

Thyroid Example

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Data

Model Summary

DEV with split/merge

```
##
## Frequency of MCMC iterations finding K groups:
##      1      2      3      4      5
##      1 9221 2562  209      7
##
## Percentage of MCMC iterations finding K groups:
##      1      2      3      4      5
##      0.0 76.8 21.3  1.7  0.1
##
## *Note that above frequency summaries of MCMC iterations were made before burn-in or thresholds were
##      All inference on phi will be made after accounting for burn-in and thresholding.
##
## K = 12  n_k = 7667 after burn-in and thresholding
##      Mean Median Empirical SE  2.5% 97.5%
## mu_1_1  0.24  0.24          0.00  0.14  0.35
## mu_1_2  0.14  0.14          0.00  0.00  0.28
## mu_1_3 -0.28 -0.27          0.00 -0.36 -0.19
## mu_2_1 -1.66 -1.67          0.16 -2.43 -0.84
## mu_2_2 -0.99 -1.00          0.13 -1.69 -0.20
## mu_2_3  1.90  1.90          0.18  1.07  2.71
##      Mean Median Empirical SE  2.5% 97.5%
## sigma_1_11 0.50  0.50          0.00  0.41  0.62
## sigma_1_22 0.83  0.82          0.01  0.64  1.03
## sigma_1_33 0.35  0.34          0.00  0.27  0.45
## sigma_1_12 0.38  0.38          0.00  0.27  0.51
## sigma_1_13 -0.10 -0.10          0.00 -0.18 -0.04
## sigma_1_23 -0.12 -0.11          0.00 -0.21 -0.03
## sigma_2_11 2.60  2.45          0.69  1.42  4.58
## sigma_2_22 2.45  2.29          0.71  1.29  4.55
## sigma_2_33 2.69  2.60          0.92  1.16  4.84
## sigma_2_12 1.59  1.46          0.55  0.54  3.39
## sigma_2_13 -1.45 -1.37          0.57 -3.17 -0.23
## sigma_2_23 -1.24 -1.14          0.47 -2.81 -0.16
##
## K = 18  n_k = 2151 after burn-in and thresholding
##      Mean Median Empirical SE  2.5% 97.5%
```

```

## mu_1_1  0.24   0.24           0.00  0.14  0.35
## mu_1_2  0.15   0.15           0.00  0.01  0.28
## mu_1_3 -0.27 -0.27           0.00 -0.36 -0.19
## mu_2_1 -1.79 -1.80           0.16 -2.51 -0.96
## mu_2_2 -1.07 -1.09           0.14 -1.74 -0.29
## mu_2_3  2.10  2.12           0.17  1.20  2.86
## mu_3_1 -0.18  0.15          14.06 -7.31  5.75
## mu_3_2  0.43  0.40          18.96 -5.61  6.52
## mu_3_3 -1.42 -1.65          36.26 -7.59  5.56
##           Mean Median Empirical SE    2.5% 97.5%
## sigma_1_11 0.51  0.51           0.00  0.41  0.63
## sigma_1_22 0.83  0.82           0.01  0.65  1.03
## sigma_1_33 0.34  0.33           0.00  0.27  0.43
## sigma_1_12 0.39  0.38           0.00  0.28  0.51
## sigma_1_13 -0.10 -0.10          0.00 -0.17 -0.04
## sigma_1_23 -0.11 -0.11          0.00 -0.20 -0.03
## sigma_2_11 2.41  2.27           0.61  1.28  4.22
## sigma_2_22 2.33  2.18           0.66  1.23  4.30
## sigma_2_33 2.13  1.96           0.71  1.01  4.18
## sigma_2_12 1.40  1.27           0.47  0.41  3.10
## sigma_2_13 -1.09 -0.98          0.46 -2.69 -0.07
## sigma_2_23 -0.97 -0.86          0.40 -2.39 -0.03
## sigma_3_11 16.14  7.22          2314.99  2.02 74.16
## sigma_3_22 22.09  7.50          54655.62  1.96 66.64
## sigma_3_33 25.91  7.50          89200.25  2.11 78.89
## sigma_3_12  4.70  1.25          4264.33 -15.12 29.43
## sigma_3_13 -4.77 -1.37          3256.73 -34.30 12.76
## sigma_3_23 -6.05 -1.24          36985.06 -31.42 14.65
##
## Summary function runtime is 0.1782708 mins

## $S
## [1] 12000
##
## $alpha
## [1] 1
##
## $mu0
##      [,1]
## [1,]    0
## [2,]    0
## [3,]    0
##
## $lambda0
##      [,1] [,2] [,3]
## [1,]    5    1   -1
## [2,]    1    5   -1
## [3,]   -1   -1    5
##
## $k_init
## [1] 1
##
## $g
## [1] 1

```

```

##
## $h
## [1] 10
##
## $r
## [1] 1.649648
##
## $mod_type
## [1] "conjUVV"
##
## $split_merge
## [1] FALSE
##
## $sm_iter
## [1] 5

## [[1]]
##      Mean Median Empirical SE  2.5% 97.5%
## mu_1_1  0.24  0.24      0.00  0.14  0.35
## mu_1_2  0.14  0.14      0.00  0.00  0.28
## mu_1_3 -0.28 -0.27      0.00 -0.36 -0.19
## mu_2_1 -1.66 -1.67      0.16 -2.43 -0.84
## mu_2_2 -0.99 -1.00      0.13 -1.69 -0.20
## mu_2_3  1.90  1.90      0.18  1.07  2.71
##
## [[2]]
##      Mean Median Empirical SE  2.5% 97.5%
## mu_1_1  0.24  0.24      0.00  0.14  0.35
## mu_1_2  0.15  0.15      0.00  0.01  0.28
## mu_1_3 -0.27 -0.27      0.00 -0.36 -0.19
## mu_2_1 -1.79 -1.80      0.16 -2.51 -0.96
## mu_2_2 -1.07 -1.09      0.14 -1.74 -0.29
## mu_2_3  2.10  2.12      0.17  1.20  2.86
## mu_3_1 -0.18  0.15     14.06 -7.31  5.75
## mu_3_2  0.43  0.40     18.96 -5.61  6.52
## mu_3_3 -1.42 -1.65     36.26 -7.59  5.56

## [[1]]
##      Mean Median Empirical SE  2.5% 97.5%
## sigma_1_11 0.50  0.50      0.00  0.41  0.62
## sigma_1_22 0.83  0.82      0.01  0.64  1.03
## sigma_1_33 0.35  0.34      0.00  0.27  0.45
## sigma_1_12 0.38  0.38      0.00  0.27  0.51
## sigma_1_13 -0.10 -0.10      0.00 -0.18 -0.04
## sigma_1_23 -0.12 -0.11      0.00 -0.21 -0.03
## sigma_2_11 2.60  2.45      0.69  1.42  4.58
## sigma_2_22 2.45  2.29      0.71  1.29  4.55
## sigma_2_33 2.69  2.60      0.92  1.16  4.84
## sigma_2_12 1.59  1.46      0.55  0.54  3.39
## sigma_2_13 -1.45 -1.37      0.57 -3.17 -0.23
## sigma_2_23 -1.24 -1.14      0.47 -2.81 -0.16
##
## [[2]]
##      Mean Median Empirical SE  2.5% 97.5%
## sigma_1_11 0.51  0.51      0.00  0.41  0.63

```

```

## sigma_1_22 0.83 0.82 0.01 0.65 1.03
## sigma_1_33 0.34 0.33 0.00 0.27 0.43
## sigma_1_12 0.39 0.38 0.00 0.28 0.51
## sigma_1_13 -0.10 -0.10 0.00 -0.17 -0.04
## sigma_1_23 -0.11 -0.11 0.00 -0.20 -0.03
## sigma_2_11 2.41 2.27 0.61 1.28 4.22
## sigma_2_22 2.33 2.18 0.66 1.23 4.30
## sigma_2_33 2.13 1.96 0.71 1.01 4.18
## sigma_2_12 1.40 1.27 0.47 0.41 3.10
## sigma_2_13 -1.09 -0.98 0.46 -2.69 -0.07
## sigma_2_23 -0.97 -0.86 0.40 -2.39 -0.03
## sigma_3_11 16.14 7.22 2314.99 2.02 74.16
## sigma_3_22 22.09 7.50 54655.62 1.96 66.64
## sigma_3_33 25.91 7.50 89200.25 2.11 78.89
## sigma_3_12 4.70 1.25 4264.33 -15.12 29.43
## sigma_3_13 -4.77 -1.37 3256.73 -34.30 12.76
## sigma_3_23 -6.05 -1.24 36985.06 -31.42 14.65

## NULL

##
## 1 2 3 4 5
## 0.0 76.8 21.3 1.7 0.1

## Time difference of 88.18687 mins

```

```

##
## Frequency of MCMC iterations finding K groups:
##   1   2   3   4   5   6   7
##  53 3019 5269 2900 667  86   6
##
## Percentage of MCMC iterations finding K groups:
##   1   2   3   4   5   6   7
##  0.4 25.2 43.9 24.2  5.6  0.7  0.0
##
## *Note that above frequency summaries of MCMC iterations were made before burn-in or thresholds were
##       All inference on phi will be made after accounting for burn-in and thresholding.
##
## K = 12  n_k = 2613 after burn-in and thresholding
##           Mean Median Empirical SE  2.5% 97.5%
## mu_1_1 -0.90 -0.38          1.10 -3.12  0.01
## mu_1_2 -0.47 -0.14          0.53 -2.01  0.20
## mu_1_3  1.03  0.53          1.08  0.11  2.82
## mu_2_1  0.17  0.20          0.02 -0.11  0.39
## mu_2_2  0.06  0.08          0.02 -0.26  0.28
## mu_2_3 -0.26 -0.27          0.01 -0.52  0.01
##           Mean Median Empirical SE  2.5% 97.5%
## sigma_1_11 2.71  2.18          17.51  1.39  5.59
## sigma_1_22 2.55  2.10           8.64  1.28  5.40
## sigma_1_33 2.66  2.12          39.63  1.22  5.09
## sigma_1_12 1.66  1.51           4.97  0.50  3.71
## sigma_1_13 -1.43 -1.42          17.23 -3.22 -0.13
## sigma_1_23 -1.30 -1.10           7.94 -2.99 -0.06
## sigma_2_11  0.49  0.46           0.02  0.32  0.95
## sigma_2_22  0.66  0.65           0.04  0.35  1.07
## sigma_2_33  0.40  0.36           0.03  0.27  1.01
## sigma_2_12  0.28  0.27           0.03  0.06  0.67
## sigma_2_13 -0.12 -0.09           0.02 -0.62 -0.01
## sigma_2_23 -0.11 -0.09           0.01 -0.46  0.00
##
## K = 18  n_k = 4389 after burn-in and thresholding
##           Mean Median Empirical SE  2.5% 97.5%
## mu_1_1 -1.37 -1.46           2.69 -3.66  0.39
## mu_1_2 -0.87 -0.86           1.20 -2.76  0.51
## mu_1_3  1.52  1.65           1.24 -0.45  3.23
## mu_2_1  0.18  0.19           0.02 -0.14  0.45
## mu_2_2  0.07  0.08           0.02 -0.25  0.36
## mu_2_3 -0.25 -0.26           0.01 -0.52  0.03
## mu_3_1 -0.18  0.07           1.41 -2.76  1.44
## mu_3_2  0.04  0.11           1.09 -2.16  1.95
## mu_3_3  0.16 -0.12           1.51 -2.02  2.67
##           Mean Median Empirical SE  2.5% 97.5%
## sigma_1_11 3.66  2.50          720.23  1.29  9.07
## sigma_1_22 3.07  2.33          29.73  1.18  8.73
## sigma_1_33 3.03  2.37          16.56  1.05  8.59
## sigma_1_12 1.75  1.43         112.10 -0.20  4.76
## sigma_1_13 -1.57 -1.36          55.74 -4.10  0.46
## sigma_1_23 -1.22 -1.04          12.74 -3.76  0.55
## sigma_2_11  0.50  0.48           0.02  0.32  0.85
## sigma_2_22  0.68  0.66           0.05  0.36  1.17

```

```

## sigma_2_33 0.41 0.36 0.02 0.27 0.86
## sigma_2_12 0.29 0.28 0.02 0.05 0.62
## sigma_2_13 -0.12 -0.10 0.01 -0.47 -0.01
## sigma_2_23 -0.11 -0.10 0.01 -0.35 0.01
## sigma_3_11 2.86 1.61 26.90 0.52 12.10
## sigma_3_22 3.06 1.90 28.41 0.55 12.15
## sigma_3_33 2.98 1.65 47.78 0.43 12.62
## sigma_3_12 1.32 0.85 9.50 -0.49 6.03
## sigma_3_13 -1.11 -0.51 11.77 -5.93 0.69
## sigma_3_23 -0.96 -0.44 11.69 -5.56 0.93
##
## K = 24 n_k = 2331 after burn-in and thresholding
## Mean Median Empirical SE 2.5% 97.5%
## mu_1_1 0.17 0.17 0.02 -0.17 0.48
## mu_1_2 0.05 0.05 0.02 -0.27 0.38
## mu_1_3 -0.25 -0.25 0.02 -0.53 0.03
## mu_2_1 0.11 0.22 0.70 -2.03 1.39
## mu_2_2 0.27 0.22 0.68 -1.60 1.98
## mu_2_3 0.03 -0.18 0.80 -1.18 2.37
## mu_3_1 -1.19 -1.23 1.00 -2.99 0.56
## mu_3_2 -0.74 -0.74 0.68 -2.26 0.79
## mu_3_3 1.41 1.49 1.08 -0.43 3.15
## mu_4_1 -0.97 -0.90 4.11 -4.37 2.28
## mu_4_2 -0.61 -0.51 7.66 -3.74 2.73
## mu_4_3 0.84 0.83 4.47 -2.81 3.83
## Mean Median Empirical SE 2.5% 97.5%
## sigma_1_11 0.48 0.46 0.02 0.30 0.85
## sigma_1_22 0.64 0.58 0.06 0.34 1.21
## sigma_1_33 0.41 0.37 0.02 0.27 0.85
## sigma_1_12 0.26 0.23 0.02 0.05 0.61
## sigma_1_13 -0.11 -0.09 0.01 -0.43 0.00
## sigma_1_23 -0.10 -0.09 0.01 -0.32 0.01
## sigma_2_11 2.06 1.31 5.75 0.51 7.22
## sigma_2_22 2.47 1.83 7.57 0.52 8.28
## sigma_2_33 2.17 1.25 15.74 0.42 8.76
## sigma_2_12 1.08 0.78 2.39 -0.32 4.32
## sigma_2_13 -0.79 -0.38 3.25 -4.22 0.35
## sigma_2_23 -0.73 -0.36 3.47 -4.15 0.41
## sigma_3_11 2.76 2.41 7.37 0.86 6.02
## sigma_3_22 2.69 2.25 16.65 0.87 6.20
## sigma_3_33 2.67 2.31 5.07 0.83 6.65
## sigma_3_12 1.53 1.30 9.67 0.06 4.11
## sigma_3_13 -1.35 -1.24 1.89 -3.75 0.10
## sigma_3_23 -1.07 -0.96 2.07 -3.36 0.32
## sigma_4_11 5.89 3.40 144.30 1.01 25.61
## sigma_4_22 6.68 3.44 2155.43 1.06 25.28
## sigma_4_33 5.77 3.38 160.68 0.90 22.90
## sigma_4_12 1.63 1.15 158.38 -3.19 11.59
## sigma_4_13 -1.62 -1.04 51.51 -11.94 4.16
## sigma_4_23 -1.89 -0.86 364.08 -10.87 4.07
##
## K = 30 n_k = 548 after burn-in and thresholding
## Mean Median Empirical SE 2.5% 97.5%
## mu_1_1 0.15 0.21 0.50 -1.65 1.44

```

```

## mu_1_2  0.30  0.27          0.48 -1.22  1.86
## mu_1_3  0.01 -0.20          0.53 -0.94  2.21
## mu_2_1  0.16  0.17          0.03 -0.20  0.51
## mu_2_2  0.05  0.05          0.03 -0.30  0.40
## mu_2_3 -0.24 -0.25          0.02 -0.54  0.07
## mu_3_1 -1.17 -1.28          1.17 -2.82  0.65
## mu_3_2 -0.69 -0.68          0.73 -2.36  0.90
## mu_3_3  1.39  1.50          1.06 -0.44  3.16
## mu_4_1 -0.30  0.00          3.03 -4.36  2.62
## mu_4_2 -0.10  0.04          3.83 -3.89  2.92
## mu_4_3  0.16 -0.08          4.07 -2.89  3.95
## mu_5_1 -1.68 -1.55         12.45 -4.54  1.82
## mu_5_2 -1.02 -1.05          2.91 -4.11  2.41
## mu_5_3  1.42  1.64          2.74 -2.43  3.95
##           Mean Median Empirical SE    2.5% 97.5%
## sigma_1_11 1.76  1.21          2.76  0.53  6.11
## sigma_1_22 2.16  1.73          2.83  0.57  6.47
## sigma_1_33 1.73  1.06          3.96  0.41  7.26
## sigma_1_12 1.00  0.75          1.33  0.02  3.62
## sigma_1_13 -0.69 -0.35          1.08 -3.16  0.39
## sigma_1_23 -0.66 -0.39          0.95 -3.69  0.29
## sigma_2_11 0.48  0.45          0.02  0.30  0.88
## sigma_2_22 0.60  0.53          0.05  0.34  1.24
## sigma_2_33 0.42  0.37          0.03  0.27  0.87
## sigma_2_12 0.24  0.19          0.02  0.05  0.60
## sigma_2_13 -0.11 -0.09          0.02 -0.39  0.01
## sigma_2_23 -0.10 -0.08          0.01 -0.29  0.02
## sigma_3_11 2.77  2.42          3.58  0.82  6.16
## sigma_3_22 2.74  2.34          2.79  0.80  7.15
## sigma_3_33 2.63  2.33          2.39  0.70  7.01
## sigma_3_12 1.44  1.21          1.70 -0.14  3.89
## sigma_3_13 -1.31 -1.17          1.23 -3.56  0.21
## sigma_3_23 -1.07 -0.91          1.09 -3.55  0.49
## sigma_4_11 6.91  3.71         146.10  0.91 36.17
## sigma_4_22 8.93  3.87         986.85  0.99 32.03
## sigma_4_33 7.88  3.71         516.51  0.88 35.06
## sigma_4_12 1.94  0.97          97.37 -6.02 20.97
## sigma_4_13 -2.80 -0.92         145.79 -18.50  3.93
## sigma_4_23 -1.50 -0.88         373.87 -15.09  6.88
## sigma_5_11 9.94  4.02        5515.16  1.42 24.47
## sigma_5_22 6.17  3.92          70.92  1.51 22.04
## sigma_5_33 6.22  3.94         114.06  1.52 23.06
## sigma_5_12 2.09  1.45          52.88 -3.06 11.68
## sigma_5_13 -1.97 -1.28         162.14 -10.35  3.64
## sigma_5_23 -1.59 -1.11          25.17 -9.39  4.15
##
## Split/Merge MH Steps:
## # A tibble: 2 x 3
##   move_type Accept_Prob Count
##   <fct>         <dbl> <int>
## 1 MERGE           0.443  1054
## 2 SPLIT           0.442  1346
##
## Summary function runtime is 1.430754 mins

```

```

## $S
## [1] 12000
##
## $alpha
## [1] 1
##
## $mu0
##      [,1]
## [1,]    0
## [2,]    0
## [3,]    0
##
## $lambda0
##      [,1] [,2] [,3]
## [1,]    5    1   -1
## [2,]    1    5   -1
## [3,]   -1   -1    5
##
## $k_init
## [1] 1
##
## $g
## [1] 1
##
## $h
## [1] 10
##
## $r
## [1] 5.236196
##
## $mod_type
## [1] "conjUVV"
##
## $split_merge
## [1] TRUE
##
## $sm_iter
## [1] 5
##
## [[1]]
##      Mean Median Empirical SE  2.5% 97.5%
## mu_1_1 -0.90  -0.38      1.10 -3.12  0.01
## mu_1_2 -0.47  -0.14      0.53 -2.01  0.20
## mu_1_3  1.03   0.53      1.08  0.11  2.82
## mu_2_1  0.17   0.20      0.02 -0.11  0.39
## mu_2_2  0.06   0.08      0.02 -0.26  0.28
## mu_2_3 -0.26  -0.27      0.01 -0.52  0.01
##
## [[2]]
##      Mean Median Empirical SE  2.5% 97.5%
## mu_1_1 -1.37  -1.46      2.69 -3.66  0.39
## mu_1_2 -0.87  -0.86      1.20 -2.76  0.51
## mu_1_3  1.52   1.65      1.24 -0.45  3.23
## mu_2_1  0.18   0.19      0.02 -0.14  0.45

```



```

## mu_2_2  0.07   0.08           0.02 -0.25  0.36
## mu_2_3 -0.25  -0.26           0.01 -0.52  0.03
## mu_3_1 -0.18   0.07           1.41 -2.76  1.44
## mu_3_2  0.04   0.11           1.09 -2.16  1.95
## mu_3_3  0.16  -0.12           1.51 -2.02  2.67
##
## [[3]]
##      Mean Median Empirical SE  2.5% 97.5%
## mu_1_1  0.17   0.17           0.02 -0.17  0.48
## mu_1_2  0.05   0.05           0.02 -0.27  0.38
## mu_1_3 -0.25  -0.25           0.02 -0.53  0.03
## mu_2_1  0.11   0.22           0.70 -2.03  1.39
## mu_2_2  0.27   0.22           0.68 -1.60  1.98
## mu_2_3  0.03  -0.18           0.80 -1.18  2.37
## mu_3_1 -1.19  -1.23           1.00 -2.99  0.56
## mu_3_2 -0.74  -0.74           0.68 -2.26  0.79
## mu_3_3  1.41   1.49           1.08 -0.43  3.15
## mu_4_1 -0.97  -0.90           4.11 -4.37  2.28
## mu_4_2 -0.61  -0.51           7.66 -3.74  2.73
## mu_4_3  0.84   0.83           4.47 -2.81  3.83
##
## [[4]]
##      Mean Median Empirical SE  2.5% 97.5%
## mu_1_1  0.15   0.21           0.50 -1.65  1.44
## mu_1_2  0.30   0.27           0.48 -1.22  1.86
## mu_1_3  0.01  -0.20           0.53 -0.94  2.21
## mu_2_1  0.16   0.17           0.03 -0.20  0.51
## mu_2_2  0.05   0.05           0.03 -0.30  0.40
## mu_2_3 -0.24  -0.25           0.02 -0.54  0.07
## mu_3_1 -1.17  -1.28           1.17 -2.82  0.65
## mu_3_2 -0.69  -0.68           0.73 -2.36  0.90
## mu_3_3  1.39   1.50           1.06 -0.44  3.16
## mu_4_1 -0.30   0.00           3.03 -4.36  2.62
## mu_4_2 -0.10   0.04           3.83 -3.89  2.92
## mu_4_3  0.16  -0.08           4.07 -2.89  3.95
## mu_5_1 -1.68  -1.55          12.45 -4.54  1.82
## mu_5_2 -1.02  -1.05           2.91 -4.11  2.41
## mu_5_3  1.42   1.64           2.74 -2.43  3.95
##
## [[1]]
##      Mean Median Empirical SE  2.5% 97.5%
## sigma_1_11 2.71   2.18          17.51  1.39  5.59
## sigma_1_22 2.55   2.10           8.64  1.28  5.40
## sigma_1_33 2.66   2.12          39.63  1.22  5.09
## sigma_1_12 1.66   1.51           4.97  0.50  3.71
## sigma_1_13 -1.43  -1.42          17.23 -3.22 -0.13
## sigma_1_23 -1.30  -1.10           7.94 -2.99 -0.06
## sigma_2_11 0.49   0.46           0.02  0.32  0.95
## sigma_2_22 0.66   0.65           0.04  0.35  1.07
## sigma_2_33 0.40   0.36           0.03  0.27  1.01
## sigma_2_12 0.28   0.27           0.03  0.06  0.67
## sigma_2_13 -0.12  -0.09           0.02 -0.62 -0.01
## sigma_2_23 -0.11  -0.09           0.01 -0.46  0.00
##

```

```

## [[2]]
##           Mean Median Empirical SE   2.5% 97.5%
## sigma_1_11  3.66  2.50      720.23  1.29  9.07
## sigma_1_22  3.07  2.33       29.73  1.18  8.73
## sigma_1_33  3.03  2.37       16.56  1.05  8.59
## sigma_1_12  1.75  1.43      112.10 -0.20  4.76
## sigma_1_13 -1.57 -1.36       55.74 -4.10  0.46
## sigma_1_23 -1.22 -1.04       12.74 -3.76  0.55
## sigma_2_11  0.50  0.48        0.02  0.32  0.85
## sigma_2_22  0.68  0.66        0.05  0.36  1.17
## sigma_2_33  0.41  0.36        0.02  0.27  0.86
## sigma_2_12  0.29  0.28        0.02  0.05  0.62
## sigma_2_13 -0.12 -0.10        0.01 -0.47 -0.01
## sigma_2_23 -0.11 -0.10        0.01 -0.35  0.01
## sigma_3_11  2.86  1.61       26.90  0.52 12.10
## sigma_3_22  3.06  1.90       28.41  0.55 12.15
## sigma_3_33  2.98  1.65       47.78  0.43 12.62
## sigma_3_12  1.32  0.85        9.50 -0.49  6.03
## sigma_3_13 -1.11 -0.51       11.77 -5.93  0.69
## sigma_3_23 -0.96 -0.44       11.69 -5.56  0.93
##
## [[3]]
##           Mean Median Empirical SE   2.5% 97.5%
## sigma_1_11  0.48  0.46        0.02  0.30  0.85
## sigma_1_22  0.64  0.58        0.06  0.34  1.21
## sigma_1_33  0.41  0.37        0.02  0.27  0.85
## sigma_1_12  0.26  0.23        0.02  0.05  0.61
## sigma_1_13 -0.11 -0.09        0.01 -0.43  0.00
## sigma_1_23 -0.10 -0.09        0.01 -0.32  0.01
## sigma_2_11  2.06  1.31        5.75  0.51  7.22
## sigma_2_22  2.47  1.83        7.57  0.52  8.28
## sigma_2_33  2.17  1.25       15.74  0.42  8.76
## sigma_2_12  1.08  0.78        2.39 -0.32  4.32
## sigma_2_13 -0.79 -0.38        3.25 -4.22  0.35
## sigma_2_23 -0.73 -0.36        3.47 -4.15  0.41
## sigma_3_11  2.76  2.41        7.37  0.86  6.02
## sigma_3_22  2.69  2.25       16.65  0.87  6.20
## sigma_3_33  2.67  2.31        5.07  0.83  6.65
## sigma_3_12  1.53  1.30        9.67  0.06  4.11
## sigma_3_13 -1.35 -1.24        1.89 -3.75  0.10
## sigma_3_23 -1.07 -0.96        2.07 -3.36  0.32
## sigma_4_11  5.89  3.40      144.30  1.01 25.61
## sigma_4_22  6.68  3.44     2155.43  1.06 25.28
## sigma_4_33  5.77  3.38      160.68  0.90 22.90
## sigma_4_12  1.63  1.15     158.38 -3.19 11.59
## sigma_4_13 -1.62 -1.04       51.51 -11.94  4.16
## sigma_4_23 -1.89 -0.86     364.08 -10.87  4.07
##
## [[4]]
##           Mean Median Empirical SE   2.5% 97.5%
## sigma_1_11  1.76  1.21        2.76  0.53  6.11
## sigma_1_22  2.16  1.73        2.83  0.57  6.47
## sigma_1_33  1.73  1.06        3.96  0.41  7.26
## sigma_1_12  1.00  0.75        1.33  0.02  3.62

```

```

## sigma_1_13 -0.69 -0.35      1.08 -3.16  0.39
## sigma_1_23 -0.66 -0.39      0.95 -3.69  0.29
## sigma_2_11  0.48  0.45      0.02  0.30  0.88
## sigma_2_22  0.60  0.53      0.05  0.34  1.24
## sigma_2_33  0.42  0.37      0.03  0.27  0.87
## sigma_2_12  0.24  0.19      0.02  0.05  0.60
## sigma_2_13 -0.11 -0.09      0.02 -0.39  0.01
## sigma_2_23 -0.10 -0.08      0.01 -0.29  0.02
## sigma_3_11  2.77  2.42     3.58  0.82  6.16
## sigma_3_22  2.74  2.34     2.79  0.80  7.15
## sigma_3_33  2.63  2.33     2.39  0.70  7.01
## sigma_3_12  1.44  1.21     1.70 -0.14  3.89
## sigma_3_13 -1.31 -1.17     1.23 -3.56  0.21
## sigma_3_23 -1.07 -0.91     1.09 -3.55  0.49
## sigma_4_11  6.91  3.71    146.10  0.91 36.17
## sigma_4_22  8.93  3.87    986.85  0.99 32.03
## sigma_4_33  7.88  3.71    516.51  0.88 35.06
## sigma_4_12  1.94  0.97     97.37 -6.02 20.97
## sigma_4_13 -2.80 -0.92    145.79 -18.50  3.93
## sigma_4_23 -1.50 -0.88    373.87 -15.09  6.88
## sigma_5_11  9.94  4.02   5515.16  1.42 24.47
## sigma_5_22  6.17  3.92     70.92  1.51 22.04
## sigma_5_33  6.22  3.94    114.06  1.52 23.06
## sigma_5_12  2.09  1.45     52.88 -3.06 11.68
## sigma_5_13 -1.97 -1.28    162.14 -10.35  3.64
## sigma_5_23 -1.59 -1.11     25.17 -9.39  4.15

## # A tibble: 2 x 3
##   move_type Accept_Prob Count
##   <fct>      <dbl> <int>
## 1 MERGE      0.443  1054
## 2 SPLIT      0.442  1346

##
##    1    2    3    4    5    6    7
## 0.4 25.2 43.9 24.2  5.6  0.7  0.0

## Time difference of 198.3613 mins

```