F Distribution and One-Way ANOVA: Practice*

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Abstract

This module provides a practice on F Distribution and One-Way ANOVA as a part of Collaborative Statistics collection (col10522) by Barbara Illowsky and Susan Dean.

1 Student Learning Outcome

- The student will conduct a One-Way ANOVA hypothesis test.

2 Given

Suppose a group is interested in determining whether teenagers obtain their drivers licenses at approximately the same average age across the country. Suppose that the following data are randomly collected from five teenagers in each region of the country. The numbers represent the age at which teenagers obtained their drivers licenses.

	Northeast	**South**	**West**	**Central**	**East**
	16.3	16.9	16.4	16.2	17.1
	16.1	16.5	16.5	16.6	17.2
	16.4	16.4	16.6	16.5	16.6
	16.5	16.2	16.1	16.4	16.8
$\overline{x} =$	_____	_____	_____	_____	_____
$s^2 =$	_____	_____	_____	_____	_____

Table 1

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3 Hypothesis

Exercise 1

State the hypotheses.

H_o:

H_a:

4 Data Entry

Enter the data into your calculator or computer.

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

degrees of freedom - numerator: $\text{df}(n) =$

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

degrees of freedom - denominator: $\text{df}(d) =$

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

F test statistic =

Exercise 5 ***(Solution on p. 3.)***

p-value =

5 Decisions and Conclusions

State the decisions and conclusions (in complete sentences) for the following preconceived levels of α .

Exercise 6

$\alpha = 0.05$

Decision:

Conclusion:

Exercise 7

$\alpha = 0.01$

Decision:

Conclusion:

Solutions to Exercises in this Module

Solution to Exercise (p. 2)
$df\,(1) = 4$
Solution to Exercise (p. 2)
$df\,(2) = 15$
Solution to Exercise (p. 2)
Test statistic $= F = 4.22$
Solution to Exercise (p. 2)
0.017