

IT2120 - Probability and Statistics

Lab Sheet 09

IT24104101 – Gunasekara D.L.K.T.

```
3 set.seed(123)
4
5 mu <- 45
6 sigma <- 2
7 n <- 25
8
9 sample_data <- rnorm(n, mean = mu, sd = sigma)
10 sample_data
11
12 t_test_result <- t.test(sample_data, mu = 46, alternative = "less")
13 t_test_result
14
15 if(t_test_result$p.value < 0.05){
16   print("Reject H0: The average baking time is less than 46 minutes.")
17 } else {
18   print("Fail to reject H0: Not enough evidence to say average baking time is less than 46 minutes.")
19 }
20
```

```
> set.seed(123)
>
> mu <- 45
> sigma <- 2
> n <- 25
>
> sample_data <- rnorm(n, mean = mu, sd = sigma)
> sample_data
[1] 43.87905 44.53965 48.11742 45.14102 45.25858 48.43013 45.92183 42.46988 43.62629 44.10868
[11] 47.44816 45.71963 45.80154 45.22137 43.88832 48.57383 45.99570 41.06677 46.40271 44.05442
[21] 42.86435 44.56405 42.94799 43.54222 43.74992
>
> t_test_result <- t.test(sample_data, mu = 46, alternative = "less")
> t_test_result
```

One Sample t-test

```
data: sample_data
t = -2.8167, df = 24, p-value = 0.004776
alternative hypothesis: true mean is less than 46
95 percent confidence interval:
 -Inf 45.58124
sample estimates:
mean of x
44.93334
```

```
>
> if(t_test_result$p.value < 0.05){
+   print("Reject H0: The average baking time is less than 46 minutes.")
+ } else {
+   print("Fail to reject H0: Not enough evidence to say average baking time is less than 46 minutes.")
+ }
[1] "Reject H0: The average baking time is less than 46 minutes."
> |
```