**Statistics for Psychology - PSYCH-UH 1004Q**

**Homework #8**

Due 12/10/23 at 11:59pm

20 points

(The homework assignments will never require you to use R unless the problem explicitly says “use this R code”. For other problems, can use R if you find it useful, they should be completed easily by hand.)

1. A researcher is studying the effects of both regular exercise and a vegetarian diet on resting heart rate. A 2x2 matrix was created to cross these two factors (activity: exercisers versus non-exercisers; diet: vegetarians versus non-vegetarians), and 40 subjects were found for each condition. The mean heart rates and standard deviations (not variances) for each condition are as follows:

|  |  |
| --- | --- |
|  | activity |
| **Exercisers** | **Non-exercisers** |
| diet | **Vegetarians** | $$\overbar{X}=60$$ | $$\overbar{X}=70$$ |
| $$s=20$$$$n=40$$ | $$s=21$$$$n=40$$ |
| **Non-vegetarians** | $$\overbar{X}=70$$ | $$\overbar{X}=80$$ |
| $$s=20$$$$n=40$$ | $$s=19$$$$n=40$$ |

1. Looking at the condition means, do you think there is a main effect of activity (yes or no)? (1 point)
2. Looking at the condition means, do you think there is a main effect of diet (yes or no)? (1 point)
3. State the formula to calculate *F* for a main effect. (1 point)
4. State the formula for $MS\_{B}$. (1 point)
5. State the formula for $MS\_{W}$. (1 point)
6. Calculate the values for the two main effects by hand. You do not need to calculate the interaction. Place the results in the ANOVA table below. The cells you must fill in are white, the two that remain empty are gray. (13 points)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | df | SS | MS | *F* | *p* |
| diet |  |  |  |  |  |
| activity |  |  |  |  |  |
| within |  |  |  |  |  |

1. What is your statistical conclusion for the main effect of activity? (1 point)
2. What is your statistical conclusion for the main effect of diet? (1 point)