

SOA Exam P 021 (General Probability)

Let S = Model 1997

A = Automobile from 1997, 1998, 1999 was involved in an accident

$$\text{Find: } \Pr(S|A) = \frac{\Pr(S \cap A)}{\Pr(A)}$$

$$\begin{aligned}\Pr(S \cap A) &= 0.16 \times 0.05 \\ &= 0.008\end{aligned}$$

$$\begin{aligned}\Pr(A) &= \Pr(97 \cap \text{Accident}) + \Pr(98 \cap \text{Accident}) + \\ &\quad \Pr(99 \cap \text{Accident}) \\ &= (0.16 \times 0.05) + (0.18 \times 0.02) + (0.2 \times 0.03) \\ &= 0.0176\end{aligned}$$

$$\begin{aligned}\Pr(S|A) &= \frac{0.008}{0.0176} \\ &= 0.4545 \dots\end{aligned}$$

ANS: D