

# betaNB: Internal Tests

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## Tests

```
#> test-betaNB-beta-nb-est
#> Call:
#> BetaNB(object = nb)
#>
#> Standardized regression slopes
#> type = "pc"
#>      est      se R  0.05%   0.5%   2.5%  97.5%  99.5%  99.95%
#> NARTIC  0.4951 0.0300 5 0.4350 0.4358 0.4398 0.5082 0.5085 0.5085
#> PCTGRT  0.3915 0.0831 5 0.2338 0.2359 0.2450 0.4306 0.4308 0.4308
#> PCTSUPP 0.2632 0.0835 5 0.2048 0.2051 0.2065 0.3904 0.3929 0.3934
#> Call:
#> BetaNB(object = nb)
#>
#> Standardized regression slopes
#> type = "pc"
#> Call:
#> BetaNB(object = nb)
#>
#> Standardized regression slopes
#> type = "bc"
#> Call:
#> BetaNB(object = nb)
#>
#> Standardized regression slopes
#> type = "bc"
#>      est      se R  0.05%   0.5%   2.5%  97.5%  99.5%  99.95%
#> NARTIC  0.4951 0.0300 5 0.4349 0.4351 0.4362 0.5075 0.5083 0.5085
#> PCTGRT  0.3915 0.0831 5 0.2336 0.2341 0.2367 0.4303 0.4307 0.4308
#> PCTSUPP 0.2632 0.0835 5 0.2047 0.2048 0.2052 0.3845 0.3911 0.3932
#> Call:
#> BetaNB(object = nb)
#>
#> Standardized regression slopes
#> type = "bca"
```

```

#> Call:
#> BetaNB(object = nb)
#>
#> Standardized regression slopes
#> type = "bca"
#>      est      se R  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> NARTIC  0.4951 0.0300 5 0.4349 0.4351 0.4363 0.5075 0.5083 0.5085
#> PCTGRT  0.3915 0.0831 5 0.2337 0.2344 0.2376 0.4303 0.4307 0.4308
#> PCTSUPP 0.2632 0.0835 5 0.2047 0.2048 0.2051 0.3834 0.3904 0.3929
#> Test passed
#> Call:
#> BetaNB(object = nb)
#>
#> Standardized regression slopes
#> type = "pc"
#>      est      se R  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> NARTIC  0.7622 0.0392 5 0.7502 0.7509 0.754 0.8458 0.8464 0.8466
#> Call:
#> BetaNB(object = nb)
#>
#> Standardized regression slopes
#> type = "pc"
#> Call:
#> BetaNB(object = nb)
#>
#> Standardized regression slopes
#> type = "bc"
#> Call:
#> BetaNB(object = nb)
#>
#> Standardized regression slopes
#> type = "bc"
#>      est      se R  0.05%   0.5%   2.5%  97.5% 99.5% 99.95%
#> NARTIC  0.7622 0.0392 5 0.7501 0.7501 0.7501 0.8197 0.841 0.845
#> Call:
#> BetaNB(object = nb)
#>
#> Standardized regression slopes
#> type = "bca"
#> Call:
#> BetaNB(object = nb)
#>
#> Standardized regression slopes
#> type = "bca"
#>      est      se R  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> NARTIC  0.7622 0.0392 5 0.7501 0.7501 0.7501 0.8175 0.8401 0.8442

```

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#> test-betaNB-delta-r-sq-nb-est

#> Call:
#> DeltaRSqNB(object = nb)
#>
#> Improvement in R-squared
#> type = "pc"
#>
      est      se R  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> NARTIC  0.1859 0.0938 5 0.1452 0.1453 0.1460 0.3646 0.3748 0.3771
#> PCTGRT  0.1177 0.0494 5 0.0416 0.0420 0.0440 0.1556 0.1573 0.1577
#> PCTSUPP 0.0569 0.0249 5 0.0517 0.0518 0.0521 0.1109 0.1137 0.1143
#> Call:
#> DeltaRSqNB(object = nb)
#>
#> Improvement in R-squared
#> type = "pc"
#> Test passed
#> Test passed

#> test-betaNB-diff-beta-nb-est

#> Call:
#> DiffBetaNB(object = nb)
#>
#> Differences of standardized regression slopes
#> type = "pc"
#>
      est      se R  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> NARTIC-PCTGRT  0.1037 0.0952 5 -0.0177 -0.0169 -0.0132 0.2193 0.2288 0.2309
#> NARTIC-PCTSUPP 0.2319 0.0966 5  0.1964  0.1965  0.1970 0.4155 0.4218 0.4232
#> PCTGRT-PCTSUPP 0.1282 0.0728 5  0.1139  0.1149  0.1192 0.3016 0.3088 0.3104
#> Call:
#> DiffBetaNB(object = nb)
#>
#> Differences of standardized regression slopes
#> type = "pc"
#> Test passed
#> Test passed

#> test-betaNB-nb

#> Test passed
#> Call:
#> NB(object = object, R = 6)
#>
#> The first six bootstrap covariance matrices.
#>
#> [[1]]
#>
      [,1]      [,2]      [,3]

```

```

#> [1,] 0.9995644 0.49386431 0.48424398
#> [2,] 0.4938643 0.99183910 0.01565328
#> [3,] 0.4842440 0.01565328 0.96452717
#>
#> [[2]]
#>           [,1]           [,2]           [,3]
#> [1,] 0.9849381 0.49395218 0.48798262
#> [2,] 0.4939522 1.01696150 -0.02545923
#> [3,] 0.4879826 -0.02545923 0.97840209
#>
#> [[3]]
#>           [,1]           [,2]           [,3]
#> [1,] 1.0182402 0.45174940 0.52946551
#> [2,] 0.4517494 1.02317813 -0.01809394
#> [3,] 0.5294655 -0.01809394 1.03604847
#>
#> [[4]]
#>           [,1]           [,2]           [,3]
#> [1,] 0.9513605 0.48128409 0.44280957
#> [2,] 0.4812841 0.95518750 -0.03498347
#> [3,] 0.4428096 -0.03498347 1.06615302
#>
#> [[5]]
#>           [,1]           [,2]           [,3]
#> [1,] 1.0170626 0.50036646 0.50629744
#> [2,] 0.5003665 0.96127715 0.07198405
#> [3,] 0.5062974 0.07198405 0.95530078
#>
#> [[6]]
#>           [,1]           [,2]           [,3]
#> [1,] 1.0441501 0.49596248 0.50554789
#> [2,] 0.4959625 0.99127600 0.04935253
#> [3,] 0.5055479 0.04935253 0.96828949
#> test-betaNB-p-cor-nb-est
#> Call:
#> PCorNB(object = nb)
#>
#> Squared partial correlations
#> type = "pc"
#>           est      se R  0.05%   0.5%   2.5%  97.5%  99.5%  99.95%
#> NARTIC  0.4874 0.0915 5 0.2999 0.3019 0.3109 0.5256 0.5268 0.5271
#> PCTGRT  0.3757 0.0801 5 0.2834 0.2847 0.2905 0.4704 0.4708 0.4709
#> PCTSUPP 0.2254 0.0785 5 0.1104 0.1113 0.1152 0.2910 0.2921 0.2923
#> Call:
#> PCorNB(object = nb)

```

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#>
#> Squared partial correlations
#> type = "pc"
#> Test passed
#> Test passed

#> test-betaNB-r-sq-mc-est

#> Call:
#> RSqNB(object = nb)
#>
#> R-squared and adjusted R-squared
#> type = "pc"
#>      est      se R  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> rsq 0.8045 0.0386 5 0.7673 0.7683 0.7728 0.8651 0.8660 0.8663
#> adj 0.7906 0.0413 5 0.7507 0.7518 0.7566 0.8555 0.8565 0.8567
#> Call:
#> RSqNB(object = nb)
#>
#> R-squared and adjusted R-squared
#> type = "pc"
#> Test passed
#> Call:
#> RSqNB(object = nb)
#>
#> R-squared and adjusted R-squared
#> type = "pc"
#>      est      se R  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> rsq 0.5809 0.0826 5 0.4513 0.4535 0.4633 0.6656 0.6691 0.6699
#> adj 0.5714 0.0845 5 0.4388 0.4411 0.4511 0.6580 0.6616 0.6624
#> Call:
#> RSqNB(object = nb)
#>
#> R-squared and adjusted R-squared
#> type = "pc"
#> Test passed

#> test-betaNB-s-cor-nb-est

#> Call:
#> SCorNB(object = nb)
#>
#> Semipartial correlations
#> type = "pc"
#>      est      se R  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> NARTIC 0.4312 0.0375 5 0.4114 0.4123 0.4161 0.5080 0.5094 0.5097
#> PCTGRT 0.3430 0.0443 5 0.3023 0.3026 0.3038 0.4006 0.4012 0.4013

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#> PCTSUPP 0.2385 0.0687 5 0.1901 0.1908 0.1939 0.3480 0.3495 0.3499
#> Call:
#> SCorNB(object = nb)
#>
#> Semipartial correlations
#> type = "pc"
#> Test passed
#> Test passed
#> [[1]]
#> [[1]][[1]]
#> [[1]][[1]]$value
#> [[1]][[1]]$value[[1]]
#>          est      se R  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> NARTIC 0.7622 0.0392 5 0.7501 0.7501 0.7501 0.8175 0.8401 0.8442
#>
#>
#> [[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]]
#> [1] TRUE
#>
#>
#> [[1]][[3]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[4]]
#> [[1]][[4]]$value
#> [[1]][[4]]$value[[1]]
#> [[1]][[4]]$value[[1]][[1]]
#>          [,1]      [,2]      [,3]
#> [1,] 0.9995644 0.49386431 0.48424398

```

```

#> [2,] 0.4938643 0.99183910 0.01565328
#> [3,] 0.4842440 0.01565328 0.96452717
#>
#> [[1]][[4]]$value[[1]][[2]]
#>      [,1]      [,2]      [,3]
#> [1,] 0.9849381 0.49395218 0.48798262
#> [2,] 0.4939522 1.01696150 -0.02545923
#> [3,] 0.4879826 -0.02545923 0.97840209
#>
#> [[1]][[4]]$value[[1]][[3]]
#>      [,1]      [,2]      [,3]
#> [1,] 1.0182402 0.45174940 0.52946551
#> [2,] 0.4517494 1.02317813 -0.01809394
#> [3,] 0.5294655 -0.01809394 1.03604847
#>
#> [[1]][[4]]$value[[1]][[4]]
#>      [,1]      [,2]      [,3]
#> [1,] 0.9513605 0.48128409 0.44280957
#> [2,] 0.4812841 0.95518750 -0.03498347
#> [3,] 0.4428096 -0.03498347 1.06615302
#>
#> [[1]][[4]]$value[[1]][[5]]
#>      [,1]      [,2]      [,3]
#> [1,] 1.0170626 0.50036646 0.50629744
#> [2,] 0.5003665 0.96127715 0.07198405
#> [3,] 0.5062974 0.07198405 0.95530078
#>
#> [[1]][[4]]$value[[1]][[6]]
#>      [,1]      [,2]      [,3]
#> [1,] 1.0441501 0.49596248 0.50554789
#> [2,] 0.4959625 0.99127600 0.04935253
#> [3,] 0.5055479 0.04935253 0.96828949
#>
#>
#>
#> [[1]][[4]]$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]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[6]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[7]]
#> [[1]][[7]]$value
#> [[1]][[7]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[7]]$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/>