Package: designpower (via r-universe)

June 2, 2026

Title Design Power Analysis Tools

Version 0.0.2

Description Tools for iterative power analysis and design optimization using simulation and adaptive sampling strategies.

License GPL-3

URL https://github.com/inbo/designpower

BugReports https://github.com/inbo/designpower/issues

Depends R (>= 4.1.0)

Imports DBI, digest, dplyr, duckdb, ggplot2, mgcv, rlang, scales, tidyr

Suggests testthat (>= 3.0.0)

Config/checklist/communities inbo

Config/checklist/keywords sample size, power analysis, design optimization

Config/testthat/edition 3

Encoding UTF-8

Language en-GB

Roxygen list(markdown = TRUE)

RoxygenNote 7.3.3

Config/pak/sysreqs libicu-dev xz-utils

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

Date/Publication 2026-03-04 15:22:21 UTC

RemoteUrl https://github.com/inbo/designpower

RemoteRef HEAD

RemoteSha 28a7d7a507e5802e0ee31d344b1db056971db4f9

Contents

`find_power` *Find Optimal Design*

Description

Iteratively search for optimal design parameters using adaptive simulation.

Usage

```
find_power(
  design,
  design_digits,
  opti,
  sim_power,
  extra_args = list(),
  power = 0.9,
  alpha = 0.1,
  filename = "power.duckdb"
)
```

Arguments

`design`	List. Initial design parameters.
`design_digits`	Named numeric. Precision (number of decimal places) for each parameter. The names must match those in `design`.
`opti`	Character. Name of parameter to optimize.
`sim_power`	Function. Simulation function (should accept `design` and `n_sim`).
`extra_args`	List. Optional additional arguments passed to `sim_power`. Defaults to an empty list.
`power`	Numeric. Target power (default 0.9).
`alpha`	Numeric. Significance level (default 0.1).
`filename`	Character. Path to `DuckDB` database file.

Details

Uses `DuckDB` to store simulations and gradually refines design parameters to achieve target power.

Value

Numeric vector. The optimized parameter value and confidence range.

Examples

```
## Not run:
find_power(
  design = list(trend = -0.03, n_site = 20, n_year = 12),
  design_digits = c(trend = 4, n_site = 0, n_year = 0),
  opti = "trend",
  sim_power = sim_power,
  extra_args = list()
)

## End(Not run)
```

`sim_power` *Simple Power Simulation*

Description

A basic example of a power simulation function.

Usage

```
sim_power(
  design = list(trend = -0.03, n_year = 12, n_sample = 20),
  n_sim = 100,
  intercept = 2,
  sigma_error = 0.1
)
```

Arguments

`design`	A named list with design parameters: • `trend`: The true trend parameter • `n_year`: Number of years • `n_sample`: Number of samples per year
`n_sim`	Integer. Number of simulations.
`intercept`	Numeric. Intercept of the model.
`sigma_error`	Numeric. Standard deviation of the error term.

Details

Simulates data under a simple model and returns p-values.

Value

A data frame with columns:

- p: P-values from simulations
- trend: Estimated trends

Examples

```
## Not run:
sim_power(
  design = list(trend = -0.03, n_year = 12, n_sample = 20),
  n_sim = 10
)

## End(Not run)
```

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