MCMC Diagnostics - IFLS data

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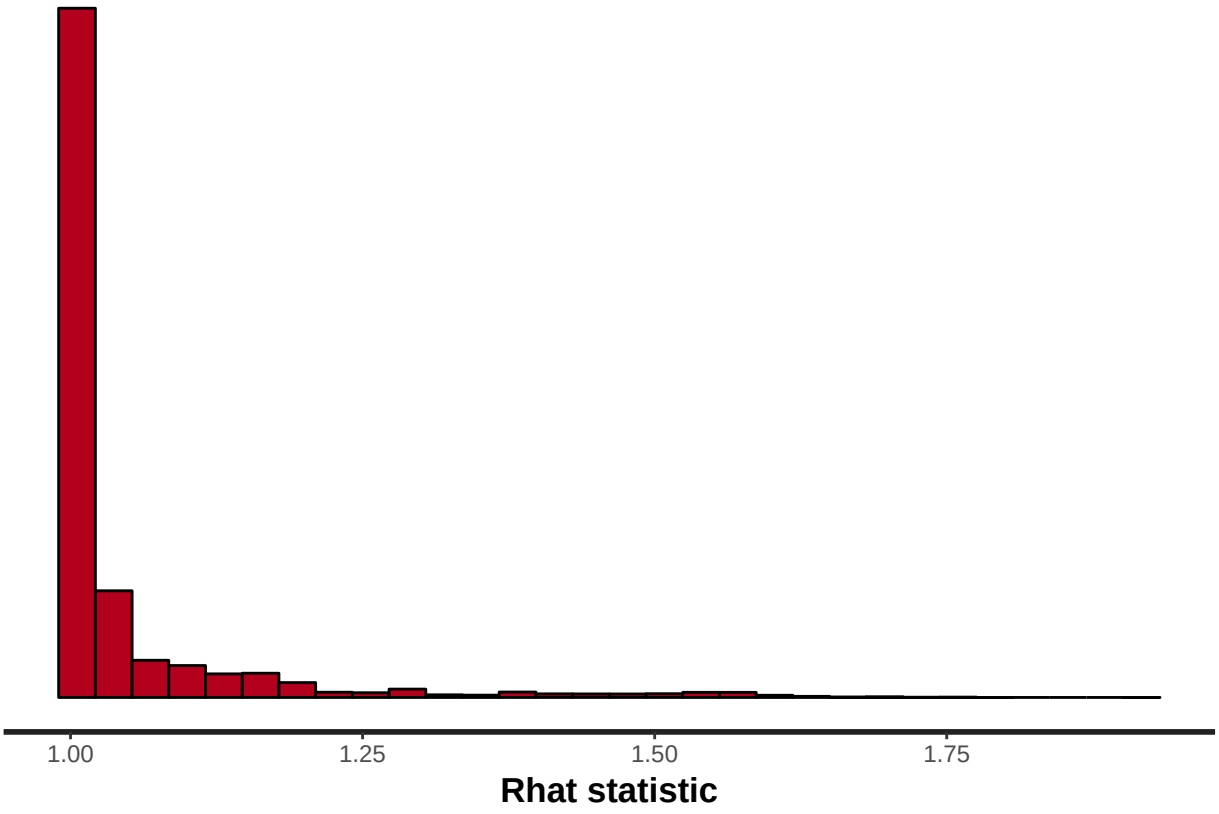
07/22/2020

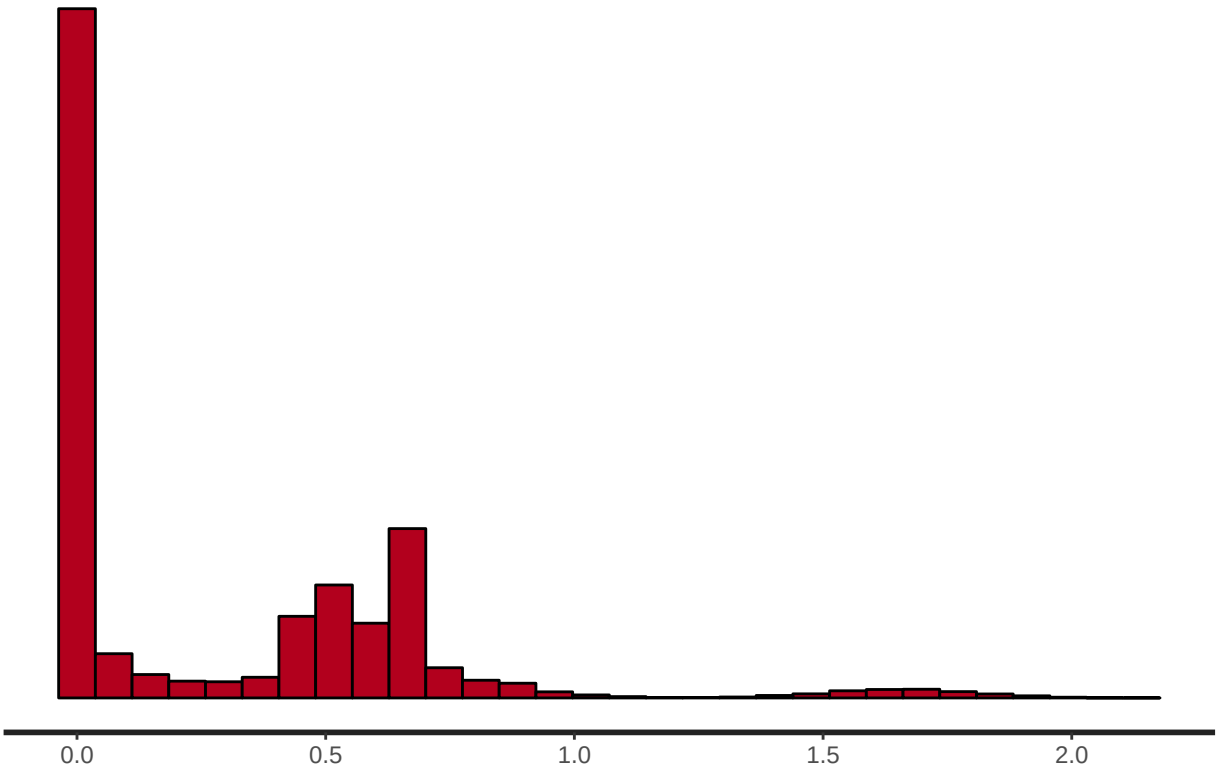
General MCMC diagnostic plots

Overall model diagnostics from rstan package.

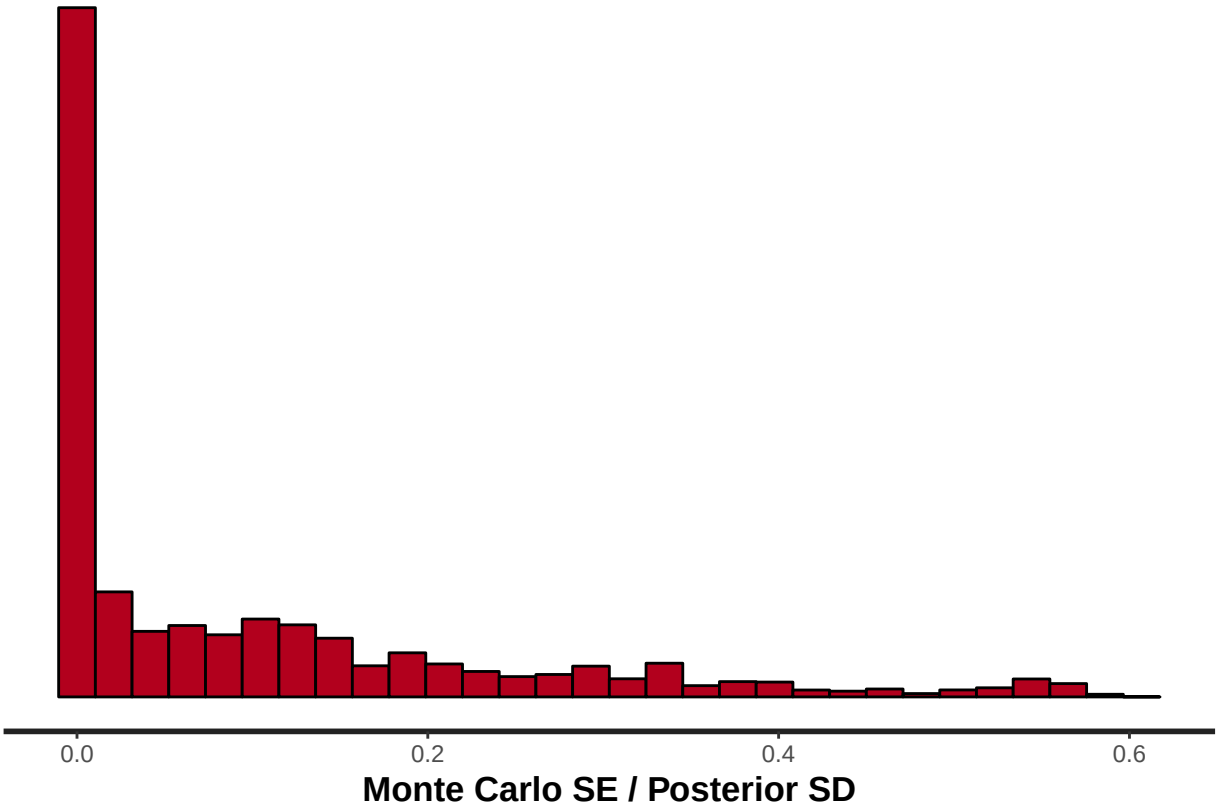
```
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```




```
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```



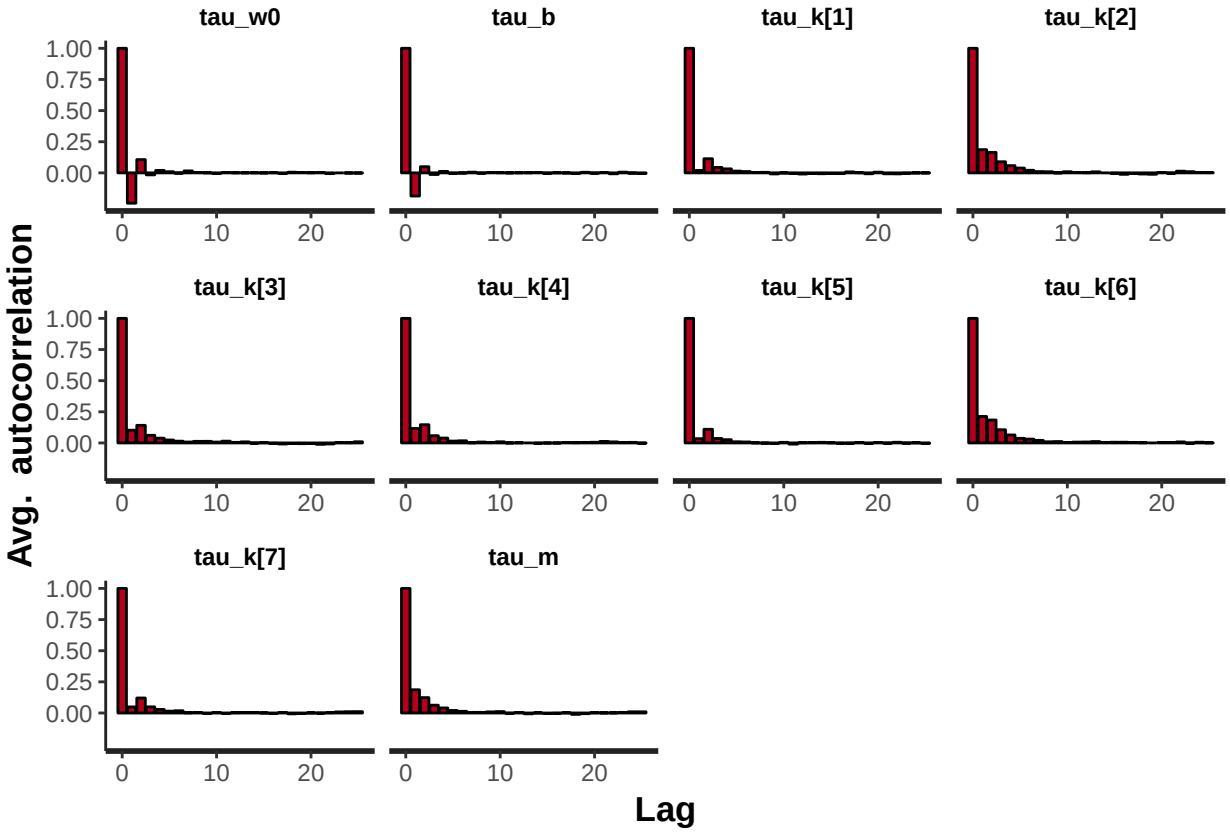

```
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```

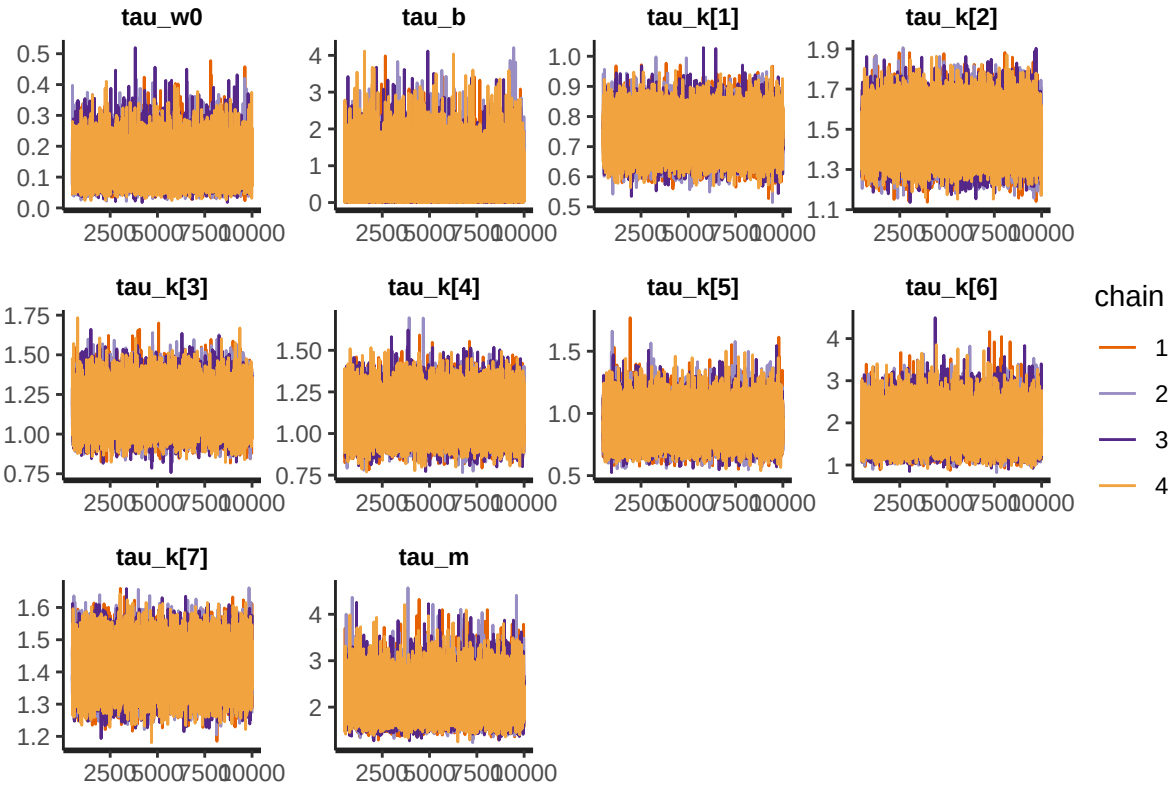


Individual Parameter Diagnostics

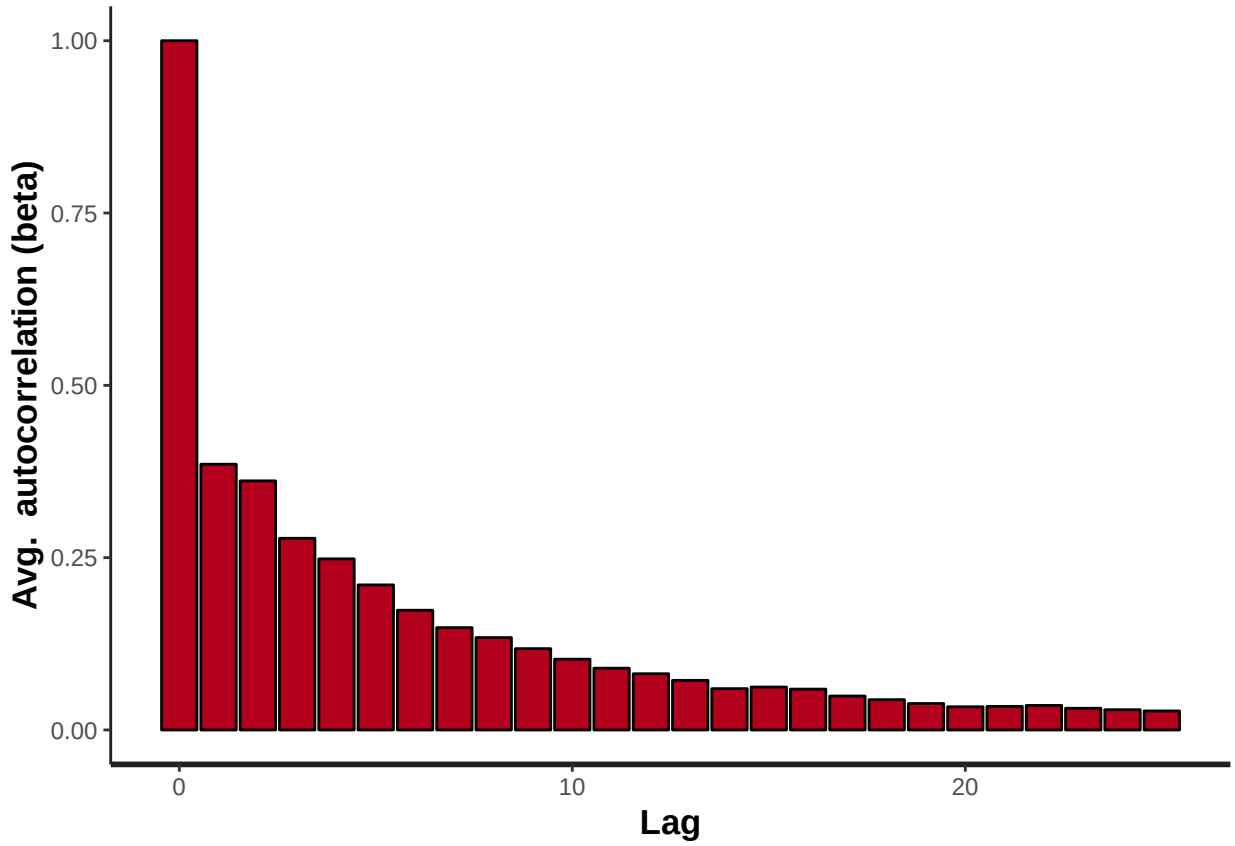
Individual parameter plots. Autocorrelation and trace plots for individual parameters, and histograms of posterior medians for group parameters.

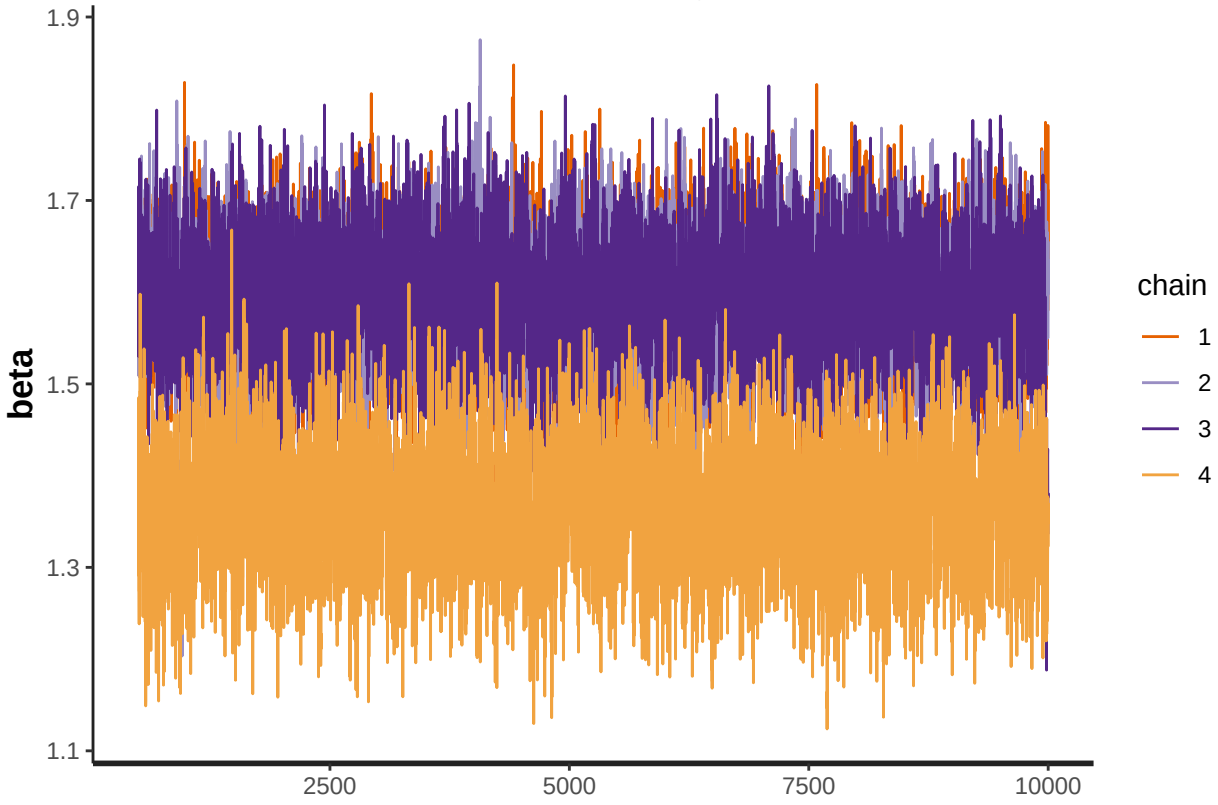
```
##                mean      se_mean          sd       25%       50%       75%
## tau_w0    0.1443703 0.0007264120 0.05431868 0.1050499 0.1376089 0.1762912
## tau_b     0.4607471 0.0024447126 0.46460682 0.1306363 0.3200403 0.6351438
## tau_k[1]  0.7385089 0.0003522789 0.05666217 0.6995139 0.7364854 0.7755341
## tau_k[2]  1.4772712 0.0007741132 0.10170503 1.4071691 1.4732043 1.5443665
## tau_k[3]  1.1589737 0.0007970280 0.11294598 1.0801493 1.1528372 1.2320551
## tau_k[4]  1.1042659 0.0007262275 0.10481917 1.0310672 1.0987719 1.1714381
## tau_k[5]  0.9135668 0.0007715927 0.12530232 0.8259412 0.9046200 0.9916135
## tau_k[6]  1.8251516 0.0030060788 0.37561363 1.5562479 1.7797570 2.0463011
## tau_k[7]  1.4137091 0.0003894516 0.06057972 1.3721730 1.4125720 1.4543258
## tau_m     2.1391393 0.0024892489 0.34722276 1.8956849 2.0942674 2.3316113
##               n_eff      Rhat
## tau_w0     5591.553 1.0042336
## tau_b     36117.321 1.0023678
## tau_k[1]  25870.995 1.0000661
## tau_k[2]  17261.395 1.0002091
## tau_k[3]  20081.419 1.0001930
## tau_k[4]  20832.245 0.9999832
## tau_k[5]  26371.938 0.9999987
## tau_k[6]  15612.842 1.0002403
## tau_k[7]  24196.222 1.0000605
## tau_m     19457.173 1.0000890
```

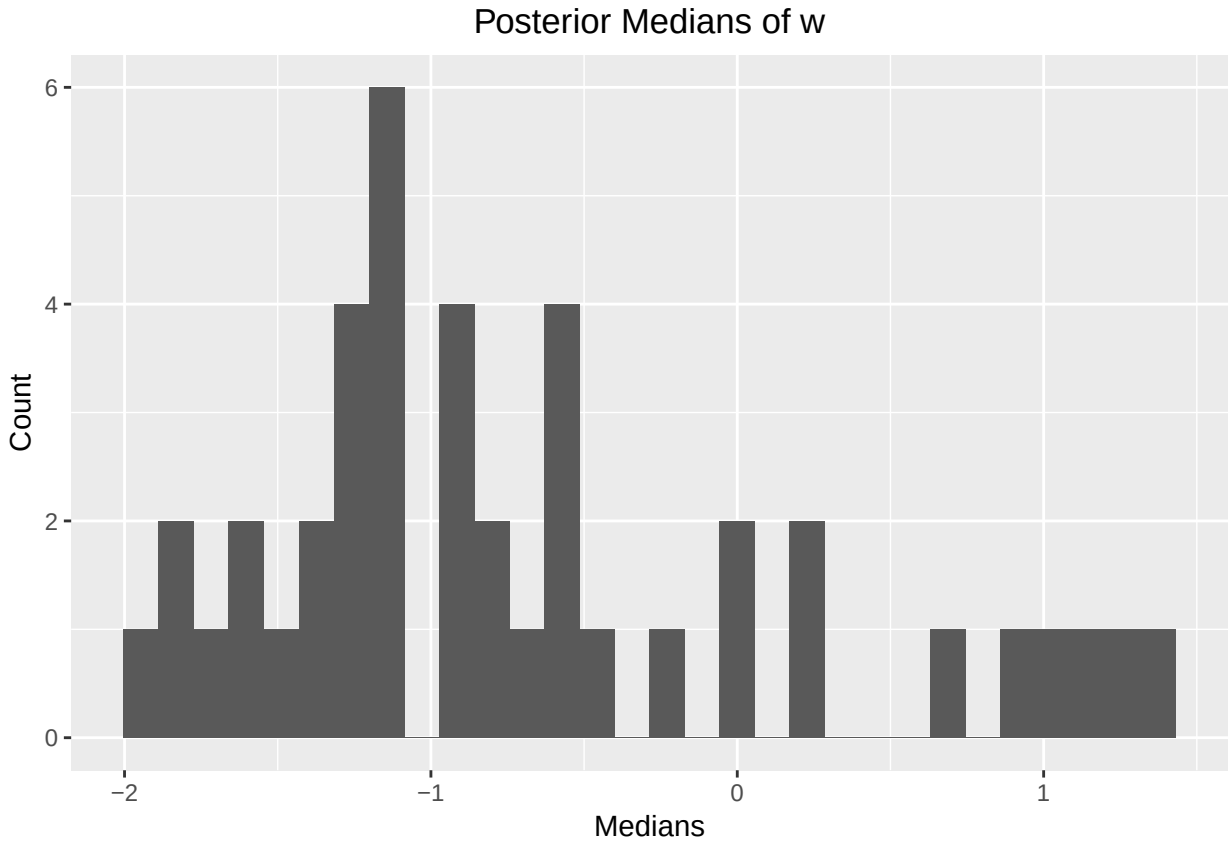




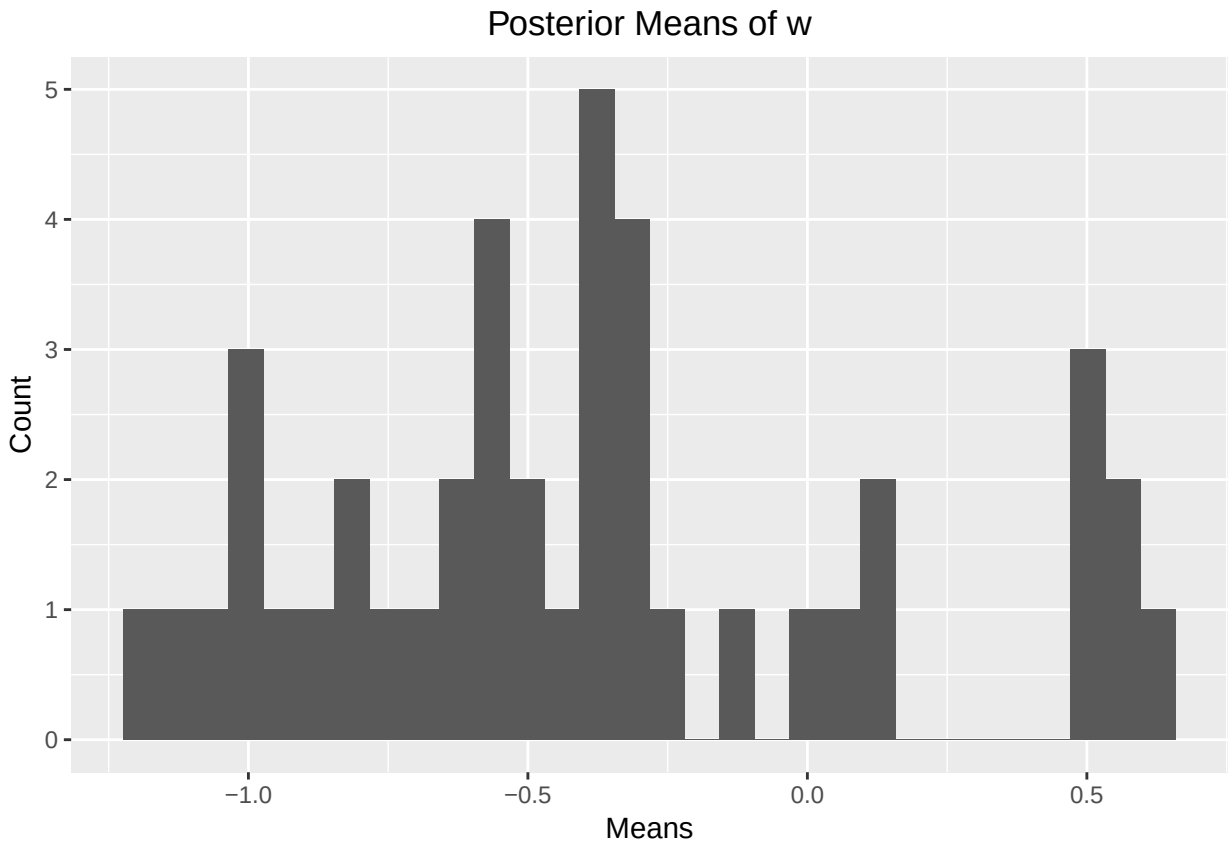

```
##          mean     se_mean         sd      25%      50%      75%    n_eff
## beta 1.53472 0.07293817 0.1194783 1.460833 1.565833 1.621195 2.683296
##          Rhat
## beta 1.911187
```


Avg. autocorrelation (beta)
1.00
0.75
0.50
0.25
0.00
0
10
20
Lag

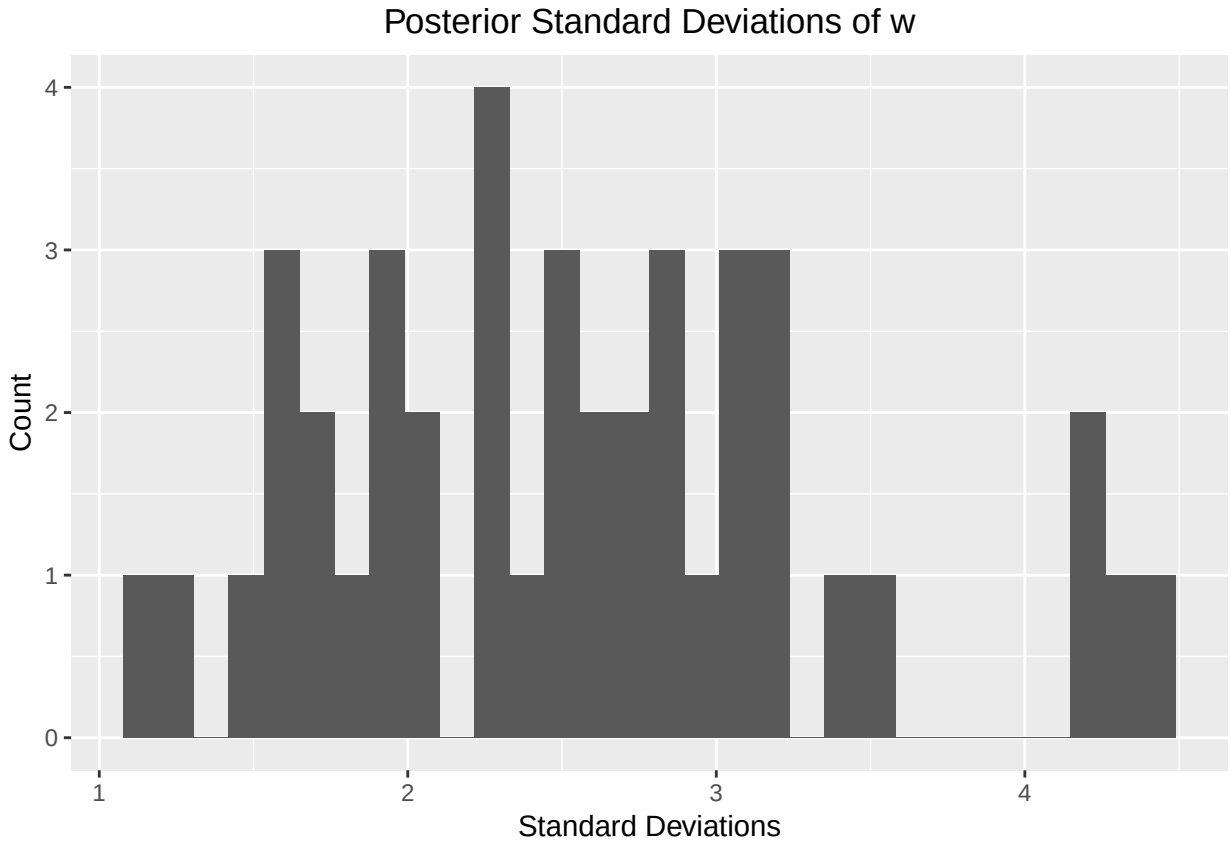

beta
1.9
1.7
1.5
1.3
1.1
2500
5000
7500
10000
chain
1
2
3
4

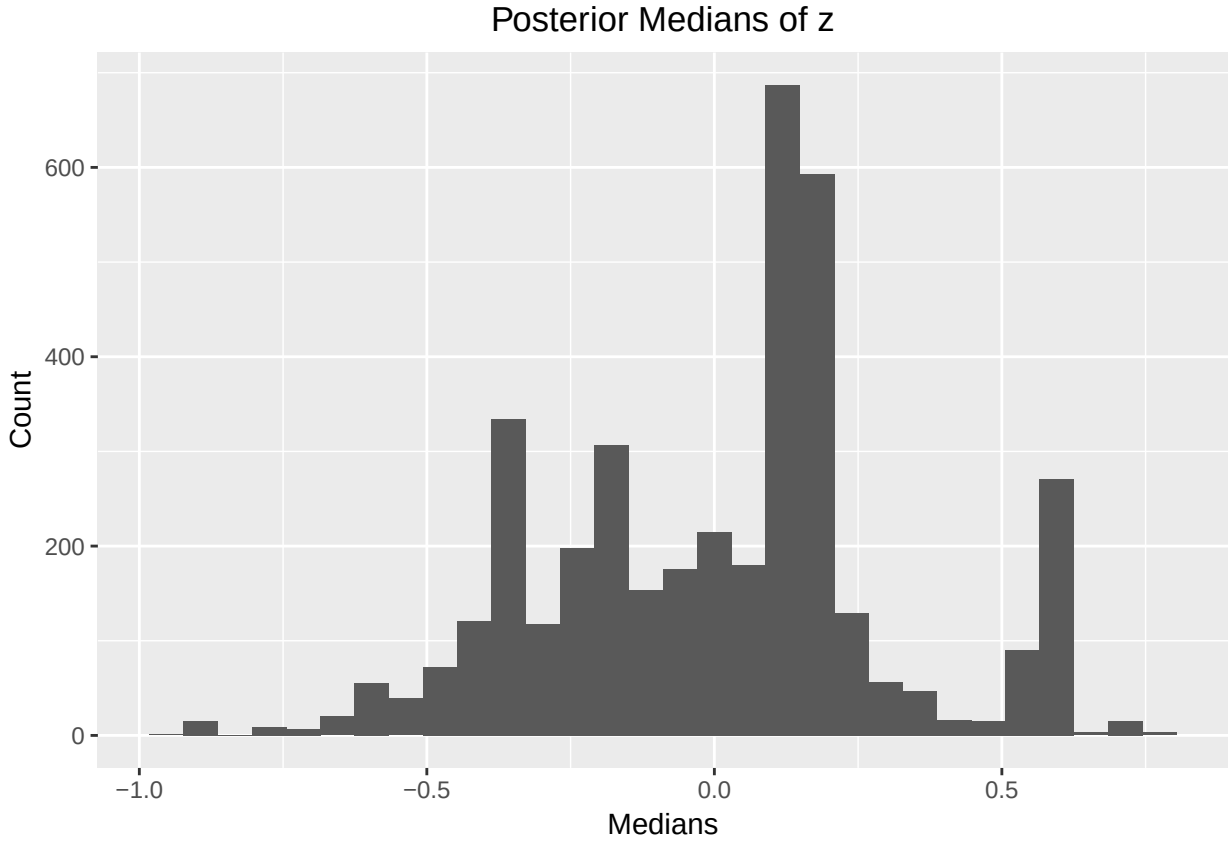



```
## [1] "       "
```

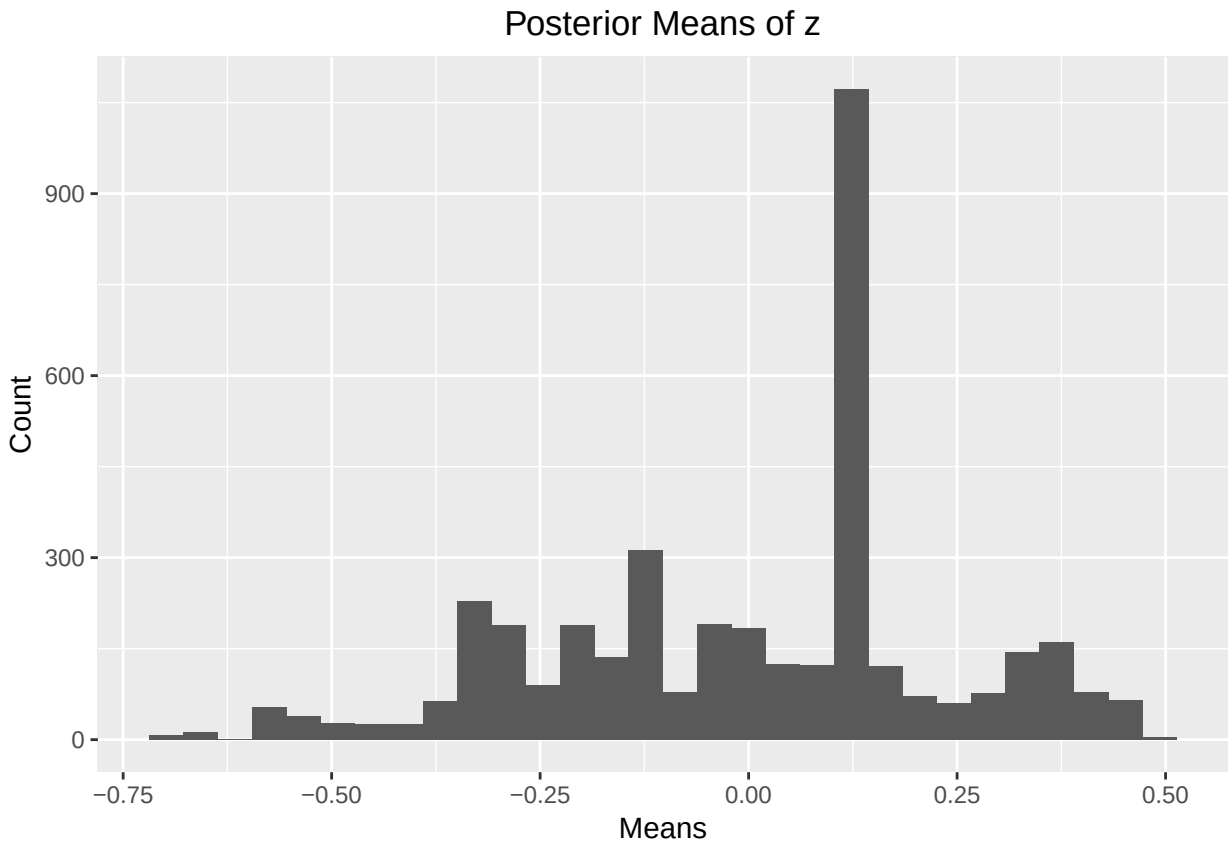



```
## [1] "      "
```

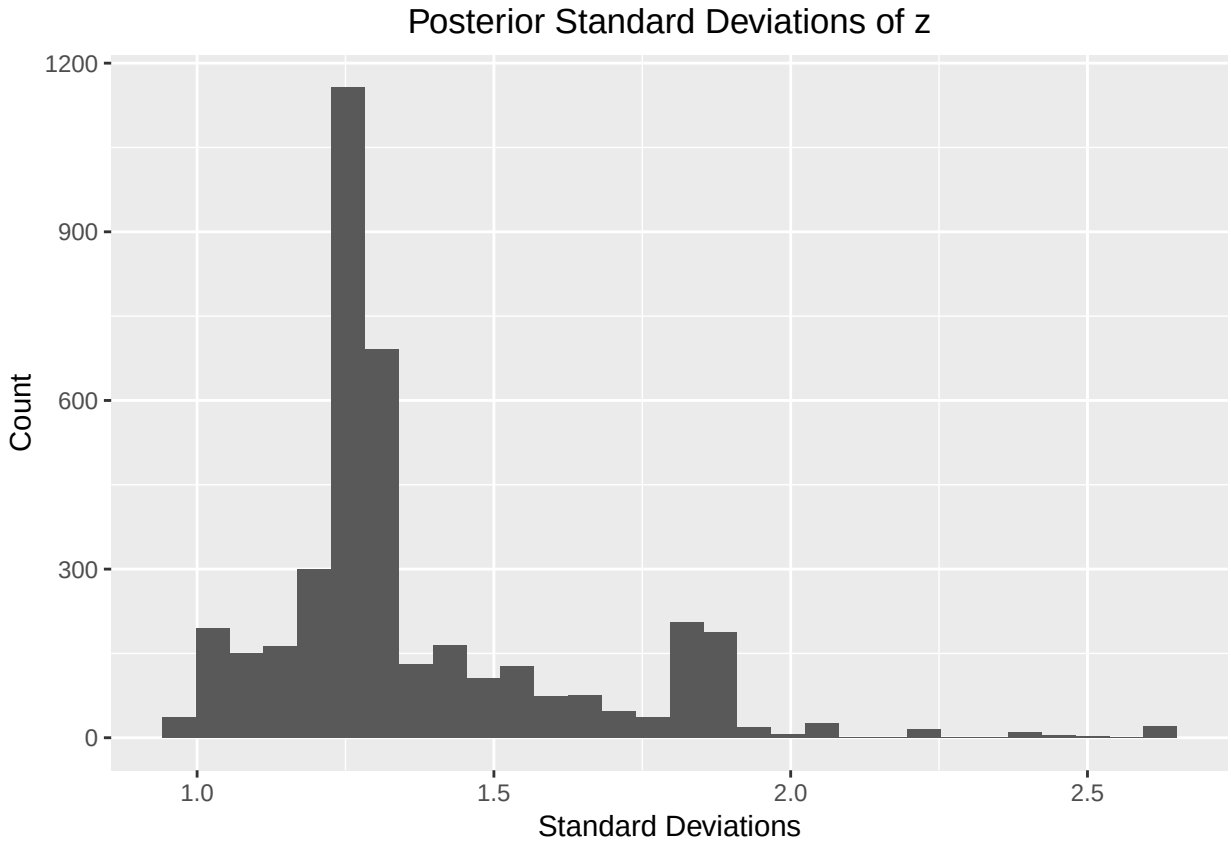

Posterior Standard Deviations of w
Count
0
1
2
3
4
1
2
3
4
Standard Deviations

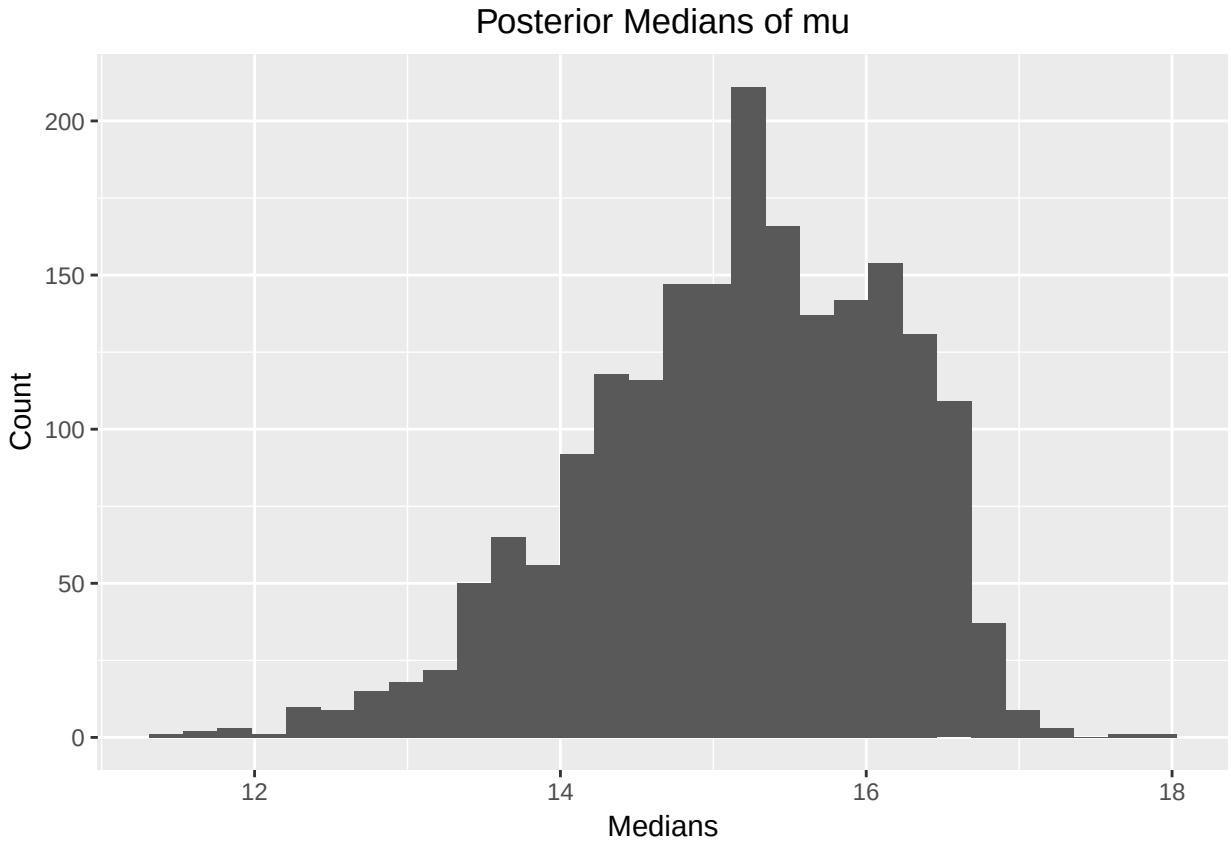

Posterior Medians of z
Count
0
200
400
600
−1.0
−0.5
0.0
0.5
Medians

```
## [1] "       "
```

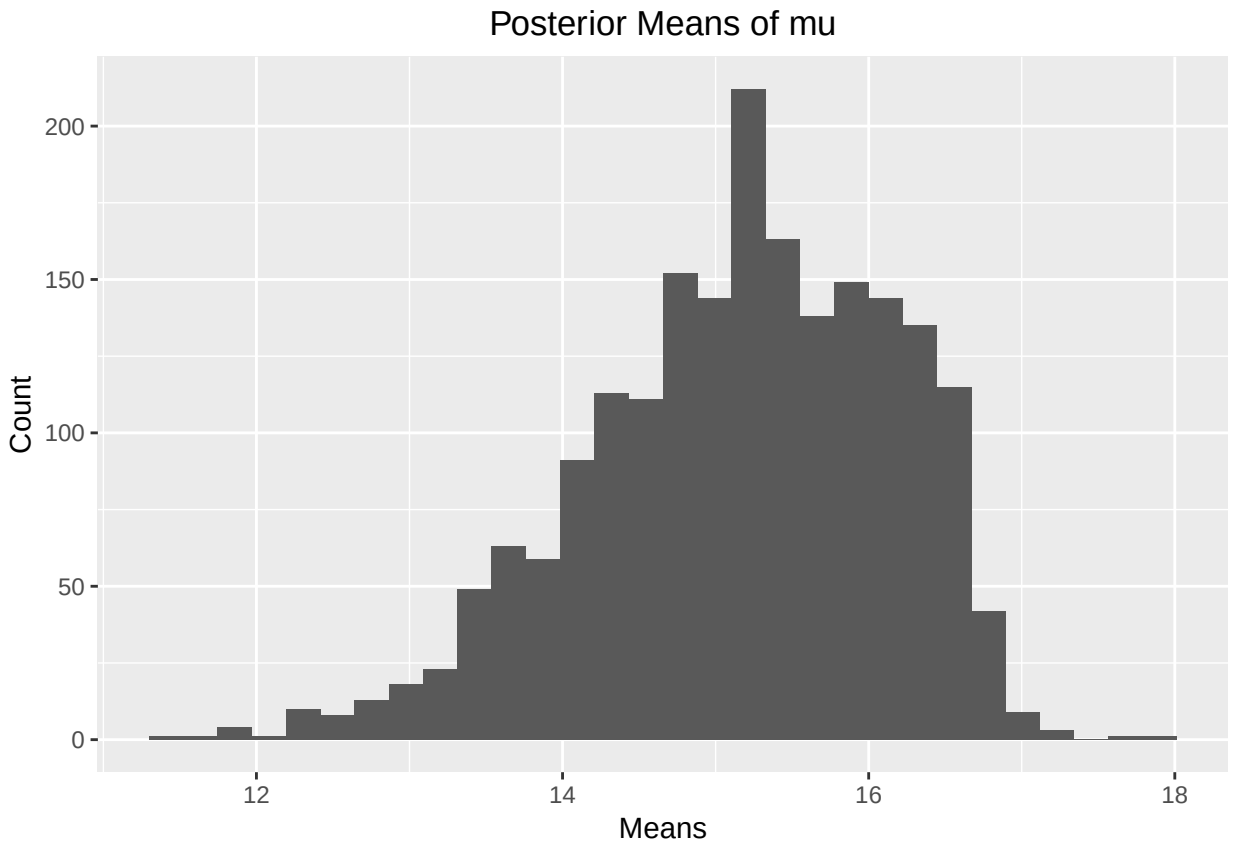

Posterior Means of z
Count
900
600
300
0
−0.75
−0.50
−0.25
0.00
0.25
0.50
Means

```
## [1] "       "
```

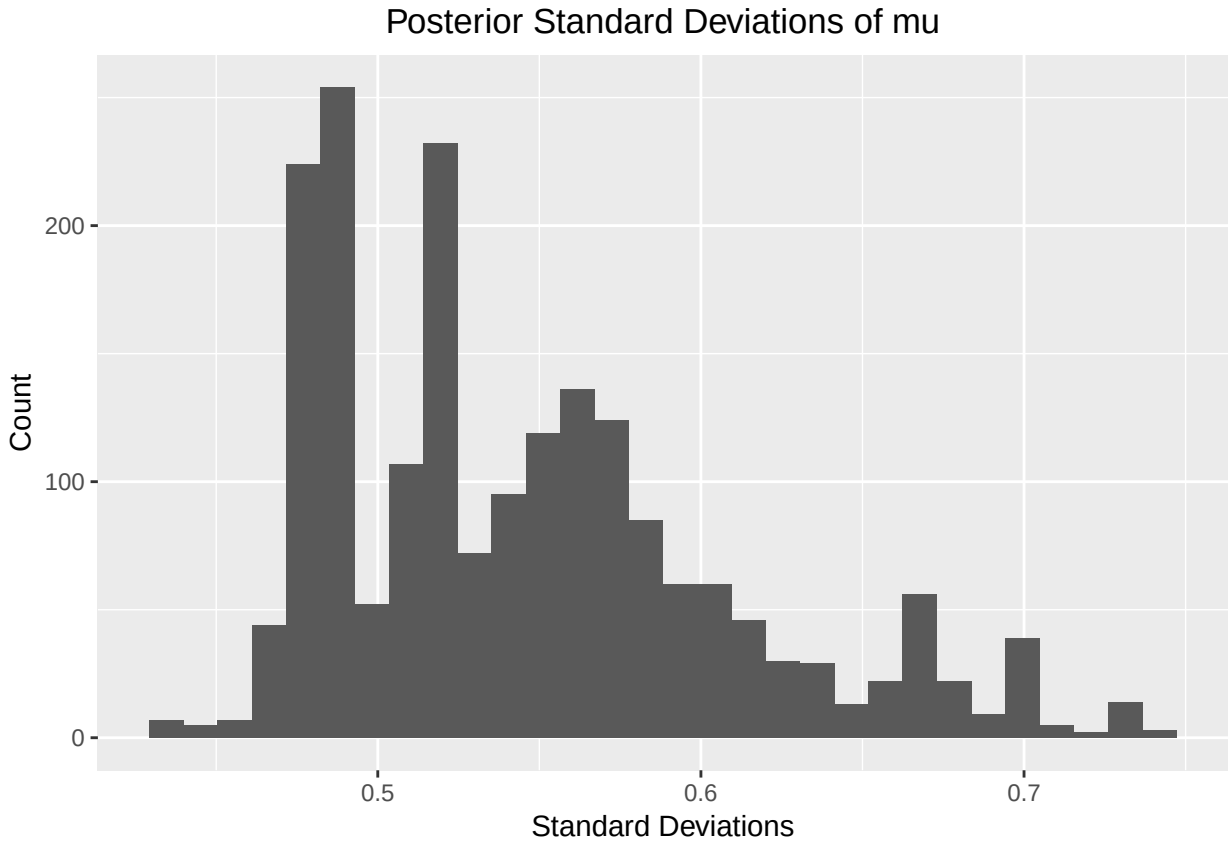

Posterior Standard Deviations of z
Count
1200
900
600
300
0
1.0
1.5
2.0
2.5
Standard Deviations

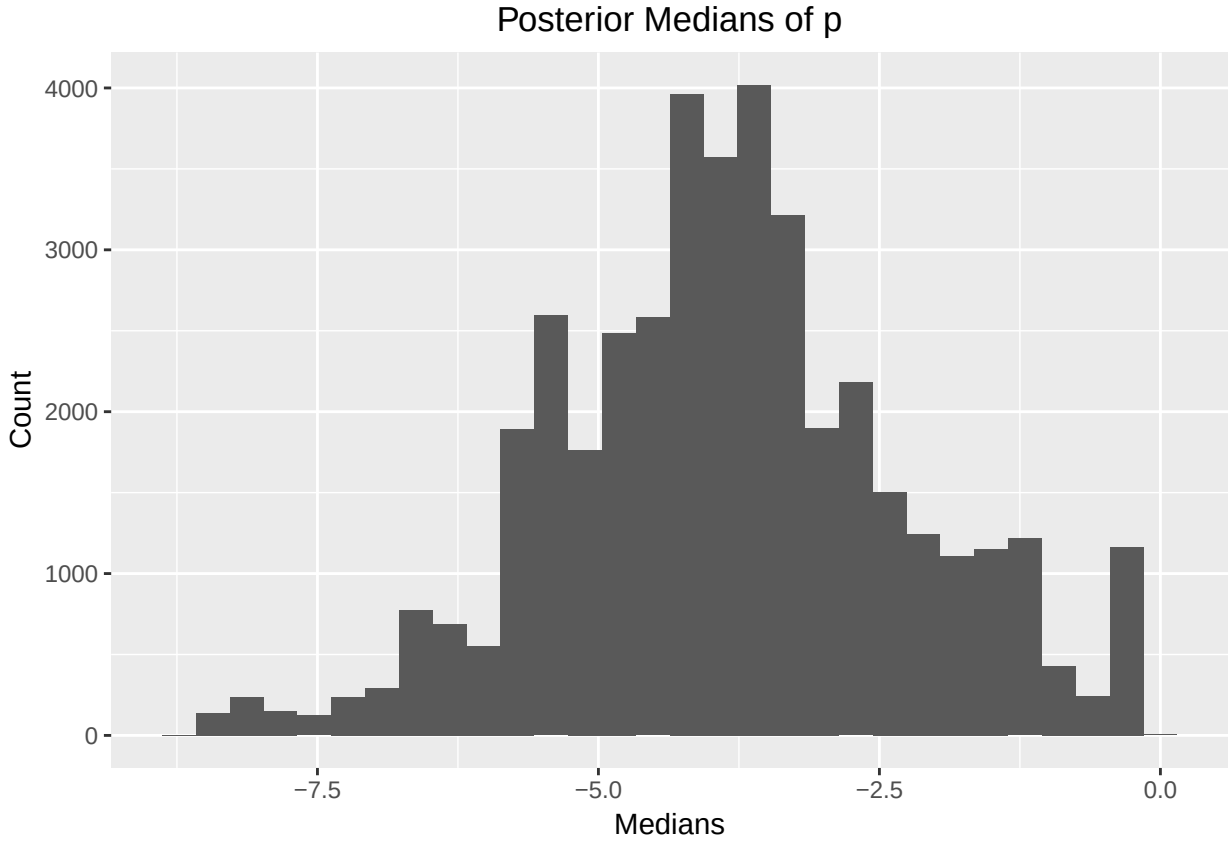

Posterior Medians of mu
Count
200
150
100
50
0
12
14
16
18
Medians

```
## [1] "       "
```

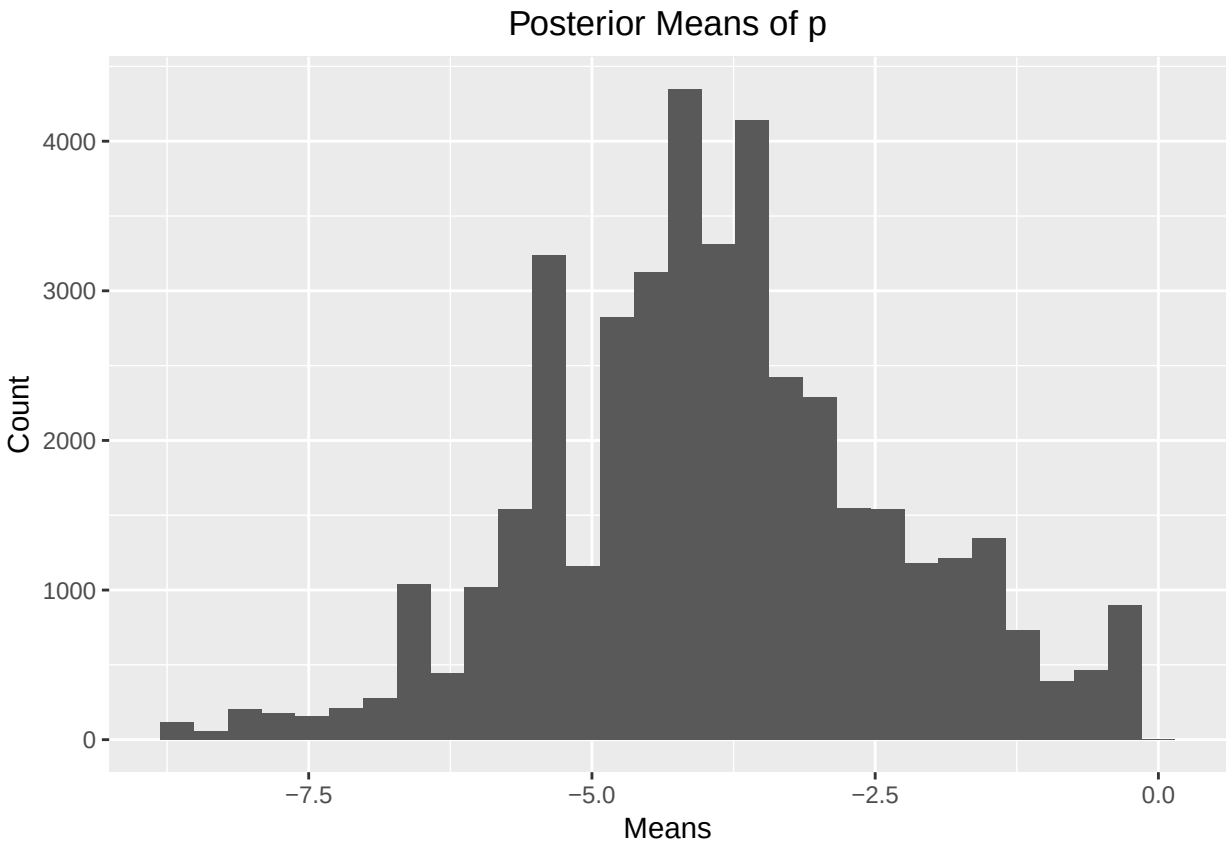



```
## [1] "       "
```

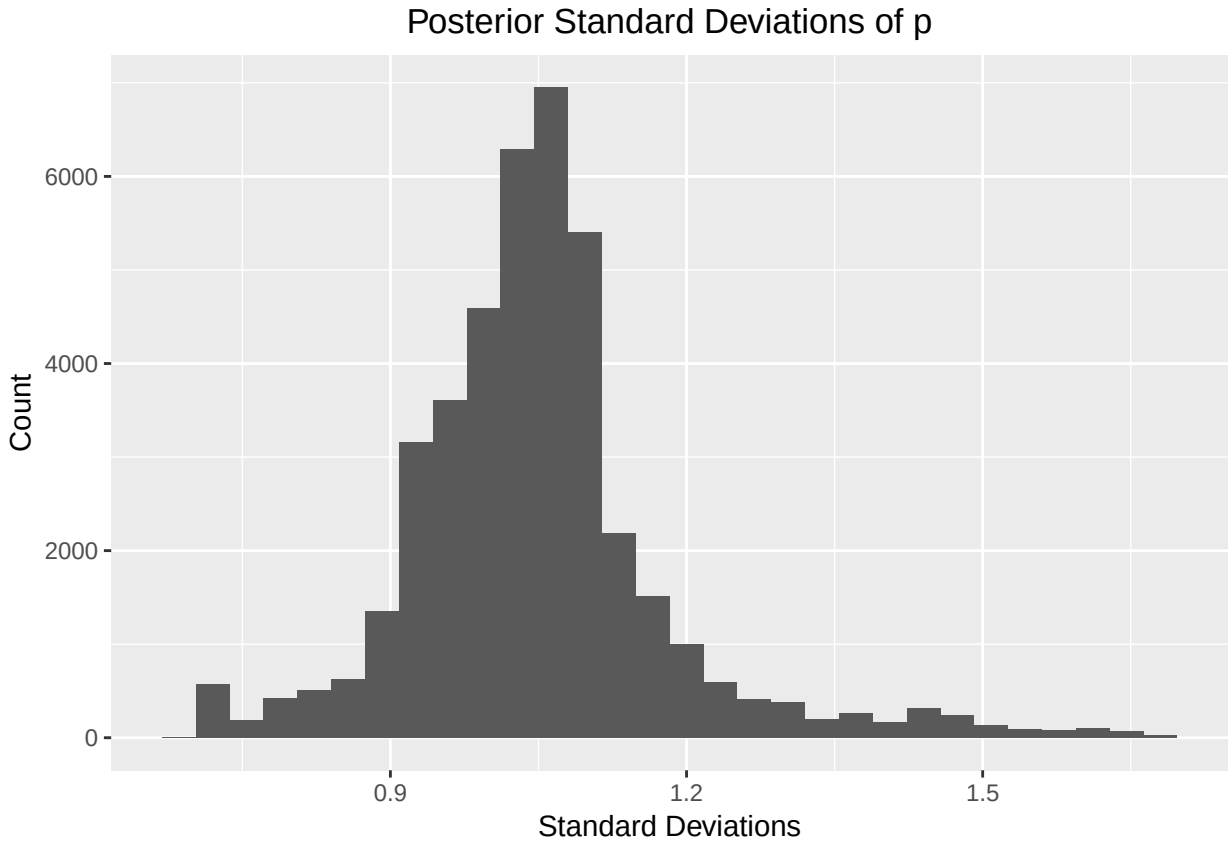

Posterior Standard Deviations of mu
Count
200
100
0
0.5
0.6
0.7
Standard Deviations


Posterior Medians of p
Count
4000
3000
2000
1000
0
−7.5
−5.0
−2.5
0.0
Medians

```
## [1] "       "
```


Posterior Means of p
Count
4000
3000
2000
1000
0
−7.5
−5.0
−2.5
0.0
Means

```
## [1] "       "
```



Histograms for β values and w, and z posterior means across chains.