

Group assignment of Week5

*group 6: Finn Womack, Lorne Curran, Martin Leandro Uranga Priore, Chenyang Duo,
Emerson Webb, Jiarui Xu*

5/2/2019

```
knitr::opts_chunk$set(echo = TRUE, warning = FALSE, message = FALSE,  
  fig.show = "hold")  
library(tidyverse)  
library(ggplot2)  
rm(list = ls())
```

Plot1

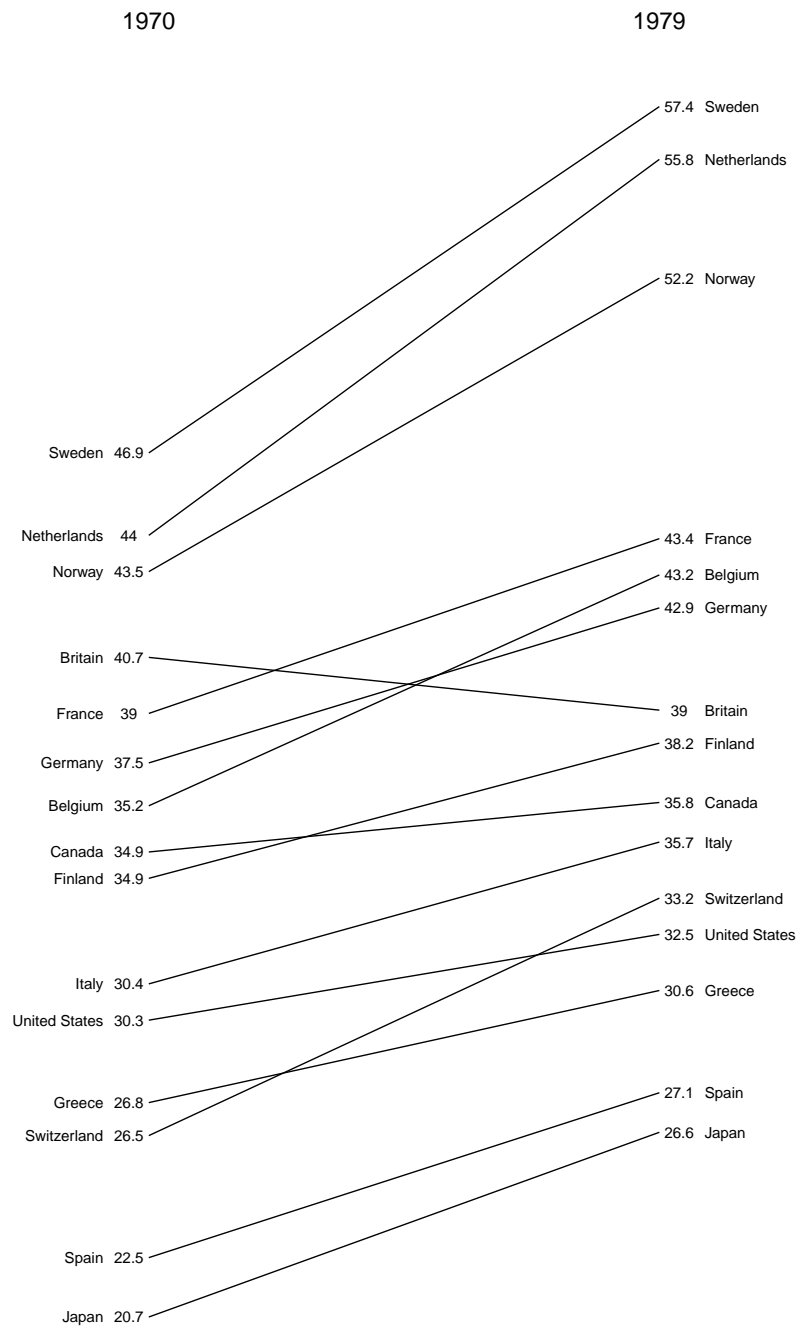
```
tax <- tribble(  
  ~ Country,      ~ `1970`, ~ `1979`,  
  "Sweden",      46.9,    57.4,  
  "Netherlands", 44.0,    55.8,  
  "Norway",      43.5,    52.2,  
  "Britain",     40.7,    39.0,  
  "France",      39.0,    43.4,  
  "Germany",     37.5,    42.9,  
  "Belgium",     35.2,    43.2,  
  "Canada",      34.9,    35.8,  
  "Finland",     34.9,    38.2,  
  "Italy",       30.4,    35.7,  
  "United States", 30.3,    32.5,  
  "Greece",      26.8,    30.6,  
  "Switzerland", 26.5,    33.2,  
  "Spain",       22.5,    27.1,  
  "Japan",       20.7,    26.6  
)  
  
tidytax <- tax %>%  
  gather(`1970`, `1979`, key = "year", value = "GDP", convert = T)  
  
tidytax$adj <- c(46.9, 44.4, 43.3, 40.7, 39.0, 37.5, 36.2, 34.8, 34.0, 30.8, 29.7, 27.2, 26.2, 22.5, 20.7)  
ggplot(tidytax)+  
  geom_line(aes(x = year, y = adj, group = Country), size = .3)+  
  theme_void()+  
  xlab("")+  
  ylab("")+  
  scale_y_continuous(limits = c(20, 63))+  
  scale_x_continuous(limits = c(1963, 1983))+  
  geom_text(data = filter(tidytax, year == 1970),  
    aes(x = year, y = adj, label = Country),  
    nudge_x = -.8, hjust = 1, size = 2.5)+  
  geom_text(data = filter(tidytax, year == 1970),  
    aes(x = year, y = adj, label = GDP),  
    nudge_x = -.35, size = 2.5)+
```

```

geom_text(data = filter(tidytax, year == 1979),
          aes(x = year, y = adj, label = Country), size = 2.5,
          nudge_x = 0.8, hjust = 0)+
geom_text(data = filter(tidytax, year == 1979),
          aes(x = year, y = adj, label = GDP),
          nudge_x = 0.35, size = 2.5)+
annotate("text", x = c(1970, 1979), y = 60,
          label = c("1970", "1979"))+
annotate("text", x = 1965, y = 58,
          label = "Current Receipts of Government\n as Percentage of Gross Domestic\n Product, 1970 and 1979"
          size = 2)

```

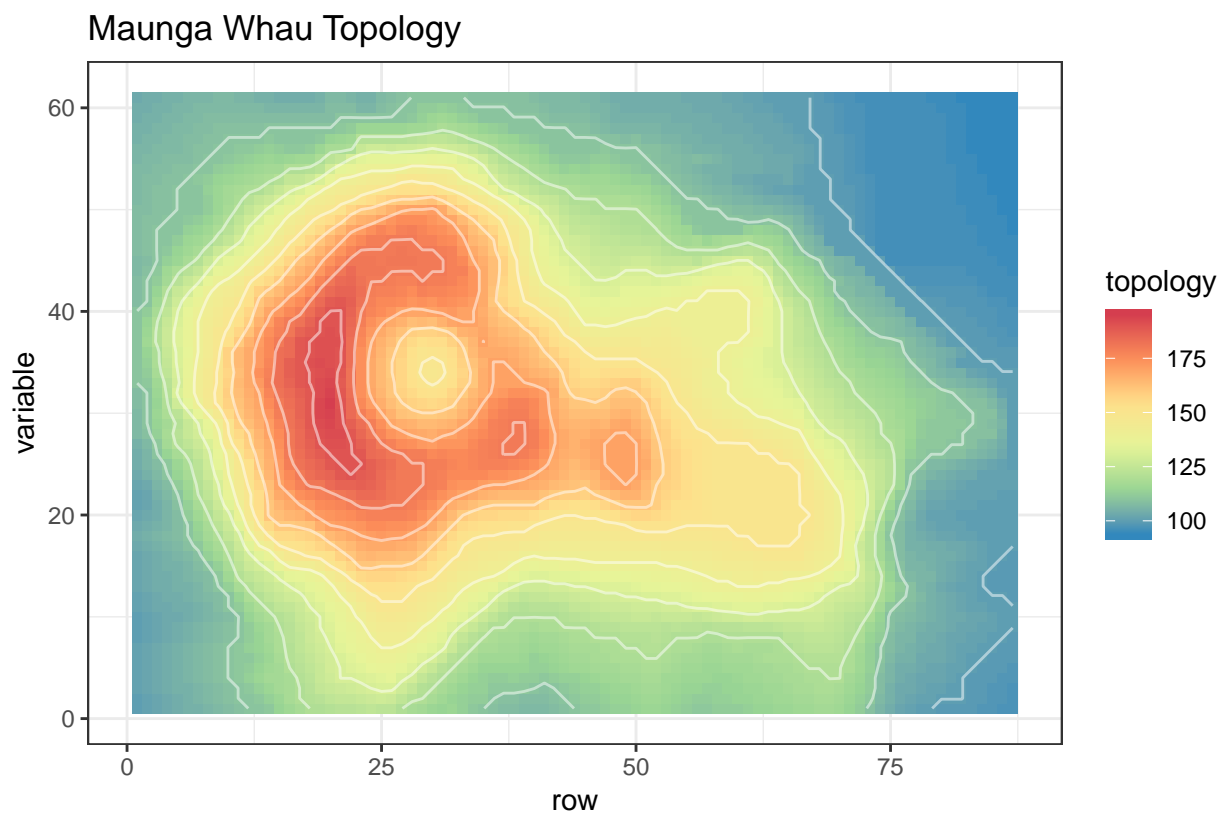
Current Receipts of Government
as Percentage of Gross Domestic
Product, 1970 and 1979



Plot2

```
volcano_tbl <- as_tibble(volcano)
colnames(volcano_tbl) <- 1:ncol(volcano)
volcano_tbl$row <- 1:nrow(volcano_tbl)

volcano_tbl_new <- gather(volcano_tbl,variable,topology,-row,convert = TRUE)
ggplot(volcano_tbl_new, aes(x=row, y=variable,z=topology,fill=topology)) +
  geom_tile() +
  coord_equal() +
  geom_contour(color = "white", alpha = 0.5) +
  scale_fill_distiller(palette="Spectral", na.value="white") +
  theme_bw() +
  labs(title = "Maunga Whau Topology")
```



Plot3

```
budget <- tribble(
  ~ Expenses,
  ~ Jan, ~ Feb, ~ Mar, ~ Apr, ~ May, ~ Jun, ~ Jul, ~ Aug, ~ Sep, ~ Oct, ~ Nov,
  "Domestic Actual", 84853, 84838, 88103, 85072, 88723, 90384, 89374, 95273, 94239, 92394, 96934,
  "Domestic Budget", 83000, 83830, 84668, 85515, 86370, 87234, 88106, 88987, 89877, 90776, 91684,
  "International Actual", 12538, 12438, 14934, 14033, 13945, 15938, 14086, 15934, 13945, 17338, 19384,
  "International Budget", 12000, 12600, 13860, 13200, 13860, 15246, 14520, 15246, 16771, 15972, 16771,
)
```

```

budget_new <- gather(budget,variable,value,-Expenses)

a <- subset(budget_new,Expenses=="Domestic Actual")$value
b <- subset(budget_new,Expenses=="Domestic Budget")$value
c <- subset(budget_new,Expenses=="International Actual")$value
d <- subset(budget_new,Expenses=="International Budget")$value

Domestic_difference <- a-b
International_difference <- c-d
Domestic_proportion <- (a-b)/a
International_proportion <- (c-d)/c
Month <- factor(subset(budget_new, Expenses=="Domestic Actual")$variable, levels=c("Jan","Feb","Mar","Apr","May","Jun","Jul","Aug","Sep","Oct","Nov","Dec"))

budget_diff <- tibble(Domestic_difference,International_difference,
                     Domestic_proportion,International_proportion,Month)
budget_diff_new<- gather(budget_diff[c(1,2,5)],key="Type1",
                        value="Difference",Domestic_difference,
                        International_difference,-Month) %>%
  mutate(Type=gsub("_.*","",Type1))

ggplot(budget_diff_new,aes(x=Month,y=Difference,group=Type,colour=Type))+
  geom_line()+
  theme_minimal()+
  geom_hline(yintercept=0)+
  geom_point()+ylab("")+xlab("")+
  scale_y_continuous(breaks = seq(-4000,14000,2000),
                    limits=c(-4100,14100)) +
  geom_text(data = filter(budget_diff_new, Month == "Dec"),
            aes(x = Month, y = Difference, label = Type),
            nudge_x = 0.15, hjust = 0, size = 2.5)+
  scale_x_discrete(expand=c(.15,0))+
  theme(legend.position="none")+
  labs(title = "Expense Variance from Budget in U.S. Dollars")

budget_diff2 <- gather(budget_diff[c(3,4,5)],key="Type1",
                      value="Difference",Domestic_proportion,
                      International_proportion,-Month) %>%
  mutate(Type=gsub("_.*","",Type1))

ggplot(budget_diff2,aes(x=Month,y=Difference,group=Type,colour=Type))+
  geom_line()+
  theme_minimal()+
  geom_hline(yintercept=0)+
  geom_point()+ylab("")+xlab("")+
  scale_y_continuous(labels=scales::percent,
                    breaks = seq(-.2,.25,.05),
                    limits=c(-.24,.25)) +
  geom_text(data = filter(budget_diff2, Month == "Dec"),
            aes(x = Month, y = Difference, label = Type),
            nudge_x = 0.15, hjust = 0, size = 2.5)+
  scale_x_discrete(expand=c(.15,0))+
  theme(legend.position="none")+

```

```
labs(title = "Percentage Variance of Expenses from Budget")
```

