

## Alpha sensitivity analysis

```
library(covdepGE)
library(ggplot2)
library(latex2exp)
# function to create probability of inclusion visualization
gg_graph <- function(incl_probs, alpha) return(ggplot(reshape2::melt(incl_probs),
  aes(x = Var1, y = Var2, fill = value)) + geom_tile(color = "brown") +
  scale_fill_gradient(low = "white", high = "steelblue", breaks = c(1,
    0)) + labs(fill = "Probability of Inclusion") + theme_classic() +
  xlab("Variable") + ylab("Variable") + ggtitle(TeX(paste("Inclusion probabilities, individual 45, $\alpha$")) + theme(plot.title = element_text(hjust = 0.5)))

source("generate_data.R")
cont <- generate_continuous()

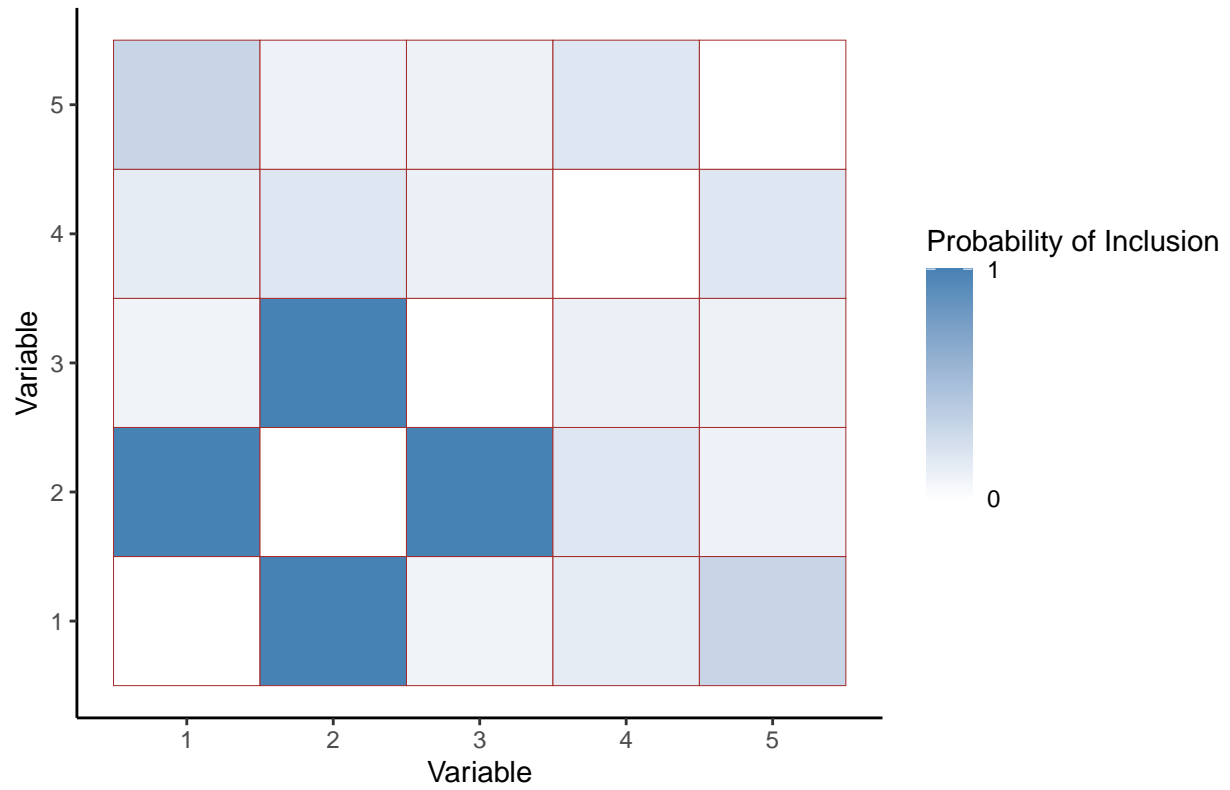
alpha_init <- seq(-1000, 1000, 200)

for (alpha in alpha_init) {
  out.cont <- covdepGE(data_mat = cont$data, Z = cont$covts, tau = 0.56,
    alpha = alpha, pi_vec = NULL, print_time = T)
  # get probabilities of inclusion for the 45th individual
  incl_probs.cont45 <- out.cont$inclusion_probs[[45]]

  print(gg_graph(incl_probs.cont45, alpha))
}

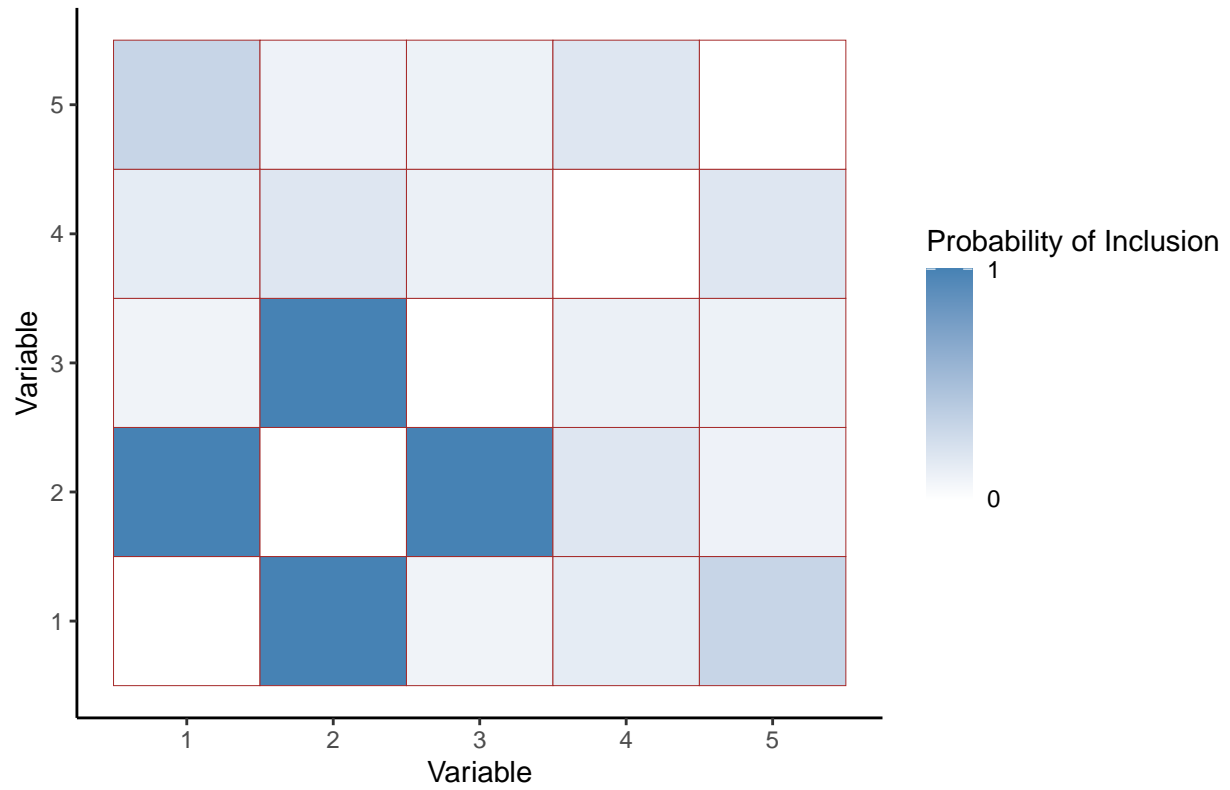
## Time difference of 2.394838 secs
```

Inclusion probabilities, individual 45,  $\alpha_0 = -1000$



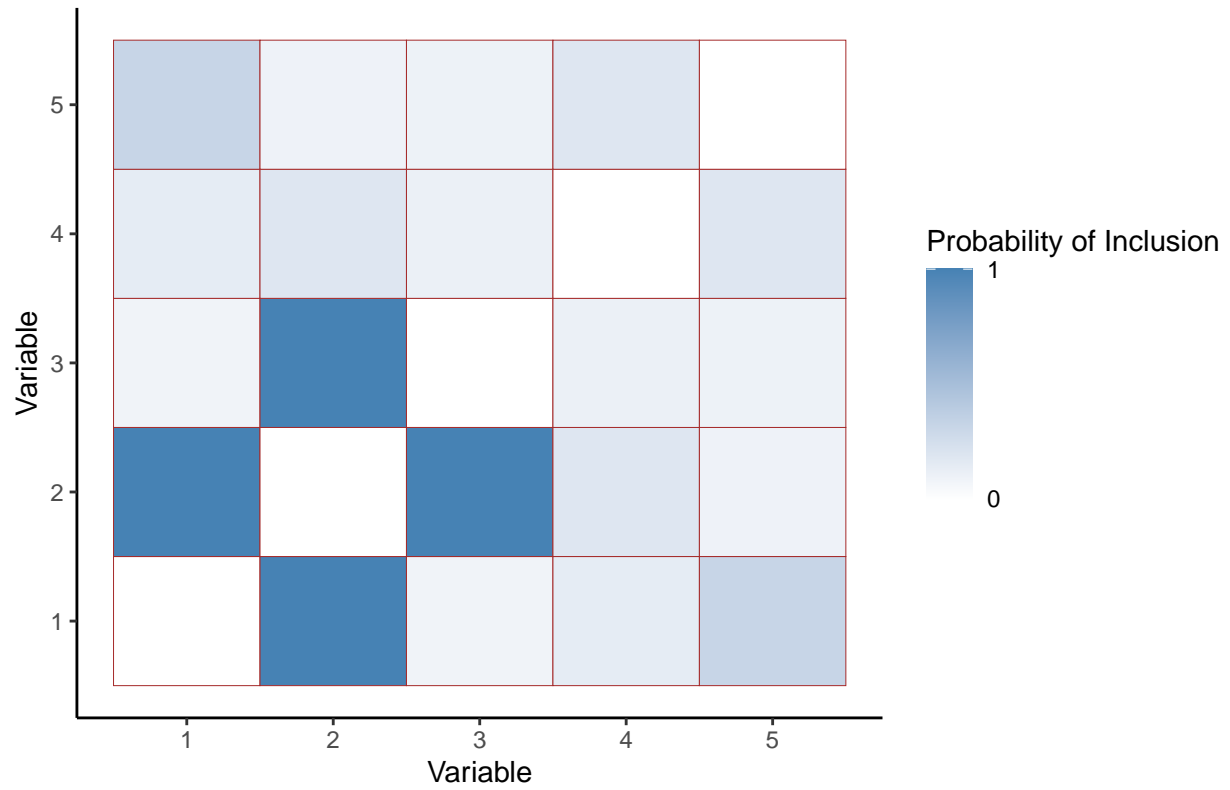
## Time difference of 1.697256 secs

Inclusion probabilities, individual 45,  $\alpha_0 = -800$



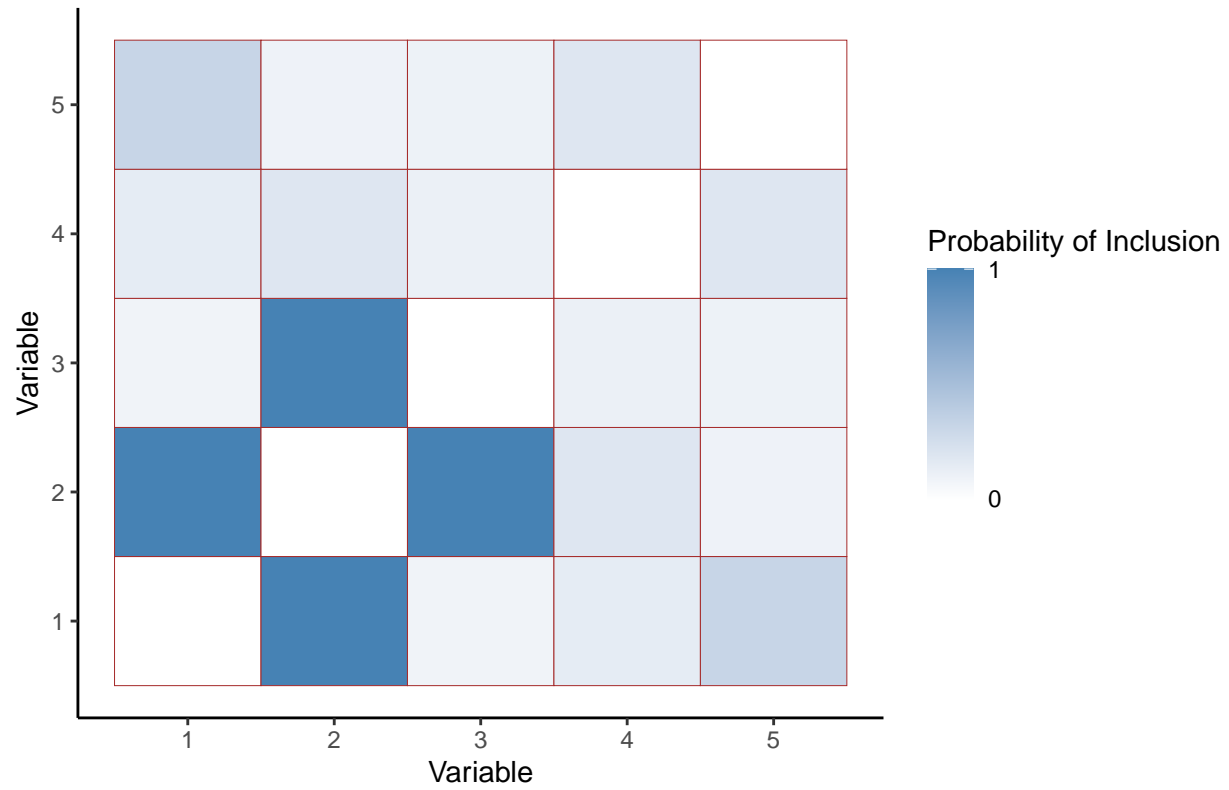
## Time difference of 1.68267 secs

Inclusion probabilities, individual 45,  $\alpha_0 = -600$



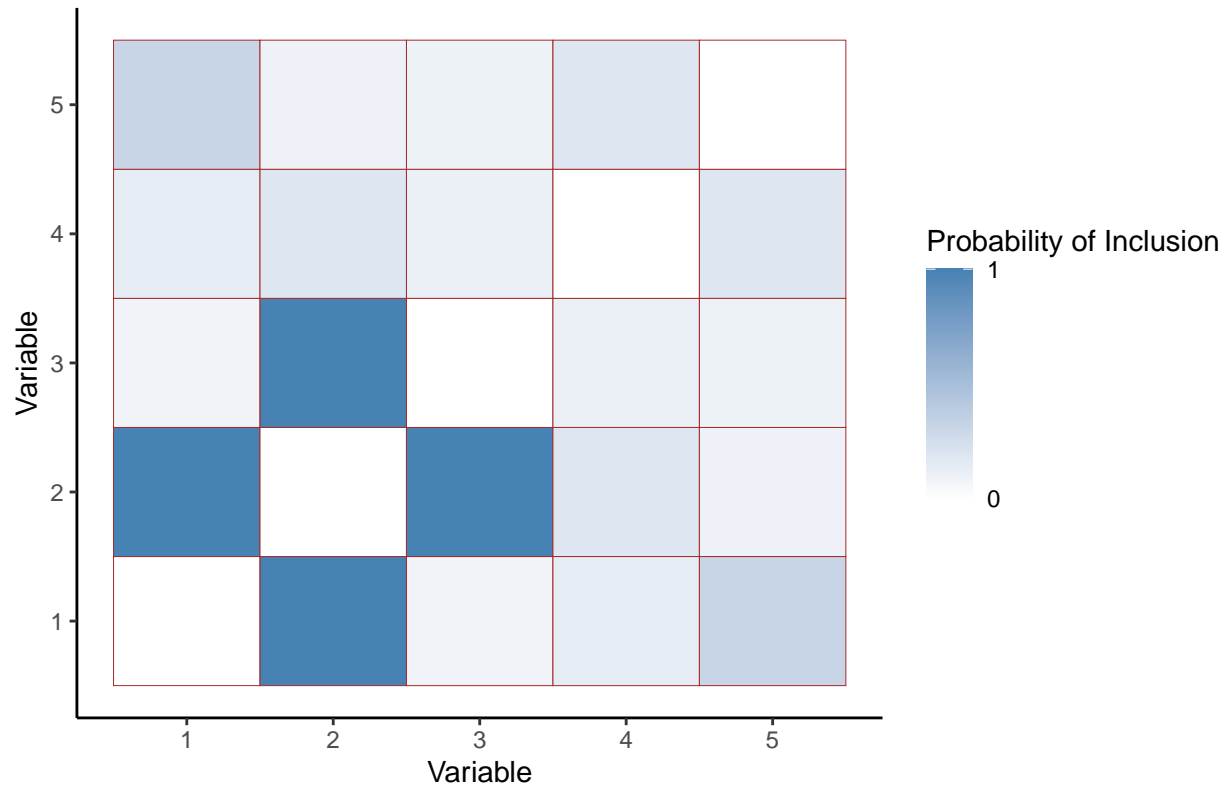
## Time difference of 1.661093 secs

Inclusion probabilities, individual 45,  $\alpha_0 = -400$



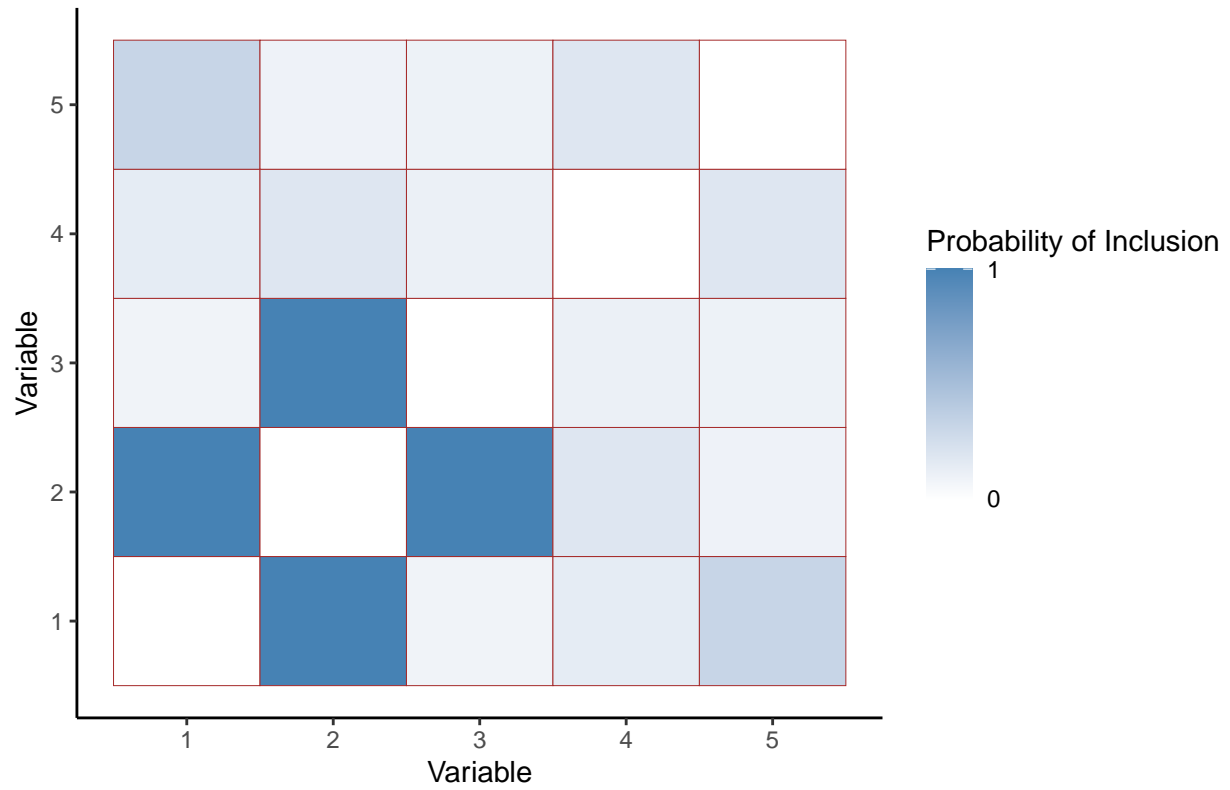
## Time difference of 1.661649 secs

Inclusion probabilities, individual 45,  $\alpha_0 = -200$



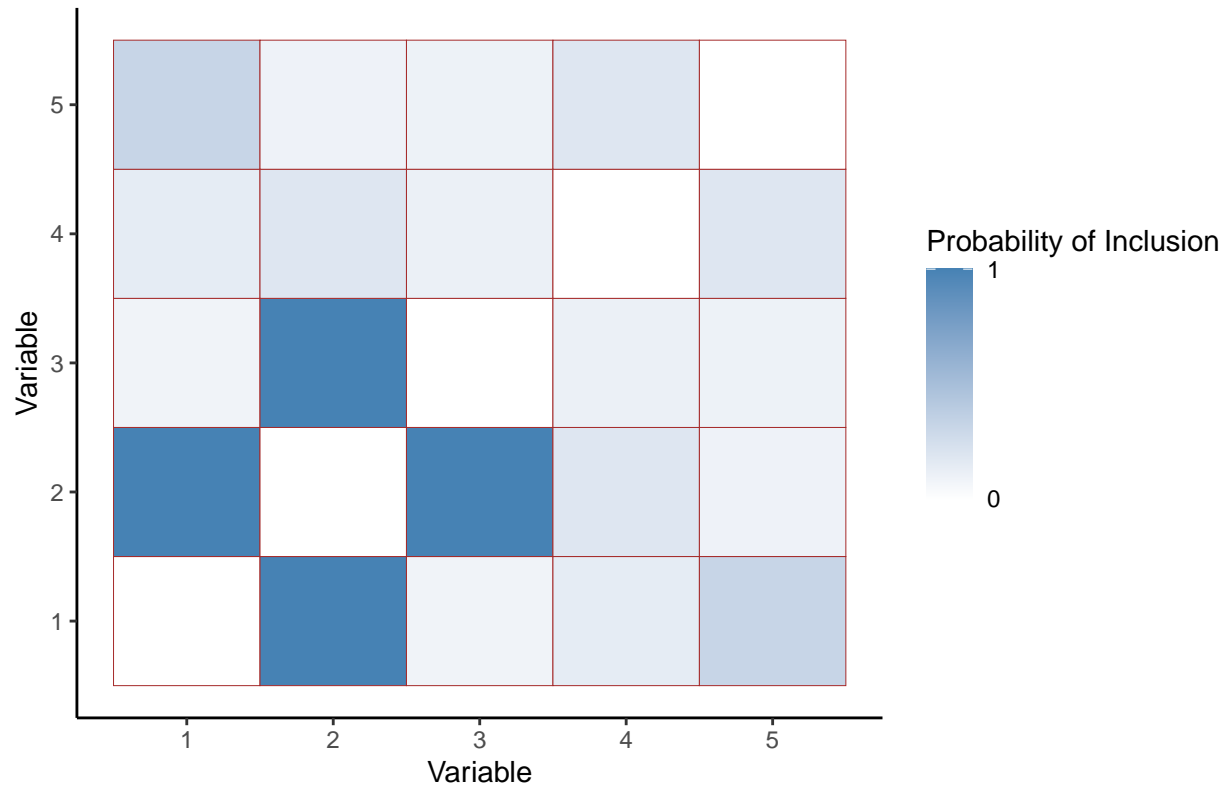
## Time difference of 1.666302 secs

Inclusion probabilities, individual 45,  $\alpha_0 = 0$



## Time difference of 1.704084 secs

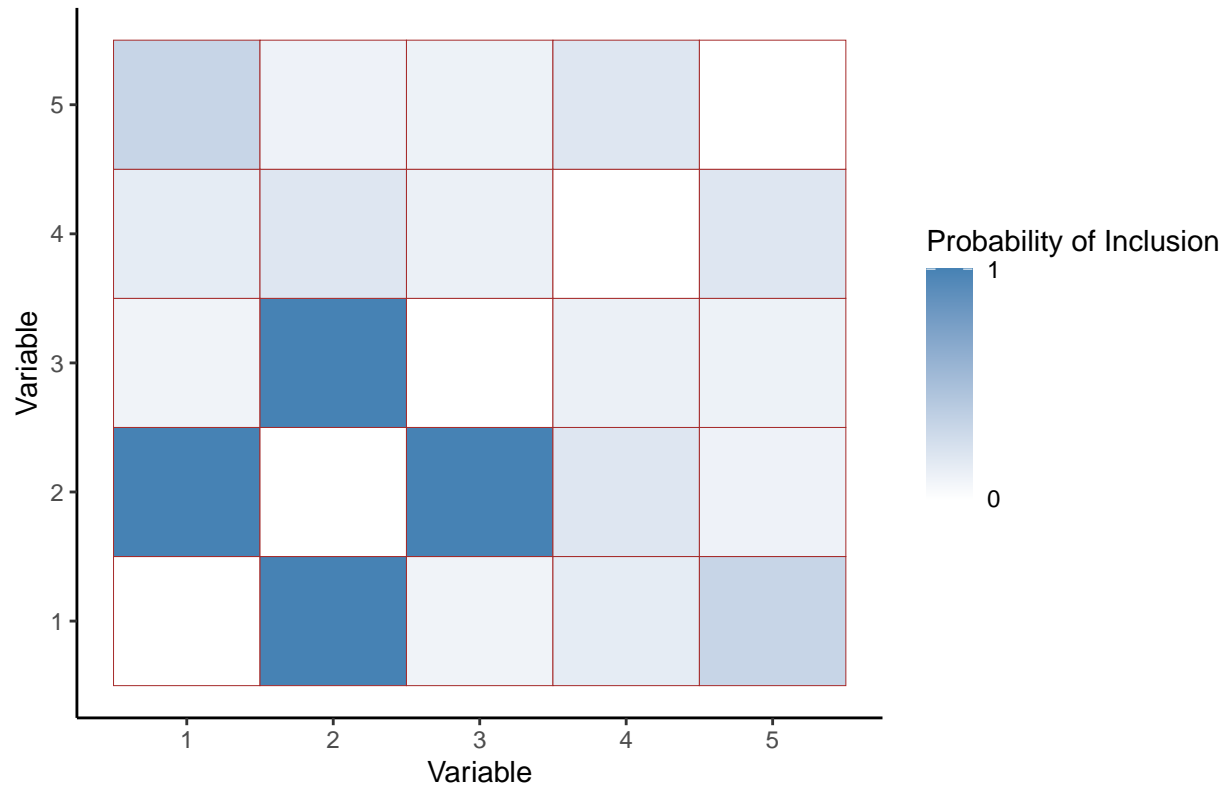
Inclusion probabilities, individual 45,  $\alpha_0 = 200$



## Time difference of 1.682957 secs

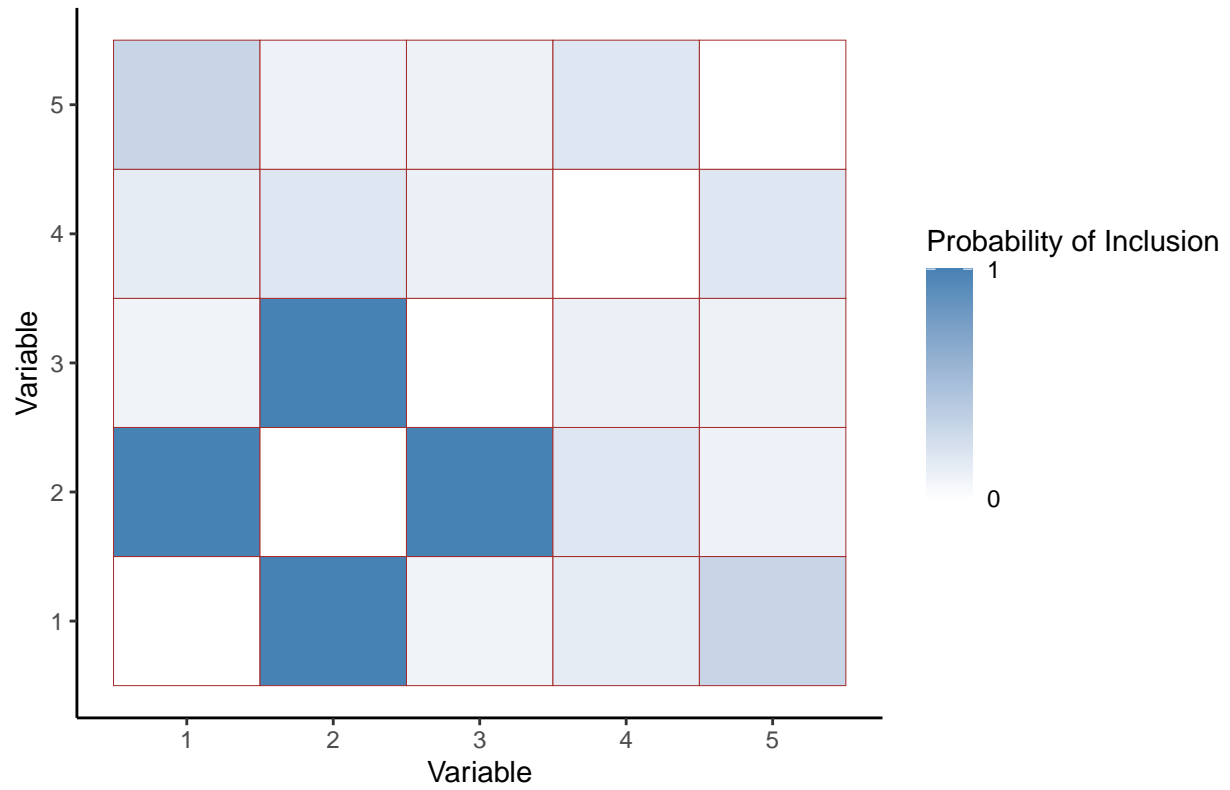


Inclusion probabilities, individual 45,  $\alpha_0 = 400$



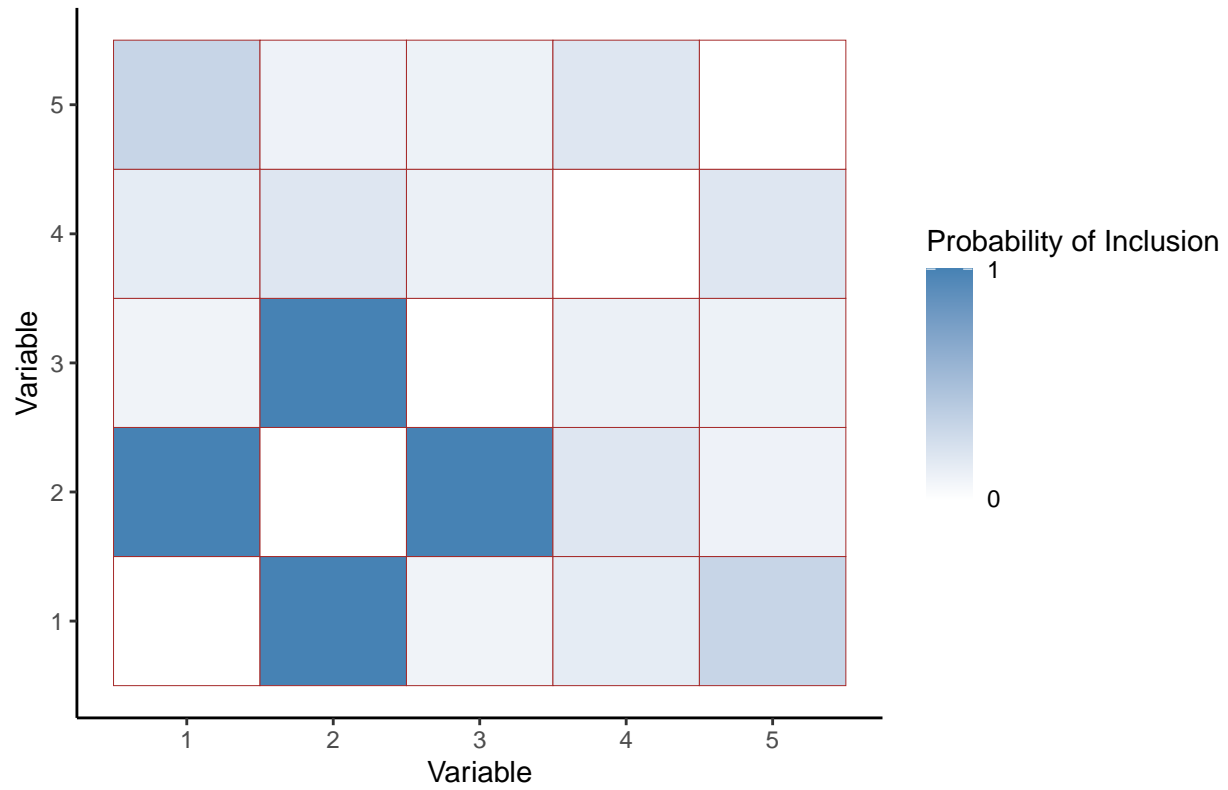
## Time difference of 1.792296 secs

Inclusion probabilities, individual 45,  $\alpha_0 = 600$



## Time difference of 1.670784 secs

Inclusion probabilities, individual 45,  $\alpha_0 = 800$



## Time difference of 1.808861 secs

Inclusion probabilities, individual 45,  $\alpha_0 = 1000$

