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Q3.

Define separation as meaning  $A$  is independent of  $C$  given  $Y$ , and Sufficiency as meaning  $A$  is independent of  $Y$  given  $C$

Let  $A$  be gender,  $Y$  be hyperlipidemia, and  $C$  be 1 if  $p(Y|\text{region}) \geq .5$  and 0 ow.

I claim we have separation but not sufficiency.

Let  $A$  be gender,  $Y$  be hyperlipidemia, and  $C$  be 1 if  $p(Y|\text{activity}) \geq .5$  and 0 ow.

I claim we have sufficiency but not separation.