GCM,LOCO Subset Selection Simulation

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(a) Linear Model with Independent Predictors

$$Y_1 \sim 1.5X_1 + 1.5X_2 + 2X_3 + 2X_4 + 2X_5 + 3X_6 + 4X_7 + 5X_8 + \epsilon$$

(b) Linear Model with Correlated Predictors

$$Y_2 \sim 1.5X_1 + 1.5X_2 + 2X_3 + 2X_4 + 2X_5 + 3X_6 + 4X_7 + 5X_8 + \epsilon$$

Where $X_1 \not\perp\!\!\!\perp X_2$ and $\text{cov}(X_1, X_2) = 0, 0.5, 0.75, 0.9$ respectively.

(c) Linear Model with Correlated Predictors and Different SNR

$$Y_3 \sim 1.5X_1 + 1.5X_2 + 2X_3 + 2X_4 + 2X_5 + 3X_6 + 4X_7 + 5X_8 + \epsilon$$

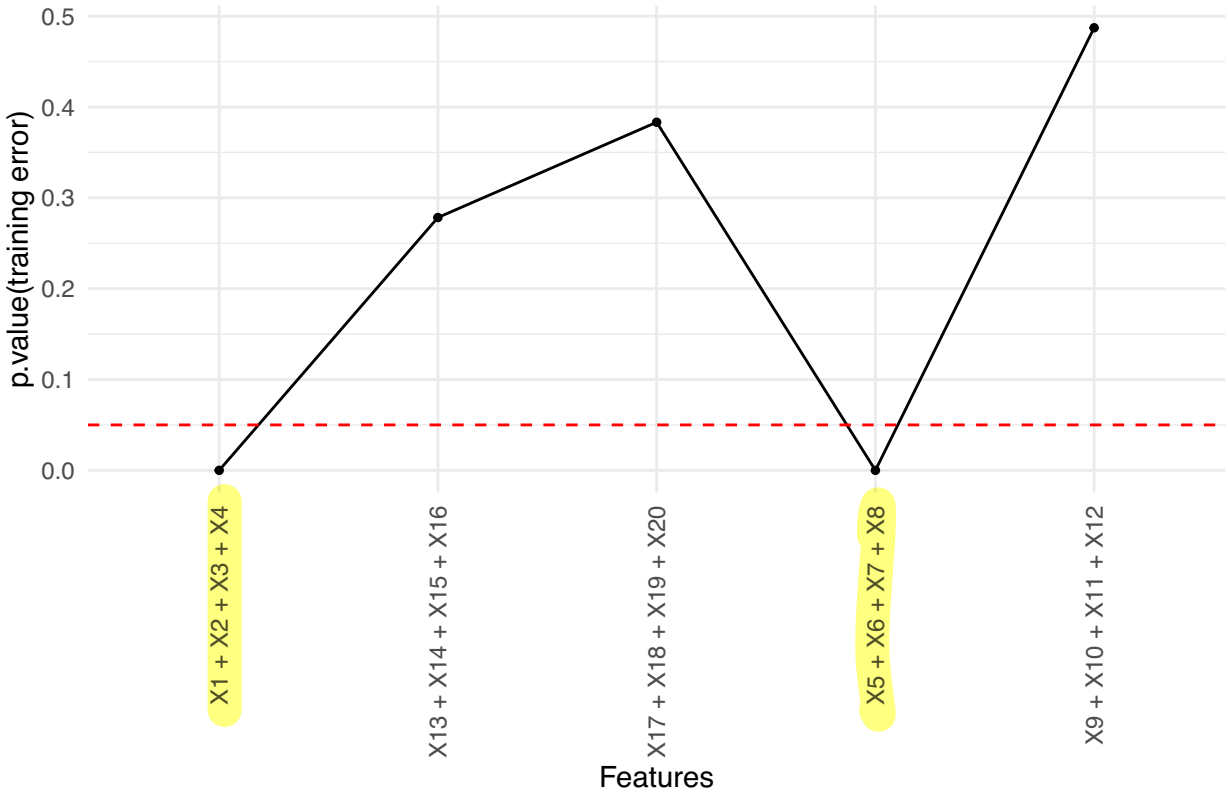
Where $\text{cov}(X_i, X_j) = \rho^{|i-j|}$ and $\epsilon \sim N(0, \sigma^2)$ with $\sigma^2 = 0.1, 0.5, 0.75, 2.1$.

(d) Non-linear Model

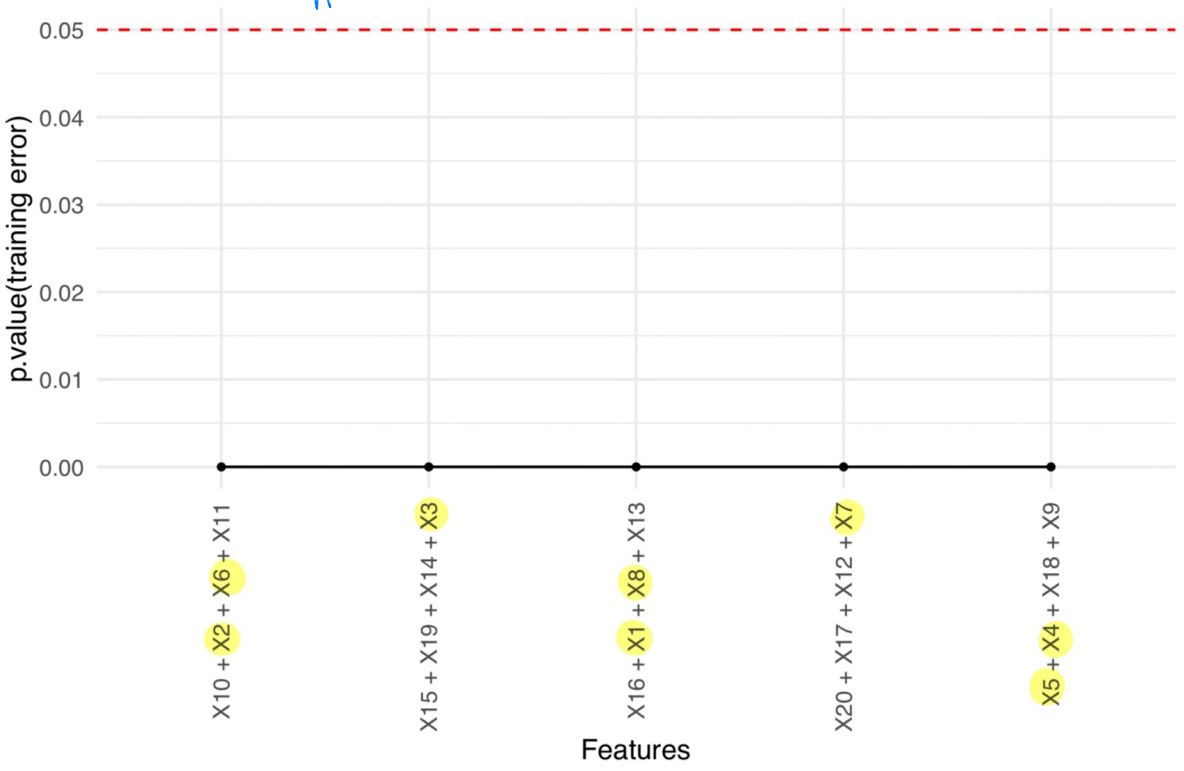
$$Y_4 \sim 2X_1^2 + 2\cos(4X_2) + \sin(X_3) + \exp(X_4/3) + 3X_5 + X_6^3 + 5X_7 + \max(0, X_8)$$

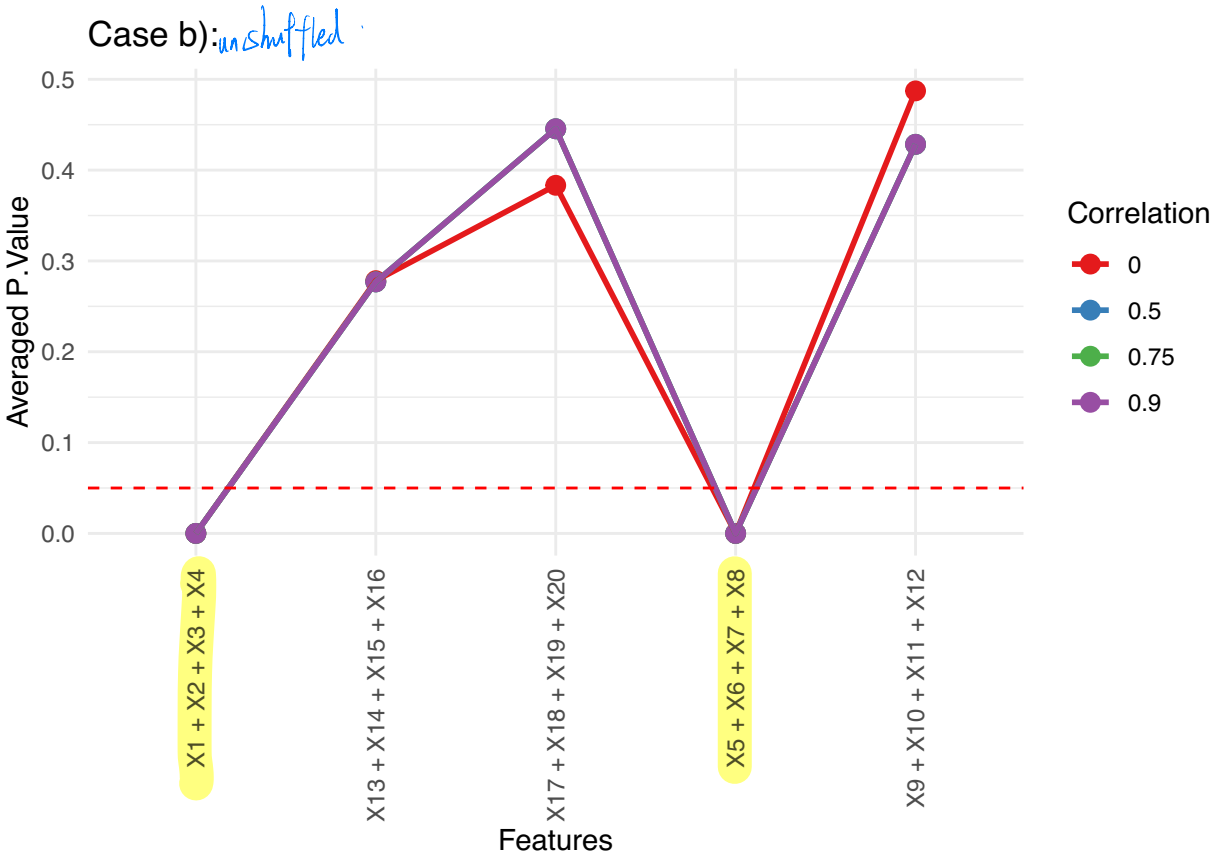
LOCO Subsets selection

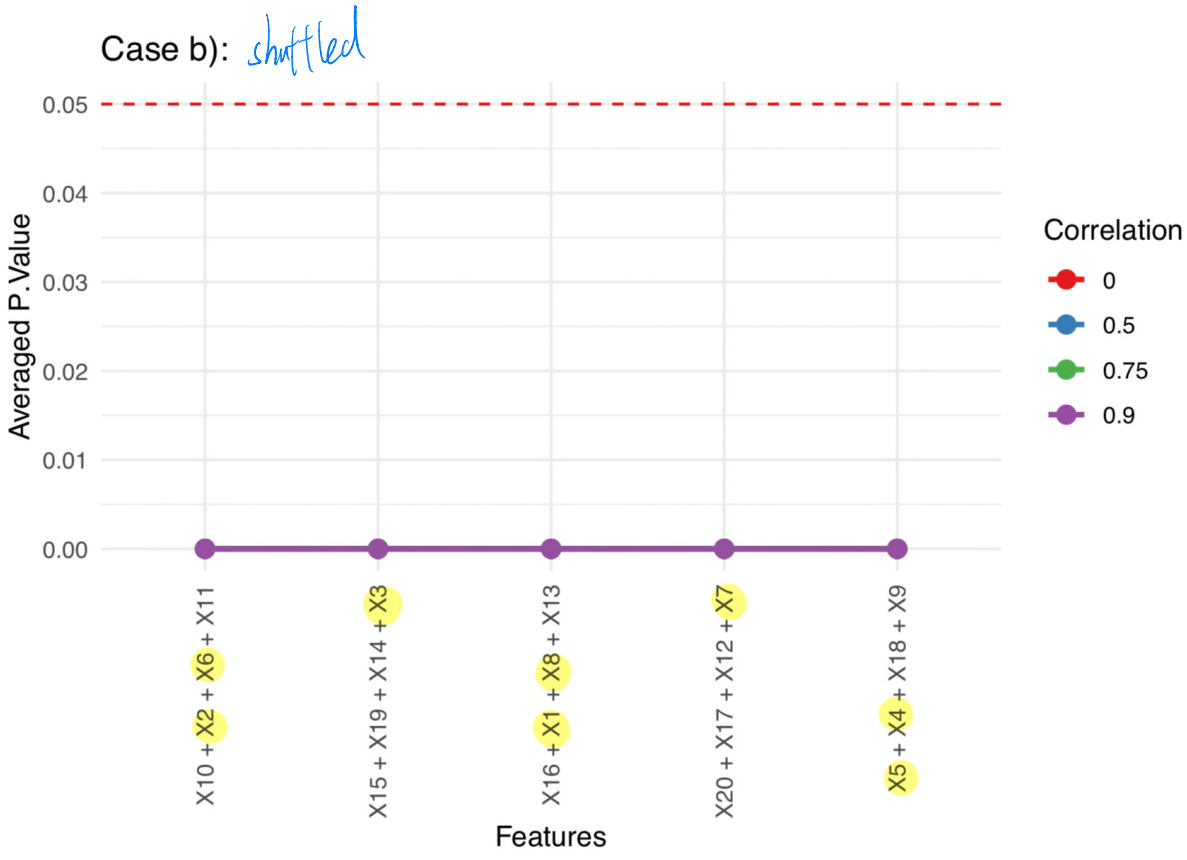
Case a): unshuffled

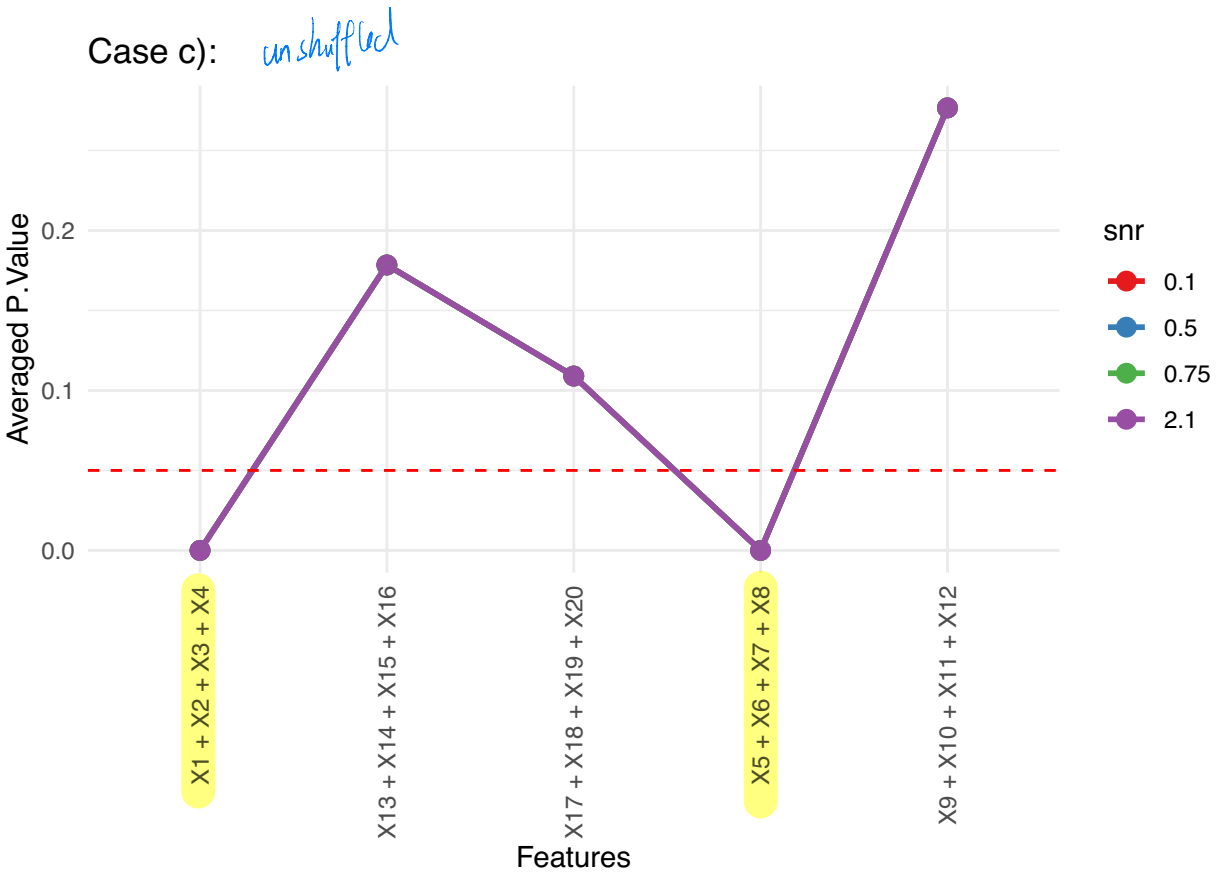


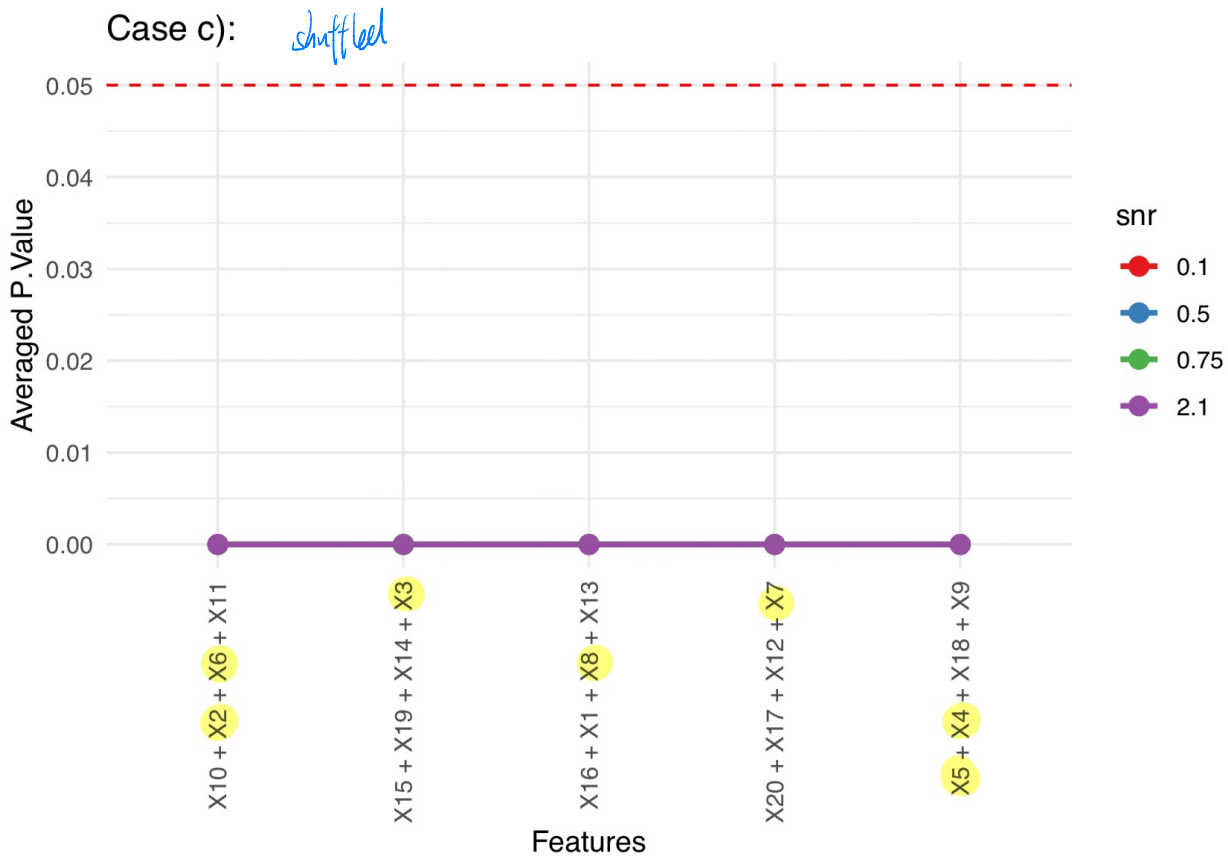
Case a): shuffled



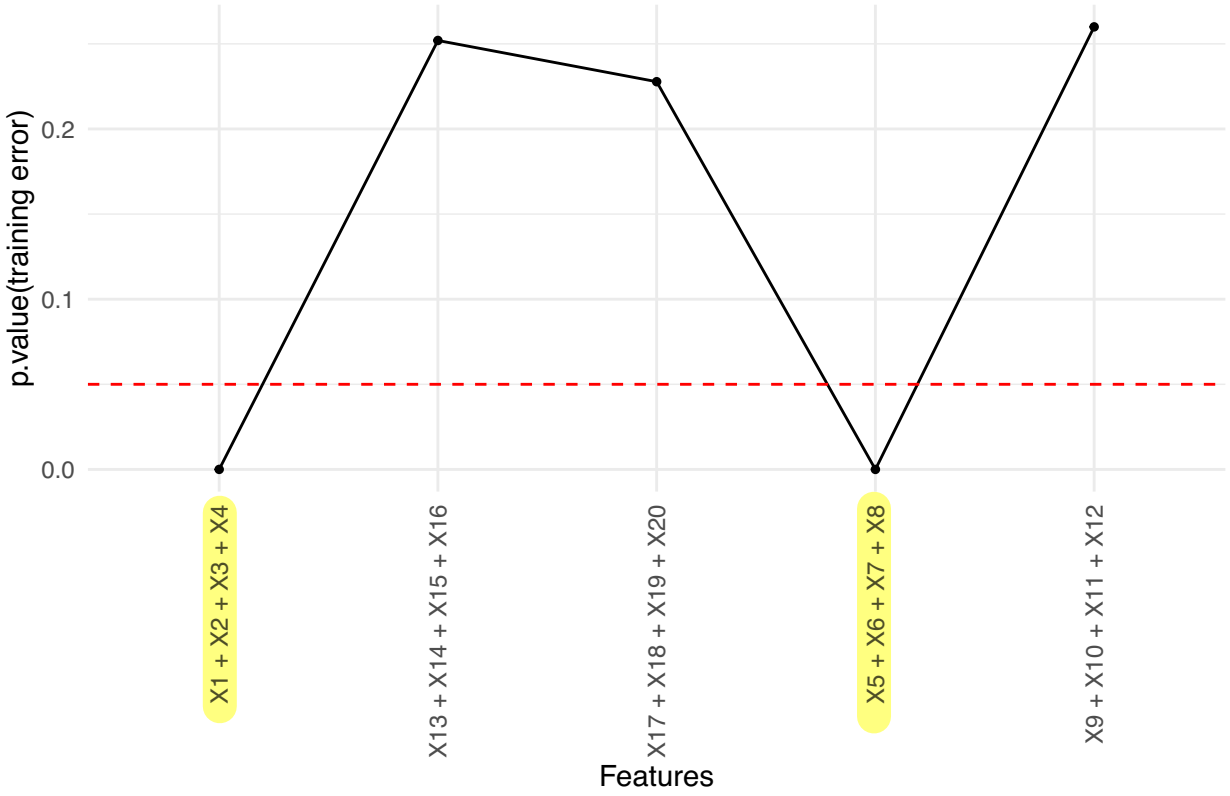

Case b): unshuffled
Averaged P.Value
0.5
0.4
0.3
0.2
0.1
0.0
X1 + X2 + X3 + X4
X13 + X14 + X15 + X16
X17 + X18 + X19 + X20
X5 + X6 + X7 + X8
X9 + X10 + X11 + X12
Features
Correlation
0
0.5
0.75
0.9


Case b): shuffled
Averaged P.Value
0.05
0.04
0.03
0.02
0.01
0.00
X10 + X2 + X6 + X11
X15 + X19 + X14 + X3
X16 + X1 + X8 + X13
X20 + X17 + X12 + X7
X5 + X4 + X18 + X9
Features
Correlation
0
0.5
0.75
0.9

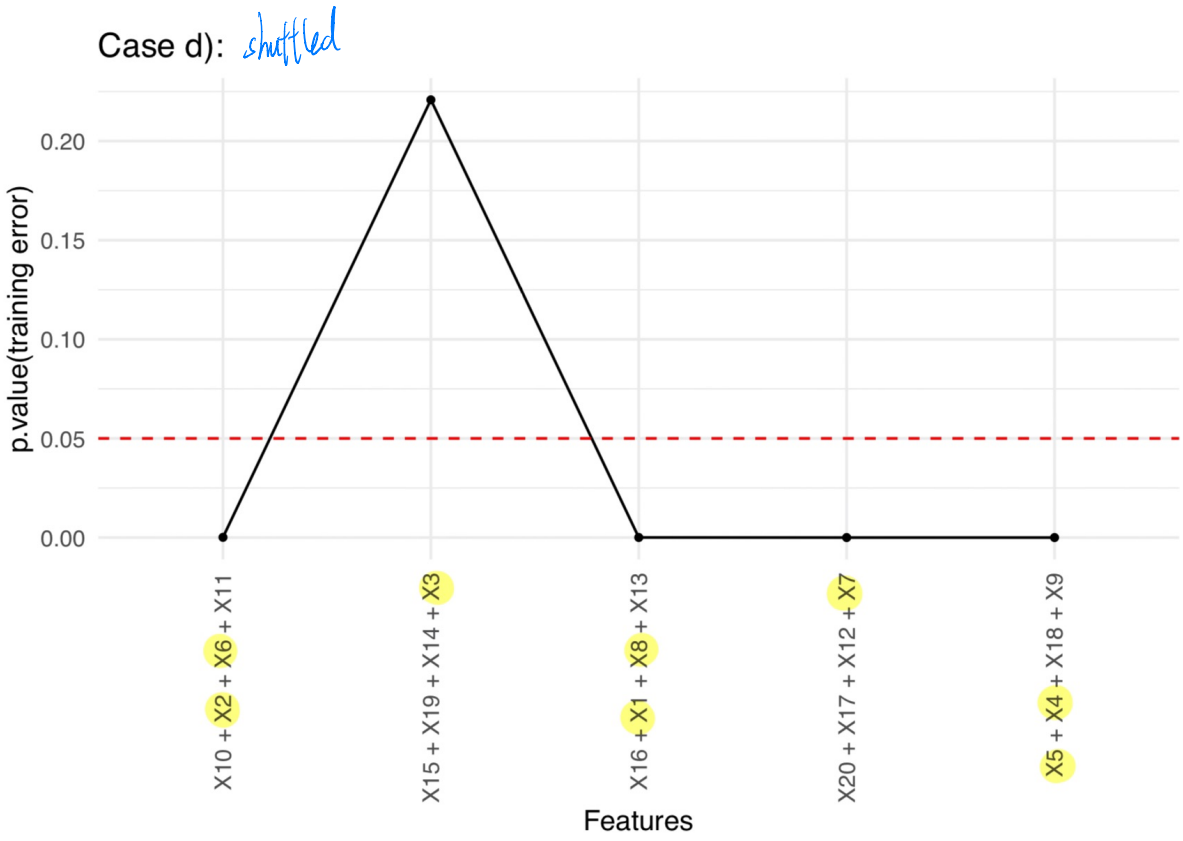

Case c): unshuffled
Averaged P.Value
0.2
0.1
0.0
X1 + X2 + X3 + X4
X13 + X14 + X15 + X16
X17 + X18 + X19 + X20
X5 + X6 + X7 + X8
X9 + X10 + X11 + X12
Features
snr
0.1
0.5
0.75
2.1


Case c): shuffled
Averaged P.Value
0.05
0.04
0.03
0.02
0.01
0.00
X10 + X2 + X6 + X11
X15 + X19 + X14 + X3
X16 + X1 + X8 + X13
X20 + X17 + X12 + X7
X5 + X4 + X18 + X9
Features
snr
0.1
0.5
0.75
2.1

Case d): unshuffled.

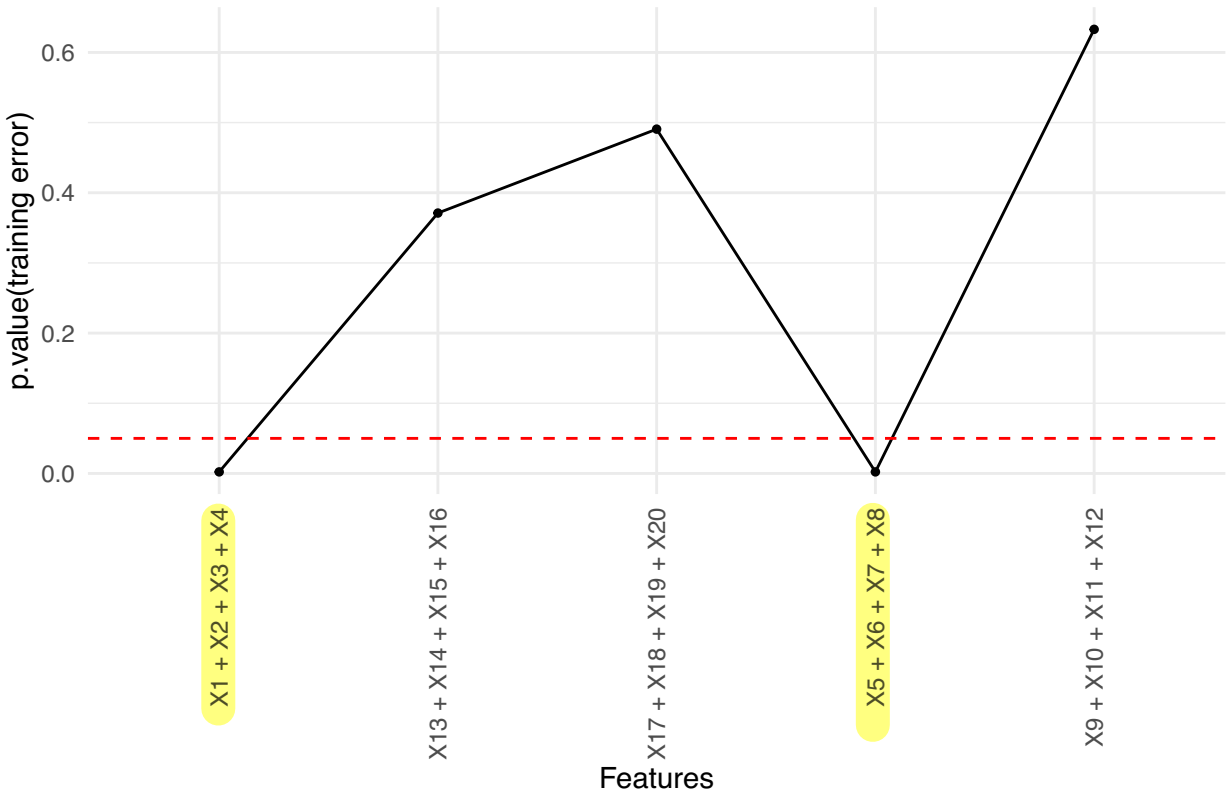


Case d): shuffled

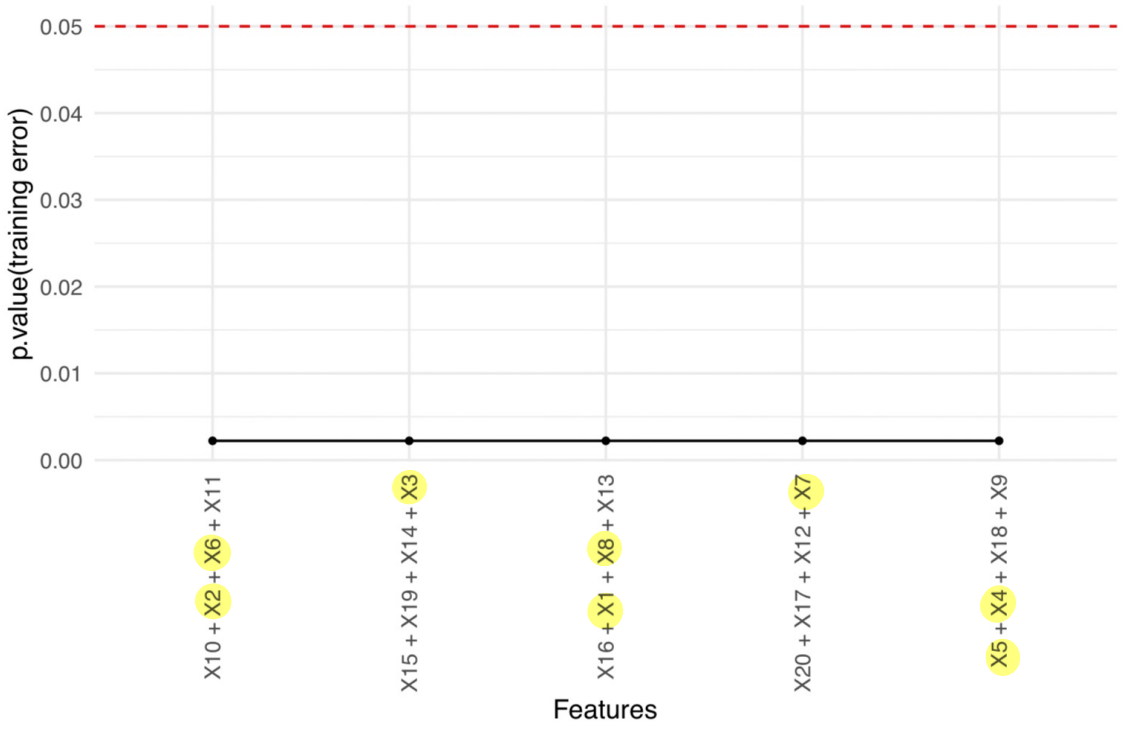


GCM Subsets selection

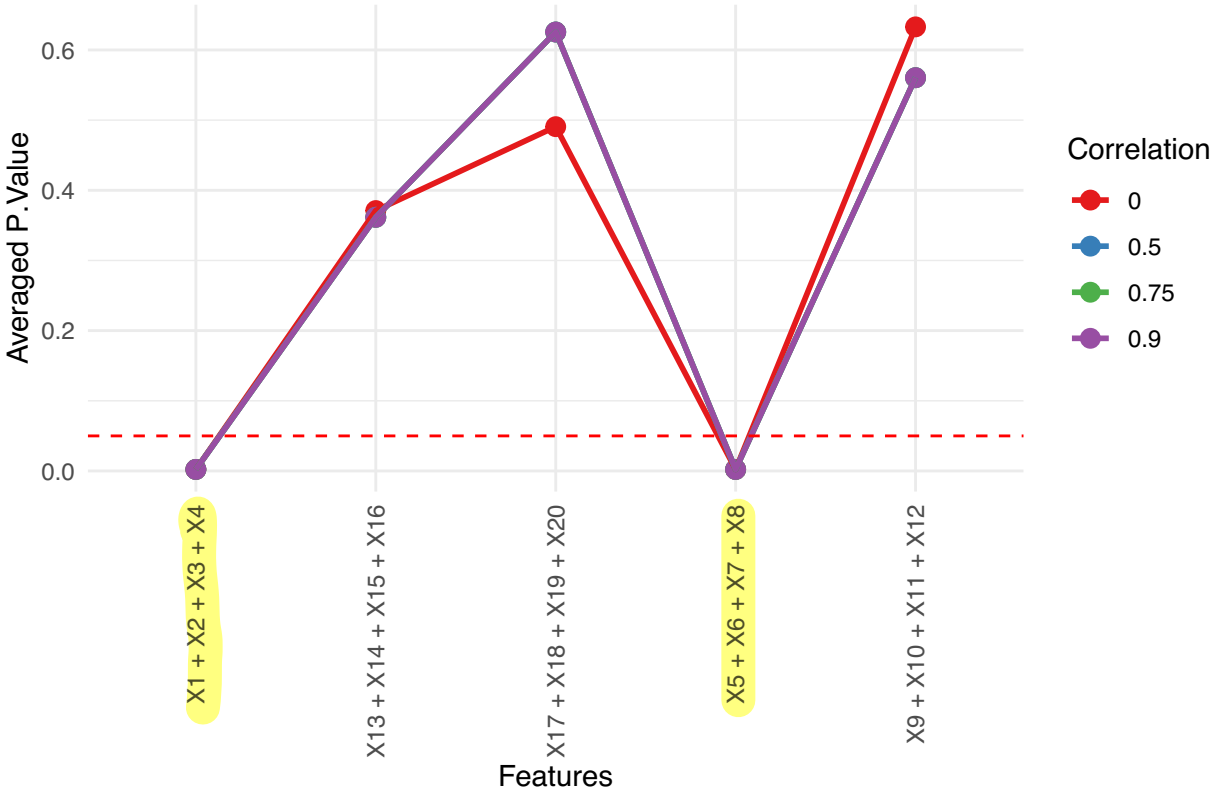
Case a): unshuffled.



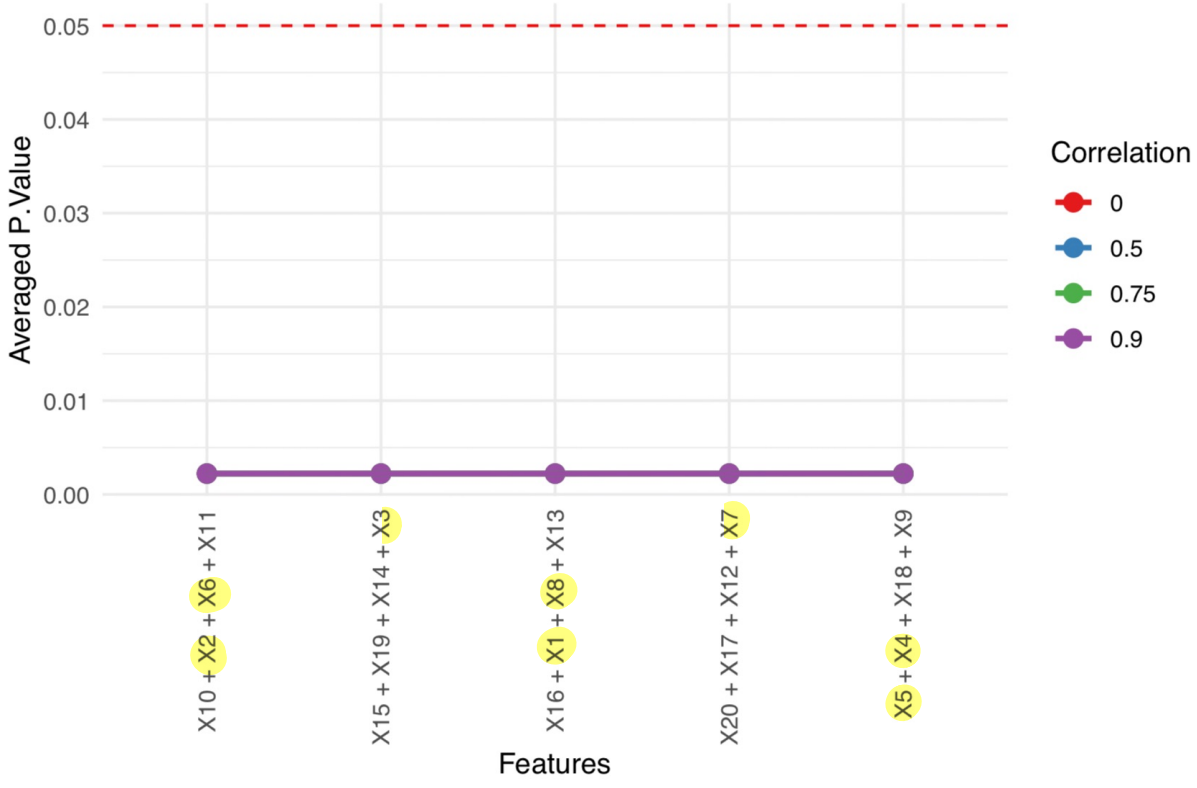
Case a): shuffled.

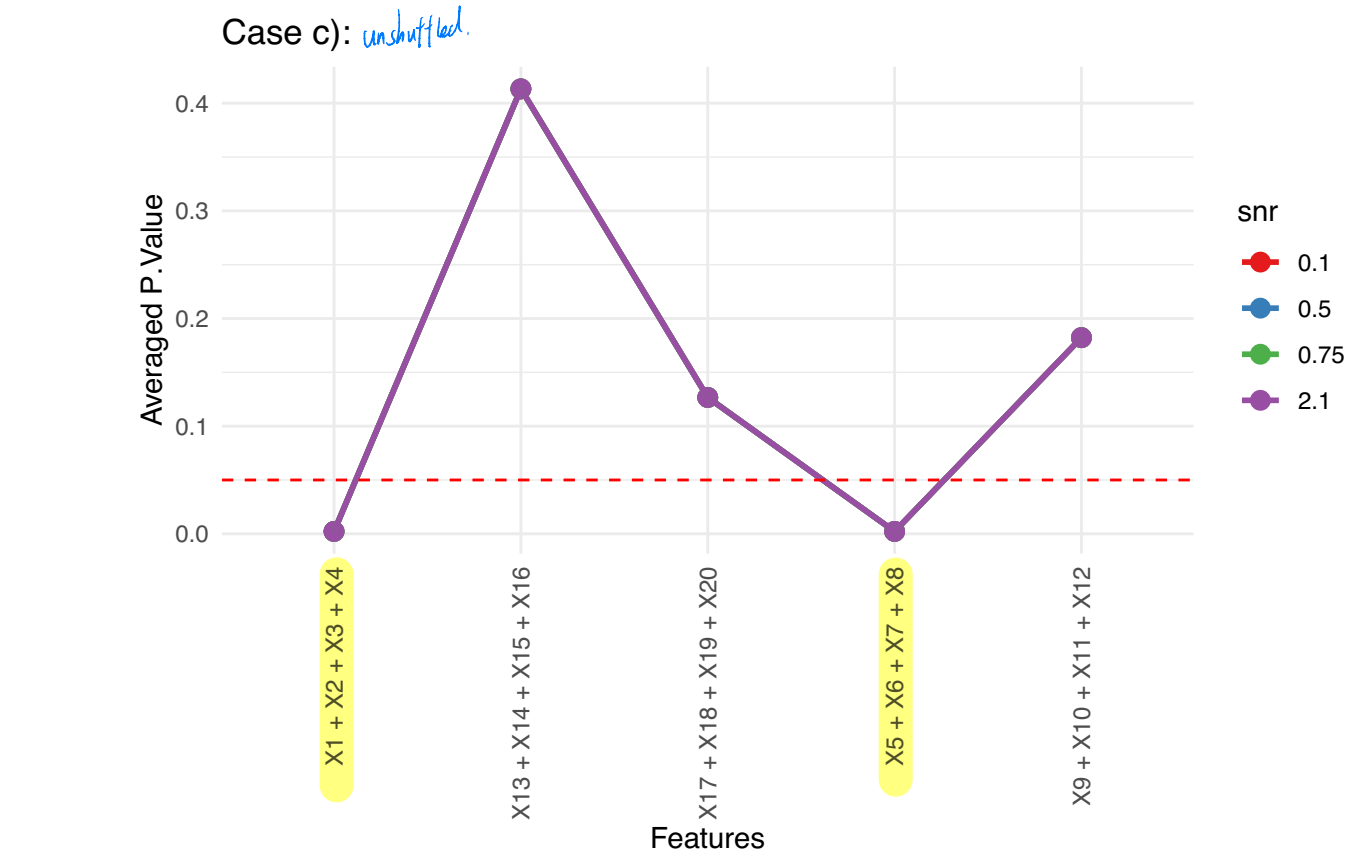


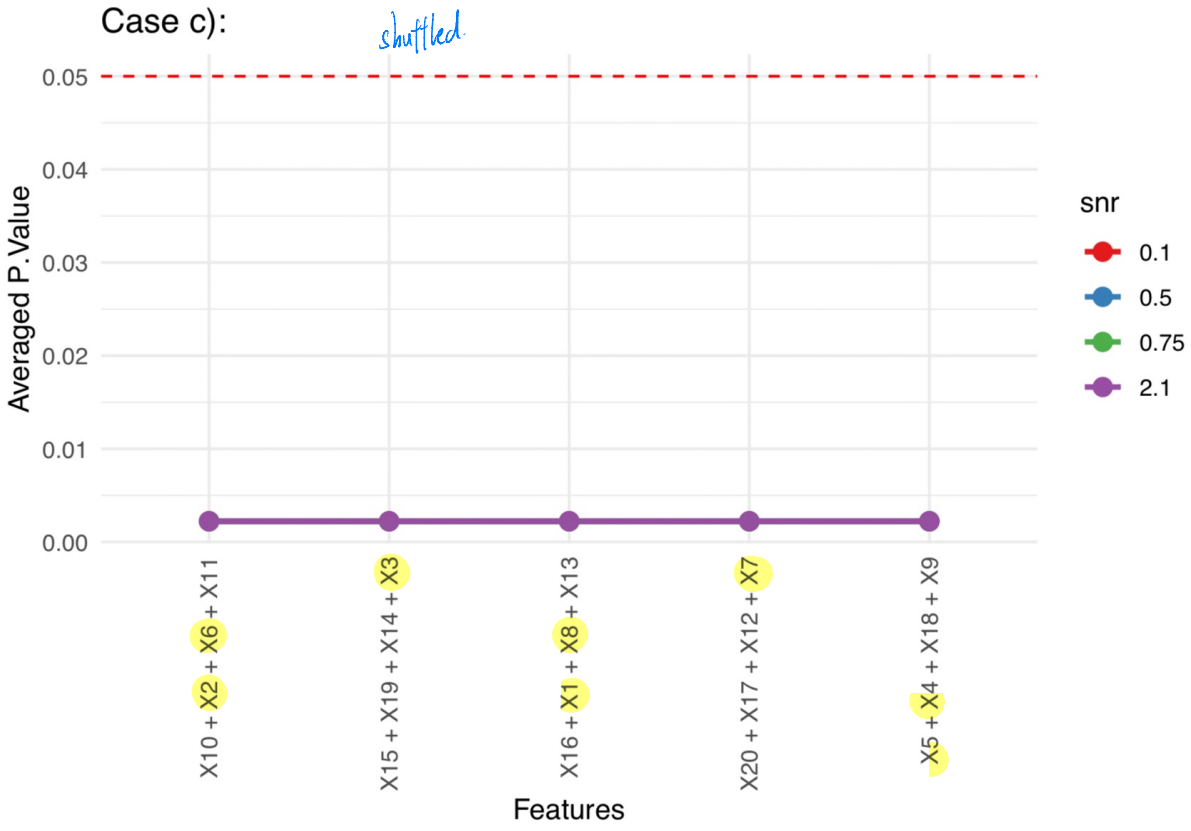
Case b): unshuffled.



Case b): shuffled.




Case c): unshuffled.
Averaged P.Value
0.4
0.3
0.2
0.1
0.0
X1 + X2 + X3 + X4
X13 + X14 + X15 + X16
X17 + X18 + X19 + X20
X5 + X6 + X7 + X8
X9 + X10 + X11 + X12
Features
snr
0.1
0.5
0.75
2.1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0.05
0.04
0.03
0.02
0.01
0.00
X10 + X2 + X6 + X11
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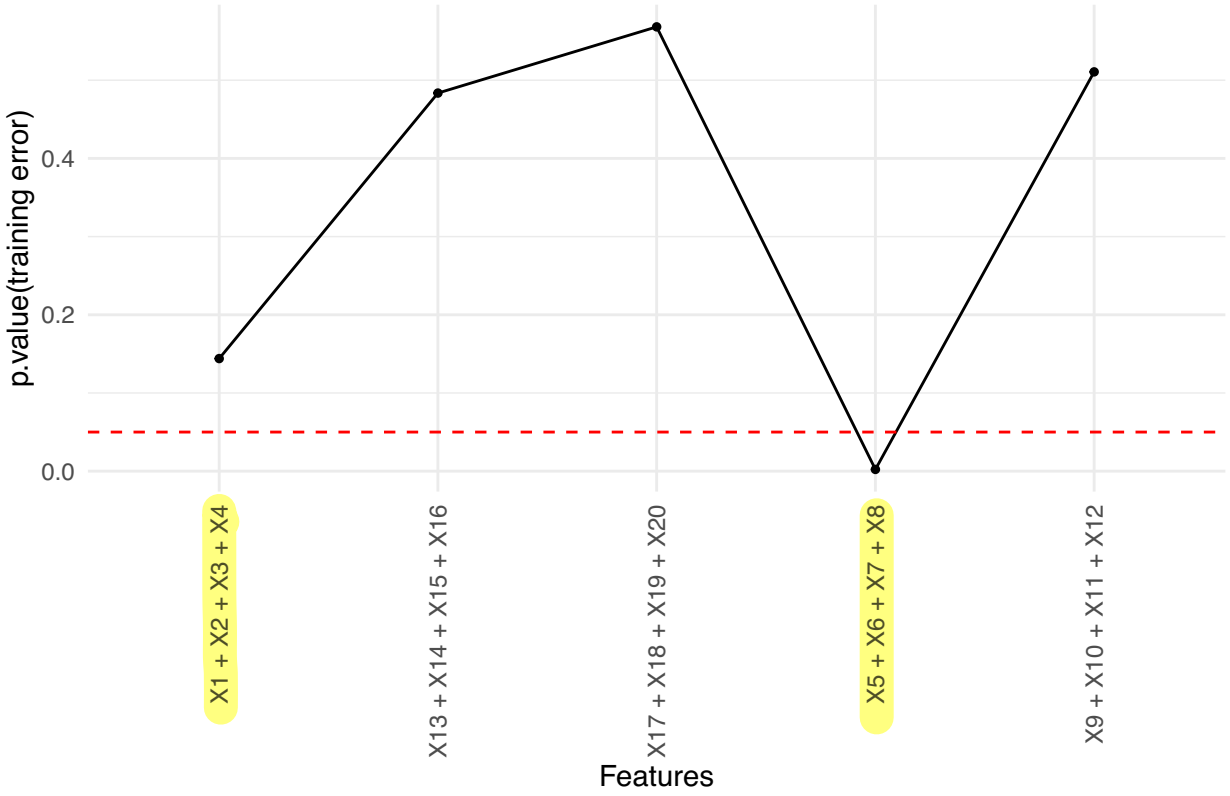
X16 + X1 + X8 + X13
X20 + X17 + X12 + X7
X5 + X4 + X18 + X9
Features
snr
0.1
0.5
0.75
2.1

Case d): unshuffled



Case d): shuffled