# R-Output Presenattion

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(a) $Y_1 \sim X_1 + X_2 + X_3 + X_4 + \epsilon$, where $X_i$ are mutually independent.

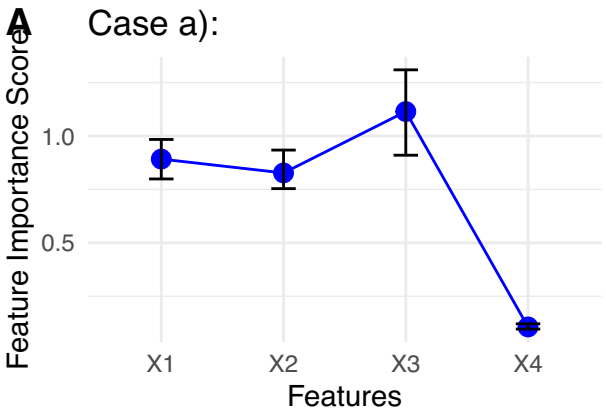
(b) $Y_2 \sim X_1 + X_2 + 0.001X_3 + X_4 + \epsilon$, where $X_i$ are mutually independent.

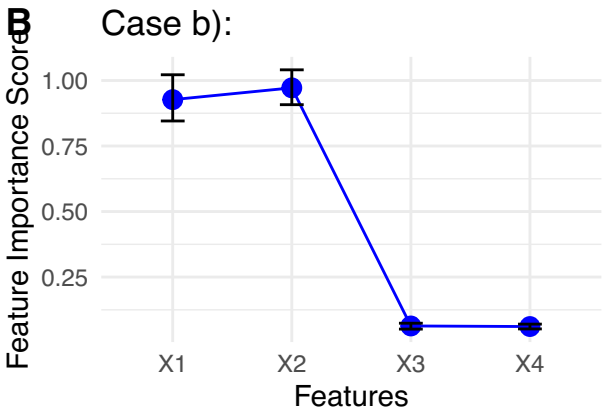
(c) $Y_3 \sim X_1 + X_2 + X_3 + X_4 + \epsilon$, where $X_1 \not\perp\!\!\!\perp X_2$.

(d) $Y_4 \sim X_1 + X_3 + X_4\epsilon$, where $X_1 \not\perp\!\!\!\perp X_2$.

**LOCO only** sample size 1000

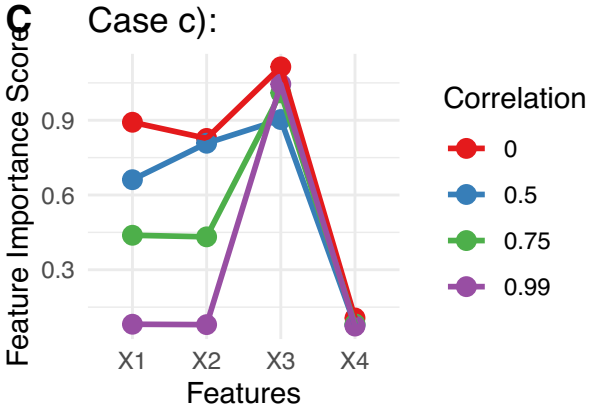
55.94 sec

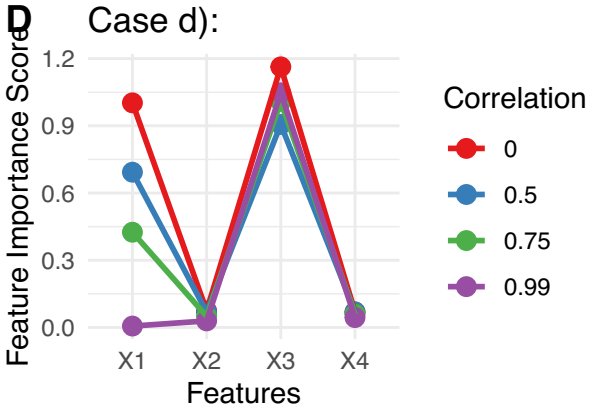



55.76 sec

216.25 sec

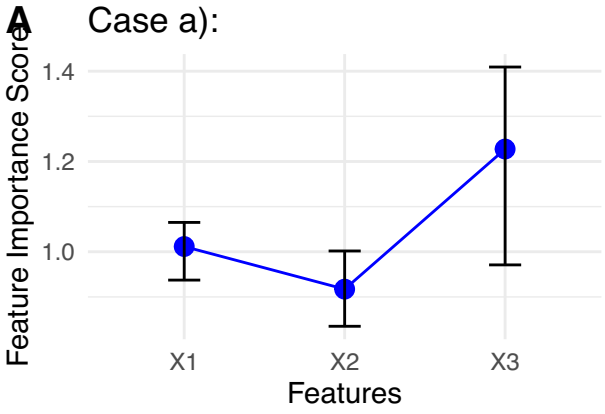


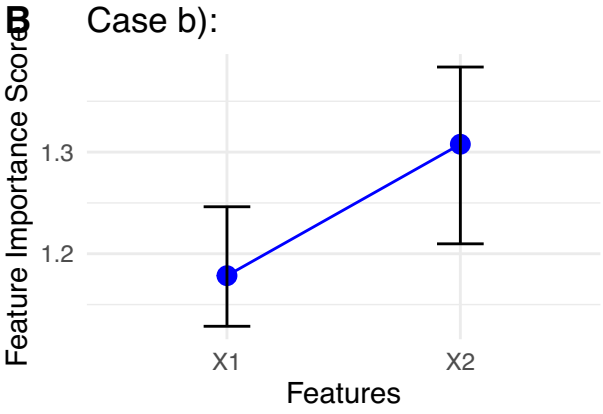




212.86 sec

**GCM filter first + LOCO , sample size 1000**

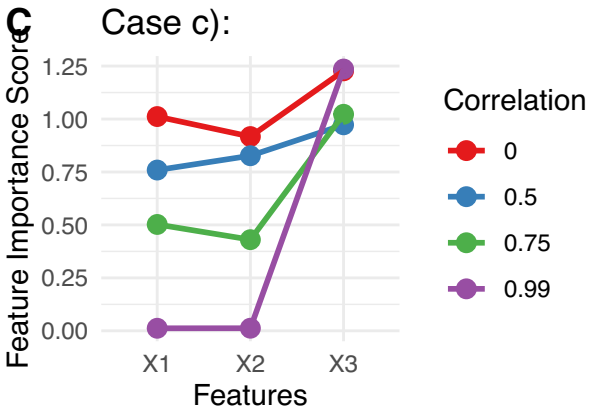
55.41 sec

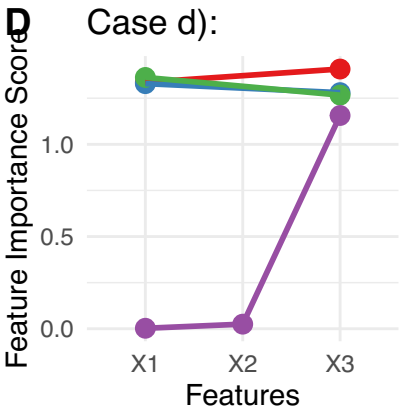



46.57 sec

207.48 sec

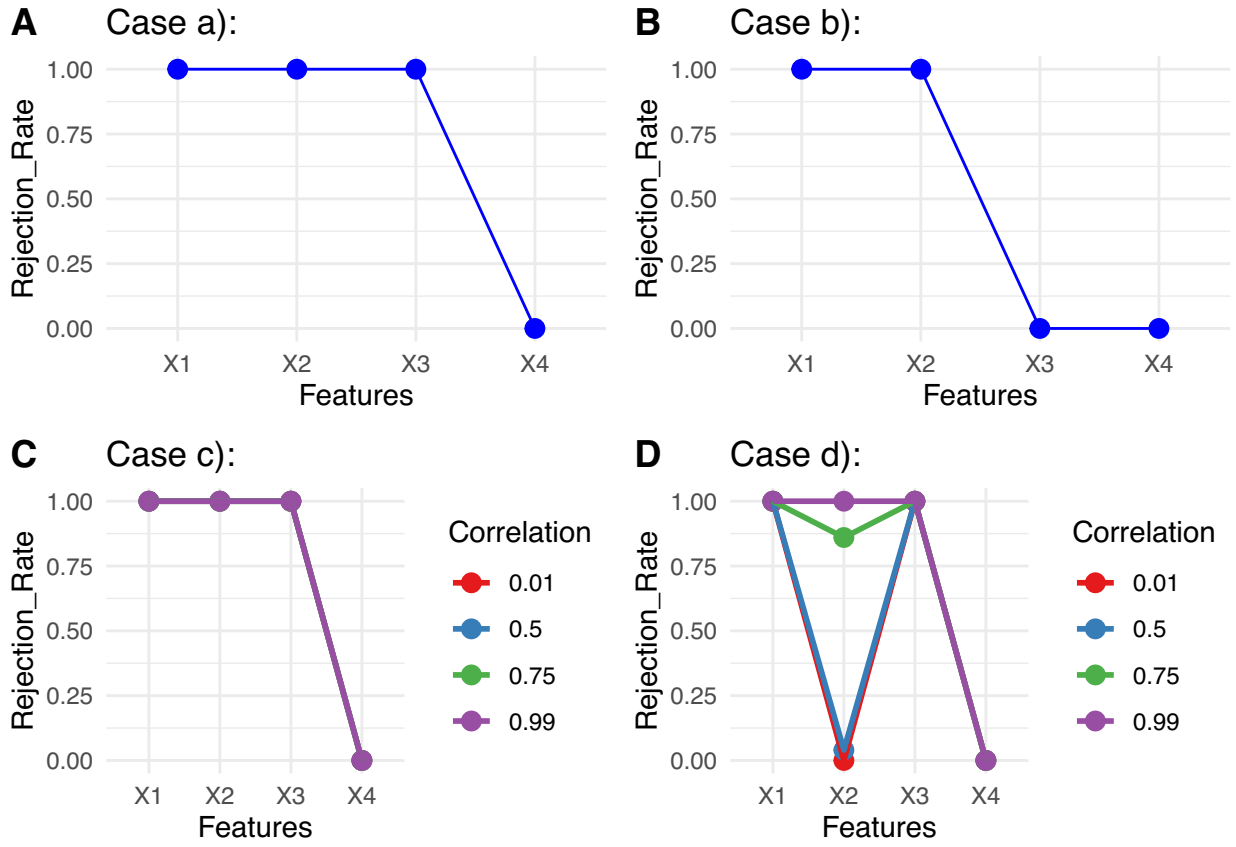



After GCM filter only $X_1, X_3$ are kept

180.88 sec

GCM only 100 simulations, sample size = 1000.

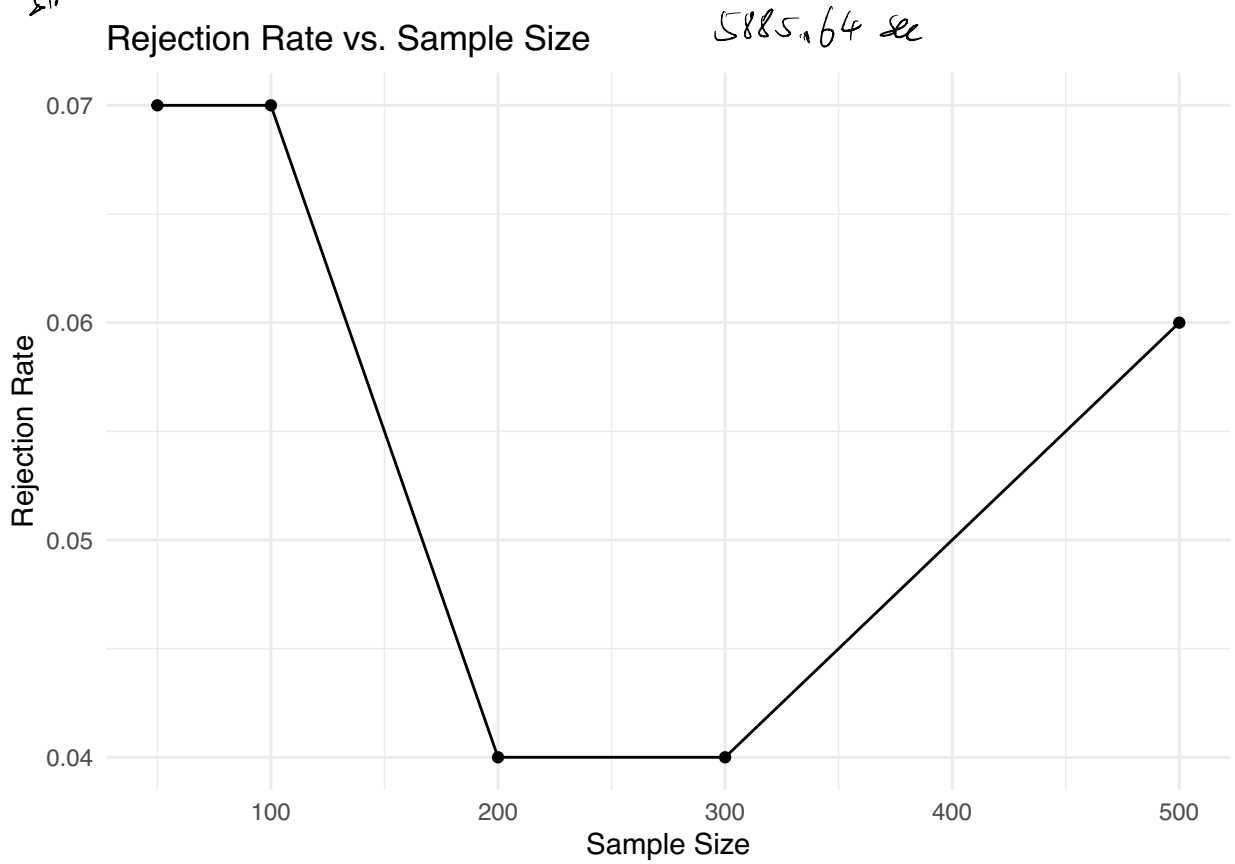



##################GCM Simulation#####################################

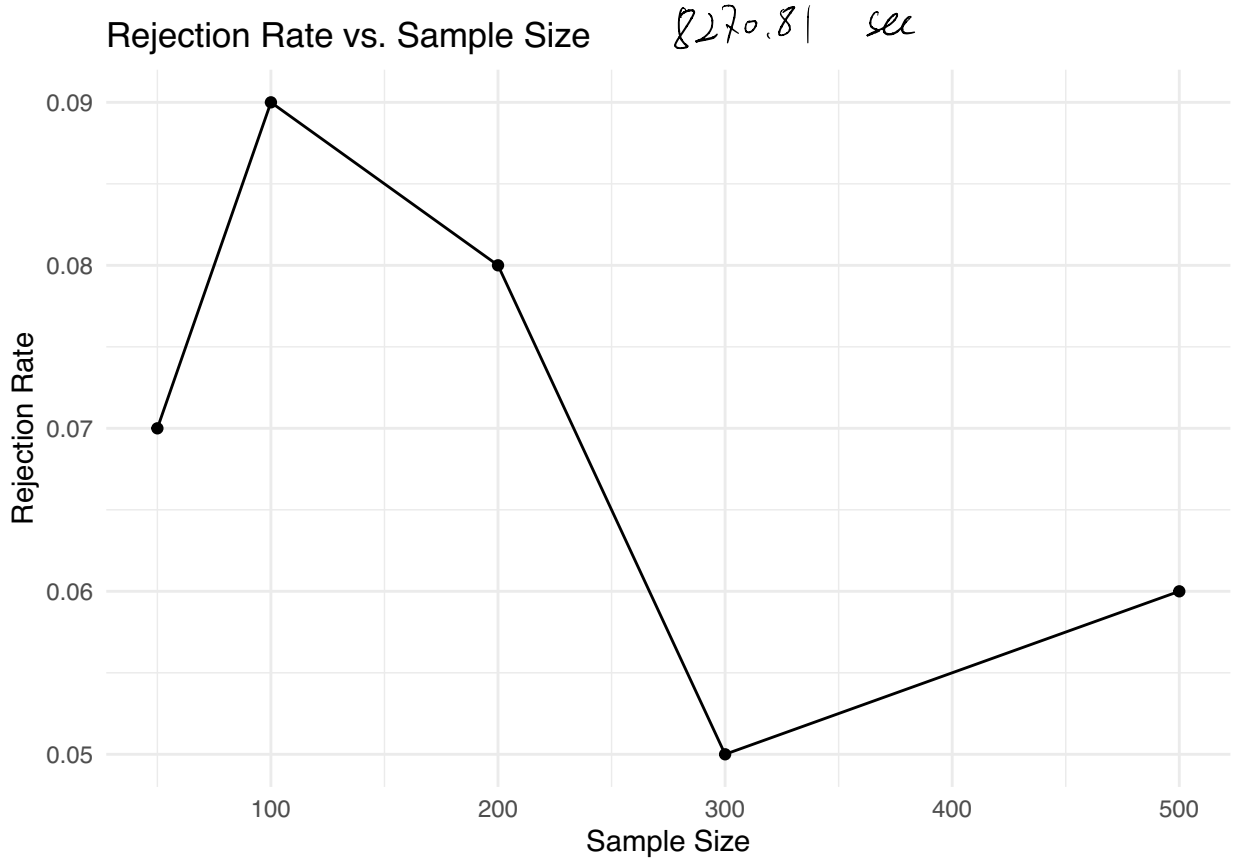
Non-linear : $a) Z \sim N(0,1), X = 2 * sin(Z) + 0.1 * N(0,1), Y = 2 * sin(Z) + 0.1 * N(0,1)$

100 simulations

5885.64 sec




Linear : $b) Z \sim N(0,1), X = 2 * Z + 0.1 * N(0,1), Y = 2 * Z + 0.1 * N(0,1)$


Rejection Rate vs. Sample Size
8270.81 sec
0.09
0.08
0.07
0.06
0.05
Rejection Rate
100
200
300
400
500
Sample Size