

Simulation 3

2025-06-03

Modèle de Cox

$$\lambda_1 = 0.2; k_1 = 1.7$$

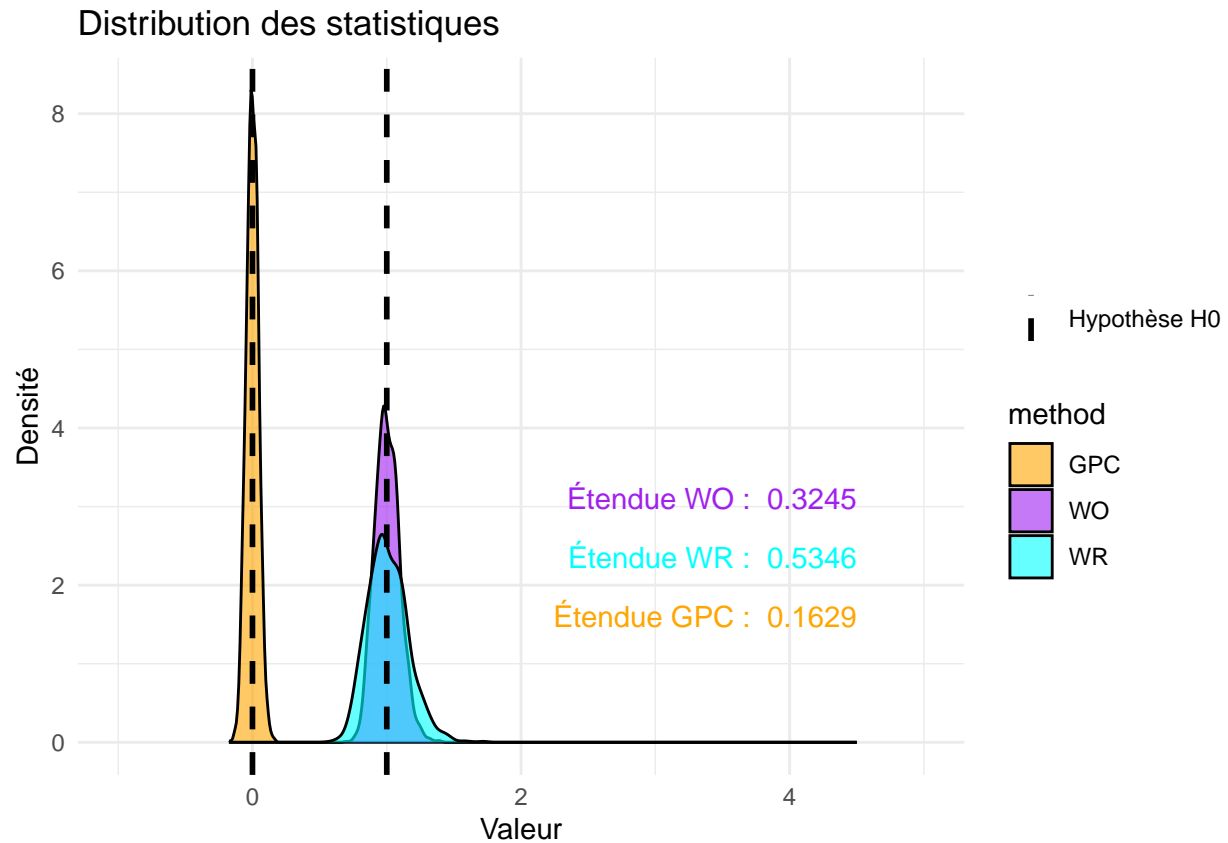
$$\lambda_2 = 0.15; k_2 = 1.5$$

$$\beta = -0.9$$

$$t_censure = c(1,3,6)$$

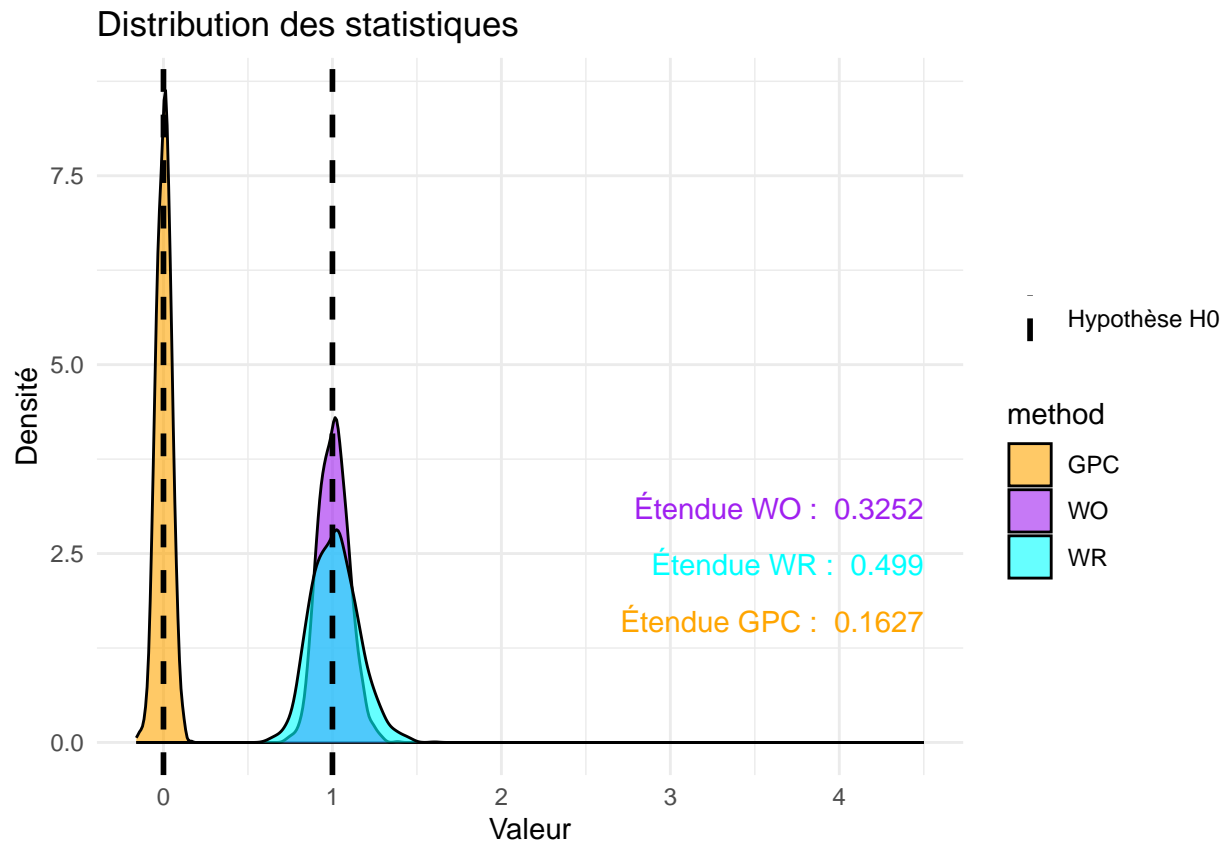
$$\tau = c(0,0)$$

```
## $Count
##      Win Loose Tie      WR      W0      GPC
## endpoint1 1951  1949 6099 1.00103 1.00040 0.00020
## endpoint2 1116  1124 3859 0.99288 0.99738 -0.00131
## overall   3068  3073 3859 0.99837 0.99900 -0.00050
##
## $value_tte_cont_C
##      Y_1_C (tte) Y_2_C (tte)
## min      4.103721  0.029174
## median   4.633222  4.103721
## max      9.000000  9.000000
##
## $value_tte_cont_T
##      Y_1_T (tte) Y_2_T (tte)
## min      0.068135  4.103721
## median   8.837879  8.897834
## max      9.000000  9.000000
##
## $censure
##      endpoint 1 endpoint2
## T  0.6681725 0.6670075
## C  0.7522250 0.7701025
##
## $p_val_GPC
## [1] "probabilité d'avoir des p-valeur < 0.05 pour la GPC:  0.045"
##
## $p_val_WR
## [1] "probabilité d'avoir des p-valeur < 0.05 pour le WR:  0"
##
## $p_val_W0
## [1] "probabilité d'avoir des p-valeur < 0.05 pour le W0:  0.0455"
```



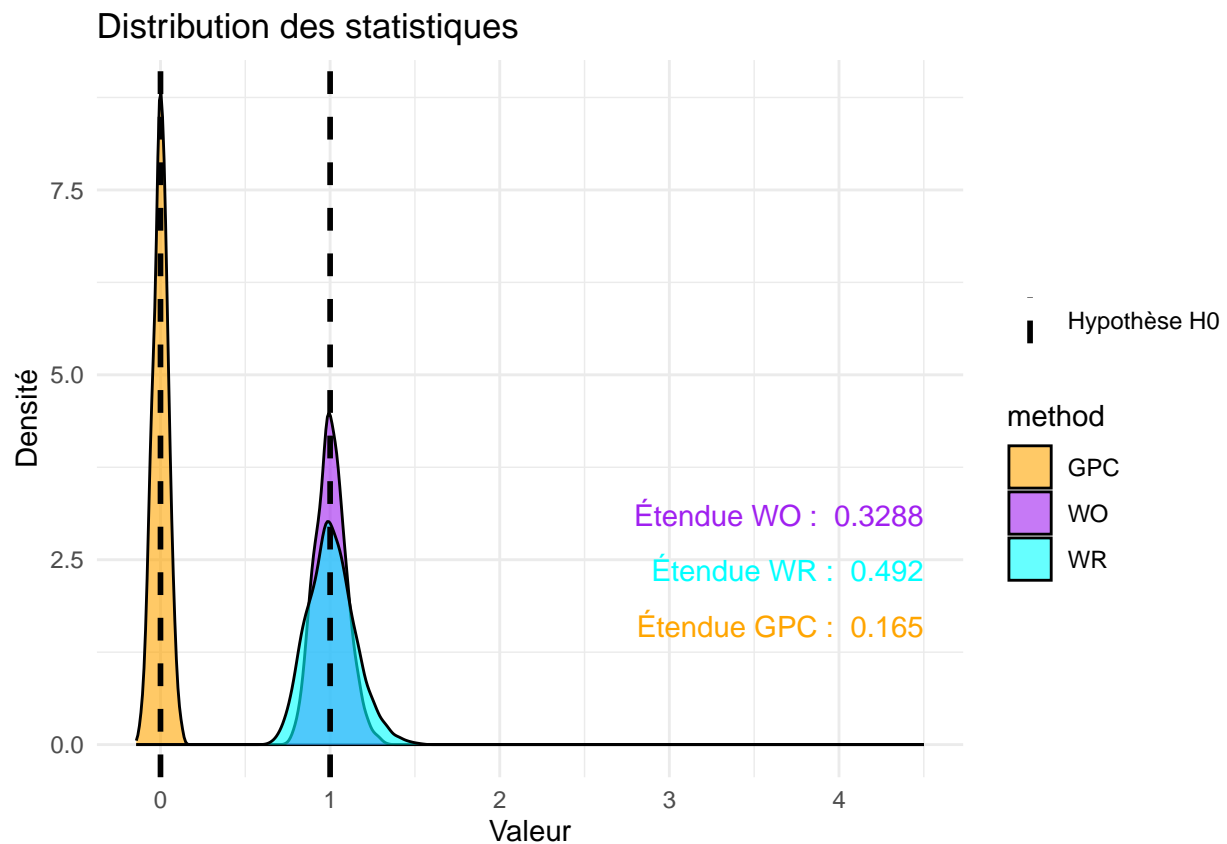
```
## $Count
##      Win Loose Tie      WR      WO      GPC
## endpoint1 2152  2143 5705 1.00420 1.00180 0.00090
## endpoint2 1151  1141 3413 1.00876 1.00351 0.00175
## overall   3303  3284 3413 1.00579 1.00381 0.00190
##
## $value_tte_cont_C
##      Y_1_C (tte) Y_2_C (tte)
## min      4.094447  0.0281325
## median    4.636539  4.0944470
## max     14.000000 14.0000000
##
## $value_tte_cont_T
##      Y_1_T (tte) Y_2_T (tte)
## min      0.070284  4.094447
## median    9.614773  9.868443
## max     14.000000 14.000000
##
## $censure
##      endpoint 1 endpoint2
## T  0.5608025 0.5550900
## C  0.7072300 0.7323675
##
## $p_val_GPC
## [1] "probabilité d'avoir des p-valeur < 0.05 pour la GPC:  0.0435"
##
```

```
## $p_val_WR
## [1] "probabilité d'avoir des p-valeur < 0.05 pour le WR:  0"
##
## $p_val_WO
## [1] "probabilité d'avoir des p-valeur < 0.05 pour le WO:  0.044"
```



```
## $Count
##      Win Loose Tie      WR      WO      GPC
## endpoint1 2214  2214 5572 1.00000 1.0000 0.0000
## endpoint2 1151  1141 3279 1.00876 1.0036 0.0018
## overall   3361  3361 3279 1.00000 1.0000 0.0000
##
## $value_tte_cont_C
##      Y_1_C (tte) Y_2_C (tte)
## min      4.104892  0.0291905
## median    4.636539  4.1048922
## max     19.000000 19.0000000
##
## $value_tte_cont_T
##      Y_1_T (tte) Y_2_T (tte)
## min      0.0662745  4.094447
## median    9.6009650  9.848439
## max     19.0000000 19.000000
##
## $censure
```

```
## endpoint 1 endpoint2
## T 0.5608025 0.4786325
## C 0.6863075 0.7323675
##
## $p_val_GPC
## [1] "probabilité d'avoir des p-valeur < 0.05 pour la GPC: 0.0495"
##
## $p_val_WR
## [1] "probabilité d'avoir des p-valeur < 0.05 pour le WR: 0"
##
## $p_val_WO
## [1] "probabilité d'avoir des p-valeur < 0.05 pour le WO: 0.0495"
```

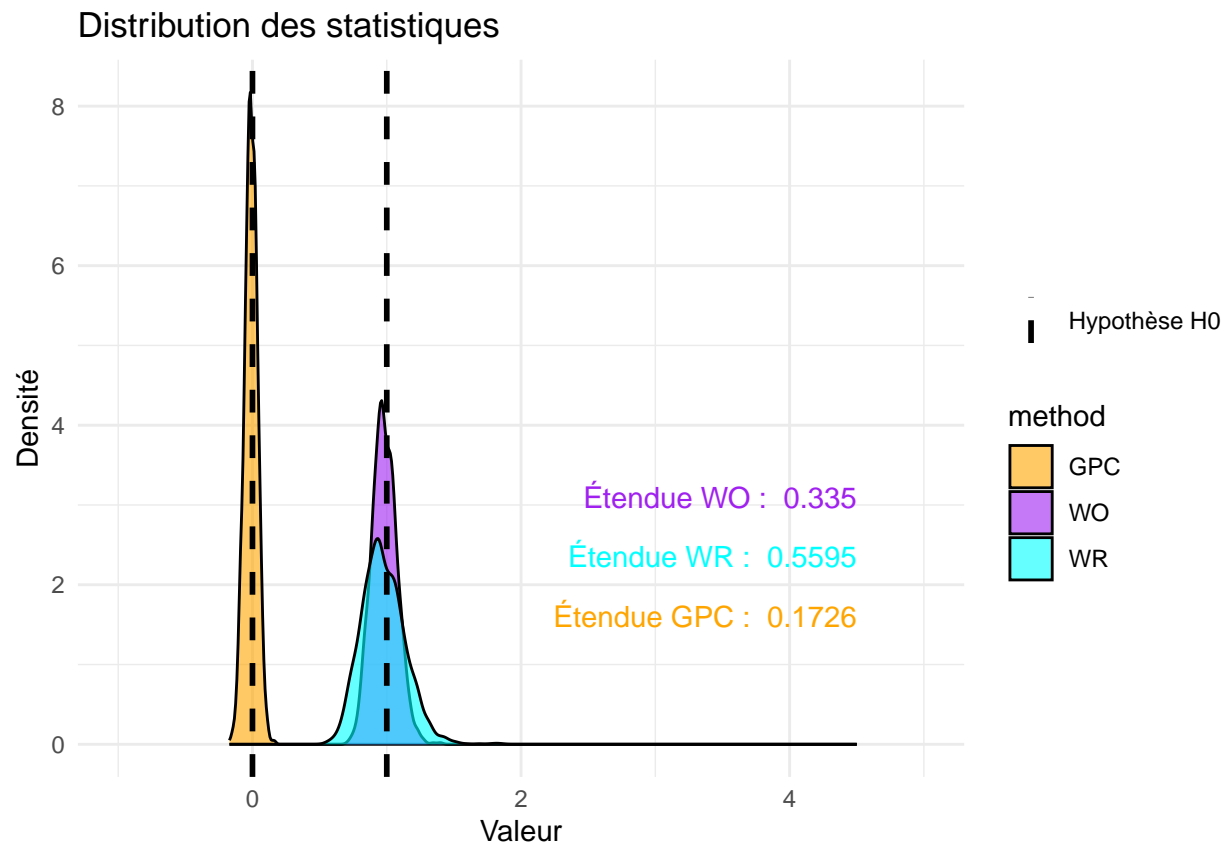


Modèle AFT

$\lambda_1 = 0.09; k_1 = 1.5 \lambda_2 = 0.1; k_2 = 1.5 \beta = 0.9 t_{\text{censure}} = c(2,6,11)$
 $\tau = c(0.5,0.7)$

```
## $Count
##      Win Loose Tie      WR      WO      GPC
## endpoint1 2741 2746 4513 0.99818 0.99900 -0.00050
## endpoint2  117   224 4172 0.52232 0.95368 -0.02371
## overall   2858 2970 4172 0.96229 0.97785 -0.01120
```

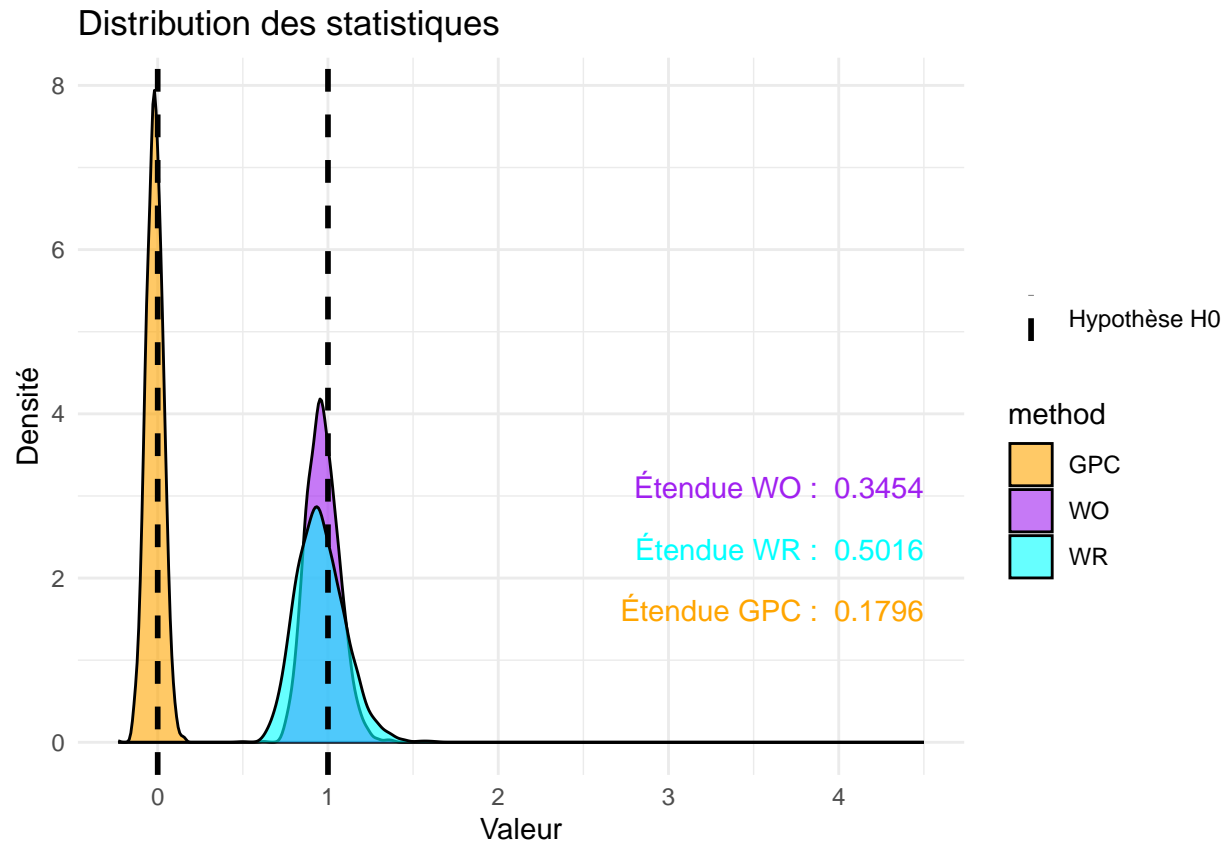
```
##
## $value_tte_cont_C
##      Y_1_C (tte) Y_2_C (tte)
## min      4.767588  0.034722
## median    5.893919  4.767588
## max      9.000000  9.000000
##
## $value_tte_cont_T
##      Y_1_T (tte) Y_2_T (tte)
## min      0.0610635  4.767588
## median    7.8595285  6.893745
## max      9.0000000  9.000000
##
## $censure
##      endpoint 1 endpoint2
## T  0.4167375 0.3935550
## C  0.3701700 0.3352925
##
## $p_val_GPC
## [1] "probabilité d'avoir des p-valeur < 0.05 pour la GPC:  0.0575"
##
## $p_val_WR
## [1] "probabilité d'avoir des p-valeur < 0.05 pour le WR:  0"
##
## $p_val_WO
## [1] "probabilité d'avoir des p-valeur < 0.05 pour le WO:  0.0575"
```



```

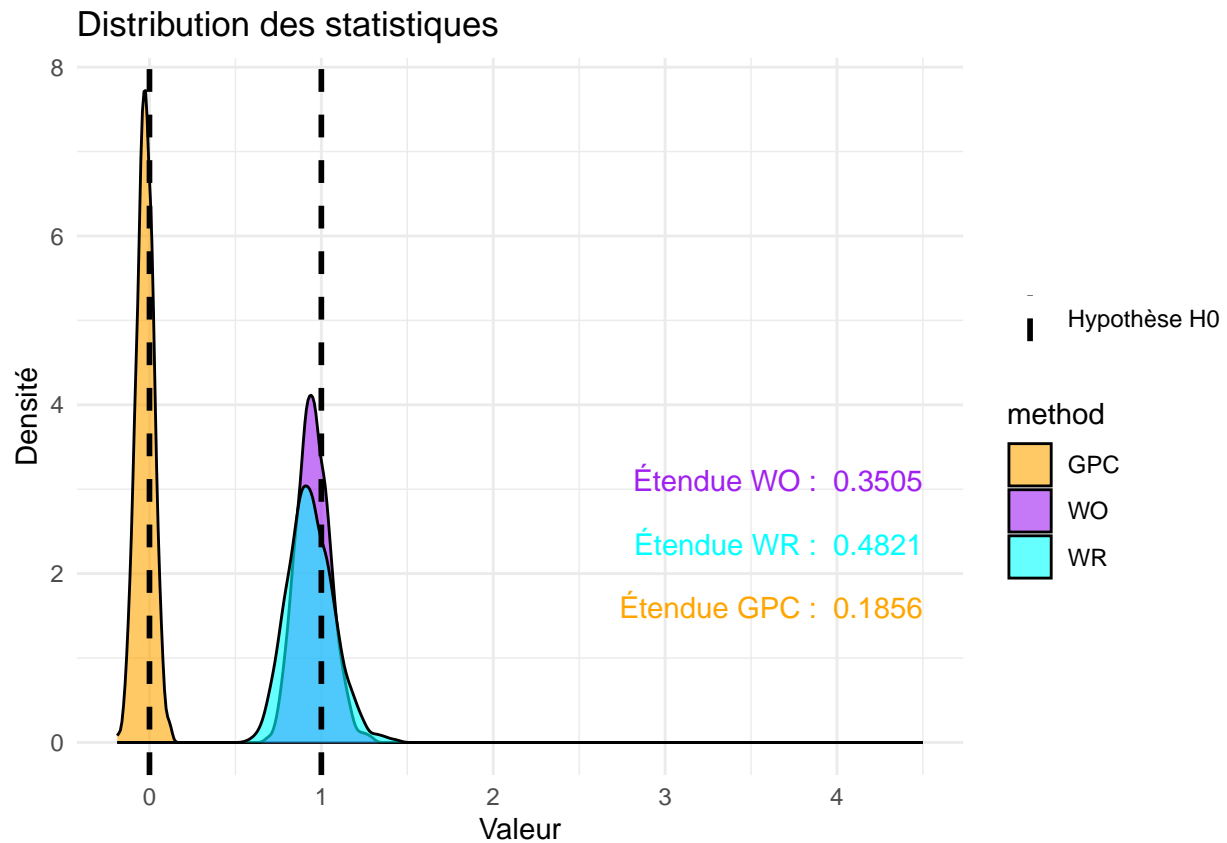
## $Count
##      Win Loose Tie      WR      W0      GPC
## endpoint1 3084 3074 4513 1.00325 1.00188 0.00094
## endpoint2 203  393 3247 0.51654 0.90578 -0.04944
## overall   3287 3467 3247 0.94808 0.96464 -0.01800
##
## $value_tte_cont_C
##      Y_1_C (tte) Y_2_C (tte)
## min      4.751186  0.0337675
## median    5.907094  4.7511860
## max      14.000000  14.0000000
##
## $value_tte_cont_T
##      Y_1_T (tte) Y_2_T (tte)
## min      0.063318  4.751186
## median    7.926583  6.906100
## max      14.000000  14.000000
##
## $censure
##      endpoint 1 endpoint2
## T  0.5378000 0.5011175
## C  0.4609725 0.4071900
##
## $p_val_GPC
## [1] "probabilité d'avoir des p-valeur < 0.05 pour la GPC:  0.0625"
##
## $p_val_WR
## [1] "probabilité d'avoir des p-valeur < 0.05 pour le WR:  0"
##
## $p_val_W0
## [1] "probabilité d'avoir des p-valeur < 0.05 pour le W0:  0.0635"

```



```
## $Count
##      Win Loose Tie      WR      WO      GPC
## endpoint1 3212  3212 3576 1.00000 1.00000 0.00000
## endpoint2  262   523 2791 0.50096 0.86396 -0.07299
## overall   3474  3735 2791 0.93012 0.94913 -0.02610
##
## $value_tte_cont_C
##      Y_1_C (tte) Y_2_C (tte)
## min      0.0486785  0.034702
## median    5.9019175  4.748464
## max     19.0000000 19.000000
##
## $value_tte_cont_T
##      Y_1_T (tte) Y_2_T (tte)
## min      0.058979  4.748464
## median    7.914800  6.900110
## max     19.000000 19.000000
##
## $censure
##      endpoint 1 endpoint2
## T  0.6192325 0.5671725
## C  0.5146975 0.4497475
##
## $p_val_GPC
## [1] "probabilité d'avoir des p-valeur < 0.05 pour la GPC:  0.087"
##
```

```
## $p_val_WR
## [1] "probabilité d'avoir des p-valeur < 0.05 pour le WR: 0"
##
## $p_val_WO
## [1] "probabilité d'avoir des p-valeur < 0.05 pour le WO: 0.088"
```



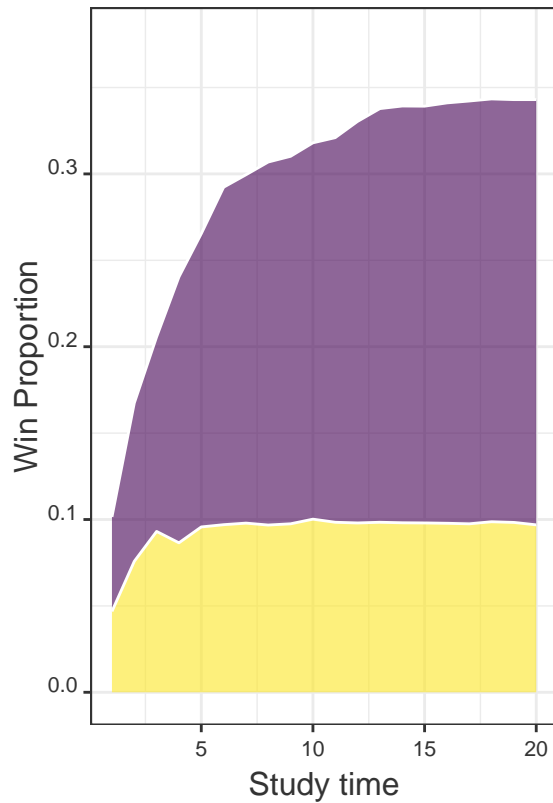
Plots packages

Cox

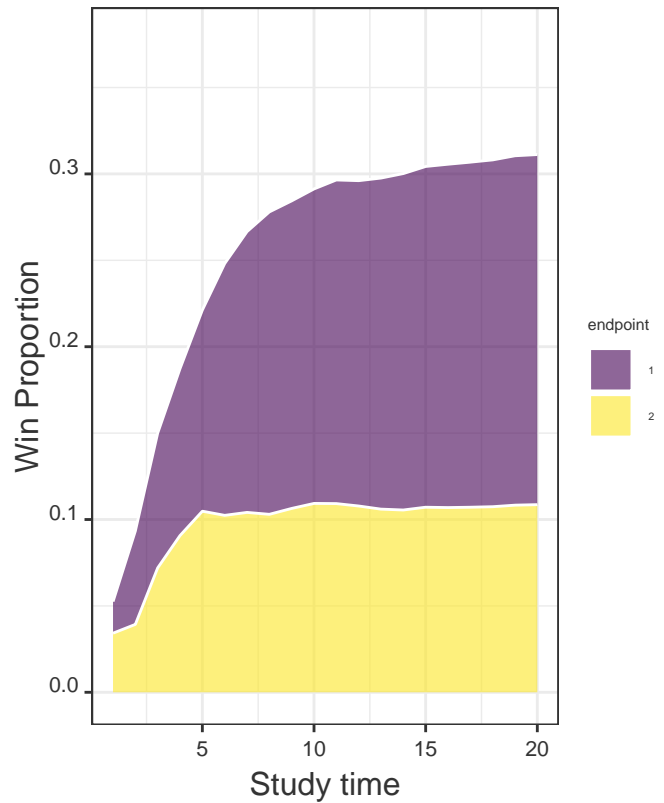
```
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##  0.021   5.741   13.945   20.598   28.247  123.154
```

```
## 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.
```


The win proportion for the treat



The win proportion for the control group



```
## $win_trt_t
##   time endpoint1 endpoint2
## 1     1    0.0547    0.0468
## 2     2    0.0916    0.0758
## 3     3    0.1126    0.0931
## 4     4    0.1539    0.0865
## 5     5    0.1697    0.0957
## 6     6    0.1953    0.0970
## 7     7    0.2016    0.0979
## 8     8    0.2101    0.0968
## 9     9    0.2127    0.0975
## 10    10    0.2178    0.1002
## 11    11    0.2226    0.0984
## 12    12    0.2324    0.0980
## 13    13    0.2394    0.0984
## 14    14    0.2412    0.0981
## 15    15    0.2412    0.0980
## 16    16    0.2433    0.0978
## 17    17    0.2447    0.0975
## 18    18    0.2447    0.0987
## 19    19    0.2447    0.0983
## 20    20    0.2461    0.0969
##
## $win_con_t
##   time endpoint1 endpoint2
## 1     1    0.0183    0.0342
```

```
## 2      2      0.0541      0.0393
## 3      3      0.0780      0.0720
## 4      4      0.0966      0.0907
## 5      5      0.1164      0.1048
## 6      6      0.1457      0.1024
## 7      7      0.1625      0.1041
## 8      8      0.1750      0.1030
## 9      9      0.1780      0.1064
## 10     10     0.1820      0.1093
## 11     11     0.1873      0.1092
## 12     12     0.1883      0.1078
## 13     13     0.1916      0.1060
## 14     14     0.1947      0.1055
## 15     15     0.1972      0.1071
## 16     16     0.1987      0.1069
## 17     17     0.1997      0.1071
## 18     18     0.2007      0.1074
## 19     19     0.2022      0.1083
## 20     20     0.2026      0.1086
```

```
##
```

```
## $win_tie_t
```

```
##      time proportion of ties
```

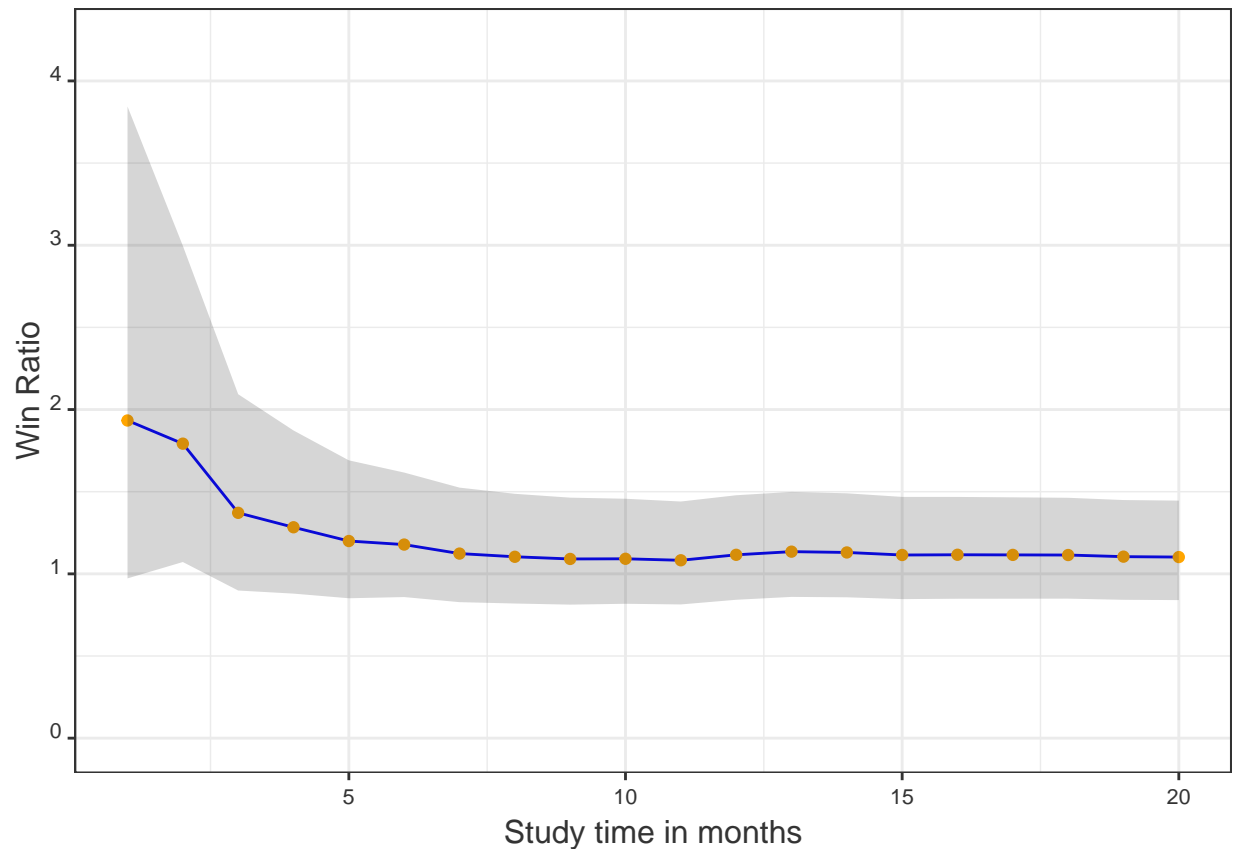
```
## 1      1      0.8460
## 2      2      0.7392
## 3      3      0.6443
## 4      4      0.5723
## 5      5      0.5134
## 6      6      0.4596
## 7      7      0.4339
## 8      8      0.4151
## 9      9      0.4054
## 10     10     0.3907
## 11     11     0.3825
## 12     12     0.3735
## 13     13     0.3646
## 14     14     0.3605
## 15     15     0.3565
## 16     16     0.3533
## 17     17     0.3510
## 18     18     0.3485
## 19     19     0.3465
## 20     20     0.3458
```

```
##
```

```
## $max_study_time
```

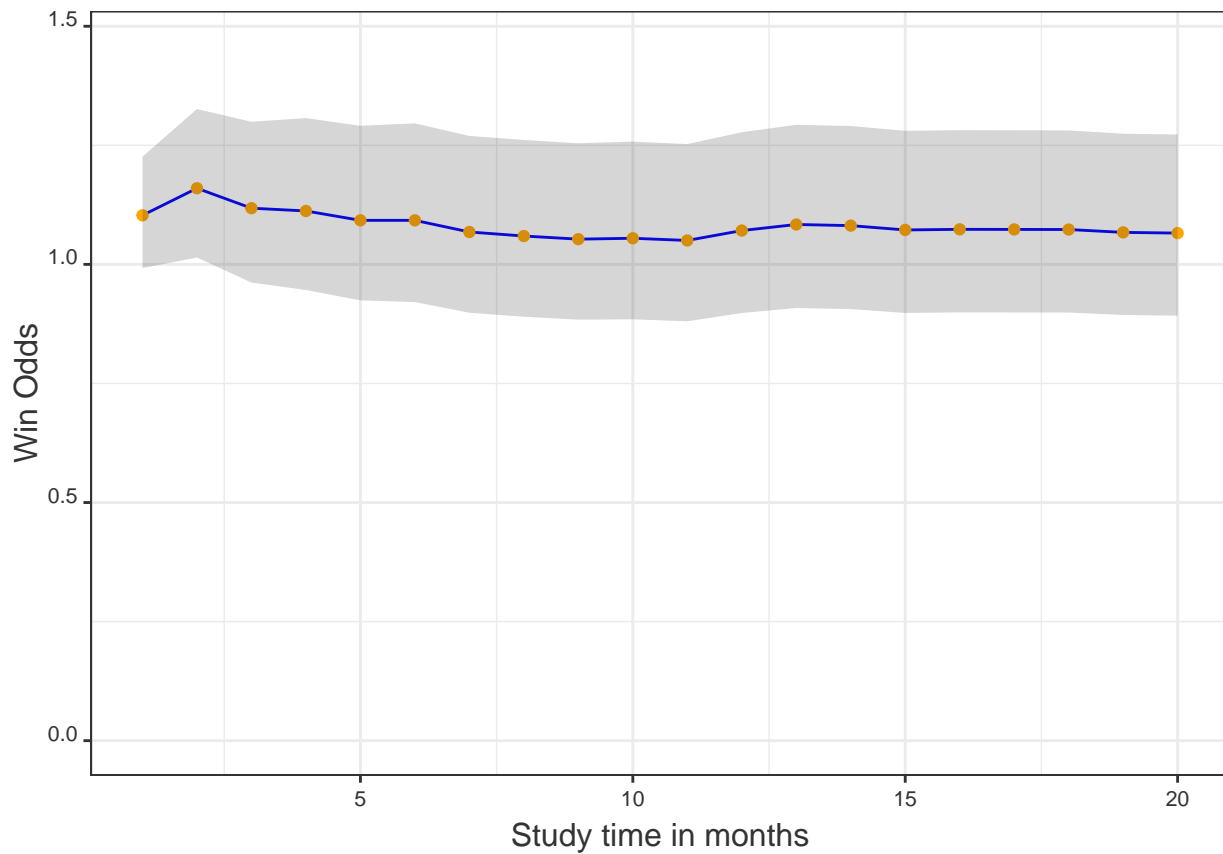
```
## [1] 123.154
```

```
## 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  1.933333 0.9722901 3.844303
## 2      2  1.792291 1.0720075 2.996535
## 3      3  1.371333 0.8984388 2.093137
## 4      4  1.283502 0.8797470 1.872559
## 5      5  1.199819 0.8513678 1.690886
## 6      6  1.178154 0.8586815 1.616486
## 7      7  1.123406 0.8277094 1.524739
## 8      8  1.103957 0.8194678 1.487210
## 9      9  1.090717 0.8126991 1.463843
## 10     10  1.091658 0.8178907 1.457062
## 11     11  1.082631 0.8137889 1.440287
## 12     12  1.115839 0.8422226 1.478347
## 13     13  1.135081 0.8596893 1.498690
## 14     14  1.130247 0.8572047 1.490259
## 15     15  1.114689 0.8461870 1.468390
## 16     16  1.116165 0.8485979 1.468097
## 17     17  1.115385 0.8487443 1.465792
## 18     18  1.114573 0.8491259 1.463003
## 19     19  1.104670 0.8420348 1.449222
## 20     20  1.102185 0.8402782 1.445726
```

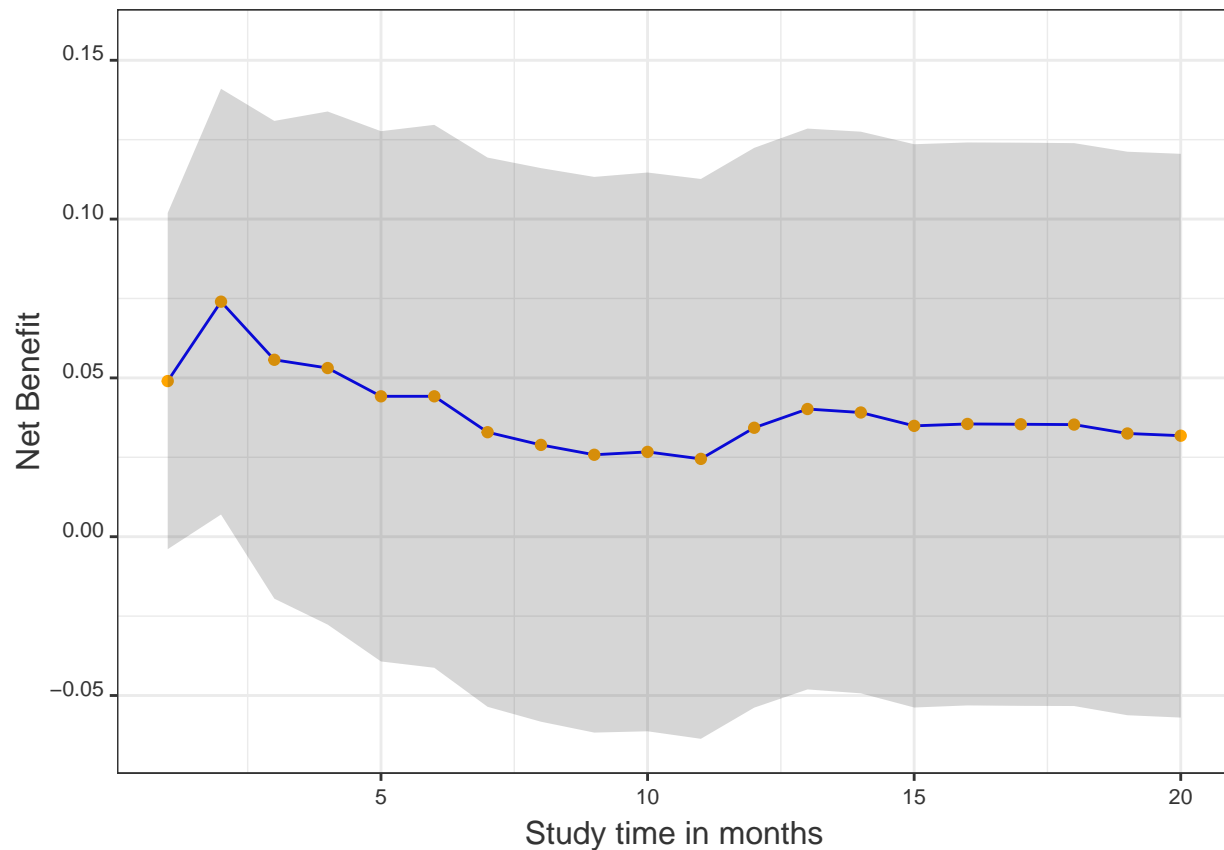
```
## Warning in stat_t.plot(data = data, Ctime = 1:20, arm.name = c("T", "C"), : The
## study entry time is missing, by default zero will be assigned to all subjects.
```



```
## $statistic
## [1] "WO"
##
## $values
##      time win_stat lower_ci upper_ci
## 1      1  1.103049 0.9922573 1.226212
## 2      2  1.159827 1.0143315 1.326193
## 3      3  1.117971 0.9618439 1.299441
## 4      4  1.112155 0.9462504 1.307148
## 5      5  1.092488 0.9245150 1.290980
## 6      6  1.092488 0.9208353 1.296138
## 7      7  1.068038 0.8984393 1.269653
## 8      8  1.059520 0.8900437 1.261267
## 9      9  1.052967 0.8839652 1.254279
## 10     10 1.054865 0.8846997 1.257760
## 11     11 1.050231 0.8805096 1.252666
## 12     12 1.071037 0.8979700 1.277458
## 13     13 1.083767 0.9083490 1.293062
## 14     14 1.081382 0.9061132 1.290553
## 15     15 1.072324 0.8980637 1.280398
## 16     16 1.073613 0.8992356 1.281806
## 17     17 1.073398 0.8989975 1.281632
```

```
## 18 18 1.073183 0.8988930 1.281268
## 19 19 1.067183 0.8936960 1.274349
## 20 20 1.065689 0.8923703 1.272670
```

```
## 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.
```



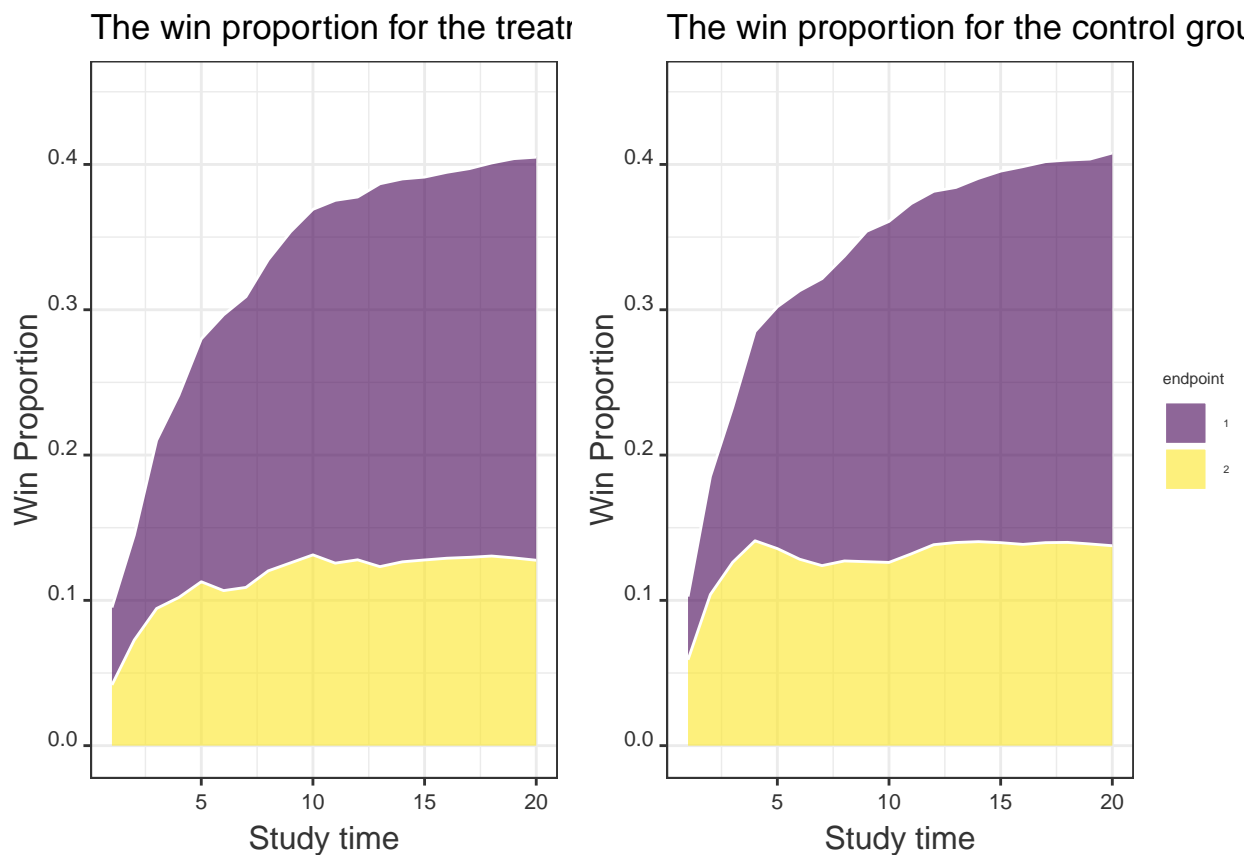
```
## $statistic
## [1] "NB"
##
## $values
##      time win_stat      lower_ci upper_ci
## 1      1  0.0490 -0.003925694 0.1019257
## 2      2  0.0740  0.006979384 0.1410206
## 3      3  0.0557 -0.019509245 0.1309092
## 4      4  0.0531 -0.027674027 0.1338740
## 5      5  0.0442 -0.039271815 0.1276718
## 6      6  0.0442 -0.041265878 0.1296659
## 7      7  0.0329 -0.053559945 0.1193599
## 8      8  0.0289 -0.058250395 0.1160504
## 9      9  0.0258 -0.061674533 0.1132745
## 10    10  0.0267 -0.061259839 0.1146598
## 11    11  0.0245 -0.063632133 0.1126321
## 12    12  0.0343 -0.053822793 0.1224228
## 13    13  0.0402 -0.048085002 0.1284850
```

```
## 14 14 0.0391 -0.049315442 0.1275154
## 15 15 0.0349 -0.053771325 0.1235713
## 16 16 0.0355 -0.053120030 0.1241200
## 17 17 0.0354 -0.053252314 0.1240523
## 18 18 0.0353 -0.053310299 0.1239103
## 19 19 0.0325 -0.056206241 0.1212062
## 20 20 0.0318 -0.056947769 0.1205478
```

AFT

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
## 0.008   5.426  14.591  20.295  26.257 116.471
```

```
## 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      0.0533      0.0418
## 2      2      0.0722      0.0727
## 3      3      0.1157      0.0944
## 4      4      0.1393      0.1020
## 5      5      0.1671      0.1128
## 6      6      0.1898      0.1067
```

## 7	7	0.2001	0.1089
## 8	8	0.2141	0.1203
## 9	9	0.2279	0.1258
## 10	10	0.2378	0.1313
## 11	11	0.2497	0.1256
## 12	12	0.2497	0.1279
## 13	13	0.2635	0.1232
## 14	14	0.2635	0.1265
## 15	15	0.2635	0.1278
## 16	16	0.2656	0.1290
## 17	17	0.2675	0.1296
## 18	18	0.2705	0.1305
## 19	19	0.2748	0.1292
## 20	20	0.2774	0.1276

##

\$win_con_t

##	time	endpoint1	endpoint2
## 1	1	0.0435	0.0591
## 2	2	0.0811	0.1040
## 3	3	0.1066	0.1262
## 4	4	0.1440	0.1410
## 5	5	0.1664	0.1356
## 6	6	0.1848	0.1283
## 7	7	0.1975	0.1239
## 8	8	0.2097	0.1271
## 9	9	0.2274	0.1266
## 10	10	0.2347	0.1261
## 11	11	0.2411	0.1320
## 12	12	0.2432	0.1383
## 13	13	0.2444	0.1398
## 14	14	0.2500	0.1404
## 15	15	0.2557	0.1397
## 16	16	0.2600	0.1385
## 17	17	0.2622	0.1397
## 18	18	0.2631	0.1399
## 19	19	0.2649	0.1388
## 20	20	0.2703	0.1376

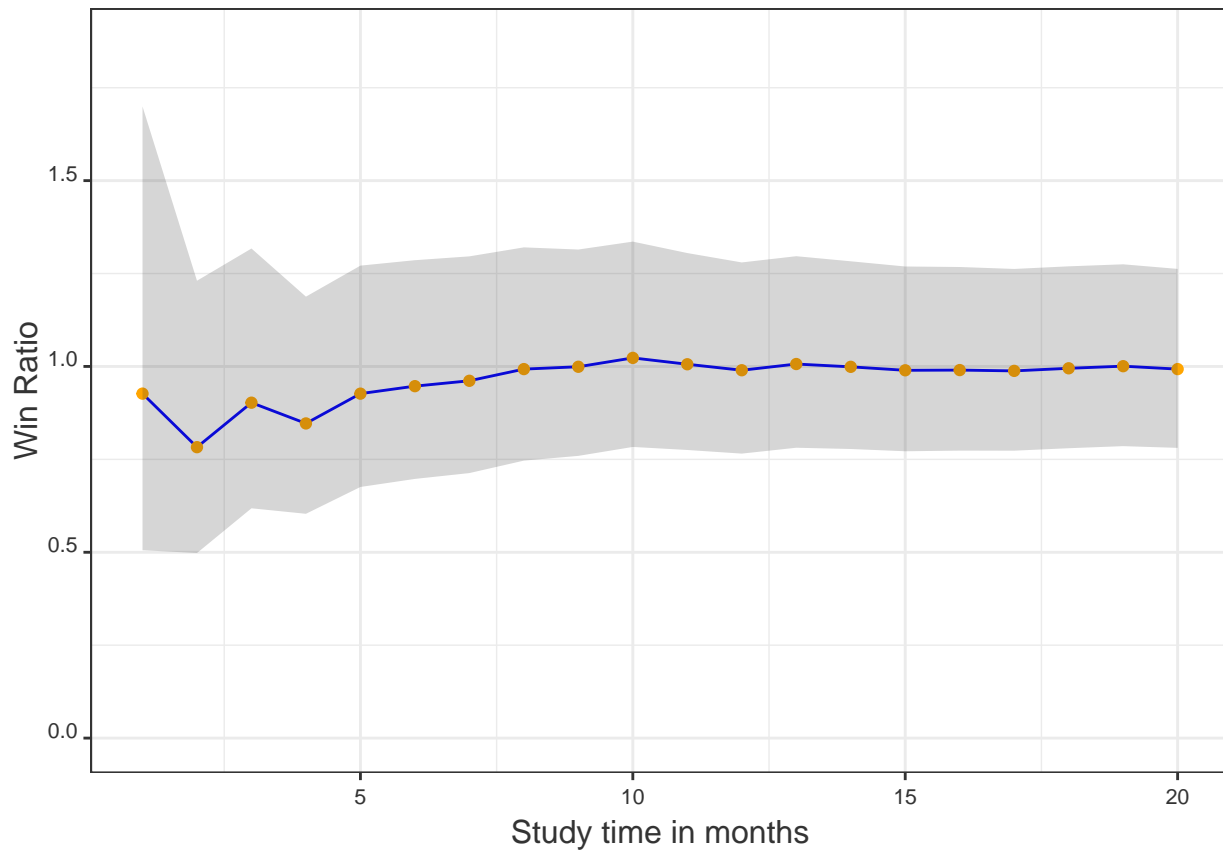
##

\$win_tie_t

##	time	proportion of ties
## 1	1	0.8023
## 2	2	0.6700
## 3	3	0.5571
## 4	4	0.4737
## 5	5	0.4181
## 6	6	0.3904
## 7	7	0.3696
## 8	8	0.3288
## 9	9	0.2923
## 10	10	0.2701
## 11	11	0.2516
## 12	12	0.2409
## 13	13	0.2291
## 14	14	0.2196

```
## 15 15 0.2133
## 16 16 0.2069
## 17 17 0.2010
## 18 18 0.1960
## 19 19 0.1923
## 20 20 0.1871
##
## $max_study_time
## [1] 116.471
```

```
## 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.
```

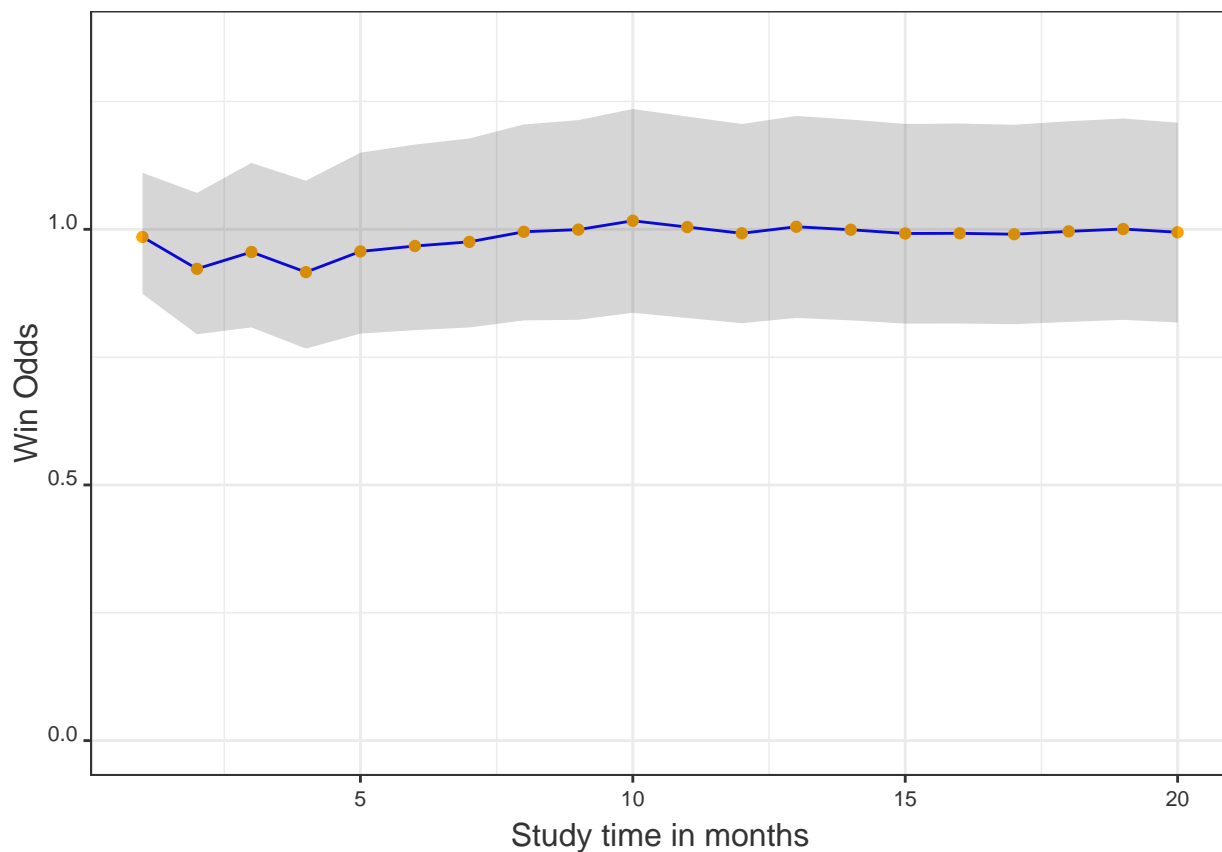


```
## $statistic
## [1] "WR"
##
## $values
##   time win_stat lower_ci upper_ci
## 1     1 0.9269006 0.5054997 1.699595
## 2     2 0.7828201 0.4979506 1.230659
## 3     3 0.9024914 0.6182851 1.317339
## 4     4 0.8466667 0.6034926 1.187826
## 5     5 0.9268212 0.6757145 1.271243
## 6     6 0.9469818 0.6973905 1.285900
## 7     7 0.9614188 0.7130725 1.296258
```



```
## 8      8 0.9928741 0.7465689 1.320439
## 9      9 0.9991525 0.7593994 1.314599
## 10     10 1.0230044 0.7833962 1.335899
## 11     11 1.0058965 0.7752560 1.305153
## 12     12 0.9897772 0.7654565 1.279836
## 13     13 1.0065070 0.7812733 1.296674
## 14     14 0.9989754 0.7778531 1.282957
## 15     15 0.9896308 0.7717815 1.268972
## 16     16 0.9902133 0.7735070 1.267632
## 17     17 0.9880567 0.7733708 1.262339
## 18     18 0.9950372 0.7799676 1.269410
## 19     19 1.0007431 0.7855660 1.274860
## 20     20 0.9928904 0.7808732 1.262473
```

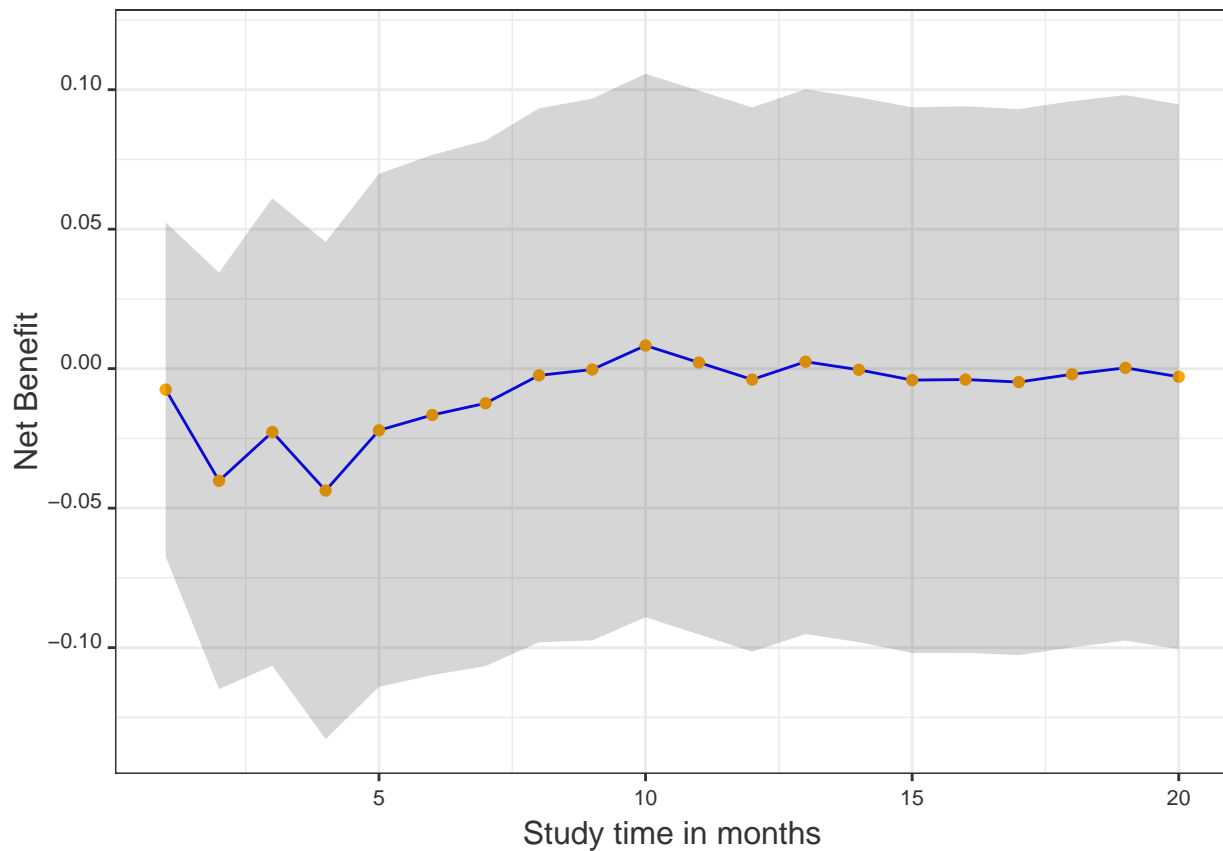
```
## Warning in stat_t.plot(data = data, Ctime = 1:20, arm.name = c("T", "C"), : The
## study entry time is missing, by default zero will be assigned to all subjects.
```



```
## $statistic
## [1] "W0"
##
## $values
##      time  win_stat lower_ci upper_ci
## 1      1  0.9851117 0.8738334 1.110561
## 2      2  0.9227072 0.7947434 1.071275
## 3      3  0.9556077 0.8082234 1.129868
```

```
## 4      4 0.9162595 0.7667098 1.094979
## 5      5 0.9567557 0.7960592 1.149891
## 6      6 0.9673421 0.8027591 1.165668
## 7      7 0.9755038 0.8080092 1.177719
## 8      8 0.9952115 0.8218726 1.205109
## 9      9 0.9994002 0.8230170 1.213585
## 10     10 1.0167389 0.8367909 1.235384
## 11     11 1.0044097 0.8265340 1.220565
## 12     12 0.9922303 0.8163645 1.205982
## 13     13 1.0050125 0.8267264 1.221747
## 14     14 0.9992003 0.8219710 1.214643
## 15     15 0.9918335 0.8156274 1.206107
## 16     16 0.9922303 0.8157198 1.206935
## 17     17 0.9904459 0.8143701 1.204591
## 18     18 0.9960080 0.8188975 1.211424
## 19     19 1.0006002 0.8228848 1.216696
## 20     20 0.9942168 0.8178595 1.208602
```

```
## 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	-0.0075	-0.06743264	0.05243264
## 2	2	-0.0402	-0.11484633	0.03444633
## 3	3	-0.0227	-0.10645451	0.06105451
## 4	4	-0.0437	-0.13279558	0.04539558
## 5	5	-0.0221	-0.11403728	0.06983728
## 6	6	-0.0166	-0.10984880	0.07664880
## 7	7	-0.0124	-0.10659029	0.08179029
## 8	8	-0.0024	-0.09808494	0.09328494
## 9	9	-0.0003	-0.09738920	0.09678920
## 10	10	0.0083	-0.08909073	0.10569073
## 11	11	0.0022	-0.09525712	0.09965712
## 12	12	-0.0039	-0.10144717	0.09364717
## 13	13	0.0025	-0.09514075	0.10014075
## 14	14	-0.0004	-0.09802510	0.09722510
## 15	15	-0.0041	-0.10189880	0.09369880
## 16	16	-0.0039	-0.10184218	0.09404218
## 17	17	-0.0048	-0.10267012	0.09307012
## 18	18	-0.0020	-0.09989815	0.09589815
## 19	19	0.0003	-0.09746954	0.09806954
## 20	20	-0.0029	-0.10053232	0.09473232