STAT 475 TAKE-HOME MIDTERM EXAM

(*Due Tuesday, October 22, by 10pm, sent to stat475f24@ mail.com in a single pdf file*)

Exercises for Handout 10 material: Explain the reason for selecting the correct answer, as well as the reason for NOT selecting EACH of the wrong answers.

* Quiz for Chapter 8 in the textbook: Questions 1 – 6.
* A00-201 Practice Exam: Question 94 and 97.

And the following

Exercise 1. For the data in file ‘ExamEx1.xls’, produce a report identical to the one in file ‘Report\_Ex1.html’.

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Exercises for Handout 11 material: Explain the reason for selecting the correct answer, as well as the reason for NOT selecting EACH of the wrong answers.

* Quiz for Chapter 8 in the textbook: Questions 7 – 10.
* A00-201 Practice Exam: Questions 95 and 101.
* A00-211 Practice Exam: Questions 16 and 57.

And the following

Exercise 2. Information on presence or absence (yes or no) of two characteristics A and B is available for several individuals. The data are stored in file ‘ExamEx2.dat’. Compute the number of individuals who have

(a) characteristic A

(b) characteristic B

(c) only characteristic A

(d) only characteristic B

(e) both characteristics

(f) neither characteristic

(g) either characteristic

Hint: Construct a two-way table of A by B.

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Exercises for Handout 12 material: Explain the reason for selecting the correct answer, as well as the reason for NOT selecting EACH of the wrong answers.

* Quiz for Chapter 12 in the textbook: Questions 1 – 10.
* A00-201 Practice Exam: Questions 1, 17, 18, 19, 20, 62, and 63.
* A00-211 Practice Exam: Questions 7, 40, 53, 56 and 70.

Exercise 3. The following data sets contain BMI measurements for the baseline, 3 months, and 9 months, for the intervention and control group patients.

data int;

input ID$ GROUP$ BMI\_base BMI\_3mos BMI\_9mos;

cards;

101 int 34.5 33.8 31.1

102 int 30.7 29.6 27.3

103 int 32.0 30.7 27.5

105 int 34.6 33.5 33.3

106 int 37.6 34.9 30.1

107 int 30.2 29.2 28.7

108 int 37.2 36.0 35.1

109 int 35.2 33.3 33.7

111 int 32.3 31.4 29.4

;

data cnt;

input ID$ GROUP$ BMI\_base BMI\_3mos BMI\_9mos;

cards;

401 cnt 33.7 33.4 33.2

402 cnt 31.2 30.1 29.8

404 cnt 30.8 31.1 31.8

406 cnt 29.2 29.0 28.9

408 cnt 27.7 27.3 27.9

409 cnt 33.8 32.9 31.4

;

1. Concatenate the data sets and compute the change in BMI between the baseline and 9 months. Your output should look like this:

| **Obs** | **ID** | **GROUP** | **BMI\_base** | **BMI\_3mos** | **BMI\_9mos** | **BMI\_change** |
| --- | --- | --- | --- | --- | --- | --- |
| **1** | 101 | int | 34.5 | 33.8 | 31.1 | -3.4 |
| **2** | 102 | int | 30.7 | 29.6 | 27.3 | -3.4 |
| **3** | 103 | int | 32.0 | 30.7 | 27.5 | -4.5 |
| **4** | 105 | int | 34.6 | 33.5 | 33.3 | -1.3 |
| **5** | 106 | int | 37.6 | 34.9 | 30.1 | -7.5 |
| **6** | 107 | int | 30.2 | 29.2 | 28.7 | -1.5 |
| **7** | 108 | int | 37.2 | 36.0 | 35.1 | -2.1 |
| **8** | 109 | int | 35.2 | 33.3 | 33.7 | -1.5 |
| **9** | 111 | int | 32.3 | 31.4 | 29.4 | -2.9 |
| **10** | 401 | cnt | 33.7 | 33.4 | 33.2 | -0.5 |
| **11** | 402 | cnt | 31.2 | 30.1 | 29.8 | -1.4 |
| **12** | 404 | cnt | 30.8 | 31.1 | 31.8 | 1.0 |
| **13** | 406 | cnt | 29.2 | 29.0 | 28.9 | -0.3 |
| **14** | 408 | cnt | 27.7 | 27.3 | 27.9 | 0.2 |
| **15** | 409 | cnt | 33.8 | 32.9 | 31.4 | -2.4 |

1. Remove the intervention group patients whose BMI decreased by less than 3 points and also the control group patients whose BMI increased over time. Your output should look like this:

| **Obs** | **ID** | **GROUP** | **BMI\_base** | **BMI\_3mos** | **BMI\_9mos** |
| --- | --- | --- | --- | --- | --- |
| **1** | 101 | int | 34.5 | 33.8 | 31.1 |
| **2** | 102 | int | 30.7 | 29.6 | 27.3 |
| **3** | 103 | int | 32.0 | 30.7 | 27.5 |
| **4** | 106 | int | 37.6 | 34.9 | 30.1 |
| **5** | 401 | cnt | 33.7 | 33.4 | 33.2 |
| **6** | 402 | cnt | 31.2 | 30.1 | 29.8 |
| **7** | 406 | cnt | 29.2 | 29.0 | 28.9 |
| **8** | 409 | cnt | 33.8 | 32.9 | 31.4 |

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Exercises for Handout 13 material: Explain the reason for selecting the correct answer, as well as the reason for NOT selecting EACH of the wrong answers.

* Quiz for Chapter 14 in the textbook: Questions 1 – 10.
* A00-201 Practice Exam: Questions 5, 38, 84, 85, 86, 87, and 117.
* A00-211 Practice Exam: Questions 9, 26, and 39.

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Exercises for Handout 14 material: Explain the reason for selecting the correct answer, as well as the reason for NOT selecting EACH of the wrong answers.

* Quiz for Chapter 15 in the textbook: Questions 1 – 10.
* A00-201 Practice Exam: Questions 44, 45, 46, 47, and 116.
* A00-211 Practice Exam: Questions 4, 34, and 47.

and the following

Exercise 4. Patients underwent knee replacement surgeries for one or both knees. The data record patient id, the replaced knee number (1 or 2), and satisfaction scores pre-operatively, one day, one week, and one month after the surgery. The data are

Patient Knee Score Score at Score at Score at

ID Number Pre-op one day one week one month

01 1 0 5 7 10

02 1 0 10 15 15

02 2 3 5 8 10

03 1 0 3 3 3

03 2 0 6 9 9

04 1 0 4 10 10

(a) Use the ARRAY statement to create a data set containing satisfaction scores for knee 1. The data set should look like this

id visit score

01 1 0

01 2 5

01 3 7

01 4 10

02 1 0

02 2 10

02 3 15

02 4 15

03 1 0

03 2 3

03 3 3

03 4 3

04 1 0

04 2 4

04 3 10

04 4 10

(b) Use the ARRAY statement to create a data set containing satisfaction scores for knee 2. The data set should look like this

id visit score

02 1 3

02 2 5

02 3 8

02 4 10

03 1 0

03 2 6

03 3 9

03 4 9

(c) Use the MERGE statement to create the merged file that looks like this

score\_ score\_

id visit knee1 knee2

01 pre\_op 0 .

01 day 1 5 .

01 week 1 7 .

01 month 1 10 .

02 pre\_op 0 3

02 day 1 10 5

02 week 1 15 8

02 month 1 15 10

03 pre\_op 0 0

03 day 1 3 6

03 week 1 3 9

03 month 1 3 9

04 pre\_op 0 .

04 day 1 4 .

04 week 1 10 .

04 month 1 10 .

(d) Turn in your SAS code as well as the output it produces.

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Exercises for Handout 15 material: Explain the reason for selecting the correct answer, as well as the reason for NOT selecting EACH of the wrong answers.

* Quiz for Chapter 13 in the textbook: Questions 1 – 5.
* A00-201 Practice Exam: Questions 25, 26, 27, 28, 29, 59, 77, 79, 80, 81, and 83.
* A00-211 Practice Exam: Questions 2, 38, and 45.

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Exercises for Handout 16 material: Explain the reason for selecting the correct answer, as well as the reason for NOT selecting EACH of the wrong answers.

* Quiz for Chapter 13 in the textbook: Questions 6 – 10.
* A00-201 Practice Exam: Questions 72, 73, 74, 75, 76, and 82.
* A00-211 Practice Exam: Questions 33, 37, 46, and 54.

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Also, do

* A00-201 Practice Exam: Questions 2, 4, 6, 22, 23, 36, and 105.
* A00-211 Practice Exam: Questions 18, 28, and 63.