

Model Complete Cases

Martin Skarzynski

2018-04-21

```
library(here)
library(readr)
library(dplyr)
library(tidyr)
library(survey)
library(purrr)
library(furrr)
plan(multiprocess)
source("kod/get_modelstats.R")

#Variables to be included in the model
chsn <- c(
  "PERMTH_INT", #time
  "canc_mort", #event
  "SDPPSU6", #PSU
  "SDPSTRA6", #Stratification
  "WTPFQX6", #Weights
  "age_strat" #Age strata from script 3
  #"HSAGEIR" #Age in years at interview
)

#Variables to be removed from the model
remv <- c(
  "HAN9", #remove age variables
  "HAQ7",
  "HAT29",
  "HAJ0",
  "WTPXRP2", #remove unneed weight variables
  "WTPQRP5",
  "WTPQRP7",
  "WTPQRP13",
  "WTPQRP15",
  "WTPQRP16",
  "WTPQRP17",
  "WTPQRP18",
  "WTPQRP19",
  "WTPQRP20",
  "WTPQRP21",
  "WTPQRP23",
  "WTPQRP27",
  "WTPQRP28",
  "WTPQRP39",
  "WTPQRP40",
  "WTPQRP43",
  "WTPQRP44",
  "WTPQRP49"
)

path <- 'dat/3-clean-complete-cases.rds'
```

```

# the modelstats function returns a dataframe
# after taking in the following arguments
#seed,
#n_random_vars,
#datafile_path,
#chosen_vars,
#remove_vars
map_sizes <- function(seed){
  map2_dfr(.x = seed,
    .y = seq(10), # number of random variables
    ~try(get_modelstats(seed=.x,
      n_random_vars=.y,
      datafile_path=path,
      chosen_vars=chsn,
      remove_vars=remv)))
}
#save an object with 1000 models
try(map_dfr(.x = seq(50), # number of seeds
  .f = ~try(map_sizes(seed=.x)))) %>%
write_rds(here("dat/4-model-first-run.rds"))

```

```

## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`

```

```

## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`

```

```

## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`

```

```

## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`

```

```

## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`

```

```

## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`

```

```

## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,

```



```
## Warning: Unknown variables: `WTPQRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPQRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```


[illegible]

```
## Warning: Unknown variables: `WTPQRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPQRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,
```



```
## Warning: Unknown variables: `WTPQRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPQRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPQRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning in coxph(formula = Surv(PERMTH_INT, canc_mort) ~ strata(age_strat)
## + : X matrix deemed to be singular; variable 7

## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`

## Warning in coxph(formula = Surv(PERMTH_INT, canc_mort) ~ strata(age_strat)
## + : X matrix deemed to be singular; variable 7

## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`

## Warning in coxph(formula = Surv(PERMTH_INT, canc_mort) ~ strata(age_strat)
## + : X matrix deemed to be singular; variable 7 9

## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`

## Warning in coxph(formula = Surv(PERMTH_INT, canc_mort) ~ strata(age_strat)
## + : X matrix deemed to be singular; variable 7 9

## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`

## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`

## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`

## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`

## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```



```
## Warning: Unknown variables: `WTPQRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```



```
## Warning: Unknown variables: `WTPQRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPQRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPQRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPQRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```



```
## Warning: Unknown variables: `WTPQRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```



```
## Warning: Unknown variables: `WTPQRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPQRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPQRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPQRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPQRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`.
```



```
## Warning: Unknown variables: `WTPQRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```

## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`

## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`

## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`

## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`

## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`

## Warning in coxph(formula = Surv(PERMTH_INT, canc_mort) ~ strata(age_strat)
## + : X matrix deemed to be singular; variable 1

## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`

## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`

## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`

## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`

## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,

```



```
## Warning: Unknown variables: `WTPQRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```

```
## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,  
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,  
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,  
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`
```



```

## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`

## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`

## Warning: Unknown variables: `WTPXRP2`, `WTPQRP5`, `WTPQRP7`, `WTPQRP13`,
## `WTPQRP15`, `WTPQRP16`, `WTPQRP17`, `WTPQRP18`, `WTPQRP19`, `WTPQRP20`,
## `WTPQRP21`, `WTPQRP23`, `WTPQRP27`, `WTPQRP28`, `WTPQRP39`, `WTPQRP40`,
## `WTPQRP43`, `WTPQRP44`, `WTPQRP49`

```