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Chapter: 9 Trash Bags Analysis

Problem Definition: A manufacturer wishes to advertise a new environmentally friendly trash bag on a major TV Network. If the bag strength has not been significantly increased, then the manufacturer will need to make improvements to the manufacturing process before moving forward with an advertisement on a major TV network.

Hypothesis:

H_0: μ ≤ 50 lbs.

H_1: μ > 50 lbs.

Decision Rule: If the Z test statistic is greater than 1.645 reject the null.

Test:

Descriptive Statistics

N	Mean	StDev	SE Mean	95% Lower Bound for μ
50	59.85	33.66	2.12	56.36

μ: population mean of Trashbag Strength
Known standard deviation = 15

Test

Null hypothesis	H_0: μ = 50
Alternative hypothesis	H_1: μ > 50

Z-Value	P-Value
4.64	0.000

Conclusion:

1) The Z test statistic of 4.64 is greater than the critical value of 1.645. Reject the null hypothesis. There is a 5% chance that a type 1 error has been committed and a true null has been rejected.

2) P-value of 0.00 < 0.5 alpha α rejecting null hypothesis, test is statistically significant.

3) The hypothesized value of μ = 50 lbs. does not fall within the confidence interval lower bound of 56.36 lbs. rejecting the null hypothesis.

Interpretation: The test shows that there is a statistically significant chance that on average the bags will hold more than 50 lbs. The manufacturer can move forward with the network television advertisement.

Assumptions: With an independently and randomly selected sample size of 50 approximate normality can be assumed under central limit theorem because the sample size is greater than 30.