

Research Article

# Evaluating the Level of Noise Pollution in the Town of Jamalpur, Bangladesh

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## Abstract

The study aimed to assess the extent of noise pollution in different areas within Jamalpur District Town. REED SD-4023 was used to measure noise levels from various sampling sites from January 1, 2021, to April 30, 2021. Several samples were collected from each sampling site. Every place's noise level measurement has been taken three times a day. Based on land uses, Jamalpur District Town was divided into 7 different zones and 60 places. The mean noise level and Leq were found to be 72.19 dBA and 94.36 dBA. The mean noise level and Leq for the Silent Area, Residential Area, Mixed Areas, Commercial Area, Industrial Area, Road Intersection, and Village Area were 69.70 dBA and 84.38 dBA; 70.78 dBA and 91.96 dBA; 77.28 dBA and 86.31 dBA; 77.27 dBA and 89.28 dBA; 70.56 dBA and 82.91 dBA; 79.12 dBA and 102.42 dBA; and 60.64 dBA and 93.25 dBA. The hierarchy of various land uses according to mean noise levels was road intersections > mixed areas > commercial areas > residential areas > industrial areas > silent areas > village areas. The three major areas with the highest levels of noise pollution were Foudari Mor (107.72 dBA), Tennis Club Mor (107.39 dBA), and South Kachari Para (102.63 dBA). Conversely, the three major locations with the lowest noise pollution levels included Pinggol Hati (63.34 dBA), East Binondi Para (63.36 dBA), and Bichitro Para (63.83 dBA), as measured by Leq. It has been observed that the noise level had exceeded the National Standard Level in all the locations from this study.

## Keywords

Noise Pollution, Jamalpur District Town, Land Use, Cluster, Dispersion, Noise Standard, Bangladesh

## 1. Introduction

An excessive amount of loud or disturbing sounds in the environment is referred to as noise pollution. These noises have the potential to disrupt everyday life, negatively impact both human and animal health, and result in long-term health issues. Noise pollution in Jamalpur is getting worse due to the city's fast population growth and influx of new residents. Loudspeakers at public gatherings, construction sites, industrial operations, and heavy traffic are the main sources of

noise pollution. The constant cacophony of shops, market-places, building sites, and honking cars seriously detracts from the neighborhood's atmosphere. People's lives are negatively impacted by noise pollution, which can lead to a variety of health issues, including headaches, fatigue, stress, hearing loss, decreased productivity at work, and sleep disruptions [1-3].

Long-term exposure to a noisy metropolitan setting can

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seriously harm cognitive and auditory abilities, especially in young children. Students are more likely to engage in unhealthy behaviors like smoking, procrastinating, binge drinking, and drug use when they are under stress [4]. Motorized vehicles are the main cause of noise pollution in urban settings [5]. Excessive noise has a negative impact on our country's economy and environment. The loss of biodiversity will eventually make human lifestyles unsustainable [6].

The risk of illness among traffic police personnel is significantly increased by high levels of noise and air pollution, particularly at busy Intersection [7-13]. Among traffic cops, psychological and auditory health issues are common [14-17]. Despite efforts by the government to address the issue, noise pollution remains a major concern in the busy city. Since coughing has a significant negative influence on the upper respiratory tract, many traffic cops wear masks to shield themselves from the harmful effects of air pollution. Since many people are still unaware of how noise affects their auditory perception, its consequences are frequently not immediately apparent. Twenty-five risk variables have been recognized by the World Health Organization (WHO) as contributing to the worldwide illness burden brought on by occupational noise [18].

One or both ears may sustain occupational injuries as a result of a variety of work-related incidents, potentially leading to partial or complete hearing loss [19]. There are two types of auditory impairment: noise-induced hearing loss (NIHL) and traumatic hearing loss. Increasing noise levels at work continue to be a global issue. Over 30 million Americans are employed in environments where noise levels are dangerously high [20]. According to the World Health Organization (WHO), 4 to 5 million German workers, or 12% to 15% of the total, were impacted by excessive noise levels [21].

Every employment involves some level of noise, although some occupations—like flying commercial aircraft, handling particular materials, and performing impact operations—have significantly higher noise levels than others. Industry, transportation, mining, construction, agriculture, and the military are the industries most likely to produce noise-induced hearing loss (NIHL). Situations in developed countries are improving as a result of increased awareness and effective actions. Studies show that mean noise levels in a number of developed countries are much above the advised occupational threshold, but there is very little information available for underdeveloped countries [22-25].

Both auditory and non-auditory pathways may be negatively impacted by noise. Studies examining the effects of loud, high-frequency noise have focused on different populations living in impacted locations [26-30]. The effect of motor noise on the auditory health of Indian traffic police officers has not been studied [13]. Due to exposure to noise, the traffic police in Jamalpur District Town have comparable problems. The absence of auditory protection devices in these patients is a likely explanation. Officers must solely concentrate on comprehending the possible health hazards. The effects of noise are frequently disregarded since most people do not consider it to be a serious environmental issue. According to medical experts, prolonged exposure to noise levels of 80 dBA or more might cause temporary or permanent hearing loss.

Noise pollution may seem like a minor issue in our country right now. Assessing the options is a wise course of action. Noise problems could quickly get worse if the government disregards public wellbeing [31-37]. In order to determine the extent of the problem, investigate the relationship between noise levels and various land uses, and gauge the spatial distribution of noise levels across the city, this study examined the levels of noise pollution in a number of locations within Jamalpur District Town.

## 2. Materials and Methods

### 2.1. Study Area

The research was carried out at Jamalpur District Town (map). The selection of Jamalpur District Town was based on its high degree of tourist appeal, increasing urbanization, and a recent substantial increase in the number of vehicles and industries. Ambient noise levels in Jamalpur District Town are sometimes 2-3 times greater than those in other nations. This might have negative effects on the environment and public health. This study was conducted in the Jamalpur District Town areas, which have higher traffic volumes than other places. A sound pressure meter (REED SD-4023) was used to measure the noise levels in the designated area. The survey was administered over the week. The measurements were made at important traffic Intersection throughout the city. The sound pressure level in the traffic region was evaluated using A-weighting. In Jamalpur District Town, 60 sites and 7 different zones were identified based on land use.

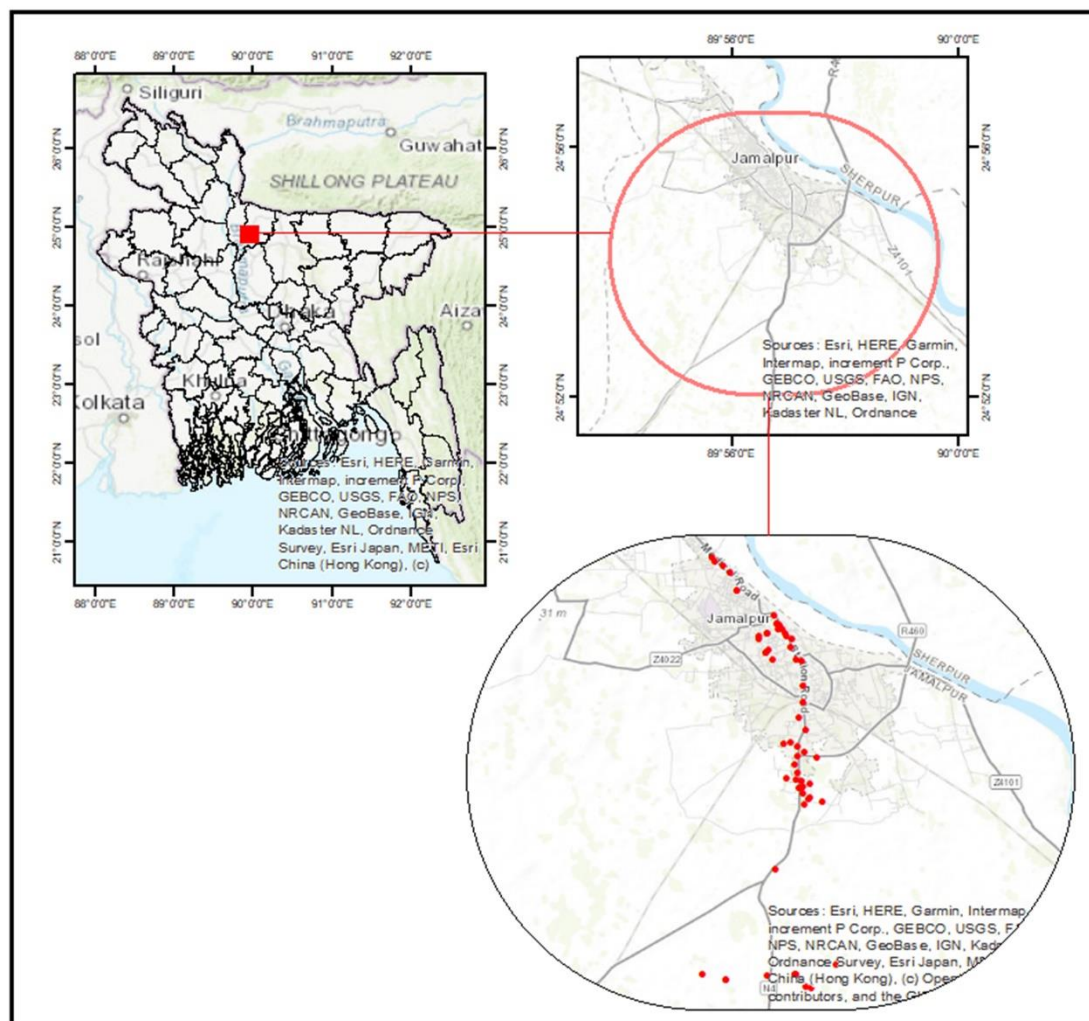


Figure 1. Study Area of Jamalpur District Town.

## 2.2. Data Collection

From January 1, 2021, and April 30, 2021, the sound level meter (REED SD-4023) was used to measure the noise levels in Jamalpur District Town. The SD series sound level meter has three measurement ranges and lets users select sample rates ranging from 1 to 3600 seconds. Without the need for software, the user may immediately generate an Excel file with raw data by setting a desired sample rate on an SD card (up to 16 GB). A tripod and AC adapter are optional accessories for continuous, long-term monitoring, as is PC software that allows users to examine real-time information.

## 2.3. Measuring Procedure and Analysis

The data recording function records the highest and lowest values. To start utilizing the Data Record feature, push the REC button once, and a "REC" signal will appear. The screen will display the "REC" indication. The user must first press the REC button once in order to show the maximum value and

a "REC. MAX." signal. To delete the maximum value, press the Hold Button once. A "REC." sign will then show on the screen and the memory process will continue continuously. Second, if the user hits the REC button again, a "REC. MIN." indicator will appear next to the least number. To remove the minimum value, press the Hold Button once. The display will then just show the "REC." indicator and go on with the memory function. Third, to disable memory recording, press and hold the REC button for two seconds. It will display the current reading once again. Standing on the road at a height of almost 1.5 meters above the ground, the data was collected. All noise barriers were removed in order to determine the actual sound level. Data was collected every second for a total of five minutes each station. The recorded data was stored on a microSD card. Microsoft Excel 2010 and IBM SPSS 20 were used to analyze the collected data. Each piece of information is shown using a range of tables and graphs that match various ArcGIS v.10 versions. Version 2.1 was used to build a study area map and a noise attenuation map.

### 3. Results and Discussion

Jamalpur District Town was determined to have a mean noise level of 72.19 dBA and a Leq of 94.36 dBA, respectively.

Analysis of data from 10 points in the Silent Area of Jamalpur District Town shows that, as illustrated in Figure 2, the highest noise level recorded was at the DC Office (111.90 dBA), which is nearly twice the standard daytime noise level for the Silent Area and about two times the nighttime level.

The lowest was recorded in the Singhojani Bohumukhi High School (45.60 dBA). Furthermore, the measured mean and Leq values were 69.70 dBA and 84.38 dBA for silent areas. The analysis also found that the highest mean sound explored in the DC Office (79.01 dBA) and the lowest is Govt. Jaheda Shorif Women's College (58.40 dBA). The maximum Leq was found in the DC office (91.57 dBA) and the minimum Leq was identified in Govt. Jaheda Shorif Women College (65.19 dBA).

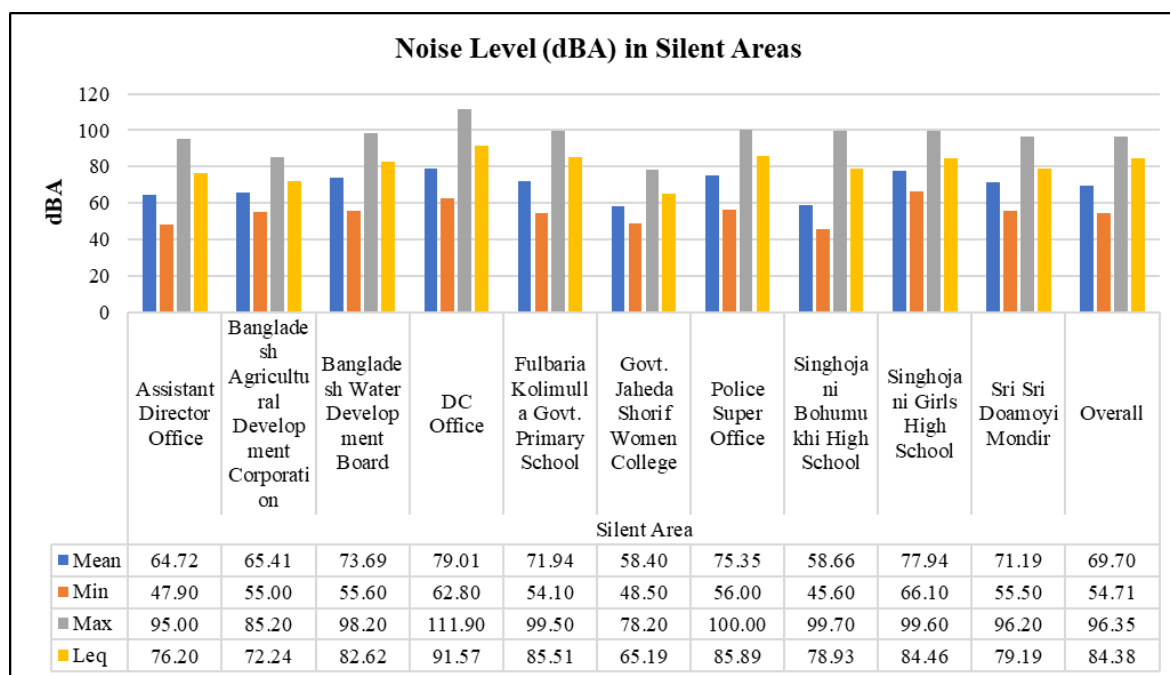


Figure 2. Noise Level (dBA) in Silent Areas.

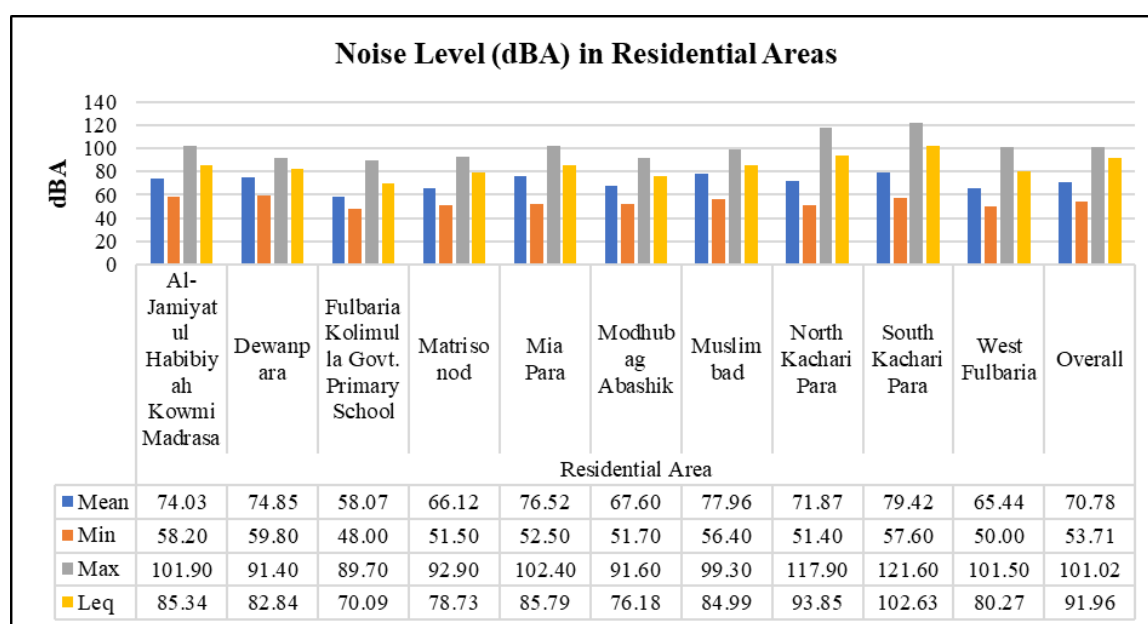


Figure 3. Noise Level (dBA) in Residential Areas.

Figure 3 illustrates the noise levels of 10 locations in residential areas, highlighting that the maximum noise level is found at South Kachari Para (121.60 dBA) and the minimum noise level is recorded at Fulbaria Kolimulla Govt. Primary School (48 dBA). Furthermore, the Leq of the residential area was 91.96 dBA and the mean noise level was 70.78 dBA. Ad-

ditionally, the residential area's mean noise level was found at South Kachari Para (79.42 dBA) as the highest and the lowest mean at the Fulbaria Kolimulla Govt. Primary School (58.07 dBA). Moreover, the highest Leq was found in South Kachari Para (102.63 dBA), whereas the lowest Leq was recorded in Fulbaria Kolimulla Govt. Primary School (70.09 dBA).

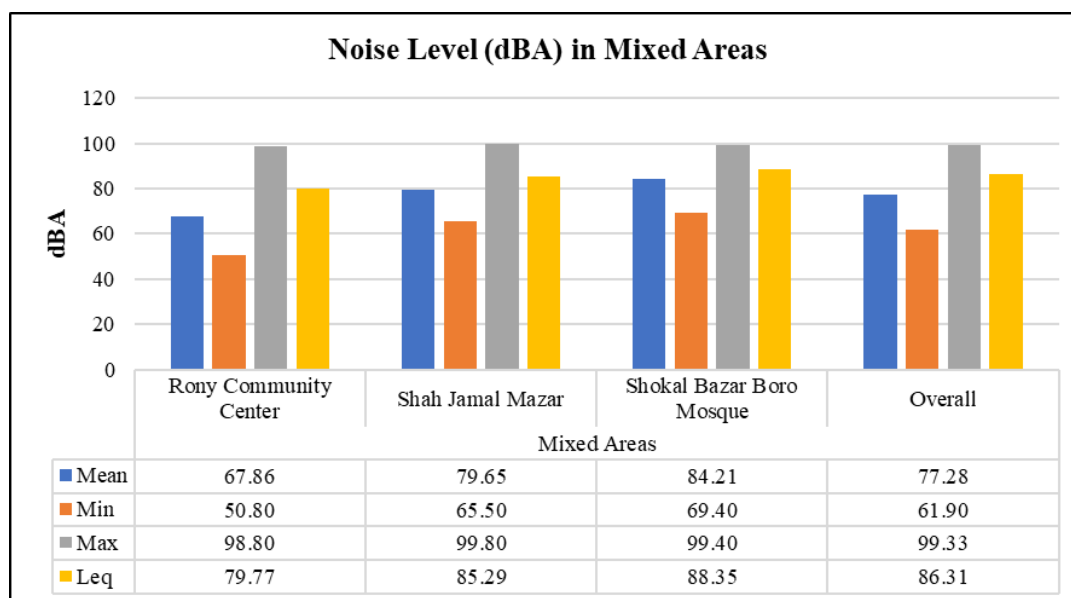


Figure 4. Noise Level (dBA) in Mixed Areas.

Figure 4 illustrates the noise levels at 3 locations in mixed areas of Jamalpur District Town. The Leq of the mixed areas was 86.31 dBA and the mean noise level was 77.28 dBA. The maximum noise level was measured at Shah Jamal Mazar (99.80 dBA), whereas the minimum recorded noise level was found in Rony Community Center (50.80 dBA). Furthermore,

the highest mean noise level was recorded at Shokal Bazar Boro Mosque (84.21 dBA), while the lowest mean noise level was discovered in Rony Community Center (67.86 dBA). Moreover, the highest Leq was found in Shokal Bazar Boro Mosque (88.35 dBA), whereas the lowest Leq was found in Rony Community Center (79.77 dBA).

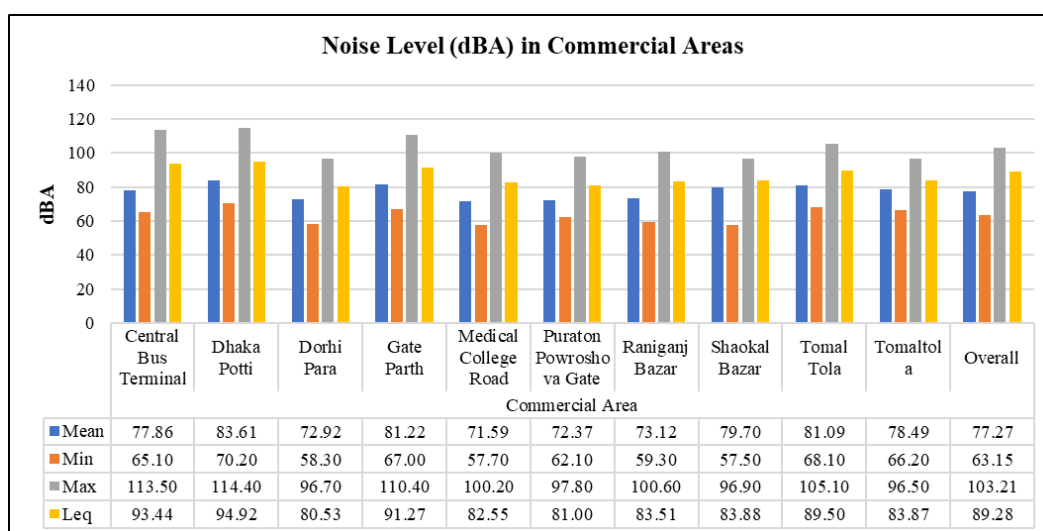


Figure 5. Noise Level (dBA) in Commercial Areas.

Figure 5 explores the noise levels at 10 locations in the commercial area of Jamalpur District Town. The Leq of the commercial area was 89.28 dBA and the mean noise level was 77.27 dBA. The maximum noise level was measured at Dhaka Potti (114.40 dBA), whereas the minimum recorded noise level was found in Shaokal Bazar (57.50 dBA). Furthermore,

the highest mean noise level was recorded in Dhaka Potti (83.61 dBA), whereas the lowest mean noise level was discovered in Medical College Road (71.59 dBA). Moreover, the highest Leq was found in Dhaka Potti (94.92 dBA), whereas the lowest Leq was found in Dorhi Para (80.53 dBA).

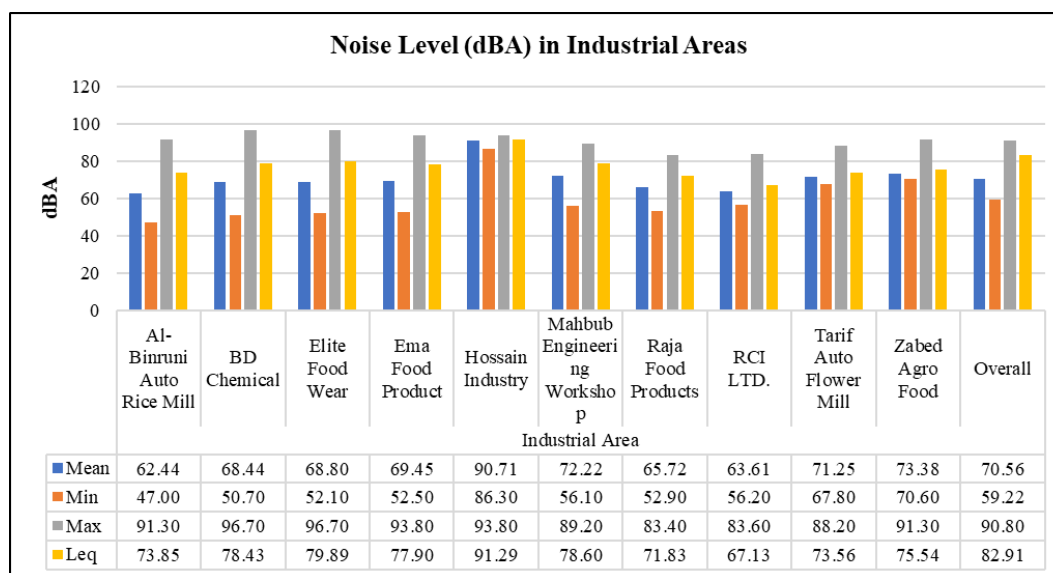


Figure 6. Noise Level (dBA) in Industrial Areas.

Figure 6 depicts the noise levels at 10 locations in the industrial area of Jamalpur District Town. The Leq of the industrial area was 82.91 dBA and the mean noise level was 70.56 dBA. The maximum noise level was found in BD Chemical and Elite Food Wear (96.70 dBA), while the minimum noise level was found in Al-Binruni Auto Rice Mill (47

dBA). Furthermore, the highest mean noise level was recorded at Hossain Industry (90.71 dBA), whereas the lowest mean noise level was discovered at Al-Binruni Auto Rice Mill (62.44 dBA). Moreover, the highest Leq was found in Hossain Industry (91.29 dBA), whereas the lowest Leq was found in RCI LTD. (67.13 dBA).

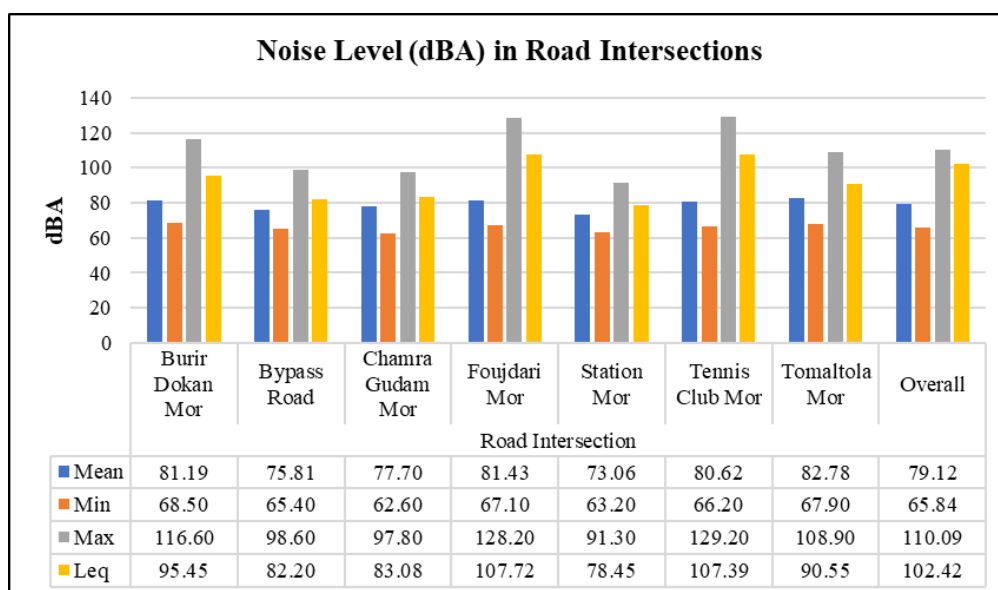


Figure 7. Noise Level (dBA) in Road Intersection.

Figure 7 portrays the noise levels at 7 locations in the road intersection of Jamalpur District Town. The Leq of the road intersection was 102.42 dBA and the mean noise level was 79.12 dBA. The maximum noise level was found in Tennis Club Mor (129.20 dBA), while the minimum noise level was found in Chamra Gudam Mor (62.60 dBA). Furthermore, the

highest mean noise level was recorded at Tomaltola Mor (82.78 dBA), whereas the lowest mean noise level was discovered at Station Mor (73.06 dBA). Moreover, the highest Leq was found in Foujdari Mor (107.72 dBA), whereas the lowest Leq was found in Station Mor (78.45 dBA).

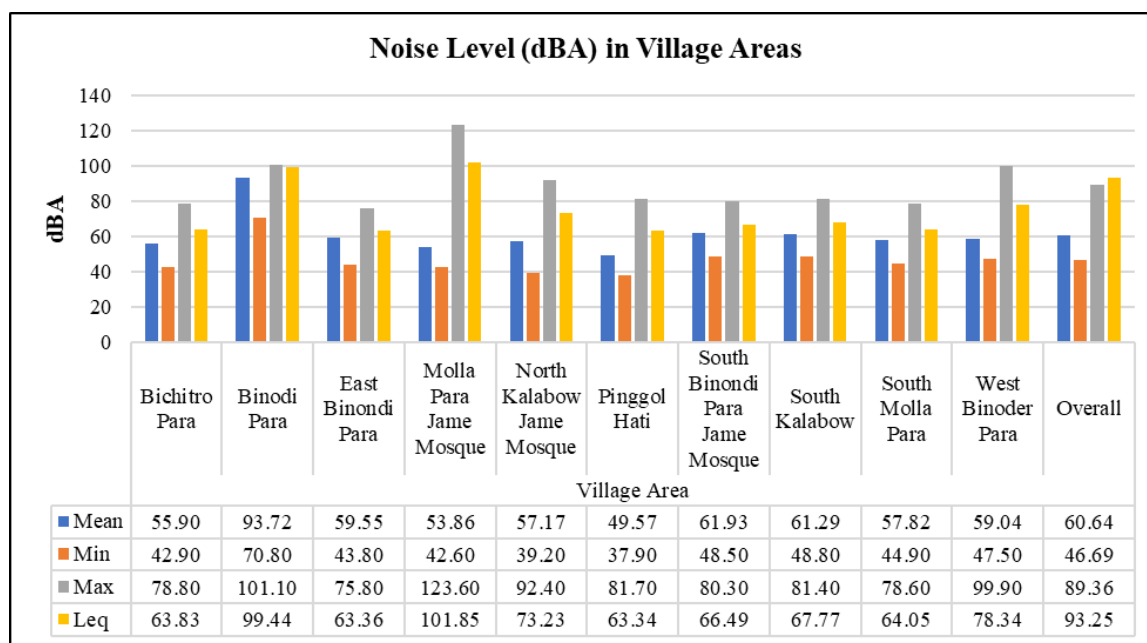


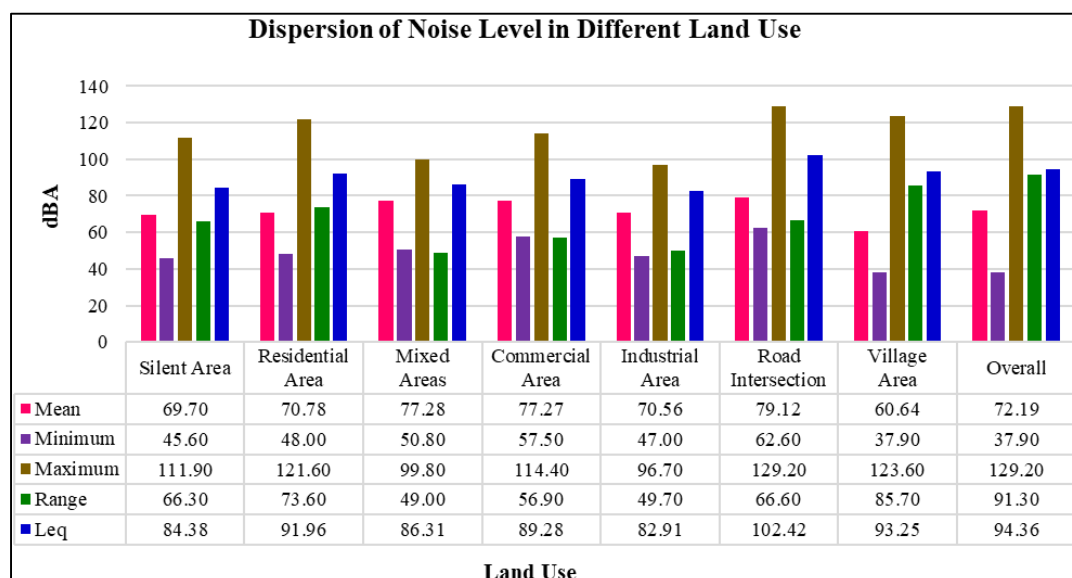
Figure 8. Noise Level (dBA) in Village Areas.

Figure 8 denotes the noise levels at 10 locations in the village area of Jamalpur District Town. The Leq of the village area was 93.25 dBA and the mean noise level was 60.64 dBA. The maximum noise level was found in Molla Para Jame Mosque (123.60 dBA), while the minimum noise level was found in Pinggol Hati (37.90 dBA). Furthermore, the highest

mean noise level was recorded in Binodi Para (93.72 dBA), whereas the lowest mean noise level was discovered in Pinggol Hati (49.57 dBA). Moreover, the highest Leq was found in Molla Para Jame Mosque (101.85 dBA), whereas the lowest Leq was found in Pinggol Hati (63.34 dBA).

Table 1. Dispersion of Noise Quality in Different Land Use in Jamalpur District Town.

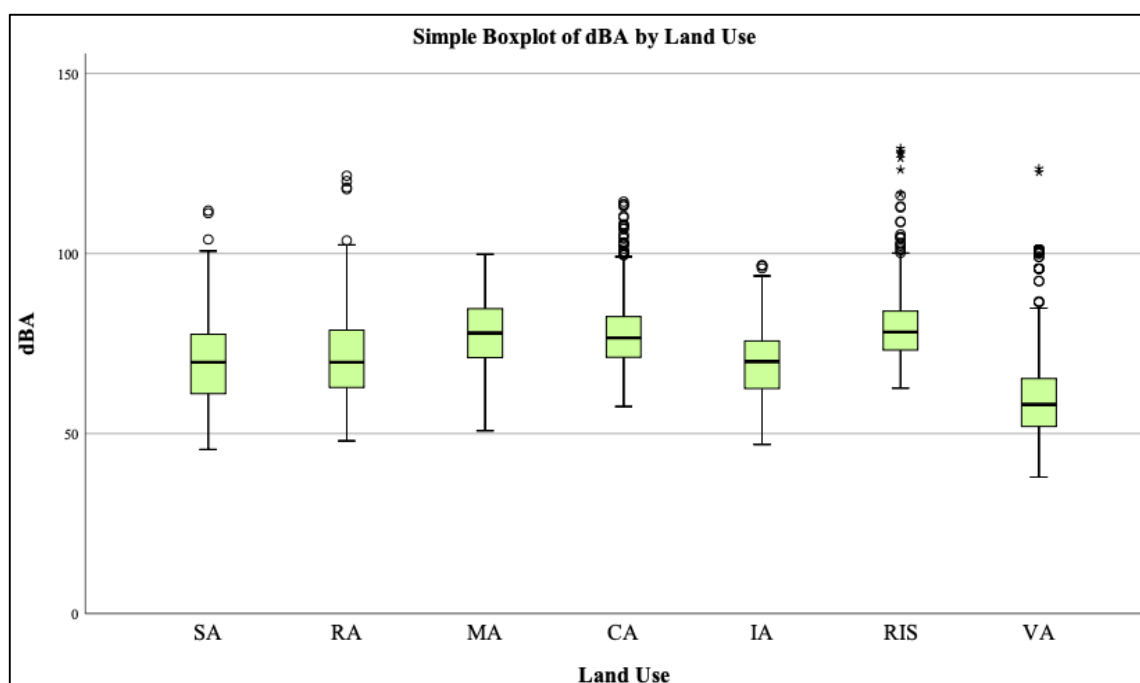
| Land Use (N)          | Mean  | Minimum | Maximum | Standard Deviation | Range | Median | Leq    | Rank |
|-----------------------|-------|---------|---------|--------------------|-------|--------|--------|------|
| Silent Area (10)      | 69.70 | 45.60   | 111.90  | 11.26              | 66.30 | 69.80  | 84.38  | 6    |
| Residential Area (10) | 70.78 | 48.00   | 121.60  | 10.96              | 73.60 | 69.80  | 91.96  | 4    |
| Mixed Areas (3)       | 77.28 | 50.80   | 99.80   | 10.49              | 49.00 | 77.90  | 86.31  | 2    |
| Commercial Area (10)  | 77.27 | 57.50   | 114.40  | 8.46               | 56.90 | 76.60  | 89.28  | 3    |
| Industrial Area (10)  | 70.56 | 47.00   | 96.70   | 10.50              | 49.70 | 70.00  | 82.91  | 5    |
| Road Intersection (7) | 79.12 | 62.60   | 129.20  | 7.87               | 66.60 | 78.20  | 102.42 | 1    |
| Village Area (10)     | 60.64 | 37.90   | 123.60  | 13.81              | 85.70 | 58.10  | 93.25  | 7    |
| Overall (60)          | 72.19 | 37.90   | 129.20  | 12.27              | 91.30 | 71.50  | 94.36  | -    |



**Figure 9.** Dispersion of Noise Level in Different Land Use.

Table 1 and Figure 9 demonstrate the descriptive statistics for the noise quality of the study. The study incorporates 7 distinct land uses. The highest mean was found at the Road Intersection (79.12 dBA), and the lowest mean was identified in the Village Area (60.64 dBA). Additionally, the Village Area (85.70 dBA) had the highest ranges, while the Mixed Areas (49 dBA) had the

lowest ranges. Moreover, the highest Leq was recorded in the Road Intersection (102.42 dBA), whereas the lowest Leq was found in Industrial Area (82.91 dBA). From the comparison of mean, standard deviation, and coefficient of variation, it was observed that the highest variation is in the Village Area, which means that future study is needed for this zone.



**Figure 10.** Mean Noise Pollution in Jamalpur District Town.

The whisker box plot (Figure 10) shows mean noise pollution in Jamalpur District Town. A horizontal black line marks the median. The lower boundary of the box indicates the 25th

percentile. The upper boundary of the box indicates the 75th percentile. The whisker represents the maximum (upper whisker) and minimum value (lower whisker). Points above

the whiskers indicate outliers.

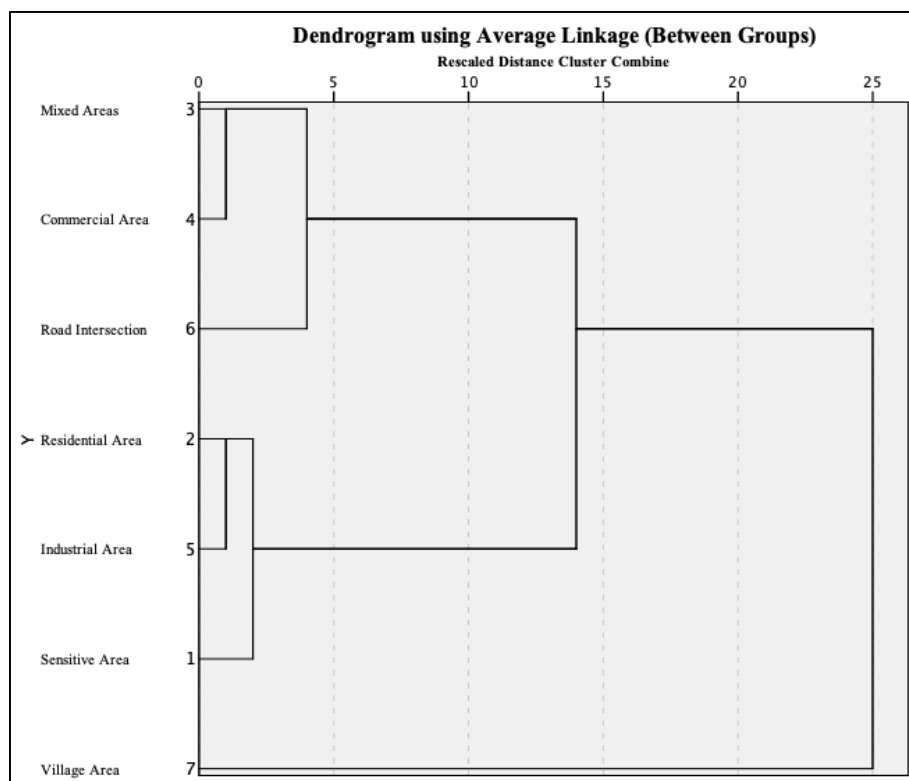


Figure 11. Land Use Based Cluster, in Terms of dBA.

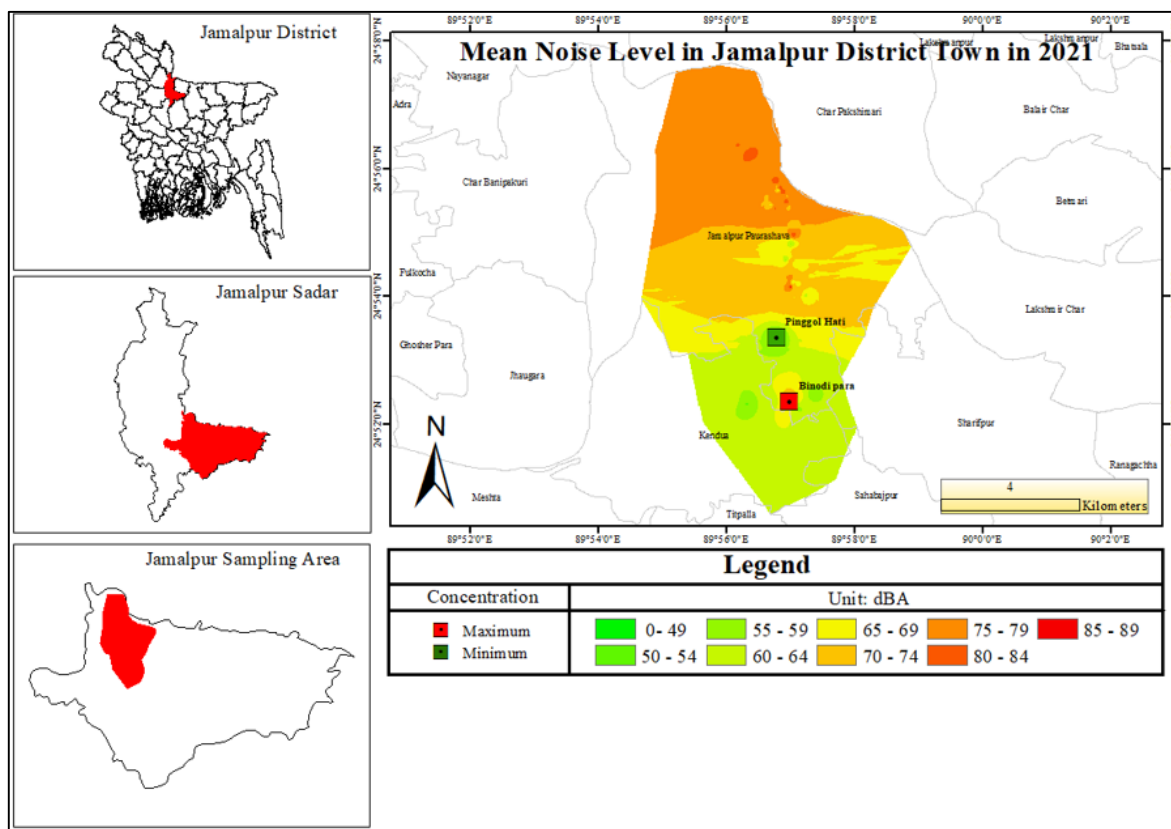


Figure 12. Spatial Map of Mean Noise Pollution.

The land-use-based cluster is depicted in Figure 11; there are three clusters according to dBA. The first cluster consists of commercial, industrial, and mixed areas. The second cluster consists of residential areas and silent areas. In addition, the final cluster is represented by the road intersection area.

Figure 12 shows the noise level at different places in Jamalpur District Town. Yellow areas have limited while

rising higher levels are shown in orange and red. The noise was found to be higher (78-81 dBA). The red zone consists of Binodi Para (93.72 dBA), Hossain Industry (90.71 dBA), and Shokal Bazar Boro Mosque (84.21 dBA). Furthermore, the green zone included Pinggol Hati (49.57 dBA), Mulla Para Jame Mosque (53.86 dBA), and Bichitro Para (55.90 dBA).

**Table 2.** Post-hoc Analysis.

| (I) Land Use     | (J) Land Use      | Mean Difference (I-J) | Standard Error | Sig.  |
|------------------|-------------------|-----------------------|----------------|-------|
| Silent Area      | Residential Area  | -1.0854*              | 0.27752        | 0     |
|                  | Mixed Areas       | -7.5839*              | 0.38968        | 0     |
|                  | Commercial Area   | -7.5751*              | 0.26781        | 0     |
|                  | Industrial Area   | -.8654*               | 0.27124        | 0.001 |
|                  | Road Intersection | -9.4250*              | 0.30208        | 0     |
| Residential Area | Village Area      | 9.0524*               | 0.26993        | 0     |
|                  | Silent Area       | 1.0854*               | 0.27752        | 0     |
|                  | Mixed Areas       | -6.4985*              | 0.3978         | 0     |
|                  | Commercial Area   | -6.4897*              | 0.27949        | 0     |
|                  | Industrial Area   | 0.22                  | 0.28278        | 0.437 |
| Mixed Areas      | Road Intersection | -8.3396*              | 0.31248        | 0     |
|                  | Village Area      | 10.1379*              | 0.28153        | 0     |
|                  | Silent Area       | 7.5839*               | 0.38968        | 0     |
|                  | Residential Area  | 6.4985*               | 0.3978         | 0     |
|                  | Commercial Area   | 0.0088                | 0.39108        | 0.982 |
| Commercial Area  | Industrial Area   | 6.7185*               | 0.39344        | 0     |
|                  | Road Intersection | -1.8411*              | 0.4153         | 0     |
|                  | Village Area      | 16.6364*              | 0.39254        | 0     |
|                  | Silent Area       | 7.5751*               | 0.26781        | 0     |
|                  | Residential Area  | 6.4897*               | 0.27949        | 0     |
| Industrial Area  | Mixed Areas       | -0.0088               | 0.39108        | 0.982 |
|                  | Industrial Area   | 6.7097*               | 0.27325        | 0     |
|                  | Road Intersection | -1.8499*              | 0.30388        | 0     |
|                  | Village Area      | 16.6276*              | 0.27196        | 0     |
|                  | Silent Area       | .8654*                | 0.27124        | 0.001 |
|                  | Residential Area  | -0.22                 | 0.28278        | 0.437 |
|                  | Mixed Areas       | -6.7185*              | 0.39344        | 0     |
|                  | Commercial Area   | -6.7097*              | 0.27325        | 0     |
|                  | Road Intersection | -8.5596*              | 0.30691        | 0     |
|                  | Village Area      | 9.9179*               | 0.27533        | 0     |

| (I) Land Use      | (J) Land Use      | Mean Difference (I-J) | Standard Error | Sig. |
|-------------------|-------------------|-----------------------|----------------|------|
| Road Intersection | Silent Area       | 9.4250*               | 0.30208        | 0    |
|                   | Residential Area  | 8.3396*               | 0.31248        | 0    |
|                   | Mixed Areas       | 1.8411*               | 0.4153         | 0    |
|                   | Commercial Area   | 1.8499*               | 0.30388        | 0    |
|                   | Industrial Area   | 8.5596*               | 0.30691        | 0    |
|                   | Village Area      | 18.4775*              | 0.30576        | 0    |
| Village Area      | Silent Area       | -9.0524*              | 0.26993        | 0    |
|                   | Residential Area  | -10.1379*             | 0.28153        | 0    |
|                   | Mixed Areas       | -16.6364*             | 0.39254        | 0    |
|                   | Commercial Area   | -16.6276*             | 0.27196        | 0    |
|                   | Industrial Area   | -9.9179*              | 0.27533        | 0    |
|                   | Road Intersection | -18.4775*             | 0.30576        | 0    |

Based on observed means. / The error term is Mean Square (Error) = 116.070./ \* The mean difference is significant at the 0.

Table 2 shows significant differences in the 7 distributed land uses. The mean differences are significantly lower (the mean difference is significant at the 0.05 level) at particular land uses.

Table 3. Comply with Noise Standard [38].

| Land Use (N)          | Location                                        | Standard Value | Within Standard (%) |
|-----------------------|-------------------------------------------------|----------------|---------------------|
| Silent Area (10)      | Assistant Director Office                       | 50             | 4.08%               |
|                       | Bangladesh Agricultural Development Corporation |                | 0.00%               |
|                       | Bangladesh Water Development Board              |                | 0.00%               |
|                       | DC Office                                       |                | 0.00%               |
|                       | Fulbaria Kolimulla Govt. Primary School         |                | 0.00%               |
|                       | Govt. Jaheda Shorif Women College               |                | 4.40%               |
|                       | Police Super Office                             |                | 0.00%               |
|                       | Singhojani Bohumukhi High School                |                | 12.07%              |
|                       | Singhojani Girls High School                    |                | 0.00%               |
|                       | Sri Sri Doamoyi Mondir                          |                | 0.00%               |
| Mean                  |                                                 |                | 2.06%               |
| Residential Area (10) | Al-Jamiyatul Habibiyah Kowmi Madrasa            | 55             | 0.00%               |
|                       | Dewanpara                                       |                | 0.00%               |
|                       | Fulbaria Kolimulla Govt. Primary School         |                | 47.06%              |
|                       | Matrisonod                                      |                | 11.28%              |
|                       | Mia Para                                        |                | 0.65%               |
|                       | Modhubag Abashik                                |                | 3.68%               |
|                       | Muslimbad                                       |                | 0.00%               |

| Land Use (N)         | Location                    | Standard Value | Within Standard (%) |
|----------------------|-----------------------------|----------------|---------------------|
| Mean                 | North Kachari Para          | 60             | 0.83%               |
|                      | South Kachari Para          |                | 0.00%               |
|                      | West Fulbaria               |                | 2.66%               |
|                      |                             |                | 6.62%               |
| Mixed Areas (3)      | Rony Community Center       | 60             | 24.92%              |
|                      | Shah Jamal Mazar            |                | 0.00%               |
|                      | Shokal Bazar Boro Mosque    |                | 0.00%               |
|                      |                             |                | 8.31%               |
| Commercial Area (10) | Central Bus Terminal        | 70             | 16.62%              |
|                      | Dhaka Potti                 |                | 0.00%               |
|                      | Dorhi Para                  |                | 36.28%              |
|                      | Gate Parth                  |                | 7.22%               |
|                      | Medical College Road        |                | 49.63%              |
|                      | Puraton Powroshova Gate     |                | 45.18%              |
|                      | Raniganj Bazar              |                | 40.21%              |
|                      | Shaokal Bazar               |                | 5.19%               |
|                      | Tomal Tola                  |                | 1.74%               |
|                      | Tomaltola                   |                | 5.21%               |
| Mean                 |                             |                | 20.73%              |
| Industrial Area (10) | Al-Binruni Auto Rice Mill   | 75             | 90.58%              |
|                      | BD Chemical                 |                | 76.67%              |
|                      | Elite Food Wear             |                | 73.50%              |
|                      | Ema Food Product            |                | 71.27%              |
|                      | Hossain Industry            |                | 0.00%               |
|                      | Mahbub Engineering Workshop |                | 63.67%              |
|                      | Raja Food Products          |                | 83.58%              |
|                      | RCI LTD.                    |                | 96.77%              |
|                      | Tarif Auto Flower Mill      |                | 88.30%              |
|                      | Zabed Agro Food             |                | 89.45%              |
| Mean                 |                             |                | 73.38%              |
| All Mean             |                             |                | 22.22%              |

Table 3 demonstrates that 22.22% of areas in Jamalpur District Town belonged to the noise standard across 5 land uses. 2.06% of the areas in the silent zone met the noise standard across 10 locations, 6.62% of the areas in the residential zone met the noise standard in 10 locations, 8.31% of the areas in the mixed zone met the noise standard across 3 locations, 20.73% of the areas in the commercial zone met the noise standard across 10 locations, and 73.38% of the areas in

the industrial area met the noise standard across 10 locations.

In the silent zone, the Singhojani Bohumukhi High School (12.07%) recorded the highest noise intensity within the standard, while in the residential zone, Fulbaria Kolimulla Govt. Primary School (47.06%) had the highest intensity. The mixed area's data represents the highest at Rony Community Center (24.92%); conversely, in the commercial area, a high intensity was found at Medical College Road (49.63%).

Moreover, in the industrial area, the highest noise intensity was observed in RCI LTD. (96.77%).

The Sound Pollution (Control) Rules—2006 only addressed 5 of the 7 land uses that were the subject of the present study. Consequently, the comparison of all land uses to noise requirements was not conducted in road Intersection or village areas.

## 4. Conclusions

In every sampling location, the noise level was found to be higher than the national standard level. Leq and the mean noise level of Jamalpur District Town were determined to be 94.36 dBA and 72.19 dBA, respectively. The mean noise level and Leq for the Silent Area, Residential Area, Mixed Areas, Commercial Area, Industrial Area, Road Intersection, and Village Area were recorded: 69.70 dBA and 84.38 dBA; 70.78 dBA and 91.96 dBA; 77.28 dBA and 86.31 dBA; 77.27 dBA and 89.28 dBA; 70.56 dBA and 82.91 dBA; 79.12 dBA and 102.42 dBA; and 60.64 dBA and 93.25 dBA. The order of different land uses based on mean noise levels was road intersections, mixed areas, commercial areas, residential areas, industrial areas, silent areas, and village areas. South Kachari Para (102.63 dBA), Tennis Club Mor (107.39 dBA), and Foudjari Mor (107.72 dBA) were the three main locations with the highest noise pollution levels. On the other hand, according to Leq, the three main areas with the lowest noise pollution levels were Pinggol Hati (63.34 dBA), East Binondi Para (63.36 dBA), and Bichitro Para (63.83 dBA). Due to an increase in traffic and tourists, Jamalpur District Town has seen a steady rise in noise levels recently. Noise pollution is rarely regarded as a major type of pollution since its detrimental effects on human health are frequently disregarded. In Jamalpur and throughout Bangladesh, noise pollution is a significant issue that is frequently disregarded. The government, media, and non-governmental organizations (NGOs) must work together to improve living circumstances and ease the situation in Bangladesh. Since many of the sources of noise pollution are unnecessary, we cannot afford to waste time or energy delaying action to reduce it. Given the seriousness of the issue and the suffering it causes, people can no longer afford to overlook noise pollution. To improve the future of our children as well as the general public's health, welfare, and sanity, we must all take this matter seriously and start the process of finding a solution. If we are members of the public, the media, or non-governmental groups, we all have a responsibility to contribute to the solution of the noise pollution problem. Further research is also required to track the noise pollution levels in Jamalpur District Town to ensure a sustainable way of living.

## Abbreviations

|    |                     |
|----|---------------------|
| AC | Alternating Current |
| BD | Bangladesh          |

|      |                                             |
|------|---------------------------------------------|
| CAPS | Center for Atmospheric Pollution Studies    |
| dBA  | A-Weighted Decibel                          |
| DC   | Deputy Commissioner                         |
| DoE  | Department of Environment                   |
| GB   | Gigabyte                                    |
| GIS  | Geographic Information System               |
| Govt | Government                                  |
| Leq  | Equivalent Continuous Sound Pressure Level  |
| Ltd  | Limited                                     |
| MAX  | Maximum                                     |
| MIN  | Minimum                                     |
| N    | Number (In Terms of Quantity)               |
| NIHL | Noise-Induced Hearing Loss                  |
| PC   | Personal Computer                           |
| RCI  | Regional Cooperation and Integration        |
| REC  | Record                                      |
| SD   | Secure Digital                              |
| SPSS | Statistical Package for the Social Sciences |
| WHO  | World Health Organization                   |

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## Conflicts of Interest

The authors declare no conflicts of interest.

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