

Naïve Bayes Training Phase

- Training a naïve Bayes model:

1. Set n_c to the number of times ($y_i = c$).
2. Estimate $p(y_i = c)$ as $\frac{n_c}{n}$.
3. Set n_{cjk} as the number of times ($y_i = c, x_{ij} = k$)
4. Estimate $p(x_{ij} = k | y_i = c)$ as $\frac{n_{cjk}}{n}$.
5. Use that $p(x_{ij} = k | y_i = c) = \frac{p(x_{ij} = k, y_i = c)}{p(y_i = c)}$

$$= \frac{n_{cjk}/n}{n_c/n} = \frac{n_{cjk}}{n_c}$$

$$p(x_{11}=1 | y_1=1) = \frac{4}{6} = \frac{2}{3}$$

