Disc. Sec week of 8 - 12 May 17

Disc. Sec. 4 (2)

pp. R - (56), (57)

AMS 7 8 May 17 (1)

all potential (may) pimlico riders at rush hour

weight (lbs.)

N = ?

(N >> n)

mean μ = 158 lb.

SD σ = 33 lb.

like a SRS = IID

hypothetical IID

may be IID

the observed (sample) underground riders

weight (lbs)

n = 192

sum S = ?

ex. 30,900 lb.

n = 192

sum S = ?

ex. ~~22,000~~ 29,950

. . .

repeated-sampling (imaginary)

30,900

29,950

.

.

M = ∞

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

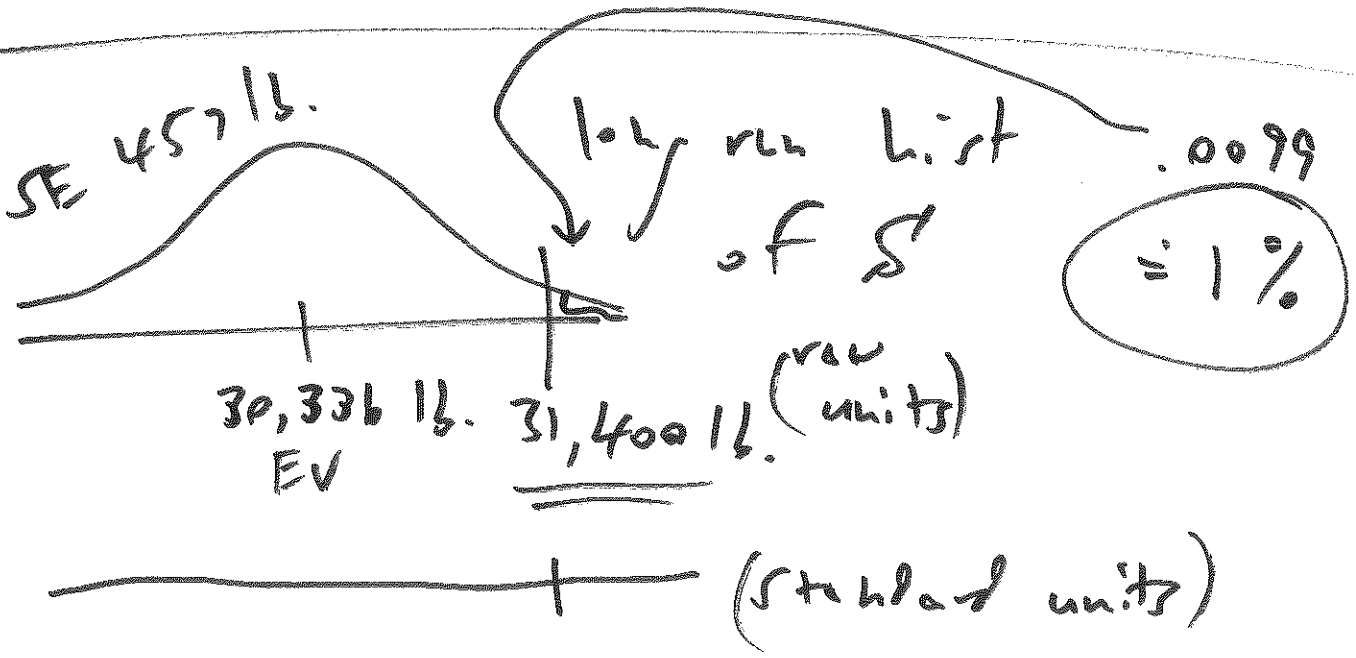
long run SD SE of S = 457 lb.

long run hist

P(escalator overloads) = P(S > 31,400 lb.) = ?

EV of S = $E_{IID}(S) = n\mu$ = (192)(158 lb.) = 30,336 lb.

$SE_{\bar{x}}(\bar{x}) = \sigma\sqrt{n} = (33\text{ lb.})\sqrt{192} \approx 457$ lb. (2)



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

$$= 2.33$$

1% failure rate not good enough: so fully loaded trips every day!

⊕ = system says bad

⊖ = ——— good

G = really is good

B = really is bad

① $P(B) = 1\%$ (prevalence) ③

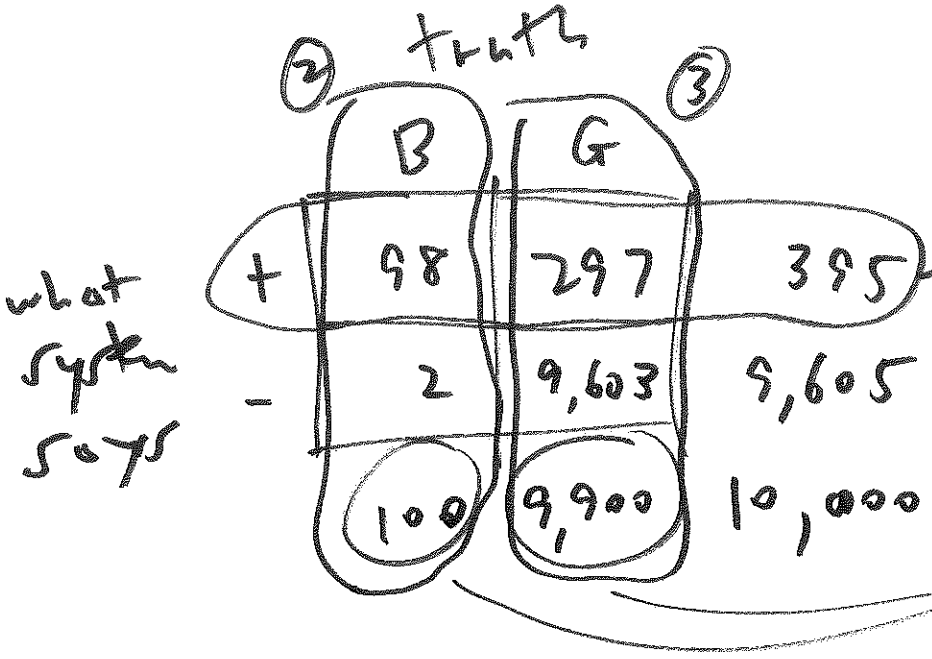
③ $P(- \mid G) = 97\%$

② $P(+ \mid B) = 98\%$

$P(\underset{\text{2nd reality}}{\text{cond}} \mid \underset{\text{1st}}{\text{system says}})$

$= ?$

$= P(B \mid +)$



$= \frac{98}{395} \approx$ 25%!