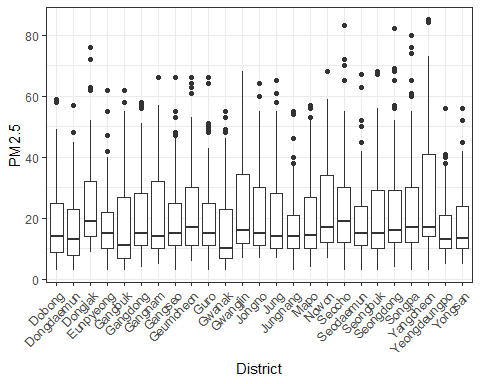
Seoul Air Pollution ggplot

MinJung Kang

2018-12-12

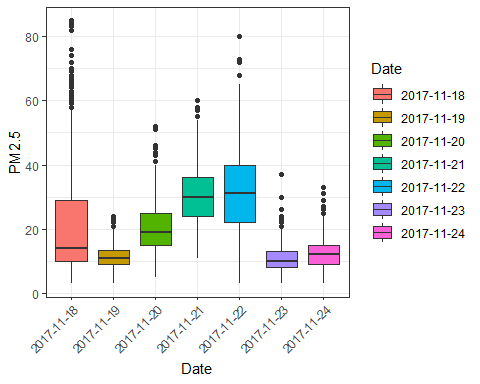
### Boxplot by District

G\_District <- ggplot(A,  
 aes(x = District,  
 y = PM2.5,  
 group = District)) + theme\_bw() + theme(axis.text.x = element\_text(angle = 45,  
 hjust = 1,  
 vjust = 1))  
G\_District + geom\_boxplot()



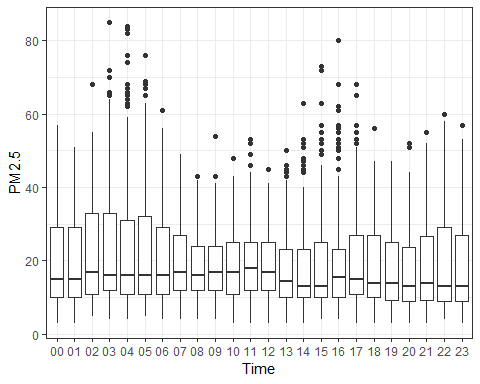
### Boxplot by Date

A$Date <- as.factor(A$Date)  
G\_Date <-ggplot(A, aes(x= Date, y= PM2.5,  
 group = Date,  
 fill = Date))  
G\_Date + geom\_boxplot() + theme\_bw() + theme(axis.text.x = element\_text(angle = 45,  
 hjust = 1,  
 vjust = 1))



### Boxplot by Time

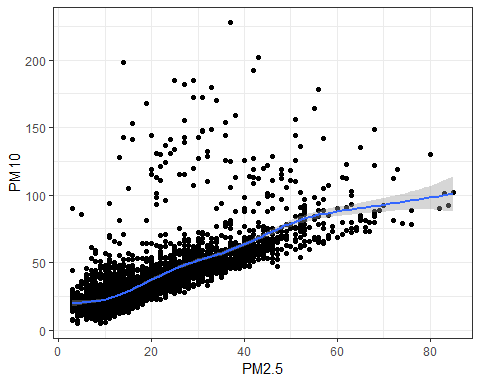
G\_Time <-ggplot(A, aes(x= Time, y= PM2.5,  
 group = Time))  
G\_Time + geom\_boxplot() + theme\_bw()



### Scatterplot

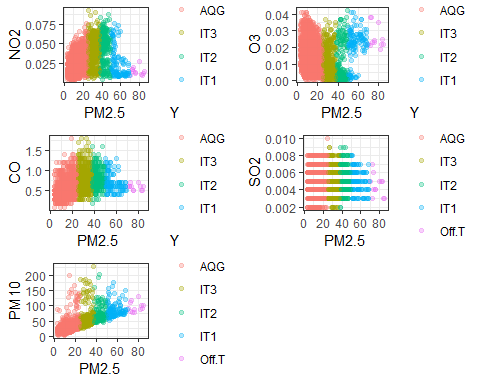
G\_point <- ggplot(data = A,  
 aes(x = PM2.5, y = PM10))  
G\_point + geom\_point() + geom\_smooth() + theme\_bw()

## `geom\_smooth()` using method = 'gam' and formula 'y ~ s(x, bs = "cs")'



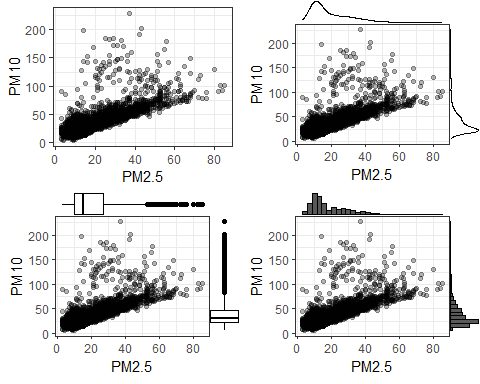
### Scatterplot

G1 <- ggplot(data = A,  
 aes(x = PM2.5, y = NO2, color = Y, fill = Y)) + geom\_point(alpha=0.3) + theme\_bw()  
G2 <- ggplot(data = A,  
 aes(x = PM2.5, y = O3, color = Y, fill = Y)) + geom\_point(alpha=0.3) + theme\_bw()  
G3 <- ggplot(data = A,  
 aes(x = PM2.5, y = CO, color = Y, fill = Y)) + geom\_point(alpha=0.3) + theme\_bw()  
G4 <- ggplot(data = A,  
 aes(x = PM2.5, y = SO2, color = Y, fill = Y)) + geom\_point(alpha=0.3) + theme\_bw()  
G5 <- ggplot(data = A,  
 aes(x = PM2.5, y = PM10, color = Y, fill = Y)) + geom\_point(alpha=0.3) + theme\_bw()  
  
grid.arrange(G1, G2, G3, G4, G5, nrow = 3)



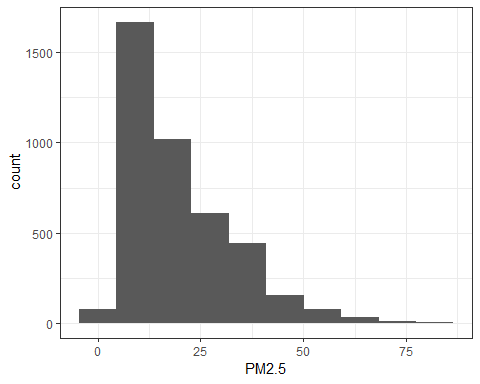
### Scatterplot Extra

P1 <- ggplot(data = A, aes(x = PM2.5, y = PM10)) + geom\_point(alpha=0.3) + theme\_bw()  
P2 <- ggMarginal(P1, type="density")  
P3 <- ggMarginal(P1, type="boxplot")  
P4 <- ggMarginal(P1, type="histogram")  
  
grid.arrange(P1, P2, P3, P4, nrow = 2)

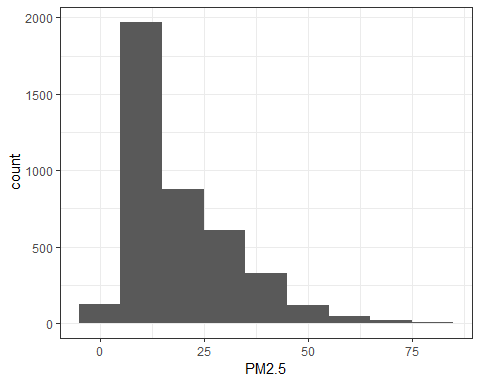


### Histogram PM2.5

Histo <- ggplot(A, aes(x = PM2.5)) + theme\_bw()  
Histo + geom\_histogram(bins=10)

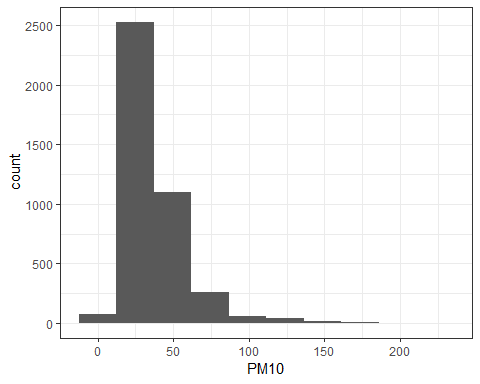


Histo + geom\_histogram(binwidth=10)

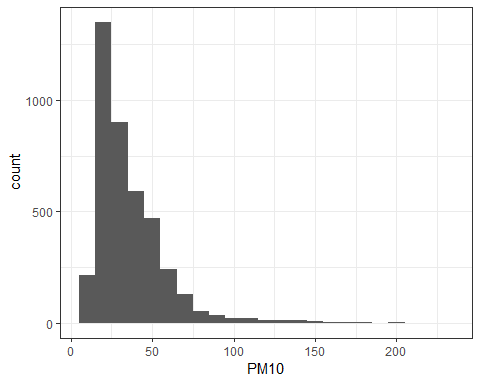


### Histogram PM10

Histo10 <- ggplot(A, aes(x = PM10)) + theme\_bw()  
Histo10 + geom\_histogram(bins=10)

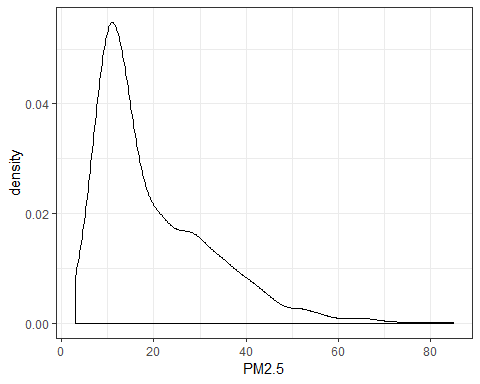


Histo10 + geom\_histogram(binwidth=10)



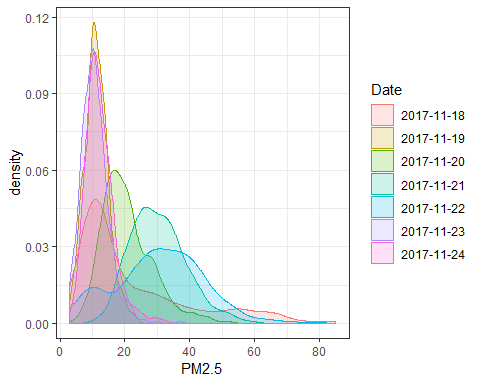
### Density PM2.5

Dens <- ggplot(A, aes(x=PM2.5)) + theme\_bw()  
Dens + geom\_density()



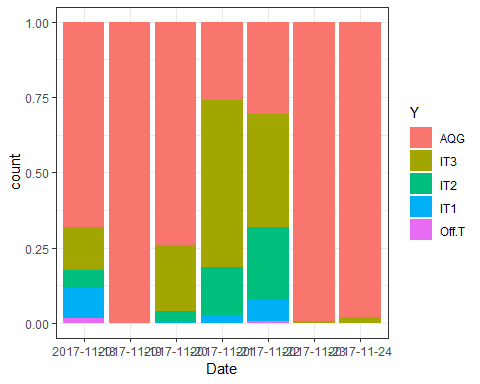
### Density by Date

Dens\_Date <- ggplot(A, aes(x=PM2.5, color= Date, fill = Date))  
Dens\_Date + geom\_density(alpha=0.2) + theme\_bw()

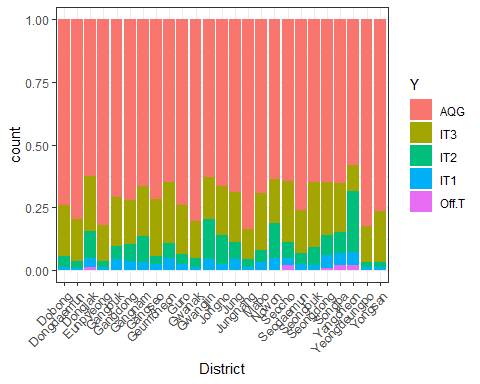


### Bar by Airclass

A$Date <- as.factor(A$Date)  
A$Time <- as.factor(A$Time)  
A$airclass <- as.factor(A$Y)  
  
  
Date\_Bar <- ggplot(data = A, aes(x = Date , fill = Y))  
Date\_Bar + geom\_bar(position="fill") + theme\_bw()



District\_Bar <- ggplot(data = A, aes(x = District , fill = Y))  
District\_Bar + geom\_bar(position="fill") + theme\_bw() + theme(axis.text.x =  
 element\_text(angle = 45,  
 hjust = 1,  
 vjust = 1))



Time\_Bar <- ggplot(data = A, aes(x = Time , fill = Y))  
Time\_Bar + geom\_bar(position="fill") + theme\_bw()

