17-19

a) p = the prop. of correct hand identifications

$H_0: p = .5$ (she's guessing)

$H_a: p > .5$ (she can tell)

b) $\hat{p} = \frac{123}{280} = .439$

• Which hand was randomly chosen, so not biased

• $np \geq 10$ $\quad n(1-p) \geq 10$

$\frac{123}{280}(280) \geq 10$ $\quad 280\left(1 - \frac{123}{280}\right) \geq 10$

$123 \geq 10$ $\quad 157 \geq 10$

c) It makes sense that p-value > .5 because I was trying to prove that p > .5, but my $\hat{p}$ was less than .5!

$\sigma_{\hat{p}} = \sqrt{\frac{.5(1-.5)}{280}}$

$z = \frac{.439 - .5}{\sqrt{\frac{.5(1-.5)}{280}}} = -2.03$

$P(z > -2.03) = \boxed{.9789}$ ← p-value

d) No → never "accept" H_0
However, I definitely DO NOT have any evidence against H_0, so I fail to reject H_0.

e) I have no evid. that ther. touch is effective based on this experiment.

18-10 $\hat{p} = \frac{1783}{2613} = .6824$

a) $.6824 \pm 3.29\sqrt{\frac{.6824(1-.6824)}{2613}}$

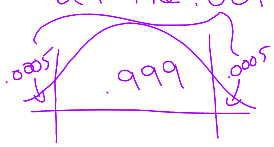
$(.6524, .7123)$

b) Potentially response bias → people could have lied about voting (self-reported)

c) no, .49 is not in my interval

d) yes → people who would claim to have voted instead of actually voted.

e) .49 is not in the 99.9% interval, therefore you would reject $H_0: p = .49$ at the .001 level with a two-sided ($\neq$) test.



$1 - .999 = \frac{.001}{2} = .0005$

$.0005 + .999 + .0005 = 1$

Practice:

Interpret the interval:

I am 99.9% confident that the actual prop. of all Americans that would claim to have voted is between .652 and .712.

Interpret the conf. level (99.9%):

If I took repeated samples of 2,613 Americans and created 99.9% conf. int. for each, in the long run, 99.9% of those intervals would capture the actual prop of all Amer. who would claim to have voted.