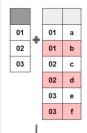
admiral :: CHEAT SHEET

What you need to know

{admiral} is an open-source, modularized toolbox that enables the development of ADaM datasets in R. {admiral} code is comprised of interchangeable blocks, i.e. function calls, that sequentially derive new variables or parameters to help construct an ADaM dataset.

Generic Variable-Adding Functions



derive_vars_merged(dataset, dataset_add, new_vars, filter_add, order, mode...)

Add new variable(s) to the input dataset based on variables from another dataset. Merged observations can be selected by a condition and/or selecting the first/last observation for each by group.



derive_vars_merged(
 dataset = adsl,
 dataset_add = vs,
 by_vars = exprs(STUDYID, USUBJID),
 order = exprs(convert_dtc_to_dtm(VSDTC)),
 mode = "last",
 new_vars = exprs(LASTWGT = VSSTRESN),
 filter_add = VSTESTCD == "WEIGHT"



derive_vars_joined(dataset, dataset_add, new_vars, join_type, filter_add, order, mode...)

Add variables from an additional dataset to the input dataset. The selection of the observations from the additional dataset can depend on variables from both datasets.



derive_vars_joined(
 dataset = adae, dataset_add = period_ref,
 by_vars = exprs(STUDYID, USUBJID),
 join_vars = exprs(APERSDT, APEREDT),
 join_type = "all",
 filter_join = APERSDT <= ASTDT & [...])</pre>

Notable others:

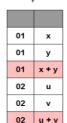
derive_vars_extreme_event() derive_vars_merged_lookup() derive_vars_transposed() derive_var_merged_ef_msrc() derive_vars_computed() derive_var_merged_summary() derive_vars_cat() derive_vars_crit_flag()

Generic Parameter-Adding Functions

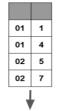


derive_param_computed(dataset,
dataset_add = NULL, by_vars, parameters,
set_values_to, ...)

Add a parameter computed from the analysis value of other parameters.

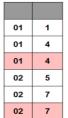


derive_param_computed(
 dataset = advs,
 by_vars = exprs(USUBJID, VISIT),
 parameters = c("SYSBP", "DIABP"),
 set_values_to = exprs(
 AVAL = (AVAL.SYSBP+2*AVAL.DIABP)/3,
 PARAMCD = "MAP",
 PARAM = "Mean Arterial Pressure",
 AVALU = "mmHg"
)



derive_extreme_records(dataset, dataset_add,
dataset_ref, by_vars, order, mode,
keep_source_vars, set_values_to, ...)

Add the first or last observation for each by group as new observations. The new observations can be selected from the input dataset or an additional dataset.



derive_extreme_records(
dataset = adlb, dataset_add = adlb,
by_vars = exprs(USUBJID),
order = exprs(AVAL, AVISITN),
mode = "first", filter_add = !is.na(AVAL),
keep_source_vars = exprs(AVAL),
set_values_to = exprs(DTYPE = "MIN"))

Notable others:

derive_expected_records() derive_locf_records()
derive_extreme_event() derive_param_exposure()
derive_summary_records()

Note: These functions are just some examples of the many generic variable/parameter-adding functions in {admiral}. Check the <u>reference page</u> for all of them!

Links: Github Repo - Documentation - Join the Pharmaverse Slack

Functions Treating Days/Dates/Datetimes

derive_vars_(dt/dtm)(dataset, new_vars_prefix, ...)
Derive or impute a date/datetime from a date character Vector.

admiral

```
derive_vars_dt(admh, new_vars_prefix = "AST", dtc =
MHSTDTC)
```

derive_vars_dy(dataset, reference_date, source_vars)
Adds relative day variables (--DY).

```
derive_vars_dy(
  dataset = adsl, reference_date = TRTSDTM,
  source_vars = exprs(TRTSDTM, ASTDTM, AENDT)
)
```

derive_vars_dtm_to_(dt/tm)(dataset, source_vars,...)
Derive date/time variables from datetime variables.

```
derive_vars_dtm_to_tm(
  dataset = adcm, source_var = exprs(TRTSDTM)
)
```

derive_vars_duration(dataset, new_var, new_var_unit, start date, end date).

Derive duration between two dates.

```
derive_vars_duration(
  dataset = adsl, new_var = AAGE, new_var_unit = AAGEU,
  start_date = BRTHDT, end_date = RANDDT,
  out_unit = "years"
```

Computation Functions for Vectors

These functions do what their names suggest and can be used inside dplyr:: mutate() or other {admiral} functions.

```
compute_age_years()
compute_dtf()
compute_duration()
compute_tmf()
compute_scale()
```

convert_date_to_dtm()
transform_range()
convert_dtc_to_dt()
convert_dtc_to_dtm()

Special Variable-Adding Functions

derive_var_age_years(dataset, age_var, age_unit, new_var)
Derive age in years.

derive_vars_period(dataset, dataset_ref, new_vars)

Add ADSL subperiod, period, or phase variables.

derive_var_anrind(dataset, use_a1h1lo, ...)

Derive analysis reference range indicator (ANRIND)

derive_var_atoxgr_dir(dataset, new_var, tox_description_var, meta_criteria, criteria_direction, get_unit_expr, signif_dig)

Derive character lab grade based on severity or toxicity criteria.

derive_var_(base/chg/pchg)(dataset, ...)

Derive baseline/change/percent change variables.

derive_vars_crit_flag(dataset, condition, description, ...)

Derive criterion flag variables (CRITy, CRITyF(L/N)).

derive_var_ontrtfl(dataset, start_date, ref_start_date, ref_end_date, ref_end_window ...)

Derive on-treatment flag (ONTRTFL) with a single assessment date (e.g ADT) or event start and end dates (e.g. ASTDT/AENDT).

derive_var_trtemfl(dataset, new_var, start_date, end_date, trt_start_date, trt_end_date, end_window, ...)

Derive treatment emergent analysis flag (TRTEMFL).

derive_vars_query(dataset, dataset_queries) Derive query variables.

derive_vars_atc(dataset, dataset_facm, by_vars, id_vars,
value_var)

Derive ATC class variables from FACM to ADCM.

Special Parameter-Adding Functions

*derive_param_bmi(dataset, by_vars, set_values_to, ...)
Derive BMI parameter.

*derive_param_bsa(dataset, by_vars, set_values_to, ...)
Derive body surface area parameter (multiple methods).

*derive_param_map(dataset, by_vars, set_values_to, ...)
Derive mean arterial pressure parameter.

derive_param_doseint(dataset, by_vars, set_values_to, ...) Derive dose intensity parameter.

 $\label{lem:conditions} \begin{tabular}{ll} \textbf{derive_param_tte} (\texttt{dataset}, \texttt{dataset_adsl}, \texttt{source_datasets}, \texttt{by_vars}, \texttt{start_date}, \texttt{event_conditions}, \texttt{censor_conditions}, \dots) \\ \end{tabular}$

Derive time-to-event parameter.

* wrapper of derive_param_computed().

Note: These functions are just some examples of the many special variable/parameter-adding functions in {admiral}. Check the reference page for all of them!

Higher Order Functions

Meta-functions that take {admiral} functions as input and facilitate their execution.



call_derivation(dataset, derivation, variable_params, ...)

Call a single derivation multiple times with some parameters/arguments fixed across calls and others varying.



call_derivation(
 dataset = adae,
 derivation = derive_vars_dt,
 variable_params = list(
 params([...]),
 params([...])
))

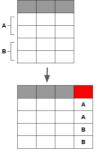


restrict_derivation(dataset, derivation,
args. filter)

Execute a derivation on a subset of the input dataset.



restrict_derivation(dataset = adlb, derivation = derive_vars_merged, args = params([...]), filter = AVISITN > 0)



slice_derivation(dataset, derivation, args, ...)

The input dataset is split into slices (subsets) and for each slice the derivation is called separately. Some or all arguments of the derivation may vary depending on the slice.

```
slice_derivation(
dataset = advs,
derivation = derive_vars_dtm,
args = params([...]),
derivation_slice(filter = [...], args = [...]),
derivation_slice(filter = [...], args = [...]),
)
```

Links: Github Repo - Documentation - Join the Pharmaverse Slack

Templates

Example scripts to be used as a starting point for ADaM creation.



List all available ADaM templates in {admiral} (or another package).

use_ad_template(adam_name, package,
overwrite.open)

Open an ADaM template script. use_ad_template("adsl")

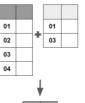
Utilities



convert_blanks_to_na()

Turn SAS blank strings into R NAs.

convert_blanks_to_na(c("a", "", "b"))



filter_exist(dataset, dataset_add, by_vars,
filter_add)

Returns all records in the input dataset belonging to by groups present in a (possibly filtered) source dataset.



filter_exist(
 dataset = adsl, dataset_add = adae,
 by_vars = exprs(USUBJID),
 filter add = AEDECOD == "FATIGUE"))



filter_extreme(dataset, by_vars, order, mode, check_type = "warning")

Filters the first/last record in by group.

filter_extreme(by_vars = exprs(USUBJID),
 order = exprs(EXSEQ), mode = "first")



filter_relative (dataset, by_vars, order, condition, mode, selection, inclusive...)

Filters the observations before or after the observation where a specified condition is fulfilled for each by group.



filter_relative(
response,
by_vars = exprs(USUBJID),
order = exprs(AVISITN),
condition = AVALC == "PD",
mode = "first", selection = "before",
inclusive = TRUE)

