Discussion section 4 / #1

Ans? 7 Jul 2016

p. (R-59)

B = (card really is bad)

G = not B = (card really is good) ①

⊕ = (system says card is bad)

⊖ = not ⊕ = (system says card is good)

P(B) = 1%

P(⊖ | G) = 97%

P(⊕ | B) = 98%

P(B | ⊕) = ?

P(B) = 1%

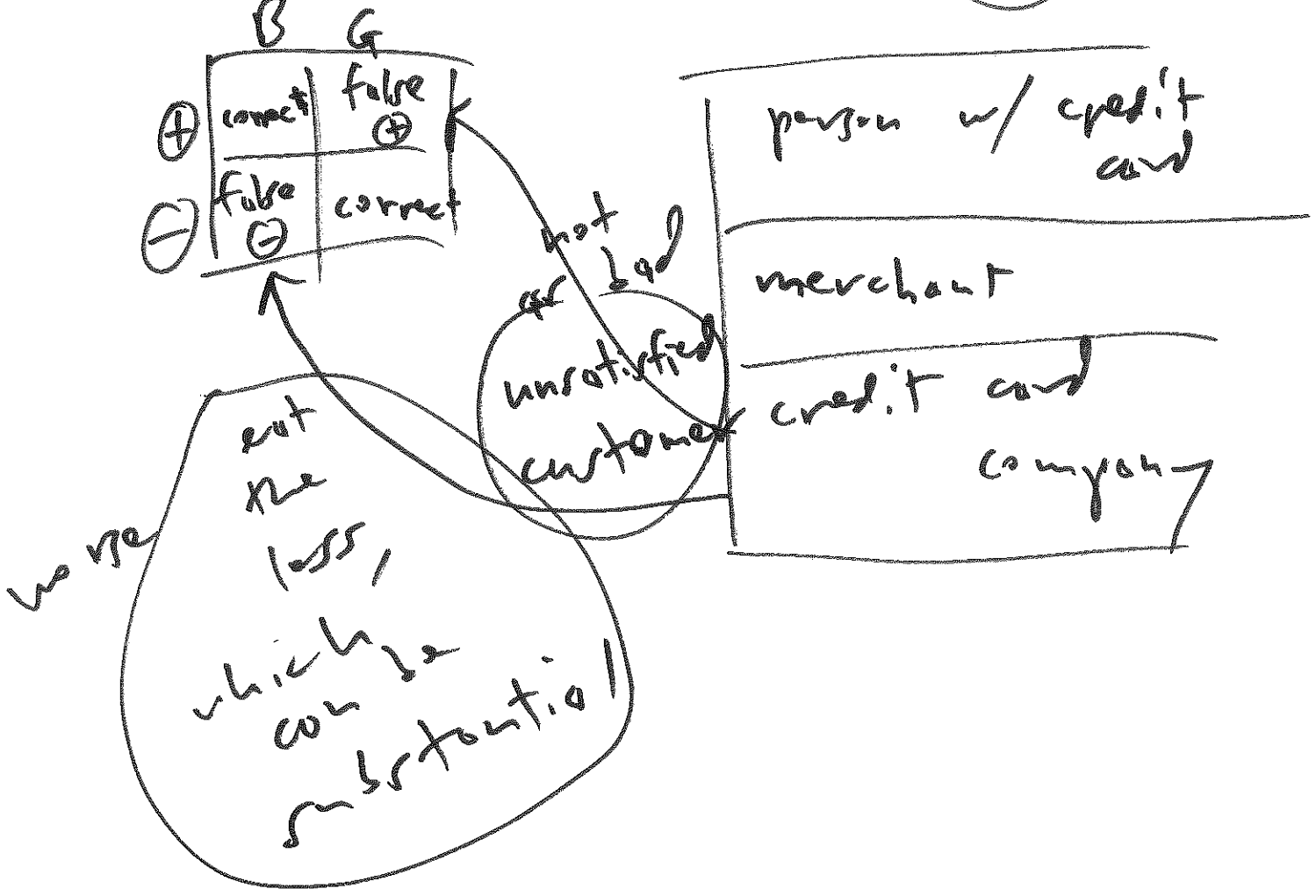
truth

system says	B	G	
⊕	98	297	395
⊖	2	9,603	9,605
	100	9,900	10,000

prevalence ≈ 25%

$P(B|\oplus) = \frac{98}{395}$!

a lot of false ⊕ : 297



pop: all British adults who will ride the underground at rush hour

sample: the observed people on escalator

imag. data: all possible samples

weight

N = ?

(big)

like at random without repl. (like SRS) = like IID

weight

n = 192

sum S = ?

like IID (ex. 30,900 lb.)

mean $\mu = 158$ lb.

SD $\sigma = 33$ lb.

n = 192

sum S = ?, (ex. 31,450 lb.)

30,900

31,450

$n \to \infty$

long run mean of S = EV of S = 30,336 lb.

long run SD of S = SE of S = 457 lb.

p.p. hist.

long run hist.

CLT

$E_{IID}(S) = n\mu$

$= (192)(158 \text{ lb.})$

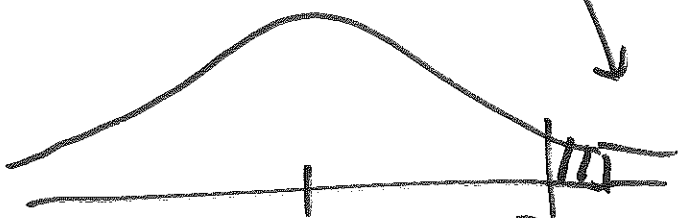
$= 30,336$ lb.

30,336 lb.

P(escalator overloads) = $P(S > 31,400 \text{ lb.}) = ?$

SE 457 lb.

(1%) long run limit of $\bar{x}$



30,336 lb. 31,400 lb.

(EV)

long run SD of $\bar{x}$

$= SE_{\bar{x}}(\bar{x}) = \sigma/\sqrt{n}$

$= (33 \text{ lb.})/\sqrt{192}$

$31{,}400 \text{ lb.} - 30{,}336 \text{ lb.} = 457 \text{ lb.}$

457 lb

$= \pm 2.33$

for (b) & (c),

see pp. L-(149) + (151)