Package ‘tidydelta’

July 19, 2024

Title Estimation of Standard Errors using Delta Method

Version 0.1.0

Description Delta Method implementation to estimate standard errors with known asymptotic properties within the ‘tidyverse’ workflow. The Delta Method is a statistical tool that approximates an estimator’s behaviour using a Taylor Expansion. For a comprehensive explanation, please refer to Chapter 3 of van der Vaart (1998, ISBN: 9780511802256).

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Imports dplyr, numDeriv, purrr, rlang, tibble, cli

Suggests testthat (>= 3.0.0), tidyverse

Encoding UTF-8

RoxygenNote 7.3.2

Config/testthat/edition 3

URL https://github.com/JavierMtzRdz/tidydelta

BugReports https://github.com/JavierMtzRdz/tidydelta/issues

NeedsCompilation no

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Repository CRAN

Date/Publication 2024-07-18 23:20:02 UTC

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**cases_ext**

*Extract variables and their names from the formula*

**Description**

Extract variables and their names from the formula

**Usage**

```r
cases_ext(formula, mean_dta = NULL, cov_dta = NULL)
```

**Arguments**

- `formula`: A formula object specifying the variables of interest.
- `mean_dta`: Vector containing the means of the variables.
- `cov_dta`: Covariance matrix of the variables.

**Value**

list containing objects with variables and formula

---

**ext_bd_var**

*Extract variables from a formula*

**Description**

Extracts variables from a formula string.

**Usage**

```r
ext_bd_var(formula)
```

**Arguments**

- `formula`: A formula object or a character string representing a formula.

**Value**

A named character vector of extracted variables.
for_to_exp

Convert a formula to an expression

Description

Converts a formula to an expression for further evaluation.

Usage

for_to_exp(formula)

Arguments

formula A formula object or a character string representing a formula.

Value

The evaluated expression.

tidydelta

Delta Method implementation

Description

Estimates standard errors for transformations of random variables using Delta method.

Usage

tidydelta(
    formula,
    normality_eval = TRUE,
    formula_vars = mean,
    mean_dta = NULL,
    cov_dta = NULL,
    n = NULL,
    conf_lev = 0.95
)

Arguments

formula A formula object specifying the variables of interest.

normality_eval Logical value to run normality test in case of being possible.

formula_vars The function(s) to apply to the variables in the formula.

mean_dta Vector containing the means of the variables.

cov_dta Covariance matrix of the variables.
Sample size evaluation (in case that we can evaluate the confidence intervals with different hypnotic sample sizes).

Confidence level for confidence intervals.

Value

A tibble with columns for means, standard errors, and optionally, confidence intervals.

Examples

```r
# Equivalent ways to use tidydelta()
library(tidyverse)

x <- rnorm(1000, mean = 5, sd = 2)
y <- rnorm(1000, mean = 15, sd = 3)

bd <- tibble(x, y)

tidydelta(~ y / x,
        conf_lev = .95)

tidydelta(~ bd$y / bd$x,
        conf_lev = .95)

bd %>%
    summarise(tidydelta(~ y / x,
                       conf_lev = .95))
```

---

### where_env

Recursive search of environment containing object.

#### Usage

```r
where_env(name, env = rlang::caller_env())
```

#### Arguments

- `name`: Object searched
- `env`: Initial environment to search

#### Value

A named character vector of extracted variables.
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