

Analysis

Nathan Green

17/03/2020

calculate these curves by calculating the proportion of people in each age, sex, ethnicity group who die each year (with those who emigrate being censored, of course). Of course, we'll need a separate survivorship curve for each year of birth, as life expectancy changes over time. expect there to be sex differences; if ethnicity doesn't make a difference then we can aggregate across ethnicity.

ETHPOP is based on ONS data in what year?

```
library(readr)
library(dplyr)
library(ggplot2)
library(scales)
library(survivorETHPOP)
```

0.1 Individual categories hazards and survival

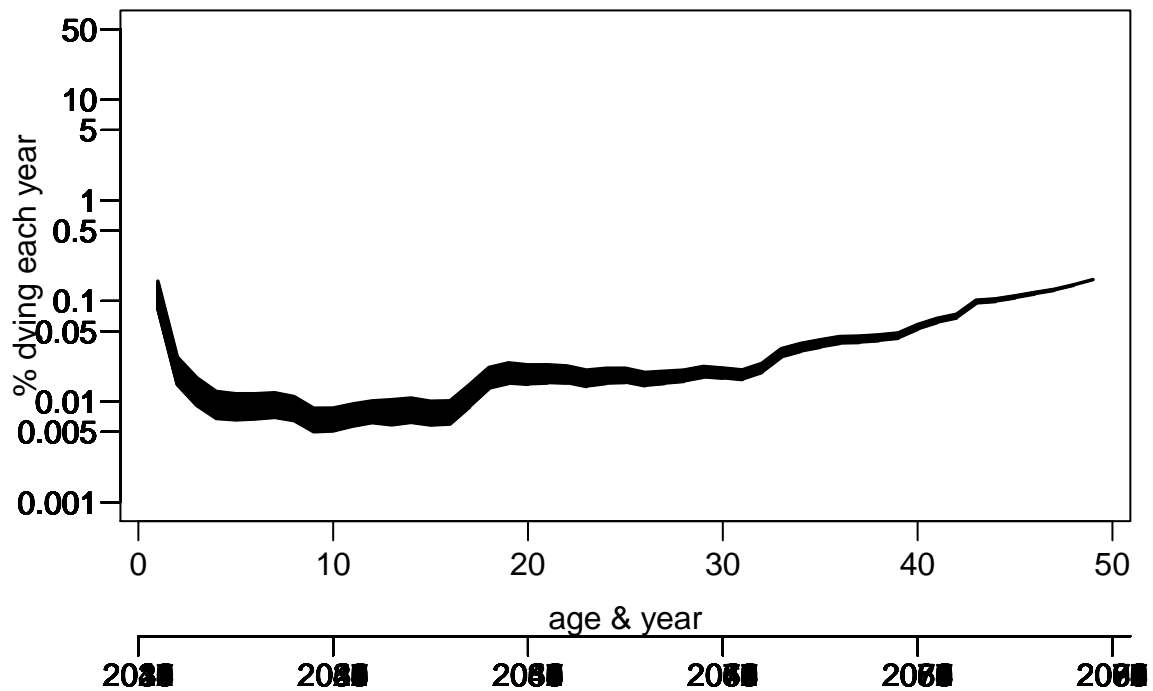
```
survivor_curve(group = list(sex = "M",
                             ETH.group = "WHO",
                             year = 2011)) %>%

  haz_plot()

for (i in 2012:2043) {
  survivor_curve(group = list(sex = "M",
                              ETH.group = "WHO",
                              year = i)) %>%

    haz_plot(add = TRUE)
}
```

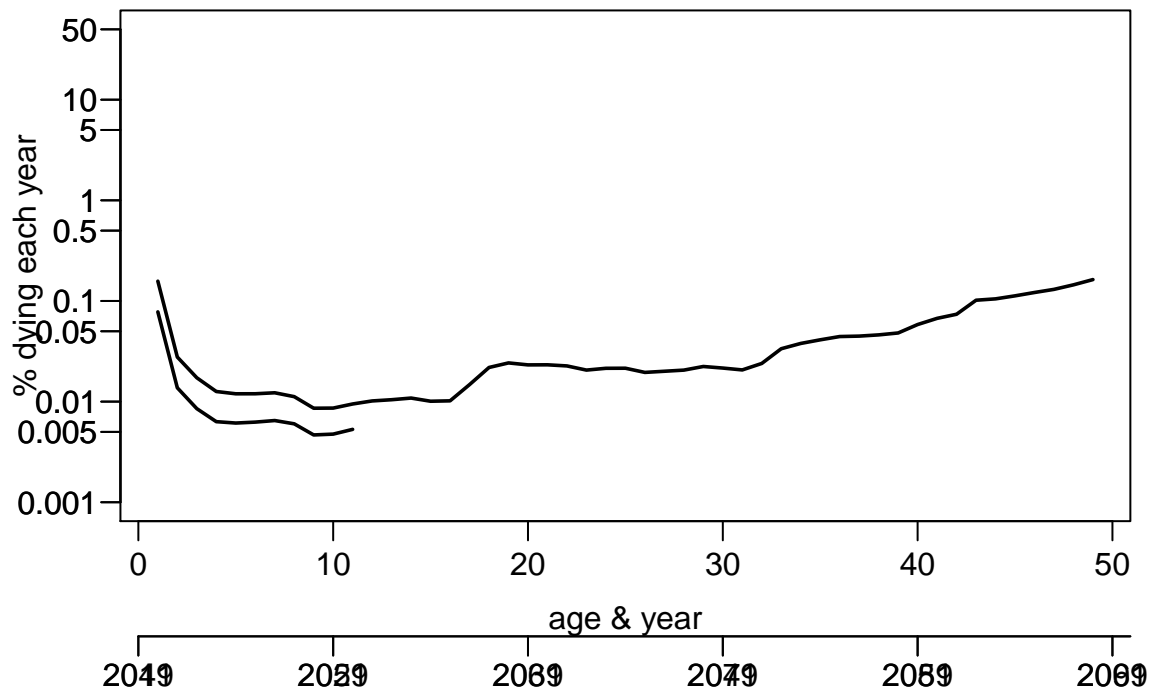
2011 WHO M



```
survivor_curve(group = list(sex = "M",
                             ETH.group = "WHO",
                             year = 2011)) %>%
  haz_plot()

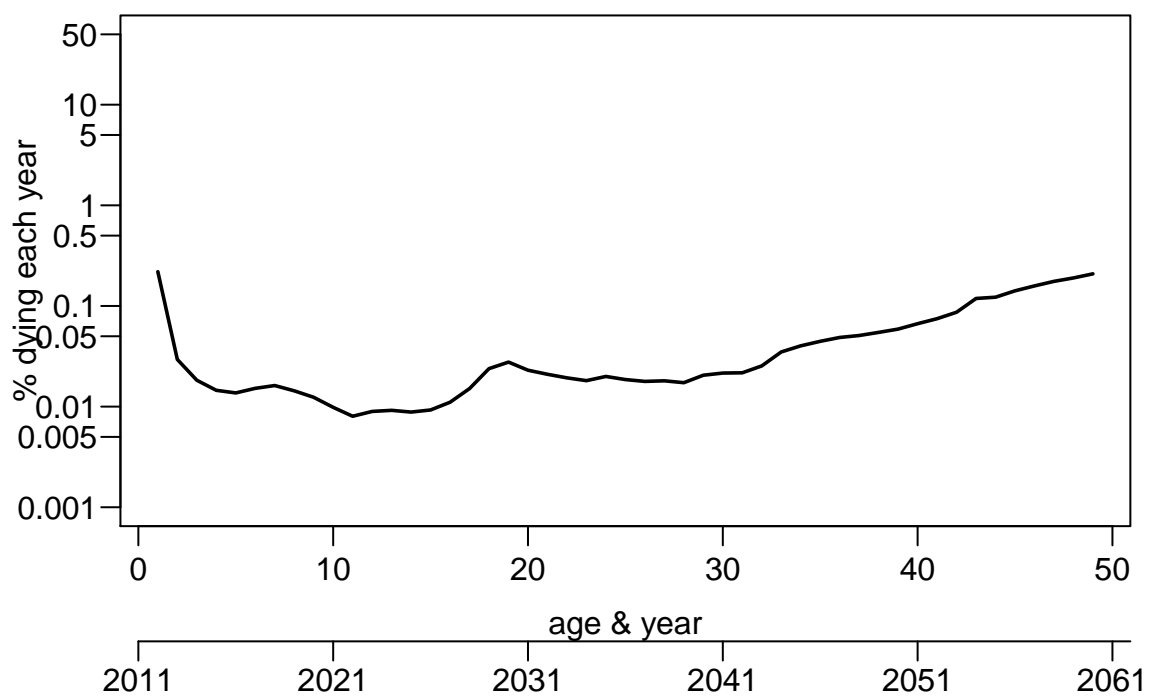
survivor_curve(group = list(sex = "M",
                             ETH.group = "WHO",
                             year = 2049)) %>%
  haz_plot(add = TRUE)
```

2011 WHO M

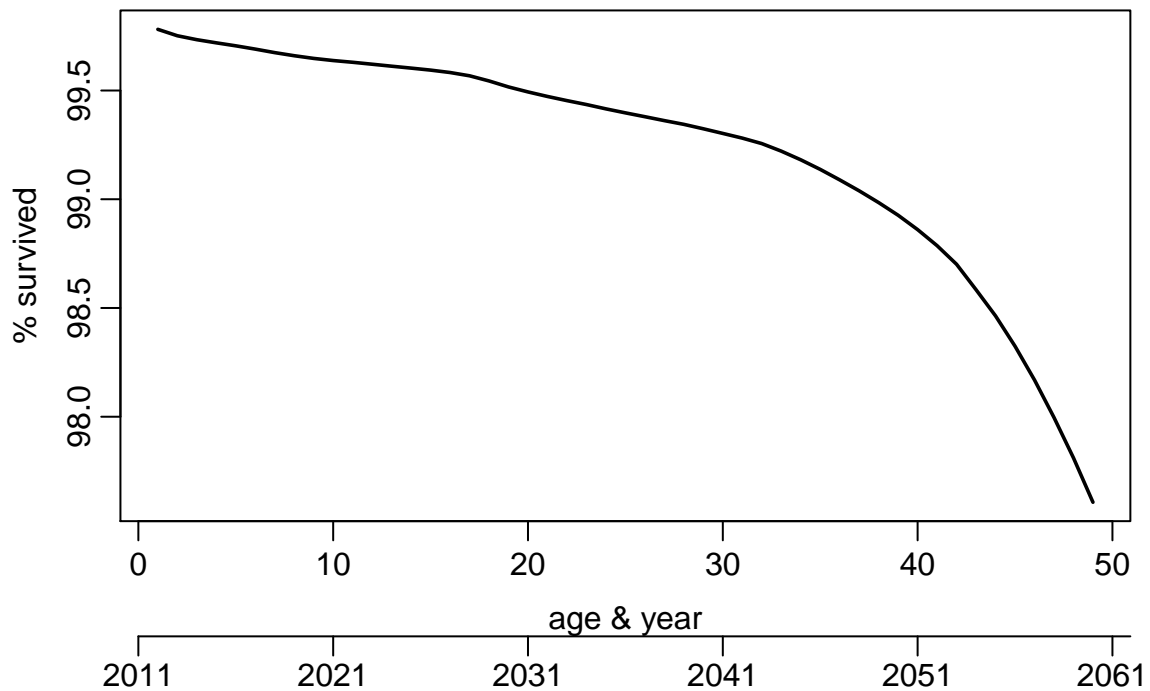


```
survivor_curve(group = list(sex = "M",
                             ETH.group = "BAN",
                             year = 2011)) %>%
  haz_plot() %>%
  surv_plot()
```

2011 BAN M



2011 BAN M



0.1.1 Ethnic groups

```
ethnic_grps <- c("BAN", "BLA", "BLC", "CHI", "IND", "MIX", "OAS", "OBL", "OTH", "PAK", "WBI", "WHO")

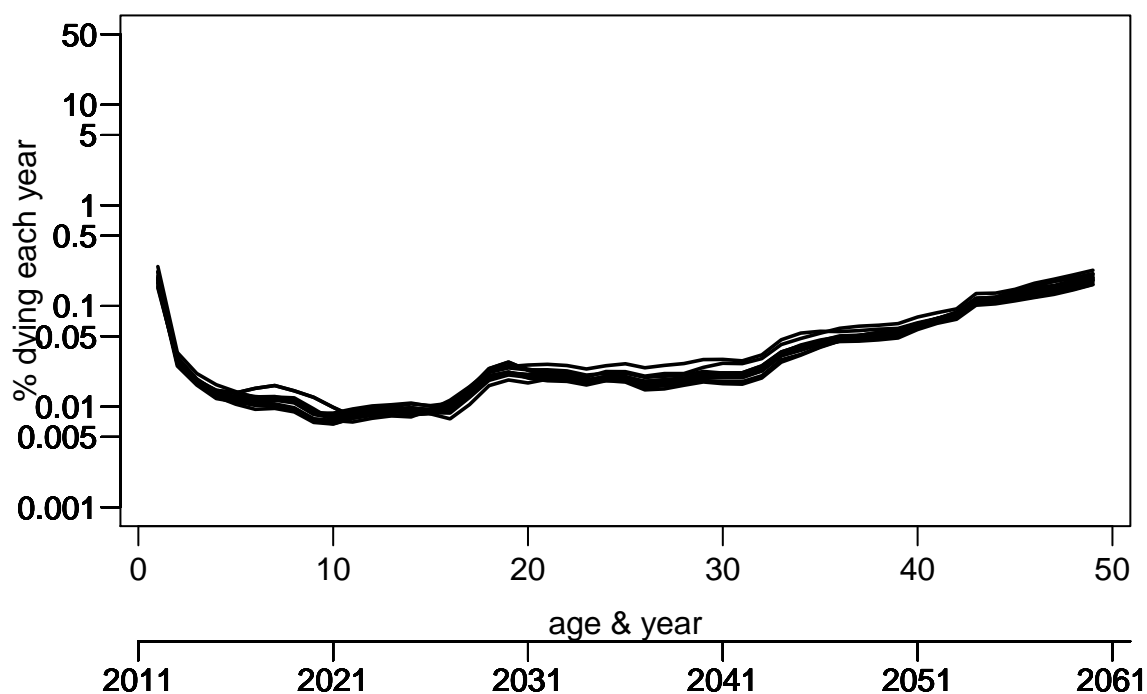
survivor_curve(group = list(sex = "M",
                             ETH.group = "BAN",
                             year = 2011)) %>%

  haz_plot()

for (i in ethnic_grps) {
  survivor_curve(group = list(sex = "M",
                              ETH.group = i,
                              year = 2011)) %>%

    haz_plot(add = TRUE)
}
```

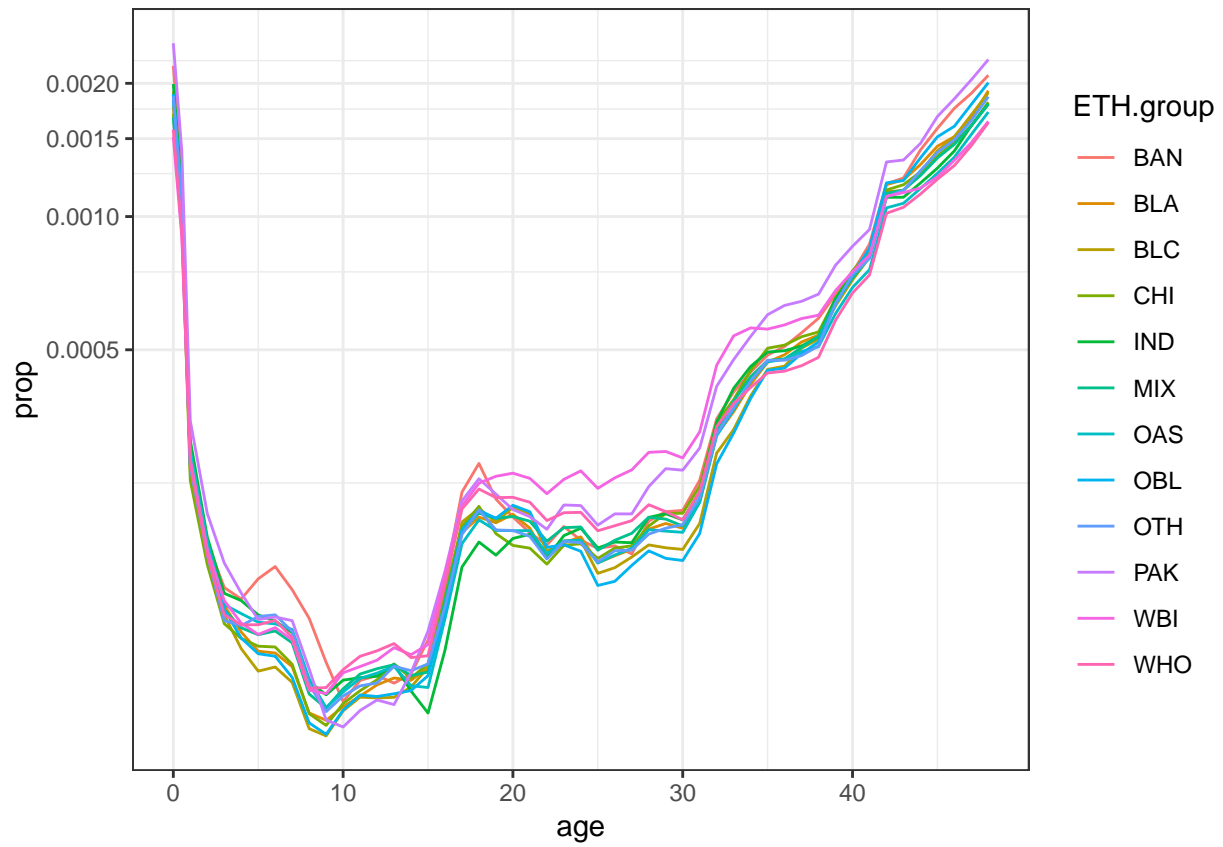
2011 BAN M



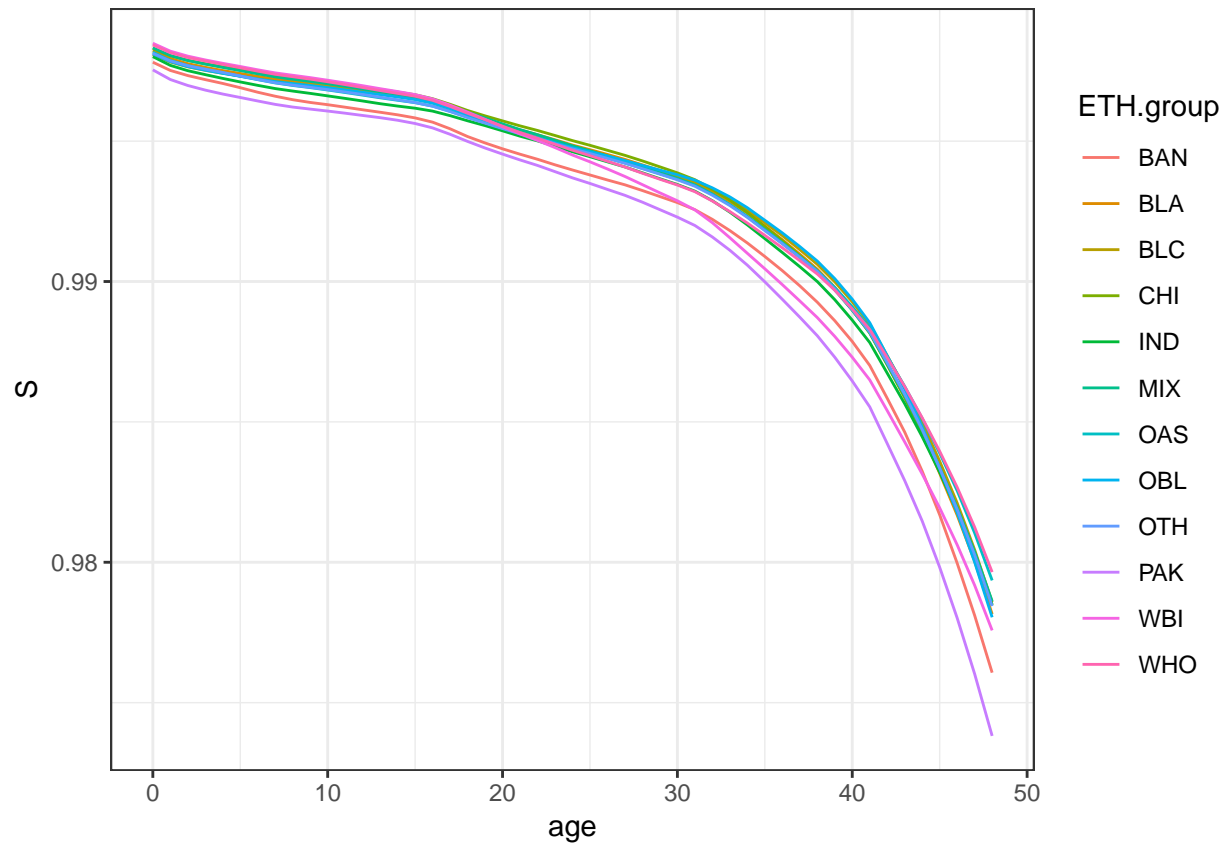
```
out <- NULL

for (i in ethnic_grps) {
  out <-
    survivor_curve(group = list(sex = "M",
                                ETH.group = i,
                                year = 2011)) %>%
    rbind(out, .)
}

ggplot(out, aes(x = age, y = prop, colour = ETH.group)) +
  geom_line() +
  # scale_y_continuous(trans='log2') +
  coord_trans(y = "log10") +
  theme_bw()
```



```
ggplot(out, aes(x = age, y = S, colour = ETH.group)) +  
  geom_line() +  
  theme_bw()
```



0.2 Comparison with ONS

Single ONS all-cause hazard and survival curves.

Projected

0.3 Extrapolation of ETHPOP