Results: Facebook Network

Groups are:
- school
- family
- housemates
- college
- partner’s friends
- Norwegians
The Latent Position Cluster Model

- Actors embedded in latent “social space”
- Closer in social space $\Rightarrow$ higher prob. of a link
- Positions are mixtures of cluster positions
- Want posterior distribution $p$ of positions, etc given links
- Many model parameters; MCMC is slow...

Variational Inference

- Offers a faster closed form approximation $q$
- Minimise Kullback-Leibler divergence
  \[ E_q[\log(q)] - E_q[\log(p)] \]
- Iterative algorithm loops over factorized $q$
- Numerical optimizations required
- Approximation to the log-likelihood required to make expectation tractable