**edX**　　**UTAustinX:** UT.7.20x Foundations of Data Analysis - Part 2

Week 5: Hypothesis Testing (More Than Two Group Means) > Problem Set > Question 4
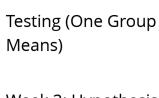
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# Question 4

Below is the source table for a study on sleep aids, comparing the effectiveness of three (3) different treatments. Note that some of the elements of the table are missing.

|  | SS | df | MS | F |
|---|---|---|---|---|
| **Between Treatments** | 782.00 | | | |
| **Within Treatments** | | 34 | | |
| **Total** | 2,147.00 | | | |

(1/1 point)

4a. What is $SS_{Within}$ ?

Testing (One Group
Means)

> 1365 ✓

**Answer:** 1365

1365

▶ Week 3: Hypothesis
Testing (Two Group
Means)

*You have used 1 of 1 submissions*

▶ Week 4: Hypothesis
Testing (Categorical
Data)

(1/1 point)

4b. What is $df_{Total}$ ?

▾ **Week 5: Hypothesis
Testing (More Than
Two Group Means)**

> 36 ✓

**Answer:** 36

36

**Readings**
Reading Check due May 03,
2016 at 17:00 UTC　✎

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**Lecture Videos**
Comprehension Check due
May 03, 2016 at 17:00 UTC　✎

(1/1 point)

4c. What is $MS_{Within}$ ? *(Round to 2 decimal places.)*

**R Tutorial Videos**

**Pre-Lab**
Pre-Lab due May 03, 2016 at
17:00 UTC　✎

**Lab**

Lab due May 03, 2016 at 17:00
UTC                                         ✎

**Problem Set**

Problem Set due May 03, 2016
at 17:00 UTC                                ✎

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40.15                          ✔

**Answer:** 40.15

40.15

*You have used 1 of 1 submissions*

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(1/1 point)

4d. What is the **F statistic**? *(Round to 2 decimal places, and use your rounded answer from 4c.)*

9.74                          ✔

**Answer:** 9.74

9.74

*You have used 1 of 1 submissions*

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(1/1 point)

4e. Using an F-critical of 3.28, what is the appropriate conclusion of the test?

⦿    At least one of the sleep aids performs better than the others.    ✔

○ The three sleep aids perform equally well.

*You have used 1 of 1 submissions*

(1/1 point)

4f. You decide to perform a post-hoc analysis on these group means using a Bonferroni correction. How many group mean comparisons will you do?

| 3 | ✔

**Answer:** 3

| 3 |

*You have used 1 of 1 submissions*

(1/1 point)

4g. What should be the new significance level for your post-hoc tests, assuming an original $α=0.05$? *(Round to 3 decimal places.)*

<div style="border: 2px solid green; display: inline-block;">0.017</div>  ✔

**Answer:** 0.017

0.017

*You have used 1 of 1 submissions*

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4h. Here are the results from your post-hoc analysis. These are the p-values from the actual t-tests. They are not adjusted, so be sure to compare them to the significance level you calculated above.

|                   | T-Statistic | P-Value |
|-------------------|-------------|---------|
| **Group 1 - Group 2** | 1.90        | 0.137   |
| **Group 1 - Group 3** | 3.79        | 0.004   |
| **Group 2 - Group 3** | 3.44        | 0.028   |

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(1/1 point)

What do you conclude?

○   The Sleep Aid 1 group and Sleep Aid 2 group were significantly different from Sleep Aid 3 group, but not from each other.

○   The Sleep Aid 1 group and Sleep Aid 2 group were significantly different from one another.

◉   The Sleep Aid 1 was significantly different from the Sleep Aid 3 group.   ✔

*You have used 1 of 1 submissions*

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