Package 'eq5dsuite'

Type Package

Title Manipulating and Analysing EQ-5d Data

Version 1.0.0

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Description The EQ-5D is a widely-
used standarized instrument for measuring Health Related Quality Of Life (HRQOL),
developed by the EuroQol group <https:
//euroqol.org/>. It assesses five dimensions; mobility, self-care,
usual activities, pain/discomfort, and anxiety/depression, using either a three-level (EQ-5D-
3L) or five-level (EQ-5D-5L) scale.
Scores from these dimensions are commonly converted into a single utility index using country-
specific value sets,
which are critical in clinical and economic evaluations of healthcare and in population health sur-
veys.
The eq5dsuite package enables users to calculate utility index values for the EQ-5D instruments,
including crosswalk utilities using the original crosswalk devel-
oped by van Hout et al. (2012) <doi:10.1016/j.jval.2012.02.008>
(mapping EQ-5D-5L responses to EQ-5D-
3L index values), or the recently developed reverse crosswalk
by van Hout et al. (2021) <doi:10.1016/j.jval.2021.03.009> (mapping EQ-5D-3L responses
to EQ-5D-5L index values). Users are allowed to add and/or remove user-defined value sets.
Additionally, the package provides tools to analyze EQ-5D data according to the recommended
guidelines outlined in ``Methods for Analyzing and Reporting EQ-
5D data'' by Devlin et al. (2020) <doi:10.1007/978-3-030-47622-9>.

License GPL (>= 2)

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Imports dplyr, ggplot2, moments, RColorBrewer, rlang, scales, stringr,
tidyr, rappdirs

NeedsCompilation no

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R topics documented:

.add_utility *Add utility values to a data frame*

Description

This function adds utility values to a data frame based on a specified version of EQ-5D and a country name.

Usage

```
.add_utility(df, eq5d_version, country)
```

Arguments

df	A data frame containing the state data. The state must be included in the data frame as a character vector under the column named 'state'.
eq5d_version	A character string specifying the version of EQ-5D, i.e. 3L or 5L.
country	A character string representing the name of the country. This could be in a 2-letter format, full name or short name, as specified in the country_codes datasets.

Value

A data frame with an additional column named 'utility' containing the calculated utility values. If the input country name is not found in the country_codes dataset, a list of available codes is printed, and subsequentyl an error message is displayed and the function stops.

Examples

```
df <- data.frame(state = c("11111", "11123", "32541"))
.add_utility(df, "5L", "DK")
```

.check_uniqueness	*Check the uniqueness of groups This function takes a data frame 'df' and a vector of columns 'group_by', and checks whether the combinations of values in the columns specified by 'group_by' are unique. If the combinations are not unique, a warning message is printed.*

Description

Check the uniqueness of groups This function takes a data frame 'df' and a vector of columns 'group_by', and checks whether the combinations of values in the columns specified by 'group_by' are unique. If the combinations are not unique, a warning message is printed.

Usage

```
.check_uniqueness(df, group_by)
```

Arguments

df	A data frame.
group_by	A character vector of column names in 'df' that specify the groups to check for uniqueness.

Value

No return value, called for side effects: it will stop with an error if any group combinations are not unique.

Examples

```
df <- data.frame(id = c(1, 1, 1, 1, 2, 2),
                 fu = rep(c("baseline", "follow-up"), 3),
                 value = rnorm(6))
.check_uniqueness(df, c("id", "fu"))
```

.EQxwrprob	*.EQxwrprob*

Description

Takes a matrix of parameters for reverse crosswalk model, returns 243 x 25 matrix of state/level transition probabilities.

Usage

```
.EQxwrprob(par = NULL)
```

Arguments

par   Matrix of model parameters

Value

An 243 * 25 matrix with probabilities for state level transitions.

.freqtab	*Helper function for frequency of levels by dimensions tables*

Description

Helper function for frequency of levels by dimensions tables

Usage

```
.freqtab(
  df,
  names_eq5d = NULL,
  name_fu = NULL,
  levels_fu = NULL,
  eq5d_version = NULL
)
```

Arguments

df	Data frame with the EQ-5D and follow-up columns
names_eq5d	Character vector of column names for the EQ-5D dimensions
name_fu	Character string for the follow-up column. If NULL, no grouping is used, and the table reports for the total population.
levels_fu	Character vector containing the order of the values in the follow-up column. If NULL (default value), the levels will be ordered in the order of appearance in df.
eq5d_version	Version of the EQ-5D instrument

Value

Summary data frame.

.gen_colours	*Generate colours for PCHC figures*

Description

This internal function generates a vector of colours based on the specified base colour. Currently only green and orange colours are implemented. The wrapper is used in Figures 2.2-2.4.

Usage

```
.gen_colours(col, n)
```

Arguments

col	A character string specifying the base colour. Only "green" or "orange" is accepted.
n	A positive integer specifying the number of colours to generate.

Value

A vector of colours generated based on the specified base colour and number of colours.

Examples

```
# generate 10 colours for base colour "green"
.gen_colours("green", 10)
# generate 7 colours for base colour "orange"
.gen_colours("orange", 7)
```

.getmode *Get the mode of a vector.*

Description

This function calculates the mode of a numeric or character vector. If there are multiple modes, the first one is returned. The code is taken from an R help page.

Usage

```
.getmode(v)
```

Arguments

v   A numeric or character vector.

Value

The mode of 'v'.

Examples

```
.getmode(c(1, 2, 3, 3))
.getmode(c("a", "b", "b", "c"))
```

.get_lfs *Calculate the Level Frequency Score (LFS)*

Description

This function calculates the Level Frequency Score (LFS) for a given EQ-5D state and a specified version of EQ-5D. If at least one domain contains a missing entry, the whole LFS is set to be NA.

Usage

```
.get_lfs(s, eq5d_version)
```

Arguments

s   A character vector representing the EQ-5D state, e.g. 11123.

eq5d_version   A character string specifying the version of EQ-5D, i.e. 3L or 5L.

Value

A character vector representing the calculated LFS.

Examples

```
.get_lfs("333", "3L") # returns 003
.get_lfs("333", "5L") # returns 00300
.get_lfs("12345", "5L") # returns 11111
```

.get_names *Replace NULL names with default values*

Description

This function takes in a list of parameters, which would be column names of the input data frame, and checks if they are null. Any nulls are replaced with default values, and the updated list of parameters is returned.

Usage

```
.get_names(df = NULL, ...)
```

Arguments

df	a data frame; only used/supplied if levels_fu needs to be defined
...	a list of parameters consisting of any/all of 'names_eq5d', 'name_fu', 'levels_fu', 'eq5d_version', and 'name_vas'.

Value

a list of parameters with null entries replaced with default values.

Examples

```
.get_names(names_eq5d = c("mo", "sc", "ua", "pd", "ad"))
.get_names(names_eq5d = NULL, eq5d_version = NULL, name_vas = NULL)
.get_names(df = example_data, name_fu = NULL, levels_fu = NULL)
```

.modify_ggplot_theme *Modify ggplot2 theme*

Description

Modify ggplot2 theme

Usage

```
.modify_ggplot_theme(p)
```

Arguments

p   ggplot2 plot

Value

ggplot2 plot with modified theme

.pchc   *Wrapper to determine Paretian Classification of Health Change*

Description

This internal function determines Paretian Classification of Health Change (PCHC) for each combination of the variables specified in the 'group_by' argument. It is used in the code for table_2_4-table_2_5 and figure_2_1-figure_2_4. An EQ-5D health state is deemed to be 'better' than another if it is better on at least one dimension and is no worse on any other dimension. An EQ-5D health state is deemed to be 'worse' than another if it is worse in at least one dimension and is no better in any other dimension.

Usage

```
.pchc(df, level_fu_1, add_noprobs = FALSE)
```

Arguments

df   A data frame with EQ-5D states and follow-up variable. The dataset is assumed to be have been ordered correctly.

level_fu_1   Value of the first (i.e. earliest) follow-up. Would normally be defined as levels_fu[1].

add_noprobs   Logical value indicating whether to include a separate classification for those without problems (default is FALSE)

Value

A data frame with PCHC value for each combination of the grouping variables. If 'add_noprobs' is TRUE, a separate classification for those without problems is also included.

Examples

```
df <- data.frame(id = c(1, 1, 2, 2),
                 fu = c(1, 2, 1, 2),
                 mo = c(1, 1, 1, 1),
                 sc = c(1, 1, 5, 1),
                 ua = c(1, 1, 4, 3),
                 pd = c(1, 1, 1, 3),
                 ad = c(1, 1, 1, 1))
.pchc(df, level_fu_1 = 1, add_noprobs = TRUE)
```

.pchctab   *.pchctab: Changes in health according to the PCHC (Paretian Classi-
                                fication of Health Change)*

Description

.pchctab: Changes in health according to the PCHC (Paretian Classification of Health Change)

Usage

```
.pchctab(
  df,
  name_id,
  name_groupvar,
  names_eq5d = NULL,
  name_fu = NULL,
  levels_fu = NULL,
  add_noprobs = FALSE
)
```

Arguments

df	Data frame with the EQ-5D, grouping, id and follow-up columns
name_id	Character string for the patient id column
name_groupvar	Character string for the grouping column
names_eq5d	Character vector of column names for the EQ-5D dimensions
name_fu	Character string for the follow-up column
levels_fu	Character vector containing the order of the values in the follow-up column. If NULL (default value), the levels will be ordered in the order of appearance in df.
add_noprobs	if set to TRUE, level corresponding to "no problems" will be added to the table

Value

Summary data frame

Examples

```
.pchctab(df = example_data, name_groupvar = "surgtype", name_id = "id")
```

.pchc_plot_by_dim	*Wrapper to generate Paretian Classification of Health Change plot by dimension*

Description

This internal function plots Paretian Classification of Health Change (PCHC) by dimension. The input is a data frame containing the information to plot, and the plot will contain bars representing the proportion of the total data that falls into each dimension, stacked by covariate. The wrapper is used in Figures 2.2-2.4.

Usage

```
.pchc_plot_by_dim(plot_data, ylab, title, cols, text_rotate = FALSE)
```

Arguments

plot_data	A data frame containing information to plot, with columns for name (the dimensions to plot), p (the proportion of the total data falling into each dimension), and fu (the follow-up).
ylab	The label for the y-axis.
title	The plot title.
cols	A vector of colors to use for the bars.
text_rotate	A logical indicating whether to rotate the text labels for the bars.

Value

A ggplot object containing the PCHC plot.

Examples

```
plot_data <- data.frame(name = c("Dimension 1", "Dimension 2"),
p = c(0.5, 0.5),
fu = c("Covariate A", "Covariate B"))
cols <- c("#99FF99", "#006600", "#FFCC99", "#663300")
.pchc_plot_by_dim(plot_data, "Proportion", "Example PCHC Plot", cols)
```

.prep_eq5d   *Data checking/preparation: EQ-5D variables*

Description

This function prepares a data frame for analysis by extracting, processing, and adding columns for
EQ-5D variables, including state, LSS (Level Sum Score), LFS (Level Frequency Score) and utility.

Usage

```
.prep_eq5d(
  df,
  names,
  add_state = FALSE,
  add_lss = FALSE,
  add_lfs = FALSE,
  add_utility = FALSE,
  eq5d_version = NULL,
  country = NULL
)
```

Arguments

df	a data frame of EQ-5D scores
names	character vector of length 5 with names of EQ-5D variables in the data frame. The variables should be in an integer format.
add_state	logical indicating whether the EQ-5D state should be added
add_lss	logical indicating whether the LSS (Level Sum Score) should be added
add_lfs	logical indicating whether the LFS (Level Frequency Score) should be added
add_utility	logical indicating whether the utility should be added
eq5d_version	character indicating the version of the EQ-5D questionnaire to use (either "3L" or "5L")
country	character indicating the country to retrieve the quality of life score for

Value

a modified data frame with EQ-5D domain columns renamed to default names, and, if necessary,
with added columns for state, LSS, LFS, and/or utility. If any of the checks fail (e.g. EQ-5D
columns are not in an integer format), an error message is displayed and the function is stopping.

Examples

```
set.seed(1234)
df <- data.frame(mo = sample(1:5, 3), sc = sample(1:5, 3),
  ua = sample(1:5, 3), pd = sample(1:5, 3), ad = sample(1:5, 3))
```

```
.prep_eq5d(df, names = c("mo", "sc", "ua", "pd", "ad"),
  add_state = TRUE, add_lss = TRUE)
.prep_eq5d(df, names = c("mo", "sc", "ua", "pd", "ad"),
  add_state = TRUE, add_lss = TRUE, add_lfs = TRUE, add_utility = TRUE,
  eq5d_version = "5L", country = "Denmark")
```

.prep_fu   *Data checking/preparation: follow-up variable*

Description

This function prepares the follow-up (FU) variable for analysis by giving it a default name ('fu') and factorising

Usage

```
.prep_fu(df, name = NULL, levels = NULL)
```

Arguments

df   A data frame.

name   Column name in the data frame that contains follow-up information.

levels   Levels to factorise the FU variable into.

Value

A data frame with the follow-up variable renamed as "fu" and factorised.

Examples

```
df <- data.frame(id = c(1, 1, 2, 2),
  visit = c("baseline", "follow-up", "baseline", "follow-up"))
.prep_fu(df = df, name = "visit", levels = c("baseline", "follow-up"))
```

.prep_vas   *Data checking/preparation: VAS variable*

Description

The function prepares the data for VAS (Visual Analogue Scale) analyses.

Usage

```
.prep_vas(df, name)
```

Arguments

df   A data frame.

name   Column name in the data frame that holds the VAS score. The column can only contain integers or NAs

Value

A modified data frame with the VAS score renamed to "vas". If any checks fail (e.g. column is not numeric), an error message is displayed and the function is stopping.

Examples

```
df <- data.frame(vas_score = c(20, 50, 80, NA, 100))
.prep_vas(df = df, name = "vas_score")
df <- data.frame(vas_score = c(20.5, 50, 80, NA, 100))
.prep_vas(df = df, name = "vas_score")
```

.pstate3t5   *.pstate3t5*

Description

Takes a N x 25 matrix with probabilities per level/dimension, and creates an N * 3125 matrix with probabilities per state

Usage

```
.pstate3t5(PPP)
```

Arguments

PPP   N x 25 matrix with probabilities per level/dimension created by EQrxwprobs

Value

An N * 3125 matrix with probabilities per state

.pstate5t3 *.pstate5t3*

Description

Takes a 15 x 5 matrix with probabilities per level/dimension, and creates an 3125x243 matrix with probabilities per state

Usage

```
.pstate5t3(probs = .EQxwprob)
```

Arguments

probs   15 x 5 matrix with probabilities per level/dimension, typically saved in .EQxwprob

Value

An 3125x243 matrix with probabilities per state

.summary_cts_by_fu *Wrapper to summarise a continuous variable by follow-up (FU)*

Description

This function summarizes a continuous variable for each follow-up (FU) and calculates various statistics such as mean, standard deviation, median, mode, kurtosis, skewness, minimum, maximum, range, and number of observations. It also reports the total sample size and the number (and proportion) of missing values for each FU. The input 'df' must contain an ordered FU variable and the continuous variable of interest. The name of the continuous variable must be specified using 'name_v'. The wrapper is used in Table 3.1 (for VAS) or Table 4.2 (for EQ-5D utility)

Usage

```
.summary_cts_by_fu(df, name_v)
```

Arguments

df   A data frame containing the FU and continuous variable of interest. The dataset must contain an ordered 'fu' variable.

name_v   A character string with the name of the continuous variable in 'df' to be summarised.

Value

Data frame with one row for each statistic and one column for each FU.

Examples

```
df <- data.frame(fu = c(1,1,2,2,3,3),
                 vas = c(7,8,9,NA,7,6))
.summary_cts_by_fu(df, name_v = "vas")
```

.summary_mean_ci   *Wrapper to calculate summary mean with 95% confidence interval*

Description

This internal function calculates summary mean and 95% confidence interval of the utility variable, which can also be grouped. The function is used in Figures 4.2-4.4.

Usage

```
.summary_mean_ci(df, group_by)
```

Arguments

df   A data frame containing a 'utility' column.

group_by   A character vector of column names to group by.

Value

A data frame with the mean, lower bound, and upper bound of the 95

Examples

```
df <- data.frame(group = c("A", "A", "B", "B"),
                 utility = c(0.5, 0.7, 0.8, 0.9))
.summary_mean_ci(df, group_by = "group")
```

.summary_table_2_1 *Wrapper for the repetitive code in function_table_2_1. Data frame summary*

Description

This internal function summarises a data frame by grouping it based on the variables specified in the 'group_by' argument and calculates the frequency of each group. The output is used in Table 2.1

Usage

```
.summary_table_2_1(df, group_by)
```

Arguments

df   A data frame

group_by   A character vector of variables in 'df' to group by. Should contain 'eq5d' and 'fu'.

Value

A summarised data frame with groups defined by 'eq5d' and 'fu' variables, the count of observations in each group, and the frequency of each group.

Examples

```
set.seed(1234)
df <- data.frame(eq5d = rep(rnorm(5), 2),
                 fu = rep(c(1, 0, 1, 0, 1), 2))
.summary_table_2_1(df, c("eq5d", "fu"))
```

.summary_table_4_3 *Summary wrapper for Table 4.3*

Description

This internal function creates a summary of the data frame for Table 4.3. It groups the data by the variables specified in 'group_by' and calculates various summary statistics.

Usage

```
.summary_table_4_3(df, group_by)
```

Arguments

df   A data frame.

group_by   A character vector of names of variables by which to group the data.

Value

A data frame with the summary statistics.

Examples

```
df <- data.frame(group = c("A", "A", "B", "B"),
                 utility = c(0.5, 0.7, 0.8, 0.9))
.summary_table_4_3(df, group_by = "group")
```

.summary_table_4_4   *Summary wrapper for Table 4.4*

Description

This internal function creates a summary of the data frame for Table 4.4. It groups the data by the variables specified in 'group_by' and calculates various summary statistics.

Usage

```
.summary_table_4_4(df, group_by)
```

Arguments

df   A data frame.

group_by   A character vector of names of variables by which to group the data.

Value

A data frame with the summary statistics.

Examples

```
df <- data.frame(group = c("A", "A", "B", "B"),
                 utility = c(0.5, 0.7, 0.8, 0.9))
.summary_table_4_4(df, group_by = "group")
```

---

eq5d   *eq5d*

Description

Get EQ-5D index values for the -3L, -5L, crosswalk (-3L value set applied to -5L health states), reverse crosswealk (-5L value set applied to -3L health states), and -Y-3L

Usage

```
eq5d(
  x,
  country = NULL,
  version = "5L",
  dim.names = c("mo", "sc", "ua", "pd", "ad")
)
```

Arguments

x	A vector of 5-digit EQ-5D-3L state indexes or a matrix/data.frame with columns corresponding to EQ-5D state dimensions
country	String vector indicating country names or ISO3166 Alpha 2 / 3 country codes.
version	String indicating which version to use. Options are '5L' (default), '3L', 'xw', 'xwr', and 'Y3L'.
dim.names	A vector of dimension names to identify dimension columns.

Value

A vector of values or data.frame with one column for each value set requested.

Examples

```
# US -3L value set
eq5d(c(11111, 12321, 32123, 33333), 'US', '3L')
# Danish and US -5L value sets applied to -3L descriptives, i.e. reverse crosswalk
eq5d(make_all_EQ_states('3L'), c('DK', 'US'), 'XWR')
# US -5L value set
eq5d(c(11111, 12321, 32153, 55555), 'US', '5L')
```

---

eq5d3l *eq5d3l*

Description

Get EQ-5D-3L index values from individual responses to the five dimensions of the EQ-5D-3L.

Usage

```
eq5d3l(x, country = NULL, dim.names = c("mo", "sc", "ua", "pd", "ad"))
```

Arguments

x	A vector of 5-digit EQ-5D-3L state indexes or a matrix/data.frame with columns corresponding to EQ-5D-3L state dimensions.
country	String vector indicating country names or ISO3166 Alpha 2 / 3 country codes.
dim.names	A character vector specifying the names of the EQ-5D-3L dimensions. Default is c("mo", "sc", "ua", "pd", "ad").

Value

A vector of EQ-5D-3L values or data.frame with one column for each value set requested.

Examples

```
eq5d3l(c(11111, 12321, 32123, 33333), 'US') # US -3L value set
eq5d3l(make_all_EQ_states('3L'), c('DK', 'CA')) # Danish and Canada -3L value sets
```

---

eq5d5l *eq5d5l*

Description

Get EQ-5D-5L index values from individual responses to the five dimensions of the EQ-5D-5L.

Usage

```
eq5d5l(x, country = NULL, dim.names = c("mo", "sc", "ua", "pd", "ad"))
```

Arguments

x	A vector of 5-digit EQ-5D-5L state indexes or a matrix/data.frame with columns corresponding to EQ-5D-5L state dimensions.
country	String vector indicating country names or ISO3166 Alpha 2 / 3 country codes.
dim.names	A character vector specifying the names of the EQ-5D-5L dimensions. Default is c("mo", "sc", "ua", "pd", "ad").

Value

A vector of EQ-5D-5L values or data.frame with one column for each value set requested.

Examples

```
eq5d5l(c(11111, 12321, 32423, 55555), 'IT') # Italy -5L value set
eq5d5l(make_all_EQ_states('5L'), c('Japan', 'China')) # Japon and China -5L value sets
```

---

eq5dy3l	*eq5dy3l*

Description

Get EQ-5D-Y3L index values from individual responses to the five dimensions of the EQ-5D-Y3L.

Usage

```
eq5dy3l(x, country = NULL, dim.names = c("mo", "sc", "ua", "pd", "ad"))
```

Arguments

x	A vector of 5-digit EQ-5D-Y3L state indexes or a matrix / data frame with columns for each dimension.
country	String vector indicating country names or ISO3166 Alpha 2 / 3 country codes.
dim.names	A character vector specifying the names of the EQ-5D-Y3L dimensions. Default is c("mo", "sc", "ua", "pd", "ad").

Value

A vector of EQ-5D-Y3L values or data.frame with one column for each value set requested.

Examples

```
# Slovenia -Y3L value set
eq5dy3l(x = c(11111, 12321, 33333), country = 'SI')
# Germany and Spain -Y3L value sets
eq5dy3l(make_all_EQ_states('3L'), c('Germany', 'Spain'))
```

---

eqvs_add   *eqvs_add*

Description

Add user-defined EQ-5D value set and corresponding crosswalk option.

Usage

```
eqvs_add(
  df,
  version = "5L",
  country = NULL,
  saveOption = 1,
  savePath = NULL,
  description = NULL,
  code2L = NULL,
  code3L = NULL
)
```

Arguments

df	A data.frame or file name pointing to csv file. The contents of the data.frame or csv file should be exactly two columns: state, containing a list of all 3125 (for 5L) or 243 (for 3L) EQ-5D health state vectors, and a column of corresponding utility values, with a suitable name.
version	Version of the EQ-5D instrument. Can take values 5L (default) or 3L.
country	Optional string. If not NULL, will be used as a country description for the user-defined value set.
saveOption	Integer indicating how the cache data should be saved. 1: Do not save (default), 2: Save in package folder, 3: Save in another path.
savePath	A path where the cache data should be saved when 'saveOption' is 3. Please use 'eqvs_load' to load it in your next session.
description	Optional string. If not NULL, will be used as a descriptive text for the user-defined value set.
code2L	Optional string. If not NULL, will be used as the two-digit code for the value set. Must be different from any existing national value set code.
code3L	Optional string. If not NULL, will be used as the three-digit code for the value set. Must be different from any existing national value set code.

Value

True/False, indicating success or error.

Examples

```
# make nonsense value set
new_df <- data.frame(state = make_all_EQ_indexes(), TEST = runif(3125))
# Add as value set for Fantasia
eqvs_add(new_df, version = "5L", country = 'Fantasia', saveOption = 1)
```

---

eqvs_display   *eqvs_display*

Description

Display available value sets, which can also be used as (reverse) crosswalks.

Usage

```
eqvs_display(version = "5L", return_df = FALSE)
```

Arguments

version	Version of the EQ-5D instrument. Can take values 5L (default) or 3L.
return_df	If set to TRUE, the function will return information on the names of the available value sets in a data.frame. Defaults to FALSE

Value

Default NULL, if return_df == TRUE, returns a data.frame with the displayed information.

Examples

```
# Display available value sets.
eqvs_display
```

---

eqvs_drop   *eqvs_drop*

Description

Drop user-defined EQ-5D value set to reverse crosswalk options.

Usage

```
eqvs_drop(country = NULL, version = "5L", saveOption = 1, savePath = NULL)
```

Arguments

country	Optional string. If NULL, a list of current user-defined value sets will be provided for selection. If set, and matching an existing user-defined value set, a prompt will be given as to whether the value set should be deleted.
version	Version of the EQ-5D instrument. Can take values 5L (default) or 3L.
saveOption	Integer indicating how the cache data should be saved. 1: Do not save (default), 2: Save in package folder, 3: Save in another path.
savePath	A path where the cache data should be saved when 'saveOption' is 3. Please use 'eqvs_load' to load it in your next session.

Value

True/False, indicating success or error.

Examples

```
# make nonsense value set
new_df <- data.frame(state = make_all_EQ_indexes(), TEST = runif(3125))
# Add as value set for Fantasia
eqvs_add(new_df, version = "5L", country = 'Fantasia', saveOption = 1)
# Drop value set for Fantasia
eqvs_drop('Fantasia', saveOption = 1)
```

---

eqvs_load	*eqvs_load*

Description

Load cache data from a specified path.

Usage

```
eqvs_load(loadPath)
```

Arguments

loadPath	The path from which to load the cache data.

Value

TRUE if loading is successful, FALSE otherwise.

---

eqxw *eqxw*

Description

Get crosswalk values

Usage

```
eqxw(x, country = NULL, dim.names = c("mo", "sc", "ua", "pd", "ad"))
```

Arguments

x	A vector of 5-digit EQ-5D-5L state indexes or a matrix/data.frame with columns corresponding to EQ-5D state dimensions
country	String vector indicating country names or ISO3166 Alpha 2 / 3 country codes.
dim.names	A vector of dimension names to identify dimension columns

Value

A vector of reverse crosswalk values or data.frame with one column per reverse crosswalk set requested.

Examples

```
eqxw(c(11111, 12521, 32123, 55555), 'US')
eqxw(make_all_EQ_states('5L'), c('DK', 'US'))
```

---

eqxwr *eqxwr*

Description

Get reverse crosswalk values

Usage

```
eqxwr(x, country = NULL, dim.names = c("mo", "sc", "ua", "pd", "ad"))
```

Arguments

x	A vector of 5-digit EQ-5D-3L state indexes or a matrix/data.frame with columns corresponding to EQ-5D state dimensions
country	String vector indicating country names or ISO3166 Alpha 2 / 3 country codes.
dim.names	A vector of dimension names to identify dimension columns

Value

A vector of reverse crosswalk values or data.frame with one column per reverse crosswalk set requested.

Examples

```
eqxwr(c(11111, 12321, 32123, 33333), 'US')
eqxwr(make_all_EQ_states('3L'), c('DK', 'US'))
```

---

example_data   *example_data*

Description

A dataset containing patient-level data in a long format.

Usage

```
data(example_data)
```

Format

A data frame with 6600 rows and 13 variables:

id double Patient id

mo double EQ-5D-5L Mobility dimension

sc double EQ-5D-5L Self-care dimension

ua double EQ-5D-5L Usual activities dimension

pd double EQ-5D-5L Pain / discomfort dimension

ad double EQ-5D-5L Anxiety/depression dimension

vas double Value of the VAS scale measurememnt

fu character Follow-up (baseline / follow-up)

year_range character Time period for the follow-up (2009-2010 / 2010-2011 / 2011-2012); could be used as an alternative follow-up variable

month double Another alternative follow-up variable (1, ..., 15)

surgtype character Type of surgery (Cataract / Hernia / Hip / Knee / Veins)

gender character Patient's gender (Female / Male)

age double Patient's age in years

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| figure_1_2_1 | *Figure 1.2.1: Paretian Classification of Health Change* |

Description

Figure 1.2.1: Paretian Classification of Health Change

Usage

```
figure_1_2_1(df, names_eq5d = NULL, name_fu = NULL, levels_fu = NULL, name_id)
```

Arguments

df	Data frame with the EQ-5D, follow-up and patient id columns
names_eq5d	Character vector of column names for the EQ-5D dimensions
name_fu	Character string for the follow-up column
levels_fu	Character vector containing the order of the values in the follow-up column. If NULL (default value), the levels will be ordered in the order of appearance in df.
name_id	Character string for the patient id column

Value

Summary plot and data used for plotting

Examples

```
tmp <- figure_1_2_1(df = example_data, name_fu = "surgtype", name_id = "id")
tmp$p
tmp$plot_data
```

| figure_1_2_2 | *Figure 1.2.2: Percentage of respondents who improved overall by the dimensions (%)* |

Description

Figure 1.2.2: Percentage of respondents who improved overall by the dimensions (%)

Usage

```
figure_1_2_2(df, names_eq5d = NULL, name_fu = NULL, levels_fu = NULL, name_id)
```

Arguments

df	Data frame with the EQ-5D, follow-up and patient id columns
names_eq5d	Character vector of column names for the EQ-5D dimensions
name_fu	Character string for the follow-up column
levels_fu	Character vector containing the order of the values in the follow-up column. If NULL (default value), the levels will be ordered in the order of appearance in df.
name_id	Character string for the patient id column

Value

Summary plot and data used for plotting

Examples

```
tmp <- figure_1_2_2(df = example_data, name_fu = "year_range", name_id = "id")
tmp$p
tmp$plot_data
```

---

figure_1_2_3	*Figure 1.2.3: Percentage of respondents who worsened overall by the dimensions (%)*

Description

Figure 1.2.3: Percentage of respondents who worsened overall by the dimensions (%)

Usage

```
figure_1_2_3(df, names_eq5d = NULL, name_fu = NULL, levels_fu = NULL, name_id)
```

Arguments

df	Data frame with the EQ-5D, follow-up and patient id columns
names_eq5d	Character vector of column names for the EQ-5D dimensions
name_fu	Character string for the follow-up column
levels_fu	Character vector containing the order of the values in the follow-up column. If NULL (default value), the levels will be ordered in the order of appearance in df.
name_id	Character string for the patient id column

Value

Summary plot and data used for plotting

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Examples

```
tmp <- figure_1_2_3(df = example_data, name_fu = "year_range", name_id = "id")
tmp$p
tmp$plot_data
```

| figure_1_2_4 | *Figure 1.2.4: Percentage of respondents who had a mixed change by the dimensions in which they improved and worsened (%)* |

Description

Figure 1.2.4: Percentage of respondents who had a mixed change by the dimensions in which they improved and worsened (%)

Usage

```
figure_1_2_4(df, names_eq5d = NULL, name_fu = NULL, levels_fu = NULL, name_id)
```

Arguments

df	Data frame with the EQ-5D, follow-up and patient id columns
names_eq5d	Character vector of column names for the EQ-5D dimensions
name_fu	Character string for the follow-up column
levels_fu	Character vector containing the order of the values in the follow-up column. If NULL (default value), the levels will be ordered in the order of appearance in df.
name_id	Character string for the patient id column

Value

Summary plot and data used for plotting

Examples

```
tmp <- figure_1_2_4(df = example_data, name_fu = "year_range", name_id = "id")
tmp$p
tmp$plot_data
```

---

figure_1_3_1   *Figure 1.3.1: EQ-5D values plotted against LSS*

Description

Figure 1.3.1: EQ-5D values plotted against LSS

Usage

```
figure_1_3_1(df, names_eq5d = NULL, eq5d_version = NULL, country)
```

Arguments

df	Data frame with the EQ-5D columns
names_eq5d	Character vector of column names for the EQ-5D dimensions
eq5d_version	Version of the EQ-5D instrument
country	A character string representing the name of the country. This could be in a 2-letter format, full name or short name, as specified in the country_codes datasets.

Value

Summary plot and data used for plotting

Examples

```
tmp <- figure_1_3_1(df = example_data, country = "USA")
tmp$p
tmp$plot_data
```

---

figure_1_3_2   *Figure 1.3.2: EQ-5D values plotted against LFS*

Description

Figure 1.3.2: EQ-5D values plotted against LFS

Usage

```
figure_1_3_2(df, names_eq5d = NULL, eq5d_version = NULL, country)
```

Arguments

df	Data frame with the EQ-5D columns
names_eq5d	Character vector of column names for the EQ-5D dimensions
eq5d_version	Version of the EQ-5D instrument
country	A character string representing the name of the country. This could be in a 2-letter format, full name or short name, as specified in the country_codes datasets.

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Value

Summary plot and data used for plotting

Examples

```
tmp <- figure_1_3_2(df = example_data, country = "USA")
tmp$p
tmp$plot_data
```

---

figure_2_1   *Figure 2.1: EQ VAS scores*

Description

Figure 2.1: EQ VAS scores

Usage

```
figure_2_1(df, name_vas = NULL)
```

Arguments

df   Data frame with the VAS column

name_vas   Character string for the VAS column

Value

Summary plot and data used for plotting

Examples

```
tmp <- figure_2_1(df = example_data)
tmp$p
tmp$plot_data
```

---

figure_2_2 *Figure 2.2: Mid-point EQ VAS scores*

Description

Figure 2.2: Mid-point EQ VAS scores

Usage

```
figure_2_2(df, name_vas = NULL)
```

Arguments

df   Data frame with the VAS column

name_vas   Character string for the VAS column

Value

Summary plot and data used for plotting

Examples

```
tmp <- figure_2_2(df = example_data)
tmp$p
tmp$plot_data
```

---

figure_3_1 *Figure 3.1: EQ-5D values by timepoints: mean values and 95% confidence intervals*

Description

Figure 3.1: EQ-5D values by timepoints: mean values and 95% confidence intervals

Usage

```
figure_3_1(
  df,
  names_eq5d = NULL,
  name_fu = NULL,
  levels_fu = NULL,
  eq5d_version = NULL,
  country
)
```

figure_3_2 33

Arguments

df	Data frame with the VAS columns
names_eq5d	Character vector of column names for the EQ-5D dimensions
name_fu	Character string for the follow-up column
levels_fu	Character vector containing the order of the values in the follow-up column. If NULL (default value), the levels will be ordered in the order of appearance in df.
eq5d_version	Version of the EQ-5D instrument
country	A character string representing the name of the country. This could be in a 2-letter format, full name or short name, as specified in the country_codes datasets.

Value

Summary plot and data used for plotting

Examples

```
tmp <- figure_3_1(df = example_data, name_fu = "month", country = "USA")
tmp$p
tmp$plot_data
```

---

figure_3_2	*Figure 3.2: Mean EQ-5D values and 95% confidence intervals: all vs by groupvar*

Description

Figure 3.2: Mean EQ-5D values and 95% confidence intervals: all vs by groupvar

Usage

```
figure_3_2(df, names_eq5d = NULL, name_groupvar, eq5d_version = NULL, country)
```

Arguments

df	Data frame with the EQ-5D and grouping columns
names_eq5d	Character vector of column names for the EQ-5D dimensions
name_groupvar	Character string for the grouping column
eq5d_version	Version of the EQ-5D instrument
country	A character string representing the name of the country. This could be in a 2-letter format, full name or short name, as specified in the country_codes datasets.

Value

Summary plot and data used for plotting

Examples

```
tmp <- figure_3_2(df = example_data, name_groupvar = "surgtype", country = "USA")
tmp$p
tmp$plot_data
```

---

figure_3_3   *Figure 3.3: EQ-5D values: smoothed lines and confidence intervals by groupvar*

Description

Figure 3.3: EQ-5D values: smoothed lines and confidence intervals by groupvar

Usage

```
figure_3_3(
  df,
  names_eq5d = NULL,
  name_fu = NULL,
  levels_fu = NULL,
  name_groupvar,
  eq5d_version = NULL,
  country
)
```

Arguments

df	Data frame with the EQ-5D, follow-up and grouping columns
names_eq5d	Character vector of column names for the EQ-5D dimensions
name_fu	Character string for the follow-up column
levels_fu	Character vector containing the order of the values in the follow-up column. If NULL (default value), the levels will be ordered in the order of appearance in df.
name_groupvar	Character string for the grouping column
eq5d_version	Version of the EQ-5D instrument
country	A character string representing the name of the country. This could be in a 2-letter format, full name or short name, as specified in the country_codes datasets.

Value

Summary plot and data used for plotting

Examples

```
tmp <- figure_3_3(df = example_data, name_fu = "month",
  name_groupvar = "gender", country = "USA")
tmp$p
tmp$plot_data
```

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---

figure_3_4	*Figure 3.4: EQ-5D values: smoothed lines and confidence intervals by groupvar*

Description

Figure 3.4: EQ-5D values: smoothed lines and confidence intervals by groupvar

Usage

```
figure_3_4(df, names_eq5d = NULL, eq5d_version = NULL, country)
```

Arguments

df	Data frame with the EQ-5D columns
names_eq5d	Character vector of column names for the EQ-5D dimensions
eq5d_version	Version of the EQ-5D instrument
country	A character string representing the name of the country. This could be in a 2-letter format, full name or short name, as specified in the country_codes datasets.

Value

Summary plot and data used for plotting

Examples

```
tmp <- figure_3_4(df = example_data, country = "USA")
tmp$p
tmp$plot_data
```

---

figure_3_5	*Figure 3.5: EQ-5D values: smoothed lines and confidence intervals by groupvar*

Description

Figure 3.5: EQ-5D values: smoothed lines and confidence intervals by groupvar

Usage

```
figure_3_5(
  df,
  names_eq5d = NULL,
  name_vas = NULL,
  eq5d_version = NULL,
  country
)
```

Arguments

df	Data frame with the EQ-5D columns
names_eq5d	Character vector of column names for the EQ-5D dimensions
name_vas	Character string for the VAS column
eq5d_version	Version of the EQ-5D instrument
country	A character string representing the name of the country. This could be in a 2-letter format, full name or short name, as specified in the country_codes datasets.

Value

Summary plot and data used for plotting

Examples

```
tmp <- figure_3_5(df = example_data, country = "USA")
tmp$p
tmp$plot_data
```

---

make_all_EQ_indexes   *make_all_EQ_indexes*

Description

Make a vector containing all 5-digit EQ-5D indexes for -3L or -5L version.

Usage

```
make_all_EQ_indexes(
  version = "5L",
  dim.names = c("mo", "sc", "ua", "pd", "ad")
)
```

Arguments

version	Either "3L" or "5L", to signify whether 243 or 3125 states should be generated
dim.names	A vector of dimension names to be used as names for output columns.

Value

A vector with 5-digit state indexes for all 243 (-3L) or 3125 (-5L) EQ-5D health states

Examples

```
make_all_EQ_indexes('3L')
```

---

make_all_EQ_states   *make_all_EQ_states*

Description

Make a data.frame with all health states defined by dimensions

Usage

```
make_all_EQ_states(
  version = "5L",
  dim.names = c("mo", "sc", "ua", "pd", "ad"),
  append_index = FALSE
)
```

Arguments

version	Either "3L" or "5L", to signify whether 243 or 3125 states should be generated
dim.names	A vector of dimension names to be used as names for output columns.
append_index	Boolean to indicate whether a column of 5-digit EQ-5D health state indexes should be added to output.

Value

A data.frame with 5 columns and 243 (-3L) or 3125 (-5L) health states

Examples

```
make_all_EQ_states('3L')
```

---

make_dummies   *EQ_dummies*

Description

Make a data.frame of all EQ-5D dummies relevant for e.g. regression modeling.

Usage

```
make_dummies(
  df,
  version = "5L",
  dim.names = c("mo", "sc", "ua", "pd", "ad"),
  drop_level_1 = TRUE,
  add_intercept = FALSE,
```

```
    incremental = FALSE,
    prepend = NULL,
    append = NULL,
    return_df = TRUE
)
```

Arguments

df	data.frame containing EQ-5D health states.
version	Either "3L" or "5L", to signify EQ-5D instrument version
dim.names	A vector of dimension names to be used as names for output columns.
drop_level_1	If set to FALSE, dummies for level 1 will be included. Defaults to TRUE.
add_intercept	If set to TRUE, a column containing 1s will be appended. Defaults to FALSE.
incremental	If set to TRUE, incremental dummies will be produced (e.g. MO = 3 will give mo2 = 1, mo3 = 1). Defaults to FALSE.
prepend	Optional string to be prepended to column names.
append	Optional string to be appended to column names.
return_df	If set to TRUE, data.frame is returned, otherwise matrix. Defaults to TRUE.

Value

A data.frame of dummy variables

Examples

```
make_dummies(make_all_EQ_states('3L'), '3L')

make_dummies(df = make_all_EQ_states('3L'),
             version =  '3L',
             incremental = TRUE,
             add_intercept = TRUE,
             prepend = "d_")
```

---

table_1_1_1	*Table 1.1.1: Frequency of levels by dimensions, cross-sectional*

Description

Table 1.1.1: Frequency of levels by dimensions, cross-sectional

Usage

```
table_1_1_1(df, names_eq5d = NULL, eq5d_version = NULL)
```

table_1_1_2 39

Arguments

df	Data frame with the EQ-5D and follow-up columns
names_eq5d	Character vector of column names for the EQ-5D dimensions
eq5d_version	Version of the EQ-5D instrument

Value

Summary data frame.

Examples

```
table_1_1_1(df = example_data)
table_1_1_1(df = example_data, eq5d_version = "3L")
```

---

table_1_1_2	*Table 1.1.2: Frequency of levels by dimensions, separated by category*

Description

Table 1.1.2: Frequency of levels by dimensions, separated by category

Usage

```
table_1_1_2(
  df,
  names_eq5d = NULL,
  name_cat = NULL,
  levels_cat = NULL,
  eq5d_version = NULL
)
```

Arguments

df	Data frame with the EQ-5D and follow-up columns
names_eq5d	Character vector of column names for the EQ-5D dimensions
name_cat	Character string for the category column. If NULL, no grouping is used, and the table reports for the total population, i.e. equal to table 1.1.1.
levels_cat	Character vector containing the order of the values in the category column, if the wish is to have these presented in a particular order. If NULL (default value), unless the variable is a factor, the levels will be ordered in the order of appearance in df.
eq5d_version	Version of the EQ-5D instrument

Value

Summary data frame.

Examples

```
table_1_1_2(df = example_data, name_cat = "surgtype")
```

---

table_1_1_3	*Table 1.1.3: Prevalence of the 10 most frequently observed self-reported health states*

Description

Table 1.1.3: Prevalence of the 10 most frequently observed self-reported health states

Usage

```
table_1_1_3(df, names_eq5d = NULL, eq5d_version = NULL, n = 10)
```

Arguments

df	Data frame with the EQ-5D columns
names_eq5d	Character vector of column names for the EQ-5D dimensions
eq5d_version	Version of the EQ-5D instrument
n	Number of most frequently observed states to display (default 10)

Value

Summary data frame

Examples

```
table_1_1_3(df = example_data)
table_1_1_3(df = example_data, n = 5)
table_1_1_3(df = example_data, eq5d_version = "3L")
```

---

table_1_2_1	*Table 1.2.1: Frequency of levels by dimensions, by follow-up*

Description

Table 1.2.1: Frequency of levels by dimensions, by follow-up

Usage

```
table_1_2_1(
  df,
  names_eq5d = NULL,
  name_fu = NULL,
  levels_fu = NULL,
  eq5d_version = NULL
)
```

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Arguments

df	Data frame with the EQ-5D and follow-up columns
names_eq5d	Character vector of column names for the EQ-5D dimensions
name_fu	Character string for the follow-up column. If NULL, the function will check if there is a column named "follow-up" or "fu", in which case the first of those will be used.
levels_fu	Character vector containing the order of the values in the follow-up column. If NULL (default value), the levels will be ordered in the order of appearance in df.
eq5d_version	Version of the EQ-5D instrument

Value

Summary data frame.

Examples

```
table_1_2_1(df = example_data)
table_1_2_1(df = example_data, name_fu = "month")
```

---

table_1_2_2	*Table 1.2.2: Changes in health according to the PCHC (Paretian Classification of Health Change)*

Description

Table 1.2.2: Changes in health according to the PCHC (Paretian Classification of Health Change)

Usage

```
table_1_2_2(
  df,
  name_id,
  name_groupvar,
  names_eq5d = NULL,
  name_fu = NULL,
  levels_fu = NULL
)
```

Arguments

df	Data frame with the EQ-5D, grouping, id and follow-up columns
name_id	Character string for the patient id column
name_groupvar	Character string for the grouping column
names_eq5d	Character vector of column names for the EQ-5D dimensions

name_fu	Character string for the follow-up column
levels_fu	Character vector containing the order of the values in the follow-up column. If NULL (default value), the levels will be ordered in the order of appearance in df.

Value

Summary data frame

Examples

```
table_1_2_2(df = example_data, name_groupvar = "surgtype", name_id = "id")
```

---

table_1_2_3	*Table 1.2.3: Changes in health according to the PCHC, taking account of those with no problems*

Description

Table 1.2.3: Changes in health according to the PCHC, taking account of those with no problems

Usage

```
table_1_2_3(
  df,
  name_id,
  name_groupvar,
  names_eq5d = NULL,
  name_fu = NULL,
  levels_fu = NULL
)
```

Arguments

df	Data frame with the EQ-5D, grouping, id and follow-up columns
name_id	Character string for the patient id column
name_groupvar	Character string for the grouping column
names_eq5d	Character vector of column names for the EQ-5D dimensions
name_fu	Character string for the follow-up column
levels_fu	Character vector containing the order of the values in the follow-up column. If NULL (default value), the levels will be ordered in the order of appearance in df.

Value

Summary data frame

table_1_2_4 43

Examples

```
table_1_2_3(df = example_data, name_groupvar = "surgtype", name_id = "id")
```

---

table_1_2_4 *Table 1.2.4: Changes in levels in each dimension, percentages of total and of type of change*

Description

Table 1.2.4: Changes in levels in each dimension, percentages of total and of type of change

Usage

```
table_1_2_4(df, name_id, names_eq5d = NULL, name_fu = NULL, levels_fu = NULL)
```

Arguments

df	Data frame with the EQ-5D, id and follow-up columns
name_id	Character string for the patient id column
names_eq5d	Character vector of column names for the EQ-5D dimensions
name_fu	Character string for the follow-up column
levels_fu	Character vector containing the order of the values in the follow-up column. If NULL (default value), the levels will be ordered in the order of appearance in df.

Value

Summary data frame

Examples

```
table_1_2_4(df = example_data, name_id = "id")
```

table_1_3_1	*Table 1.3.1: Summary statistics for the EQ-5D values by all the different LSSs (Level Sum Scores)*

Description

Table 1.3.1: Summary statistics for the EQ-5D values by all the different LSSs (Level Sum Scores)

Usage

```
table_1_3_1(df, names_eq5d = NULL, eq5d_version = NULL, country)
```

Arguments

df	Data frame with the EQ-5D columns
names_eq5d	Character vector of column names for the EQ-5D dimensions
eq5d_version	Version of the EQ-5D instrument
country	A character string representing the name of the country. This could be in a 2-letter format, full name or short name, as specified in the country_codes datasets.

Value

Summary data frame

Examples

```
table_1_3_1(df = example_data, country = "USA")
table_1_3_1(df = example_data, eq5d_version = "3L", country = "USA")
```

table_1_3_2	*Table 1.3.2: Distribution of the EQ-5D states by LFS (Level Frequency Score)*

Description

Table 1.3.2: Distribution of the EQ-5D states by LFS (Level Frequency Score)

Usage

```
table_1_3_2(df, names_eq5d = NULL, eq5d_version = NULL)
```

Arguments

df	Data frame with the EQ-5D columns
names_eq5d	Character vector of column names for the EQ-5D dimensions
eq5d_version	Version of the EQ-5D instrument

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Value

Summary data frame

Examples

```
table_1_3_2(df = example_data)
table_1_3_2(df = example_data, eq5d_version = "3L")
```

---

table_1_3_3	*Table 1.3.3: Number of observations in the LFS (Level Frequency Score) according to the EQ-5D values*

Description

Table 1.3.3: Number of observations in the LFS (Level Frequency Score) according to the EQ-5D values

Usage

```
table_1_3_3(df, names_eq5d = NULL, eq5d_version = NULL, country)
```

Arguments

df	Data frame with the EQ-5D columns
names_eq5d	Character vector of column names for the EQ-5D dimensions
eq5d_version	Version of the EQ-5D instrument
country	A character string representing the name of the country. This could be in a 2-letter format, full name or short name, as specified in the country_codes datasets.

Value

Summary data frame

Examples

```
df <- example_data[example_data$surgtype == "Knee", ]
 table_1_3_3(df = df,
          names_eq5d = c("mo", "sc", "ua", "pd", "ad"),
          eq5d_version = "5L",
          country = "USA")
```

table_1_3_4	*Table 1.3.4: Summary statistics of EQ-5D values by LFS (Level Frequency Score)*

Description

Table 1.3.4: Summary statistics of EQ-5D values by LFS (Level Frequency Score)

Usage

```
table_1_3_4(df, names_eq5d = NULL, eq5d_version = NULL, country)
```

Arguments

df	Data frame with the EQ-5D columns
names_eq5d	Character vector of column names for the EQ-5D dimensions
eq5d_version	Version of the EQ-5D instrument
country	A character string representing the name of the country. This could be in a 2-letter format, full name or short name, as specified in the country_codes datasets.

Value

Summary data frame

Examples

```
table_1_3_4(df = example_data, country = "Denmark")
table_1_3_4(df = example_data, eq5d_version = "3L", country = "Denmark")
```

table_2_1	*Table 2.1: EQ VAS Score by timepoints*

Description

Table 2.1: EQ VAS Score by timepoints

Usage

```
table_2_1(df, name_vas = NULL, name_fu = NULL, levels_fu = NULL)
```

Arguments

df	Data frame with the VAS and the follow-up columns
name_vas	Character string for the VAS column
name_fu	Character string for the follow-up column
levels_fu	Character vector containing the order of the values in the follow-up column.

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Value

Summary data frame

Examples

```
table_2_1(df = example_data)
```

---

table_2_2 *Table 2.2: EQ VAS Scores frequency of mid-points*

Description

Table 2.2: EQ VAS Scores frequency of mid-points

Usage

```
table_2_2(df, name_vas = NULL, add_na_total = TRUE)
```

Arguments

df	Data frame with the VAS column
name_vas	Character string for the VAS column
add_na_total	Logical, whether to add summary of the missing, and across the Total, data

Value

Summary data frame

Examples

```
table_2_2(df = example_data)
```

---

table_3_1 *Table 3.1: EQ-5D values: by timepoints*

Description

Table 3.1: EQ-5D values: by timepoints

Usage

```
table_3_1(
  df,
  names_eq5d = NULL,
  name_fu = NULL,
  levels_fu = NULL,
  eq5d_version = NULL,
  country
)
```

Arguments

df	Data frame with the EQ-5D and follow-up columns
names_eq5d	Character vector of column names for the EQ-5D dimensions
name_fu	Character string for the follow-up column
levels_fu	Character vector containing the order of the values in the follow-up column. If NULL (default value), the levels will be ordered in the order of appearance in df.
eq5d_version	Version of the EQ-5D instrument
country	A character string representing the name of the country. This could be in a 2-letter format, full name or short name, as specified in the country_codes datasets.

Value

Summary data frame

Examples

```
table_3_1(df = example_data, country = "USA")
table_3_1(df = example_data, eq5d_version = "3L", country = "Denmark")
table_3_1(df = example_data, country = "Denmark")
```

---

table_3_2 *Table 3.2 EQ-5D values: by groupvar*

Description

Table 3.2 EQ-5D values: by groupvar

Usage

```
table_3_2(
  df,
  names_eq5d = NULL,
  name_fu = NULL,
  levels_fu = NULL,
```

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```
  name_groupvar,
  eq5d_version = NULL,
  country
)
```

Arguments

df	Data frame with the EQ-5D, follow-up and grouping columns
names_eq5d	Character vector of column names for the EQ-5D dimensions
name_fu	Character string for the follow-up column
levels_fu	Character vector containing the order of the values in the follow-up column. If NULL (default value), the levels will be ordered in the order of appearance in df.
name_groupvar	Character string for the grouping column
eq5d_version	Version of the EQ-5D instrument
country	A character string representing the name of the country. This could be in a 2-letter format, full name or short name, as specified in the country_codes datasets.

Value

Summary data frame

Examples

```
table_3_2(df = example_data, name_groupvar = "surgtype", country = "USA")
```

---

table_3_3   *Table 3.3 EQ-5D values: by age and groupvar*

Description

Table 3.3 EQ-5D values: by age and groupvar

Usage

```
table_3_3(
  df,
  names_eq5d = NULL,
  name_fu = NULL,
  levels_fu = NULL,
  name_groupvar,
  name_age,
  eq5d_version = NULL,
  country
)
```

Arguments

df	Data frame with the EQ-5D, age, follow-up and grouping columns
names_eq5d	Character vector of column names for the EQ-5D dimensions
name_fu	Character string for the follow-up column
levels_fu	Character vector containing the order of the values in the follow-up column. If NULL (default value), the levels will be ordered in the order of appearance in df.
name_groupvar	Character string for the grouping column
name_age	Character string for the age column
eq5d_version	Version of the EQ-5D instrument
country	A character string representing the name of the country. This could be in a 2-letter format, full name or short name, as specified in the country_codes datasets.

Value

Summary data frame

Examples

```
table_3_3(df = example_data, name_age = "age", name_groupvar = "surgtype",
  country = "USA")
```

---

toEQ5Ddims   *toEQ5Ddims*

Description

Generate dimension vectors based on state index

Usage

```
toEQ5Ddims(x, dim.names = c("mo", "sc", "ua", "pd", "ad"))
```

Arguments

x	A vector of 5-digit EQ-5D state indexes.
dim.names	A vector of dimension names to be used as names for output columns.

Value

A data.frame with 5 columns, one for each EQ-5D dimension, with names from dim.names argument.

Examples

```
toEQ5Ddims(c(12345, 54321, 12321))
```

---

toEQ5Dindex *toEQ5DIndex*

Description

Generate EQ-5D state vector from data.frame/matrix or named vector with dimensions.

Usage

```
toEQ5Dindex(x, dim.names = c("mo", "sc", "ua", "pd", "ad"))
```

Arguments

x   A data.frame, matrix, or vector containing dimension levels. Should have col-
                umn names corresponding to the dim.names argument.

dim.names   A vector of dimension names in data.frame/matrix/vector x

Value

A vector of 5-digit EQ-5D health state indexes.

Examples

```
toEQ5Dindex(c(1,2,3,4,5))

example_data <- as.data.frame(matrix(data = c(1, 2, 3, 4, 5,
                                              5, 4, 3, 2, 1,
                                              3, 2, 1, 2, 3),
                                     ncol = 5,
                                     byrow = TRUE,
                               dimnames = list(NULL, c("mo", "sc", "ua", "pd", "ad"))))
example_data$irrelevant <- c(6,5,3)
toEQ5Dindex(example_data)
```

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