

THE CHI-SQUARE DISTRIBUTION: PRACTICE 2*

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Abstract

This module provides a practice on Chi-Square Distribution 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 contingency tables.

Conduct a hypothesis test to determine if smoking level and ethnicity are independent.

2 Collect the Data

Copy the data provided in **Probability Topics Practice 1: Calculating Probabilities** into the table below.

Smoking Levels by Ethnicity (Observed)

Smoking Level Per Day	African American	Native Hawaiian	Latino	Japanese Americans	White	TOTALS
1-10						
11-20						
21-30						
<i>continued on next page</i>						

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

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

<http://claymore.cnx.rice.edu:8180/content/m17056/1.11/>

Attributed to: Barbara Illowsky and Susan Dean



31+						
TOTALS						

Table 1

3 Hypothesis

State the hypotheses.

- H_o :
- H_a :

4 Expected Values

Enter expected values in the above below. Round to two decimal places.

5 Analyze the Data

Calculate the following values:

Exercise 1 *(Solution on p. 4.)*
 Degrees of freedom =

Exercise 2 *(Solution on p. 4.)*
 Chi² test statistic =

Exercise 3 *(Solution on p. 4.)*
 p-value =

Exercise 4 *(Solution on p. 4.)*
 Is this a right-tailed, left-tailed, or two-tailed test? Explain why.

6 Graph the Data

Exercise 5
 Graph the situation. Label and scale the horizontal axis. Mark the mean and test statistic. Shade in the region corresponding to the p-value.



7 Conclusions

State the decision and conclusion (in a complete sentence) for the following preconceived levels of α .

Exercise 6

(Solution on p. 4.)

$$\alpha = 0.05$$

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

Exercise 7

$$\alpha = 0.01$$

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



Solutions to Exercises in this Module

Solution to Exercise 1 (p. 2)

12

Solution to Exercise 2 (p. 2)

10301.8

Solution to Exercise 3 (p. 2)

0

Solution to Exercise 4 (p. 2)

right

Solution to Exercise 6 (p. 3)

a. Reject the null hypothesis

