

# betaNB: Internal Tests

Ivan Jacob Agaloos Pesigan

## 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 0.1125 5 0.3532 0.3549 0.3622 0.6421 0.6500 0.6518
#> PCTGRT  0.3915 0.0828 5 0.3075 0.3078 0.3089 0.4969 0.5075 0.5100
#> PCTSUPP 0.2632 0.1239 5 0.1384 0.1394 0.1438 0.4367 0.4443 0.4460
#> 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 0.1125 5 0.3540 0.3601 0.3800 0.6493 0.6516 0.6520
#> PCTGRT  0.3915 0.0828 5 0.3106 0.3180 0.3271 0.5101 0.5102 0.5102
#> PCTSUPP 0.2632 0.1239 5 0.1389 0.1425 0.1544 0.4436 0.4458 0.4461
#> 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 0.1125 5 0.3542 0.3606 0.3807 0.6495 0.6517 0.6520
#> PCTGRT  0.3915 0.0828 5 0.3113 0.3189 0.3274 0.5102 0.5102 0.5102
#> PCTSUPP 0.2632 0.1239 5 0.1385 0.1413 0.1524 0.4427 0.4455 0.4461
#> 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 0.0379 5 0.7498 0.7499 0.7503  0.83 0.8309 0.8311
#> 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 0.0379 5 0.7498 0.7498 0.7499 0.8279 0.8303  0.831
#> 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 0.0379 5 0.7498 0.7498 0.7499 0.8273 0.8299 0.8309

```

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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 0.0455 5 0.1343 0.1346 0.1360 0.2431 0.2478 0.2489
#> PCTGRT  0.1177 0.0474 5 0.0928 0.0931 0.0941 0.2075 0.2132 0.2145
#> PCTSUPP 0.0569 0.0440 5 0.0088 0.0091 0.0105 0.1173 0.1224 0.1235
#> 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 0.1601 5 -0.1886 -0.1841 -0.1639 0.2065 0.2081 0.2085
#> NARTIC-PCTSUPP 0.2319 0.1559 5  0.0784  0.0806  0.0901 0.4510 0.4543 0.4551
#> PCTGRT-PCTSUPP 0.1282 0.1086 5  0.0583  0.0596  0.0657 0.3279 0.3333 0.3345
#> 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,] 1.0429676 0.49817705 0.50459640
#> [2,] 0.4981770 1.00189977 0.01291844
#> [3,] 0.5045964 0.01291844 1.00390685
#>
#> [[2]]
#>      [,1]      [,2]      [,3]
#> [1,] 0.9973711 0.484219505 0.469192634
#> [2,] 0.4842195 1.005066547 -0.005728622
#> [3,] 0.4691926 -0.005728622 0.997330996
#>
#> [[3]]
#>      [,1]      [,2]      [,3]
#> [1,] 1.0355153 0.502857229 0.508380799
#> [2,] 0.5028572 0.958005837 -0.007539596
#> [3,] 0.5083808 -0.007539596 1.025384668
#>
#> [[4]]
#>      [,1]      [,2]      [,3]
#> [1,] 0.9885137 0.4607358967 4.96905e-01
#> [2,] 0.4607359 1.0410203510 -5.82723e-05
#> [3,] 0.4969050 -0.0000582723 1.01153e+00
#>
#> [[5]]
#>      [,1]      [,2]      [,3]
#> [1,] 0.9816832 0.453859457 0.478163434
#> [2,] 0.4538595 1.015032396 -0.006125349
#> [3,] 0.4781634 -0.006125349 0.963541572
#>
#> [[6]]
#>      [,1]      [,2]      [,3]
#> [1,] 0.9707144 0.5192386 0.4404835
#> [2,] 0.5192386 1.0579085 -0.0448690
#> [3,] 0.4404835 -0.0448690 1.0120264

#> 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 0.0487 5 0.3790 0.3792 0.3803 0.4949 0.4988 0.4996
#> PCTGRT  0.3757 0.0691 5 0.2650 0.2652 0.2659 0.4203 0.4235 0.4242
#> PCTSUPP 0.2254 0.0657 5 0.1135 0.1140 0.1160 0.2721 0.2817 0.2838
#> Call:
#> PCorNB(object = nb)

```

```

#>
#> 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 0.0405 5 0.7673 0.7680 0.7710 0.8712 0.8737 0.8742
#> adj 0.7906 0.0434 5 0.7507 0.7514 0.7547 0.8620 0.8647 0.8652
#> 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 0.0351 5 0.4945 0.4951 0.4976 0.5865 0.5902 0.5910
#> adj 0.5714 0.0359 5 0.4830 0.4836 0.4862 0.5771 0.5809 0.5818
#> 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 0.0325 5 0.4151 0.4152 0.4159 0.4823 0.4826 0.4826
#> PCTGRT 0.3430 0.0892 5 0.1802 0.1807 0.1833 0.3778 0.3808 0.3815

```

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#> PCTSUPP 0.2385 0.0708 5 0.1498 0.1504 0.1531 0.3189 0.3233 0.3243
#> 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 0.0379 5 0.7498 0.7498 0.7499 0.8273 0.8299 0.8309
#>
#>
#> [[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,] 1.0429676 0.49817705 0.50459640

```

```

#> [2,] 0.4981770 1.00189977 0.01291844
#> [3,] 0.5045964 0.01291844 1.00390685
#>
#> [[1]][[4]]$value[[1]][[2]]
#>      [,1]      [,2]      [,3]
#> [1,] 0.9973711 0.484219505 0.469192634
#> [2,] 0.4842195 1.005066547 -0.005728622
#> [3,] 0.4691926 -0.005728622 0.997330996
#>
#> [[1]][[4]]$value[[1]][[3]]
#>      [,1]      [,2]      [,3]
#> [1,] 1.0355153 0.502857229 0.508380799
#> [2,] 0.5028572 0.958005837 -0.007539596
#> [3,] 0.5083808 -0.007539596 1.025384668
#>
#> [[1]][[4]]$value[[1]][[4]]
#>      [,1]      [,2]      [,3]
#> [1,] 0.9885137 0.4607358967 4.96905e-01
#> [2,] 0.4607359 1.0410203510 -5.82723e-05
#> [3,] 0.4969050 -0.0000582723 1.01153e+00
#>
#> [[1]][[4]]$value[[1]][[5]]
#>      [,1]      [,2]      [,3]
#> [1,] 0.9816832 0.453859457 0.478163434
#> [2,] 0.4538595 1.015032396 -0.006125349
#> [3,] 0.4781634 -0.006125349 0.963541572
#>
#> [[1]][[4]]$value[[1]][[6]]
#>      [,1]      [,2]      [,3]
#> [1,] 0.9707144 0.5192386 0.4404835
#> [2,] 0.5192386 1.0579085 -0.0448690
#> [3,] 0.4404835 -0.0448690 1.0120264
#>
#>
#>
#> [[1]][[4]]$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/>