

# Simulation 3

2025-06-03

## Modèle de Cox

$\lambda_1 = 0.1; k_1 = 2$

$\lambda_2 = 0.12; k_2 = 1.7$

$\beta = -3$

$t\_censure = c(9,14,19)$

$\tau = c(0,0)$

##	Min.	1st Qu.	Median	Mean	3rd Qu.	Max.
##	3.034	4.398	4.896	4.995	5.461	9.729

##	Min.	1st Qu.	Median	Mean	3rd Qu.	Max.
##	2.521	3.393	3.726	3.755	4.054	6.153

```
## $Count
##           Win Loose Tie      WR      WO      GPC
## endpoint1 4414   993 4593 4.44512 2.03998 0.34210
## endpoint2 2294   396 1902 5.79293 2.40906 0.41333
## overall   6708  1390 1902 4.82590 3.27168 0.53180
##
```

```
## $value_tte_cont_C
##           Y_1_C (tte) Y_2_C (tte)
## min           4.642900  0.0326235
## median        5.361705  4.6429005
## max           9.000000  9.0000000
##
```

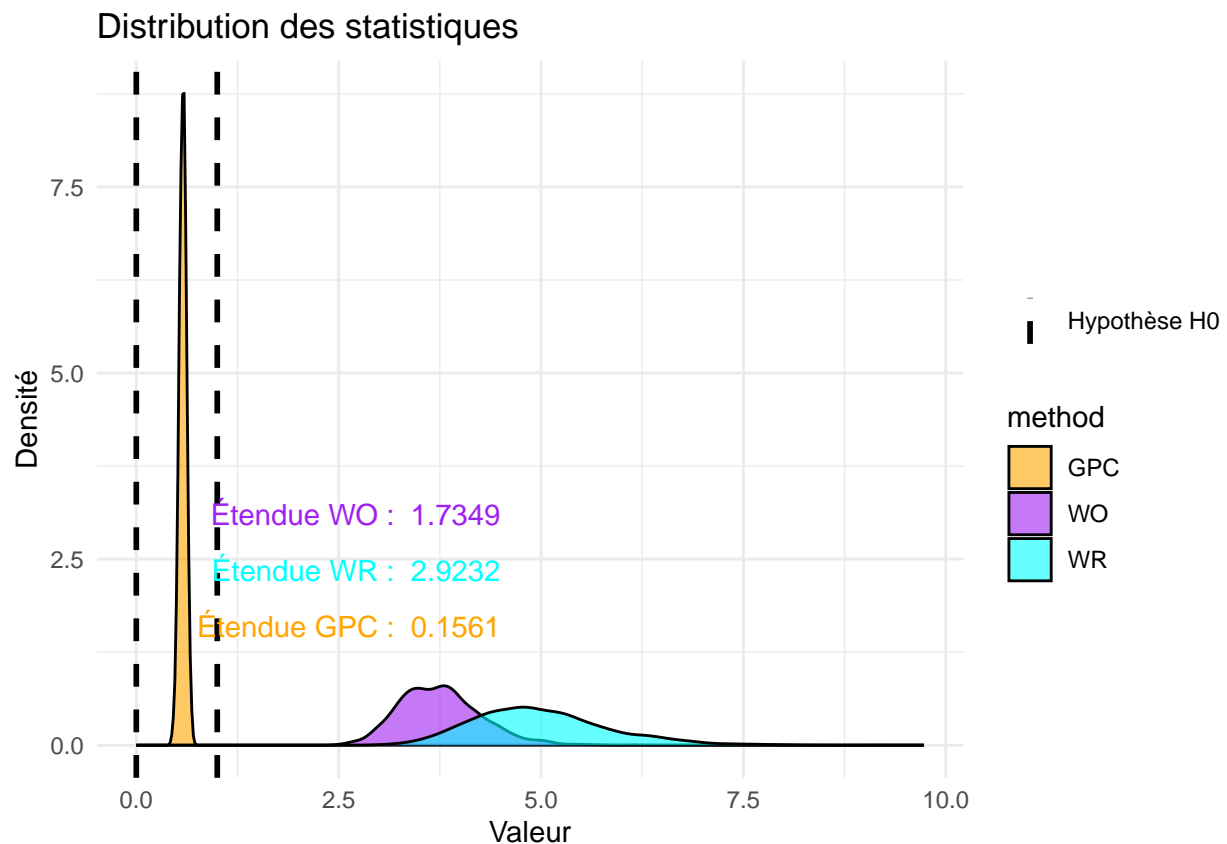
```
## $value_tte_cont_T
##           Y_1_T (tte) Y_2_T (tte)
## min           0.095685  4.6429
## median        9.000000  9.0000
## max           9.000000  9.0000
##
```

```
## $censure
## endpoint 1 endpoint2
## T    0.838740 0.8508125
## C    0.470355 0.4074150
##
```

```
## $p_val_GPC
## [1] "probabilité d'avoir des p-valeur < 0.05 pour la GPC:  1"
##
## $p_val_WR
```

```
## [1] "probabilité d'avoir des p-valeur < 0.05 pour le WR: 1"
##
## $p_val_WO
## [1] "probabilité d'avoir des p-valeur < 0.05 pour le WO: 1"
```

```
##      method      value
## Length:6000      Min.   :0.4320
## Class :character  1st Qu.:0.6043
## Mode  :character  Median :3.6848
##                      Mean  :3.1085
##                      3rd Qu.:4.5377
##                      Max.   :9.7285
```

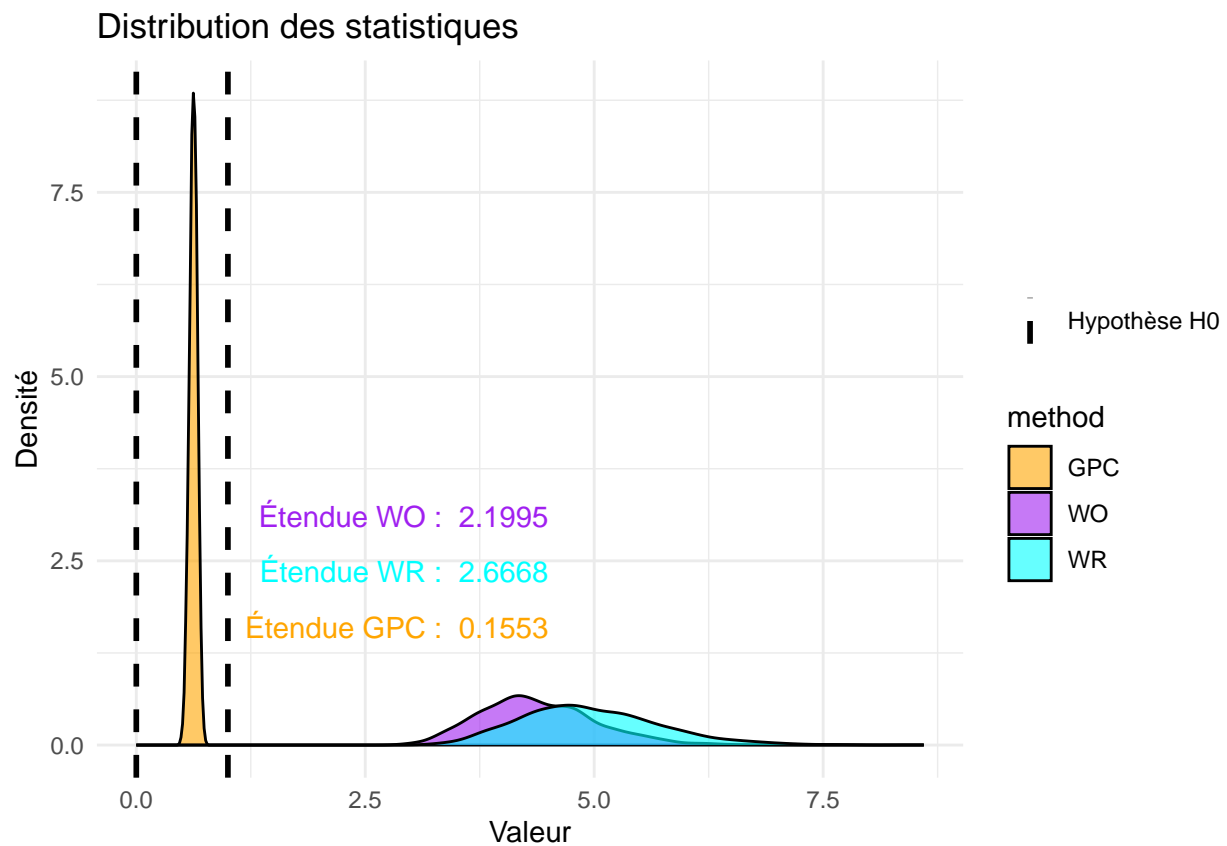


```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##      3.126  4.414   4.882   4.963  5.426   8.599
```

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##      2.867  3.941   4.326   4.384  4.773   7.126
```

```
## $Count
##      Win Loose Tie      WR      WO      GPC
## endpoint1 5060 1131 3809 4.47392 2.29435 0.39290
## endpoint2 2138  369 1302 5.79404 2.73431 0.46443
## overall   7198 1500 1302 4.79867 3.64900 0.56980
##
```

```
## $value_tte_cont_C
##      Y_1_C (tte) Y_2_C (tte)
## min      4.646518  0.032192
## median    5.366321  4.646518
## max      14.000000  14.000000
##
## $value_tte_cont_T
##      Y_1_T (tte) Y_2_T (tte)
## min      0.093803  4.646518
## median   13.034481  13.302117
## max      14.000000  14.000000
##
## $censure
##      endpoint 1 endpoint2
## T  0.7784150 0.7930125
## C  0.3549475 0.2981350
##
## $p_val_GPC
## [1] "probabilité d'avoir des p-valeur < 0.05 pour la GPC:  1"
##
## $p_val_WR
## [1] "probabilité d'avoir des p-valeur < 0.05 pour le WR:  1"
##
## $p_val_WO
## [1] "probabilité d'avoir des p-valeur < 0.05 pour le WO:  1"
```



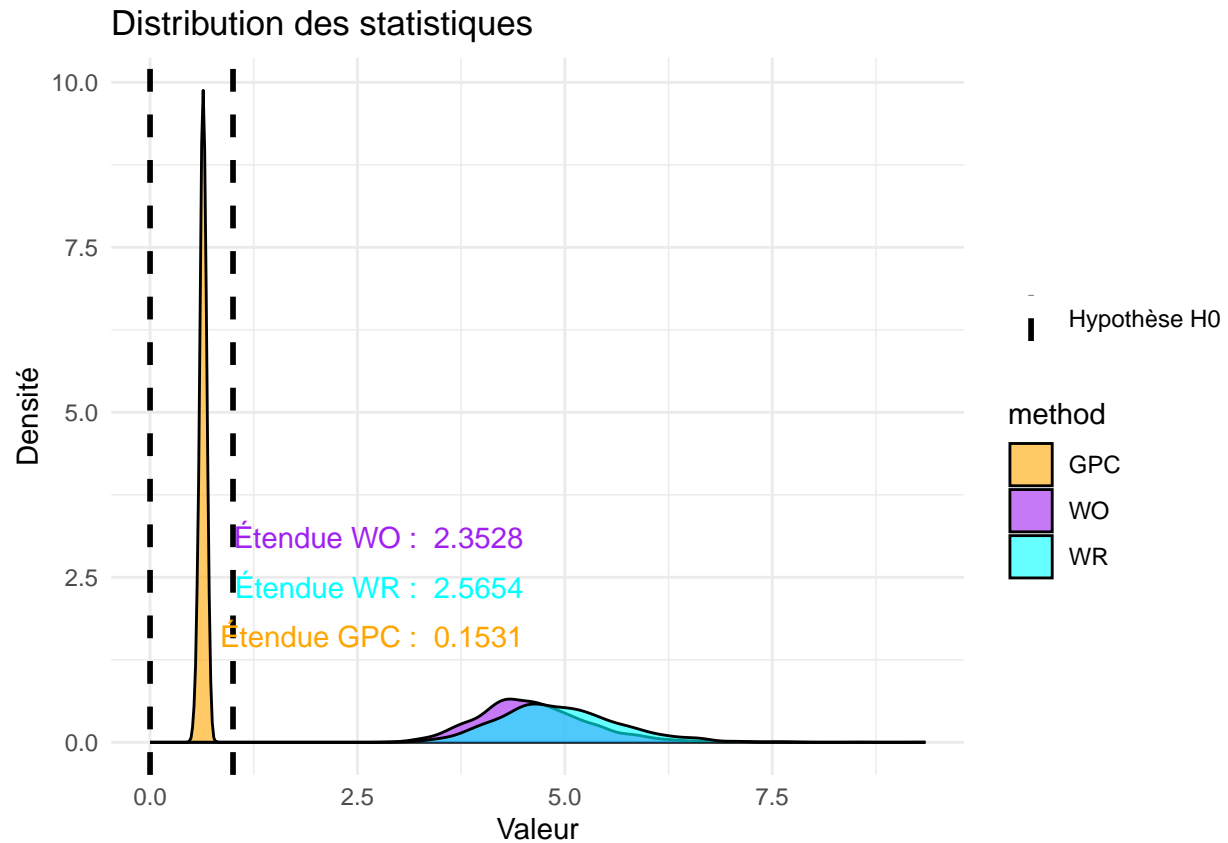
```

##      Min. 1st Qu.  Median      Mean 3rd Qu.      Max.
##      2.979  4.439   4.864   4.936   5.372   9.346

##      Min. 1st Qu.  Median      Mean 3rd Qu.      Max.
##      2.912  4.171   4.559   4.616   5.010   8.547

## $Count
##           Win Loose Tie      WR      WO      GPC
## endpoint1 5308  1190 3502 4.46050 2.40020 0.41180
## endpoint2 2138   369 1103 5.79404 2.92178 0.49003
## overall   7355  1542 1103 4.76978 3.77669 0.58130
##
## $value_tte_cont_C
##           Y_1_C (tte) Y_2_C (tte)
## min           4.640848    0.032152
## median        5.366321    4.640848
## max           19.000000   19.000000
##
## $value_tte_cont_T
##           Y_1_T (tte) Y_2_T (tte)
## min           0.092429    4.646518
## median       13.282062   13.748615
## max           19.000000   19.000000
##
## $censure
##      endpoint 1 endpoint2
## T    0.778415 0.7491025
## C    0.296105 0.2981350
##
## $p_val_GPC
## [1] "probabilité d'avoir des p-valeur < 0.05 pour la GPC:  1"
##
## $p_val_WR
## [1] "probabilité d'avoir des p-valeur < 0.05 pour le WR:  1"
##
## $p_val_WO
## [1] "probabilité d'avoir des p-valeur < 0.05 pour le WO:  1"

```



```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##      2.977  4.334   4.844   4.938   5.422   9.410
```

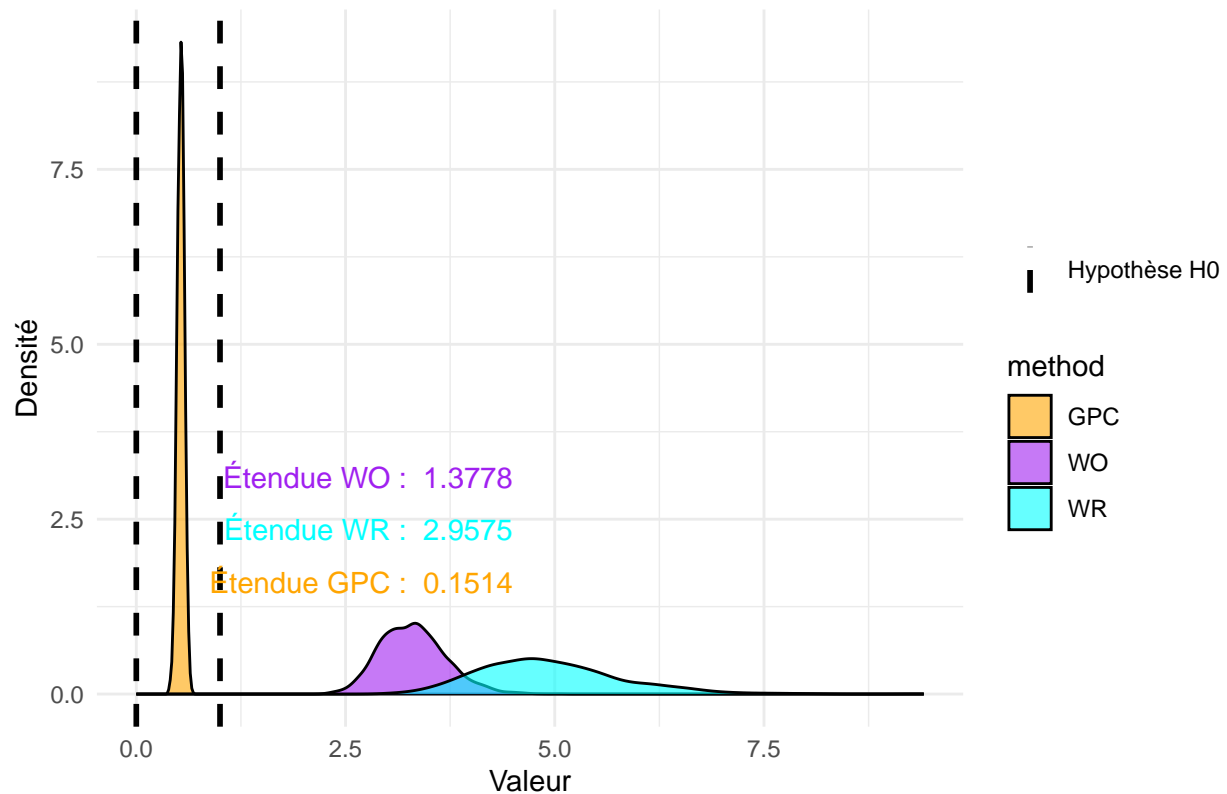
```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##      2.291  3.022   3.292   3.306   3.549   5.050
```

```
## $Count
##           Win Loose Tie      WR      WO      GPC
## endpoint1 4414   993 4593 4.44512 2.03998 0.34210
## endpoint2 2294   396 1902 5.79293 2.40906 0.41333
## overall   6708  1390 1902 4.82590 3.27168 0.53180
##
## $value_tte_cont_C
##           Y_1_C (tte) Y_2_C (tte)
## min           4.642900  0.0326235
## median        5.361705  4.6429005
## max           9.000000  9.0000000
##
## $value_tte_cont_T
##           Y_1_T (tte) Y_2_T (tte)
## min           0.095685  4.6429
## median        9.000000  9.0000
## max           9.000000  9.0000
##
## $censure
```

```
## endpoint 1 endpoint2
## T 0.838740 0.8508125
## C 0.470355 0.4074150
##
## $p_val_GPC
## [1] "probabilité d'avoir des p-valeur < 0.05 pour la GPC: 1"
##
## $p_val_WR
## [1] "probabilité d'avoir des p-valeur < 0.05 pour le WR: 1"
##
## $p_val_WO
## [1] "probabilité d'avoir des p-valeur < 0.05 pour le WO: 1"
```

```
## method value
## Length:6000 Min. :0.3922
## Class :character 1st Qu.:0.5603
## Mode :character Median :3.2845
## Mean :2.9255
## 3rd Qu.:4.3550
## Max. :9.4095
```

### Distribution des statistiques



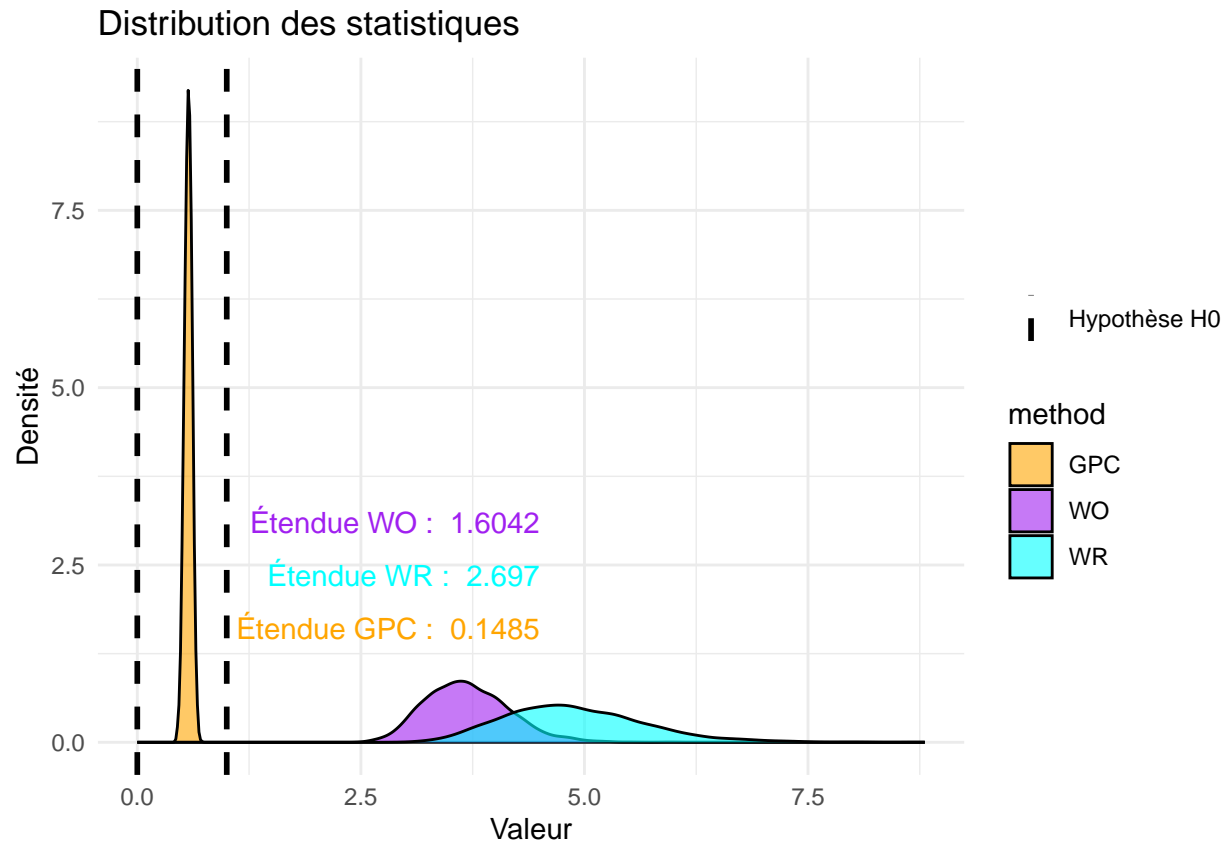
```
## Min. 1st Qu. Median Mean 3rd Qu. Max.
## 3.052 4.326 4.816 4.896 5.366 8.806
```

```
## Min. 1st Qu. Median Mean 3rd Qu. Max.
## 2.602 3.352 3.664 3.692 3.986 5.961
```

```

## $Count
##      Win Loose Tie      WR      W0      GPC
## endpoint1 5060 1131 3809 4.47392 2.29435 0.39290
## endpoint2 2138  369 1302 5.79404 2.73431 0.46443
## overall   7198 1500 1302 4.79867 3.64900 0.56980
##
## $value_tte_cont_C
##      Y_1_C (tte) Y_2_C (tte)
## min      4.646518    0.032192
## median    5.366321    4.646518
## max      14.000000    14.000000
##
## $value_tte_cont_T
##      Y_1_T (tte) Y_2_T (tte)
## min      0.093803    4.646518
## median   13.034481   13.302117
## max      14.000000    14.000000
##
## $censure
##      endpoint 1 endpoint2
## T   0.7784150 0.7930125
## C   0.3549475 0.2981350
##
## $p_val_GPC
## [1] "probabilité d'avoir des p-valeur < 0.05 pour la GPC:  1"
##
## $p_val_WR
## [1] "probabilité d'avoir des p-valeur < 0.05 pour le WR:  1"
##
## $p_val_W0
## [1] "probabilité d'avoir des p-valeur < 0.05 pour le W0:  1"

```



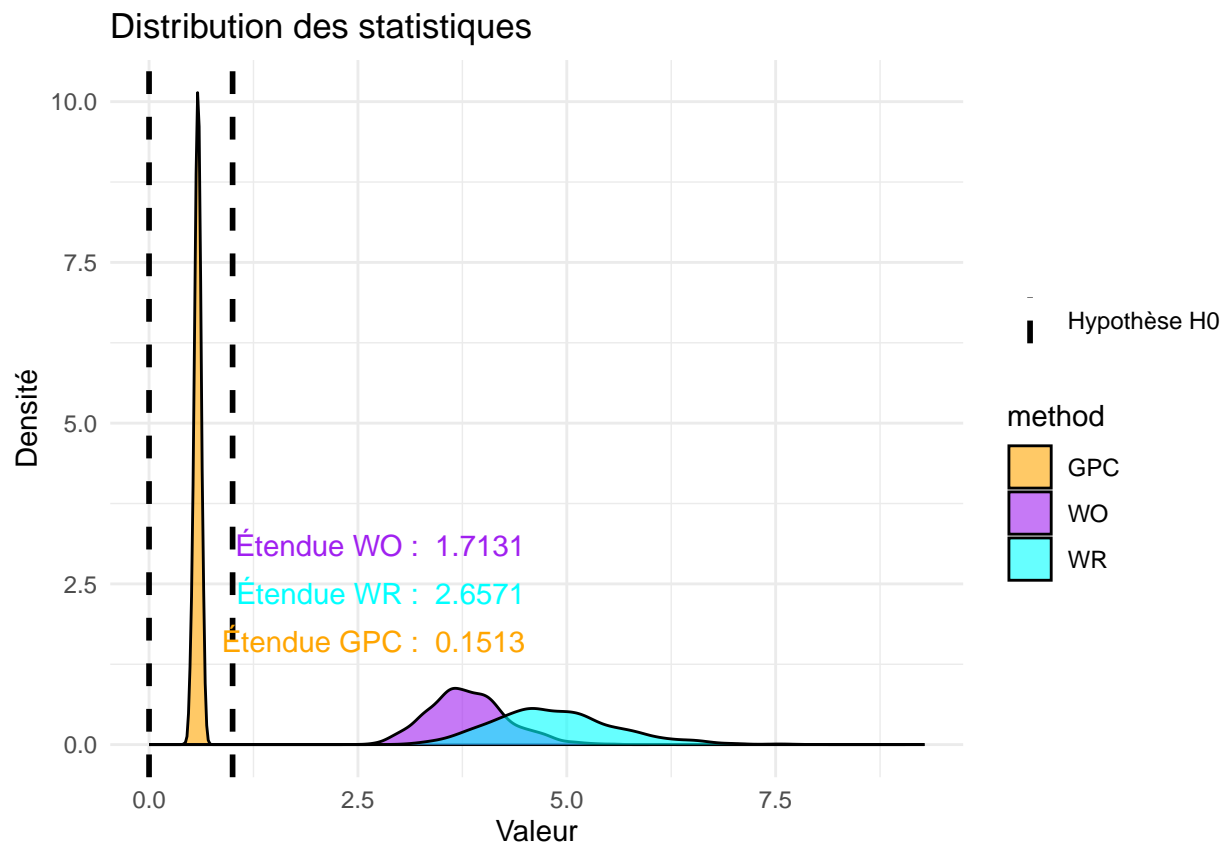
```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##      2.822  4.343   4.795   4.861  5.286   9.280
```

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##      2.471  3.506   3.788   3.822  4.106   6.153
```

```
## $Count
##           Win Loose Tie      WR      WO      GPC
## endpoint1 5308  1190 3502 4.46050 2.40020 0.41180
## endpoint2 2138   369 1103 5.79404 2.92178 0.49003
## overall   7355  1542 1103 4.76978 3.77669 0.58130
##
## $value_tte_cont_C
##           Y_1_C (tte) Y_2_C (tte)
## min           4.640848    0.032152
## median        5.366321    4.640848
## max           19.000000   19.000000
##
## $value_tte_cont_T
##           Y_1_T (tte) Y_2_T (tte)
## min           0.092429    4.646518
## median       13.282062   13.748615
## max           19.000000   19.000000
##
## $censure
```



```
## endpoint 1 endpoint2
## T 0.778415 0.7491025
## C 0.296105 0.2981350
##
## $p_val_GPC
## [1] "probabilité d'avoir des p-valeur < 0.05 pour la GPC: 1"
##
## $p_val_WR
## [1] "probabilité d'avoir des p-valeur < 0.05 pour le WR: 1"
##
## $p_val_WO
## [1] "probabilité d'avoir des p-valeur < 0.05 pour le WO: 1"
```



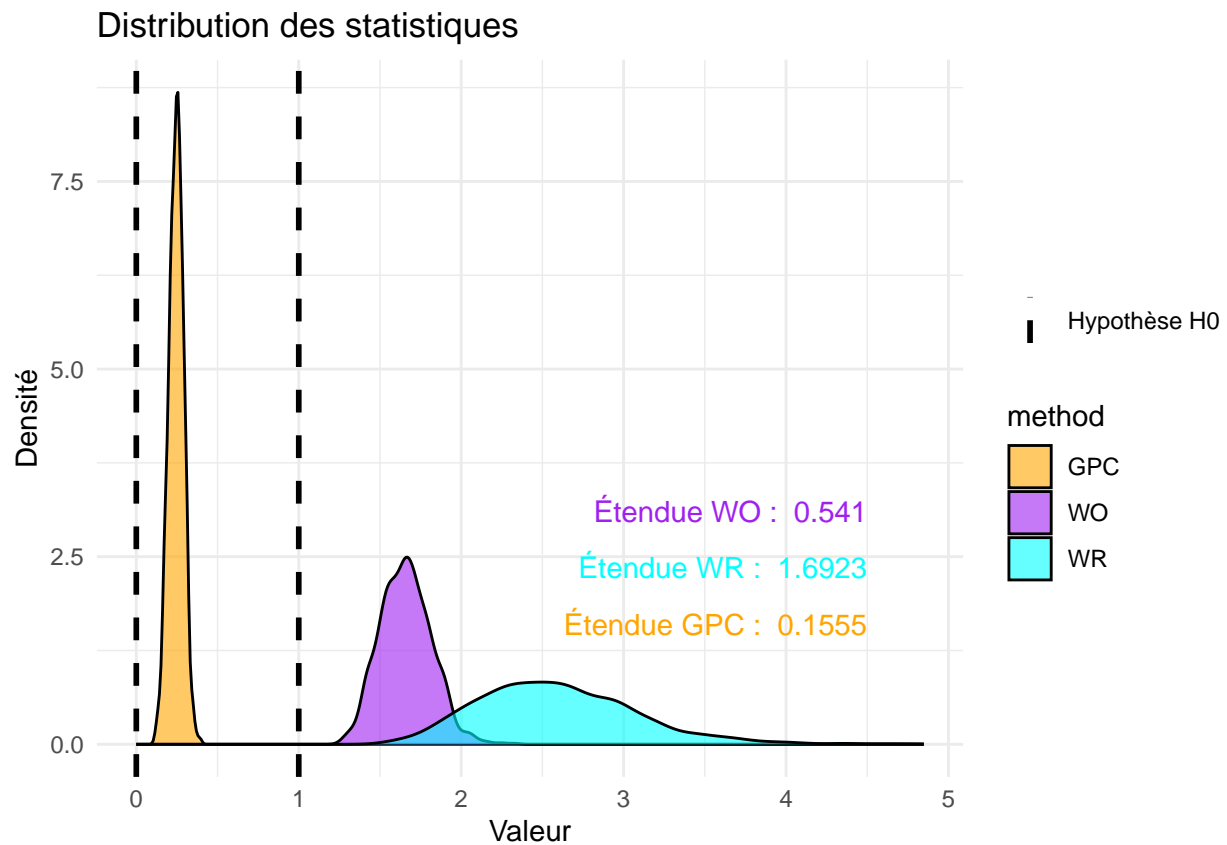
## Modèle AFT

$\lambda_1 = 0.09; k_1 = 1.5 \lambda_2 = 0.1; k_2 = 1.5 \beta = 0.9 t\_censure = c(9,14,19)$

$\tau = c(0,0)$

```
## $Count
##      Win Loose Tie      WR      WO      GPC
## endpoint1 3842 1541 4617 2.49319 1.59774 0.23010
## endpoint2  217   63 4338 3.44444 1.06900 0.03335
## overall   4058 1604 4338 2.52993 1.65041 0.24540
```

```
##
## $value_tte_cont_C
##      Y_1_C (tte) Y_2_C (tte)
## min      5.421077  0.036799
## median    5.780954  5.421077
## max      9.000000  9.000000
##
## $value_tte_cont_T
##      Y_1_T (tte) Y_2_T (tte)
## min      0.087588  5.421077
## median    8.979170  8.926674
## max      9.000000  9.000000
##
## $censure
##      endpoint 1 endpoint2
## T  0.7592500 0.7364725
## C  0.5253325 0.5070450
##
## $p_val_GPC
## [1] "probabilité d'avoir des p-valeur < 0.05 pour la GPC:  1"
##
## $p_val_WR
## [1] "probabilité d'avoir des p-valeur < 0.05 pour le WR:  1"
##
## $p_val_WO
## [1] "probabilité d'avoir des p-valeur < 0.05 pour le WO:  1"
```

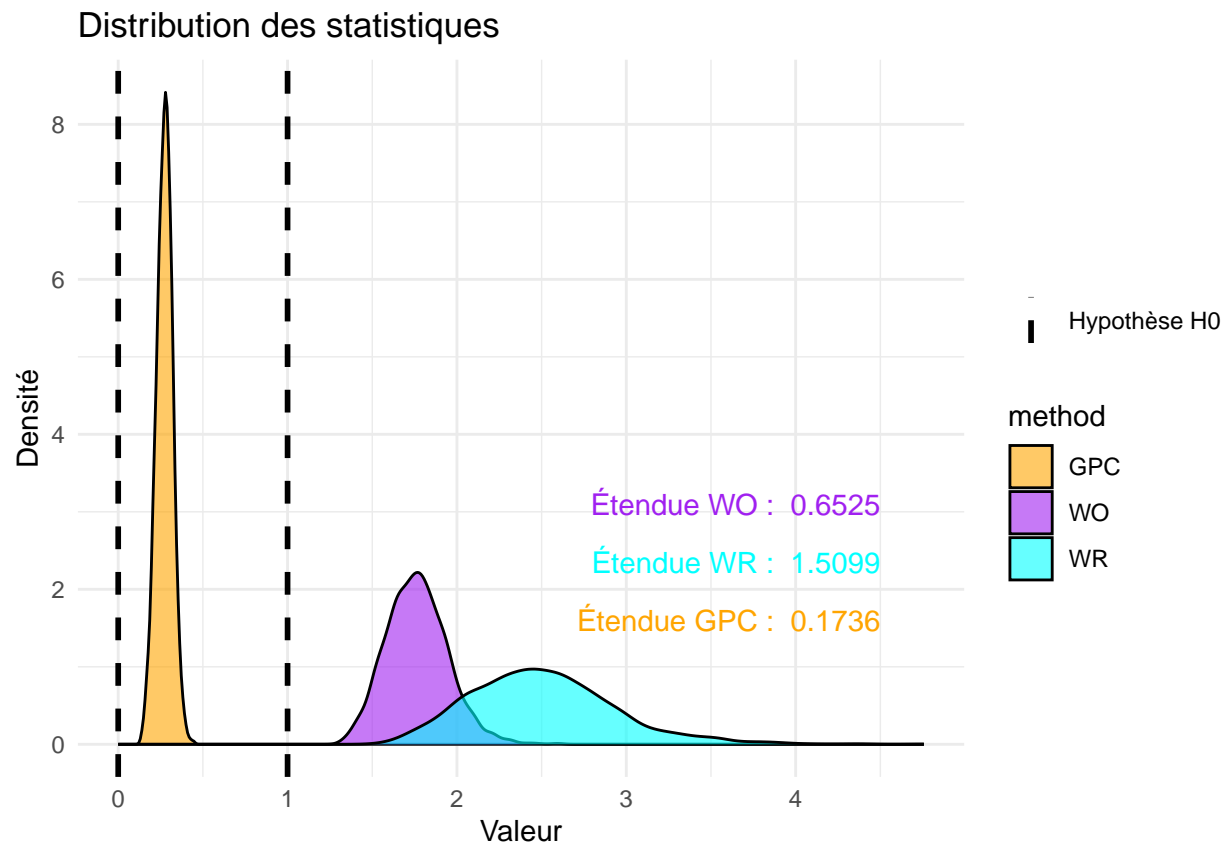


```

## Saving 6.5 x 4.5 in image

## $Count
##      Win Loose Tie      WR      WO      GPC
## endpoint1 4255  1759 4617 2.41899 1.61364 0.23479
## endpoint2  356   117 3514 3.04274 1.12753 0.05994
## overall   4611  1875 3514 2.45920 1.75330 0.27360
##
## $value_tte_cont_C
##      Y_1_C (tte) Y_2_C (tte)
## min           5.423362    0.036298
## median        5.791952    5.423362
## max          14.000000   14.000000
##
## $value_tte_cont_T
##      Y_1_T (tte) Y_2_T (tte)
## min           0.0860845    5.423362
## median       10.7503605   10.164938
## max          14.000000   14.000000
##
## $censure
##      endpoint 1 endpoint2
## T  0.6849875    0.66184
## C  0.4408225    0.42698
##
## $p_val_GPC
## [1] "probabilité d'avoir des p-valeur < 0.05 pour la GPC:  1"
##
## $p_val_WR
## [1] "probabilité d'avoir des p-valeur < 0.05 pour le WR:  1"
##
## $p_val_WO
## [1] "probabilité d'avoir des p-valeur < 0.05 pour le WO:  1"

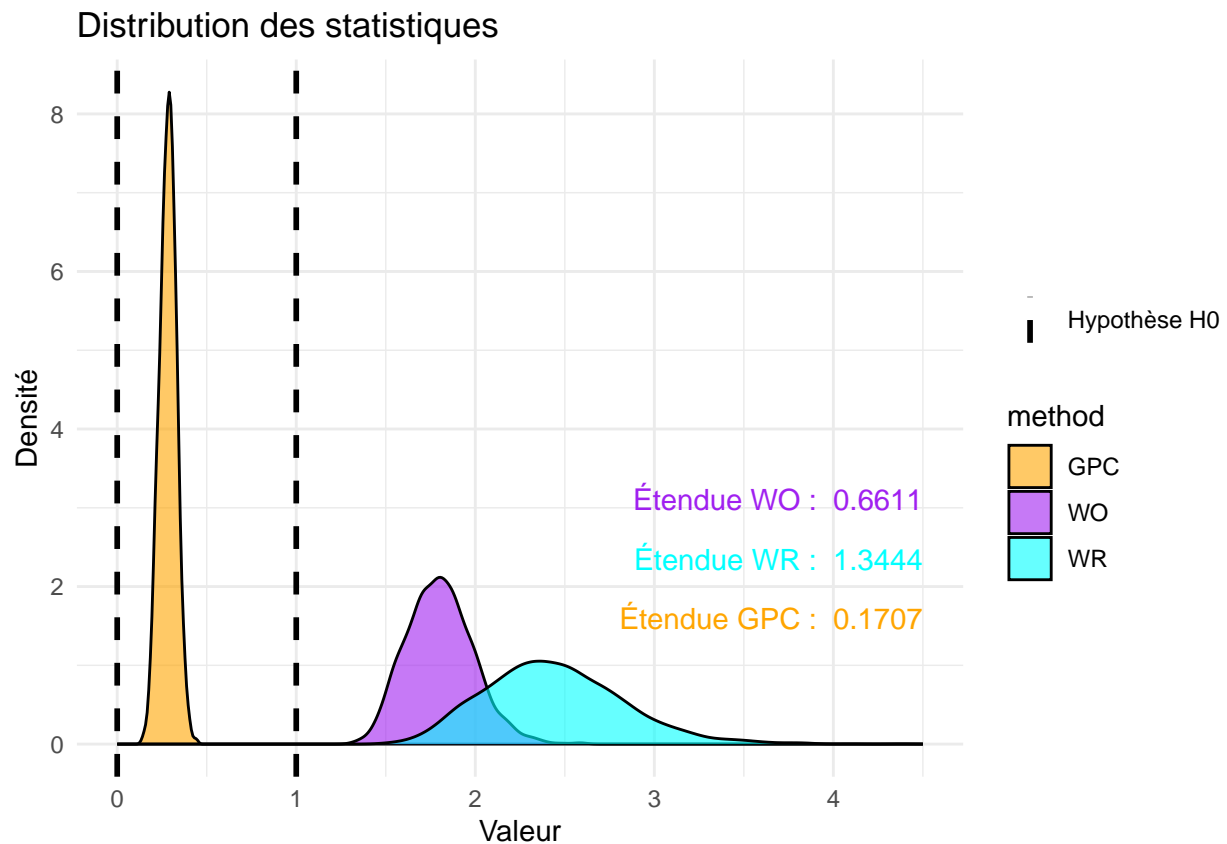
```



```
## Saving 6.5 x 4.5 in image
```

```
## $Count
##      Win Loose Tie      WR      WO      GPC
## endpoint1 4408  1859 3733 2.37117 1.68420 0.25490
## endpoint2  450   164 3119 2.74390 1.16594 0.07661
## overall   4858  2023 3119 2.40138 1.79135 0.28350
##
## $value_tte_cont_C
##      Y_1_C (tte) Y_2_C (tte)
## min      0.0498665  0.036194
## median   5.7683105  5.420920
## max     19.0000000 19.000000
##
## $value_tte_cont_T
##      Y_1_T (tte) Y_2_T (tte)
## min      0.084957  5.42092
## median  10.718506 10.13876
## max     19.000000 19.00000
##
## $censure
##      endpoint 1 endpoint2
## T  0.6340175  0.612610
## C  0.3972225  0.384665
##
```

```
## $p_val_GPC
## [1] "probabilité d'avoir des p-valeur < 0.05 pour la GPC: 1"
##
## $p_val_WR
## [1] "probabilité d'avoir des p-valeur < 0.05 pour le WR: 1"
##
## $p_val_WO
## [1] "probabilité d'avoir des p-valeur < 0.05 pour le WO: 1"
```



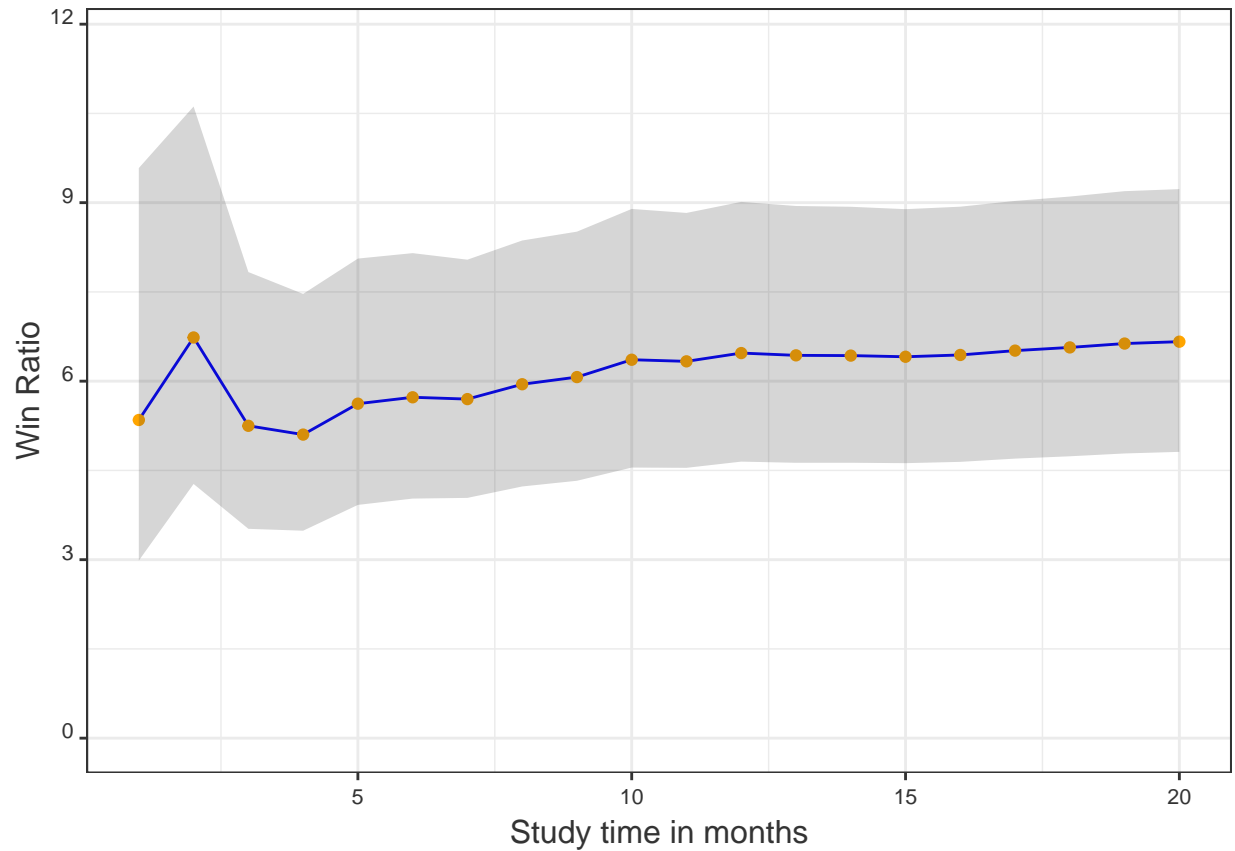
```
## Saving 6.5 x 4.5 in image
```

## Plots packages

### Cox

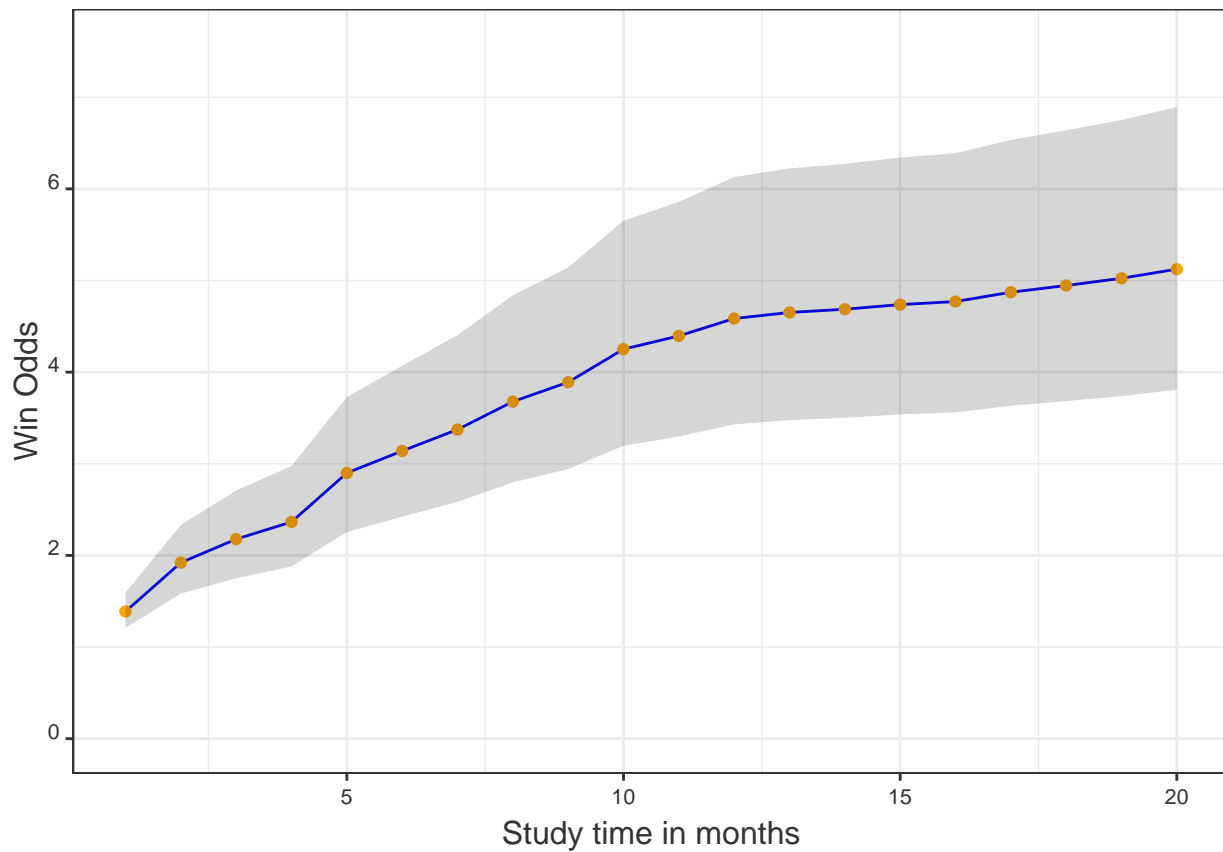
```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##  0.015   9.760   24.520   34.171   52.043  199.933
```

```
## Warning in stat_t.plot(data = data, Ctime = 1:20, arm.name = c("T", "C"), : The
## study entry time is missing, by default zero will be assigned to all subjects.
```



```
## $statistic
## [1] "WR"
##
## $values
##      time win_stat lower_ci upper_ci
## 1      1  5.347594  2.984493  9.581782
## 2      2  6.734545  4.272155 10.616213
## 3      3  5.250000  3.518242  7.834168
## 4      4  5.102123  3.486434  7.466559
## 5      5  5.621442  3.920416  8.060524
## 6      6  5.729186  4.026500  8.151886
## 7      7  5.698701  4.038261  8.041877
## 8      8  5.948142  4.229905  8.364347
## 9      9  6.068611  4.326050  8.513087
## 10     10  6.360173  4.547791  8.894824
## 11     11  6.333051  4.543339  8.827766
## 12     12  6.472293  4.647666  9.013252
## 13     13  6.433978  4.628323  8.944077
## 14     14  6.429648  4.628674  8.931366
## 15     15  6.410299  4.621909  8.890684
## 16     16  6.440466  4.643755  8.932341
## 17     17  6.513378  4.698531  9.029224
## 18     18  6.567114  4.737637  9.103058
## 19     19  6.632378  4.784872  9.193231
## 20     20  6.663583  4.811800  9.228010
```

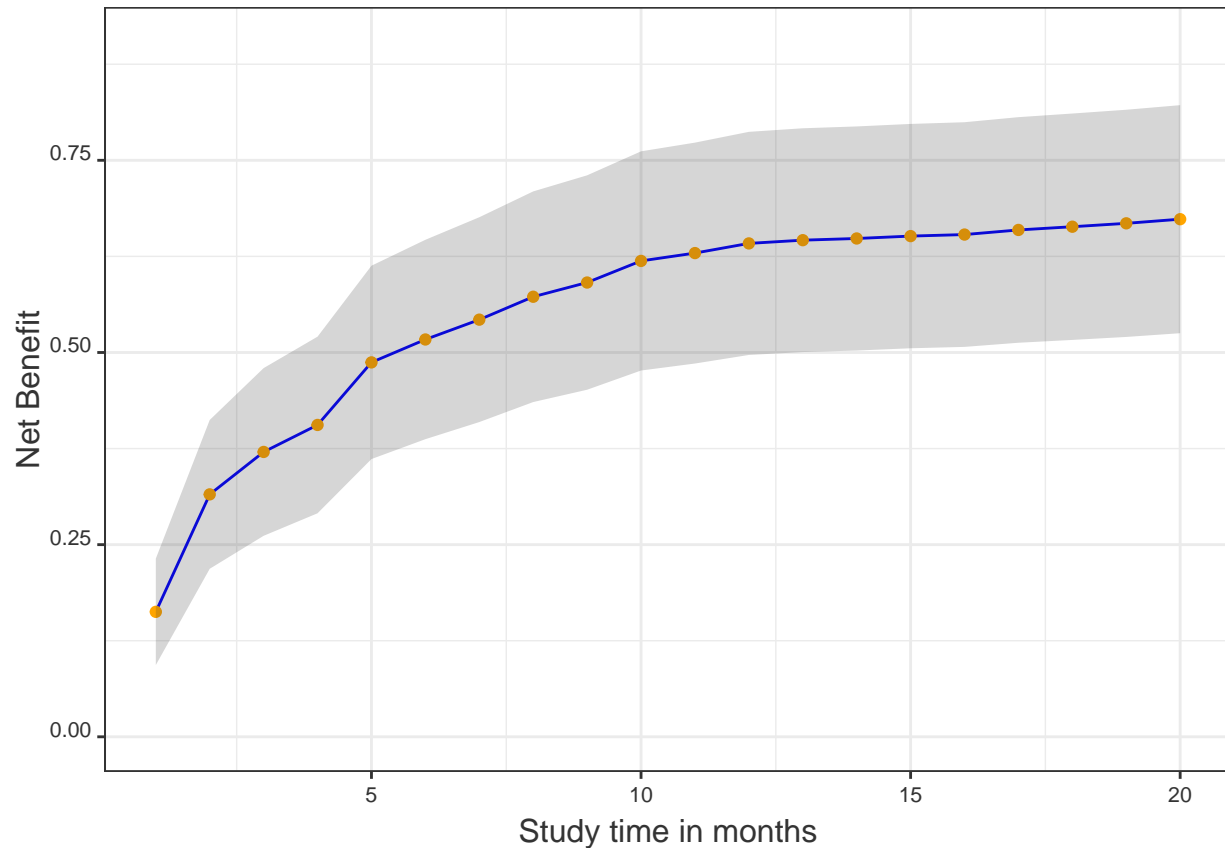
```
## Warning in stat_t.plot(data = data, Ctime = 1:20, arm.name = c("T", "C"), : The
## study entry time is missing, by default zero will be assigned to all subjects.
```



```
## $statistic
## [1] "WO"
##
## $values
##      time win_stat lower_ci upper_ci
## 1      1  1.388345  1.208834  1.594512
## 2      2  1.921414  1.583200  2.331879
## 3      3  2.177629  1.750833  2.708465
## 4      4  2.365304  1.879691  2.976374
## 5      5  2.899396  2.254630  3.728547
## 6      6  3.139930  2.422517  4.069799
## 7      7  3.373497  2.584336  4.403637
## 8      8  3.678363  2.796640  4.838074
## 9      9  3.889976  2.943007  5.141649
## 10     10  4.250722  3.196171  5.653214
## 11     11  4.395198  3.297384  5.858514
## 12     12  4.585032  3.429898  6.129196
## 13     13  4.651314  3.476390  6.223330
## 14     14  4.686665  3.501447  6.273072
## 15     15  4.737235  3.538195  6.342610
## 16     16  4.770340  3.561355  6.389744
## 17     17  4.871991  3.632832  6.533827
```

```
## 18 18 4.945303 3.683645 6.639082
## 19 19 5.024096 3.738536 6.751719
## 20 20 5.123699 3.808375 6.893305
```

```
## Warning in stat_t.plot(data = data, Ctime = 1:20, arm.name = c("T", "C"), : The
## study entry time is missing, by default zero will be assigned to all subjects.
```



```
## $statistic
## [1] "NB"
##
## $values
##      time win_stat  lower_ci  upper_ci
## 1      1  0.1626 0.09337216 0.2318278
## 2      2  0.3154 0.21859342 0.4122066
## 3      3  0.3706 0.26152736 0.4796726
## 4      4  0.4057 0.29080040 0.5205996
## 5      5  0.4871 0.36134178 0.6128582
## 6      6  0.5169 0.38720343 0.6465966
## 7      7  0.5427 0.40945951 0.6759405
## 8      8  0.5725 0.43547548 0.7095245
## 9      9  0.5910 0.45151450 0.7304855
## 10     10 0.6191 0.47653229 0.7616677
## 11     11 0.6293 0.48560834 0.7729917
## 12     12 0.6419 0.49676675 0.7870332
## 13     13 0.6461 0.50052233 0.7916777
```

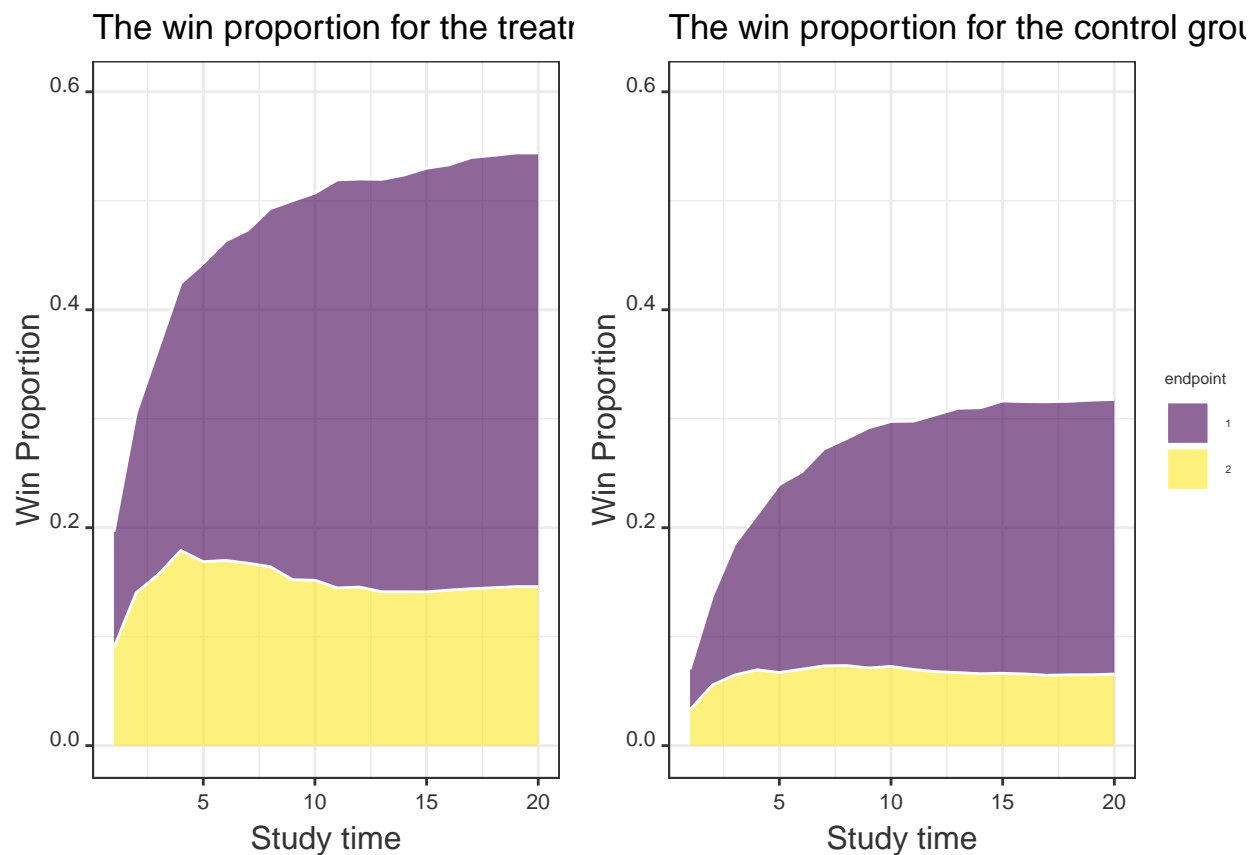


```
## 14 14 0.6483 0.50252751 0.7940725
## 15 15 0.6514 0.50548157 0.7973184
## 16 16 0.6534 0.50726173 0.7995383
## 17 17 0.6594 0.51265491 0.8061451
## 18 18 0.6636 0.51633229 0.8108677
## 19 19 0.6680 0.52022424 0.8157758
## 20 20 0.6734 0.52506296 0.8217370
```

## AFT

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
## 0.047   9.815   21.180   32.257   46.544  193.228
```

```
## Warning in partition_t.plot(data = data, Ctime = 1:20, arm.name = c("T", : The
## study entry time is missing, by default zero will be assigned to all subjects.
```



```
## $win_trt_t
##      time endpoint1 endpoint2
## 1      1      0.1059      0.0902
## 2      2      0.1652      0.1404
## 3      3      0.2078      0.1573
## 4      4      0.2454      0.1791
## 5      5      0.2738      0.1688
## 6      6      0.2931      0.1700
```

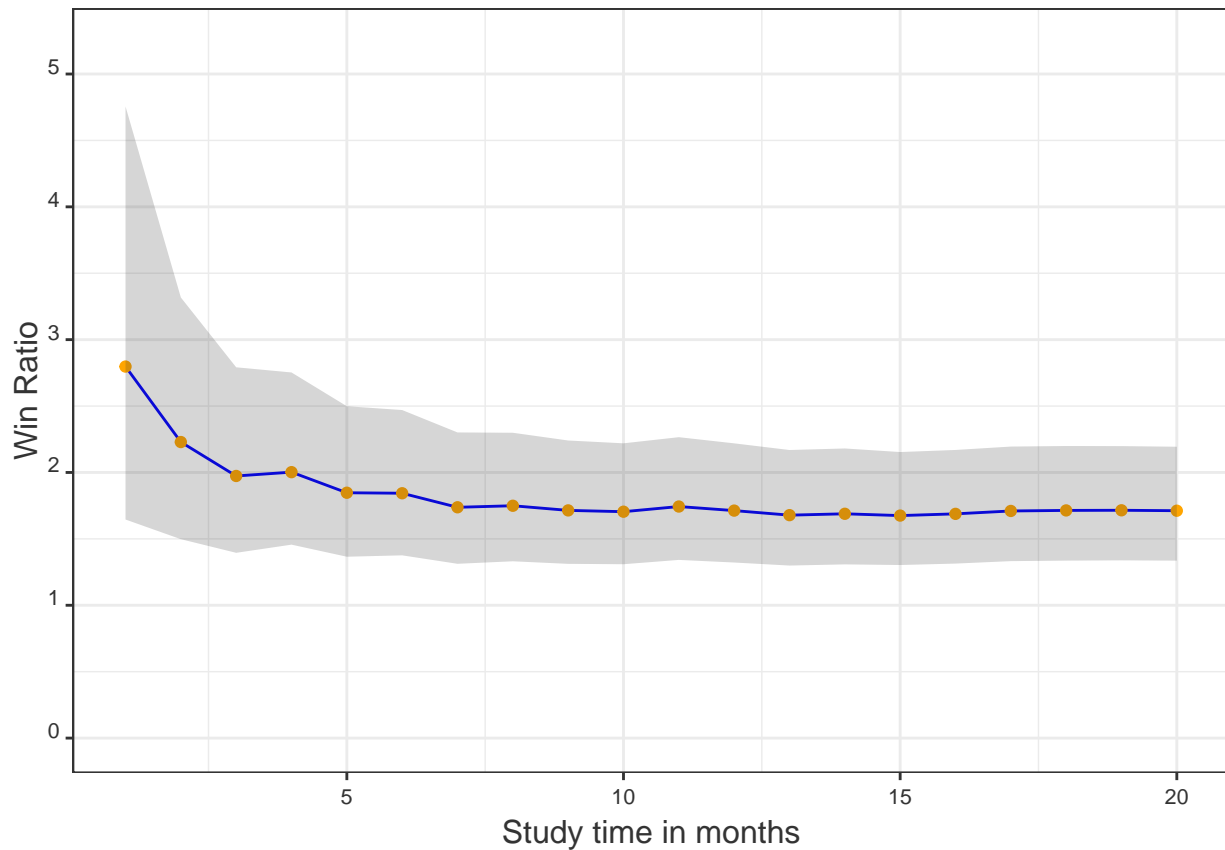
```

## 7      7      0.3058      0.1674
## 8      8      0.3286      0.1642
## 9      9      0.3479      0.1522
## 10     10     0.3553      0.1518
## 11     11     0.3745      0.1447
## 12     12     0.3745      0.1455
## 13     13     0.3785      0.1412
## 14     14     0.3825      0.1412
## 15     15     0.3888      0.1411
## 16     16     0.3903      0.1427
## 17     17     0.3957      0.1440
## 18     18     0.3968      0.1449
## 19     19     0.3980      0.1459
## 20     20     0.3980      0.1459
##
## $win_con_t
##      time endpoint1 endpoint2
## 1      1      0.0372      0.0329
## 2      2      0.0815      0.0556
## 3      3      0.1202      0.0648
## 4      4      0.1424      0.0696
## 5      5      0.1725      0.0671
## 6      6      0.1811      0.0701
## 7      7      0.1991      0.0732
## 8      8      0.2082      0.0735
## 9      9      0.2204      0.0713
## 10     10     0.2248      0.0727
## 11     11     0.2279      0.0699
## 12     12     0.2357      0.0679
## 13     13     0.2426      0.0670
## 14     14     0.2441      0.0660
## 15     15     0.2499      0.0664
## 16     16     0.2499      0.0658
## 17     17     0.2510      0.0646
## 18     18     0.2510      0.0650
## 19     19     0.2520      0.0651
## 20     20     0.2520      0.0657
##
## $win_tie_t
##      time proportion of ties
## 1      1              0.7338
## 2      2              0.5573
## 3      3              0.4499
## 4      4              0.3635
## 5      5              0.3178
## 6      6              0.2857
## 7      7              0.2545
## 8      8              0.2255
## 9      9              0.2082
## 10     10              0.1954
## 11     11              0.1830
## 12     12              0.1764
## 13     13              0.1707
## 14     14              0.1662

```

```
## 15 15 0.1538
## 16 16 0.1513
## 17 17 0.1447
## 18 18 0.1423
## 19 19 0.1390
## 20 20 0.1384
##
## $max_study_time
## [1] 129.573
```

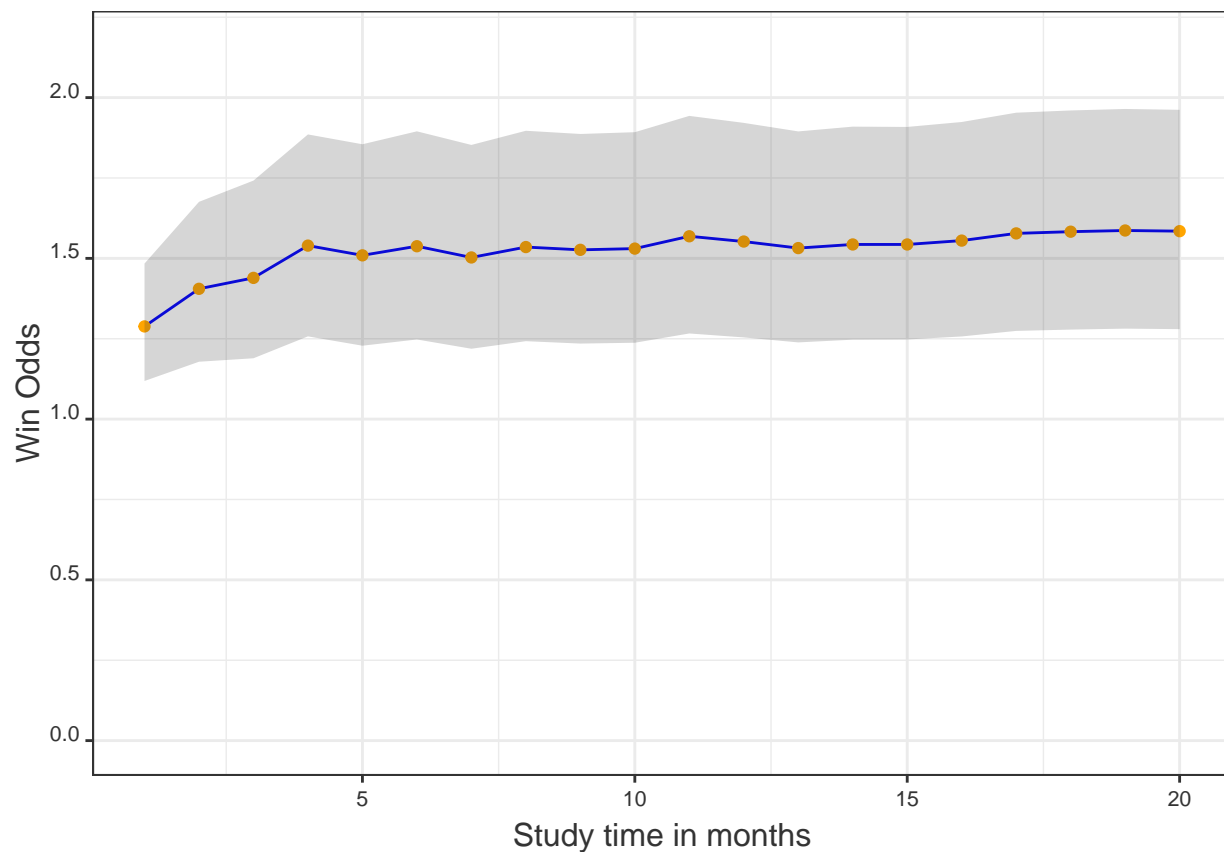
```
## Warning in stat_t.plot(data = data, Ctime = 1:20, arm.name = c("T", "C"), : The
## study entry time is missing, by default zero will be assigned to all subjects.
```



```
## $statistic
## [1] "WR"
##
## $values
##   time win_stat lower_ci upper_ci
## 1     1 2.797432 1.645509 4.755748
## 2     2 2.229030 1.497699 3.317472
## 3     3 1.973514 1.395047 2.791845
## 4     4 2.002358 1.456492 2.752806
## 5     5 1.847245 1.365606 2.498755
## 6     6 1.843551 1.375958 2.470047
## 7     7 1.737789 1.312258 2.301309
```

```
## 8      8 1.749379 1.331230 2.298871
## 9      9 1.714433 1.311822 2.240609
## 10     10 1.704538 1.309126 2.219381
## 11     11 1.743452 1.341593 2.265684
## 12     12 1.712780 1.321965 2.219133
## 13     13 1.678618 1.299059 2.169076
## 14     14 1.688810 1.307953 2.180568
## 15     15 1.675308 1.303105 2.153822
## 16     16 1.688312 1.313853 2.169494
## 17     17 1.710076 1.332344 2.194898
## 18     18 1.714241 1.336225 2.199196
## 19     19 1.715232 1.338237 2.198430
## 20     20 1.711992 1.336025 2.193761
```

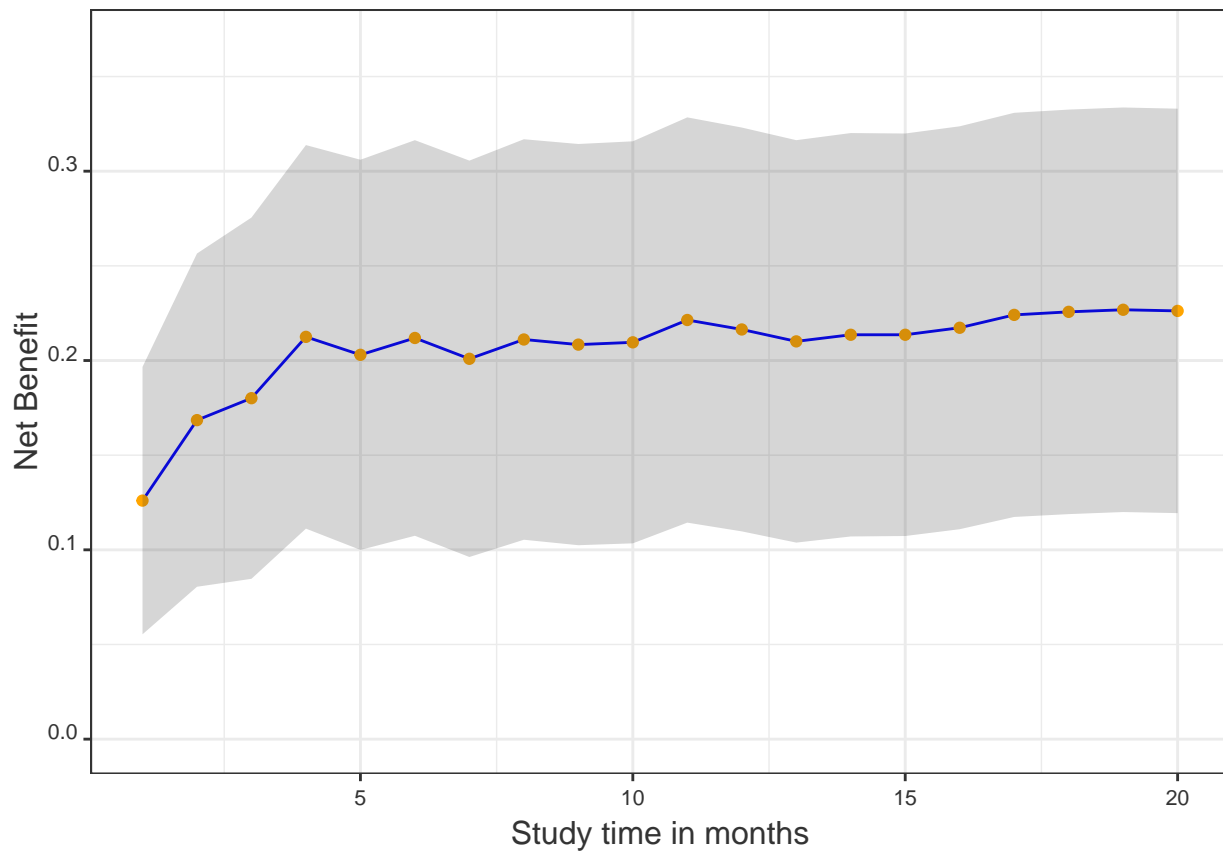
```
## Warning in stat_t.plot(data = data, Ctime = 1:20, arm.name = c("T", "C"), : The
## study entry time is missing, by default zero will be assigned to all subjects.
```



```
## $statistic
## [1] "W0"
##
## $values
##      time win_stat lower_ci upper_ci
## 1      1 1.288330 1.118610 1.483799
## 2      2 1.405292 1.178463 1.675780
## 3      3 1.439322 1.189282 1.741932
```

```
## 4      4 1.539683 1.257319 1.885459
## 5      5 1.509410 1.228297 1.854861
## 6      6 1.537749 1.247767 1.895123
## 7      7 1.502816 1.218909 1.852850
## 8      8 1.535176 1.242449 1.896870
## 9      9 1.526529 1.234985 1.886897
## 10     10 1.530364 1.237563 1.892441
## 11     11 1.568713 1.266420 1.943164
## 12     12 1.552323 1.254129 1.921418
## 13     13 1.531966 1.238594 1.894826
## 14     14 1.543235 1.247066 1.909741
## 15     15 1.543235 1.247667 1.908821
## 16     16 1.555257 1.257112 1.924113
## 17     17 1.577652 1.274376 1.953101
## 18     18 1.582978 1.278434 1.960069
## 19     19 1.586653 1.281371 1.964667
## 20     20 1.584647 1.279821 1.962077
```

```
## Warning in stat_t.plot(data = data, Ctime = 1:20, arm.name = c("T", "C"), : The
## study entry time is missing, by default zero will be assigned to all subjects.
```



```
## $statistic
## [1] "NB"
##
## $values
```

##	time	win_stat	lower_ci	upper_ci
## 1	1	0.1260	0.05537022	0.1966298
## 2	2	0.1685	0.08048314	0.2565169
## 3	3	0.1801	0.08468870	0.2755113
## 4	4	0.2125	0.11120260	0.3137974
## 5	5	0.2030	0.09995467	0.3060453
## 6	6	0.2119	0.10741801	0.3163820
## 7	7	0.2009	0.09620776	0.3055922
## 8	8	0.2111	0.10531974	0.3168803
## 9	9	0.2084	0.10243129	0.3143687
## 10	10	0.2096	0.10341917	0.3157808
## 11	11	0.2214	0.11436906	0.3284309
## 12	12	0.2164	0.10974438	0.3230556
## 13	13	0.2101	0.10381254	0.3163875
## 14	14	0.2136	0.10705653	0.3201435
## 15	15	0.2136	0.10729742	0.3199026
## 16	16	0.2173	0.11088796	0.3237120
## 17	17	0.2241	0.11735951	0.3308405
## 18	18	0.2257	0.11886407	0.3325359
## 19	19	0.2268	0.11995197	0.3336480
## 20	20	0.2262	0.11937912	0.3330209