Oct6

2022-11-06

```
library("tidyverse")
```

```
## -- Attaching packages --------------------------------------- tidyverse 1.3.2 --
## v ggplot2 3.4.0      v purrr   0.3.5
## v tibble  3.1.8      v dplyr   1.0.10
## v tidyr   1.2.1      v stringr 1.4.1
## v readr   2.1.3      v forcats 0.5.2
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
library("dplyr")
source("../constant/constant.R")
source("../function/disc_gamma.R")
```

```
##
## Attaching package: 'extraDistr'
##
## The following object is masked from 'package:purrr':
##
##     rdunif
```

```
source("../function/make_plot.R")
source("../model/pls/ridge.R")


### Importing Rt estimation package
# library(EpiEstim)
source("../run/run_EpiEstim.R")

source("../model/pls/ridge.R")

source("../run/run_pf_all.R")
```

```
##
## Attaching package: 'pomp'
##
## The following object is masked from 'package:purrr':
##
##     map
```

```
#
# source("../run/run_ridge_gd.R")

### Importing data, no cyclic effect

# d = read.csv("../data/processed/d2.csv")
# plot(d$y, type = "l")
# plot(d$r, type = "l")
```

Run methods

EpiEstim

epiestim <- run_epiestim(d, p1 = sid_covid_mean, p2 = sid_covid_sd) plot(epiestim, type = "l")

PLS

CLosed form

lamb <- cv_loss(d$iwt, dy) # loocv <- CV(d$iwt, dy, lambdas = exp(seq(from=0.1, to = 10, by = 0.3))) ridge <- get_r(d$iwt, dy, lambda = lamb) plot(ridge, type = "l")

NLP GD

ridge_gd <- run_ridge_gd(d, lamb) plot(ridge_gd$estimate, type = "l")

Particle Filter

pf <- run_pf(d, 0.5) plot(pf$filter.mean.x, type = "l")

EpiNow

epin <- read.csv("data/results/epinow2_d2.csv") plot(epin$median[1:500], type = "l")

Build Rt estimation dataframe

all_rt <- data.frame(idx = 1:nrow(d), a_True_Rt = d$r, $EpiEstim = epiestim$, $Ridge_closed_form = ridge$, $Ridge_gd = ridge_gd$estimate, Particle_Filter = pf$filter.mean.x$, $EpiNow2 = epin$median[1:500])

all_rt %>% pivot_longer(!idx, names_to = "method", values_to = "vals")%>% ggplot(aes(x = idx, fill=method, linetype=method, color = method))+ geom_line(aes(y=vals))+ theme_bw()+ xlab("Time")+ ylab("Rt")

‘‘‘