Informattion Science3

Assignment3

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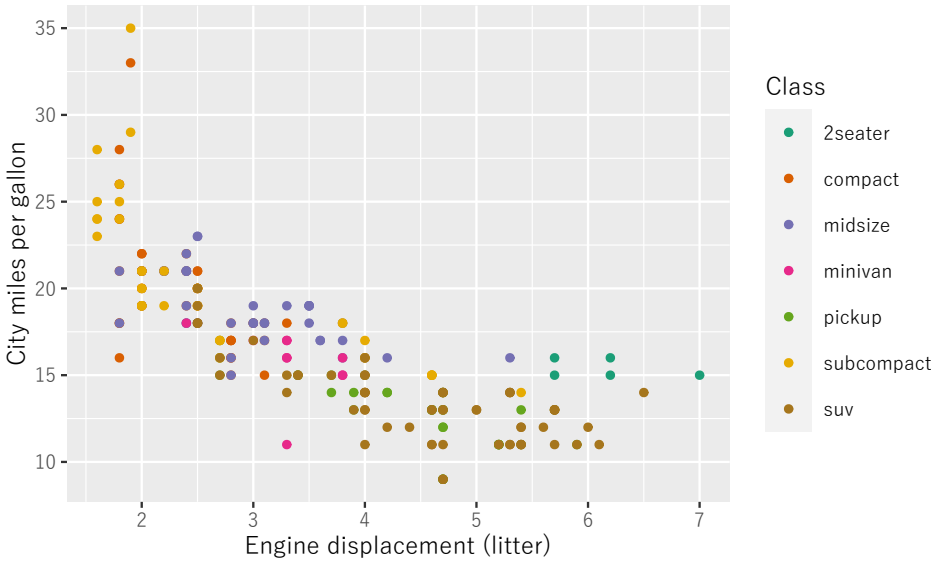
```
glimpse(mpg)
```

```
## Rows: 234
## Columns: 11
## $ manufacturer <chr> "audi", "audi", "audi", "audi", "audi", "audi", "audi", "~
## $ model        <chr> "a4", "a4", "a4", "a4", "a4", "a4", "a4", "a4 quattro", "~
## $ displ        <dbl> 1.8, 1.8, 2.0, 2.0, 2.8, 2.8, 3.1, 1.8, 1.8, 2.0, 2.0, 2.~
## $ year         <int> 1999, 1999, 2008, 2008, 1999, 1999, 2008, 1999, 1999, 200~
## $ cyl          <int> 4, 4, 4, 4, 6, 6, 6, 4, 4, 4, 4, 6, 6, 6, 6, 6, 6, 8, 8, ~
## $ trans        <chr> "auto(l5)", "manual(m5)", "manual(m6)", "auto(av)", "auto~
## $ drv          <chr> "f", "f", "f", "f", "f", "f", "f", "4", "4", "4", "4", "4~
## $ cty          <int> 18, 21, 20, 21, 16, 18, 18, 18, 16, 20, 19, 15, 17, 17, 1~
## $ hwy          <int> 29, 29, 31, 30, 26, 26, 27, 26, 25, 28, 27, 25, 25, 25, 2~
## $ fl           <chr> "p", "p", "p", "p", "p", "p", "p", "p", "p", "p", "p", "p~
## $ class        <chr> "compact", "compact", "compact", "compact", "compact", "c~
```

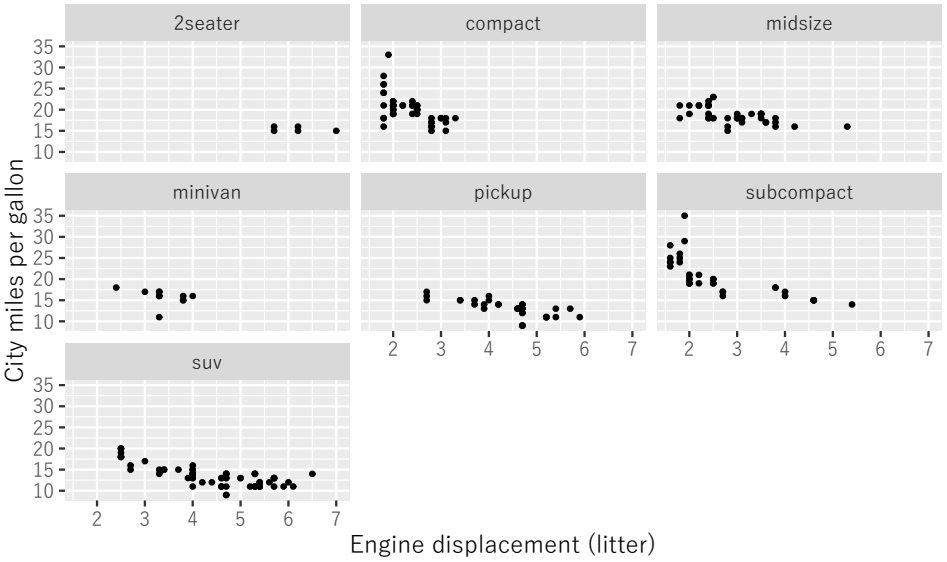
横軸はエンジン排気量 (displ)、縦軸は、(cyl)

```
mpg %>%
  group_by(class) %>%
  summarise(cty,
            displ,
            .groups = "drop") %>%
```

```
  ggplot() +
  geom_point(aes(x = displ, y = cty, color = class), size = 1) +
  scale_color_brewer(palette = "Dark2") +
  labs(x = "Engine displacement (litter)", y = "City miles per gallon", color = "Class")
```




```
mpg %>%
  group_by(class) %>%
  summarise(cty,
            displ,
            .groups = "drop") %>%
  ggplot() +
  geom_point(aes(x = displ, y = cty, color = class), color = "black",size = 0.5) +
  labs(x = "Engine displacement (litter)", y = "City miles per gallon") +
  facet_wrap(~ class, ncol = 3)
```



2 2

```
glimpse(presidential)
```

```
## Rows: 11
## Columns: 4
## $ name  <chr> "Eisenhower", "Kennedy", "Johnson", "Nixon", "Ford", "Carter", "~
## $ start <date> 1953-01-20, 1961-01-20, 1963-11-22, 1969-01-20, 1974-08-
09, 197~
## $ end   <date> 1961-01-20, 1963-11-22, 1969-01-20, 1974-08-09, 1977-01-
20, 198~
## $ party <chr> "Republican", "Democratic", "Democratic", "Republican", "Republi~
```

```
glimpse(economics)
```

```
## Rows: 574
## Columns: 6
## $ date     <date> 1967-07-01, 1967-08-01, 1967-09-01, 1967-10-01, 1967-11-
01, ~
## $ pce      <dbl> 506.7, 509.8, 515.6, 512.2, 517.4, 525.1, 530.9, 533.6, 544.3~
## $ pop      <dbl> 198712, 198911, 199113, 199311, 199498, 199657, 199808, 19992~
## $ psavert  <dbl> 12.6, 12.6, 11.9, 12.9, 12.8, 11.8, 11.7, 12.3, 11.7, 12.3, 1~
## $ uempmed  <dbl> 4.5, 4.7, 4.6, 4.9, 4.7, 4.8, 5.1, 4.5, 4.1, 4.6, 4.4, 4.4, 4~
```

```
## $ unemploy <dbl> 2944, 2945, 2958, 3143, 3066, 3018, 2878, 3001, 2877, 2709, 2~
```

まず、折れ線グラフを先につくり、キャンバスの大きさは presidental に合わせる

gglot を重ねられるのか？

Date 型を数値に直す

```
daydata_1 <- seq(as.Date("1953-01-20"), as.Date("1967-07-01")-1, by = "1 day")
daydata_2 <- seq(as.Date("2015-04-02"), as.Date("2017-01-20"), by = "1 day")
```

まずは、ecininucs のデータの長さを president にそろえる必要あり。キャンバスが一致しない

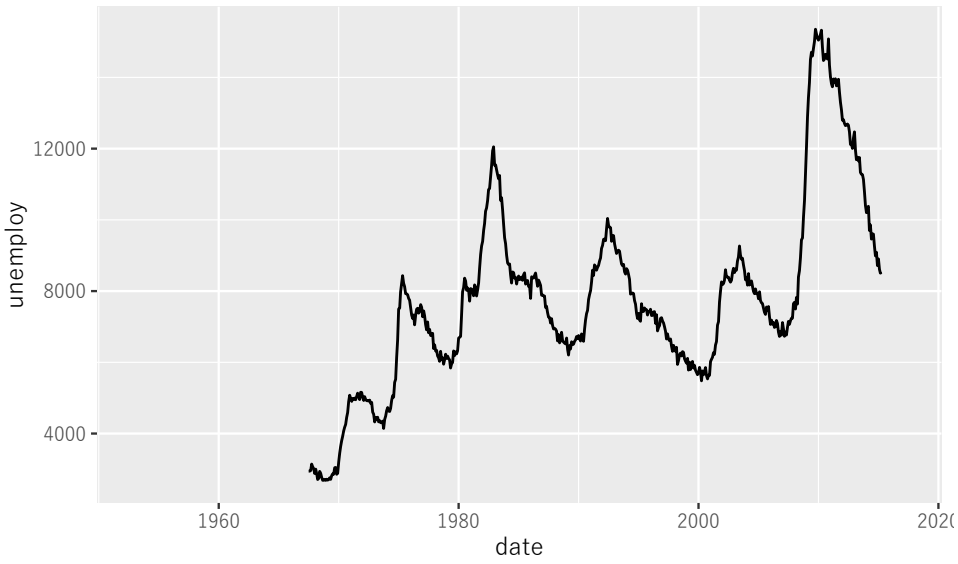
```
df1 <- economics[, c("date", "unemploy")]

df2 <- tibble(date = daydata_1,
              unemploy = rep(NA, length(daydata_1)))

df3 <- tibble(date = daydata_2,
              unemploy = rep(NA, length(daydata_2)))

df1 <- bind_rows(df2, df1, df3)
```

```
fig1 <- df1 %>%
  ggplot() +
  geom_line(aes(x = date, y = unemploy))
fig1
```

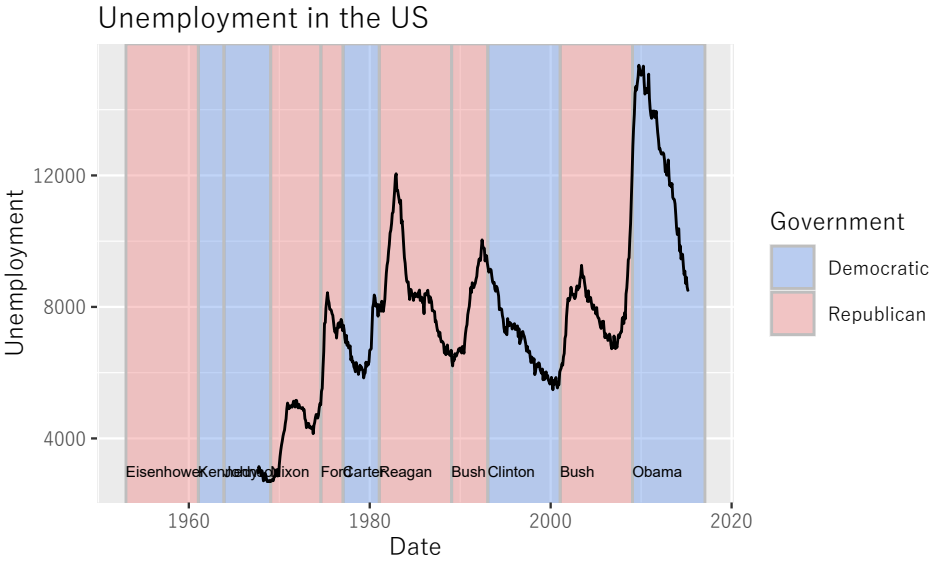


```r
df1 <- df1 %>%
  mutate(party = rep(0, length(df1$date)))
```

```r
for (i in 1:length(df1$date)) {
  day <- df1$date[i]

  if (day <= "1961-01-20") {
    df1$party[i] <- "Republican"
  } else if ((day >= "1969-01-20") & (day <= "1974-08-09")) {
    df1$party[i] <- "Republican"
  } else if ((day >= "1969-01-20") & (day <= "1977-01-20")) {
    df1$party[i] <- "Republican"
  } else if ((day >= "1981-01-20") & (day <= "1993-01-20")) {
    df1$party[i] <- "Republican"
  } else if ((day >= "2001-01-20") & (day <= "2009-01-20")) {
    df1$party[i] <- "Republican"
  } else {
    df1$party[i] <- "Democratic"
  }
}
```

```r
ggplot(economics, aes(x = date, y = unemploy)) +
  geom_rect(data = presidential, aes(NULL, NULL, xmin = start, xmax = end,
                                     fill = party),
            ymin = 0, ymax = 16000, alpha = 0.4, alpha = 0.1,colour = "gray") +
  geom_line(size = 0.5) +
  scale_fill_manual(values = c("Democratic" = "#6495ED",
                               "Republican" = "#F08080")) +
  geom_text(data=presidential,aes(x=start, y=3000,label=name), size=2, hjust = 0) +
  labs(title = "Unemployment in the US", x = "Date", y = "Unemployment",
       fill = "Government")
```


Unemployment in the US
Unemployment
12000
8000
4000
Eisenhowe
Kenn
Nixon
For
Carte
Reagan
Bush
Clinton
Bush
Obama
1960
1980
2000
2020
Date
Government
Democratic
Republican

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