Model Specification

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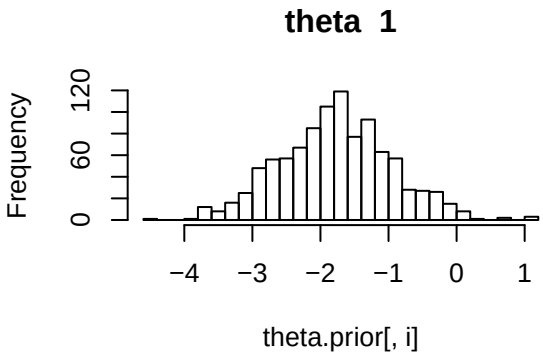
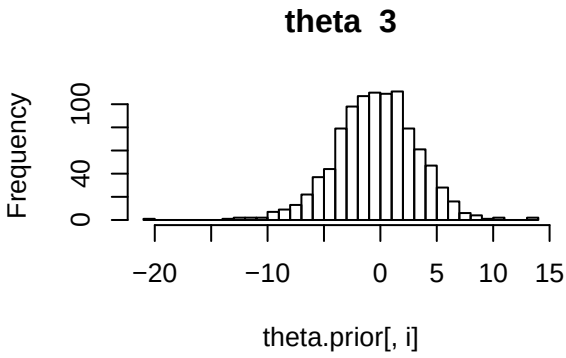
```
##
## Attaching package: 'dplyr'
##
## The following objects are masked from 'package:stats':
##
##     filter, lag
##
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
##
##
## Attaching package: 'magrittr'
##
## The following object is masked from 'package:dplyr':
##
##     %>%
##
## Loading required package: foreach
## Loading required package: iterators
## Loading required package: parallel
```

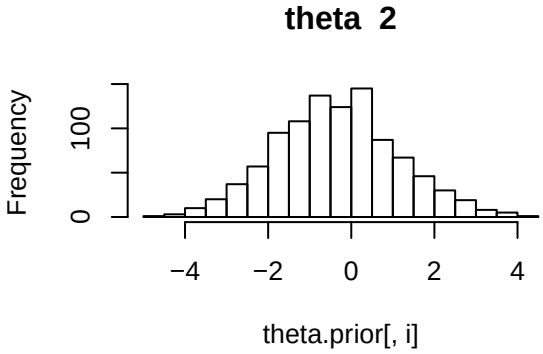
Simulate from $\pi \sim$ Dirichlet:

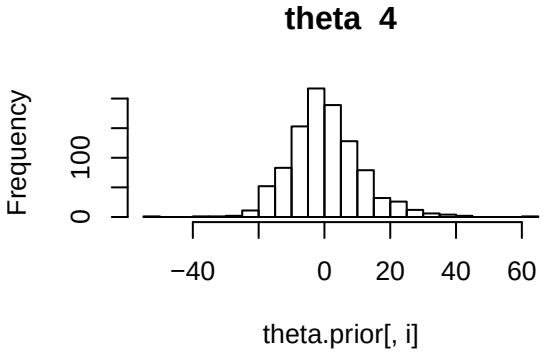
```
# simulation
registerDoMC(4)
theta.prior = foreach(i=1:1000, .combine=rbind) %dopar% {
      rdirichlet(1,c(3,4,2,0.5,0.2,0.1,0.1,0.05,0.05)) %>% PiToTheta(.) %>% t(.)
}

# marginal distribution
layout(matrix(1:4,nrow=2))
for (i in 1:4)
{hist(theta.prior[,i],breaks=25,main=paste("theta ",i))}
```

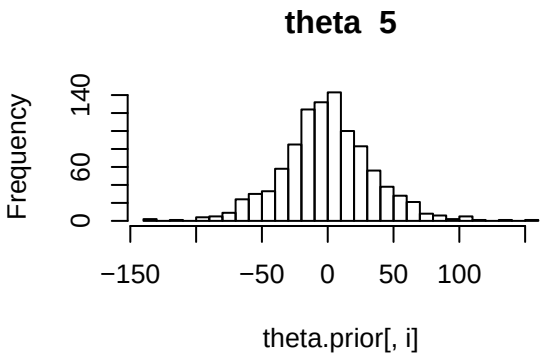


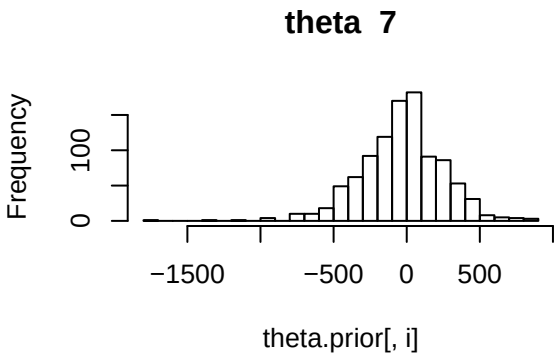


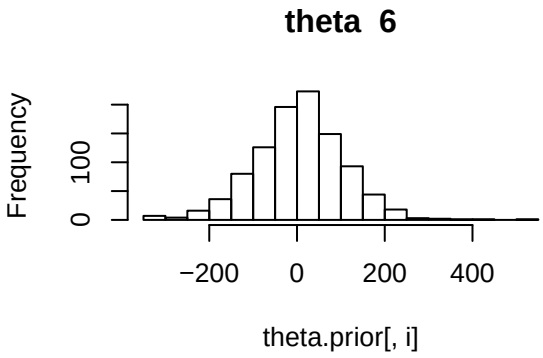


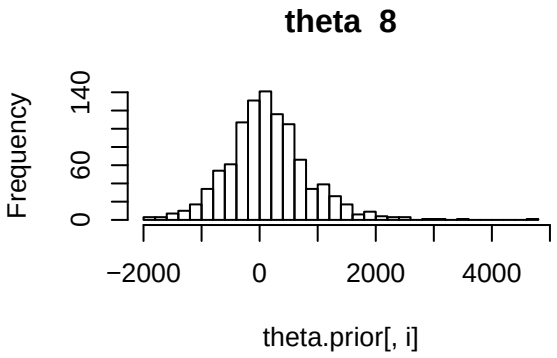



```
for (i in 5:8)
{hist(theta.prior[,i],breaks=25,main=paste("theta ",i))}
```









```r
layout(matrix(1,nrow=1))

# covariance
cor(theta.prior)
```

```
##           [,1]      [,2]    [,3]    [,4]     [,5]     [,6]     [,7]
## [1,]  1.000000 -0.789956  0.4192 -0.1943  0.09608 -0.04884  0.01896
## [2,] -0.789956  1.000000 -0.7635  0.4211 -0.20353  0.09347 -0.03846
## [3,]  0.419245 -0.763531  1.0000 -0.8228  0.53352 -0.31535  0.18296
## [4,] -0.194280  0.421114 -0.8228  1.0000 -0.88413  0.67365 -0.48627
## [5,]  0.096078 -0.203532  0.5335 -0.8841  1.00000 -0.92919  0.79241
## [6,] -0.048837  0.093473 -0.3154  0.6736 -0.92919  1.00000 -0.95613
## [7,]  0.018960 -0.038456  0.1830 -0.4863  0.79241 -0.95613  1.00000
## [8,]  0.002396  0.009198 -0.1054  0.3391 -0.63996  0.84926 -0.96191
##           [,8]
## [1,]  0.002396
## [2,]  0.009198
## [3,] -0.105372
## [4,]  0.339147
## [5,] -0.639960
## [6,]  0.849262
## [7,] -0.961911
## [8,]  1.000000
```

```r
pairs(theta.prior)
```