

HYPOTHESIS TESTING OF SINGLE MEAN AND SINGLE PROPORTION: PRACTICE 2*

Susan Dean
Barbara Illowsky, Ph.D.

This work is produced by The Connexions Project and licensed under the Creative Commons Attribution License †

Abstract

This module provides a practice of Hypothesis Testing of Single Mean and Single Proportion as a part of Collaborative Statistics collection (col10522) by Barbara Illowsky and Susan Dean.

1 Student Learning Outcomes

- The student will explore the properties of hypothesis testing with a single mean and unknown population standard deviation.

2 Given

A random survey of 75 death row inmates revealed that the average length of time on death row is 17.4 years with a standard deviation of 6.3 years. Conduct a hypothesis test to determine if the population average time on death row could likely be 15 years.

3 Hypothesis Testing: Single Average

Exercise 1 *(Solution on p. 3.)*

Is this a test of averages or proportions?

Exercise 2 *(Solution on p. 3.)*

State the null and alternative hypotheses.

a. H_o :

b. H_a :

Exercise 3 *(Solution on p. 3.)*

Is this a right-tailed, left-tailed, or two-tailed test? How do you know?

Exercise 4 *(Solution on p. 3.)*

What symbol represents the Random Variable for this test?

*Version 1.8: Feb 18, 2009 8:30 pm US/Central

†<http://creativecommons.org/licenses/by/2.0/>

Source URL: <http://cnx.org/content/col10522/latest/>

Saylor URL: <http://www.saylor.org/courses/ma121/>

<http://cnx.org/content/m17016/1.8/>

Attributed to: Barbara Illowsky and Susan Dean



Exercise 5

In words, define the Random Variable for this test.

*(Solution on p. 3.)***Exercise 6**

Is the population standard deviation known and, if so, what is it?

*(Solution on p. 3.)***Exercise 7**

Calculate the following:

(Solution on p. 3.)

- $\bar{x} =$
- $6.3 =$
- $n =$

Exercise 8

Which test should be used? In 1 -2 complete sentences, explain why.

*(Solution on p. 3.)***Exercise 9**

State the distribution to use for the hypothesis test.

*(Solution on p. 3.)***Exercise 10**

Sketch a graph of the situation. Label the horizontal axis. Mark the hypothesized mean and the sample mean, \bar{x} . Shade the area corresponding to the p-value.



Figure 1

Exercise 11

Find the p-value.

*(Solution on p. 3.)***Exercise 12**

At a pre-conceived $\alpha = 0.05$, what is your:

(Solution on p. 3.)

- Decision:
- Reason for the decision:
- Conclusion (write out in a complete sentence):

4 Discussion Question

Does it appear that the average time on death row could be 15 years? Why or why not?

Solutions to Exercises in this Module

Solution to Exercise 1 (p. 1)

averages

Solution to Exercise 2 (p. 1)

a. $H_o : \mu = 15$

b. $H_a : \mu \neq 15$

Solution to Exercise 3 (p. 1)

two-tailed

Solution to Exercise 4 (p. 1)

\bar{X}

Solution to Exercise 5 (p. 2)

the average time spent on death row

Solution to Exercise 6 (p. 2)

No

Solution to Exercise 7 (p. 2)

a. 17.4

b. s

c. 75

Solution to Exercise 8 (p. 2)

t -test

Solution to Exercise 9 (p. 2)

t_{74}

Solution to Exercise 11 (p. 2)

0.0015

Solution to Exercise 12 (p. 2)

a. Reject the null hypothesis