Problem 2.5

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2.5 The data frame vit2005 in the PASWR package contains descriptive info and the appraised total price (in euros) for appartments in Victoria, Spain.

library(PASWR2)

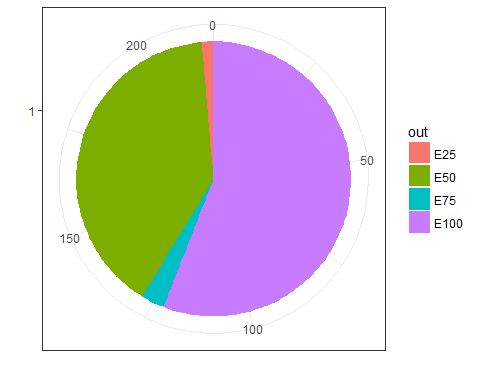
## Warning: package 'PASWR2' was built under R version 3.4.2

## Loading required package: lattice

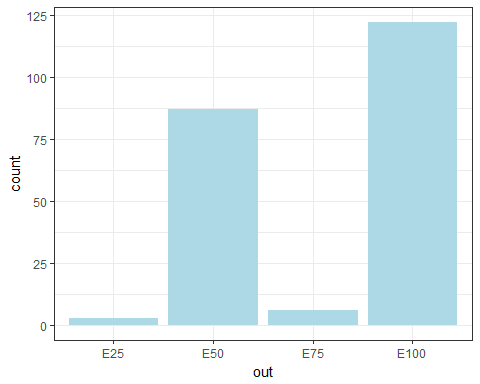
## Loading required package: ggplot2

1. Create a freq table, piechart, and a barplot showing the num of apartments grouped by the var out. Which method conveys the info best?

VIT2005$out <- factor(VIT2005$out, levels = c("E25", "E50", "E75", "E100"))  
plot1 <- ggplot(data = VIT2005, aes(x = factor(1), fill = out))+ geom\_bar(width = 1) + coord\_polar(theta = "y") + theme\_bw() + labs(x = "", y = "")  
plot2 <- ggplot(data = VIT2005, aes(x = out)) + geom\_bar(fill = "lightblue") + theme\_bw()  
plot1



plot2

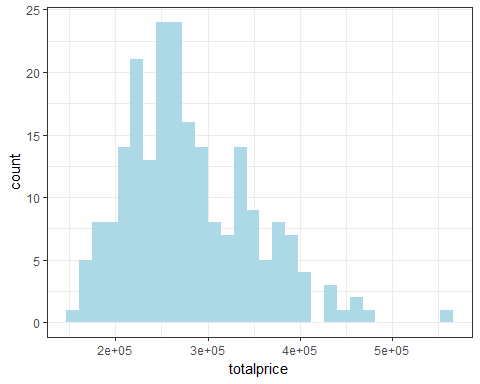


# The barplot is best

1. Charaterize the distribution of the var totalprice.

ggplot(data = VIT2005, aes(x = totalprice)) + geom\_histogram(fill = "lightblue") + theme\_bw()

## `stat\_bin()` using `bins = 30`. Pick better value with `binwidth`.



max(VIT2005$totalprice) #one outlier at 560000.

## [1] 560000

median(VIT2005$totalprice)

## [1] 269750

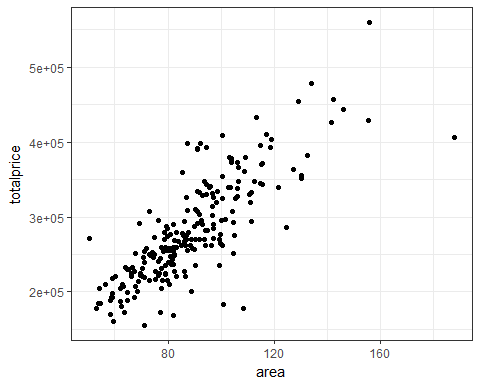
IQR(VIT2005$totalprice)

## [1] 100125

# The distribution of totalprice is skewed to the right. The median totalprice is 269750 and the IQR for totalprice is 100125.

1. Charaterize the relationship between totalprice and area.

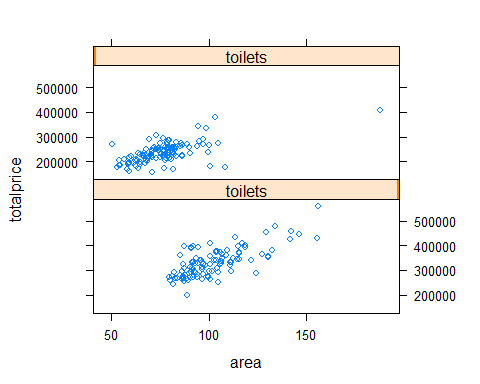
ggplot(data = VIT2005, aes(x = area, y = totalprice)) + geom\_point() + theme\_bw()



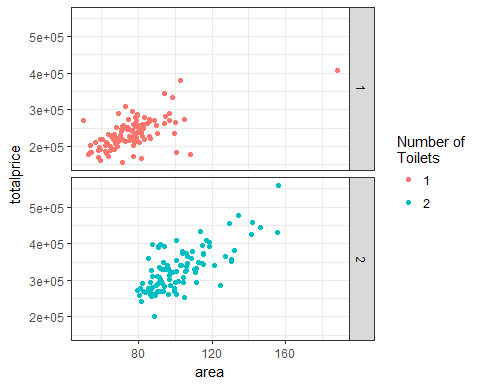
# The relationship between totalprice and area is of positive linear.

1. Create a Trellis plot of totalprice vs area conditioning on toilets. Between what 2 values of area do apartments have both one and two bathrooms?

xyplot(totalprice ~ area | toilets, data = VIT2005, layout = c(1, 2), as.table = TRUE)



ggplot(data = VIT2005, aes(x = area, y = totalprice, color = as.factor(toilets))) + geom\_point() + facet\_grid(toilets ~ .) + theme\_bw() + guides(color = guide\_legend("Number of\nToilets"))



# Apartments with one bathroom: approx between 50 and 100 m^2  
# Apartments with two bathrooms: approx between 80 and 120 m2.   
# The intersection of apartments with one and two bathrooms is approximately (80 to 100)m^2.

1. Use the area values from part (d) to create a subset of apartments that have both 1 and 2 bathrooms. By how much does an additional bathroom increase the appraised value of the apartment? Would you be willing to pay for an additioal bathroom if you lived in Spain?

both\_bathrooms <- subset(VIT2005, subset = area >= 80 & area <= 100)  
result <- tapply(both\_bathrooms$totalprice, both\_bathrooms$toilets, median)  
result

## 1 2   
## 255000 291000

diff(result)

## 2   
## 36000

# The increase in totalprice for a second bathroom for apartments between  
# 80 and 100 m^2 is 36000 euros - probably not willing to pay the addiional costs.