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EVALUATING THE OVERALL CONDITION OF SLUM DWELLERS IN KHULNA CITY.

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Abstract

The primary goal of this study is to evaluate the socio-economic and environmental scenario and make a comparison among four types (i.e. public, private, socially disadvantaged and floating) of slums in four significant slums of Khulna city. A total of 927 household survey was conducted by members of all 7 groups. Slumness of these slums are determined using Slum Severity Index based on physical aspects like housing structure and dwelling condition; socio-economic aspects like migration, income status, social conflict status; health and sanitation aspects considering overall sanitation system, waste disposal system and drainage condition etc. Also some correlation matrices are generated through SPSS to establish relation among different variables. GIS is used to generate accessibility maps in different context. All these results indicates that different slum needs insights in different aspects. By using this study as an overview of the overall slums in this city, it can play an important role regarding formulating related policies and strategies.

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In preparing this report, substantial information was gathered from relevant websites and research papers.

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Chapter 1: Introduction

1.1. Background of the Study

With an urban growth rate of more than 90 percent in developing countries, for the first time in history, more than half of the world's population is living in urbanized areas (CitiesAlliance, 2010). Among the SAARC countries, Bangladesh has the highest number of urban people living below the poverty line – 21%, as opposed to 15% in Nepal, 14% in India, 13 % in Pakistan and 5% in Sri Lanka (DhakaTribune, 2014).

United Nation General Assembly in 2001 designed a document entitled “Road Map towards the implementation of the United Nations Millennium Declaration” stating 8 goals to be achieved with detailed targets and indicators. Among which Millennium Development Goal (MDG) 7 is “Ensure Environmental Sustainability”, Target 11 is “By 2020 to have achieved a significant improvement in the lives of 100 million slum dwellers.” The indicators associated with this target are as follows: indicator 30, “proportion of urban population with access to improved sanitation”, and indicator 31, “proportion of households with secure tenure.”

This indicators are also related to UN-habitat definition of slums provided in 2006 as a slum is an overcrowded and underserved area where the residents lack in tenure security, insufficient living space, durability in extreme natural condition, and access to social amenities like safe water, adequate sanitation etc. and Bangladesh Bureau of Statistics definition provided in Census of Slum Areas and Floating Population 2014.

UN-Habitat estimates that the number of people living in slum condition is 863 million, in contrast to 760 million in 2000 and 650 million in 1990. Once peasants and employed in rural agriculture, the rural to urban migrants constitute a third of the entire urban population of any typical city on the global south. Over the years, the problem of the growth of urban slums became so acute that sociologists, economists, planners and policy makers needed data on the number and the socio-economic characteristics of these slum dwellers to inform the development of welfare programs (BBS 2015).

With the increase in urbanization, this deprived populations grief is also increasing. Considering Khulna City slum dwellers having the worst case of scenario, a comparative study has been conducted to determine the severity of different slums based on some fixed indicators. This indicators have been fixed based on our study goal.

The analysis of (Patel, Koizumi, & Crooks, 2014) highlights differences in slum profiles measured in terms of both housing deprivation levels and housing deprivation types in both cities. Their main objective was to establish the necessity of household level analysis of slums in drawing implications for designing and implementing slum policies.

1.2. Objective of the Study and Relevant Research Questions

This study is designed thoroughly based on the objective:

- To see socio-economic and environmental condition of different slums of Khulna city.

To achieve this objective, some research questions have been developed so that answering those questions can help to complete this study. The probable research questions are:

1. How to determine socio-economic condition?
2. What indicators are to be observed?
3. How the indicators compliance with the study?
4. How environmental conditions differ from one slum to another?
5. How the indicators are correlated with each other?

1.3. Scopes of the Study

While designing the research proposal, some scopes have been discovered. The scopes are:

- Firstly, comparable scenarios can be developed among different types of slums.
- Secondly, scenarios developed in early stage can help understanding different problems and worst cases based on different criterions.
- Thirdly, based on the findings of this study, policy implementation on specific aspects of any slum is possible.

1.3. Limitations of the Study

There are limitations which could affect the research process. They are as follows:

- Secondary information in each case was not available.
- Time frame to complete the research work was not enough.
- Primary data collection method could create biasness of information if all the questions in the survey questionnaire are in closed form. There are chances it might reflect the view of the researcher but not the reality.

Chapter 2: Literature Review

2.1. Concept of Slum and Definition

Slum is defined in many ways from different perspective. It varies from country to country (Chauhan, 1996) defines slum as buildings and areas that are environmentally and structurally deficient. A result of multiple deprivations such as; illegal land tenure, deficient environment and inadequate shelter and are the result of the gap between the demand and the legal and formal supply in the housing market. The definition of a slum is considered to be same as set forth by (Mahbub, 2009) “A slum (is) thus defined as a neighborhood or residential area with a minimum of 10 households or a mess unit with at least 25 members with four of the following five conditions prevailing within it: predominantly poor housing; very high population density and room crowding; very poor environmental services, particularly water and sanitation facilities; very low socioeconomic status for the majority of residents and lack of security of tenure.” (UN-Habitat, 2003) Defines a slum household in operational terms, as lacking one or more of the following indicators: a durable housing structure; access to clean water; access to improved sanitation; sufficient living space; and secure tenure. The first four rely on conventional definitions; the last is the most difficult to assess and is not currently used in slum measurement. Again from the definition of (Slum Census Bangladesh, 2010), the major characteristics of slums are-

- Predominantly poor housing
- Very high population density and room crowding (more than 1,000 persons per acre)
- Very poor environmental services
- Very low socio-economic status for the majority of residents
- Lack of security of tenure (permanent threat of eviction)
- Poor governance

As the concept of slum depends of several issues, it needs to be defined suitably for the research. According to different slum definitions, slums of Bangladesh can be defined as the settlement of people of homogeneous socio economic condition that developed illegally or legally in a small area with high density and deprived of all basic human needs.

2.2 Urban slum Development in Bangladesh

The Slum Improvement Project (SIP) under the LGED began in 1985 in five municipalities, and the first phase ended in 1988. For the second phase (1988 - 1996), the SIP extended its program to four city corporations and twenty-one municipalities. (Alam) The improvement project needs up gradation of slum condition with proper assessment for achieving final goal.

2.2.1 Slum Upgrading

Slum up gradation means to mitigate the poor condition of it. The portion of poor living in an urban area is not negligible and they live miserable life in highly congested areas without adequate basic needs which are defined as urban slum. As a part of poverty reduction and urban development, slums are a major concern of authority to be changed. It's impossible to evict

this large group of people from the city. Hence, it is a must to improve their living condition to achieve overall development.

2.2.2 Slum Assessment

Assessment of slum has become a major issue as being part of the city which is continuously spreading in a sever way. To achieve minimal poverty of city, several projects have been conducted in several times. But their impact on slum improvement and reduction of poverty is negligible as the slums are not well assessed before any project. National slum definition fails to define many slums and main issues of slums. It causes less attention to the most important factors for slum upgrading. So it requires a full assessment of slums and their major problems to develop a proper definition of slum and proper identification of them. Several methods are available for slum assessment like Living Condition Diamond, Poverty Gap Index, and Slum Severity Index etc. For the assessment purpose of the research, Slum Severity Index is used.

2.2.3 Slum Severity Index

A deprivation score named the Slum Severity Index (SSI) was developed by aggregating the binary scores. The SSI ranges between 0 and 5 where 0 indicates the non-slum status whereas the score of 5 lacks all the five basic elements of housing, suggesting the poorest living conditions. The SSI advances the traditional slum/non-slum contrast to the slum spectrum, allowing us to differentiate households by degree of housing deprivation (Patel, 2014). It's an important tool of measuring the severity of a slum. Severity of a slum indicates how poor condition it is comparing with other slums on the basis of some basic criterion.

2.3. Indicators

Indicators are the base of any assessment. They are the criteria on which the assessment is conducted. Indicators need to be set to achieve the goal of research and obviously they must reflect the actual scenario. As the research is on slum assessment of Khulna, the indicators are selected according to Bangladesh context. Key indicators and sub criteria are selected from several slum definition of several researches.

2.4 Case Studies: Some related case studies has been given below as a review matrix in table no. 1

Table 1: Literature review matrix

Authors	Document Name	Document Type	Study Area	Time	Data Collection	Objectives	Methods / Issues	Outcomes
Tahera Akter	Migration and living conditions in urban slums: implications for food security	Journal	Mohammadpur slum	2007	<ul style="list-style-type: none"> • Primary data <ul style="list-style-type: none"> ○ Living conditions of slum dwellers • Secondary data <ul style="list-style-type: none"> ○ The trend of environmental displacement ○ Population growth 	To analyze socioeconomic condition of slum dwellers and their consumption pattern.	<ul style="list-style-type: none"> ✓ Selection of study area ✓ Both primary and secondary data collection ✓ Questionnaire survey ✓ Applying statistical technique ✓ Frequency distribution 	<ul style="list-style-type: none"> ✓ Majority of them can't afford nutritious food which is expensive to them. ✓ Planned migration and secured socioeconomic factors are suggested
Paula Lucci, Tanvi Bhatkal, Amina Khan and Tom Berliner	What works in improving the living conditions of slum dwellers	Paper	Sub-Saharan Africa, East Asia, South-East Asia, South Asia, Latin America and Caribbean	2015	Primary and secondary data	To review the evidence on what works in improving the living conditions in slum settlements	<ul style="list-style-type: none"> ✓ Selection of study area ✓ Collection of primary data ✓ Secondary data ✓ Analyzing recent trends in urbanization and the expansion of slum settlements. 	Highlighting the future challenges that governments will need to address to deal with urbanization and the implementation of the SDG target on access to housing and slum upgrading.
J. Godwin Premsing, Sheena Philip	Improving living conditions in Slums Dwellers	Journal	India	Jun. 2014	Primary and secondary data	To improve the physical environment of the dwelling places like basic amenities of toilets, proper drainage, sewerage system and adequate water supply.	<ul style="list-style-type: none"> ✓ Selection of study area ✓ Collection of primary data ✓ Secondary data 	The condition of the Slum people can be improved even at low levels of economic development through appropriate public action for social provisioning and redistribution.

3.1. Study Area

The following four slums are situated at the Khulna Metropolitan Area boundary where Ispahani, Rupsha, Sonadanga and Zoragate slums are located at ward 3, 29, 18 and 21 respectively. The survey conducted to determine economic condition of the low income community where public and private slum dwellers living their livelihood obtaining multiple income opportunities as permanent or temporary helping themselves to survive within these selected areas.

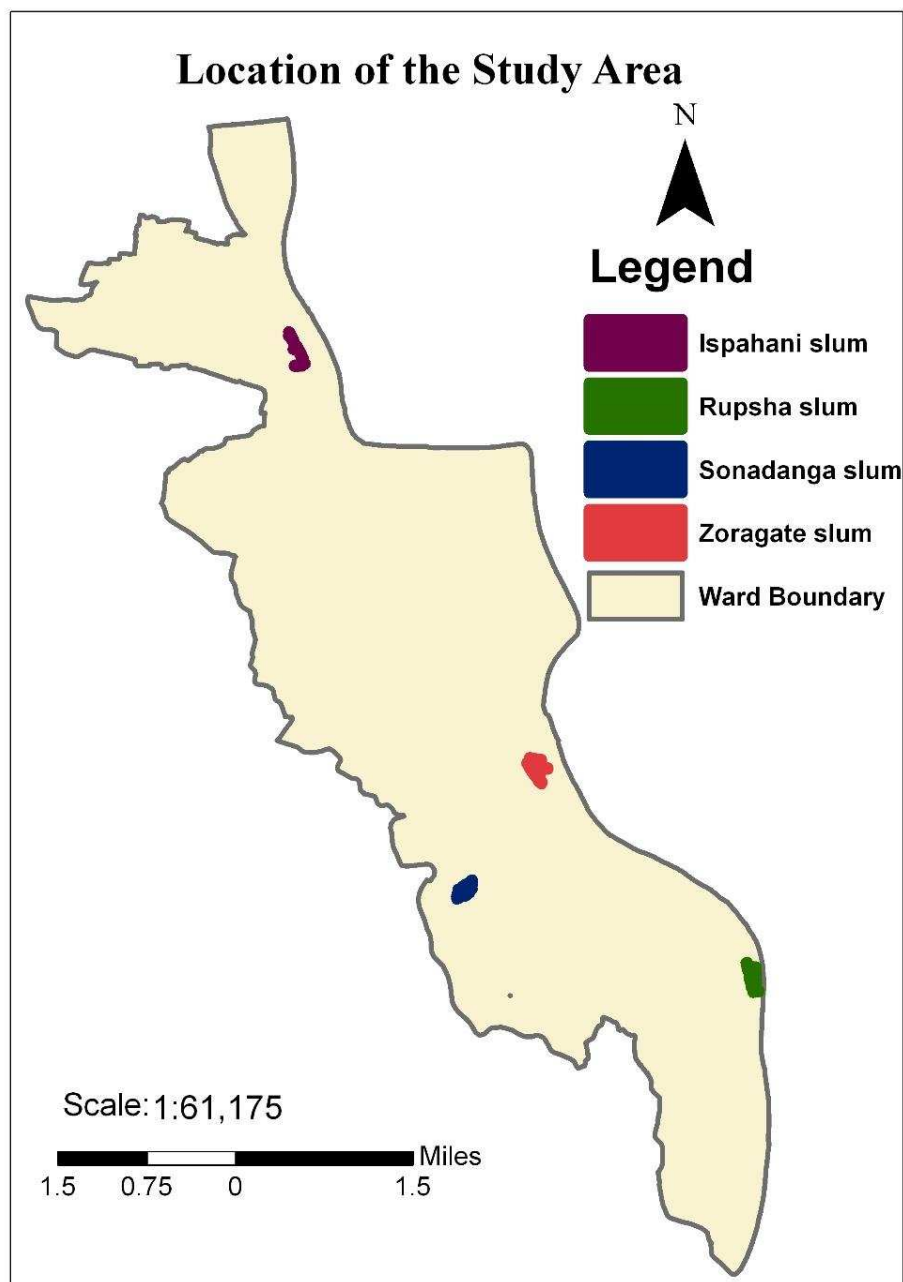


Figure 1 Location of the study area

3.2. Methodology

The methodological steps of the study are described in this chapter. Sequential steps are followed to obtain the objective of the research and particular methods are clarified to understand the further data processing and analysis. The step by step procedure are formulated as a flow as following:

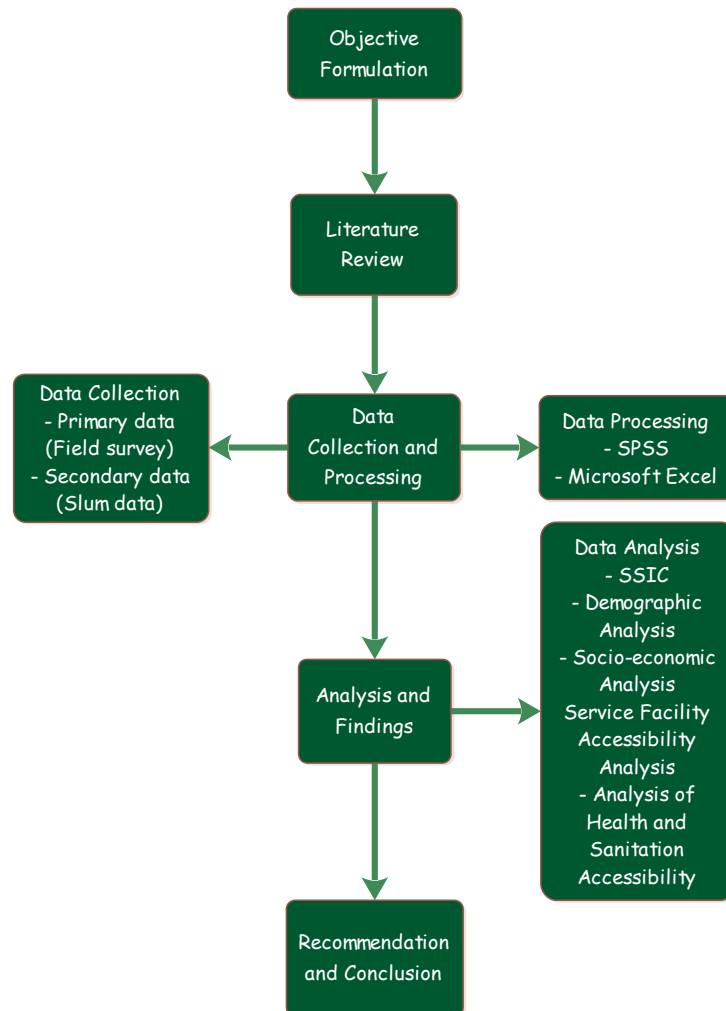


Figure 3.2 Methodology

3.2.1 Objective Formulation:

The objective of the research is articulated by the course teachers to evaluate the economic condition of the low income community group those are slum dwellers of Khulna Metropolitan Area among the four suggested slums.

3.2.2 Literature Review:

Related research documents and reports are analyzed to understand and validate the research in case of evaluating the economic condition, opportunity of getting accessibility to different services, determining scale of poverty, determining socio-economic status.

3.2.3 Data Collection and Processing

Both primary and secondary data were collected to determine the economic condition and factors to be analyzed to evaluate the current scenario.

3.2.3.1 Primary Data Collection

The primary data were collected conducting field survey to the four individual slums. Nine hundred and twenty-seven survey were directed randomly. General questionnaire was prepared to perform the survey by different groups. All the individuals shared their personal information, locality condition, opinion, expectations and recommend some valuable precautionary steps required to be taken by the local government.

3.2.3.2 Secondary Data Collection

Secondary data (ward population, road network, slum locations, ward boundary and shapefiles) were collected from different government and non-government organizations, websites, journals and research papers to perform analysis.

3.2.4 Analysis and Findings

Data analysis chapter was organized according to the categorical analysis of Slum Severity Index Calculation (SSIC), demographic analysis, socio-economic analysis, service facility accessibility analysis and analysis on health and sanitation accessibility and findings are tabulated gathering the information from the analysis, comparing three different slum categories and theoretical evidence from the slum dwellers.

3.2.4.1 Slum Severity Index Calculation (SSIC)

Slum Severity Index calculation has been made to measure the slumness of the study area. It is a comparative indicator from which we can easily identify the slum which is in most poor condition based on some indicators for defining slum in Bangladesh (Mainul & Mortaza, 2016). The overall calculation process is given below:

1. Indicator Selection

Indicators are selected based on Bangladeshi context. In this index the indicators are put together to provide a better picture of slum areas and their condition as in “Slum Severity Index for Bangladesh” by Mainul & Mortaza, 2016.

2. Calculation of SSI

The first step is to classify the deprivation status of the alternatives given in questionnaire based on table no. 4. For example, people living in jhupri are more insecure and mostly affected by natural calamity. Therefore, it can be said that they are deprived from housing structure and materials. The next task is to assign the values based on deprivation status. For example, the value for resident type to indicate slum severity: resident type: Jhupri=1, Tin Shed=4, Semi-pucca=7 and Pucca=10). Value of the alternatives has been assigned as given in “Slum Severity Index for Bangladesh” (Mainul & Mortaza, 2016).

Table 2: Scoring of Different answering options of questionnaire and their deprivation status

Value of the Answers	Deprivation Status
1-3	Very Poor
4-6	Moderate Deprivation
7-8	Mild Deprivation
8-10	No Deprivation

(Source: Mainul & Mortaza, 2016)

Standardized question value is needed to maintain the accuracy in calculating deprivation scores of all study areas. Consequently, each indicator was assigned with equal weightage factor. As for example there are five key indicators in this study so the weight will 220 for each indicator.

Then the summation of each indicators score were tabulated and the weighted value or index value for each indicator was calculated through the following formula:

Index Value = (Summation of each-sub indicator value * Weighted factor*100) / (Highest value of sub indicators * Weighted Factor)

3.2.4.2 Demographic Analysis:

This chapter analyzed the information about the demography of the slum occupants which includes their age group, education level, income level, migration status, reason of migration, change in income and living standard after migration etc.

3.2.4.3 Socio-economic Analysis

This chapter focuses on economic condition of slum dwellers, variation in tenancy and sanitation according to monthly income and their poverty level.

3.2.4.4 Service Facility and Accessibility Analysis

To assess the consequence of the accessibility of the surveyed slums, it has been categorized as five individual spatial contents such as hospital and clinic, workplace, recreational facility, primary schools and colleges and markets. To evaluate the present scenario service range is estimated according to the preference of the slum dwellers from survey data within the associated wards and near facility providers. For different services different standards are followed according to the type and service capabilities. Moreover, preferred mode is also considered to attain the service of the dwellings.

Table 3: Accessibility of service range, cost and mode choice.

Service range (meter)	Type	Cost (Tk)	Mode choice
0 - 500	Hospital and clinic, workplace, cinema hall, schools and colleges and market	-	On foot
500 – 1000	Hospital and clinic, workplace, cinema hall, schools and colleges	5	On foot, easy bike, atul/mahindra, cycle.
1000 - 2000	Hospital and clinic, workplace, cinema hall, schools and colleges.	8 - 10	Easy bike, atul/mahindra, cycle.

Service range (meter)	Type	Cost (Tk)	Mode choice
2000 - 3000	Hospital and clinic, workplace, cinema hall.	12 - 15	Easy bike, atul/mahindra.
3000 - 5000	Hospital and clinic and workplace.	15 - 25	Easy bike, atul/mahindra,

(Source: Welmort, 2001)

3.2.4.5 Health and Sanitation Accessibility Analysis

Health and sanitation condition were analyzed on the basis of sanitation for different slum types, health Issues, problems due to natural calamity and living problems of slum dwellers.

3.2.5 Recommendation and Conclusion

Investigating the drawbacks and evaluating the consequences from the above study some recommendations are determined to mitigate the adverse effects affecting the slum dwellers, create and enhancing further opportunities to uphold the quality of their livelihood and then conclusion was drawn for the research.

Chapter 4: Analysis & Findings

4.1. Slum Severity Index (SSI)

Slum Severity Index calculation has been made to measure the slumness of the study area. It is a comparative indicator from which we can easily identify the slum which is in most poor condition based on some indicators for defining slum in Bangladesh (Mainul & Mortaza, 2016).

The overall calculation of slum severity index has been given below in table no.

Table 4: Calculation of Severity Index at a glance according Different Study Area

Indicators	Weighted Value	Sub indicators	Koiladipo (Socially Deprived Group)	Rupsha Slum	Sonadanga Slum	Ispahani Colony Slum
Dwelling	20	Structure	7	4	7	7
		Density	3	4	5	6
		Migration Rate	3	7	5	6
Score			13	15	17	19
Weighted Value = $\frac{20 \times \text{Individual Score}}{20 \times \text{Highest Score}}$			43.33	50	56.66	63.33
Infrastructure	20	Water Supply and Sanitation	6	5	5	7
		Drainage & Garbage Disposal	4	4	4	6
		Road Accessibility	5	6	4	6
Score			15	15	13	19
Weighted Value			50	50	43.33	63.33
Socio-Economic	20	Occupation	4	4	4	4
		Income	7	4	4	5
		Education	6	5	3	3
Score			17	13	11	12
Weighted Value			56.66	43.33	36.67	40
Health Status	20	Household Health Behavior	7	6	6	7
Weighted Value			70	60	60	70

Indicators	Weighted Value	Sub indicators	Koiladipo (Socially Deprived Group)	Rupsha Slum	Sonadanga Slum	Ispahani Colony Slum
Social Security and Capital	20	Help from NGO, public and Private Organization	7	5	4	3
Weighted Value			70	50	40	30
Average Weighted Value			58	51	47	53

(Source: Author, 2016)

Table 5: Slum Severity Index at a Glance for individual Slum Defining Indicators and Average Index value of each Study area

Indicators	Koiladipo	Rupsha Slum	Sonadanga Slum	Ispahani Colony Slum
Dwelling	43.33	50	56.66	63.33
Infrastructure	50	50	43.33	63.33
Socio-Economic	56.66	43.33	36.67	40
Health Status	70	60	60	70
Social Security and Capital	70	50	40	30
Average Index Value	58	51	47	53

(Source: Author, 2016)



Figure 3: Graphical representation of deprivation of all areas

Among the five sites, Socio-economic condition exhibits severe deprivation that other dimensions from figure 1. The policy makers should focus on that particular part for development. We also see that people of Sonadanga Slum are the most deprived than others.

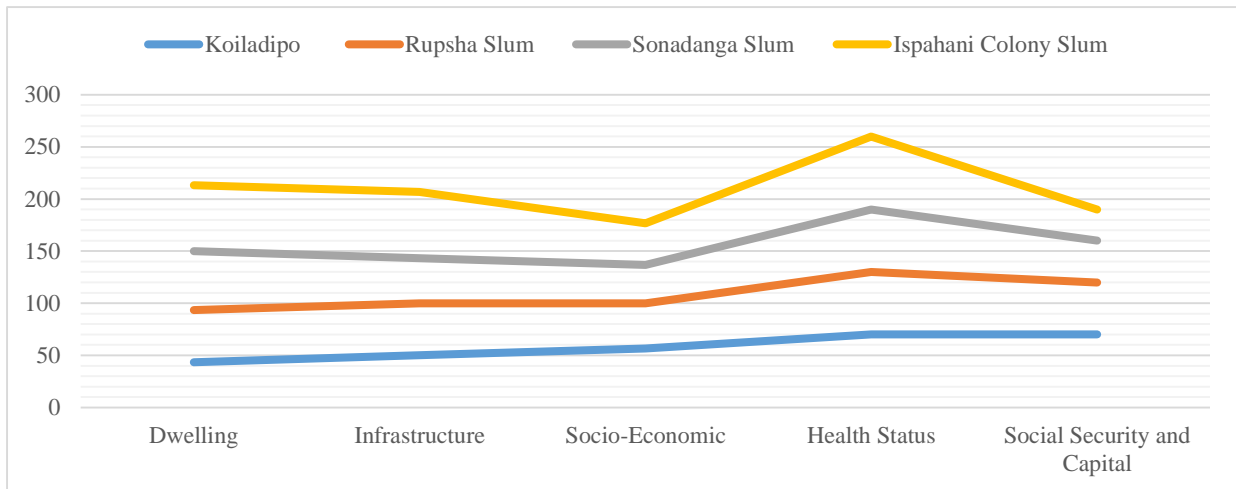


Figure 4: Comparative representation of individual slum defining indicators of different study area

Figure 2 represents the comparative condition of each indicators. We see that in Ispahani Colony Slum the socio-economic aspect is the worst compared to others but the health status is much improved and diseases occur less than other slum due to good environment.

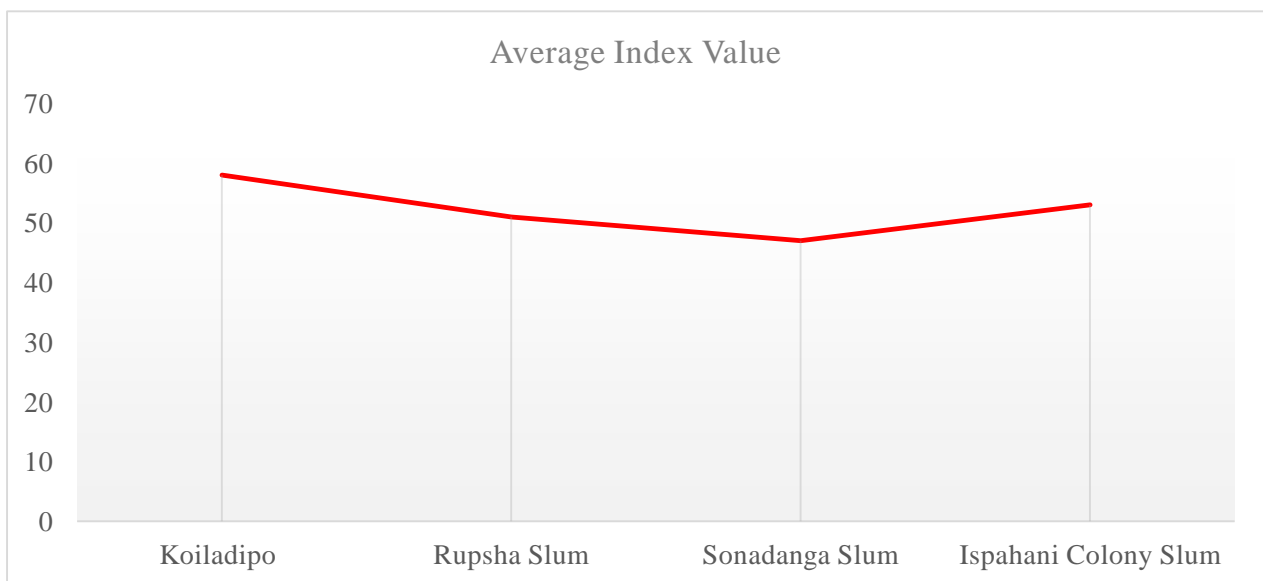


Figure 5: Average Slum Severity Index of Different Study Area

Figure 3 shows that the Koila dipo slum is altogether comparatively in a good condition than others and Sonadanga slum is the worst.

4.2. Socio-economic Analysis

This part of the study mainly focuses on overall demographic condition, migration status of the slum dwellers. Also, economic condition of slum dwellers, variation in tenancy as well as health and sanitation according to monthly income and their poverty level is measured.

4.2.1. Demography

A total of 3593 people lives in 927 respondent households, among whom, most of them belongs to the young generation between age group of 15 and 20. Male to female ratio in these areas are almost same. But female are more in number between the age group of 25 to 30 and 30 to 35.

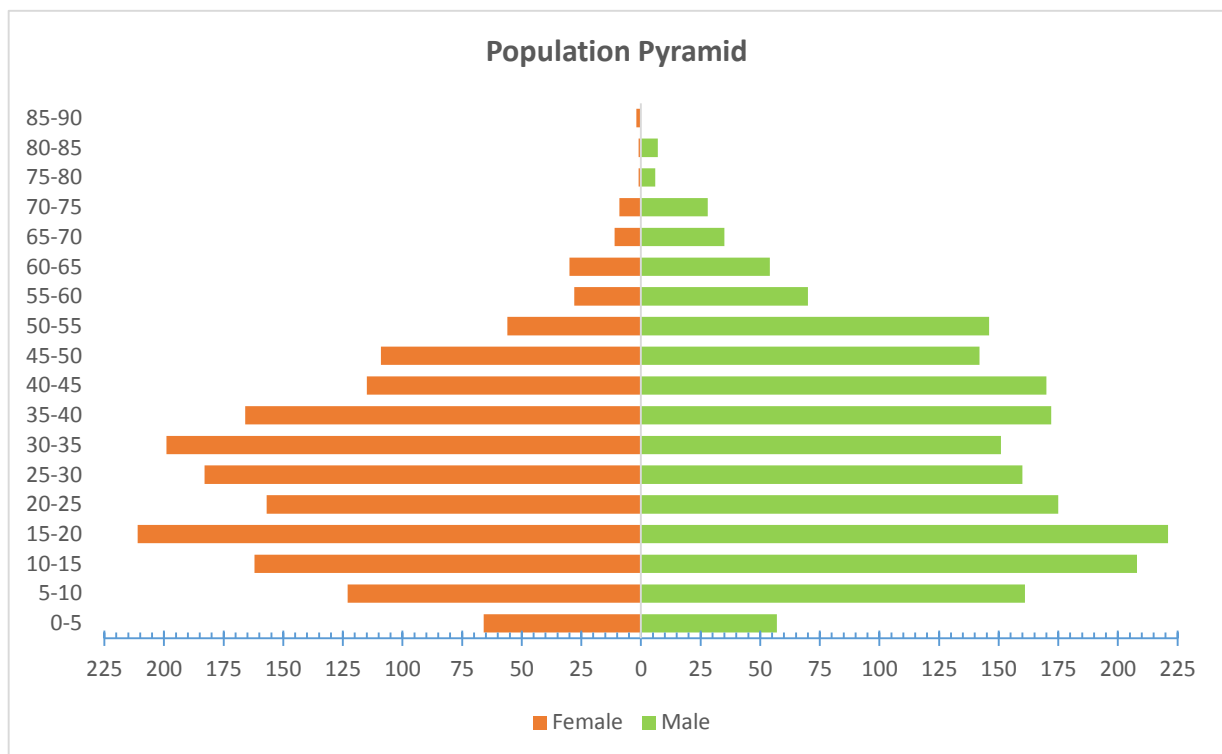


Figure 6: Demographic profile of the study area

4.2.2. Education

Education, being considered as the fundamental right of men both by the constitution of Bangladesh and also by UN, this right is not exercised properly by the children residing in these slums. This is because of their parental low income. At early years, they could not attend schools as they had to contribute in their family's income. But the second generation of this league is not deprived of their right over education. Even the third generation children do not have to worry about their study and most of them are admitted to nearby primary and secondary schools.

Considering the fact of access to primary education, the drawn figure shows that the majority of children do not exercise this right. But this figure does not represent the actual situation as children (counted the age 5-10 for school going children) who are supposed to attend the school do it and the others who are counted as "do not go to school" are mainly under aged children. Survey data show that more than 41% of children aged between 5 and 11 do not go to school

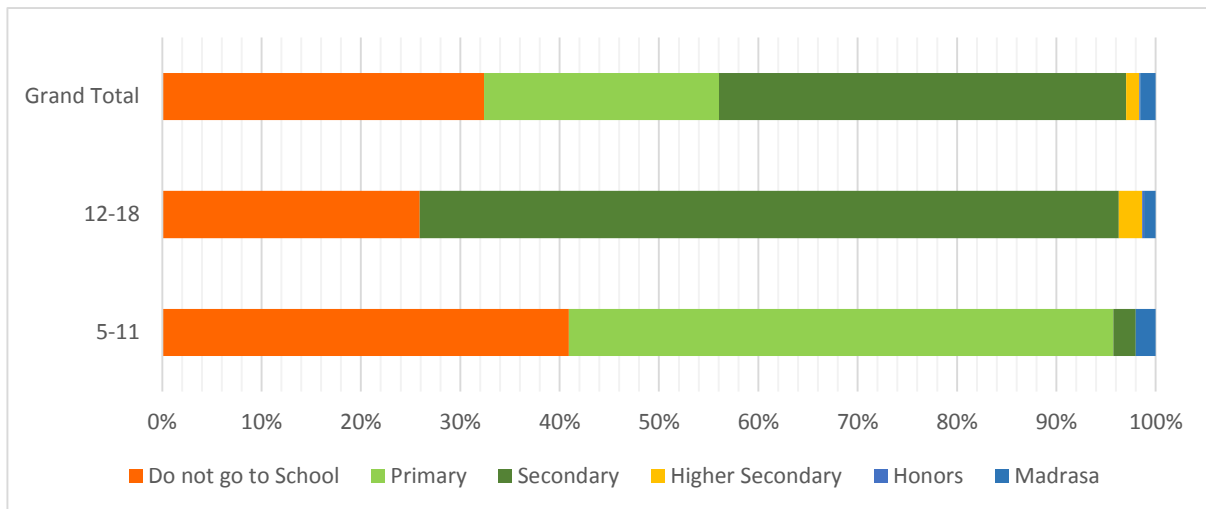


Figure 7: Education Status of Children Aged 5 to 18

at all. This percentage is slightly lower than this when it comes to the children of 12 to 18. This is because the parents are not aware of the benefits of schooling in life even the children are not interested as instead of going to school, they can earn money in some ways and can also enjoy their free life. The situation was worse before as rate of illiteracy among the youth of these slums is relatively high.

4.2.3. Relation among Monthly Income, Age, Gender and Education Level

A relation is tried to be established among this variables considering monthly income as dependent variable and gender, age and highest level of education. Applying Pearson correlation, from the collected sample data, it can be stated that monthly income of a person is negatively related to his age meaning that with the increase in age, income decreases for these people as most of their work is daily wage based and requires physical activity.

Table 6: Correlation table among monthly income, gender, age and education level.

	Monthly Income	Gender	Age	Education Level
Monthly Income	1.000	.001	-.138	.169
Gender	.001	1.000	-.285	-.011
Age	-.138	-.285	1.000	-.017
Education Level	.169	-.011	-.017	1.000

As most of the respondents primary occupation is labor based, respondent's monthly income has less relation with their highest level of education.

4.2.4 Migration status

Migration and displacement is not a new issue for Bangladesh. People have been displaced and migrated for many social, political, economic and disaster related reasons since the beginning of recorded history. Migration in these four slum area is 37.33% of the total survey data where 24.6% people have been migrated willingly and 12.3% people have been migrated forcefully. The people who are migrated forcefully because maximum of them living in the government land and they are living there illegally. Government can take off them in any time for national

purposes and there is no ordinance for illegal title holder to compensate for income and livelihood. Again some people are migrated forcefully because of political issues.

Table 7: overall condition of migration

Migration	Yes	Percent	No	Percent
		339	37.33%	558
Migration Type	Willingly	Percent	Forcefully	Percent
		223	24.6%	112

4.2.5 Migration condition in four slum

There are comparative analysis of four slum (Ispahani labor colony, Koyla dipo, Rupsha and Khora). Total 339 respondent have said positive answer about migration and they have come from different location and region for various purposes for changing their living condition, income level. In field survey in these slum total 37.33% people are migrant. This situation is comparatively different in these slum. Willingly migration in Ispahani labor colony, Koyla dipo, Rupsha and Khora slums are 66.6% forcefully migration 33.4% in these area. Ispahani colony and Rupsha are comparatively smaller numbers of migrants than Koyla dipo and Khora slum.

Table 8: location wise Migration condition in four slum

Location	Type of migration		Total (%)
	Willingly (%)	Forcefully (%)	
Ispahani Labor Colony	59.3	40.7	100
Koyla Dipo	56.6	43.4	100
Rupsha	58.3	41.7	100
Khora (Sonadanga)	87.9	12.1	100
Total	66.6	33.4	100%

Table 9: Slum type wise Migration condition in four slum (Source: Field Survey, 2016)

Slum Type	Type of migration		Total (%)
	Willingly (%)	Forcefully (%)	
Public	55.1	44.9	100
Private	77.3	22.7	100
Socially Disadvantaged	54.5	45.5	100
Total	66.8	33.2	100

There are comparative analysis of three type of slum people (Ispahani labor colony, Koyla dipo, Rupsha and Khora) with their migration. Total 339 respondent have said positive answer about migration and they have come from different location and region for various purposes for changing their living condition, income level. In field survey in these slum total 35% people are migrant. This situation is comparatively different in these slum. Willingly migration in public, private and socially disadvantaged people are 66.8% forcefully migration 33.2% in these area.

4.2.6 Migration pattern

From the survey data most of the migrant people have come from Barisal (5%), Khalishpur (3%), Nixon market (3%), Power house (5.01%), Rail colony (7%), Rail field (4.12%), Railway station (3%), Doulotpur (2.35%) and Satkhira (4%) and Others (56%).

4.2.7 Reason of Migration

There are comparative analysis of four slum (Ispahani labor colony, Koyla dipo, Rupsha and Khora). Total 314 respondent have said positive answer about migration and they have come from different location and region for various purposes for changing their living condition, income level. But there are also some reason for migration that force people to migrate. Through the respondent who are willingly migrant in these slum, main reason for the migration is economic opportunity. They also come here for climate change, eviction from rural area for family reason, eviction from rural area for political reason and others. But the percentage of these people is very poor. Again the respondent who are forcefully migrant in these slums, main reason for the migration is economic opportunity, eviction from rural area for political reason and others. They also come here for climate change, eviction from rural area for family reason and others. But the percentage of these people is very poor.

4.2.8 Location wise migration

From the survey data most of the migrant people have come from Barisal, Nixon market, Satkhira, railway station, Khalishpur, Bagerhat and other location willingly. On the other way most of the migrant people have come forcefully from Doulotpur, Khalishpur, Patuakhali and Railway station.

4.2.9 Correlation matrix between Living condition and Income level of slums

Table 10: Correlation matrix between Living condition and Income level of slums.

Indicators		Reason of Migration	After Migration Living condition	After Migration Income Level
Reason of Migration	Pearson Correlation	1	.137	.170
	Sig. (2-tailed)		.024	.006
After Migration Living Condition	Pearson Correlation	.137	1	.765
	Sig. (2-tailed)	.024		.000
After Migration Income Level	Pearson Correlation	.170	.765	1
	Sig. (2-tailed)	.006	.000	

The correlation between reason of migration and living condition is significant. That means the reason of migration affect Living condition of slum people and their livelihood. Because most of them want to change their living condition and they migrant there increasing their condition. Most of the respondent said that they have better condition than previous. The correlation

between reason of migration and income level is significant. That means the reason of migration affect income level of slum people and their livelihood. Because most of them want to change their economic condition and they migrant there increasing their income level. Most of the respondent said that they have better condition than previous. Some people have got better job than previous condition and they change their livelihood pattern.

4.2.10 Duration and Living condition

Through the respondent who have migrated willingly and forcefully, comparative analysis have done fo their living condition after migration. Most of the rural people come here to change their economic condition, livelihood pattern. The people who have come willingly, 43.1% of them are satisfied after migration. Their living condition is better than their previous condition and they are happy to live in this condition. Some respondent said that their living condition are similar of previous condition (40.2%) and few number of people are unhappy to live in this condition and their living condition are worse (16.7%) than previous condition. The people who have come forcefully, most of them are not satisfied after migration. Their living condition is similar to their previous condition and they are not happy to live in this condition. Some respondent said that their living condition are similar of previous condition and few number of people are unhappy to live in this condition and their living condition are worse than previous condition. As they have no way to prevent, most of them living in the illegal government place and government can take off them in any time without any compensation. So they are carrying this for the long time.

Table 11: Duration and Living condition.

Duration of living on this slum(Years)	After Migration Living Condition			Total (%)
	Increased (%)	Similar (%)	Decreased (%)	
1-5	49.3	37.3	13.4	100.0
6-10	45.1	35.2	19.7	100.0
11-15	43.2	35.1	21.6	100.0
16-20	33.3	48.1	18.5	100.0
Above 20	35.1	50.0	14.9	100.0
Total	43.1	40.2	16.7	100.0

4.2.11. Income Distribution according to Slum Type

The income distribution according to slum type has been given in table no. from the table we see that public is mostly below 3000 taka per month. And private slum income range is better than public slum. In public slum most of them are illegal dwellers so they have no fixed income source. As a result it affects their income and livelihood as we can see from the table and chart below.

Table 12: Income range distribution in percentage according to slum type

Slum Type/Income (BDT/Month)	<3000	3000-5000	5000-8000	8000-10000	>10000
Public	63.6	68.1	54.5	62.5	55.1
Private	27.3	27.5	44.9	36.6	43.6
Socially Disadvantaged	9.1	4.4	0.6	0.9	1.3
Total	91	176	112	156	91

Most slum dwellers average income range is between 5000-8000 according to the chart above. There are few people who are associated with higher income occupation like office stuff or public workers. The income range percentage of the slum dwellers is given below in a pie chart.

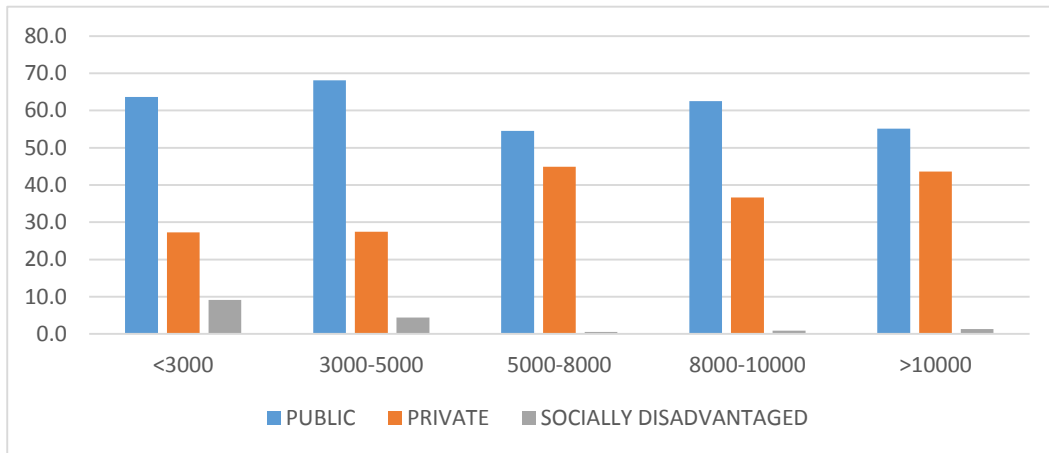


Figure 8: Monthly Income Distribution of the Slum Dwellers

4.2.12. Household monthly income and Tenancy Type

From the table no. We see that the illegal dwellers average monthly income are between 000-8000 BDT. People who have higher income like 8000 or more have their own house comparatively to the others. Public slums are rent free and people who earns 3000-5000 BDT/month are mostly benefited by the public slums as they do not have to pay any kind of house rent and they can expend their surplus income to other sources like education or to get better medical facilities. A comparative chart has been given below in figure no. 17. There is a high correlation between tenancy type and household income. That means housing type is greatly influenced by the monthly income of the slum dwellers which is .819.

Table 13: Monthly Income based Tenancy Type in percentage

Income Range	Own (%)	Rented (%)	Rent free (%)	Illegal (%)
<3000	2.4	1.1	3.4	0.0
3000-5000	14.3	17.7	28.8	11.8
5000-8000	28.7	38.1	30.5	35.3
8000-10000	22.0	19.9	15.3	23.5
>10000	32.5	23.2	22.0	29.4

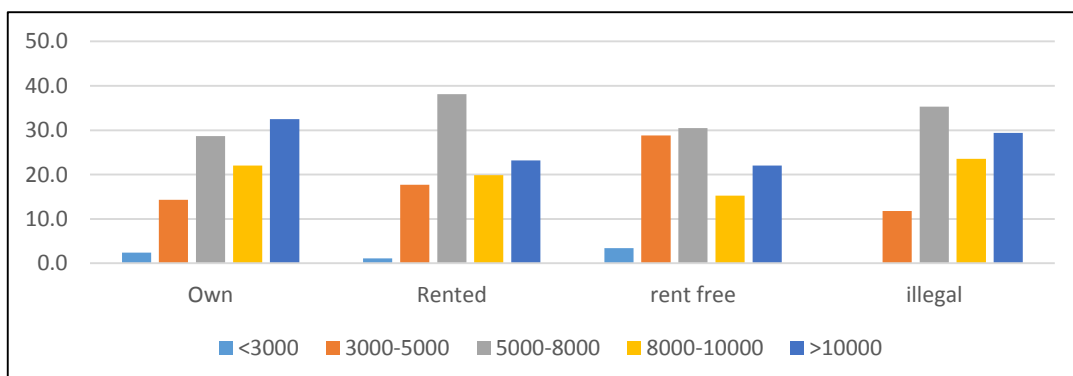


Figure 9: Tenancy type based on household monthly income.

4.2.13. Migration rate according to monthly household income

The correlation between migration and income is very insignificant. People does not migrate depending on income but depending on income opportunities. The lower income people

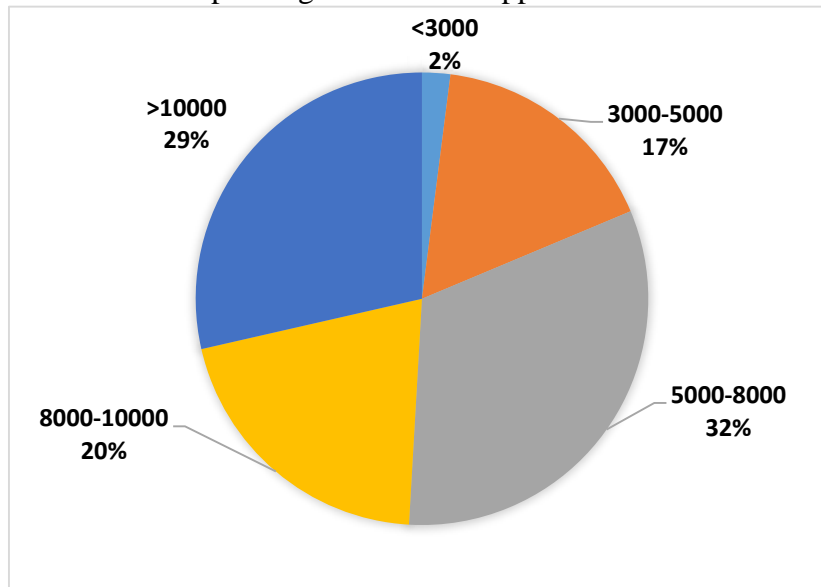


Figure 10: Pie diagram of Monthly Income Percentage

migrate a lot as they live in public slum and it is very insecure. There are no permanent situation for both living and income opportunities. They have to evacuate at any time and they know it. As a result the migration rate is higher in the lower income range and lesser in higher income range as we can see it from the line chart given in figure no. 5

4.2.14. Measure of Poverty

Poverty is the main reason behind the creation of slum and squatters and the low living standards of slum occupants. Because of low income, inadequate income source people are bound to move into this settlements and they cannot improve their living quality. To measure the poverty of these occupants three indices are used which are- head count ratio, poverty gap index and squared poverty gap index.

In this study the percentage of the population who are below the poverty line is measured through Head-count ratio. According to World Bank the poverty line for Bangladesh is \$1.90 per day which is around 4492BDT (\approx 5000 BDT) per month.

Head-count ratio = $p / N * 100$, where, p= number of house lying below poverty line and N= Number total house surveyed.

PGI is used to determine the percentages of families lying below the poverty line. It emphasizes more on identifying the poor who should be more focused to reduce poverty gap. Like PGI, SPGI is another form of index which is used to determine the percentages of people lying below the poverty line. SPGI is a weighted sum of poverty gaps (as a proportion of the poverty line), where the weights are the proportionate poverty gaps themselves.

Indices	Public Slum	Private slum	Socially Disadvantaged
Head Count Ratio	21.36%	12.96%	55.55%
Poverty Gap Index	24.71%	19.3%	30.01%
Squared Poverty Gap Index	0.201	0.265	0.136

Here, the number of poor is higher in socially disadvantaged group and 55% people need more concentration. The average shortfall of poor or depth of poverty is also higher in socially disadvantaged group. And poverty is lesser in private slum although they have to pay rent.

4.3. Service Facilities Accessibility Analysis

To assess the consequence of the accessibility of the surveyed slums, it has been categorized as five individual spatial contents such as hospital and clinic, workplace, recreational facility, primary schools and colleges and markets. To evaluate the present scenario service range is estimated according to the preference of the slum dwellers from survey data within the associated wards and near facility providers. For different services different standards are followed according to the type and service capabilities. Moreover, preferred mode is also considered to attain the service of the dwellings.

4.3.1. Hospital and clinic

There are 12 hospitals which are providing services of the slum dwellers, almost all the slum dwellers used to get the vaccination and primary medical services from nearby hospitals. For major treatment issues and severe disease procurement two most prominent findings from the survey data are Khulna Medical College and Khulna Sadar Hospital. Among all the slums, Ispahani colony has got the most remote distance in case of getting the treatment facility where all the other slums are getting the service from nearby distances.

Table 14: Distance to hospital and clinic service

Slum Name	Distance (km)
Ispahani slum	2 - 3
Zoragate slum	0 - 0.5
Sonadanga slum	0 - 0.5
Rupsha slum	1 - 2

(Source: Field Survey, 2016)

4.3.2. Work place

There are multi variation in respect of profession among the four slum dwellers. Several workplaces within or distant areas are located around Khulna city where most of them are security guard, sweeper, driver, rickshaw puller, labour and so on. About 40 - 50% of the slum dwellers are dependent of changing profession as seasonal income differs a lot in the context of Khulna. So no stable workplace are identifiable because of changing practice of profession of the slum dwellers.

4.3.3. Recreational facilities

According to the survey, all the slum dwellers getting their recreational advantages from watching television and going to the cinema hall. Most Ispahani slum dwellers have got television at their house so that they hardly go to the cinema hall but remaining three slum dwellers are regular or simultaneous cinema freak. According to DAP 13 -14 data, there are only three cinema halls nearby among these four slums but it is quite unfortunate that all the slums get the cinema hall at remote distances.

Slum Name	Distance (km)
Ispahani slum	1.5 - 2
Zoragate slum	2 - 2.5
Sonadanga slum	Greater than 3

4.3.4 Schools and colleges

There are a plenty of primary schools and colleges are identified around these slums and many of the children are attending schools from different families. The existing wards locating the slums and adjacent nearby wards includes 143 schools, high schools and colleges according to DAP 13 -14 data. So, all the slums are facilitated with 500 m service range which can ensure the forthcoming children in future to enhance the light of education.

4.3.5 Market

The markets nearby around the slums have not much service capability more than half kilometer as these are not facilitated with all necessary utilities required for the slum dwellers. Ispahani and Zoragate slums are far from the service zone of 500m as they need to come across over 1 – 1.5 km to attain the necessary conveniences from Khulna New Market where Zoragate slum dwellers have to attain services within 1km distance market places. Khora slums and Rupsha slums are getting nearby accessibilities and alternatives in terms of marketing, getting goods and services.

All the maps are given below according to serial:

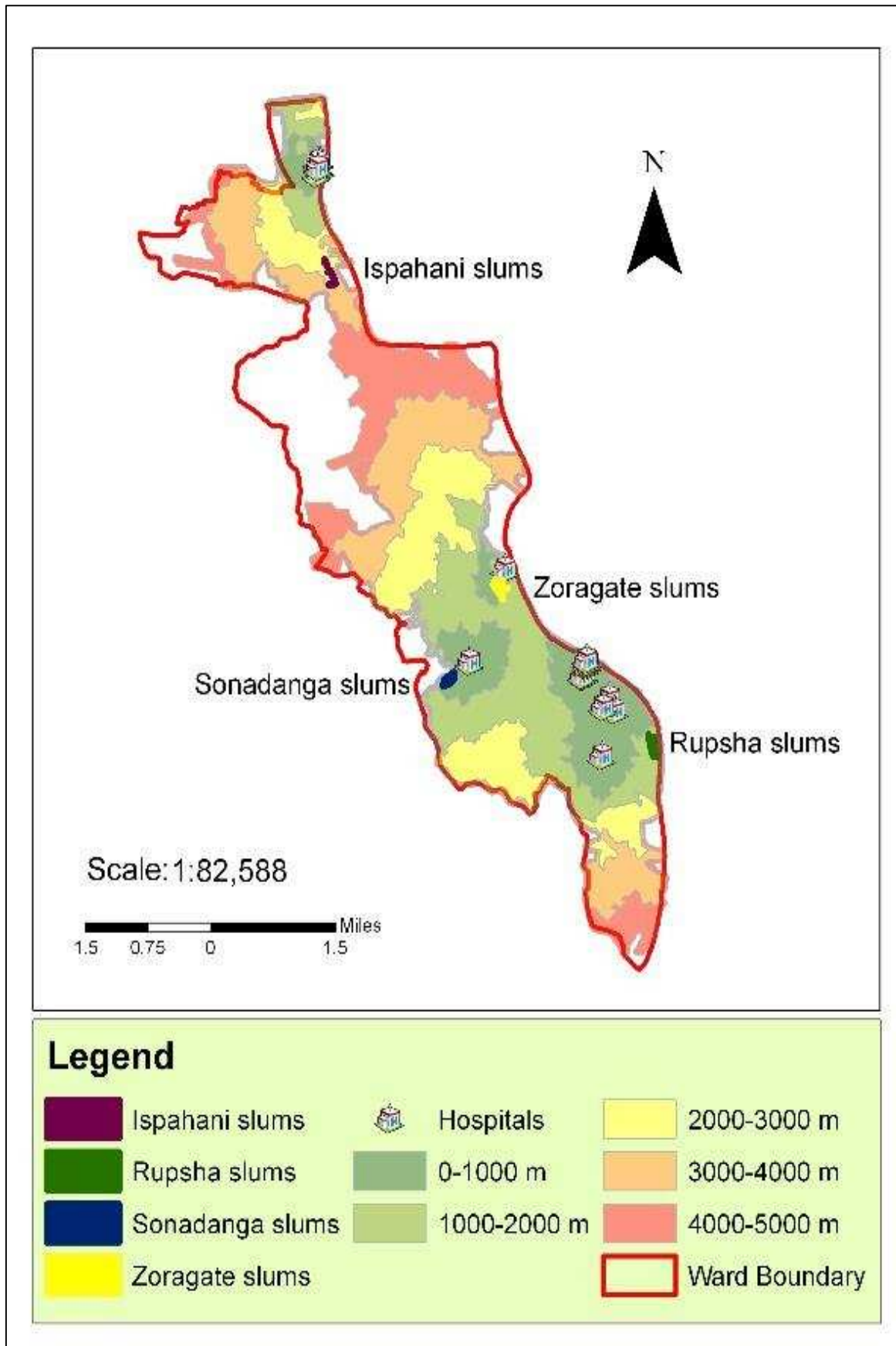


Figure 11: Hospital and clinic service range (Source: Author, 2016)

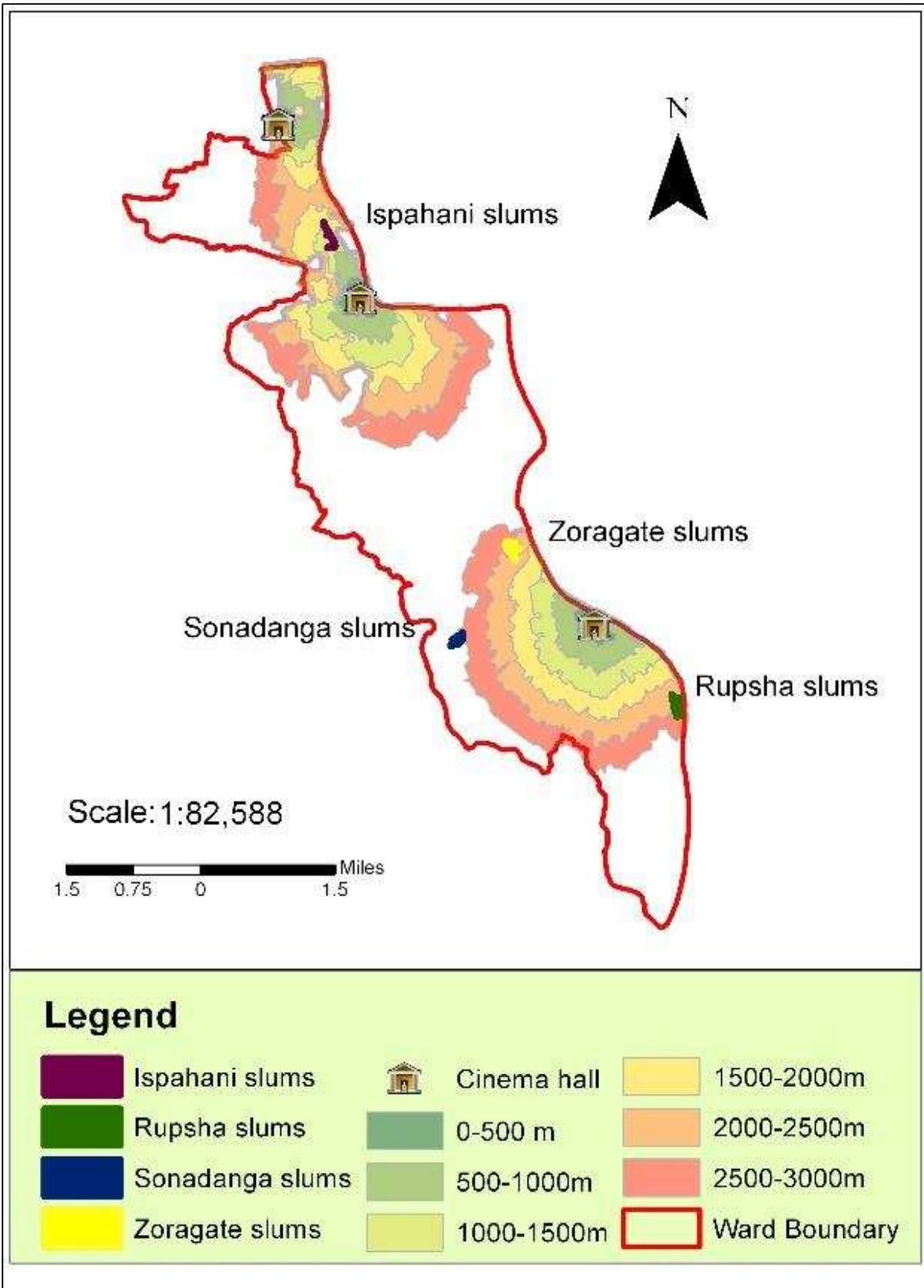


Figure 12 Service range for recreational facility (Source: Author, 2016)

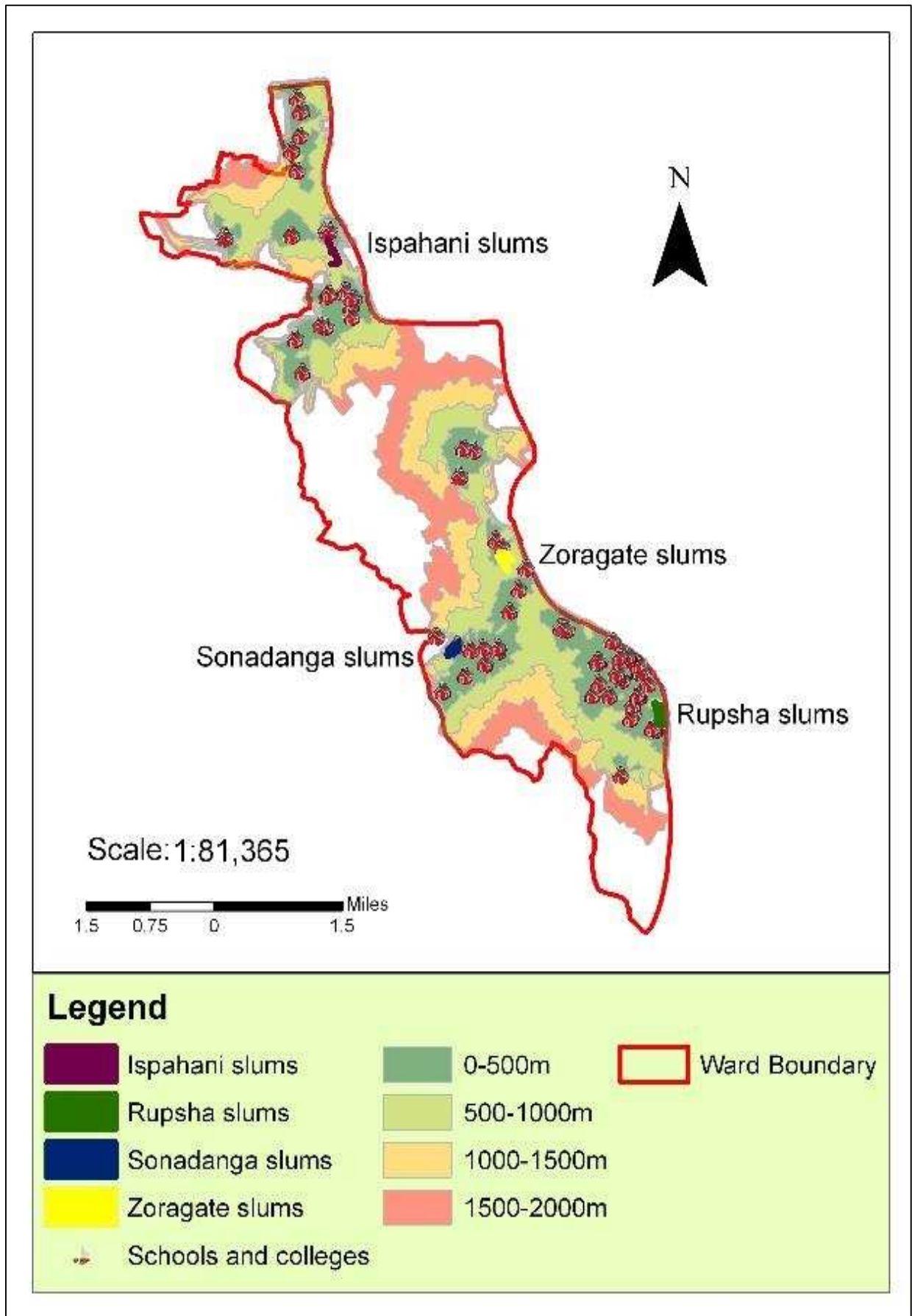


Figure 13 Service range of the schools and colleges (Source: Author, 2016)

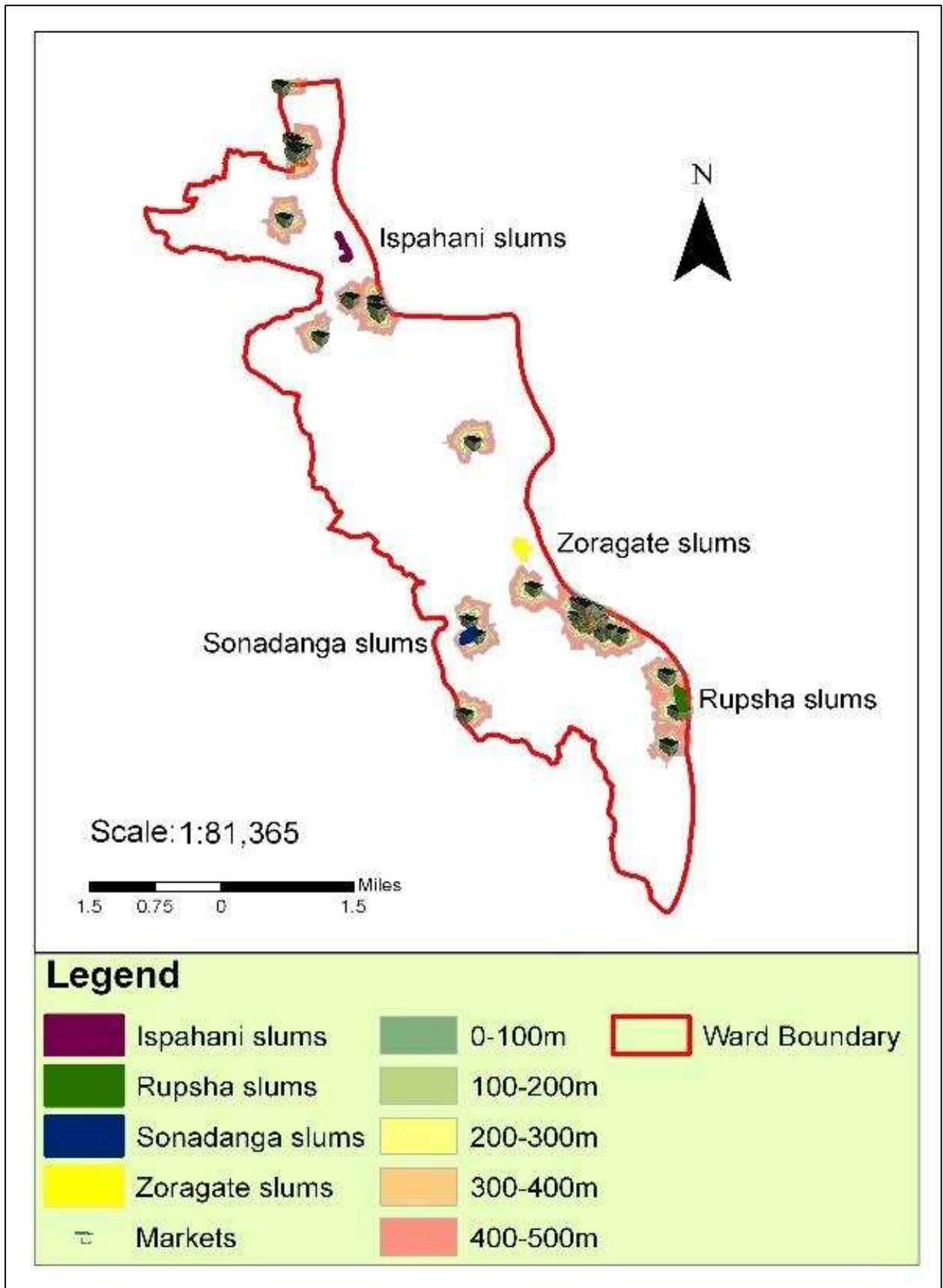


Figure 14 Service range of the markets (Source: Author, 2016)

4.4. Analysis of Health & Sanitation

4.4.1. Sanitation for Different Slum Types

The scenario of different types of slums in terms of sanitation is such that most of the dwellers from all four types of slum uses shared sanitation. Again, all of the slums seems to use more sanitary latrine than pit latrine and no sanitary latrine because of NGOs' activity on sanitation improvement of slums. Although most of the latrines are provided by different NGOs, very few household have owned latrine.

Table 15: Sanitation system usage percentage per slum.

Sanitation						
Indicators		Sanitation Type			Sanitation System	
		Sanitary	Pit-Latrine	Non Sanitary	Owned	Shared
Slum Type	Public	58.5%	30.4%	11.1%	17.6%	82.4%
	Private	85.9%	14.1%	0%	18.7%	81.3%
	Socially Deprived	50%	44.4%	5.6%	5.9%	94.1%
	Floating	0%	100%	0%	0%	100%

4.4.2. Health Issues

Most of the slum dwellers face Fever and Cold and Cough and Diarrhoea most as health issues and most of them indicated the dirty environment as the main reason behind their health issues. Overall dirty environment of slum consists of waterlogging, waste disposal at here and there, and congested living. Another major reason for health issues is contaminated water. Although most of the slum dwellers uses tube well water for drinking and other daily purposes, its quality is not up to the mark because of logged water around the slum area and bad condition of drainage system. Water gets contaminated easily for logged waste water and again logged water body and drains are suitable breeding place for mosquito.

Cost due to health issue is a major concern for the slum dwellers as they face it at a regular interval. Around 89% from total respondents prefer government hospital for healthcare as being cheap in terms of cost but most of them are not satisfied with the service. In terms of expenses, 67.7% dwellers has to pay around 100-500 taka for each health issue.

4.5. Major Findings from analysis at a glance

An overall comparison is figured out among three types of slum in this section

Aspects	Public Slum	Private Slum	Socially Disadvantaged Group
School going children	38.6% families is not able to send their children to school.	25.6 % families is not able to send their children to school.	52.94% families have no school going children
Migrated Families	34.54%	40.83%	77.8%
Income of max. families	29.7% people have income 5000-8000 BDT	36.57% families have income of 5000-8000BDT.	11.1% have income of 3000-5000BDT.
House Ownership	19.8% rented & 5.8% illegal.	43.5% rented & 1.06% illegal.	11.76% rented.
Sanitation system	82.43% use communal sanitation system.	81.2% use communal sanitation system.	All use communal sanitation system.
House Type	14.7% are jhupri, 53.68% are katcha and 1.23% are pucca, rest are semi-pucca.	13.28 % are jhupri, 29.54% are katcha and 3.79% are pucca, 52.59% are semi-pucca.	33.33 % are jhupri, 50% are katcha, and 16.7% are semi-pucca.
Waste Disposal System	86.4 % do not have any waste disposal system.	84.6% do not have any waste disposal system.	No waste disposal system.
Waste Disposal Point	Nearby pond and river.	Near road and the disposal point constructed by NGO.	Not in any specific place.
Water Logging Problem	49.9% families face this problem.	61.75% face this problem.	75% face this problem.
Damage of houses due to natural calamity	49.9 % families face it.	35.6% face it.	All have this problem as most of the house is of Jhupri type.
Contaminated Water	40.06% people face it.	47.40% face this problem.	60% face this.
Congested Housing	Public slums are more congested than private slums.	Private slums are less congested.	-
Local Bulling	Yes	No	Yes
Theft, robbery	Frequently happens.	Not so frequently	-

(Source: Field survey and author's analytical perspective, 2016)

Chapter 5: Conclusion and Recommendation

In conclusion we can say that, the slum people obviously need financial help from government or non-government organization. In that case drainage, electricity facility, sanitation and water supply facility has to be improved and proper security for family members, women, and children are a must.

Under the above circumstances, problem specific recommendation has been provided below for better understanding and what is need to be done to upgrade the existing situation:

First of all, sanitation condition is very poor in most of the slums that were surveyed. About 60-65% household share the same latrine for sanitation which is unhygienic and a major cause of various health hazards.

So in this perspective more pucca latrine is needed to be made for per capita household so that about 40-50% household share common sanitation facilities. In this regard local NGOs and govt. organization has to make a social survey where the severity is high in terms of sharing.

Secondly, most of the semi-pucca households are in poor condition they need to be repaired in emergency basis. So a community based financial helping organization can be formed where the rich people can contribute to improve the infrastructural facilities. In this respect a social advertisement can be formed with volunteers from school or college going children. This has to be aided by govt. or social organization. Community participation has to be ensured in this respect to evaluate a successful assessment for this plan. The amount of money which can be drawn from the fund can be then used for infrastructural improvement purpose in a monthly basis and based on emergency where a committee will be formed for overall maintenance.

Thirdly, establishment of an order of deprived areas to know about the most deprived to less deprived areas. It will help to identify that who needs most and urgent support for improvement.

Fourthly, the slum severity index (SSI) which is calculated in this study can define in which perspective the improvement work should be done and focused on. This will help us to provide a way of physical as well as social improvement for slum dwellers.

Finally, policy level act is not properly implemented in this region. So more field level work should be done before providing financial and organizational support to the urban poor to validate the level of support needed to be given to that particular area or household.

While the experiences highlighted in this working paper point to aspects that worked well, there are also plenty of instances where the same mistakes are made time and again. Based on a literature review and interviews with stakeholders we selected a shortlist of best practice and common mistakes which are given below:

Do:

- i. ensure community participation in slum upgrading and work in partnership, fostering collaboration between stakeholders;
- ii. Focus on both tenure and access to basic infrastructure (including pragmatic approaches to the former)

- iii. Build flexibility in the design and implementation of slum upgrading programs to account for different communities' specific needs, including the poorest;
- iv. Provide a city-wide framework policy to enable 'scale' with local-level implementation since each settlement may face differing circumstances;
- v. Have a lead agency with a clear mandate that can run the program and coordinate the work of other government agencies and actors;
- vi. In addition to slum upgrading, plan for urban expansion and provide affordable housing; in cities where more than half of the population lives in slums, city upgrading rather than slum upgrading is required.

Don't:

- i. Evict slum dwellers; fear of eviction and insecure tenure increases poor communities' vulnerability and prevents them from making improvements to housing and basic infrastructure;
- ii. Relocate them to cheaper land far away from job opportunities; it does not improve the well-being of the urban poor;
- iii. Provide poor quality materials and infrastructure; these can undermine the confidence of the community;
- iv. Operating as individual organization (different departments of government need to work together for coherent implementation e.g. access to utilities plus financing for housing);
- v. Try to stop rural–urban migration (while improvements in rural development and agricultural productivity in poor countries are needed, efforts to restrict rural–urban migration do not work; migration flows will continue)

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