

§ 8.1 #3, 6, 10, 14, 26, 30

Claim

#3 Men Heights $\mu = 174.1$

a) $H_0: \mu = 174.1$ ✓

b) $H_1: \mu \neq 174.1$

c) Reject that $\mu = 174.1$

fail to Reject that $\mu = 174.1$ ✓

d) No, we can not Support
that a Mean equals 174.1

Cell Phones

#6 Claim: $p < .95$

$H_0: p = .95$ $\hat{p} = .87$ ✓

$H_1: p < .95$ $n = 1128$ ✓

#10 Conclusion about Cell phones

TISE to Support that the
Proportion who own cell phones
is less than 95%

"OR"

Can Not

TINSE to Support that
the proportion of Adults
who own cell phones is less
than 95% ✓

#14 cell phone

TS: $Z = \frac{\hat{p} - p}{\sqrt{\frac{p(1-p)}{n}}} = \frac{.87 - .95}{\sqrt{\frac{.95 \cdot .05}{1128}}}$

$Z = -12.3$ ✓

$x = 981$

#26 Test at $\alpha = .05$ ✓

Claim: $p < .9$ $H_0: p = .9$ $H_1: p < .9$

Reject H_0 $p = .0003 < \alpha = .05$

TISE to Support that the
Proportion who own a cell
Phone is less than 90% ✓

#30 The Prop of people with
blue eyes is .35

$H_0: p = .35$ $H_1: p \neq .35$

Type I data Shows that
✓ Prop is Not .35 when
the True prop of people
with blue eyes is .35

Type II Data does Not
✓ show $p \neq .35$ when it
actually is Not .35

#8.2 #6, 8, 20, 26

#6 $n=1000$ $\hat{p}=.29$ $x=290$
 Claim $p > .25$
 $H_0: p = .25$ TS $Z = 2.92$
 $H_1: p > .25$ $p\text{-value} = .0017$

a) Right Tailed

b) TS: $Z = 2.92$

c) $p\text{-value} = .0017$

d) $H_0: p = .25$

We Reject H_0

e) TISE to Support that more than $1/4$ of adults feel comfortable in self-driving cars.

#20 Tennis Instant Replay

$n=879$ $x=231$ $\alpha = .01$

Claim: $p < 1/3$

$H_0: p = 1/3$

$H_1: p < 1/3$

CV: $Z = -2.33$

TS: $Z = -4.44$

PE: $\hat{p} = \frac{231}{879} = .263$

TISE to Support that fewer than $1/3$ of calls are overturned.

Players are not good at catching referee errors.

$p\text{-value} = .00000$

$invnorm(.01)$

Z

$.263$

$1/3$

$\hat{p}$

0.263

0.263

0.263

0.263

0.263

0.263

0.263

0.263

0.263

0.263

#26 Nicotine Patch

$x=39$ $n=32+39=71$ $\alpha = .05$

Claim: $p > .5$

$H_0: p = .5$

$H_1: p > .5$

CV: $Z = 1.645$

TS: $Z = .83$

PE: $\hat{p} = .549$

TISE to reject that half say we should replace passwords with Biometric Sensors.

$p\text{-value} = .203$

$invnorm(1-.05)$

Z

$.549$

$.549$

$.549$

$.549$

$.549$

$.549$

$.549$

$.549$

$.549$

$.549$

$.549$

$.549$

$.549$

$.549$

TISE to Support that more than 50% are not smoking.

It is so hard to quit that even getting close to half is good.

(Anything here is okay)

$fail to reject H_0$

0.549

0.549

0.549

0.549

0.549

0.549

0.549

0.549

0.549

0.549

0.549

0.549

0.549

0.549

0.549

0.549

0.549

0.549

0.549

0.549

0.549

0.549

✓ (3) (3) ✓ (2)
 68.3 #1, 10, 22, 7, 17

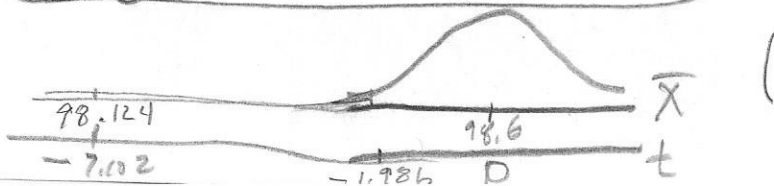
#1 SRS and
 We need $n > 30$ or a Normal
 Population. This sample
 only has $n = 12$ data
 values.

A normal QQ Plot or Histogram
 show data does NOT appear
 to come from a Normal population
 We can't tell if it is a SRS
 Requirements are **Not Met**

#10 Body Temp Data
 Claim: $\mu = 98.6$ $\alpha = .05$

$H_0: \mu = 98.6$ ✓ $TS: t = -7.102$
 $H_1: \mu \neq 98.6$ ✓ $CV: t = \pm 1.986$ ✓
 $df = 92$ $p\text{-value} < .0001$ ✓ $\alpha = .05$

Reject H_0 PE: $\bar{X} = 98.124$
 There is sufficient evidence to
 Reject that the mean
 body temp is 98.6 ✓



#7 $P\text{-value} = 2 \cdot \text{tcdf}(1.340, 9999, 5)$
 $= .2379$

#22 A Minute? $\alpha = .05$

Claim: $\mu = 60$

68 81 39 65 42 21 60
 63 66 48 64 70 96 91 65

$H_0: \mu = 60$

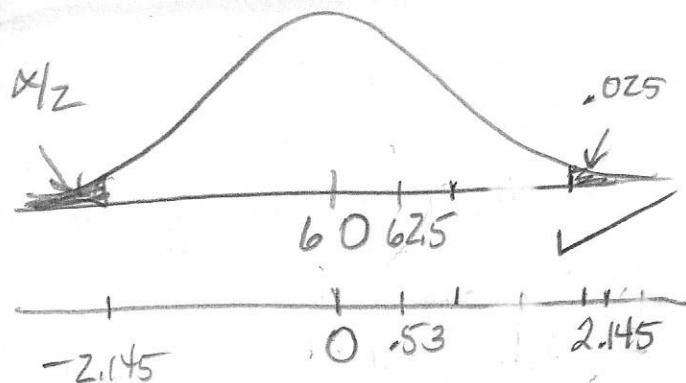
$H_1: \mu \neq 60$ ✓ TTest

PE: $\bar{X} = 62.7$ $n = 15$ ✓

TS: $t = 0.530$ ✓

CV: $t = \pm 2.145 = \text{invT}(1 - .05/2, 14)$ ✓

P-value = .6043



TI NSE to reject that
 the mean estimate of
 a minute is 60. ✓

As a group they are
 fairly good.

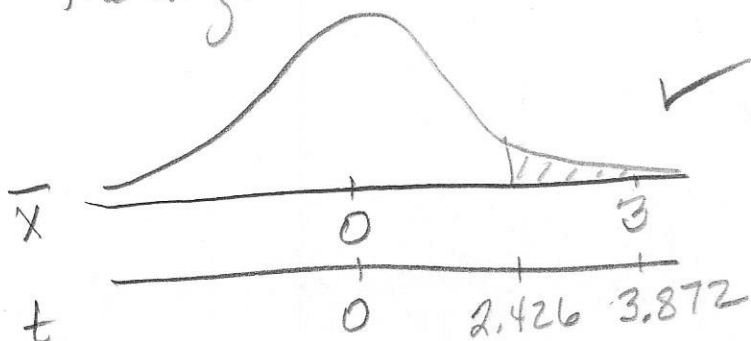
88.3 #7, 17

#7 Claim $\mu = 240$ $n = 6$ $t = 1.340$
 $P\text{-value} = 2 \cdot Tcdf(1.340, 9999, 5)$
 $= \boxed{.2379}$ ✓

#17 $n = 40$ $PE: \bar{X} = 3.0$ $S = 4.9$
 (2) $\alpha = .01$ claim $\mu > 0$
 $H_0: \mu = 0$ $TS: t = \frac{\bar{x} - \mu}{s/\sqrt{n}} = \frac{3 - 0}{4.9/\sqrt{40}}$
 $H_1: \mu > 0$ $TS: t = \boxed{3.872}$ ✓
 $P\text{-value} = .0002 < .01$ ✓
 $CV: t^* = invT(1 - .01, 39) = \boxed{2.426}$ ✓

Reject H_0
 HSE to Support that the mean weight loss is greater than zero. ✓

Not Practically Significant
 the weight loss is too small ✓



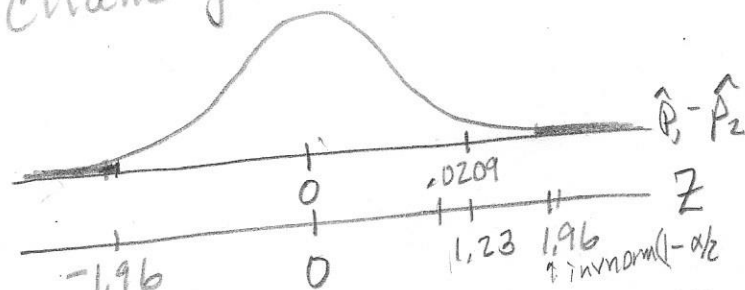
89.1 #10, 18

#10 $n_1 = 2441$ $X_1 = 1027$ Men
 $n_2 = 1273$ $X_2 = 509$ Women

$\alpha = .05$ claim: $P_1 = P_2$
 $H_0: P_1 = P_2$ $PE: \hat{P}_1 - \hat{P}_2 = .0209$

$H_1: P_1 \neq P_2$ $\hat{P}_1 = .4207$
 $\hat{P}_2 = .3998$
 $TS: Z = 1.23$ $p\text{-value} = .2199 > \alpha$
 $CV: Z = \pm 1.96$ FTR H_0

TINSE to reject that the proportion of Successful Challenges is the same.



b) 95% CI $-.0124 < P_1 - P_2 < .0542$
 Since zero is in interval there is not a significant difference in Successful calls.

c) Men & Women have similar Proportions of Success