
Statistics: Assignment No. 4

Instructions:

Attempt all Exercises, all exercises carry equal marks.

This assignment is **10%** of your final grade.

1 Family energy cost data

An economist wants to determine whether the monthly energy cost for families has changed from the previous year, when the mean cost per month was \$200. The economist randomly samples 25 families and records their energy costs for the current year.

- (1) Produce a Minitab Summary Report using the Minitab Assistant
- (2) Briefly explain why you use the **1-Sample t test**.
- (3) Has the energy cost changed significantly since last year?

2 Fat content data

A scientist for a company that manufactures processed food wants to assess the percentage of fat in the company's bottled sauce. The advertised percentage is 15%. The scientist measures the percentage of fat in 20 random samples. Previous measurements found that the population standard deviation is 2.6%.

- (1) Produce a Minitab Summary Report using the Minitab Assistant
- (2) Briefly explain why you use the **1-Sample Z, Normality Test**,
- (3) Is the average fat content significantly different to the advertised 15% fat content?

3 Resting heart rate data

A physiologist wants to determine whether a particular running program has an effect on resting heart rate. The heart rates of 20 randomly selected people were measured. The people were then put on the running program and measured again one year later. Thus, the before and after measurements for each person are a pair of observations.

- (1) Produce a Minitab Summary Report using the Minitab Assistant
- (2) Briefly explain why you use the **Paired t**.
- (3) Does the running program have an effect on resting heart rate? (lower heart rate is better).

4 Hospital comparison data

A healthcare consultant wants to compare the patient satisfaction ratings of two hospitals. The consultant collects ratings from 20 patients for each of the hospitals.

- (1) Produce a Minitab Summary Report using the Minitab Assistant
- (2) Briefly explain why you use the **2-Sample t**.
- (3) Does the running program have an effect on resting heart rate? (lower heart rate is better).