

1. Introduction

- Variable selection and model-X knockoffs
- Knockoff sampling is difficult

2. Characterizing knockoff distributions

- The characterization theorem
- Connection to Markov chain Monte Carlo (MCMC)

3. Metropolized knockoff sampling (Metro)

- How it works
- Time complexity and graphical structure

4. Good proposals inspired by the MCMC literature

- Covariance-guided proposal
- Multiple-try Metropolis (MTM)

5. **Simulation results**

6. Discussion

Mean absolute correlation (MAC)

For **any** valid knockoff distribution

$$\mathbf{corr}(X_i, \tilde{X}_j) = \mathbf{corr}(X_i, X_j) \text{ if } i \neq j$$

$$\mathbf{corr}(\tilde{X}_i, \tilde{X}_j) = \mathbf{corr}(X_i, X_j)$$

$$\mathbf{corr}(X, \tilde{X}) =$$

