Introduction

`pmplots` is an `R` package to generate exploratory and diagnostic plots commonly of interest in pharamcometrics. Each function in `pmplots` is named according to the specific plot it generates via calls to functions in the `ggplot2` `R` package.

This document lists the functional requirements for the `pmplots` package.

Requirements for pharamcometric plotting package `pmplots`

Section	RID	Requirement
Default column names	1	Column `RES` refers to residual; rendered `res` in function names
	2	Column `WRES` weighted residual; rendered `wres` in function names
	3	Column `CWRES` refers to conditional weighted residual; rendered `cwres` in function names
	4	Column `TIME` refers to model time; rendered `time` in function names
	5	Column `TAFD` refers to time after first dose; rendered `tafd` in function names
	6	Column `TAD` refers to time after dose; rendered `tad` in function names
	7	Column `DV` refers to observed data; rendered `dv` in function names
	8	Column `PRED` refers to population level predictions; rendered `pred` in function names
	9	Column `IPRED` refers to individual level predictions; rendered `ipred` in function names
Plots generated	10	Functions `dv_time`, `dv_tafd`, and `dv_tad` plot `DV` versus the appropriate time measure; both lines and points are plotted
	11	Functions `dv_pred` and `dv_ipred` plot `DV` versus the appropriate predicted value; a line of identity is added as well as a loess smothing line; both the x- and y-axis maybe be transformed to log scale with the `loglog` argument; if `loglog` is used, only positive values are retained for the plot
	12	Functions `res_time`, `res_tafd`, and `res_tad` plots residual versus the appropriate time measure; a reference line is added at `res=0` as well as a loess smoothing line
	13	Functions `wres_time`, `wres_tafd`, and `wres_tad` plots weighted residual versus the appropriate time measure; a reference line is added at `wres=0` as well as a loess smoothing line
	14	Functions `cwres_time`, `cwres_tafd`, and `cwres_tad` plots conditional weighted residual versus the appropriate time measure; a reference line is added at `cwres=0` as well as a loess smoothing line

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	15	Functions `res_pred`, `wres_pred` and `cwres_pred` plot the appropriate residual versus population model predictions (`PRED`); a horizontal reference line is added at `c/w/res=0` as well as a loess smoothing line
	16	Functions `res_cont`, `wres_cont`, and `cwres_cont` plot the appropriate residual versus a continuous covariate in the data set; a horizontal reference line is added at `c/w/res=0` as well as a loess smoothing line
	17	Functions `res_cat`, `wres_cat`, and `cwres_cat` makes a boxplot of the appropriate residual versus a categorical data set column
	18	Function `wres_q` and `cwres_q` generates quantile-quantile plots of the appropriate residual value; a refereince identity line is added
	19	Function `eta_hist` generates histograms of model ETAs and returns a list `gg/ggplot` objects
	20	Function `eta_cont` generates a scatterplot of model ETAs versus a continuous variable in the data set; a horizontal reference line at `ETAn=0` and loess smoothing line are also added to the plot
	21	Function `eta_cat` generates boxplot summaries of model ETAs by a categorical variable in the data set
	22	Function `eta_pairs` generates pairs plots using the `ggpairs` function from the `GGally` package
	23	Function `splitplot` splits the input data set according to a discrete data item and generates a plot according to a user-named function, returning a list of `gg/ggplot` objects
Continuous scatter	24	x-axis options availabe in `x_scale_continuous` can be modified by the xs argument
	25	y-axis options available in `y_scale_continuous` can be modified by the ys argument
	26	When loess smoothing lines are generated, `geom_smooth` with `ggplot2` default behavior is used; the smooth may be modified through the `smooth` argument
	27	A title may be added through the `title` argument
Boxplot summaries	28	x-axis options availabe in `x_scale_discrete` can be modified by the xs argument
	29	y-axis options available in `y_scale_continuous` can be modified by the ys argument
	30	Boxplot summaries are generated using `geom_boxplot` with `ggplot2` default configuration
	31	A title may be added thought the `title` argument
Input data	32	Data are input as data.frame or tibble
	33	For continuous scatter plots, numeric data are required or an error is generated; data are considered discrete if they are `numeric` or `integer`
	34	For boxplot summaries, discrete data are required for x-axis for boxplot summaries; data are considered discrete of they are `character`, `factor`, or `logical`
R packages	35	Imports: `dplyr (>= 0.7.2)`, `rlang (>= 0.1.2)`
	36	Depends: `ggplot2 (>= 2.2.1)`

Section	RID	Requirement
	37	Suggests: `testthat`