

$$P(\text{spam}) = \frac{58}{100} \quad P(\neg \text{spam}) = \frac{42}{100}$$

$$P(\text{buy} | \text{spam}) = \frac{47}{58} \rightarrow \frac{48}{60}$$

$$P(\text{win} | \text{spam}) = \frac{41}{58} \rightarrow \frac{42}{60}$$

$$P(\text{buy} | \neg \text{spam}) = \frac{3}{42} \rightarrow \frac{4}{44}$$

$$P(\text{win} | \neg \text{spam}) = \frac{5}{42} \rightarrow \frac{6}{44}$$

$$\begin{array}{c} \text{SPAM} \\ \left(\frac{42}{60}\right) \left(1 - \frac{48}{60}\right) \left(\frac{58}{100}\right) \end{array}$$

$$\approx \underline{0.0812}$$

$$\begin{array}{c} \neg \text{SPAM} \\ \left(\frac{6}{44}\right) \left(1 - \frac{4}{44}\right) \left(\frac{42}{100}\right) \end{array}$$

$$\approx \underline{0.0521}$$

Should be predicted as spam

$$P(\text{spam} | \text{win}, \neg \text{buy}) = \frac{-0.0812}{-0.0812 + 0.0521} \approx 0.6092$$