Package ‘dfadjust’

December 16, 2019

Title Degrees of Freedom Adjustment for Robust Standard Errors

Version 1.0.1

Description Computes small-sample degrees of freedom adjustment for heteroskedasticity robust standard errors, and for clustered standard errors in linear regression. See Imbens and Kolesár (2016) <doi:10.1162/REST_a_00552> for a discussion of these adjustments.

Depends R (>= 3.5.0)

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Encoding UTF-8

LazyData true

Suggests testthat (>= 2.1.0), sandwich, knitr, rmarkdown, spelling, formatR

RoxygenNote 7.0.2

URL https://github.com/kolesarm/Robust-Small-Sample-Standard-Errors

BugReports https://github.com/kolesarm/Robust-Small-Sample-Standard-Errors/issues

Language en-US

VignetteBuilder knitr

NeedsCompilation no

Author Michal Kolesár [aut, cre] (<https://orcid.org/0000-0002-2482-7796>)

Maintainer Michal Kolesár <kolesarmi@googlemail.com>

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**Standard Errors with adjusted degrees of freedom**

**Description**

Standard Errors with adjusted degrees of freedom

**Usage**

```r
dfadjustSE(
  model,
  clustervar = NULL,
  ell = NULL,
  IK = TRUE,
  tol = 1e-09,
  rho0 = FALSE
)
```

**Arguments**

- `model`: Fitted model returned by the `lm` function.
- `clustervar`: Factor variable that defines clusters. If `NULL` (or not supplied), the command computes heteroscedasticity-robust standard errors, rather than cluster-robust standard errors.
- `ell`: A vector of the same length as the dimension of covariates, specifying which linear combination $\ell^T \beta$ of coefficients $\beta$ to compute. If `NULL`, compute standard errors for each regressor coefficient.
- `IK`: Only relevant for cluster-robust standard errors. Specifies whether to compute the degrees-of-freedom adjustment using the Imbens-Kolesár (2016) method (if `TRUE`), or the Bell-McCaffrey (2002) method (if `FALSE`).
- `tol`: Numerical tolerance for determining whether an eigenvalue equals zero.
- `rho0`: Impose positive $\rho$ when estimating the Moulton (1986) model when implementing the IK method?

**Value**

Returns a list with the following components:

- `vcov`: Variance-covariance matrix estimator. For independent errors, it corresponds to the HC2 estimator (see MacKinnon and White, 1985 and the reference manual for the `sandwich` package). For clustered errors, it corresponds to a version the generalization of the HC2 estimator, called LZ2 in Imbens and Kolesár.
- `coefficients`: Matrix of estimated coefficients, along with HC1, and HC2 standard errors, Adjusted standard errors, and effective degrees of freedom. Adjusted standard error is HC2 standard error multiplied by $qt(0.975, df=dof)/qnorm(0.975)$ so that one can construct 95% confidence intervals by adding and subtracting 1.96 times the adjusted standard error.
**rho, sig** Estimates of $\rho$ and $\sigma$ of the Moulton (1986) model for the regression errors. Only computed if I1K method is used

**References**


**Examples**

```r
## No clustering:
set.seed(42)
x <- sin(1:100)
y <- rnorm(100)
fm <- lm(y ~ x + I(x^2))
dfadjustSE(fm)
## Clustering, with 5 clusters
clustervar <- as.factor(c(rep(1, 40), rep(1, 20),
                       rep(2, 20), rep(3, 10), rep(4, 10)))
dfadjustSE(fm, clustervar)
```
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