存活作業3

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require(survival)

## Loading required package: survival

require(KMsurv)

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require(dplyr)

## Loading required package: dplyr

##   
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':  
##   
## filter, lag

## The following objects are masked from 'package:base':  
##   
## intersect, setdiff, setequal, union

data(bmt)  
bmt$id=c(1:nrow(bmt))

## (ta)

tadata=select(bmt,t2,ta,da,group,id,d1)  
mutate(tadata,start=ta,end=t2,event=da)->tadata ###新增start跟end  
tadata$start[which(tadata$event==0)]=0 ###將non-event 去除  
filter(tadata,event==0)->nonevent  
filter(tadata,event==1)->eventa  
event0=eventa   
event0$event=0 ##拆成event=0跟event=1  
event0$start=0 ##重新設定start  
event0$end=event0$ta ##重新設定end  
rbind(event0,eventa,nonevent) %>% arrange(id)->Acompletedata ##合併並排序  
fa=coxph(Surv(start,end,d1)~factor(group)+ta,data=Acompletedata)  
summary(fa)

## Call:  
## coxph(formula = Surv(start, end, d1) ~ factor(group) + ta, data = Acompletedata)  
##   
## n= 163, number of events= 97   
##   
## coef exp(coef) se(coef) z Pr(>|z|)   
## factor(group)2 -0.0570600 0.9445374 0.2658557 -0.215 0.8301   
## factor(group)3 0.6374713 1.8916913 0.2519656 2.530 0.0114 \*   
## ta -0.0021088 0.9978934 0.0002762 -7.634 2.28e-14 \*\*\*  
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## exp(coef) exp(-coef) lower .95 upper .95  
## factor(group)2 0.9445 1.0587 0.5609 1.5904  
## factor(group)3 1.8917 0.5286 1.1545 3.0997  
## ta 0.9979 1.0021 0.9974 0.9984  
##   
## Concordance= 0.831 (se = 0.02 )  
## Likelihood ratio test= 118.1 on 3 df, p=<2e-16  
## Wald test = 65.44 on 3 df, p=4e-14  
## Score (logrank) test = 93.94 on 3 df, p=<2e-16

## (tc)

tcdata=select(bmt,t2,tc,dc,group,id,d1)  
mutate(tcdata,start=tc,end=t2,event=dc)->tcdata  
tcdata$start[which(tcdata$event==0)]=0  
filter(tcdata,event==0)->noneventc  
filter(tcdata,event==1)->eventc  
event0c=eventc  
event0c$event=0  
event0c$start=0  
event0c$end=event0c$tc  
rbind(event0c,eventc,noneventc) %>% arrange(id)->Ccompletedata  
Ccompletedata=Ccompletedata[-which(Ccompletedata$start>Ccompletedata$end),]  
fc=coxph(Surv(start,end,d1)~factor(group)+tc,data=Ccompletedata)  
summary(fc)

## Call:  
## coxph(formula = Surv(start, end, d1) ~ factor(group) + tc, data = Ccompletedata)  
##   
## n= 196, number of events= 108   
##   
## coef exp(coef) se(coef) z Pr(>|z|)   
## factor(group)2 -0.0263280 0.9740156 0.2553706 -0.103 0.9179   
## factor(group)3 0.4611510 1.5858983 0.2335615 1.974 0.0483 \*   
## tc -0.0020217 0.9979804 0.0004628 -4.368 1.25e-05 \*\*\*  
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## exp(coef) exp(-coef) lower .95 upper .95  
## factor(group)2 0.974 1.0267 0.5905 1.6067  
## factor(group)3 1.586 0.6306 1.0034 2.5066  
## tc 0.998 1.0020 0.9971 0.9989  
##   
## Concordance= 0.746 (se = 0.023 )  
## Likelihood ratio test= 61.89 on 3 df, p=2e-13  
## Wald test = 27.41 on 3 df, p=5e-06  
## Score (logrank) test = 42.18 on 3 df, p=4e-09

## (tp)

tpdata=select(bmt,t2,tp,dp,group,id,d1)  
mutate(tpdata,start=tp,end=t2,event=dp)->tpdata  
tpdata$start[which(tpdata$event==0)]=0  
filter(tpdata,event==0)->noneventp  
filter(tpdata,event==1)->eventp  
event0p=eventp  
event0p$event=0  
event0p$start=0  
event0p$end=event0p$tp  
rbind(event0p,eventp,noneventp) %>% arrange(id)->Pcompletedata  
Pcompletedata=Pcompletedata[-which(Pcompletedata$start==Pcompletedata$end),]  
fp=coxph(Surv(start,end,d1)~factor(group)+tp,data=Pcompletedata)  
summary(fp)

## Call:  
## coxph(formula = Surv(start, end, d1) ~ factor(group) + tp, data = Pcompletedata)  
##   
## n= 256, number of events= 145   
##   
## coef exp(coef) se(coef) z Pr(>|z|)   
## factor(group)2 -0.6372964 0.5287200 0.2189736 -2.910 0.00361 \*\*  
## factor(group)3 0.2403366 1.2716771 0.1976515 1.216 0.22400   
## tp -0.0004542 0.9995459 0.0006397 -0.710 0.47768   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## exp(coef) exp(-coef) lower .95 upper .95  
## factor(group)2 0.5287 1.8914 0.3442 0.8121  
## factor(group)3 1.2717 0.7864 0.8632 1.8733  
## tp 0.9995 1.0005 0.9983 1.0008  
##   
## Concordance= 0.589 (se = 0.024 )  
## Likelihood ratio test= 19.85 on 3 df, p=2e-04  
## Wald test = 18.6 on 3 df, p=3e-04  
## Score (logrank) test = 19.53 on 3 df, p=2e-04