

Discussion
 Section
 week of
 29 Oct - 2 Nov
 2018

p. R - (56) #1

G = card
 really is good
 AMS →
 29 Oct
 18
 (1)

B = card
 really is bad

(+) = system
 says bad

(-) = system says
 good

$P(B) = 1\%$

$P(- | G) = 97\% \leftarrow$

$P(+ | B) = 98\% \leftarrow$
 =

$P(B | +) = 25\%$

often
 $P(Y | X) \neq P(X | Y)$

ex.

$P(\text{clouds} | \text{rain}) =$
 high

$P(\text{rain} | \text{clouds}) =$
 low

what
 system
 says

	truth		
	B	G	
(+)	98	297	395
(-)	2	9,603	9,605
	100	9,900	10,000

← 2x2 contingency table
 gender & MLP

$P(B | +) = \frac{98}{395} = 25\% !!$

UC LA

false ⊕ rate = $P(G | +) = 100\% - 25\%$ ^②
 $= 75\%$!!

false ⊖ rate = $P(B | -) = \frac{2}{9,605}$
 $= 0.0002$
 $= 0.02\%$

		truth		
		B	G	
what system says	⊕	no error	a little bit bad for bank	false positive
	⊖	really bad for bank	no error	you: pissed off merchant: loses profit bank: lost small fee, lost interest payment

↑
 false negative

you: get TV for free
 merchant: no downside
 bank: has to cover loss

$2 + 297 = 299$ mistakes;
 - only 2 out of 299 are the really bad kind for the bank