Student Crimtab Data Graphic Analysis

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Data Manipulation

```
load("./crimtab.RData")
```

산점도를 여러 유형으로 표현하기 위하여 필요한 패키지 설치

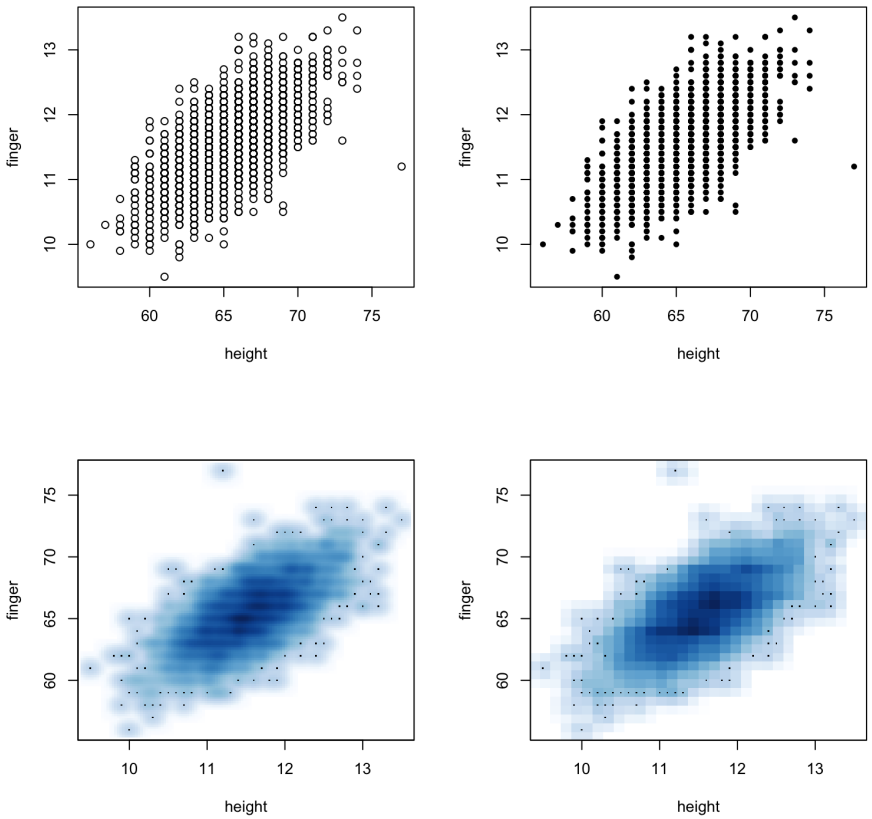
```
# install.packages("hexbin", repos = "https://cran.rstudio.com")
library(hexbin)
```

`crimtab_bin` 계산

```
crimtab_bin <- hexbin(crimtab_long_df$height,
                      crimtab_long_df$finger,
                      xbins = 50)
```

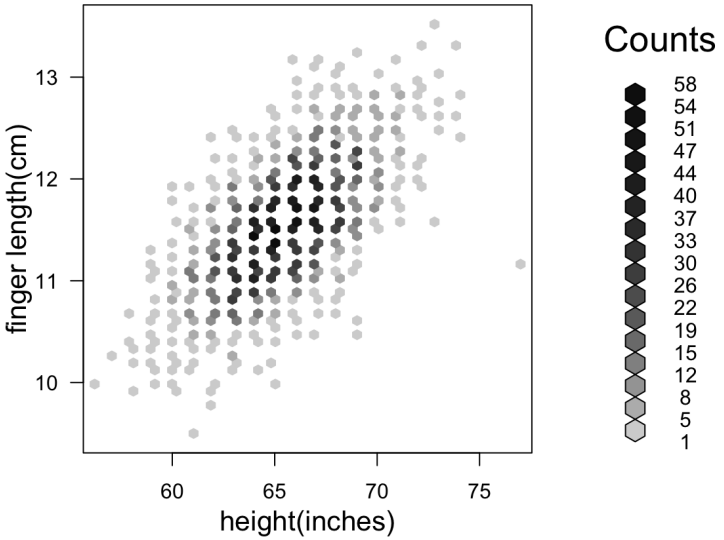
Plots

```
par(mfrow = c(2, 2))
# plot(x = crimtab_long_df[, 2], y = crimtab_long_df[, "finger"])
plot(crimtab_long_df[, 2:1])
plot(crimtab_long_df[, 2:1],
     pch = 20)
# smoothScatter(crimtab_long_df[,"height"], crimtab_long_df[,"finger"], xlab = "heigh
t", ylab = "finger")
# smoothScatter(crimtab_long_df[,"height"], crimtab_long_df[,"finger"], nbin = 32, xl
ab = "height", ylab = "finger")
smoothScatter(crimtab_long_df,
              xlab = "height",
              ylab = "finger")
smoothScatter(crimtab_long_df,
              nbin = 32,
              xlab = "height",
              ylab = "finger")
```



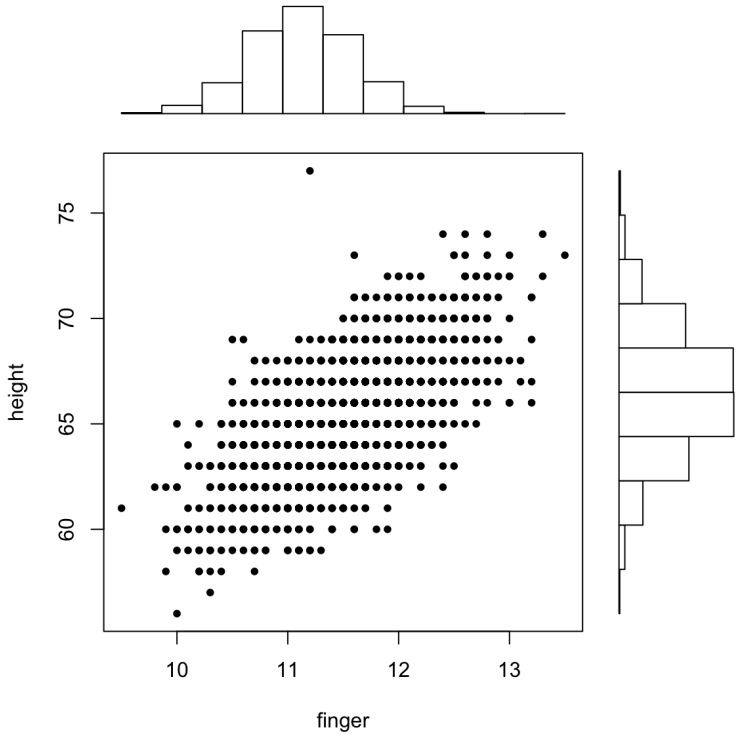
Plot crimtab_bin

```
par(mfrow = c(1, 1))
plot(crimtab_bin,
     xlab = "height(inches)",
     ylab = "finger length(cm)")
```



산점도와 함께 주변분포 표시

```
par(mar = c(4, 4, 1, 1))
par(fig = c(0, 0.8, 0, 0.8))
plot(crimtab_long_df, pch = 20)
par(fig = c(0, 0.8, 0.68, 1), new = TRUE)
# hist(crimtab_long_df[, "height"], axes = FALSE, ann = FALSE)
hist(crimtab_long_df$height, axes = FALSE, ann = FALSE)
par(fig = c(0.68, 1, 0, 0.8), new = TRUE)
# barplot(table(cut(crimtab_long_df[, "finger"], breaks = 10)), space = 0, col = "whi
te", horiz = TRUE, axes = FALSE, axisnames = FALSE)
barplot(table(cut(crimtab_long_df$finger, breaks = 10)),
        space = 0, col = "white", horiz = TRUE, axes = FALSE, axisnames = FALSE)
```

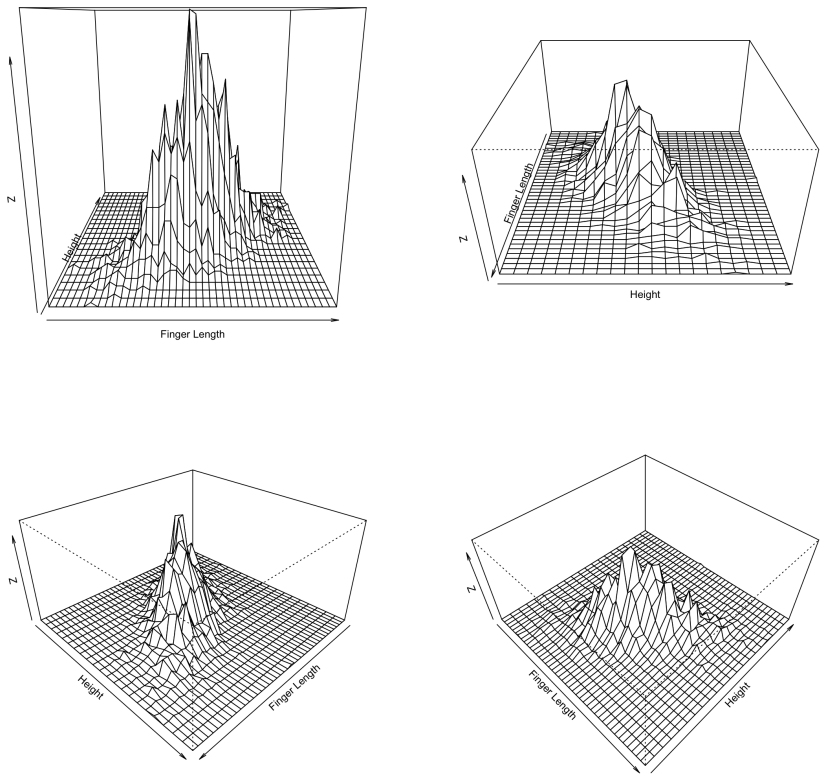



```
par(fig = c(0, 1, 0, 1))
par(mar = c(5, 4, 1, 1) + 0.1)
```

persp()

`persp()` 를 활용하면 다양한 각도에서 3차원 겨냥도를 그려볼 수 있음. x 축은 행, y 축은 열에 펼쳐진 격자를 0에서 1까지로 조정. `theta` 와 `phi` 는 박스를 돌려보는 각도이고, `expand` 는 박스 높이의 상대적인 비율임. x 축과 y 축의 라벨 이외에는 디폴트값을 적용시킨 겨냥도와 적절히 조정한 겨냥도를 비교해 볼 것,

```
par(mfrow = c(2, 2))
persp(crimtab_2,
      xlab = "Finger Length",
      ylab = "Height")
persp(crimtab_2,
      xlab = "Finger Length",
      ylab = "Height",
      theta = 90,
      phi = 30,
      expand = 0.5,
      scale = TRUE)
persp(crimtab_2,
      xlab = "Finger Length",
      ylab = "Height",
      theta = 135,
      phi = 30,
      expand = 0.5,
      scale = TRUE)
persp(crimtab_2,
      xlab = "Finger Length",
      ylab = "Height",
      theta = 45,
      phi = 45,
      expand = 0.5,
      scale = TRUE)
```




```
par(mfrow = c(1, 1))
```