Package: ife (via r-universe)

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Type Package

Title Autodiff for Influence Function Based Estimates

Version 0.2.5

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Description Implements an S7 class for estimates based on influence functions, with forward mode automatic differentiation defined for standard arithmetic operations.

License GPL (>= 3)

Encoding UTF-8

URL https://github.com/nt-williams/ife

BugReports https://github.com/nt-williams/ife/issues

Imports cli, collapse, generics, S7 (>= 0.2.0)

RoxygenNote 7.3.2

Suggests testthat (>= 3.0.0)

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NeedsCompilation no

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

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`ife` *Create a new 'influence_func_estimate' object*

Description

Create a new 'influence_func_estimate' object

Usage

```
ife(
  x,
  eif,
  weights = rep(1, length(eif)),
  id = as.character(1:length(eif)),
  critical_value = qnorm(0.975)
)

influence_func_estimate(
  x,
  eif,
  weights = rep(1, length(eif)),
  id = as.character(1:length(eif)),
  critical_value = qnorm(0.975)
)
```

Arguments

`x`	[`numeric(1)`] The point estimate.
`eif`	[`numeric(n)`] The influence function.
`weights`	[`numeric(n)`] Optional known survey sampling weights.
`id`	[`character(n)`] Optional cluster identifiers.
`critical_value`	[`numeric(1)`] Optional critical value for constructing confidence interval.

Details

If known survey weights are provided, the variance estimator is the sample variance of the influence function multiplied by the survey weights (see DOI: 10.1093/aje/kwu197 for more information). If there is clustering, `x` and `eif` are assumed to be on the individual-level. The individual-level influence function is then aggregated to the cluster-level and the variance estimator is the sample variance of the estimated cluster-level influence function, scaled by the number of clusters (see DOI: 10.1002/sim.9813 for more information).

Value

An 'S7' object of class `influence_func_estimate`.

Examples

```
.x <- rnorm(100)
.y <- rnorm(100)
x <- influence_func_estimate(mean(.x), .x - mean(.x))
y <- influence_func_estimate(mean(.x), .y - mean(.y))
x + y
x + 1
1 - y
x / y
x * y
tidy(x)
# Example: Confidence interval for a variance estimate
.z <- rnorm(100, 0, sqrt(4))
ife(mean(.z^2), .z^2 - mean(.z^2)) - ife(mean(.z), .z - mean(.z))^2
```

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