betaMC: Internal Tests

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Tests

```
#> test-betaMC-beta-mc-est-mi
#> Call:
#> BetaMC(object = mc)
#>
#> Standardized regression slopes
#> type = "mvn"
#>            est      se R  0.05%    0.5%    2.5%   97.5%   99.5%  99.95%
#> NARTIC  0.4951 0.0495 5 0.4066 0.4073 0.4102 0.5341 0.5395 0.5407
#> PCTGRT  0.3915 0.0767 5 0.3464 0.3465 0.3468 0.5051 0.5057 0.5059
#> PCTSUPP 0.2632 0.0612 5 0.1588 0.1600 0.1653 0.3025 0.3035 0.3038
#> Call:
#> BetaMC(object = mc)
#>
#> Standardized regression slopes
#> type = "mvn"
#> Test passed
#> Call:
#> BetaMC(object = mc)
#>
#> Standardized regression slopes
#> type = "mvn"
#>           est     se R  0.05%   0.5%    2.5%  97.5%  99.5% 99.95%
#> NARTIC 0.7622 0.0689 5 0.7086 0.7092 0.7119 0.8808 0.8874 0.8889
#> Call:
#> BetaMC(object = mc)
#>
#> Standardized regression slopes
#> type = "mvn"

#> test-betaMC-beta-mc-est

#> Call:
#> BetaMC(object = mc)
#>
#> Standardized regression slopes
```

```
#> type = "mvn"
#>           est     se R  0.05%    0.5%    2.5%  97.5%  99.5% 99.95%
#> NARTIC  0.4951 0.1365 5 0.3463 0.3466 0.3477 0.6593 0.6739 0.6772
#> PCTGRT  0.3915 0.1147 5 0.3004 0.3023 0.3109 0.5714 0.5717 0.5717
#> PCTSUPP 0.2632 0.0901 5 0.1657 0.1663 0.1686 0.3789 0.3888 0.3910
#> Call:
#> BetaMC(object = mc)
#>
#> Standardized regression slopes
#> type = "mvn"
#> Test passed
#> Call:
#> BetaMC(object = mc)
#>
#> Standardized regression slopes
#> type = "mvn"
#>          est     se R  0.05%    0.5%    2.5%  97.5%  99.5% 99.95%
#> NARTIC 0.7622 0.021 5 0.7311 0.7319 0.7352 0.7811 0.7812 0.7812
#> Call:
#> BetaMC(object = mc)
#>
#> Standardized regression slopes
#> type = "mvn"
```

#> *test-betaMC-delta-r-sq-mc-est-mi*

```
#> Call:
#> DeltaRSqMC(object = mc)
#>
#> Improvement in R-squared
#> type = "mvn"
#>           est     se R  0.05%    0.5%    2.5%  97.5%  99.5% 99.95%
#> NARTIC  0.1859 0.0330 5 0.0975 0.0977 0.0986 0.1752 0.1770 0.1774
#> PCTGRT  0.1177 0.0643 5 0.0680 0.0683 0.0693 0.2136 0.2165 0.2171
#> PCTSUPP 0.0569 0.0163 5 0.0139 0.0141 0.0151 0.0548 0.0559 0.0561
#> Call:
#> DeltaRSqMC(object = mc)
#>
#> Improvement in R-squared
#> type = "mvn"
#> Test passed
#> Test passed
```

#> *test-betaMC-delta-r-sq-mc-est*

```
#> Call:
#> DeltaRSqMC(object = mc)
```

```
#>
#> Improvement in R-squared
#> type = "mvn"
#>            est     se R  0.05%    0.5%    2.5%  97.5%   99.5% 99.95%
#> NARTIC  0.1859 0.0676 5 0.0602 0.0610 0.0646 0.2312 0.2363 0.2374
#> PCTGRT  0.1177 0.0378 5 0.0716 0.0729 0.0790 0.1670 0.1686 0.1689
#> PCTSUPP 0.0569 0.0276 5 0.0270 0.0273 0.0288 0.0926 0.0936 0.0939
#> Call:
#> DeltaRSqMC(object = mc)
#>
#> Improvement in R-squared
#> type = "mvn"
#> Test passed
#> Test passed

#> test-betaMC-diff-beta-mc-est-mi

#> Call:
#> DiffBetaMC(object = mc)
#>
#> Differences of standardized regression slopes
#> type = "mvn"
#>                   est     se R   0.05%    0.5%    2.5%  97.5%  99.5% 99.95%
#> NARTIC-PCTGRT  0.1037 0.1264 5 -0.2067 -0.2036 -0.1901 0.0983 0.0998 0.1002
#> NARTIC-PCTSUPP 0.2319 0.1734 5  0.0140  0.0169  0.0297 0.4656 0.4813 0.4848
#> PCTGRT-PCTSUPP 0.1282 0.1735 5  0.0510  0.0517  0.0550 0.4269 0.4297 0.4303
#> Call:
#> DiffBetaMC(object = mc)
#>
#> Differences of standardized regression slopes
#> type = "mvn"
#> Test passed
#> Test passed

#> test-betaMC-diff-beta-mc-est

#> Call:
#> DiffBetaMC(object = mc)
#>
#> Differences of standardized regression slopes
#> type = "mvn"
#>                   est     se R  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> NARTIC-PCTGRT  0.1037 0.0559 5 0.0635 0.0645 0.0693 0.2107 0.2157 0.2168
#> NARTIC-PCTSUPP 0.2319 0.1286 5 0.1559 0.1577 0.1657 0.4742 0.4795 0.4807
#> PCTGRT-PCTSUPP 0.1282 0.1326 5 0.0011 0.0035 0.0140 0.3420 0.3489 0.3505
#> Call:
#> DiffBetaMC(object = mc)
```

```
#>
#> Differences of standardized regression slopes
#> type = "mvn"
#> Test passed
#> Test passed

#> test-betaMC-mc-fixed-x-mi

#> MCMI(object = object, R = R, type = "mvn", fixed_x = TRUE, m = 100)
#> MCMI(object = object, R = R, type = "adf", fixed_x = TRUE, m = 100)
#> MCMI(object = object, R = R, type = "hc0", fixed_x = TRUE, m = 100)
#> MCMI(object = object, R = R, type = "hc1", fixed_x = TRUE, m = 100)
#> MCMI(object = object, R = R, type = "hc2", fixed_x = TRUE, m = 100)
#> MCMI(object = object, R = R, type = "hc3", fixed_x = TRUE, m = 100)
#> MCMI(object = object, R = R, type = "hc4", fixed_x = TRUE, m = 100)
#> MCMI(object = object, R = R, type = "hc4m", fixed_x = TRUE, m = 100)
#> MCMI(object = object, R = R, type = "hc5", fixed_x = TRUE, m = 100)
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed

#> test-betaMC-mc-fixed-x

#> MC(object = object, R = R, type = "mvn", fixed_x = TRUE)
#> MC(object = object, R = R, type = "adf", fixed_x = TRUE)
#> MC(object = object, R = R, type = "hc0", fixed_x = TRUE)
#> MC(object = object, R = R, type = "hc1", fixed_x = TRUE)
#> MC(object = object, R = R, type = "hc2", fixed_x = TRUE)
#> MC(object = object, R = R, type = "hc3", fixed_x = TRUE)
#> MC(object = object, R = R, type = "hc4", fixed_x = TRUE)
#> MC(object = object, R = R, type = "hc4m", fixed_x = TRUE)
#> MC(object = object, R = R, type = "hc5", fixed_x = TRUE)
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
```

```
#> Test passed
#> Call:
#> MC(object = object, R = 5L, decomposition = "chol", fixed_x = TRUE)
#> The first set of simulated parameter estimates
#> and model-implied covariance matrix.
#>
#> $coef
#> [1] 0.4613200 0.5369813
#>
#> $sigmasq
#> [1] 0.5280087
#>
#> $vechsigmacapx
#> [1] 1.000000e+00 2.496804e-16 1.000000e+00
#>
#> $sigmacapx
#>              [,1]         [,2]
#> [1,] 1.000000e+00 2.496804e-16
#> [2,] 2.496804e-16 1.000000e+00
#>
#> $sigmaysq
#> [1] 1.029174
#>
#> $sigmayx
#> [1] 0.4613200 0.5369813
#>
#> $sigmacap
#>            [,1]         [,2]         [,3]
#> [1,] 1.0291737 4.613200e-01 5.369813e-01
#> [2,] 0.4613200 1.000000e+00 2.496804e-16
#> [3,] 0.5369813 2.496804e-16 1.000000e+00
#>
#> $pd
#> [1] TRUE
#>
#> Call:
#> MC(object = object, R = 5L, decomposition = "svd", fixed_x = TRUE)
#> The first set of simulated parameter estimates
#> and model-implied covariance matrix.
#>
#> $coef
#> [1] 0.4651039 0.5253450
#>
#> $sigmasq
#> [1] 0.5068517
#>
```

```
#> $vechsigmacapx
#> [1] 1.000000e+00 2.496804e-16 1.000000e+00
#>
#> $sigmacapx
#>               [,1]         [,2]
#> [1,] 1.000000e+00 2.496804e-16
#> [2,] 2.496804e-16 1.000000e+00
#>
#> $sigmaysq
#> [1] 0.9991607
#>
#> $sigmayx
#> [1] 0.4651039 0.5253450
#>
#> $sigmacap
#>           [,1]         [,2]         [,3]
#> [1,] 0.9991607 4.651039e-01 5.253450e-01
#> [2,] 0.4651039 1.000000e+00 2.496804e-16
#> [3,] 0.5253450 2.496804e-16 1.000000e+00
#>
#> $pd
#> [1] TRUE

#> test-betaMC-mc-mi

#> MCMI(object = object, R = R, type = "mvn", m = 100)
#> MCMI(object = object, R = R, type = "adf", m = 100)
#> MCMI(object = object, R = R, type = "hc0", m = 100)
#> MCMI(object = object, R = R, type = "hc1", m = 100)
#> MCMI(object = object, R = R, type = "hc2", m = 100)
#> MCMI(object = object, R = R, type = "hc3", m = 100)
#> MCMI(object = object, R = R, type = "hc4", m = 100)
#> MCMI(object = object, R = R, type = "hc4m", m = 100)
#> MCMI(object = object, R = R, type = "hc5", m = 100)
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed

#> test-betaMC-mc

#> MC(object = object, R = R, type = "mvn")
```

```
#> MC(object = object, R = R, type = "adf")
#> MC(object = object, R = R, type = "hc0")
#> MC(object = object, R = R, type = "hc1")
#> MC(object = object, R = R, type = "hc2")
#> MC(object = object, R = R, type = "hc3")
#> MC(object = object, R = R, type = "hc4")
#> MC(object = object, R = R, type = "hc4m")
#> MC(object = object, R = R, type = "hc5")
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Call:
#> MC(object = object, R = 5L, decomposition = "chol")
#> The first set of simulated parameter estimates
#> and model-implied covariance matrix.
#>
#> $coef
#> [1] 0.4909380 0.4650551
#>
#> $sigmasq
#> [1] 0.5226041
#>
#> $vechsigmacapx
#> [1] 0.95723981 0.02867601 0.94037730
#>
#> $sigmacapx
#>            [,1]       [,2]
#> [1,] 0.95723981 0.02867601
#> [2,] 0.02867601 0.94037730
#>
#> $sigmaysq
#> [1] 0.9697937
#>
#> $sigmayx
#> [1] 0.4832814 0.4514054
#>
#> $sigmacap
#>          [,1]       [,2]       [,3]
#> [1,] 0.9697937 0.48328136 0.45140543
```

```
#> [2,] 0.4832814 0.95723981 0.02867601
#> [3,] 0.4514054 0.02867601 0.94037730
#>
#> $pd
#> [1] TRUE
#>
#> Call:
#> MC(object = object, R = 5L, decomposition = "svd")
#> The first set of simulated parameter estimates
#> and model-implied covariance matrix.
#>
#> $coef
#> [1] 0.5026221 0.4910602
#>
#> $sigmasq
#> [1] 0.5488357
#>
#> $vechsigmacapx
#> [1]   1.04522410 -0.08171959  1.00142947
#>
#> $sigmacapx
#>              [,1]         [,2]
#> [1,]   1.04522410 -0.08171959
#> [2,] -0.08171959   1.00142947
#>
#> $sigmaysq
#> [1] 1.014035
#>
#> $sigmayx
#> [1] 0.4852235 0.4506881
#>
#> $sigmacap
#>             [,1]         [,2]         [,3]
#> [1,] 1.0140347   0.48522348   0.45068807
#> [2,] 0.4852235   1.04522410  -0.08171959
#> [3,] 0.4506881  -0.08171959   1.00142947
#>
#> $pd
#> [1] TRUE
#> test-betaMC-p-cor-mc-est-mi

#> Call:
#> PCorMC(object = mc)
#>
#> Squared partial correlations
#> type = "mvn"
```

```
#>              est      se R   0.05%   0.5%   2.5%   97.5%  99.5% 99.95%
#> NARTIC  0.4874 0.1326 5 0.2171 0.2209 0.2381 0.5693 0.5773 0.5791
#> PCTGRT  0.3757 0.1193 5 0.0564 0.0603 0.0774 0.3501 0.3510 0.3512
#> PCTSUPP 0.2254 0.1346 5 0.0480 0.0486 0.0513 0.3702 0.3826 0.3854
#> Call:
#> PCorMC(object = mc)
#>
#> Squared partial correlations
#> type = "mvn"
#> Test passed
#> Test passed

#> test-betaMC-p-cor-mc-est

#> Call:
#> PCorMC(object = mc)
#>
#> Squared partial correlations
#> type = "mvn"
#>              est      se R   0.05%   0.5%   2.5%   97.5%  99.5% 99.95%
#> NARTIC  0.4874 0.1178 5 0.3124 0.3138 0.3196 0.5923 0.5975 0.5987
#> PCTGRT  0.3757 0.0994 5 0.2468 0.2480 0.2534 0.4907 0.4958 0.4970
#> PCTSUPP 0.2254 0.0440 5 0.0913 0.0924 0.0973 0.2049 0.2065 0.2069
#> Call:
#> PCorMC(object = mc)
#>
#> Squared partial correlations
#> type = "mvn"
#> Test passed
#> Test passed

#> test-betaMC-r-sq-mc-est-mi

#> Call:
#> RSqMC(object = mc)
#>
#> R-squared and adjusted R-squared
#> type = "mvn"
#>          est      se R   0.05%   0.5%   2.5%   97.5%  99.5% 99.95%
#> rsq 0.8045 0.0529 5 0.7268 0.7273 0.7292 0.8569 0.8608 0.8617
#> adj 0.7906 0.0567 5 0.7073 0.7078 0.7099 0.8467 0.8509 0.8518
#> Call:
#> RSqMC(object = mc)
#>
#> R-squared and adjusted R-squared
#> type = "mvn"
#> Test passed
```

```
#> Call:
#> RSqMC(object = mc)
#>
#> R-squared and adjusted R-squared
#> type = "mvn"
#>        est     se R  0.05%    0.5%    2.5%   97.5%   99.5%  99.95%
#> rsq 0.5809 0.0720 5 0.4790 0.4790 0.4791 0.6438 0.6497 0.6511
#> adj 0.5714 0.0737 5 0.4671 0.4671 0.4673 0.6357 0.6418 0.6432
#> Call:
#> RSqMC(object = mc)
#>
#> R-squared and adjusted R-squared
#> type = "mvn"
#> Test passed

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

#> Call:
#> RSqMC(object = mc)
#>
#> R-squared and adjusted R-squared
#> type = "mvn"
#>        est     se R  0.05%    0.5%    2.5%   97.5%   99.5%  99.95%
#> rsq 0.8045 0.0395 5 0.7261 0.7272 0.7325 0.8225 0.8226 0.8227
#> adj 0.7906 0.0424 5 0.7065 0.7078 0.7134 0.8098 0.8100 0.8100
#> Call:
#> RSqMC(object = mc)
#>
#> R-squared and adjusted R-squared
#> type = "mvn"
#> Test passed
#> Call:
#> RSqMC(object = mc)
#>
#> R-squared and adjusted R-squared
#> type = "mvn"
#>        est     se R  0.05%    0.5%    2.5%   97.5%   99.5%  99.95%
#> rsq 0.5809 0.0458 5 0.4433 0.4443 0.4487 0.5651 0.5689 0.5697
#> adj 0.5714 0.0468 5 0.4307 0.4317 0.4362 0.5553 0.5591 0.5600
#> Call:
#> RSqMC(object = mc)
#>
#> R-squared and adjusted R-squared
#> type = "mvn"
#> Test passed

#> test-betaMC-s-cor-mc-est-mi
```

```
#> Call:
#> SCorMC(object = mc)
#>
#> Semipartial correlations
#> type = "mvn"
#>            est     se R  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> NARTIC  0.4312 0.0989 5 0.2802 0.2816 0.2878 0.5173 0.5193 0.5198
#> PCTGRT  0.3430 0.0193 5 0.2853 0.2854 0.2861 0.3255 0.3256 0.3256
#> PCTSUPP 0.2385 0.0845 5 0.1508 0.1523 0.1591 0.3717 0.3828 0.3854
#> Call:
#> SCorMC(object = mc)
#>
#> Semipartial correlations
#> type = "mvn"
#> Test passed
#> Test passed

#> test-betaMC-s-cor-mc-est

#> Call:
#> SCorMC(object = mc)
#>
#> Semipartial correlations
#> type = "mvn"
#>            est     se R  0.05%   0.5%   2.5%  97.5%  99.5% 99.95%
#> NARTIC  0.4312 0.0663 5 0.2778 0.2789 0.2840 0.4523 0.4599 0.4617
#> PCTGRT  0.3430 0.0993 5 0.2937 0.2946 0.2984 0.5384 0.5458 0.5475
#> PCTSUPP 0.2385 0.0797 5 0.1586 0.1603 0.1676 0.3559 0.3585 0.3591
#> Call:
#> SCorMC(object = mc)
#>
#> Semipartial correlations
#> type = "mvn"
#> Test passed
#> Test passed
#> [[1]]
#> [[1]][[1]]
#> [[1]][[1]]$value
#> [[1]][[1]]$value[[1]]
#>     2.5%     97.5%
#> 0.7119151 0.8807594
#>
#>
#> [[1]][[1]]$visible
#> [1] TRUE
#>
#>
```

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```
#> [[1]][[2]]
#> [[1]][[2]]$value
#> [[1]][[2]]$value[[1]]
#>      2.5%      97.5%
#> 0.7352168 0.7811421
#>
#>
#> [[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] 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]]
#> [1] TRUE
```

```
#> 
#> 
#> [[1]][[6]]$visible
#> [1] TRUE
#> 
#> 
#> [[1]][[7]]
#> [[1]][[7]]$value
#> [[1]][[7]]$value[[1]]
#> [1] TRUE
#> 
#> 
#> [[1]][[7]]$visible
#> [1] TRUE
#> 
#> 
#> [[1]][[8]]
#> [[1]][[8]]$value
#> [[1]][[8]]$value[[1]]
#> [[1]][[8]]$value[[1]]$coef
#> [1] 0.4651039 0.5253450
#> 
#> [[1]][[8]]$value[[1]]$sigmasq
#> [1] 0.5068517
#> 
#> [[1]][[8]]$value[[1]]$vechsigmacapx
#> [1] 1.000000e+00 2.496804e-16 1.000000e+00
#> 
#> [[1]][[8]]$value[[1]]$sigmacapx
#>               [,1]         [,2]
#> [1,] 1.000000e+00 2.496804e-16
#> [2,] 2.496804e-16 1.000000e+00
#> 
#> [[1]][[8]]$value[[1]]$sigmaysq
#> [1] 0.9991607
#> 
#> [[1]][[8]]$value[[1]]$sigmayx
#> [1] 0.4651039 0.5253450
#> 
#> [[1]][[8]]$value[[1]]$sigmacap
#>           [,1]         [,2]         [,3]
#> [1,] 0.9991607 4.651039e-01 5.253450e-01
#> [2,] 0.4651039 1.000000e+00 2.496804e-16
#> [3,] 0.5253450 2.496804e-16 1.000000e+00
#> 
#> [[1]][[8]]$value[[1]]$pd
```

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```
#> [1] TRUE
#>
#>
#>
#> [[1]][[8]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[9]]
#> [[1]][[9]]$value
#> [[1]][[9]]$value[[1]]
#> Call:
#> MCMI(object = object, R = R, type = "mvn", adj = TRUE)
#> The first set of simulated parameter estimates
#> and model-implied covariance matrix.
#>
#> $coef
#> [1] 0.4552634 0.4976936
#>
#> $sigmasq
#> [1] 0.5144748
#>
#> $vechsigmacapx
#> [1]   0.9876903 -0.0343121  0.9715521
#>
#> $sigmacapx
#>            [,1]        [,2]
#> [1,]  0.9876903 -0.0343121
#> [2,] -0.0343121  0.9715521
#>
#> $sigmaysq
#> [1] 0.9442916
#>
#> $sigmayx
#> [1] 0.4325824 0.4679142
#>
#> $sigmacap
#>           [,1]        [,2]        [,3]
#> [1,] 0.9442916  0.4325824  0.4679142
#> [2,] 0.4325824  0.9876903 -0.0343121
#> [3,] 0.4679142 -0.0343121  0.9715521
#>
#> $pd
#> [1] TRUE
#>
```

```
#> 
#> 
#> [[1]][[9]]$visible
#> [1] TRUE
#> 
#> 
#> [[1]][[10]]
#> [[1]][[10]]$value
#> [[1]][[10]]$value[[1]]
#>          beta1 beta2 rsq sigmax1x1 sigmax2x1 sigmax2x2
#> sigmaysq     1     1  -2      0.25       0.5      0.25
#> sigmayx1     1     0   0      0.50       0.5      0.00
#> sigmayx2     0     1   0      0.00       0.5      0.50
#> sigmax1x1    0     0   0      1.00       0.0      0.00
#> sigmax2x1    0     0   0      0.00       1.0      0.00
#> sigmax2x2    0     0   0      0.00       0.0      1.00
#> 
#> 
#> [[1]][[10]]$visible
#> [1] TRUE
#> 
#> 
#> [[1]][[11]]
#> [[1]][[11]]$value
#> [[1]][[11]]$value[[1]]
#> [1] TRUE
#> 
#> 
#> [[1]][[11]]$visible
#> [1] TRUE
#> 
#> 
#> [[1]][[12]]
#> [[1]][[12]]$value
#> [[1]][[12]]$value[[1]]
#> [1] TRUE
#> 
#> 
#> [[1]][[12]]$visible
#> [1] TRUE
#> 
#> 
#> [[1]][[13]]
#> [[1]][[13]]$value
#> [[1]][[13]]$value[[1]]
#> [1] TRUE
```

```
#>
#>
#> [[1]][[13]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[14]]
#> [[1]][[14]]$value
#> [[1]][[14]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[14]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[15]]
#> [[1]][[15]]$value
#> [[1]][[15]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[15]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[16]]
#> [[1]][[16]]$value
#> [[1]][[16]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[16]]$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/