Ex from Meeting 2 of LSE PH 500

H_0: μ ≤ 150 vs. H_1: μ > 150 (Let σ = 10, ***n* = 25**)
let significance level α = .025

Reject iff M > 150 + 2SE (N-P)

Reject H_0 whenever M ≥ 150 + 2σ/√*n*: M ≥ 154

M is the sample mean, its value is M_0.
1SE = σ/√*25* = *10/5* = *2*

Reject H_0 whenever $M \geq 150 + 2(2)$: $M \geq 154$

Let $M_0 = 154$, just at the .025 cut-off.

Assess SEV for the same claims in Table 3.1 p. 144

Claim $\mu > 149$
SEV $(\mu > 149) = Pr(M \leq 154; 149)$

$Z = (154 - 149)/2 = 2.5$

$Pr(Z \leq 2.5) = .99$

Now consider

Claim $\mu > 150$ (for the same outcome $M = 154$)

$SEV(\mu > 150) = Pr(M \leq 154; 150)$

$Z = (154 - 150)/2 = 2$

$Pr(Z \leq 2) = .97$

Now consider

Claim $\mu > 151$ (for the same outcome $M = 154$)

SEV $(\mu > 151) = Pr(M \leq 154; 151)$

$Z = (154 - 151)/2 = 1.5$

$Pr(Z \leq 1.5) = .93$

Now consider

Claim $\mu > 152$ (for the same outcome $M = 154$)

$SEV(\mu > 152) = Pr(M \leq 154; 152)$

$Z = (154 - 152)/2 = 1$

$Pr(Z \leq 1) = .84$

Now consider

Claim $\mu > 153$ (for the same outcome $M = 154$)

SEV $(\mu > 153) = Pr(M \leq 154; 153)$

$Z = (154 – 153)/2 = .5$

$Pr(Z \leq .5) = .69$

Add one beyond that table

Claim $\mu > 154$ (for the same outcome $M = 154$)

SEV $(\mu > 154) = Pr(M \leq 154; 154)$

$Z = (154 - 154)/2 = 0$

$Pr(Z \leq 0) = .5$

The warrant gets worse and worse for larger discrepancies given the same outcome