Package 'tidydelta'

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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

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cases_ext *Extract variables and their names from the formula*

Description

Extract variables and their names from the formula

Usage

```
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

```
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.

n	Sample size evaluation (in case that we can evaluate the confidence intervals with different hypnotic sample sizes).
conf_lev	Confidence level for confidence intervals.

Value

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

Examples

```
# 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
  ))
```

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where_env *Recursive search of environment*

Description

Recursive search of environment containing object.

Usage

```
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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