Package: TimeSpaceAnalysis (via r-universe)

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Type Package

Title Statistical tools for time-space analysis

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Description Use Geometric Data Analysis approaches (e.g. MCA or MFA), time pattern analysis (see ``time sequence clustering'') and places chronologies (see ``time geography'') analysis.

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Depends R (>= 4.0), tidyverse, forcats, magrittr, grid, gridExtra, Hmisc, ggrepel, ggforce, gghighlight, ggtext, cowplot, ggthemes, patchwork, ggmap, sf, RColorBrewer, dendextend, GDAtools, FactoMineR, missMDA, factoextra, bookdown, rlang, glue, stringr, magick, scales, kableExtra, ragg, concaveman, usedist, gginnards, vdiffr

Suggests kml3d, explor, questionr, testthat

BugReports https://github.com/inventionate/TimeSpaceAnalysis/issues

URL https://github.com/inventionate/TimeSpaceAnalysis

RoxygenNote 7.3.2

LazyData TRUE

Collate 'get-path-coord.R' 'add-path.R' 'add-theme.R' 'get-index-mod.R' 'excl-mfa-group.R' 'extract-legend.R' 'get-mfa-mod-group-id.R' 'utilities.R' 'fviz-gda-var.R' 'fviz-add-sup-ind.R' 'fviz-dendrogram.R' 'fviz-gda-conc-ellipse.R' 'supvar-stats.R' 'fviz-gda-interaction.R' 'fviz-gda-quali-ellipses.R' 'fviz-gda-quali-supvar.R' 'supvar-crossing-stats.R' 'fviz-gda-structure.R' 'get-gda-trajectory.R' 'fviz-gda-trajectory-ellipses.R' 'fviz-gda-trajectory-quali.R'

'fviz-gda-trajectory-sample.R' 'fviz-gda-trajectory.R'
'fviz-gda-var-axis.R' 'fviz-mca-var-corr.R'
'gda-describe-axis.R' 'gda-describe-group.R'
'gda-optimise-df.R' 'get-mca-var-corr.R'
'get-places-chronology-time-pattern.R'
'get-places-chronology.R' 'get-time-pattern-series.R'
'get-time-pattern-profile.R' 'get-time-pattern.R'
'modified-rates.R' 'plot-barplot.R'
'plot-places-chronology-meaning.R'
'plot-places-chronology-path.R'
'plot-places-chronology-time-pattern.R'
'plot-places-chronology.R' 'plot-time-pattern-profile.R'
'plot-time-pattern-series.R' 'plot-time-pattern.R' 'zzz.R'

Repository https://inventionate.r-universe.dev

RemoteUrl https://github.com/inventionate/TimeSpaceAnalysis

RemoteRef HEAD

RemoteSha e0f602ed5f82e7c768c8f12a13ddcbd755c550db

Contents

`add_path` *Concat the categories of a variable*

Description

Concat the categories of a variable

Usage

```
add_path(
  res_gda_quali,
  var,
  var_levels = NULL,
  exclude = NULL,
  axes = 1:2,
  linetype = "dashed",
  colour = "black",
  size = 1
)
```

Arguments

`res_gda_quali`	GDA result.
`var`	variable name.
`var_levels`	categories to concat.
`exclude`	categories to exclude.
`axes`	axes to plot.

linetype	linetype of concat path.
colour	colour of concat path.
size	size of concat path.

Value

ggplo2 path geom.

`add_theme` *Optimise ggplot2 plot.*

Description

Optimise ggplot2 plot.

Usage

```
add_theme(plot, font_family = "Fira Sans Condensed Medium")
```

Arguments

plot	ggplot2 object.
font_family	plot overall font family.

Value

ggplot2 geoms.

`excl_mfa_group` *Extract list of MFA group indices to exclude (for sMFA).*

Description

Extract list of MFA group indices to exclude (for sMFA).

Usage

```
excl_mfa_group(df_mfa, group_mfa, pattern)
```

Arguments

df_mfa	MFA optmised data frame.
group_mfa	MFA group definition.
pattern	search pattern (regular expression).

Value

list with MFA group specific exclude indices.

extract_legend *Extract legends form ggplot2 objects.*

Description

Extract legends form ggplot2 objects.

Usage

```
extract_legend(p)
```

Arguments

p	ggplot2 object (plot) containing legends (guides).

Value

plottable legend grob.

fviz_add_sup_ind *Add supplementary individuals.*

Description

Add supplementary individuals.

Usage

```
fviz_add_sup_ind(
  res_gda,
  sup_ind = NULL,
  colour = "red",
  ind_visible = FALSE,
  label = NULL,
  size = 10,
  group = NULL,
  group_names = NULL,
  group_style = "both",
  axes = 1:2
)
```

Arguments

res_gda	MCA results.
sup_ind	supplementary individual profiles (data.frame).
colour	colour of point and labels.
ind_visible	show individual points.
label	label names.
size	label size.
group	vector containing group definition.
group_names	names of the groups.
group_style	style to plot (vector containing "shape", "colour" or "both).
axes	the GDA dimensions to plot.

Value

ggplot2 visalization of supplementary individuals.

---

fviz_dendrogram *Visualize HCPC hclus trees.*

Description

Visualize HCPC hclus trees.

Usage

```
fviz_dendrogram(
  res_hcpc,
  palette = NULL,
  cluster = 1,
  labels = FALSE,
  circle = FALSE,
  hline = 0.8,
  pointsize = 2,
  linetype = "dashed",
  cut_height = NULL,
  title = NULL,
  cut_upper = NULL,
  colour_upper = "#555555",
  hlabel = NULL,
  hlabel_pos = 0.001
)
```

Arguments

res_hcpc	(s)HCPC results.
palette	colour definition per cluster.
cluster	amount of clusters.
labels	plot labels (boolean).
circle	plot circle (boolean).
hline	hline height.
pointsize	leaves pointsize.
linetype	hline linetype.
cut_height	cut dendrogram at specific hight.
title	the plot title.
cut_upper	style upper dendrogram.
colour_upper	colour of the upper dendrogram.
hlabel	label of hline.
hlabel_pos	position of hlabel.

Value

ggplot2 dendrogram visualization.

---

fviz_gda_conc_ellipse *Title*

Description

Title

Usage

```
fviz_gda_conc_ellipse(
  res_gda,
  level = 0.8647,
  alpha = 0.1,
  colour = "black",
  linetype = "dotted",
  density = FALSE,
  fill = NA,
  axes = 1:2,
  scale_size = 1,
  title = "GDA individuals plot",
  plot_modif_rates = TRUE,
  axis_lab_name = "Achse",
  labels = NULL,
```

```
  xlim = NULL,
  ylim = NULL,
  blank = FALSE
)
```

Arguments

res_gda	GDA result.
level	ellipse level (default 86.47%).
alpha	opacity level (default 0.1).
colour	ellipse border colour.
linetype	ellipse edge linetype.
density	show density contours (boolean).
fill	ellipse fill colour.
axes	the GDA dimensions to plot.
scale_size	scale minimal point size.
title	the plot title.
plot_modif_rates	plot modified rates instead of eigenvalue percentage (boolean).
axis_lab_name	name of axis label.
labels	label axes (vector of length 4; left, right, top, bottom).
xlim	x Axis limits (vector of length 2).
ylim	y Axis limits (vector of length 2).
blank	visualisation without labels and tick values.

Value

ggplot2 GDA visualisation with concentration ellipse.

---

fviz_gda_interaction *Visualize interaction cloud.*

Description

Visualize interaction cloud.

Usage

```
fviz_gda_interaction(
  res_gda,
  df_var_quali,
  var_quali,
  title = "MCA quali interaction effects",
  mean_alpha = 0.75,
  path_linetype = "solid",
  path_size = 1,
  path_colour = "black",
  scale_mean_points = TRUE,
  axes = 1:2,
  palette = "Set1",
  path_alpha = 1,
  impute = TRUE,
  variable = "both",
  plot_modif_rates = TRUE,
  axis_lab_name = "Achse",
  labels = NULL
)
```

Arguments

res_gda	MCA result.
df_var_quali	crossed variable data frame.
var_quali	name of crossed supplementary variable.
title	plot title.
mean_alpha	alpha of the mean point.
path_linetype	linetype of concat path.
path_size	size of concat path.
path_colour	colour of concat path.
scale_mean_points	scale mean points (boolean).
axes	axes to plot.
palette	used colour brewer palette.
path_alpha	opacity of the path.
impute	use imputation to handle missing data.
variable	which diagram to plot (vector containing 1, 2 or "both").
plot_modif_rates	plot modified rates instead of eigenvalue percentage (boolean).
axis_lab_name	name of axis label.
labels	label axes (vector of length 4; left, right, top, bottom).

Value

ggplot2 interaction cloud visualizsation.

`fviz_gda_quali_ellipses` *Title*

Description

Title

Usage

```
fviz_gda_quali_ellipses(
  res_gda,
  df_var_quali,
  var_quali,
  title = NULL,
  facet = TRUE,
  alpha_point = 0.75,
  conc_linetype = "solid",
  conf_linetype = "solid",
  scale_mean_points = TRUE,
  axes = 1:2,
  colour = "Set1",
  impute = TRUE,
  concentration_ellipses = TRUE,
  confidence_ellipses = FALSE,
  conf_colour = FALSE,
  plot_modif_rates = TRUE,
  ncol = 3,
  individuals = TRUE,
  impute_ncp = 2,
  reorder = NULL,
  alpha_ellipses = 0.15,
  print_eta2 = TRUE,
  axis_lab_name = "Achse",
  label_mean_points = TRUE,
  highlight = FALSE,
  profiles = NULL,
  labels = NULL,
  axes_annotate_alpha = 0.3,
  density = FALSE,
  global_conc_ellipses = TRUE,
  in_freq = FALSE,
  facet_title_size = 14
)
```

Arguments

res_gda	GDA (MCA, MFA) result (rownames have to be individual questionnaire IDs).
df_var_quali	data frame of one quali variable.
var_quali	name if quali variable.
title	plot title.
facet	whether facet ellipses or not (boolean).
alpha_point	opacity of individual points.
conc_linetype	linetype of concentration ellipses.
conf_linetype	linetype of confidence ellipses.
scale_mean_points	scale mean point size in respect of the group size (boolean).
axes	the GDA dimensions to plot.
colour	Colour brewer scale or FALSE.
impute	impute missing data (boolean).
concentration_ellipses	plot concentration ellipse (boolean).
confidence_ellipses	plot confidence ellipses (boolean).
conf_colour	colour confidence ellipses (boolean).
plot_modif_rates	plot modified rates instead of eigenvalue percentage (boolean).
ncol	Number of facet columns.
individuals	show individual points (boolean).
impute_ncp	number of dimensions to predict missing values.
reorder	numeric vector containing new level order (index).
alpha_ellipses	concentration ellipses fill alpha.
print_eta2	print eta2 value per axis (boolean).
axis_lab_name	name of axis label.
label_mean_points	show labels (boolean).
highlight	show facets with highlighted group (boolean).
profiles	optional add specific profiles (tibble).
labels	label axes (vector of length 4; left, right, top, bottom).
axes_annotate_alpha	alpha value of axes annotations.
density	show density contours (boolean).
global_conc_ellipses	should the global concentration ellipse be shown (boolean).
in_freq	order by number of observations with each level (largest first) (boolean).
facet_title_size	size of the facet stripe title (numeric).

Value

ggplot2 visualization with concentration and quali var ellipses.

`fviz_gda_quali_supvar` *Visualize supplementary variables.*

Description

Visualize supplementary variables.

Usage

```
fviz_gda_quali_supvar(
  res_gda,
  df_var_quali,
  var_quali,
  title = NULL,
  path = FALSE,
  linetype = "solid",
  axes = 1:2,
  scale_point = TRUE,
  size_point = 3,
  scale_text = FALSE,
  size_text = 3,
  palette = "Set1",
  impute = TRUE,
  plot_modif_rates = TRUE,
  impute_ncp = 2,
  relevel = NULL,
  print_eta2 = TRUE,
  axis_lab_name = "Achse",
  axes_annotate_alpha = 0.3,
  labels = NULL,
  xlim = NULL,
  ylim = NULL,
  accuracy = 0.1,
  pos_adjust = 0.001,
  colour_point = FALSE
)
```

Arguments

`res_gda`	GDA result.
`df_var_quali`	crossed variable data frame.
`var_quali`	crossed variable name.
`title`	plot title.

path	plot path (boolean).
linetype	specify path linetype.
axes	which axes should be plotted.
scale_point	scale points by weight (boolean).
size_point	define point size.
scale_text	scale text by weight (boolean).
size_text	define text size.
palette	RColorBrewer palette.
impute	impute missing data (boolean).
plot_modif_rates	plot modified rates instead of eigenvalue percentage (boolean).
impute_ncp	number of dimensions to predict missing values.
relevel	character vector containing new level order.
print_eta2	print eta2 value per axis (boolean).
axis_lab_name	name of axis label.
axes_annotate_alpha	alpha value of axes annotations.
labels	label axes (vector of length 4; left, right, top, bottom).
xlim	x Axis limits (vector of length 2).
ylim	y Axis limits (vector of length 2).
accuracy	numeric vector (defaults to 0.1).
pos_adjust	numeric vector for axis labels adjustment (defaults to 0.001)
colour_point	should the points be coloured (boolean)?

Value

ggplot2 visualization of supplementary variables.

---

fviz_gda_structure *Visualize additive cloud.*

Description

Visualize additive cloud.

Usage

```
fviz_gda_structure(
  res_gda,
  df_var_quali,
  var_quali,
  title = NULL,
  scale_mean_points = TRUE,
  axes = 1:2,
  palette = "Set1",
  impute = TRUE,
  cloud = "both",
  plot_modif_rates = TRUE,
  axis_lab_name = "Achse",
  labels = NULL,
  axes_annotate_alpha = 0.3
)
```

Arguments

res_gda	MCA result.
df_var_quali	crossed variable data frame.
var_quali	name of quali variable.
title	plot title.
scale_mean_points	scale points (boolean).
axes	which axis to plot.
palette	colour palette (boolean).
impute	impute missing data (boolean).
cloud	which cloud should be plotted (string: real, fitted, both, deviation)
plot_modif_rates	plot modified rates instead of eigenvalue percentage (boolean).
axis_lab_name	name of axis label.
labels	label axes (vector of length 4; left, right, top, bottom).
axes_annotate_alpha	alpha value of axes annotations.

Value

ggplot2 visualization of additive cloud.

`fviz_gda_trajectory` *Visualization of trajectories (connected active and passive individual points).*

Description

Visualization of trajectories (connected active and passive individual points).

Usage

```
fviz_gda_trajectory(
  res_gda,
  select = list(name = NULL, within_inertia = NULL, case = NULL),
  title = NULL,
  axes = 1:2,
  ind_labels = FALSE,
  time_point_names = NULL,
  plot_modif_rates = TRUE,
  axis_lab_name = "Achse",
  labels = NULL,
  legend_x = 0.12,
  legend_y = 0.9,
  axes_annotate_alpha = 0.3,
  xlim = NULL,
  ylim = NULL
)
```

Arguments

`res_gda`	MCA result (rownames have to be questionnaire IDs including time number, e.g. 87654_1).
`select`	vector of names, within_inertia of individuals selection (within_inertia: vector containing the number of high variation and low variationindividuals) or case (vector containing NULL, complete, or incomplete).
`title`	the plot title
`axes`	axes to plot.
`ind_labels`	plot labels (boolean).
`time_point_names`	vector containing the name of the time points.
`plot_modif_rates`	plot modified rates instead of eigenvalue percentage (boolean).
`axis_lab_name`	name of axis label.
`labels`	label axes (vector of length 4; left, right, top, bottom).
`legend_x`	x position of legend.

legend_y	y position of legend.
axes_annotate_alpha	alpha value of axes annotations.
xlim	x Axis limits (vector of length 2).
ylim	y Axis limits (vector of length 2).

Value

trajectory ggplot2 visualization.

`fviz_gda_trajectory_ellipses` *Visualization of trajectory structuring factor ellipses.*

Description

Visualization of trajectory structuring factor ellipses.

Usage

```
fviz_gda_trajectory_ellipses(
  res_gda,
  df_var_quali,
  var_quali,
  axes = 1:2,
  impute = TRUE,
  time_point_names = NULL,
  ind_points = TRUE,
  concentration_ellipse = TRUE,
  title = NULL,
  plot_modif_rates = TRUE,
  alpha = 0.15,
  select = NULL,
  select_facet = TRUE,
  labels = NULL,
  xlim = NULL,
  ylim = NULL,
  axes_annotate_alpha = 0.3,
  complete_obs = FALSE,
  facet_title_size = 14,
  density = FALSE,
  ellipses = TRUE
)
```

Arguments

res_gda	MCA result (rownames have to be questionnaire IDs including time number, e.g. 87654_1).
df_var_quali	data frame containing one qualitative variable (with IDs as rownames).
var_quali	name of the structuring variable.
axes	the axes to plot.
impute	use imputation for missing data.
time_point_names	vector containing the name of the time points.
ind_points	show individuals (boolean).
concentration_ellipse	plot concentration ellipses (boolean).
title	title of the plot.
plot_modif_rates	plot modified rates instead of eigenvalue percentage (boolean).
alpha	ellipse fill alpha.
select	choose cluster/category.
select_facet	facet clusters/categories (boolean.)
labels	label axes (vector of length 4; left, right, top, bottom).
xlim	x limits.
ylim	y limits.
axes_annotate_alpha	alpha value of axes annotations.
complete_obs	plot only complete observations (boolean).
facet_title_size	size of the facet stripe title (numeric).
density	should 2D density lines be drawn (boolean).
ellipses	should ellipses be drawn (boolean).

Value

ggplot2 visualization.

`fviz_gda_trajectory_quali` *Visualize trajectories and structuring factors.*

Description

Visualize trajectories and structuring factors.

Usage

```
fviz_gda_trajectory_quali(
  res_gda,
  df_var_quali,
  var_quali,
  var_quali_select = NULL,
  axes = 1:2,
  ind_labels = FALSE,
  title = NULL,
  time_point_names = NULL,
  select = list(name = NULL, within_inertia = NULL, case = NULL),
  impute = TRUE,
  plot_modif_rates = TRUE,
  labels = NULL,
  xlim = NULL,
  ylim = NULL,
  axes_annotate_alpha = 0.3,
  case_names = NULL,
  label_x_limits = NA,
  label_y_limits = NA
)
```

Arguments

`res_gda`	MCA result (rownames have to be questionnaire IDs including time number, e.g. 87654_1).
`df_var_quali`	data frame containing one qualitative variable (with IDs as rownames).
`var_quali`	name of the structuring variable.
`var_quali_select`	the name of the selected categories/clusters.
`axes`	the axes to plot.
`ind_labels`	plot labels (boolean).
`title`	the plot title.
`time_point_names`	vector containing the name of the time points.

select	select vector of names, within_inertia of individuals selection (within_inertia: vector containing the number of high variation and low variationindividuals) or case (vector containing NULL, complete, or incomplete).
impute	use imputation for missing data.
plot_modif_rates	plot modified rates instead of eigenvalue percentage (boolean).
labels	label axes (vector of length 4; left, right, top, bottom).
xlim	numeric vector of 2.
ylim	numeric vector of 2.
axes_annotate_alpha	alpha value of axes annotations.
case_names	named character vector containing names of cases.
label_x_limits	constrain the labels to a specific area. Limits are specified in data coordinates.
label_y_limits	constrain the labels to a specific area. Limits are specified in data coordinates.

Value

ggplot2 visualization.

`fviz_gda_trajectory_sample` *Visualization of the separated concentration ellipses of the sample.*

Description

Visualization of the separated concentration ellipses of the sample.

Usage

```
fviz_gda_trajectory_sample(
  res_gda,
  time_point_names = NULL,
  axes = 1:2,
  ind_points = TRUE,
  concentration_ellipse = TRUE,
  complete = TRUE,
  title = NULL,
  plot_modif_rates = TRUE,
  alpha = 0.15,
  axis_lab_name = "Achse",
  axes_annotate_alpha = 0.3,
  labels = NULL,
  legend_x = 0.12,
  legend_y = 0.9,
  xlim = NULL,
  ylim = NULL
)
```

Arguments

res_gda	MCA result (rownames have to be questionnaire IDs including time number, e.g. 87654_1).
time_point_names	vector containing the name of the time points.
axes	the axes to plot.
ind_points	show individuals (boolean).
concentration_ellipse	show or hide overall concentration ellipse (boolean).
complete	plot only complete cases (boolean).
title	title of the plot
plot_modif_rates	plot modified rates instead of eigenvalue percentage (boolean).
alpha	ellipse fill alpha.
axis_lab_name	name of axis label.
axes_annotate_alpha	alpha value of axes annotations.
labels	label axes (vector of length 4; left, right, top, bottom).
legend_x	x position of legend.
legend_y	y position of legend.
xlim	x Axis limits (vector of length 2).
ylim	y Axis limits (vector of length 2).

Value

ggplot2 visualization.

---

fviz_gda_var *Visualize specific contributing modalities in a plane.*

Description

Visualize specific contributing modalities in a plane.

Usage

```
fviz_gda_var(
  res_gda,
  contrib = "auto",
  title = NULL,
  axes = 1:2,
  group = NULL,
```

```
  group_names = NULL,
  group_style = "both",
  textsize = 4,
  colour_palette = "Set1",
  individuals = FALSE,
  individuals_size = "auto",
  individuals_alpha = 0.5,
  individuals_names = FALSE,
  plot_modif_rates = TRUE,
  axis_lab_name = "Achse",
  group_lab_name = "Themengruppen",
  labels = NULL,
  xlim = NULL,
  ylim = NULL,
  alpha = 1
)
```

Arguments

res_gda	GDA result data frame.
contrib	"auto" calculates the optimal modalities to show (based on the basic criterion). Otherwise define an amount of modalities to plot.
title	plot title.
axes	the GDA dimensions to plot.
group	vector containing group definition.
group_names	names of the groups.
group_style	style to plot (vector containing "shape", "colour" or "both).
textsize	size of the text.
colour_palette	name of the used colour palette.
individuals	show individual points/ biplot (boolean).
individuals_size	set individual point size manual or "auto".
individuals_alpha	set alpha value.
individuals_names	plot individual names (boolean).
plot_modif_rates	plot modified rates instead of eigenvalue percentage (boolean).
axis_lab_name	name of axis label.
group_lab_name	name of variable groups.
labels	label axes (vector of length 4; left, right, top, bottom).
xlim	x Axis limits (vector of length 2).
ylim	y Axis limits (vector of length 2).
alpha	numeric value between 0 and 1.

Value

ggplot2 visualization containing selected modalities.

`fviz_gda_var_axis` *Visualize specific contributing modalities.*

Description

Visualize specific contributing modalities.

Usage

```
fviz_gda_var_axis(
  res_gda,
  axis = 1,
  contrib = "auto",
  title = NULL,
  axes = 1:2,
  group = NULL,
  group_names = NULL,
  group_style = "both",
  textsize = 4,
  colour_palette = "Set1",
  individuals = FALSE,
  individuals_size = "auto",
  individuals_alpha = 0.5,
  individuals_names = FALSE,
  plot_modif_rates = TRUE,
  axis_lab_name = "Achse",
  group_lab_name = "Themengruppen",
  labels = NULL,
  xlim = NULL,
  ylim = NULL,
  alpha = 1
)
```

Arguments

`res_gda`	GDA result data frame.
`axis`	dimension to be filtered.
`contrib`	"auto" calculates the optimal modalities to show (based on the basic criterion). Otherwise define an amount of modalities to plot.
`title`	plot title.
`axes`	the GDA dimensions to plot.
`group`	vector containing group definition.

group_names	names of the groups.
group_style	style to plot (vector containing "shape", "colour" or "both).
textsize	size of the text.
colour_palette	name of the used colour palette.
individuals	show individual points/ biplot (boolean).
individuals_size	set individual point size manual or "auto".
individuals_alpha	set alpha value.
individuals_names	plot individual names (boolean).
plot_modif_rates	plot modified rates instead of eigenvalue percentage (boolean).
axis_lab_name	name of axis label.
group_lab_name	name of variable groups.
labels	label axes (vector of length 4; left, right, top, bottom).
xlim	x Axis limits (vector of length 2).
ylim	y Axis limits (vector of length 2).
alpha	numeric value between 0 and 1.

Value

ggplot2 visualization containing selected modalities.

---

fviz_mca_var_corr *Visualize MCA variable representation square.*

Description

Visualize MCA variable representation square.

Usage

```
fviz_mca_var_corr(
  res_gda,
  axes = c(1, 2),
  geom = c("point", "text"),
  labelsize = 4,
  pointsize = 2,
  invisible = NULL,
  labels = TRUE,
  repel = TRUE,
  select = list(name = NULL, eta2 = NULL),
  plot_modif_rates = TRUE,
  title = "MCA - Variable Representation"
)
```

Arguments

res_gda	MCA result.
axes	axes to plot.
geom	whether points or labels to plot.
labelsize	size of labels.
pointsize	size of points.
invisible	hide "passive" or "active" variables.
labels	label points or not (boolean).
repel	repel labels (boolean).
select	selection of variables (names) or eta2 values (all above value).
plot_modif_rates	plot modified rates instead of eigenvalue percentage (boolean).
title	plot title.

Value

ggplot2 visualization of variable correlation square (variables representation).

---

gda_describe_axis *Calculate axis contributions.*

Description

Calculate axis contributions.

Usage

```
gda_describe_axis(res_gda, axis = 1, contrib = "auto")
```

Arguments

res_gda	MCA result.
axis	which axis to calculate.
contrib	"auto" calculates the optimal modalities to show (based on the basic criterion). Otherwise define an amount of modalities to plot.

Value

list containing axis contribution results.

gda_describe_group *Calculate group contributions.*

Description

Calculate group contributions.

Usage

```
gda_describe_group(res_gda, group = NULL, group_names = NULL)
```

Arguments

res_gda	MCA result.
group	vector containing group definition.
group_names	names of the groups.

Value

list containing group results.

gda_optimise_df *Optimise data frame for Geometric Data Analysis*

Description

Optimise data frame for Geometric Data Analysis

Usage

```
gda_optimise_df(df_name, mod_excl = NA, prop_na_excl = 0.2, rename_na = FALSE)
```

Arguments

df_name	name of the data frame to optimise.
mod_excl	specify, which modalities should excluded.
prop_na_excl	overall level to exclude specified modalities.
rename_na	rename NA with label

Value

optimised data frame.

get_gda_trajectory *Extract trajectory data.*

Description

Extract trajectory data.

Usage

```
get_gda_trajectory(res_gda, time_point_names = NULL, complete_obs = FALSE)
```

Arguments

res_gda	GDA result.
time_point_names	name of the separated time points.
complete_obs	plot only complete observations (boolean).

Value

list containing time point separated ind coord and time point names.

get_index_mod *Exctract index of specific modalities.*

Description

Exctract index of specific modalities.

Usage

```
get_index_mod(df_gda, pattern = "Fehlender Wert")
```

Arguments

df_gda	GDA optimised data frame.
pattern	search pattern (regular expression).

Value

indices of modalities.

get_mca_var_corr *Reshapes MCA results.*

Description

Reshapes MCA results.

Usage

```
get_mca_var_corr(res_mca, axes = 1:2)
```

Arguments

res_mca	MCA result.
axes	axes selection.

Value

data frame with MCA variable names, types, coords and eta2 values.

get_mfa_mod_group_id *Extract the corresponding group id of MFA variable categories.*

Description

Extract the corresponding group id of MFA variable categories.

Usage

```
get_mfa_mod_group_id(res_mfa)
```

Arguments

res_mfa	MFA result.

Value

vector containing group ids in MFA result order.

get_path_coord *Extract coords of categories to concat.*

Description

Extract coords of categories to concat.

Usage

```
get_path_coord(res_gda_quali, var, var_levels = NULL, exclude = NULL)
```

Arguments

res_gda_quali	GDA result.
var	variable names.
var_levels	variable categories to concat.
exclude	categories to exclude.

Value

data frame with path coords.

get_places_chronology *Reshape place chronology data.*

Description

Reshape place chronology data.

Usage

```
get_places_chronology(
  data,
  id = "all",
  weekday = "all",
  title,
  exclude_sleep = TRUE
)
```

Arguments

data	a data frame, which contains place chronology data.
id	vector, which contains questionnaiere ids.
weekday	vector, which contains a day selection.
title	specify plot title.
exclude_sleep	exclude sleep duration (boolean).

Value

reshaped data frame for further visualization.

`get_places_chronology_time_pattern` *Reshpape place chronology time pattern data.*

Description

Reshpape place chronology time pattern data.

Usage

```
get_places_chronology_time_pattern(oc_data, id = "all", weekday = "all")
```

Arguments

`id`	vector, which contains questionnaire ids. Use "all" if you want to plot all ids.
`weekday`	vector, which contains days to plot.
`data`	data frame, which contains place chronology time pattern data.

Value

reshaped data frame for further visualization.

`get_time_pattern` *Reshape time pattern data.*

Description

Reshape time pattern data.

Usage

```
get_time_pattern(data, id = "all", reshape_data = TRUE)
```

Arguments

`data`	data frame which contains time pattern data.
`id`	vector which contains questionnaire ids.
`reshape_data`	whether reshape data or not. Use this option if your data is column wise concentration (e. g. "mo_seminar")

Value

reshaped data frame for further visualization.

get_time_pattern_profile

Reshape time pattern profile data frame.

Description

Reshape time pattern profile data frame.

Usage

```
get_time_pattern_profile(data_tp, id = "all")
```

Arguments

data_tp	data frame containing questionnaire_id, kml3d results and time pattern data.
id	time pattern number.

Value

Reshaped data frame.

get_time_pattern_series

Reshape time pattern series data.

Description

Reshape time pattern series data.

Usage

```
get_time_pattern_series(data_tp)
```

Arguments

data_tp	data frame including questionnaire_id, kml3d results and time pattern data.

Value

Reshaped data frame.

modified_rates *Calculate modified rates*

Description

Calculate modified rates

Usage

```
modified_rates(mca_res)
```

Arguments

mca_res	FactoMineR MCA object.

Value

Modified rates as tibble.

plot_barplot *Visualize a barplot.*

Description

Visualize a barplot.

Usage

```
plot_barplot(
  df_origin,
  df_var,
  sort = FALSE,
  bar_abs_size = 3.5,
  bar_rel_size = 3,
  axes_rel_small = 0.6,
  show_missing = TRUE,
  digits = 1,
  flip = FALSE
)
```

Arguments

df_origin	source data farme (tibble).
df_var	categorical variable name.
sort	sort bars (boolean).
bar_abs_size	size of absolute values in plot.
bar_rel_size	size of relative values in plot.
axes_rel_small	relative value for small axes text (labels, titles ...).
show_missing	include missing values in plot or not (boolean).
digits	amount of label value digits.
flip	flip axes (boolean).

Value

ggplot2 barplot.

---

plot_places_chronology

Plot single or multiple place chronologies in different scales.

Description

Plot single or multiple place chronologies in different scales.

Usage

```
plot_places_chronology(
  data,
  id,
  weekday = "all",
  size_range = NULL,
  colour_path = "black",
  size_path = 2,
  alpha_path = 0.25,
  alpha_points = 0.85,
  linetype_path = "solid",
  force_repel = 3,
  title = NULL,
  axis_label = FALSE,
  xlim = NULL,
  ylim = NULL,
  xextra = 3,
  print_place_duration = TRUE,
  point_padding = unit(1, "lines"),
  exclude_sleep = TRUE,
  facets = FALSE
)
```

Arguments

data	a data frame (columns: ID, day, duration, place, address, lon, lat, prop_duration).
id	vector, which contains questionnaire ids. Choosa "all" to compute all ids.
weekday	vector, which contains the weekday to plot.
size_range	specify the size for visualizatipn of duration.
colour_path	sepcify the path line colour.
size_path	specify the path line size.
alpha_path	specify the path line alpha value [0:1].
alpha_points	specify the point alpha value [0:1].
linetype_path	specify the linetype of the path line.
force_repel	specify how heavy the repel algorithmn should be.
title	title of the plot.
axis_label	show or hide axis labels (boolean).
xlim	specify plot x limits.
ylim	specify plot y limits.
xextra	extra space for time plot (units in cm).
print_place_duration	print place overall duration (hours).
point_padding	Amount of padding around labeled point. Defaults to unit(0, "lines").
exclude_sleep	exclude sleep duration (boolean).
facets	plot facets (boolean).

Value

ggplot2 visualization of place chronology data.

---

plot_places_chronology_meaning

Plot place chronologies map structure and zoom in.

Description

Plot place chronologies map structure and zoom in.

Usage

```
plot_places_chronology_meaning(
  data,
  id,
  weekday = "all",
  size_range = NULL,
  colour_path = "black",
  size_path = 2,
  alpha_path = 0.25,
  alpha_points = 1,
  linetype_path = "solid",
  title = NULL,
  axis_label = FALSE,
  print_place_duration = TRUE,
  exclude_sleep = TRUE,
  facets = FALSE,
  facets_include_place = NULL,
  facets_include_all = FALSE,
  exclude_na = FALSE,
  exclude = NULL,
  exclude_meaning = NULL,
  meanings = NULL,
  map = FALSE,
  map_zoom = 10,
  map_add_x = 0.2,
  map_add_y = 0.1,
  graph = TRUE,
  area_fill = "white",
  area_colour = "black",
  area_alpha = 0,
  area_size = 1.5,
  con_size = 5,
  area_linetype = "solid",
  area_expand = 0.5,
  area_label_fontsize = c(12, 10),
  area_buffer = 10,
  map_scalebar = TRUE,
  map_scalebar_location = "topright",
  map_scalebar_text_size = 4.5,
  map_scalebar_box_size = 0.015,
  map_scalebar_border_size = 0.85,
  map_scalebar_dist = 1,
  map_scalebar_text_dist = 0.02,
  map_scalebar_unit_pos_dist = 0.5
)
```

Arguments

data	a data frame (columns: ID, day, duration, place, address, lon, lat, prop_duration).
id	vector, which contains questionnaire ids. Choose "all" to compute all ids.
weekday	vector, which contains the weekday to plot.
size_range	specify the size for visualizatipn of duration.
colour_path	sepcify the path line colour.
size_path	specify the path line size.
alpha_path	specify the path line alpha value [0:1].
alpha_points	specify the point alpha value [0:1].
linetype_path	specify the linetype of the path line.
title	title of the plot.
axis_label	show or hide axis labels (boolean).
print_place_duration	print place overall duration (hours).
exclude_sleep	exclude sleep duration (boolean).
facets	plot facets (boolean).
facets_include_place	explicit include places in facets (vector).
facets_include_all	include all place names in facet plot (boolean).
exclude_na	drop NA places (boolean).
exclude	exclude specific places from the plot (vector).
exclude_meaning	meanings to be excluded (vector).
meanings	give places a meaning for grouping (vector).
map	use map background (boolean).
map_zoom	map zoom level.
map_add_x	adjust map x area.
map_add_y	adjust map y area.
graph	plot graph (boolean).
area_fill	fill colour of meaning area.
area_colour	line colour of meaning area.
area_alpha	alpha of meaning area.
area_size	size of meaning area.
con_size	size of the label connector (numeric).
area_linetype	linetype of meaning area.
area_expand	size of the area expand (numeric).
area_label_fontsize	area label fontsize (vector).

area_buffer The size of the region around the mark where labels cannot be placed (in mm).

map_scalebar show a scale bar (boolean).

map_scalebar_location
location of the scalebar.

map_scalebar_text_size
size of the scale text.

map_scalebar_box_size
size of the box.

map_scalebar_border_size
size of the border.

map_scalebar_dist
displayed disctance.

map_scalebar_text_dist
distance between box and text.

map_scalebar_unit_pos_dist
add space between scalebar values and unit.

Value

ggplot2 visualization of place chronology data.

---

plot_places_chronology_path

Plot place chronologies activity paths.

Description

Plot place chronologies activity paths.

Usage

```
plot_places_chronology_path(
  data,
  id,
  recodeded_places = NULL,
 recode_week = c(`Woche 4` = "5", `Woche 3` = "4", `Woche 2` = "3", `Woche 1` = "2")
)
```

Arguments

data a data frame (columns: ID, day, duration, place, address, lon, lat, prop_duration).

id vector, which contains questionnaire ids. Choose "all" to compute all ids.

recodeded_places
recode leves of place labels by named vector.

week recode leves of week labels by named vector.

Value

ggplot2 visualization of place chronology path.

`plot_places_chronology_time_pattern` *Plot place chronology time pattern data.*

Description

Plot place chronology time pattern data.

Usage

```
plot_places_chronology_time_pattern(
  data,
  id = "all",
  weekday = "all",
  graph = TRUE,
  print_prop_duration = TRUE,
  legend = TRUE,
  bar_width = 1,
  ncol = 3,
  labels = NULL,
  facet_label = TRUE,
  legend_bottom = TRUE,
  legend_cols = 2
)
```

Arguments

`data`	data frame, which contains place chronology time pattern data.
`id`	vector, which contains questionnaire ids. Use "all" if you want to plot all ids.
`weekday`	weekday vector, which contains days to plot.
`graph`	whether to plot or not to plot the praph (boolean)
`print_prop_duration`	whether to print or not to print prop duration data.
`legend`	show or hide legends (boolean).
`bar_width`	specify the width of the bars.
`ncol`	number of cols, if there are multiple plots (facets).
`labels`	facet labels.
`facet_label`	show facets (boolean).
`legend_bottom`	show legend on bottom (boolean).
`legend_cols`	number of legend cols (numeric).

Value

ggplot2 visualization of place chronology time pattern data.

`plot_time_pattern` *Plot single or multiple time pattern.*

Description

Plot single or multiple time pattern.

Usage

```
plot_time_pattern(
  data,
  id = "all",
  ncol = 4,
  reshape_data = TRUE,
  print_prop_duration = TRUE,
  fluid = FALSE,
  labels = NULL,
  legend = TRUE,
  facet = TRUE
)
```

Arguments

`data`	data frame which contains time pattern data.
`id`	vector which contains questionnaire ids.
`ncol`	number of cols, if there are multiple plots (facets).
`reshape_data`	whether reshape data or not.
`print_prop_duration`	whether to print or not to print prop duration data (boolean).
`fluid`	should be static bars or fluid lines visualized (boolean).
`labels`	facet labels.
`legend`	show legend (boolean).
`facet`	plot facets (boolean).

Value

ggplot2 visualization of time pattern data.

plot_time_pattern_profile

Plot average time pattern profiles.

Description

Plot average time pattern profiles.

Usage

```
plot_time_pattern_profile(data_tp, id = "all", ncol = 4, fluid = FALSE)
```

Arguments

data_tp	data frame containing questionnaire_id, kml3d results and time pattern data.
id	time pattern to plot.
ncol	facet columns.
fluid	should be static bars or fluid lines visualized (boolean).

Value

ggplot2 avgerage time pattern profile plot.

plot_time_pattern_series

Plot time pattern series data.

Description

Plot time pattern series data.

Usage

```
plot_time_pattern_series(
  data_tp,
  alpha = 0.3,
  individual_lines = FALSE,
  title = "Time pattern profiles (kml3d results)",
  hour_limits = c(0, 24),
  hour_scale = c(0, 4, 8, 12)
)
```

Arguments

data_tp	data frame including questionnaire_id, kml3d results and time pattern data.
alpha	opacity of the time pattern lines.
individual_lines	show individual time pattern lines (boolean).
title	plot title.
hour_limits	y axis limits (hours).
hour_scale	y axis breaks (hours).

Value

ggplot2 time pattern series plot.

---

supvar_crossing_stats *Calculate crossed variables double breakdown of variance.*

Description

Calculate crossed variables double breakdown of variance.

Usage

```
supvar_crossing_stats(
  res_gda,
  var_quali_df,
  var_quali,
  impute = TRUE,
  axes = 1:2
)
```

Arguments

res_gda	MCA result.
var_quali_df	the supplementary data frame.
var_quali	crossed supplementary variable (vector separated by "_").
impute	impute missing data (boolean).
axes	the GDA dimensions to calculate double breakdown of variance.

Value

Returns a list:

var	double breakdown of variance.
reg	result of linear regressions.

supvar_stats *Calculate results for supplementary variables.*

Description

Calculate results for supplementary variables.

Usage

```
supvar_stats(res_gda, var_quali_df, var_quali, impute = TRUE, impute_ncp = 2)
```

Arguments

res_gda	GDA result.
var_quali_df	the supplementary data frame.
var_quali	supplementary variable name (string).
impute	impute missing data (boolean).
impute_ncp	number of dimensions to predict missing values.

Value

Returns a list:

weight	numeric vector of categories weights
cord	data frame of categories coordinates
cos2	data frame of categories square cosine
var	data frame of categories within variances, variance between and within categories and variable square correlation ratio (eta2)
v.test	data frame of categories test-values
supvar	vector of the supplementary variable categories

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