

pi stability analysis

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Experiment Overview

This experiment was to analyze the new method of hyperparameter selection with a focus placed on the selection of the optimal π . 50 trials were performed. In each trial, for each variable, π was selected by maximizing ELBO over the following grid:

$$\pi = \{\underbrace{0.05, 0.10, 0.15, 0.20, 0.25, 0.30, 0.35, 0.40, 0.45}\}$$

σ^2 and σ_β^2 were fit to the data using MAPE.

The optimal π was stabilized in the following manner: upon concluding the first grid search, another grid search was performed using the values of μ , α , σ^2 , and σ_β^2 corresponding to the optimal π as initial values. If the optimal π remained unchanged from the first grid search, then the grid search was concluded and the final values for μ , α , σ^2 , and σ_β^2 were selected. However, if the optimal π changed, then the grid search was repeated until the optimal π stabilized.

At the end of the trials, the distribution of the optimal π values were visualized by variable. Additionally, the number of additional grid searches necessary for the choice of the optimal π to stabilize was visualized - this distribution was not broken down by variable, and thus, there are # variables \times # trials observations in this distribution. These visualizations are in the *Results* section

In addition, for each trial, the following were recorded:

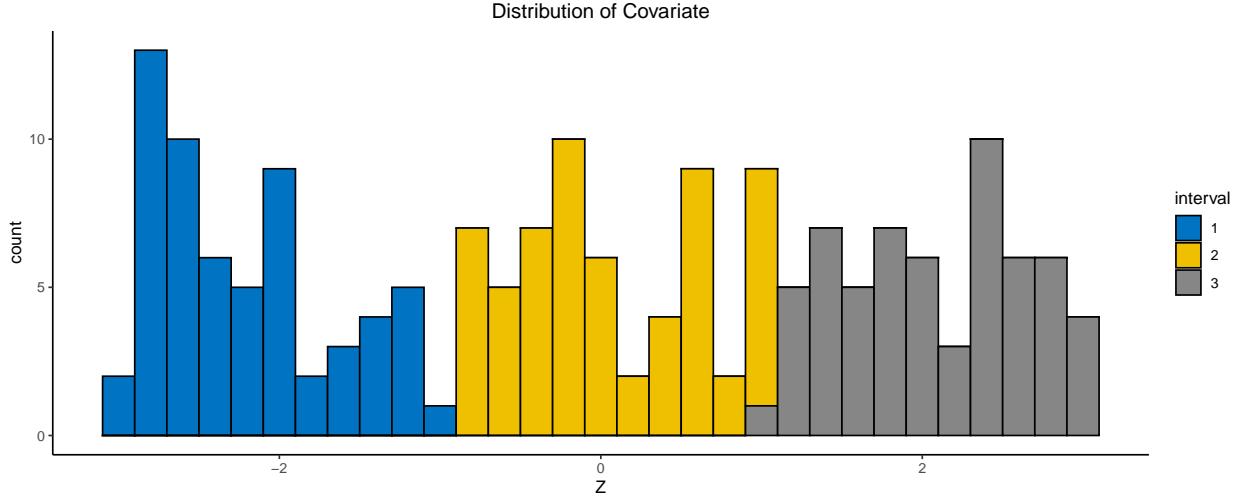
- the distribution of the covariates
- the model summary
- the unique graphs produced by the model
- the number of grid searches performed before the optimal π values stabilized
- the optimal π values
- a visualization of the fitted variance hyperparameters for the final model

These trial by trial details are included in the final section, *Detailed Results*.

Data Generation

Extraneous Covariate

I generated the covariate, Z , as the union of three almost disjoint intervals of equal measure. That is, $Z = Z_1 \cup Z_2 \cup Z_3$ with $Z_1 = (-3, -1)$, $Z_2 = (a, b) = (-1, 1)$, $Z_3 = (1, 3)$. Within each interval, I generated 60 covariate values from a uniform distribution. For example:



Precision Matrix

All of the individuals in interval 1 had the same precision matrix, $\Omega^{(1)}$:

$$\Omega_{i,j}^{(1)} = \begin{cases} 2 & i = j \\ 1 & (i, j) \in \{(1, 2), (2, 1), (2, 3), (3, 2)\} \\ 0 & o.w. \end{cases}$$

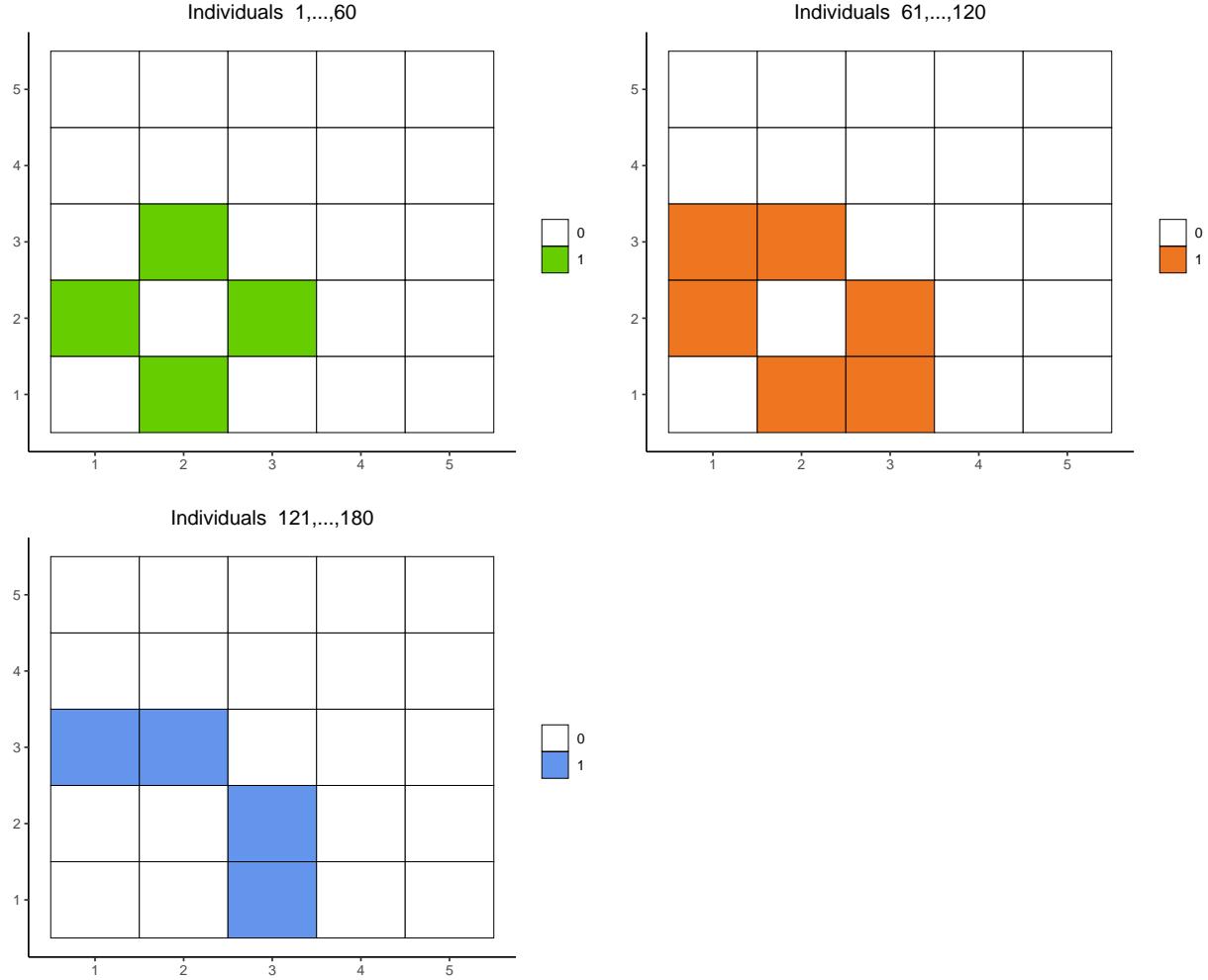
Also, all of the individuals in interval 3 had the same precision matrix, $\Omega^{(3)}$:

$$\Omega_{i,j}^{(3)} = \begin{cases} 2 & i = j \\ 1 & (i, j) \in \{(1, 3), (3, 1), (2, 3), (3, 2)\} \\ 0 & o.w. \end{cases}$$

However, the individuals in interval 2 had a precision matrix that was dependent upon Z and (a, b) . Let $\beta_0 = -a/(b - a)$ and $\beta_1 = 1/(b - a)$. Then:

$$\Omega_{i,j}^{(2)}(z) = \begin{cases} 2 & i = j \\ 1 & (i, j) \in \{(2, 3), (3, 2)\} \\ 1 - \beta_0 - \beta_1 z & (i, j) \in \{(1, 2), (2, 1)\} \\ \beta_0 + \beta_1 z & (i, j) \in \{(1, 3), (3, 1)\} \\ 0 & o.w. \end{cases}$$

Thus, $\Omega^{(2)}(a) = \Omega^{(1)}$ and $\Omega^{(2)}(b) = \Omega^{(3)}$. That is, an individual on the left or right boundary of Z_2 would have precision matrix $\Omega^{(1)}$ or $\Omega^{(3)}$, respectively. The conditional dependence structures corresponding to each of these precision matrices are visualized below.



Data matrix

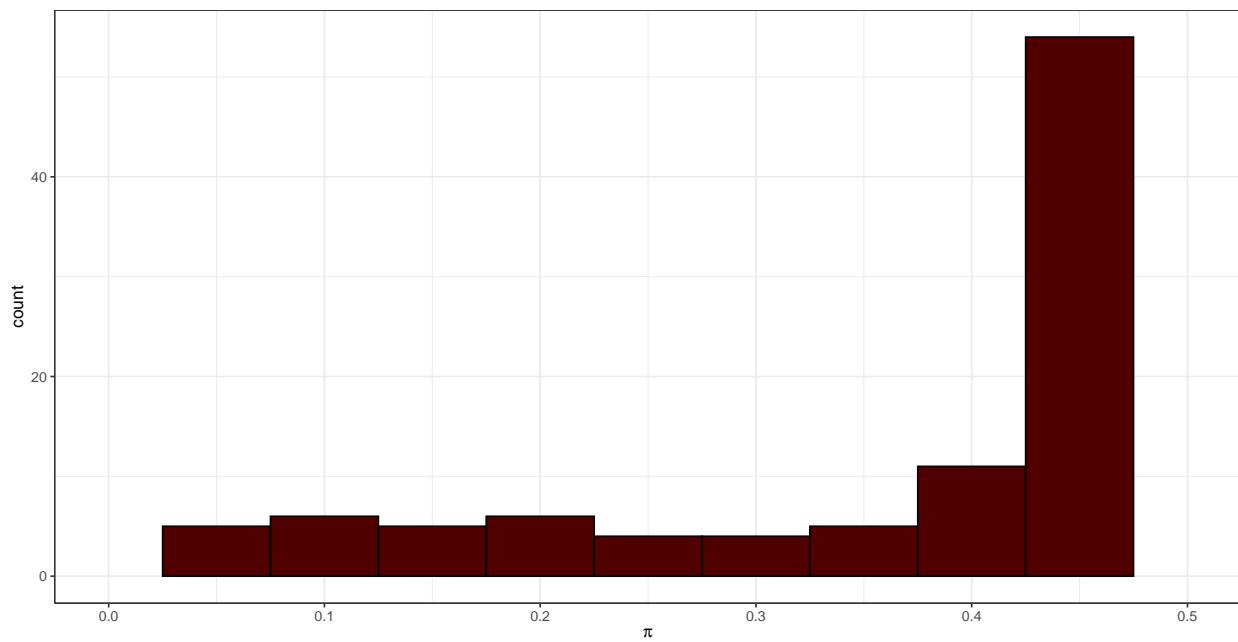
Let z_l be the extraneous covariate for the l -th individual. To generate the data matrix for the l -th individual, I took a random sample from $\mathcal{N}(0, \{\Omega_l(z_l)\}^{-1})$, where:

$$\Omega_l(z_l) = \begin{cases} \Omega^{(1)} & z_l \in Z_1 \\ \Omega^{(2)}(z_l) & z_l \in Z_2 \\ \Omega^{(3)} & z_l \in Z_3 \end{cases}$$

Results

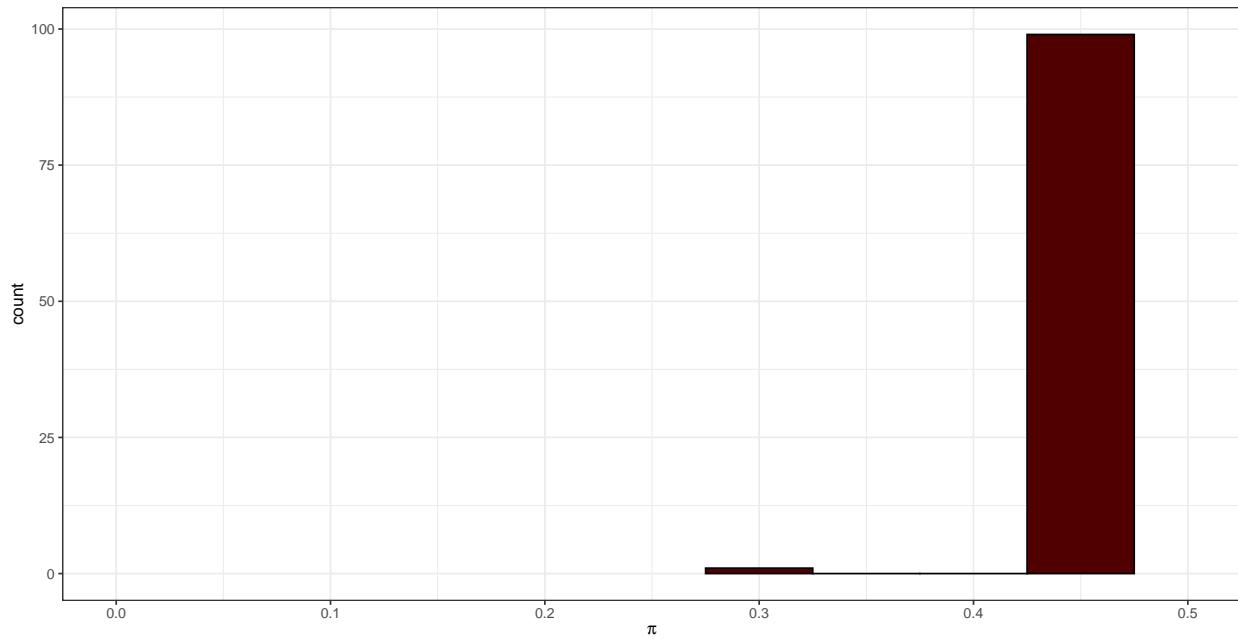
```
## [[1]]
```

Optimal π values, Variable 1



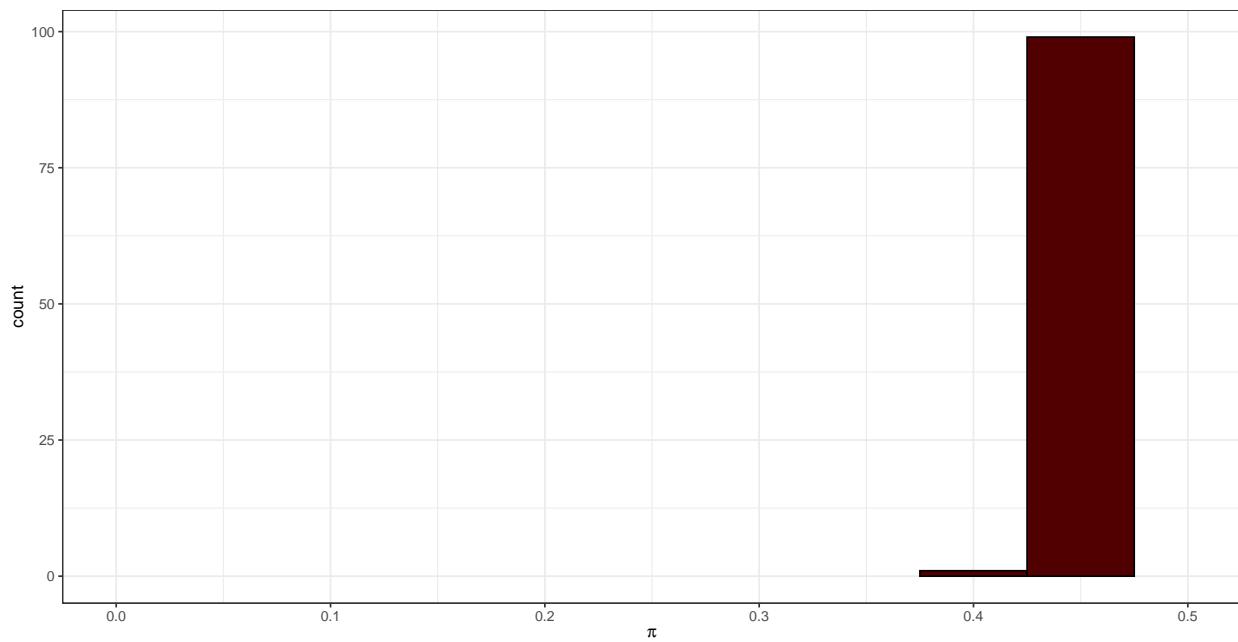
```
##  
## [[2]]
```

Optimal π values, Variable 2



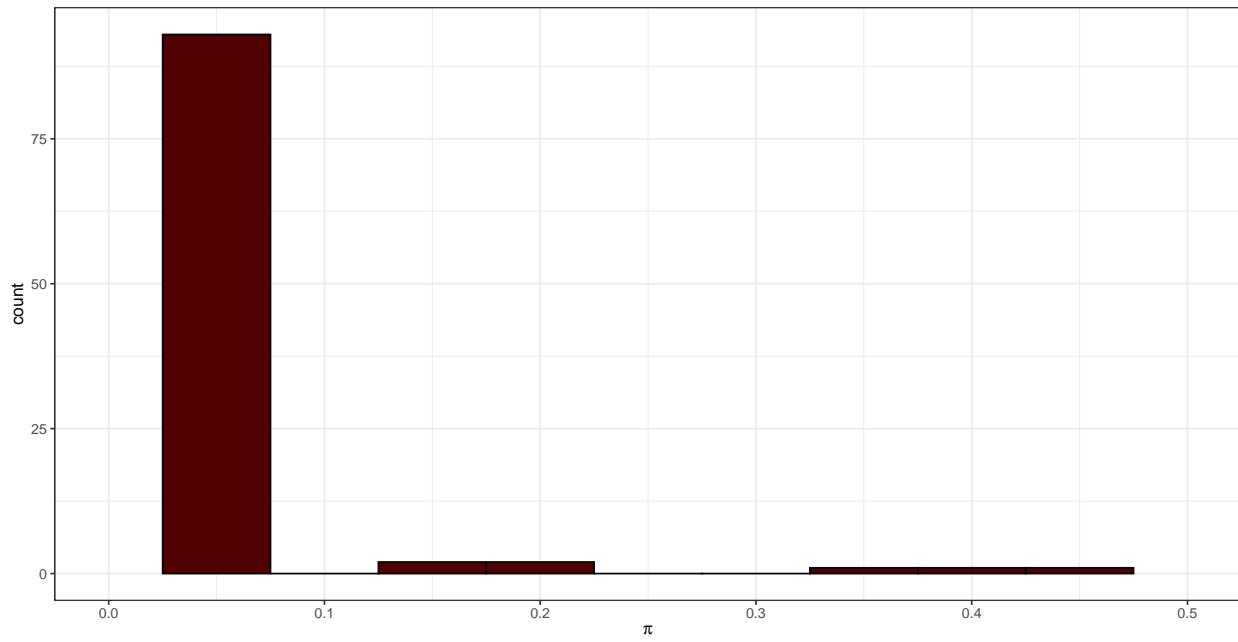
```
##  
## [[3]]
```

Optimal π values, Variable 3



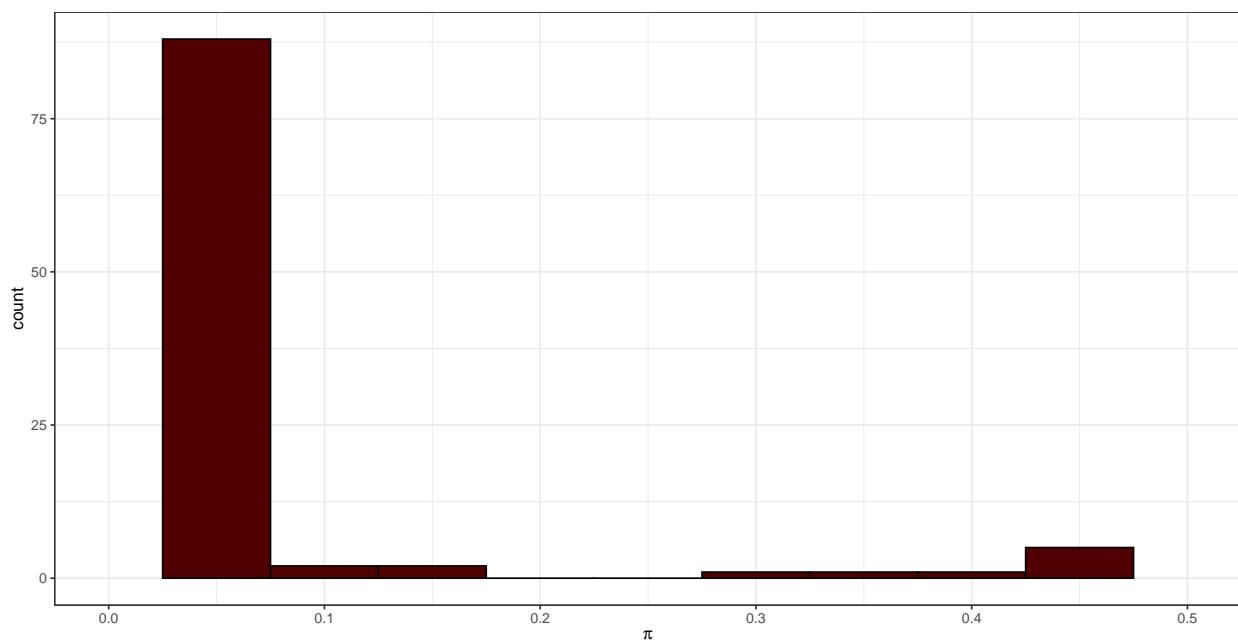
```
##  
## [[4]]
```

Optimal π values, Variable 4

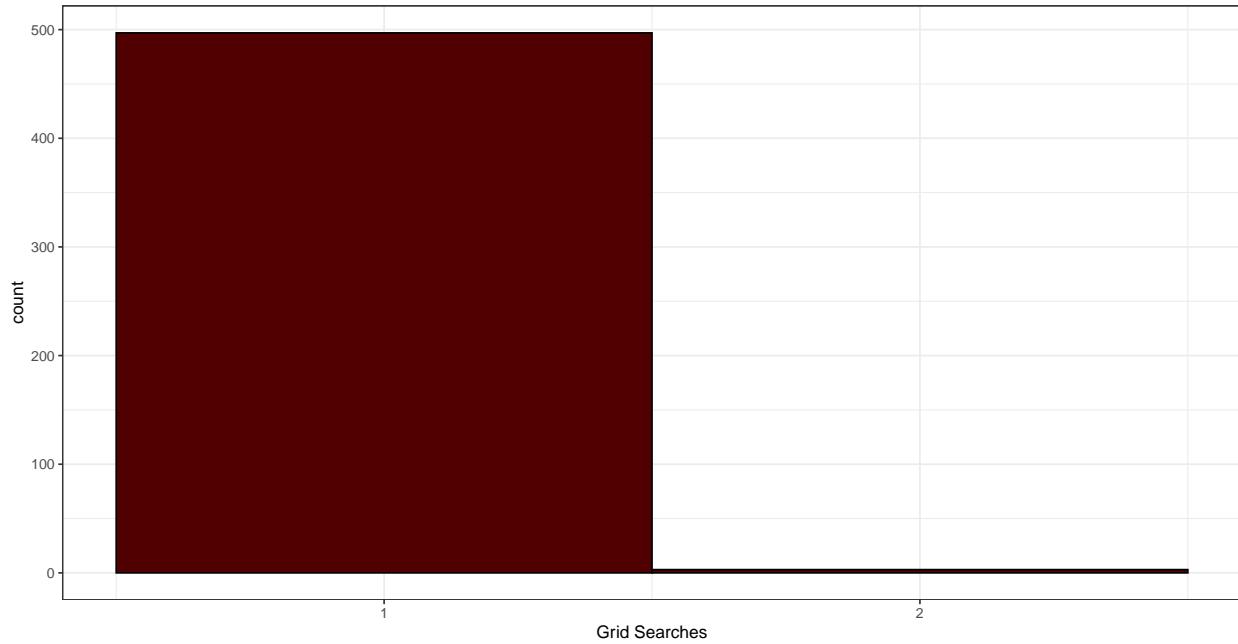


```
##  
## [[5]]
```

Optimal π values, Variable 5



Number of grid searches before stability



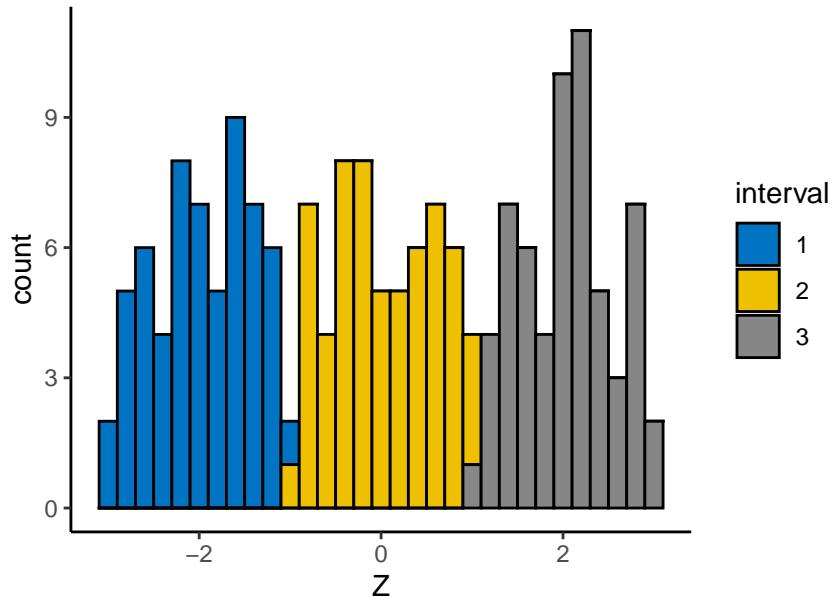
Detailed Results

```
## Time difference of 51.67519 mins

## [1] 1

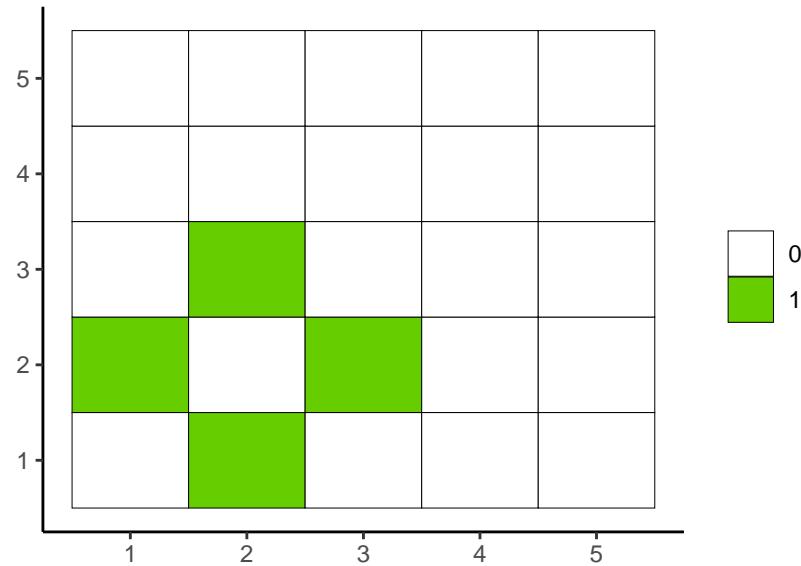
## $trial1
## $trial1$covariates
```

Distribution of Covariate, Trial 1



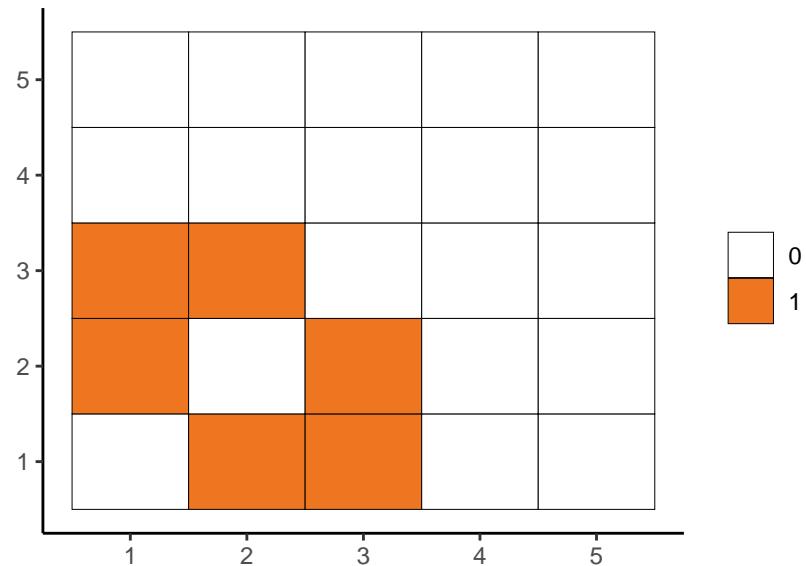
```
##
## $trial1$summary
## Covariate Dependent Graphical Model
##
## Model ELBO: -84751.04           Unique conditional dependence structures: 4
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 2/5 variables
##
## Model fit completed in 31.179 secs
##
## $trial1$unique_graphs
## $trial1$unique_graphs$graph1
## [1] "1,...,53"
##
## $trial1$unique_graphs$graph2
## [1] "54,...,61,96,...,100"
##
## $trial1$unique_graphs$graph3
## [1] "62,...,95"
##
## $trial1$unique_graphs$graph4
## [1] "101,...,180"
##
## $trial1$unique_graphs[[5]]
```

Graph 1, Individuals 1,...,53



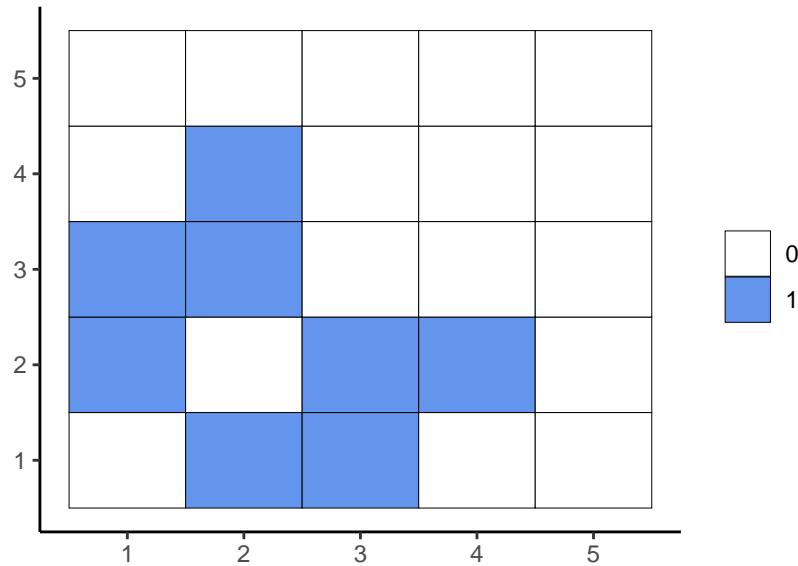
```
##  
## $trial1$unique_graphs[[6]]
```

Graph 2, Individuals 54,...,61,96,...,100



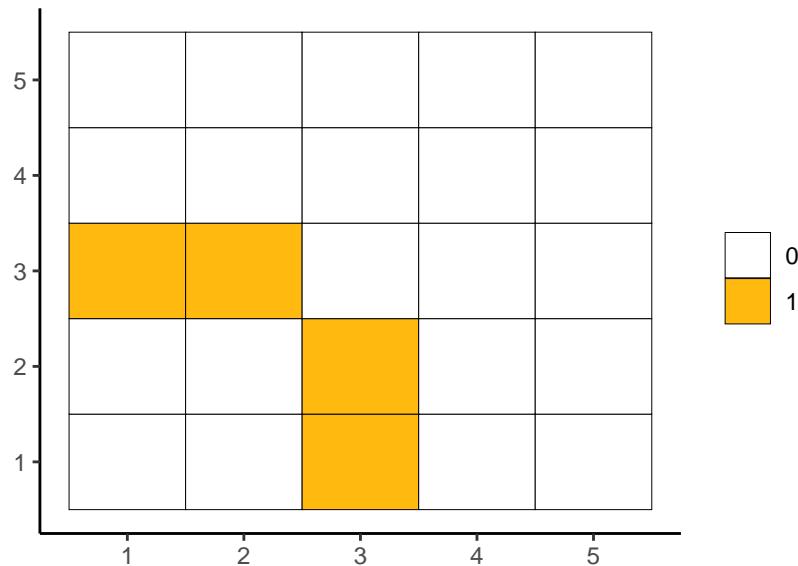
```
##  
## $trial1$unique_graphs[[7]]
```

Graph 3, Individuals 62,...,95



```
##  
## $trial1$unique_graphs[[8]]
```

Graph 4, Individuals 101,...,180

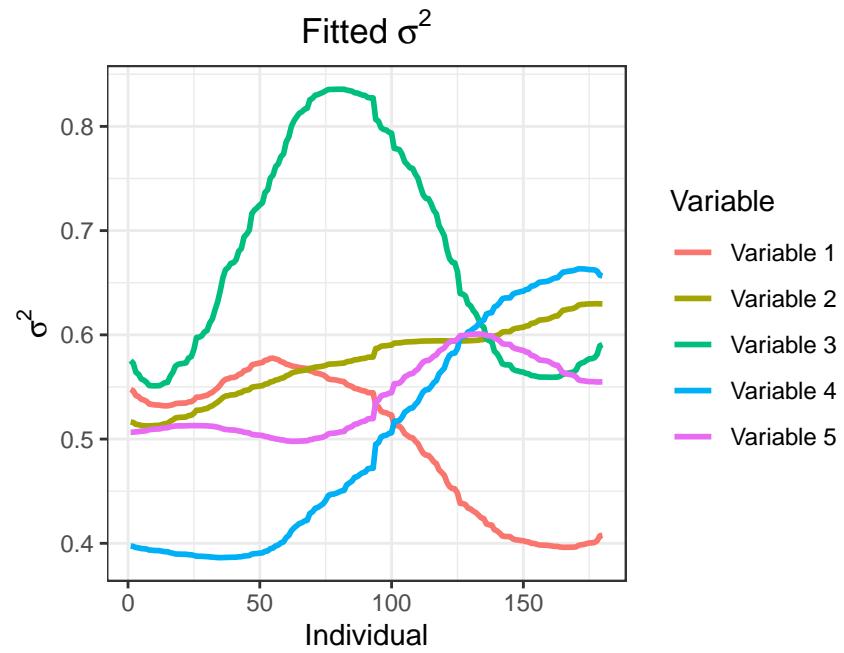


```
##  
##  
## $trial1$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial1$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.40      0.45      0.45      0.05      0.05
##
## $trial1$sigmasq

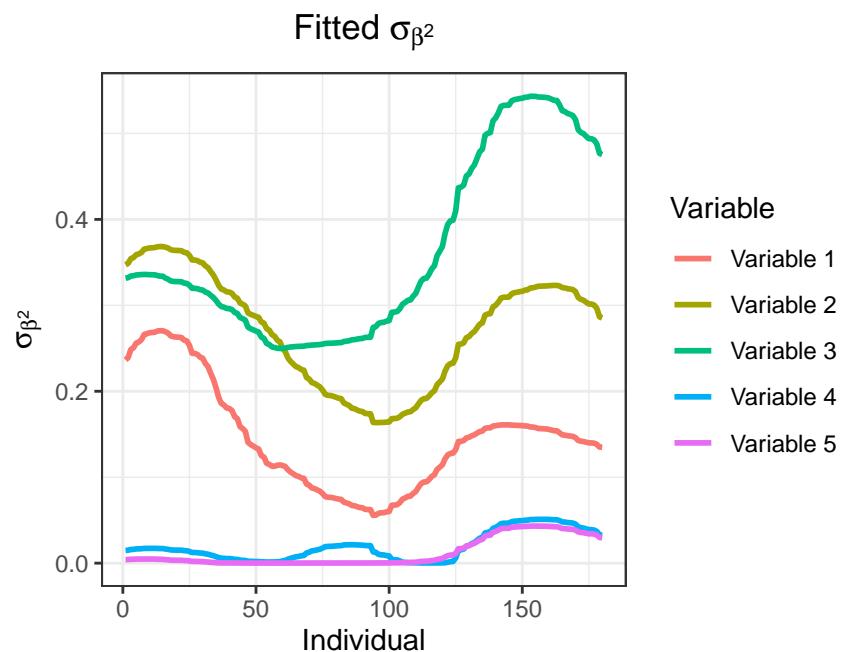
```



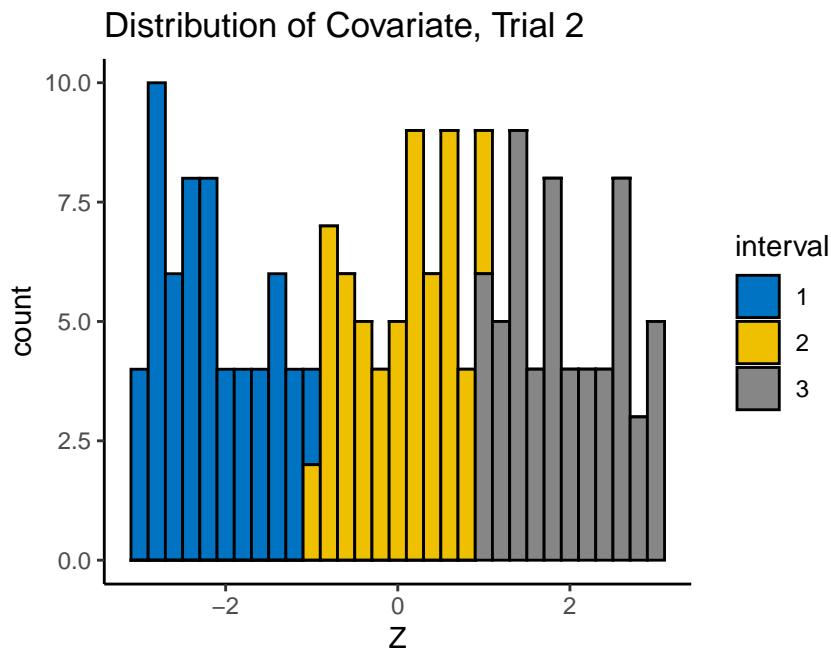
```

## 
## $trial1$sigmabetasq

```

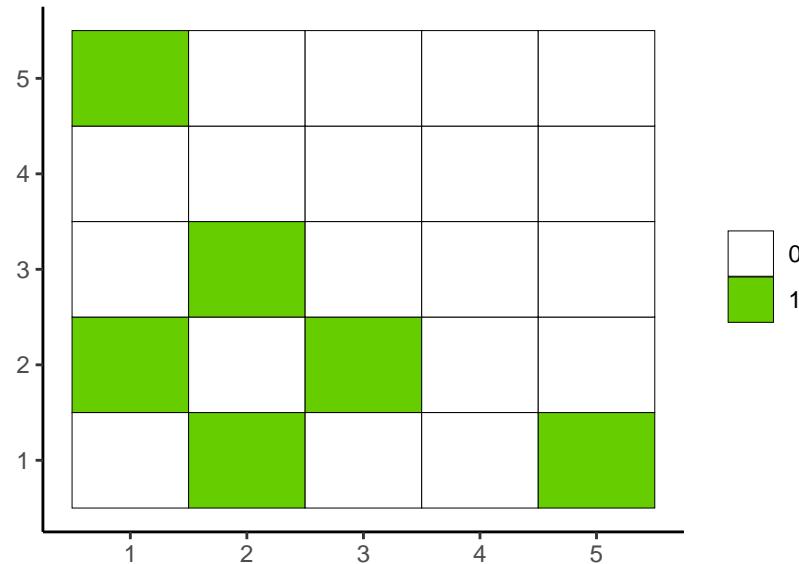


```
##  
##  
## $trial2  
## $trial2$covariates
```



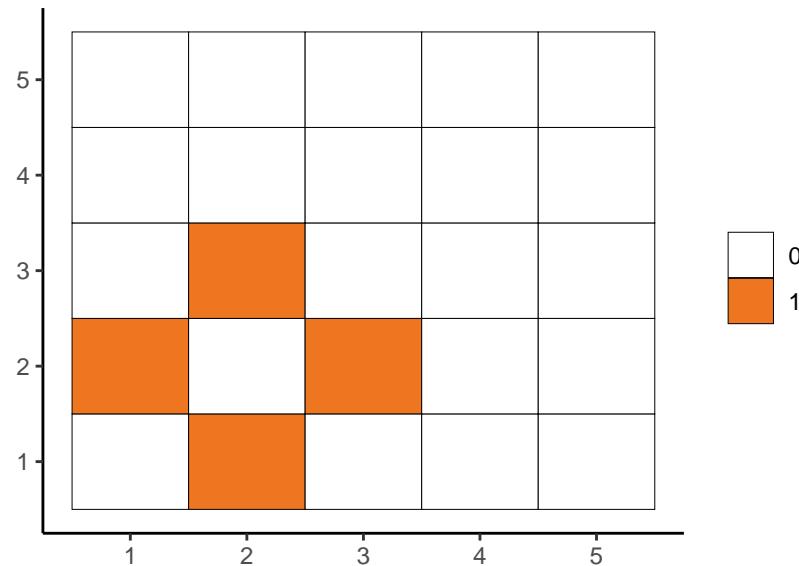
```
##  
## $trial2$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84768.45 Unique conditional dependence structures: 5  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 3/5 variables  
##  
## Model fit completed in 30.402 secs  
##  
## $trial2$unique_graphs  
## $trial2$unique_graphs$graph1  
## [1] "1,...,31"  
##  
## $trial2$unique_graphs$graph2  
## [1] "32,...,58"  
##  
## $trial2$unique_graphs$graph3  
## [1] "59,...,104"  
##  
## $trial2$unique_graphs$graph4  
## [1] "105,...,140"  
##  
## $trial2$unique_graphs$graph5  
## [1] "141,...,180"  
##  
## $trial2$unique_graphs[[6]]
```

Graph 1, Individuals 1,...,31



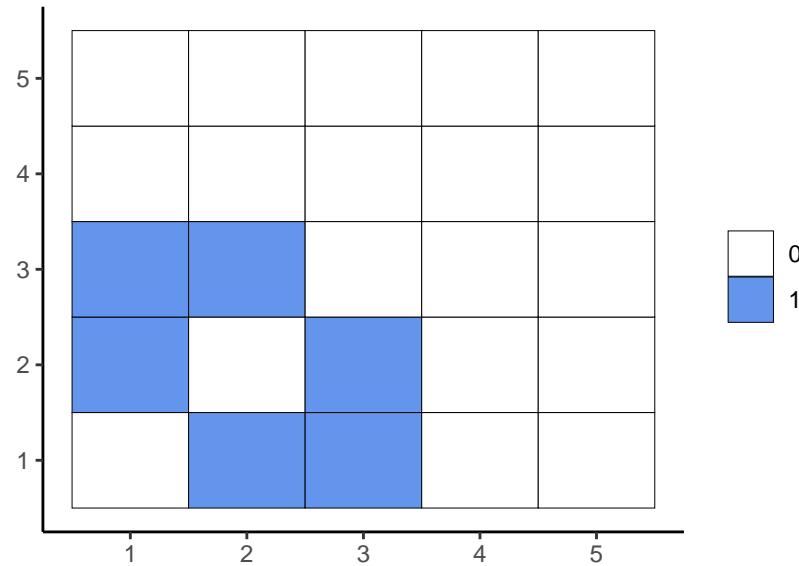
```
##  
## $trial2$unique_graphs[[7]]
```

Graph 2, Individuals 32,...,58



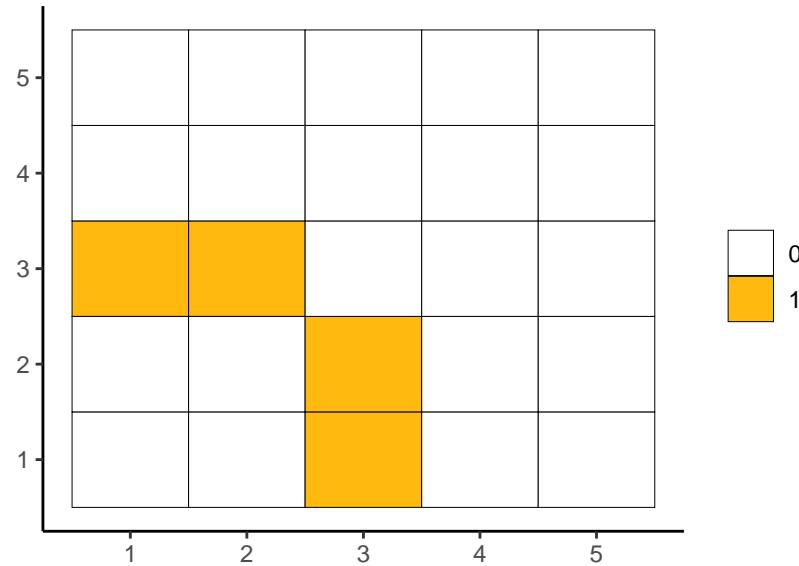
```
##  
## $trial2$unique_graphs[[8]]
```

Graph 3, Individuals 59,...,104



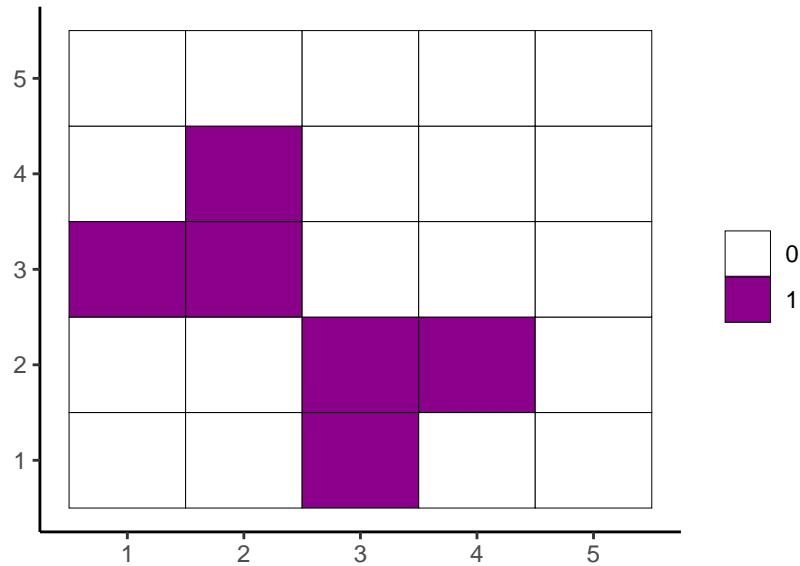
```
##  
## $trial2$unique_graphs[[9]]
```

Graph 4, Individuals 105,...,140

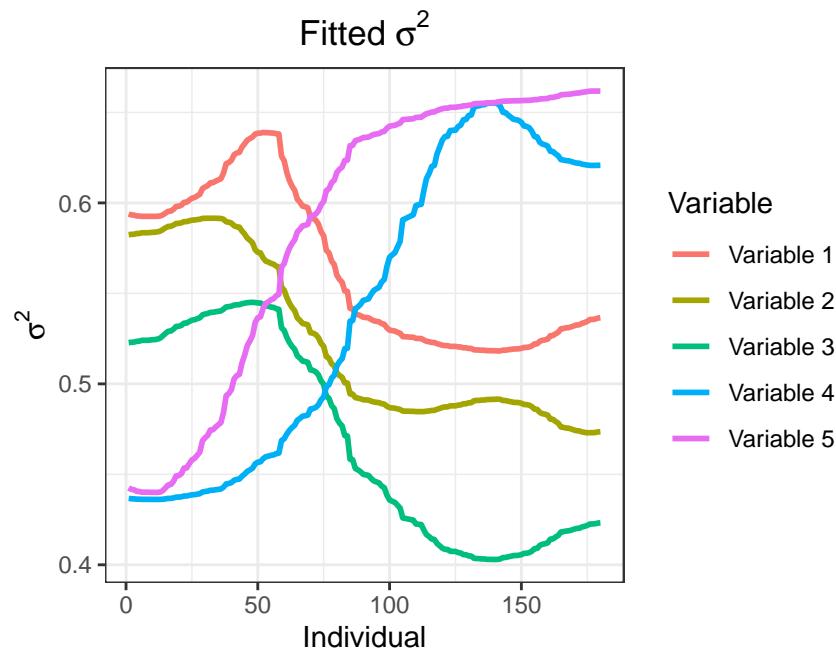


```
##  
## $trial2$unique_graphs[[10]]
```

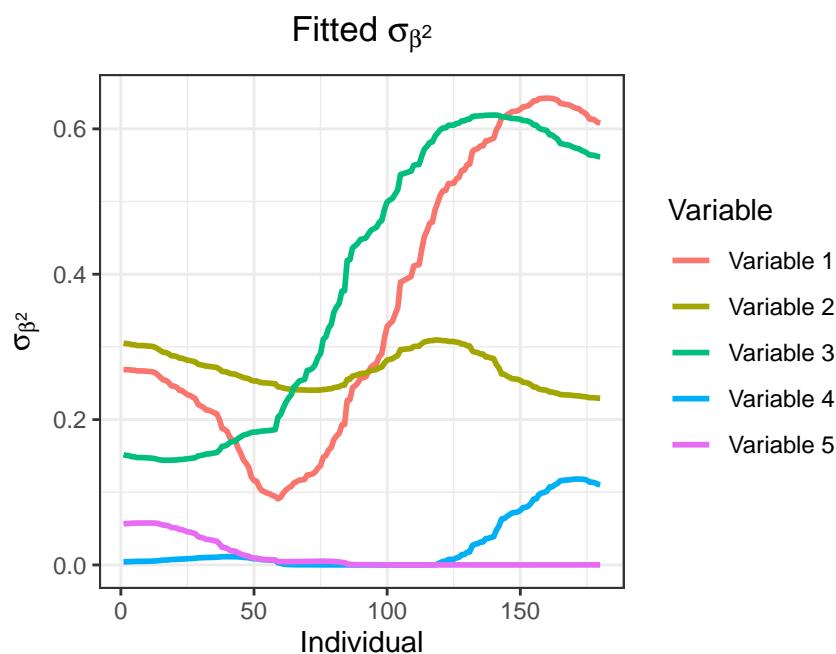
Graph 5, Individuals 141,...,180



```
##  
##  
## $trial2$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial2$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.25      0.45      0.45      0.05      0.05  
##  
## $trial2$sigmasq
```

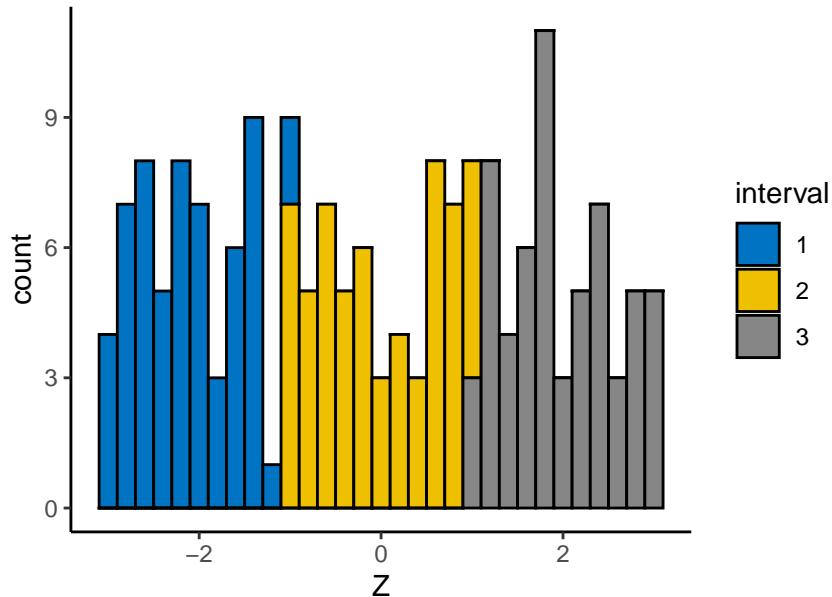


```
##  
## $trial2$sigmabetasq
```



```
##  
##  
## $trial3  
## $trial3$covariates
```

Distribution of Covariate, Trial 3



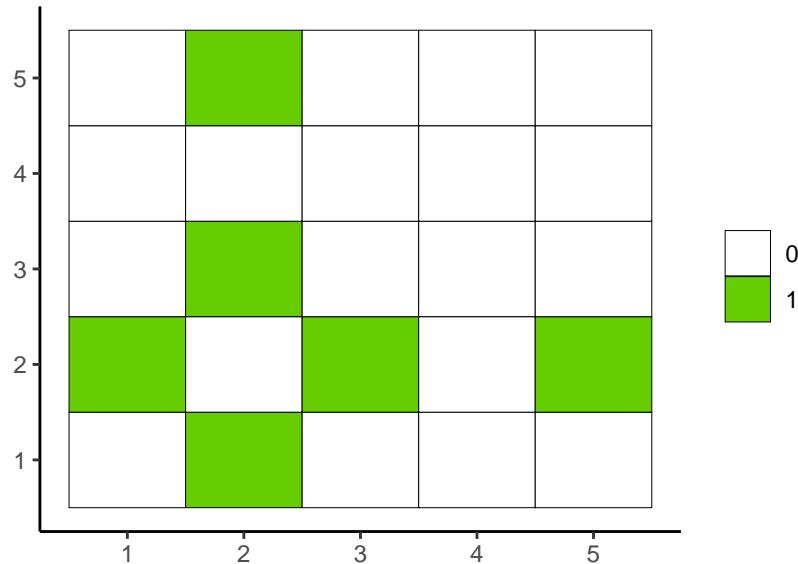
```

## 
## $trial3$summary
## Covariate Dependent Graphical Model
## 
## Model ELBO: -84964.64           Unique conditional dependence structures: 7
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 2/5 variables
## 
## Model fit completed in 29.015 secs
## 
## $trial3$unique_graphs
## $trial3$unique_graphs$graph1
## [1] "1,...,80"
## 
## $trial3$unique_graphs$graph2
## [1] "81,...,92"
## 
## $trial3$unique_graphs$graph3
## [1] "93,...,110"
## 
## $trial3$unique_graphs$graph4
## [1] "111,...,116"
## 
## $trial3$unique_graphs$graph5
## [1] "117,...,125"
## 
## $trial3$unique_graphs$graph6
## [1] "126,...,154"
## 
## $trial3$unique_graphs$graph7
## [1] "155,...,180"
## 

```

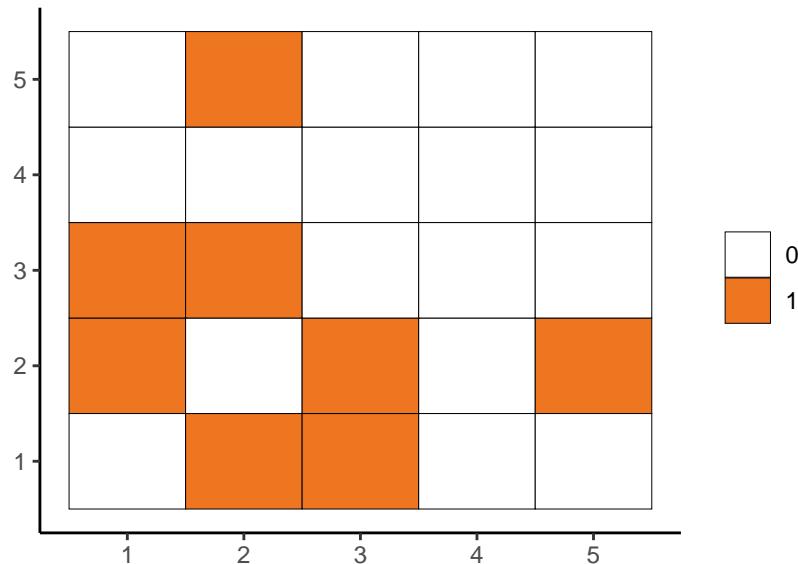
```
## $trial3$unique_graphs[[8]]
```

Graph 1, Individuals 1,...,80



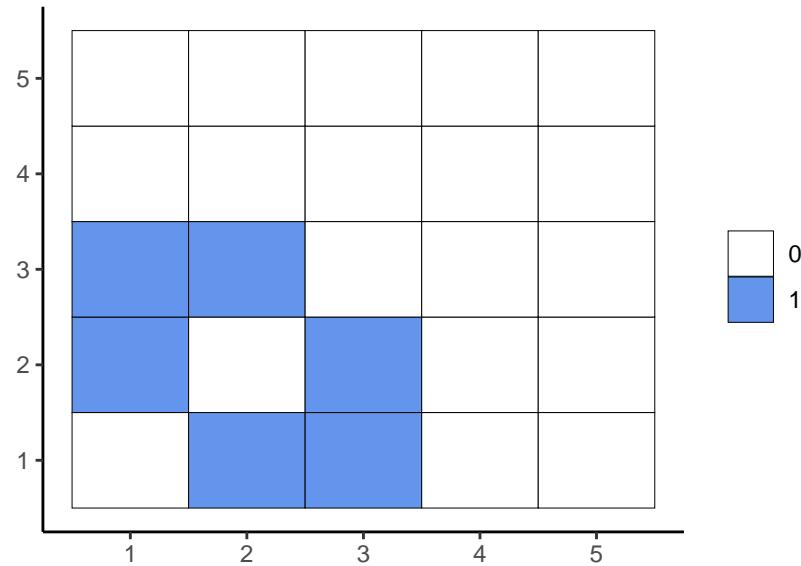
```
##  
## $trial3$unique_graphs[[9]]
```

Graph 2, Individuals 81,...,92



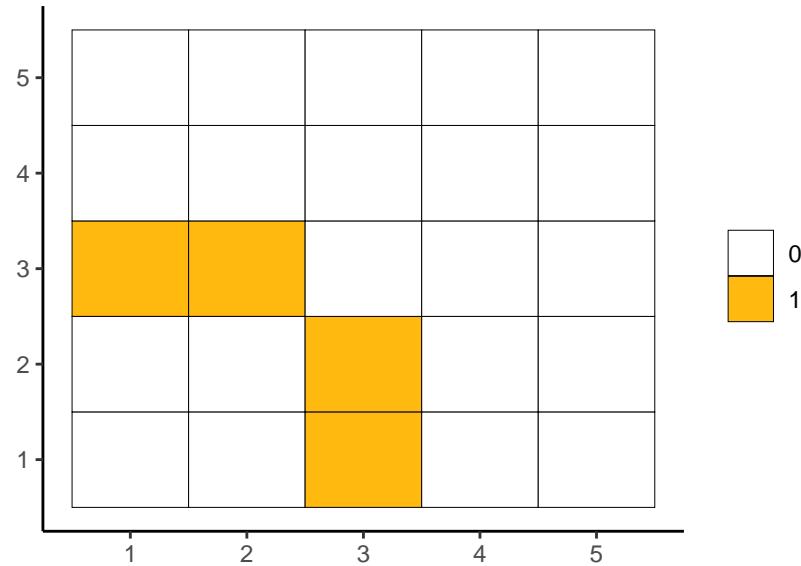
```
##  
## $trial3$unique_graphs[[10]]
```

Graph 3, Individuals 93,...,110



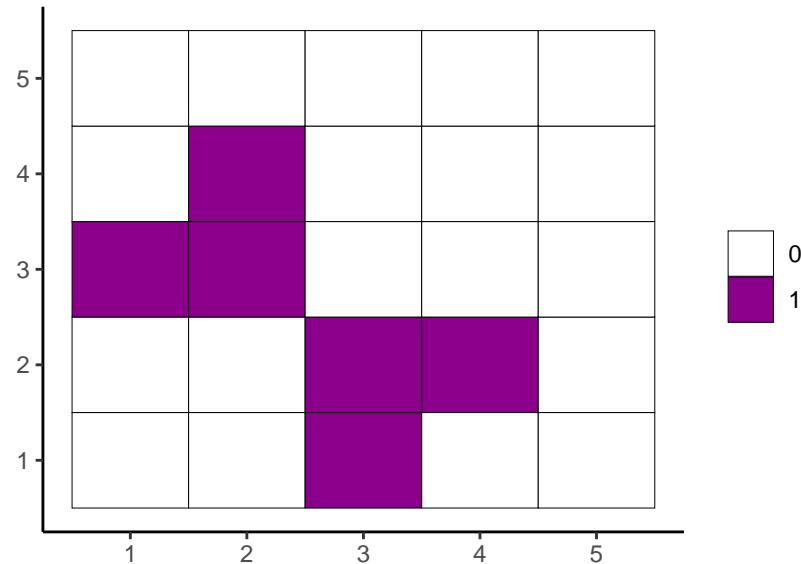
```
##  
## $trial3$unique_graphs[[11]]
```

Graph 4, Individuals 111,...,116



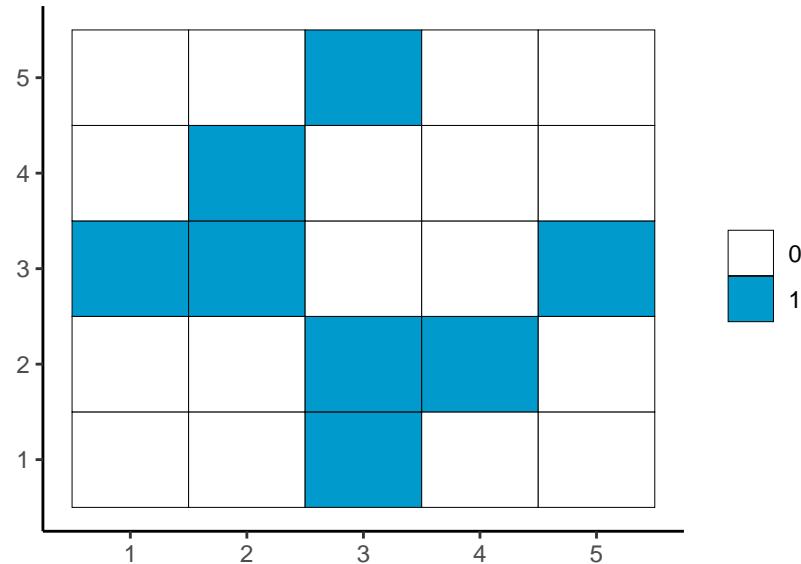
```
##  
## $trial3$unique_graphs[[12]]
```

Graph 5, Individuals 117,...,125



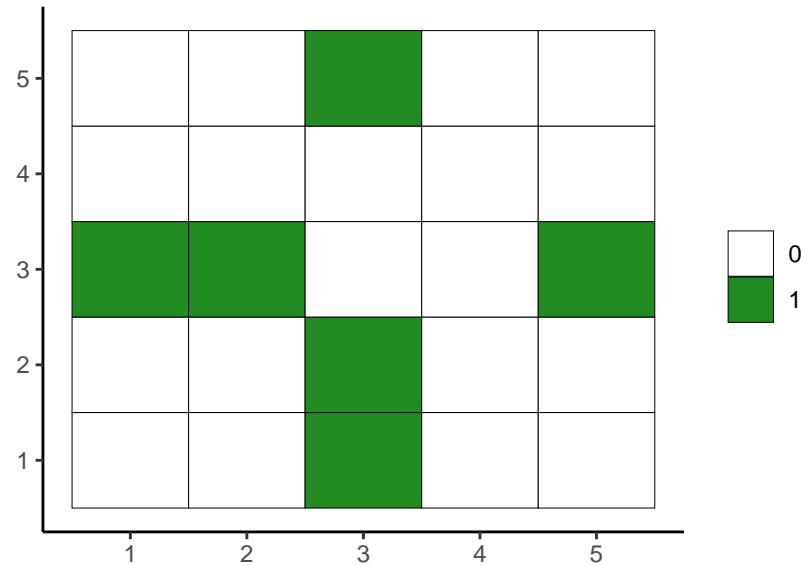
```
##  
## $trial3$unique_graphs[[13]]
```

Graph 6, Individuals 126,...,154

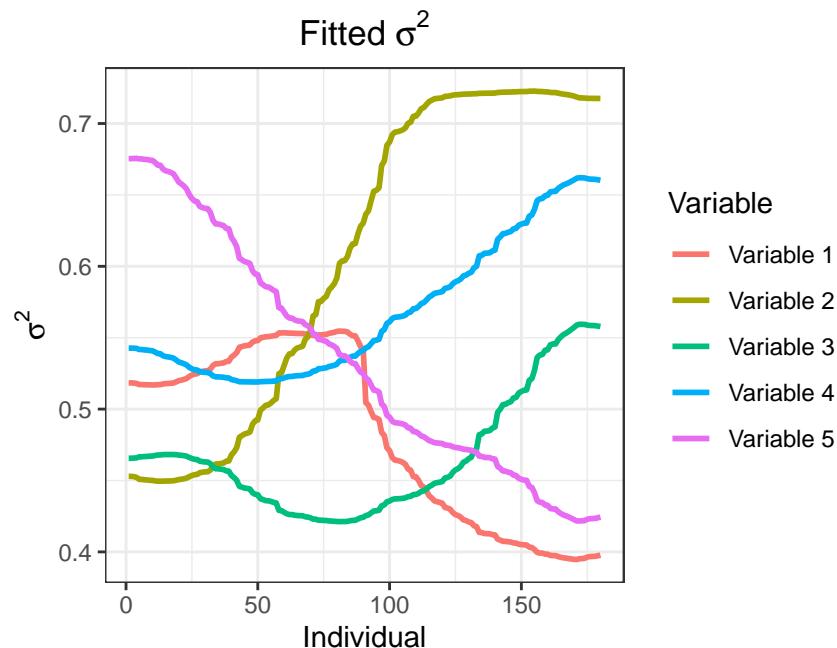


```
##  
## $trial3$unique_graphs[[14]]
```

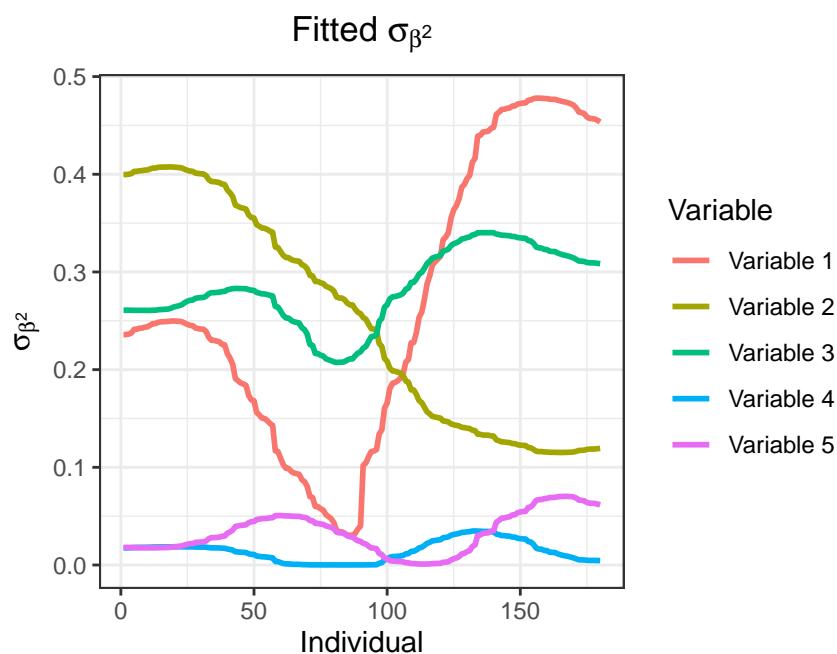
Graph 7, Individuals 155,...,180



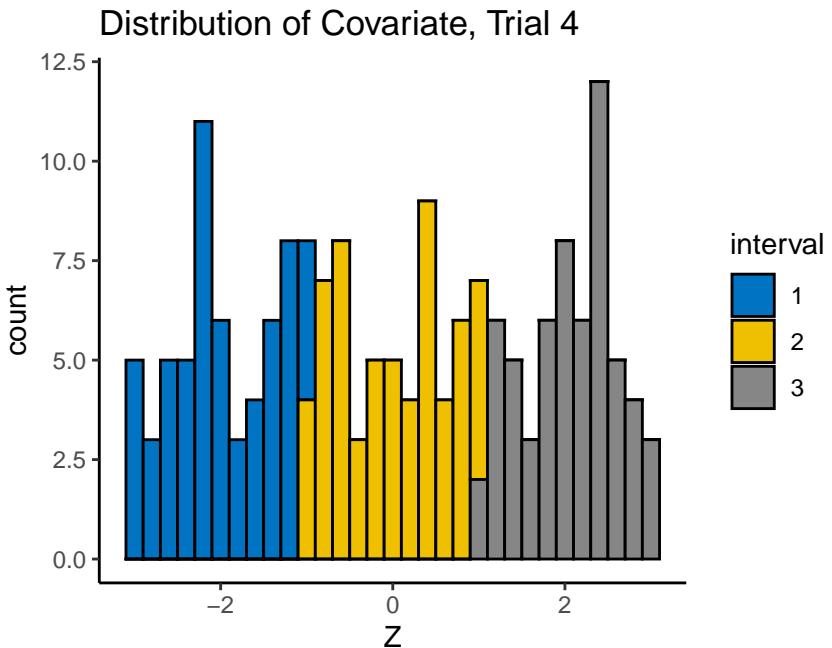
```
##  
##  
## $trial3$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1           1           1           1           1  
##  
## $trial3$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.10      0.45      0.45      0.05      0.05  
##  
## $trial3$sigmasq
```



```
##  
## $trial3$sigmabetasq
```

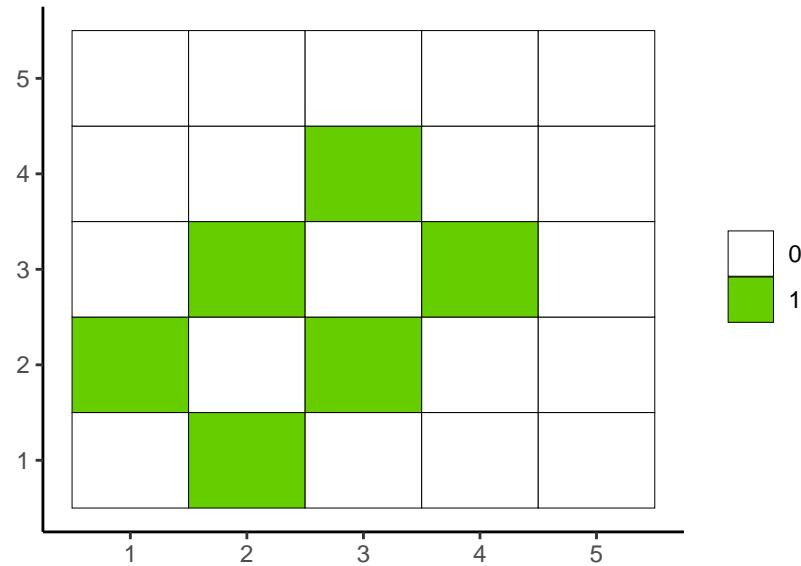


```
##  
##  
## $trial4  
## $trial4$covariates
```



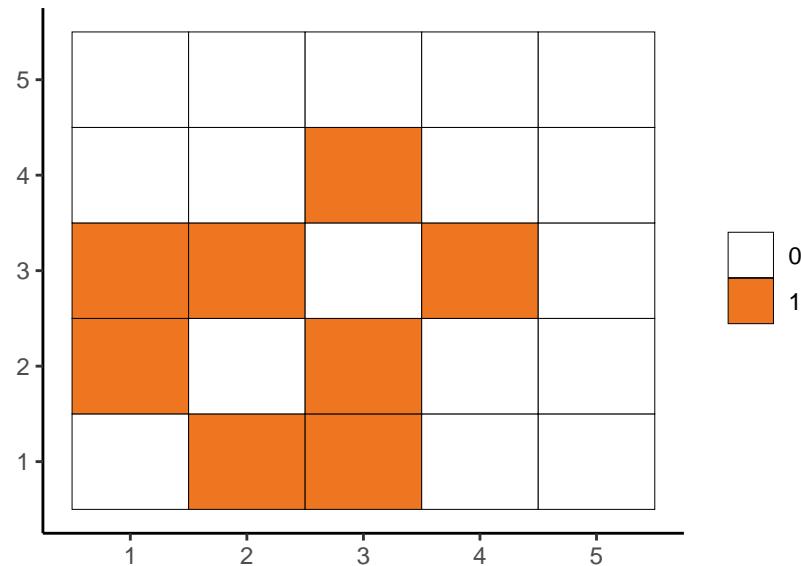
```
##
## $trial4$summary
## Covariate Dependent Graphical Model
##
## Model ELBO: -84896.28           Unique conditional dependence structures: 4
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 2/5 variables
##
## Model fit completed in 33.614 secs
##
## $trial4$unique_graphs
## $trial4$unique_graphs$graph1
## [1] "1,...,48"
##
## $trial4$unique_graphs$graph2
## [1] "49"
##
## $trial4$unique_graphs$graph3
## [1] "50,...,149"
##
## $trial4$unique_graphs$graph4
## [1] "150,...,180"
##
## $trial4$unique_graphs[[5]]
```

Graph 1, Individuals 1,...,48



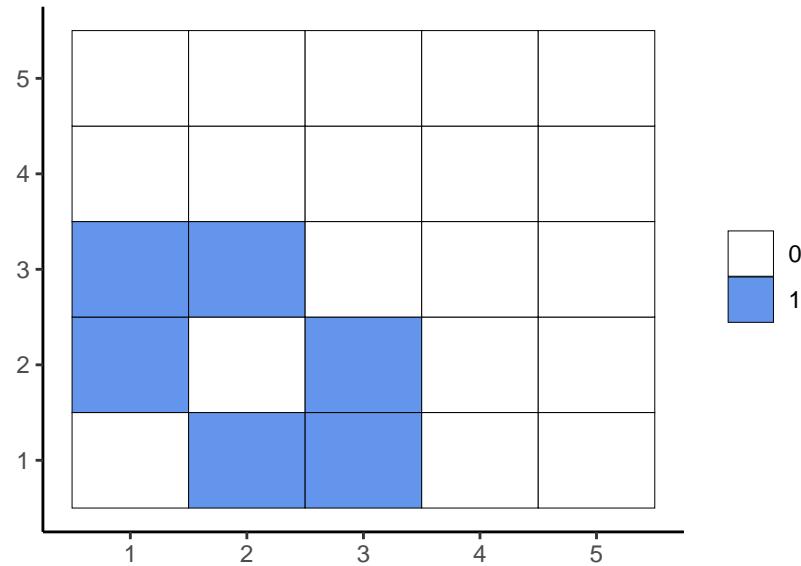
```
##  
## $trial4$unique_graphs[[6]]
```

Graph 2, Individuals 49



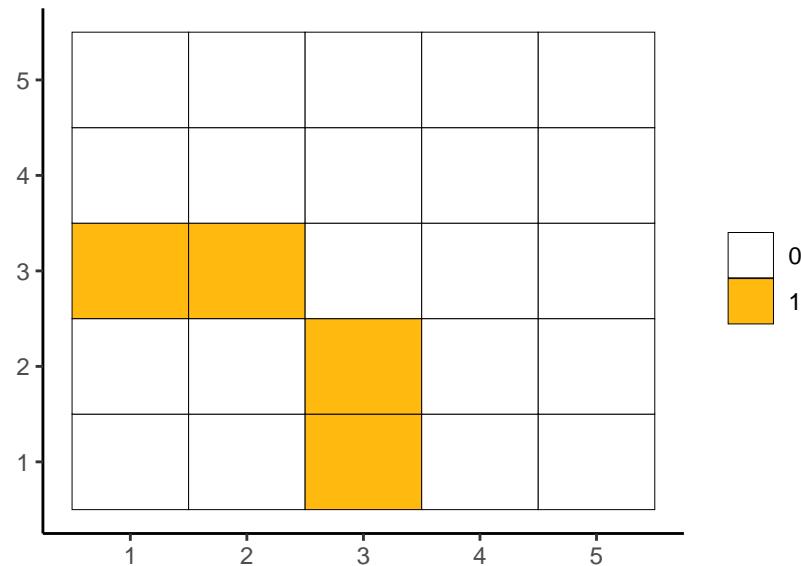
```
##  
## $trial4$unique_graphs[[7]]
```

Graph 3, Individuals 50,...,149



```
##  
## $trial4$unique_graphs[[8]]
```

Graph 4, Individuals 150,...,180

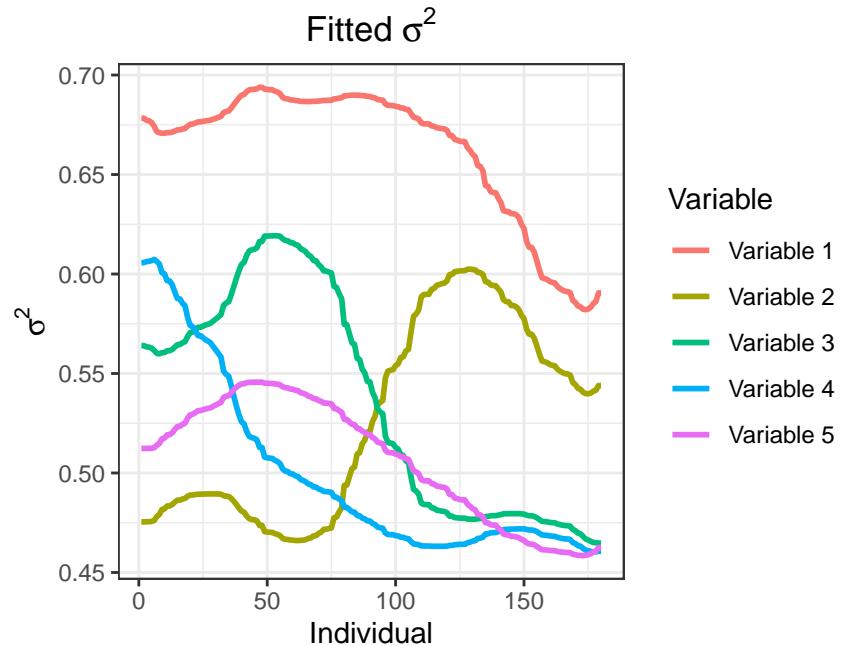


```
##  
##  
## $trial4$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial4$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.45      0.45      0.45      0.05      0.05
##
## $trial4$sigmasq

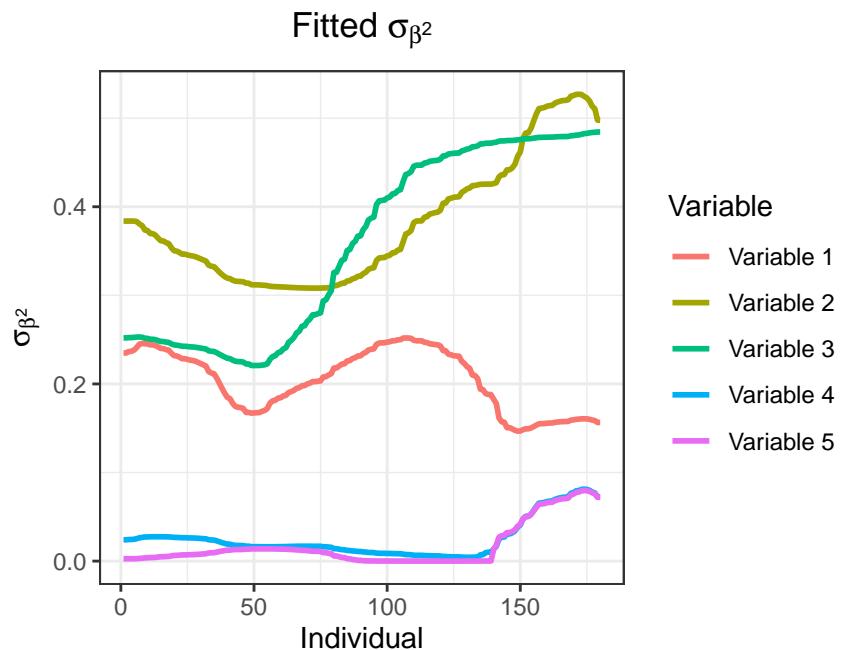
```



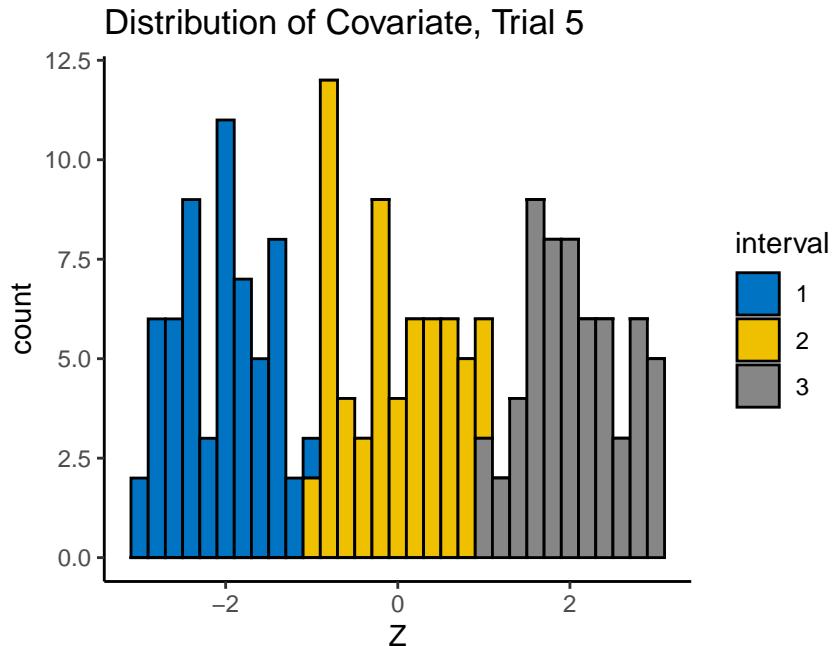
```

## 
## $trial4$sigmabetasq

```

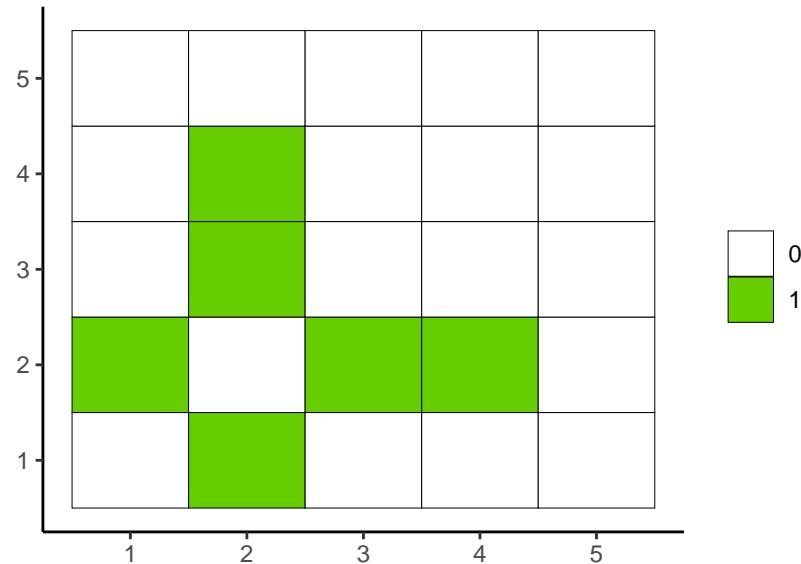


```
##  
##  
## $trial5  
## $trial5$covariates
```



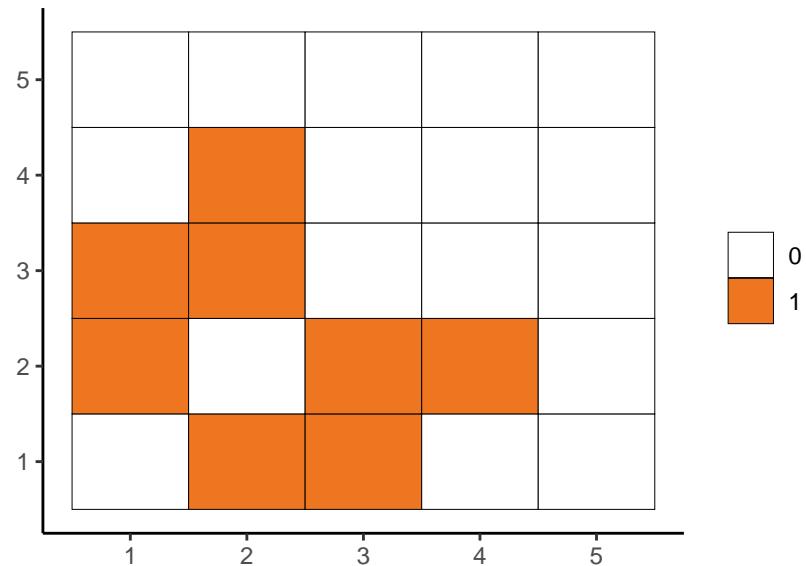
```
##  
## $trial5$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -85323.34 Unique conditional dependence structures: 3  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 3/5 variables  
##  
## Model fit completed in 31.244 secs  
##  
## $trial5$unique_graphs  
## $trial5$unique_graphs$graph1  
## [1] "1,...,43"  
##  
## $trial5$unique_graphs$graph2  
## [1] "44,...,99"  
##  
## $trial5$unique_graphs$graph3  
## [1] "100,...,180"  
##  
## $trial5$unique_graphs[[4]]
```

Graph 1, Individuals 1,...,43



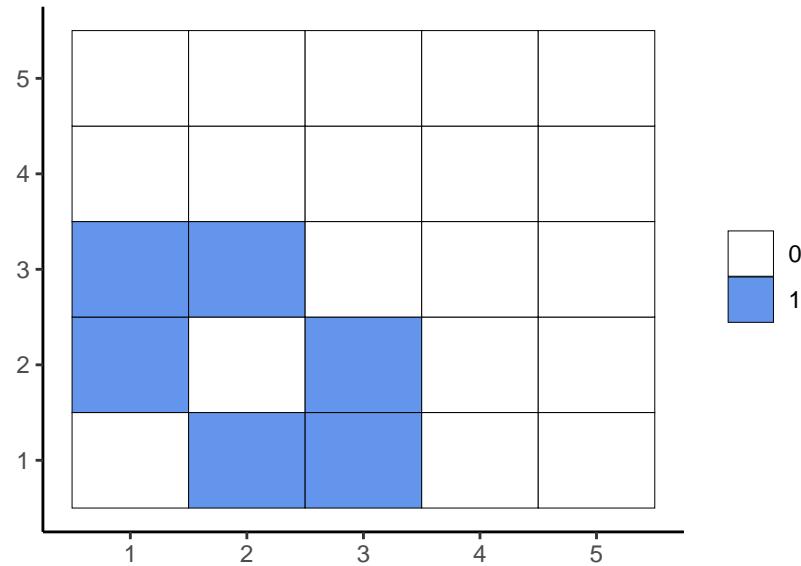
```
##  
## $trial5$unique_graphs[[5]]
```

Graph 2, Individuals 44,...,99

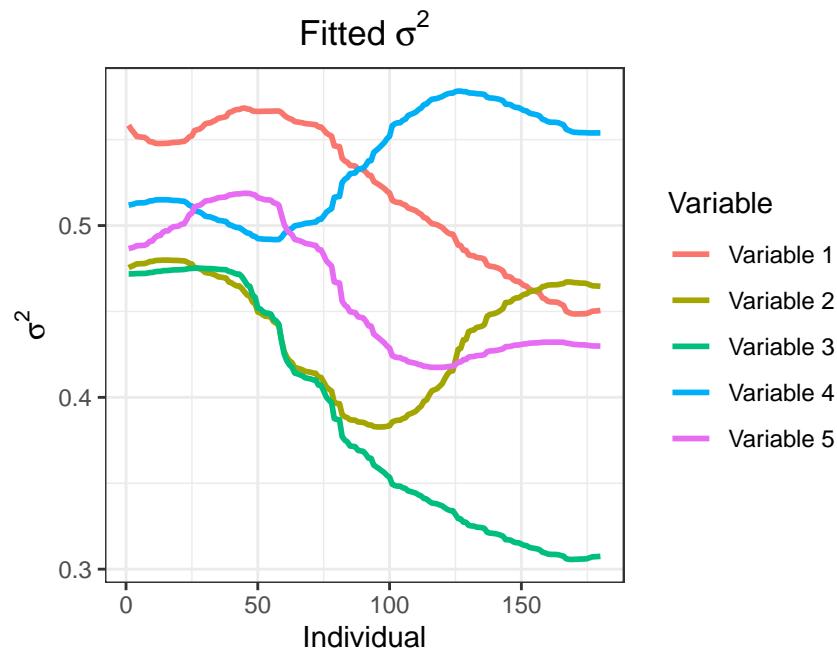


```
##  
## $trial5$unique_graphs[[6]]
```

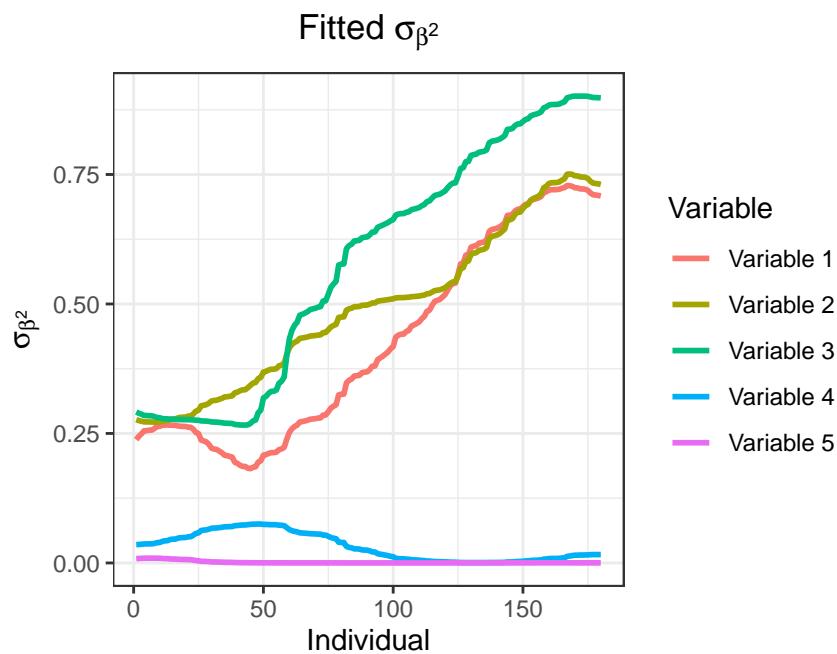
Graph 3, Individuals 100,...,180



```
##  
##  
## $trial5$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial5$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.45      0.45      0.45      0.05      0.05  
##  
## $trial5$sigmasq
```

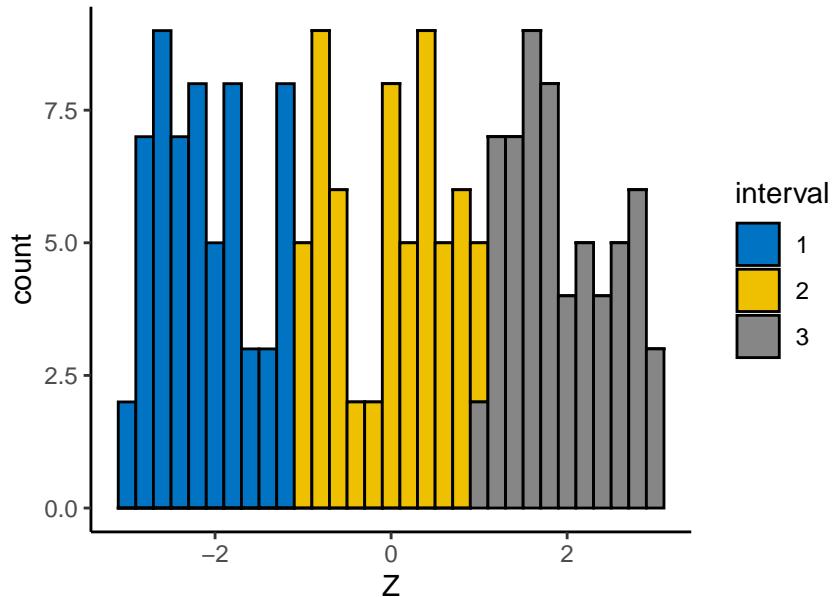


```
##  
## $trial5$sigmabetasq
```



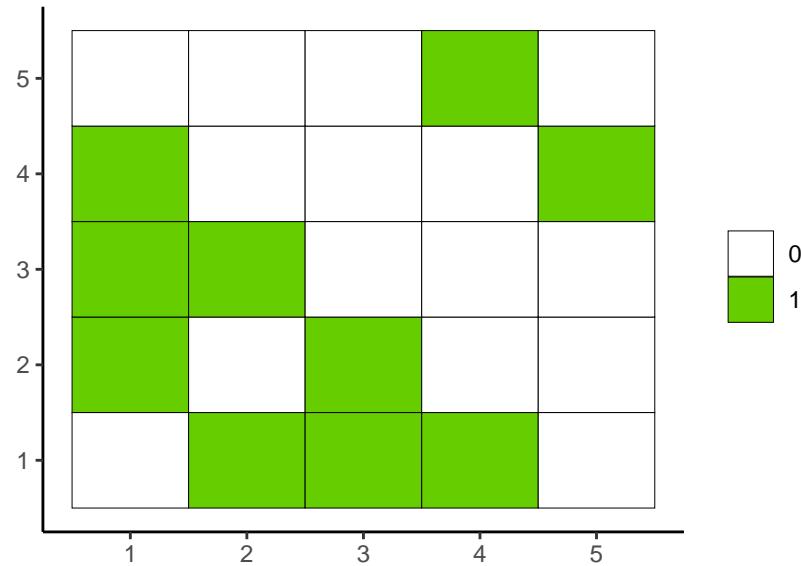
```
##  
##  
## $trial6  
## $trial6$covariates
```

Distribution of Covariate, Trial 6



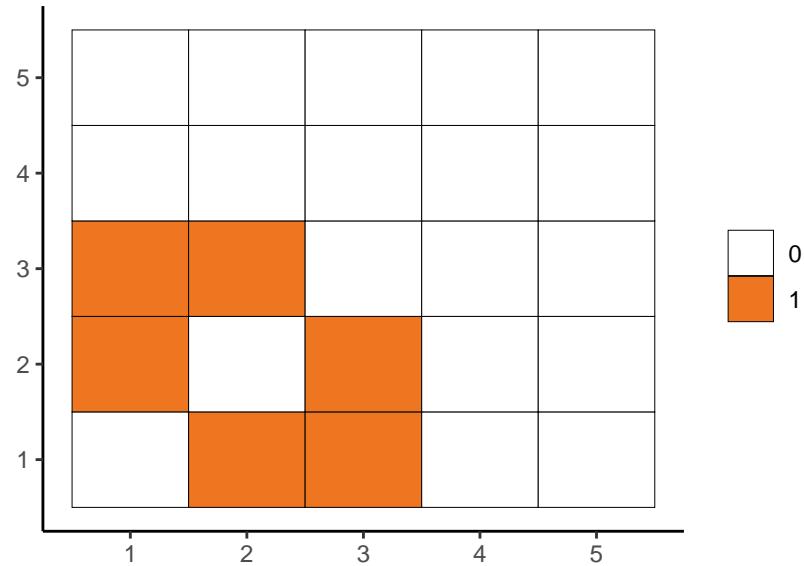
```
##
## $trial6$summary
## Covariate Dependent Graphical Model
##
## Model ELBO: -84904.05           Unique conditional dependence structures: 4
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 2/5 variables
##
## Model fit completed in 27.728 secs
##
## $trial6$unique_graphs
## $trial6$unique_graphs$graph1
## [1] "1,...,38"
##
## $trial6$unique_graphs$graph2
## [1] "39,...,61,84,...,90"
##
## $trial6$unique_graphs$graph3
## [1] "62,...,83"
##
## $trial6$unique_graphs$graph4
## [1] "91,...,180"
##
## $trial6$unique_graphs[[5]]
```

Graph 1, Individuals 1,...,38



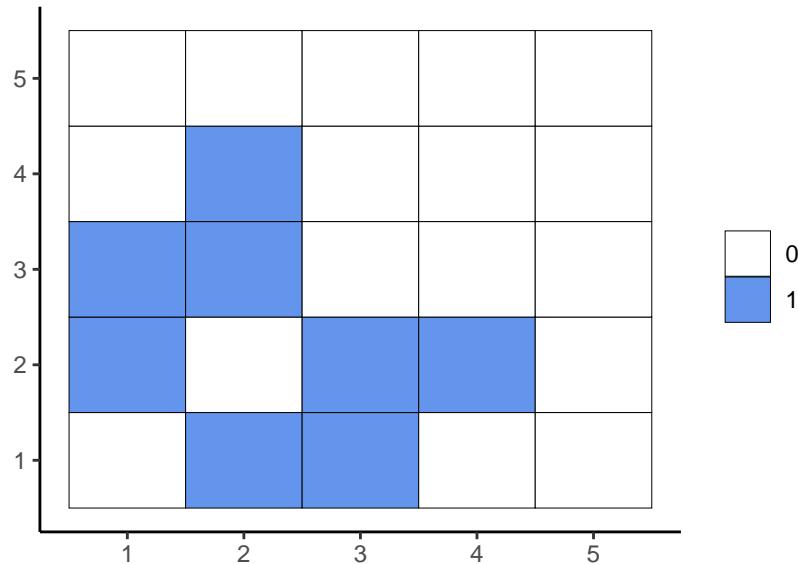
```
##  
## $trial6$unique_graphs[[6]]
```

Graph 2, Individuals 39,...,61,84,...,90



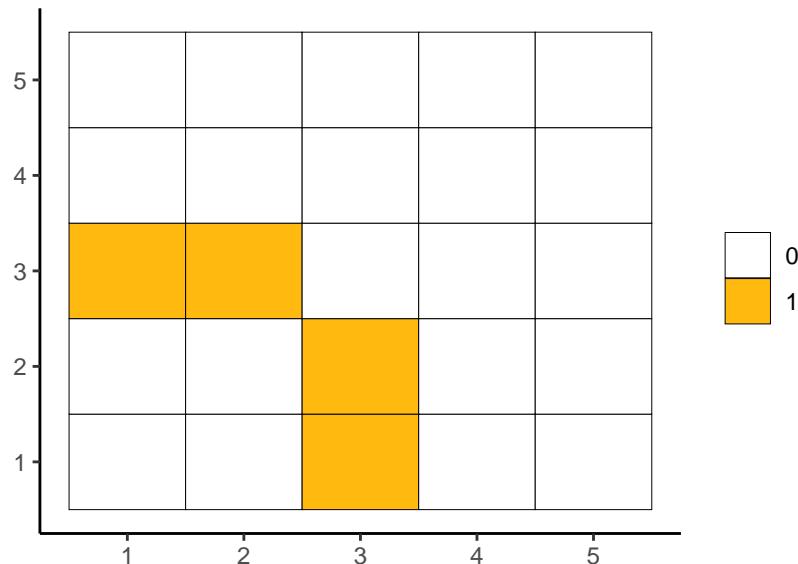
```
##  
## $trial6$unique_graphs[[7]]
```

Graph 3, Individuals 62,...,83



```
##  
## $trial6$unique_graphs[[8]]
```

Graph 4, Individuals 91,...,180

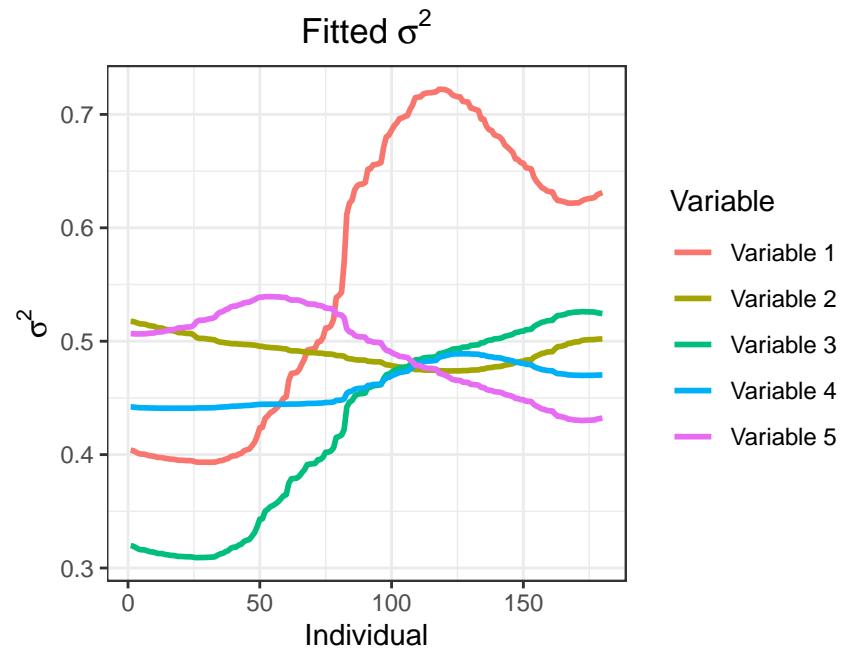


```
##  
##  
## $trial6$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial6$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.45      0.45      0.45      0.05      0.05
##
## $trial6$sigmasq

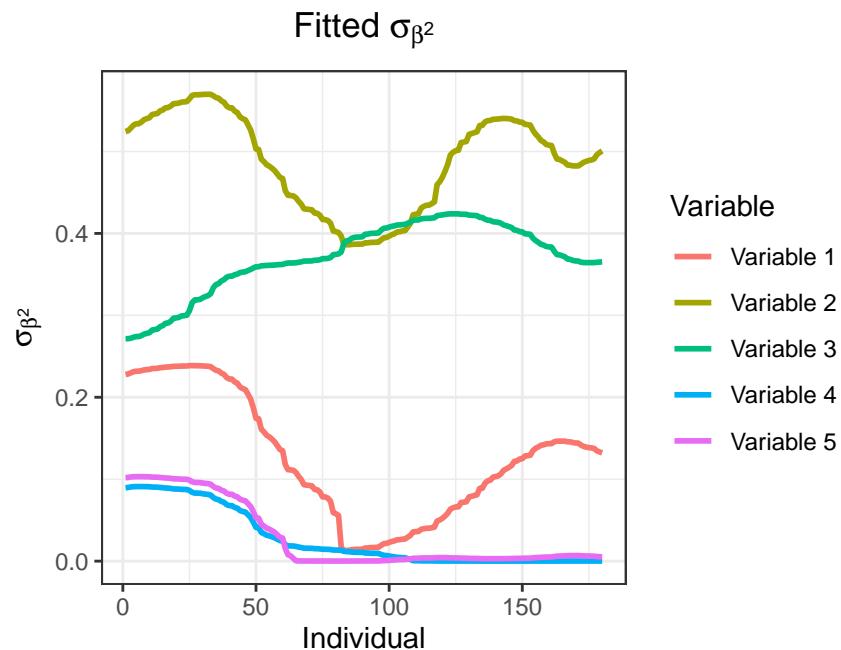
```



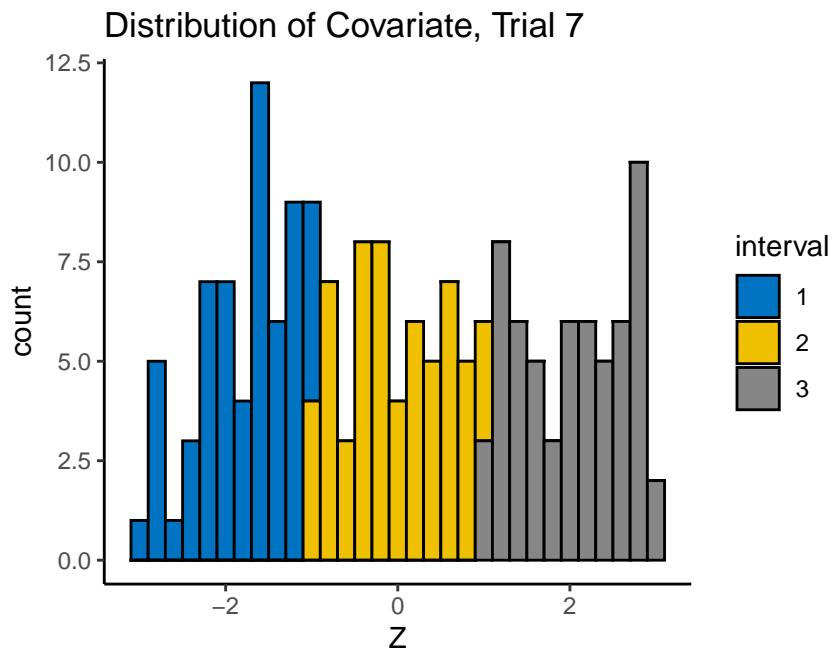
```

## 
## $trial6$sigmabetasq

```

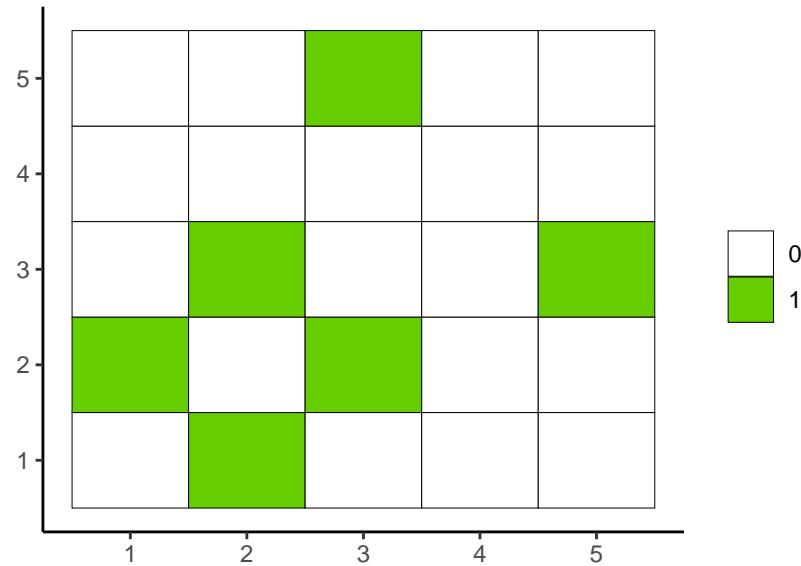


```
##  
##  
## $trial7  
## $trial7$covariates
```



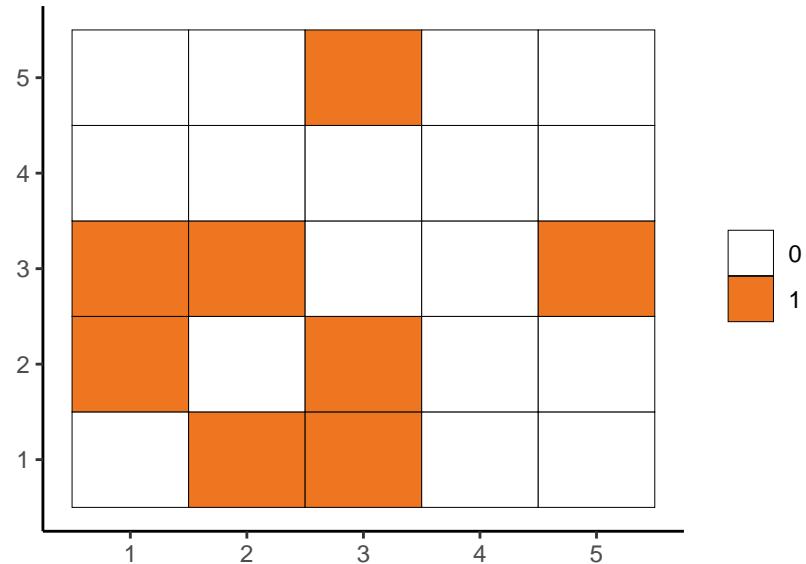
```
##  
## $trial7$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -85068.41 Unique conditional dependence structures: 5  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 2/5 variables  
##  
## Model fit completed in 34.385 secs  
##  
## $trial7$unique_graphs  
## $trial7$unique_graphs$graph1  
## [1] "1,...,55"  
##  
## $trial7$unique_graphs$graph2  
## [1] "56,...,63"  
##  
## $trial7$unique_graphs$graph3  
## [1] "64,...,155"  
##  
## $trial7$unique_graphs$graph4  
## [1] "156,...,162"  
##  
## $trial7$unique_graphs$graph5  
## [1] "163,...,180"  
##  
## $trial7$unique_graphs[[6]]
```

Graph 1, Individuals 1,...,55



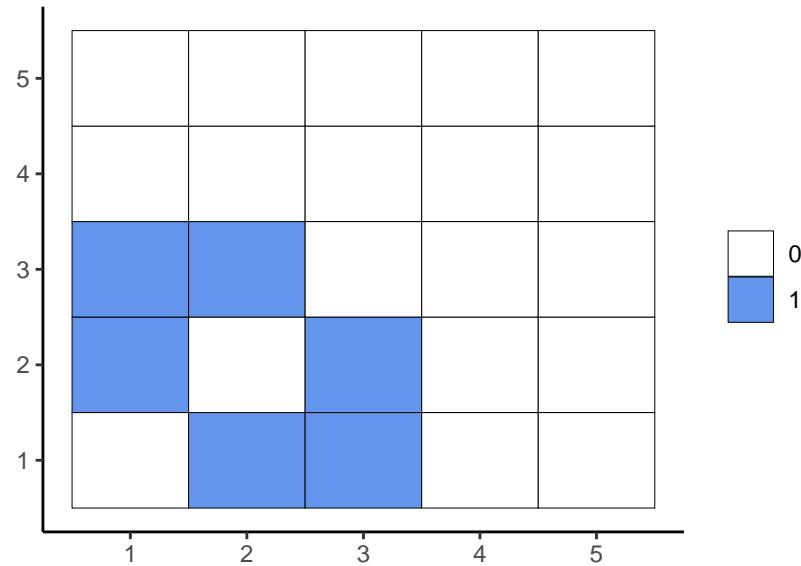
```
##  
## $trial7$unique_graphs[[7]]
```

Graph 2, Individuals 56,...,63



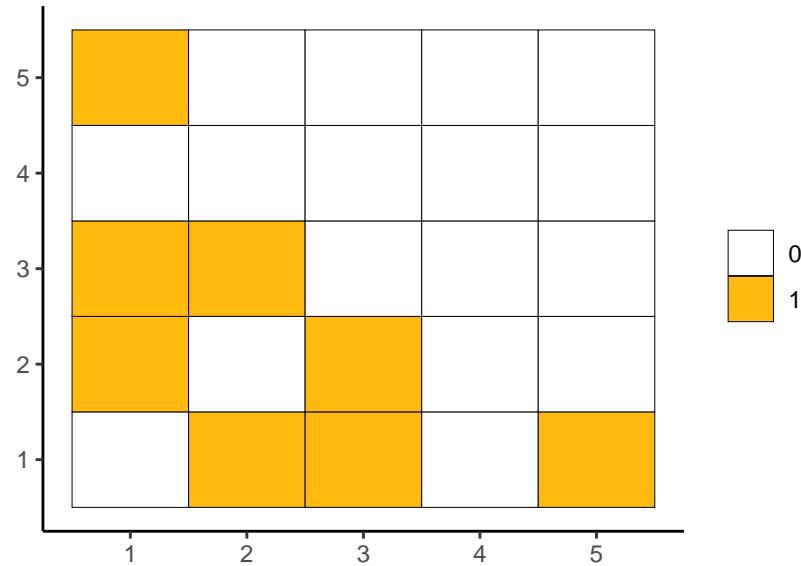
```
##  
## $trial7$unique_graphs[[8]]
```

Graph 3, Individuals 64,...,155



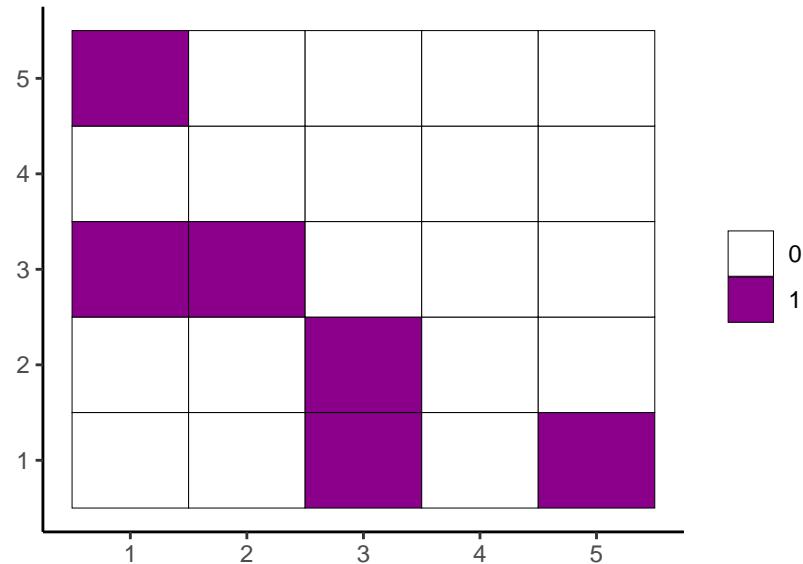
```
##  
## $trial7$unique_graphs[[9]]
```

Graph 4, Individuals 156,...,162

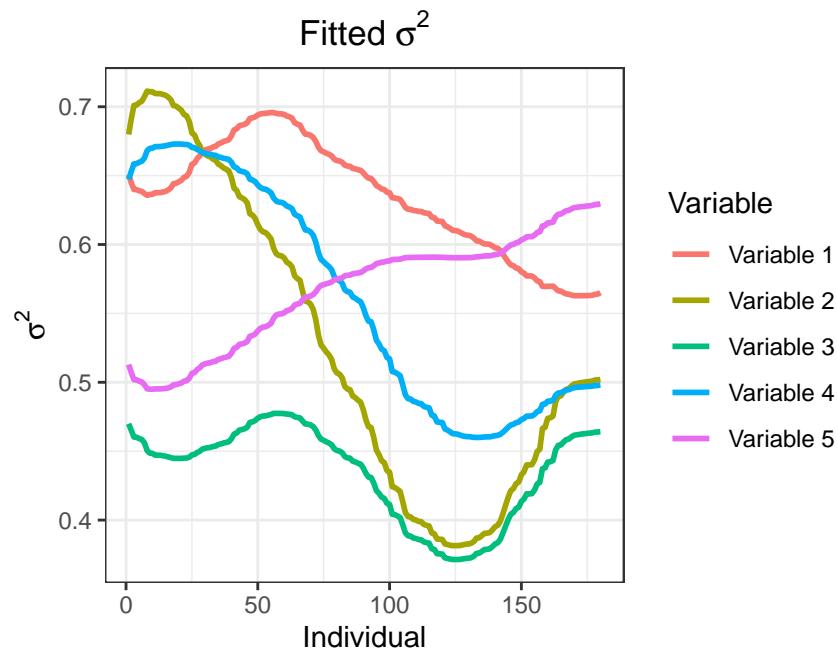


```
##  
## $trial7$unique_graphs[[10]]
```

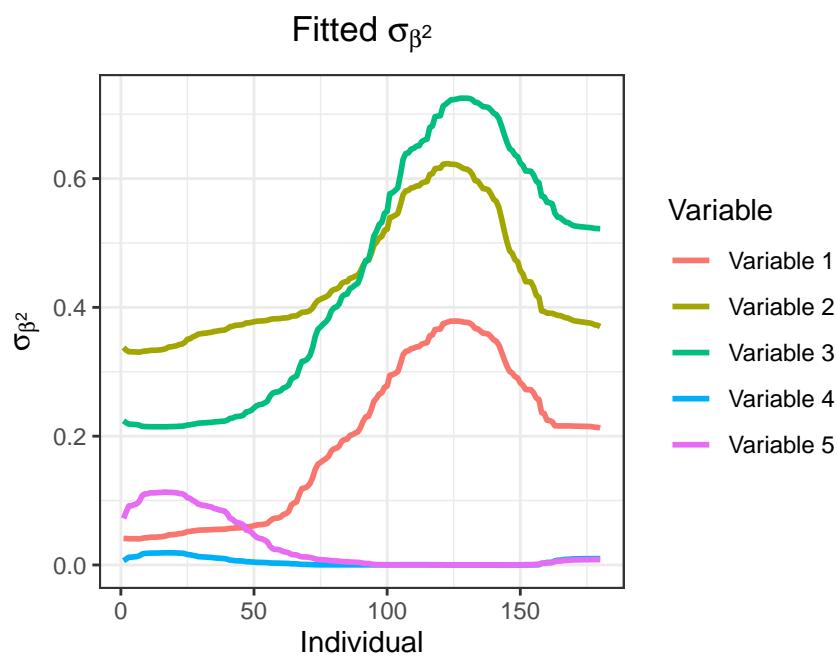
Graph 5, Individuals 163,...,180



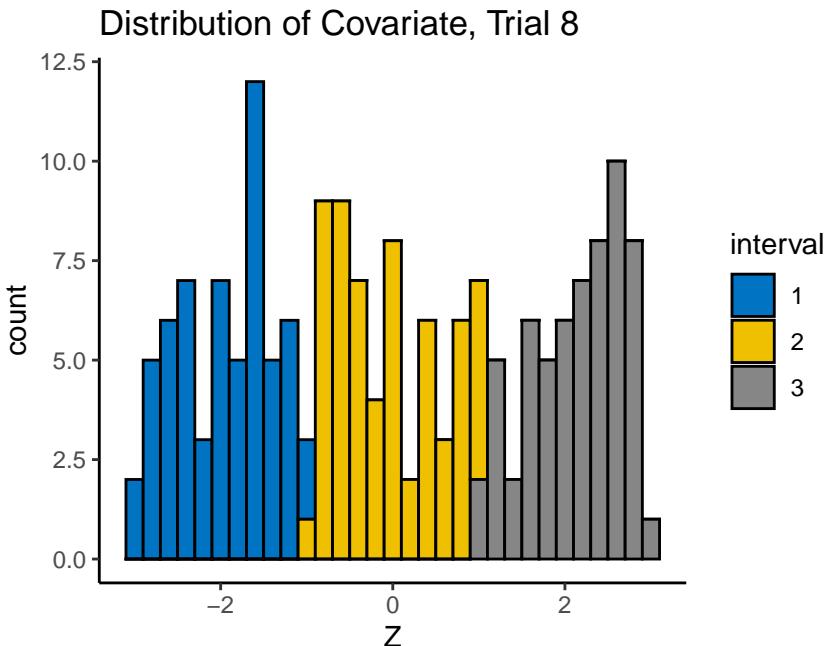
```
##  
##  
## $trial7$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1           1           1           1           1  
##  
## $trial7$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          0.45       0.45       0.45       0.05       0.35  
##  
## $trial7$sigmasq
```



```
##  
## $trial7$sigmabetasq
```

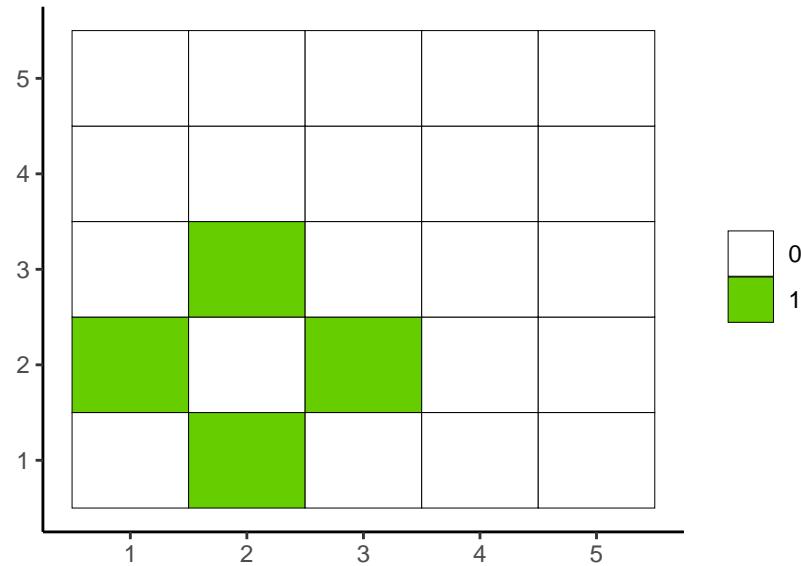


```
##  
##  
## $trial8  
## $trial8$covariates
```



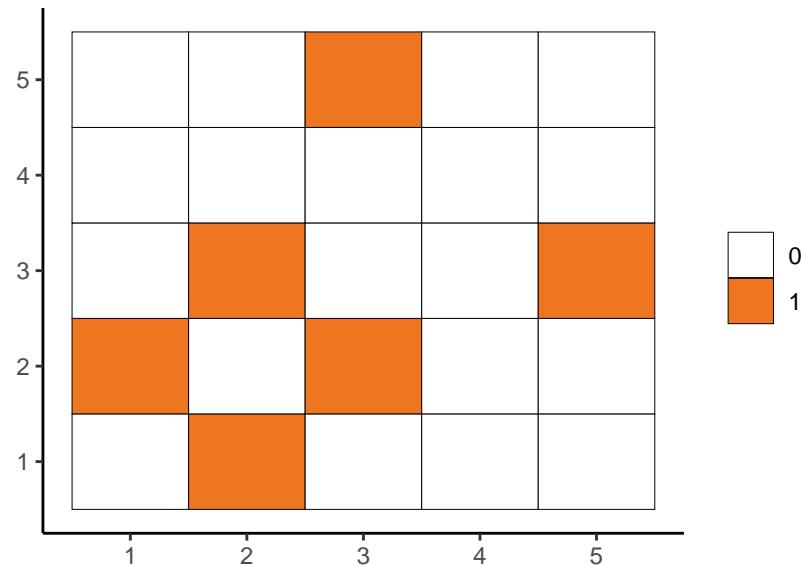
```
##
## $trial8$summary
## Covariate Dependent Graphical Model
##
## Model ELBO: -84483.24           Unique conditional dependence structures: 6
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 2/5 variables
##
## Model fit completed in 27.796 secs
##
## $trial8$unique_graphs
## $trial8$unique_graphs$graph1
## [1] "1,...,37"
##
## $trial8$unique_graphs$graph2
## [1] "38,...,75"
##
## $trial8$unique_graphs$graph3
## [1] "76"
##
## $trial8$unique_graphs$graph4
## [1] "77,...,98"
##
## $trial8$unique_graphs$graph5
## [1] "99,...,106"
##
## $trial8$unique_graphs$graph6
## [1] "107,...,180"
##
## $trial8$unique_graphs[[7]]
```

Graph 1, Individuals 1,...,37



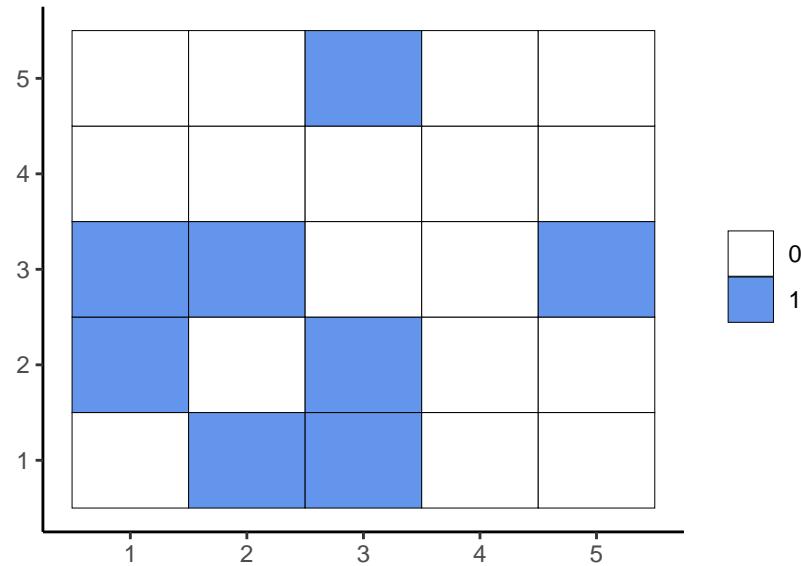
```
##  
## $trial8$unique_graphs[[8]]
```

Graph 2, Individuals 38,...,75



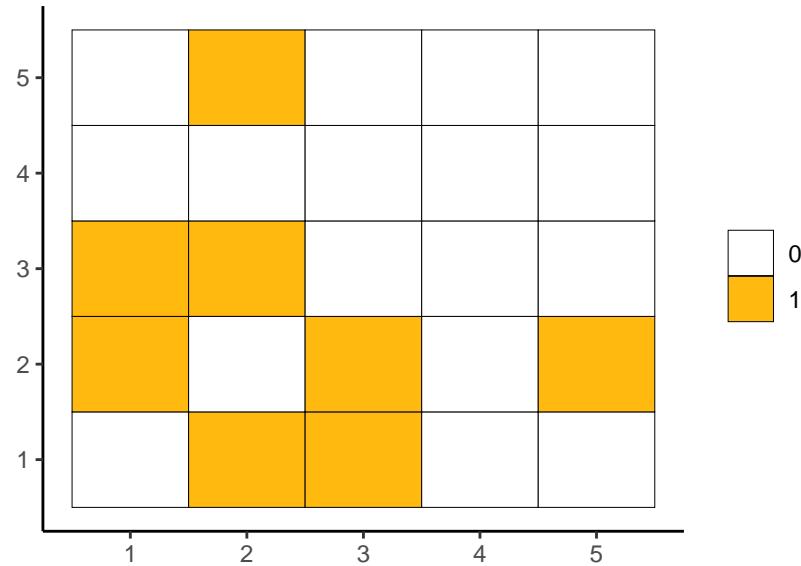
```
##  
## $trial8$unique_graphs[[9]]
```

Graph 3, Individuals 76



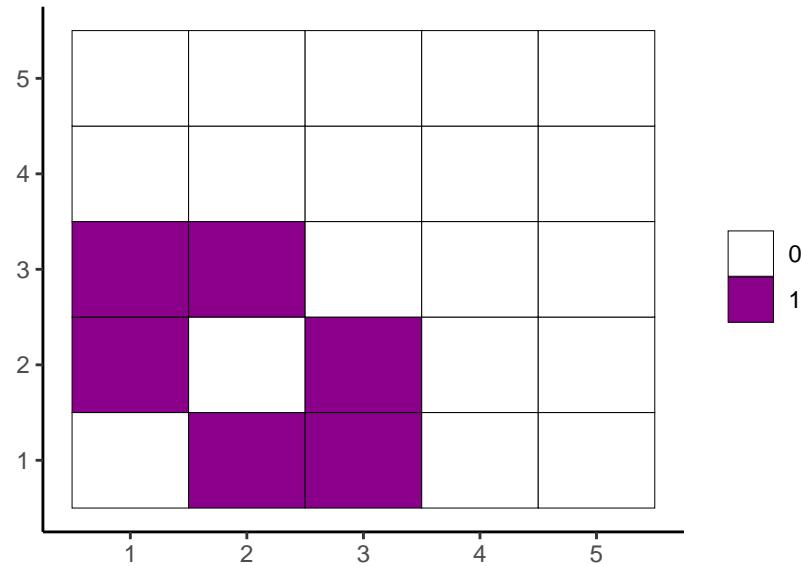
```
##  
## $trial8$unique_graphs[[10]]
```

Graph 4, Individuals 77,...,98



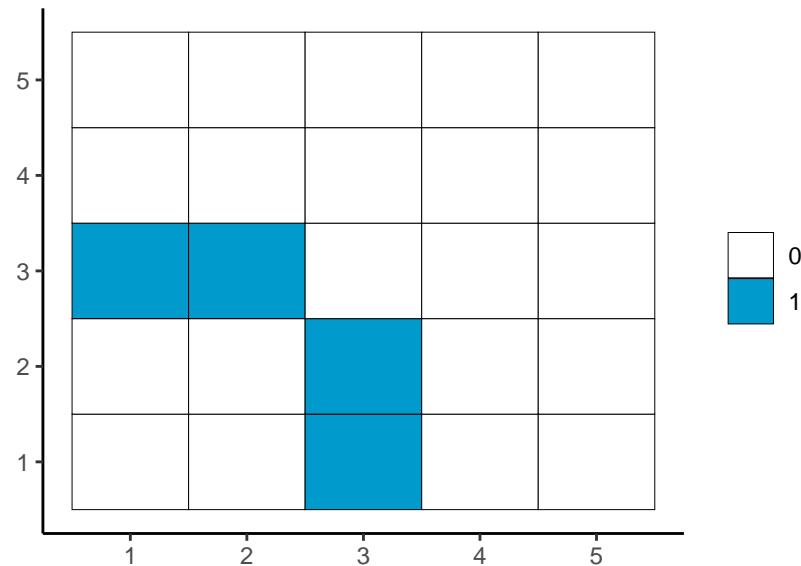
```
##  
## $trial8$unique_graphs[[11]]
```

Graph 5, Individuals 99,...,106



```
##  
## $trial8$unique_graphs[[12]]
```

Graph 6, Individuals 107,...,180

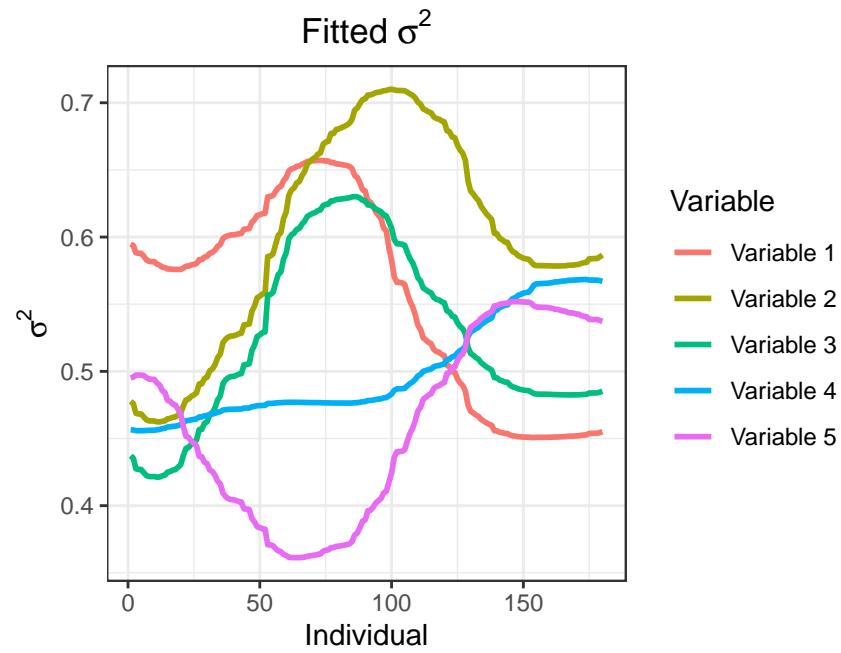


```
##  
##  
## $trial8$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial8$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.10      0.45      0.45      0.05      0.05
##
## $trial8$sigmasq

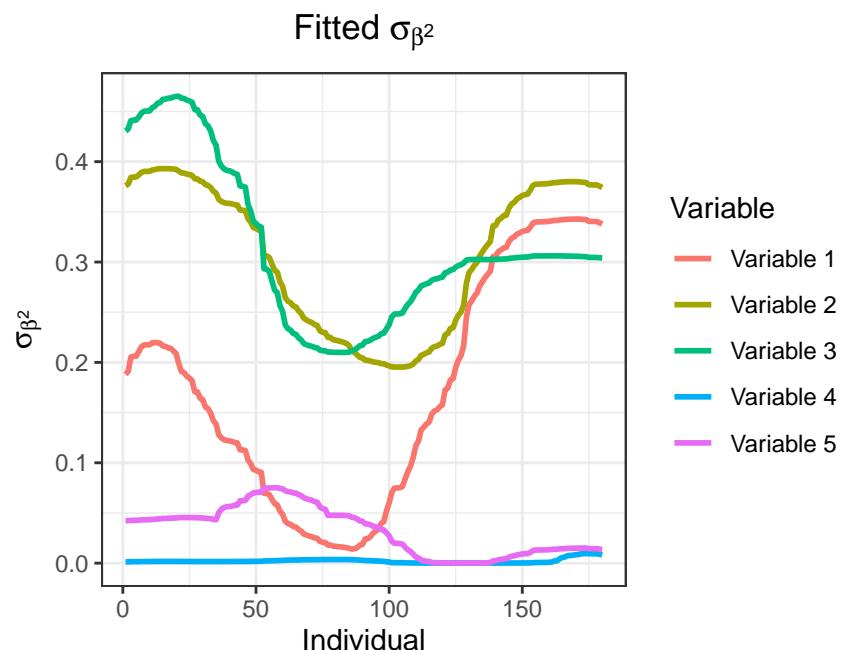
```



```

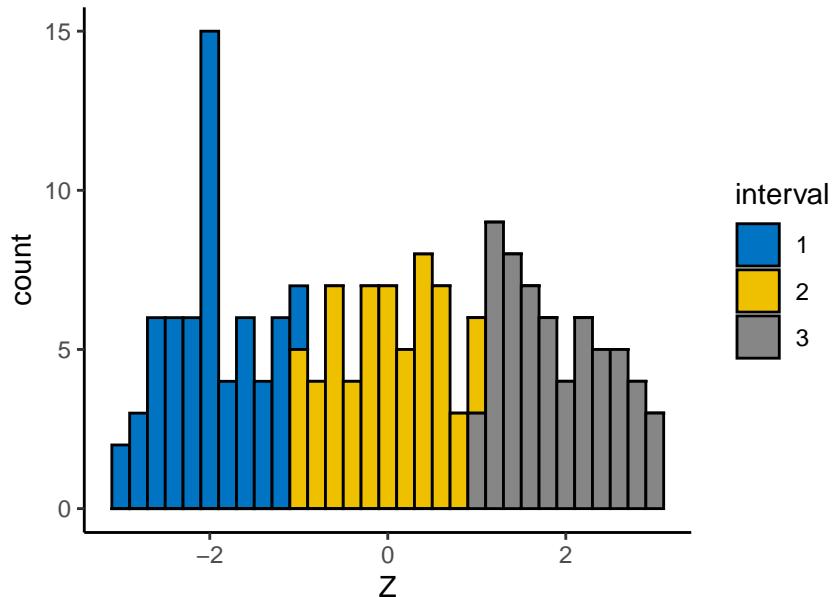
## 
## $trial8$sigmabetasq

```



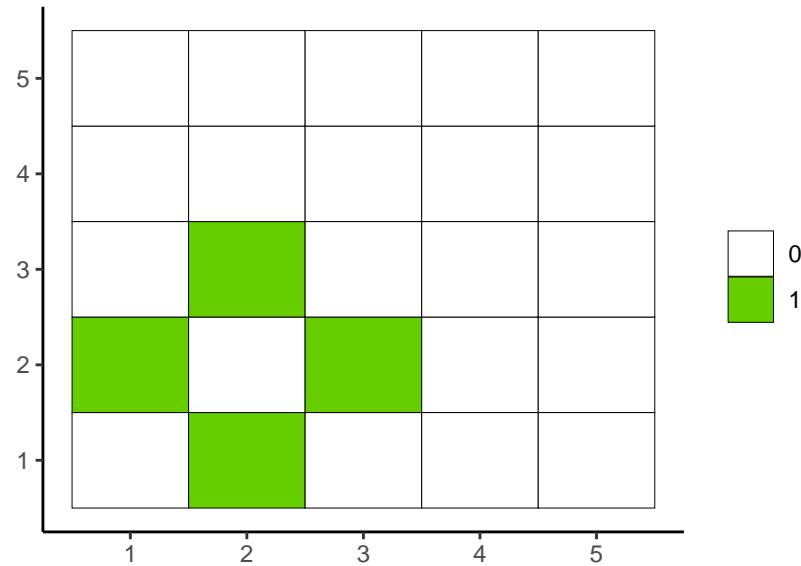
```
##  
##  
## $trial9  
## $trial9$covariates
```

Distribution of Covariate, Trial 9



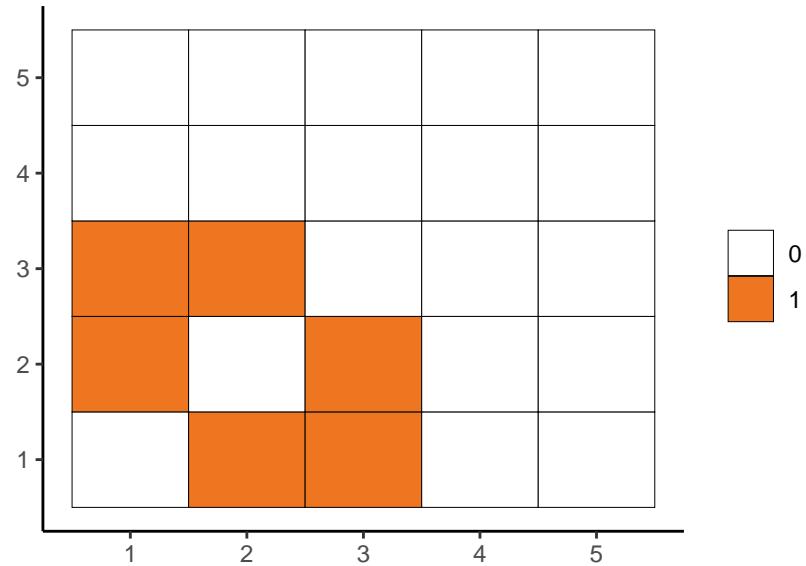
```
##  
## $trial9$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84712.33 Unique conditional dependence structures: 3  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 1/5 variables  
##  
## Model fit completed in 37.183 secs  
##  
## $trial9$unique_graphs  
## $trial9$unique_graphs$graph1  
## [1] "1,2,31,...,94"  
##  
## $trial9$unique_graphs$graph2  
## [1] "3,...,30,95,...,141"  
##  
## $trial9$unique_graphs$graph3  
## [1] "142,...,180"  
##  
## $trial9$unique_graphs[[4]]
```

Graph 1, Individuals 1,2,31,...,94



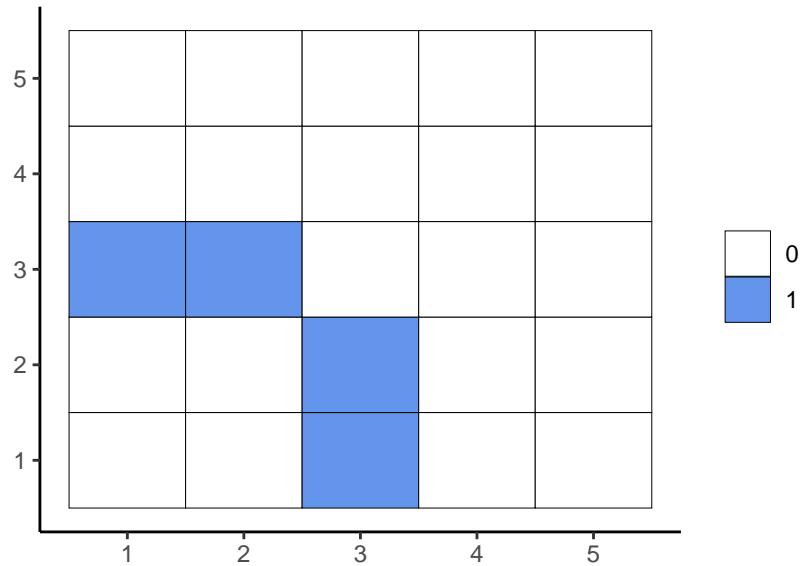
```
##  
## $trial9$unique_graphs[[5]]
```

Graph 2, Individuals 3,...,30,95,...,141

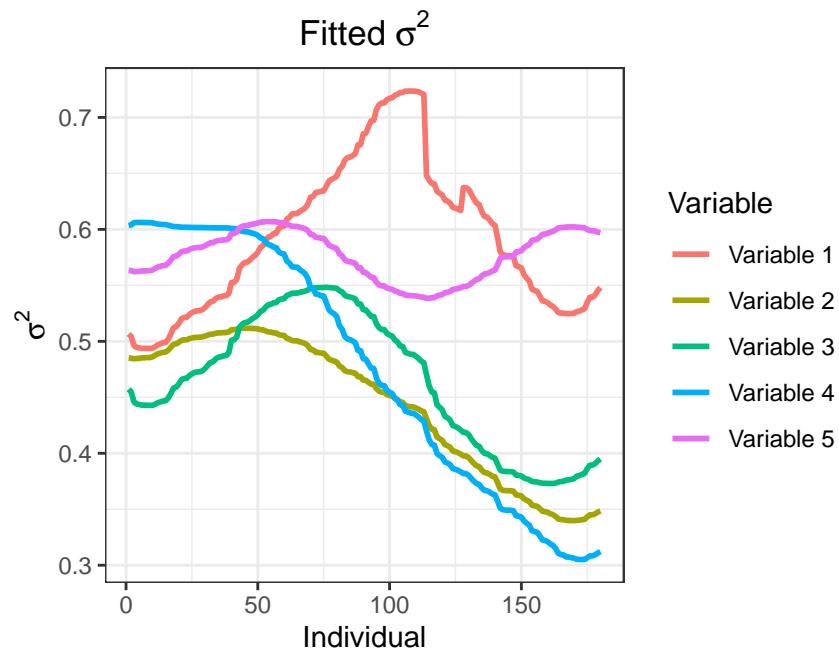


```
##  
## $trial9$unique_graphs[[6]]
```

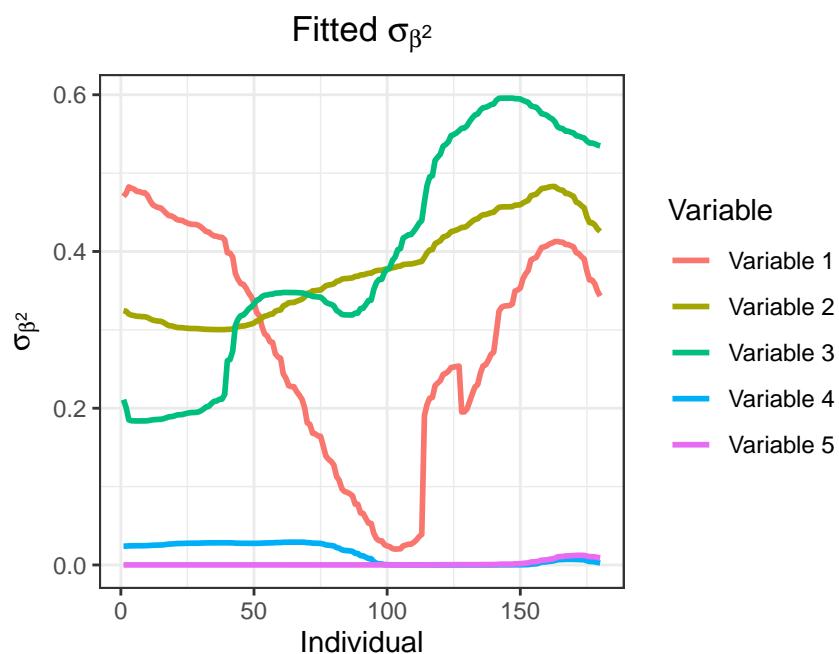
Graph 3, Individuals 142,...,180



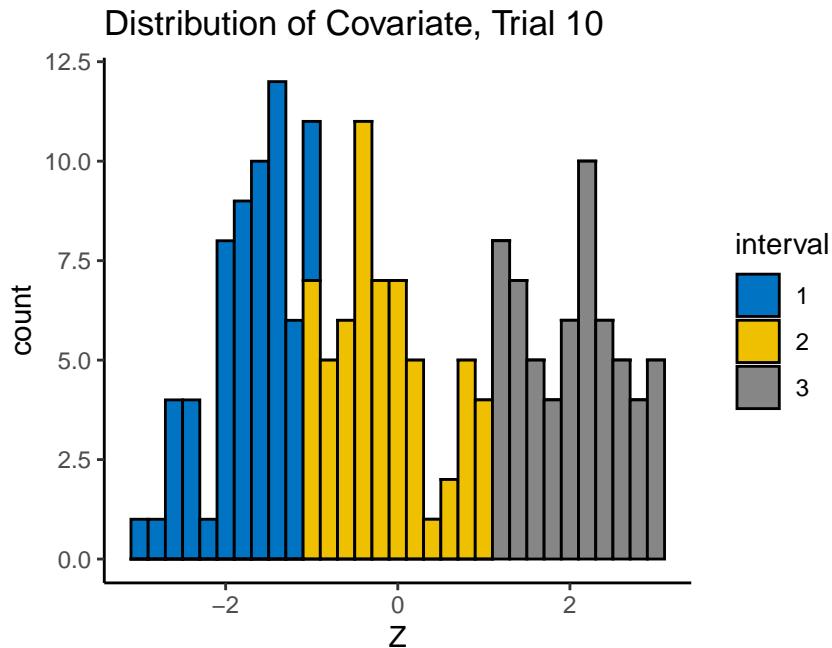
```
##  
##  
## $trial9$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial9$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.05      0.45      0.45      0.05      0.05  
##  
## $trial9$sigmasq
```



```
##  
## $trial9$sigmabetasq
```



```
##  
##  
## $trial10  
## $trial10$covariates
```



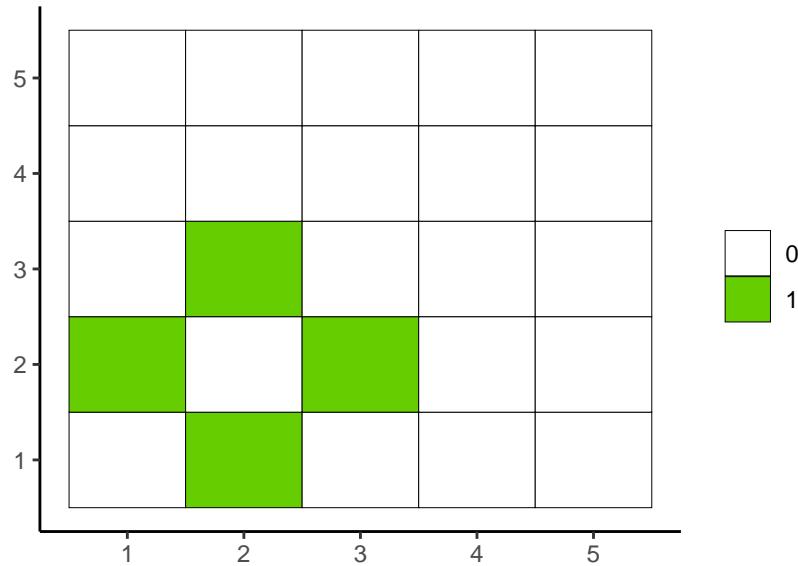
```

## 
## $trial10$summary
## Covariate Dependent Graphical Model
## 
## Model ELBO: -84439.49           Unique conditional dependence structures: 7
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 3/5 variables
## 
## Model fit completed in 25.826 secs
## 
## $trial10$unique_graphs
## $trial10$unique_graphs$graph1
## [1] "1,...,96"
## 
## $trial10$unique_graphs$graph2
## [1] "97,...,103"
## 
## $trial10$unique_graphs$graph3
## [1] "104,...,117"
## 
## $trial10$unique_graphs$graph4
## [1] "118,...,127"
## 
## $trial10$unique_graphs$graph5
## [1] "128,...,149"
## 
## $trial10$unique_graphs$graph6
## [1] "150,...,160"
## 
## $trial10$unique_graphs$graph7
## [1] "161,...,180"
## 

```

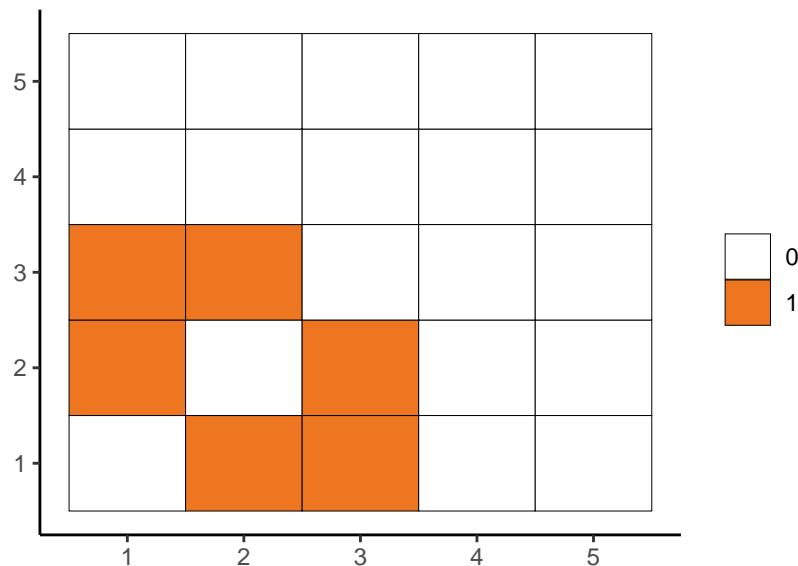
```
## $trial10$unique_graphs[[8]]
```

Graph 1, Individuals 1,...,96



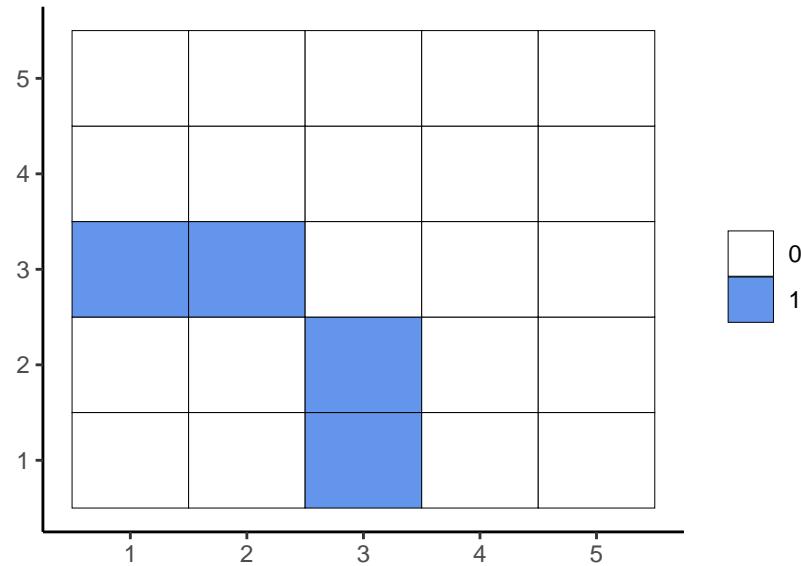
```
##  
## $trial10$unique_graphs[[9]]
```

Graph 2, Individuals 97,...,103



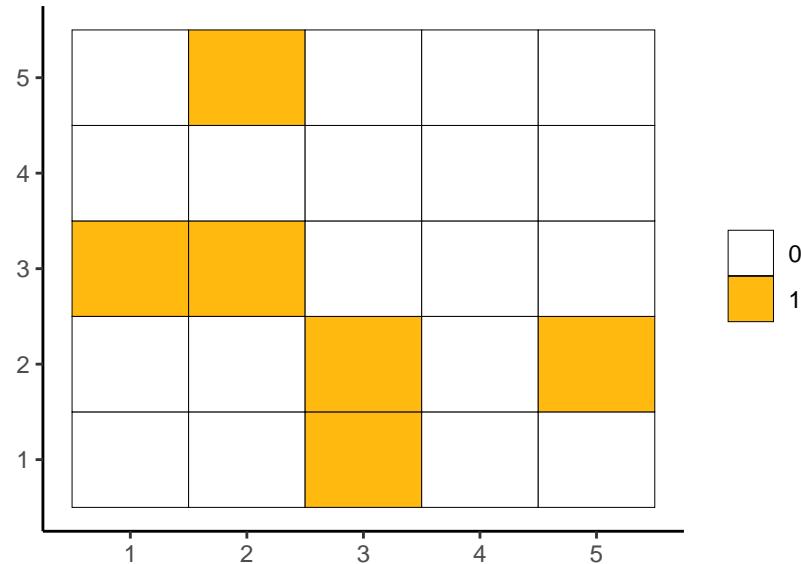
```
##  
## $trial10$unique_graphs[[10]]
```

Graph 3, Individuals 104,...,117



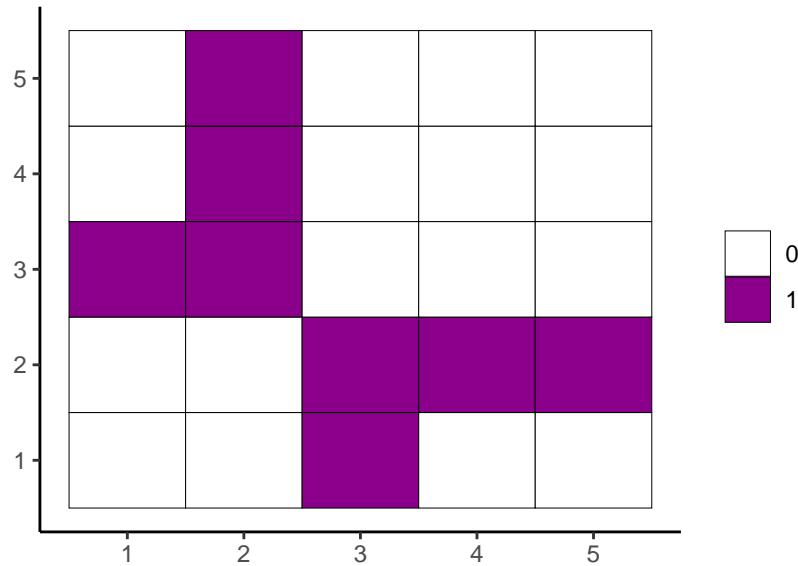
```
##  
## $trial10$unique_graphs[[11]]
```

Graph 4, Individuals 118,...,127



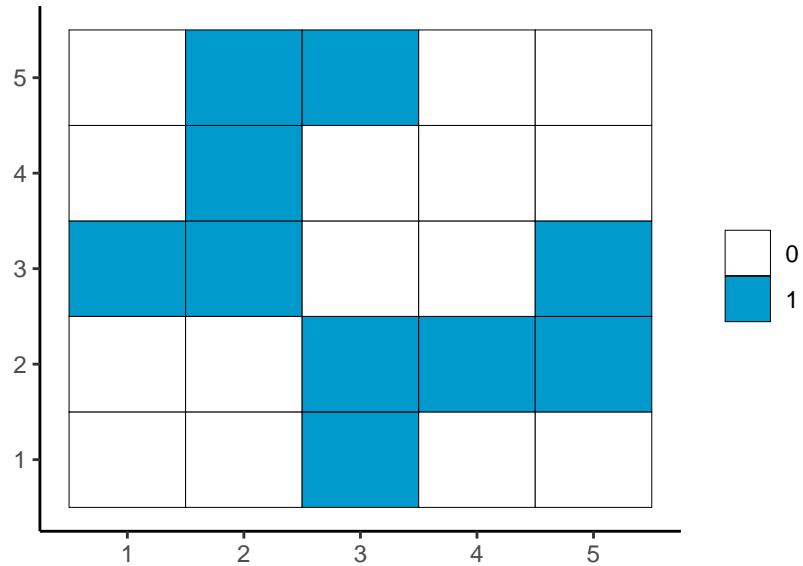
```
##  
## $trial10$unique_graphs[[12]]
```

Graph 5, Individuals 128,...,149



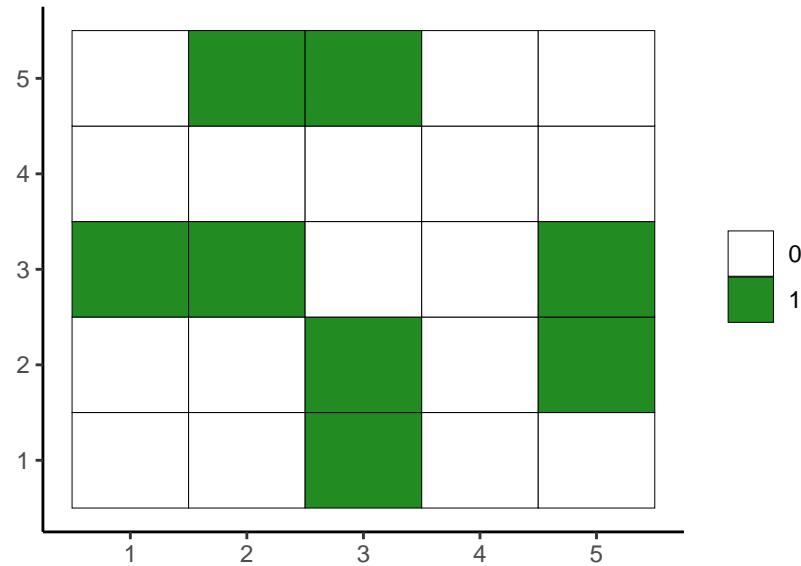
```
##  
## $trial10$unique_graphs[[13]]
```

Graph 6, Individuals 150,...,160

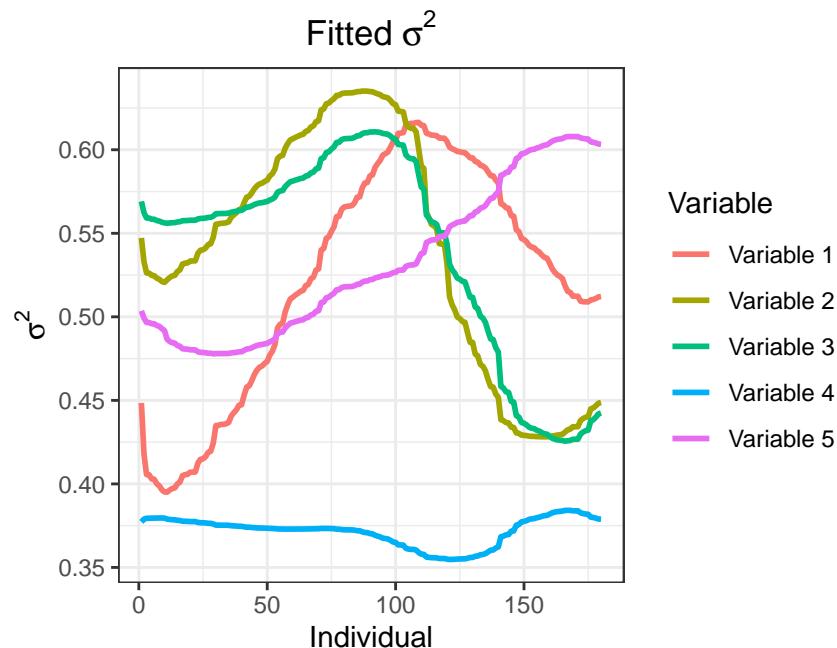


```
##  
## $trial10$unique_graphs[[14]]
```

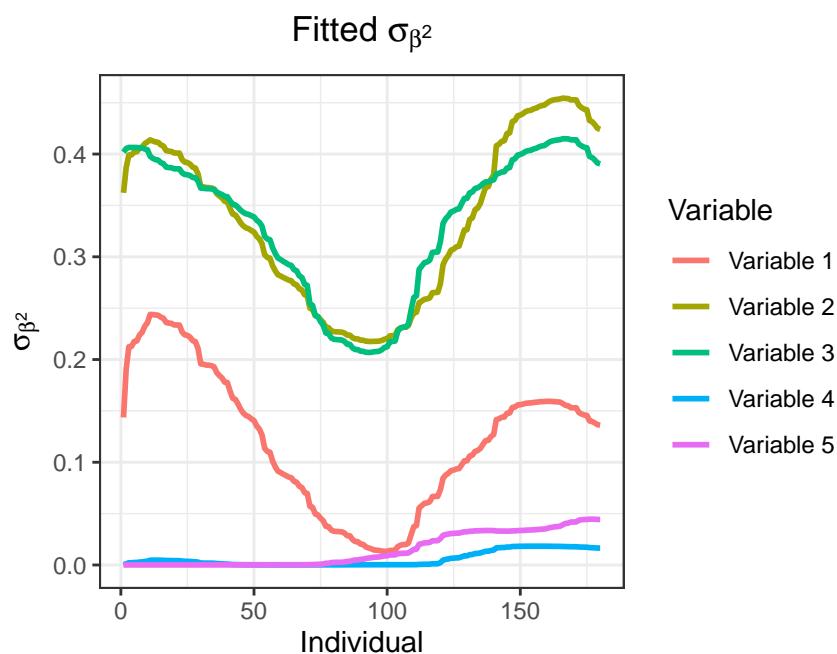
Graph 7, Individuals 161,...,180



```
##  
##  
## $trial10$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1           1           1           1           1  
##  
## $trial10$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          0.30       0.45       0.45       0.05       0.05  
##  
## $trial10$sigmasq
```

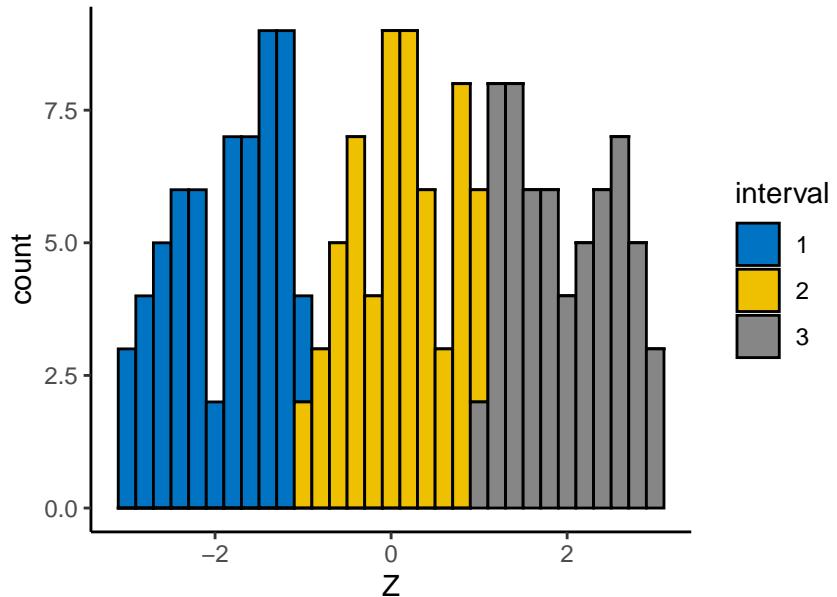


```
##  
## $trial10$sigmabetasq
```



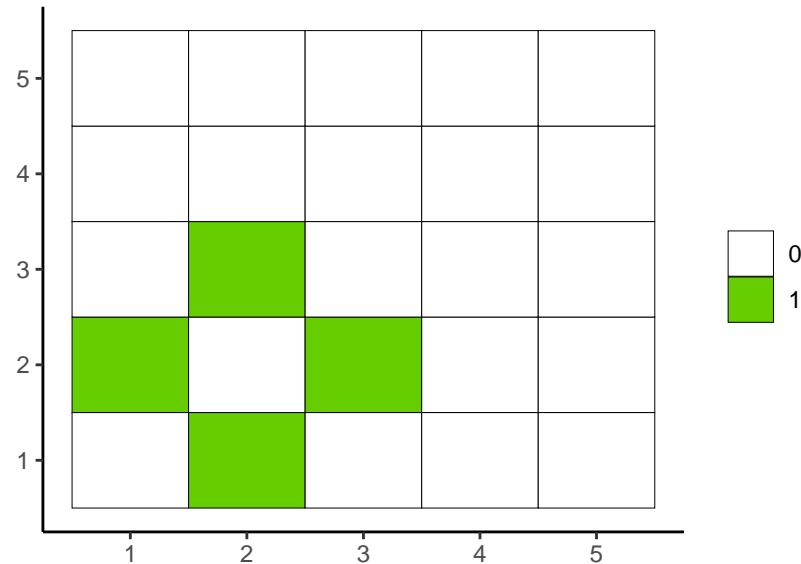
```
##  
##  
## $trial11  
## $trial11$covariates
```

Distribution of Covariate, Trial 11



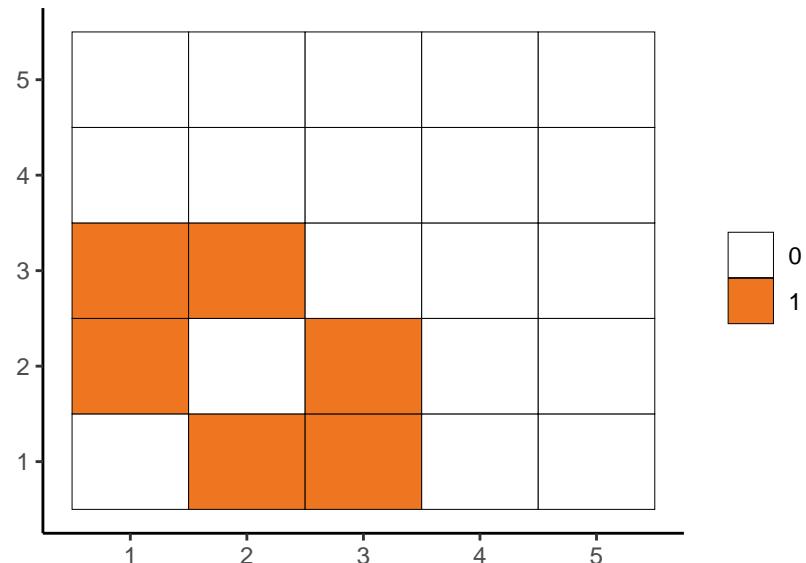
```
##  
## $trial11$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84507.08           Unique conditional dependence structures: 4  
## n: 180, variables: 5           Hyperparameter grid size: 9 points  
## CAVI converged for 2/5 variables  
##  
## Model fit completed in 27.818 secs  
##  
## $trial11$unique_graphs  
## $trial11$unique_graphs$graph1  
## [1] "1,...,86"  
##  
## $trial11$unique_graphs$graph2  
## [1] "87,...,114"  
##  
## $trial11$unique_graphs$graph3  
## [1] "115,...,120"  
##  
## $trial11$unique_graphs$graph4  
## [1] "121,...,180"  
##  
## $trial11$unique_graphs[[5]]
```

Graph 1, Individuals 1,...,86



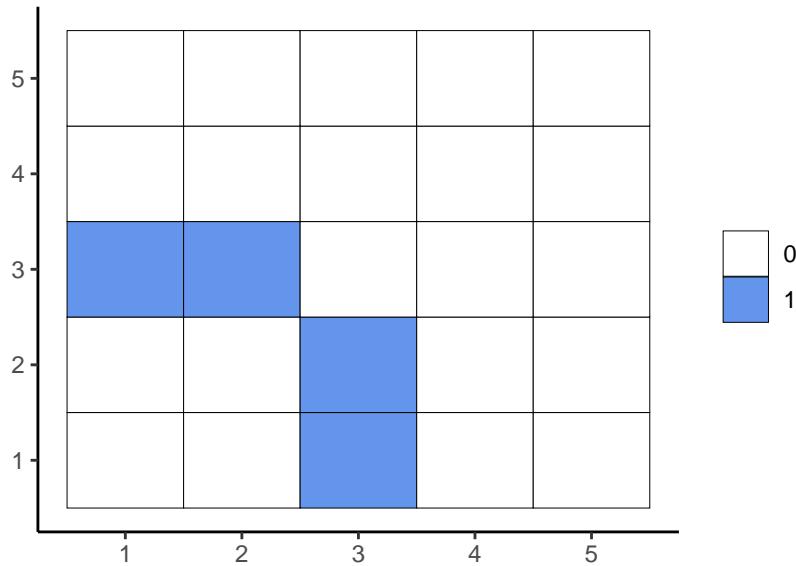
```
##  
## $trial11$unique_graphs[[6]]
```

Graph 2, Individuals 87,...,114



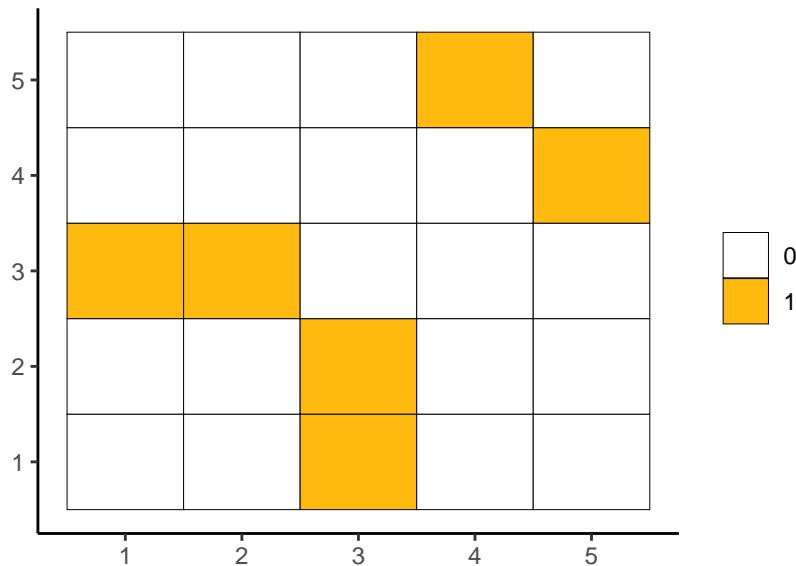
```
##  
## $trial11$unique_graphs[[7]]
```

Graph 3, Individuals 115,...,120



```
##  
## $trial11$unique_graphs[[8]]
```

Graph 4, Individuals 121,...,180

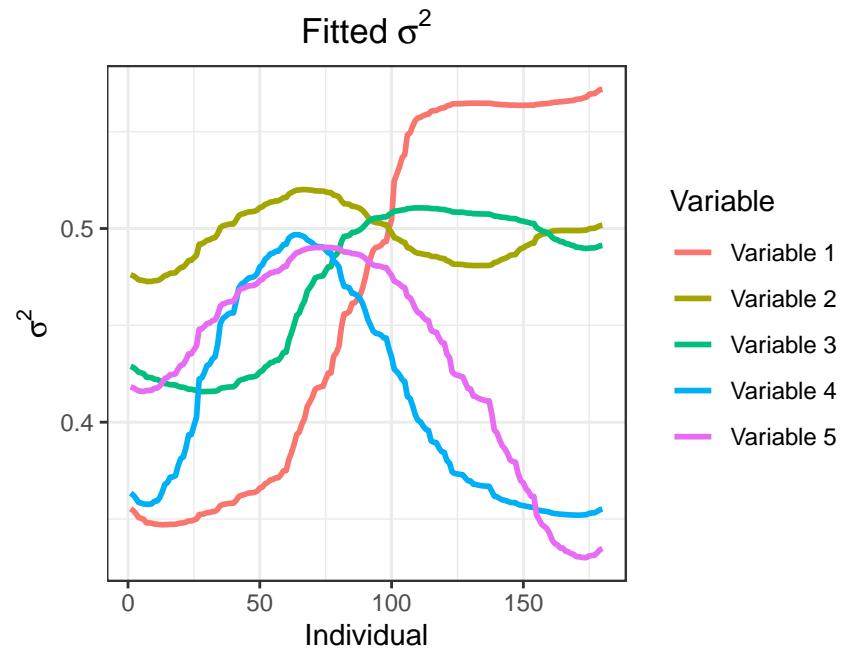


```
##  
##  
## $trial11$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial11$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.20      0.45      0.45      0.15      0.15
##
## $trial11$sigmasq

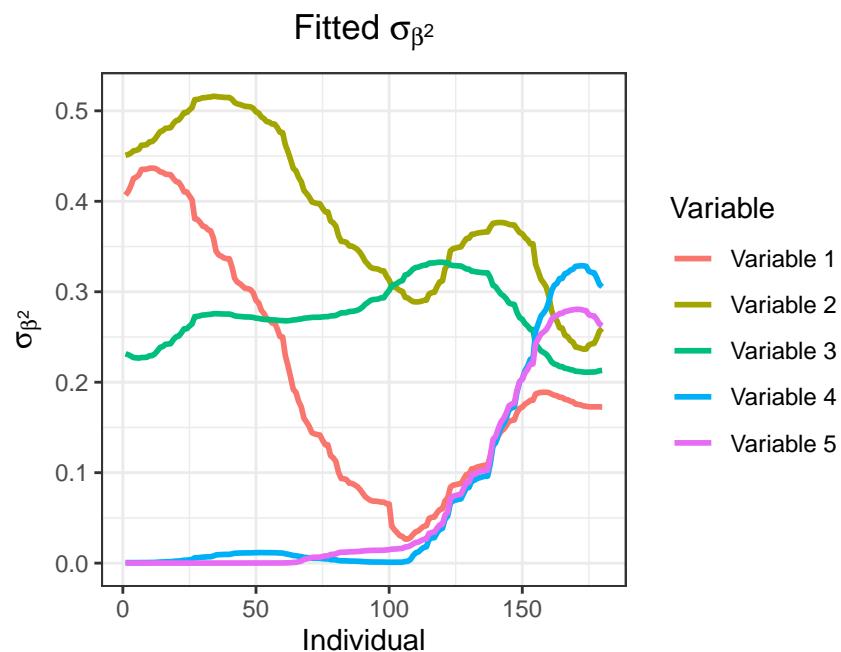
```



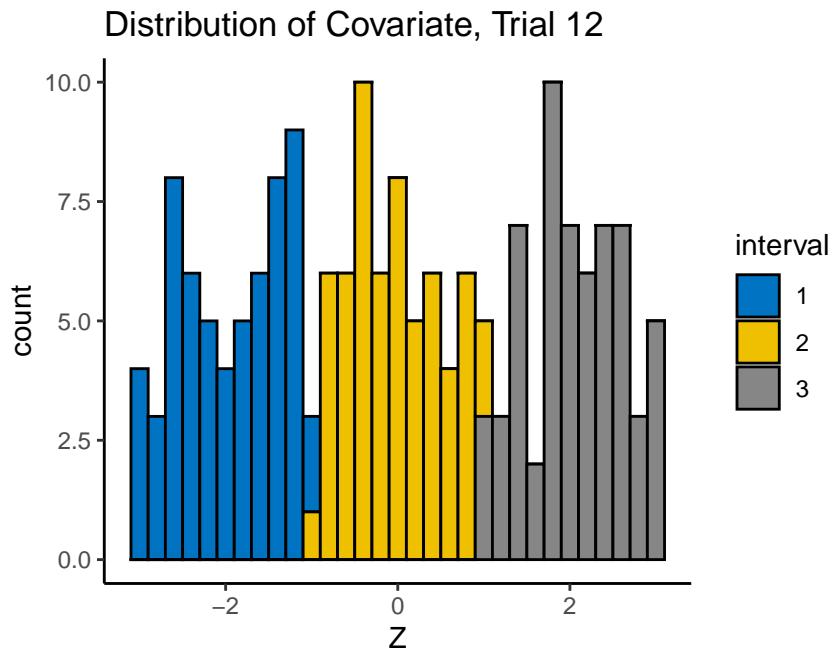
```

## 
## $trial11$sigmabetasq

```

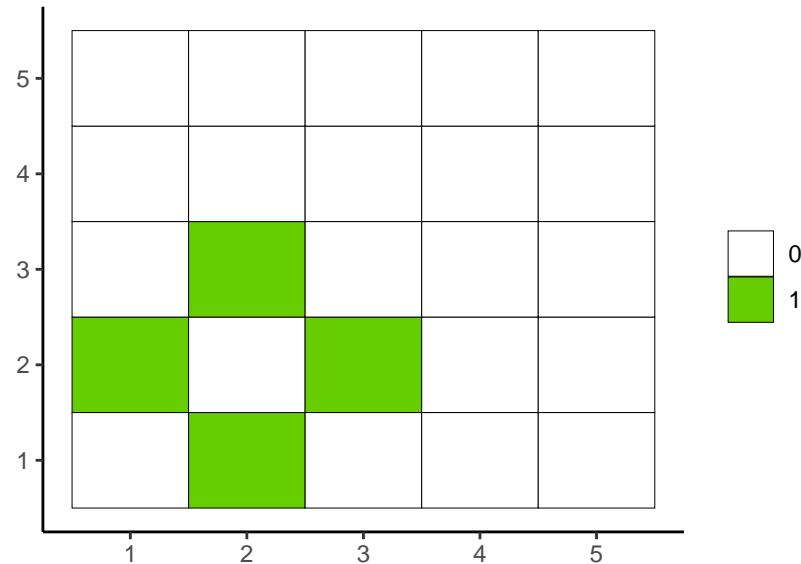


```
##  
##  
## $trial12  
## $trial12$covariates
```



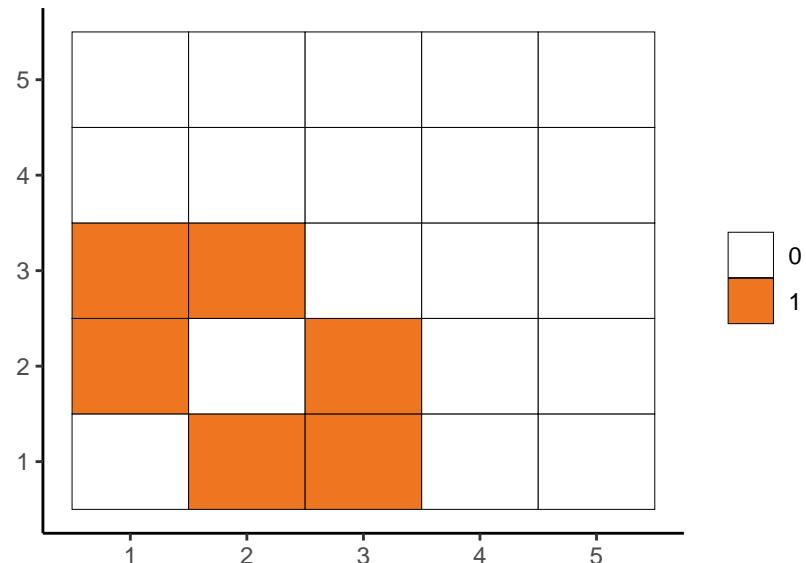
```
##  
## $trial12$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84524.96                                    Unique conditional dependence structures: 3  
## n: 180, variables: 5                                    Hyperparameter grid size: 9 points  
## CAVI converged for 2/5 variables  
##  
## Model fit completed in 30.135 secs  
##  
## $trial12$unique_graphs  
## $trial12$unique_graphs$graph1  
## [1] "1,...,84"  
##  
## $trial12$unique_graphs$graph2  
## [1] "85,...,167"  
##  
## $trial12$unique_graphs$graph3  
## [1] "168,...,180"  
##  
## $trial12$unique_graphs[[4]]
```

Graph 1, Individuals 1,...,84



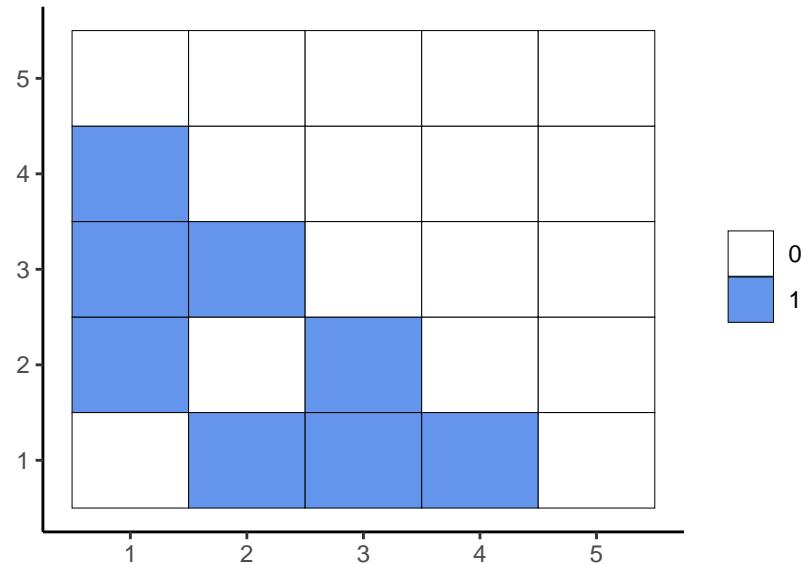
```
##  
## $trial12$unique_graphs[[5]]
```

Graph 2, Individuals 85,...,167

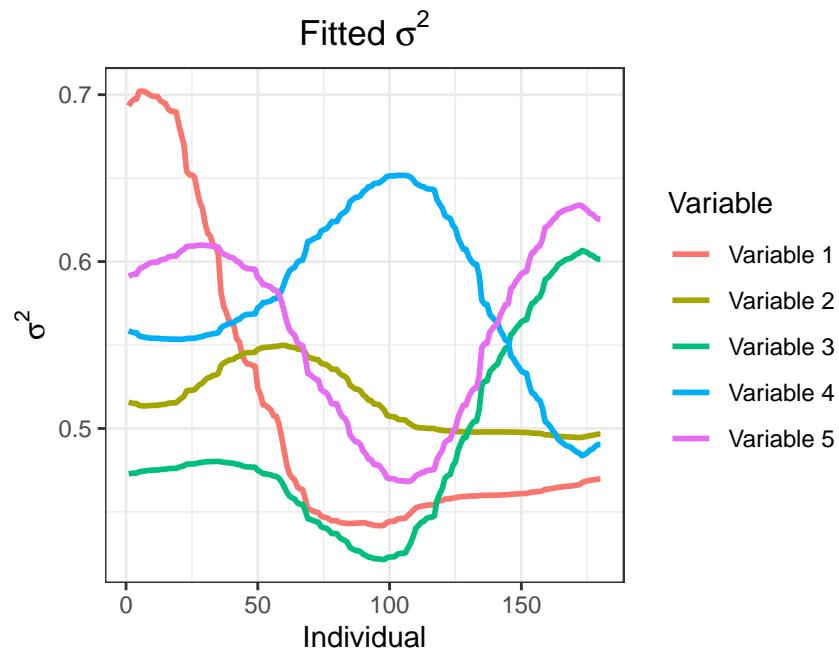


```
##  
## $trial12$unique_graphs[[6]]
```

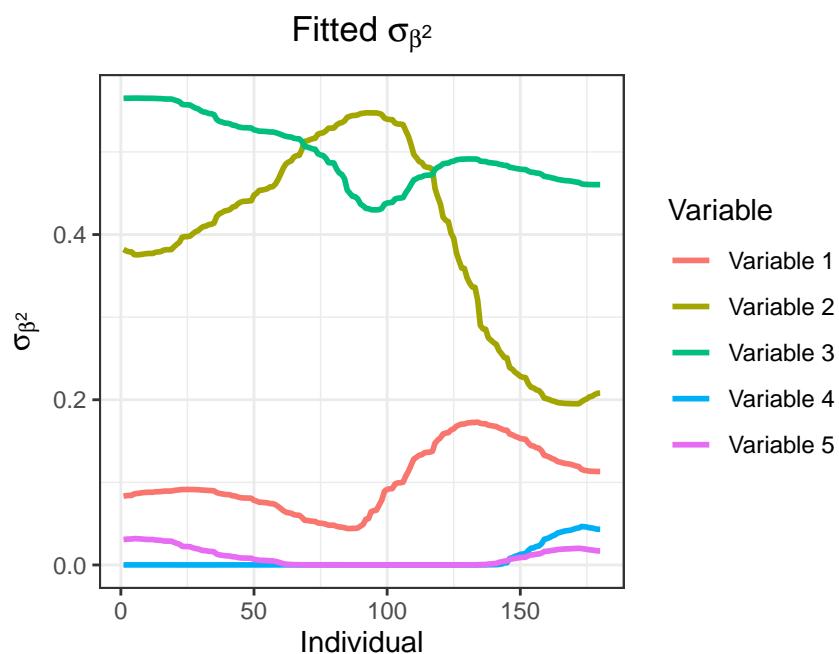
Graph 3, Individuals 168,...,180



```
##  
##  
## $trial12$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial12$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          0.45      0.45      0.45      0.05      0.05  
##  
## $trial12$sigmasq
```

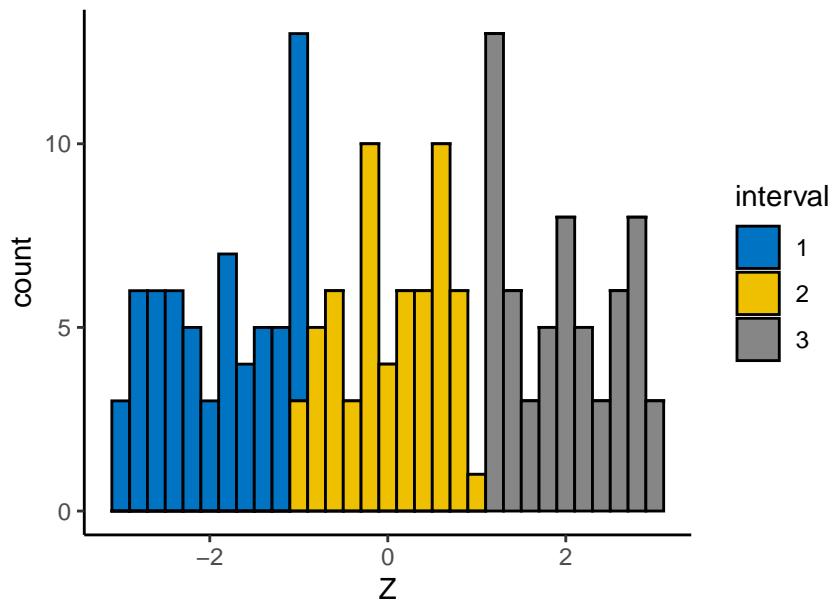


```
##  
## $trial12$sigmabetasq
```



```
##  
##  
## $trial13  
## $trial13$covariates
```

Distribution of Covariate, Trial 13

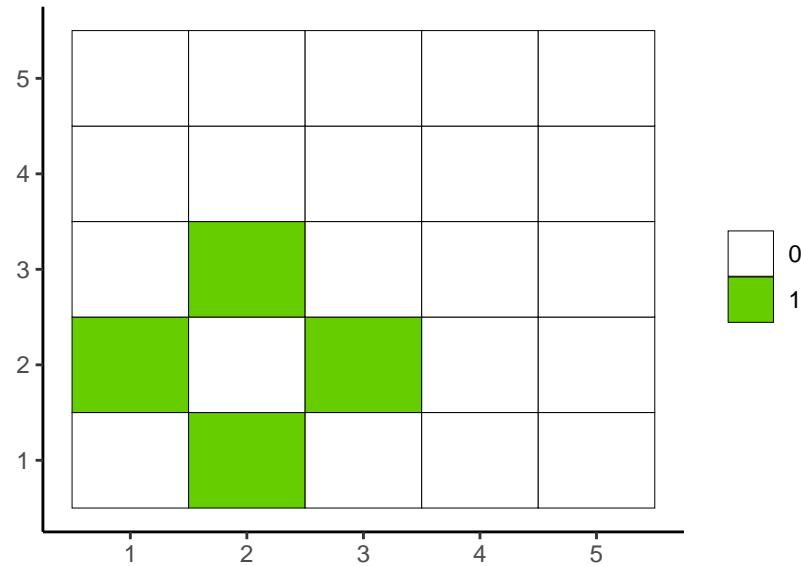


```

## 
## $trial13$summary
##                               Covariate Dependent Graphical Model
## 
## Model ELBO: -84870.04           Unique conditional dependence structures: 5
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 2/5 variables
## 
## Model fit completed in 34.477 secs
## 
## $trial13$unique_graphs
## $trial13$unique_graphs$graph1
## [1] "1,...,18,51,...,63"
## 
## $trial13$unique_graphs$graph2
## [1] "19,...,50"
## 
## $trial13$unique_graphs$graph3
## [1] "64,...,120"
## 
## $trial13$unique_graphs$graph4
## [1] "121,...,144"
## 
## $trial13$unique_graphs$graph5
## [1] "145,...,180"
## 
## $trial13$unique_graphs[[6]]

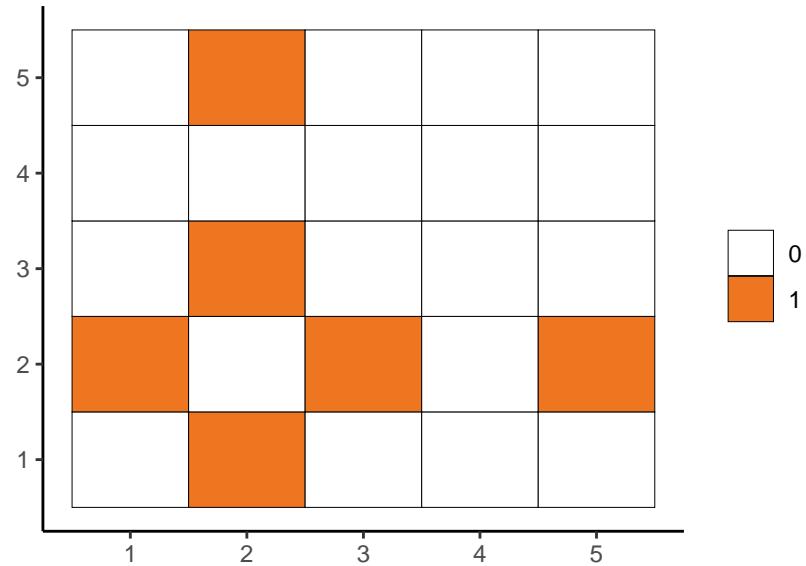
```

Graph 1, Individuals 1,...,18,51,...,63



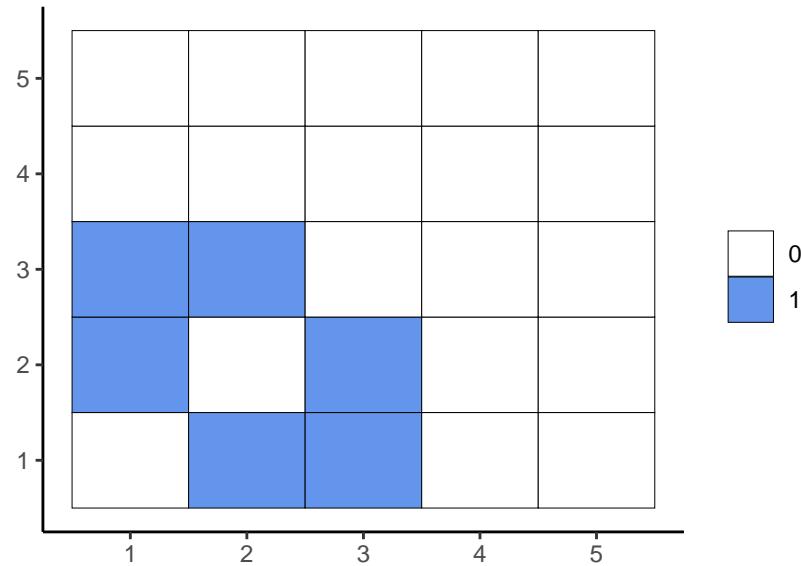
```
##  
## $trial13$unique_graphs[[7]]
```

Graph 2, Individuals 19,...,50



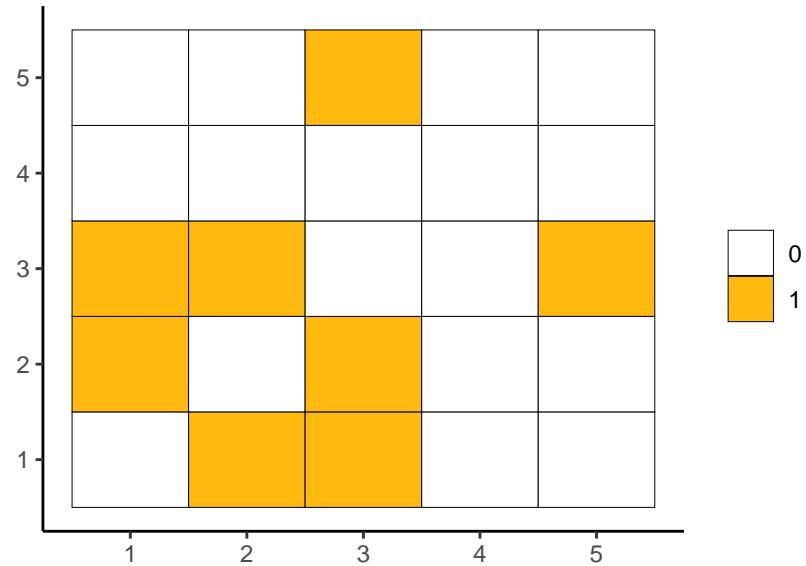
```
##  
## $trial13$unique_graphs[[8]]
```

Graph 3, Individuals 64,...,120



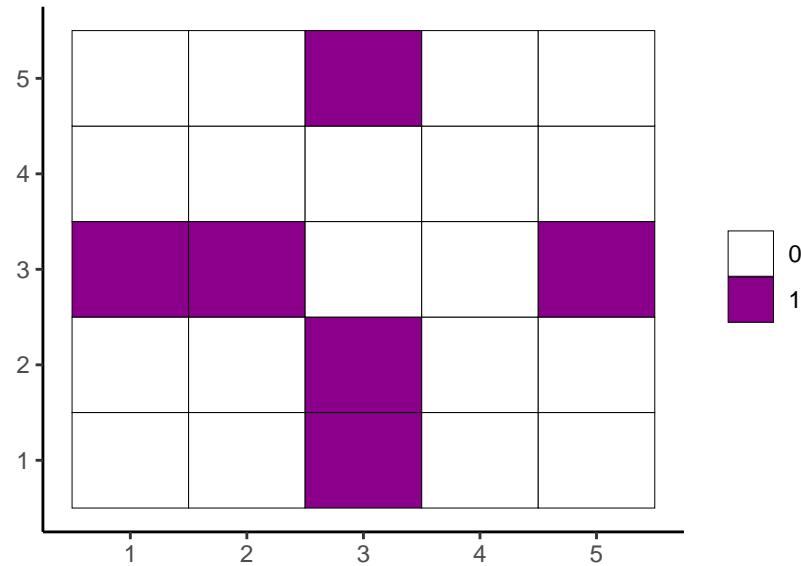
```
##  
## $trial13$unique_graphs[[9]]
```

Graph 4, Individuals 121,...,144

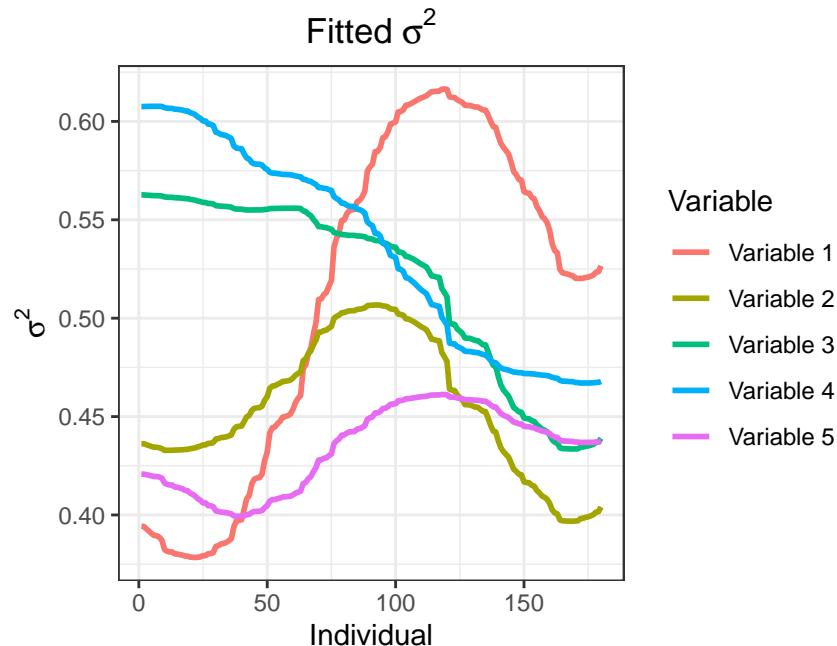


```
##  
## $trial13$unique_graphs[[10]]
```

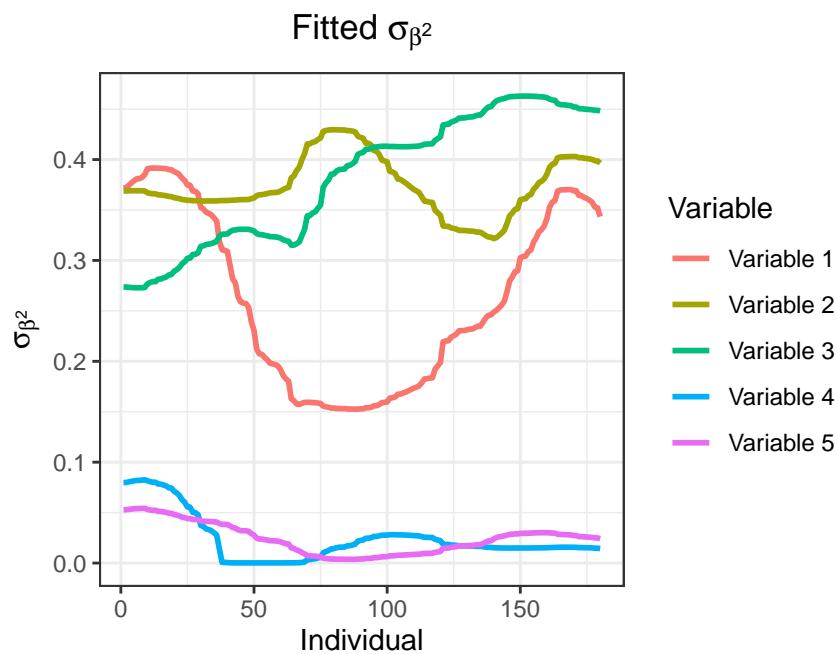
Graph 5, Individuals 145,...,180



```
##  
##  
## $trial13$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial13$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          0.45      0.45      0.45      0.05      0.05  
##  
## $trial13$sigmasq
```

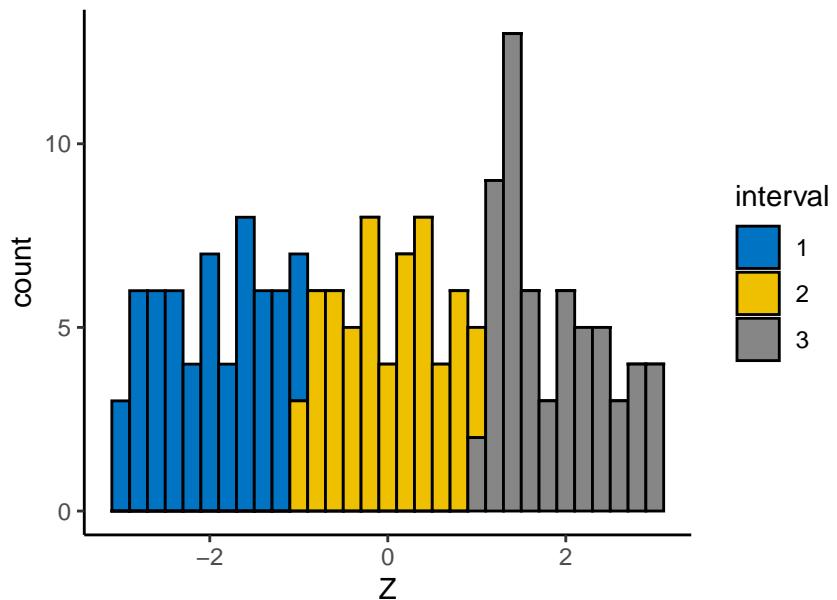


```
##  
## $trial13$sigmabetasq
```



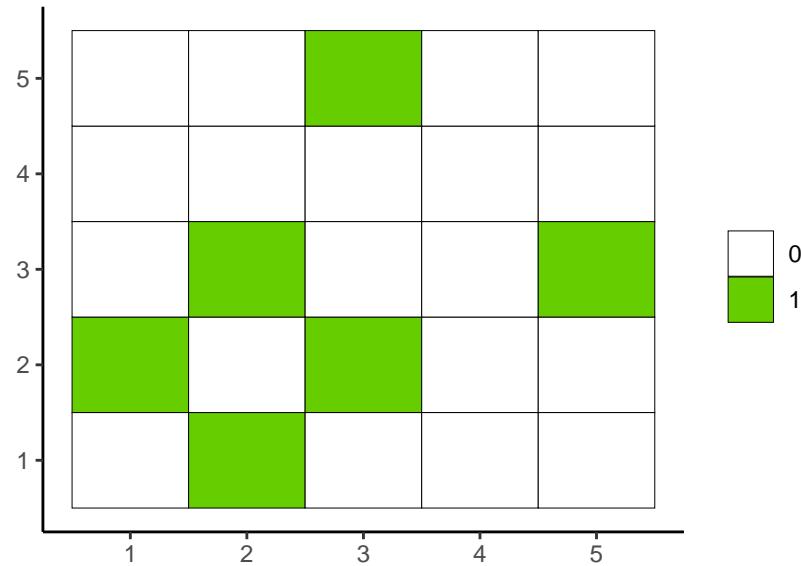
```
##  
##  
## $trial14  
## $trial14$covariates
```

Distribution of Covariate, Trial 14



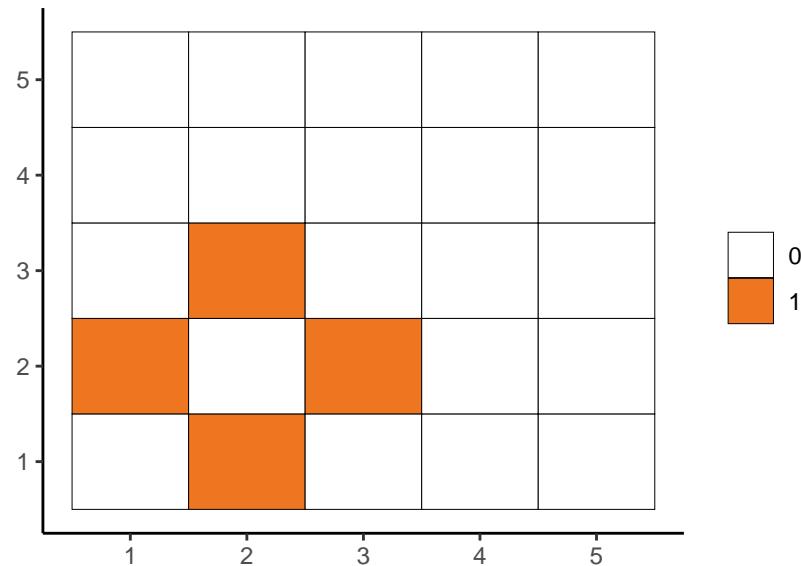
```
##  
## $trial14$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84715.29           Unique conditional dependence structures: 6  
## n: 180, variables: 5           Hyperparameter grid size: 9 points  
## CAVI converged for 3/5 variables  
##  
## Model fit completed in 29.334 secs  
##  
## $trial14$unique_graphs  
## $trial14$unique_graphs$graph1  
## [1] "1,...,22,46"  
##  
## $trial14$unique_graphs$graph2  
## [1] "23,...,45"  
##  
## $trial14$unique_graphs$graph3  
## [1] "47,...,99"  
##  
## $trial14$unique_graphs$graph4  
## [1] "100,...,121"  
##  
## $trial14$unique_graphs$graph5  
## [1] "122,...,170"  
##  
## $trial14$unique_graphs$graph6  
## [1] "171,...,180"  
##  
## $trial14$unique_graphs[[7]]
```

Graph 1, Individuals 1,...,22,46



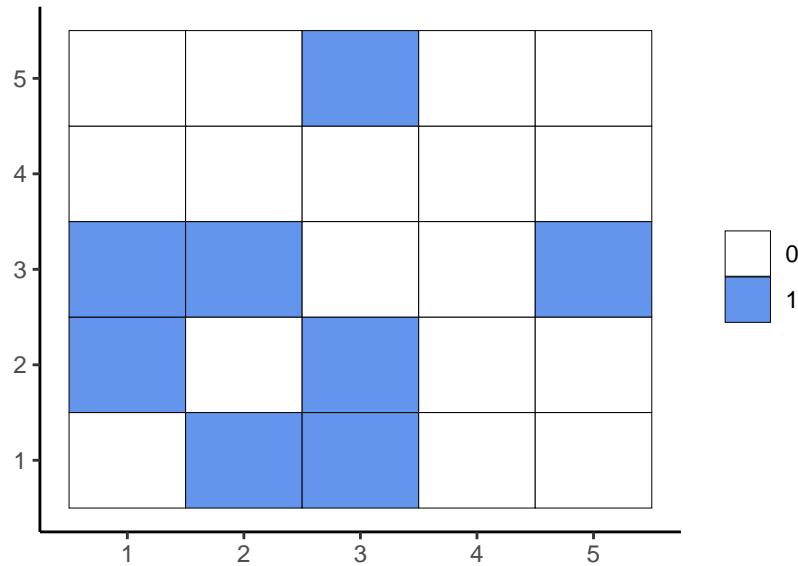
```
##  
## $trial14$unique_graphs[[8]]
```

Graph 2, Individuals 23,...,45



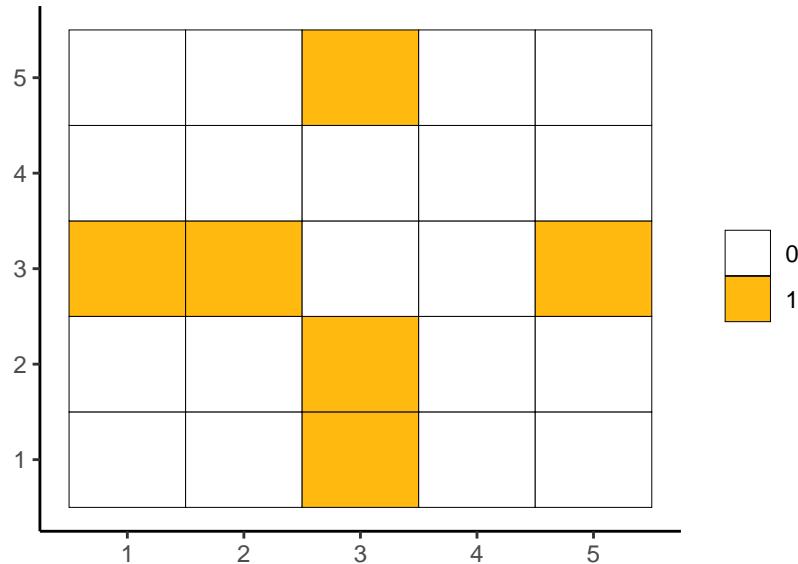
```
##  
## $trial14$unique_graphs[[9]]
```

Graph 3, Individuals 47,...,99



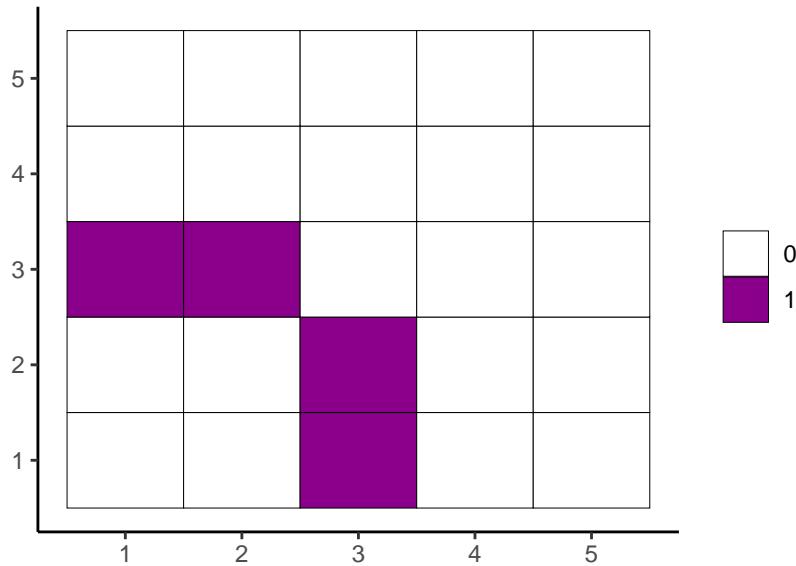
```
##  
## $trial14$unique_graphs[[10]]
```

Graph 4, Individuals 100,...,121



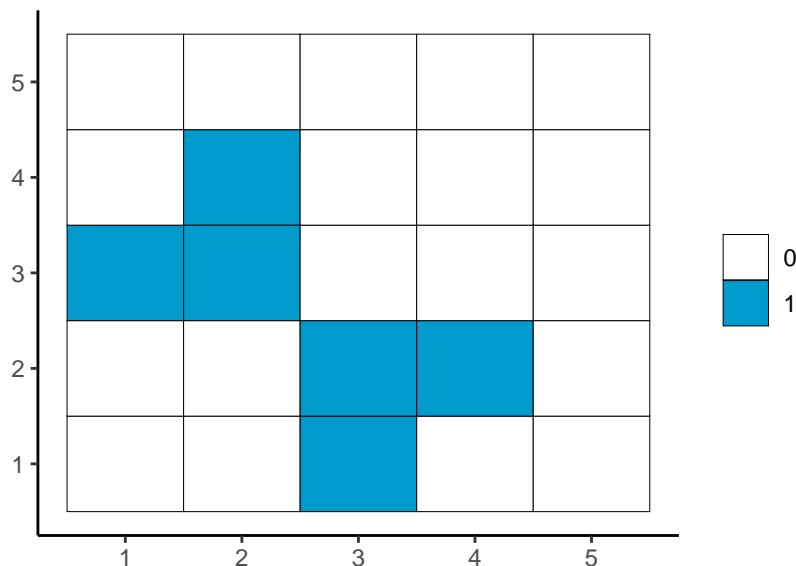
```
##  
## $trial14$unique_graphs[[11]]
```

Graph 5, Individuals 122,...,170



```
##  
## $trial14$unique_graphs[[12]]
```

Graph 6, Individuals 171,...,180

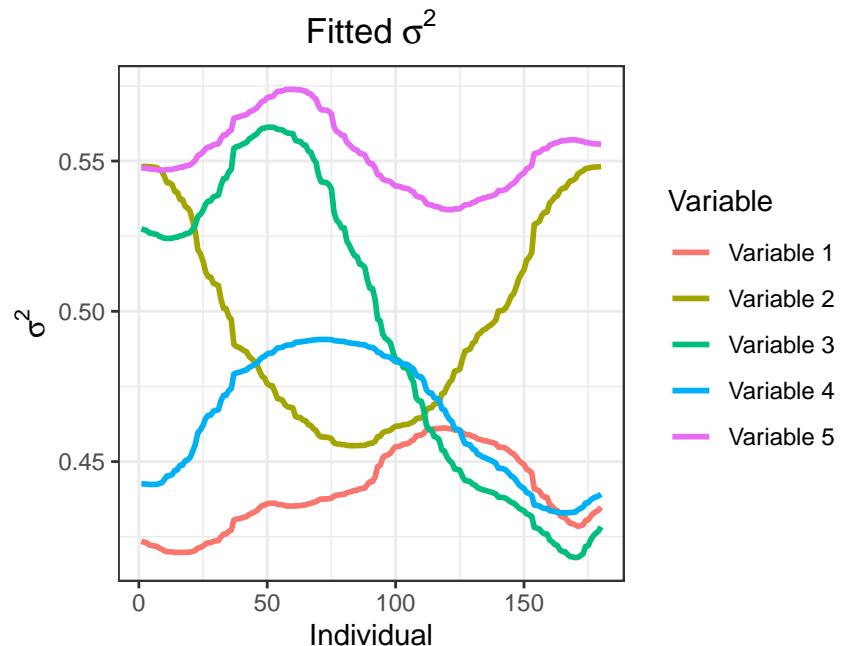


```
##  
##  
## $trial14$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial14$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.40      0.45      0.45      0.05      0.05
##
## $trial14$sigmasq

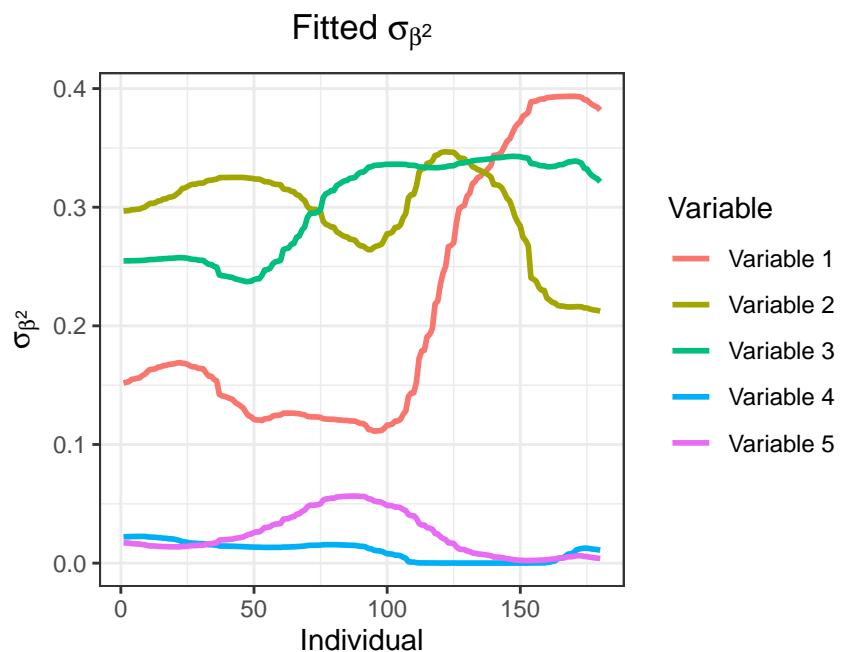
```



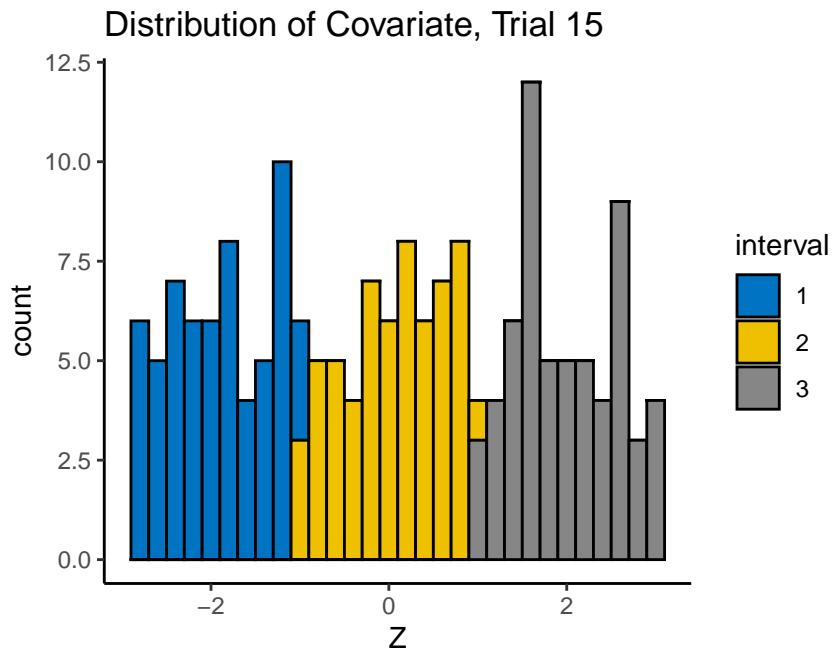
```

## 
## $trial14$sigmabetasq

```

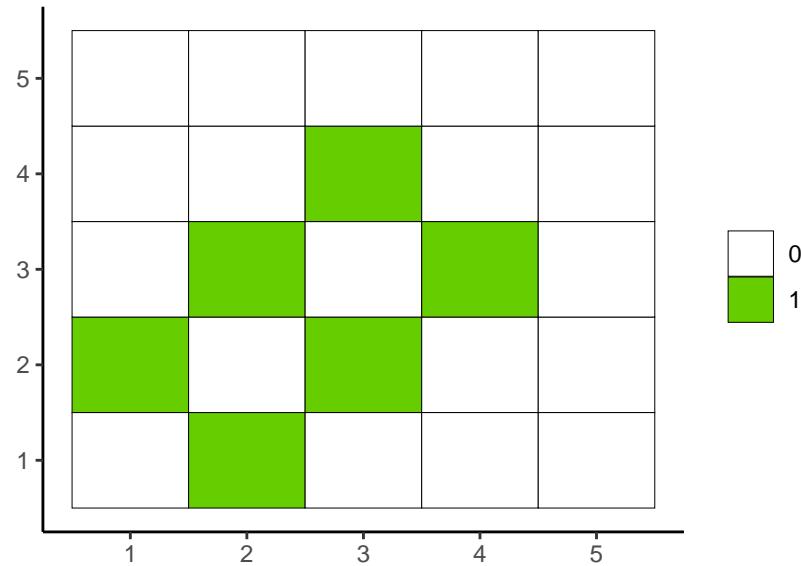


```
##  
##  
## $trial15  
## $trial15$covariates
```



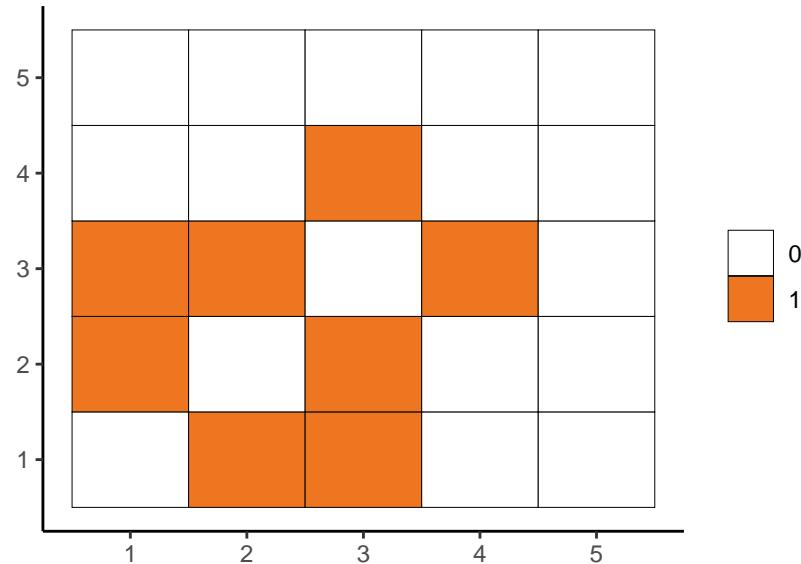
```
##  
## $trial15$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -85129.1 Unique conditional dependence structures: 3  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 3/5 variables  
##  
## Model fit completed in 34.337 secs  
##  
## $trial15$unique_graphs  
## $trial15$unique_graphs$graph1  
## [1] "1,...,70"  
##  
## $trial15$unique_graphs$graph2  
## [1] "71,...,131"  
##  
## $trial15$unique_graphs$graph3  
## [1] "132,...,180"  
##  
## $trial15$unique_graphs[[4]]
```

Graph 1, Individuals 1,...,70



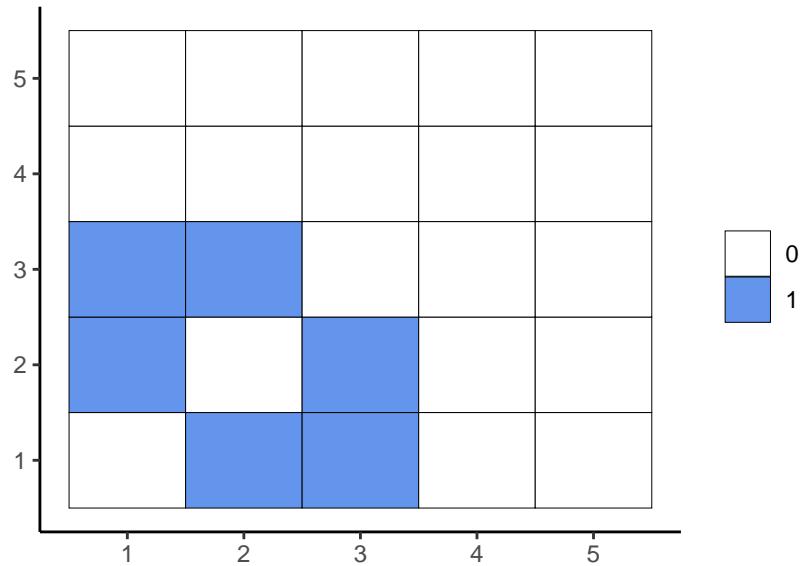
```
##  
## $trial15$unique_graphs[[5]]
```

Graph 2, Individuals 71,...,131

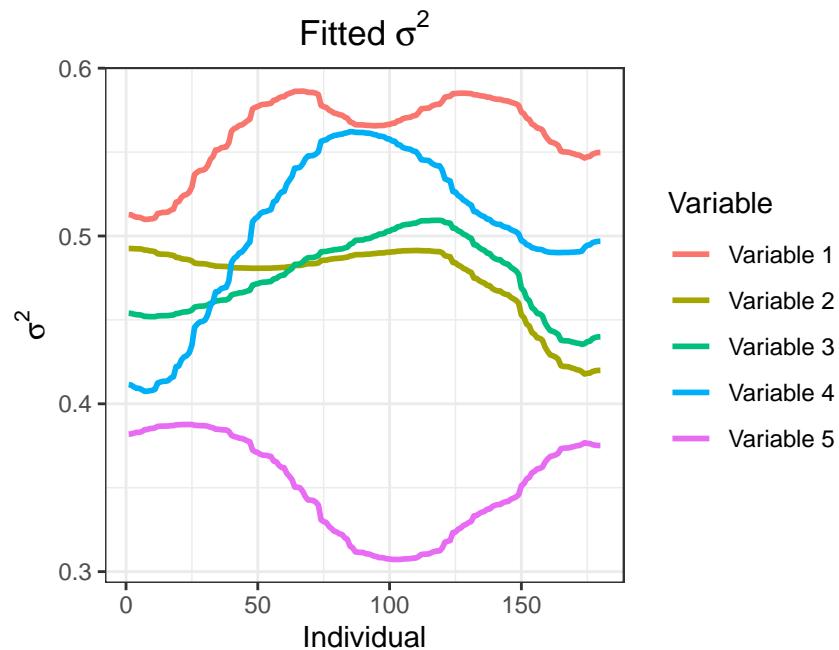


```
##  
## $trial15$unique_graphs[[6]]
```

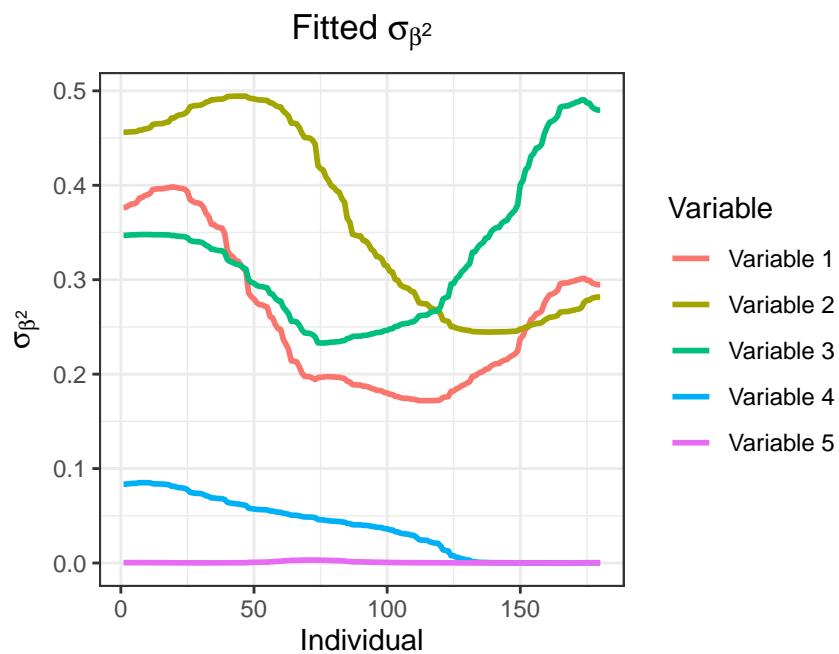
Graph 3, Individuals 132,...,180



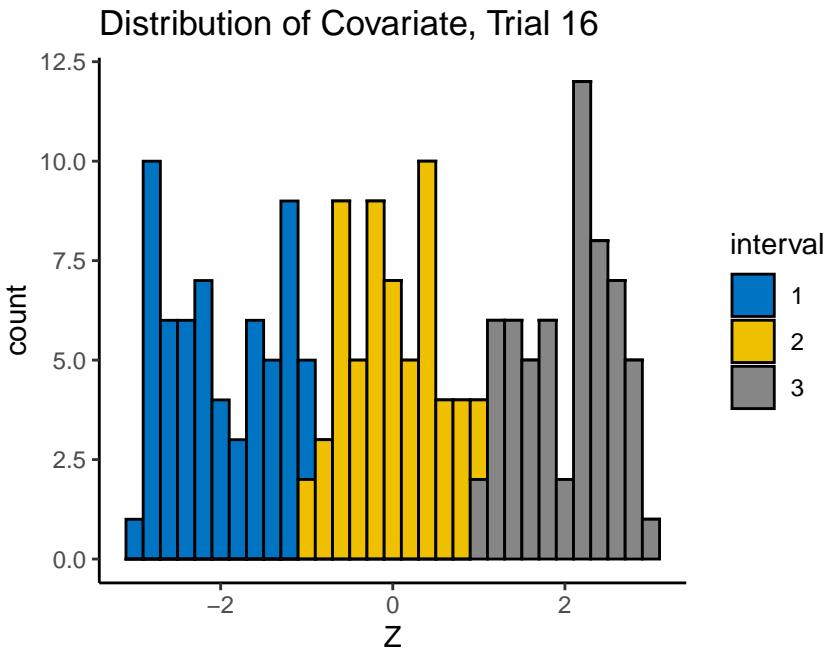
```
##  
##  
## $trial15$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial15$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.45      0.45      0.45      0.40      0.05  
##  
## $trial15$sigmasq
```



```
##  
## $trial15$sigmabetasq
```

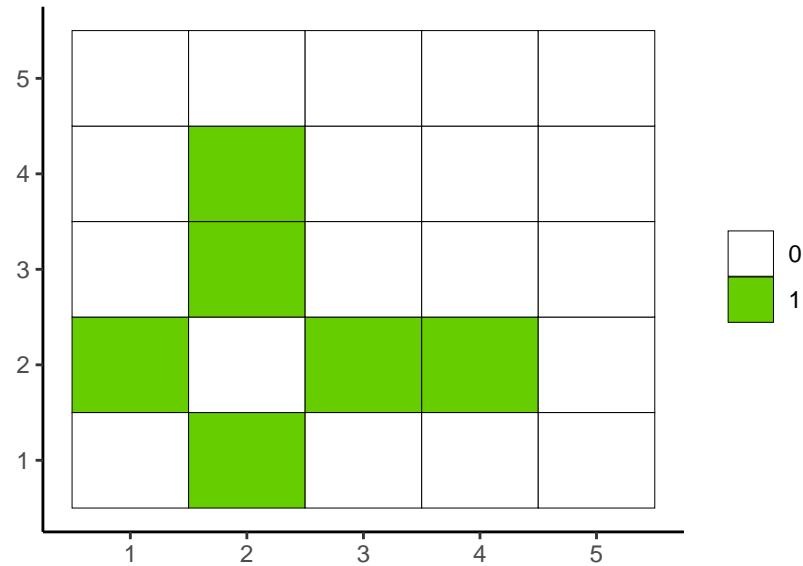


```
##  
##  
## $trial16  
## $trial16$covariates
```



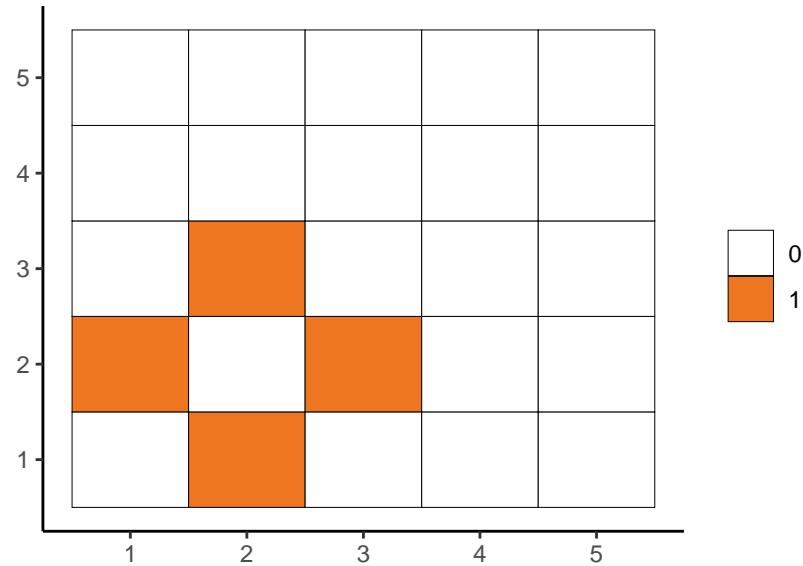
```
##  
## $trial16$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84873.59           Unique conditional dependence structures: 4  
## n: 180, variables: 5           Hyperparameter grid size: 9 points  
## CAVI converged for 3/5 variables  
##  
## Model fit completed in 29.602 secs  
##  
## $trial16$unique_graphs  
## $trial16$unique_graphs$graph1  
## [1] "1,...,13"  
##  
## $trial16$unique_graphs$graph2  
## [1] "14,...,60"  
##  
## $trial16$unique_graphs$graph3  
## [1] "61,...,146"  
##  
## $trial16$unique_graphs$graph4  
## [1] "147,...,180"  
##  
## $trial16$unique_graphs[[5]]
```

Graph 1, Individuals 1,...,13



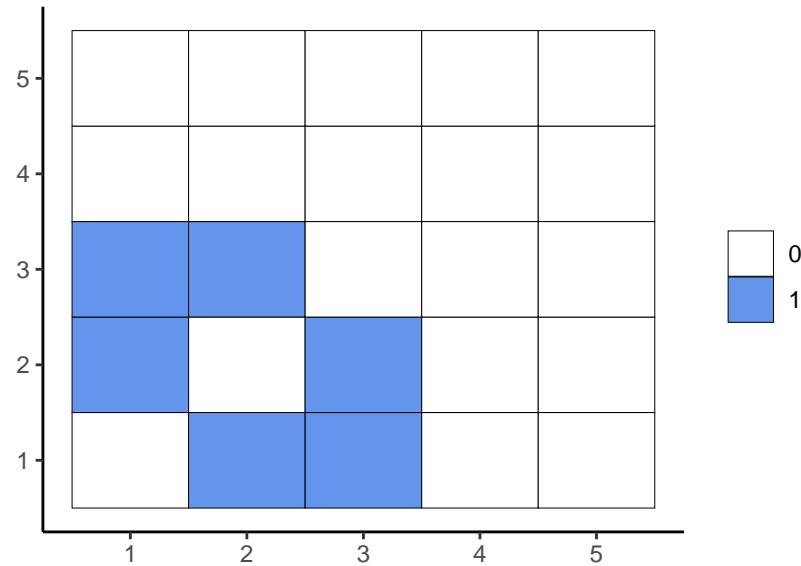
```
##  
## $trial16$unique_graphs[[6]]
```

Graph 2, Individuals 14,...,60



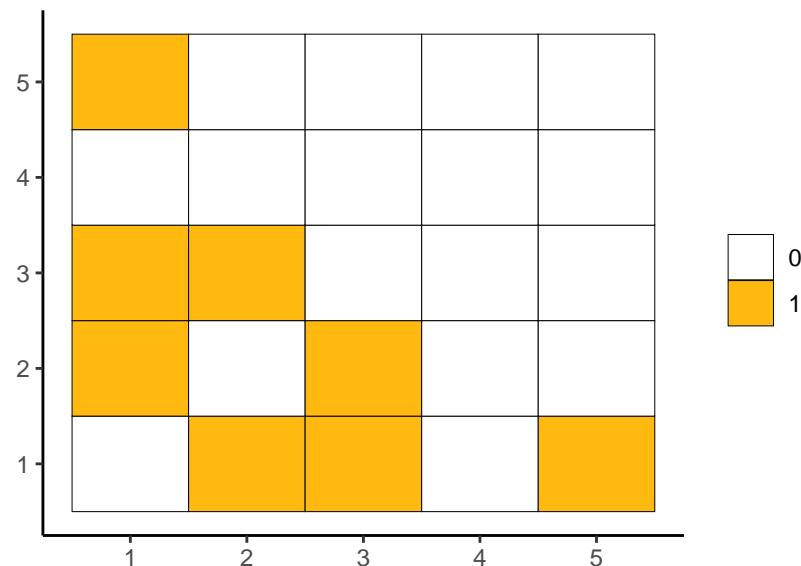
```
##  
## $trial16$unique_graphs[[7]]
```

Graph 3, Individuals 61,...,146



```
##  
## $trial16$unique_graphs[[8]]
```

Graph 4, Individuals 147,...,180

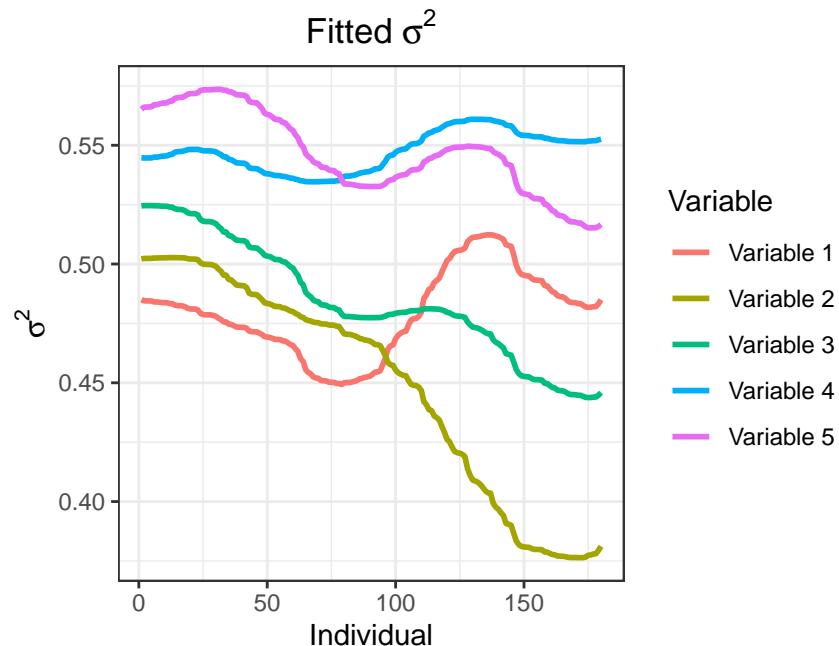


```
##  
##  
## $trial16$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial16$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.45      0.45      0.45      0.05      0.05
##
## $trial16$sigmasq

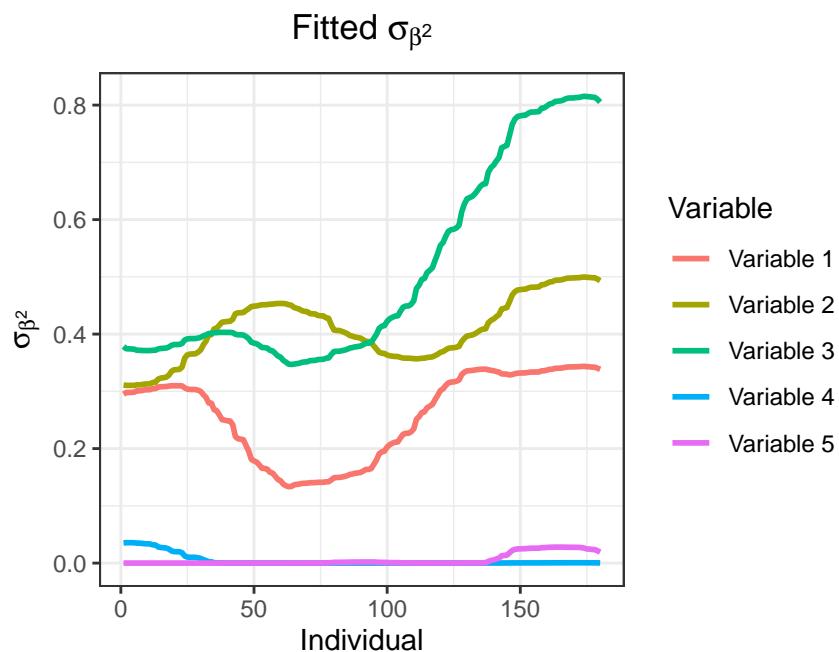
```



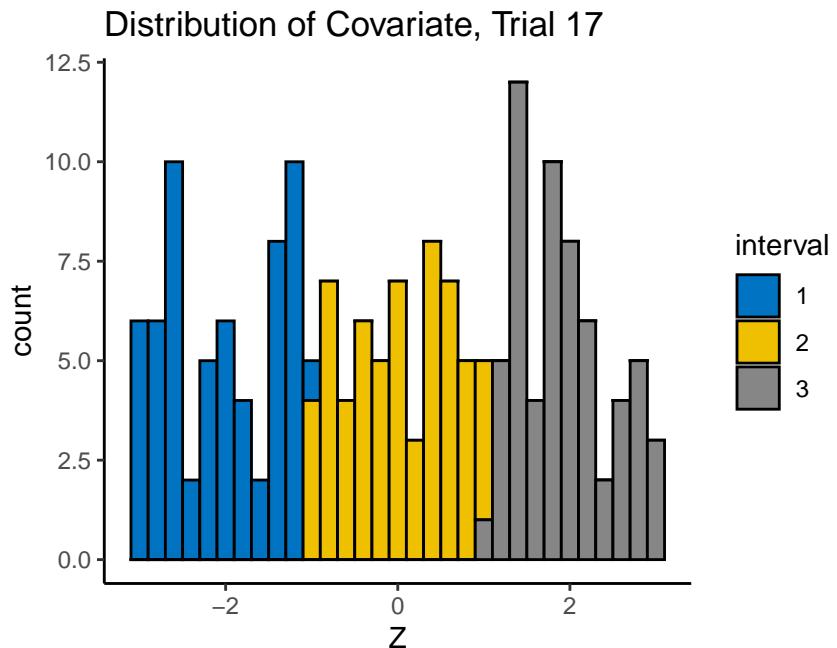
```

## $trial16$sigmabetasq

```

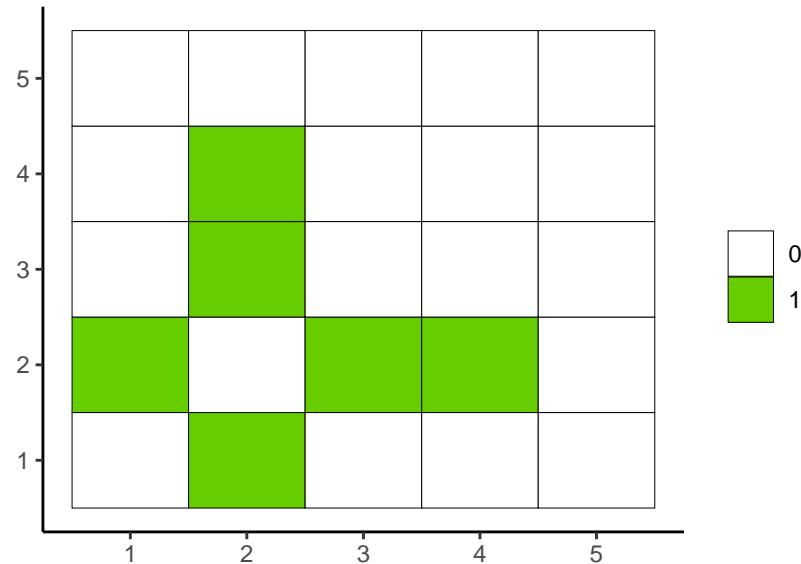


```
##  
##  
## $trial17  
## $trial17$covariates
```



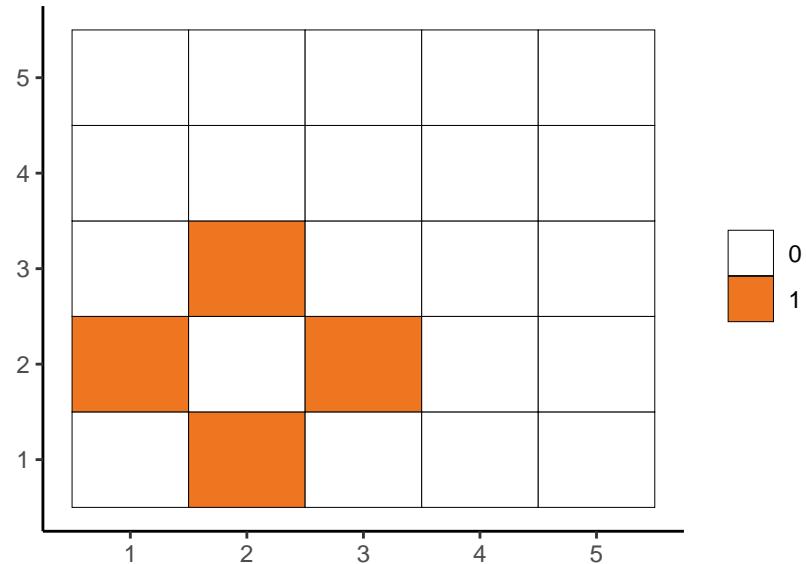
```
##  
## $trial17$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84220.8 Unique conditional dependence structures: 4  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 3/5 variables  
##  
## Model fit completed in 26.827 secs  
##  
## $trial17$unique_graphs  
## $trial17$unique_graphs$graph1  
## [1] "1,...,16"  
##  
## $trial17$unique_graphs$graph2  
## [1] "17,...,87"  
##  
## $trial17$unique_graphs$graph3  
## [1] "88,...,113"  
##  
## $trial17$unique_graphs$graph4  
## [1] "114,...,180"  
##  
## $trial17$unique_graphs[[5]]
```

Graph 1, Individuals 1,...,16



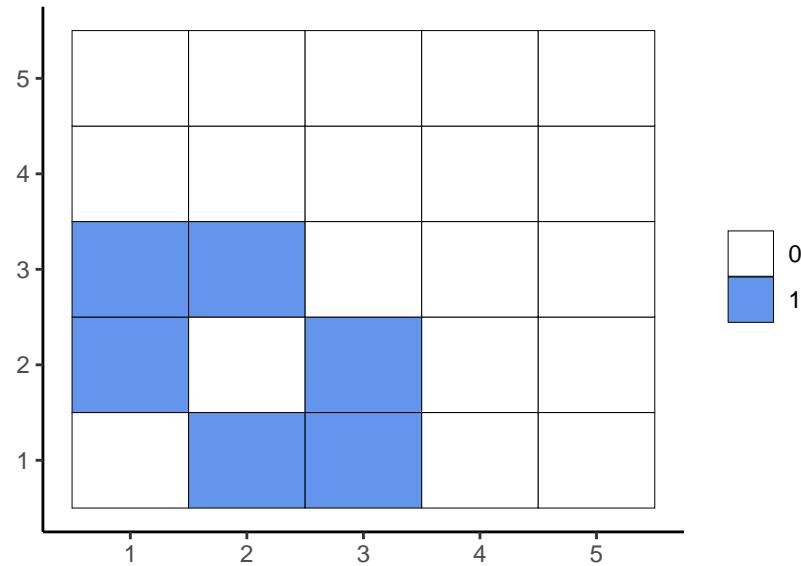
```
##  
## $trial17$unique_graphs[[6]]
```

Graph 2, Individuals 17,...,87



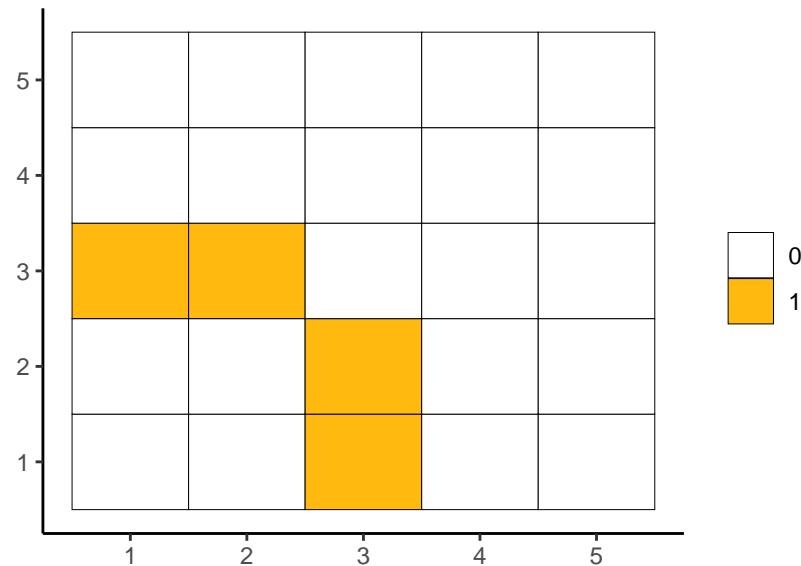
```
##  
## $trial17$unique_graphs[[7]]
```

Graph 3, Individuals 88,...,113



```
##  
## $trial17$unique_graphs[[8]]
```

Graph 4, Individuals 114,...,180

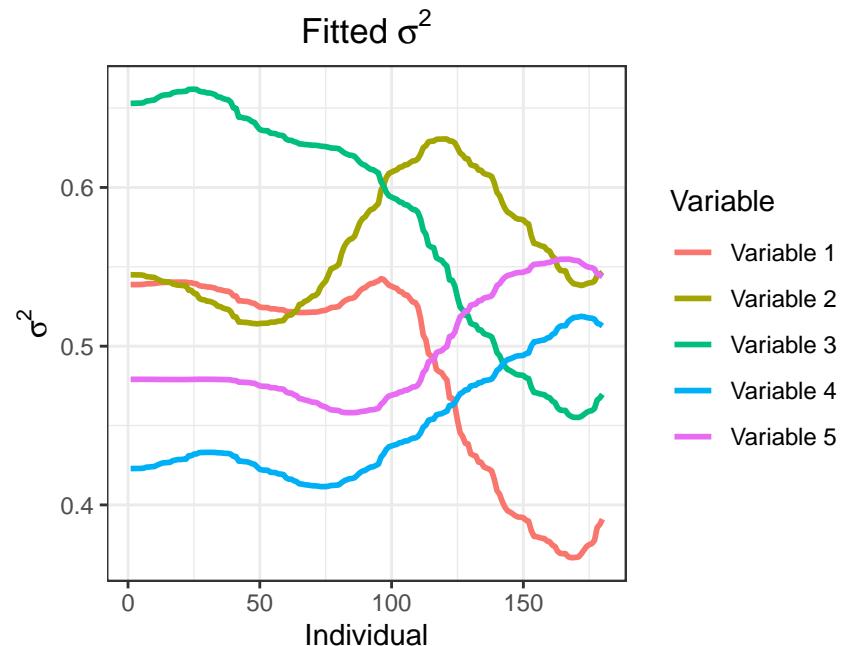


```
##  
##  
## $trial17$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial17$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.15      0.45      0.45      0.05      0.05
##
## $trial17$sigmasq

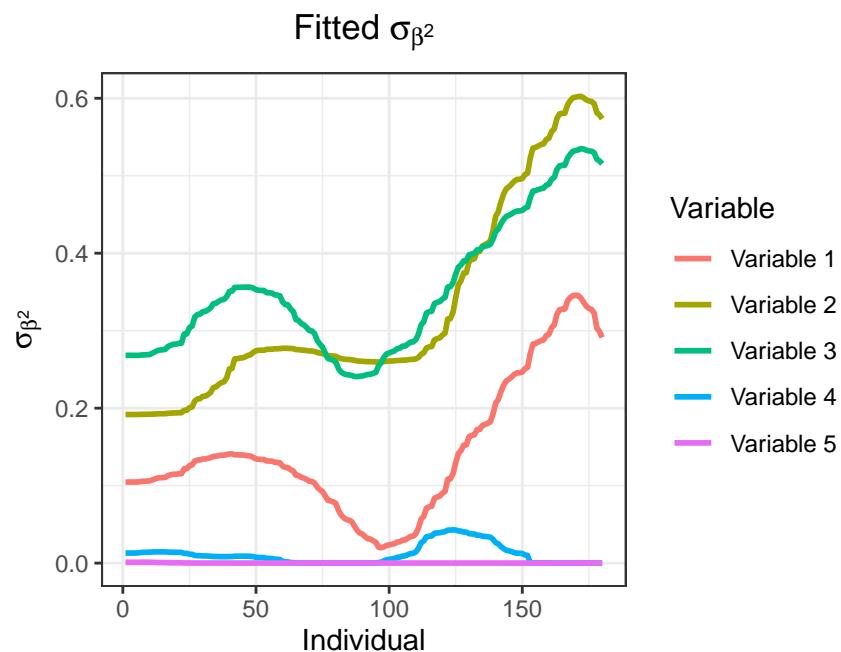
```



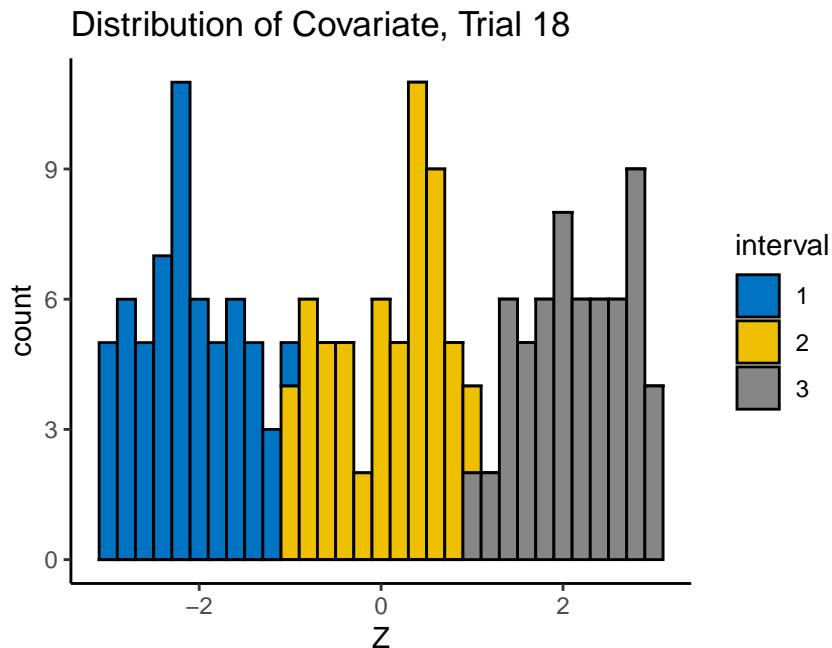
```

## 
## $trial17$sigmabetasq

```

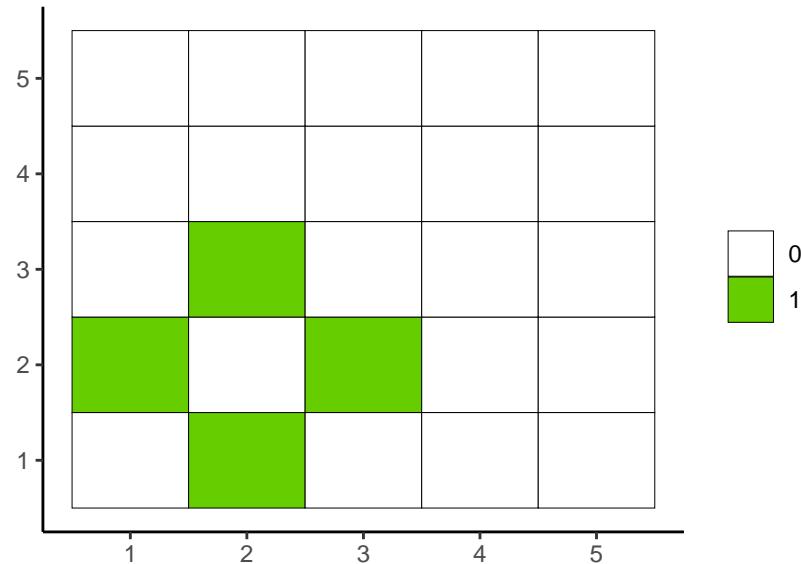


```
##  
##  
## $trial18  
## $trial18$covariates
```

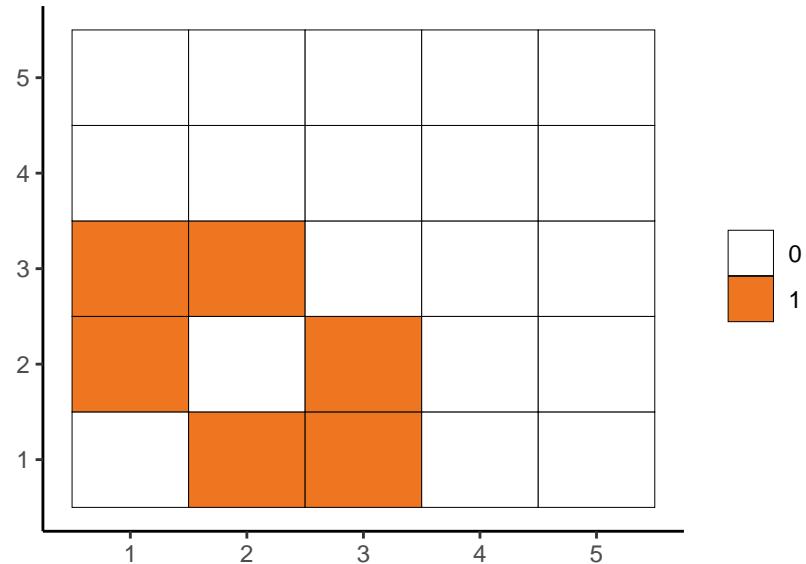


```
##  
## $trial18$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84352.48                            Unique conditional dependence structures: 3  
## n: 180, variables: 5                            Hyperparameter grid size: 9 points  
## CAVI converged for 3/5 variables  
##  
## Model fit completed in 28.175 secs  
##  
## $trial18$unique_graphs  
## $trial18$unique_graphs$graph1  
## [1] "1,...,59"  
##  
## $trial18$unique_graphs$graph2  
## [1] "60,...,123"  
##  
## $trial18$unique_graphs$graph3  
## [1] "124,...,180"  
##  
## $trial18$unique_graphs[[4]]
```

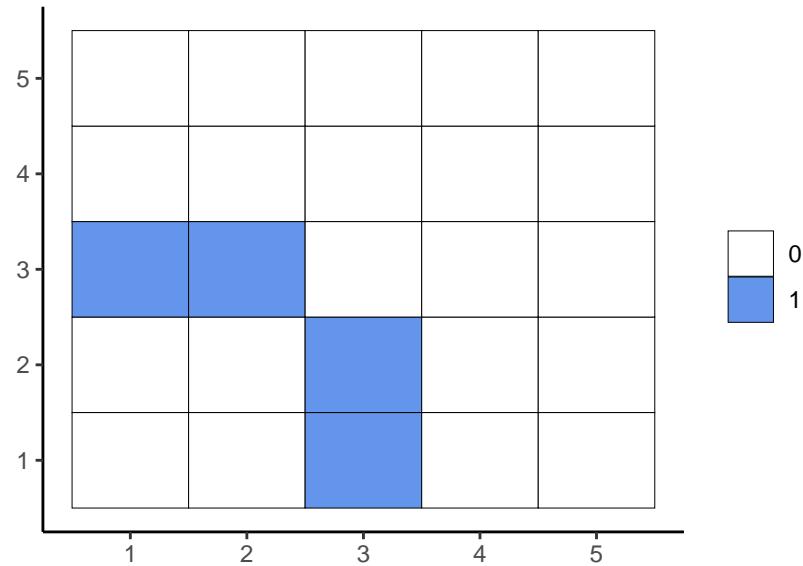
Graph 1, Individuals 1,...,59



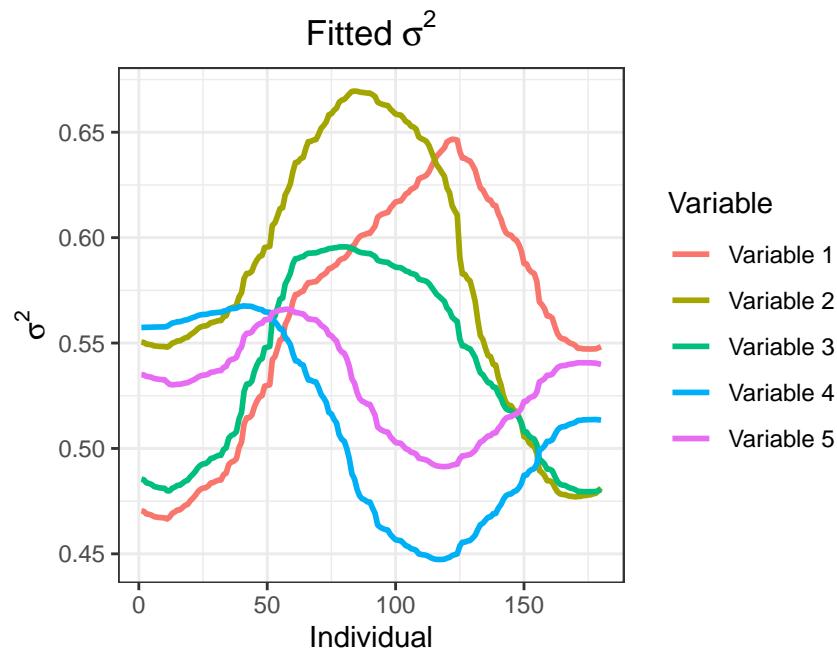
Graph 2, Individuals 60,...,123



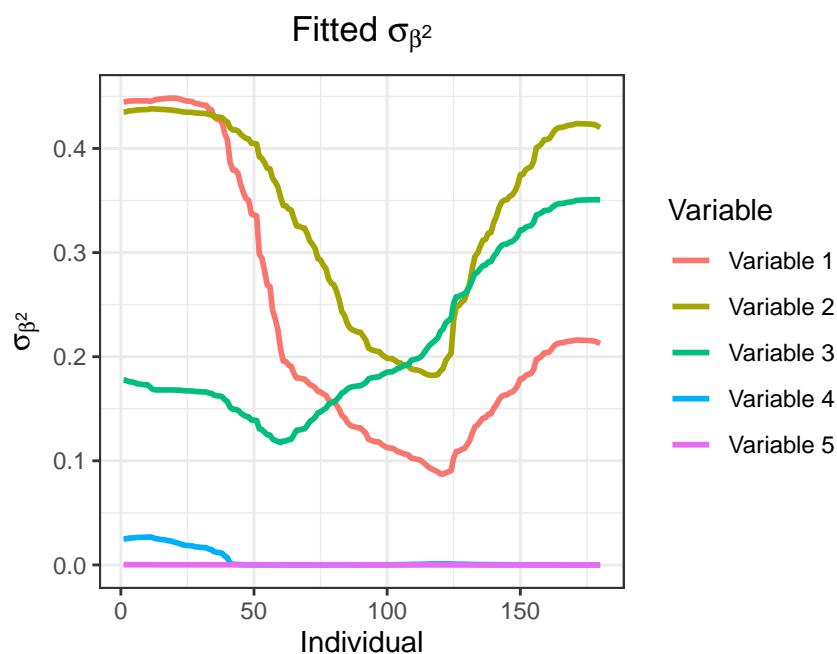
Graph 3, Individuals 124,...,180



```
##  
##  
## $trial18$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial18$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.45      0.45      0.45      0.05      0.05  
##  
## $trial18$sigmasq
```

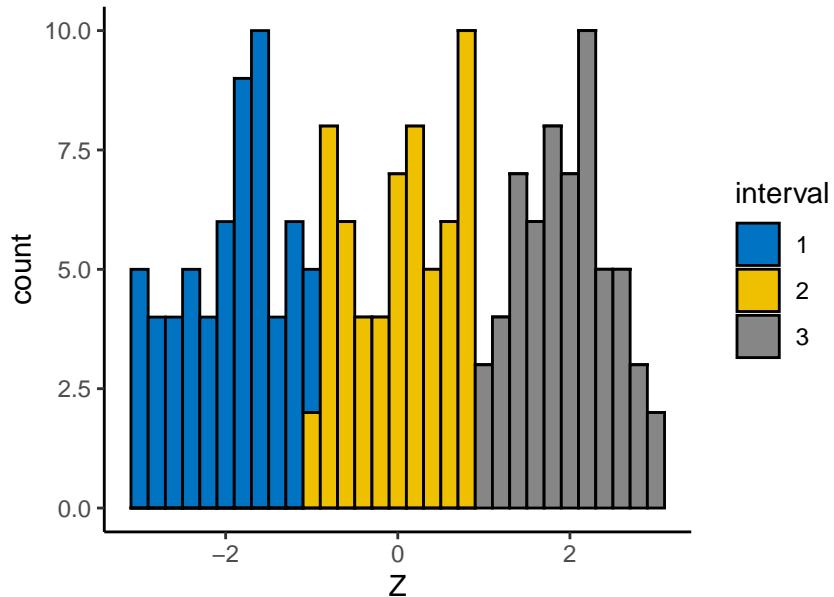


```
##  
## $trial18$sigmabetasq
```



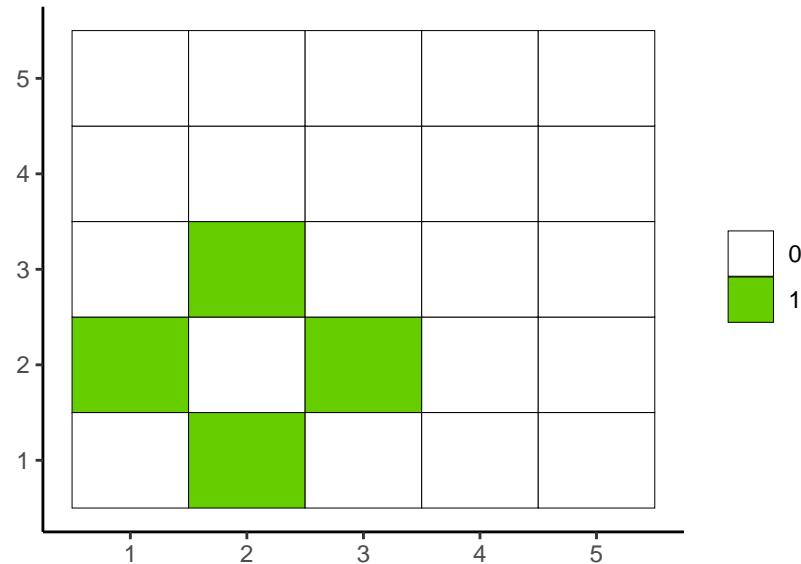
```
##  
##  
## $trial19  
## $trial19$covariates
```

Distribution of Covariate, Trial 19



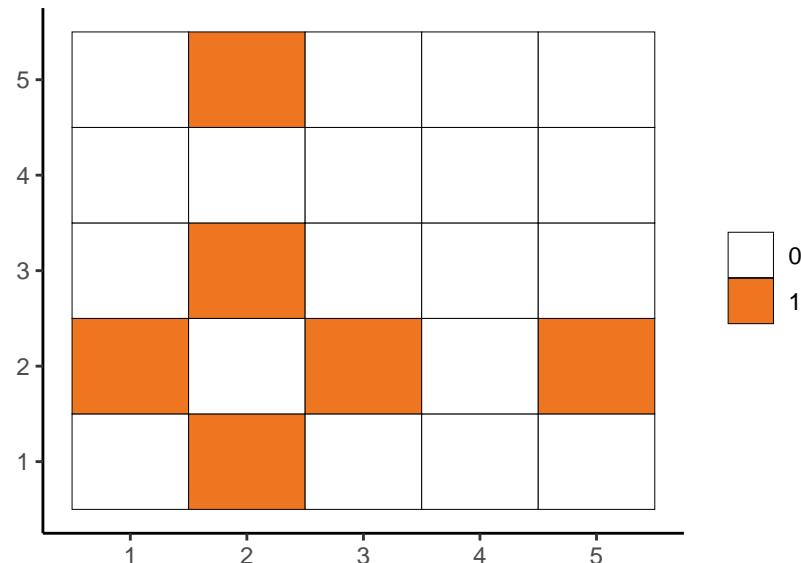
```
##  
## $trial19$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -85220.54           Unique conditional dependence structures: 5  
## n: 180, variables: 5           Hyperparameter grid size: 9 points  
## CAVI converged for 3/5 variables  
##  
## Model fit completed in 27.291 secs  
##  
## $trial19$unique_graphs  
## $trial19$unique_graphs$graph1  
## [1] "1,...,70"  
##  
## $trial19$unique_graphs$graph2  
## [1] "71,...,84"  
##  
## $trial19$unique_graphs$graph3  
## [1] "85"  
##  
## $trial19$unique_graphs$graph4  
## [1] "86,...,91"  
##  
## $trial19$unique_graphs$graph5  
## [1] "92,...,180"  
##  
## $trial19$unique_graphs[[6]]
```

Graph 1, Individuals 1,...,70



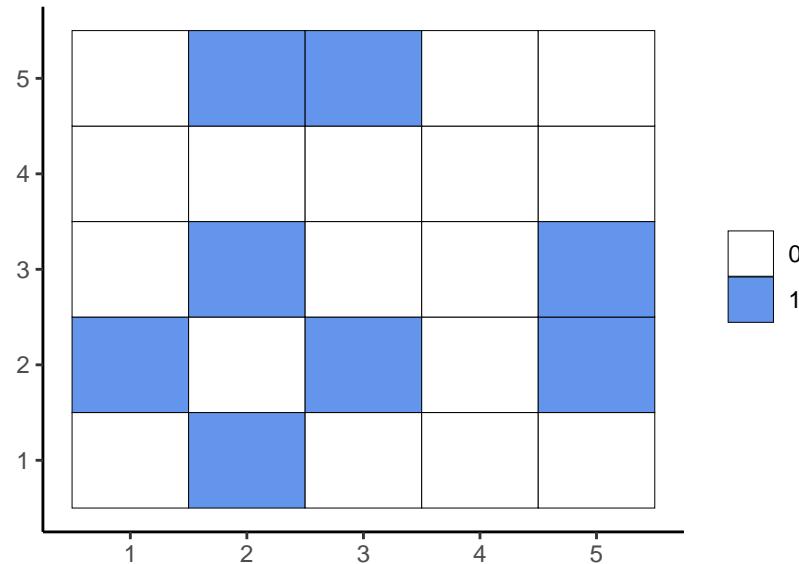
```
##  
## $trial19$unique_graphs[[7]]
```

Graph 2, Individuals 71,...,84



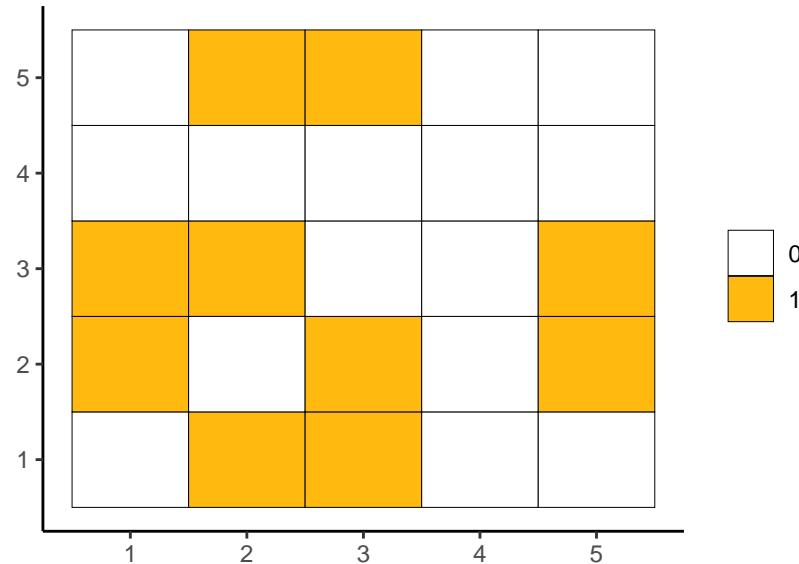
```
##  
## $trial19$unique_graphs[[8]]
```

Graph 3, Individuals 85



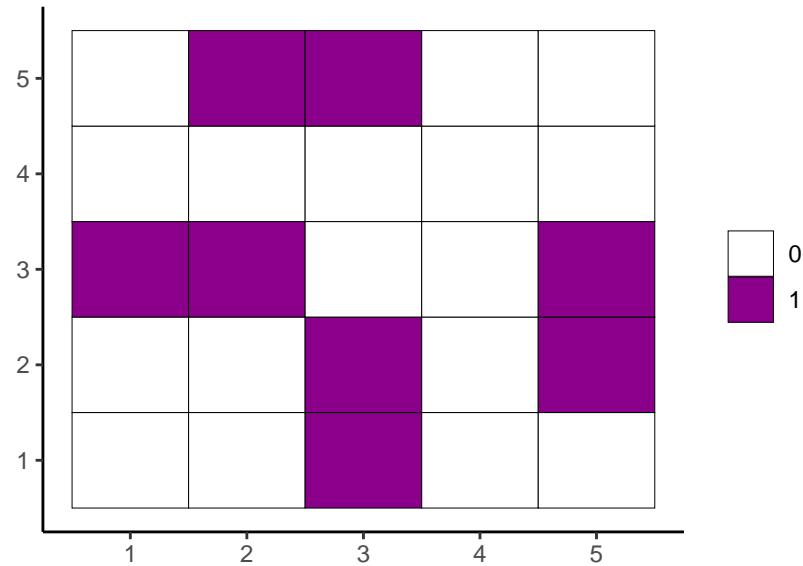
```
##  
## $trial19$unique_graphs[[9]]
```

Graph 4, Individuals 86,...,91

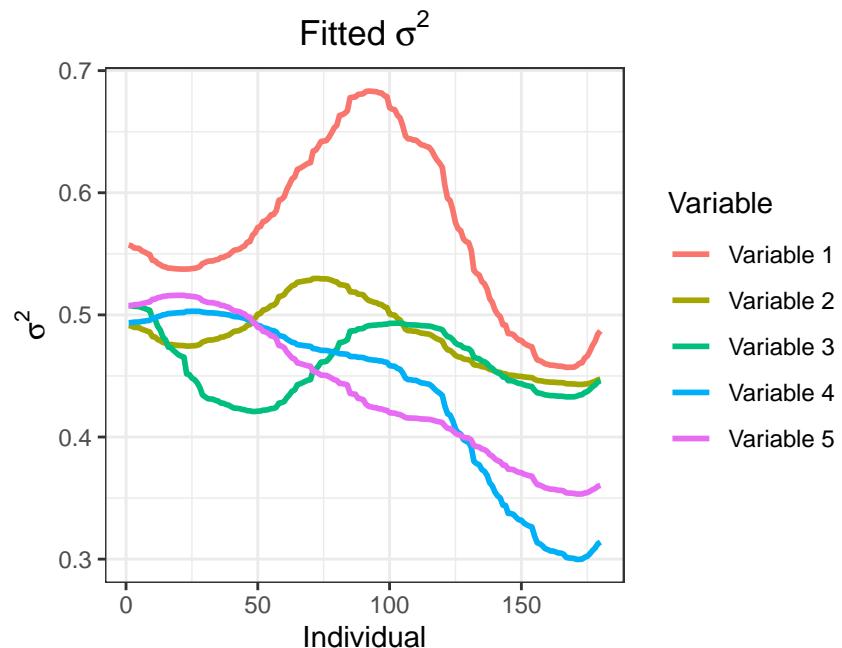


```
##  
## $trial19$unique_graphs[[10]]
```

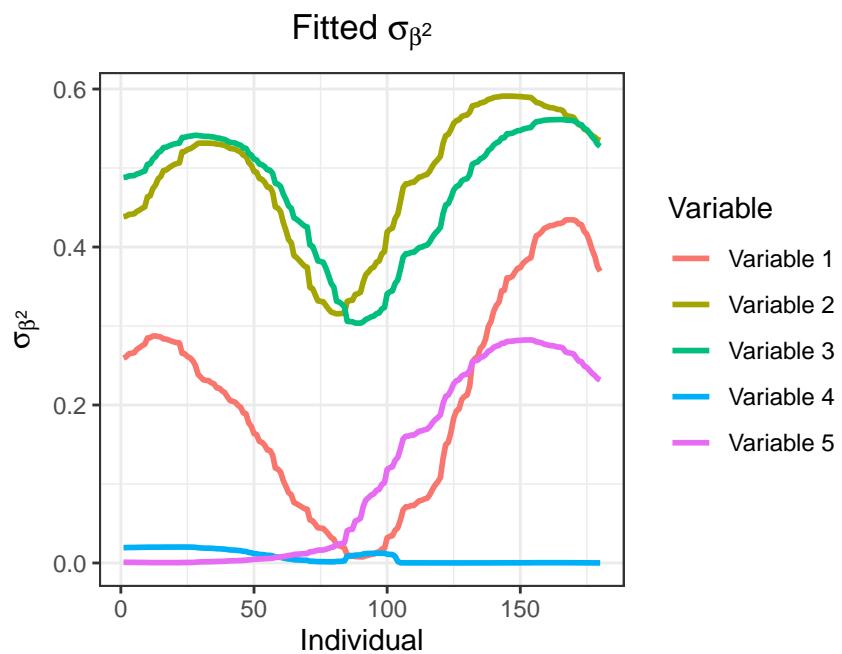
Graph 5, Individuals 92,...,180



```
##  
##  
## $trial19$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial19$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.35      0.45      0.45      0.05      0.45  
##  
## $trial19$sigmasq
```

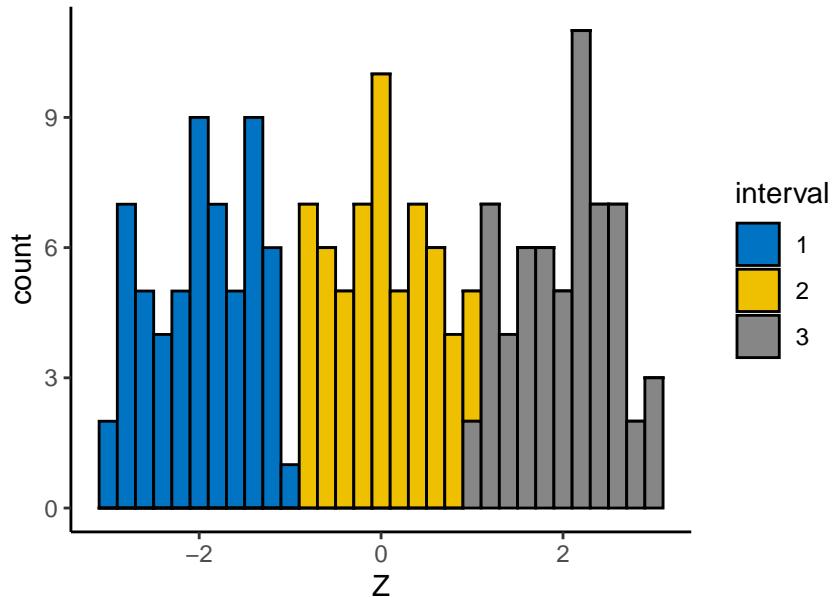


```
##  
## $trial19$sigmabetasq
```



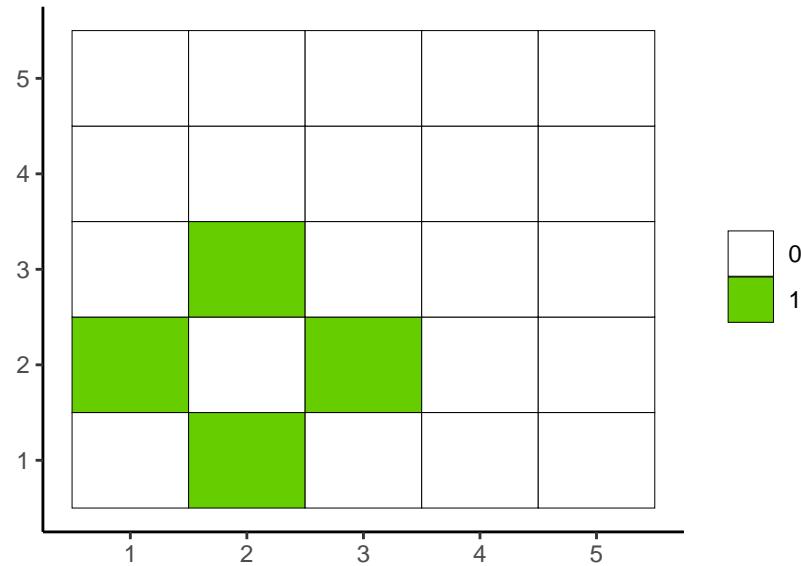
```
##  
##  
## $trial20  
## $trial20$covariates
```

Distribution of Covariate, Trial 20



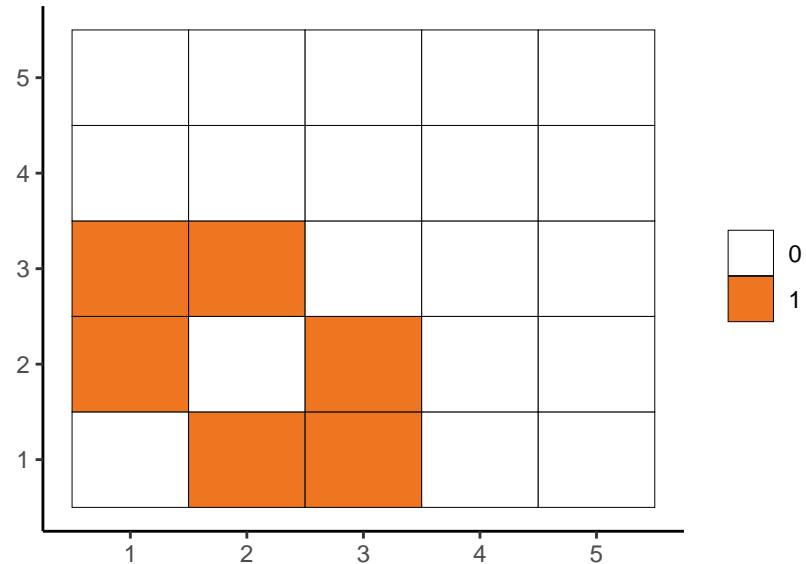
```
##  
## $trial20$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84474.73           Unique conditional dependence structures: 3  
## n: 180, variables: 5           Hyperparameter grid size: 9 points  
## CAVI converged for 2/5 variables  
##  
## Model fit completed in 29.188 secs  
##  
## $trial20$unique_graphs  
## $trial20$unique_graphs$graph1  
## [1] "1,...,62"  
##  
## $trial20$unique_graphs$graph2  
## [1] "63,...,125"  
##  
## $trial20$unique_graphs$graph3  
## [1] "126,...,180"  
##  
## $trial20$unique_graphs[[4]]
```

Graph 1, Individuals 1,...,62



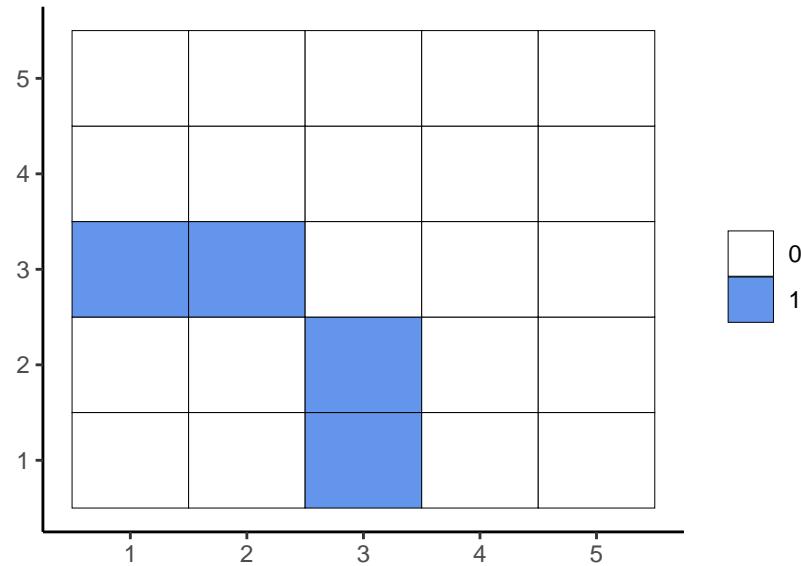
```
##  
## $trial20$unique_graphs[[5]]
```

Graph 2, Individuals 63,...,125

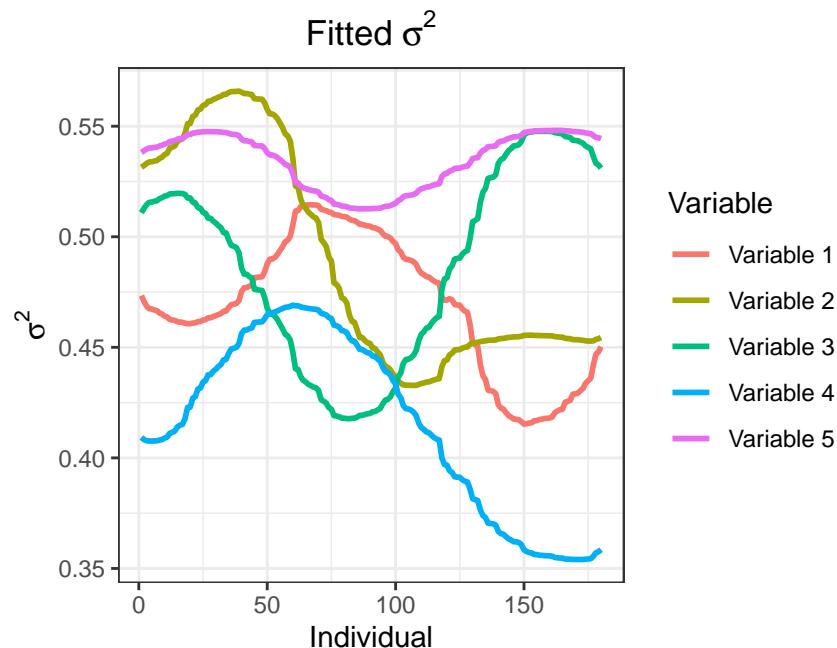


```
##  
## $trial20$unique_graphs[[6]]
```

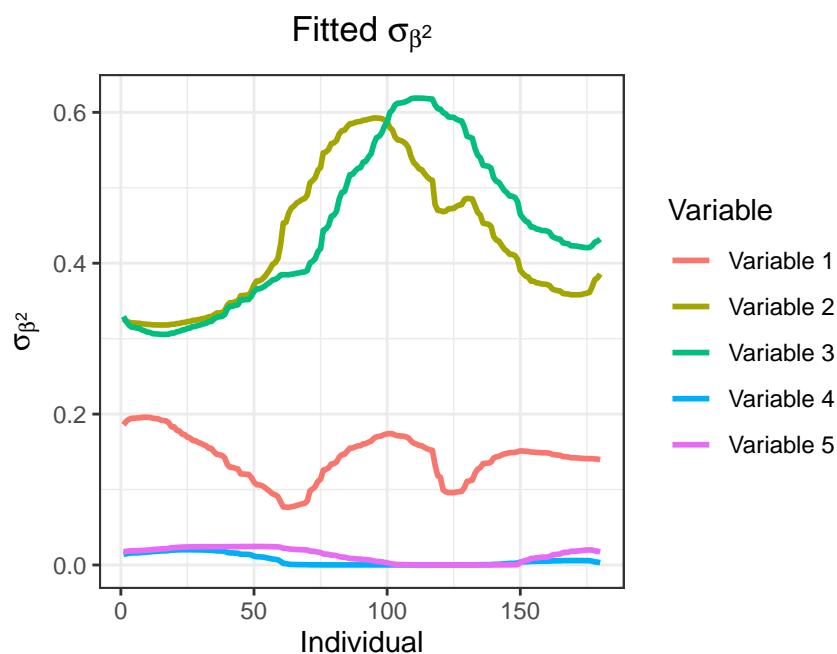
Graph 3, Individuals 126,...,180



```
##  
##  
## $trial20$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial20$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          0.45      0.45      0.45      0.05      0.05  
##  
## $trial20$sigmasq
```

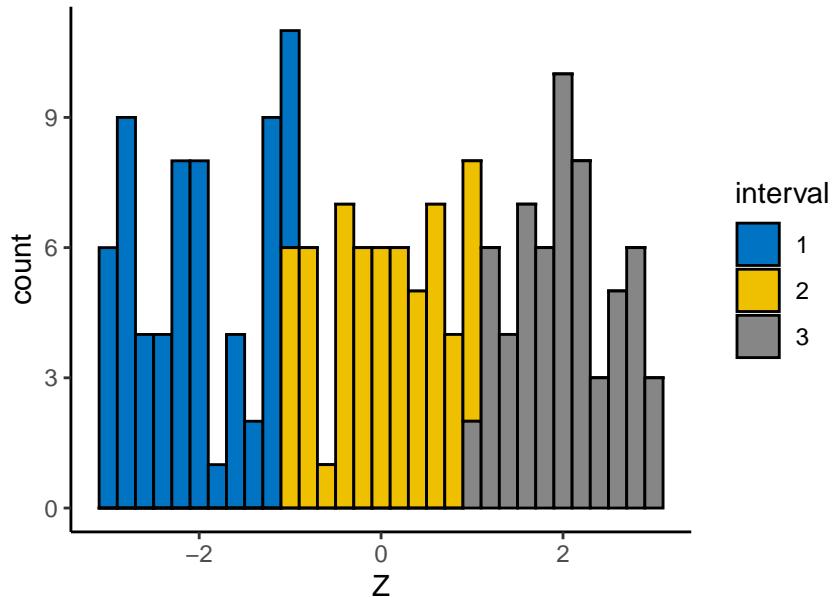


```
##  
## $trial20$sigmabetasq
```



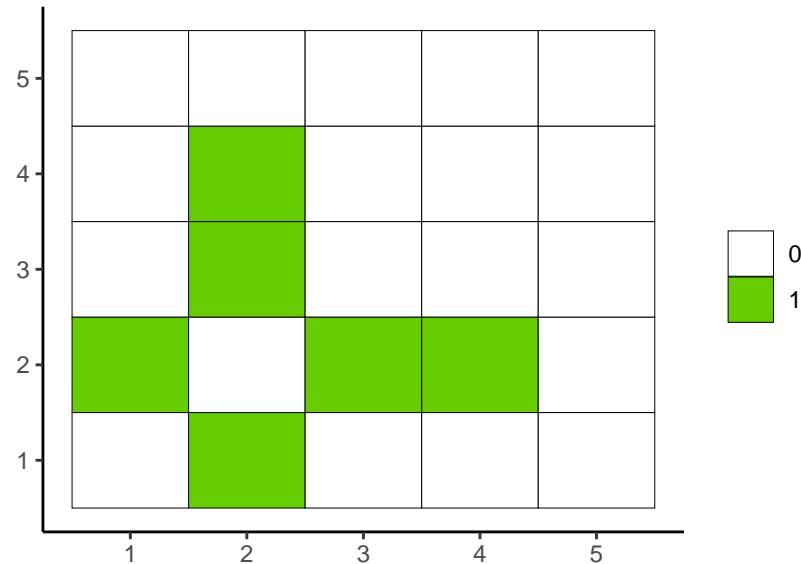
```
##  
##  
## $trial21  
## $trial21$covariates
```

Distribution of Covariate, Trial 21



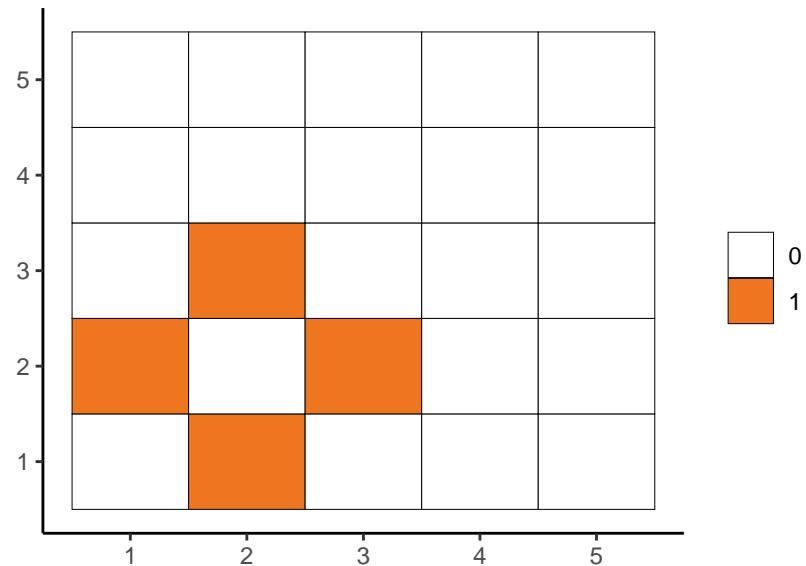
```
##  
## $trial21$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -85516.08           Unique conditional dependence structures: 5  
## n: 180, variables: 5           Hyperparameter grid size: 9 points  
## CAVI converged for 2/5 variables  
##  
## Model fit completed in 31.741 secs  
##  
## $trial21$unique_graphs  
## $trial21$unique_graphs$graph1  
## [1] "1,...,40"  
##  
## $trial21$unique_graphs$graph2  
## [1] "41,...,46"  
##  
## $trial21$unique_graphs$graph3  
## [1] "47,...,70"  
##  
## $trial21$unique_graphs$graph4  
## [1] "71,...,122"  
##  
## $trial21$unique_graphs$graph5  
## [1] "123,...,180"  
##  
## $trial21$unique_graphs[[6]]
```

Graph 1, Individuals 1,...,40



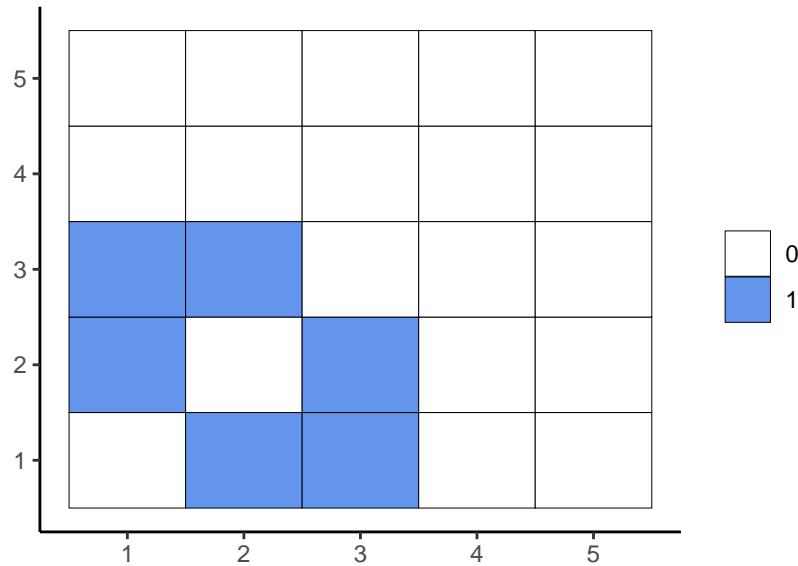
```
##  
## $trial21$unique_graphs[[7]]
```

Graph 2, Individuals 41,...,46



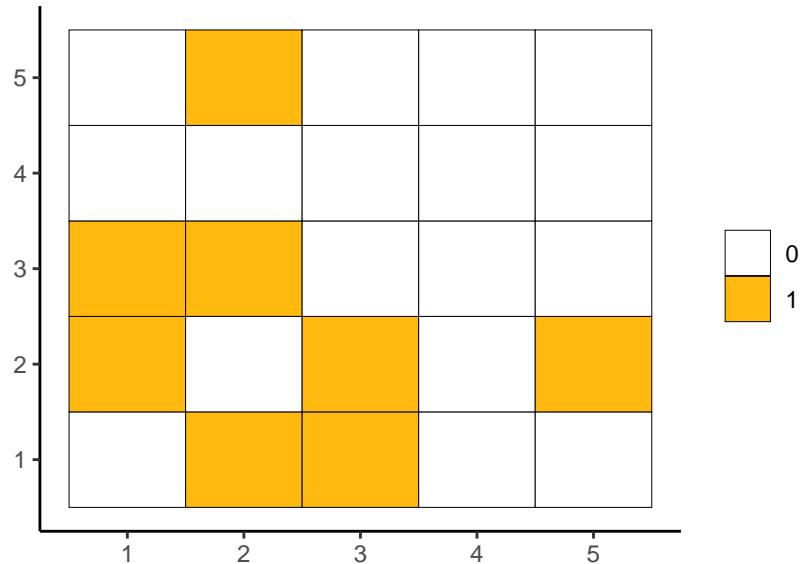
```
##  
## $trial21$unique_graphs[[8]]
```

Graph 3, Individuals 47,...,70



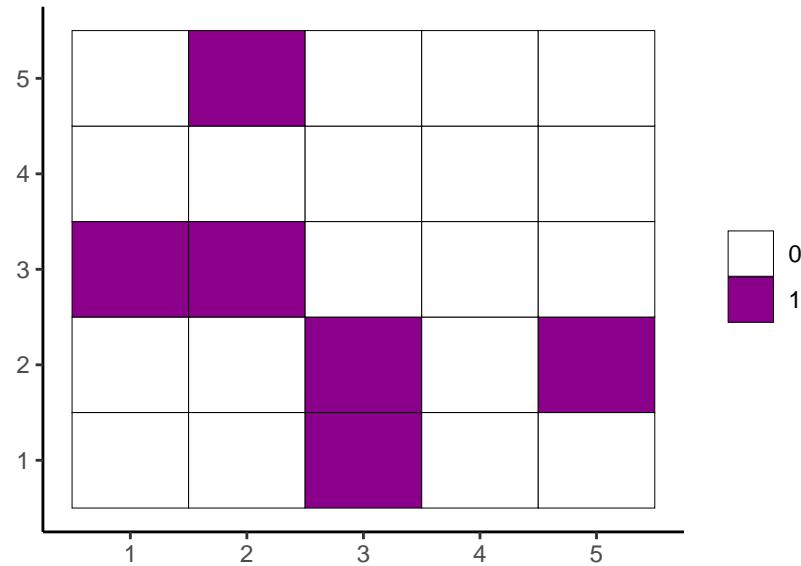
```
##  
## $trial21$unique_graphs[[9]]
```

Graph 4, Individuals 71,...,122

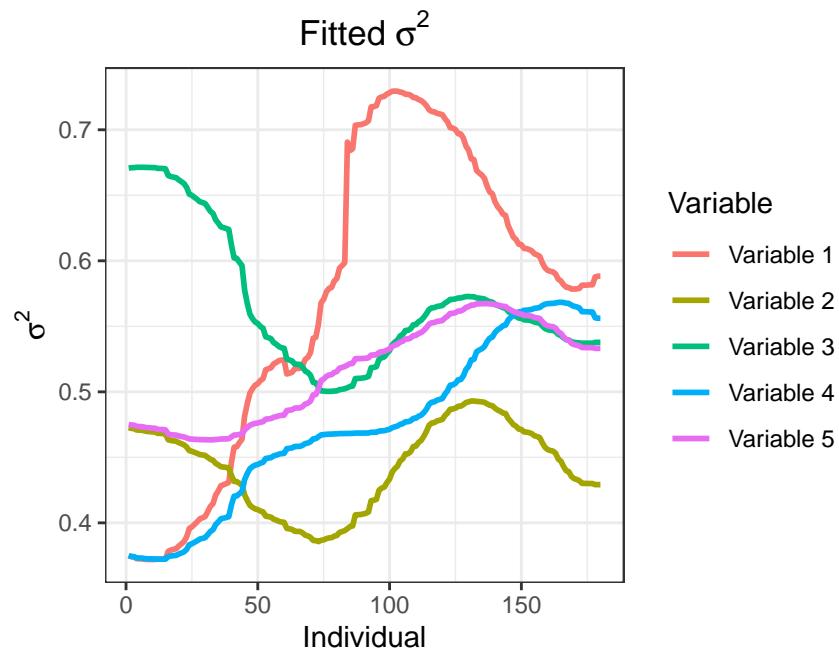


```
##  
## $trial21$unique_graphs[[10]]
```

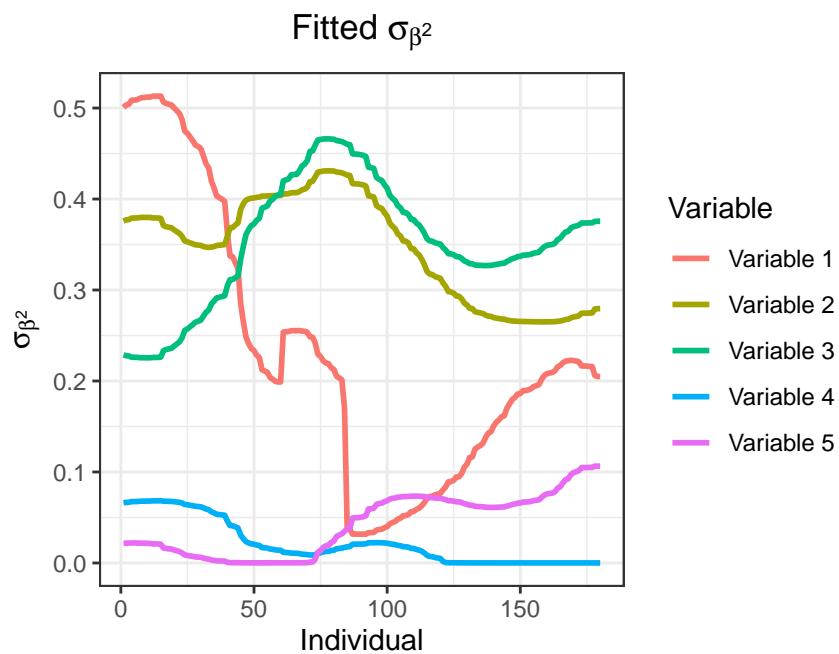
Graph 5, Individuals 123,...,180



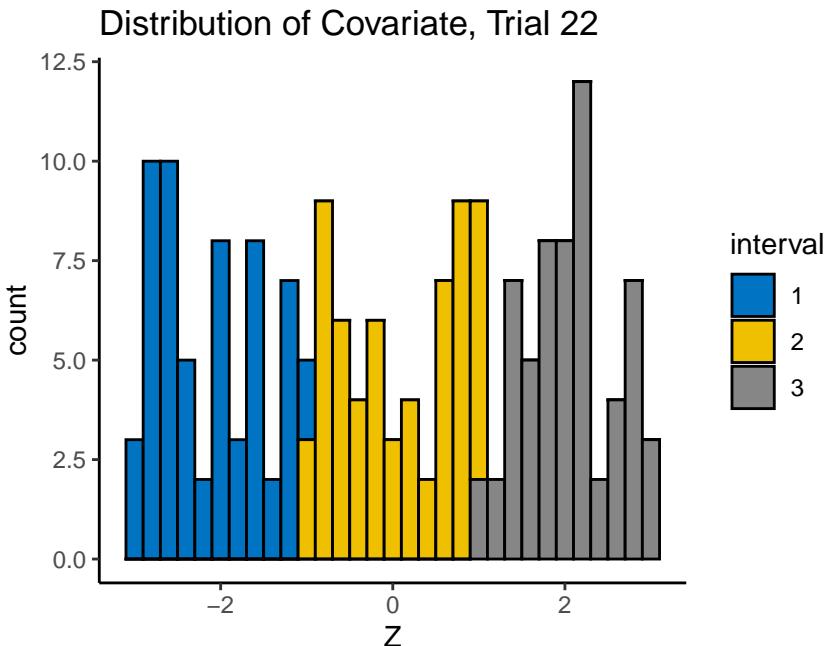
```
##  
##  
## $trial21$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial21$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.05      0.45      0.45      0.05      0.05  
##  
## $trial21$sigmasq
```



```
##  
## $trial21$sigmabetasq
```

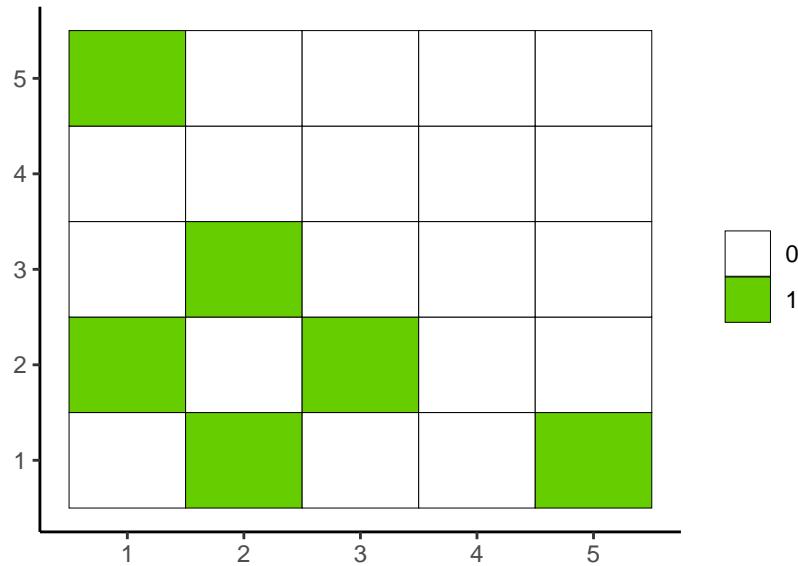


```
##  
##  
## $trial22  
## $trial22$covariates
```



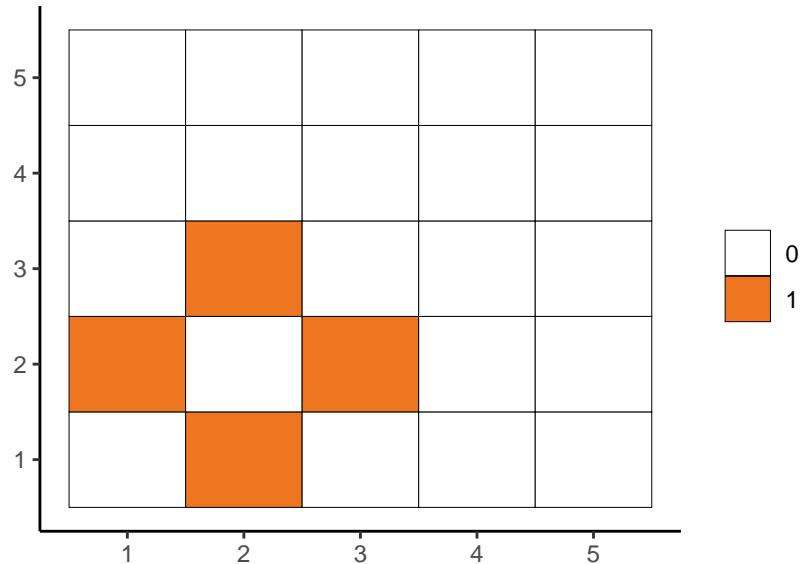
```
##
## $trial22$summary
## Covariate Dependent Graphical Model
##
## Model ELBO: -85037.23           Unique conditional dependence structures: 6
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 2/5 variables
##
## Model fit completed in 35.358 secs
##
## $trial22$unique_graphs
## $trial22$unique_graphs$graph1
## [1] "1,...,28"
##
## $trial22$unique_graphs$graph2
## [1] "29,...,51"
##
## $trial22$unique_graphs$graph3
## [1] "52,...,98"
##
## $trial22$unique_graphs$graph4
## [1] "99,...,122"
##
## $trial22$unique_graphs$graph5
## [1] "123,...,126"
##
## $trial22$unique_graphs$graph6
## [1] "127,...,180"
##
## $trial22$unique_graphs[[7]]
```

Graph 1, Individuals 1,...,28



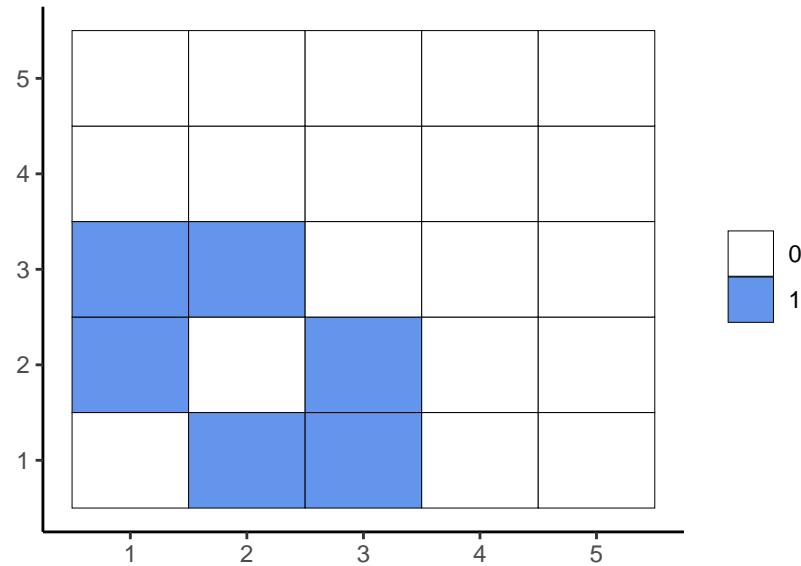
```
##  
## $trial22$unique_graphs[[8]]
```

Graph 2, Individuals 29,...,51



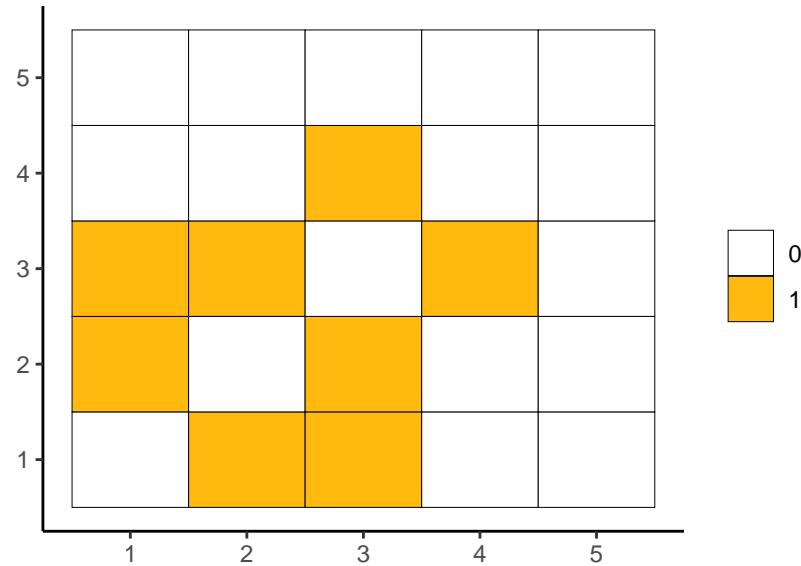
```
##  
## $trial22$unique_graphs[[9]]
```

Graph 3, Individuals 52,...,98



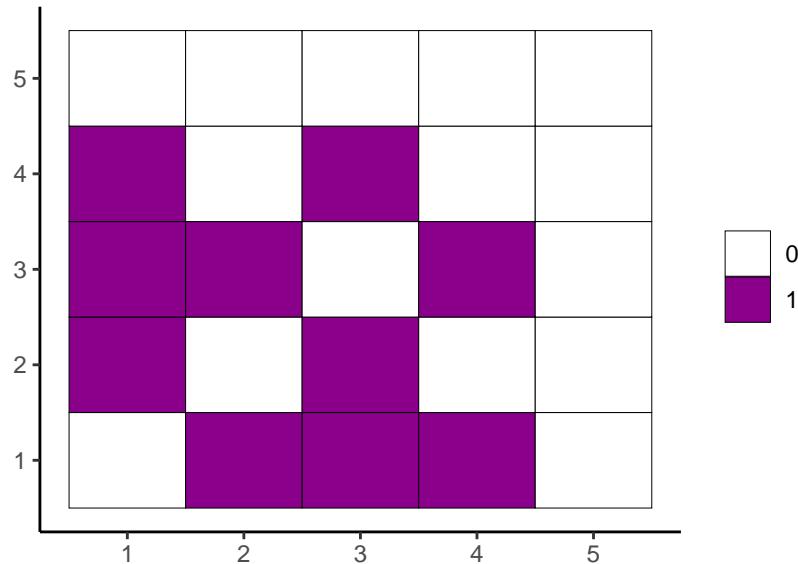
```
##  
## $trial22$unique_graphs[[10]]
```

Graph 4, Individuals 99,...,122



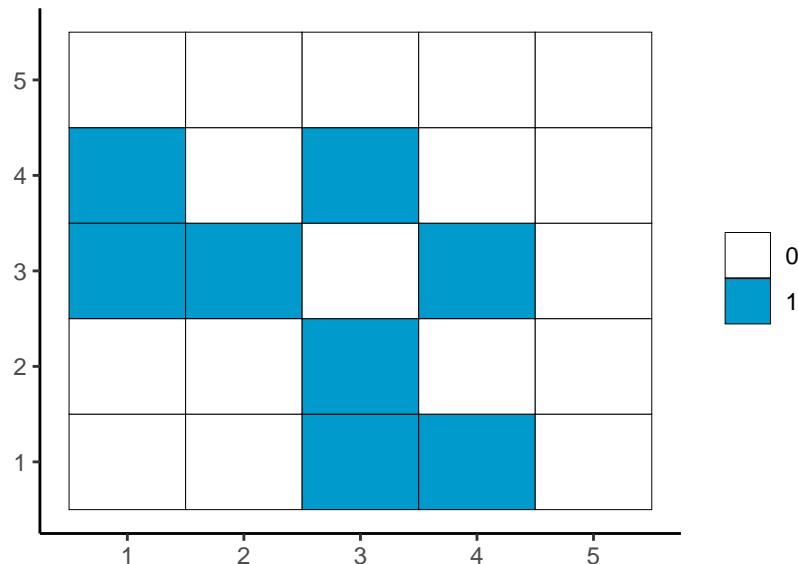
```
##  
## $trial22$unique_graphs[[11]]
```

Graph 5, Individuals 123,...,126



```
##  
## $trial22$unique_graphs[[12]]
```

Graph 6, Individuals 127,...,180

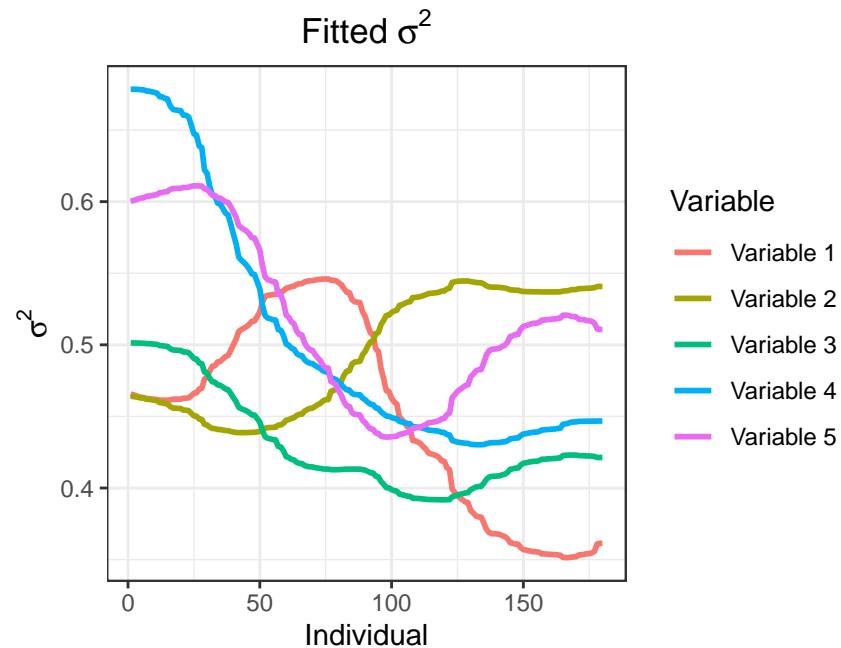


```
##  
##  
## $trial22$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial22$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.45      0.45      0.45      0.05      0.05
##
## $trial22$sigmasq

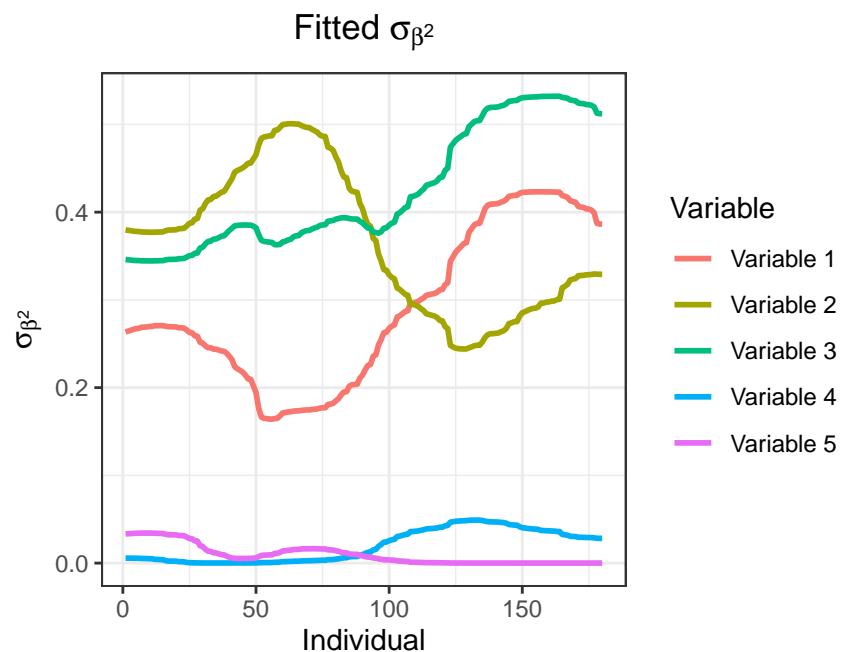
```



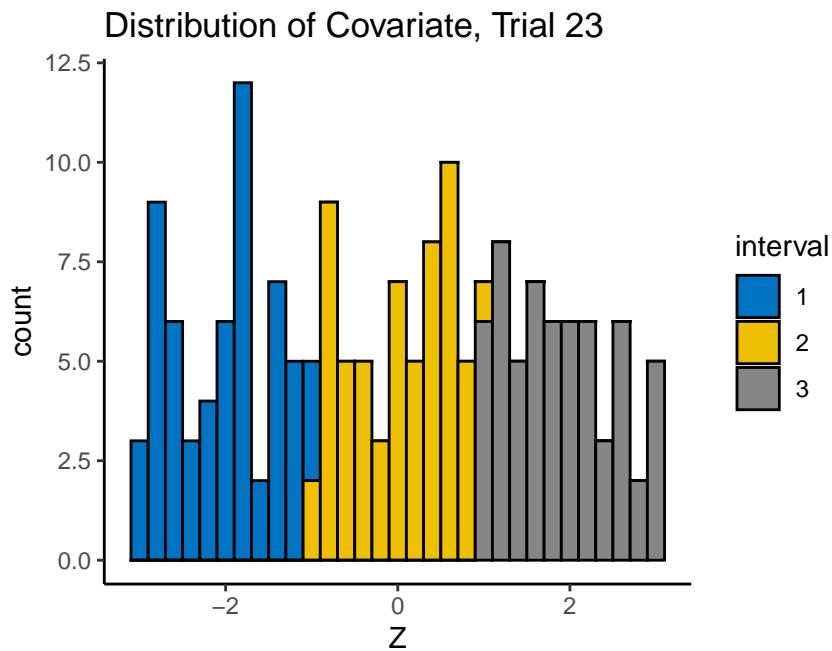
```

## 
## $trial22$sigmabetasq

```



```
##  
##  
## $trial23  
## $trial23$covariates
```



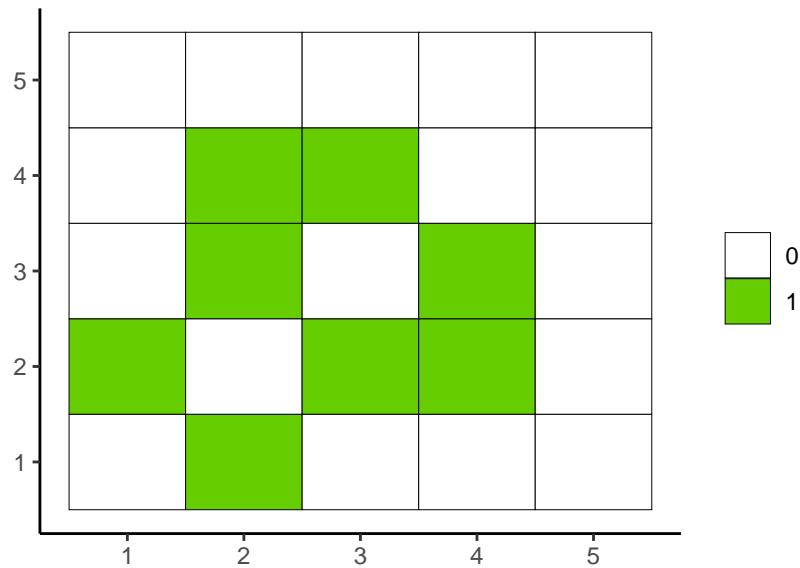
```
##  
## $trial23$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -85276.33 Unique conditional dependence structures: 8  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 3/5 variables  
##  
## Model fit completed in 30.651 secs  
##  
## $trial23$unique_graphs  
## $trial23$unique_graphs$graph1  
## [1] "1,...,24"  
##  
## $trial23$unique_graphs$graph2  
## [1] "25,...,47"  
##  
## $trial23$unique_graphs$graph3  
## [1] "48,...,56"  
##  
## $trial23$unique_graphs$graph4  
## [1] "57,...,81"  
##  
## $trial23$unique_graphs$graph5  
## [1] "82,...,123"  
##  
## $trial23$unique_graphs$graph6
```

```

## [1] "124,...,131"
##
## $trial23$unique_graphs$graph7
## [1] "132,...,167"
##
## $trial23$unique_graphs$graph8
## [1] "168,...,180"
##
## $trial23$unique_graphs[[9]]

```

Graph 1, Individuals 1,...,24

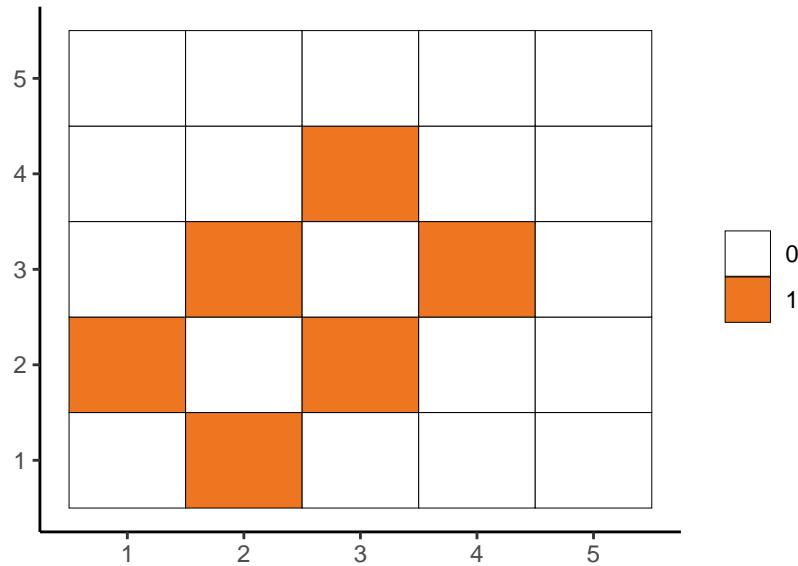


```

##
## $trial23$unique_graphs[[10]]

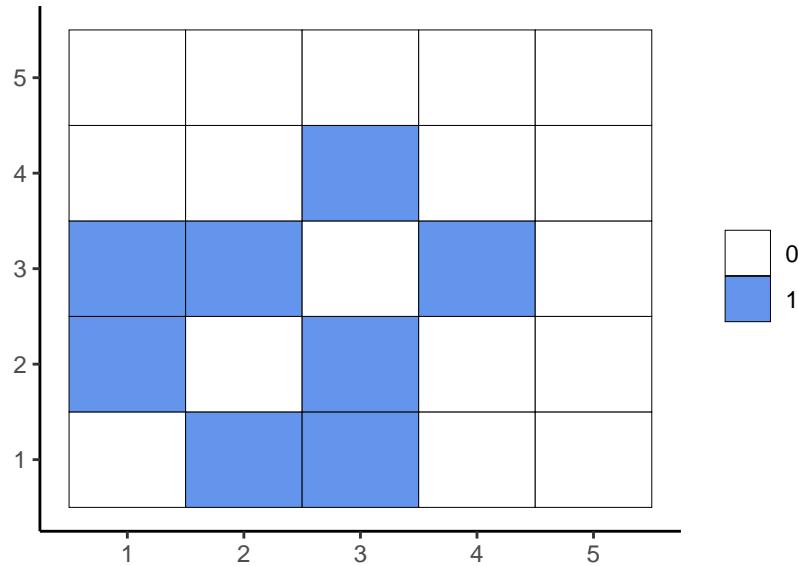
```

Graph 2, Individuals 25,...,47



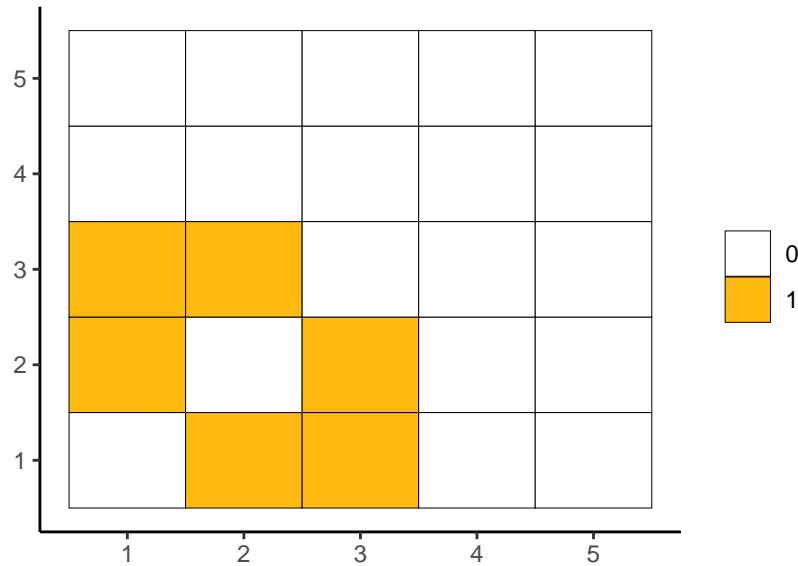
```
##  
## $trial23$unique_graphs[[11]]
```

Graph 3, Individuals 48,...,56



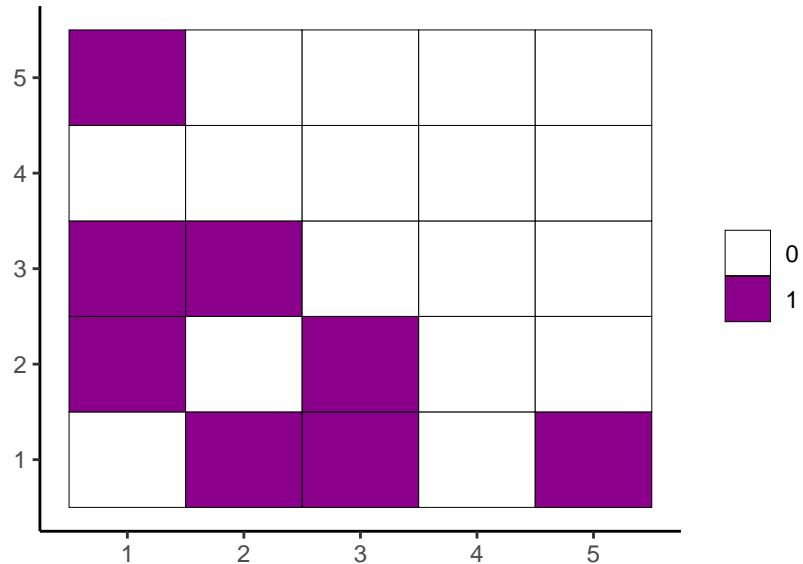
```
##  
## $trial23$unique_graphs[[12]]
```

Graph 4, Individuals 57,...,81



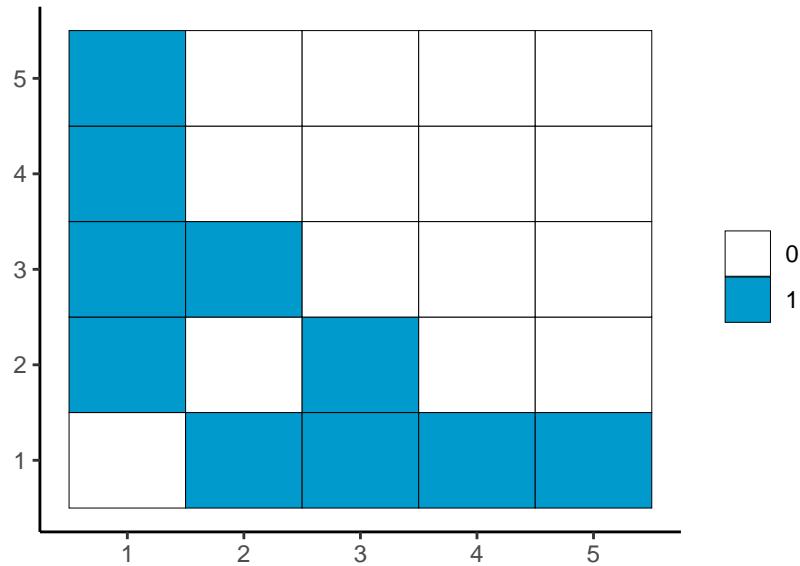
```
##  
## $trial23$unique_graphs[[13]]
```

Graph 5, Individuals 82,...,123



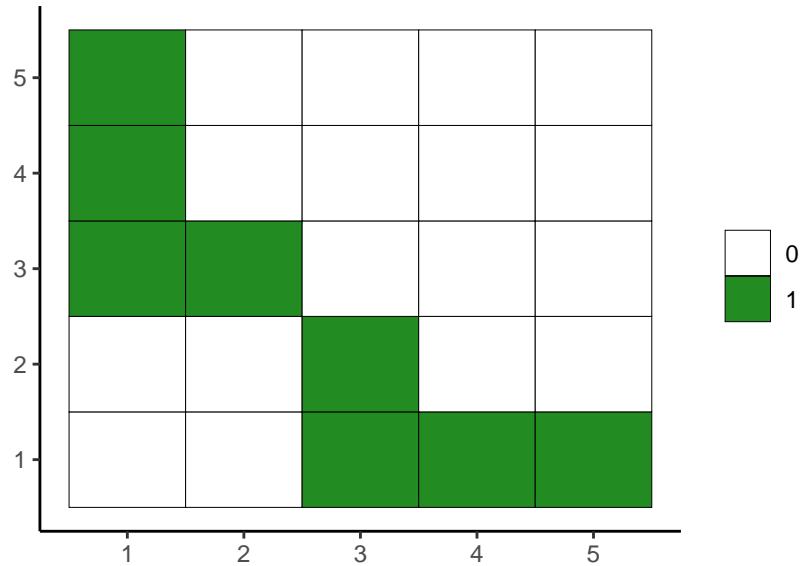
```
##  
## $trial23$unique_graphs[[14]]
```

Graph 6, Individuals 124,...,131



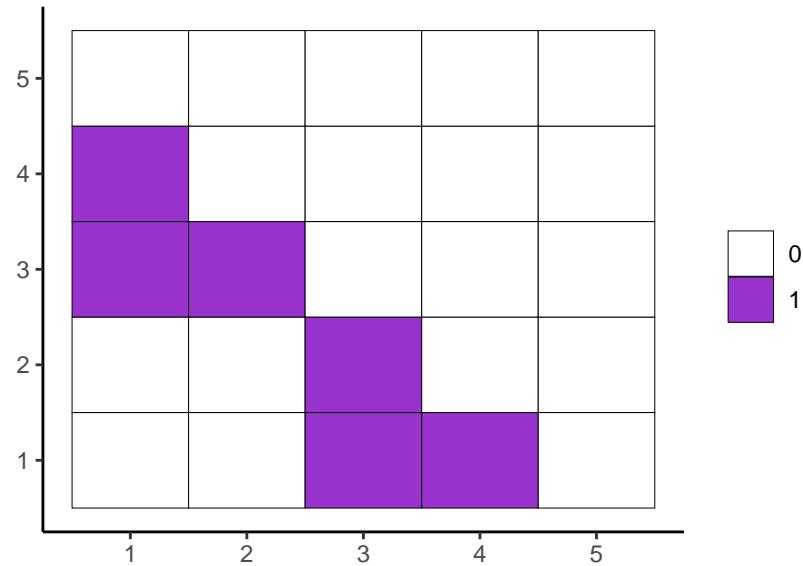
```
##  
## $trial23$unique_graphs[[15]]
```

Graph 7, Individuals 132,...,167

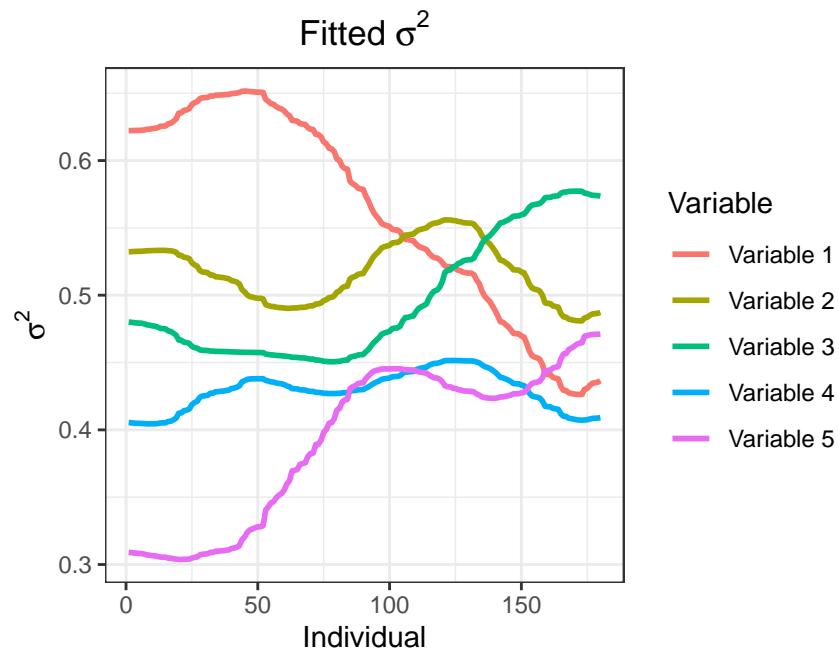


```
##  
## $trial23$unique_graphs[[16]]
```

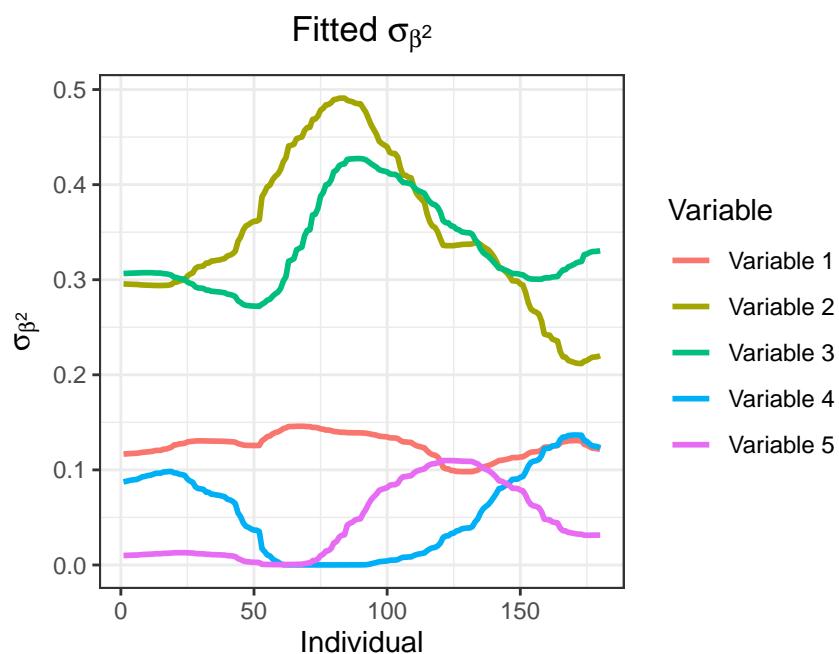
Graph 8, Individuals 168,...,180



```
##  
##  
## $trial23$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial23$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.45      0.45      0.45      0.05      0.05  
##  
## $trial23$sigmasq
```

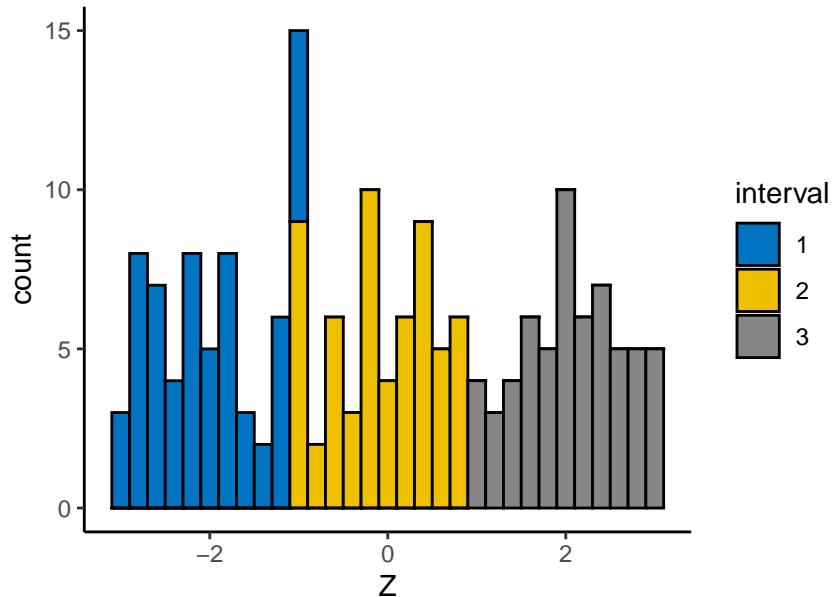


```
##  
## $trial23$sigmabetasq
```



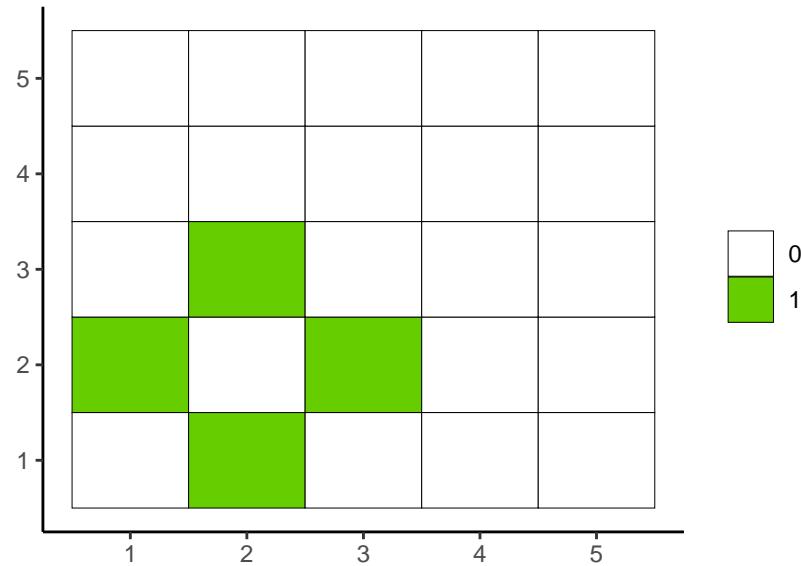
```
##  
##  
## $trial24  
## $trial24$covariates
```

Distribution of Covariate, Trial 24



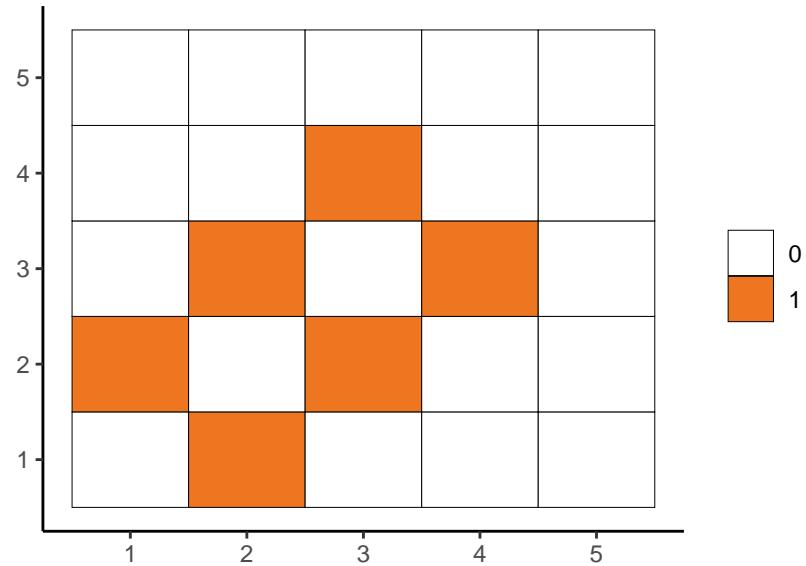
```
##  
## $trial24$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84455.36           Unique conditional dependence structures: 4  
## n: 180, variables: 5           Hyperparameter grid size: 9 points  
## CAVI converged for 2/5 variables  
##  
## Model fit completed in 29.561 secs  
##  
## $trial24$unique_graphs  
## $trial24$unique_graphs$graph1  
## [1] "1,...,43"  
##  
## $trial24$unique_graphs$graph2  
## [1] "44,...,91"  
##  
## $trial24$unique_graphs$graph3  
## [1] "92,...,131"  
##  
## $trial24$unique_graphs$graph4  
## [1] "132,...,180"  
##  
## $trial24$unique_graphs[[5]]
```

Graph 1, Individuals 1,...,43



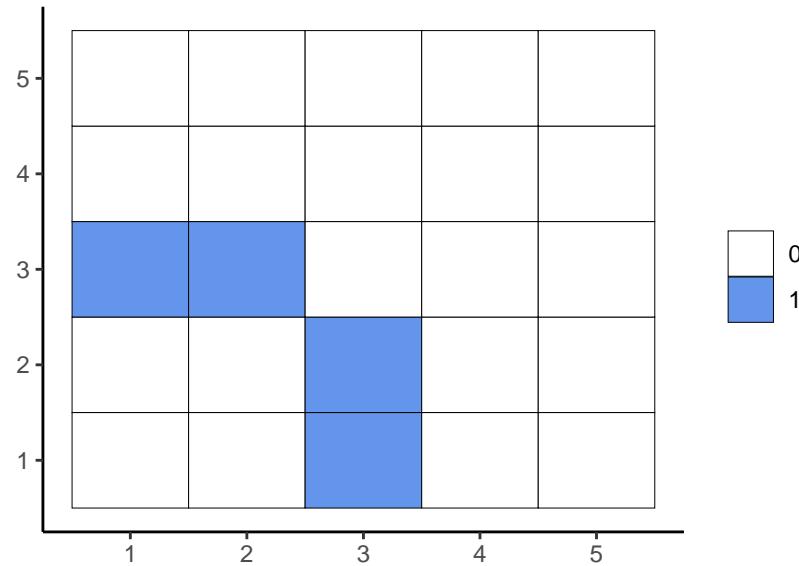
```
##  
## $trial24$unique_graphs[[6]]
```

Graph 2, Individuals 44,...,91



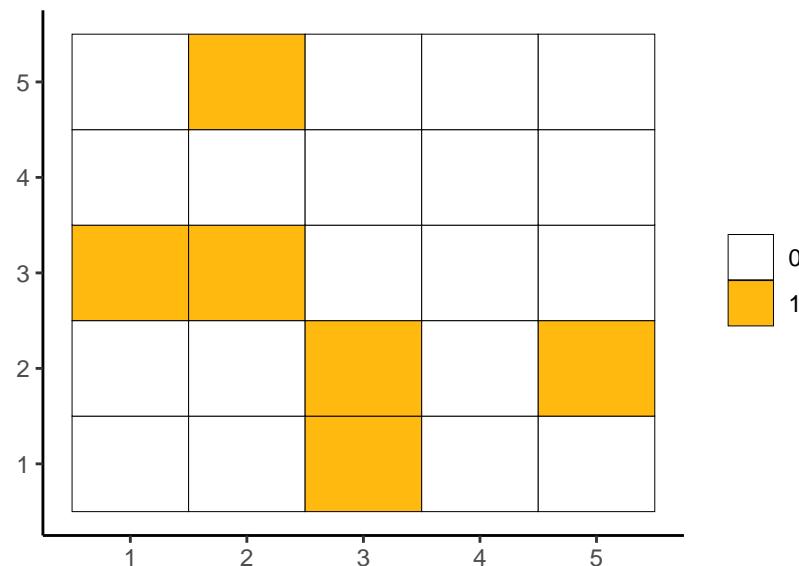
```
##  
## $trial24$unique_graphs[[7]]
```

Graph 3, Individuals 92,...,131



```
##  
## $trial24$unique_graphs[[8]]
```

Graph 4, Individuals 132,...,180

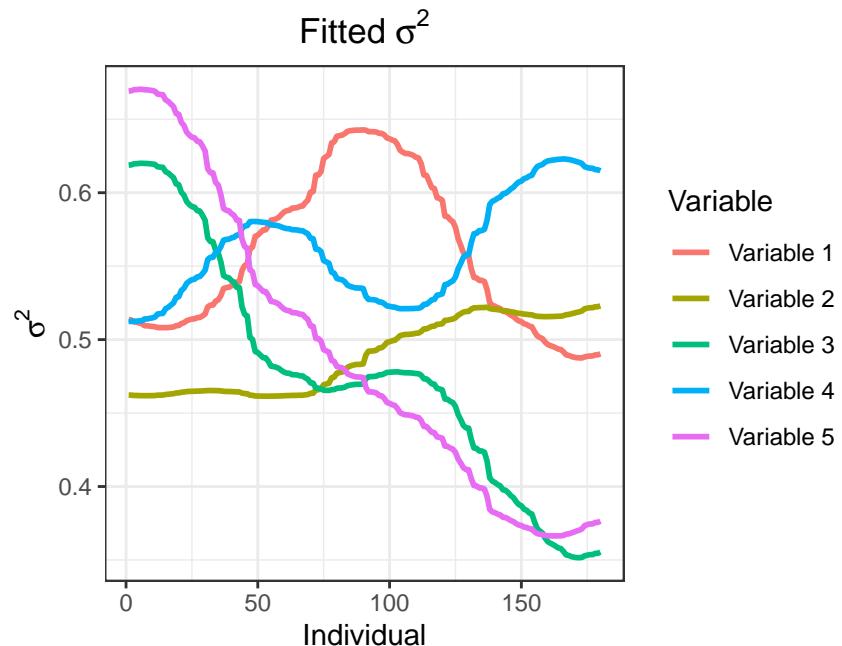


```
##  
##  
## $trial24$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial24$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.30      0.45      0.45      0.05      0.45
##
## $trial24$sigmasq

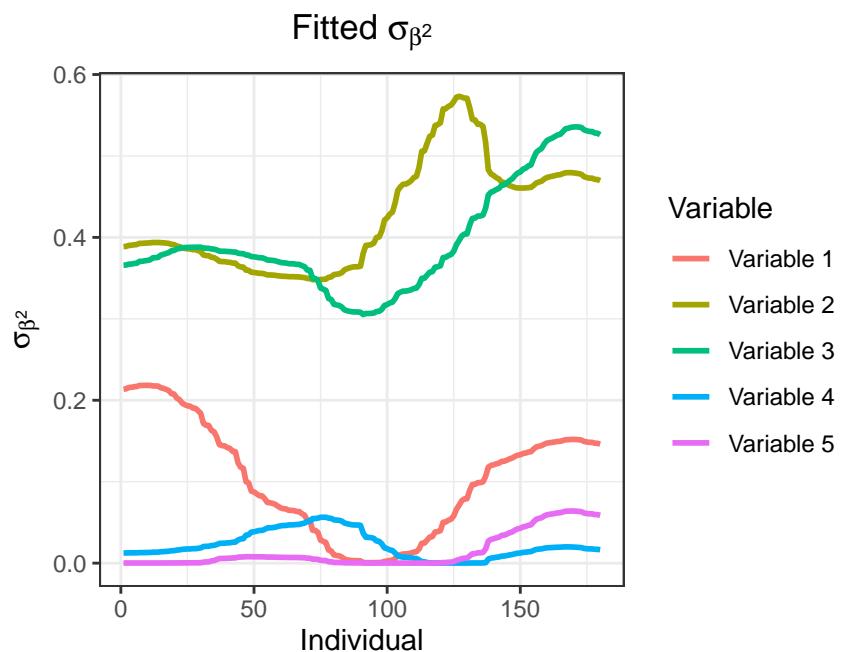
```



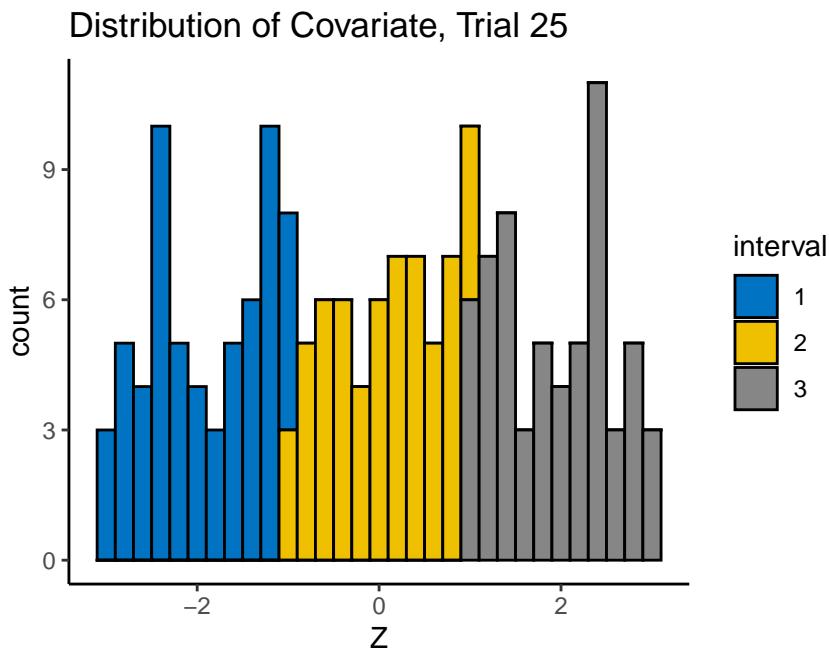
```

## 
## $trial24$sigmabetasq

```



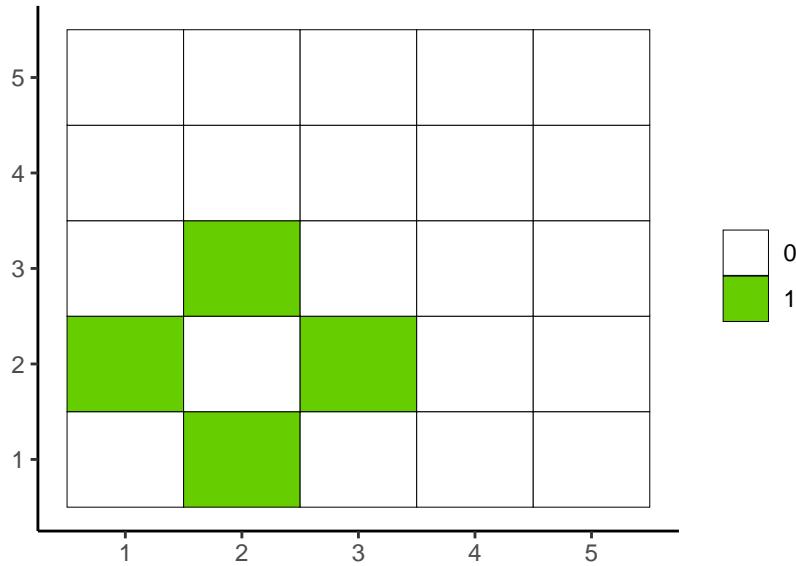
```
##  
##  
## $trial25  
## $trial25$covariates
```



```
##  
## $trial25$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84971.5 Unique conditional dependence structures: 6  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 2/5 variables  
##  
## Model fit completed in 33.647 secs  
##  
## $trial25$unique_graphs  
## $trial25$unique_graphs$graph1  
## [1] "1,2"  
##  
## $trial25$unique_graphs$graph2  
## [1] "3,...,27"  
##  
## $trial25$unique_graphs$graph3  
## [1] "28,...,44"  
##  
## $trial25$unique_graphs$graph4  
## [1] "45,...,102"  
##  
## $trial25$unique_graphs$graph5  
## [1] "103,...,142"  
##  
## $trial25$unique_graphs$graph6
```

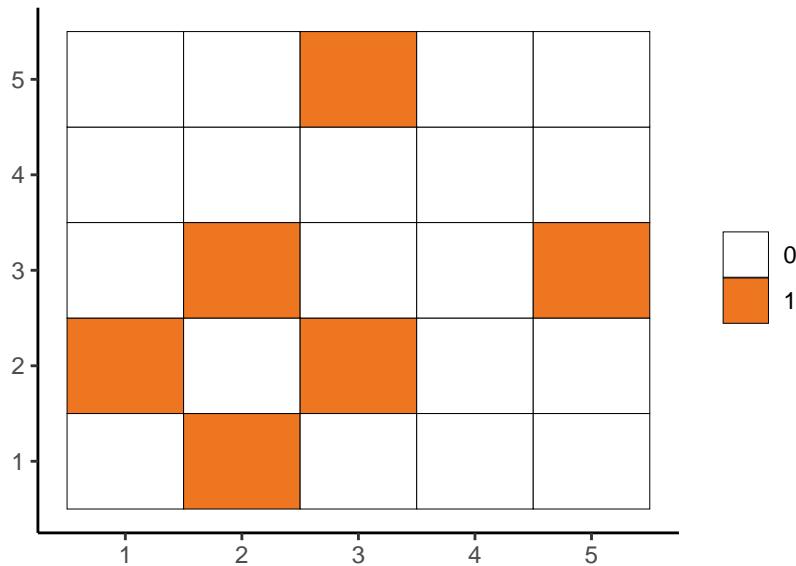
```
## [1] "143,...,180"  
##  
## $trial25$unique_graphs[[7]]
```

Graph 1, Individuals 1,2



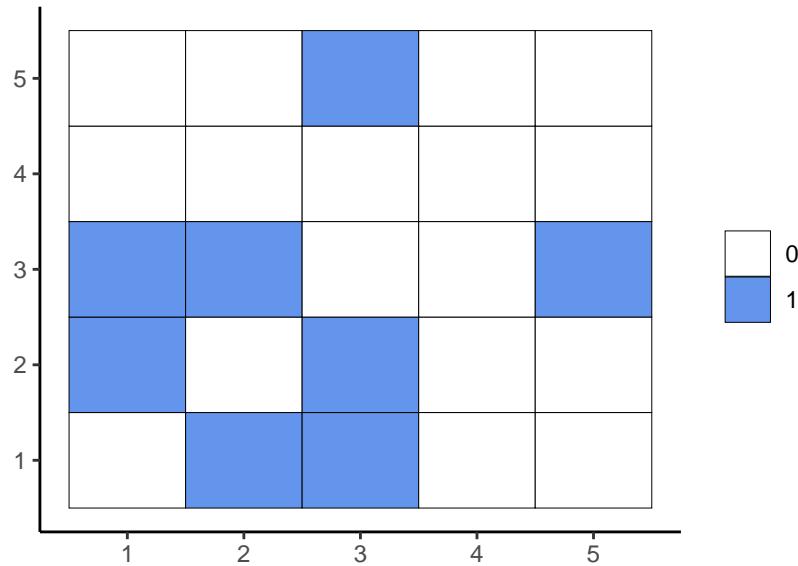
```
##  
## $trial25$unique_graphs[[8]]
```

Graph 2, Individuals 3,...,27



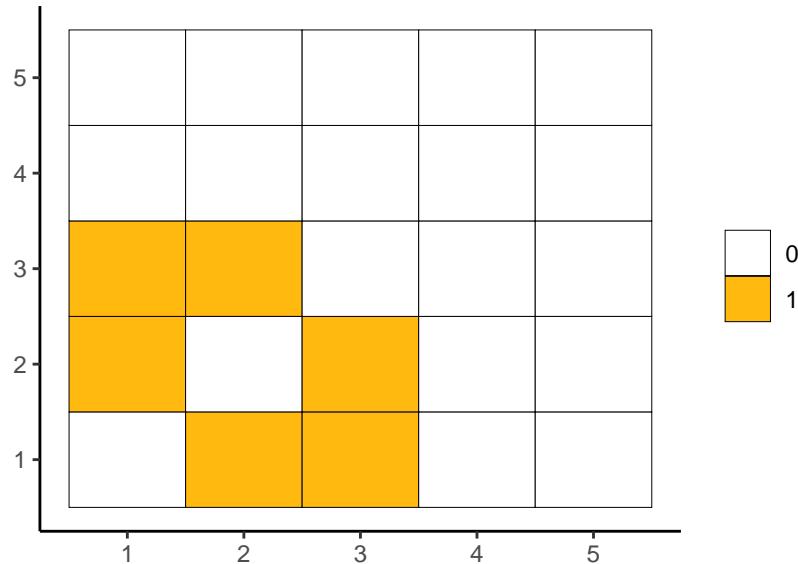
```
##  
## $trial25$unique_graphs[[9]]
```

Graph 3, Individuals 28,...,44



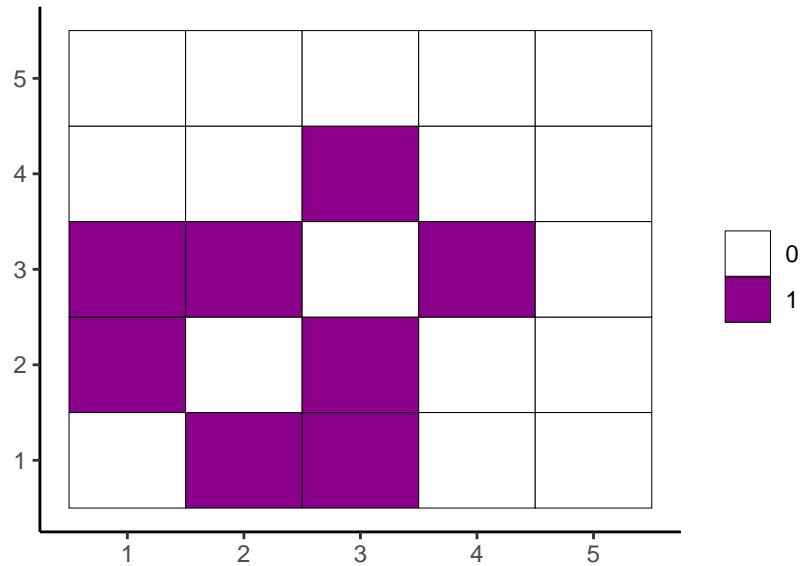
```
##  
## $trial25$unique_graphs[[10]]
```

Graph 4, Individuals 45,...,102



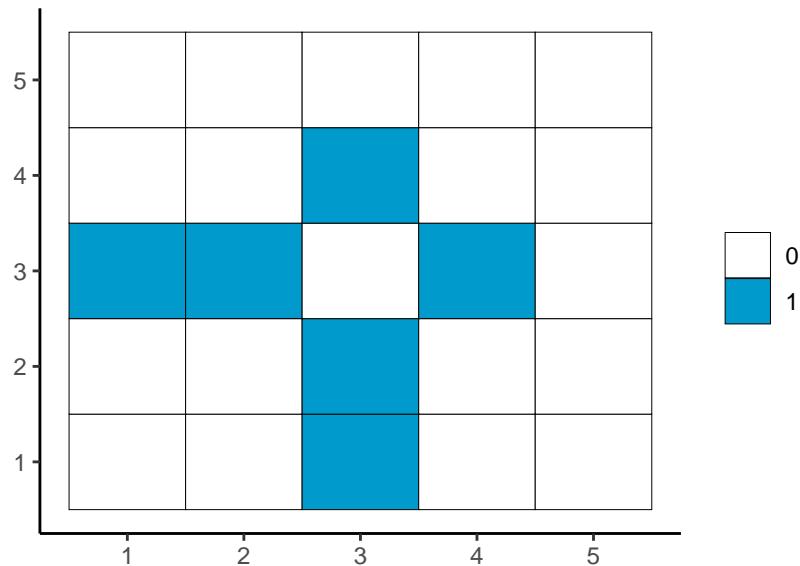
```
##  
## $trial25$unique_graphs[[11]]
```

Graph 5, Individuals 103,...,142



```
##  
## $trial25$unique_graphs[[12]]
```

Graph 6, Individuals 143,...,180

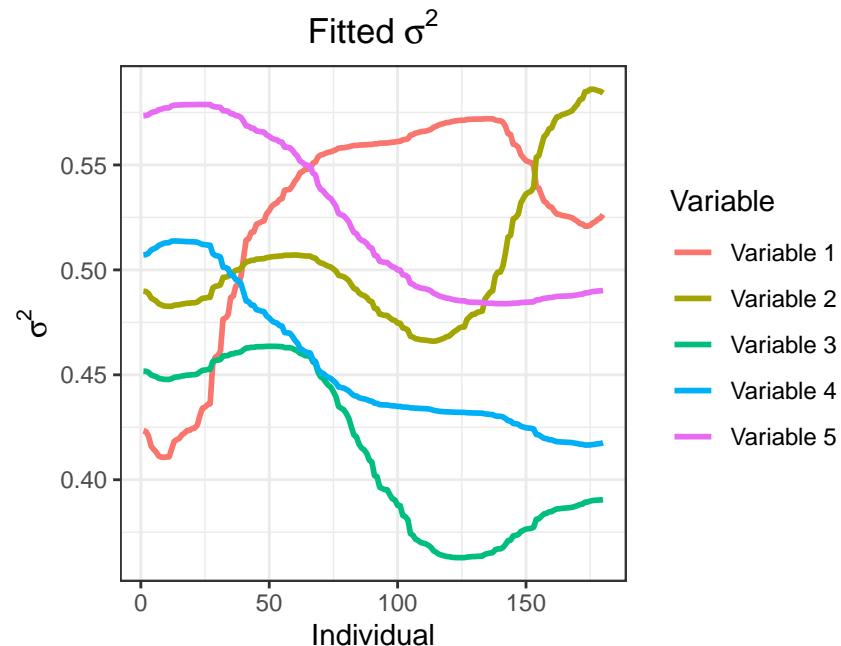


```
##  
##  
## $trial25$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial25$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.45      0.45      0.45      0.15      0.05
##
## $trial25$sigmasq

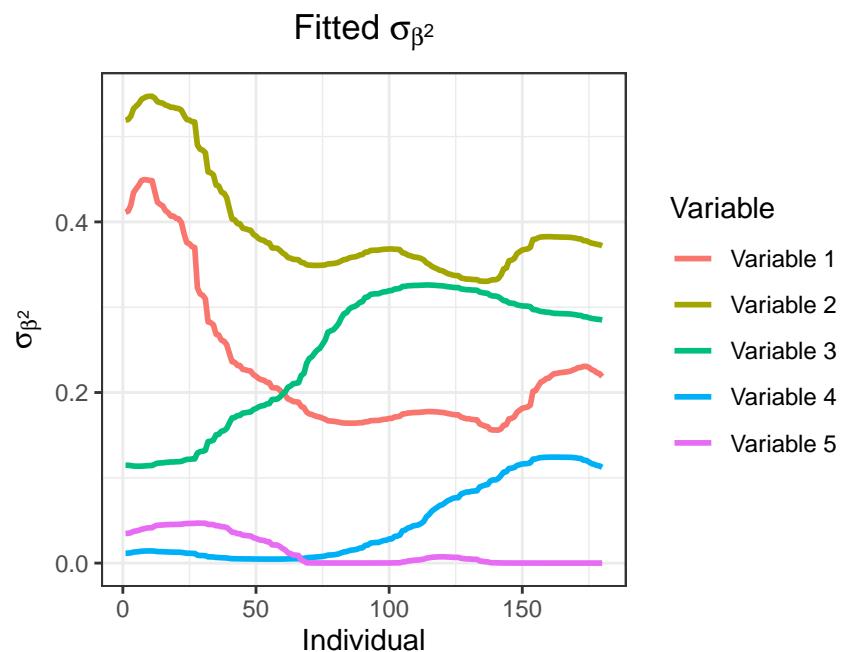
```



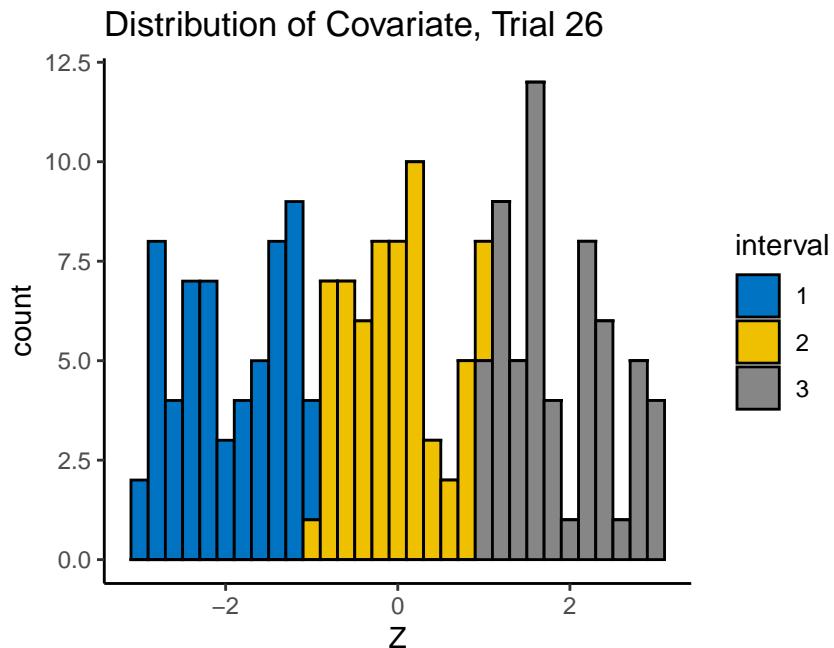
```

## 
## $trial25$sigmabetasq

```

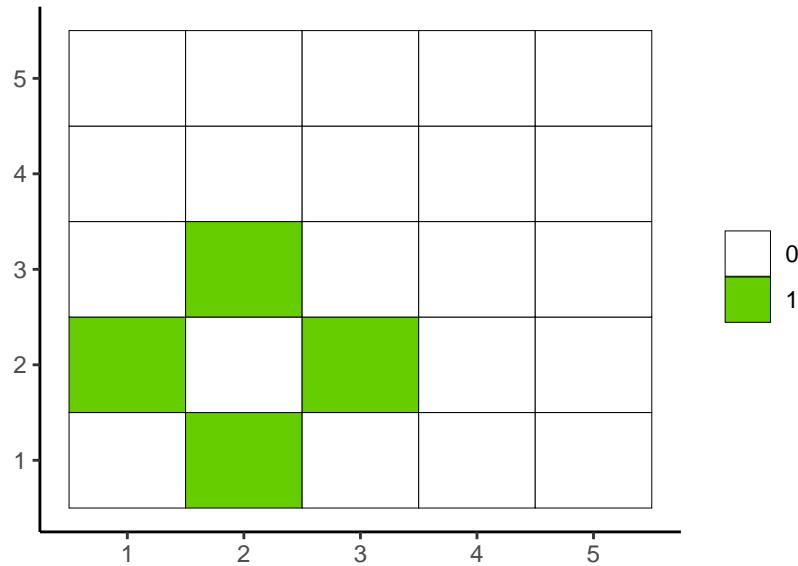


```
##  
##  
## $trial26  
## $trial26$covariates
```



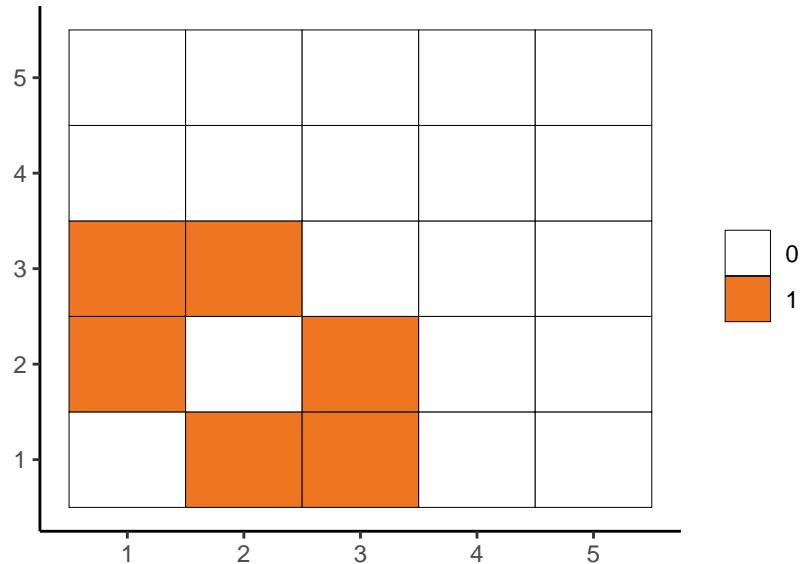
```
##  
## $trial26$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84313.46 Unique conditional dependence structures: 3  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 3/5 variables  
##  
## Model fit completed in 28.625 secs  
##  
## $trial26$unique_graphs  
## $trial26$unique_graphs$graph1  
## [1] "1,22,...,60"  
##  
## $trial26$unique_graphs$graph2  
## [1] "2,...,21,61,...,127"  
##  
## $trial26$unique_graphs$graph3  
## [1] "128,...,180"  
##  
## $trial26$unique_graphs[[4]]
```

Graph 1, Individuals 1,22,...,60



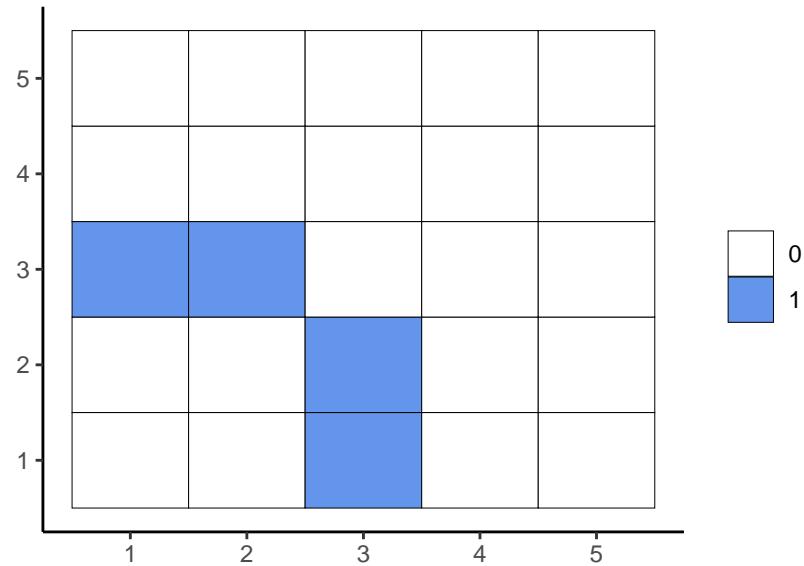
```
##  
## $trial26$unique_graphs[[5]]
```

Graph 2, Individuals 2,...,21,61,...,127

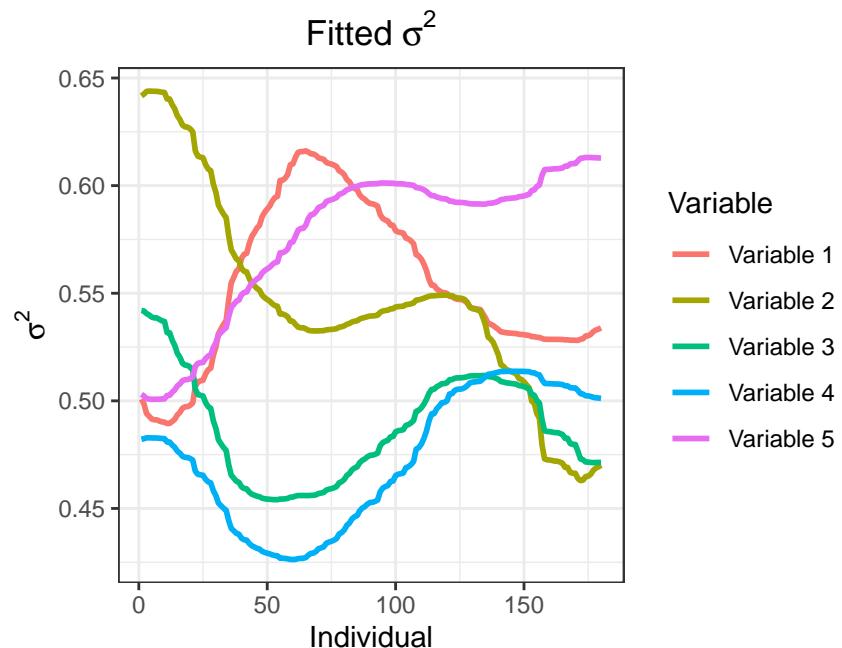


```
##  
## $trial26$unique_graphs[[6]]
```

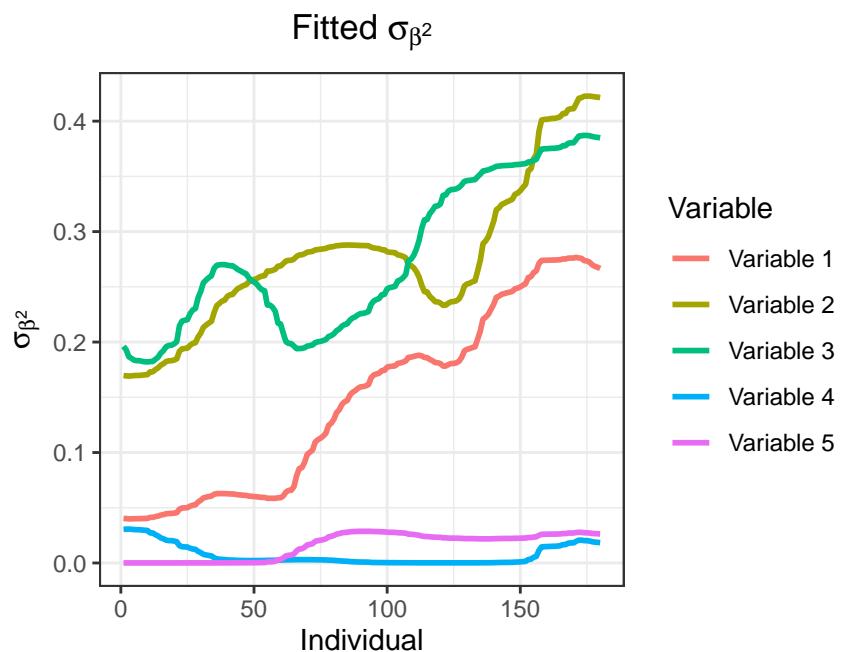
Graph 3, Individuals 128,...,180



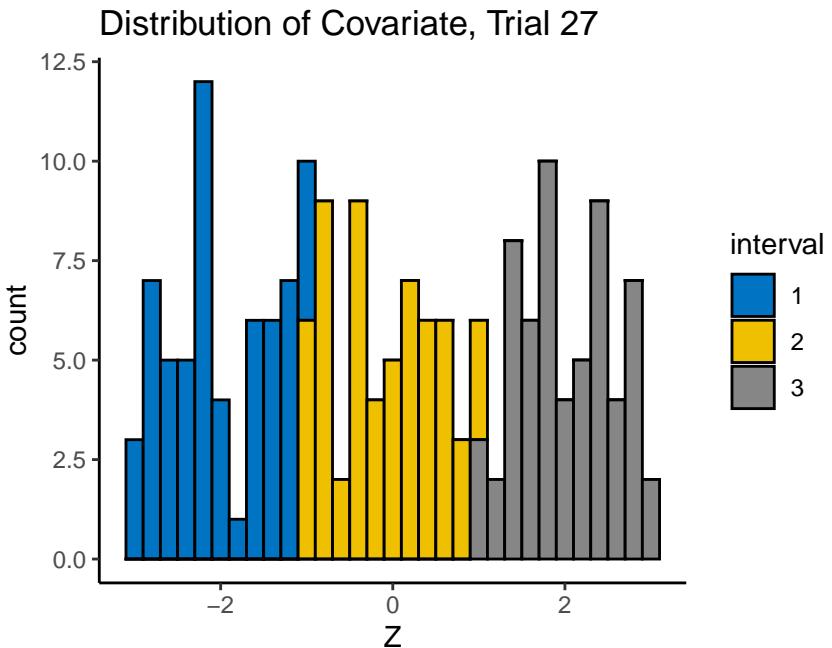
```
##  
##  
## $trial26$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial26$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.45      0.45      0.45      0.05      0.05  
##  
## $trial26$sigmasq
```



```
##  
## $trial26$sigmabetasq
```



```
##  
##  
## $trial27  
## $trial27$covariates
```

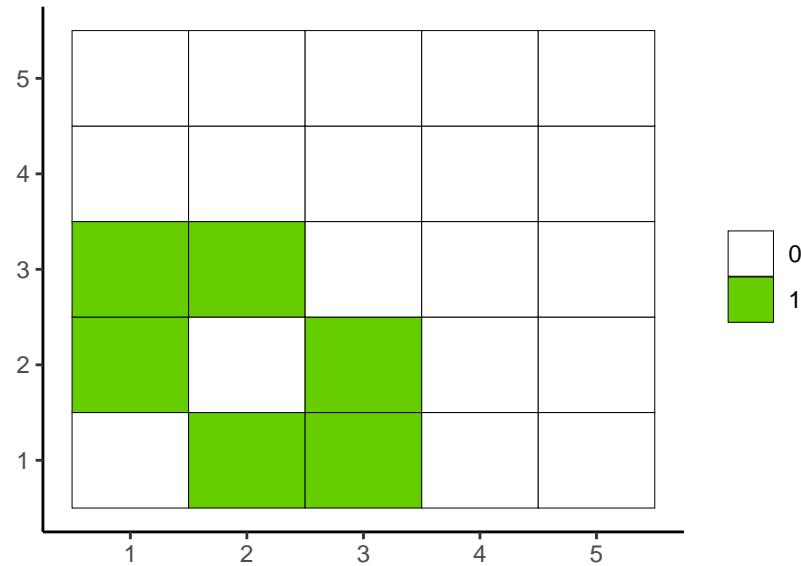


```

## 
## $trial27$summary
##                               Covariate Dependent Graphical Model
## 
## Model ELBO: -84555.4           Unique conditional dependence structures: 5
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 2/5 variables
## 
## Model fit completed in 34.974 secs
## 
## $trial27$unique_graphs
## $trial27$unique_graphs$graph1
## [1] "1,...,10,20,...,53"
## 
## $trial27$unique_graphs$graph2
## [1] "11,...,19"
## 
## $trial27$unique_graphs$graph3
## [1] "54,...,95"
## 
## $trial27$unique_graphs$graph4
## [1] "96,...,100,127,...,180"
## 
## $trial27$unique_graphs$graph5
## [1] "101,...,126"
## 
## $trial27$unique_graphs[[6]]

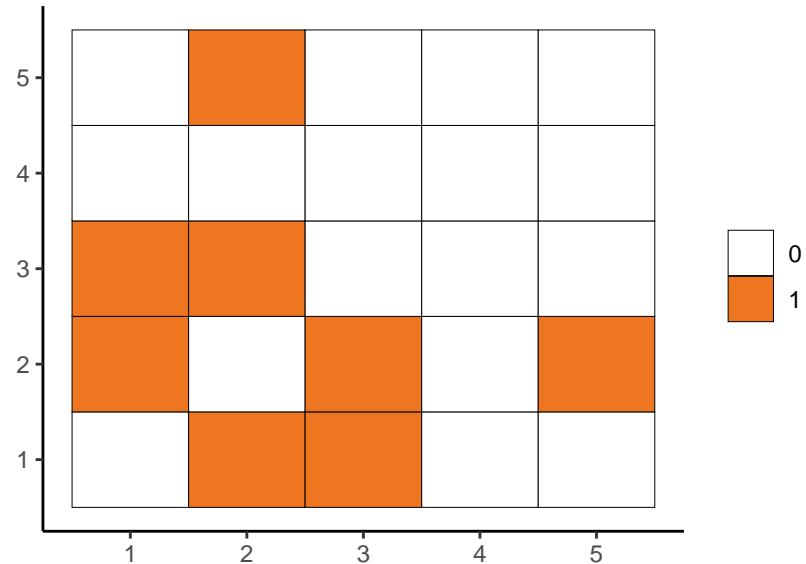
```

Graph 1, Individuals 1,...,10,20,...,53



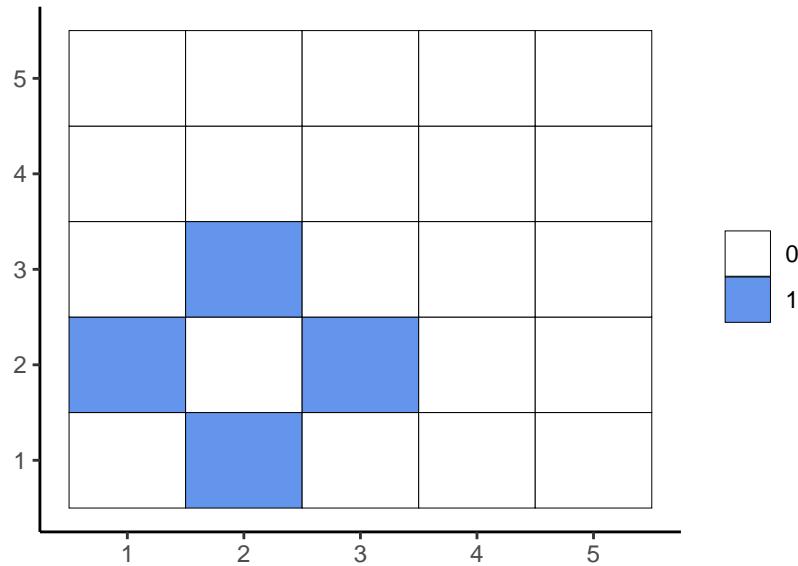
```
##  
## $trial27$unique_graphs[[7]]
```

Graph 2, Individuals 11,...,19



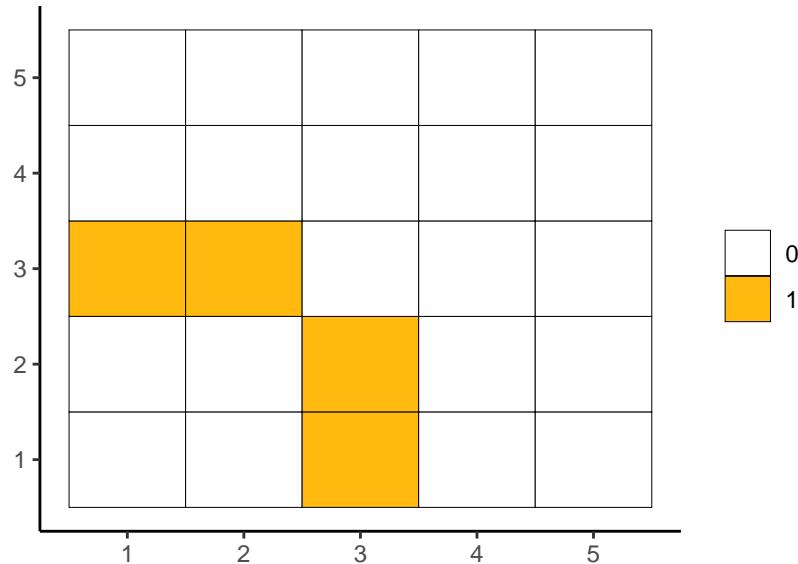
```
##  
## $trial27$unique_graphs[[8]]
```

Graph 3, Individuals 54,...,95



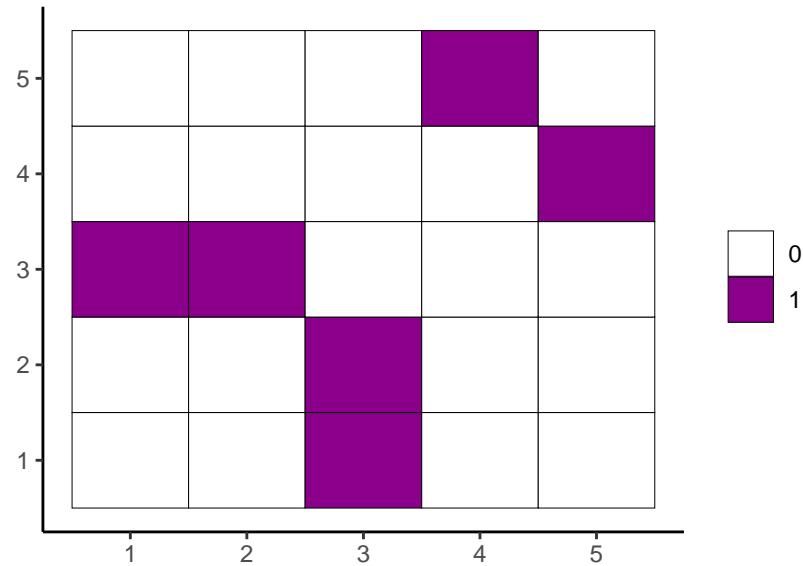
```
##  
## $trial27$unique_graphs[[9]]
```

Graph 4, Individuals 96,...,100,127,...,180

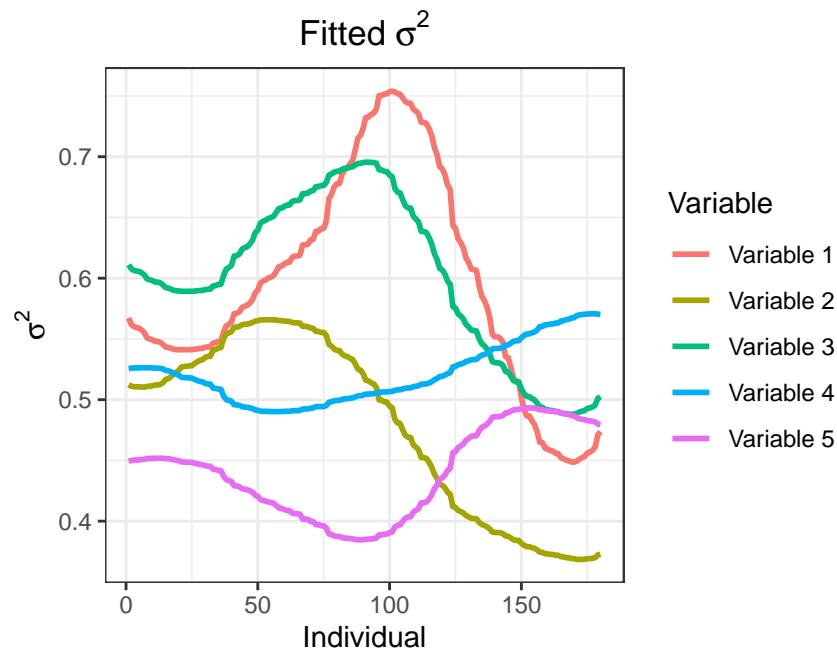


```
##  
## $trial27$unique_graphs[[10]]
```

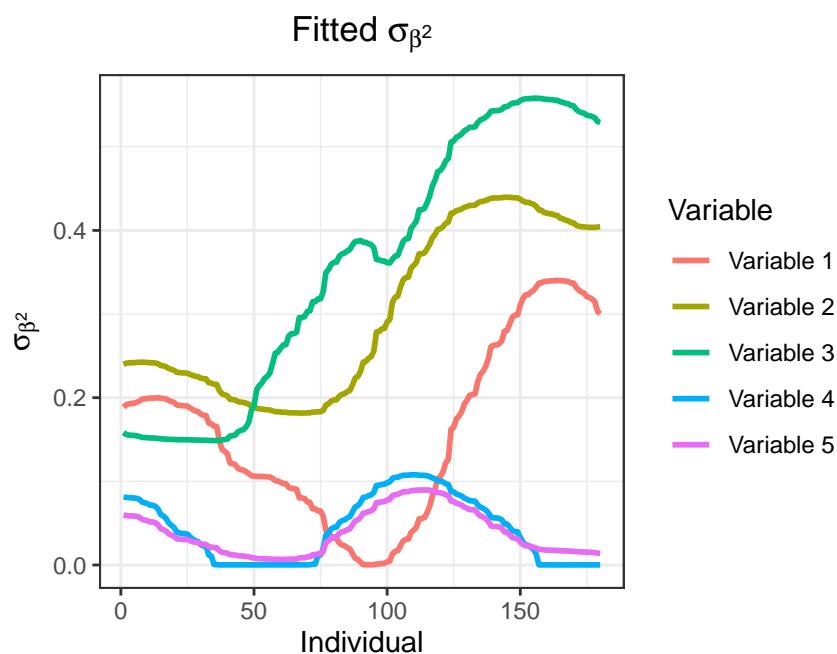
Graph 5, Individuals 101,...,126



```
##  
##  
## $trial27$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial27$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.45      0.45      0.45      0.05      0.05  
##  
## $trial27$sigmasq
```

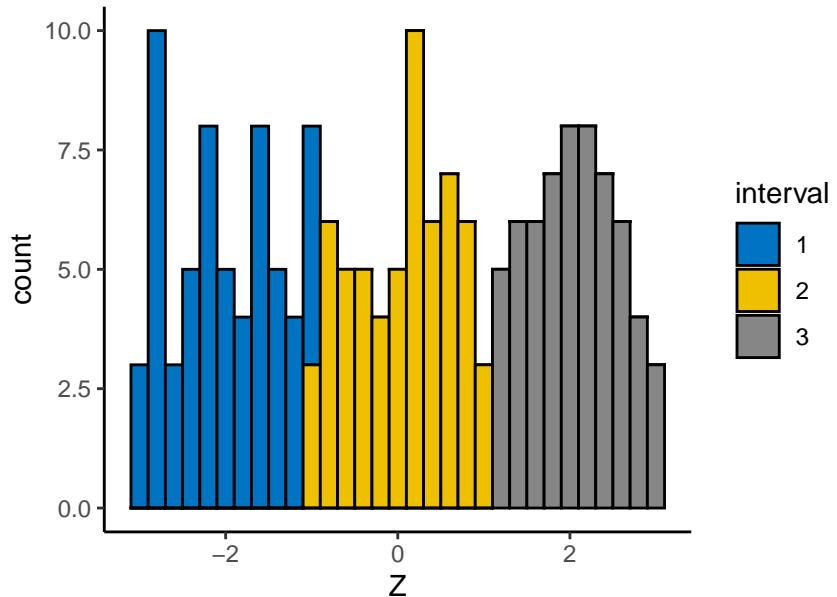


```
##  
## $trial27$sigmabetasq
```



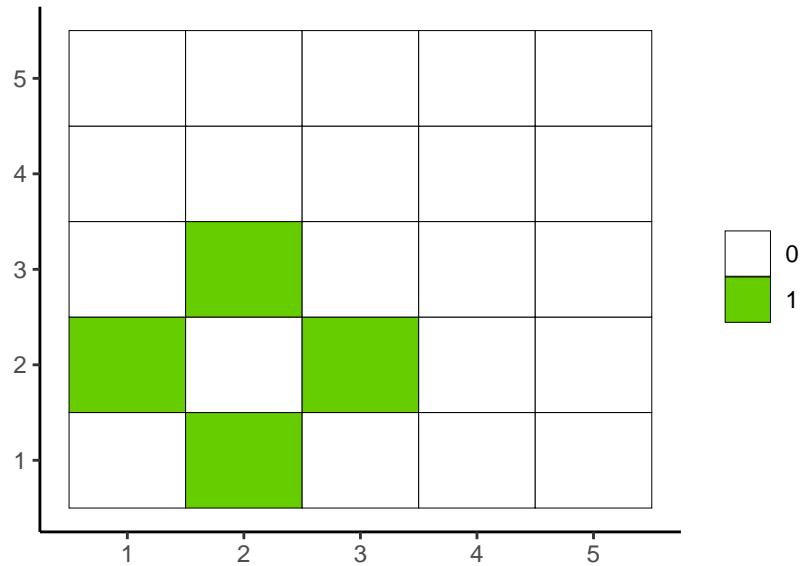
```
##  
##  
## $trial28  
## $trial28$covariates
```

Distribution of Covariate, Trial 28



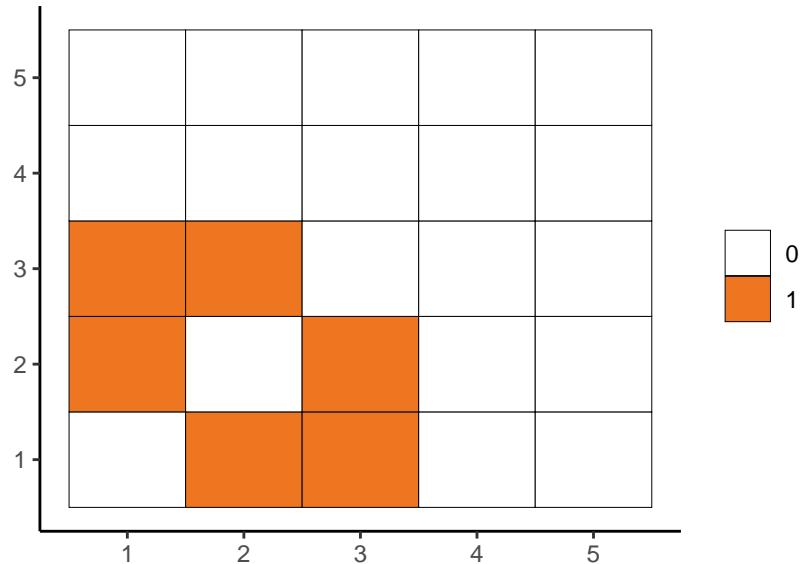
```
##
## $trial28$summary
## Covariate Dependent Graphical Model
##
## Model ELBO: -84249.38           Unique conditional dependence structures: 3
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 2/5 variables
##
## Model fit completed in 31.517 secs
##
## $trial28$unique_graphs
## $trial28$unique_graphs$graph1
## [1] "1,...,74"
##
## $trial28$unique_graphs$graph2
## [1] "75,...,87,138,...,176"
##
## $trial28$unique_graphs$graph3
## [1] "88,...,137,177,...,180"
##
## $trial28$unique_graphs[[4]]
```

Graph 1, Individuals 1,...,74



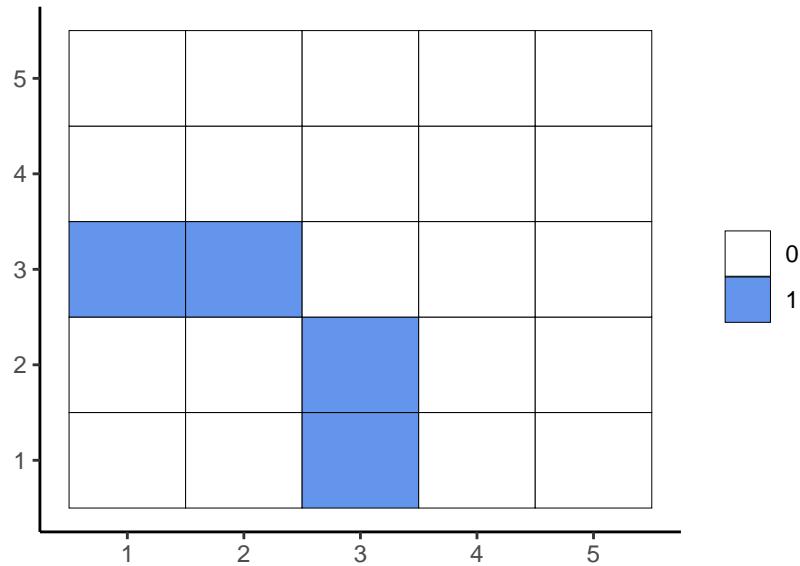
```
##  
## $trial28$unique_graphs[[5]]
```

Graph 2, Individuals 75,...,87,138,...,176

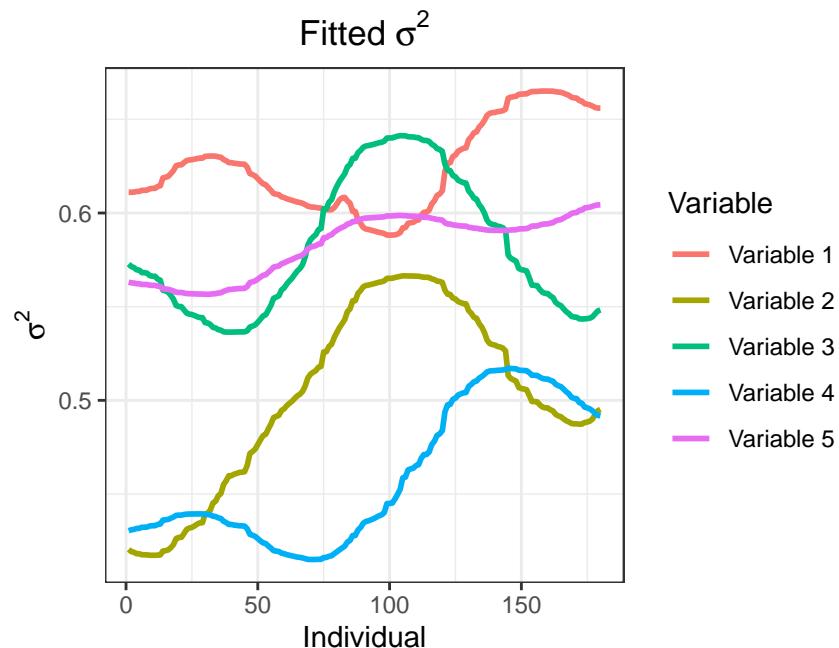


```
##  
## $trial28$unique_graphs[[6]]
```

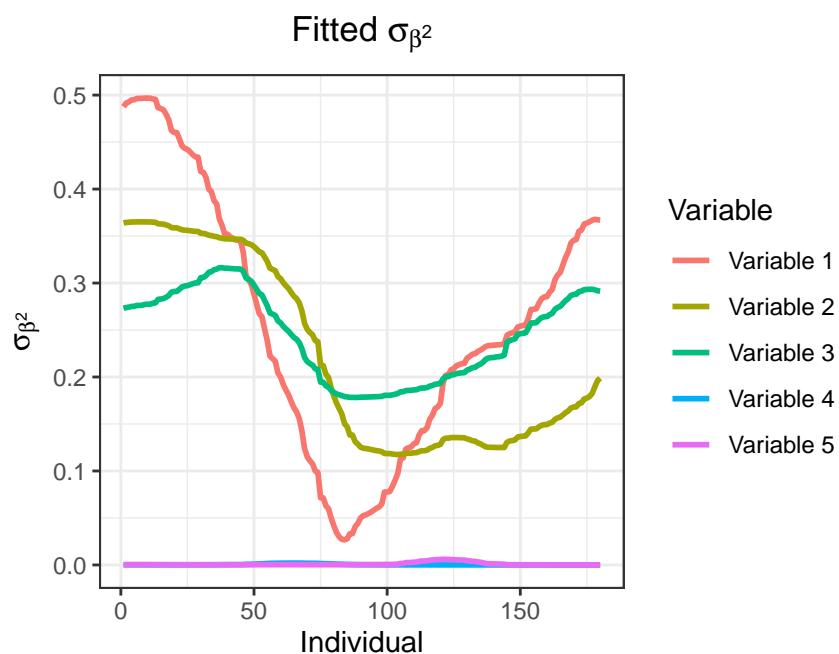
Graph 3, Individuals 88,...,137,177,...,180



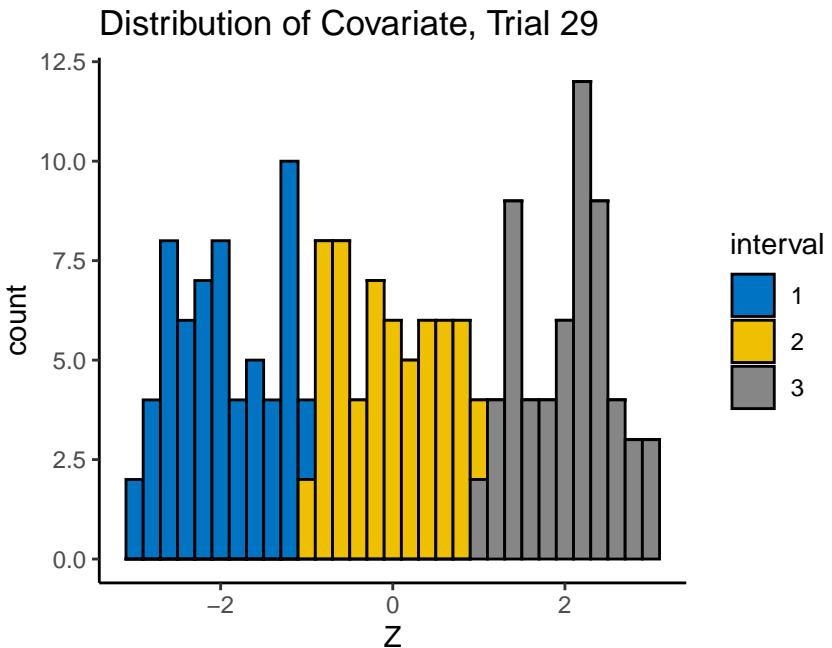
```
##  
##  
## $trial28$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial28$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.20      0.45      0.45      0.05      0.05  
##  
## $trial28$sigmasq
```



```
##  
## $trial28$sigmabetasq
```

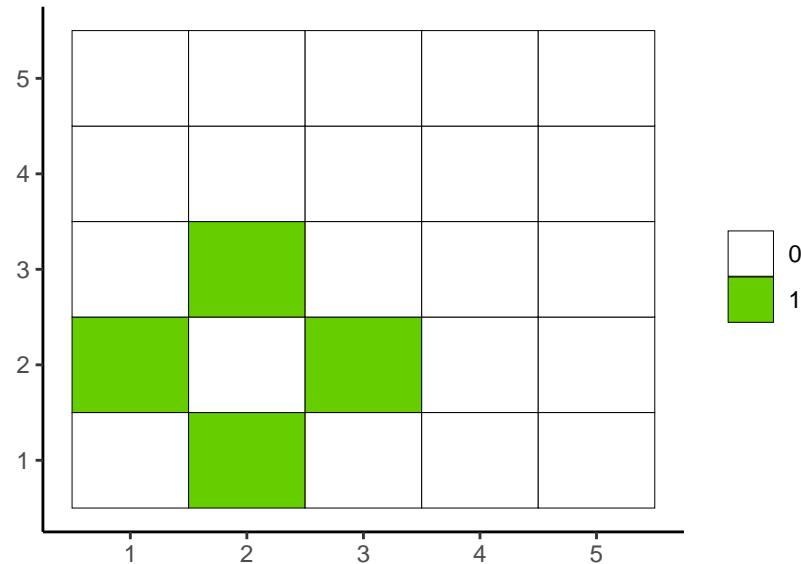


```
##  
##  
## $trial29  
## $trial29$covariates
```



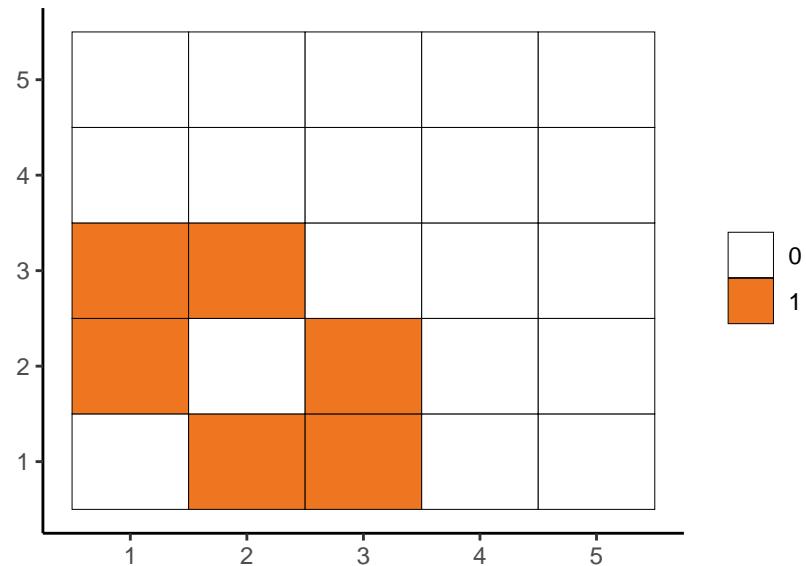
```
##  
## $trial29$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84597.57           Unique conditional dependence structures: 4  
## n: 180, variables: 5           Hyperparameter grid size: 9 points  
## CAVI converged for 3/5 variables  
##  
## Model fit completed in 29.16 secs  
##  
## $trial29$unique_graphs  
## $trial29$unique_graphs$graph1  
## [1] "1,...,63"  
##  
## $trial29$unique_graphs$graph2  
## [1] "64,...,126"  
##  
## $trial29$unique_graphs$graph3  
## [1] "127,...,168,175,...,180"  
##  
## $trial29$unique_graphs$graph4  
## [1] "169,...,174"  
##  
## $trial29$unique_graphs[[5]]
```

Graph 1, Individuals 1,...,63



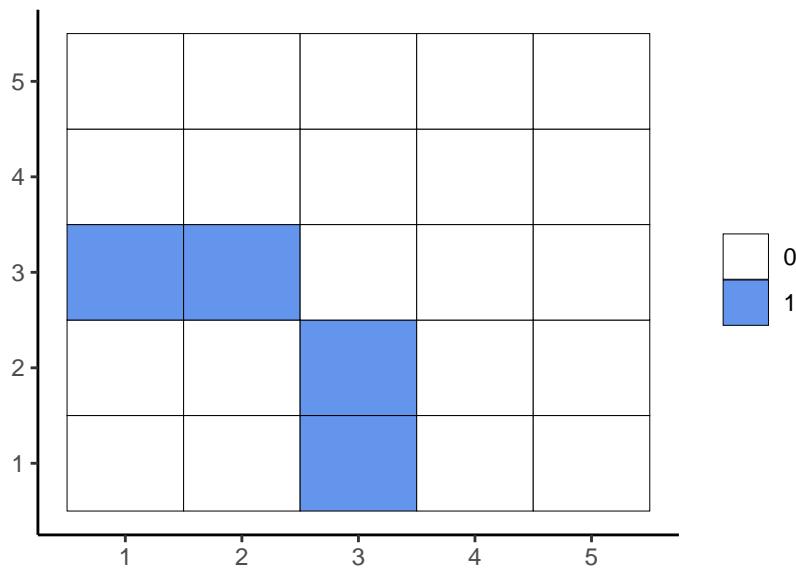
```
##  
## $trial29$unique_graphs[[6]]
```

Graph 2, Individuals 64,...,126



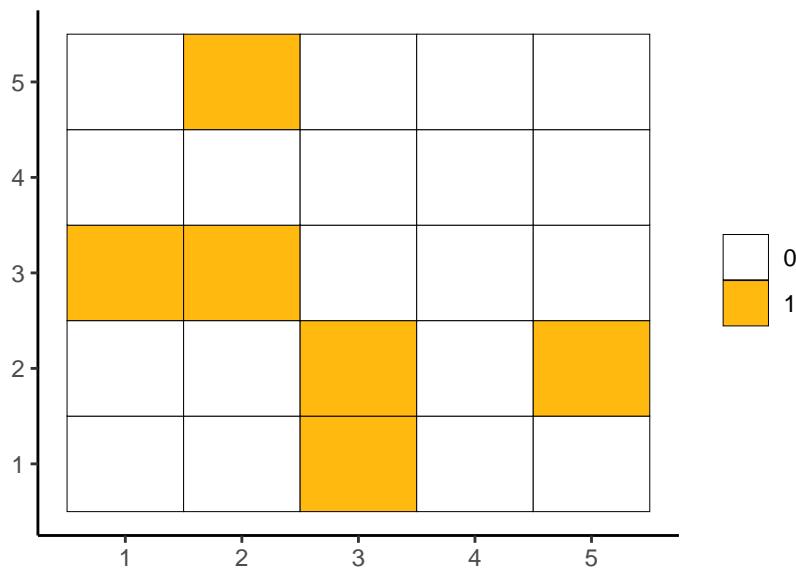
```
##  
## $trial29$unique_graphs[[7]]
```

Graph 3, Individuals 127,...,168,175,...,180



```
##  
## $trial29$unique_graphs[[8]]
```

Graph 4, Individuals 169,...,174

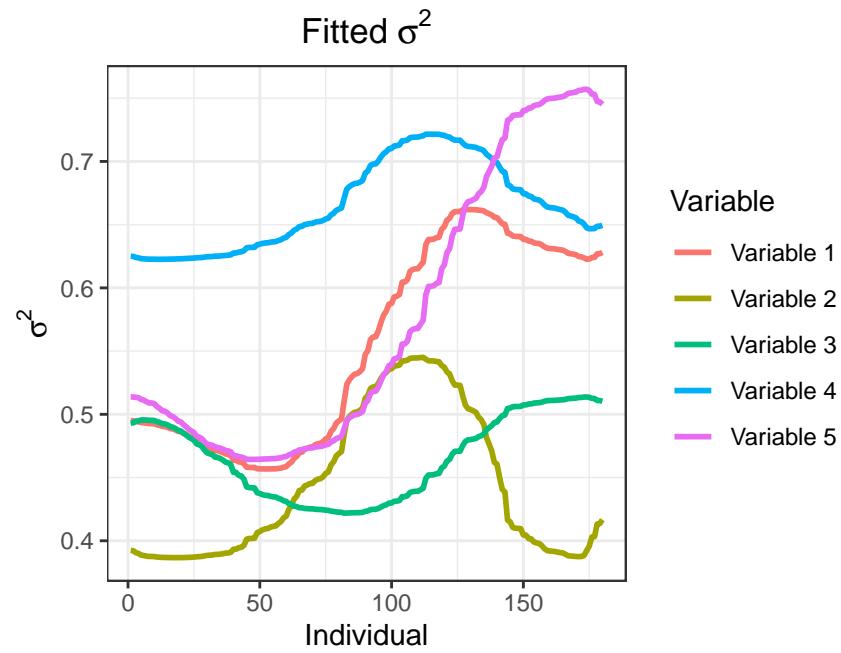


```
##  
##  
## $trial29$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial29$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.35      0.45      0.45      0.05      0.05
##
## $trial29$sigmasq

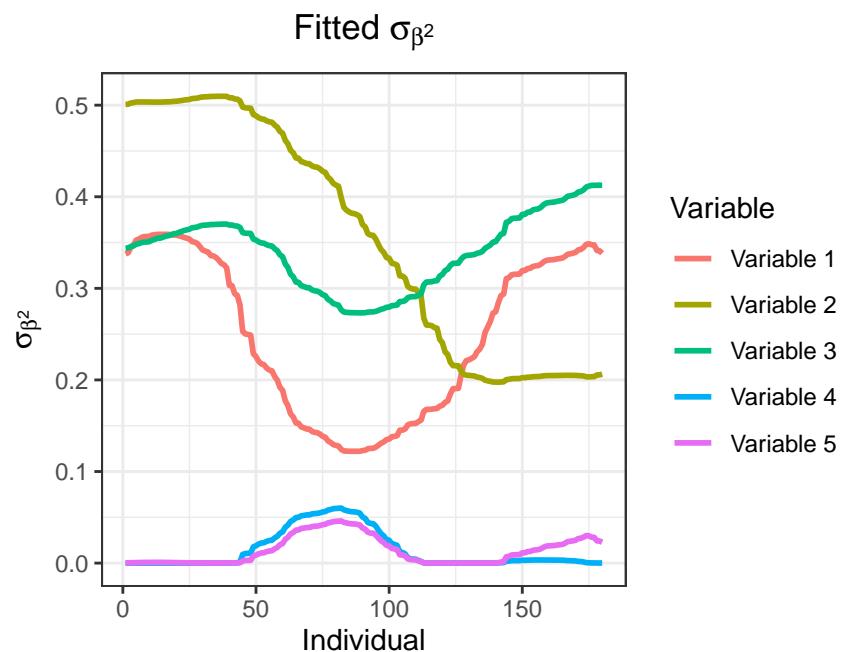
```



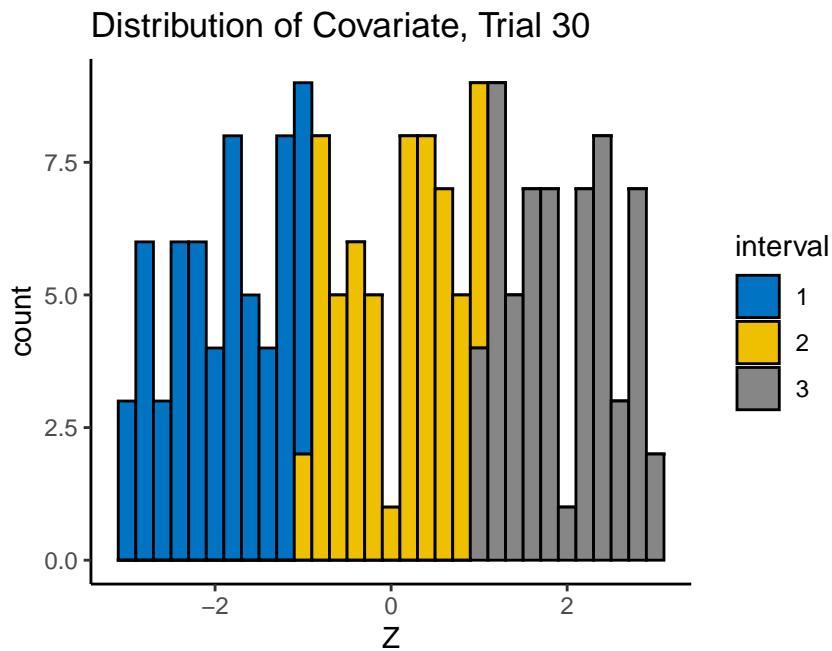
```

## $trial29$sigmabetasq

```

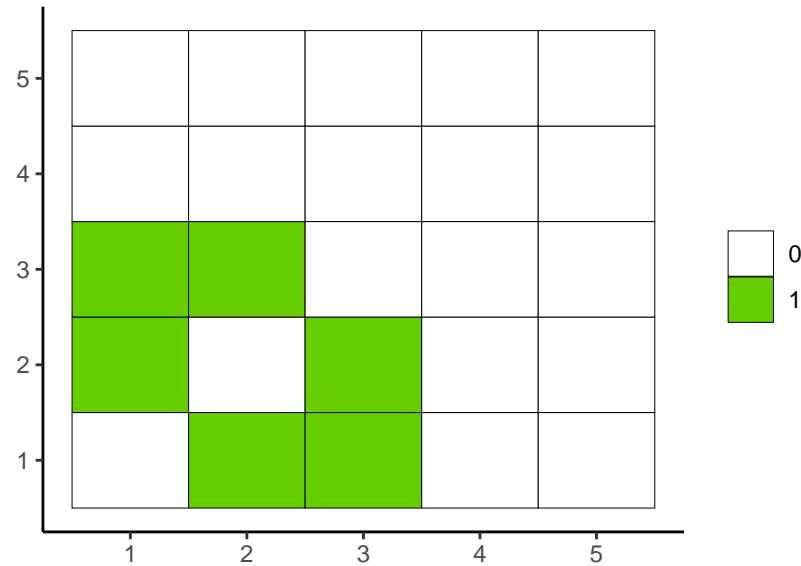


```
##  
##  
## $trial30  
## $trial30$covariates
```



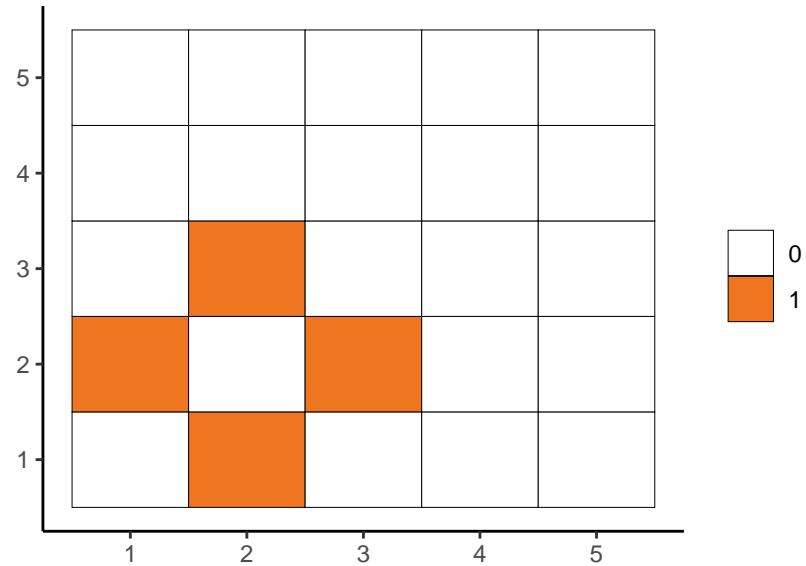
```
##  
## $trial30$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84653.06 Unique conditional dependence structures: 5  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 1/5 variables  
##  
## Model fit completed in 36.205 secs  
##  
## $trial30$unique_graphs  
## $trial30$unique_graphs$graph1  
## [1] "1, ..., 37, 78, ..., 104"  
##  
## $trial30$unique_graphs$graph2  
## [1] "38, ..., 77"  
##  
## $trial30$unique_graphs$graph3  
## [1] "105, ..., 125"  
##  
## $trial30$unique_graphs$graph4  
## [1] "126, 127"  
##  
## $trial30$unique_graphs$graph5  
## [1] "128, ..., 180"  
##  
## $trial30$unique_graphs[[6]]
```

Graph 1, Individuals 1,...,37,78,...,104



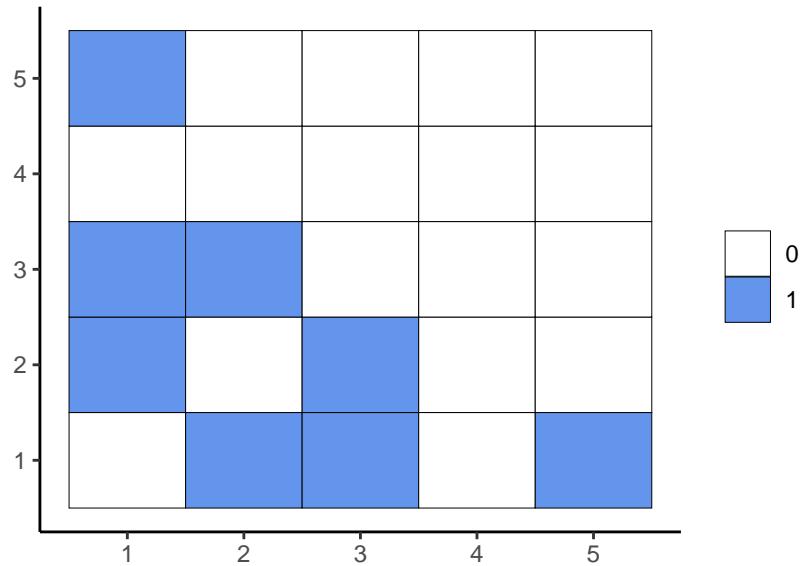
```
##  
## $trial30$unique_graphs[[7]]
```

Graph 2, Individuals 38,...,77



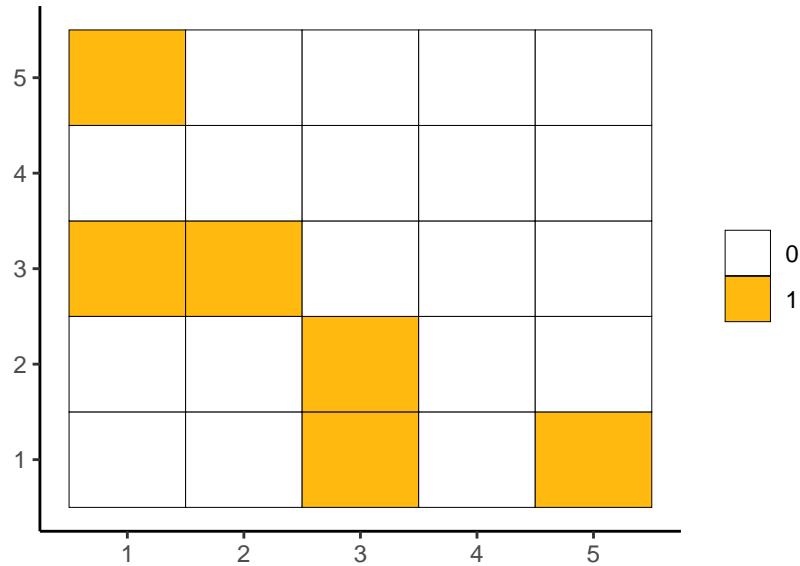
```
##  
## $trial30$unique_graphs[[8]]
```

Graph 3, Individuals 105,...,125



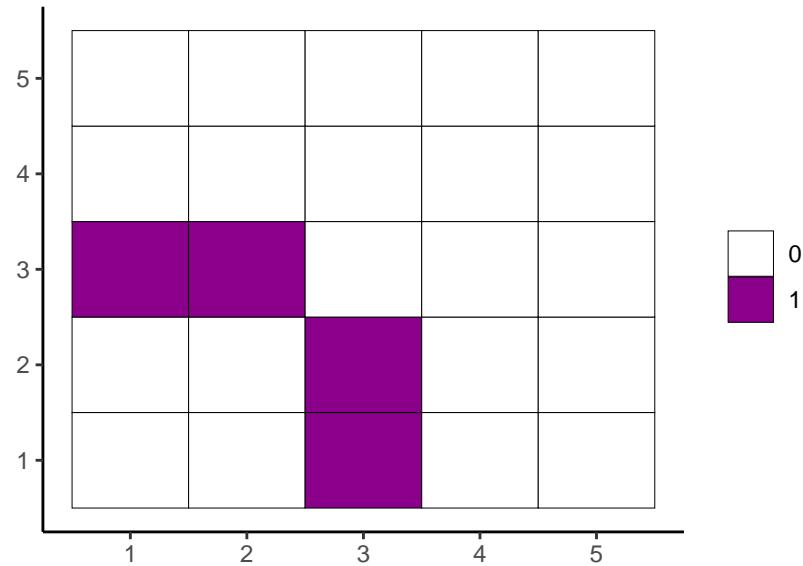
```
##  
## $trial30$unique_graphs[[9]]
```

Graph 4, Individuals 126,127

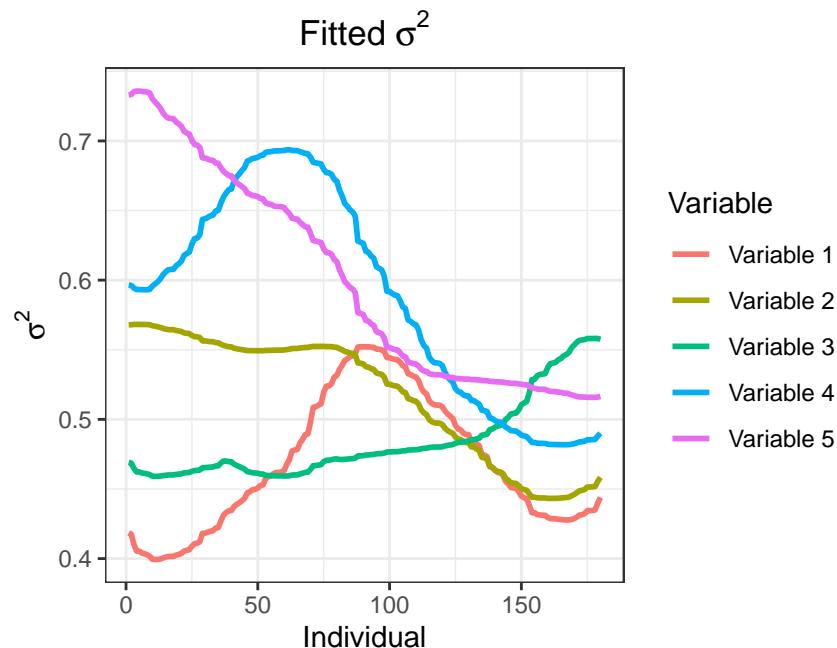


```
##  
## $trial30$unique_graphs[[10]]
```

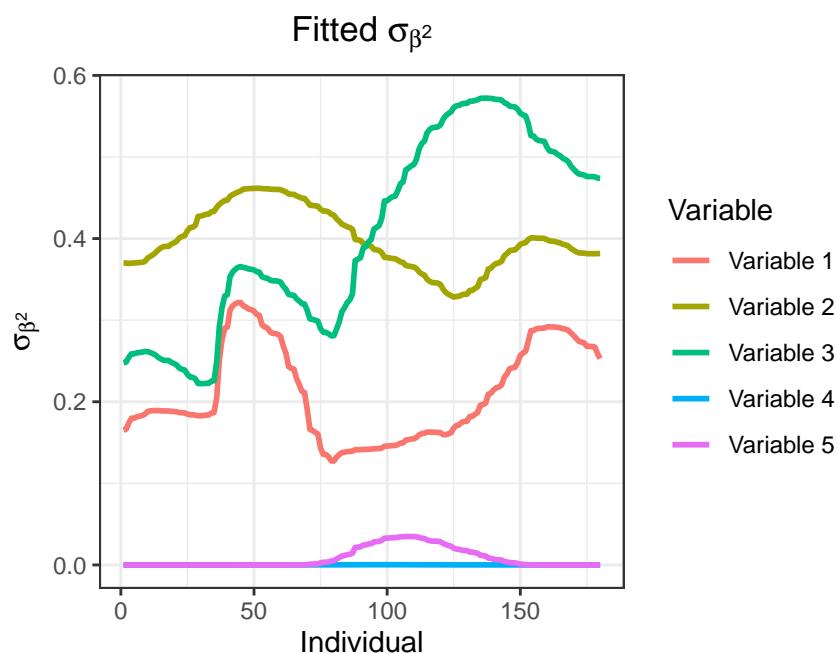
Graph 5, Individuals 128,...,180



```
##  
##  
## $trial30$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial30$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          0.45      0.45      0.45      0.05      0.05  
##  
## $trial30$sigmasq
```

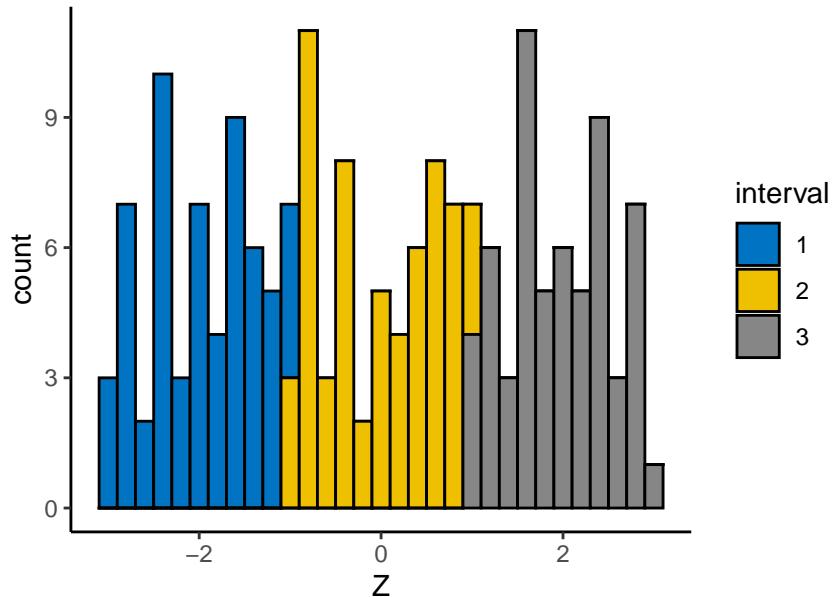


```
##  
## $trial30$sigmabetasq
```



```
##  
##  
## $trial31  
## $trial31$covariates
```

Distribution of Covariate, Trial 31

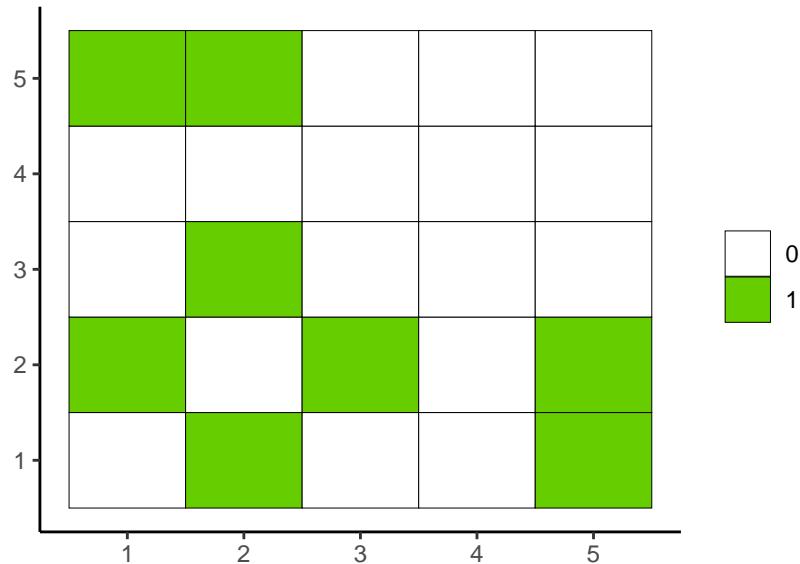


```

## 
## $trial31$summary
##                               Covariate Dependent Graphical Model
## 
## Model ELBO: -84672.01           Unique conditional dependence structures: 6
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 3/5 variables
## 
## Model fit completed in 25.65 secs
## 
## $trial31$unique_graphs
## $trial31$unique_graphs$graph1
## [1] "1,...,19"
## 
## $trial31$unique_graphs$graph2
## [1] "20,...,78"
## 
## $trial31$unique_graphs$graph3
## [1] "79,...,81"
## 
## $trial31$unique_graphs$graph4
## [1] "82,...,101"
## 
## $trial31$unique_graphs$graph5
## [1] "102,...,131"
## 
## $trial31$unique_graphs$graph6
## [1] "132,...,180"
## 
## $trial31$unique_graphs[[7]]

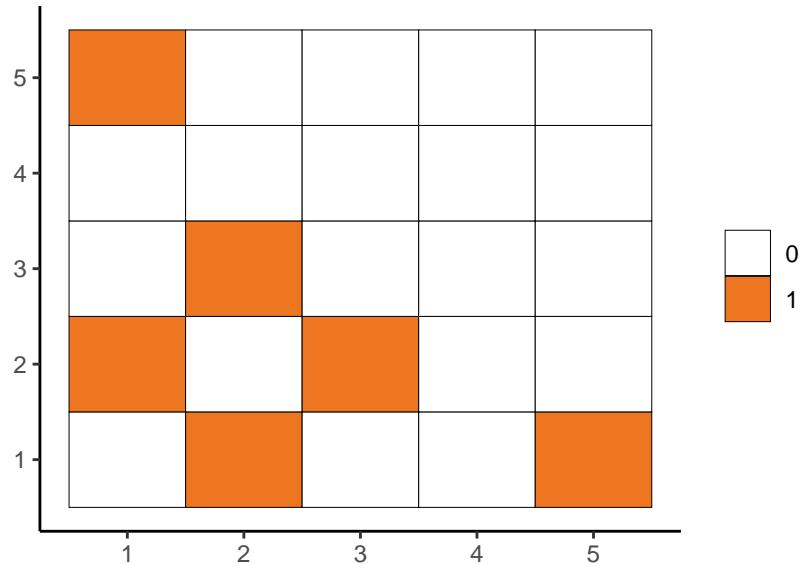
```

Graph 1, Individuals 1,...,19



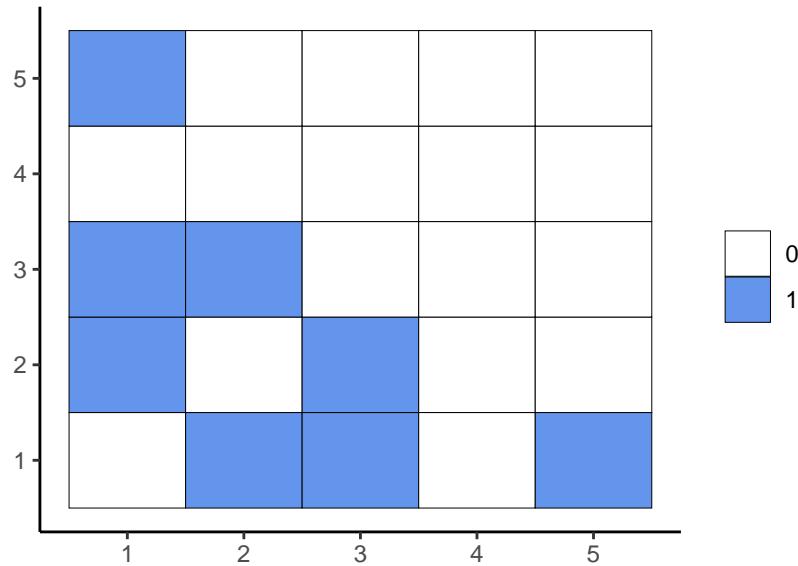
```
##  
## $trial31$unique_graphs[[8]]
```

Graph 2, Individuals 20,...,78



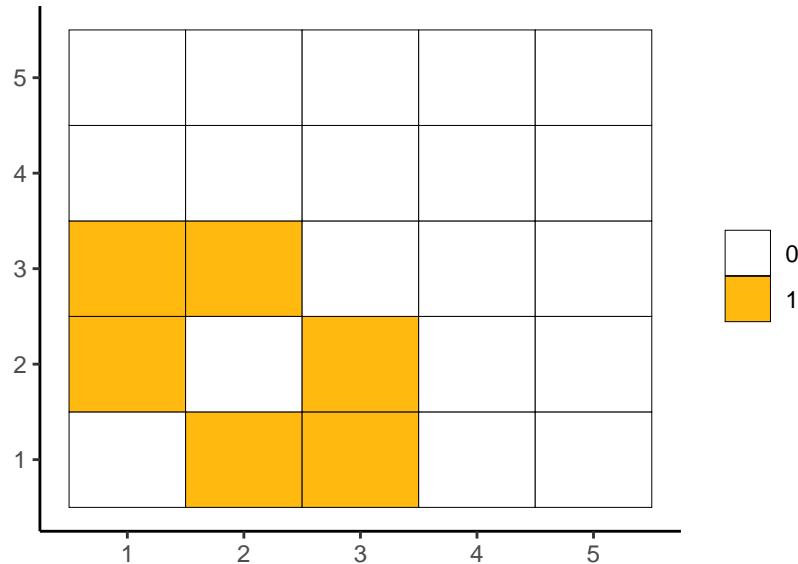
```
##  
## $trial31$unique_graphs[[9]]
```

Graph 3, Individuals 79,...,81



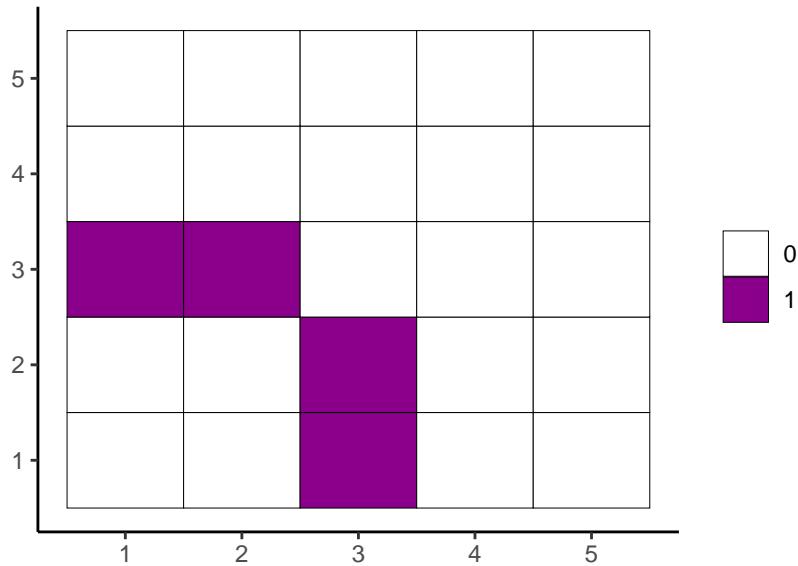
```
##  
## $trial31$unique_graphs[[10]]
```

Graph 4, Individuals 82,...,101



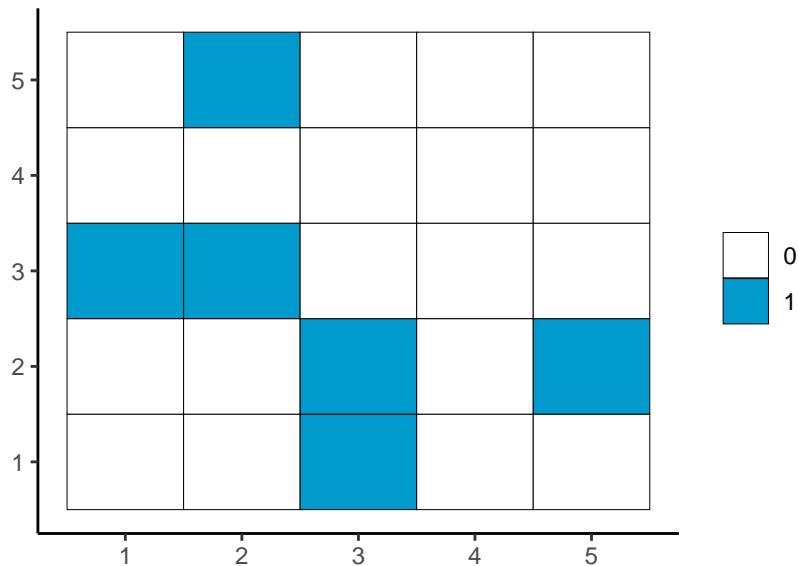
```
##  
## $trial31$unique_graphs[[11]]
```

Graph 5, Individuals 102,...,131



```
##  
## $trial31$unique_graphs[[12]]
```

Graph 6, Individuals 132,...,180

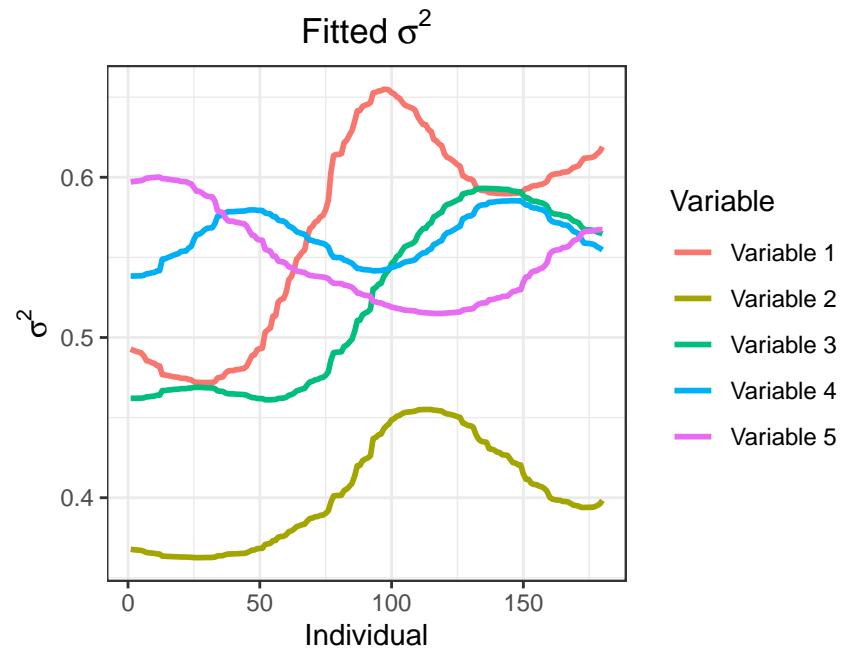


```
##  
##  
## $trial31$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial31$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.45      0.45      0.45      0.05      0.05
##
## $trial31$sigmasq

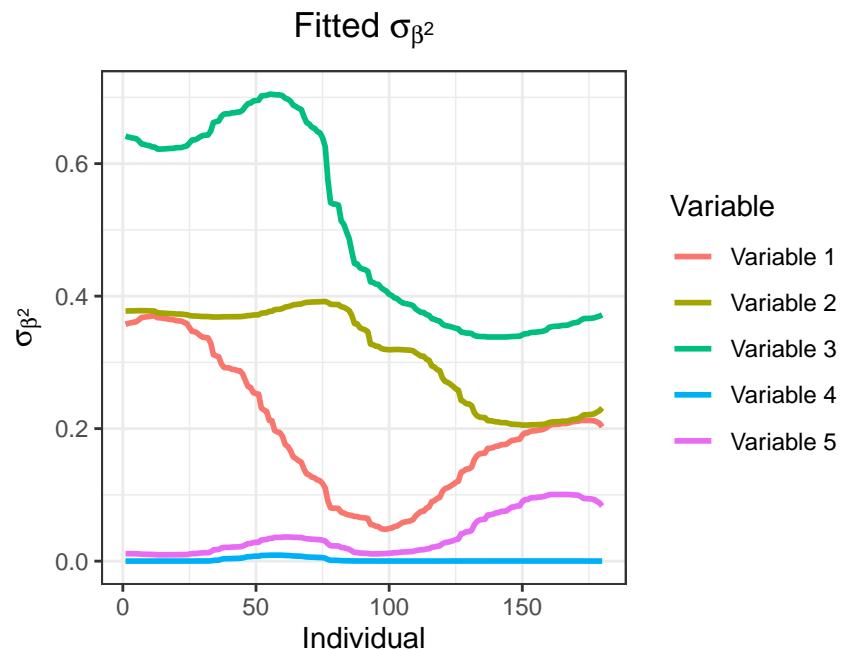
```



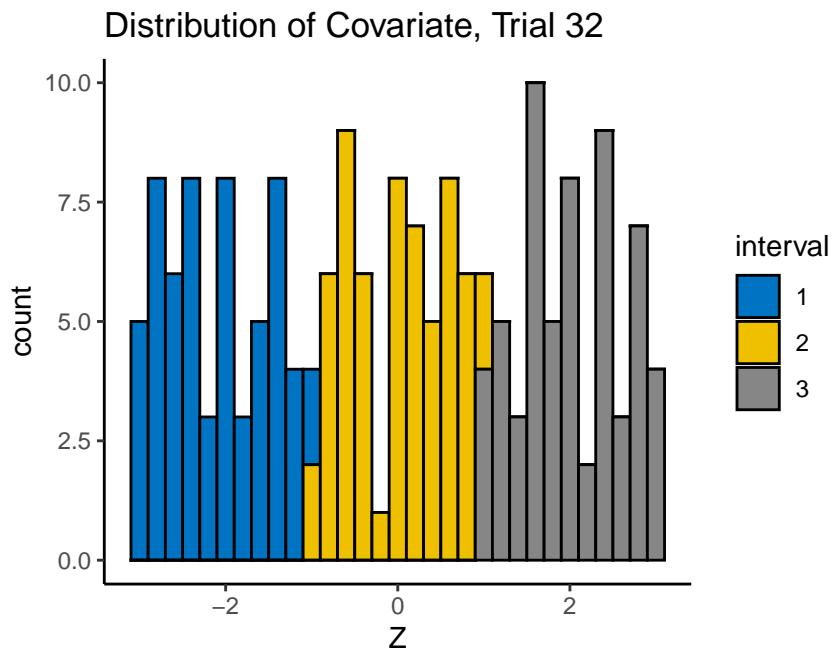
```

## 
## $trial31$sigmabetasq

```

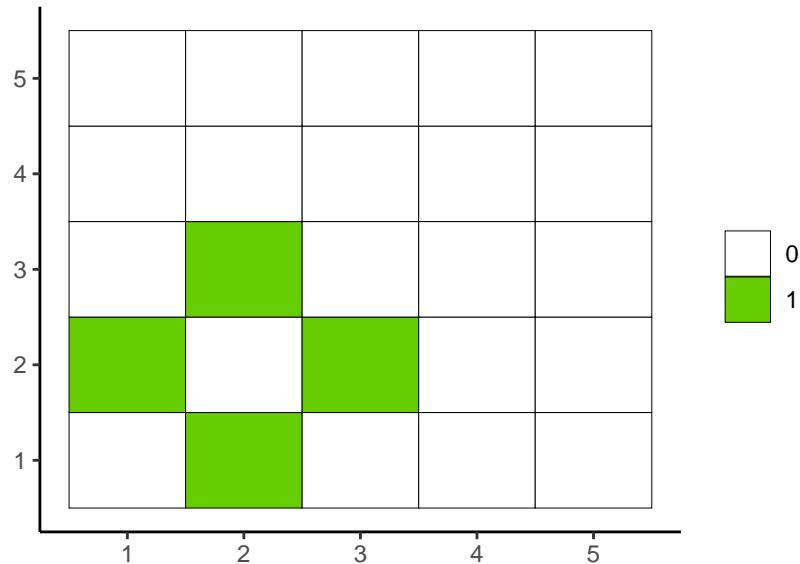


```
##  
##  
## $trial32  
## $trial32$covariates
```



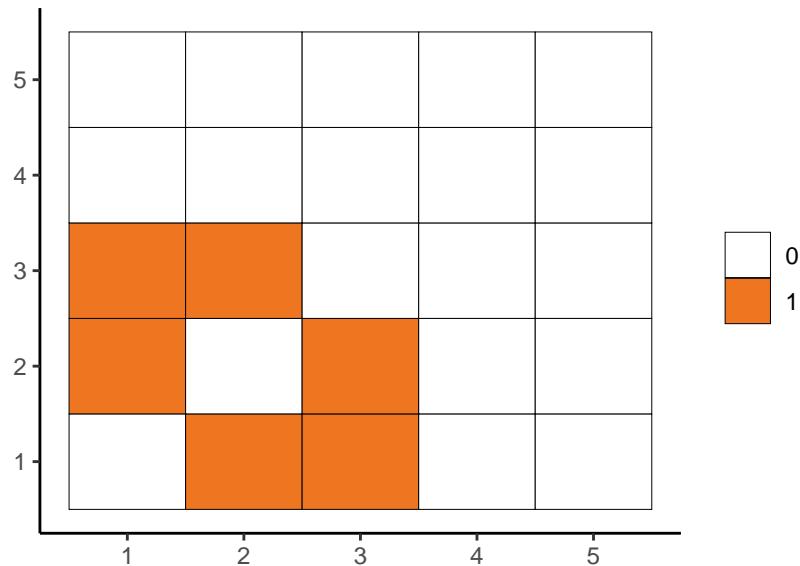
```
##  
## $trial32$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84611.24 Unique conditional dependence structures: 5  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 3/5 variables  
##  
## Model fit completed in 29.477 secs  
##  
## $trial32$unique_graphs  
## $trial32$unique_graphs$graph1  
## [1] "1,...,64"  
##  
## $trial32$unique_graphs$graph2  
## [1] "65,...,92"  
##  
## $trial32$unique_graphs$graph3  
## [1] "93,...,139"  
##  
## $trial32$unique_graphs$graph4  
## [1] "140,...,158"  
##  
## $trial32$unique_graphs$graph5  
## [1] "159,...,180"  
##  
## $trial32$unique_graphs[[6]]
```

Graph 1, Individuals 1,...,64



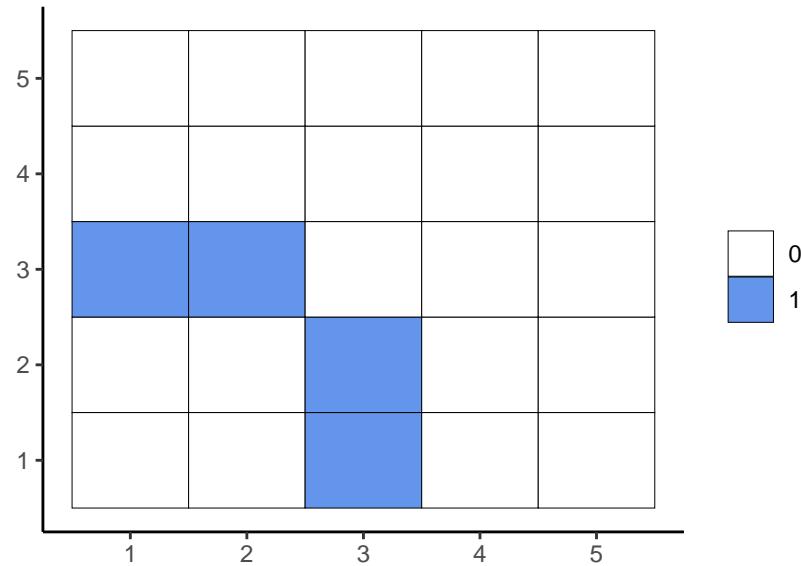
```
##  
## $trial32$unique_graphs[[7]]
```

Graph 2, Individuals 65,...,92



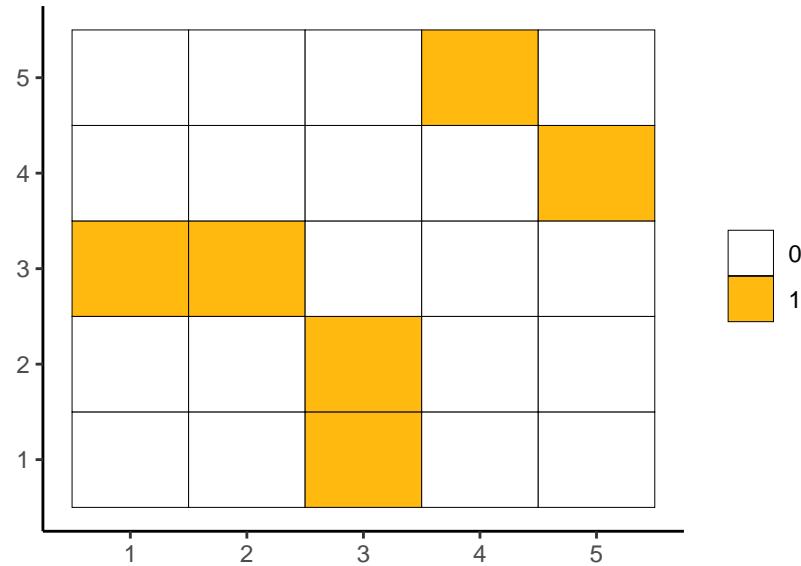
```
##  
## $trial32$unique_graphs[[8]]
```

Graph 3, Individuals 93,...,139



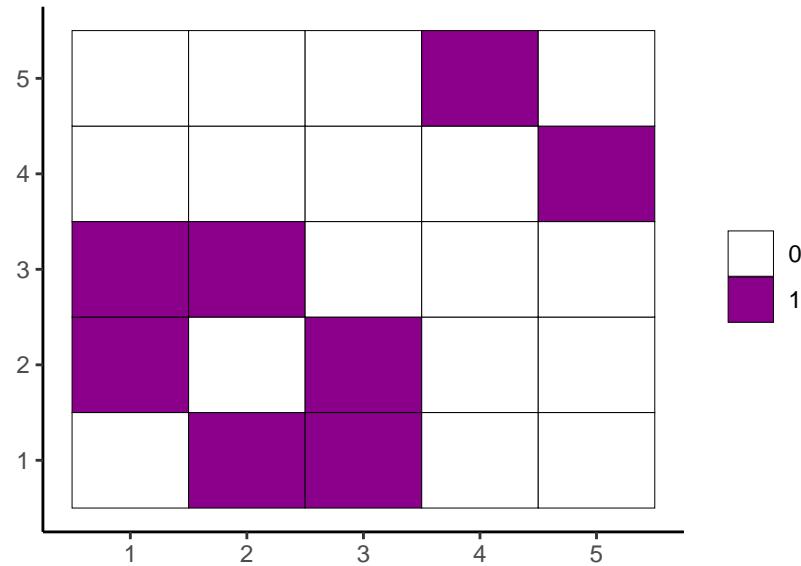
```
##  
## $trial32$unique_graphs[[9]]
```

Graph 4, Individuals 140,...,158

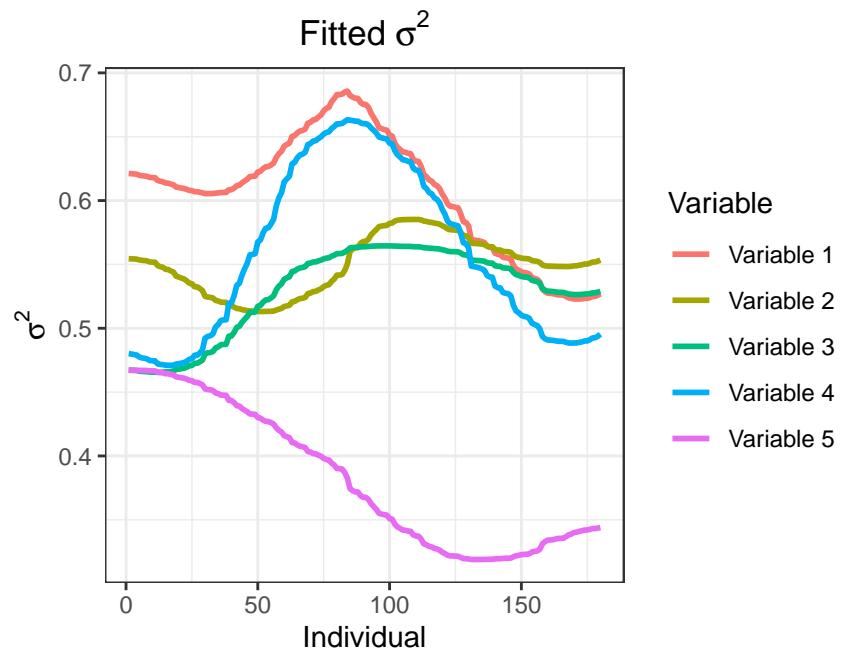


```
##  
## $trial32$unique_graphs[[10]]
```

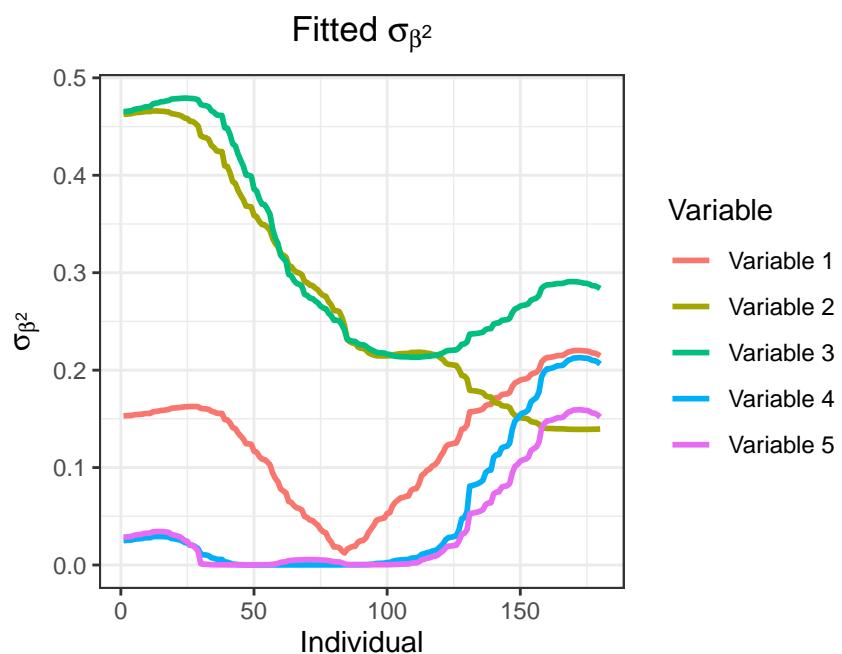
Graph 5, Individuals 159,...,180



```
##  
##  
## $trial32$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial32$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.20      0.45      0.45      0.05      0.05  
##  
## $trial32$sigmasq
```

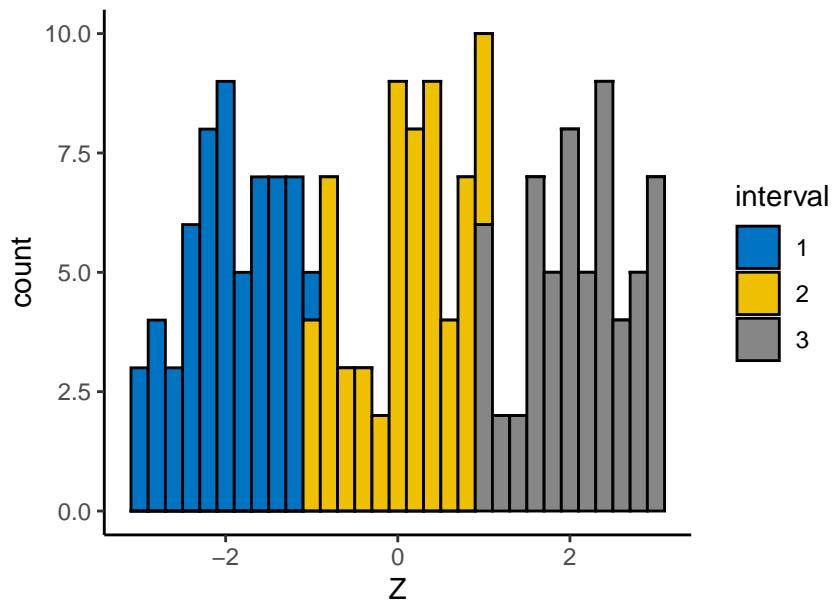


```
##  
## $trial32$sigmabetasq
```



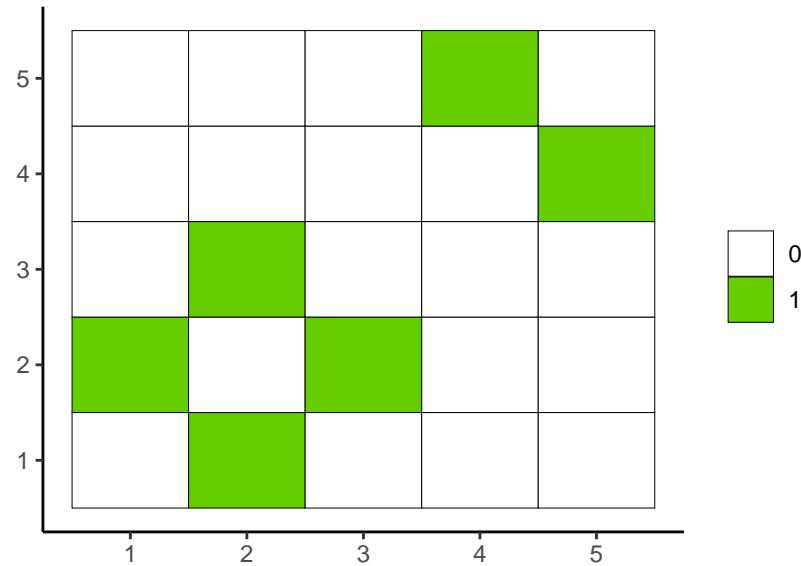
```
##  
##  
## $trial33  
## $trial33$covariates
```

Distribution of Covariate, Trial 33



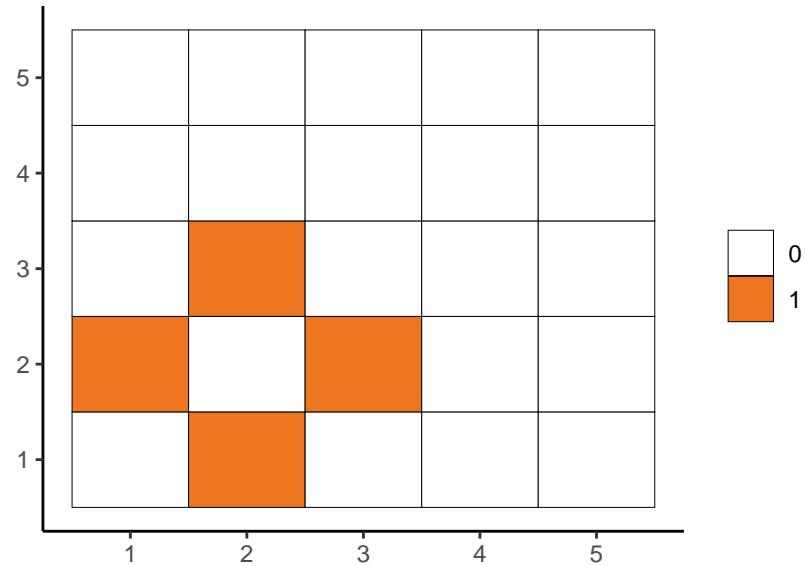
```
##
## $trial33$summary
## Covariate Dependent Graphical Model
##
## Model ELBO: -85173.1           Unique conditional dependence structures: 5
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 2/5 variables
##
## Model fit completed in 31.593 secs
##
## $trial33$unique_graphs
## $trial33$unique_graphs$graph1
## [1] "1,...,30"
##
## $trial33$unique_graphs$graph2
## [1] "31,...,65"
##
## $trial33$unique_graphs$graph3
## [1] "66,...,105,133,...,157"
##
## $trial33$unique_graphs$graph4
## [1] "106,...,132"
##
## $trial33$unique_graphs$graph5
## [1] "158,...,180"
##
## $trial33$unique_graphs[[6]]
```

Graph 1, Individuals 1,...,30



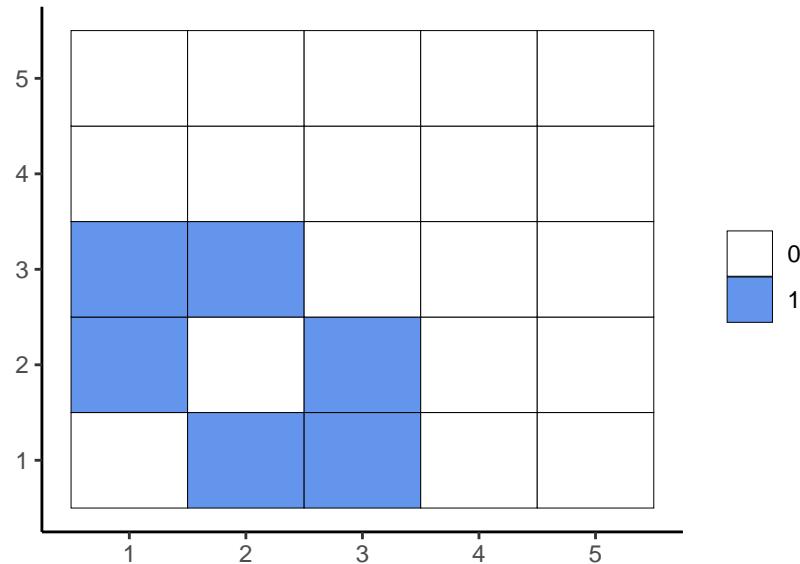
```
##  
## $trial33$unique_graphs[[7]]
```

Graph 2, Individuals 31,...,65



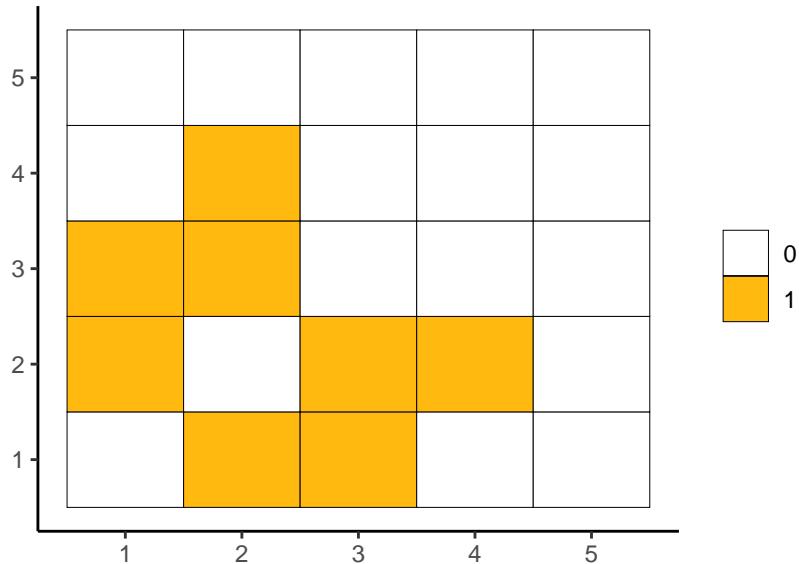
```
##  
## $trial33$unique_graphs[[8]]
```

Graph 3, Individuals 66,...,105,133,...,157



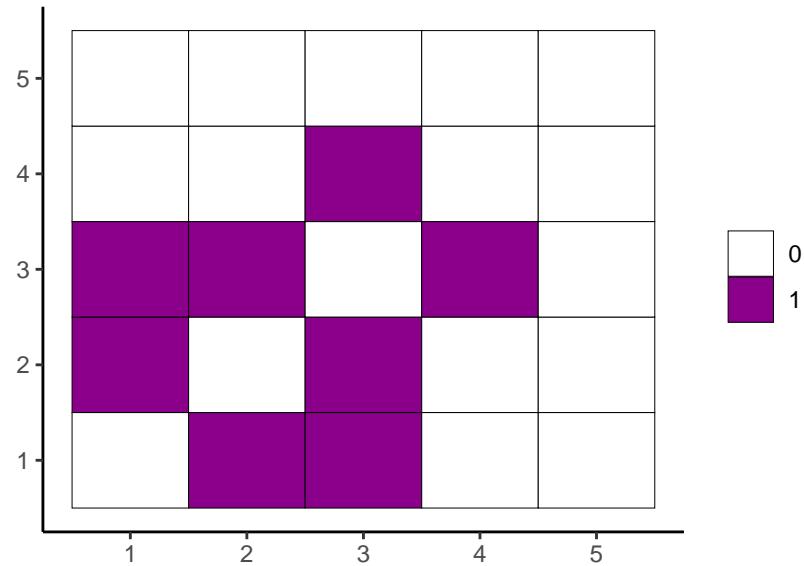
```
##  
## $trial33$unique_graphs[[9]]
```

Graph 4, Individuals 106,...,132

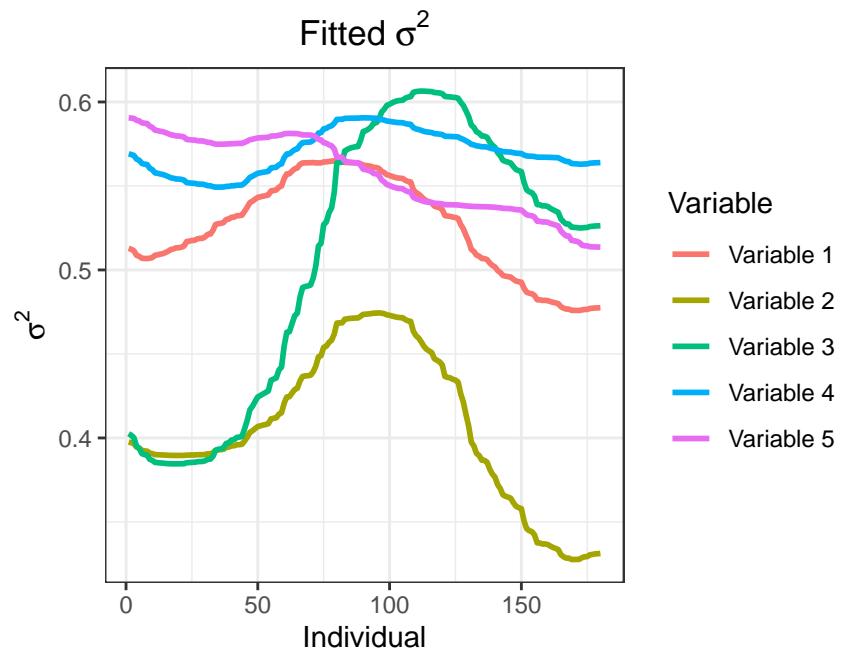


```
##  
## $trial33$unique_graphs[[10]]
```

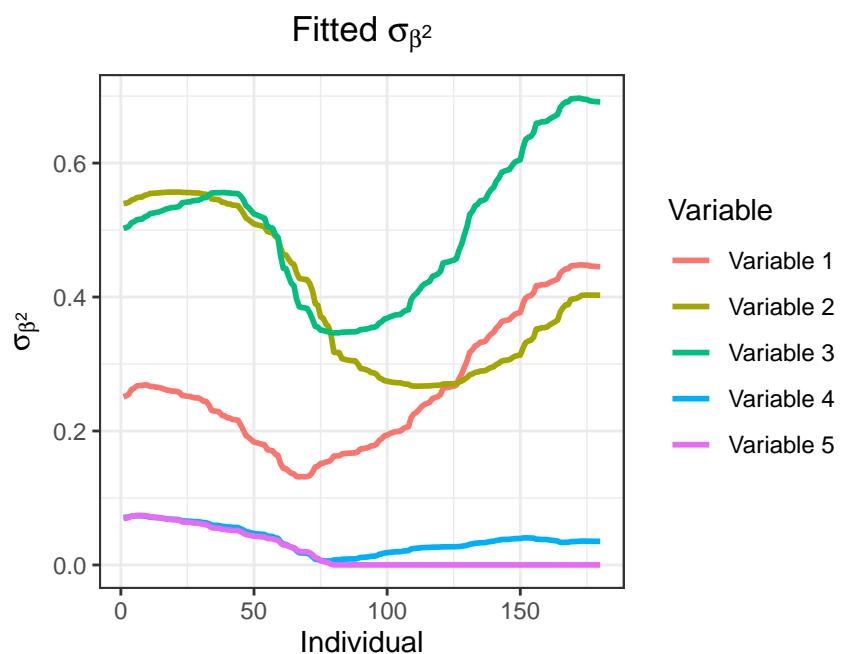
Graph 5, Individuals 158,...,180



```
##  
##  
## $trial33$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial33$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.45      0.45      0.45      0.05      0.05  
##  
## $trial33$sigmasq
```

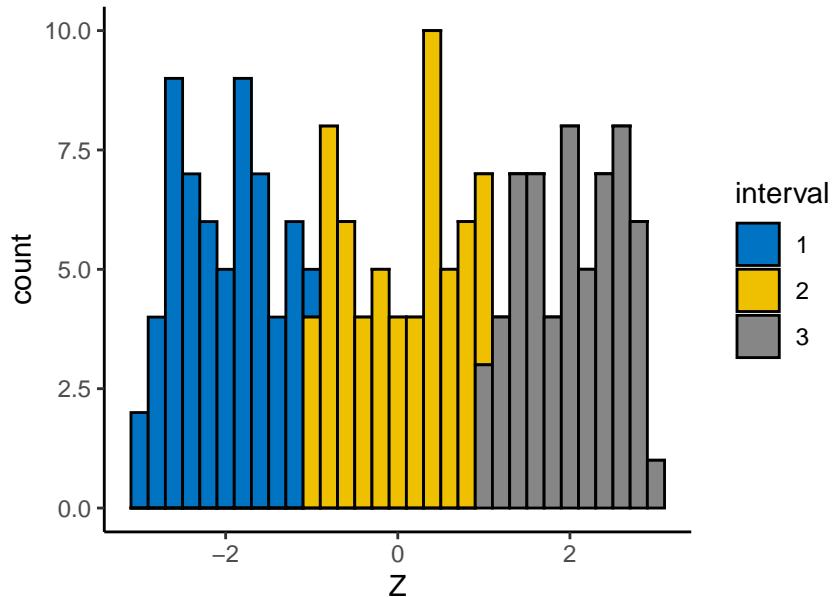


```
##  
## $trial33$sigmabetasq
```



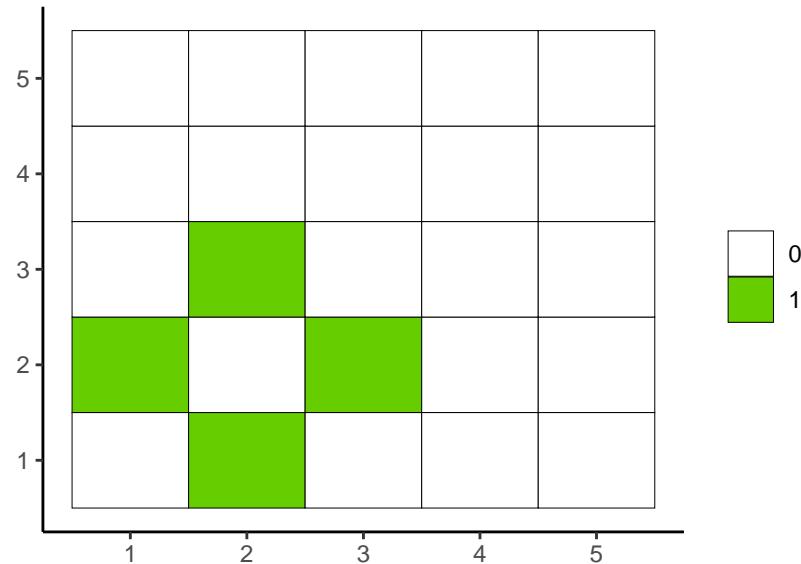
```
##  
##  
## $trial34  
## $trial34$covariates
```

Distribution of Covariate, Trial 34



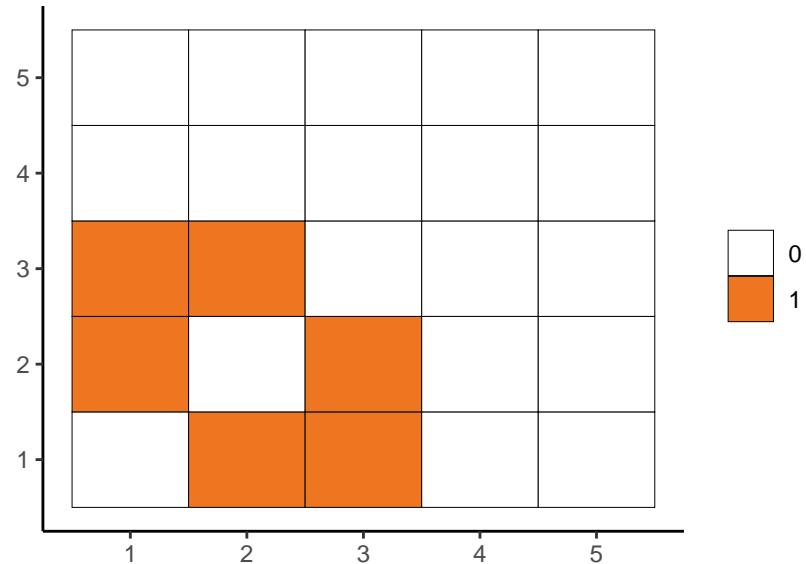
```
##  
## $trial34$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84524.79           Unique conditional dependence structures: 3  
## n: 180, variables: 5           Hyperparameter grid size: 9 points  
## CAVI converged for 3/5 variables  
##  
## Model fit completed in 32.827 secs  
##  
## $trial34$unique_graphs  
## $trial34$unique_graphs$graph1  
## [1] "1,...,56"  
##  
## $trial34$unique_graphs$graph2  
## [1] "57,...,140"  
##  
## $trial34$unique_graphs$graph3  
## [1] "141,...,180"  
##  
## $trial34$unique_graphs[[4]]
```

Graph 1, Individuals 1,...,56



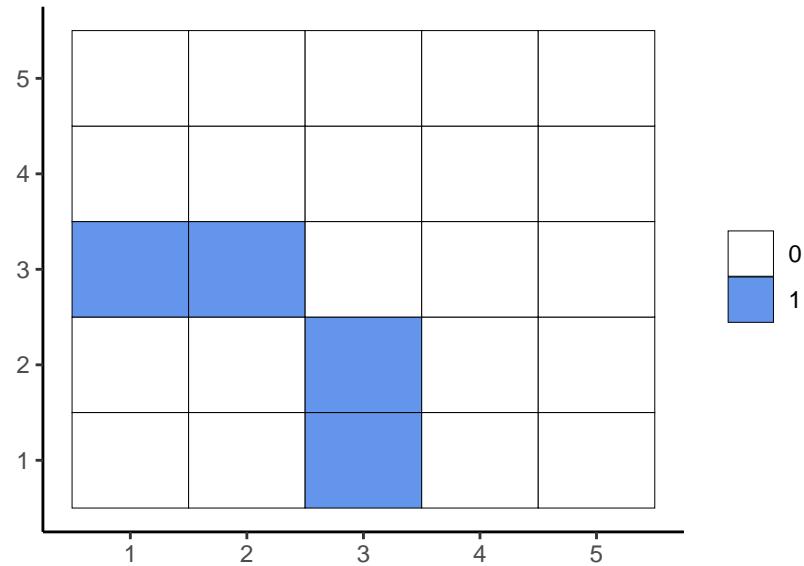
```
##  
## $trial34$unique_graphs[[5]]
```

Graph 2, Individuals 57,...,140

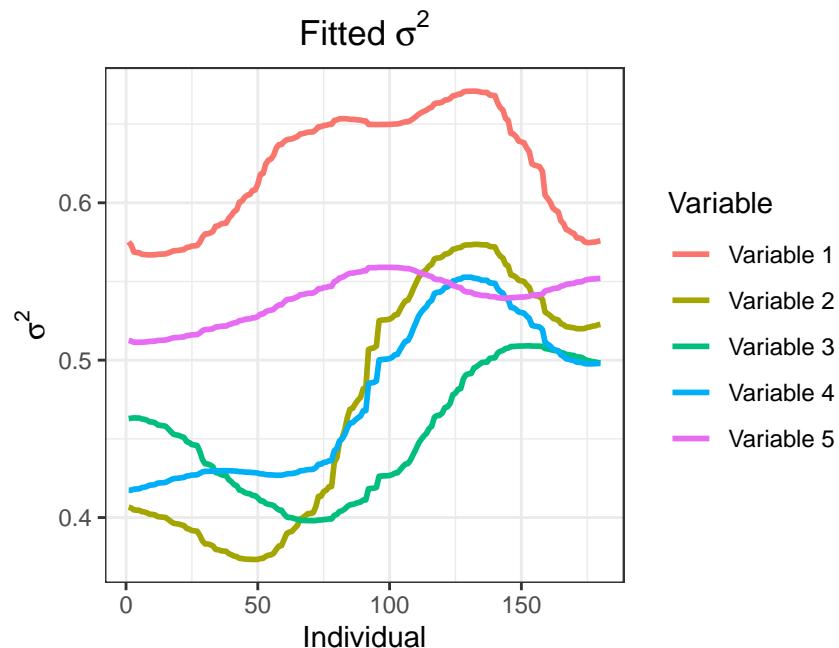


```
##  
## $trial34$unique_graphs[[6]]
```

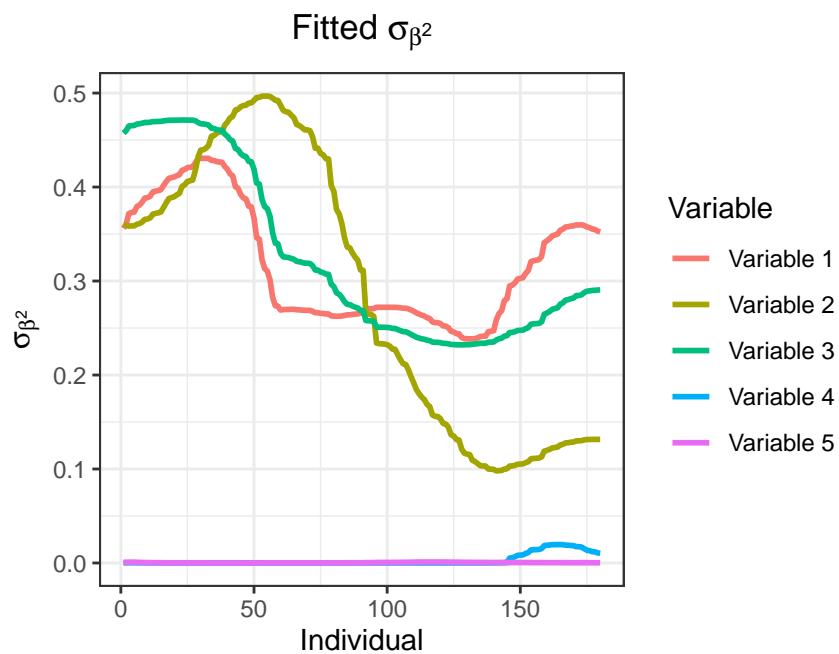
Graph 3, Individuals 141,...,180



```
##  
##  
## $trial34$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial34$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          0.45      0.45      0.45      0.05      0.05  
##  
## $trial34$sigmasq
```

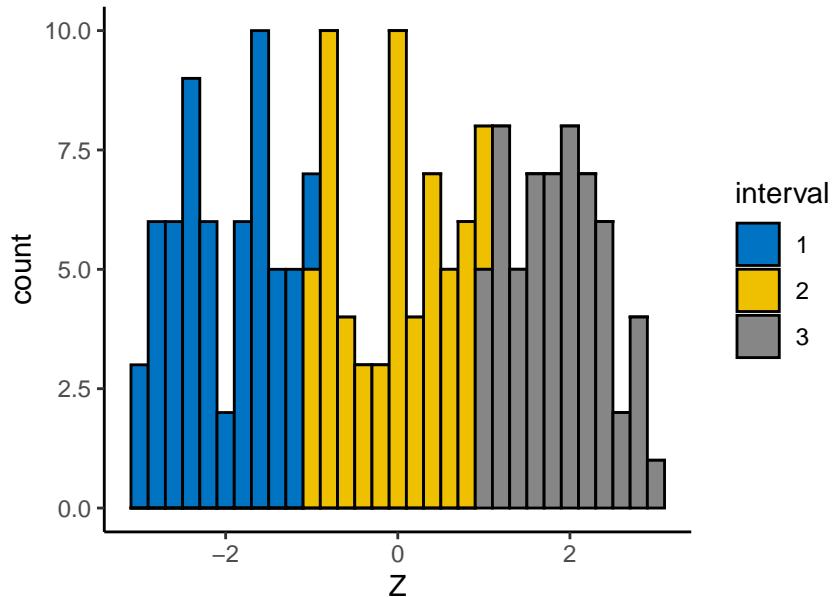


```
##  
## $trial34$sigmabetasq
```



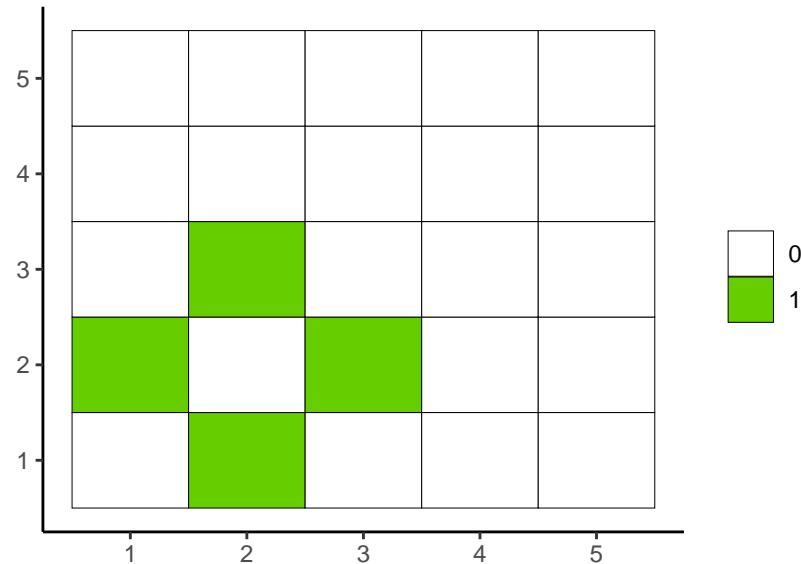
```
##  
##  
## $trial35  
## $trial35$covariates
```

Distribution of Covariate, Trial 35



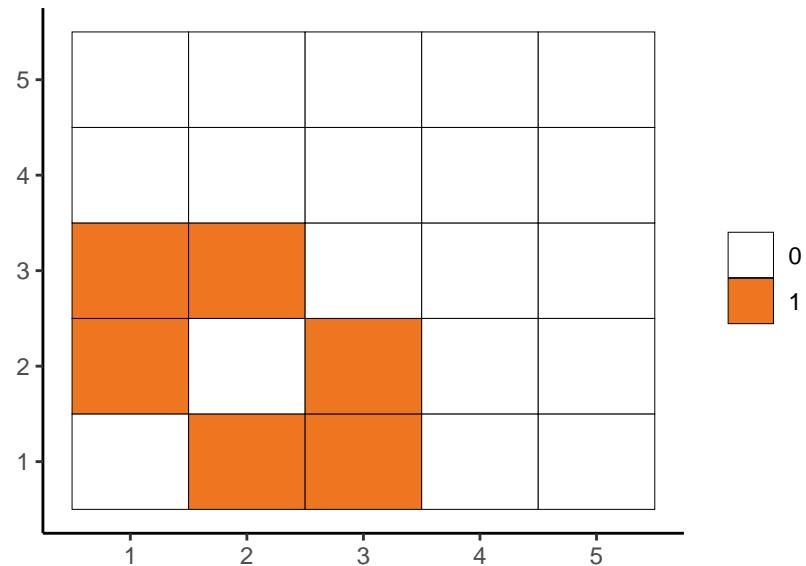
```
##
## $trial35$summary
## Covariate Dependent Graphical Model
##
## Model ELBO: -84488.54           Unique conditional dependence structures: 4
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 2/5 variables
##
## Model fit completed in 29.045 secs
##
## $trial35$unique_graphs
## $trial35$unique_graphs$graph1
## [1] "1,...,65"
##
## $trial35$unique_graphs$graph2
## [1] "66,...,107"
##
## $trial35$unique_graphs$graph3
## [1] "108,...,149"
##
## $trial35$unique_graphs$graph4
## [1] "150,...,180"
##
## $trial35$unique_graphs[[5]]
```

Graph 1, Individuals 1,...,65



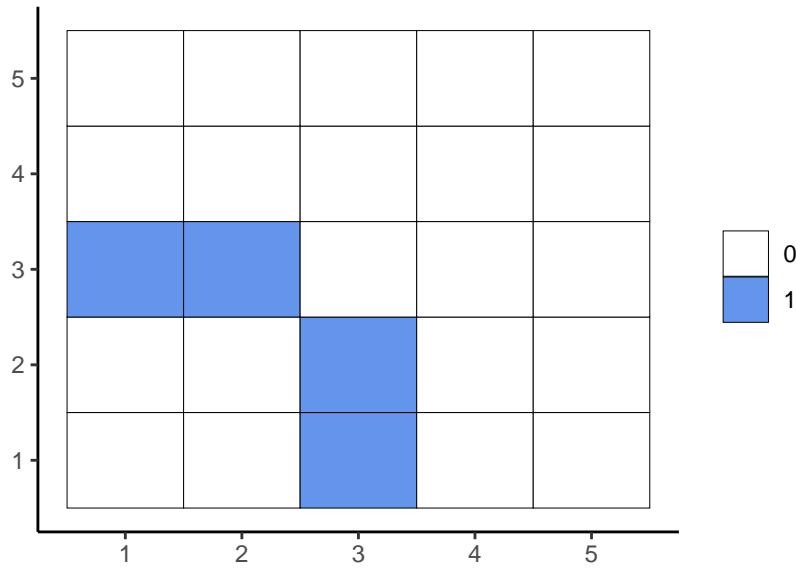
```
##  
## $trial35$unique_graphs[[6]]
```

Graph 2, Individuals 66,...,107



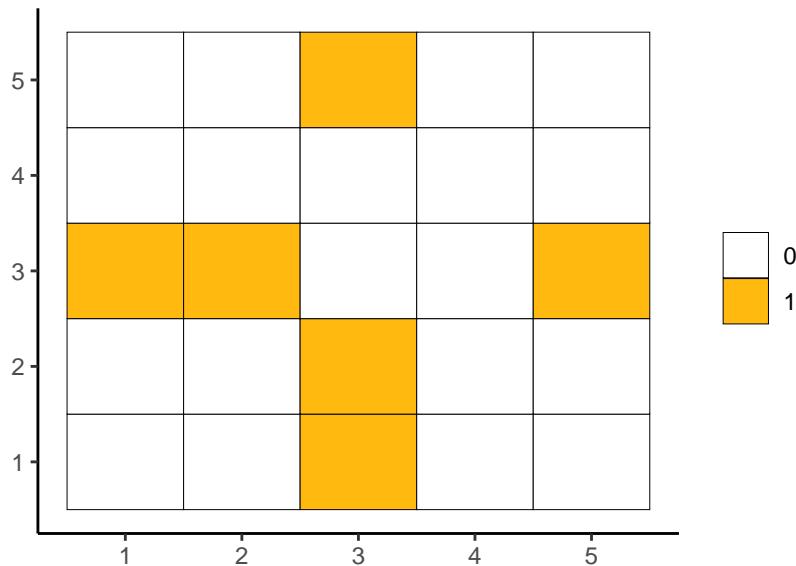
```
##  
## $trial35$unique_graphs[[7]]
```

Graph 3, Individuals 108,...,149



```
##  
## $trial35$unique_graphs[[8]]
```

Graph 4, Individuals 150,...,180

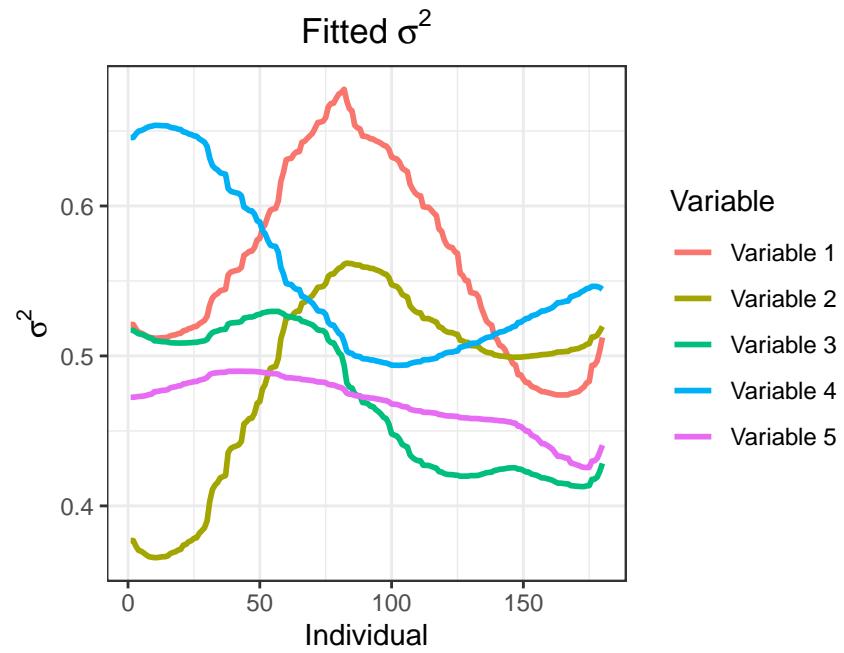


```
##  
##  
## $trial35$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial35$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.05      0.45      0.45      0.05      0.05
##
## $trial35$sigmasq

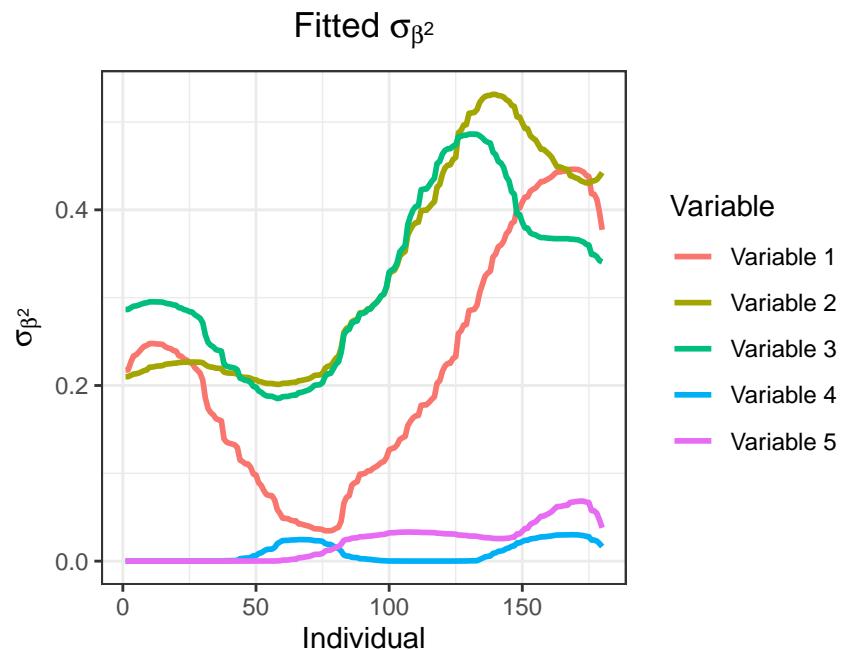
```



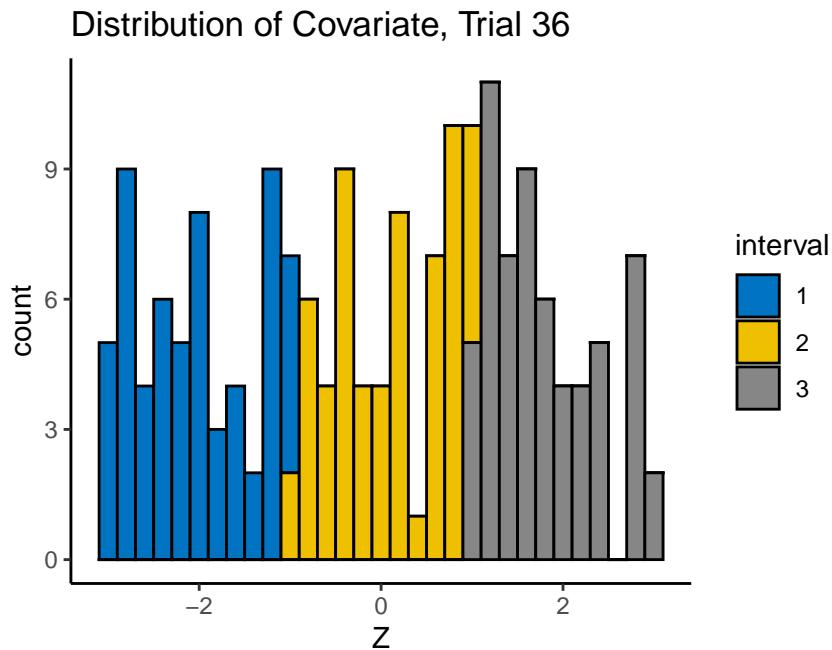
```

## 
## $trial35$sigmabetasq

```

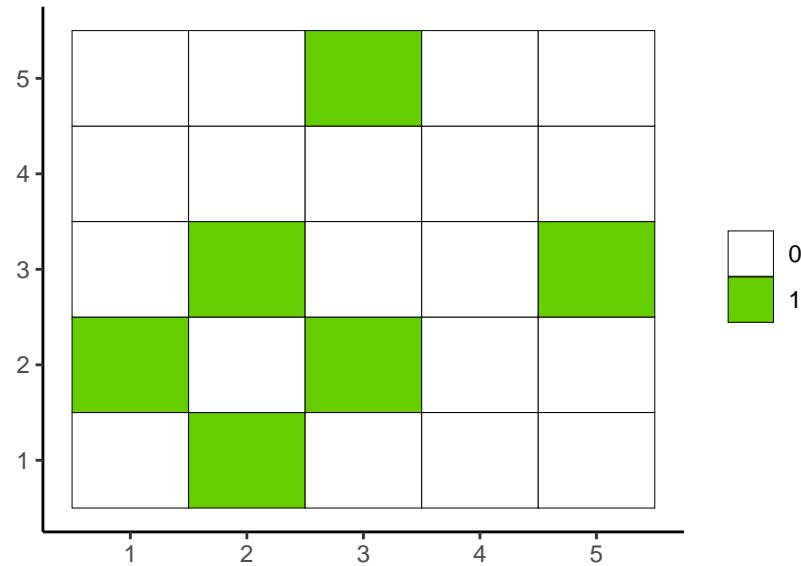


```
##  
##  
## $trial36  
## $trial36$covariates
```



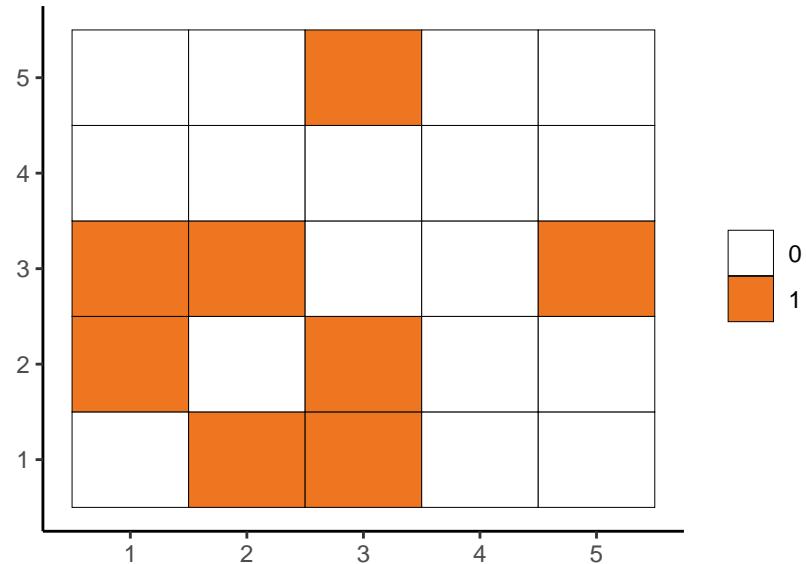
```
##  
## $trial36$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84785.93 Unique conditional dependence structures: 4  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 3/5 variables  
##  
## Model fit completed in 25.044 secs  
##  
## $trial36$unique_graphs  
## $trial36$unique_graphs$graph1  
## [1] "1,...,44"  
##  
## $trial36$unique_graphs$graph2  
## [1] "45,...,77"  
##  
## $trial36$unique_graphs$graph3  
## [1] "78,...,136"  
##  
## $trial36$unique_graphs$graph4  
## [1] "137,...,180"  
##  
## $trial36$unique_graphs[[5]]
```

Graph 1, Individuals 1,...,44



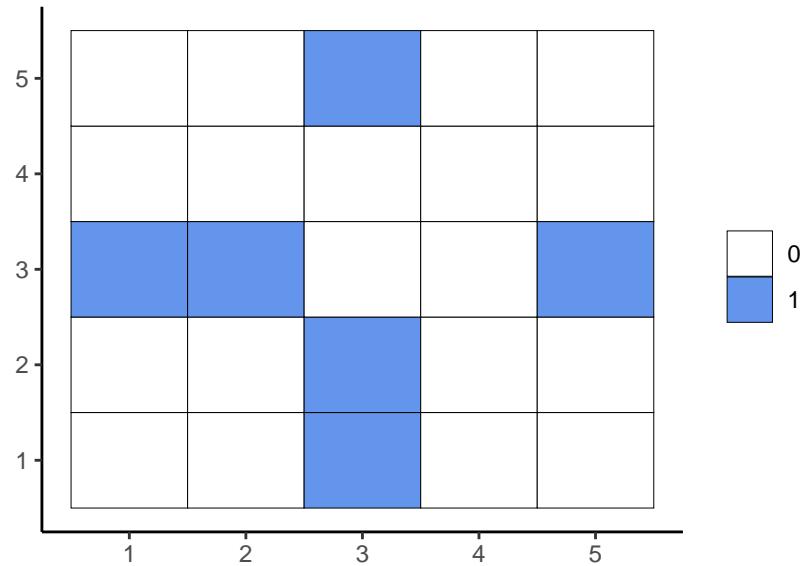
```
##  
## $trial36$unique_graphs[[6]]
```

Graph 2, Individuals 45,...,77



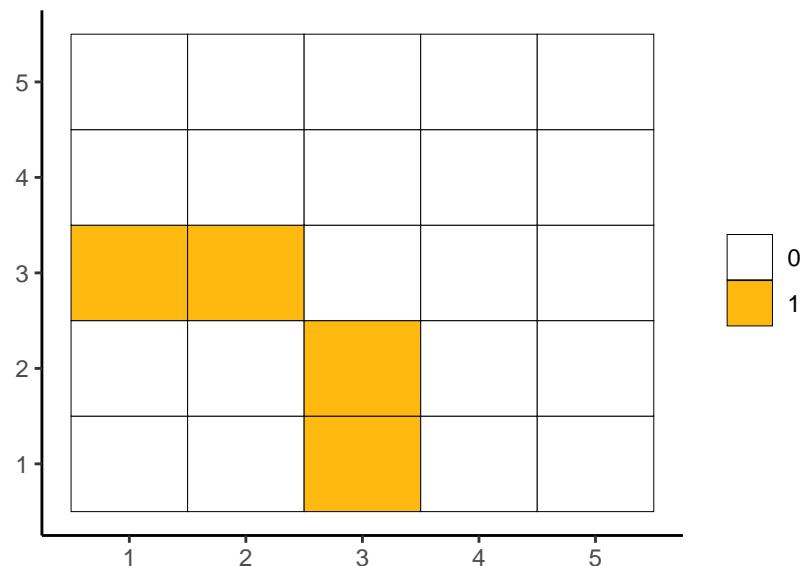
```
##  
## $trial36$unique_graphs[[7]]
```

Graph 3, Individuals 78,...,136



```
##  
## $trial36$unique_graphs[[8]]
```

Graph 4, Individuals 137,...,180

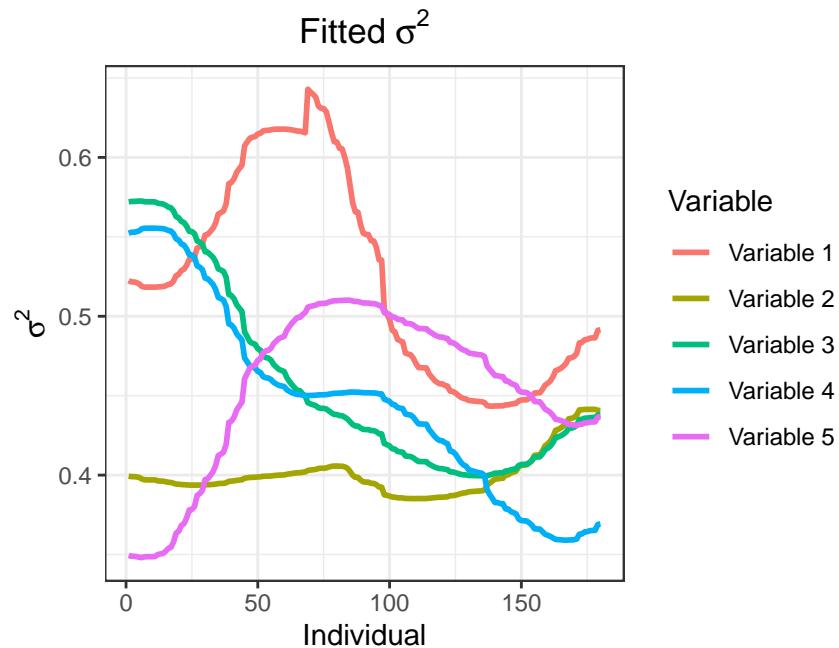


```
##  
##  
## $trial36$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial36$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.20      0.45      0.45      0.05      0.45
##
## $trial36$sigmasq

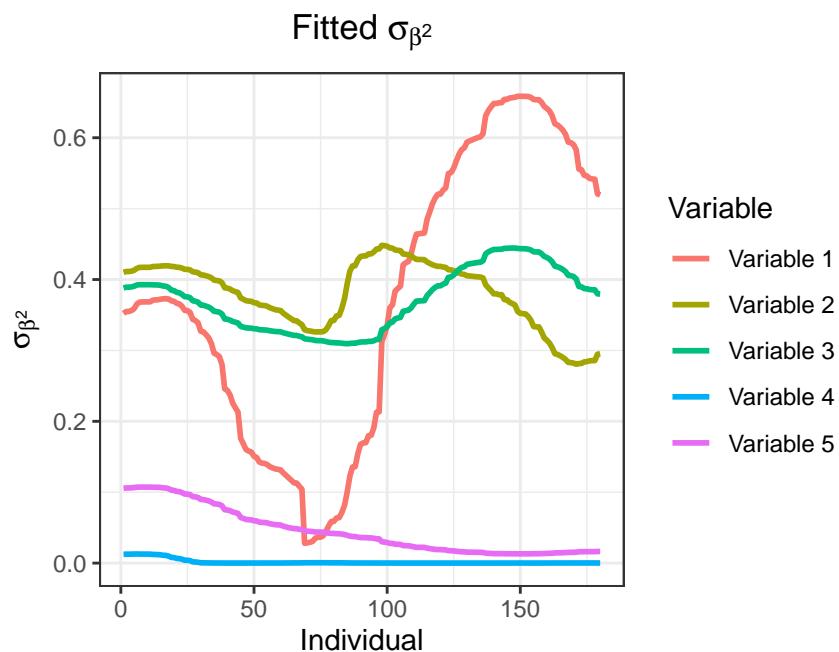
```



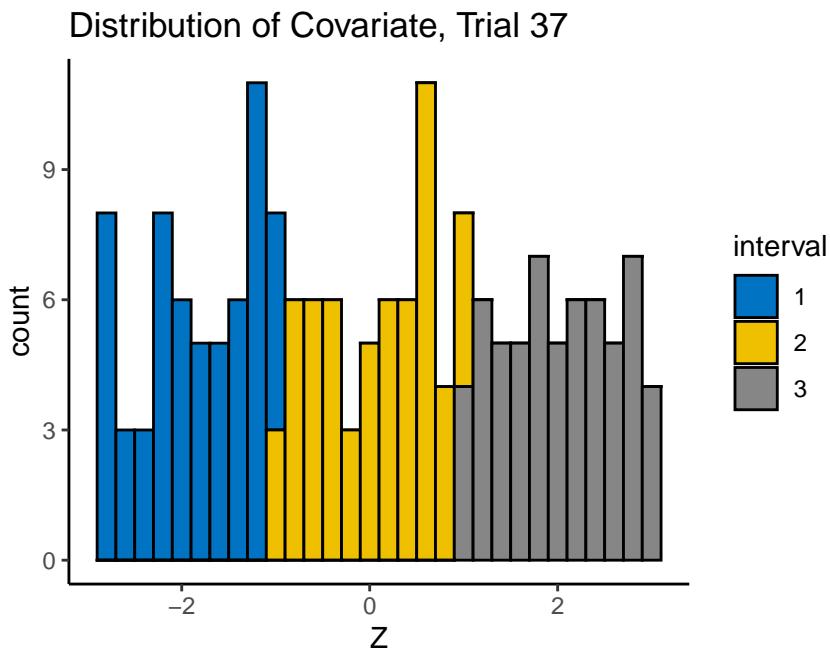
```

## $trial36$sigmabetasq

```



```
##  
##  
## $trial37  
## $trial37$covariates
```



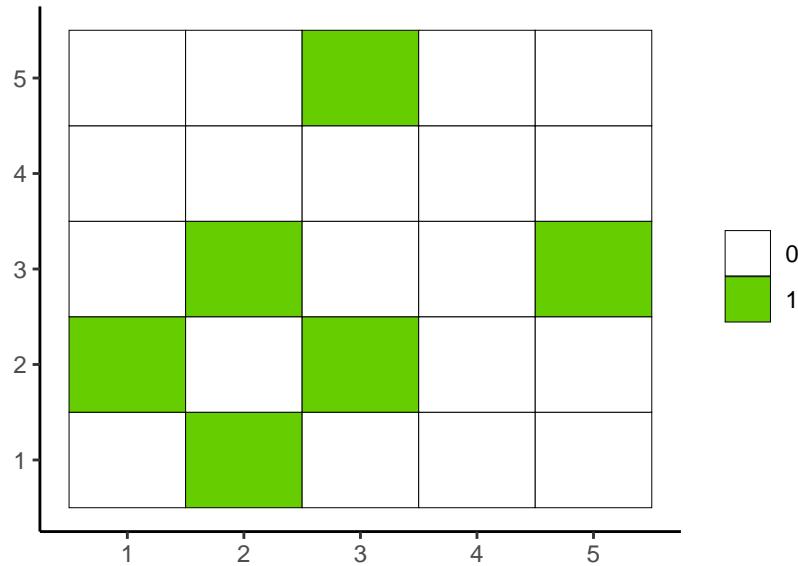
```
##  
## $trial37$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -85177.34 Unique conditional dependence structures: 8  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 2/5 variables  
##  
## Model fit completed in 37.284 secs  
##  
## $trial37$unique_graphs  
## $trial37$unique_graphs$graph1  
## [1] "1,...,64"  
##  
## $trial37$unique_graphs$graph2  
## [1] "65,...,83"  
##  
## $trial37$unique_graphs$graph3  
## [1] "84,...,113"  
##  
## $trial37$unique_graphs$graph4  
## [1] "114,...,125"  
##  
## $trial37$unique_graphs$graph5  
## [1] "126,...,139"  
##  
## $trial37$unique_graphs$graph6
```

```

## [1] "140,...,157"
##
## $trial37$unique_graphs$graph7
## [1] "158"
##
## $trial37$unique_graphs$graph8
## [1] "159,...,180"
##
## $trial37$unique_graphs[[9]]

```

Graph 1, Individuals 1,...,64

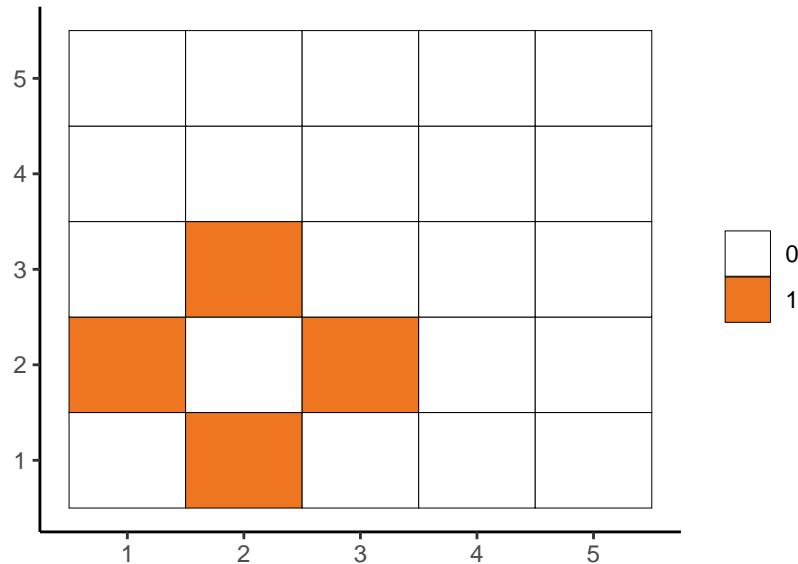


```

##
## $trial37$unique_graphs[[10]]

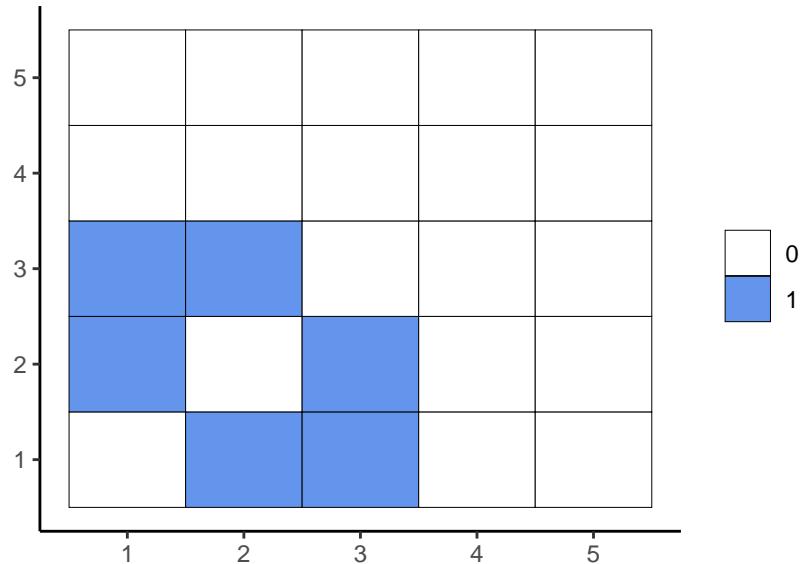
```

Graph 2, Individuals 65,...,83



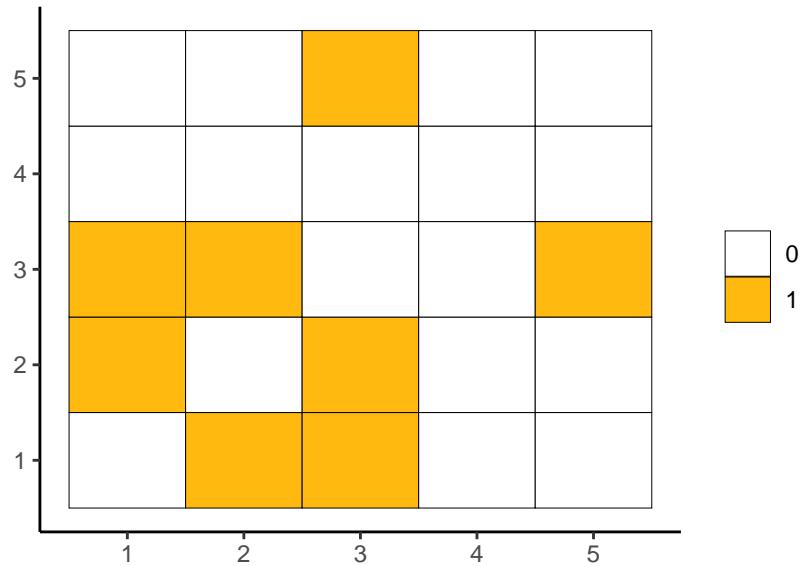
```
##  
## $trial37$unique_graphs[[11]]
```

Graph 3, Individuals 84,...,113



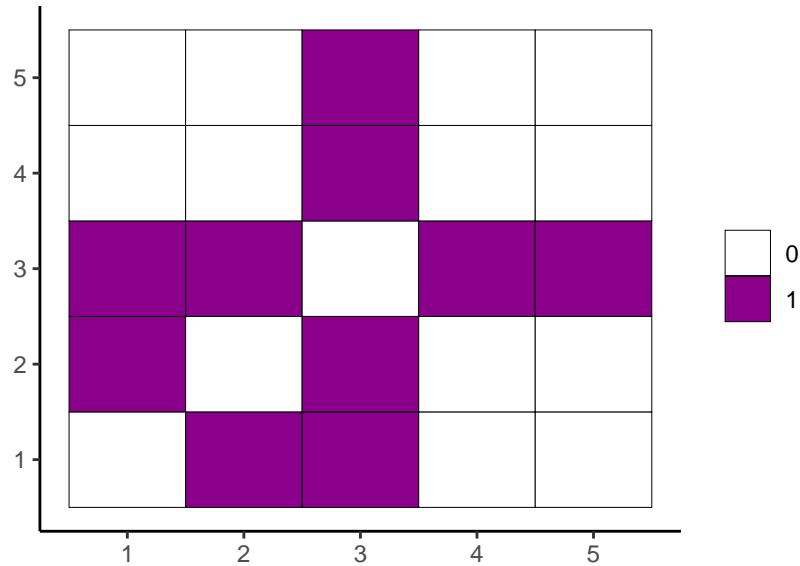
```
##  
## $trial37$unique_graphs[[12]]
```

Graph 4, Individuals 114,...,125



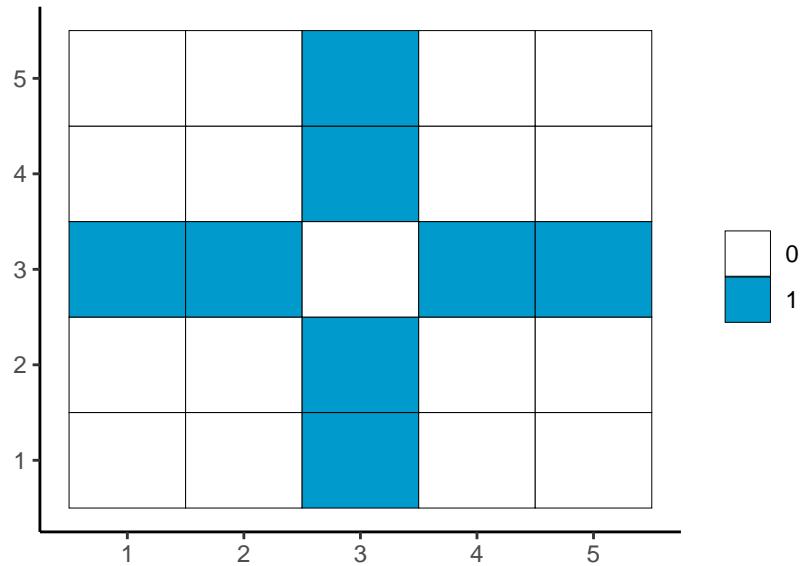
```
##  
## $trial37$unique_graphs[[13]]
```

Graph 5, Individuals 126,...,139



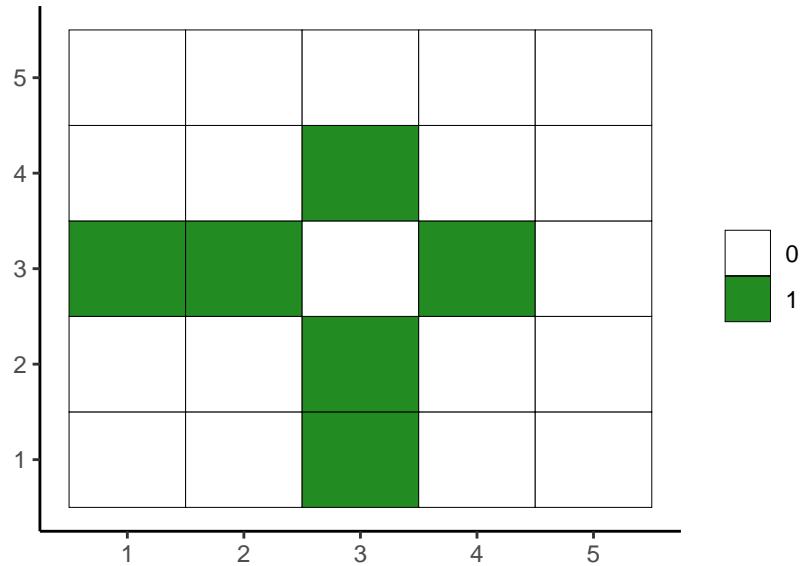
```
##  
## $trial37$unique_graphs[[14]]
```

Graph 6, Individuals 140,...,157



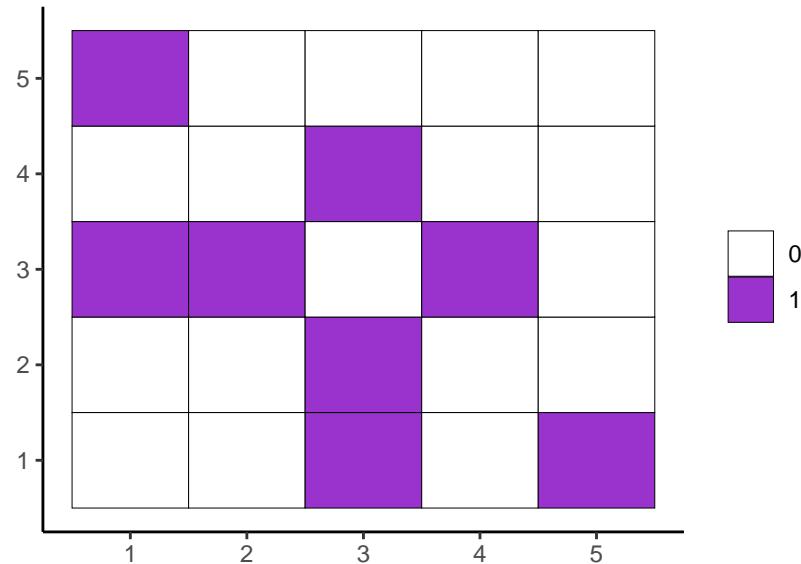
```
##  
## $trial37$unique_graphs[[15]]
```

Graph 7, Individuals 158

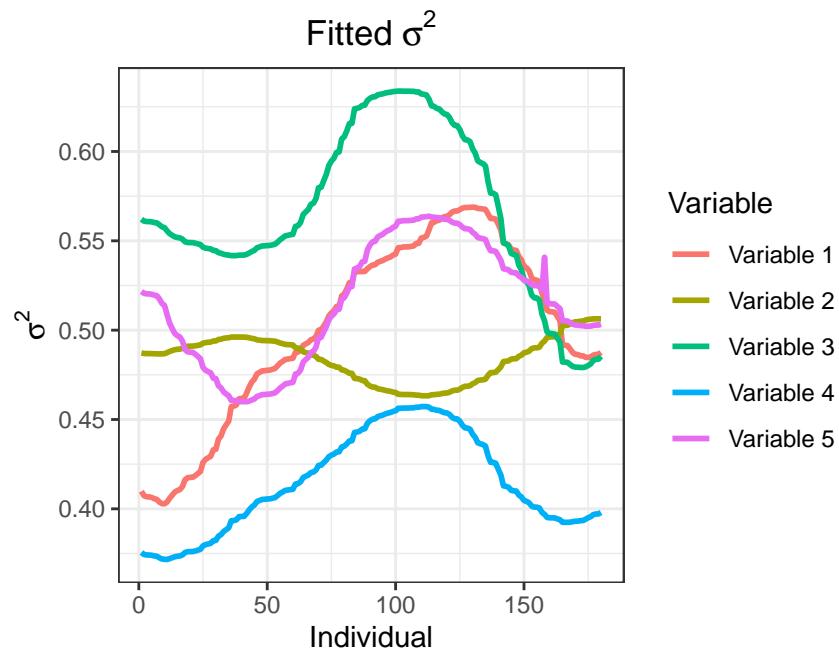


```
##  
## $trial37$unique_graphs[[16]]
```

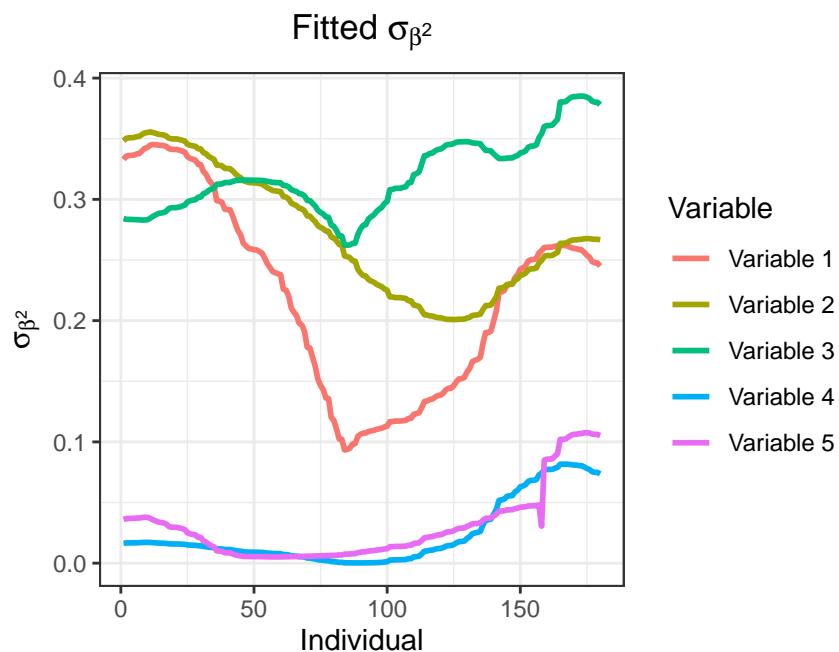
Graph 8, Individuals 159,...,180



```
##  
##  
## $trial37$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          2          1  
##  
## $trial37$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.40      0.45      0.45      0.35      0.05  
##  
## $trial37$sigmasq
```

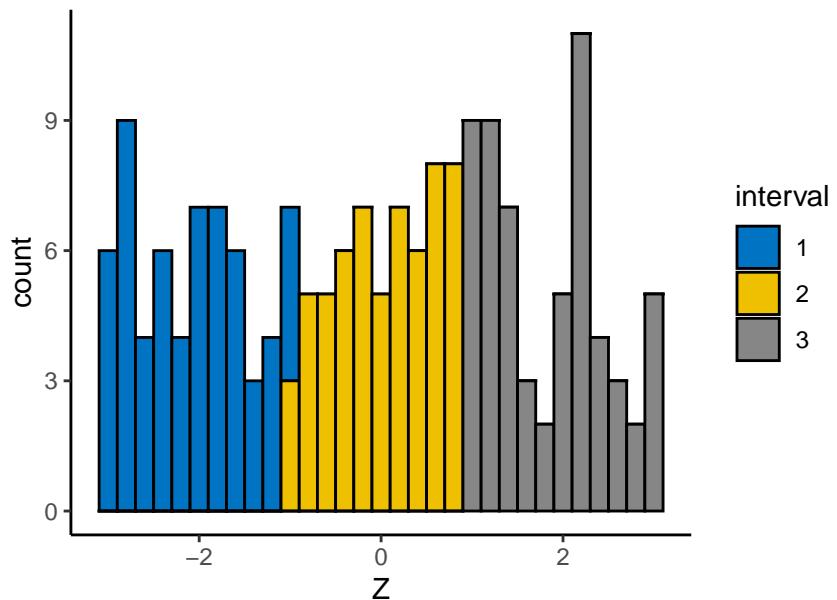


```
##  
## $trial37$sigmabetasq
```



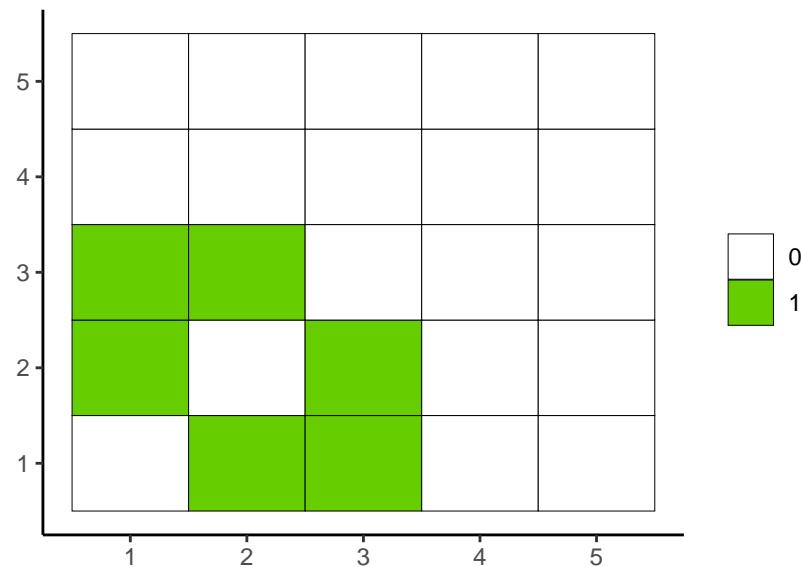
```
##  
##  
## $trial38  
## $trial38$covariates
```

Distribution of Covariate, Trial 38



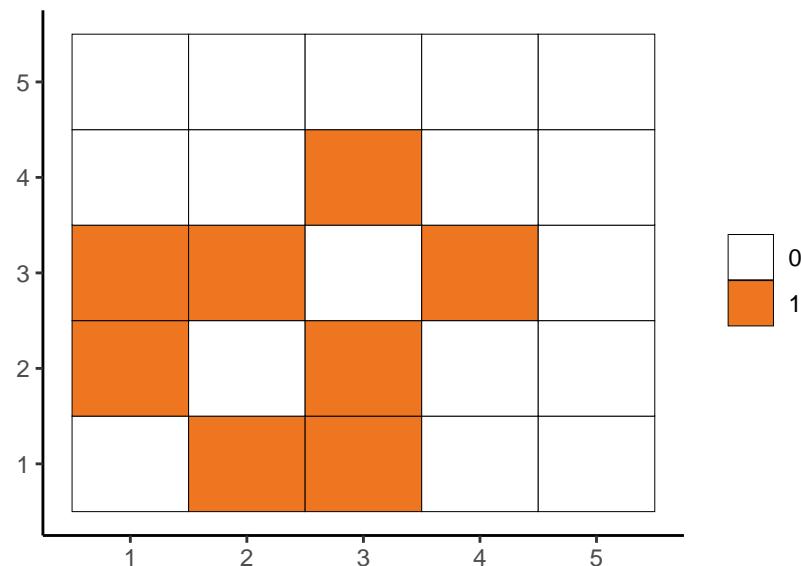
```
##  
## $trial38$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -85272.34           Unique conditional dependence structures: 2  
## n: 180, variables: 5           Hyperparameter grid size: 9 points  
## CAVI converged for 3/5 variables  
##  
## Model fit completed in 29.048 secs  
##  
## $trial38$unique_graphs  
## $trial38$unique_graphs$graph1  
## [1] "1,...,140,176,...,180"  
##  
## $trial38$unique_graphs$graph2  
## [1] "141,...,175"  
##  
## $trial38$unique_graphs[[3]]
```

Graph 1, Individuals 1,...,140,176,...,180



```
##  
## $trial38$unique_graphs[[4]]
```

Graph 2, Individuals 141,...,175

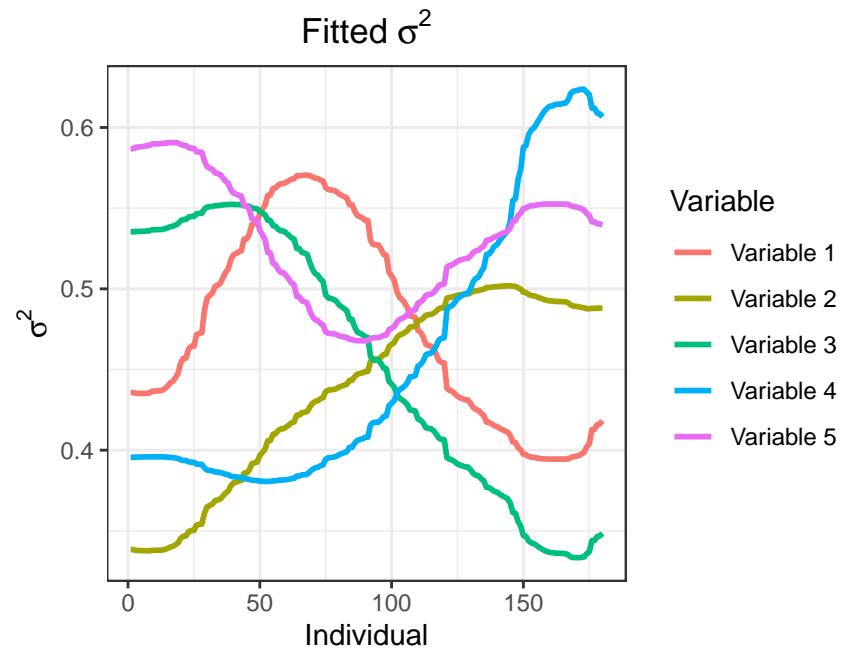


```
##  
##  
## $trial38$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial38$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.45      0.45      0.45      0.05      0.05
##
## $trial38$sigmasq

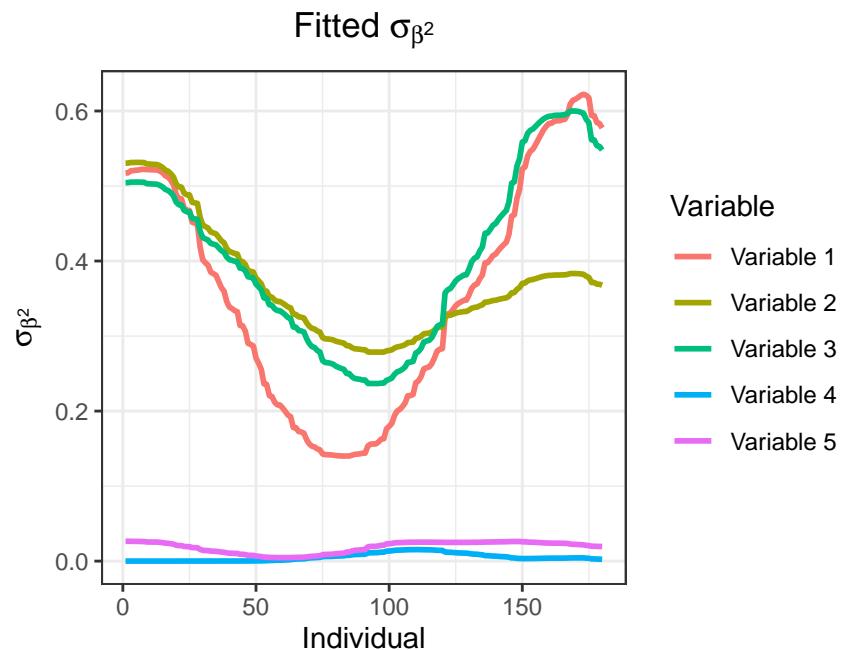
```



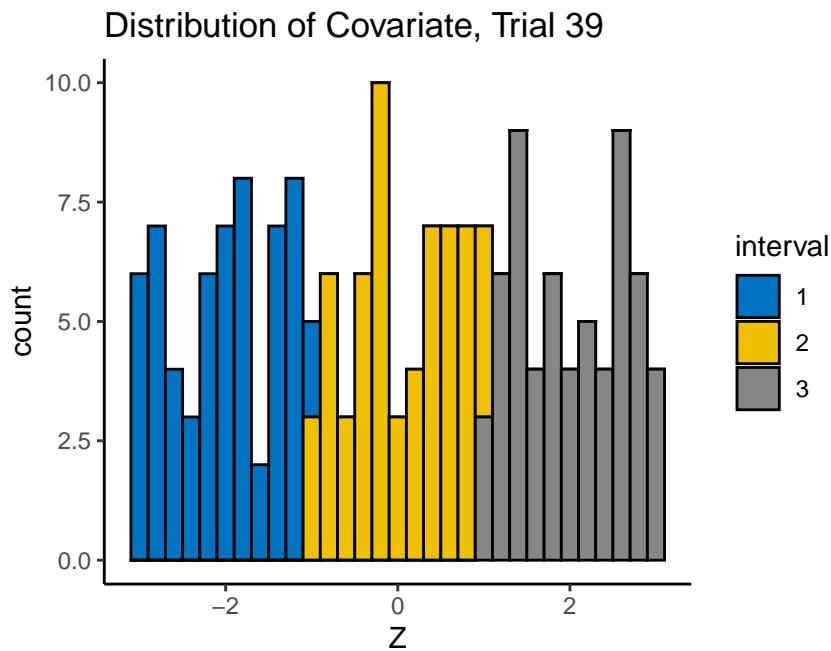
```

## 
## $trial38$sigmabetasq

```



```
##
## $trial39
## $trial39$covariates
```



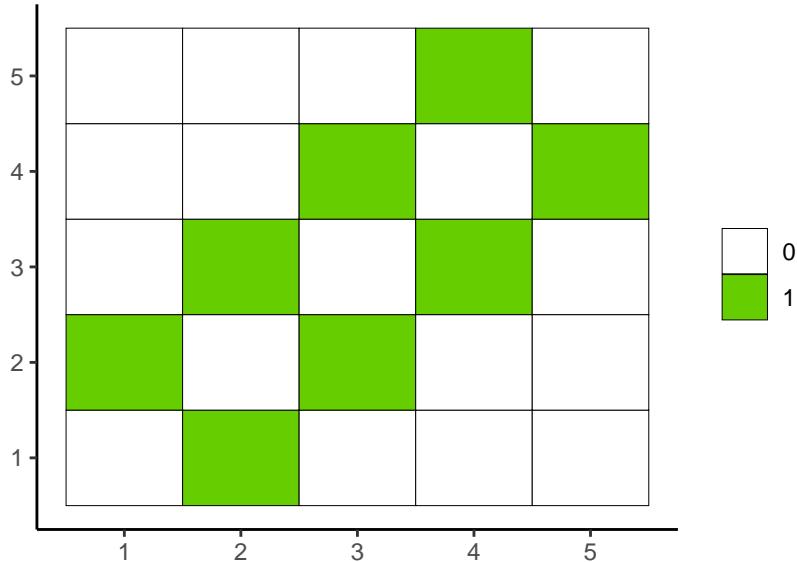
```
##
## $trial39$summary
## Covariate Dependent Graphical Model
##
## Model ELBO: -84826.27           Unique conditional dependence structures: 7
## n: 180, variables: 5             Hyperparameter grid size: 9 points
## CAVI converged for 2/5 variables
##
## Model fit completed in 28.521 secs
##
## $trial39$unique_graphs
## $trial39$unique_graphs$graph1
## [1] "1,...,20"
##
## $trial39$unique_graphs$graph2
## [1] "21,...,26"
##
## $trial39$unique_graphs$graph3
## [1] "27,...,75"
##
## $trial39$unique_graphs$graph4
## [1] "76,...,89"
##
## $trial39$unique_graphs$graph5
## [1] "90,...,121"
##
## $trial39$unique_graphs$graph6
```

```

## [1] "122,...,147"
##
## $trial39$unique_graphs$graph7
## [1] "148,...,180"
##
## $trial39$unique_graphs[[8]]

```

Graph 1, Individuals 1,...,20

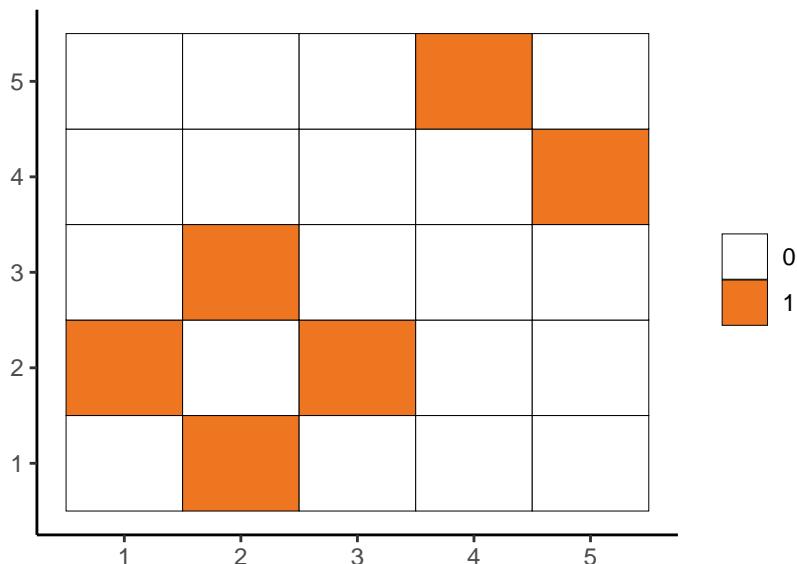


```

##
## $trial39$unique_graphs[[9]]

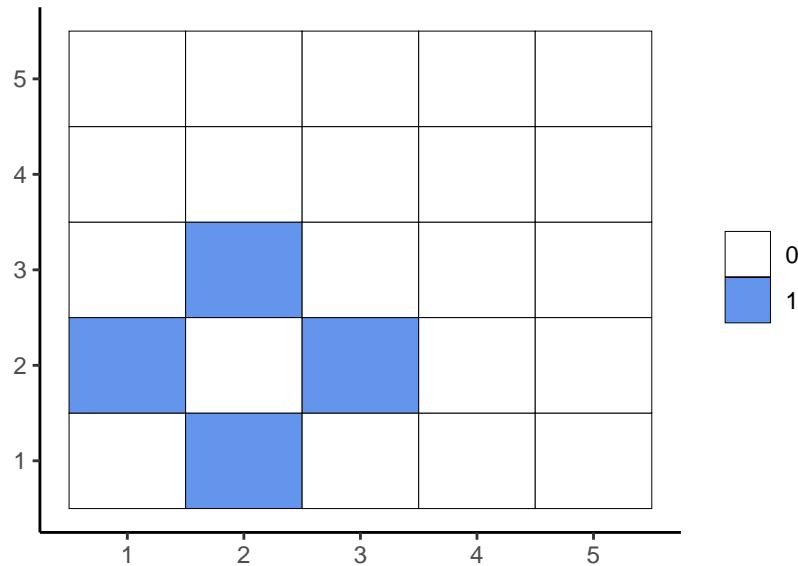
```

Graph 2, Individuals 21,...,26



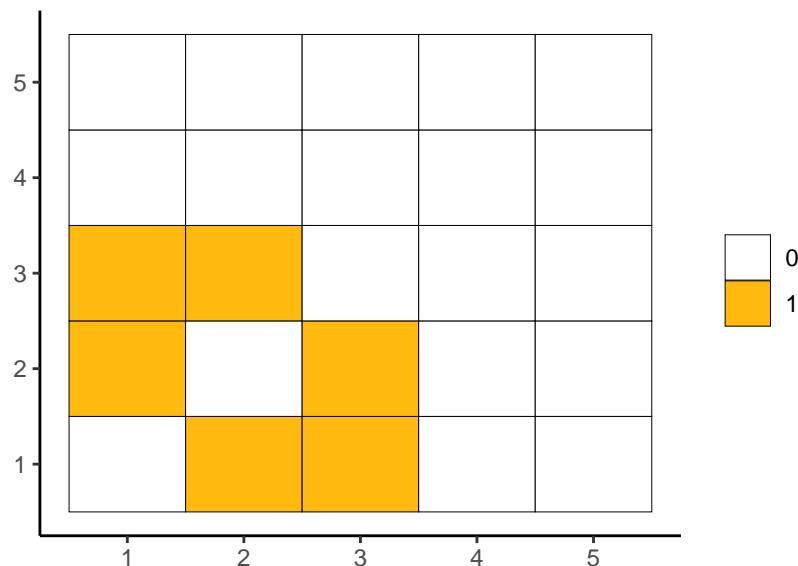
```
##  
## $trial39$unique_graphs[[10]]
```

Graph 3, Individuals 27,...,75



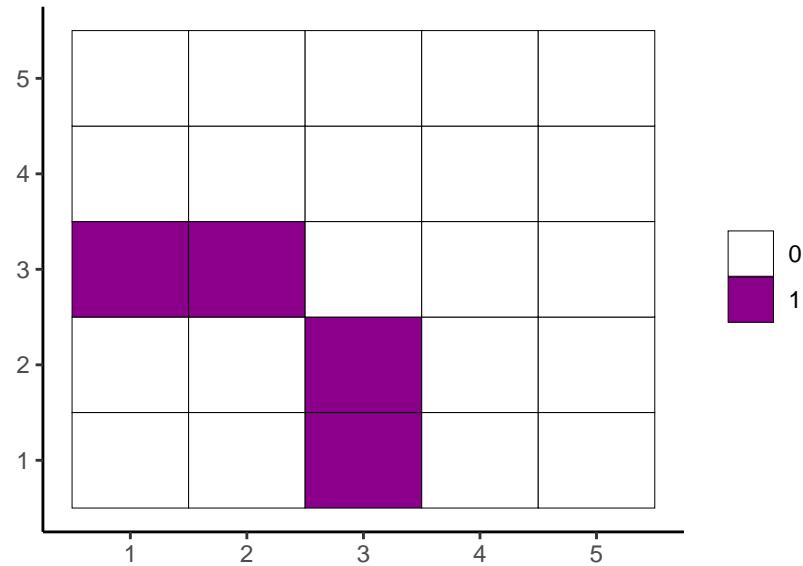
```
##  
## $trial39$unique_graphs[[11]]
```

Graph 4, Individuals 76,...,89



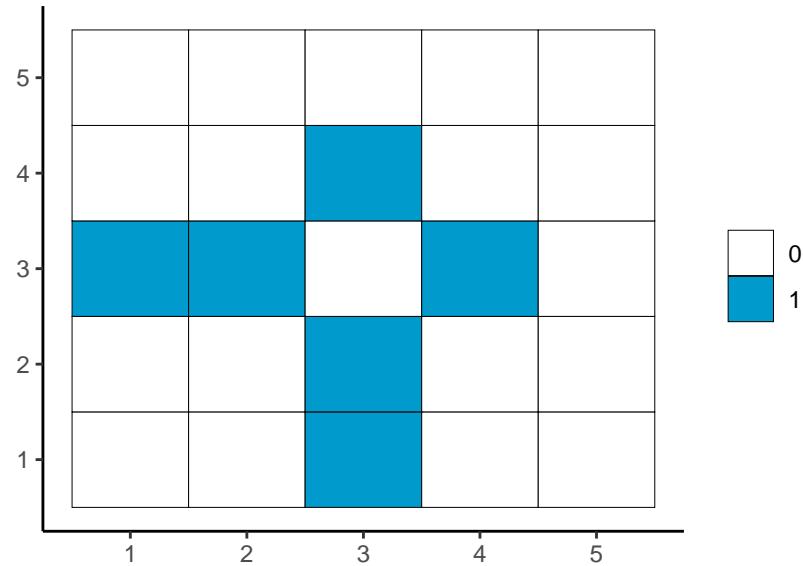
```
##  
## $trial39$unique_graphs[[12]]
```

Graph 5, Individuals 90,...,121



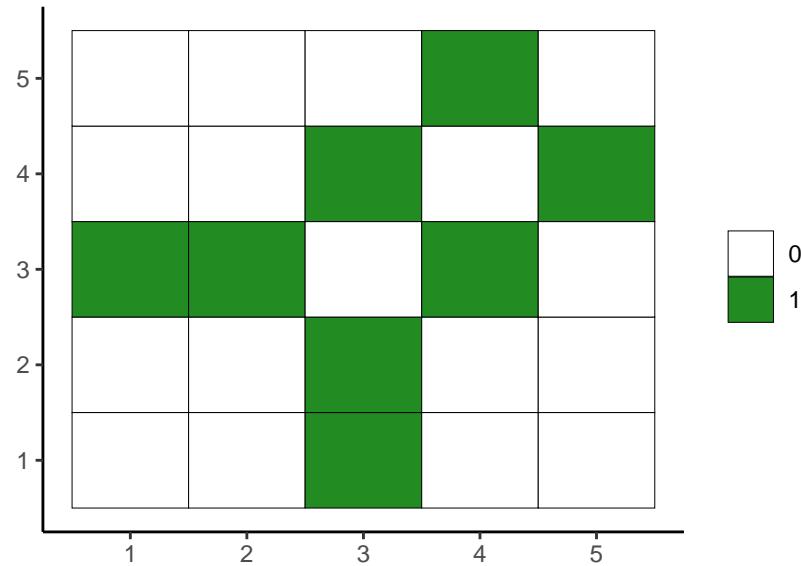
```
##  
## $trial39$unique_graphs[[13]]
```

Graph 6, Individuals 122,...,147

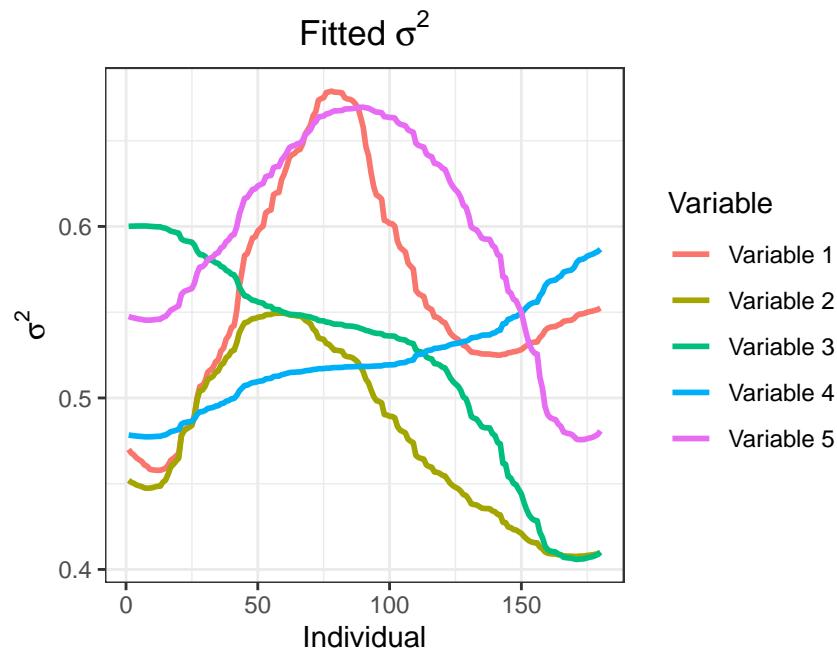


```
##  
## $trial39$unique_graphs[[14]]
```

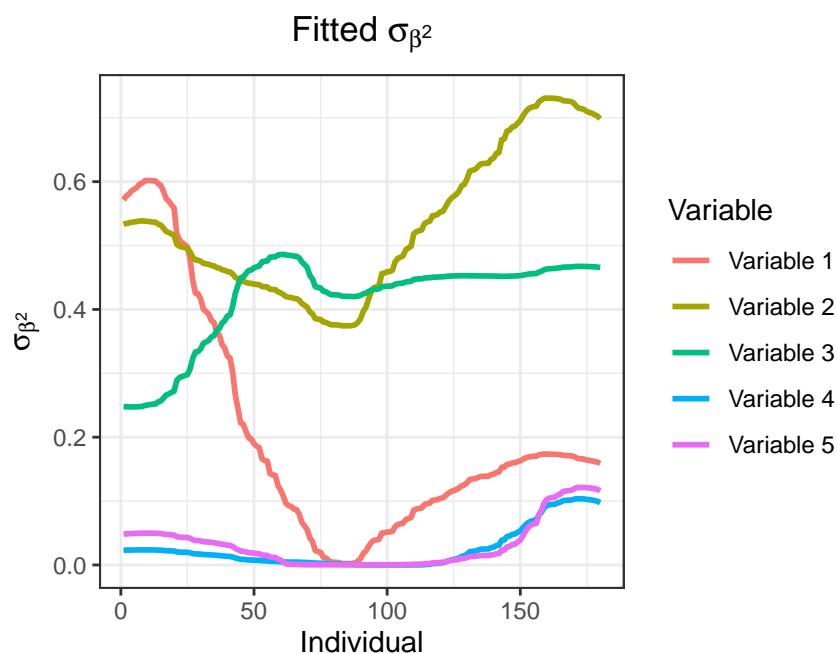
Graph 7, Individuals 148,...,180



```
##  
##  
## $trial39$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial39$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.30      0.45      0.45      0.45      0.05  
##  
## $trial39$sigmasq
```

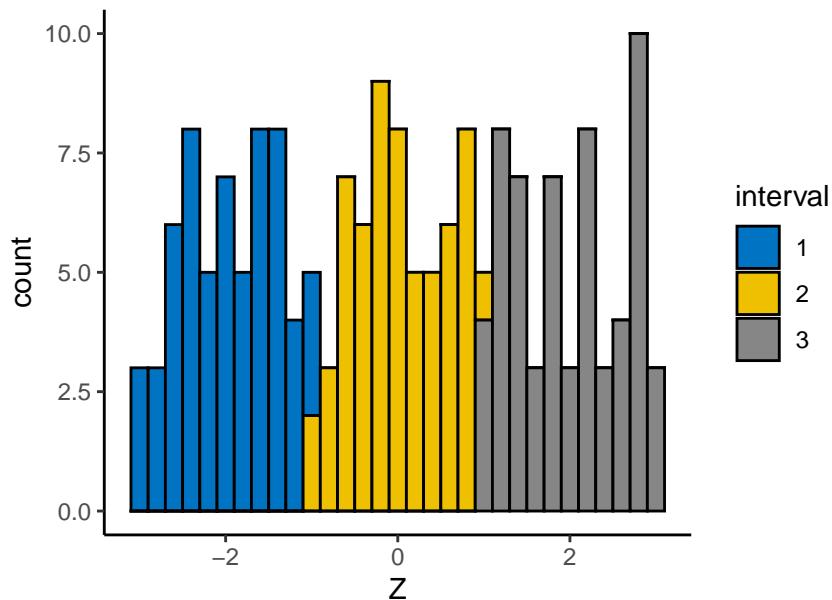


```
##  
## $trial39$sigmabetasq
```



```
##  
##  
## $trial40  
## $trial40$covariates
```

Distribution of Covariate, Trial 40



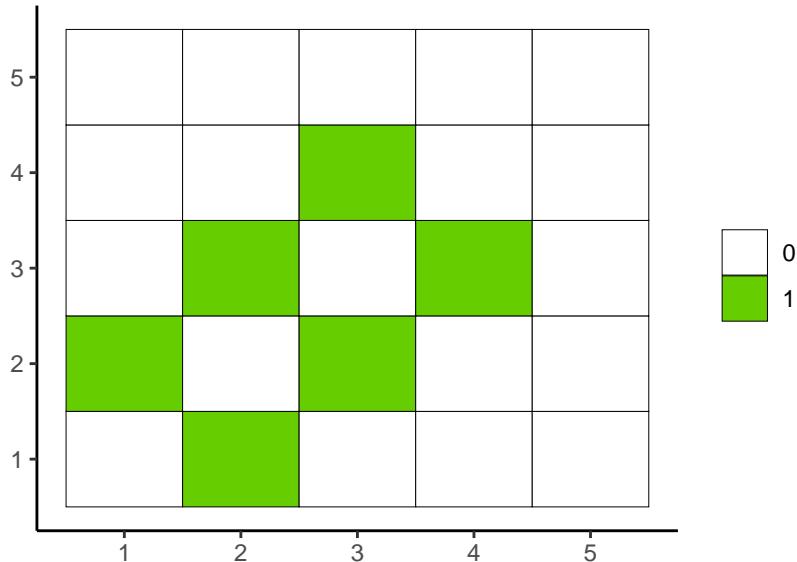
```
##  
## $trial40$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -85722.35           Unique conditional dependence structures: 12  
## n: 180, variables: 5           Hyperparameter grid size: 9 points  
## CAVI converged for 4/5 variables  
##  
## Model fit completed in 32.21 secs  
##  
## $trial40$unique_graphs  
## $trial40$unique_graphs$graph1  
## [1] "1,...,5,19,...,41"  
##  
## $trial40$unique_graphs$graph2  
## [1] "6,...,18"  
##  
## $trial40$unique_graphs$graph3  
## [1] "42,...,46"  
##  
## $trial40$unique_graphs$graph4  
## [1] "47,...,60"  
##  
## $trial40$unique_graphs$graph5  
## [1] "61,...,72"  
##  
## $trial40$unique_graphs$graph6  
## [1] "73,...,93"  
##  
## $trial40$unique_graphs$graph7  
## [1] "94,...,104"  
##
```

```

## $trial40$unique_graphs$graph8
## [1] "105,...,108"
##
## $trial40$unique_graphs$graph9
## [1] "109,...,140"
##
## $trial40$unique_graphs$graph10
## [1] "141,...,143"
##
## $trial40$unique_graphs$graph11
## [1] "144,...,148"
##
## $trial40$unique_graphs$graph12
## [1] "149,...,180"
##
## $trial40$unique_graphs[[13]]

```

Graph 1, Individuals 1,...,5,19,...,41

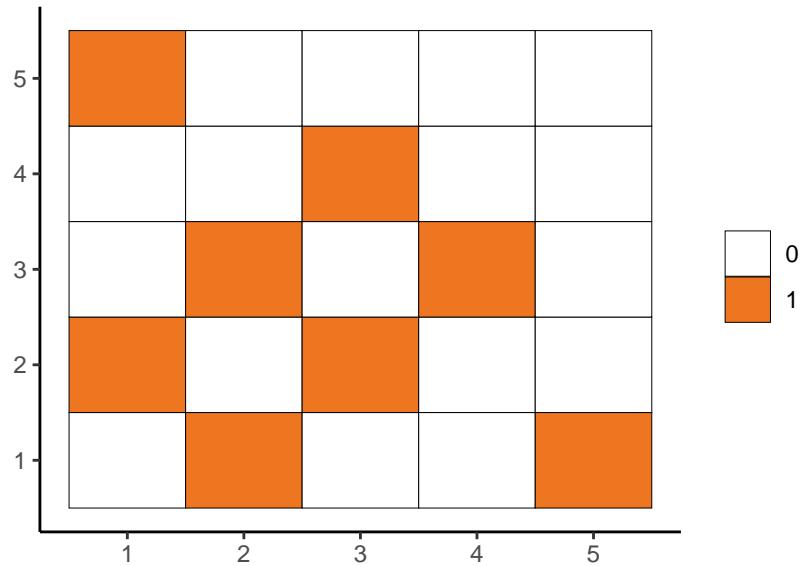


```

##
## $trial40$unique_graphs[[14]]

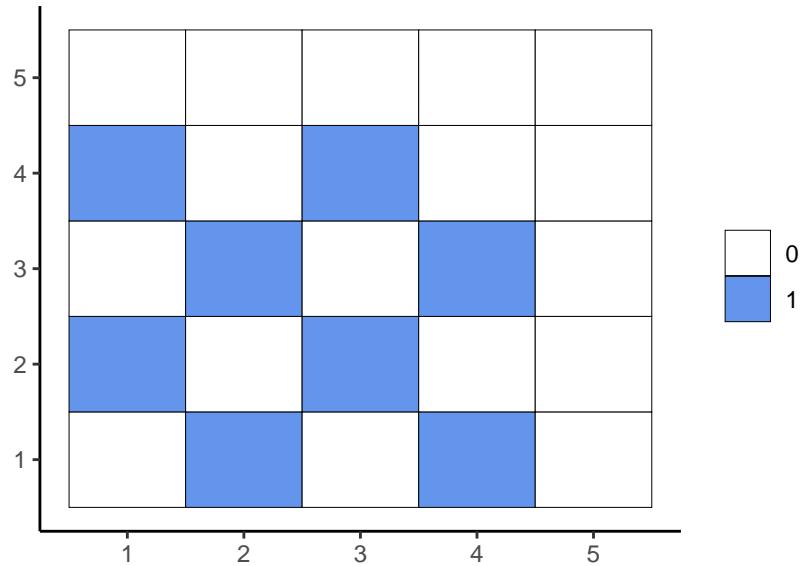
```

Graph 2, Individuals 6,...,18



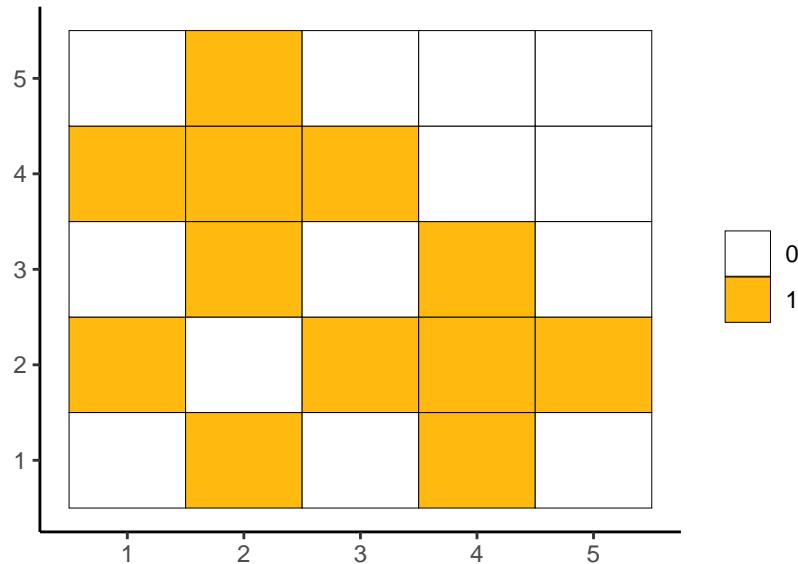
```
##  
## $trial40$unique_graphs[[15]]
```

Graph 3, Individuals 42,...,46



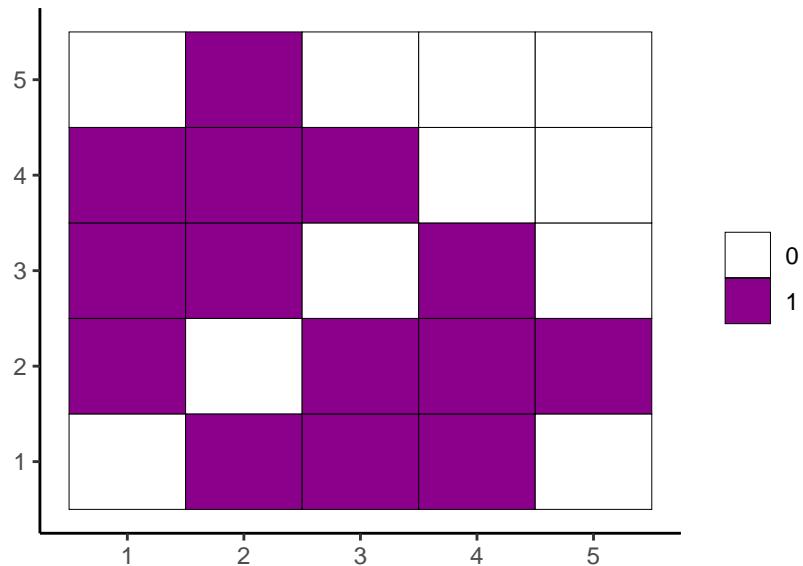
```
##  
## $trial40$unique_graphs[[16]]
```

Graph 4, Individuals 47,...,60



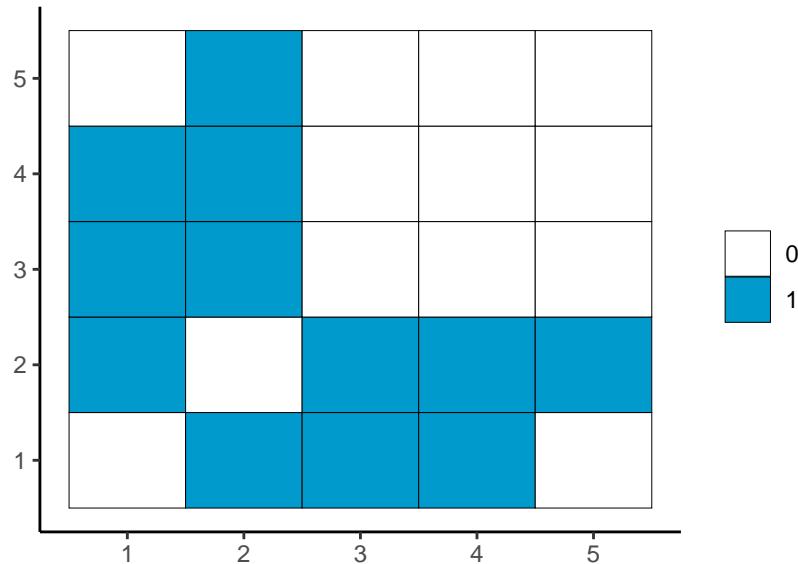
```
##  
## $trial40$unique_graphs[[17]]
```

Graph 5, Individuals 61,...,72



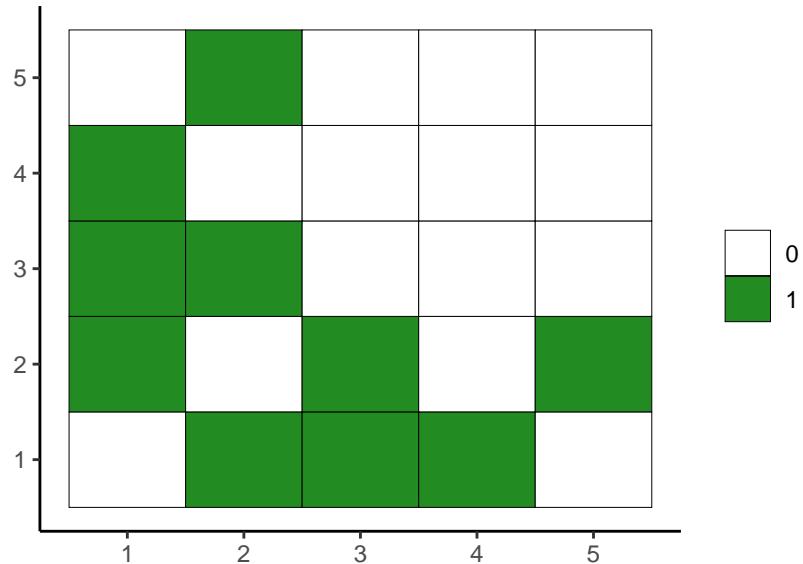
```
##  
## $trial40$unique_graphs[[18]]
```

Graph 6, Individuals 73,...,93



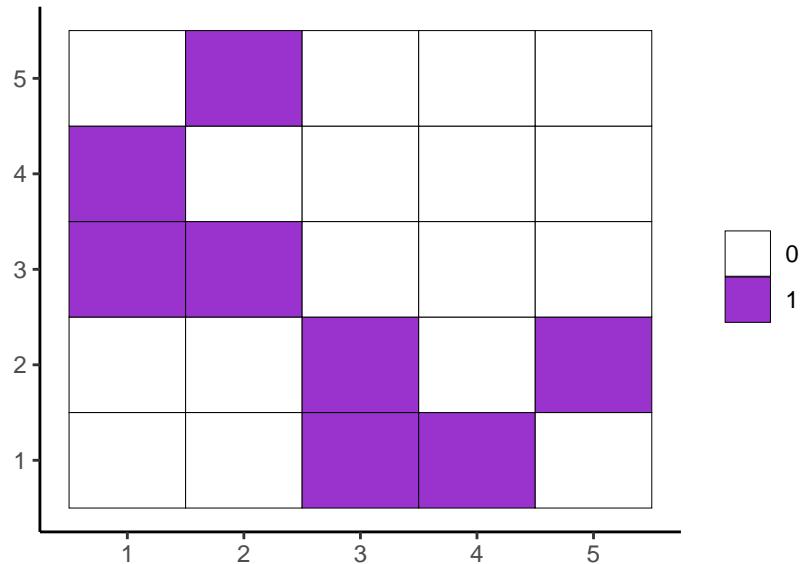
```
##  
## $trial40$unique_graphs[[19]]
```

Graph 7, Individuals 94,...,104



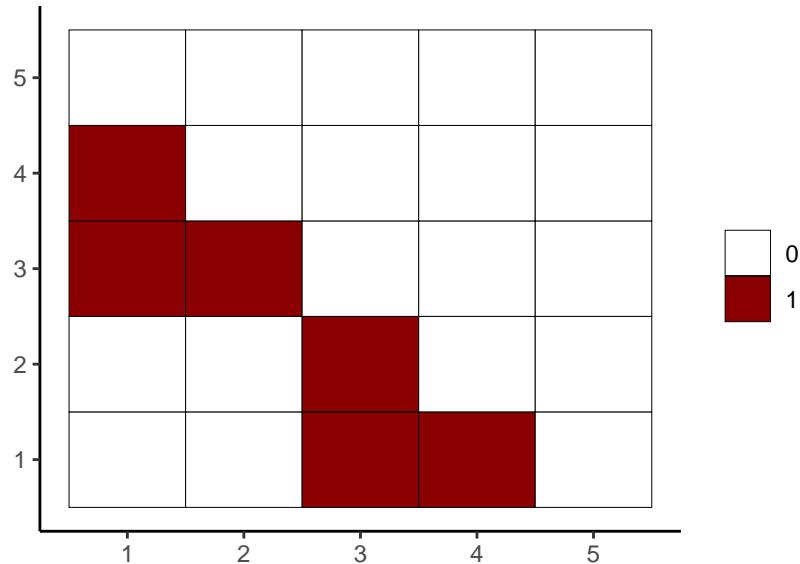
```
##  
## $trial40$unique_graphs[[20]]
```

Graph 8, Individuals 105,...,108



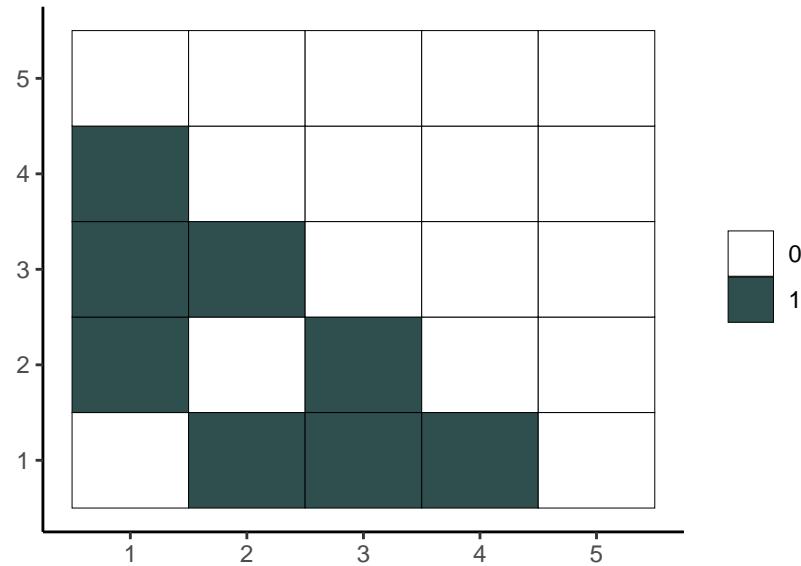
```
##  
## $trial40$unique_graphs[[21]]
```

Graph 9, Individuals 109,...,140



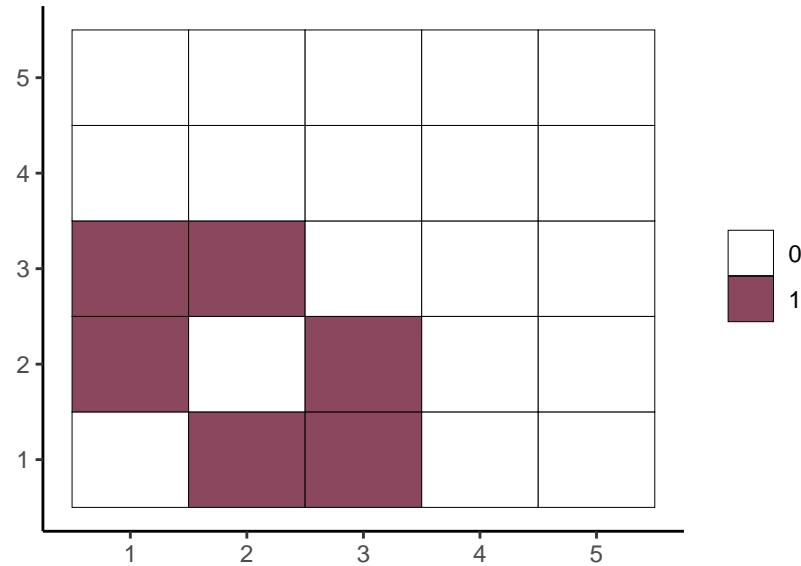
```
##  
## $trial40$unique_graphs[[22]]
```

Graph 10, Individuals 141,...,143



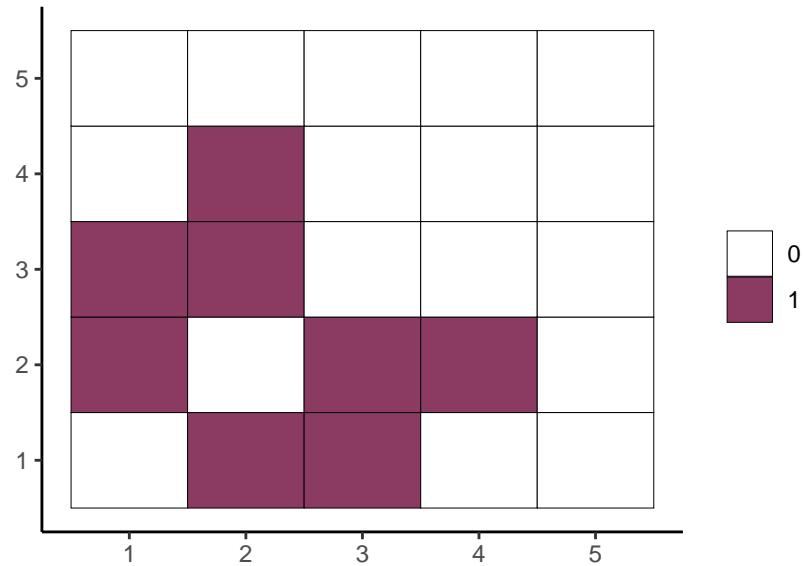
```
##  
## $trial40$unique_graphs[[23]]
```

Graph 11, Individuals 144,...,148

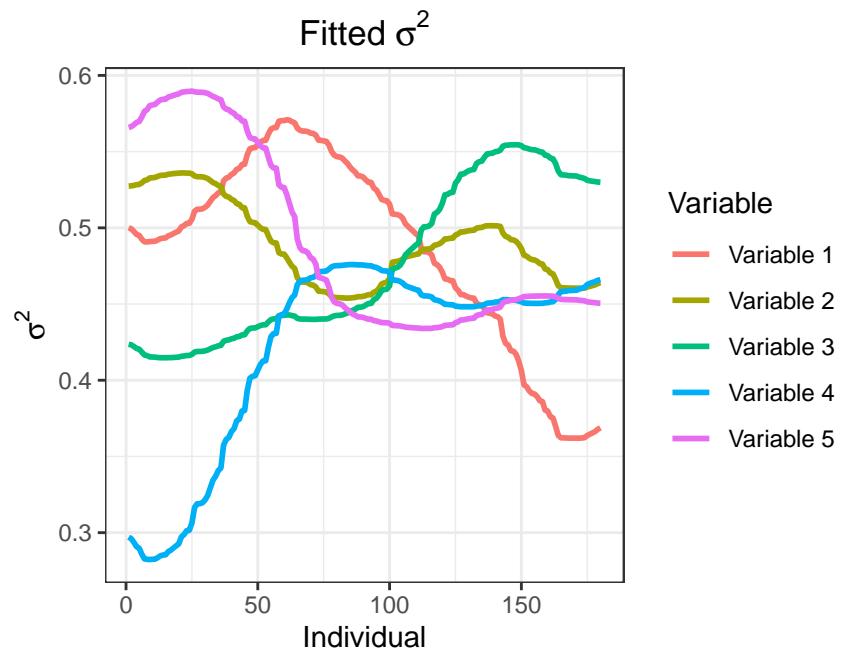


```
##  
## $trial40$unique_graphs[[24]]
```

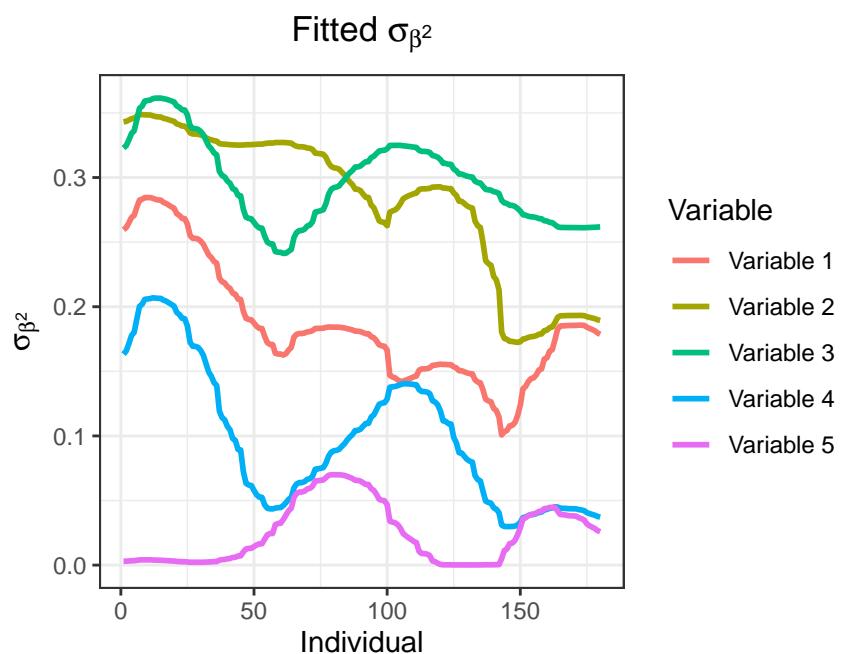
Graph 12, Individuals 149,...,180



```
##  
##  
## $trial40$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial40$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          0.45      0.45      0.45      0.20      0.05  
##  
## $trial40$sigmasq
```

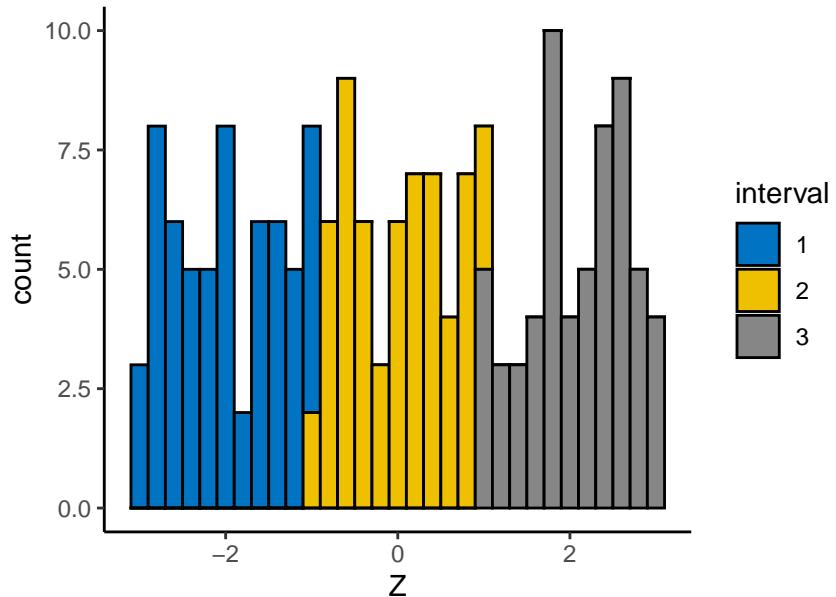


```
##  
## $trial40$sigmabetasq
```



```
##  
##  
## $trial41  
## $trial41$covariates
```

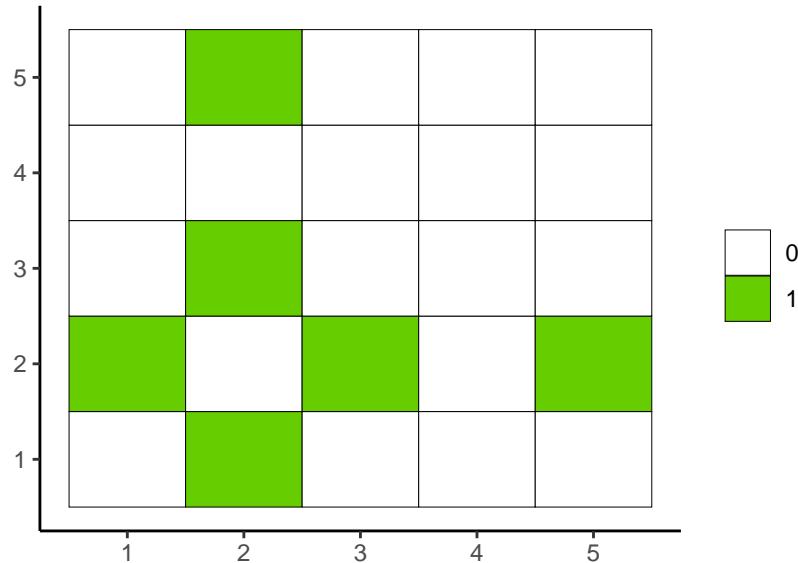
Distribution of Covariate, Trial 41



```
##  
## $trial41$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84805.42           Unique conditional dependence structures: 8  
## n: 180, variables: 5           Hyperparameter grid size: 9 points  
## CAVI converged for 3/5 variables  
##  
## Model fit completed in 28.028 secs  
##  
## $trial41$unique_graphs  
## $trial41$unique_graphs$graph1  
## [1] "1,...,37"  
##  
## $trial41$unique_graphs$graph2  
## [1] "38,...,64"  
##  
## $trial41$unique_graphs$graph3  
## [1] "65,...,86"  
##  
## $trial41$unique_graphs$graph4  
## [1] "87,...,114"  
##  
## $trial41$unique_graphs$graph5  
## [1] "115,...,131"  
##  
## $trial41$unique_graphs$graph6  
## [1] "132,133"  
##  
## $trial41$unique_graphs$graph7  
## [1] "134,...,145"  
##
```

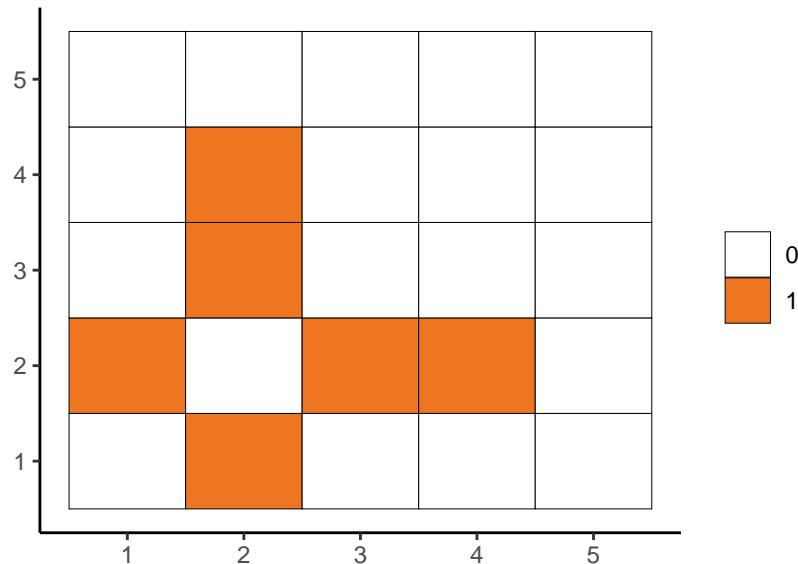
```
## $trial41$unique_graphs$graph8
## [1] "146,...,180"
##
## $trial41$unique_graphs[[9]]
```

Graph 1, Individuals 1,...,37



```
##
## $trial41$unique_graphs[[10]]
```

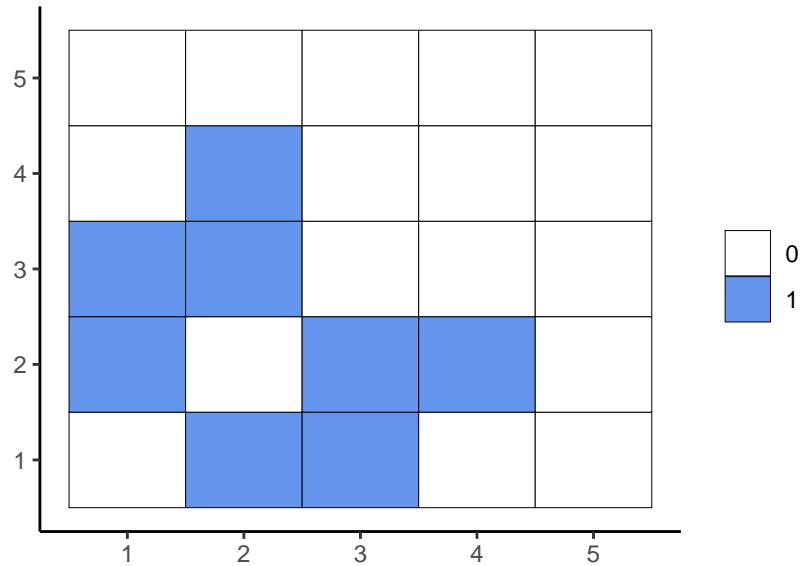
Graph 2, Individuals 38,...,64



```
##
```

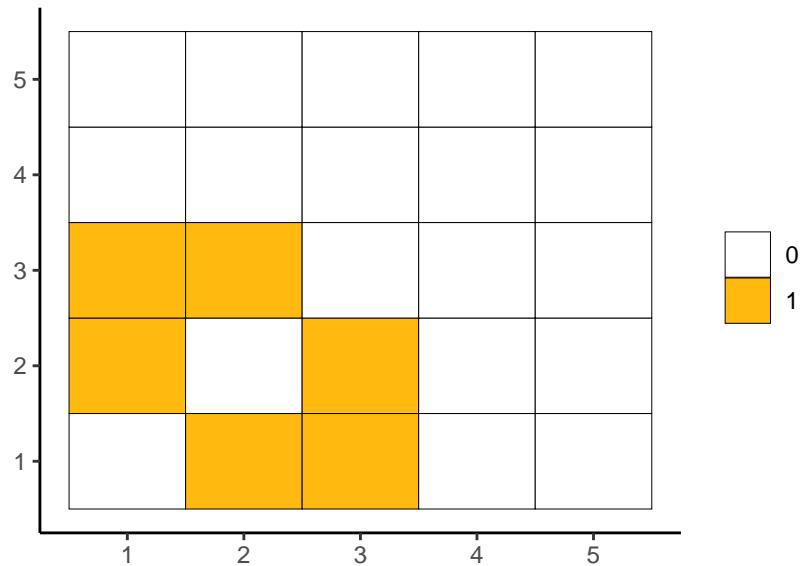
```
## $trial41$unique_graphs[[11]]
```

Graph 3, Individuals 65,...,86



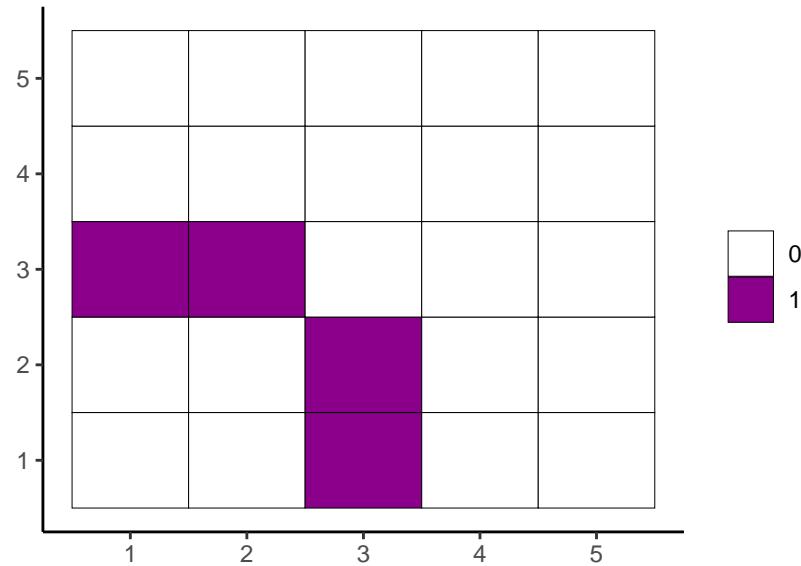
```
##  
## $trial41$unique_graphs[[12]]
```

Graph 4, Individuals 87,...,114



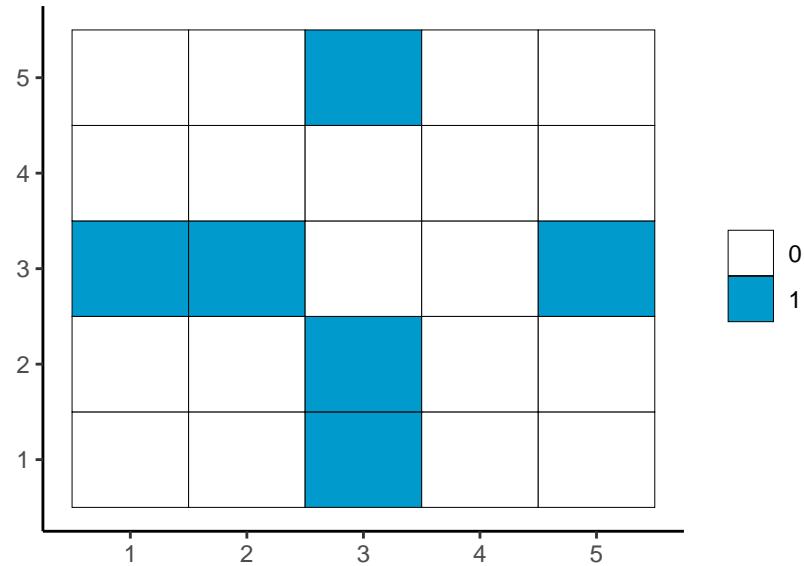
```
##  
## $trial41$unique_graphs[[13]]
```

Graph 5, Individuals 115,...,131



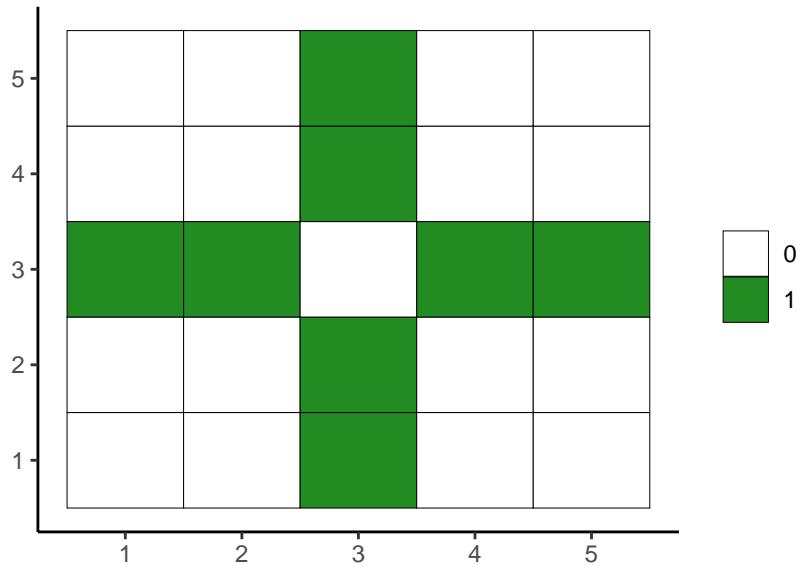
```
##  
## $trial41$unique_graphs[[14]]
```

Graph 6, Individuals 132,133



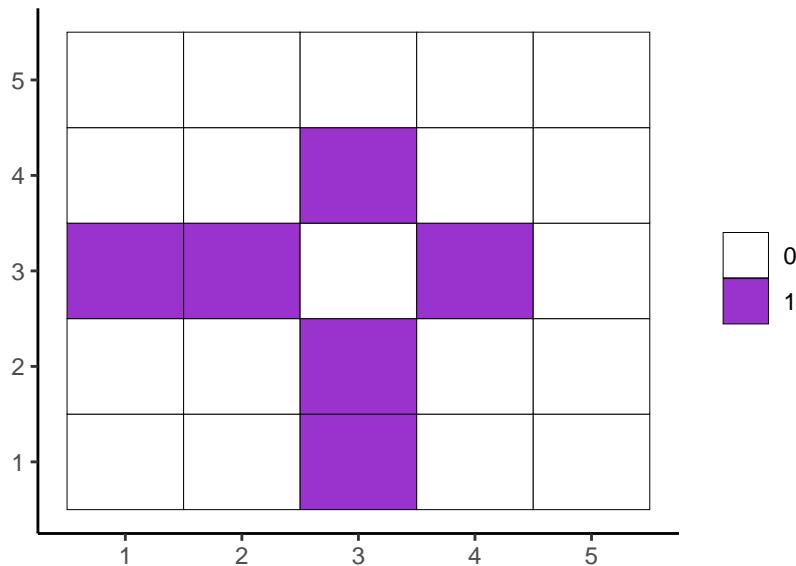
```
##  
## $trial41$unique_graphs[[15]]
```

Graph 7, Individuals 134,...,145



```
##  
## $trial41$unique_graphs[[16]]
```

Graph 8, Individuals 146,...,180

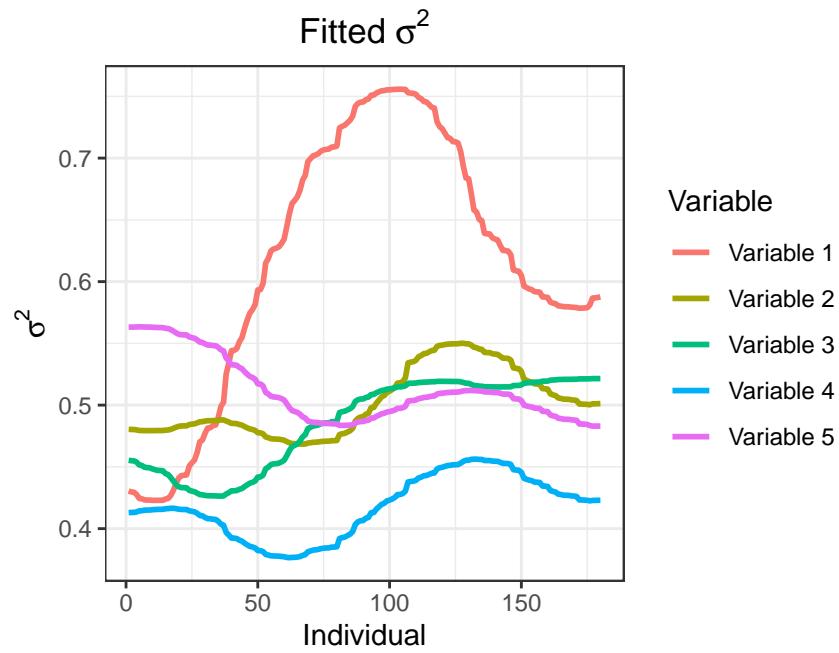


```
##  
##  
## $trial41$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial41$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.45      0.45      0.45      0.05      0.05
##
## $trial41$sigmasq

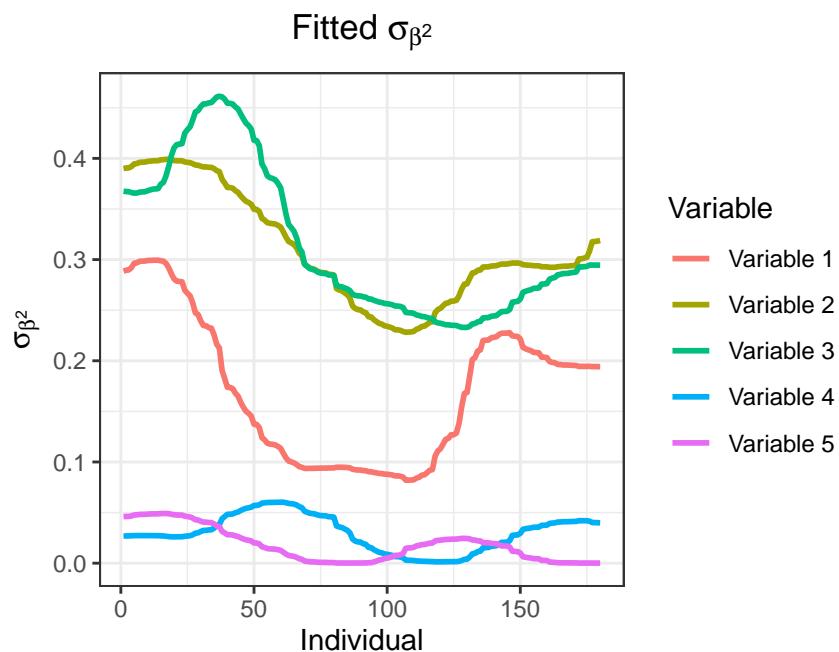
```



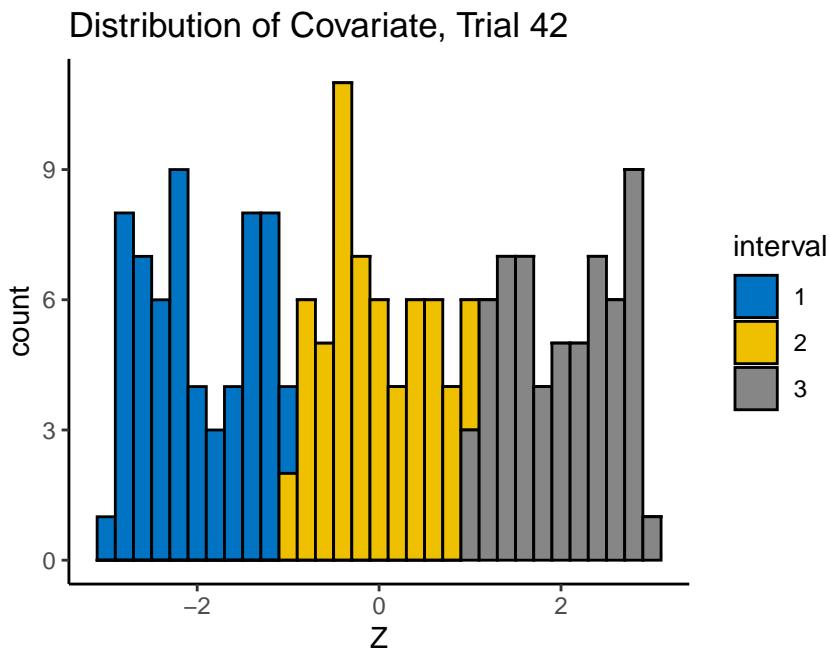
```

## $trial41$sigmabetasq

```

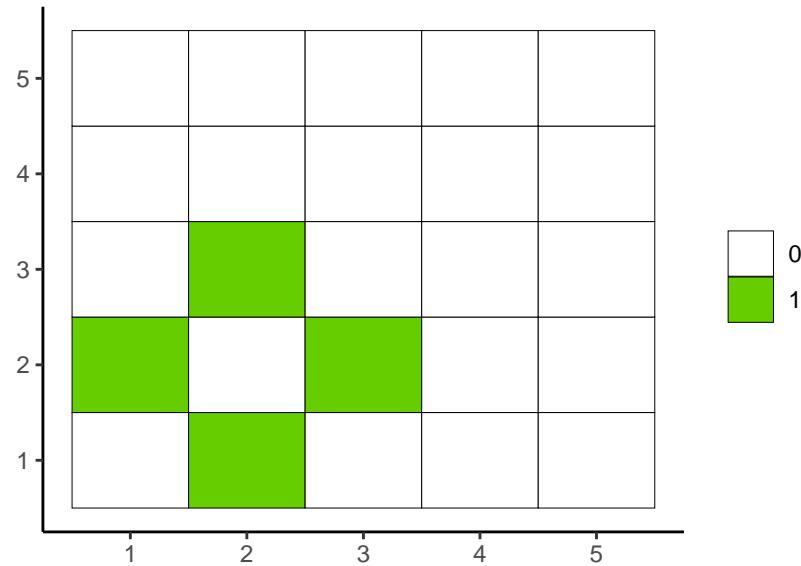


```
##  
##  
## $trial42  
## $trial42$covariates
```



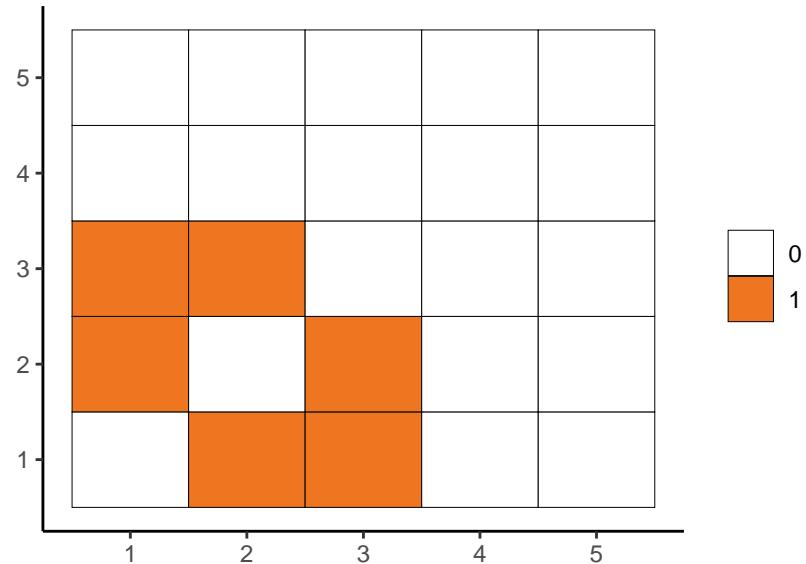
```
##  
## $trial42$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84758.09 Unique conditional dependence structures: 5  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 2/5 variables  
##  
## Model fit completed in 32.324 secs  
##  
## $trial42$unique_graphs  
## $trial42$unique_graphs$graph1  
## [1] "1,...,64"  
##  
## $trial42$unique_graphs$graph2  
## [1] "65,...,100,170,...,180"  
##  
## $trial42$unique_graphs$graph3  
## [1] "101,...,128"  
##  
## $trial42$unique_graphs$graph4  
## [1] "129,...,144"  
##  
## $trial42$unique_graphs$graph5  
## [1] "145,...,169"  
##  
## $trial42$unique_graphs[[6]]
```

Graph 1, Individuals 1,...,64



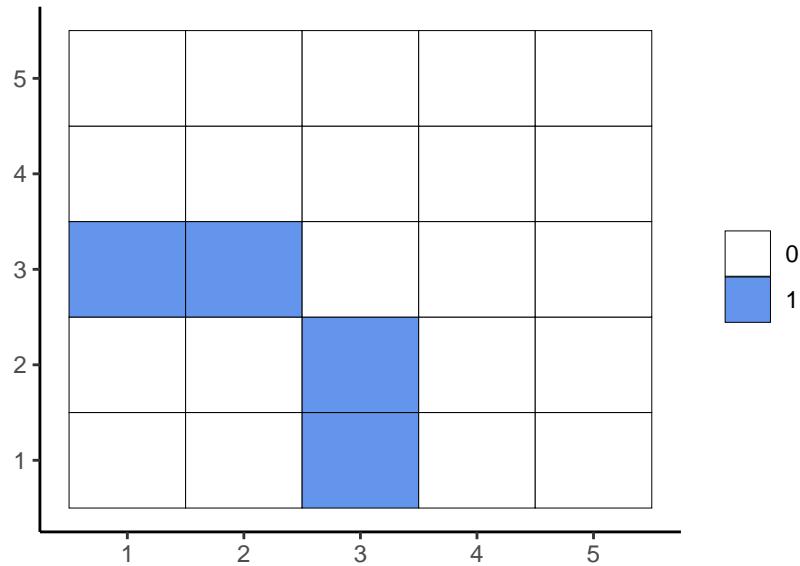
```
##  
## $trial42$unique_graphs[[7]]
```

Graph 2, Individuals 65,...,100,170,...,180



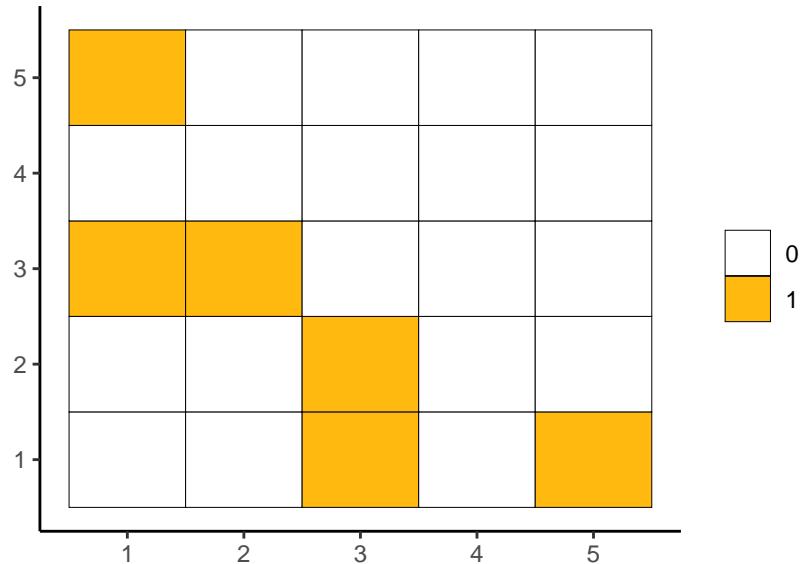
```
##  
## $trial42$unique_graphs[[8]]
```

Graph 3, Individuals 101,...,128



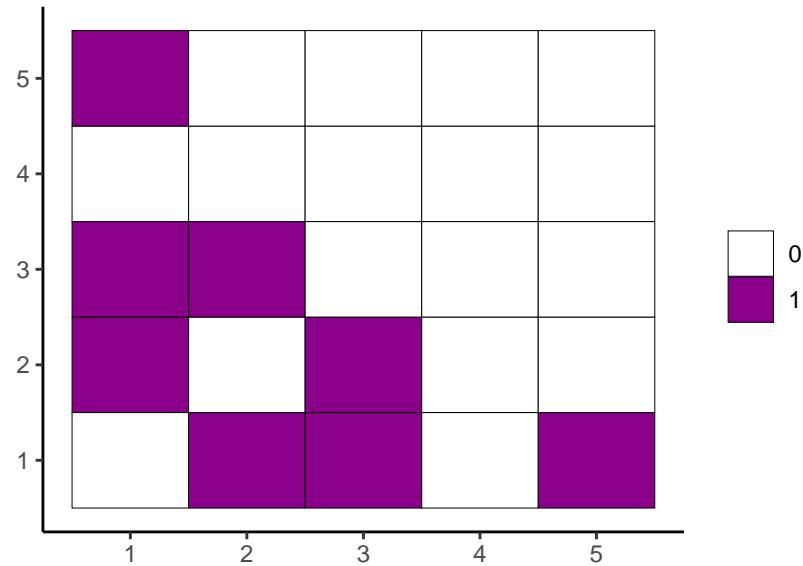
```
##  
## $trial42$unique_graphs[[9]]
```

Graph 4, Individuals 129,...,144

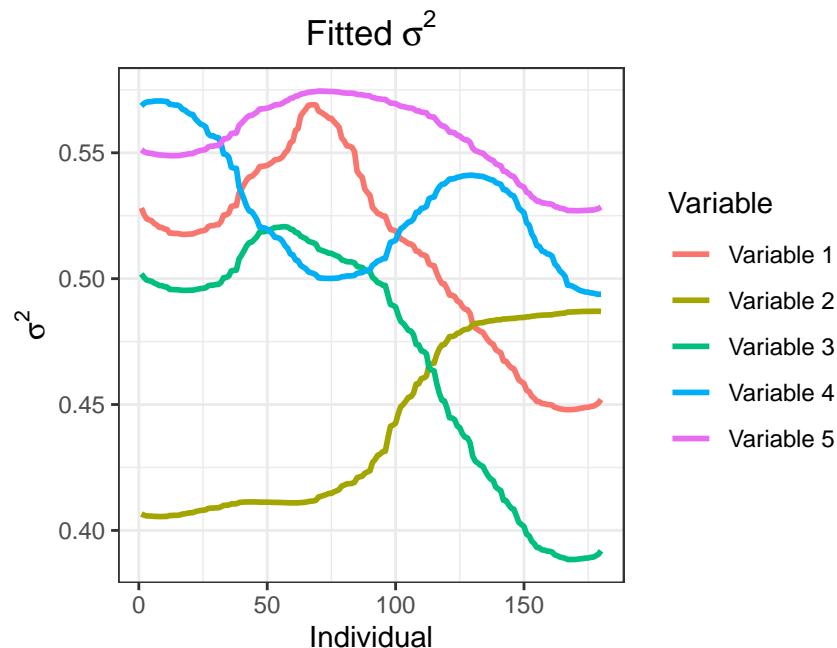


```
##  
## $trial42$unique_graphs[[10]]
```

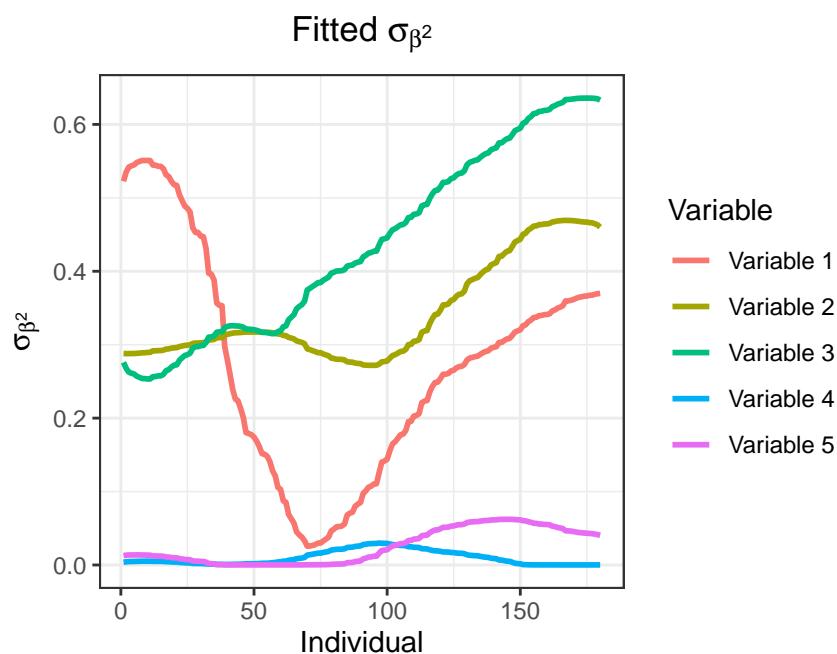
Graph 5, Individuals 145,...,169



```
##  
##  
## $trial42$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1           1           1           1           1  
##  
## $trial42$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          0.05       0.45       0.45       0.05       0.05  
##  
## $trial42$sigmasq
```

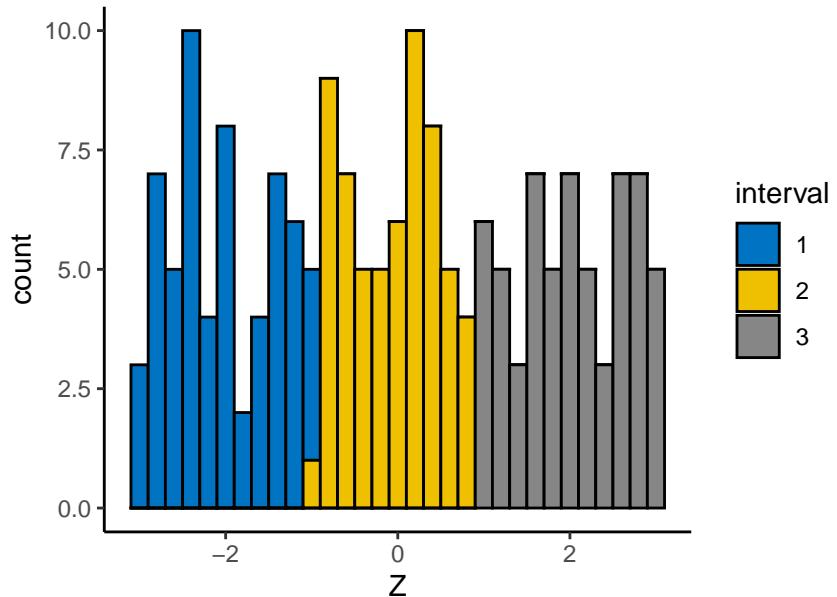


```
##  
## $trial42$sigmabetasq
```



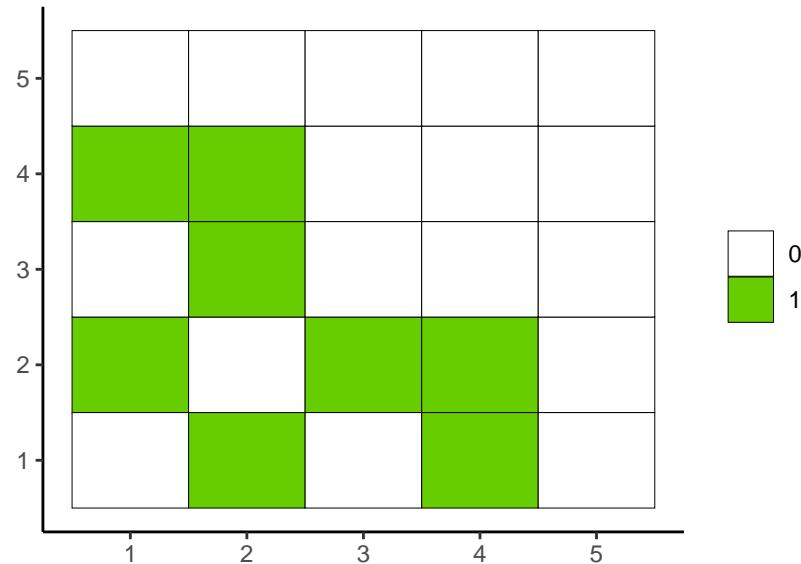
```
##  
##  
## $trial43  
## $trial43$covariates
```

Distribution of Covariate, Trial 43



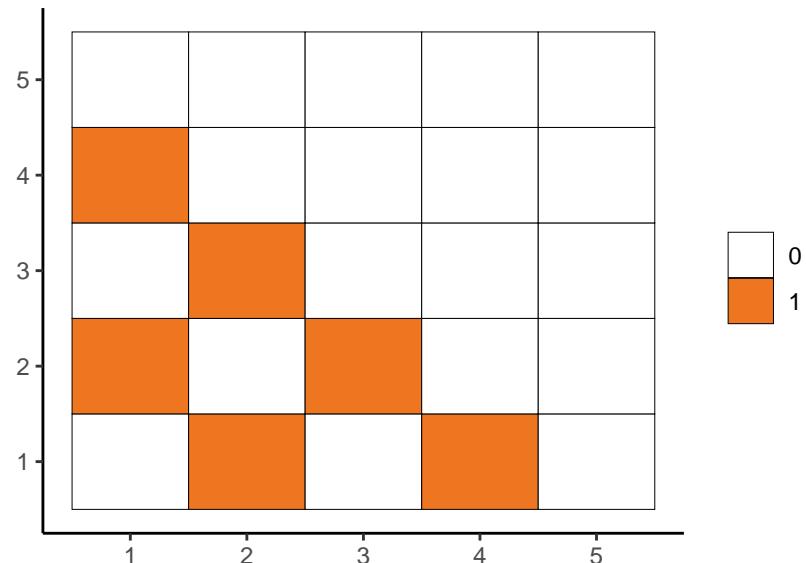
```
##  
## $trial43$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -85696.73           Unique conditional dependence structures: 4  
## n: 180, variables: 5           Hyperparameter grid size: 9 points  
## CAVI converged for 2/5 variables  
##  
## Model fit completed in 34.101 secs  
##  
## $trial43$unique_graphs  
## $trial43$unique_graphs$graph1  
## [1] "1,...,56"  
##  
## $trial43$unique_graphs$graph2  
## [1] "57,...,69"  
##  
## $trial43$unique_graphs$graph3  
## [1] "70,...,156"  
##  
## $trial43$unique_graphs$graph4  
## [1] "157,...,180"  
##  
## $trial43$unique_graphs[[5]]
```

Graph 1, Individuals 1,...,56



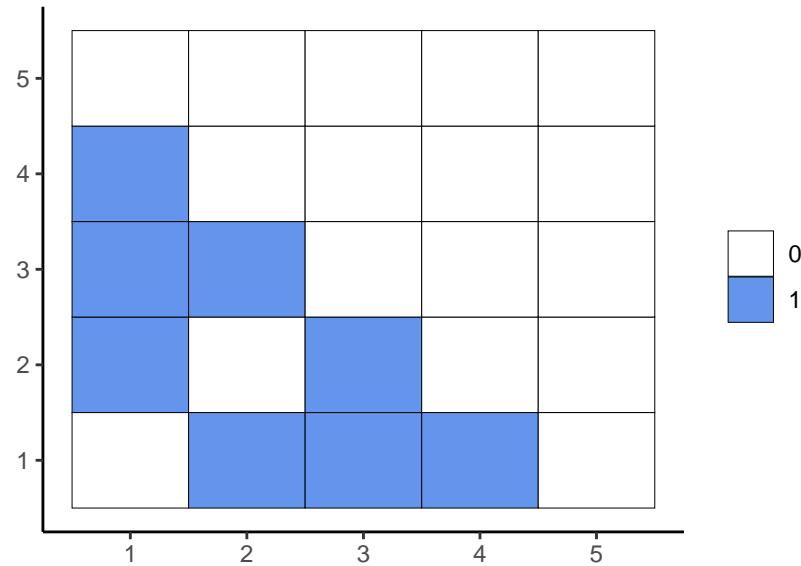
```
##  
## $trial43$unique_graphs[[6]]
```

Graph 2, Individuals 57,...,69



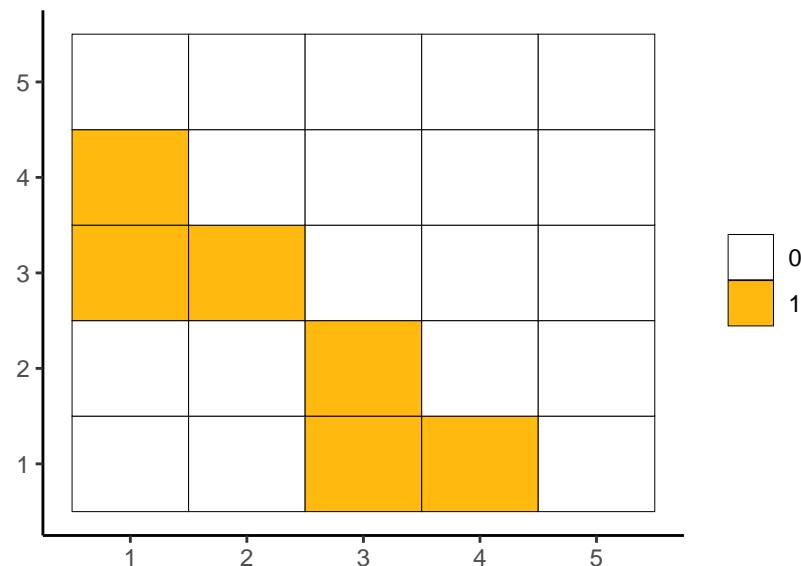
```
##  
## $trial43$unique_graphs[[7]]
```

Graph 3, Individuals 70,...,156



```
##  
## $trial43$unique_graphs[[8]]
```

Graph 4, Individuals 157,...,180

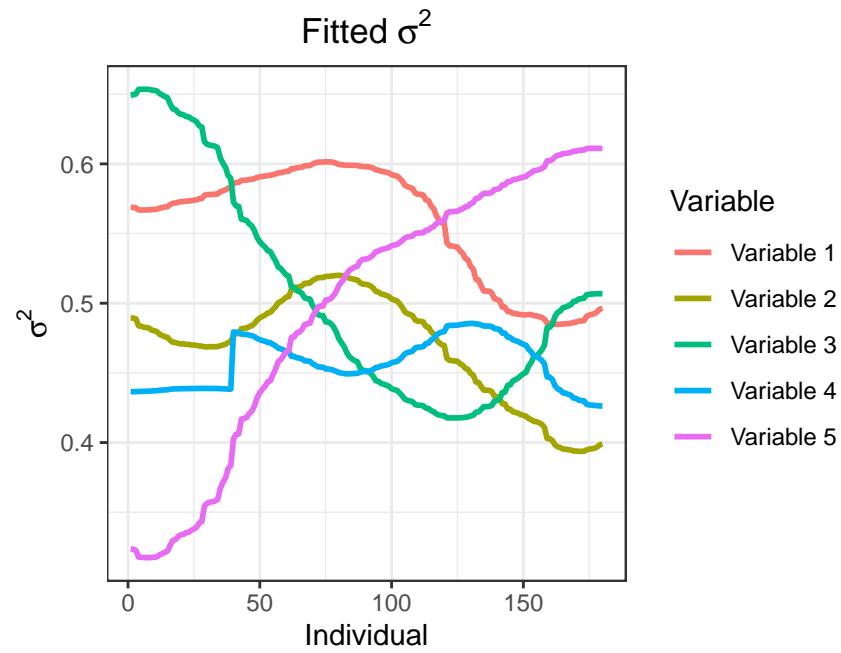


```
##  
##  
## $trial43$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial43$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.45      0.45      0.45      0.05      0.05
##
## $trial43$sigmasq

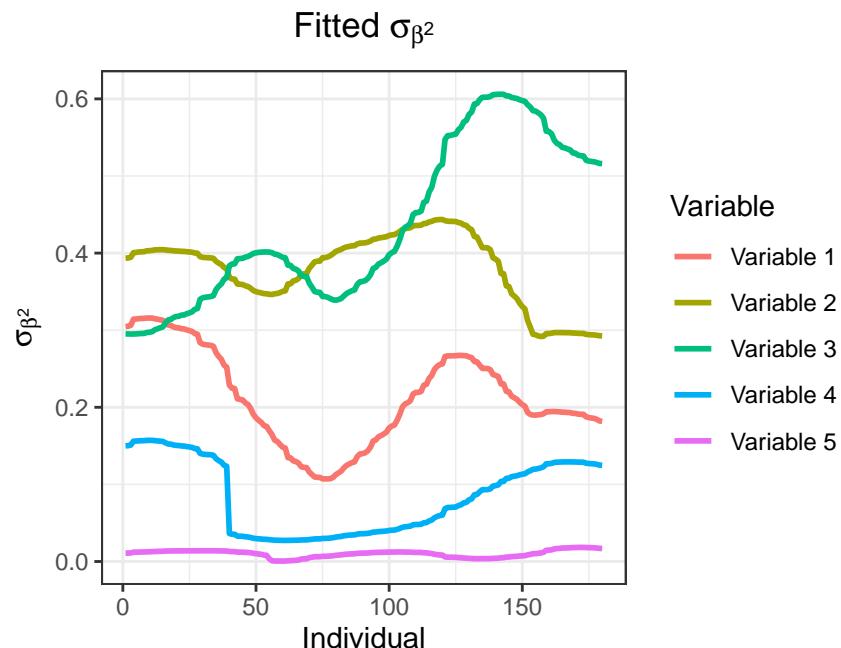
```



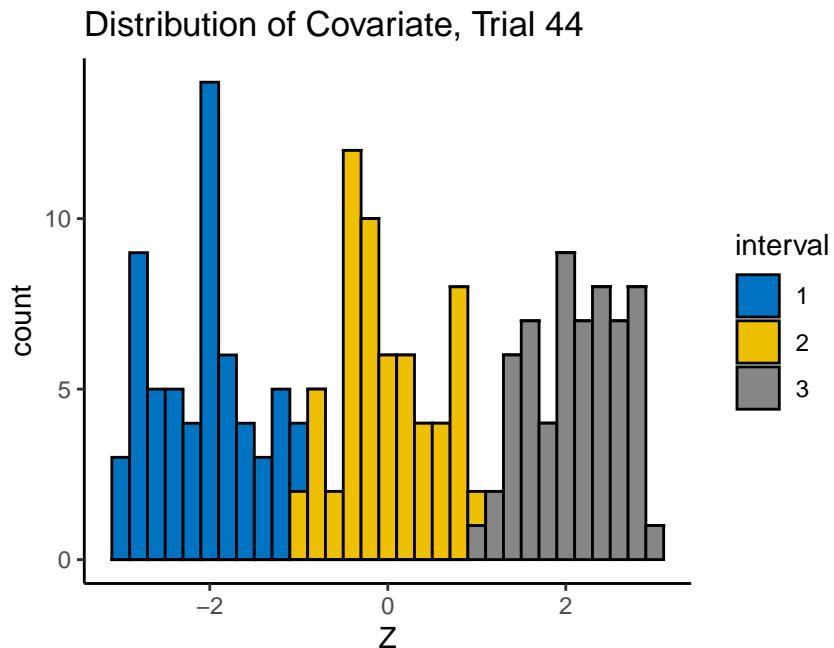
```

## $trial43$sigmabetasq

```



```
##  
##  
## $trial44  
## $trial44$covariates
```

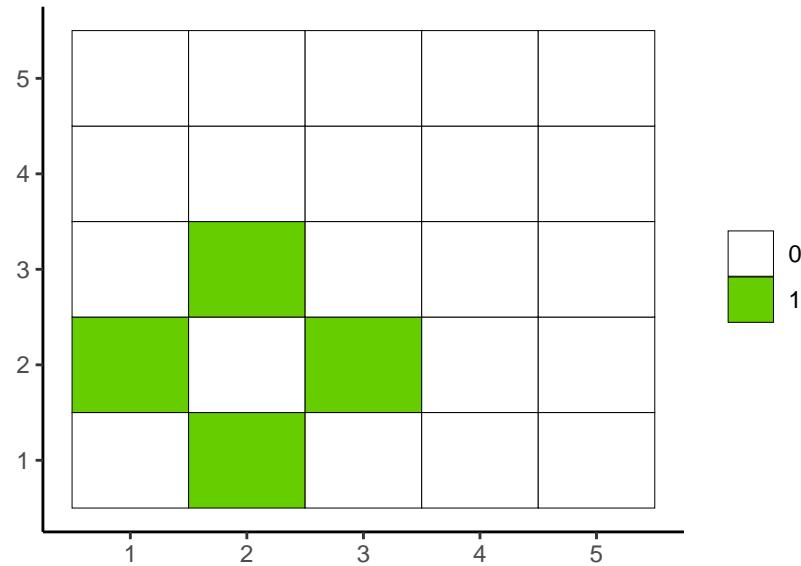


```

## 
## $trial44$summary
##                               Covariate Dependent Graphical Model
## 
## Model ELBO: -84410.92           Unique conditional dependence structures: 4
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 3/5 variables
## 
## Model fit completed in 23.856 secs
## 
## $trial44$unique_graphs
## $trial44$unique_graphs$graph1
## [1] "1,...,24,64,...,94"
## 
## $trial44$unique_graphs$graph2
## [1] "25,...,63"
## 
## $trial44$unique_graphs$graph3
## [1] "95,...,101"
## 
## $trial44$unique_graphs$graph4
## [1] "102,...,180"
## 
## $trial44$unique_graphs[[5]]

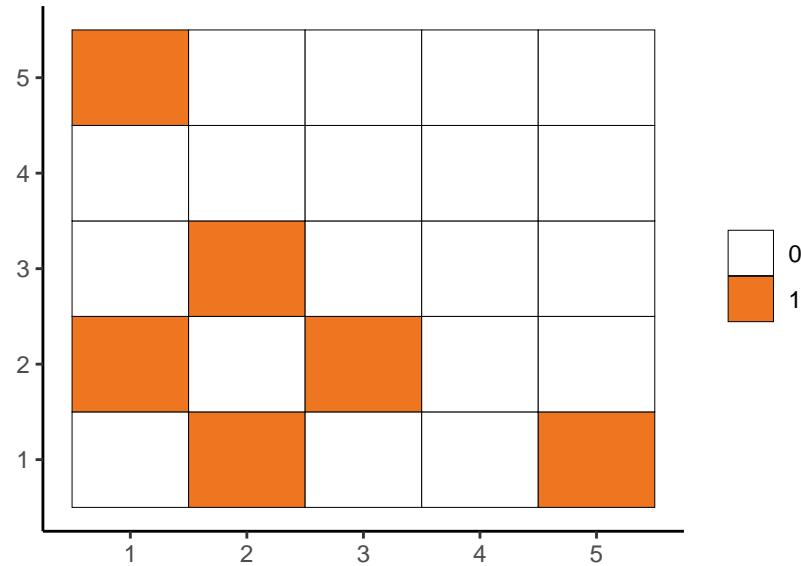
```

Graph 1, Individuals 1,...,24,64,...,94



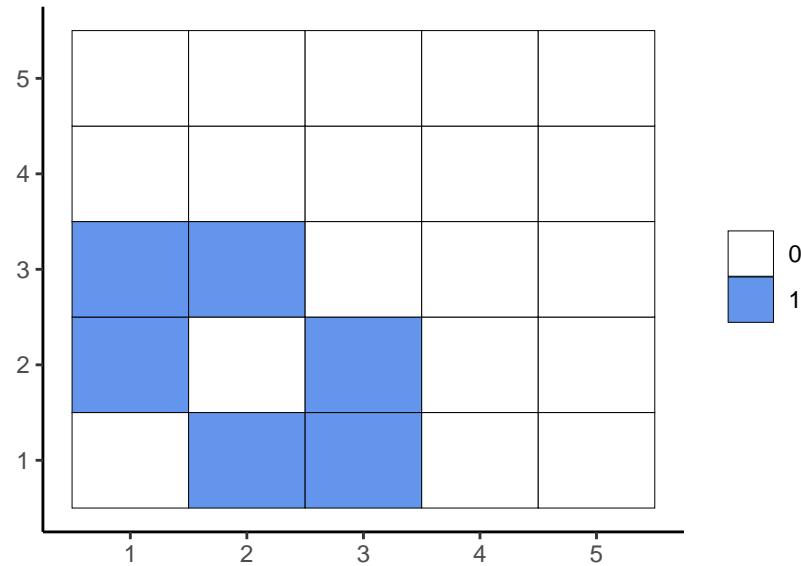
```
##  
## $trial44$unique_graphs[[6]]
```

Graph 2, Individuals 25,...,63



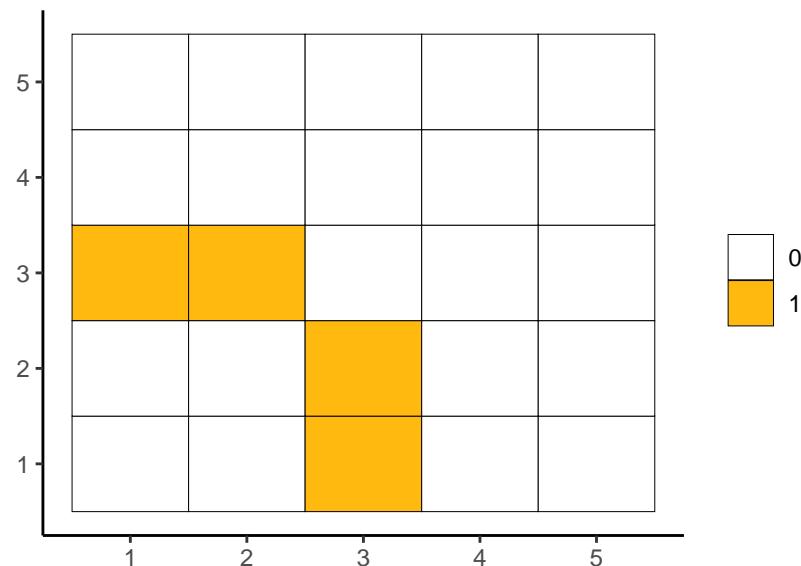
```
##  
## $trial44$unique_graphs[[7]]
```

Graph 3, Individuals 95,...,101



```
##  
## $trial44$unique_graphs[[8]]
```

Graph 4, Individuals 102,...,180

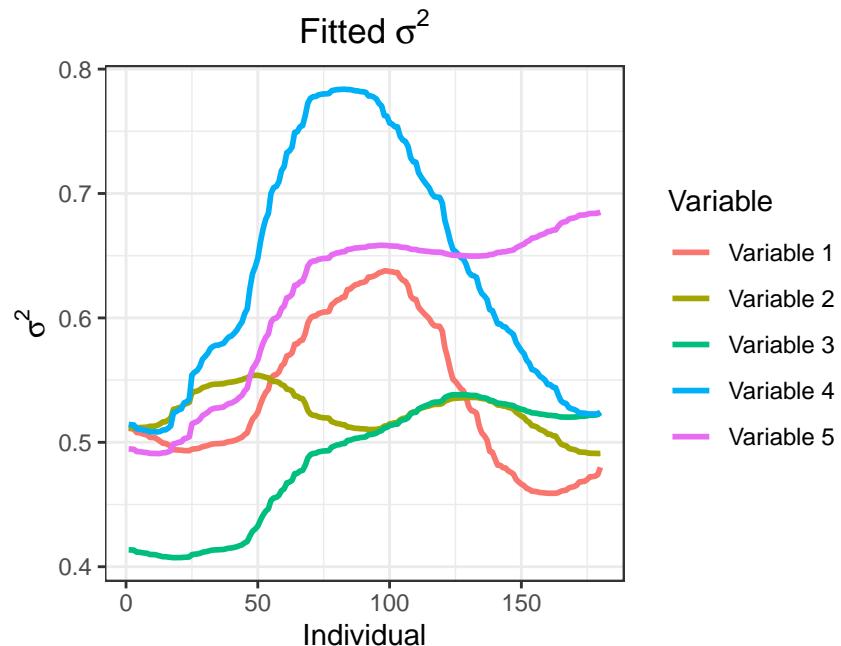


```
##  
##  
## $trial44$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial44$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.25      0.45      0.45      0.05      0.05
##
## $trial44$sigmasq

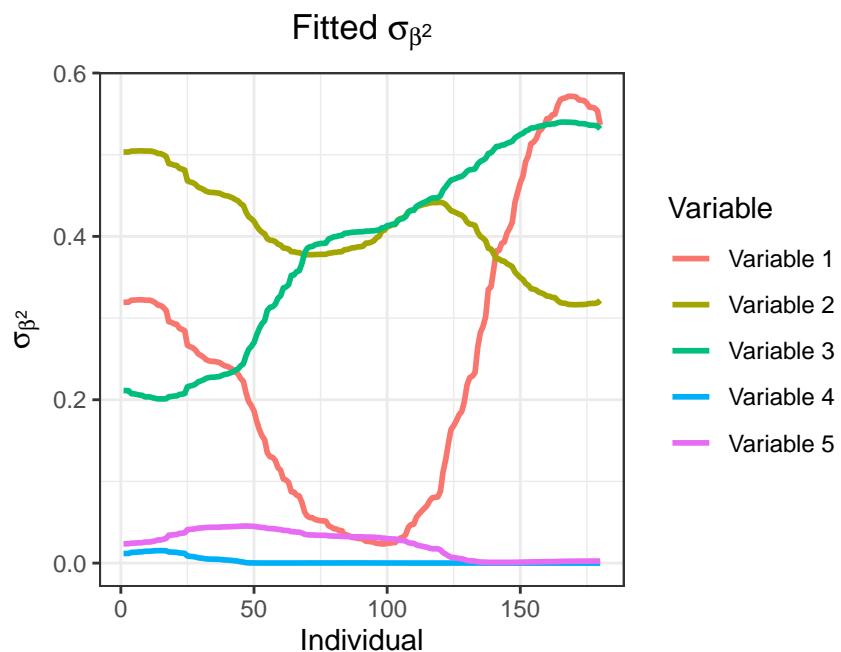
```



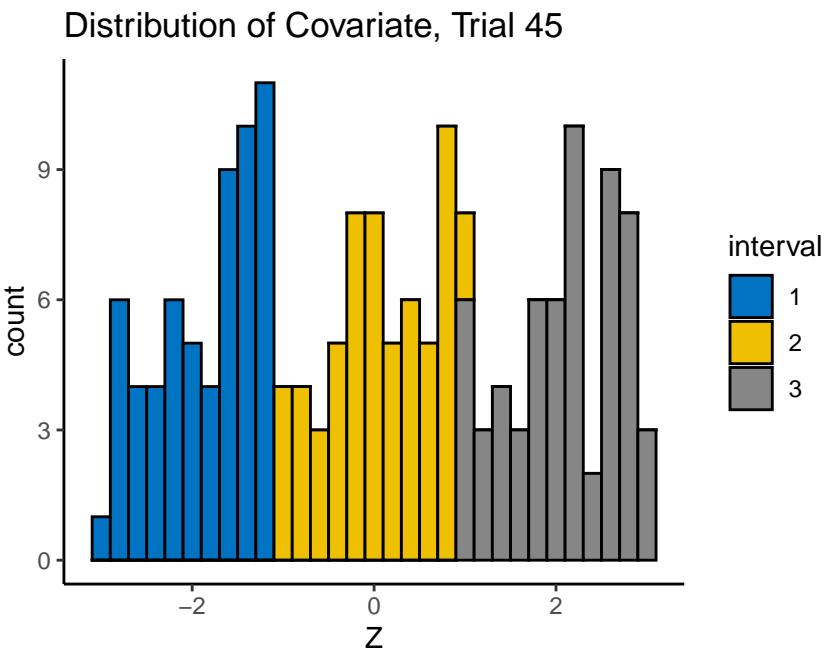
```

## $trial44$sigmabetasq

```



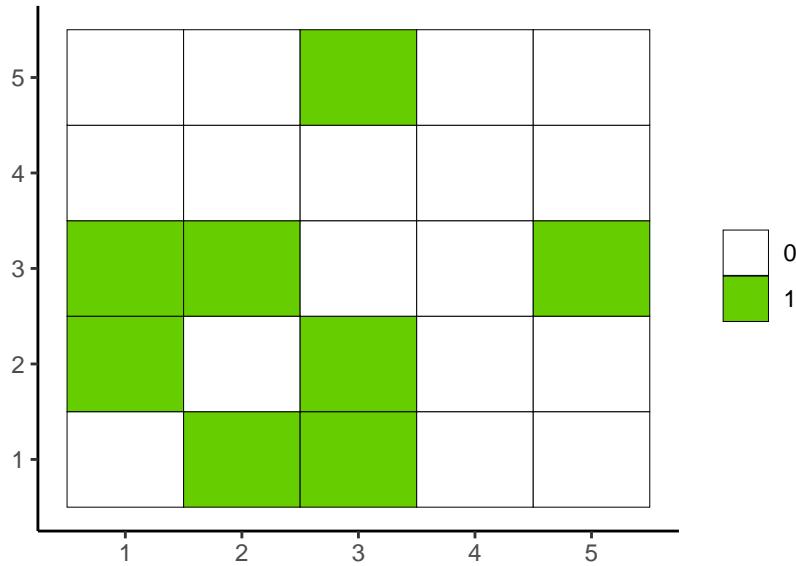
```
##  
##  
## $trial45  
## $trial45$covariates
```



```
##  
## $trial45$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -85131.82 Unique conditional dependence structures: 6  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 3/5 variables  
##  
## Model fit completed in 33.354 secs  
##  
## $trial45$unique_graphs  
## $trial45$unique_graphs$graph1  
## [1] "1,...,28"  
##  
## $trial45$unique_graphs$graph2  
## [1] "29,...,130"  
##  
## $trial45$unique_graphs$graph3  
## [1] "131,...,135"  
##  
## $trial45$unique_graphs$graph4  
## [1] "136,...,151"  
##  
## $trial45$unique_graphs$graph5  
## [1] "152,...,160,180"  
##  
## $trial45$unique_graphs$graph6
```

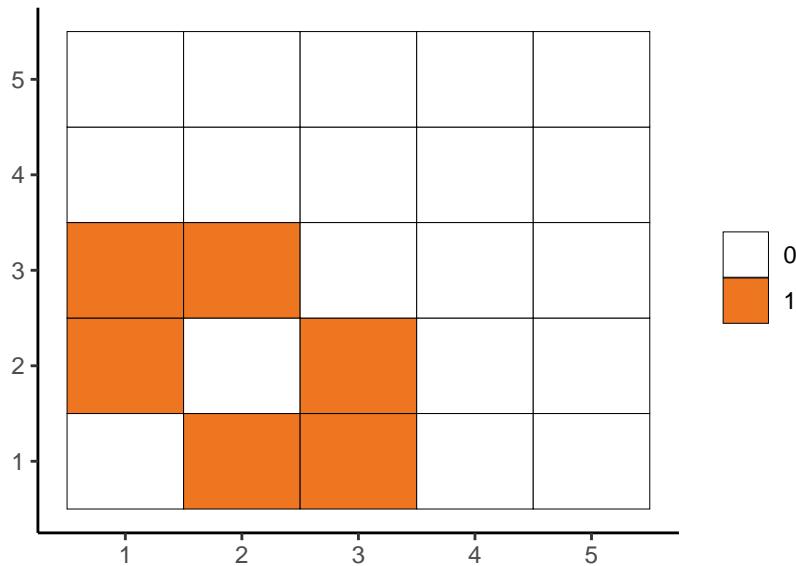
```
## [1] "161,...,179"  
##  
## $trial45$unique_graphs[[7]]
```

Graph 1, Individuals 1,...,28



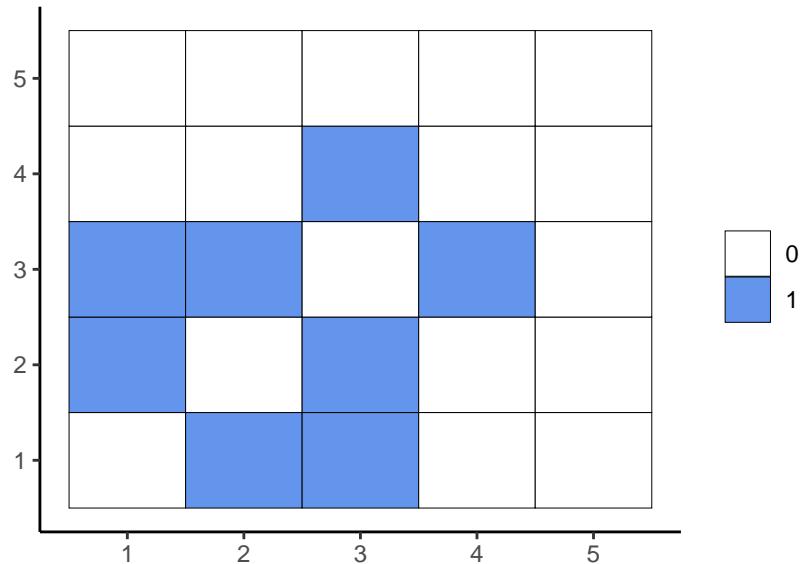
```
##  
## $trial45$unique_graphs[[8]]
```

Graph 2, Individuals 29,...,130



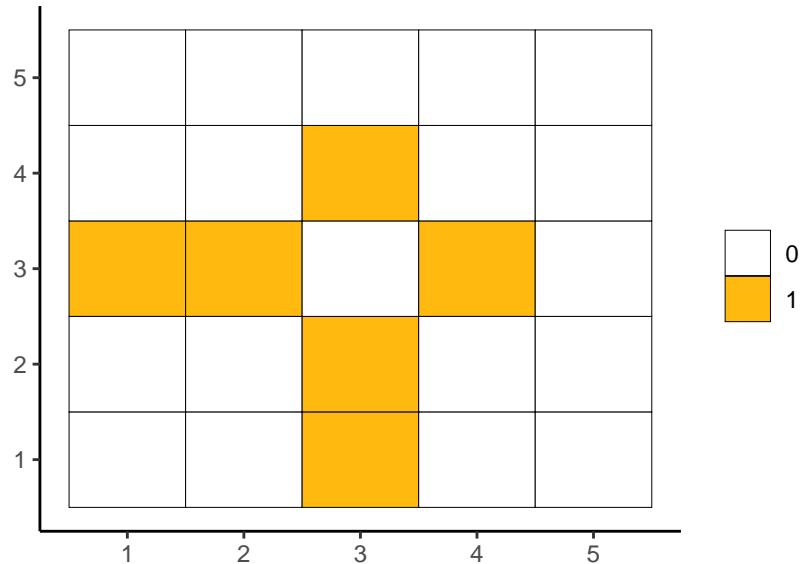
```
##  
## $trial45$unique_graphs[[9]]
```

Graph 3, Individuals 131,...,135



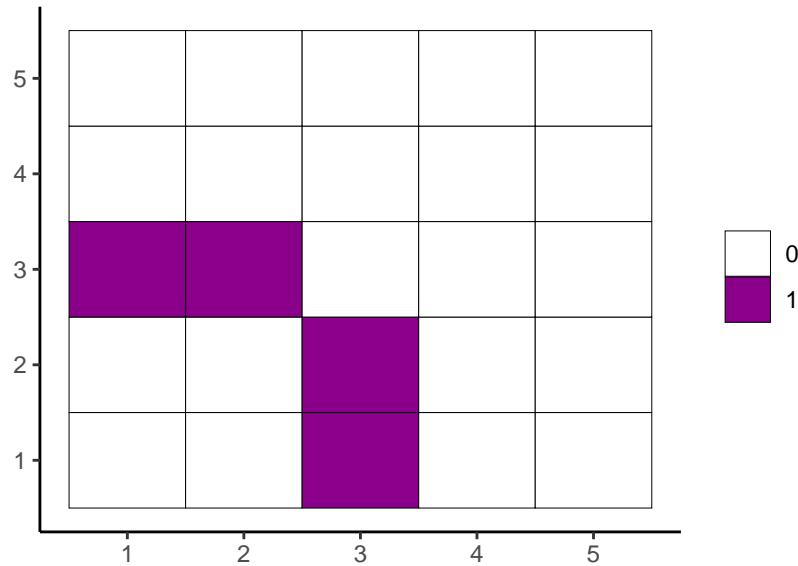
```
##  
## $trial45$unique_graphs[[10]]
```

Graph 4, Individuals 136,...,151



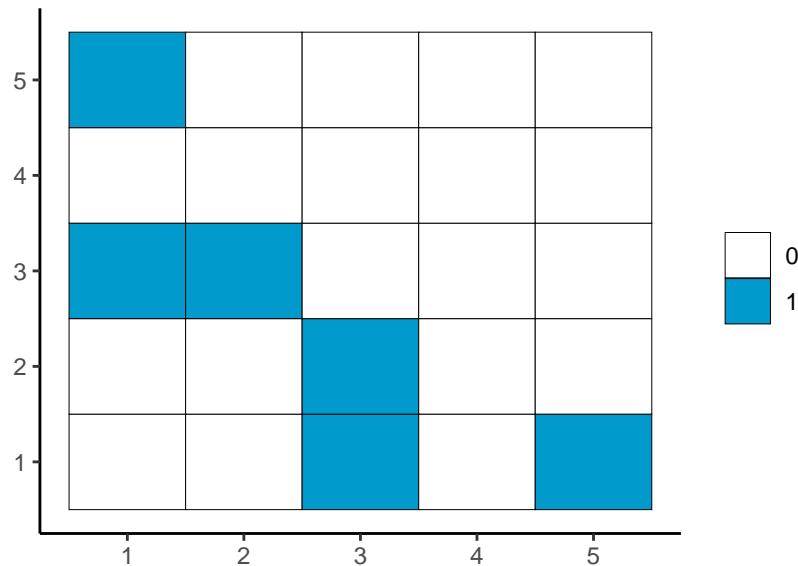
```
##  
## $trial45$unique_graphs[[11]]
```

Graph 5, Individuals 152,...,160,180



```
##  
## $trial45$unique_graphs[[12]]
```

Graph 6, Individuals 161,...,179

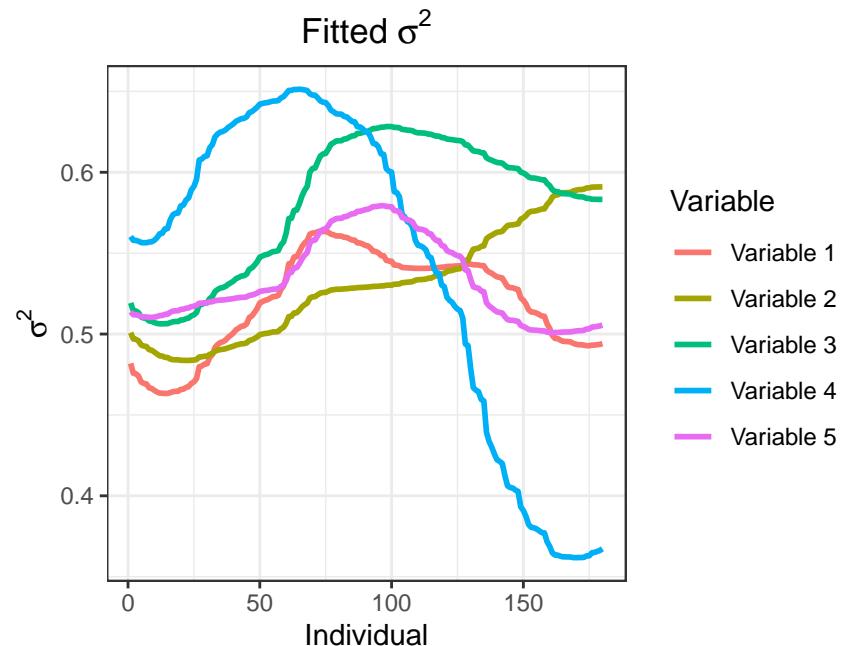


```
##  
##  
## $trial45$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##
```

```

## $trial45$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.45      0.45      0.45      0.05      0.05
##
## $trial45$sigmasq

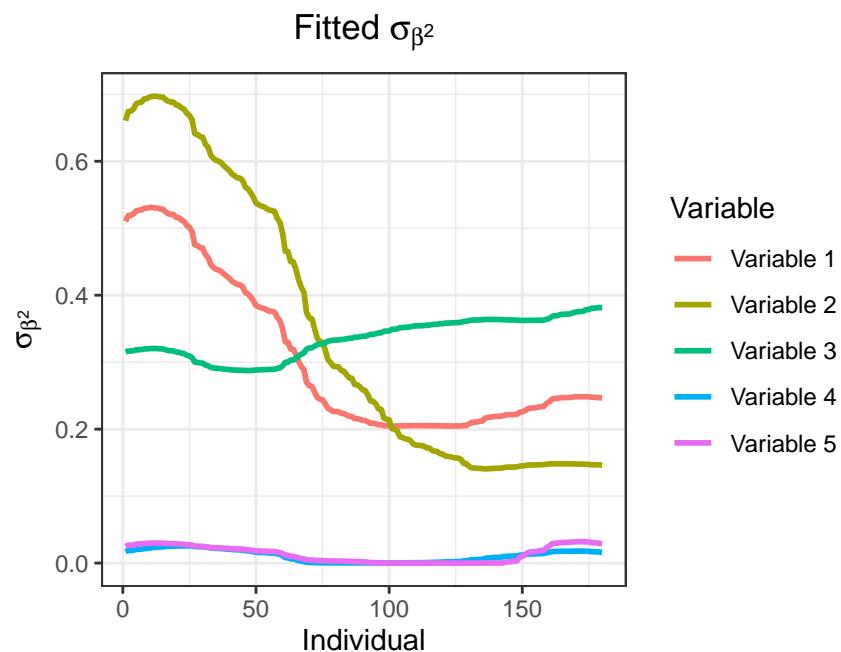
```



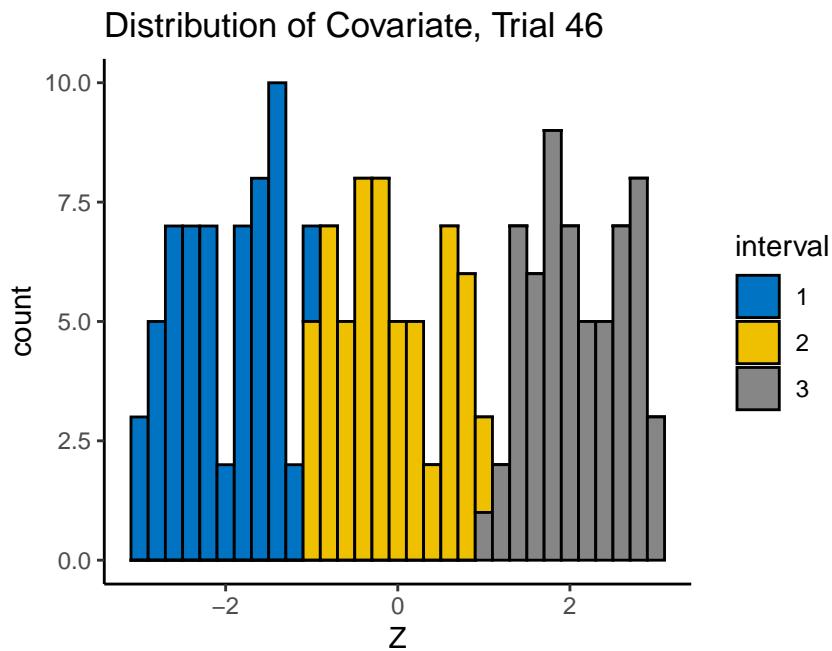
```

## 
## $trial45$sigmabetasq

```



```
##  
##  
## $trial46  
## $trial46$covariates
```



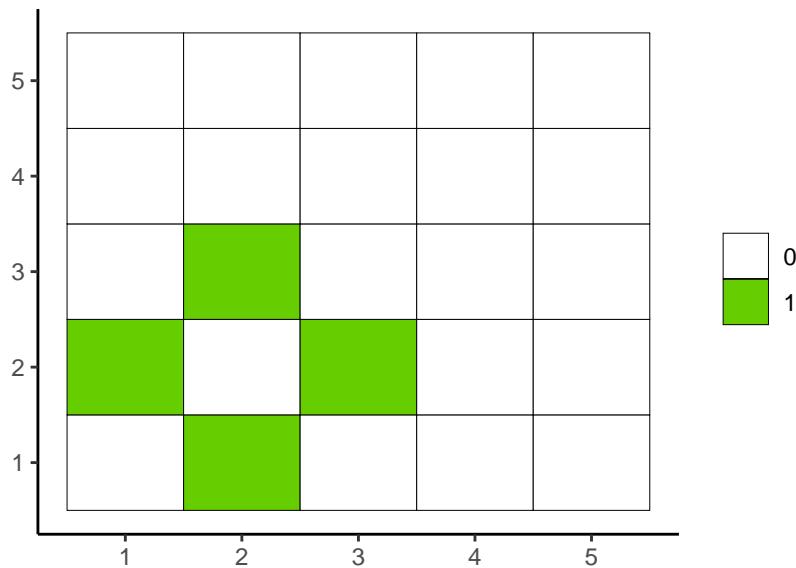
```
##  
## $trial46$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84886.57 Unique conditional dependence structures: 9  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 2/5 variables  
##  
## Model fit completed in 26.927 secs  
##  
## $trial46$unique_graphs  
## $trial46$unique_graphs$graph1  
## [1] "1,...,57"  
##  
## $trial46$unique_graphs$graph2  
## [1] "58,...,68"  
##  
## $trial46$unique_graphs$graph3  
## [1] "69,...,98"  
##  
## $trial46$unique_graphs$graph4  
## [1] "99,...,101"  
##  
## $trial46$unique_graphs$graph5  
## [1] "102,...,111"  
##  
## $trial46$unique_graphs$graph6
```

```

## [1] "112,...,119"
##
## $trial46$unique_graphs$graph7
## [1] "120,...,130"
##
## $trial46$unique_graphs$graph8
## [1] "131,...,154"
##
## $trial46$unique_graphs$graph9
## [1] "155,...,180"
##
## $trial46$unique_graphs[[10]]

```

Graph 1, Individuals 1,...,57

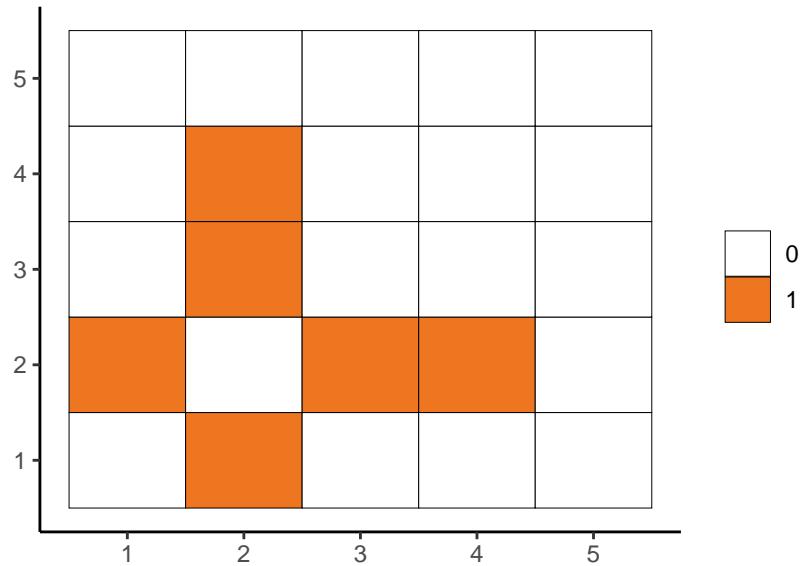


```

##
## $trial46$unique_graphs[[11]]

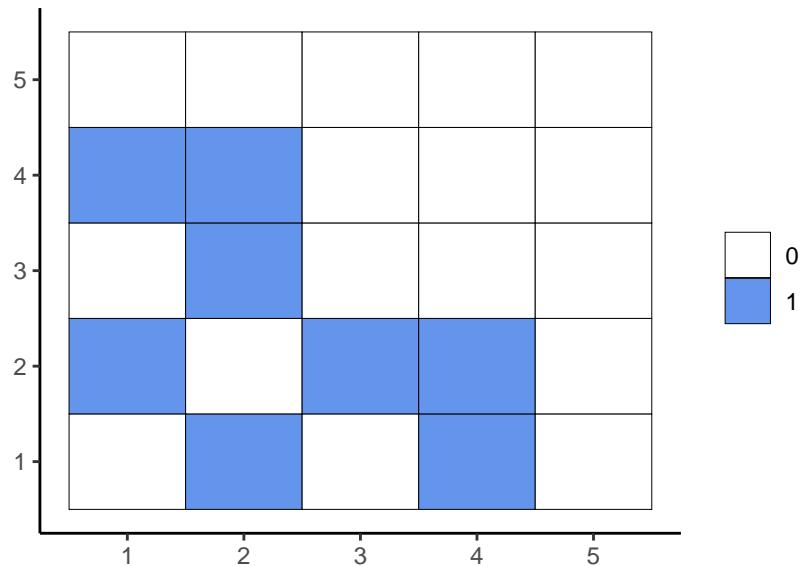
```

Graph 2, Individuals 58,...,68



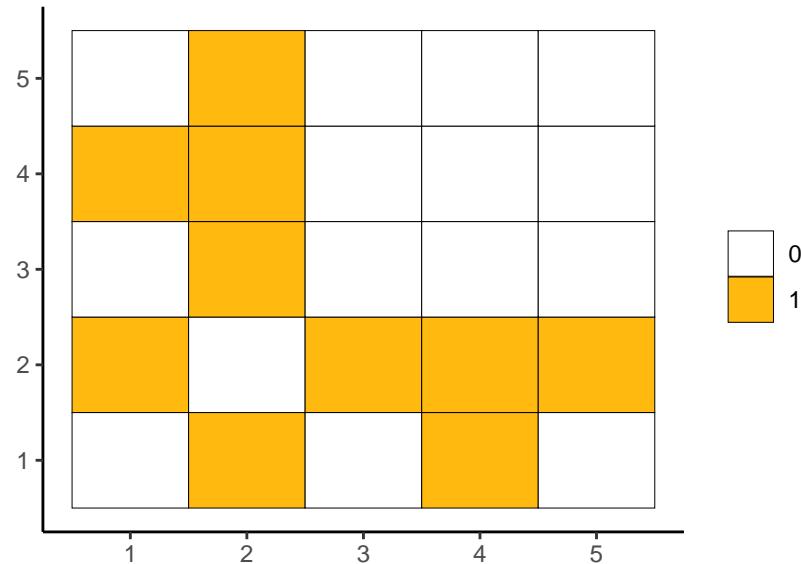
```
##  
## $trial46$unique_graphs[[12]]
```

Graph 3, Individuals 69,...,98



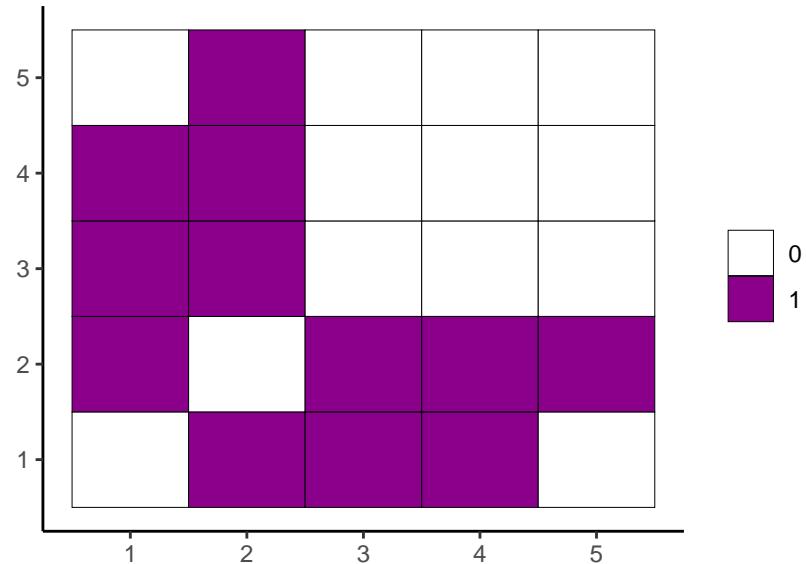
```
##  
## $trial46$unique_graphs[[13]]
```

Graph 4, Individuals 99,...,101



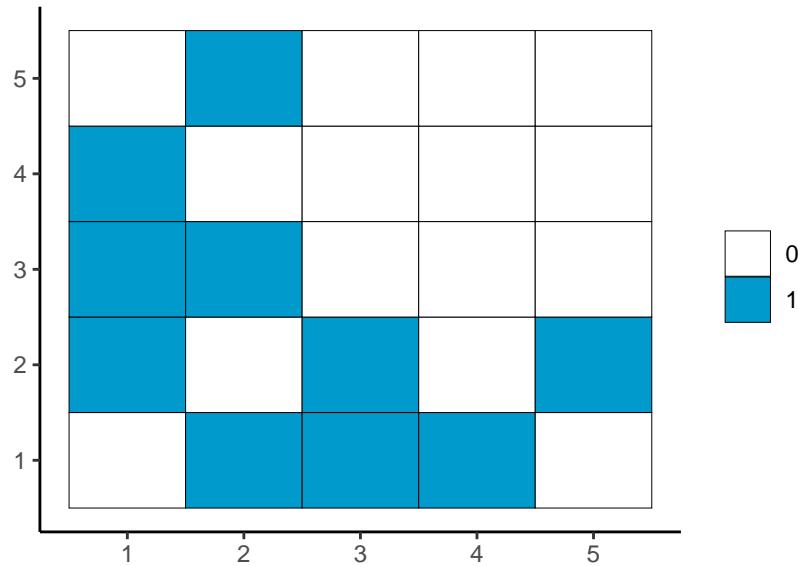
```
##  
## $trial46$unique_graphs[[14]]
```

Graph 5, Individuals 102,...,111



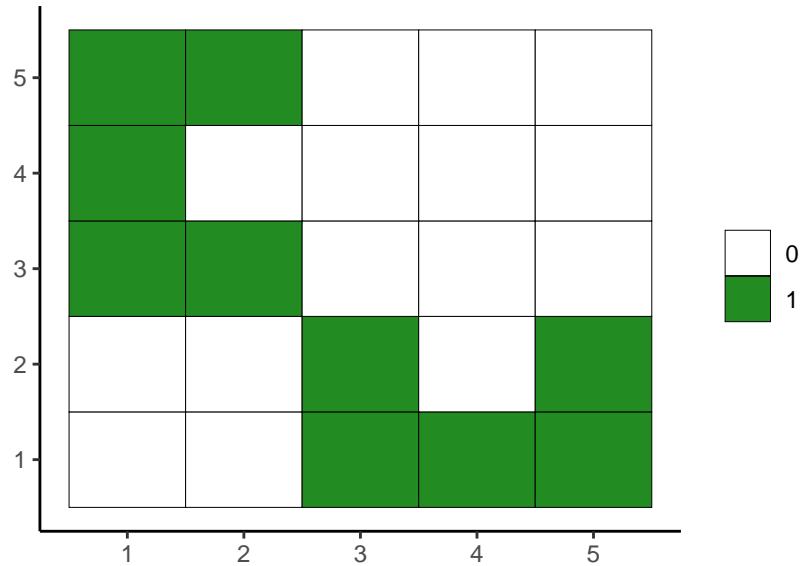
```
##  
## $trial46$unique_graphs[[15]]
```

Graph 6, Individuals 112,...,119



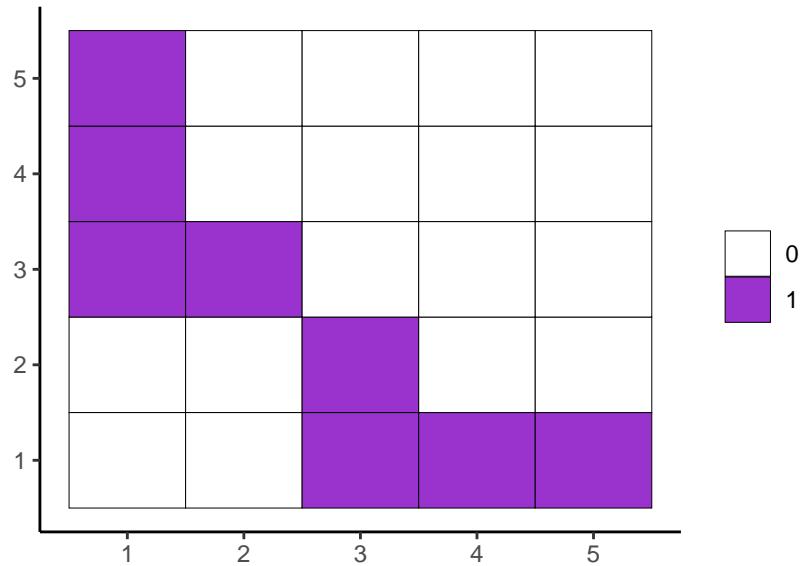
```
##  
## $trial46$unique_graphs[[16]]
```

Graph 7, Individuals 120,...,130



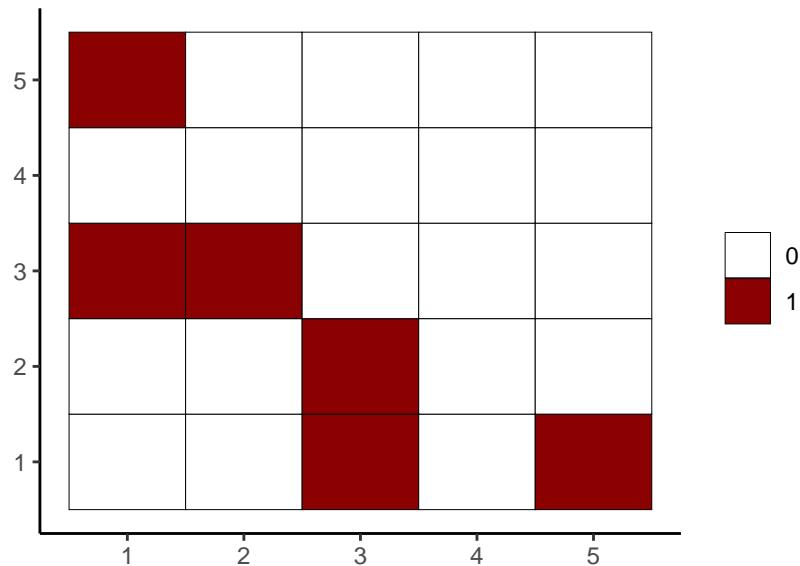
```
##  
## $trial46$unique_graphs[[17]]
```

Graph 8, Individuals 131,...,154



```
##  
## $trial46$unique_graphs[[18]]
```

Graph 9, Individuals 155,...,180

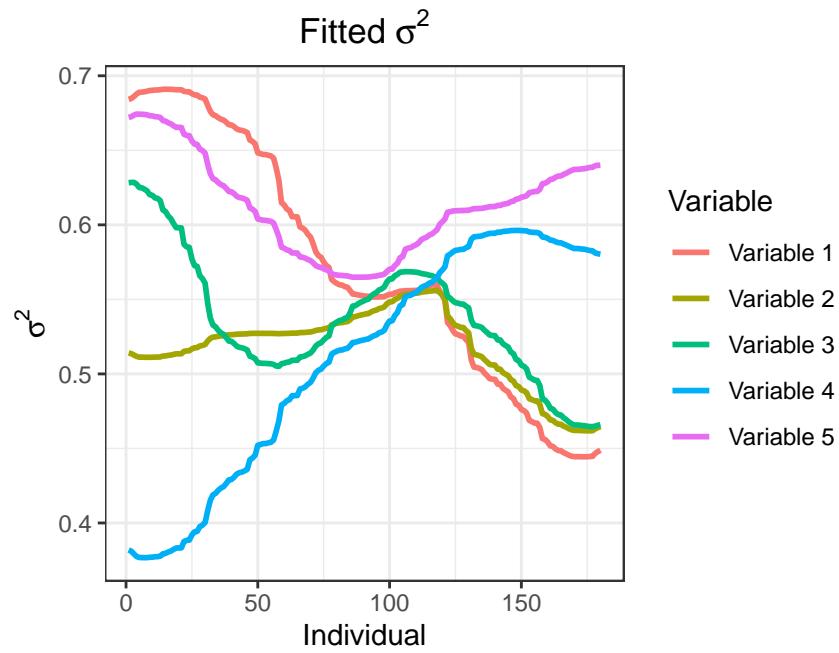


```
##  
##  
## $trial46$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial46$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.45      0.45      0.45      0.05      0.10
##
## $trial46$sigmasq

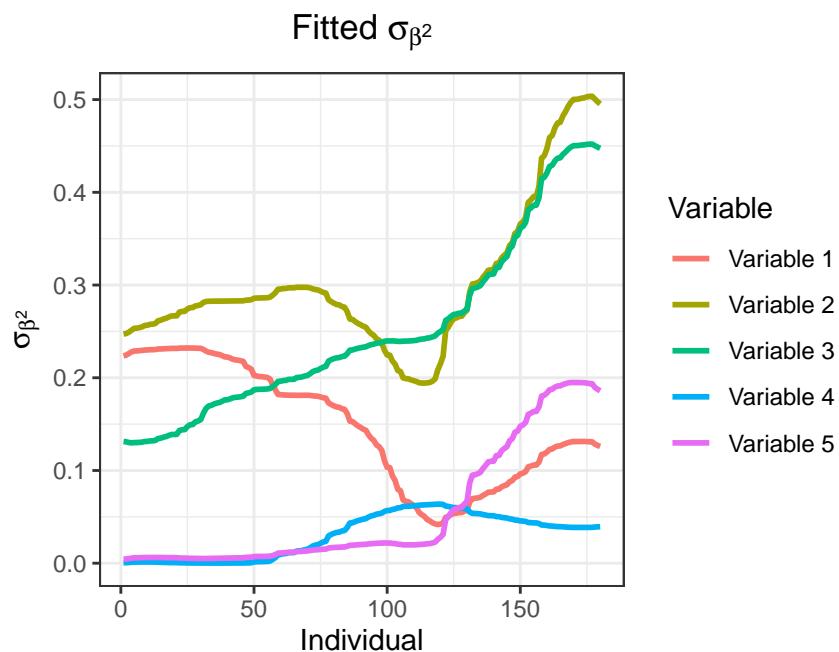
```



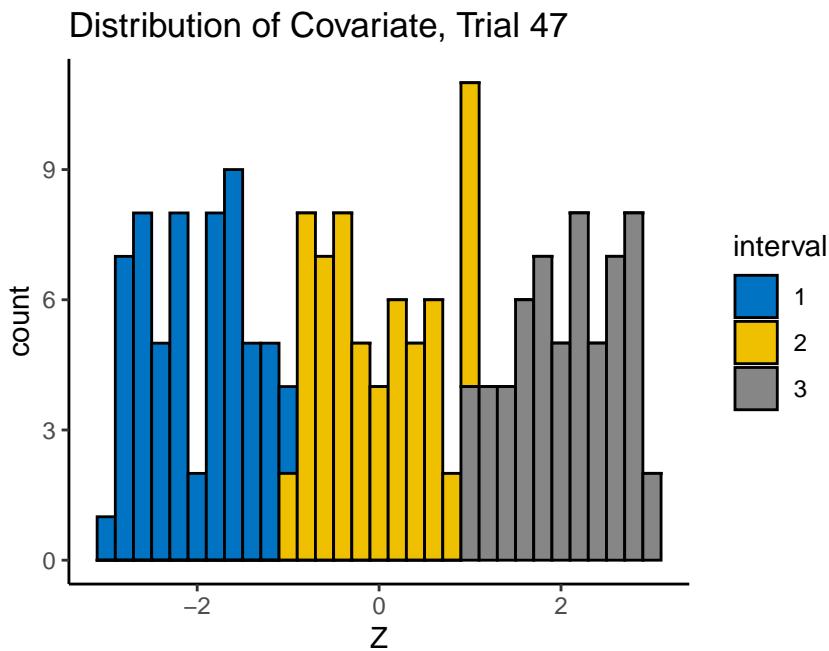
```

## $trial46$sigmabetasq

```



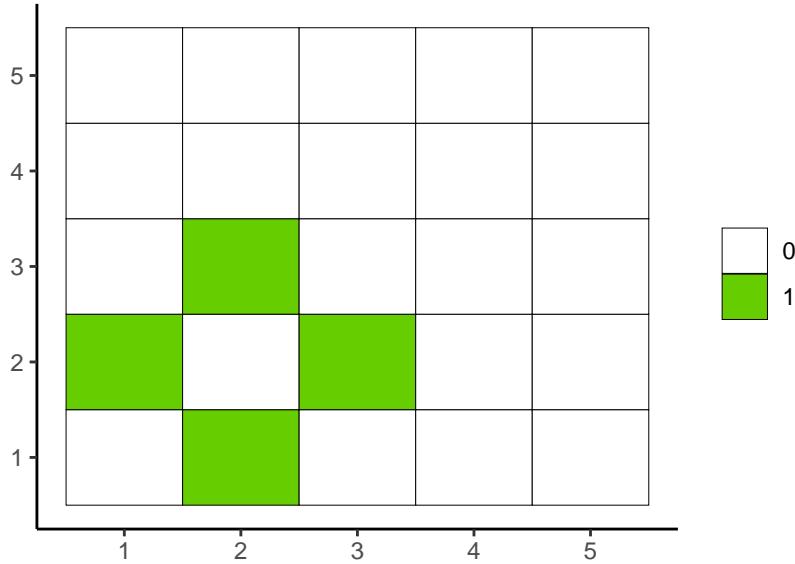
```
##  
##  
## $trial47  
## $trial47$covariates
```



```
##  
## $trial47$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84885.89 Unique conditional dependence structures: 6  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 2/5 variables  
##  
## Model fit completed in 33.518 secs  
##  
## $trial47$unique_graphs  
## $trial47$unique_graphs$graph1  
## [1] "1,...,38"  
##  
## $trial47$unique_graphs$graph2  
## [1] "39,...,48,84,...,128"  
##  
## $trial47$unique_graphs$graph3  
## [1] "49,...,58,82,83"  
##  
## $trial47$unique_graphs$graph4  
## [1] "59,...,81"  
##  
## $trial47$unique_graphs$graph5  
## [1] "129"  
##  
## $trial47$unique_graphs$graph6
```

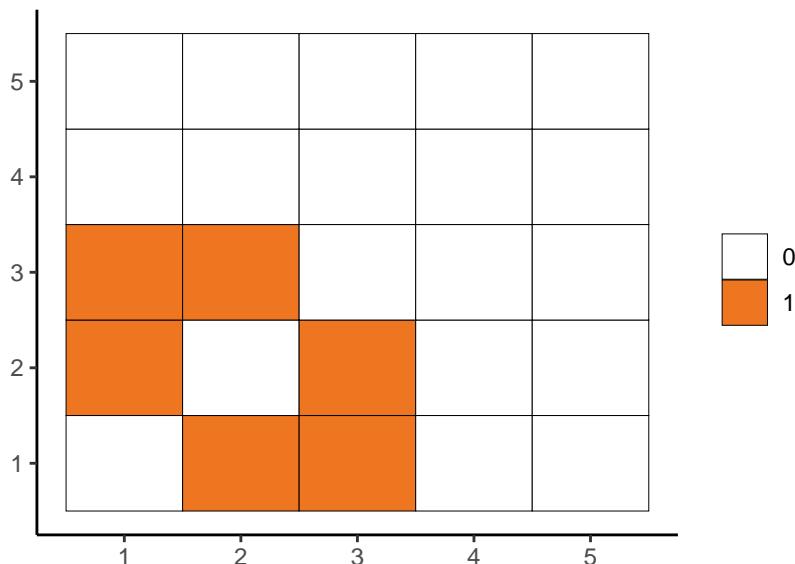
```
## [1] "130,...,180"  
##  
## $trial47$unique_graphs[[7]]
```

Graph 1, Individuals 1,...,38



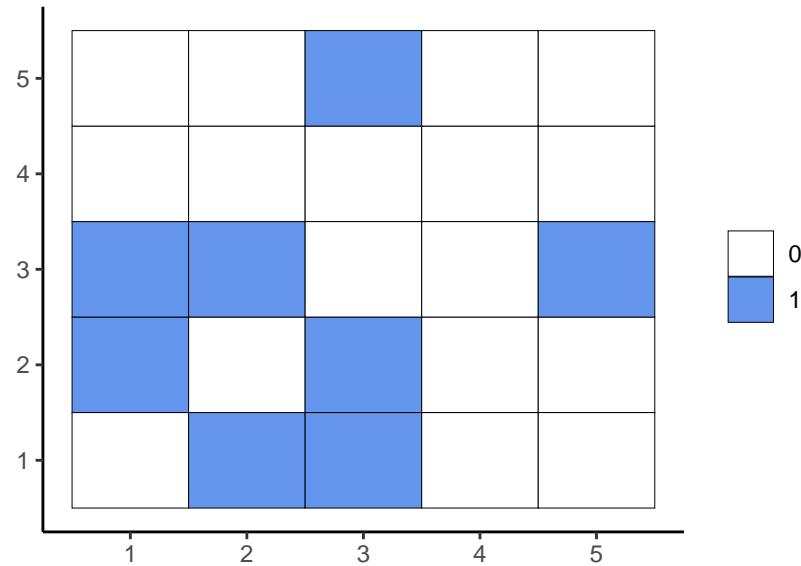
```
##  
## $trial47$unique_graphs[[8]]
```

Graph 2, Individuals 39,...,48,84,...,128



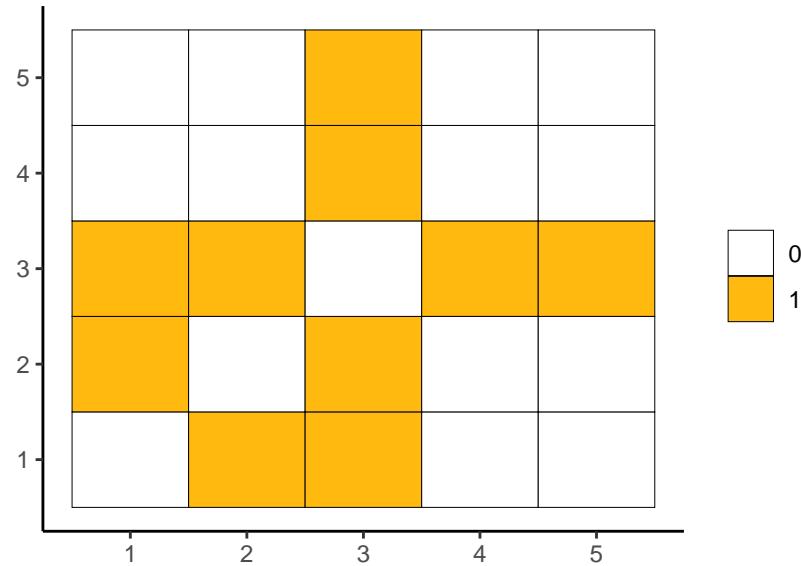
```
##  
## $trial47$unique_graphs[[9]]
```

Graph 3, Individuals 49,...,58,82,83



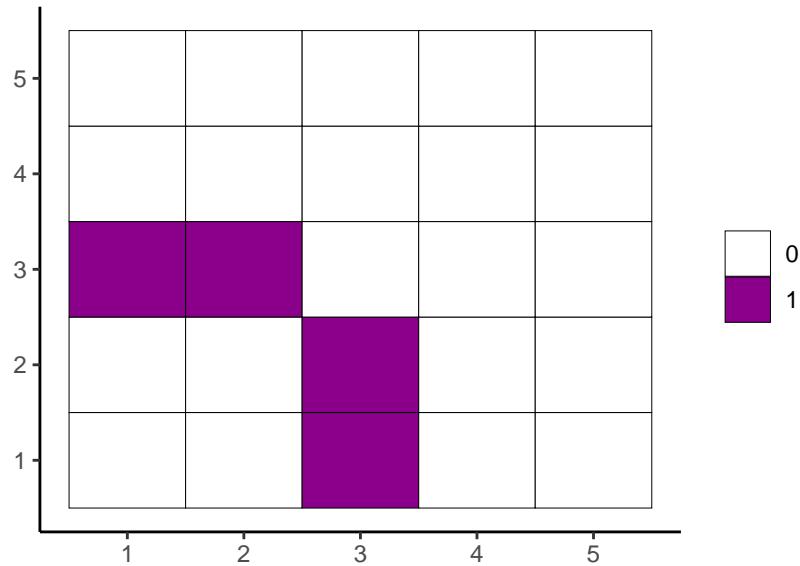
```
##  
## $trial47$unique_graphs[[10]]
```

Graph 4, Individuals 59,...,81



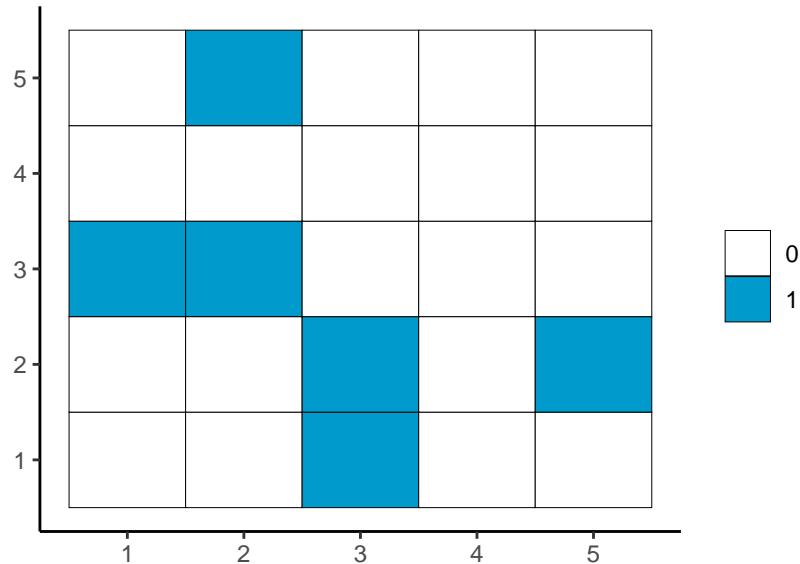
```
##  
## $trial47$unique_graphs[[11]]
```

Graph 5, Individuals 129



```
##  
## $trial47$unique_graphs[[12]]
```

Graph 6, Individuals 130,...,180

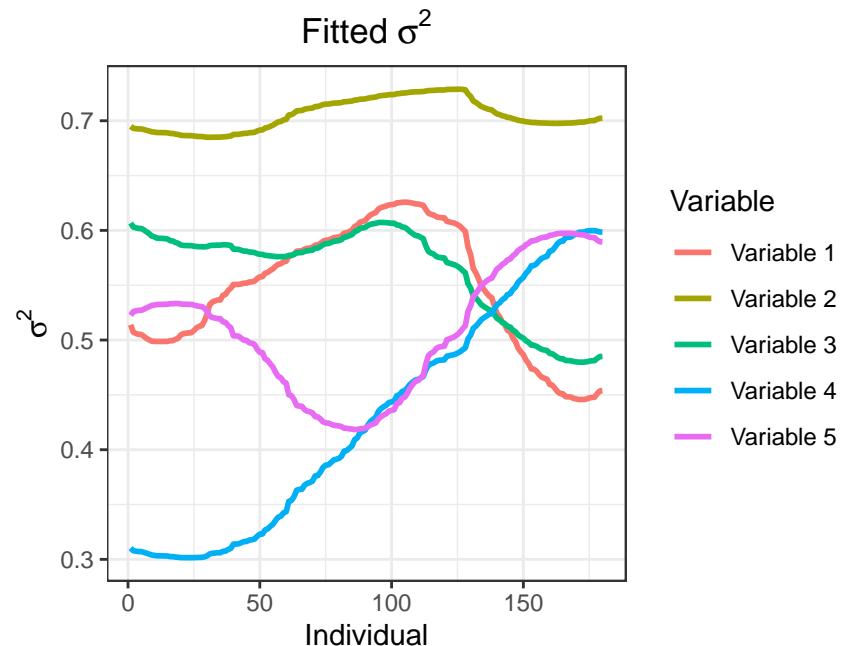


```
##  
##  
## $trial47$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial47$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.45      0.45      0.45      0.05      0.05
##
## $trial47$sigmasq

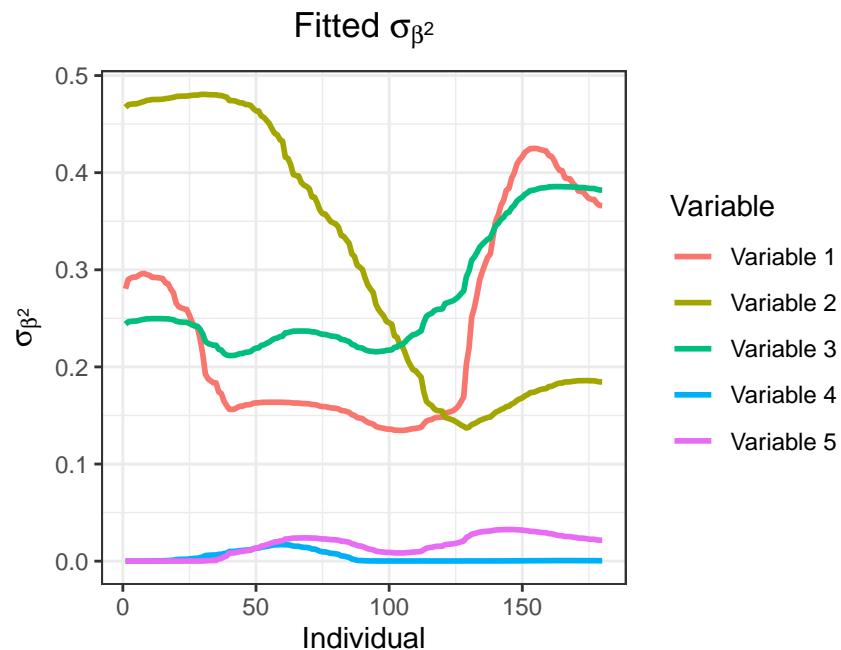
```



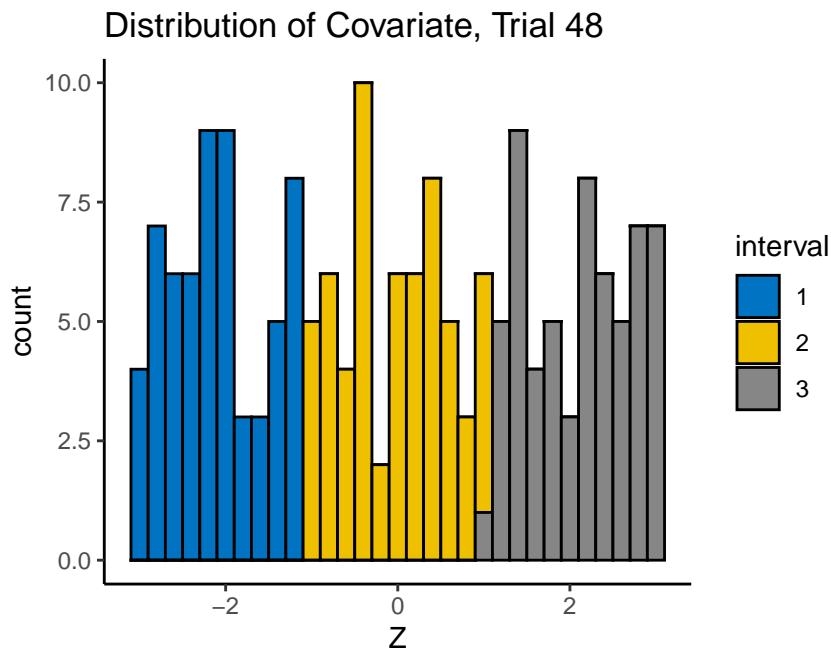
```

## $trial47$sigmabetasq

```

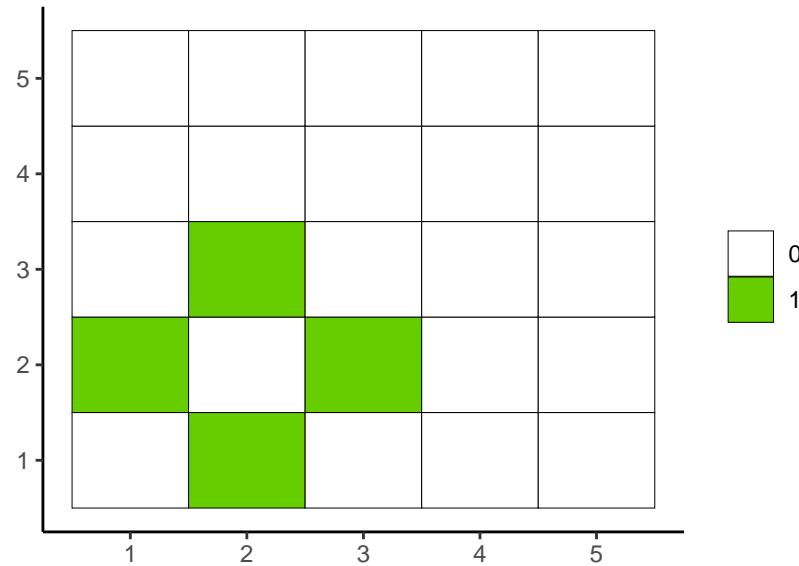


```
##  
##  
## $trial48  
## $trial48$covariates
```



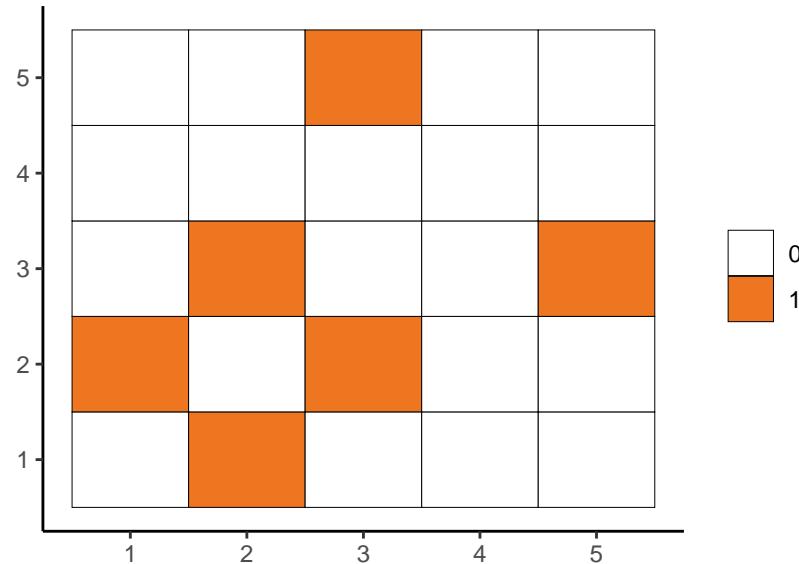
```
##  
## $trial48$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84819.91 Unique conditional dependence structures: 5  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 1/5 variables  
##  
## Model fit completed in 33.681 secs  
##  
## $trial48$unique_graphs  
## $trial48$unique_graphs$graph1  
## [1] "1,25,...,61"  
##  
## $trial48$unique_graphs$graph2  
## [1] "2,...,24"  
##  
## $trial48$unique_graphs$graph3  
## [1] "62,...,138"  
##  
## $trial48$unique_graphs$graph4  
## [1] "139,...,153"  
##  
## $trial48$unique_graphs$graph5  
## [1] "154,...,180"  
##  
## $trial48$unique_graphs[[6]]
```

Graph 1, Individuals 1,25,...,61



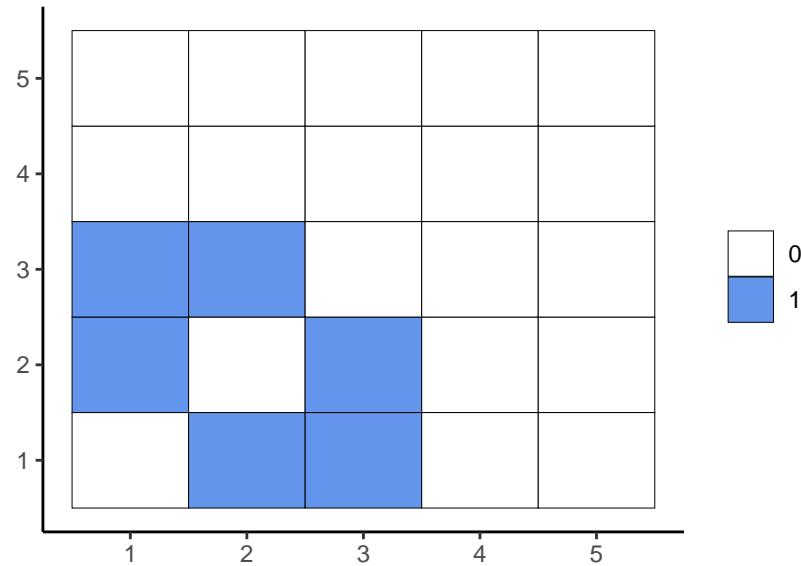
```
##  
## $trial48$unique_graphs[[7]]
```

Graph 2, Individuals 2,...,24



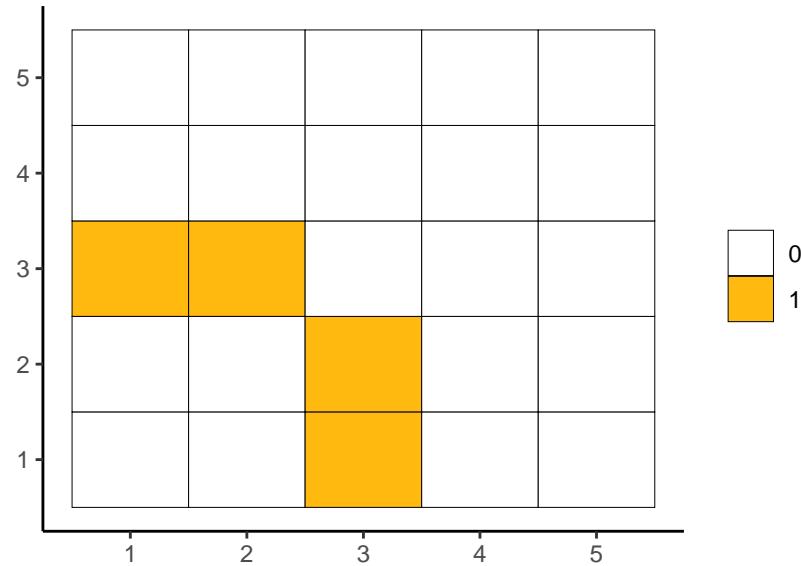
```
##  
## $trial48$unique_graphs[[8]]
```

Graph 3, Individuals 62,...,138



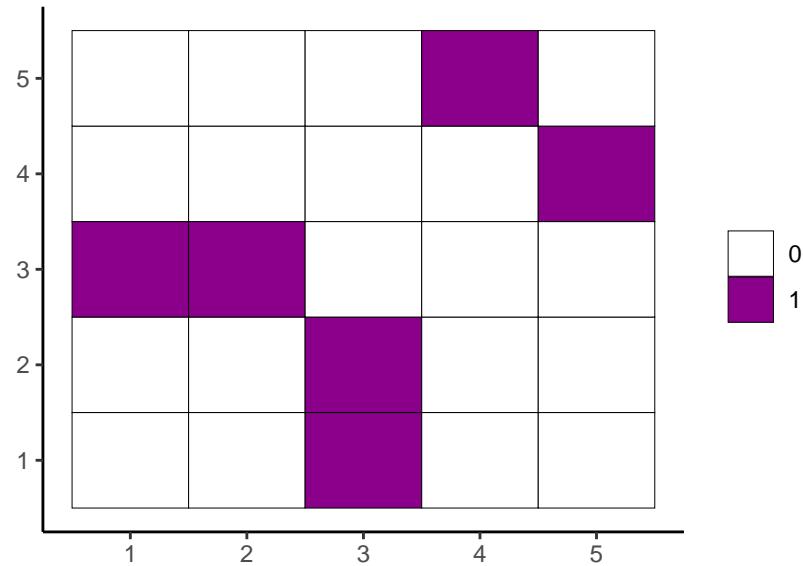
```
##  
## $trial48$unique_graphs[[9]]
```

Graph 4, Individuals 139,...,153

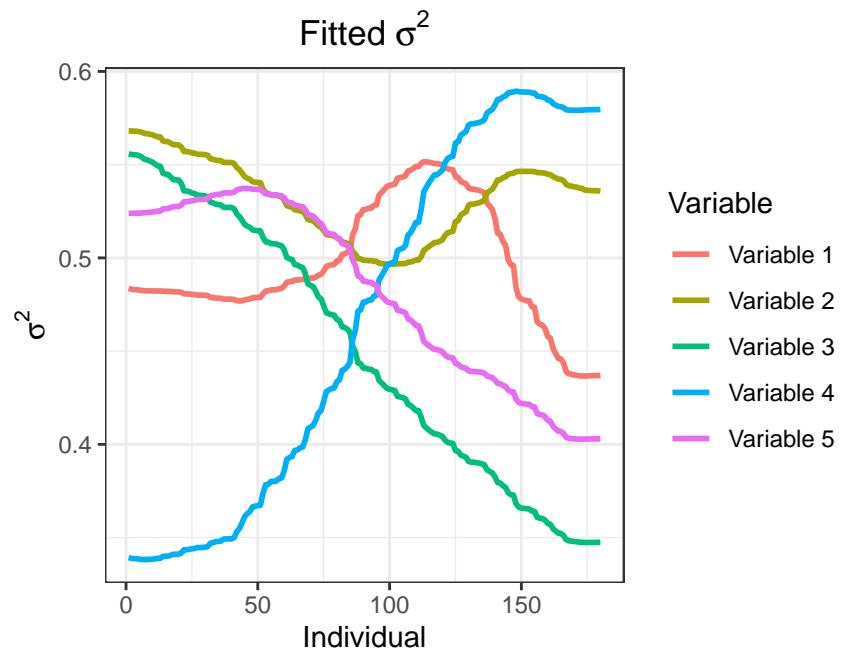


```
##  
## $trial48$unique_graphs[[10]]
```

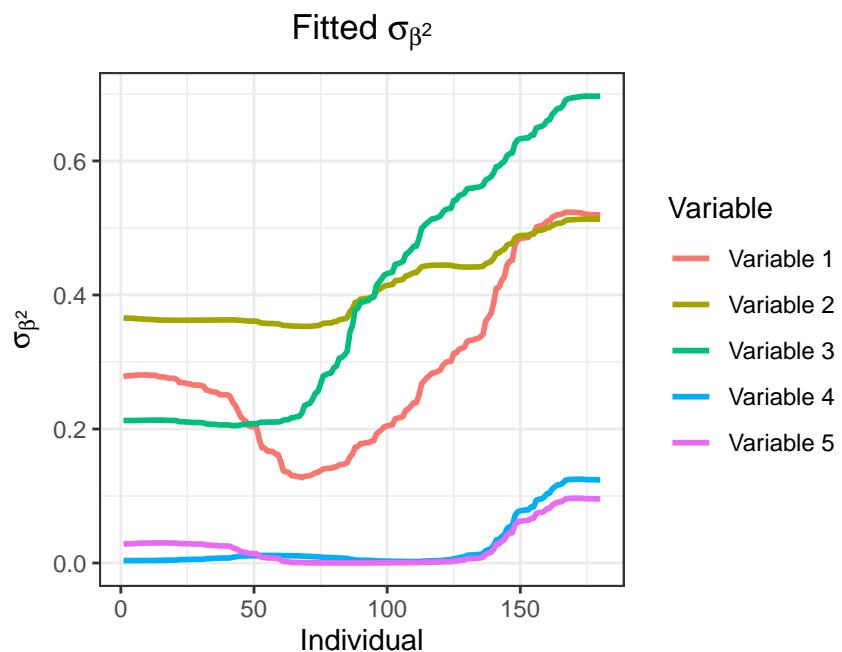
Graph 5, Individuals 154,...,180



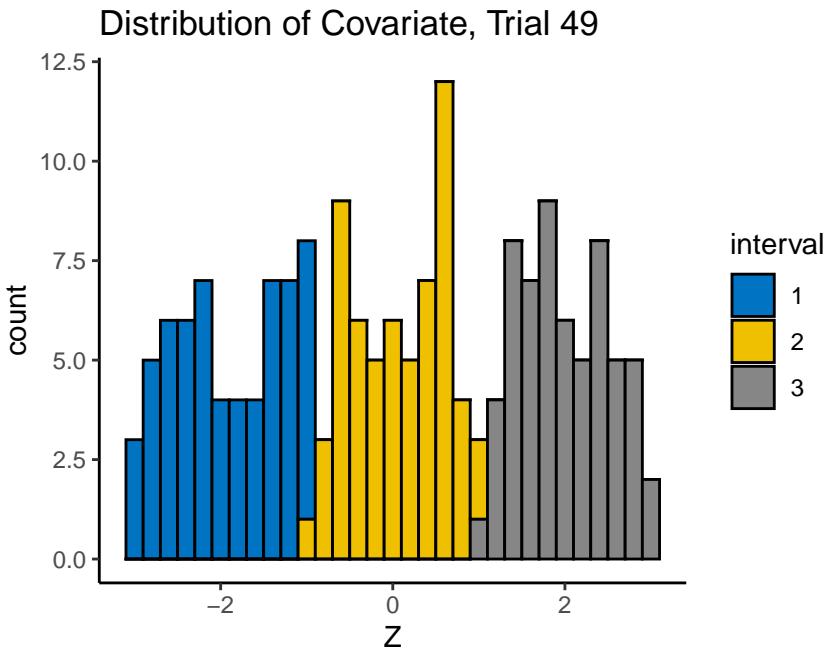
```
##  
##  
## $trial48$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial48$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.40      0.45      0.45      0.05      0.05  
##  
## $trial48$sigmasq
```



```
##  
## $trial48$sigmabetasq
```



```
##  
##  
## $trial49  
## $trial49$covariates
```

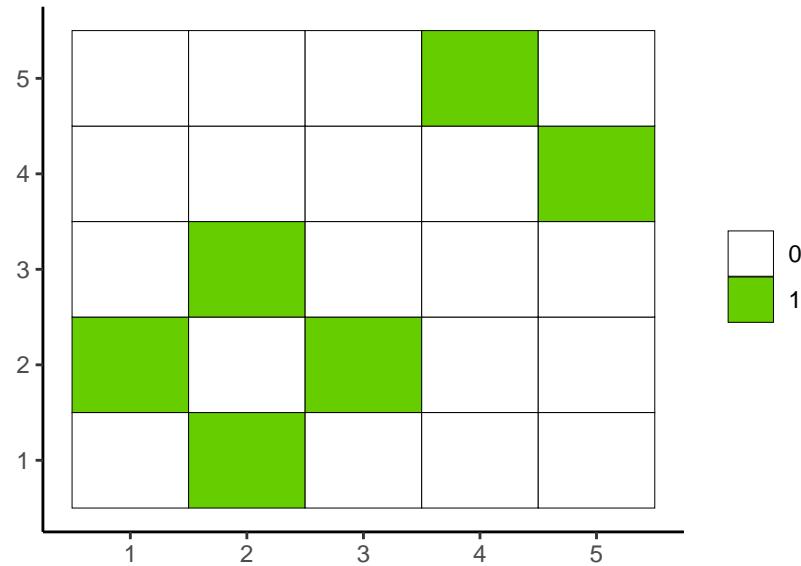


```

## 
## $trial49$summary
##                               Covariate Dependent Graphical Model
## 
## Model ELBO: -84749.57           Unique conditional dependence structures: 5
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 3/5 variables
## 
## Model fit completed in 27.036 secs
## 
## $trial49$unique_graphs
## $trial49$unique_graphs$graph1
## [1] "1,...,37"
## 
## $trial49$unique_graphs$graph2
## [1] "38,...,53"
## 
## $trial49$unique_graphs$graph3
## [1] "54,...,82"
## 
## $trial49$unique_graphs$graph4
## [1] "83,...,137"
## 
## $trial49$unique_graphs$graph5
## [1] "138,...,180"
## 
## $trial49$unique_graphs[[6]]

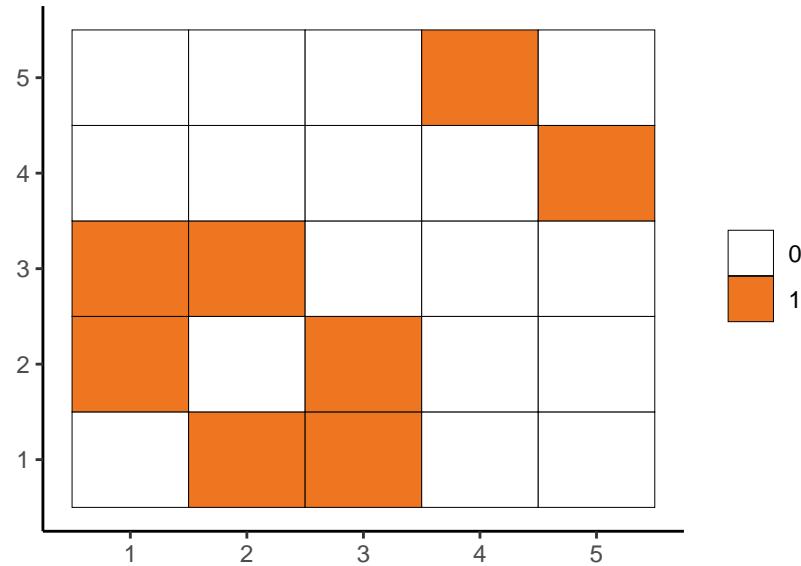
```

Graph 1, Individuals 1,...,37



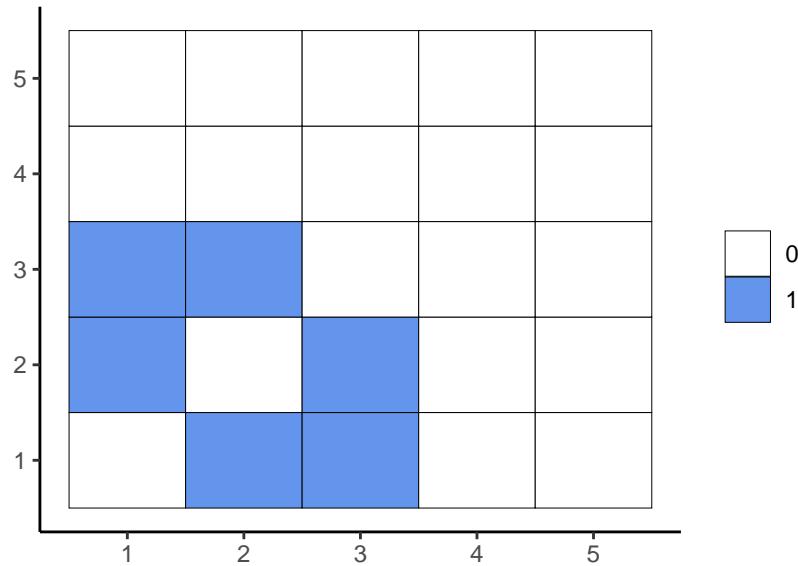
```
##  
## $trial49$unique_graphs[[7]]
```

Graph 2, Individuals 38,...,53



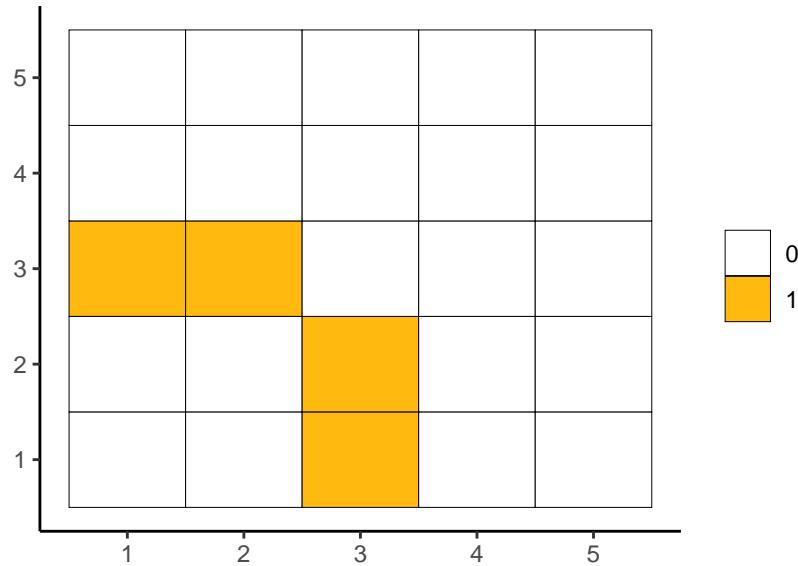
```
##  
## $trial49$unique_graphs[[8]]
```

Graph 3, Individuals 54,...,82



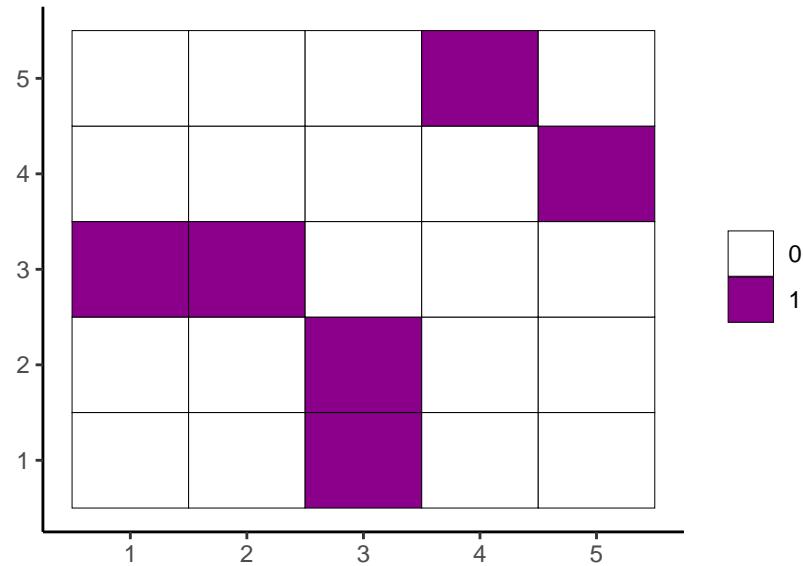
```
##  
## $trial49$unique_graphs[[9]]
```

Graph 4, Individuals 83,...,137

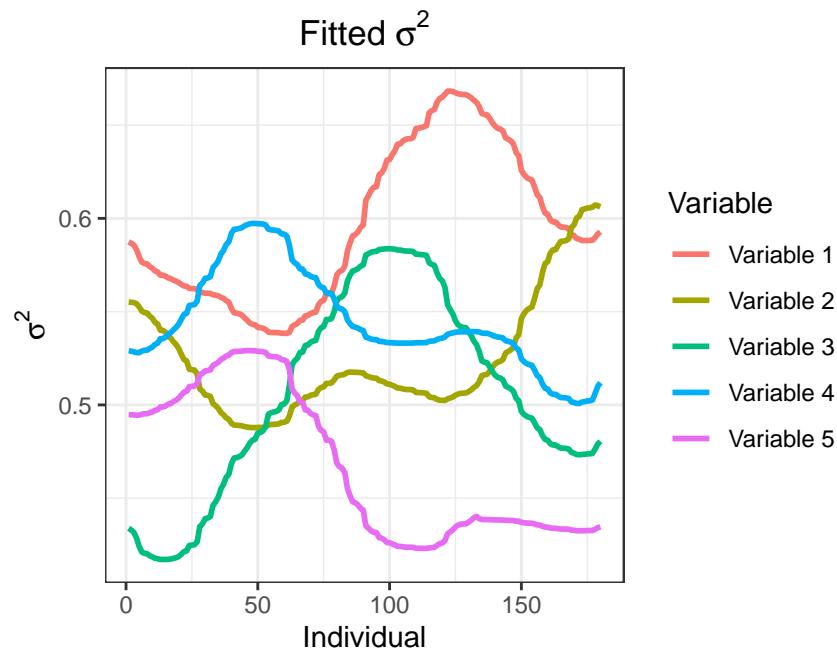


```
##  
## $trial49$unique_graphs[[10]]
```

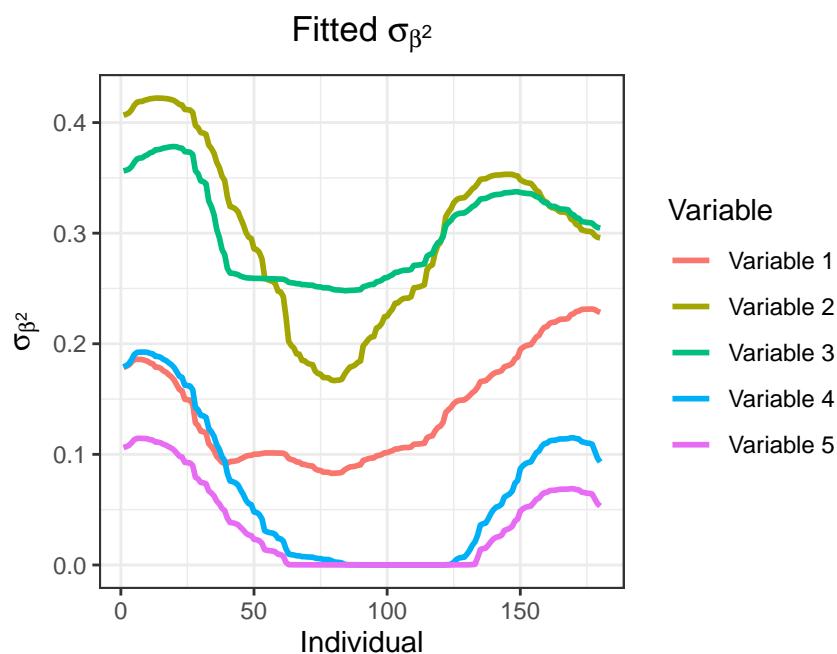
Graph 5, Individuals 138,...,180



```
##  
##  
## $trial49$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial49$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.45      0.45      0.45      0.05      0.45  
##  
## $trial49$sigmasq
```

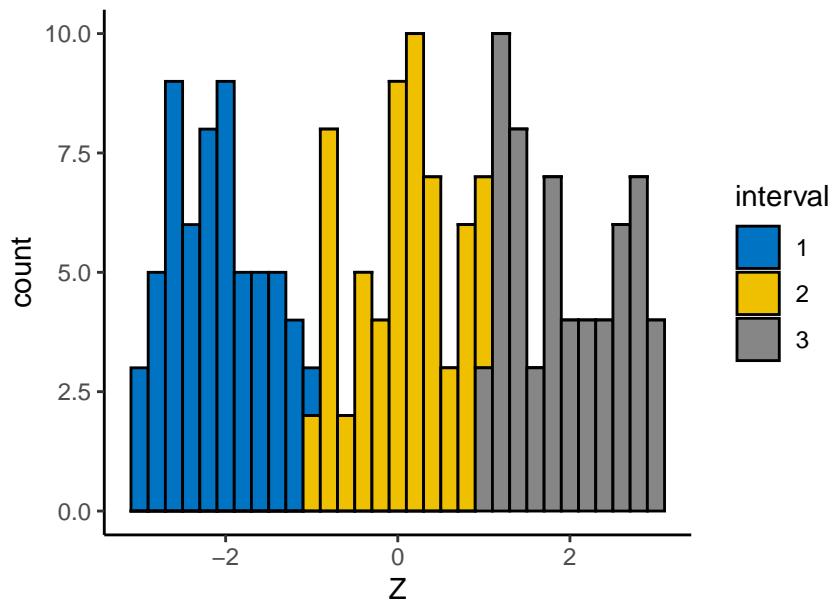


```
##  
## $trial49$sigmabetasq
```



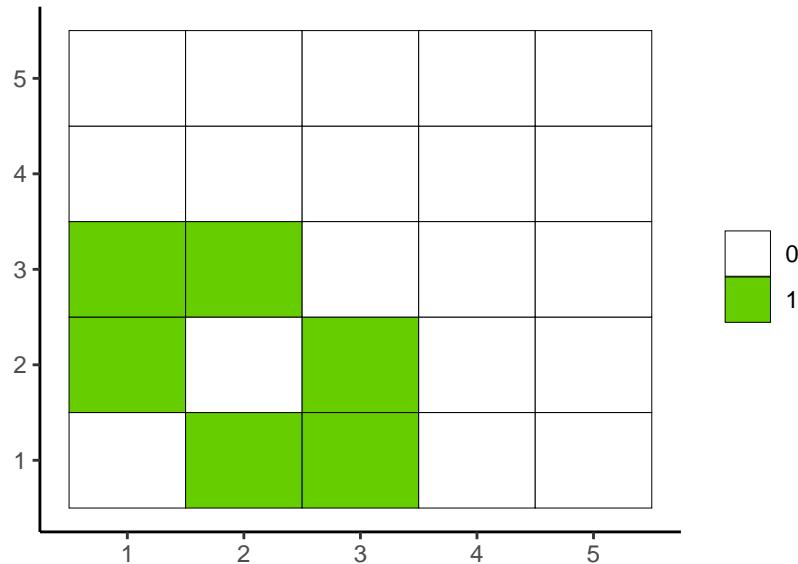
```
##  
##  
## $trial50  
## $trial50$covariates
```

Distribution of Covariate, Trial 50



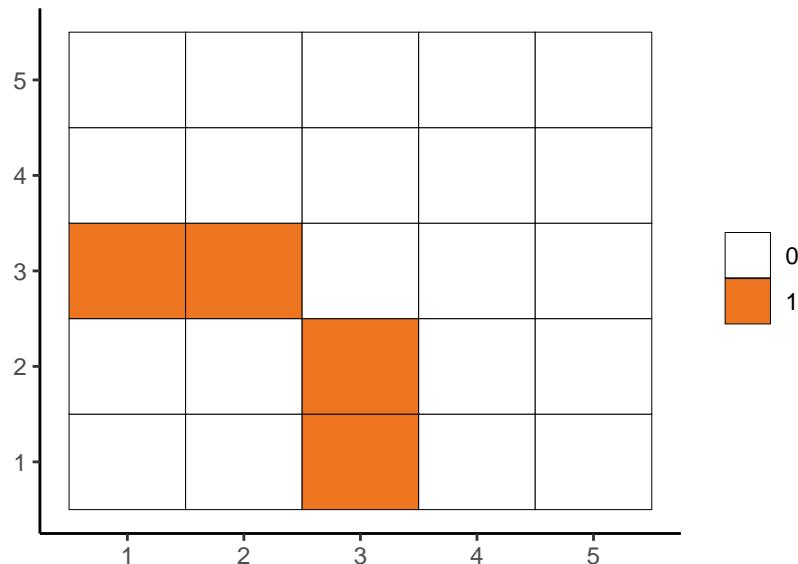
```
##  
## $trial50$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84784.8           Unique conditional dependence structures: 2  
## n: 180, variables: 5           Hyperparameter grid size: 9 points  
## CAVI converged for 3/5 variables  
##  
## Model fit completed in 34.34 secs  
##  
## $trial50$unique_graphs  
## $trial50$unique_graphs$graph1  
## [1] "1,...,107"  
##  
## $trial50$unique_graphs$graph2  
## [1] "108,...,180"  
##  
## $trial50$unique_graphs[[3]]
```

Graph 1, Individuals 1,...,107



```
##  
## $trial50$unique_graphs[[4]]
```

Graph 2, Individuals 108,...,180

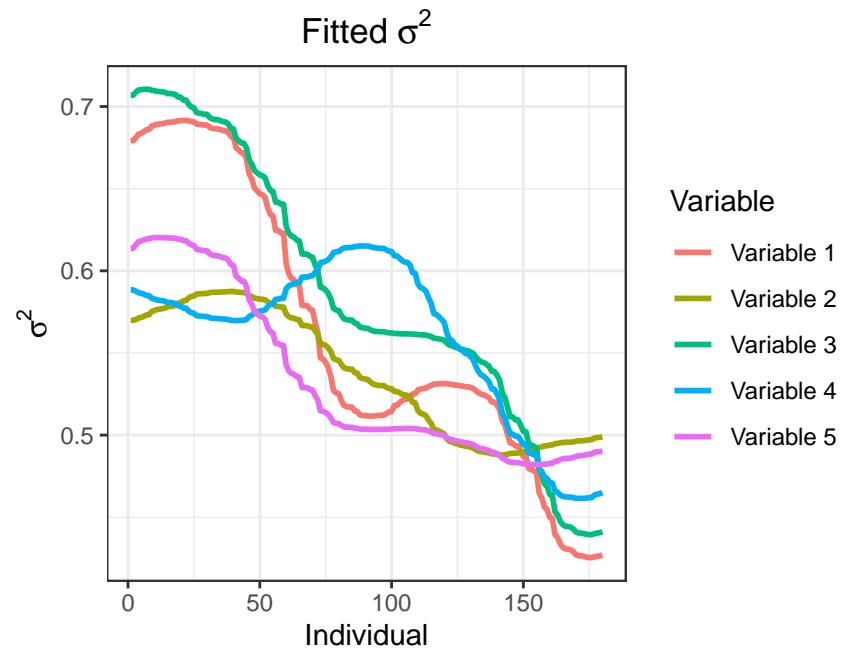


```
##  
##  
## $trial50$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial50$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.45      0.45      0.45      0.05      0.05
##
## $trial50$sigmasq

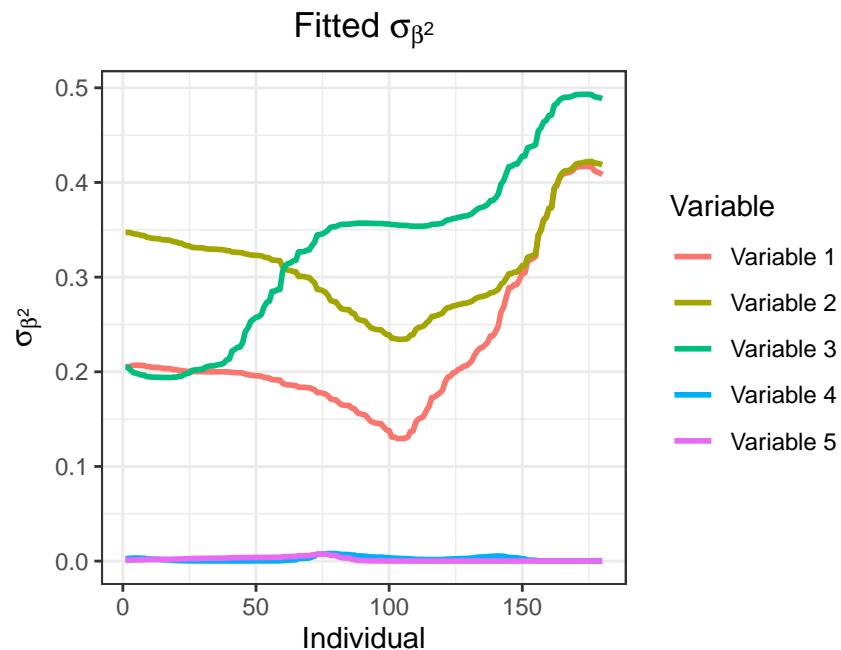
```



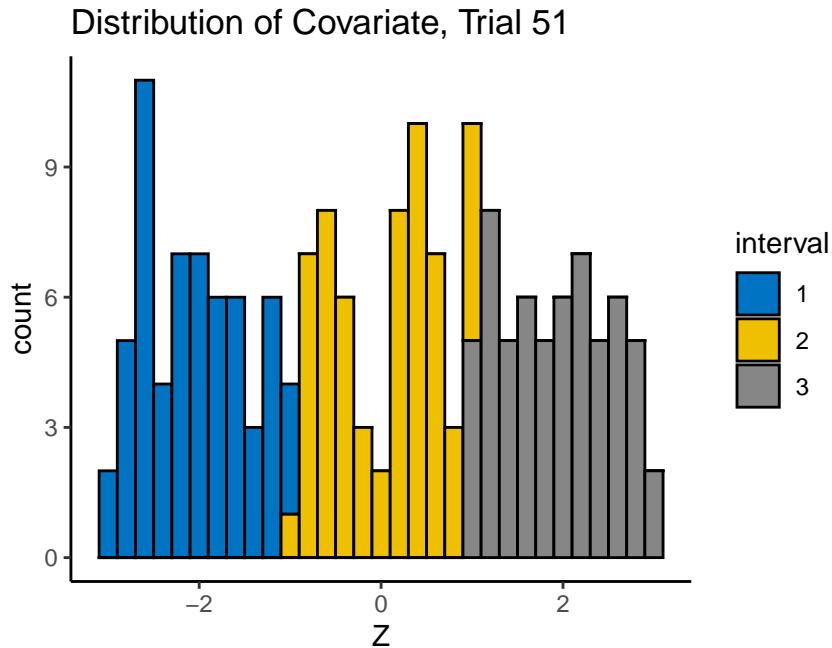
```

## 
## $trial50$sigmabetasq

```

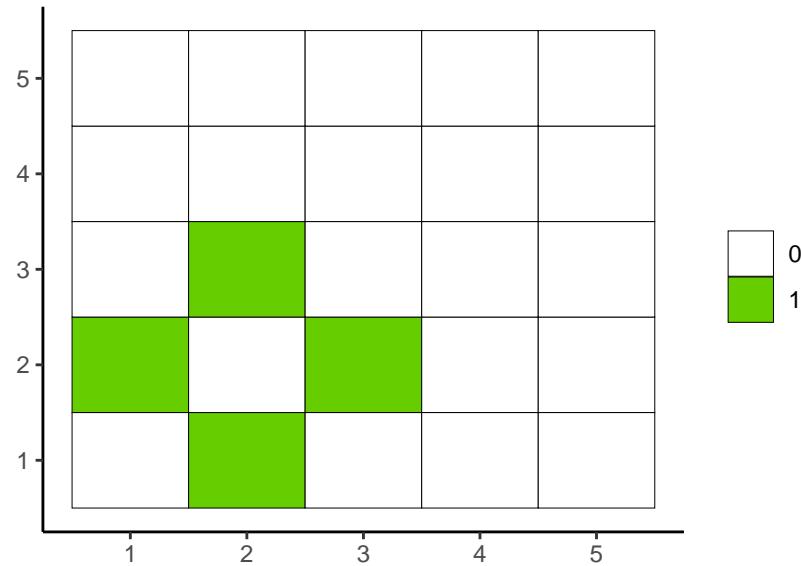


```
##  
##  
## $trial51  
## $trial51$covariates
```



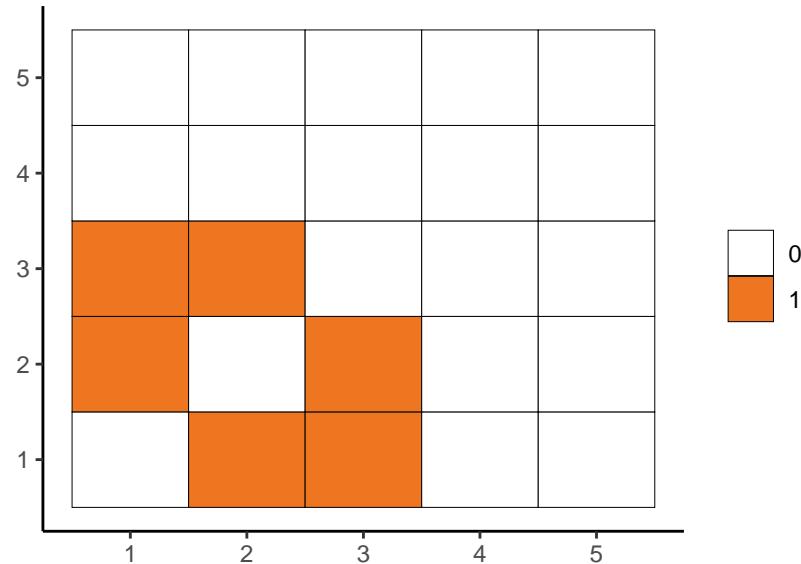
```
##  
## $trial51$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84699.6 Unique conditional dependence structures: 3  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 1/5 variables  
##  
## Model fit completed in 34.512 secs  
##  
## $trial51$unique_graphs  
## $trial51$unique_graphs$graph1  
## [1] "1,...,42"  
##  
## $trial51$unique_graphs$graph2  
## [1] "43,...,121"  
##  
## $trial51$unique_graphs$graph3  
## [1] "122,...,180"  
##  
## $trial51$unique_graphs[[4]]
```

Graph 1, Individuals 1,...,42



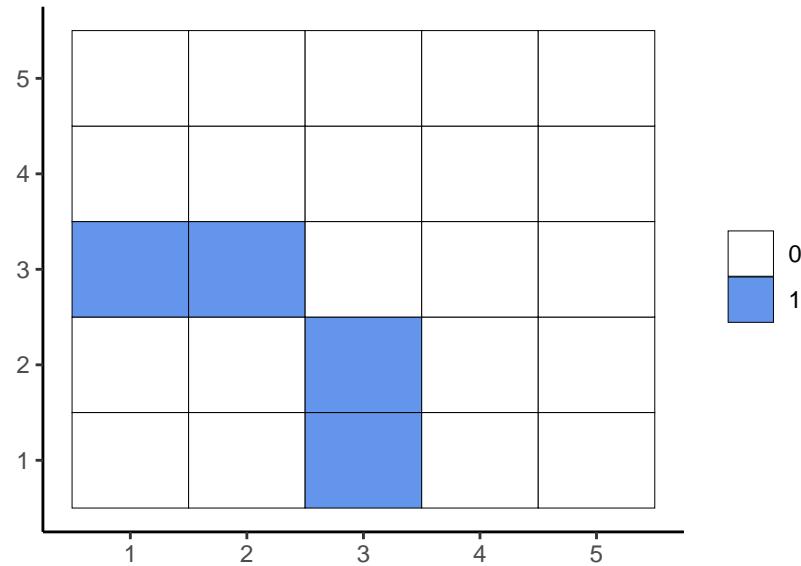
```
##  
## $trial51$unique_graphs[[5]]
```

Graph 2, Individuals 43,...,121

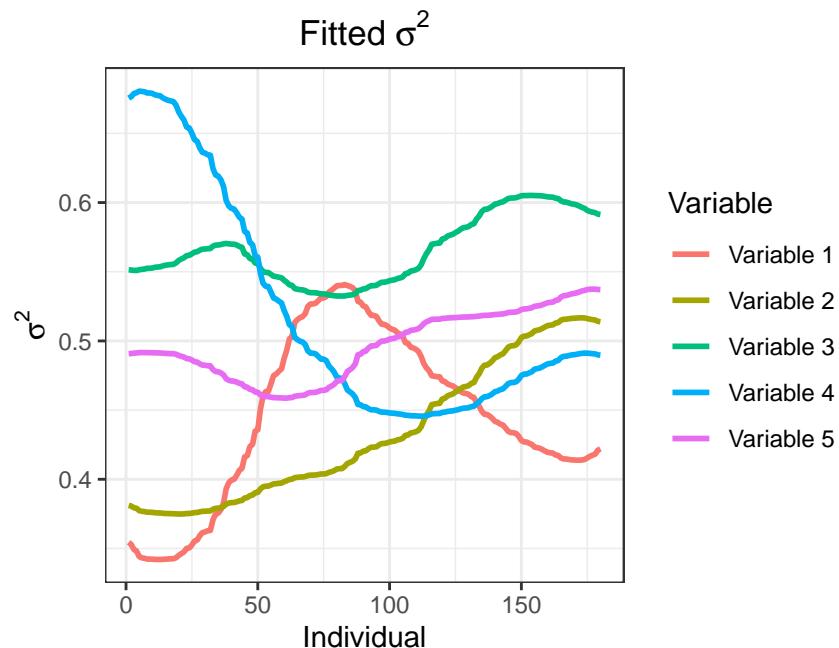


```
##  
## $trial51$unique_graphs[[6]]
```

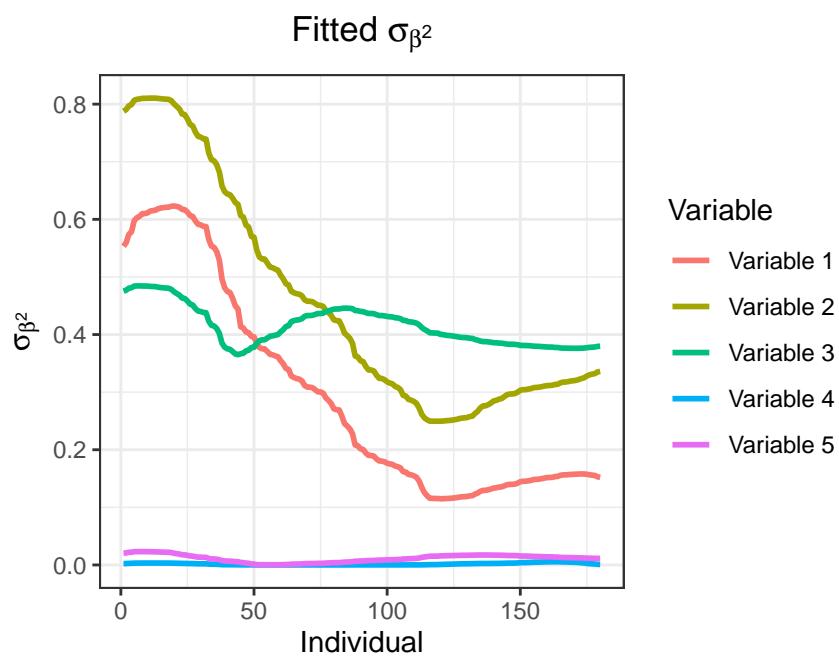
Graph 3, Individuals 122,...,180



```
##  
##  
## $trial51$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial51$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.45      0.45      0.45      0.05      0.05  
##  
## $trial51$sigmasq
```

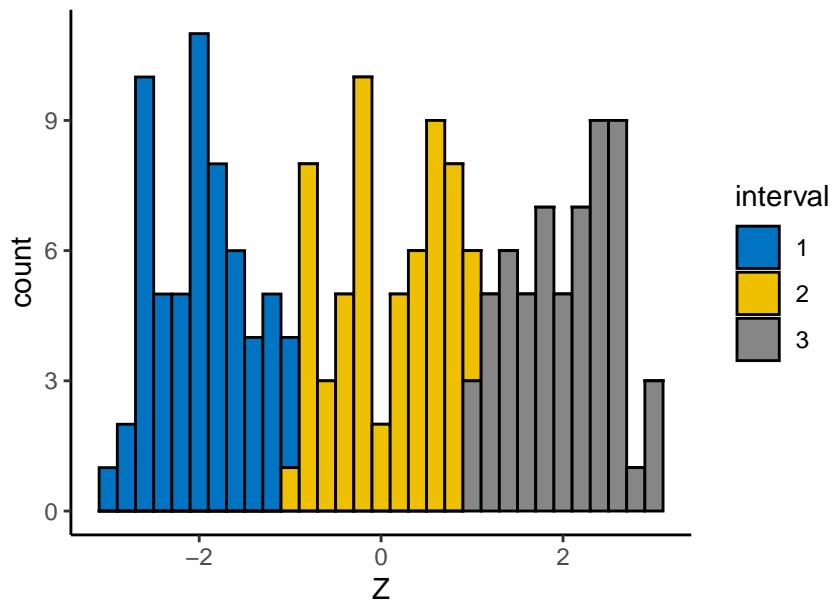


```
##  
## $trial51$sigmabetasq
```



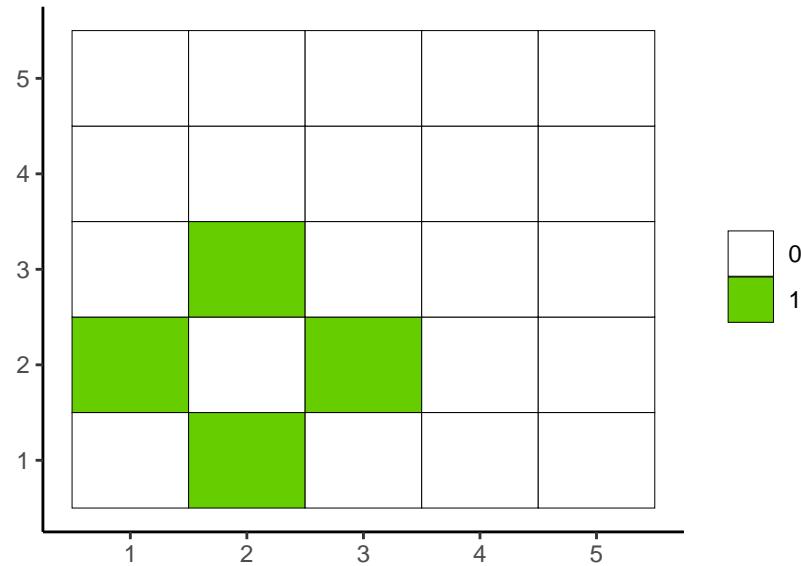
```
##  
##  
## $trial52  
## $trial52$covariates
```

Distribution of Covariate, Trial 52



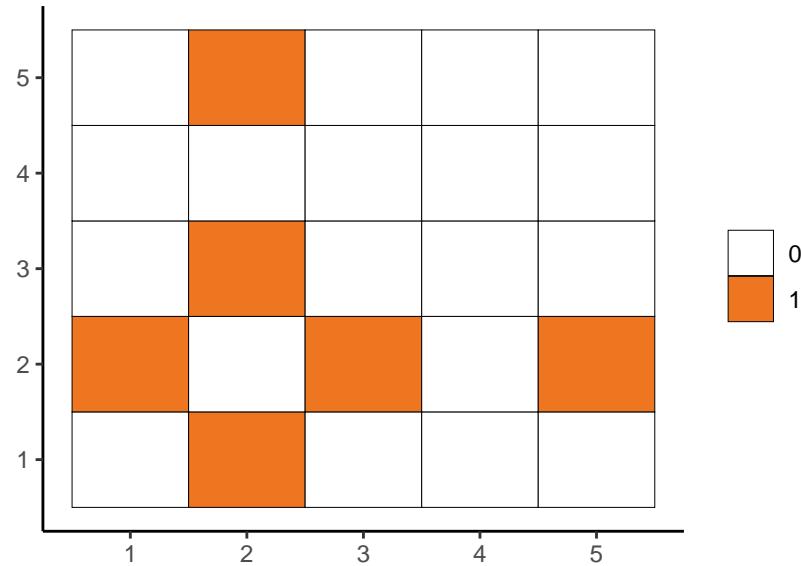
```
##
## $trial52$summary
## Covariate Dependent Graphical Model
##
## Model ELBO: -84645.4           Unique conditional dependence structures: 6
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 2/5 variables
##
## Model fit completed in 29.609 secs
##
## $trial52$unique_graphs
## $trial52$unique_graphs$graph1
## [1] "1,46,...,68"
##
## $trial52$unique_graphs$graph2
## [1] "2,...,16"
##
## $trial52$unique_graphs$graph3
## [1] "17,...,23"
##
## $trial52$unique_graphs$graph4
## [1] "24,...,45"
##
## $trial52$unique_graphs$graph5
## [1] "69,...,91"
##
## $trial52$unique_graphs$graph6
## [1] "92,...,180"
##
## $trial52$unique_graphs[[7]]
```

Graph 1, Individuals 1,46,...,68



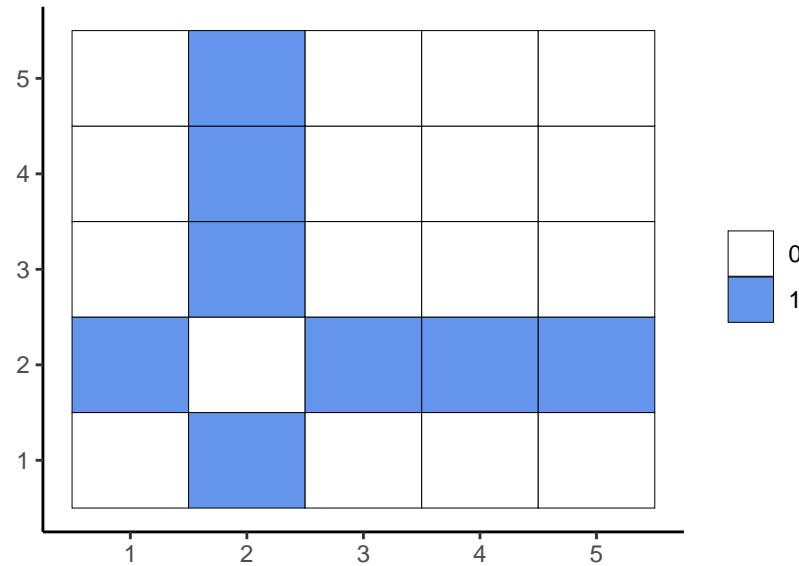
```
##  
## $trial52$unique_graphs[[8]]
```

Graph 2, Individuals 2,...,16



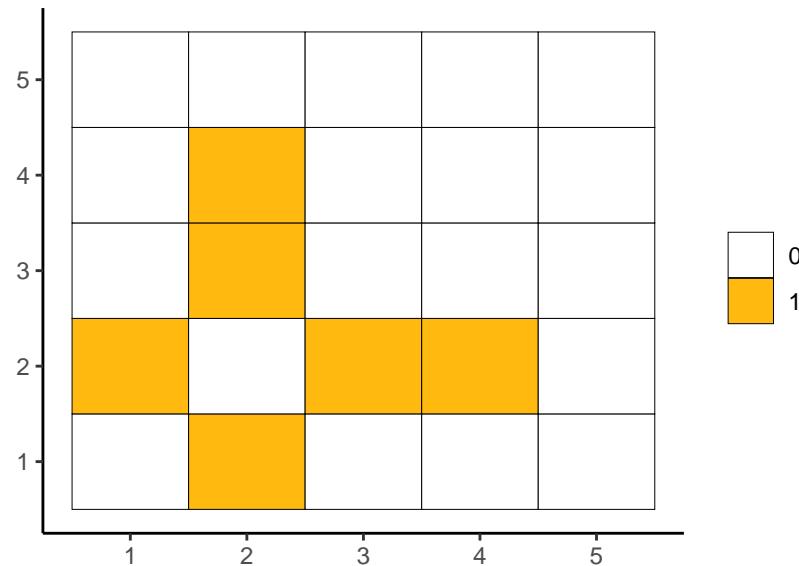
```
##  
## $trial52$unique_graphs[[9]]
```

Graph 3, Individuals 17,...,23



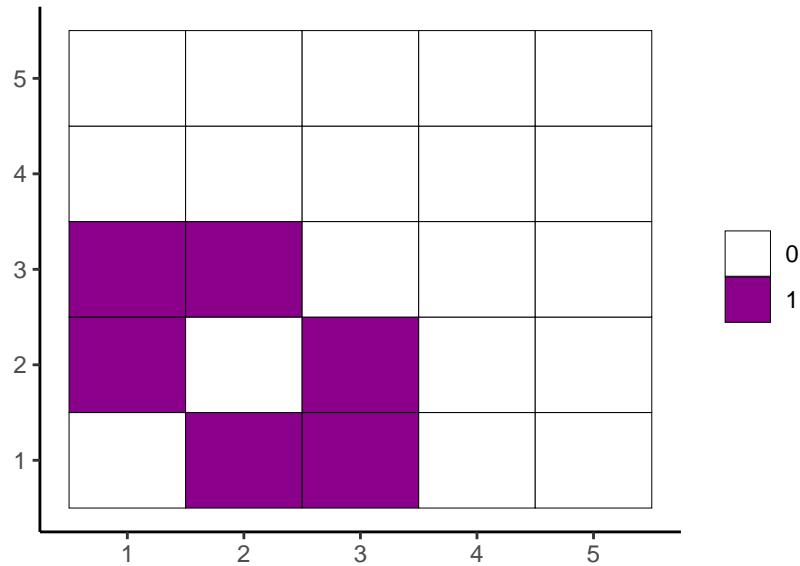
```
##  
## $trial52$unique_graphs[[10]]
```

Graph 4, Individuals 24,...,45



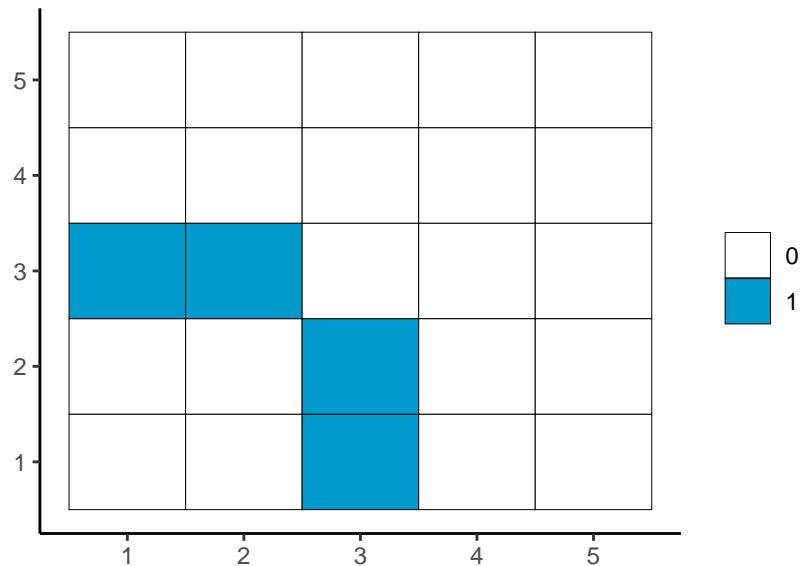
```
##  
## $trial52$unique_graphs[[11]]
```

Graph 5, Individuals 69,...,91



```
##  
## $trial52$unique_graphs[[12]]
```

Graph 6, Individuals 92,...,180

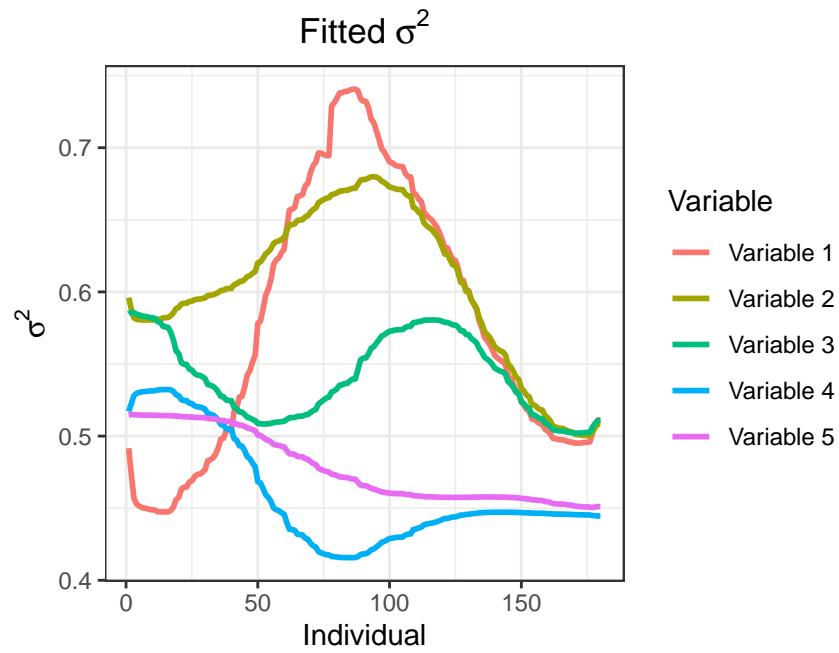


```
##  
##  
## $trial52$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial52$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.15      0.45      0.45      0.05      0.05
##
## $trial52$sigmasq

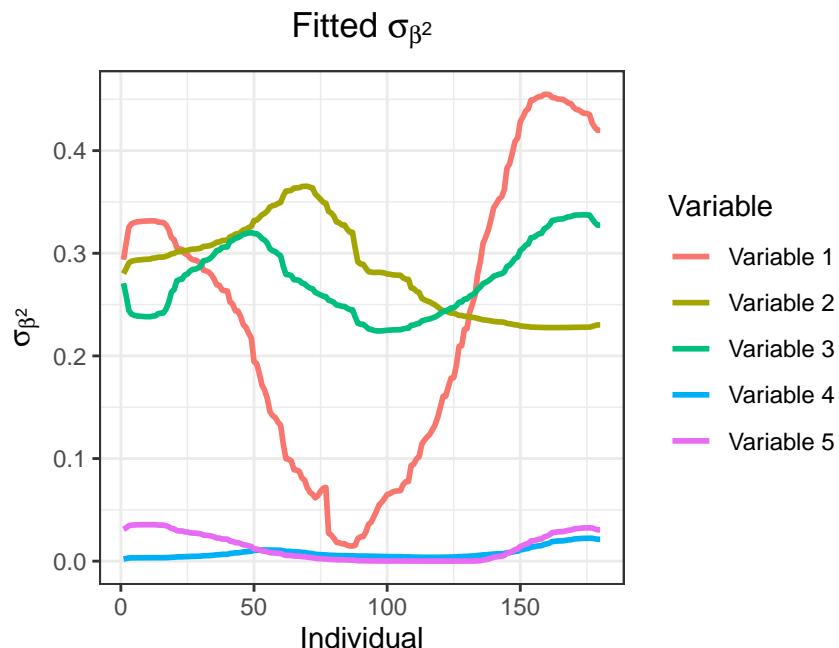
```



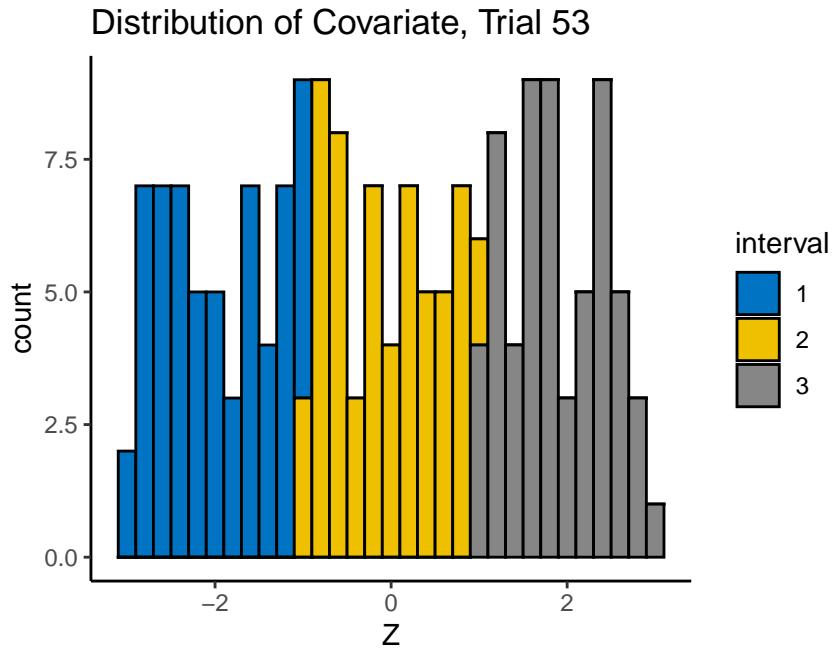
```

## 
## $trial52$sigmabetasq

```



```
##  
##  
## $trial53  
## $trial53$covariates
```



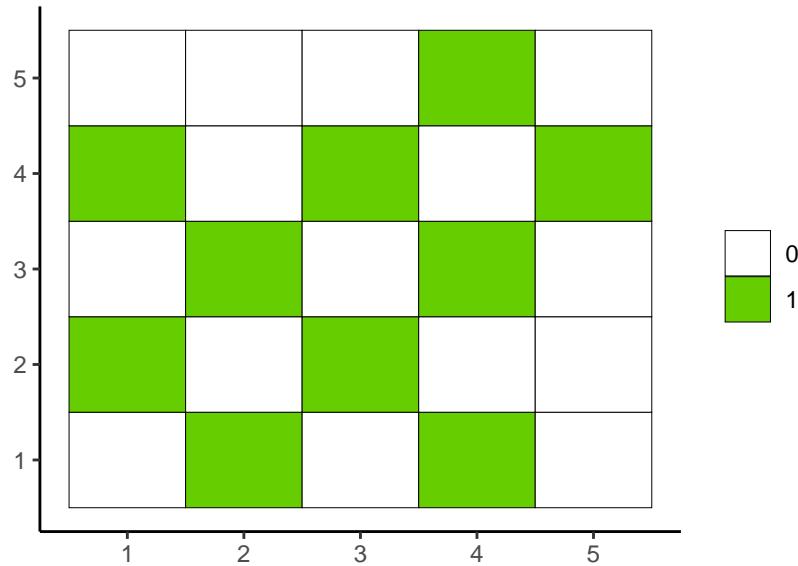
```
##  
## $trial53$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -85497.58 Unique conditional dependence structures: 8  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 4/5 variables  
##  
## Model fit completed in 33.068 secs  
##  
## $trial53$unique_graphs  
## $trial53$unique_graphs$graph1  
## [1] "1,...,22"  
##  
## $trial53$unique_graphs$graph2  
## [1] "23,...,44"  
##  
## $trial53$unique_graphs$graph3  
## [1] "45,...,67"  
##  
## $trial53$unique_graphs$graph4  
## [1] "68,69"  
##  
## $trial53$unique_graphs$graph5  
## [1] "70,...,106"  
##  
## $trial53$unique_graphs$graph6
```

```

## [1] "107,...,126"
##
## $trial53$unique_graphs$graph7
## [1] "127,...,134"
##
## $trial53$unique_graphs$graph8
## [1] "135,...,180"
##
## $trial53$unique_graphs[[9]]

```

Graph 1, Individuals 1,...,22

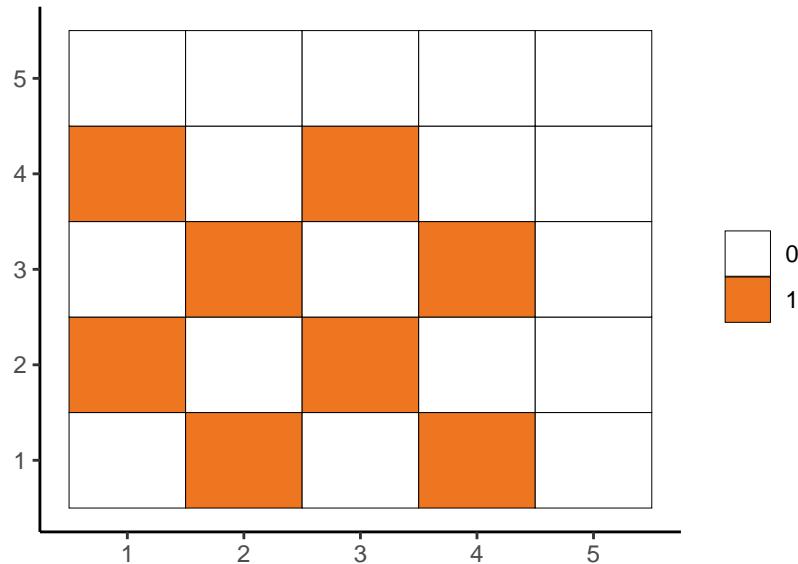


```

##
## $trial53$unique_graphs[[10]]

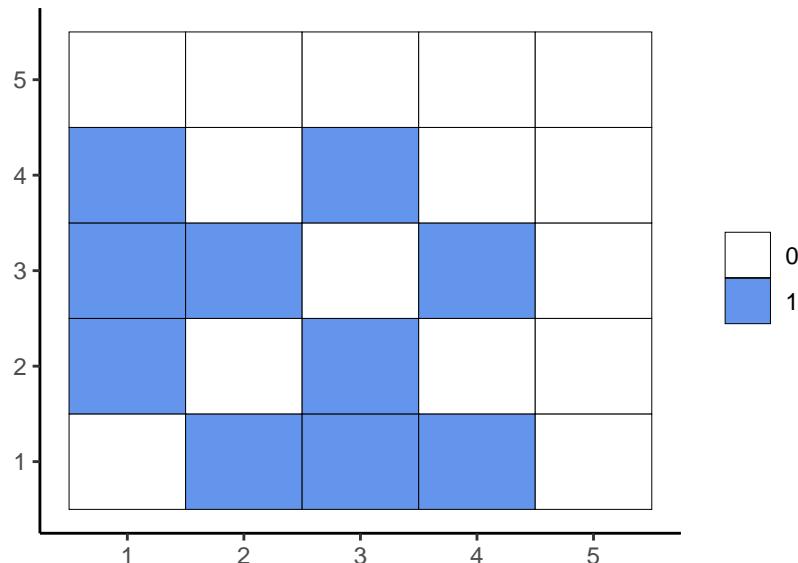
```

Graph 2, Individuals 23,...,44



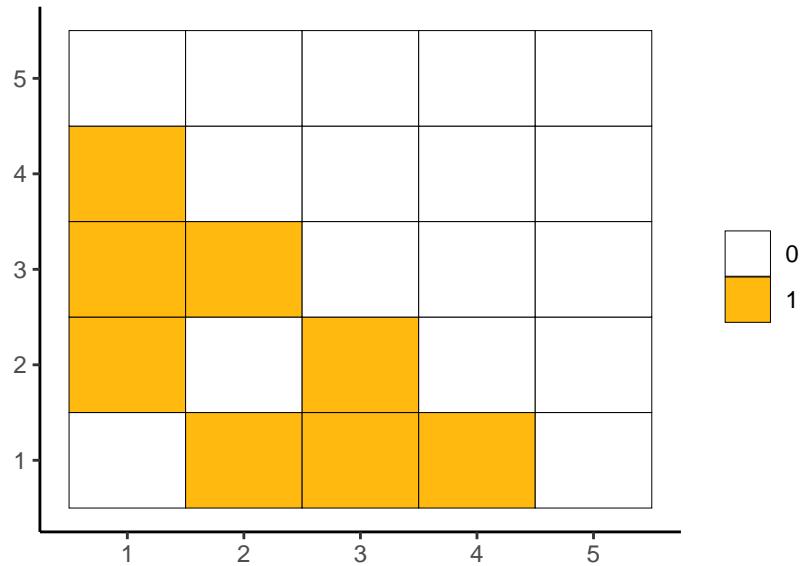
```
##  
## $trial53$unique_graphs[[11]]
```

Graph 3, Individuals 45,...,67



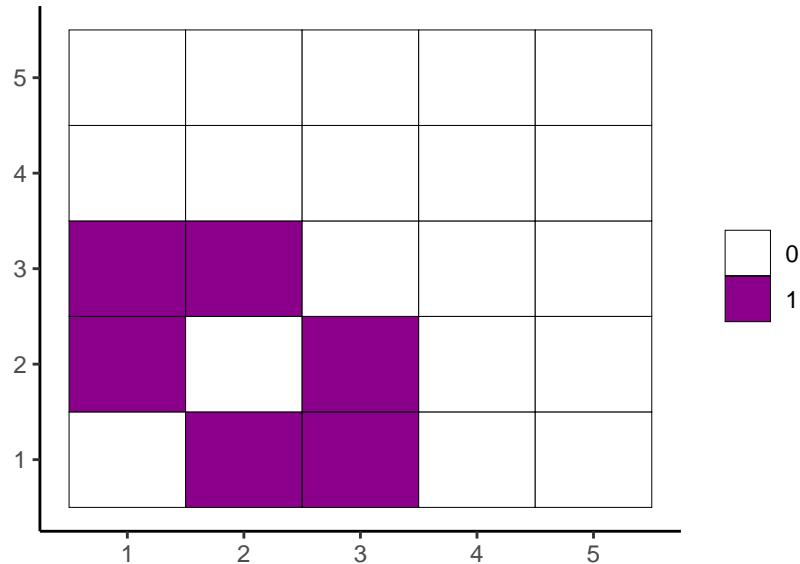
```
##  
## $trial53$unique_graphs[[12]]
```

Graph 4, Individuals 68,69



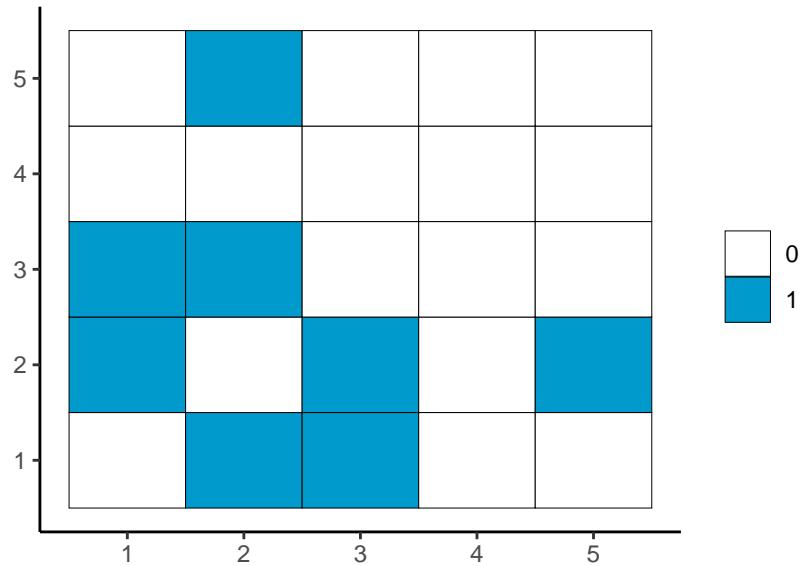
```
##  
## $trial53$unique_graphs[[13]]
```

Graph 5, Individuals 70,...,106



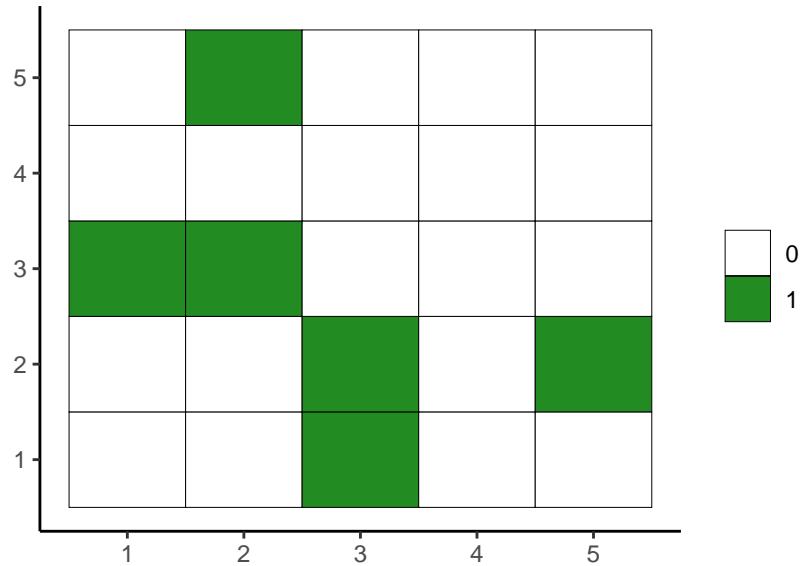
```
##  
## $trial53$unique_graphs[[14]]
```

Graph 6, Individuals 107,...,126



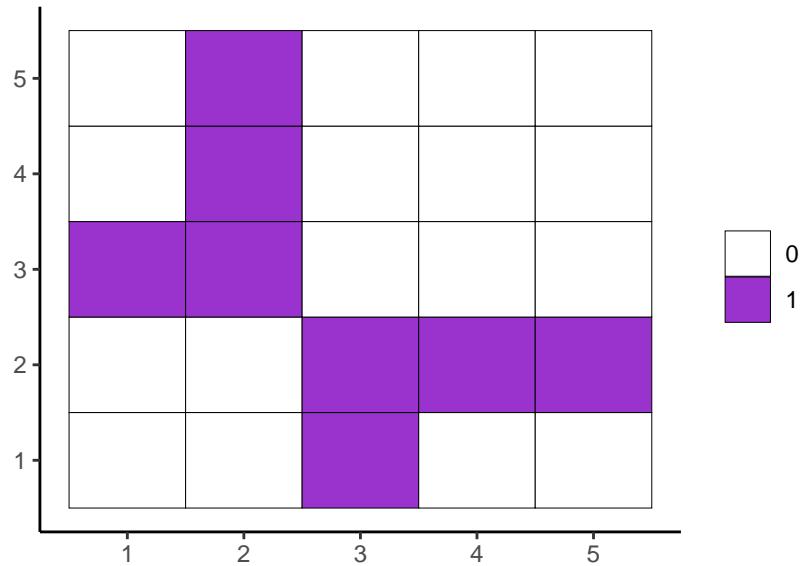
```
##  
## $trial53$unique_graphs[[15]]
```

Graph 7, Individuals 127,...,134

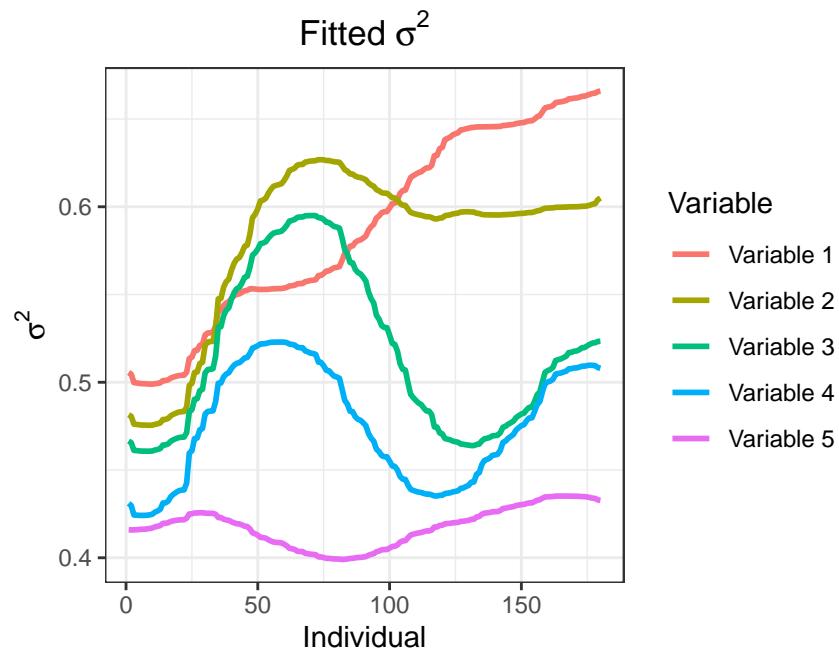


```
##  
## $trial53$unique_graphs[[16]]
```

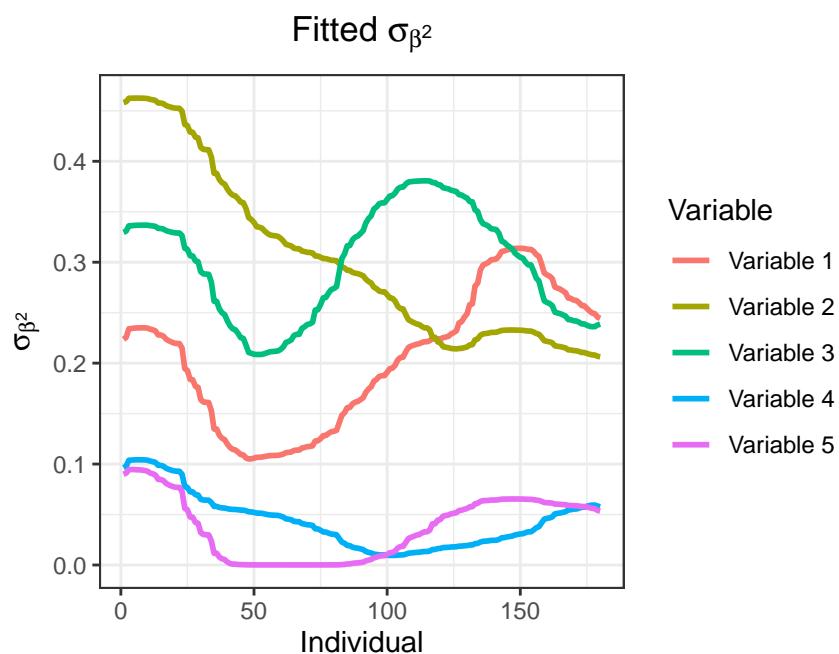
Graph 8, Individuals 135,...,180



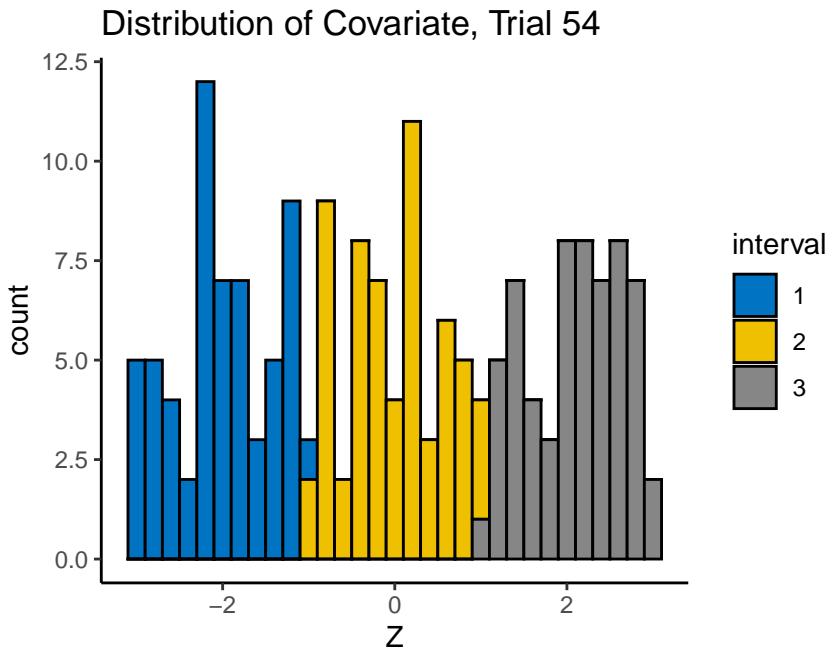
```
##  
##  
## $trial53$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial53$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          0.45      0.45      0.45      0.05      0.05  
##  
## $trial53$sigmasq
```



```
##  
## $trial53$sigmabetasq
```

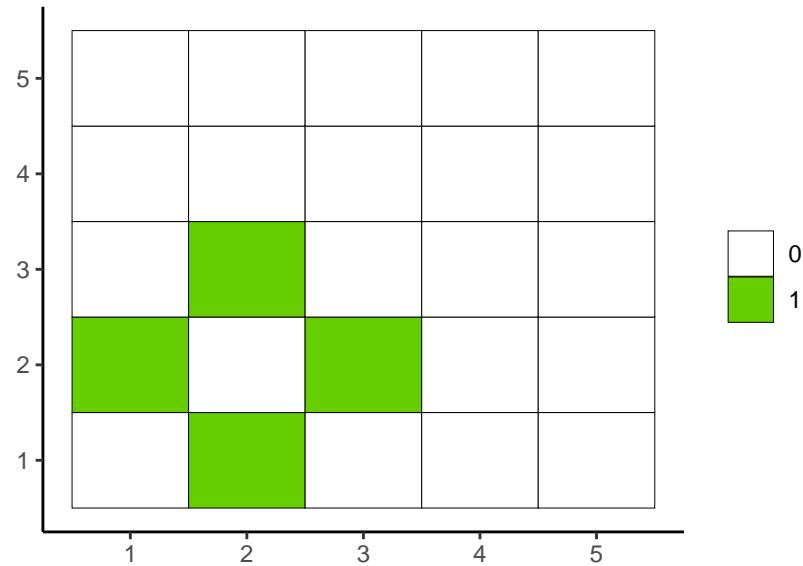


```
##  
##  
## $trial54  
## $trial54$covariates
```



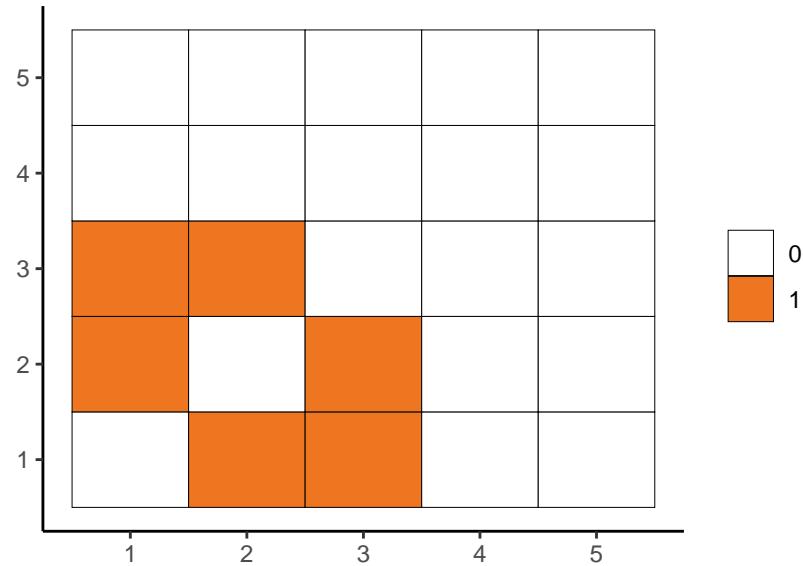
```
##
## $trial54$summary
## Covariate Dependent Graphical Model
##
## Model ELBO: -84419.09           Unique conditional dependence structures: 3
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 3/5 variables
##
## Model fit completed in 30.558 secs
##
## $trial54$unique_graphs
## $trial54$unique_graphs$graph1
## [1] "1,...,60"
##
## $trial54$unique_graphs$graph2
## [1] "61,...,137"
##
## $trial54$unique_graphs$graph3
## [1] "138,...,180"
##
## $trial54$unique_graphs[[4]]
```

Graph 1, Individuals 1,...,60



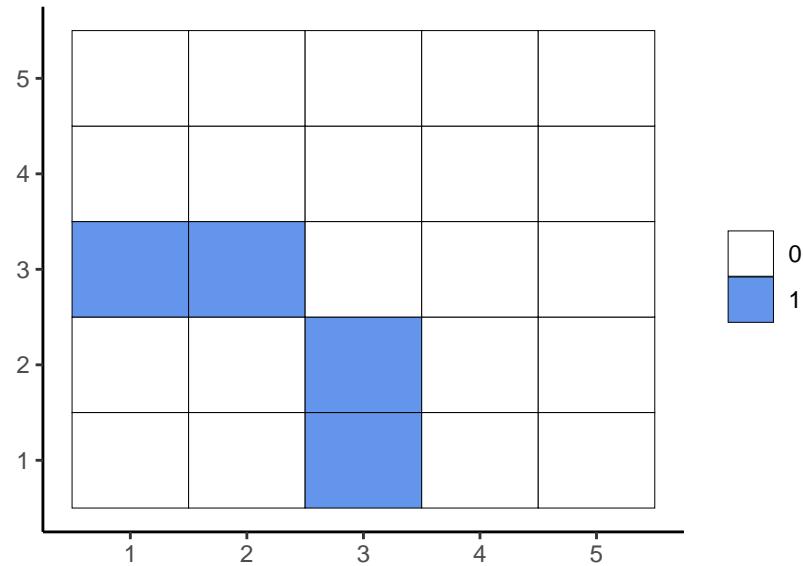
```
##  
## $trial54$unique_graphs[[5]]
```

Graph 2, Individuals 61,...,137

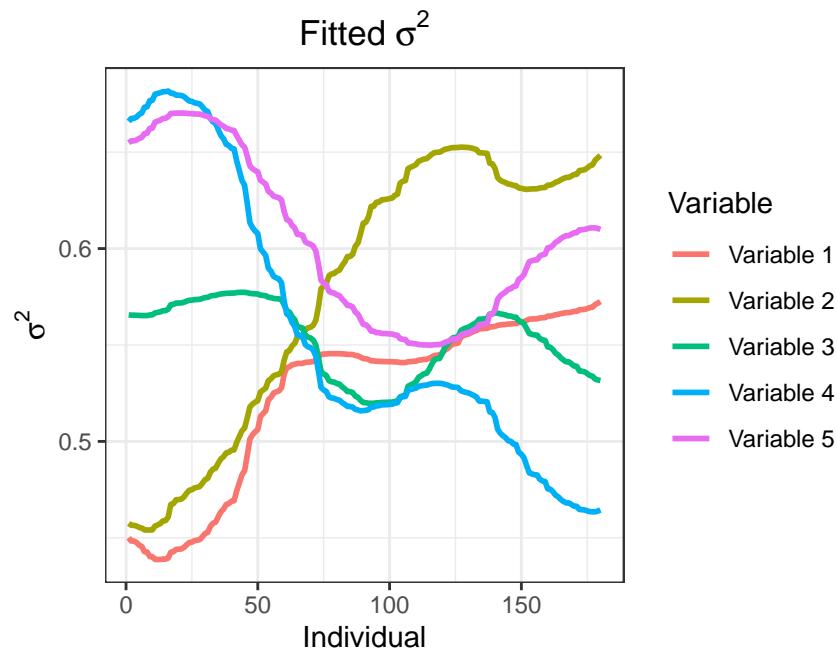


```
##  
## $trial54$unique_graphs[[6]]
```

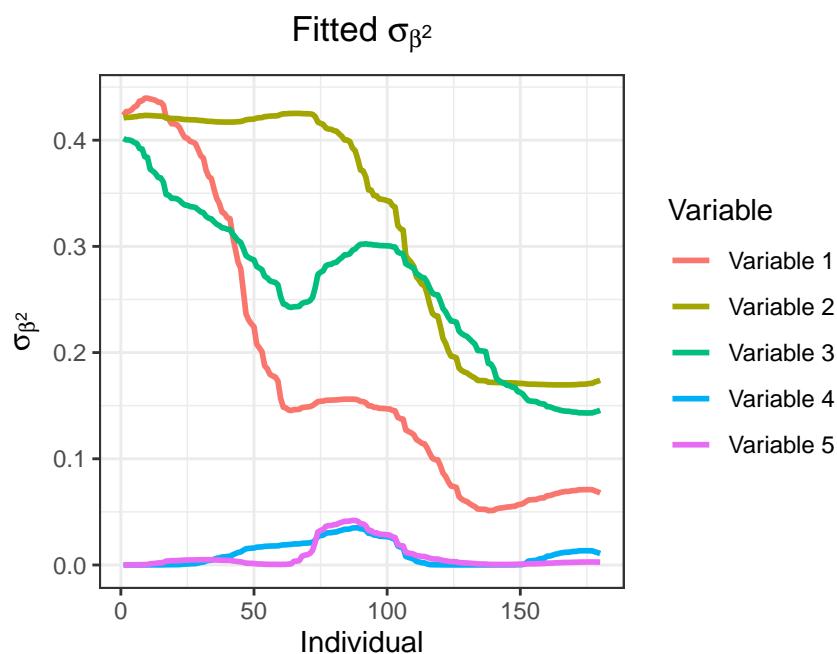
Graph 3, Individuals 138,...,180



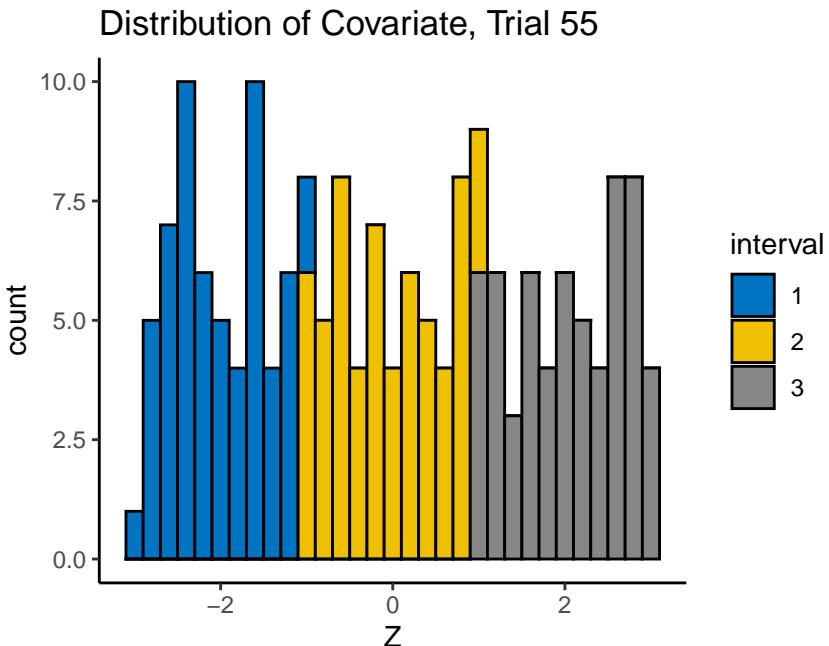
```
##  
##  
## $trial54$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial54$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.45      0.45      0.45      0.05      0.05  
##  
## $trial54$sigmasq
```



```
##  
## $trial54$sigmabetasq
```



```
##  
##  
## $trial55  
## $trial55$covariates
```



```

##  

## $trial55$summary  

## Covariate Dependent Graphical Model  

##  

## Model ELBO: -84300           Unique conditional dependence structures: 6  

## n: 180, variables: 5          Hyperparameter grid size: 9 points  

## CAVI converged for 2/5 variables  

##  

## Model fit completed in 28.748 secs  

##  

## $trial55$unique_graphs  

## $trial55$unique_graphs$graph1  

## [1] "1,...,42"  

##  

## $trial55$unique_graphs$graph2  

## [1] "43,...,73"  

##  

## $trial55$unique_graphs$graph3  

## [1] "74,...,95"  

##  

## $trial55$unique_graphs$graph4  

## [1] "96,...,126"  

##  

## $trial55$unique_graphs$graph5  

## [1] "127,...,152,180"  

##  

## $trial55$unique_graphs$graph6  

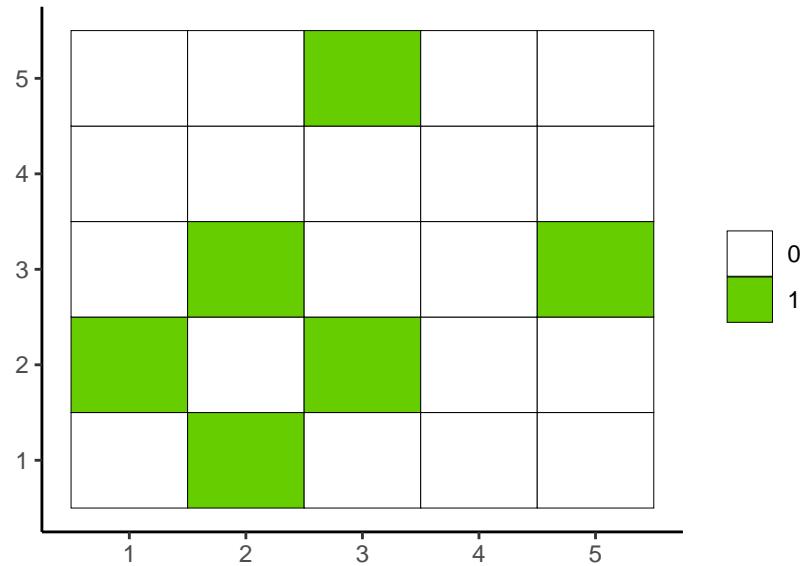
## [1] "153,...,179"  

##  

## $trial55$unique_graphs[[7]]

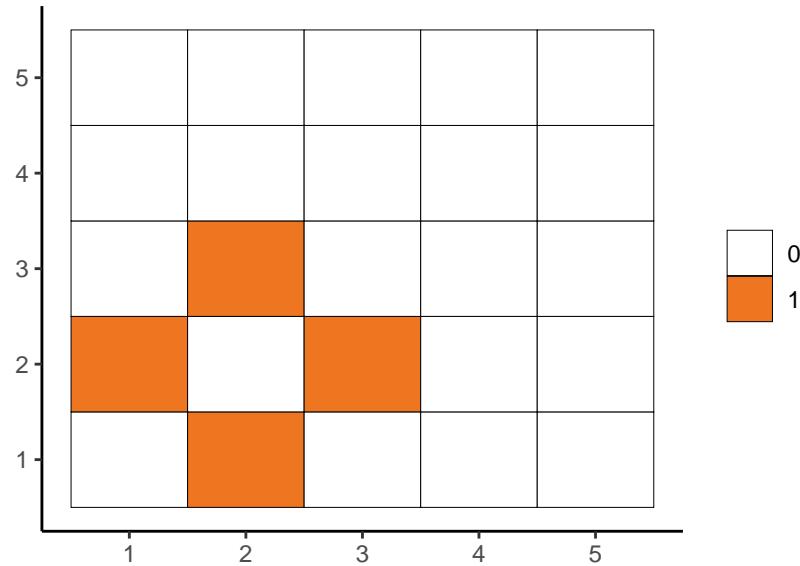
```

Graph 1, Individuals 1,...,42



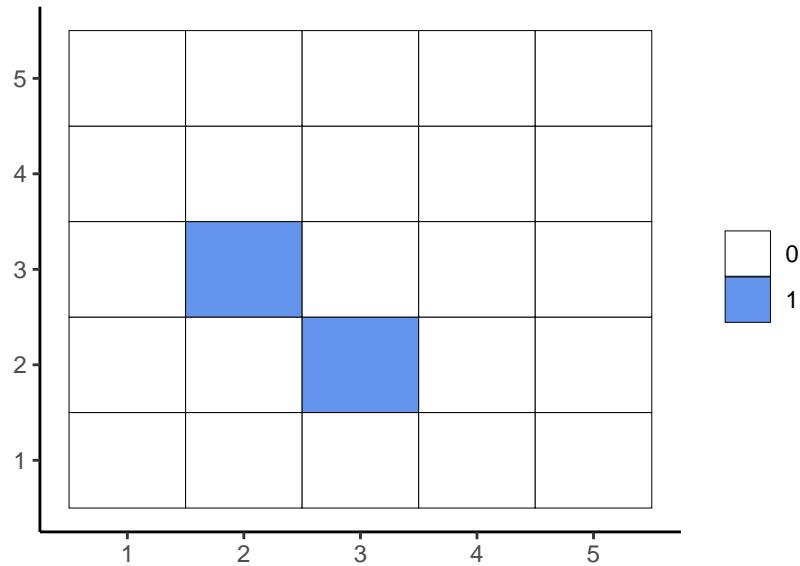
```
##  
## $trial55$unique_graphs[[8]]
```

Graph 2, Individuals 43,...,73



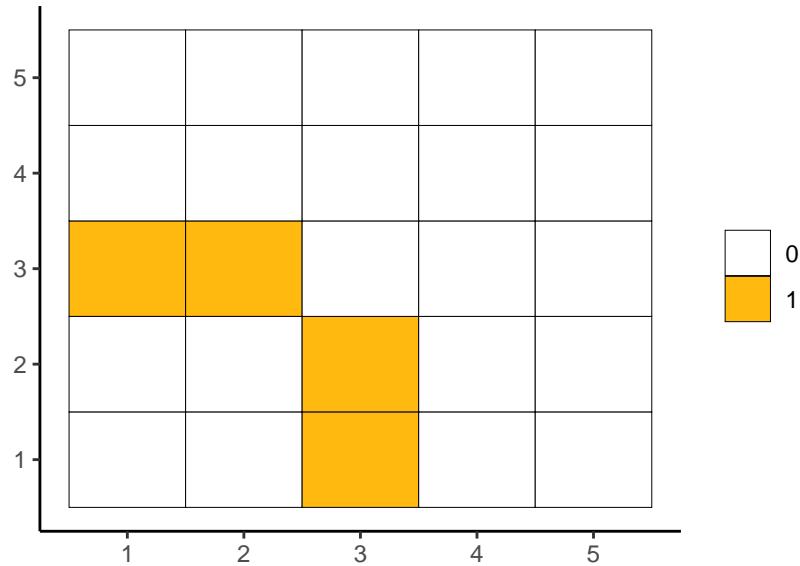
```
##  
## $trial55$unique_graphs[[9]]
```

Graph 3, Individuals 74,...,95



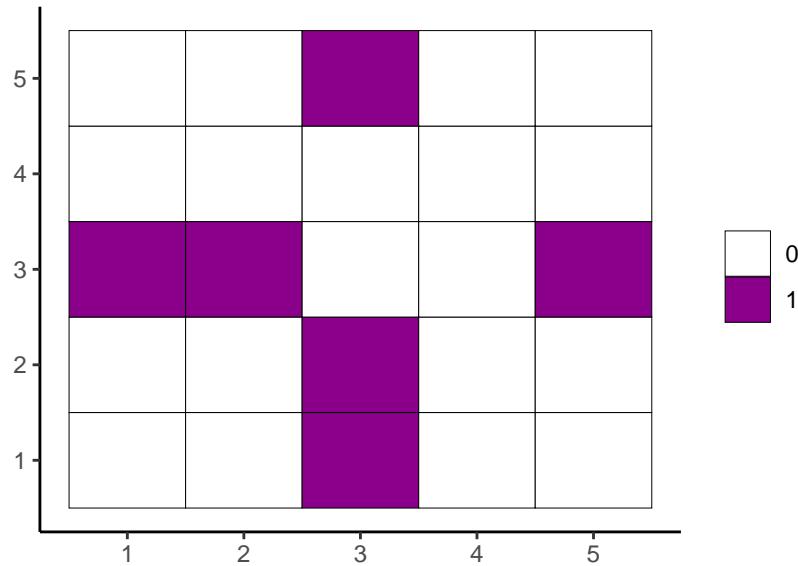
```
##  
## $trial55$unique_graphs[[10]]
```

Graph 4, Individuals 96,...,126



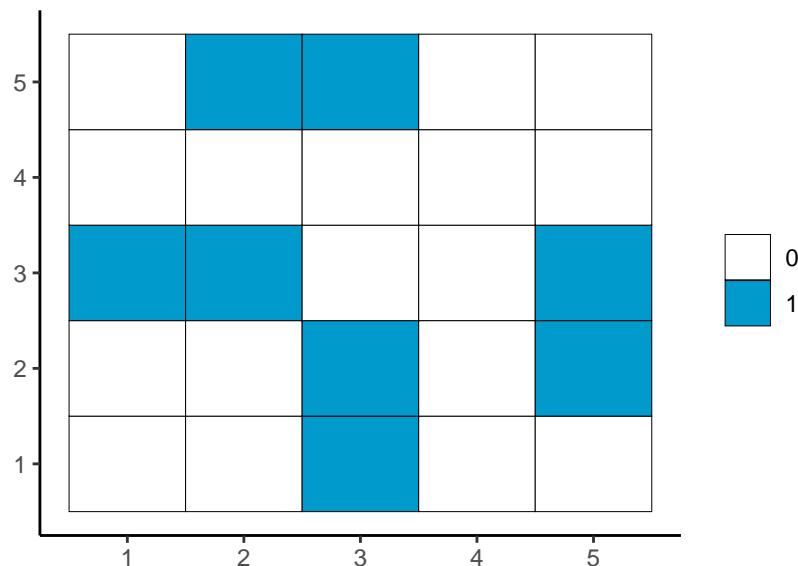
```
##  
## $trial55$unique_graphs[[11]]
```

Graph 5, Individuals 127,...,152,180



```
##  
## $trial55$unique_graphs[[12]]
```

Graph 6, Individuals 153,...,179

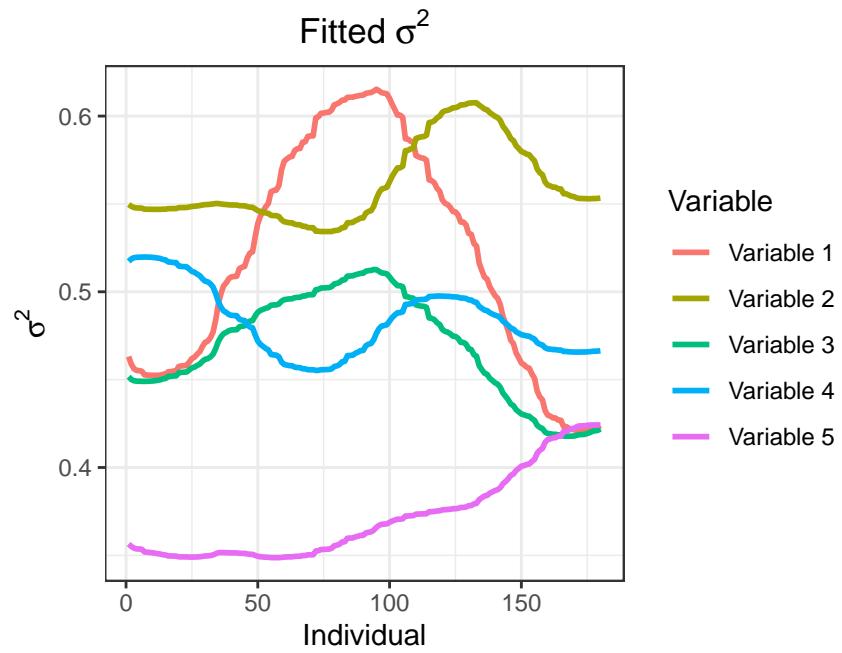


```
##  
##  
## $trial55$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial55$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.40      0.45      0.45      0.05      0.05
##
## $trial55$sigmasq

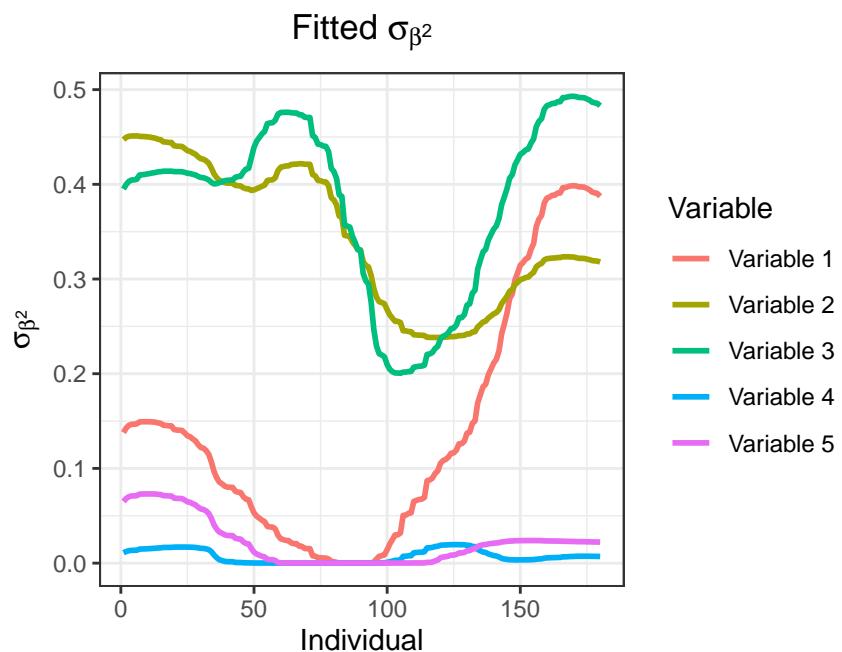
```



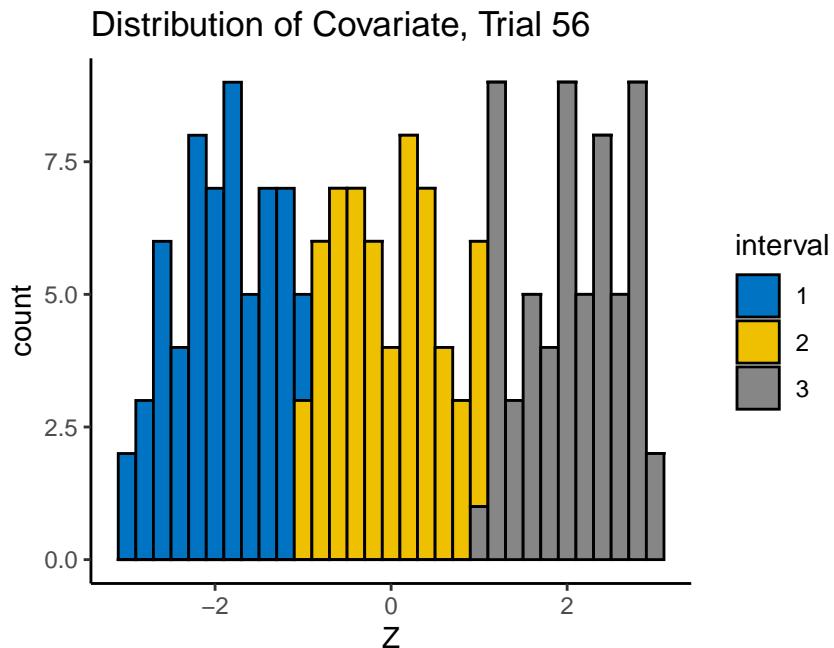
```

## $trial55$sigmabetasq

```

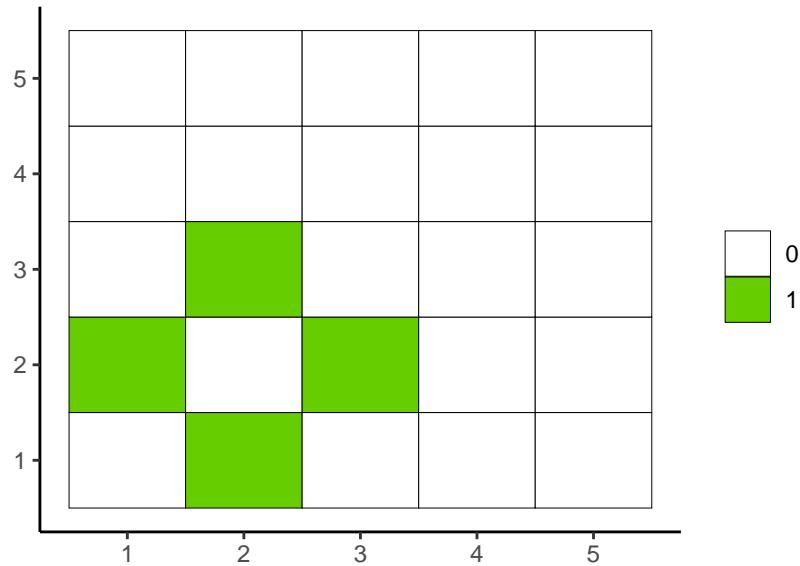


```
##  
##  
## $trial56  
## $trial56$covariates
```



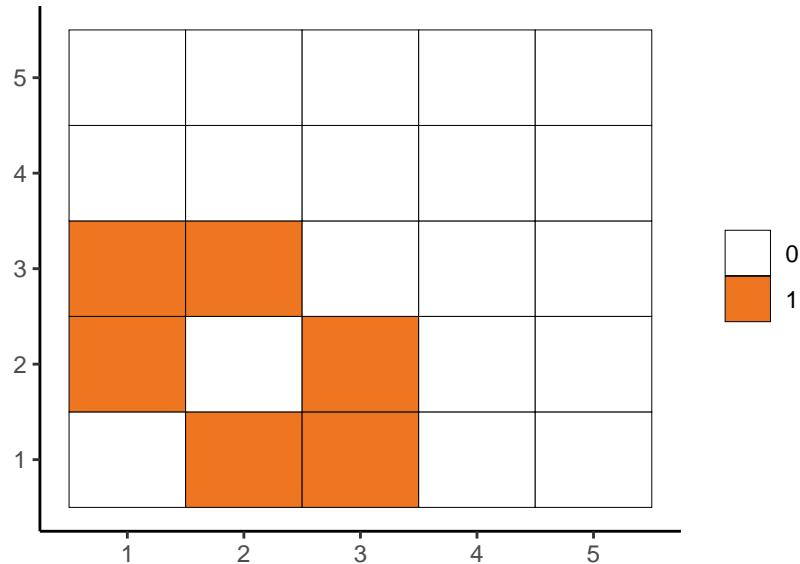
```
##  
## $trial56$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84251.55 Unique conditional dependence structures: 3  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 2/5 variables  
##  
## Model fit completed in 28.245 secs  
##  
## $trial56$unique_graphs  
## $trial56$unique_graphs$graph1  
## [1] "1,...,53"  
##  
## $trial56$unique_graphs$graph2  
## [1] "54,...,92"  
##  
## $trial56$unique_graphs$graph3  
## [1] "93,...,180"  
##  
## $trial56$unique_graphs[[4]]
```

Graph 1, Individuals 1,...,53



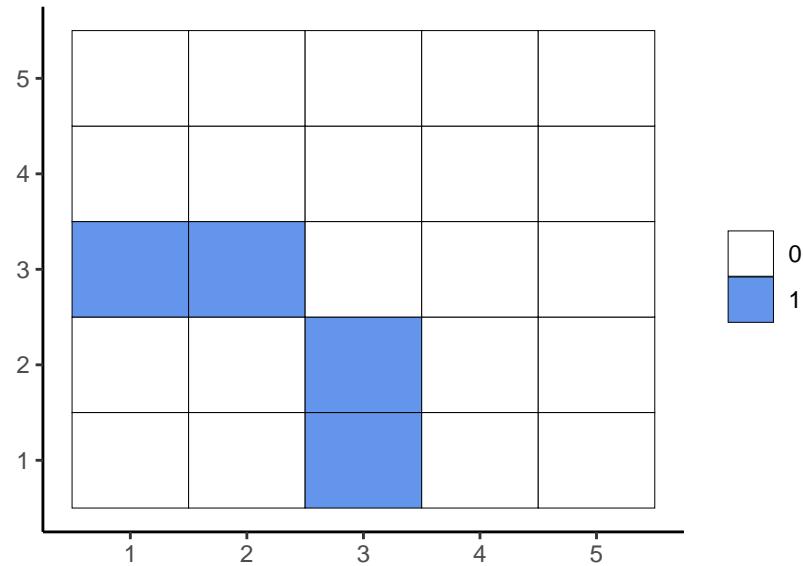
```
##  
## $trial156$unique_graphs[[5]]
```

Graph 2, Individuals 54,...,92

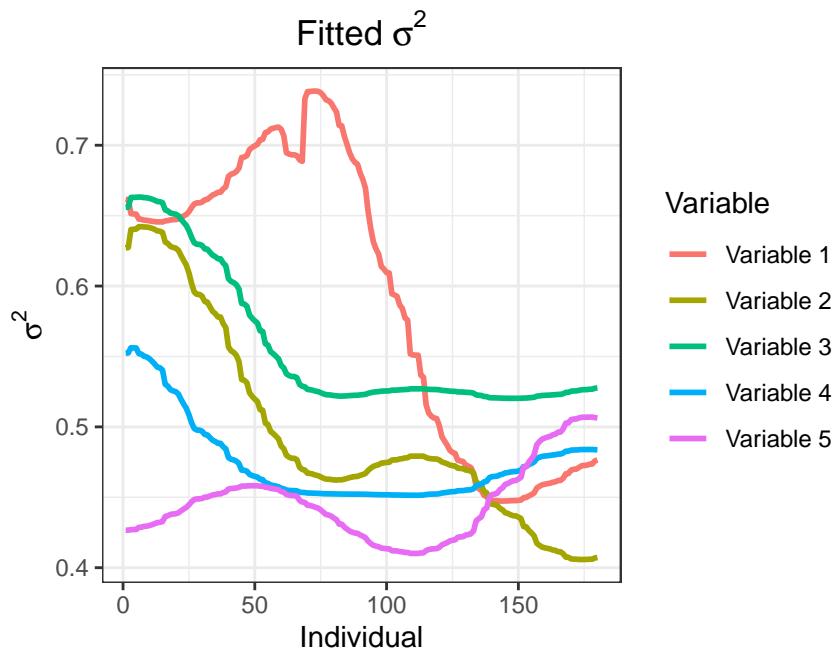


```
##  
## $trial156$unique_graphs[[6]]
```

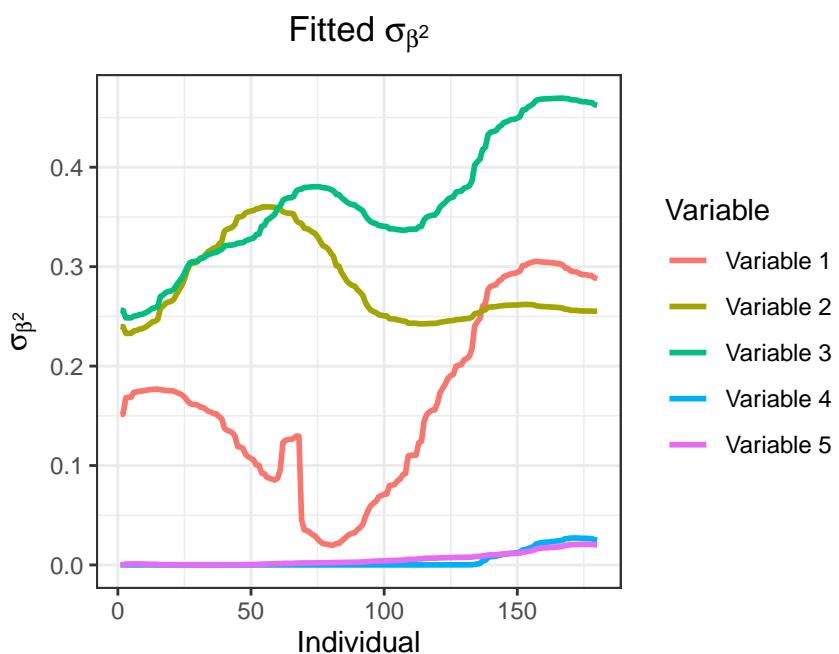
Graph 3, Individuals 93,...,180



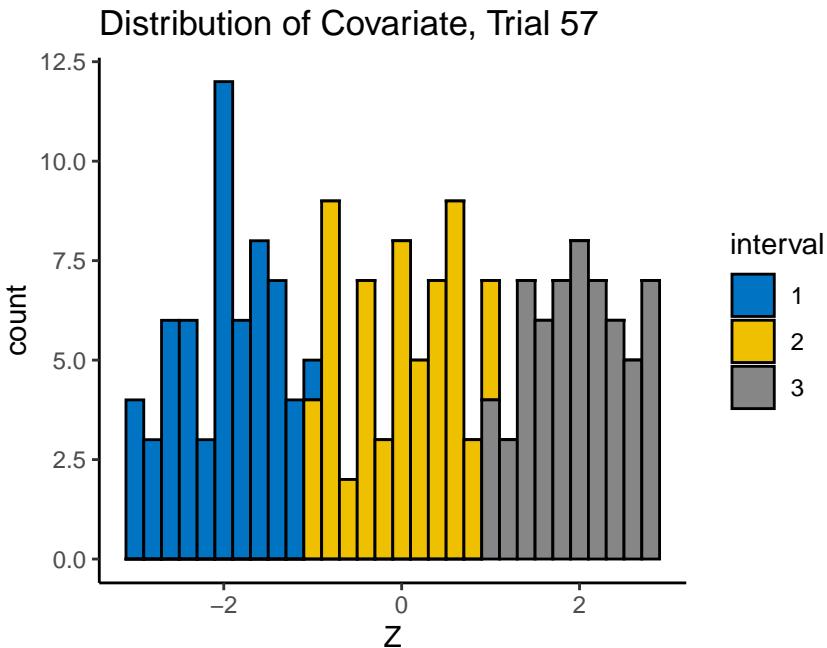
```
##  
##  
## $trial56$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial56$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.10      0.45      0.45      0.05      0.05  
##  
## $trial56$sigmasq
```



```
##  
## $trial56$sigmabetasq
```



```
##  
##  
## $trial57  
## $trial57$covariates
```

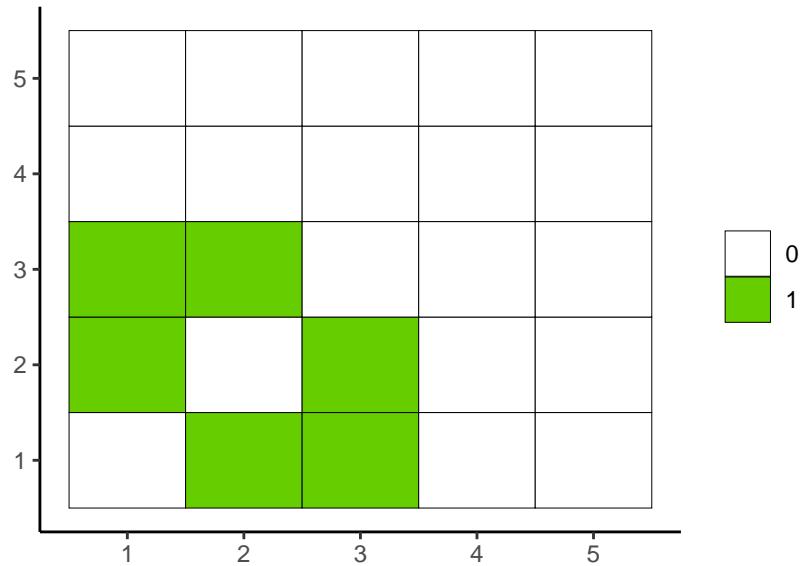


```

## 
## $trial57$summary
##                               Covariate Dependent Graphical Model
## 
## Model ELBO: -85250.8           Unique conditional dependence structures: 6
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 2/5 variables
## 
## Model fit completed in 36.434 secs
## 
## $trial57$unique_graphs
## $trial57$unique_graphs$graph1
## [1] "1,...,7"
## 
## $trial57$unique_graphs$graph2
## [1] "8,...,53"
## 
## $trial57$unique_graphs$graph3
## [1] "54,...,57"
## 
## $trial57$unique_graphs$graph4
## [1] "58,...,150"
## 
## $trial57$unique_graphs$graph5
## [1] "151,...,156"
## 
## $trial57$unique_graphs$graph6
## [1] "157,...,180"
## 
## $trial57$unique_graphs[[7]]

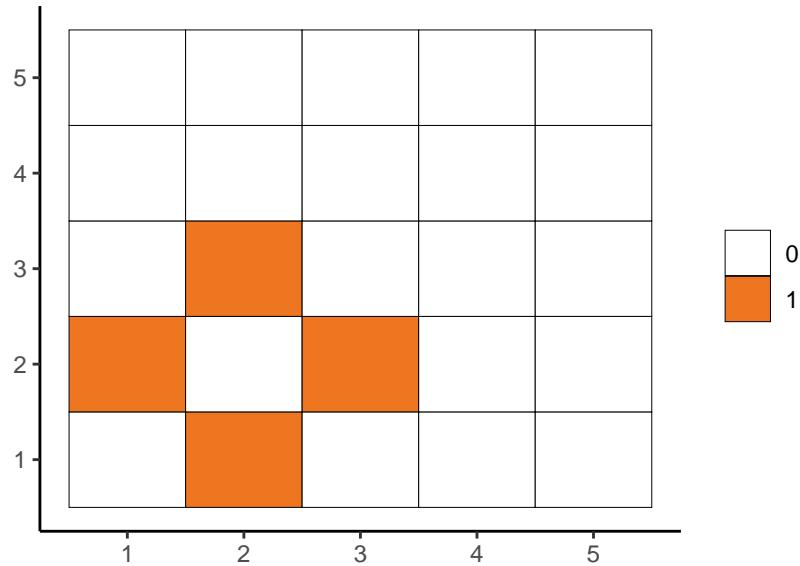
```

Graph 1, Individuals 1,...,7



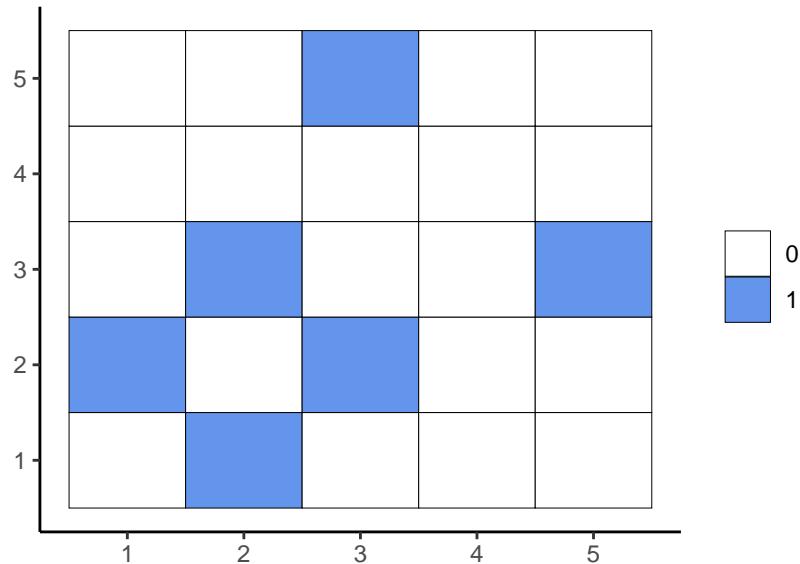
```
##  
## $trial157$unique_graphs[[8]]
```

Graph 2, Individuals 8,...,53



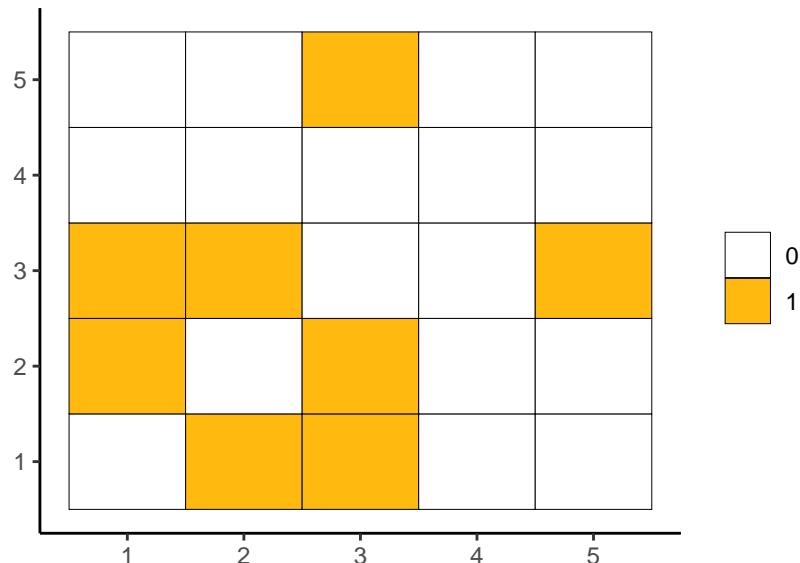
```
##  
## $trial157$unique_graphs[[9]]
```

Graph 3, Individuals 54,...,57



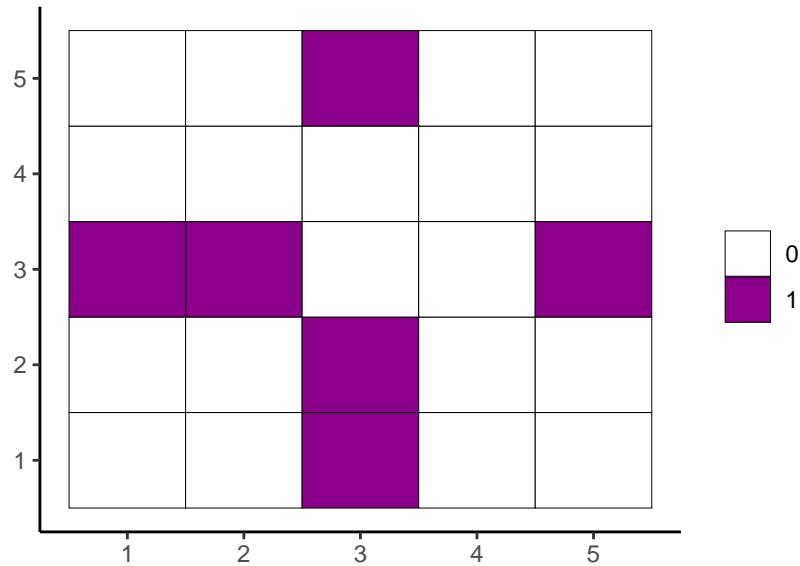
```
##  
## $trial57$unique_graphs[[10]]
```

Graph 4, Individuals 58,...,150



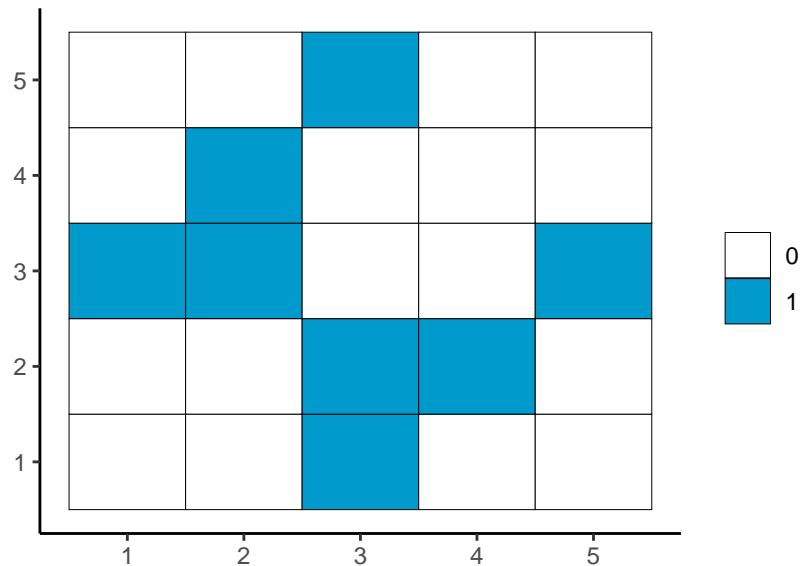
```
##  
## $trial57$unique_graphs[[11]]
```

Graph 5, Individuals 151,...,156



```
##  
## $trial57$unique_graphs[[12]]
```

Graph 6, Individuals 157,...,180

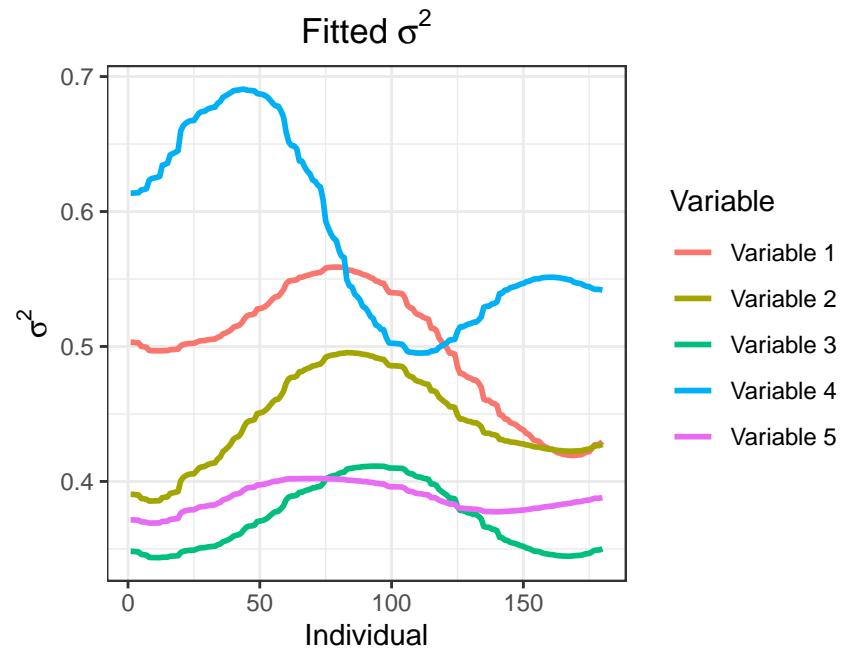


```
##  
##  
## $trial57$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial57$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.40      0.45      0.45      0.05      0.40
##
## $trial57$sigmasq

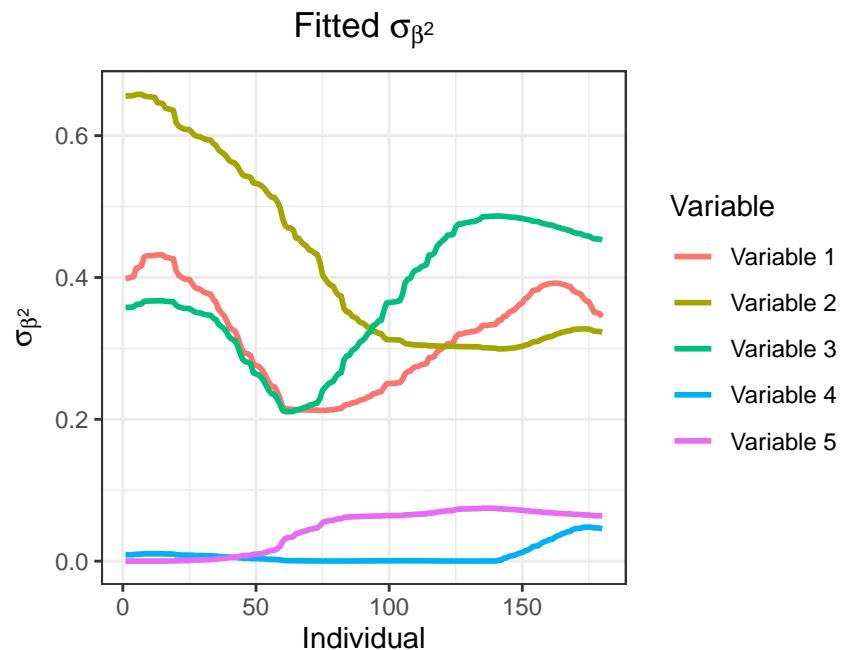
```



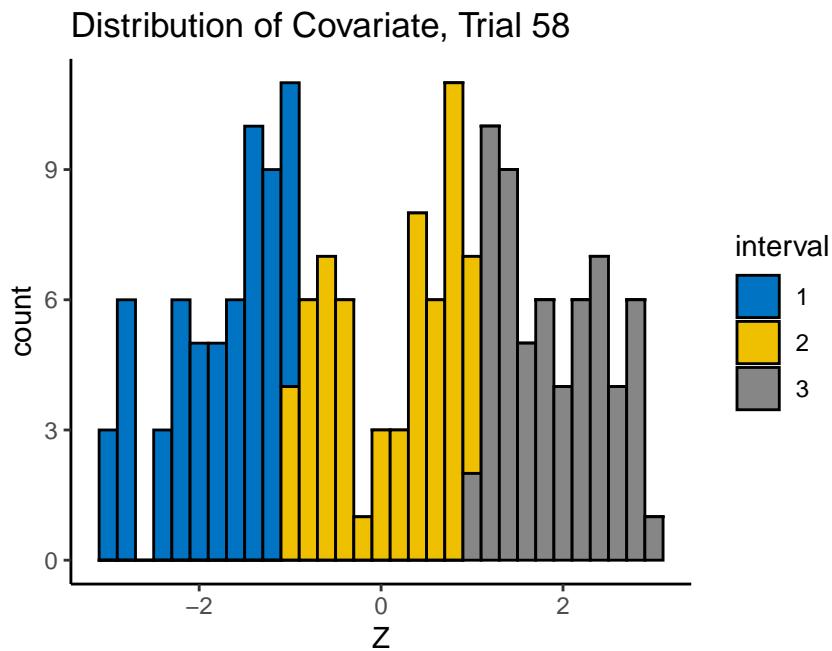
```

## 
## $trial57$sigmabetasq

```



```
##  
##  
## $trial58  
## $trial58$covariates
```

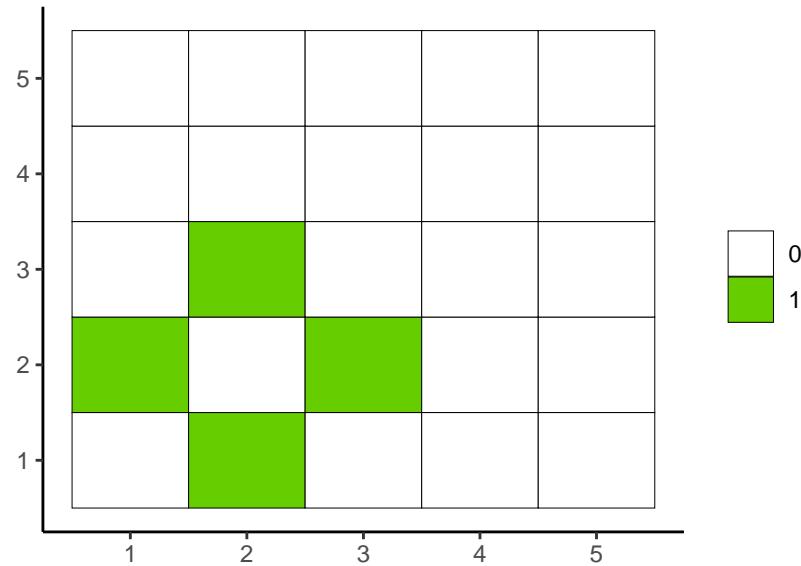


```

## ## $trial58$summary
## Covariate Dependent Graphical Model
##
## Model ELBO: -84646.3           Unique conditional dependence structures: 5
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 2/5 variables
##
## Model fit completed in 28.512 secs
##
## $trial58$unique_graphs
## $trial58$unique_graphs$graph1
## [1] "1,2,14,...,53"
##
## $trial58$unique_graphs$graph2
## [1] "3,...,13"
##
## $trial58$unique_graphs$graph3
## [1] "54,...,104"
##
## $trial58$unique_graphs$graph4
## [1] "105,...,146"
##
## $trial58$unique_graphs$graph5
## [1] "147,...,180"
##
## $trial58$unique_graphs[[6]]

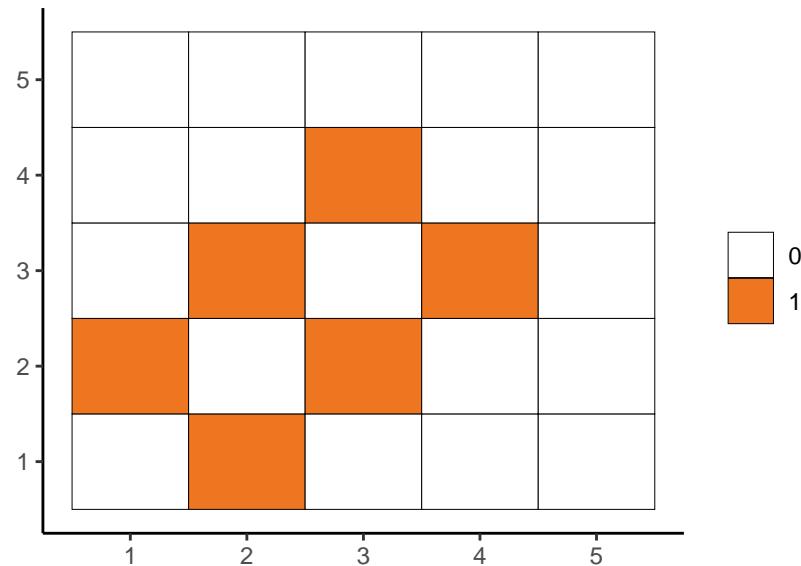
```

Graph 1, Individuals 1,2,14,...,53



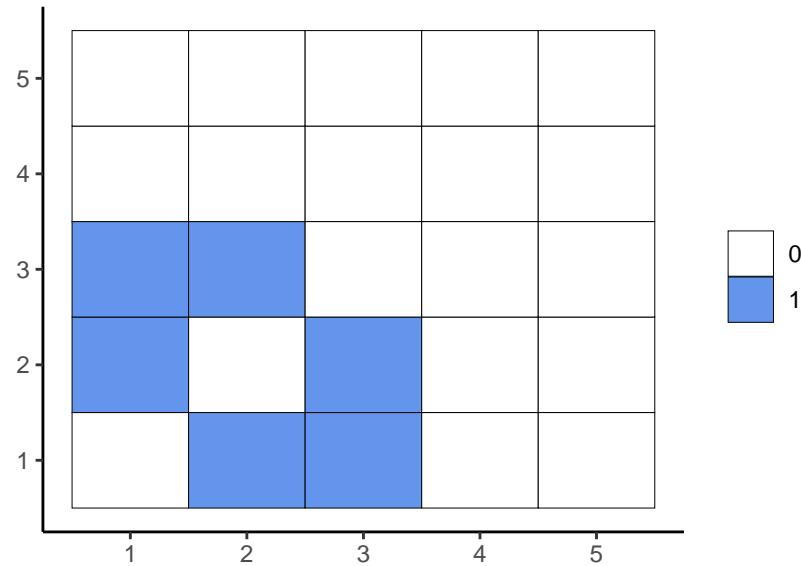
```
##  
## $trial58$unique_graphs[[7]]
```

Graph 2, Individuals 3,...,13



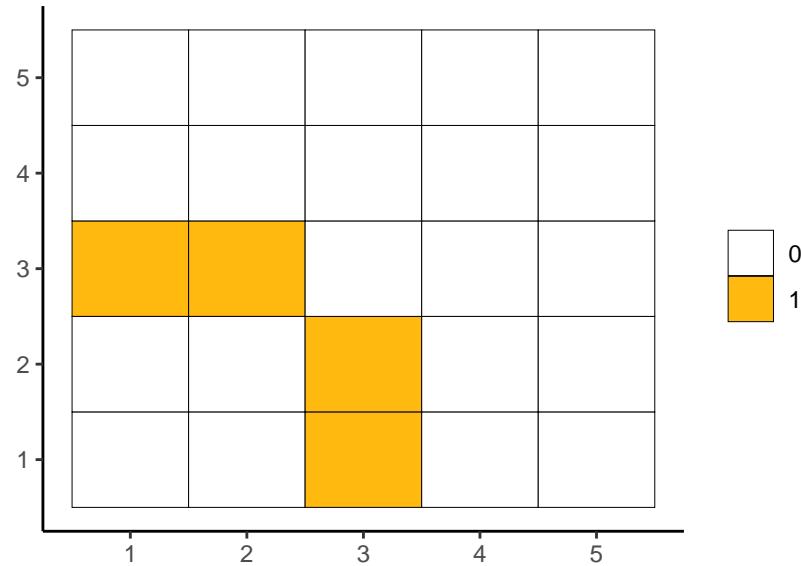
```
##  
## $trial58$unique_graphs[[8]]
```

Graph 3, Individuals 54,...,104



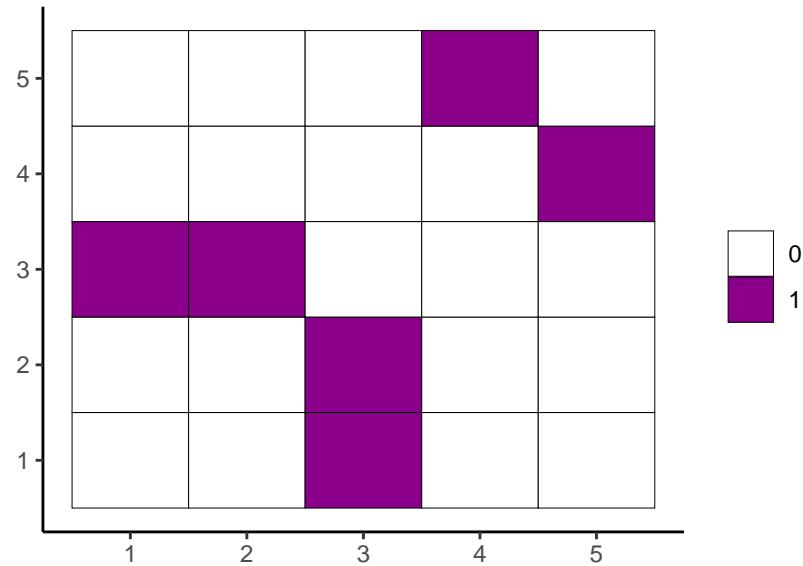
```
##  
## $trial58$unique_graphs[[9]]
```

Graph 4, Individuals 105,...,146

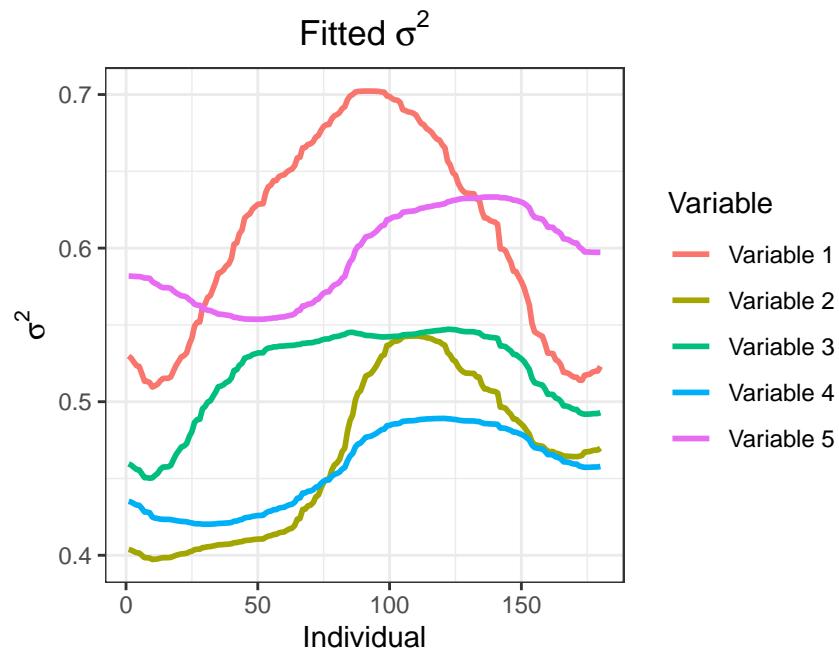


```
##  
## $trial58$unique_graphs[[10]]
```

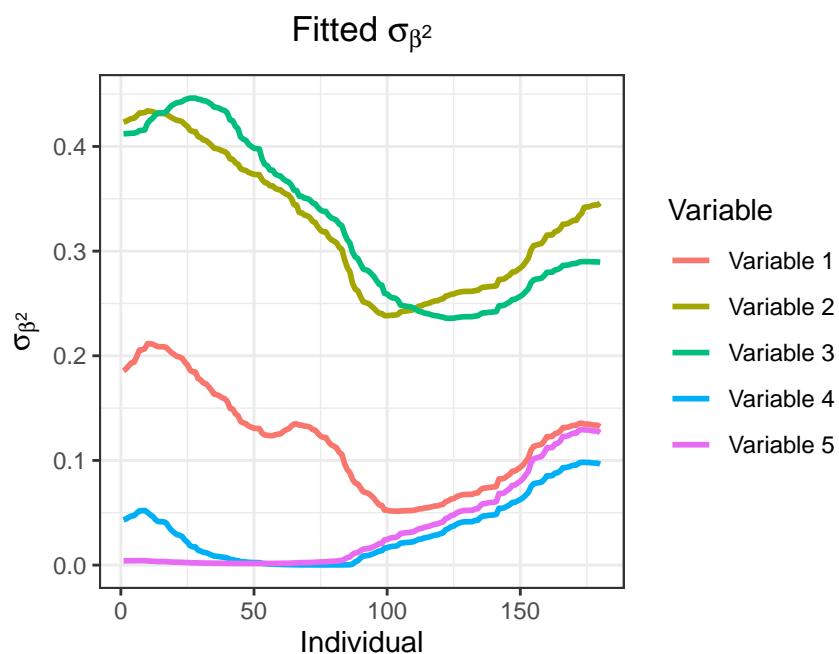
Graph 5, Individuals 147,...,180



```
##  
##  
## $trial58$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial58$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.45      0.45      0.45      0.05      0.05  
##  
## $trial58$sigmasq
```

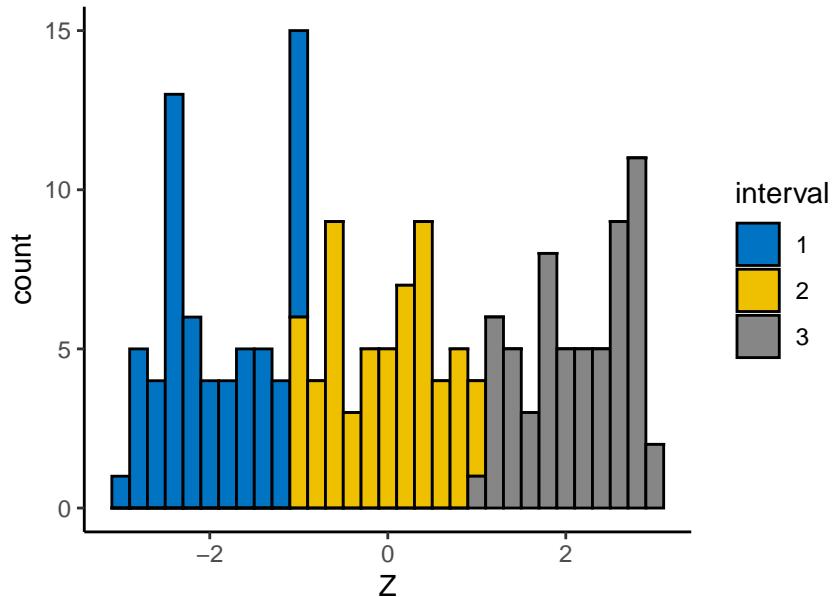


```
##  
## $trial58$sigmabetasq
```



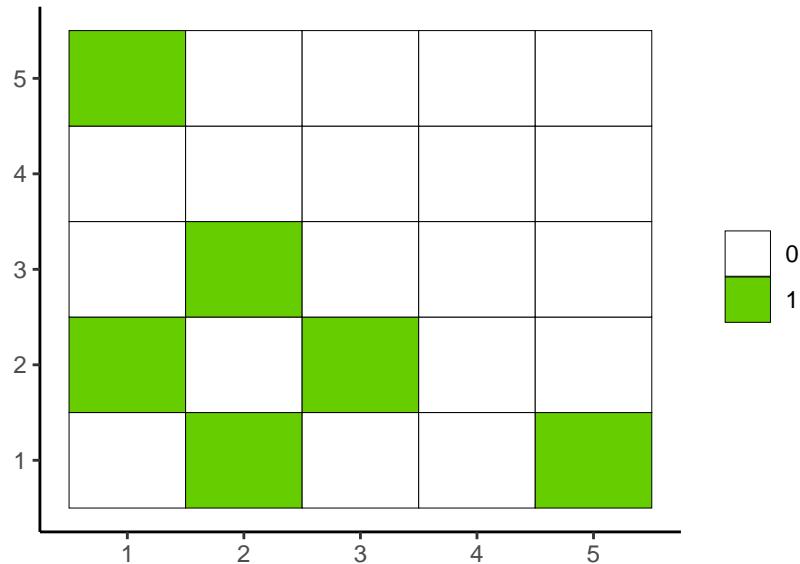
```
##  
##  
## $trial59  
## $trial59$covariates
```

Distribution of Covariate, Trial 59



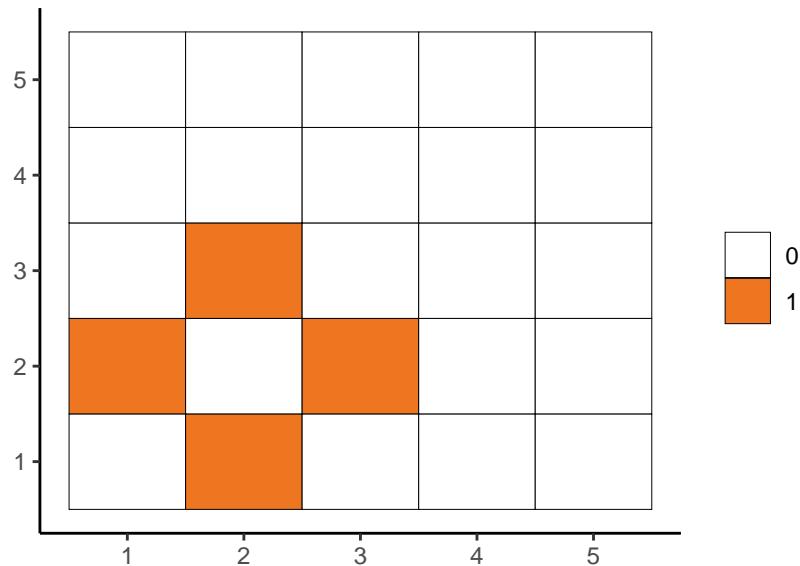
```
##  
## $trial59$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84726.72           Unique conditional dependence structures: 5  
## n: 180, variables: 5           Hyperparameter grid size: 9 points  
## CAVI converged for 3/5 variables  
##  
## Model fit completed in 29.443 secs  
##  
## $trial59$unique_graphs  
## $trial59$unique_graphs$graph1  
## [1] "1,...,47"  
##  
## $trial59$unique_graphs$graph2  
## [1] "48,...,68"  
##  
## $trial59$unique_graphs$graph3  
## [1] "69,...,79"  
##  
## $trial59$unique_graphs$graph4  
## [1] "80,...,109"  
##  
## $trial59$unique_graphs$graph5  
## [1] "110,...,180"  
##  
## $trial59$unique_graphs[[6]]
```

Graph 1, Individuals 1,...,47



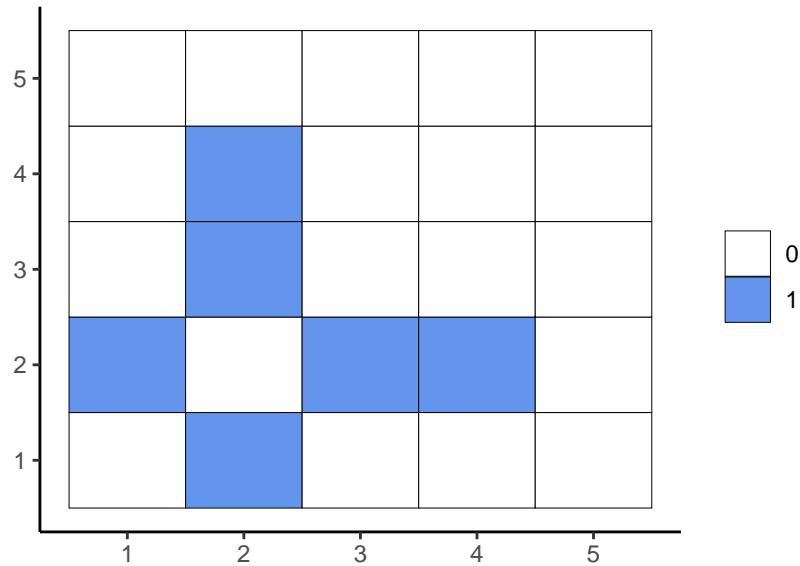
```
##  
## $trial159$unique_graphs[[7]]
```

Graph 2, Individuals 48,...,68



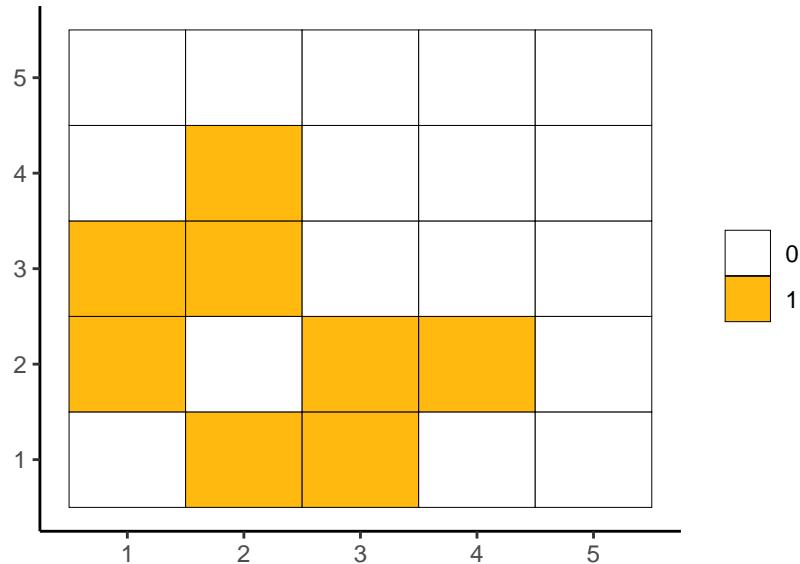
```
##  
## $trial159$unique_graphs[[8]]
```

Graph 3, Individuals 69,...,79



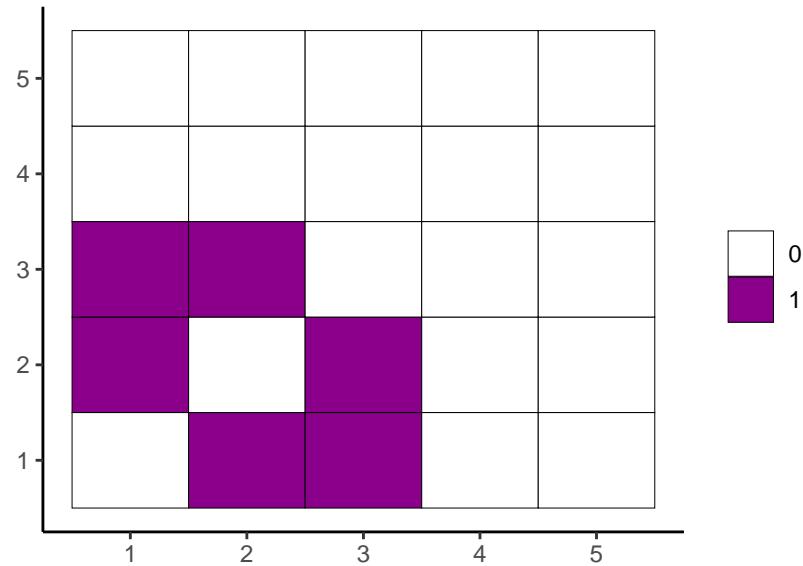
```
##  
## $trial159$unique_graphs[[9]]
```

Graph 4, Individuals 80,...,109

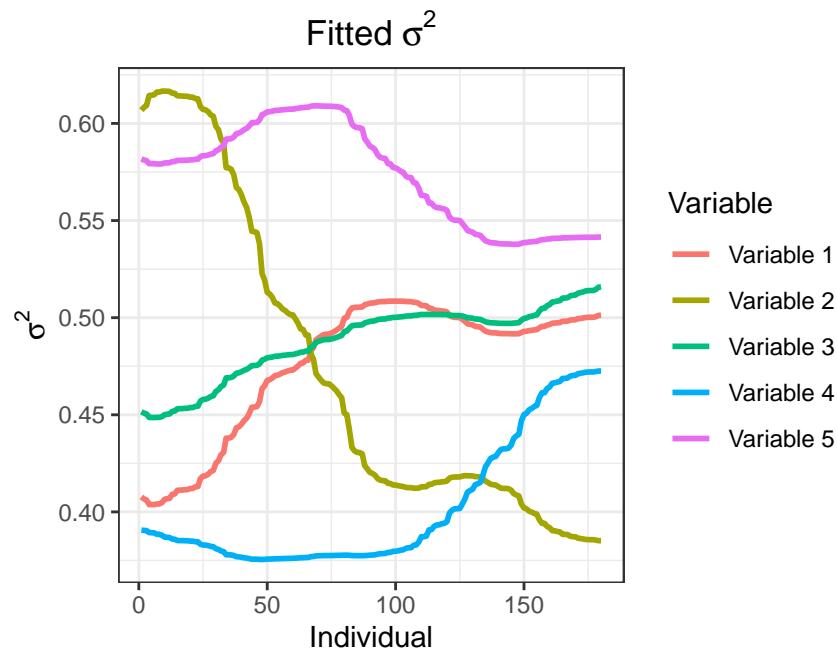


```
##  
## $trial159$unique_graphs[[10]]
```

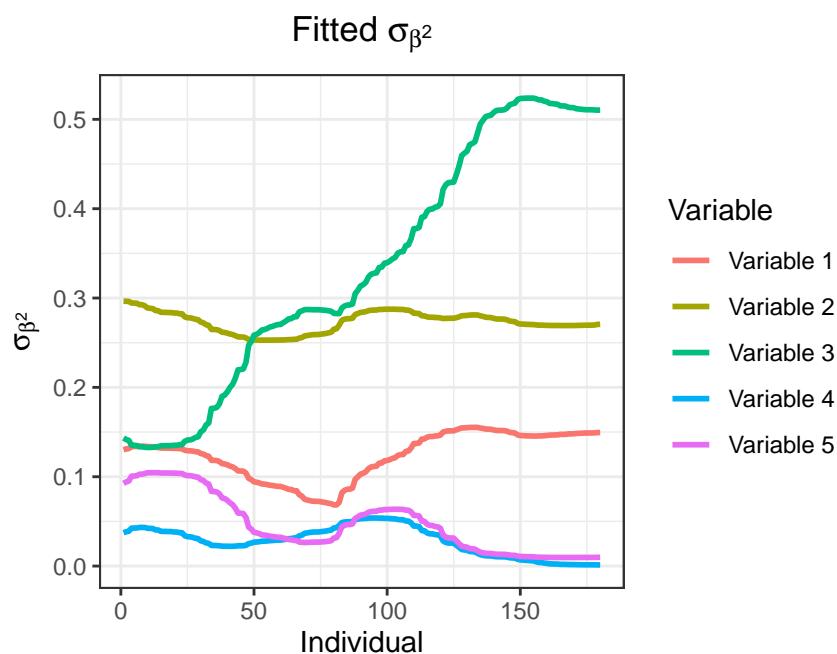
Graph 5, Individuals 110,...,180



```
##  
##  
## $trial59$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial59$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.45      0.45      0.45      0.05      0.05  
##  
## $trial59$sigmasq
```

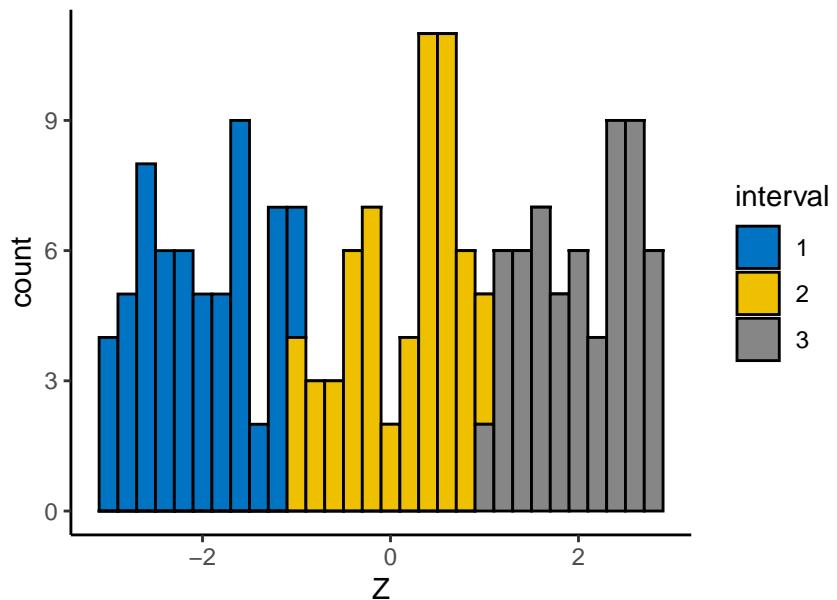


```
##  
## $trial59$sigmabetasq
```



```
##  
##  
## $trial60  
## $trial60$covariates
```

Distribution of Covariate, Trial 60

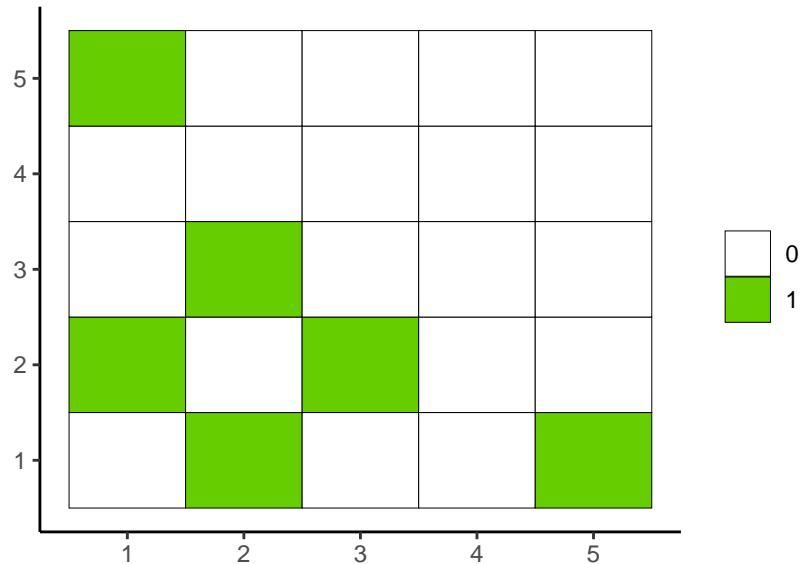


```

## 
## $trial60$summary
##                               Covariate Dependent Graphical Model
## 
## Model ELBO: -84932.06           Unique conditional dependence structures: 3
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 1/5 variables
## 
## Model fit completed in 33.418 secs
## 
## $trial60$unique_graphs
## $trial60$unique_graphs$graph1
## [1] "1,...,59"
## 
## $trial60$unique_graphs$graph2
## [1] "60,...,71"
## 
## $trial60$unique_graphs$graph3
## [1] "72,...,180"
## 
## $trial60$unique_graphs[[4]]

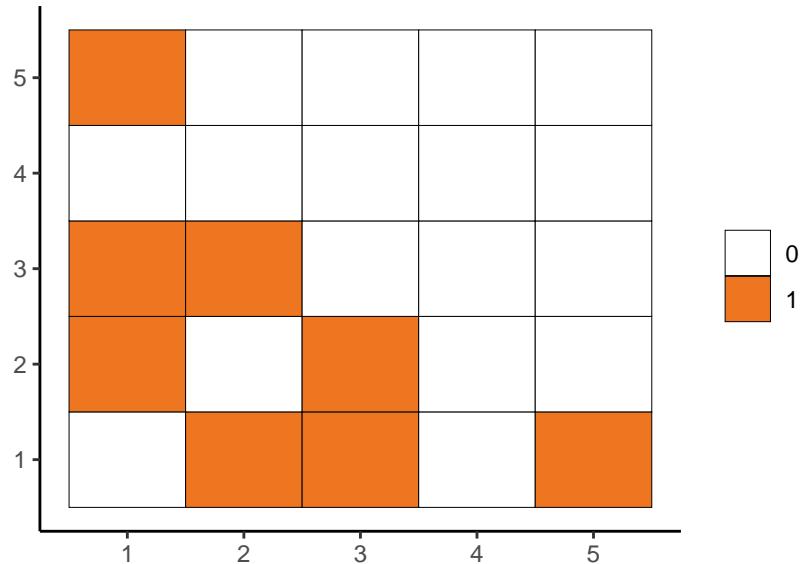
```

Graph 1, Individuals 1,...,59



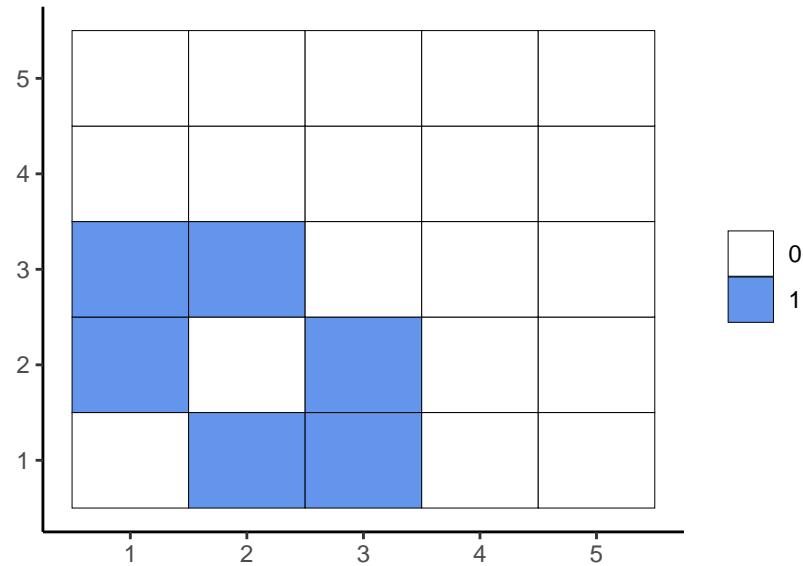
```
##  
## $trial60$unique_graphs[[5]]
```

Graph 2, Individuals 60,...,71

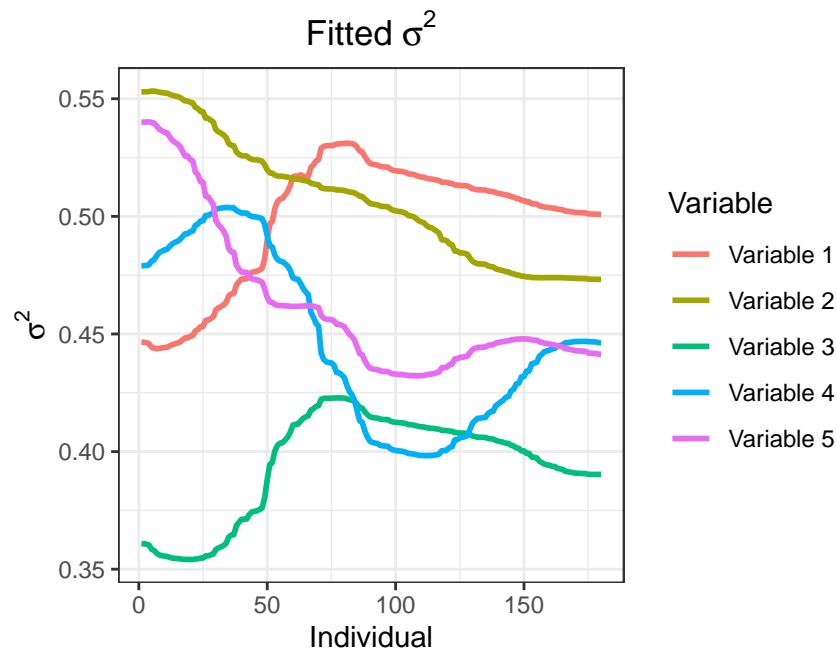


```
##  
## $trial60$unique_graphs[[6]]
```

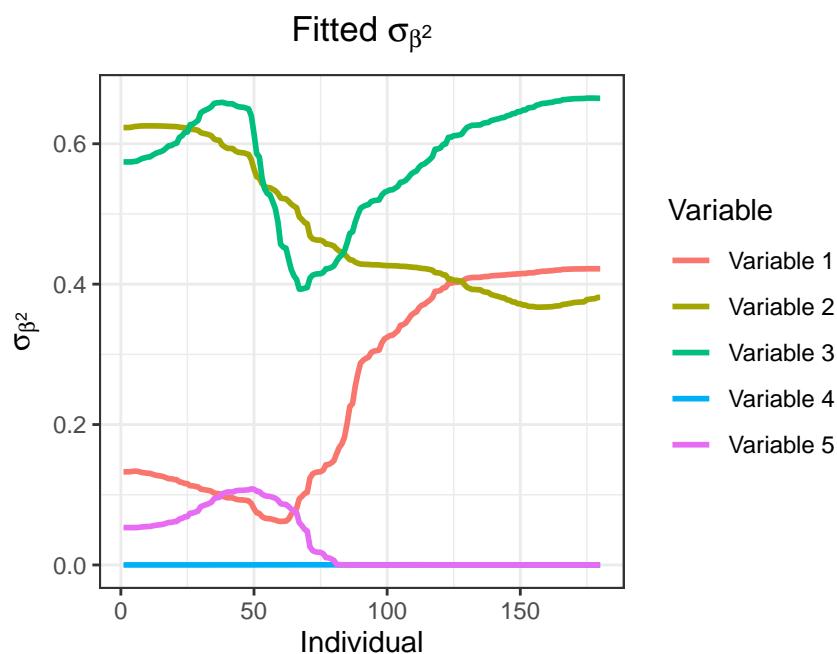
Graph 3, Individuals 72,...,180



```
##  
##  
## $trial60$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial60$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.45      0.45      0.45      0.05      0.05  
##  
## $trial60$sigmasq
```

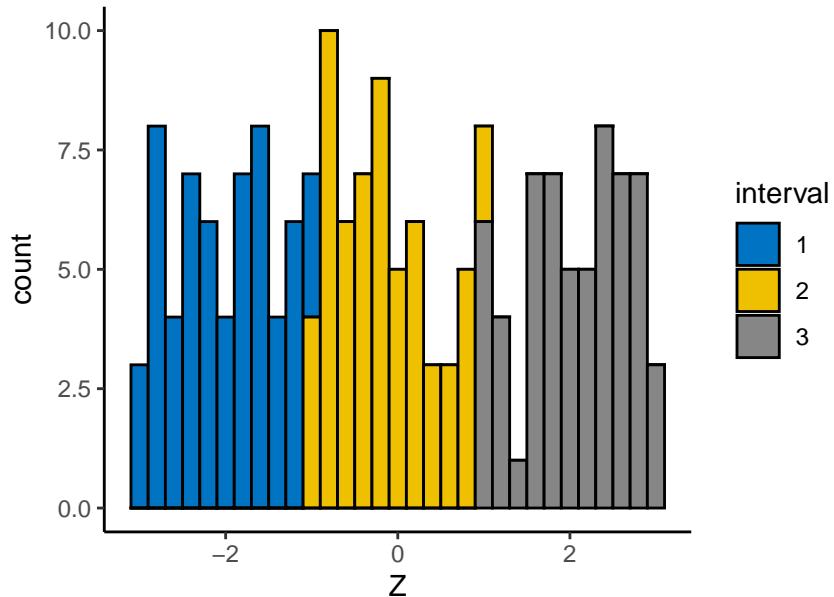


```
##  
## $trial60$sigmabetasq
```



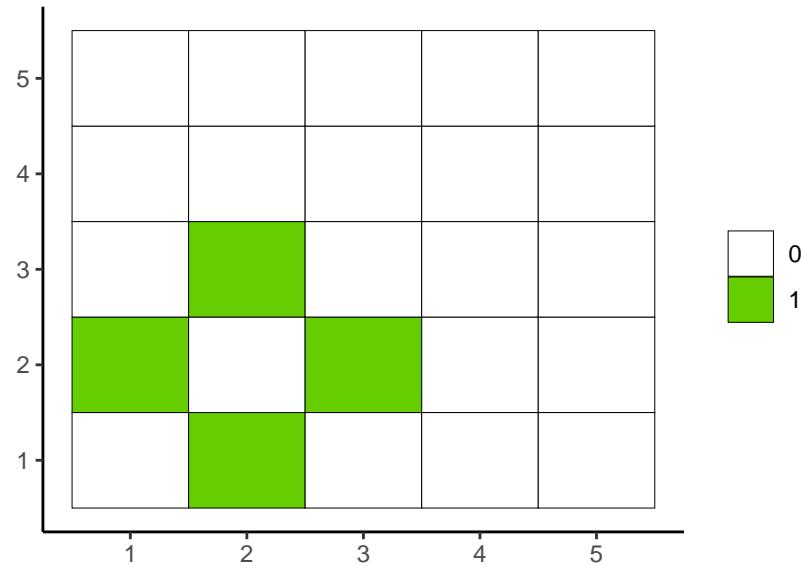
```
##  
##  
## $trial61  
## $trial61$covariates
```

Distribution of Covariate, Trial 61



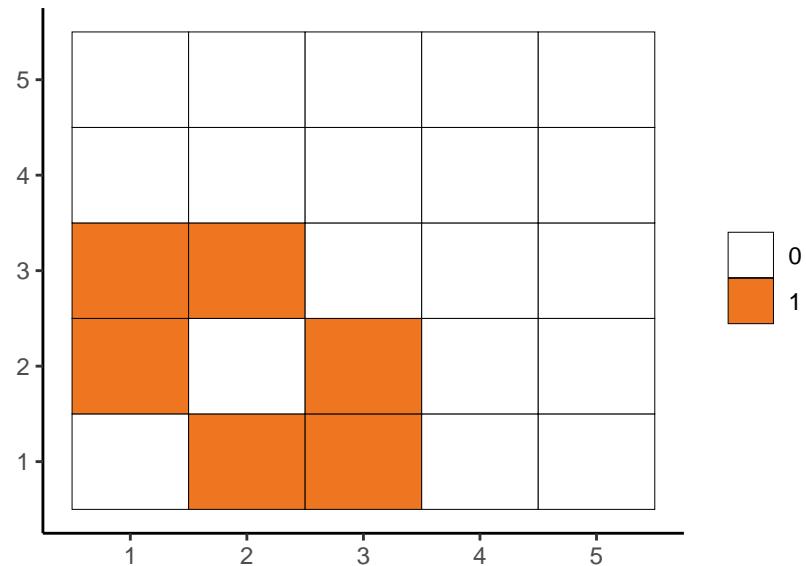
```
##  
## $trial61$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -85188.51           Unique conditional dependence structures: 6  
## n: 180, variables: 5           Hyperparameter grid size: 9 points  
## CAVI converged for 3/5 variables  
##  
## Model fit completed in 35.241 secs  
##  
## $trial61$unique_graphs  
## $trial61$unique_graphs$graph1  
## [1] "1,...,45"  
##  
## $trial61$unique_graphs$graph2  
## [1] "46,...,63,96,...,126"  
##  
## $trial61$unique_graphs$graph3  
## [1] "64,...,95"  
##  
## $trial61$unique_graphs$graph4  
## [1] "127,...,155"  
##  
## $trial61$unique_graphs$graph5  
## [1] "156,...,170"  
##  
## $trial61$unique_graphs$graph6  
## [1] "171,...,180"  
##  
## $trial61$unique_graphs[[7]]
```

Graph 1, Individuals 1,...,45



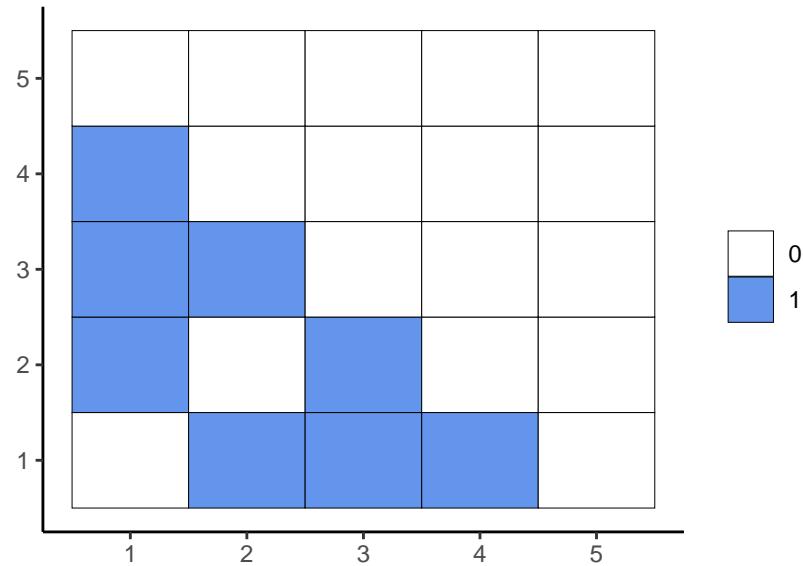
```
##  
## $trial61$unique_graphs[[8]]
```

Graph 2, Individuals 46,...,63,96,...,126



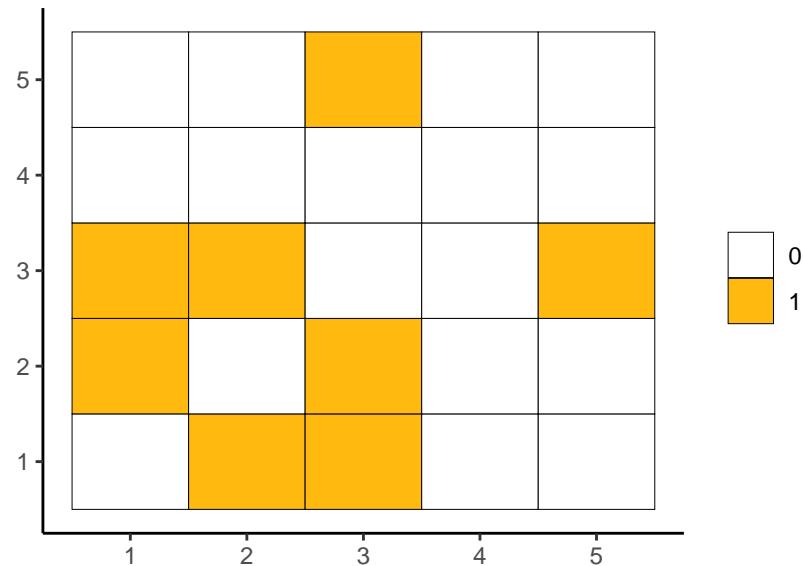
```
##  
## $trial61$unique_graphs[[9]]
```

Graph 3, Individuals 64,...,95



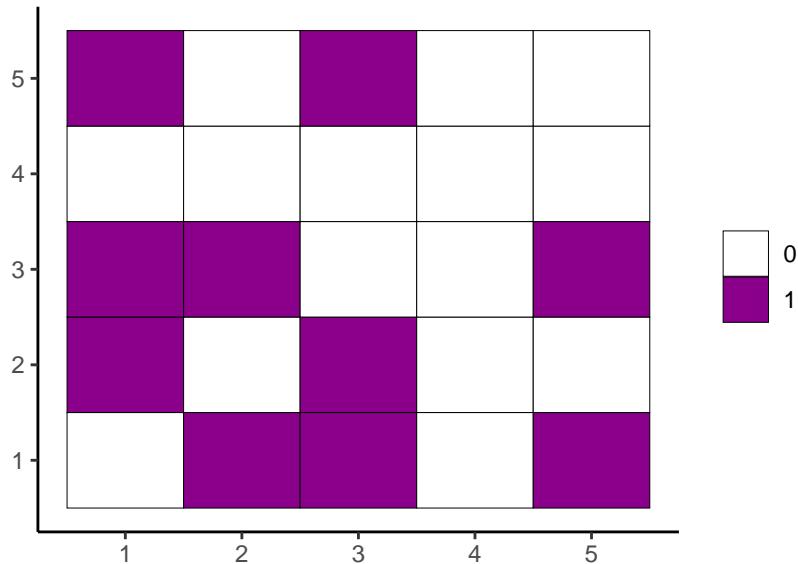
```
##  
## $trial61$unique_graphs[[10]]
```

Graph 4, Individuals 127,...,155



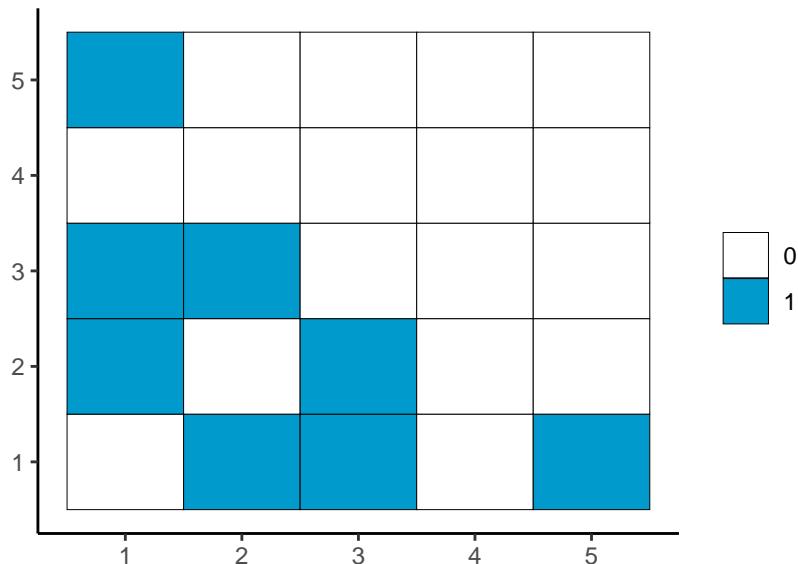
```
##  
## $trial61$unique_graphs[[11]]
```

Graph 5, Individuals 156,...,170



```
##  
## $trial61$unique_graphs[[12]]
```

Graph 6, Individuals 171,...,180

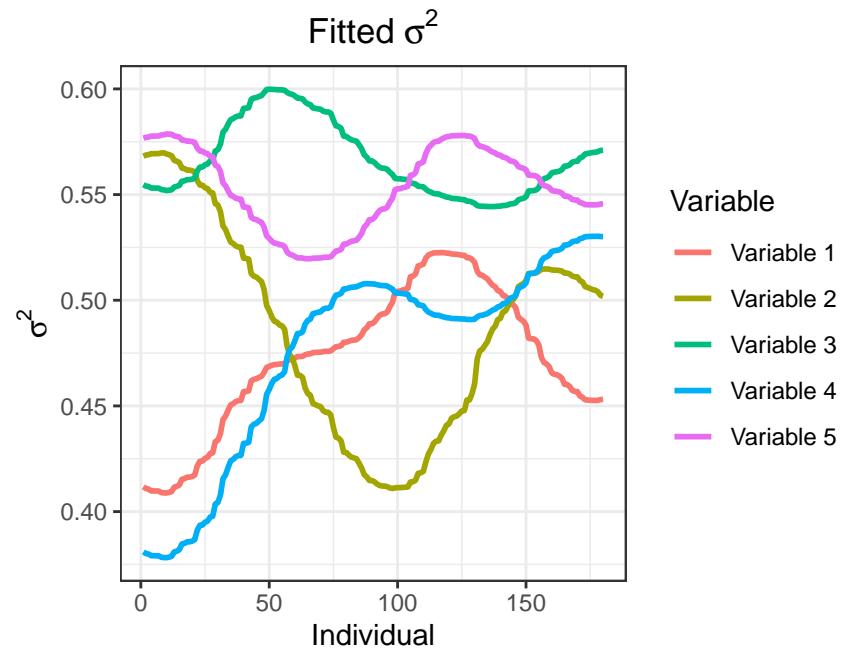


```
##  
##  
## $trial61$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          2  
##
```

```

## $trial61$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.45      0.45      0.45      0.05      0.30
##
## $trial61$sigmasq

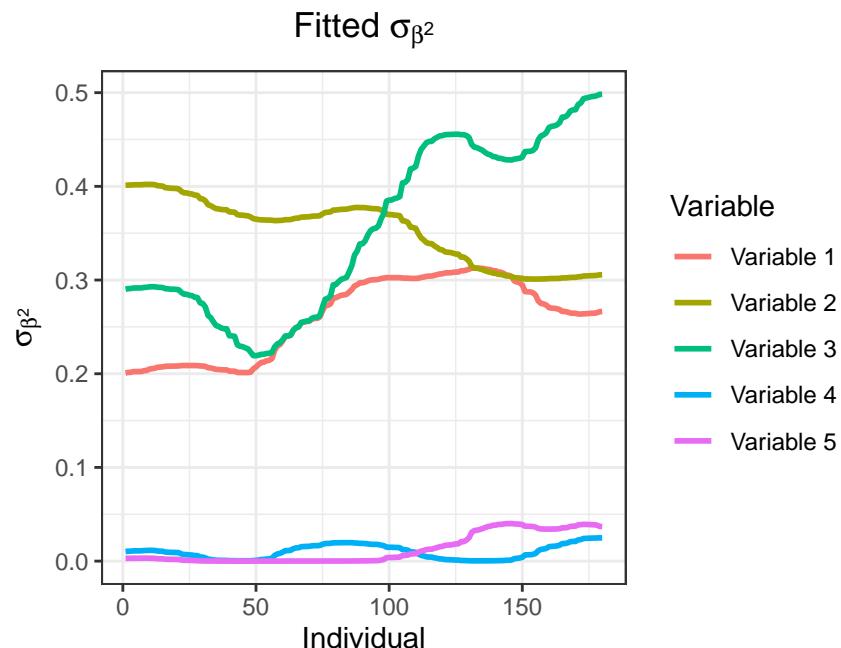
```



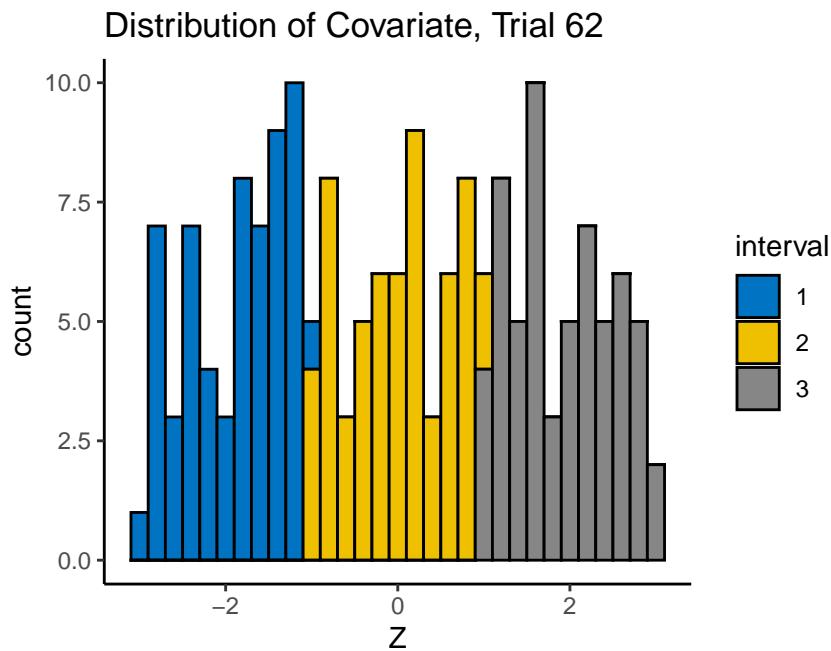
```

## $trial61$sigmabetasq

```



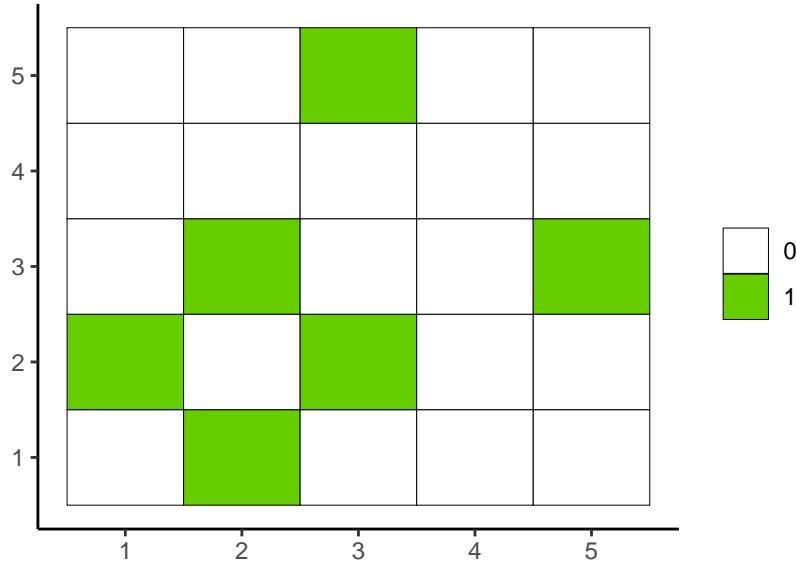
```
##  
##  
## $trial62  
## $trial62$covariates
```



```
##  
## $trial62$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84691.96 Unique conditional dependence structures: 6  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 2/5 variables  
##  
## Model fit completed in 30.059 secs  
##  
## $trial62$unique_graphs  
## $trial62$unique_graphs$graph1  
## [1] "1,...,40"  
##  
## $trial62$unique_graphs$graph2  
## [1] "41,...,64"  
##  
## $trial62$unique_graphs$graph3  
## [1] "65,...,130"  
##  
## $trial62$unique_graphs$graph4  
## [1] "131,...,141"  
##  
## $trial62$unique_graphs$graph5  
## [1] "142,...,173"  
##  
## $trial62$unique_graphs$graph6
```

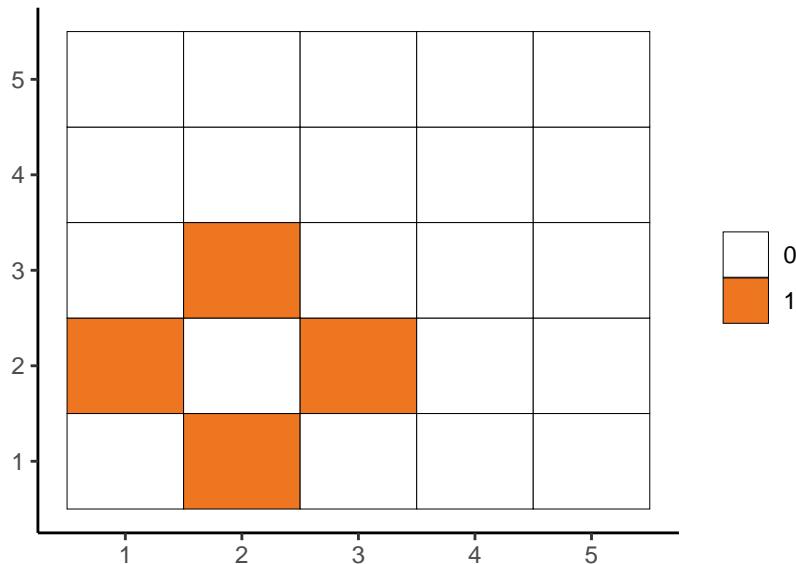
```
## [1] "174,...,180"  
##  
## $trial62$unique_graphs[[7]]
```

Graph 1, Individuals 1,...,40



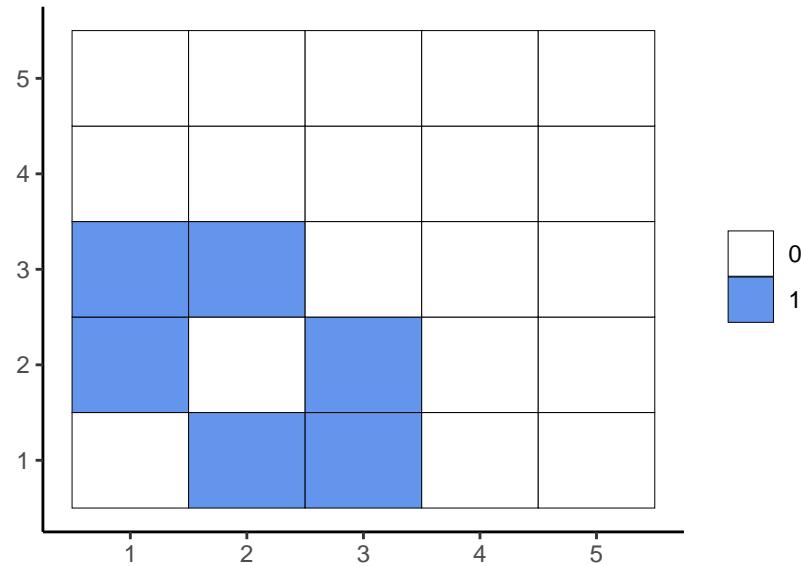
```
##  
## $trial62$unique_graphs[[8]]
```

Graph 2, Individuals 41,...,64



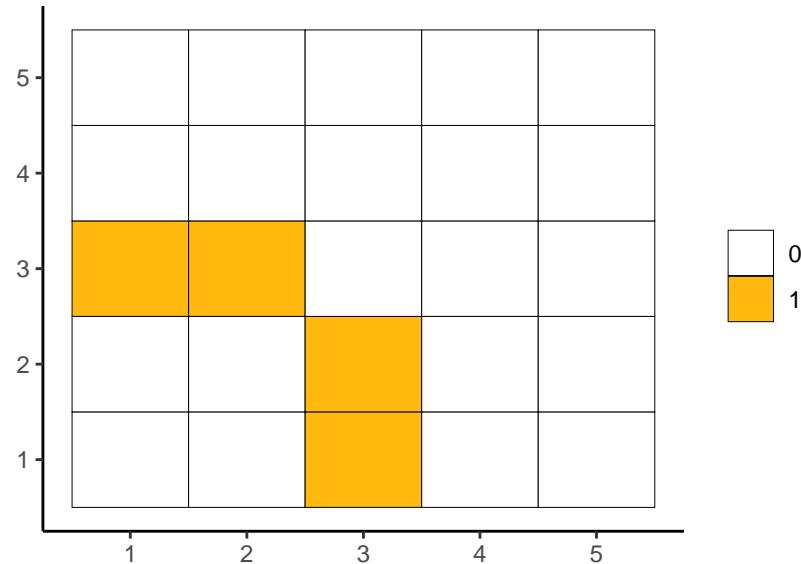
```
##  
## $trial62$unique_graphs[[9]]
```

Graph 3, Individuals 65,...,130



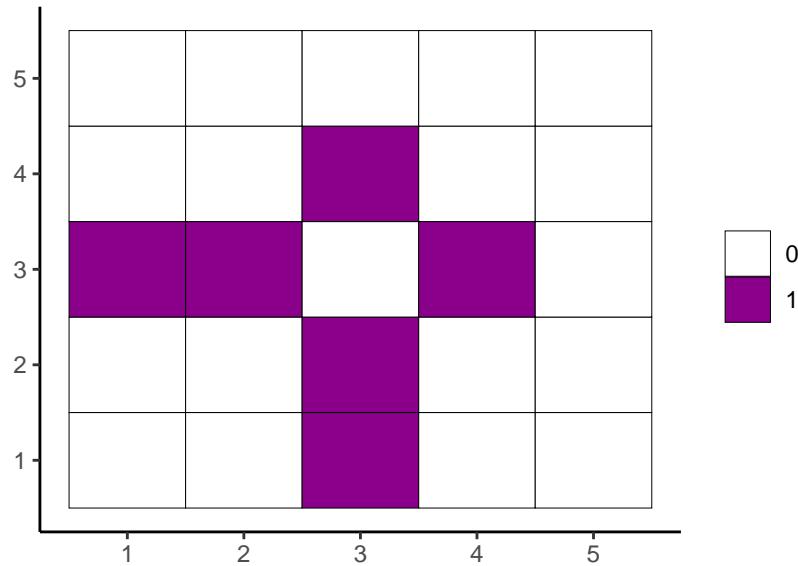
```
##  
## $trial62$unique_graphs[[10]]
```

Graph 4, Individuals 131,...,141



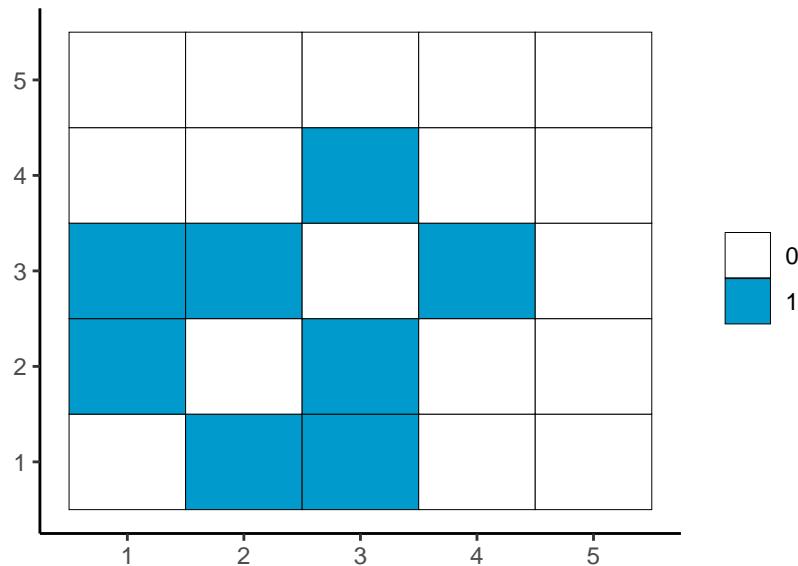
```
##  
## $trial62$unique_graphs[[11]]
```

Graph 5, Individuals 142,...,173



```
##  
## $trial62$unique_graphs[[12]]
```

Graph 6, Individuals 174,...,180

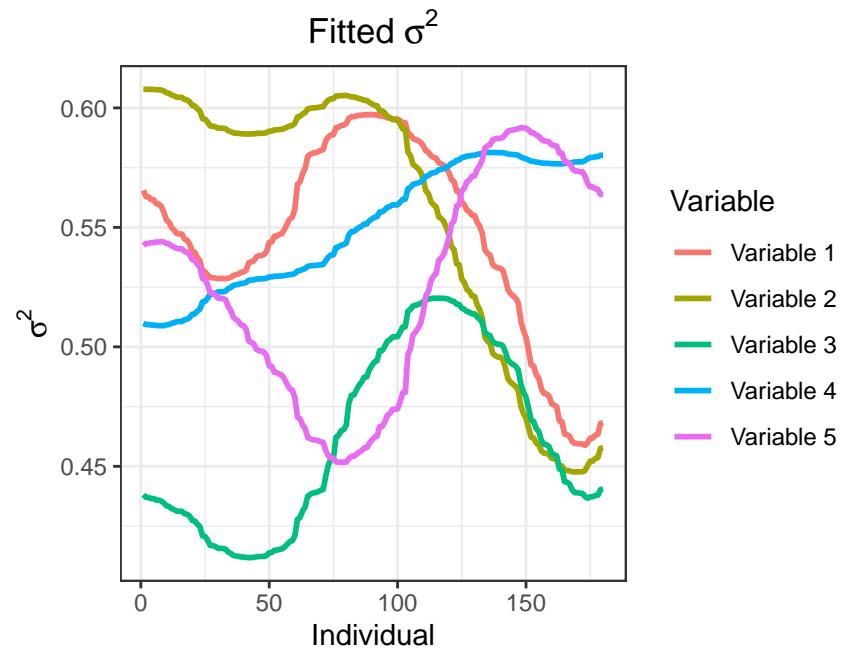


```
##  
##  
## $trial62$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial62$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.45      0.45      0.45      0.05      0.05
##
## $trial62$sigmasq

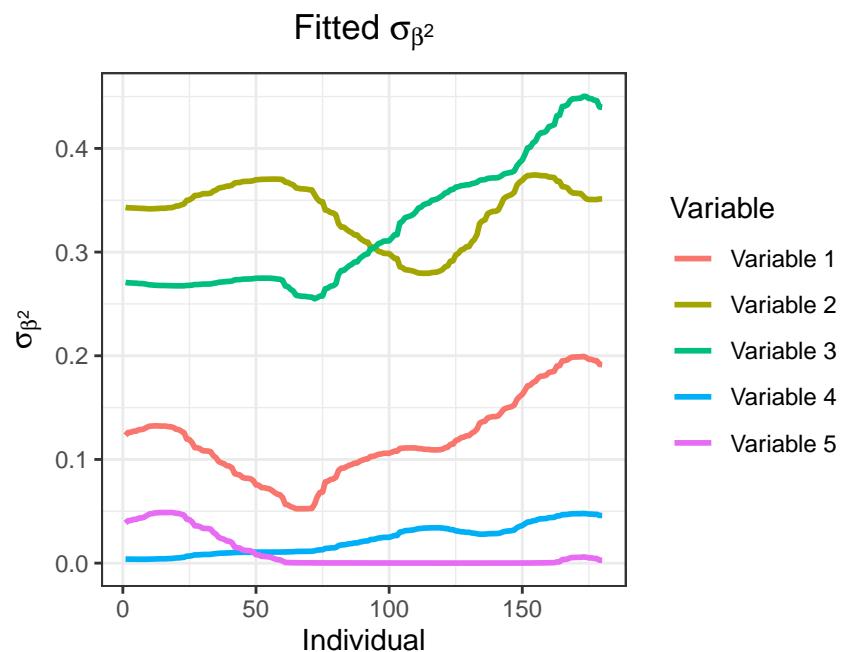
```



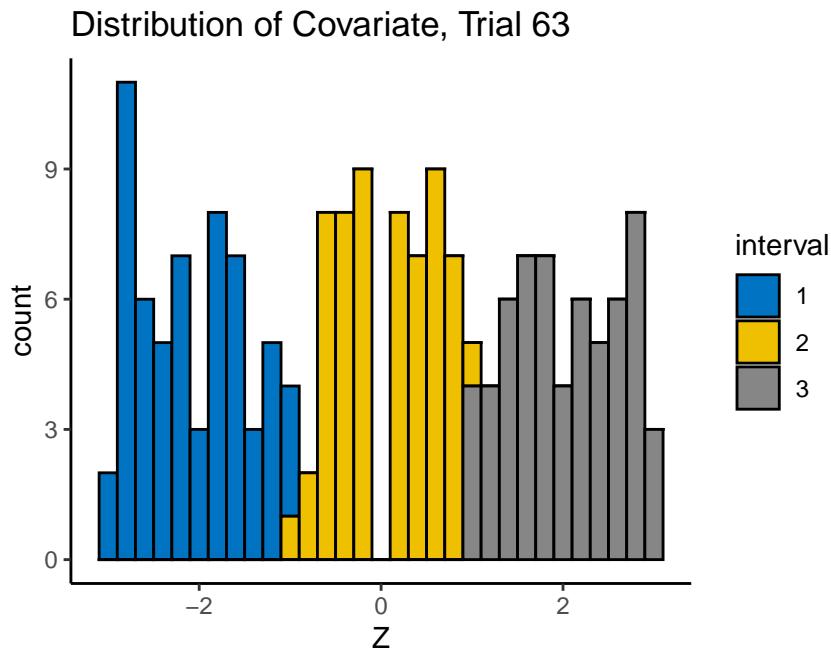
```

## 
## $trial62$sigmabetasq

```

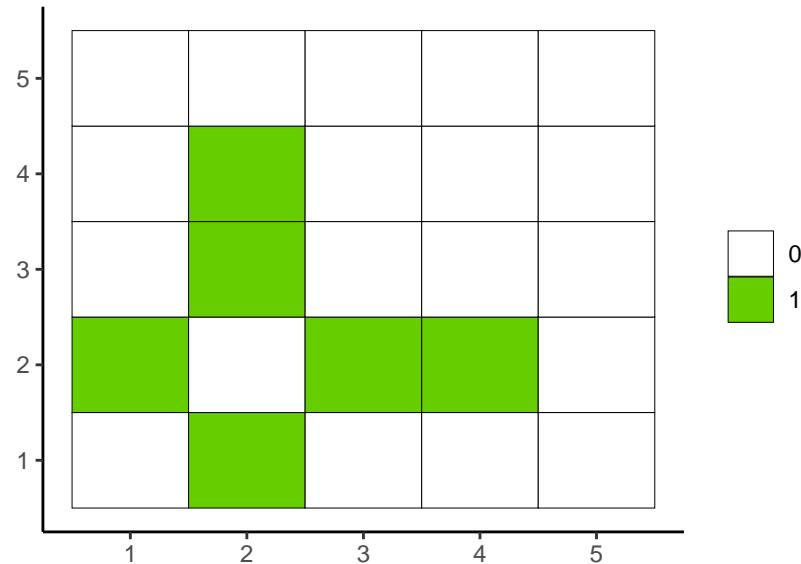


```
##  
##  
## $trial63  
## $trial63$covariates
```



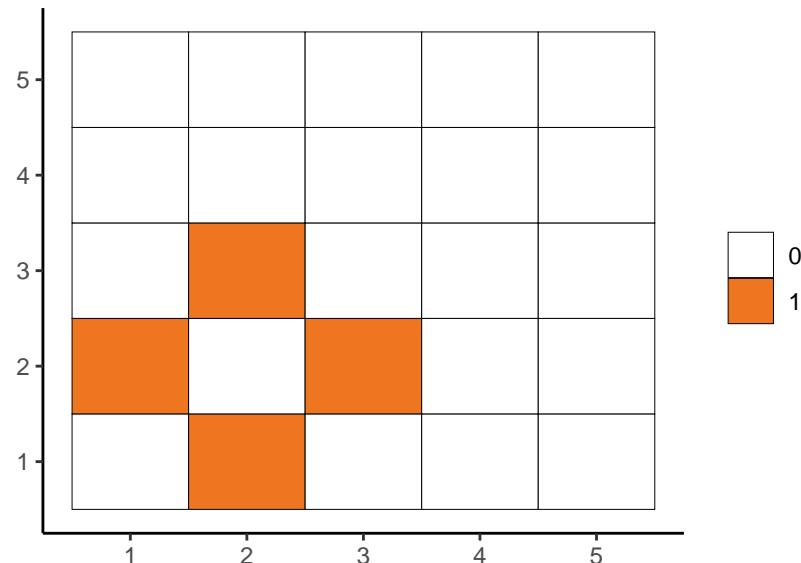
```
##  
## $trial63$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -85077.05 Unique conditional dependence structures: 4  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 2/5 variables  
##  
## Model fit completed in 35.004 secs  
##  
## $trial63$unique_graphs  
## $trial63$unique_graphs$graph1  
## [1] "1,...,36"  
##  
## $trial63$unique_graphs$graph2  
## [1] "37,...,51"  
##  
## $trial63$unique_graphs$graph3  
## [1] "52,...,128"  
##  
## $trial63$unique_graphs$graph4  
## [1] "129,...,180"  
##  
## $trial63$unique_graphs[[5]]
```

Graph 1, Individuals 1,...,36



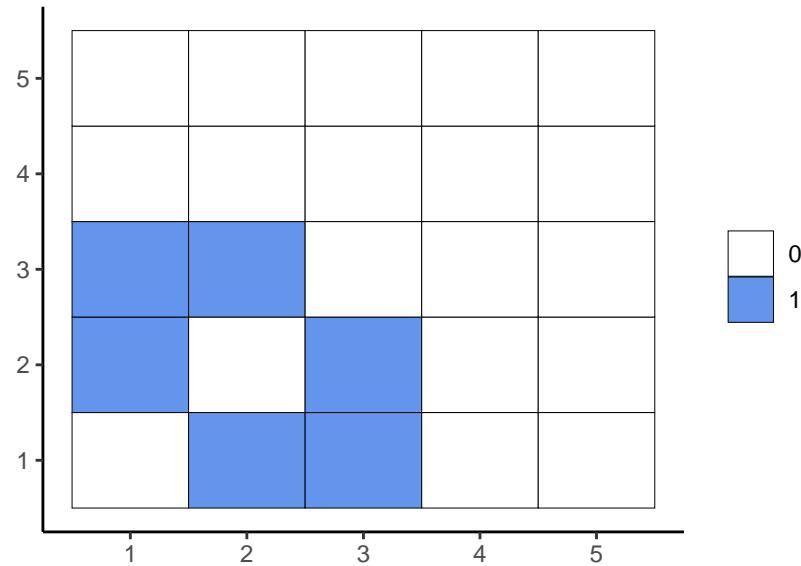
```
##  
## $trial63$unique_graphs[[6]]
```

Graph 2, Individuals 37,...,51



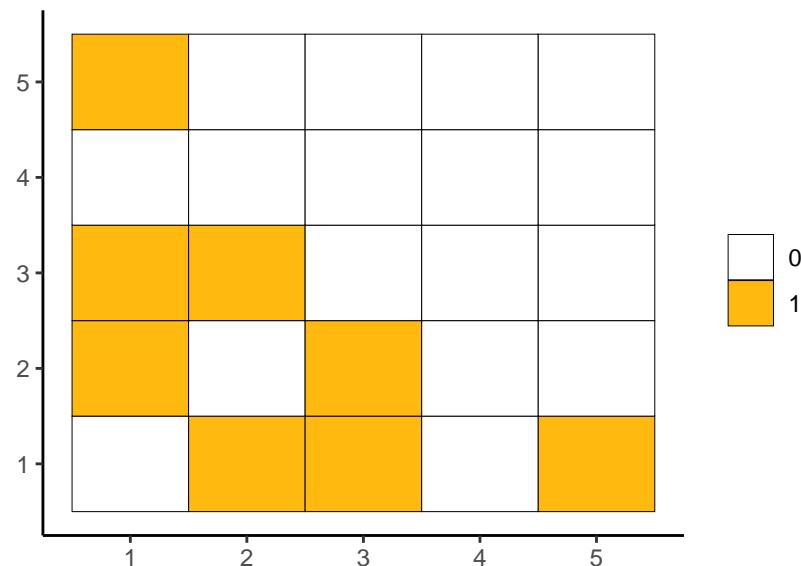
```
##  
## $trial63$unique_graphs[[7]]
```

Graph 3, Individuals 52,...,128



```
##  
## $trial63$unique_graphs[[8]]
```

Graph 4, Individuals 129,...,180

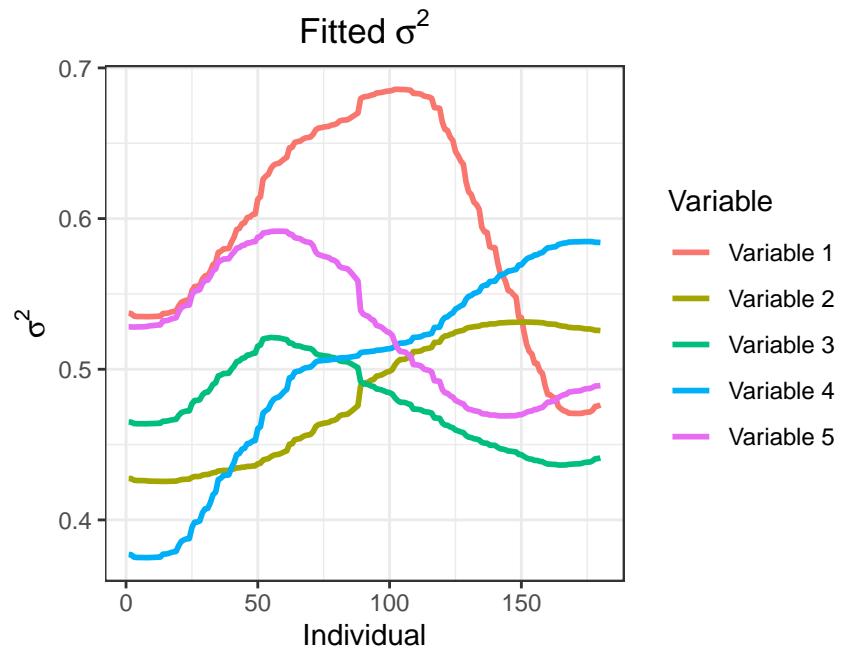


```
##  
##  
## $trial63$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##
```

```

## $trial63$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.45      0.45      0.45      0.05      0.05
##
## $trial63$sigmasq

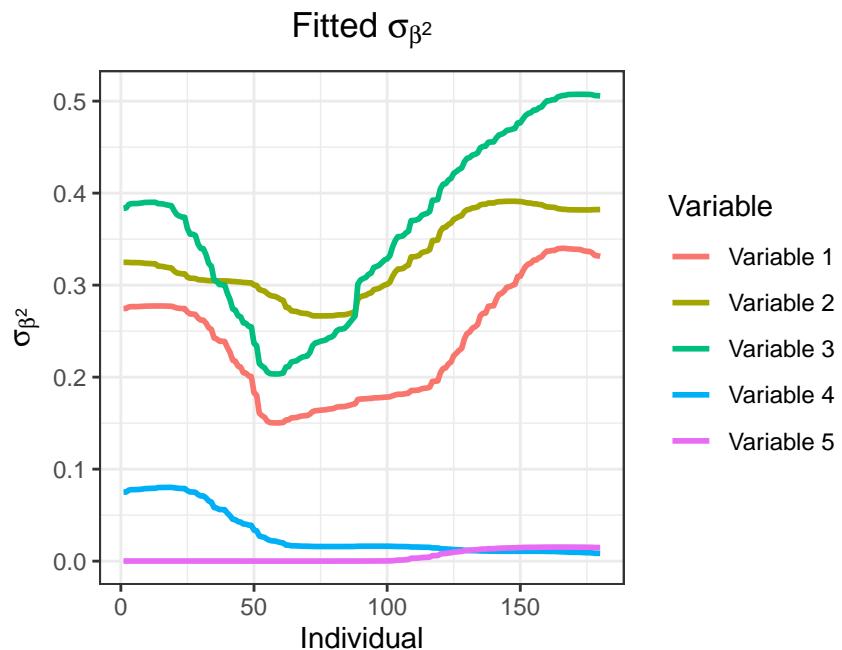
```



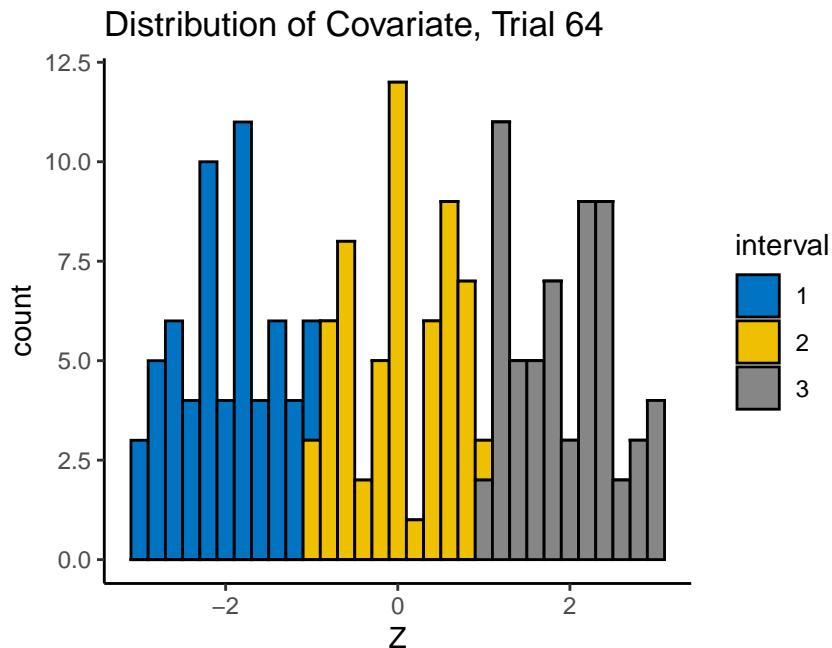
```

## 
## $trial63$sigmabetasq

```

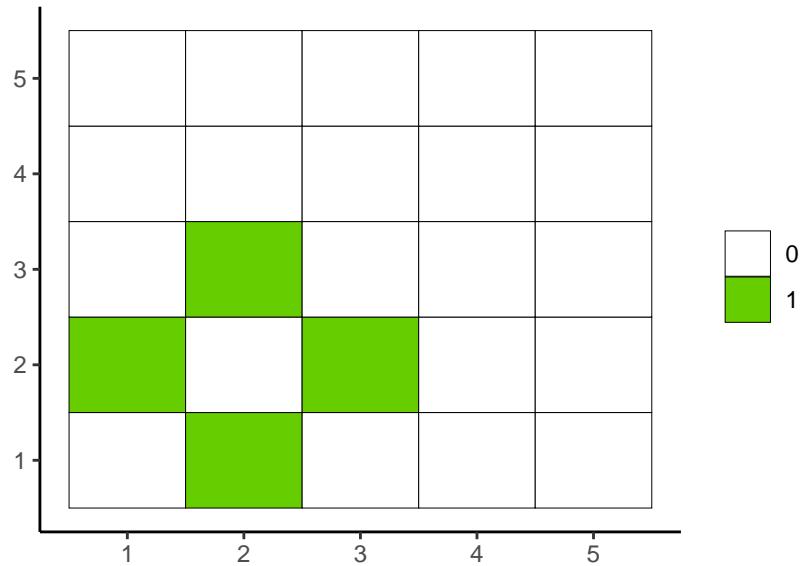


```
##  
##  
## $trial64  
## $trial64$covariates
```



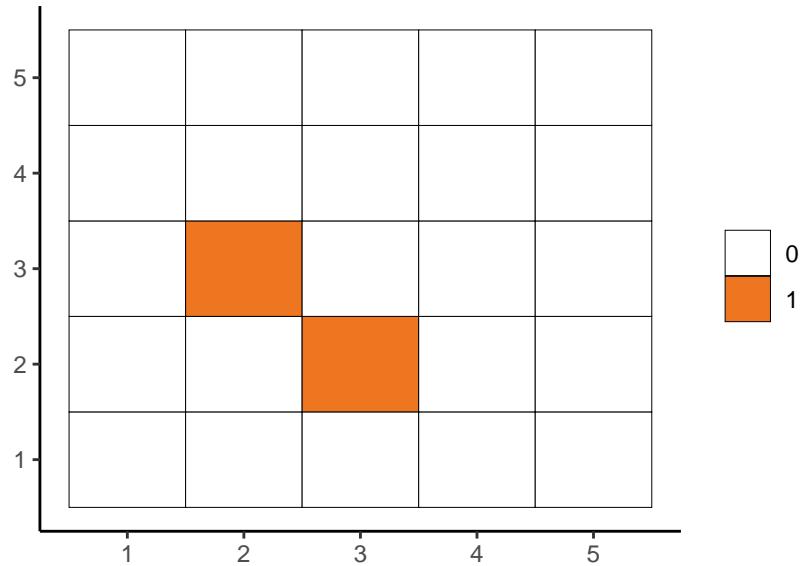
```
##  
## $trial64$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84428.64 Unique conditional dependence structures: 4  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 2/5 variables  
##  
## Model fit completed in 27.277 secs  
##  
## $trial64$unique_graphs  
## $trial64$unique_graphs$graph1  
## [1] "1,...,83"  
##  
## $trial64$unique_graphs$graph2  
## [1] "84,...,89"  
##  
## $trial64$unique_graphs$graph3  
## [1] "90,...,124"  
##  
## $trial64$unique_graphs$graph4  
## [1] "125,...,180"  
##  
## $trial64$unique_graphs[[5]]
```

Graph 1, Individuals 1,...,83



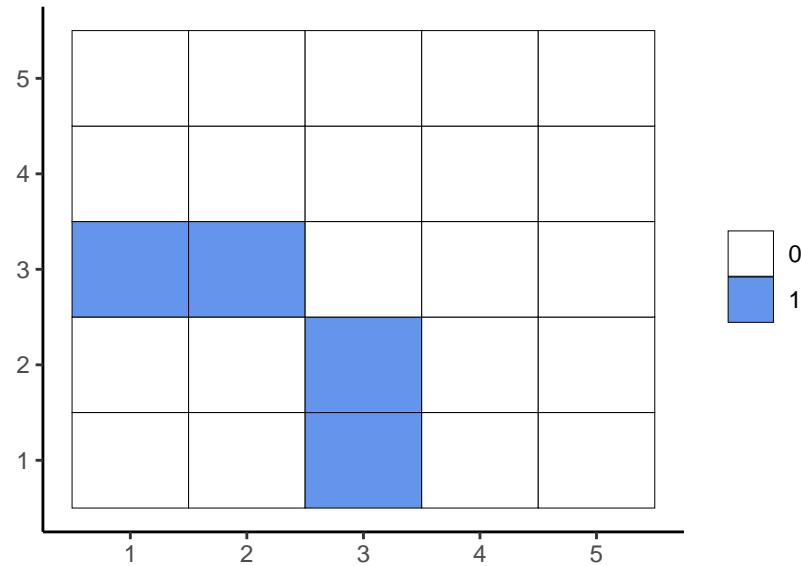
```
##  
## $trial64$unique_graphs[[6]]
```

Graph 2, Individuals 84,...,89



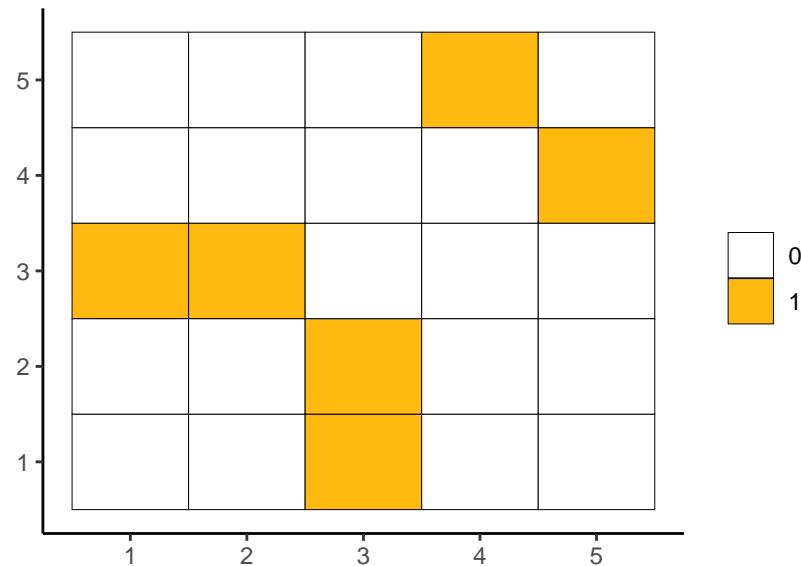
```
##  
## $trial64$unique_graphs[[7]]
```

Graph 3, Individuals 90,...,124



```
##  
## $trial64$unique_graphs[[8]]
```

Graph 4, Individuals 125,...,180

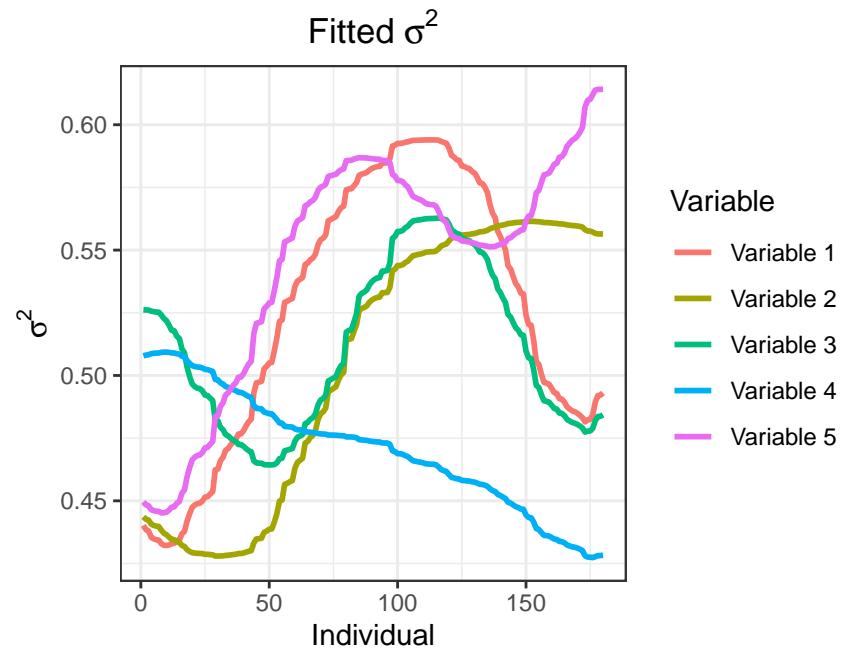


```
##  
##  
## $trial64$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial64$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.35      0.45      0.45      0.05      0.05
##
## $trial64$sigmasq

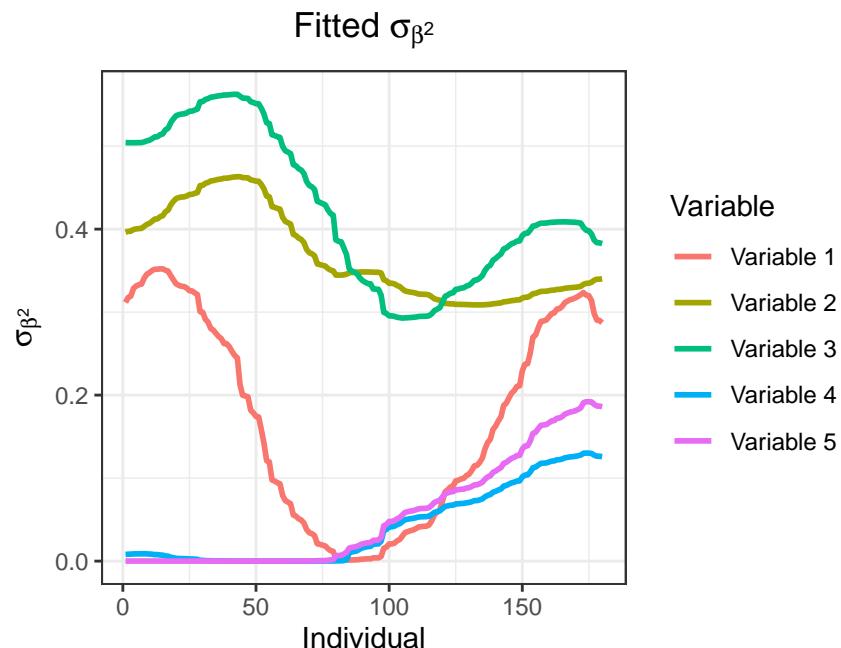
```



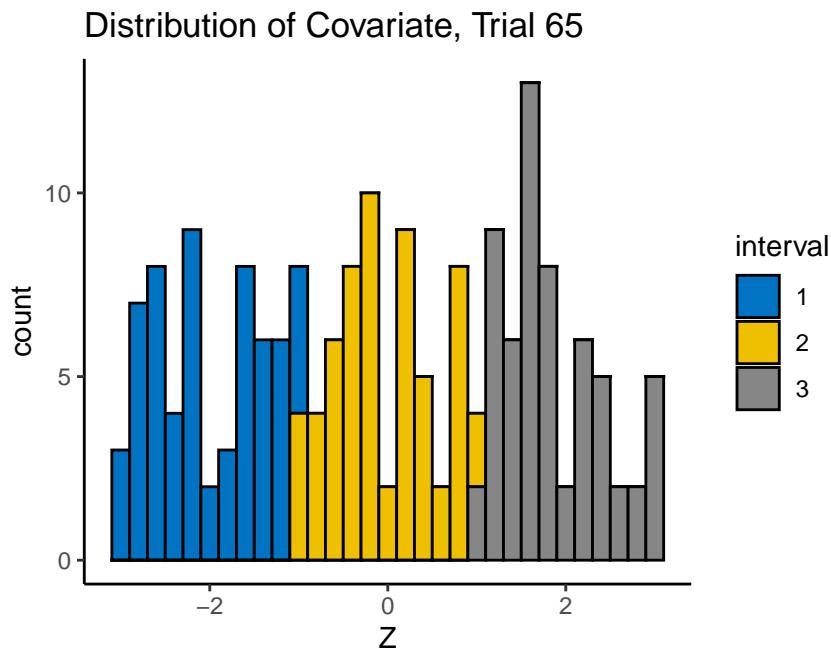
```

## $trial64$sigmabetasq

```

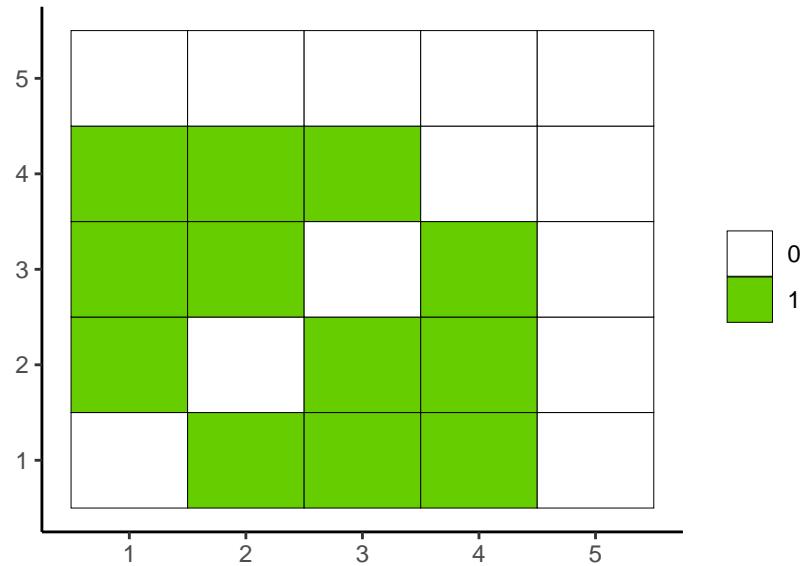


```
##
## $trial65
## $trial65$covariates
```



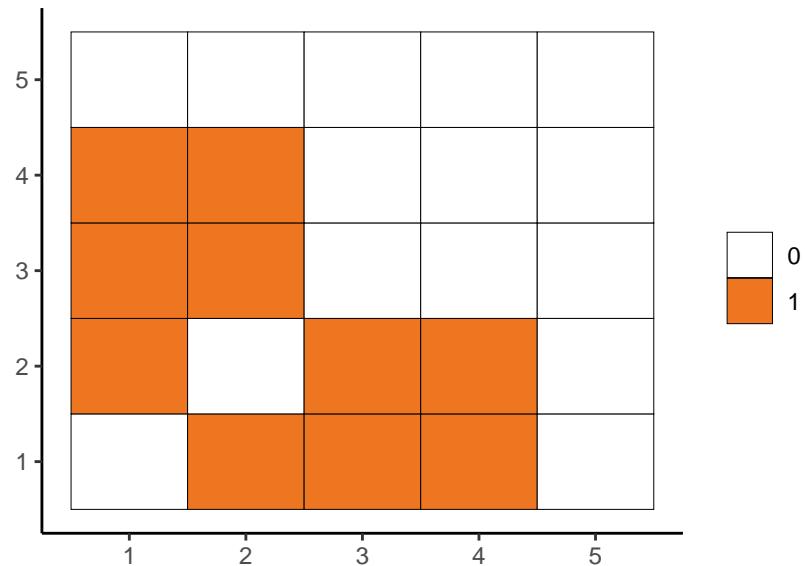
```
##
## $trial65$summary
## Covariate Dependent Graphical Model
##
## Model ELBO: -85390.02           Unique conditional dependence structures: 5
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 4/5 variables
##
## Model fit completed in 32.353 secs
##
## $trial65$unique_graphs
## $trial65$unique_graphs$graph1
## [1] "1,...,30"
##
## $trial65$unique_graphs$graph2
## [1] "31,...,75"
##
## $trial65$unique_graphs$graph3
## [1] "76,...,94"
##
## $trial65$unique_graphs$graph4
## [1] "95,...,120"
##
## $trial65$unique_graphs$graph5
## [1] "121,...,180"
##
## $trial65$unique_graphs[[6]]
```

Graph 1, Individuals 1,...,30



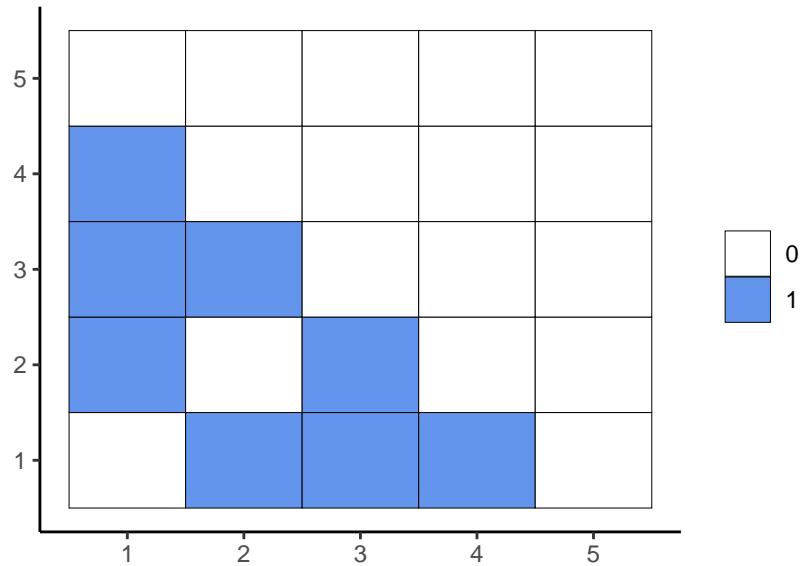
```
##  
## $trial65$unique_graphs[[7]]
```

Graph 2, Individuals 31,...,75



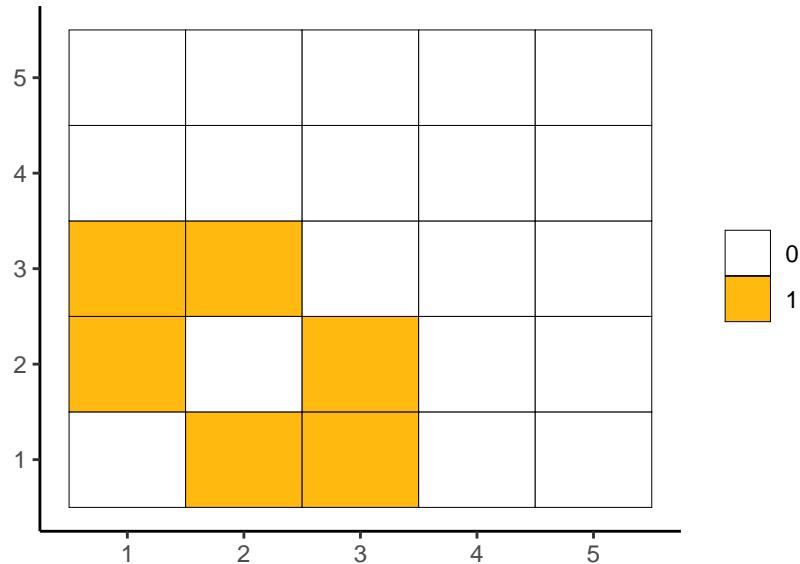
```
##  
## $trial65$unique_graphs[[8]]
```

Graph 3, Individuals 76,...,94



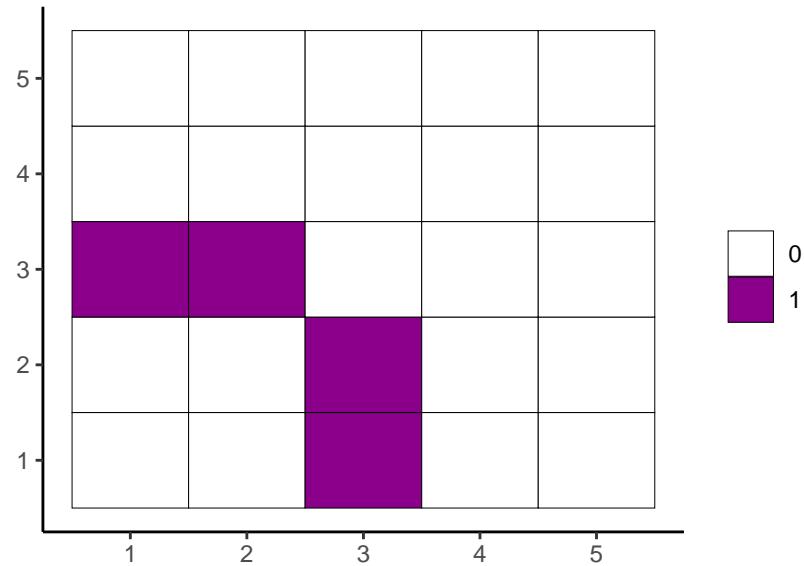
```
##  
## $trial65$unique_graphs[[9]]
```

Graph 4, Individuals 95,...,120

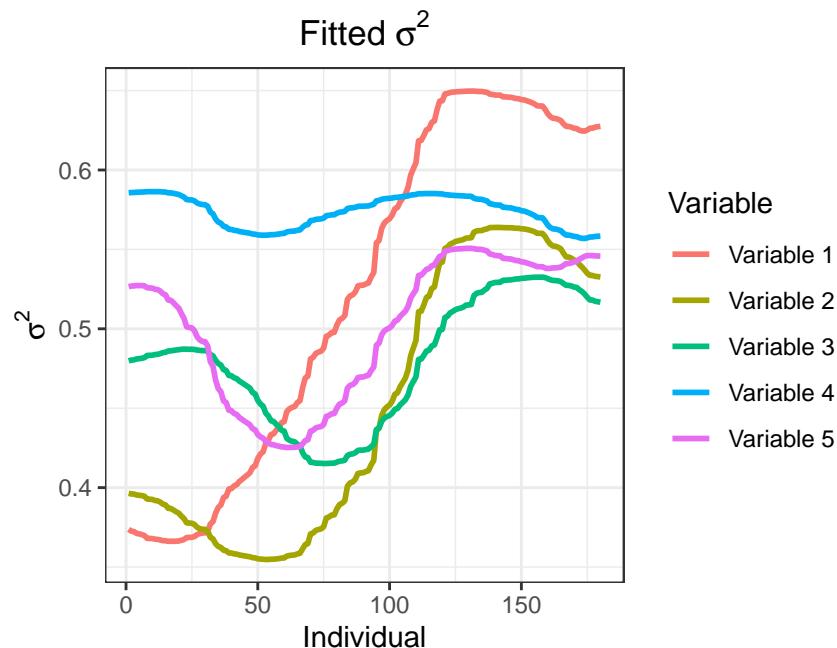


```
##  
## $trial65$unique_graphs[[10]]
```

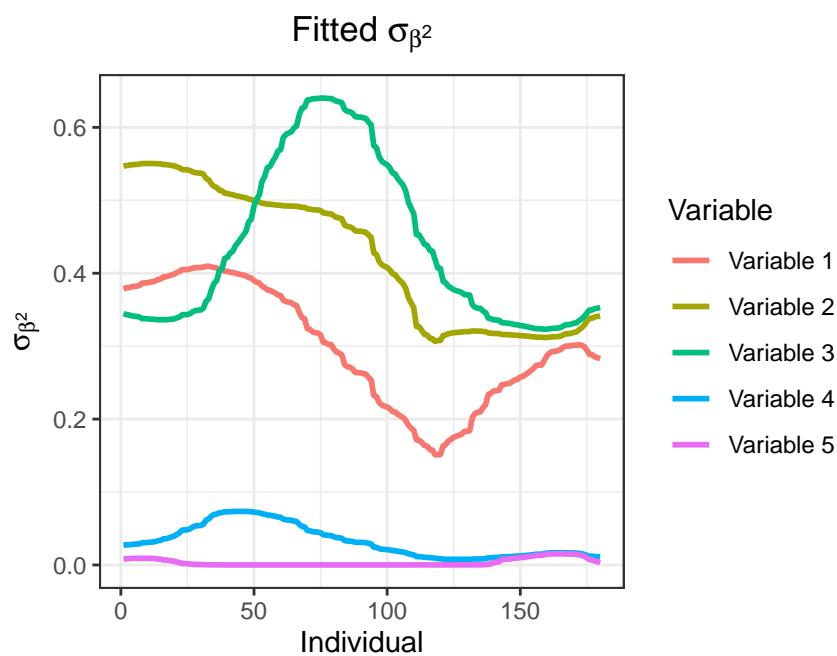
Graph 5, Individuals 121,...,180



```
##  
##  
## $trial65$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial65$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.45      0.45      0.45      0.05      0.05  
##  
## $trial65$sigmasq
```

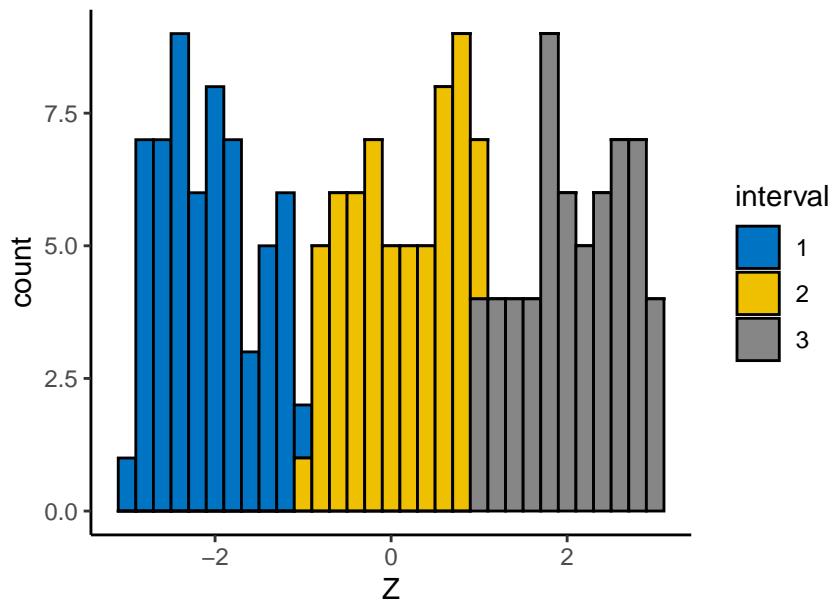


```
##  
## $trial65$sigmabetasq
```



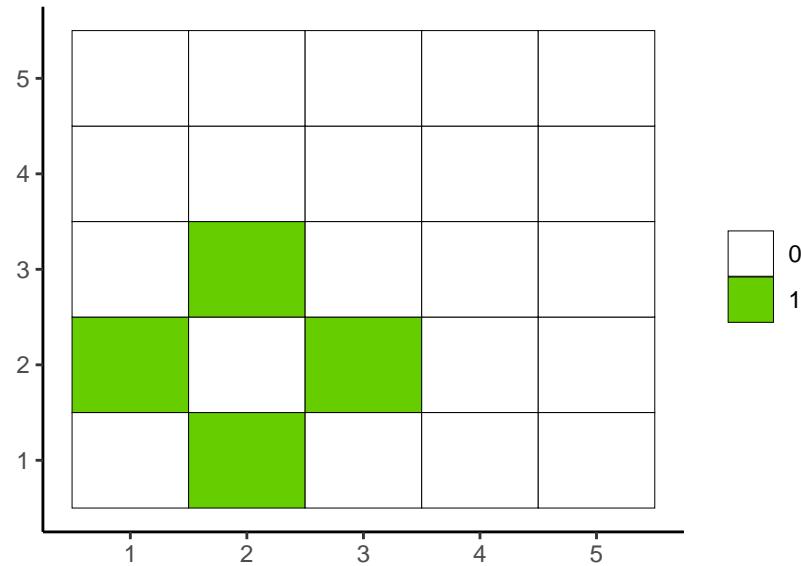
```
##  
##  
## $trial66  
## $trial66$covariates
```

Distribution of Covariate, Trial 66



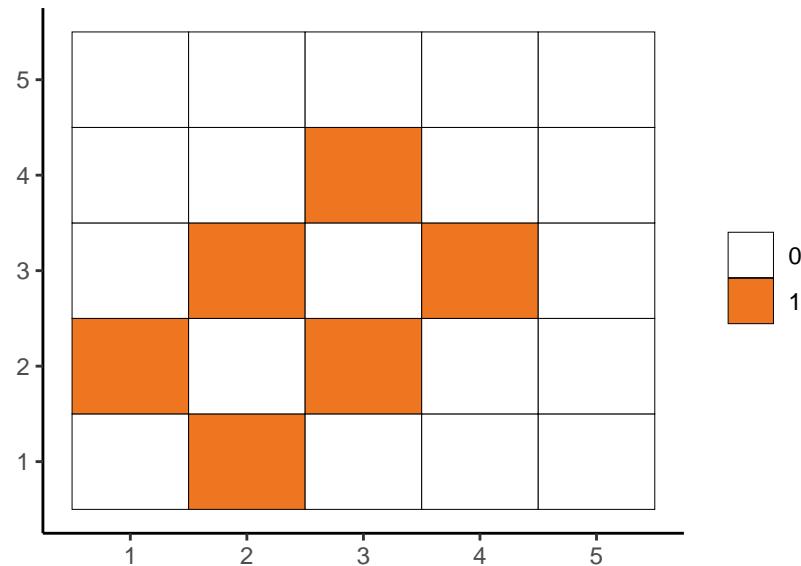
```
##
## $trial66$summary
## Covariate Dependent Graphical Model
##
## Model ELBO: -84786.76           Unique conditional dependence structures: 5
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 3/5 variables
##
## Model fit completed in 30.107 secs
##
## $trial66$unique_graphs
## $trial66$unique_graphs$graph1
## [1] "1,...,3,14,...,40"
##
## $trial66$unique_graphs$graph2
## [1] "4,...,13"
##
## $trial66$unique_graphs$graph3
## [1] "41,...,85"
##
## $trial66$unique_graphs$graph4
## [1] "86,...,124"
##
## $trial66$unique_graphs$graph5
## [1] "125,...,180"
##
## $trial66$unique_graphs[[6]]
```

Graph 1, Individuals 1,...,3,14,...,40



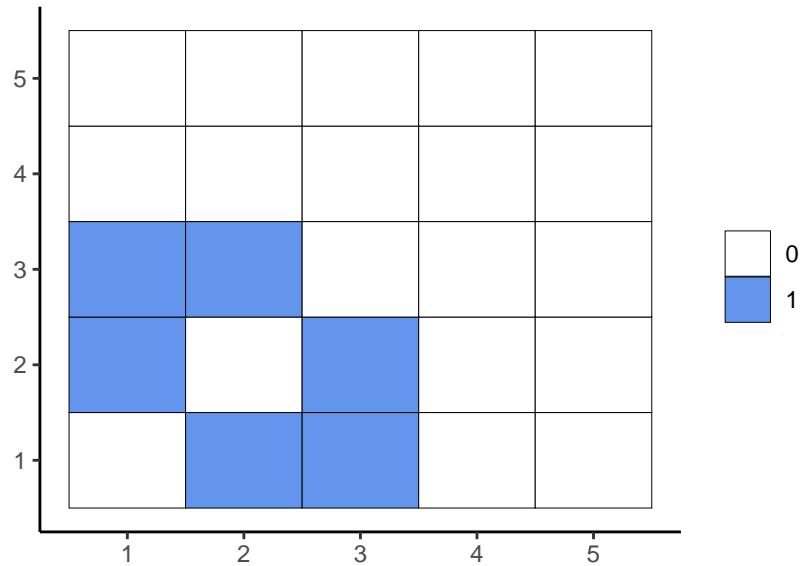
```
##  
## $trial166$unique_graphs[[7]]
```

Graph 2, Individuals 4,...,13



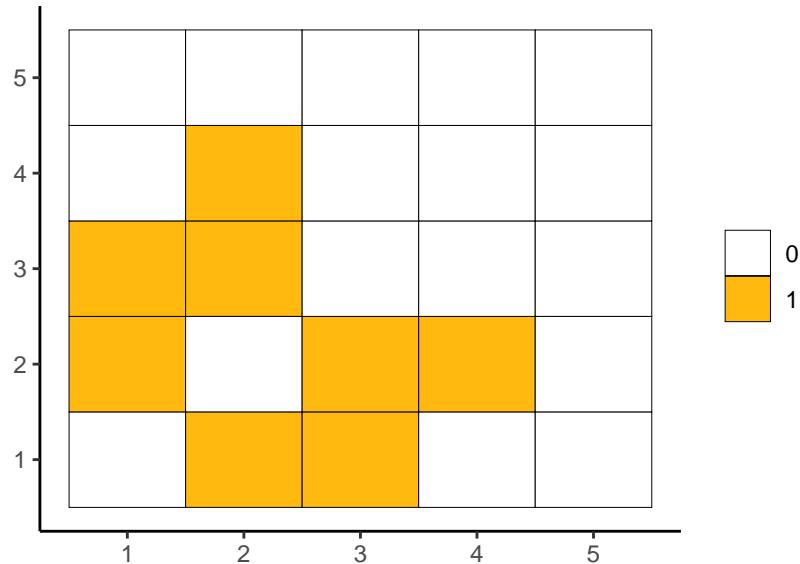
```
##  
## $trial166$unique_graphs[[8]]
```

Graph 3, Individuals 41,...,85



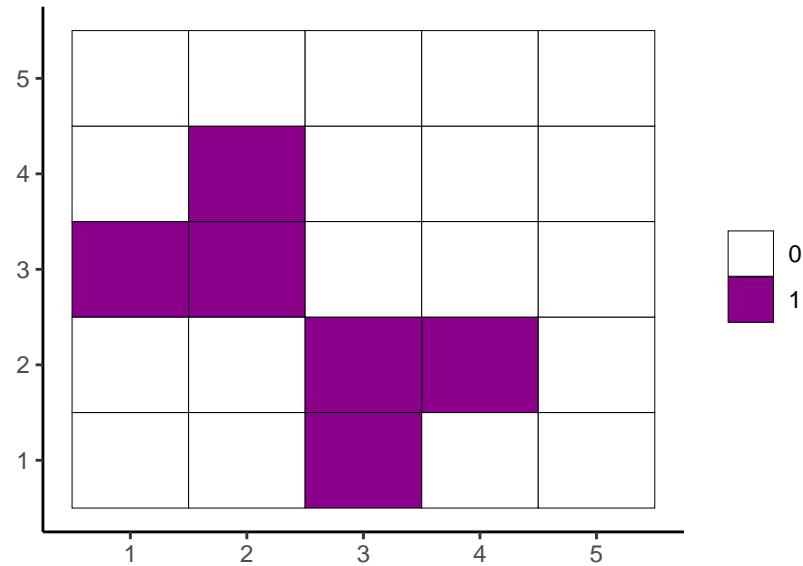
```
##  
## $trial166$unique_graphs[[9]]
```

Graph 4, Individuals 86,...,124

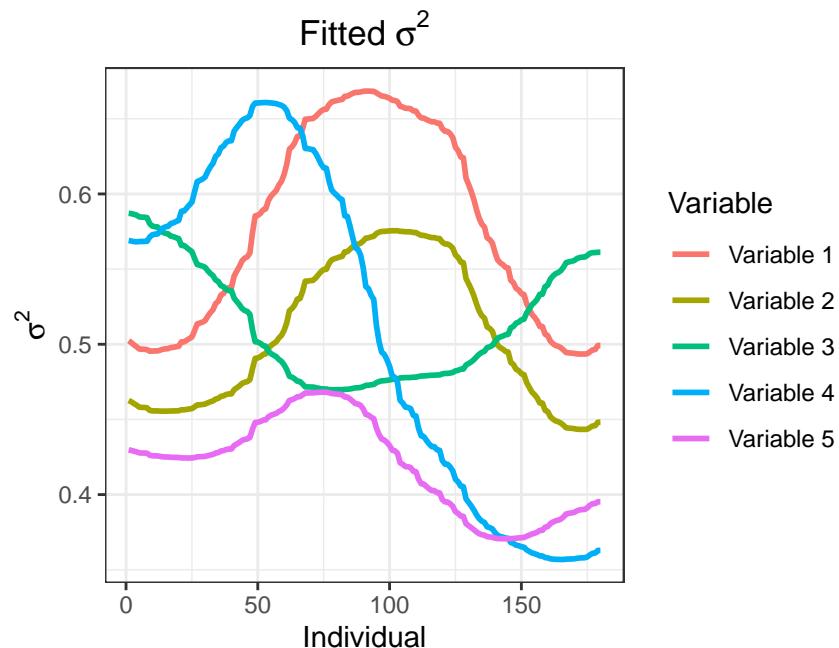


```
##  
## $trial166$unique_graphs[[10]]
```

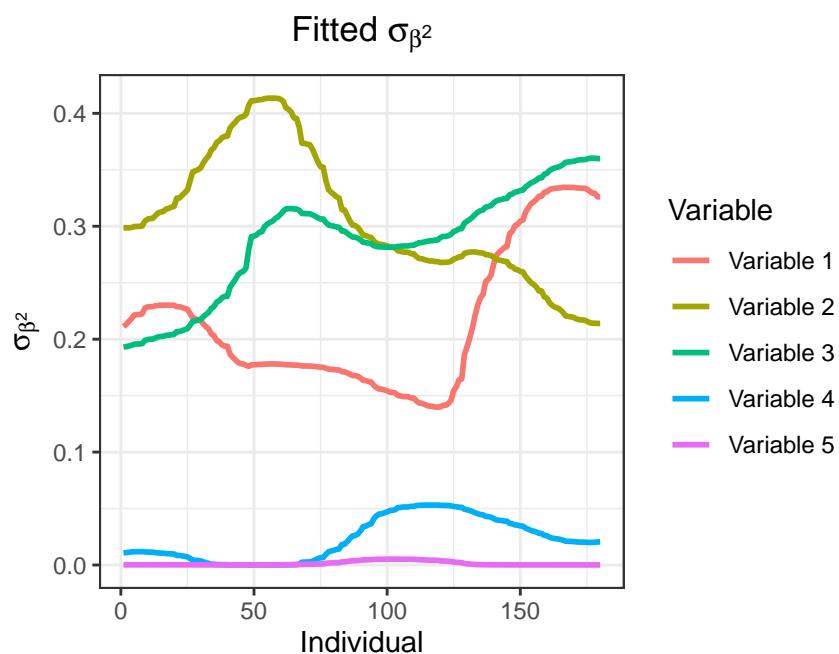
Graph 5, Individuals 125,...,180



```
##  
##  
## $trial66$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial66$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          0.45      0.45      0.45      0.05      0.05  
##  
## $trial66$sigmasq
```

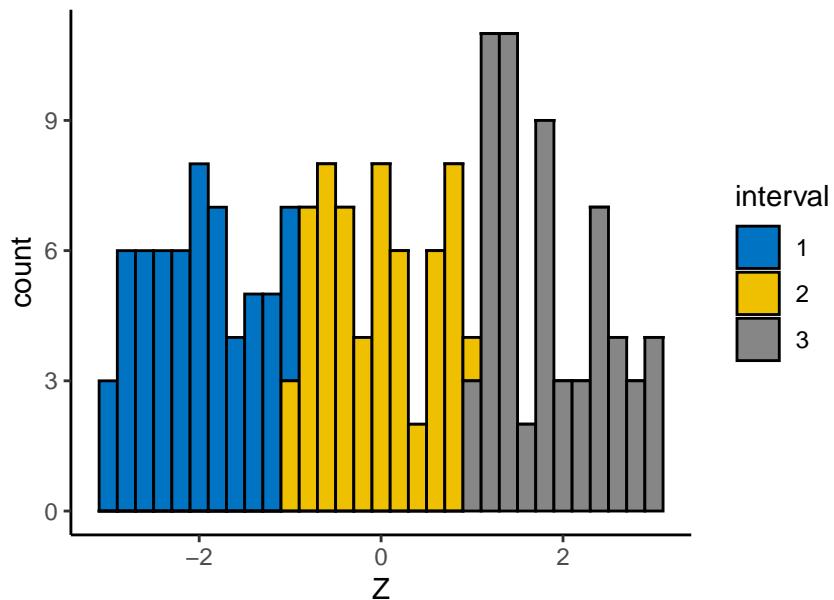


```
##  
## $trial66$sigmabetasq
```



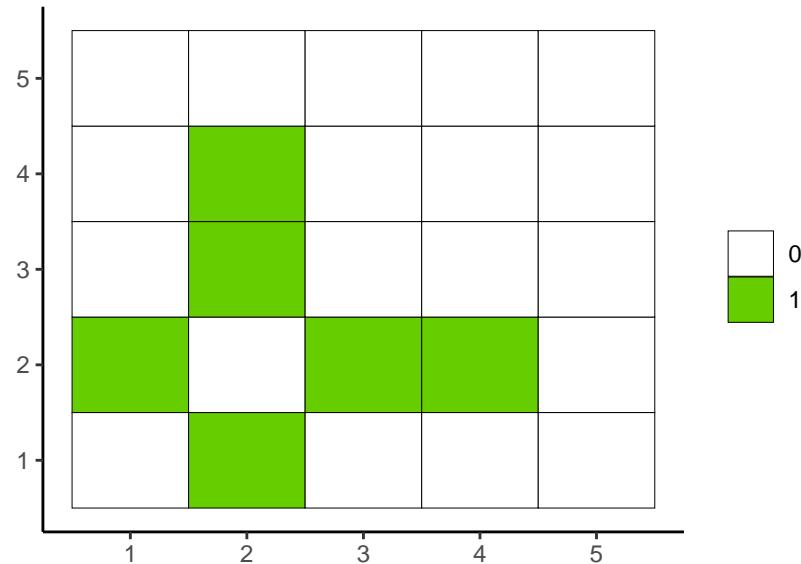
```
##  
##  
## $trial67  
## $trial67$covariates
```

Distribution of Covariate, Trial 67



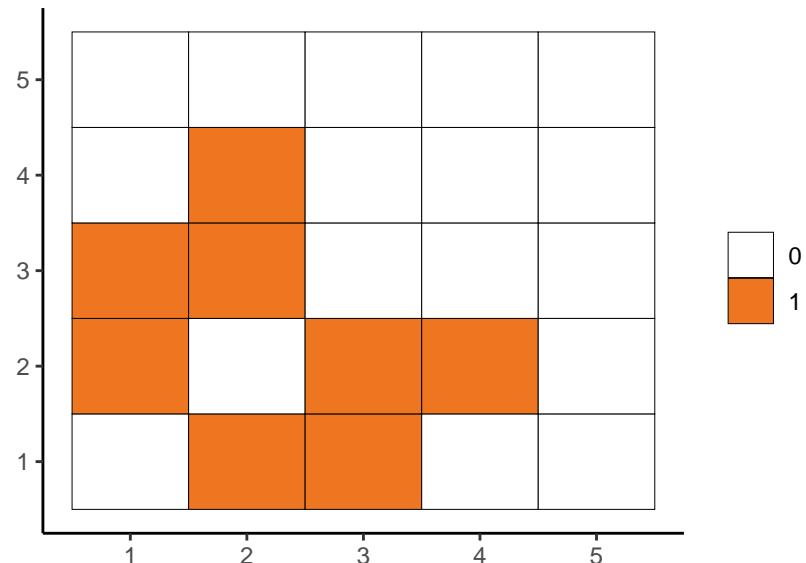
```
##  
## $trial67$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -85024.68           Unique conditional dependence structures: 6  
## n: 180, variables: 5           Hyperparameter grid size: 9 points  
## CAVI converged for 2/5 variables  
##  
## Model fit completed in 32.518 secs  
##  
## $trial67$unique_graphs  
## $trial67$unique_graphs$graph1  
## [1] "1,...,44"  
##  
## $trial67$unique_graphs$graph2  
## [1] "45,...,67"  
##  
## $trial67$unique_graphs$graph3  
## [1] "68,...,104,125,...,131"  
##  
## $trial67$unique_graphs$graph4  
## [1] "105,...,124"  
##  
## $trial67$unique_graphs$graph5  
## [1] "132,...,145,180"  
##  
## $trial67$unique_graphs$graph6  
## [1] "146,...,179"  
##  
## $trial67$unique_graphs[[7]]
```

Graph 1, Individuals 1,...,44



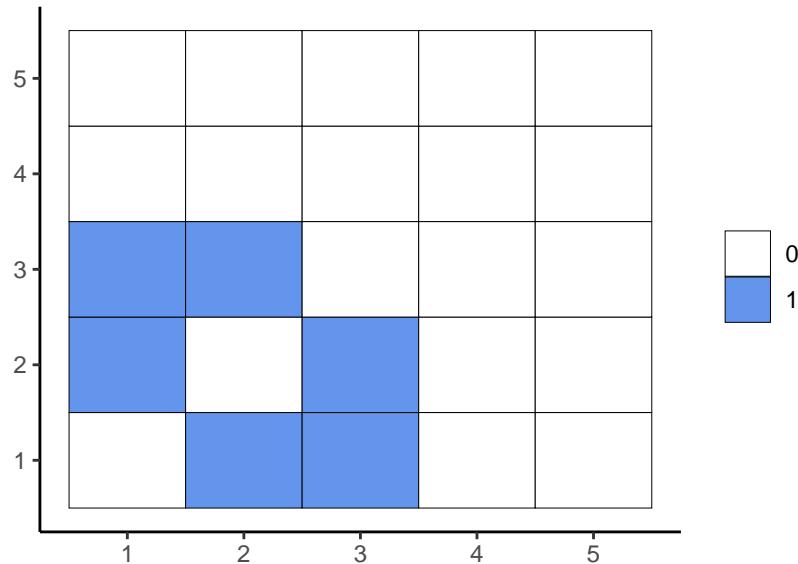
```
##  
## $trial67$unique_graphs[[8]]
```

Graph 2, Individuals 45,...,67



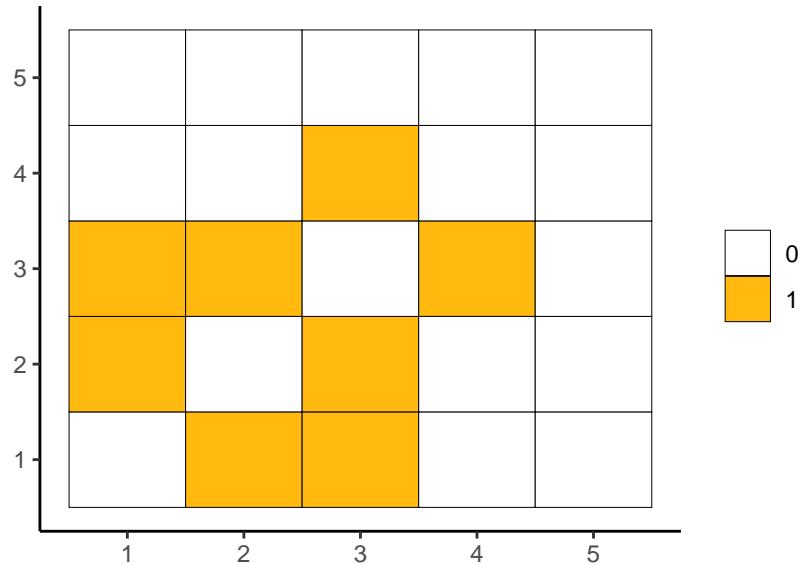
```
##  
## $trial67$unique_graphs[[9]]
```

Graph 3, Individuals 68,...,104,125,...,131



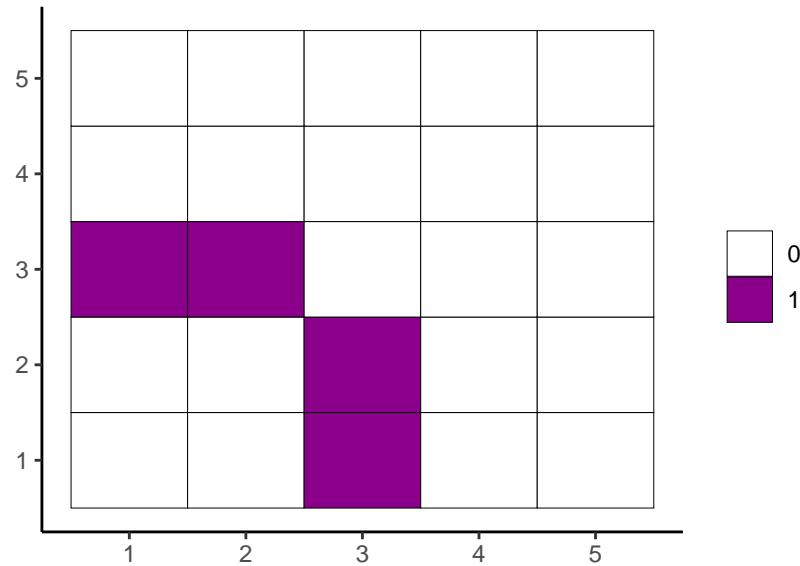
```
##  
## $trial67$unique_graphs[[10]]
```

Graph 4, Individuals 105,...,124



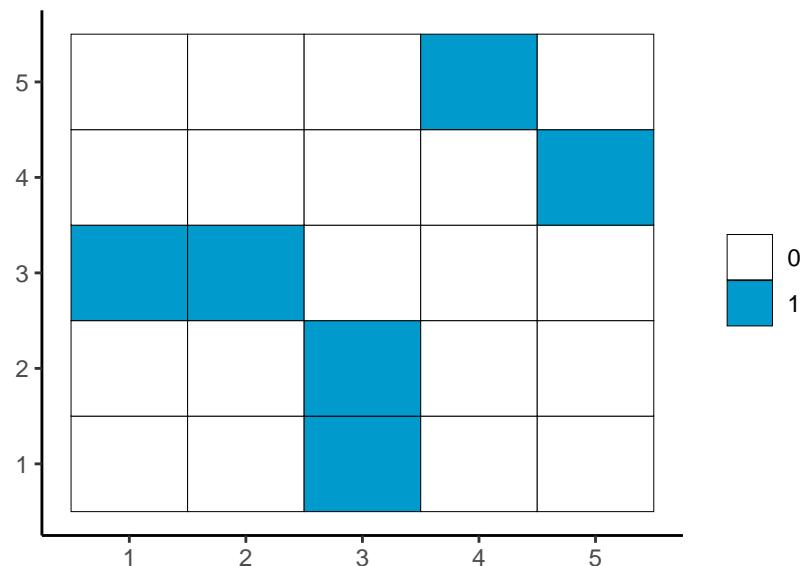
```
##  
## $trial67$unique_graphs[[11]]
```

Graph 5, Individuals 132,...,145,180



```
##  
## $trial67$unique_graphs[[12]]
```

Graph 6, Individuals 146,...,179

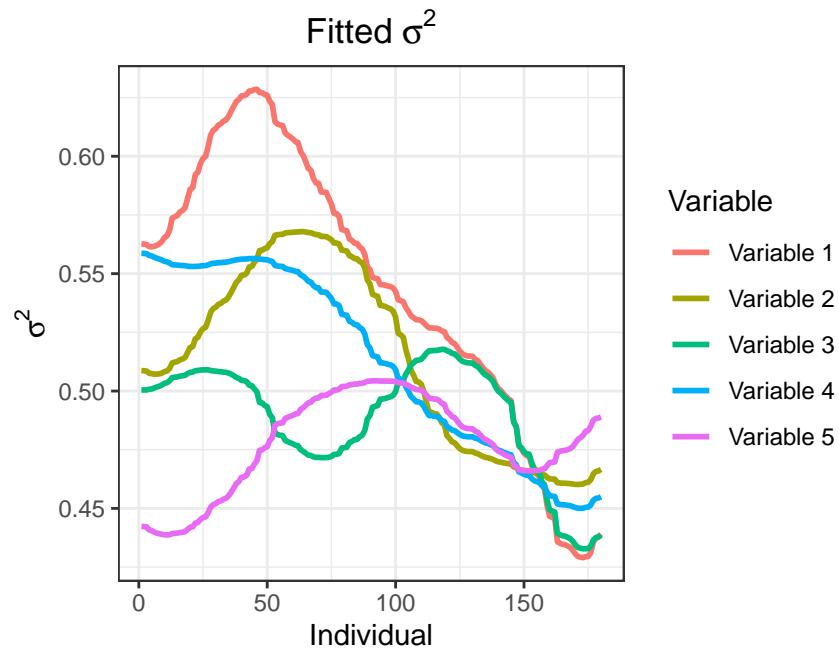


```
##  
##  
## $trial67$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial67$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.40      0.45      0.45      0.05      0.05
##
## $trial67$sigmasq

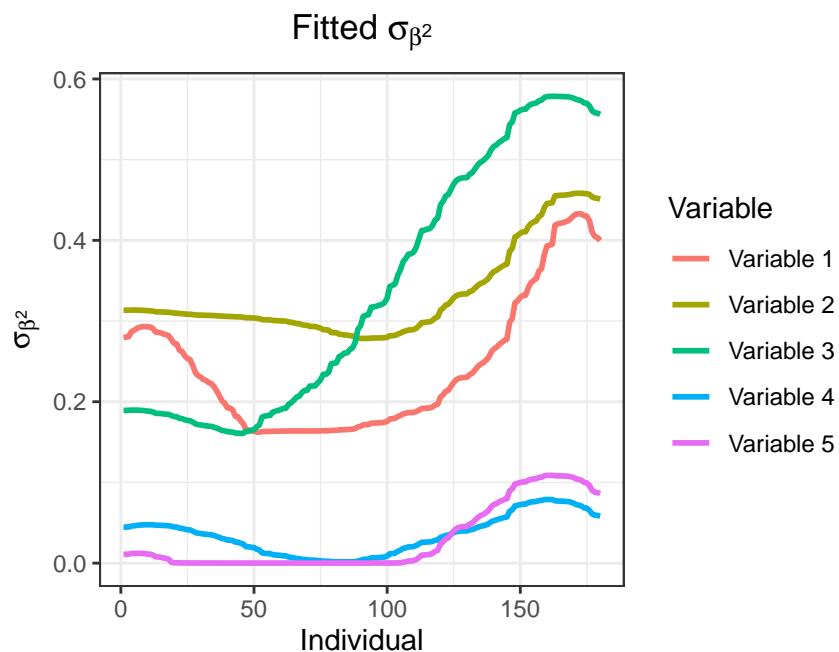
```



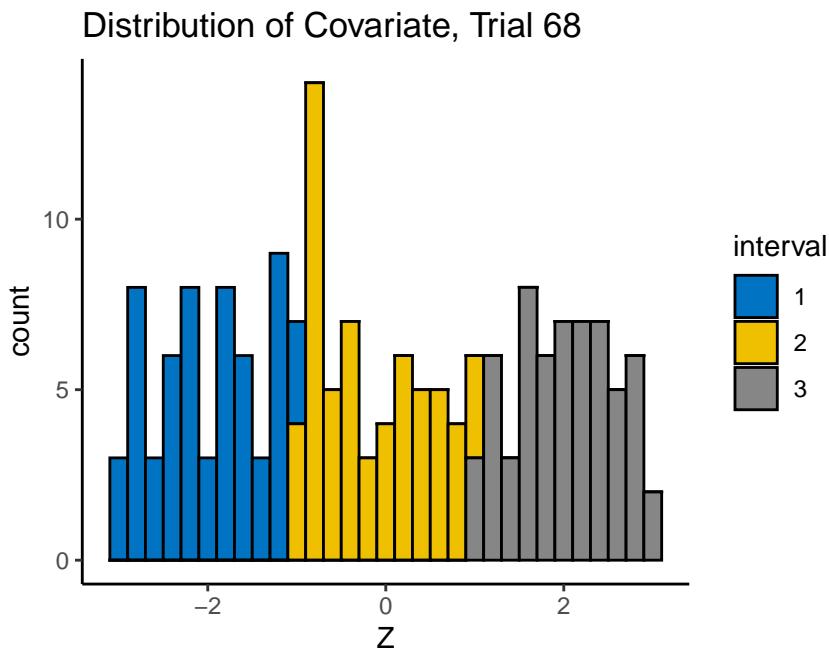
```

## 
## $trial67$sigmabetasq

```

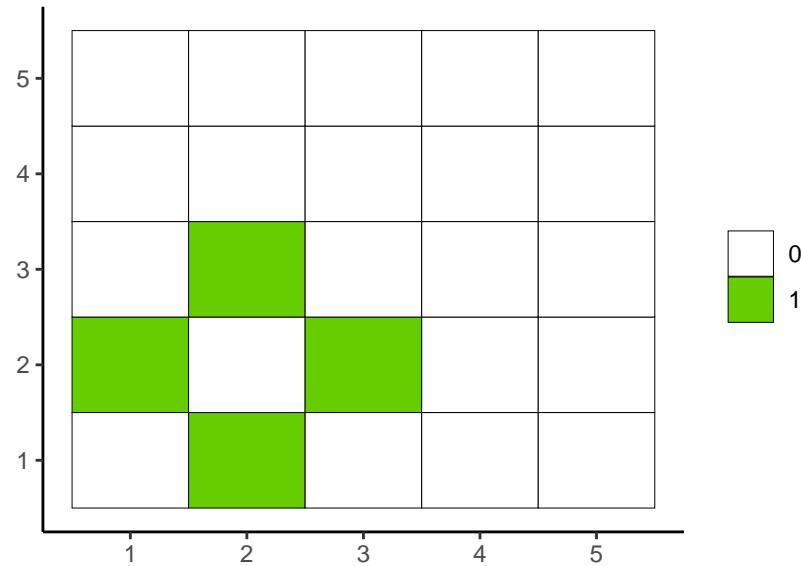


```
##  
##  
## $trial68  
## $trial68$covariates
```



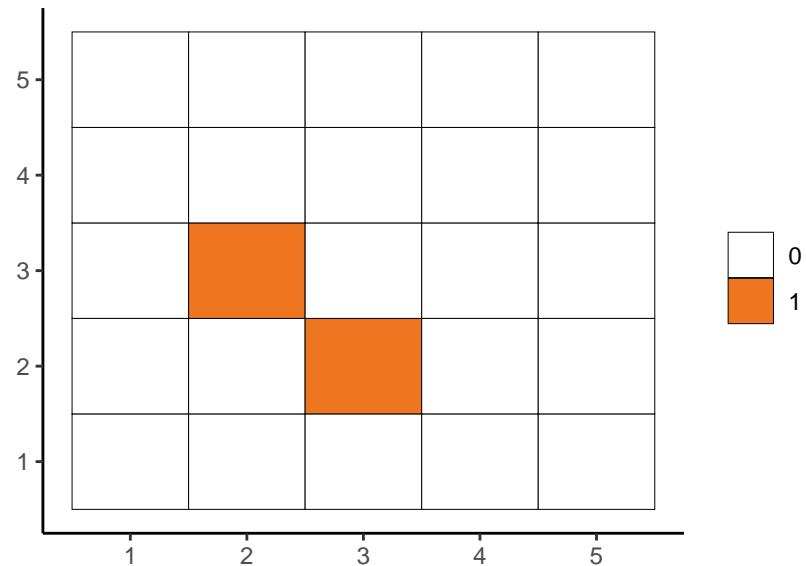
```
##  
## $trial68$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84304.23 Unique conditional dependence structures: 5  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 2/5 variables  
##  
## Model fit completed in 28.574 secs  
##  
## $trial68$unique_graphs  
## $trial68$unique_graphs$graph1  
## [1] "1,...,98"  
##  
## $trial68$unique_graphs$graph2  
## [1] "99,...,101"  
##  
## $trial68$unique_graphs$graph3  
## [1] "102,...,105,134,...,147"  
##  
## $trial68$unique_graphs$graph4  
## [1] "106,...,133"  
##  
## $trial68$unique_graphs$graph5  
## [1] "148,...,180"  
##  
## $trial68$unique_graphs[[6]]
```

Graph 1, Individuals 1,...,98



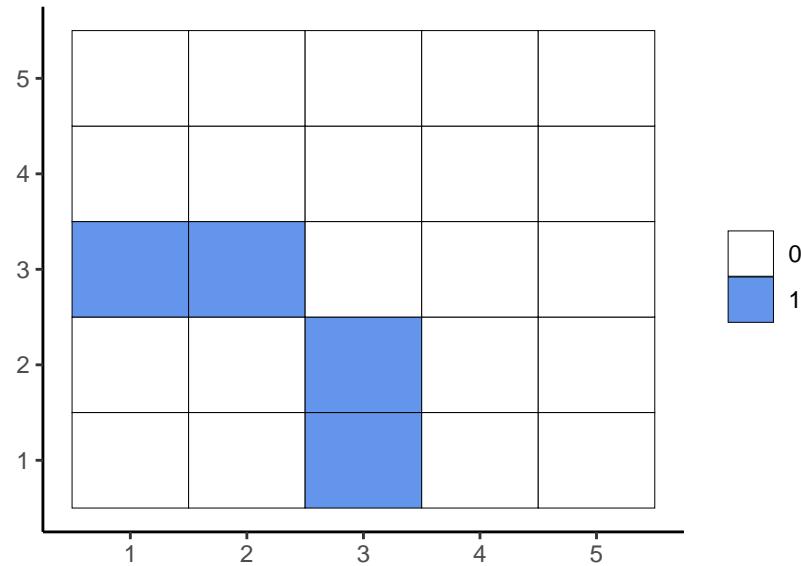
```
##  
## $trial68$unique_graphs[[7]]
```

Graph 2, Individuals 99,...,101



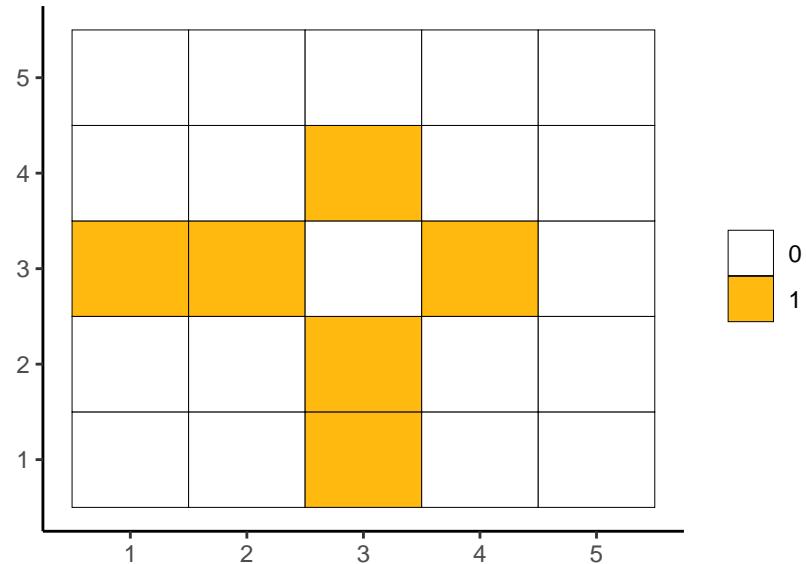
```
##  
## $trial68$unique_graphs[[8]]
```

Graph 3, Individuals 102,...,105,134,...,147



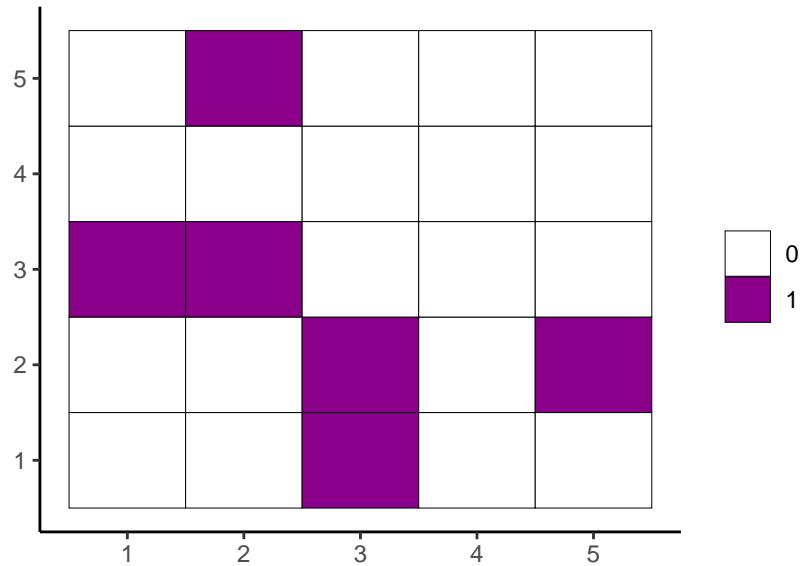
```
##  
## $trial68$unique_graphs[[9]]
```

Graph 4, Individuals 106,...,133

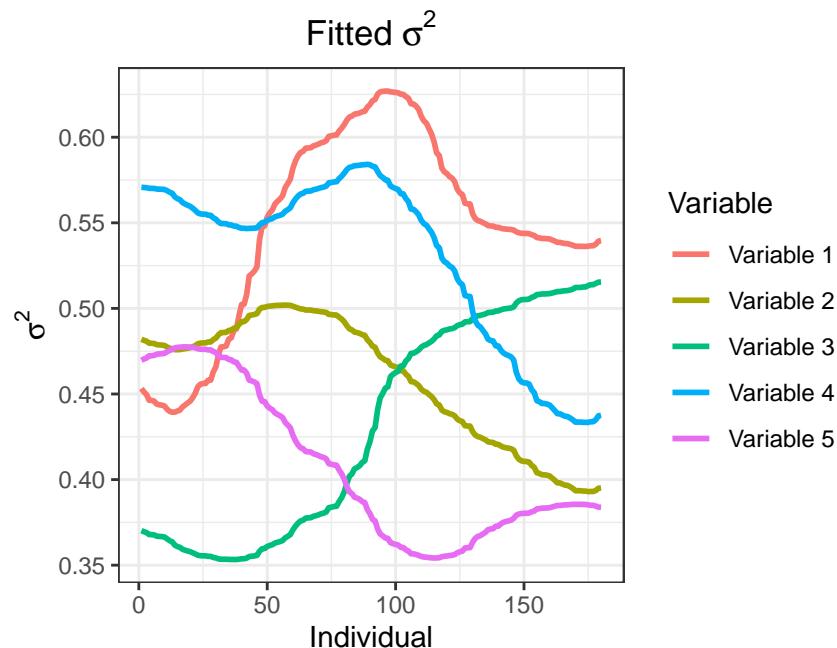


```
##  
## $trial68$unique_graphs[[10]]
```

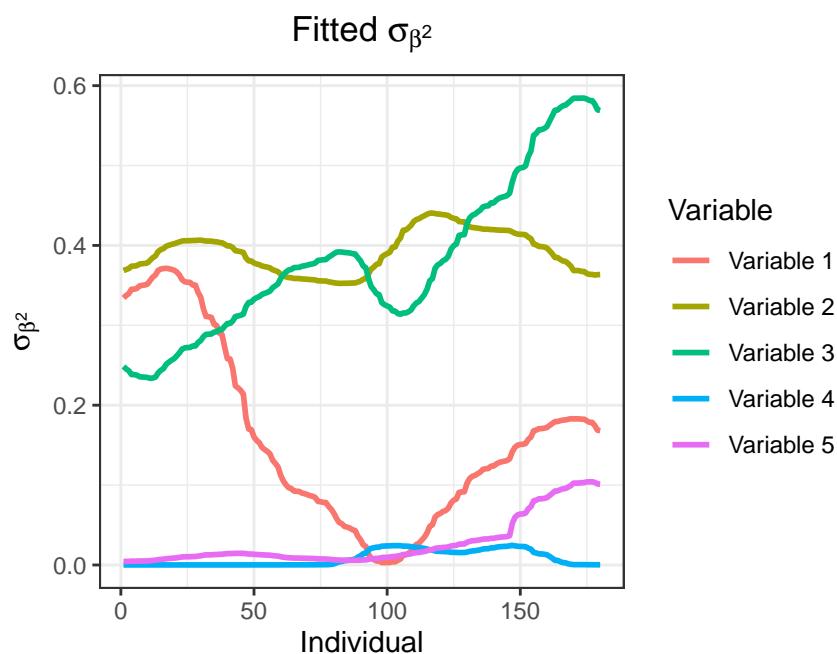
Graph 5, Individuals 148,...,180



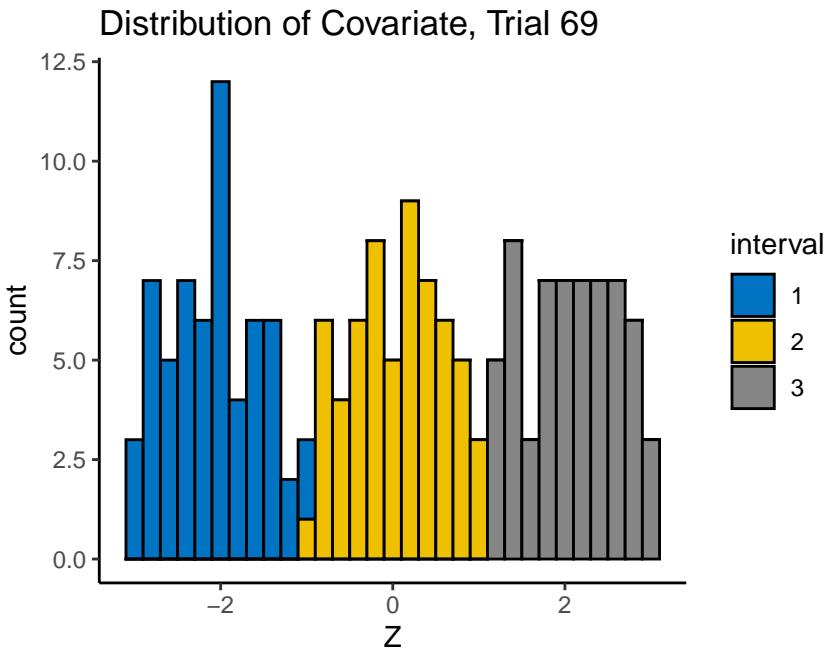
```
##  
##  
## $trial68$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial68$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.35      0.45      0.45      0.05      0.05  
##  
## $trial68$sigmasq
```



```
##  
## $trial68$sigmabetasq
```

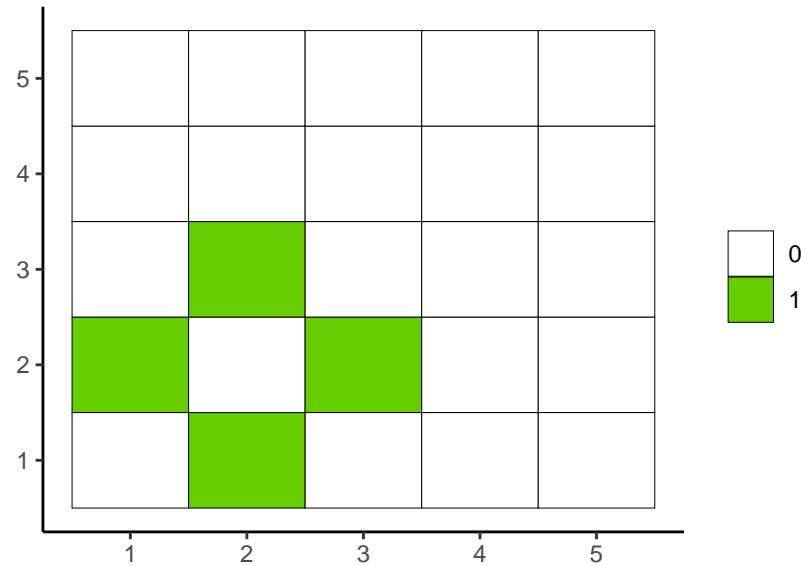


```
##  
##  
## $trial69  
## $trial69$covariates
```



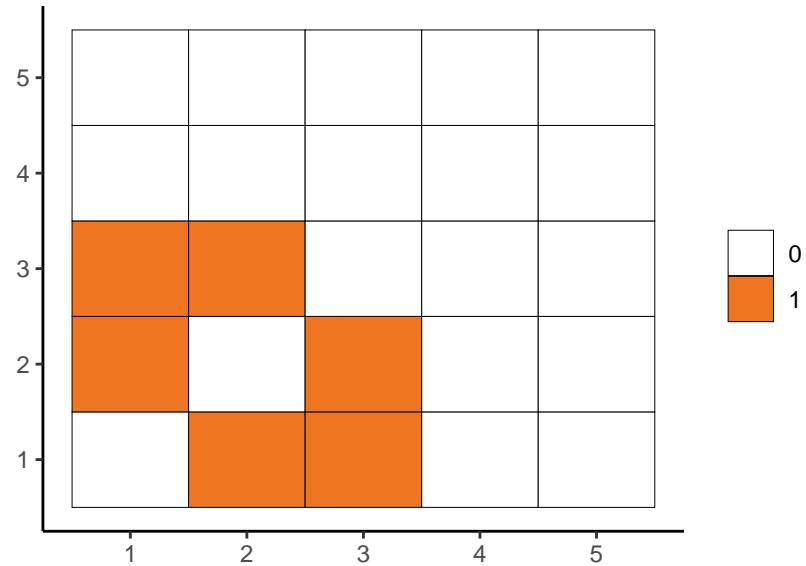
```
##
## $trial69$summary
## Covariate Dependent Graphical Model
##
## Model ELBO: -84514.95           Unique conditional dependence structures: 3
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 3/5 variables
##
## Model fit completed in 32.962 secs
##
## $trial69$unique_graphs
## $trial69$unique_graphs$graph1
## [1] "1,...,29"
##
## $trial69$unique_graphs$graph2
## [1] "30,...,120"
##
## $trial69$unique_graphs$graph3
## [1] "121,...,180"
##
## $trial69$unique_graphs[[4]]
```

Graph 1, Individuals 1,...,29



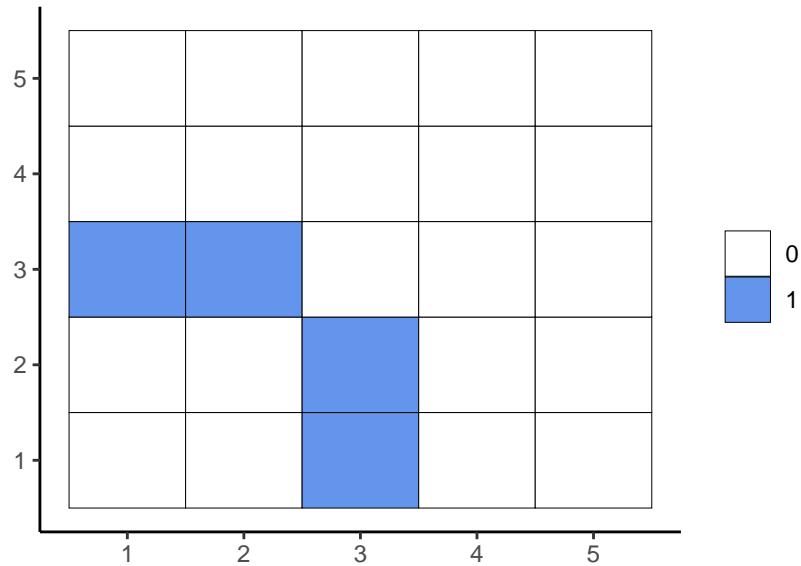
```
##  
## $trial169$unique_graphs[[5]]
```

Graph 2, Individuals 30,...,120

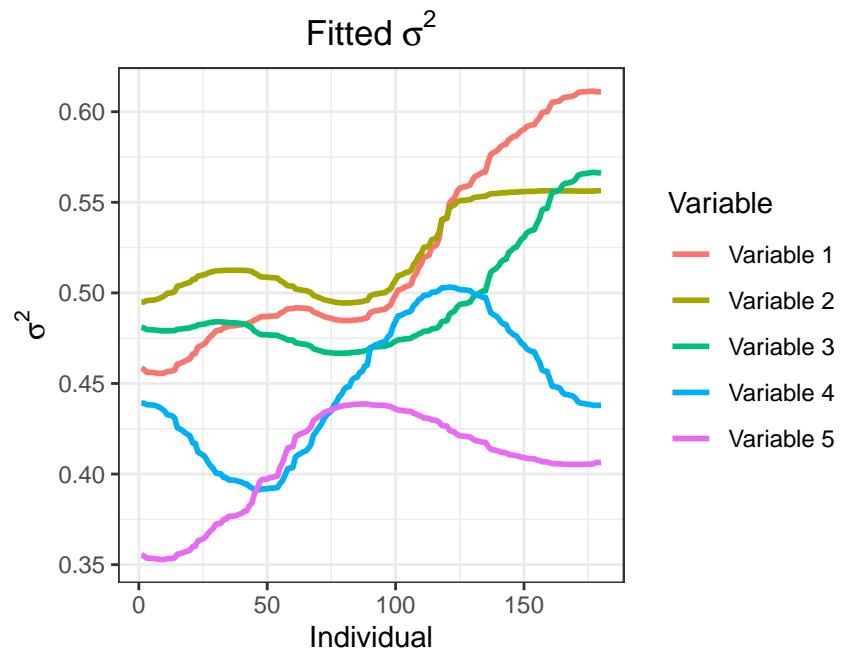


```
##  
## $trial169$unique_graphs[[6]]
```

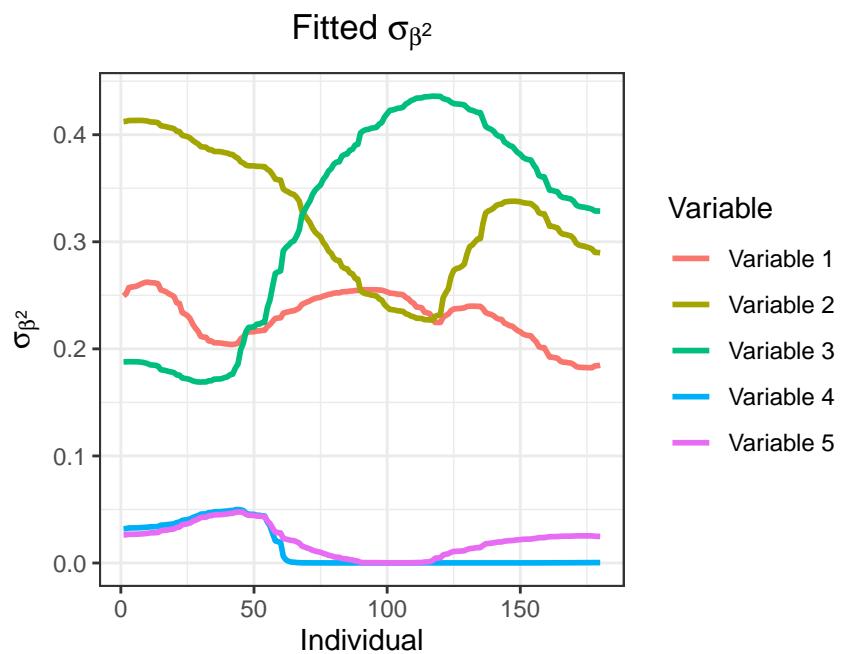
Graph 3, Individuals 121,...,180



```
##  
##  
## $trial69$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial69$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.45      0.45      0.45      0.05      0.05  
##  
## $trial69$sigmasq
```

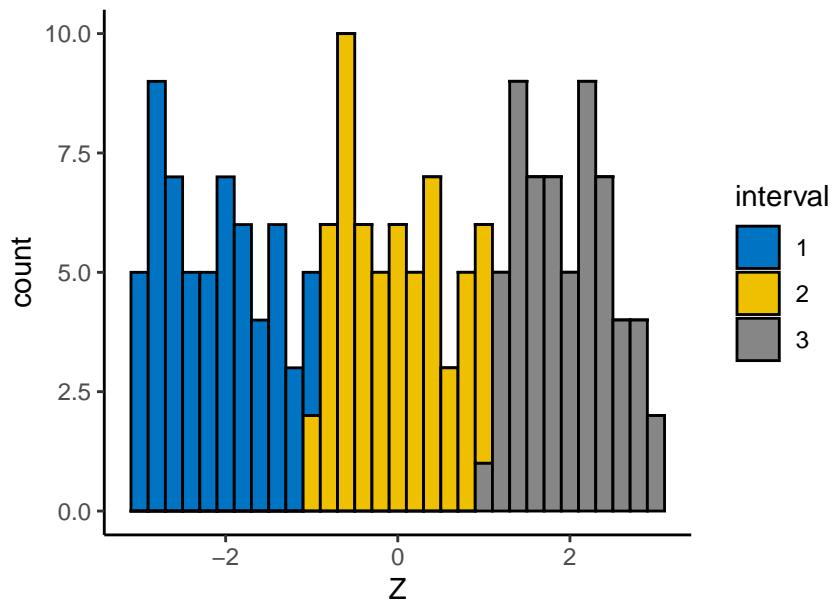


```
##  
## $trial69$sigmabetasq
```



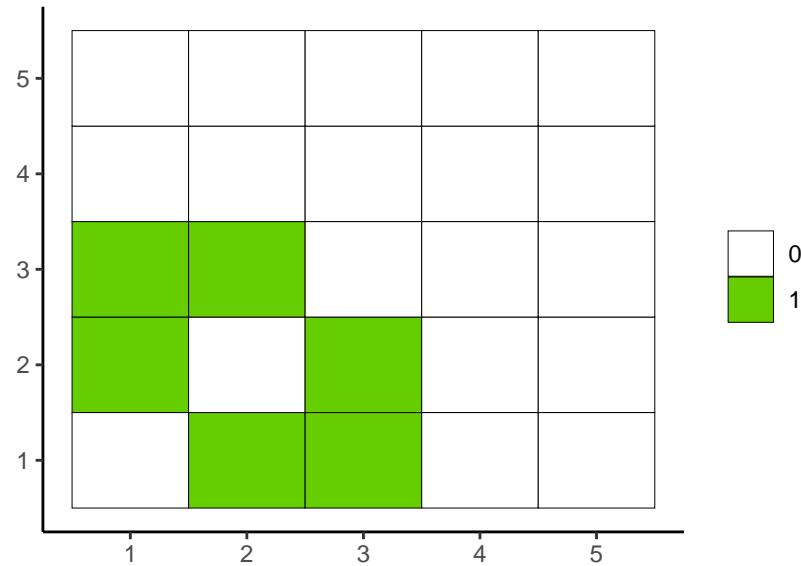
```
##  
##  
## $trial70  
## $trial70$covariates
```

Distribution of Covariate, Trial 70



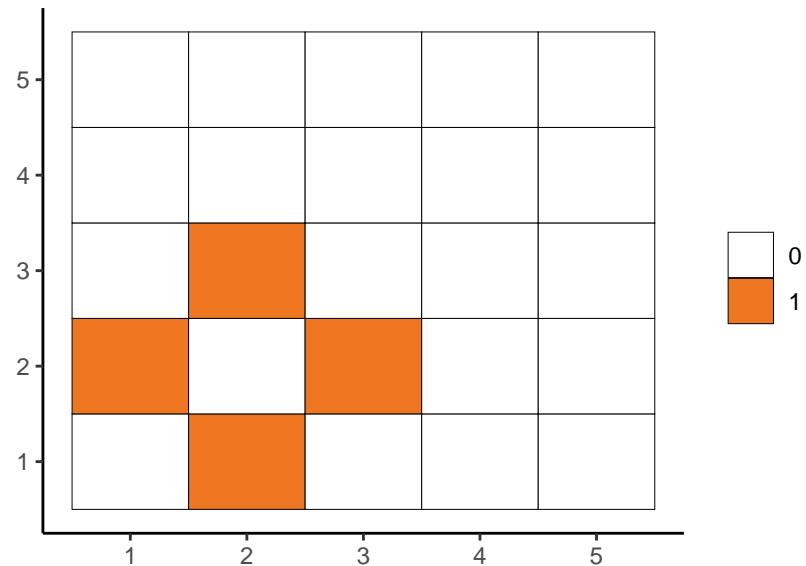
```
##
## $trial70$summary
## Covariate Dependent Graphical Model
##
## Model ELBO: -84076.6           Unique conditional dependence structures: 4
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 3/5 variables
##
## Model fit completed in 32.08 secs
##
## $trial70$unique_graphs
## $trial70$unique_graphs$graph1
## [1] "1,...,50"
##
## $trial70$unique_graphs$graph2
## [1] "51,...,87"
##
## $trial70$unique_graphs$graph3
## [1] "88,...,91"
##
## $trial70$unique_graphs$graph4
## [1] "92,...,180"
##
## $trial70$unique_graphs[[5]]
```

Graph 1, Individuals 1,...,50



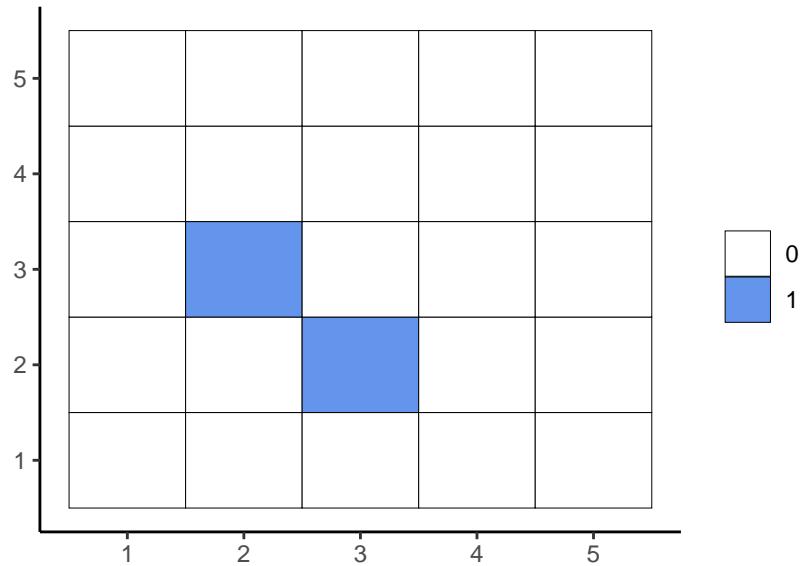
```
##  
## $trial170$unique_graphs[[6]]
```

Graph 2, Individuals 51,...,87



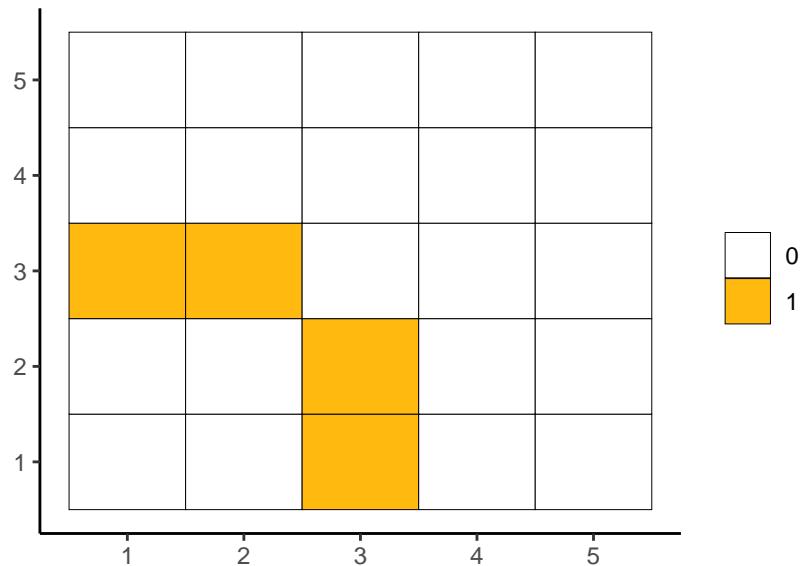
```
##  
## $trial170$unique_graphs[[7]]
```

Graph 3, Individuals 88,...,91



```
##  
## $trial70$unique_graphs[[8]]
```

Graph 4, Individuals 92,...,180

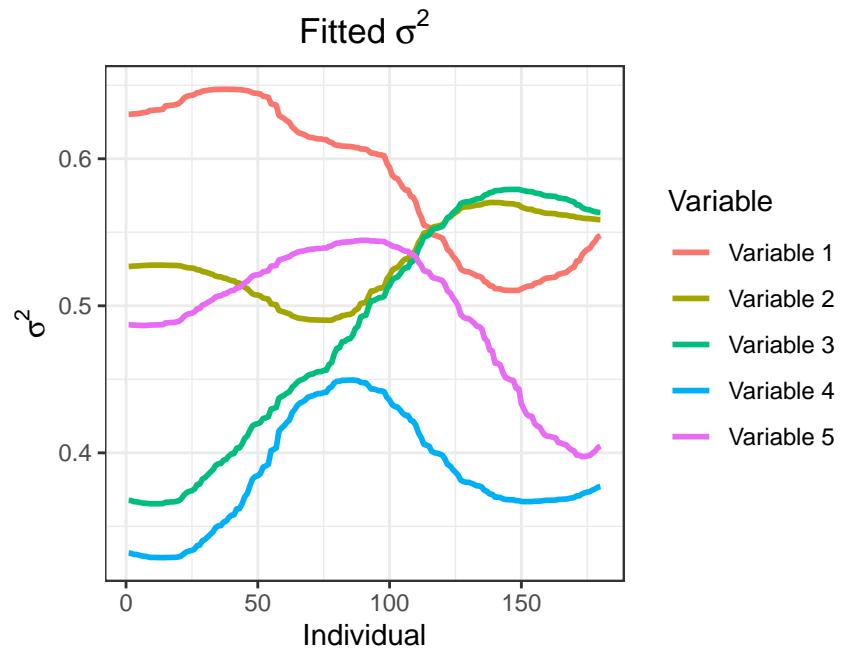


```
##  
##  
## $trial70$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial70$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.45      0.30      0.45      0.05      0.05
##
## $trial70$sigmasq

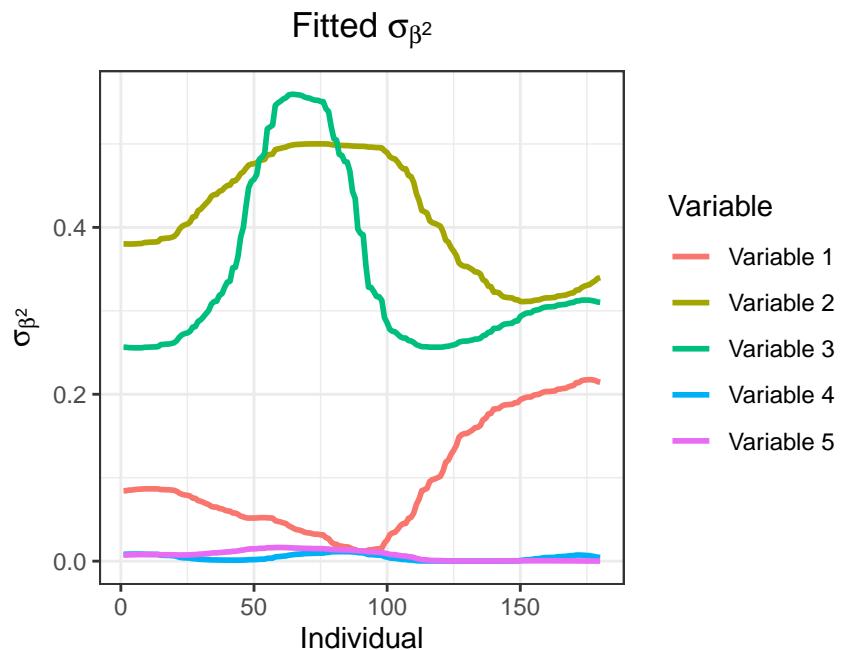
```



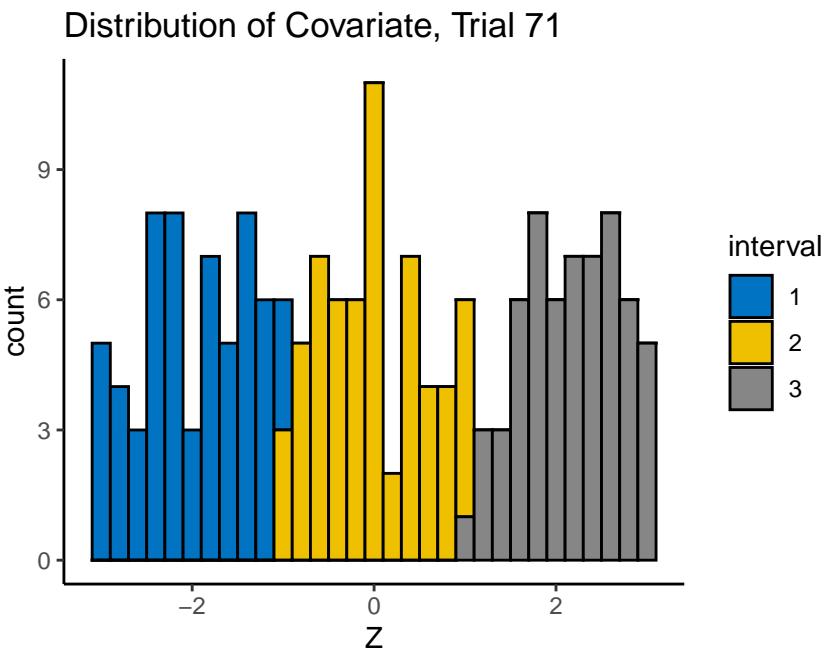
```

## 
## $trial70$sigmabetasq

```

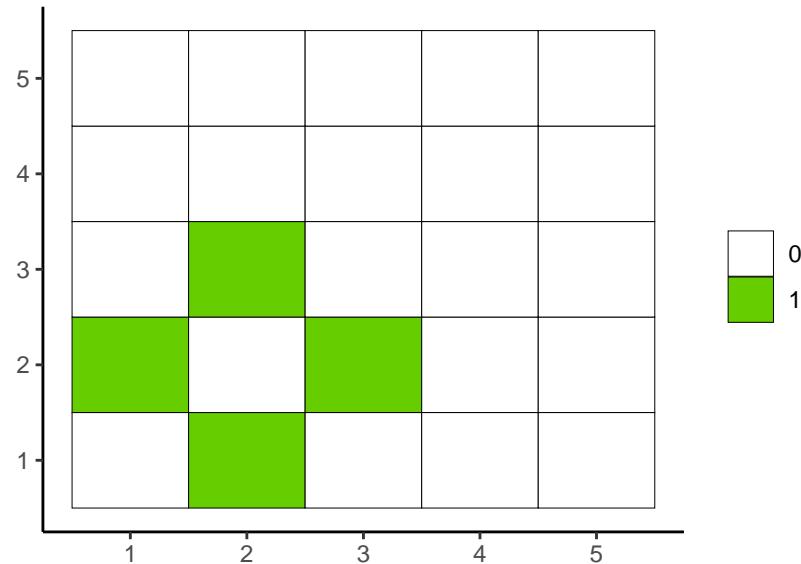


```
##
## $trial71
## $trial71$covariates
```



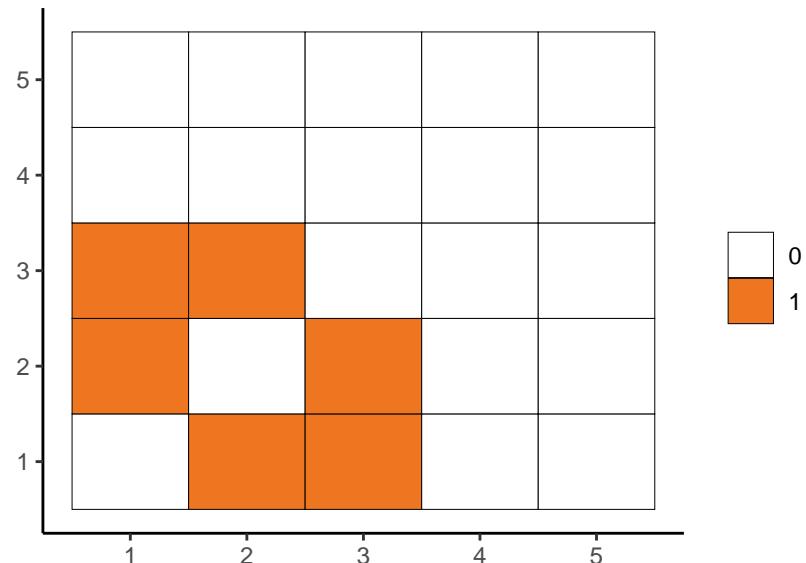
```
##
## $trial71$summary
## Covariate Dependent Graphical Model
##
## Model ELBO: -85029           Unique conditional dependence structures: 5
## n: 180, variables: 5          Hyperparameter grid size: 9 points
## CAVI converged for 3/5 variables
##
## Model fit completed in 25.711 secs
##
## $trial71$unique_graphs
## $trial71$unique_graphs$graph1
## [1] "1,...,81"
##
## $trial71$unique_graphs$graph2
## [1] "82,...,110"
##
## $trial71$unique_graphs$graph3
## [1] "111,112"
##
## $trial71$unique_graphs$graph4
## [1] "113,...,143"
##
## $trial71$unique_graphs$graph5
## [1] "144,...,180"
##
## $trial71$unique_graphs[[6]]
```

Graph 1, Individuals 1,...,81



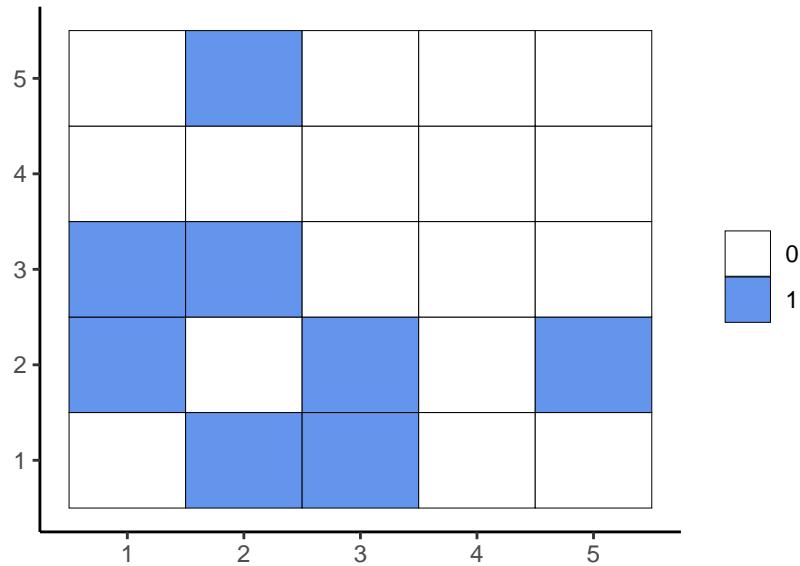
```
##  
## $trial71$unique_graphs[[7]]
```

Graph 2, Individuals 82,...,110



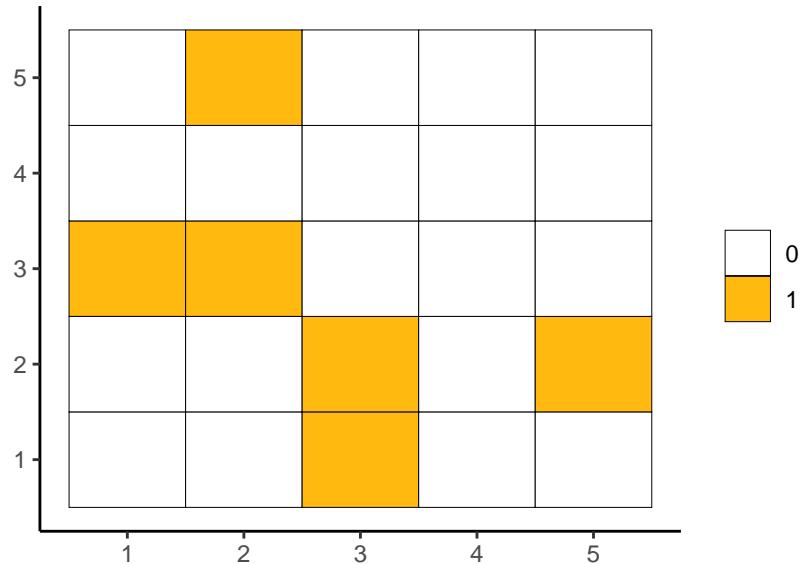
```
##  
## $trial71$unique_graphs[[8]]
```

Graph 3, Individuals 111,112



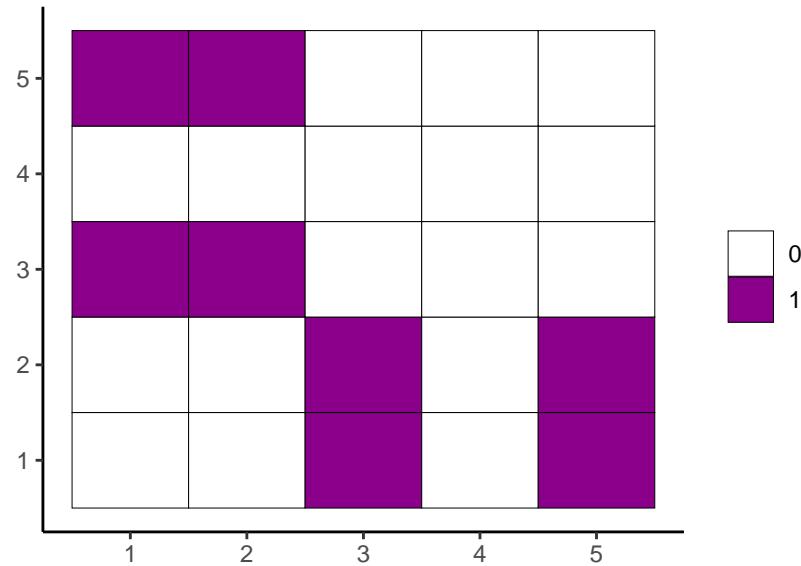
```
##  
## $trial71$unique_graphs[[9]]
```

Graph 4, Individuals 113,...,143

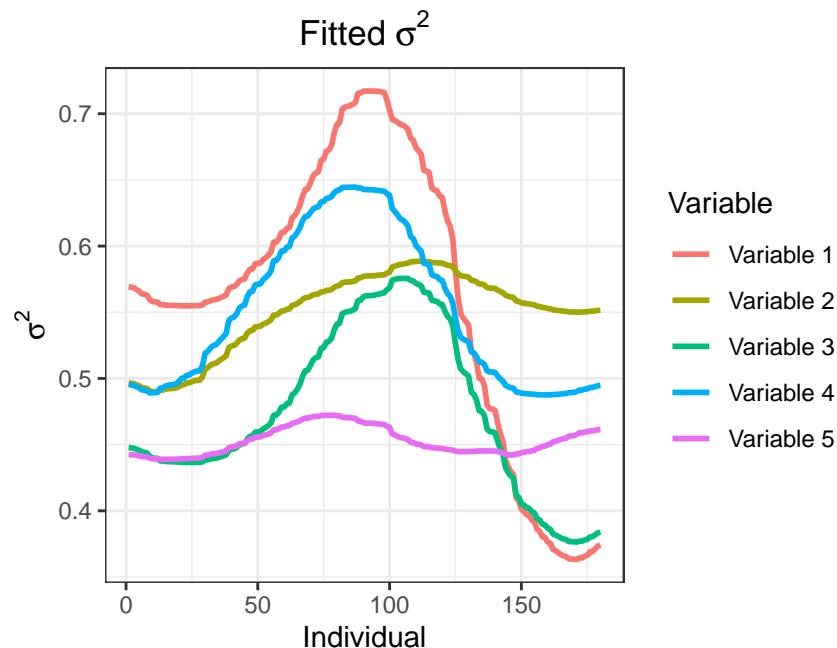


```
##  
## $trial71$unique_graphs[[10]]
```

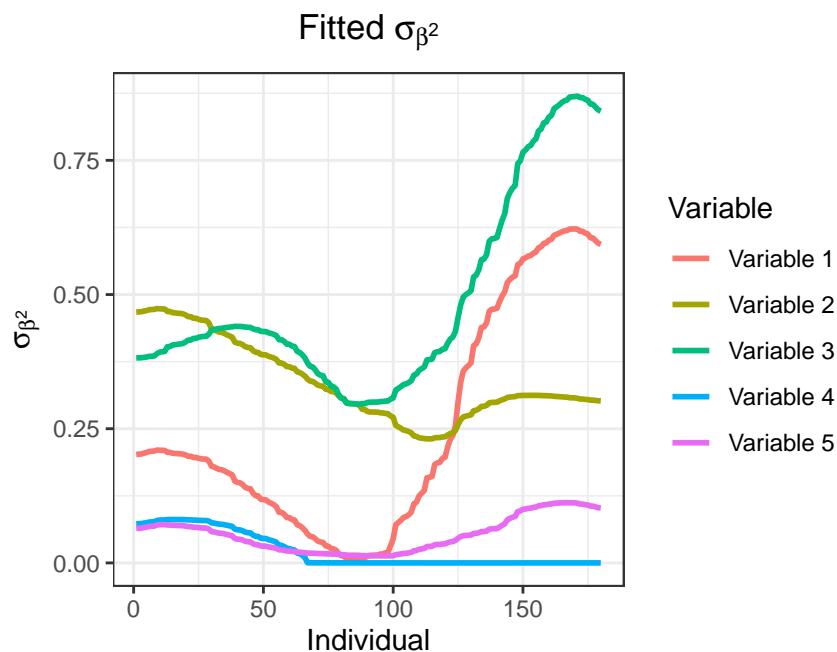
Graph 5, Individuals 144,...,180



```
##  
##  
## $trial71$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial71$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.25      0.45      0.45      0.05      0.05  
##  
## $trial71$sigmasq
```

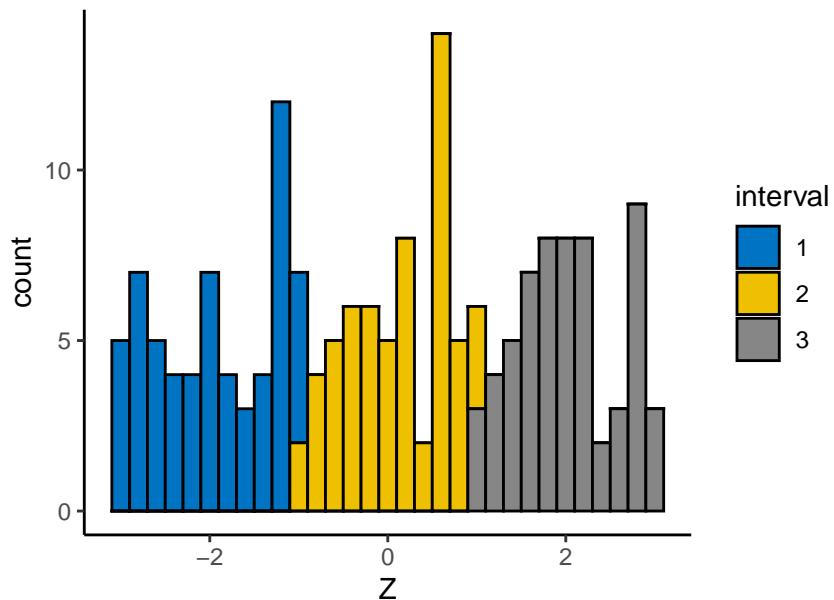


```
##  
## $trial71$sigmabetasq
```



```
##  
##  
## $trial72  
## $trial72$covariates
```

Distribution of Covariate, Trial 72

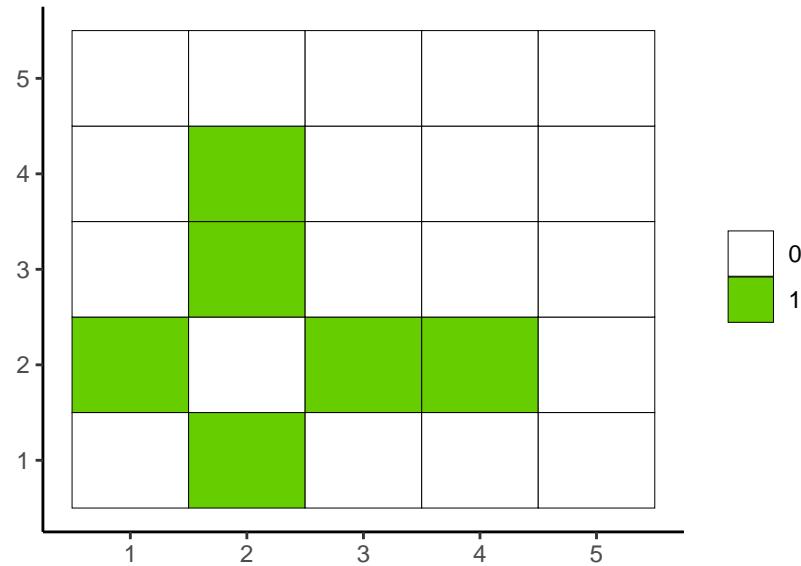


```

## 
## $trial72$summary
##                               Covariate Dependent Graphical Model
## 
## Model ELBO: -84768.1           Unique conditional dependence structures: 4
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 2/5 variables
## 
## Model fit completed in 29.751 secs
## 
## $trial72$unique_graphs
## $trial72$unique_graphs$graph1
## [1] "1,...,81"
## 
## $trial72$unique_graphs$graph2
## [1] "82,...,97"
## 
## $trial72$unique_graphs$graph3
## [1] "98,...,115"
## 
## $trial72$unique_graphs$graph4
## [1] "116,...,180"
## 
## $trial72$unique_graphs[[5]]

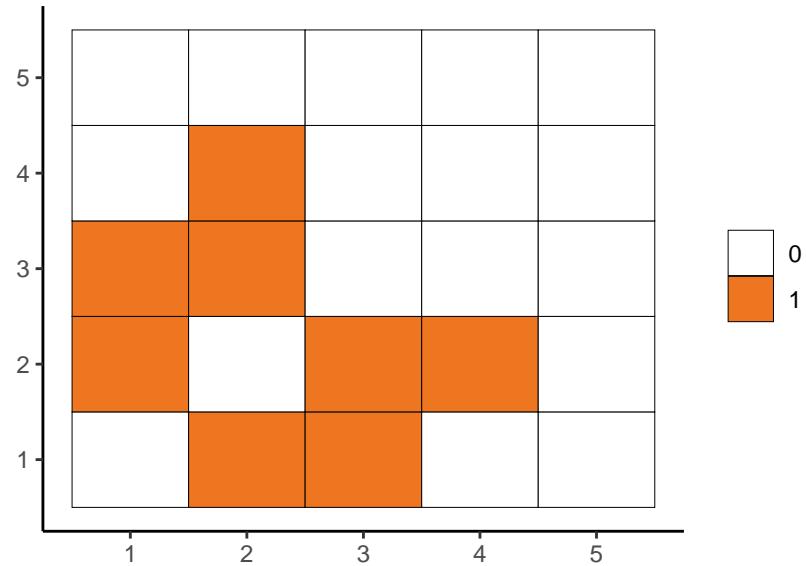
```

Graph 1, Individuals 1,...,81



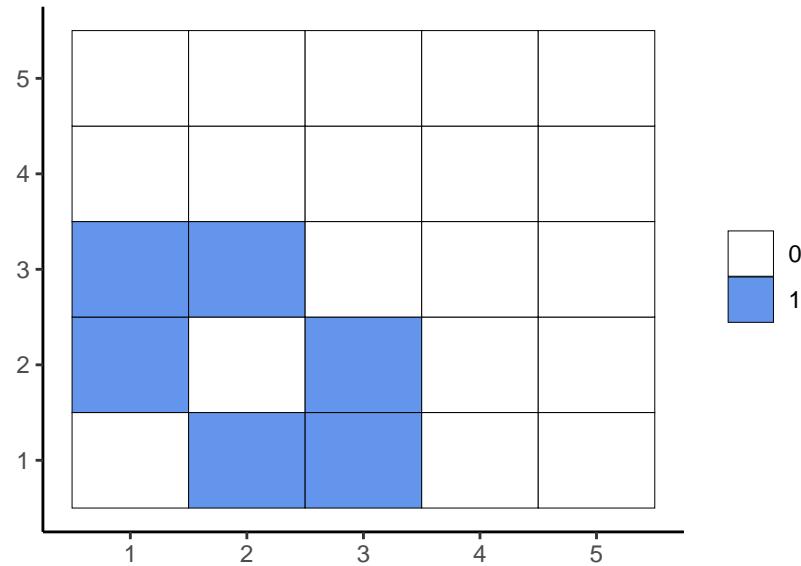
```
##  
## $trial72$unique_graphs[[6]]
```

Graph 2, Individuals 82,...,97



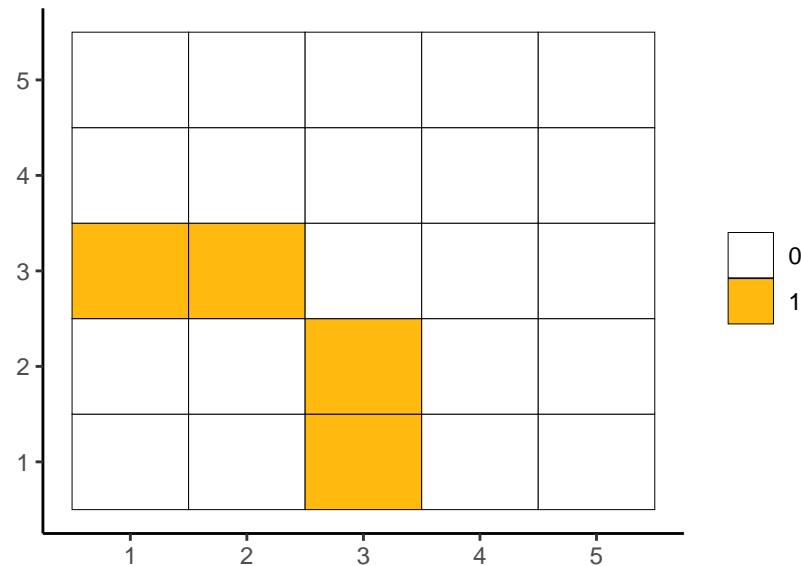
```
##  
## $trial72$unique_graphs[[7]]
```

Graph 3, Individuals 98,...,115



```
##  
## $trial72$unique_graphs[[8]]
```

Graph 4, Individuals 116,...,180

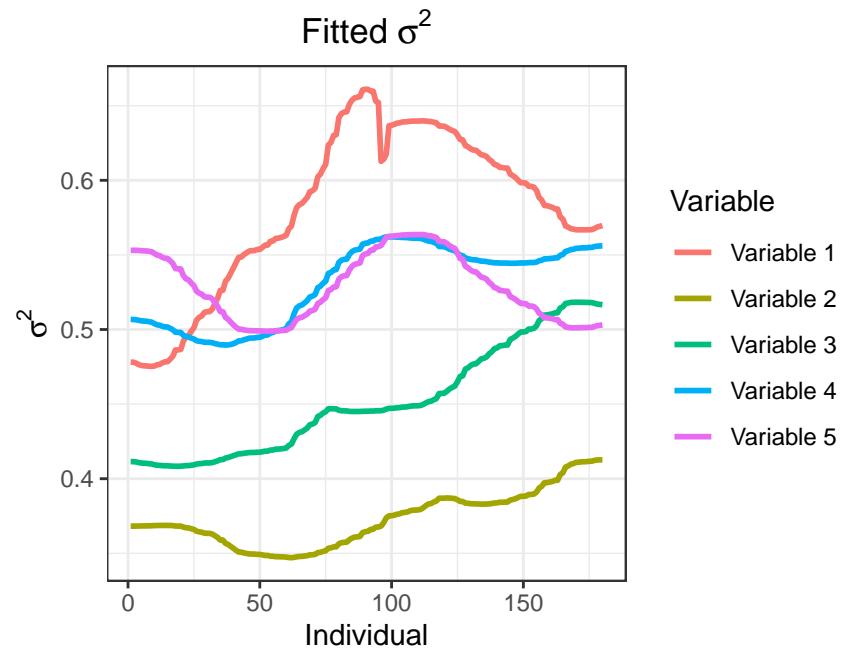


```
##  
##  
## $trial72$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial72$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.10      0.45      0.45      0.05      0.05
##
## $trial72$sigmasq

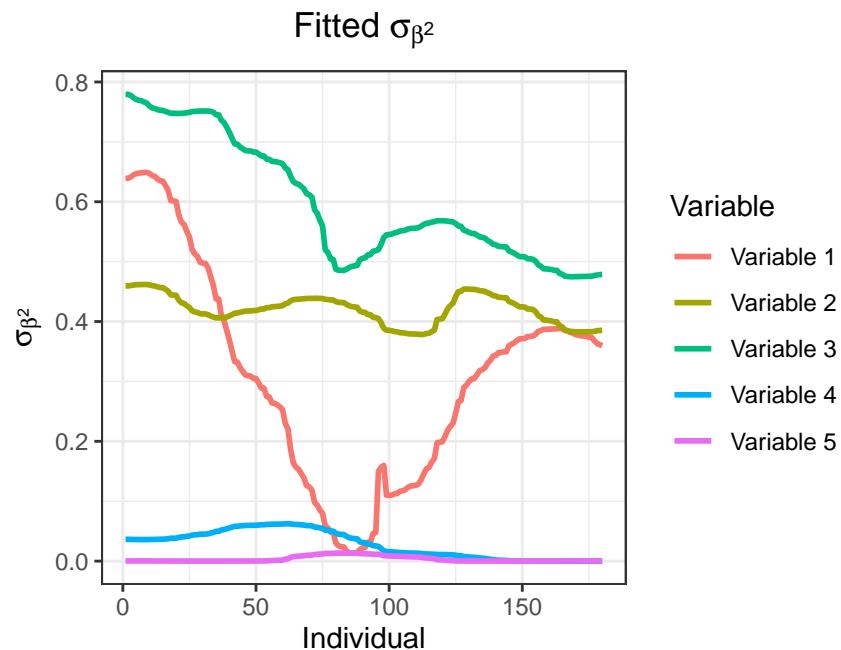
```



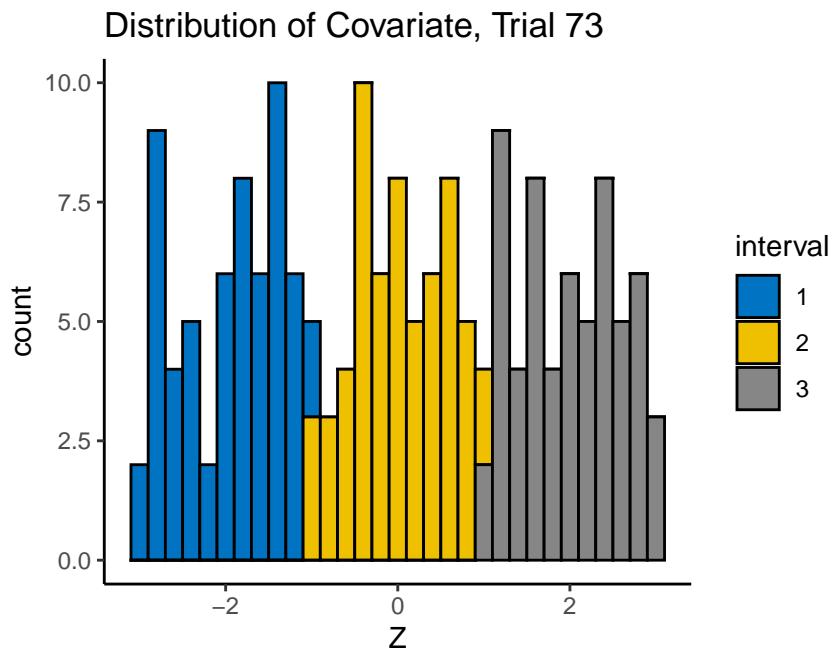
```

## $trial72$sigmabetasq

```



```
##  
##  
## $trial73  
## $trial73$covariates
```



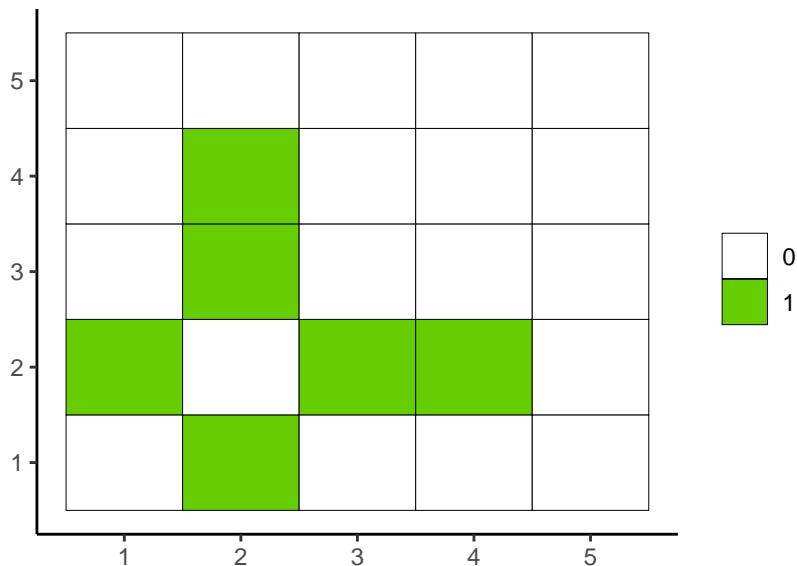
```
##  
## $trial73$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -85115.49 Unique conditional dependence structures: 9  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 3/5 variables  
##  
## Model fit completed in 30.39 secs  
##  
## $trial73$unique_graphs  
## $trial73$unique_graphs$graph1  
## [1] "1,...,55"  
##  
## $trial73$unique_graphs$graph2  
## [1] "56,...,85"  
##  
## $trial73$unique_graphs$graph3  
## [1] "86,87"  
##  
## $trial73$unique_graphs$graph4  
## [1] "88,...,101"  
##  
## $trial73$unique_graphs$graph5  
## [1] "102,...,109"  
##  
## $trial73$unique_graphs$graph6
```

```

## [1] "110,...,120"
##
## $trial73$unique_graphs$graph7
## [1] "121,122"
##
## $trial73$unique_graphs$graph8
## [1] "123,...,145"
##
## $trial73$unique_graphs$graph9
## [1] "146,...,180"
##
## $trial73$unique_graphs[[10]]

```

Graph 1, Individuals 1,...,55

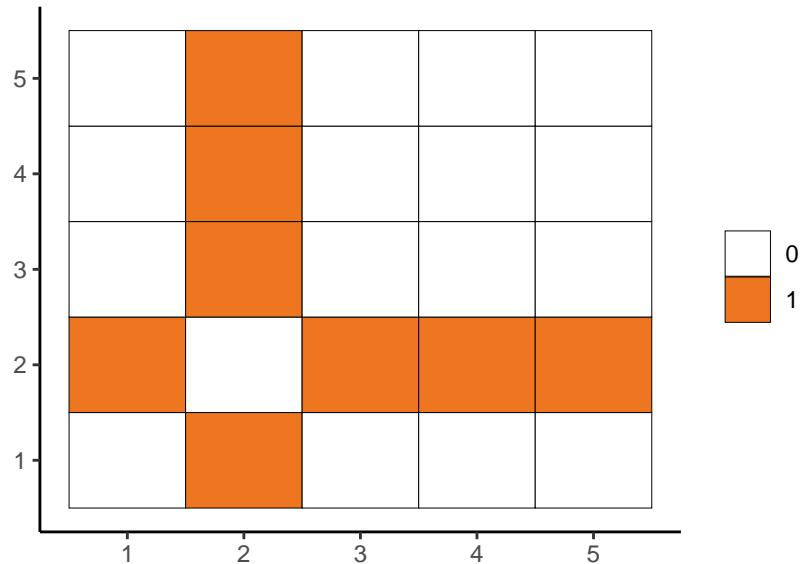


```

##
## $trial73$unique_graphs[[11]]

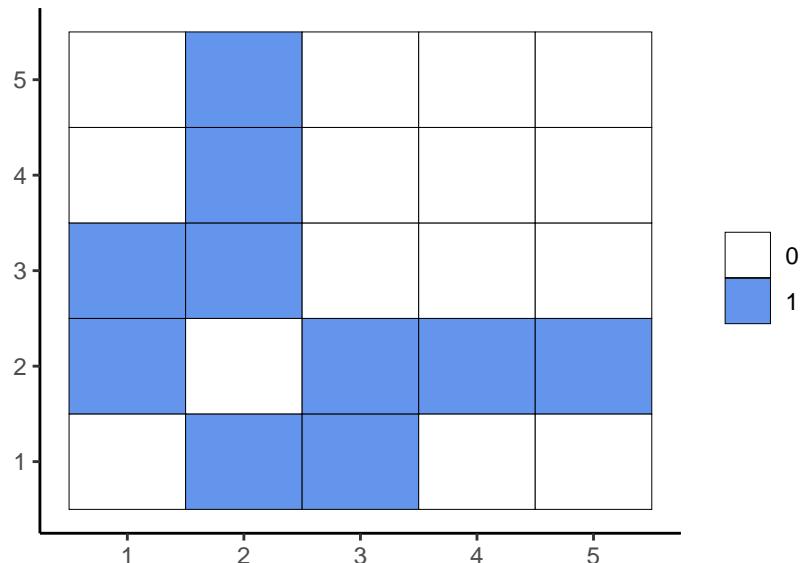
```

Graph 2, Individuals 56,...,85



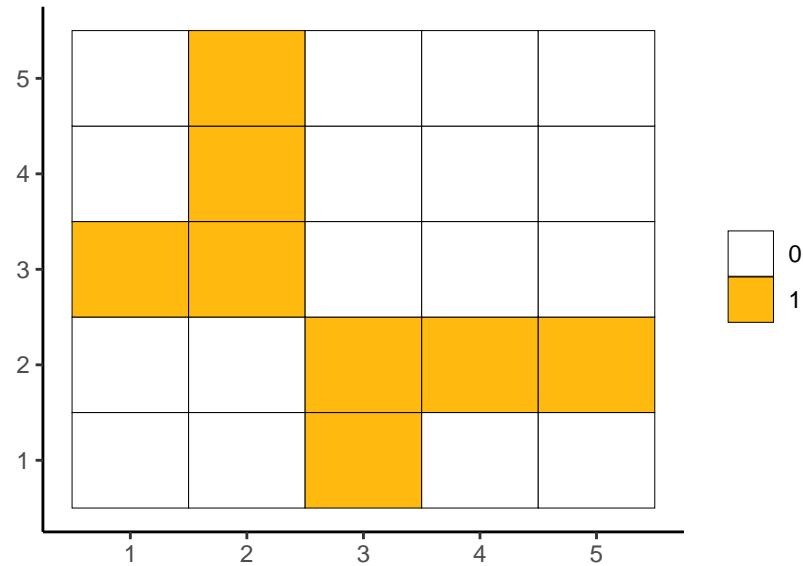
```
##  
## $trial73$unique_graphs[[12]]
```

Graph 3, Individuals 86,87



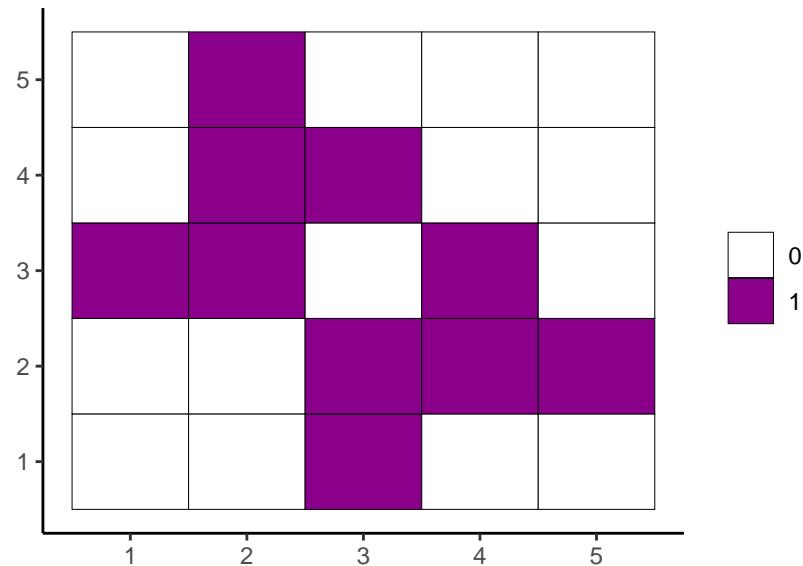
```
##  
## $trial73$unique_graphs[[13]]
```

Graph 4, Individuals 88,...,101



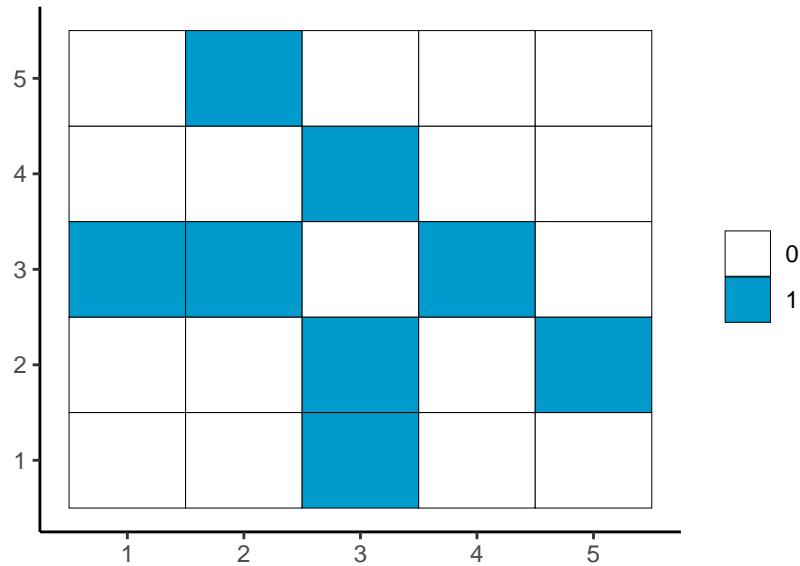
```
##  
## $trial73$unique_graphs[[14]]
```

Graph 5, Individuals 102,...,109



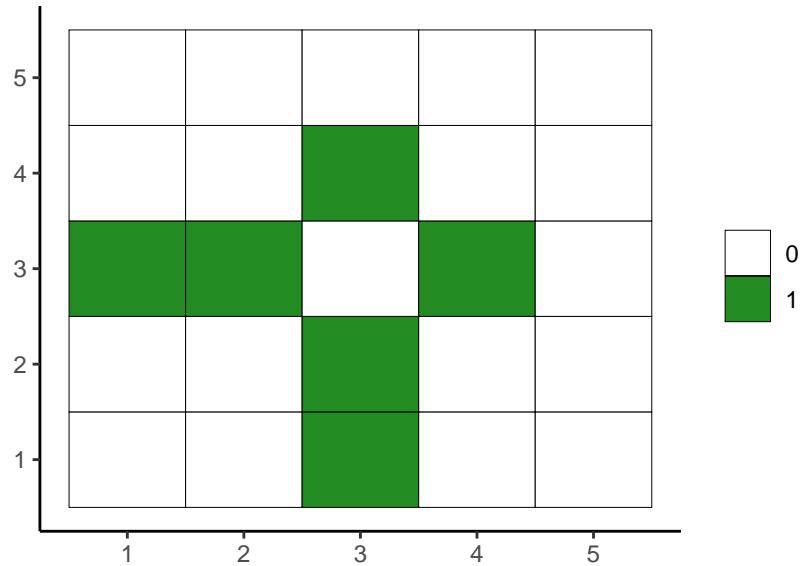
```
##  
## $trial73$unique_graphs[[15]]
```

Graph 6, Individuals 110,...,120



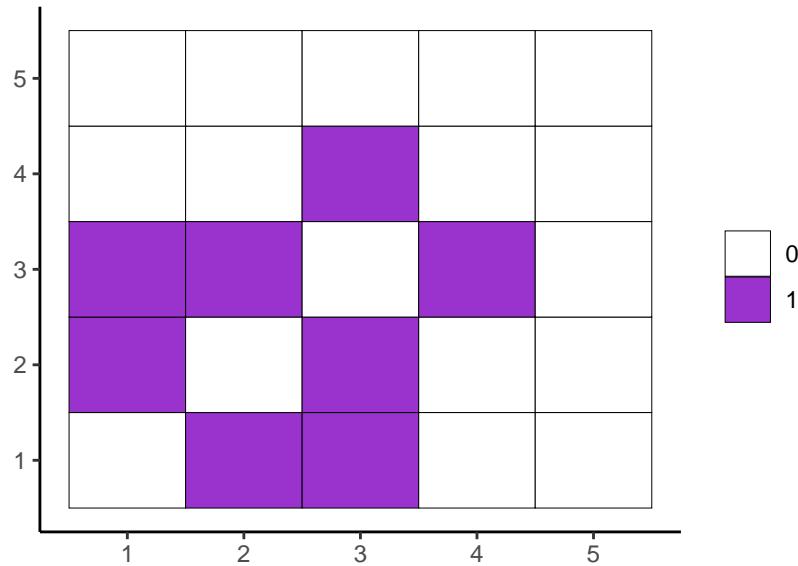
```
##  
## $trial73$unique_graphs[[16]]
```

Graph 7, Individuals 121,122



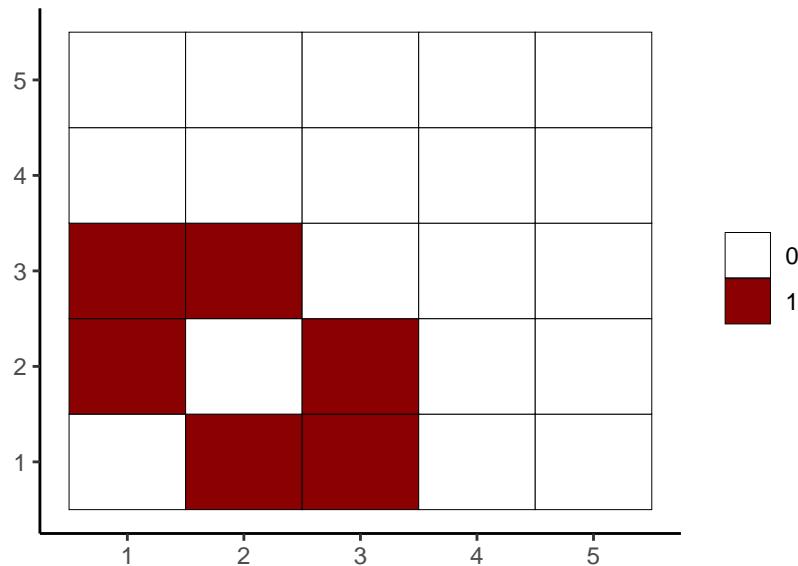
```
##  
## $trial73$unique_graphs[[17]]
```

Graph 8, Individuals 123,...,145



```
##  
## $trial73$unique_graphs[[18]]
```

Graph 9, Individuals 146,...,180

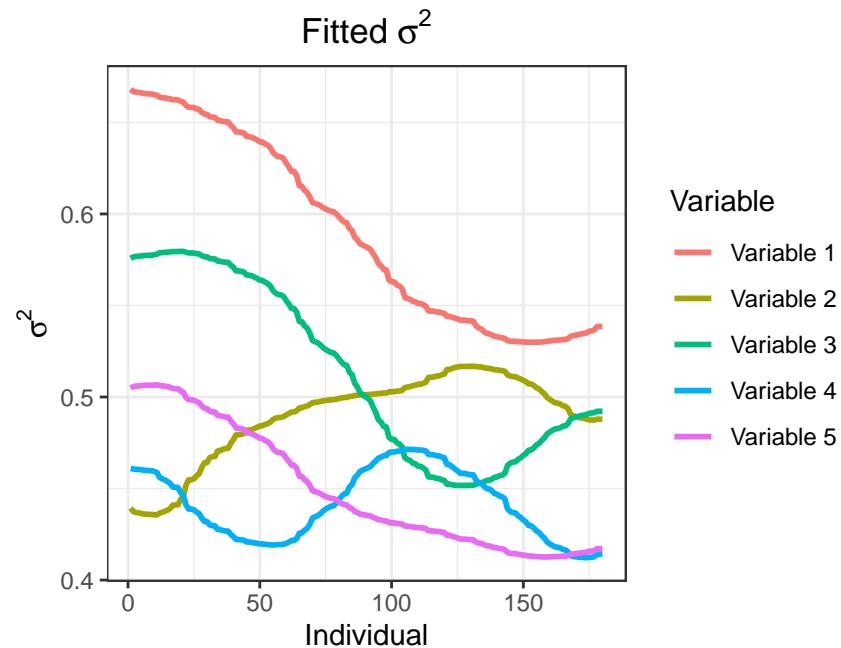


```
##  
##  
## $trial73$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial73$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.45      0.45      0.45      0.05      0.05
##
## $trial73$sigmasq

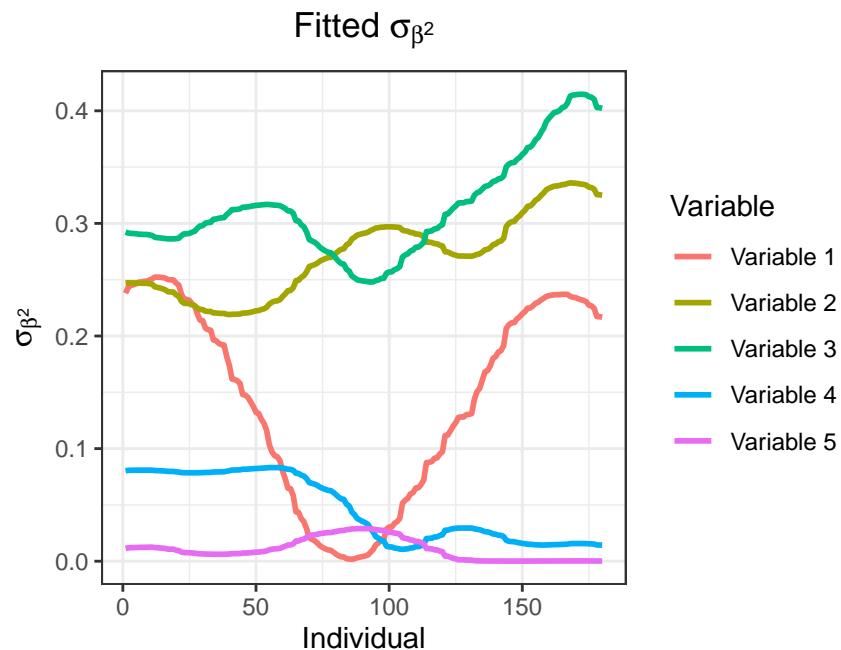
```



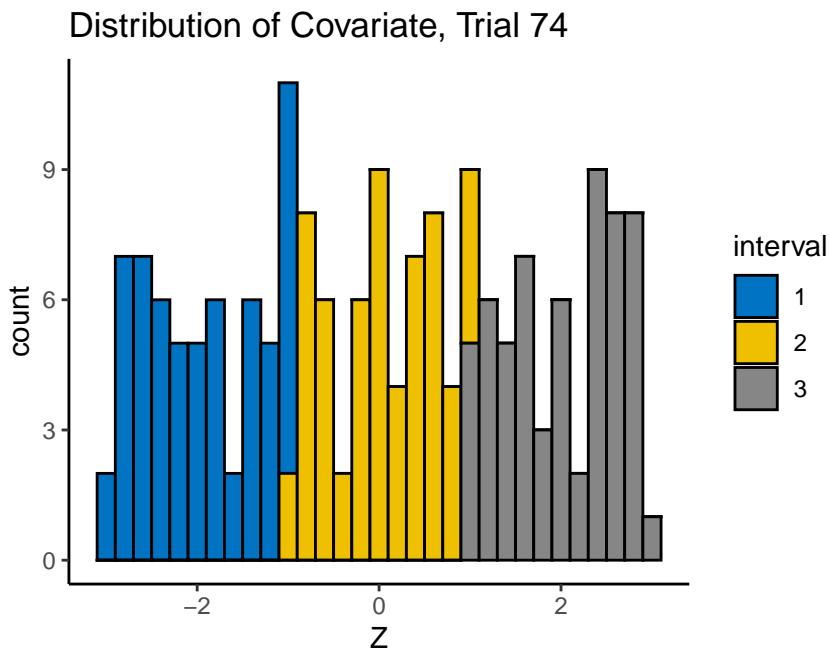
```

## 
## $trial73$sigmabetasq

```

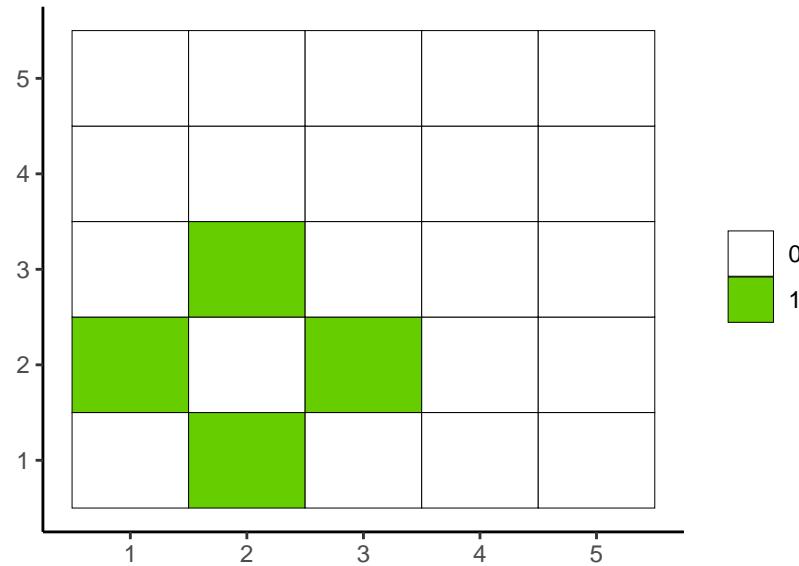


```
##  
##  
## $trial74  
## $trial74$covariates
```



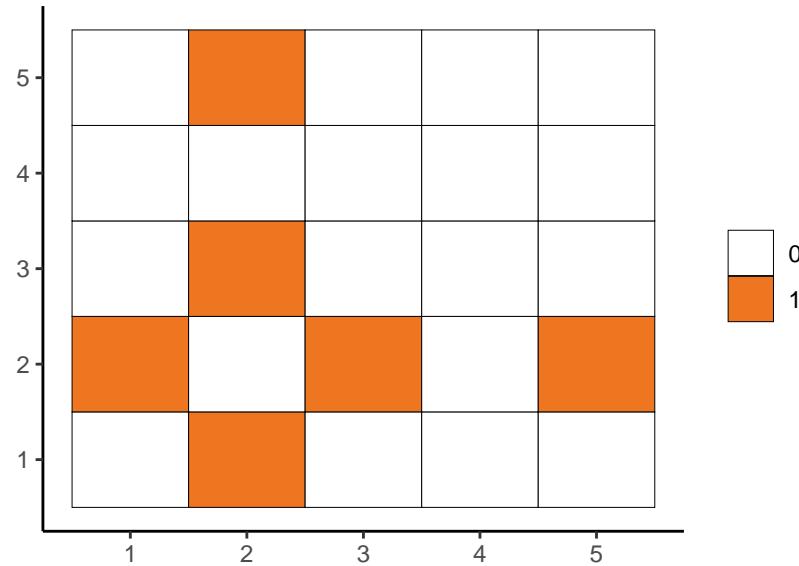
```
##  
## $trial74$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84924.94 Unique conditional dependence structures: 5  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 3/5 variables  
##  
## Model fit completed in 29.809 secs  
##  
## $trial74$unique_graphs  
## $trial74$unique_graphs$graph1  
## [1] "1, ..., 10, 62, 63"  
##  
## $trial74$unique_graphs$graph2  
## [1] "11, ..., 61"  
##  
## $trial74$unique_graphs$graph3  
## [1] "64, ..., 131"  
##  
## $trial74$unique_graphs$graph4  
## [1] "132, ..., 143"  
##  
## $trial74$unique_graphs$graph5  
## [1] "144, ..., 180"  
##  
## $trial74$unique_graphs[[6]]
```

Graph 1, Individuals 1,...,10,62,63



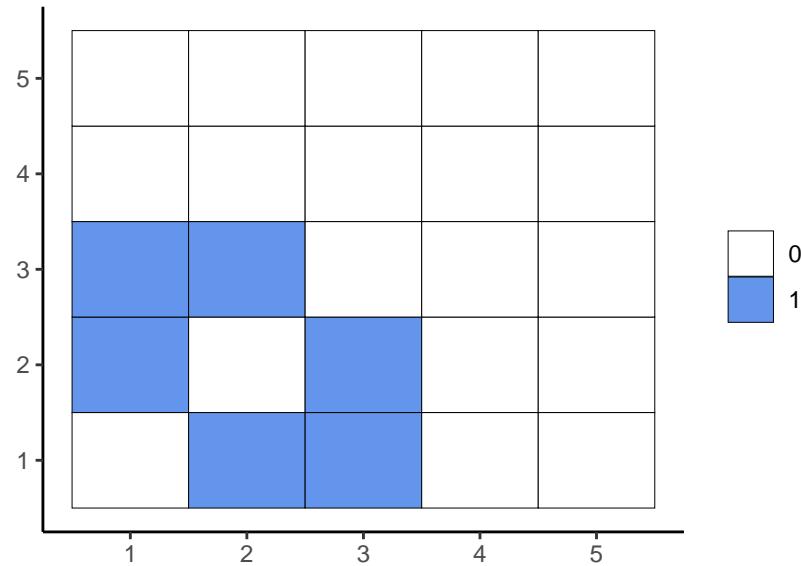
```
##  
## $trial74$unique_graphs[[7]]
```

Graph 2, Individuals 11,...,61



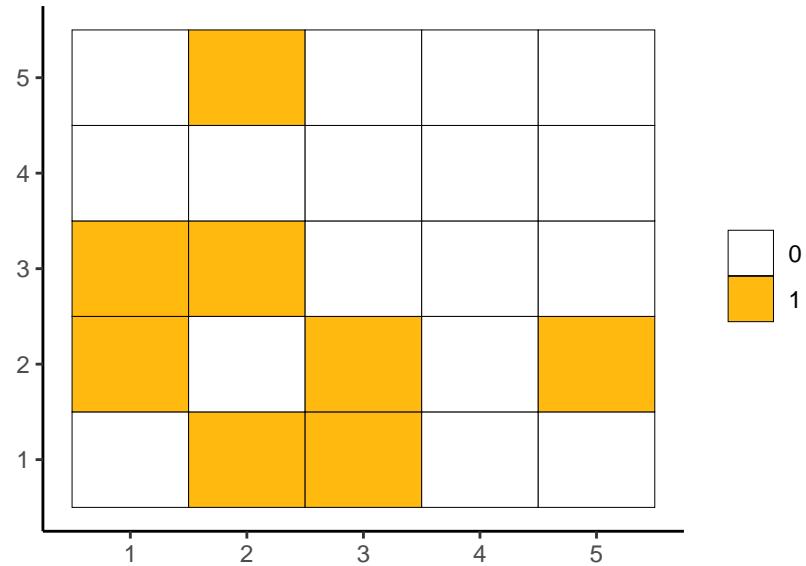
```
##  
## $trial74$unique_graphs[[8]]
```

Graph 3, Individuals 64,...,131



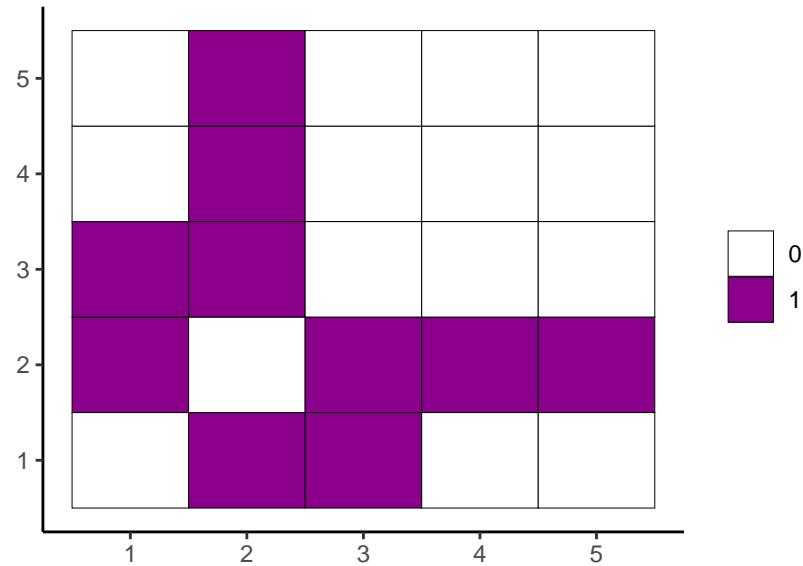
```
##  
## $trial74$unique_graphs[[9]]
```

Graph 4, Individuals 132,...,143

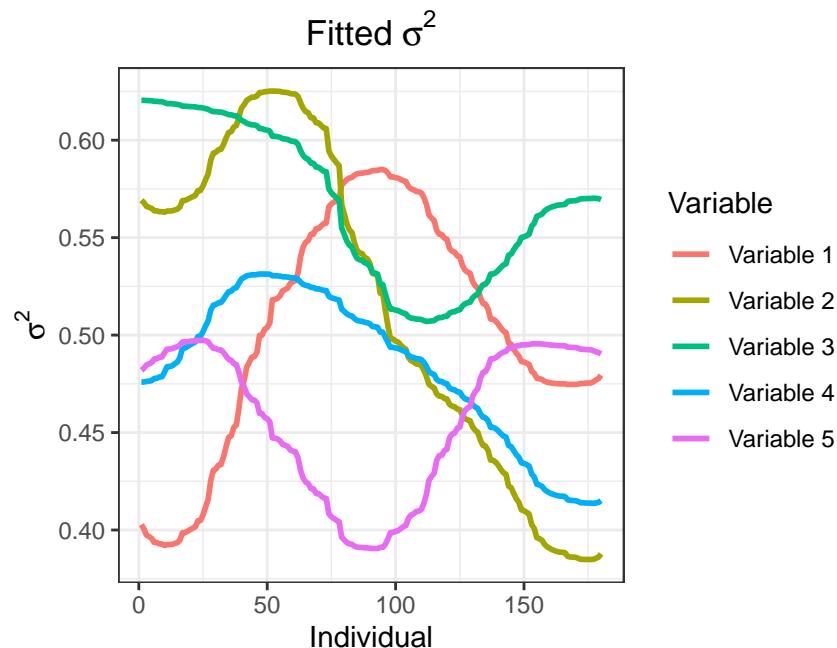


```
##  
## $trial74$unique_graphs[[10]]
```

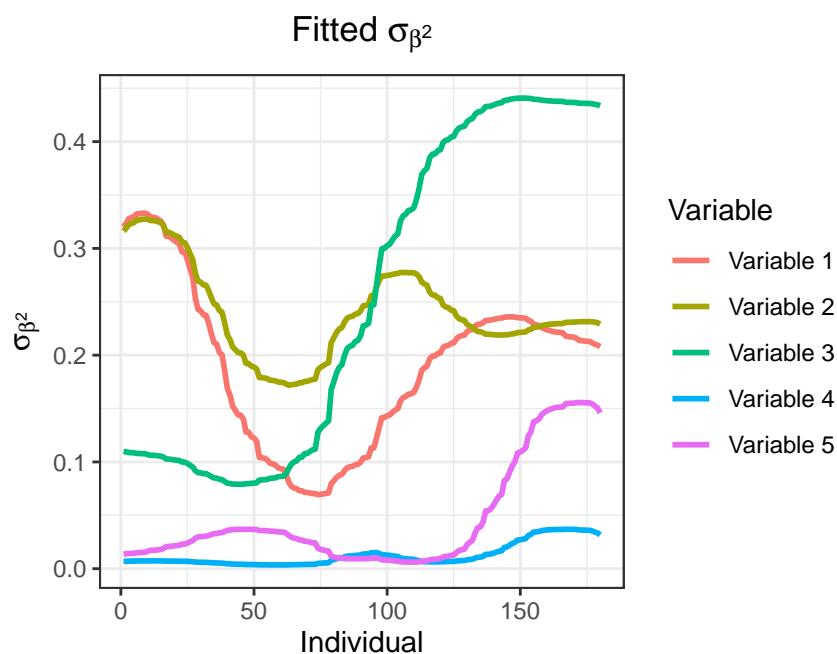
Graph 5, Individuals 144,...,180



```
##  
##  
## $trial74$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1           1           1           1           1  
##  
## $trial74$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          0.45       0.45       0.45       0.05       0.05  
##  
## $trial74$sigmasq
```

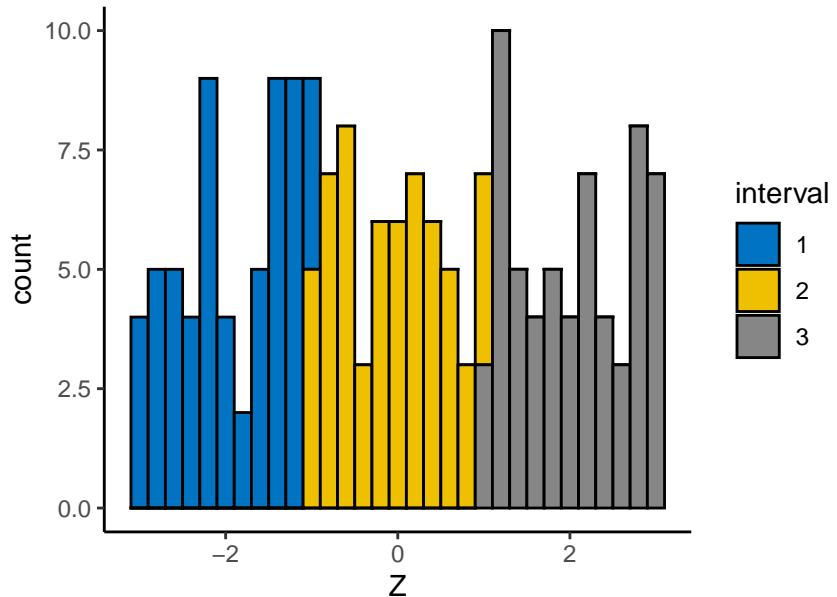


```
##  
## $trial74$sigmabetasq
```



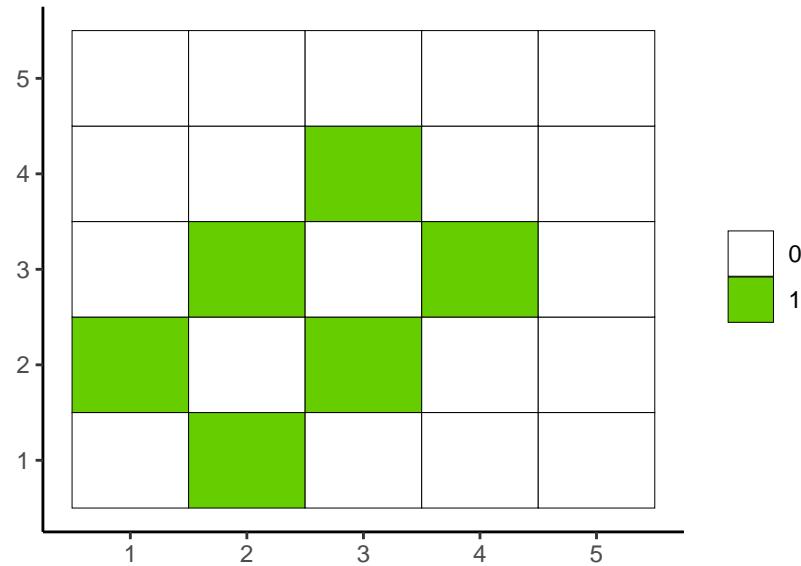
```
##  
##  
## $trial75  
## $trial75$covariates
```

Distribution of Covariate, Trial 75



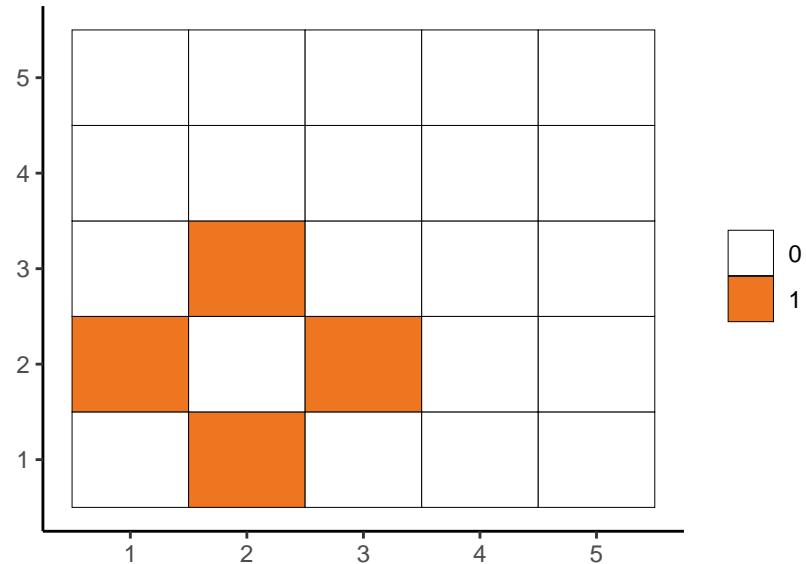
```
##  
## $trial75$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -85133.58           Unique conditional dependence structures: 4  
## n: 180, variables: 5           Hyperparameter grid size: 9 points  
## CAVI converged for 3/5 variables  
##  
## Model fit completed in 28.365 secs  
##  
## $trial75$unique_graphs  
## $trial75$unique_graphs$graph1  
## [1] "1,...,14"  
##  
## $trial75$unique_graphs$graph2  
## [1] "15,...,50"  
##  
## $trial75$unique_graphs$graph3  
## [1] "51,...,75,117,...,180"  
##  
## $trial75$unique_graphs$graph4  
## [1] "76,...,116"  
##  
## $trial75$unique_graphs[[5]]
```

Graph 1, Individuals 1,...,14



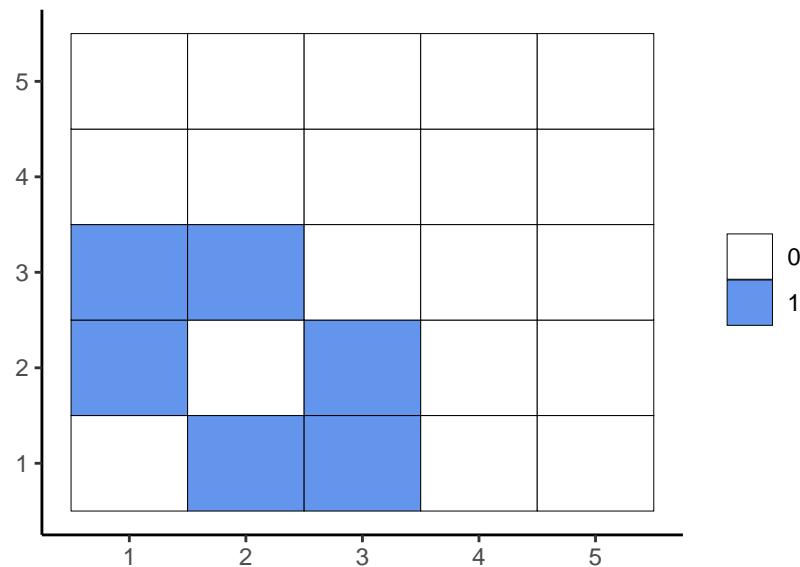
```
##  
## $trial75$unique_graphs[[6]]
```

Graph 2, Individuals 15,...,50



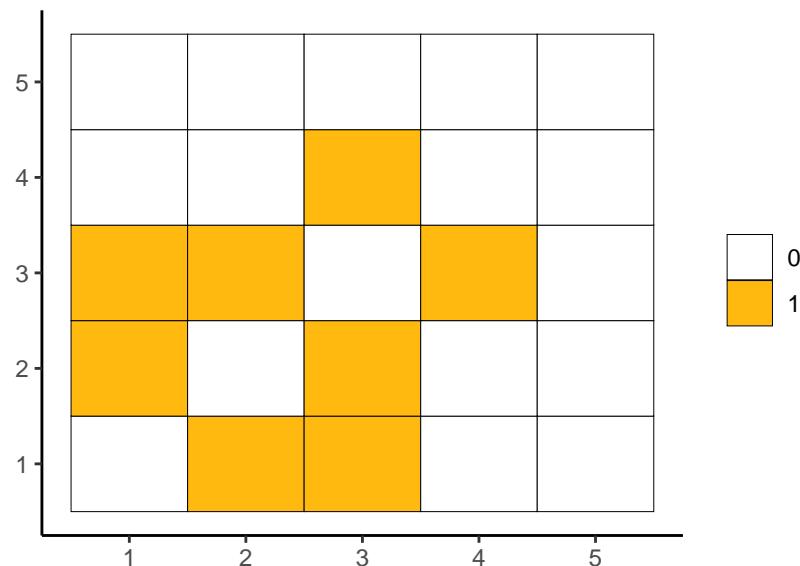
```
##  
## $trial75$unique_graphs[[7]]
```

Graph 3, Individuals 51,...,75,117,...,180



```
##  
## $trial75$unique_graphs[[8]]
```

Graph 4, Individuals 76,...,116

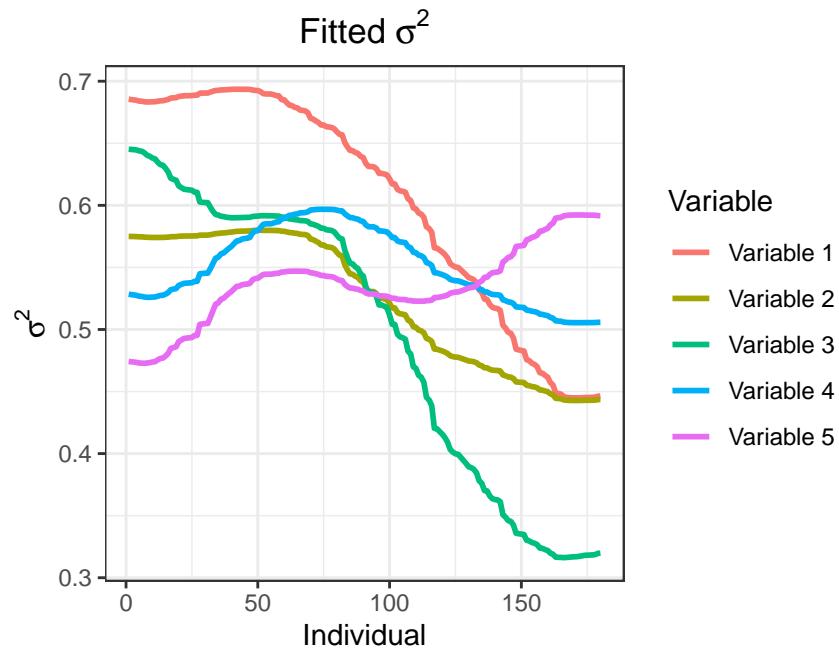


```
##  
##  
## $trial75$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial75$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.45      0.45      0.45      0.05      0.05
##
## $trial75$sigmasq

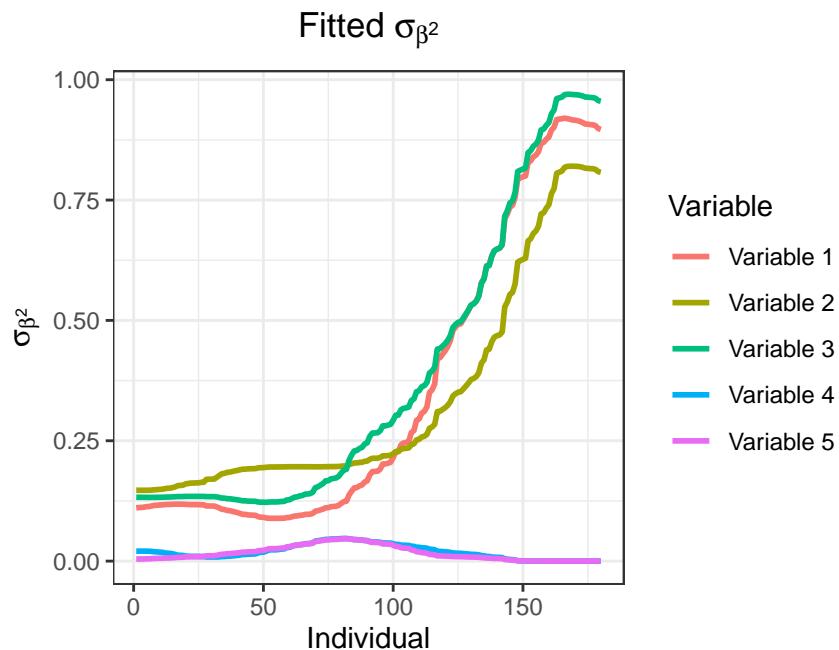
```



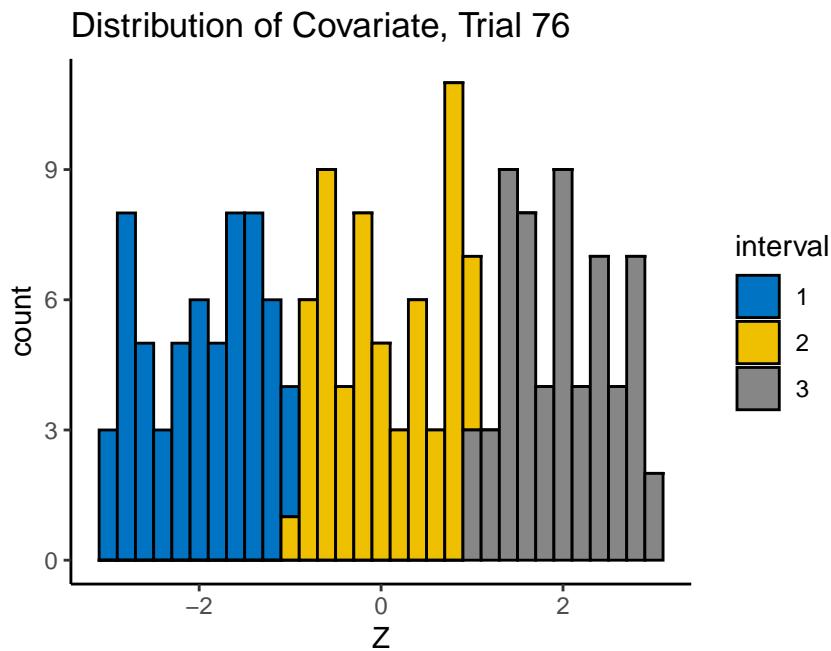
```

## 
## $trial75$sigmabetasq

```



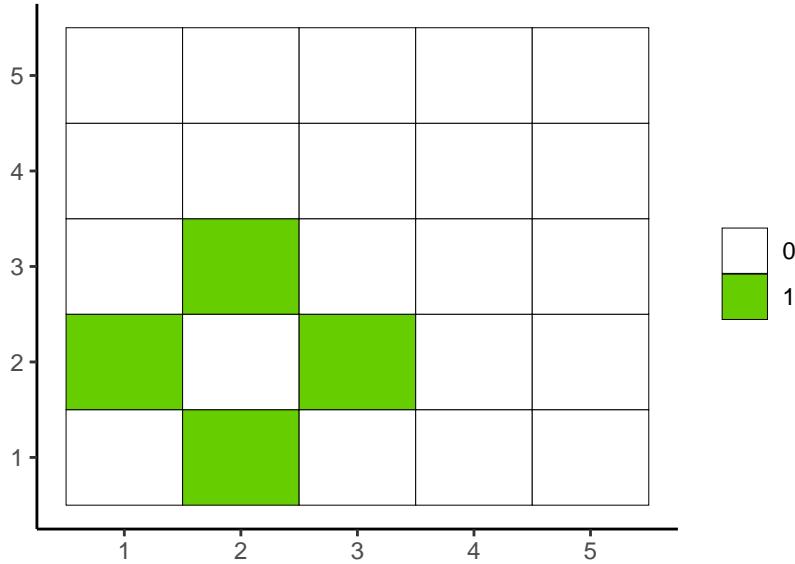
```
##  
##  
## $trial76  
## $trial76$covariates
```



```
##  
## $trial76$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84899.14                           Unique conditional dependence structures: 6  
## n: 180, variables: 5                           Hyperparameter grid size: 9 points  
## CAVI converged for 2/5 variables  
##  
## Model fit completed in 30.85 secs  
##  
## $trial76$unique_graphs  
## $trial76$unique_graphs$graph1  
## [1] "1,...,29"  
##  
## $trial76$unique_graphs$graph2  
## [1] "30,...,55"  
##  
## $trial76$unique_graphs$graph3  
## [1] "56,57,84,...,102"  
##  
## $trial76$unique_graphs$graph4  
## [1] "58,...,83"  
##  
## $trial76$unique_graphs$graph5  
## [1] "103,...,126"  
##  
## $trial76$unique_graphs$graph6
```

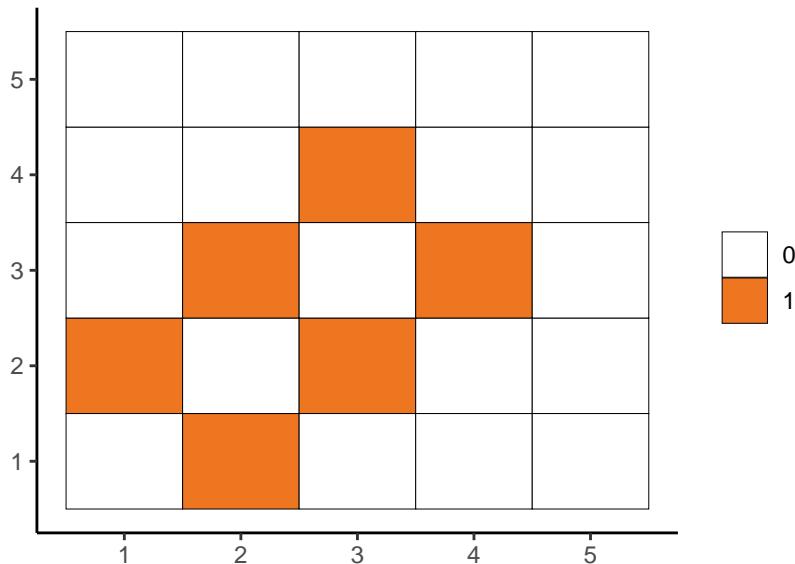
```
## [1] "127,...,180"  
##  
## $trial76$unique_graphs[[7]]
```

Graph 1, Individuals 1,...,29



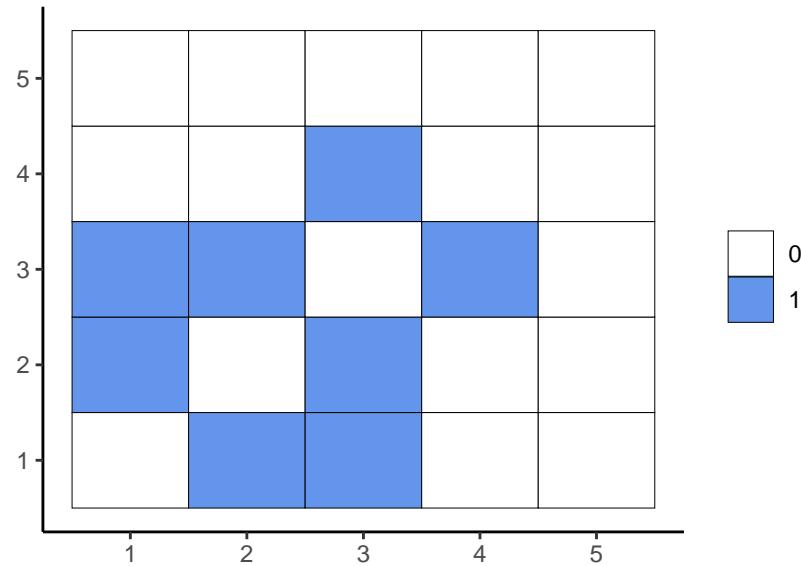
```
##  
## $trial76$unique_graphs[[8]]
```

Graph 2, Individuals 30,...,55



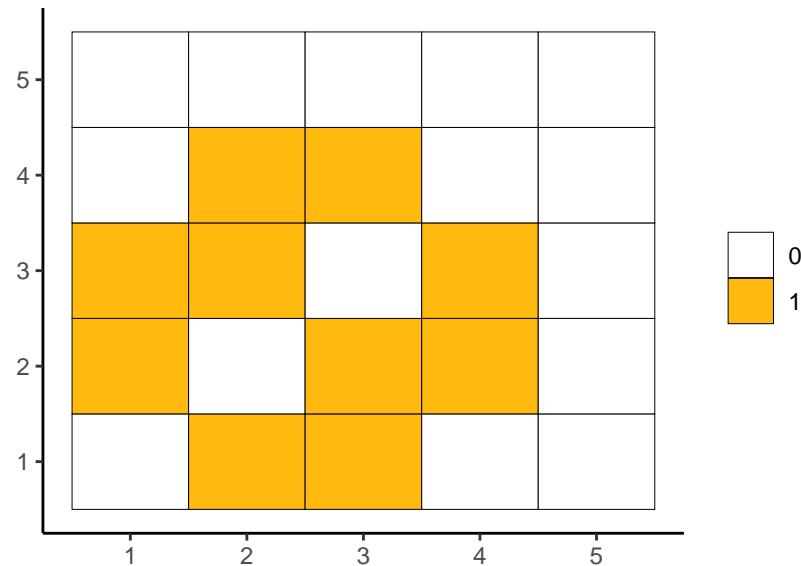
```
##  
## $trial76$unique_graphs[[9]]
```

Graph 3, Individuals 56,57,84,...,102



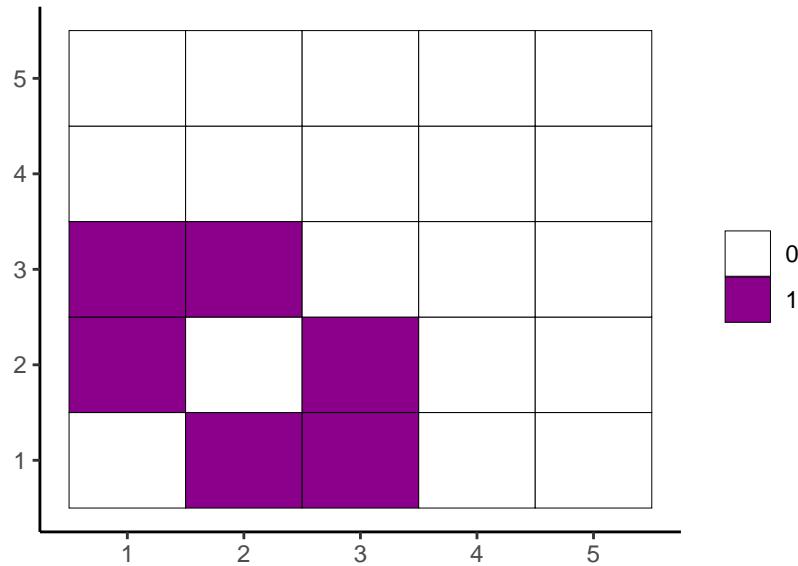
```
##  
## $trial76$unique_graphs[[10]]
```

Graph 4, Individuals 58,...,83



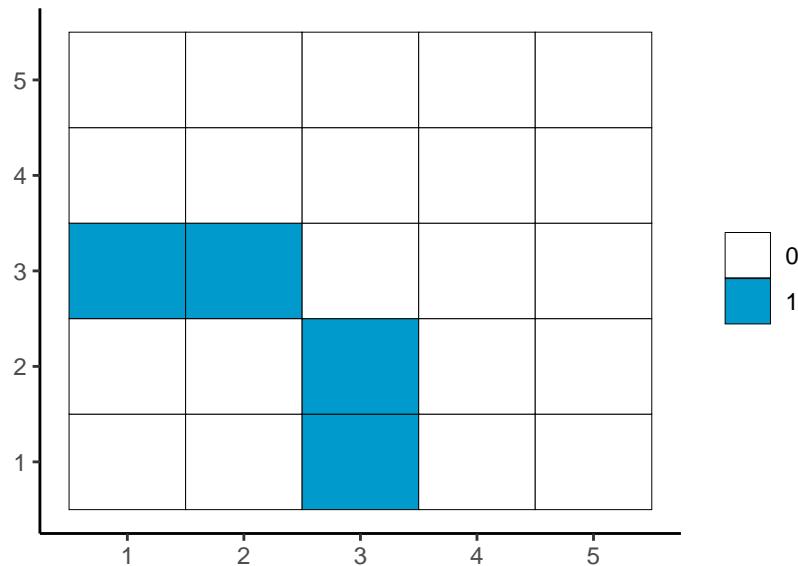
```
##  
## $trial76$unique_graphs[[11]]
```

Graph 5, Individuals 103,...,126



```
##  
## $trial76$unique_graphs[[12]]
```

Graph 6, Individuals 127,...,180

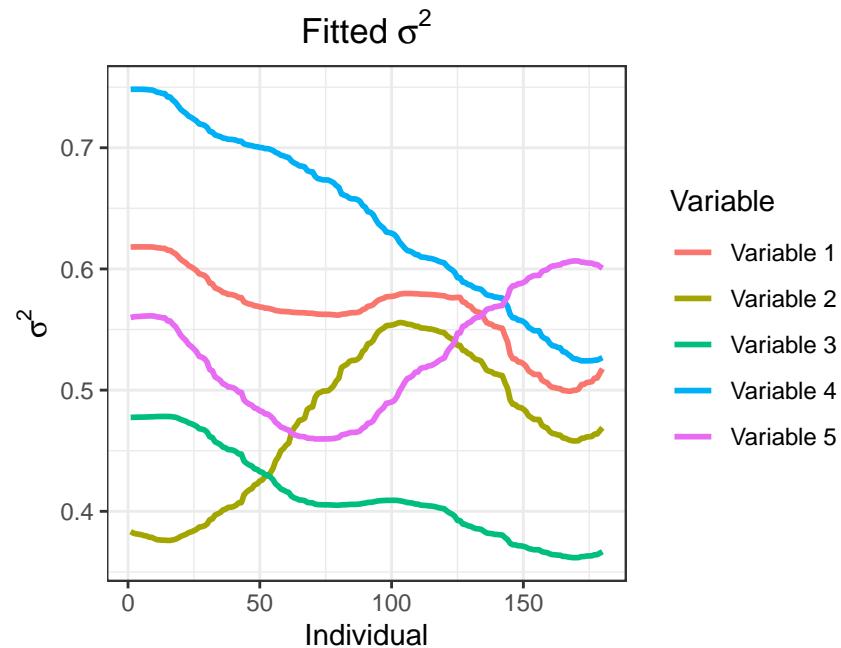


```
##  
##  
## $trial76$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial76$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.40      0.45      0.45      0.05      0.05
##
## $trial76$sigmasq

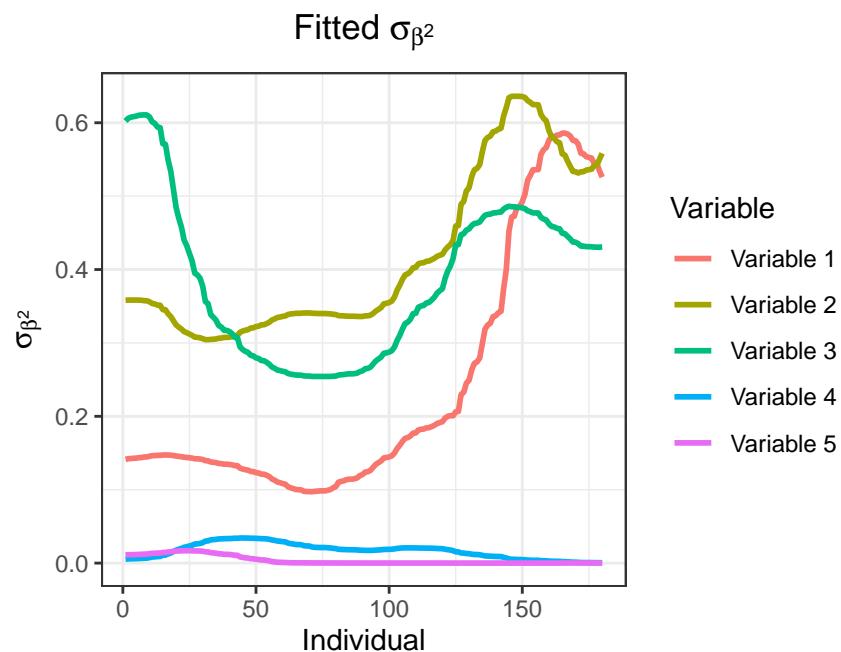
```



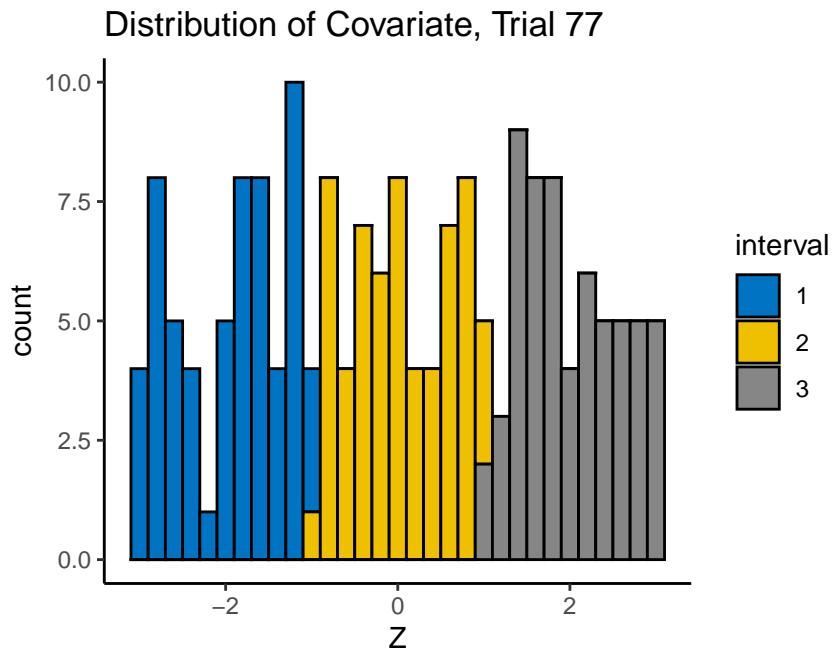
```

## 
## $trial76$sigmabetasq

```

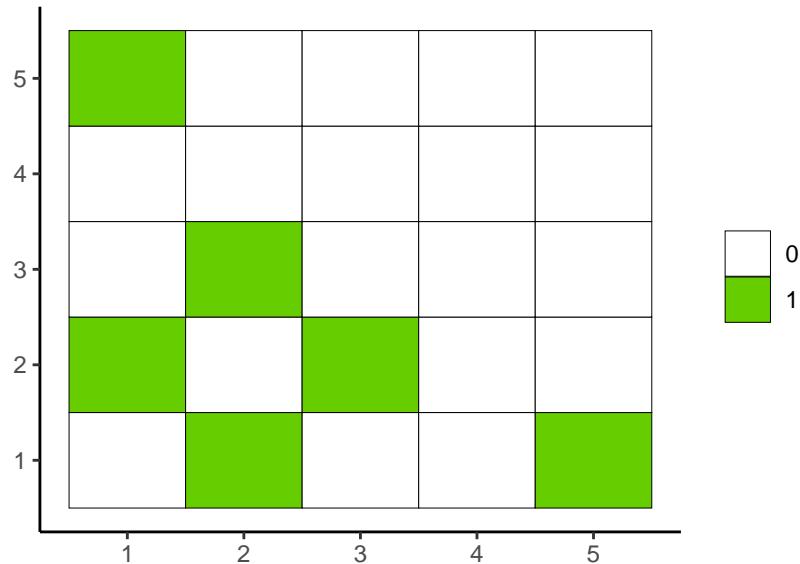


```
##  
##  
## $trial77  
## $trial77$covariates
```



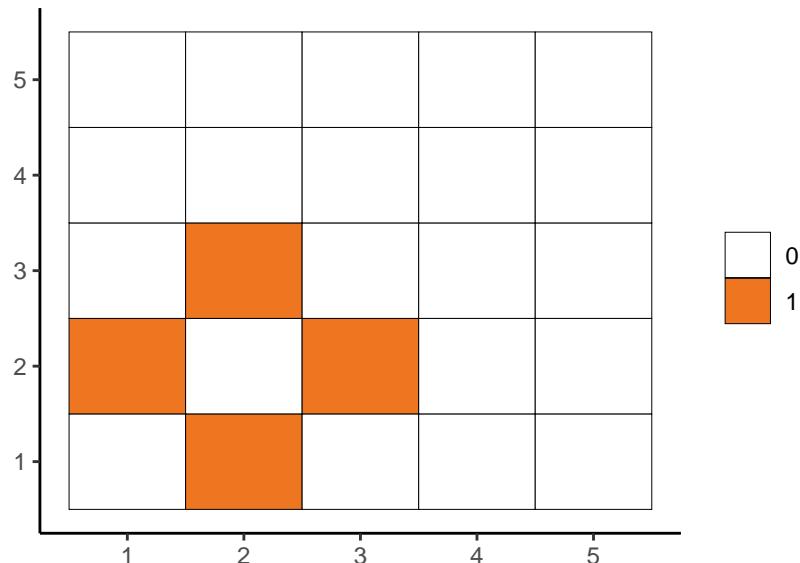
```
##  
## $trial77$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84811.87 Unique conditional dependence structures: 4  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 2/5 variables  
##  
## Model fit completed in 33 secs  
##  
## $trial77$unique_graphs  
## $trial77$unique_graphs$graph1  
## [1] "1,...,17"  
##  
## $trial77$unique_graphs$graph2  
## [1] "18,...,41"  
##  
## $trial77$unique_graphs$graph3  
## [1] "42,...,120"  
##  
## $trial77$unique_graphs$graph4  
## [1] "121,...,180"  
##  
## $trial77$unique_graphs[[5]]
```

Graph 1, Individuals 1,...,17



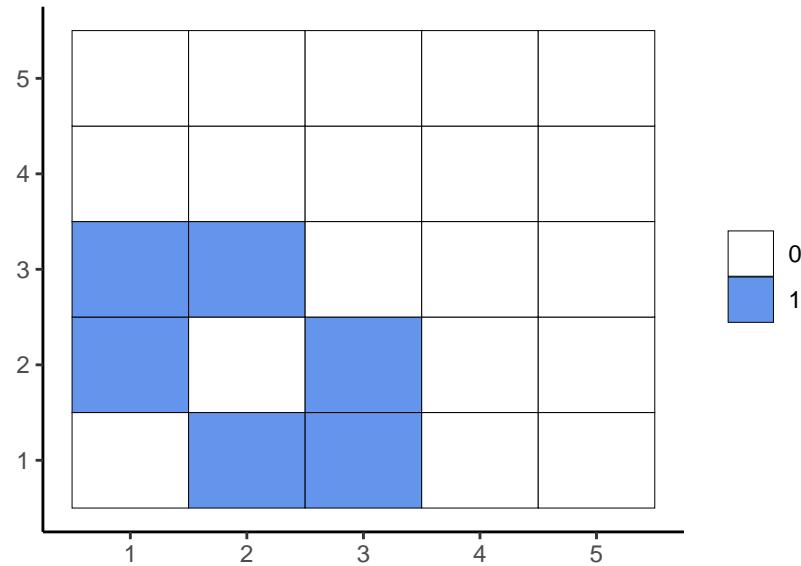
```
##  
## $trial77$unique_graphs[[6]]
```

Graph 2, Individuals 18,...,41



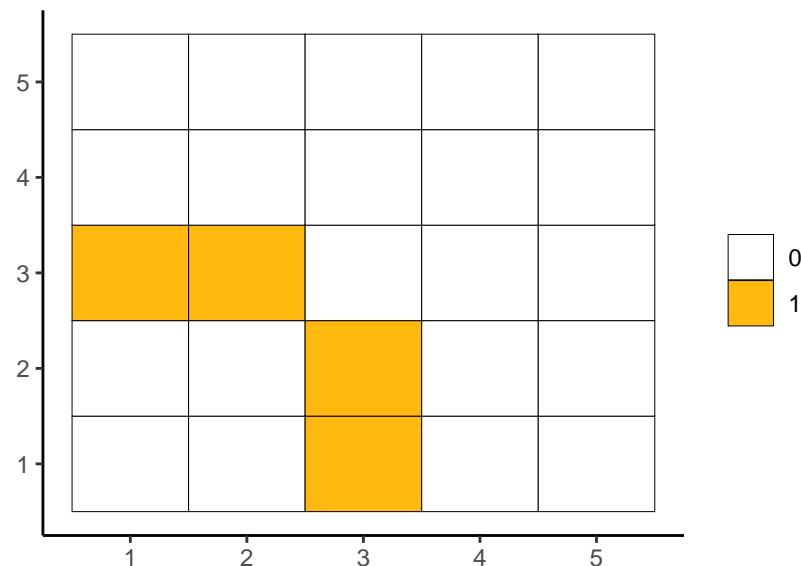
```
##  
## $trial77$unique_graphs[[7]]
```

Graph 3, Individuals 42,...,120



```
##  
## $trial77$unique_graphs[[8]]
```

Graph 4, Individuals 121,...,180

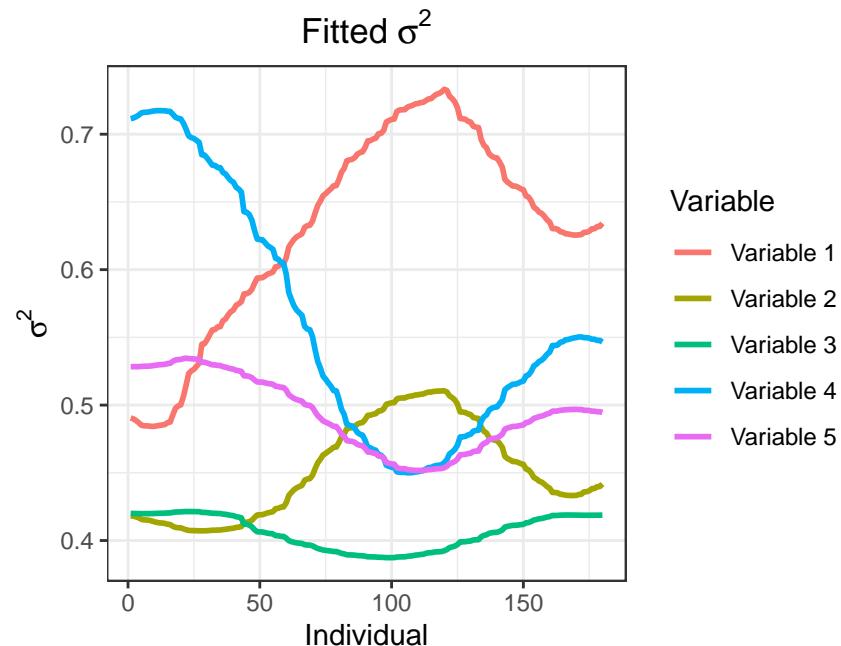


```
##  
##  
## $trial77$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial77$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.45      0.45      0.45      0.05      0.05
##
## $trial77$sigmasq

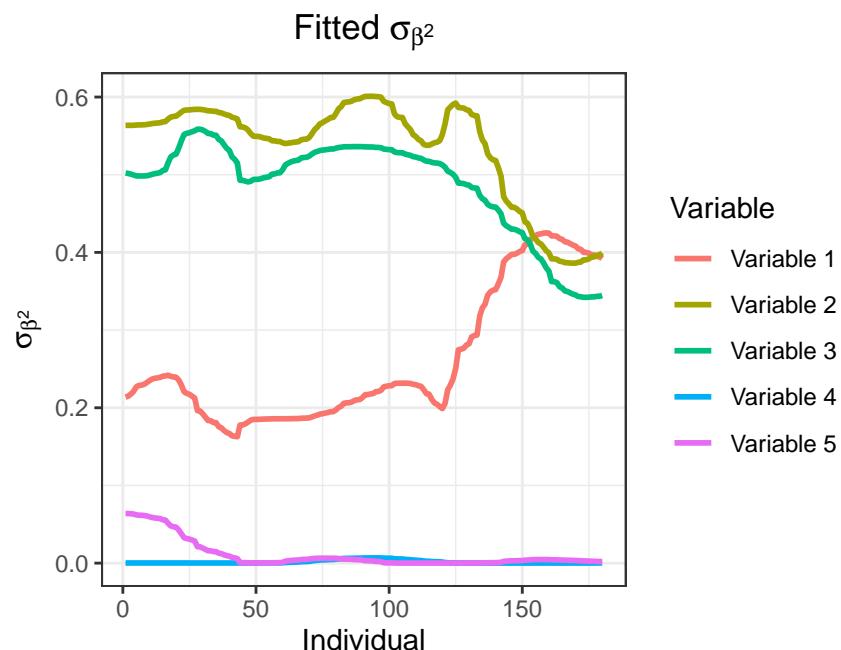
```



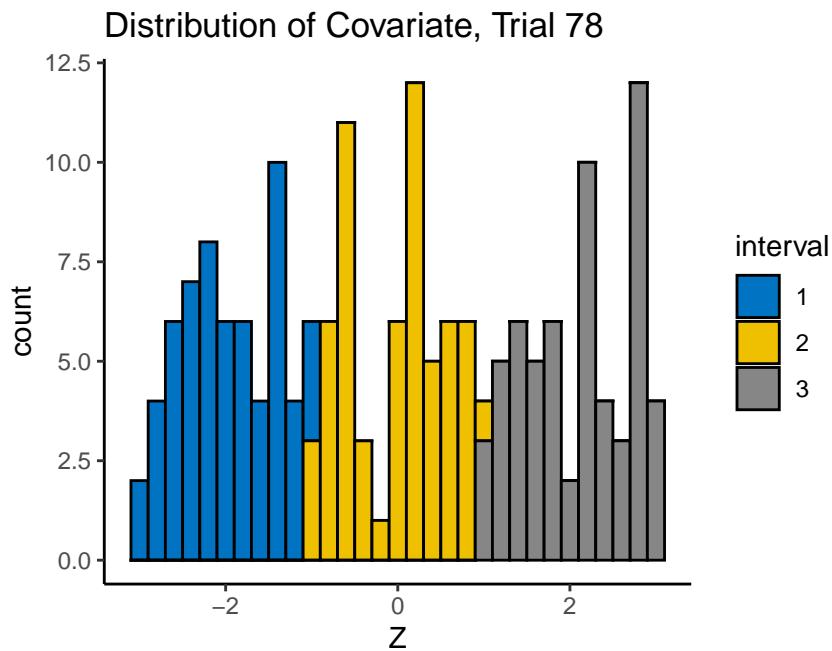
```

## 
## $trial77$sigmabetasq

```

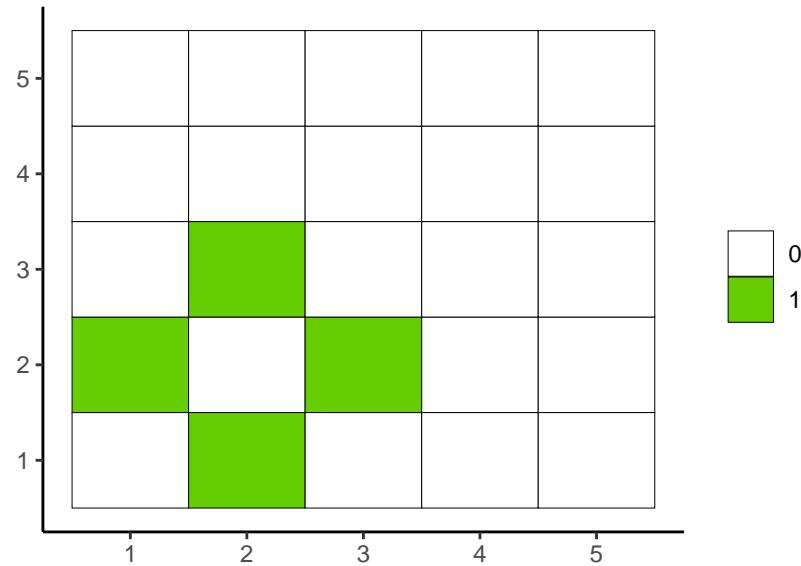


```
##  
##  
## $trial78  
## $trial78$covariates
```



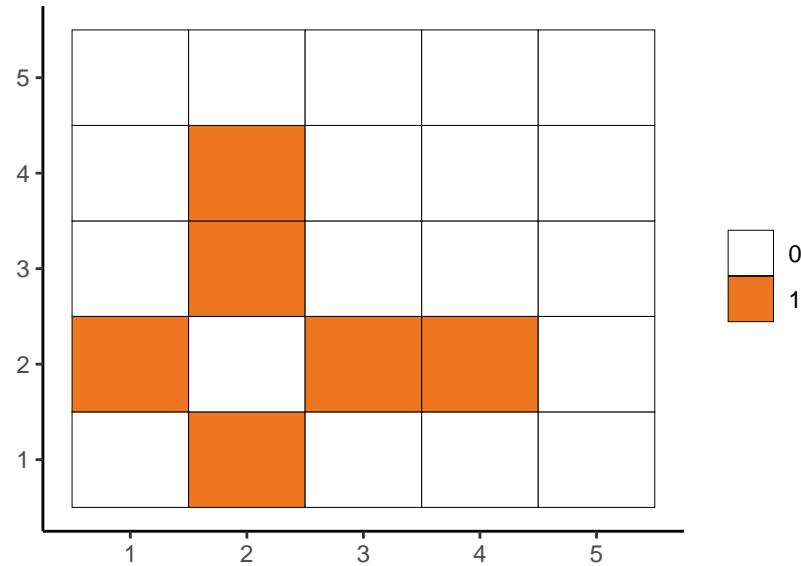
```
##  
## $trial78$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84399.13 Unique conditional dependence structures: 5  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 2/5 variables  
##  
## Model fit completed in 31.728 secs  
##  
## $trial78$unique_graphs  
## $trial78$unique_graphs$graph1  
## [1] "1,35,...,57"  
##  
## $trial78$unique_graphs$graph2  
## [1] "2,3,9,...,34"  
##  
## $trial78$unique_graphs$graph3  
## [1] "4,...,8"  
##  
## $trial78$unique_graphs$graph4  
## [1] "58,...,108,163,...,180"  
##  
## $trial78$unique_graphs$graph5  
## [1] "109,...,162"  
##  
## $trial78$unique_graphs[[6]]
```

Graph 1, Individuals 1,35,...,57



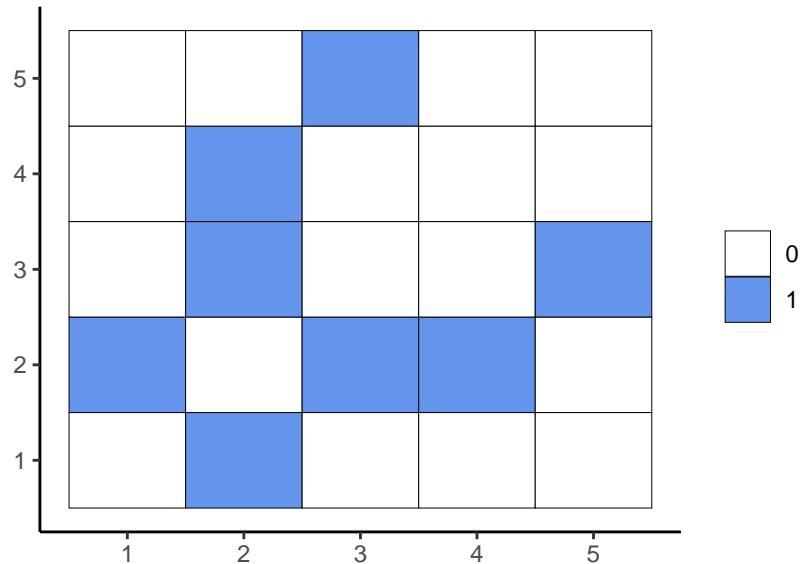
```
##  
## $trial78$unique_graphs[[7]]
```

Graph 2, Individuals 2,3,9,...,34



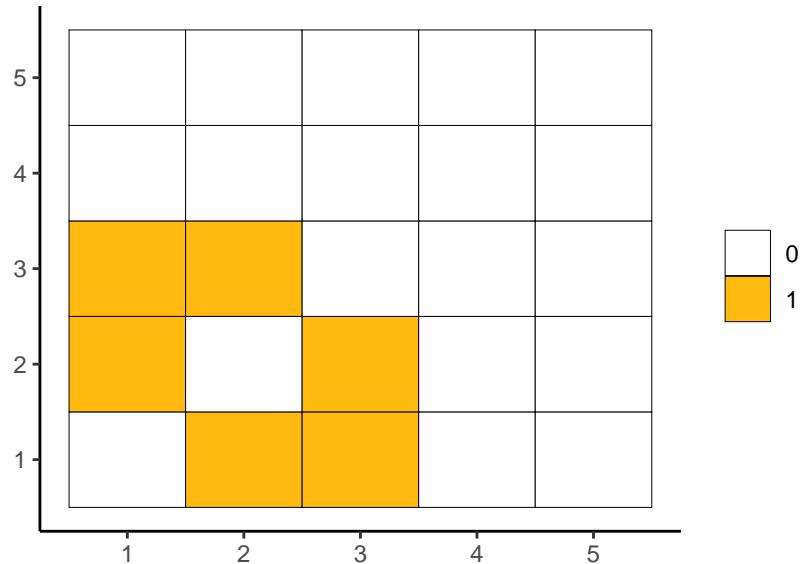
```
##  
## $trial78$unique_graphs[[8]]
```

Graph 3, Individuals 4,...,8



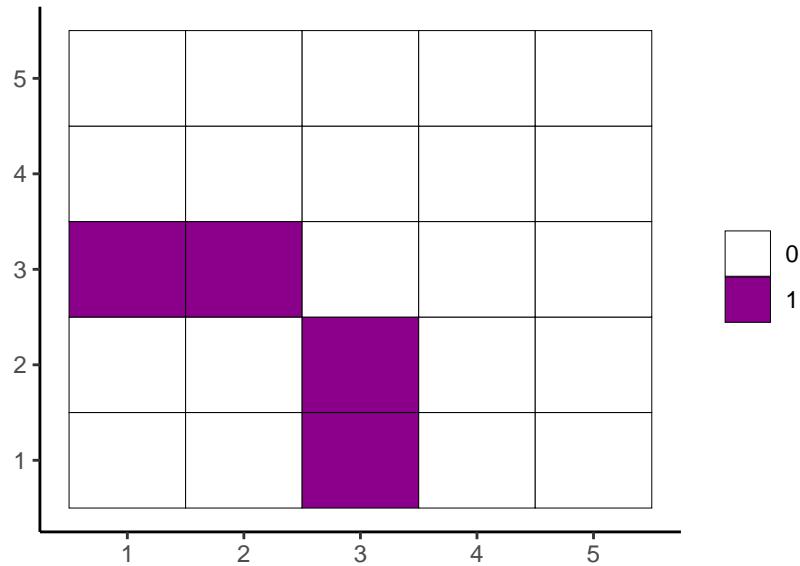
```
##  
## $trial78$unique_graphs[[9]]
```

Graph 4, Individuals 58,...,108,163,...,180

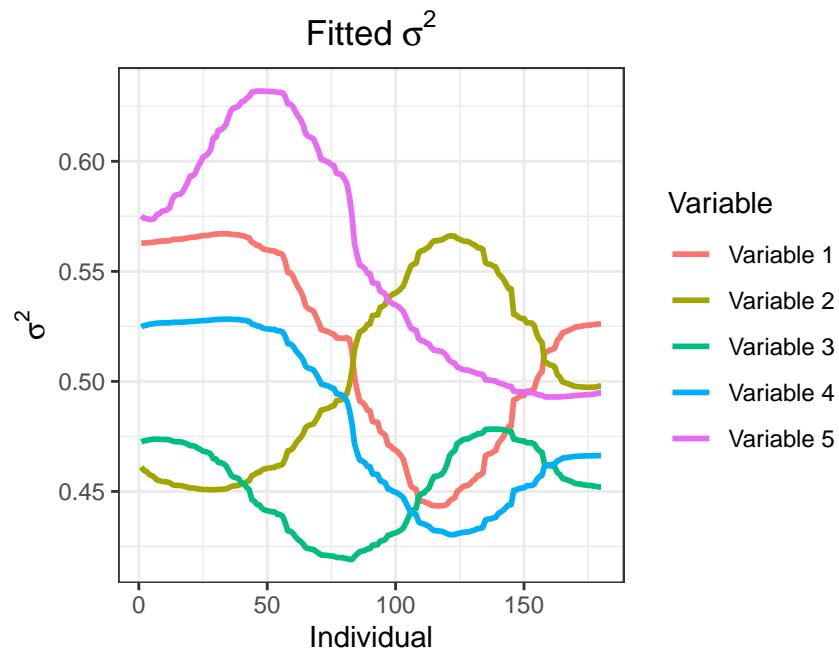


```
##  
## $trial78$unique_graphs[[10]]
```

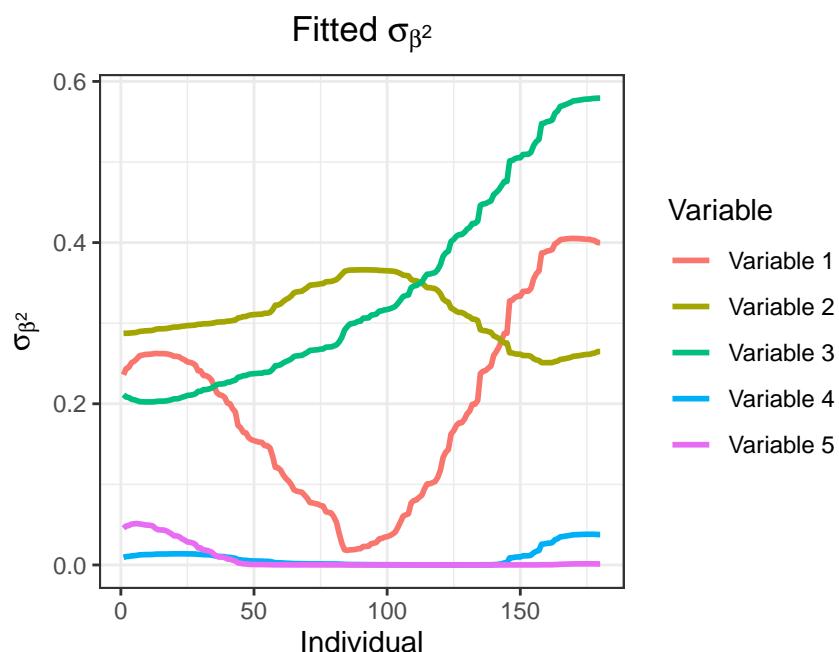
Graph 5, Individuals 109,...,162



```
##  
##  
## $trial78$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial78$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.15      0.45      0.45      0.05      0.05  
##  
## $trial78$sigmasq
```

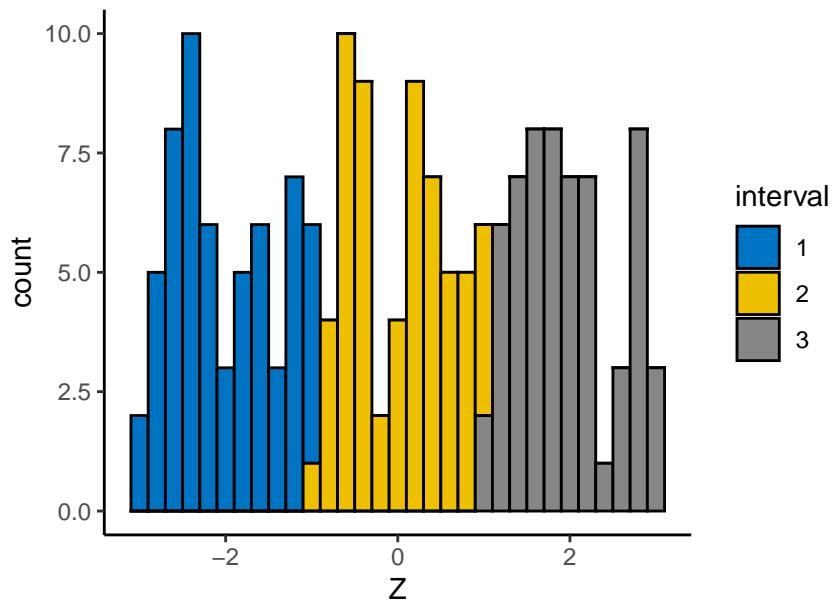


```
##  
## $trial78$sigmabetasq
```



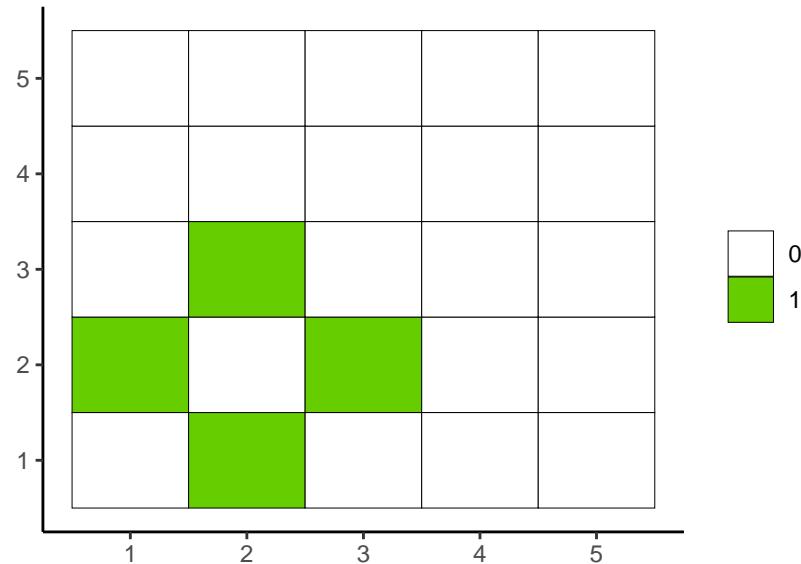
```
##  
##  
## $trial79  
## $trial79$covariates
```

Distribution of Covariate, Trial 79



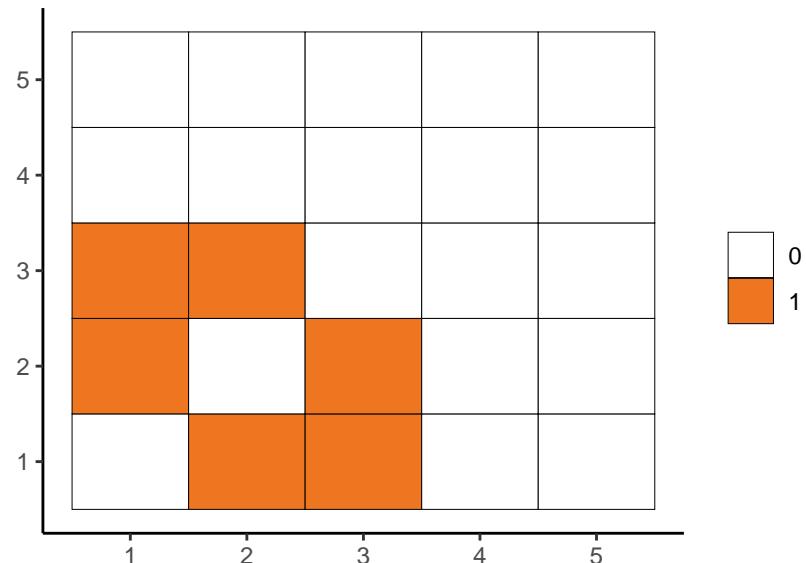
```
##  
## $trial79$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84986.76           Unique conditional dependence structures: 3  
## n: 180, variables: 5           Hyperparameter grid size: 9 points  
## CAVI converged for 3/5 variables  
##  
## Model fit completed in 32.081 secs  
##  
## $trial79$unique_graphs  
## $trial79$unique_graphs$graph1  
## [1] "1,...,48"  
##  
## $trial79$unique_graphs$graph2  
## [1] "49,...,157"  
##  
## $trial79$unique_graphs$graph3  
## [1] "158,...,180"  
##  
## $trial79$unique_graphs[[4]]
```

Graph 1, Individuals 1,...,48



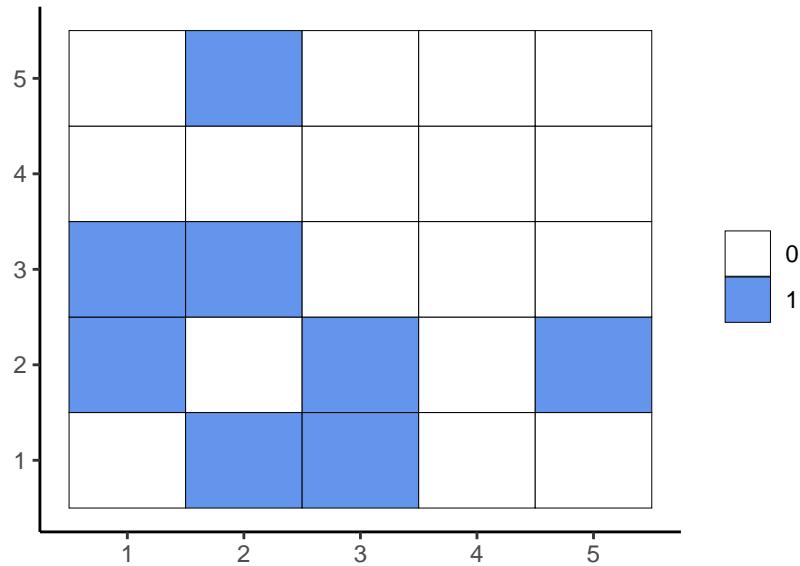
```
##  
## $trial79$unique_graphs[[5]]
```

Graph 2, Individuals 49,...,157

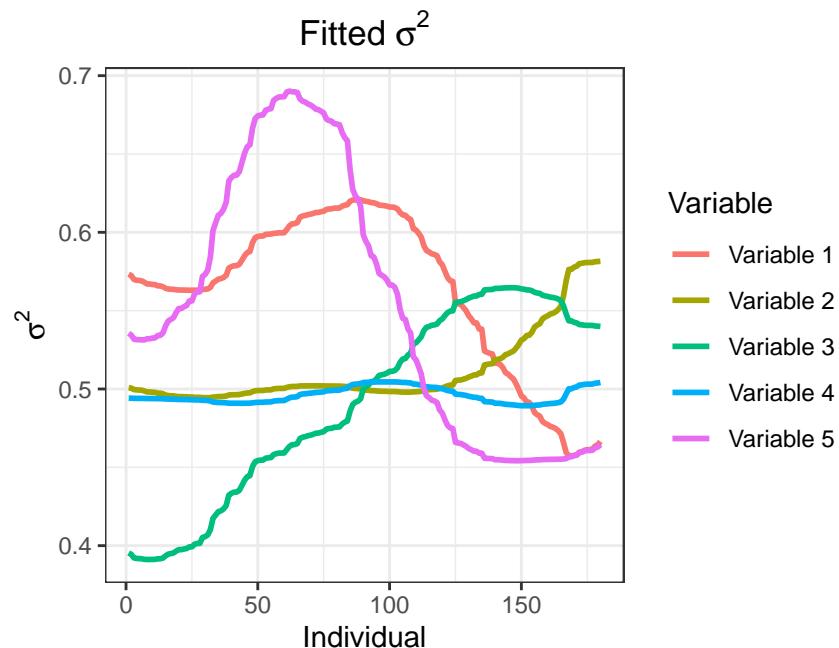


```
##  
## $trial79$unique_graphs[[6]]
```

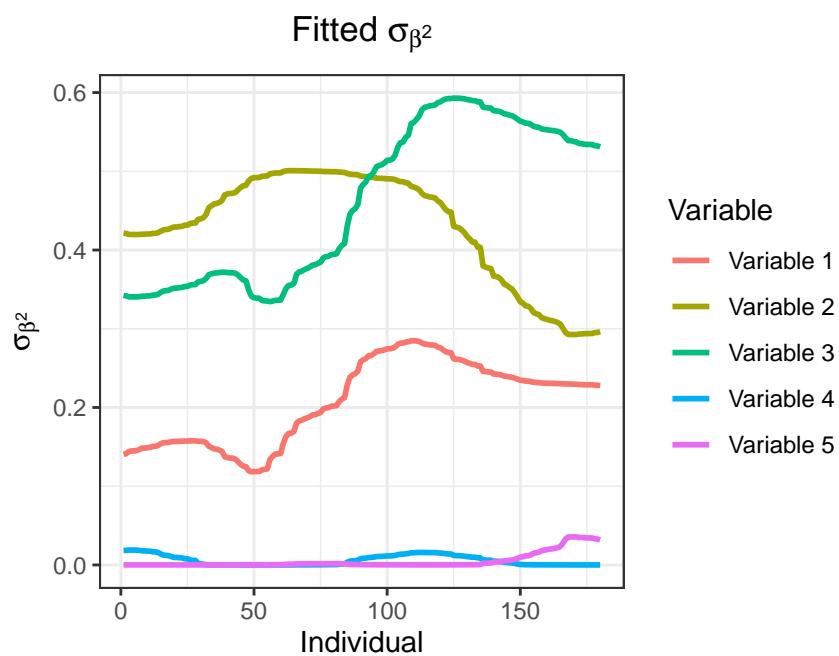
Graph 3, Individuals 158,...,180



```
##  
##  
## $trial79$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial79$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          0.45      0.45      0.45      0.05      0.05  
##  
## $trial79$sigmasq
```

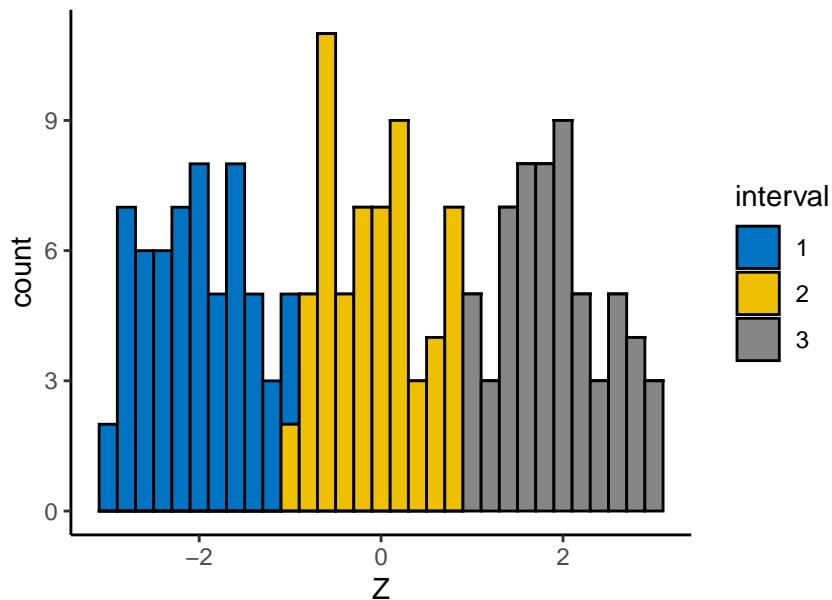


```
##  
## $trial79$sigmabetasq
```



```
##  
##  
## $trial80  
## $trial80$covariates
```

Distribution of Covariate, Trial 80

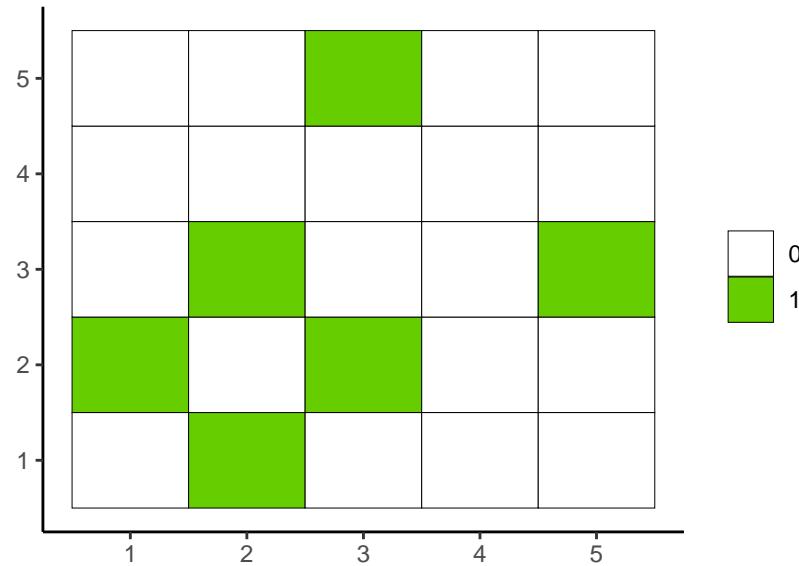


```

## 
## $trial80$summary
##                               Covariate Dependent Graphical Model
## 
## Model ELBO: -84604.04           Unique conditional dependence structures: 6
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 2/5 variables
## 
## Model fit completed in 29.376 secs
## 
## $trial80$unique_graphs
## $trial80$unique_graphs$graph1
## [1] "1,...,8,15,...,79"
## 
## $trial80$unique_graphs$graph2
## [1] "9,...,14"
## 
## $trial80$unique_graphs$graph3
## [1] "80"
## 
## $trial80$unique_graphs$graph4
## [1] "81,...,114"
## 
## $trial80$unique_graphs$graph5
## [1] "115,...,143,164,...,180"
## 
## $trial80$unique_graphs$graph6
## [1] "144,...,163"
## 
## $trial80$unique_graphs[[7]]

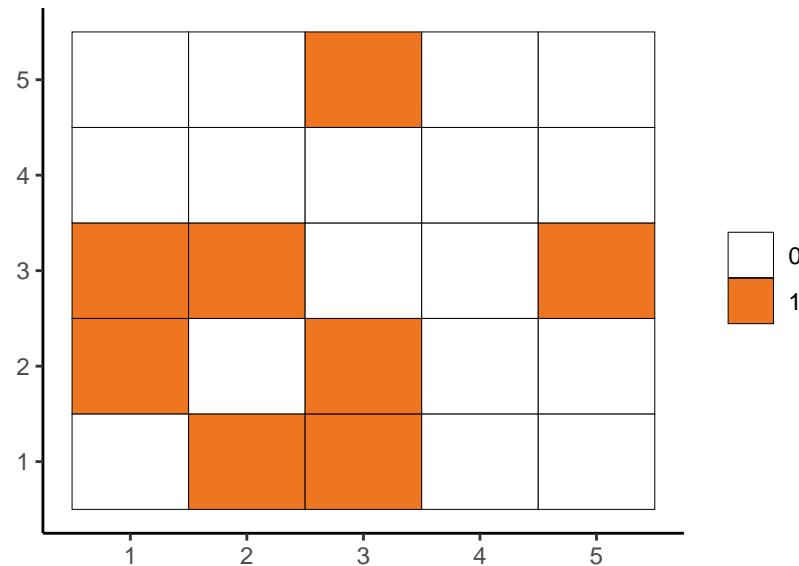
```

Graph 1, Individuals 1,...,8,15,...,79



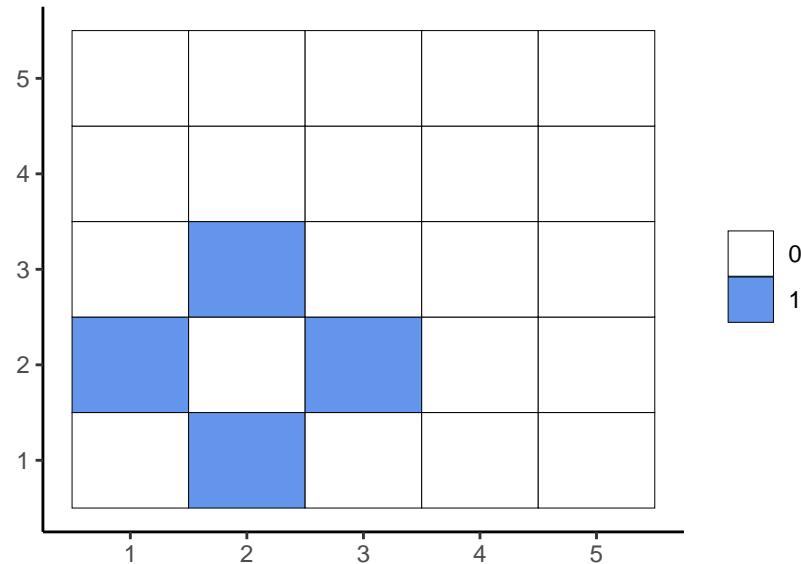
```
##  
## $trial180$unique_graphs[[8]]
```

Graph 2, Individuals 9,...,14



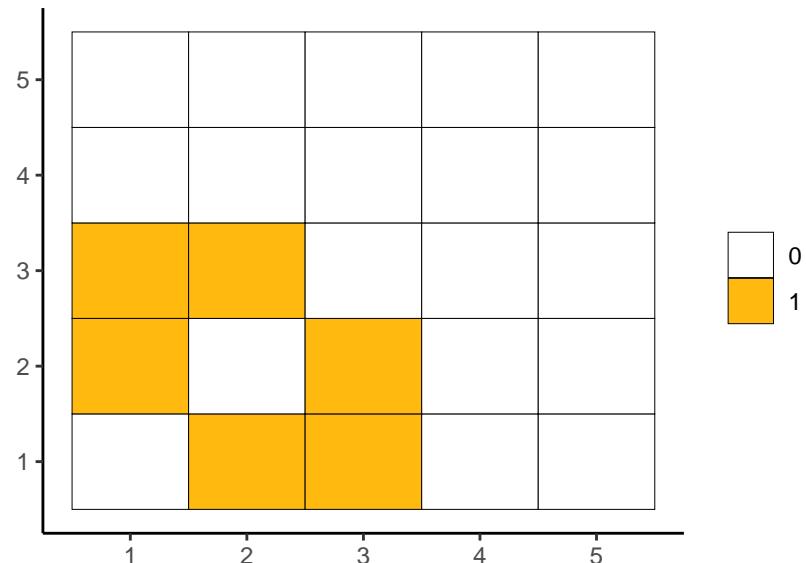
```
##  
## $trial180$unique_graphs[[9]]
```

Graph 3, Individuals 80



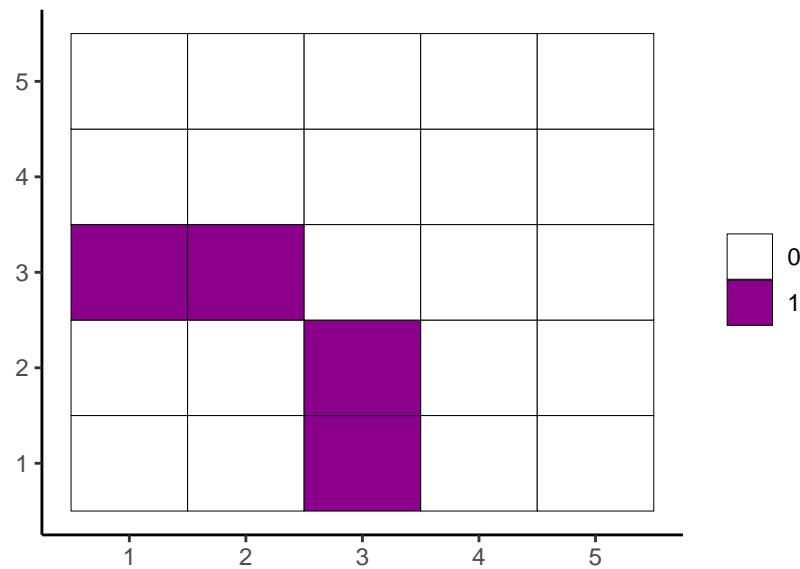
```
##  
## $trial80$unique_graphs[[10]]
```

Graph 4, Individuals 81,...,114



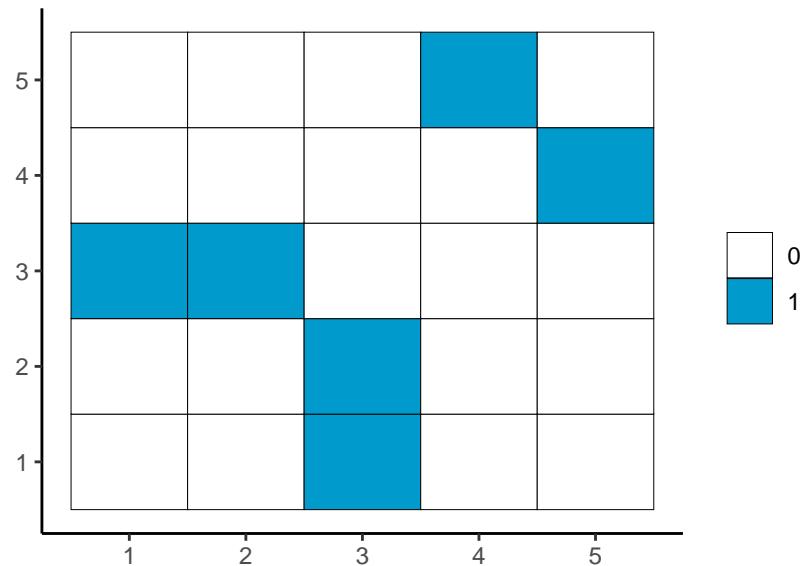
```
##  
## $trial80$unique_graphs[[11]]
```

Graph 5, Individuals 115,...,143,164,...,180



```
##  
## $trial80$unique_graphs[[12]]
```

Graph 6, Individuals 144,...,163

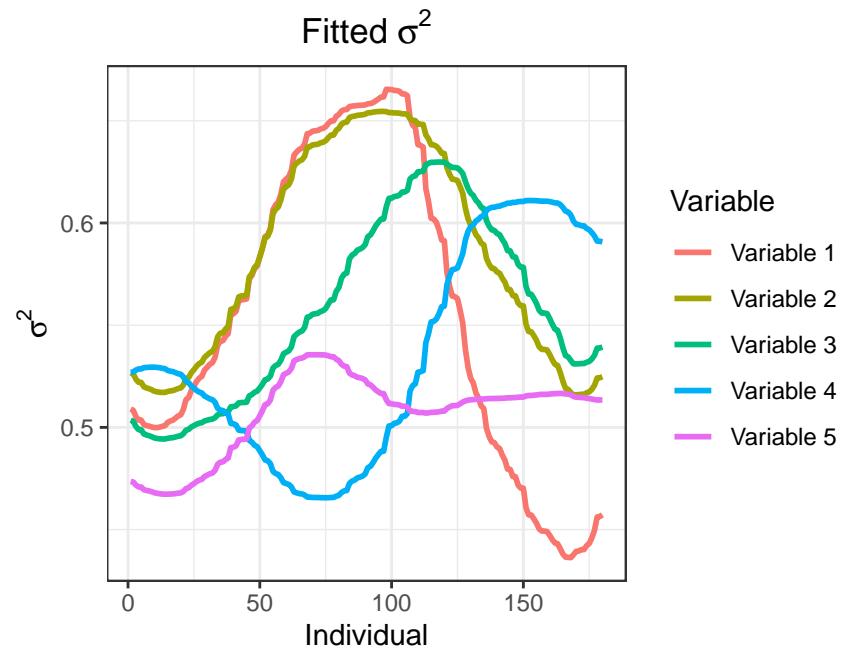


```
##  
##  
## $trial80$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial80$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.15      0.45      0.45      0.05      0.15
##
## $trial80$sigmasq

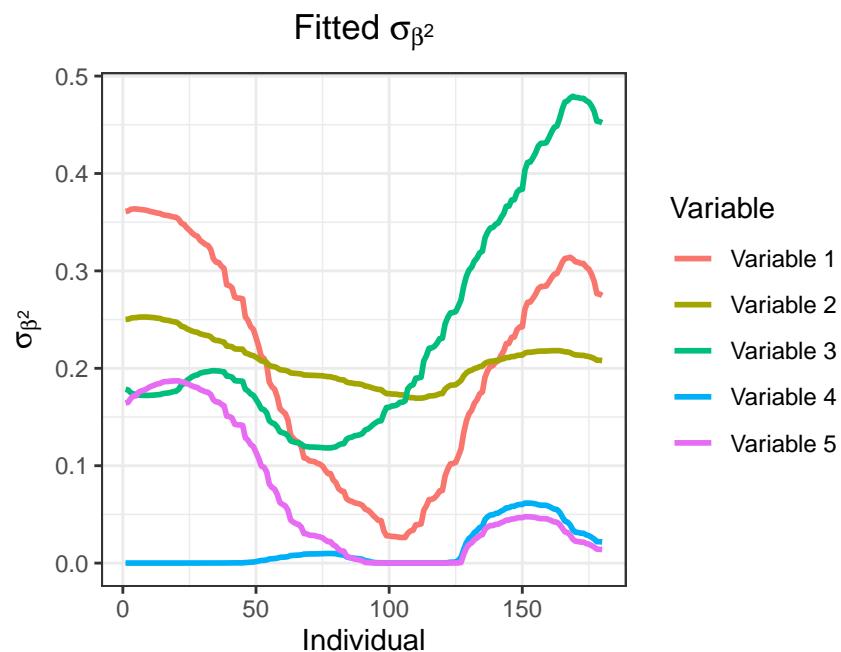
```



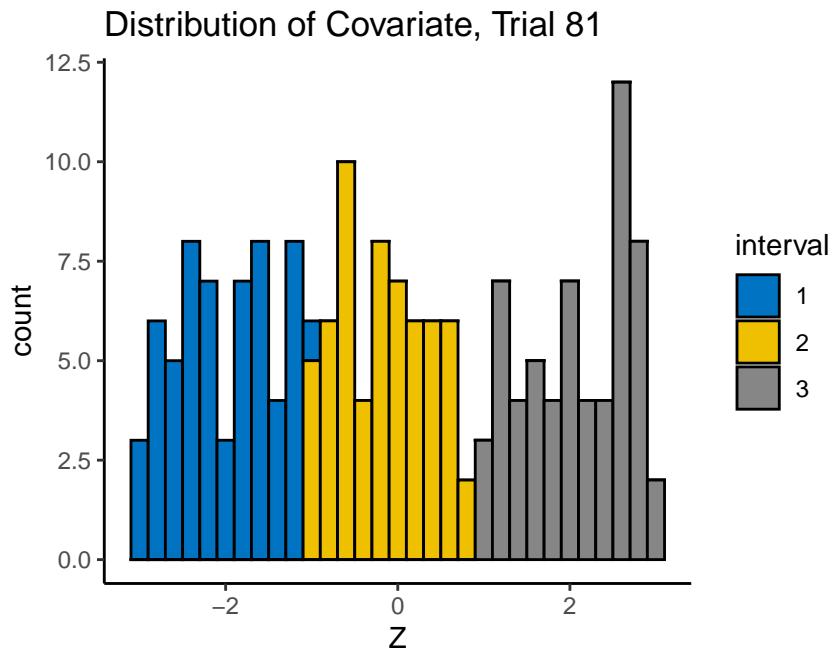
```

## $trial80$sigmabetasq

```

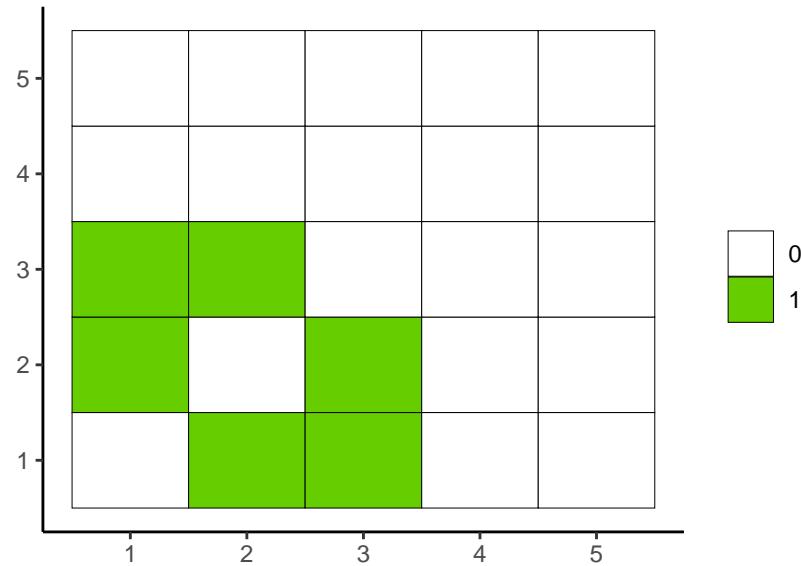


```
##  
##  
## $trial81  
## $trial81$covariates
```



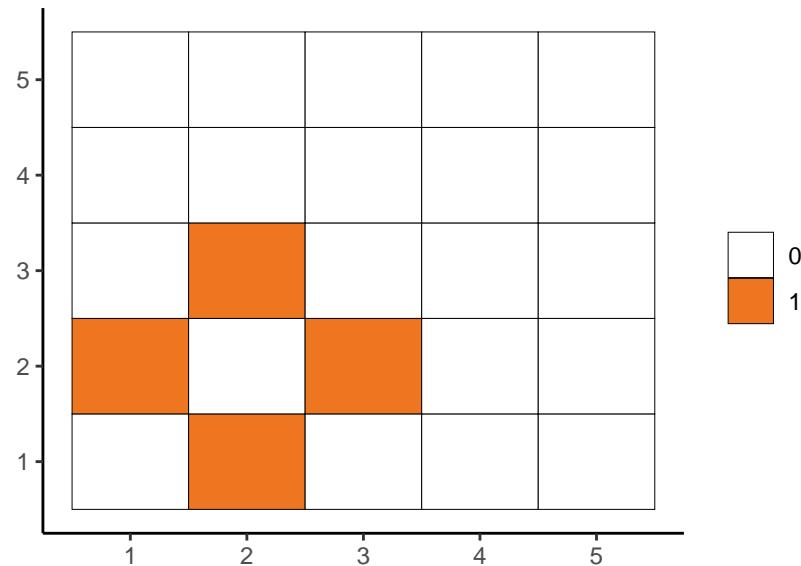
```
##  
## $trial81$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84242.32 Unique conditional dependence structures: 4  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 3/5 variables  
##  
## Model fit completed in 29.162 secs  
##  
## $trial81$unique_graphs  
## $trial81$unique_graphs$graph1  
## [1] "1,...,32"  
##  
## $trial81$unique_graphs$graph2  
## [1] "33,...,93"  
##  
## $trial81$unique_graphs$graph3  
## [1] "94,...,98"  
##  
## $trial81$unique_graphs$graph4  
## [1] "99,...,180"  
##  
## $trial81$unique_graphs[[5]]
```

Graph 1, Individuals 1,...,32



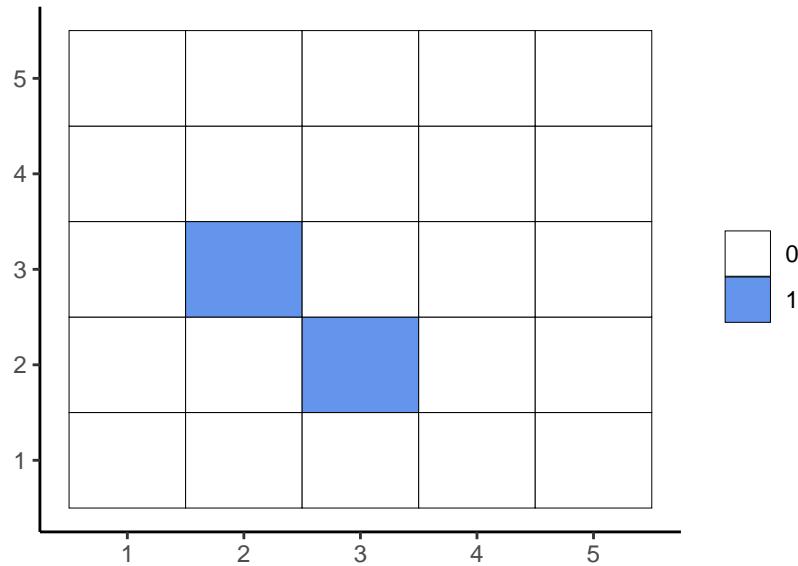
```
##  
## $trial81$unique_graphs[[6]]
```

Graph 2, Individuals 33,...,93



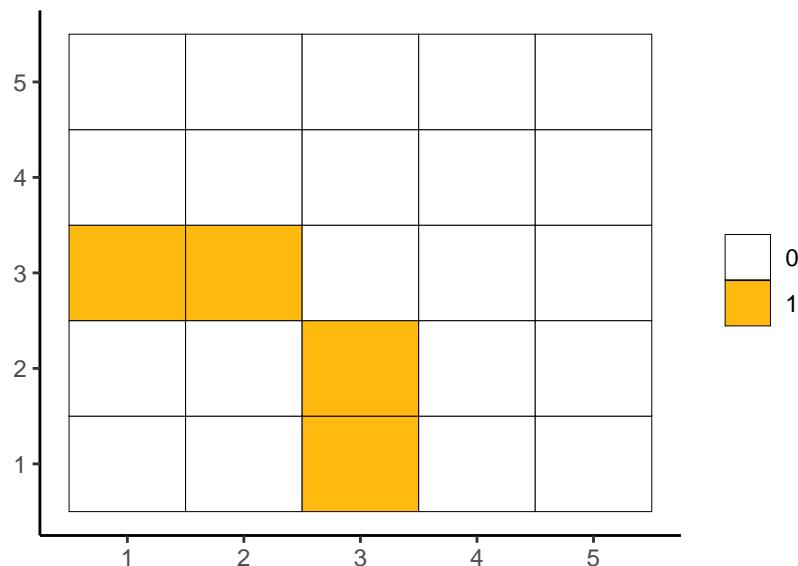
```
##  
## $trial81$unique_graphs[[7]]
```

Graph 3, Individuals 94,...,98



```
##  
## $trial81$unique_graphs[[8]]
```

Graph 4, Individuals 99,...,180

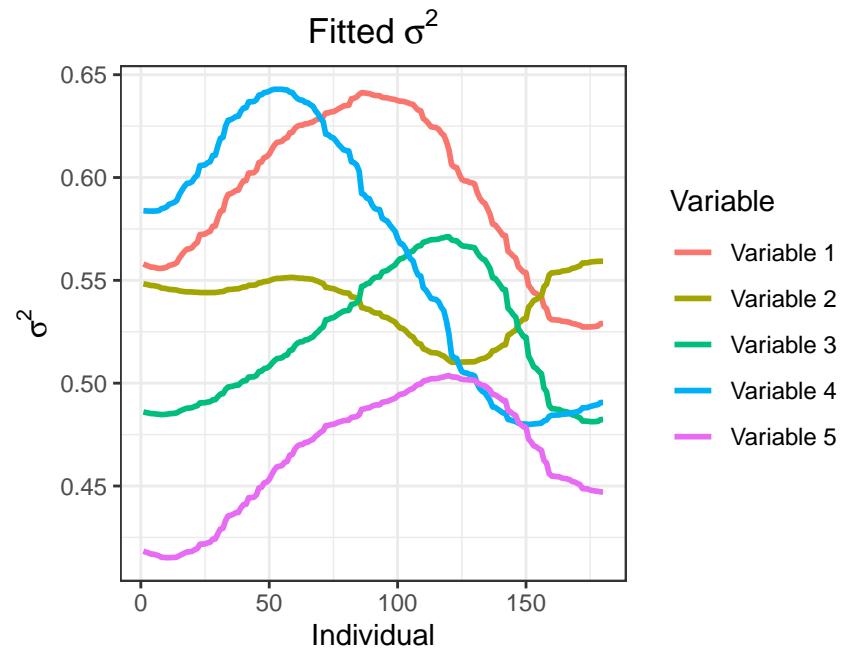


```
##  
##  
## $trial81$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial81$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.20      0.45      0.40      0.05      0.05
##
## $trial81$sigmasq

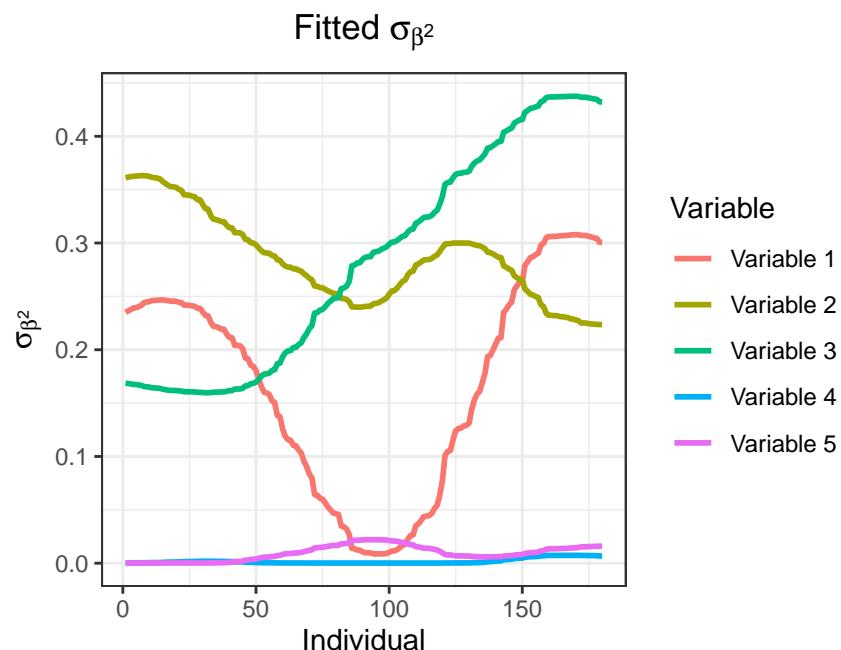
```



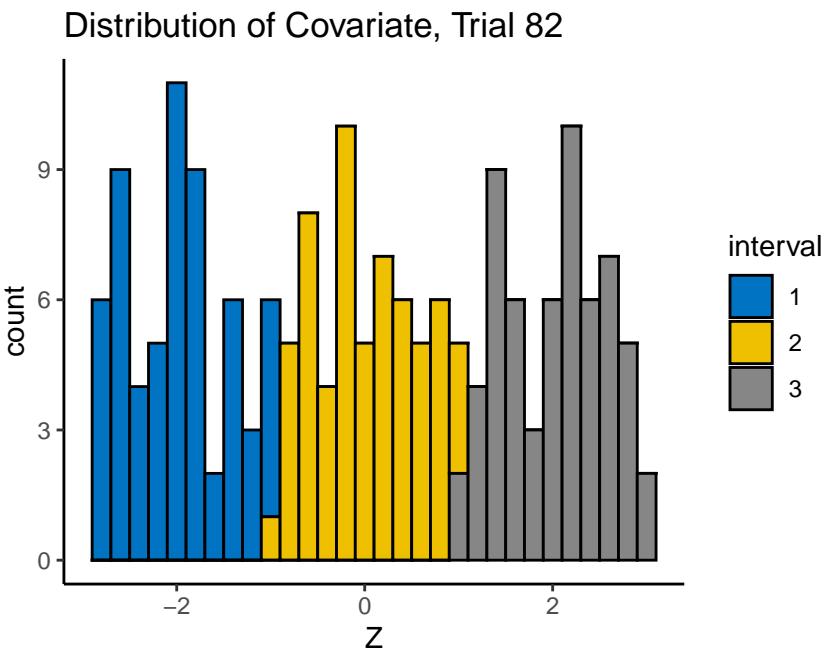
```

## 
## $trial81$sigmabetasq

```

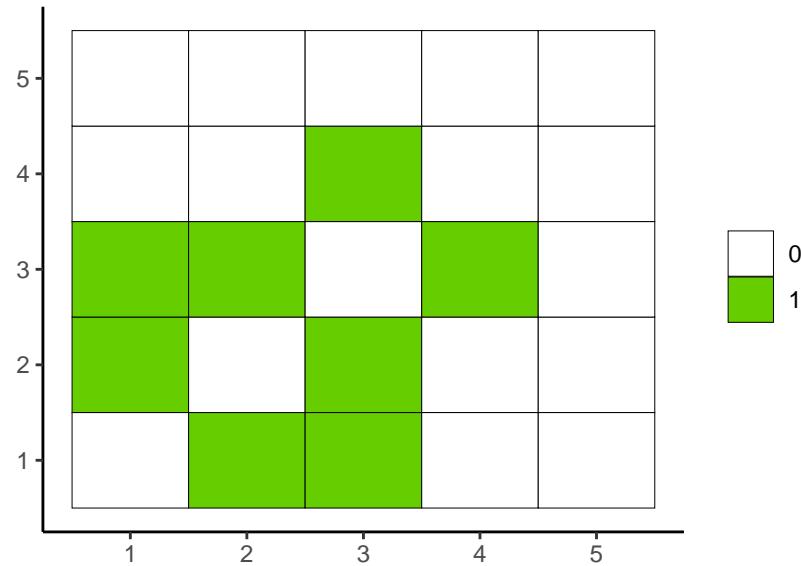


```
##  
##  
## $trial82  
## $trial82$covariates
```



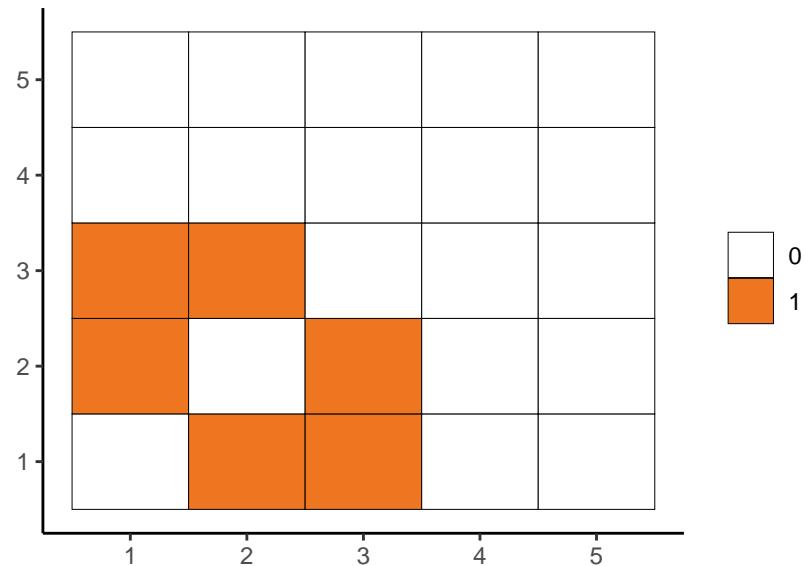
```
##  
## $trial82$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84926.88 Unique conditional dependence structures: 5  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 2/5 variables  
##  
## Model fit completed in 35.454 secs  
##  
## $trial82$unique_graphs  
## $trial82$unique_graphs$graph1  
## [1] "1,...,15"  
##  
## $trial82$unique_graphs$graph2  
## [1] "16,...,45,56,...,129"  
##  
## $trial82$unique_graphs$graph3  
## [1] "46,...,55"  
##  
## $trial82$unique_graphs$graph4  
## [1] "130,...,171,176,...,180"  
##  
## $trial82$unique_graphs$graph5  
## [1] "172,...,175"  
##  
## $trial82$unique_graphs[[6]]
```

Graph 1, Individuals 1,...,15



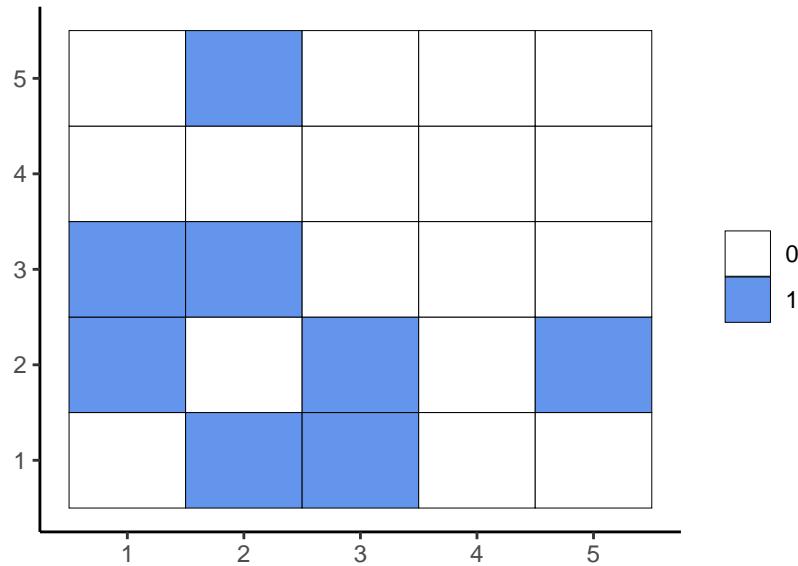
```
##  
## $trial82$unique_graphs[[7]]
```

Graph 2, Individuals 16,...,45,56,...,129



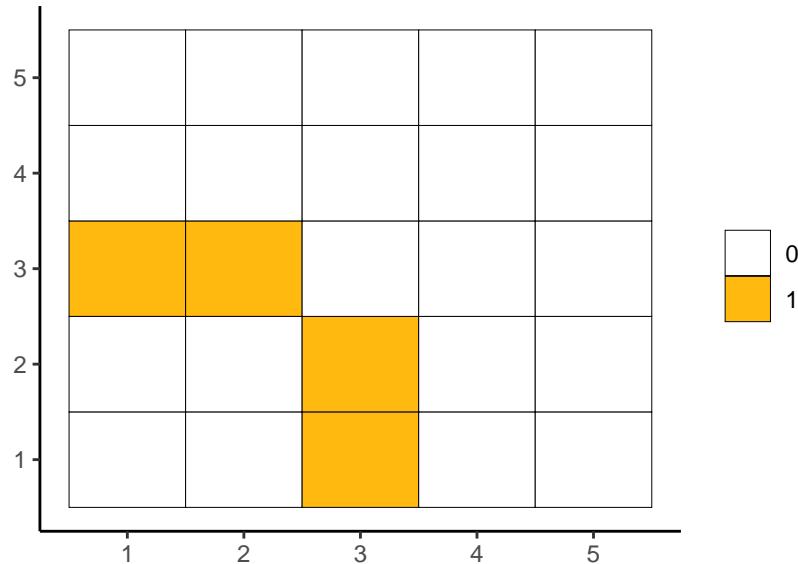
```
##  
## $trial82$unique_graphs[[8]]
```

Graph 3, Individuals 46,...,55



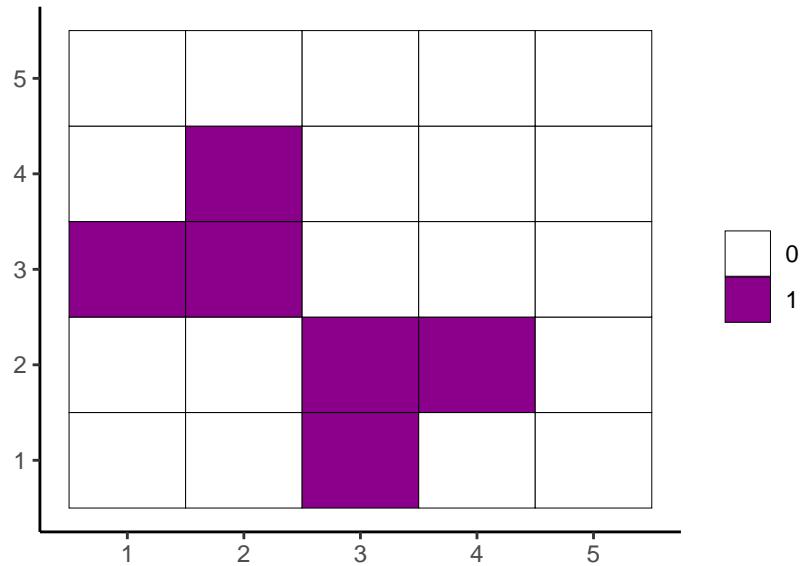
```
##  
## $trial82$unique_graphs[[9]]
```

Graph 4, Individuals 130,...,171,176,...,180

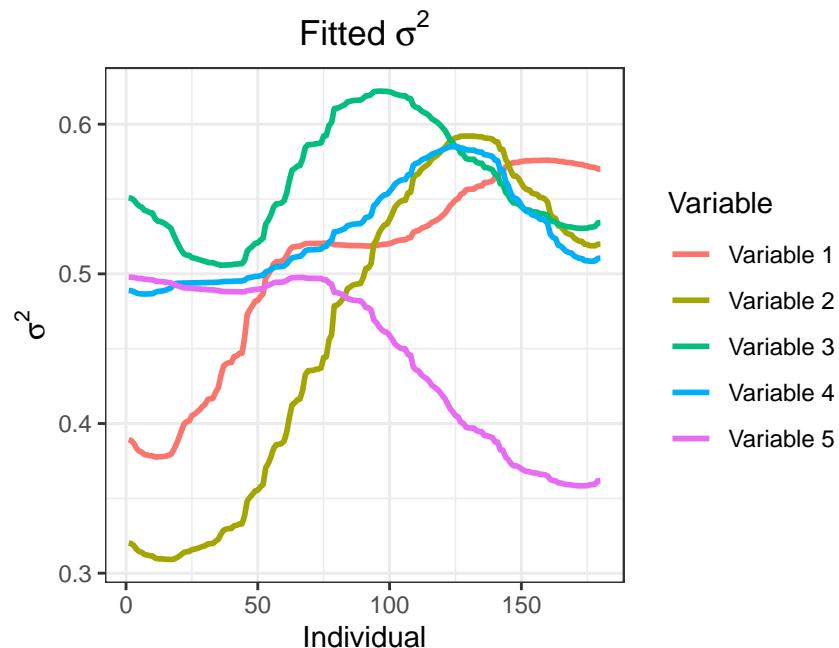


```
##  
## $trial82$unique_graphs[[10]]
```

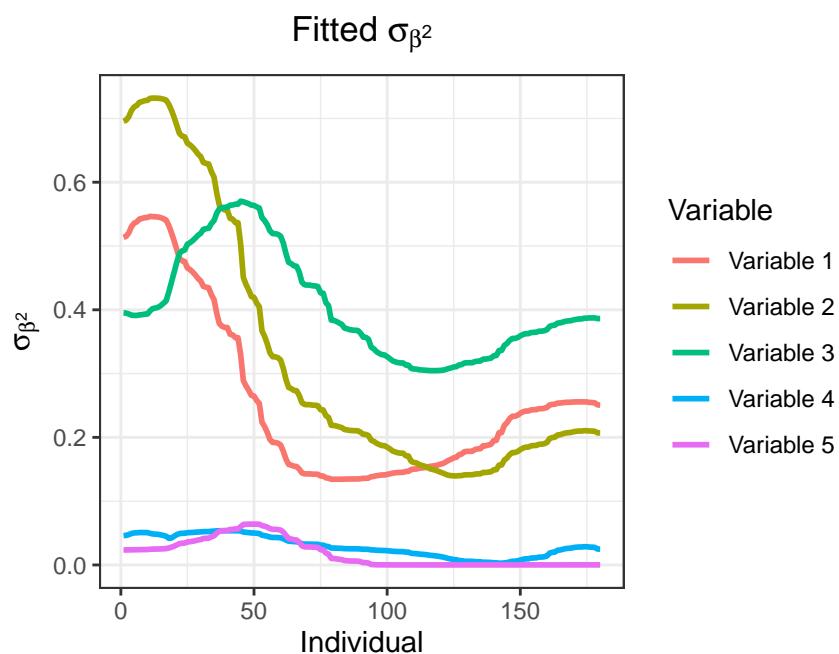
Graph 5, Individuals 172,...,175



```
##  
##  
## $trial82$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial82$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          0.45      0.45      0.45      0.05      0.05  
##  
## $trial82$sigmasq
```

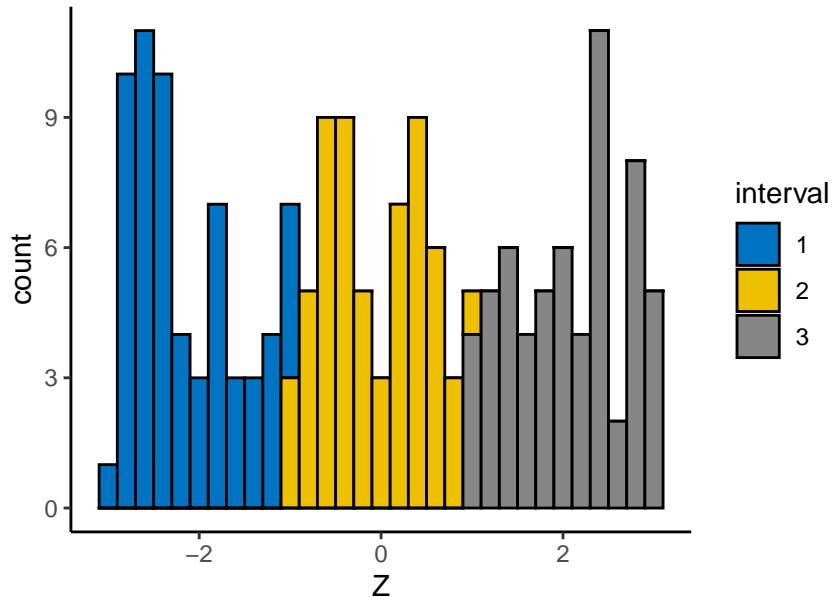


```
##  
## $trial82$sigmabetasq
```



```
##  
##  
## $trial83  
## $trial83$covariates
```

Distribution of Covariate, Trial 83

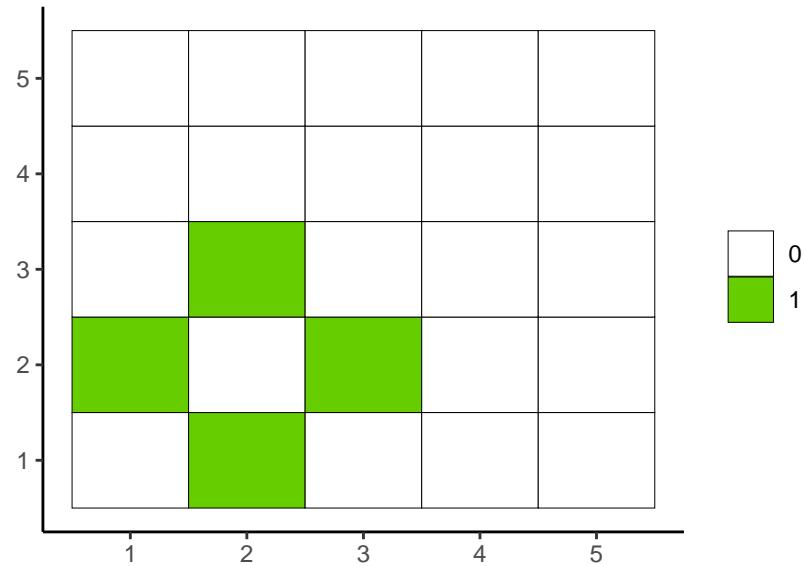


```

## 
## $trial83$summary
##                               Covariate Dependent Graphical Model
## 
## Model ELBO: -84238.77           Unique conditional dependence structures: 4
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 2/5 variables
## 
## Model fit completed in 27.901 secs
## 
## $trial83$unique_graphs
## $trial83$unique_graphs$graph1
## [1] "1,...,94"
## 
## $trial83$unique_graphs$graph2
## [1] "95,...,107"
## 
## $trial83$unique_graphs$graph3
## [1] "108,...,167"
## 
## $trial83$unique_graphs$graph4
## [1] "168,...,180"
## 
## $trial83$unique_graphs[[5]]

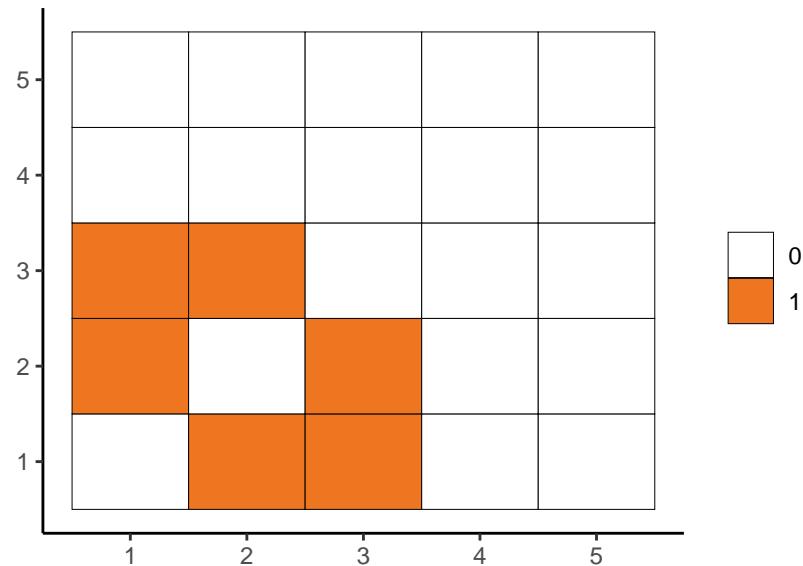
```

Graph 1, Individuals 1,...,94



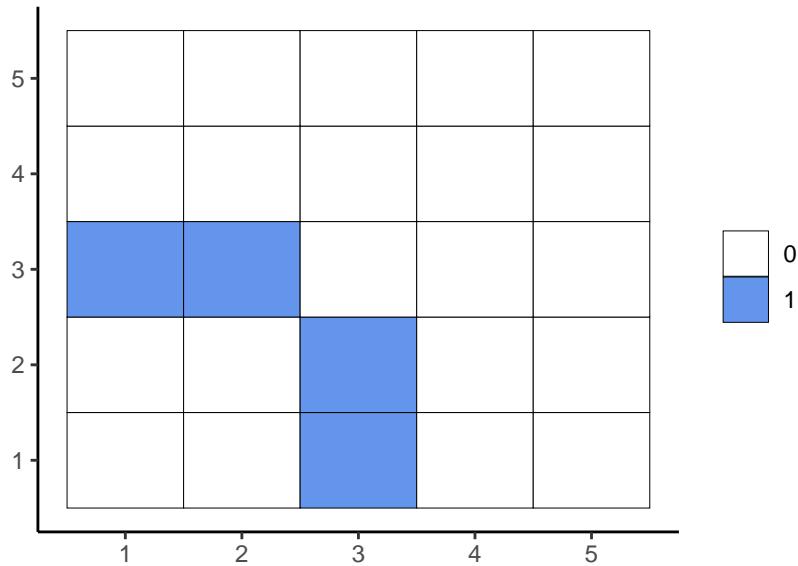
```
##  
## $trial83$unique_graphs[[6]]
```

Graph 2, Individuals 95,...,107



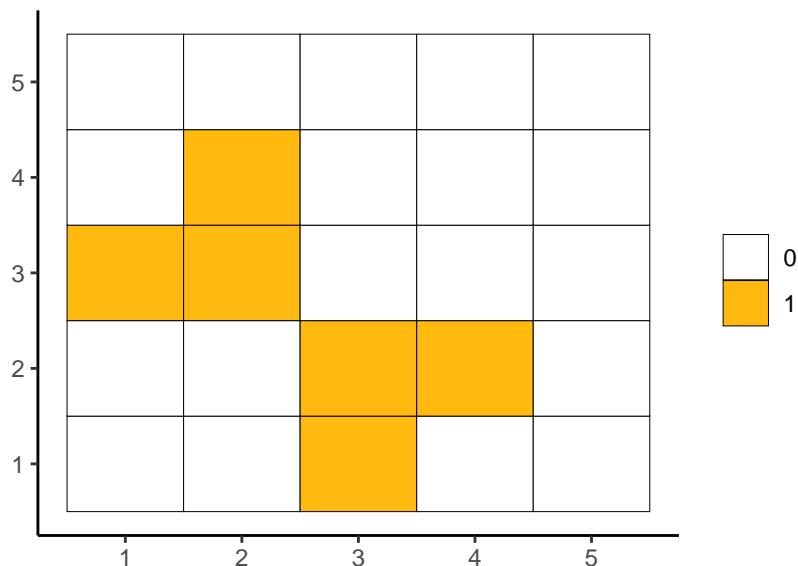
```
##  
## $trial83$unique_graphs[[7]]
```

Graph 3, Individuals 108,...,167



```
##  
## $trial83$unique_graphs[[8]]
```

Graph 4, Individuals 168,...,180

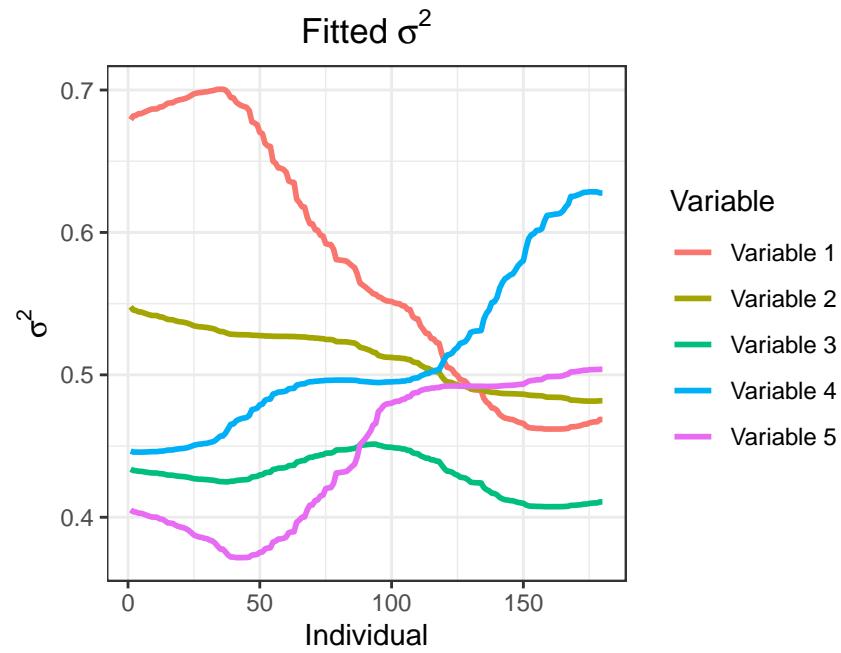


```
##  
##  
## $trial83$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
## 1 1 1 1 1  
##
```

```

## $trial83$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.35      0.45      0.45      0.05      0.05
##
## $trial83$sigmasq

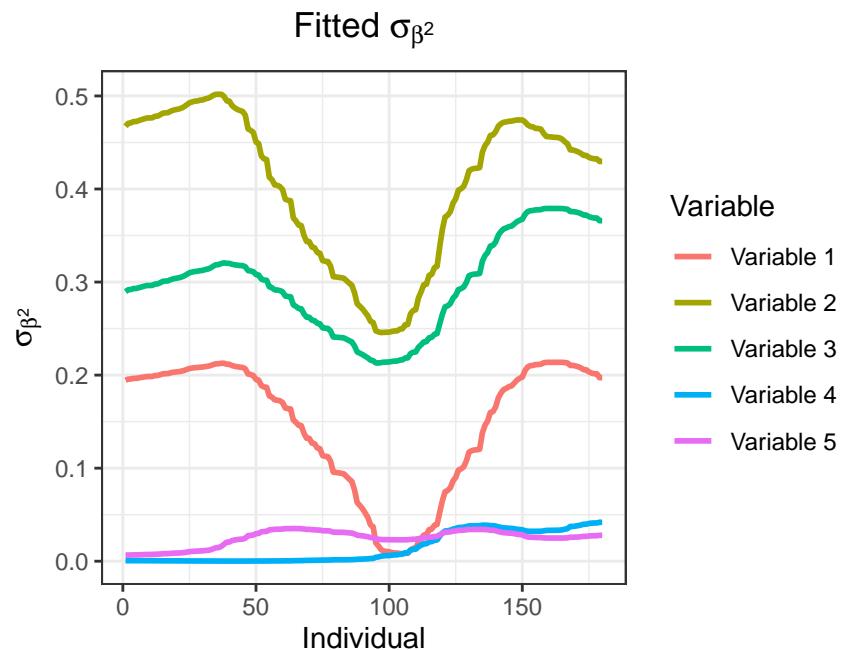
```



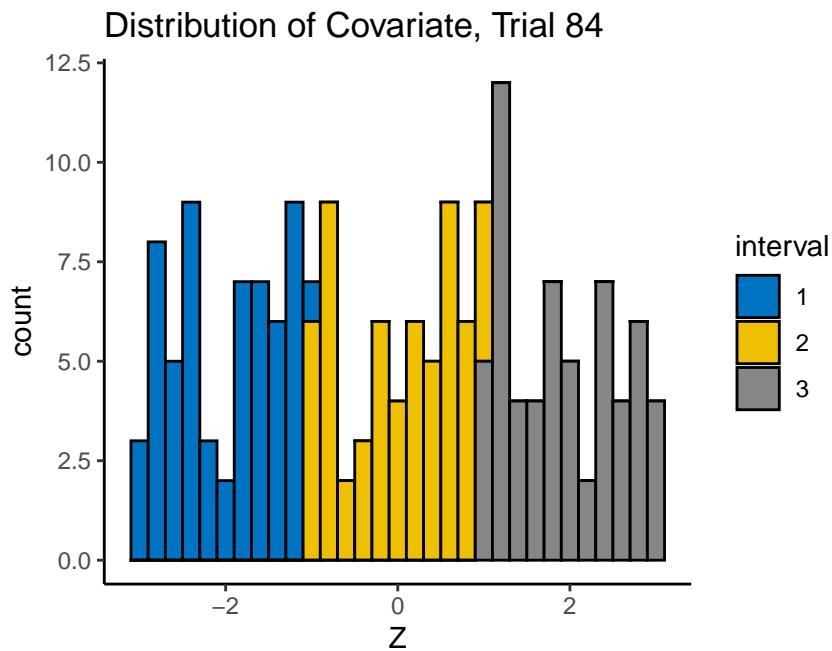
```

## 
## $trial83$sigmabetasq

```

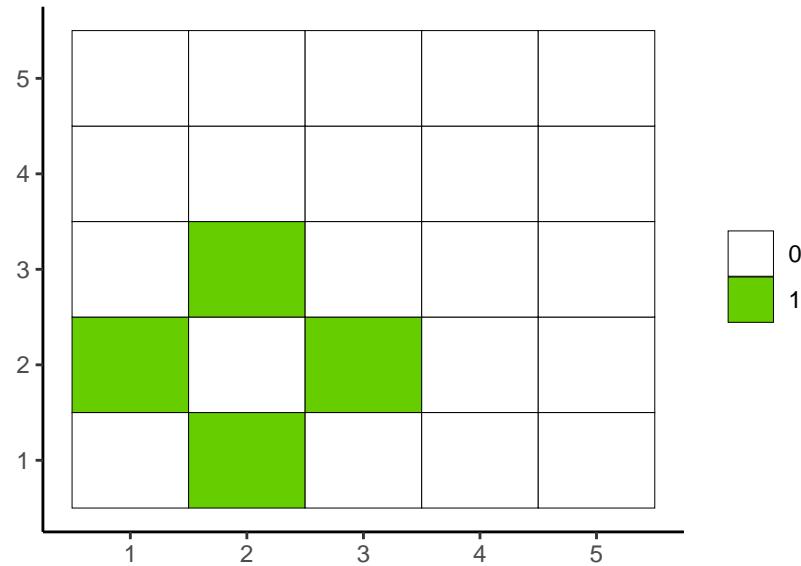


```
##  
##  
## $trial84  
## $trial84$covariates
```



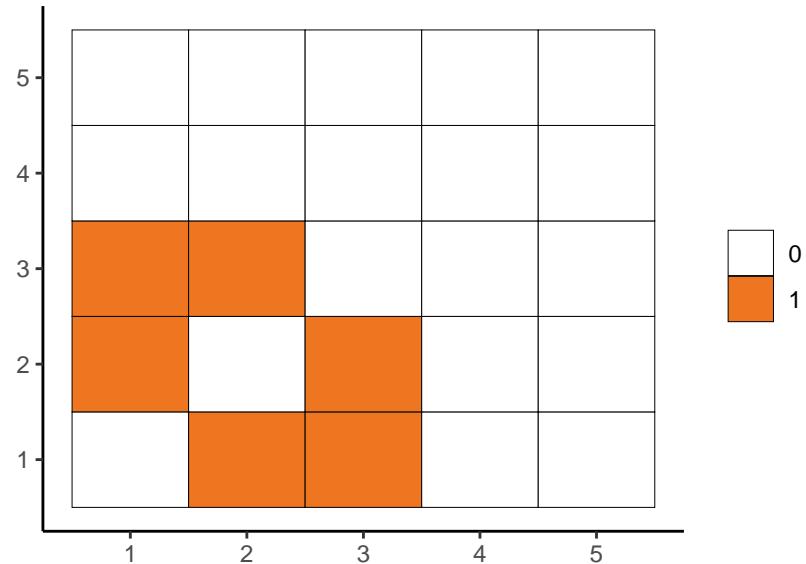
```
##  
## $trial84$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84569.5 Unique conditional dependence structures: 5  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 2/5 variables  
##  
## Model fit completed in 31.756 secs  
##  
## $trial84$unique_graphs  
## $trial84$unique_graphs$graph1  
## [1] "1,...,64"  
##  
## $trial84$unique_graphs$graph2  
## [1] "65,...,152"  
##  
## $trial84$unique_graphs$graph3  
## [1] "153,...,157"  
##  
## $trial84$unique_graphs$graph4  
## [1] "158,...,176"  
##  
## $trial84$unique_graphs$graph5  
## [1] "177,...,180"  
##  
## $trial84$unique_graphs[[6]]
```

Graph 1, Individuals 1,...,64



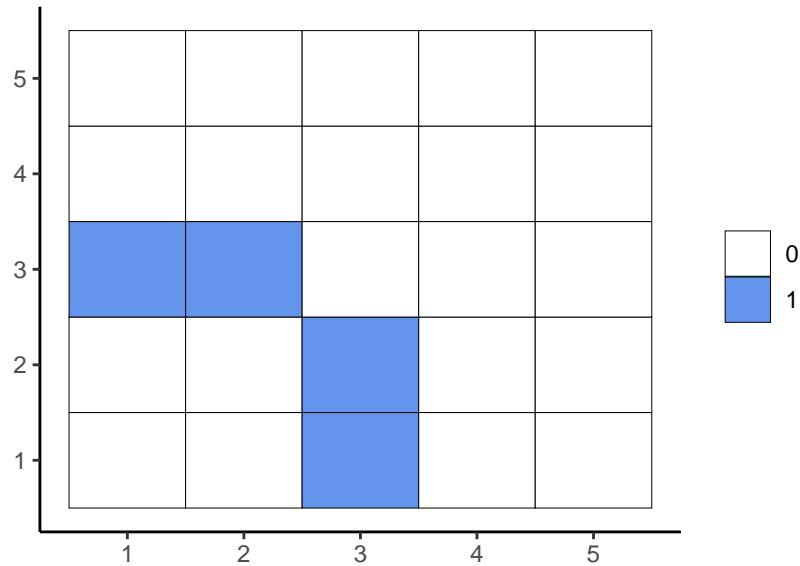
```
##  
## $trial84$unique_graphs[[7]]
```

Graph 2, Individuals 65,...,152



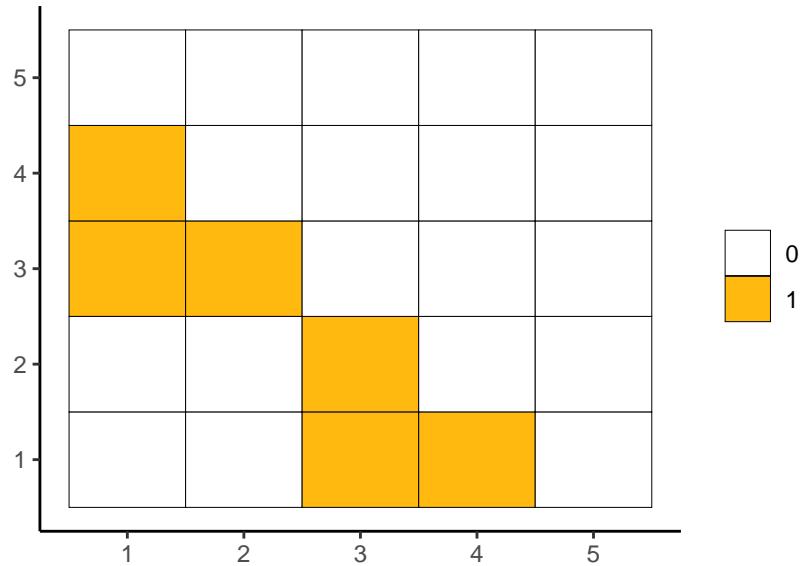
```
##  
## $trial84$unique_graphs[[8]]
```

Graph 3, Individuals 153,...,157



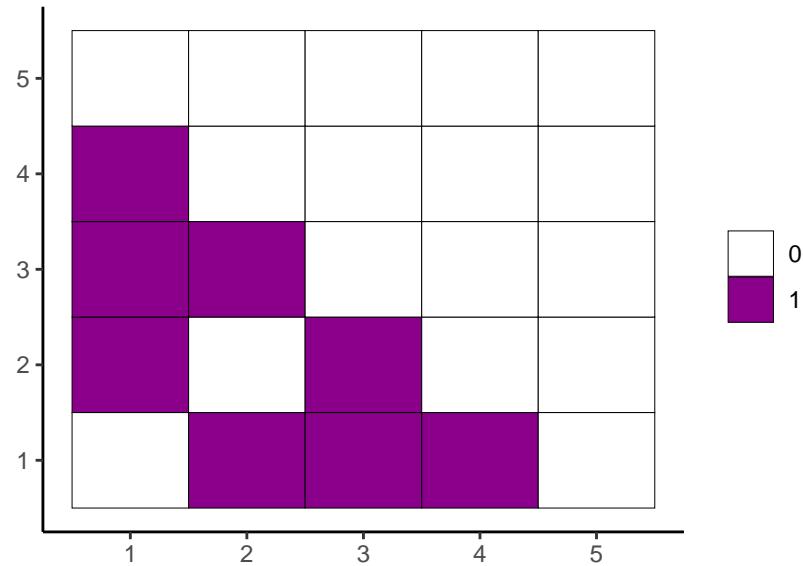
```
##  
## $trial84$unique_graphs[[9]]
```

Graph 4, Individuals 158,...,176

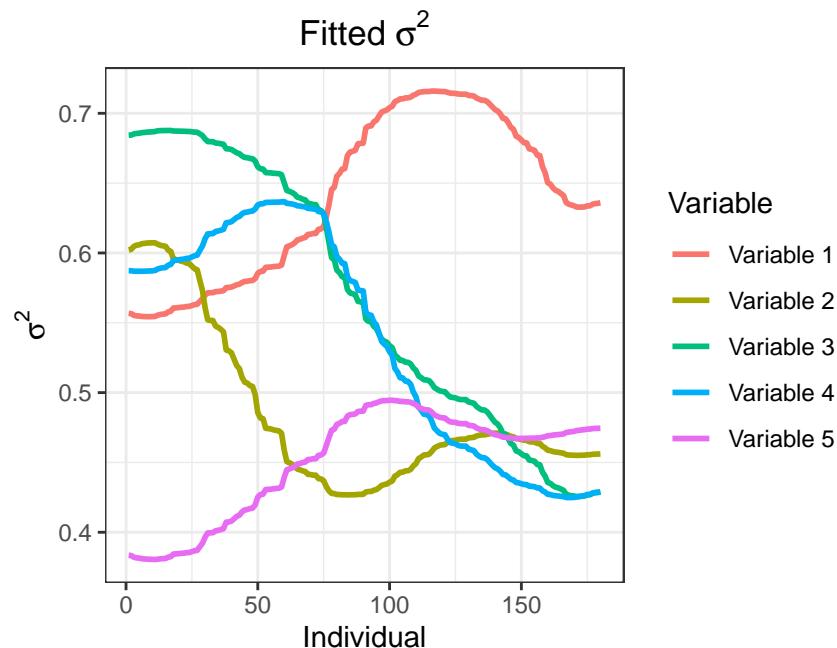


```
##  
## $trial84$unique_graphs[[10]]
```

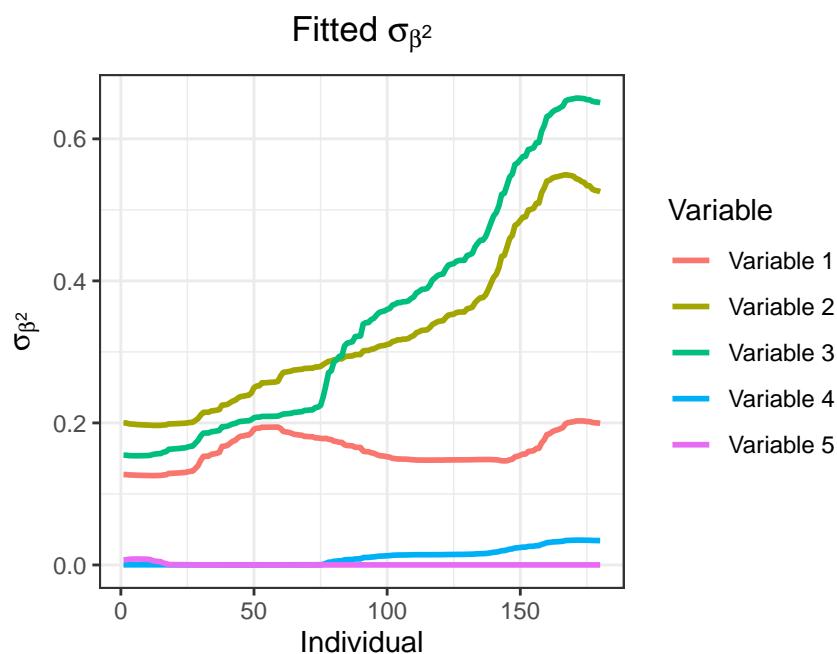
Graph 5, Individuals 177,...,180



```
##  
##  
## $trial84$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial84$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.40      0.45      0.45      0.05      0.05  
##  
## $trial84$sigmasq
```

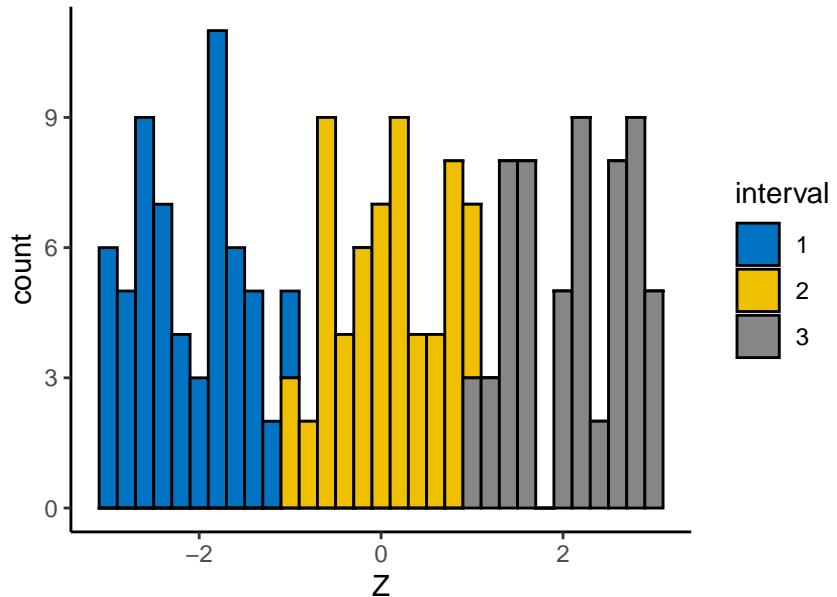


```
##  
## $trial84$sigmabetasq
```



```
##  
##  
## $trial85  
## $trial85$covariates
```

Distribution of Covariate, Trial 85

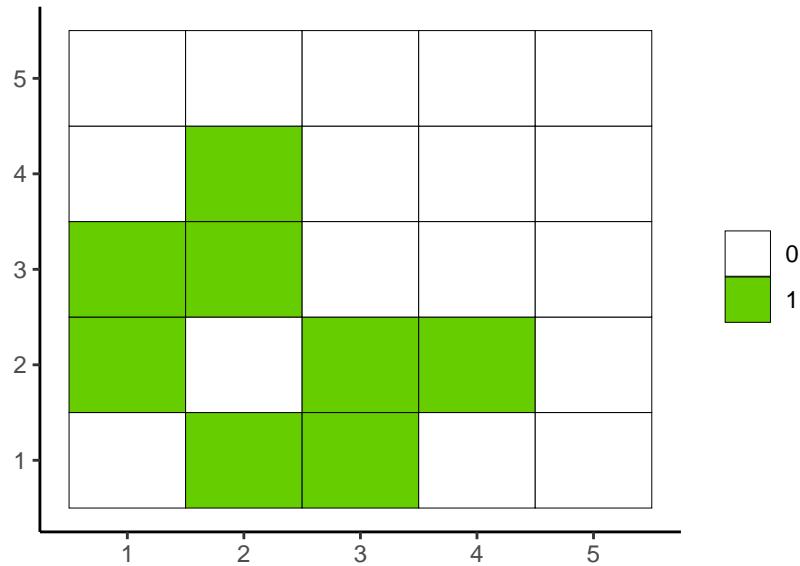


```

## 
## $trial85$summary
##                               Covariate Dependent Graphical Model
## 
## Model ELBO: -84423.89           Unique conditional dependence structures: 5
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 1/5 variables
## 
## Model fit completed in 35.084 secs
## 
## $trial85$unique_graphs
## $trial85$unique_graphs$graph1
## [1] "1,...,4"
## 
## $trial85$unique_graphs$graph2
## [1] "5,...,31,86,...,120"
## 
## $trial85$unique_graphs$graph3
## [1] "32,...,78"
## 
## $trial85$unique_graphs$graph4
## [1] "79,...,85"
## 
## $trial85$unique_graphs$graph5
## [1] "121,...,180"
## 
## $trial85$unique_graphs[[6]]

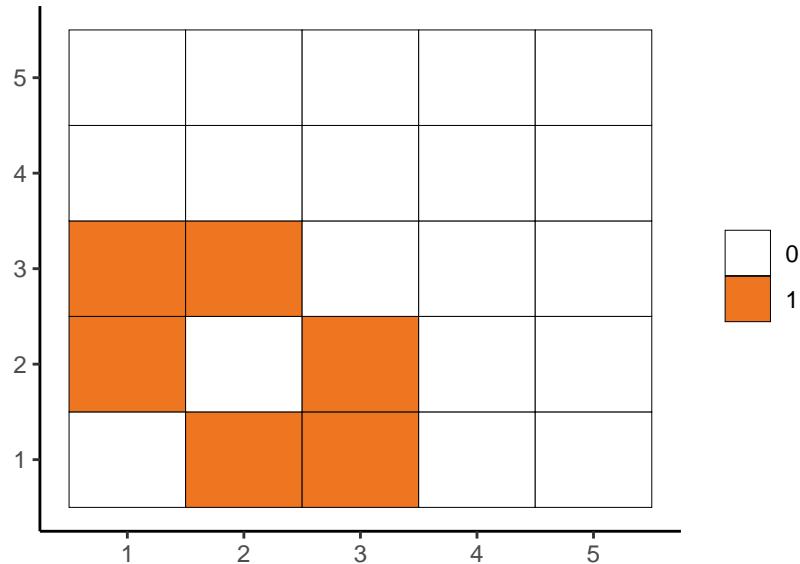
```

Graph 1, Individuals 1,...,4



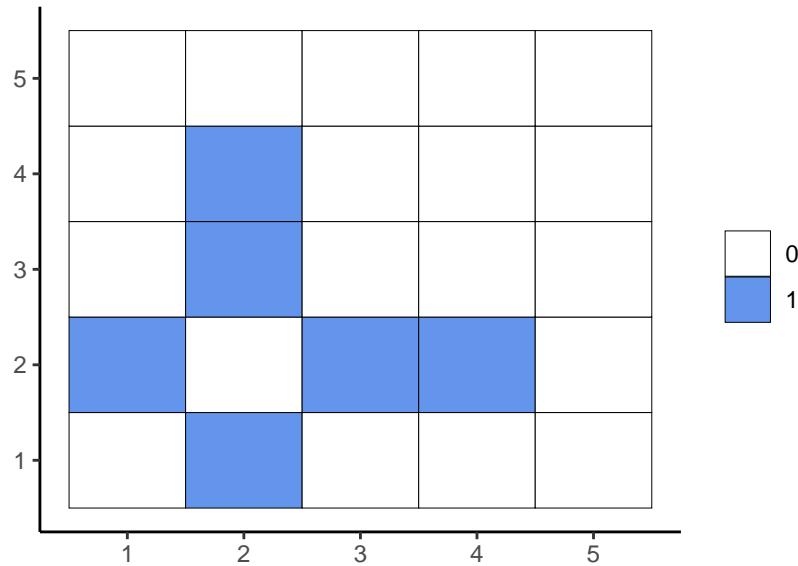
```
##  
## $trial185$unique_graphs[[7]]
```

Graph 2, Individuals 5,...,31,86,...,120



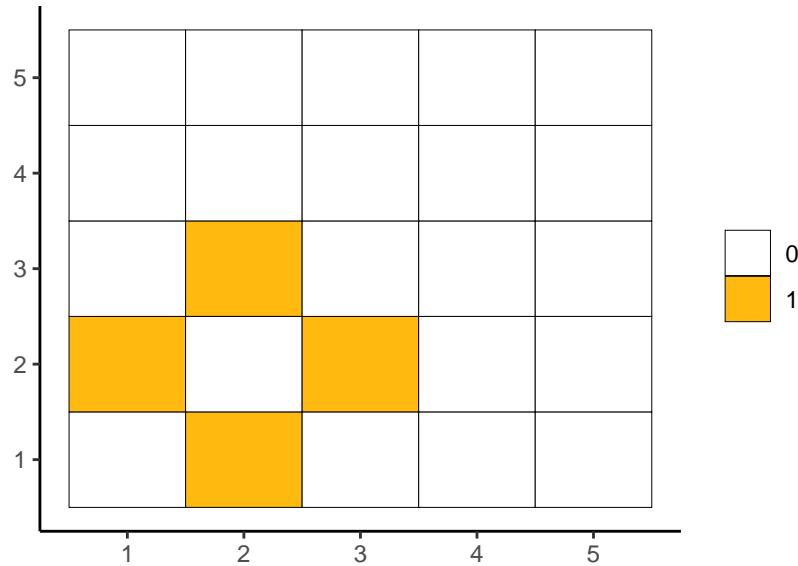
```
##  
## $trial185$unique_graphs[[8]]
```

Graph 3, Individuals 32,...,78



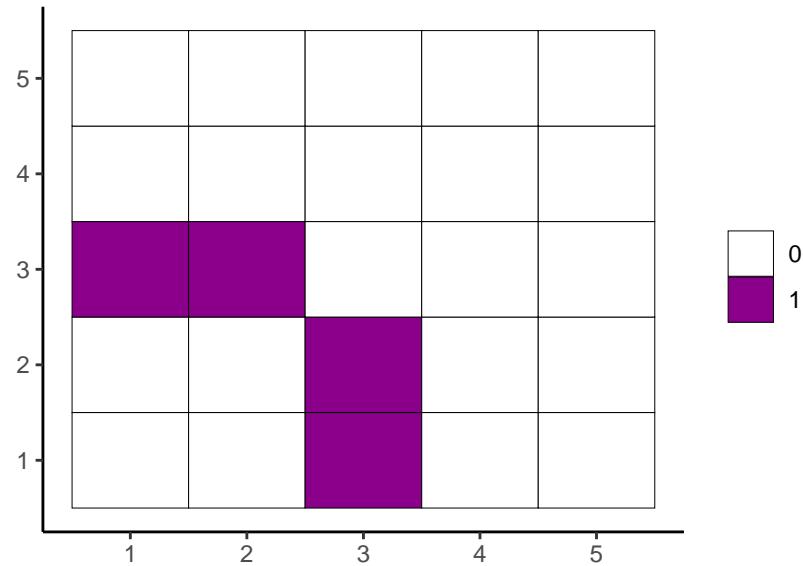
```
##  
## $trial185$unique_graphs[[9]]
```

Graph 4, Individuals 79,...,85

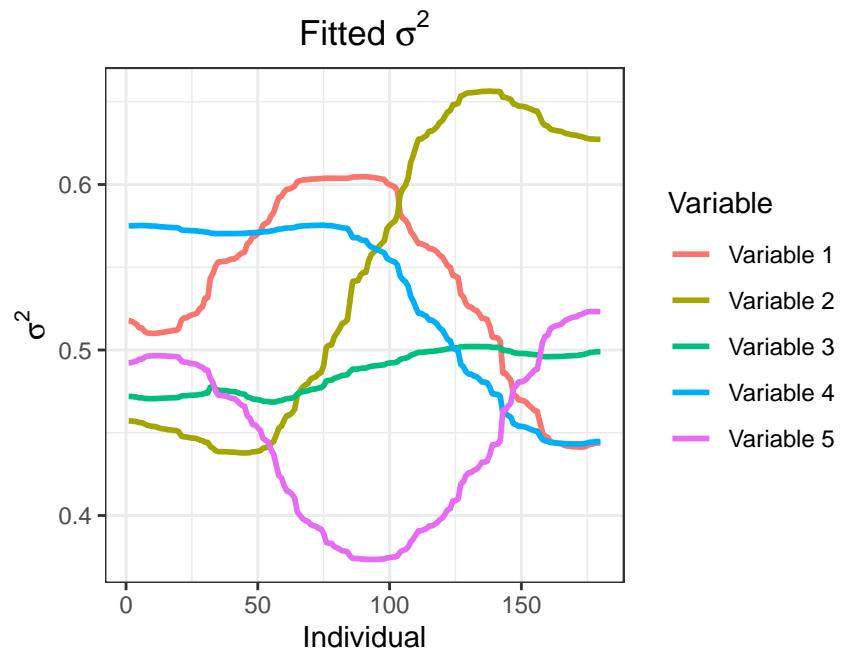


```
##  
## $trial185$unique_graphs[[10]]
```

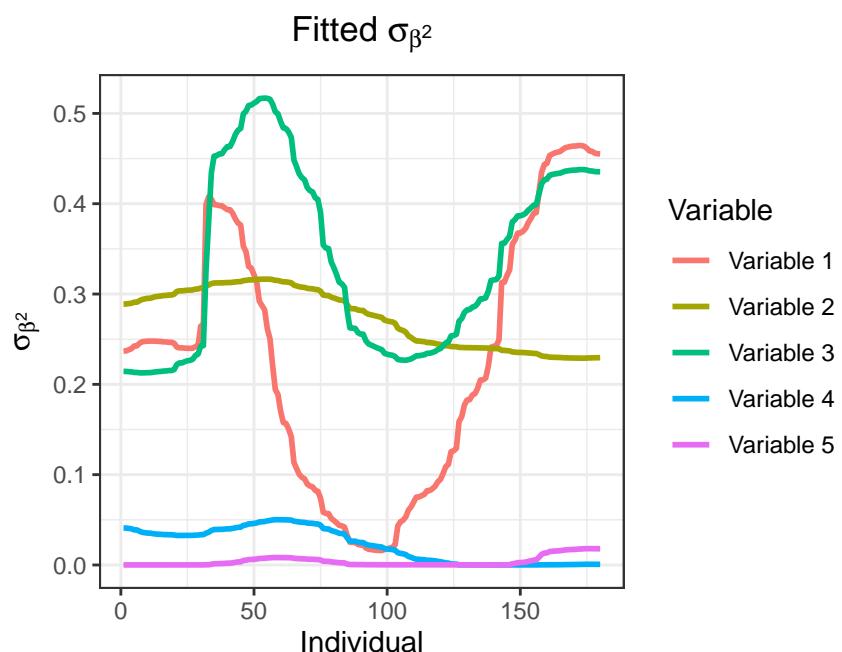
Graph 5, Individuals 121,...,180



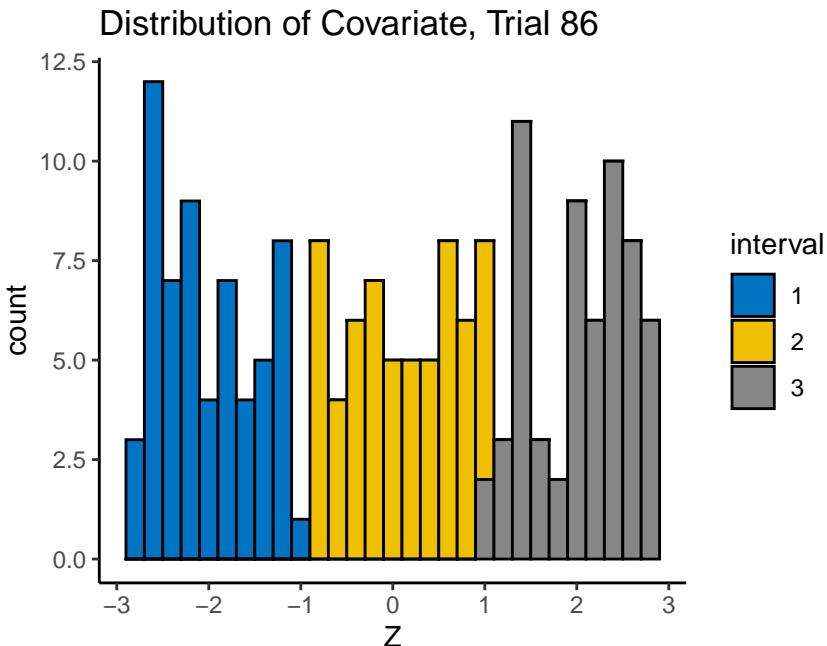
```
##  
##  
## $trial85$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial85$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.30      0.45      0.45      0.05      0.05  
##  
## $trial85$sigmasq
```



```
##  
## $trial85$sigmabetasq
```



```
##  
##  
## $trial86  
## $trial86$covariates
```



```

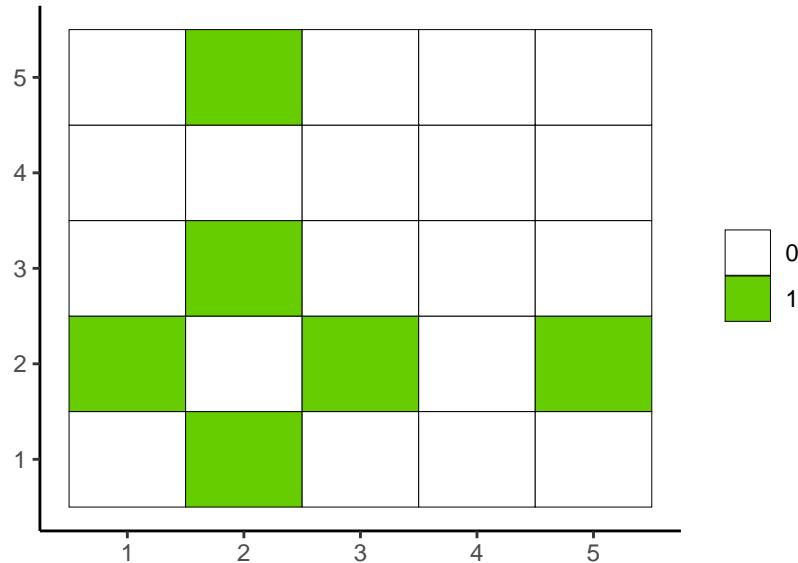
## 
## $trial86$summary
## Covariate Dependent Graphical Model
## 
## Model ELBO: -85018.91           Unique conditional dependence structures: 8
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 1/5 variables
## 
## Model fit completed in 34.086 secs
## 
## $trial86$unique_graphs
## $trial86$unique_graphs$graph1
## [1] "1,...,32"
## 
## $trial86$unique_graphs$graph2
## [1] "33,...,43"
## 
## $trial86$unique_graphs$graph3
## [1] "44,...,98"
## 
## $trial86$unique_graphs$graph4
## [1] "99,...,113"
## 
## $trial86$unique_graphs$graph5
## [1] "114,...,122"
## 
## $trial86$unique_graphs$graph6
## [1] "123,...,141"
## 
## $trial86$unique_graphs$graph7
## [1] "142,...,155"
## 
```

```

## $trial86$unique_graphs$graph8
## [1] "156,...,180"
##
## $trial86$unique_graphs[[9]]

```

Graph 1, Individuals 1,...,32

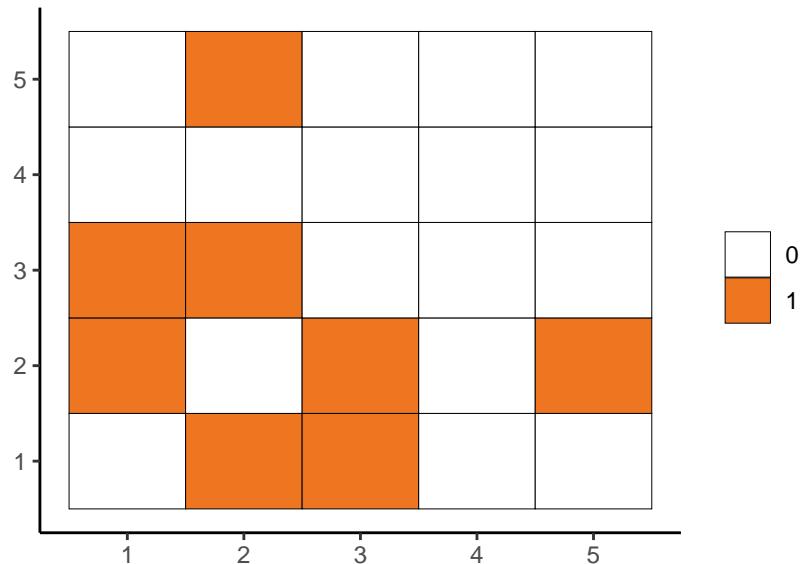


```

##
## $trial86$unique_graphs[[10]]

```

Graph 2, Individuals 33,...,43



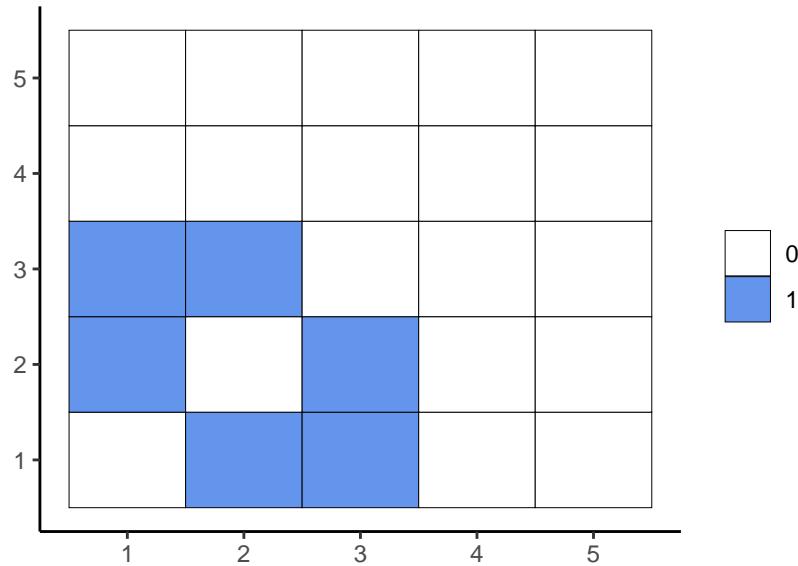
```

##

```

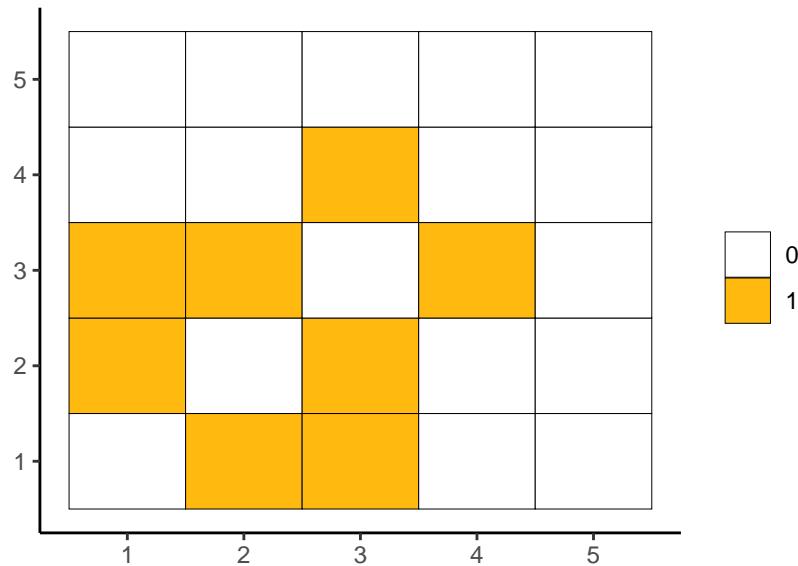
```
## $trial86$unique_graphs[[11]]
```

Graph 3, Individuals 44,...,98



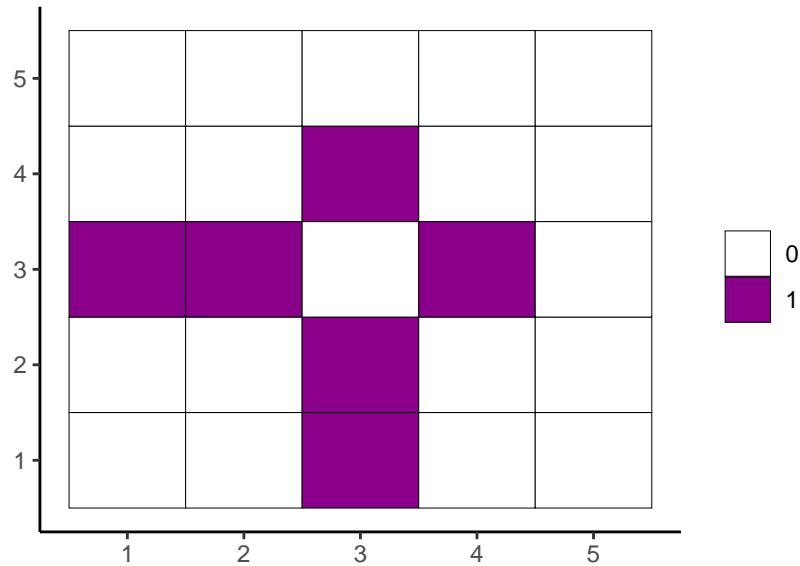
```
##  
## $trial86$unique_graphs[[12]]
```

Graph 4, Individuals 99,...,113



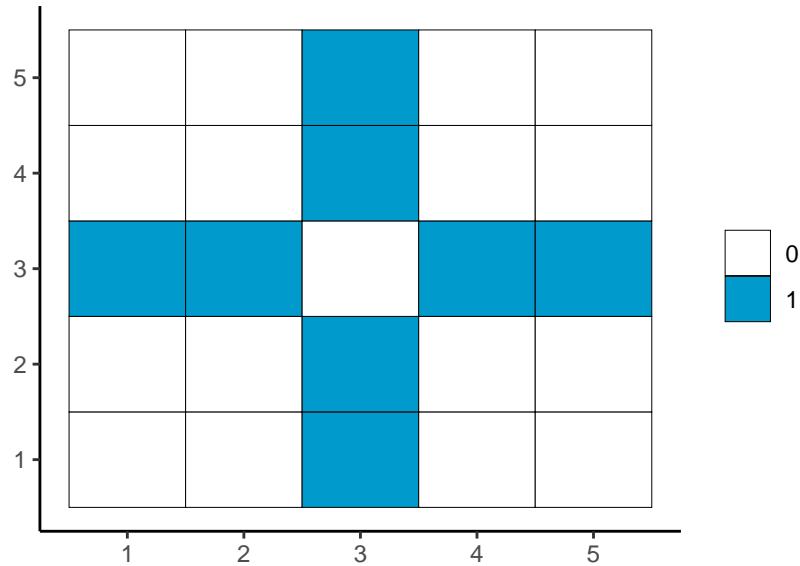
```
##  
## $trial86$unique_graphs[[13]]
```

Graph 5, Individuals 114,...,122



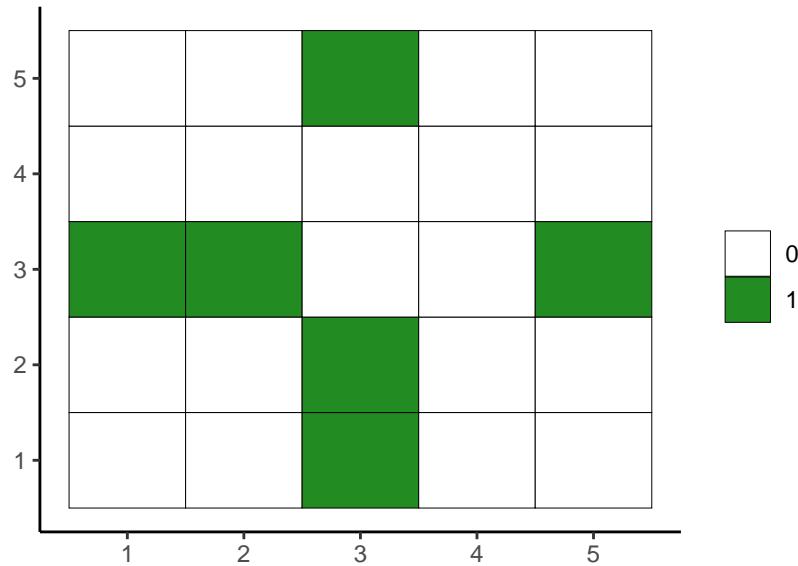
```
##  
## $trial186$unique_graphs[[14]]
```

Graph 6, Individuals 123,...,141



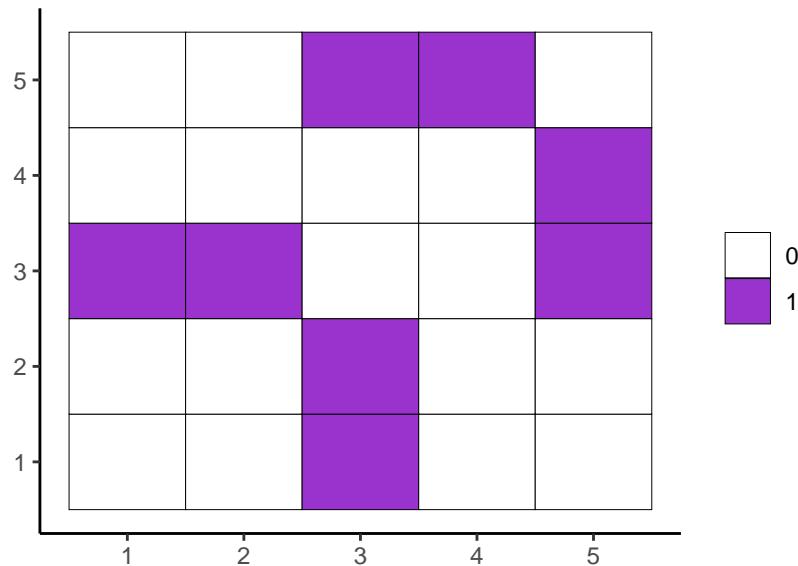
```
##  
## $trial186$unique_graphs[[15]]
```

Graph 7, Individuals 142,...,155



```
##  
## $trial86$unique_graphs[[16]]
```

Graph 8, Individuals 156,...,180

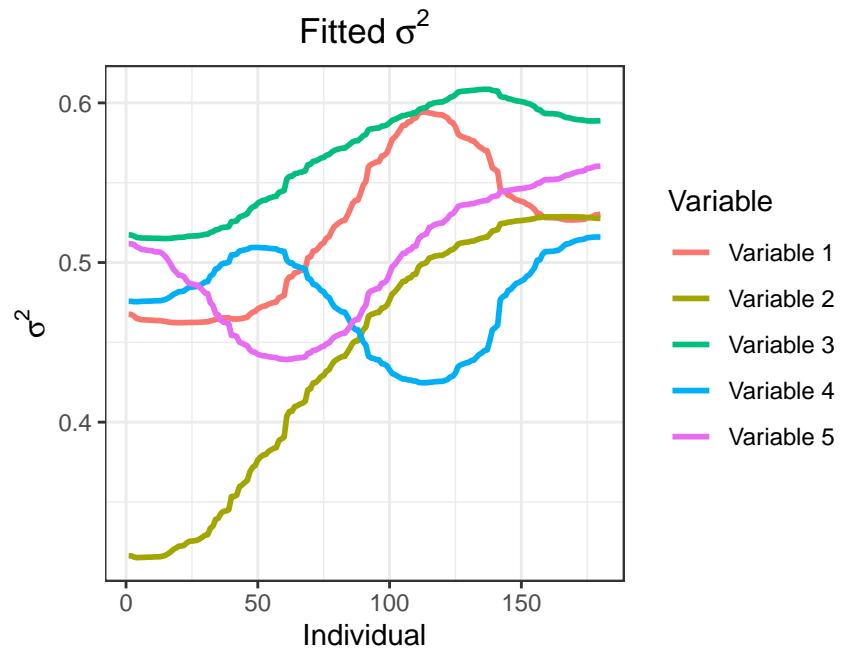


```
##  
##  
## $trial86$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial86$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.40      0.45      0.45      0.05      0.45
##
## $trial86$sigmasq

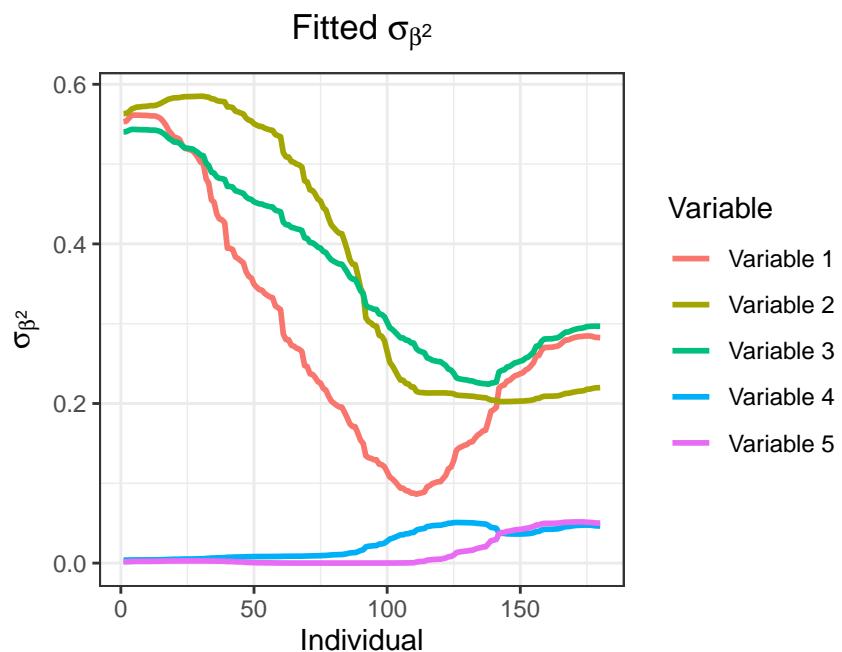
```



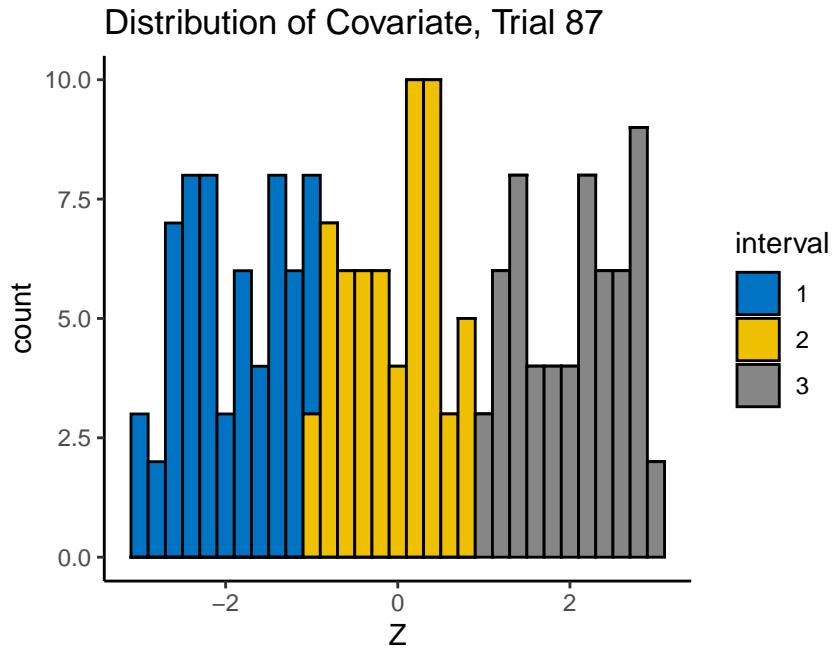
```

## 
## $trial86$sigmabetasq

```

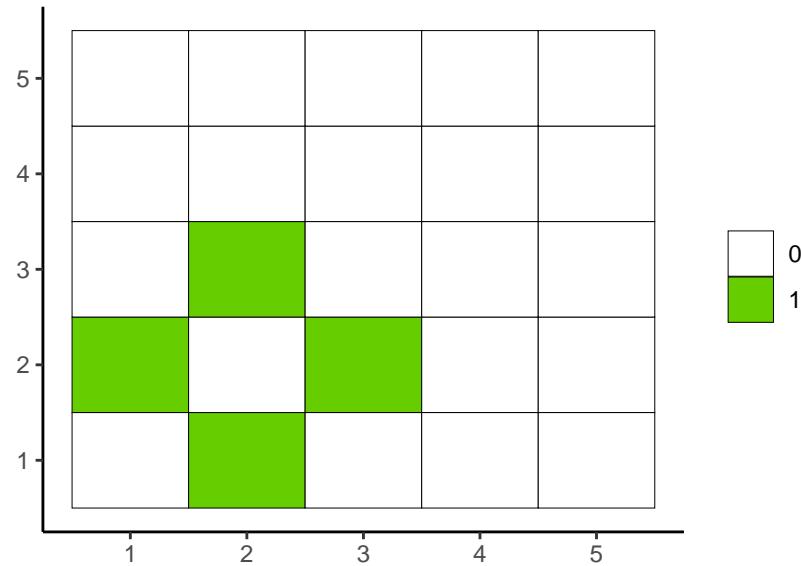


```
##  
##  
## $trial87  
## $trial87$covariates
```



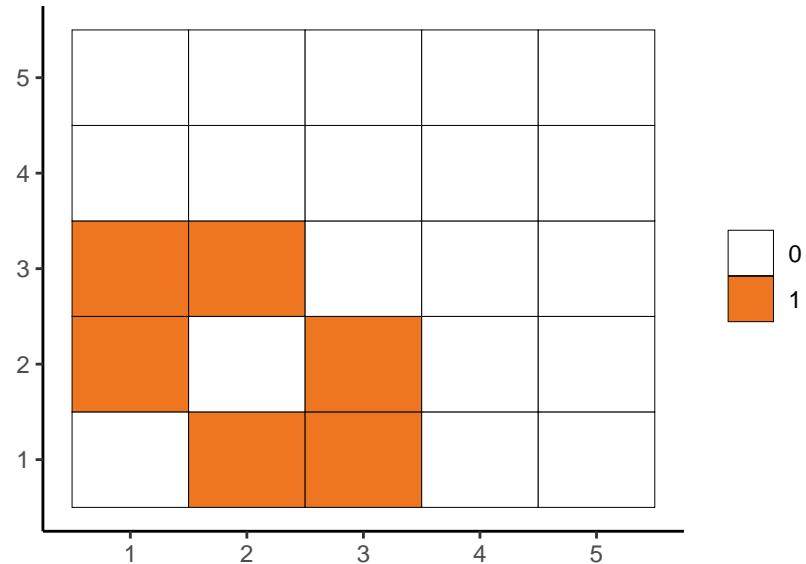
```
##  
## $trial87$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84805.4 Unique conditional dependence structures: 5  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 1/5 variables  
##  
## Model fit completed in 34.87 secs  
##  
## $trial87$unique_graphs  
## $trial87$unique_graphs$graph1  
## [1] "1,...,64"  
##  
## $trial87$unique_graphs$graph2  
## [1] "65,...,132"  
##  
## $trial87$unique_graphs$graph3  
## [1] "133,...,141"  
##  
## $trial87$unique_graphs$graph4  
## [1] "142,...,144"  
##  
## $trial87$unique_graphs$graph5  
## [1] "145,...,180"  
##  
## $trial87$unique_graphs[[6]]
```

Graph 1, Individuals 1,...,64



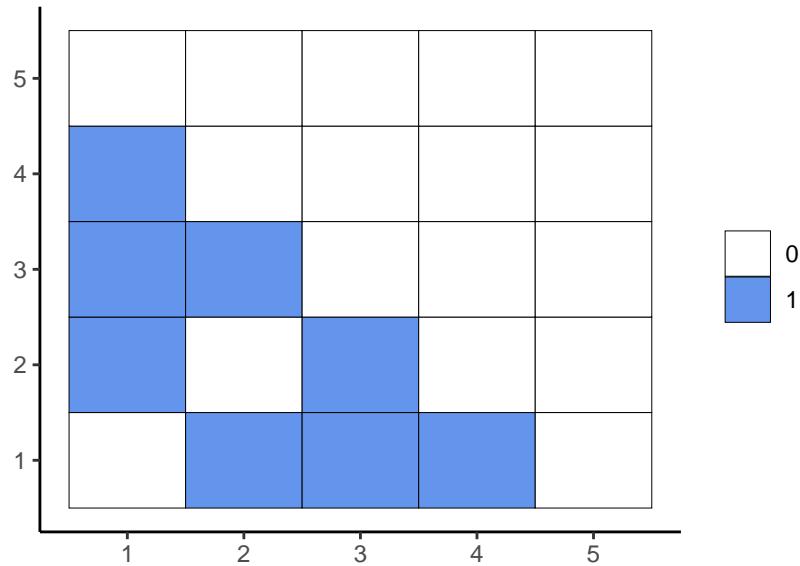
```
##  
## $trial87$unique_graphs[[7]]
```

Graph 2, Individuals 65,...,132



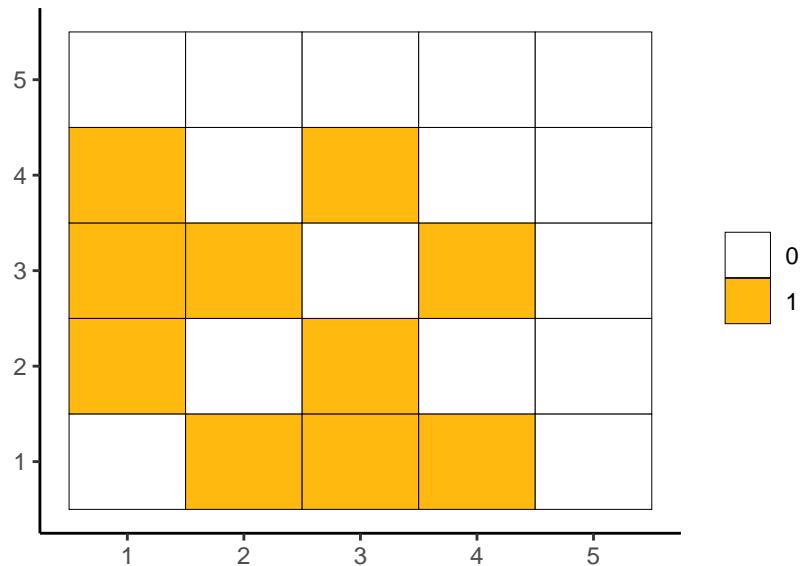
```
##  
## $trial87$unique_graphs[[8]]
```

Graph 3, Individuals 133,...,141



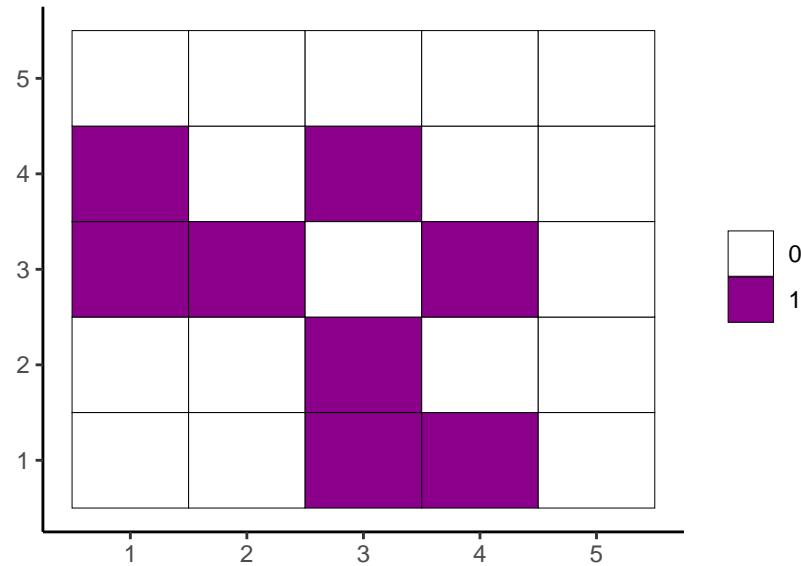
```
##  
## $trial87$unique_graphs[[9]]
```

Graph 4, Individuals 142,...,144

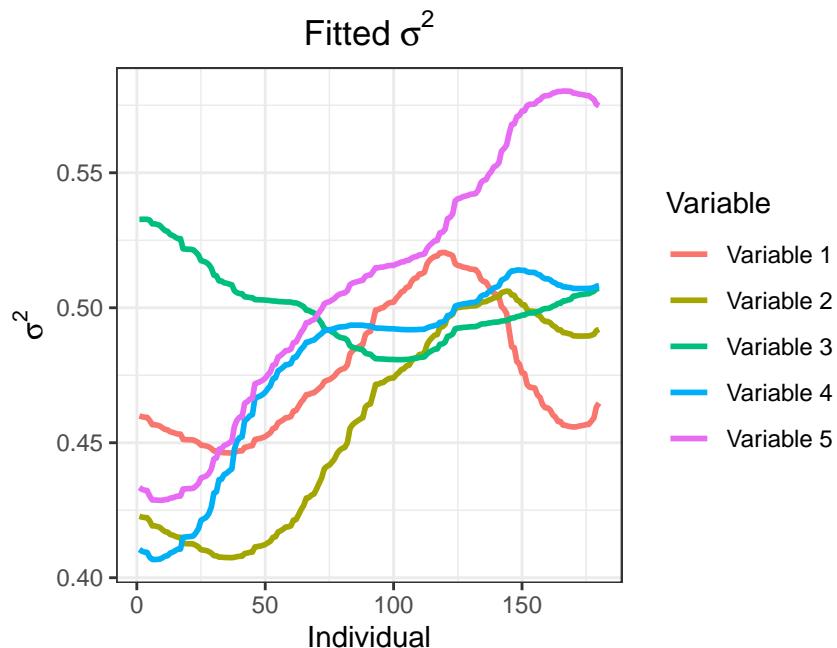


```
##  
## $trial87$unique_graphs[[10]]
```

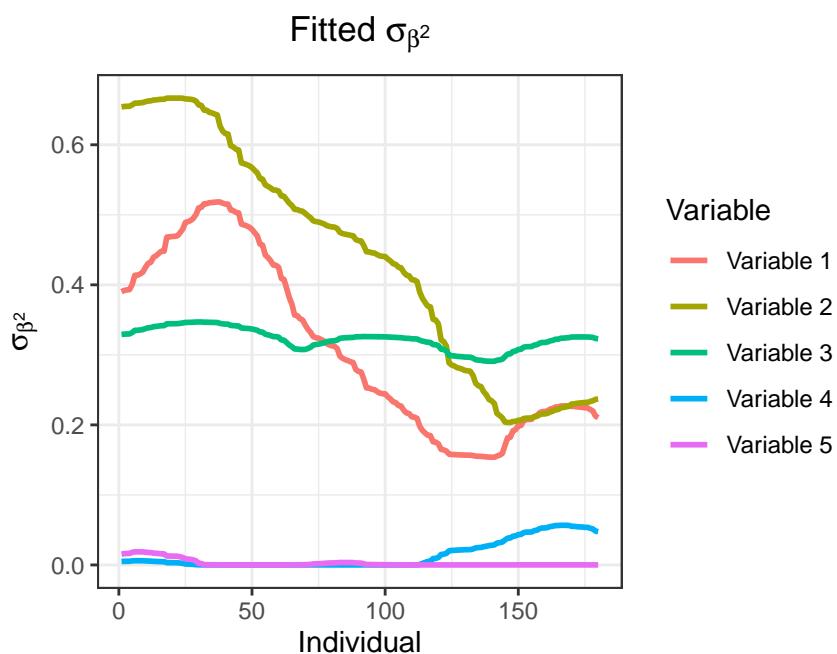
Graph 5, Individuals 145,...,180



```
##  
##  
## $trial87$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial87$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.45      0.45      0.45      0.05      0.05  
##  
## $trial87$sigmasq
```

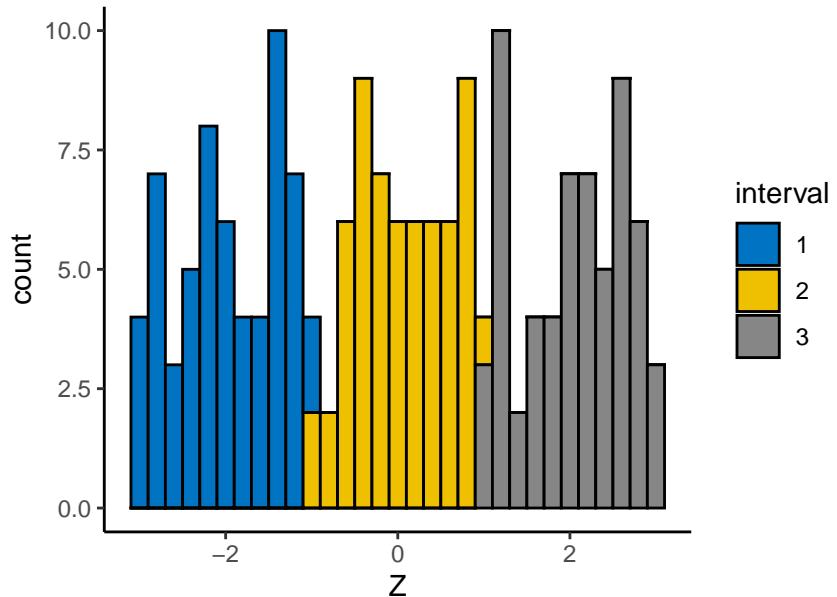


```
##  
## $trial87$sigmabetasq
```



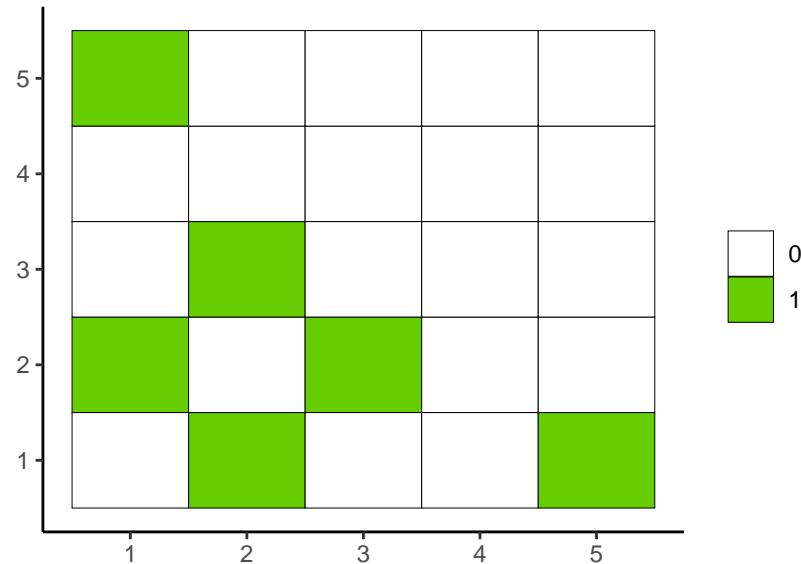
```
##  
##  
## $trial88  
## $trial88$covariates
```

Distribution of Covariate, Trial 88



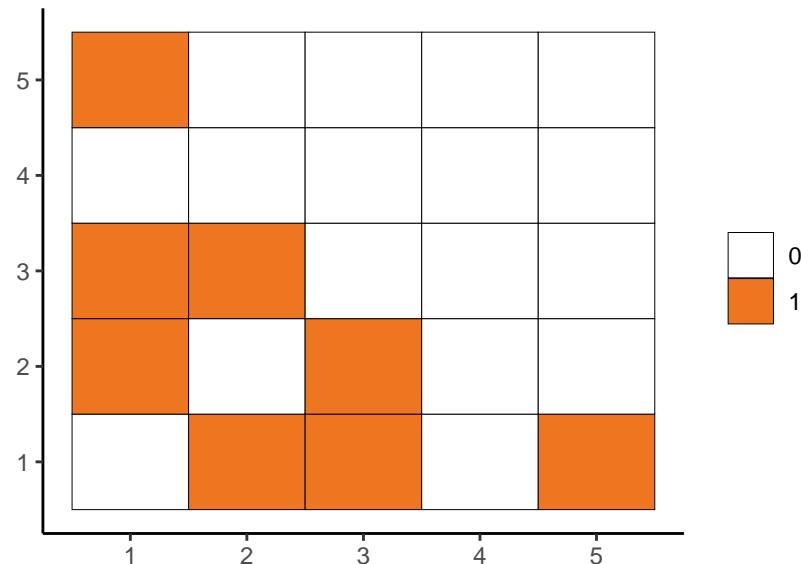
```
##
## $trial88$summary
## Covariate Dependent Graphical Model
##
## Model ELBO: -85504.25           Unique conditional dependence structures: 2
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 3/5 variables
##
## Model fit completed in 34.662 secs
##
## $trial88$unique_graphs
## $trial88$unique_graphs$graph1
## [1] "1,...,45"
##
## $trial88$unique_graphs$graph2
## [1] "46,...,180"
##
## $trial88$unique_graphs[[3]]
```

Graph 1, Individuals 1,...,45



```
##  
## $trial88$unique_graphs[[4]]
```

Graph 2, Individuals 46,...,180

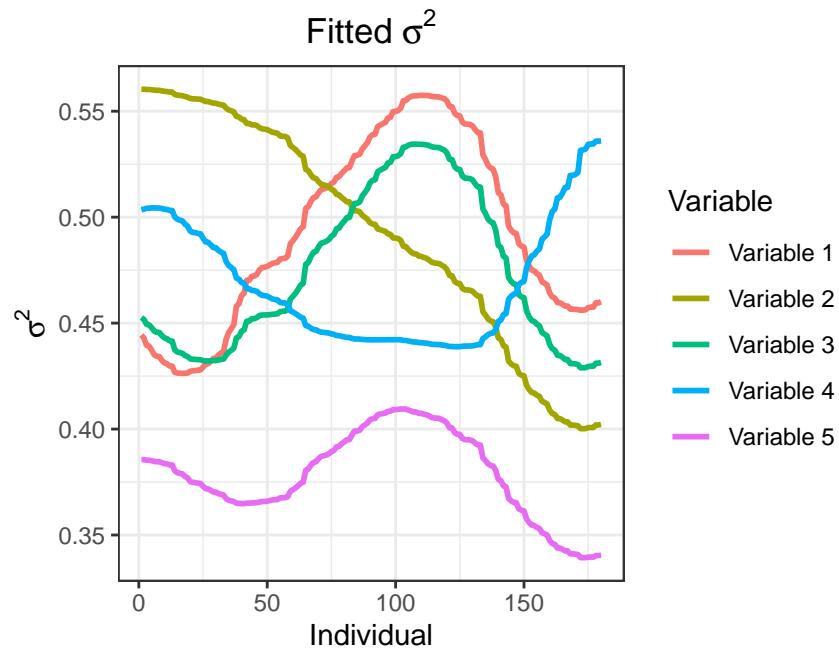


```
##  
##  
## $trial88$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##
```

```

## $trial88$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.45      0.45      0.45      0.05      0.05
##
## $trial88$sigmasq

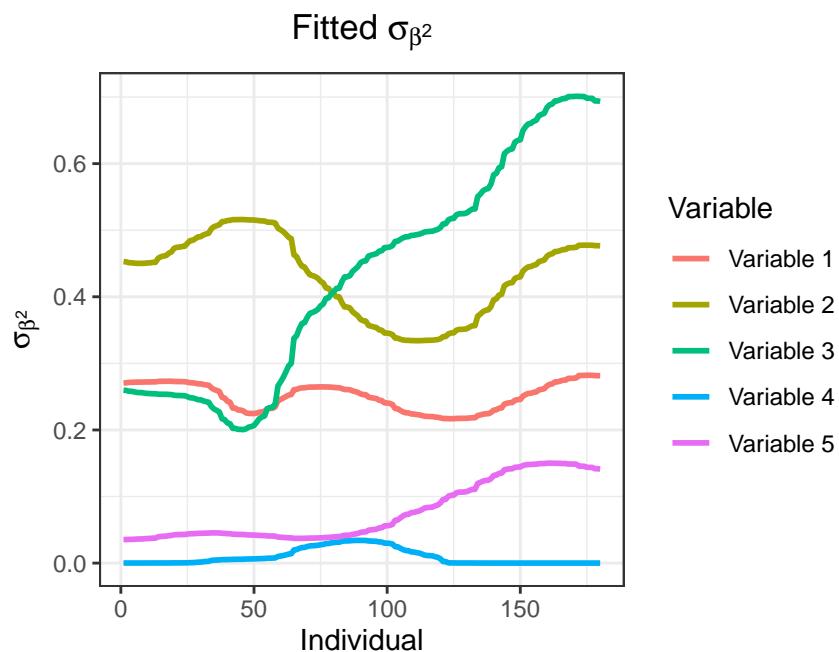
```



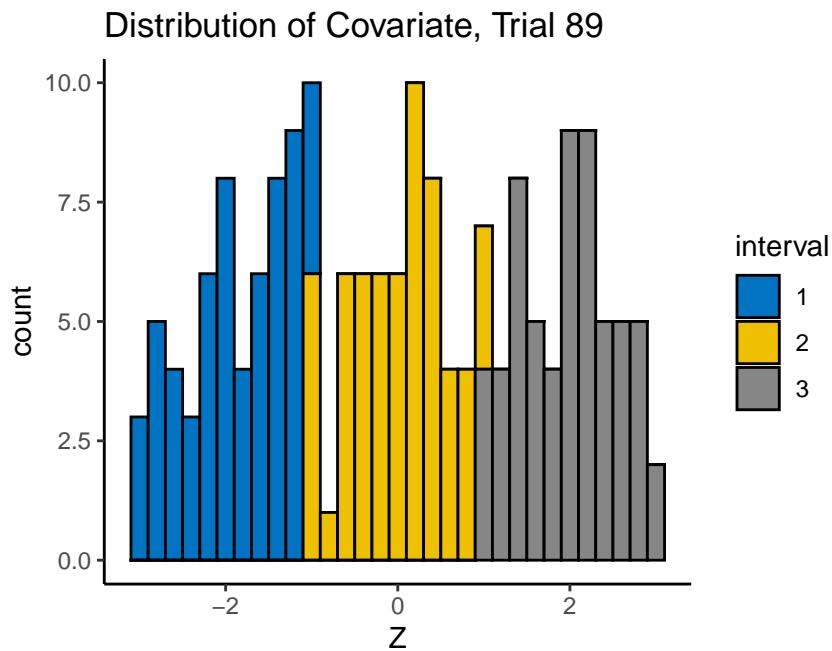
```

## 
## $trial88$sigmabetasq

```

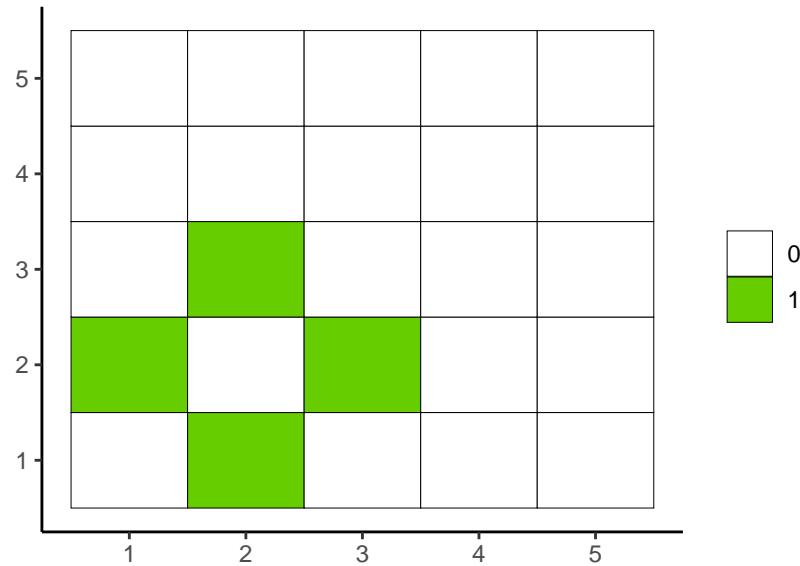


```
##  
##  
## $trial89  
## $trial89$covariates
```



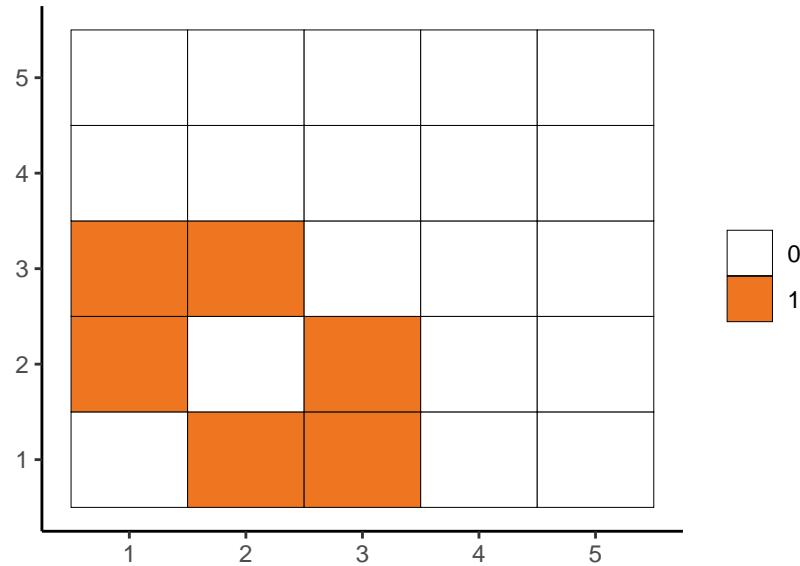
```
##  
## $trial89$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84513.05 Unique conditional dependence structures: 5  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 3/5 variables  
##  
## Model fit completed in 27.525 secs  
##  
## $trial89$unique_graphs  
## $trial89$unique_graphs$graph1  
## [1] "1,...,54"  
##  
## $trial89$unique_graphs$graph2  
## [1] "55,...,78,115,...,167"  
##  
## $trial89$unique_graphs$graph3  
## [1] "79,...,90,106,...,114"  
##  
## $trial89$unique_graphs$graph4  
## [1] "91,...,105"  
##  
## $trial89$unique_graphs$graph5  
## [1] "168,...,180"  
##  
## $trial89$unique_graphs[[6]]
```

Graph 1, Individuals 1,...,54



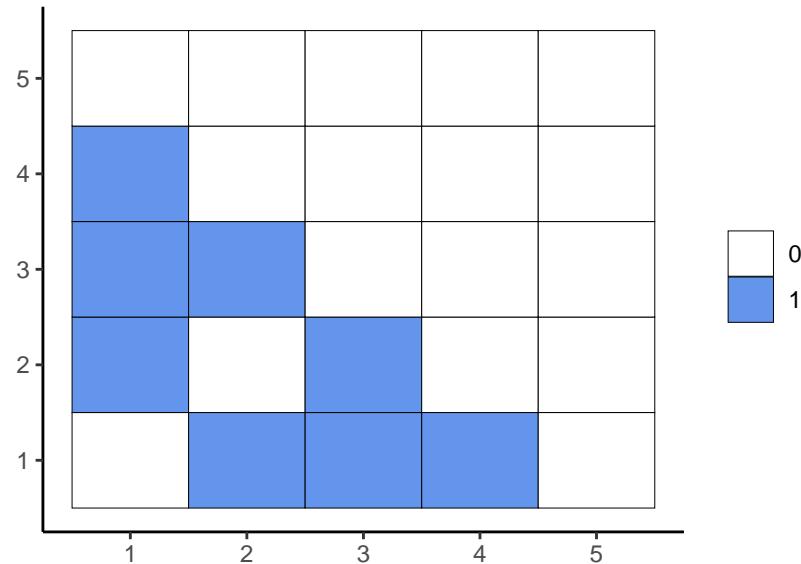
```
##  
## $trial189$unique_graphs[[7]]
```

Graph 2, Individuals 55,...,78,115,...,167



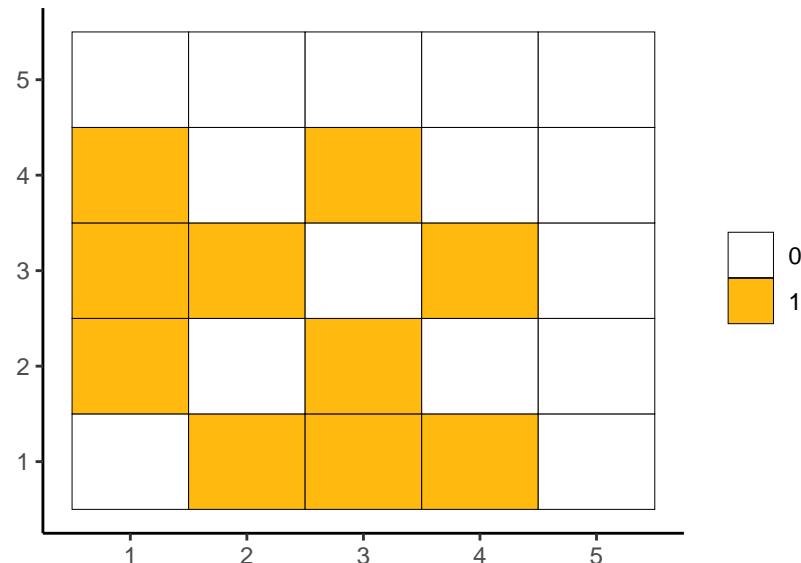
```
##  
## $trial189$unique_graphs[[8]]
```

Graph 3, Individuals 79,...,90,106,...,114



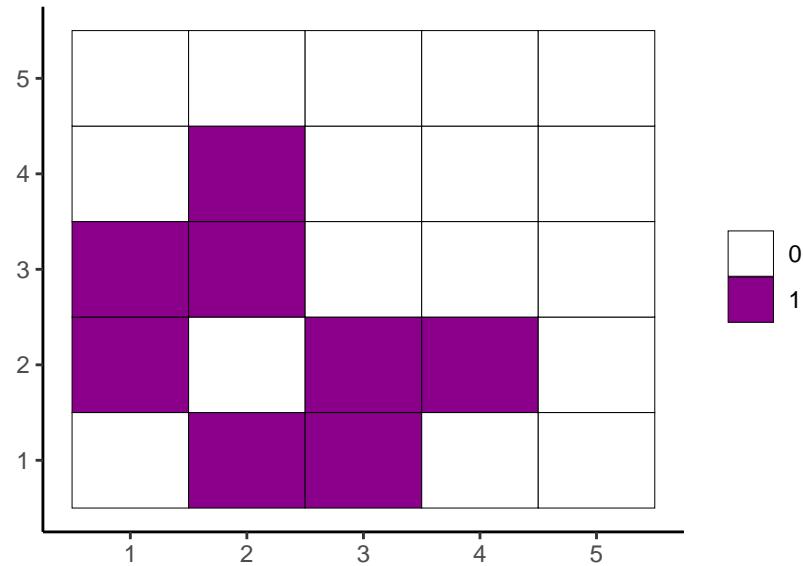
```
##  
## $trial189$unique_graphs[[9]]
```

Graph 4, Individuals 91,...,105

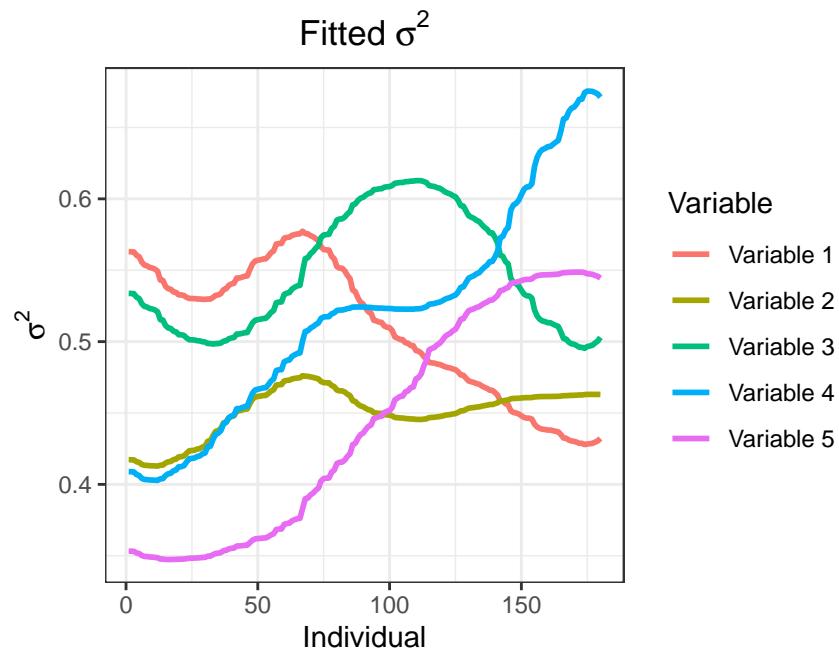


```
##  
## $trial189$unique_graphs[[10]]
```

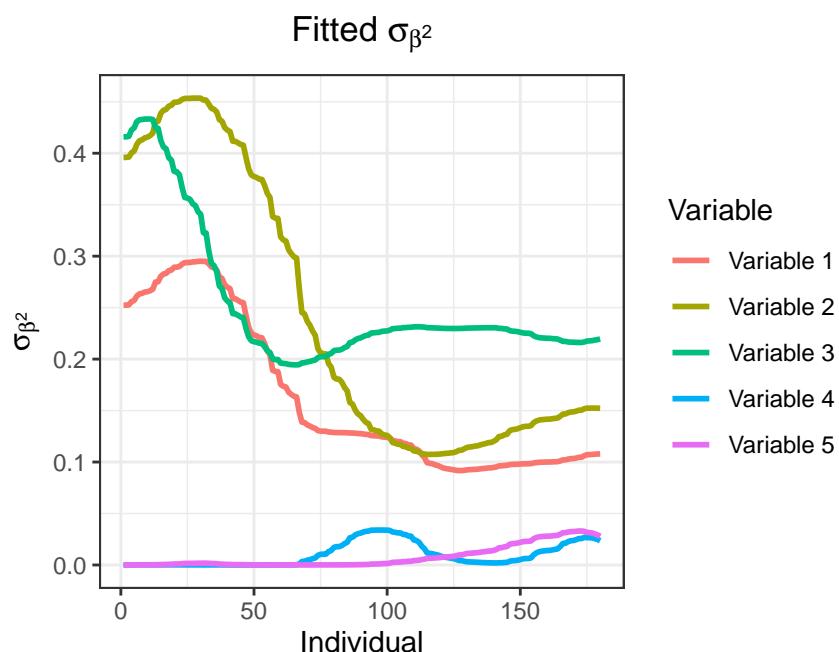
Graph 5, Individuals 168,...,180



```
##  
##  
## $trial89$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial89$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.45      0.45      0.45      0.05      0.05  
##  
## $trial89$sigmasq
```

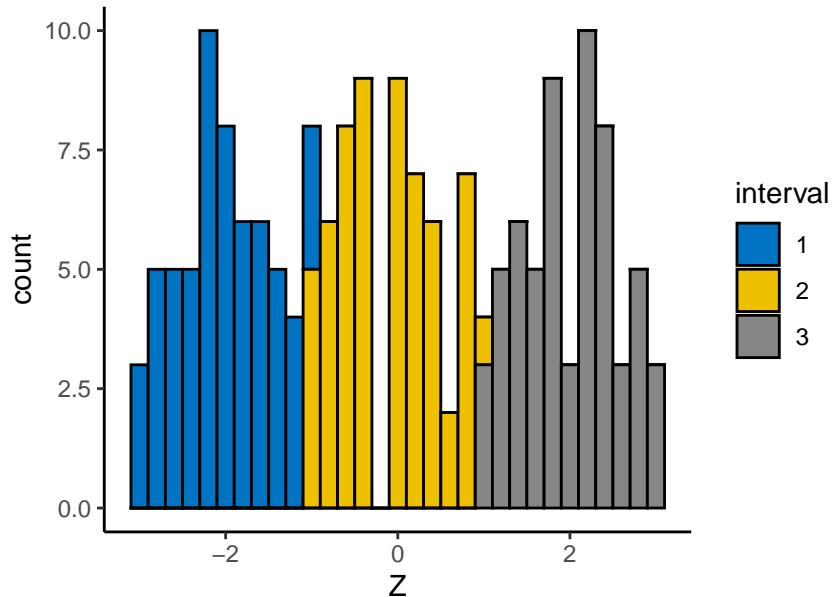


```
##  
## $trial89$sigmabetasq
```



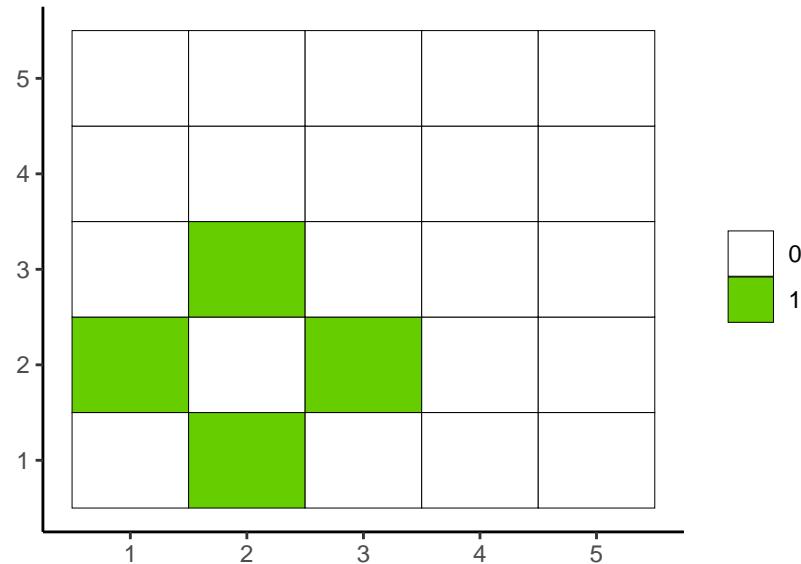
```
##  
##  
## $trial90  
## $trial90$covariates
```

Distribution of Covariate, Trial 90



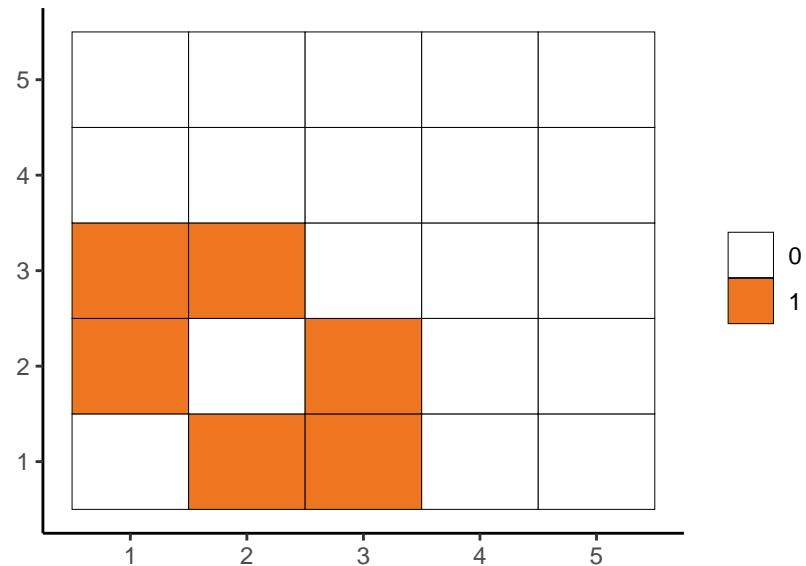
```
##
## $trial90$summary
## Covariate Dependent Graphical Model
##
## Model ELBO: -84969.63           Unique conditional dependence structures: 4
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 1/5 variables
##
## Model fit completed in 33.357 secs
##
## $trial90$unique_graphs
## $trial90$unique_graphs$graph1
## [1] "1,...,60"
##
## $trial90$unique_graphs$graph2
## [1] "61,...,129"
##
## $trial90$unique_graphs$graph3
## [1] "130,...,135"
##
## $trial90$unique_graphs$graph4
## [1] "136,...,180"
##
## $trial90$unique_graphs[[5]]
```

Graph 1, Individuals 1,...,60



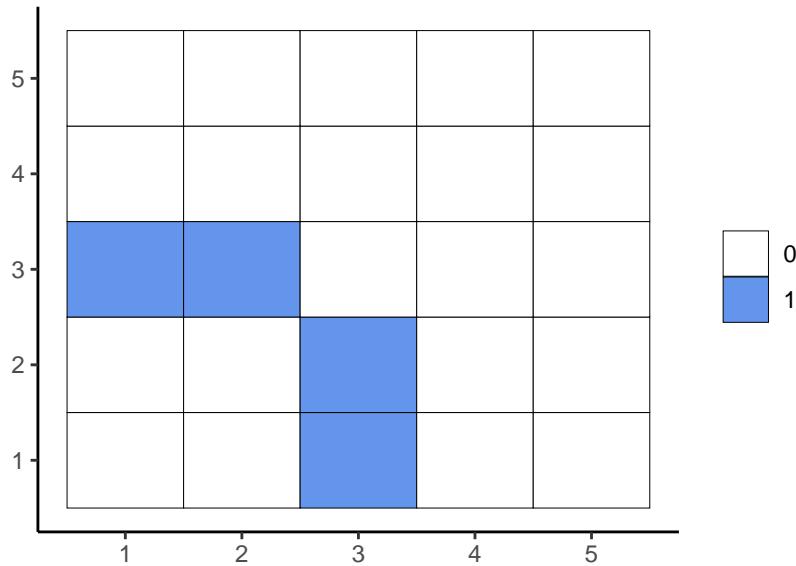
```
##  
## $trial90$unique_graphs[[6]]
```

Graph 2, Individuals 61,...,129



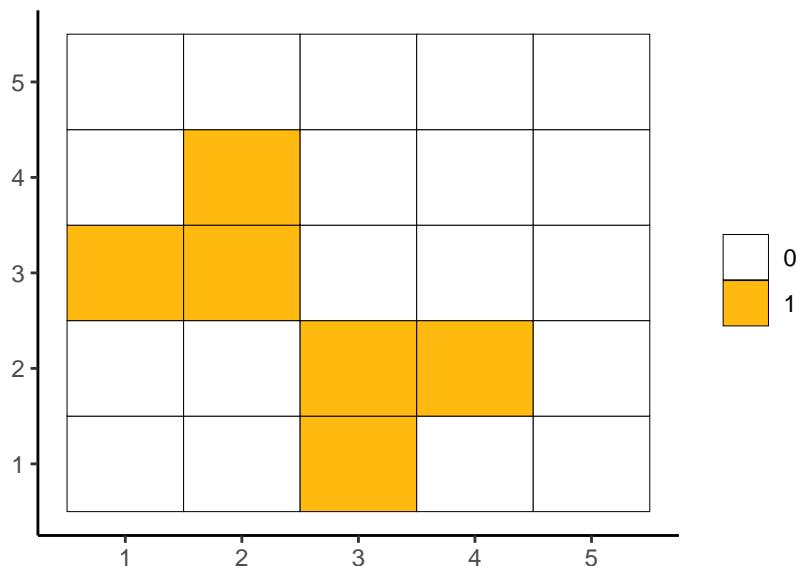
```
##  
## $trial90$unique_graphs[[7]]
```

Graph 3, Individuals 130,...,135



```
##  
## $trial90$unique_graphs[[8]]
```

Graph 4, Individuals 136,...,180

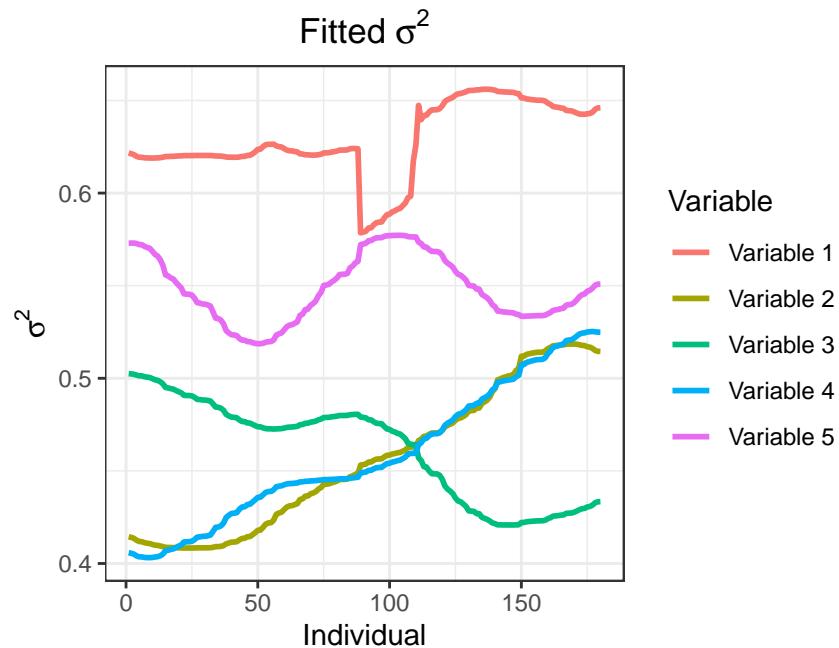


```
##  
##  
## $trial90$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial90$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.05      0.45      0.45      0.05      0.05
##
## $trial90$sigmasq

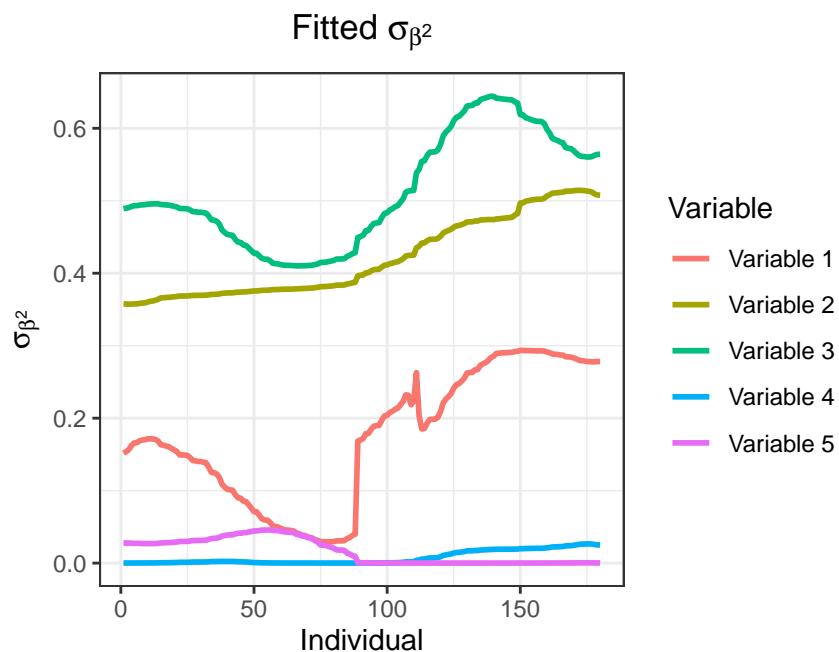
```



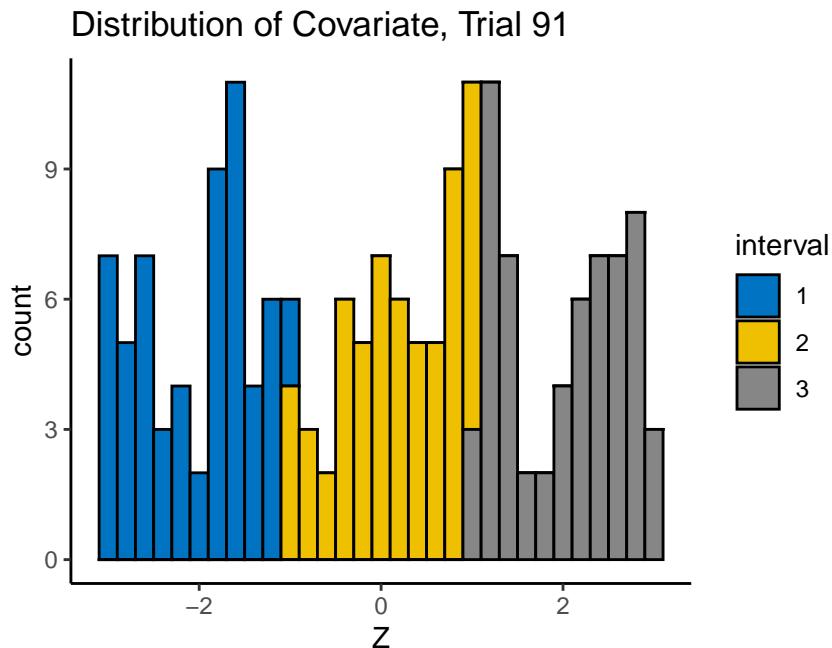
```

## $trial90$sigmabetasq

```

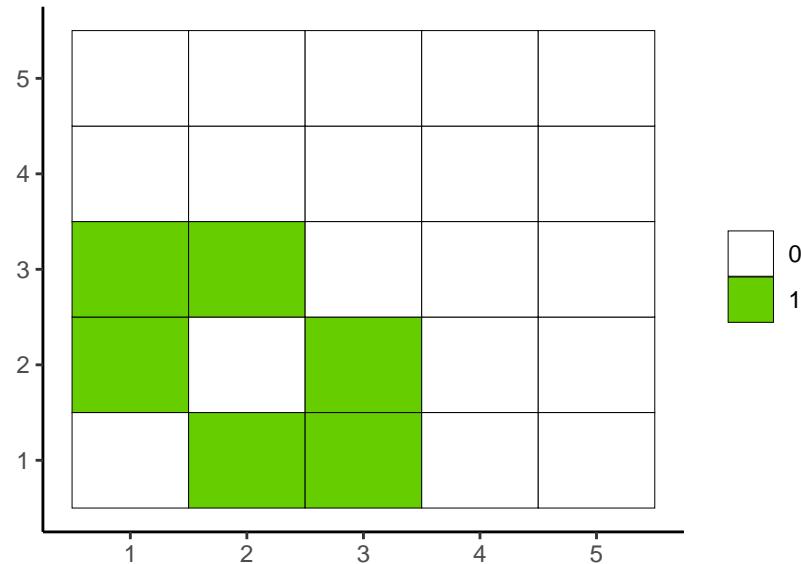


```
##  
##  
## $trial91  
## $trial91$covariates
```



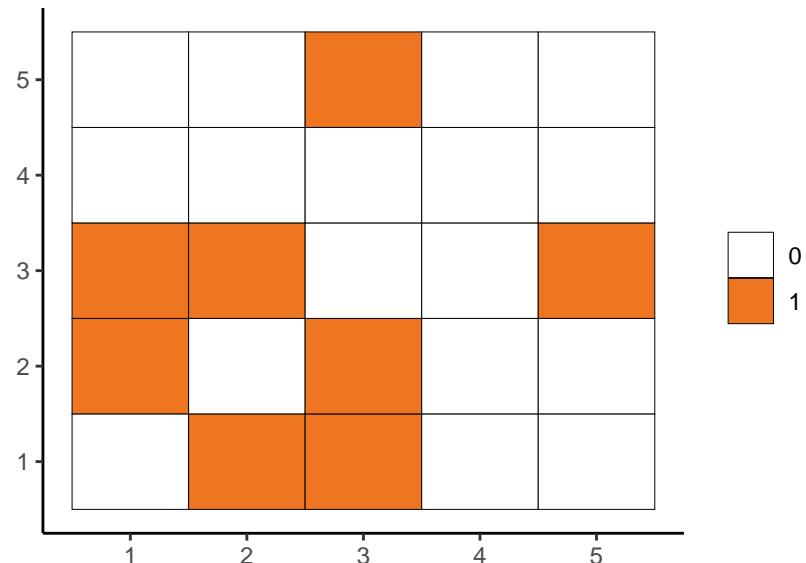
```
##  
## $trial91$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -85184.93 Unique conditional dependence structures: 4  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 2/5 variables  
##  
## Model fit completed in 28.709 secs  
##  
## $trial91$unique_graphs  
## $trial91$unique_graphs$graph1  
## [1] "1,...,50"  
##  
## $trial91$unique_graphs$graph2  
## [1] "51,...,108"  
##  
## $trial91$unique_graphs$graph3  
## [1] "109,...,139"  
##  
## $trial91$unique_graphs$graph4  
## [1] "140,...,180"  
##  
## $trial91$unique_graphs[[5]]
```

Graph 1, Individuals 1,...,50



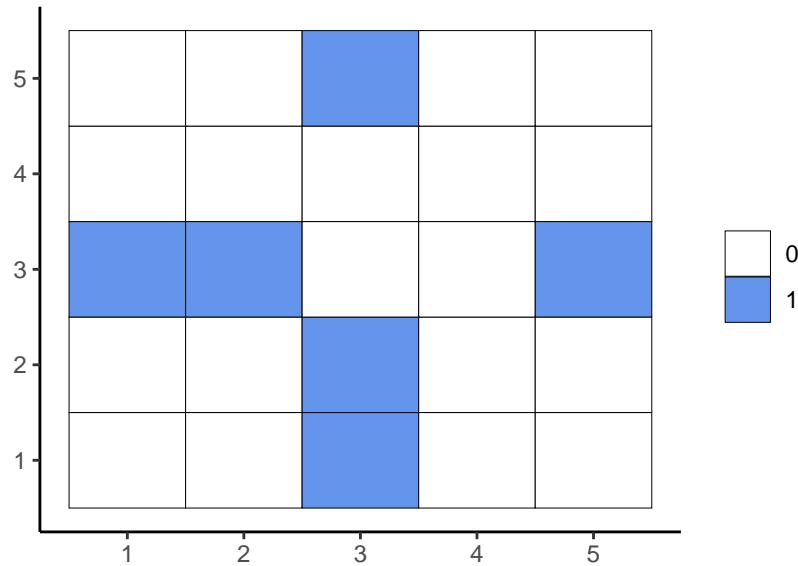
```
##  
## $trial91$unique_graphs[[6]]
```

Graph 2, Individuals 51,...,108



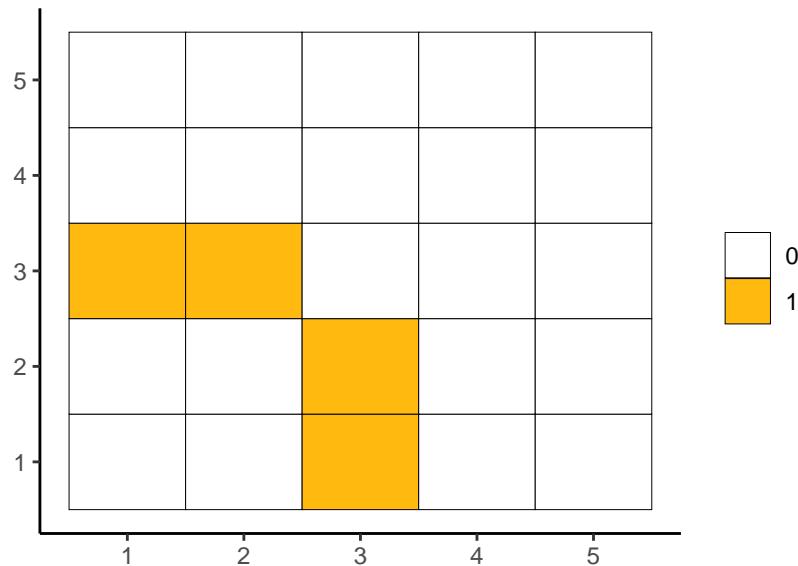
```
##  
## $trial91$unique_graphs[[7]]
```

Graph 3, Individuals 109,...,139



```
##  
## $trial91$unique_graphs[[8]]
```

Graph 4, Individuals 140,...,180

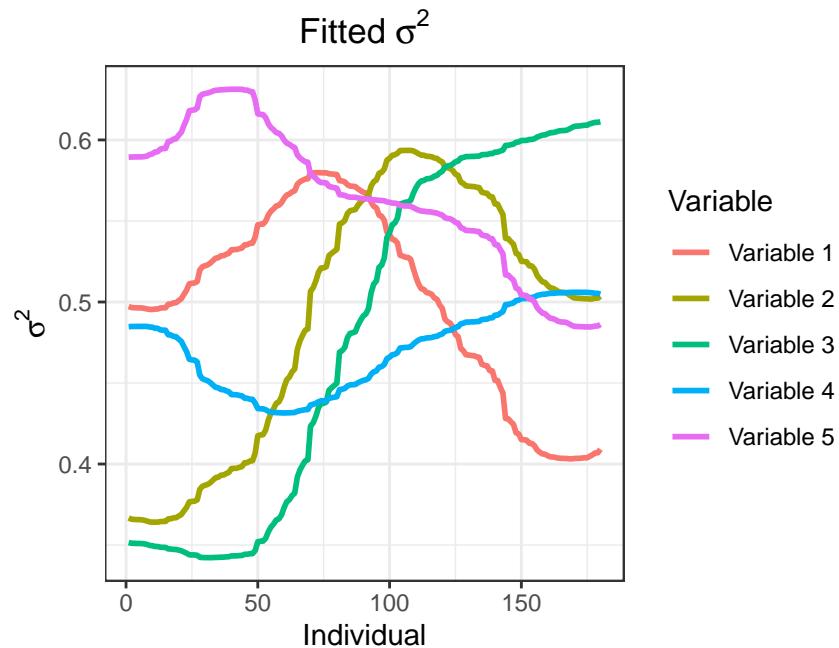


```
##  
##  
## $trial91$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial91$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.45      0.45      0.45      0.05      0.05
##
## $trial91$sigmasq

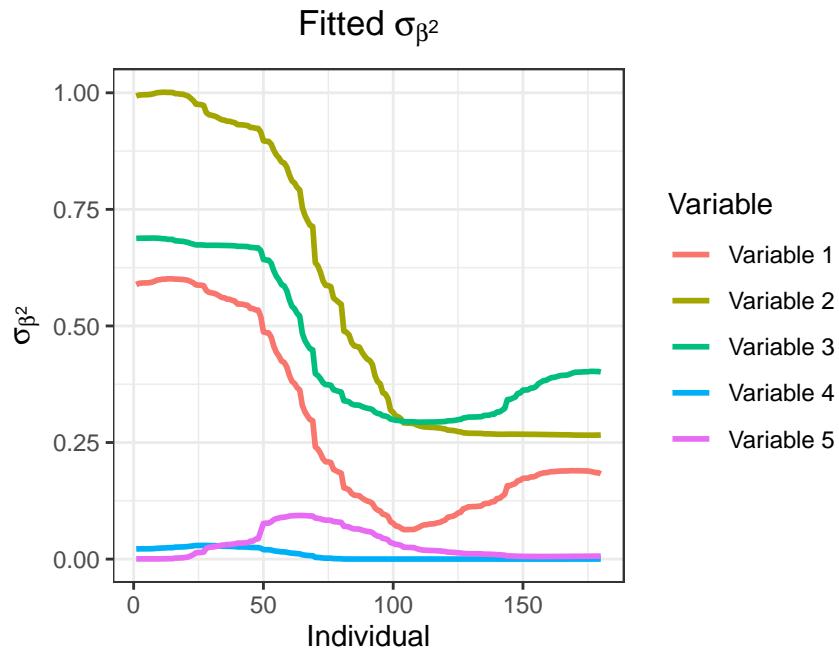
```



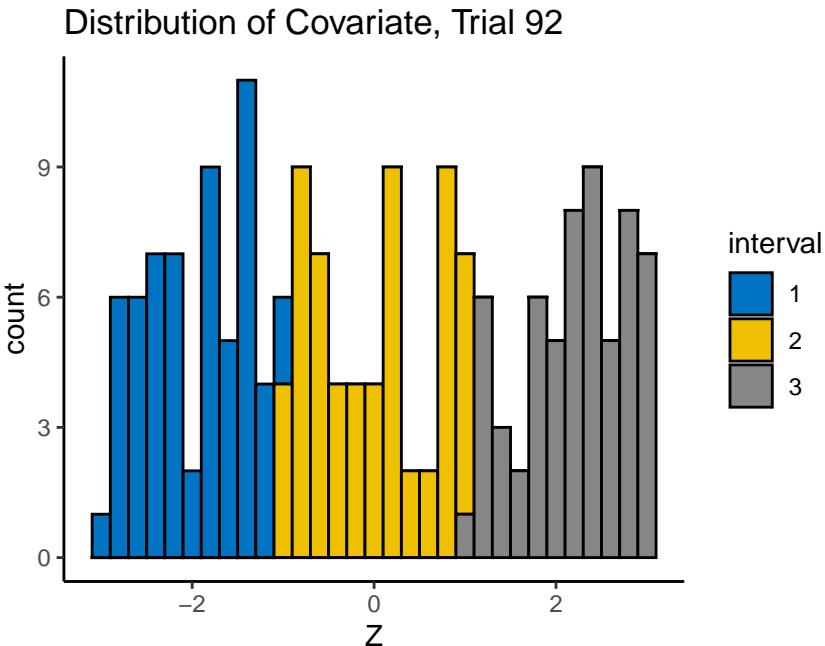
```

## $trial91$sigmabetasq

```

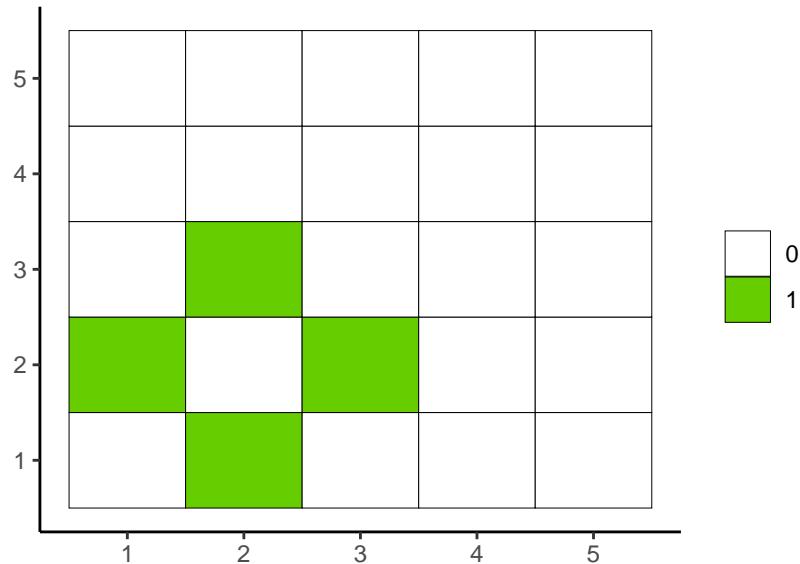


```
##  
##  
## $trial92  
## $trial92$covariates
```



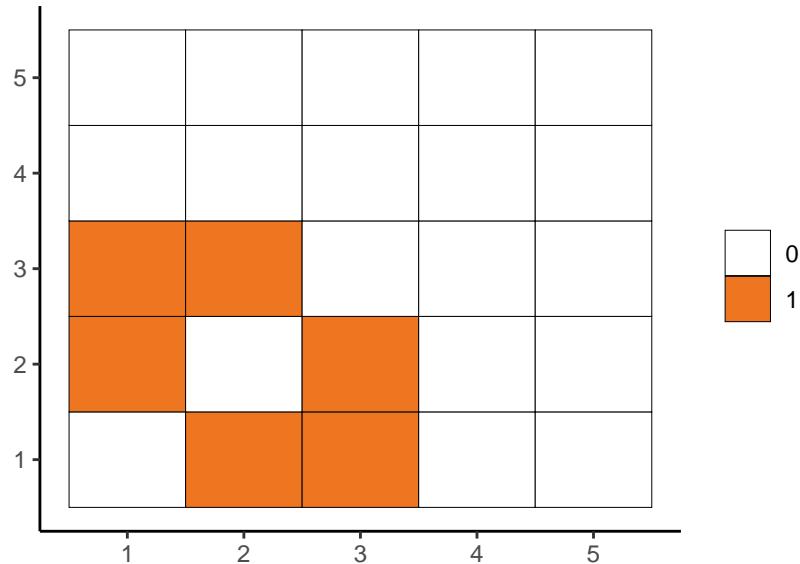
```
##  
## $trial92$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84576.21 Unique conditional dependence structures: 4  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 2/5 variables  
##  
## Model fit completed in 26.392 secs  
##  
## $trial92$unique_graphs  
## $trial92$unique_graphs$graph1  
## [1] "1,...,85"  
##  
## $trial92$unique_graphs$graph2  
## [1] "86,...,104"  
##  
## $trial92$unique_graphs$graph3  
## [1] "105,...,146"  
##  
## $trial92$unique_graphs$graph4  
## [1] "147,...,180"  
##  
## $trial92$unique_graphs[[5]]
```

Graph 1, Individuals 1,...,85



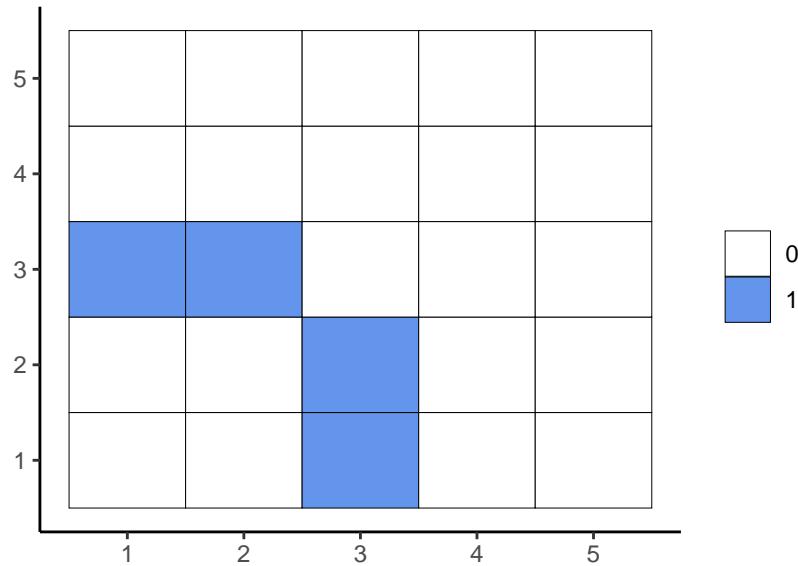
```
##  
## $trial92$unique_graphs[[6]]
```

Graph 2, Individuals 86,...,104



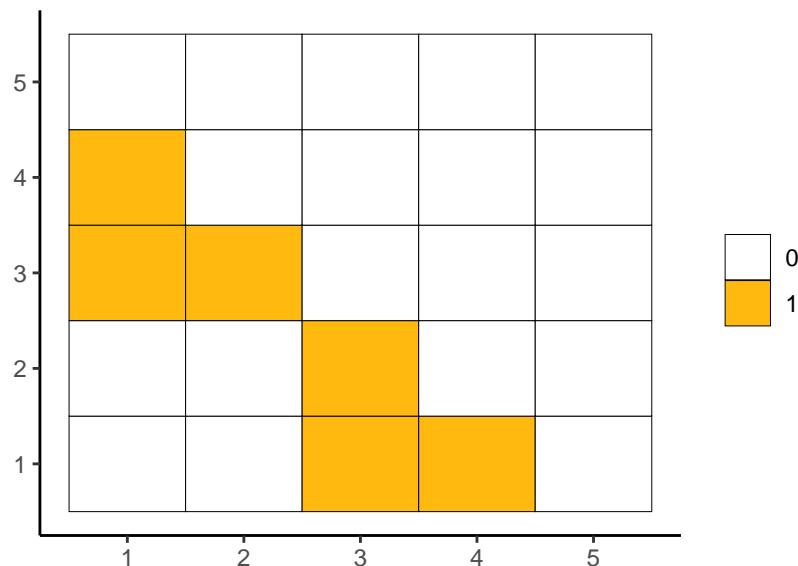
```
##  
## $trial92$unique_graphs[[7]]
```

Graph 3, Individuals 105,...,146



```
##  
## $trial92$unique_graphs[[8]]
```

Graph 4, Individuals 147,...,180

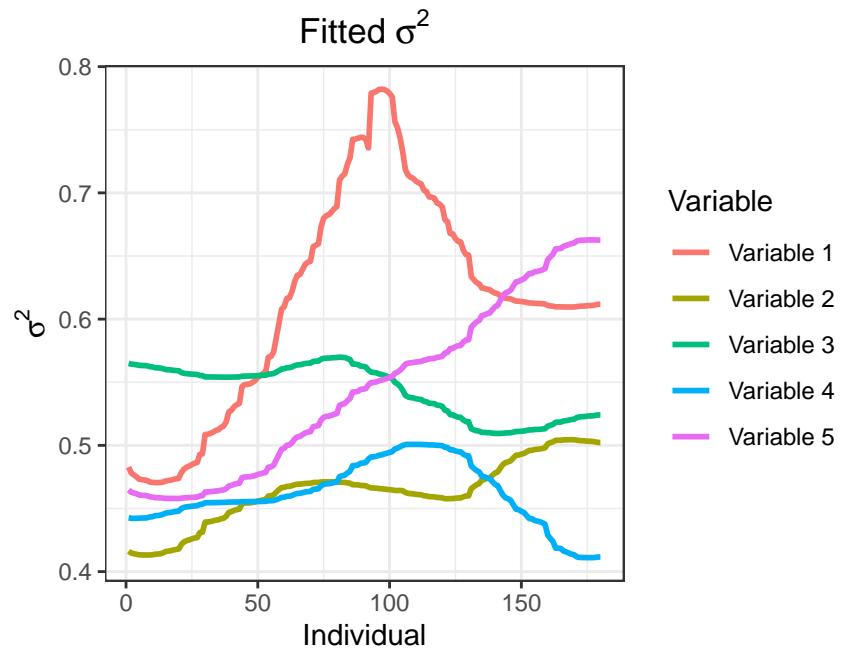


```
##  
##  
## $trial92$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial92$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.15      0.45      0.45      0.05      0.05
##
## $trial92$sigmasq

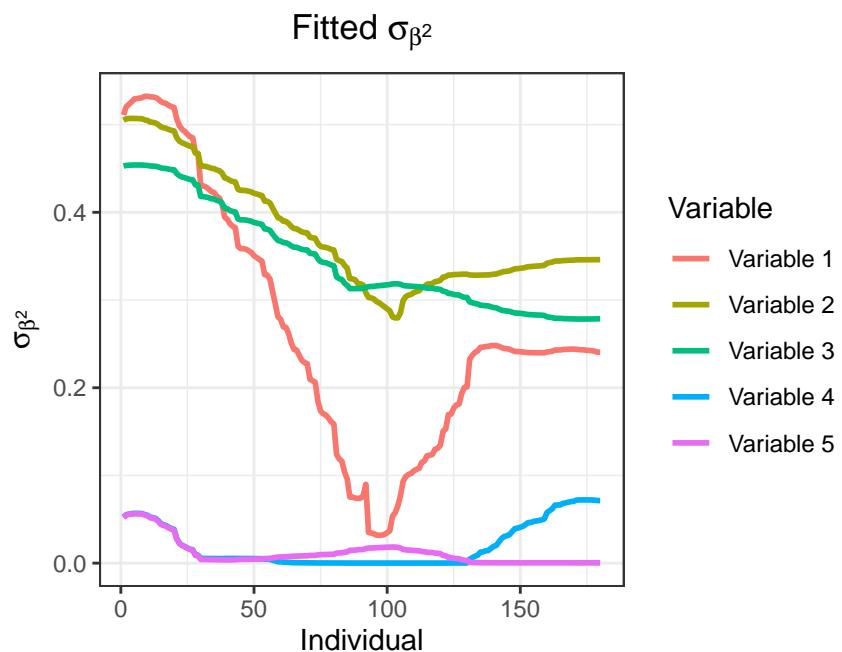
```



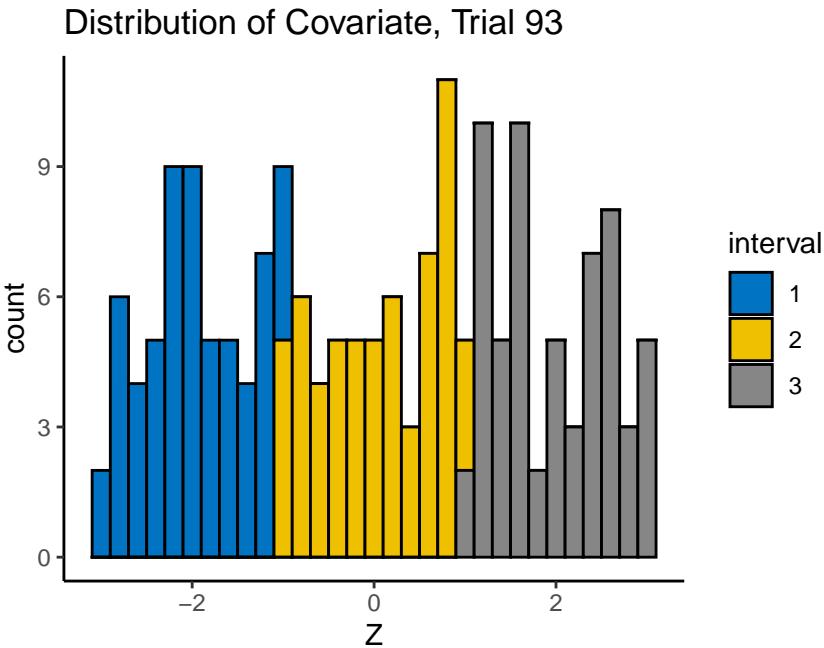
```

## $trial92$sigmabetasq

```

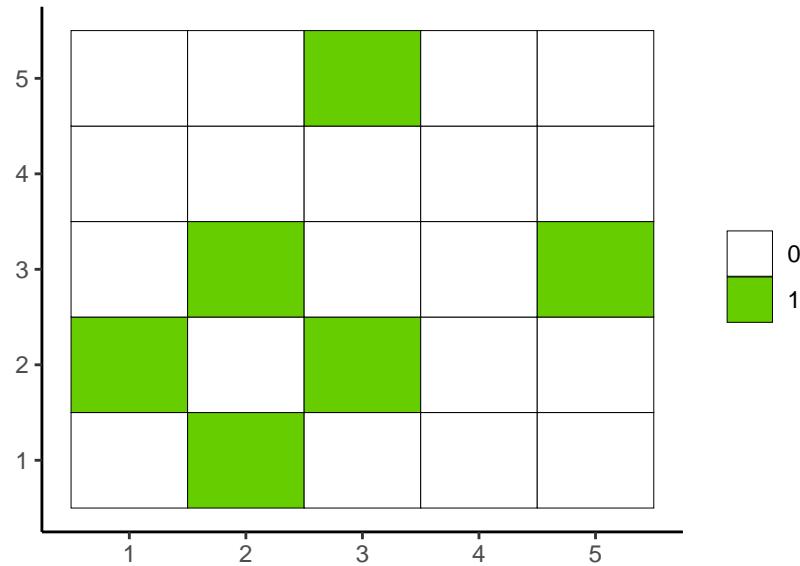


```
##  
##  
## $trial93  
## $trial93$covariates
```



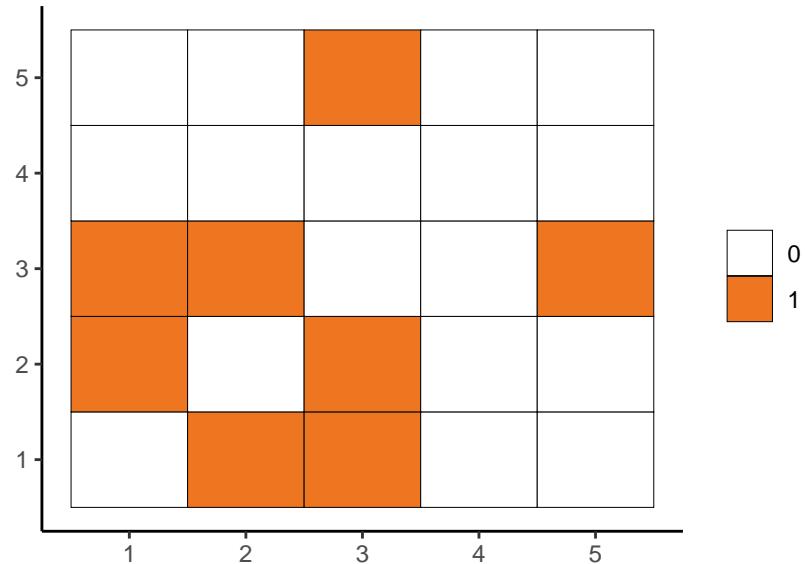
```
##  
## $trial93$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84440.45 Unique conditional dependence structures: 5  
## n: 180, variables: 5 Hyperparameter grid size: 9 points  
## CAVI converged for 2/5 variables  
##  
## Model fit completed in 28.475 secs  
##  
## $trial93$unique_graphs  
## $trial93$unique_graphs$graph1  
## [1] "1,...,45"  
##  
## $trial93$unique_graphs$graph2  
## [1] "46,...,49"  
##  
## $trial93$unique_graphs$graph3  
## [1] "50,...,84"  
##  
## $trial93$unique_graphs$graph4  
## [1] "85,...,155"  
##  
## $trial93$unique_graphs$graph5  
## [1] "156,...,180"  
##  
## $trial93$unique_graphs[[6]]
```

Graph 1, Individuals 1,...,45



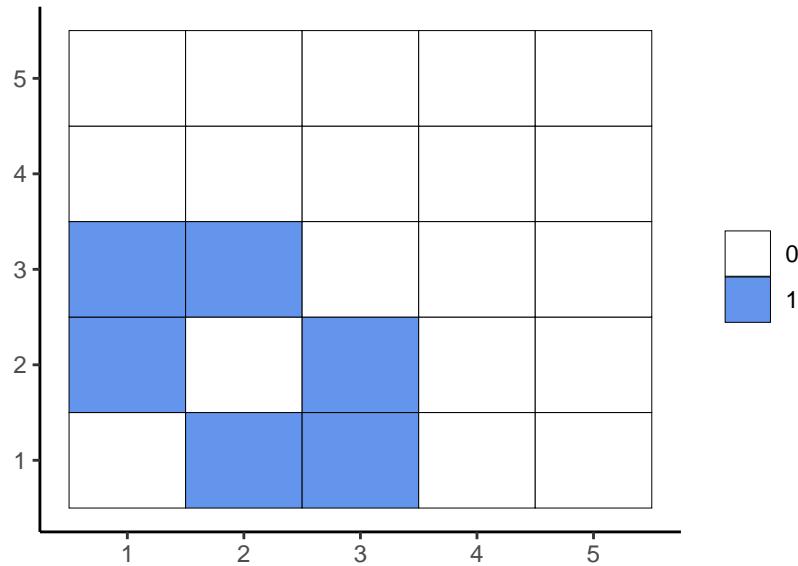
```
##  
## $trial93$unique_graphs[[7]]
```

Graph 2, Individuals 46,...,49



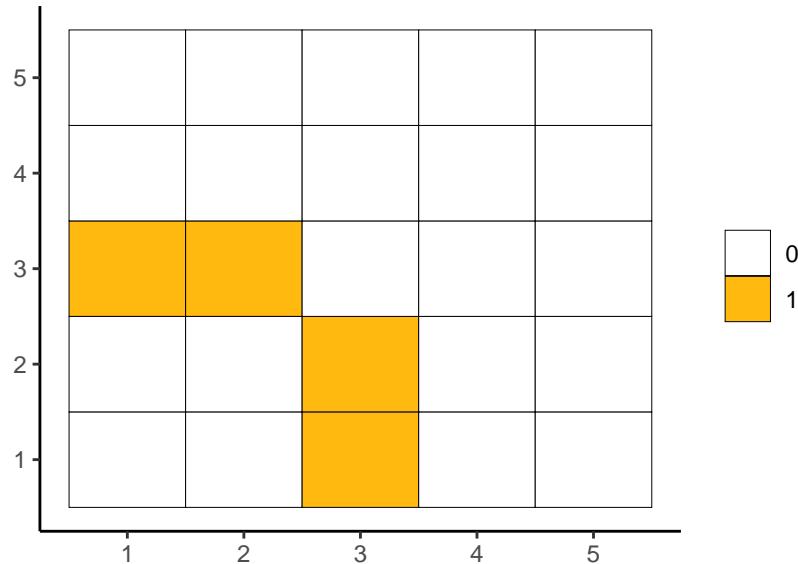
```
##  
## $trial93$unique_graphs[[8]]
```

Graph 3, Individuals 50,...,84



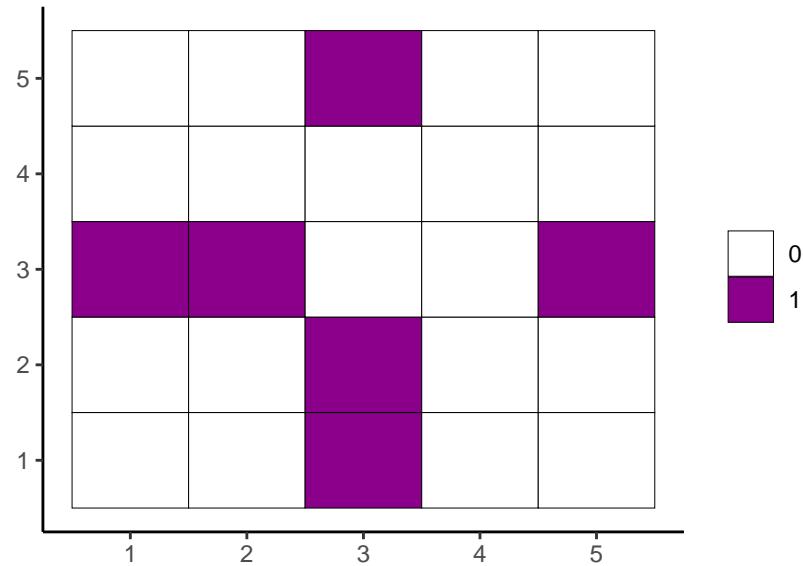
```
##  
## $trial93$unique_graphs[[9]]
```

Graph 4, Individuals 85,...,155

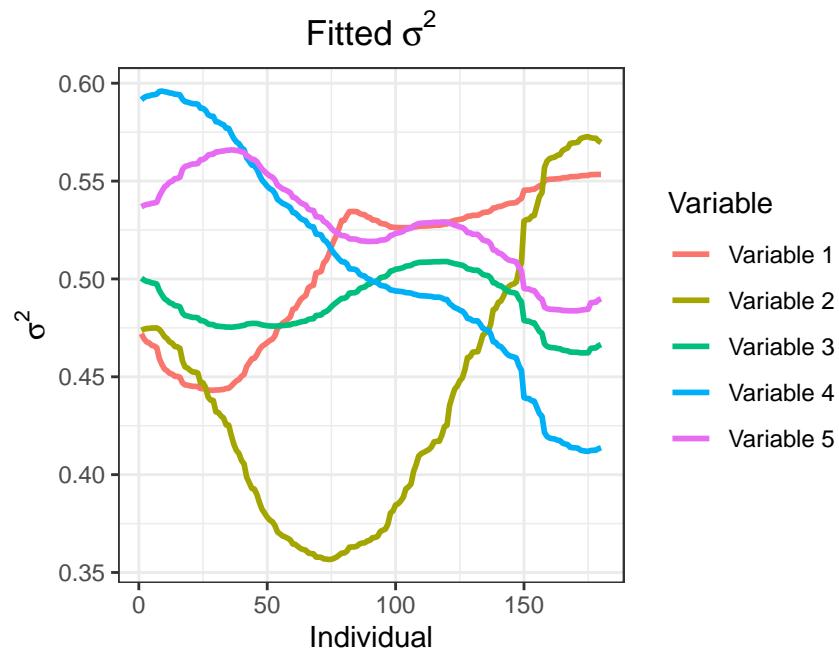


```
##  
## $trial93$unique_graphs[[10]]
```

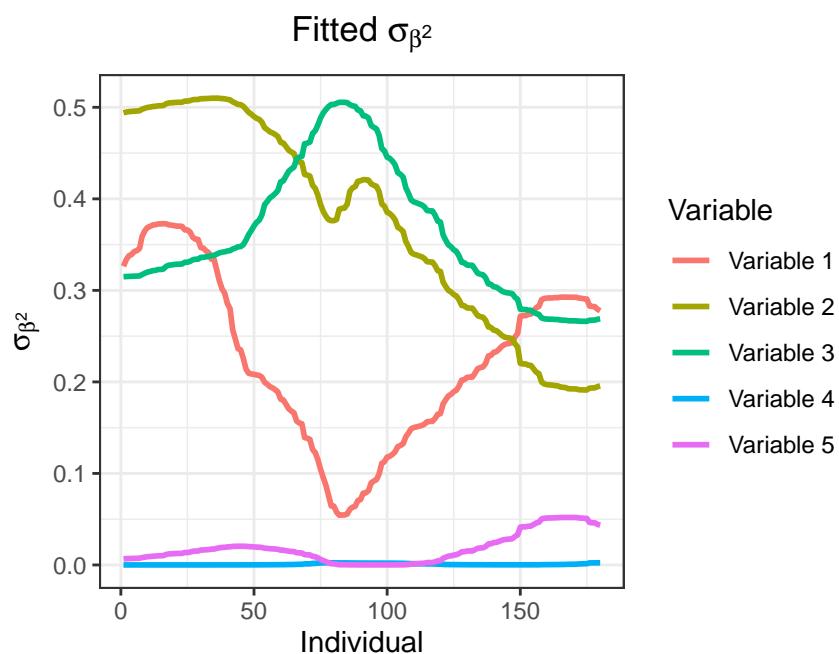
Graph 5, Individuals 156,...,180



```
##  
##  
## $trial93$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial93$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.40      0.45      0.45      0.05      0.05  
##  
## $trial93$sigmasq
```

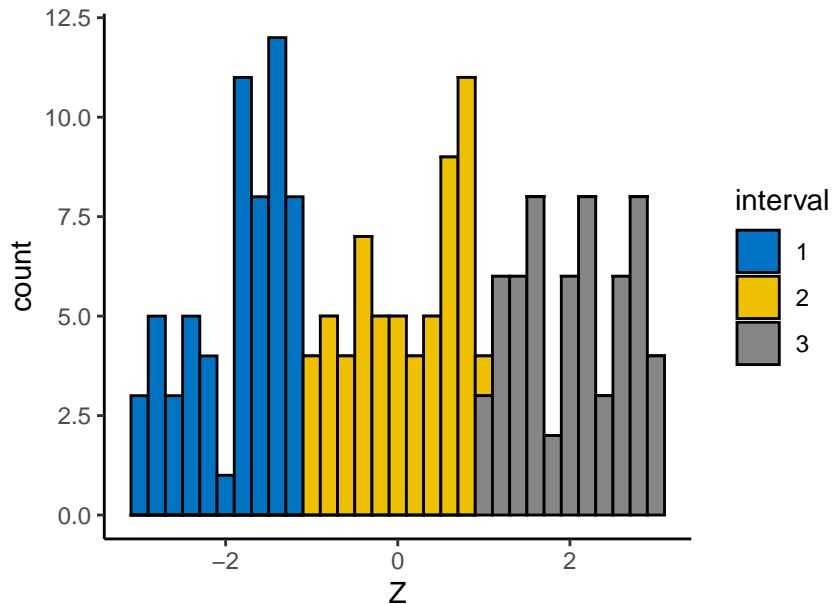


```
##  
## $trial93$sigmabetasq
```



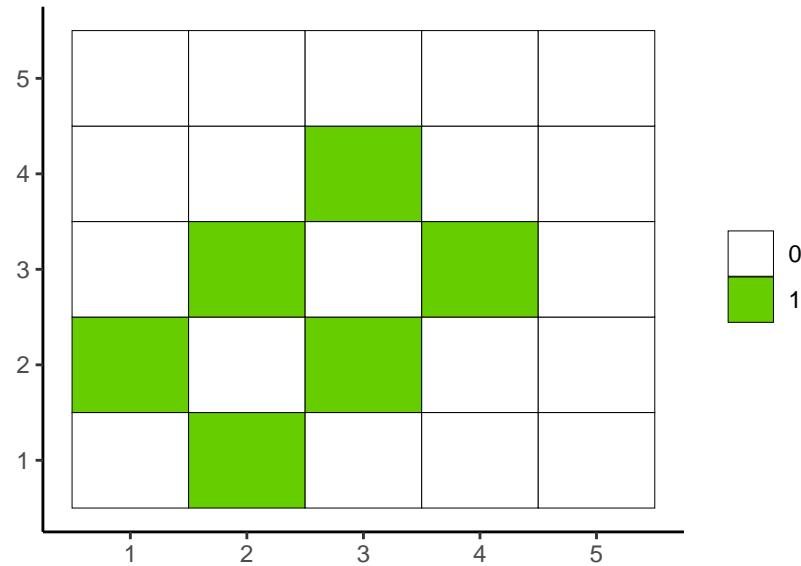
```
##  
##  
## $trial94  
## $trial94$covariates
```

Distribution of Covariate, Trial 94



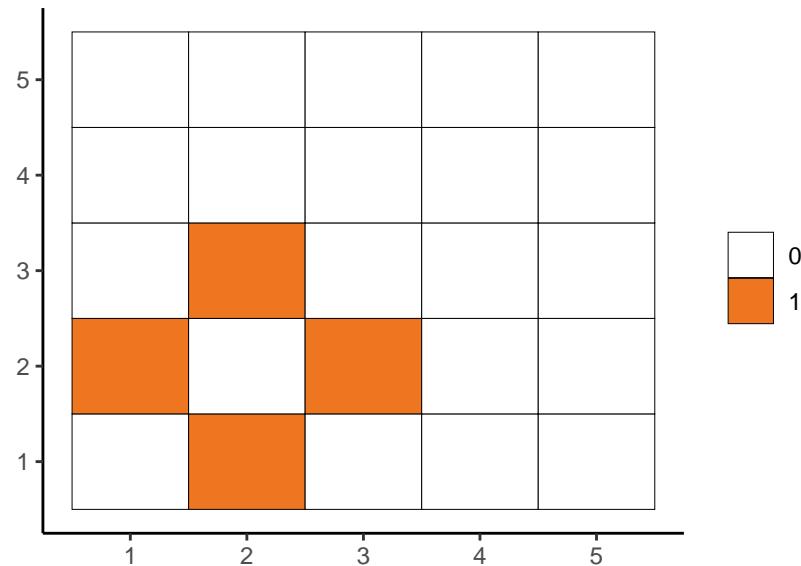
```
##
## $trial94$summary
## Covariate Dependent Graphical Model
##
## Model ELBO: -84455.09           Unique conditional dependence structures: 5
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 3/5 variables
##
## Model fit completed in 25.902 secs
##
## $trial94$unique_graphs
## $trial94$unique_graphs$graph1
## [1] "1,...,42"
##
## $trial94$unique_graphs$graph2
## [1] "43,...,76"
##
## $trial94$unique_graphs$graph3
## [1] "77,...,96"
##
## $trial94$unique_graphs$graph4
## [1] "97,...,159"
##
## $trial94$unique_graphs$graph5
## [1] "160,...,180"
##
## $trial94$unique_graphs[[6]]
```

Graph 1, Individuals 1,...,42



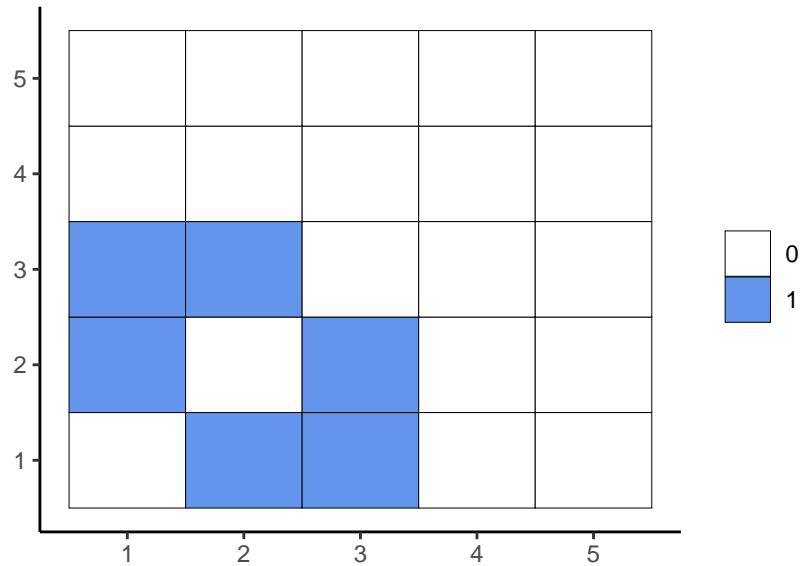
```
##  
## $trial94$unique_graphs[[7]]
```

Graph 2, Individuals 43,...,76



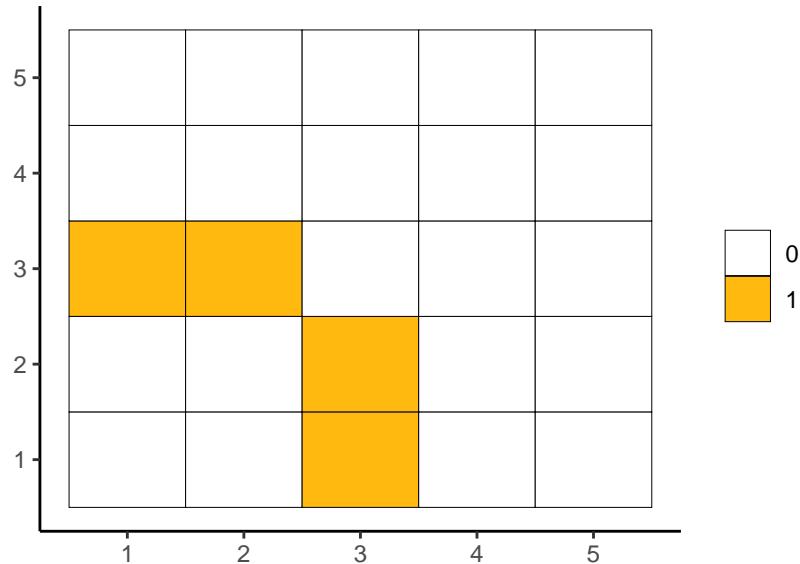
```
##  
## $trial94$unique_graphs[[8]]
```

Graph 3, Individuals 77,...,96



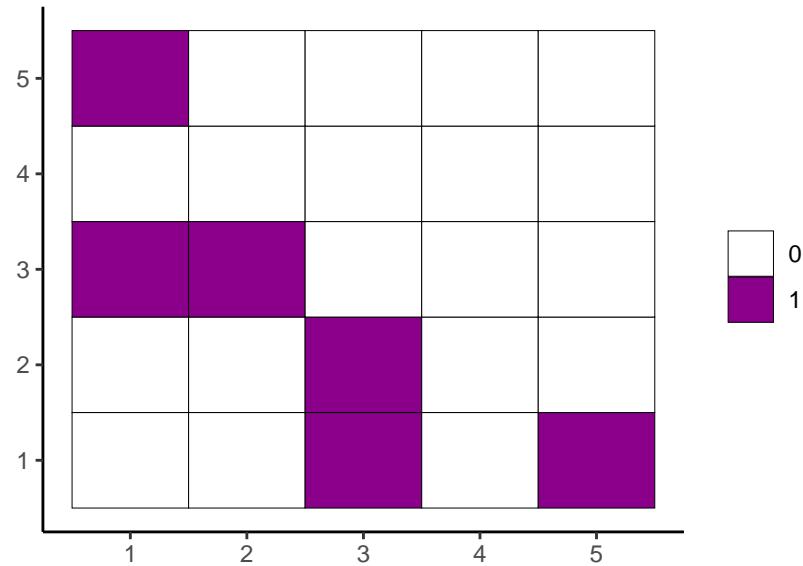
```
##  
## $trial94$unique_graphs[[9]]
```

Graph 4, Individuals 97,...,159

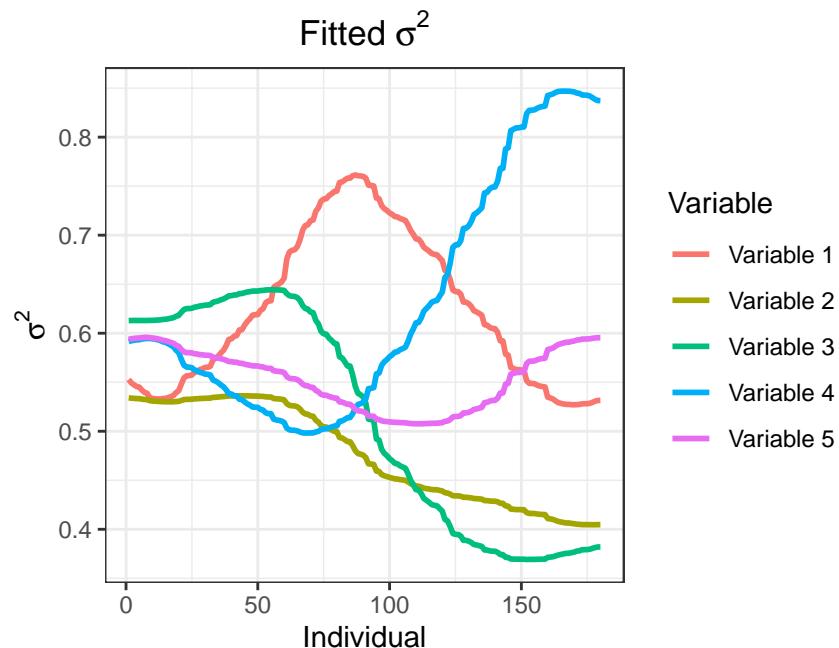


```
##  
## $trial94$unique_graphs[[10]]
```

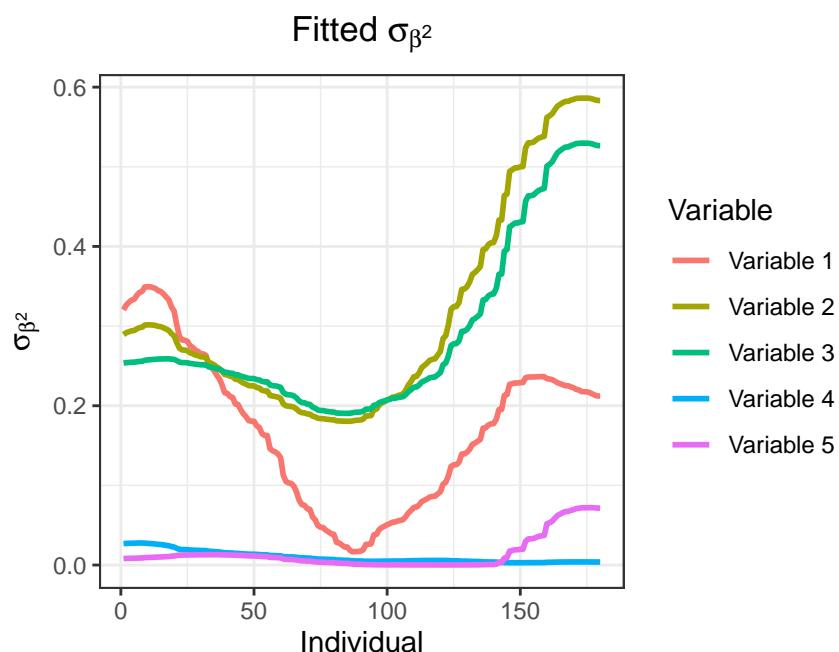
Graph 5, Individuals 160,...,180



```
##  
##  
## $trial94$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial94$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.25      0.45      0.45      0.05      0.05  
##  
## $trial94$sigmasq
```

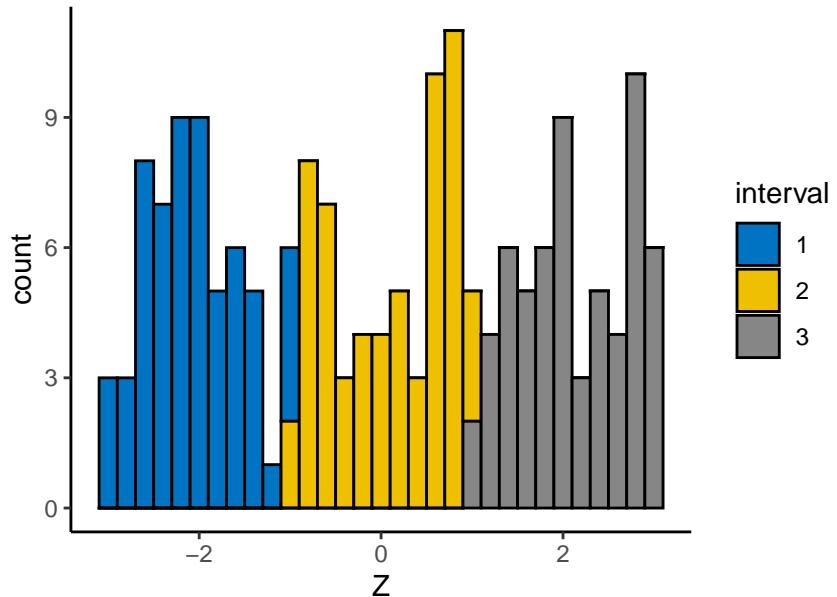


```
##  
## $trial94$sigmabetasq
```



```
##  
##  
## $trial95  
## $trial95$covariates
```

Distribution of Covariate, Trial 95

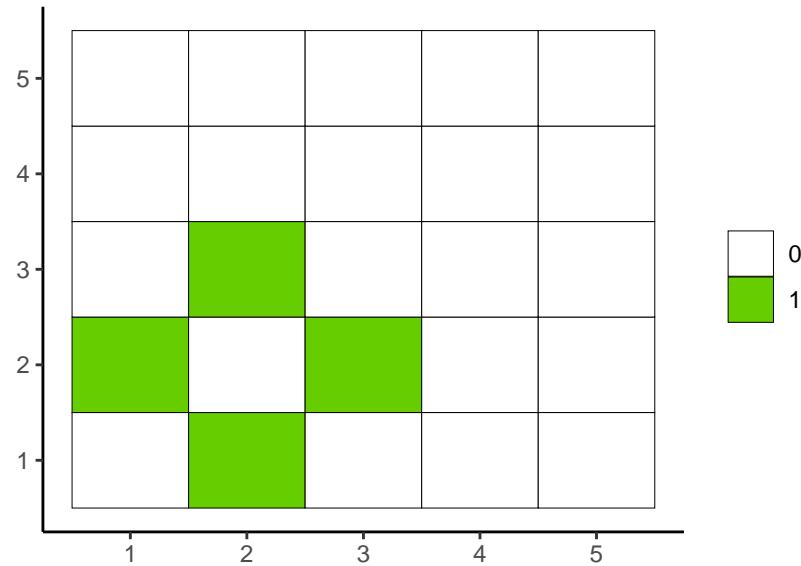


```

## 
## $trial95$summary
##                               Covariate Dependent Graphical Model
## 
## Model ELBO: -84509.27           Unique conditional dependence structures: 5
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 2/5 variables
## 
## Model fit completed in 28.408 secs
## 
## $trial95$unique_graphs
## $trial95$unique_graphs$graph1
## [1] "1,...,30"
## 
## $trial95$unique_graphs$graph2
## [1] "31,...,86"
## 
## $trial95$unique_graphs$graph3
## [1] "87,...,90"
## 
## $trial95$unique_graphs$graph4
## [1] "91,...,133"
## 
## $trial95$unique_graphs$graph5
## [1] "134,...,180"
## 
## $trial95$unique_graphs[[6]]

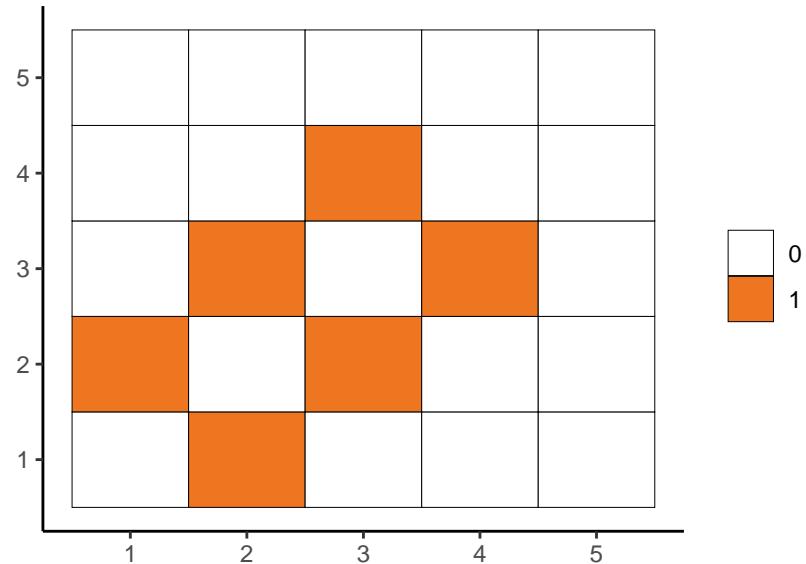
```

Graph 1, Individuals 1,...,30



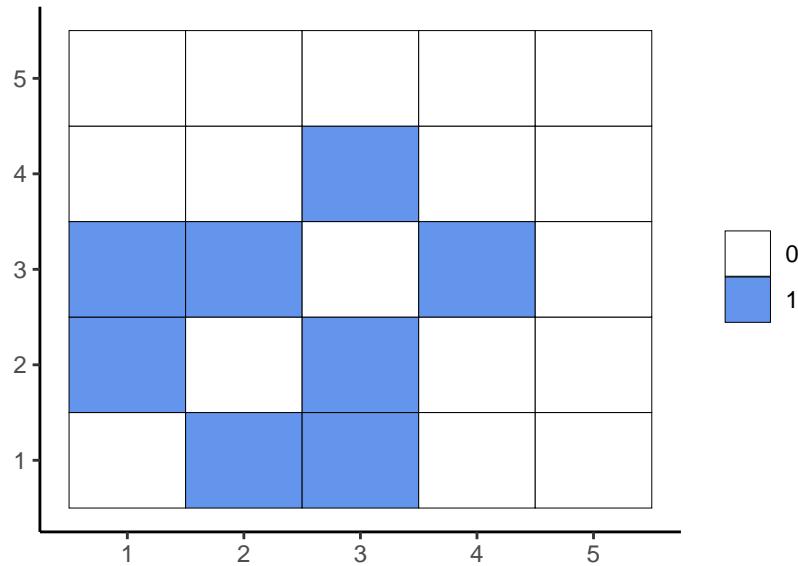
```
##  
## $trial95$unique_graphs[[7]]
```

Graph 2, Individuals 31,...,86



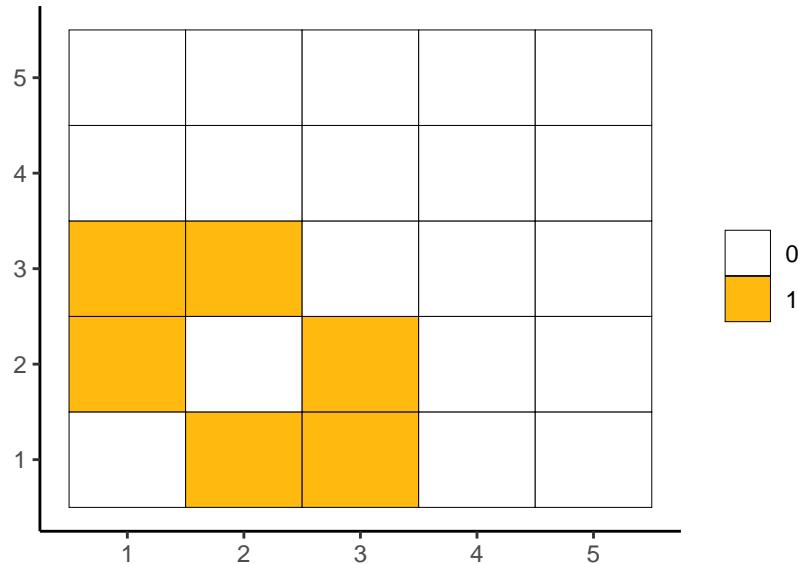
```
##  
## $trial95$unique_graphs[[8]]
```

Graph 3, Individuals 87,...,90



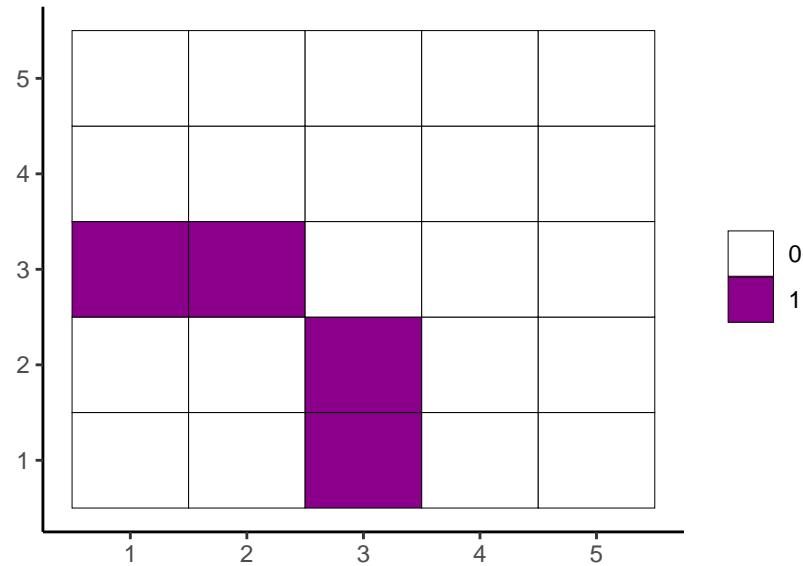
```
##  
## $trial95$unique_graphs[[9]]
```

Graph 4, Individuals 91,...,133

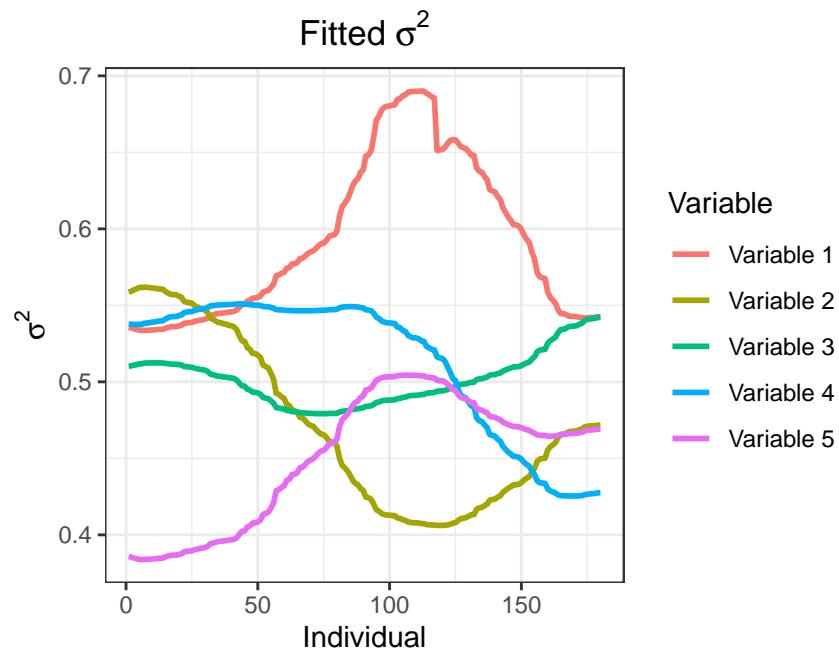


```
##  
## $trial95$unique_graphs[[10]]
```

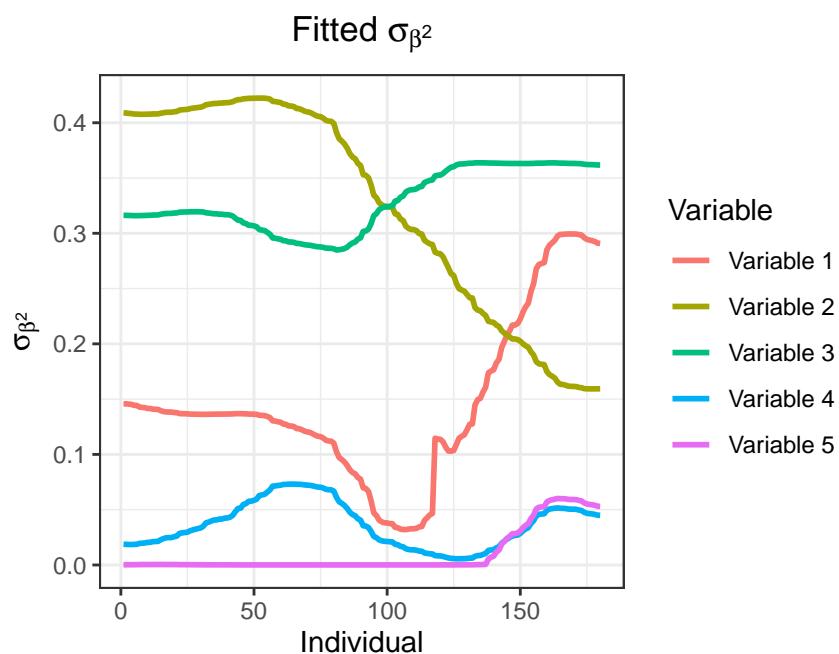
Graph 5, Individuals 134,...,180



```
##  
##  
## $trial95$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial95$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.10      0.45      0.45      0.05      0.05  
##  
## $trial95$sigmasq
```

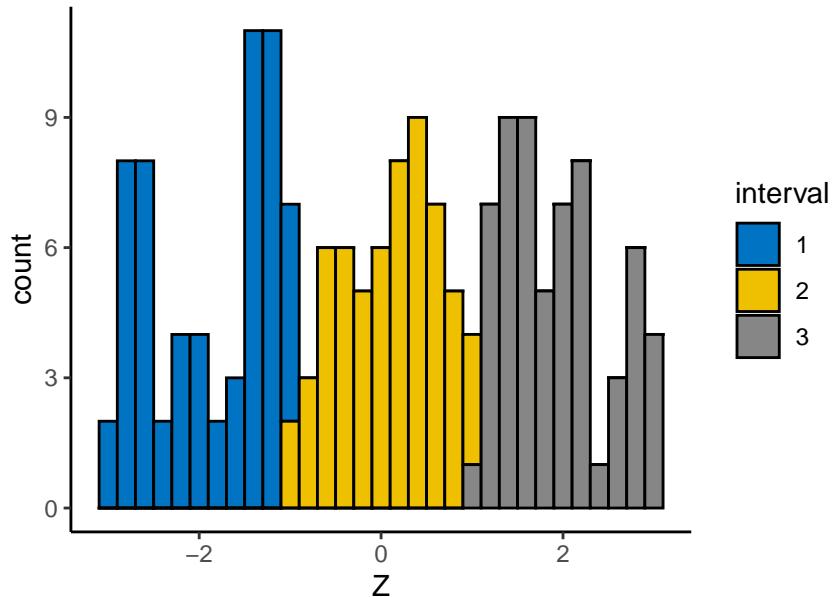


```
##  
## $trial95$sigmabetasq
```



```
##  
##  
## $trial96  
## $trial96$covariates
```

Distribution of Covariate, Trial 96

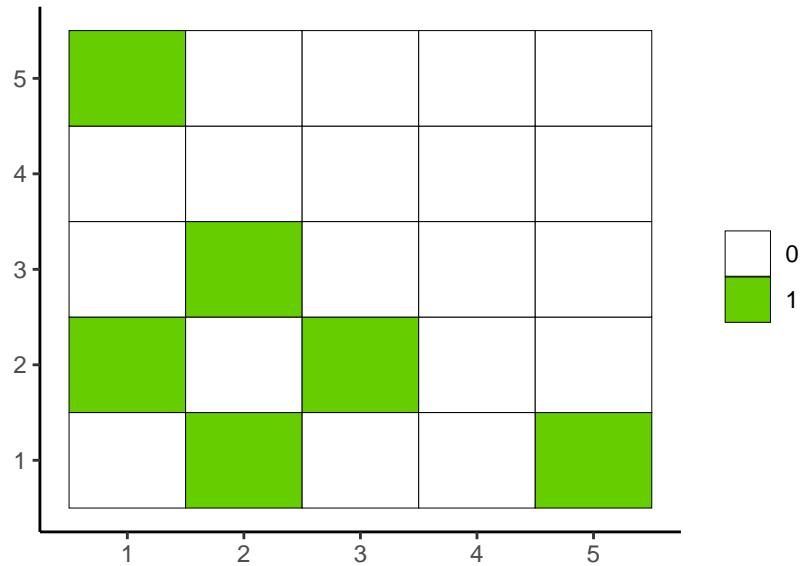


```

## 
## $trial96$summary
##                               Covariate Dependent Graphical Model
## 
## Model ELBO: -84943.32           Unique conditional dependence structures: 5
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 2/5 variables
## 
## Model fit completed in 37.866 secs
## 
## $trial96$unique_graphs
## $trial96$unique_graphs$graph1
## [1] "1,...,23"
## 
## $trial96$unique_graphs$graph2
## [1] "24,...,26"
## 
## $trial96$unique_graphs$graph3
## [1] "27,...,59,87,...,168,170,...,180"
## 
## $trial96$unique_graphs$graph4
## [1] "60,...,86"
## 
## $trial96$unique_graphs$graph5
## [1] "169"
## 
## $trial96$unique_graphs[[6]]

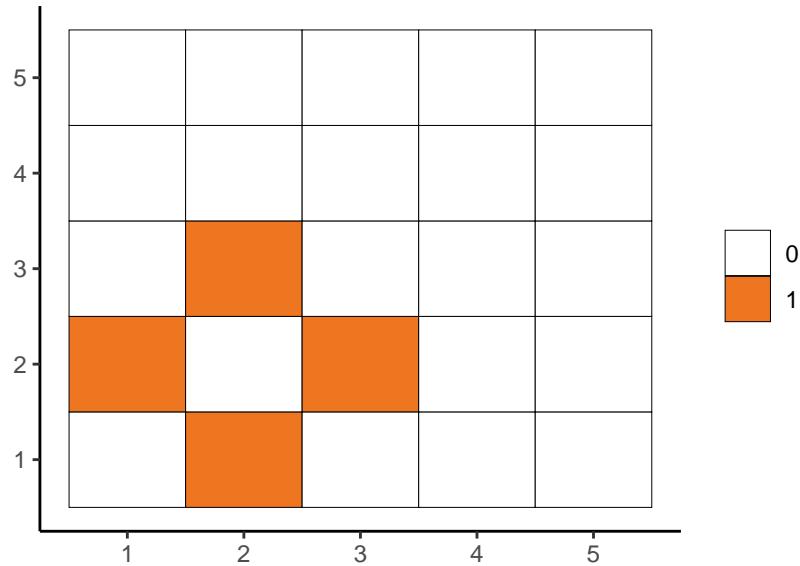
```

Graph 1, Individuals 1,...,23



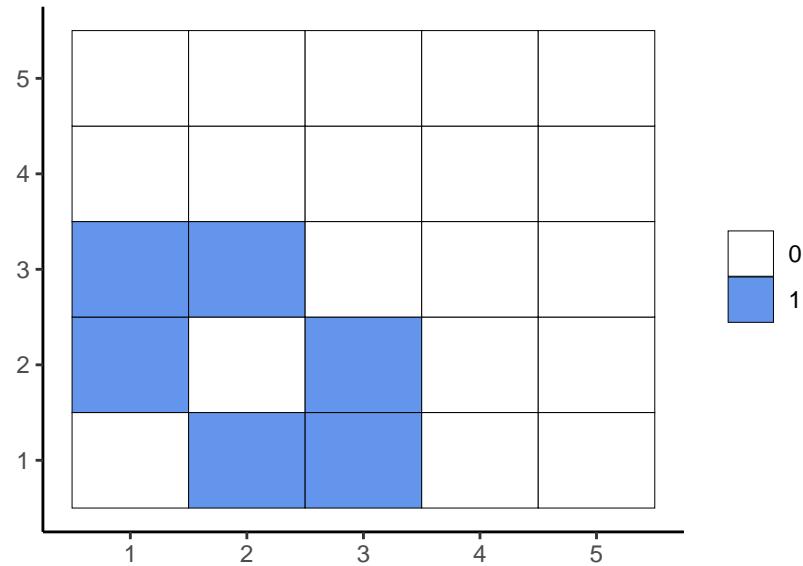
```
##  
## $trial96$unique_graphs[[7]]
```

Graph 2, Individuals 24,...,26



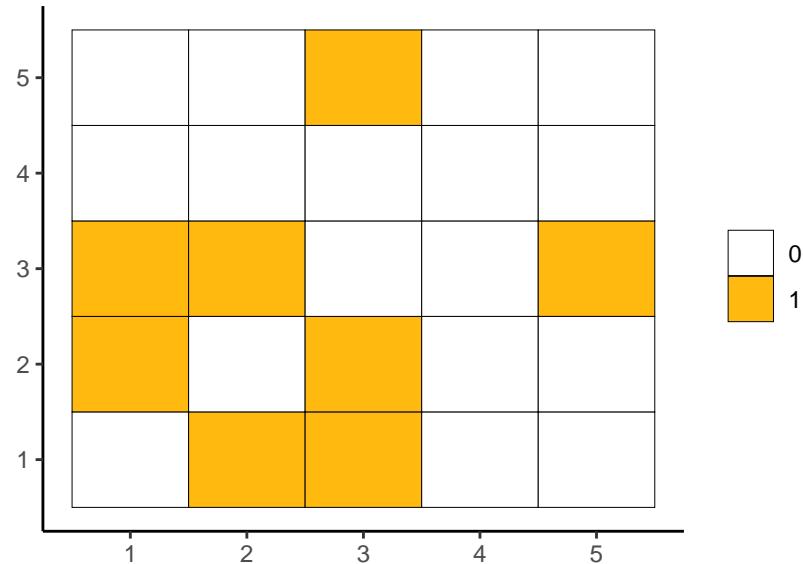
```
##  
## $trial96$unique_graphs[[8]]
```

Graph 3, Individuals 27,...,59,87,...,168,170,...,180



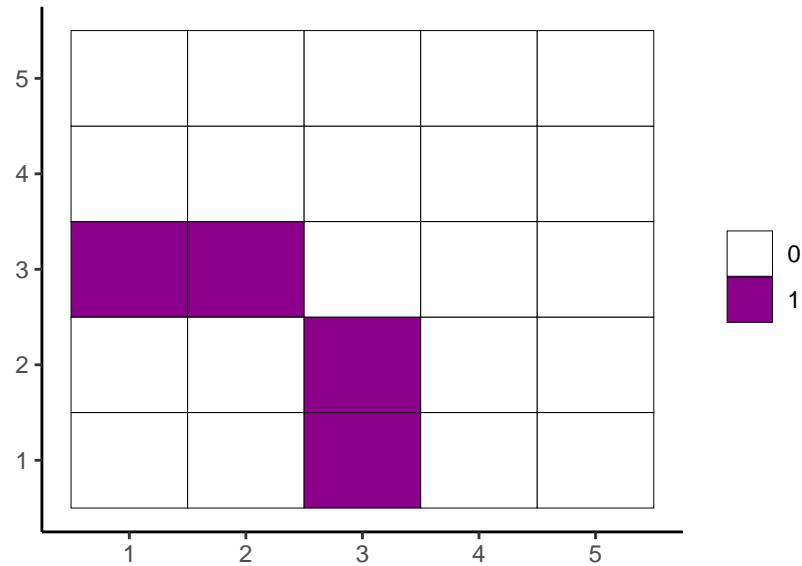
```
##  
## $trial96$unique_graphs[[9]]
```

Graph 4, Individuals 60,...,86

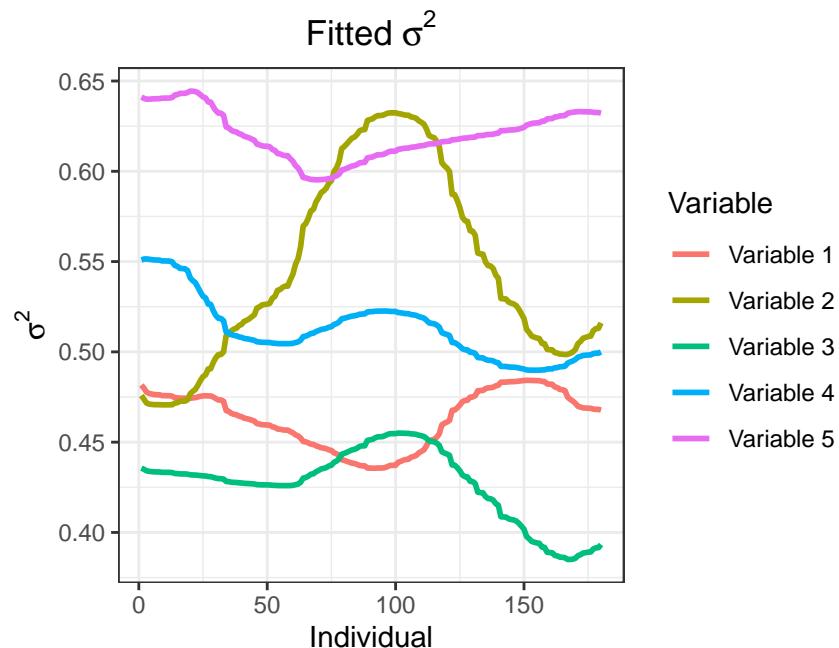


```
##  
## $trial96$unique_graphs[[10]]
```

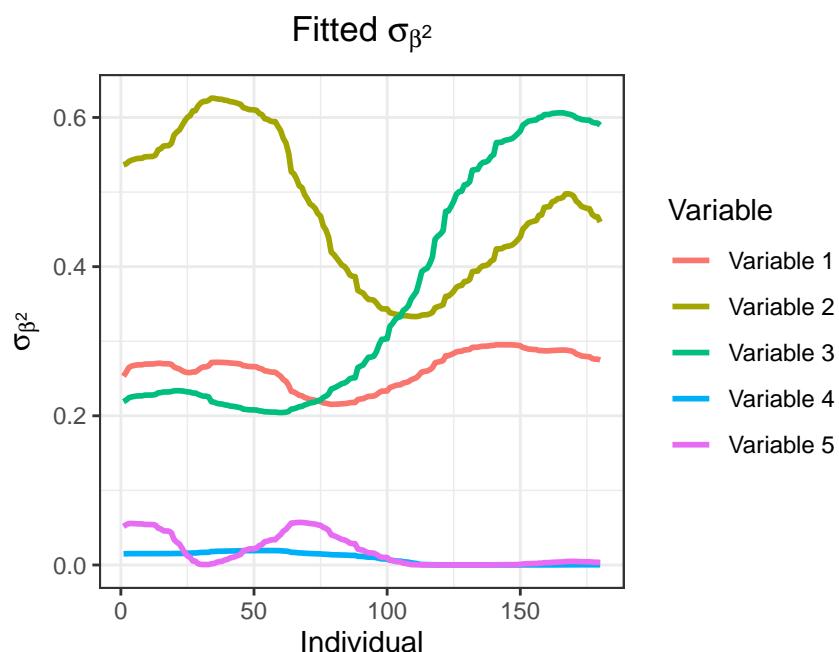
Graph 5, Individuals 169



```
##  
##  
## $trial96$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          1          1  
##  
## $trial96$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          0.45      0.45      0.45      0.05      0.05  
##  
## $trial96$sigmasq
```

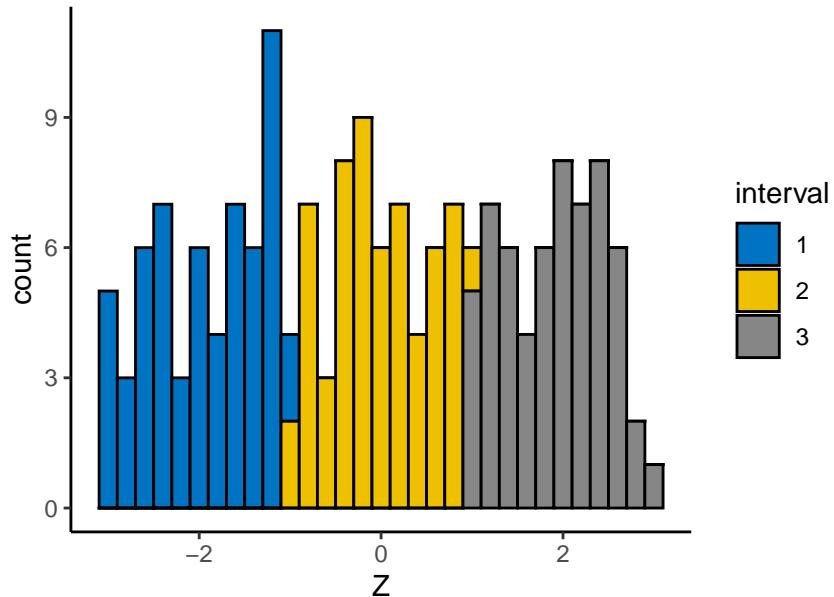


```
##  
## $trial96$sigmabetasq
```



```
##  
##  
## $trial97  
## $trial97$covariates
```

Distribution of Covariate, Trial 97



```

## 
## $trial97$summary
## Covariate Dependent Graphical Model
## 
## Model ELBO: -85002.83           Unique conditional dependence structures: 8
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 3/5 variables
## 
## Model fit completed in 29.964 secs
## 
## $trial97$unique_graphs
## $trial97$unique_graphs$graph1
## [1] "1,...,14"
## 
## $trial97$unique_graphs$graph2
## [1] "15,...,33"
## 
## $trial97$unique_graphs$graph3
## [1] "34,...,63"
## 
## $trial97$unique_graphs$graph4
## [1] "64,...,72"
## 
## $trial97$unique_graphs$graph5
## [1] "73,...,89"
## 
## $trial97$unique_graphs$graph6
## [1] "90,...,106"
## 
## $trial97$unique_graphs$graph7
## [1] "107,...,110"
## 

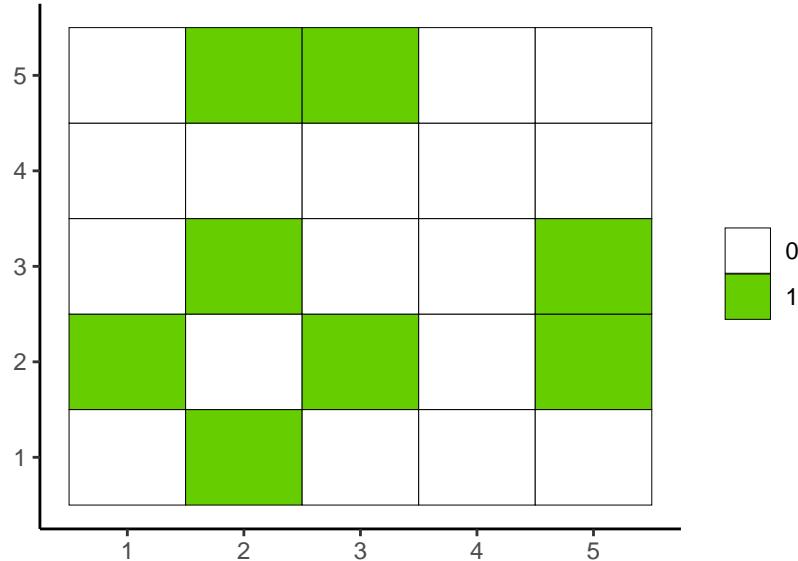
```

```

## $trial97$unique_graphs$graph8
## [1] "111,...,180"
##
## $trial97$unique_graphs[[9]]

```

Graph 1, Individuals 1,...,14

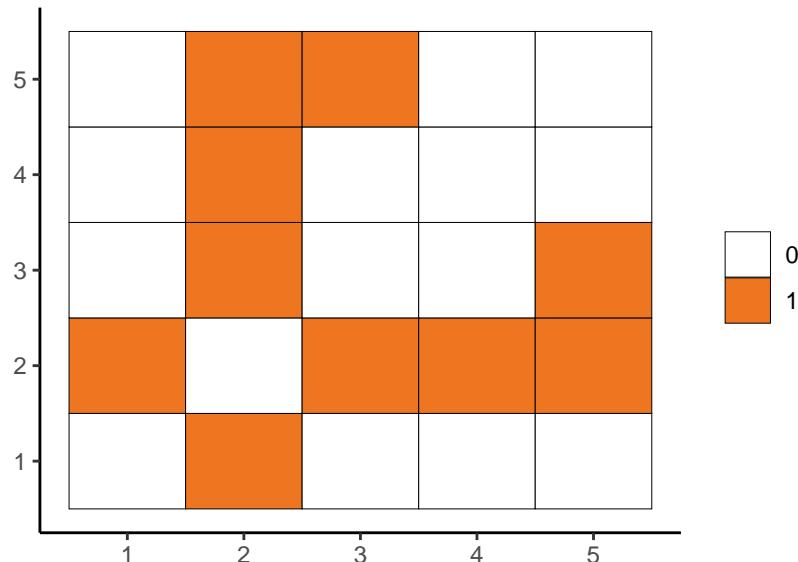


```

##
## $trial97$unique_graphs[[10]]

```

Graph 2, Individuals 15,...,33



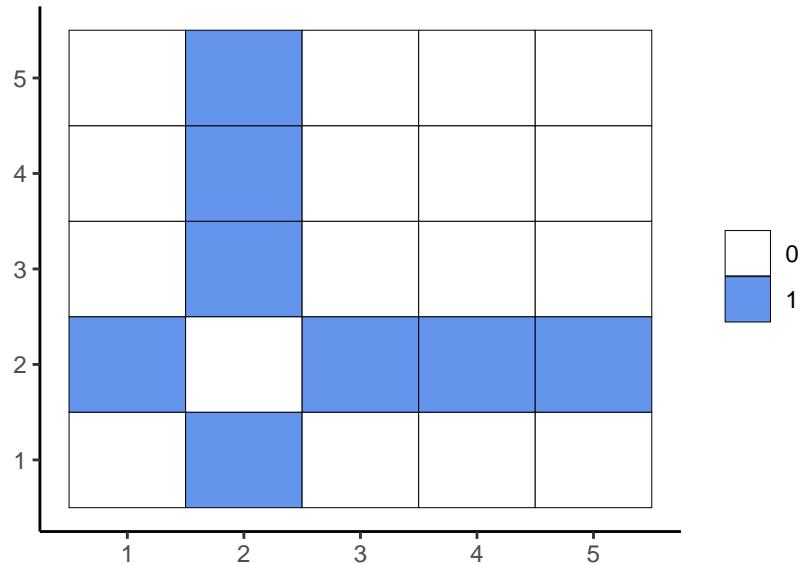
```

##

```

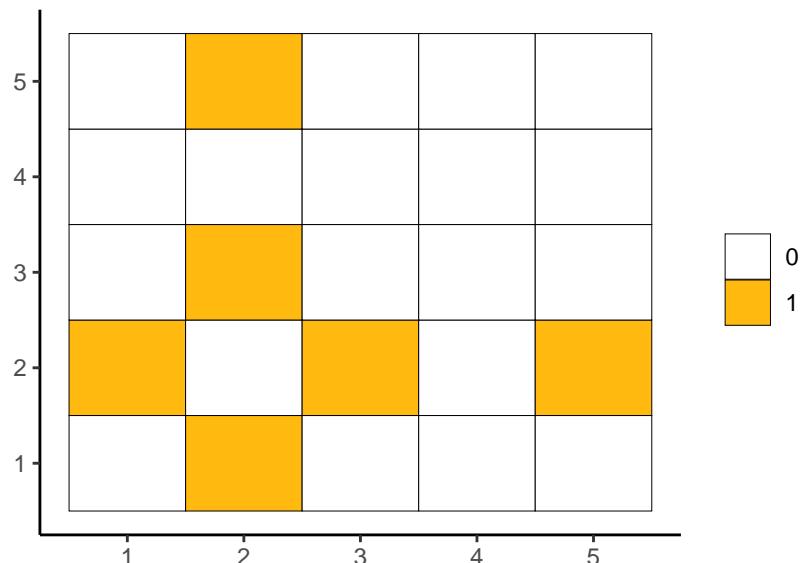
```
## $trial97$unique_graphs[[11]]
```

Graph 3, Individuals 34,...,63



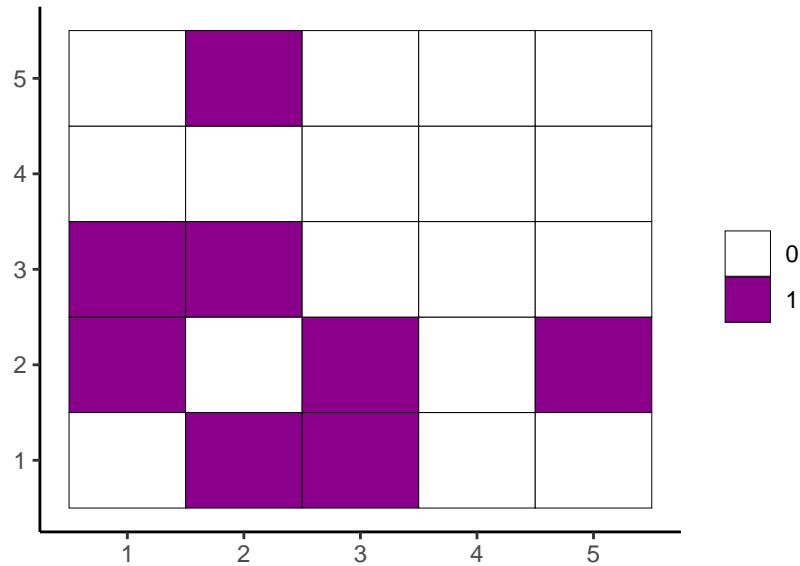
```
##  
## $trial97$unique_graphs[[12]]
```

Graph 4, Individuals 64,...,72



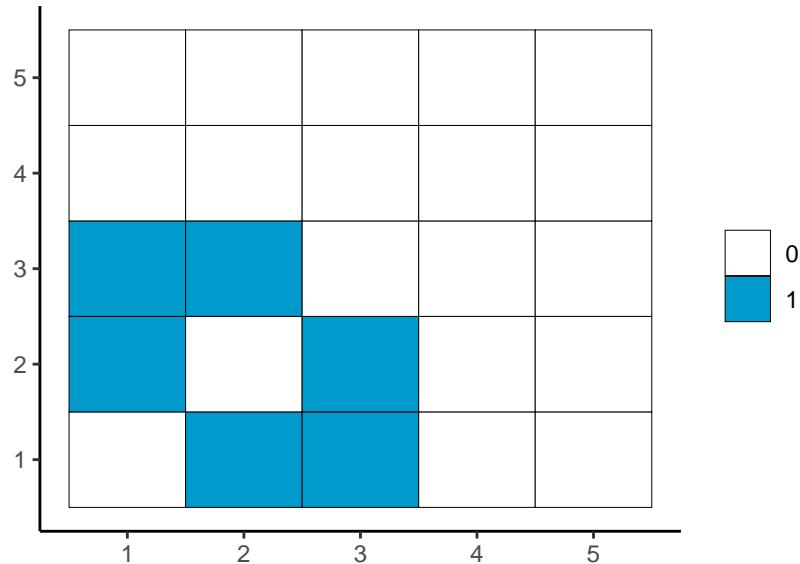
```
##  
## $trial97$unique_graphs[[13]]
```

Graph 5, Individuals 73,...,89



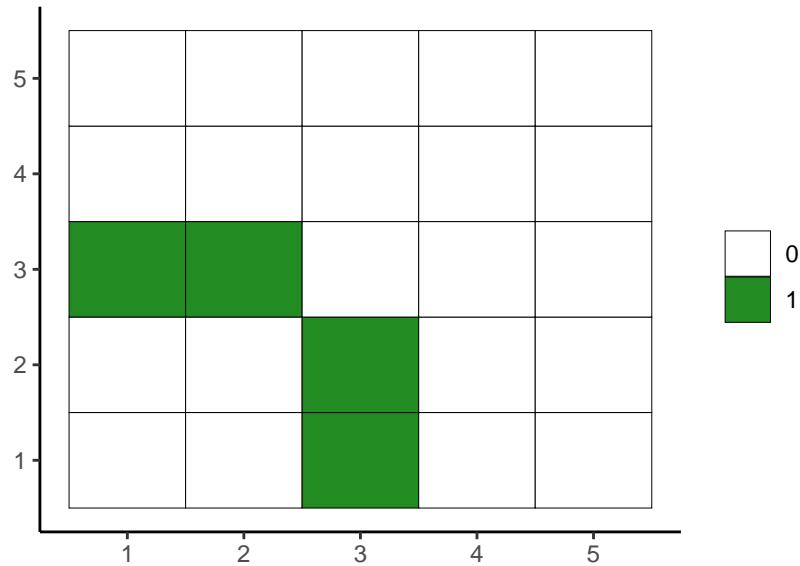
```
##  
## $trial97$unique_graphs[[14]]
```

Graph 6, Individuals 90,...,106



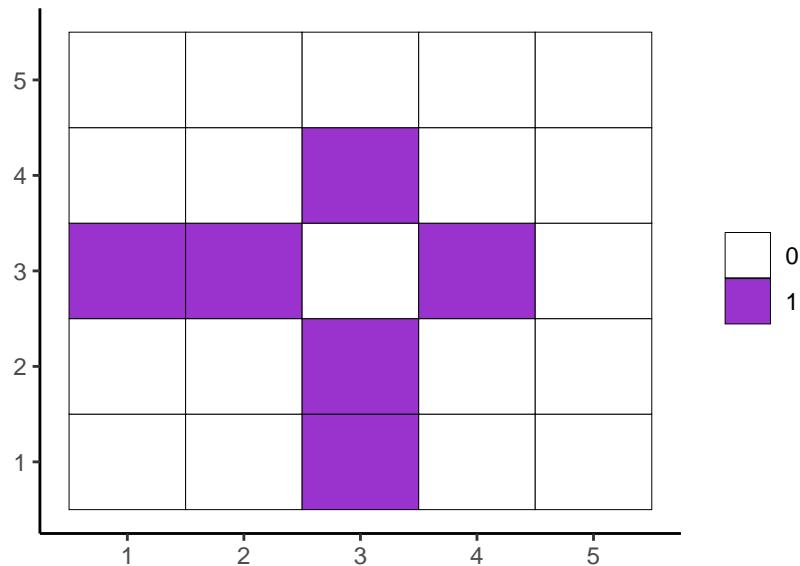
```
##  
## $trial97$unique_graphs[[15]]
```

Graph 7, Individuals 107,...,110



```
##  
## $trial97$unique_graphs[[16]]
```

Graph 8, Individuals 111,...,180

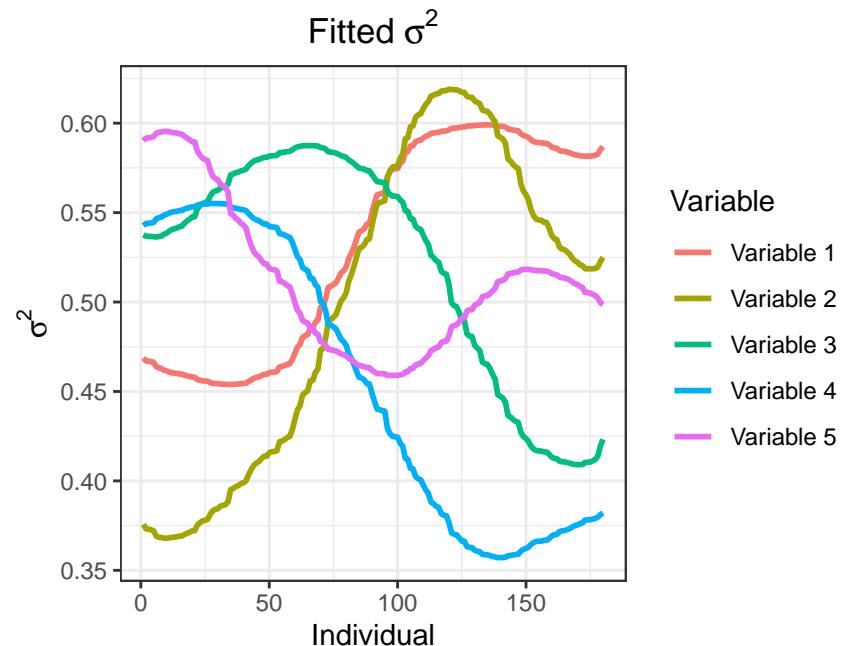


```
##  
##  
## $trial97$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1          1          1          2          1  
##
```

```

## $trial97$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.20      0.45      0.45      0.20      0.10
##
## $trial97$sigmasq

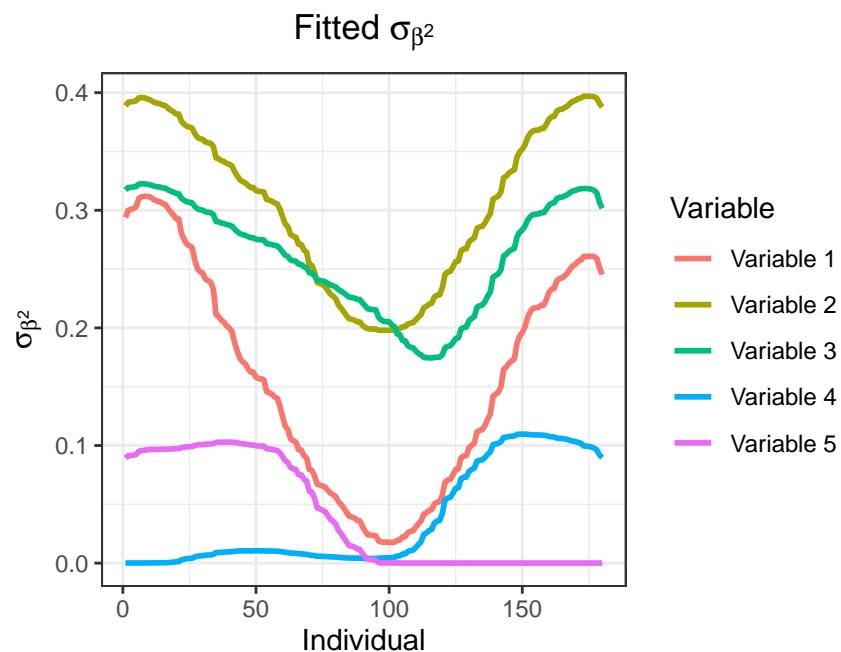
```



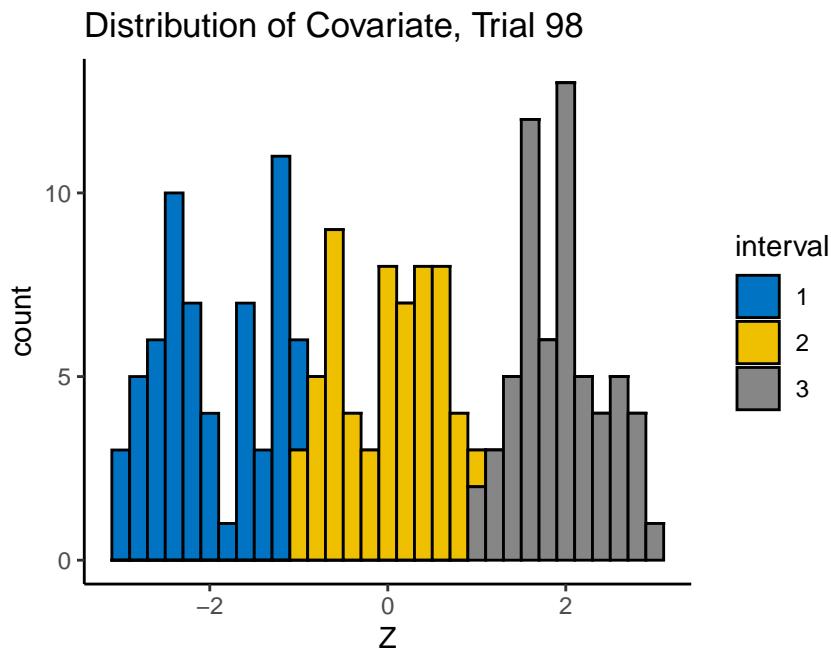
```

## $trial97$sigmabetasq

```



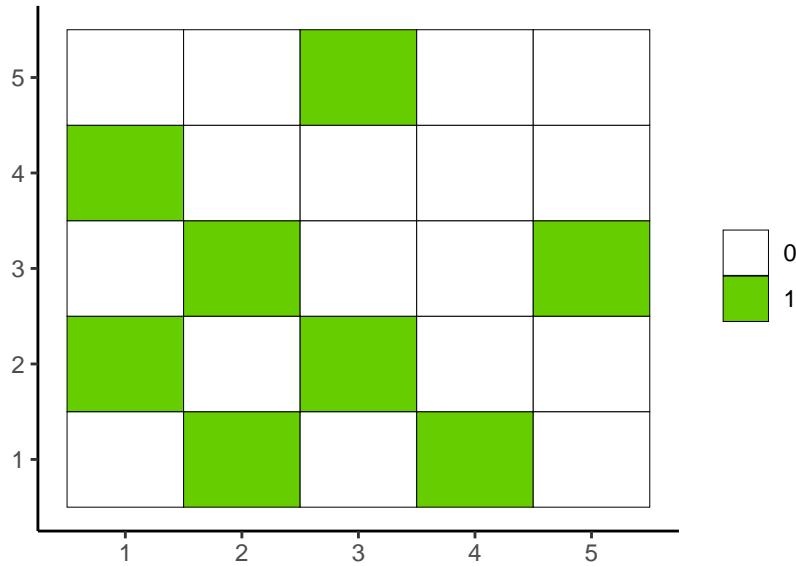
```
##  
##  
## $trial98  
## $trial98$covariates
```



```
##  
## $trial98$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84943.34                           Unique conditional dependence structures: 6  
## n: 180, variables: 5                           Hyperparameter grid size: 9 points  
## CAVI converged for 2/5 variables  
##  
## Model fit completed in 30.969 secs  
##  
## $trial98$unique_graphs  
## $trial98$unique_graphs$graph1  
## [1] "1,...,28"  
##  
## $trial98$unique_graphs$graph2  
## [1] "29,...,43"  
##  
## $trial98$unique_graphs$graph3  
## [1] "44,...,79"  
##  
## $trial98$unique_graphs$graph4  
## [1] "80,...,123"  
##  
## $trial98$unique_graphs$graph5  
## [1] "124,...,141"  
##  
## $trial98$unique_graphs$graph6
```

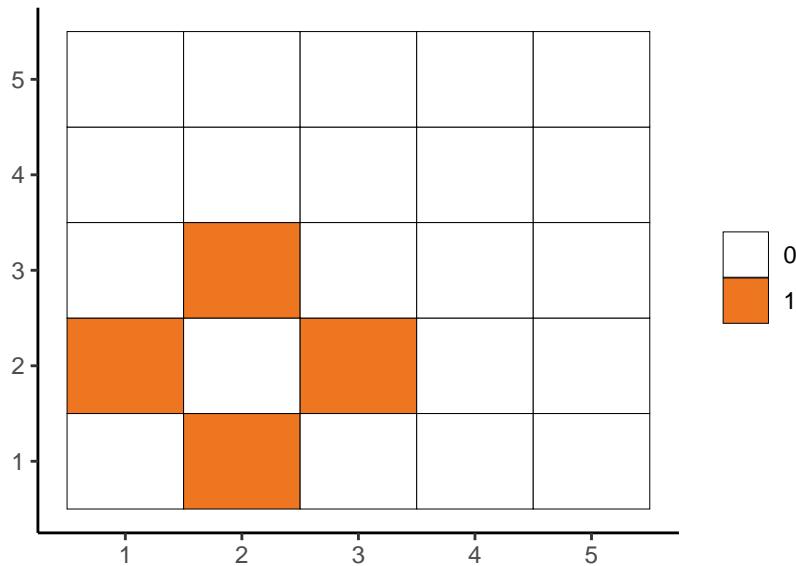
```
## [1] "142,...,180"  
##  
## $trial98$unique_graphs[[7]]
```

Graph 1, Individuals 1,...,28



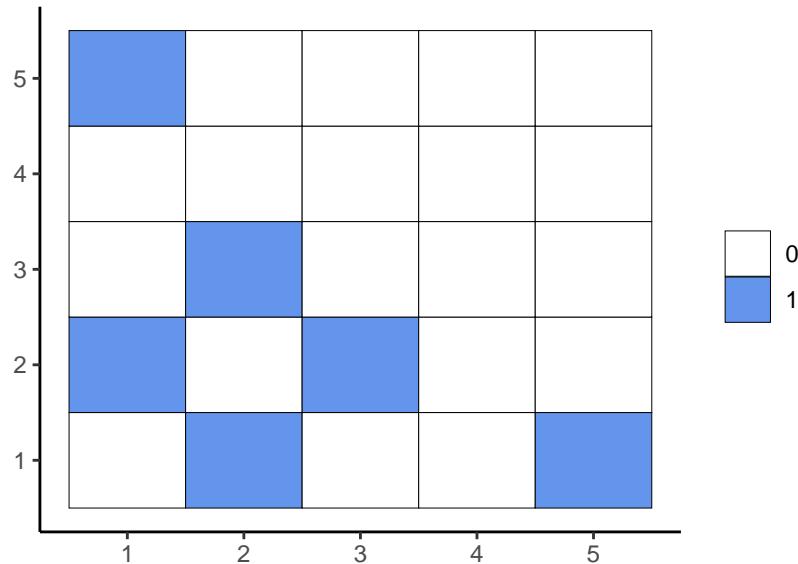
```
##  
## $trial98$unique_graphs[[8]]
```

Graph 2, Individuals 29,...,43



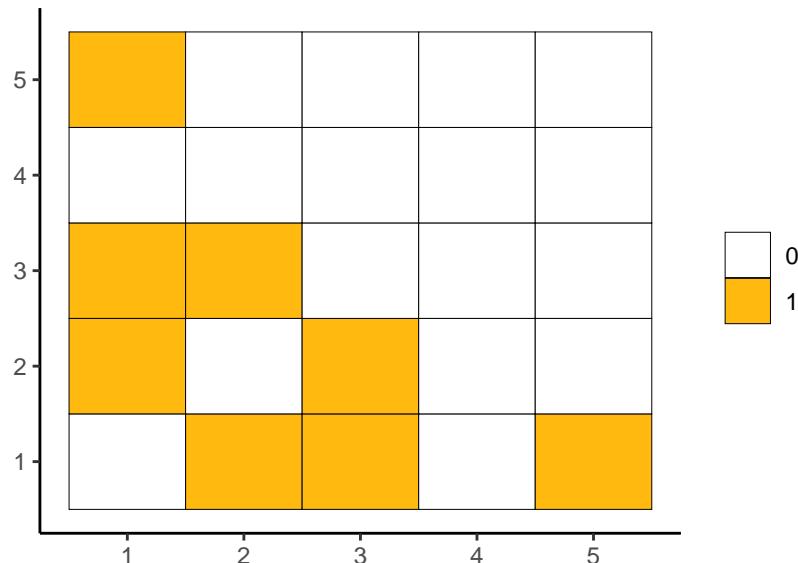
```
##  
## $trial98$unique_graphs[[9]]
```

Graph 3, Individuals 44,...,79



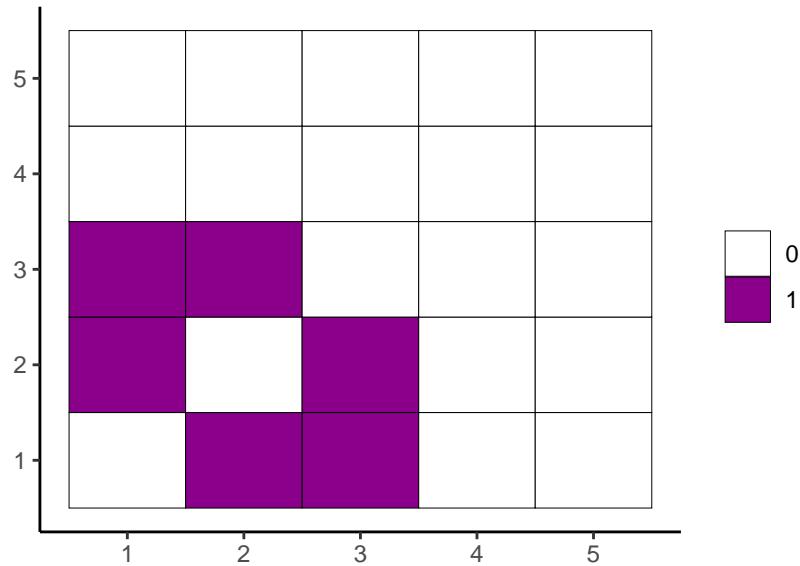
```
##  
## $trial98$unique_graphs[[10]]
```

Graph 4, Individuals 80,...,123



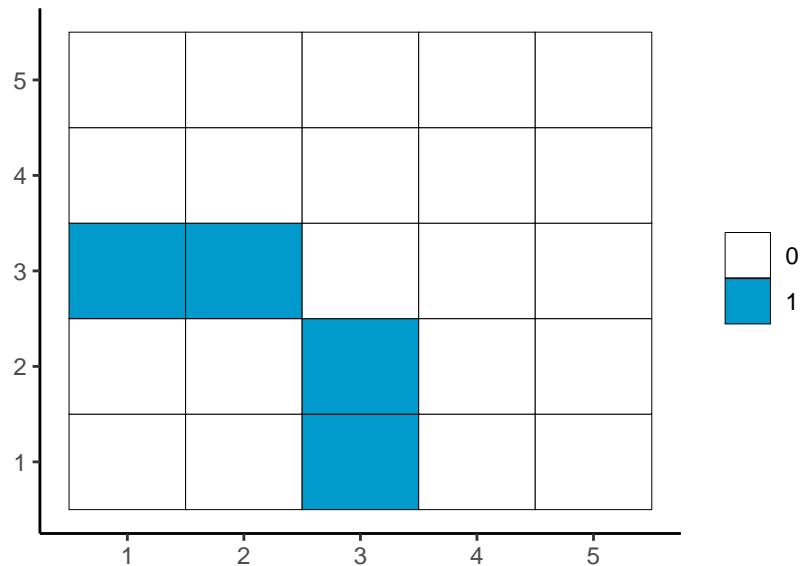
```
##  
## $trial98$unique_graphs[[11]]
```

Graph 5, Individuals 124,...,141



```
##  
## $trial98$unique_graphs[[12]]
```

Graph 6, Individuals 142,...,180

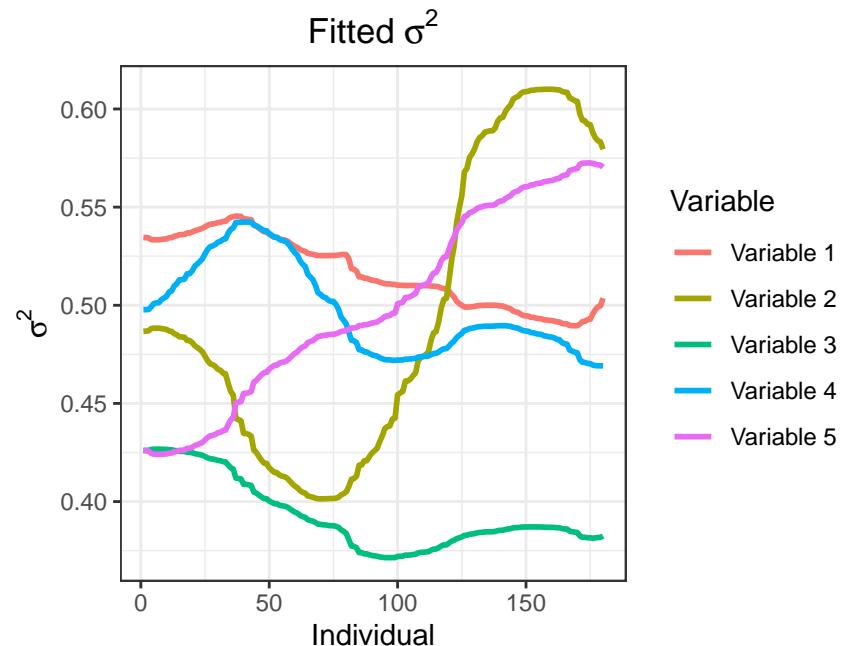


```
##  
##  
## $trial98$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##           1           1           1           1           1  
##
```

```

## $trial98$pi
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5
##      0.45      0.45      0.45      0.05      0.05
##
## $trial98$sigmasq

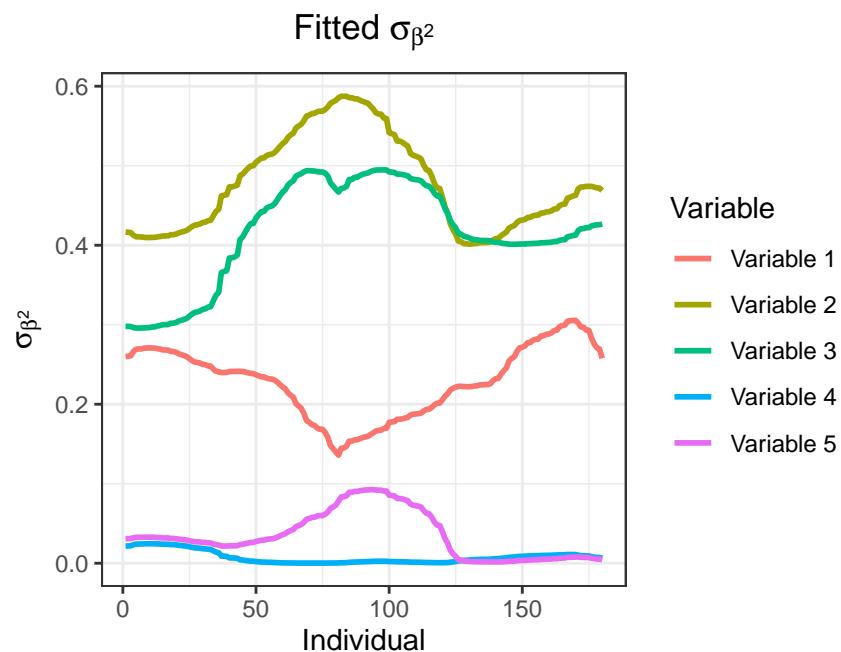
```



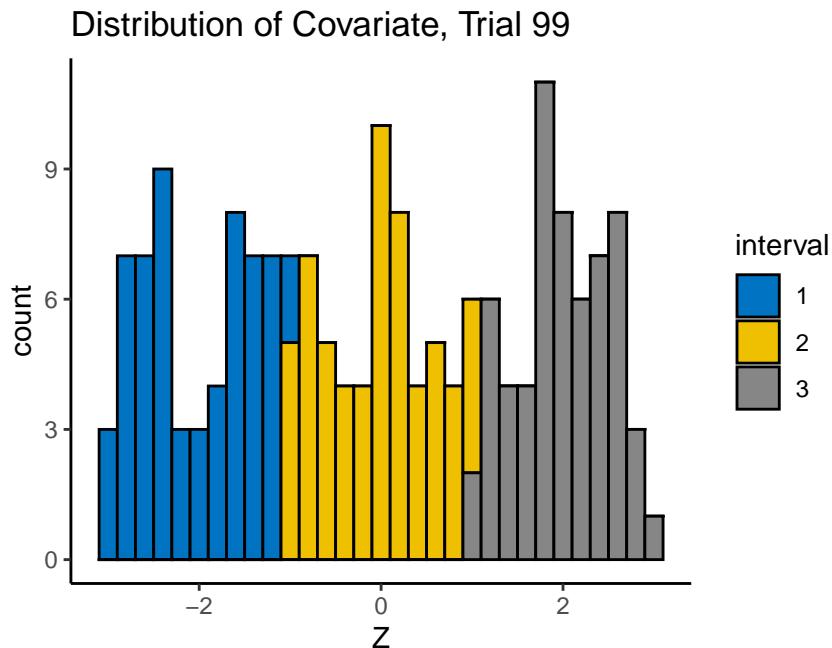
```

## 
## $trial98$sigmabetasq

```

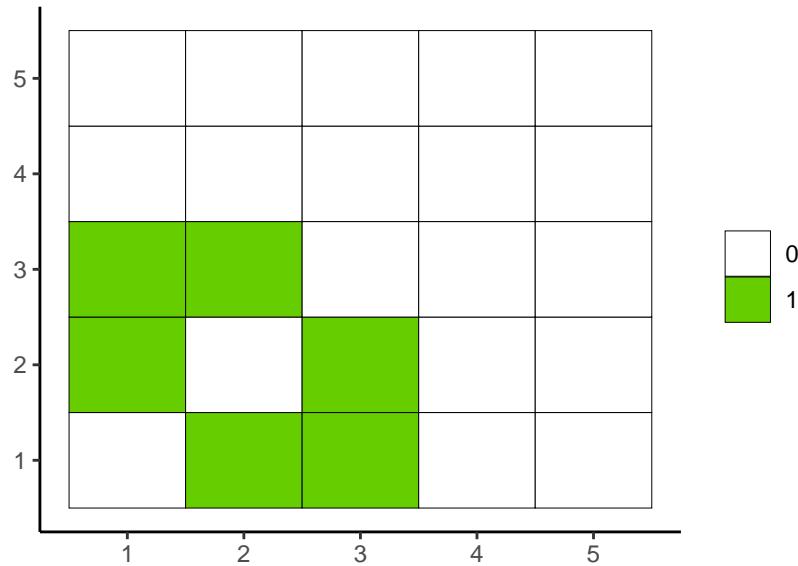


```
##  
##  
## $trial99  
## $trial99$covariates
```



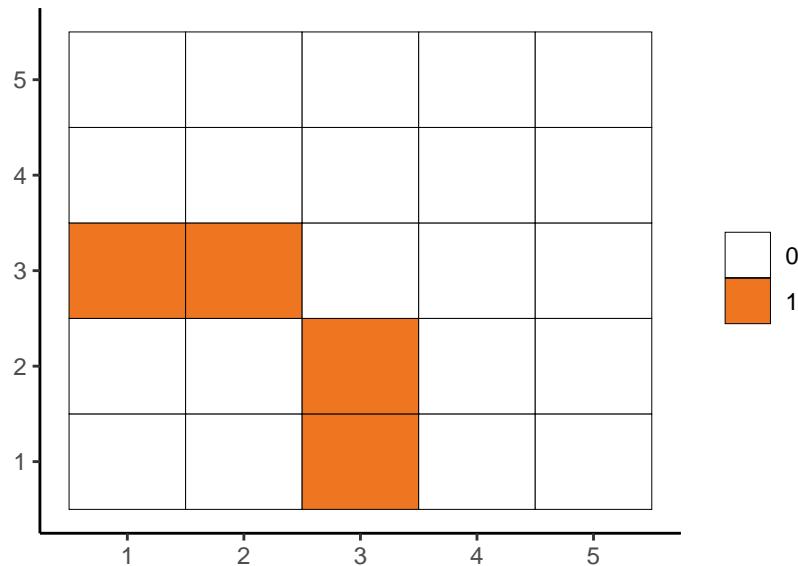
```
##  
## $trial99$summary  
## Covariate Dependent Graphical Model  
##  
## Model ELBO: -84877.42                            Unique conditional dependence structures: 3  
## n: 180, variables: 5                            Hyperparameter grid size: 9 points  
## CAVI converged for 3/5 variables  
##  
## Model fit completed in 28.432 secs  
##  
## $trial99$unique_graphs  
## $trial99$unique_graphs$graph1  
## [1] "1,...,128"  
##  
## $trial99$unique_graphs$graph2  
## [1] "129,...,143,152,...,180"  
##  
## $trial99$unique_graphs$graph3  
## [1] "144,...,151"  
##  
## $trial99$unique_graphs[[4]]
```

Graph 1, Individuals 1,...,128



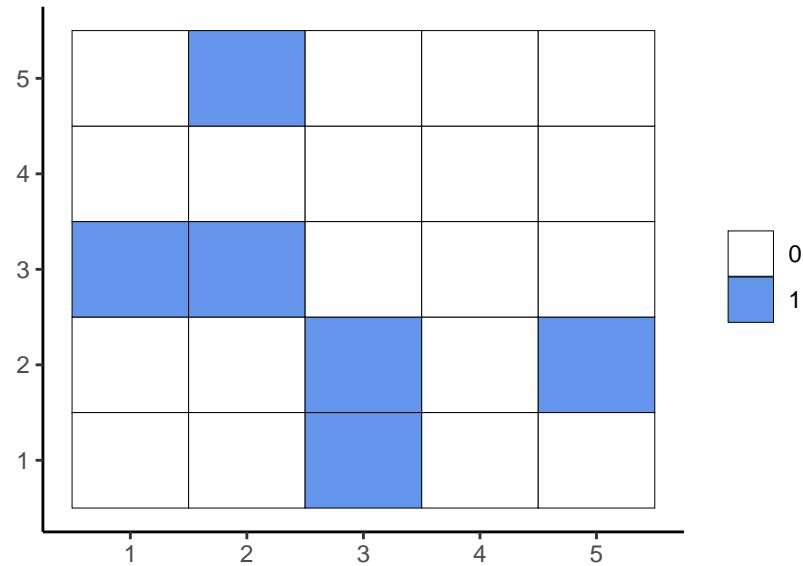
```
##  
## $trial99$unique_graphs[[5]]
```

Graph 2, Individuals 129,...,143,152,...,180

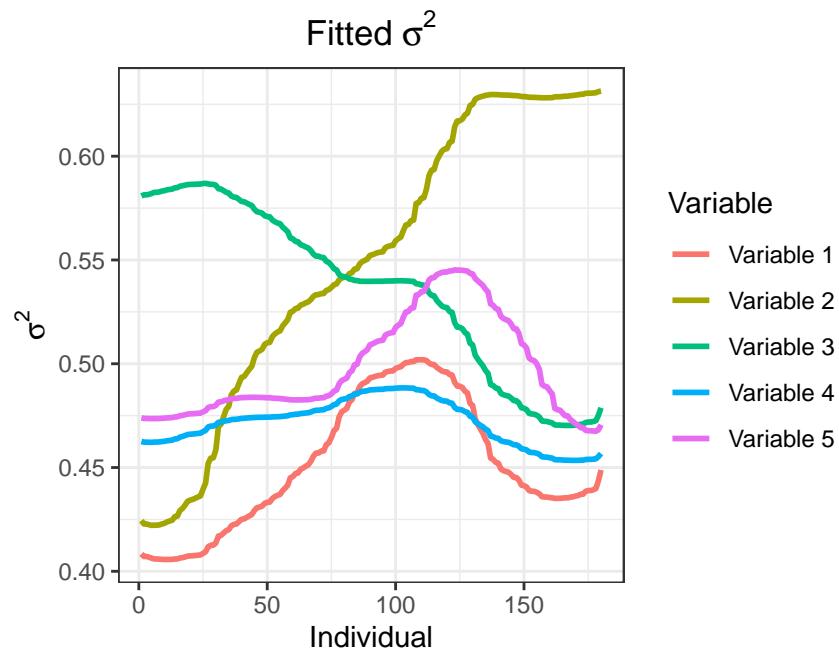


```
##  
## $trial99$unique_graphs[[6]]
```

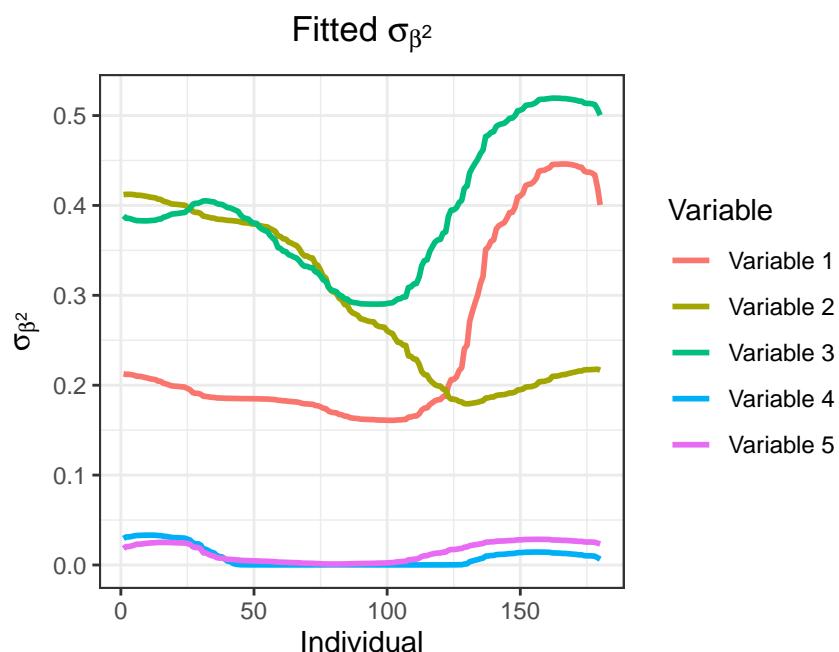
Graph 3, Individuals 144,...,151



```
##  
##  
## $trial99$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1           1           1           1           1  
##  
## $trial99$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          0.45       0.45       0.45       0.05       0.05  
##  
## $trial99$sigmasq
```

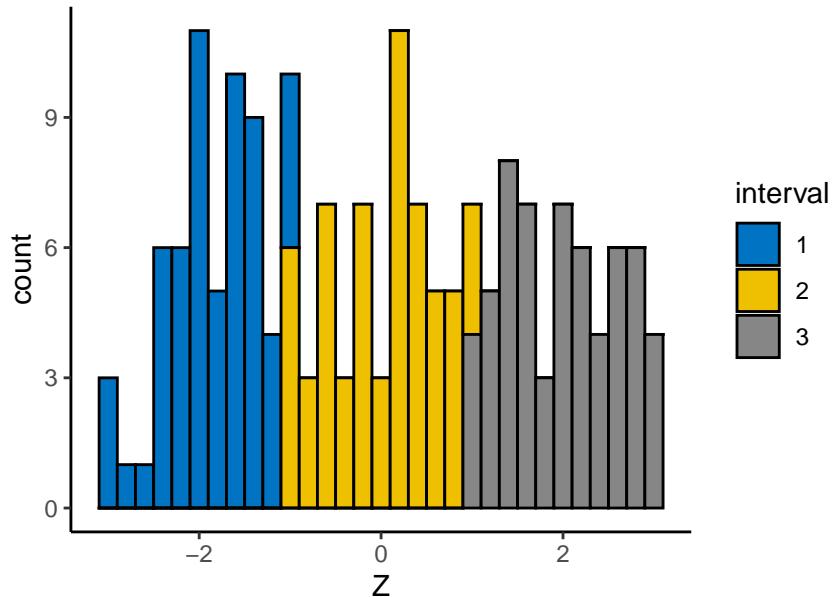


```
##  
## $trial99$sigmabetasq
```



```
##  
##  
## $trial100  
## $trial100$covariates
```

Distribution of Covariate, Trial 100

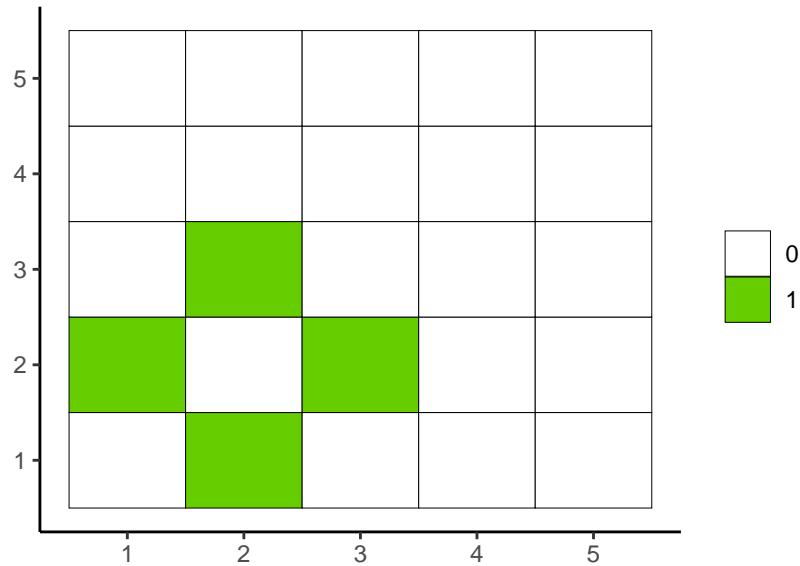


```

## 
## $trial100$summary
##                               Covariate Dependent Graphical Model
## 
## Model ELBO: -84737.82           Unique conditional dependence structures: 5
## n: 180, variables: 5           Hyperparameter grid size: 9 points
## CAVI converged for 3/5 variables
## 
## Model fit completed in 27.103 secs
## 
## $trial100$unique_graphs
## $trial100$unique_graphs$graph1
## [1] "1,...,84"
## 
## $trial100$unique_graphs$graph2
## [1] "85,...,99"
## 
## $trial100$unique_graphs$graph3
## [1] "100,...,117"
## 
## $trial100$unique_graphs$graph4
## [1] "118,...,129"
## 
## $trial100$unique_graphs$graph5
## [1] "130,...,180"
## 
## $trial100$unique_graphs[[6]]

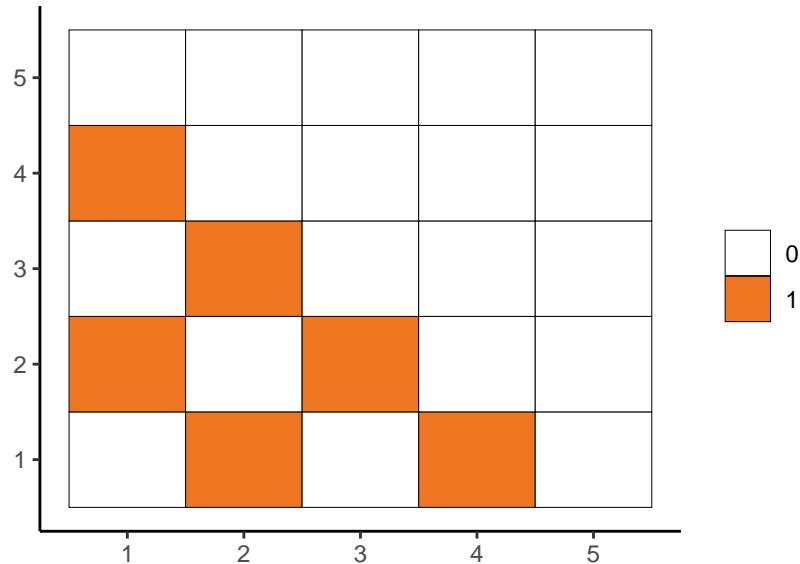
```

Graph 1, Individuals 1,...,84



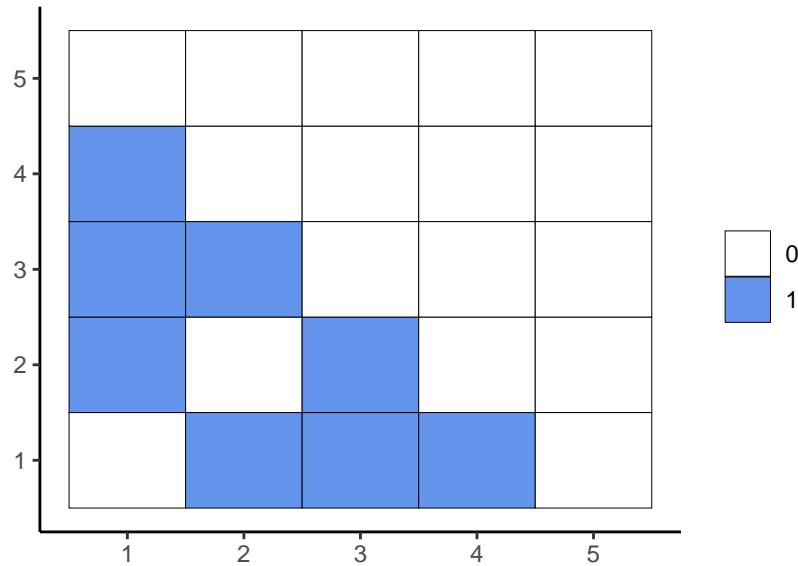
```
##  
## $trial100$unique_graphs[[7]]
```

Graph 2, Individuals 85,...,99



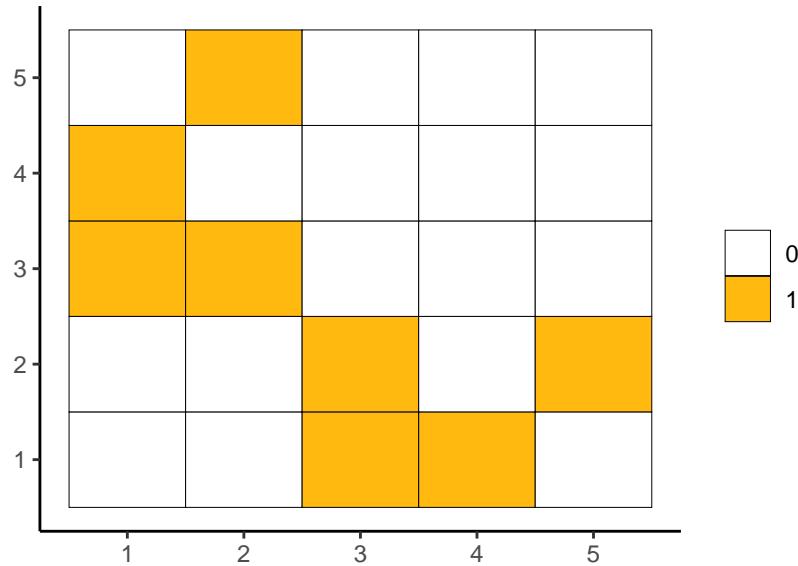
```
##  
## $trial100$unique_graphs[[8]]
```

Graph 3, Individuals 100,...,117



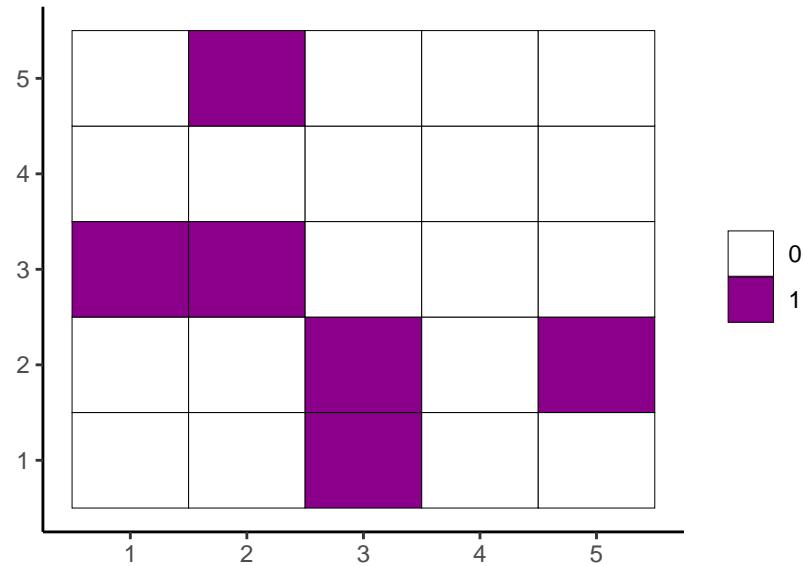
```
##  
## $trial100$unique_graphs[[9]]
```

Graph 4, Individuals 118,...,129

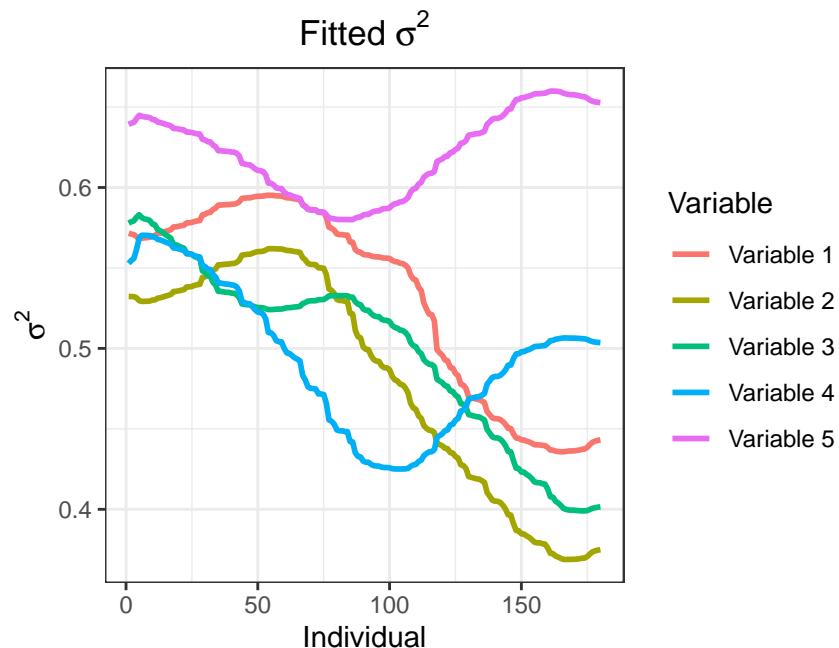


```
##  
## $trial100$unique_graphs[[10]]
```

Graph 5, Individuals 130,...,180



```
##  
##  
## $trial100$pi_stable_iter  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##          1           1           1           1           1  
##  
## $trial100$pi  
## Variable 1 Variable 2 Variable 3 Variable 4 Variable 5  
##      0.10      0.45      0.45      0.05      0.05  
##  
## $trial100$sigmasq
```



```
##  
## $trial100$sigmabetasq
```

