conditional probabilities & bayes' rule

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2015 Gallup poll on use of online dating sites:

		Age				
		18-29	30-49 B	50-64	65+	Total
Used online dating site	Yes A	60	86	58	21	225
	No	255	426	450	382	1513
	Total	315	512	508	403	1738

% of 30-49 year olds using online dating sites =

86 / 512 ≈ 0.17

A&B B

P(use online dating site | 30-49 year old)

Bayes' rule:

$$P(A \mid B) = \frac{P(A \ \& \ B)}{P(B)}$$

Source: http://www.pewinternet.org/2016/02/11/15-percent-of-american-adults-have-used-online-dating-sites-or-mobile-dating-apps/

Bayes' rule

Thomas Bayes
(1702 –1761)

Source: http://bayesian.org/bayes

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$$P(\text{use online dating site} \mid \text{30-49 year old}) = \frac{P(\text{use online dating site \& 30-49 year old})}{P(\text{30-49 year old})}$$

$$= \frac{86 / 1738}{512 / 1738} = \frac{86}{512} \approx 0.17$$

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