

Homework IV
Independent Sample *t*-test and Difference *t*-test

Due Friday 3/12 by 5:00

1. Assume that we are interested in the number of alcoholic beverages consumed per week by students at Radford University. We draw *two independent samples* of students: (1) collected from students living on “The Dark Side” and (2) collected from students living on the “Light Side”. We find the following:

$$\begin{array}{ll} O_1 = 18 & O_2 = 14 \\ s_1 = 2.5 & s_2 = 1.5 \\ n = 15 & n = 12 \end{array}$$

- a. Write the Null hypothesis, two One-tailed Alternative (Research) hypotheses, and the Two-Tailed hypotheses.
- b. Using the appropriate critical values test each hypothesis above.
- c. Report your results in proper APA format (Be sure to report the highest level of significance achieved)
- d. What does this tell us in the context of the null and each of the research hypotheses?

2. Similarly, let’s say that we are interested in the number of parties attended per semester by students from the (1) dark and (2) light sides of the RU. We find the following:

$$\begin{array}{ll} O_1 = 21 & O_2 = 25 \\ s_1 = 4 & s_2 = 4 \\ n = 15 & n = 12 \end{array}$$

- a. Write the Null hypothesis, two One-tailed Alternative (Research) hypotheses, and the Two-Tailed hypotheses.
- b. Using the appropriate critical values test each hypothesis above.
- c. Report your results in proper APA format (Be sure to report the highest level of significance achieved)
- d. What does this tell us in the context of the null and each of the research hypotheses?

3. Let’s say we want to know if listening to country music increases or decreases the number of pages read per night. We sample 9 research subjects and find the data listed in Table 1

- a. Write the Null hypothesis, two One-tailed Alternative (Research) hypotheses, and a Two-Tailed hypothesis.
- b. Using the appropriate critical values test each hypothesis above.
- c. Report your results in proper APA format (Be sure to report the highest level of significance achieved)
- d. What does this tell us in the context of the null and each of the research hypotheses?

4. Let’s say we want to know if listening to the Blues increases or decreases the number of pages read per night. We sample 12 research subjects and find the data listed in Table 2.

- a. Write the Null hypothesis, two One-tailed Alternative (Research) hypotheses, and a Two-Tailed hypothesis.
- b. Using the appropriate critical values test each hypothesis above.
- c. Report your results in proper APA format (Be sure to report the highest level of significance achieved)
- d. What does this tell us in the context of the null and each of the research hypotheses?

Table 1 Country Music/Reading

<i>Individual</i>	<i>Number of Pages Read</i>	
	<i>No Music</i>	<i>Listening to Country Music</i>
1	33	21
2	31	32
3	18	16
4	36	33
5	31	24
6	30	22
7	38	41
8	24	15
9	23	12

Table 2 Blues/Reading Data

<i>Individual</i>	<i>Number of Pages Read</i>	
	<i>No Music</i>	<i>Listening to The Blues</i>
1	23	31
2	21	42
3	28	26
4	31	43
5	18	34
6	20	32
7	32	51
8	34	25
9	33	22
10	29	31
11	23	22
12	33	36