Statistics

Lecture 13

Feb 19-8:47 AM

42% of 350 randomly selected adults have done texting while driving.

Find 99% conf. interval for the Prop. of all drivers that have texted while driving.

C-level: .99

$n = 350$

$\hat{p} = .42$

$x = n\hat{p} = 350(.42) = 147$

$< p <$

STAT → TESTS ↓ 1-PropZInt

$x = 147$

$n = 350$

C-level: .99

Calculate

$.352 < p < .488$

$.35 < p < .49$

$E = \frac{.49 - .35}{2} = .07$

$\hat{p} = \frac{.49 + .35}{2} = .42$

We are 99% conf. that between 35% and 49% of all drivers have texted while driving.

Feb 3-4:32 PM

Confidence Interval for Population Mean:

$$\bar{x} - E < \mu < \bar{x} + E$$

$\bar{x}$: Sample Mean, Point-estimate

E: Margin of error

Case I: σ Known	Case II: σ Unknown
$E = z_{\alpha/2} \cdot \frac{\sigma}{\sqrt{n}}$	$E = t_{\alpha/2} \cdot \frac{s}{\sqrt{n}}$ $df = n-1$
TI: ZInterval inpt: Stats	TI: TInterval inpt: Stats

$E = \frac{-}{2}$ $\quad \bar{x} = \frac{+}{2}$

Feb 3-4:41 PM

Given: $n = 28$, $\bar{x} = 82$, $\sigma = 12$

C-level: .9

find 90% conf. interval for Pop. mean.

Since σ is known $\quad <\mu<$

we use ZInterval

STAT TESTS ZInterval

inpt: Stats

$\sigma = 12$

whole # → $\bar{x} = 82$

$n = 28$

C-level: .9

Calculate

$E = \frac{86 - 78}{2} = 4$

$\bar{x} = \frac{86 + 78}{2} = 82$

$78 < \mu < 86$

we are 90% confident that Pop. mean is between 78 and 86.

Feb 3-4:47 PM

Given: $n=15$, $\bar{x}=33$, $S=6$

Find 98% Conf. interval for Pop. mean.

C-level: .98

$<\mu<$

Since σ is unknown

we use T Interval

inpt: Stats

STAT TESTS TInterval

inpt: Stats

whole # → $\bar{x}=33$

$S=6$

$n=15$

C-level: .98

Calculate

$29<\mu<37$

we are 98% confident that Pop. mean is between 29 & 37.

$E=\frac{37-29}{2}=4$

$\bar{x}=\frac{37+29}{2}=33$

Feb 3-4:53 PM

40 randomly selected nurses had a mean monthly Salary of $6400.

$n=40$, $\bar{x}=6400$

It is known that Standard dev. of monthly Salaries of all nurses is $500.

$\sigma=500$

No C-level → .95

Find Conf. Interval for the mean Salary of all nurses.

$<\mu<$

σ is known → ZInterval

inpt: Stats

$E=\frac{6555-6245}{2}=155$

$\bar{x}=\frac{6555+6245}{2}=6400$

σ: 500

$\bar{x}=6400$ ← whole #

$n=40$

C-level: .95

Calculate

$6245<\mu<6555$

Feb 3-5:00 PM

I randomly selected 12 exams, the mean was 83.5 with standard dev. of 7.5.

$n = 12$ $\bar{x} = 83.5$ $S = 7.5$

C-level: .99

Find 99% Conf. interval for the mean of all exams. $< \mu <$

σ is unknown

we use [T Interval]

inpt: [Stats]

$\bar{x}$: 83.5 ← 1-dec.

S: 7.5

n: 12

C-level: .99

[Calculate]

$76.8 < \mu < 90.2$

we are 99% Confident that the mean of all exams is between 76.8 and 90.2.

$E = \frac{90.2 - 76.8}{2} = 6.7$

$\bar{x} = \frac{90.2 + 76.8}{2} = 83.5$

Feb 3-5:08 PM

Ages of 10 randomly selected students are given below:

24	35	18	40	20
28	30	32	19	38

Store in a list, find $\bar{x}$ & S, Round to whole #

1-Var Stats with L1

$\bar{x} = 28.4$ $\bar{x} = 28$

$S = 7.975$ $S = 8$

$n = 10$

Find 90% Conf. interval for the mean age of all students.

σ unknown → [T Interval]

SG 21 & 22

$23 < \mu < 33$

$E = \frac{33 - 23}{2} = 5$

$\bar{x} = \frac{33 + 23}{2} = 28$

Feb 3-5:17 PM