H.W. p.608 86, 88, 90, 92, 108

86. $H_0: \mu = \$85{,}000$ $H_a: \mu > \$85{,}00$ μ = true mean income of pop of people living near restaurant

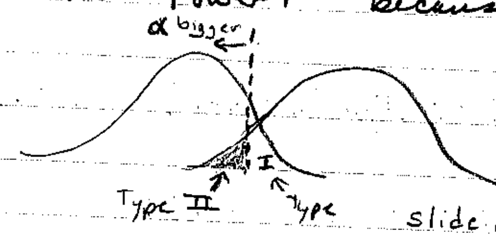
Power = 0.64 — Interpret

If the true mean income in the population of people who live near the restaurant is $\mu = \$86{,}000$ then there is a 64% chance we will find convincing evidence for $H_a: \mu > \$86{,}000$

88. a) $n \downarrow$ variability $\uparrow$ $\therefore$ Power $\downarrow$ more over-lap.
smaller sample size gives less info about true mean, μ.

b) Effect size $\downarrow$ Power $\downarrow$ more overlap.
Its harder to detect a smaller difference between the null + alternative parameter values.

c) if $\alpha \uparrow$ from .05 to .10 Power $\uparrow$ because Type II Error $\downarrow$
(Type I $\uparrow$)



slide dotted line

90. a) one Disadvantage of using $\alpha = 0.10$ instead of $\alpha = 0.05$ is that it increases probability of a Type I Error

b) one Disadvantage of taking $n = 50$ people instead of $n = 30$ is that it takes more time + money.

$H_0: p = .37$ $H_a: p > .37$ p = true prop of student at this school who are satisfied w/ parking after the change.

92. a) Power is .75 for $p = 0.45$

If the true proportion of students at this school who are satisfied with the parking situation after the change is $p = 0.45$, then there is a 0.75 probability that the principal will find convincing evidence for $H_a: p > 0.37$ If the alternative H_a is true, then there is a 75% chance of getting convincing evidence for H_a

b) $P(\text{Type I Error}) = \alpha = 0.05$
$P(\text{Type II Error}) = 1 - \text{Power} = 1 - 0.75 = 0.25$

c) Power would increase if you increase sample size
less variability - less overlap.
Or use a larger significance level, $\alpha = 0.10$

108. b $P(\text{Type II Error}) = 1 - \text{Power}$
$1 - .90 = 0.10$

93.
a) $\text{Power} = 1 - P(\text{Type II error})$ $1 - 0.14 = 0.86$

b) $P(\text{Type I Error}) = \alpha = 0.01$