What proportion of <u>male</u> students <u>like</u> living in Syracuse?

$$P(\text{like} \mid \text{male}) =$$

$$= \frac{\#\ \text{males}_{\&}\ \text{like Syr.} / \#\text{total}}{\#\ \text{males} / \#\text{total}}$$

$$= \frac{P(\text{Male}\ \&\ \text{Like})}{P(\text{Male})}$$

Conditional probability

Independent events

A and B are independent
if $\quad P(A|B) = P(A)$

$$P(A \text{ and } B) = P(A) \cdot P(B)$$
$$\text{Why } ?????$$

$$P(A|B) = \frac{P(A \text{ and } B)}{P(B)} = P(A)$$

$$= \frac{P(A) \cdot P(B)}{P(B)} = P(A)$$