MATU9D2: Practical Statistics

Spring 2016

Solutions to Weekly Assignment 3

Q1. One sample, known sd, independent random sample,
Normally distributed, quistion about the mean.
So 2 bot appropriate.
Ho: 4 = 15 hot 4 = true mean population weight loss
$Hp: \mu = 15$ het $\mu = true$ mean population weight loss $H_1: \mu > 15$ in 6 months.
One tailed sure question asks "does
One tailed since question asks "does dust produce greater weight losses?"
Significance hevel \$1,05
Test Statistic Z = 3-15 ~ N(0,1) under Hø
5/Nn.
Observed Test Statistic
$n=12$ $\bar{x}=\bar{x}=254.5=21.21$
6=9 n 12
Z = 21.21 - 15 = 6.21 = 2.390
9/12 2.598
Rejection Region O Significance level 0.05
(2) One sided (H1: 11 > 15)
3 Normal Tables
^/2 2 44
P(Z>z) = 0.05
=) 2 = 1.645
Gunnor RyectHp Reject Hp
anown appoints . 3

Conclusion: Observed Test Statistic (2.39) is in the Rejection Region (2.39 > 1.645) so we can reject Ho in favour of HI at 5% level and conclude that we have evidence, at 5% level, that the mean weight loss is significantly more than 15 pounds on this duet Note: Significance level \$.81 Rejection Region 1) Sighwel 6.01 @ One sided (H1:12715) Normal Tables P(Z>Z)=001 =) z = 2.33-2.33 Can Regul Carrot Report Conclusion: Observed Toot Statistic (2.39) is in the Ryection Region (2.39 > 2.33) so we can eyest Ho in passer of H, at 10% level & conclude that moun weight loss is significantly greater than 15 prinds on this diet So test is significant not only at 5% level but 1% level Alternatively, calculate the p-value P(Z> ObsTeot Statistic) = P(Z > 2.39) = / pvalue 1 - P(Z < 2.39) = 1-0.9916 = 0.0084/

p < 0.01 so can reject Ho in favour of H1 at 1% (65%)