

PSYC 003 Homework 6



I. An education advocate predicts that going to a charter school for junior high will lead to better academic performance than going to a public school for junior high. A lottery placed students randomly into either a charter school or a public school for junior high and then their academic performance was assessed using a standardized test where the number of questions correct out of 30 was measured. Here are their scores on the standardized test:

Public School students: 5, 18, 4, 0, 16, 12, 8

Charter School students: 20, 15, 13, 25, 19, 14, 23, 27

1. *State the Statistical Hypotheses:* H_0 : H_A :
2. *Select the Appropriate Statistical Test and Identify the significance level (α):*
3. *What type of design does this study employ:*
4. *Describe the Sample (Be sure to include the number of participants and any relevant sample characteristics):*
5. *Rejection Region (Be sure to draw the picture, clearly label the critical value, and identify the value of degrees of freedom if applicable):*
6. *Calculate Test Statistic:*
7. *Make the Statistical Decision:*
8. *Write the interpretation:*

VI. A Coach predicts that a supplement Gestimine will help track athletes recover from weight training so they can work out longer the next day. Using random assignment, she assigns 45 athletes to receive Gestimine and another 45 to receive a placebo sugar pill. Those who received Gestimine were able to complete a 70 minute workout on average the next day ($s = 12$ minutes), whereas the placebo group were only able to complete 55 minute workout the next day ($s = 10$ minutes). The specialist will tolerate a 1% error rate.

1. *State the Statistical Hypotheses:* $H_0:$ $H_A:$
2. *Select the Appropriate Statistical Test and Identify the significance level (α):*
3. *What type of design does this study employ:*
4. *Calculate the test statistic:*
5. *Rejection Region (Be sure to draw the picture, clearly label the critical value, and identify the value of degrees of freedom if applicable):*

VII. New arthritis patients were randomly assigned so that 50 patients received training in mindfulness and another 50 received physical therapy. After a month, pain levels for the mindfulness condition were on average 5.5 (on a 7 point scale), whereas those for the physical therapy condition were on average 6.1. In the population, that those who meditate have ($\sigma = 10.5$), whereas those in physical therapy have ($\sigma = 8.6$).

1. *State the Statistical Hypotheses:* $H_0:$ $H_A:$
2. *Select the Appropriate Statistical Test and Identify the significance level (α):*
3. *What type of design does this study employ:*
4. *Calculate the test statistic:*
5. *Rejection Region (Be sure to draw the picture, clearly label the critical value, and identify the value of degrees of freedom if applicable):*

VIII. A researcher wonders about the impact of the birth order of siblings on the percentage likelihood that they will end up in art-related careers. Two siblings, one who is the first born ($n = 41$) and one who is born later than first ($n = 41$), make up the sample. Results show that 5% of first born siblings end up in art-related careers, whereas 7% of later-born siblings end up in art-related careers.

1. *State the Statistical Hypotheses:* $H_0:$ $H_A:$
2. *Select the Appropriate Statistical Test and Identify the significance level (α):*
3. *What type of design does this study employ:*
4. *Calculate the test statistic:*
5. *Rejection Region (Be sure to draw the picture, clearly label the critical value, and identify the value of degrees of freedom if applicable):*