Version 3: 3 clusters

Simulate data

```
I <- 50
K <- 3
S <- 10

# choose diffuse priors for gamma
a_gamma <- 2
b_gamma <- 10

set.seed(123)

a <- matrix(NA, nrow=K, ncol=S)
b <- matrix(NA, nrow=K, ncol=S)
for (s in 1:S) {
  a[, s] <- rgamma(K, a_gamma, rate = 1/b_gamma)
  b[, s] <- rgamma(K, a_gamma, rate = 1/b_gamma)
}

# reorder a,b matrices to match ordering of means (U) in S1
U <- a/(a+b)
V <- a+b
U.ordered <- U[order(U[,1]), ]
a.ordered <- a[order(U[,1]),]
b.ordered <- b[order(U[,1]),]
V.ordered <- V[order(U[,1]),]

pi <- as.vector(rdirichlet(1, rep(1, K)))
z <- sample(1:K, size = I, replace = T, prob = pi)

w <- matrix(NA, nrow=I, ncol=S)
for (s in 1:S) {
  w[, s] <- rbeta(I, a.ordered[,s][z], b.ordered[,s][z])
}

tcn <- matrix(2, nrow=I, ncol=S)
m <- matrix(rep(sample(1:2, size = I, replace = T), S), nrow=I, ncol=S)

calcTheta <- function(m, tcn, w) {
  (m * w) / (tcn * w + 2*(1-w))
}
theta <- calcTheta(m, tcn, w)

n <- replicate(S, rpois(I, 100))
y <- matrix(NA, nrow=I, ncol=S)
for (i in 1:I) {
  for (s in 1:S) {
    y[i, s] <- rbinom(1, n[i, s], theta[i,s])
  }
```

```
}
```

JAGS

```
jags.file <- file.path(models.dir, "v3_uv_unif.jags")

test.data <- list("I" = I, "S" = S, "K" = K,
                  "y" = y, "n" = n,
                  "m" = m, "tcn" = tcn)
jags.m <- jags.model(jags.file, test.data,
                     n.chains = 1,
                     inits = list(".RNG.name" = "base::Wichmann-Hill",
                                  ".RNG.seed" = 123))
```

```
## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
## Graph information:
##    Observed stochastic nodes: 500
##    Unobserved stochastic nodes: 611
##    Total graph size: 8511
##
## Initializing model
```

```
params <- c("z", "w", "U", "V")
samps <- coda.samples(jags.m, params, n.iter=10000, thin=7)
s <- summary(samps)
```

```
effectiveSize(samps)
```

```
##    U[1,1]    U[2,1]    U[3,1]    U[1,2]    U[2,2]    U[3,2]    U[1,3]
##  833.3215  754.0121 1126.2601 1269.9634 1428.0000 1428.0000 1313.2872
##    U[2,3]    U[3,3]    U[1,4]    U[2,4]    U[3,4]    U[1,5]    U[2,5]
## 1428.0000 1112.8912 1488.1657 1428.0000 1060.0345 1324.0603 1428.0000
##    U[3,5]    U[1,6]    U[2,6]    U[3,6]    U[1,7]    U[2,7]    U[3,7]
## 1203.5792 1428.0000 1428.0000 1428.0000 1428.0000 1413.4536 1428.0000
##    U[1,8]    U[2,8]    U[3,8]    U[1,9]    U[2,9]    U[3,9]   U[1,10]
## 1428.0000 1428.0000 1311.8344 1428.0000 1252.2983 1428.0000 1428.0000
##   U[2,10]   U[3,10]    V[1,1]    V[2,1]    V[3,1]    V[1,2]    V[2,2]
## 1156.0470 1428.0000 1260.5688 1307.1286 1193.5127 1005.7410 1388.9795
##    V[3,2]    V[1,3]    V[2,3]    V[3,3]    V[1,4]    V[2,4]    V[3,4]
## 1627.8105 1195.3295 1295.4036 1428.0000 1221.7736 1027.0504 1273.5244
##    V[1,5]    V[2,5]    V[3,5]    V[1,6]    V[2,6]    V[3,6]    V[1,7]
## 1260.7662 1245.9813 1428.0000 1133.4261 1428.0000 1428.0000 1314.8998
##    V[2,7]    V[3,7]    V[1,8]    V[2,8]    V[3,8]    V[1,9]    V[2,9]
## 1226.5592 1428.0000 1105.4319 1275.5601 1428.0000 1454.8546 1428.0000
##    V[3,9]   V[1,10]   V[2,10]   V[3,10]    w[1,1]    w[2,1]    w[3,1]
## 1428.0000  981.4264 1063.4453 1428.0000 1428.0000 1428.0000 1428.0000
##    w[4,1]    w[5,1]    w[6,1]    w[7,1]    w[8,1]    w[9,1]   w[10,1]
## 1281.5787 1409.0222 1428.0000 1471.9515 1428.0000 1428.0000 1428.0000
##   w[11,1]   w[12,1]   w[13,1]   w[14,1]   w[15,1]   w[16,1]   w[17,1]
## 1428.0000 1428.0000 1897.3104 1428.0000 1314.1734 1428.0000 1428.0000
##   w[18,1]   w[19,1]   w[20,1]   w[21,1]   w[22,1]   w[23,1]   w[24,1]
```

```
## 1321.6915 1428.0000 1428.0000 1428.0000 1428.0000 1445.4741 1428.0000
##   w[25,1]   w[26,1]   w[27,1]   w[28,1]   w[29,1]   w[30,1]   w[31,1]
## 1428.0000 1428.0000 1304.0447 1319.5647 1557.7579 1428.0000 1398.4679
##   w[32,1]   w[33,1]   w[34,1]   w[35,1]   w[36,1]   w[37,1]   w[38,1]
## 1428.0000 1428.0000 1438.1085 1428.0000 1428.0000 1428.0000 1428.0000
##   w[39,1]   w[40,1]   w[41,1]   w[42,1]   w[43,1]   w[44,1]   w[45,1]
## 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000
##   w[46,1]   w[47,1]   w[48,1]   w[49,1]   w[50,1]    w[1,2]    w[2,2]
## 1559.3010 1600.0987 1428.0000 1428.0000 1428.0000 1196.6468 1428.0000
##    w[3,2]    w[4,2]    w[5,2]    w[6,2]    w[7,2]    w[8,2]    w[9,2]
## 1605.3329 1428.0000 1241.0491 1428.0000 1428.0000 1428.0000 1168.4121
##   w[10,2]   w[11,2]   w[12,2]   w[13,2]   w[14,2]   w[15,2]   w[16,2]
## 1428.0000 1428.0000 1428.0000 1304.9422 1628.0207 1428.0000 1428.0000
##   w[17,2]   w[18,2]   w[19,2]   w[20,2]   w[21,2]   w[22,2]   w[23,2]
## 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000 1257.1255 1567.0235
##   w[24,2]   w[25,2]   w[26,2]   w[27,2]   w[28,2]   w[29,2]   w[30,2]
## 1287.1058 1428.0000 1170.7807 1616.5085 1428.0000 1274.5704 1428.0000
##   w[31,2]   w[32,2]   w[33,2]   w[34,2]   w[35,2]   w[36,2]   w[37,2]
## 1218.8807 1321.3299 2116.1290 1207.1796 1176.5850 1428.0000 1428.0000
##   w[38,2]   w[39,2]   w[40,2]   w[41,2]   w[42,2]   w[43,2]   w[44,2]
## 1428.0000 1428.0000 1487.5054 1506.9504 1250.1779 1162.9369 1428.0000
##   w[45,2]   w[46,2]   w[47,2]   w[48,2]   w[49,2]   w[50,2]    w[1,3]
## 1428.0000 1710.0022 1428.0000 1311.2742 1428.0000 1342.3895 1289.1875
##    w[2,3]    w[3,3]    w[4,3]    w[5,3]    w[6,3]    w[7,3]    w[8,3]
## 1428.0000 1741.0596 1288.0181 1428.0000 1172.7230 1460.9234 1584.4127
##    w[9,3]   w[10,3]   w[11,3]   w[12,3]   w[13,3]   w[14,3]   w[15,3]
## 1428.0000 1428.0000 1428.0000 1641.6527 1428.0000 1428.0000 1865.9973
##   w[16,3]   w[17,3]   w[18,3]   w[19,3]   w[20,3]   w[21,3]   w[22,3]
## 1428.0000 1428.0000 1428.0000 1428.0000 1320.3252 1428.0000 1428.0000
##   w[23,3]   w[24,3]   w[25,3]   w[26,3]   w[27,3]   w[28,3]   w[29,3]
## 1812.3867 1428.0000 1428.0000 1519.4261 1428.0000 1428.0000 1580.0205
##   w[30,3]   w[31,3]   w[32,3]   w[33,3]   w[34,3]   w[35,3]   w[36,3]
## 1323.9735 1001.9880 1281.9094 1428.0000 1803.4979 1428.0000 1428.0000
##   w[37,3]   w[38,3]   w[39,3]   w[40,3]   w[41,3]   w[42,3]   w[43,3]
## 1428.0000 1428.0000 1428.0000 1302.7671 1923.7175 1428.0000 1428.0000
##   w[44,3]   w[45,3]   w[46,3]   w[47,3]   w[48,3]   w[49,3]   w[50,3]
## 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000
##    w[1,4]    w[2,4]    w[3,4]    w[4,4]    w[5,4]    w[6,4]    w[7,4]
## 1428.0000 1428.0000 1428.0000 1653.8286 1428.0000 1428.0000 1537.2653
##    w[8,4]    w[9,4]   w[10,4]   w[11,4]   w[12,4]   w[13,4]   w[14,4]
## 1336.2158 1507.5929 1428.0000 1637.1825 1428.0000 1428.0000 1428.0000
##   w[15,4]   w[16,4]   w[17,4]   w[18,4]   w[19,4]   w[20,4]   w[21,4]
## 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000 1192.8499
##   w[22,4]   w[23,4]   w[24,4]   w[25,4]   w[26,4]   w[27,4]   w[28,4]
## 1484.7290 1428.0000 1428.0000 1645.0726 1428.0000 1796.5091 1159.5781
##   w[29,4]   w[30,4]   w[31,4]   w[32,4]   w[33,4]   w[34,4]   w[35,4]
## 1428.0000 1428.0000 1217.7715 1428.0000 1285.1567 1428.0000 1428.0000
##   w[36,4]   w[37,4]   w[38,4]   w[39,4]   w[40,4]   w[41,4]   w[42,4]
## 1428.0000 1428.0000 1428.0000 1428.0000 1607.7809 1428.0000 1428.0000
##   w[43,4]   w[44,4]   w[45,4]   w[46,4]   w[47,4]   w[48,4]   w[49,4]
## 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000
##   w[50,4]    w[1,5]    w[2,5]    w[3,5]    w[4,5]    w[5,5]    w[6,5]
## 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000
##    w[7,5]    w[8,5]    w[9,5]   w[10,5]   w[11,5]   w[12,5]   w[13,5]
```

```
## 1176.3399 1428.0000 1644.3735 1428.0000 1272.2973 1439.8862 1428.0000
##   w[14,5]   w[15,5]   w[16,5]   w[17,5]   w[18,5]   w[19,5]   w[20,5]
## 1428.0000 1428.0000 1540.4627 1428.0000 1311.1484 1428.0000 1428.0000
##   w[21,5]   w[22,5]   w[23,5]   w[24,5]   w[25,5]   w[26,5]   w[27,5]
## 1274.0900 1428.0000 1303.4038 1259.1308 1607.4279 1428.0000 1428.0000
##   w[28,5]   w[29,5]   w[30,5]   w[31,5]   w[32,5]   w[33,5]   w[34,5]
## 1280.8022 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000 1430.2228
##   w[35,5]   w[36,5]   w[37,5]   w[38,5]   w[39,5]   w[40,5]   w[41,5]
## 1428.0000 1428.0000 1425.7457 1428.0000 1428.0000 1119.1244 1428.0000
##   w[42,5]   w[43,5]   w[44,5]   w[45,5]   w[46,5]   w[47,5]   w[48,5]
## 1585.8932 1731.9927 1428.0000 1428.0000 1266.9797 1428.0000 1428.0000
##   w[49,5]   w[50,5]    w[1,6]    w[2,6]    w[3,6]    w[4,6]    w[5,6]
## 1428.0000 1428.0000 1554.6562 1556.6035 1428.0000 1428.0000 1428.0000
##    w[6,6]    w[7,6]    w[8,6]    w[9,6]   w[10,6]   w[11,6]   w[12,6]
## 1550.4132 1428.0000 1617.1708 1428.0000 1428.0000 1428.0000 1428.0000
##   w[13,6]   w[14,6]   w[15,6]   w[16,6]   w[17,6]   w[18,6]   w[19,6]
## 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000
##   w[20,6]   w[21,6]   w[22,6]   w[23,6]   w[24,6]   w[25,6]   w[26,6]
## 1428.0000 1428.0000 1428.0000 1209.3494 1428.0000 1222.0982 1428.0000
##   w[27,6]   w[28,6]   w[29,6]   w[30,6]   w[31,6]   w[32,6]   w[33,6]
## 1428.0000 1304.5509 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000
##   w[34,6]   w[35,6]   w[36,6]   w[37,6]   w[38,6]   w[39,6]   w[40,6]
## 1542.8031 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000
##   w[41,6]   w[42,6]   w[43,6]   w[44,6]   w[45,6]   w[46,6]   w[47,6]
## 1428.0000 1260.0571 1428.0000 1592.3914 1428.0000 1428.0000 1428.0000
##   w[48,6]   w[49,6]   w[50,6]    w[1,7]    w[2,7]    w[3,7]    w[4,7]
## 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000 1320.5856
##    w[5,7]    w[6,7]    w[7,7]    w[8,7]    w[9,7]   w[10,7]   w[11,7]
## 1428.0000 1803.8201 1428.0000 1428.0000 1428.0000 1379.9458 1428.0000
##   w[12,7]   w[13,7]   w[14,7]   w[15,7]   w[16,7]   w[17,7]   w[18,7]
## 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000 1265.1968
##   w[19,7]   w[20,7]   w[21,7]   w[22,7]   w[23,7]   w[24,7]   w[25,7]
## 1428.0000 1428.0000 1428.0000 1593.5031 1550.7431 1305.9241 1428.0000
##   w[26,7]   w[27,7]   w[28,7]   w[29,7]   w[30,7]   w[31,7]   w[32,7]
## 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000
##   w[33,7]   w[34,7]   w[35,7]   w[36,7]   w[37,7]   w[38,7]   w[39,7]
## 1428.0000 1478.5638 1428.0000 1428.0000 1100.6871 1428.0000 1254.5812
##   w[40,7]   w[41,7]   w[42,7]   w[43,7]   w[44,7]   w[45,7]   w[46,7]
## 1543.6414 1428.0000 1546.8591 1428.0000 1566.4683 1428.0000 1428.0000
##   w[47,7]   w[48,7]   w[49,7]   w[50,7]    w[1,8]    w[2,8]    w[3,8]
##  818.3898 1428.0000 1428.0000 1428.0000 1428.0000 1235.4144 1428.0000
##    w[4,8]    w[5,8]    w[6,8]    w[7,8]    w[8,8]    w[9,8]   w[10,8]
## 1428.0000 1570.1948 1428.0000 1428.0000 1260.4476 1428.0000 1428.0000
##   w[11,8]   w[12,8]   w[13,8]   w[14,8]   w[15,8]   w[16,8]   w[17,8]
## 1428.0000 1428.0000 1428.0000 1428.0000 1386.6660 1428.0000 1428.0000
##   w[18,8]   w[19,8]   w[20,8]   w[21,8]   w[22,8]   w[23,8]   w[24,8]
## 1428.0000 1428.0000 1428.0000 1298.3330 1397.6898 1428.0000 1428.0000
##   w[25,8]   w[26,8]   w[27,8]   w[28,8]   w[29,8]   w[30,8]   w[31,8]
## 1428.0000 1428.0000 1008.6847 1428.0000 1428.0000 1159.5437 1428.0000
##   w[32,8]   w[33,8]   w[34,8]   w[35,8]   w[36,8]   w[37,8]   w[38,8]
## 1428.0000 1428.0000 1304.3208 1428.0000 1565.8229 1428.0000 1428.0000
##   w[39,8]   w[40,8]   w[41,8]   w[42,8]   w[43,8]   w[44,8]   w[45,8]
## 1428.0000 1662.2111 1275.4662 1428.0000 1108.0506 1428.0000 1544.1030
##   w[46,8]   w[47,8]   w[48,8]   w[49,8]   w[50,8]    w[1,9]    w[2,9]
```

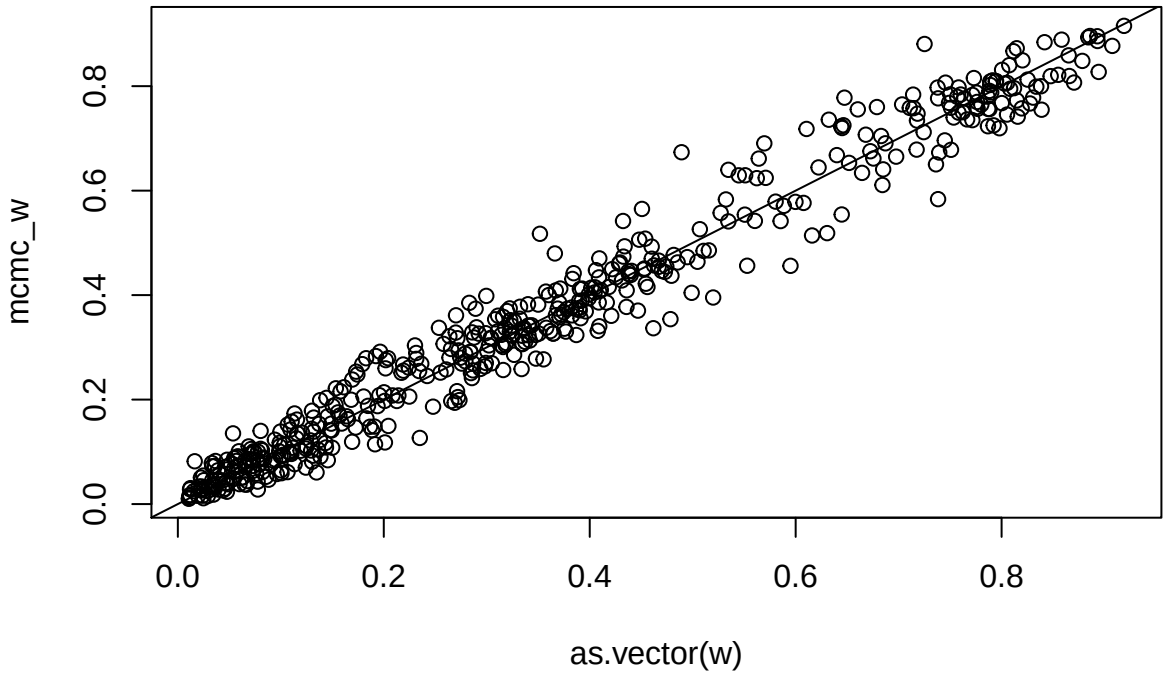
```
## 1537.9223 1267.7997 1428.0000 1428.0000 1428.0000 1428.0000 1216.2033
##    w[3,9]    w[4,9]    w[5,9]    w[6,9]    w[7,9]    w[8,9]    w[9,9]
## 1428.0000 1428.0000 1317.8130 1428.0000 1428.0000 1251.0723 1428.0000
##   w[10,9]   w[11,9]   w[12,9]   w[13,9]   w[14,9]   w[15,9]   w[16,9]
## 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000 1874.9054 1428.0000
##   w[17,9]   w[18,9]   w[19,9]   w[20,9]   w[21,9]   w[22,9]   w[23,9]
## 1428.0000 1322.9767 1428.0000 1428.0000 1428.0000 1288.9454 1428.0000
##   w[24,9]   w[25,9]   w[26,9]   w[27,9]   w[28,9]   w[29,9]   w[30,9]
## 1250.3477 1428.0000 1542.9366 1428.0000 1281.4775 1428.0000 1428.0000
##   w[31,9]   w[32,9]   w[33,9]   w[34,9]   w[35,9]   w[36,9]   w[37,9]
## 1428.0000 1428.0000 1428.0000 1571.4318 1428.0000 1428.0000 1428.0000
##   w[38,9]   w[39,9]   w[40,9]   w[41,9]   w[42,9]   w[43,9]   w[44,9]
## 1428.0000 1428.0000 1295.7519 1321.5075 1678.0950 1338.9267 1428.0000
##   w[45,9]   w[46,9]   w[47,9]   w[48,9]   w[49,9]   w[50,9]   w[1,10]
## 1428.0000 1293.6007 1428.0000 1428.0000 1428.0000 1776.8187 1428.0000
##   w[2,10]   w[3,10]   w[4,10]   w[5,10]   w[6,10]   w[7,10]   w[8,10]
## 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000 1149.7608 1428.0000
##   w[9,10]  w[10,10]  w[11,10]  w[12,10]  w[13,10]  w[14,10]  w[15,10]
## 1428.0000 1629.5792 1635.5940 1428.0000 1428.0000 1428.0000 1428.0000
##  w[16,10]  w[17,10]  w[18,10]  w[19,10]  w[20,10]  w[21,10]  w[22,10]
## 2002.8334 1168.4339 1428.0000 1295.5688 1428.0000 1428.0000 1428.0000
##  w[23,10]  w[24,10]  w[25,10]  w[26,10]  w[27,10]  w[28,10]  w[29,10]
## 1325.9766 1428.0000 1428.0000  983.5116 1098.5198 1220.9132 1428.0000
##  w[30,10]  w[31,10]  w[32,10]  w[33,10]  w[34,10]  w[35,10]  w[36,10]
## 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000
##  w[37,10]  w[38,10]  w[39,10]  w[40,10]  w[41,10]  w[42,10]  w[43,10]
## 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000
##  w[44,10]  w[45,10]  w[46,10]  w[47,10]  w[48,10]  w[49,10]  w[50,10]
## 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000 1428.0000 1378.8541
##      z[1]      z[2]      z[3]      z[4]      z[5]      z[6]      z[7]
##    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
##      z[8]      z[9]     z[10]     z[11]     z[12]     z[13]     z[14]
##    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
##     z[15]     z[16]     z[17]     z[18]     z[19]     z[20]     z[21]
##    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
##     z[22]     z[23]     z[24]     z[25]     z[26]     z[27]     z[28]
##    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
##     z[29]     z[30]     z[31]     z[32]     z[33]     z[34]     z[35]
##    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
##     z[36]     z[37]     z[38]     z[39]     z[40]     z[41]     z[42]
##    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
##     z[43]     z[44]     z[45]     z[46]     z[47]     z[48]     z[49]
##    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
##     z[50]
##    0.0000
```

```
pdf(file.path(trace.dir, paste0(runName, "_trace.pdf")))
plot(samps)
dev.off()
```

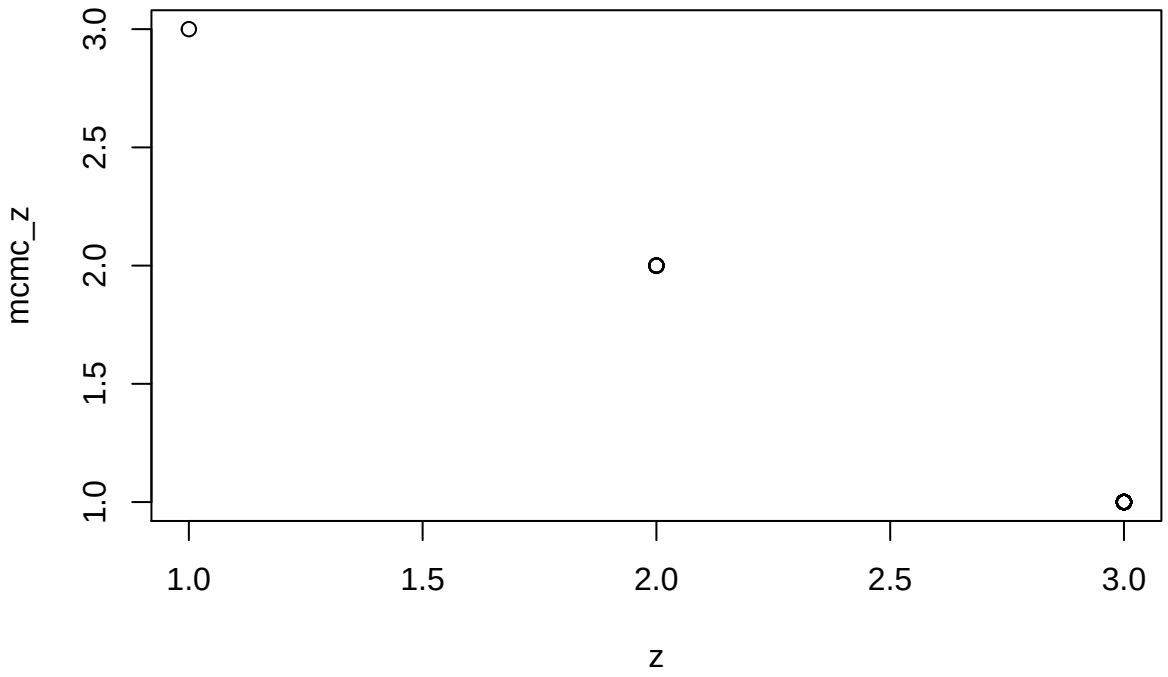
```
## pdf
##   2
```

```
mcmc_vals <- s$statistics
mcmc_w <- mcmc_vals[substr(rownames(mcmc_vals), 1, 1) == "w", "Mean"]
```

```r
plot(as.vector(w), mcmc_w, type = "p")
abline(a=0, b=1)
```

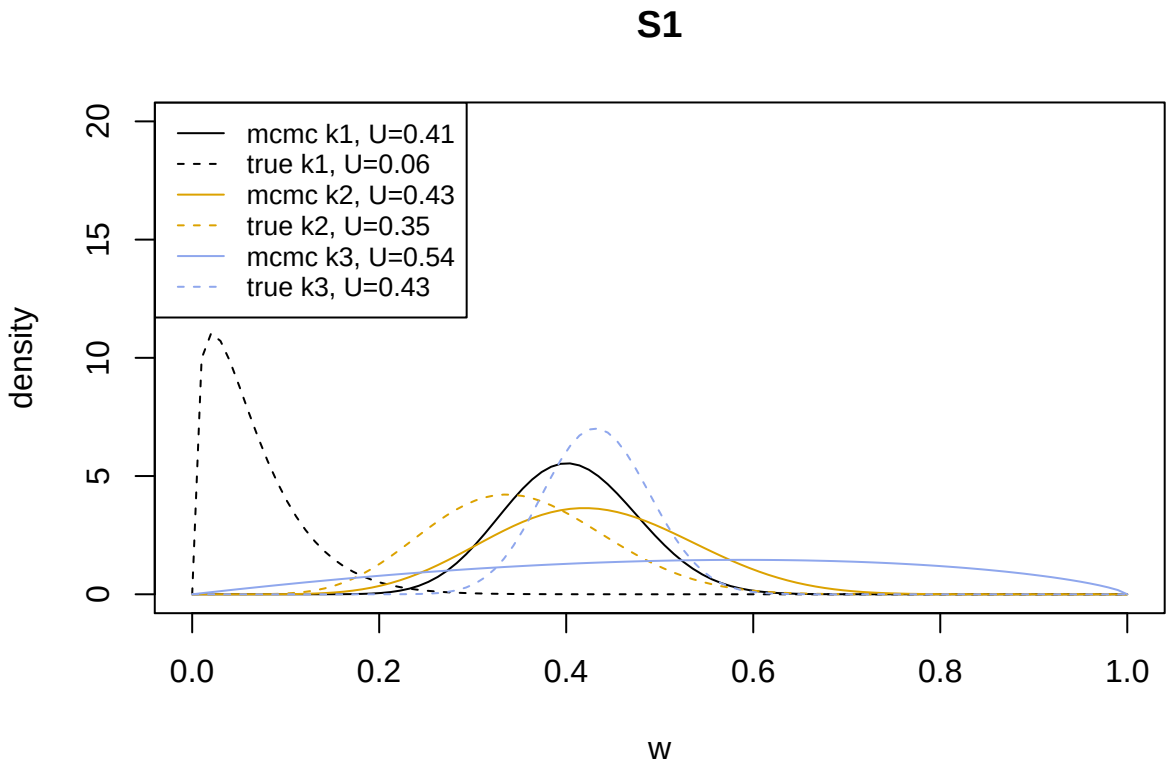


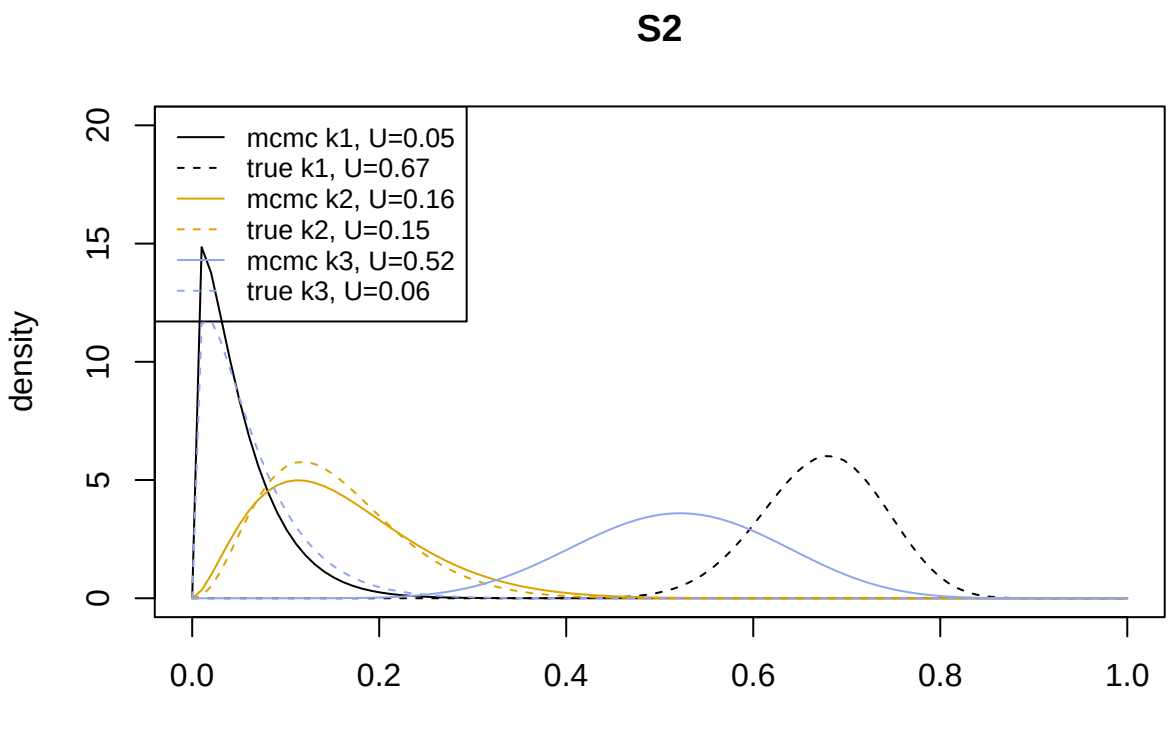

```r
mcmc_z <- as.vector(mcmc_vals[substr(rownames(mcmc_vals), 1, 1) == "z", "Mean"])
#mcmc_z <- round(mcmc_z, 0)
plot(z, mcmc_z, type = "p")
```

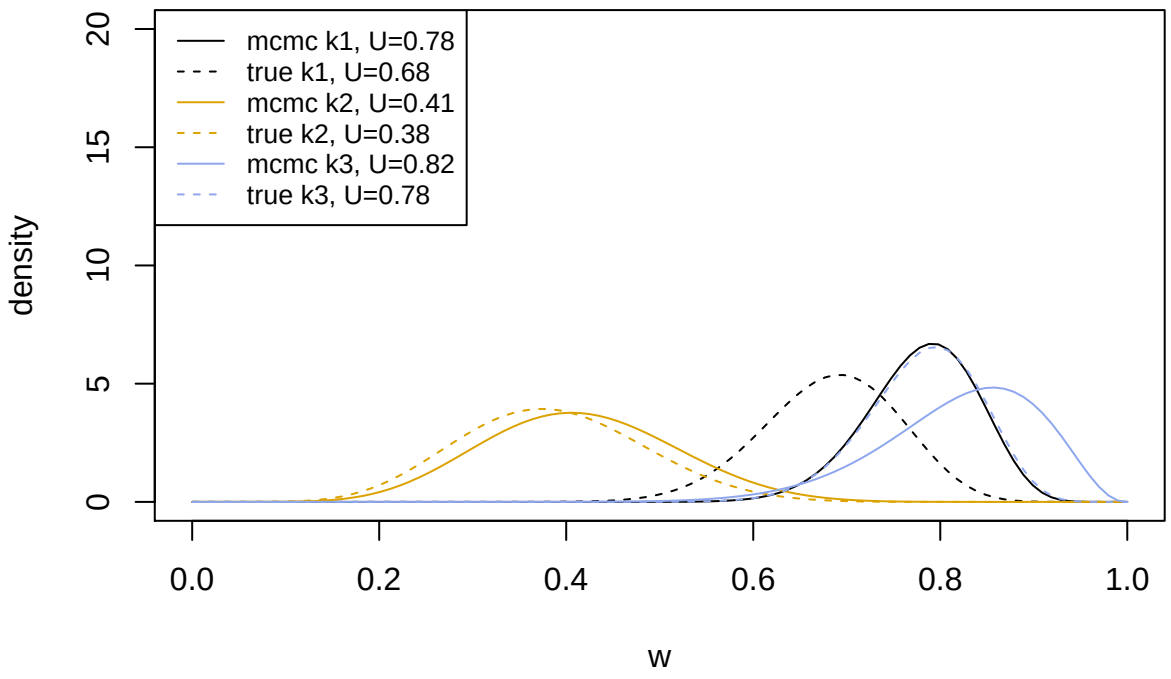


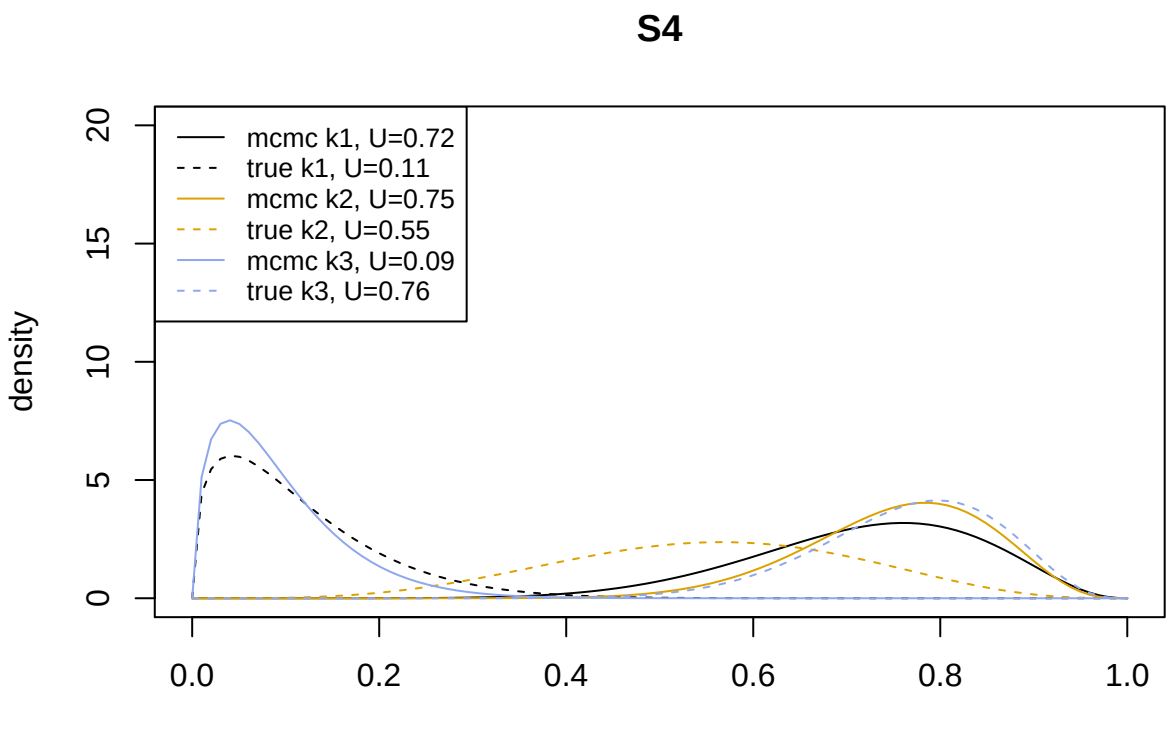

```r
mcmc_U <- mcmc_vals[substr(rownames(mcmc_vals), 1, 1) == "U", "Mean"]
mcmc_U <- matrix(mcmc_U, nrow=K)
mcmc_V <- mcmc_vals[substr(rownames(mcmc_vals), 1, 1) == "V", "Mean"]
mcmc_V <- matrix(mcmc_V, nrow=K)
```

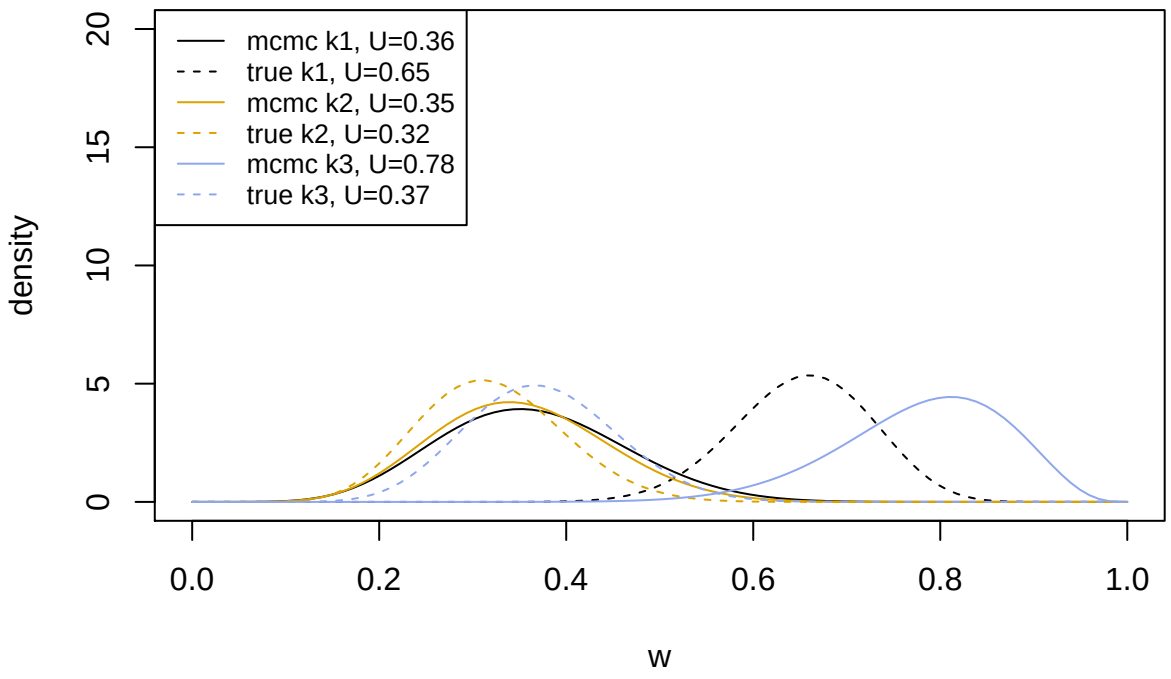
```r
p <- seq(0, 1, length = 100)
colors <- c("#000000", "#DCA200", "#8FA7ED", "#9D847A", "#A47901")
for (s in 1:S) {
  for (k in 1:K) {
    if (k == 1) {
      # plot mcmc mean U,V
      plot(p, dbeta(p, mcmc_U[k,s] * mcmc_V[k,s], (1-mcmc_U[k,s])*mcmc_V[k,s]),
           main = paste0("S", s),
           ylab = "density", xlab = "w", type = "l", col = colors[k],
           ylim = c(0, 20))
      # plot truth
      lines(p, dbeta(p, a.ordered[k,s], b.ordered[k,s]), type = "l", col = colors[k], lty=2)
      # add legend
      allU <- round(as.vector(rbind(mcmc_U[,s], U.ordered[,s])), digits = 2)
      legend(x = "topleft",
             legend = paste0(c("mcmc k", "true k"), rep(1:K, each=2), ", U=", allU),
             col = colors[rep(1:K, each=2)],
             lty = rep(1:2, K),
             cex=0.8)
    } else {
      # plot mcmc mean U,V
      lines(p, dbeta(p, mcmc_U[k,s] * mcmc_V[k,s], (1-mcmc_U[k,s])*mcmc_V[k,s]),
            type = "l", col = colors[k])
      # plot truth
      lines(p, dbeta(p, a.ordered[k,s], b.ordered[k,s]), type = "l", col = colors[k], lty=2)
    }
  }
}
```

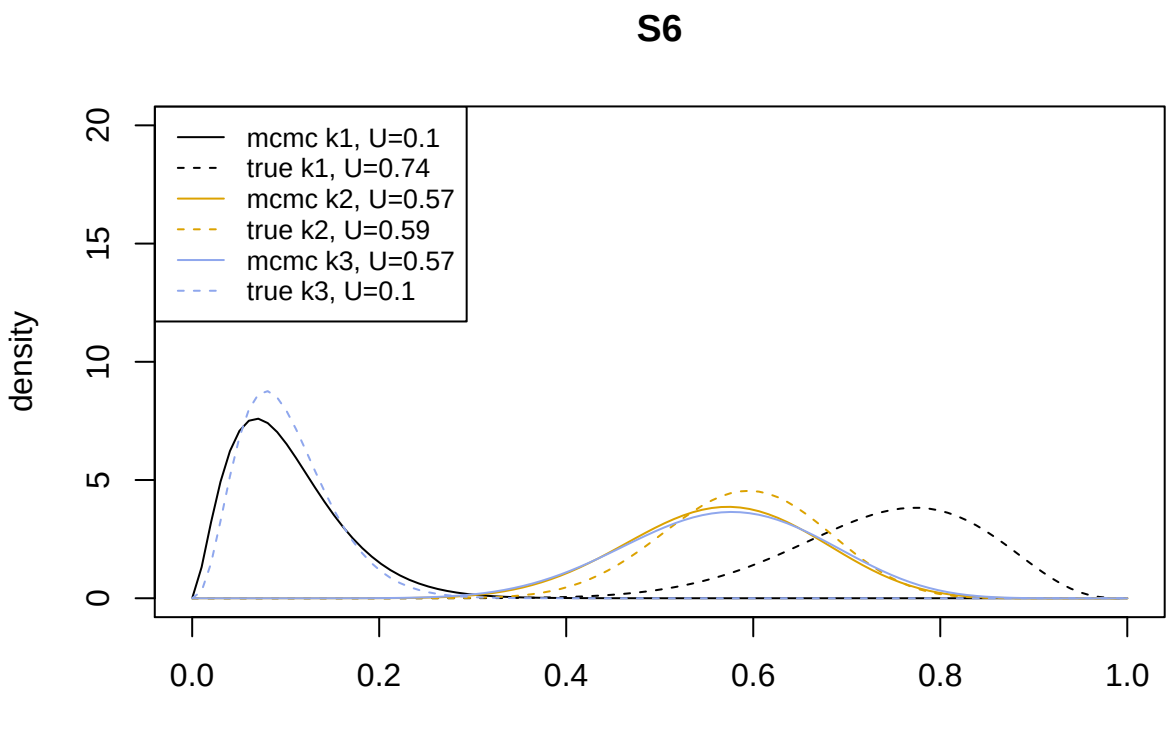


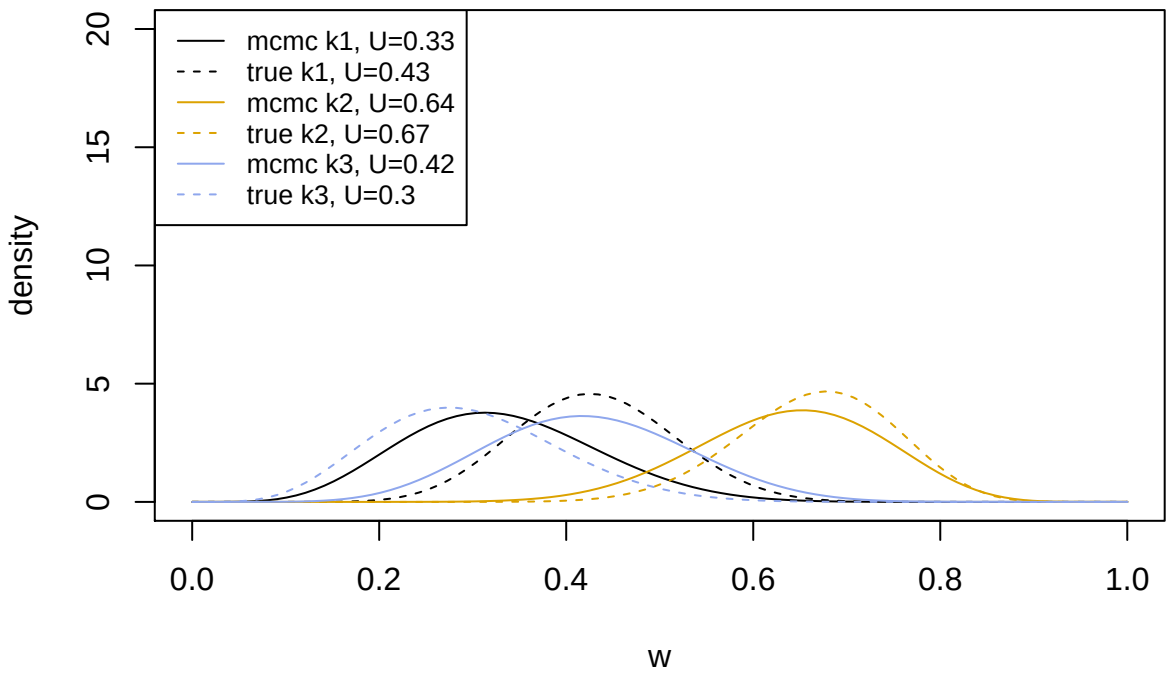

S2
mcmc k1, U=0.05
true k1, U=0.67
mcmc k2, U=0.16
true k2, U=0.15
mcmc k3, U=0.52
true k3, U=0.06
density
0
5
10
15
20
0.0
0.2
0.4
0.6
0.8
1.0
w


S3
mcmc k1, U=0.78
true k1, U=0.68
mcmc k2, U=0.41
true k2, U=0.38
mcmc k3, U=0.82
true k3, U=0.78
density
0
5
10
15
20
0.0
0.2
0.4
0.6
0.8
1.0
w

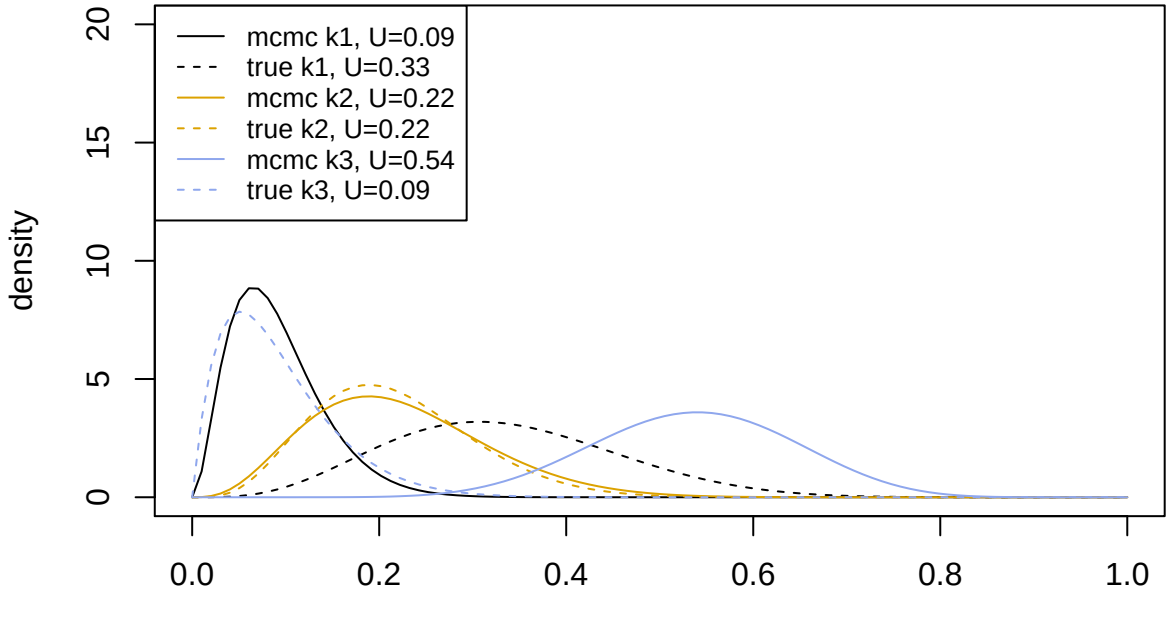

S4
mcmc k1, U=0.72
true k1, U=0.11
mcmc k2, U=0.75
true k2, U=0.55
mcmc k3, U=0.09
true k3, U=0.76
density
0
5
10
15
20
0.0
0.2
0.4
0.6
0.8
1.0
w


S5
mcmc k1, U=0.36
true k1, U=0.65
mcmc k2, U=0.35
true k2, U=0.32
mcmc k3, U=0.78
true k3, U=0.37
density
0
5
10
15
20
0.0
0.2
0.4
0.6
0.8
1.0
w

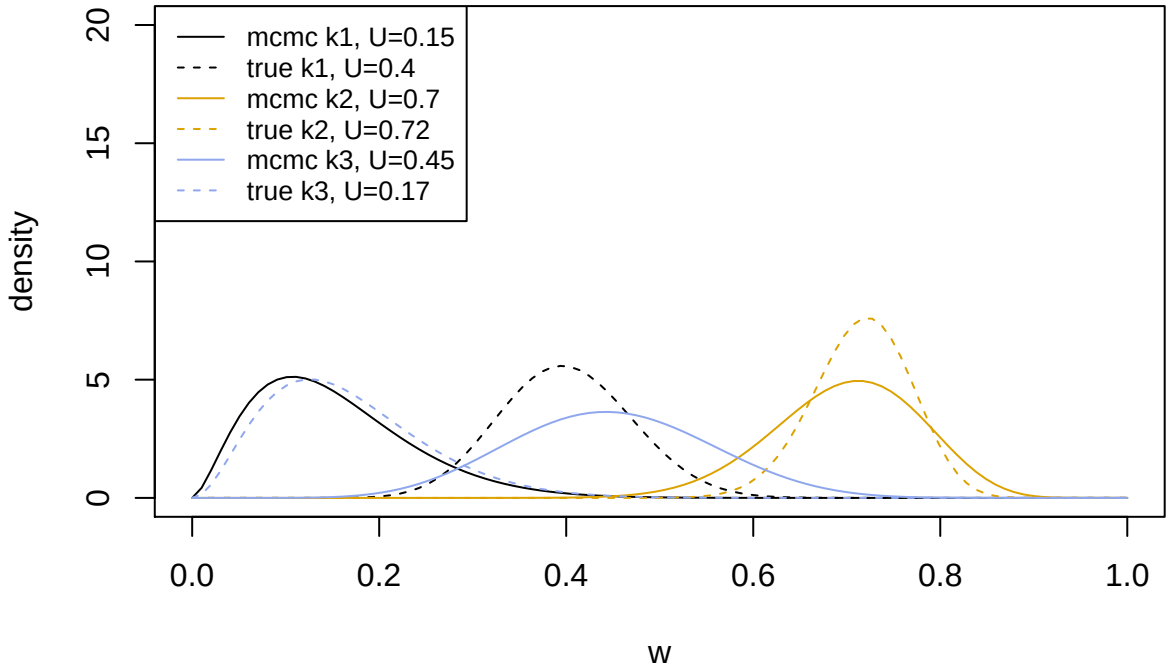

S6
mcmc k1, U=0.1
true k1, U=0.74
mcmc k2, U=0.57
true k2, U=0.59
mcmc k3, U=0.57
true k3, U=0.1
density
0
5
10
15
20
0.0
0.2
0.4
0.6
0.8
1.0
w


S7
mcmc k1, U=0.33
true k1, U=0.43
mcmc k2, U=0.64
true k2, U=0.67
mcmc k3, U=0.42
true k3, U=0.3
density
0
5
10
15
20
0.0
0.2
0.4
0.6
0.8
1.0
w

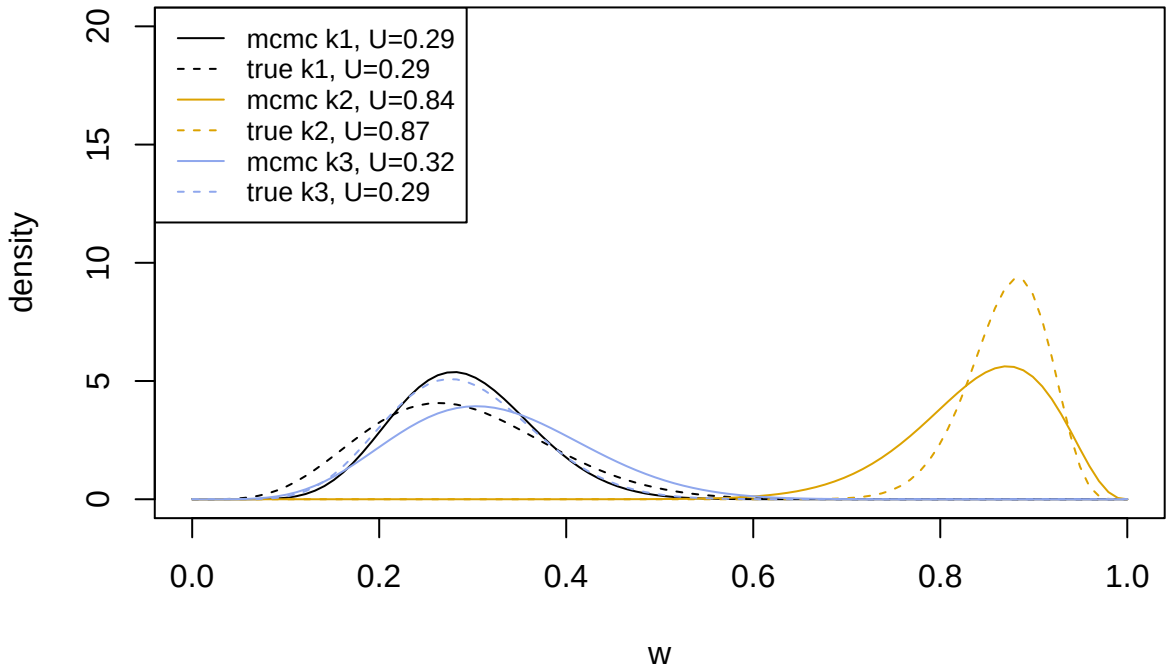
S8


mcmc k1, U=0.09
true k1, U=0.33
mcmc k2, U=0.22
true k2, U=0.22
mcmc k3, U=0.54
true k3, U=0.09
density
0
5
10
15
20
0.0
0.2
0.4
0.6
0.8
1.0
w

S9


mcmc k1, U=0.15
true k1, U=0.4
mcmc k2, U=0.7
true k2, U=0.72
mcmc k3, U=0.45
true k3, U=0.17
density
0
5
10
15
20
0.0
0.2
0.4
0.6
0.8
1.0
w

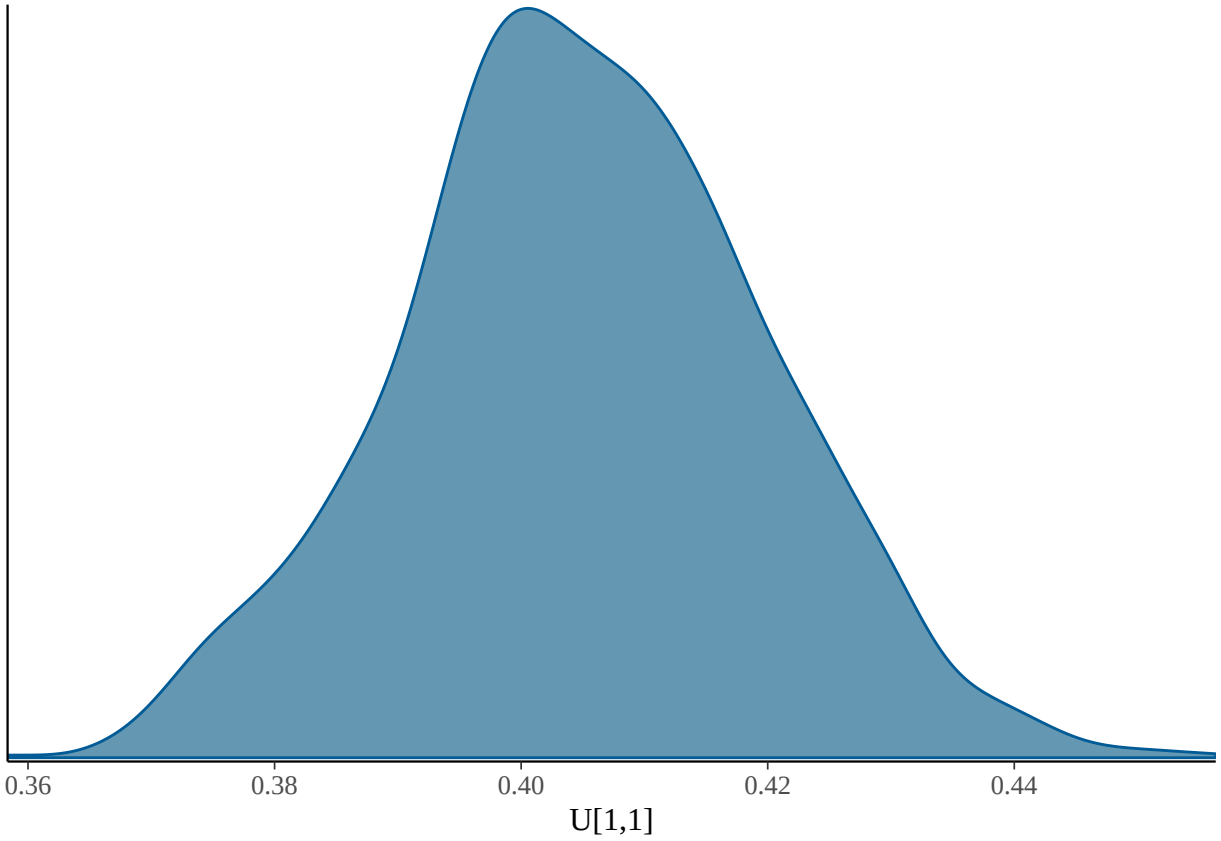
S10



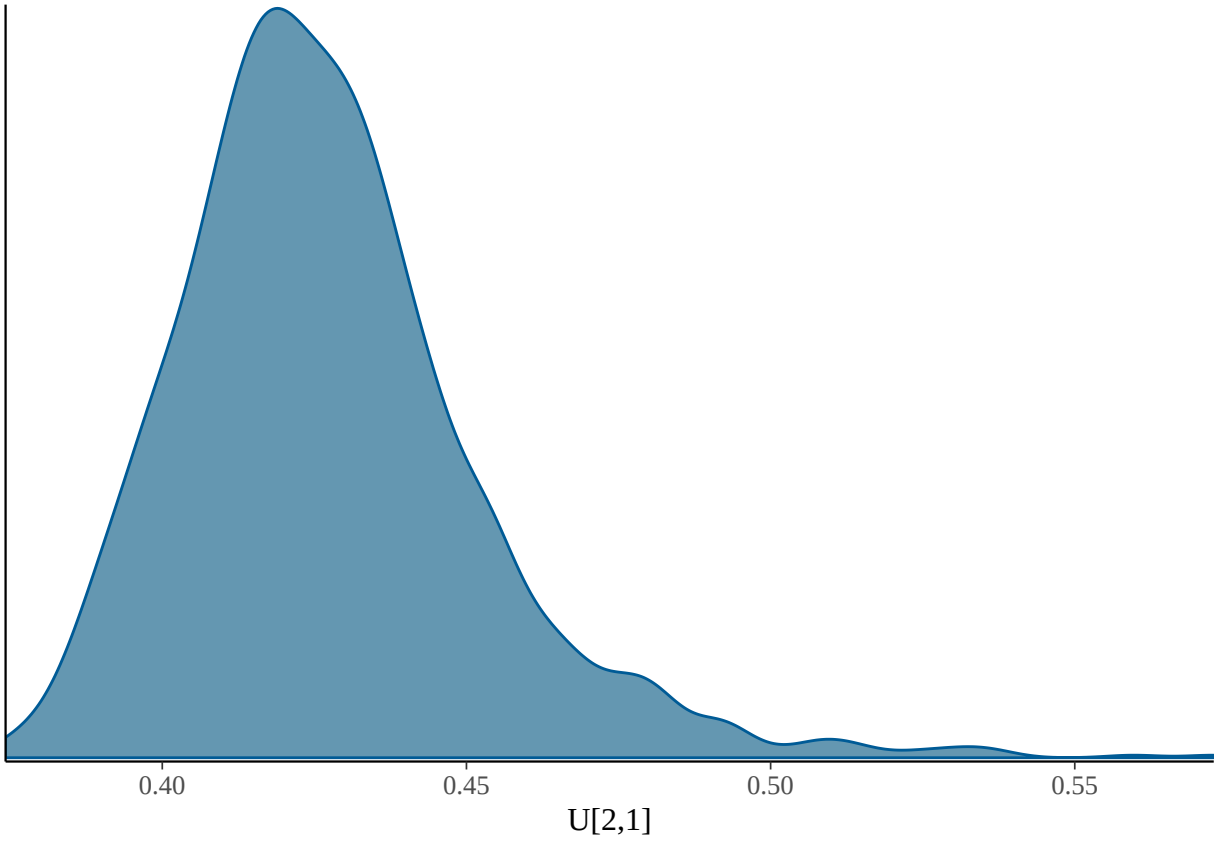

```
# https://cran.r-project.org/web/packages/bayesplot/vignettes/plotting-mcmc-draws.html
posterior <- as.array(samps)

U[,1]
```

```
## [1] 0.3492084 0.4330499 0.0638265
```

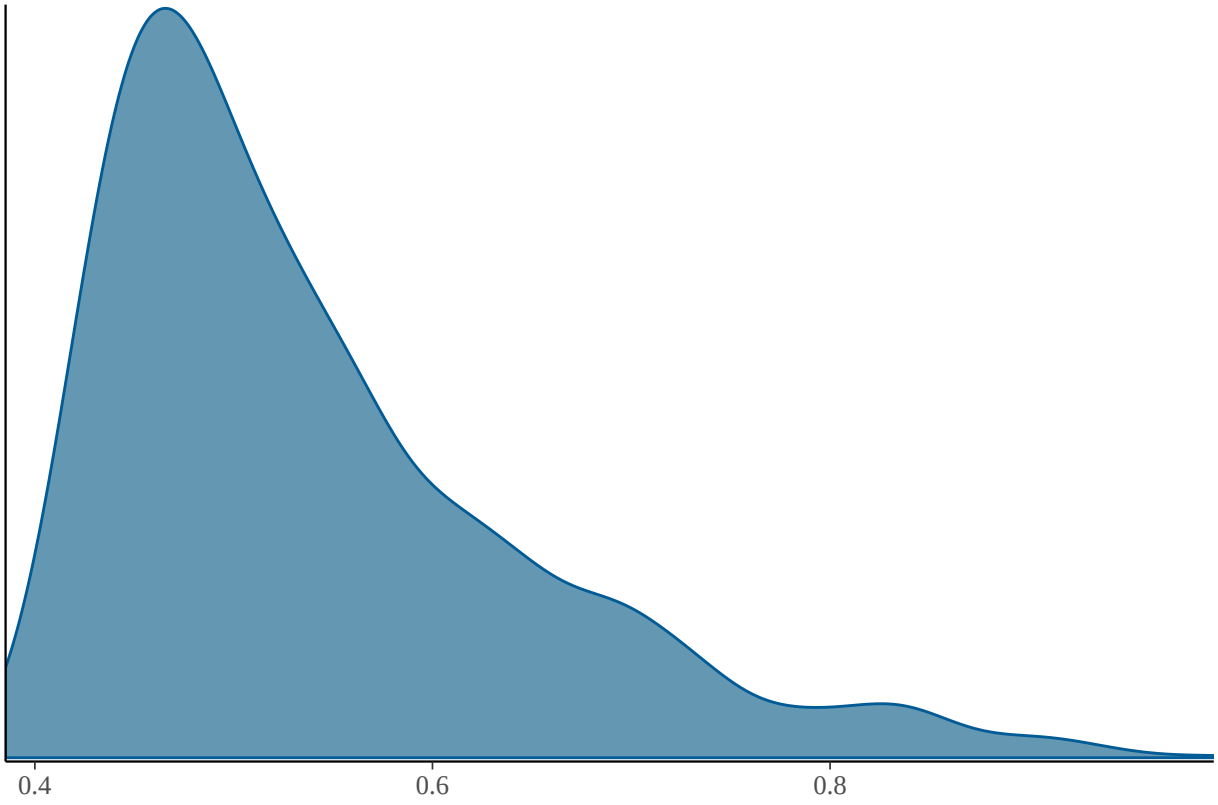
```
mcmc_dens(posterior, pars = "U[1,1]")
```




```
mcmc_dens(posterior, pars = "U[2,1]")
```




```
mcmc_dens(posterior, pars = "U[3,1]")
```



U[3,1]