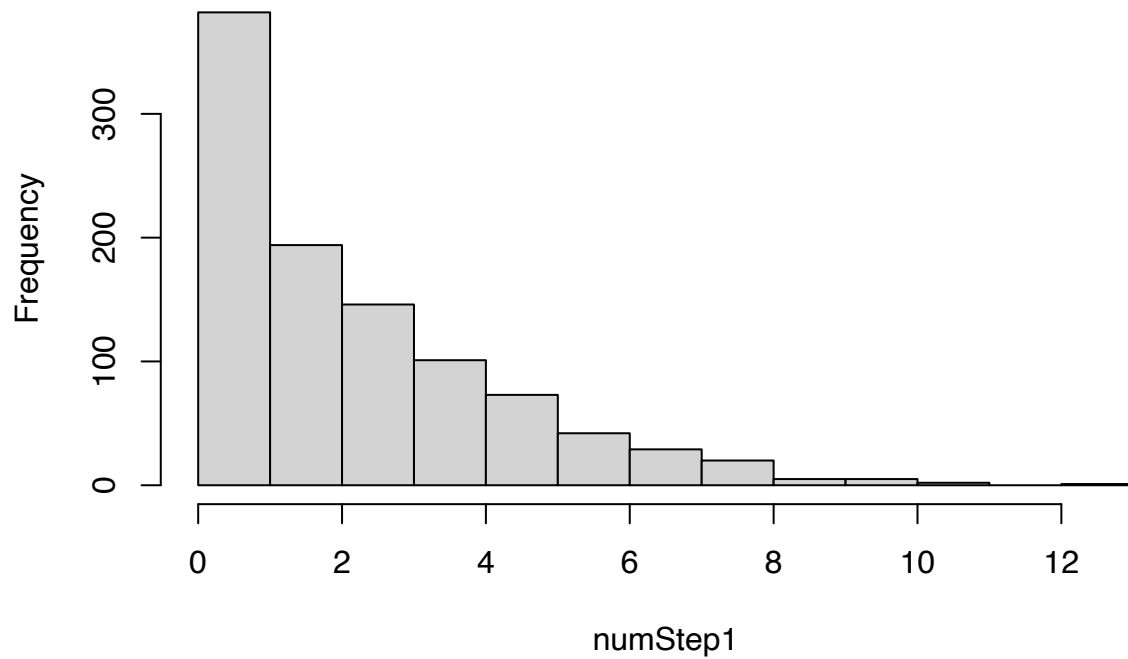
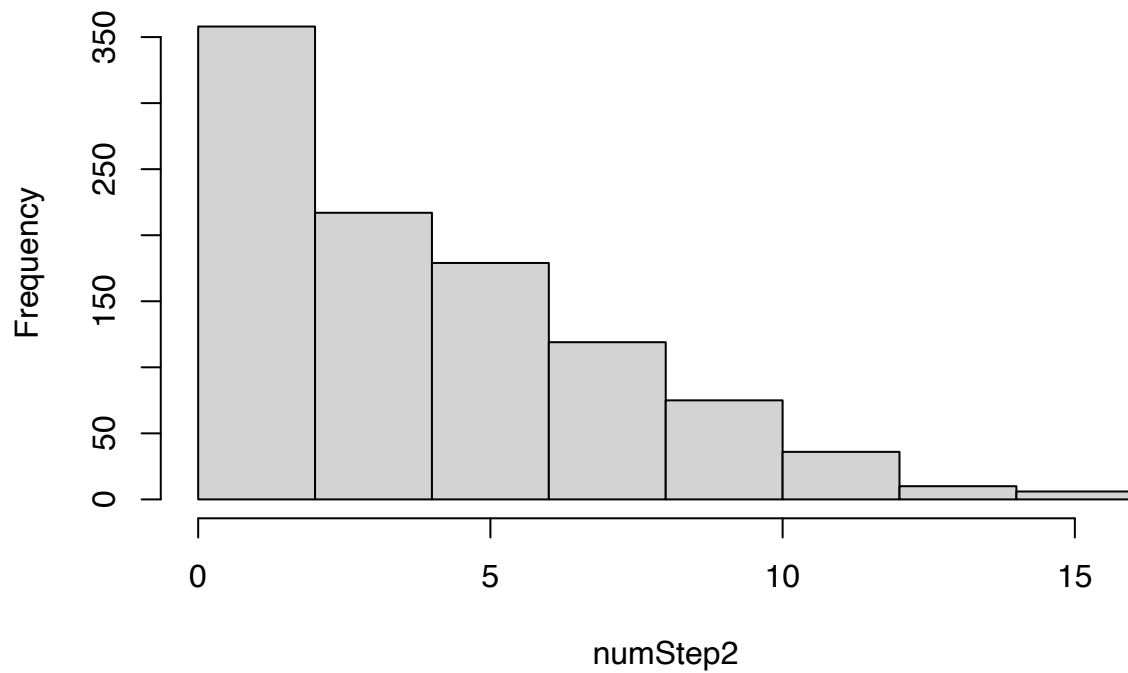


Histogram of numStep1



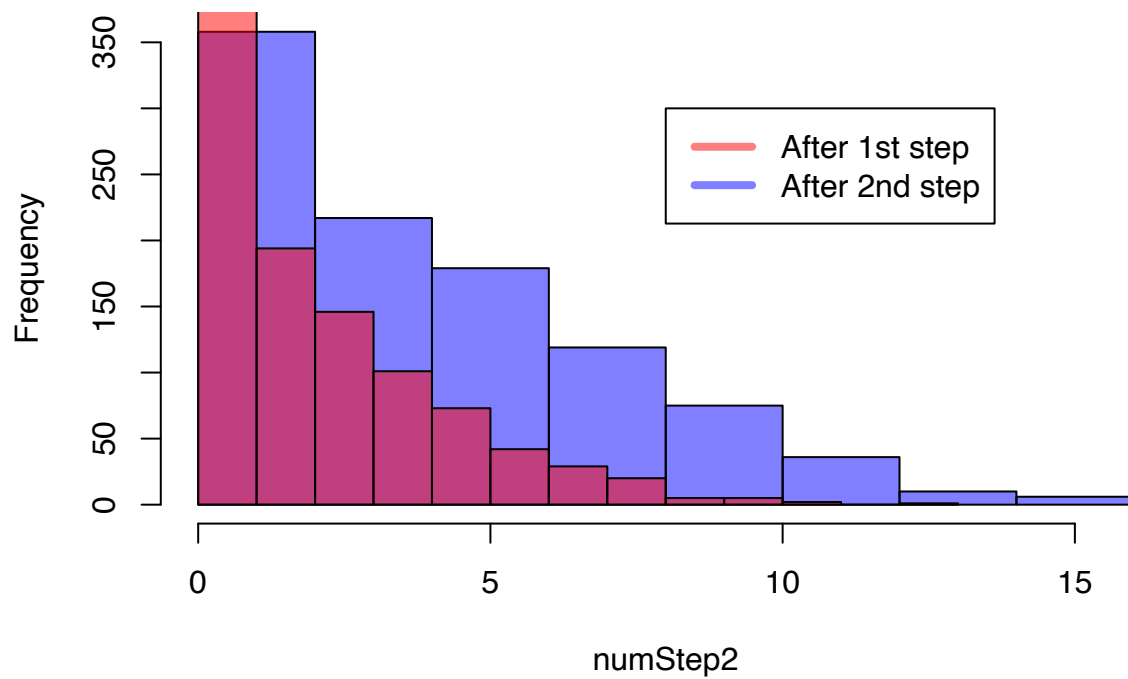
```
H2 = hist(numStep2, breaks=10);
```

Histogram of numStep2



```
c1 = rgb(1, 0, 0, 0.5)
c2 = rgb(0, 0, 1, 0.5)
plot(H2, col = c2, main=" ")
```

```
plot(H1, col = c1, add = TRUE)
legend(8, 300, legend=c("After 1st step", "After 2nd step"), lwd=4,
      col=c(c1, c2))
```



step 2

```
rm(list=ls())
set.seed(123)
ensp25 = c()
for (j in 1:1000){
  nObs = 100
  nPreds = 25
  #generate random values from N(0,1)
  dat = rnorm(nObs * (1 + nPreds))
  #create a matrix of the values
  dataset = matrix(data = dat, nrow = nObs, ncol = nPreds + 1)
  dframe = as.data.frame(dataset)
  strs = c("y")
  for (k in 1:nPreds){
    strs = c(strs, paste("x", toString(k), sep=""))
  }
  colnames(dframe) = c(strs)
  #linear model
  model = lm(y ~ ., data=dframe)
  vals = summary(model)$coefficients
  sig_vals = vals[,4]
  #count number of predictors with val < 0.05
  counter1 = 0
```

```

for (i in 1:length(sig_vals)){
  if (sig_vals[i] <= 0.05){
    counter1 = counter1 + 1
  }
}
#now we check for the significant predictors (those with a val < 0.25)
keep = c(1)
for (i in 1:length(sig_vals)){
  if (sig_vals[i] <= 0.25){
    keep = append(keep, i)
  }
}
new_matrix = dataset[ , keep]
new_dframe = as.data.frame(new_matrix)
new_names = c("ynew")
for (k in 1:(length(keep)-1)){
  new_names = c(new_names, paste("x", toString(k), sep=""))
}
colnames(new_dframe) = c(new_names)

#new regression:
new_model = lm(ynew ~ ., data=new_dframe)
new_vals = summary(new_model)$coefficients
new_sig_vals = new_vals[ ,4]

#count number of predictors with val < 0.05
counter2 = 0
for (i in 1:length(new_sig_vals)){
  if (new_sig_vals[i] <= 0.05){
    counter2 = counter2 + 1
  }
}
ensp25 = c(ensp25, (counter2 - counter1))
}

```

```
## Warning in summary.lm(new_model): essentially perfect fit: summary may be
## unreliable
```

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