Herma framtíðar aldursgögn

Brynjólfur Gauti Jónsson

3/17/2020

```r
library(tidyverse); library(cowplot); library(kableExtra); library(scales); library(gganimate)
library(lubridate); library(emmeans); library(broom); library(propagate)
theme_set(theme_classic(base_size = 12) +
            background_grid(color.major = "grey90",
                              color.minor = "grey95",
                              minor = "xy", major = "xy") +
            theme(legend.position = "none"))
```

```r
d <- read_csv("smit.csv") %>%
  filter(tegund == "Samtals",
         fjoldi > 0)
```

```r
ice.g <- nls(fjoldi ~ SSlogis(dagar, phi1, phi2, phi3), data = d)
```

```r
if (!file.exists("preds.csv")) {
  preds_obj <- predictNLS(ice.g, newdata = tibble(dagar = seq(0, 50)), interval = "prediction")

  preds <- preds_obj$summary %>%
    as_tibble %>%
    select(pred = "Sim.Mean", upper = "Sim.97.5%") %>%
    mutate(dagar = row_number() - 1)
  write_csv(preds, "preds.csv")

} else {
  preds <- read_csv("preds.csv")
}
```

```r
aldur <- tibble(aldur = c("0 - 9", "10 - 19", "20 - 29",
                          "30 - 39", "40 - 49", "50 - 59", "60 - 69",
                          "70 - 79", "80+"),
                tilfelli = c(2, 11, 27, 23, 54, 43, 35, 3, 0) + 1) %>%
  mutate(hlutf = tilfelli / sum(tilfelli))
```

```r
make_pred <- function(cases, n = 100, q = 0.95) {
  sims <- rmultinom(n = n, size = cases, prob = aldur$hlutf)

  est <- apply(sims, 1, median)
  upper <- apply(sims, 1, quantile, probs = q)

  tibble(aldur = aldur$aldur,
         median_tilfelli = est,
         upper_tilfelli = upper) %>%
    list
}
```

```r
simulations <- preds %>%
  rowwise %>%
  mutate(simulation = make_pred(upper, n = 30000)) %>%
  unnest(simulation)

simulations %>%
  ggplot(aes(dagar, median_tilfelli)) +
  geom_line() +
  geom_line(aes(y = upper_tilfelli), lty = 2) +
  facet_wrap("aldur", scales = "free") +
  labs(title = "Forspáð tilfelli eftir aldri",
       subtitle = "Reiknað út frá núverandi aldursdreifingu smita",
       y = "Tilfelli") +
  ggsave("aldur_simulations.png", width = 8, height = 8, scale = 2)
```

Forspáð tilfelli eftir aldri
Reiknað út frá núverandi aldursdreifingu smita