

Small Scale Sim

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Small-scale simulation results

Data settings

I generated data at 1000 sites using the following settings:

- $\alpha = 0.3$
- $\rho = 0.025$
- $\xi = 0$

This is 750 sites for training, and 250 sites for cross validation. The MCMC ran for 45000 iterations with 35000 burnin, and convergence is pretty good for ρ and β_0 , α is not as good, but still not horrible.

Methods

There were 3 methods used to fit the datasets.

1: Fit α , ρ , β_0 , and random effect in the MCMC. The mean of ρ in the MCMC is set to be the estimates from the pairwise composite likelihood. The α term is given a beta prior with mean equal to the estimate from the pairwise composite likelihood, and standard deviation of 0.05.

2: Logit

3: Probit

In model 1, to help speed up the computational aspect of the MCMC, we only include sites for a knot that are within a certain distance of the knot location. This is set at an initial value based upon the knot spacing, and is adjusted during the MCMC to ensure that all of the random effects are moving from their initial values.

Results

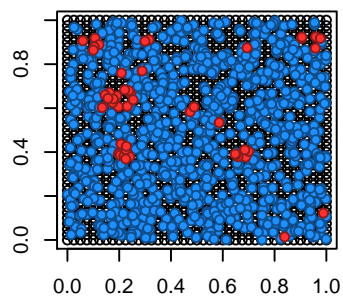
Here are the results for 10 datasets:

Table 1: Simulation results (x 100) for 10 datasets

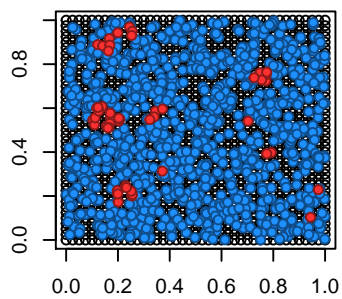
	1	2	3
1	1.623	22.1	2.049
2	1.141	14.28	1.313
3	3.784	9.843	3.773
4	4.237	19.28	5.041
5	1.543	13.78	2.38
6	2.198	20.15	2.844
7	2.5	21.03	3.038
8	3.111	9.223	2.141
9	3.734	19.59	3.391
10	1.575	17.94	1.594
Mean	2.545	16.72	2.756

I think part of the problem with the logit is that it doesn't converge well at all. It may take a little time to tweak the MCMC settings for the logit to do well.

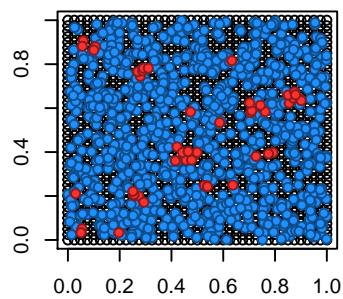
simulated dataset: 1



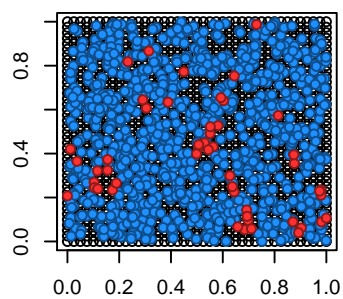
simulated dataset: 2



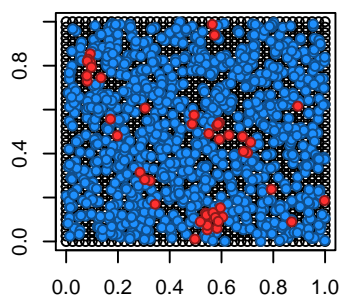
simulated dataset: 3



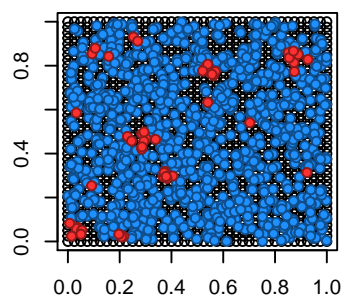
simulated dataset: 4



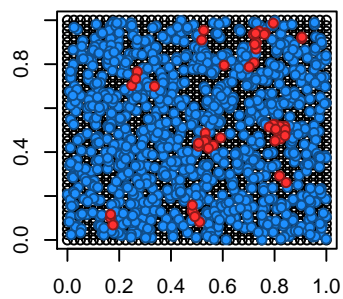
simulated dataset: 5



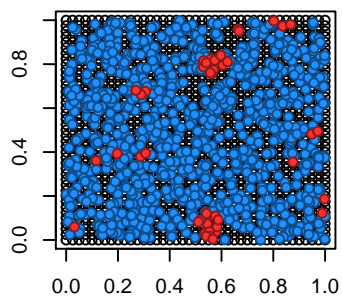
simulated dataset: 6



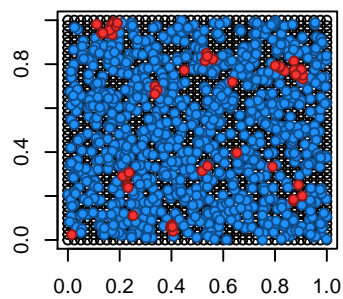
simulated dataset: 7



simulated dataset: 8



simulated dataset: 9



simulated dataset: 10

