Deliverable 05 – Worksheet

**Instructions:** The following worksheet describes two examples – one is an example for independent samples and the other one for dependent samples. Your job is to demonstrate the solution to each scenario by showing how to work through each example in detail. You are expected to explain all of the steps in your own words.

 **Independent samples:**One of our researchers wishes to determine whether people with high blood pressure can reduce their systolic blood pressure by taking a new drug we have developed. The sample data is shown below, where $\overbar{x}\_{1}$ represents the mean blood pressure of the treatment group and $\overbar{x}\_{2}$ represents the mean for the control group. Use a significance level of 0.01 and the critical value method to test the claim that the drug reduces the blood pressure. We do not know the values of the population standard deviations.

|  |  |
| --- | --- |
| Treatment Group | Control Group |
| n1 | **75** | **n2** | **70** |
| $$\overbar{x}\_{1}$$ | **186.7** | $$\overbar{x}\_{2}$$ | **201.9** |
| s1 | **37.5** | **s2** | **39.8** |
|  |  |  |  |

1. Write the hypotheses in symbolic form, determine if the test is right-tailed, left-tailed, or two tailed and explain why.

**Answer and Explanation**

*Enter your step-by-step description and explanations here.*

1. Calculate the critical value and the test statistic.

**Answer and Explanation**

*Enter your step-by-step description and explanations here.*

1. Make a decision about the null hypothesis and explain your reasoning, then make a conclusion about the claim in nontechnical terms.

**Answer and Explanation**

*Enter your step-by-step description and explanations here.*

**Dependent samples**

This same new drug was tested on another group, but this time the test was done before the drug was administered, and then tested after the drug was given to the same group. The results are shown in the table below:

|  |  |  |
| --- | --- | --- |
| **Subject** | **Before** | **After** |
| **1** | 199 | 190 |
| **2** | 174 | 172 |
| **3** | 195 | 187 |
| **4** | 170 | 167 |
| **5** | 179 | 169 |
| **6** | 182 | 181 |
| **7** | 183 | 176 |
| **8** | 208 | 193 |
| **9** | 185 | 179 |
| **10** | 155 | 145 |
| **11** | 169 | 166 |
| **12** | 208 | 197 |

Use the data above with a significance level of 0.05 to test the claim that for the populations of blood pressures before and after the drug, the differences have a mean greater than 0 mm Hg (so the claim is that the drug helps lower the blood pressure). Use the P-Value method to determine whether or not to reject the null hypothesis and state your conclusion.

1. Write the hypothesesin symbolic form, determine if the test is right-tailed, left-tailed, or two tailed and explain why.

**Answer and Explanation**

*Enter your step-by-step description and explanations here.*

1. Calculate the test statistic and the P-Value.

**Answer and Explanation**

*Enter your step-by-step description and explanations here.*

1. Make a decision about the null hypothesis and explain your reasoning, then make a conclusion about the claim in nontechnical terms.

**Answer and Explanation**

*Enter your step-by-step description and explanations here.*