

Bernoly_simulation

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```
set.seed(124)
prob = c(0.1 , 0.3 , 0.5 , 0.7 , 0.9)
s = 1
n = c(5 ,10 , 30 , 50 , 100 , 150)
r = 500000
for(j in 1:length(prob)){
  for(i in 1:length(n)){
    D = matrix(rbinom(n = n[i] * r , size = s , prob = prob[j]) ,
               ncol = r , nrow = n[i])

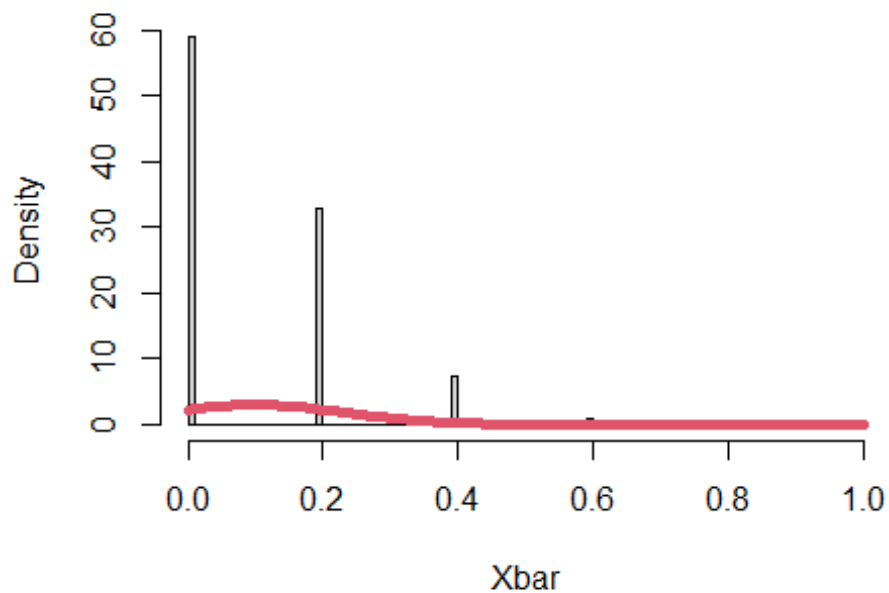
    Xbar = colMeans(D)
    print(paste("for prob = ", prob[j] , " n = ",n[i] ))
    hist(Xbar , breaks = 100 , freq = F)
    curve(dnorm(x , s * prob[j] , sqrt(prob[j] * n[i] * (1-prob[j])) / n[i] ) ,
          col = 2 , add = T , lwd = 5)

    print(paste("the mean of x bar for prob = ", prob[j] , " n = ",n[i] ,"is : "
               , mean(Xbar)))
    print(paste("the mean of x distribution for prob = ", prob[j] , " n = ",n[i]
               ,"is : "
               , (m = s * prob[j])))

    print(paste("the variance of x bar for prob = ", prob[j] , " n = ",n[i] ,"is
               : "
               , (var(Xbar))))
    print(paste("the variance of x distribution for prob = ", prob[j] , " n =
               ",n[i] ,"is : "
               , (v = (prob[j] * s *(1-prob[j]) / n ))))
  }
}

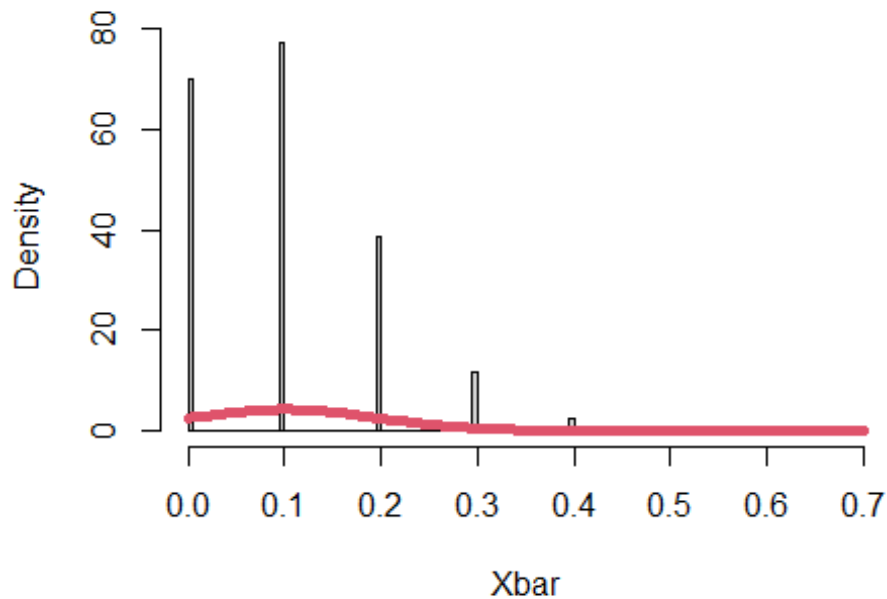
## [1] "for prob = 0.1 n = 5"
```

Histogram of Xbar



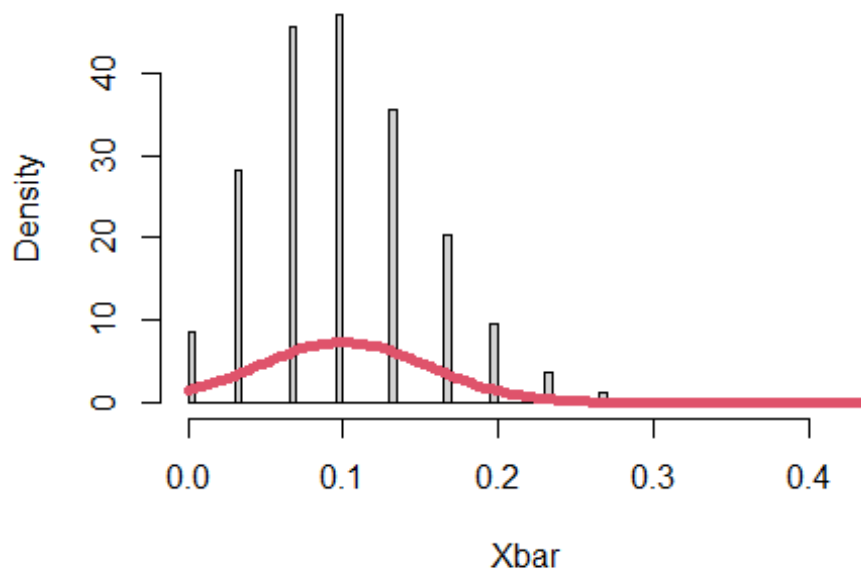
```
## [1] "the mean of x bar for prob = 0.1 n = 5 is : 0.100142"
## [1] "the mean of x distribution for prob = 0.1 n = 5 is : 0.1"
## [1] "the variance of x bar for prob = 0.1 n = 5 is :
0.0180060958481917"
## [1] "the variance of x distribution for prob = 0.1 n = 5 is : 0.018"
## [2] "the variance of x distribution for prob = 0.1 n = 5 is : 0.009"
## [3] "the variance of x distribution for prob = 0.1 n = 5 is : 0.003"
## [4] "the variance of x distribution for prob = 0.1 n = 5 is : 0.0018"
## [5] "the variance of x distribution for prob = 0.1 n = 5 is : 9e-04"
## [6] "the variance of x distribution for prob = 0.1 n = 5 is : 6e-04"
## [1] "for prob = 0.1 n = 10"
```

Histogram of Xbar



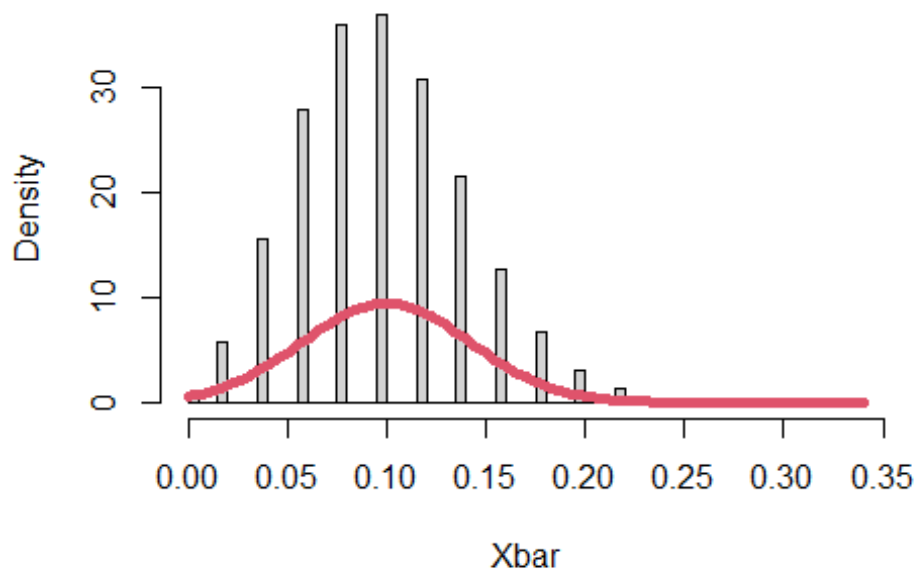
```
## [1] "the mean of x bar for prob = 0.1 n = 10 is : 0.0999824"
## [1] "the mean of x distribution for prob = 0.1 n = 10 is : 0.1"
## [1] "the variance of x bar for prob = 0.1 n = 10 is :
0.00903677776379555"
## [1] "the variance of x distribution for prob = 0.1 n = 10 is : 0.018"
## [2] "the variance of x distribution for prob = 0.1 n = 10 is : 0.009"
## [3] "the variance of x distribution for prob = 0.1 n = 10 is : 0.003"
## [4] "the variance of x distribution for prob = 0.1 n = 10 is : 0.0018"
## [5] "the variance of x distribution for prob = 0.1 n = 10 is : 9e-04"
## [6] "the variance of x distribution for prob = 0.1 n = 10 is : 6e-04"
## [1] "for prob = 0.1 n = 30"
```

Histogram of Xbar



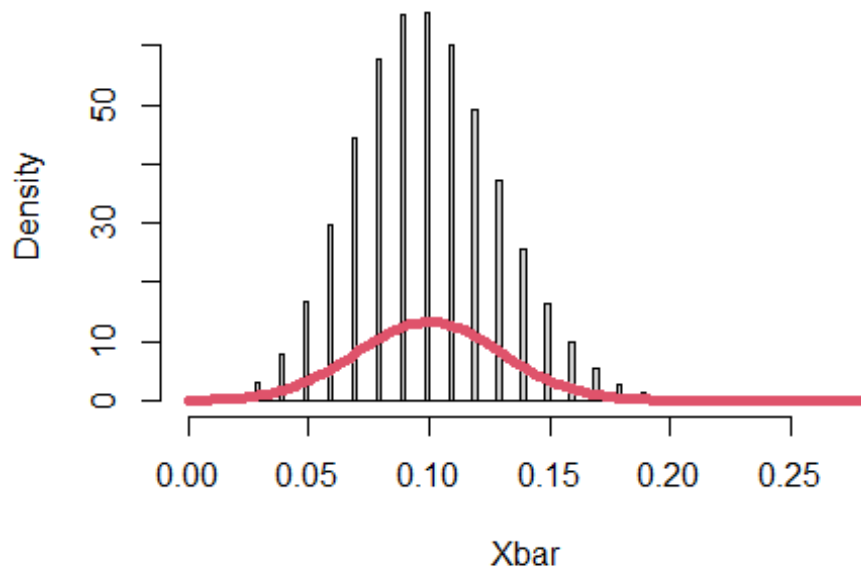
```
## [1] "the mean of x bar for prob = 0.1 n = 30 is : 0.0999548666666667"
## [1] "the mean of x distribution for prob = 0.1 n = 30 is : 0.1"
## [1] "the variance of x bar for prob = 0.1 n = 30 is : 
0.00299931729495015"
## [1] "the variance of x distribution for prob = 0.1 n = 30 is : 0.018"
## [2] "the variance of x distribution for prob = 0.1 n = 30 is : 0.009"
## [3] "the variance of x distribution for prob = 0.1 n = 30 is : 0.003"
## [4] "the variance of x distribution for prob = 0.1 n = 30 is : 0.0018"
## [5] "the variance of x distribution for prob = 0.1 n = 30 is : 9e-04"
## [6] "the variance of x distribution for prob = 0.1 n = 30 is : 6e-04"
## [1] "for prob = 0.1 n = 50"
```

Histogram of Xbar



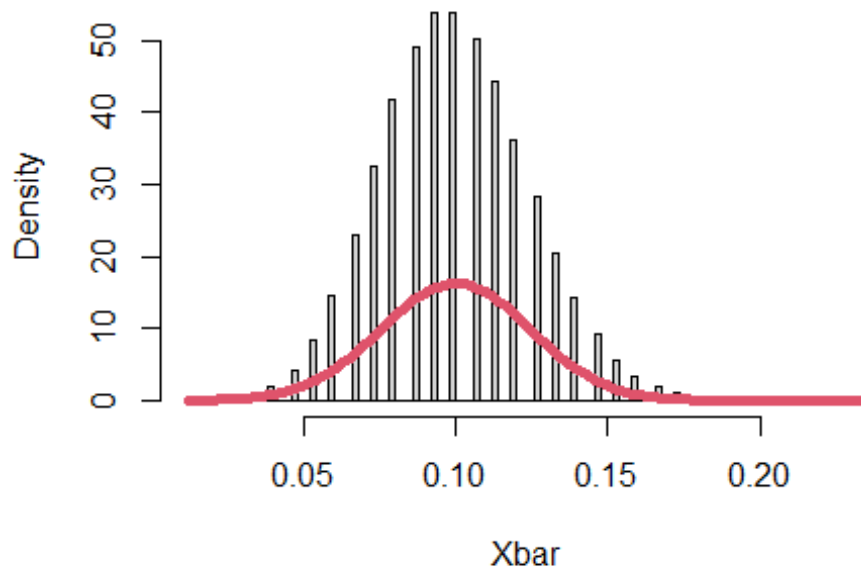
```
## [1] "the mean of x bar for prob = 0.1 n = 50 is : 0.09993824"
## [1] "the mean of x distribution for prob = 0.1 n = 50 is : 0.1"
## [1] "the variance of x bar for prob = 0.1 n = 50 is :
0.00179924458419157"
## [1] "the variance of x distribution for prob = 0.1 n = 50 is : 0.018"
## [2] "the variance of x distribution for prob = 0.1 n = 50 is : 0.009"
## [3] "the variance of x distribution for prob = 0.1 n = 50 is : 0.003"
## [4] "the variance of x distribution for prob = 0.1 n = 50 is : 0.0018"
## [5] "the variance of x distribution for prob = 0.1 n = 50 is : 9e-04"
## [6] "the variance of x distribution for prob = 0.1 n = 50 is : 6e-04"
## [1] "for prob = 0.1 n = 100"
```

Histogram of Xbar

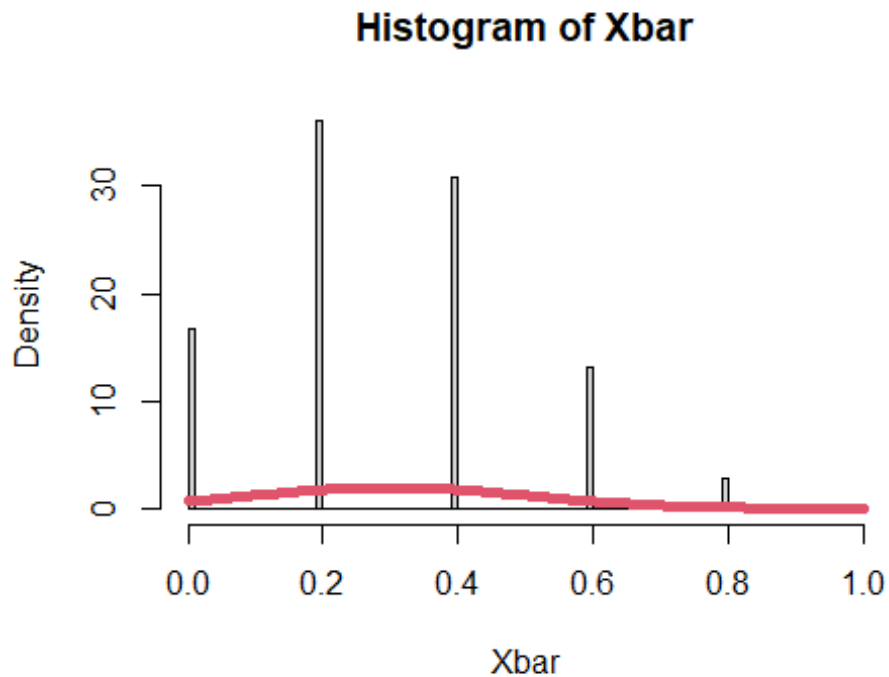


```
## [1] "the mean of x bar for prob = 0.1 n = 100 is : 0.10002698"
## [1] "the mean of x distribution for prob = 0.1 n = 100 is : 0.1"
## [1] "the variance of x bar for prob = 0.1 n = 100 is : 
0.000901003674086947"
## [1] "the variance of x distribution for prob = 0.1 n = 100 is : 0.018"
## [2] "the variance of x distribution for prob = 0.1 n = 100 is : 0.009"
## [3] "the variance of x distribution for prob = 0.1 n = 100 is : 0.003"
## [4] "the variance of x distribution for prob = 0.1 n = 100 is : 
0.0018"
## [5] "the variance of x distribution for prob = 0.1 n = 100 is : 9e-04"
## [6] "the variance of x distribution for prob = 0.1 n = 100 is : 6e-04"
## [1] "for prob = 0.1 n = 150"
```

Histogram of Xbar

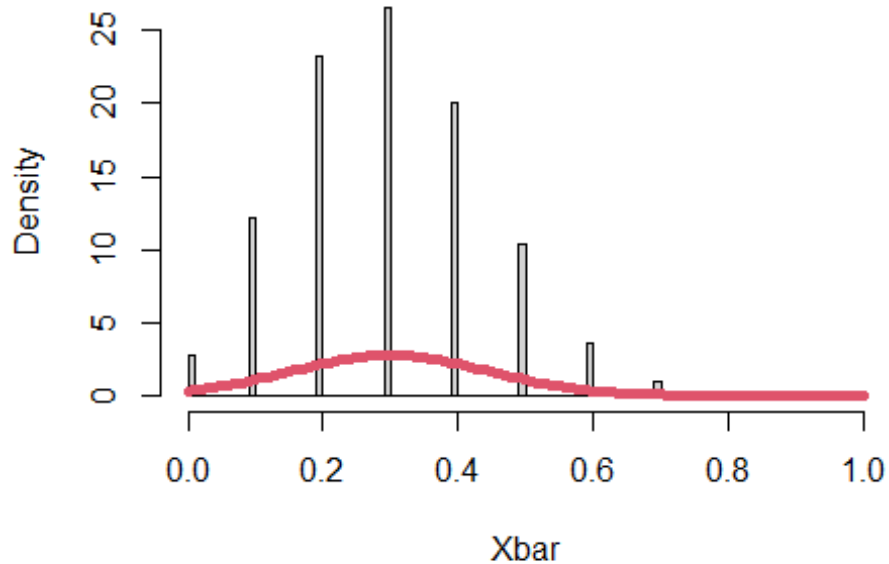


```
## [1] "the mean of x bar for prob = 0.1 n = 150 is : 0.10004812"
## [1] "the mean of x distribution for prob = 0.1 n = 150 is : 0.1"
## [1] "the variance of x bar for prob = 0.1 n = 150 is : 
0.000601978532867111"
## [1] "the variance of x distribution for prob = 0.1 n = 150 is : 0.018"
## [2] "the variance of x distribution for prob = 0.1 n = 150 is : 0.009"
## [3] "the variance of x distribution for prob = 0.1 n = 150 is : 0.003"
## [4] "the variance of x distribution for prob = 0.1 n = 150 is : 
0.0018"
## [5] "the variance of x distribution for prob = 0.1 n = 150 is : 9e-04"
## [6] "the variance of x distribution for prob = 0.1 n = 150 is : 6e-04"
## [1] "for prob = 0.3 n = 5"
```



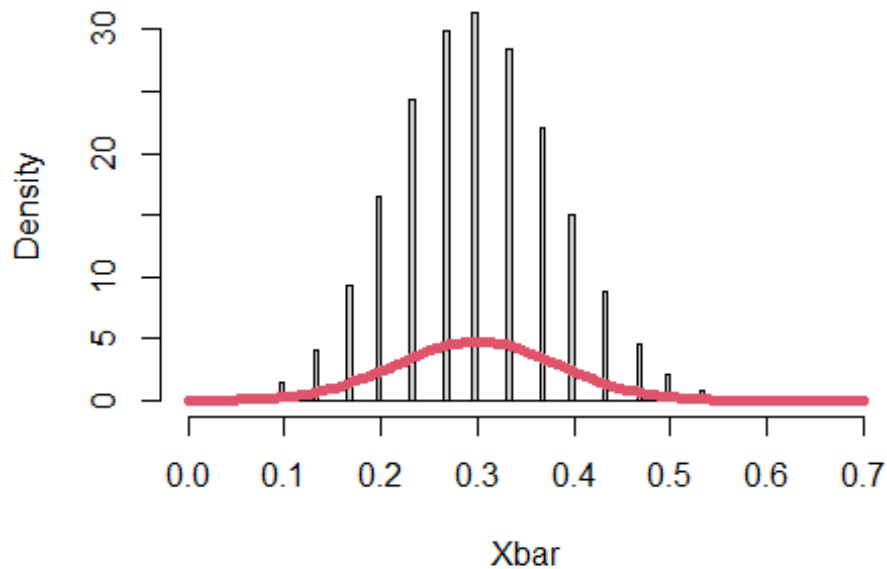
```
## [1] "the mean of x bar for prob = 0.3 n = 5 is : 0.299938"
## [1] "the mean of x distribution for prob = 0.3 n = 5 is : 0.3"
## [1] "the variance of x bar for prob = 0.3 n = 5 is : 
0.0420367202294404"
## [1] "the variance of x distribution for prob = 0.3 n = 5 is : 0.042"
## [2] "the variance of x distribution for prob = 0.3 n = 5 is : 0.021"
## [3] "the variance of x distribution for prob = 0.3 n = 5 is : 0.007"
## [4] "the variance of x distribution for prob = 0.3 n = 5 is : 0.0042"
## [5] "the variance of x distribution for prob = 0.3 n = 5 is : 0.0021"
## [6] "the variance of x distribution for prob = 0.3 n = 5 is : 0.0014"
## [1] "for prob = 0.3 n = 10"
```


Histogram of Xbar

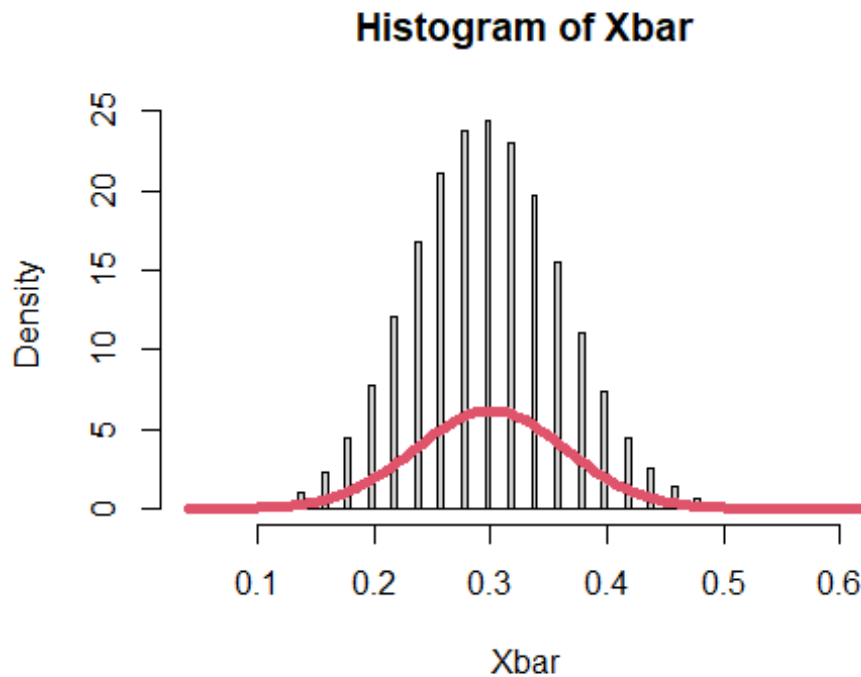


```
## [1] "the mean of x bar for prob = 0.3 n = 10 is : 0.2998804"
## [1] "the mean of x distribution for prob = 0.3 n = 10 is : 0.3"
## [1] "the variance of x bar for prob = 0.3 n = 10 is :
0.0210313477585355"
## [1] "the variance of x distribution for prob = 0.3 n = 10 is : 0.042"
## [2] "the variance of x distribution for prob = 0.3 n = 10 is : 0.021"
## [3] "the variance of x distribution for prob = 0.3 n = 10 is : 0.007"
## [4] "the variance of x distribution for prob = 0.3 n = 10 is : 0.0042"
## [5] "the variance of x distribution for prob = 0.3 n = 10 is : 0.0021"
## [6] "the variance of x distribution for prob = 0.3 n = 10 is : 0.0014"
## [1] "for prob = 0.3 n = 30"
```

Histogram of Xbar

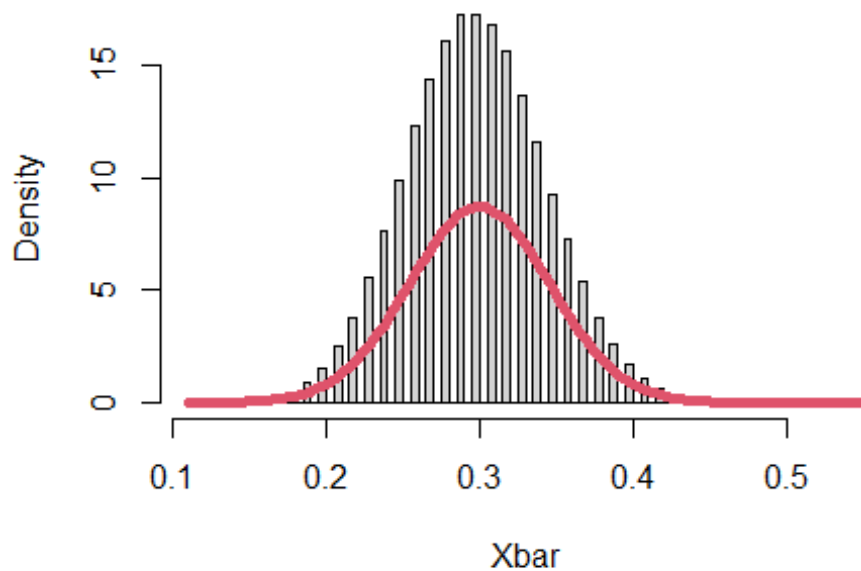


```
## [1] "the mean of x bar for prob = 0.3 n = 30 is : 0.300133466666667"
## [1] "the mean of x distribution for prob = 0.3 n = 30 is : 0.3"
## [1] "the variance of x bar for prob = 0.3 n = 30 is :
0.00701359176938797"
## [1] "the variance of x distribution for prob = 0.3 n = 30 is : 0.042"
## [2] "the variance of x distribution for prob = 0.3 n = 30 is : 0.021"
## [3] "the variance of x distribution for prob = 0.3 n = 30 is : 0.007"
## [4] "the variance of x distribution for prob = 0.3 n = 30 is : 0.0042"
## [5] "the variance of x distribution for prob = 0.3 n = 30 is : 0.0021"
## [6] "the variance of x distribution for prob = 0.3 n = 30 is : 0.0014"
## [1] "for prob = 0.3 n = 50"
```



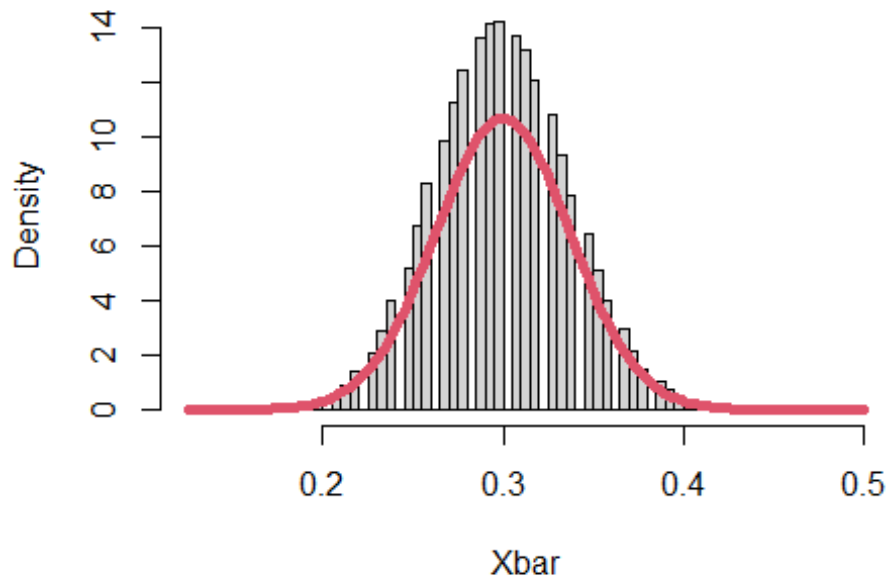
```
## [1] "the mean of x bar for prob = 0.3 n = 50 is : 0.2997812"
## [1] "the mean of x distribution for prob = 0.3 n = 50 is : 0.3"
## [1] "the variance of x bar for prob = 0.3 n = 50 is :
0.00419708852073704"
## [1] "the variance of x distribution for prob = 0.3 n = 50 is : 0.042"
## [2] "the variance of x distribution for prob = 0.3 n = 50 is : 0.021"
## [3] "the variance of x distribution for prob = 0.3 n = 50 is : 0.007"
## [4] "the variance of x distribution for prob = 0.3 n = 50 is : 0.0042"
## [5] "the variance of x distribution for prob = 0.3 n = 50 is : 0.0021"
## [6] "the variance of x distribution for prob = 0.3 n = 50 is : 0.0014"
## [1] "for prob = 0.3 n = 100"
```

Histogram of Xbar

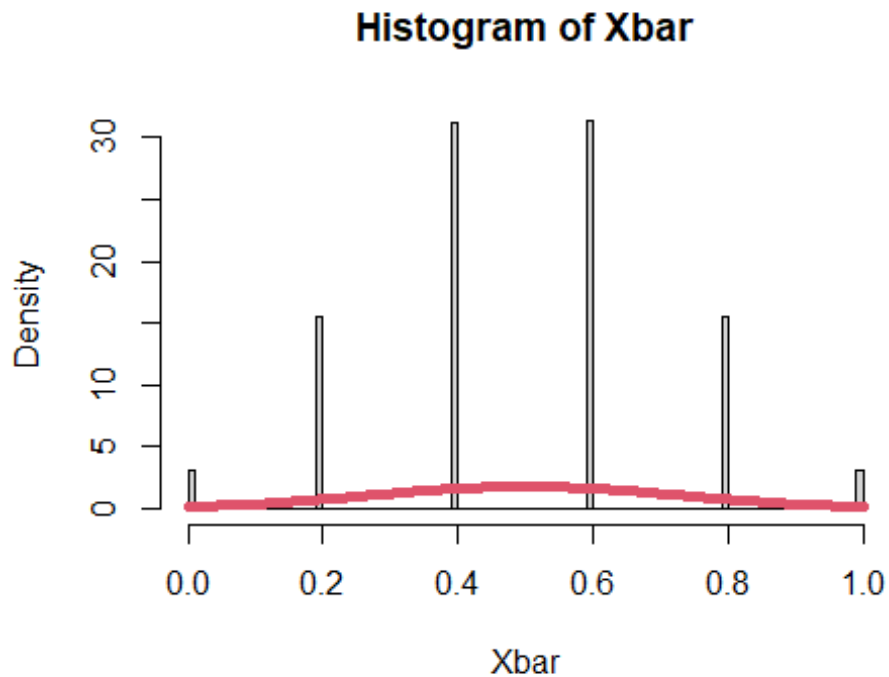


```
## [1] "the mean of x bar for prob = 0.3 n = 100 is : 0.29998218"
## [1] "the mean of x distribution for prob = 0.3 n = 100 is : 0.3"
## [1] "the variance of x bar for prob = 0.3 n = 100 is :
0.00210007368259497"
## [1] "the variance of x distribution for prob = 0.3 n = 100 is : 0.042"
## [2] "the variance of x distribution for prob = 0.3 n = 100 is : 0.021"
## [3] "the variance of x distribution for prob = 0.3 n = 100 is : 0.007"
## [4] "the variance of x distribution for prob = 0.3 n = 100 is :
0.0042"
## [5] "the variance of x distribution for prob = 0.3 n = 100 is :
0.0021"
## [6] "the variance of x distribution for prob = 0.3 n = 100 is :
0.0014"
## [1] "for prob = 0.3 n = 150"
```

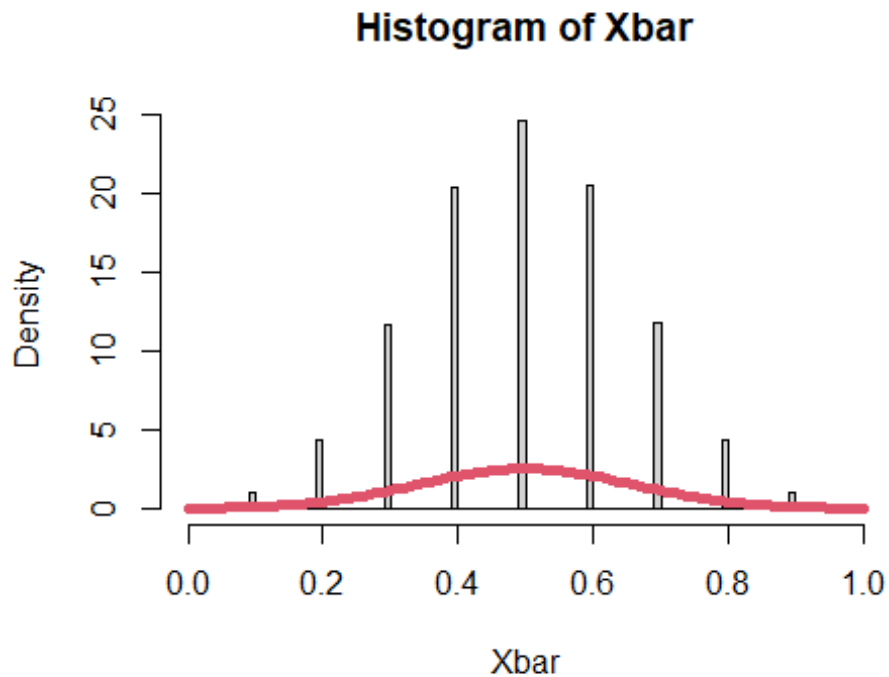
Histogram of Xbar



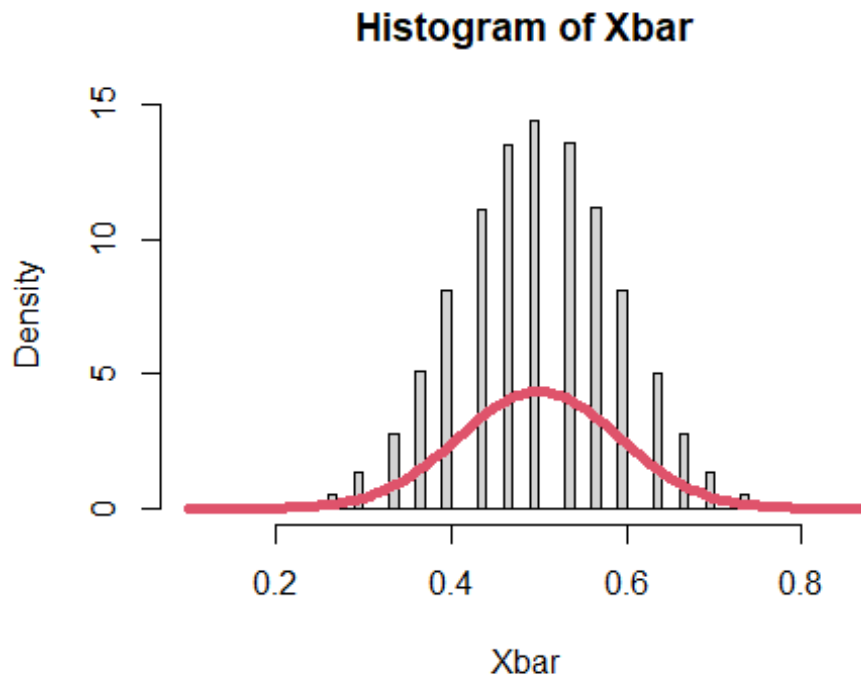
```
## [1] "the mean of x bar for prob = 0.3 n = 150 is : 0.300043093333333"
## [1] "the mean of x distribution for prob = 0.3 n = 150 is : 0.3"
## [1] "the variance of x bar for prob = 0.3 n = 150 is : 
0.00140399792873826"
## [1] "the variance of x distribution for prob = 0.3 n = 150 is : 0.042"
## [2] "the variance of x distribution for prob = 0.3 n = 150 is : 0.021"
## [3] "the variance of x distribution for prob = 0.3 n = 150 is : 0.007"
## [4] "the variance of x distribution for prob = 0.3 n = 150 is : 
0.0042"
## [5] "the variance of x distribution for prob = 0.3 n = 150 is : 
0.0021"
## [6] "the variance of x distribution for prob = 0.3 n = 150 is : 
0.0014"
## [1] "for prob = 0.5 n = 5"
```



```
## [1] "the mean of x bar for prob = 0.5 n = 5 is : 0.5004592"
## [1] "the mean of x distribution for prob = 0.5 n = 5 is : 0.5"
## [1] "the variance of x bar for prob = 0.5 n = 5 is :
0.0498931689216978"
## [1] "the variance of x distribution for prob = 0.5 n = 5 is : 0.05"
## [2] "the variance of x distribution for prob = 0.5 n = 5 is : 0.025"
## [3] "the variance of x distribution for prob = 0.5 n = 5 is :
0.008333333333333333"
## [4] "the variance of x distribution for prob = 0.5 n = 5 is : 0.005"
## [5] "the variance of x distribution for prob = 0.5 n = 5 is : 0.0025"
## [6] "the variance of x distribution for prob = 0.5 n = 5 is :
0.0016666666666666667"
## [1] "for prob = 0.5 n = 10"
```

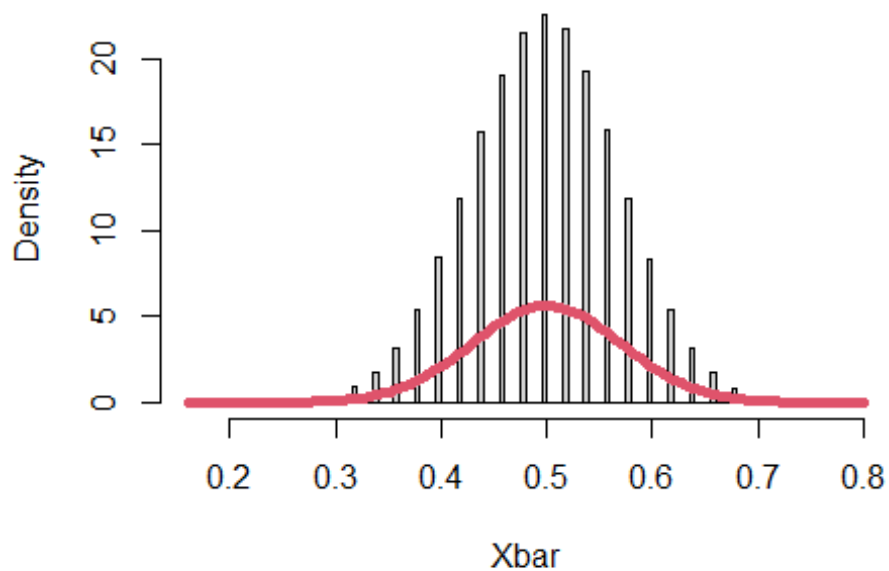


```
## [1] "the mean of x bar for prob = 0.5 n = 10 is : 0.5002264"
## [1] "the mean of x distribution for prob = 0.5 n = 10 is : 0.5"
## [1] "the variance of x bar for prob = 0.5 n = 10 is :
0.0249906787243974"
## [1] "the variance of x distribution for prob = 0.5 n = 10 is : 0.05"
## [2] "the variance of x distribution for prob = 0.5 n = 10 is : 0.025"
## [3] "the variance of x distribution for prob = 0.5 n = 10 is :
0.008333333333333333"
## [4] "the variance of x distribution for prob = 0.5 n = 10 is : 0.005"
## [5] "the variance of x distribution for prob = 0.5 n = 10 is : 0.0025"
## [6] "the variance of x distribution for prob = 0.5 n = 10 is :
0.0016666666666666667"
## [1] "for prob = 0.5 n = 30"
```



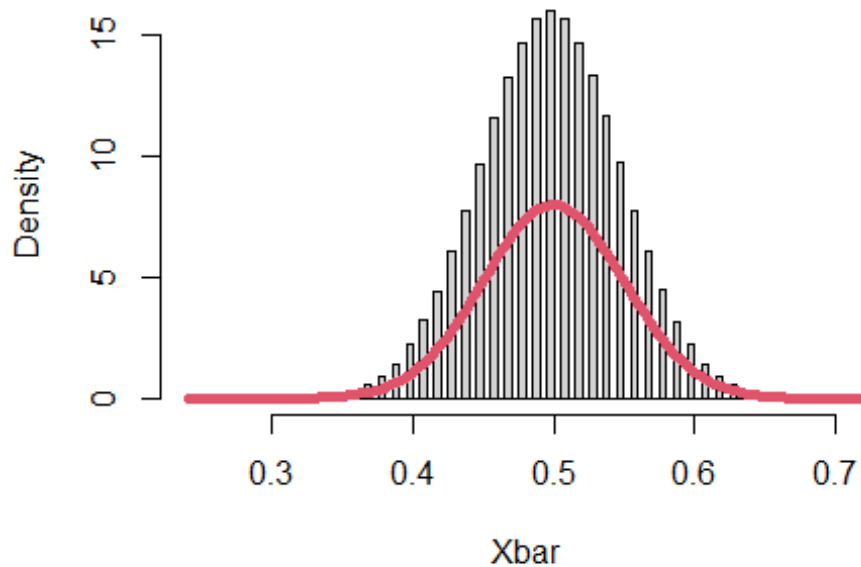
```
## [1] "the mean of x bar for prob = 0.5 n = 30 is : 0.499948333333333"
## [1] "the mean of x distribution for prob = 0.5 n = 30 is : 0.5"
## [1] "the variance of x bar for prob = 0.5 n = 30 is :
0.00834327401710359"
## [1] "the variance of x distribution for prob = 0.5 n = 30 is : 0.05"
## [2] "the variance of x distribution for prob = 0.5 n = 30 is : 0.025"
## [3] "the variance of x distribution for prob = 0.5 n = 30 is :
0.00833333333333333"
## [4] "the variance of x distribution for prob = 0.5 n = 30 is : 0.005"
## [5] "the variance of x distribution for prob = 0.5 n = 30 is : 0.0025"
## [6] "the variance of x distribution for prob = 0.5 n = 30 is :
0.00166666666666667"
## [1] "for prob = 0.5 n = 50"
```


Histogram of Xbar



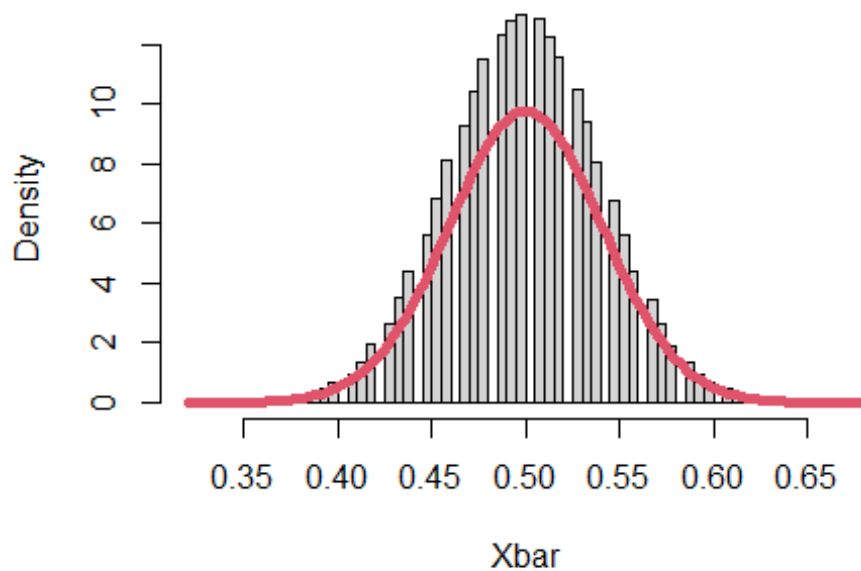
```
## [1] "the mean of x bar for prob = 0.5 n = 50 is : 0.50003536"
## [1] "the mean of x distribution for prob = 0.5 n = 50 is : 0.5"
## [1] "the variance of x bar for prob = 0.5 n = 50 is :
0.00499770954508949"
## [1] "the variance of x distribution for prob = 0.5 n = 50 is : 0.05"
## [2] "the variance of x distribution for prob = 0.5 n = 50 is : 0.025"
## [3] "the variance of x distribution for prob = 0.5 n = 50 is :
0.00833333333333333"
## [4] "the variance of x distribution for prob = 0.5 n = 50 is : 0.005"
## [5] "the variance of x distribution for prob = 0.5 n = 50 is : 0.0025"
## [6] "the variance of x distribution for prob = 0.5 n = 50 is :
0.00166666666666667"
## [1] "for prob = 0.5 n = 100"
```

Histogram of Xbar



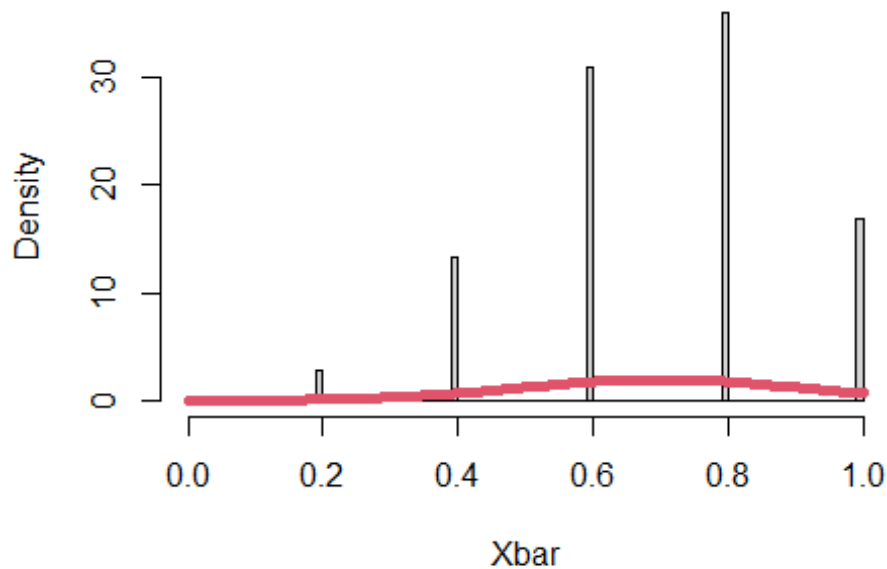
```
## [1] "the mean of x bar for prob = 0.5 n = 100 is : 0.50008864"
## [1] "the mean of x distribution for prob = 0.5 n = 100 is : 0.5"
## [1] "the variance of x bar for prob = 0.5 n = 100 is :
0.00250625355545751"
## [1] "the variance of x distribution for prob = 0.5 n = 100 is : 0.05"
## [2] "the variance of x distribution for prob = 0.5 n = 100 is : 0.025"
## [3] "the variance of x distribution for prob = 0.5 n = 100 is :
0.00833333333333333"
## [4] "the variance of x distribution for prob = 0.5 n = 100 is : 0.005"
## [5] "the variance of x distribution for prob = 0.5 n = 100 is :
0.0025"
## [6] "the variance of x distribution for prob = 0.5 n = 100 is :
0.00166666666666667"
## [1] "for prob = 0.5 n = 150"
```

Histogram of Xbar



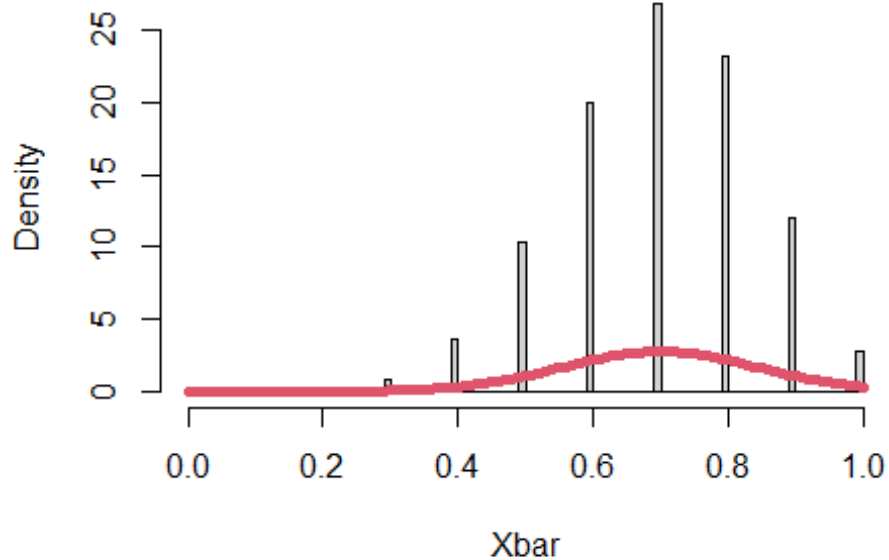
```
## [1] "the mean of x bar for prob = 0.5 n = 150 is : 0.5000024"
## [1] "the mean of x distribution for prob = 0.5 n = 150 is : 0.5"
## [1] "the variance of x bar for prob = 0.5 n = 150 is :
0.00166810786378906"
## [1] "the variance of x distribution for prob = 0.5 n = 150 is : 0.05"
## [2] "the variance of x distribution for prob = 0.5 n = 150 is : 0.025"
## [3] "the variance of x distribution for prob = 0.5 n = 150 is :
0.00833333333333333"
## [4] "the variance of x distribution for prob = 0.5 n = 150 is : 0.005"
## [5] "the variance of x distribution for prob = 0.5 n = 150 is :
0.0025"
## [6] "the variance of x distribution for prob = 0.5 n = 150 is :
0.00166666666666667"
## [1] "for prob = 0.7 n = 5"
```

Histogram of Xbar



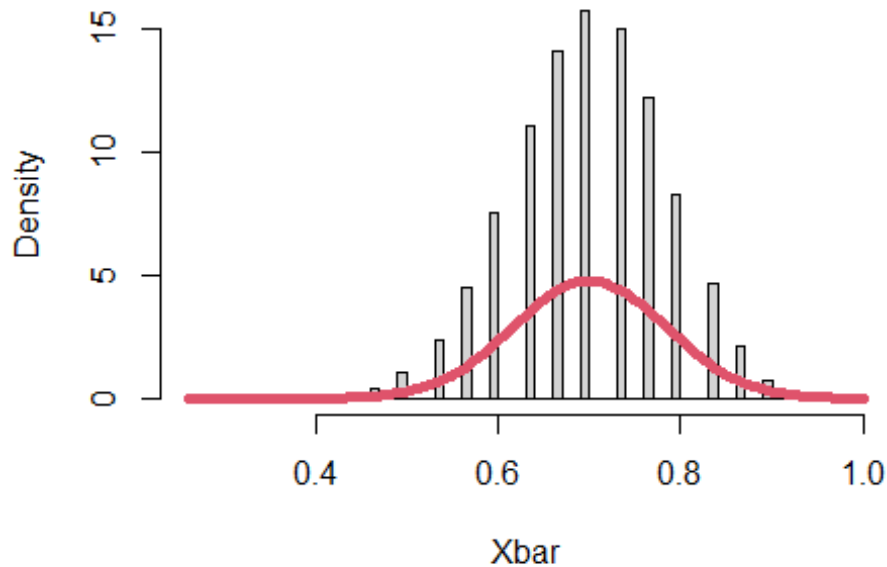
```
## [1] "the mean of x bar for prob = 0.7 n = 5 is : 0.7000352"
## [1] "the mean of x distribution for prob = 0.7 n = 5 is : 0.7"
## [1] "the variance of x bar for prob = 0.7 n = 5 is :
0.0419623226856054"
## [1] "the variance of x distribution for prob = 0.7 n = 5 is : 0.042"
## [2] "the variance of x distribution for prob = 0.7 n = 5 is : 0.021"
## [3] "the variance of x distribution for prob = 0.7 n = 5 is : 0.007"
## [4] "the variance of x distribution for prob = 0.7 n = 5 is : 0.0042"
## [5] "the variance of x distribution for prob = 0.7 n = 5 is : 0.0021"
## [6] "the variance of x distribution for prob = 0.7 n = 5 is : 0.0014"
## [1] "for prob = 0.7 n = 10"
```

Histogram of Xbar

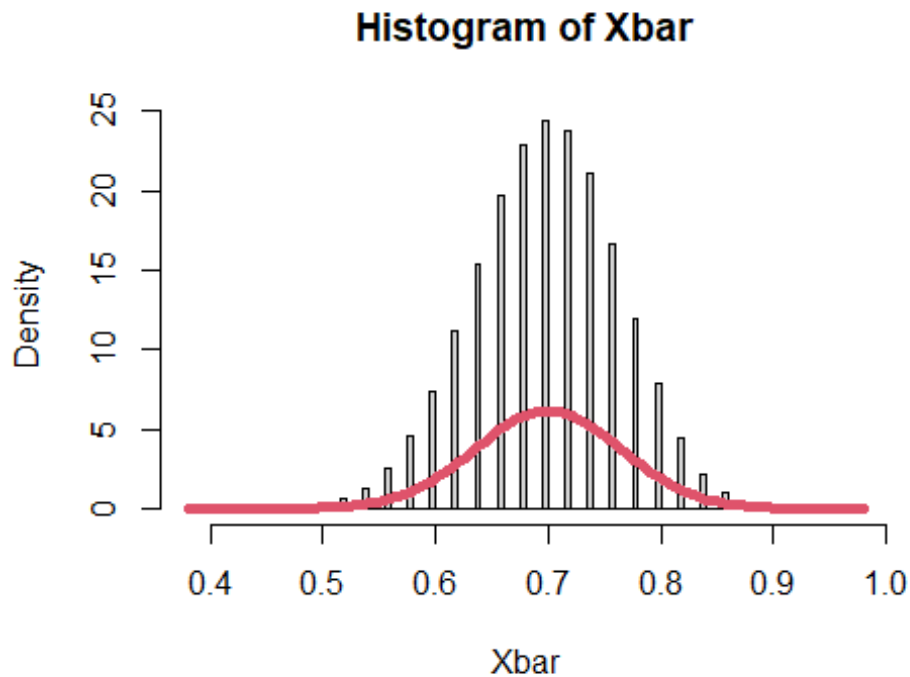


```
## [1] "the mean of x bar for prob = 0.7 n = 10 is : 0.6999552"
## [1] "the mean of x distribution for prob = 0.7 n = 10 is : 0.7"
## [1] "the variance of x bar for prob = 0.7 n = 10 is :
0.0209215998361596"
## [1] "the variance of x distribution for prob = 0.7 n = 10 is : 0.042"
## [2] "the variance of x distribution for prob = 0.7 n = 10 is : 0.021"
## [3] "the variance of x distribution for prob = 0.7 n = 10 is : 0.007"
## [4] "the variance of x distribution for prob = 0.7 n = 10 is : 0.0042"
## [5] "the variance of x distribution for prob = 0.7 n = 10 is : 0.0021"
## [6] "the variance of x distribution for prob = 0.7 n = 10 is : 0.0014"
## [1] "for prob = 0.7 n = 30"
```

Histogram of Xbar

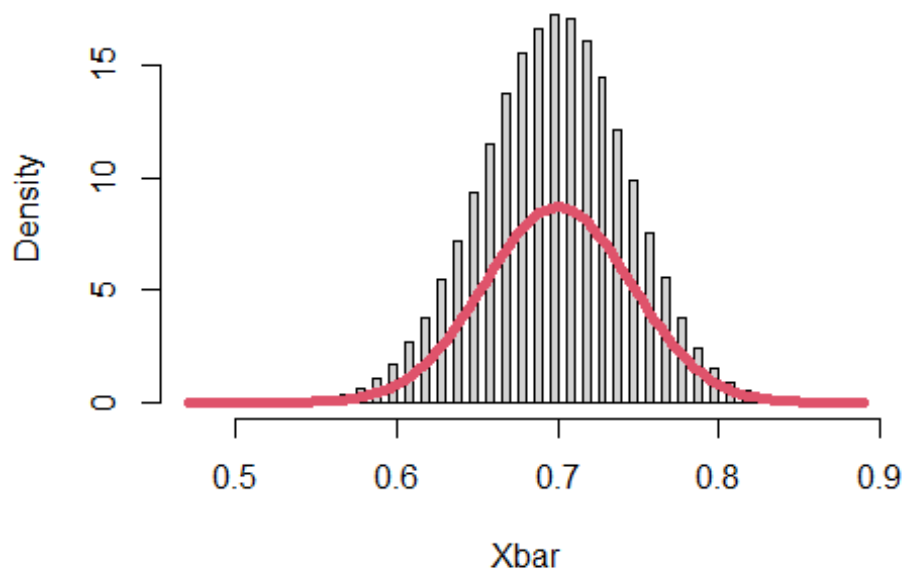


```
## [1] "the mean of x bar for prob = 0.7 n = 30 is : 0.6998638666666667"
## [1] "the mean of x distribution for prob = 0.7 n = 30 is : 0.7"
## [1] "the variance of x bar for prob = 0.7 n = 30 is :
0.00703691109709332"
## [1] "the variance of x distribution for prob = 0.7 n = 30 is : 0.042"
## [2] "the variance of x distribution for prob = 0.7 n = 30 is : 0.021"
## [3] "the variance of x distribution for prob = 0.7 n = 30 is : 0.007"
## [4] "the variance of x distribution for prob = 0.7 n = 30 is : 0.0042"
## [5] "the variance of x distribution for prob = 0.7 n = 30 is : 0.0021"
## [6] "the variance of x distribution for prob = 0.7 n = 30 is : 0.0014"
## [1] "for prob = 0.7 n = 50"
```



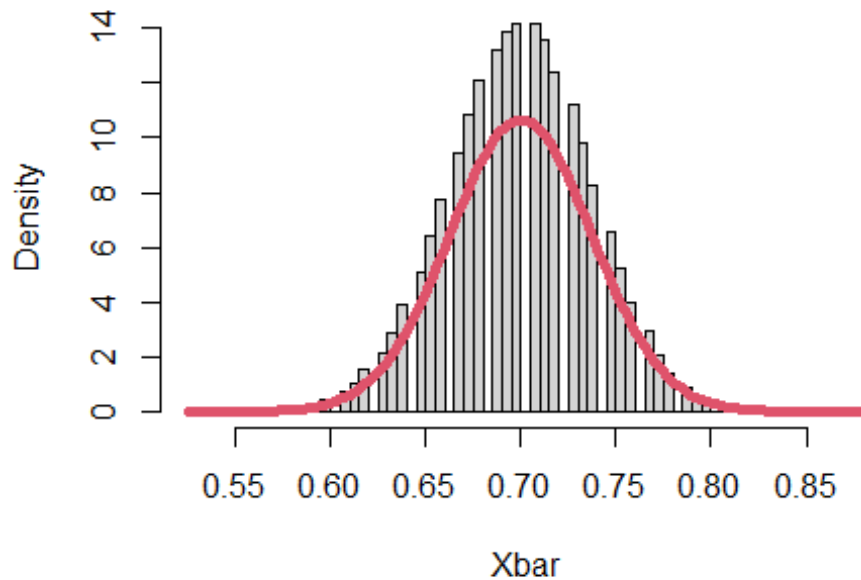
```
## [1] "the mean of x bar for prob = 0.7 n = 50 is : 0.7000562"
## [1] "the mean of x distribution for prob = 0.7 n = 50 is : 0.7"
## [1] "the variance of x bar for prob = 0.7 n = 50 is :
0.00420388604933209"
## [1] "the variance of x distribution for prob = 0.7 n = 50 is : 0.042"
## [2] "the variance of x distribution for prob = 0.7 n = 50 is : 0.021"
## [3] "the variance of x distribution for prob = 0.7 n = 50 is : 0.007"
## [4] "the variance of x distribution for prob = 0.7 n = 50 is : 0.0042"
## [5] "the variance of x distribution for prob = 0.7 n = 50 is : 0.0021"
## [6] "the variance of x distribution for prob = 0.7 n = 50 is : 0.0014"
## [1] "for prob = 0.7 n = 100"
```

Histogram of Xbar



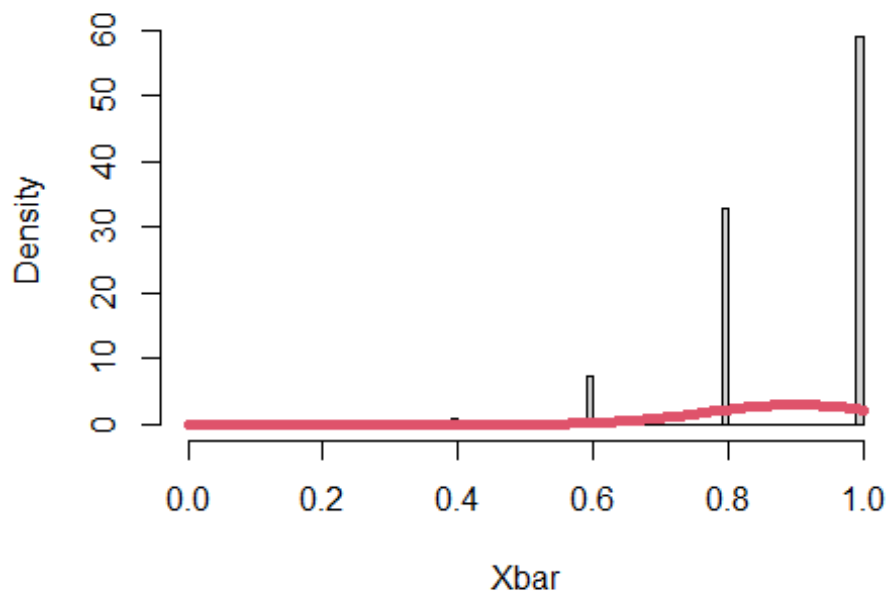
```
## [1] "the mean of x bar for prob = 0.7 n = 100 is : 0.69994772"
## [1] "the mean of x distribution for prob = 0.7 n = 100 is : 0.7"
## [1] "the variance of x bar for prob = 0.7 n = 100 is :
0.00210183947048054"
## [1] "the variance of x distribution for prob = 0.7 n = 100 is : 0.042"
## [2] "the variance of x distribution for prob = 0.7 n = 100 is : 0.021"
## [3] "the variance of x distribution for prob = 0.7 n = 100 is : 0.007"
## [4] "the variance of x distribution for prob = 0.7 n = 100 is :
0.0042"
## [5] "the variance of x distribution for prob = 0.7 n = 100 is :
0.0021"
## [6] "the variance of x distribution for prob = 0.7 n = 100 is :
0.0014"
## [1] "for prob = 0.7 n = 150"
```


Histogram of Xbar



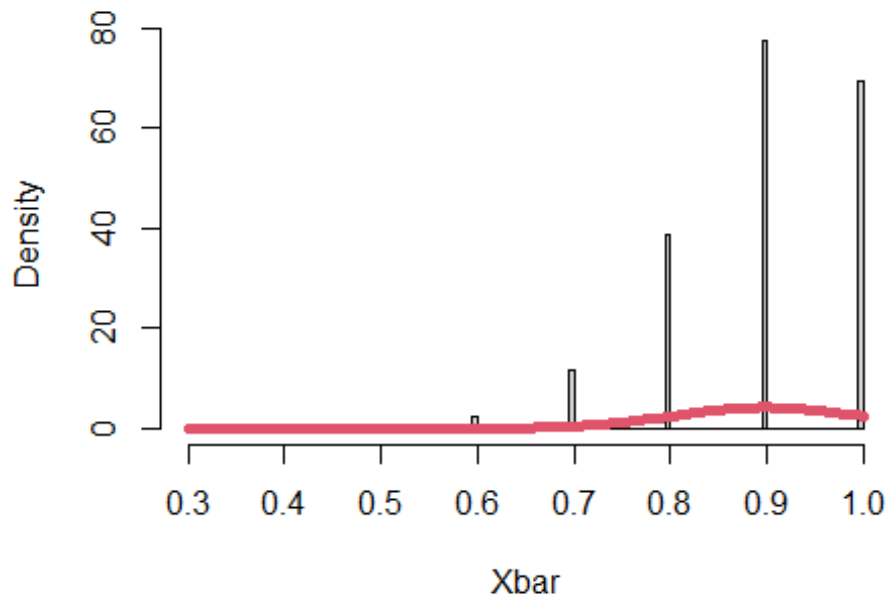
```
## [1] "the mean of x bar for prob = 0.7 n = 150 is : 0.699945626666667"
## [1] "the mean of x distribution for prob = 0.7 n = 150 is : 0.7"
## [1] "the variance of x bar for prob = 0.7 n = 150 is :
0.00140021513285978"
## [1] "the variance of x distribution for prob = 0.7 n = 150 is : 0.042"
## [2] "the variance of x distribution for prob = 0.7 n = 150 is : 0.021"
## [3] "the variance of x distribution for prob = 0.7 n = 150 is : 0.007"
## [4] "the variance of x distribution for prob = 0.7 n = 150 is :
0.0042"
## [5] "the variance of x distribution for prob = 0.7 n = 150 is :
0.0021"
## [6] "the variance of x distribution for prob = 0.7 n = 150 is :
0.0014"
## [1] "for prob = 0.9 n = 5"
```

Histogram of Xbar



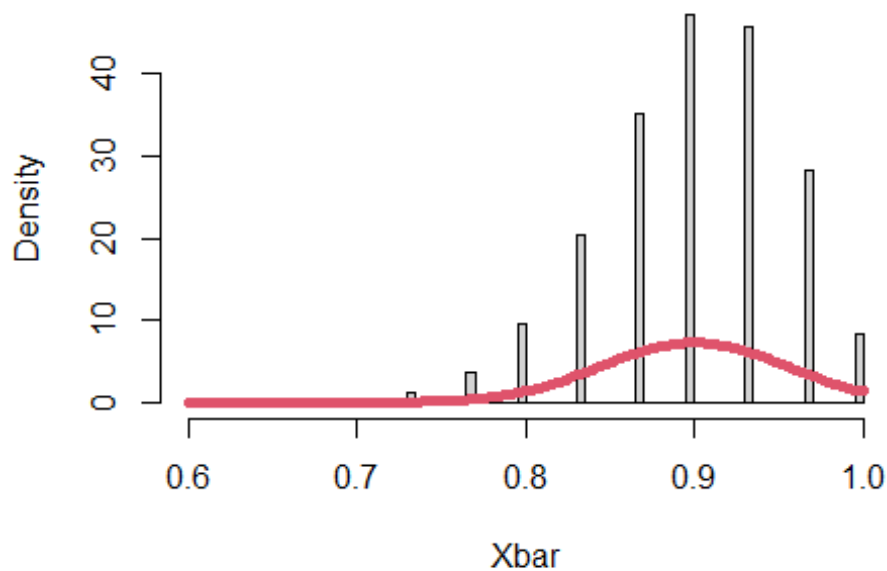
```
## [1] "the mean of x bar for prob = 0.9 n = 5 is : 0.9001712"
## [1] "the mean of x distribution for prob = 0.9 n = 5 is : 0.9"
## [1] "the variance of x bar for prob = 0.9 n = 5 is :
0.0179729666364933"
## [1] "the variance of x distribution for prob = 0.9 n = 5 is : 0.018"
## [2] "the variance of x distribution for prob = 0.9 n = 5 is : 0.009"
## [3] "the variance of x distribution for prob = 0.9 n = 5 is : 0.003"
## [4] "the variance of x distribution for prob = 0.9 n = 5 is : 0.0018"
## [5] "the variance of x distribution for prob = 0.9 n = 5 is : 9e-04"
## [6] "the variance of x distribution for prob = 0.9 n = 5 is : 6e-04"
## [1] "for prob = 0.9 n = 10"
```

Histogram of Xbar



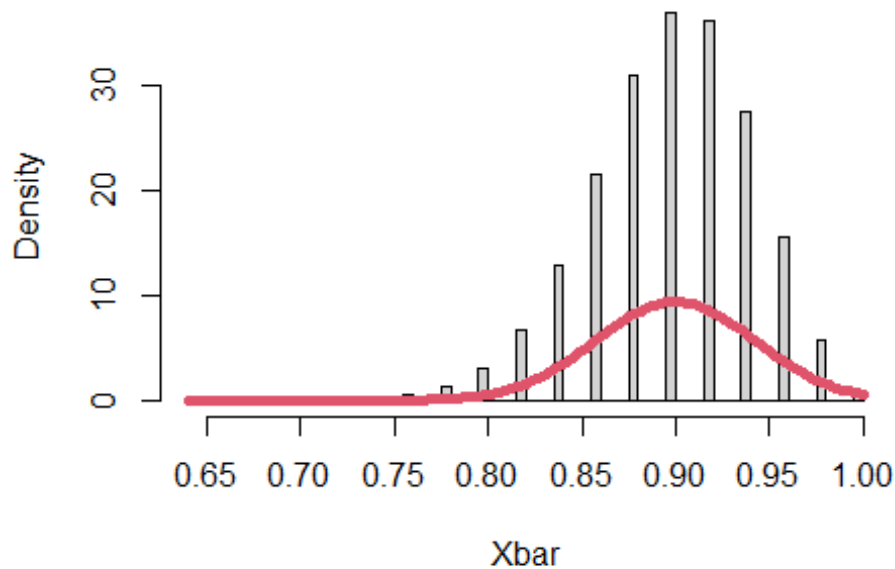
```
## [1] "the mean of x bar for prob = 0.9 n = 10 is : 0.8998236"
## [1] "the mean of x distribution for prob = 0.9 n = 10 is : 0.9"
## [1] "the variance of x bar for prob = 0.9 n = 10 is :
0.00900814689933379"
## [1] "the variance of x distribution for prob = 0.9 n = 10 is : 0.018"
## [2] "the variance of x distribution for prob = 0.9 n = 10 is : 0.009"
## [3] "the variance of x distribution for prob = 0.9 n = 10 is : 0.003"
## [4] "the variance of x distribution for prob = 0.9 n = 10 is : 0.0018"
## [5] "the variance of x distribution for prob = 0.9 n = 10 is : 9e-04"
## [6] "the variance of x distribution for prob = 0.9 n = 10 is : 6e-04"
## [1] "for prob = 0.9 n = 30"
```

Histogram of Xbar



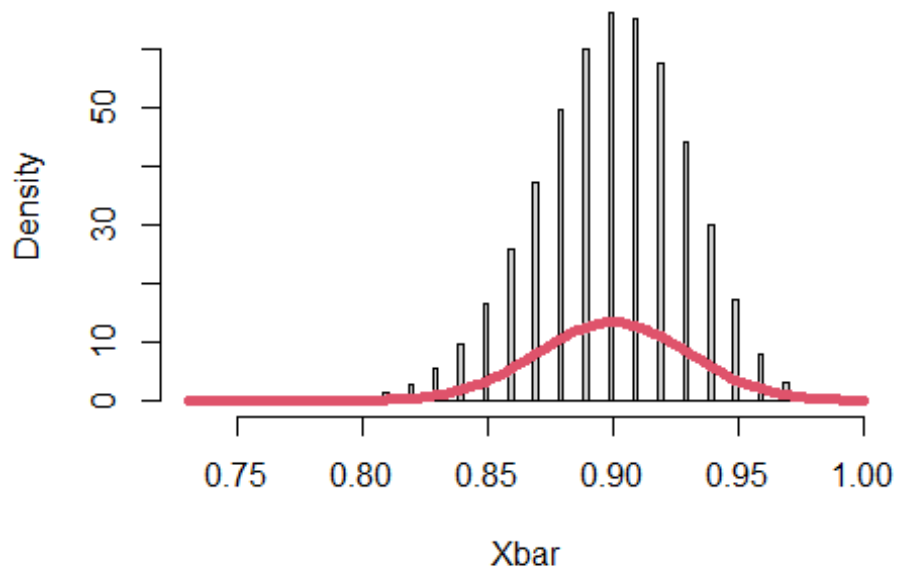
```
## [1] "the mean of x bar for prob = 0.9 n = 30 is : 0.900084266666667"
## [1] "the mean of x distribution for prob = 0.9 n = 30 is : 0.9"
## [1] "the variance of x bar for prob = 0.9 n = 30 is :
0.00299043888000665"
## [1] "the variance of x distribution for prob = 0.9 n = 30 is : 0.018"
## [2] "the variance of x distribution for prob = 0.9 n = 30 is : 0.009"
## [3] "the variance of x distribution for prob = 0.9 n = 30 is : 0.003"
## [4] "the variance of x distribution for prob = 0.9 n = 30 is : 0.0018"
## [5] "the variance of x distribution for prob = 0.9 n = 30 is : 9e-04"
## [6] "the variance of x distribution for prob = 0.9 n = 30 is : 6e-04"
## [1] "for prob = 0.9 n = 50"
```

Histogram of Xbar



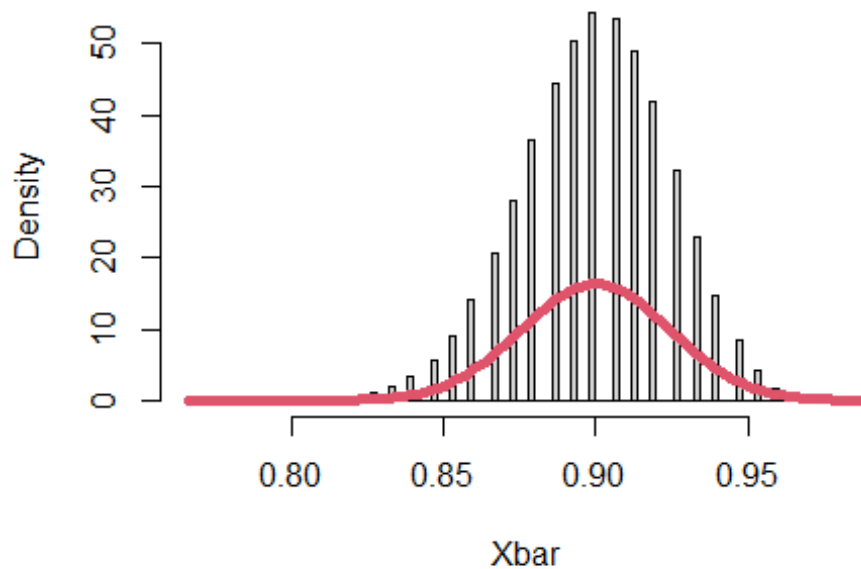
```
## [1] "the mean of x bar for prob = 0.9 n = 50 is : 0.89988304"
## [1] "the mean of x distribution for prob = 0.9 n = 50 is : 0.9"
## [1] "the variance of x bar for prob = 0.9 n = 50 is :
0.00180295312626465"
## [1] "the variance of x distribution for prob = 0.9 n = 50 is : 0.018"
## [2] "the variance of x distribution for prob = 0.9 n = 50 is : 0.009"
## [3] "the variance of x distribution for prob = 0.9 n = 50 is : 0.003"
## [4] "the variance of x distribution for prob = 0.9 n = 50 is : 0.0018"
## [5] "the variance of x distribution for prob = 0.9 n = 50 is : 9e-04"
## [6] "the variance of x distribution for prob = 0.9 n = 50 is : 6e-04"
## [1] "for prob = 0.9 n = 100"
```

Histogram of Xbar



```
## [1] "the mean of x bar for prob = 0.9 n = 100 is : 0.89997128"
## [1] "the mean of x distribution for prob = 0.9 n = 100 is : 0.9"
## [1] "the variance of x bar for prob = 0.9 n = 100 is : 
0.000901611778385157"
## [1] "the variance of x distribution for prob = 0.9 n = 100 is : 0.018"
## [2] "the variance of x distribution for prob = 0.9 n = 100 is : 0.009"
## [3] "the variance of x distribution for prob = 0.9 n = 100 is : 0.003"
## [4] "the variance of x distribution for prob = 0.9 n = 100 is : 
0.0018"
## [5] "the variance of x distribution for prob = 0.9 n = 100 is : 9e-04"
## [6] "the variance of x distribution for prob = 0.9 n = 100 is : 6e-04"
## [1] "for prob = 0.9 n = 150"
```

Histogram of Xbar



```
## [1] "the mean of x bar for prob = 0.9 n = 150 is : 0.899960226666667"
## [1] "the mean of x distribution for prob = 0.9 n = 150 is : 0.9"
## [1] "the variance of x bar for prob = 0.9 n = 150 is : 
0.000599323616729189"
## [1] "the variance of x distribution for prob = 0.9 n = 150 is : 0.018"
## [2] "the variance of x distribution for prob = 0.9 n = 150 is : 0.009"
## [3] "the variance of x distribution for prob = 0.9 n = 150 is : 0.003"
## [4] "the variance of x distribution for prob = 0.9 n = 150 is : 
0.0018"
## [5] "the variance of x distribution for prob = 0.9 n = 150 is : 9e-04"
## [6] "the variance of x distribution for prob = 0.9 n = 150 is : 6e-04"
```