

age > 40 , income low

Quiz 6

Normal

$$P(\text{buy} \mid \text{age} > 40, \text{income: low})$$

$$P(\text{age} \mid \text{buy}) = 3/9$$

$$P(\text{age} \mid \text{not buy}) = 2/5$$

$$P(\text{income} \mid \text{buy}) = 3/9$$

$$P(\text{income} \mid \text{not buy}) = 1/5$$

$$\text{buy} = 3/9 \times 3/9 = 0.111$$

$$\text{not buy} = 2/5 \times 1/5 = 0.08$$

Prior

$$0.111 \times 0.643 = 0.071377 \quad \checkmark$$

$$0.08 \times 0.357 = 0.02856$$

Laplacian correction

$$P(\text{buy} \mid \text{age } 31-40, \text{income: high})$$

$$P(\text{age} \mid \text{buy}) = 5/12$$

$$P(\text{age} \mid \text{not buy}) = 1/8$$

$$P(\text{Income} \mid \text{buy}) = 2/9$$

$$P(\text{Income} \mid \text{not buy}) = 2/5$$

$$\text{buy} = 5/12 \times 2/9 = 0.09259$$

$$\text{not buy} = 1/8 \times 2/5 = 0.05$$

$$0.09259 \times 0.643 = 0.05953 \quad \checkmark \text{ buy}$$

$$0.05 \times 0.357 = 0.01785$$