Chosun Tax : Province

Problem

1769년(영조 45년) 도별 수조 현황표를 막대그래프로 표시

〈표 14〉 1769년(영조 45년) 도(道)별 수조 현황

구분	징수 대상	경기도	충청도	전라도	경상도	강원도	황해도	함경도	평안도	합 계
징수 세액	쌀	6,277	17,130	42,253	29,484	1,039	3,531	865	2,483	103,062
	소미(좁쌀)							4,097	2,673	6,770
	콩	7,324	16,925	22,999	29,903	2,003	15,076	2,048	8,019	104,297
	수미(대동미)						194		3,424	3,618
	별수미55)						2,355			2,355
	소수미						8,292		19,941	28,233
	별수소미						9,352			9,352
	회전소미						535			535
	화전 콩						16			16
	논전 면포						194			194
	삼수량 쌀		9,883	15,939	15,963	754				42,539
	삼수량 소미					543				543
	쌀환산(석)	9,939	35,476	69,692	60,399	3,229	29,883	5,167	31,996	245,779
	구성비	4%	14%	28%	25%	1%	12%	2%	13%	100%
조정 상납 세액	쌀	5,587	23,361	58,547	10,046	509	3,102			101,152
	콩	6,066	9,837	16,645	6,283	691	4,363			43,885
	소미					719	3,005			3,724
	면포		11,821	1,426	4,985	7,357	194			25,783
	돈				53,356		97,611			150,967
	쌀환산(석)	8,620	31,657	67,277	25,283	3,532	27,265	0	0	163,634
	구성비	5%	19%	41%	15%	2%	17%	0%	0%	100%

자료 : 「증보문헌비고」 제149권 전부고 9 조세 2(영조 45년(1769))

Data Setup

```
library(extrafont)
```

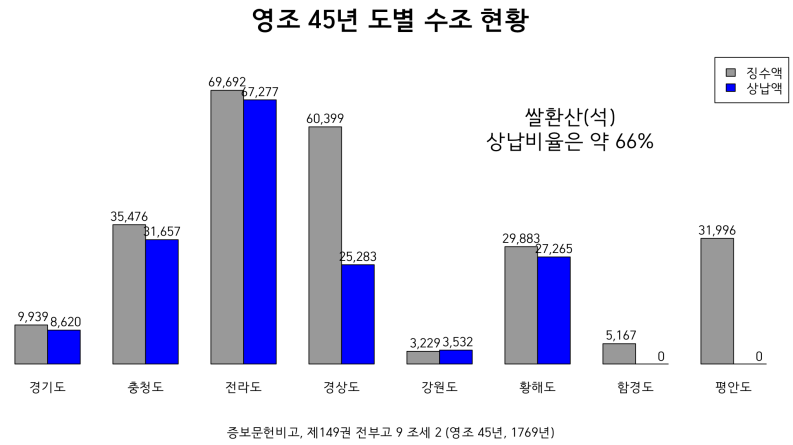
```
## Registering fonts with R
```

```
province <- c("경기도", "충청도", "전라도", "경상도", "강원도", "황해도", "함경도", "평안도")
expected <- c(9939, 35476, 69692, 60399, 3229, 29883, 5167, 31996)
collected <- c(8620, 31657, 67277, 25283, 3532, 27265, 0, 0)
tax.df <- data.frame(province, expected, collected, stringsAsFactors = FALSE)
tax.df
```

```
##   province expected collected
## 1   경기도     9939      8620
## 2   충청도    35476     31657
## 3   전라도    69692     67277
## 4   경상도    60399     25283
## 5   강원도     3229      3532
## 6   황해도    29883     27265
## 7   함경도     5167         0
## 8   평안도    31996         0
```

Barplot(R Base)

```
library(extrafont)
par(family = "HCR Dotum LVT")
b1 <- barplot(t(as.matrix(tax.df[, 2:3])),
        axes = FALSE,
        ylim = c(0, 80000),
        beside = TRUE,
        names.arg = tax.df[, 1],
        legend.text = c("징수액", "상납액"), col = c("darkgrey", "blue"))
# axis(side = 2,
#     at = as.vector(as.matrix(rates.df[, 2:3])),
#     labels =  as.vector(as.matrix(rates.df[, 2:3])), las = 1)
text(x = b1[1, ], y = expected + 2000, labels = format(expected, big.mark = ","), col
 = "black")
text(x = b1[2, ], y = collected + 2000, labels = format(collected, big.mark = ","), c
ol = "black")
main.title <- "영조 45년 도별 수조 현황"
sub.title <- "증보문헌비고, 제149권 전부고 9 조세 2 (영조 45년, 1769년)"
main.text <- "쌀환산(석)\n상납비율은 약 66%"
title(main = main.title, sub = sub.title, cex.main = 2)
text(x = 18, y = 60000, main.text, cex = 1.6, adj = 0.5)
```



ggplot

Data for ggplot

```
library(reshape2)
tax.df$province.f <- factor(province, levels = province)
tax.df
```

```
##   province expected collected province.f
## 1   경기도     9939      8620     경기도
## 2   충청도    35476     31657     충청도
## 3   전라도    69692     67277     전라도
## 4   경상도    60399     25283     경상도
## 5   강원도     3229      3532     강원도
## 6   황해도    29883     27265     황해도
## 7   함경도     5167         0     함경도
## 8   평안도    31996         0     평안도
```

```
str(tax.df)
```

```
## 'data.frame':    8 obs. of  4 variables:
##  $ province  : chr  "경기도" "충청도" "전라도" "경상도" ...
##  $ expected  : num  9939 35476 69692 60399 3229 ...
##  $ collected : num  8620 31657 67277 25283 3532 ...
##  $ province.f: Factor w/ 8 levels "경기도","충청도",..: 1 2 3 4 5 6 7 8
```

```
tax.df.melt <- melt(tax.df[, 2:4],
                    id.vars = "province.f",
                    measure.vars = c("expected", "collected"),
                    variable.name = "tax", value.name = "amount")
tax.df.melt
```

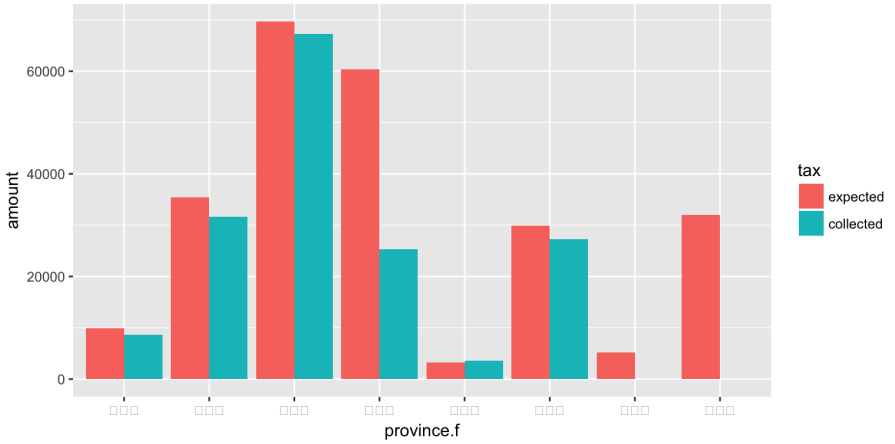
```
##    province.f       tax amount
## 1      경기도  expected   9939
## 2      충청도  expected  35476
## 3      전라도  expected  69692
## 4      경상도  expected  60399
## 5      강원도  expected   3229
## 6      황해도  expected  29883
## 7      함경도  expected   5167
## 8      평안도  expected  31996
## 9      경기도 collected   8620
## 10     충청도 collected  31657
## 11     전라도 collected  67277
## 12     경상도 collected  25283
## 13     강원도 collected   3532
## 14     황해도 collected  27265
## 15     함경도 collected      0
## 16     평안도 collected      0
```

```
str(tax.df.melt)
```

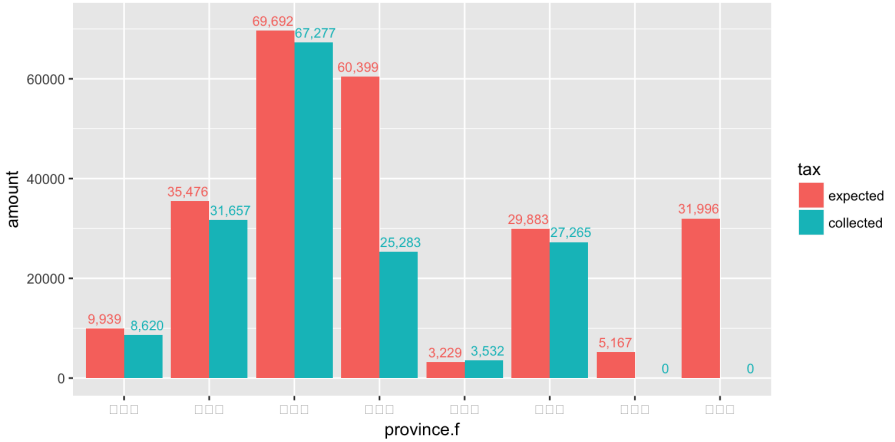
```
## 'data.frame':    16 obs. of  3 variables:
##  $ province.f: Factor w/ 8 levels "경기도","충청도",..: 1 2 3 4 5 6 7 8 1 2 ...
##  $ tax       : Factor w/ 2 levels "expected","collected": 1 1 1 1 1 1 1 1 2 2 ...
##  $ amount    : num  9939 35476 69692 60399 3229 ...
```

geom_bar()

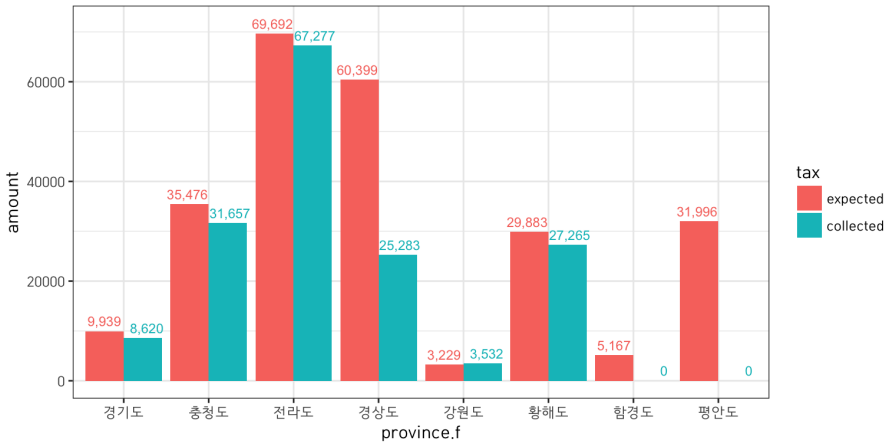
```
library(ggplot2)
source("./theme_kr.R")
g0 <- ggplot(data = tax.df.melt, mapping = aes(x = province.f, y = amount, fill = ta
x))
(g1 <- g0 + geom_bar(stat = "identity", position = position_dodge()))
```



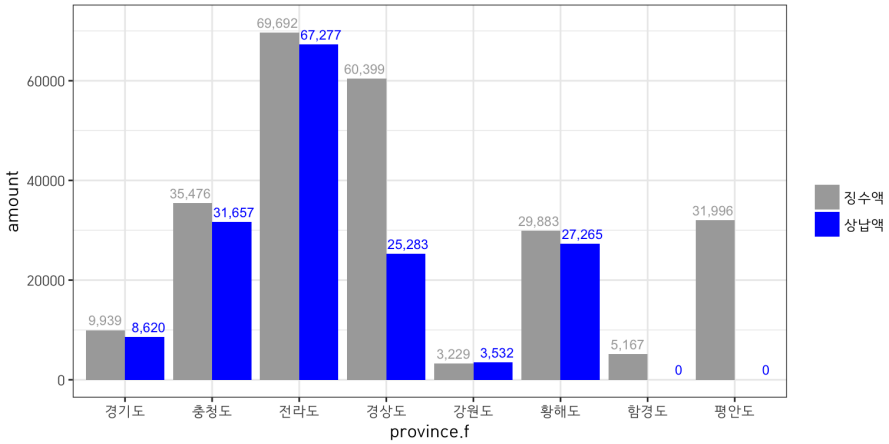

```
g2 <- g1 + geom_text(mapping = aes(x = province.f, y = amount + 2000, label = format
(amount,
    big.mark = ","), colour = tax), position = position_dodge(width = 1), size = 3)
g2
```



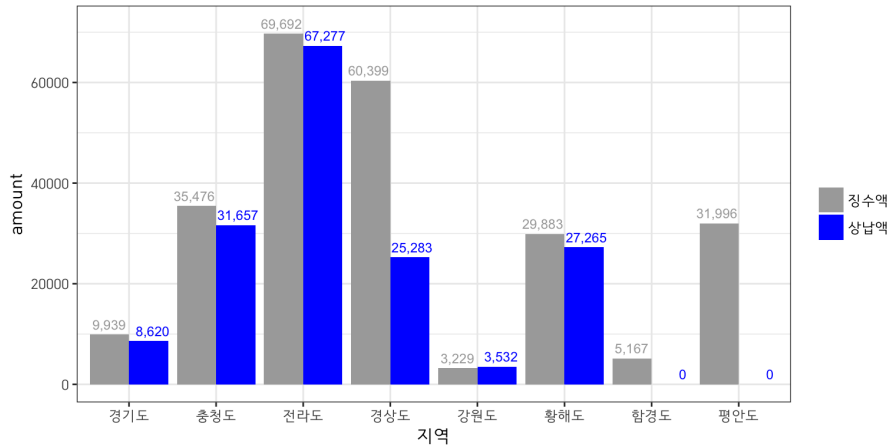

```
g3 <- g2 + theme_bw() + theme.kr
g3
```



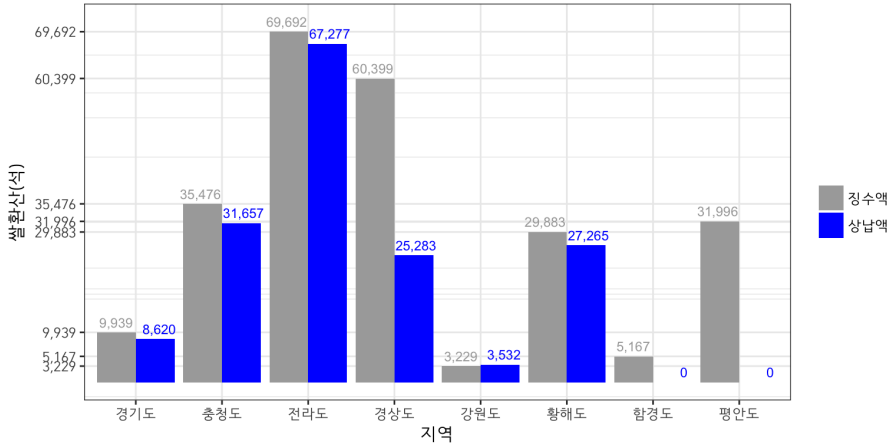

```
g4 <- g3 + scale_fill_manual(name = "", values = c("darkgrey", "blue"), labels = c("징수액",
    "상납액")) + scale_colour_manual(name = "", values = c("darkgrey", "blue"),
    labels = c("징수액", "상납액"))
g4
```



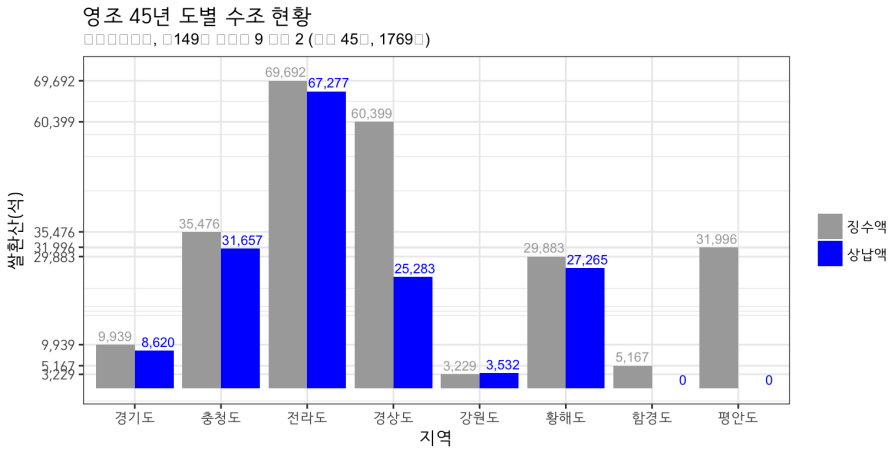

```
g5 <- g4 + scale_x_discrete(name = "지역")
g5
```



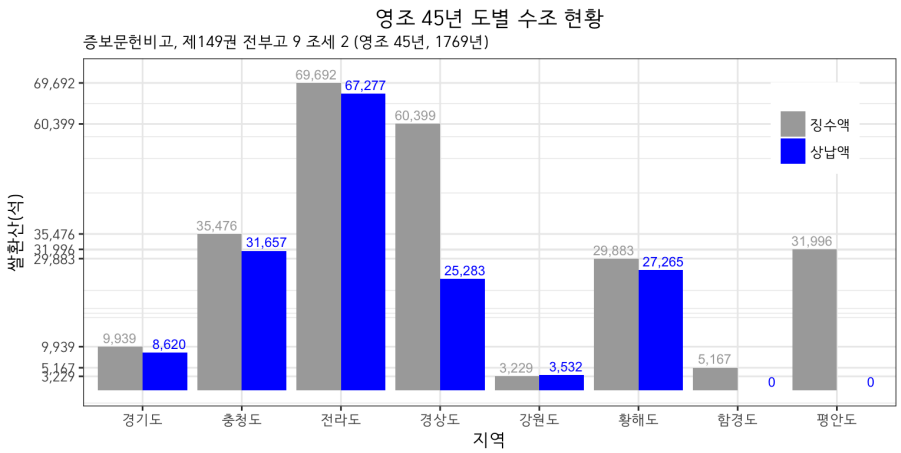

```
g6 <- g5 + scale_y_continuous(name = "쌀환산(석)", breaks = as.vector(as.matrix(tax.df[,
    2])), labels = format(as.vector(as.matrix(tax.df[, 2])), big.mark = ","))
g6
```




```
g7 <- g6 + labs(title = main.title, subtitle = sub.title)
g7
```




```
g8 <- g7 + theme(plot.title = element_text(hjust = 0.5), plot.subtitle = element_text
(family = "HCR Dotum LVT"),
    legend.position = c(0.9, 0.8))
g8
```




```
ggsave("../pics/chosun_tax_ggplot.png", dpi = 72)
```

```
## Saving 7 x 5 in image
```