

1/27/2025

$Y=1$: Zombified
 $Y=0$: healthy

$$P(Y=1) = \frac{1}{6}$$

$$\text{Sensitivity} = P(f(x)=1 | Y=1) = \frac{4}{5}$$

$$\text{Specificity} = P(f(x)=0 | Y=0) = \frac{4}{5}$$

What is $P(Y=0 | f(x)=1)$?

$f(x)$

		0	1	
Y	0	$\frac{4}{5} \cdot \frac{5}{6}$	$\frac{1}{5} \cdot \frac{5}{6}$	$\frac{5}{6}$
	1	$\frac{1}{5} \cdot \frac{1}{6}$	$\frac{4}{5} \cdot \frac{1}{6}$	$\frac{1}{6}$

$$P(Y=0 | f(x)=1) = \frac{P(Y=0, f(x)=1)}{P(f(x)=1)}$$

$$= \frac{\frac{1}{6}}{\frac{1}{6} + \frac{4}{30}} = \frac{5}{9}$$