

MCMC Diagnostics - IFLS data

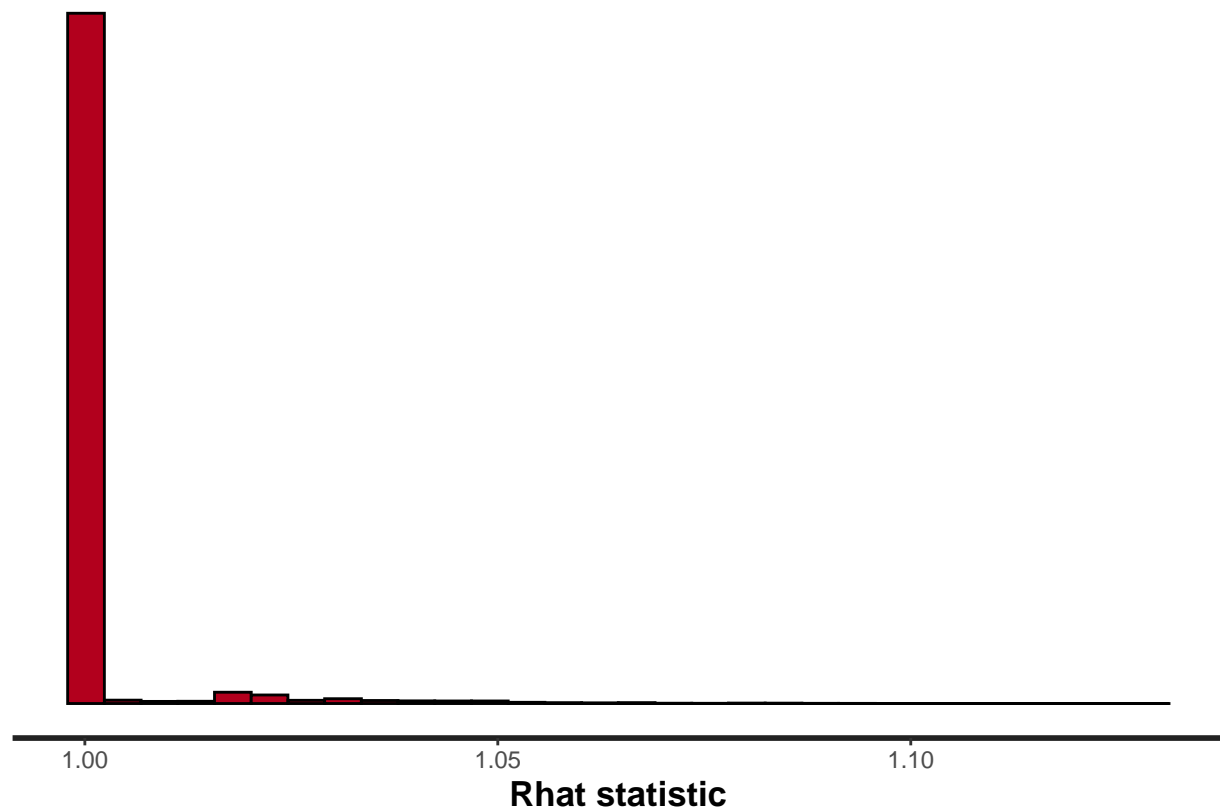
Sarah Teichman

03/09/2021

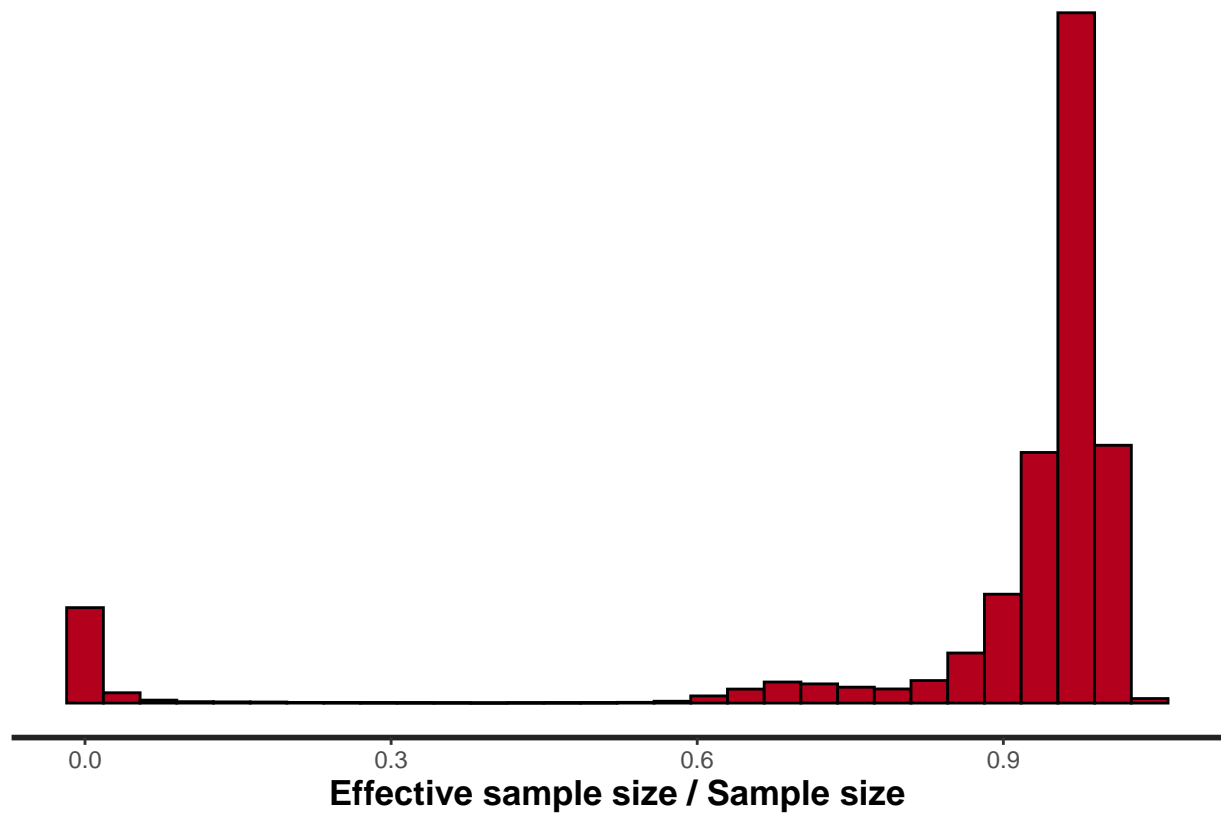
General MCMC diagnostic plots

Overall model diagnostics from rstan package.

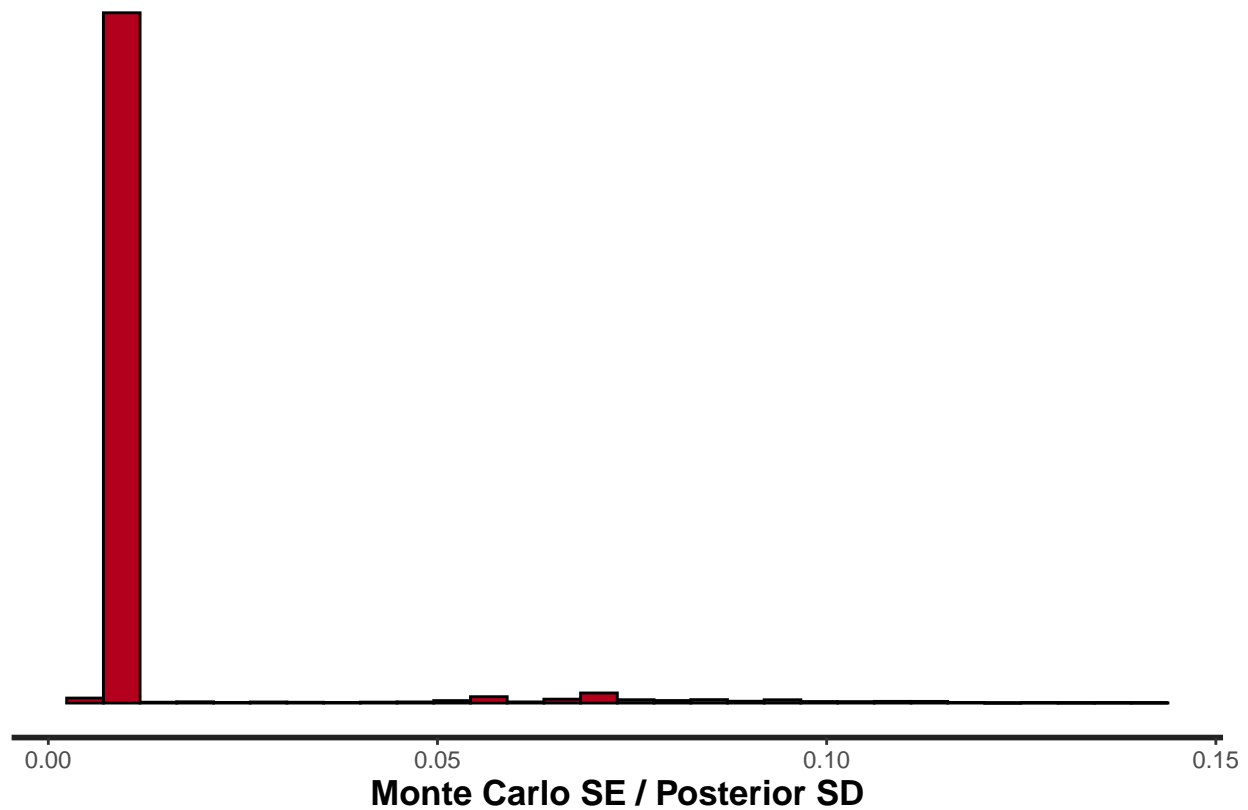
```
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.  
## Warning: Removed 3955 rows containing non-finite values (stat_bin).
```



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## Warning: Removed 3955 rows containing non-finite values (stat_bin).
```



Individual Parameter Diagnostics

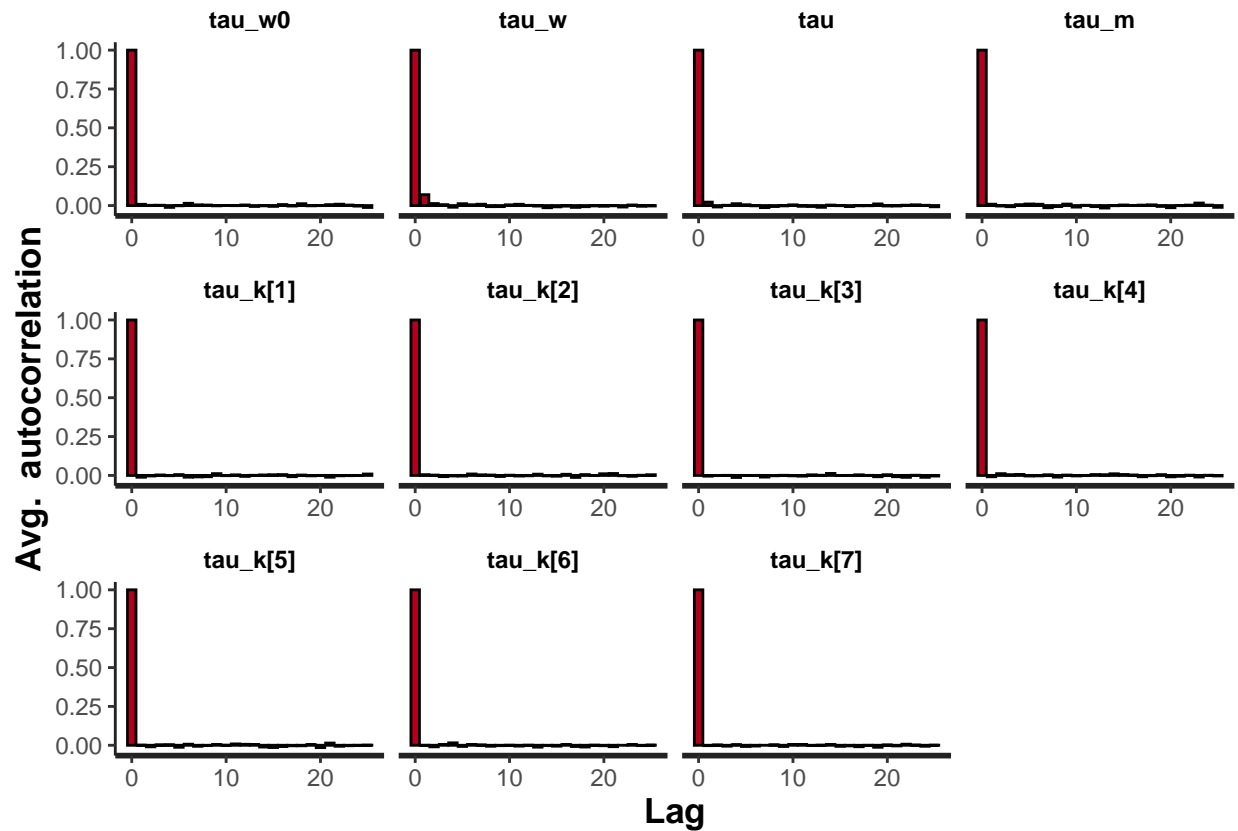
Individual parameter plots. Autocorrelation and trace plots for individual parameters, and histograms of posterior medians for group parameters.

##		mean	se_mean	sd	25%	50%	75%
##	tau_w0	0.2218534	0.0006395948	0.08844253	0.1579547	0.2097891	0.2731394
##	tau_w	0.3865426	0.0010259958	0.13218714	0.2917706	0.3696406	0.4626615
##	tau	1.2862813	0.0002642386	0.03619390	1.2612302	1.2861084	1.3113389
##	tau_m	1.5559344	0.0018605212	0.25806383	1.3726805	1.5233229	1.7001069
##	tau_k[1]	1.5361171	0.0042392323	0.60068759	1.1271401	1.4105048	1.8004993
##	tau_k[2]	1.6271174	0.0039296506	0.54718983	1.2510440	1.5216736	1.8765764
##	tau_k[3]	1.2065803	0.0033240026	0.46760414	0.8875133	1.1106646	1.4125693
##	tau_k[4]	2.4227124	0.0078977260	1.09133034	1.6493073	2.1872510	2.9463316
##	tau_k[5]	2.6281236	0.0091884237	1.28534629	1.7026315	2.3653727	3.2613422
##	tau_k[6]	1.7805768	0.0080082067	1.12147431	0.9682363	1.5191570	2.3148594
##	tau_k[7]	3.5609792	0.0082351641	1.15567967	2.7392515	3.3500983	4.1458335
##		n_eff	Rhat				
##	tau_w0	19121.08	0.9999866				
##	tau_w	16599.20	0.9999489				
##	tau	18761.96	1.0002416				
##	tau_m	19239.11	1.0001156				
##	tau_k[1]	20078.11	0.9999138				
##	tau_k[2]	19389.57	1.0002196				
##	tau_k[3]	19789.46	0.9998574				
##	tau_k[4]	19094.50	0.9999701				
##	tau_k[5]	19568.53	1.0000420				

```
## tau_k[6] 19611.38 0.9999635
## tau_k[7] 19693.84 0.9999039
```

```
## Warning: Ignoring unknown parameters: fun.y
```

```
## No summary function supplied, defaulting to `mean_se()`
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```



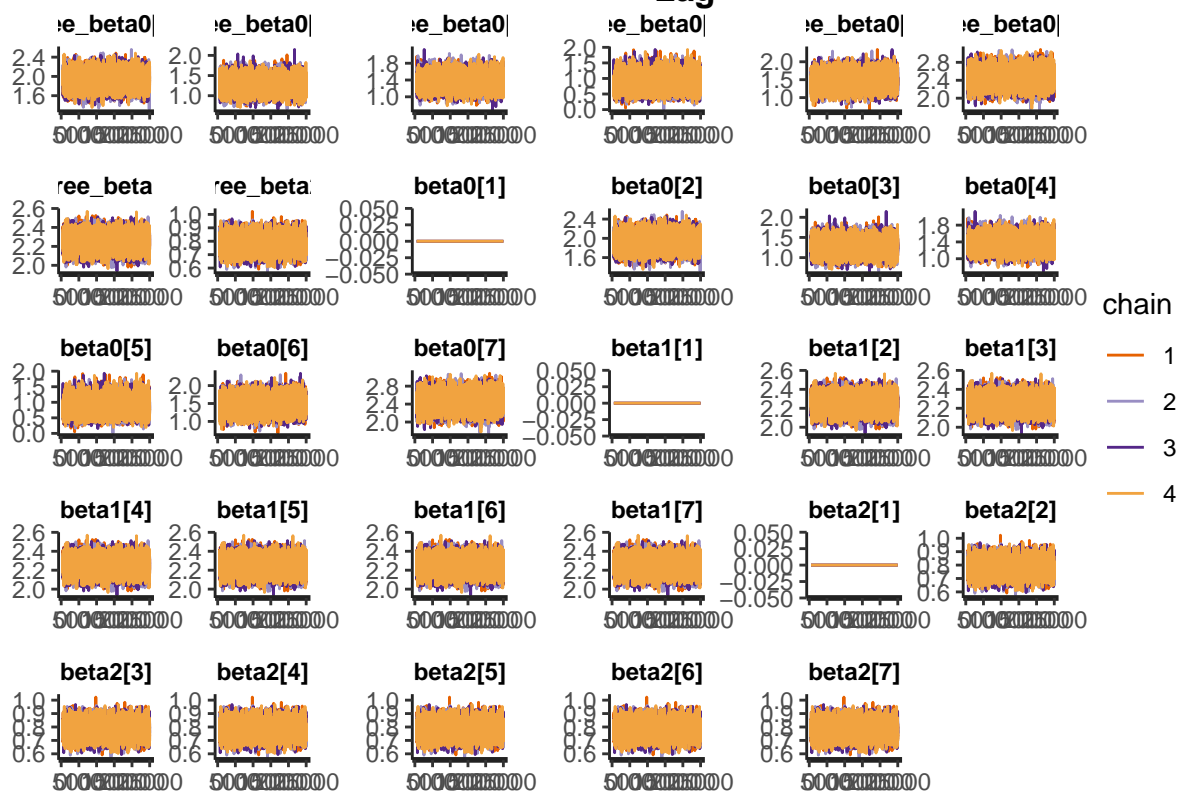
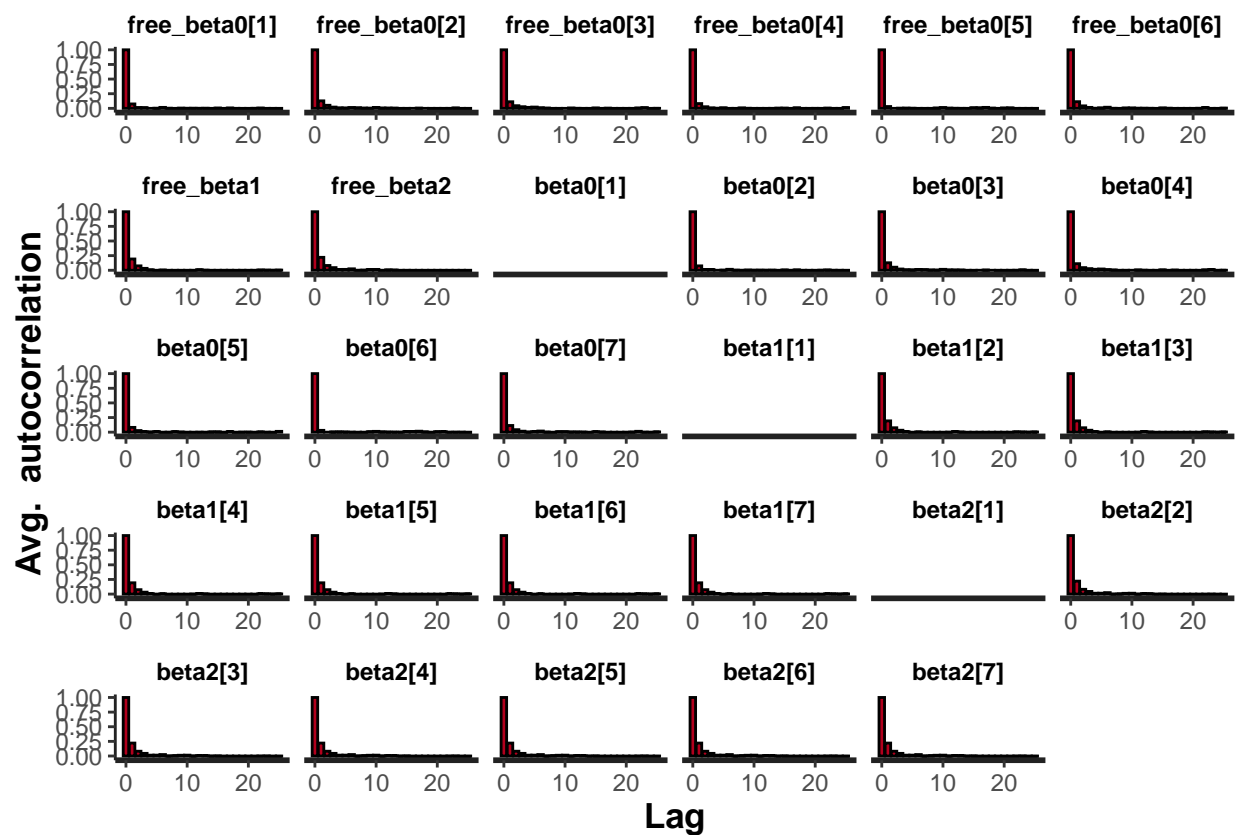
	mean	se_mean	sd	25%	50%	75%
## free_beta0[1]	1.9203162	0.0011850827	0.14994321	1.8199069	1.9184895	2.0197021
## free_beta0[2]	1.2745459	0.0014686966	0.16704558	1.1624603	1.2719358	1.3836766
## free_beta0[3]	1.3619610	0.0013782019	0.15858129	1.2552096	1.3594575	1.4667688
## free_beta0[4]	0.8448809	0.0018706805	0.23286844	0.6808615	0.8284592	0.9853225
## free_beta0[5]	1.4502428	0.0014489258	0.19583525	1.3179878	1.4443221	1.5782342
## free_beta0[6]	2.4512507	0.0013969357	0.16622088	2.3383910	2.4496766	2.5627783
## free_beta1	2.2470238	0.0007110870	0.07844168	2.1935139	2.2470162	2.3001159
## free_beta2	0.7828715	0.0005264683	0.05376477	0.7467540	0.7827985	0.8187621
## beta0[1]	0.0000000	NaN	0.00000000	0.00000000	0.00000000	0.00000000
## beta0[2]	1.9203162	0.0011850827	0.14994321	1.8199069	1.9184895	2.0197021
## beta0[3]	1.2745459	0.0014686966	0.16704558	1.1624603	1.2719358	1.3836766

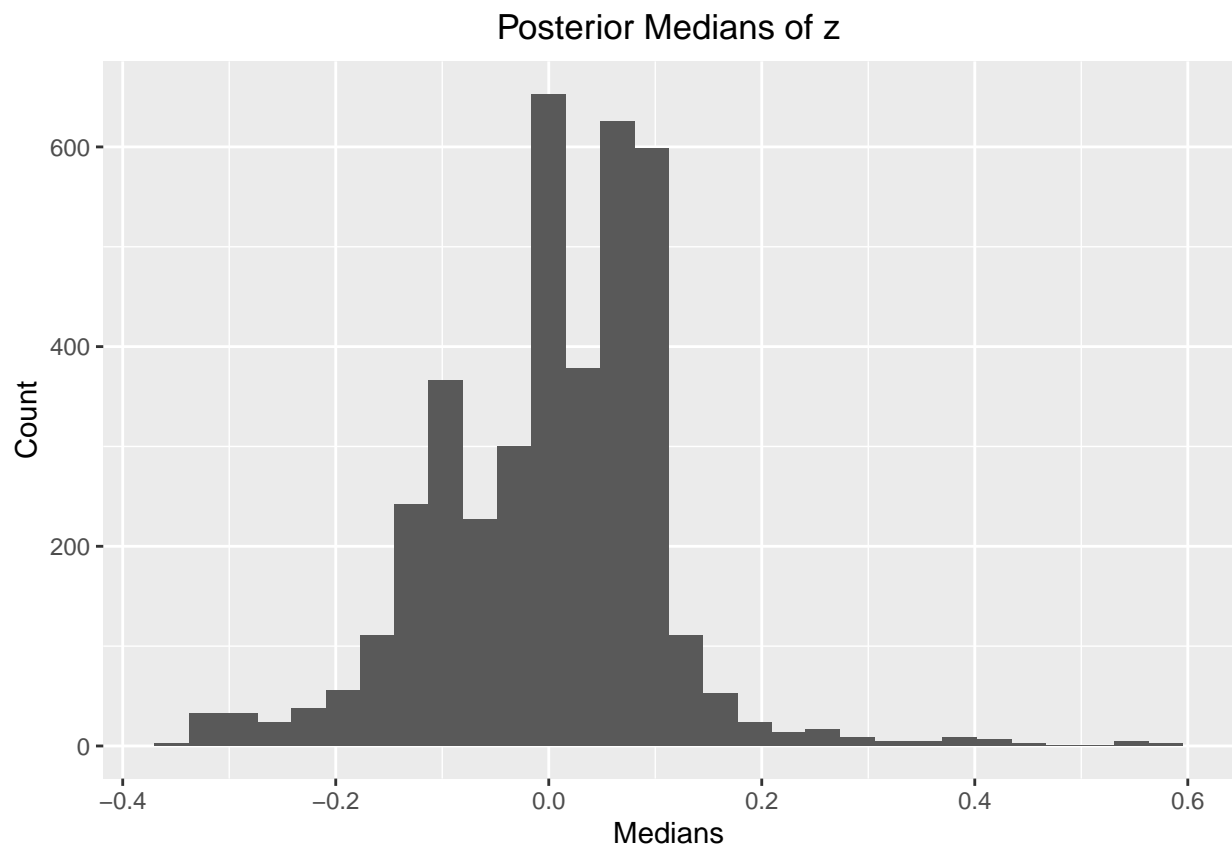
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## beta0[4]      1.3619610 0.0013782019 0.15858129 1.2552096 1.3594575 1.4667688
## beta0[5]      0.8448809 0.0018706805 0.23286844 0.6808615 0.8284592 0.9853225
## beta0[6]      1.4502428 0.0014489258 0.19583525 1.3179878 1.4443221 1.5782342
## beta0[7]      2.4512507 0.0013969357 0.16622088 2.3383910 2.4496766 2.5627783
## beta1[1]      0.0000000          NaN 0.00000000 0.00000000 0.00000000 0.00000000
## beta1[2]      2.2470238 0.0007110870 0.07844168 2.1935139 2.2470162 2.3001159
## beta1[3]      2.2470238 0.0007110870 0.07844168 2.1935139 2.2470162 2.3001159
## beta1[4]      2.2470238 0.0007110870 0.07844168 2.1935139 2.2470162 2.3001159
## beta1[5]      2.2470238 0.0007110870 0.07844168 2.1935139 2.2470162 2.3001159
## beta1[6]      2.2470238 0.0007110870 0.07844168 2.1935139 2.2470162 2.3001159
## beta1[7]      2.2470238 0.0007110870 0.07844168 2.1935139 2.2470162 2.3001159
## beta2[1]      0.0000000          NaN 0.00000000 0.00000000 0.00000000 0.00000000
## beta2[2]      0.7828715 0.0005264683 0.05376477 0.7467540 0.7827985 0.8187621
## beta2[3]      0.7828715 0.0005264683 0.05376477 0.7467540 0.7827985 0.8187621
## beta2[4]      0.7828715 0.0005264683 0.05376477 0.7467540 0.7827985 0.8187621
## beta2[5]      0.7828715 0.0005264683 0.05376477 0.7467540 0.7827985 0.8187621
## beta2[6]      0.7828715 0.0005264683 0.05376477 0.7467540 0.7827985 0.8187621
## beta2[7]      0.7828715 0.0005264683 0.05376477 0.7467540 0.7827985 0.8187621
##              n_eff      Rhat
## free_beta0[1] 16008.71 1.0000292
## free_beta0[2] 12936.17 1.0000291
## free_beta0[3] 13239.70 0.9999151
## free_beta0[4] 15496.09 1.0001981
## free_beta0[5] 18267.93 0.9999780
## free_beta0[6] 14158.53 0.9999405
## free_beta1    12168.81 1.0003085
## free_beta2    10429.20 0.9999596
## beta0[1]      NaN      NaN
## beta0[2]      16008.71 1.0000292
## beta0[3]      12936.17 1.0000291
## beta0[4]      13239.70 0.9999151
## beta0[5]      15496.09 1.0001981
## beta0[6]      18267.93 0.9999780
## beta0[7]      14158.53 0.9999405
## beta1[1]      NaN      NaN
## beta1[2]      12168.81 1.0003085
## beta1[3]      12168.81 1.0003085
## beta1[4]      12168.81 1.0003085
## beta1[5]      12168.81 1.0003085
## beta1[6]      12168.81 1.0003085
## beta1[7]      12168.81 1.0003085
## beta2[1]      NaN      NaN
## beta2[2]      10429.20 0.9999596
## beta2[3]      10429.20 0.9999596
## beta2[4]      10429.20 0.9999596
## beta2[5]      10429.20 0.9999596
## beta2[6]      10429.20 0.9999596
## beta2[7]      10429.20 0.9999596

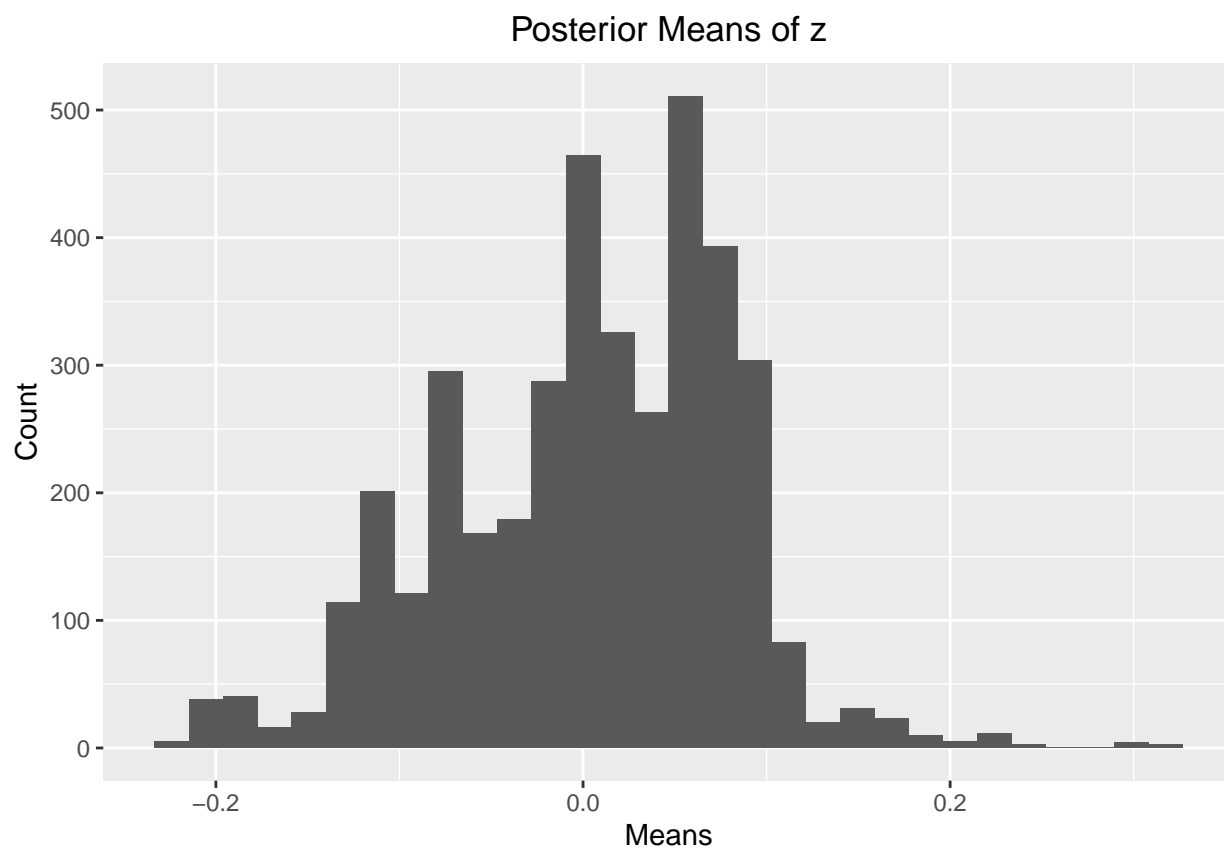
## Warning: Ignoring unknown parameters: fun.y

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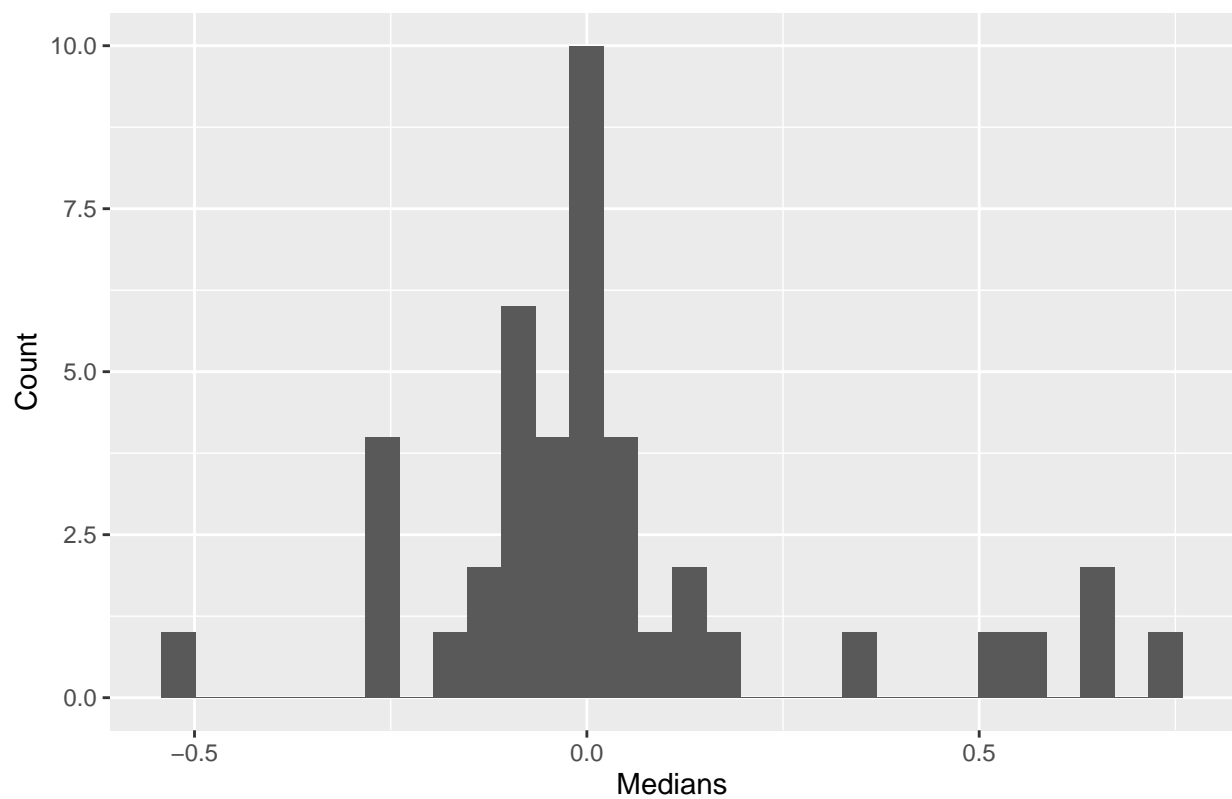
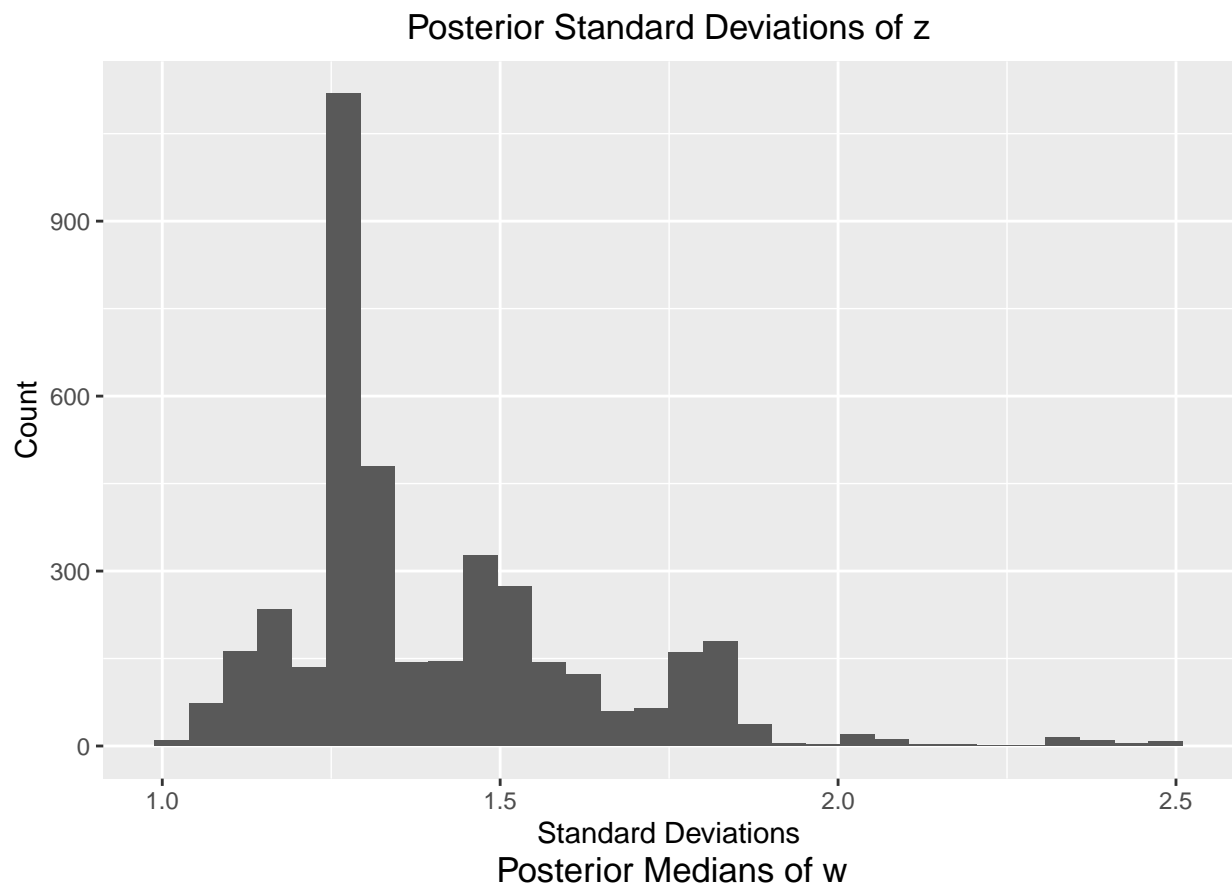





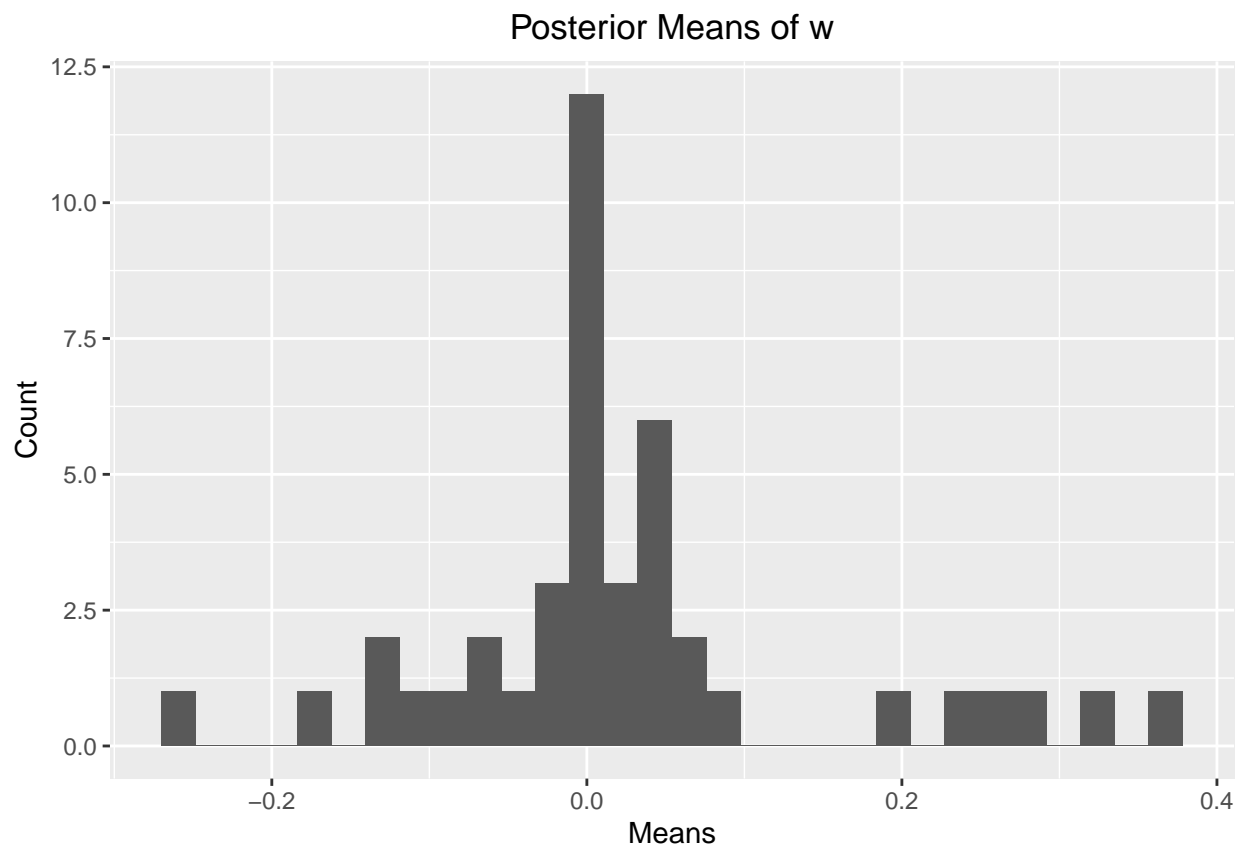
[1] " "



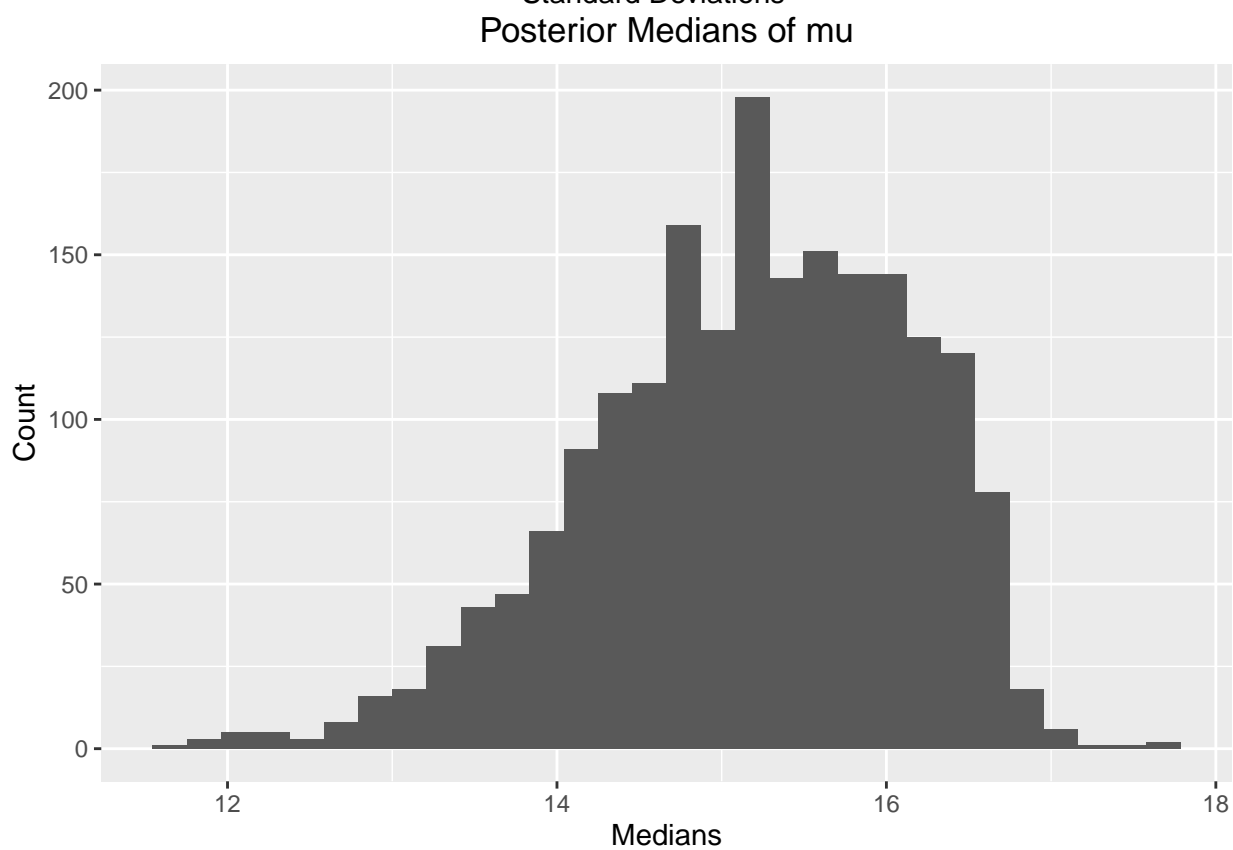
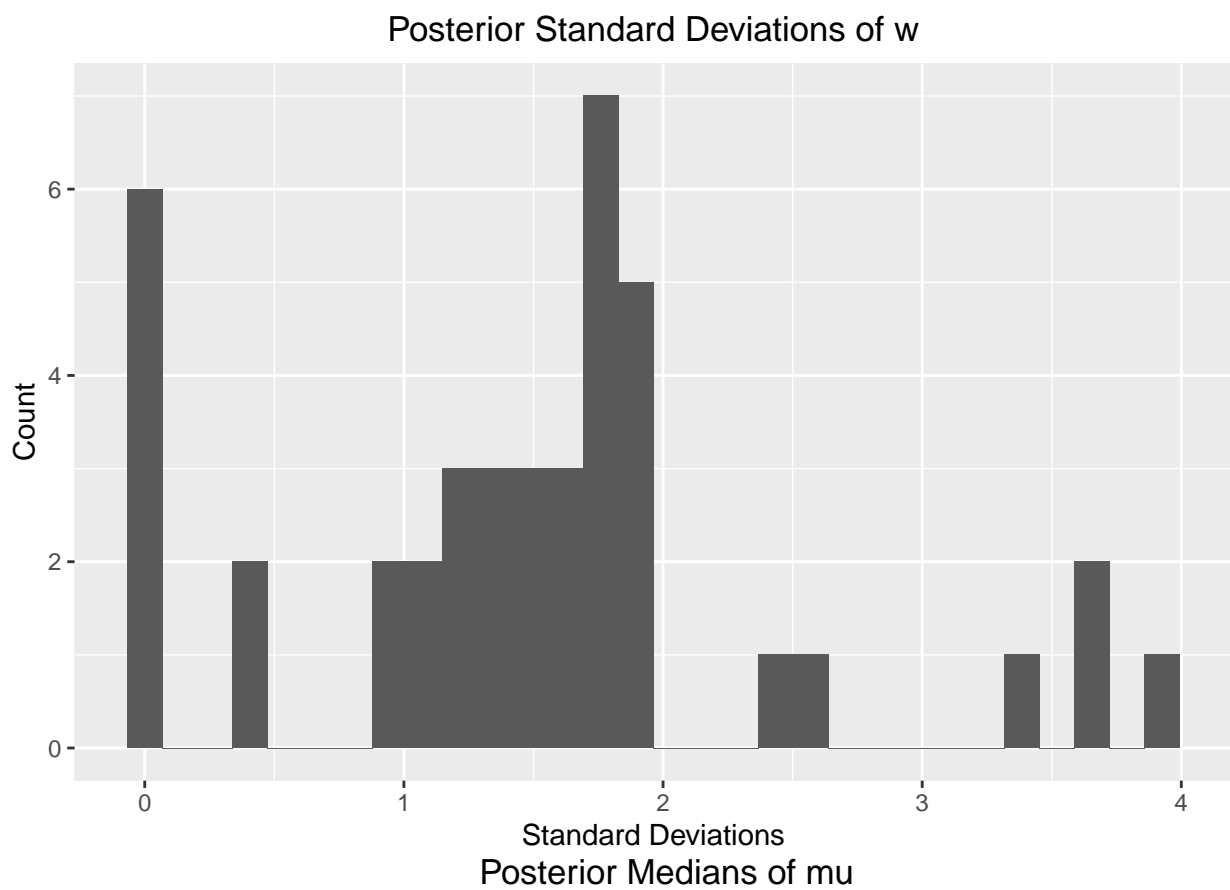
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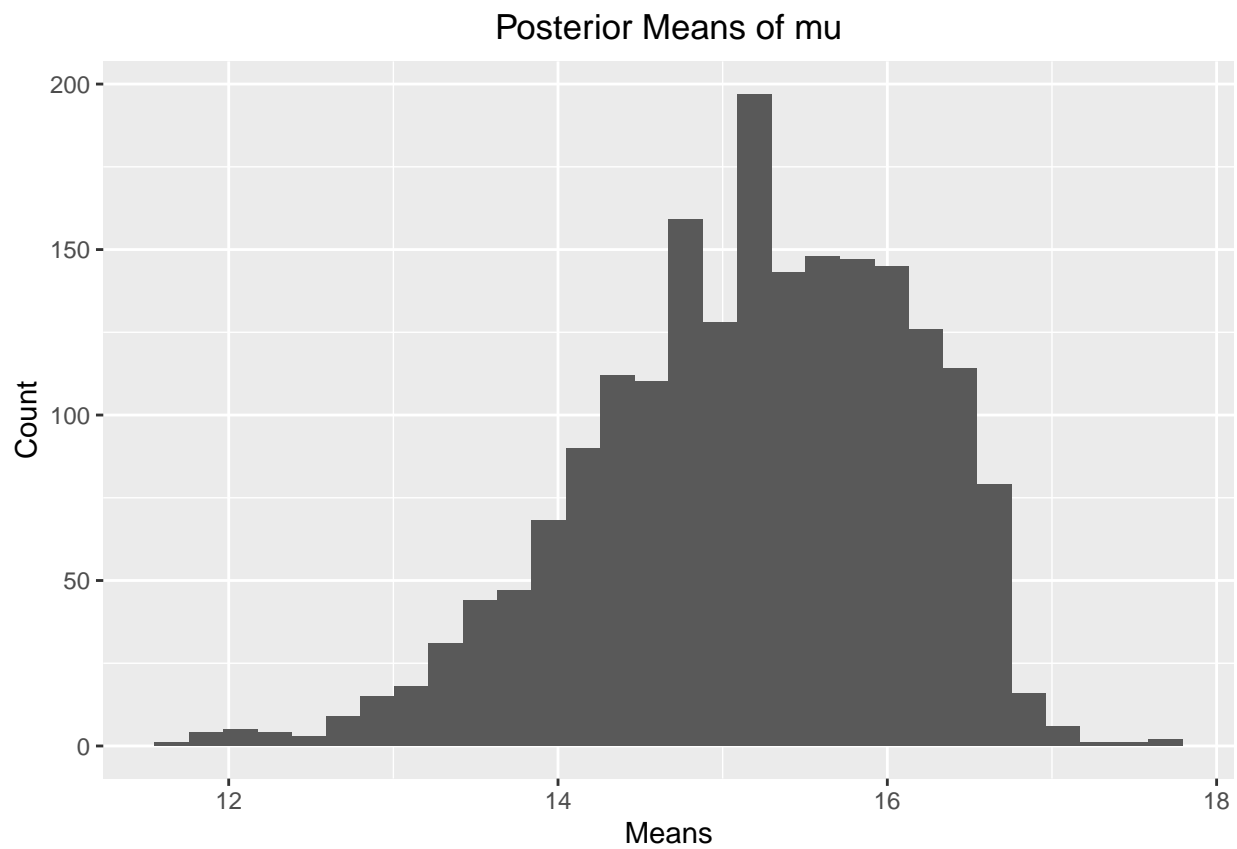
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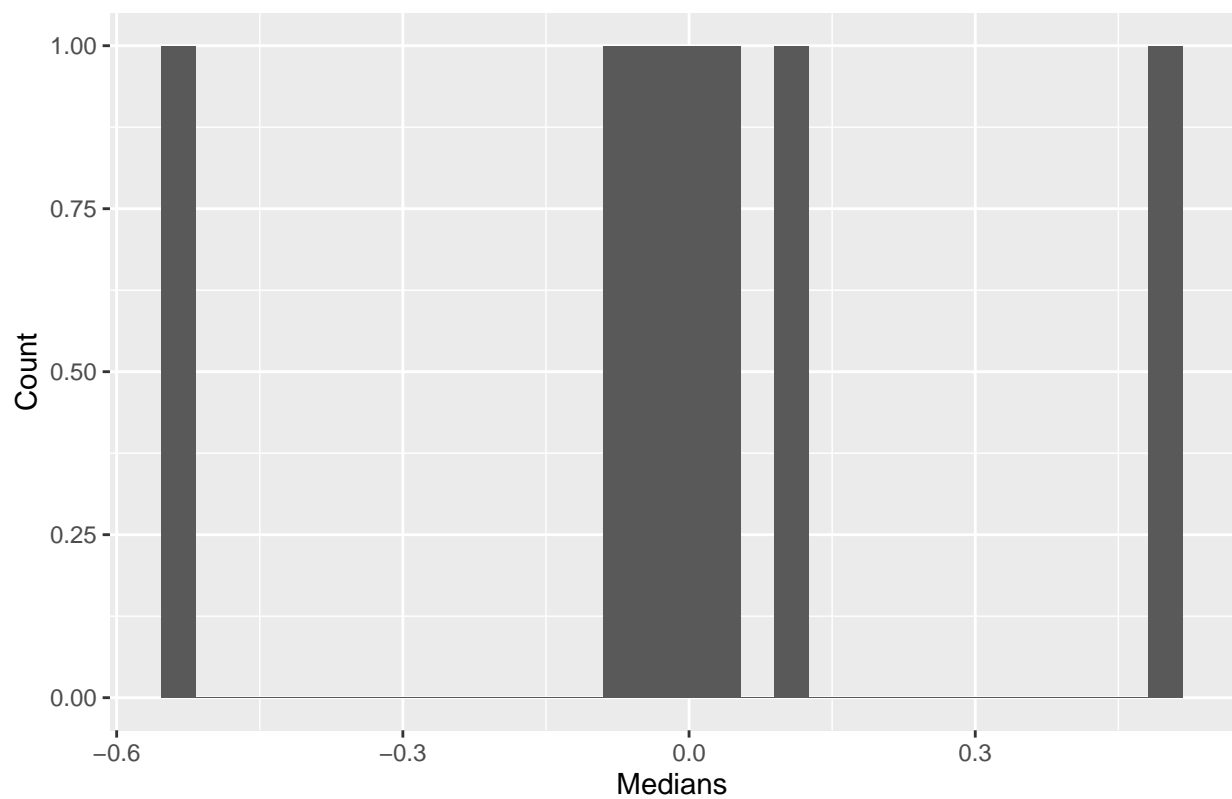
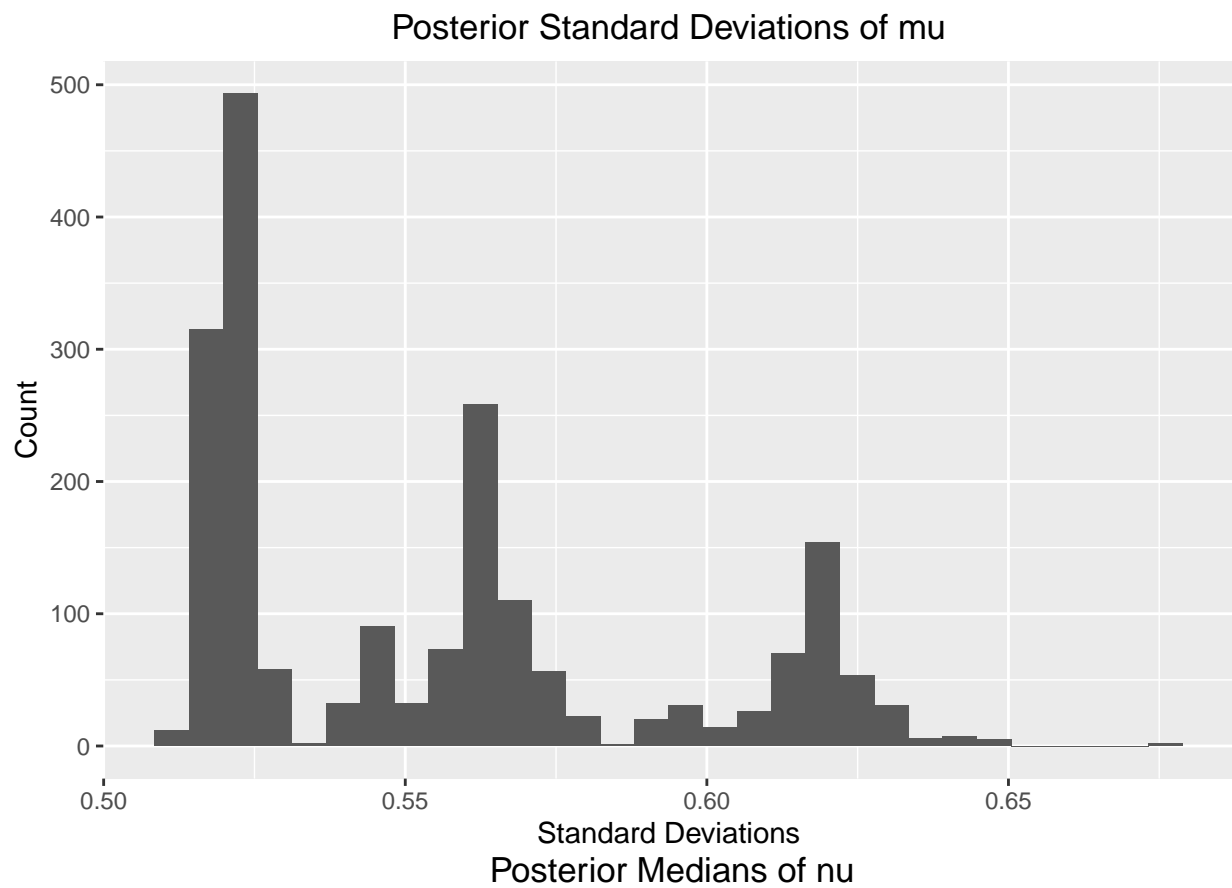
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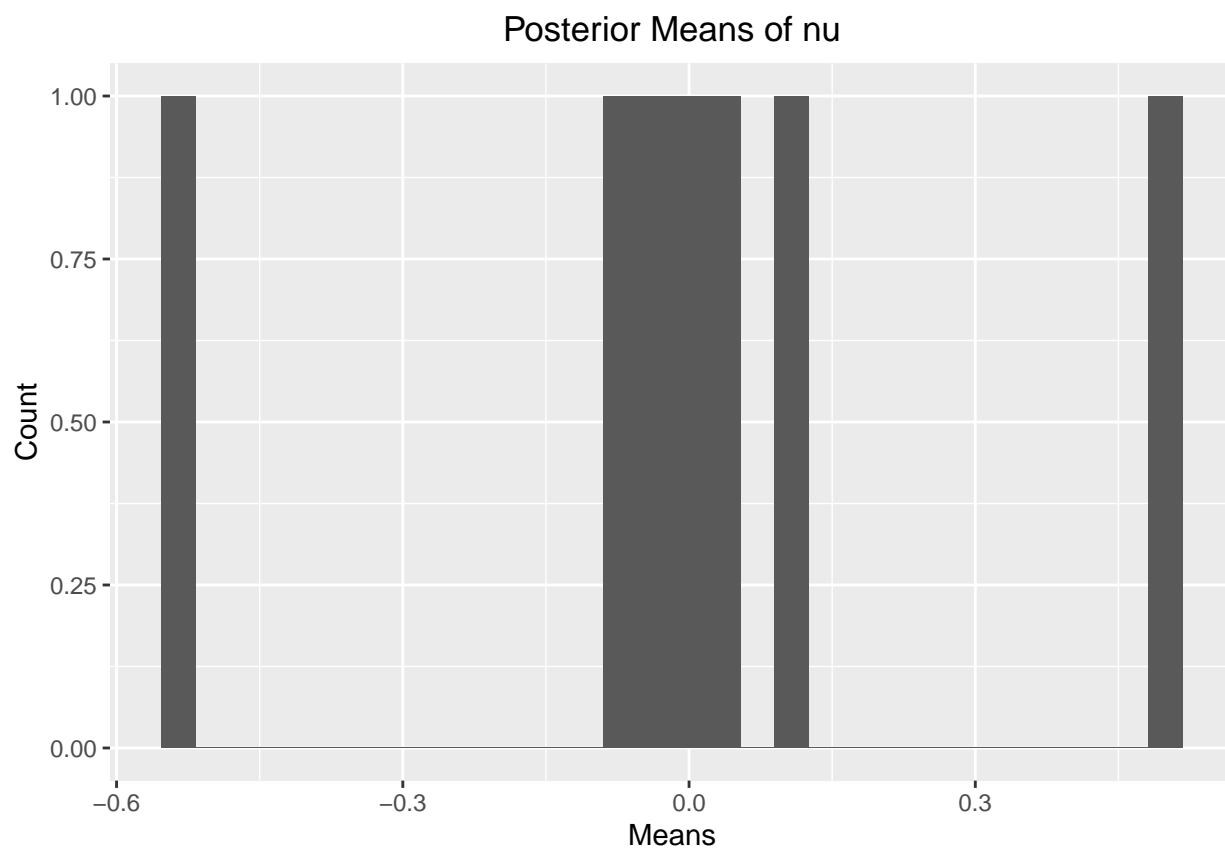
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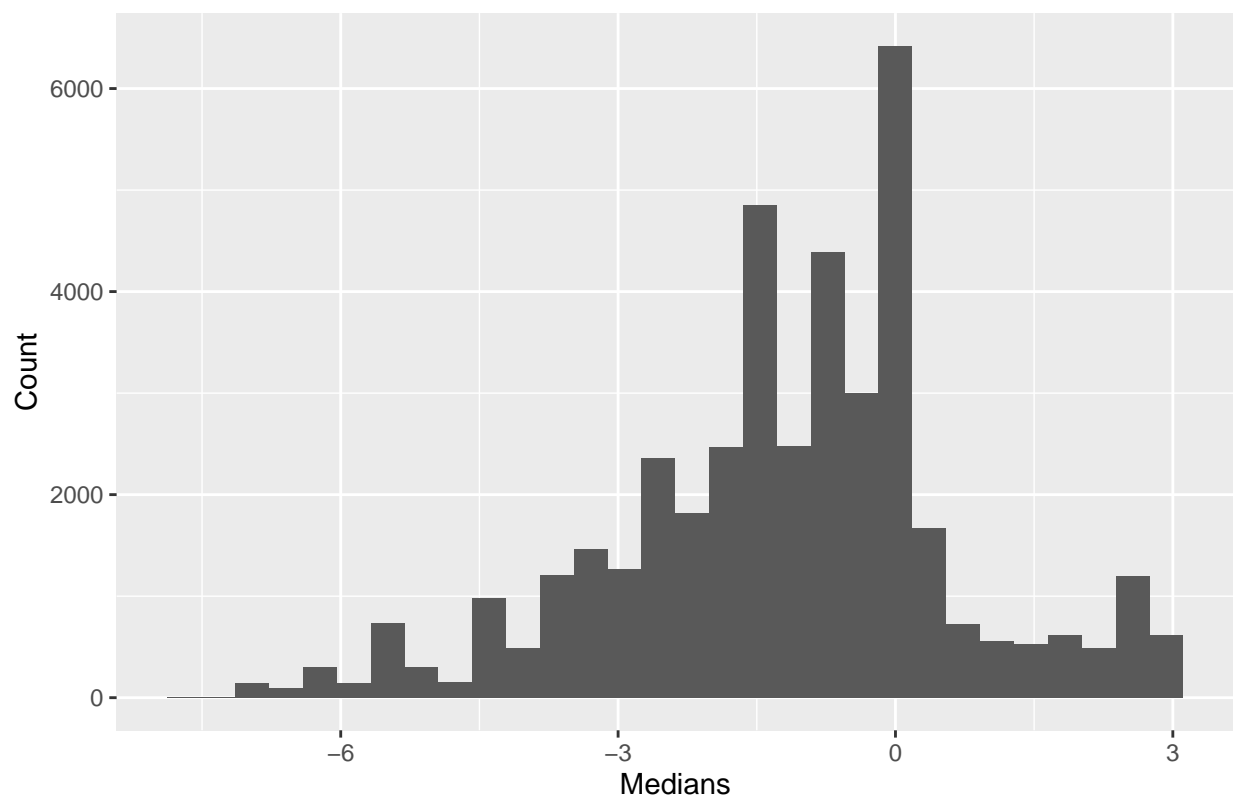
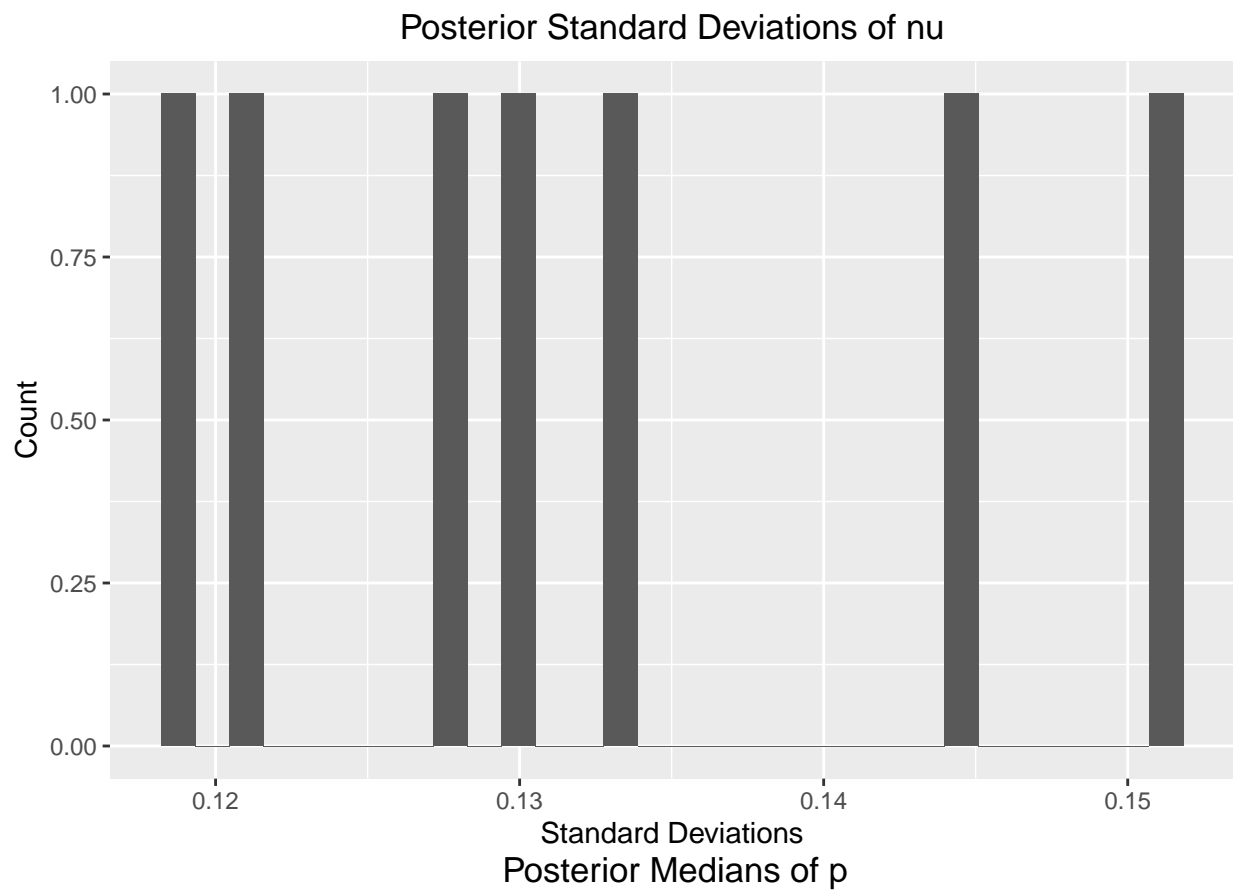
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## [1] " "
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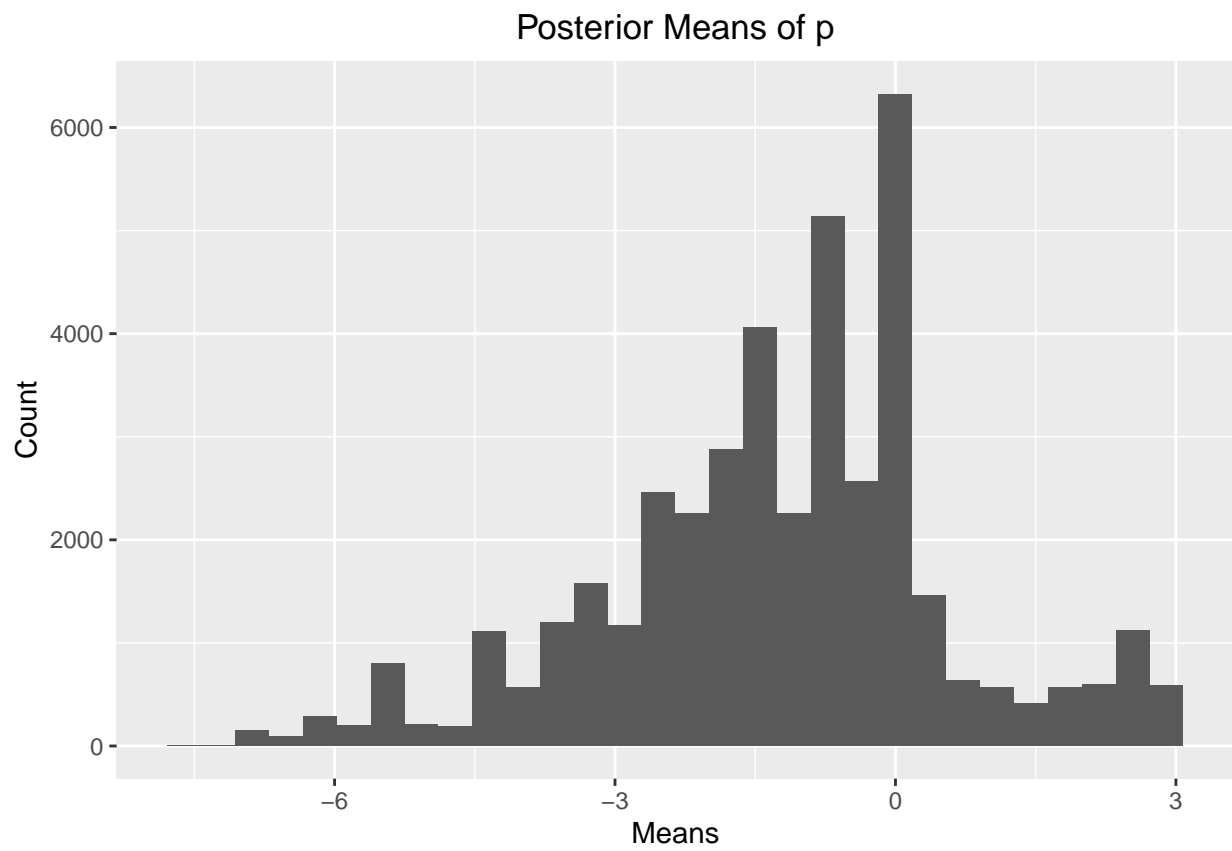
[1] " "



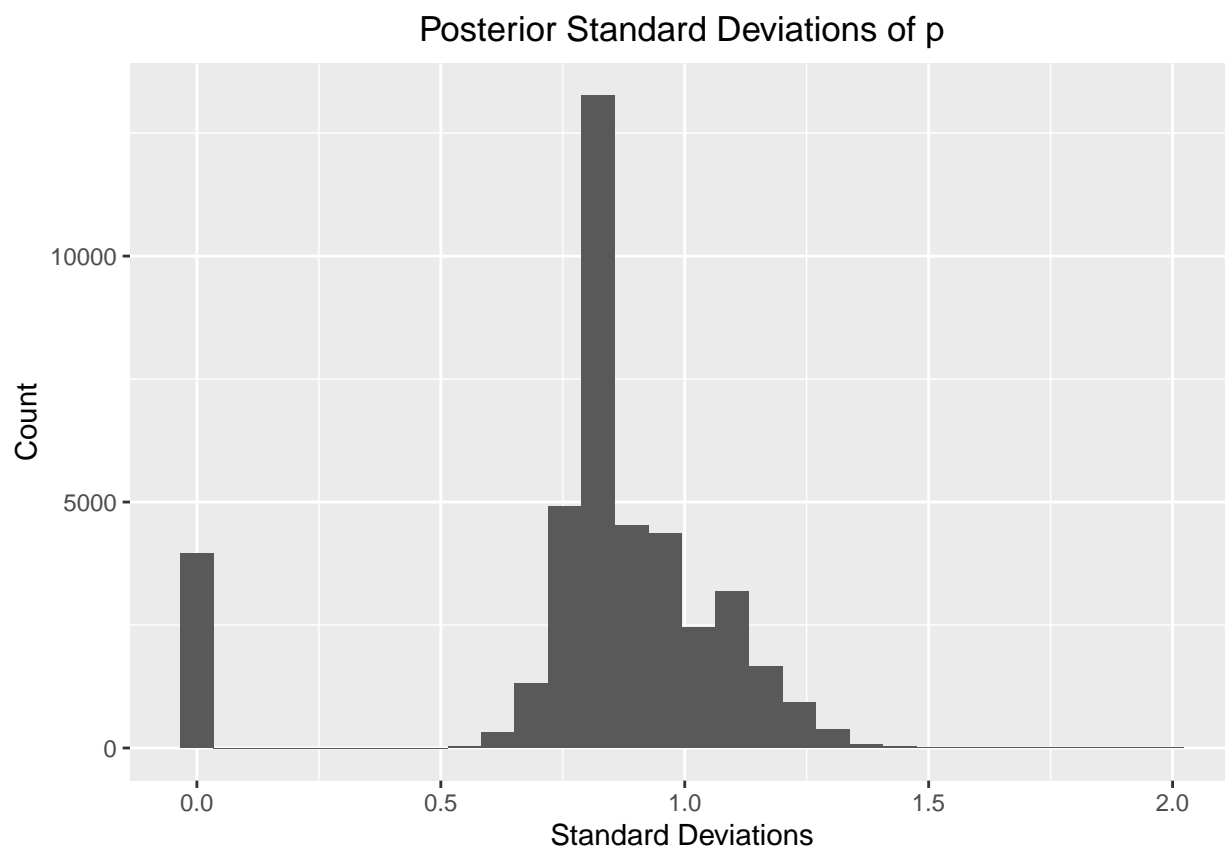
```
## [1] "    "
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[1] " "



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## [1] "    "
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Histograms for β values and w , and z posterior means across chains.