

Answer on Question #79709 – Math – Statistics and Probability

A new diet program claims that participants will lose an average at least eight pounds during the week of the program. a random sample of 40 people participating in the program showed a sample mean weight loss of seven pounds. the sample standard deviation was 3.2 pound.

Question

- 1) What is the rejection rule with $\alpha=0.05$?

Solution

H_0 : participants will lose an average of at least eight pounds; $\mu \geq 8$

H_a : participants will lose an average of less than eight pounds; $\mu < 8$

For a left-tailed test $df = n - 1 = 39$ and $\alpha = 0.05$, $t_c = -1.685$

Rejection rule: reject the null hypothesis if $t < \underline{-1.685}$.

Question

- 2) What is your conclusion about the claim made by the diet program?

Solution

$$t = \frac{\bar{x} - \mu}{\frac{s}{\sqrt{n}}} = \frac{7 - 8}{\frac{3.2}{\sqrt{40}}} = -1.98$$

Test statistic in the rejection region => reject the null hypothesis.

The sample data provides sufficient evidence to reject the claim.

Question

- 3) What is the p-value?

Solution

Using t -distribution table or technology, for $t = -1.98$ at $df = 39$, $p = \underline{0.0274} < 0.05$.

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