-01", "SD", "Y",
  "2", "2020-02-01", "PR", "Y",
  "2", "2020-03-01", "SD", "Y",
  "2", "2020-03-13", "CR", "Y",
  "3", "2019-11-12", "CR", "Y",
  "3", "2019-12-02", "CR", "Y",
  "3", "2020-01-01", "SD", "Y",
  "4", "2020-01-01", "PR", "Y",
  "4", "2020-03-01", "SD", "N",
  "4", "2020-04-01", "SD", "Y",
  "4", "2020-05-01", "PR", "Y",
  "4", "2020-05-15", "NON-CR/NON-PD", "Y",
  "5", "2020-01-01", "PR", "Y",
  "5", "2020-01-10", "SD", "Y",
  "5", "2020-01-20", "PR", "Y",
  "5", "2020-05-15", "NON-CR/NON-PD", "Y",
  "6", "2020-02-06", "PR", "Y",
  "6", "2020-02-16", "CR", "Y",
  "6", "2020-03-30", "PR", "Y",
  "6", "2020-04-12", "PD", "Y",
  "6", "2020-05-01", "CR", "Y",
  "6", "2020-06-01", "CR", "Y",
  "7", "2020-02-06", "PR", "Y",
  "7", "2020-02-16", "CR", "Y",
  "7", "2020-04-01", "NE", "N"
) %>%
  mutate(PARAMCD = "OVR")

drug_obs <-
derive_param_bor

bind_rows(tribble(~USUBJID, ~ADTC, ~AVALC, 
   "2", "2020-03-01", "Y", 
   "4", "2020-02-01", "Y") 
) %>%
  mutate(PARAMCD = "PD")

adrs <- bind_rows(ovr_obs, pd_obs) %>%
  mutate(
    ADT = ymd(ADTC),
    STUDYID = "XX1234"
  ) %>%
  select(-ADTC) %>%
  derive_vars_merged(
    dataset_add = adsl,
    by_vars = exprs(STUDYID, USUBJID),
    new_vars = exprs(TRTSDT)
  )

pd_date <- date_source(
  dataset_name = "adrs",
  date = ADT,
  filter = PARAMCD == "PD"
)

aval_fun_pass <- function(arg) {
  case_when(
    arg == "CR" ~ 11,
    arg == "PR" ~ 22,
    arg == "SD" ~ 33,
    arg == "NON-CR/NON-PD" ~ 44,
    arg == "PD" ~ 55,
    arg == "NE" ~ 66,
    arg == "MISSING" ~ 77,
    TRUE ~ NA_real_
  )
}

# Derive best overall response parameter
derive_param_bor(
  adrs,
  dataset_adsl = adsl,
  filter_source = PARAMCD == "OVR" & ANL01FL == "Y",
  source_pd = pd_date,
  source_datasets = list(adrs = adrs),
  aval_fun = aval_fun_pass,
  reference_date = TRTSDT,
  ref_start_window = 28,
  set_values_to = exprs(
    PARAMCD = "BOR",
    PARAM = "Best Overall Response"
  )
) %>%
derive_param_clinbenefit

Filtering

filter(PARAMCD == "BOR")

---

derive_param_clinbenefit

*Adds a Parameter for Clinical Benefit*

---

**Description**

*Superseded* The `derive_param_clinbenefit()` function has been superseded in favor of `derive_extreme_event()`. Adds a parameter for clinical benefit/disease control

**Usage**

```r
derive_param_clinbenefit(
  dataset,
  dataset_adsl,
  filter_source,
  source_resp,
  source_pd = NULL,
  source_datasets,
  reference_date,
  ref_start_window,
  aval_fun,
  clinben_vals = c("CR", "PR", "SD", "NON-CR/NON-PD"),
  set_values_to,
  subject_keys = get_admiral_option("subject_keys")
)
```

**Arguments**

- **dataset**: Input dataset. This is the dataset to which the clinical benefit rate parameter will be added. The variables `PARAMCD`, `AVALC`, `ADT`, and those specified by the `subject_keys` parameter and the `reference_date` parameter are expected. After applying `filter_source` and/or `source_pd` the variable `ADT` and the variables specified by `subject_keys` must be a unique key of the dataset.

- **dataset_adsl**: ADSL input dataset. The variables specified for `subject_keys` is expected. For each subject of the specified dataset a new observation is added to the input dataset. Variables in `dataset_adsl` that also appear in `dataset` will be populated with the appropriate subject-specific value for these new observations.

- **filter_source**: Filter condition in dataset that represents records for overall disease response assessment for a subject at a given timepoint, e.g. `PARAMCD == "OVR"` or `PARAMCD == "OVRLRESP"`.

- **source RESP**: A `date_source` object specifying the dataset, date variable, and filter condition used to identify response status.
source_pd  A date_source object specifying the dataset, date variable, and filter condition used to identify disease progression.

source_datasets  A named list of data sets is expected. The list must contain the names provided by the dataset_name field of the date_source() objects specified for source_pd and source_resp.

reference_date  Name of variable representing the index date for ref_start_window. A variable providing a date. An unquoted symbol is expected.

ref_start_window  Integer representing number of days from reference_date that must elapse before an evaluable non-PD assessment counts toward determining clinical benefit.

aval_fun  Deprecated, please use set_values_to instead. Function to map character analysis value (AVALC) to numeric analysis value (AVAL). The (first) argument of the function must expect a character vector and the function must return a numeric vector.

clinben_vals  A vector of response values to be considered when determining clinical benefit.

set_values_to  A named list returned by exprs() containing new variables and their static value to be populated for the clinical benefit rate parameter records, e.g. exprs(PARAMCD = "CBR", PARAM = "Clinical Benefit Rate").

subject_keys  A named list returned by exprs() containing variables used to uniquely identify subjects.

Details

Clinical benefit/disease control is first identified by looking for subjects having response status, and then derived for subjects that have at least one evaluable non-PD response assessment prior to first PD (Progressive Disease) (i.e., responses inclusive of CR, PR, SD, and NON-CR/NON-PD) and after a specified amount of time from a reference date (ref_start_window).

Note: The user input values they wish to include when determining clinical benefit using the argument clinben_vals. The default values for this are CR, PR, SD, and NON-CR/NON-PD, as listed above. In the below example, eligible values be limited to CR and PR.

Example: clinben_vals <- c("CR", "PR")

1. The input dataset (dataset) is restricted to the observations matching filter_source and to observations before or at the date specified by source_pd.

2. This dataset is further restricted to include user-generated response assessments from clinben_vals or include response assessments of CR, PR, SD, and NON-CR/NON-PD, exclude missing response assessments, and exclude those less than ref_start_window after reference_date. The earliest assessment by ADT is then selected.

3. The dataset identified by dataset in source_resp is restricted according to its filter argument. The variable corresponding to the date parameter of source_resp is considered together with ADT from the previous step.

4. For the observations being added to dataset, ADT is set to the earlier of the first assessment date representing an evaluable non-PD assessment prior to first PD, or the date representing the start of response.
5. For the observations being added to dataset, AVALC is set to
   - Y for those subjects in the dataset meeting the criteria for clinical benefit above
   - N for subjects not meeting the clinical benefit criteria in dataset or the dataset identified in source_resp
   - N for subjects present in dataset_adsl but not present in dataset or the dataset identified in source_resp.

6. AVAL is derived using AVALC as input to the function specified in aval_fun.

7. The variables specified by set_values_to are added to the new observations with values equal to the values specified in the same.

8. The new observations are added to dataset. Variables held in common between dataset and dataset_adsl are kept for the new observations, and are populated with their values from dataset_adsl.

Value

The input dataset with a new parameter for clinical benefit

Author(s)

Andrew Smith

See Also

Other superseded: derive_param_bor(), derive_param_confirmed_bor(), derive_param_confirmed_resp(), derive_param_response(), filter_pd()

Examples

library(lubridate)
library(dplyr)
library(admiral)

adsl <- tibble::tribble(
  ~USUBJID, ~TRTSDT, ~USUBJID, ~TRTSDT, ~USUBJID, ~TRTSDT, ~USUBJID, ~TRTSDT,
  "01", ymd("2020-01-14"), "01", ymd("2020-01-14"), "01", ymd("2020-01-14"),
  "02", ymd("2021-02-16"), "02", ymd("2021-02-16"), "02", ymd("2021-02-16"),
  "03", ymd("2021-03-09"), "03", ymd("2021-03-09"), "03", ymd("2021-03-09"),
  "04", ymd("2021-04-21")
) %>%
  mutate(STUDYID = "AB42")

adrs <- tibble::tribble(
  ~USUBJID, ~PARAMCD, ~AVALC, ~ADT, ~USUBJID, ~PARAMCD, ~AVALC, ~ADT, ~USUBJID, ~PARAMCD, ~AVALC, ~ADT,
  "01", "RSP", "Y", ymd("2021-03-14"), "01", "RSP", "Y", ymd("2021-03-14"), "01", "RSP", "Y", ymd("2021-03-14"),
  "03", "RSP", "N", NA, "03", "RSP", "N", NA, "03", "RSP", "N", NA,
  "04", "RSP", "N", NA, "04", "RSP", "N", NA, "04", "RSP", "N", NA,
  "01", "PD", "N", NA, "01", "PD", "N", NA, "01", "PD", "N", NA,
  "03", "PD", "N", NA, "03", "PD", "N", NA, "03", "PD", "N", NA,
```
"04",  "PD",  "N",  NA,
"01",  "OVR",  "SD",  ymd("2020-03-14"),
"01",  "OVR",  "PR",  ymd("2021-04-13"),
"02",  "OVR",  "PR",  ymd("2021-04-08"),
"02",  "OVR",  "PD",  ymd("2021-05-07"),
"02",  "OVR",  "CR",  ymd("2021-06-20"),
"03",  "OVR",  "SD",  ymd("2021-03-30"),
"04",  "OVR",  "NE",  ymd("2021-05-21"),
"04",  "OVR",  "NA",  ymd("2021-06-30"),
"04",  "OVR",  "NE",  ymd("2021-07-24"),
"04",  "OVR",  "ND",  ymd("2021-09-04"),
```
**Description**

**[Superseded]** The `derive_param_confirmed_bor()` function has been superseded in favor of `derive_extreme_event()`.

Adds a parameter for confirmed best overall response (BOR)

**Usage**

```r
derive_param_confirmed_bor(
    dataset,
    dataset_adsl,
    filter_source,
    source_pd = NULL,
    source_datasets = NULL,
    reference_date,
    ref_start_window,
    ref_confirm,
    max_nr_ne = 1,
    accept_sd = FALSE,
    missing_as_ne = FALSE,
    aval_fun,
    set_values_to,
    subject_keys = get_admiral_option("subject_keys")
)
```

**Arguments**

- **dataset**
  Input dataset
  
  The PARAMCD, ADT, and AVALC variables and the variables specified by `subject_keys` and `reference_date` are expected. After applying `filter_source` and/or `source_pd` the variable ADT and the variables specified by `subject_keys` must be a unique key of the dataset.

- **dataset_adsl**
  ADSL input dataset
  
  The variables specified for `subject_keys` are expected. For each subject of the specified dataset a new observation is added to the input dataset.

- **filter_source**
  Source filter
  
  All observations in `dataset_source` fulfilling the specified condition are considered for deriving the confirmed best overall response.

- **source_pd**
  Date of first progressive disease (PD)
  
  If the parameter is specified, the observations of the input dataset for deriving the new parameter are restricted to observations up to the specified date. Observations at the specified date are included. For subjects without first PD date all observations are taken into account.
  
  *Permitted Values:* a `date_source` object (see `admiral::date_source()` for details)

- **source_datasets**
  Source dataset for the first PD date
derive_param_confirmed_bor

A named list of datasets is expected. It links the dataset_name from source_pd with an existing dataset. For example if source_pd = pd_date with

```r
pd_date <- date_source(
    dataset_name = "adrs",
    date = ADT,
    filter = PARAMCD == PD
)
```
and the actual response dataset in the script is myadrs, source_datasets = list(adrs = myadrs) should be specified.

**reference_date**

Reference date

The reference date is used for the derivation of "SD" and "NON-CR/NON-PD" response (see "Details" section). Usually it is treatment start date (TRTSDT) or randomization date (RANDDT).

*Permitted Values:* a numeric date variable

**ref_start_window**

Stable disease time window

Assessments at least the specified number of days after the reference date (i.e. where ADT >= reference_date + ref_start_window) with response "CR", "PR", "SD", or "NON-CR/NON-PD" are considered for "SD" or "NON-CR/NON-PD" response.

*Permitted Values:* a non-negative numeric scalar

**ref_confirm**

Minimum time period for confirmation

The assessment and the confirmatory assessment for "CR" and "PR" have to be at least the specified number of days apart.

**max_nr_ne**

The specified number of "NE" assessments between the assessment and the confirmatory assessment for "CR" and "PR" response is accepted.

*Permitted Values:* a non-negative numeric scalar

**accept_sd**

Accept "SD" for "PR"?

If the argument is set to TRUE, one "SD" assessment between the assessment and the confirmatory assessment for "PR" response is accepted. Otherwise, no "SD" assessment must occur between the two assessments.

*Permitted Values:* a logical scalar

**missing_as_ne**

Consider no assessments as "NE"?

If the argument is set to TRUE, the response is set to "NE" for subjects without an assessment in the input dataset. Otherwise, the response is set to "MISSING" for these subjects.

*Permitted Values:* a logical scalar

**aval_fun**

Deprecated, please use set_values_to instead.

Function to map character analysis value (AVALC) to numeric analysis value (AVAL)

The (first) argument of the function must expect a character vector and the function must return a numeric vector.
derive_param_confirmed_bor

set_values_to  Variables to set
A named list returned by `exprs()` defining the variables to be set for the new parameter, e.g. `exprs(PARAMCD = "CBOR", PARAM = "Confirmed Best Overall Response")` is expected. The values must be symbols, character strings, numeric values, or NA.

subject_keys  Variables to uniquely identify a subject
A list of symbols created using `exprs()` is expected.

Details
1. The input dataset (dataset) is restricted to the observations matching `filter_source` and to observations before or at the date specified by `source_pd`.
2. The following potential confirmed responses are selected from the restricted input dataset:
   • "CR": An assessment is considered as complete response (CR) if
     - `AVALC == "CR"`,
     - there is a confirmatory assessment with `AVALC == "CR"` at least `ref_confirm` days after the assessment,
     - all assessments between the assessment and the confirmatory assessment are "CR" or "NE", and
     - there are at most `max_nr_ne "NE"` assessments between the assessment and the confirmatory assessment.
   • "PR": An assessment is considered as partial response (PR) if
     - `AVALC == "PR"`,
     - there is a confirmatory assessment with `AVALC %in% c("CR", "PR")` at least `ref_confirm` days after the assessment,
     - all assessments between the assessment and the confirmatory assessment are "CR", "PR", "SD", or "NE",
     - there is no "PR" assessment after a "CR" assessment in the confirmation period,
     - there are at most `max_nr_ne "NE"` assessments between the assessment and the confirmatory assessment, and
     - if the `accept_sd` argument is set to TRUE, one "SD" assessment in the confirmation period is accepted. Otherwise, no "SD" assessment must occur within the confirmation period.
   • "SD": An assessment is considered as stable disease (SD) if
     - `AVALC %in% c("CR", "PR", "SD")` and
     - the assessment is at least `ref_start_window` days after `reference_date`.
   • "NON-CR/NON-PD": An assessment is considered as NON-CR/NON-PD if
     - `AVALC = "NON-CR/NON-PD"` and
     - the assessment is at least `ref_start_window` days after `reference_date`.
   • "PD": An assessment is considered as progressive disease (PD) if `AVALC == "PD"`.
   • "NE": An assessment is considered as not estimable (NE) if
     - `AVALC == "NE"` or
     - `AVALC %in% c("CR", "PR", "SD", "NON-CR/NON-PD")` and the assessment is less than `ref_start_window` days after `reference_date`. 


derive_param_confirmed_bor

• "ND": An assessment is considered as not done (ND) if AVALC == "ND".
• "MISSING": An assessment is considered as missing (MISSING) if a subject has no observation in the input dataset.

If the missing_as_ne argument is set to TRUE, AVALC is set to "NE" for these subjects.

3. For each subject the best response as derived in the previous step is selected, where "CR" is best and "MISSING" is worst in the order above. If the best response is not unique, the first one (with respect to ADT) is selected. If the selected record is from the input dataset, all variables are kept. If the selected record is from dataset_adsl, all variables which are in both dataset and dataset_adsl are kept.

4. The AVAL variable is added and set to aval_fun(AVALC).

5. The variables specified by the set_values_to parameter are added to the new observations.

6. The new observations are added to input dataset.

Value

The input dataset with a new parameter for confirmed best overall response

Author(s)

Stefan Bundfuss

See Also

Other superseded: derive_param_bor(), derive_param_clinbenefit(), derive_param_confirmed_resp(), derive_param_response(), filter_pd()

Examples

library(dplyr)
library(lubridate)
library(admiral)

# Create ADSL dataset
adsl <- tibble::tribble(
  ~USUBJID, ~TRTSDTC,
  "1", "2020-01-01",
  "2", "2019-12-12",
  "3", "2019-11-11",
  "4", "2019-12-30",
  "5", "2020-01-01",
  "6", "2020-02-02",
  "7", "2020-02-02",
  "8", "2020-04-01",
  "9", "2020-03-01"
) %>%
mutable(
  TRTSDT = ymd(TRTSDTC),
  STUDYID = "XX1234"
)
# Create ADRS dataset

```r
ero_v <- tibble::tribble(~USUBJID, ~ADTC, ~AVALC, 
  "1", "2020-01-01", "PR", 
  "1", "2020-02-01", "CR", 
  "1", "2020-02-16", "NE", 
  "1", "2020-03-01", "CR", 
  "1", "2020-04-01", "SD", 
  "2", "2020-01-01", "SD", 
  "2", "2020-02-01", "PR", 
  "2", "2020-03-01", "SD", 
  "2", "2020-03-13", "CR", 
  "3", "2019-11-12", "CR", 
  "3", "2019-12-02", "CR", 
  "3", "2020-01-01", "SD", 
  "4", "2020-01-01", "PR", 
  "4", "2020-03-01", "SD", 
  "4", "2020-04-01", "SD", 
  "4", "2020-05-01", "PR", 
  "4", "2020-05-15", "NON-CR/NON-PD", 
  "5", "2020-01-01", "PR", 
  "5", "2020-01-10", "SD", 
  "5", "2020-01-20", "PR", 
  "5", "2020-05-15", "NON-CR/NON-PD", 
  "6", "2020-02-06", "PR", 
  "6", "2020-02-16", "CR", 
  "6", "2020-03-30", "PR", 
  "6", "2020-04-12", "PD", 
  "6", "2020-05-01", "CR", 
  "6", "2020-06-01", "PD", 
  "7", "2020-02-06", "PR", 
  "7", "2020-02-16", "CR", 
  "7", "2020-04-01", "NE", 
  "9", "2020-03-16", "CR", 
  "9", "2020-04-01", "NE", 
  "9", "2020-04-16", "NE", 
  "9", "2020-05-01", "CR": 
  ) %>%
  mutate(PARAMCD = "OVR", ANL01FL = "Y")
```

```r
pd_v <-
  bind_rows(tibble::tribble(~USUBJID, ~ADTC, ~AVALC, 
    "6", "2020-04-12", "Y", 
  ) %>%
  mutate(PARAMCD = "PD", ANL01FL = "Y"))
```

```r
adrs <- bind_rows(ovo, pd_v) %>%
  mutate(
    ADT = ymd(ADTC),
    STUDYID = "XX1234"
  ) %>%
  select(-ADTC)
```
```r
derive_vars_merged(
    dataset_add = adsl,
    by_vars = exprs(STUDYID, USUBJID),
    new_vars = exprs(TRTSDT)
)

pd_date <- date_source(
    dataset_name = "adrs",
    date = ADT,
    filter = PARAMCD == "PD" & ANL01FL == "Y"
)

# Derive confirmed best overall response parameter
derive_param_confirmed_bor(
    adrs,
    dataset_adsl = adsl,
    filter_source = PARAMCD == "OVR" & ANL01FL == "Y",
    source_pd = pd_date,
    source_datasets = list(adrs = adrs),
    reference_date = TRTSDT,
    ref_start_window = 28,
    ref_confirm = 28,
    set_values_to = exprs(
        PARAMCD = "CBOR",
        PARAM = "Best Confirmed Overall Response by Investigator"
    )
) %>%
  filter(PARAMCD == "CBOR")

# Derive confirmed best overall response parameter (accepting SD for PR,
# accept two NEs, and considering missings as NE)
derive_param_confirmed_bor(
    adrs,
    dataset_adsl = adsl,
    filter_source = PARAMCD == "OVR" & ANL01FL == "Y",
    source_pd = pd_date,
    source_datasets = list(adrs = adrs),
    reference_date = TRTSDT,
    ref_start_window = 28,
    ref_confirm = 28,
    max_nr_ne = 2,
    accept_sd = TRUE,
    missing_as_ne = TRUE,
    set_values_to = exprs(
        PARAMCD = "CBOR",
        PARAM = "Best Confirmed Overall Response by Investigator"
    )
) %>%
  filter(PARAMCD == "CBOR")
```
derive_param_confirmed_resp

Adds a Parameter for Confirmed Response

Description

[Superseded] The derive_param_confirmed_resp() function has been superseded in favor of derive_extreme_event().

Adds a parameter for confirmed response

Usage

derive_param_confirmed_resp(
    dataset,
    dataset_adsl,
    filter_source,
    source_pd = NULL,
    source_datasets = NULL,
    ref_confirm,
    max_nr_ne = 1,
    accept_sd = FALSE,
    aval_fun,
    set_values_to,
    subject_keys = get_admiral_option("subject_keys")
)

Arguments

dataset Input dataset
The PARAMCD, ADT, and AVALC variables and the variables specified by subject_keys and reference_date are expected.

After applying filter_source and/or source_pd the variable ADT and the variables specified by subject_keys must be a unique key of the dataset.

dataset_adsl ADSL input dataset
The variables specified for subject_keys are expected. For each subject of the specified dataset a new observation is added to the input dataset.

filter_source Source filter
All observations in dataset_source fulfilling the specified condition are considered for deriving the confirmed response.

source_pd Date of first progressive disease (PD)
If the parameter is specified, the observations of the input dataset for deriving the new parameter are restricted to observations up to the specified date. Observations at the specified date are included. For subjects without first PD date all observations are take into account.

Permitted Values: a date_source object (see admiral::date_source() for details)
source_datasets
Source dataset for the first PD date
A named list of datasets is expected. It links the dataset_name from source_pd with an existing dataset.
For example if source_pd = pd_date with

```r
pd_date <- date_source(
    dataset_name = "adrs",
    date = ADT,
    filter = PARAMCD == PD
)
```

and the actual response dataset in the script is myadrs, source_datasets = list(adrs = myadrs) should be specified.

ref_confirm Minimum time period for confirmation
The assessment and the confirmatory assessment for "CR" and "PR" have to be at least the specified number of days apart.

max_nr_ne The specified number of "NE" assessments between the assessment and the confirmatory assessment for "CR" and "PR" response is accepted.

Permitted Values: a non-negative numeric scalar

accept_sd Accept "SD" for "PR"?
If the argument is set to TRUE, one "SD" assessment between the assessment and the confirmatory assessment for "PR" response is accepted. Otherwise, no "SD" assessment must occur between the two assessments.

Permitted Values: a logical scalar

aval_fun Deprecated, please use set_values_to instead.
Function to map character analysis value (AVALC) to numeric analysis value (AVAL)
The (first) argument of the function must expect a character vector and the function must return a numeric vector.

set_values_to Variables to set
A named list returned by exprs() defining the variables to be set for the new parameter, e.g. exprs(PARAMCD = "CRSP", PARAM = "Confirmed Response") is expected. The values must be symbols, character strings, numeric values, or NA.

subject_keys Variables to uniquely identify a subject
A list of symbols created using exprs() is expected.

Details

1. The input dataset (dataset) is restricted to the observations matching filter_source and to observations before or at the date specified by source_pd.
2. A subject is considered as responder if there is at least one observation in the restricted dataset with
   - AVALC == "CR",
• there is a confirmatory assessment with \texttt{AVALC == "CR"} at least \texttt{ref\_confirm} days after the assessment,
• all assessments between the assessment and the confirmatory assessment are "CR" or "NE", and
• there are at most \texttt{max\_nr\_ne} "NE" assessments between the assessment and the confirmatory assessment.

or at least one observation with

• \texttt{AVALC == "PR"},
• there is a confirmatory assessment with \texttt{AVALC \in\{"CR", "PR"\}} at least \texttt{ref\_confirm} days after the assessment,
• all assessments between the assessment and the confirmatory assessment are "CR", "PR", "SD", or "NE",
• there is no "PR" assessment after a "CR" assessment in the confirmation period,
• there are at most \texttt{max\_nr\_ne} "NE" assessments between the assessment and the confirmatory assessment,
• if the \texttt{accept\_sd} argument is set to \texttt{TRUE}, one "SD" assessment in the confirmation period is accepted. Otherwise, no "SD" assessment must occur within the confirmation period.

3. For responders \texttt{AVALC} is set to "Y" and \texttt{ADT} to the first date where the response criteria are fulfilled. For all other subjects in dataset \texttt{ads1} \texttt{AVALC} is set to "N" and \texttt{ADT} to \texttt{NA}.

4. The \texttt{AVAL} variable is added and set to \texttt{aval\_fun(AVALC)}.

5. The variables specified by the \texttt{set\_values\_to} parameter are added to the new observations.

6. The new observations are added to input dataset.

\textbf{Value}

The input dataset with a new parameter for confirmed response

\textbf{Author(s)}

Stefan Bundfuss

\textbf{See Also}

Other superseded: \texttt{derive\_param\_bor()}, \texttt{derive\_param\_clinbenefit()}, \texttt{derive\_param\_confirmed\_bor()}, \texttt{derive\_param\_response()}, \texttt{filter\_pd()}

\textbf{Examples}

library(dplyr)
library(adir)

# Create ADSL dataset
ads1 <- tibble::tribble(  ~USUBJID, ~TRTSDTC,
    "1", "2020-01-01",
    "2", "2019-12-12",
    "3", "2019-11-11",
)
```r
# Create ADRS dataset
ovr_obs <- tibble::tribble(~USUBJID, ~ADTC, ~AVALC,
    '1', '2020-01-01', 'PR',
    '1', '2020-02-01', 'CR',
    '1', '2020-02-16', 'NE',
    '1', '2020-03-01', 'CR',
    '1', '2020-04-01', 'SD',
    '2', '2020-01-01', 'SD',
    '2', '2020-02-01', 'PR',
    '2', '2020-03-01', 'SD',
    '2', '2020-03-13', 'CR',
    '3', '2019-11-12', 'CR',
    '3', '2019-12-02', 'CR',
    '3', '2020-01-01', 'SD',
    '4', '2020-01-01', 'PR',
    '4', '2020-03-01', 'SD',
    '4', '2020-04-01', 'SD',
    '4', '2020-05-01', 'PR',
    '4', '2020-05-15', 'NON-CR/NON-PD',
    '5', '2020-01-01', 'PR',
    '5', '2020-01-10', 'SD',
    '5', '2020-01-20', 'PR',
    '5', '2020-05-15', 'NON-CR/NON-PD',
    '6', '2020-02-06', 'PR',
    '6', '2020-02-16', 'CR',
    '6', '2020-03-30', 'PR',
    '6', '2020-04-12', 'PD',
    '6', '2020-05-01', 'CR',
    '6', '2020-06-01', 'CR',
    '7', '2020-02-06', 'PR',
    '7', '2020-02-16', 'CR',
    '7', '2020-04-01', 'NE',
    '9', '2020-03-16', 'CR',
    '9', '2020-04-01', 'NE',
    '9', '2020-04-16', 'NE',
    '9', '2020-05-01', 'CR')

mutate(PARAMCD = "OVR", ANL01FL = "Y")

pd_obs <-
    bind_rows(tibble::tribble(}
```
derive_param_response

```r
-~USUBJID, ~ADTC, ~AVALC,
  "6", "2020-04-12", "Y"
) %>%
  mutate(PARAMCD = "PD", ANL01FL = "Y")

adrs <- bind_rows(ovr_obs, pd_obs) %>%
  mutate(
    ADT = lubridate::ymd(ADTC),
    STUDYID = "XX1234"
  ) %>%
  select(-ADTC)

pd_date <- date_source(
  dataset_name = "adrs",
  date = ADT,
  filter = PARAMCD == "PD" & ANL01FL == "Y"
)

# Derive confirmed response parameter
derive_param_confirmed_resp(
  adrs,
  dataset_adsl = adsl,
  filter_source = PARAMCD == "OVR" & ANL01FL == "Y",
  source_pd = pd_date,
  source_datasets = list(adrs = adrs),
  ref_confirm = 28,
  set_values_to = exprs(
    PARAMCD = "CRSP",
    PARAM = "Confirmed Response by Investigator"
  )
) %>%
  filter(PARAMCD == "CRSP")

# Derive confirmed response parameter (accepting SD for PR and two NEs)
derive_param_confirmed_resp(
  adrs,
  dataset_adsl = adsl,
  filter_source = PARAMCD == "OVR" & ANL01FL == "Y",
  source_pd = pd_date,
  source_datasets = list(adrs = adrs),
  ref_confirm = 28,
  max_nr_ne = 2,
  accept_sd = TRUE,
  set_values_to = exprs(
    PARAMCD = "CRSP",
    PARAM = "Confirmed Response by Investigator"
  )
) %>%
  filter(PARAMCD == "CRSP")
```
derive_param_response  Adds a Parameter Indicating If a Subject Had a Response before Progressive Disease

**Description**

[Superseded] The derive_param_response() function has been superseded in favor of derive_extreme_event().

Adds a parameter indicating if a response has been observed. If a response has been observed, AVALC is set to "Y", AVAL to 1 and ADT is set to the first date when a response has been observed. If a response has not been observed, AVALC is set to "N", AVAL to 0 and ADT is set NA.

**Usage**

```r
derive_param_response(
  dataset,
  dataset_adsl,
  filter_source,
  source_pd = NULL,
  source_datasets = NULL,
  set_values_to,
  aval_fun,
  subject_keys = get_admiral_option("subject_keys")
)
```

**Arguments**

- `dataset`  
  Input dataset
  The variables specified by the `subject_keys` and ADT are expected.
  After applying `filter_source` and/or `source_pd` the variable ADT and the variables specified by `subject_keys` must be a unique key of the dataset.

- `dataset_adsl`  
  Input dataset
  - The variables specified for `subject_keys` are expected.
  - For each observation of the specified dataset a new observation is added to the input dataset. This is to capture those patients that may never have had a tumor assessment.

- `filter_source`  
  Source filter
  All observations in the dataset data fulfilling the specified condition are selected.

- `source_pd`  
  Sources and conditions defining the end of the assessment period for the responses.
  An object of type `date_source` is expected
  All observations in dataset defining the response data fulfilling the `filter_source` condition are considered as response if they fall before the end of the assessment period as defined by `source_pd`.
For subjects with at least one response before the end of the assessment period, AVALC is set to "Y", AVAL to 1, and ADT to the first date when the response occurred.

For all other subjects AVALC is set to "N", AVAL to 0, and ADT to NA.

source_datasets
Source dataset
A named list of datasets with one element is expected (e.g. list(adrs= adrs)).
The name must match the dataset_name field of the admiral::date_source() object specified for source_pd.
The variables specified by the subject_keys argument and the date field of the admiral::date_source() object are expected in the dataset.

set_values_to
Variables to set
A named list returned by exprs() defining the variables to be set for the new parameter, e.g. exprs(PARAMCD = "RSP", PARAM = "Response by investigator") is expected.
The values must be symbols, character strings, numeric values or NA.

aval_fun
Deprecated, please use set_values_to instead.
Function to map character analysis value (AVALC) to numeric analysis value (AVAL)
The (first) argument of the function must expect a character vector and the function must return a numeric vector.

subject_keys
Variables to uniquely identify a subject
A list of symbols created using exprs() is expected.

Details
1. The Date of the end of the assessment period (e.g. Progressive disease, as defined by pd_source) is added to the response dataset.
2. The response dataset is restricted to observations occurring before or on the date of progressive disease.
3. For each subject (with respect to the variables specified for the subject_keys parameter), the first observation (with respect to ADT) where the response condition (filter_source parameter) is fulfilled is selected.
4. For each observation in dataset_ads1 a new observation is created.
   - For subjects with a response AVALC is set to "Y", AVAL to 1, and ADT to the first date (ADT) where the response condition is fulfilled.
   - For all other subjects AVALC is set to "N", AVAL to 0 and ADT to NA.
5. The variables specified by the set_values_to parameter are added to the new observations.
6. The new observations are added to input dataset.

Value
The input dataset with a new parameter indicating if and when a response occurred
Author(s)

Samia Kabi

See Also

Other superseded: `derive_param_bor()`, `derive_param_clinbenefit()`, `derive_param_confirmed_bor()`, `derive_param_confirmed_resp()`, `filter_pd()`

Examples

```r
library(dplyr)
library(admiral)
library(lubridate)
library(tibble)

adsl <- tribble(~USUBJID,   
"1", "2", "3", "4"
) %>%
  mutate(STUDYID = "XX1234")

adrs <- tribble(~USUBJID, ~PARAMCD, ~ADTC, ~AVALC, ~ANL01FL,  
"1", "OVR", "2020-01-02", "PR", "Y",  
"1", "OVR", "2020-02-01", "CR", "Y",  
"1", "OVR", "2020-03-01", "CR", "Y",  
"1", "OVR", "2020-04-01", "SD", "Y",  
"1", "PD", NA_character_, "N", "Y",  
"2", "OVR", "2021-06-15", "SD", "Y",  
"2", "OVR", "2021-07-16", "PD", "Y",  
"2", "OVR", "2021-09-14", "PD", "Y",  
"2", "PD", "2021-09-14", "Y", "Y",  
"3", "OVR", "2021-09-14", "SD", "Y",  
"3", "OVR", "2021-10-30", "PD", "Y",  
"3", "OVR", "2021-12-25", "CR", "Y",  
"3", "PD", "2021-10-30", "Y", "Y"
) %>%
  mutate(STUDYID = "XX1234",  
    ADT = ymd(ADTC),  
    ANL01FL = "Y"
) %>%
  select(~ADTC)

# Define the end of the assessment period for responses:
# all responses before or on the first PD will be used.

pd <- date_source(  
  dataset_name = "adrs",  
  date = ADT,  
  first_only = TRUE)
```
filter = PARAMCD == "PD" & AVALC == "Y"
)
# Derive the response parameter
derive_param_response(
  dataset = adrs,
  dataset_adsl = adsl,
  filter_source = PARAMCD == "OVR" & AVALC %in% c("CR", "PR") & ANL01FL == "Y",
  source_pd = pd,
  source_datasets = list(adrs = adrs),
  set_values_to = exprs(
    AVAL = yn_to_numeric(AVALC),
    PARAMCD = "RSP",
    PARAM = "Response by investigator"
  ),
  subject_keys = get_admiral_option("subject_keys")
) %>%
arrange(USUBJID, PARAMCD, ADT)

filter_pd

Filter up to First PD (Progressive Disease) Date

Description

[Superseded] The filter_pd() function has been superseded in favor of filter_relative().

Filter a dataset to only include the source parameter records up to and including the first PD (progressive disease). These records are passed to downstream derivations regarding responses such as BOR (best overall response).

Usage

filter_pd(
  dataset,
  filter,
  source_pd,
  source_datasets,
  subject_keys = get_admiral_option("subject_keys")
)

Arguments

dataset Input dataset
The variables ADT and those specified by subject_keys are expected.

filter Filter condition for restricting the input dataset

source_pd A admiral::date_source() object providing the date of first PD
For each subject the first date (date field) in the provided dataset (dataset_name field) restricted by filter field is considered as first PD date.
source_datasets
A named list of data sets is expected.
The name must match the name provided by the dataset_name field of the admiral::date_source() object specified for source_pd.

subject_keys
Variables to uniquely identify a subject
A list of symbols created using exprs() is expected.

Details
1. The input dataset (dataset) is restricted by filter.
2. For each subject the first PD date is derived as the first date (source_pd$date) in the source pd dataset(source_datasets[[source_pd$dataset_name]]) restricted by source_pd$filter.
3. The restricted input dataset is restricted to records up to first PD date. Records matching first PD date are included. For subject without any first PD date, all records are included.

Value
A subset of the input dataset

Author(s)
Teckla Akinyi, Stefan Bundfuss

See Also
Other superseded: derive_param_bor(), derive_param_clinbenefit(), derive_param_confirmed_bor(), derive_param_confirmed_resp(), derive_param_response()

Examples
library(dplyr)
library(lubridate)
library(admiral)
library(admiralonco)

# Filter OVR records up to first PD, first PD date provided in separate BDS dataset (adevent)

ADT = as_date(ADT)
)
adevent <- tibble::tribble(
~STUDYID, ~USUBJID, ~PARAMCD, ~AVALC, ~ADT,
"CDISCPILOT01", "01-701-1015", "PD", "Y", "2016-02-22",
"CDISCPILOT01", "01-701-1034", "PD", "Y", "2016-04-25"
) %>% mutate(
ADT = as_date(ADT)
)
pd <- date_source(
  dataset_name = "adevent",
  date = ADT,
  filter = PARAMCD == "PD"
)
filter_pd(
  dataset = adrs,
  filter = PARAMCD == "OVR" & ANL01FL == "Y",
  source_pd = pd,
  source_datasets = list(adevent = adevent)
)
# Filter OVR records up to first PD, first PD date provided in ADSL dataset
adsl <- tibble::tribble(
~STUDYID, ~USUBJID, ~PDDT,
"CDISCPILOT01", "01-701-1015", "2016-02-22",
"CDISCPILOT01", "01-701-1034", "2016-04-25",
"CDISCPILOT01", "01-701-1035", ""
) %>% mutate(
PDDT = as_date(PDDT)
)
pd <- date_source(
  dataset_name = "adsl",
  date = PDDT
)
filter_pd(
  dataset = adrs,
  filter = PARAMCD == "OVR" & ANL01FL == "Y",
  source_pd = pd,
  source_datasets = list(adsl = adsl)
)
# Filter OVR records up to first PD, first PD date provided in input dataset (PD parameter)
adrs <- tibble::tribble(
~STUDYID, ~USUBJID, ~PARAMCD, ~AVALC, ~ADT, ~ANL01FL,
"CDISCPILOT01", "01-701-1015", "OVR", "CR", "2016-01-25", "Y",
"CDISCPILOT01", "01-701-1015", "OVR", "SD", "2016-02-22", NA_character_,
"CDISCPILOT01", "01-701-1015", "OVR", "PD", "2016-02-22", "Y",
"CDISCPILOT01", "01-701-1015", "BOR", "CR", "2016-01-25", "Y",

filter_pd(
  dataset = adrs,
  filter = PARAMCD == "OVR" & ANL01FL == "Y",
  source_pd = pd,
  source_datasets = list(adrs = adrs)
)
```
"CDISCPILOT01", "01-701-1034", "OVR", "SD", "2015-12-07", "Y",
"CDISCPILOT01", "01-701-1034", "OVR", "PD", "2016-04-25", "Y",
"CDISCPILOT01", "01-701-1034", "OVR", "PD", "2016-06-25", "Y",
"CDISCPILOT01", "01-701-1034", "BOR", "SD", "2015-12-07", "Y",
"CDISCPILOT01", "01-701-1035", "OVR", "SD", "2016-04-25", "Y",
"CDISCPILOT01", "01-701-1035", "OVR", "PR", "2016-06-25", "Y",
"CDISCPILOT01", "01-701-1035", "BOR", "PR", "2016-06-25", "Y",
"CDISCPILOT01", "01-701-1015", "PD", "Y", "2016-02-22", "Y",
"CDISCPILOT01", "01-701-1034", "PD", "Y", "2016-04-25", "Y"
```
get_crpr_dataset

Get CR Records Followed by PR That Lead to a Prior Error

Description
Get CR Records Followed by PR That Lead to a Prior Error

Usage
get_crpr_dataset()

Details
Some {admiralonco} functions check that in the source records CR is not followed by PR and throw an error otherwise. The get_crpr_dataset() function allows one to retrieve the duplicate records that lead to an error.

Note that the function always returns the dataset of duplicates from the last error that has been thrown in the current R session. Thus, after restarting the R sessions get_crpr_dataset() will return NULL and after a second error has been thrown, the dataset of the first error can no longer be accessed (unless it has been saved in a variable).

Value
A data.frame or NULL

Author(s)
Stefan Bundfuss

See Also
signal_crpr()

Utilities for Dataset Checking: signal_crpr()

Examples
library(tibble)
library(dplyr)
library(lubridate)
library(admiralonco)
library(rlang)

adrs <- tribble(~USUBJID, ~ADTC, ~AVALC,
"1",  "2020-01-01", "PR",
"1",  "2020-02-01", "CR",
"1",  "2020-02-16", "NE",
"1",  "2020-03-01", "CR",
"2",  "2020-02-06", "PR",
"2",  "2020-02-16", "CR",
"2",  "2020-03-30", "PR",

```r
%>
mutate(
    ADT = ymd(ADTC),
    STUDYID = "XX1234"
)
```

signal_crpr(adrs, order = exprs(ADT))

get_crpr_dataset()

---

### Pre-Defined Response Event Objects

**Description**

These pre-defined `event()` and `event_joined()` objects can be used as input to `admiral::derive_extreme_event()`.

**Usage**

- `rsp_y`
- `no_data_n`
- `cb_y`
- `bor_cr`
- `bor_pr`
- `bor_sd`
- `bor_non_crpd`
- `bor_pd`
- `bor_ne`
- `no_data_missing`
- `crsp_y_cr`
Details

To see the definition of the various objects simply print the object in the R console, e.g. `bor_sd`. For details of how to use these objects please refer to `admiral::derive_extreme_event()`.

It is assumed that `dataset_name = "ovr"` refers to the dataset of the only overall response assessments at each visit which should be considered for the parameter derivations. For example the dataset should include only post-baseline assessments up to first PD and before start of anti-cancer therapy.

See Also

`admiral::derive_extreme_event(), admiral::event(), admiral::event_joined()`

Examples

```r
# This shows the definition of all pre-defined 'event' objects that ship
# with {admiralonco}
exports <- sort(getNamespaceExports("admiralonco"))
for (obj_name in exports) {
  obj <- getExportedValue("admiralonco", obj_name)
  if (inherits(obj, "event_def")) {
    cat("\n", obj_name, "\n", sep = "")
    print(obj, indent = 2)
  }
}
```

---

`signal_crpr`  
**Signal CR Records Followed by PR**

Description

Signal CR Records Followed by PR

Usage

```r
signal_crpr(
  dataset,
  order,
  msg = "Dataset contains CR records followed by PR.",
  subject_keys = get_admiral_option("subject_keys"),
  check_type = "warning"
)```
Arguments

- **dataset**: A data frame
- **order**: A list of variables created using `exprs()` determining the order or the records
- **msg**: The condition message
- **subject_keys**: Variables to uniquely identify a subject
  A list of symbols created using `exprs()` is expected.
- **check_type**: Type of message to issue when detecting PR after CR.

*Permitted Values*: "message", "warning" or "error"

Value

No return value, called for side effects

Author(s)

Stefan Bundfuss

See Also

- `get_crpr_dataset()`

Utilities for Dataset Checking: `get_crpr_dataset()`

Examples

```r
library(tibble)
library(dplyr)
library(lubridate)
library(admiralonco)
library(rlang)

adrs <- tribble(~USUBJID, ~ADTC, ~AVALC,
"1", "2020-01-01", "PR",
"1", "2020-02-01", "CR",
"1", "2020-02-16", "NE",
"1", "2020-03-01", "CR",
"2", "2020-02-06", "PR",
"2", "2020-02-16", "CR",
"2", "2020-03-30", "PR",
)

adrs <- mutate(
  USUBJID = ~USUBJID,
  ~ADTC = ymd(ADTC),
  ~AVALC = ~AVALC,
  ADTC = ymd(ADTC),
  STUDYID = "XX1234"
)

signal_crpr(adrs, order = exprs(ADTC))
```
Index

* datasets
  admiral_adrs, 3

* sourceSpecifications
  death_event, 4
  rsp_y, 33

* superseded
  derive_param_bor, 5
  derive_param_clinbenefit, 10
  derive_param_confirmed_bor, 13
  derive_param_confirmed_resp, 20
  derive_param_response, 25
  filter_pd, 28

* utils_ds_chk
  get_crpr_dataset, 32
  signal_crpr, 34

* utils_fmt
  avalResp, 3

  admiral::censor_source(), 4
  admiral::derive_extreme_event(), 34
  admiral::derive_param_tte(), 4
  admiral::event(), 34
  admiral::event_joined(), 34
  admiral::event_source(), 4
  admiral::tte_source(), 4
  admiral_adrs, 3
  avalresp, 3

  bor_cr (rsp_y), 33
  bor_ne (rsp_y), 33
  bor_non_crpd (rsp_y), 33
  bor_pd (rsp_y), 33
  bor_pr (rsp_y), 33
  bor_sd (rsp_y), 33

  cb_y (rsp_y), 33
  cbor_cr (rsp_y), 33
  cbor_pr (rsp_y), 33
  crsp_y_cr (rsp_y), 33
  crsp_y_pr (rsp_y), 33
  death_event, 4
  derive_param_bor, 5, 12, 17, 22, 27, 29
  derive_param_clinbenefit, 7, 10, 17, 22, 27, 29
  derive_param_confirmed_bor, 7, 12, 13, 22, 27, 29
  derive_param_confirmed_resp, 7, 12, 17, 19, 27, 29
  derive_param_response, 7, 12, 17, 22, 24, 29
  filter_pd, 7, 12, 17, 22, 27, 28
  get_crpr_dataset, 32, 35
  get_crpr_dataset(), 35
  lasta_censor (death_event), 4
  lastalive_censor (death_event), 4
  no_data_missing (rsp_y), 33
  no_data_n (rsp_y), 33
  pd_event (death_event), 4
  rand_censor (death_event), 4
  rsp_y, 33
  signal_crpr, 32, 34
  signal_crpr(), 32
  trts_censor (death_event), 4

36