

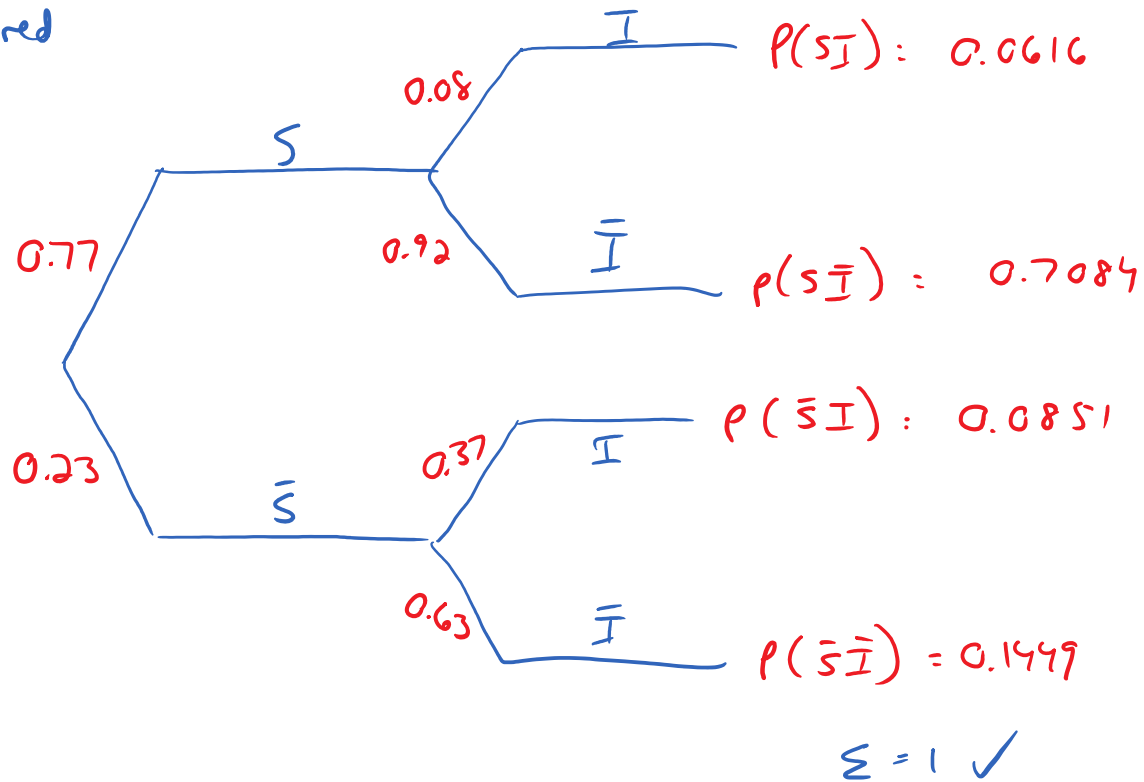
Review:

Thursday, April 11, 2019 2:49 PM

A highway safety study found that in 77% of all accidents, the driver was wearing a seat belt. Accident reports indicated that 92% of those drivers were uninjured, but only 63% of the non-seatbelted drivers were.

For a randomly selected accident, calculate the probability that if a driver was injured, they weren't wearing a seat belt.

let S = seat belt
 I = injured



$$P(\bar{S} | I) = \frac{P(\bar{S}I)}{P(I)} = \frac{0.0851}{0.0851 + 0.0616}$$

$$= 0.580095$$

$$\approx 58\%$$

For the above question, are "being injured" and "wearing a seatbelt" independent?

method 1: $P(\bar{S} | I) \approx 58\%$
 $P(\bar{S}) = 23\%$ } not same
 \therefore dependent

method 2: $P(I | S) = 8\%$
 $P(I) = 0.0851 + 0.0616 \neq 8\%$ } same conclusion

method 3: $P(I | S) = 8\%$
 $P(I | \bar{S}) = 37\%$ } same conclusion