

# **DETERMINING A SATISFACTION INDEX OF URBAN LOCAL BODIES**

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## **PROJECT OVERVIEW**

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This project, "Determining a Satisfaction Index of Urban Local Bodies," focuses on assessing citizen satisfaction with urban governance in three municipalities: Kolkata Municipal Corporation (KMC), Kamarhati Municipality, and Gobordanga Municipality. The study focuses on the need for effective, accountable local governance in fast-growing cities, recognizing that citizen satisfaction is a key measure of governance quality.

In today's world, good governance is key to building sustainable cities. This study looks at how people feel about their urban local bodies (ULBs), using both surveys and interviews to gather in-depth feedback on their experiences and opinions.

The research covers several important aspects of ULB performance, like public service, health and safety, urban development, environmental sustainability, transparency in ULB's decisions, civic engagement, etc. Two stage cluster sampling approach is used to ensure diverse representation by socioeconomic background, age, education level, length of residence, etc.

The goal of this project is to give ULBs the insights they need to boost transparency, accountability, and public involvement, ultimately supporting better governance and enhancing residents' quality of life.

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## **INTRODUCTION**

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### ***Relevance of the project***

Urban local bodies (ULBs) play a vital role in improving city life, affecting everything from services to local governance. As cities like Kolkata, Kamarhati, and Gobardanga grow, understanding how satisfied people are with these local institutions is more important than ever. This project, "Determining a Satisfaction Index of Urban Local Bodies," aims to measure and assess how people feel about their local governance, focusing on essential areas like public service, health and safety, urban development, environmental sustainability, transparency in ULB's decisions, civic engagement, etc.

This study offers insights into the effectiveness of local governance and helps policymakers identify areas needing improvement. By establishing satisfaction benchmarks, this project also contributes to ongoing efforts to make urban living more sustainable and equitable.

### ***Technology involved***

As this project is a mixed-method approach that integrates both quantitative and qualitative research techniques the project leverages several tools and technologies to ensure effective data collection, organization, and analysis:

- A. **Google Forms**: Used for designing and distributing the survey questionnaire online, Google Forms facilitated accessibility for respondents with internet access, allowing for easy data input and storage.
- B. **Survey Questionnaire (Offline Tool)**: For areas or demographics with limited internet access, physical survey questionnaires were utilized. These were manually filled out by respondents and later entered into digital format for integration with the main dataset, ensuring a comprehensive sample.
- C. **Microsoft Excel**: Excel served as the primary tool for data processing, from organizing and cleaning the data to calculating averages, weighted satisfaction indices, and standard deviations. It was also used for generating visualizations and conducting cross-tabulations.
- D. **Tableau**: It was used in cases where our desired graphical representations could not be created on Excel. We created word clouds on Tableau to visualize the responses on our open-ended questions with their frequency number.
- E. **GIS Mapping**: Geographic Information System (GIS) technology (Q-GIS application) was used to create spatial maps of the survey regions of three ULBs, helping to visualize the distribution and satisfaction patterns across wards and boroughs in ULBs. This added a geographic dimension to the analysis.

## ***Background material survey***

The survey questionnaire was designed to encompass multiple segments relevant to urban residents' satisfaction with local services. It includes:

- A. **Public services**: Questions related to respondents' satisfaction with essential services like garbage collection, road maintenance, and drinking water supply.
- B. **Health and safety**: Queries about healthcare facilities, law and order, and disease control measures.
- C. **Urban development**: Items focused on infrastructure development, housing, and slum improvements.
- D. **Environmental sustainability**: Questions addressing green spaces, tree plantations, pollution, and waste management.
- E. **Citizen engagement**: Topics on how residents feel about their engagement with ULBs, communication methods, and feedback mechanisms.
- F. **Overall satisfaction over the past 10 years**: This section captures residents' views on how key services like water supply, education, and healthcare have progressed over time, using categories such as "getting better," "unchanged," and "getting worse."
- G. **Open-ended questions**: Here, participants share specific pressing issues in their locality and suggest additional services they would like the ULB to introduce. This gives direct feedback on local needs and preferences, allowing for a qualitative layer to the satisfaction index.

## ***Procedure Used***

The project followed a systematic procedure:

- A. **Defining Parameters**: Key dimensions of satisfaction identified, such as public service, health and safety, urban development, environmental sustainability, transparency in ULB's decisions, civic engagement, etc.
- B. **Developing Instruments**: A structured questionnaire and interview guide was created on the basis of the predefined parameters.
- C. **Two-Step Sampling**: Firstly, cluster selection was done, wards within each ULB area were selected as primary clusters (for Kolkata different boroughs were selected). This helped to capture diverse localities within each urban body. Secondly, random sampling was done within within cluster, a random sample of individuals was then selected from each ward (for Kolkata - boroughs). This approach aimed to reduce sampling bias and provide a balanced demographic distribution across age, income, occupation, and educational background.
- D. **Data Collection**: The survey was distributed through online platforms (google forms). Interns also conducted offline surveys in different parts of the study area on the basis of the designed questionnaire.
- E. **Data Analysis**: The quantitative data was analyzed to calculate the satisfaction index, providing a measurable score of citizen satisfaction. For the qualitative data, a thematic analysis was conducted to identify key insights and common themes from the participants' responses.
- F. **Reporting**: The Findings are compiled into a comprehensive report that includes the satisfaction index, key insights, actionable recommendations and other aspects.

## ***Purpose of the Project***

The main purpose of this project is to create a detailed Urban Local Body (ULB) Satisfaction Index, which will be a tool to measure how satisfied residents are with key services and facilities provided by ULBs in Kolkata, Kamarhati, and Gobardanga. By looking at residents' experiences with services like public utilities, health and safety, infrastructure, environmental management, and citizen engagement, the index gives a clear picture of how well ULBs are meeting public needs.

This project also examines satisfaction trends over the past decade, highlighting both improvements and ongoing challenges in areas like water supply, waste management, education, and healthcare. Through open-ended responses, it captures local challenges and gathers feedback on additional services residents would like.

Beyond evaluating current conditions, the project provides useful insights for urban planners, policymakers, and ULB officials. The ultimate goal is to use this index to support continuous improvement, enhance quality of life, and promote sustainable urban development in these areas.

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## **PROJECT OBJECTIVE**

This project focuses on developing a Satisfaction Index to evaluate and compare citizen satisfaction levels among three distinct urban local bodies which are Kolkata Municipal Corporation, Kamarhati Municipality, and Gobordanga Municipality. The objectives are outlined as follows:

**1) A Comprehensive Satisfaction Index:**

The project aimed to create a comprehensive ULB Satisfaction Index to quantify resident feedback on essential urban services across Kolkata, Kamarhati, and Gobardanga. This index encompassed five primary segments: Public Services, Health and Safety, Urban Development, Environmental Sustainability, and Citizen Engagement, providing a detailed and measurable reflection of public satisfaction within each of these service categories.

**2) Different Satisfaction Among Different Occupation and Income Rates:**

The objective was to analyse how satisfaction levels varied among different occupational groups and income brackets within the three municipalities. Surveys were designed to collect demographic data, allowing segmentation of results to see if higher-income individuals or specific occupational groups (like student, self-employed, retired, homemaker, etc.) reported different satisfaction levels.

**3) Evaluated Satisfaction Trends Over the Past Decade:**

The project also examined satisfaction trends over the last ten years for specific service aspects, including water supply, waste management, and healthcare. This analysis of past data aimed to uncover improvements or persisting issues, offering insight into how ULB services evolved over time and whether these changes met residents' expectations.

**4) Correlation Between Services:**

A correlation analysis was conducted to understand the relationships between different satisfaction segments. This helped identify which services, such as health facilities or environmental management, had the most significant influence on overall resident satisfaction. These findings aimed to inform authorities about priority areas that impact public perceptions more strongly.

**5) Identifying Key Concerns:**

Through open-ended survey questions, the project gathered detailed resident suggestions for additional services and facilities, which provided deeper insights into local priorities and unaddressed needs. This qualitative data highlighted specific community preferences and potential improvements that may not have been fully covered in the structured survey responses.

**6) Comparison Among Three ULBs:**

By gathering and analyzing feedback, the project conducted a comparative assessment of satisfaction scores among the three surveyed ULBs. This analysis identified key differences and commonalities in public opinion, highlighting each ULB's service strengths and pinpointing specific areas that required targeted improvements.

**❖ A Sample Survey conducted to Gather Resident Feedback:**

This project utilized a sample survey approach to collect opinions and satisfaction ratings from residents of the three ULBs. By employing a two-step cluster sampling method—selecting clusters first and then using random sampling within those clusters—the project ensured a representative sample of each region's population. This methodology enabled a manageable data collection process while maintaining diversity in respondents to reflect a broad spectrum of public opinions across age groups, occupations, and socio-economic backgrounds.

**❖ Focused on a Target Population within Urban Local Bodies:**

The target population for this survey consisted of residents within the boundaries of the selected ULBs: Kolkata, Kamarhati, and Gobardanga with samples of 50 responses

each for Gobardanga and Kamarhati, and 100 responses for Kolkata. This sample distribution was designed to capture diverse satisfaction levels and service needs across these areas. By focusing on this demographic, the project aimed to capture meaningful insights from those whose daily lives and well-being are closely tied to the performance of their local governing bodies.

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## METHODOLOGY

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The research is a Descriptive Research. For the research on the aforementioned topic, we would be taking up the mixed methodology. This would be combining the quantitative and qualitative methods to answer our question. Using the mixed method would be beneficial as it will help us gain a more complete picture on the issue at hand. The deficiencies of standalone qualitative and quantitative studies will be avoided as a result. In this type of study that we would be undertaking, getting a total understanding of the topic from all possible viewpoints is given a priority.

For the **quantitative methods**, we would be asking questions in the forms of numerical scales, such as the Likert Scale. The values obtained on these scales will give us a numerical satisfaction score. This score can then be transferred to an index, which can then be represented and analysed graphically.

As for the **qualitative methods**, our surveys will include open ended questions that allow the respondents to express their thoughts in words. Their opinions will be taken into account on various issues that come under our study area. The responses to these will allow us to see the data in a theoretical manner. We can then thematically analyse the data obtained to give more bases to our findings.

### *Sampling Methodology*

#### **Size**

Firstly, to get an actual representation of Urban Local Bodies with its population in millions, as is the case for the Kolkata Municipal Corporation, we would have to survey each and every single borough and collect thousands of samples. In reality however, this is not possible with such a small team and very limited time. Therefore, we had to select certain areas which would give the best possible representation of the entire ULB. As for the size, we had 200 samples from across the 3 ULBs, 100 from KMC and 50 each from Kamarhati and Gobardanga Municipalities.

#### **Method**

Our sampling procedure was done by the two-stage sampling method. In the first stage we selected clusters from our study area. These were our areas of interest. When we had to select the samples from the cluster thereafter, we had two possible methods available, that is simple random sampling and stratified random sampling. We chose to go ahead with simple random sampling from our selected methods as this gave us a variety of samples in its natural state.

### *Survey Methodology*

#### **Questionnaire**

We conducted both online and offline surveys for this research. A questionnaire was formed that covered all bases with respect to our research. The questionnaire has been attached with this report for reference. Our questionnaire contained both closed and open-ended questions. The closed questions were in the form of the Likert Scale and asked respondents for their satisfaction on various issues. These included issues such as public service, healthcare, citizen engagement and urban development. The open-ended questions mainly focused on understanding the major problems of a particular area. The respondents were asked to answer these in their own words as they felt. Moreover, at the very beginning of the questionnaire, we have a demographic information section for the respondents. This section includes details like the age, sex, occupation and level of income. These types of data were important for us as we based some parts of our analysis on them. For the online part of our survey, the same questionnaire was sent out for responses in the form of a Google Form.

#### **Online survey vs Offline survey: A comparison**

The process, experience and everything else that made up the survey were extremely different in the two modes. We, as a team of 5 members, physically went to our target areas to conduct surveys for the offline responses. It was quite an experience and indeed very different from circulating Google Forms on WhatsApp. Below, we try to draw a contrast between our two modes of survey:

	Offline		Online
✓	Area of interest could be chosen specifically. Distribution of data was more or less uniform, and the data was collected exactly according to its needs.	✗	Random distribution of Google Forms brought data from all possible areas within the respective ULB. Distribution of data was not uniform.
✓	Respondents could be chosen with respect to their potential demographical group, with visual inputs. This helped us get data from people of varying socio-economic backgrounds at will.	✗	There was little room to filter respondents through their demographic identities. Therefore, most of the online data ended up being from similar socio-economic backgrounds
✗	As a team of only 5 members, offline surveys were extremely time consuming and physically exhausting for us.	✓	Online surveys were very effective with respect to time management, as we could just circulate the Google Forms and the respondents could answer them when they wanted.
✗	With offline surveys, we often had to talk about our research to many people in detail, before finding out that they weren't actually interested.	✓	With online surveys, we did not have to physically deal with people refusing to take part. They could simply not respond if they wanted to.
✓	We could explain each question to the respondents personally and judge their thoughts accurately.	✗	There could possibly have been rare cases, where an online respondent has misunderstood a question and hence given a response which they don't actually mean to.

### Our Areas of Interest

The research has been focused on certain areas on the 3 ULBs in such a way that we get maximum representation of the entire Municipality or Municipal Corporation.

Our areas of interest for the Kolkata Municipal Corporation, the Kamarhati Municipality and the Gobordanga Municipality are as follows. The corresponding borough/ward numbers have been given alongside as applicable.

KOLKATA MUNICIPAL CORPORATION	
North Kolkata	South Kolkata
Borough No. ( Area )	
1 ( Bagbazar, Shobhabazar, Kumortuli, Shobhabazar, Belgachia )	8 ( Southern avenue, Deshapriya park )
2 ( Fariapukur, Shyampukur, Shyambazar, Amherst Street )	10 ( Poddar Nagar, Sulekha, Jadavpur, Vidyasagar, New Alipore, Ramgarh )
4 ( Maniktala, Girish Park )	11 ( Baghajatin, Santoshpur, Haltu, Sapuipara )
5 ( Jorasanko, Rajabazar, Mg Road Metro, Marcus Lane, College Street )	12 ( Garpha, Ramlal Bazar, Garia, Ajaynagar )
6 ( Maidan, Boubazar )	14 ( Behala )
7 ( Maidan )	

KAMARHATI MUNICIPALITY	
Areas	Ward No.
Ariadaha	3, 4
Belgharia	20, 35
Dakshineshwar	12, 13
Rathtala	23

GOBORDANGA MUNICIPALITY	
Areas	Ward No.
Goipur	2
Master Colony	7
Khantura	14
Gobordanga Bazar	9, 10
Station Area	12



Methodology of Analysis

Majority of our analysis was done on Microsoft Excel using various tools within it. To start with, all the data that we had collected from the surveys, both online and offline was entered into our validated data sheet. Using data validation helped us verify that all the values entered were applicable, and helped us resolve errors if any. Then we did data tabulation after the validation process. Our entire dataset contained around 200 samples from the Kolkata Municipal Corporation, Kamarhati Municipality and the Gobordanga Municipality. The analysis we did could be broadly divided into two parts. The first one involved the study of the entire data set and drawing comparisons between the 3 ULBs. The other part was about a detailed study of each of the 3 bodies, comparing satisfaction scores between them, based on our areas of interest.

Average Satisfaction

As mentioned earlier, our questionnaire included certain segments on which questions were asked. These segments were divided in a distinct manner. They were as follows:

- Public Services
- Health & Safety
- Urban Development
- Environment & Sustainability
- Citizen Engagement

The Likert Scale was used on questions relating to the aforementioned five segments. The design of the scale is given below:

Satisfaction level	Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
Score	1.	2.	3.	4.	5.

For the basic level analysis, we converted their raw answers to an average value for each segment. For example, if a respondent had answered 4, 2, 3, 5, 2 on the five questions relating to urban development, we can find out the average of this is 3.2. This number would then be our Urban Development average for that respondent. However, now that we had mean values, we would need to create a continuous Likert Scale index. This was done according to the table mentioned alongside:

Average Value Range	Interpretation
1.0 – 1.8	Very Dissatisfied
1.8 – 2.6	Dissatisfied
2.6 – 3.4	Neutral
3.4 – 4.2	Satisfied
4.2 – 5.0	Very Satisfied

According to this scale, we would then decide what the average satisfaction score signified. This scale has been used throughout the analysis at different stages as and when required, since we arrived at average values of satisfaction scores multiple times, for different levels of our study.

Overall Satisfaction and Weightage Index

Once we had calculated the average of every respondent for each different segment, we could then calculate the mean of all the averages under a certain segment and that value would show us the overall satisfaction regarding a particular segment in that given area. In this way, it was repeated for all five segments for a given area, and we could see how satisfied our sample was overall regarding a particular topic. This we did using PivotTables on Excel. We then represented the same on bar graphs to give a clear visual idea of the same. This process was done for each of the 3 ULBs, as well as for each area within a ULB when analyzing the ULBs in detail.

Our next target was to find out about the overall satisfaction score of an area (or an entire ULB) when taking into account all five segments of the survey. For this, simply averaging the five segments would not give a true representation of our data since all the factors could not have equal importance. Therefore, we had to assign weightages to each segment. To do this, in the same way we calculated the average for each different segment, this time we calculated the standard deviations for each of the five segments. This we did for the three Urban Local Bodies.

While comparing the standard deviations for these 3 ULBs on each different segment, we found out that Health & Safety, and Environment & Sustainability had more or less the same standard deviation values across the three ULBs. Based on this variation, the segments with lower variation were given a higher weightage, and vice-versa. The weightage of each of the five segments are given according to the table below:

Segment	Weightage
Public Service	20% (0.2)
Health & Safety	30% (0.3)
Urban Development	15% (0.15)
Environment & Sustainability	25% (0.25)
Citizen Engagement	10% (0.1)

Calculating the weighted average for these five segments gave us a weighted average for each ULB while comparing the three. Also, we did the same while studying each ULB in detail while dividing them based on our areas of interest. For that, we got an overall weighted satisfaction score for each area. In both these cases, we converted the score to our Likert Scale Index as was mentioned above. The weighted overall satisfaction score was also represented graphically to understand the numbers that showed up visually.

### Trend Analysis of the Past 10 Years

Moreover, we had a section near the end of the questionnaire which aimed at finding out about the change in multiple facilities over the last 10 years. These questions had three possible answers, getting better, getting worse, and unchanged. The facilities include various aspects like education, healthcare, market and hazard mitigation. Since these answers were in words, we needed to create a value-based index according to the answers. This helped us analyze data for those questions on a larger scale. The index for these questions were as follows:

Answer	Assigned Value
Getting Better	+1
Unchanged	0
Getting Worse	-1

Once we assigned these values to their corresponding responses, we found the average value of each particular question such as education, power supply, internet access, etc. This we did both for the ULBs and for the areas that we studied under them. It helped us understand whether a particular facility had improved or regressed in the past ten years and by how much. We represented the same through heat maps on Excel that gives us very clear picture of the changes that took place. Once we had the average for all the questions, we then found out their mean so as to understand the rough change overall in an area or an entire ULB when considering all parameters. The same has been represented through horizontal bar graphs alongside.

For the trend analysis, we also checked for outliers in the data using the inter-quartile range (IQR) method and the Z-score method. When we analyzed the three ULBs as a comparison, we did not find any outliers. However, when each ULB was separately analyzed based on their wards or boroughs, we did find a very few natural outliers. Our work had no faults in the survey or calculation and thus, we retained the outliers in our analysis as they reflect the true form of the data.

### Satisfaction based on Demographic Characters

Since we had data from people of varying socio-economic backgrounds, we could use their occupation and level of income, to understand how their satisfaction scores varied across the board. This is something we only did while comparing the 3 Urban Local Bodies as a whole, since we did not have people in our dataset from every type of occupation while studying each area of interest. We used PivotTables again and this time plotted the satisfactions separately with respect to their occupation and their annual family income one after the other. Heat mapping was used to visually interpret the differences in satisfaction across the different sections of society.

### Correlation Analysis

The correlation analysis tried to see how strongly each segment of service related to one another. We did this for all of the three ULBs by using the correlation function and using the series of individual averages of each segment. What we arrived at was a correlation matrix that was conditionally formatted to highlight which factors relate with each other more than others. Analyzing this helped us understand the underlying reasons for the satisfaction scores across the different segments.



## Analysis of Open-Ended Questions

We had three open ended questions at the end of our questionnaire that was in a way optional for respondents to answer.

**Q1.** What are the most pressing issues in your locality that the ULB should address?

**Q2.** What additional services or facilities would you like the ULB to introduce in your locality?

**Q3.** Any other suggestions or feedback for the Urban Local Body.

We manually made a frequency distribution table based on whatever answers we saw to those questions. We wanted to generate a word cloud to visually represent the most pressing issues and the answers we got to that question. This was done using Tableau as it was not available in Excel. We imported the data from excel chart and created a packed circle chart with the corresponding frequencies displayed inside the circle.

For the second question about the additional services the respondents wanted in their area, we created a similar frequency table manually. This was graphically represented via a line chart. The word cloud and line graph clearly brought out the major problems at hand for the ULBs and what needs to change.

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## DATA ANALYSIS

This section presents a comprehensive analysis of the data collected from the Urban Local Bodies (ULBs) of Kolkata, Kamarhati, and Gobardanga, focusing on resident satisfaction across various service dimensions. The analysis includes **summary tables, cross-reference tables, graphs, and visualizations** to provide clear insights into the satisfaction levels of residents and highlight key patterns and trends. The data has been analyzed in three main parts:

### 1. Descriptive Analysis:

This section includes summary statistics such as **average satisfaction scores, weighted satisfaction indices, and standard deviations** for each service segment (e.g., public service, health and safety, urban development). These values offer an overview of how residents perceive each aspect of their local governance, and we use cross-tabulation to explore the relationship between satisfaction and demographic factors like income and occupation.

### 2. Trend Analysis:

The trend analysis focuses on assessing the changes in various service aspects over the past 10 years across the three ULBs (Kolkata, Kamarhati, and Gobardanga). This analysis aims to capture residents' perceptions of improvements, stagnation, or decline in services, helping us understand which areas have progressed and which require attention. Key service aspects examined include **education, healthcare, road infrastructure, water supply, waste management, and more.**

For each ULB, we calculated the weighted average trend scores for each service aspect. These scores are categorized as **"Getting Better," "Unchanged,"** or **"Getting Worse,"** based on residents' responses. The results are presented in summary tables and visualized with trend graphs, allowing us to compare changes across ULBs.

### 3. Inferential Analysis:

Inferential analysis dives deeper into the relationships among satisfaction dimensions to understand how various service aspects influence each other. Using statistical tools, particularly **correlation analysis**, we explore the interconnections between different satisfaction segments (e.g., public services vs. health and safety, urban development vs. environmental quality).

This analysis aims to reveal patterns that suggest causative or associative relationships. For example, a high positive correlation between public services and health and safety satisfaction indicates that improvements in one area could positively impact the other, enhancing overall resident satisfaction.

The analyzed data has been presented into four segments, which are:

- A. **Deeper insights into Gobardanga ULB**
- B. **Deeper insights into Kamarhati ULB**
- C. **Deeper insights into Kolkata ULB**
- D. **A comparative analysis among the three ULBs (Urban Local Bodies)**

➤ **Deeper Insights into Gobardanga ULB (Urban Local Body):**

▪ **About Study Area:**

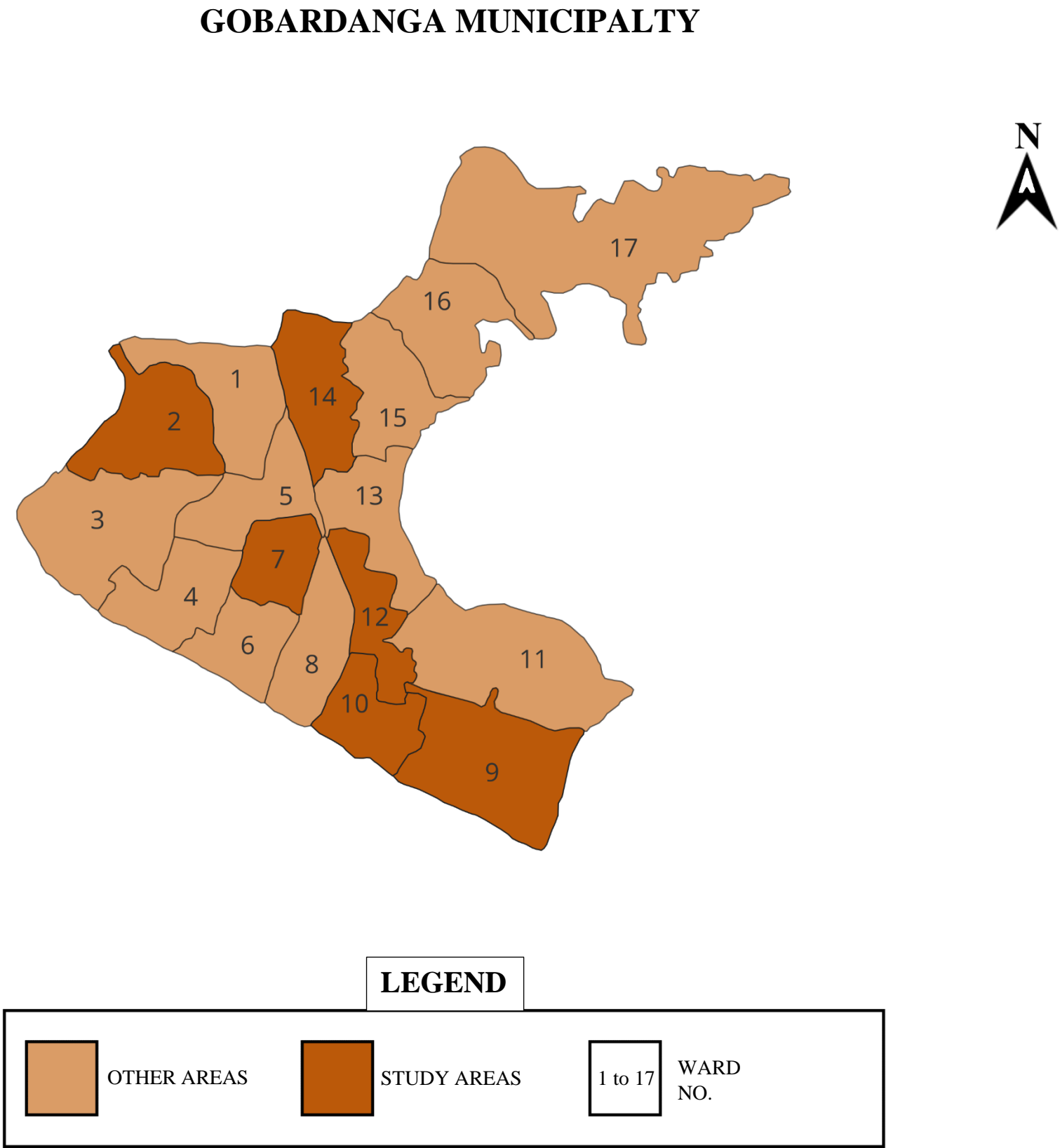
The sample for the Gobardanga Urban Local Body (ULB) analysis represents a diverse group of residents from various parts of central and south part of Gobardanga. We have collected 50 responses from Gobardanga by both online and offline mode. . We collected our data on the basis of areas of Gobardanga Municipality.

We surveyed the following areas in Gobardanga Municipality:

GOBARDANGA MUNICIPALITY	
Study areas	Ward No.
Goipur	2
Master Colony	7
Khantura	14
Gobardanga Bazar	9, 10
Station Area	12

Studying these distinct areas provide us valuable insights into how the residents of Gobardanga experience urban challenges differently depending on their location. By examining the satisfaction levels and needs of people from the above mentioned five areas, this study aims to capture the diversity of urban issues across the Gobardanga ULB area.

The following is the map of the Gobardanga Municipality. The map shows the study areas within the Gobardanga Municipality where the survey was conducted.



Map interpretation:

**Study Areas:** Five areas Khantura, Station area, Gobardanga bazar, Master colony and Goipur represent the primary focus areas of the survey, where data was collected to understand resident satisfaction and key concerns regarding municipal services. These study areas provide insights into the overall Gobardanga ULB’s public service efficiency, infrastructure conditions, and specific needs.

**Purpose:** This map is essential for understanding the spatial distribution of surveyed areas across the Gobardanga Municipality. By analysing the responses from these areas, we aim to assess the quality of services, public satisfaction, and areas needing improvement in the overall Gobardanga municipality.

The study areas selected within each area are critical for assessing a diverse range of issues. These areas allow for a representative understanding of resident satisfaction in zones of Gobardanga ULB.

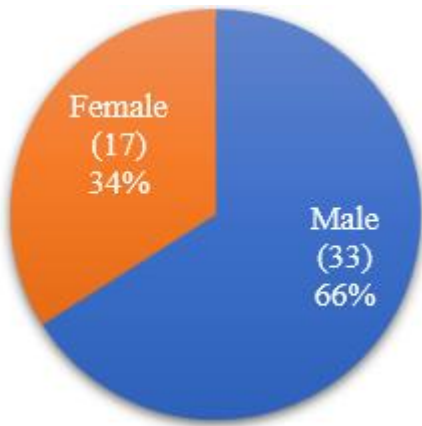
▪ Demographic Details:

By examining key attributes such as **age, gender, education, occupation, length of residence** and **family income**, this section aims to provide an overview of the respondents’ profile. Understanding these characteristics enables us to identify the needs and expectations of various groups within the survey, ensuring a more detailed interpretation of the findings.

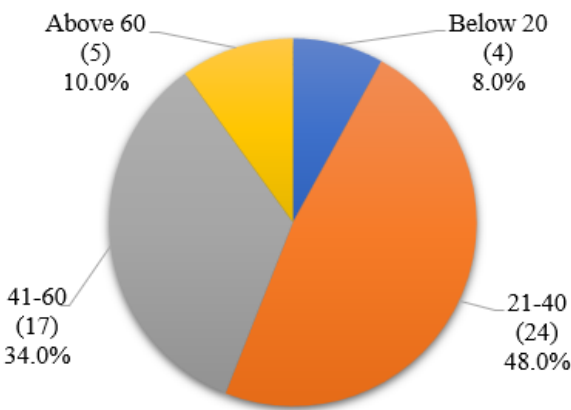
Gender Distribution:

The sample is predominantly male 66%, with females comprising 34% of participants. The male dominance in the sample may indicate a higher willingness or availability among men to participate in civic surveys in the area.

This male-dominant sample may not fully represent the needs and concerns of women in the area. This gender imbalance could influence the priorities expressed, as men and women may have different concerns regarding urban services and facilities.



Age Profile:



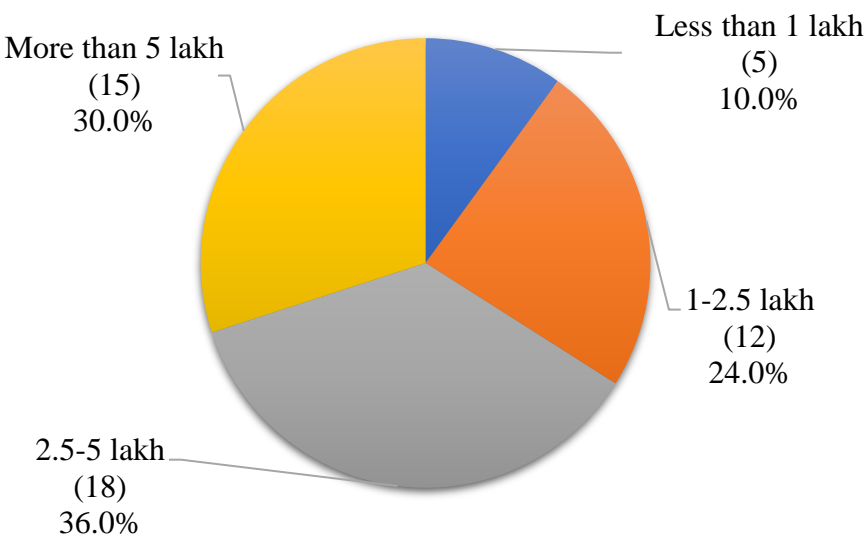
The majority of respondents fall within the 21–40 years age group (48.0%), followed by the 41–60 years group (34.0%). A relatively small proportion is under 20 years (8.0%) or over 60 years (10.0%).

The high proportion of respondents in the 21–40 years group indicates a potentially active and economically engaged demographic. This group may have a strong interest in issues related to employment, infrastructure, urban development, etc. But the small proportion of above 60 years may be more concerned with healthcare, accessibility, and safety.

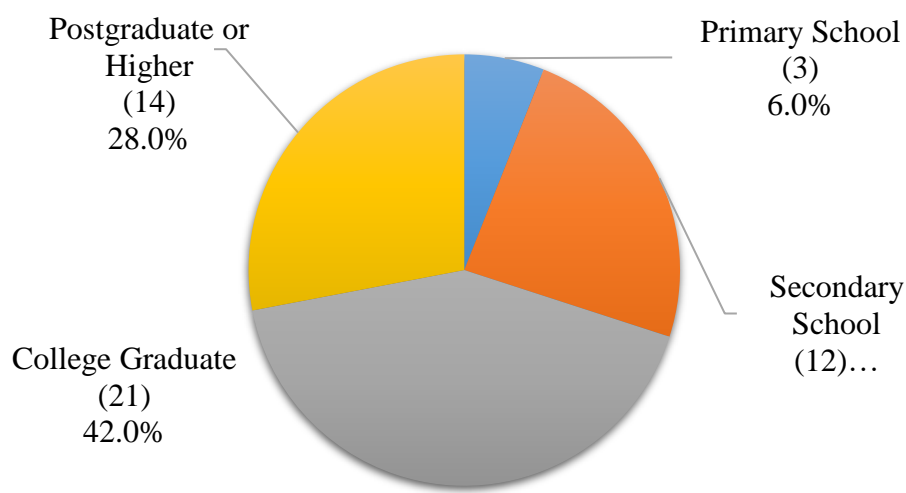
Economic Diversity:

The income distribution shows a diverse economic profile: 24.0% earn between 1–2.5 lakh, while 10% earn less than 1 lakh per annum. Around 66.0% earn more than 2.5 lakh, split equally between 2.5–5 lakh and over 5 lakh segments.

This diversity suggests that the sample includes both low and middle-income residents, potentially providing a balanced perspective on basic needs versus lifestyle amenities.



Educational Qualification:



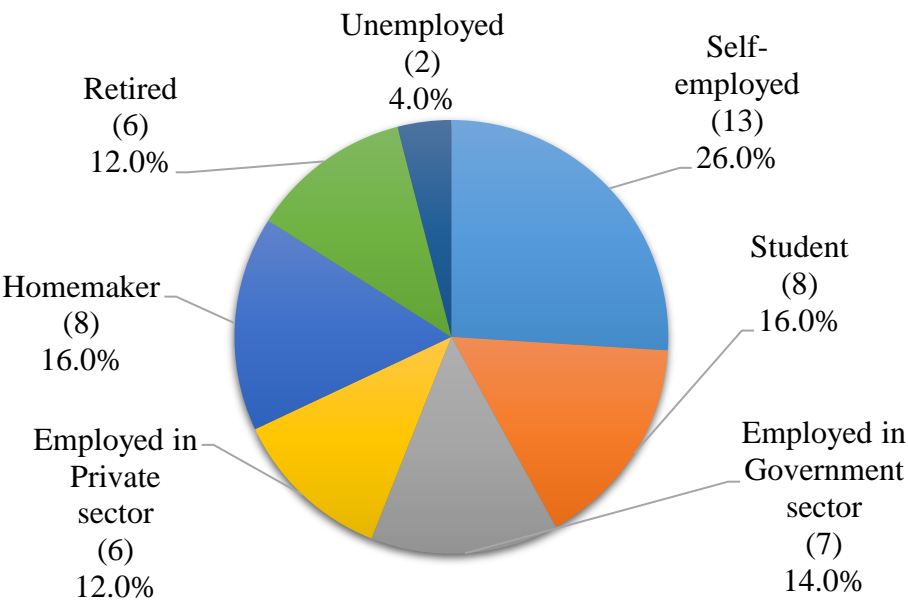
The sample is relatively well-educated, with a notable portion of respondents being college graduates (42.0%) and secondary school graduates (24.0%). This suggests a sample with awareness of civic and urban issues.

An educated sample likely has higher expectations for quality services from the ULB and may advocate for more advanced or sustainable urban development projects, such as environmental protection, waste management, and structured urban planning.

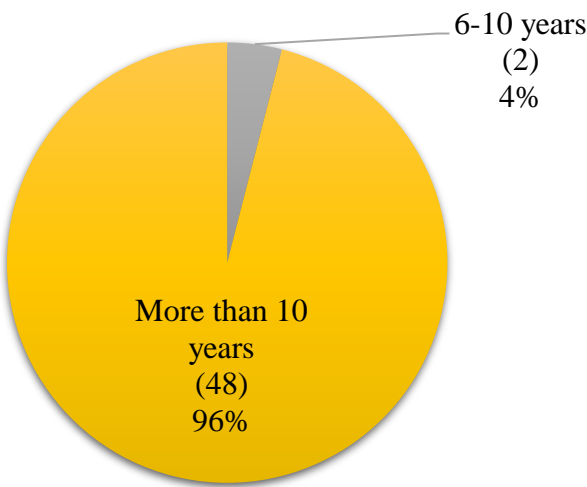
Occupational Profile:

Self-employed represent the largest occupational group at 26.0%, followed by homemaker (16.0%) and student (16.0%). Only 14.0% are employed in the government sector, and 12.0% are employed in private sectors.

A significant student population reflects a young, potentially transient demographic. Their needs may focus on educational facilities, recreational spaces, and public transport. The self-employed and private sector employees are likely to prioritize efficient infrastructure, market facilities etc.



Residence Stability:



Most respondents have lived in the area for more than 10 years, indicating a largely stable, long-term resident base. Only 4% of the respondents have lived in the area for 6-10 years.

Long-term residents are more likely to be invested in the area's development and may have deeper insights into changes over time, as well as more persistent issues like water logging, drainage, and traffic.

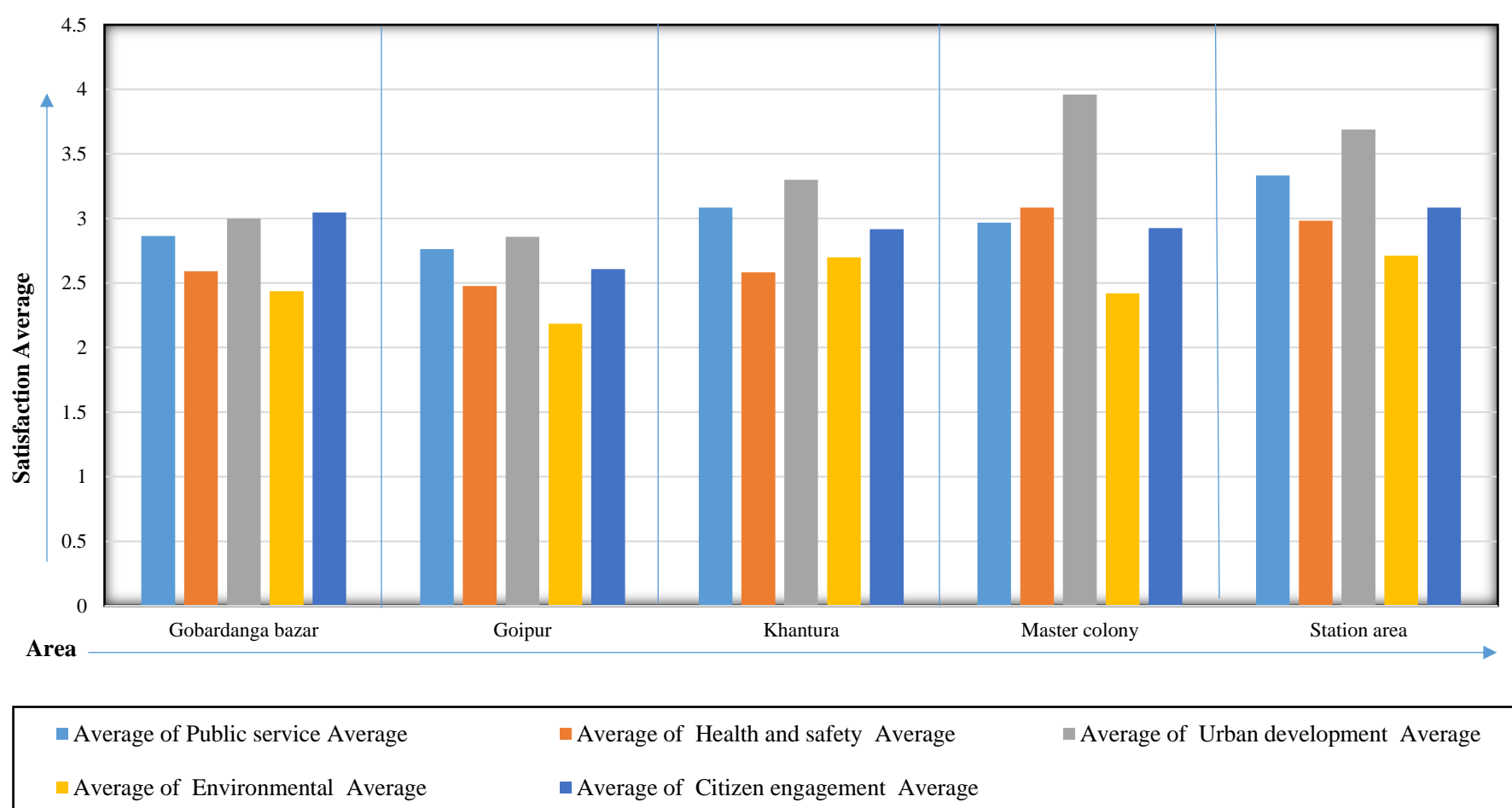
The demographic details of the respondents provide a foundation for interpreting the survey results, as it highlights the background characteristics that may influence participants' perspectives on urban issues. These will help us to understand, how different ULB services in Gobardanga satisfy the diverse population.

▪ Average Satisfaction of All Segments :

As we collected our data from different areas of Gobardanga municipality, satisfaction segments in our study like public services, health and safety satisfaction etc. provide us deeper insights about how multiple satisfaction criteria (**public service, health and safety, urban development, environment and citizen engagement**) have various satisfaction avg. scores in different areas.

Area	Public service satisfaction	Health and safety satisfaction	Urban development satisfaction	Environmental satisfaction	Citizen engagement satisfaction
Gobardanga bazar	Neutral	Dissatisfied	Neutral	Dissatisfied	Neutral
Goipur	Neutral	Dissatisfied	Neutral	Dissatisfied	Neutral
Khantura	Neutral	Dissatisfied	Neutral	Neutral	Neutral
Master colony	Neutral	Neutral	Satisfied	Dissatisfied	Neutral
Station area	Neutral	Neutral	Satisfied	Neutral	Neutral





By analysing **numerical satisfaction averages, qualitative satisfaction ratings** (conversion of numerical average score into satisfaction rating) and **the graphical representation of the satisfaction average scores** we get the following insights about public service, health and safety, urban development, environment and citizen engagement of different areas under Gobardanga municipality.

### Public Service Satisfaction :

Areas of Gobardanga municipality show an average satisfaction score of (2.97), indicating relatively consistent satisfaction across the municipality. Station area has the highest public service satisfaction score (3.34). Goipur has the lowest score in public service average satisfaction (2.76).

Above mentioned all surveyed areas in Gobardanga municipality are rated as "Neutral" in terms of public service satisfaction. This neutral satisfaction levels suggest that residents generally feel average about public services.

### Health and Safety Satisfaction :

The average satisfaction score for Health and Safety is (2.73) in the areas of Gobardanga municipality. Master colony has the highest health and safety satisfaction score (3.08). Goipur has the lowest score in health and safety satisfaction (2.48).

Ratings are "Neutral," and often “Dissatisfied” in Goipur, Gobardanga bazar, Khantura showing that residents generally feel insecure about health and safety services. Health and Safety services in most areas are viewed as dissatisfied suggesting that the condition of health and safety is in turmoil.

### Urban Development Satisfaction :

The average satisfaction score Urban development in Gobardanga municipality is (3.31) with highest score in Master colony (3.96) and lowest in Goipur (2.85). Most areas fall into the "Neutral" category for Urban Development, with only a few showings of "Satisfied" ratings. The neutral ratings and moderate averages suggest that residents feel urban development is acceptable but not outstanding.

### Environmental Satisfaction :

Environmental satisfaction is lower overall, with (2.45), higher satisfaction is in Station area (2.71) and lower satisfaction in Goipur (2.18), show overall dissatisfaction.

Gobardanga bazar, Goipur, Master colony have rated as “Dissatisfied” in terms of environmental satisfaction. Except Khantura and Station area as they rated environment in a “Neutral” state. Environmental issues appear to be a significant concern across Gobardanga municipality especially in areas where ratings fall under "Dissatisfied." It shows that these areas need immediate attention to improve waste management, pollution control and green space development.

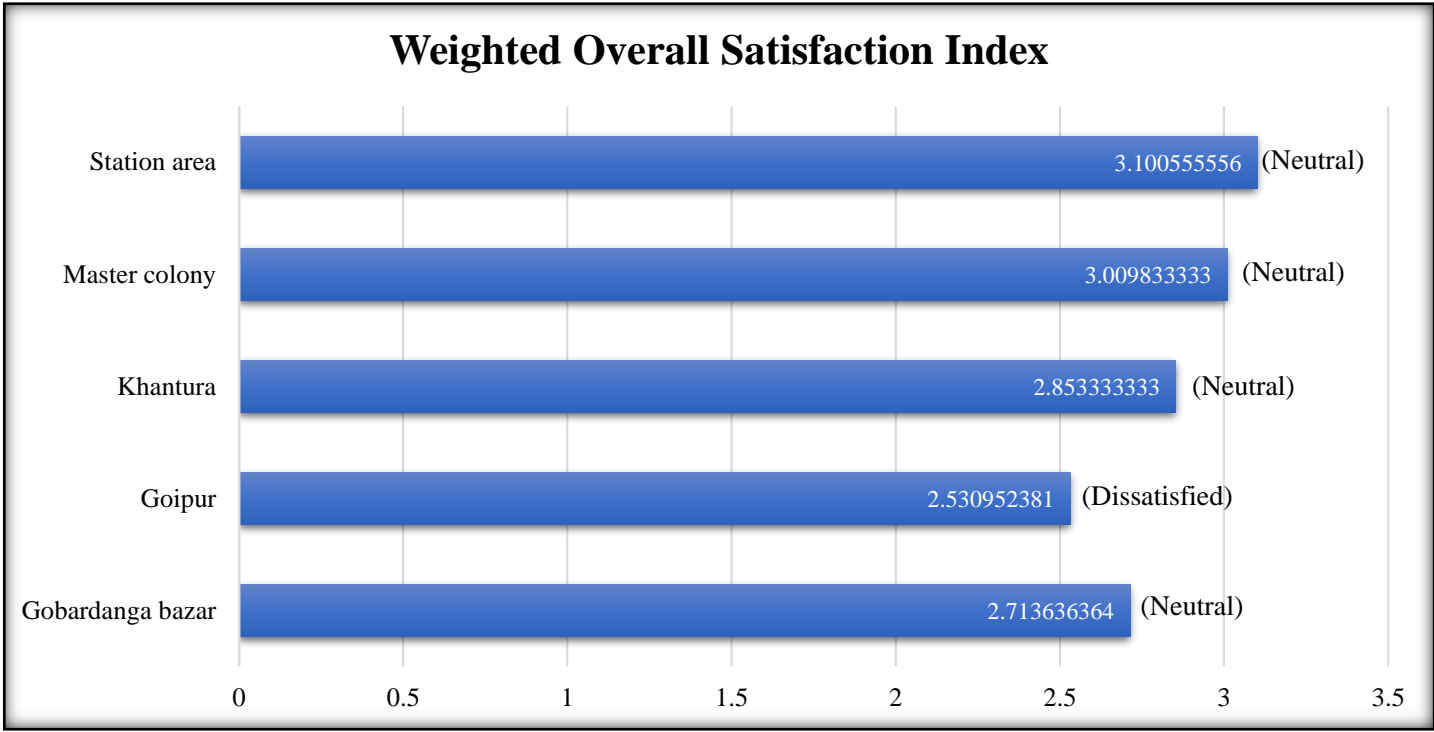
### Citizen Engagement Satisfaction :

Satisfaction with Citizen Engagement averages at (2.89) in Gobardanga municipality, indicating generally moderate satisfaction levels. Station area (3.08) slightly higher scores, indicating better engagement in those area. Goipur has the lowest score (2.60) in citizen engagement. All areas are rated as "Neutral" in Citizen Engagement. Citizen engagement has moderate ratings.



▪ **Overall Satisfaction of Each Area:**

The weighted overall satisfaction index was calculated for each area under Gobardanga municipality to provide a clear measure of residents’ perceptions of service quality. Through this we get a comprehensive understanding of overall urban satisfaction in Gobardanga municipality.



**Summary of Overall Satisfaction Levels in Gobardanga’s ULB Areas:**

- Most areas in Gobardanga municipality fall under the "Neutral" category, except Goipur that falls under the “Dissatisfied” category for overall satisfaction. This suggests that while residents do not express major dissatisfaction, there is also no strong positive perception toward urban services. The average values hovering around (2.5) to (3), indicate a generally balanced but a not so good satisfaction score.
- **Station area** has a slightly higher satisfaction score (3.10). It indicates that residents in Station area feel a little more positive about urban services than other areas. However, this area still fall within the "Neutral" range.
- **Goipur** is only area where satisfaction score (2.53) is in “Dissatisfied” range, that indicates residents of this area feel negative about urban services.

Residents generally have a neutral view of urban services across Gobardanga municipality, with only one area, Goipur showing dissatisfaction among its residents.

▪ **Analysis of Satisfaction Variability Across Gobardanga Areas :**

The standard deviation values across different segments of satisfaction provide insights into how consistently or differently residents feel about public services, health and safety, urban development, environmental quality, and citizen engagement within the Gobardanga municipality.

The following table is showing the standard deviation value of all satisfaction segments of each area.

Area	StdDev of Public service Average	StdDev of Health and safety Average	StdDev of Urban development Average	StdDev of Environmental Average	StdDev of Citizen engagement Average
Gobardanga bazar	0.571635965	0.70853384	0.632455532	0.685963158	0.485002343
Goipur	0.456268241	0.623119883	0.885537026	0.746125523	0.83039776
Khantura	0.329140294	0.311804782	0.394968353	0.352136337	0.645497224
Master colony	0.47009324	0.424918293	0.408792259	0.520256347	0.950511558
Station area	0.300462606	0.529966223	0.566666667	0.686375343	0.612372436

**Public Service Satisfaction:**

Gobardanga bazar has a slightly higher variability in public service satisfaction with average standard deviation of (0.57). This suggests that residents in Gobardanga bazar have a wider range of opinions on public services.

**Health and Safety Satisfaction:**

Overall, in the Gobardanga municipality the condition of health and safety is very poor. But among them Gobardanga bazar has a relatively higher standard deviation (0.70). This suggests that residents in Gobardanga bazar have a wider range of opinions on health and safety issues.

Urban Development Satisfaction:

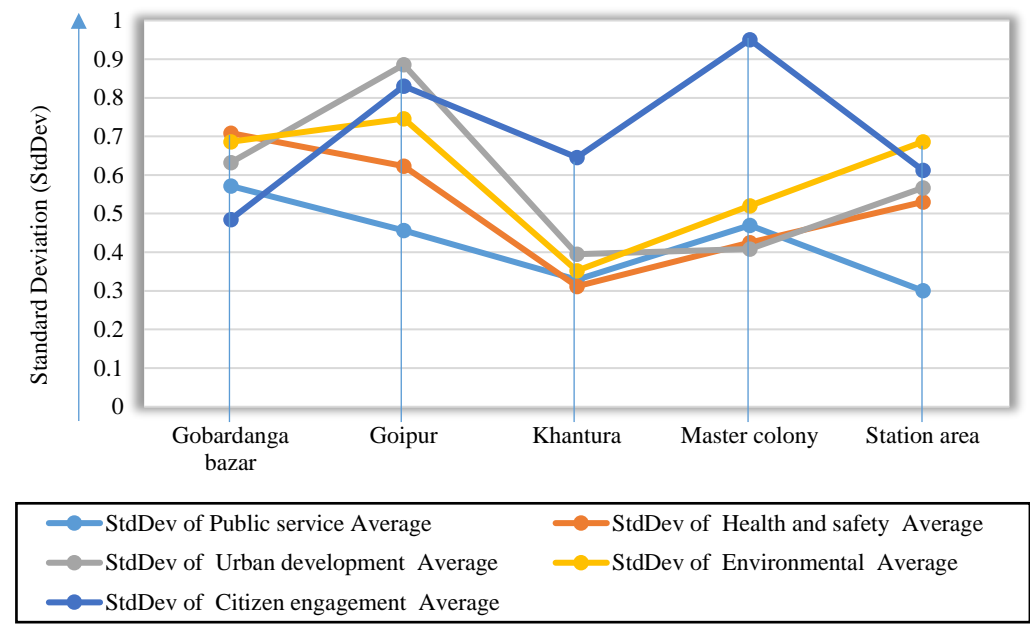
Urban development satisfaction shows slightly higher variability in Goipur compared to other areas. This suggests that opinions on urban development initiatives vary more in Goipur.

Environmental Satisfaction:

Goipur shows the high variability in environmental satisfaction (0.746), indicating diverse views across the area.

Citizen Engagement Satisfaction:

Master colony shows a higher variability (0.95) in citizen engagement satisfaction compared to other areas, suggesting that residents in Master colony have more diverse feelings about their involvement and voice in ULB decisions.



With the help of this line graph, we can get quick insights about satisfaction variability of all satisfaction criteria in Gobardanga municipality.

The standard deviation values reveal that certain segments, particularly environmental and citizen engagement, have higher variability in satisfaction among all satisfaction criteria. This suggests that these areas may have inconsistencies in service delivery or community engagement, leading to mixed opinions among residents.

The trends reveal that while public service satisfaction is relatively stable, there are significant inconsistencies in resident experiences with environmental quality and citizen engagement. These insights suggest that ULBs can focus on these high-variability areas to achieve a more balanced satisfaction across all residents.

▪ Analysis of Trends Over the Past 10 Years of Different Facilities:

This trend analysis section explores the perceived changes in key facilities in Gobardanga ULB over the past 10 years. By examining aspects such as **education, healthcare, infrastructure, and environmental management**, etc. this analysis provides insights into how these five surveyed areas have progressed, remained stable, or declined according to resident feedback.

Following table shows the data of the weighted average score of different aspects or facilities over past 10 years:

ASPECTS	Area				
	Gobardanga bazar	Goipur	Khantura	Master colony	Station area
Average of Weighted Education	0.000	-0.286	0.000	0.800	0.333
Average of Weighted Medical	-0.727	-0.571	-0.667	-0.400	-0.333
Average of Weighted Road	0.273	0.286	0.333	0.500	0.667
Average of Weighted Power supply	0.818	0.857	0.333	1.000	0.889
Average of Weighted Water supply	0.273	0.286	0.500	0.400	0.667
Average of Weighted Solid waste management	0.182	0.286	0.167	0.500	0.556
Average of Weighted Water waste management	-0.091	-0.214	-0.500	0.300	0.333
Average of Weighted Market	-0.818	0.643	0.833	0.000	0.111
Average of Weighted Internet Access	0.182	-0.071	0.167	0.400	0.333
Average of Weighted Recreation facilities	1.000	0.786	0.667	1.000	0.778
Average of Weighted Government policies towards ULB development	0.000	0.214	0.167	0.100	0.222
Average of Weighted Hazard mitigation	-0.091	-0.357	-0.333	0.500	-0.222
Overall change of all aspects over past 10 years in every ULB	0.083	0.155	0.139	0.425	0.361

Education:

With an average score of (0.8) Master colony represents comparatively positive change in education facilities over past decade following Station area (0.34). The average weighted scores across areas in Gobardanga municipality indicate that education services have been improved in low rate in only two areas. Other two areas, Gobardanga bazar and Khantura have zero improvement and the education has deteriorated in Goipur.

Medical and Healthcare Services:

From the aforementioned chart, we can easily say that the medical system has totally broken down in Gobardanga municipality. The worst situation is in Gobardanga bazar with an average score of (-0.72). Among all the areas the situation of Master colony is relatively better with average score (-0.4).

Road and Infrastructure Development:

With an average score of (0.67) Station area represents comparatively higher positive change in road and infrastructure over the past decade while Goipur shows lower positive change with a score of (0.28).

Power and Water Supply:

Master colony shows (1) a great positive change in power supply following Station area (0.89) and Gobardanga bazar (0.81). Relatively, Khantura has very less improvement regarding power supply. Station area shows the higher improvement in water supply (0.67). On the other hand, Gobardanga bazar has low improvement in water supply with the score of (0.27).

Waste Management (Solid and Water):

Station area with the score of (0.56) has faced the highest improvements in the ULB area. Khantura has the least improvements in solid waste management with the score of (0.17). In the matter of water waste management, the ULB has faced negative changes as the lowest score of Khantura (-0.5), followed by Goipur (-0.21).The Station area has improved very little with a score of (0.34).

Internet Access:

Internet access has seen improvements in Master colony with a score of (0.4), that is the highest positive change relative to the other surveyed areas.

Government Policies towards ULB Development:

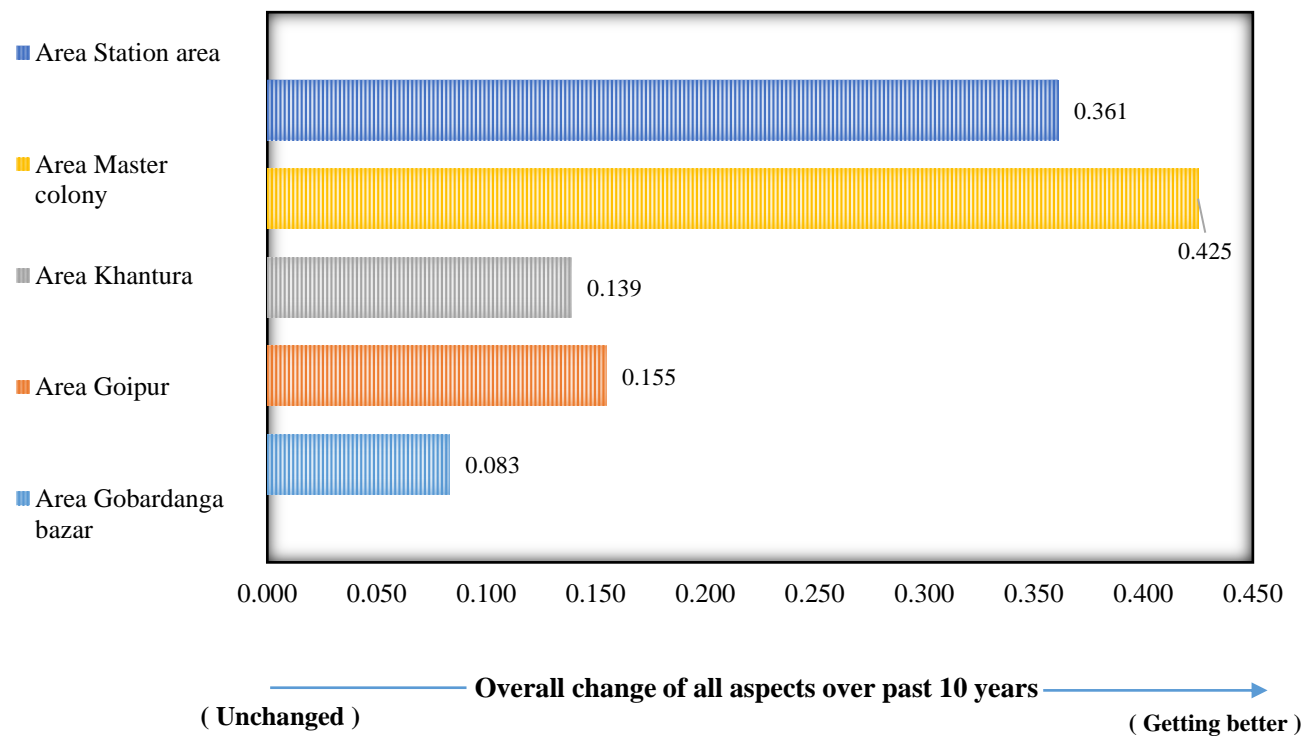
Perceptions of government policies vary across area in Gobardanga, with higher score of (0.23) in Station area indicates overall moderate change in public service in this domain over last decade.

Hazard Mitigation and Environmental Sustainability:

With an average score of (0.5), Master colony represents the only positive change in hazard mitigation facilities over past decade while the other areas have shown negative changes for this domain.

Recreation Facilities:

With an average score of 1, Gobardanga bazar and Master colony represent the highest positive changes in recreational facilities over the past decade. From the above chart we can easily say that the recreation facilities have changed positively in the Gobardanga ULB at a very satisfactory rate.



This graph shows the overall change in various aspects or facilities over the past 10 years in the five places Station area, Master colony, Khantura, Goipur, Gobardanga bazar.

The values indicate the perceived improvement level, with Master colony scoring higher (0.425) followed by Station area (0.361), Goipur (0.154), Khantura (0.138), Gobardanga bazar (0.083)

This suggests that residents in Master colony feel that services or facilities have improved significantly over the last decade compared to other areas.

The visualization captures a regional disparity in satisfaction of facilities regarding progress, which could indicate differences in resource allocation, management or development focus between these areas.

▪ **Correlation Analysis among All Satisfaction Segments:**

This correlation analysis examines the interrelationships between various satisfaction segments within the urban local body (ULB) of Gobardanga, focusing on satisfaction segments such as health and safety, urban development, and environmental sustainability. By identifying the strongest and weakest correlations, we aim to gain insights into how improvements in one area might influence perceptions in another.

CORRELATION MATRIX					
	Public Service	Health & Safety	Urban Development	Environment & Sustainability	Citizen Engagement
Public Service	1	0.641671964	0.675926616	0.666785221	0.549894271
Health & Safety	0.641671964	1	0.697268654	0.71415107	0.503350848
Urban Development	0.675926616	0.697268654	1	0.583830958	0.53240571
Environment & Sustainability	0.666785221	0.71415107	0.583830958	1	0.682927956
Citizen Engagement	0.549894271	0.503350848	0.53240571	0.682927956	1

With the help of this correlation matrix table, we got the following insights,

**Health and Safety and Environmental Sustainability (0.71) :**

There is a very strong link here. This indicates that if people think health and safety are good, the environmental sustainability is also at a similar standard. Initiatives aimed at environmental sustainability will probably impact health and safety in a positive manner

**Health and Safety and Urban Development (0.70) :**

This very strong link indicates that when urban development is good, people feel health and safety is better too. Improving urban infrastructure could directly support health and safety satisfaction.

**Environmental Sustainability and Citizen Engagement (0.68) :**

There’s a strong connection here as well which indicates that environmental sustainability and citizen engagement can go hand in hand with one another. Developments in one field might cause improvements in the other one.

**Public Services and Urban Development (0.68) :**

Residents who are satisfied with public services tend to view urban development favourably. This suggests that public services and urban growth efforts could be improved together to enhance satisfaction in both areas.

**Public Services and Environmental Sustainability (0.67) :**

There’s a strong connection here as well which indicates that public service and environmental sustainability can go hand in hand with one another. Developments in public service should cause improvements in the environmental sustainability.

**Public Services and Health and Safety (0.64) :**

There's also a quite strong link here. When people feel public services are good, they often view health and safety positively too. Improvements in public services could help boost satisfaction with health and safety.

**Urban Development and Environmental Sustainability (0.58) :**

Residents see a strong link between urban development and environmental sustainability. Improvements in infrastructure are likely to boost perceptions of sustainability efforts as well.

**Public Services and Citizen Engagement (0.54) :**

This moderate link here suggests that good public services might boost feelings of engagement with ULB. However, other efforts may be needed to improve how involved residents feel in local decisions.

**Urban Development and Citizen Engagement (0.53) :**

There's a moderate link here, suggesting that better urban development might make people feel more involved in the community, but other engagement strategies might still be necessary.



Health and Safety and Citizen Engagement (0.50) :

This is the weakest link in the ULB, but still a moderate one, suggesting that better health and safety services might make people feel more involved in the community, but other engagement strategies might be necessary.

With the help of this data table, we can easily find out strongest to lowest correlation among satisfaction segments of Gobardanga ULB.

**Top Correlations:** Health and Safety vs. Environmental Sustainability has the highest correlation (0.7142), indicating that improvements in health and safety could significantly enhance environmental sustainability perceptions.

Health and Safety vs. Urban Development also shows a strong link (0.6973), suggesting that these areas are closely related in residents' perceptions.

Other pairs such as Environmental Sustainability vs. Citizen engagement, and Public Services vs. Urban Development show pretty strong links (0.6829 and 0.6759, respectively)

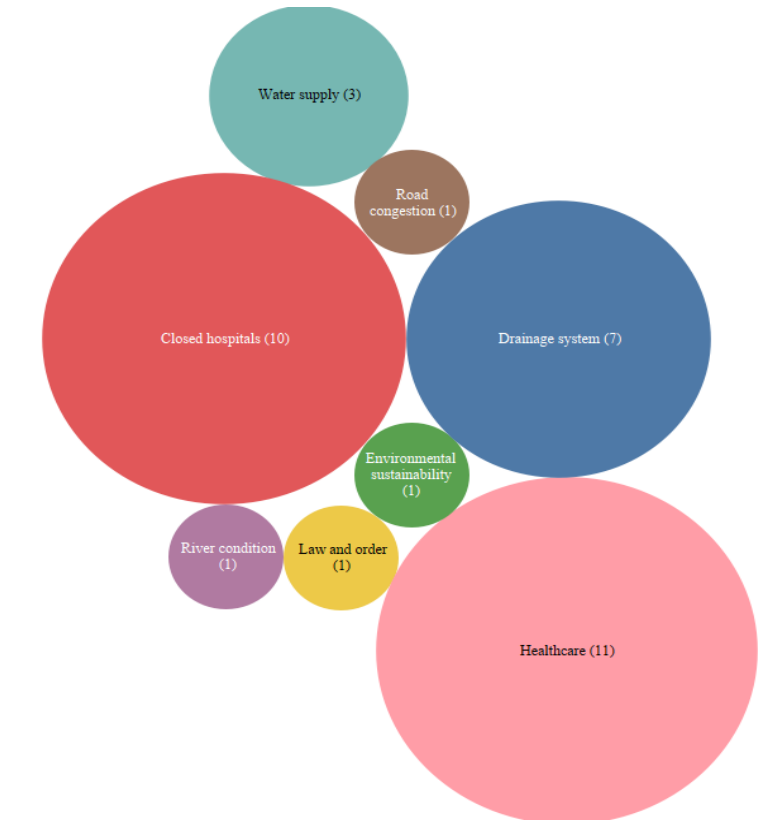
**Moderate Correlations:** Urban Development vs. Environmental Sustainability, and Public Services vs. Citizen Engagement show moderate correlations (0.5838 and 0.5499, respectively) indicating these areas are somewhat linked in residents' minds.

**Weaker Correlations:** The lowest correlations are between Urban Development and Citizen Engagement (0.5324) and Health and Safety vs. Citizen Engagement (0.5034). This indicates that residents don't see these pairs as strongly related, so they may need separate improvement strategies.

Segment Pair	Correlation Value
Environment & Sustainability vs Health & Safety	0.7142
Urban Development vs Health & Safety	0.6973
Environment & Sustainability vs Citizen Engagement	0.6829
Urban Development vs Public Service	0.6759
Environment & Sustainability vs Public Service	0.6668
Health & Safety vs Public Service	0.6417
Urban Development vs Environment & Sustainability	0.5838
Citizen Engagement vs Public Service	0.5499
Citizen Engagement vs Urban Development	0.5324
Health & Safety vs Citizen Engagement	0.5034

Open Ended Question Analysis:

In this section, we explore the specific concerns raised by residents in response to open-ended survey questions. These responses provide valuable insights into the **most pressing issues** facing the community, as well as **the services and facilities residents wish to see implemented** or improved by the Urban Local Body (ULB) of Gobardanga. The feedback highlights recurring themes and areas where residents feel the ULB's attention is most needed.



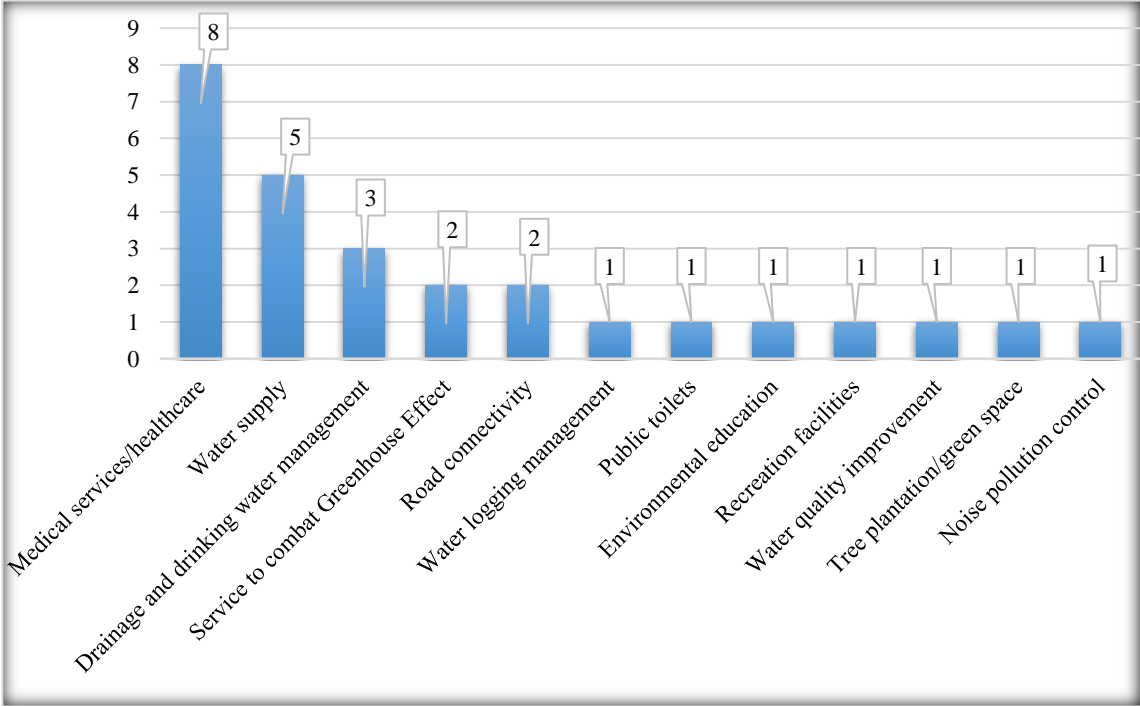
This graphical representation gives us insights about the desired facilities and additional services in the Gobardanga Municipality.

Highest priority, with residents seeking better medical services and healthcare as this service holds 8 frequency value. Demand for improved water supply and drinking water facilities are the next most demanding services as they have a frequency value of 5 and 3, respectively.

Residents want to combat the greenhouse effect and better connectivity with roads in their locality as they hold 2 frequency value. Other services like public toilets and recreation facilities have also been asked for by the respondents.

These are the most pressing issues in the Gobardanga Municipality.

With this data visualization we can see that the most common issue in Gobardanga is healthcare and closed hospitals with frequencies of 11 and 10, respectively. Also, poor drainage system (frequency 7) influences the waterlogging issue. Residents are also dissatisfied with water supply in the ULB as it has a frequency value of 3. Moreover, there have been mentions about the road congestion and river conditions in the ULB. Environmental sustainability and law and order issues have also been pointed out.





➤ **Deeper Insights into Kamarhati Municipality:**

▪ **About Study Area :**

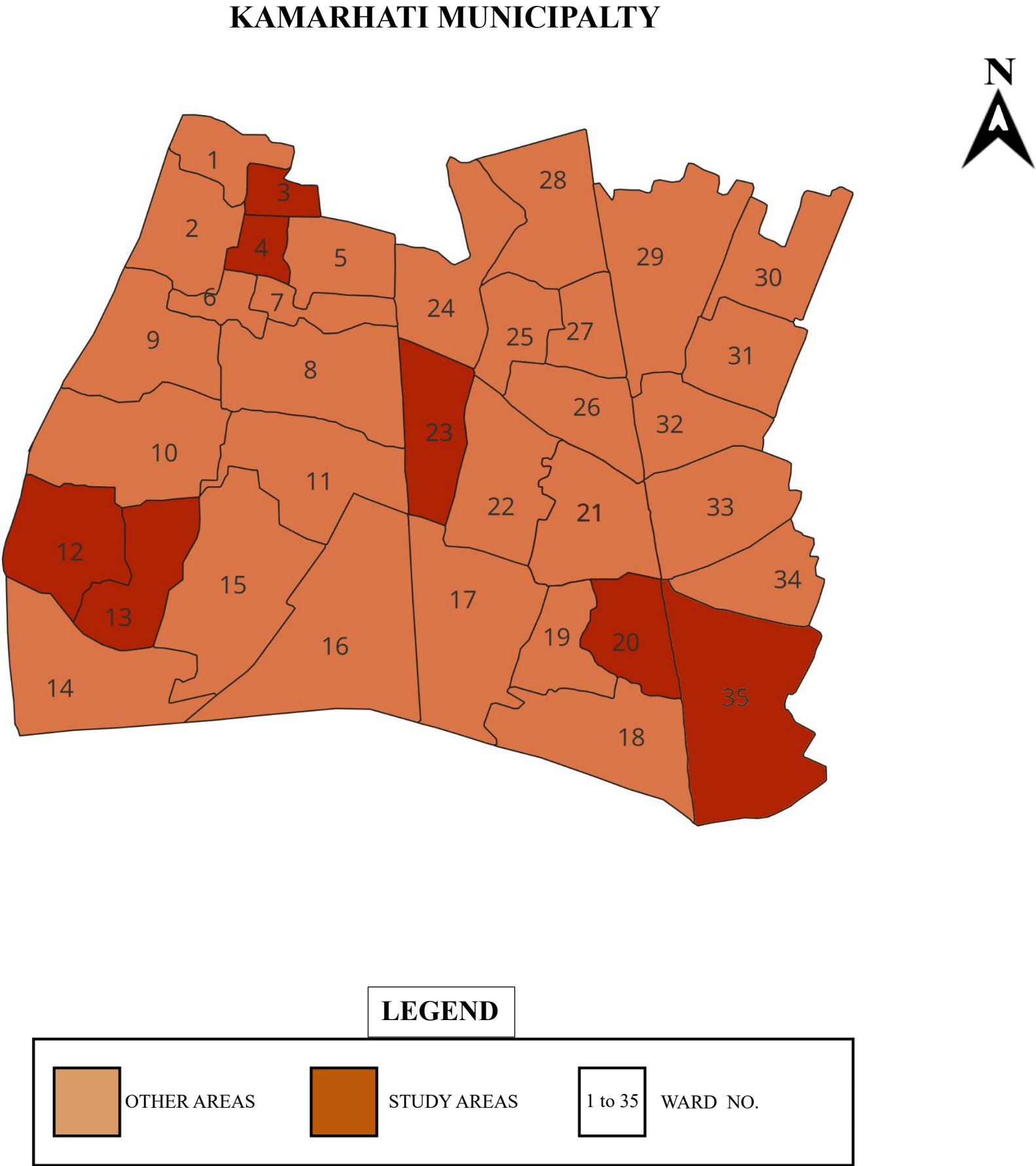
The sample for the Kamarhati Municipality analysis represents a diverse group of residents from various wards of this municipality. We have collected almost 50 responses there by both online and offline mode.

For Kamarhati Municipality, we surveyed the following wards:

Region	Ariadaha	Dakshineswar	Rathtala	Belgharia
Ward no.	3,4	12,13	23	20,35

Studying these distinct areas provides us valuable insights into how the residents of Kamarhati experience urban challenges differently depending on their location. By examining the satisfaction levels and needs of people from these areas, this study aims to capture the diversity of urban issues across this municipality.

The following map is the map of Kamarhati Municipality. The map shows the study areas within the Kamarhati Municipality where the survey was conducted.



Map Interpretation:

**Regions:** Ariadaha, Dakshineswar, Rathtala and Belgharia are the main areas where we have conducted our offline and inline survey. The wards are 3,4, 12,13, 23, 20, 35 which included in our study area.

**Study Areas:** The brown coloured wards represent the primary focus areas of the survey, where data was collected to understand resident satisfaction and key concerns regarding municipal services. These study areas provide insights into both regions' public service efficiency, infrastructure conditions, and specific needs.

**Purpose:** This map is essential for understanding the spatial distribution of surveyed areas across the Kamarhati Municipality. By analysing the responses from these wards, we aim to assess and compare the quality of services, public satisfaction, and areas needing improvement in this Municipality.

The study areas selected within several areas are critical for assessing a diverse range of issues. These areas allow for a representative understanding of resident satisfaction in zones of Kamarhati Municipality.

By focusing on specific wards across this municipality, the study provides insights into region-specific needs, public service satisfaction, and the challenges faced by the Municipality authority in meeting resident expectations.

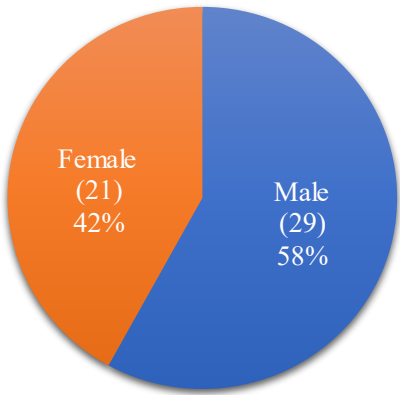
▪ Demographic Details :

By examining key attributes such as **age, gender, education, occupation, length of residence** and **family income**, this section aims to provide an overview of the respondents’ profile. Understanding these characteristics enables us to identify the needs and expectations of various groups within the survey, ensuring a more detailed interpretation of the findings.

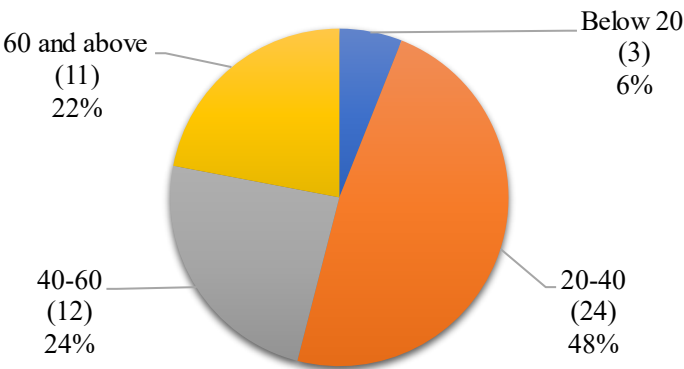
Gender Distribution :

The sample is predominantly male 58%, with females comprising 42% of participants. The male dominance in the sample may indicate a higher willingness or availability among men to participate in civic surveys in the area.

This male-dominant sample may not fully represent the needs and concerns of women in the area. This gender imbalance could influence the priorities expressed, as men and women may have different concerns regarding urban services and facilities.



Age Profile :



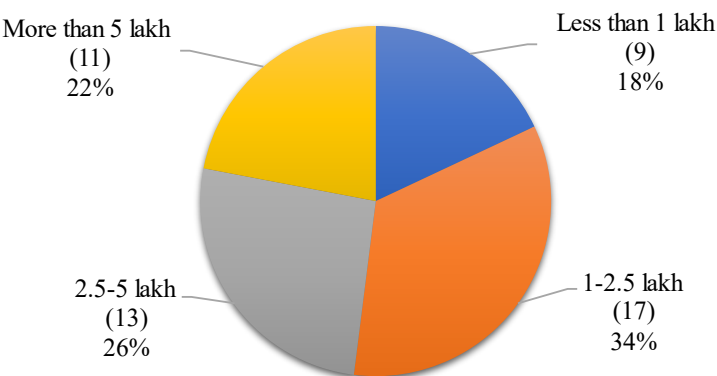
The majority of respondents fall within the 20–40 years age group (48%), followed by the 40–60 years group (24%). A relatively small proportion is under 20 years (3%) or over 60 years (11%).

The high proportion of respondents in the 20–40 years group indicates a potentially active and economically engaged demographic. This group may have a strong interest in issues related to employment, infrastructure, urban development, etc. But the small proportion of above 60 years may be more concerned with healthcare, accessibility, and safety.

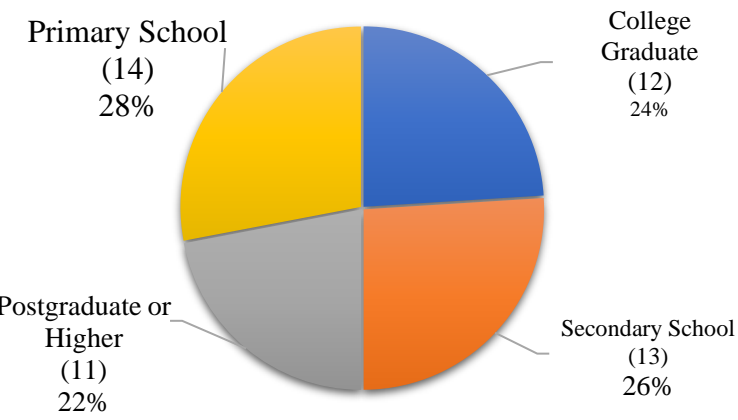
Economic Diversity :

The income distribution shows a diverse economic profile: 34% earn between 1–2.5 lakh, while 18% earn less than 1 lakh per annum. Around 26% earn between 2.5-5 lakh, and 22% more than 5lakh.

This diversity suggests that the sample includes both low- and middle-income residents, potentially providing a balanced perspective on basic needs versus lifestyle amenities.



Educational Qualification :



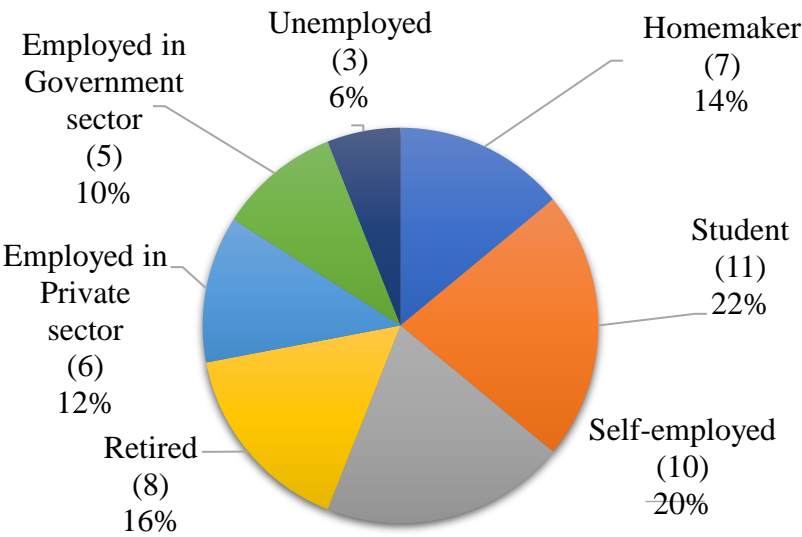
The sample is relatively well-educated, with a notable portion of respondents being college graduates (24%) and secondary school graduates (26%). This suggests a sample with awareness of civic and urban issues.

An educated sample likely has higher expectations for quality services from the ULB and may advocate for more advanced or sustainable urban development projects, such as environmental protection, waste management, and structured urban planning.

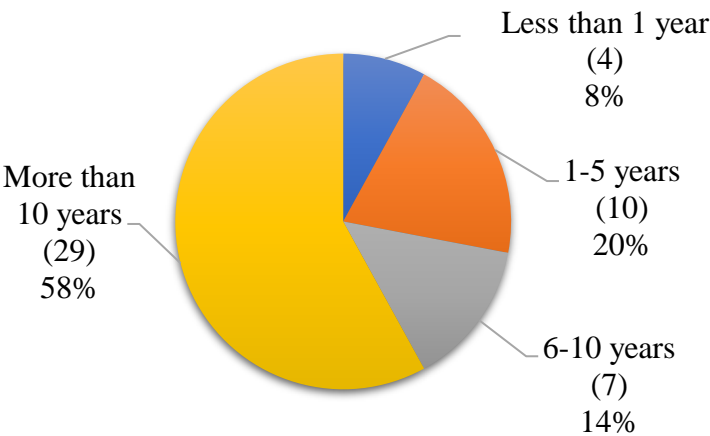
Occupational Profile :

Students represent the largest occupational group at 22%, followed by self-employed individuals (20%) and private sector employees (12%). Only 10% are employed in the government sector, and 14% are homemakers.

A significant student population reflects a young, potentially transient demographic. Their needs may focus on educational facilities, recreational spaces, and public transport. The self-employed and private sector employees are likely to prioritize efficient infrastructure, market facilities etc.



Residence Stability :



Most respondents (58%) have lived in the area for more than 10 years, indicating a largely stable, long-term resident base. Only 8% of the respondents have lived in the area for less than 1 year. 14% of the sample respondents have lived for 6 – 10 years and 20% of the respondents have lived in the area for 1 – 5 years.

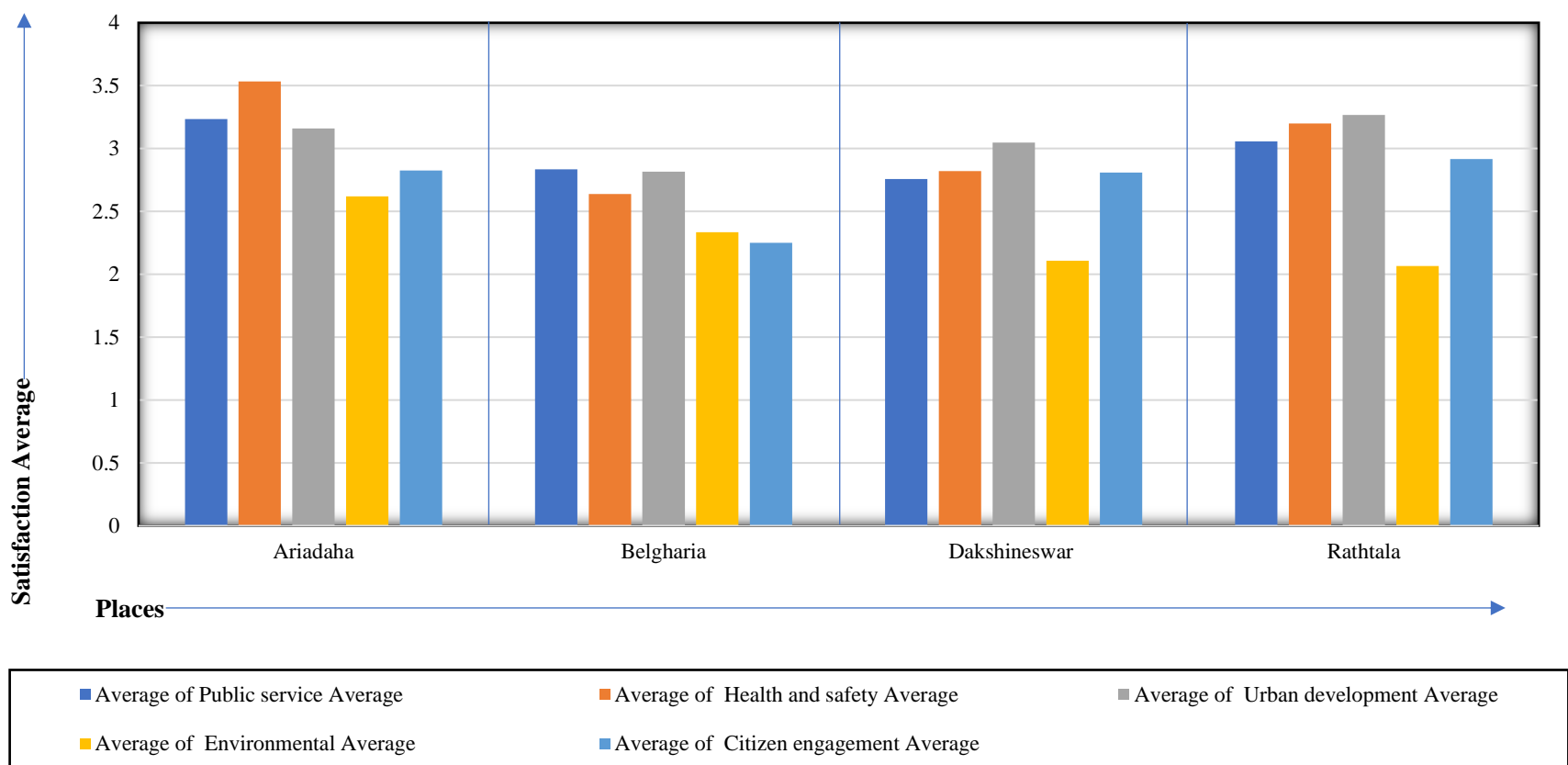
Long-term residents are more likely to be invested in the area's development and may have deeper insights into changes over time, as well as more persistent issues like water logging, drainage, and traffic.

The demographic details of the respondents provide a foundation for interpreting the survey results, as it highlights the background characteristics that may influence participants' perspectives on urban issues. These will help us to understand, how different ULB services in Kolkata satisfy the diverse population.

▪ Average Satisfaction of All Segments :

As we collected our data from different wards, satisfaction segments in our study like public services, health and safety satisfaction etc. provide us deeper insights about how multiple satisfaction criteria (**public service, health and safety, urban development, environment and citizen engagement**) have various satisfaction avg. scores in different boroughs.

Area	Public service satisfaction	Health and safety satisfaction	Urban development satisfaction	Environmental satisfaction	Citizen engagement satisfaction
Ariadaha	Neutral	Satisfied	Neutral	Neutral	Neutral
Belgharia	Neutral	Neutral	Neutral	Dissatisfied	Dissatisfied
Dakshineswar	Neutral	Neutral	Neutral	Dissatisfied	Neutral
Rathtala	Neutral	Neutral	Neutral	Dissatisfied	Neutral



By analysing **numerical satisfaction averages**, **qualitative satisfaction ratings** (conversion of numerical average score into satisfaction rating) and **the graphical representation of the satisfaction average scores** we get following insights about public service, health and safety, urban development, environment and citizen engagement of different boroughs under North and South Kolkata.

**Public Service Satisfaction :**

Areas of Kamarhati municipality show an average satisfaction score of (2.96), indicating relatively consistent satisfaction across the municipality. Ariadaha has the highest public service satisfaction score (3.23). Dakshineswar has the lowest score in public service average satisfaction (2.76).

Above mentioned all surveyed areas in Kamarhati municipality are rated as "Neutral" in terms of public service satisfaction. This neutral satisfaction levels suggest that residents generally feel average about public services.

**Health and Safety Satisfaction :**

The average satisfaction score for Health and Safety is (3.03) in the areas of Kamarhati municipality. Ariadaha has the highest health and safety satisfaction score (3.53). Belgharia has the lowest score in health and safety satisfaction (2.64).

Ratings are "Neutral," and often “Satisfied” in Ariadaha showing that residents generally feel secure about health and safety services.

**Urban Development Satisfaction :**

The average satisfaction score Urban development in Kamarhati municipality is (3.08) with highest score in Ariadaha (3.16) and lowest in Belgharia (2.82). All areas fall into the "Neutral" category for Urban Development. The neutral ratings and moderate averages suggest that residents feel urban development is acceptable but not outstanding.

**Environmental Satisfaction :**

Environmental satisfaction is lower overall, with (2.25), higher satisfaction is in Ariadaha (2.62) and lower satisfaction in Rathtala (2.07), show overall dissatisfaction.

Dakshineswar, Rathtala and Belgharia have rated as “Dissatisfied” in terms of environmental satisfaction. Except Ariadaha as they rated environment in a “Neutral” state. Environmental issues appear to be a significant concern across Kamarhati municipality especially in areas where ratings fall under "Dissatisfied." It shows that these areas need immediate attention to improve waste management, pollution control and green space development.

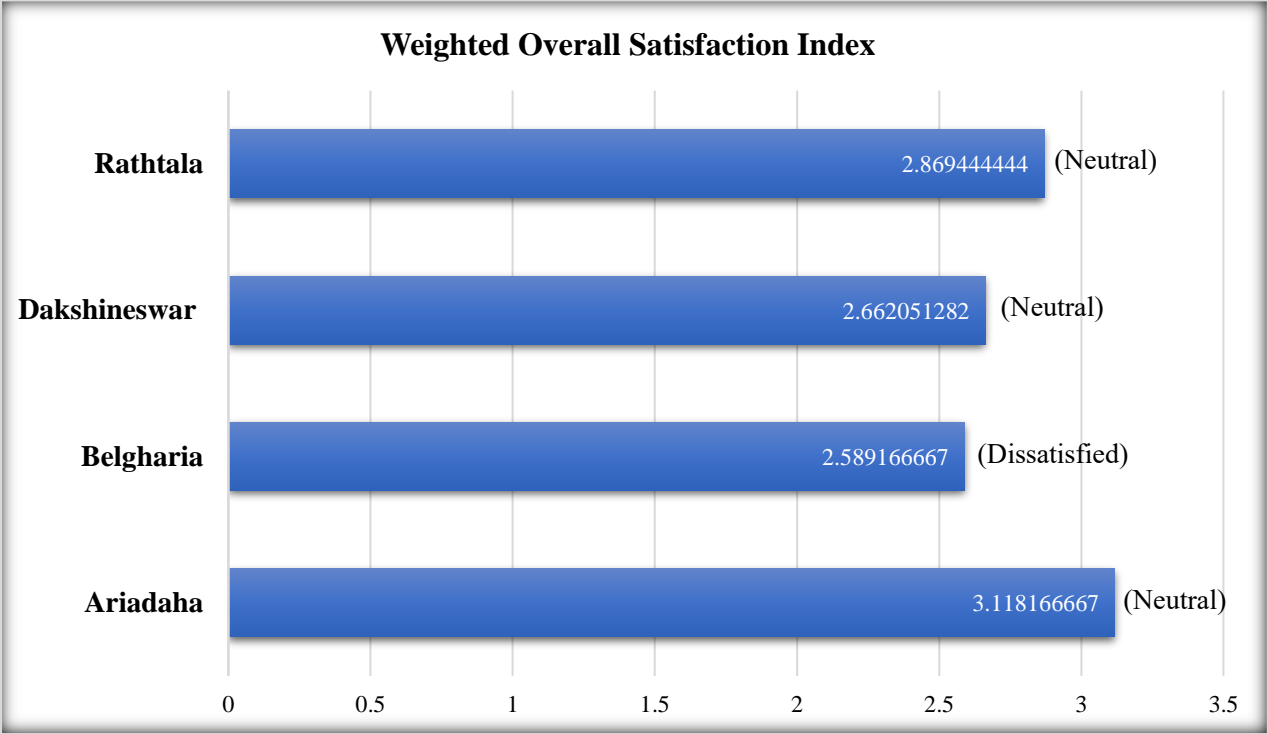
**Citizen Engagement Satisfaction :**

Satisfaction with Citizen Engagement averages at (2.71) in Kamarhati municipality, indicating generally moderate satisfaction levels. With the lowest score (2.25), Belgharia indicates a rate of dissatisfaction. Other three area give neutral responses. The highest rating comes from Rathtala (2.92).

▪ **Overall Satisfaction of Each Area :**

The weighted overall satisfaction index was calculated for each area under Kamarhati municipality to provide a clear measure of residents’ perceptions of service quality. Through this we get a comprehensive understanding of overall urban satisfaction in Kamarhati municipality.





**Summary of Overall Satisfaction Levels in Kamarhati's ULB Areas :**

- Most areas in Kamarhati municipality fall under the "Neutral" category, except Belgharia that falls under the “Dissatisfied” category for overall satisfaction. This suggests that while residents do not express major dissatisfaction, there is also no strong positive perception toward urban services. The average values hovering around (2.55-3.1), indicate a generally balanced but a not so good satisfaction score.
- **Ariadaha** has a slightly higher satisfaction score (3.12). It indicates that residents in Station area feel a little more positive about urban services than other areas. However, this area still falls within the "Neutral" range.
- **Belgharia** is only area where satisfaction score (2.59) is in “Dissatisfied” range, that indicates residents of this area feel negative about urban services.

Residents generally have a neutral view of urban services across Kamarhati municipality, with only one area, Belgharia showing dissatisfaction among its residents.

▪ **Analysis of Satisfaction Variability Across Kamarhati Areas :**

The standard deviation values across different segments of satisfaction provide insights into how consistently or differently residents feel about public services, health and safety, urban development, environmental quality, and citizen engagement within the Kamarhati municipality.

The following table is showing the standard deviation value of all satisfaction segments of each area.

Area	StdDev of Public service Average	StdDev of Health and safety Average	StdDev of Urban development Average	StdDev of Environmental Average	StdDev of Citizen engagement Average
Ariadaha	0.562182695	0.349602949	0.488080139	0.74505779	0.773250714
Belgharia	0.721250317	0.692066636	0.500605694	0.453938989	0.917010955
Dakshineswar	0.502840932	0.421974736	0.67898869	0.586602561	0.722797273
Rathtala	0.832539304	0.581459576	0.699659781	0.762202323	1.055033288

**Public Service Satisfaction :**

Rathtala and Belgharia has a higher variability in public service satisfaction with average standard deviation of (0.83) and (0.72) respectively. This suggests that residents in those areas have a wider range of opinions on public services.

**Health and Safety Satisfaction :**

Belgharia and Rathtala has a relatively higher standard deviation (0.69 and 0.58 respectively). This suggests that residents of those two areas have a wider range of opinions on health and safety issues.

**Urban Development Satisfaction :**

Urban development satisfaction shows slightly higher variability in Dakshineswar and Rathtala compared to other areas. This suggests that opinions on urban development initiatives vary more in those two areas. (0.68 & 0.69)

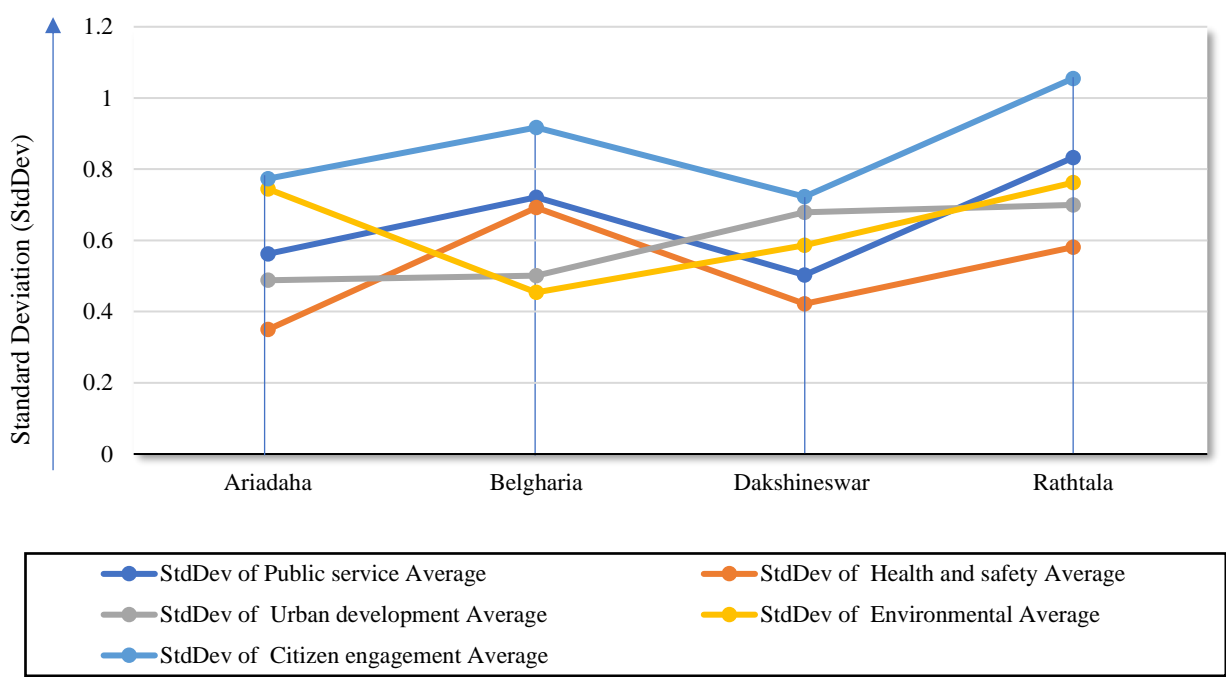
**Environmental Satisfaction :**

Ariadaha & Rathtala show the higher variability in environmental satisfaction (0.75 & 0.76), indicating diverse views across the area.



Citizen Engagement Satisfaction :

Rathtala shows a higher variability (1.05) in citizen engagement satisfaction compared to other areas, suggesting that residents in Rathtala have more diverse feelings about their involvement and voice in ULB decisions.



With the help of this line graph, we can get quick insights about satisfaction variability of all satisfaction criteria in Kamarhati Municipality areas.

The standard deviation values reveal that certain segments, particularly health & safety and citizen engagement, have higher variability in satisfaction among all satisfaction criteria. This suggests that these areas may have inconsistencies in service delivery or community engagement, leading to mixed opinions among residents.

While Rathtala generally shows higher variability in satisfaction, Dakshineswar exhibits more consistency in certain areas like citizen engagement and public services.

In some wards, certain services are performing well and meeting residents' expectations, while in other words, those same services may not be as effective. This creates an imbalance in satisfaction levels across different areas, with some areas experiencing better services than others.

▪ Analysis of Trends Over the Past 10 Years of Different Facilities :

This trend analysis section explores the perceived changes in key facilities in Kamarhati Municipality over the past 10 years. By examining aspects such as **education, healthcare, infrastructure, and environmental management**, etc. this analysis provides insights into how these regions have progressed, remained stable, or declined according to resident feedback.

Following table shows the data of the weighted average score of different aspects or facilities over past 10 years;

ASPECTS	Area			
	Ariadaha	Belgharia	Dakshineswar	Rathtala
Average of Weighted Education	0.100	-0.167	0.000	-0.133
Average of Weighted Medical	-0.100	-0.333	-0.231	-0.200
Average of Weighted Road	0.500	0.333	0.077	-0.133
Average of Weighted Power supply	1.000	0.917	0.615	0.733
Average of Weighted Water supply	0.500	-0.417	-0.077	0.400
Average of Weighted Solid waste management	0.000	-0.750	-0.077	0.267
Average of Weighted Water waste management	-0.400	-0.833	-0.231	-0.133
Average of Weighted Market	-0.200	-0.083	-0.462	0.067
Average of Weighted Internet Access	0.100	-0.333	-0.077	-0.133
Average of Weighted Recreation facilities	1.000	0.833	0.846	0.533
Average of Weighted Government policies towards ULB development	0.100	-0.750	-0.385	-0.333
Average of Weighted Hazard mitigation	0.000	-0.583	0.000	-0.067
Overall change of all aspects over past 10 years in every area	0.225	-0.181	0.000	0.072

Education:

With an average score of (0.1) Ariadaha represents comparatively positive change in education facilities over past decade. The negative weighted scores across areas in Kamarhati municipality indicate that education services have been deteriorated in low rate in only two areas Belgharia and Rathtala. Other area Dakshineswar have zero improvement and the education has improved in low rate in Ariadaha.

Medical and Healthcare Services:

From the aforementioned chart, we can easily say that the medical system has broken down in Kamarhati municipality. The worst situation is in Belgharia with an average score of (-0.33). Among all the areas the situation of Ariadaha is relatively better with average score (-0.1).

Road and Infrastructure Development :

With an average score of (0.60) Ariadaha represents comparatively higher positive change in road and infrastructure over the past decade while Rathtala shows lower negative change with a score of (-0.133).

Power Supply :

Ariadaha shows (1) a great positive change in power supply following Belgharia (0.89) and Rathtala (0.81) and Dakshineswar (0.615).

Water Supply :

Ariadaha shows the higher improvement in water supply (0.5). On the other hand, Belgharia and Dakshineswar has deterioration in water supply.

Waste Management (Solid and Water) :

Kamarhati Municipality saw a huge deterioration in waste management system in almost every area. Belgharia has the worst situation with the score of (-0.75) in solid waste management and (-0.83) in water waste management.

Internet Access :

Internet access has seen improvements in Ariadaha with a score of (1.0), that is the highest positive change relative to the other surveyed areas.

Government Policies towards ULB Development :

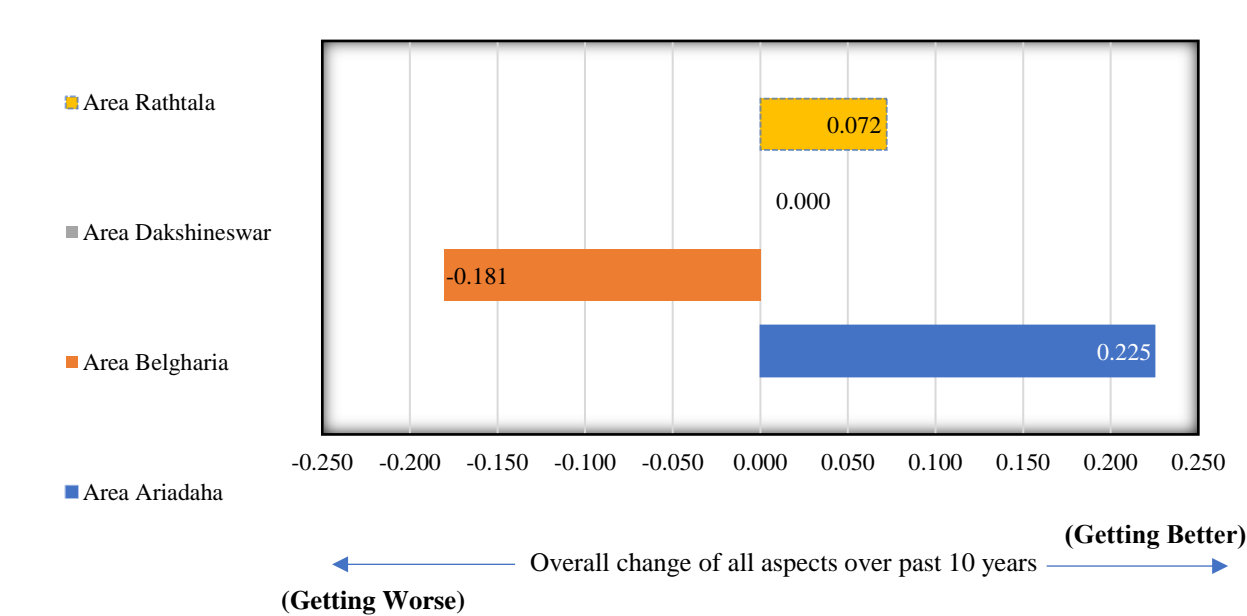
Perceptions of government policies vary across area in Kamarhati, with higher score of (0.1) in Ariadaha, indicates overall negative change in public service in this domain over last decade.

Hazard Mitigation and Environmental Sustainability :

With a score of (-0.58), Belgharia represents the worst change in hazard mitigation facilities over past decade while the other areas have shown negative or neutral changes for this domain.

Recreation Facilities :

With an average score of (0.1), Ariadaha represent the highest positive changes in recreational facilities over the past decade. From the above chart we can easily say that the recreation facilities have changed negatively in the Kamarhati ULB at a very satisfactory rate.



This graph shows the overall change in various aspects or facilities over the past 10 years in the four areas Rathtala, Dakshineswar, Belgharia and Ariadaha.

The values indicate the perceived improvement level, with Ariadaha scoring higher (0.225) followed by Rathtala (0.072). There is no improvement in Dakshineswar (0), and a negative improvement in Belgharia (-0.181).

This suggests that residents in Ariadaha feel that services or facilities have improved significantly over the last decade compared to other areas.

The visualization captures a regional disparity in satisfaction of facilities regarding progress, which could indicate differences in resource allocation, management or development focus between these areas.

▪ Correlation Analysis among All Satisfaction Segments:

This correlation analysis examines the interrelationships between various satisfaction segments within the urban local bodies (ULBs) of Kamarhati, focusing on satisfaction segments such as health and safety, urban development, and environmental sustainability. By identifying the strongest and weakest correlations, we aim to gain insights into how improvements in one area might influence perceptions in another.

With the help of this correlation matrix table, we got the following insights,

CORRELATION MATRIX					
	Public service	Health & safety	Urban development	Environmental sustainability	Citizen engagement
Public service	1	0.631316481	0.633715352	0.537701157	0.604825149
Health & safety	0.631316481	1	0.512532688	0.404963692	0.549701629
Urban development	0.633715352	0.512532688	1	0.592393048	0.521640541
Environmental sustainability	0.537701157	0.404963692	0.592393048	1	0.50416239
Citizen engagement	0.604825149	0.549701629	0.521640541	0.50416239	1

**Public Services and Health and Safety (0.63) :**

There's also a strong link here. When people feel public services are good, they often view health and safety positively too. Improvements in public services could help boost satisfaction with health and safety.

**Public Services and Urban Development (0.63) :**

Residents who are satisfied with public services tend to view urban development favourably. This suggests that public services and urban growth efforts could be improved together to enhance satisfaction in both areas.

**Public Services and Citizen Engagement (0.60) :**

This link here suggests that good public services highly boost feelings of engagement with ULB. This suggests that public services and Citizen Engagement efforts could be improved together to enhance satisfaction in both areas.

**Urban Development and Environmental Sustainability (0.59) :**

Residents see a strong link between urban development and environmental sustainability. Improvements in infrastructure are likely to boost perceptions of sustainability efforts as well.

**Health and Safety and Citizen Engagement (0.55) :**

There's a strong link here, suggesting that better health and safety services make people feel more involved in the community.

**Public Services and Environmental Sustainability (0.53) :**

The link here means that satisfaction with public services strongly affect views on environmental sustainability. Residents may see these as same issues, so each may need same improvement strategies.

**Urban Development and Citizen Engagement (0.52) :**

A moderate strong link here indicates that urban development alone may be enough to make residents feel more engaged with ULB, suggesting a need for targeted engagement activities.

**Health and Safety and Urban Development (0.51) :**

This moderate strong link indicates that when urban development is good, people feel health and safety is better too. Improving urban infrastructure could maybe directly support health and safety satisfaction.

**Environmental Sustainability and Citizen Engagement (0.50) :**

There’s a moderate connection, meaning that visible environmental improvements might make people feel a bit more engaged with the ULBs, though engagement could be improved further.

**Health and Safety and Environmental Sustainability (0.40) :**

Residents see a fair connection between environmental efforts and health and safety. Initiatives aimed at sustainability could positively impact views on health and safety.

With the help of this data table, we can easily find out strongest to lowest correlation among satisfaction segments of Kolkata ULB.

**Top Correlations:** Public service vs. Urban Development has the highest correlation (0.634), indicating that improvements in public service could significantly enhance urban development perceptions.

Health and Safety vs. Public Service also shows a strong link (0.6313), suggesting that these areas are closely related in residents' perceptions.

Other pairs such as Public Service vs. Citizen engagement, and Environmental Sustainability vs. Urban Development show pretty strong links (0.6048 and 0.5924 respectively)

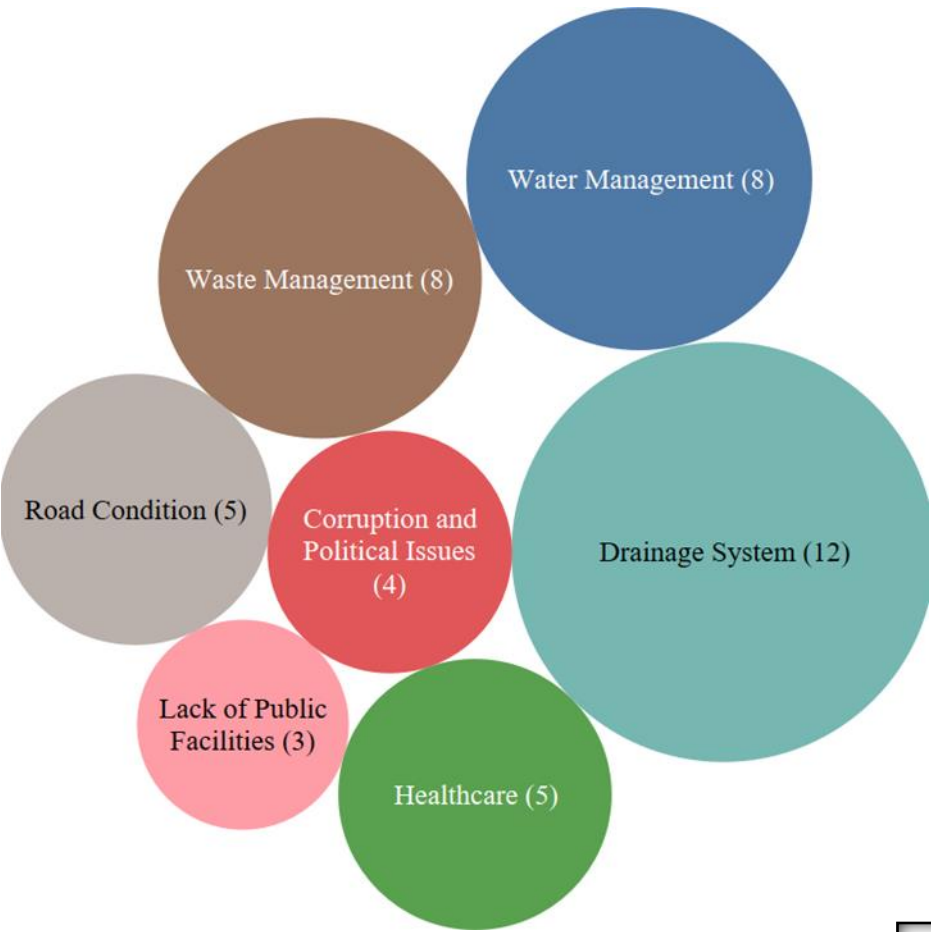
**Moderate Correlations:** Health Safety vs. Citizen Engagement, and Public Services vs. Environmental Sustainability show moderate correlations (0.5377 and 0.5216, respectively) indicating these areas are somewhat linked in residents' minds.

**Weaker Correlations:** The lowest correlations are between Environmental Sustainability and Citizen Engagement (0.5042) and Health and Safety vs. Environmental Sustainability (0.4050). This indicates that residents don't see these pairs as strongly related, so they may need separate improvement strategies.

Segment Pair	Correlation
Public Services vs. Urban Development	0.634
Public Services vs. Health and Safety	0.631
Public Services vs. Citizen Engagement	0.605
Urban Development vs. Environmental Sustainability	0.592
Health and Safety vs. Citizen Engagement	0.550
Public Services vs. Environmental Sustainability	0.538
Urban Development vs. Citizen Engagement	0.522
Health and Safety vs. Urban Development	0.513
Environmental Sustainability vs. Citizen Engagement	0.504
Health and Safety vs. Environmental Sustainability	0.405

▪ **Open Ended Question Analysis:**

In this section, we explore the specific concerns raised by residents in response to open-ended survey questions. These responses provide valuable insights into the **most pressing issues** facing the community, as well as **the services and facilities residents wish to see implemented** or improved by the Urban Local Body (ULB) of Kamarhati. The feedback highlights recurring themes and areas where residents feel the ULB's attention is most needed.

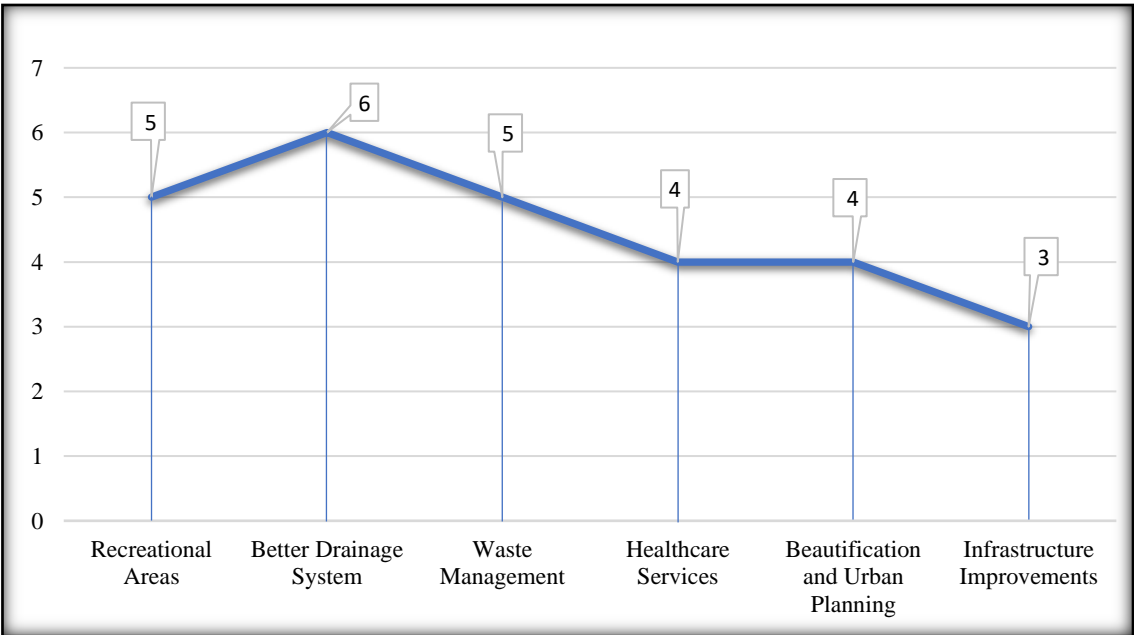


These are the most pressing issues in Kamarhati Municipality.

With this data visualization we can see that the most common issue in Kamarhati is drainage system with a frequency number of 12 and also poor Water Management System (frequency 8) influences the waterlogging issue. Residents are also dissatisfied with waste disposal and sanitation in the ULB as it has 8 frequency value. Issues with Road condition suggest a need for street regulation. Lack of access to adequate health services are also notable issues in Kamarhati Municipality. There are concerns about corruption and political issues and lack of public facilities.

This graphical representation gives us insights about the desired facilities and additional services in Kamarhati ULB.

Highest priority, with residents seeking better drainage system as this service holds 6 frequency value. Demand for improved recreational facilities and better waste management system are the second most demanding service as those both have a frequency value 5. Residents want healthcare services and more green areas in their locality as those two issues both holds 4 frequency value. Need for better infrastructural planning is important as this service holds a frequency of number 3.





➤ **Deeper Insights Into Kolkata ULB (Urban Local Body) :**

▪ **About Study Area :**

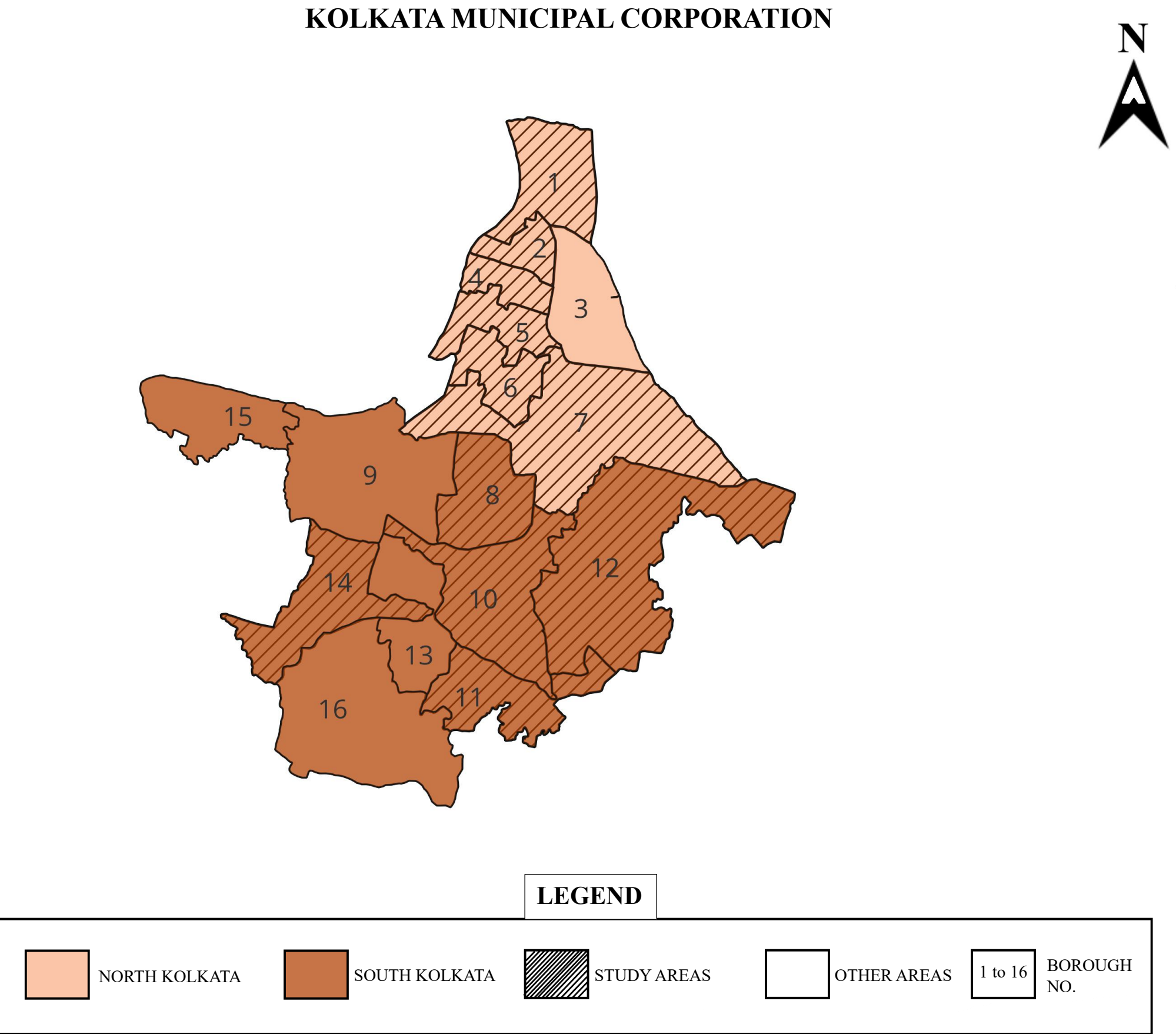
The sample for the Kolkata Urban Local Body (ULB) analysis represents a diverse group of residents from various parts of North and South Kolkata. We have collected almost 101 responses from Kolkata by both online and offline mode. We collected our data on the basis of boroughs of Kolkata Municipal Corporation (KMC).

For North Kolkata and South Kolkata, we surveyed the following boroughs:

Region	North Kolkata	South Kolkata
Borough no.	1, 2, 4, 5, 6, 7	8, 10, 11, 12, 14

Studying these distinct areas provides us valuable insights into how the residents of Kolkata experience urban challenges differently depending on their location. By examining the satisfaction levels and needs of people from North and South Kolkata, this study aims to capture the diversity of urban issues across the city.

The following map is the map of Kolkata Municipality. The map shows the study areas within the Kolkata Municipality Corporation (KMC) where the survey was conducted. Kolkata has been divided into two main regions: North Kolkata and South Kolkata, represented in different shades for clarity.





Map interpretation :

**Regions:** North Kolkata and South Kolkata are distinctly marked to represent the geographical and administrative areas within the KMC. North Kolkata includes boroughs 1, 2, 3, 4, 5, 6, and 7, while South Kolkata covers boroughs 8, 9, 10, 11, 12, 13, 14, and 16. This distinction helps in comparing responses and satisfaction across these two parts of the city.

**Study Areas:** The striped boroughs represent the primary focus areas of the survey, where data was collected to understand resident satisfaction and key concerns regarding municipal services. These study areas provide insights into both regions' public service efficiency, infrastructure conditions, and specific needs.

**Purpose:** This map is essential for understanding the spatial distribution of surveyed areas across the two main regions of Kolkata. By analysing the responses from these boroughs, we aim to assess and compare the quality of services, public satisfaction, and areas needing improvement in both North and South Kolkata.

The study areas selected within each borough are critical for assessing a diverse range of issues. These areas allow for a representative understanding of resident satisfaction in zones of Kolkata ULB.

By focusing on specific boroughs across North and South Kolkata, the study provides insights into region-specific needs, public service satisfaction, and the challenges faced by the KMC in meeting resident expectations.

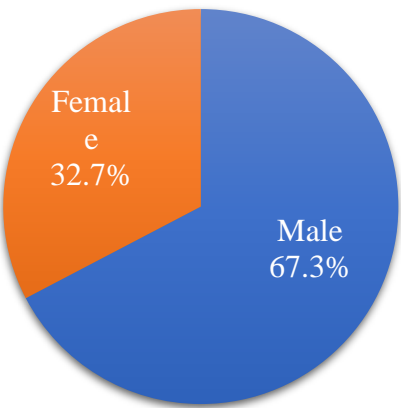
▪ **Demographic Details :**

By examining key attributes such as **age, gender, education, occupation, length of residence** and **family income**, this section aims to provide an overview of the respondents’ profile. Understanding these characteristics enables us to identify the needs and expectations of various groups within the survey, ensuring a more detailed interpretation of the findings.

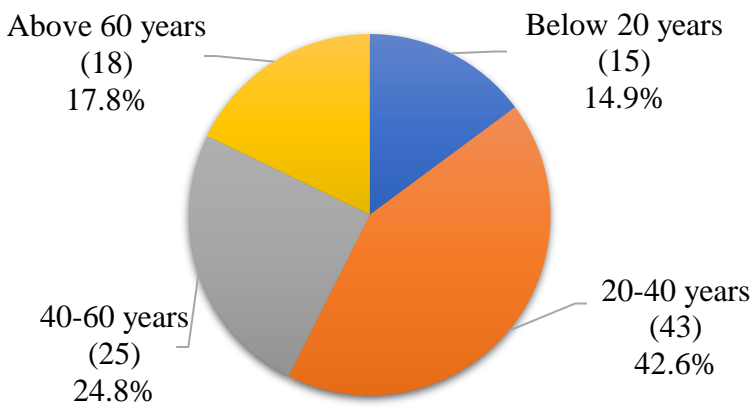
**Gender Distribution :**

The sample is predominantly male 67.3% , with females comprising 32.7% of participants. The male dominance in the sample may indicate a higher willingness or availability among men to participate in civic surveys in the area.

This male-dominant sample may not fully represent the needs and concerns of women in the area. This gender imbalance could influence the priorities expressed, as men and women may have different concerns regarding urban services and facilities.



**Age Profile :**



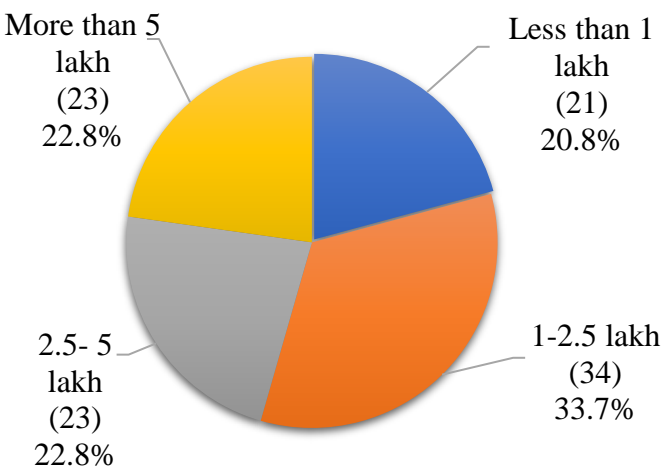
The majority of respondents fall within the 20–40 years age group (42.6%), followed by the 40–60 years group (24.8%). A relatively small proportion is under 20 years (14.9%) or over 60 years (17.8%).

The high proportion of respondents in the 20–40 years group indicates a potentially active and economically engaged demographic. This group may have a strong interest in issues related to employment, infrastructure, urban development, etc. But the small proportion of above 60 years may be more concerned with healthcare, accessibility, and safety.

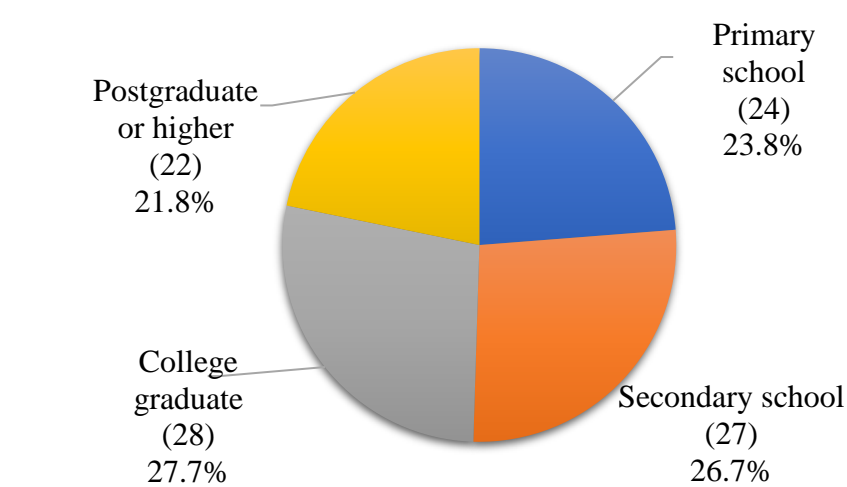
**Economic Diversity :**

The income distribution shows a diverse economic profile: 33.7% earn between 1–2.5 lakh, while 20.8% earn less than 1 lakh per annum. Around 45.6% earn more than 2.5 lakh, split equally between 2.5–5 lakh and over 5 lakh segments.

This diversity suggests that the sample includes both low- and middle-income residents, potentially providing a balanced perspective on basic needs versus lifestyle amenities.



Educational Qualification :



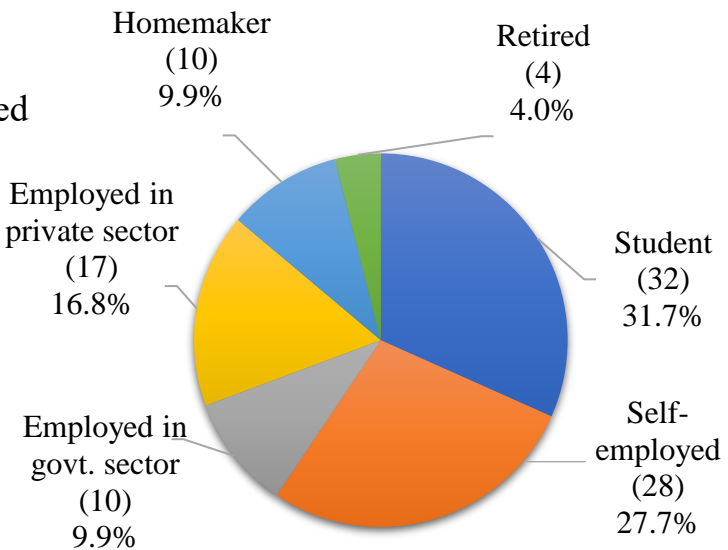
The sample is relatively well-educated, with a notable portion of respondents being college graduates (27.7%) and secondary school graduates (26.7%). This suggests a sample with awareness of civic and urban issues.

An educated sample likely has higher expectations for quality services from the ULB and may advocate for more advanced or sustainable urban development projects, such as environmental protection, waste management, and structured urban planning.

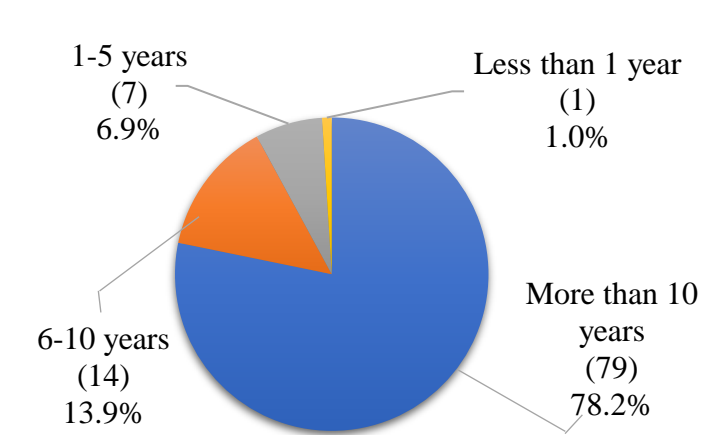
Occupational Profile :

Students represent the largest occupational group at 31.7%, followed by self-employed individuals (27.7%) and private sector employees (16.8%). Only 9.9% are employed in the government sector, and 9.9% are homemakers.

A significant student population reflects a young, potentially transient demographic. Their needs may focus on educational facilities, recreational spaces, and public transport. The self-employed and private sector employees are likely to prioritize efficient infrastructure, market facilities etc.



Residence Stability :



Most respondents have lived in the area for more than 10 years, indicating a largely stable, long-term resident base. Only 1% of the respondents have lived in the area for less than 1 year. 13.9% of the sample respondents have lived for 6 – 10 years and 6.9% of the respondents have lived in the area for 1 – 5 years.

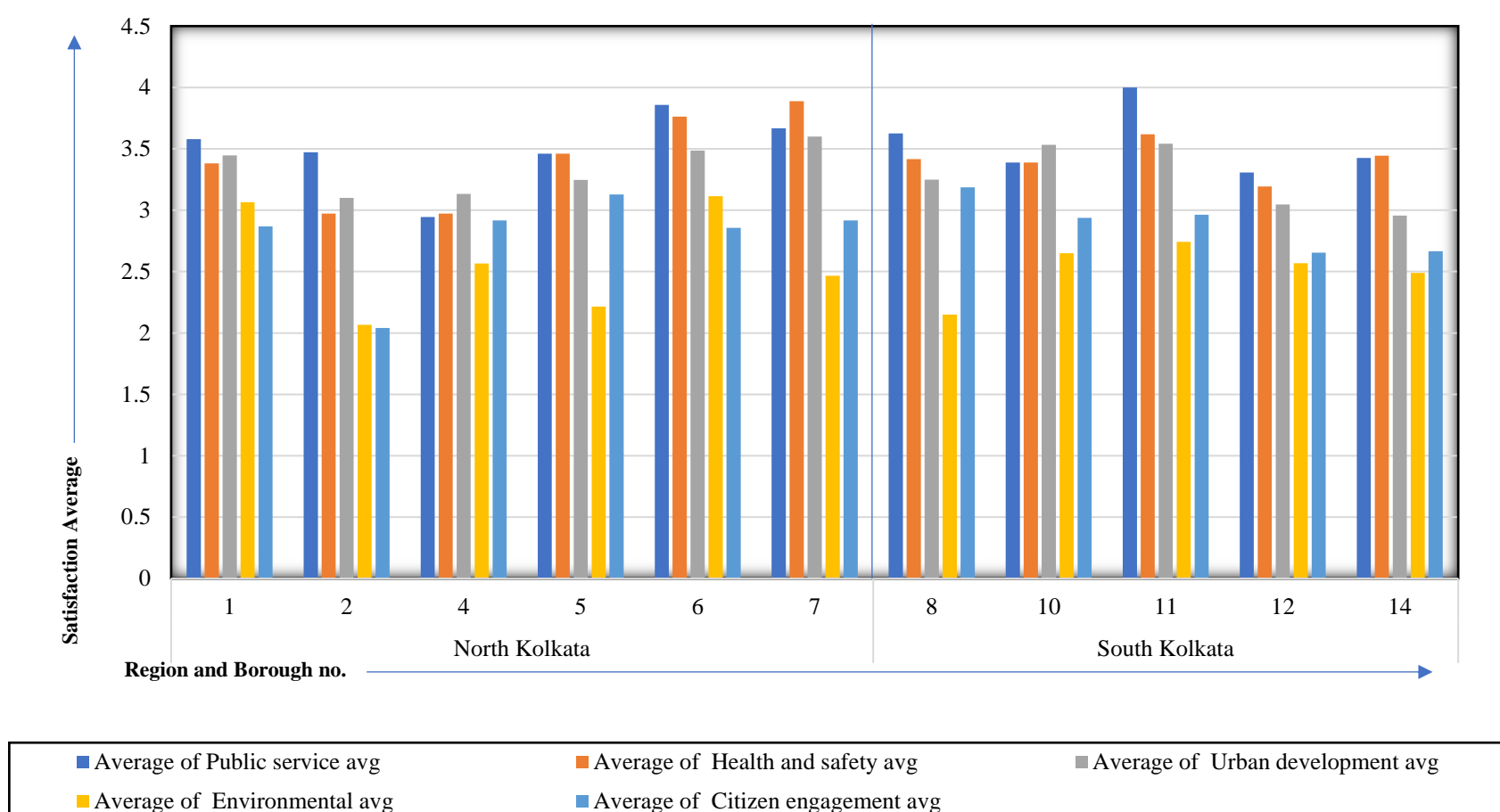
Long-term residents are more likely to be invested in the area's development and may have deeper insights into changes over time, as well as more persistent issues like water logging, drainage, and traffic.

The demographic details of the respondents provide a foundation for interpreting the survey results, as it highlights the background characteristics that may influence participants' perspectives on urban issues. These will help us to understand, how different ULB services in Kolkata satisfy the diverse population.

▪ Average Satisfaction of All Segments :

As we collected our data from different boroughs under North and South Kolkata, satisfaction segments in our study like public services, health and safety satisfaction etc. provide us deeper insights about how multiple satisfaction criteria ( **public service, health and safety, urban development, environment and citizen engagement** ) have various satisfaction avg. scores in different boroughs.

Region and Borough no.	Public service satisfaction	Health and safety satisfaction	Urban development satisfaction	Environmental satisfaction	Citizen engagement satisfaction
North Kolkata	Satisfied	Neutral	Neutral	Neutral	Neutral
1	Satisfied	Neutral	Satisfied	Neutral	Neutral
2	Satisfied	Neutral	Neutral	Dissatisfied	Dissatisfied
4	Neutral	Neutral	Neutral	Dissatisfied	Neutral
5	Satisfied	Satisfied	Neutral	Dissatisfied	Neutral
6	Satisfied	Satisfied	Satisfied	Neutral	Neutral
7	Satisfied	Satisfied	Satisfied	Dissatisfied	Neutral
South Kolkata	Satisfied	Neutral	Neutral	Dissatisfied	Neutral
8	Satisfied	Satisfied	Neutral	Dissatisfied	Neutral
10	Neutral	Neutral	Satisfied	Neutral	Neutral
11	Satisfied	Satisfied	Satisfied	Neutral	Neutral
12	Neutral	Neutral	Neutral	Dissatisfied	Neutral
14	Satisfied	Satisfied	Neutral	Dissatisfied	Neutral



By analysing **numerical satisfaction averages**, **qualitative satisfaction ratings** (conversion of numerical average score into satisfaction rating) and **the graphical representation of the satisfaction average scores** we get following insights about public service, health and safety, urban development, environment and citizen engagement of different boroughs under North and South Kolkata.

### Public Service Satisfaction :

North Kolkata boroughs show an average satisfaction score of 3.51, slightly higher than South Kolkata's average of 3.49, indicating relatively consistent satisfaction across the city. Borough 11 in South Kolkata has the highest public service satisfaction score (4.00). Borough 4 in North Kolkata has the lowest score in public service average satisfaction (2.94).

Most boroughs in both North and South Kolkata are rated as "Satisfied" in terms of public service satisfaction, with only a few boroughs in a "Neutral" state (Borough 4 in North Kolkata and Borough 10, 12 in South Kolkata). The high satisfaction levels suggest that residents generally feel public services meet their expectations, though there are specific boroughs where residents are less satisfied, which may indicate areas for targeted improvements.

### Health and Safety Satisfaction :

The average satisfaction score for Health and Safety is 3.39 in North Kolkata and 3.38 in South Kolkata, showing minimal difference between the regions. Boroughs 6 (3.76) and 7 (3.88) in North Kolkata and Borough 11 (3.61) in South Kolkata received notably higher scores, indicating strong satisfaction.

Ratings are predominantly "Satisfied" or "Neutral," showing that residents generally feel secure but there are some room for improvement in health and safety specially, in borough 1, 2, 3 (North Kolkata) and borough 10, 12 (South Kolkata) as they rated health and safety in a "Neutral" state. Health and Safety services in most boroughs are viewed as satisfactory, but the scores reflect a moderate level of satisfaction, suggesting that there may be room for improvements in certain areas.

### Urban Development Satisfaction :

Urban development scores vary slightly, with an average of 3.34 in North Kolkata and 3.25 in South Kolkata. Boroughs like 6 (3.48) and 7 (3.6) in North Kolkata and Borough 10 (3.53), 11 (3.54) in South Kolkata have higher ratings, indicating higher satisfaction.

Most boroughs fall into the "Neutral" category for Urban Development, with only a few showings "Satisfied" ratings (Borough 1, 6, 7 in North Kolkata and Borough 10, 11 in South Kolkata). The neutral ratings and moderate averages suggest that residents feel urban development is acceptable but not outstanding, while some boroughs showing more positive feedback.

### Environmental Satisfaction :

Environmental satisfaction is lower overall, with North Kolkata averaging 2.68 and South Kolkata 2.56. Boroughs 1 (3.06) and 6 (3.11) in North Kolkata have slightly higher scores, while others, like Boroughs 2 (2.06) and 8 (2.15), show dissatisfaction.

Many boroughs are rated as "Dissatisfied" in terms of environmental satisfaction, especially in South Kolkata. Except borough 1, 6, 10, 11 as they rated environment in a "Neutral" state. Environmental issues appear to be a significant concern across Kolkata, especially in boroughs where ratings fall under "Dissatisfied." It shows, these areas need immediate attention to improve waste management, pollution control and green space development.

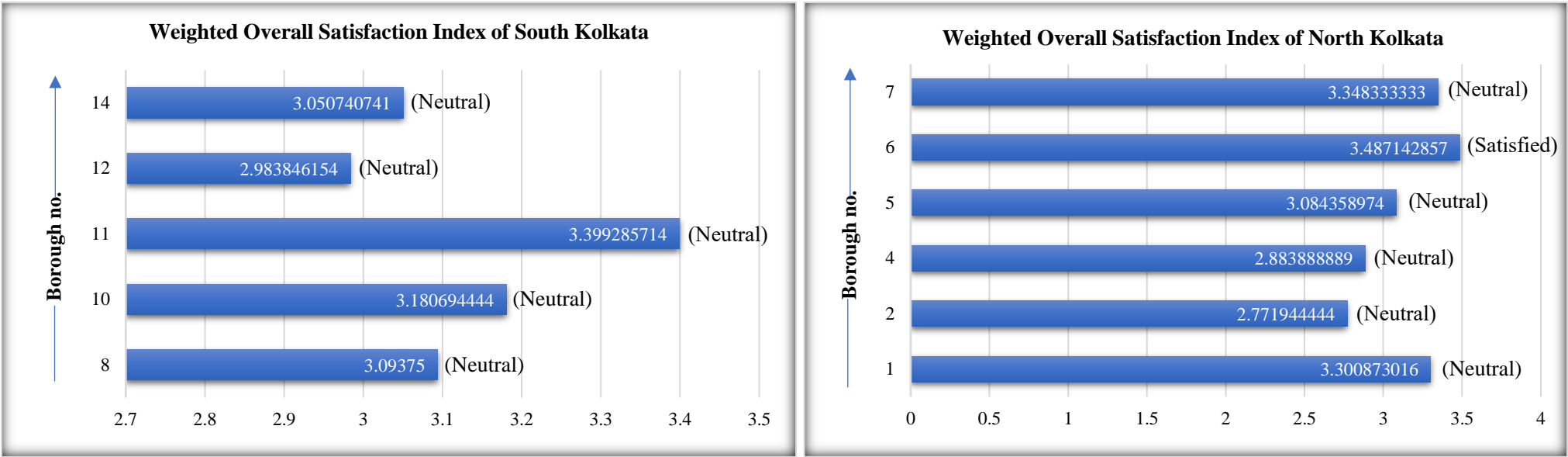
Citizen Engagement Satisfaction :

Satisfaction with Citizen Engagement averages at 2.85 in North Kolkata and 2.83 in South Kolkata, indicating generally moderate satisfaction levels. Boroughs 5 (3.12) and 8 (3.18) have slightly higher scores, indicating better engagement in those areas. Borough 2 has the lowest score (2.04) in citizen engagement.

Most boroughs are rated as "Neutral" in Citizen Engagement, with only a few showing slightly positive satisfaction among them. But borough 2 is rated as "Dissatisfied" in terms of citizen engagement satisfaction. Citizen engagement has moderate ratings. There is room for ULB to improve communication and involve people more in decision-making, especially in boroughs with lower ratings.

Overall Satisfaction of Each Area :

The weighted overall satisfaction index was calculated for each borough under both North and South Kolkata to provide a clear measure of residents’ perceptions of service quality. Through this we get a comprehensive understanding of overall urban satisfaction in North Kolkata and South Kolkata.



Summary of Overall Satisfaction Levels in Kolkata's ULB Areas :

- Most boroughs in both North and South Kolkata fall under the "Neutral" category for overall satisfaction. This suggests that while residents do not express major dissatisfaction, there is also no strong positive perception toward urban services. The average values hovering around 3 indicate a generally balanced but unremarkable perception of satisfaction.
- North Kolkata has a slightly higher satisfaction score (3.18) compared to South Kolkata’s satisfaction score (3.12). Although this difference is small, it indicates that residents in North Kolkata feel a little more positive about urban services than those in South Kolkata. However, both regions still fall within the "Neutral" range.
- All boroughs in South Kolkata have "Neutral" satisfaction ratings, with no boroughs reaching "Satisfied." This evenness could mean that services are consistently delivered, but it also shows room for improvement specially, for borough 12 with a satisfaction score of 2.98 (neutral). Boroughs 10 (3.18) and 11 (3.39), which have slightly higher scores, might benefit from targeted improvements to move them closer to "Satisfied."
- Boroughs under North Kolkata are also showing almost similar "Neutral" satisfaction ratings but there are also room for improvements specially, for borough 2 (2.77) with a “neutral” satisfaction rating. But boroughs like 1 (3.30) and 7 (3.34) have comparatively higher scores than others in North Kolkata.
- Borough 6 in North Kolkata is the only area that reached a "Satisfied" rating, with a satisfaction score of 3.49. Residents here seem more pleased with the services, suggesting there may be successful initiatives or better conditions in this borough than others. Looking into what is working here might provide ideas for other areas.

Residents generally have a neutral view of urban services across Kolkata, with only a few areas showing higher satisfaction (only borough 6 is showing satisfied rating. This neutrality suggests that services are adequate but could be better in each area. By improving services in areas close to "Satisfied," the ULBs could help increase overall satisfaction and create a more positive view of urban services in both North Kolkata and South Kolkata regions.



▪ **Analysis of Satisfaction Variability Across Kolkata Boroughs :**

The standard deviation values across different segments of satisfaction provide insights into how consistently or differently residents feel about public services, health and safety, urban development, environmental quality, and citizen engagement within North and South Kolkata.

The following table is showing the standard deviation value of all satisfaction segments of each borough.

Region and Borough no.	StdDev of Public service avg	StdDev of Health and safety avg	StdDev of Urban development avg	StdDev of Environmental avg	StdDev of Citizen engagement avg
North Kolkata	0.628335257	0.651422021	0.511275461	0.708162062	0.902686337
1	0.624986772	0.548084688	0.565348607	0.642910051	0.967015536
2	0.60934087	0.400231415	0.414728827	0.206559112	0.458711965
4	0.417221852	0.798725837	0.665331997	1.083820403	1.169045194
5	0.799750673	0.799750673	0.440861627	0.395487366	0.557581775
6	0.22419757	0.525789907	0.343649877	0.501426536	1.078744861
7	0.333333333	0.254587539	0.529150262	0.230940108	1.127312438
South Kolkata	0.593950989	0.633275737	0.550041321	0.715146379	0.656744342
8	0.515949323	0.645497224	0.443471157	0.1	0.65748891
10	0.596002395	0.70112944	0.561383572	0.903025219	0.414578099
11	0.608580619	0.583049818	0.250713268	0.525538273	0.994029797
12	0.547917581	0.560448538	0.375533808	0.773934338	0.725563442
14	0.559706713	0.731247032	0.733333333	0.671648056	0.515388203

**Public Service Satisfaction :**

North Kolkata has a slightly higher variability in public service satisfaction with average standard deviation of 0.63 compared to South Kolkata (0.59). This suggests that residents in North Kolkata have a wider range of opinions on public services.

Borough 5 in North Kolkata has the highest variability (0.80), meaning residents in this area have more mixed feelings about public services than other boroughs, with some possibly finding them satisfactory and others less so. Boroughs 6 (0.22) and 7 (0.33) show lower standard deviations indicating that residents in these boroughs tend to have more similar views about public services, which is basically “satisfied” in terms of average satisfaction rating.

**Health and Safety Satisfaction :**

Both North and South Kolkata show similar variability in health and safety satisfaction (average standard deviations of 0.65 and 0.63, respectively), indicating moderately varied opinions across both regions. But North Kolkata still has more variability in opinions about health and safety.

Borough 10 in South Kolkata has the high variability in health and safety satisfaction (0.70). Borough 7 in North Kolkata has the lowest variability (0.25), which implies that residents here have a more uniform opinion, possibly reflecting consistent service quality in health and safety measures. But borough 4 and 5 have the highest variability in health and safety satisfaction ( 0.79) among all boroughs, suggesting that views on health and safety services differ significantly among residents in these boroughs. Some may feel the services are adequate, while others see room for improvement.

**Urban Development Satisfaction :**

Urban development satisfaction shows slightly higher variability in South Kolkata (0.55) compared to North Kolkata (0.51). This suggests that opinions on urban development initiatives vary more in South Kolkata.

Borough 14 in South Kolkata has the highest standard deviation for urban development (0.73), meaning residents here have a wide range of opinions. This could be due to differences in infrastructure quality or development projects within the borough. Whereas borough 11 in South Kolkata show lowest variability (0.25), indicating that residents generally agree on their satisfaction with urban development efforts in this area which is basically “satisfied” in terms of average satisfaction rating.

**Environmental Satisfaction :**

Both North and South Kolkata show high variability in environmental satisfaction (0.708 and 0.715, respectively), indicating diverse views across different boroughs in North and South Kolkata.

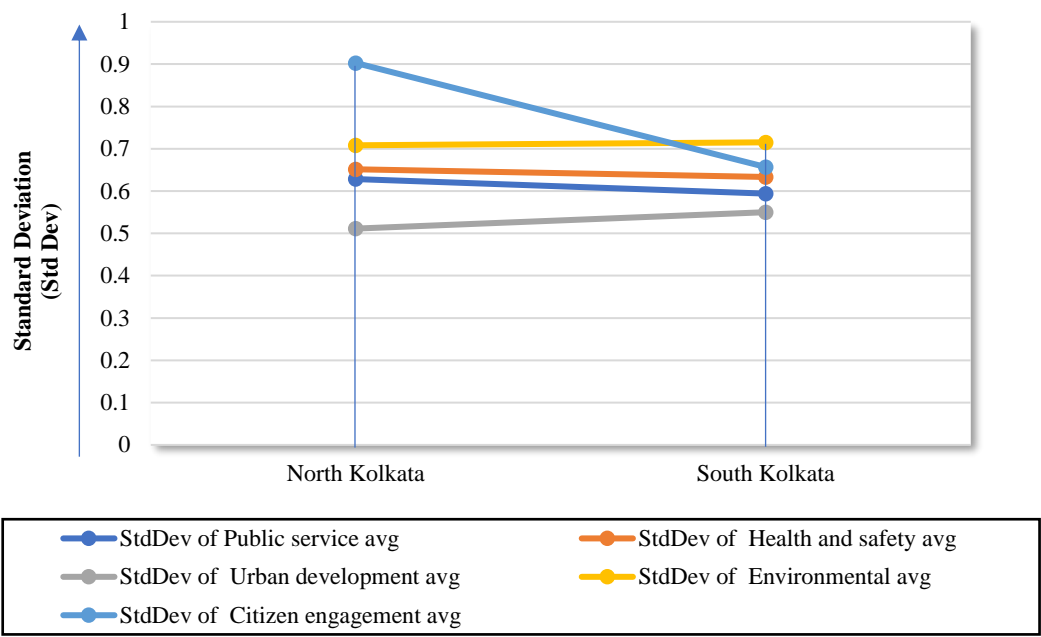
Borough 4 in North Kolkata has the highest standard deviation for environmental satisfaction (1.08), suggesting that while some residents may find the environmental quality acceptable, others might have concerns, such as pollution or waste management. But borough 8 in South Kolkata shows lowest variability (0.10), which may reflect maximum people experiences same satisfaction in environmental conditions or green space availability which is “dissatisfied” in terms of average satisfaction rating.

**Citizen Engagement Satisfaction :**

North Kolkata shows a higher variability (0.90) in citizen engagement satisfaction compared to South Kolkata (0.66), suggesting that residents in North Kolkata have more diverse feelings about their involvement and voice in ULB decisions.

Borough 4 and 7 in North Kolkata have particularly high variability (1.17 and 1.12), indicating that some residents feel their voices are heard and respected, while others feel disconnected from ULB’s decision-making processes. Boroughs 2 in North Kolkata and

borough 10 in South Kolkata show lower variability (0.45 and 0.41, respectively) implying that residents here have more consistent opinions about how well they are engaged by the ULB, possibly due to uniform outreach of ULB in these boroughs.



With the help of this line graph, we can get quick insights about satisfaction variability of all satisfaction criteria in both North and South Kolkata.

The standard deviation values reveal that certain segments, particularly environmental and citizen engagement, have higher variability in satisfaction among all satisfaction criteria. This suggests that these areas may have inconsistencies in service delivery or community engagement, leading to mixed opinions among residents .

This table allows for a quick comparison, showing which region has more varied opinions for each satisfaction segment.

While North Kolkata generally shows higher variability in satisfaction, South Kolkata exhibits more consistency in certain areas like citizen engagement and public services.

Satisfaction Segment	Std. Dev. (North Kolkata)	Std. Dev. (South Kolkata)	Region with More Variability
Public Service Satisfaction	0.628	0.594	North Kolkata
Health and Safety Satisfaction	0.651	0.633	North Kolkata
Urban Development Satisfaction	0.511	0.55	South Kolkata
Environmental Satisfaction	0.708	0.715	South Kolkata
Citizen Engagement Satisfaction	0.902	0.657	North Kolkata

In some boroughs, certain services are performing well and meeting residents' expectations, while in other boroughs, those same services may not be as effective. This creates an imbalance in satisfaction levels across different boroughs, with some areas experiencing better services than others.

▪ Analysis of Trends Over the Past 10 Years of Different Facilities :

This trend analysis section explores the perceived changes in key facilities in Kolkata ULB over the past 10 years. By examining aspects such as **education, healthcare, infrastructure, and environmental management**, etc. this analysis provides insights into how these North Kolkata and South Kolkata regions have progressed, remained stable, or declined according to resident feedback.

Following table shows the data of the weighted average score of different aspects or facilities over past 10 years;

ASPECTS	South Kolkata	North Kolkata
Education	0.133	0.232
Medical	0.378	0.286
Road connectivity	0.444	0.500
Power supply	0.778	0.893
Water supply	0.556	0.393
Solid waste management	0.333	0.214
Water waste management	0.156	0.107
Market	0.444	0.232
Internet Access	0.844	0.893
Government policies	0.133	-0.321
Hazard mitigation	0.178	-0.036
Recreation facilities	0.244	-0.036
Overall Avg. of each area	0.385	0.280

## **Education :**

With an average score of 0.232 North Kolkata represents comparatively positive change in education facilities over past decade while South Kolkata shows little positive change with a score of 0.133.

The average weighted scores across boroughs in North Kolkata indicate that education services have seen moderate improvement but with some variability. Boroughs such as Borough 6 report higher scores, suggesting positive changes, while Borough 4 shows neutral trends, indicating little perceived change. South Kolkata has generally seen minimal perceived change in education services, with scores mostly indicating an "unchanged" stance. Boroughs such as Borough 8 and 14 show slight improvements, but the perception of progress is less pronounced compared to North Kolkata.

## **Medical and Healthcare Services :**

With an average score of 0.378 South Kolkata represents comparatively positive change in medical facilities over past decade while North Kolkata shows moderate positive change with a score of 0.286.

The weighted scores reveal a mixed view, with Borough 6 showing notable improvement in healthcare services, while Borough 4 exhibits a more neutral perception. This indicates that healthcare improvements have been uneven across North Kolkata, with some areas benefitting more than others. South Kolkata's healthcare services trend similarly to North, with boroughs like Borough 10 is showing moderate improvement while borough 8 showing the highest improvement over past decade among all boroughs.

## **Road and Infrastructure Development :**

With an average score of 0.500 North Kolkata represents comparatively positive change in road and infrastructure over past decade while South Kolkata shows almost similar positive change with a score of 0.444.

Infrastructure improvements in North Kolkata are perceived to be more positive, especially in Boroughs 1 and 2, which have higher scores indicating better road and infrastructure development. Boroughs like 4 and 7 however, fall into the neutral range, indicating disparities in the quality of infrastructure improvements across boroughs. South Kolkata's perception of infrastructure improvement varies. Borough 8 and 11 show positive trends, while other boroughs remain mostly neutral. This suggests that while some areas in South Kolkata have seen road and infrastructure improvements, others have not witnessed significant changes.

## **Power and Water Supply :**

North Kolkata shows (0.893) a great positive change in power supply comparatively South Kolkata shows (0.778) less positive change. But in case of water supply North Kolkata shows (0.393) relatively less positive change than South Kolkata (0.556).

Boroughs generally report improved access to power supply, with Boroughs 2, 5, and 6 showing highest positive changes over past 10 years in North Kolkata . However, water supply scores indicate less positive change in all boroughs, but borough 4 is reflecting negative changes in North Kolkata . In South Kolkata, power supply is perceived to be consistently adequate across boroughs. Water supply however, shows variability but it is getting better in boroughs under South Kolkata than North Kolkata . Overall, South Kolkata has maintained steady performance in power supply and water services with boroughs 8 and 11 showing highest positive changes in both facilities.

## **Waste Management (Solid and Water) :**

The scores for waste management in North Kolkata show moderate improvements (solid waste management : 0.214 and water waste management : 0.107) but with significant variation. Borough 4 scores highest positive change in solid waste management whereas borough 5 shows most negative changes over last decade. Borough 2 report most negative changes in water waste management whereas borough 1 shows highest positive changes over past 10 years.

Waste management in South Kolkata shows a mix of neutral and slightly positive responses which is more than North Kolkata (solid waste management : 0.333 and water waste management : 0.156) . Borough 11 reflecting highest positive change in solid waste management practices and borough 10 reflects lowest positive change in last 10 years. However, boroughs like Borough 12 indicate that challenges persist, especially in water waste management as it shows most negative changes but borough 8 shows most positive changes in this domain in South Kolkata.

## **Internet Access :**

Internet access has seen improvements in North Kolkata with a score of 0.893, particularly in Borough 1, 6, 7 where scores indicate highest positive change over the last decade while other boroughs remain more neutral.

South Kolkata generally reflects consistent improvement in internet access with a score of 0.844 across boroughs, especially in Borough 8, 11, 14 show the highest positive changes over last 10 years . This suggests that internet infrastructure has been a focus area and is appreciated by residents in both regions.

## **Government Policies towards ULB Development :**

Perceptions of government policies vary across boroughs in North Kolkata, with a score of (-0.321) it indicates overall negative change in public service whereas with a score of (0.133) South Kolkata reflect a little positive change in this domain over last decade.

In North Kolkata borough 7 shows most negative stance but comparatively borough 6 indicate a less negative change over past 10 years. In South Kolkata borough 8 shows most positive stance whereas borough 12 shows most negative changes over past 10 years.

**Hazard Mitigation and Environmental Sustainability :**

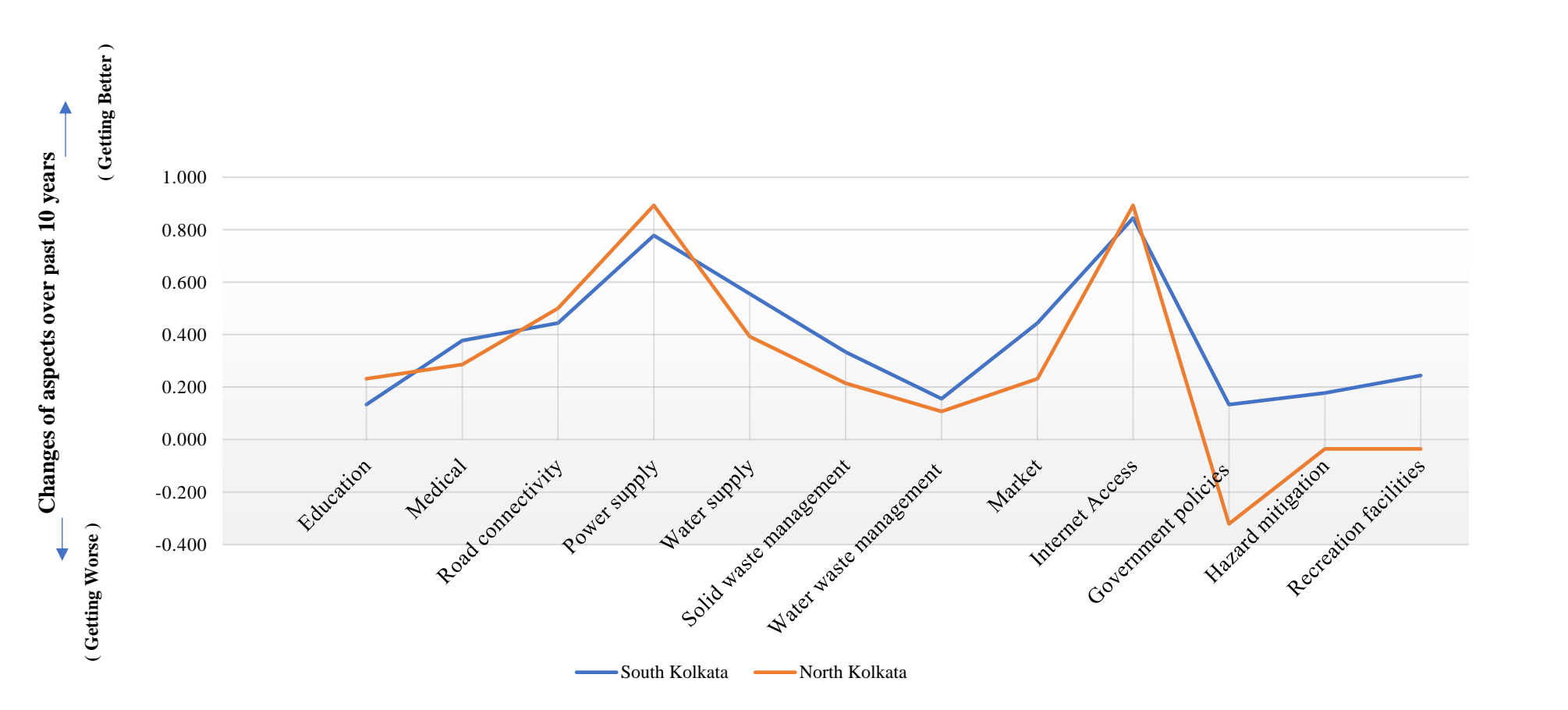
With an average score of 0.176 South Kolkata represents comparatively positive change in hazard mitigation facilities over past decade while North Kolkata shows a little negative change with a score of (-0.036).

In North Kolkata borough 1 shows most positive stance but comparatively borough 2 indicate most negative change over past 10 years. In South Kolkata borough 11 shows most positive stance whereas borough 12 shows most negative changes over past 10 years. While other areas show neutral scores

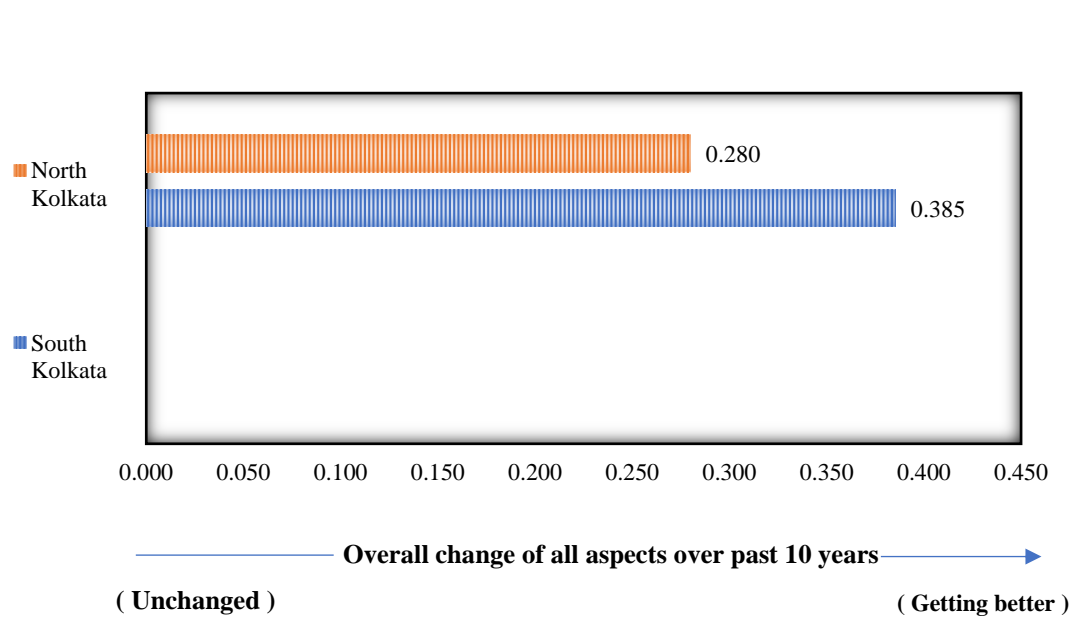
**Recreation Facilities :**

With an average score of 0.244 South Kolkata represents comparatively positive change in recreational facilities over past decade while North Kolkata shows a little negative change with a score of (-0.036).

In North Kolkata borough 4 shows most positive stance but comparatively borough 1 indicates most negative change over past 10 years. In South Kolkata borough 8 shows most positive stance whereas borough 12 shows that there is no change took place over past 10 years. While other areas show neutral scores in both regions.



This upper mentioned line graph is a comparative analysis between North and South Kolkata in terms of changing facilities over past 10 years.



This graph shows the overall change in various aspects or facilities over the past 10 years in two regions of Kolkata: North Kolkata and South Kolkata.

The values indicate the perceived improvement level, with South Kolkata scoring higher (0.385) compared to North Kolkata (0.280).

This suggests that residents in South Kolkata feel that services or facilities have improved more significantly over the last decade compared to North Kolkata, where improvements are perceived to be less impactful.

The visualization captures a regional disparity in satisfaction of facilities regarding progress, which could indicate differences in resource allocation, management or development focus between these areas.



▪ **Correlation Analysis among All Satisfaction Segments :**

This correlation analysis examines the interrelationships between various satisfaction segments within the urban local bodies (ULBs) of Kolkata, focusing on satisfaction segments such as health and safety, urban development, and environmental sustainability. By identifying the strongest and weakest correlations, we aim to gain insights into how improvements in one area might influence perceptions in another.

CORRELATION MATRIX					
	Public service	Health and safety	Urban development	Environmental sustainability	Citizen engagement
Public service	1	0.500979314	0.429690147	0.265216775	0.257528344
Health and safety	0.500979314	1	0.566947718	0.473195439	0.380826878
Urban development	0.429690147	0.566947718	1	0.539986304	0.270610522
Environmental sustainability	0.265216775	0.473195439	0.539986304	1	0.392573939
Citizen engagement	0.257528344	0.380826878	0.270610522	0.392573939	1

With the help of this correlation matrix table, we got the following insights,

**Health and Safety and Urban Development (0.57) :**

This strong link indicates that when urban development is good, people feel health and safety is better too. Improving urban infrastructure could directly support health and safety satisfaction.

**Urban Development and Environmental Sustainability (0.54) :**

Residents see a strong link between urban development and environmental sustainability. Improvements in infrastructure are likely to boost perceptions of sustainability efforts as well.

**Public Services and Health and Safety (0.50) :**

There's also a strong link here. When people feel public services are good, they often view health and safety positively too. Improvements in public services could help boost satisfaction with health and safety.

**Health and Safety and Environmental Sustainability (0.47) :**

Residents see a fair connection between environmental efforts and health and safety. Initiatives aimed at sustainability could positively impact views on health and safety.

**Public Services and Urban Development (0.43) :**

Residents who are satisfied with public services tend to view urban development favourably. This suggests that public services and urban growth efforts could be improved together to enhance satisfaction in both areas.

**Environmental Sustainability and Citizen Engagement (0.39) :**

There's a moderate connection, meaning that visible environmental improvements might make people feel a bit more engaged with the ULBs, though engagement could be improved further.

**Health and Safety and Citizen Engagement (0.38) :**

There's a moderate link here, suggesting that better health and safety services might make people feel more involved in the community, but other engagement strategies might still be necessary.

**Urban Development and Citizen Engagement (0.27) :**

A weak link here indicates that urban development alone may not be enough to make residents feel more engaged with ULB, suggesting a need for targeted engagement activities.

**Public Services and Environmental Sustainability (0.27) :**

The weaker link here means that satisfaction with public services doesn't strongly affect views on environmental sustainability. Residents may see these as separate issues, so each may need unique improvement strategies.

**Public Services and Citizen Engagement (0.26) :**

This weakest link here suggests that good public services might slightly boost feelings of engagement with ULB. However, other efforts may be needed to improve how involved residents feel in local decisions. These two need unique improvement strategies.

With the help of this data table, we can easily find out strongest to lowest correlation among satisfaction segments of Kolkata ULB.

**Top Correlations:** Health and Safety vs. Urban Development has the highest correlation (0.5669), indicating that improvements in urban development could significantly enhance health and safety perceptions.

Urban Development vs. Environmental Sustainability also shows a strong link (0.5400), suggesting that these areas are closely related in residents' perceptions.

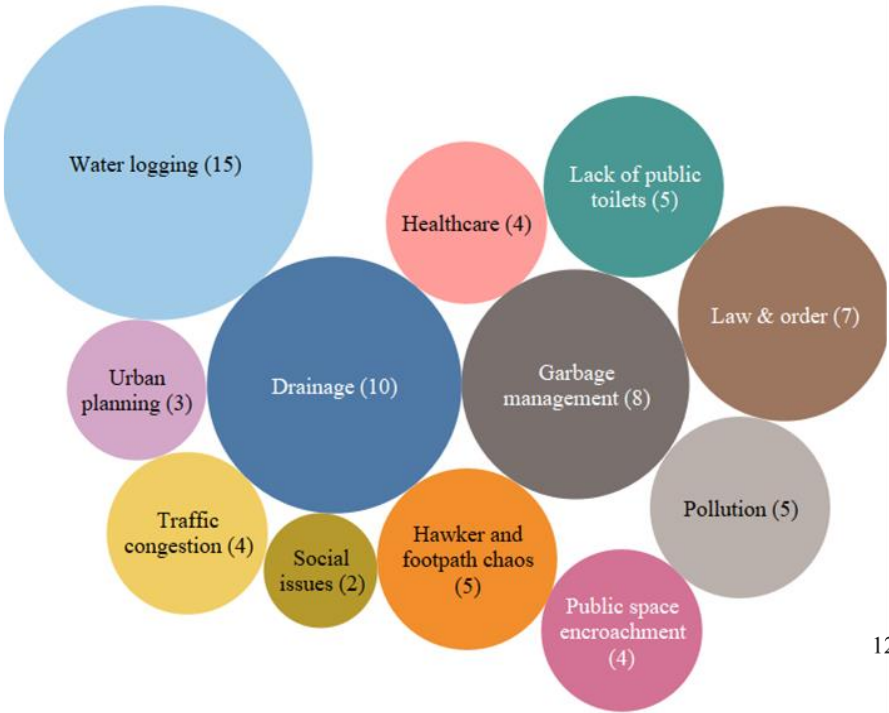
**Moderate Correlations:** Environmental Sustainability and Citizen Engagement and Health and Safety and Citizen Engagement show moderate correlations (0.3926 and 0.3808, respectively) indicating these areas are somewhat linked in residents' minds.

Segment Pair	Correlation
Health and Safety vs. Urban Development	0.5669
Urban Development vs. Environmental Sustainability	0.54
Public Services vs. Health and Safety	0.501
Health and Safety vs. Environmental Sustainability	0.4732
Public Services vs. Urban Development	0.4297
Environmental Sustainability vs. Citizen Engagement	0.3926
Health and Safety vs. Citizen Engagement	0.3808
Urban Development vs. Citizen Engagement	0.2706
Public Services vs. Environmental Sustainability	0.2652
Public Services vs. Citizen Engagement	0.2575

**Weaker Correlations:** The lowest correlations are between Public Services vs. Environmental Sustainability (0.2652) and Public Services vs. Citizen Engagement (0.2575). This indicates that residents don't see these pairs as strongly related, so they may need separate improvement strategies.

■ Open Ended Question Analysis :

In this section, we explore the specific concerns raised by residents in response to open-ended survey questions. These responses provide valuable insights into the **most pressing issues** facing the community, as well as **the services and facilities residents wish to see implemented** or improved by the Urban Local Body (ULB) of Kolkata. The feedback highlights recurring themes and areas where residents feel the ULB's attention is most needed.

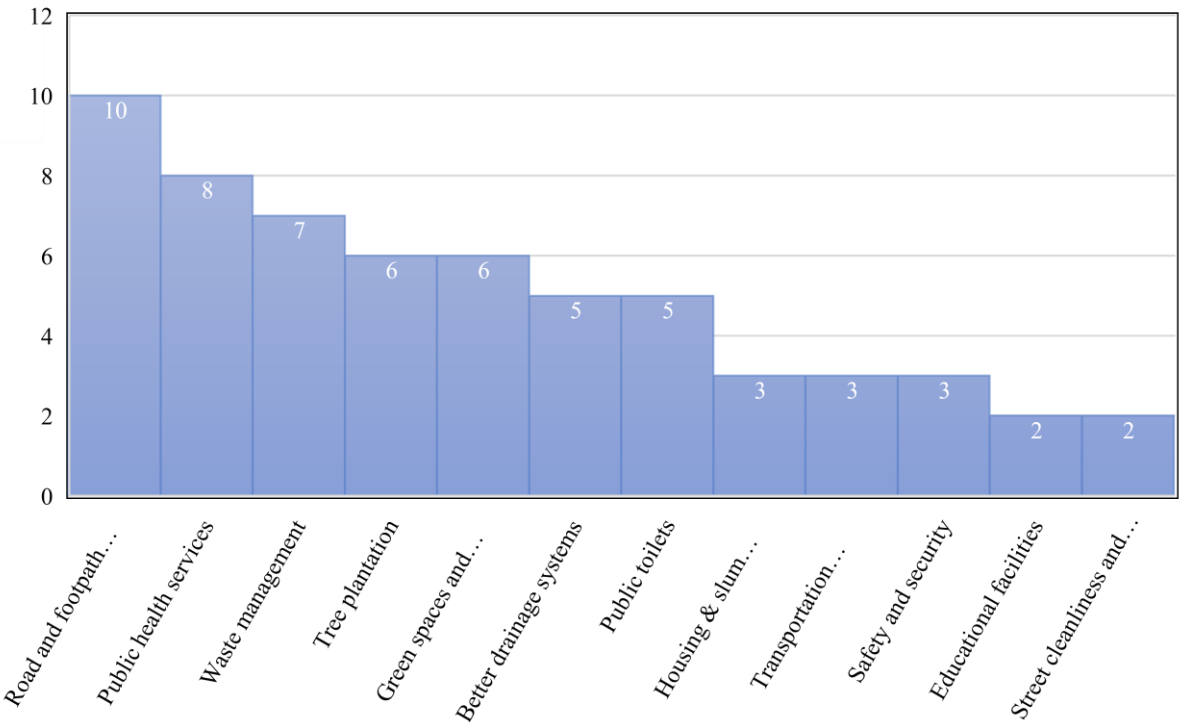


This graphical representation gives us insights about the desired facilities and additional services in Kolkata ULB.

Highest priority, with residents seeking better roads and pedestrian paths as this service holds 10 frequency value. Demand for improved healthcare facilities is the second most demanding service as it has a frequency value 8. Residents want cleaner surroundings and more green areas in their locality as waste management holds 7 frequency value. Need for better drainage and sanitation facilities as both of these services hold a frequency number 5.

This are the most pressing issues in Kolkata Municipality.

With this data visualization we can see that the most common issue in Kolkata is water logging with a frequency number of 15 also poor drainage system (frequency 10) influences the waterlogging issue. Residents are also dissatisfied with waste disposal and sanitation in the ULB as it has 10 frequency value. There are concerns about public safety and social order as law and order has frequency value 7. Issues with pollution and overcrowded sidewalks suggest a need for better environmental controls and street regulation. Lack of access to restrooms and adequate health services are also notable issues in Kolkata.



Residents mainly want improvements in drainage, waste management, healthcare, and road conditions, along with more green spaces. These areas are key to improving quality of life and satisfaction with local services.

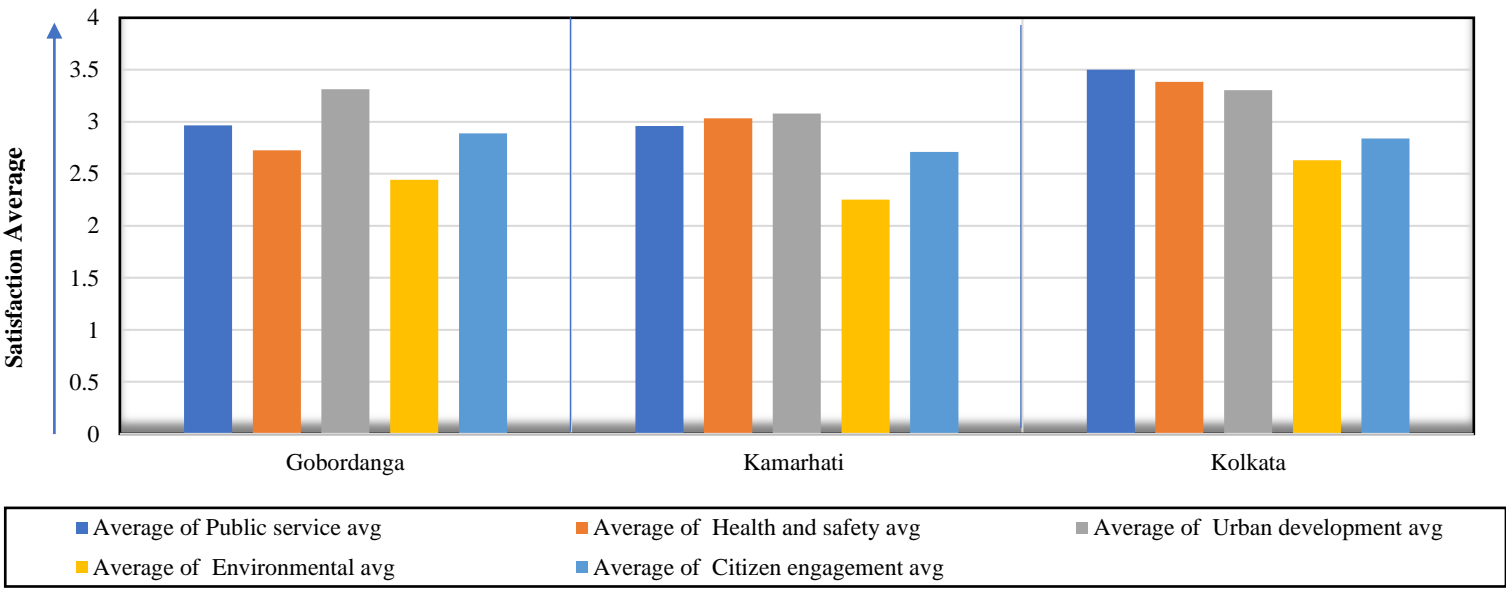
➤ **A Comparative Analysis Among Three Urban Local Bodies :**

Using a sample survey approach, feedback was collected through a structured questionnaire, with responses gathered from 50 participants each in Gobardanga and Kamarhati and 100 participants in Kolkata. Following analysis is based on those responses to get comparative insights among three ULBs (Gobardanga, Kamarhati, Kolkata) on various factors.

▪ **Average Satisfaction of Three ULBs :**

This study aims to assess resident satisfaction across three Urban Local Bodies (ULBs) in West Bengal: Kolkata, Kamarhati, and Gobardanga. The focus is on understanding satisfaction levels in key areas such as **public services, health and safety, urban development, environmental sustainability, and citizen engagement**. This analysis helps identify strengths and areas for improvement in each ULB, contributing to more effective and resident-cantered urban governance.

ULB Area	Public service satisfaction	Health and safety satisfaction	Urban development satisfaction	Environmental satisfaction	Citizen engagement satisfaction
Gobardanga	Neutral	Neutral	Neutral	Dissatisfied	Neutral
Kamarhati	Neutral	Neutral	Neutral	Dissatisfied	Neutral
Kolkata	Satisfied	Neutral	Neutral	Neutral	Neutral



By analysing **numerical satisfaction averages, qualitative satisfaction ratings** (conversion of numerical average score into satisfaction rating) and **the graphical representation of the satisfaction average scores** we get following insights about public service, health and safety, urban development, environment and citizen engagement of Kolkata, Kamarhati, Gobardanga.

**Public Service Satisfaction :**

Kolkata leads with an average score of 3.50, indicating a higher level of satisfaction among residents. Gobardanga and Kamarhati have similar scores around 2.96, both reflecting a "Neutral" stance. Kolkata is the only ULB with a "Satisfied" rating in Public Service, suggesting relatively strong performance in this area. Gobardanga and Kamarhati have "Neutral" ratings, highlighting a need for further improvements to reach higher resident satisfaction.

**Health and Safety Satisfaction :**

Kolkata again ranks the highest with an average score of 3.38, followed by Kamarhati at 3.03. But Gobardanga ranks the lowest with an average score around 2.72. All three ULBs are rated "Neutral" for Health and Safety, indicating residents perceive this segment as neither particularly strong nor inadequate. This neutral stance suggests potential for enhancement in health and safety measures across all ULBs.

**Urban Development Satisfaction :**

Gobardanga scores the highest in urban development at 3.31, followed by Kolkata at 3.30. Kamarhati holds average satisfaction score slightly below Gobardanga and Kolkata 3.08 indicate similar neutral levels of satisfaction. All three areas hold a "Neutral" rating,

indicating a perception that urban development is adequate but lacks outstanding results. While Gobardanga and Kolkata scores marginally higher, there appears to be a shared sentiment across ULBs that urban development could be more impactful.

**Environmental Satisfaction :**

Kolkata’s environmental satisfaction score is 2.63, higher than Gobardanga (2.44) and Kamarhati (2.25) represents a better position in environmental satisfaction among three ULBs. Both Gobardanga and Kamarhati are rated "Dissatisfied" in Environmental Satisfaction, indicating dissatisfaction with environmental conditions. Kolkata’s "Neutral" rating reflects moderate perceptions, suggesting that environmental efforts in Kolkata are somewhat better but still require substantial improvements to achieve higher satisfaction.

**Citizen Engagement Satisfaction :**

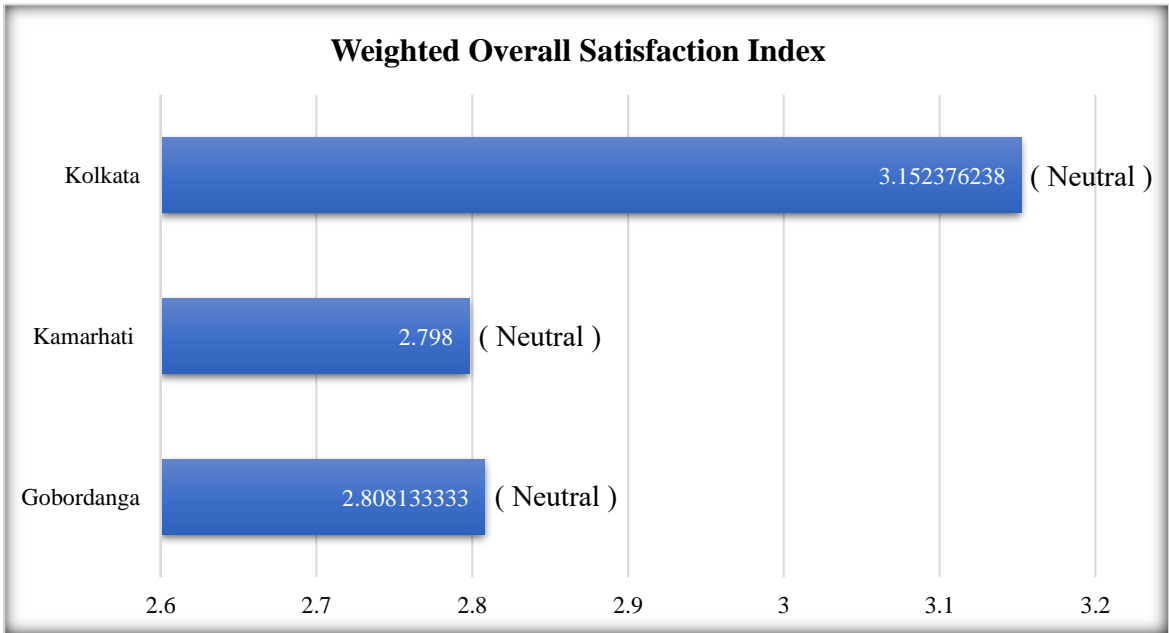
Scores across ULBs are fairly close, but Gobardanga and Kolkata score similarly in citizen engagement, around 2.84 and 2.89, indicating a little higher satisfaction score. Kamarhati, at 2.71, shows slightly lower but still neutral satisfaction. All three ULBs received a "Neutral" rating for Citizen Engagement, which suggests residents feel moderately engaged but see room for improvement. This indicates potential for ULBs to increase community involvement and enhance participatory governance to foster higher satisfaction.

**Valuable insights:**

- Kolkata generally performs better across segments, particularly in Public Service and Health and Safety, which may explain the higher levels of satisfaction in those areas.
- Gobardanga and Kamarhati display similarities in satisfaction trends, both scoring lower in Environmental Satisfaction and Public Services. These findings suggest the need for focused interventions in these areas to meet resident expectations.
- Uniform Neutral Ratings in Citizen Engagement reflect a common sentiment that ULBs could do more to involve citizens in decision-making processes and improve transparency.
- Environmental Satisfaction is a weak area across all ULBs, especially in Gobardanga and Kamarhati, where residents express dissatisfaction. Prioritizing improvements in waste management, pollution control, and green spaces may boost satisfaction in this segment.

▪ **Overall Satisfaction of Each ULB :**

The weighted overall satisfaction index was calculated for each Urban Local Body to provide a clear measure of residents’ perceptions of service quality. Through this we get a comparative understanding of overall urban satisfaction in Kolkata, Kamarhati and Gobardanga.



**Analysis of Weighted Overall Satisfaction Index of Each ULB**

- **Kolkata** has the highest weighted overall satisfaction index at **3.15**, indicating a comparatively more positive perception among respondents in this area. Despite this being the highest score, it is still categorized as "Neutral," suggesting that while services in Kolkata may be better received than in other areas, there is room for improvement to move towards a more "Satisfied" sentiment.
- **Gobardanga** has a slightly lower index at **2.81**. This score also falls in the "Neutral" range, showing moderate satisfaction. However, this score indicates that there may be specific aspects that residents appreciate, though overall satisfaction remains neutral in Gobardanga. There are areas to work for getting a “Satisfied” range.



- **Kamarhati** has the lowest score at **2.80** but still remains within the "Neutral" category. This marginally lower score suggests that satisfaction levels in Kamarhati are slightly less than in Gobardanga and Kolkata, potentially due to gaps in services or areas that require immediate attention to elevate satisfaction levels.
- All three ULBs (Kolkata, Gobardanga, and Kamarhati) share a "Neutral" overall satisfaction sentiment. This indicates that none of the ULBs are meeting the full satisfaction of residents but are not entirely dissatisfactory either. Kolkata stands out slightly, suggesting a better perception, while Gobardanga and Kamarhati are close behind with similar satisfaction levels.
- The small differences in scores highlight specific areas that each ULB might focus on to improve resident satisfaction. For instance, Kamarhati and Gobardanga could benefit from targeted improvements in key services, potentially learning from practices in Kolkata.

The overall neutral satisfaction across all ULBs suggests that while basic expectations may be met, residents across these areas are looking for enhancements in service quality and delivery to feel fully satisfied. This underscores the importance of continuous monitoring and adjustments in service strategies for each ULB to boost satisfaction levels.

▪ **Analysis of Satisfaction Variability Across Three ULBs :**

The standard deviation values across different segments of satisfaction provide insights into how consistently or differently residents feel about public services, health and safety, urban development, environmental quality, and citizen engagement within Gobardanga, Kamarhati, Kolkata.

The following table is showing the standard deviation value of all satisfaction segments of each ULB.

ULB Area	StdDev of Public service avg	StdDev of Health and safety avg	StdDev of Urban development avg	StdDev of Citizen engagement avg	StdDev of Environmental avg
Gobordanga	0.478565506	0.597386599	0.762552106	0.73220383	0.650638619
Kamarhati	0.68392624	0.616294243	0.618094504	0.902603943	0.666161714
Kolkata	0.610325528	0.640200739	0.5281014	0.798768304	0.710147105

**Public Service Satisfaction :**

Kamarhati shows the highest variability in satisfaction (0.6839), indicating a wider range of resident opinions on public services. Kolkata follows with a standard deviation of (0.6103), suggesting some variability but less extreme than Kamarhati. Gobardanga has the lowest variability at (0.4786), indicating that residents’ opinions on public services are relatively consistent.

Gobardanga public service satisfaction seems more consistent, while Kamarhati shows more diverse opinions. This may indicate uneven service delivery in Kamarhati followed by Kolkata. But Gobardanga gets more or less same public service compared to other ULBS.

**Health and Safety Satisfaction :**

The variability is relatively close across the three ULBs, with Kolkata at (0.6402), Kamarhati at (0.6163), and Gobardanga at (0.5974). But among all ULBs Kolkata shows slightly more variation in health and safety satisfaction, implying that resident views in this segment are more divided than in the other ULBs.

Kolkata and Kamarhati have more diverse opinions, perhaps reflecting differences in healthcare or safety services across neighbourhoods while Gobardanga has more same opinion about health and safety issues.

**Urban Development Satisfaction :**

Gobardanga has the highest standard deviation (0.7626), indicating significant variability in resident satisfaction with urban development. Kamarhati has a moderate variability at (0.6181), showing less spread in opinions compared to Gobardanga. Kolkata has the lowest variability (0.5281), suggesting more consistent views on urban development among its residents.

Urban development satisfaction is more varied in Gobardanga, which could indicate uneven development across different parts of the city. Kolkata’s lower deviation suggests more consistent urban development across the board.

Citizen Engagement Satisfaction :

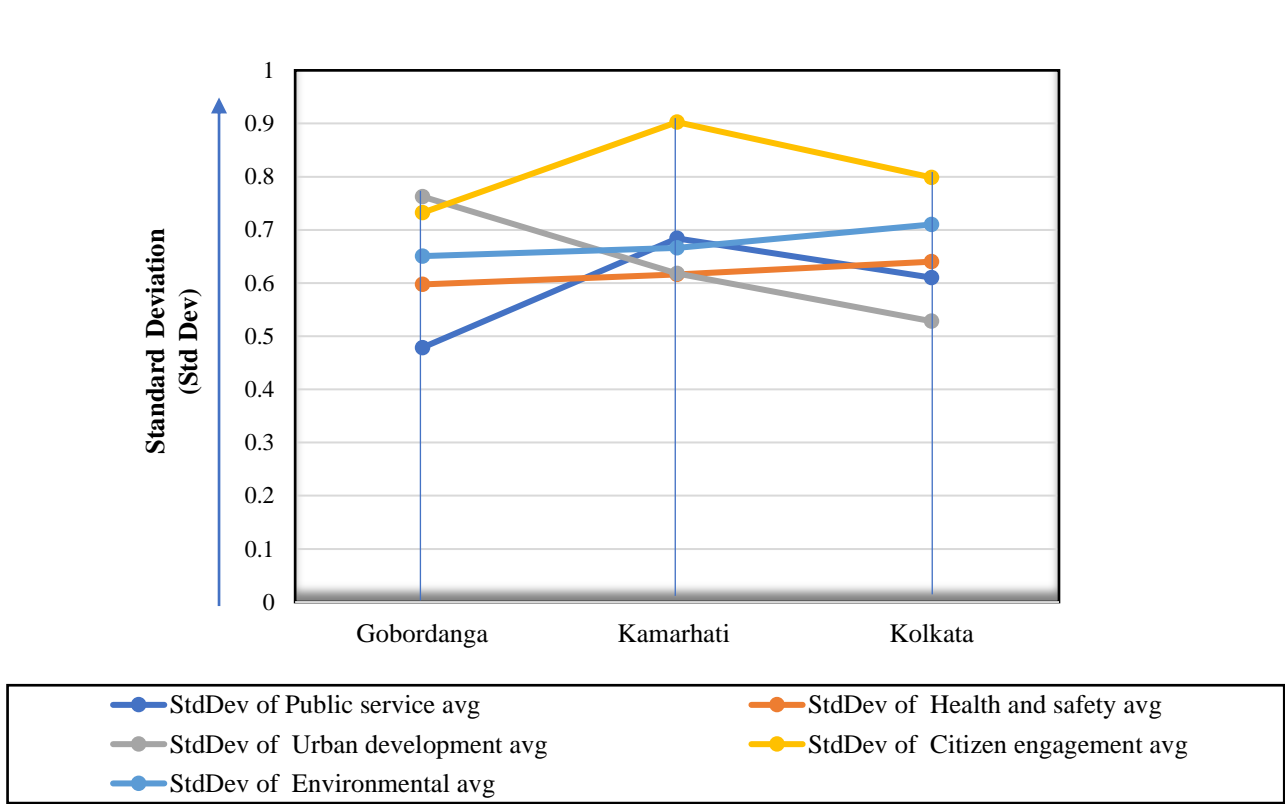
Kamarhati has the highest variability (0.9026), showing that resident opinions on citizen engagement are widely spread, with some feeling very satisfied and others less so. Kolkata follows with (0.7988), indicating moderate variability in this segment. Gobardanga has a lower variability (0.7322), showing that opinions on citizen engagement are relatively more aligned among residents.

Kamarhati’s high deviation in citizen engagement indicates that the ULB’s interaction with residents is inconsistent. Kolkata and Gobardanga also show variability, though less pronounced.

Environmental Satisfaction :

Kolkata has the highest variability in environmental satisfaction (0.7101), indicating diverse opinions among residents. Kamarhati has a similar but slightly lower standard deviation at (0.6662). Gobardanga again shows the lowest variability (0.6506), suggesting a more unified opinion on environmental satisfaction.

Kolkata’s higher standard deviation suggests environmental conditions vary more widely across the city. Lower deviation of Gobardanga indicates more uniformity, though it’s unclear whether it’s consistently positive or negative.



With the help of this line graph, we can get quick insights about satisfaction variability of all satisfaction criteria in three ULBs.

Kamarhati generally shows higher variability across most segments, particularly in public service and citizen engagement satisfaction. This suggests that Kamarhati has more polarized opinions in these areas, indicating potential areas for targeted improvement to address varying resident needs.

Kolkata displays moderate variability, with the highest spread in citizen engagement satisfaction followed by environmental satisfaction. This could indicate that while there is general satisfaction, specific environmental issues and citizen engagement may need more focused attention.

Gobardanga generally has the lowest variability in most segments, suggesting more consistent satisfaction levels. However, the high standard deviation in urban development satisfaction points to possible concerns or diverse experiences in this specific area.

▪ Analysis of Trends Over the Past 10 Years of Different Facilities :

This trend analysis section explores the perceived changes in key facilities in Kolkata, Gobardanga and Kamarhati over the past 10 years. By examining aspects such as **education, healthcare, infrastructure, and environmental management**, etc. this analysis provides insights into how these three ULBs have progressed, remained stable, or declined according to resident feedback.

Following table shows the data of the weighted average score of different aspects or facilities over past 10 years;

ASPECTS	ULB AREA		
	Gobordanga	Kamarhati	Kolkata
Average of Weighted Education	0.140	-0.060	0.188
Average of Weighted Medical	-0.540	-0.220	0.327
Average of Weighted Road	0.400	0.180	0.475
Average of Weighted Power supply	0.820	0.800	0.842
Average of Weighted Water supply	0.400	0.100	0.465
Average of Weighted Solid waste management	0.340	-0.120	0.267
Average of Weighted Water waste management	-0.020	-0.380	0.129
Average of Weighted Market	0.120	-0.160	0.327
Average of Weighted Internet Access	0.860	0.780	0.871
Average of Weighted Recreation facilities	0.180	-0.120	0.089
Average of Weighted Government policies towards ULB development	0.140	-0.360	-0.119
Average of Weighted Hazard mitigation	-0.100	-0.160	0.059
Overall change of all aspects over past 10 years in every ULB	0.228	0.023	0.327

**Education :**

Kolkata has the highest positive perception in educational improvements, with a score of (0.188), suggesting residents have noticed a gradual increase in the quality or availability of educational facilities. Gobardanga also reflects a positive but modest improvement at (0.140) lower than Kolkata, indicating slight satisfaction with educational facilities but with room for further enhancement. Kamarhati, with a slight negative score (-0.060), suggests that the residents may feel the educational improvements have either unchanged or declined, possibly due to inadequate facilities or limited upgrades in the area in educational field.

**Medical Services :**

Kolkata stands out with a positive score of (0.327), indicating noticeable improvements in healthcare accessibility and quality. This could reflect the development of public health facilities or increased medical services over the past decade. Kamarhati show negative scores (- 0.220) and this implies that residents in this area are dissatisfied with upgradation rate of medical services. But Gobardanga shows most negative score (-0.540) potentially due to inadequate facilities, long waiting times, or lack of modern healthcare resources.

**Road Infrastructure :**

Kolkata leads with (0.475), indicating significant improvements in road infrastructure, possibly due to recent projects aimed at reducing congestion and improving road quality. Gobardanga follows with (0.400), reflecting a positive trend but indicating less rapid progress compared to Kolkata over the last 10 years. Kamarhati has the lowest positive score of (0.180), which suggests minimum improvements and also implies that more attention is needed in road infrastructure to meet residents' expectations.

**Power Supply :**

This is a high-performing segment across all ULBs, with Kolkata scoring (0.842), closely followed by Gobardanga at (0.820), and Kamarhati at (0.800). This uniform positivity indicates that power supply is generally well-managed and reliable across these regions, reflecting residents' satisfaction with improvements in this essential service over the last decade.

**Water Supply :**

Kolkata has the highest satisfaction with water supply improvements at (0.465), suggesting consistent water availability and quality improvements. Gobardanga also shows a positive perception with (0.400), indicating satisfaction but also a potential area for continued focus. Kamarhati has a much lower score of (0.100) among all the ULBs, which could indicate intermittent water issues or slower progress in water supply enhancements, reflecting residents' concerns.

**Solid Waste Management :**

Both Gobardanga (0.340) and Kolkata (0.267) indicate positive perceptions of waste management improvements, possibly due to increased waste collection efforts or improved cleanliness over last decade. But Gobardanga performing a little better than Kolkata in this service. But Kamarhati displays a slightly negative trend (-0.120), suggesting issues with waste collection frequency, facility maintenance, or awareness of waste disposal practices.

**Water Waste Management :**

Kolkata shows a positive score of (0.129), reflecting some improvement in handling wastewater and reducing pollution. Gobardanga and Kamarhati exhibit negative perceptions with scores of (-0.020) and (-0.380) respectively. This suggests that wastewater management systems may be underdeveloped or ineffective in these areas, causing dissatisfaction. But still Gobardanga holds a better position in terms of water waste management improvement over the last 10 years than Kamarhati.

**Market Facilities :**

Kolkata again leads with a positive perception (0.327), indicating residents have noticed improvements in local markets, perhaps in terms of cleanliness, variety of goods, or infrastructure. Gobardanga shows a smaller positive trend (0.120), indicating moderate satisfaction with market facilities. Kamarhati has a negative trend (-0.160), possibly due to lack of modern facilities, cleanliness, or variety in markets, which could affect resident satisfaction.

**Internet Access :**

Kolkata exhibits the highest positive score (0.871), reflecting high resident satisfaction with internet connectivity, likely due to infrastructure upgrades and better coverage. Gobardanga follows closely with (0.860), indicating strong satisfaction with internet access just like Kolkata. Kamarhati scores slightly lower at (0.780), which, although very positive, may suggest some areas still face connectivity issues and need upgradation in internet access.

**Recreation Facilities :**

Gobardanga shows comparatively a notable positive score (0.180), reflecting resident satisfaction with available recreational facilities over the last 10 years but there are still some room for improvements. Kolkata has a minimal positive score (0.089), which suggests limited improvements in recreational facilities over the last decade but not as prominently recognized. Kamarhati has a negative trend (-0.120), indicating dissatisfaction with the lack or quality of recreational spaces available to residents.

**Government Policies towards ULB Development :**

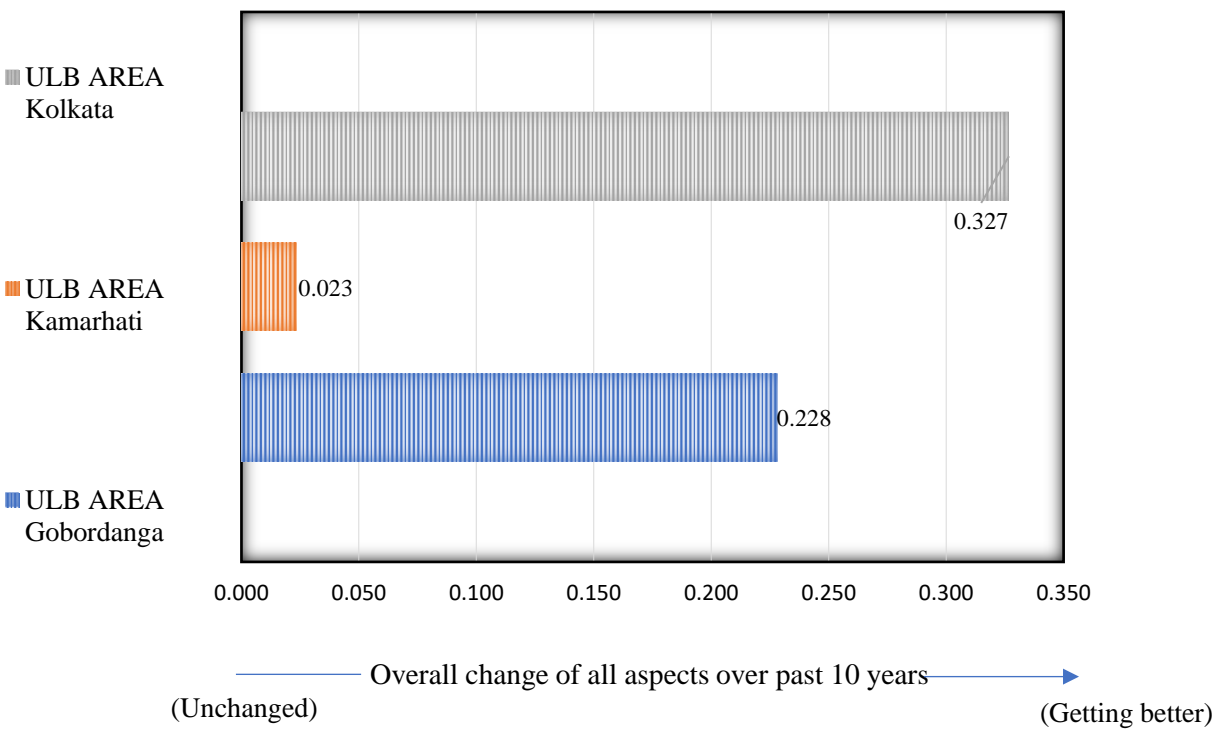
Gobardanga has a slight positive perception (0.140), suggesting some level of satisfaction with policy efforts for local development. Kolkata and Kamarhati have negative scores, (-0.119) and (-0.360) respectively, implying dissatisfaction. This could reflect scepticism about the effectiveness or execution of government policies aimed at urban development in these areas.

**Hazard Mitigation :**

Kolkata has a minimal positive score (0.059), suggesting minor improvements in disaster preparedness or hazard mitigation efforts. Gobardanga shows negative trend (-0.100), indicating concerns regarding the lack of adequate hazard mitigation measures, which could include flood management, disaster response infrastructure, or awareness programs. But Kamarhati experienced more negative trend in hazard mitigation over the last 10 years with a score of (-0.160).

**Valuable insights:**

- Kolkata generally demonstrates the highest satisfaction across most aspects, especially in infrastructure (roads, power supply, internet) and public services, which reflects the ULB's relatively strong performance in recent improvements.
- Gobardanga shows moderate satisfaction across several segments, particularly in internet access, power supply, and recreation facilities, suggesting a mixed but somewhat positive perception of ULB efforts.
- Kamarhati lags in many areas, with negative trends in important sectors like medical services, waste management, and government policy effectiveness. This suggests potential areas where the local body needs to focus to enhance residents' quality of life.
- Power supply and internet access are the only two facilities that show strong positive performance across three Urban Local Bodies over the past 10 years.
- Education and hazard mitigation remain unchanged and also show negative change (like, education in Kamarhati and hazard mitigation in both Gobardanga and Kamarhati) which means these facilities have more room for getting better .



The bar graph presents an overall change in satisfaction across various aspects over the past 10 years for three ULBs: Kolkata, Gobardanga, and Kamarhati.

Kolkata has the highest positive change score (0.327), indicating that residents generally perceive improvements in urban services and amenities over the past decade. The higher overall change suggests that Kolkata has made visible improvements in aspects such as power supply, road infrastructure, and internet access, which align with the city’s larger infrastructure and service improvement projects.

Gobardanga has a positive overall change of (0.228), which is less than Kolkata’s but significantly higher than Kamarhati’s. The

residents of Gobardanga perceive positive changes, particularly in basic utilities like power supply and internet access. This indicates gradual but effective improvements in essential services. While there are visible improvements, the overall change score reflects that Gobardanga may still lack in more advanced amenities and consistent quality across all sectors compared to Kolkata.

Kamarhati shows the lowest overall change, with a score of (0.023), which is close to neutral. This suggests limited perceived improvements over the past 10 years. The low score indicates that Kamarhati has either maintained a stagnant level of service quality or has not managed to address residents' expectations effectively. This area may have been struggling to implement necessary improvements in various aspects like waste management and recreational facilities.

▪ **Occupation-Based Satisfaction Analysis :**

The cross-tabulation analysis aims to explore how satisfaction levels vary among residents with different occupations across key service segments within each ULB. By examining occupation-specific feedback on public services, health and safety, urban development, environmental sustainability, and citizen engagement, this analysis sheds light on the distinct experiences and expectations of different occupational groups. This approach helps identify which occupations express higher or lower satisfaction with specific services, allowing us to see potential alignment or gaps between service delivery and the needs of various professional categories across Gobardanga, Kamarhati and Kolkata.



OCCUPATION of ULB areas ▾	Average of Public service avg	Average of Health and safety avg	Average of Urban development avg	Average of Environmental avg	Average of Citizen engagement avg
▣ Gobardanga	2.97	2.73	3.31	2.44	2.89
Employed in Government sector	3.08	2.86	3.37	2.77	3.21
Employed in Private sector	2.70	2.23	2.76	2.08	2.65
Homemaker	3.10	2.70	3.48	2.36	2.60
Retired	3.29	3.00	3.95	2.90	3.13
Self-employed	2.89	2.84	3.33	2.40	2.90
Student	2.95	2.62	3.09	2.40	2.84
Unemployed	3.00	2.67	3.90	2.30	3.00
▣ Kamarhati	2.96	3.03	3.08	2.25	2.71
Employed in Government sector	2.89	3.22	2.93	1.60	2.92
Employed in Private sector	3.14	3.50	3.00	2.30	3.58
Homemaker	2.39	2.50	3.47	2.13	2.17
Retired	2.90	2.57	2.91	2.40	2.61
Self-employed	3.18	3.32	3.28	2.64	2.94
Student	2.95	3.05	2.94	1.72	2.10
Unemployed	2.38	2.13	2.80	2.20	2.38
▣ Kolkata	3.50	3.38	3.30	2.63	2.84
Employed in Government sector	3.64	3.64	3.40	3.20	3.29
Employed in Private sector	3.22	3.09	2.91	2.18	2.46
Homemaker	3.31	3.23	3.40	2.98	3.56
Retired	3.46	3.13	3.25	2.85	2.69
Self-employed	3.70	3.52	3.37	2.61	2.79
Student	3.48	3.40	3.35	2.61	2.80

With help of this above projected cross tabulation table ( occupation vs average satisfactions ) we get insights into how urban services impact groups such as government employees, private sector workers, self-employed individuals, homemakers, students, and retirees, across the three ULBs of Gobardanga, Kamarhati, and Kolkata.

### Public Service Satisfaction :

- Kolkata: Overall, Kolkata shows the highest satisfaction in public service across all occupations, especially among self-employed individuals (3.70) government employee (3.64) and students (3.48).
- Gobardanga: Retired individuals report the highest satisfaction (3.29), while private sector employees have the lowest (2.70) satisfaction in public service.
- Kamarhati: Self-employed people show relatively high satisfaction (3.14), whereas unemployed individuals and homemaker have the lowest satisfaction (2.38, 2.39 respectively).

### Health and Safety Satisfaction :

- Kolkata: Government sector employees report the highest satisfaction in health and safety (3.64), followed closely by students (3.40). Overall, Kolkata shows the highest satisfaction in health and safety across all occupations.
- Kamarhati: Private sector employees also report high satisfaction (3.50), with the lowest satisfaction among unemployed individuals (2.13).
- Gobardanga: Retired individuals are most satisfied with health and safety (3.00), while private sector employees show the lowest satisfaction (2.23).

### Urban Development Satisfaction :

- Gobardanga: Retired individuals report the highest satisfaction (3.95), while students and private sector employees are less satisfied with urban development (3.09 and 2.76, respectively).
- Kolkata: The homemaker, government employee and student groups rate urban development satisfaction highly (3.40, 3.40 and 3.35, respectively) whereas private employee groups rate urban development the lowest with a score (2.91).
- Kamarhati: Homemakers are the most satisfied with urban development (3.47), whereas unemployed individuals show the lowest satisfaction (2.80).

### Environmental Satisfaction :

- Kolkata: Government sector employees again show the highest satisfaction with environmental aspects (3.20), while private sector employees report the lowest (2.18).
- Gobardanga: Retired individuals have the highest satisfaction (2.90), while private employee group rates environmental aspects lower (2.08).
- Kamarhati: Self-employed people report highest satisfaction (2.64), with government sector employees showing the lowest satisfaction (1.60).

Citizen Engagement Satisfaction :

- Gobardanga: Government employees report highest satisfaction (3.21), while homemakers show lowest satisfaction (2.60) with citizen engagement.
- Kolkata: Homemakers are most satisfied with citizen engagement (3.56), while private sector employees show lowest satisfaction (2.46).
- Kamarhati: Private sector employees report the highest citizen engagement satisfaction (3.58), whereas students show the lowest (2.10).

Occupation of ULB areas	Weighted overall satisfaction average
Retired	3.188
Employed in Government sector	2.993
Unemployed	2.86
Self-employed	2.82
Homemaker	2.802
Student	2.725
Employed in Private sector	2.409
Gobordanga	2.808
Self-employed	3.078
Employed in Private sector	3.061
Employed in Government sector	2.676
Retired	2.65
Student	2.586
Homemaker	2.498
Unemployed	2.32
Kamarhati	2.798
Employed in Government sector	3.459
Homemaker	3.241
Self-employed	3.234
Student	3.152
Retired	3.098
Employed in Private sector	2.799
Kolkata	3.152

With the help of this data table, we can get quick insights about how overall satisfaction of different occupation groups change among three ULBs.

Gobardanga:

- Highest overall satisfaction is reported by retirees (3.188) and government employees (2.993), indicating a positive perception of services among these groups.
- Private sector employees have the lowest satisfaction (2.409), suggesting potential areas for improvement in services relevant to this group.
- Students (2.725) and unemployed (2.86) residents also report lower satisfaction compared to other groups.

Kamarhati:

- Private sector employees (3.061) and self-employed individuals (3.078) show relatively high overall satisfaction, indicating a favourable view of services in these occupations.
- Homemakers and the unemployed report the lowest satisfaction (2.498 and 2.32, respectively), highlighting potential challenges in addressing the needs of these groups.

Kolkata:

- Government sector employees (3.459) and homemakers (3.241) show the highest satisfaction, suggesting successful engagement with these groups' needs. Private sector employees report the lowest score in Kolkata (2.799), though their satisfaction is still higher than equivalent groups in other ULBs.

▪ Annual Family Income-Based Satisfaction Analysis :

The cross-tabulation analysis aims to explore how satisfaction levels vary among residents with different annual income across key service segments within each ULB. By examining annual income-specific feedback on public services, health and safety, urban development, environmental sustainability, and citizen engagement, this analysis sheds light on the distinct experiences and expectations of different income groups. This approach helps identify which income groups express higher or lower satisfaction with specific services, allowing us to see potential alignment or gaps between service delivery and the needs of various income categories across Gobardanga, Kamarhati and Kolkata.

Annual Income of ULB areas	Average of Public service avg	Average of Health and safety avg	Average of Urban development avg	Average of Environmental avg	Average of Citizen engagement avg
Gobordanga	2.97	2.73	3.31	2.44	2.89
1-2.5 lakh	2.92	2.78	3.50	2.67	3.00
2.5-5 lakh	3.01	2.97	3.25	2.38	2.88
Less than 1 lakh	3.13	2.63	3.28	2.48	2.80
More than 5 lakh	2.93	2.58	3.25	2.34	2.86
Kamarhati	2.96	3.03	3.08	2.25	2.71
1-2.5 lakh	3.17	3.06	3.08	2.23	2.52
2.5-5 lakh	2.77	3.05	2.92	2.23	2.79
Less than 1 lakh	3.13	3.27	3.40	2.68	3.09
More than 5 lakh	2.79	2.83	3.05	2.05	2.63
Kolkata	3.50	3.38	3.30	2.63	2.84
1-2.5 lakh	3.63	3.64	3.40	2.72	2.90
2.5-5 lakh	3.48	3.23	3.28	2.54	2.55
Less than 1 lakh	3.50	3.36	3.37	2.86	3.12
More than 5 lakh	3.40	3.29	3.18	2.43	2.78

With help of this above projected cross tabulation table ( annual family income vs average satisfactions ) we get insights into how urban services impact income groups such as ‘less than 1 lakh’, ‘1–2.5 lakh’, ‘2.5–5 lakh’ and ‘more than 5 lakhs’ across the three ULBs of Gobardanga, Kamarhati, and Kolkata.

**Public Service Satisfaction :**

Kolkata has the highest satisfaction across income groups, especially among the 1-2.5 lakh income group with a score of (3.63). Kamarhati shows moderate satisfaction, with highest ratings from the 1-2.5 lakh group (3.17) and less than 1lakh group shows also higher rating of (3.13) whereas lower ratings from higher earners. Gobardanga shows balanced satisfaction, with slightly higher satisfaction among lower-income groups specially less than 1 lakh group with a satisfaction average score (3.13).

**Health and Safety :**

Kolkata again leads with consistently high satisfaction across all income levels and 1- 2.5 lakh group shows highest satisfaction (3.64) in terms of health and safety among all groups. Kamarhati shows highest satisfaction among lower-income groups, with a slight decline in higher-income groups. Less than 1 lakh group experiences highest satisfaction with a score (3.27). Gobardanga has moderate satisfaction, highest among mid-income earners, 2.5-5 lakh group with a satisfaction score of (2.97).

**Urban Development :**

All ULBs report high satisfaction in urban development. Kolkata again leads with consistently high satisfaction across all income levels but again 1- 2.5 lakh group shows highest satisfaction (3.40). Kamarhati showing particularly high ratings from lower-income groups. Here also less than 1 lakh group experiences highest satisfaction with a score (3.40). Gobardanga also maintains high satisfaction across all income levels, with peak satisfaction among the 1-2.5 lakh group (3.50).

**Environmental Satisfaction :**

Satisfaction is lower overall for environmental aspects in all ULB. Every income group of every ULB shows a moderate almost neutral satisfaction in this segment. Kolkata has the highest ratings, especially among lower-income groups like less than 1 lakh shows highest score (2.86). Gobardanga has moderate to low satisfaction, particularly among lower earners. Kamarhati shows highest satisfaction score (2.68) in less than 1 lakh group.

**Citizen Engagement :**

Gobardanga leads with the highest satisfaction, particularly from lower-income respondents. 1-2.5 lakh group give the highest rating in this domain with a score (3.00). Kolkata shows balanced satisfaction across income groups. The less than 1 lakh group experiences highest satisfaction with a score of (3.12). Kamarhati sees the lowest satisfaction in higher income groups, with the highest engagement among lower earners here also less than 1 lakh group experiences highest satisfaction with a score of (3.09).

With the help of this data table, we can get quick insights about how overall satisfaction of different income groups change among three ULBs.

**Gobardanga:**

Residents with an annual income of 1-2.5 lakh have the highest overall satisfaction (2.908). Higher income groups (> 5 lakh) tend to report lower satisfaction (2.718), which suggests that higher income residents in Gobardanga may have higher expectations or perceive gaps in ULB services. The variation in satisfaction scores across income levels indicates that income influences perceptions of ULB performance in Gobardanga.

**Kamarhati:**

Those earning less than 1 lakh report the highest satisfaction (3.094), indicating that lower-income residents in Kamarhati are relatively more satisfied with ULB services. Higher income residents (> 5 lakh) are the least satisfied (2.641), again suggesting that wealthier residents may have unmet expectations or demands for improvement. The downward trend in satisfaction as income rises suggests a potential need for the ULB to address the specific needs of higher-income groups.

**Kolkata:**

Residents with an income of 1-2.5 lakh report the highest satisfaction (3.296), followed closely by those with less than 1 lakh (3.238). Satisfaction is still relatively high for higher income groups (3.032 for > 5 lakh), but there is a slight drop, similar to Gobardanga and Kamarhati. The overall higher satisfaction in Kolkata across all income levels could indicate better service provision or resident engagement by the ULB compared to the Gobardanga and Kamarhati. In summary, lower to middle-income residents tend to be more satisfied across all three ULBs, while higher-income groups show slightly lower satisfaction, suggesting a gap in addressing the expectations of wealthier residents. This pattern may point to the need for ULBs to better communicate or enhance services that meet the expectations of higher income groups.

Annual Income of ULB areas	Overall weighted satisfaction average
Gobordanga	2.808
1-2.5 lakh	2.908
2.5-5 lakh	2.865
Less than 1 lakh	2.809
More than 5 lakh	2.718
Kamarhati	2.798
Less than 1 lakh	3.094
1-2.5 lakh	2.821
2.5-5 lakh	2.744
More than 5 lakh	2.641
Kolkata	3.152
1-2.5 lakh	3.296
Less than 1 lakh	3.238
2.5-5 lakh	3.045
More than 5 lakh	3.032



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## CONCLUSION

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This project aimed to assess the satisfaction index across three Urban Local Bodies (ULBs): Kolkata, Kamarhati, and Gobardanga. Through extensive data collection and analysis, including average satisfaction ratings, weighted satisfaction indices, standard deviation analysis, cross-tabulations, and trend analysis over the past 10 years, we gained valuable insights into the performance and areas for improvement within each ULB.

This project aimed to assess the satisfaction levels of residents in three ULBs—Kolkata, Kamarhati, and Gobardanga—across key public service segments. The analysis highlighted several critical insights:

### Satisfaction Levels by Segment:

Kolkata generally showed higher satisfaction in Public Services, with a notable average score of (3.5), indicating a relatively positive perception of services compared to Kamarhati and Gobardanga, both with averages around (2.96) to (3.0), reflecting a more neutral response.

In Health and Safety, Kolkata also led with a score of (3.38), while Kamarhati and Gobardanga showed lower averages, suggesting more room for improvement in these areas.

### Variability in Resident Satisfaction:

The standard deviation analysis revealed that Gobardanga had higher variability in the Urban Development segment (StdDev: 0.76), indicating mixed satisfaction levels, while Kamarhati's Citizen Engagement segment had the highest variability (StdDev: 0.90), highlighting diverse opinions on how residents feel about their engagement with the ULB.

### Segment Correlations:

Strong correlations were observed between certain segments, such as Health and Safety and Environmental Sustainability ( $r = 0.71$ ), suggesting that residents perceive these areas as interconnected, likely due to their influence on overall living conditions.

The Public Service segment was moderately correlated with Urban Development ( $r = 0.68$ ), implying that improvements in public services may enhance perceptions of urban development.

### Overall Weighted Satisfaction:

Kolkata achieved the highest weighted overall satisfaction index of (3.15), while Gobardanga and Kamarhati scored closer to each other, around 2.8. This indicates that while Kolkata residents are generally more satisfied, the other two ULBs require further attention to reach comparable levels of satisfaction.

### Trend Analysis on Service Quality over the Past Decade:

Kolkata demonstrated positive trends in segments like Internet Access and Power Supply, with averages of (0.87) and (0.84), respectively, indicating improvements. In contrast, Kamarhati showed negative trends in areas such as Hazard Mitigation and Government Policies, suggesting dissatisfaction with these services' developments over time.

#### ❖ Justification for Conclusions:

These findings collectively highlight that while Kolkata has a more favourable satisfaction profile, particularly in core public service areas, both Kamarhati and Gobardanga need strategic improvements. The variability and correlation analyses further justify the need for targeted interventions, as certain areas, like Health and Safety, strongly influence overall satisfaction. Trend analysis reinforces this by indicating where services have improved or declined, guiding future ULB priorities.

### Recommendations for Future Work:

**Enhanced Focus on Low-Performing Areas :** Kamarhati's stagnant satisfaction index indicates a need for ULB management to prioritize service improvement. Future projects could focus on understanding the barriers to improvement in this area.

**Continuous Monitoring :** Establishing a system for regular satisfaction assessment could allow ULBs to respond proactively to residents' needs and changes in satisfaction levels over time.

**Targeted Interventions :** Given the findings on service-specific satisfaction and variability, ULBs should consider targeted interventions in segments with the highest dissatisfaction, such as environmental sustainability and citizen engagement, particularly in Kamarhati and Gobardanga.

**Further Analysis by Demographic Segments :** Future studies could expand on this work by including deeper demographic analysis to understand satisfaction trends within specific resident groups.



**Integration of Advanced Analytical Techniques:** Future work could leverage advanced statistical and machine learning techniques to uncover deeper insights and patterns in the satisfaction data. Techniques like regression analysis, cluster analysis, or sentiment analysis (if qualitative data is included) can provide a more sophisticated understanding of factors influencing satisfaction. Machine learning models could also help predict future satisfaction levels based on current trends, assisting ULBs in proactive decision-making.

**Developing a Dynamic ULB Satisfaction Dashboard:** To make data-driven decision-making more accessible for policymakers, a dynamic dashboard could be developed. This dashboard would allow real-time monitoring of satisfaction scores and trends, providing ULB officials with an interactive tool to assess their performance across various segments and demographics. By visualizing key metrics and correlations, ULBs could quickly identify areas needing attention and prioritize resources accordingly.

In conclusion, while Kolkata is making steady progress in improving resident satisfaction, Kamarhati and Gobardanga have more work to do to meet their residents' expectations. This project highlights the importance of addressing specific service gaps and implementing proactive measures to enhance overall satisfaction across all ULBs.

APPENDIX

Sl.no	Topic	Attachment Link
1	References	<ul style="list-style-type: none"><li><a href="https://www.kmcgov.in/KMCPortal/jsp/KMCPortalHome1.jsp">https://www.kmcgov.in/KMCPortal/jsp/KMCPortalHome1.jsp</a></li><li><a href="https://www.kamarhatimunicipality.org/">https://www.kamarhatimunicipality.org/</a></li><li><a href="http://gobardangamunicipality.org/Default.aspx?PageID=110">http://gobardangamunicipality.org/Default.aspx?PageID=110</a></li></ul>
2	Books	"Urban Governance in India" by C.P. Barthwal "A Geography of Population" by R.C Chandra
3	Survey Questionnaire	<a href="https://drive.google.com/file/d/15N2Td1orlEHVtc0v0zvCECVR2Oq9Gm1I/view?usp=drivesdk">https://drive.google.com/file/d/15N2Td1orlEHVtc0v0zvCECVR2Oq9Gm1I/view?usp=drivesdk</a>
4	Document Link	<a href="https://github.com/KanadBiswas-geo/Determining_ULB_Satisfaction_Index/tree/main">https://github.com/KanadBiswas-geo/Determining_ULB_Satisfaction_Index/tree/main</a>