

STAT 471: Midterm Exam Dry Run

Please make sure you can successfully compile this document to PDF well in advance of the midterm exam. If not, please consult the teaching staff for help as soon as possible.

1 Test load packages

```
library(kableExtra)                # for printing tables

## Warning: package 'kableExtra' was built under R version 4.1.1

library(cowplot)                   # for side by side plots

## Warning: package 'cowplot' was built under R version 4.1.1

library(glmnetUtils)               # to run ridge and lasso

## Warning: package 'glmnetUtils' was built under R version 4.1.1

library(lubridate)                 # for dealing with dates
library(maps)                      # for creating maps
source("../..//functions/plot_glmnet.R") # for lasso/ridge trace plots
library(tidyverse)                 # for everything else

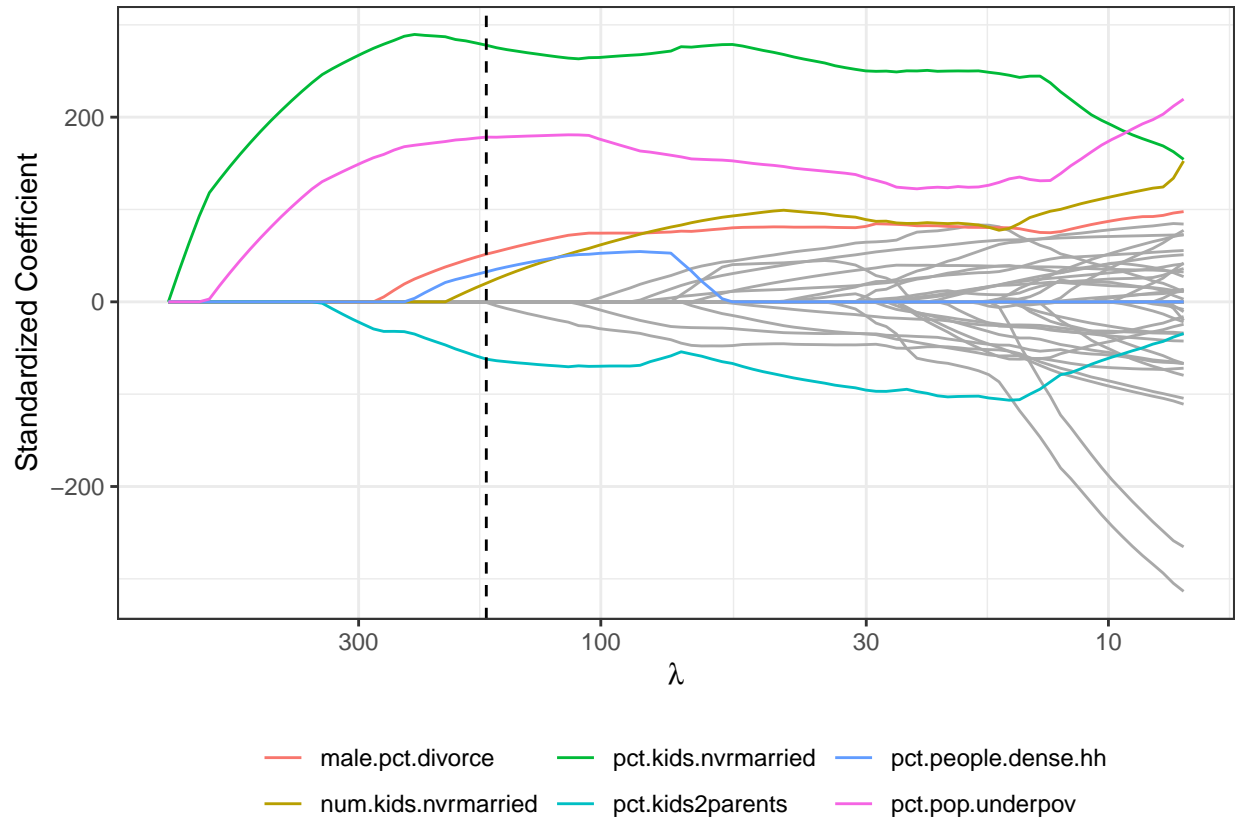
## Warning: package 'tibble' was built under R version 4.1.1
## Warning: package 'tidyr' was built under R version 4.1.1
## Warning: package 'readr' was built under R version 4.1.1
```

2 Test glmnetUtils

```
crime_data = read_csv("../..//data/CrimeData_FL.csv")
lasso_fit = cv.glmnet(violentcrimes.perpop ~ ., # formula notation, as usual
                      alpha = 1,                # alpha = 1 for lasso
                      nfolds = 10,              # number of folds
                      data = crime_data)        # data to run lasso on
```

3 Test plot_glmnet

```
plot_glmnet(lasso_fit, crime_data, features_to_plot = 6)
```



4 Test maps

Figure 1 displays a map of Florida.

```
# create a map of Florida
map_data("county") %>%
  as_tibble() %>%
  filter(region == "florida") %>%
  ggplot() +
  geom_polygon(data=map_data("state") %>% filter(region == "florida"),
    aes(x=long, y=lat, group=group),
    color="black", fill=NA, size = 1, alpha = .3) +
  geom_polygon(aes(x=long, y=lat, group=group),
    fill = "dodgerblue",
    color="black", size = .25) +
  theme_void()
```

5 Test kableExtra

Table 1 displays a simple table.

```
tibble(x = 1:5, y = 6:10) %>%
  kable(format = "latex", row.names = NA,
    booktabs = TRUE, digits = 2,
    col.names = c("Column 1", "Column 2"),
```

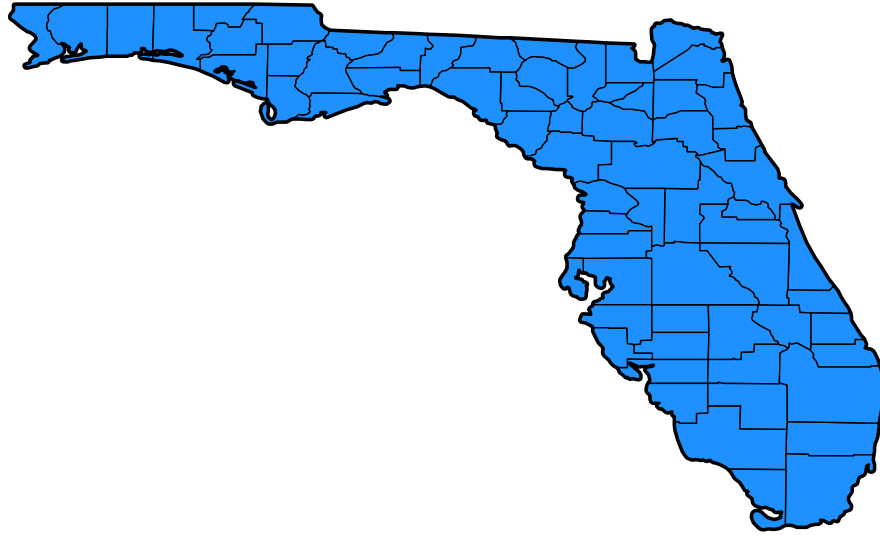


Figure 1: This is ia map of Florida.

Table 1: This is a simple table.

Column 1	Column 2
1	6
2	7
3	8
4	9
5	10

```
caption = "This is a simple table.") %>%
kable_styling(position = "center")
```

6 Test cowplot

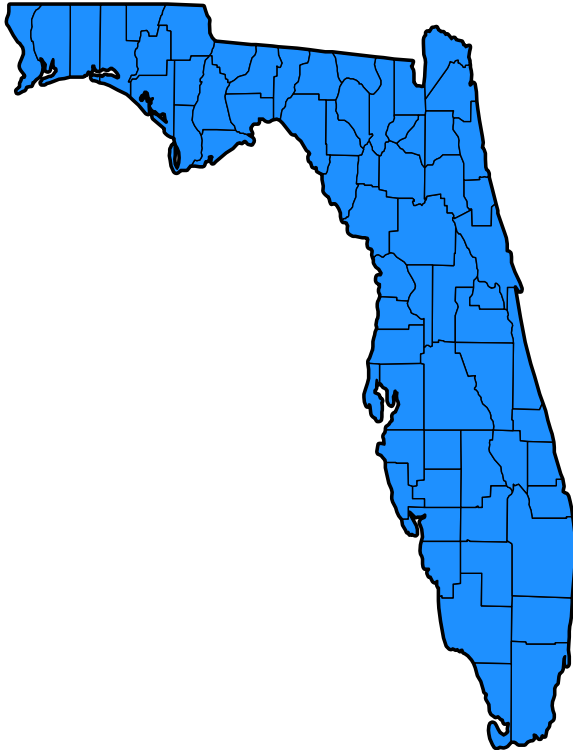
```
# create a map of Florida
fl_map = map_data("county") %>%
  as_tibble() %>%
  filter(region == "florida") %>%
  ggplot() +
  geom_polygon(data=map_data("state") %>% filter(region == "florida"),
    aes(x=long, y=lat, group=group),
    color="black", fill=NA, size = 1, alpha = .3) +
  geom_polygon(aes(x=long, y=lat, group=group),
    fill = "dodgerblue",
    color="black", size = .25) +
  ggtitle("Florida") +
  theme_void()

# create a map of Georgia
```

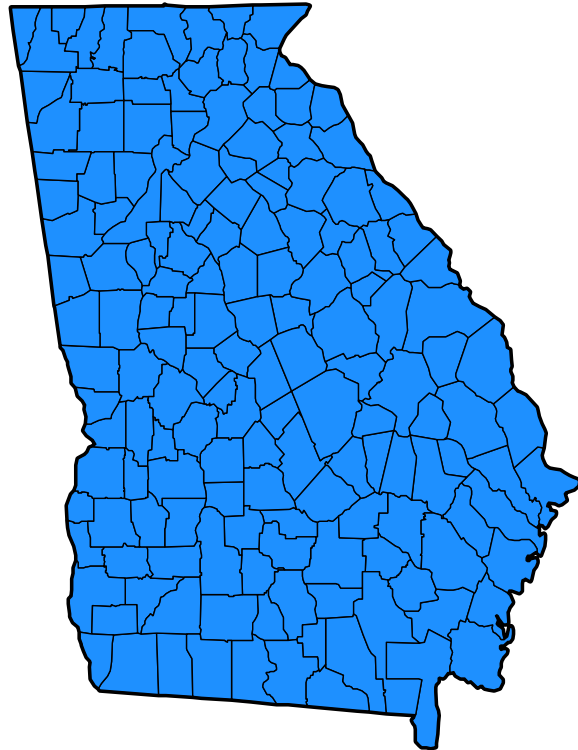
```
ga_map = map_data("county") %>%
  as_tibble() %>%
  filter(region == "georgia") %>%
  ggplot() +
  geom_polygon(data=map_data("state") %>% filter(region == "georgia"),
    aes(x=long, y=lat, group=group),
    color="black", fill=NA, size = 1, alpha = .3) +
  geom_polygon(aes(x=long, y=lat, group=group),
    fill = "dodgerblue",
    color="black", size = .25) +
  ggtitle("Georgia") +
  theme_void()

# concatenate plots
plot_grid(fl_map, ga_map)
```

Florida



Georgia



7 Test lubridate

```
# extract today's date
date = today()
date
```

```
## [1] "2021-10-25"
```

```
# extract day  
day(date)
```

```
## [1] 25
```

```
# extract month  
month(date)
```

```
## [1] 10
```

```
# extract year  
year(date)
```

```
## [1] 2021
```