Package: DIETCOST (via r-universe)

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Description Easily perform a Monte Carlo simulation to evaluate the cost and carbon, ecological, and water footprints of a set of ideal diets. Pre-processing tools are also available to quickly treat the data, along with basic statistical features to analyze the simulation results — including the ability to establish confidence intervals for selected parameters, such as nutrients and price/emissions. A 'standard version' of the datasets employed is included as well, allowing users easy access to customization. This package brings to R the 'Python' software initially developed by Vandevijvere, Young, Mackay, Swinburn and Gahegan (2018) <doi:10.1186/s12966-018-0648-6>.

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`add_float_range` *Float range*

Description

Checks if a numeric variable is within a continuous float range.

Usage

```
add_float_range(variable, min, max)
```

Arguments

`variable`	Numeric variable.
`min`	Minimum possible value.
`max`	Maximum possible value.

Value

No return value,only performs a check.

`add_range` *Discrete range*

Description

Checks if a variable is within a discrete range.

Usage

```
add_range(variable, range, message)
```

Arguments

variable	variable.
range	Allowed range.
message	Message to be printed in case of failure.

Value

No return value, only performs a check.

---

addConstraintData *Food constraint data addition*

Description

Adds nutrients constraint data, according to chosen diet, to foods dataframe.

Usage

```
addConstraintData(filepath, df, diets, max_scale, override_min = NULL)
```

Arguments

filepath	Path in which the dataset, in .xlsx format, is stored..
df	Foods dataframe.
diets	Chosen diets. Constraint sheets in foods dataset must be of format 'constraints_DIETNAME_diet_foods', then the parameter passed will be DIETNAME. Can be a vector of diets in format c('DIETNAME1','DIETNAME2',...,'DIETNAMEN').
max_scale	Maximum scale.
override_min	If is not null, overrides all minimum values.

Value

Foods dataframe with constraints columns.

addEmissionData *Emission data addition*

Description

Adds emission data to foods dataframe.

Usage

```
addEmissionData(filepath, df, emission_cols = NULL)
```

Arguments

filepath	Path in which the dataset, in .xlsx format, is stored.
df	Foods dataframe.
emission_cols	Optional parameter. Emission column names if standard dataset isn't used.

Value

Food dataframe with emission data.

addFoodGroupsConstraintData *Food group constraint data addition*

Description

Adds serves constraints to food groups dataframe

Usage

```
addFoodGroupsConstraintData(filepath, df, diets)
```

Arguments

filepath	Path in which the dataset, in .xlsx format, is stored..
df	Food groups dataframe.
diets	Chosen diets. Constraint sheets in foods dataset must be of format 'constraints_DIETNAME_diet_food_g then the parameter passed will be DIETNAME. Can be a vector of diets in format c('DIETNAME1','DIETNAME2',...,'DIETNAMEN').

Value

Food groups dataframe with added constraint data.

addNutrientData *Nutrients data addition*

Description

Adds nutrients data to foods dataframe.

Usage

```
addNutrientData(filepath, df)
```

Arguments

filepath	Path in which the dataset, in .xlsx format, is stored..
df	Foods dataframe.

Value

Foods dataframe with nutrient columns.

addPriceData *Price data addition*

Description

Adds price data to foods dataframe.

Usage

```
addPriceData(filepath, df)
```

Arguments

filepath	Path in which the dataset, in .xlsx format, is stored..
df	Foods dataframe.

Value

Foods dataframe with added price data.

`calculateGroupedResults` *Calculates grouped results for a Monte Carlo Simulation*

Description

Calculates a confidence interval for price and footprints obtained through a Monte Carlo Simulation, grouped by food groups. This function should be employed only if the standard table supplied with this package is utilized. Prints a .xlsx file in the home directory.

Usage

```
calculateGroupedResults(path_file, report_path, confidence_interval)
```

Arguments

`path_file`	A string containing the path to the folder containing the .csv files created in the monteCarlo function.
`report_path`	A string containing the path to where the report will be saved.
`confidence_interval`	A float. Must be either 0.01, 0.05 or 0.1.

Value

No R object return, prints an Excel workbook.

`calculateResults` *Calculates results for a Monte Carlo Simulation*

Description

Calculates a confidence interval for several parameters obtained through a Monte Carlo Simulation. This function should be employed only if the standard table supplied with this package is utilized. Prints a .xlsx file in the home directory.

Usage

```
calculateResults(path_file, report_path, confidence_interval)
```

Arguments

`path_file`	A string containing the path to the folder containing the .csv files created in the monteCarlo function.
`report_path`	A string containing the path to where the report will be saved.
`confidence_interval`	A float. Must be either 0.01, 0.05 or 0.1.

Value

No R object return, prints an Excel workbook.

`check_function` *Missing value check*

Description

Checks if there are any missing values in a given column from the dataset.

Usage

```
check_function(name, column)
```

Arguments

`name`	Column in which missing values will be sought.
`column`	Column name, in string format.

Value

No return, only performs a check.

`check_id_defined` *ID mismatch check*

Description

Checks if a given food has an ID assigned but is absent in another dataset.

Usage

```
check_id_defined(df1, df2, value)
```

Arguments

`df1`	First dataframe.
`df2`	Second dataframe.
`value`	Dataset name.

Value

No return, only performs a check.

check_match_food_price

Food/price mismatch check

Description

Checks if all foods have a price.

Usage

```
check_match_food_price(df)
```

Arguments

df	Dataframe.

Value

No return, only performs a check.

check_match_individual_diet

Individual/diet mismatch check

Description

Checks if all individuals have a matching diet.

Usage

```
check_match_individual_diet(df)
```

Arguments

df	Dataframe.

Value

No return, only performs a check.

check_min_exists *Minimum intake food groups check*

Description

Looks for a minimum value and sets zero if missing,

Usage

```
check_min_exists(df, check, col)
```

Arguments

df	Dataframe.
check	Boolean variable to permit optional food group.
col	Minimum percentage intake column name.

Value

Dataframe.

check_nom_num_df *Applies non-nummeric value check to entire dataframe*

Description

Checks if values supposed to be numeric are in fact numeric.

Usage

```
check_nom_num_df(df)
```

Arguments

df	Dataframe columns.

Value

No return, only performs a check.

check_non_num *Non-numeric check*

Description

Checks if values supposed to be numeric are in fact numeric.

Usage

```
check_non_num(df)
```

Arguments

df	Dataframe column.

Value

No return, only performs a check.

check_spelling *Spellcheck*

Description

Checks if two datasets have the same spelling in names column.

Usage

```
check_spelling(df1, df2, condition)
```

Arguments

df1	First dataframe.
df2	Second dataframe.
condition	Column to be joined.

Value

No return, only performs a check.

check_variety *Variety check*

Description

Checks if varieties are into the allowed range (1,2 or 3).

Usage

```
check_variety(df)
```

Arguments

df	Dataframe variety column.

Value

No return, only performs a check.

checkLinkedFoods *Linked foods check*

Description

Checks if lower bound linked foods serves are lower or equal to higher bound linked foods serves.

Usage

```
checkLinkedFoods(df, low, high)
```

Arguments

df	Random meal plan.
low	Vector of lower bound food IDs.
high	Vector of higher bound food IDs.

Value

Differences dataframe.

checks_optional_food_groups *Optional food groups check*

Description

If discretionary foods, alcohol or takeaway are permitted, looks for a minimum value and sets zero if missing,

Usage

```
checks_optional_food_groups(check, value)
```

Arguments

check	Boolean variable to permit optional food group.
value	Minimum percentage of energy intake from optional food group.

Value

Minimum percentage of energy intake from optional food group.

checkZeroDiff *All zero difference check*

Description

Checks if differences dataframe is all zeroes.

Usage

```
checkZeroDiff(diff)
```

Arguments

diff	Differences dataframe

Value

Boolean. TRUE if all zeroes, FALSE otherwise.

converts_dataframe *Weekly conversion*

Description

Converts data from daily to weekly

Usage

```
converts_dataframe(df, exclusion_cols)
```

Arguments

df	Dataframe.
exclusion_cols	Columns (non-numerical or percentage) that conversion won't be applied.

Value

Weekly dataframe.

convertWeeklyFoodGroups *Food group serves conversion*

Description

Converts food group serves dataframe to weekly values.

Usage

```
convertWeeklyFoodGroups(df, diet, individual)
```

Arguments

df	Food group serves dataframe.
diet	Chosen diet. Must be DIETNAME from 'constraints_DIETNAME_diet_food_groups' sheet in dataset.
individual	Individual whose random meal plan will be created to. Can be one of man, woman, boy or girl.

Value

Converted food group serves dataframe.

Examples

```
food_groups_wk <- convertWeeklyFoodGroups(DIETCOST::food_groups, 'C', 'man');
```

convertWeeklyNutrientTargets *Nutrient targets conversion*

Description

Converts nutrient targets dataframe to weekly values.

Usage

```
convertWeeklyNutrientTargets(df, diet, person, nutrient_constraints = NULL)
```

Arguments

df	Nutrient targets dataframe.
diet	Chosen diet. Must be DIETNAME from 'constraints_DIETNAME_diet_foods' sheet in dataset.
person	Individual whose random meal plan will be created to. Can be one of man, woman, boy or girl.
nutrient_constraints	Optional parameter. Vector of nutrients column names to be used if not all nutrients are to be used as constraints.

Value

Converted nutrient targets dataframe.

Examples

```
nutrient_targets_wk <- convertWeeklyNutrientTargets(DIETCOST::nutrient_targets, 'C', 'man')
```

createFoodData *Food data creation*

Description

Creates a food data dataframe

Usage

```
createFoodData(filepath, redmeat_ids)
```

Arguments

filepath	Path in which the dataset, in .xlsx format, is stored.
redmeat_ids	Vector of redmeat IDs.

Value

Food dataframe.

`createFoodGroupData` *Food group data creation*

Description

Creates and populates a food group data dataframe

Usage

```
createFoodGroupData(df)
```

Arguments

`df`	Foods dataframe.

Value

Food group dataframe.

`createNutrientTargets` *Nutrients data addition*

Description

Adds nutrients data to foods dataframe.

Usage

```
createNutrientTargets(
  filepath,
  allow_alcohol = TRUE,
  allow_discretionary = TRUE,
  allow_takeaway = TRUE,
  alcohol_perc_max = NULL,
  discretionary_perc_max = NULL,
  takeaway_perc_max = NULL
)
```

Arguments

`filepath`	Path in which the dataset, in .xlsx format, is stored..
`allow_alcohol`	Boolean variable checking if alcohol is permitted. Default TRUE.
`allow_discretionary`	Boolean variable checking if discretionary foods are permitted. Default TRUE.
`allow_takeaway`	Boolean variable checking if takeaway is permitted. Default TRUE.
`alcohol_perc_max`	Optional parameter. Defines maximum energy intake derived from alcohol.
`discretionary_perc_max`	Optional parameter. Defines maximum energy intake derived from discretionary foods.
`takeaway_perc_max`	Optional parameter. Defines maximum energy intake derived from takeaway.

Value

Nutrient targets dataframe.

`createRandomMeal` *Random meal plan*

Description

Creates a random meal plan.

Usage

```
createRandomMeal(
  foods_df,
  targets_df,
  person,
  diet,
  allowed_varieties,
  min_serve_size_difference,
  allow_discretionary = TRUE,
  allow_alcohol = TRUE,
  allow_takeaway = TRUE,
  emission_cols = NULL,
  nutrient_cols = NULL
)
```

Arguments

foods_df	Foods dataframe.
targets_df	Nutrient targets dataframe.
person	Individual whose random meal plan will be created to. Can be one of man, woman, boy or girl.
diet	Chosen diet. Must be DIETNAME from 'constraints_DIETNAME_diet_foods' sheet in dataset.
allowed_varieties	Permitted food varieties. Can be a vector of the following: 1,2 and/or 3.
min_serve_size_difference	Multiplier to serve difference. A float between 0 and 1.
allow_discretionary	Boolean variable checking if discretionary foods are permitted. Default TRUE.
allow_alcohol	Boolean variable checking if alcohol is permitted. Default TRUE.
allow_takeaway	Boolean variable checking if takeaway is permitted. Default TRUE.
emission_cols	Optional parameter. Emission column names if standard dataset isn't used.
nutrient_cols	Optional parameter. Nutrients column names if standard dataset isn't used.

Value

Random meal plan dataframe.

Examples

```
foods_df <- createRandomMeal(foods_df = DIETCOST::foods,
                             targets_df = DIETCOST::nutrient_targets,
                             person = 'man',
                             diet = 'C',
                             allowed_varieties = c(1,2,3),
                             min_serve_size_difference = 0.5,
                             allow_takeaway = TRUE,
                             allow_alcohol = TRUE,
                             allow_discretionary = TRUE)
```

---

diff_calc *Difference calculator*

Description

Calculates difference between values of random meal plan created and targets logged.

Usage

```
diff_calc(val, min, max)
```

Arguments

val	Value to be evalueted.
min	Minimum constraint.
max	Maximum constraint.

Value

Difference.

---

energy_conversor *MJ to KJ conversion*

Description

Converts energy values in megajoules (MJ) to kilojoules (KJ),

Usage

```
energy_conversor(df, min, max)
```

Arguments

df	Dataframe.
min	Minimum energy column name. Default 'energy_mj_min'.
max	Maximum energy column name. Default 'energy_mj_max'.

Value

No return, only performs a check.

---

food_groups *Food groups dataset example*

Description

A set of data containing commonly available food groups based on a Brazilian typical diet.

Usage

```
food_groups
```

Format

A dataframe with 12 rows and 74 columns:

food_group Food group, i.e. 'Fruit' or 'Vegetable'
food_group_id Numerical code for dood group
man_min_g_C Weekly minimal current diet intake for males, in grams
man_max_g_C Weekly maximal current diet intake for males, in grams
man_target_g_C Weekly target current diet intake for males, in grams
man_min_serve_C Weekly minimal current diet intake for males, in serves
man_max_serve_C Weekly maximal current diet intake for males, in serves
man_target_serve_C Weekly target current diet intake for males, in serves
woman_min_g_C Weekly minimal current diet intake for females, in grams
woman_max_g_C Weekly maximal current diet intake for females, in grams
woman_target_g_C Weekly target current diet intake for females, in grams
woman_min_serve_C Weekly minimal current diet intake for females, in serves
woman_max_serve_C Weekly maximal current diet intake for females, in serves
woman_target_serve_C Weekly target current diet intake for females, in serves
boy_min_g_C Weekly minimal current diet intake for boys, in grams
boy_max_g_C Weekly maximal current diet intake for boys, in grams
boy_target_g_C Weekly target current diet intake for boys, in grams
boy_min_serve_C Weekly minimal current diet intake for boys, in serves
boy_max_serve_C Weekly maximal current diet intake for boys, in serves
boy_target_serve_C Weekly target current diet intake for boys, in serves
girl_min_g_C Weekly minimal current diet intake for girls, in grams
girl_max_g_C Weekly maximal current diet intake for girls, in grams
girl_target_g_C Weekly target current diet intake for girls, in grams
girl_min_serve_C Weekly minimal current diet intake for girls, in serves
girl_max_serve_C Weekly maximal current diet intake for girls, in serves
girl_target_serve_C Weekly target current diet intake for girls, in serves
man_min_g_PF Weekly minimal EAT-Lancet diet intake for males, in grams
man_max_g_PF Weekly maximal EAT-Lancet diet intake for males, in grams
man_target_g_PF Weekly target EAT-Lancet diet intake for males, in grams
man_min_serve_PF Weekly minimal EAT-Lancet diet intake for males, in serves
man_max_serve_PF Weekly maximal EAT-Lancet diet intake for males, in serves
man_target_serve_PF Weekly target EAT-Lancet diet intake for males, in serves
woman_min_g_PF Weekly minimal EAT-Lancet diet intake for females, in grams
woman_max_g_PF Weekly maximal EAT-Lancet diet intake for females, in grams
woman_target_g_PF Weekly target EAT-Lancet diet intake for females, in grams

woman_min_serve_PF Weekly minimal EAT-Lancet diet intake for females, in serves
woman_max_serve_PF Weekly maximal EAT-Lancet diet intake for females, in serves
woman_target_serve_PF Weekly target EAT-Lancet diet intake for females, in serves
boy_min_g_PF Weekly minimal EAT-Lancet diet intake for boys, in grams
boy_max_g_PF Weekly maximal EAT-Lancet diet intake for boys, in grams
boy_target_g_PF Weekly target EAT-Lancet diet intake for boys, in grams
boy_min_serve_PF Weekly minimal EAT-Lancet diet intake for boys, in serves
boy_max_serve_PF Weekly maximal EAT-Lancet diet intake for boys, in serves
boy_target_serve_PF Weekly target EAT-Lancet diet intake for boys, in serves
girl_min_g_PF Weekly minimal EAT-Lancet diet intake for girls, in grams
girl_max_g_PF Weekly maximal EAT-Lancet diet intake for girls, in grams
girl_target_g_PF Weekly target EAT-Lancet diet intake for girls, in grams
girl_min_serve_PF Weekly minimal EAT-Lancet diet intake for girls, in serves
girl_max_serve_PF Weekly maximal EAT-Lancet diet intake for girls, in serves
girl_target_serve_PF Weekly target EAT-Lancet diet intake for girls, in serves
man_min_g_H Weekly minimal healthy diet intake for males, in grams
man_max_g_H Weekly maximal healthy diet intake for males, in grams
man_target_g_H Weekly target healthy diet intake for males, in grams
man_min_serve_H Weekly minimal healthy diet intake for males, in serves
man_max_serve_H Weekly maximal healthy diet intake for males, in serves
man_target_serve_H Weekly target healthy diet intake for males, in serves
woman_min_g_H Weekly minimal healthy diet intake for females, in grams
woman_max_g_H Weekly maximal healthy diet intake for females, in grams
woman_target_g_H Weekly target healthy diet intake for females, in grams
woman_min_serve_H Weekly minimal healthy diet intake for females, in serves
woman_max_serve_H Weekly maximal healthy diet intake for females, in serves
woman_target_serve_H Weekly target healthy diet intake for females, in serves
boy_min_g_H Weekly minimal healthy diet intake for boys, in grams
boy_max_g_H Weekly maximal healthy diet intake for boys, in grams
boy_target_g_H Weekly target healthy diet intake for boys, in grams
boy_min_serve_H Weekly minimal healthy diet intake for boys, in serves
boy_max_serve_H Weekly maximal healthy diet intake for boys, in serves
boy_target_serve_H Weekly target healthy diet intake for boys, in serves
girl_min_g_H Weekly minimal healthy diet intake for girls, in grams
girl_max_g_H Weekly maximal healthy diet intake for girls, in grams
girl_target_g_H Weekly target healthy diet intake for girls, in grams
girl_min_serve_H Weekly minimal healthy diet intake for girls, in serves
girl_max_serve_H Weekly maximal healthy diet intake for girls, in serves
girl_target_serve_H Weekly target healthy diet intake for girls, in serves

Source

Elaborated by authors.

`foodData` *Single-function food dataframe creation*

Description

Creates foods dataframe, with emission, nutrients, constraints and price data, in a single function.

Usage

```
foodData(
  filepath = filepath,
  redmeat_ids,
  diets,
  max_scale,
  emission_cols = NULL,
  override_min = NULL
)
```

Arguments

`filepath`	Path in which the dataset, in .xlsx format, is stored..
`redmeat_ids`	Vector of unique food IDs that are redmeat.
`diets`	Chosen diets. Constraint sheets in foods dataset must be of format 'constraints_DIETNAME_diet_foods', then the parameter passed will be DIETNAME. Can be a vector of diets in format c('DIETNAME1','DIETNAME2',...,'DIETNAMEN').
`max_scale`	Maximum scale. Default is two.
`emission_cols`	Optional parameter. Emission column names if standard dataset isn't used.
`override_min`	If is not null, overrides all minimum values

Value

Foods dataframe.

foodGroupData *Single-function food group dataframe creation*

Description

Creates food groups dataframe, with constraints data, in a single function.

Usage

```
foodGroupData(filepath, df_foods, diets)
```

Arguments

filepath	Path in which the dataset, in .xlsx format, is stored.
df_foods	Foods dataframe.
diets	Chosen diets. Constraint sheets in foods dataset must be of format 'constraints_DIETNAME_diet_food_g then the parameter passed will be DIETNAME. Can be a vector of diets in format c('DIETNAME1','DIETNAME2',...,'DIETNAMEN').

Value

Food groups dataframe.

foods *Foods dataset example*

Description

A set of data containing commonly available foods based on a Brazilian typical diet.

Usage

```
foods
```

Format

A dataframe with 99 rows and 45 columns:

food_group Food group, i.e. 'Fruit' or 'Vegetable'

food_group_id Numerical code for dood group

food_name Food name, i.e. LEMON

food_id Unique numerical food id

variety Variety. Must be 1, 2 or 3

redmeat Boolean redmeat identifier

CF_gCO2eq Carbon footprint
WF_l Water footprint
EF_g_m2 Ecological footprint
serve_size_C Serve size for current diet, in grams
man_min_C Minimal current diet intake for males, in grams
woman_min_C Minimal current diet intake for females, in grams
boy_min_C Minimal current diet intake for boys, in grams
girl_min_C Minimal current diet intake for girls, in grams
man_max_C Maximal current diet intake for males, in grams
woman_max_C Maximal current diet intake for females, in grams
boy_max_C Maximal current diet intake for boys, in grams
girl_max_C Maximal current diet intake for girls, in grams
serve_size_PF Serve size for EAT-Lancet diet, in grams
man_min_PF Minimal EAT-Lancet diet intake for males, in grams
woman_min_PF Minimal EAT-Lancet diet intake for females, in grams
boy_min_PF Minimal EAT-Lancet diet intake for boys, in grams
girl_min_PF Minimal EAT-Lancet diet intake for girls, in grams
man_max_PF Maximal EAT-Lancet diet intake for males, in grams
woman_max_PF Maximal EAT-Lancet diet intake for females, in grams
boy_max_PF Maximal EAT-Lancet diet intake for boys, in grams
girl_max_PF Maximal EAT-Lancet diet intake for girls, in grams
serve_size_H Serve size for healthy diet, in grams
man_min_H Minimal healthy diet intake for males, in grams
woman_min_H Minimal healthy diet intake for females, in grams
boy_min_H Minimal healthy diet intake for boys, in grams
girl_min_H Minimal healthy diet intake for girls, in grams
man_max_H Maximal healthy diet intake for males, in grams
woman_max_H Maximal healthy diet intake for females, in grams
boy_max_H Maximal healthy diet intake for boys, in grams
girl_max_H Maximal healthy diet intake for girls, in grams
energy_kj_g Energy content of food, in kJ/g
fat_g Fat content of food per grams
sat_fat_g Saturated fat content of food per grams
CHO_g Carbohydrates content of food per grams
sugars_g Sugars content of food per grams
fibre_g Fibre content of food per grams
protein_g Protein content of food per grams
sodium_mg Sodium content of food per miligrams
price Price of food per 100g

Source

Elaborated by authors.

`getDifference` *General difference calculation*

Description

Applies difference calculation to entire dataset.

Usage

```
getDifference(df_target, df_nutrients, merge_col)
```

Arguments

`df_target`	Constraints dataframe.
`df_nutrients`	Nutrients/serves from random meal plan dataframe.
`merge_col`	Column to join both dataframes.

Value

Differences dataframe.

`getFoodGroupServes` *Food group serves calculator*

Description

Calculates total food group serves of random meal plan.

Usage

```
getFoodGroupServes(df)
```

Arguments

`df`	Random meal plan.

Value

Food group serves dataframe.

getNutrients *Nutrients values calculator*

Description

Calculates nutritional value of meal plan.

Usage

```
getNutrients(df, nutrient_cols = NULL)
```

Arguments

df	Random meal plan.
nutrient_cols	Optional parameter. Vector of nutrients column names to be used if nutrients are different from standard dataset.

Value

Nutrients dataframe.

getPerc *Percentage values calculator*

Description

Calculates percentage nutrient values.

Usage

```
getPerc(df_nutri, df_meal)
```

Arguments

df_nutri	Nutrient constraints dataframe.
df_meal	Random meal plan

Value

Percentage dataframe.

join_function *Join function*

Description

Safely performs a left join between two dataframes.

Usage

```
join_function(df1, df2, condition)
```

Arguments

df1	First dataframe.
df2	Second dataframe.
condition	Column in which the two datframes will be joined. Can be a single string or a vector.

Value

Dataframe.

monteCarlo *Monte Carlo simulation*

Description

Creates a Monte Carlo simulation to a given number of iterations. A hit meal consists of one that returnz zero difference between nutrient targets and random meal plan, food groups serves and respects lower linked foods serves lower or equal to higher linked foods serves, if existent.

Usage

```
monteCarlo(
  dir_path,
  iterations,
  foods_df,
  nutrient_targets_df,
  food_group_targets_df,
  person,
  diet,
  allowed_varieties,
  min_serve_size_difference,
  allow_discretionary = TRUE,
  allow_alcohol = TRUE,
```

```
  allow_takeaway = TRUE,
  emission_cols = NULL,
  nutrient_cols = NULL,
  nutrient_constraints = NULL,
  linked_low_1 = NULL,
  linked_high_1 = NULL,
  linked_low_2 = NULL,
  linked_high_2 = NULL
)
```

Arguments

dir_path	A string containing the path where a directory will be created.
iterations	Number of iterations. Integer.
foods_df	Foods dataframe.
nutrient_targets_df	Nutrient constraints dataframe.
food_group_targets_df	Food group serves dataframe.
person	Individual whose random meal plan will be created to. Can be one of man, woman, boy or girl.
diet	Chosen diet. Must be DIETNAME from 'constraints_DIETNAME_diet_foods' sheet in dataset.
allowed_varieties	Permitted food varieties. Can be a vector of the following: 1,2 and/or 3.
min_serve_size_difference	Multiplier to serve difference. A float between 0 and 1.
allow_discretionary	Boolean variable checking if discretionary foods are permitted. Default TRUE.
allow_alcohol	Boolean variable checking if alcohol is permitted. Default TRUE.
allow_takeaway	Boolean variable checking if takeaway is permitted. Default TRUE.
emission_cols	Optional parameter. Emission column names if standard dataset isn't used.
nutrient_cols	Optional parameter. Nutrients column names if standard dataset isn't used.
nutrient_constraints	Optional parameter. Vector of nutrients column names to be used if not all nutrients are to be used as constraints.
linked_low_1	Optional parameter. Vector of lower bound food IDs.
linked_high_1	Optional parameter. Vector of higher bound food IDs.
linked_low_2	Optional parameter. Vector of lower bound food IDs.
linked_high_2	Optional parameter. Vector of higher bound food IDs.

Value

List of dataframes, containing results of simulation.

`monteCarloSimulation` *Single-function Monte Carlo simulation and results export.*

Description

Runs Monte Carlo Simulation and prints results, in .xlsx format, in a single funtion.

Usage

```
monteCarloSimulation(
  dir_path,
  iterations,
  foods_df,
  nutrient_targets_df,
  food_group_targets_df,
  person,
  diet,
  allowed_varieties,
  min_serve_size_difference,
  allow_discretionary = TRUE,
  allow_alcohol = TRUE,
  allow_takeaway = TRUE,
  emission_cols = NULL,
  nutrient_cols = NULL,
  nutrient_constraints = NULL,
  linked_low_1 = NULL,
  linked_high_1 = NULL,
  linked_low_2 = NULL,
  linked_high_2 = NULL
)
```

Arguments

`dir_path`	A string containing the path where a directory will be created. This same path will hold the reports Excel workbook.
`iterations`	Number of iterations. Integer.
`foods_df`	Foods dataframe.
`nutrient_targets_df`	Nutrient constraints dataframe.
`food_group_targets_df`	Food group serves dataframe.
`person`	Individual whose random meal plan will be created to. Can be one of man, woman, boy or girl.
`diet`	Chosen diet. Must be DIETNAME from 'constraints_DIETNAME_diet_foods' sheet in dataset.

`allowed_varieties`
: Permitted food varieties. Can be a vector of the following: 1,2 and/or 3.

`min_serve_size_difference`
: Multiplier to serve difference. A float between 0 and 1.

`allow_discretionary`
: Boolean variable checking if discretionary foods are permitted. Default TRUE.

`allow_alcohol` Boolean variable checking if alcohol is permitted. Default TRUE.

`allow_takeaway` Boolean variable checking if takeaway is permitted. Default TRUE.

`emission_cols` Optional parameter. Emission column names if standard dataset isn't used.

`nutrient_cols` Optional parameter. Nutrients column names if standard dataset isn't used.

`nutrient_constraints`
: Optional parameter. Vector of nutrients column names to be used if not all nutrients are to be used as constraints.

`linked_low_1` Optional parameter. Vector of lower bound food IDs.

`linked_high_1` Optional parameter. Vector of higher bound food IDs.

`linked_low_2` Optional parameter. Vector of lower bound food IDs.

`linked_high_2` Optional parameter. Vector of higher bound food IDs.

Value

No R object return. Prints an Excel workbook.

`nutrient_targets` *Nutrients dataset example*

Description

A set of data containing nutrient weekly targets based on a Brazilian typical diet.

Usage

```
nutrient_targets
```

Format

A dataframe with 12 rows and 48 columns:

individual Person whose nutrient targets will be provided: man, woman, boy or girl

diet Diet whose nutrient targets will be provided: current (C), EAT-Lancet (PF) or healthy (H)

energy_kj_min Minimal weekly intake of energy, in kJ/g

energy_kj_max Maximal weekly intake of energy, in kJ/g

fat_grams_min Minimal weekly intake of fat in grams

fat_grams_max Maximal weekly intake of fat in grams

sat_fat_grams_min Minimal weekly intake of saturated fat in grams
sat_fat_grams_max Maximal weekly intake of saturated fat in grams
CHO_gram_mins Minimal weekly intake of carbohydrates in grams
CHO_gram_max Maximal weekly intake of carbohydrates in grams
sugars_grams_min Minimal weekly intake of sugars in grams
sugars_grams_max Maximal weekly intake of sugars in grams
fibre_grams_min Minimal weekly intake of fibre in grams
fibre_grams_max Maximal weekly intake of fibre in grams
protein_grams_min Minimal weekly intake of protein in grams
protein_grams_max Maximal weekly intake of protein in grams
sodium_mgrams_min Minimal weekly intake of sodium in grams
sodium_mgrams_max Maximal weekly intake of sodium in grams
protein_perc_min Minimal weekly intake of protein in percentage
protein_perc_max Maximal weekly intake of protein in percentage
sat_fat_perc_min Minimal weekly intake of saturated fat in percentage
sat_fat_perc_max Maximal weekly intake of saturated fat in percentage
fat_perc_min Minimal weekly intake of fat in percentage
fat_perc_max Maximal weekly intake of fat in percentage
CHO_perc_mins Minimal weekly intake of carbohydrates in percentage
CHO_perc_max Maximal weekly intake of carbohydrates in percentage
redmeat_grams_min Minimal weekly intake of red meat in grams
redmeat_grams_max Maximal weekly intake of red meat in grams
fruit_serves_min Minimal weekly intake of Fruit in serves
fruit_serves_max Maximal weekly intake of Fruit in serves
starchy_veg_serves_min Minimal weekly intake of Starchy vegetables in serves
starchy_veg_serves_max Maximal weekly intake of Starchy vegetables in serves
veg_serves_min Minimal weekly intake of Vegetables in serves
veg_serves_max Maximal weekly intake of Vegetables in serves
dairy_serves_min Minimal weekly intake of Dairy in serves
dairy_serves_max Maximal weekly intake of Dairy in serves
grain_serves_min Minimal weekly intake of Grains in serves
grain_serves_max Maximal weekly intake of Grains in serves
protein_serves_min Minimal weekly intake of Protein in serves
protein_serves_max Maximal weekly intake of Protein in serves
sugars_perc_mins Minimal weekly intake of sugars in percentage
sugars_perc_max Maximal weekly intake of sugars in percentage
alcohol_perc_mins Minimal weekly intake of Alcohol in percentage
alcohol_perc_max Maximal weekly intake of Alcohol in percentage
discretionary_perc_mins Minimal weekly intake of Discretionary foods in percentage
discretionary_perc_max Maximal weekly intake of Discretionary foods in percentage
takeaway_perc_mins Minimal weekly intake of Takeaway in percentage
takeaway_perc_max Maximal weekly intake of Takeaway foods in percentage

Source

Elaborated by authors.

`nutrientDataCalculation` *Nutrient data application to random meal plan created*

Description

Applies nutrient data calculation to random meal plan generated.

Usage

```
nutrientDataCalculation(df, nutrient_cols = NULL)
```

Arguments

`df`	Random meal plan.
`nutrient_cols`	Optional parameter. Nutrient column names if standard dataset isn't used.

Value

Random meal plan with nutrients calculated.

`permitted_individuals` *Permitted individuals check*

Description

Checks if logged individuals are one or all of the following: man, woman, boy or girl.

Usage

```
permitted_individuals(df)
```

Arguments

`df`	Variable.

Value

No R object return, performs only a check.

priceEmissionData *Price/emission data application to random meal plan created*

Description

Applies price and emission data calculation to random meal plan generated.

Usage

```
priceEmissionData(df, emission_cols = NULL)
```

Arguments

df	Random meal plan.
emission_cols	Optional parameter. Emission column names if standard dataset isn't used.

Value

Random meal plan with price and emissions calculated.

printResults *Exportation of Monte Carlo results*

Description

Exports, in .xlsx format, the results of Monte Carlo simulation.

Usage

```
printResults(file_path, results, person, diet, allowed_varieties, iterations)
```

Arguments

file_path	A string containing the path where the file will be saved.
results	List of results
person	Individual whose random meal plan will be created to. Can be one of man, woman, boy or girl.
diet	Chosen diet. Must be DIETNAME from 'constraints_DIETNAME_diet_foods' sheet in dataset.
allowed_varieties	Permitted food varieties. Can be a vector of the following: 1,2 and/or 3.
iterations	Number of iterations. Integer.

Value

No R object return, prints a Excel workbook.

random_plan *Random deletion*

Description

Randomly deletes a food.

Usage

```
random_plan(df, column, condition)
```

Arguments

df	Dataframe.
column	Column from which decision about removal of values will be made.
condition	Condition that, if is true, will enable radom removal.

Value

Random meal plan

redmeat_check *Redmeat flag*

Description

Sets a boolean redmeat flag column in dataset.

Usage

```
redmeat_check(id, redmeat_ids)
```

Arguments

id	Food group id column in dataframe.
redmeat_ids	Vector of unique food IDs that are redmeat.

Value

No R object return, performs only a check.

remove_suffix *Suffix removal*

Description

Removes one of two suffixes from column names

Usage

```
remove_suffix(vector, suffix_1, suffix_2)
```

Arguments

vector	Vector of column names
suffix_1	First suffix to be removed.
suffix_2	Second suffix to be removed.

Value

Vector of column names without suffixes.

sample_safe *Safe sampling*

Description

Safely extracts a random unitary sample from a vector.

Usage

```
sample_safe(x)
```

Arguments

x	Vector.

Value

Random sample.

Examples

```
intake <- DIETCOST::sample_safe(c(10,25,37,52,100));
```

sauces_protein_discretionary_change *Sauces, protein and discretionary food groups treatment*

Description

Treats above said food name groups to the format used in the package.

Usage

```
sauces_protein_discretionary_change(group)
```

Arguments

group	Food group column in dataframe.

Value

Treated dataframe.

standard_name_check *Standard name check*

Description

Checks if variable names are the standard defined into DIETCOST R standard table.

Usage

```
standard_name_check(df, ...)
```

Arguments

df	Dataframe.
...	Any number of strings.

Value

No R object return, performs only a check.

Examples

```
standard_name_check(DIETCOST::foods, 'food_id', 'food_name')
```

starchy_fill *Starchy vegetables serves addition*

Description

Adds minimum and maximum serves of starchy vegetables.

Usage

```
starchy_fill(df, starchy_name, serve_identifier, max_identifier)
```

Arguments

df	Dataframe.
starchy_name	Starchy vegetables food group name. Default 'Starchy vegetables'.
serve_identifier	Serve column identifier. Default 'serve'.
max_identifier	Max column identifier. Default 'max'.

Value

Food group dataframe with starchy vegetable minimum and maximum serves columns added.

treat_df *Pre-treatment of constraint data*

Description

Pre-treatment of constraints dataframe.

Usage

```
treat_df(df, min_identifier, max_identifier, suffix, max_scale, override_min)
```

Arguments

df	Dataframe to be treated.
min_identifier	Minimum value column identifier. 'Min' in standard dataset.
max_identifier	Maximum value column identifier. 'Max' in standard dataset.
suffix	Suffix to be added to column name.
max_scale	Maximum scale. Default is two.
override_min	If is not null, overrides all minimum values.

Value

Treated dataframe.

treat_groups_df *Treatment of food group constraints dataframe*

Description

Converts weekly food group serves to daily and adds diet suffix to column names.

Usage

```
treat_groups_df(df, suffix)
```

Arguments

df	Dataframe.
suffix	Suffix to be added to column.

Value

Treated food group dataframe.

unique_values *Unique value check*

Description

Checks if there are non-unique values in dataset.

Usage

```
unique_values(value, df, value_col, value_name)
```

Arguments

value	Column from which an unique vector will be formed.
df	Dataframe in which lies the column to be checked.
value_col	Name of the column to be checked, in string format.
value_name	Name of the variable tested.

Value

No R object return, performs only a check.

upload_data *Data upload*

Description

Safely uploads data to be processed in DIETCOST software.

Usage

```
upload_data(filepath, sheet)
```

Arguments

filepath	The filepath in which the dataset, in .xlsx format, is saved.
sheet	The sheet of the .xlsx to be read.

Value

The dataframe generated by the file which was read.

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