Honors Statistics

7.4: Hypothesis testing (σ known)

Determine whether the given conditions justify using the methods of this section when testing a claim about the population mean μ

1) The sample size is n = 25, σ = 6.44, and the original population is normally distributed.
2) The sample size is n = 7, σ is not known, and the original population is normally distributed.
3) The sample size is n = 11, σ is not known, and the original population is normally distributed.
4) The sample size is n = 47, σ = 12.6, and the original population is not normally distributed.

9) *Conduct a 6-step hypothesis test using the p-value method.*
In order to monitor the ecological health of the Florida Everglades, various measurements are recorded at different times. The bottom temperatures are recorded at the Garfield Bight station and the mean is 30.4°C is obtained 61 temperatures recorded on 61 different days. Assuming σ = 1.7°C, test the claim that the population mean is greater than 30°C. Use a 0.05 significance level.

11) *Conduct a 6-step hypothesis test using the traditional method.*
When people smoke, the nicotine they absorb is converted to cotinine, which can be measured. A sample of 40 smokers has a mean cotinine level of 172.5. Assuming σ is known to be 119.5, use a 0.01 significance level to test the claim that the mean cotinine level of all smokers is equal to 200.

Answers

1 Yes 2 No 3 No 4 Yes 9 P-value = 0.0329; reject null
11 $z_{cv} = \pm 2.576$; z= -1.46; fail to reject null