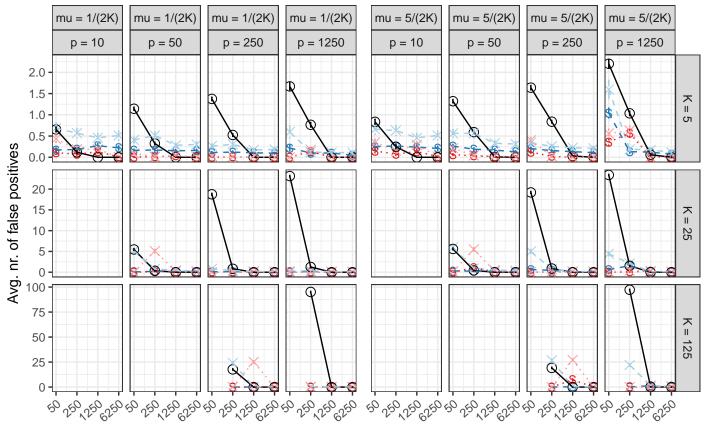$X \sim N(0, \Sigma_1(\mu)), \ \varepsilon \sim N(0, 1), \ \beta \sim \text{Unif}(0.2, 2)$