

IT24102700- PS LAB10

Jayawardhana A.T.G - IT2120

Exercise 2

1)

Null Hypothesis (H_0): Customers choose the four snack types with equal probability.

$$P(A) = P(B) = P(C) = P(D) = 0.25$$

Alternative Hypothesis (H_1): At least one snack type has a probability of being chosen that is not 0.25.

2)

```
1 getwd()
2 setwd("C:\\Users\\AMASHI\\OneDrive\\Desktop\\IT24102700 Lab10\\Data.csv")
3 getwd()
4
5 ## Exercise
6
7
8 # Part (ii)
9
10 observed_counts <- c(120, 95, 85, 100)
11 probabilities <- c(0.25, 0.25, 0.25, 0.25)
12 chisq.test(x = observed_counts, p = probabilities)
```

Environment History Connections Tutorial

Values	
observed_counts	num [1:4] 120 95 85 100
probabilities	num [1:4] 0.25 0.25 0.25 0.25

```
> ## Exercise
>
> # Part (ii)
>
> observed_counts <- c(120, 95, 85, 100)
> probabilities <- c(0.25, 0.25, 0.25, 0.25)
> chisq.test(x = observed_counts, p = probabilities)
```

Chi-squared test for given probabilities

data: observed_counts
X-squared = 6.5, df = 3, p-value = 0.08966

R: Histograms

hist (graphics)

Histograms

Description

3)

- Significance Level: 5%
- Rejection Region: If the p-value for the test is less than 0.05, reject the null hypothesis.

- P-value: The p-value obtained from the test is 0.08966
- Decision: Since the p-value (0.08966) is more than the significance level (0.05), we accept the null hypothesis.
- Conclusion: There is sufficient statistical evidence to conclude that customers choose the four snack types with equal probability. The vending machine owner's claim is supported by the data.