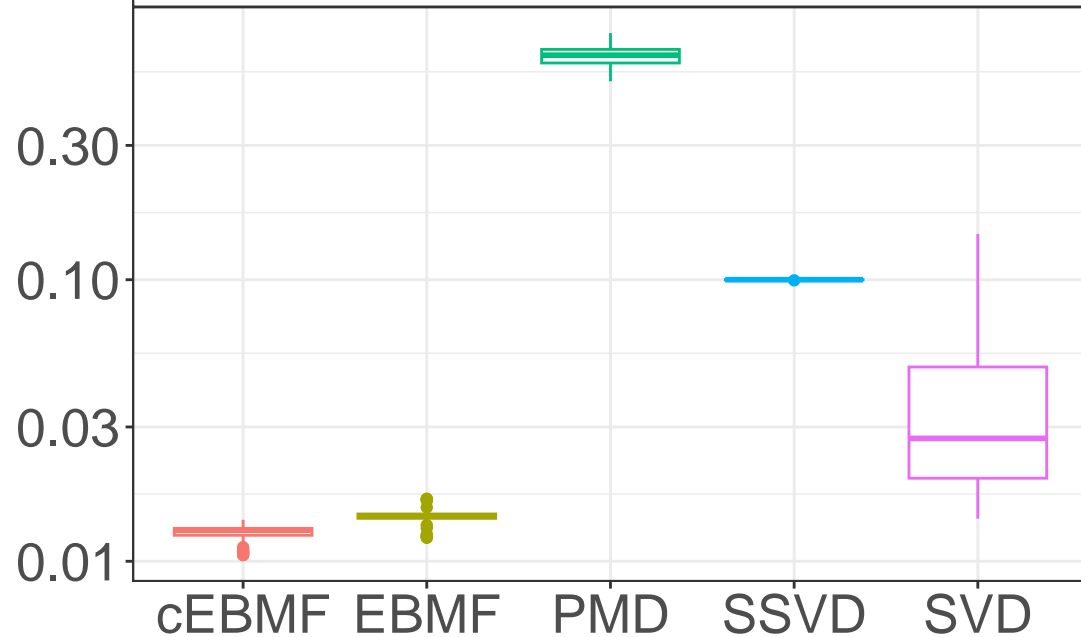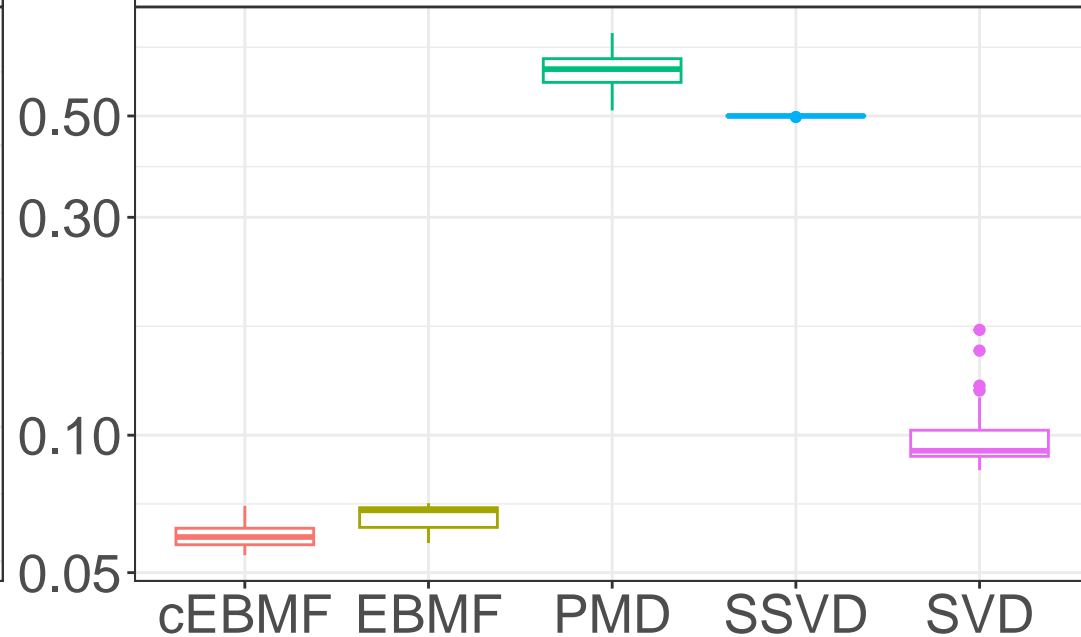Sparsity driven covariat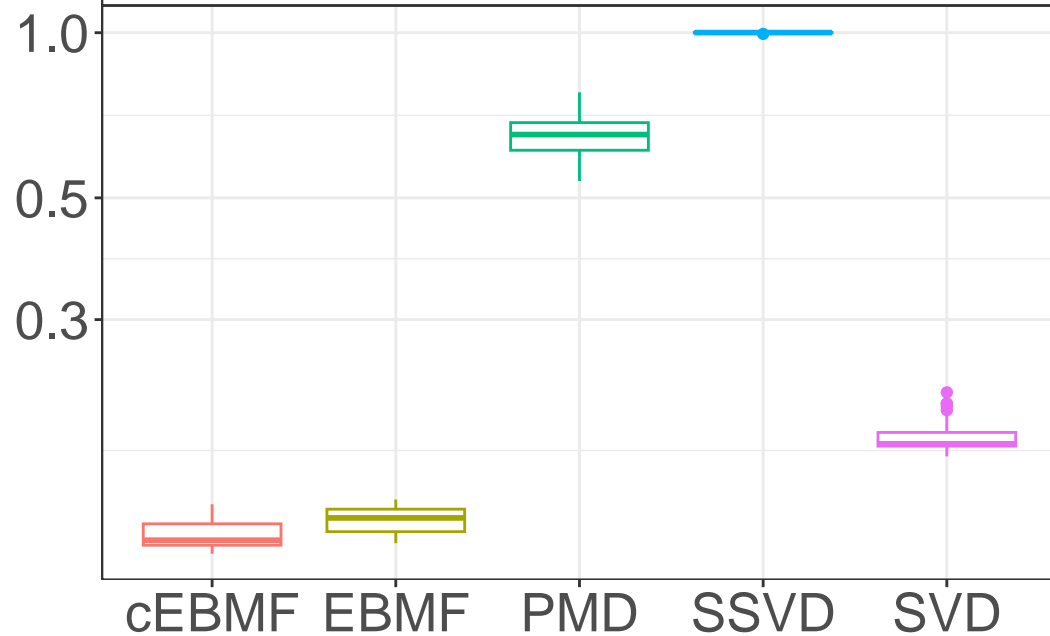e