

SIR, WE CAUGHT  
ONE MORE  
CRIMINAL TODAY



6% OF THIS CITY  
POPULATION IS OF  
CRIMINALS AS PER LAST  
YEAR DATA. WE SHOULD  
DO SOMETHING ABOUT  
INCREASING CRIME IN  
THE CITY.

SIR, THIS ONE TOO IS A  
DRIVER OF CABER CAB  
COMPANY. ALMOST 50%  
OF CRIMINALS I CATCH  
ARE CABERs.  
I SEE SOMETHING FISHY  
HERE.

I DON'T THINK SO  
JUNIOR.  
HALF OF 6% CRIMINALS  
MEANS JUST 3%. YOU  
CAN'T SUSPECT ALL  
CABERs FOR SO FEW  
CRIMINALS.



PARDON ME BOSS. JUNIOR HAS A POINT.  
CABERs MAKE 4% OF THIS CITY POPULATION.  
SO IT MEANS SAY CITY POPULATION IS 100,  
THEN THERE ARE 4 CABERs. AND YOU SAID 3  
ARE CRIMINALS. THAT MEANS  $\frac{3}{4}$  TH OF  
CABERs ARE CRIMINALS.



OH YES! THANKS DETECTIVE THOMAS!  
I GOOFED UP THE MATH. THIS CABER  
BOSS SEEMS TO BE ACTUALLY  
RUNNING ORGANIZED CRIME UNDER  
GUISE OF HIS CAB COMPANY.  
LET'S GO CATCH HIM...



THOMAS BAYES

$$P(\text{criminals}) = 6\%$$

$$P(\text{cabers}|\text{criminals}) = 50\%$$

$$P(\text{cabers}) = 4\%$$

*A*

*B*

$$P(A | B) = \frac{P(B | A) P(A)}{P(B)}$$

$$\begin{aligned} P(\text{criminals}|\text{cabers}) &= \frac{P(\text{cabers} |\text{criminals}) \times P(\text{criminals})}{P(\text{cabers})} \\ &= \frac{50\% \times 6\%}{4\%} = 75\% \end{aligned}$$