

# betaMC: External Tests

Ivan Jacob Agaloos Pesigan

## Tests

```
#> test-external-betaMC-beta-mc-adf  
#> Standardized Monte Carlo Confidence Intervals  
#> Test passed  
#> Test passed  
#> Test passed  
#> Test passed  
  
#> test-external-betaMC-beta-mc-mlm  
  
#> Standardized Monte Carlo Confidence Intervals  
#> Test passed  
#> Test passed  
#> Test passed  
#> Test passed  
  
#> test-external-betaMC-beta-mc-mvn  
  
#> Standardized Monte Carlo Confidence Intervals  
#> Test passed  
#> Test passed  
#> Test passed  
#> Test passed  
  
#> test-external-betaMC-beta-mc  
  
#> Test passed  
#> Test passed  
#> Test passed  
#> Test passed  
#> Test passed  
#> Test passed  
#> Test passed  
#> Test passed  
#> Test passed  
  
#> test-external-betaMC-delta-r-sq-mc
```

```

#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed

#> test-external-betaMC-diff-adf

#> Standardized Monte Carlo Confidence Intervals
#> Test passed
#> Test passed
#> Test passed
#> Test passed

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

#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed

#> test-external-betaMC-diff-mlm

#> Standardized Monte Carlo Confidence Intervals
#> Test passed
#> Test passed
#> Test passed
#> Test passed

#> test-external-betaMC-diff-mvn

#> Standardized Monte Carlo Confidence Intervals
#> Test passed
#> Test passed
#> Test passed
#> Test passed

#> test-external-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
#> Call:
#> MC(object = object, R = 5L, decomposition = "chol")
#> The first set of simulated parameter estimates
#> and model-implied covariance matrix.
#>
#> $coef
#> [1] 0.4990891 0.4980637
#>
#> $sigmasq
#> [1] 0.4978686
#>
#> $vechsigmacapx
#> [1] 0.9980201884 0.0006462136 0.9916709341
#>
#> $sigmacapx
#>           [,1]      [,2]
#> [1,] 0.9980201884 0.0006462136
#> [2,] 0.0006462136 0.9916709341
#>
#> $sigmaysq
#> [1] 0.992788
#>
#> $sigmayx
#> [1] 0.4984229 0.4942378
#>
#> $sigmacap
#>           [,1]      [,2]      [,3]

```

```

#> [1,] 0.9927880 0.4984228626 0.4942378200
#> [2,] 0.4984229 0.9980201884 0.0006462136
#> [3,] 0.4942378 0.0006462136 0.9916709341
#>
#> $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] 0.5006203 0.5017003
#>
#> $sigmasq
#> [1] 0.5026333
#>
#> $vechsigmacapx
#> [1] 1.000063377 -0.001765834 0.988013027
#>
#> $sigmacapx
#>      [,1]      [,2]
#> [1,] 1.000063377 -0.001765834
#> [2,] -0.001765834 0.988013027
#>
#> $sigmaysq
#> [1] 1.001069
#>
#> $sigmayx
#> [1] 0.4997661 0.4948024
#>
#> $sigmacap
#>      [,1]      [,2]      [,3]
#> [1,] 1.0010689 0.499766068 0.494802444
#> [2,] 0.4997661 1.000063377 -0.001765834
#> [3,] 0.4948024 -0.001765834 0.988013027
#>
#> $pd
#> [1] TRUE
#> test-external-betaMC-p-cor-mc
#> Test passed
#> Test passed
#> Test passed
#> Test passed

```

```

#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed

#> test-external-betaMC-r-sq-adf

#> Standardized Monte Carlo Confidence Intervals
#> Test passed
#> Test passed
#> Test passed
#> Test passed

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

#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed

#> test-external-betaMC-r-sq-mlm

#> Standardized Monte Carlo Confidence Intervals
#> Test passed
#> Test passed
#> Test passed
#> Test passed

#> test-external-betaMC-r-sq-mvn

#> Standardized Monte Carlo Confidence Intervals
#> Test passed
#> Test passed
#> Test passed
#> Test passed

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

#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> Test passed

```

```
#> Test passed
#> Test passed
#> Test passed
#> Test passed
#> [[1]]
#> [[1]] [[1]]
#> [[1]] [[1]]$value
#> [[1]] [[1]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[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]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]] [[4]]$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]]$value[[1]]
#> [1] TRUE
#>
#>
#> [[1]][[8]]$visible
#> [1] TRUE
#>
#>
#> [[1]][[9]]
#> [[1]][[9]]$value
#> [[1]][[9]]$value[[1]]
#> [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"
```

## Class

```
#> [[1]]  
#> [1] "data.frame"  
#>  
#> [[2]]  
#> [1] "root_criterion"
```

## References

- Pesigan, I. J. A., & Cheung, S. F. (2023). Monte Carlo confidence intervals for the indirect effect with missing data. *Behavior Research Methods*, 56(3), 1678–1696. <https://doi.org/10.3758/s13428-023-02114-4>
- R Core Team. (2024). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing. Vienna, Austria. <https://www.R-project.org/>