

① Sufficiency holds but not separation

Y: Hyperlipidemia (Ground truth)

C: Prediction, prediction = true whenever  $P(\text{Hyperlipidemia} = \text{Yes} | \text{Gender} = \text{Male}) > 0.5$

A = Gender

Hyperlipidemia	Prediction	Gender	Sufficiency		Separated	
			$P(H P \cap G) = P(H P)$		$P(P H \cap G) \neq P(P H)$	
Yes	Yes	M	0.2		0.15	0.2
Yes	Yes	F	0.2		0.1	0.15
Yes	No	M	0.1		0.2	0.2
Yes	No	F	0.1		0.15	0.05
No	Yes	M	0.1		0.1	0.2
No	Yes	F	0.1		0.2	0.15
No	No	M	0.1		0.15	0.15
No	No	F	0.1		0.15	0.1

② Separation holds but not sufficiency

Y: Hyperlipidemia (Ground truth)

C: Prediction, prediction = true whenever  $P(\text{Hyperlipidemia} = \text{Yes} | \text{Evidence}) > 0.5$  where Gender  $\neq$  Evidence

A = Gender

Hyperlipidemia	Prediction	Gender	Sufficiency		Separated	
			$P(H P \cap G) \neq P(H P)$		$P(P H \cap G) = P(P H)$	
Yes	Yes	M	0.3	0.1	0.2	
Yes	Yes	F	0.1	0.15	0.2	
Yes	No	M	0.2	0.1	0.1	
Yes	No	F	0.1	0.15	0.1	
No	Yes	M	0.1	0.2	0.1	
No	Yes	F	0.2	0.15	0.1	
No	No	M	0.05	0.15	0.1	
No	No	F	0.05	0.2	0.1	