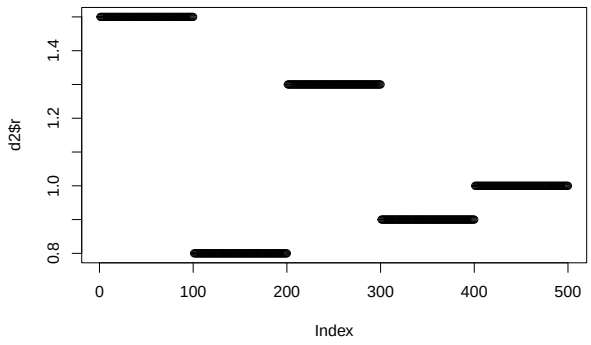
Oct30

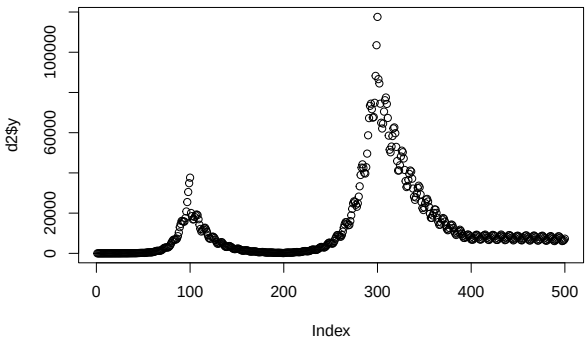
2022-10-31

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

```
## -- Attaching packages --------------------------------------- tidyverse 1.3.1 --

## v ggplot2 3.3.5     v purrr   0.3.4
## v tibble  3.1.6     v dplyr   1.0.7
## v tidyr   1.2.0     v stringr 1.4.0
## v readr   2.1.2     v forcats 0.5.1

## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
d2 <- read.csv("../data/processed/d1.csv")

plot(d2$r)
plot(d2$y)
```





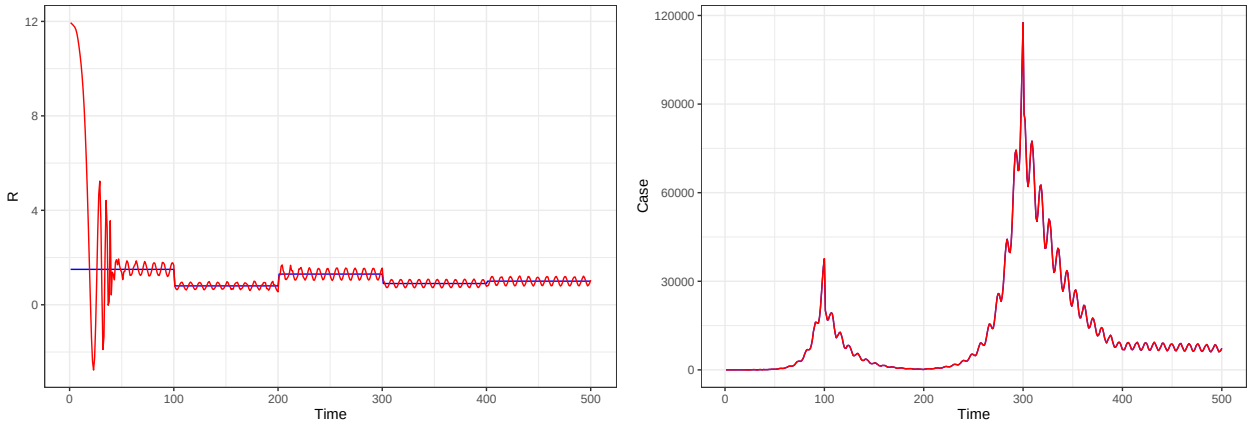

```
# ridge_cv <- CV(W = d2$iwt, Y=d2$y)
# plot(log(ridge_cv$scores))
# ridge_cv$lambdas[1:5]
```

```
get_loss <- function(r, W, Y, lambda){
  dat_length = length(Y)
  D = build_D(dat_length)
```

```
  W = diag(W)

  loss = sum((Y-W%*%r)^2/dat_length) + lambda*sum((D%*%r)^2)

  return(loss)
}
```

```
# lambda = ridge_cv$lambdas[1]
lambda = 1000
ridge_r <- get_r(d2$iwt, d2$y, lambda)
diag_ridge <- diag_plots(d2$r, ridge_r, d2$iwt, d2$y, cap=0)
diag_ridge$rt
diag_ridge$oneday

get_loss(ridge_r, d2$iwt, d2$y, lambda)
```

```
## [1] 107956.4
```




```
ridge_obj <- function(data, par, loss_func, iwt = iwt, smooth_func, penalties, pen_func = log, ...){

  dat_length = nrow(data)

  loss = loss_func(z=data$y, iwt = iwt, r = par)

  r_pen <- penalties$r* smooth_func(par)

  obj_value = sum(loss+r_pen)

  return(obj_value)
}

r_smooth_penalty <- function(r){
  return(sum(diff(r)^2))
}

normal_loss <- function(z, iwt, r){
  return(sum((z-r*iwt)^2))
}
```

```
init_r = rep(1, nrow(d2))

result <- nlm(f=ridge_obj, p = init_r, iterlim =2000, print.level = 0, data=d2, penalties = list("r"=lar

diag_gd <- diag_plots(d2$r, result$estimate, d2$iwt, d2$y, cap=0)
diag_gd$rt
diag_gd$oneday

get_loss(result$estimate, d2$iwt, d2$y, lambda)
```

```
## [1] 7665.158
```