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 0.0742 5 0.3314 0.3318 0.3336 0.4977 0.4996 0.5000
#> PCTGRT  0.3915 0.0515 5 0.3970 0.3975 0.3995 0.5262 0.5324 0.5338
#> PCTSUPP 0.2632 0.0761 5 0.1907 0.1913 0.1937 0.3591 0.3612 0.3617
#> 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 0.0742 5 0.3361 0.3478 0.3780 0.5001 0.5001 0.5001
#> PCTGRT  0.3915 0.0515 5 0.3970 0.3970 0.3970 0.3970 0.3970 0.3970
#> PCTSUPP 0.2632 0.0761 5 0.1907 0.1908 0.1915 0.3542 0.3597 0.3614
#> 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 0.0742 5  0.3364 0.3481 0.3784 0.5001 0.5001 0.5001
#> PCTGRT   0.3915 0.0515 5     NaN    NaN    NaN    NaN    NaN    NaN
#> PCTSUPP  0.2632 0.0761 5  0.1907 0.1907 0.1912 0.3532 0.3591 0.3612
#> 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 0.0549 5  0.6932 0.6941 0.6982 0.8262 0.8272 0.8274
#> 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 0.0549 5  0.6931 0.6933 0.6945 0.8238 0.8265 0.8273
#> 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 0.0549 5  0.6931 0.6932 0.6939 0.8232 0.826 0.8271
```

```
#> 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 0.0586 5 0.1037 0.1044 0.1077 0.2390 0.2396 0.2397
#> PCTGRT  0.1177 0.0337 5 0.1205 0.1207 0.1218 0.1944 0.1949 0.1950
#> PCTSUPP 0.0569 0.0251 5 0.0183 0.0185 0.0196 0.0786 0.0825 0.0833
#> 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 0.0506 5  0.0461  0.0466  0.0491 0.1743 0.1797 0.1809
#> NARTIC-PCTSUPP 0.2319 0.1369 5 -0.0396 -0.0375 -0.0280 0.2858 0.2871 0.2873
#> PCTGRT-PCTSUPP 0.1282 0.1132 5 -0.1161 -0.1142 -0.1059 0.1545 0.1577 0.1584
#> 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,]  0.9954218  0.49371289  0.49266065
#> [2,]  0.4937129  1.07533238 -0.01730969
#> [3,]  0.4926606 -0.01730969  1.01636123
#>
#> [[2]]
#>             [,1]        [,2]        [,3]
#> [1,]  0.9947852  0.42814843  0.50212332
#> [2,]  0.4281484  0.96976203 -0.01367435
#> [3,]  0.5021233 -0.01367435  0.93588205
#>
#> [[3]]
#>             [,1]        [,2]        [,3]
#> [1,]  1.0134421  0.54488674  0.44595823
#> [2,]  0.5448867  1.04200031 -0.01268766
#> [3,]  0.4459582 -0.01268766  0.95075035
#>
#> [[4]]
#>             [,1]        [,2]        [,3]
#> [1,]  1.0613048  0.57348422  0.47918688
#> [2,]  0.5734842  1.06131380  0.06094995
#> [3,]  0.4791869  0.06094995  0.95336370
#>
#> [[5]]
#>             [,1]        [,2]        [,3]
#> [1,]  1.0084678  0.463646321  0.484668958
#> [2,]  0.4636463  0.996401777 -0.003765766
#> [3,]  0.4846690 -0.003765766  0.982719518
#>
#> [[6]]
#>             [,1]        [,2]        [,3]
#> [1,]  0.9486729  0.47885784  0.46170535
#> [2,]  0.4788578  0.93958879  0.02377637
#> [3,]  0.4617053  0.02377637  0.98682963
#> 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  0.1114 5  0.3957 0.3969 0.4026 0.6740 0.6886 0.6919
#> PCTGRT   0.3757  0.0449 5  0.4236 0.4243 0.4271 0.5376 0.5439 0.5454
#> PCTSUPP  0.2254  0.0957 5  0.2004 0.2023 0.2106 0.4429 0.4463 0.4470
#> 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 0.0516 5 0.7495 0.7505 0.7549 0.8836 0.8873 0.8882
#> adj 0.7906 0.0553 5 0.7316 0.7327 0.7374 0.8753 0.8793 0.8802
#> 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 0.0918 5 0.5061 0.5065 0.5085 0.7243 0.7315 0.7331
#> adj 0.5714 0.0939 5 0.4948 0.4953 0.4974 0.7180 0.7254 0.7271
#> 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 0.0775 5 0.3007 0.3021 0.3086 0.4823 0.4825 0.4826
#> PCTGRT 0.3430 0.0759 5 0.2469 0.2472 0.2488 0.4082 0.4085 0.4086
```

```
#> PCTSUPP 0.2385 0.0538 5 0.1745 0.1746 0.1751 0.2822 0.2831 0.2834
#> 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 0.0549 5 0.6931 0.6932 0.6939 0.8232 0.826 0.8271
#>
#>
#> [[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,] 0.9954218  0.49371289  0.49266065
```

6

```
#> [2,] 0.4937129  1.07533238 -0.01730969
#> [3,] 0.4926606 -0.01730969  1.01636123
#>
#> [[1]][[4]]$value[[1]][[2]]
#>           [,1]        [,2]         [,3]
#> [1,] 0.9947852  0.42814843  0.50212332
#> [2,] 0.4281484  0.96976203 -0.01367435
#> [3,] 0.5021233 -0.01367435  0.93588205
#>
#> [[1]][[4]]$value[[1]][[3]]
#>           [,1]        [,2]         [,3]
#> [1,] 1.0134421  0.54488674  0.44595823
#> [2,] 0.5448867  1.04200031 -0.01268766
#> [3,] 0.4459582 -0.01268766  0.95075035
#>
#> [[1]][[4]]$value[[1]][[4]]
#>           [,1]        [,2]        [,3]
#> [1,] 1.0613048 0.57348422 0.47918688
#> [2,] 0.5734842 1.06131380 0.06094995
#> [3,] 0.4791869 0.06094995 0.95336370
#>
#> [[1]][[4]]$value[[1]][[5]]
#>           [,1]         [,2]          [,3]
#> [1,] 1.0084678  0.463646321  0.484668958
#> [2,] 0.4636463  0.996401777 -0.003765766
#> [3,] 0.4846690 -0.003765766  0.982719518
#>
#> [[1]][[4]]$value[[1]][[6]]
#>           [,1]        [,2]        [,3]
#> [1,] 0.9486729 0.47885784 0.46170535
#> [2,] 0.4788578 0.93958879 0.02377637
#> [3,] 0.4617053 0.02377637 0.98682963
#>
#>
#>
#> [[1]][[4]]$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/