

# EDUC 6050

Name: \_\_\_\_\_

In-Class Exam 2 (Spring 2018)

Score: \_\_\_\_\_ /100

**Directions:** Complete all the questions. As the syllabus says you may use your “printed discussion points, homework, and other notes during examinations.” Good luck!

## Multiple Choice (5 pts each)

1. Which of the following statements is the best interpretation of a standard deviation?
  - A. The typical distance deviation scores are from the population
  - B. The typical distance scores are from the mean
  - C. The typical distance scores are from the deviation scores
  - D. The typical distance scores are from each other
2. You are doing a study about the influence of having children on depression levels. You do a regression and get an  $R^2 = .50$ . What is an appropriate interpretation of this result?
  - A. Parents are 50% more likely to have depression than non-parents
  - B. The results are not significant
  - C. Having children causes 50% of the depression found in parents
  - D. 50% of the variability in depression is accounted for by having children
3. We hypothesize that both time spent hiking and shoe-type (Jordans or Nike) predict resting heart rate. We want to test this hypothesis. What approach can we use?
  - A. Pearson Correlation
  - B. Multiple Regression
  - C. ANOVA
  - D. Chi-square test of independence
4. What should we use if we want to find the influence of a third variable on a relationship between two variables?
  - A. Either mediation or moderation
  - B. Neither mediation nor moderation
  - C. Mediation
  - D. Moderation
5. A correlational study between the number of shark attacks and the amount of ice cream purchased found an  $r$  of .361 and an  $R^2$  of 0.10. What does this mean?
  - A. There is no correlation between shark attacks and ice cream purchases.
  - B. There is a positive correlation between shark attacks and ice cream purchases.
  - C. There is a negative correlation between shark attacks and ice cream purchases.
  - D. Ice cream causes more shark attacks
6. You decide to look at exam scores for students (with permission, of course). You found a positive association between note-taking and high performance on the exam. This association may be explained by hours studying. What type of variable is “hours studying”?
  - A. Confounder
  - B. A bad one
  - C. Predictor
  - D. Outcome
7. See Output: What approach could we use?

- A. ANOVA
  - B. T-Test
  - C. Chi Square Test of Independence
  - D. Correlation
8. See Output: What approach was used?
- A. Pearson Correlation
  - B. Chi Square Test of Independence
  - C. T-Test
  - D. One-way ANOVA
9. See Output: Is the result significant between educ and income and what does that mean?
- A. Not significant; the variables are related
  - B. Significant; the variables are related
  - C. Not significant; the variables are not related
  - D. Significant; the variables are not related
10. See Output: What approach was used?
- A. One-way ANOVA
  - B. Chi Square Test of Independence
  - C. T-Test
  - D. Correlation
11. See Output: Assuming the dependent variable is income and independent variable is biological sex, is the result significant and what does that mean?
- A. Not significant; there is not a difference between the sexes in their income
  - B. Significant; there is a difference between the sexes in their income
  - C. Not significant; there is a difference between the sexes in their income
  - D. Significant; there is not a difference between the sexes in their income
12. See Output: With the dependent variable being income and the independent variable being academic degree earned, is the result significant and what does that mean?
- A. Significant; There is a difference in income between the degrees earned
  - B. Not significant; There is a difference in income between the degrees earned
  - C. Not significant; There is not a difference in income between the degrees earned
  - D. Significant; There is not a difference in income between the degrees earned
13. What are the steps of hypothesis testing that we've used in this class?
- A. 1. Examine Variables, 2. State Assumptions, 3. Calculate Effect Size, 4. Compute Test Statistic, 5. Interpret Results
  - B. 1. Examine Variables, 2. State Assumptions, 3. Define Critical Regions, 4. Calculate Effect Size, 5. Compute Test Statistic, 6. Interpret Results
  - C. 1. State Null/Research Hypotheses, 2. Define Critical Regions, 3. Compute Test Statistic, 4. Interpret Results
  - D. 1. Examine Variables, 2. State Null/Research Hypotheses, 3. Define Critical Regions, 4. Compute Test Statistic, 5. Compute Effect Size, 6. Interpret Results
14. You have data on awkwardness levels across three time points. You want to find if there are differences across time. What approach is probably best for you use here?
- A. Nothing. No approach is good in this data.
  - B. Multiple Regression
  - C. Repeated Measures ANOVA
  - D. Paired samples t-test

15. If our estimate in a regression is 3.5, how would we interpret it?
- A. For a one unit increase in our outcome, there is an associated 3.5 unit increase in the predictor
  - B. Not relevant to my life. Not going to answer.
  - C. For a 3.5 unit increase in our predictor, there is an associated 1 unit increase in the outcome
  - D. For a one unit increase in our predictor, there is an associated 3.5 unit increase in the outcome

### Interpretation (25 pts)

Let's say you are interested in understanding how watching The Office influence individuals' views of regarding awkward social interactions. You ask individuals how much they've watched The Office and present them with awkward social interactions (via video) to have them rate the awkwardness. You go through each step of the hypothesis test, you see no problems with the assumptions and have decided on an alpha of .05 for concluding significance. You decide to control for age and biological sex in the analysis. You assess the data and find the following results.

- What analysis did you use?
- What is the effect of watching The Office on the ratings of awkwardness?
- What does the  $R^2$  mean here?

#### Model Fit Measures

Model	R	$R^2$
1	0.636	0.405

#### MODEL SPECIFIC RESULTS

##### MODEL 1

#### Model Coefficients

Predictor	Estimate	SE	t	p
Intercept	-0.669	0.7963	-0.840	0.403
office	-0.221	0.0406	-5.441	< .001
age	0.100	0.0158	6.341	< .001
sex	-0.106	0.4632	-0.229	0.819

## Output Page

### Question 7

Contingency Tables

degree	Female	Male	Total
<HS	111	85	196
Associates	63	53	116
Bachelors	105	109	214
Graduate	60	41	101
HS	344	302	646
Total	683	590	1273

### Question 8

		age	educ	hompop	income06
age	Pearson's r	-	-0.064	-0.386	-0.016
	p-value	-	0.022	< .001	0.596
educ	Pearson's r		-	-0.060	0.408
	p-value		-	0.033	< .001
hompop	Pearson's r			-	0.188
	p-value			-	< .001
income06	Pearson's r				-
	p-value				-

### Question 9

		age	educ	hompop	income06
age	Pearson's r	-	-0.064	-0.386	-0.016
	p-value	-	0.022	< .001	0.596
educ	Pearson's r		-	-0.060	0.408
	p-value		-	0.033	< .001

hompop	Pearson's r	-	0.188
	p-value	-	< .001
income06	Pearson's r		-
	p-value		-

---

## Question 10

---

		statistic	df	p
income06	Student's t	-3.79	1113	< .001

---

## Question 11

---

		statistic	df	p
income06	Student's t	-3.79	1113	< .001

---

## Question 12

---

	Sum of Squares	df	Mean Square	F	p
degree	3.77e+11	4	9.43e+10	61.3	< .001
Residuals	1.71e+12	1110	1.54e +9		

---