

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

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

Section	RID	Requirement
	37	Suggests: <code>testthat</code>