betaSandwich: Internal Tests

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Tests

```
#> test-betaSandwich-beta-sandwich-adf
#> Test passed
#> Test passed

#> test-betaSandwich-beta-sandwich-hc

#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed

#> test-betaSandwich-beta-sandwich-methods

#> Call:
#> BetaHC(object = object)
#>
#> Standardized regression slopes with HC3 standard errors:
#>            est     se      t      p   0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> NARTIC  0.4951 0.0786 6.3025 0.0000  0.2172 0.2832 0.3366 0.6537 0.7071 0.7731
#> PCTGRT  0.3915 0.0818 4.7831 0.0000  0.1019 0.1707 0.2263 0.5567 0.6123 0.6810
#> PCTSUPP 0.2632 0.0855 3.0786 0.0037 -0.0393 0.0325 0.0907 0.4358 0.4940 0.5658
#> Call:
#> BetaHC(object = object)
#>
#> Standardized regression slopes with HC3 standard errors:
#> Call:
#> BetaN(object = object)
#>
#> Standardized regression slopes with MVN standard errors:
#>            est     se      t     p   0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> NARTIC  0.4951 0.0759 6.5272 0.000  0.2268 0.2905 0.3421 0.6482 0.6998 0.7635
```

```
#> PCTGRT  0.3915 0.0770 5.0824 0.000  0.1190 0.1837 0.2360 0.5469 0.5993 0.6640
#> PCTSUPP 0.2632 0.0747 3.5224 0.001 -0.0011 0.0616 0.1124 0.4141 0.4649 0.5276
#> Call:
#> BetaN(object = object)
#>
#> Standardized regression slopes with MVN standard errors:
#> Call:
#> BetaADF(object = object)
#>
#> Standardized regression slopes with ADF standard errors:
#>           est     se      t      p   0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> NARTIC  0.4951 0.0674 7.3490 0.0000  0.2568 0.3134 0.3592 0.6311 0.6769 0.7335
#> PCTGRT  0.3915 0.0710 5.5164 0.0000  0.1404 0.2000 0.2483 0.5347 0.5830 0.6426
#> PCTSUPP 0.2632 0.0769 3.4231 0.0014 -0.0088 0.0558 0.1081 0.4184 0.4707 0.5353
#> Call:
#> BetaADF(object = object)
#>
#> Standardized regression slopes with ADF standard errors:
#> Call:
#> BetaHC(object = object)
#>
#> Standardized regression slopes with HC3 standard errors:
#>           est     se       t p  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> NARTIC 0.7622 0.0645 11.8222 0 0.5349 0.5886 0.6322 0.8921 0.9357 0.9895
#> Call:
#> BetaHC(object = object)
#>
#> Standardized regression slopes with HC3 standard errors:
#> Call:
#> BetaN(object = object)
#>
#> Standardized regression slopes with MVN standard errors:
#>           est     se       t p  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> NARTIC 0.7622 0.0618 12.3341 0 0.5443 0.5958 0.6376 0.8867 0.9285   0.98
#> Call:
#> BetaN(object = object)
#>
#> Standardized regression slopes with MVN standard errors:
#> Call:
#> BetaADF(object = object)
#>
#> Standardized regression slopes with ADF standard errors:
#>           est     se      t p  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> NARTIC 0.7622 0.0604 12.625 0 0.5493 0.5996 0.6405 0.8838 0.9247  0.975
#> Call:
#> BetaADF(object = object)
```

```
#>
#> Standardized regression slopes with ADF standard errors:

#> test-betaSandwich-beta-sandwich-mvn

#> Test passed
#> Test passed

#> test-betaSandwich-diff-beta-sandwich

#> Test passed
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#> Test passed
#> Test passed
#> Test passed
#> Test passed

#> test-betaSandwich-diff-beta-sandwich-methods

#> Difference between standardized regression coefficients with MVN standard errors:
#>                   est     se      z      p   0.05%    0.5%    2.5%  97.5%
#> NARTIC-PCTGRT  0.1037 0.1357 0.7640 0.4449 -0.3428 -0.2458 -0.1623 0.3696
#> NARTIC-PCTSUPP 0.2319 0.1252 1.8524 0.0640 -0.1800 -0.0906 -0.0135 0.4773
#> PCTGRT-PCTSUPP 0.1282 0.1227 1.0451 0.2960 -0.2755 -0.1878 -0.1123 0.3688
#>                 99.5% 99.95%
#> NARTIC-PCTGRT  0.4531 0.5501
#> NARTIC-PCTSUPP 0.5544 0.6438
#> PCTGRT-PCTSUPP 0.4443 0.5320
#> Difference between standardized regression coefficients with MVN standard errors:
#> Difference between standardized regression coefficients with ADF standard errors:
#>                   est     se      z      p   0.05%    0.5%    2.5%  97.5%
#> NARTIC-PCTGRT  0.1037 0.1212 0.8555 0.3923 -0.2950 -0.2084 -0.1338 0.3411
#> NARTIC-PCTSUPP 0.2319 0.1181 1.9642 0.0495 -0.1566 -0.0722  0.0005 0.4633
#> PCTGRT-PCTSUPP 0.1282 0.1215 1.0555 0.2912 -0.2716 -0.1847 -0.1099 0.3664
#>                 99.5% 99.95%
#> NARTIC-PCTGRT  0.4158 0.5024
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#> NARTIC-PCTSUPP 0.5360 0.6204
#> PCTGRT-PCTSUPP 0.4412 0.5281
#> Difference between standardized regression coefficients with ADF standard errors:
#> Difference between standardized regression coefficients with HC0 standard errors:
#>                   est     se      z      p   0.05%    0.5%    2.5%  97.5%
#> NARTIC-PCTGRT  0.1037 0.1175 0.8820 0.3778 -0.2830 -0.1990 -0.1267 0.3340
#> NARTIC-PCTSUPP 0.2319 0.1143 2.0281 0.0425 -0.1443 -0.0626  0.0078 0.4560
#> PCTGRT-PCTSUPP 0.1282 0.1175 1.0911 0.2752 -0.2585 -0.1745 -0.1021 0.3586
#>                 99.5% 99.95%
#> NARTIC-PCTGRT  0.4064 0.4904
#> NARTIC-PCTSUPP 0.5264 0.6081
#> PCTGRT-PCTSUPP 0.4310 0.5150
#> Difference between standardized regression coefficients with HC0 standard errors:
#> Difference between standardized regression coefficients with HC1 standard errors:
#>                   est     se      z      p   0.05%    0.5%    2.5%  97.5%
#> NARTIC-PCTGRT  0.1037 0.1175 0.8820 0.3778 -0.2830 -0.1990 -0.1267 0.3340
#> NARTIC-PCTSUPP 0.2319 0.1143 2.0281 0.0425 -0.1443 -0.0626  0.0078 0.4560
#> PCTGRT-PCTSUPP 0.1282 0.1175 1.0911 0.2752 -0.2585 -0.1745 -0.1021 0.3586
#>                 99.5% 99.95%
#> NARTIC-PCTGRT  0.4064 0.4904
#> NARTIC-PCTSUPP 0.5264 0.6081
#> PCTGRT-PCTSUPP 0.4310 0.5150
#> Difference between standardized regression coefficients with HC1 standard errors:
#> Difference between standardized regression coefficients with HC2 standard errors:
#>                   est     se      z      p   0.05%    0.5%    2.5%  97.5%
#> NARTIC-PCTGRT  0.1037 0.1274 0.8137 0.4158 -0.3155 -0.2245 -0.1460 0.3533
#> NARTIC-PCTSUPP 0.2319 0.1213 1.9119 0.0559 -0.1672 -0.0805 -0.0058 0.4696
#> PCTGRT-PCTSUPP 0.1282 0.1256 1.0212 0.3072 -0.2850 -0.1952 -0.1179 0.3744
#>                 99.5% 99.95%
#> NARTIC-PCTGRT  0.4318 0.5228
#> NARTIC-PCTSUPP 0.5443 0.6310
#> PCTGRT-PCTSUPP 0.4517 0.5415
#> Difference between standardized regression coefficients with HC2 standard errors:
#> Difference between standardized regression coefficients with HC3 standard errors:
#>                   est     se      z      p   0.05%    0.5%    2.5%  97.5%
#> NARTIC-PCTGRT  0.1037 0.1386 0.7478 0.4546 -0.3524 -0.2534 -0.1680 0.3753
#> NARTIC-PCTSUPP 0.2319 0.1289 1.7986 0.0721 -0.1924 -0.1002 -0.0208 0.4846
#> PCTGRT-PCTSUPP 0.1282 0.1345 0.9536 0.3403 -0.3143 -0.2182 -0.1353 0.3918
#>                 99.5% 99.95%
#> NARTIC-PCTGRT  0.4607 0.5598
#> NARTIC-PCTSUPP 0.5640 0.6562
#> PCTGRT-PCTSUPP 0.4746 0.5708
#> Difference between standardized regression coefficients with HC3 standard errors:
#> Difference between standardized regression coefficients with HC4 standard errors:
#>                   est     se      z      p   0.05%    0.5%    2.5%  97.5%
#> NARTIC-PCTGRT  0.1037 0.1421 0.7297 0.4656 -0.3638 -0.2622 -0.1748 0.3821
```

```
#> NARTIC-PCTSUPP 0.2319 0.1268 1.8289 0.0674 -0.1853 -0.0947 -0.0166 0.4804
#> PCTGRT-PCTSUPP 0.1282 0.1332 0.9630 0.3356 -0.3100 -0.2148 -0.1328 0.3893
#>                 99.5% 99.95%
#> NARTIC-PCTGRT  0.4696 0.5711
#> NARTIC-PCTSUPP 0.5585 0.6491
#> PCTGRT-PCTSUPP 0.4713 0.5664
#> Difference between standardized regression coefficients with HC4 standard errors:
#> Difference between standardized regression coefficients with HC4M standard errors:
#>                   est     se      z      p   0.05%    0.5%    2.5%  97.5%
#> NARTIC-PCTGRT  0.1037 0.1433 0.7234 0.4694 -0.3678 -0.2654 -0.1772 0.3845
#> NARTIC-PCTSUPP 0.2319 0.1309 1.7716 0.0765 -0.1988 -0.1053 -0.0247 0.4884
#> PCTGRT-PCTSUPP 0.1282 0.1375 0.9326 0.3510 -0.3242 -0.2260 -0.1413 0.3978
#>                 99.5% 99.95%
#> NARTIC-PCTGRT  0.4727 0.5751
#> NARTIC-PCTSUPP 0.5691 0.6626
#> PCTGRT-PCTSUPP 0.4824 0.5807
#> Difference between standardized regression coefficients with HC4M standard errors:
#> Difference between standardized regression coefficients with HC5 standard errors:
#>                   est     se      z      p   0.05%    0.5%    2.5%  97.5%
#> NARTIC-PCTGRT  0.1037 0.1284 0.8074 0.4194 -0.3188 -0.2270 -0.1480 0.3553
#> NARTIC-PCTSUPP 0.2319 0.1200 1.9326 0.0533 -0.1629 -0.0772 -0.0033 0.4671
#> PCTGRT-PCTSUPP 0.1282 0.1246 1.0290 0.3035 -0.2818 -0.1928 -0.1160 0.3725
#>                 99.5% 99.95%
#> NARTIC-PCTGRT  0.4343 0.5261
#> NARTIC-PCTSUPP 0.5410 0.6267
#> PCTGRT-PCTSUPP 0.4492 0.5383
#> Difference between standardized regression coefficients with HC5 standard errors:
#> [[1]]
#> [[1]][[1]]
#> [[1]][[1]]$value
#> [[1]][[1]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[1]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[2]]
#> [[1]][[2]]$value
#> [[1]][[2]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[2]]$visible
#> [1] TRUE
```

```
#>
#>
#> [[1]][[3]]
#> [[1]][[3]]$value
#> [[1]][[3]]$value[[1]]
#>      2.5%     97.5%
#> 0.6404985 0.8838331
#>
#>
#> [[1]][[3]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[4]]
#> [[1]][[4]]$value
#> [[1]][[4]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[4]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[5]]
#> [[1]][[5]]$value
#> [[1]][[5]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[5]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[6]]
#> [[1]][[6]]$value
#> [[1]][[6]]$value[[1]]
#>                          2.5%     97.5%
#> NARTIC-PCTGRT  -0.147967260 0.3552801
#> NARTIC-PCTSUPP -0.003283367 0.4670783
#> PCTGRT-PCTSUPP -0.116012725 0.3724948
#>
#>
#> [[1]][[6]]$visible
#> [1] TRUE
```

Environment

```
ls()

#> [1] "nas1982"  "root"     "tex_file"
```

Class

```
#> [[1]]
#> [1] "data.frame"
#>
#> [[2]]
#> [1] "root_criterion"
#>
#> [[3]]
#> [1] "character"
```

References

R Core Team. (2022). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing. Vienna, Austria. https://www.R-project.org/