**Bahir Dar University**

**College of Medicine and Health Science**

**Department of Epidemiology and Biostatistics**

**Assignment-2 on Biostatistics course for GAMBY MPH students**

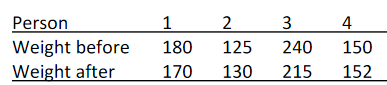
1. A brochure inviting subscriptions for a new diet program states that the participants are expected to lose their weight over 11Kg in five weeks. Suppose that, from the data of the five-week weight losses of 56 participants, the sample mean and sample standard deviation are found to be 13Kg and 5.5 Kg, respectively.
2. Construct the 95% confidence interval for the average weight lose
3. Test whether this finding is in line with the expected at α = .05 level of significance?
4. A doctor claims that about 30 percent of all persons exposed to a certain amount of radiation will feel any ill effects. Among 19 randomly selected samples who were exposed to radiation, only 1 felt any ill effects.
5. Construct the 95% confidence interval for the population proportion?
6. Test whether the proportion of population who are exposed to radiation fell any ill effect is less than doctor’s claim α = .05 level of significance?

test the null hypothesis θ = 0.30 against the alternative hypothesis θ < 0.30 at the α = .05 significance level

1. A researcher wishes to try three different techniques to lower the blood pressure of individuals diagnosed with high blood pressure. The subjects are randomly assigned to three groups; the first group takes medication, the second group exercises, and the third group follows a special diet. After four weeks, the reduction in each person’s blood pressure is recorded. At =0.05, test the claim that there is no difference in average blood pressure among the three groups. The data are

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| --- | --- | --- | --- | --- | --- | --- |
| **Medication** | 10 | 12 | 9 | 12 | 14 |  |
| **Exercise** | 6 | 8 | 3 | 1 | 2 | 4 |
| **Diet** | 5 | 9 | 12 | 8 | 6 | 7 |

1. The water diet requires you to drink 2 cups of water every half hour from  
   when you get up until you go to bed but eat anything you want. Four adult volunteers agreed to test this diet. They are weighed prior to beginning the diet and 6 weeks after. Their weights in pounds are



1. Construct 95% confidence interval for the difference in weight gain
2. Test =0.05 at whether there is a difference in weight gain before and after diet
3. A team of researchers stated that effective methods of therapy help people access and process their emotions (Watson & Bedard, 2006). They looked at the level of emotional processing brought about by two different types of therapy for clients diagnosed with depression. The first group (N = 17) took part in cognitive-behavioral therapy **(CBT)**. The second group (N = 21) took part in process-experiential therapy **(PET).** The Experiencing

Scale measured their level of emotional processing. The CBT group scored a mean of 2.73 on the scale, with a standard deviation of .46. The PET group scored a mean of 3.04, with a standard deviation of .42.

1. Construct 95% confidence interval for the difference of two population means?
2. Test whether PET therapeutic technique brings about more emotional processing than the other at 5% level of significance?
3. A team of audiologists was interested in examining whether their patients’ satisfaction with their hearing aids was related to how long they had used hearing aids (Williams, Johnson, & Danhauer, 2009). They divided their patients into two categories, new users (N = 30) and experienced users (N = 34), and asked them to indicate how satisfied they were with their hearing aids; the higher the score, the greater the satisfaction. The new users reported a mean satisfaction of 26.90 on the scale (standard deviation = 3.96), and the experienced users reported a mean satisfaction of 28.03 (standard deviation = 5.04).
4. Construct 95% confidence interval for the difference of the two group population mean satisfaction?
5. Test whether the experience users are more satisfied than new users at 5% level of significance?