ASSESSING DRINKING WATER NEEDS AND CHALLENGES IN MATALE DISTRICT: A STUDY FROM RATTHOTA DIVISIONAL SECRETARIAT DIVISION

SURVEY DATA ANALYSIS REPORT

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1. Chapter 01-Introduction

1.1. Introduction

Access to clean drinking water is essential for sustaining life and ensuring the well-being of communities. Despite being endowed with ample rainfall, the Matale district in Sri Lanka faces significant challenges in meeting its population's drinking water needs. This study aims to investigate the factors contributing to the scarcity of potable water in Matale, particularly within the Ratthota Divisional Secretariat Division. Through comprehensive analysis, this research seeks to shed light on the complexities surrounding water accessibility and the impacts of inadequate water provision on the socio-economic fabric of the region. By understanding the root causes of water scarcity and its repercussions, policymakers and stakeholders can devise effective strategies to address this pressing issue and improve the quality of life for residents in Matale district.

1.2. Background of the study

Water, as a fundamental necessity for all living organisms, holds paramount importance in sustaining life and fostering societal development. In Matale district, located in the central province of Sri Lanka, the abundance of rainfall would typically suggest a favorable environment for meeting water needs. However, empirical evidence indicates a stark contrast, revealing persistent challenges in ensuring access to safe drinking water for local communities. Despite annual rainfall ranging from 1250 to 2000 millimeters, as documented by the Sri Lanka Meteorological Department, the Gammedda Project Report 2020 and the Ukta Matale district annual performance account report underscore the prevalence of a significant drinking water problem within the region. Even minor droughts exacerbate this issue, leading to acute water shortages. This discrepancy between water availability and accessibility necessitates a closer examination of the underlying factors contributing to water scarcity in Matale district. The impacts of this scarcity extend beyond mere inconvenience, permeating various facets of community life, including economic activities, social dynamics, and educational pursuits. Recognizing the multifaceted nature of the drinking water problem in Matale, this study endeavors to unravel its causes and implications, providing valuable insights for devising sustainable solutions to mitigate its adverse effects on the local populace.

1.3. Objective of the study

The primary aim of this study is to discern the determinants influencing the drinking water requirements and associated challenges in Matale district.

1.3.1. Sub objectives of the study.

The overarching objective of the research is delineated through the following specific aims:

- To quantify the drinking water requisites of the populace residing in Matale district.
- To ascertain the sources utilized by the inhabitants of Matale District to fulfill their drinking water necessities.

- To assess the extent of challenges encountered by the community in accessing potable water.
- To identify demographic and socio-economic factors that may influence the drinking water needs and challenges within Matale district.
- To delineate geographical areas within Matale district that exhibit notable implications for the drinking water predicament.

1.4. Significance of the study

This research is an exploratory investigation into the factors influencing the success of the microfinance core banking system in Samurdhi Banks in western province. This study is being conducted using bank officials who are working with MIS in Samurdhi banks in Colombo district.

- Evaluation of the magnitude of regional water supply initiatives entails quantifying the requisite water consumption levels.
- A delineation of the geographical placement of regional water supply endeavors can be gleaned through the identification of water consumption distribution patterns.
- Heighten public consciousness regarding potable water origins.
- Proficiency in discerning challenges encountered in fulfilling potable water consumption requisites and proffering corresponding remedial strategies.
- Facilitation of policymaking endeavors pertaining to water utilization.
- Such endeavors afford insight into actionable measures aimed at mitigating potable water scarcity concerns.

1.5. Methodology

Target Population:	Households or individuals living in Matale District
Sampling Population:	Households or individuals living in Ratthota Divisional Secretariat
Sample size:	275
Sampling Method:	Multistage sampling (cluster sampling and systematic sampling) is used. Considering the 54 village official domains in Ratthota regional secretariat as natural clusters, one cluster was randomly selected and identified as Kaikawala village official domain. A systematic sample of 275 household units located on several roads located in the domain of the Village Officer of Kaikawala is selected.
Method of data collection:	Self-enumeration and interviews
Data Collection Instrument:	Structured Questionnaire

Sample Frame

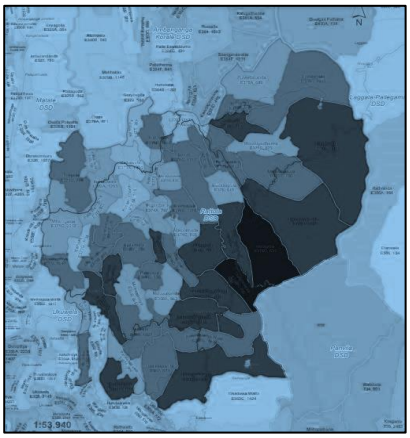


Figure 1:Map of Ratthota Divisional Secretariat Source: Department of Census and Statistics (2020) The map shown in Figure 1 depicts the distribution of the 54 village officer domains in Ratthota Divisional Secretariat, the sampling frame of the study.

1.6. Limitations and Delimitations of the study

1.6.1. Limitations

- The timeframe allocated for conducting the study may have restricted the depth and breadth of data collection and analysis.
- Limited availability of resources, including financial, technological, and human resources, might have hindered the comprehensive execution of the research.

1.6.2. Delimitations

- The study exclusively addresses issues related to drinking water demand, thereby excluding analysis of other aspects of water resource management or utilization.
- The study's focus is confined to the Ratthota Divisional Secretariat, potentially limiting the generalizability of findings to broader geographic regions.

2. Chapter 02- Selected variable list with the scales of measurement

2.1. Introduction

In this chapter, present the selected variables along with their scales of measurement for understanding the status of families in the Matale district. These variables encompass demographic characteristics, household expenses, housing conditions, and water cleanliness management practices.

2.2. Nominal

- RES_GND (Respondent's Grama Niladhari Division)

Categories: 1: Koswana South, 2:Bogambara,3: Epitamulla,4: Gansarapola,5: Koswana North,6: Raththota

- RES_MAR (Respondent's Marital Status)

Categories:1: Married, 2: Unmarried, 3: Other

- RES_EMP (Respondent's Employment Sector)

Categories: 1: Government Sector,2: Private Sector, 3: Self-employed, 4: Other

- HOU_NAT_FLO (Nature of Floor in the House)

Categories:1: Tile, 2: Cement, 3: Clay, 4: Other

- RES_GEN (Respondent's Gender)

Categories: 1: Female, 2: Male

- HOU_NAT_ROO (Nature of Roof in the House)

Categories: 1: Concrete, 2: Asbestos Sheet, 3: Plate, 4: Other

Below variables categories are 1-Yes,2-No

- WCM_BOI (Boiling as Mode of Water Cleansing)
- WCM_FIL (Filtering with Cloth as Mode of Water Cleansing)
- WCM_MAC (Cleaning Machines as Mode of Water Cleansing)
- DWP_QUA (Drinking Water Problem - Quality)

2.3. Ratio

- RES_AGE (Respondent's Age)
- FAM_EXP_WAT (Family's Monthly Expense for Water)-measured in Rs.
- FAM_INC (Family's Monthly Income)-measured in Rs.
- FAM_EXP_HEA (Family's Monthly Expense for Health)-measured in Rs.
- HOU_STO_COU (Number of Stairs in the House)

2.4. Ordinal

- RES_EDU (Respondent's Education Level)

Categories: 1: No formal Education, 2: Secondary Education, 3: OL Education, 4: AL Education, 5: Bachelors and Above

3. Chapter 03- Results of data screening

3.1. Introduction

Data screening is a critical step in the research process, aimed at ensuring that datasets are clean and prepared for subsequent statistical analyses. The primary goal of data screening is to ascertain the usability, reliability, and validity of the data for testing causal theories. This process involves several key steps, including identifying and addressing missing values, which occur when respondents skip answers or leave portions of the data blank. Missing data can introduce significant challenges, underscoring the importance of thorough screening. Additionally, outlier detection, focusing on individual variables (univariate outliers), is crucial for identifying anomalies that may impact the integrity of the dataset. By diligently addressing these aspects during data screening, researchers can enhance the robustness of their analyses and ensure the validity of their findings.

3.2. Missing value Analysis

Table 1: Missing Value Analysis

Variables	Total Count	Number of Missing Values	Variables	Total Count	Number of Missing Values
RES_GND	214	0	HOU_NAT_ROO	212	2
RES_AGE	214	0	DRI_WAT_CON	201	13
RES_GEN	214	0	NON_DRI_WAT_CON	173	41
RES_MAR	213	1	TIME_WAT	214	0
RES_EDU	214	0	WCM_BOI	210	4
RES_EMP	213	1	WCM_FIL	205	9
FAM_SIZ	214	0	WCM_MAC	208	6
FAM_EXP_WAT	214	0	DWP_QUA	210	4
TOT_EXP	214	0	DWP_LIM	209	5
FAM_INC	211	3	DWP_FIN	211	3
HOU_STO_COU	214	0	DWP_INF	210	4
HOU_NAT_FLO	214	0	FAM_EXP_HEA	156	58
HOU_NAT_WAL	214	0	DWP_SIC	208	6

Source: Sample Survey,2024

According to the Table 1, there are missing values in the marital status, employment sector, family income, drinking water problem- health issues, Quality, Limited Access to Cleaning Sources and Limited Access to Finances, Boiling, Filtering and Cleaning Machines as Mode of Water Cleansing, drinking water consumption, on-drinking water consumption , Monthly Expense for Health and Nature of Roof in the House.

Table 2: Selecting the Optimum Value for Replacement Missing Value

Variable	Mean	Median	Mode
RES_MAR	-	-	1
RES_EMP	-	-	3
FAM_INC	46212	40000	-

HOU_NAT_ROO	-	-	2
DRI_WAT_CON	480116	450000	-
NON_DRI_WAT_CON	446854	400000	-
WCM_BOI	-	-	1
WCM_FIL	-	-	2
WCM_MAC	-	-	2
DWP_QUA	-	-	1, 2
DWP_LIM	-	-	2
DWP_FIN	-	-	2
DWP_INF	-	-	1
FAM_EXP_HEA	4689	4000	-
DWP_SIC	-	-	2

Source: Sample Survey,2024

3.3. Outliers Analysis

The boxplot of total expenditure(Rs.) in the figure 2, it can be observed six or seven outliers. According to the Table 2(*Selecting the Optimum Value for Replacement Missing Value*), It can be noticed that median value is the optimum value for replacing the outliers. since the distributions is skewed one.

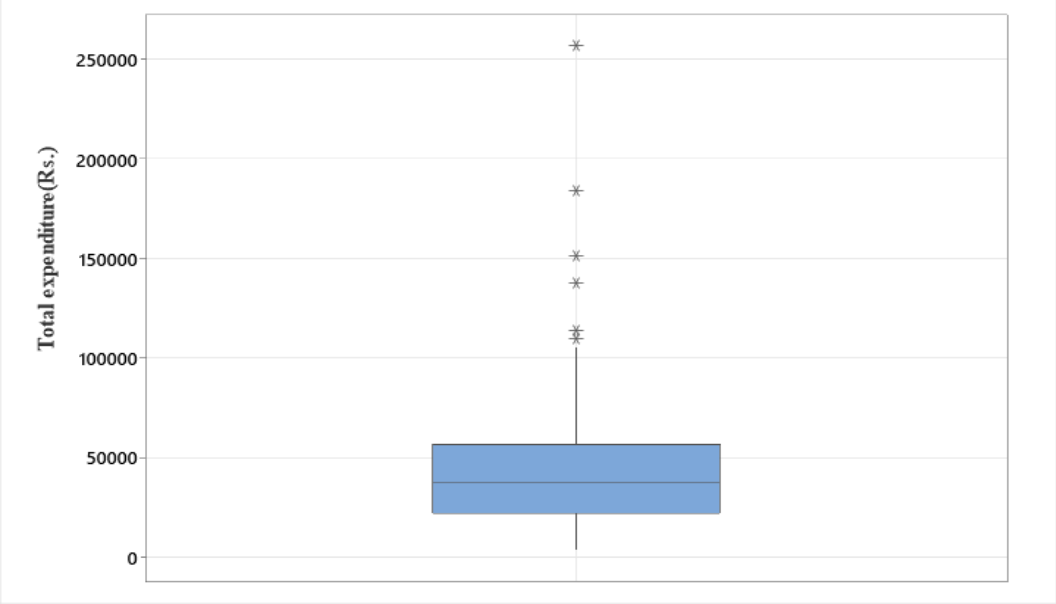


Figure 2: Box plot for Total Expenditure

The box plots representing marital status, family income, total expenditure, expenditure for health, monthly drinking water consumption, and monthly non-drinking water consumption have revealed the presence of outliers. In addressing this concern, the adoption of an optimal value for outlier replacement has been proposed (refer to Figure 5-10).

4. Chapter 04- Relevancy of methods used for data cleaning

4.1. Selecting the Optimum Value for Replacement Missing Values

According to the Table 2(*Selecting the Optimum Value for Replacement Missing Value*), It can be noticed that median value is the optimum value for replacing the missing values in the Monthly family income, drinking water consumption, non-drinking water consumption and Family's Monthly Expense for Health variables since the distributions are skewed one.

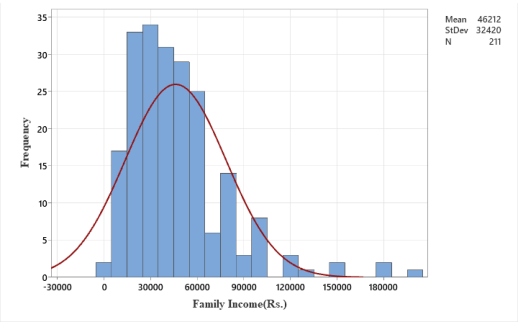


Figure 3: Histogram(with normal curve) of Monthly Income

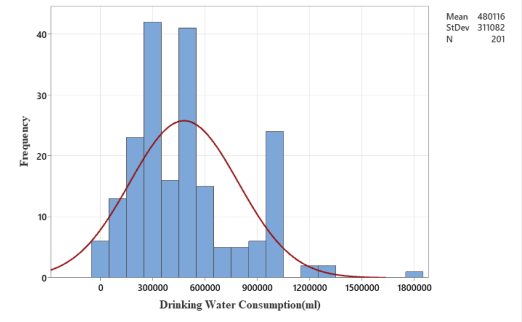


Figure 4: Histogram(with normal curve) of drinking water consumption(ml)

On other hand mode values (1,3,2,1,2,2,2,2,1,2) are suitable for replacing the missing values of the variables marital status, employment sector, Nature of Roof in the House, Boiling, Filtering and Cleaning Machines as Mode of Water Cleansing variables, Limited Access to Cleaning Sources and Limited Access to Finances respectively.

Drinking Water Problem – Quality variable have two mode. Instead, the proposal suggests the creation of a distinct category labeled "Other" to accommodate instances falling outside the predominant modes. Furthermore, it is imperative to note that, currently, the dataset under consideration exhibits no instances of missing values, as detailed in Appendix A.

4.2. Selecting the Optimum Value for Reducing the outliner Values

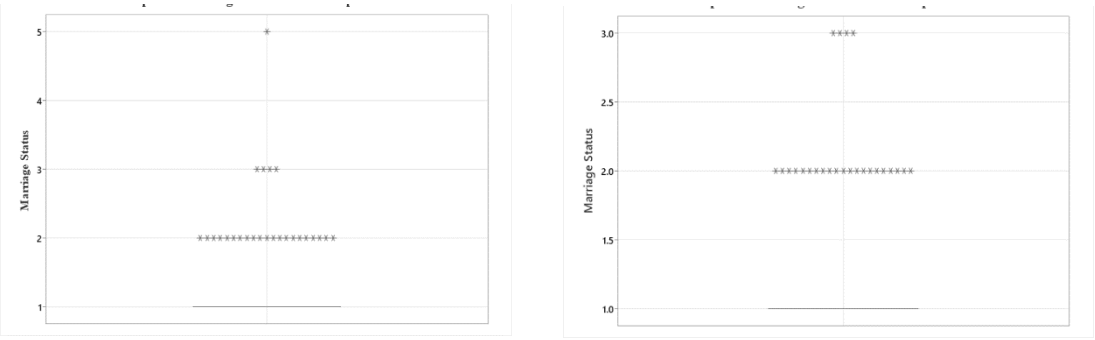


Figure 5: Box plots illustrating marital status before (left) and after (right) outlier reduction

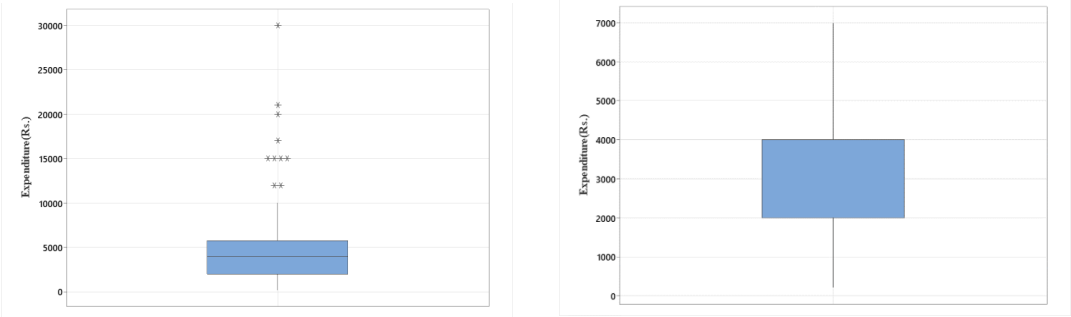


Figure 7: Box plots illustrating health expenditure before (left) and after (right) outlier reduction

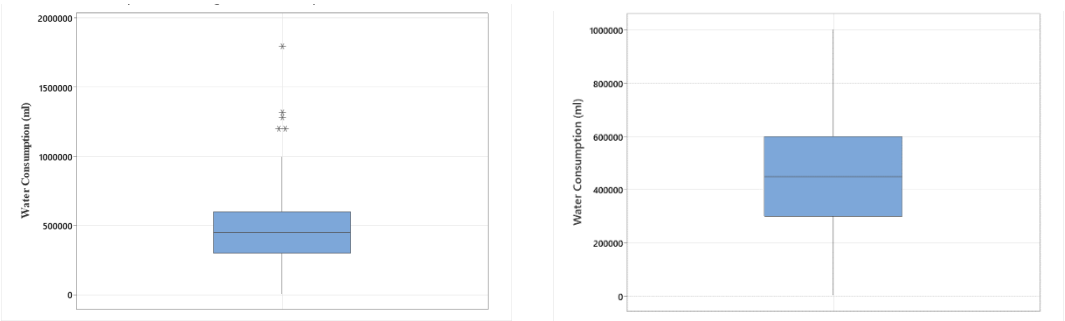


Figure 6: Box plots illustrating drinking water consumption(ml) before (left) and after (right) outlier reduction

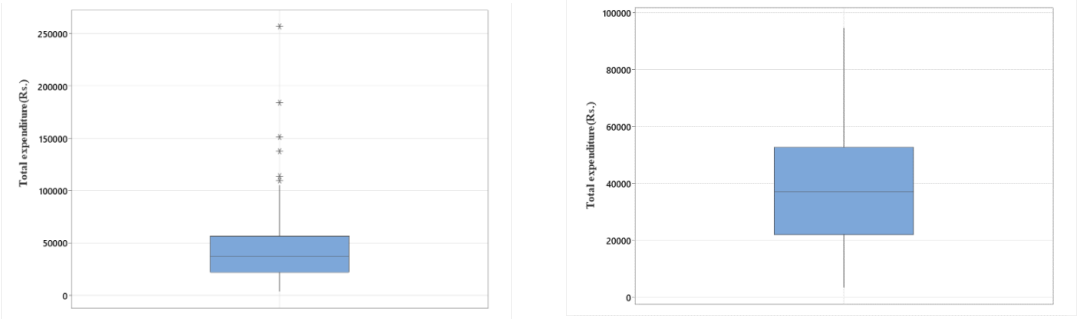


Figure 8: Box plots illustrating total expenditure before (left) and after (right) outlier reduction

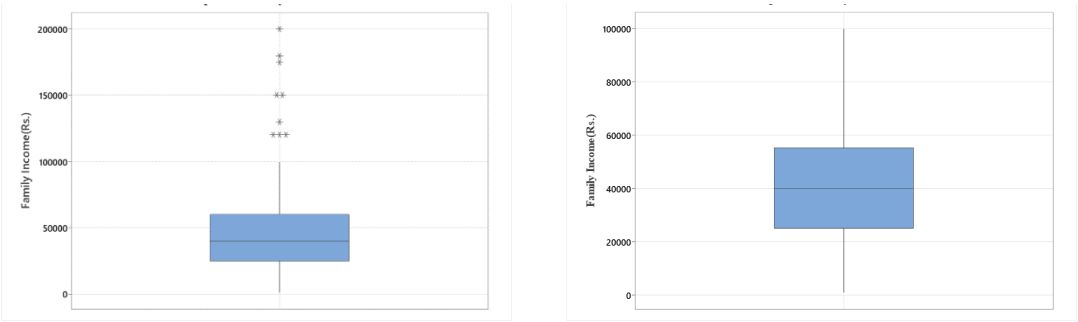


Figure 9: Box plots illustrating family income(Rs.) before (left) and after (right) outlier reduction

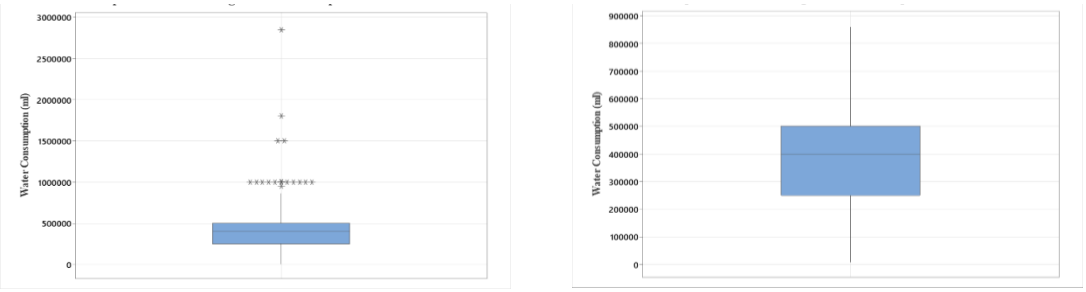


Figure 10: Box plots illustrating non-drinking water consumption(ml) before (left) and after (right) outlier reduction

Outliers were mitigated through the utilization of the median, recognized as the optimal variable, across all variables except for marital status.

4.3. Variable omission

Certain variables have been intentionally omitted from the analysis due to limitations in the data quality and information relevance. This decision was made following careful consideration of the variables' ability to provide meaningful insights into the research objectives. Variables such as Distance, Expenditure, Number of dates, Number of weeks, and the quality of drinking and non-drinking water from water sources were excluded from the analysis.

The rationale behind this exclusion stems from inadequacies in the data collection process, where respondents may have misinterpreted questions or provided inaccurate information, thereby compromising the reliability and validity of the dataset. Furthermore, variables such as RES_NAT (Ethnicity of the Respondent), RES_REL (Religion of the Respondent), and RES_TOL (Period of living in the specific area) were also omitted. For instance, the overwhelming majority of respondents identified as Sinhalese and Buddhist, rendering the responses largely homogeneous and thus devoid of significant variance.

Additionally, data pertaining to the period of residence in the specific area was deemed unreliable, prompting its exclusion from further analysis. Overall, the deliberate omission of these variables ensures a more focused and rigorous examination of the remaining dataset, thereby enhancing the credibility and robustness of subsequent statistical analyses.

4.4. New variable creates

In order to enrich the dataset and facilitate comprehensive analysis, several new variables have been generated. These variables include FAM_SIZE, denoting family size; TOT_EXP, representing total expenditure; TOT_WAT_CON, encompassing combined water consumption; and TIME_WAT (min), reflecting combined water usage duration in minutes. The creation of these variables is pivotal for expanding the scope of inquiry and capturing essential aspects of the respondents' demographics, behaviors, and consumption patterns. By introducing these new variables, researchers can delve deeper into the dynamics of water usage and expenditure within the studied population, thereby enhancing the depth and accuracy of subsequent analyses.

5. Chapter 05- Results of exploratory data analysis

5.1. Introduction

This chapter provides an in-depth examination of the data gathered through questionnaire surveys conducted as part of the study. The analytical exposition in this chapter is structured into three primary sections: Response Rate across Grama Niladari Divisions, Sample Characteristics, and Correlation Analysis. Additionally, the chapter encompasses the quantitative assessment of drinking and non-drinking water volumes, the evaluation of finite water resource availability within Grama Niladhari Divisions, and the establishment of minimum water quality standards at the Grama Niladari Division level.

5.2. Response Rate according to GN division

In our survey, we meticulously distributed 275 questionnaires across various regions including Koswana South, Bogambara, Epitamulla, Gansarapola, Koswana North, and Ratthota Grama Niladari Divisions. Out of these, we received 215 completed questionnaires, marking a response rate of 78.18%.

This comprehensive distribution and collection strategy allowed us to gather a diverse range of responses from different segments of the population. The data collected from Grama Niladari Division specifically exemplifies the efficacy of our approach, showcasing a detailed breakdown of the response rate within this particular region. Such a response rate is instrumental in ensuring the robustness and reliability of our findings, particularly within the realm of social science research.

Table 3: Response Rate according to GN divisions

GN Division	Number of respondents	Percentage
Koswana South	162	75.70
Bogambara	26	12.15
Epitamulla,	4	1.87
Gansarapola	11	5.14
Koswana North	4	1.87
Ratthota	7	3.27
All	214	100.00

Source: Sample Survey,2024

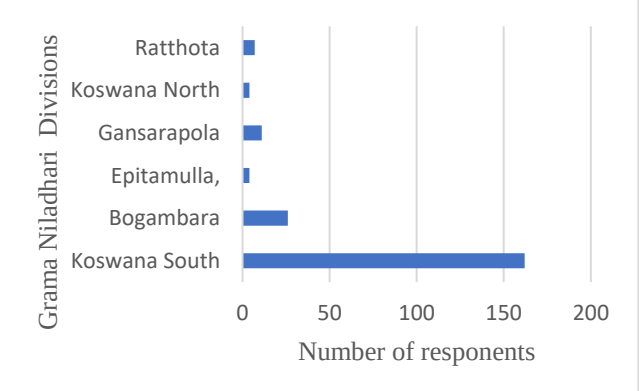


Figure 11: Number of responses according to GN divisions

According to Figure11 and Table 3 , the majority of the respondent's rate for 75.70% belong to Koswana South Grama Niladhari Division while the minority responded rate represents both Epitamulla and Kosawana North Grama NIladhari Division in Matale district as 1.87%.

5.3. Characteristics of samaple

1.1.1. Gender

The study involves both male and female villagers who living in Ratthota divisional secretariat division. To analyze and discern the determinants influencing the drinking water requirements and associated challenges from a gender perspective aforementioned factor can be considered a crucial factor.

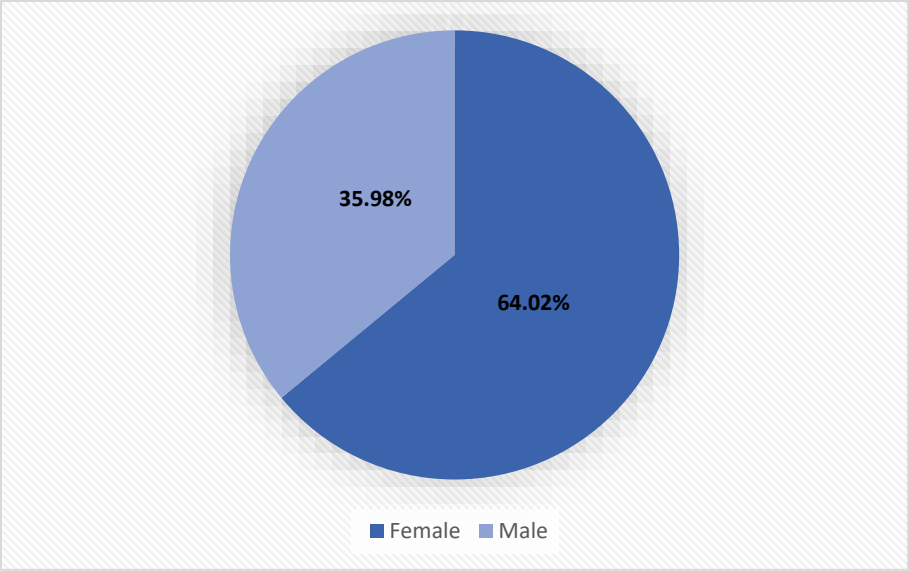


Figure 12: Respondent by Gender

According to Figure 12, 35.98% of the respondents were male and 64.02% were female which indicates that most of the respondents are referred to females.

1.1.2. Educational Level

Examining the education level of the respondents has paved a different way to reach the objectives of the study. The researcher went of deep classification has proved that respondence accuracy level. Thus, the respondents have been classified into five groups considering No formal Education, Secondary Education, Ordinary level Education, Advanced Level education, Bachelors And Above.

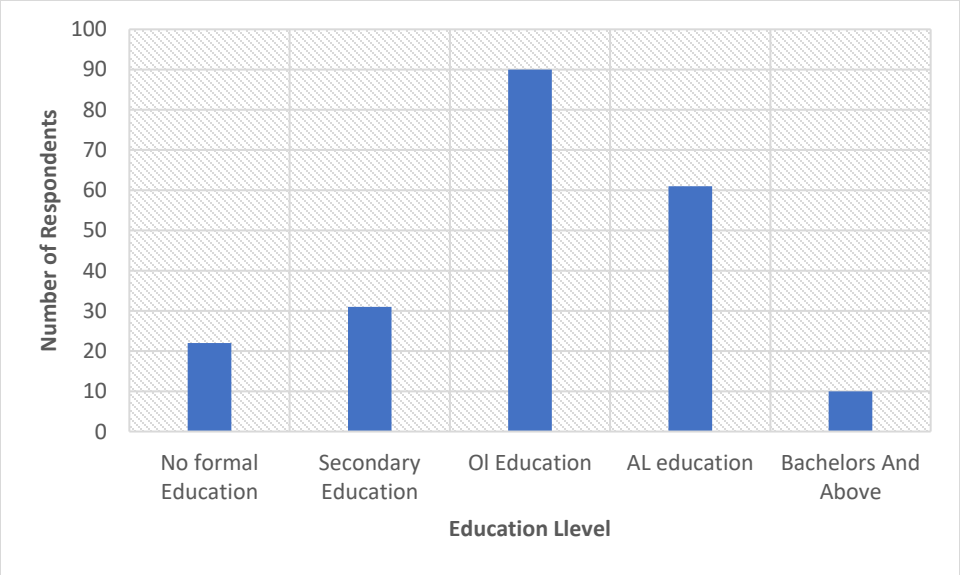


Figure 13: Education Level of Respondents

According to Figure 13, the G.C.E Ordinary level examination has been passed by the majority,90 of the respondents, and also should be noted that only 10 of the respondents are qualified Bachelors and above qualification and 61 of the respondents have qualified with Advanced Level. Only 22 respondents are no formal education. Therefore, it has proved that respondence accuracy level can be high.

1.1.3. Monthly Income

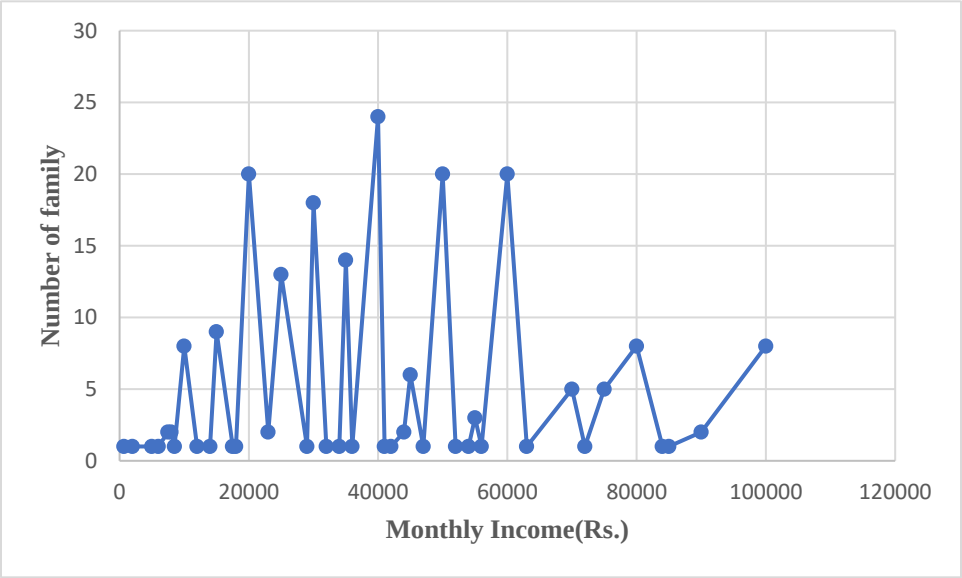


Figure 14: Distribution of the monthly Income

Table 4: Summary measurements of Monthly Income(Rs.)

Mean	StDev	Minimum	Median	Maximum	IQR	Mode	Skewness	Kurtosis
41522	23078	700	40000	100000	30250	40000	0.67	-0.02

Source: Sample Survey,2024

According to Table 4, the monthly income from Rs.700(minimum) to Rs.40000 (maximum), with a mean of Rs.41522.00 and a standard deviation of Rs.23078.00. The median income is Rs.40000, and the majority of the family have Rs.40000.00 monthly income. Further, this dataset describes that the middle 50% of values in the dataset have a spread of Rs.30250.00. The skewness coefficient calculated is 0.67, since it is far to 0, it can be assumed that the dataset is moderately skewed to the right. (Appendix B)

5.4. Quantification of drinking and non-drinking Water Volumes

According to Table 5, The data provides a comprehensive overview of water consumption patterns, highlighting significant variation both in total consumption and its constituent components, with further insights into the distributional characteristics of the dataset.

Table 5: Summary measurements of Monthly water consumption(ml)

Summary Measurements	Drinking Water Consumption(ml)	Non-drinking Water Consumption(ml)	Total water Consumption
Mean	456999	373377	830376
StDev	266465	158423	320995
Minimum	5000	6000	21000
Median	450000	400000	800000
Maximum	1000000	860000	1600000
IQR	300000	249850	416666
Mode	300000	400000	1000000
Skewness	0.72	0.05	0.17
Kurtosis	-0.17	0.55	-0.32

Source: Sample Survey,2024

Based on the provided data on monthly water consumption, several key observations can be made. The mean total water consumption is calculated at approximately 830,376 milliliters, with a standard deviation of 320,995 milliliters, indicating a considerable degree of variability within the dataset. The median total water consumption, however, stands slightly lower at 800,000 milliliters, suggesting a right-skewed distribution, as evidenced by a positive skewness value of 0.17. Notably, the mode for total water consumption is recorded at 1,000,000 milliliters, indicating a prevalent value within the dataset.

5.5. The Assessment of Finite Water Resource Availability within Grama Niladhari Divisions.

Table 6: Family with limited water resources

Grama NIladari Division	Number of Family with Limited Water Access
Koswana South	76
Bogambara	15
Epitamulla	1
Gansara pola	1
Koswana North	0
Rathota	5

Source: Sample Survey,2024

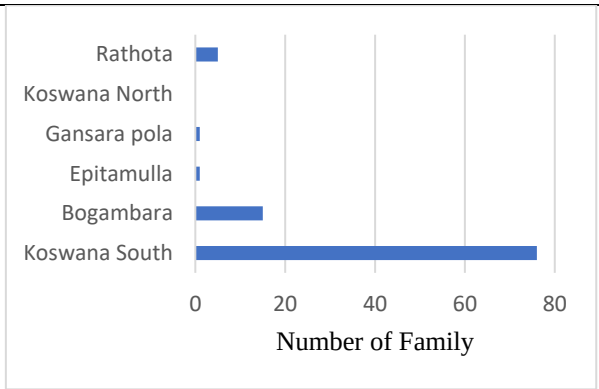


Figure 15: Number of family with limited water resource

The Table 6 and Figure 15 presents data on the number of families experiencing limited access to water across different Grama Niladari Divisions. Among the divisions, Koswana South exhibits the highest number of families facing water access challenges, with 76 households affected. Bogambara follows with 15 families, while divisions like Epitamulla, Gansara Pola, and Rathota show fewer instances, with 1 family each. Remarkably, Koswana North reports no families with limited water access. This data highlights disparities in water accessibility across various divisions, with some areas facing more acute challenges than others. It underscores the importance of targeted interventions to address water scarcity issues, particularly in regions with a higher prevalence of households experiencing limited access to this essential resource. Additionally, it emphasizes the need for comprehensive strategies to ensure equitable water distribution and mitigate the adverse impacts of water scarcity on affected communities.

5.6. The Determination of Minimum Water Quality Standards at the Grama Niladari Division Level

Below Table 7, presents data on the quality of water in various Grama Niladari Divisions, categorized into "Bad Quality of the Water" and "Good Quality of the Water." Across the divisions, Koswana South has the highest instances of both bad and good quality water, with 77 and 81 occurrences respectively. Conversely, divisions such as Epitamulla and Rathota exhibit minimal occurrences of bad quality water, with only 1 and 7 instances respectively. It is evident that there is considerable variation in water quality across different Grama Niladari Divisions, with some areas experiencing more frequent occurrences of bad quality water than others.

Table 7: Occurrence of Water Quality in Various Grama Niladari Divisions

Grama NIladari Division	Bad quality of the water	Good Quality Of the water	Other
Koswana South	77	81	4
Bogambara	9	17	0
Epitamulla	1	3	0
Gansara pola	10	1	0
Koswana North	1	3	0
Rathota	7	0	0

Source: Sample Survey,2024

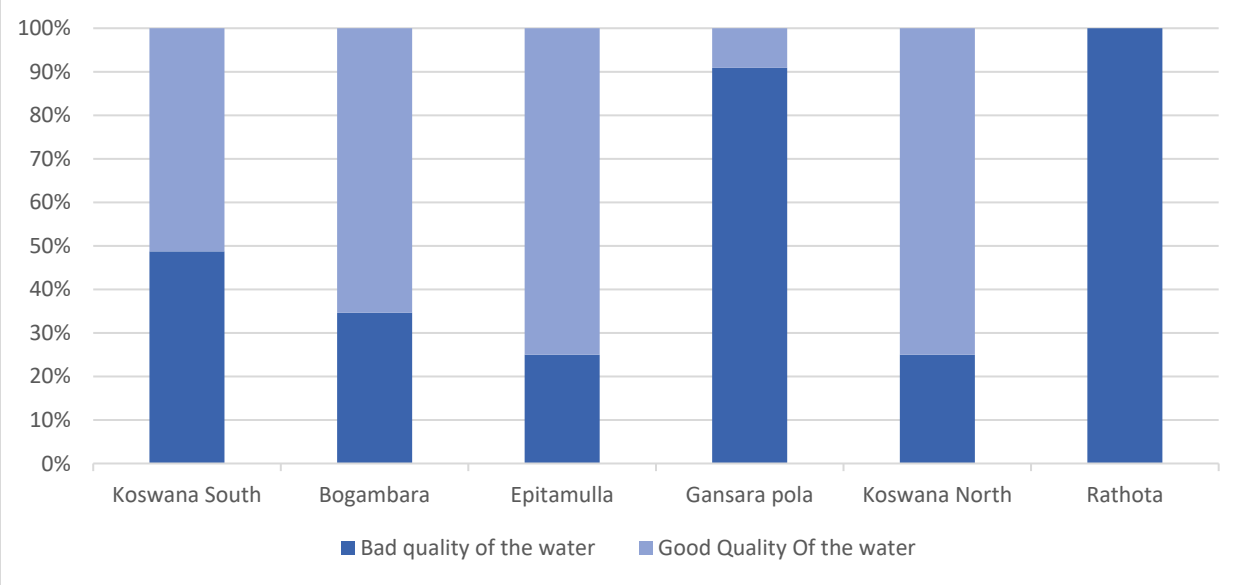


Figure 16:Distribution of Water Quality Across Grama Niladari Divisions

Figure 16 visually represents the distribution of water quality within each Grama Niladari Division. Each column is segmented into two parts, representing the proportion of bad and good quality water respectively. Notably, divisions like Koswana South and Bogambara display larger segments for good quality water, indicating that the majority of water samples collected from these areas are of satisfactory quality. Conversely, divisions like Gansara Pola and Koswana North show larger segments for bad quality water, suggesting a higher prevalence of water quality issues in these areas. Overall, the chart provides a clear comparison of water quality distribution across different divisions, facilitating insights into areas that may require attention or improvement efforts.

5.7. Correlation Analysis

1.1.4. Relationship between Monthly Income and Monthly Water Consumption

Because of that researcher wish to identify any relationship exist between monthly income and the water consumption related to the villages in Matale district. in order to go through fact, it is performed correlation analysis. Therefore, the correlation coefficients and their significance can be extracted as shown in table

Table 8: Results of Correlation Analysis

X	Monthly Income(Rs.)
Y	Monthly Water Consumption(ml).
Correlation	-0.128
95% CI for ρ	(-0.258, 0.006)
P-Value	0.062

Source: Sample Survey,2024

Figure 17:Scatter plot of Monthly Income and Monthly Water Consumption

It can be identified that the correlation of exploratory variables with the response variable are significant are not significant. In conclusion, it is evident that no discernible correlation exists between the resolution of the drinking water predicament and familial income status.

Conclusion

This study provides a comprehensive analysis of the factors influencing water accessibility and quality in the Matale district of Sri Lanka, with a particular focus on the Ratthota Divisional Secretariat Division. Through a meticulous investigation, the research has unveiled the multifaceted nature of the drinking water predicament within the region, shedding light on the complexities surrounding water provision and its socio-economic implications. Despite the district's abundant rainfall, persistent challenges persist in ensuring equitable access to safe drinking water for local communities.

The findings reveal significant disparities in water accessibility and quality across different Grama Niladari Divisions, with some areas experiencing acute challenges, such as limited water access and poor water quality, while others fare comparatively better. Moreover, the study highlights the critical role of socio-economic factors, demographic characteristics, and household practices in shaping water consumption patterns and exacerbating water scarcity issues.

Through rigorous data screening, including missing value analysis and outlier detection, the research ensures the reliability and validity of its findings, enhancing the robustness of subsequent statistical analyses. The adoption of multistage sampling techniques and structured questionnaires facilitates a comprehensive understanding of water-related challenges and their underlying determinants within the study area.

Furthermore, the study underscores the significance of policy interventions and community-driven initiatives in addressing water scarcity concerns and improving water governance in Matale district. By quantifying water requisites, identifying challenges, and delineating geographical hotspots for water scarcity, policymakers and stakeholders can devise targeted strategies to enhance water accessibility, mitigate water-related risks, and safeguard the well-being of local communities.

In conclusion, this research contributes valuable insights into the complexities surrounding water scarcity in Matale district, offering a foundation for evidence-based policymaking and sustainable water management practices. Moving forward, concerted efforts are needed to address the government and officers, foster community resilience, and ensure the equitable distribution of this vital resource for the prosperity and welfare of all residents in Matale district.

Attachments

සමාජ සංඛ්‍යාන අධ්‍යයනාංශය
මානවශාස්ත්‍ර හා සමාජීයවිද්‍යා පීඨය
ශ්‍රී ජයවර්ධනපුර විශ්වවිද්‍යාලය

අන්වේක්ෂක අංකය	ප්‍රතිචාරක අංකය

මාතලේ දිස්ත්‍රික්කයේ ජීවත් වන ජනකාවගේ පානීය ජල පරිභෝජනය සහ එය සපුරා ගැනීමේ දී මුහුණ දෙන ගැටලු පිළිබඳ ව අධ්‍යයනය කිරීම
(රත්තොට ප්‍රාදේශීය ලේකම් කොට්ඨාසය ඇසුරින්)

(අපගේ මෙම සමීක්ෂණය සාර්ථක කර ගැනීම සඳහා ඔබ දක්වන සහයෝගය ඉතා අගය කොට සලකන අතර ඔබ ලබා දෙන තොරතුරුවල රහස්‍යභාවය සුරකින බවටත්, අදාළ තොරතුරු අධ්‍යයන අවශ්‍යතාව සඳහා පමණක් යොදා ගන්නා බවටත් අපි සහතික වෙමු.)

පළමු කොටස (ප්‍රජාවිද්‍යාත්මක තොරතුරු)

ප්‍රතිචාරකයාගේ තොරතුරු

ග්‍රාම නිලධාරී කොට්ඨාසය

වයස

පුම්භිරි බව	ජන වර්ගය	ආගම	විවාහක තත්ත්වය

1-ස්ත්‍රී, 2-පුරුෂ
1-සිංහල, 2- දෙමළ, 3-මුස්ලිම්, 4- වෙනත්
1-බෞද්ධ, 2- හින්දු, 3-කතෝලික, 4-වෙනත් ඉස්ලාම්
1-විවාහක, 2-අවිවාහක, 3-වෙනත්

අධ්‍යාපන මට්ටම

- විධිමත් අධ්‍යාපනයක් නැත
- 8 ශ්‍රේණිය දක්වා
- සාමාන්‍ය පෙළ දක්වා
- උසස් පෙළ දක්වා
- උපාධි හෝ ඉහළ

ප්‍රදේශයේ පදිංචි වී සිටින වසර ගණන

ගෘහ මූලිකයාගේ සේවා නියුක්තිය

- රාජ්‍ය අංශය
- පෞද්ගලික අංශය
- ස්වයං රැකියා
- වෙනත්

කුටුම්භය සම්බන්ධ තොරතුරු

පවුලේ ස්වභාවය		සාමාජිකයන් ගණන		
		වැඩිහිටි	ළමුන්	එකතුව
න්‍යෂ්ටික				
විස්තෘත				

සාමාන්‍ය මාසික වියදම

අවශ්‍යතාව	වියදම (රු.)
ආහාරපාන	
විදුලිය	
ජලය	
සෞඛ්‍යය	
අධ්‍යාපනය	
විනෝදාස්වාදය	
වෙනත්	

සාමාන්‍ය මාසික ආදායම (රු.)

නිවසේ ස්වභාවය

- තට්ටු ගණන
- ගෙඹිම
- බිත්ති
- වහල

ගෙඹිම:
1-ටයිල්, 2-සිමෙන්ති, 3-මැටි, 4-වෙනත්
බිත්ති:
1- සිමෙන්ති, 2-ගඩොල් ගල්, 3-මැටි, 4-වෙනත්
වහල:
1-කොන්ක්‍රීට්, ඇස්බැස්ටොස්, තහඩු, 4-වෙනත්

1

දෙවන කොටස (ජල මූලාශ්‍ර සහ ජල පරිභෝජනය සම්බන්ධ තොරතුරු)

ජල මූලාශ්‍රය	පානීය	පානීය නොවන	දුර (කි.මී)	කාලය (පැය)	වියදම (රු)	වාර ගණන		ජලයේ ගුණාත්මක බව
						දින	යනි	
ගෙවත්තේ ළිඳ								
අසල්වැසි නිවසක ළිඳ								
නල ජලය								
ස්වාභාවික ජල මාර්ග								
බෝතල් කළ ජලය								
පිරිපහදු කළ ජලය සපයන මධ්‍යස්ථාන								
වෙනත්								

ජලයේ ගුණාත්මක බව: 1-ඉතා ඉහළයි, 2-ඉහළයි, 3-මධ්‍යස්ථයි, 4-පහළයි, 5- ඉතා පහළයි

නිවසේ දී ජලය පිරිපහදු කරන ආකාර(ය)

	ඔව	නැත
උණු කරගැනීම		
රෙදි ආදී පෙරණ යොදාගැනීම		
පිරිපහදු කරන යන්ත්‍ර භාවිත කිරීම		

නිවසේ දී ජලය පිරිපහදු කරන වෙනත් ක්‍රම දක්වන්න.

පානීය ජලය සපුරා ගැනීමේ දී මුහුණ දෙන ගැටලු

ගැටලු	ඔව	නැත
ජලයේ අවම ගුණාත්මක බව		
පිරිසිදු ජල මූලාශ්‍ර සඳහා ඇති සීමිත ප්‍රවේශය		
ජල පහසුකම් සපයා ගැනීමට ඇති මූල්‍ය බාධක		
ජල පහසුකම් ලබා ගැනීම සඳහා නිසි යටිතල පහසුකම් සපයා නොදීම		
ජලය හේතුවෙන් රෝගාබාධවලට ගොදුරු වීමේ අවදානම		

පානීය ජලය සපුරා ගැනීමේ දී මුහුණ දෙන වෙනත් ගැටලු දක්වන්න.

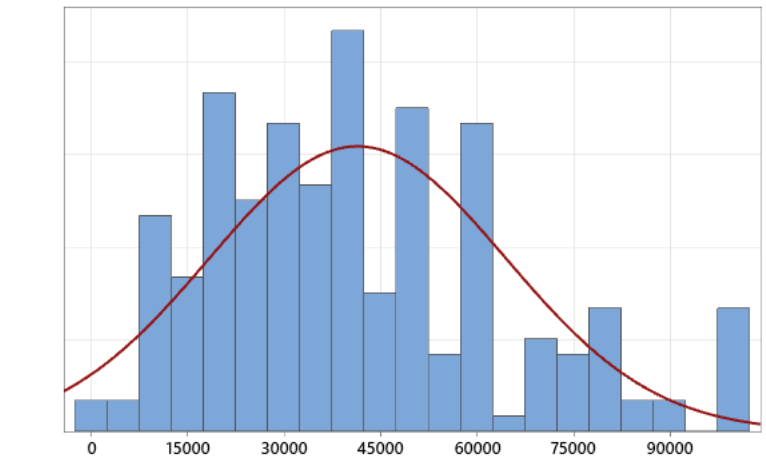
පානීය ජලය සපුරා ගැනීමේ දී මුහුණ දෙන ගැටලු විසඳා ගැනීම සඳහා යොදාගන්නා ක්‍රමවේද දක්වන්න.

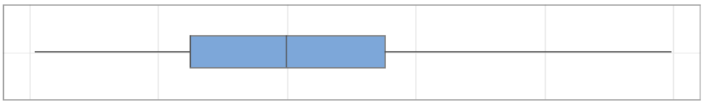
Appendix-A (After the replaced missing values)

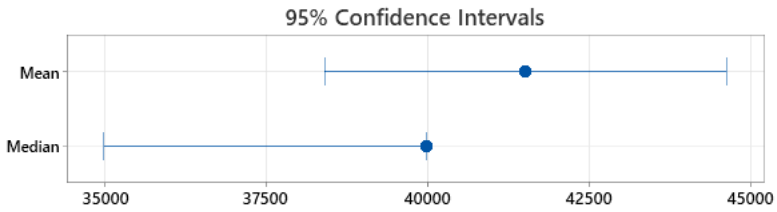
Variables	Total Count	Number of Missing Values
RES_GND	214	0
RES_AGE	214	0
RES_GEN	214	0
RES_MAR	214	0
RES_EDU	214	0
RES_EMP	214	0
FAM_SIZ	214	0
FAM_EXP_WAT	214	0
TOT_EXP	214	0
FAM_INC	214	0
HOU_STO_COU	214	0
HOU_NAT_FLO	214	0
HOU_NAT_WAL	214	0

Variables	Total Count	Number of Missing Values
HOU_NAT_ROO	214	0
DRI_WAT_CON	214	0
NON_DRI_WAT_CON	214	0
TIME_WAT	214	0
WCM_BOI	214	0
WCM_FIL	214	0
WCM_MAC	214	0
DWP_QUA	214	4
DWP_LIM	214	0
DWP_FIN	214	0
DWP_INF	214	0
FAM_EXP_HEA	214	0
DWP_SIC	214	0

Appendix-B (Summary Report Of Family Income)







Anderson-Darling Normality Test

A-Squared	2.56
P-Value	<0.005
Mean	41522
StDev	23078
Variance	532571769
Skewness	0.665105
Kurtosis	-0.022282
N	214
Minimum	700
1st Quartile	25000
Median	40000
3rd Quartile	55250
Maximum	100000

95% Confidence Interval for Mean

38412	44632

95% Confidence Interval for Median

35000	40000

95% Confidence Interval for StDev

21079	25499