# Evaluation of Monthly Expenses of Residential Students who study in Faculty of Science, University of Kelaniya



STAT 22632 – Survey Methods & Sampling Techniques

Department of Statistic & Computer Science

University of Kelaniya

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Prepared by: Group 07

Submitted to:

Dr. A.M.C.H.Attanayake,

Department of Statistic & Computer Science.

# **Members of Group 07**

PS/2020/110	Ms. D.D.A.K. INDEEWARI
PS/2020/120	Ms. A.H.P. THARUSHIKA
PS/2020/137	Ms. M.H.M.P.N.K. DISSANAYAKE
PS/2020/156	Mr. C.K. KARIYAWASAM
PS/2020/168	Mr. D.M.P.M. DASANAYAKA
PS/2020/169	Mr. A.D.N.D. NANDASIRI
PS/2020/170	Mr. T.A. KOTTEGODA
PS/2020/187	Ms. W.D.S. SAVINDI
PS/2020/252	Ms. R.V.P.I. SEWWANDI

## **Abstraction**

This survey study aims to evaluate the monthly expenses of residential students studying at the Faculty of Science, University of Kelaniya. The study will analyze various types that contribute to the monthly expenses of these students, including accommodation costs, food expenses, transportation costs, and other miscellaneous expenses. By conducting an online survey among the population, the research will provide insights into the financial challenges faced by students and offers recommendations for financial management strategies. The findings of this study will be valuable for university administrators, policymakers, and students in understanding and addressing the financial needs of residential students at the Faculty of Science, University of Kelaniya.

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## **Acknowledgment**

We would like to express our gratitude to our project supervisor Dr.(Mrs.) A.M.C.H.Attanayake, Senior Lecturer, Head of the Department of Statistics and Computer Science, Faculty of Science, University of Kelaniya for guiding us throughout our survey project by giving advice, opinions, and suggestions as well as by encouraging us.

We would like to thank Mr.Nishchitha Pathirana and Ms. Sandeepa, Samarasighe, Demonstrators of the course unit "Survey Methods and Sampling Techniques", and to all the lecturers and staff members of the Department of statistics and computer science for helping us to carry out our research. Most importantly, we would like to express our special thanks and gratitude to all our group members, and university colleagues for their ongoing support, affection, and encouragement throughout our studies and to everyone who gave us a helping hand and who contributed in many ways to make our research success.

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#### 1. Introduction

#### 1.1Research Problem

In the current backdrop of the prevailing economic crisis in Sri Lanka, it becomes imperative to delve into the economic challenges faced by residential undergraduate students. The economic downturn has undoubtedly affected various aspects of daily life, and one critical area is the monthly expenses incurred by students pursuing higher education. As the cost of living continues to rise and economic uncertainties persist, understanding the financial dynamics of residential students is essential for devising targeted interventions and support systems. This statistical survey aims to comprehensively evaluate the monthly expenses of residential students within the faculty of science University of Kelaniya, shedding light on the impact of the economic crisis on their financial well-being.

## 1.2Aims and Objectives

- Access Monthly Expenditure Patterns.
- Identify Financial Challenges.
- Identifying Coping Mechanisms.
- Finding Methods to Minimize Expenses.
- Understanding Academic Implications.

## 1.3Background Information

Managing monthly expenses is an important aspect of a university student's life. Residential students often have unique financial needs due to expenses related to accommodation, food, transportation, and other living costs. These expenses can add up quickly and have a significant impact on a student's financial situation. Therefore, it is crucial for students to be aware of their weekly expenses and to manage their finances effectively to ensure that they can cover their expenses while also achieving their academic goals. By conducting a survey to evaluate their monthly expenses, researchers aim to gain insights into the specific financial burdens that these students encounter.

A survey was carried out at the Faculty of Science, University of Kelaniya among all undergraduates to gather information about their monthly expenses. The survey was conducted through online, and all students of Faculty of Science participated and provided self-reported data. It should be noted that the accuracy of the information gathered may be influenced by the respondents' level of awareness. The survey covered all years (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>) in the Faculty of Science.

Stratified sampling was the sampling technique we used to identify the sample and to collect data we utilized a questionnaire in the form of a Google Form, which provided a convenient and efficient method for data collection. Obtain a representative sample through random sampling. Finally, we obtain a representative sample from our respondents.

This study is significant as it can provide valuable information for university administrators and policymakers to develop support programs and financial management strategies tailored to the needs of residential students at the Faculty of Science, University of Kelaniya. Understanding the monthly expenses of students can also help in identifying areas where financial assistance or resources may be required to alleviate financial stress and enhance the overall student experience.

By conducting a thorough survey and analysis of the monthly expenses of residential students, this study seeks to contribute to the existing knowledge on student financial well-being and inform future initiatives aimed at supporting the financial stability of students pursuing their studies at the Faculty of Science, University of Kelaniya.

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## 2. Survey Methodology

#### 2.1Theory

#### **Stratified Sampling**

Stratified random sampling is one of the probability sampling techniques. That involves the division of a population into smaller non-overlapping, homogeneous subgroups known as strata. Each stratum is sampled using Simple Random Sampling, allowing researchers to estimate statistical measures for each subpopulation.

#### **Sample Design**

- Our target population was the Residential undergraduates in the Faculty of Science, University of Kelaniya.
- Develop a structured questionnaire covering various expense categories, ensure clarity and simplicity in the questionnaire.
  - Obtain a representative sample through random sampling.
  - Ethical considerations include informed consent and confidentiality.
  - Data collection was conducted online within a specified time frame.
- Descriptive and, if applicable, inferential statistics were used for data analysis monthly expenses.
  - After getting responses we presented and analyzed the data we have collected.

#### 2.2 Methodology

#### 2.2.1 Pilot survey

We conducted a pilot survey for a better understanding of our main survey and to get to know the mistakes of the survey that might occur. We used a questionnaire with 21 questions to conduct this survey.

Pilot survey data reveal that individuals do not rely solely on part-time or full-time employment for their income, with a significant percentage of participants also earning income through freelance work.

Upon statistical examination of the gathered pilot survey data, it becomes evident that employing a single questionnaire for both residential and non-residential students in the Faculty of Science has introduced an error, compromising the validity and representativeness of the findings.

According to the pilot data, an error was identified in allowing respondents to enter the cost of specific expenses.

#### 2.2.2 Main survey

We calculated the sample size of the main survey using the Proportional allocation.

$$n = \frac{\sum_{i=1}^{l} N_i \, p_i (1-p)_i}{ND + \frac{1}{N} \sum_{i=1}^{l} N_i \, p_i (1-p)_i} \qquad , \quad n_i = n \left( \frac{N_i}{\sum_{i=1}^{l} N_i} \right) = n \left( \frac{N_i}{N} \right)$$

$$D=\frac{B^2}{4}$$

n = Sample Size

N = Population Size

p = Probability of Success

Our assumption when calculating the sample size was, Confidence Level = 90%

Our population, No. of Males =  $N_{Male}$  = 1407

No. of Females = 
$$N_{\text{Female}} = 1750$$

N = 3157

Then, 
$$B = 0.1$$
,  $p = 0.5$  
$$D = \frac{(0.1)^2}{4} = 0.0025$$

Therefore,

$$n = \frac{(1407 * 0.5 * 0.5) + (1750 * 0.5 * 0.5)}{3157 * 0.0025 + (1/3157) * [(1407 * 0.5 * 0.5) + (1750 * 0.5 * 0.5)]}$$

$$n = 96.9297$$

$$\therefore n \approx 100$$

$$n_{Male} = n \left( \frac{N_{Male}}{N} \right) = 100 \left( \frac{1407}{3157} \right) = 44.57 \approx 45$$

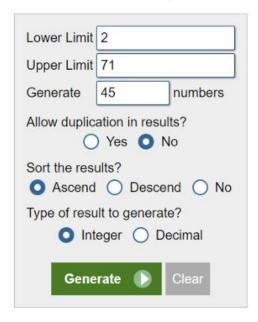
$$n_{Female} = n \left( \frac{N_{Female}}{N} \right) = 100 \left( \frac{1750}{3157} \right) = 55.43 \approx 55$$

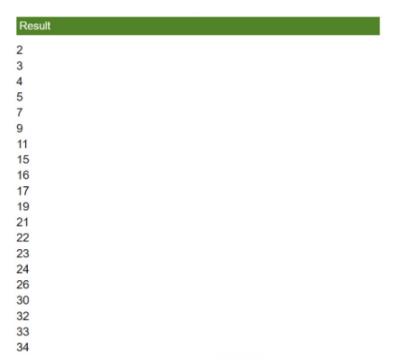
## Sample selection from the population.

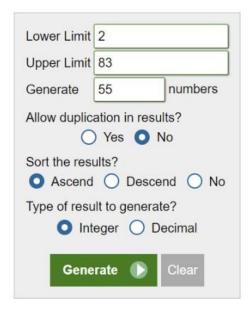
Our population is undergraduates of Faculty of Science, University of Kelaniya. Then, to do our survey in more accurately, need to be selected representative sample from the population.

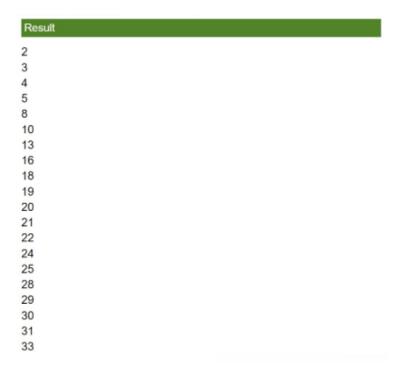
We got 152 responses from our online questionnaire. Then by using Online Random Number Generator, we selected representative sample which has sample size 100 including  $n_{Male} = 45$  and  $n_{Female} = 55$ . Here we used random sampling technique without replacement.

#### Here are the screenshots,









## **Questionnaire:**

Link: https://forms.gle/GBfhFQppnvMy8ezu9 \*Indicates required questions 01. **Gender** (Please indicate your sex) \* Mark only one. O Male O Female 02. Academic Year \* Mark only one. O Year 1 O Year 2 O Year 3 O Year 4 03. Financial assistance from family? \* Mark only one. O Totally O Partially ONo 04. Are you employed and what is the category? \* Mark only one. O Full time O Part time O Freelance O<sub>No</sub>

	<b>Do you get mahapola/b</b> u Mark only one.	ursary or any other scholarship? *
	O Yes	
	O Yes O No	
	Where do you reside cur Mark only one.	rrently? *
	O At home	Skip to question 22
	O At the hostel	Skip to question 7
	O At a boarding he	ouse Skip to question 7
	Other:	
Monthly Exp	enses of Residential Stud	dents
07.		thly rent for accommodation? *
	O 4000	
	O 4500	
	O 5000	
	O 5500	
	O 6000	
	O 6500	
	O 7000	
	O 8000	
	O 9000	
	O 10000	
	Other:	

08. What utilities do you pay for each month? *
Check all that apply.
None
☐ Electricity
☐ Water
Internet
Other:
09. How much do you pay for utilities per month? * Mark only one.
O 0
O Below 700
O 700
O 1000
O 2000
O 3500
O 4500
O Above 4500
10. How do you typically get your food and groceries? * Check all that apply.
Cook by myself
From the University canteen
From local shop or supermarket
Other:

11. How much does food and groceries cost per month for you? * Mark only one.		
O Below 8000		
O 8000		
O 10000		
O 11000		
O 12000		
O 15000		
O Above 15000		
12. What is your primary mode of transportation? * Check all that apply.		
Bus		
☐ Train		
Car		
Motorbike		
Other:  13. How much does the monthly cost of transportation? *  Mark only one.		
O 0		
O Below 500		
O 500		
O 1000		
O 2000		
O 4000		
O 6000		
O Above 6000		

14. What is your estimated monthly expenditure on clothing and personal care items Mark only one.
O Below 500
O 500
O 1000
O 2000
O 3000
O 4000
O Above 4000
15. How much do you typically spend on medical expenses monthly? * Mark only one.
O Below 500
O 500
O 1000
O 2000
O 3000
O 4000
O 5000
O Above 5000

16. How much do you spend for leisure time activities monthly? (Engaging in recreation, hobbies and recreational activities) *  Mark only one.
O Below 400
O 400
O 1000
O 2000
O 3000
O Above 3000
17. How likely do you think financial constraints impact your ability to participate in academic activities? * Mark only one.
O Not at all
O To a small extent
O Moderately
O Significantly
O Very significantly
18. How likely do you believe increasing scholarship opportunities specifically for science students would positively impact their financial situation? * Mark only one.
O Unlikely
O Likely
O Neutral
O Good
O Very good

19. How often do you explore job opportunities to supplement your increase and reduce financial strain? * Mark only one.
O Never
ORarely
O Occasionally
O Frequently
O Always
20. To what extent do you consider meal planning and cooking at home to minimize monthly food expenses? * Mark only one.
O Not at all
O To a small extent
O Moderately
O Significantly
O Extensively
21. What are the methods do you suggest reducing expenses of undergraduates?

## **Monthly Expenses of Non-residential Students**

22. What is your primary mode of transportation? *		
Check all that apply.		
Bus		
☐ Train		
☐ Car		
☐ Motorbike		
Other:		
23. How much does the monthly cost of transportation? *		
Mark only one.		
$\bigcirc$ 0		
O Below 500		
O 500		
O 1000		
O 2000		
O 4000		
O 6000		
O Above 6000		
24. Except Transportation, mention your monthly expenses roughly.*		

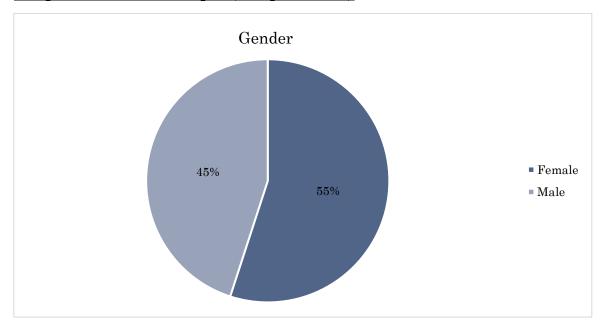
25. How likely do you think financial constraints impact your ability to participate in academic activities? * Mark only one.
O Not at all
O To a small extent
O Moderately
O Significantly
O Very significantly
26. How likely do you believe increasing scholarship opportunities specifically for science students would positively impact their financial situation? * Mark only one.
Ounlikely
OLikely
O Neutral
O Good
O Very good
27. How often do you explore job opportunities to supplement your increase and reduce financial strain? * Mark only one.
O Never
O Rarely
O Occasionally
O Frequently
O Always

28. To what extent do you consider meal planning and cooking at home to minimize monthly food expenses? * Mark only one.	e
O Not at all	
O To a small extent	
O Moderately	
O Significantly	
O Extensively	
29. What are the methods do you suggest reducing expenses of undergraduates?	

## 3. Analysis and Interpretation

This section presents the analysis, graphical representations and interpretations of the study. The selected 100 data will be presented in charts to provide a visual representation of the distribution of expenses and key insights into students' spending habits with a brief interpretation and an analysis based on that.

#### Graphs from total sample (sample of 100)



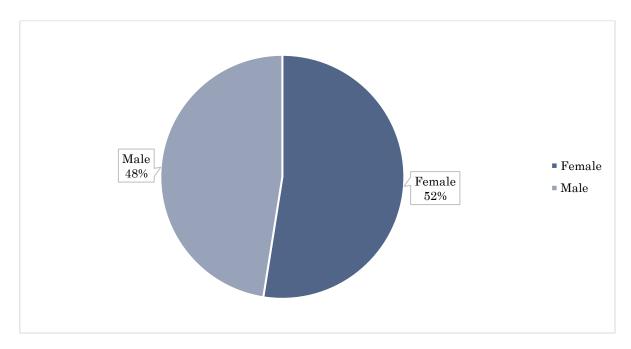
3.1 Figure 1: Gender vise representation of the respondents

Row Labels	Count of Index
Female	55
Male	45
<b>Grand Total</b>	100

According to the pie chart, there is a gender distribution of 55 out of 100 which is 55% female and 45 out of 100 which is 45% male among the students in the sample.

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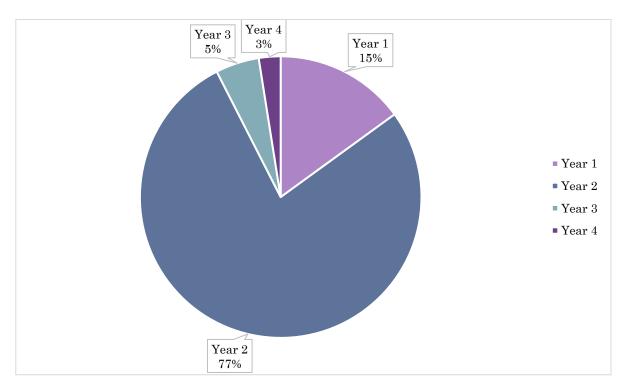
#### Graphs from residential filtered sample (80 out of 100)



3.2 Figure 2: Gender vise representation of the respondents

Count of	
Row Labels	Index
Female	42
Male	38
<b>Grand Total</b>	80

According to the pie chart, the gender among the residential undergraduates in our sample is 42 out of 80, which is 52% female, and 38 out of 80, which is 45% male.

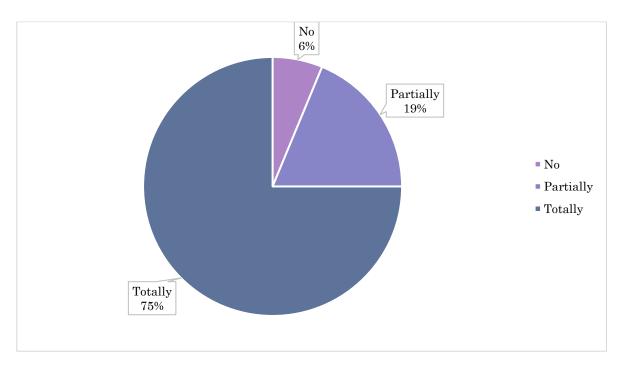


3.3 Figure 3: Year vise representation of respondents

Row Labels	Count of Index
Year 1	12
Year 2	62
Year 3	4
Year 4	2
<b>Grand Total</b>	80

As we collected data from the faculty of science, the graph represents the distribution of each residential respondent's university year. According to the pie chart, out of 80 residential respondents in our sample,

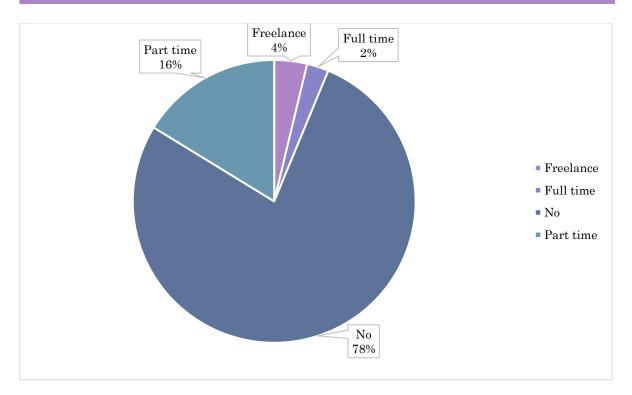
The majority are from the 2nd year, which is 62 (77%), and the minimum number of respondents are from the 4th year, which is 2 (3%). And out of the 80 respondents, 12 (15%) are from the 1st year, and 4 (5%) are from the 3rd year.



3.4 Figure 4: Financial Assistance from Family

Row Labels	Count of Index
No	5
Partially	15
Totally	60
<b>Grand Total</b>	80

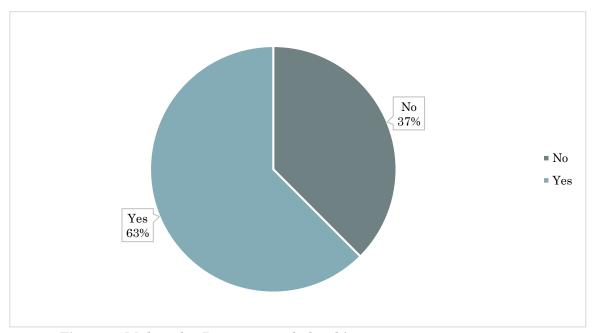
The following pie chart illustrates the nature of financial assistance that residential respondents receive from their families. Majority of the above-mentioned respondents, which is 60 (75%) of them, receive financial assistance when 15 (19%) of them take it partially and the remaining 5 of them (6%) do not take any financial assistance from their families.



3.5 Figure 5: Employee category

Row Labels	Count of Index
Freelance	3
Full time	2
No	62
Part time	13
<b>Grand Total</b>	80

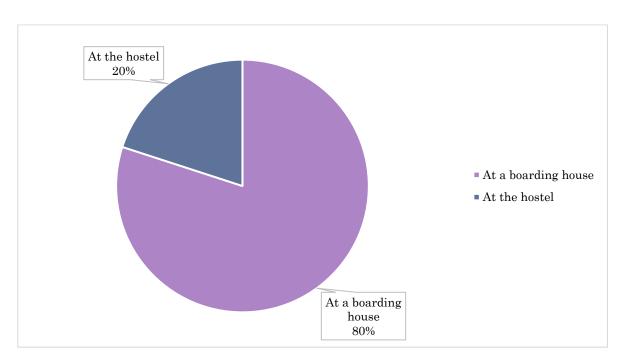
This pie chart provides a visual representation of the nature of the undergraduates' employment among the residential undergraduates in our sample. According to the chart, 62 (78%) of them are unemployed while only 2 (2%) are employed, and 13 (16%) of them are doing part-time jobs. In addition, another 3 (4%) of them work as freelancers.



Figure~6: Mahapola/Bursary~or~scholarship

Row Labels	Count of Index
No	30
Yes	50
<b>Grand Total</b>	80

This graph indicates that 50 (63%) of residential undergraduates in our sample are receiving any kind of scholarship while 30 (37%) of them are receiving no scholarships.



3.6 Figure 7: Current Resident

Row Labels	Count of Index
At a boarding house	64
At the hostel	16
Grand Total	80

This chart shows that among the residential respondents in our sample, the majority of them are living at a boarding house, which is 64 (80%), and the remaining 16 (20%) are living at a university hostel.

#### 4. Discussion and Conclusions

The discussion provides insights into the financial challenges faced by residential students at the University of Kelaniya's Faculty of Science. It highlights the need for tailored support services and financial literacy initiatives to address varying spending habits influenced by gender. Additionally, unexpected spending patterns underscore the complexity of student finances, prompting further investigation into underlying factors. Overall, the study emphasizes the significance of understanding student financial behaviors to enhance their financial well-being and academic success.

(90% Confidence Level)For residential respondents,

$$\overline{x} + t\alpha_{/2} \frac{S}{\sqrt{n}}$$

Confidence Interval of male =  $26270.2381 \pm t_{0.05,44} * \frac{S_M}{\sqrt{45}}$ =  $26270.2381 \pm 1.680 * \frac{6813.9282}{\sqrt{45}}$ = (24563.7606, 27976.7156)

There is a 90% confident that the population mean for the monthly expenses of Female undergraduate students in Faculty of Science, University of Kelaniya is between LKR 24563.7606 and LKR 27976.7156.

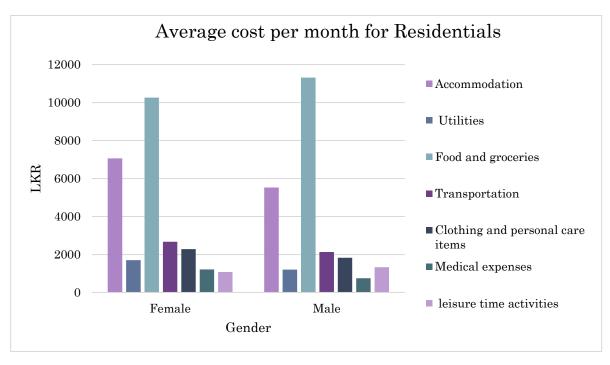
Confidence Interval of female = 
$$24093.4211 \pm t_{0.05,54} * \frac{S_F}{\sqrt{55}}$$
  
=  $24093.4211 \pm 1.674 * \frac{7279.2058}{\sqrt{55}}$   
=  $(22450.3433, 25736.4988)$ 

There is a 90% confident that the population mean for the monthly expenses of Female undergraduate students in Faculty of Science, University of Kelaniya is between LKR 22450.34 and LKR 25736.50.

Confidence Interval of residentials = 
$$25236.25 \pm 1.664 * \frac{7102.2281}{\sqrt{80}}$$
  
=  $(2391.945, 26557.5546)$ 

There is a 90% confident that the population mean for the monthly expenses of undergraduate students in Faculty of Science, University of Kelaniya is between LKR 2391.95 and LKR 26557.55.

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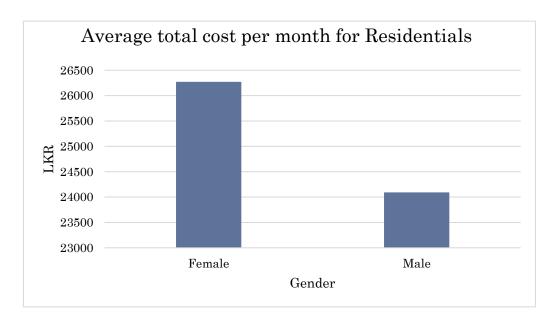
4.1 Figure 8: Average cost per month for Residentials

Gender	Accommodation	Utilities	Food and groceries	Transportation	Clothing and personal care items	Medical expenses	Leisure time activities
Female	7055.952381	1704.7619	10261.90476	2666.666667	2285.714286	1214.28571	1080.9524
Male	5530.263158	1205.26316	11315.78947	2131.578947	1828.947368	750	1331.5789
Total Average	6331.25	1467.5	10762.5	2412.5	2068.75	993.75	1200

This multiple bar chart represents the average cost per month for male and female residential undergraduates in our sample categorized by their Accommodation, Utilities, Food and Groceries, Transportation, Clothing and personal care items, medical expenses and leisure time activities.

• As shown in the graph the highest average cost has been paid for food and groceries by both females and males which is Rs.10,262/= and Rs.11316/= respectively.

- The lowest average cost has been paid for leisure time activities by females which is Rs.1081/=, and by males it has been paid for medical expenses which is Rs.750/=.
- Both males and females in the study spend more money on Transportation than they spend it on Clothing and personal care items per month.
- The graph shows that female residential undergraduates spend more on accommodation, utilities, and medical expenses per month compared to male residential undergraduates. Specifically, females spend an average of 7056/= on accommodation (compared to 5530/= for males), 1705/= on utilities (compared to 1205/= for males), and 1214/= on medical expenses (compared to 750/= for males).

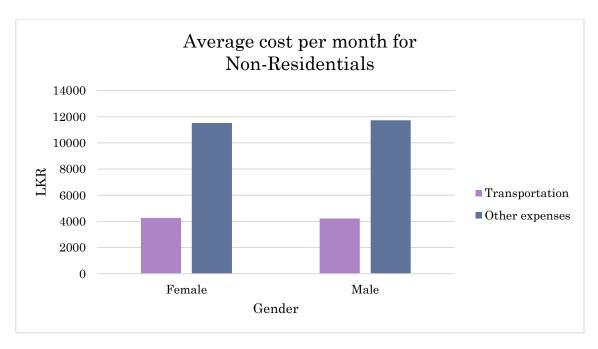


4.2 Figure 9: Average total cost per month for Residentials

Gender	Average total cost (per month)
Female	26270.2381
Male	24093.4211

The bar graph shows that the average total cost per month for males is 24,093 LKR, and for females, it's 26,270 LKR. This means, on average, females spend 2177 LKR more per month than males. So, the female bar would be taller on the graph, indicating higher average spending.

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4.3 Figure 10: Average cost per month for non-Residentials

Row Labels	Transportation	Other expenses
Female	4269.230769	11521.69231
Male	4214.285714	11727.71429
Total Average	4250	11593.8

we have a bar graph comparing average transportation costs and average other expenses for males and females:

■ Average Transportation Costs:

•Male: LKR 4214

•Female: LKR 4269

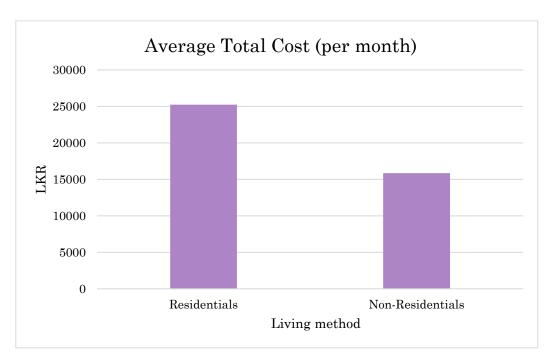
■ Average Other Expenses:

•Male: LKR 11 727

•Female: LKR 11 521

In this example, for transportation costs, females spend LKR 50 more on average compared to males. Similarly, for other expenses, males spend LKR 206 more on average compared to females.

This indicates that, on average, males and females spend equally in both categories.



4.4 Figure 11: Average Total Cost (per month)

Method	Average total cost (per month)
Residentials	25236.25
Non-Residentials	15843.8

This graph that shows the average total cost per month for residential and non-residential undergraduates. The average total cost per month for residential undergraduates is LKR25,236.25, which is higher than the average total cost for non-residential undergraduates, at LKR15,843.80.

This means, on average, residential undergraduates cost LKR 9,392.45 more per month than non-residential undergraduates.

## **Conclusion**

- From the Likert question in our questionnaire, we found out that for the majority of our sample, financial constraints impact moderately on their ability to participate in academic activities, while for many of them, it impacts to a small extent. For the least amount of them, the financial constraints impact very significantly. And also, a higher percentage of male residential undergraduates find it impacts them moderately as well as not at all compared to female residential undergraduates, while more female residential undergraduates find it impacts them significantly as well as to a small extent compared to male residential undergraduates.
- According to our survey, most residential undergraduates find that increasing scholarship opportunities, specifically for science students, would positively impact their financial situation, while the least amount of them find that increasing scholarship opportunities is unlikely to impact positively on their financial situation. Also, there are some residential undergraduates who are neutral on this matter.

Here are the suggestions from the respondents for our questionnaire.

- Expand the amount of hostel facility.
- The Price of food in the university canteen should be reduced.
- Set up part time job opportunity near the campus.
- Providing additional grace period for doing additional work.
- More Scholarships opportunities should be provided.
- In order reduce the cost, every student should be maintaining a daily plan that suits them.

Our suggestions to reduce monthly expenses of university students.

- Minimizing expenses linked to attending career fairs is a necessity for undergraduates dealing with financial constraints.
- Amid the economic crisis in Sri Lanka, undergraduates are turning to part-time work and freelancing. Initiatives promoting these options are needed to support students financially.
- Provide opportunities for undergraduates to participate internal part time job opportunities (e.g.-: Base canteen, lab assistants) to enhance their experiences and financial stability.

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## 5. References

• Lecture notes, STAT 22632 – Survey Methods & Sampling Techniques, Dr. A.M.C.H. Attanayake, Department of Statistic & Computer Science, University of Kelaniya.

# **Individual Contribution**

PS/2020/110	Questionnaire
PS/2020/120	Conclusion
PS/2020/137	Analysis and Interpretation
PS/2020/156	Methodology - Pilot Survey
PS/2020/168	Conclusion
PS/2020/169	Project proposal
PS/2020/170	Analysis and Interpretation
PS/2020/187	Methodology- Main Survey
PS/2020/252	Introduction

\_\_\_\_\_THE END\_\_\_\_\_