- Separation: A is independent of C given Y, i.e.

$$P(A|CY) = P(A|Y) \text{ for all values in } Y\text{'s domain}$$

- Sufficiency A is independent of Y given C, i.e.

$$P(A|YC) = P(A|C) \text{ for all values in } C\text{'s domain}$$

First I'll show that if we have a joint distribution that satisfies sufficiency, it can't satisfy separation. Consider the variables

$$\begin{aligned} A, &\quad \text{domain}(A) = \{\text{a1}, \text{a2}\} \\ C, &\quad \text{domain}(C) = \{\text{c1}, \text{c2}\} \\ Y, &\quad \text{domain}(Y) = \{\text{y1}, \text{y2}\} \end{aligned}$$

Where all of there values have equal (0.5) probability, so in the joint, $\forall a \in \text{domain}(A), c \in \text{domain}(C), y \in \text{domain}(Y), P(A = a, C = c, Y = y) = 0.125$ (i.e. each event in the joint has equal probability)