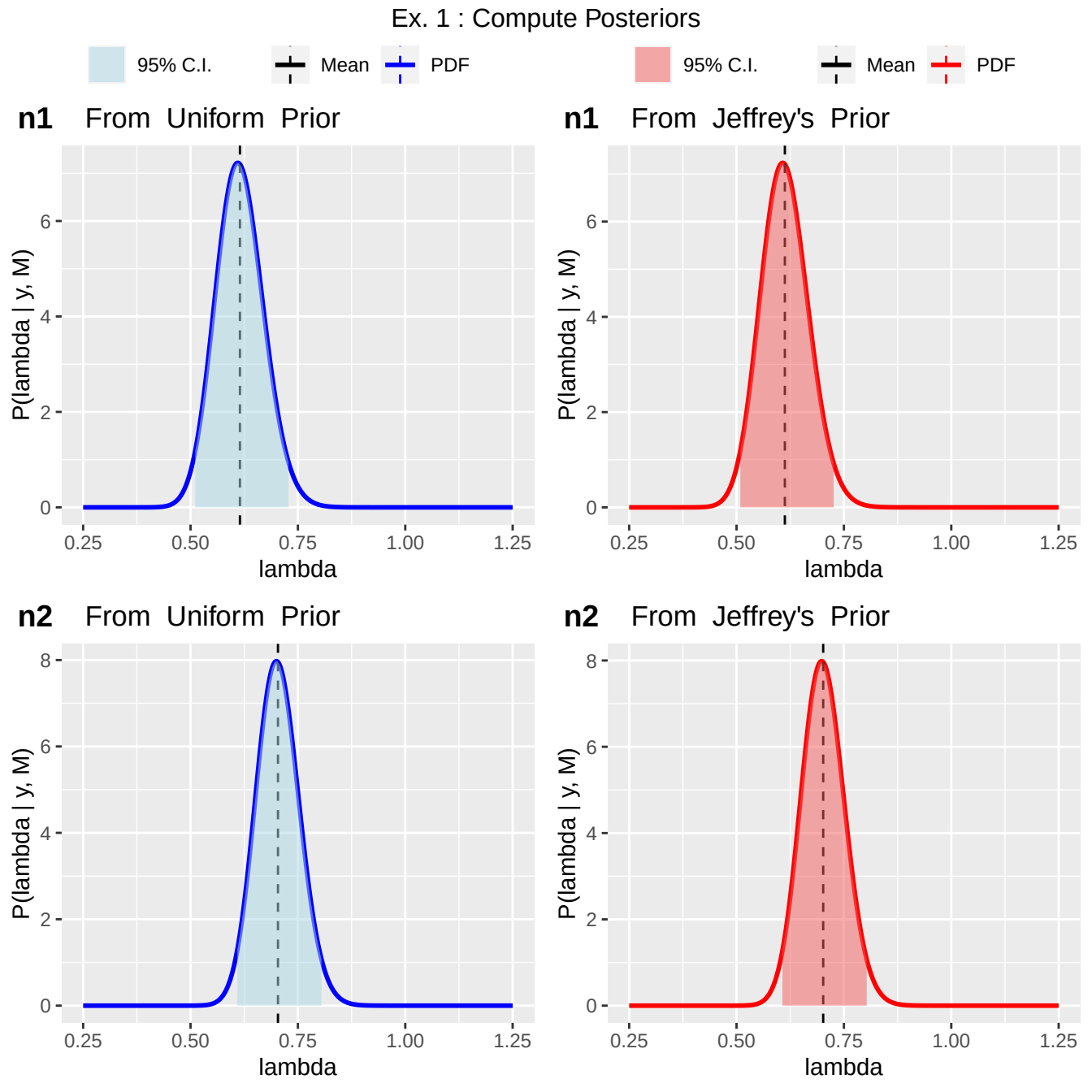
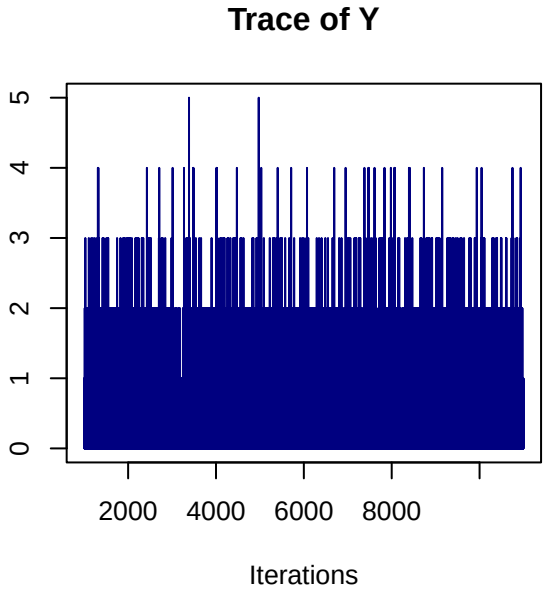
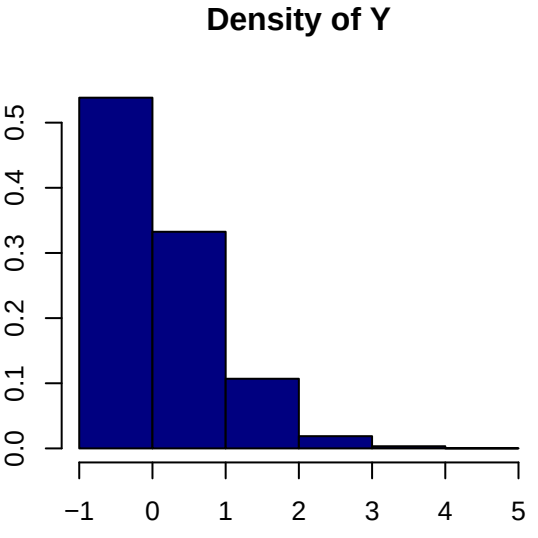
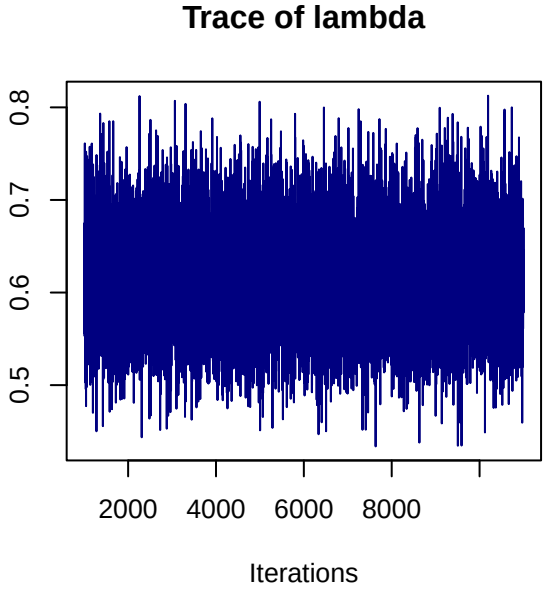
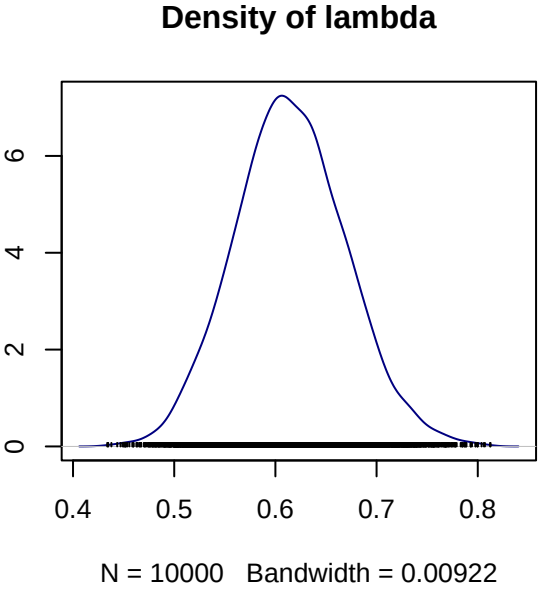

Ex. 1 : Compute Posteriors
95% C.I.
Mean
PDF
95% C.I.
Mean
PDF
n1 From Uniform Prior
n1 From Jeffrey's Prior
n2 From Uniform Prior
n2 From Jeffrey's Prior
P(lambda | y, M)
lambda
0
2
4
6
8
0.25
0.50
0.75
1.00
1.25

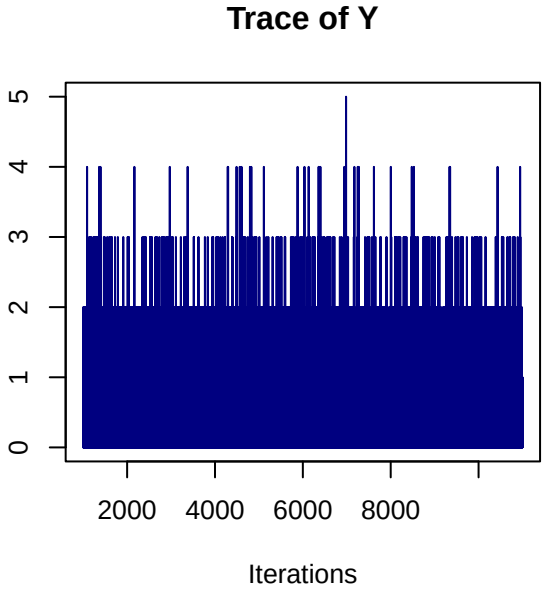
	Mean	St Dev	Median	95% C.I. sx	95% C.I. dx
n1 Uniform	0.615	0.055	0.613	0.511	0.728
n1 Jeffrey's	0.613	0.055	0.611	0.509	0.726
n2 Uniform	0.704	0.05	0.702	0.609	0.805
n2 Jeffrey's	0.702	0.05	0.701	0.607	0.803

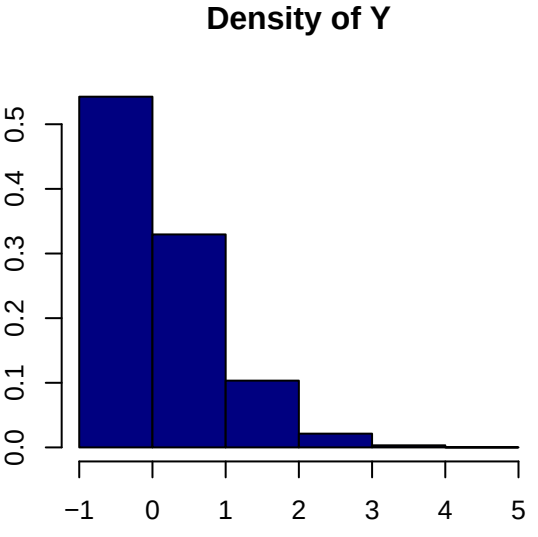

Trace of Y
0
1
2
3
4
5
2000
4000
6000
8000
Iterations

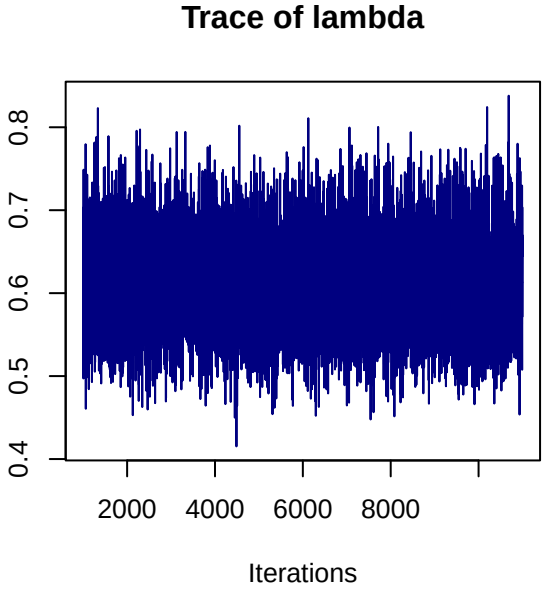

Density of Y
0.0
0.1
0.2
0.3
0.4
0.5
−1
0
1
2
3
4
5

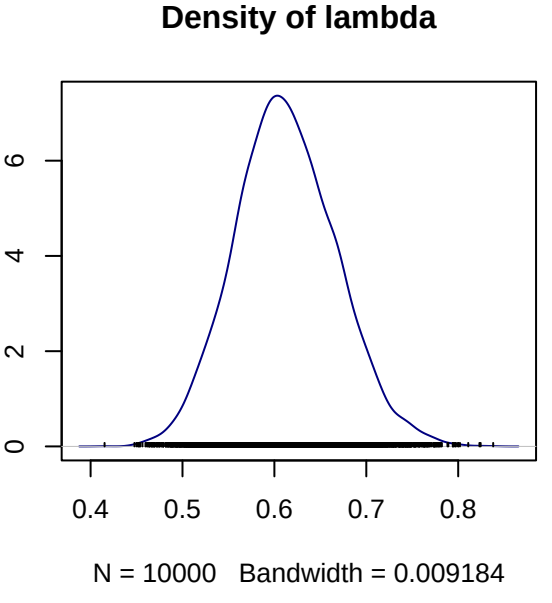

Trace of lambda
0.5
0.6
0.7
0.8
2000
4000
6000
8000
Iterations

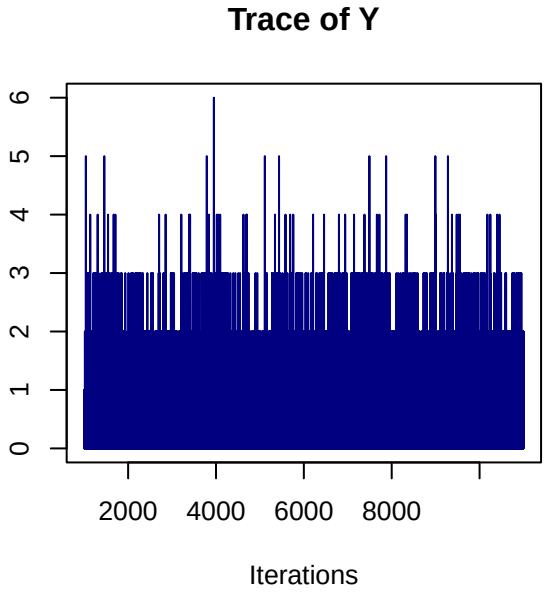

Density of lambda
0
2
4
6
0.4
0.5
0.6
0.7
0.8
N = 10000 Bandwidth = 0.00922

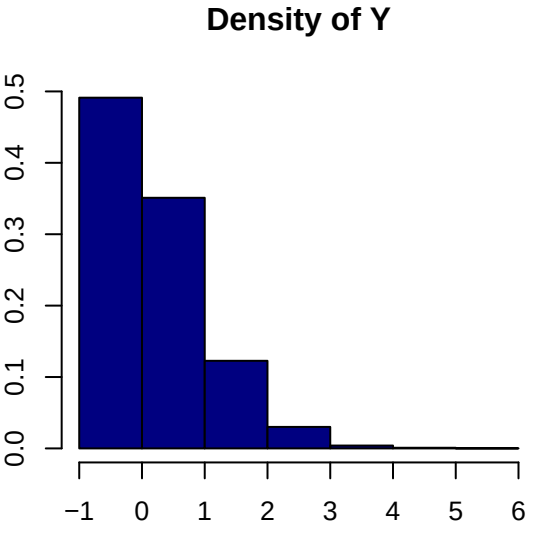

Trace of Y
0
1
2
3
4
5
2000
4000
6000
8000
Iterations

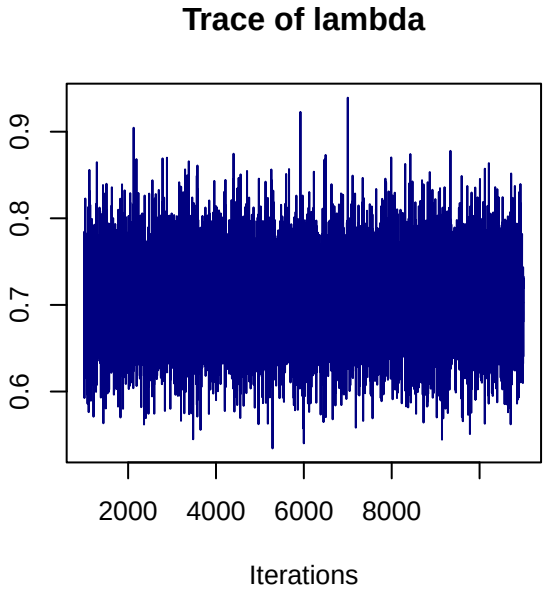

Density of Y
0.0
0.1
0.2
0.3
0.4
0.5
−1
0
1
2
3
4
5

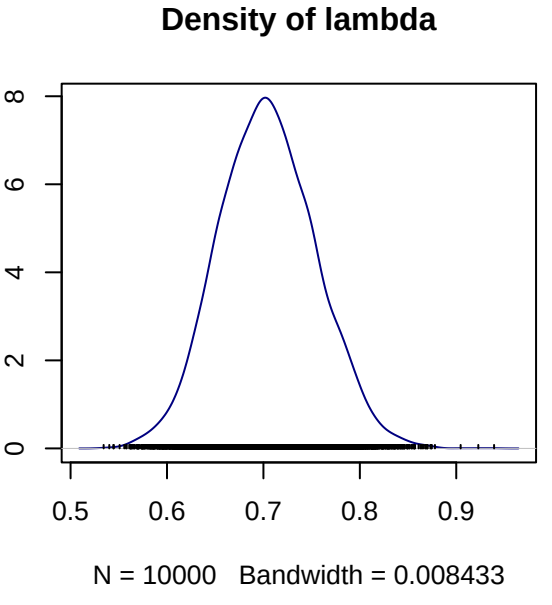

Trace of lambda
0.4
0.5
0.6
0.7
0.8
2000
4000
6000
8000
Iterations

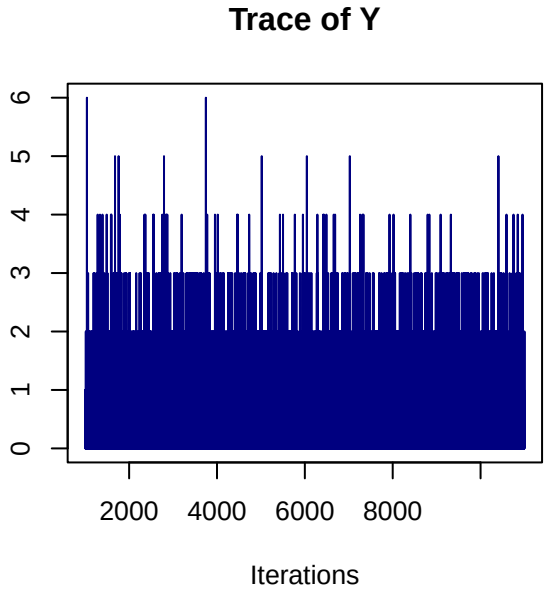

Density of lambda
0
2
4
6
0.4
0.5
0.6
0.7
0.8
N = 10000 Bandwidth = 0.009184

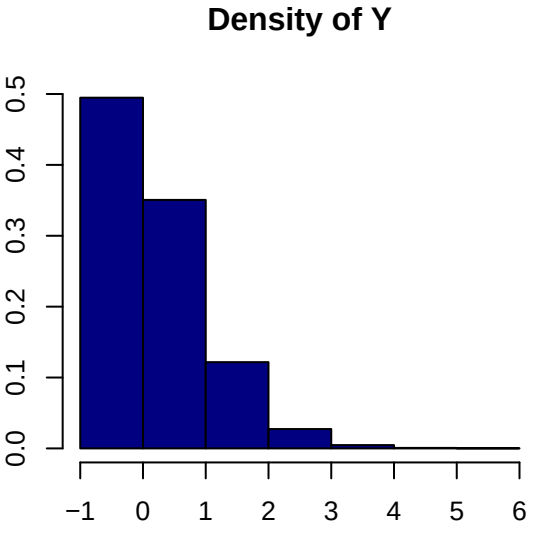

Trace of Y
0
1
2
3
4
5
6
2000
4000
6000
8000
Iterations

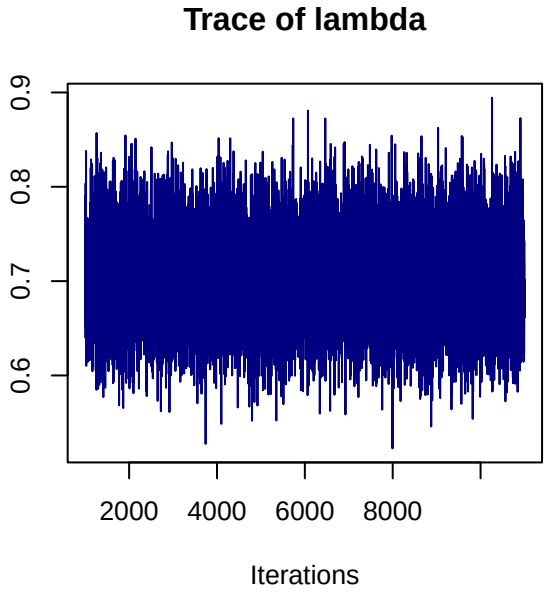

Density of Y
0.0
0.1
0.2
0.3
0.4
0.5
−1
0
1
2
3
4
5
6

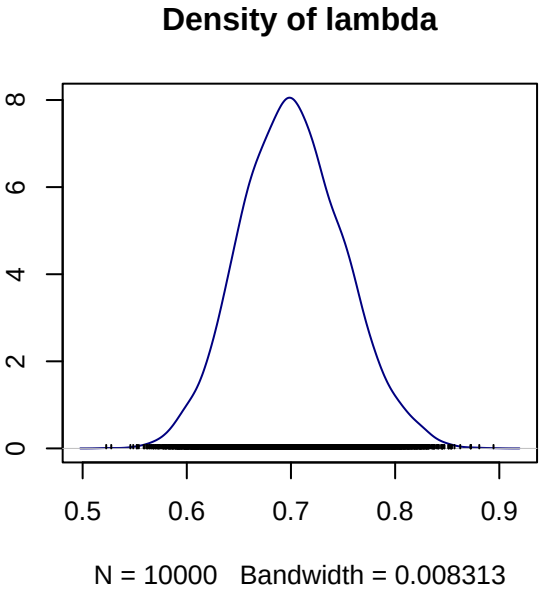

Trace of lambda
0.6
0.7
0.8
0.9
2000
4000
6000
8000
Iterations


Density of lambda
0
2
4
6
8
0.5
0.6
0.7
0.8
0.9
N = 10000 Bandwidth = 0.008433

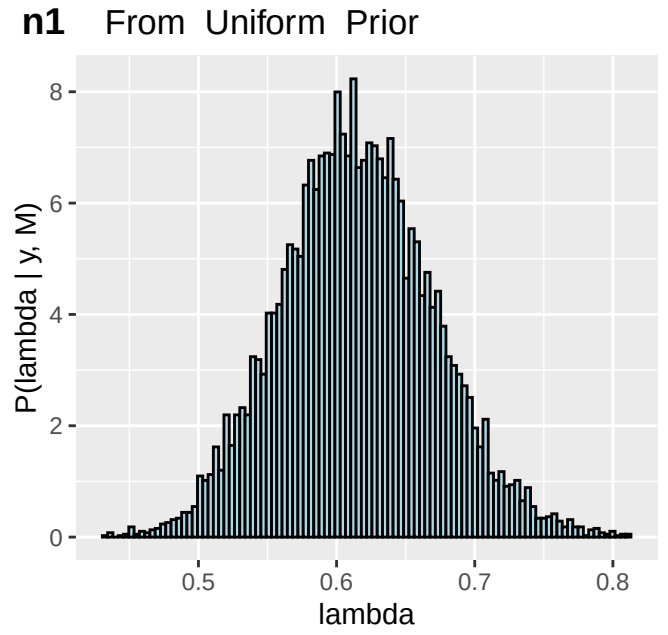

Trace of Y
0
1
2
3
4
5
6
2000
4000
6000
8000
Iterations

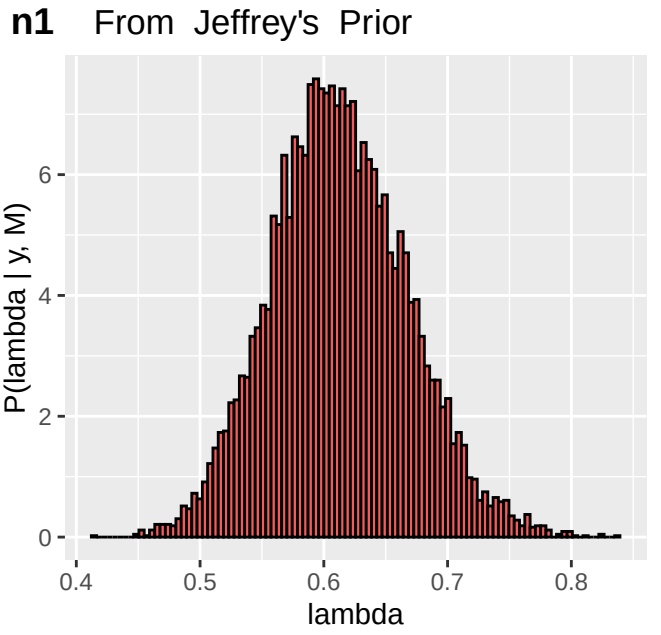

Density of Y
0.0
0.1
0.2
0.3
0.4
0.5
−1
0
1
2
3
4
5
6

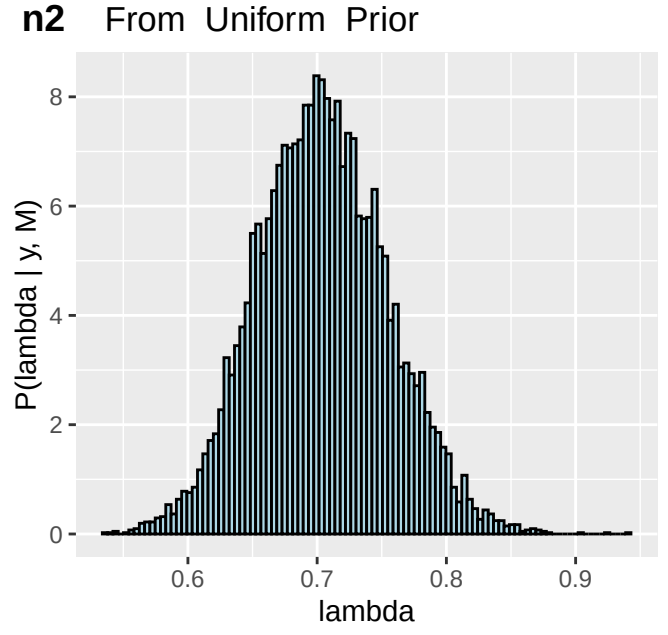

Trace of lambda
0.6
0.7
0.8
0.9
2000
4000
6000
8000
Iterations

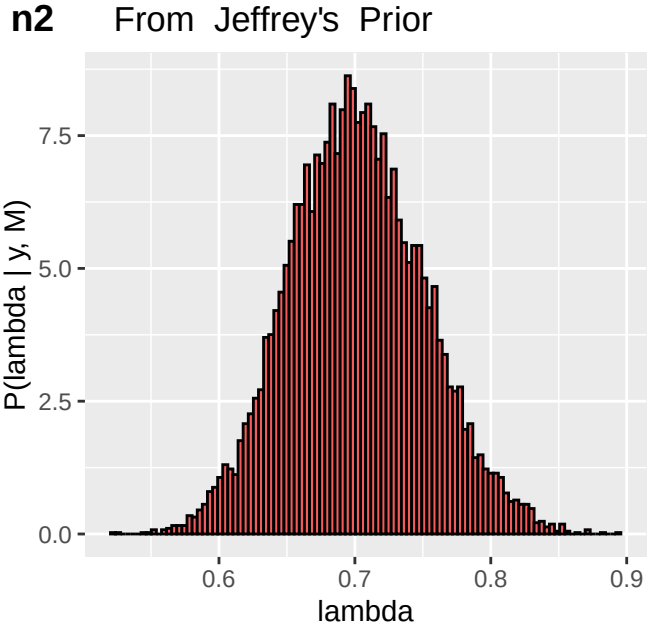

Density of lambda
0
2
4
6
8
0.5
0.6
0.7
0.8
0.9
N = 10000 Bandwidth = 0.008313

Ex. 2 : Inference on Lambda

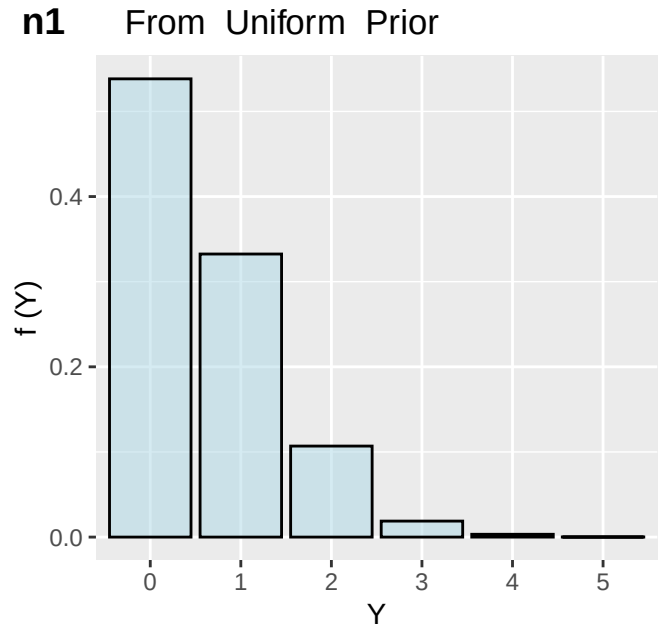


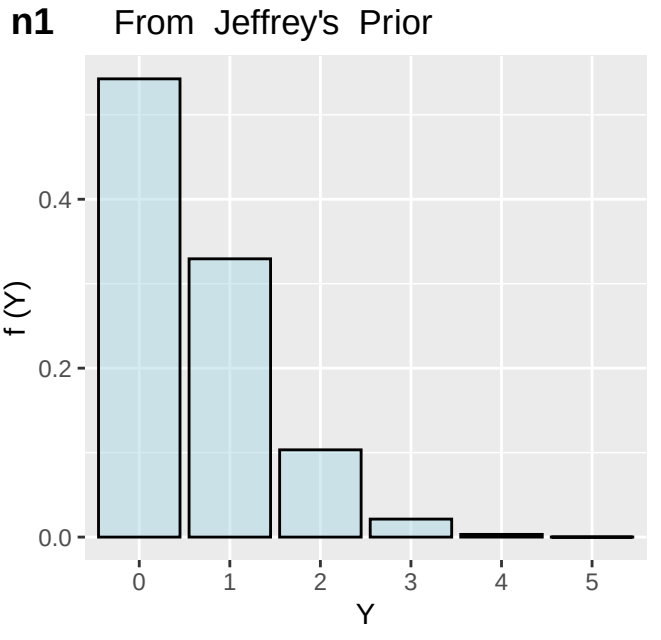


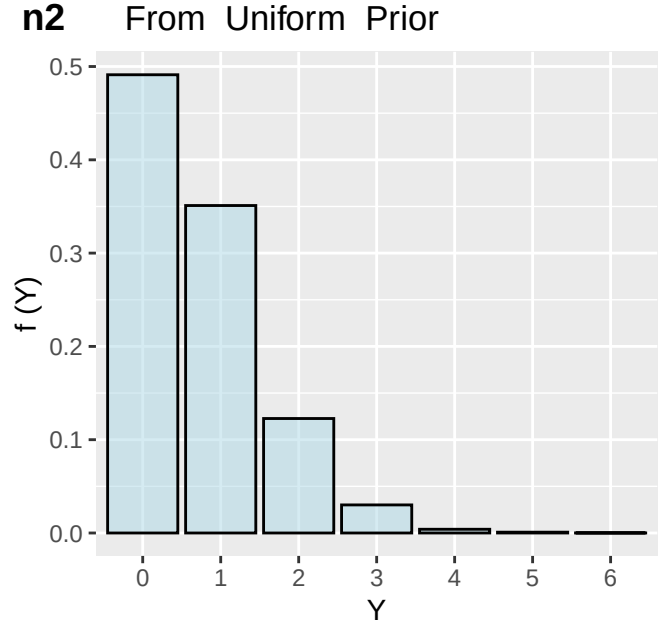


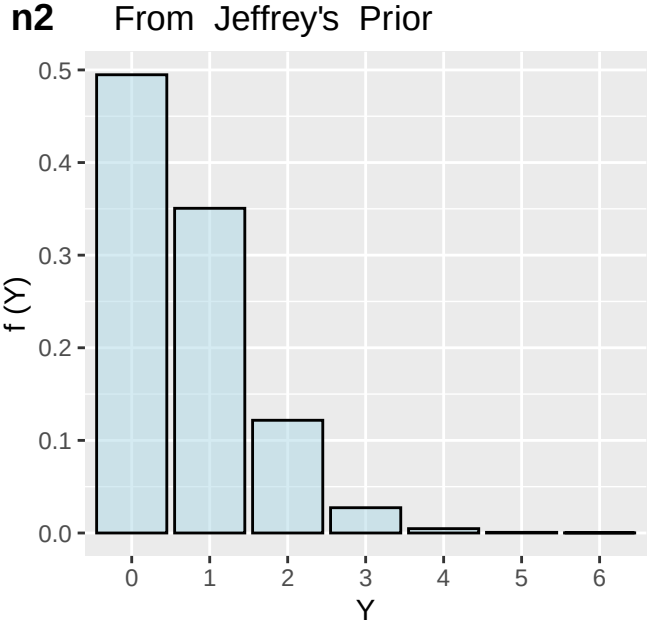


Ex. 2 : Predicted Counts

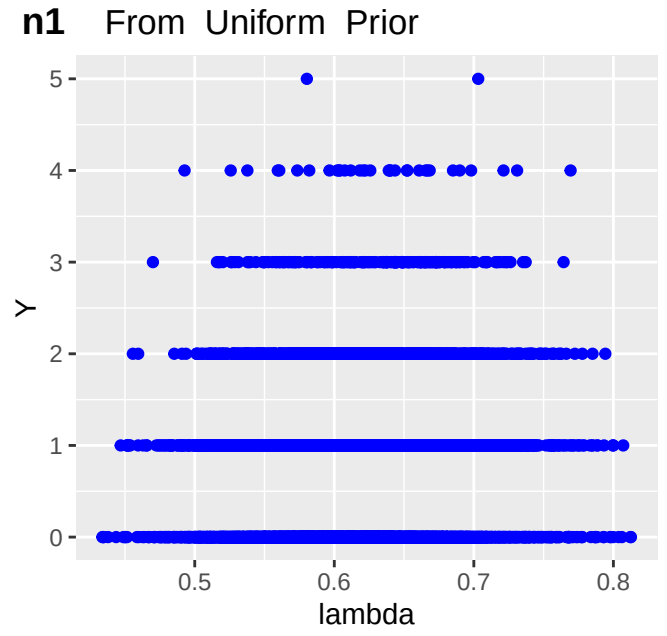


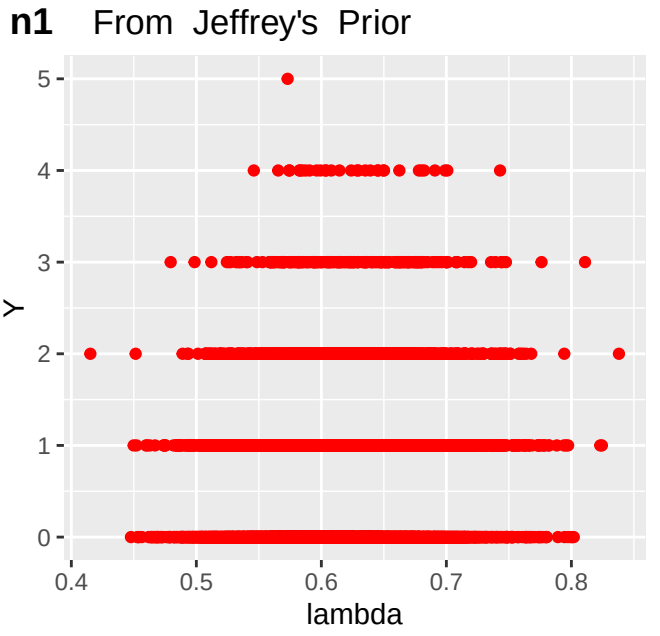


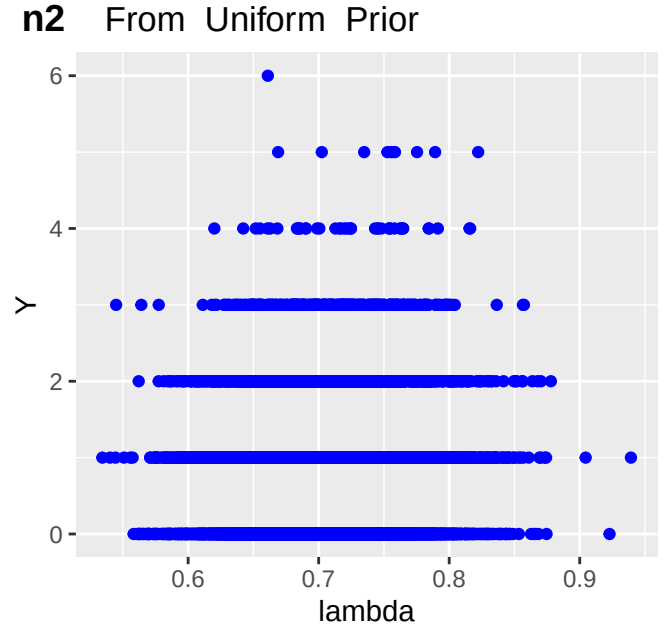


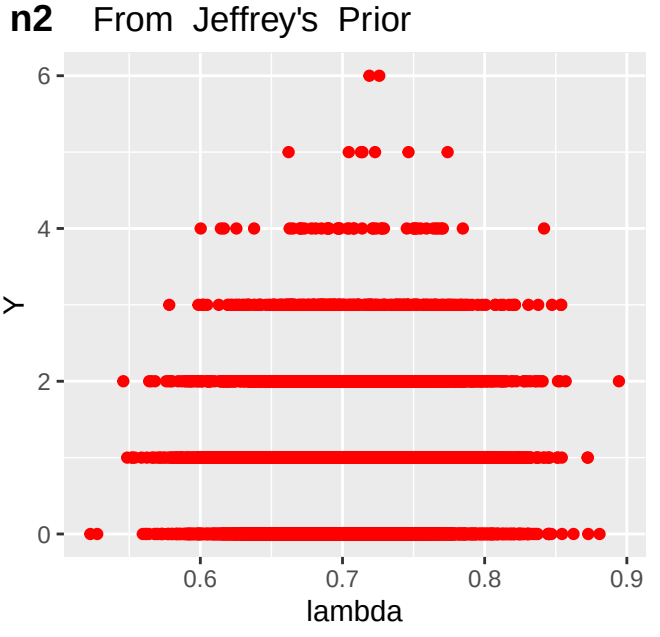


Ex. 2 : Correlation Plot

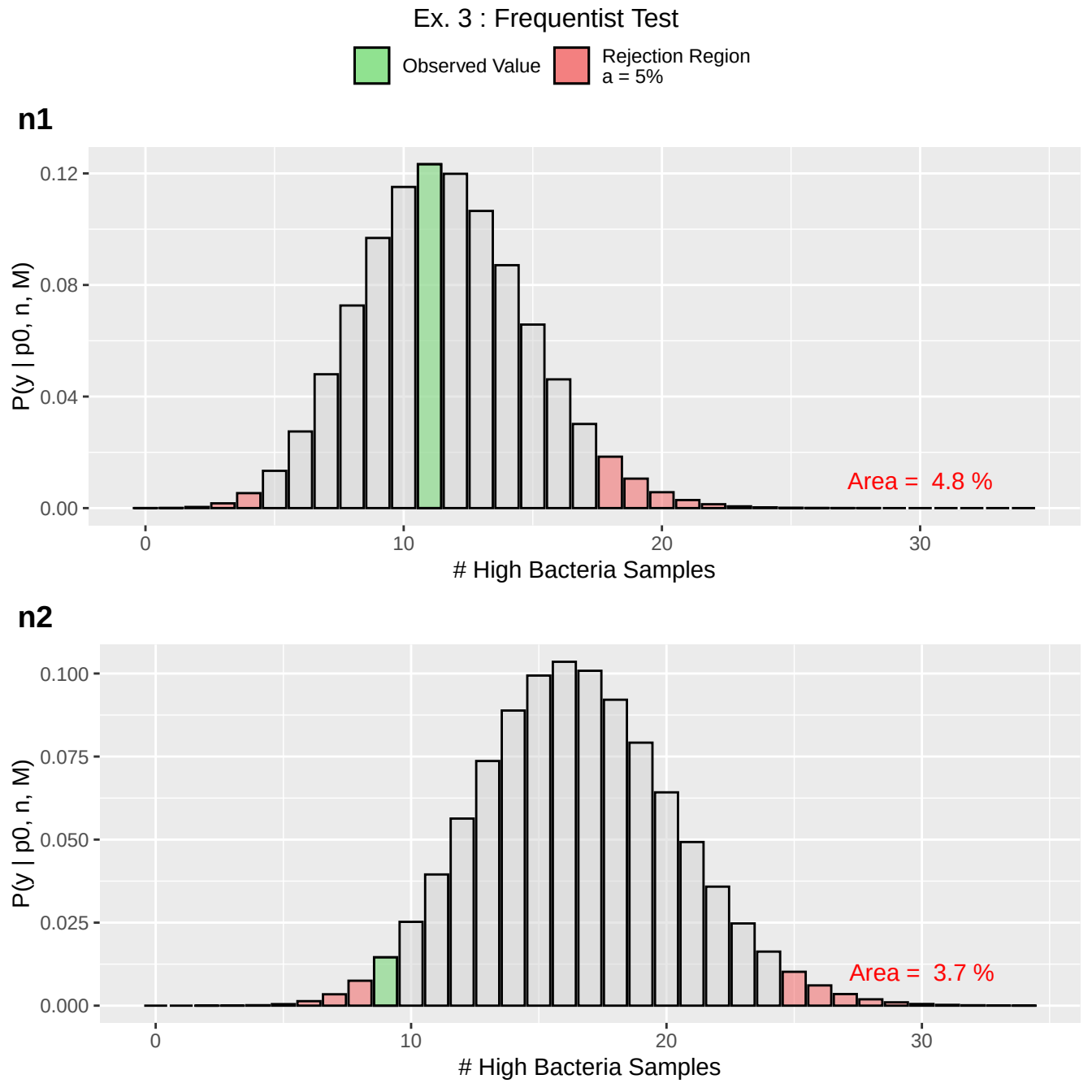


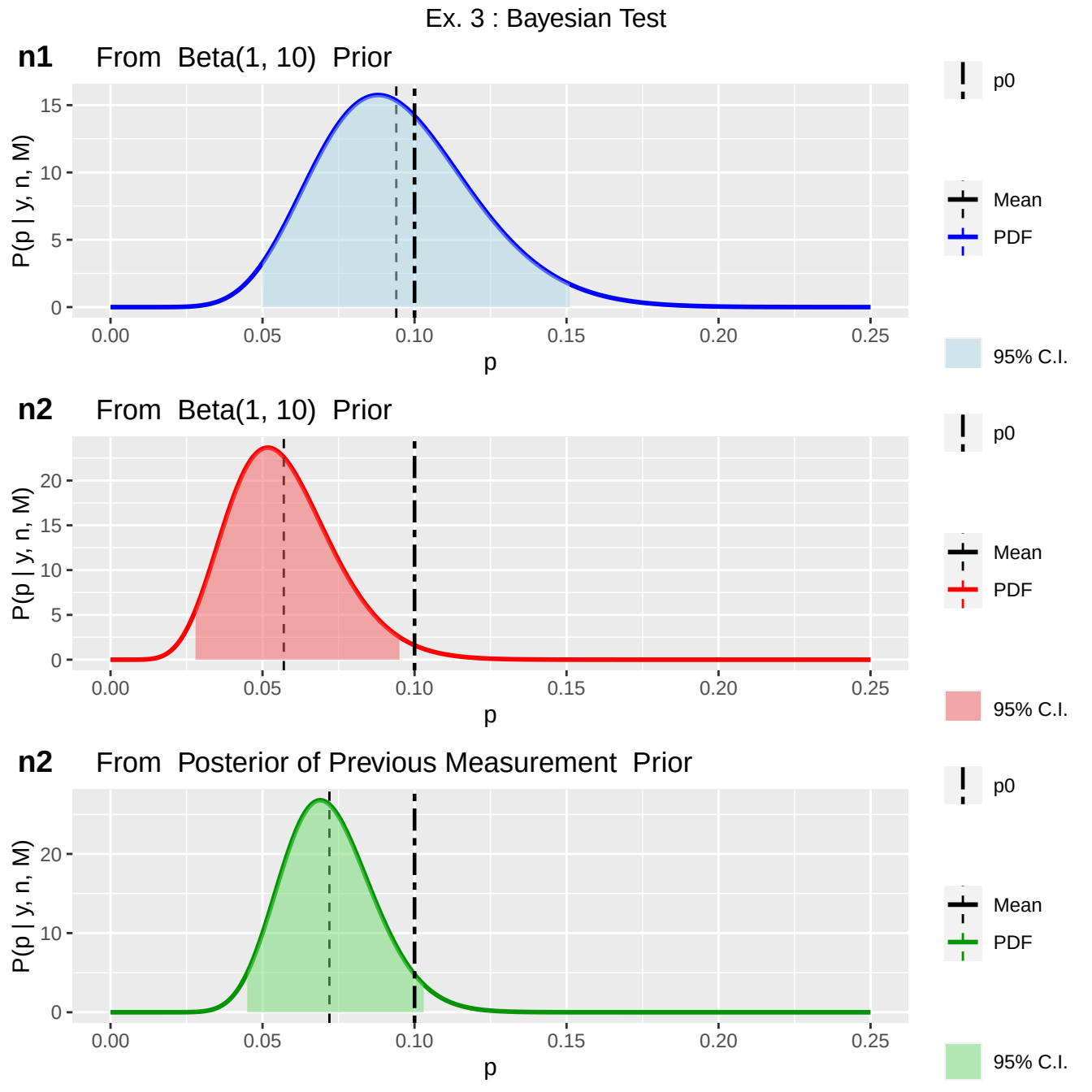




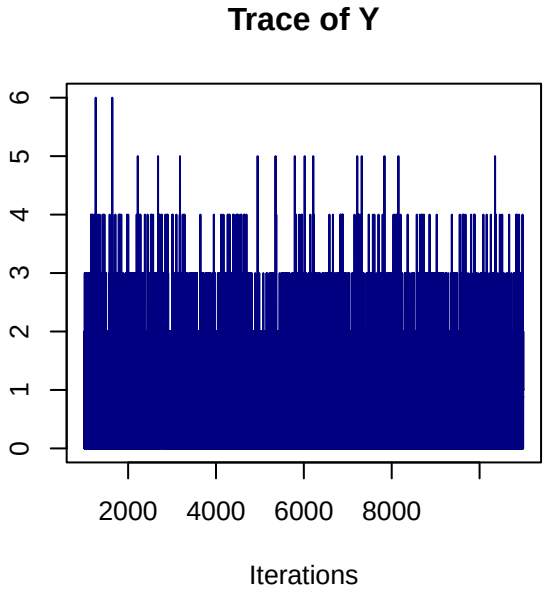


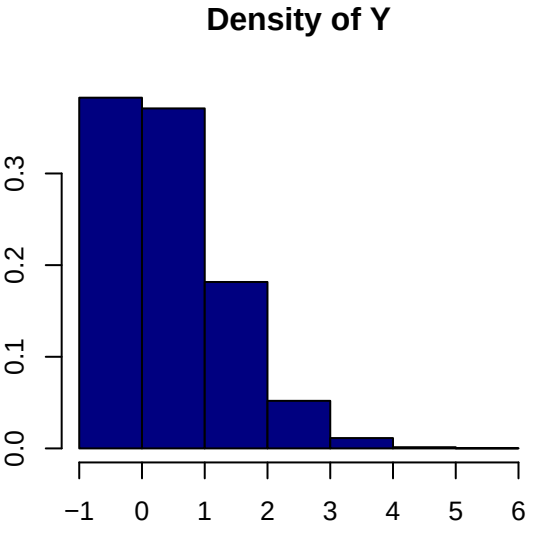
	Mean	St Dev	Median	95% C.I. sx	95% C.I. dx
n1 Uniform	0.615	0.055	0.613	0.511	0.728
n1 Jeffrey's	0.613	0.055	0.61	0.51	0.725
n2 Uniform	0.704	0.05	0.703	0.61	0.804
n2 Jeffrey's	0.701	0.049	0.7	0.607	0.803

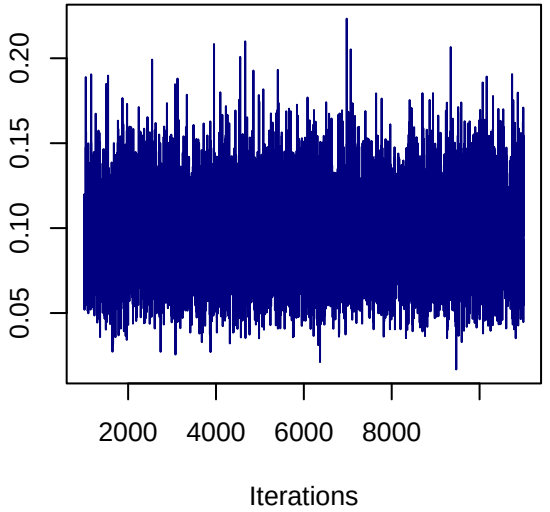

Ex. 3 : Frequentist Test
Observed Value
Rejection Region
a = 5%
n1
0.12
0.08
0.04
0.00
P(y | p0, n, M)
Area = 4.8 %
0
10
20
30
High Bacteria Samples
n2
0.100
0.075
0.050
0.025
0.000
P(y | p0, n, M)
Area = 3.7 %
0
10
20
30
High Bacteria Samples

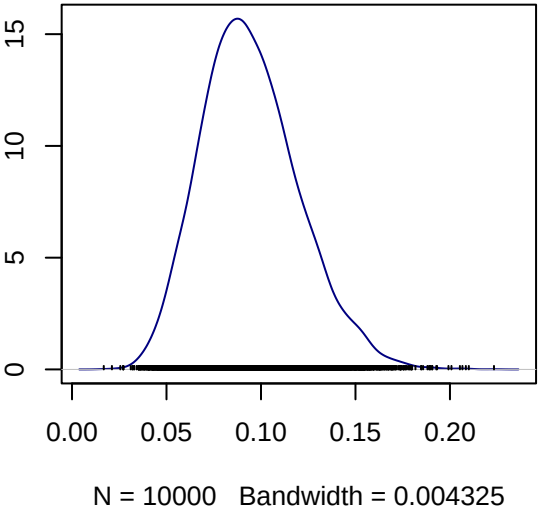

Ex. 3 : Bayesian Test
n1
From Beta(1, 10) Prior
P(p | y, n, M)
p
n2
From Beta(1, 10) Prior
P(p | y, n, M)
p
n2
From Posterior of Previous Measurement Prior
P(p | y, n, M)
p
p0
Mean
PDF
95% C.I.

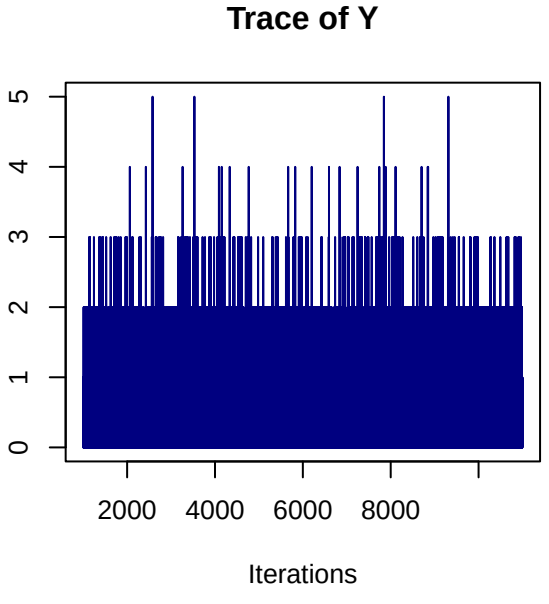
	Mean	St Dev	Median	95% C.I. sx	95% C.I. dx
n1 Beta	0.094	0.026	0.092	0.05	0.151
n2 Beta	0.057	0.017	0.055	0.028	0.095
n2 Prev. Post.	0.072	0.015	0.071	0.045	0.104

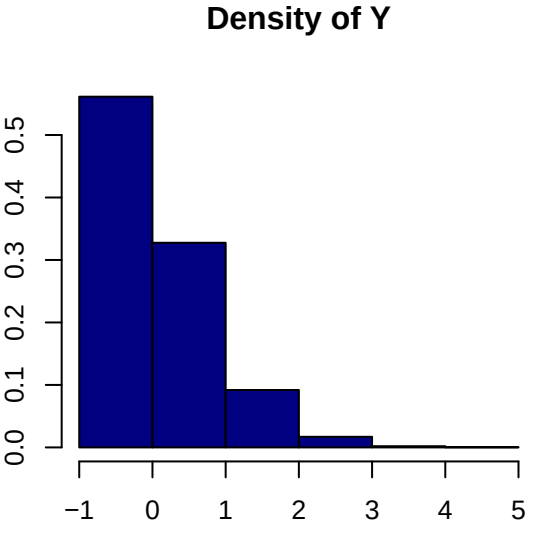

Trace of Y
0
1
2
3
4
5
6
2000
4000
6000
8000
Iterations

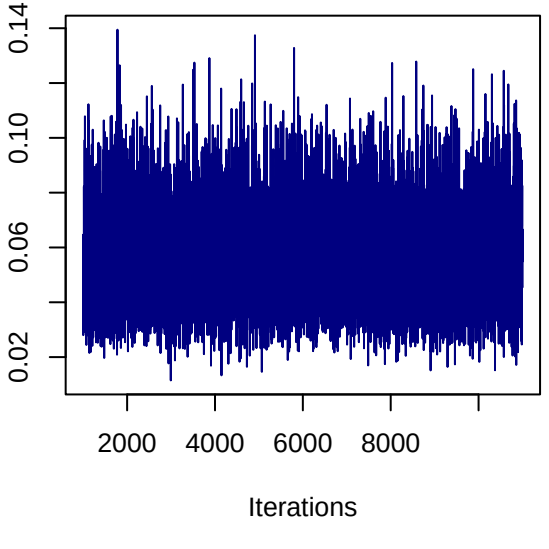

Density of Y
0.0
0.1
0.2
0.3
−1
0
1
2
3
4
5
6

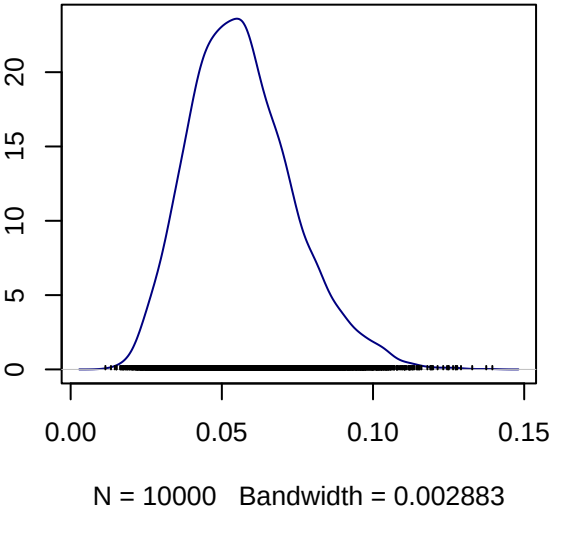

Trace of p
0.05
0.10
0.15
0.20
2000
4000
6000
8000
Iterations


Density of p
0
5
10
15
0.00
0.05
0.10
0.15
0.20
N = 10000 Bandwidth = 0.004325


Trace of Y
0
1
2
3
4
5
2000
4000
6000
8000
Iterations

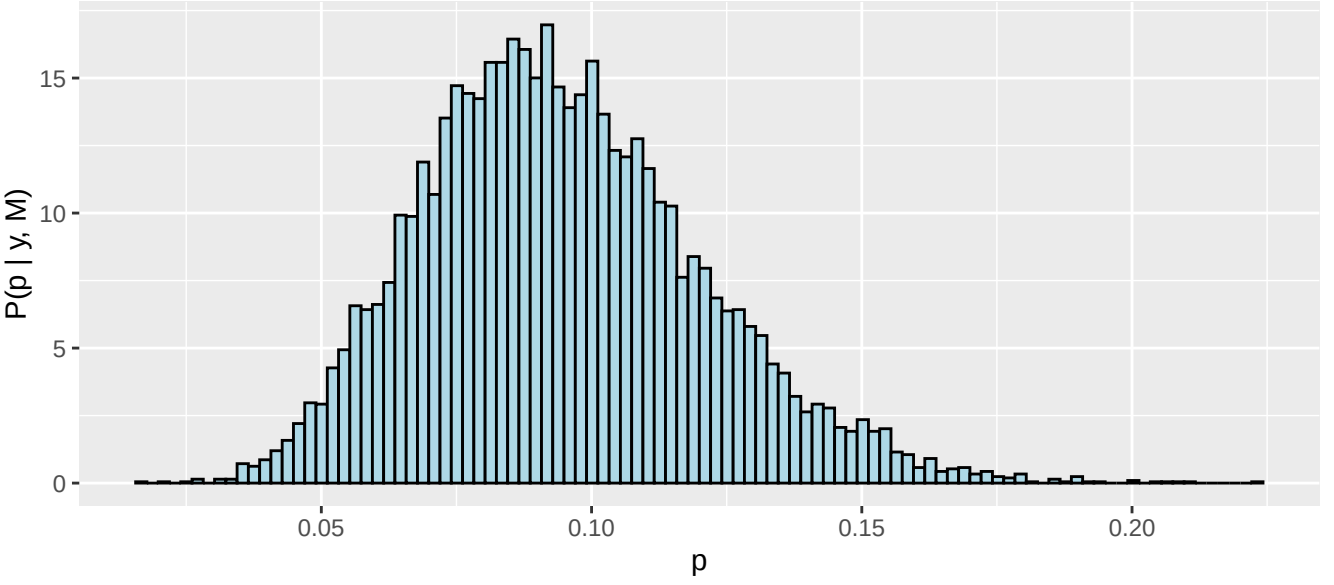

Density of Y
0.0
0.1
0.2
0.3
0.4
0.5
−1
0
1
2
3
4
5


Trace of p
0.02
0.06
0.10
0.14
2000
4000
6000
8000
Iterations

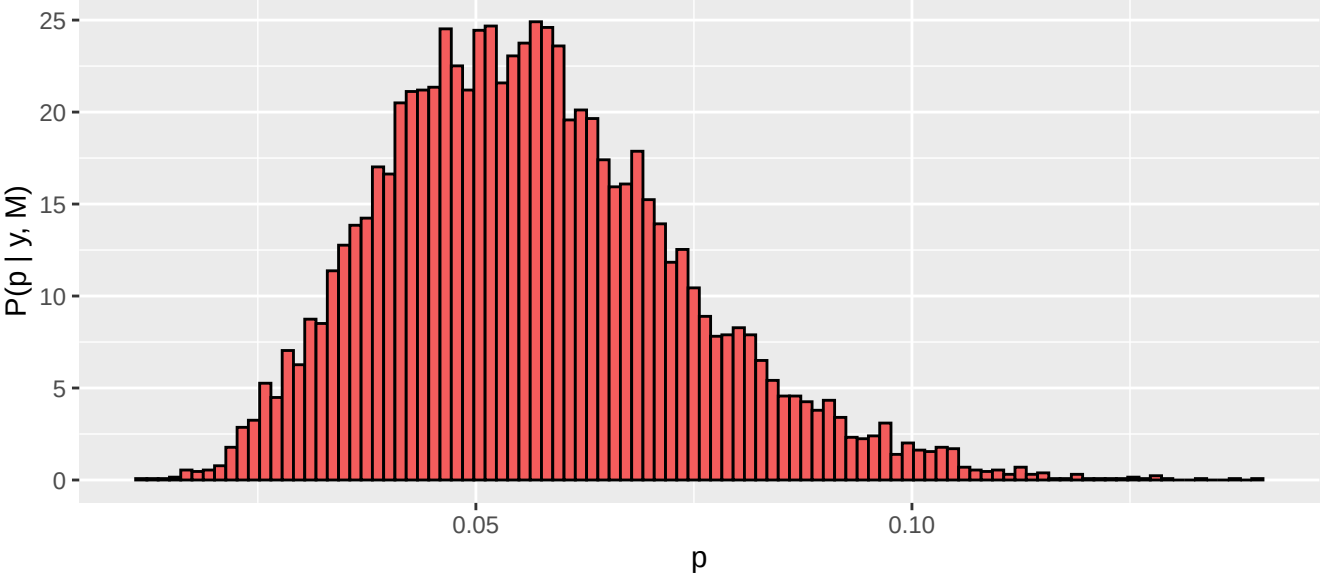

Density of p
0
5
10
15
20
0.00
0.05
0.10
0.15
N = 10000 Bandwidth = 0.002883

Ex. 4 : Inference on p

n1 From Beta(1, 10) Prior

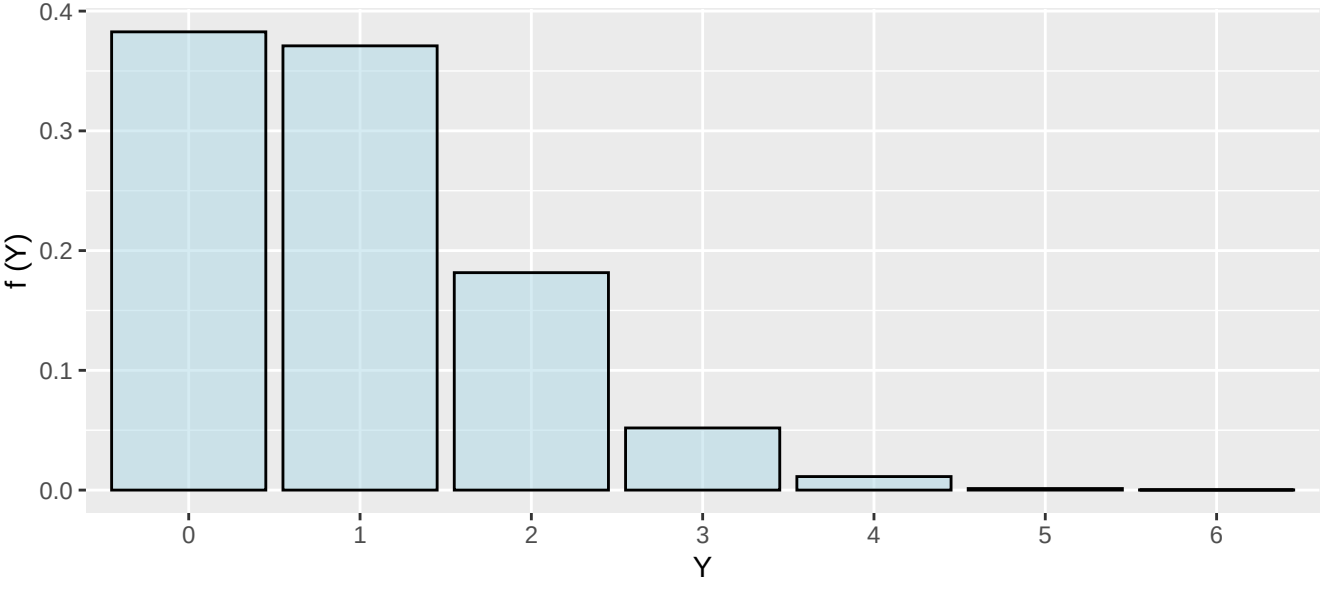


n2 From Beta(1, 10) Prior

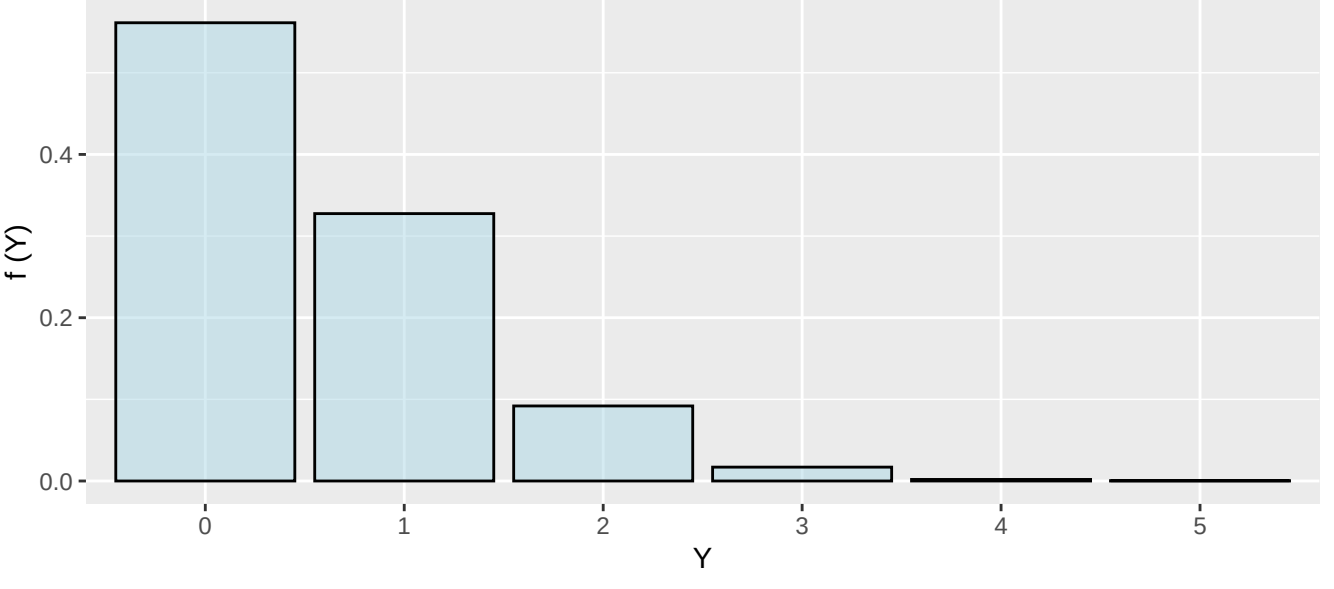


Ex. 4 : Predicted Counts

n1 From Beta(1, 10) Prior

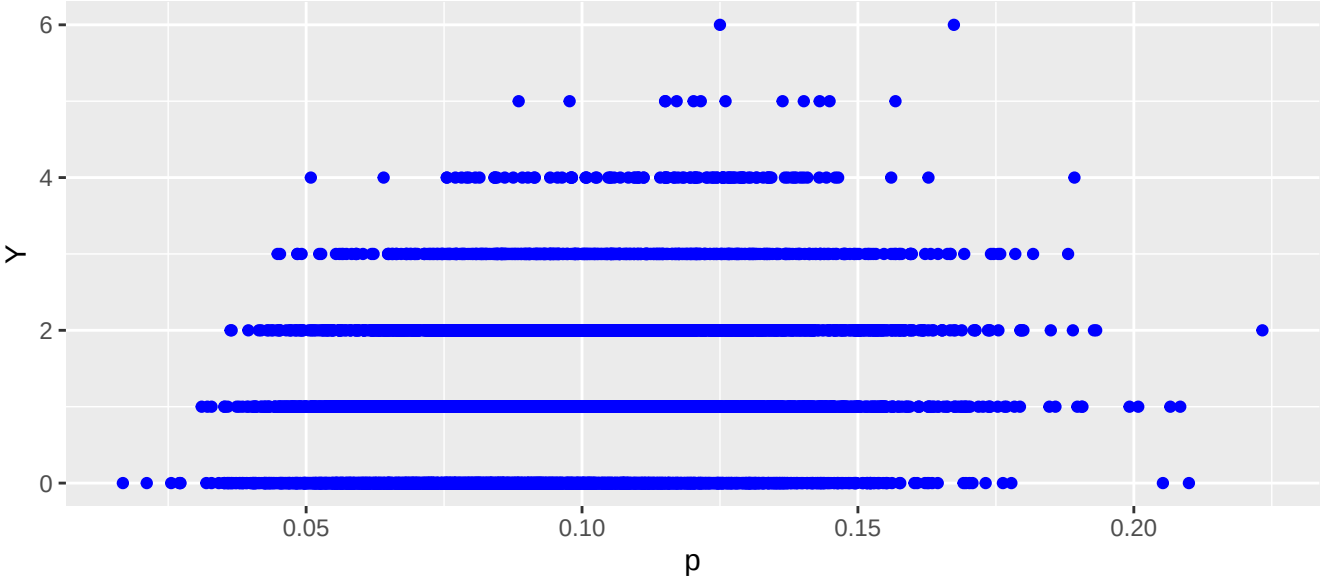


n2 From Beta(1, 10) Prior

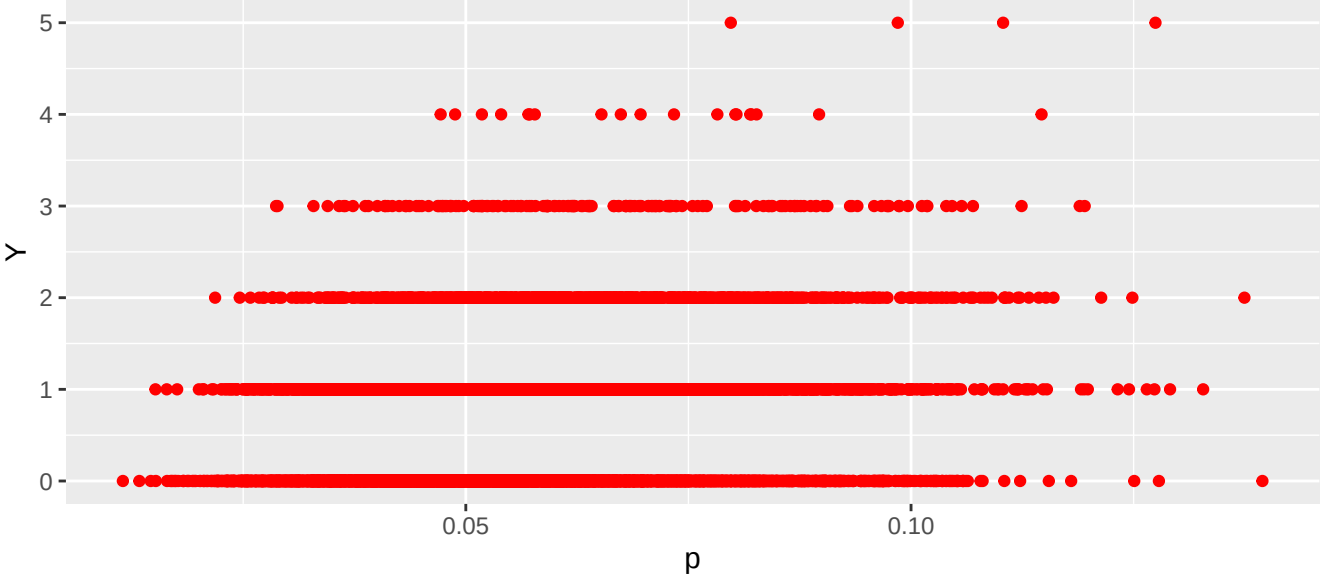


Ex. 4 : Correlation Plot

n1 From Beta(1, 10) Prior



n2 From Beta(1, 10) Prior



	Mean	St Dev	Median	95% C.I. sx	95% C.I. dx
n1 Beta	0.094	0.026	0.092	0.05	0.151
n2 Beta	0.057	0.017	0.055	0.027	0.096