Income and Consumption Patterns of Sri Lankan Senior Citizens and Subsequent Impact on Policies and Transportation

Shanika Madushani Jayathunga[1,2] and Gnanadarsha Sanjaya Dissanayake[2,3(✉)]

[1] University of Colombo, Colombo, Sri Lanka
[2] School of Mathematics and Statistics, University of Sydney, Camperdown, Sri Lanka
gnanadarshad@gmail.com
[3] NSW Ministry of Health, St. Leonards, Australia

Abstract. Sri Lanka's population is continuously growing older. Some studies show the elderly population or senior citizens of Sri Lanka will rapidly grow to 30% with an increase in the dependency ratio by 2060.

However, there are a considerable number of elders, who are still working and contributes to the country's economy. The elders have different spending patterns depending on their level of income. Identifying the patterns of elderly income and expenditure are important in arriving at government policy decisions. Embedded within such initiatives will be policies targeting to address the continuance of social welfare catering especially to the needs of the elderly population.

This paper focusses on identifying sources of elderly income and expenditure patterns in Sri Lanka and the resulting impact contribution towards the labour force.

Keywords: Elders · Income · Expenditure · Labour · Policy · Economy · Accessibility

1 Introduction and Literature Review

Income distribution or the distribution of income is a statistical measure of how many people earn or receive various amounts of income. In terms of economics an income distribution is defined as how a nation's total Gross Domestic Products (GDP) is distributed amongst its population. *Income distribution patterns or income patterns* on the other hand are diverse across countries and unrelated in any obvious way to per capita GDP or the rate of GDP growth.

Consumption pattern describes how consumers act, how they allocate income among various alternatives, how loyal they are to various brands and how they react to new products and services. In economics it has been mostly used to characterize a household's allocation of expenditures across different consumption categories, such as food, housing, clothing, and transportation.

In the current context, elderly citizens are expected to remain independent and active and use transport systems frequently until they reach their eighties in terms of age (Siren and Haustein, 2013). Developing countries are moving towards legislation that requires transport services to be made accessible, although the translation of accessibility policies into the provision of inclusive transport remains a major obstacle for many reasons, e.g., lack of monitoring and enforcement of compliance with existing accessibility legislation and inadequate resources for implementation (Roberts and Babinard, 2004).

The word Elderly differ from country to country. In Western nations such as USA, Australia etc., the elderly population cohort is referred to as "Senior Citizens". In such nation's individuals above the age of 60 fall into the elderly segment, when considered for retirement benefits and other social welfare schemes. On the contrary in a generic sense, European countries consider age of 65 as the demarcation cut-off measure as opposite to the developing world conventional age of 60 and above considered as the elderly segment (Menike, 2014). In Sri Lanka, age 55 and above are considered as elderly since, it becomes the retirement age of most private and public sector organizations. Sri Lanka has entered the third stage of demographic transition (Attanayake, 1984) and due to that Sri Lanka has a very high elderly population among south Asian countries forming 13.2% of the total population in 2001. It is predicted to reach 20% by 2020 according to the Department of Census and Statistics in Sri Lanka.

However, Sri Lanka has a culture where the younger people look after their elderly relatives, since most of the senior citizen population are reluctant to work beyond retirement. But senior citizens in developed countries work beyond the Sri Lankan retirement age threshold due to their own disposable income savings, lifetime investments and retirement pension plans. In such a context, Australia can be presented as a classic example. It is a country that has a retirement scheme based on the date of birth of each individual worker pertaining to a minimum cut-off age of retirement and the ability that an able-bodied Australian could work until they feel they are capable. But in Sri Lanka with a rising proportion of the elderly segment, the dependency burden has been rising among the working age population (Mendis, 2007). Dependency ratio is defined as the number of dependents per 100 people in the working age group (age 15–59 referred to as prime-age adults) (De Silva, 2012). For obvious reasons children (individuals under age 15) and older persons (those aged 60 and above) are considered to be dependent. At present, there are 40 children and 20 senior citizens per every 100 prime-age adults in the country. By 2060, the old age dependency ratio is estimated to increase close to 50 and the child dependency ratio is estimated to decline to 30 per every 100 prime-age adults (United Nation Economic and Social Commission for Asia and the pacific-2015). According to De Silva (2008) the aging in Sri Lanka seems to occur at lower levels of economic development compared with those of western countries.

The expenditure pattern varies among working and non-working aging populations due to home-made meals, health insurance, social security and retirement contributions. But these differences are not purely due to income differences (Monthly Labour Review 1990-https://www.bls.gov/mlr/1990/05/art4full.pdf). Sri Lanka's Contribution based retirement system has currently reached its limits (Nirosha Gaminiratne (2004). Some analysis in the literature shows that the number of elderly members and pre-school

children in a household are strong predictors of the probability and financial burden of encountering out-of-pocket healthcare expenditure (Kumara and Samaratunge (2016)).

Therefore, the analysis of income and expenditure patterns of the elderly population is extremely important in developing public, health and transportation policies to accommodate senior citizens, since Sri Lanka is a country that allocates a considerable amount of revenue from the country's budget on social welfare. A deep analysis of such apportionment is seemingly absent in the current body of knowledge.

Therefore, the main purpose of this paper is to identify and provide deeper insights relevant to the income and expenditure patterns of Sri Lanka's elderly population segment and to highlight the resulting consequences on social welfare.

2   Research Objectives and Limitations

2.1   Objective of the Study

Main objective of the research was to identify any pattern in the income and expenses of the elderly in Sri Lanka and its impact on their key social welfare activities such as health and transportation.
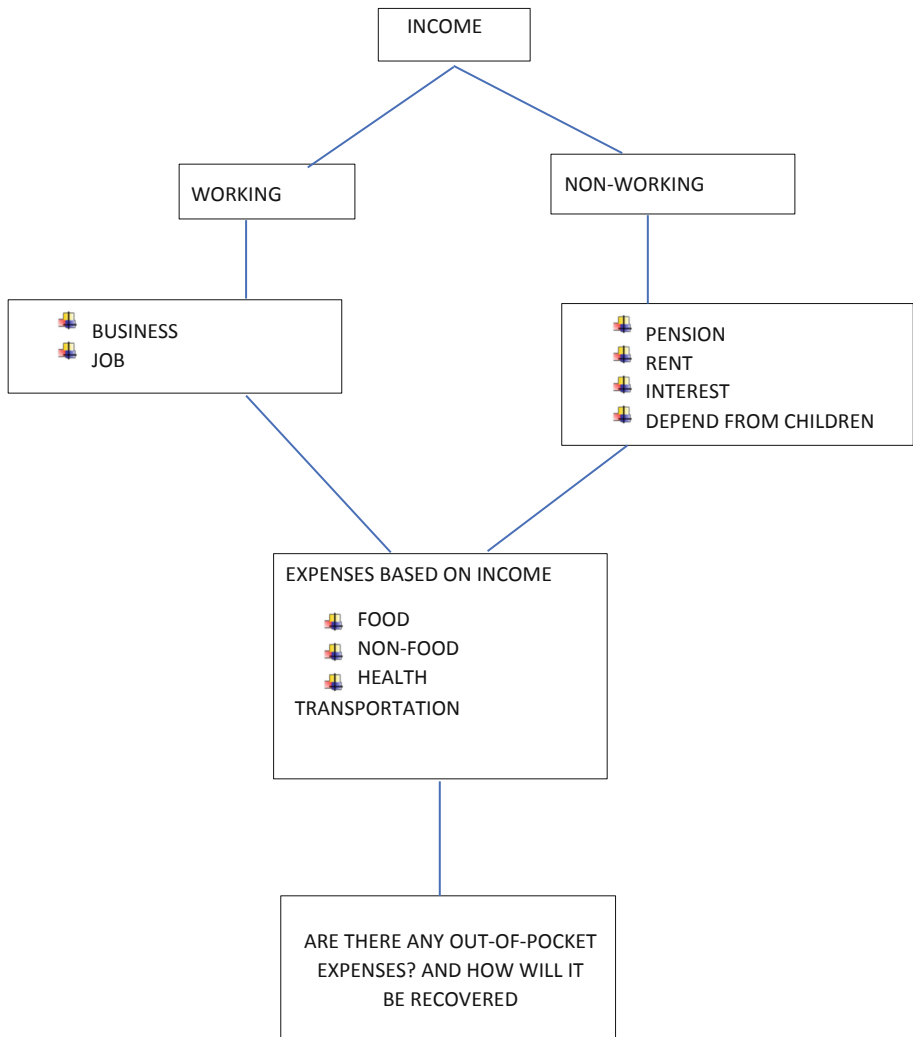
The sub objectives of the research were to find out,

1. Main income sources of elderly Sri Lankans.
2. Main expenses category of elderly Sri Lankans.
3. Identify changes in living conditions of Sri Lankan elders.
4. Identify dependencies of elderly Sri Lankans.

2.2   Limitations of the Study

1. A sample of thirty elders were used in the analysis.
2. Majority of the respondents represented Colombo district located in Western Sri Lanka.
3. Time Constraint of the study.

3   Conceptual Framework

INCOME

WORKING

NON-WORKING

- BUSINESS
- JOB

- PENSION
- RENT
- INTEREST
- DEPEND FROM CHILDREN

EXPENSES BASED ON INCOME

- FOOD
- NON-FOOD
- HEALTH
TRANSPORTATION

ARE THERE ANY OUT-OF-POCKET
EXPENSES? AND HOW WILL IT
BE RECOVERED

4 Methodology and Data

This research endeavor was conducted using a primary data survey in order to answer specific questions linked with the lifestyles of the Sri Lankan elderly cohort. In order to achieve the objectives of the research, a convenient sample of the elderly population was chosen as respondents. It did consist of 30 members randomly chosen from desired eligible population segment. Since the sample size was equal to 30 it meets the central limit theorem (CLT) in statistics. Therefore, based on the CLT a logical and a reasonable assumption can be made that with respect to the chosen sample the distribution of the means will be approximately normal (Hogg and Craig, 1995). Survey was conducted within a period of two weeks to avoid the impact of inflation on the results of the research. As the survey was performed during the period when COVID-19 pandemic prevailed, online questionnaires were used and mailed through the internet. Format of the survey tools can be found in the attached appendix of this paper. Link given below leads to the corresponding survey.

Survey Link: https://www.surveymonkey.com/r/65JD8NM.

The sample gathered represented 7 districts (distinctly demarcated areas in Sri Lanka) and did consist of 30 elders of which 67% represented Colombo district and the rest coming from the districts of Gampaha, Kalutara, Rathnapura, Galle, Badulla and Batticaloa. Respondents represented 7 out of 25 districts (nearly one third of the demarcated areas) in Sri Lanka. The proportions are depicted in Fig. 1 below. Since the objective of the research was to obtain a snapshot view of the whole country, the discrepancies in the income and consumption patterns among districts are not considered.

The sample represented elderly population ranging from the age 55 to 84 from which 47% is in between the age of 61–70 years, 46% is in between 55–60 and 7% being in between 71–87 years (Fig. 2).
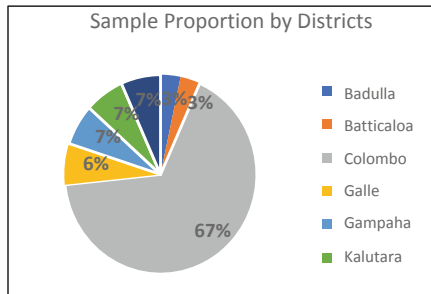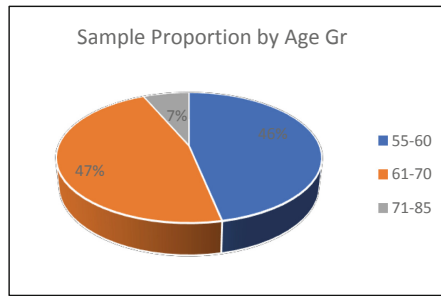

Fig. 1. .

Fig. 2. .

5 Data Analysis and Discussion

5.1 Income Analysis

In this study income refers to value items received either in monetary or non-monetary terms by all the elders within the chosen sample. Income earners could also be categorized into two major streams as working and non-working. But income sources of the workers consist of wages and salaries, business activities and non-working income. Non-working income comprises of interest earnings, pension payments, foreign transfer revenue, welfare payments and unforeseen income gains (e.g.: lottery wins, compensations etc.). These revenue sources are identified as most common monetary income of senior citizens in Sri Lanka.

The non-monetary income is the estimated value of goods and services received in kind and consumed. As the valuation of such goods and services can be subjective, non-monetary income has not been taken into consideration for this study and therefore the research focus is only on monetary income.

The survey reveals that the average income per month of an elder in Sri Lanka was Rs.248,833 in 2020. The median income per month of an elder in Sri Lanka has been reported at Rs.60,000 in 2020. Average income is a point-estimate, and it is calculated by dividing the total income by the number of elderly populations within the same domain. Median income is the amount that divides the sorted household income distribution into two equal groups, i.e., half having income above and other half having income below that amount.

As it can be seen in Table 1, two main contributions to mean income are reported from salary/wages and business activities with proportions of 39% and 38% respectively.

Figure 3 below shows the results of the survey with regard to percentage of receivers from different income sources. It shows that 27% of the elders solely rely on pension payments. In Sri Lanka there is a high dependency ratio. Also pension benefits are not indexed to prices and wages. Therefore, real value of income gets deteriorated at the time of retirement. Since Pension benefits are generally deemed to be insufficient to meet the needs of elderly, their consumption becomes limited.

Table 1. .

Source of Income	Mean	Income share
Salary/Wages	97,400	39%
Interest Income	31,600	13%
Business Activities	94,833	38%
Pension Payments	9,167	4%
Foreign Transfers	12,500	5%
Income by Chance/Adhoc Gains	3,333	1%
Total Income	**248,833**	**100%**

Also, it is noted that 40% have interest income as their revenue source, which is generated from their investments. These investments are commonly made from the money they saved in their younger age and their offspring's allocation of funds for their parents to generate monthly income. The survey results further show that 10% have interest income as their only income source which is volatile with the fluctuations in interest rates. Accordingly, their monthly income is not fixed and becomes variable in the medium-term.

Receiving income from relatives and well-wishers who are residing permanently or for work purposes in a foreign country is another common form of income for Sri Lankan elders. Twenty seven percent (27%) of elderly surveyed receive income from foreign transfers out of which 13% receive it as their sole revenue. It indicates a considerable number of elders are depending on children and relatives. Furthermore, it is worthwhile to note that these remittances not only support the elders, but also the Sri Lankan economy in terms of foreign exchange.
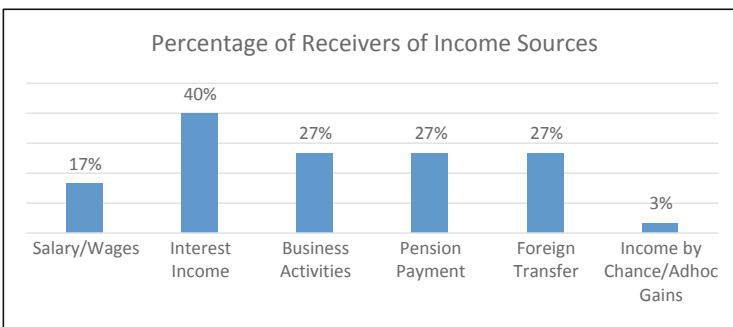

Fig. 3. .

Although salary wages are the largest proportion of mean income, it is received by only 17%, and it has also been found that the employed elders are below 60. The salaries and wages become the largest portion of mean income due to very high

salaries earned by elderly people because of their working experience and senior positions held within their workplace hierarchy.

Remark: From Fig. 3, it is evident that the sum of all the percentage of receivers across all income sources do not add up to 100%. It adds up to 141%. Reason for the sum exceeding 100% is because some of the senior citizens receive an income from multiple sources. Therefore, the income probability distribution of individuals will comprise of both mutually exclusive as well as intersecting revenue sources. The implication of it is that certain individual senior citizens will get included in multiple income source categories contributing towards their percentage of receivers. It is evident in the boosted percentage values of senior citizens in Fig. 3.

Only a total of 44% generate income by actively participating in business and employment. These elders can be considered as the ones who are contributing to the country's GDP even at their retirement age by creating economic value to the country. The balance 57% generate income through sources that do not require their physical involvement. Given that the worsening health conditions as a human age explains the reason for majority not being reliant on physical activities to survive.

Table 2. .

	1st Quantile	2nd Quantile	3rd Quantile	4th Quantile	5th Quantile
Mean Income per month (Rs.)	29,166.67	40,000.00	60,000.00	105,000.00	1,010,000.00
Share of income (%)	2.3%	3.2%	4.8%	8.4%	81.2%
Cumulative share of income (%)	2.3%	5.6%	10.4%	18.8%	100.0%
Cumulative % of Population	20%	40%	60%	80%	100%

The elderly per month income values, are arranged in ascending order and thereafter divided into five groups with equal frequencies. Such a group is defined as an income quintile. As per Table 2, out of a representative sample of 30 elders, the richest 20% generate 81.2% of the total income which indicates a very high level of income inequality among elders.

It is a phenomenon known as a Pareto probability distribution in mathematical statistics or the Pareto law in wealth distribution. Certain literature sources state it as the 80-20 rule or the power law probability distribution. The Pareto law of wealth distribution states the density of distribution of wealth W is proportional to the power of wealth $W^{-\alpha-1}$, where α is the Pareto index parameter (shape parameter of Pareto distribution) generally defined in practice within the range of 1.6 to 2.4 if rather low levels of income have been adjusted upwards for convenience. In the above analysis α will yield approximately a value of $\log_4 5 \approx 1.16$ precisely reflecting the 80-20 rule (Wold and Whittle, (1957) and Pareto (1898)).

It is interesting to note that as per the rules of statistical inference governed by CLT a sample of 30 elders provide an approximate pseudo-Pareto probability distribution of elderly income with a sampling error of negligible magnitude. On such a basis a larger sample would yield a much more accurate Pareto probability distribution of elderly income with respect to Sri Lanka.

The richest 20% of Sri Lankan elders in such a context generate their income from business and employment as experienced employees in senior roles in organizations and established business leaders. Poorest 20% accounts for only 2.3% of total income with an average of Rs 29,166.67. These are small scale business owners and retired pension payment receivers.
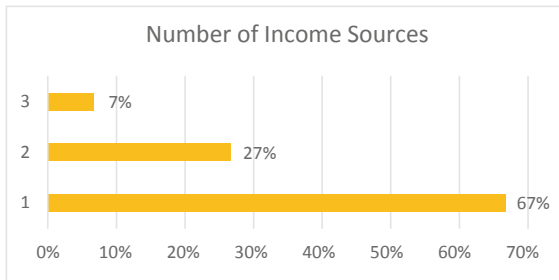

Fig. 4. **Note:** Certain percentages in Fig. 4 have been rounded up by the utilized software thereby resulting in the sum of percentages exceeding 100% by a negligible percentage value.

Figure 4 shows the proportion of elders that obtain income from a variety of sources. The maximum number of income sources is three generated by only 7%. Sixty seven percent (67%) of elders as per Fig. 4 have only one income source to fund their consumption.

5.2 Consumption Analysis

The survey reveals that the average consumption per month of an elder in Sri Lanka was Rs. 63,600 in 2020. The median consumption per month of an elder in Sri Lanka has been reported as Rs. 40,000 in 2020. Average consumption is a point estimate, and it is calculated by dividing the total consumption in a domain by the number of elderly population members in the same domain. Median consumption is the amount that divides the sorted household income distribution into two equal groups, i.e. one half having consumption above and the other half having consumption below that measure.

Food ratio has been computed by dividing elderly total food expenditure (excluding expenses on liquor, narcotics drugs and tobacco) by total expenditure as given below. Out of expenditure, food ratio is 33.7% being the largest proportion of expenditure as it is an essential cost component.

$$\text{Food Ratio} = \frac{(\text{Expenditure on food})}{\text{Total expenditure}} * 100$$

Table 3. .

Consumption	Mean	%
Food	21,433	33.7%
Housing (Rent and Water bill)	5,717	9.0%
Fuel & Light	2,667	4.2%
Clothing, Textiles & Foot wear	2,333	3.7%
Health & Personal care	3,567	5.6%
Transport & Communication	3,500	5.5%
Cultural & entertainment	1,767	2.8%
Household Services (Laundry, servant charges etc.)	9,067	14.3%
Durable household goods (Furniture, electronics etc.)	500	0.8%
Donations	117	0.2%
Liquor, Narcotic drugs & Tobacco	1,733	2.7%
Payment of debt	5,333	8.4%
Other expenses	5,867	9.2%
Total Consumption	63,600	100%

Non- food expenditure is 66.3% of total expenditure. The largest non-food expenditure is the expenditure that is spent on household services. It shows the additional needs of elders to fulfill their household requirements such as laundry and cleaning. Out of 30 elders, 93% incur expenses on health and personal care with an average of Rs. 3,567. This illustrates that the expenditure on health care has become a necessity for elders.

5.3 Communication and Transportation Analysis

From Table 3 it is evident that the transportation and communication ratio is 5.5%. The implication is that communication represents a larger segment of the 5.5%, since most senior citizens will spend more on their communication bills in trying to reach out to their loved ones who live separately. Furthermore, senior citizens will be either less mobile or immobile during their twilight years. Thus, the culmination of all such factors will lead towards the reasonable assumption that the elderly cohort living in Sri Lanka will be responsible for a transportation ratio of about 2–3% approximately. An apportioned percentage of such magnitude will not be sufficient to provide significant accessibility to most of the senior citizens. Therefore, further research is required for a developing country like Sri Lanka to optimize its transportation for senior citizens.

Research done in the past has indicated that the availability, accessibility, and affordability of transport play an important role in affecting older people's travel preferences and addressing their mobility needs (Lin et al. 2014, Guzman and Oviedo 2018, Wong et al. 2020). A key issue that became apparent in the provision of transport infrastructure and services is that future transport policies for addressing elderly citizens' mobility

needs require the consideration of transport desired by senior citizens than exclusively focusing on what they needed (Lin and Cui, 2021). When providing legislative and institutional support for senior citizens' mobility, it is vital to realise that the objective of transport alternatives such as transit is not to simply move elderly adults from origin to destination, but to provide a desirable transport system that is affordable, efficient, convenient, comfortable and enjoyable, and fully accommodates senior citizens' travel characteristics and concerns (Lin and Cui, 2021). Accelerating the development of such transport infrastructure and services that are financially acceptable, should be a worldwide imperative (Lin and Cui, 2021). Furthermore, it will be a feasible solution for Sri Lanka's elderly citizen cohort provided a revised transportation ratio is capable of providing the required fiscal stimulus.

6 Conclusion

Main income sources are salary, wages and business activities. Nearly a quarter of the elderly population receive a pension at retirement. A considerably large proportion of elderly rely only on one income source to finance their consumption. A very high-income inequality was noted among the income of elderly as around 80% of the total income is generated by the richest 20% of senior citizens.

The main expenditure as per the analysis is the food ratio component. Out of non-food expenditure a large portion is incurred on household services such as laundry and domestic help. Expenditure on health and personal care is incurred by over 90% of the elderly and has become an essential expense. There are no out of pocket expenses which means that they have an average income which is greater than the average expenditure.

According to the study it reveals more than one third of the elderly population are independent and have their own income. Hence, their consumption cost is not borne by the economy. It can be seen more than 25% of elders solely depend on pension income. According to several studies aging population will be increased in future and with the increase expenses on pension payments of the government is also expected to rise. Therefore, the Sri Lankan government must pay attention to this area when making future public policies relevant to state sector retirees.

Annexure

Income and Consumption Survey of Elderly Population in Sri Lanka – Survey Format

(Fill this form only if you are 55 or above)

Name: …………………………………………………………….

Age: ………………………………………………………….

District: …………………………………………………………….

Monthly Income (Rs.): …………………………………………………………….

Income Sources (Rs.):

Salary/Wages: ………………………………………………………….

Interest Income: ………………………………………………………….

Business Activities: …………………………………………………………

Pension Payment: ………………………………………………………….

Samurdhi/Disability Payment: …………………………………………………………

Foreign Transfer: ………………………………………………………….

Other Cash Income: ………………………………………………………….

Income by Chance/Adhoc Gains: …………………………………………………………

Monthly Expenditure (Rs.): …………………………………………………………

Expenditure Type (Rs.)

Food: ………………………………………………………….

Housing (Rent and Water bill): …………………………………………………………….

Fuel & Light: …………………………………………………

Clothing, Textiles & Foot wear: …………………………………………………………

Health & Personal care: …………………………………………………………

Transport & Communication: …………………………………………………………

Cultural & entertainment: …………………………………………………………

Household Services (Laundry, servant charges etc.): …………………………………………………

Durable household goods (Furniture, electronics etc.): …………………………………………………

Donations: ………………………………………………………

Liquor, Narcotic drugs & Tobacco: …………………………………………………………

Payment of debt: ………………………………………………………

Other expenses: ………………………………………………

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