

$$(2.13) \quad .317 \pm 1.96 \sqrt{\frac{.317(1-.317)}{1711}}$$

$$(a) \quad (.2947, .3388)$$

I am 95% confident that between .2947 and .3388 of fatal bike accidents involve alcohol.

- $.317(1711) \geq 10$ & $1711(1-.317) \geq 10$
 $542 \geq 10$ $1169 \geq 10$
 n is large (samp. dist. is approx normal)
- Not sure this sample is an SRS of all fatal bike accidents (use caution).

b) No \Rightarrow can't conclude cause \Rightarrow obs. Study
 conf. var. . . .

of bicyclist not involved in fatal accidents
 that have alcohol in their system?

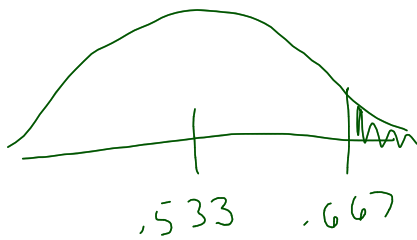
$$12.18) a) 2.576 \sqrt{\frac{.2(1-.2)}{n}} = .015$$

$$n = 4718.77$$

I would need 4,719.

$$b) 2.576 \sqrt{\frac{.10(1-.10)}{4719}} = .011$$

12.19) a) p = prop. of free throws Shaq will make.
 $H_0: p = .533$ (No improvement)
 $H_a: p > .533$ (He improved)



$$\hat{p} = \frac{26}{39} = .667$$

$$\sigma_{\hat{p}} = \sqrt{\frac{.533(1-.533)}{39}} = .0799$$

cond.:

$$.533(39) \geq 10 \quad \& \quad 39(1-.533) \geq 10$$

$$20.8 \geq 10 \quad 18.2 \geq 10$$

∴ n is large
 → (+treat) consider these 39 shots
 as an SES of Shaq's
 f.t. attempts.

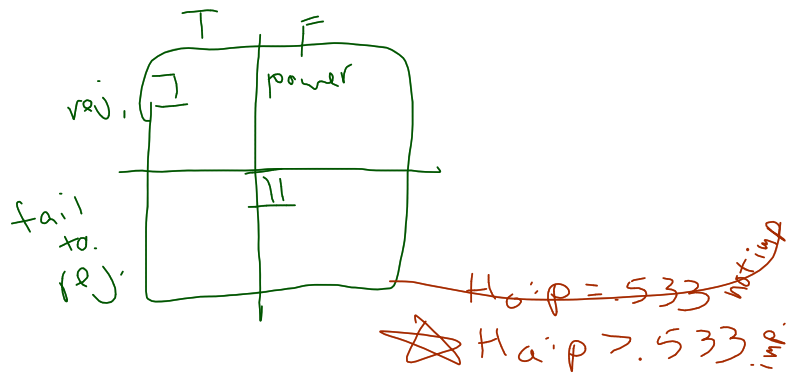
$$z = \frac{.667 - .533}{.0799} = 1.67$$

$$p\text{-value} = Pr(z > 1.67) = .047$$

with a p-value of .047, there is enough
 evidence at the .05 level to reject H_0 .
 This sample provides evid. that
 Shaq's f.t. % has increased.

c) power!

d) Type I / Type II

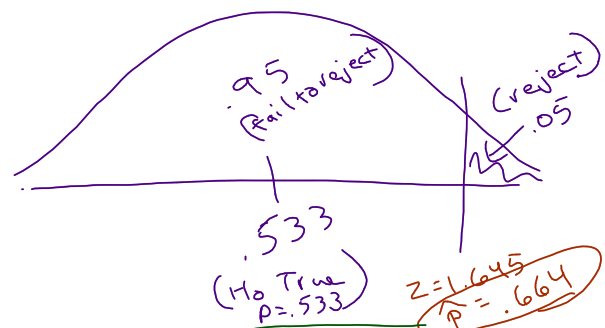


b) Type I \rightarrow Reject $H_0 \rightarrow$ we have evid. he has imp,
 H_0 true but he hasn't

Type II \rightarrow Fail to reject $H_0 \rightarrow$ Don't have evid. he imp,
 H_0 False \rightarrow but he did

C)

	H_0	
	T	F
rej	I $\alpha = .05$	power = .20
fail to rej	.95	II $\beta = .80$

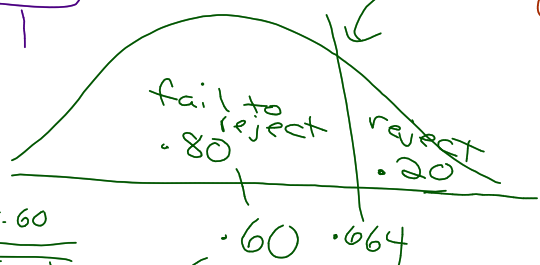


$z = 1.645$
 $\hat{p} = .664$

$invnorm(.95) = 1.645 = z$

$1.645 = \frac{\hat{p} - .533}{\sqrt{\frac{.533(1-.533)}{39}}}$

$\hat{p} = .664$



$z = \frac{.664 - .60}{\sqrt{\frac{.6(1-.6)}{39}}} = .85$ (H_0 False $p \geq .533$)
hyp. $p = .60$

$Pr(z > .85) = .20$