Package 'radiant.design'

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Type Package

Title Design Menu for Radiant: Business Analytics using R and Shiny

Version 1.6.6

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Description The Radiant Design menu includes interfaces for design of experiments, sampling, and sample size calculation. The application extends the functionality in 'radiant.data'.

Depends R (>= 4.3.0), radiant.data (>= 1.6.6),

Imports dplyr (>= 1.0.7), magrittr (>= 1.5), shiny (>= 1.8.1), AlgDesign (>= 1.1.7.3), import (>= 1.1.0), pwr (>= 1.1.2), randomizr (>= 0.20.0), mvtnorm (>= 1.2.0), polycor

Suggests testthat (>= 2.0.0), pkgdown (>= 1.1.0)

URL https://github.com/radiant-rstats/radiant.design/, https://radiant-rstats.github.io/radiant.design/, https://radiant-rstats.github.io/docs/

BugReports https://github.com/radiant-rstats/radiant.design/issues/

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R topics documented:

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doe *Create (partial) factorial design*

Description

Create (partial) factorial design

Usage

```
doe(factors, int = "", trials = NA, seed = NA)
```

Arguments

`factors`	Categorical variables used as input for design
`int`	Vector of interaction terms to consider when generating design
`trials`	Number of trials to create. If NA then all feasible designs will be considered until a design with perfect D-efficiency is found
`seed`	Random seed to use as the starting point

Details

See https://radiant-rstats.github.io/docs/design/doe.html for an example in Radiant

Value

A list with all variables defined in the function as an object of class doe

See Also

summary.doe to summarize results

Examples

```
doe(c("price; $10; $13; $16", "food; popcorn; gourmet; no food"))
doe(
  c("price; $10; $13; $16", "food; popcorn; gourmet; no food"),
  int = "price:food", trials = 9, seed = 1234
)
```

---

estimable *Determine coefficients that can be estimated based on a partial factorial design*

Description

A function to determine which coefficients can be estimated based on a partial factorial design. Adapted from a function written by Blakeley McShane at https://github.com/fzettelmeyer/mktg482/blob/master/R/expdesign.

Usage

```
estimable(design)
```

Arguments

design	An experimental design generated by the doe function that includes a partial and full factorial design

Examples

```
design <- doe(c("price; $10; $13; $16", "food; popcorn; gourmet; no food"), trials = 6)
estimable(design)
```

---

plot.sample_size_comp *Plot method for the sample_size_comp function*

Description

Plot method for the sample_size_comp function

Usage

```
## S3 method for class 'sample_size_comp'
plot(x, ...)
```

Arguments

x	Return value from sample_size_comp
...	further arguments passed to or from other methods

Details

See https://radiant-rstats.github.io/docs/design/sample_size_comp.html for an example in Radiant

See Also

sample_size_comp to generate the results

Examples

```
sample_size_comp(
  type = "proportion", p1 = 0.1, p2 = 0.15,
  conf_lev = 0.95, power = 0.8
) %>% plot()
```

---

radiant.design *radiant.design*

Description

Launch radiant.design in the default web browser

Usage

```
radiant.design(state, ...)
```

Arguments

state	Path to state file to load
...	additional arguments to pass to shiny::runApp (e.g, port = 8080)

Details

See https://radiant-rstats.github.io/docs/ for documentation and tutorials

Examples

```
## Not run:
radiant.design()

## End(Not run)
```

radiant.design_viewer *Launch radiant.design in the Rstudio viewer*

Description

Launch radiant.design in the Rstudio viewer

Usage

```
radiant.design_viewer(state, ...)
```

Arguments

state	Path to state file to load
...	additional arguments to pass to shiny::runApp (e.g, port = 8080)

Details

See https://radiant-rstats.github.io/docs/ for documentation and tutorials

Examples

```
## Not run:
radiant.design_viewer()

## End(Not run)
```

radiant.design_window *Launch radiant.design in an Rstudio window*

Description

Launch radiant.design in an Rstudio window

Usage

```
radiant.design_window(state, ...)
```

Arguments

state	Path to state file to load
...	additional arguments to pass to shiny::runApp (e.g, port = 8080)

Details

See https://radiant-rstats.github.io/docs/ for documentation and tutorials

Examples

```
## Not run:
radiant.design_window()

## End(Not run)
```

`randomizer` *Randomize cases into experimental conditions*

Description

Randomize cases into experimental conditions

Usage

```
randomizer(
  dataset,
  vars,
  conditions = c("A", "B"),
  blocks = NULL,
  probs = NULL,
  label = ".conditions",
  seed = 1234,
  data_filter = "",
  arr = "",
  rows = NULL,
  na.rm = FALSE,
  envir = parent.frame()
)
```

Arguments

`dataset`	Dataset to sample from
`vars`	The variables to sample
`conditions`	Conditions to assign to
`blocks`	A vector to use for blocking or a data.frame from which to construct a blocking vector
`probs`	A vector of assignment probabilities for each treatment conditions. By default each condition is assigned with equal probability
`label`	Name to use for the generated condition variable
`seed`	Random seed to use as the starting point
`data_filter`	Expression entered in, e.g., Data > View to filter the dataset in Radiant. The expression should be a string (e.g., "price > 10000")
`arr`	Expression to arrange (sort) the data on (e.g., "color, desc(price)")

rows	Rows to select from the specified dataset
na.rm	Remove rows with missing values (FALSE or TRUE)
envir	Environment to extract data from

Details

Wrapper for the complete_ra and block_ra from the randomizr package. See https://radiant-rstats.github.io/docs/design/randomizer.html for an example in Radiant

Value

A list of variables defined in randomizer as an object of class randomizer

See Also

summary.sampling to summarize results

Examples

```
randomizer(rndnames, "Names", conditions = c("test", "control")) %>% str()
```

---

rndnames *100 random names*

Description

100 random names

Usage

```
data(rndnames)
```

Format

A data frame with 100 rows and 2 variables

Details

A list of 100 random names. Description provided in attr(rndnames,"description")

`sample_size` *Sample size calculation*

Description

Sample size calculation

Usage

```
sample_size(
  type,
  err_mean = 2,
  sd_mean = 10,
  err_prop = 0.1,
  p_prop = 0.5,
  conf_lev = 0.95,
  incidence = 1,
  response = 1,
  pop_correction = "no",
  pop_size = 1e+06
)
```

Arguments

`type`	Choose "mean" or "proportion"
`err_mean`	Acceptable Error for Mean
`sd_mean`	Standard deviation for Mean
`err_prop`	Acceptable Error for Proportion
`p_prop`	Initial proportion estimate for Proportion
`conf_lev`	Confidence level
`incidence`	Incidence rate (i.e., fraction of valid respondents)
`response`	Response rate
`pop_correction`	Apply correction for population size ("yes","no")
`pop_size`	Population size

Details

See https://radiant-rstats.github.io/docs/design/sample_size.html for an example in Radiant

Value

A list of variables defined in sample_size as an object of class sample_size

See Also

summary.sample_size to summarize results

Examples

```
sample_size(type = "mean", err_mean = 2, sd_mean = 10)
```

`sample_size_comp` *Sample size calculation for comparisons*

Description

Sample size calculation for comparisons

Usage

```
sample_size_comp(
  type,
  n1 = NULL,
  n2 = NULL,
  p1 = NULL,
  p2 = NULL,
  delta = NULL,
  sd = NULL,
  conf_lev = NULL,
  power = NULL,
  ratio = 1,
  alternative = "two.sided"
)
```

Arguments

type	Choose "mean" or "proportion"
n1	Sample size for group 1
n2	Sample size for group 2
p1	Proportion 1 (only used when "proportion" is selected)
p2	Proportion 2 (only used when "proportion" is selected)
delta	Difference in means between two groups (only used when "mean" is selected)
sd	Standard deviation (only used when "mean" is selected)
conf_lev	Confidence level
power	Power
ratio	Sampling ratio (n1 / n2)
alternative	Two or one sided test

Details

See https://radiant-rstats.github.io/docs/design/sample_size_comp.html for an example in Radiant

Value

A list of variables defined in sample_size_comp as an object of class sample_size_comp

See Also

summary.sample_size_comp to summarize results

Examples

```
sample_size_comp(
  type = "proportion", p1 = 0.1, p2 = 0.15,
  conf_lev = 0.95, power = 0.8
)
```

---

sampling *Simple random sampling*

Description

Simple random sampling

Usage

```
sampling(
  dataset,
  vars,
  sample_size,
  seed = 1234,
  data_filter = "",
  arr = "",
  rows = NULL,
  na.rm = FALSE,
  envir = parent.frame()
)
```

Arguments

dataset	Dataset to sample from
vars	The variables to sample
sample_size	Number of units to select
seed	Random seed to use as the starting point

data_filter	Expression entered in, e.g., Data > View to filter the dataset in Radiant. The expression should be a string (e.g., "price > 10000")
arr	Expression to arrange (sort) the data on (e.g., "color, desc(price)")
rows	Rows to select from the specified dataset
na.rm	Remove rows with missing values (FALSE or TRUE)
envir	Environment to extract data from

Details

See https://radiant-rstats.github.io/docs/design/sampling.html for an example in Radiant

Value

A list of class 'sampling' with all variables defined in the sampling function

See Also

summary.sampling to summarize results

Examples

```
sampling(rndnames, "Names", 10)
```

---

summary.doe *Summary method for doe function*

Description

Summary method for doe function

Usage

```
## S3 method for class 'doe'
summary(object, eff = TRUE, part = TRUE, full = TRUE, est = TRUE, dec = 3, ...)
```

Arguments

object	Return value from doe
eff	If TRUE print efficiency output
part	If TRUE print partial factorial
full	If TRUE print full factorial
est	If TRUE print number of effects that will be estimable using the partial factorial design
dec	Number of decimals to show
...	further arguments passed to or from other methods.

Details

See https://radiant-rstats.github.io/docs/design/doe.html for an example in Radiant

See Also

doe to calculate results

Examples

```
c("price; $10; $13; $16", "food; popcorn; gourmet; no food") %>%
  doe() %>%
  summary()
```

---

summary.randomizer *Summary method for the randomizer function*

Description

Summary method for the randomizer function

Usage

```
## S3 method for class 'randomizer'
summary(object, dec = 3, ...)
```

Arguments

object	Return value from randomizer
dec	Number of decimals to show
...	further arguments passed to or from other methods

Details

See https://radiant-rstats.github.io/docs/design/randomizer.html for an example in Radiant

See Also

randomizer to generate the results

Examples

```
randomizer(rndnames, "Names", conditions = c("test", "control")) %>% summary()
```

summary.sample_size *Summary method for the sample_size function*

Description

Summary method for the sample_size function

Usage

```
## S3 method for class 'sample_size'
summary(object, ...)
```

Arguments

object	Return value from sample_size
...	further arguments passed to or from other methods

Details

See https://radiant-rstats.github.io/docs/design/sample_size.html for an example in Radiant

See Also

sample_size to generate the results

Examples

```
sample_size(type = "mean", err_mean = 2, sd_mean = 10) %>%
  summary()
```

summary.sample_size_comp *Summary method for the sample_size_comp function*

Description

Summary method for the sample_size_comp function

Usage

```
## S3 method for class 'sample_size_comp'
summary(object, ...)
```

Arguments

object	Return value from sample_size_comp
...	further arguments passed to or from other methods

Details

See https://radiant-rstats.github.io/docs/design/sample_size_comp.html for an example in Radiant

See Also

sample_size_comp to generate the results

Examples

```
sample_size_comp(
  type = "proportion", p1 = 0.1, p2 = 0.15,
  conf_lev = 0.95, power = 0.8
) %>% summary()
```

---

summary.sampling *Summary method for the sampling function*

Description

Summary method for the sampling function

Usage

```
## S3 method for class 'sampling'
summary(object, dec = 3, ...)
```

Arguments

object	Return value from sampling
dec	Number of decimals to show
...	further arguments passed to or from other methods

Details

See https://radiant-rstats.github.io/docs/design/sampling.html for an example in Radiant

See Also

sampling to generate the results

Examples

```
sampling(rndnames, "Names", 10) %>% summary()
```

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