Heterogeneity in treatment effects of 'Call to action' using causal tree method

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```
## Loading required package: rpart
## Loading required package: rpart.plot
## Loading required package: data.table
##
## Attaching package: 'dplyr'
## The following objects are masked from 'package:data.table':
##
##     between, last
## The following objects are masked from 'package:stats':
##
##     filter, lag
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

Altruistic group with number_referrals as target_variable

```
## [1] 2
## [1] "CT"
##
##
## Node number 1: 4076 observations    Complexity param= 260864.205682
##   response estimate=0.005186,  risk/n= 64.000050
##
##   Primary splits:
##  var2 >  94.5 to the left, improve=0.327, (0 missing)
##  var4 < 14.97 to the left, improve=0.001,  (0 missing)
##
##
## Node number 1: 2547 observations    Complexity param= 163007.903105
##   response estimate=0.019641,  risk/n= 63.999834
##
##   Primary splits:
##  var4 < 17.995 to the left, improve=0.055,  (0 missing)
##  var2 >  39.5 to the left, improve=0.010, (0 missing)
##  var3 >   4.5 to the left, improve=0.009, (0 missing)
##
##
## Node number 1: 2263 observations    Complexity param= 144831.576238
##   response estimate=0.022138,  risk/n= 63.999789
##
##   Primary splits:
##  var2 >  56.5 to the left, improve=0.015, (0 missing)
##  var3 >   4.5 to the left, improve=0.011, (0 missing)
##
##
## Node number 1: 1619 observations    Complexity param= 144831.521536
##   response estimate=0.015727,  risk/n= 63.999911
```

```
##
##   Primary splits:
##  var2 <  67.5 to the left, improve=0.018,  (0 missing)
##  var3 >   3.5 to the left, improve=0.008, (0 missing)
##  var4 < 23.945 to the left, improve=0.003,  (0 missing)
##
##
## Node number 1: 1450 observations    Complexity param= 92799.855420
##   response estimate=0.017621,  risk/n= 63.999888
##
##   Primary splits:
##  var3 >   3.5 to the left, improve=0.009, (0 missing)
##
##
## Node number 1: 644 observations     Complexity param= 41215.666116
##   response estimate=0.038526,  risk/n= 63.999458
##
##   Primary splits:
##  var2 <  31.5 to the left, improve=0.046,  (0 missing)
##  var3 >   4.5 to the left, improve=0.007, (0 missing)
##
##
## Node number 1: 3668 observations    Complexity param= 234751.994395
##   response estimate=0.009400,  risk/n= 63.999998
##
##   Primary splits:
##  var2 >  94.5 to the left, improve=0.195, (0 missing)
##  var4 < 17.995 to the left, improve=0.010,  (0 missing)
##
##
## Node number 1: 2298 observations    Complexity param= 147071.762857
##   response estimate=0.020824,  risk/n= 63.999812
##
##   Primary splits:
##  var4 < 17.995 to the left, improve=0.056,  (0 missing)
##  var2 >  39.5 to the left, improve=0.034, (0 missing)
##  var3 >   4.5 to the left, improve=0.008, (0 missing)
##
##
## Node number 1: 2038 observations    Complexity param= 130431.568314
##   response estimate=0.023511,  risk/n= 63.999760
##
##   Primary splits:
##  var2 >  56.5 to the left, improve=0.044, (0 missing)
##  var3 >   4.5 to the left, improve=0.011, (0 missing)
##
##
## Node number 1: 1463 observations    Complexity param= 130431.511868
##   response estimate=0.015954,  risk/n= 63.999909
##
##   Primary splits:
##  var2 <  67.5 to the left, improve=0.017,  (0 missing)
##  var3 >   3.5 to the left, improve=0.008, (0 missing)
##  var4 < 23.945 to the left, improve=0.002,  (0 missing)
##
##
## Node number 1: 1306 observations    Complexity param= 83583.866557
##   response estimate=0.017945,  risk/n= 63.999885
```

```
##
##   Primary splits:
##  var3 >   3.5 to the left, improve=0.008, (0 missing)
##
##
## Node number 1: 575 observations     Complexity param= 36799.645310
##   response estimate=0.042991,  risk/n= 63.999307
##
##   Primary splits:
##  var2 <  31.5 to the left, improve=0.051,  (0 missing)
##  var3 >   4.5 to the left, improve=0.007, (0 missing)
##
##
## Node number 1: 3668 observations    Complexity param= 234752.224107
##   response estimate=0.004875,  risk/n= 64.000061
##
##   Primary splits:
##  var2 >  94.5 to the left, improve=0.342, (0 missing)
##  var4 < 14.97 to the left, improve=0.001,  (0 missing)
##
##
## Node number 1: 1380 observations    Complexity param= 234752.224107
##   response estimate=-0.021309,  risk/n= 64.000214
##
##   Primary splits:
##  var4 < 215.43 to the left, improve=0.000,  (0 missing)
##
##
## Node number 1: 2288 observations    Complexity param= 146431.928697
##   response estimate=0.020475,  risk/n= 63.999819
##
##   Primary splits:
##  var4 < 17.995 to the left, improve=0.055,  (0 missing)
##  var3 >   4.5 to the left, improve=0.009, (0 missing)
##  var2 <  16.5 to the left, improve=0.007,  (0 missing)
##
##
## Node number 1: 2029 observations    Complexity param= 129855.586709
##   response estimate=0.023134,  risk/n= 63.999769
##
##   Primary splits:
##  var3 >   4.5 to the left, improve=0.011, (0 missing)
##  var2 <  16.5 to the left, improve=0.008,  (0 missing)
##
##
## Node number 1: 1975 observations    Complexity param= 126399.532022
##   response estimate=0.023720,  risk/n= 63.999758
##
##   Primary splits:
##  var2 <  16.5 to the left, improve=0.008,  (0 missing)
##
##
## Node number 1: 1943 observations    Complexity param= 124351.521079
##   response estimate=0.024110,  risk/n= 63.999749
##
##   Primary splits:
##  var2 >  38.5 to the left, improve=0.019, (0 missing)
##
```

```
##
## Node number 1: 1699 observations    Complexity param= 124351.513206
##   response estimate=0.019411,  risk/n= 63.999852
##
##   Primary splits:
##  var4 < 23.945 to the left, improve=0.008,  (0 missing)
##  var3 >   3.5 to the left, improve=0.008, (0 missing)
##  var2 <  41.5 to the left, improve=0.006,  (0 missing)
##
##
## Node number 1: 1643 observations    Complexity param= 105151.748328
##   response estimate=0.020052,  risk/n= 63.999842
##
##   Primary splits:
##  var3 >   3.5 to the left, improve=0.008, (0 missing)
##  var2 <  41.5 to the left, improve=0.006,  (0 missing)
##
##
## Node number 1: 1595 observations    Complexity param= 102079.740281
##   response estimate=0.020667,  risk/n= 63.999832
##
##   Primary splits:
##  var2 <  41.5 to the left, improve=0.006,  (0 missing)
##
##
## Node number 1: 244 observations     Complexity param= 15615.764878
##   response estimate=0.057018,  risk/n= 63.998960
##
##   Primary splits:
##  var2 <  31.5 to the left, improve=0.068,  (0 missing)
##
##
## Node number 1: 3668 observations    Complexity param= 234752.242281
##   response estimate=0.002845,  risk/n= 64.000066
##
##   Primary splits:
##  var2 >  94.5 to the left, improve=0.306, (0 missing)
##
##
## Node number 1: 1383 observations    Complexity param= 234752.242281
##   response estimate=-0.020411,  risk/n= 64.000175
##
##   Primary splits:
##  var4 > 27.955 to the left, improve=0.000, (0 missing)
##
##
## Node number 1: 2285 observations    Complexity param= 146240.000009
##   response estimate=0.017658,  risk/n= 63.999866
##
##   Primary splits:
##  var4 < 23.945 to the left, improve=0.050,  (0 missing)
##  var2 <  31.5 to the left, improve=0.020,  (0 missing)
##  var0 splits as LR,  improve=0.015, (0 missing)
##  var1 <   5.5 to the left, improve=0.012,  (0 missing)
##  var3 >   4.5 to the left, improve=0.006, (0 missing)
##
##
## Node number 1: 1962 observations    Complexity param= 125567.693648
```

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##   response estimate=0.020541,  risk/n= 63.999819
##
##   Primary splits:
##  var2 <  31.5 to the left, improve=0.025,  (0 missing)
##  var4 > 255.44 to the left, improve=0.021, (0 missing)
##  var0 splits as LR,  improve=0.009, (0 missing)
##  var3 >   4.5 to the left, improve=0.008, (0 missing)
##  var1 <   5.5 to the left, improve=0.006,  (0 missing)
##
##
## Node number 1: 1828 observations    Complexity param= 116991.643968
##   response estimate=0.022003,  risk/n= 63.999792
##
##   Primary splits:
##  var2 >  39.5 to the left, improve=0.098, (0 missing)
##  var4 > 255.44 to the left, improve=0.022, (0 missing)
##  var3 >   4.5 to the left, improve=0.008, (0 missing)
##  var0 splits as LR,  improve=0.006, (0 missing)
##  var1 <   5.5 to the left, improve=0.004,  (0 missing)
##
##
## Node number 1: 1676 observations    Complexity param= 116991.619299
##   response estimate=0.017056,  risk/n= 63.999886
##
##   Primary splits:
##  var4 > 160.385 to the left, improve=0.027, (0 missing)
##  var3 >   2.5 to the left, improve=0.025, (0 missing)
##  var2 <  46.5 to the left, improve=0.012,  (0 missing)
##
##
## Node number 1: 1474 observations    Complexity param= 94335.808981
##   response estimate=0.019410,  risk/n= 63.999852
##
##   Primary splits:
##  var2 <  46.5 to the left, improve=0.015,  (0 missing)
##  var3 >   2.5 to the left, improve=0.015, (0 missing)
##
##
## Node number 1: 1374 observations    Complexity param= 87935.782352
##   response estimate=0.020785,  risk/n= 63.999831
##
##   Primary splits:
##  var3 >   2.5 to the left, improve=0.015, (0 missing)
##
##
## Node number 1: 152 observations     Complexity param= 9727.810319
##   response estimate=0.076389,  risk/n= 63.998108
##
##   Primary splits:
##  var2 <  34.5 to the left, improve=0.026,  (0 missing)
##
##
## Node number 1: 3668 observations    Complexity param= 234751.984688
##   response estimate=0.009690,  risk/n= 63.999996
##
##   Primary splits:
##  var2 >  56.5 to the left, improve=0.161, (0 missing)
##  var4 < 17.995 to the left, improve=0.014,  (0 missing)
```

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##
##
## Node number 1: 2989 observations    Complexity param= 234751.984688
##   response estimate=0.003416,  risk/n= 64.000054
##
##   Primary splits:
##  var2 >  94.5 to the left, improve=0.013, (0 missing)
##
##
## Node number 1: 1619 observations    Complexity param= 103615.892425
##   response estimate=0.014417,  risk/n= 63.999926
##
##   Primary splits:
##  var2 <  67.5 to the left, improve=0.016,  (0 missing)
##  var4 < 23.945 to the left, improve=0.016,  (0 missing)
##  var3 >   3.5 to the left, improve=0.007, (0 missing)
##
##
## Node number 1: 1436 observations    Complexity param= 91903.879444
##   response estimate=0.016308,  risk/n= 63.999905
##
##   Primary splits:
##  var4 < 23.945 to the left, improve=0.017,  (0 missing)
##  var3 >   3.5 to the left, improve=0.007, (0 missing)
##
##
## Node number 1: 1286 observations    Complexity param= 82303.863121
##   response estimate=0.018242,  risk/n= 63.999881
##
##   Primary splits:
##  var3 >   3.5 to the left, improve=0.009, (0 missing)
##
##
## Node number 1: 679 observations     Complexity param= 43455.822014
##   response estimate=0.036508,  risk/n= 63.999501
##
##   Primary splits:
##  var4 < 17.995 to the left, improve=0.054,  (0 missing)
##  var2 <  31.5 to the left, improve=0.040,  (0 missing)
##  var3 >   4.5 to the left, improve=0.006, (0 missing)
##
##
## Node number 1: 590 observations     Complexity param= 37759.660950
##   response estimate=0.042125,  risk/n= 63.999335
##
##   Primary splits:
##  var2 <  31.5 to the left, improve=0.060,  (0 missing)
##  var3 >   4.5 to the left, improve=0.008, (0 missing)
##
##
## Node number 1: 3668 observations    Complexity param= 234752.228690
##   response estimate=0.004585,  risk/n= 64.000062
##
##   Primary splits:
##  var2 >  94.5 to the left, improve=0.330, (0 missing)
##  var4 < 64.99 to the left, improve=0.053,  (0 missing)
##
##
```

```
## Node number 1: 1365 observations    Complexity param= 234752.228690
##   response estimate=-0.020976,  risk/n= 64.000211
##
##   Primary splits:
##  var4 < 107.45 to the left, improve=0.013,  (0 missing)
##
##
## Node number 1: 1093 observations    Complexity param= 87360.287901
##   response estimate=-0.029329,  risk/n= 64.000240
##
##   Primary splits:
##  var4 > 27.955 to the left, improve=0.004, (0 missing)
##
##
## Node number 1: 2303 observations    Complexity param= 147391.940789
##   response estimate=0.019861,  risk/n= 63.999831
##
##   Primary splits:
##  var4 < 17.995 to the left, improve=0.049,  (0 missing)
##  var2 >  54.5 to the left, improve=0.044, (0 missing)
##  var3 >   4.5 to the left, improve=0.007, (0 missing)
##
##
## Node number 1: 2051 observations    Complexity param= 131263.610795
##   response estimate=0.022326,  risk/n= 63.999786
##
##   Primary splits:
##  var2 >  54.5 to the left, improve=0.060, (0 missing)
##  var3 >   4.5 to the left, improve=0.009, (0 missing)
##
##
## Node number 1: 1511 observations    Complexity param= 131263.561933
##   response estimate=0.014716,  risk/n= 63.999925
##
##   Primary splits:
##  var2 <  72.5 to the left, improve=0.021,  (0 missing)
##  var3 >   3.5 to the left, improve=0.006, (0 missing)
##  var4 < 23.945 to the left, improve=0.002,  (0 missing)
##
##
## Node number 1: 1279 observations    Complexity param= 81855.886181
##   response estimate=0.017427,  risk/n= 63.999894
##
##   Primary splits:
##  var3 >   3.5 to the left, improve=0.007, (0 missing)
##
##
## Node number 1: 540 observations     Complexity param= 34559.675752
##   response estimate=0.044088,  risk/n= 63.999288
##
##   Primary splits:
##  var2 <  31.5 to the left, improve=0.058,  (0 missing)
##  var3 >   4.5 to the left, improve=0.007, (0 missing)
##
##
## Node number 1: 3668 observations    Complexity param= 234752.225034
##   response estimate=0.004875,  risk/n= 64.000061
##
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```
##   Primary splits:
##  var2 >  94.5 to the left, improve=0.356, (0 missing)
##
##
## Node number 1: 2295 observations    Complexity param= 146879.946657
##   response estimate=0.020380,  risk/n= 63.999822
##
##   Primary splits:
##  var4 < 17.995 to the left, improve=0.052,  (0 missing)
##  var3 >   4.5 to the left, improve=0.009, (0 missing)
##  var2 <  16.5 to the left, improve=0.007,  (0 missing)
##
##
## Node number 1: 2042 observations    Complexity param= 130687.590757
##   response estimate=0.022941,  risk/n= 63.999774
##
##   Primary splits:
##  var3 >   4.5 to the left, improve=0.011, (0 missing)
##  var2 <  16.5 to the left, improve=0.008,  (0 missing)
##
##
## Node number 1: 1986 observations    Complexity param= 127103.538523
##   response estimate=0.023542,  risk/n= 63.999762
##
##   Primary splits:
##  var2 <  32.5 to the left, improve=0.004,  (0 missing)
##
##
## Node number 1: 1837 observations    Complexity param= 117567.519672
##   response estimate=0.024855,  risk/n= 63.999736
##
##   Primary splits:
##  var2 >  39.5 to the left, improve=0.067, (0 missing)
##
##
## Node number 1: 1684 observations    Complexity param= 117567.515443
##   response estimate=0.019546,  risk/n= 63.999850
##
##   Primary splits:
##  var4 < 23.945 to the left, improve=0.008,  (0 missing)
##  var3 >   3.5 to the left, improve=0.008, (0 missing)
##  var2 <  41.5 to the left, improve=0.003,  (0 missing)
##
##
## Node number 1: 1633 observations    Complexity param= 104511.747074
##   response estimate=0.020156,  risk/n= 63.999840
##
##   Primary splits:
##  var3 >   3.5 to the left, improve=0.008, (0 missing)
##  var2 <  41.5 to the left, improve=0.003,  (0 missing)
##
##
## Node number 1: 1585 observations    Complexity param= 101439.739166
##   response estimate=0.020777,  risk/n= 63.999830
##
##   Primary splits:
##  var2 <  41.5 to the left, improve=0.003,  (0 missing)
##
```

```
##
## Node number 1: 3669 observations    Complexity param= 234816.217475
##   response estimate=0.005206,  risk/n= 64.000059
##
##   Primary splits:
##  var2 >  94.5 to the left, improve=0.339, (0 missing)
##
##
## Node number 1: 1382 observations    Complexity param= 234816.217475
##   response estimate=-0.022247,  risk/n= 64.000227
##
##   Primary splits:
##  var4 < 203.975 to the left, improve=0.014,  (0 missing)
##
##
## Node number 1: 2287 observations    Complexity param= 146367.903815
##   response estimate=0.020989,  risk/n= 63.999810
##
##   Primary splits:
##  var4 < 17.995 to the left, improve=0.056,  (0 missing)
##  var3 >   4.5 to the left, improve=0.009, (0 missing)
##  var2 <  16.5 to the left, improve=0.006,  (0 missing)
##
##
## Node number 1: 2034 observations    Complexity param= 130175.565042
##   response estimate=0.023634,  risk/n= 63.999759
##
##   Primary splits:
##  var3 >   4.5 to the left, improve=0.012, (0 missing)
##  var2 <  16.5 to the left, improve=0.008,  (0 missing)
##
##
## Node number 1: 1979 observations    Complexity param= 126655.509389
##   response estimate=0.024246,  risk/n= 63.999746
##
##   Primary splits:
##  var2 <  16.5 to the left, improve=0.008,  (0 missing)
##
##
## Node number 1: 1949 observations    Complexity param= 124735.497622
##   response estimate=0.024617,  risk/n= 63.999738
##
##   Primary splits:
##  var2 >  56.5 to the left, improve=0.003, (0 missing)
##
##
## Node number 1: 1414 observations    Complexity param= 124735.489951
##   response estimate=0.018005,  risk/n= 63.999880
##
##   Primary splits:
##  var2 <  67.5 to the left, improve=0.021,  (0 missing)
##  var4 < 23.465 to the left, improve=0.003,  (0 missing)
##
##
## Node number 1: 535 observations     Complexity param= 34239.659891
##   response estimate=0.042424,  risk/n= 63.999358
##
##   Primary splits:
```

```
##  var2 <  31.5 to the left, improve=0.011,  (0 missing)
##
##
## Node number 1: 3669 observations    Complexity param= 234816.246439
##   response estimate=0.002305,  risk/n= 64.000067
##
##   Primary splits:
##  var2 >  94.5 to the left, improve=0.283, (0 missing)
##  var4 < 14.97 to the left, improve=0.002,  (0 missing)
##
##
## Node number 1: 1374 observations    Complexity param= 234816.246439
##   response estimate=-0.023145,  risk/n= 64.000180
##
##   Primary splits:
##  var4 < 215.43 to the left, improve=0.003,  (0 missing)
##  var2 < 108.5 to the left, improve=0.001,  (0 missing)
##
##
## Node number 1: 1295 observations    Complexity param= 87936.247985
##   response estimate=-0.025153,  risk/n= 64.000178
##
##   Primary splits:
##  var2 < 108.5 to the left, improve=0.002,  (0 missing)
##
##
## Node number 1: 2295 observations    Complexity param= 146879.998454
##   response estimate=0.017177,  risk/n= 63.999876
##
##   Primary splits:
##  var2 >  39.5 to the left, improve=0.041, (0 missing)
##  var4 < 17.995 to the left, improve=0.038,  (0 missing)
##  var3 >   4.5 to the left, improve=0.006, (0 missing)
##
##
## Node number 1: 1957 observations    Complexity param= 146879.715178
##   response estimate=0.012500,  risk/n= 63.999943
##
##   Primary splits:
##  var4 < 23.945 to the left, improve=0.019,  (0 missing)
##  var2 <  87.5 to the left, improve=0.015,  (0 missing)
##  var3 >   3.5 to the left, improve=0.005, (0 missing)
##
##
## Node number 1: 1680 observations    Complexity param= 107519.889400
##   response estimate=0.014585,  risk/n= 63.999923
##
##   Primary splits:
##  var2 <  87.5 to the left, improve=0.010,  (0 missing)
##  var3 >   3.5 to the left, improve=0.007, (0 missing)
##
##
## Node number 1: 972 observations     Complexity param= 107519.870696
##   response estimate=0.006608,  risk/n= 63.999993
##
##   Primary splits:
##  var2 >  79.5 to the left, improve=0.005, (0 missing)
##  var3 >   1.5 to the left, improve=0.004, (0 missing)
```

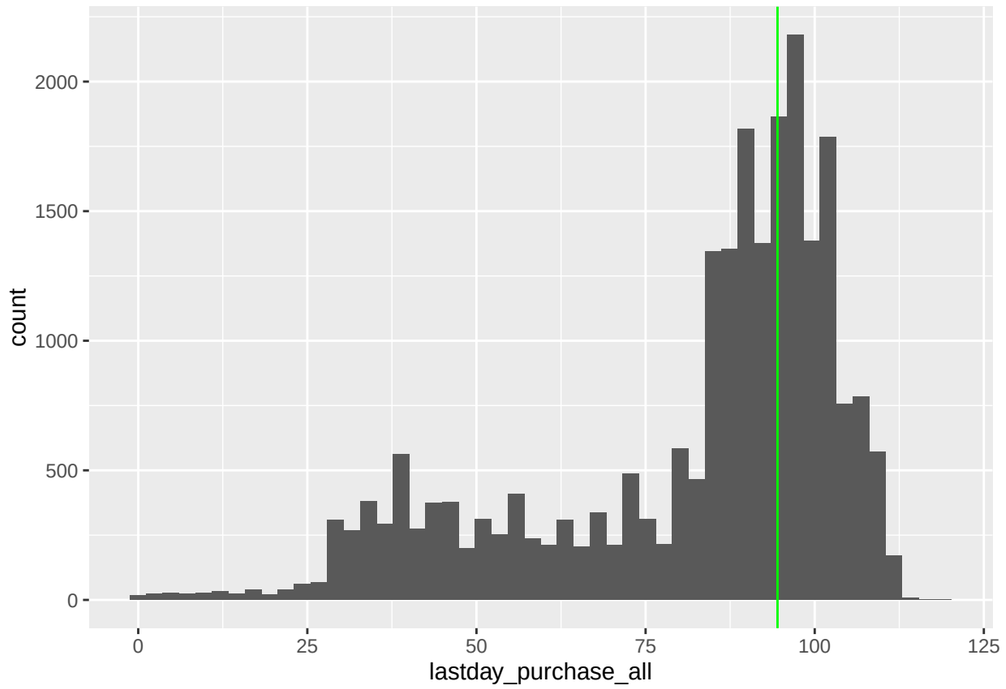
```
##  var1 >   9.5 to the left, improve=0.001, (0 missing)
##  var4 > 160.37 to the left, improve=0.001, (0 missing)
##
##
## Node number 1: 568 observations     Complexity param= 36351.992874
##   response estimate=0.011278,  risk/n= 63.999978
##
##   Primary splits:
##  var3 >   1.5 to the left, improve=0.006, (0 missing)
##  var1 >   9.5 to the left, improve=0.003, (0 missing)
##  var4 > 160.37 to the left, improve=0.001, (0 missing)
##  var2 <  41.5 to the left, improve=0.000,  (0 missing)
##
##
## Node number 1: 369 observations     Complexity param= 23615.987785
##   response estimate=0.017094,  risk/n= 63.999950
##
##   Primary splits:
##  var1 >   9.5 to the left, improve=0.004, (0 missing)
##  var2 <  41.5 to the left, improve=0.001,  (0 missing)
##
##
## Node number 1: 309 observations     Complexity param= 19775.981614
##   response estimate=0.020408,  risk/n= 63.999929
##
##   Primary splits:
##  var2 <  41.5 to the left, improve=0.001,  (0 missing)
##
##
## Node number 1: 338 observations     Complexity param= 21631.825778
##   response estimate=0.044586,  risk/n= 63.999362
##
##   Primary splits:
##  var2 <  31.5 to the left, improve=0.072,  (0 missing)
##
##
## Node number 1: 3669 observations    Complexity param= 234816.230429
##   response estimate=0.004336,  risk/n= 64.000063
##
##   Primary splits:
##  var2 >  94.5 to the left, improve=0.307, (0 missing)
##
##
## Node number 1: 1379 observations    Complexity param= 234816.230429
##   response estimate=-0.021306,  risk/n= 64.000214
##
##   Primary splits:
##  var4 < 107.45 to the left, improve=0.021,  (0 missing)
##
##
## Node number 1: 2290 observations    Complexity param= 146559.935042
##   response estimate=0.019535,  risk/n= 63.999838
##
##   Primary splits:
##  var4 < 17.995 to the left, improve=0.047,  (0 missing)
##  var2 >  56.5 to the left, improve=0.026, (0 missing)
##  var3 >   4.5 to the left, improve=0.007, (0 missing)
##
```

```
##
## Node number 1: 2035 observations    Complexity param= 130239.627921
##   response estimate=0.022001,  risk/n= 63.999794
##
##   Primary splits:
##  var2 >  56.5 to the left, improve=0.042, (0 missing)
##  var3 >   4.5 to the left, improve=0.009, (0 missing)
##
##
## Node number 1: 1458 observations    Complexity param= 130239.580512
##   response estimate=0.014556,  risk/n= 63.999929
##
##   Primary splits:
##  var2 <  67.5 to the left, improve=0.013,  (0 missing)
##  var3 >   3.5 to the left, improve=0.006, (0 missing)
##
##
## Node number 1: 1305 observations    Complexity param= 83519.896240
##   response estimate=0.016327,  risk/n= 63.999910
##
##   Primary splits:
##  var3 >   3.5 to the left, improve=0.006, (0 missing)
##
##
## Node number 1: 577 observations     Complexity param= 36927.684273
##   response estimate=0.041121,  risk/n= 63.999381
##
##   Primary splits:
##  var2 <  31.5 to the left, improve=0.044,  (0 missing)
##  var3 >   4.5 to the left, improve=0.005, (0 missing)
##
##
## Node number 1: 3669 observations    Complexity param= 234816.235356
##   response estimate=0.003756,  risk/n= 64.000064
##
##   Primary splits:
##  var2 >  94.5 to the left, improve=0.293, (0 missing)
##  var4 < 14.97 to the left, improve=0.002,  (0 missing)
##
##
## Node number 1: 1385 observations    Complexity param= 234816.235356
##   response estimate=-0.020452,  risk/n= 64.000202
##
##   Primary splits:
##  var4 > 27.955 to the left, improve=0.003, (0 missing)
##
##
## Node number 1: 1240 observations    Complexity param= 88640.279965
##   response estimate=-0.020936,  risk/n= 64.000223
##
##   Primary splits:
##  var4 < 215.43 to the left, improve=0.002,  (0 missing)
##
##
## Node number 1: 2284 observations    Complexity param= 146175.955391
##   response estimate=0.018631,  risk/n= 63.999852
##
##   Primary splits:
```

```
##  var4 < 17.995 to the left, improve=0.044,  (0 missing)
##  var3 >   4.5 to the left, improve=0.006, (0 missing)
##  var2 <  16.5 to the left, improve=0.004,  (0 missing)
##
##
## Node number 1: 2029 observations    Complexity param= 129855.662590
##   response estimate=0.021008,  risk/n= 63.999812
##
##   Primary splits:
##  var2 >  56.5 to the left, improve=0.010, (0 missing)
##  var3 >   4.5 to the left, improve=0.008, (0 missing)
##
##
## Node number 1: 1449 observations    Complexity param= 129855.618789
##   response estimate=0.014641,  risk/n= 63.999925
##
##   Primary splits:
##  var2 <  67.5 to the left, improve=0.014,  (0 missing)
##  var3 >   3.5 to the left, improve=0.006, (0 missing)
##  var4 < 23.945 to the left, improve=0.002,  (0 missing)
##
##
## Node number 1: 1294 observations    Complexity param= 82815.891001
##   response estimate=0.016447,  risk/n= 63.999905
##
##   Primary splits:
##  var3 >   3.5 to the left, improve=0.006, (0 missing)
##
##
## Node number 1: 580 observations     Complexity param= 37119.727788
##   response estimate=0.037175,  risk/n= 63.999513
##
##   Primary splits:
##  var2 <  31.5 to the left, improve=0.024,  (0 missing)
##  var3 >   4.5 to the left, improve=0.004, (0 missing)
```

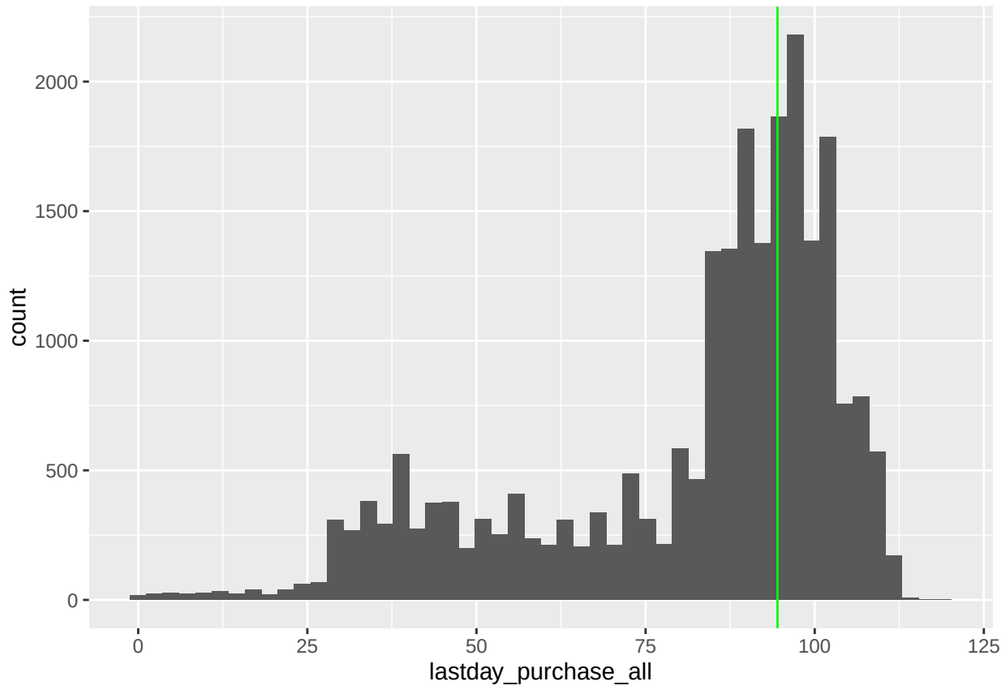
	effect	p_value	path
2	0.01515152	0.01000511	lastday_purchase_all>=94.5
3	0.008437314	0.2631325	lastday_purchase_all< 94.5

```
## [1] "lastday_purchase_all>=94.5"
```




```
## [1] "lastday_purchase_all>=94.5" "63.0810718260423"
## [1] "mean"
## [1] 81.78401
## [1] "median"
## [1] 90
```

```
## [1] "lastday_purchase_all< 94.5"
```




```
## [1] "lastday_purchase_all< 94.5" "63.0810718260423"
## [1] "mean"
## [1] 81.78401
## [1] "median"
## [1] 90
```

Equitable group with number_referrals as target_variable

```
## [1] 2
## [1] "CT"
##
##
## Node number 1: 4182 observations    Complexity param= 418200.234387
##   response estimate=0.004827,  risk/n= 100.000056
##
##   Primary splits:
##  var2 >  58.5 to the left, improve=0.255, (0 missing)
##  var4 < 111.95 to the left, improve=0.014,  (0 missing)
##
##
## Node number 1: 3366 observations    Complexity param= 418200.234387
##   response estimate=-0.002855,  risk/n= 100.000093
##
##   Primary splits:
##  var4 <  62.9 to the left, improve=0.006,  (0 missing)
##  var2 >  70.5 to the left, improve=0.001, (0 missing)
##
##
## Node number 1: 1767 observations    Complexity param= 336600.311798
```

```
##   response estimate=-0.017464,  risk/n= 100.000206
##
##   Primary splits:
##  var2 < 105.5 to the left, improve=0.018,  (0 missing)
##  var4 > 26.385 to the left, improve=0.016, (0 missing)
##
##
## Node number 1: 1606 observations    Complexity param= 176700.364733
##   response estimate=-0.019835,  risk/n= 100.000210
##
##   Primary splits:
##  var4 > 26.385 to the left, improve=0.027, (0 missing)
##  var2 >  71.5 to the left, improve=0.005, (0 missing)
##
##
## Node number 1: 1187 observations    Complexity param= 160600.338032
##   response estimate=-0.027273,  risk/n= 100.000261
##
##   Primary splits:
##  var2 >  71.5 to the left, improve=0.009, (0 missing)
##  var3 <   1.5 to the left, improve=0.004,  (0 missing)
##
##
## Node number 1: 1082 observations    Complexity param= 118700.309897
##   response estimate=-0.027998,  risk/n= 100.000278
##
##   Primary splits:
##  var3 <   1.5 to the left, improve=0.010,  (0 missing)
##
##
## Node number 1: 1599 observations    Complexity param= 159899.947065
##   response estimate=0.011984,  risk/n= 99.999963
##
##   Primary splits:
##  var2 > 101.5 to the left, improve=0.014, (0 missing)
##  var3 >   3.5 to the left, improve=0.005, (0 missing)
##  var4 > 474.845 to the left, improve=0.001, (0 missing)
##
##
## Node number 1: 1298 observations    Complexity param= 129799.940664
##   response estimate=0.014790,  risk/n= 99.999943
##
##   Primary splits:
##  var3 >   1.5 to the left, improve=0.009, (0 missing)
##  var2 <  70.5 to the left, improve=0.005,  (0 missing)
##  var4 > 474.845 to the left, improve=0.002, (0 missing)
##
##
## Node number 1: 700 observations     Complexity param= 69999.924113
##   response estimate=0.024206,  risk/n= 99.999878
##
##   Primary splits:
##  var4 > 122.955 to the left, improve=0.015, (0 missing)
##  var2 <  70.5 to the left, improve=0.004,  (0 missing)
##
##
## Node number 1: 816 observations     Complexity param= 81599.922589
##   response estimate=0.035433,  risk/n= 99.999592
```

```
##
##   Primary splits:
##  var1 <   7.5 to the left, improve=0.006,  (0 missing)
##
##
## Node number 1: 657 observations     Complexity param= 81599.667436
##   response estimate=0.016340,  risk/n= 99.999927
##
##   Primary splits:
##  var2 <  24.5 to the left, improve=0.003,  (0 missing)
##  var5 splits as RL,  improve=0.001, (0 missing)
##  var1 >     1 to the left, improve=0.001, (0 missing)
##
##
## Node number 1: 625 observations     Complexity param= 62499.952056
##   response estimate=0.017182,  risk/n= 99.999919
##
##   Primary splits:
##  var5 splits as RL,  improve=0.001, (0 missing)
##  var1 >     1 to the left, improve=0.001, (0 missing)
##
##
## Node number 1: 159 observations     Complexity param= 15899.715379
##   response estimate=0.113333,  risk/n= 99.998170
##
##   Primary splits:
##  var4 < 37.985 to the left, improve=0.123,  (0 missing)
##
##
## Node number 1: 114 observations     Complexity param= 11399.709073
##   response estimate=0.157407,  risk/n= 99.996365
##
##   Primary splits:
##  var4 > 271.97 to the left, improve=0.041, (0 missing)
##
##
## Node number 1: 3763 observations    Complexity param= 376300.253748
##   response estimate=0.004502,  risk/n= 100.000067
##
##   Primary splits:
##  var2 >  58.5 to the left, improve=0.281, (0 missing)
##
##
## Node number 1: 3023 observations    Complexity param= 376300.253748
##   response estimate=-0.003911,  risk/n= 100.000104
##
##   Primary splits:
##  var4 < 69.68 to the left, improve=0.033,  (0 missing)
##
##
## Node number 1: 1729 observations    Complexity param= 302300.314137
##   response estimate=-0.018074,  risk/n= 100.000192
##
##   Primary splits:
##  var2 < 105.5 to the left, improve=0.022,  (0 missing)
##  var4 > 26.385 to the left, improve=0.020, (0 missing)
##
##
```

```
## Node number 1: 1564 observations    Complexity param= 172900.332667
##   response estimate=-0.020549,  risk/n= 100.000194
##
##   Primary splits:
##  var4 > 26.385 to the left, improve=0.032, (0 missing)
##  var2 >  71.5 to the left, improve=0.002, (0 missing)
##
##
## Node number 1: 1188 observations    Complexity param= 156400.303781
##   response estimate=-0.028092,  risk/n= 100.000228
##
##   Primary splits:
##  var3 <   1.5 to the left, improve=0.006,  (0 missing)
##  var2 >  71.5 to the left, improve=0.006, (0 missing)
##
##
## Node number 1: 1041 observations    Complexity param= 118800.271311
##   response estimate=-0.032258,  risk/n= 100.000247
##
##   Primary splits:
##  var2 >  72.5 to the left, improve=0.007, (0 missing)
##
##
## Node number 1: 376 observations     Complexity param= 37600.032469
##   response estimate=0.008357,  risk/n= 100.000000
##
##   Primary splits:
##  var2 <  88.5 to the left, improve=0.000,  (0 missing)
##  var5 splits as RL,  improve=0.000, (0 missing)
##  var1 >   1.5 to the left, improve=0.000, (0 missing)
##  var0 splits as RL,  improve=0.000, (0 missing)
##  var4 < 10.985 to the left, improve=0.000,  (0 missing)
##
##
## Node number 1: 1294 observations    Complexity param= 129399.981471
##   response estimate=0.013180,  risk/n= 99.999961
##
##   Primary splits:
##  var3 >   1.5 to the left, improve=0.018, (0 missing)
##  var4 > 172.455 to the left, improve=0.012, (0 missing)
##  var2 > 101.5 to the left, improve=0.012, (0 missing)
##
##
## Node number 1: 698 observations     Complexity param= 69799.946917
##   response estimate=0.022762,  risk/n= 99.999898
##
##   Primary splits:
##  var2 > 101.5 to the left, improve=0.022, (0 missing)
##  var4 > 122.955 to the left, improve=0.014, (0 missing)
##
##
## Node number 1: 536 observations     Complexity param= 53599.928589
##   response estimate=0.029586,  risk/n= 99.999827
##
##   Primary splits:
##  var4 > 122.955 to the left, improve=0.019, (0 missing)
##  var2 <  70.5 to the left, improve=0.004,  (0 missing)
##
```

```
##
## Node number 1: 740 observations     Complexity param= 73999.939611
##   response estimate=0.037627,  risk/n= 99.999538
##
##   Primary splits:
##  var1 <   7.5 to the left, improve=0.069,  (0 missing)
##  var0 splits as LR,  improve=0.060, (0 missing)
##  var5 splits as LR,  improve=0.036, (0 missing)
##
##
## Node number 1: 593 observations     Complexity param= 73999.658112
##   response estimate=0.016304,  risk/n= 99.999931
##
##   Primary splits:
##  var2 <  24.5 to the left, improve=0.002,  (0 missing)
##  var5 splits as RL,  improve=0.001, (0 missing)
##  var1 >     1 to the left, improve=0.001, (0 missing)
##
##
## Node number 1: 566 observations     Complexity param= 56599.959308
##   response estimate=0.017078,  risk/n= 99.999925
##
##   Primary splits:
##  var5 splits as RL,  improve=0.001, (0 missing)
##  var1 >     1 to the left, improve=0.001, (0 missing)
##
##
## Node number 1: 147 observations     Complexity param= 14699.698803
##   response estimate=0.122302,  risk/n= 99.997485
##
##   Primary splits:
##  var4 < 37.985 to the left, improve=0.160,  (0 missing)
##
##
## Node number 1: 3763 observations    Complexity param= 376300.268028
##   response estimate=0.003090,  risk/n= 100.000071
##
##   Primary splits:
##  var2 >  58.5 to the left, improve=0.371, (0 missing)
##  var4 < 195.605 to the left, improve=0.020,  (0 missing)
##
##
## Node number 1: 742 observations     Complexity param= 74199.988818
##   response estimate=0.039074,  risk/n= 99.999485
##
##   Primary splits:
##  var1 <   7.5 to the left, improve=0.053,  (0 missing)
##  var0 splits as LR,  improve=0.044, (0 missing)
##  var5 splits as LR,  improve=0.027, (0 missing)
##
##
## Node number 1: 598 observations     Complexity param= 74199.618194
##   response estimate=0.018018,  risk/n= 99.999906
##
##   Primary splits:
##  var2 <  24.5 to the left, improve=0.003,  (0 missing)
##  var5 splits as RL,  improve=0.001, (0 missing)
##  var1 >     1 to the left, improve=0.001, (0 missing)
```

```
##
##
## Node number 1: 567 observations     Complexity param= 56699.943825
##   response estimate=0.019011,  risk/n= 99.999895
##
##   Primary splits:
##  var5 splits as RL,  improve=0.001, (0 missing)
##  var1 >     1 to the left, improve=0.001, (0 missing)
##
##
## Node number 1: 144 observations     Complexity param= 14399.674369
##   response estimate=0.125000,  risk/n= 99.997369
##
##   Primary splits:
##  var4 < 37.985 to the left, improve=0.163,  (0 missing)
##
##
## Node number 1: 102 observations     Complexity param= 10199.621125
##   response estimate=0.175258,  risk/n= 99.994689
##
##   Primary splits:
##  var4 > 271.97 to the left, improve=0.051, (0 missing)
##
##
## Node number 1: 3763 observations    Complexity param= 376300.252834
##   response estimate=0.004502,  risk/n= 100.000067
##
##   Primary splits:
##  var2 >  58.5 to the left, improve=0.259, (0 missing)
##
##
## Node number 1: 3043 observations    Complexity param= 376300.252834
##   response estimate=-0.003341,  risk/n= 100.000102
##
##   Primary splits:
##  var4 < 65.08 to the left, improve=0.061,  (0 missing)
##
##
## Node number 1: 1664 observations    Complexity param= 304300.308885
##   response estimate=-0.019297,  risk/n= 100.000193
##
##   Primary splits:
##  var2 < 104.5 to the left, improve=0.029,  (0 missing)
##  var4 > 14.985 to the left, improve=0.006, (0 missing)
##
##
## Node number 1: 1480 observations    Complexity param= 166400.321281
##   response estimate=-0.021949,  risk/n= 100.000193
##
##   Primary splits:
##  var4 > 14.985 to the left, improve=0.009, (0 missing)
##  var2 >  71.5 to the left, improve=0.003, (0 missing)
##  var3 <   1.5 to the left, improve=0.001,  (0 missing)
##
##
## Node number 1: 1343 observations    Complexity param= 148000.286094
##   response estimate=-0.024060,  risk/n= 100.000201
##
```

```
##   Primary splits:
##  var3 <   1.5 to the left, improve=0.005,  (0 missing)
##  var2 >  71.5 to the left, improve=0.002, (0 missing)
##
##
## Node number 1: 1187 observations    Complexity param= 134300.269503
##   response estimate=-0.027273,  risk/n= 100.000217
##
##   Primary splits:
##  var2 >  71.5 to the left, improve=0.007, (0 missing)
##
##
## Node number 1: 1085 observations    Complexity param= 118700.257593
##   response estimate=-0.028001,  risk/n= 100.000231
##
##   Primary splits:
##  var4 > 28.965 to the left, improve=0.001, (0 missing)
##
##
## Node number 1: 847 observations     Complexity param= 108500.250827
##   response estimate=-0.035088,  risk/n= 100.000290
##
##   Primary splits:
##  var4 < 58.14 to the left, improve=0.003,  (0 missing)
##
##
## Node number 1: 1379 observations    Complexity param= 137899.987604
##   response estimate=0.013932,  risk/n= 99.999947
##
##   Primary splits:
##  var2 > 101.5 to the left, improve=0.017, (0 missing)
##  var3 >   1.5 to the left, improve=0.010, (0 missing)
##  var4 > 474.845 to the left, improve=0.002, (0 missing)
##
##
## Node number 1: 1121 observations    Complexity param= 112099.926295
##   response estimate=0.017159,  risk/n= 99.999919
##
##   Primary splits:
##  var3 >   1.5 to the left, improve=0.019, (0 missing)
##  var2 <  70.5 to the left, improve=0.006,  (0 missing)
##  var4 > 474.845 to the left, improve=0.002, (0 missing)
##
##
## Node number 1: 590 observations     Complexity param= 58999.906757
##   response estimate=0.028777,  risk/n= 99.999810
##
##   Primary splits:
##  var4 > 122.955 to the left, improve=0.023, (0 missing)
##  var2 <  70.5 to the left, improve=0.005,  (0 missing)
##
##
## Node number 1: 720 observations     Complexity param= 71999.943949
##   response estimate=0.037037,  risk/n= 99.999562
##
##   Primary splits:
##  var1 <   7.5 to the left, improve=0.131,  (0 missing)
##  var0 splits as LR,  improve=0.120, (0 missing)
```

```
##  var5 splits as LR,  improve=0.094, (0 missing)
##  var4 > 271.635 to the left, improve=0.009, (0 missing)
##  var3 >   4.5 to the left, improve=0.009, (0 missing)
##
##
## Node number 1: 588 observations     Complexity param= 71999.684591
##   response estimate=0.014545,  risk/n= 99.999944
##
##   Primary splits:
##  var2 <  31.5 to the left, improve=0.006,  (0 missing)
##  var3 >   2.5 to the left, improve=0.003, (0 missing)
##  var5 splits as RL,  improve=0.001, (0 missing)
##  var1 >     1 to the left, improve=0.001, (0 missing)
##
##
## Node number 1: 492 observations     Complexity param= 49199.967081
##   response estimate=0.017354,  risk/n= 99.999920
##
##   Primary splits:
##  var3 >   2.5 to the left, improve=0.003, (0 missing)
##
##
## Node number 1: 132 observations     Complexity param= 13199.717510
##   response estimate=0.136000,  risk/n= 99.996867
##
##   Primary splits:
##  var4 < 37.985 to the left, improve=0.169,  (0 missing)
##
##
## Node number 1: 96 observations      Complexity param= 9599.586475
##   response estimate=0.186813,  risk/n= 99.993930
##
##   Primary splits:
##  var4 > 271.97 to the left, improve=0.051, (0 missing)
##
##
## Node number 1: 3763 observations    Complexity param= 376300.267114
##   response estimate=0.003090,  risk/n= 100.000071
##
##   Primary splits:
##  var2 >  71.5 to the left, improve=0.123, (0 missing)
##
##
## Node number 1: 2820 observations    Complexity param= 376300.267114
##   response estimate=-0.004136,  risk/n= 100.000111
##
##   Primary splits:
##  var4 < 75.965 to the left, improve=0.070,  (0 missing)
##
##
## Node number 1: 1743 observations    Complexity param= 282000.313895
##   response estimate=-0.016348,  risk/n= 100.000168
##
##   Primary splits:
##  var2 < 105.5 to the left, improve=0.023,  (0 missing)
##  var4 > 34.975 to the left, improve=0.007, (0 missing)
##
##
```

```
## Node number 1: 1572 observations    Complexity param= 174300.293683
##   response estimate=-0.018570,  risk/n= 100.000168
##
##   Primary splits:
##  var4 > 26.385 to the left, improve=0.013, (0 missing)
##  var3 <   1.5 to the left, improve=0.003,  (0 missing)
##
##
## Node number 1: 1238 observations    Complexity param= 157200.264126
##   response estimate=-0.023591,  risk/n= 100.000200
##
##   Primary splits:
##  var3 <   1.5 to the left, improve=0.009,  (0 missing)
##
##
## Node number 1: 1077 observations    Complexity param= 107700.020213
##   response estimate=0.014837,  risk/n= 99.999954
##
##   Primary splits:
##  var2 <  86.5 to the left, improve=0.012,  (0 missing)
##  var3 >   3.5 to the left, improve=0.005, (0 missing)
##
##
## Node number 1: 872 observations     Complexity param= 87199.950163
##   response estimate=0.018382,  risk/n= 99.999929
##
##   Primary splits:
##  var2 > 101.5 to the left, improve=0.019, (0 missing)
##  var3 >   3.5 to the left, improve=0.005, (0 missing)
##
##
## Node number 1: 668 observations     Complexity param= 66799.937953
##   response estimate=0.024038,  risk/n= 99.999878
##
##   Primary splits:
##  var3 >   3.5 to the left, improve=0.008, (0 missing)
##
##
## Node number 1: 943 observations     Complexity param= 94299.953219
##   response estimate=0.024775,  risk/n= 99.999820
##
##   Primary splits:
##  var2 <  24.5 to the left, improve=0.007,  (0 missing)
##
##
## Node number 1: 899 observations     Complexity param= 89899.829908
##   response estimate=0.025913,  risk/n= 99.999803
##
##   Primary splits:
##  var4 < 37.985 to the left, improve=0.002,  (0 missing)
##
##
## Node number 1: 360 observations     Complexity param= 89899.822557
##   response estimate=0.008772,  risk/n= 100.000000
##
##   Primary splits:
##  var4 > 17.995 to the left, improve=0.000, (0 missing)
##  var2 <  37.5 to the left, improve=0.000,  (0 missing)
```

```
##  var1 >   2.5 to the left, improve=0.000, (0 missing)
##  var5 splits as RL,  improve=0.000, (0 missing)
##  var0 splits as RL,  improve=0.000, (0 missing)
##
##
## Node number 1: 134 observations     Complexity param= 13400.000100
##   response estimate=0.023256,  risk/n= 99.999998
##
##   Primary splits:
##  var2 <  37.5 to the left, improve=0.000,  (0 missing)
##
##
## Node number 1: 3763 observations    Complexity param= 376300.263831
##   response estimate=0.001679,  risk/n= 100.000070
##
##   Primary splits:
##  var2 >  91.5 to the left, improve=0.246, (0 missing)
##  var4 < 111.95 to the left, improve=0.119,  (0 missing)
##
##
## Node number 1: 1758 observations    Complexity param= 376300.263831
##   response estimate=-0.016208,  risk/n= 100.000148
##
##   Primary splits:
##  var4 > 34.48 to the left, improve=0.031, (0 missing)
##  var2 < 105.5 to the left, improve=0.016,  (0 missing)
##
##
## Node number 1: 1453 observations    Complexity param= 175800.259933
##   response estimate=-0.021006,  risk/n= 100.000157
##
##   Primary splits:
##  var4 < 153.98 to the left, improve=0.008,  (0 missing)
##  var2 < 108.5 to the left, improve=0.000,  (0 missing)
##
##
## Node number 1: 1289 observations    Complexity param= 145300.228449
##   response estimate=-0.023562,  risk/n= 100.000166
##
##   Primary splits:
##  var2 < 105.5 to the left, improve=0.004,  (0 missing)
##
##
## Node number 1: 305 observations     Complexity param= 30500.031484
##   response estimate=0.010345,  risk/n= 100.000000
##
##   Primary splits:
##  var4 < 19.985 to the left, improve=0.000,  (0 missing)
##  var2 <  97.5 to the left, improve=0.000,  (0 missing)
##  var5 splits as RL,  improve=0.000, (0 missing)
##  var1 >   1.5 to the left, improve=0.000, (0 missing)
##  var0 splits as RL,  improve=0.000, (0 missing)
##
##
## Node number 1: 169 observations     Complexity param= 16900.000092
##   response estimate=0.018634,  risk/n= 100.000000
##
##   Primary splits:
```

```
##  var2 <  97.5 to the left, improve=0.001,  (0 missing)
##  var5 splits as RL,  improve=0.000, (0 missing)
##  var0 splits as RL,  improve=0.000, (0 missing)
##  var1 >     4 to the left, improve=0.000, (0 missing)
##  var3 >   1.5 to the left, improve=0.000, (0 missing)
##
##
## Node number 1: 2005 observations    Complexity param= 200500.003898
##   response estimate=0.017479,  risk/n= 99.999879
##
##   Primary splits:
##  var1 <   7.5 to the left, improve=0.095,  (0 missing)
##  var0 splits as LR,  improve=0.083, (0 missing)
##  var5 splits as LR,  improve=0.068, (0 missing)
##  var4 < 111.46 to the left, improve=0.060,  (0 missing)
##  var2 >  47.5 to the left, improve=0.007, (0 missing)
##
##
## Node number 1: 1624 observations    Complexity param= 200499.757534
##   response estimate=0.009156,  risk/n= 99.999971
##
##   Primary splits:
##  var2 >  89.5 to the left, improve=0.005, (0 missing)
##  var5 splits as RL,  improve=0.001, (0 missing)
##  var1 >   0.5 to the left, improve=0.001, (0 missing)
##  var4 < 10.985 to the left, improve=0.001,  (0 missing)
##
##
## Node number 1: 1472 observations    Complexity param= 147199.952964
##   response estimate=0.010123,  risk/n= 99.999965
##
##   Primary splits:
##  var5 splits as RL,  improve=0.001, (0 missing)
##  var1 >   0.5 to the left, improve=0.001, (0 missing)
##  var2 <  24.5 to the left, improve=0.001,  (0 missing)
##  var4 < 10.985 to the left, improve=0.001,  (0 missing)
##
##
## Node number 1: 1435 observations    Complexity param= 143499.947874
##   response estimate=0.010378,  risk/n= 99.999963
##
##   Primary splits:
##  var2 <  24.5 to the left, improve=0.001,  (0 missing)
##  var4 < 10.985 to the left, improve=0.001,  (0 missing)
##
##
## Node number 1: 1409 observations    Complexity param= 140899.946586
##   response estimate=0.010566,  risk/n= 99.999961
##
##   Primary splits:
##  var4 < 10.985 to the left, improve=0.001,  (0 missing)
##
##
## Node number 1: 381 observations     Complexity param= 38099.804570
##   response estimate=0.052925,  risk/n= 99.999238
##
##   Primary splits:
##  var4 < 37.985 to the left, improve=0.107,  (0 missing)
```

```
##  var3 >   4.5 to the left, improve=0.020, (0 missing)
##
##
## Node number 1: 276 observations     Complexity param= 27599.709699
##   response estimate=0.072519,  risk/n= 99.998561
##
##   Primary splits:
##  var3 >   4.5 to the left, improve=0.038, (0 missing)
##
##
## Node number 1: 3763 observations    Complexity param= 376300.013435
##   response estimate=0.009309,  risk/n= 100.000004
##
##   Primary splits:
##  var2 >  41.5 to the left, improve=0.214, (0 missing)
##  var4 < 111.95 to the left, improve=0.001,  (0 missing)
##
##
## Node number 1: 3387 observations    Complexity param= 376300.013435
##   response estimate=0.003464,  risk/n= 100.000045
##
##   Primary splits:
##  var2 > 109.5 to the left, improve=0.001, (0 missing)
##
##
## Node number 1: 376 observations     Complexity param= 37599.860848
##   response estimate=0.061047,  risk/n= 99.999060
##
##   Primary splits:
##  var4 < 17.48 to the left, improve=0.033,  (0 missing)
##
##
## Node number 1: 3765 observations    Complexity param= 376500.251241
##   response estimate=0.004539,  risk/n= 100.000067
##
##   Primary splits:
##  var2 >  41.5 to the left, improve=0.314, (0 missing)
##  var4 < 171.915 to the left, improve=0.010,  (0 missing)
##
##
## Node number 1: 3401 observations    Complexity param= 376500.251241
##   response estimate=-0.001946,  risk/n= 100.000088
##
##   Primary splits:
##  var4 < 65.965 to the left, improve=0.073,  (0 missing)
##  var2 >  71.5 to the left, improve=0.003, (0 missing)
##
##
## Node number 1: 1945 observations    Complexity param= 340100.297717
##   response estimate=-0.015810,  risk/n= 100.000166
##
##   Primary splits:
##  var2 < 105.5 to the left, improve=0.026,  (0 missing)
##  var4 > 14.985 to the left, improve=0.002, (0 missing)
##
##
## Node number 1: 1793 observations    Complexity param= 194500.321940
##   response estimate=-0.017458,  risk/n= 100.000161
```

```
##
##   Primary splits:
##  var4 > 14.985 to the left, improve=0.004, (0 missing)
##
##
## Node number 1: 1456 observations    Complexity param= 145599.975777
##   response estimate=0.014652,  risk/n= 99.999933
##
##   Primary splits:
##  var2 > 101.5 to the left, improve=0.020, (0 missing)
##  var3 >   3.5 to the left, improve=0.009, (0 missing)
##  var1 <   7.5 to the left, improve=0.008,  (0 missing)
##  var4 > 474.845 to the left, improve=0.003, (0 missing)
##  var0 splits as LR,  improve=0.002, (0 missing)
##
##
## Node number 1: 1209 observations    Complexity param= 120899.902939
##   response estimate=0.017668,  risk/n= 99.999903
##
##   Primary splits:
##  var3 >   1.5 to the left, improve=0.016, (0 missing)
##  var1 <   7.5 to the left, improve=0.009,  (0 missing)
##  var4 > 474.845 to the left, improve=0.003, (0 missing)
##  var0 splits as LR,  improve=0.001, (0 missing)
##
##
## Node number 1: 591 observations     Complexity param= 120899.882725
##   response estimate=0.005464,  risk/n= 100.000000
##
##   Primary splits:
##  var4 < 171.915 to the left, improve=0.000,  (0 missing)
##
##
## Node number 1: 221 observations     Complexity param= 22100.000097
##   response estimate=0.014634,  risk/n= 100.000000
##
##   Primary splits:
##  var3 >   3.5 to the left, improve=0.000, (0 missing)
##  var1 >   9.5 to the left, improve=0.000, (0 missing)
##  var2 >  96.5 to the left, improve=0.000, (0 missing)
##  var4 > 474.845 to the left, improve=0.000, (0 missing)
##
##
## Node number 1: 141 observations     Complexity param= 14100.000039
##   response estimate=0.022727,  risk/n= 99.999998
##
##   Primary splits:
##  var2 >  96.5 to the left, improve=0.000, (0 missing)
##
##
## Node number 1: 618 observations     Complexity param= 61799.882628
##   response estimate=0.029160,  risk/n= 99.999783
##
##   Primary splits:
##  var1 <   7.5 to the left, improve=0.052,  (0 missing)
##  var0 splits as LR,  improve=0.043, (0 missing)
##  var5 splits as LR,  improve=0.032, (0 missing)
##  var4 > 122.955 to the left, improve=0.026, (0 missing)
```

```
##
##
## Node number 1: 116 observations     Complexity param= 11599.822303
##   response estimate=0.090909,  risk/n= 99.998021
##
##   Primary splits:
##  var2 >  90.5 to the left, improve=0.151, (0 missing)
##
##
## Node number 1: 364 observations     Complexity param= 36399.953524
##   response estimate=0.062687,  risk/n= 99.999009
##
##   Primary splits:
##  var4 < 17.48 to the left, improve=0.030,  (0 missing)
##
##
## Node number 1: 3765 observations    Complexity param= 376500.250326
##   response estimate=0.004539,  risk/n= 100.000066
##
##   Primary splits:
##  var2 >  41.5 to the left, improve=0.307, (0 missing)
##  var4 < 111.95 to the left, improve=0.052,  (0 missing)
##
##
## Node number 1: 3395 observations    Complexity param= 376500.250326
##   response estimate=-0.001987,  risk/n= 100.000088
##
##   Primary splits:
##  var4 < 75.965 to the left, improve=0.049,  (0 missing)
##  var2 >  59.5 to the left, improve=0.011, (0 missing)
##
##
## Node number 1: 2167 observations    Complexity param= 339500.298857
##   response estimate=-0.012216,  risk/n= 100.000148
##
##   Primary splits:
##  var4 > 26.385 to the left, improve=0.040, (0 missing)
##  var2 >  70.5 to the left, improve=0.022, (0 missing)
##
##
## Node number 1: 1620 observations    Complexity param= 216700.320630
##   response estimate=-0.018000,  risk/n= 100.000179
##
##   Primary splits:
##  var2 < 105.5 to the left, improve=0.022,  (0 missing)
##
##
## Node number 1: 1480 observations    Complexity param= 162000.290054
##   response estimate=-0.020572,  risk/n= 100.000176
##
##   Primary splits:
##  var2 >  70.5 to the left, improve=0.020, (0 missing)
##
##
## Node number 1: 547 observations     Complexity param= 54700.030576
##   response estimate=0.009542,  risk/n= 99.999982
##
##   Primary splits:
```

```
##  var2 <  55.5 to the left, improve=0.002,  (0 missing)
##  var5 splits as RL,  improve=0.002, (0 missing)
##  var1 >   1.5 to the left, improve=0.002, (0 missing)
##  var0 splits as RL,  improve=0.002, (0 missing)
##  var4 < 10.985 to the left, improve=0.001,  (0 missing)
##
##
## Node number 1: 449 observations     Complexity param= 44899.990141
##   response estimate=0.011628,  risk/n= 99.999973
##
##   Primary splits:
##  var5 splits as RL,  improve=0.003, (0 missing)
##  var1 >   1.5 to the left, improve=0.003, (0 missing)
##  var0 splits as RL,  improve=0.002, (0 missing)
##  var4 < 10.985 to the left, improve=0.001,  (0 missing)
##
##
## Node number 1: 367 observations     Complexity param= 36699.987944
##   response estimate=0.014205,  risk/n= 99.999960
##
##   Primary splits:
##  var4 < 10.985 to the left, improve=0.002,  (0 missing)
##
##
## Node number 1: 1228 observations    Complexity param= 122799.978227
##   response estimate=0.014744,  risk/n= 99.999943
##
##   Primary splits:
##  var2 > 101.5 to the left, improve=0.014, (0 missing)
##  var3 >   3.5 to the left, improve=0.007, (0 missing)
##  var4 > 474.845 to the left, improve=0.002, (0 missing)
##
##
## Node number 1: 1025 observations    Complexity param= 102499.929550
##   response estimate=0.017672,  risk/n= 99.999918
##
##   Primary splits:
##  var3 >   3.5 to the left, improve=0.010, (0 missing)
##  var4 > 474.845 to the left, improve=0.003, (0 missing)
##
##
## Node number 1: 3765 observations    Complexity param= 376500.038157
##   response estimate=0.008197,  risk/n= 100.000010
##
##   Primary splits:
##  var2 >  58.5 to the left, improve=0.087, (0 missing)
##
##
## Node number 1: 3028 observations    Complexity param= 376500.038157
##   response estimate=0.002698,  risk/n= 100.000056
##
##   Primary splits:
##  var2 <  70.5 to the left, improve=0.004,  (0 missing)
##
##
## Node number 1: 2826 observations    Complexity param= 282600.169393
##   response estimate=0.003192,  risk/n= 100.000058
##
```

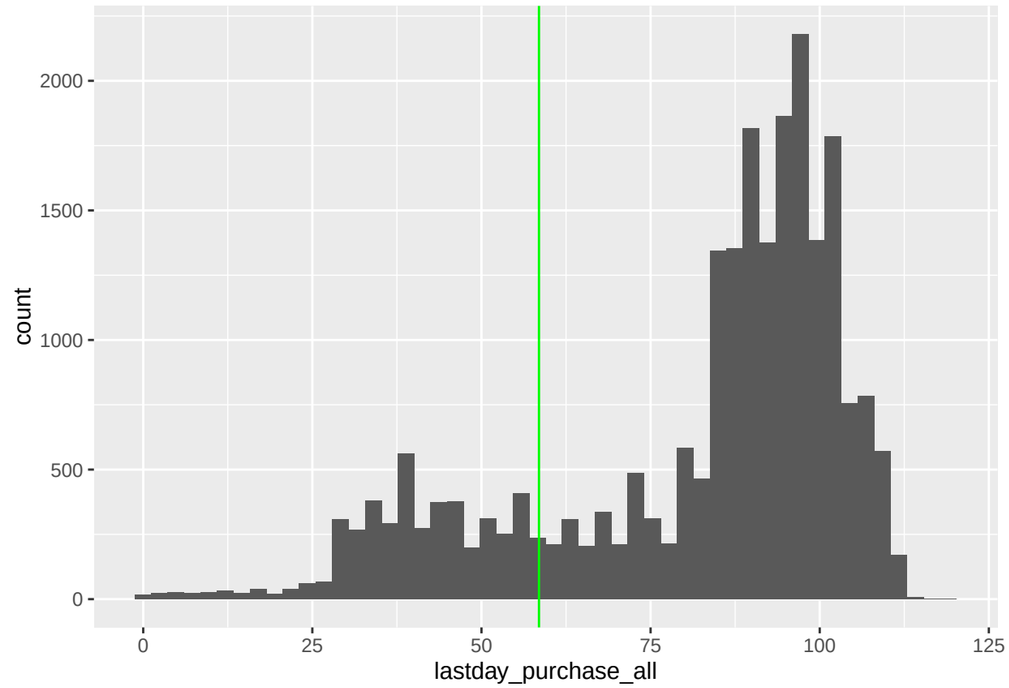
```
##   Primary splits:
##  var2 > 109.5 to the left, improve=0.002, (0 missing)
##
##
## Node number 1: 3765 observations    Complexity param= 376500.246713
##   response estimate=0.004821,  risk/n= 100.000066
##
##   Primary splits:
##  var2 >  58.5 to the left, improve=0.271, (0 missing)
##  var4 < 111.95 to the left, improve=0.039,  (0 missing)
##
##
## Node number 1: 3030 observations    Complexity param= 376500.246713
##   response estimate=-0.003651,  risk/n= 100.000106
##
##   Primary splits:
##  var4 < 65.08 to the left, improve=0.045,  (0 missing)
##
##
## Node number 1: 1654 observations    Complexity param= 303000.321958
##   response estimate=-0.020625,  risk/n= 100.000212
##
##   Primary splits:
##  var4 > 26.385 to the left, improve=0.043, (0 missing)
##  var2 < 105.5 to the left, improve=0.031,  (0 missing)
##
##
## Node number 1: 1258 observations    Complexity param= 165400.351131
##   response estimate=-0.026888,  risk/n= 100.000245
##
##   Primary splits:
##  var2 < 105.5 to the left, improve=0.044,  (0 missing)
##  var4 < 61.935 to the left, improve=0.000,  (0 missing)
##
##
## Node number 1: 1130 observations    Complexity param= 125800.308524
##   response estimate=-0.030769,  risk/n= 100.000226
##
##   Primary splits:
##  var2 >  71.5 to the left, improve=0.007, (0 missing)
##  var4 < 61.935 to the left, improve=0.000,  (0 missing)
##
##
## Node number 1: 1035 observations    Complexity param= 113000.255609
##   response estimate=-0.031746,  risk/n= 100.000240
##
##   Primary splits:
##  var4 < 61.935 to the left, improve=0.000,  (0 missing)
##
##
## Node number 1: 396 observations     Complexity param= 39600.042607
##   response estimate=0.007853,  risk/n= 100.000000
##
##   Primary splits:
##  var2 <  88.5 to the left, improve=0.000,  (0 missing)
##  var5 splits as RL,  improve=0.000, (0 missing)
##  var1 >   1.5 to the left, improve=0.000, (0 missing)
##  var0 splits as RL,  improve=0.000, (0 missing)
```

```
##  var4 < 10.985 to the left, improve=0.000,  (0 missing)
##
##
## Node number 1: 1376 observations    Complexity param= 137599.970827
##   response estimate=0.013964,  risk/n= 99.999946
##
##   Primary splits:
##  var2 > 101.5 to the left, improve=0.017, (0 missing)
##  var3 >   1.5 to the left, improve=0.010, (0 missing)
##  var4 > 474.845 to the left, improve=0.002, (0 missing)
##
##
## Node number 1: 1123 observations    Complexity param= 112299.926133
##   response estimate=0.017110,  risk/n= 99.999919
##
##   Primary splits:
##  var3 >   1.5 to the left, improve=0.019, (0 missing)
##  var2 <  70.5 to the left, improve=0.006,  (0 missing)
##  var4 > 474.845 to the left, improve=0.002, (0 missing)
##
##
## Node number 1: 590 observations     Complexity param= 58999.907157
##   response estimate=0.028777,  risk/n= 99.999811
##
##   Primary splits:
##  var4 > 122.955 to the left, improve=0.023, (0 missing)
##  var2 <  70.5 to the left, improve=0.006,  (0 missing)
##
##
## Node number 1: 735 observations     Complexity param= 73499.924755
##   response estimate=0.038012,  risk/n= 99.999529
##
##   Primary splits:
##  var1 <   6.5 to the left, improve=0.081,  (0 missing)
##  var0 splits as LR,  improve=0.072, (0 missing)
##  var5 splits as LR,  improve=0.049, (0 missing)
##  var4 < 37.985 to the left, improve=0.003,  (0 missing)
##
##
## Node number 1: 590 observations     Complexity param= 73499.653478
##   response estimate=0.016393,  risk/n= 99.999931
##
##   Primary splits:
##  var5 splits as RL,  improve=0.001, (0 missing)
##  var1 >     1 to the left, improve=0.001, (0 missing)
##
##
## Node number 1: 145 observations     Complexity param= 14499.694396
##   response estimate=0.125926,  risk/n= 99.997330
##
##   Primary splits:
##  var4 < 37.985 to the left, improve=0.158,  (0 missing)
##
##
## Node number 1: 105 observations     Complexity param= 10499.612902
##   response estimate=0.173469,  risk/n= 99.994806
##
##   Primary splits:
```

```
##  var4 > 271.97 to the left, improve=0.044, (0 missing)
```

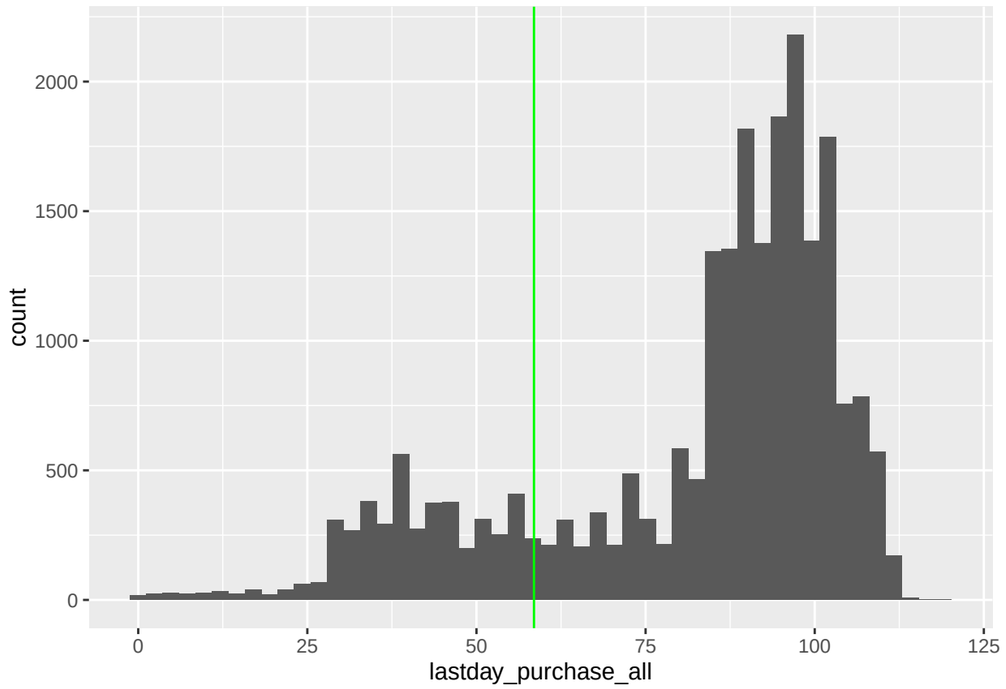
	effect	p_value	path
14	0.2	0.09435825	lastday_purchase_all>=58.5
15	0.1	0.05155893	lastday_purchase_all< 58.5,NPS< 7.5
2	0.003601353	0.3674898	lastday_purchase_all< 58.5,money_spend_all< 37.98,NPS>=7.5
6	0.0292887	0.09712939	lastday_purchase_all< 58.5,money_spend_all>=37.98,NPS>=7.5

```
## [1] "lastday_purchase_all>=58.5"
```

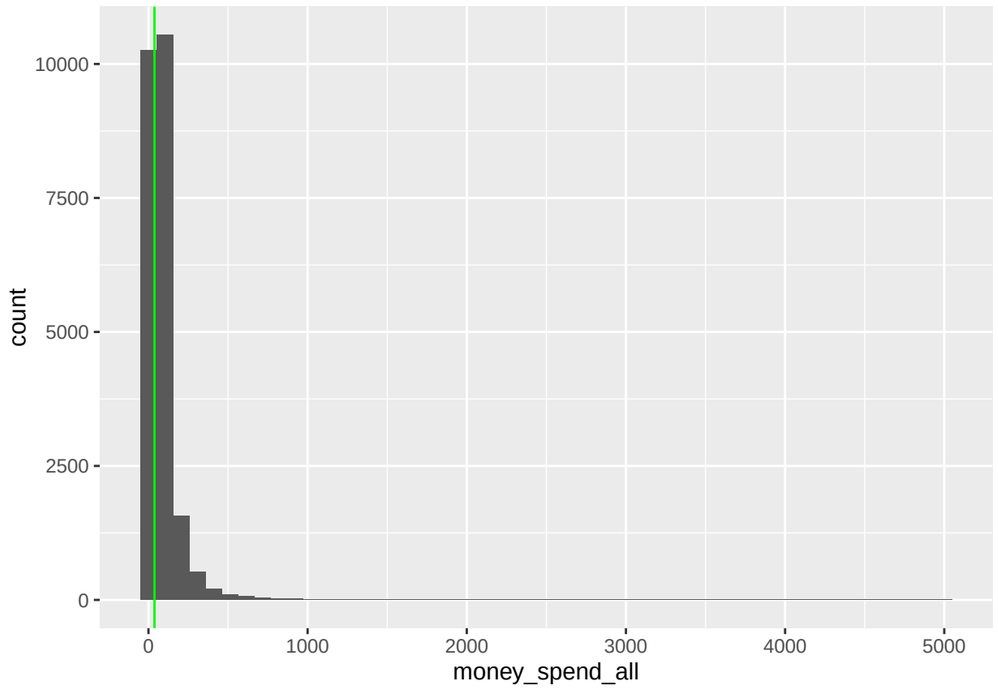



```
## [1] "lastday_purchase_all>=58.5" "19.4161458779214"
## [1] "mean"
## [1] 81.78401
## [1] "median"
## [1] 90
```

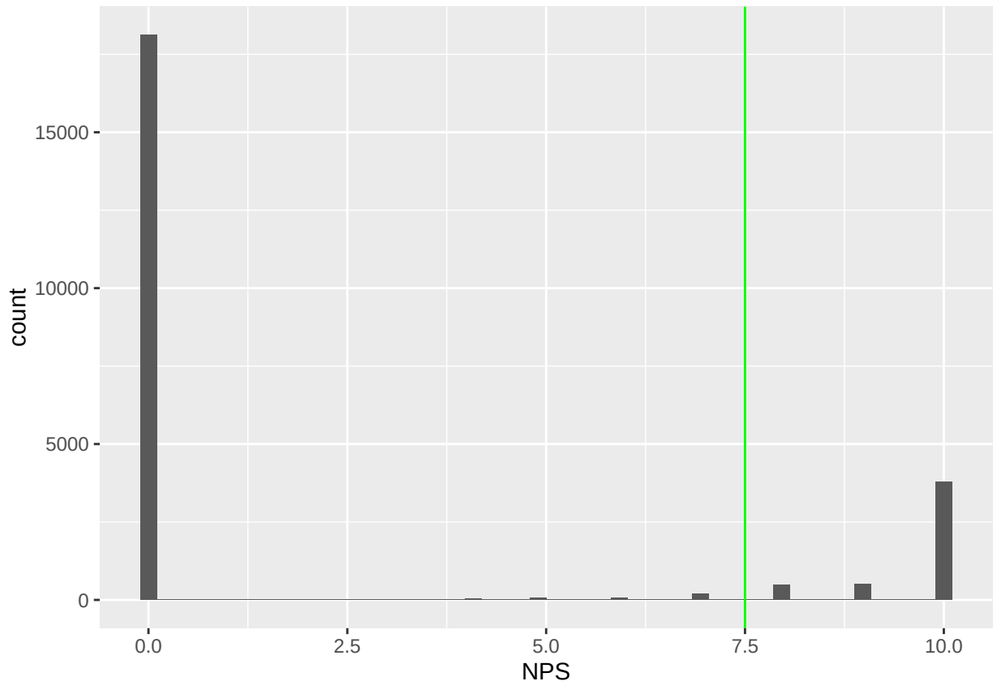
```
## [1] "lastday_purchase_all< 58.5,money_spend_all>=37.98,NPS>=7.5"
```




```
## [1] "lastday_purchase_all< 58.5" "19.4161458779214"
## [1] "mean"
## [1] 81.78401
## [1] "median"
## [1] 90
```




```
## [1] "money_spend_all>=37.98" "27.7630339868162"
## [1] "mean"
## [1] 84.6052
## [1] "median"
## [1] 57.94
```




```
## [1] "NPS>=7.5"         "79.449533430357"
## [1] "mean"
## [1] 2.095069
## [1] "median"
## [1] 0
```