

Package ‘radiant.design’

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Type Package

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

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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 (>= 3.4.0), radiant.data (>= 1.4.4), mvtnorm

Imports dplyr (>= 1.0.7), magrittr (>= 1.5), shiny (>= 1.7.1), AlgDesign (>= 1.1.7.3), import (>= 1.1.0), pwr (>= 1.1.2), randomizr (>= 0.20.0), 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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doe	<i>Create (partial) factorial design</i>
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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

<code>state</code>	Path to state file to load
<code>...</code>	additional arguments to pass to <code>shiny::runApp</code> (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

<code>state</code>	Path to state file to load
<code>...</code>	additional arguments to pass to <code>shiny::runApp</code> (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	<i>Randomize cases into experimental conditions</i>
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Description

Randomize cases into experimental conditions

Usage

```
randomizer(
  dataset,
  vars,
  conditions = c("A", "B"),
  blocks = NULL,
  probs = NULL,
  label = ".conditions",
  seed = 1234,
  data_filter = "",
  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")
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()
```

<code>rndnames</code>	<i>100 random names</i>
-----------------------	-------------------------

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	<i>Sample size calculation</i>
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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 = "",
  na.rm = FALSE,
  envir = parent.frame()
)
```

Arguments

<code>dataset</code>	Dataset to sample from
<code>vars</code>	The variables to sample
<code>sample_size</code>	Number of units to select
<code>seed</code>	Random seed to use as the starting point
<code>data_filter</code>	Expression entered in, e.g., <code>Data > View</code> to filter the dataset in Radiant. The expression should be a string (e.g., <code>"price > 10000"</code>)

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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