Ryerson University
F16 QMS 202
Practice Questions for Lecture 6
Dr Boža Tasić

Use the following scenario for problems 1-4

To test the effectiveness of a business school preparation course, 8 students took a general business test before and after the course. The results are given below. You would like to know whether the business school preparation course is effective in improving exam scores?

Student	Exam Score Before The Course	Exam Score After The Course
1	530	670
2	690	770
3	910	1000
4	700	710
5	450	550
6	820	870
7	820	770
8	630	610

1. What statistical test would you use to test this hypothesis?

   a) χ^2 test

   b) Two-sample t-test, since the samples are independent.

   c) Pooled t-test, since the standard deviations of the two populations are the same.

   d) Z test for the difference between two proportions.

   (e) Paired t-test for the mean difference, since the samples are dependent.

2. If $\mu_1$is used for the population mean of the exam scores before the course, μ_2 for the population mean of the exam scores after the course, and $\mu_D = \mu_1 - \mu_2$, the alternative hypothesis for the test would be

   a) $\mu_2 \geq \mu_1$

   b) $\mu_D \geq 0$

   (c) $\mu_D < 0$

   d) $\mu_D > 0$

   e) $\mu_1 \neq \mu_2$

3. What is the critical value for testing whether the business school preparation course is effective in improving exam scores at the $\alpha = 0.04$ level of significance?

   a) 2.891

   b) 1.956

   (c) -2.046

   d) -1.956

   e) None of the above

4. At the $\alpha = 0.03$ level of significance, the conclusion for this hypothesis test is that

   a) there is sufficient evidence that the business school preparation course does improve exam score.

   (b) the evidence indicates that the business school preparation course does not improve exam score.

   c) there is sufficient evidence that the business school preparation course has no impact on exam score.

   d) no conclusion can be drawn from the information given.

5. An experiment was conducted to study the choices made in mutual fund selection. Undergraduate and MBA students were presented with different S&P 500 index funds that were identical except for fees. Suppose 100 undergraduate students and 100 MBA students were selected. Partial results are shown below:

FUND	Undergraduate	MBA
Highest-cost Fund	27	18
Not Highest-cost Fund	73	82

At the 0.01 level of significance, is there evidence of a difference between undergraduate and MBA students in the proportion who selected the highest-cost fund?

(a) There is not enough evidence that the proportion of MBA students who selected highest-cost fund is significantly different from that of Undergraduate students.

b) The evidence suggests that the proportion of MBA students who selected highest-cost fund is significantly different from that of Undergraduate students.

c) None of the above

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