Simulation Results for Linear Models (uncorrelated errors)

2022-08-11

Summary

Results for error sd = 3 and corr = 0

mod	iprior	lasso	spikeslab	gprior
1000000	0.69	0.21	0.56	0.45
1100000	0.55	0.33	0.32	0.29
1101000	0.52	0.11	0.02	0.04
1110000	0.33	0.37	0.18	0.13
1110100	0.32	0.15	0.01	0.01
1111100	0.26	0.09	0.00	0.00
1111110	0.16	0.08	0.00	0.00
1111111	0.19	0.06	0.00	0.98

Model 1000000

- True value: 1, 0, 0, 0, 0, 0, 0
- nsim = 10000, n = 100, corr = 0, err.sd = 3

```
## $iprior
## # A tibble: 5 x 11
##       x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod          no     n   prop
##    <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>     <int> <int>  <dbl>
## 1     1     0     0     0     0     0      0 1000000       1  6858 0.686
## 2     1     1     0     0     0     0      0 1100000       5   743 0.0743
## 3     1     0     1     0     0     0      0 1010000       7   727 0.0727
## 4     1     1     0     1     0     0      0 1101000       4   594 0.0594
## 5     1     0     1     0     1     0      0 1010100       6   529 0.0529
##
## $lasso
## # A tibble: 2 x 11
##       x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod          no     n  prop
##    <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>     <int> <int> <dbl>
## 1     0     0     0     0     0     0      0 0000000      19  7532 0.753
## 2     1     0     0     0     0     0      0 1000000       1  2133 0.213
##
## $spikeslab
## # A tibble: 2 x 11
##       x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod          no     n  prop
##    <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>     <int> <int> <dbl>
## 1     1     0     0     0     0     0      0 1000000       1  5638 0.564
## 2     0     0     0     0     0     0      0 0000000      19  4187 0.419
##
## $gprior
## # A tibble: 3 x 11
##       x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod          no    n   prop
##    <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>     <int> <int>  <dbl>
## 1     1     1     1     1     1     1      1 1111111      10  4828 0.483
## 2     1     0     0     0     0     0      0 1000000       1  4476 0.448
## 3     0     0     0     0     0     0      0 0000000      19   525 0.0525
```

Model 1100000

- True value: 1, 1, 0, 0, 0, 0, 0
- nsim = 10000, n = 100, corr = 0, err.sd = 3

```
## $iprior
## # A tibble: 2 x 11
##       x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod          no     n  prop
##    <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>     <int> <int> <dbl>
## 1     1     1     0     0     0     0      0 1100000       5  5526 0.553
## 2     1     1     0     1     0     0      0 1101000       4  2047 0.205
##
## $lasso
## # A tibble: 4 x 11
##       x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod          no     n   prop
##    <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>     <int> <int>  <dbl>
## 1     0     0     0     0     0     0      0 0000000      19  4074 0.407
## 2     1     1     0     0     0     0      0 1100000       5  3257 0.326
## 3     0     1     0     0     0     0      0 0100000       2   897 0.0897
## 4     1     0     0     0     0     0      0 1000000       1   841 0.0841
##
## $spikeslab
## # A tibble: 4 x 11
##       x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod          no     n  prop
##    <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>     <int> <int> <dbl>
## 1     1     1     0     0     0     0      0 1100000       5  3206 0.321
## 2     0     1     0     0     0     0      0 0100000       2  2252 0.225
## 3     1     0     0     0     0     0      0 1000000       1  2223 0.222
## 4     0     0     0     0     0     0      0 0000000      19  2162 0.216
##
## $gprior
## # A tibble: 2 x 11
##       x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod          no     n  prop
##    <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>     <int> <int> <dbl>
## 1     1     1     1     1     1     1      1 1111111      10  5963 0.596
## 2     1     1     0     0     0     0      0 1100000       5  2899 0.290
```

Model 1101000

- True value: 1, 1, 0, 0.5, 0, 0, 0
- nsim = 10000, n = 100, corr = 0, err.sd = 3

```
## $iprior
## # A tibble: 2 x 11
##       x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod          no     n  prop
##    <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>     <int> <int> <dbl>
## 1     1     1     0     1     0     0      0 1101000       4  5229 0.523
## 2     1     1     0     0     0     0      0 1100000       5  2530 0.253
##
## $lasso
## # A tibble: 5 x 11
##       x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod          no     n   prop
##    <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>     <int> <int>  <dbl>
## 1     0     0     0     0     0     0      0 0000000      19  3633 0.363
## 2     1     1     0     0     0     0      0 1100000       5  2360 0.236
## 3     1     1     0     1     0     0      0 1101000       4  1086 0.109
## 4     0     1     0     0     0     0      0 0100000       2   728 0.0728
## 5     1     0     0     0     0     0      0 1000000       1   725 0.0725
##
## $spikeslab
## # A tibble: 4 x 11
##       x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod          no     n  prop
##    <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>     <int> <int> <dbl>
## 1     1     1     0     0     0     0      0 1100000       5  2785 0.278
## 2     1     0     0     0     0     0      0 1000000       1  2133 0.213
## 3     0     1     0     0     0     0      0 0100000       2  2108 0.211
## 4     0     0     0     0     0     0      0 0000000      19  2054 0.205
##
## $gprior
## # A tibble: 2 x 11
##       x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod          no     n  prop
##    <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>     <int> <int> <dbl>
## 1     1     1     1     1     1     1      1 1111111      10  7377 0.738
## 2     1     1     0     0     0     0      0 1100000       5  1550 0.155
```

Model 1110000

- True value: 1, 1, 1, 0, 0, 0, 0
- nsim = 10000, n = 100, corr = 0, err.sd = 3

```
## $iprior
## # A tibble: 5 x 11
##      x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod          no     n   prop
##   <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>     <int> <int>  <dbl>
## 1     1     1     1     0     0     0      0 1110000      18  3331 0.333
## 2     1     1     1     1     0     0      0 1111000      15  1217 0.122
## 3     1     1     1     0     1     0      0 1110100      16  1179 0.118
## 4     1     1     1     0     0     1      0 1110010      17  1172 0.117
## 5     1     1     1     0     1     1      0 1110110      14   508 0.0508
##
## $lasso
## # A tibble: 5 x 11
##      x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod          no     n   prop
##   <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>     <int> <int>  <dbl>
## 1     1     1     1     0     0     0      0 1110000      18  3667 0.367
## 2     0     0     0     0     0     0      0 0000000      19  1773 0.177
## 3     0     1     1     0     0     0      0 0110000       9   642 0.0642
## 4     1     0     1     0     0     0      0 1010000       7   642 0.0642
## 5     1     1     0     0     0     0      0 1100000       5   632 0.0632
##
## $spikeslab
## # A tibble: 8 x 11
##      x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod          no     n  prop
##   <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>     <int> <int> <dbl>
## 1     1     1     1     0     0     0      0 1110000      18  1777 0.178
## 2     0     0     0     0     0     0      0 0000000      19  1239 0.124
## 3     1     0     1     0     0     0      0 1010000       7  1231 0.123
## 4     0     1     1     0     0     0      0 0110000       9  1199 0.120
## 5     1     1     0     0     0     0      0 1100000       5  1187 0.119
## 6     0     0     1     0     0     0      0 0010000       3  1056 0.106
## 7     0     1     0     0     0     0      0 0100000       2  1055 0.106
## 8     1     0     0     0     0     0      0 1000000       1  1049 0.105
##
## $gprior
## # A tibble: 2 x 11
##      x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod          no     n  prop
##   <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>     <int> <int> <dbl>
## 1     1     1     1     1     1     1      1 1111111      10  7992 0.799
## 2     1     1     1     0     0     0      0 1110000      18  1281 0.128
```

Model 1110100

- True value: 1, 1, 1, 0, 0.5, 0, 0
- nsim = 10000, n = 100, corr = 0, err.sd = 3

```
## $iprior
## # A tibble: 6 x 11
##       x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod          no     n    prop
##    <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>     <int> <int>   <dbl>
## 1     1     1     1     0     1     0      0 1110100      16  3210  0.321
## 2     1     1     1     0     0     0      0 1110000      18  1432  0.143
## 3     1     1     1     0     1     1      0 1110110      14  1099  0.110
## 4     1     1     1     1     1     0      0 1111100      12  1026  0.103
## 5     1     1     1     1     0     0      0 1111000      15   569  0.0569
## 6     1     1     1     0     0     1      0 1110010      17   559  0.0559
##
## $lasso
## # A tibble: 5 x 11
##       x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod          no     n    prop
##    <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>     <int> <int>   <dbl>
## 1     1     1     1     0     0     0      0 1110000      18  2302  0.230
## 2     0     0     0     0     0     0      0 0000000      19  1571  0.157
## 3     1     1     1     0     1     0      0 1110100      16  1520  0.152
## 4     1     1     0     0     0     0      0 1100000       5   526  0.0526
## 5     0     1     1     0     0     0      0 0110000       9   518  0.0518
##
## $spikeslab
## # A tibble: 8 x 11
##       x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod          no     n    prop
##    <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>     <int> <int>   <dbl>
## 1     1     1     1     0     0     0      0 1110000      18  1516  0.152
## 2     0     0     0     0     0     0      0 0000000      19  1159  0.116
## 3     0     1     1     0     0     0      0 0110000       9  1129  0.113
## 4     1     1     0     0     0     0      0 1100000       5  1076  0.108
## 5     1     0     1     0     0     0      0 1010000       7  1071  0.107
## 6     0     1     0     0     0     0      0 0100000       2  1047  0.105
## 7     0     0     1     0     0     0      0 0010000       3  1044  0.104
## 8     1     0     0     0     0     0      0 1000000       1   993  0.0993
##
## $gprior
## # A tibble: 2 x 11
##       x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod          no     n    prop
##    <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>     <int> <int>   <dbl>
## 1     1     1     1     1     1     1      1 1111111      10  8884  0.888
## 2     1     1     1     0     0     0      0 1110000      18   603  0.0603
```

Model 1111100

- True value: 1, 1, 1, 0.5, 0.5, 0, 0
- nsim = 10000, n = 100, corr = 0, err.sd = 3

```
## $iprior
## # A tibble: 7 x 11
##       x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod          no     n   prop
##    <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>     <int> <int>  <dbl>
## 1     1     1     1     1     1     0      0 1111100      12  2615 0.262
## 2     1     1     1     1     0     0      0 1111000      15  1553 0.155
## 3     1     1     1     0     1     0      0 1110100      16  1438 0.144
## 4     1     1     1     1     1     1      1 1111111      10   766 0.0766
## 5     1     1     1     1     1     1      0 1111110      11   740 0.074
## 6     1     1     1     0     0     0      0 1110000      18   670 0.067
## 7     1     1     1     0     1     1      0 1110110      14   518 0.0518
##
## $lasso
## # A tibble: 5 x 11
##       x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod          no     n   prop
##    <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>     <int> <int>  <dbl>
## 1     1     1     1     0     0     0      0 1110000      18  1523 0.152
## 2     0     0     0     0     0     0      0 0000000      19  1467 0.147
## 3     1     1     1     1     1     0      0 1111100      12   922 0.0922
## 4     1     1     1     1     0     0      0 1111000      15   919 0.0919
## 5     1     1     1     0     1     0      0 1110100      16   893 0.0893
##
## $spikeslab
## # A tibble: 8 x 11
##       x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod          no     n   prop
##    <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>     <int> <int>  <dbl>
## 1     1     1     1     0     0     0      0 1110000      18  1278 0.128
## 2     0     0     0     0     0     0      0 0000000      19  1256 0.126
## 3     1     0     0     0     0     0      0 1000000       1  1053 0.105
## 4     0     1     1     0     0     0      0 0110000       9  1013 0.101
## 5     1     1     0     0     0     0      0 1100000       5   964 0.0964
## 6     1     0     1     0     0     0      0 1010000       7   953 0.0953
## 7     0     0     1     0     0     0      0 0010000       3   942 0.0942
## 8     0     1     0     0     0     0      0 0100000       2   896 0.0896
##
## $gprior
## # A tibble: 1 x 11
##       x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod          no     n  prop
##    <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>     <int> <int> <dbl>
## 1     1     1     1     1     1     1      1 1111111      10  9436 0.944
```

Model 1111110

- True value: 1, 1, 1, 0.5, 0.5, 0.5, 0
- nsim = 10000, n = 100, corr = 0, err.sd = 3

```
## $iprior
## # A tibble: 8 x 11
##       x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod          no     n   prop
##    <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>     <int> <int>  <dbl>
## 1     1     1     1     1     1     1      0 1111110      11  1607 0.161
## 2     1     1     1     1     1     1      1 1111111      10  1309 0.131
## 3     1     1     1     1     0     1      0 1111010      13  1251 0.125
## 4     1     1     1     0     1     1      0 1110110      14  1249 0.125
## 5     1     1     1     1     1     0      0 1111100      12  1173 0.117
## 6     1     1     1     0     1     0      0 1110100      16   804 0.0804
## 7     1     1     1     0     0     1      0 1110010      17   772 0.0772
## 8     1     1     1     1     0     0      0 1111000      15   767 0.0767
##
## $lasso
## # A tibble: 7 x 11
##       x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod          no     n   prop
##    <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>     <int> <int>  <dbl>
## 1     0     0     0     0     0     0      0 0000000      19  1244 0.124
## 2     1     1     1     0     0     0      0 1110000      18  1032 0.103
## 3     1     1     1     1     1     1      0 1111110      11   827 0.0827
## 4     1     1     1     0     0     1      0 1110010      17   574 0.0574
## 5     1     1     1     0     1     0      0 1110100      16   534 0.0534
## 6     1     1     1     1     0     0      0 1111000      15   525 0.0525
## 7     1     1     1     1     0     1      0 1111010      13   522 0.0522
##
## $spikeslab
## # A tibble: 8 x 11
##       x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod          no     n   prop
##    <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>     <int> <int>  <dbl>
## 1     0     0     0     0     0     0      0 0000000      19  1306 0.131
## 2     1     1     1     0     0     0      0 1110000      18  1157 0.116
## 3     0     0     1     0     0     0      0 0010000       3   936 0.0936
## 4     1     0     0     0     0     0      0 1000000       1   903 0.0903
## 5     0     1     0     0     0     0      0 0100000       2   894 0.0894
## 6     1     1     0     0     0     0      0 1100000       5   878 0.0878
## 7     1     0     1     0     0     0      0 1010000       7   853 0.0853
## 8     0     1     1     0     0     0      0 0110000       9   852 0.0852
##
## $gprior
## # A tibble: 1 x 11
##       x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod          no     n  prop
##    <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>     <int> <int> <dbl>
## 1     1     1     1     1     1     1      1 1111111      10  9712 0.971
```

Model 1111111

- True value: 1, 1, 1, 0.5, 0.5, 0.5, 0.25
- nsim = 10000, n = 100, corr = 0, err.sd = 3

```
## $iprior
## # A tibble: 8 x 11
##       x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod           no     n   prop
##    <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>      <int> <int>  <dbl>
## 1     1     1     1     1     1     1      1 1111111       10  1877 0.188
## 2     1     1     1     1     1     1      0 1111110       11  1367 0.137
## 3     1     1     1     0     1     1      0 1110110       14  1138 0.114
## 4     1     1     1     1     0     1      0 1111010       13  1133 0.113
## 5     1     1     1     1     1     0      0 1111100       12  1126 0.113
## 6     1     1     1     0     1     0      0 1110100       16   736 0.0736
## 7     1     1     1     0     0     1      0 1110010       17   708 0.0708
## 8     1     1     1     1     0     0      0 1111000       15   703 0.0703
##
## $lasso
## # A tibble: 4 x 11
##       x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod           no     n   prop
##    <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>      <int> <int>  <dbl>
## 1     0     0     0     0     0     0      0 0000000       19  1318 0.132
## 2     1     1     1     0     0     0      0 1110000       18   999 0.0999
## 3     1     1     1     1     1     1      0 1111110       11   727 0.0727
## 4     1     1     1     1     1     1      1 1111111       10   643 0.0643
##
## $spikeslab
## # A tibble: 8 x 11
##       x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod           no     n   prop
##    <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>      <int> <int>  <dbl>
## 1     0     0     0     0     0     0      0 0000000       19  1434 0.143
## 2     1     1     1     0     0     0      0 1110000       18  1057 0.106
## 3     1     0     0     0     0     0      0 1000000        1   926 0.0926
## 4     0     1     0     0     0     0      0 0100000        2   906 0.0906
## 5     1     0     1     0     0     0      0 1010000        7   863 0.0863
## 6     0     0     1     0     0     0      0 0010000        3   829 0.0829
## 7     0     1     1     0     0     0      0 0110000        9   811 0.0811
## 8     1     1     0     0     0     0      0 1100000        5   806 0.0806
##
## $gprior
## # A tibble: 1 x 11
##       x1    x2    x3  x1x2  x1x3  x2x3 x1x2x3 mod           no     n  prop
##    <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>  <dbl> <chr>      <int> <int> <dbl>
## 1     1     1     1     1     1     1      1 1111111       10  9770 0.977
```