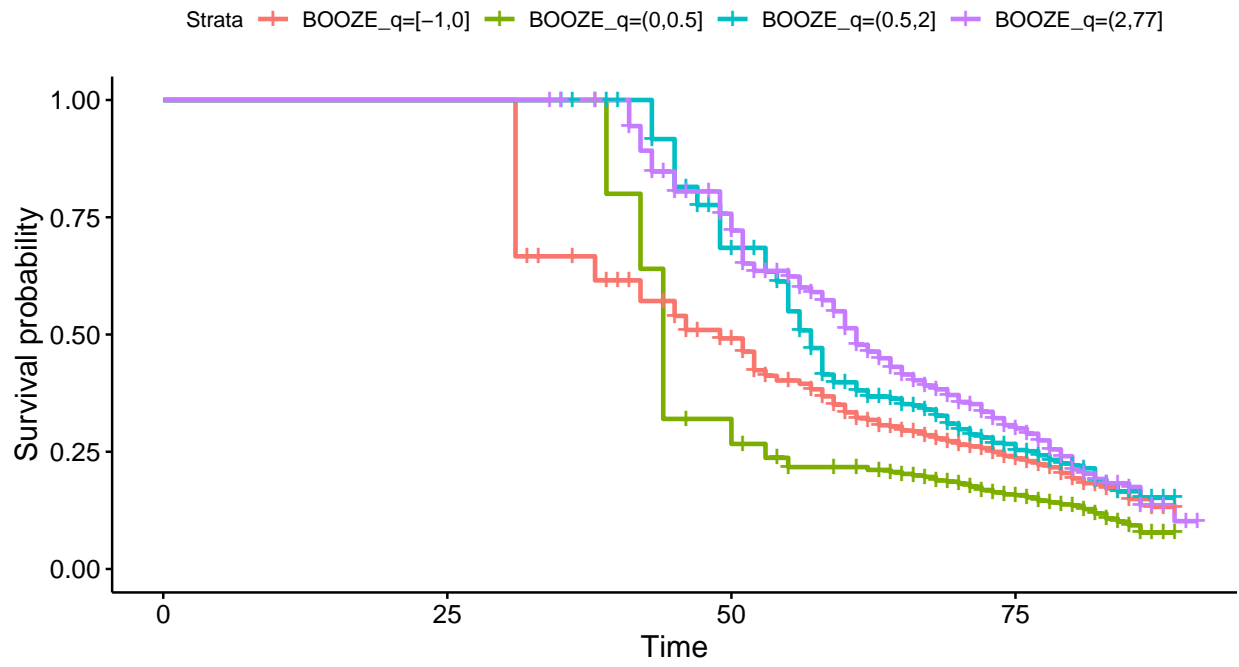


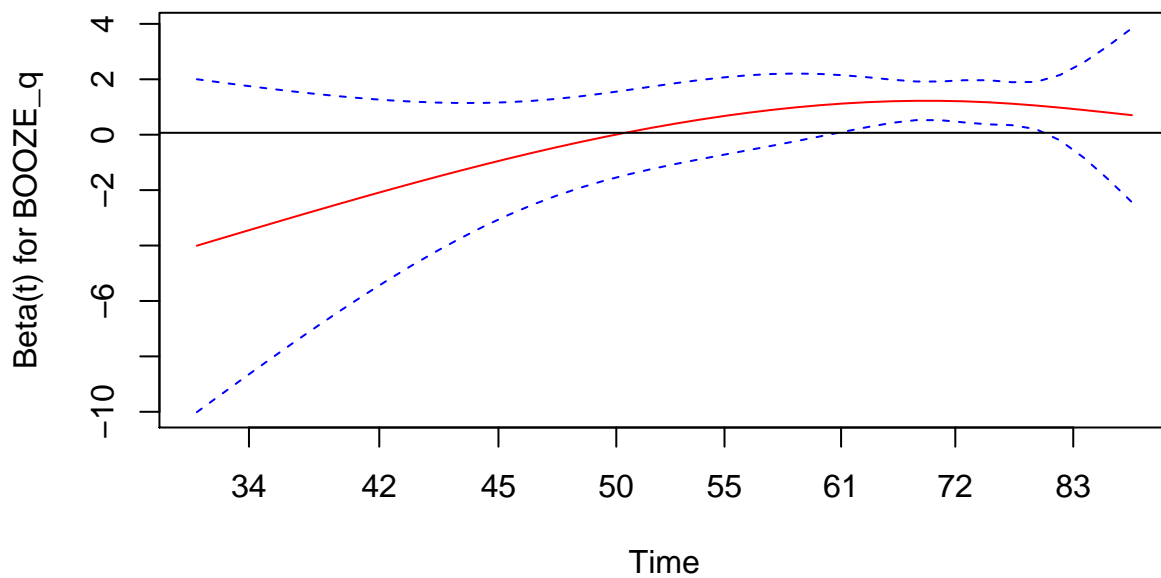
R Notebook

categorical BOOZE_q



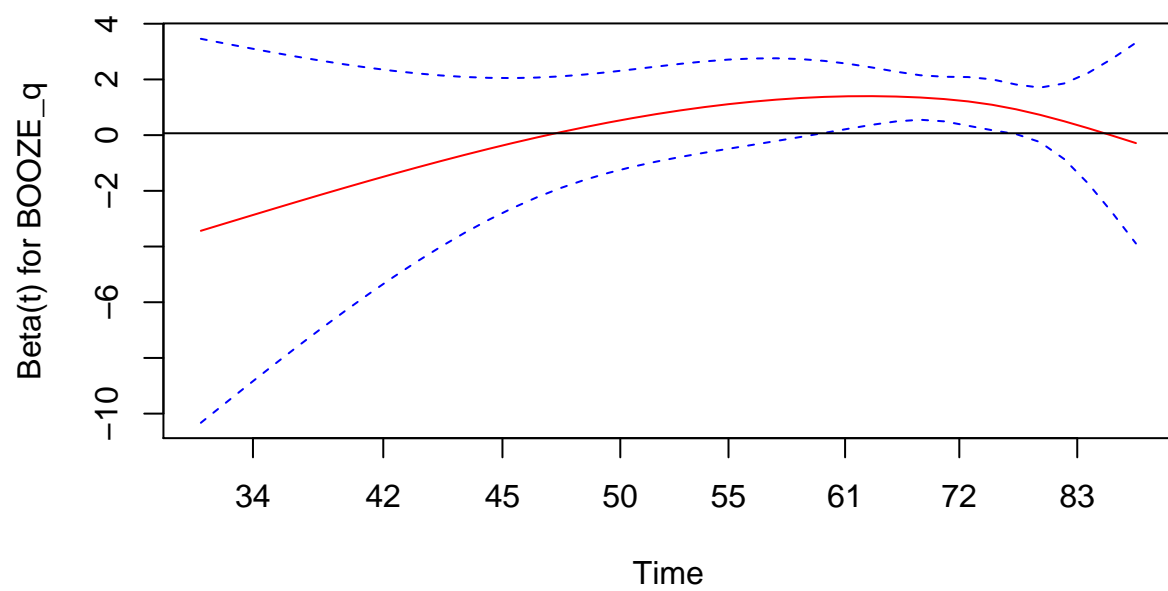
~ BOOZE_q

```
## Call:
## coxph(formula = Surv(AGEYRS, AGEDIE, cancer_death) ~ BOOZE_q,
##       data = data)
##
##   n= 2110, number of events= 556
##
##               coef exp(coef) se(coef)      z Pr(>|z|)
## BOOZE_q(0,0.5] 0.06886   1.07129  0.15200 0.453 0.650510
## BOOZE_q(0.5,2] 0.22020   1.24632  0.12571 1.752 0.079843 .
## BOOZE_q(2,77]  0.34785   1.41603  0.10015 3.473 0.000514 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##               exp(coef) exp(-coef) lower .95 upper .95
## BOOZE_q(0,0.5]    1.071    0.9335    0.7953    1.443
## BOOZE_q(0.5,2]    1.246    0.8024    0.9741    1.595
## BOOZE_q(2,77]    1.416    0.7062    1.1636    1.723
##
## Concordance= 0.545  (se = 0.012 )
## Likelihood ratio test= 12.58 on 3 df,  p=0.006
## Wald test               = 12.77 on 3 df,  p=0.005
## Score (logrank) test = 12.87 on 3 df,  p=0.005
##
##               chisq df  p
## BOOZE_q      4.66  3 0.2
## GLOBAL       4.66  3 0.2
```



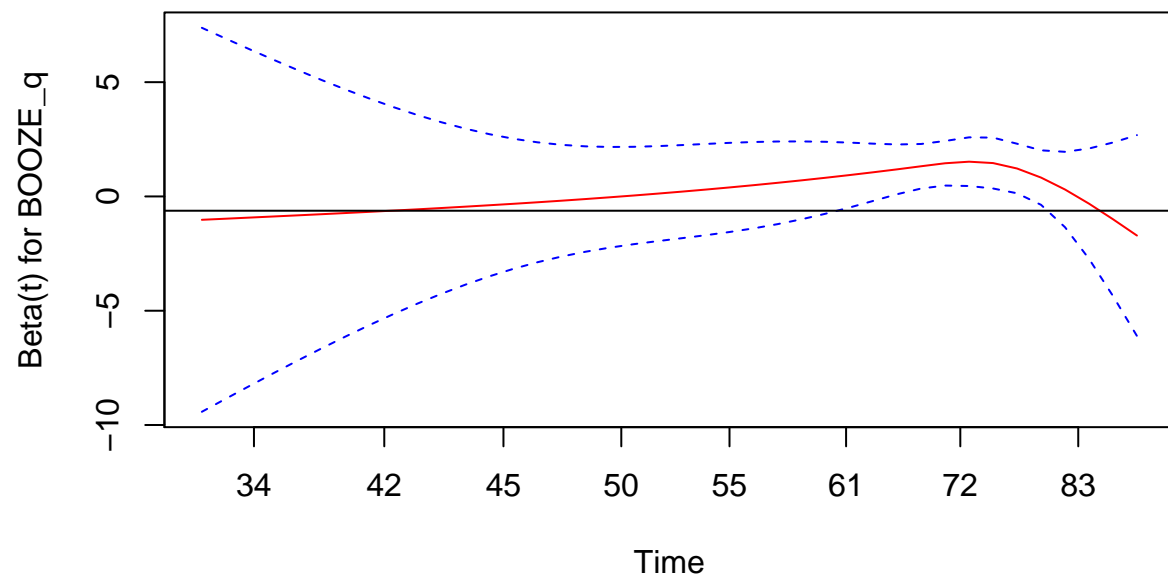
~ BOOZE_q + SEX

```
## Call:
## coxph(formula = Surv(AGEYRS, AGEDIE, cancer_death) ~ BOOZE_q +
##       SEX, data = data)
##
##      n= 2110, number of events= 556
##
##              coef exp(coef) se(coef)      z Pr(>|z|)
## BOOZE_q(0,0.5]  0.06697   1.06926  0.15201  0.441  0.65954
## BOOZE_q(0.5,2]  0.20378   1.22603  0.12635  1.613  0.10678
## BOOZE_q(2,77]   0.31373   1.36852  0.10363  3.028  0.00247 **
## SEX             -0.11385   0.89239  0.09004 -1.265  0.20604
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##              exp(coef) exp(-coef) lower .95 upper .95
## BOOZE_q(0,0.5]    1.0693    0.9352    0.7938    1.440
## BOOZE_q(0.5,2]    1.2260    0.8156    0.9571    1.571
## BOOZE_q(2,77]     1.3685    0.7307    1.1170    1.677
## SEX                0.8924    1.1206    0.7480    1.065
##
## Concordance= 0.555 (se = 0.013 )
## Likelihood ratio test= 14.18 on 4 df,  p=0.007
## Wald test              = 14.34 on 4 df,  p=0.006
## Score (logrank) test = 14.45 on 4 df,  p=0.006
##
##              chisq df      p
## BOOZE_q      4.6  3 0.20340
## SEX          14.3  1 0.00015
## GLOBAL       16.4  4 0.00258
```



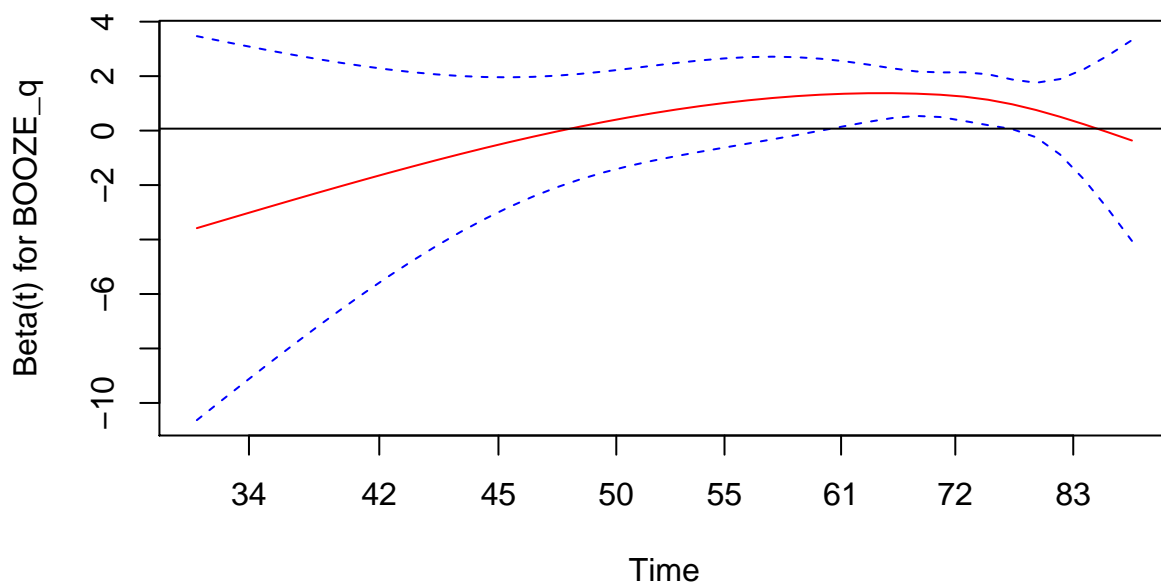
~ BOOZE_q + SEX + BOOZE_q * SEX

```
## Call:
## coxph(formula = Surv(AGEYRS, AGEDIE, cancer_death) ~ BOOZE_q +
##       SEX + BOOZE_q * SEX, data = data)
##
## n= 2110, number of events= 556
##
##               coef exp(coef) se(coef)      z Pr(>|z|)
## BOOZE_q(0,0.5] -0.6254    0.5351   0.4982 -1.255  0.20940
## BOOZE_q(0.5,2] -0.5305    0.5883   0.3850 -1.378  0.16823
## BOOZE_q(2,77] -0.2474    0.7808   0.3051 -0.811  0.41729
## SEX           -0.3512    0.7038   0.1305 -2.691  0.00713 **
## BOOZE_q(0,0.5]:SEX 0.4562    1.5780   0.3063  1.489  0.13647
## BOOZE_q(0.5,2]:SEX 0.5064    1.6593   0.2513  2.015  0.04388 *
## BOOZE_q(2,77]:SEX  0.4033    1.4967   0.2153  1.873  0.06103 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##               exp(coef) exp(-coef) lower .95 upper .95
## BOOZE_q(0,0.5]    0.5351    1.8689    0.2015    1.421
## BOOZE_q(0.5,2]    0.5883    1.6999    0.2766    1.251
## BOOZE_q(2,77]    0.7808    1.2808    0.4294    1.420
## SEX               0.7038    1.4208    0.5449    0.909
## BOOZE_q(0,0.5]:SEX 1.5780    0.6337    0.8657    2.876
## BOOZE_q(0.5,2]:SEX 1.6593    0.6027    1.0140    2.715
## BOOZE_q(2,77]:SEX  1.4967    0.6681    0.9815    2.282
##
## Concordance= 0.561 (se = 0.013 )
## Likelihood ratio test= 20.6 on 7 df, p=0.004
## Wald test              = 19.78 on 7 df, p=0.006
## Score (logrank) test = 20.08 on 7 df, p=0.005
##
##               chisq df      p
## BOOZE_q       4.67  3 0.19759
## SEX          12.34  1 0.00044
## BOOZE_q:SEX   6.67  3 0.08324
## GLOBAL       15.61  7 0.02890
```



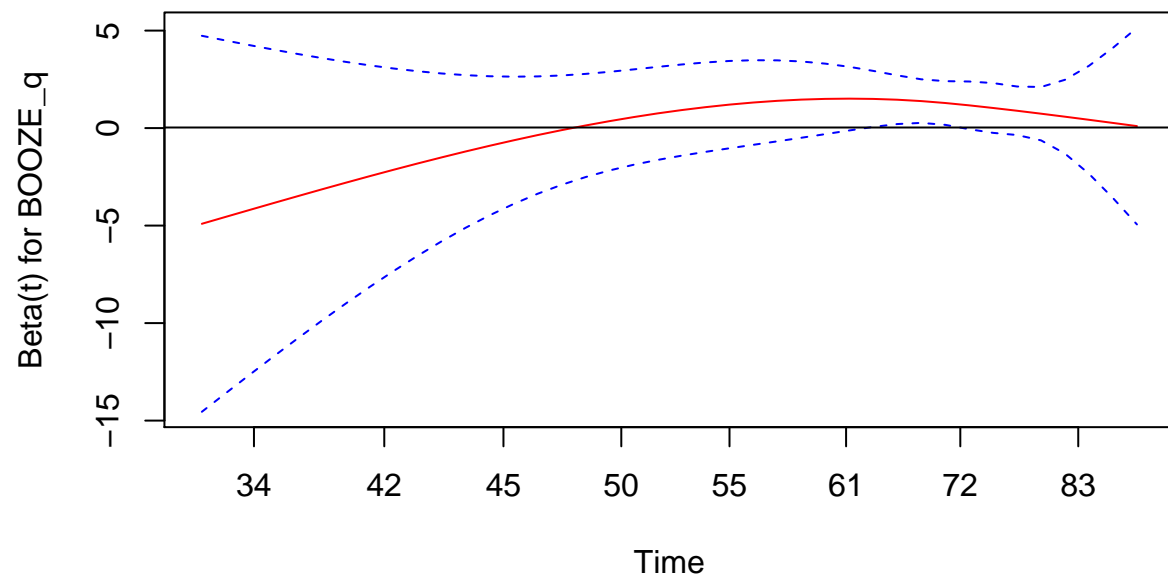
~ BOOZE_q, stratify by SEX

```
## Call:
## coxph(formula = Surv(AGEYRS, AGEDIE, cancer_death) ~ BOOZE_q +
##       strata(SEX), data = data)
##
##      n= 2110, number of events= 556
##
##               coef exp(coef) se(coef)      z Pr(>|z|)
## BOOZE_q(0,0.5] 0.07178    1.07441  0.15213  0.472  0.63706
## BOOZE_q(0.5,2] 0.19041    1.20974  0.12654  1.505  0.13241
## BOOZE_q(2,77]  0.30784    1.36049  0.10331  2.980  0.00289 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##               exp(coef) exp(-coef) lower .95 upper .95
## BOOZE_q(0,0.5]    1.074    0.9307    0.7974    1.448
## BOOZE_q(0.5,2]    1.210    0.8266    0.9440    1.550
## BOOZE_q(2,77]    1.360    0.7350    1.1111    1.666
##
## Concordance= 0.537 (se = 0.013 )
## Likelihood ratio test= 9.18 on 3 df,  p=0.03
## Wald test              = 9.27 on 3 df,  p=0.03
## Score (logrank) test = 9.32 on 3 df,  p=0.03
##
##               chisq df    p
## BOOZE_q      2.31  3 0.51
## GLOBAL       2.31  3 0.51
```



~ BOOZE_q + SEX + RACE + GRADES + MARRY + SIZE + AVGSMK +
SMSA + URBAN

```
## Call:
## coxph(formula = Surv(AGEYRS, AGEDIE, cancer_death) ~ BOOZE_q +
##       SEX + RACE + GRADES + MARRY + SIZE + AVGSMK + SMSA + URBAN,
##       data = data)
##
## n= 2110, number of events= 556
##
##               coef exp(coef) se(coef)      z Pr(>|z|)
## BOOZE_q(0,0.5]  0.030256  1.030718  0.152827  0.198  0.8431
## BOOZE_q(0.5,2]  0.151853  1.163989  0.128545  1.181  0.2375
## BOOZE_q(2,77]   0.231967  1.261078  0.108296  2.142  0.0322 *
## SEX             -0.094951  0.909418  0.092146 -1.030  0.3028
## RACE             0.099011  1.104079  0.122894  0.806  0.4204
## GRADES           0.012468  1.012546  0.012770  0.976  0.3289
## MARRY           -0.046451  0.954611  0.041285 -1.125  0.2605
## SIZE            -0.024198  0.976092  0.035141 -0.689  0.4911
## AVGSMK           0.011814  1.011884  0.002952  4.001  6.3e-05 ***
## SMSA            -0.001426  0.998575  0.054413 -0.026  0.9791
## URBAN            0.091674  1.096008  0.158731  0.578  0.5636
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##               exp(coef) exp(-coef) lower .95 upper .95
## BOOZE_q(0,0.5]    1.0307    0.9702    0.7639    1.391
## BOOZE_q(0.5,2]    1.1640    0.8591    0.9048    1.497
## BOOZE_q(2,77]     1.2611    0.7930    1.0199    1.559
## SEX                0.9094    1.0996    0.7592    1.089
## RACE                1.1041    0.9057    0.8677    1.405
## GRADES              1.0125    0.9876    0.9875    1.038
## MARRY              0.9546    1.0475    0.8804    1.035
## SIZE                0.9761    1.0245    0.9111    1.046
## AVGSMK              1.0119    0.9883    1.0060    1.018
## SMSA                0.9986    1.0014    0.8976    1.111
## URBAN              1.0960    0.9124    0.8030    1.496
##
## Concordance= 0.589 (se = 0.013 )
## Likelihood ratio test= 32.22 on 11 df,  p=7e-04
## Wald test              = 34.18 on 11 df,  p=3e-04
## Score (logrank) test = 34.43 on 11 df,  p=3e-04
##
##               chisq df      p
## BOOZE_q      4.9235  3 0.17748
## SEX          14.3421  1 0.00015
## RACE          4.5890  1 0.03218
## GRADES        2.0953  1 0.14775
## MARRY         1.3804  1 0.24003
## SIZE          0.2398  1 0.62433
## AVGSMK       10.9195  1 0.00095
## SMSA          0.0631  1 0.80166
## URBAN         0.0519  1 0.81985
## GLOBAL       35.0953 11 0.00024
```

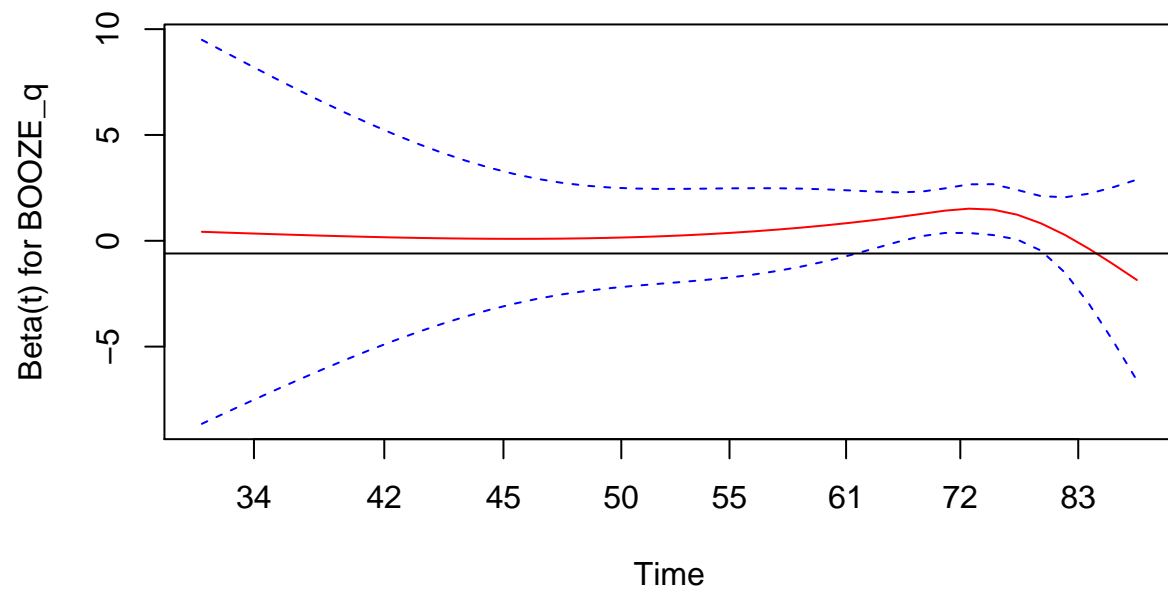
~ BOOZE_q + SEX + BOOZE_q * SEX + RACE + GRADES + MARRY +
SIZE + AVGSMK + SMSA + URBAN

```
## Call:
## coxph(formula = Surv(AGEYRS, AGEDIE, cancer_death) ~ BOOZE_q +
##       SEX + BOOZE_q * SEX + RACE + GRADES + MARRY + SIZE + AVGSMK +
##       SMSA + URBAN, data = data)
##
## n= 2110, number of events= 556
##
##               coef exp(coef)    se(coef)      z Pr(>|z|)
## BOOZE_q(0,0.5] -0.5998552  0.5488911  0.4990008 -1.202  0.2293
## BOOZE_q(0.5,2] -0.6136167  0.5413893  0.3861327 -1.589  0.1120
## BOOZE_q(2,77] -0.3134365  0.7309308  0.3065896 -1.022  0.3066
## SEX           -0.3279080  0.7204293  0.1318230 -2.487  0.0129 *
## RACE           0.1062188  1.1120652  0.1227879  0.865  0.3870
## GRADES         0.0120579  1.0121309  0.0127511  0.946  0.3443
## MARRY         -0.0492749  0.9519195  0.0413603 -1.191  0.2335
## SIZE          -0.0234216  0.9768506  0.0349752 -0.670  0.5031
## AVGSMK         0.0118307  1.0119010  0.0029659  3.989 6.64e-05 ***
## SMSA          0.0002726  1.0002726  0.0543100  0.005  0.9960
## URBAN          0.0820093  1.0854659  0.1585352  0.517  0.6050
## BOOZE_q(0,0.5]:SEX 0.4155479  1.5152006  0.3068690  1.354  0.1757
## BOOZE_q(0.5,2]:SEX 0.5299198  1.6987961  0.2515599  2.107  0.0352 *
## BOOZE_q(2,77]:SEX  0.3921858  1.4802128  0.2155599  1.819  0.0689 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##               exp(coef) exp(-coef) lower .95 upper .95
## BOOZE_q(0,0.5]    0.5489    1.8219    0.2064    1.4596
## BOOZE_q(0.5,2]    0.5414    1.8471    0.2540    1.1539
## BOOZE_q(2,77]     0.7309    1.3681    0.4008    1.3330
## SEX               0.7204    1.3881    0.5564    0.9328
## RACE              1.1121    0.8992    0.8742    1.4146
## GRADES            1.0121    0.9880    0.9871    1.0377
## MARRY             0.9519    1.0505    0.8778    1.0323
## SIZE              0.9769    1.0237    0.9121    1.0462
## AVGSMK            1.0119    0.9882    1.0060    1.0178
## SMSA              1.0003    0.9997    0.8993    1.1126
## URBAN             1.0855    0.9213    0.7956    1.4810
## BOOZE_q(0,0.5]:SEX 1.5152    0.6600    0.8304    2.7649
## BOOZE_q(0.5,2]:SEX 1.6988    0.5887    1.0376    2.7814
## BOOZE_q(2,77]:SEX  1.4802    0.6756    0.9702    2.2584
##
## Concordance= 0.59 (se = 0.013 )
## Likelihood ratio test= 38.57 on 14 df, p=4e-04
## Wald test              = 39.38 on 14 df, p=3e-04
## Score (logrank) test = 39.85 on 14 df, p=3e-04
##
##               chisq df      p
## BOOZE_q       4.9328  3 0.1768
## SEX           12.1289  1 0.0005
## RACE          4.7812  1 0.0288
## GRADES        2.0451  1 0.1527
```

```

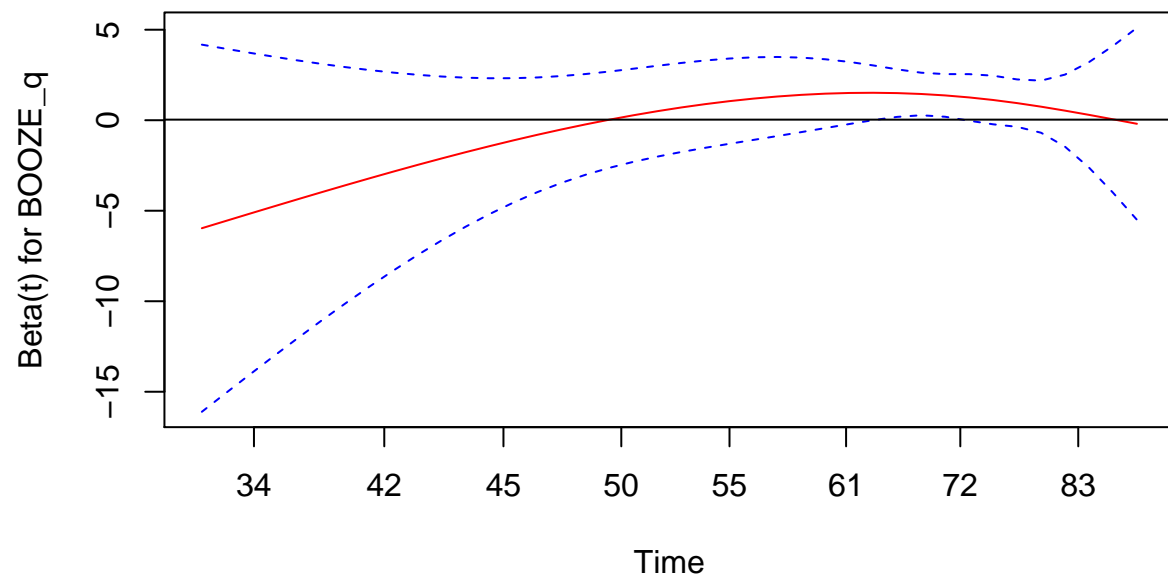
## MARRY      1.1405  1 0.2855
## SIZE       0.1254  1 0.7232
## AVGSMDK    10.7729  1 0.0010
## SMSA       0.0224  1 0.8811
## URBAN      0.0825  1 0.7739
## BOOZE_q:SEX 6.3282  3 0.0967
## GLOBAL     34.0037 14 0.0021

```



~ BOOZE_q + RACE + GRADES + MARRY + SIZE + AVGSMK + SMSA
+ URBAN, stratify by SEX

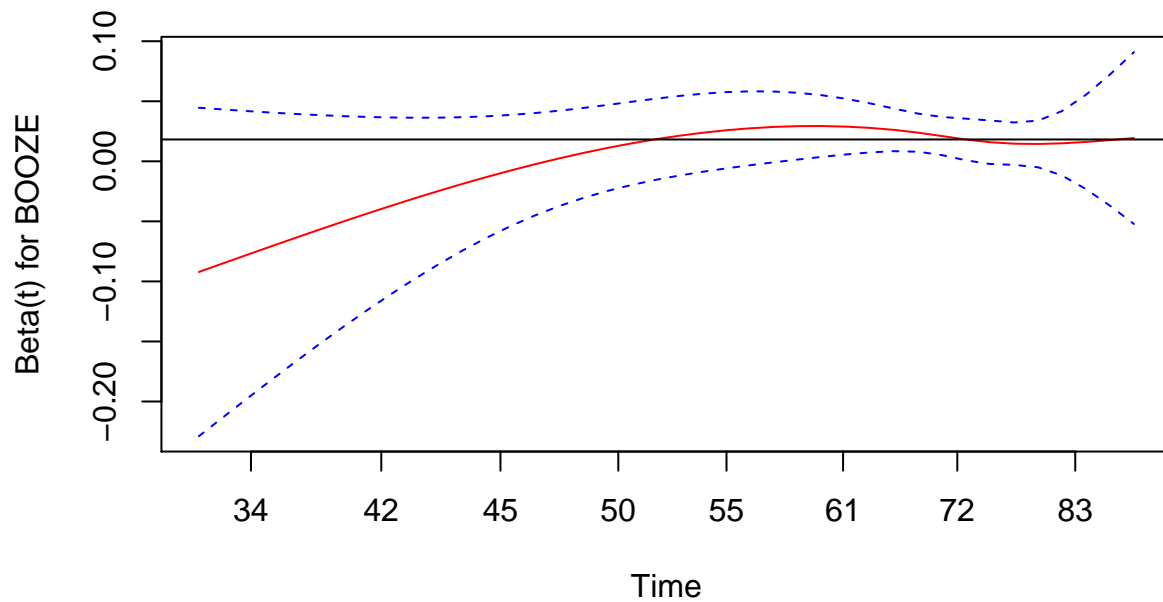
```
## Call:
## coxph(formula = Surv(AGEYRS, AGEDIE, cancer_death) ~ BOOZE_q +
##       strata(SEX) + RACE + GRADES + MARRY + SIZE + AVGSMK + SMSA +
##       URBAN, data = data)
##
## n= 2110, number of events= 556
##
##               coef exp(coef) se(coef)      z Pr(>|z|)
## BOOZE_q(0,0.5]  0.033340  1.033902  0.152932  0.218  0.8274
## BOOZE_q(0.5,2]  0.135635  1.145264  0.128914  1.052  0.2927
## BOOZE_q(2,77]   0.221995  1.248566  0.107955  2.056  0.0397 *
## RACE            0.114871  1.121729  0.122722  0.936  0.3493
## GRADES          0.013931  1.014029  0.012781  1.090  0.2757
## MARRY          -0.032487  0.968035  0.041259 -0.787  0.4310
## SIZE           -0.024413  0.975883  0.034802 -0.701  0.4830
## AVGSMK          0.011999  1.012072  0.002920  4.109 3.98e-05 ***
## SMSA           0.006539  1.006561  0.054355  0.120  0.9042
## URBAN           0.076909  1.079944  0.157714  0.488  0.6258
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##               exp(coef) exp(-coef) lower .95 upper .95
## BOOZE_q(0,0.5]    1.0339    0.9672    0.7661    1.395
## BOOZE_q(0.5,2]    1.1453    0.8732    0.8896    1.474
## BOOZE_q(2,77]     1.2486    0.8009    1.0105    1.543
## RACE              1.1217    0.8915    0.8819    1.427
## GRADES            1.0140    0.9862    0.9889    1.040
## MARRY             0.9680    1.0330    0.8928    1.050
## SIZE              0.9759    1.0247    0.9115    1.045
## AVGSMK            1.0121    0.9881    1.0063    1.018
## SMSA              1.0066    0.9935    0.9048    1.120
## URBAN             1.0799    0.9260    0.7928    1.471
##
## Concordance= 0.583 (se = 0.013 )
## Likelihood ratio test= 27.43 on 10 df,  p=0.002
## Wald test              = 29.33 on 10 df,  p=0.001
## Score (logrank) test = 29.53 on 10 df,  p=0.001
##
##               chisq df      p
## BOOZE_q 2.35e+00  3 0.5035
## RACE    3.89e+00  1 0.0487
## GRADES  2.35e+00  1 0.1252
## MARRY   1.21e+00  1 0.2705
## SIZE    3.99e-02  1 0.8418
## AVGSMK  9.37e+00  1 0.0022
## SMSA    5.11e-04  1 0.9820
## URBAN    8.23e-02  1 0.7742
## GLOBAL  2.09e+01 10 0.0222
```



continuous BOOZE

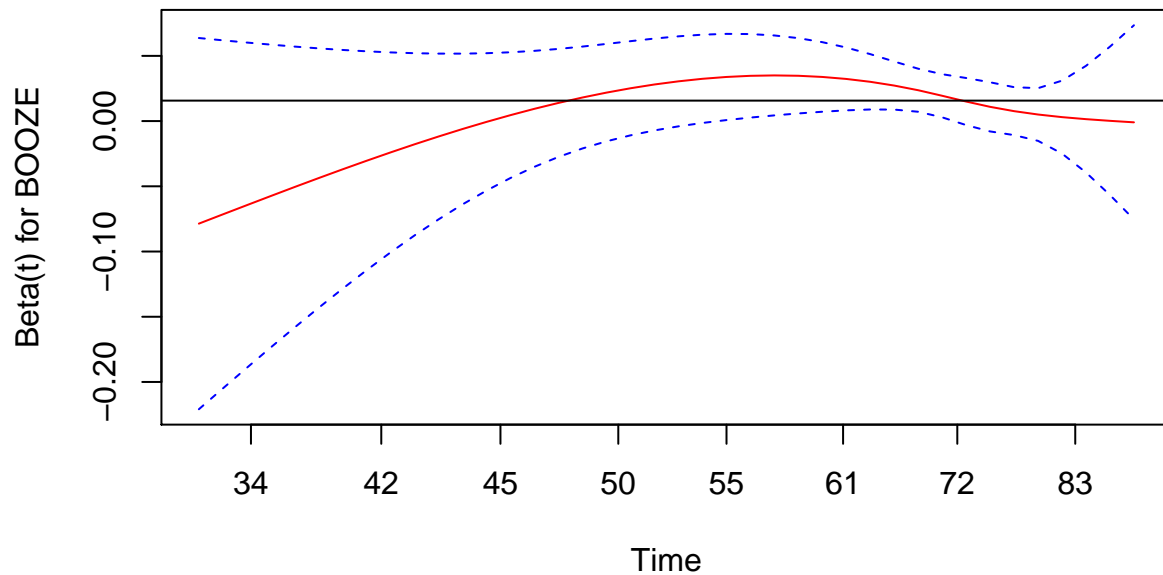
~ BOOZE

```
## Call:
## coxph(formula = Surv(AGEYRS, AGEDIE, cancer_death) ~ BOOZE, data = data)
##
##      n= 2110, number of events= 556
##
##              coef exp(coef) se(coef)      z Pr(>|z|)
## BOOZE 0.018198   1.018365 0.006369 2.857  0.00427 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##              exp(coef) exp(-coef) lower .95 upper .95
## BOOZE          1.018         0.982      1.006      1.031
##
## Concordance= 0.545 (se = 0.013 )
## Likelihood ratio test= 7.11 on 1 df,  p=0.008
## Wald test               = 8.16 on 1 df,  p=0.004
## Score (logrank) test = 8.19 on 1 df,  p=0.004
##
##              chisq df    p
## BOOZE      0.379  1 0.54
## GLOBAL    0.379  1 0.54
```



~ BOOZE + SEX

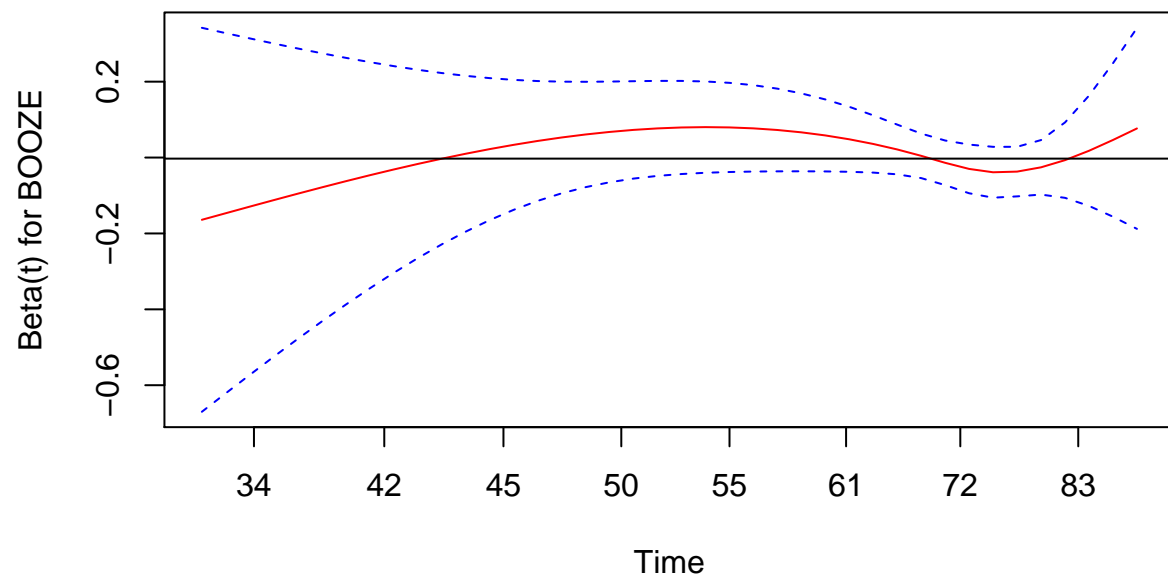
```
## Call:
## coxph(formula = Surv(AGEYRS, AGEDIE, cancer_death) ~ BOOZE +
##       SEX, data = data)
##
##      n= 2110, number of events= 556
##
##              coef exp(coef)  se(coef)      z Pr(>|z|)
## BOOZE  0.015681  1.015805  0.006629  2.366   0.018 *
## SEX    -0.140015  0.869346  0.089385 -1.566   0.117
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##              exp(coef) exp(-coef) lower .95 upper .95
## BOOZE    1.0158      0.9844    1.0027    1.029
## SEX      0.8693      1.1503    0.7296    1.036
##
## Concordance= 0.548  (se = 0.013 )
## Likelihood ratio test= 9.58  on 2 df,  p=0.008
## Wald test               = 10.4  on 2 df,  p=0.006
## Score (logrank) test = 10.46  on 2 df,  p=0.005
##
##              chisq df      p
## BOOZE    0.338  1 0.56078
## SEX    14.763  1 0.00012
## GLOBAL 15.021  2 0.00055
```



~ BOOZE + SEX + BOOZE * SEX

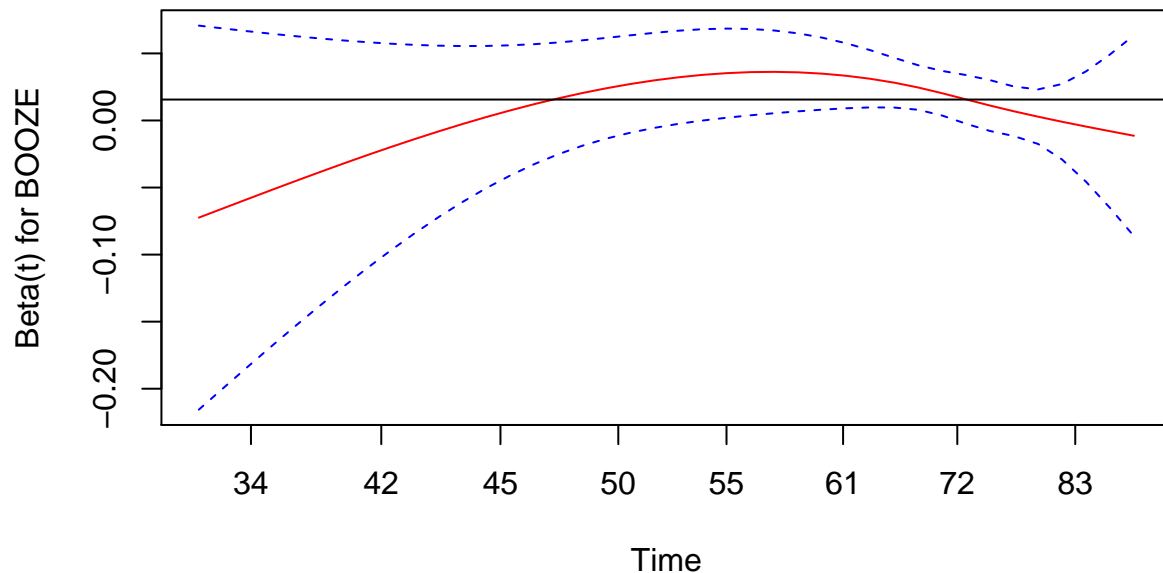
```
## Call:
## coxph(formula = Surv(AGEYRS, AGEDIE, cancer_death) ~ BOOZE +
##       SEX + BOOZE * SEX, data = data)
##
##   n= 2110, number of events= 556
##
##               coef exp(coef)  se(coef)      z Pr(>|z|)
## BOOZE      -0.002801  0.997203  0.023570 -0.119  0.9054
## SEX        -0.170493  0.843249  0.097157 -1.755  0.0793 .
## BOOZE:SEX   0.016581  1.016719  0.020068  0.826  0.4087
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##               exp(coef) exp(-coef) lower .95 upper .95
## BOOZE           0.9972      1.0028    0.9522    1.044
## SEX             0.8432      1.1859    0.6970    1.020
## BOOZE:SEX       1.0167      0.9836    0.9775    1.058
##
## Concordance= 0.551  (se = 0.013 )
## Likelihood ratio test= 10.23  on 3 df,   p=0.02
## Wald test              = 10.83  on 3 df,   p=0.01
## Score (logrank) test = 10.91  on 3 df,   p=0.01

##               chisq df      p
## BOOZE           0.2834  1 0.59447
## SEX            14.4764  1 0.00014
## BOOZE:SEX       0.0646  1 0.79939
## GLOBAL          15.7031  3 0.00130
```

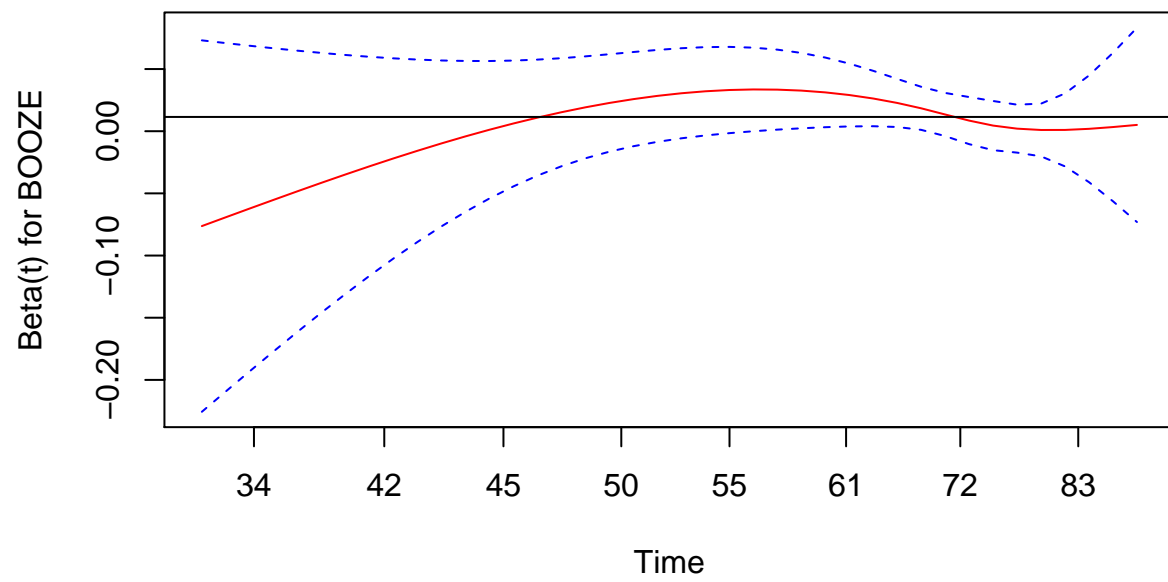
~ BOOZE, stratify by SEX

```
## Call:
## coxph(formula = Surv(AGEYRS, AGEDIE, cancer_death) ~ BOOZE +
##       strata(SEX), data = data)
##
##      n= 2110, number of events= 556
##
##              coef exp(coef) se(coef)      z Pr(>|z|)
## BOOZE 0.015602   1.015724 0.006668  2.34   0.0193 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##              exp(coef) exp(-coef) lower .95 upper .95
## BOOZE      1.016      0.9845      1.003      1.029
##
## Concordance= 0.538 (se = 0.013 )
## Likelihood ratio test= 4.92 on 1 df,  p=0.03
## Wald test               = 5.47 on 1 df,  p=0.02
## Score (logrank) test = 5.49 on 1 df,  p=0.02
##
##              chisq df    p
## BOOZE      0.328  1 0.57
## GLOBAL      0.328  1 0.57
```



~ BOOZE + SEX + RACE + GRADES + MARRY + SIZE + AVGSMK +
SMSA + URBAN

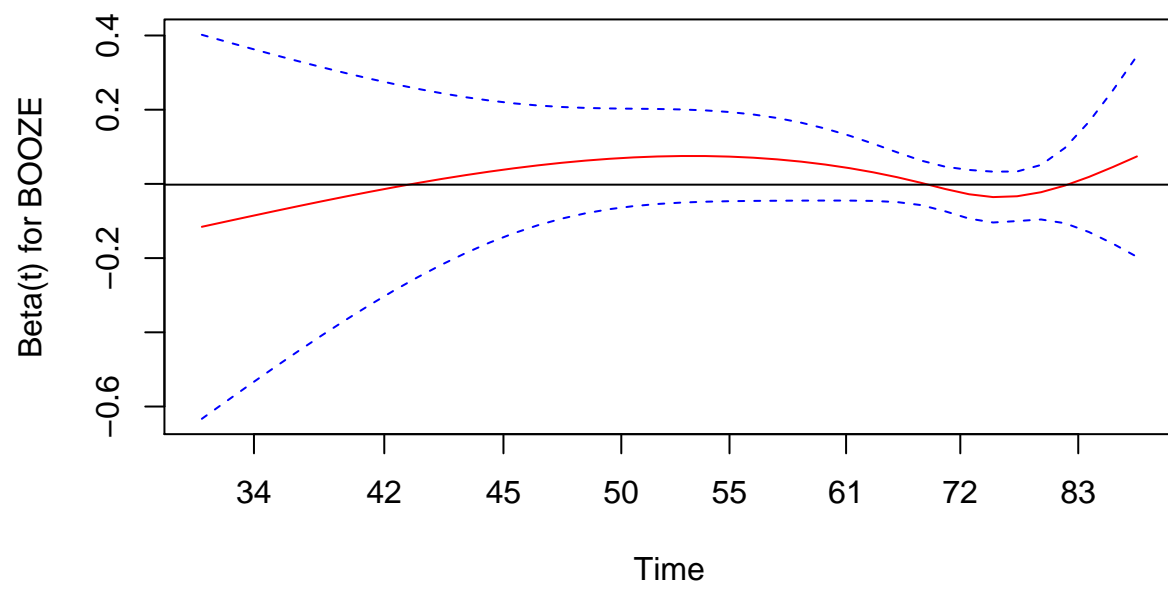
```
## Call:
## coxph(formula = Surv(AGEYRS, AGEDIE, cancer_death) ~ BOOZE +
##       SEX + RACE + GRADES + MARRY + SIZE + AVGSMK + SMSA + URBAN,
##       data = data)
##
## n= 2110, number of events= 556
##
##           coef exp(coef) se(coef)      z Pr(>|z|)
## BOOZE    0.011470  1.011536  0.006957  1.649  0.0992 .
## SEX      -0.117041  0.889549  0.091148 -1.284  0.1991
## RACE      0.092575  1.096995  0.122641  0.755  0.4503
## GRADES    0.014466  1.014571  0.012647  1.144  0.2527
## MARRY    -0.046064  0.954981  0.041258 -1.116  0.2642
## SIZE     -0.027210  0.973157  0.035159 -0.774  0.4390
## AVGSMK    0.012133  1.012207  0.002925  4.148 3.35e-05 ***
## SMSA     -0.001875  0.998127  0.054589 -0.034  0.9726
## URBAN     0.084566  1.088245  0.158669  0.533  0.5941
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##           exp(coef) exp(-coef) lower .95 upper .95
## BOOZE      1.0115      0.9886      0.9978      1.025
## SEX         0.8895      1.1242      0.7440      1.064
## RACE        1.0970      0.9116      0.8626      1.395
## GRADES      1.0146      0.9856      0.9897      1.040
## MARRY       0.9550      1.0471      0.8808      1.035
## SIZE        0.9732      1.0276      0.9084      1.043
## AVGSMK      1.0122      0.9879      1.0064      1.018
## SMSA        0.9981      1.0019      0.8968      1.111
## URBAN       1.0882      0.9189      0.7974      1.485
##
## Concordance= 0.583 (se = 0.013 )
## Likelihood ratio test= 29.8 on 9 df, p=5e-04
## Wald test              = 32.41 on 9 df, p=2e-04
## Score (logrank) test = 32.57 on 9 df, p=2e-04
##
##           chisq df      p
## BOOZE      0.4297  1 0.51212
## SEX      14.9220  1 0.00011
## RACE       4.3012  1 0.03809
## GRADES     1.9367  1 0.16403
## MARRY      1.3503  1 0.24522
## SIZE       0.2748  1 0.60015
## AVGSMK    10.8876  1 0.00097
## SMSA       0.0786  1 0.77917
## URBAN      0.0328  1 0.85633
## GLOBAL    33.6461  9 0.00010
```



```
~ BOOZE + SEX + BOOZE_q * SEX + RACE + GRADES + MARRY +
SIZE + AVGSMK + SMSA + URBAN
```

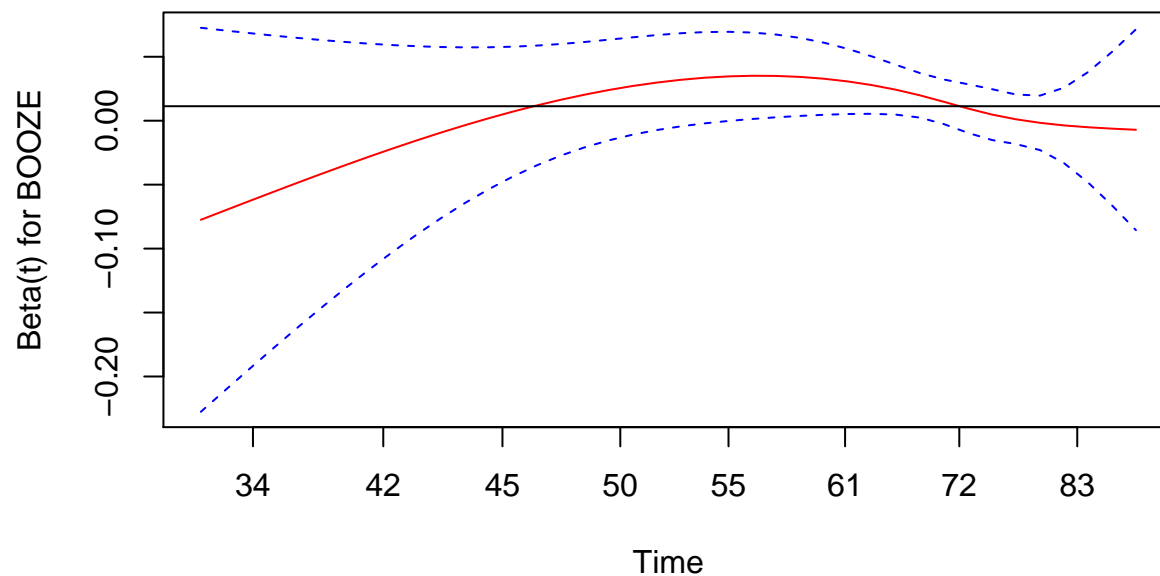
```
## Call:
## coxph(formula = Surv(AGEYRS, AGEDIE, cancer_death) ~ BOOZE +
##       SEX + BOOZE * SEX + RACE + GRADES + MARRY + SIZE + AVGSMK +
##       SMSA + URBAN, data = data)
##
## n= 2110, number of events= 556
##
##               coef exp(coef) se(coef)      z Pr(>|z|)
## BOOZE      -0.002032  0.997970  0.024104 -0.084   0.933
## SEX        -0.139580  0.869724  0.099179 -1.407   0.159
## RACE         0.093730  1.098264  0.122633  0.764   0.445
## GRADES       0.013978  1.014077  0.012681  1.102   0.270
## MARRY       -0.046100  0.954946  0.041236 -1.118   0.264
## SIZE        -0.027930  0.972457  0.035160 -0.794   0.427
## AVGSMK       0.012063  1.012136  0.002931  4.115 3.86e-05 ***
## SMSA        -0.001166  0.998835  0.054581 -0.021   0.983
## URBAN        0.086768  1.090644  0.158633  0.547   0.584
## BOOZE:SEX    0.012104  1.012178  0.020522  0.590   0.555
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##               exp(coef) exp(-coef) lower .95 upper .95
## BOOZE         0.9980      1.0020    0.9519    1.046
## SEX           0.8697      1.1498    0.7161    1.056
## RACE          1.0983      0.9105    0.8636    1.397
## GRADES        1.0141      0.9861    0.9892    1.040
## MARRY         0.9549      1.0472    0.8808    1.035
## SIZE          0.9725      1.0283    0.9077    1.042
## AVGSMK        1.0121      0.9880    1.0063    1.018
## SMSA          0.9988      1.0012    0.8975    1.112
## URBAN         1.0906      0.9169    0.7992    1.488
## BOOZE:SEX     1.0122      0.9880    0.9723    1.054
##
## Concordance= 0.584 (se = 0.013 )
## Likelihood ratio test= 30.14 on 10 df, p=8e-04
## Wald test              = 32.57 on 10 df, p=3e-04
## Score (logrank) test = 32.76 on 10 df, p=3e-04
```

```
##               chisq df      p
## BOOZE         0.3763  1 0.53961
## SEX          14.7042  1 0.00013
## RACE          4.2847  1 0.03846
## GRADES        1.9756  1 0.15986
## MARRY         1.3421  1 0.24666
## SIZE          0.2846  1 0.59368
## AVGSMK       10.8181  1 0.00101
## SMSA          0.0835  1 0.77258
## URBAN         0.0252  1 0.87384
## BOOZE:SEX     0.1070  1 0.74358
## GLOBAL       34.1511 10 0.00017
```



~ BOOZE + RACE + GRADES + MARRY + SIZE + AVGSMK + SMSA +
URBAN, stratify by SEX

```
## Call:
## coxph(formula = Surv(AGEYRS, AGEDIE, cancer_death) ~ BOOZE +
##       strata(SEX) + RACE + GRADES + MARRY + SIZE + AVGSMK + SMSA +
##       URBAN, data = data)
##
## n= 2110, number of events= 556
##
##           coef exp(coef) se(coef)      z Pr(>|z|)
## BOOZE    0.011316  1.011380  0.006993  1.618   0.106
## RACE     0.109932  1.116203  0.122541  0.897   0.370
## GRADES   0.015906  1.016033  0.012658  1.257   0.209
## MARRY   -0.032179  0.968333  0.041233 -0.780   0.435
## SIZE    -0.027842  0.972542  0.034805 -0.800   0.424
## AVGSMK   0.012282  1.012357  0.002893  4.245 2.18e-05 ***
## SMSA     0.006776  1.006799  0.054530  0.124   0.901
## URBAN    0.071522  1.074142  0.157731  0.453   0.650
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##           exp(coef) exp(-coef) lower .95 upper .95
## BOOZE     1.0114      0.9887   0.9976   1.025
## RACE       1.1162      0.8959   0.8779   1.419
## GRADES     1.0160      0.9842   0.9911   1.042
## MARRY      0.9683      1.0327   0.8932   1.050
## SIZE       0.9725      1.0282   0.9084   1.041
## AVGSMK     1.0124      0.9878   1.0066   1.018
## SMSA       1.0068      0.9932   0.9047   1.120
## URBAN      1.0741      0.9310   0.7885   1.463
##
## Concordance= 0.579 (se = 0.013 )
## Likelihood ratio test= 25.41 on 8 df,  p=0.001
## Wald test               = 27.83 on 8 df,  p=5e-04
## Score (logrank) test = 27.93 on 8 df,  p=5e-04
##
##           chisq df      p
## BOOZE    2.33e-01  1 0.6291
## RACE     3.56e+00  1 0.0593
## GRADES   2.27e+00  1 0.1323
## MARRY    1.16e+00  1 0.2814
## SIZE     6.07e-02  1 0.8054
## AVGSMK   9.31e+00  1 0.0023
## SMSA     3.36e-04  1 0.9854
## URBAN    4.87e-02  1 0.8253
## GLOBAL   1.90e+01  8 0.0149
```

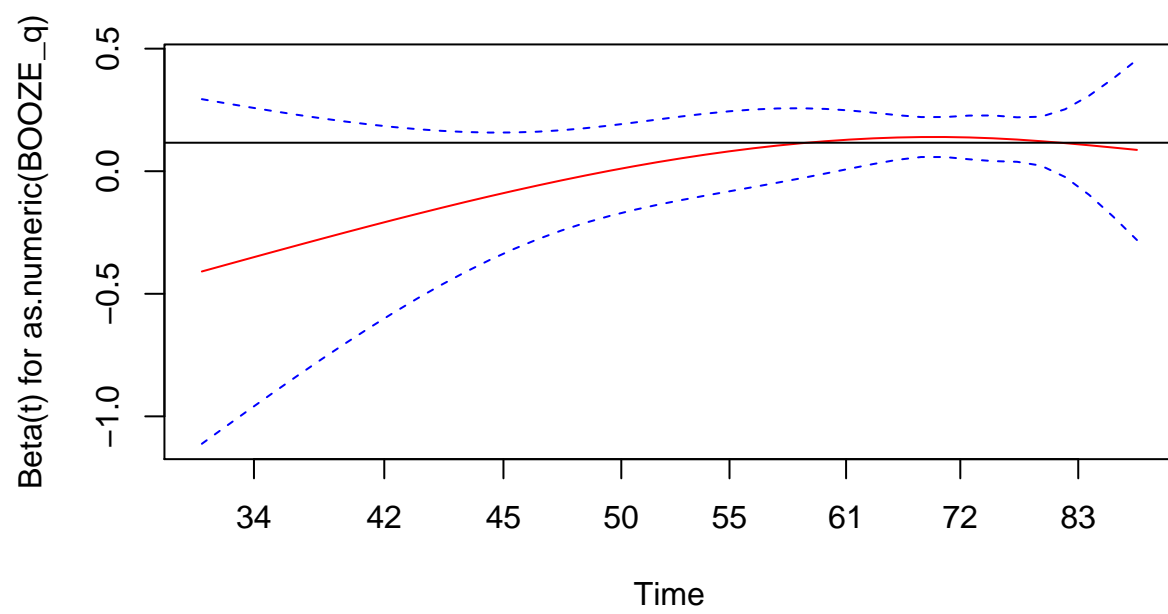


ordinal BOOZE_q_ordinal

~ BOOZE_q_ordinal

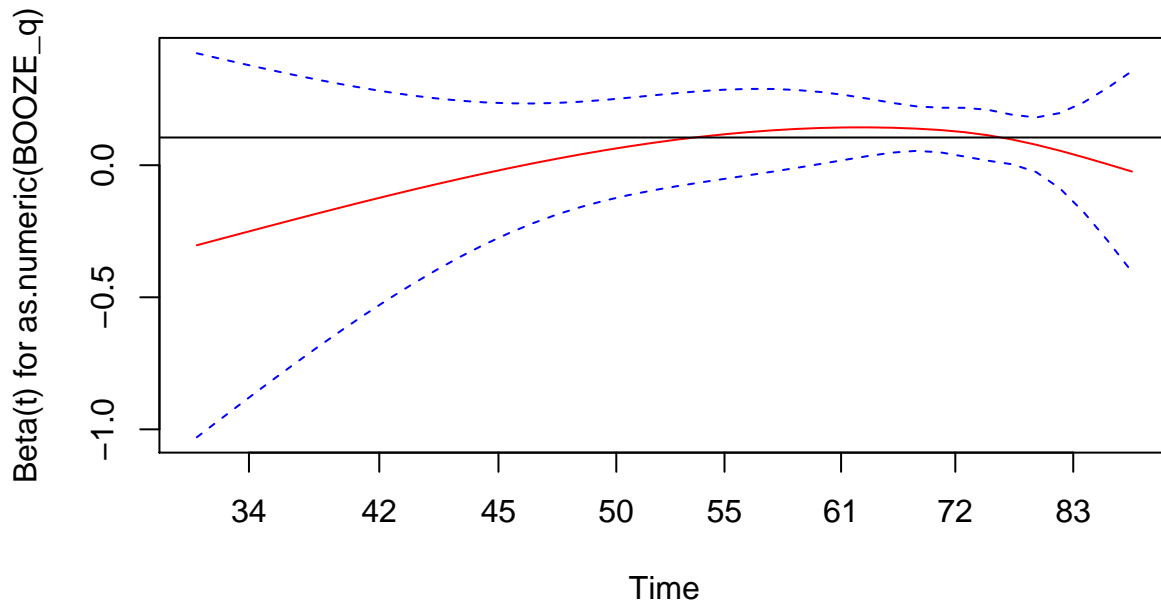
```
## Call:
## coxph(formula = Surv(AGEYRS, AGEDIE, cancer_death) ~ as.numeric(BOOZE_q),
##       data = data)
##
##   n= 2110, number of events= 556
##
##               coef exp(coef) se(coef)      z Pr(>|z|)
## as.numeric(BOOZE_q) 0.11622   1.12324  0.03274 3.549 0.000386 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##               exp(coef) exp(-coef) lower .95 upper .95
## as.numeric(BOOZE_q)    1.123    0.8903    1.053    1.198
##
## Concordance= 0.545  (se = 0.012 )
## Likelihood ratio test= 12.47  on 1 df,   p=4e-04
## Wald test               = 12.6  on 1 df,   p=4e-04
## Score (logrank) test = 12.68  on 1 df,   p=4e-04

##               chisq df    p
## as.numeric(BOOZE_q)  1.96  1 0.16
## GLOBAL                1.96  1 0.16
```

~ BOOZE_q_ordinal + SEX

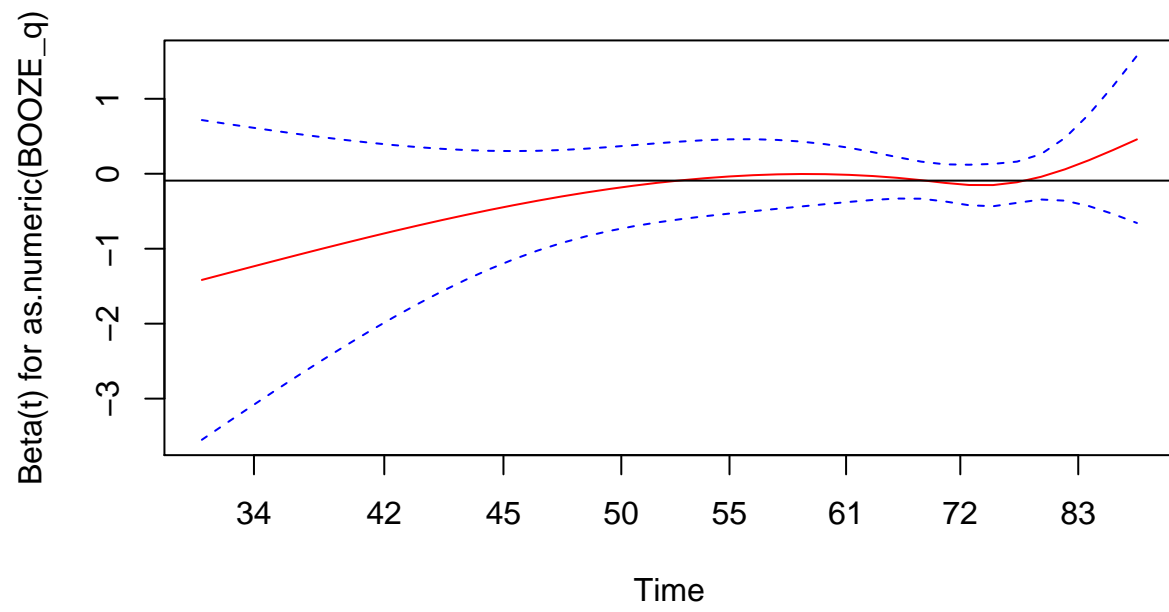
```
## Call:
## coxph(formula = Surv(AGEYRS, AGEDIE, cancer_death) ~ as.numeric(BOOZE_q) +
##       SEX, data = data)
##
## n= 2110, number of events= 556
##
##               coef exp(coef) se(coef)      z Pr(>|z|)
## as.numeric(BOOZE_q)  0.10490   1.11059  0.03386  3.098  0.00195 **
## SEX                -0.11507   0.89131  0.08986 -1.281  0.20034
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##               exp(coef) exp(-coef) lower .95 upper .95
## as.numeric(BOOZE_q)   1.1106   0.9004   1.0393   1.187
## SEX                   0.8913   1.1219   0.7474   1.063
##
## Concordance= 0.555 (se = 0.013 )
## Likelihood ratio test= 14.12 on 2 df,  p=9e-04
## Wald test               = 14.23 on 2 df,  p=8e-04
## Score (logrank) test = 14.32 on 2 df,  p=8e-04
##
##               chisq df      p
## as.numeric(BOOZE_q)   1.9  1 0.16753
## SEX                   14.3  1 0.00016
## GLOBAL                 14.5  2 0.00071
```



~ BOOZE_q_ordinal + SEX + BOOZE_q_ordinal * SEX

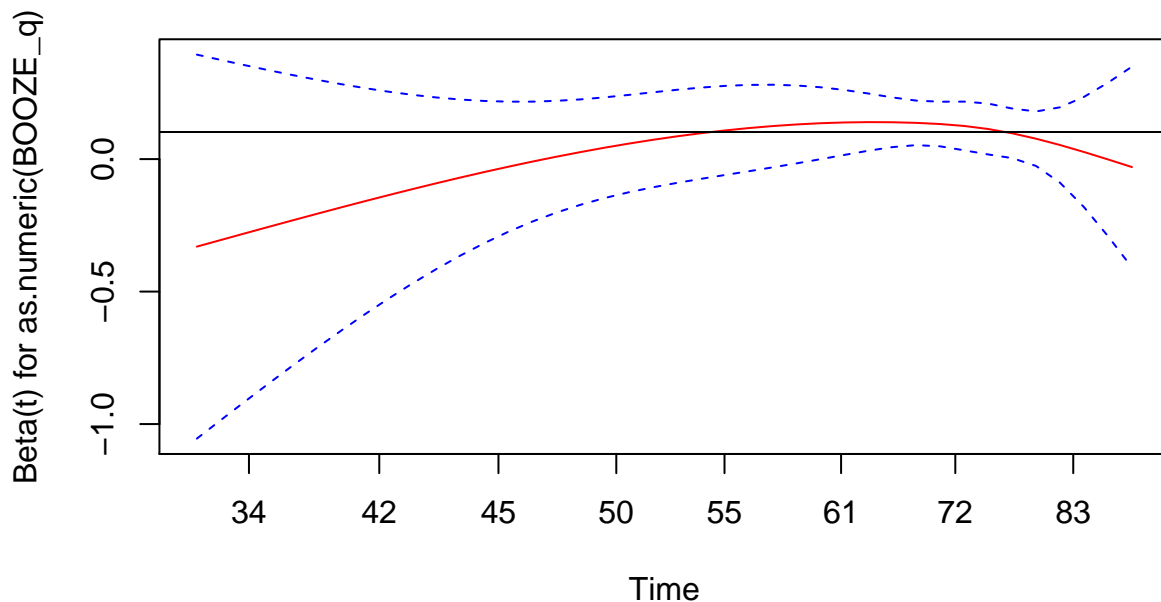
```
## Call:
## coxph(formula = Surv(AGEYRS, AGEDIE, cancer_death) ~ as.numeric(BOOZE_q) +
##       SEX + as.numeric(BOOZE_q) * SEX, data = data)
##
## n= 2110, number of events= 556
##
##               coef exp(coef) se(coef)      z Pr(>|z|)
## as.numeric(BOOZE_q) -0.09187  0.91223  0.09934 -0.925  0.3551
## SEX                -0.43802  0.64531  0.17821 -2.458  0.0140 *
## as.numeric(BOOZE_q):SEX 0.14426  1.15519  0.06830  2.112  0.0347 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##               exp(coef) exp(-coef) lower .95 upper .95
## as.numeric(BOOZE_q)    0.9122    1.0962    0.7508    1.1083
## SEX                    0.6453    1.5496    0.4551    0.9151
## as.numeric(BOOZE_q):SEX 1.1552    0.8657    1.0104    1.3207
##
## Concordance= 0.559 (se = 0.013 )
## Likelihood ratio test= 18.51 on 3 df,  p=3e-04
## Wald test              = 17.95 on 3 df,  p=5e-04
## Score (logrank) test = 18.14 on 3 df,  p=4e-04

##               chisq df      p
## as.numeric(BOOZE_q)    1.62  1 0.20290
## SEX                   12.40  1 0.00043
## as.numeric(BOOZE_q):SEX  1.06  1 0.30254
## GLOBAL                 12.91  3 0.00484
```



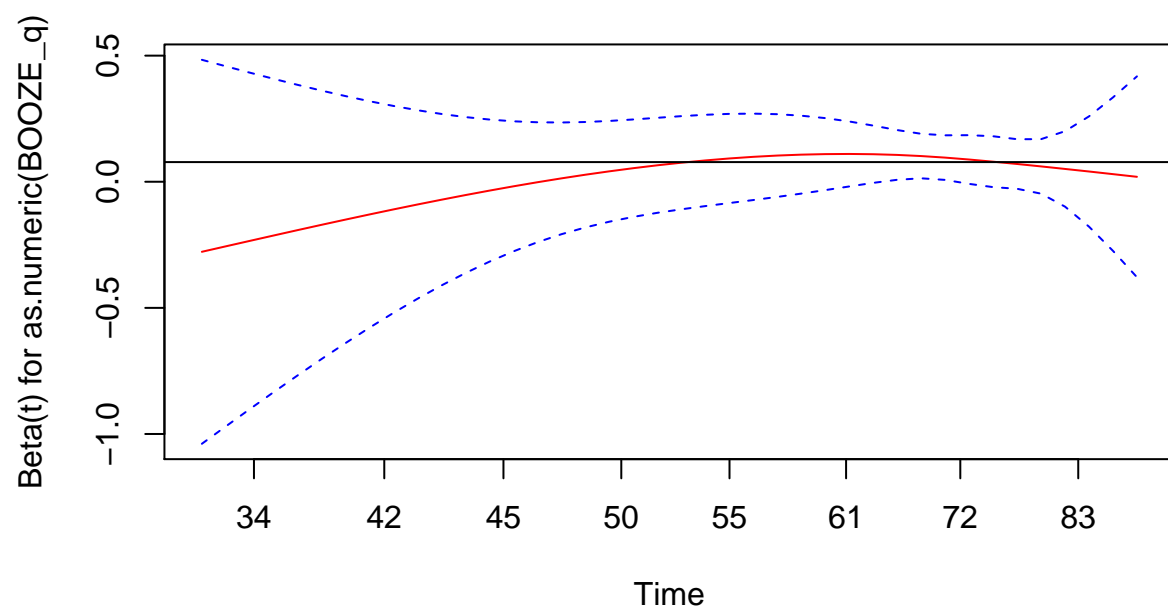
~ BOOZE_q_ordinal, stratify by SEX

```
## Call:
## coxph(formula = Surv(AGEYRS, AGEDIE, cancer_death) ~ as.numeric(BOOZE_q) +
##       strata(SEX), data = data)
##
## n= 2110, number of events= 556
##
##               coef exp(coef) se(coef)      z Pr(>|z|)
## as.numeric(BOOZE_q) 0.10227   1.10768  0.03375 3.03  0.00245 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##               exp(coef) exp(-coef) lower .95 upper .95
## as.numeric(BOOZE_q)    1.108    0.9028    1.037    1.183
##
## Concordance= 0.537 (se = 0.013 )
## Likelihood ratio test= 9.13 on 1 df,  p=0.003
## Wald test               = 9.18 on 1 df,  p=0.002
## Score (logrank) test = 9.22 on 1 df,  p=0.002
##
##               chisq df    p
## as.numeric(BOOZE_q) 0.274  1 0.6
## GLOBAL               0.274  1 0.6
```



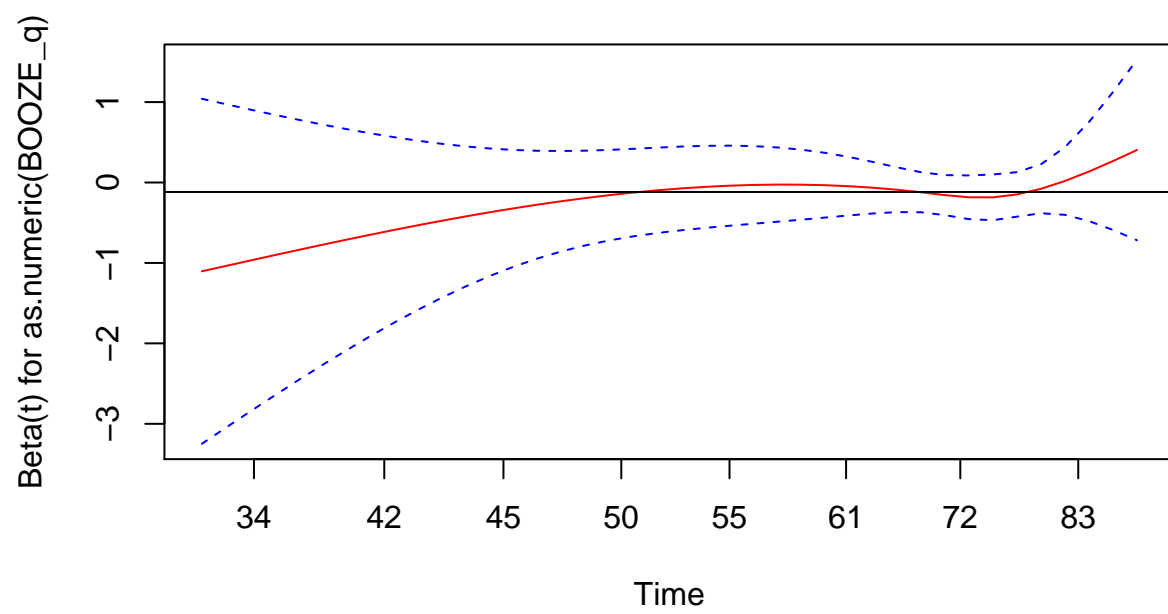
```
~ BOOZE_q_ordinal + SEX + RACE + GRADES + MARRY + SIZE +
AVGSMK + SMSA + URBAN
```

```
## Call:
## coxph(formula = Surv(AGEYRS, AGEDIE, cancer_death) ~ as.numeric(BOOZE_q) +
##       SEX + RACE + GRADES + MARRY + SIZE + AVGSMK + SMSA + URBAN,
##       data = data)
##
## n= 2110, number of events= 556
##
##               coef exp(coef) se(coef)      z Pr(>|z|)
## as.numeric(BOOZE_q)  0.077996  1.081119  0.035455  2.200  0.0278 *
## SEX                -0.096443  0.908062  0.091973 -1.049  0.2944
## RACE                 0.098073  1.103043  0.122715  0.799  0.4242
## GRADES               0.012319  1.012395  0.012745  0.967  0.3338
## MARRY               -0.046367  0.954692  0.041275 -1.123  0.2613
## SIZE               -0.023779  0.976502  0.035105 -0.677  0.4982
## AVGSMK              0.011826  1.011896  0.002954  4.004 6.23e-05 ***
## SMSA               -0.001555  0.998447  0.054381 -0.029  0.9772
## URBAN              0.089521  1.093650  0.158589  0.564  0.5724
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##               exp(coef) exp(-coef) lower .95 upper .95
## as.numeric(BOOZE_q)    1.0811    0.9250    1.0085    1.159
## SEX                    0.9081    1.1012    0.7583    1.087
## RACE                   1.1030    0.9066    0.8672    1.403
## GRADES                 1.0124    0.9878    0.9874    1.038
## MARRY                 0.9547    1.0475    0.8805    1.035
## SIZE                   0.9765    1.0241    0.9116    1.046
## AVGSMK                 1.0119    0.9882    1.0061    1.018
## SMSA                   0.9984    1.0016    0.8975    1.111
## URBAN                  1.0936    0.9144    0.8015    1.492
##
## Concordance= 0.589 (se = 0.013 )
## Likelihood ratio test= 32.11 on 9 df, p=2e-04
## Wald test               = 34.01 on 9 df, p=9e-05
## Score (logrank) test = 34.24 on 9 df, p=8e-05
##
##               chisq df      p
## as.numeric(BOOZE_q)  2.2654  1 0.13229
## SEX                 14.3288  1 0.00015
## RACE                 4.5176  1 0.03355
## GRADES               2.1064  1 0.14668
## MARRY               1.3844  1 0.23935
## SIZE                0.2532  1 0.61482
## AVGSMK             10.9534  1 0.00093
## SMSA                0.0702  1 0.79102
## URBAN              0.0478  1 0.82691
## GLOBAL             33.1701  9 0.00012
```



```
~ BOOZE_q_ordinal + SEX + BOOZE_q_ordinal * SEX + RACE + GRADES
+ MARRY + SIZE + AVGSMK + SMSA + URBAN
```

```
## Call:
## coxph(formula = Surv(AGEYRS, AGEDIE, cancer_death) ~ as.numeric(BOOZE_q) +
##       SEX + as.numeric(BOOZE_q) * SEX + RACE + GRADES + MARRY +
##       SIZE + AVGSMK + SMSA + URBAN, data = data)
##
## n= 2110, number of events= 556
##
##               coef exp(coef)    se(coef)      z Pr(>|z|)
## as.numeric(BOOZE_q) -1.175e-01  8.891e-01  9.990e-02 -1.177  0.2393
## SEX                 -4.173e-01  6.588e-01  1.793e-01 -2.328  0.0199 *
## RACE                 1.044e-01  1.110e+00  1.224e-01  0.854  0.3933
## GRADES               1.178e-02  1.012e+00  1.275e-02  0.924  0.3554
## MARRY               -4.697e-02  9.541e-01  4.132e-02 -1.137  0.2556
## SIZE                -2.346e-02  9.768e-01  3.492e-02 -0.672  0.5017
## AVGSMK               1.186e-02  1.012e+00  2.959e-03  4.008 6.13e-05 ***
## SMSA                 7.838e-05  1.000e+00  5.428e-02  0.001  0.9988
## URBAN                8.165e-02  1.085e+00  1.583e-01  0.516  0.6059
## as.numeric(BOOZE_q):SEX 1.436e-01  1.154e+00  6.840e-02  2.099  0.0358 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##               exp(coef) exp(-coef) lower .95 upper .95
## as.numeric(BOOZE_q)    0.8891    1.1247    0.7310    1.0814
## SEX                     0.6588    1.5179    0.4636    0.9361
## RACE                     1.1101    0.9008    0.8734    1.4109
## GRADES                   1.0118    0.9883    0.9869    1.0374
## MARRY                    0.9541    1.0481    0.8799    1.0346
## SIZE                     0.9768    1.0237    0.9122    1.0460
## AVGSMK                   1.0119    0.9882    1.0061    1.0178
## SMSA                     1.0001    0.9999    0.8991    1.1123
## URBAN                    1.0851    0.9216    0.7957    1.4797
## as.numeric(BOOZE_q):SEX 1.1544    0.8663    1.0096    1.3200
##
## Concordance= 0.591 (se = 0.013 )
## Likelihood ratio test= 36.46 on 10 df,  p=7e-05
## Wald test               = 37.57 on 10 df,  p=5e-05
## Score (logrank) test = 37.91 on 10 df,  p=4e-05
##
##               chisq df      p
## as.numeric(BOOZE_q)  1.9746  1 0.15997
## SEX                  12.3135  1 0.00045
## RACE                  4.5550  1 0.03282
## GRADES                2.0847  1 0.14878
## MARRY                 1.2619  1 0.26129
## SIZE                  0.1993  1 0.65528
## AVGSMK               11.0903  1 0.00087
## SMSA                  0.0526  1 0.81867
## URBAN                 0.0454  1 0.83120
## as.numeric(BOOZE_q):SEX 0.7052  1 0.40105
## GLOBAL               31.8035 10 0.00043
```

~ BOOZE_q_ordinal + RACE + GRADES + MARRY + SIZE + AVGSMK
+ SMSA + URBAN, stratify by SEX

```
## Call:
## coxph(formula = Surv(AGEYRS, AGEDIE, cancer_death) ~ as.numeric(BOOZE_q) +
##       strata(SEX) + RACE + GRADES + MARRY + SIZE + AVGSMK + SMSA +
##       URBAN, data = data)
##
## n= 2110, number of events= 556
##
##               coef exp(coef) se(coef)      z Pr(>|z|)
## as.numeric(BOOZE_q)  0.074018  1.076826  0.035358  2.093  0.0363 *
## RACE                0.114478  1.121287  0.122556  0.934  0.3503
## GRADES              0.013867  1.013964  0.012760  1.087  0.2771
## MARRY              -0.032261  0.968254  0.041246 -0.782  0.4341
## SIZE               -0.023959  0.976326  0.034758 -0.689  0.4906
## AVGSMK             0.012010  1.012083  0.002921  4.111 3.93e-05 ***
## SMSA               0.006213  1.006232  0.054317  0.114  0.9089
## URBAN              0.075532  1.078457  0.157605  0.479  0.6318
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
##               exp(coef) exp(-coef) lower .95 upper .95
## as.numeric(BOOZE_q)    1.0768    0.9287    1.0047    1.154
## RACE                   1.1213    0.8918    0.8819    1.426
## GRADES                 1.0140    0.9862    0.9889    1.040
## MARRY                 0.9683    1.0328    0.8931    1.050
## SIZE                  0.9763    1.0242    0.9120    1.045
## AVGSMK                1.0121    0.9881    1.0063    1.018
## SMSA                  1.0062    0.9938    0.9046    1.119
## URBAN                 1.0785    0.9273    0.7919    1.469
##
## Concordance= 0.582 (se = 0.013 )
## Likelihood ratio test= 27.35 on 8 df,  p=6e-04
## Wald test              = 29.19 on 8 df,  p=3e-04
## Score (logrank) test = 29.38 on 8 df,  p=3e-04
##
##               chisq df      p
## as.numeric(BOOZE_q) 4.48e-01  1 0.5032
## RACE                3.81e+00  1 0.0508
## GRADES              2.35e+00  1 0.1256
## MARRY              1.21e+00  1 0.2705
## SIZE               4.52e-02  1 0.8316
## AVGSMK             9.42e+00  1 0.0022
## SMSA               3.53e-05  1 0.9953
## URBAN              7.80e-02  1 0.7800
## GLOBAL             1.89e+01  8 0.0156
```

