

# 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 0.1258 5 0.3290 0.3318 0.3438 0.6554 0.6634 0.6652
#> PCTGRT  0.3915 0.1054 5 0.2682 0.2683 0.2685 0.5088 0.5196 0.5221
#> PCTSUPP 0.2632 0.1154 5 0.1253 0.1265 0.1318 0.4145 0.4242 0.4264
#> 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 0.1258 5 0.3288 0.3294 0.3329 0.6362 0.6577 0.6643
#> PCTGRT  0.3915 0.1054 5 0.2689 0.2704 0.3016 0.5223 0.5224 0.5224
#> PCTSUPP 0.2632 0.1154 5 0.1251 0.1254 0.1269 0.3912 0.4173 0.4253
#> 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 0.1258 5 0.3288 0.3295 0.3331 0.6369 0.6581 0.6644
#> PCTGRT  0.3915 0.1054 5 0.2690 0.2706 0.3036 0.5223 0.5224 0.5224
#> PCTSUPP 0.2632 0.1154 5 0.1251 0.1253 0.1264 0.3866 0.4143 0.4243
#> 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 0.0639 5 0.6498 0.6511 0.6566 0.818 0.8233 0.8245
#> 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 0.0639 5 0.6647 0.7014 0.7398 0.8246 0.8246 0.8246
#> 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 0.0639 5 0.659 0.6937 0.7373 0.8245 0.8246 0.8246

```

```

#> 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 0.0679 5 0.0873 0.0888 0.0956 0.2690 0.2768 0.2785
#> PCTGRT  0.1177 0.0611 5 0.0873 0.0875 0.0884 0.2302 0.2348 0.2359
#> PCTSUPP 0.0569 0.0374 5 0.0070 0.0072 0.0077 0.0838 0.0839 0.0839
#> 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 0.1010 5 -0.0854 -0.0833 -0.0740 0.1580 0.1582 0.1582
#> NARTIC-PCTSUPP 0.2319 0.1180 5  0.0943  0.0957  0.1019 0.3839 0.3891 0.3903
#> PCTGRT-PCTSUPP 0.1282 0.0866 5  0.0808  0.0819  0.0867 0.3024 0.3133 0.3157
#> 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,] 1.0120979 0.51857935 0.52299355
#> [2,] 0.5185794 1.02690556 0.02332565
#> [3,] 0.5229936 0.02332565 1.04478041
#>
#> [[2]]
#>      [,1]      [,2]      [,3]
#> [1,] 1.0299705 0.5347394 0.512923
#> [2,] 0.5347394 1.0524326 0.053052
#> [3,] 0.5129230 0.0530520 1.000122
#>
#> [[3]]
#>      [,1]      [,2]      [,3]
#> [1,] 1.0447340 0.53963346 0.52571245
#> [2,] 0.5396335 1.05319252 0.00439396
#> [3,] 0.5257124 0.00439396 1.05468130
#>
#> [[4]]
#>      [,1]      [,2]      [,3]
#> [1,] 0.9837180 0.492018910 0.443445411
#> [2,] 0.4920189 0.976226582 -0.008386487
#> [3,] 0.4434454 -0.008386487 0.974479841
#>
#> [[5]]
#>      [,1]      [,2]      [,3]
#> [1,] 0.8826897 0.40092191 0.43712161
#> [2,] 0.4009219 0.91733454 -0.04448601
#> [3,] 0.4371216 -0.04448601 1.03798771
#>
#> [[6]]
#>      [,1]      [,2]      [,3]
#> [1,] 0.9243188 0.43253412 0.46232118
#> [2,] 0.4325341 0.95140360 -0.03501429
#> [3,] 0.4623212 -0.03501429 0.97459959
#> 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 0.0325 5 0.4036 0.4044 0.4078 0.4904 0.4928 0.4934
#> PCTGRT  0.3757 0.0997 5 0.2162 0.2171 0.2209 0.4611 0.4722 0.4747
#> PCTSUPP 0.2254 0.0606 5 0.1451 0.1458 0.1489 0.2984 0.3033 0.3044
#> 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 0.0779 5 0.6474 0.6489 0.6558 0.8305 0.8314 0.8316
#> adj 0.7906 0.0835 5 0.6222 0.6238 0.6312 0.8183 0.8194 0.8196
#> 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 0.0471 5 0.5777 0.5779 0.5789 0.6823 0.6833 0.6835
#> adj 0.5714 0.0482 5 0.5681 0.5683 0.5694 0.6751 0.6761 0.6763
#> 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 0.0419 5 0.4058 0.4068 0.4112 0.5137 0.5152 0.5156
#> PCTGRT 0.3430 0.0338 5 0.2487 0.2499 0.2551 0.3327 0.3337 0.3339

```

```

#> PCTSUPP 0.2385 0.0490 5 0.1287 0.1292 0.1317 0.2445 0.2458 0.2460
#> 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 0.0639 5 0.659 0.6937 0.7373 0.8245 0.8246 0.8246
#>
#>
#> [[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,] 1.0120979 0.51857935 0.52299355

```

```

#> [2,] 0.5185794 1.02690556 0.02332565
#> [3,] 0.5229936 0.02332565 1.04478041
#>
#> [[1]][[4]]$value[[1]][[2]]
#>      [,1]      [,2]      [,3]
#> [1,] 1.0299705 0.5347394 0.512923
#> [2,] 0.5347394 1.0524326 0.053052
#> [3,] 0.5129230 0.0530520 1.000122
#>
#> [[1]][[4]]$value[[1]][[3]]
#>      [,1]      [,2]      [,3]
#> [1,] 1.0447340 0.53963346 0.52571245
#> [2,] 0.5396335 1.05319252 0.00439396
#> [3,] 0.5257124 0.00439396 1.05468130
#>
#> [[1]][[4]]$value[[1]][[4]]
#>      [,1]      [,2]      [,3]
#> [1,] 0.9837180 0.492018910 0.443445411
#> [2,] 0.4920189 0.976226582 -0.008386487
#> [3,] 0.4434454 -0.008386487 0.974479841
#>
#> [[1]][[4]]$value[[1]][[5]]
#>      [,1]      [,2]      [,3]
#> [1,] 0.8826897 0.40092191 0.43712161
#> [2,] 0.4009219 0.91733454 -0.04448601
#> [3,] 0.4371216 -0.04448601 1.03798771
#>
#> [[1]][[4]]$value[[1]][[6]]
#>      [,1]      [,2]      [,3]
#> [1,] 0.9243188 0.43253412 0.46232118
#> [2,] 0.4325341 0.95140360 -0.03501429
#> [3,] 0.4623212 -0.03501429 0.97459959
#>
#>
#>
#> [[1]][[4]]$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. (2023). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing. Vienna, Austria. <https://www.R-project.org/>