Assignment 3

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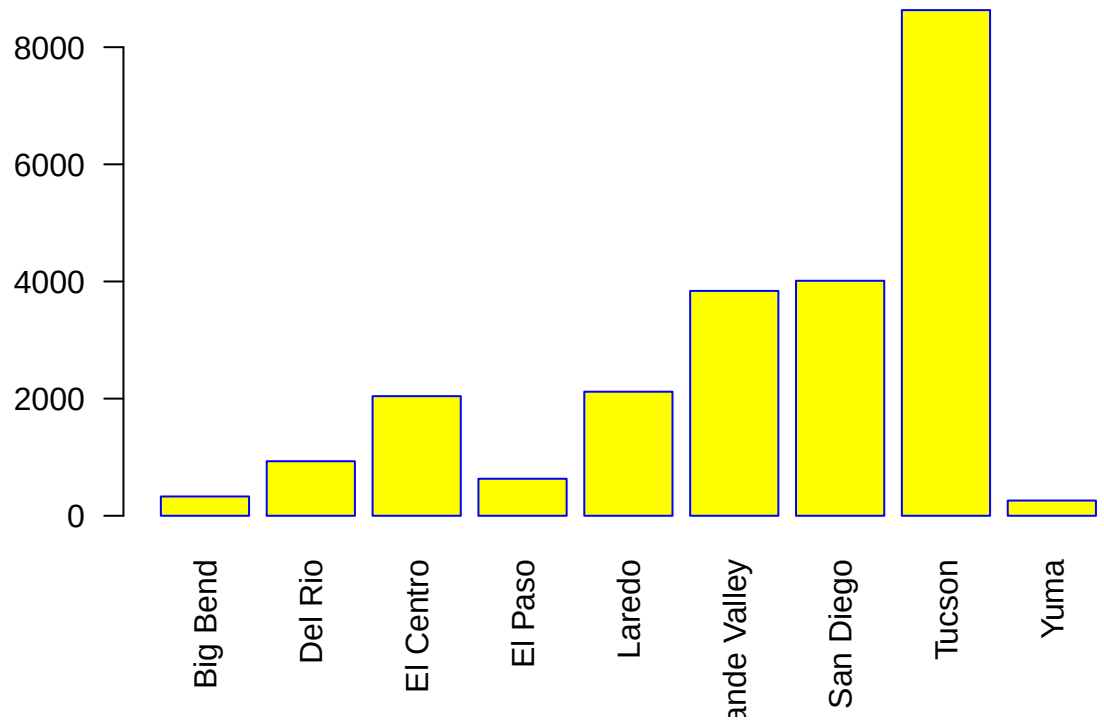
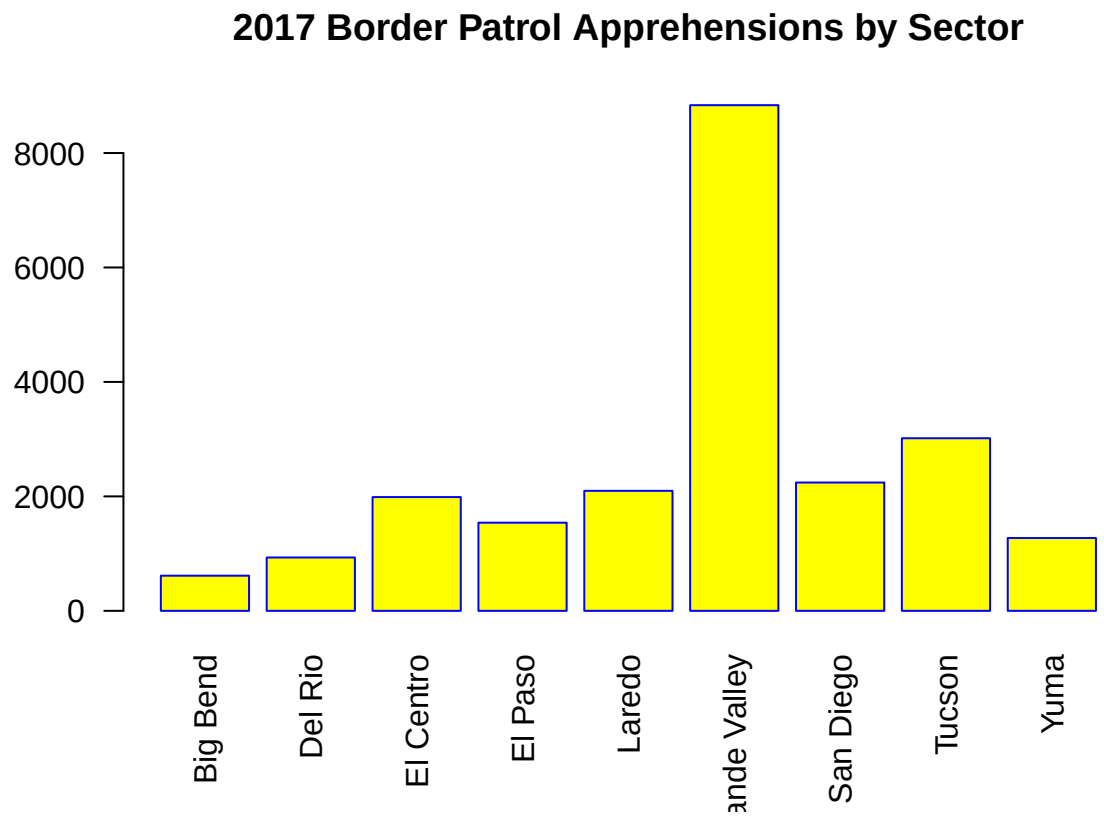
```
## Reading in Data
BP2010 <- read.csv("BP Apprehensions 2010.csv", header = TRUE, stringsAsFactors = FALSE)
PB2017 <- read.csv("PB Apprehensions 2017.csv", header = TRUE, stringsAsFactors = TRUE)
PBmonthly <- read.csv("monthly_sum.csv", header = TRUE, stringsAsFactors = TRUE)
rownames(PBmonthly) <- PBmonthly[,1]

## Displaying Data By Sector
rownames(BP2010) <- BP2010[,1]
x <- barplot(BP2010[1:9,13], names.arg = rownames(BP2010)[1:9],
        las=2,
        axisnames=TRUE,
        main="2010 Border Patrol Apprehensions by Sector",
        border="blue",
        col="yellow")
```

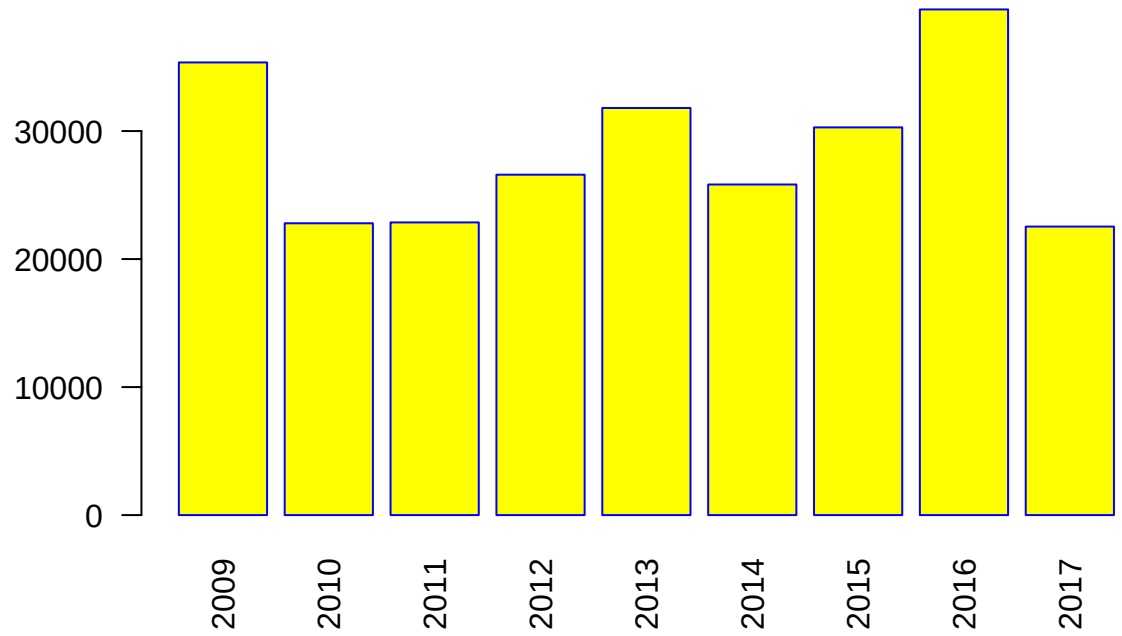



```
rownames(PB2017) <- PB2017[,1]
barplot(PB2017[1:9,13], names.arg = rownames(PB2017)[1:9],
        las=2,
        axisnames=TRUE,
```

```
        main="2017 Border Patrol Apprehensions by Sector",
        border="blue",
        col="yellow")
```




```
##Display Data By Year
barplot(rev(PBmonthly[1:9,13]), names.arg = rev(rownames(PBmonthly)[1:9]),
        las=2,
        axisnames=TRUE,
        main="Border Patrol Apprehensions by Year",
        border="blue",
        col="yellow")
```

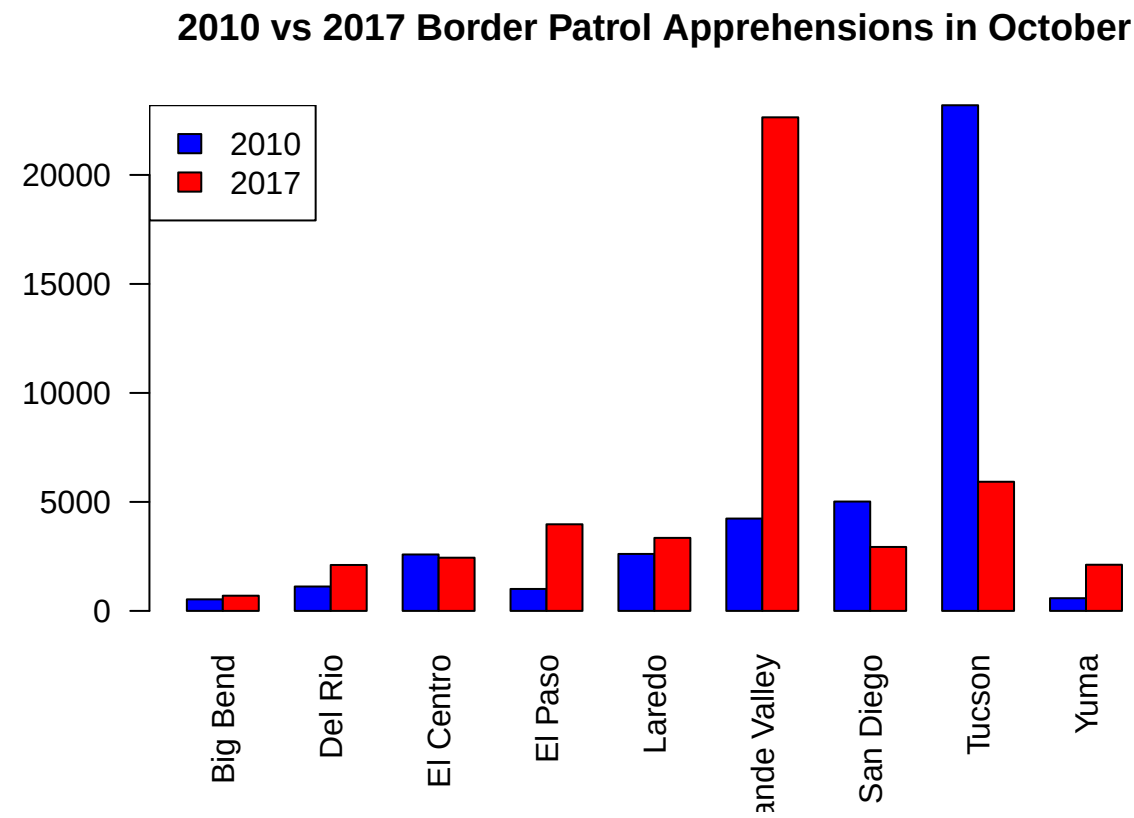



```
## T-test for Max in 2010 (Tucson) and Max in 2017 (Rio Grande Valley)
x <- subset(BP2010, select=-c(Sector))
x <- cbind(x,rowSums(x))
x <- t(x)
y <- subset(PB2017, select=-c(Sector))
y <- cbind(y,rowSums(y))
y <- t(y)
t.test(x[,8], y[,6])
```

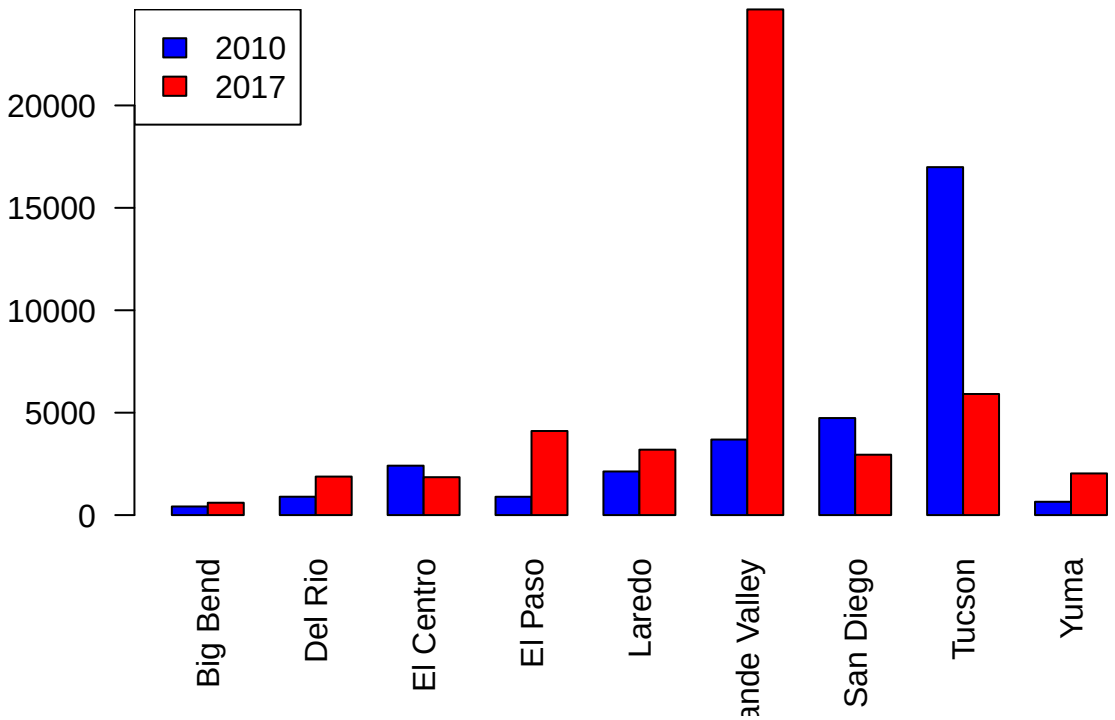
```
##
##  Welch Two Sample t-test
##
## data:  x[, 8] and y[, 6]
## t = 0.63546, df = 20.738, p-value = 0.5321
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -26125.62  49091.78
## sample estimates:
## mean of x mean of y
##  32646.46  21163.38
```

```
## Creates a 2 x 9 matrix from the 2010 data and 2017 for specified month
sideBySideMatrix <- function(month){
  matrix(c(BP2010[1:9,month], PB2017[1:9,month]), nrow = 2, byrow = TRUE)
}

## Creates the barplot for a given month
```

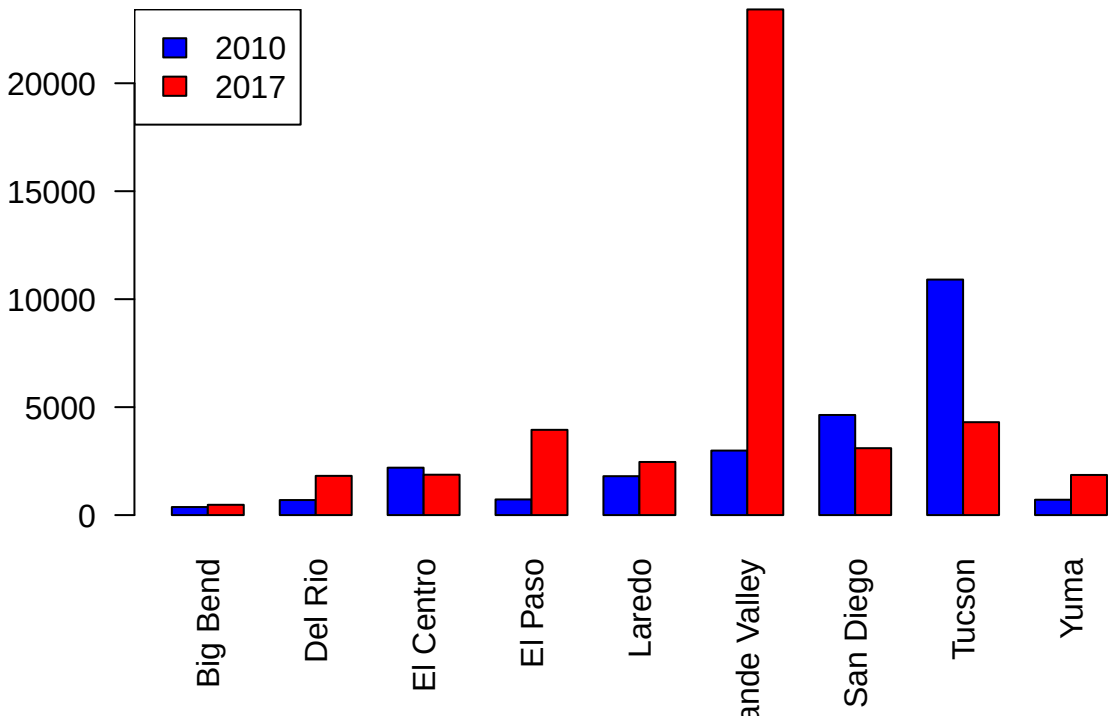
```r
sideBySideBarPlot <- function(month, monthString){
  barplot(sideBySideMatrix(month), names.arg = rownames(BP2010),
          las=2,
          axisnames=TRUE,
          beside=TRUE,
          col=c("blue", "red"),
          main = paste("2010 vs 2017 Border Patrol Apprehensions in", monthString, sep=" "))
  legend("topleft",
       c("2010", "2017"),
       fill = c("blue", "red"))
}

## Creates the side by side bar plots for each month
sideBySideBarPlot(2, "October")
```



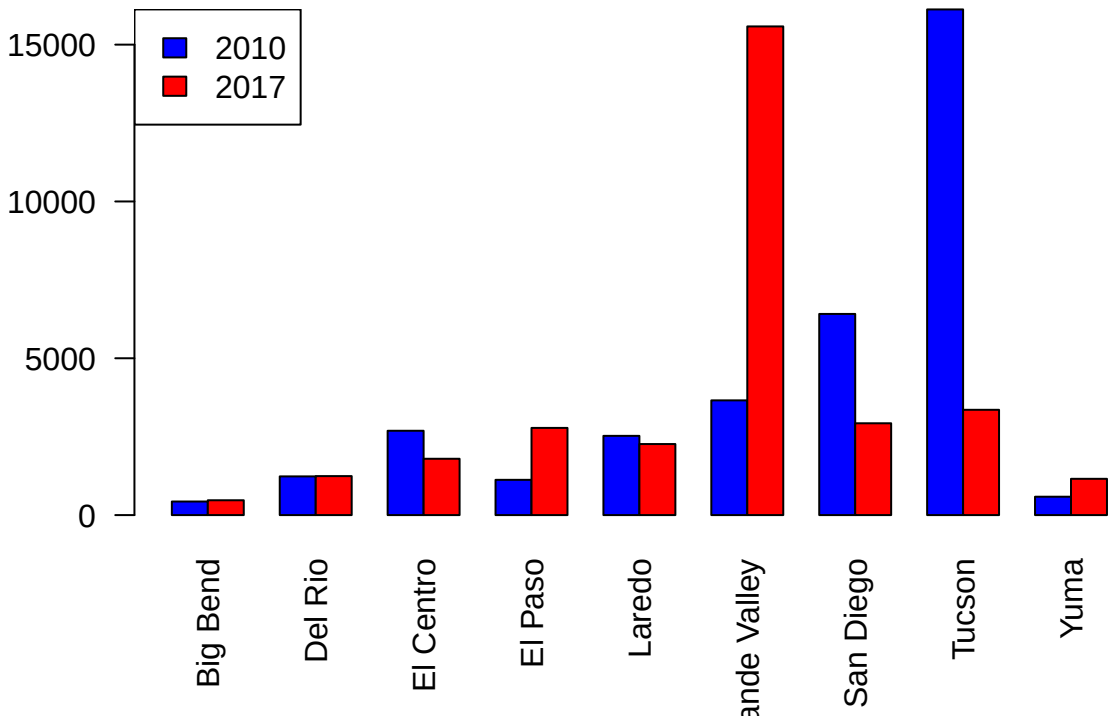

```r
sideBySideBarPlot(3, "November")
```



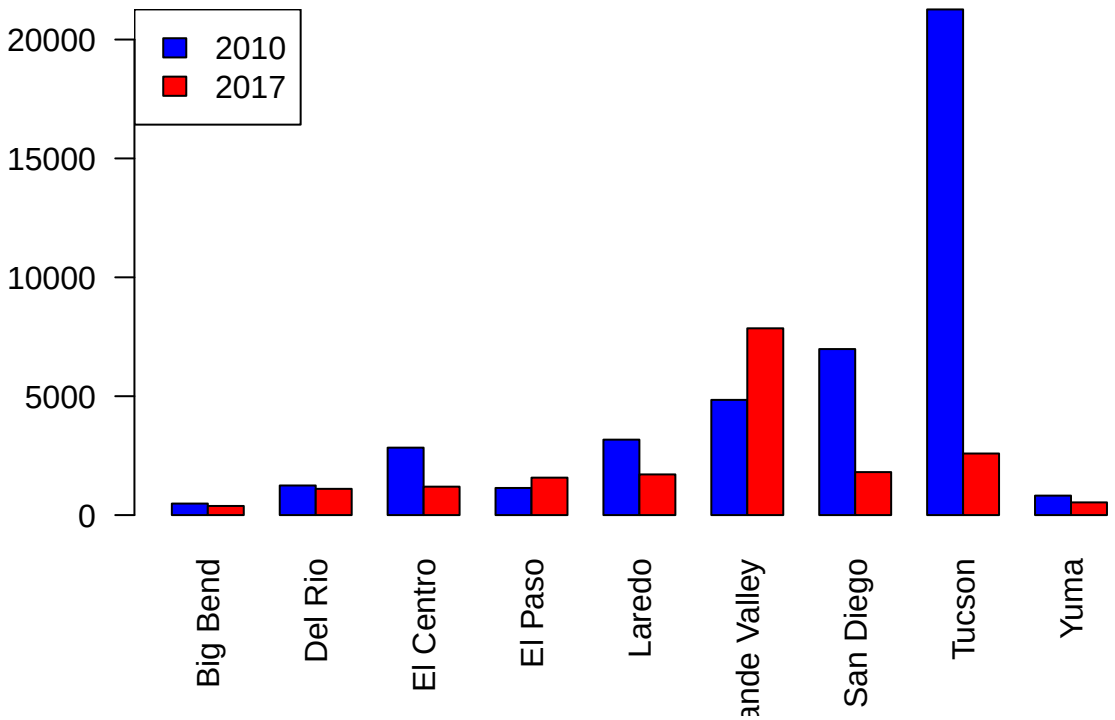

```
sideBySideBarPlot(4, "December")
```



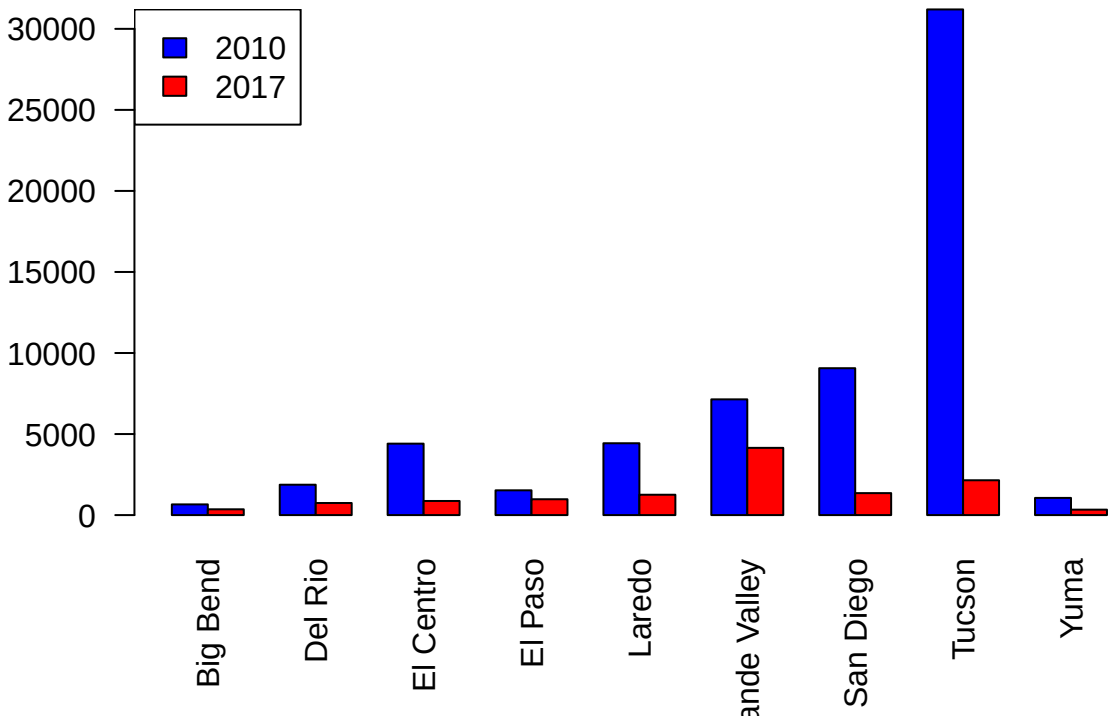

```
sideBySideBarPlot(5, "January")
```



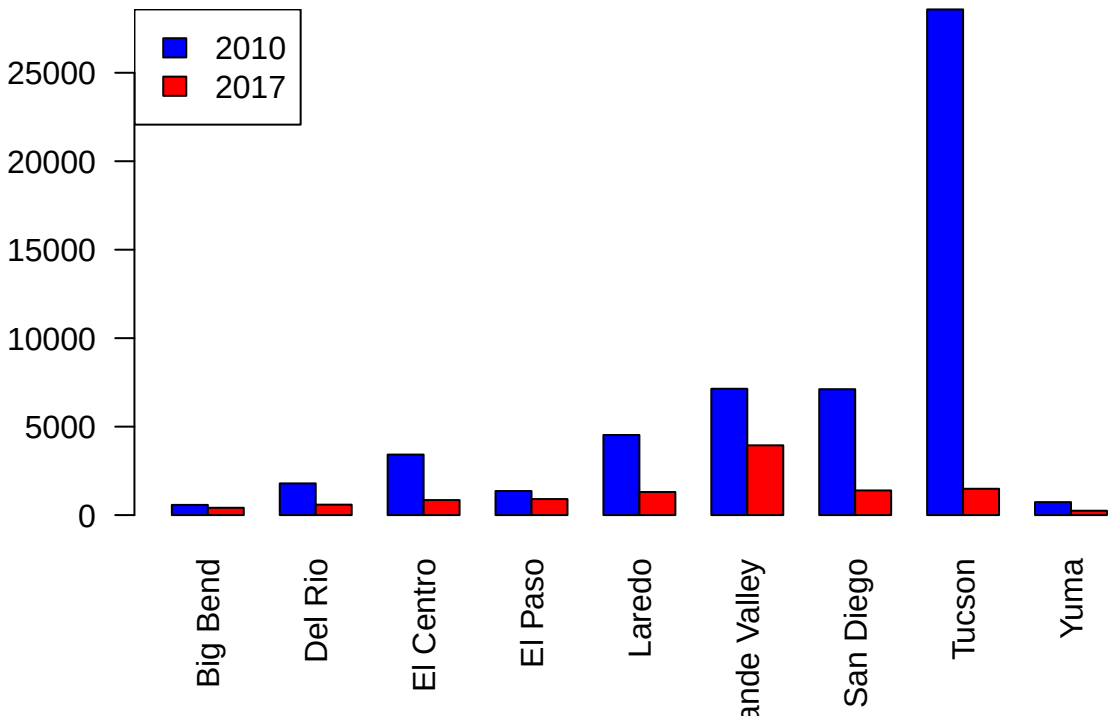

```
sideBySideBarPlot(6, "February")
```



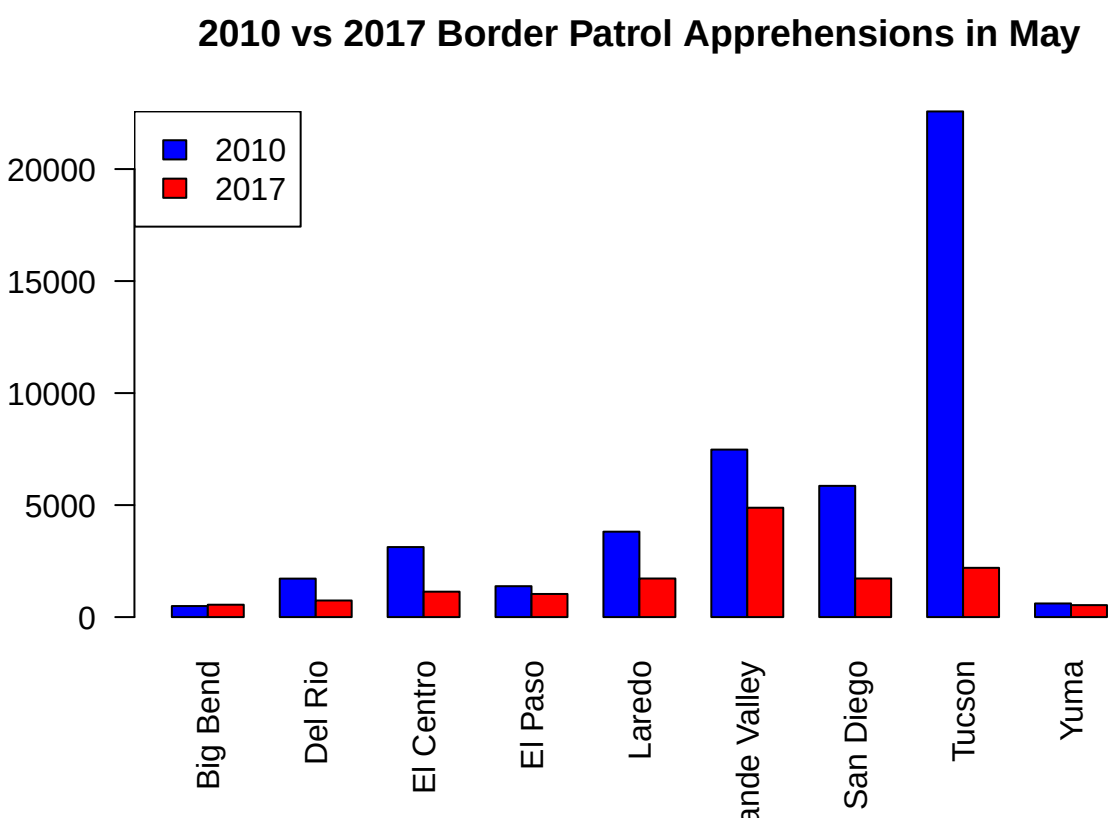

```
sideBySideBarPlot(7, "March")
```



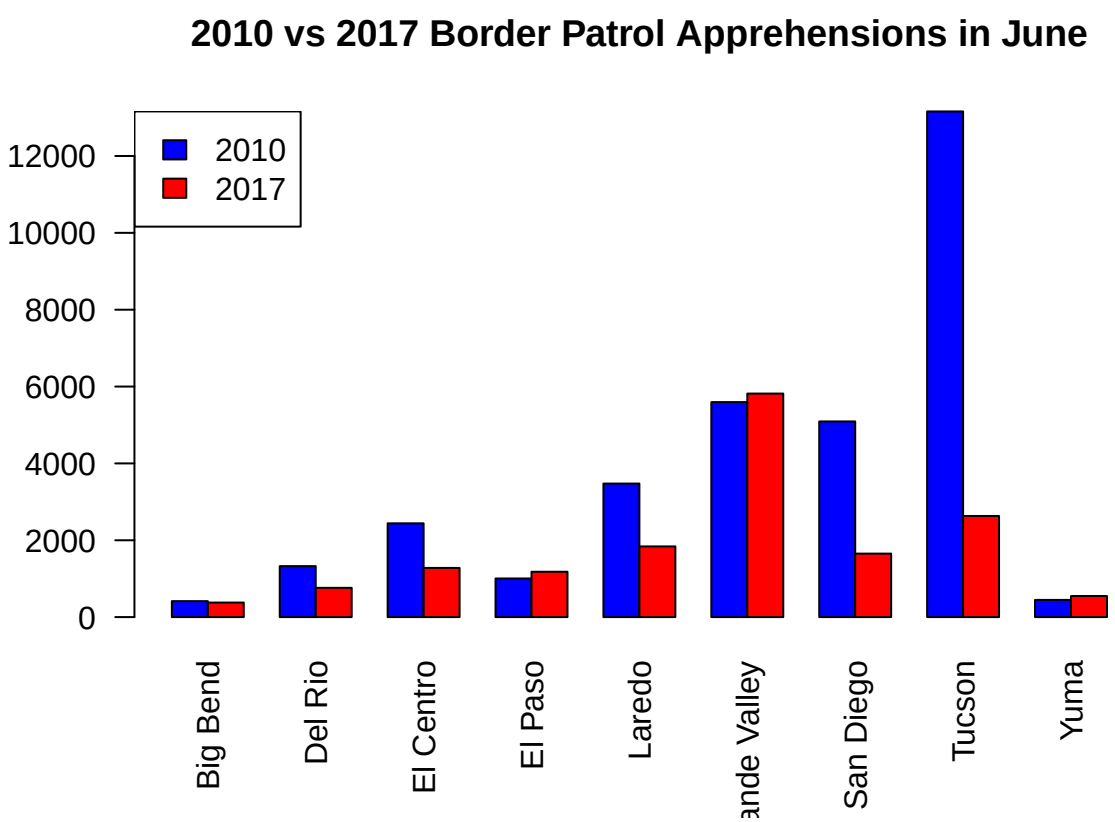

```
sideBySideBarPlot(8, "April")
```



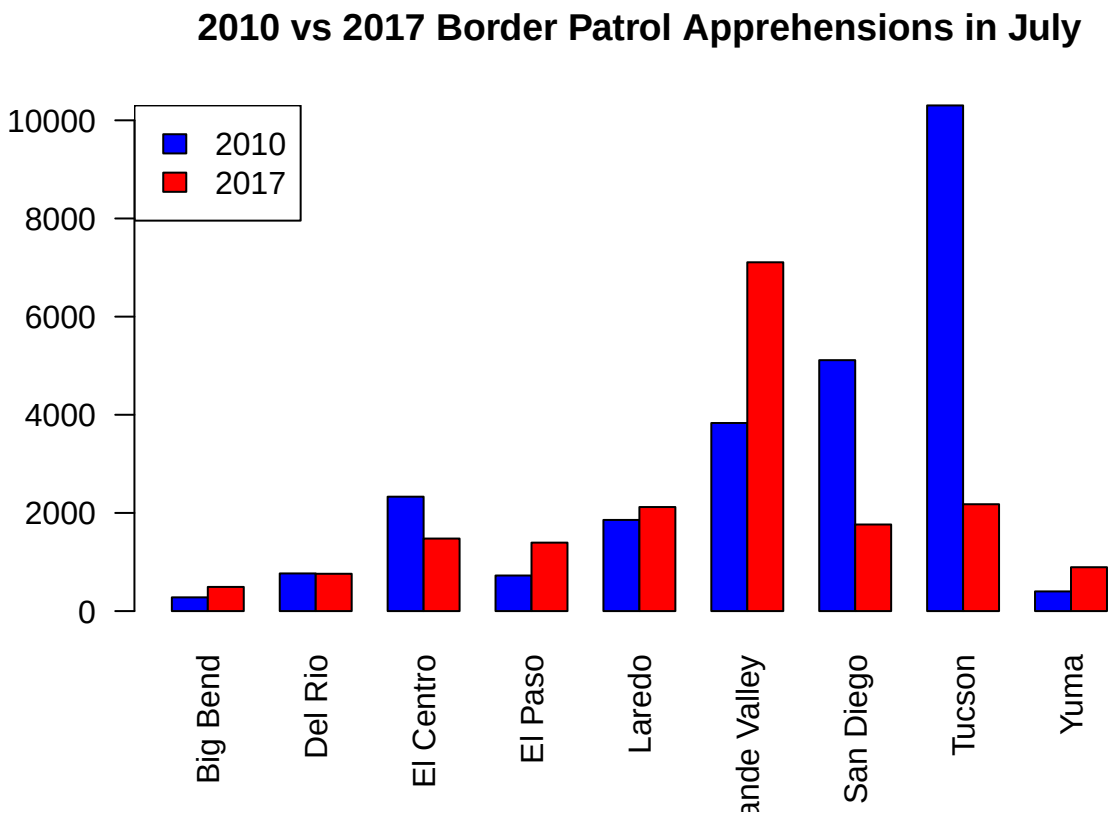

```
sideBySideBarPlot(9, "May")
```



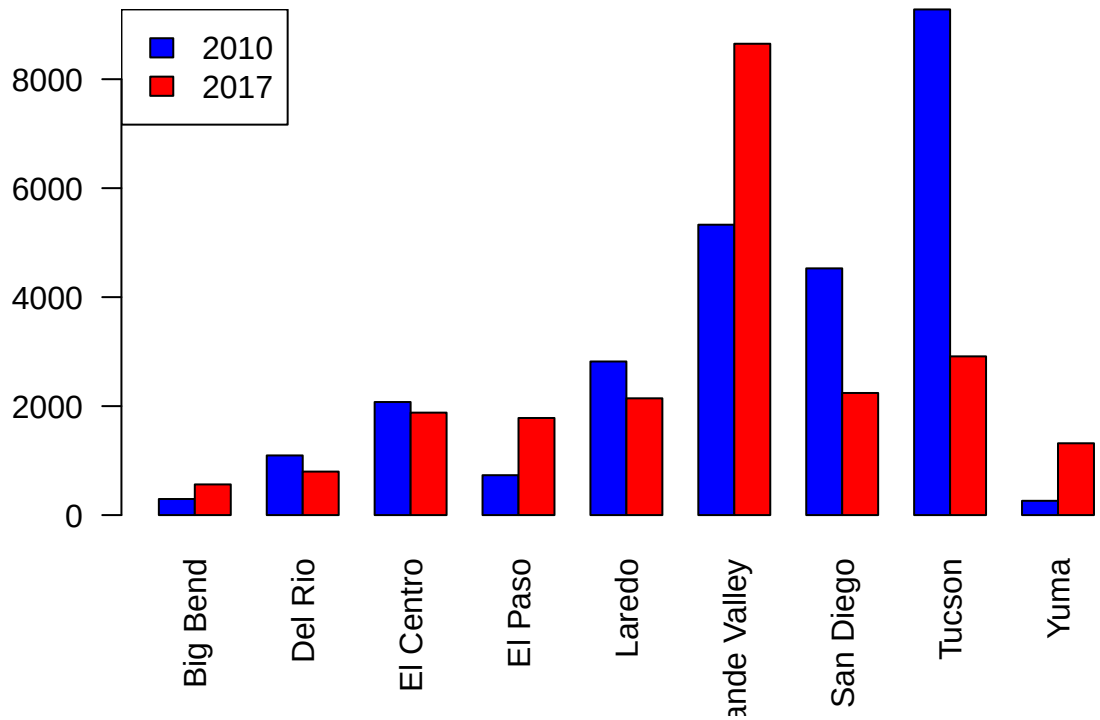

```
sideBySideBarPlot(10, "June")
```



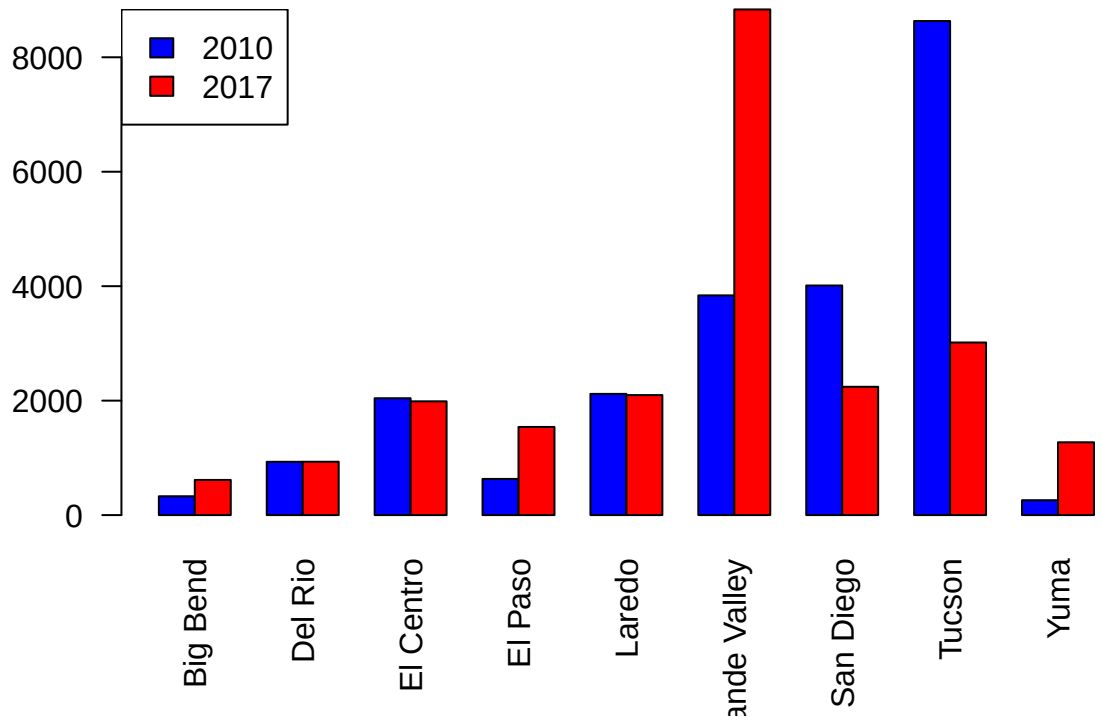

```
sideBySideBarPlot(11, "July")
```



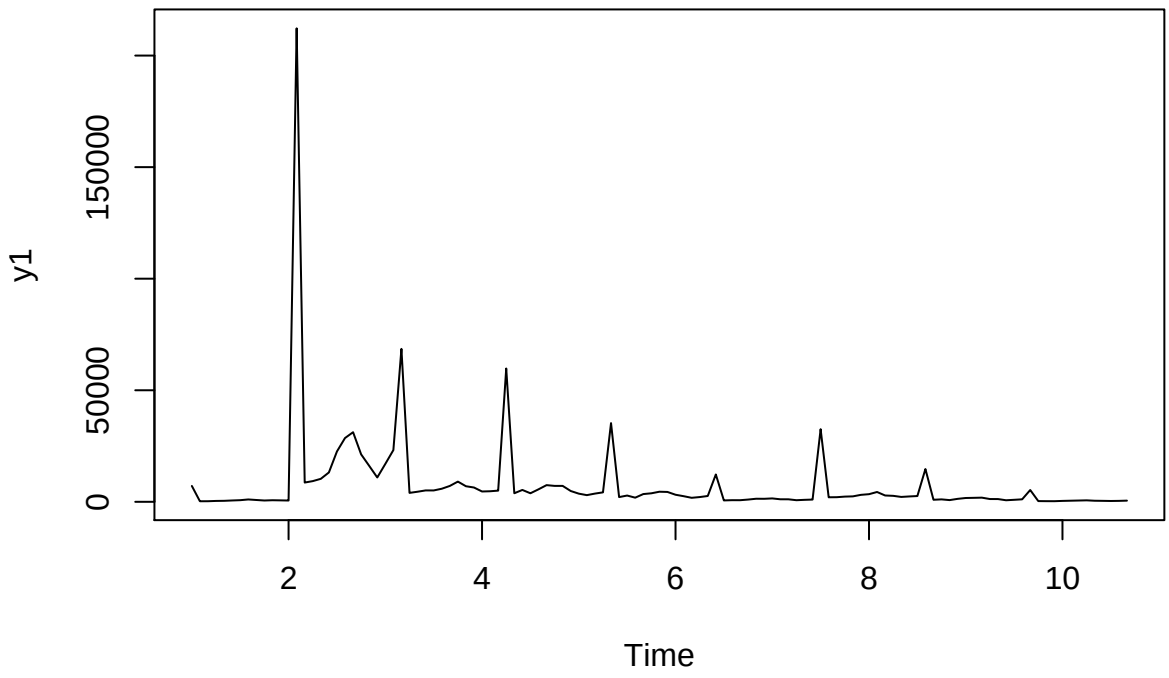

```
sideBySideBarPlot(12, "August")
```



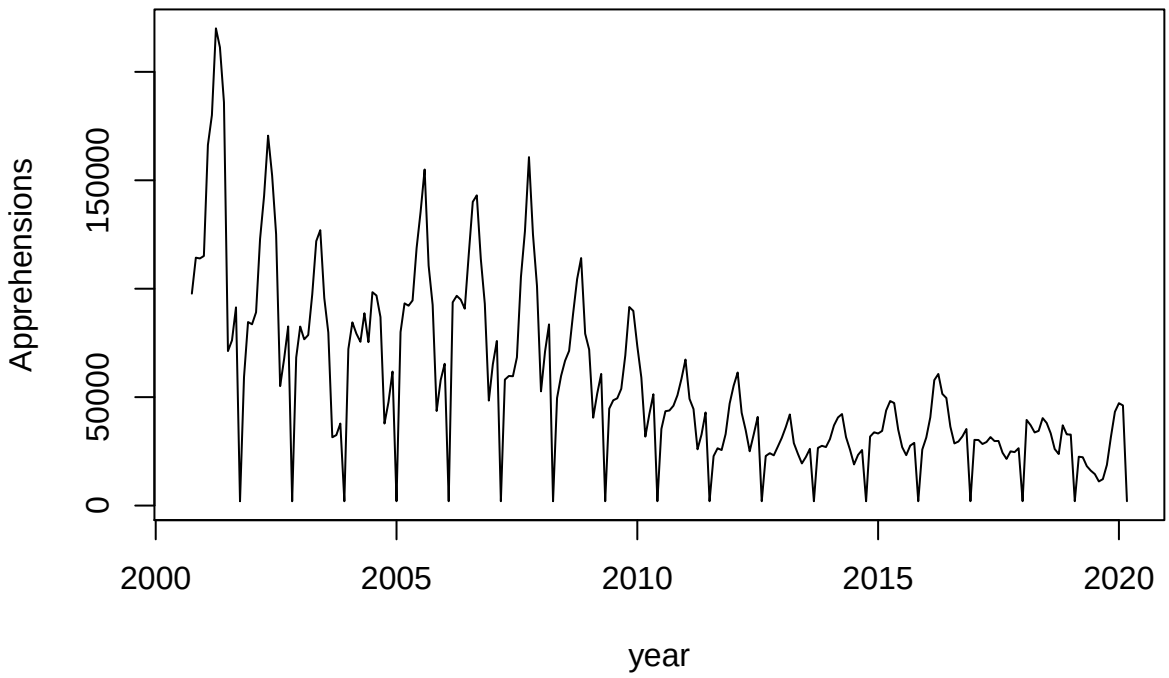

```
sideBySideBarPlot(13, "September")
```




```
x1 <- data.frame(sideBySideMatrix(2))
x1 <- cbind(data.frame(matrix =c(2010, 2017), nrow = 2, byrow = TRUE), x1)
x1 <- as.factor(t(x))
y1 <- ts(rev(x), start = 1, frequency = 12)
ts.plot(y1)
```




```
x <- as.vector(t(PBmonthly))
y <- ts(rev(x), start = c(2000, 10), frequency = 12)
ts.plot(y, gpars=list(xlab="year", ylab="Apprehensions", lty=c(1:3)))
```


Apprehensions
0
50000
150000
2000
2005
2010
2015
2020
year