

REPORT ON AMBIENT NOISE MONITORING DURING GANESH FESTIVAL, 2021



MAHARASHTRA POLLUTION CONTROL BOARD

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Foreword

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Abbreviations

CPCB	Central Pollution Control Board
dB	Decibel
dB(A)	Decibels with "A" weighting
EPA	Environmental Protection Act, 1986
Hz	Hertz
MPCB	Maharashtra Pollution Control Board
KHz	Kilo Hertz
L_{Aeq}	Equivalent continuous A-weighted sound pressure level (dB)
L_{max}	Maximum sound pressure level (dB)
L_{min}	Minimum sound pressure level (dB)
SPL	Sound Pressure Level

Introduction

Ganesh festival is celebrated every year in the state of Maharashtra. On Ganesh Chaturthi, many worshipers or devotees bring Ganapati idol (small clay statues) for ten days. While celebrating Ganesh Festival people generally ignore environmental impact of pollution on Air, Water, Noise, solid Waste, etc. caused by various activities performed in puja. As the Covid-19 pandemic is still persisting, the uses of fire crackers are reduced to a great extent which have reduced the effect on Air pollution. Also Eco-friendly Ganesh idols were highly used this year and people have carried out visarjan at their home only.

In the study of noise level during the period of Ganesh festival this year was decreased as compared to the previous years. The reason behind the reduction in noise level is due to the restrictions imposed by the Covid-19 pandemic. Noise level is increased by the drums and instruments played during the procession to visarjan and due to traffic congestions.

Maharashtra Pollution Control Board has been carrying out study of the ambient noise levels in the state of Maharashtra during the period of Ganesh Festival for more than 12 years as a continuous process. Noise monitoring was carried out at 132 locations from 27 Municipal Corporation of Maharashtra for 5 days period during Ganesh Festival i.e. on 10th, 11th, 14th, 16th and 19th September 2021 from 6 PM to 12 AM for each location which comprise of residential, commercial and silence zone.

We have carried out the noise monitoring following all the COVID protocol such as temperature and oxygen level check each day before starting the work, using mask, carrying hand sanitizer and maintaining distance between the public.

A Review of Noise Descriptors

Sound is usually made up of a wide range of different frequencies. The spread of sound energy across the audible frequency "spectrum" (about 20Hz – 20kHz) is one factor that helps to make it identifiable to the human ear. The human ear is a very sensitive system with an extensive dynamic range. To accommodate this very large range, sound levels are measured using the **decibel (dB) scale**.

A sound level meter theoretically has a flat response, in other words it responds exactly the same at different frequencies. Unlike a sound level meter, the human ear responds differently at different frequencies, so a weighting, or filter, can be used so that the meter responds more like the human ear. The most commonly used weighting is referred to as the '**A**' weighting and readings are usually measured in dBA. The "**sound pressure level**" (SPL) is twenty times the logarithm to the base 10 of the ratio of the effective pressure (p) of a sound to the reference pressure (Pr) of 20 µPa. Thus, the sound pressure level in dB = $20 \log_{10} P/Pr$.

In most cases, the sound and noise we hear are not steady. Apart from variation in tones, the magnitude or the sound pressure level of a sound or noise changes with time. The equivalent continuous noise level (Leq) is the sound pressure level of a steady sound that has, over a given period, the same energy as a fluctuating sound in question.

The sound level limits specified by CPCB, represent the general limitation on noise produced by noise sources. Some noises, however, are annoying no matter where or in what kind of environment they exist. High level impulsive noises represent a special category and, consequently, are restricted by an absolute limitation.

The Central Pollution Control Board (CPCB) constituted a National Committee of Experts on Noise Pollution Control. The Committee recommended noise standards for ambient air and for automobiles, domestic appliances and construction equipment, which were later notified under The Environment (Protection) Act, 1986 as given below:

Table 2.1: Standards of Noise Levels under EPA (1986): Noise Pollution (Regulation & Control) Rules, 2000

Area Code	Category of Area	Limits in dB(A) L_{eq}	
		Day time	Night time
A	Industrial area	75	70
B	Commercial area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

Note:

1. Day time is reckoned from 6 A.M. To 10 P.M.
2. Night time is reckoned in from 10 P.M. and 6 A.M.
3. Silence zone is referred as areas within 100 meters around premises such as hospitals, educational institutions and courts. The Silence zones are to be declared by the Competent Authority.
4. Use of vehicular horns, loudspeakers and bursting of crackers shall be banned in these zones.
5. Mixed categories of areas should be declared as one of the four above mentioned categories by the Competent Authority and the corresponding standards shall apply.

State GR / Notification: Implementation Authority for Noise Rules in Maharashtra is enclosed at **Annexure - III**

Methodology of the project

The ambient noise monitoring was carried out during the period of Ganesh Festivals for 132 locations which is covered under 27 Municipal Corporation all over Maharashtra. The monitoring was carried out for 5 days considering the noise that generate during the festival. 6 hours noise monitoring was carried out from 6 PM to 12 AM on 10th, 11th, 14th, 16th and 19th September 2021. The noise monitoring was carried out using calibrated Sound Level Meters (Type I).

The details of number noise monitoring locations in different Municipal Corporation all over Maharashtra as provided in **Table 3.1** below:

Table 3.1: Noise Monitoring Locations in Maharashtra during Ganesh Festival: 2021.

Sr.	Municipal Corporation	Number of locations
1.	Mumbai	25
2.	Navi Mumbai	05
3.	Thane	08
4.	Pune	18
5.	Nashik	05
6.	Aurangabad	05
7.	Nagpur	05
8.	Kalyan	03
9.	Amravati	03
10.	Jalgaon	03
11.	Kolhapur	03
12.	Sangli	03
13.	Mira – Bhayander	03
14.	Vasai – Virar	03
15.	Ulhasnagar	03
16.	Bhiwandi – Nizampur	03
17.	Chandrapur	03
18.	Nanded – Waghala	03
19.	Ahmednagar	03
20.	Dhule	03
21.	Malegaon	03
22.	Pimpri – Chinchwad	03
23.	Parbhani	03
24.	Latur	03
25.	Akola	03
26.	Solapur	04
27.	Panvel	03
Total No. of stations		132

The detailed list of locations is given in **Annexure I.**

Results

Hourly Noise Levels on 10th, 11th, 14th, 16th and 19th September 2021 during Ganesh Festival at different locations in Maharashtra is given in **Annexure IV**. The equivalent steady sound level of a noise energy-averaged over time was calculated represented as L_{eq} based on which the impact of noise created during the festival is measured. The formula for calculating L_{eq} is as given below:

$$L_{eq,T} = 10 \log \left(1/n \sum_{i=1}^n 10^{\frac{L_i}{10}} \right)$$

Where, L_i = levels observed at n equally spaced times during interval T.

In the present study, hourly and day wise L_{eq} has been calculated to compare the results obtained from various locations.

1. Mumbai

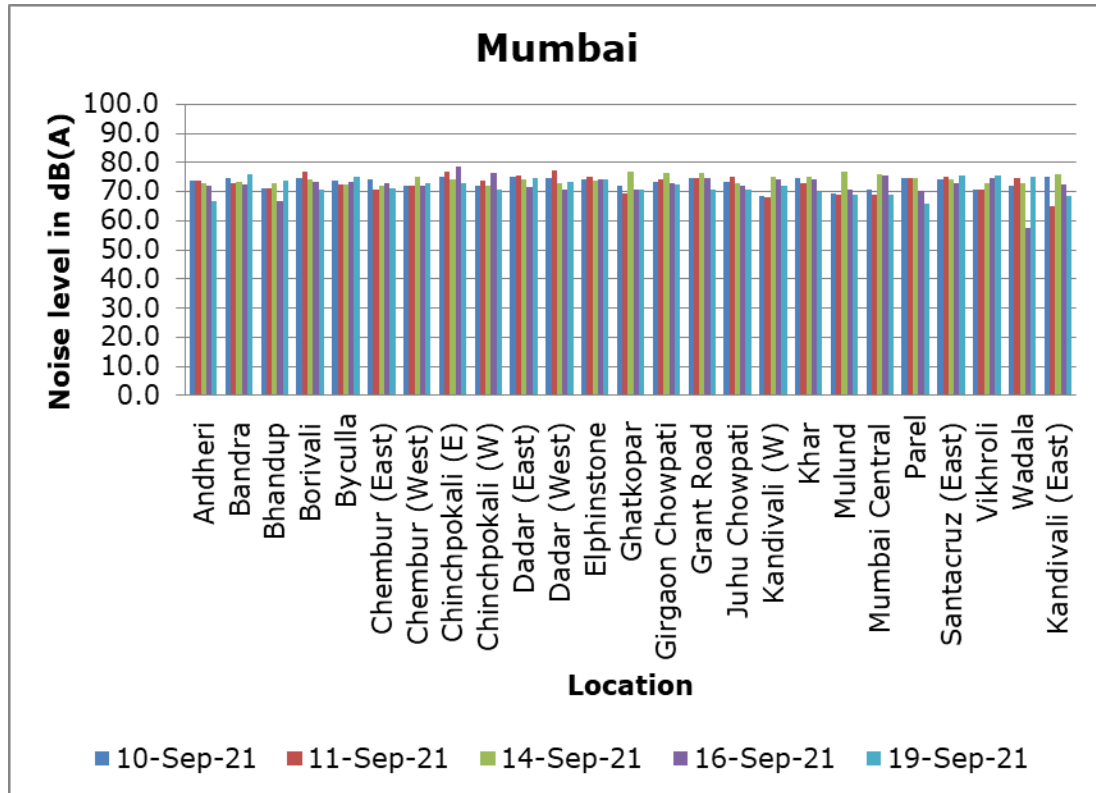
In Mumbai a total of 25 location where monitored. The highest noise level out of the 5 days monitored was observed at Chinchpokali (E) on 16th September i.e. the third day of monitoring with 78.4 dB(A). The noise level was increased due to traffic and there was no impact due to the festival.

Table 4.1: Noise Levels (L_{eq}) dB(A) during Ganesh Festival, 2021 in Mumbai

Location	10-Sep-21	11-Sep-21	14-Sep-21	16-Sep-21	19-Sep-21
	(L _{eq}) dB(A)				
Andheri	73.5	73.9	72.9	71.8	66.6
Bandra	74.5	72.7	73.3	72.5	75.8
Bhandup	70.9	71.3	72.8	66.9	73.9
Borivali	74.6	76.8	74.3	73.3	70.8
Byculla	73.6	72.5	72.3	73.1	75.3
Chembur (East)	74.1	70.8	72.0	73.1	71.1
Chembur (West)	72.0	71.8	75.3	72.0	73.0
Chinchpokali (E)	74.9	76.8	74.0	78.4	72.8
Chinchpokali (W)	72.0	73.8	72.0	76.6	70.5
Dadar (East)	74.9	75.6	74.4	71.6	74.5
Dadar(West)	74.5	77.2	73.0	70.8	73.1
Elphinstone	74.1	75.3	73.9	74.0	74.2

Location	10-Sep-21	11-Sep-21	14-Sep-21	16-Sep-21	19-Sep-21
	(L _{eq}) dB(A)				
Ghatkopar	71.9	69.4	76.7	70.8	70.7
Girgaon Chowpati	73.3	74.3	76.6	72.9	72.6
Grant Road	74.8	74.7	76.5	74.4	70.5
Juhu Chowpati	73.1	74.9	72.8	72.1	70.6
Kandivali (East)	74.9	65.1	75.9	72.7	68.5
Kandivali (W)	68.7	68.0	74.9	74.2	71.8
Khar	74.6	72.9	75.1	74.2	70.0
Mulund	69.5	68.9	76.9	70.5	68.8
Mumbai Central	70.9	69.0	75.8	75.4	69.0
Parel	74.6	74.6	74.5	70.1	65.7
Santacruz (East)	74.2	74.9	74.1	72.7	75.7
Vikhroli	70.6	70.8	73.0	74.7	75.3
Wadala	71.9	74.8	72.8	57.6	75.2

Chart 4.1: Noise Levels during Ganesh Festival, 2021 in Mumbai



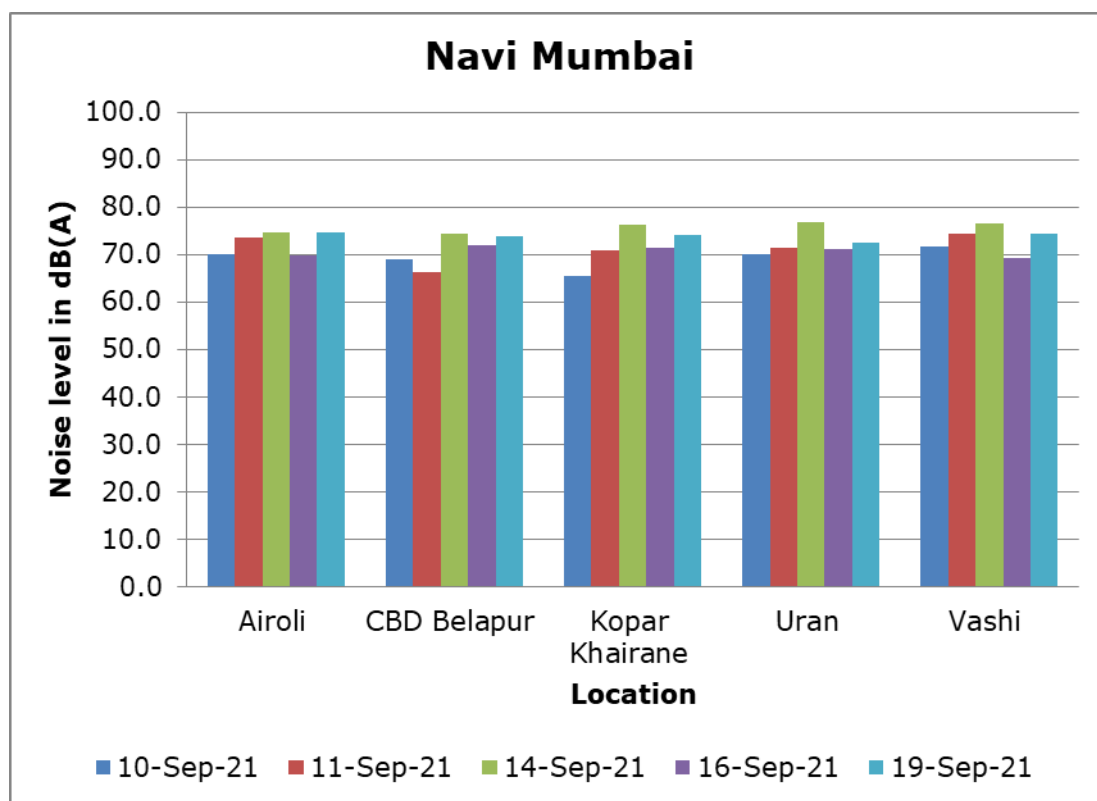
2. Navi Mumbai

In Navi Mumbai a total of 5 locations were monitored. The highest noise level was observed at Uran on 14th September with 76.9 dB(A). The increase in noise level was due to traffic congestions.

Table 4.2: Noise Levels (L_{eq}) dB(A) during Ganesh Festival, 2021 in Navi Mumbai

Location	10-Sep-21	11-Sep-21	14-Sep-21	16-Sep-21	19-Sep-21
	(L _{eq}) dB(A)				
Airoli	70.1	73.6	74.7	70.0	74.7
CBD Belapur	69.1	66.3	74.4	72.0	74.0
Kopar Khairane	65.6	71.0	76.2	71.4	74.3
Uran	70.0	71.5	76.9	71.1	72.4
Vashi	71.7	74.5	76.5	69.4	74.6

Chart 4.2: Noise Levels during Ganesh Festival, 2021 in Navi Mumbai



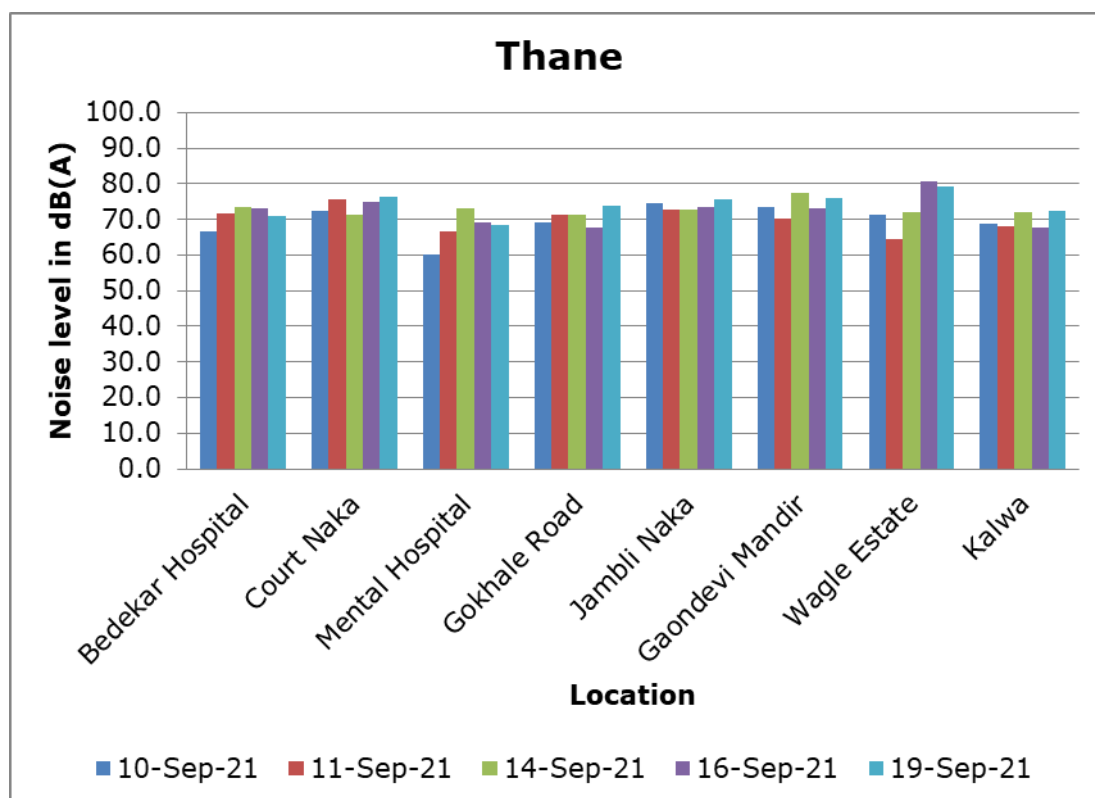
3. Thane

A total of eight locations were monitored in Thane region. The highest noise level was observed at Wagle Estate with 80.7 dB(A) on 16th September and the main reason of the increase in noise level was due to the crowd for visarjan at Wagle estate Raila devi lake.

Table 4.3: Noise Levels (L_{eq}) dB(A) during Ganesh Festival, 2021 in Thane

Location	10-Sep-21	11-Sep-21	14-Sep-21	16-Sep-21	19-Sep-21
	(L _{eq}) dB(A)				
Gokhale Road	69.2	71.3	71.4	67.9	73.7
Jambli Naka	74.5	72.6	72.7	73.3	75.5
Gaondevi Mandir	73.6	70.2	77.3	72.9	75.9
Wagle Estate	71.3	64.6	71.9	80.7	79.1
Court Naka	72.3	75.5	71.1	74.8	76.4
Mental Hospital	60.1	66.6	73.2	69.0	68.3
Bedekar Hospital	66.5	71.5	73.5	73.0	71.1
Kalwa	68.8	68.0	71.8	67.7	72.5

Chart 4.3: Noise Levels during Ganesh Festival, 2021 in Thane



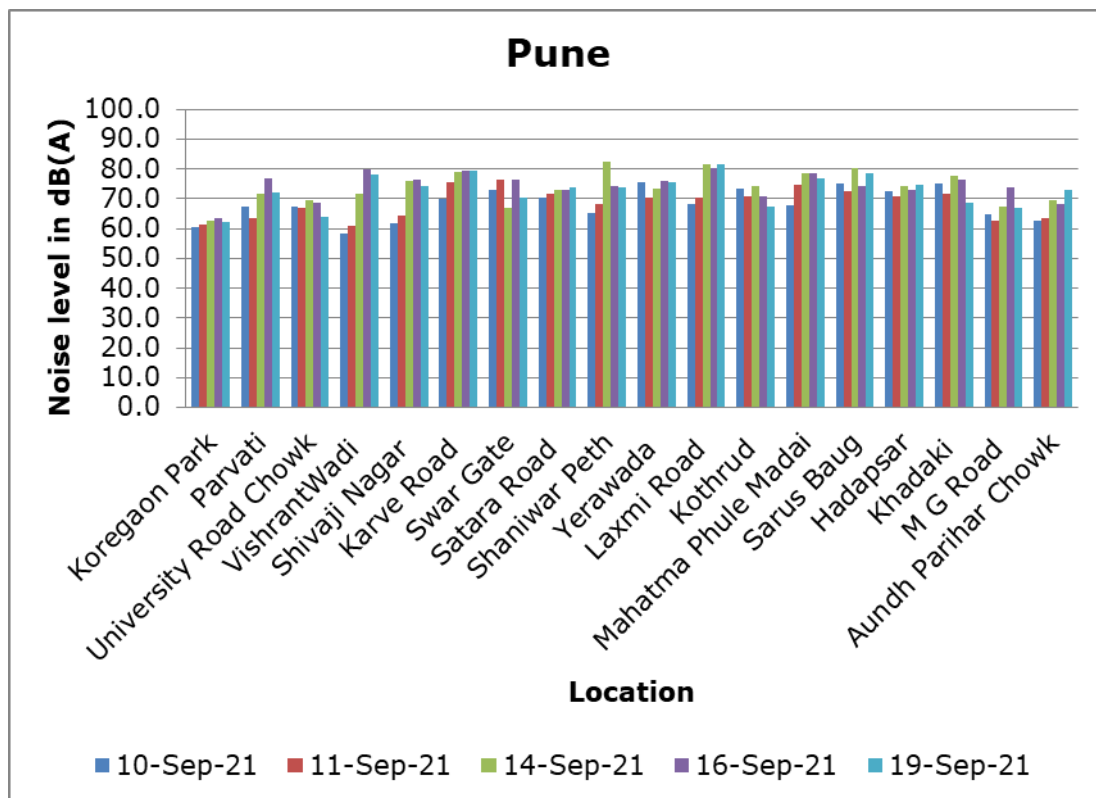
4. Pune

Eighteen locations were monitored in Pune region. The highest noise level was observed at Shaniwar Peth with 82.3 dB(A) on 14th September. The increase in noise level was due to traffic congestion due to the Ganesh idol possession and crowd.

Table 4.4: Noise Levels (L_{eq}) dB(A) during Ganesh Festival, 2021 in Pune

Location	10-Sep-21	11-Sep-21	14-Sep-21	16-Sep-21	19-Sep-21
	(L _{eq}) dB(A)				
Shivaji Nagar	61.7	64.6	76.1	76.3	74.4
Karve Road	70.0	75.5	79.1	79.4	79.4
Swar Gate	73.0	76.2	67.1	76.3	70.5
Satara Road	70.4	71.5	72.9	73.2	73.8
Shaniwar Peth	65.4	68.0	82.3	74.3	73.9
Yerawada	75.4	70.2	73.3	76.0	75.4
Laxmi Road	68.1	70.3	81.6	80.2	81.5
Kothrud	73.6	70.9	74.2	70.6	67.2
Mahatma Phule Madai	67.7	74.5	78.7	78.5	77.1
Sarus Baug	75.3	72.6	80.4	74.1	78.5
Hadapsar	72.6	70.6	74.2	72.8	74.8
Parvati	67.3	63.4	71.7	77.1	72.3
Koregaon Park	60.4	61.2	62.7	63.5	62.2
Khadaki	75.1	71.5	77.6	76.3	68.6
M G Road	64.7	62.6	67.5	74.0	67.0
University Road Chowk	67.4	67.0	69.7	68.9	63.9
Aundh Parihar Chowk	62.5	63.3	69.4	68.4	72.8
Vishrant Wadi	58.4	61.0	71.9	80.1	78.2

Chart 4.4: Noise Levels during Ganesh Festival, 2021 in Pune



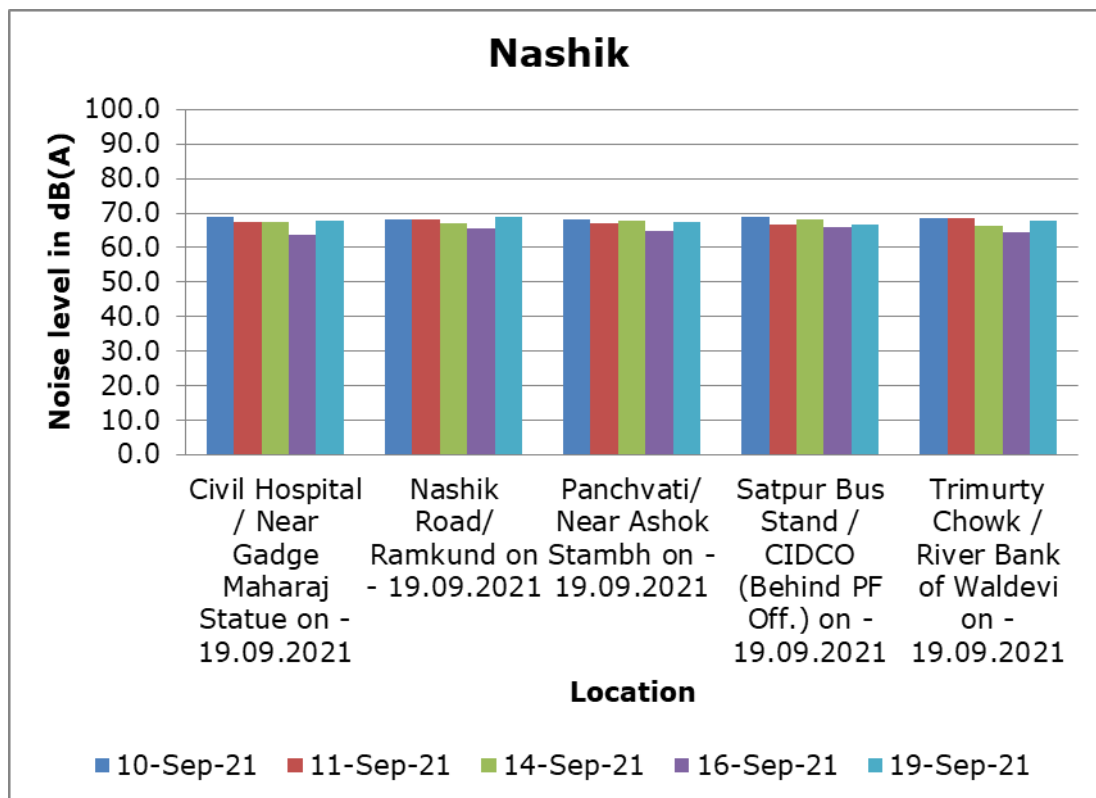
5. Nashik

Five locations were monitored for Nashik region. The highest noise level of 68.9 dB(A) was observed at Civil Hospital and Nashik Road on 10th and 19th September 2021 respectively. The increase in noise level was due to traffic and crowd near the hospital region.

Table 4.5: Noise Levels (L_{eq}) dB(A) during Ganesh Festival, 2021 in Nashik

Location	10-Sep-21	11-Sep-21	14-Sep-21	16-Sep-21	19-Sep-21
	(L _{eq}) dB(A)				
Nashik Road/ Ramkund on - 19.09.2021	68.1	68.2	66.9	65.6	68.9
Panchvati/ Near Ashok Stambh on - 19.09.2021	68.1	67.1	67.7	64.8	67.3
Civil Hospital/ Near Gadge Maharaj Statue on - 19.09.2021	68.9	67.6	67.5	63.6	67.9
Trimurty Chowk/ River Bank of Waldevi on - 19.09.2021	68.4	68.4	66.4	64.6	67.7
Satpur Bus Stand/ CIDCO (Behind PF Off.) on - 19.09.2021	68.7	66.8	68.1	66.0	66.5

Chart 4.5: Noise Levels during Ganesh Festival, 2021 in Nashik



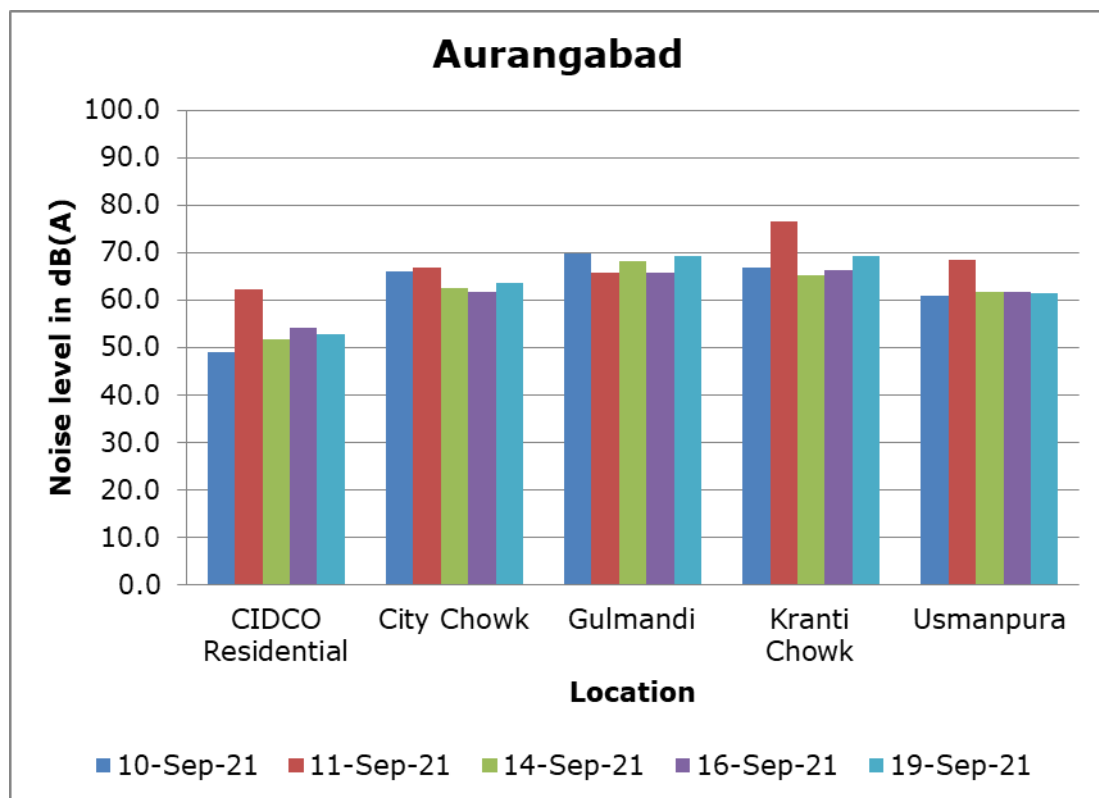
6. Aurangabad

Five locations were monitored for Aurangabad region. The highest noise level was observed on 11th September at Kranti Chowk with 76.5 dB(A). The increase in noise level was due to traffic and nearby pandals.

Table 4.6: Noise Levels (L_{eq}) dB(A) during Ganesh Festival, 2021 in Aurangabad

Location	10-Sep-21	11-Sep-21	14-Sep-21	16-Sep-21	19-Sep-21
	(Leq) dB(A)				
Gulmandi	69.8	65.7	68.1	65.8	69.4
City Chowk	66.0	66.7	62.5	61.8	63.6
Kranti Chowk	66.8	76.5	65.2	66.3	69.4
CIDCO Residential	49.1	62.3	51.7	54.3	52.9
Usmanpura	60.8	68.5	61.8	61.8	61.4

Chart 4.6: Noise Levels during Ganesh Festival, 2021 in Aurangabad



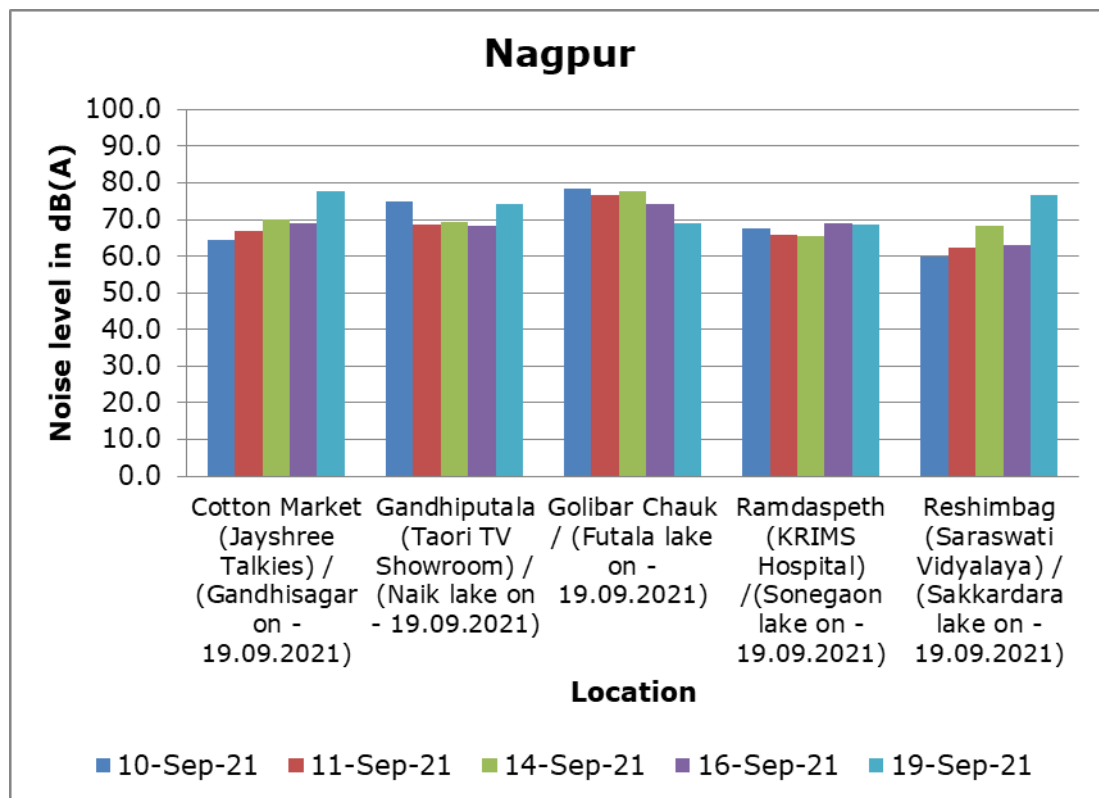
7. Nagpur

In Nagpur region also 5 locations was monitored. Golibar Chauk was found to have the highest noise level with 78.4 dB(A) on 10th September.

Table 4.7: Noise Levels (L_{eq}) dB(A) during Ganesh Festival, 2021 in Nagpur

Location	10-Sep-21	11-Sep-21	14-Sep-21	16-Sep-21	19-Sep-21
	(Leq) dB(A)				
Ramdaspath (KRIMS Hospital)/ (Sonegaon lake on - 19.09.2021)	67.7	65.7	65.5	69.0	68.8
Cotton Market (Jayshree Talkies)/ (Gandhisagar on - 19.09.2021)	64.4	66.7	69.9	68.8	77.6
Golibar Chowk/ (Futala lake on - 19.09.2021)	78.4	76.5	77.8	74.2	68.9
Reshimbag (Saraswati Vidyalaya)/ (Sakkardara lake on - 19.09.2021)	59.9	62.3	68.2	62.9	76.6
Gandhiputala (Taori TV Showroom)/ (Naik lake on - 19.09.2021)	74.7	68.5	69.2	68.4	74.2

Chart 4.7: Noise Levels during Ganesh Festival, 2021 in Nagpur



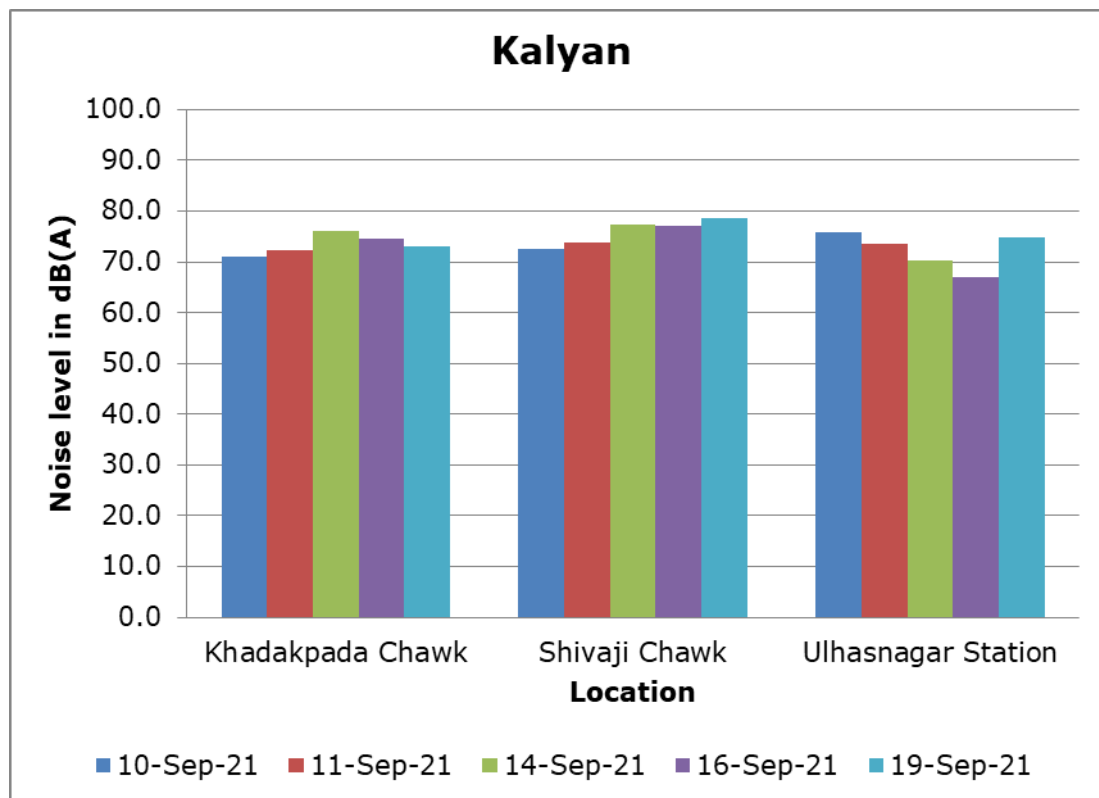
8. Kalyan

Out of three locations monitored in Kalyan region, the highest noise level was observed at Shivaji Chowk on 19th September with 78.7 dB(A). The noise level was high mainly due to the crowd and traffic.

Table 4.8: Noise Levels (L_{eq}) dB(A) during Ganesh Festival, 2021 in Kalyan

Location	10-Sep-21	11-Sep-21	14-Sep-21	16-Sep-21	19-Sep-21
	(Leq) dB(A)				
Khadakpada Chowk	71.1	72.3	76.1	74.6	72.9
Shivaji Chowk	72.4	73.8	77.3	77.1	78.7
Ulhasnagar Station	75.8	73.6	70.3	67.1	74.9

Chart 4.8: Noise Levels during Ganesh Festival, 2021 in Kalyan



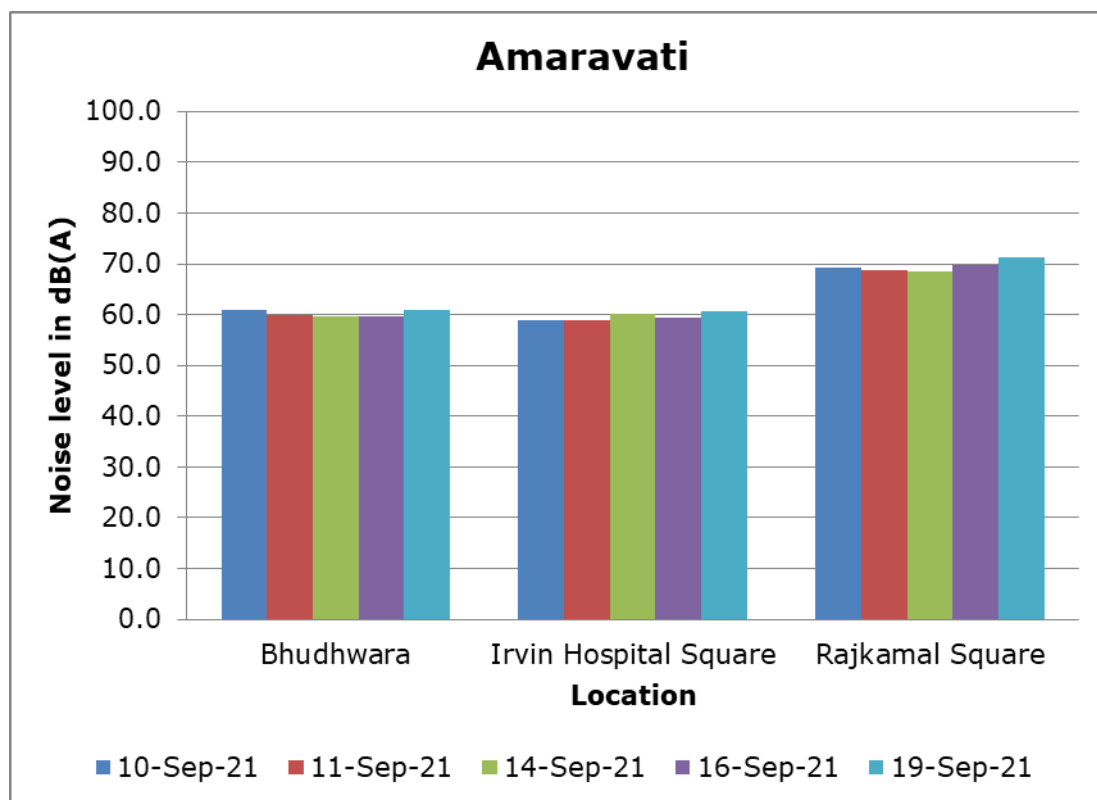
9. Amaravati

Out of the three locations monitored for Amravati region, Rajkamal Square was found to highest noise level on all five days of monitoring. The main reason for the increase in noise level in this region is traffic flow.

Table 4.9: Noise Levels (L_{eq}) dB(A) during Ganesh Festival, 2021 in Amaravati

Location	10-Sep-21	11-Sep-21	14-Sep-21	16-Sep-21	19-Sep-21
	(L _{eq}) dB(A)				
Bhudhwara	60.9	59.9	59.5	59.5	60.9
Rajkamal Square	69.3	68.8	68.5	69.8	71.2
Irvin Hospital Square	58.8	59.0	60.2	59.3	60.7

Chart 4.9: Noise Levels during Ganesh Festival, 2021 in Amaravati



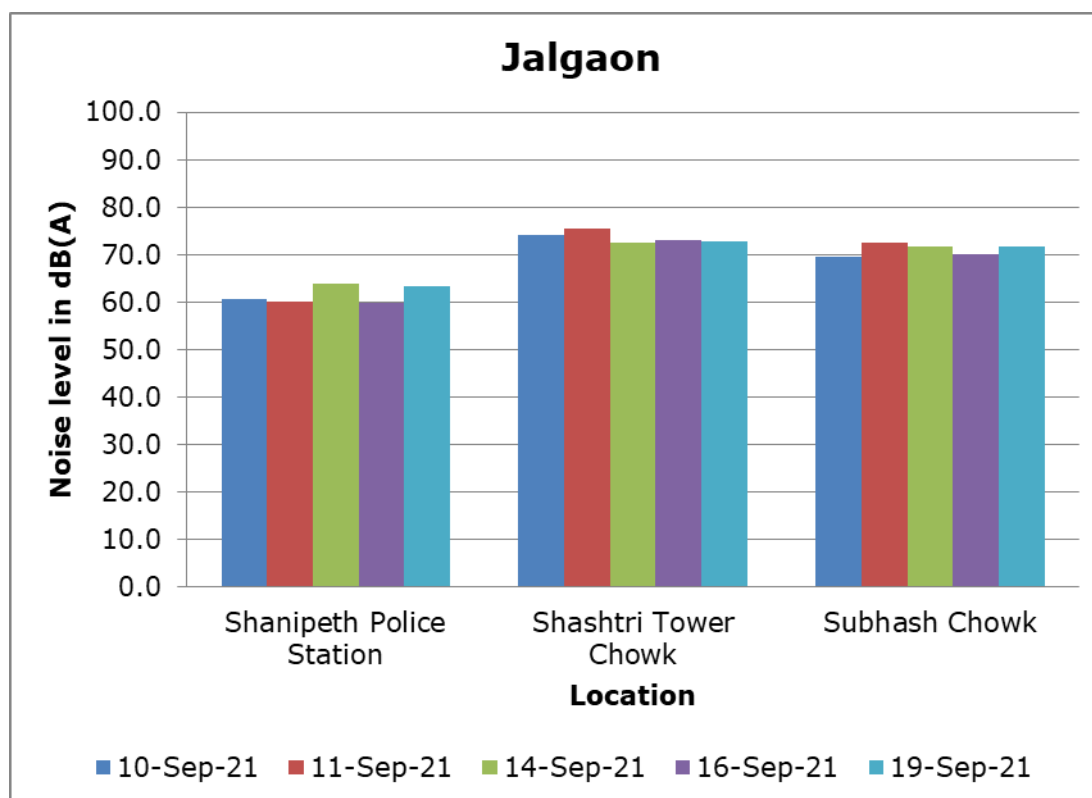
10. Jalgaon

In Jalgaon region also three locations were monitored. The highest noise level was observed at Shashtri Tower Chowk on all five days of monitoring and the increase in noise level was due to traffic congestion.

Table 4.10: Noise Levels (L_{eq}) dB(A) during Ganesh Festival, 2021 in Jalgaon

Location	10-Sep-21	11-Sep-21	14-Sep-21	16-Sep-21	19-Sep-21
	(L _{eq}) dB(A)				
Subhash Chowk	69.6	72.5	71.8	70.2	71.6
Shashtri Tower Chowk	74.3	75.6	72.6	73.1	72.8
Shanipeth Police Station	60.7	60.0	64.0	59.9	63.2

Chart 4.10: Noise Levels during Ganesh Festival, 2021 in Jalgaon



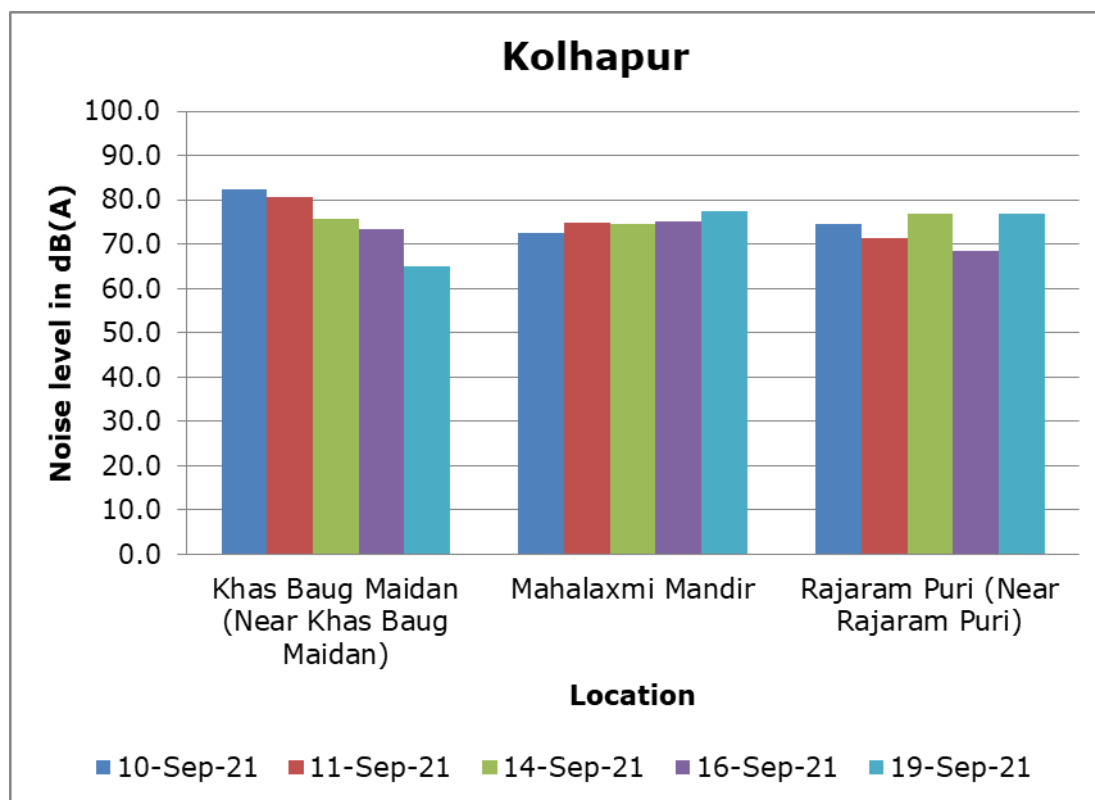
11. Kolhapur

In Kolhapur region also three locations were monitored. The highest noise level was observed at Khas Baug Maidan with 82.5 dB(A) on 10th September.

Table 4.11: Noise Levels (L_{eq}) dB(A) during Ganesh Festival, 2021 in Kolhapur

Location	10-Sep-21	11-Sep-21	14-Sep-21	16-Sep-21	19-Sep-21
	(L _{eq}) dB(A)				
Rajaram Puri	74.5	71.4	77.0	68.5	76.8
Mahalaxmi Mandir	72.7	74.7	74.7	75.1	77.6
Khas Baug Maidan	82.5	80.7	75.8	73.4	65.0

Chart 4.11: Noise Levels during Ganesh Festival, 2021 in Kolhapur



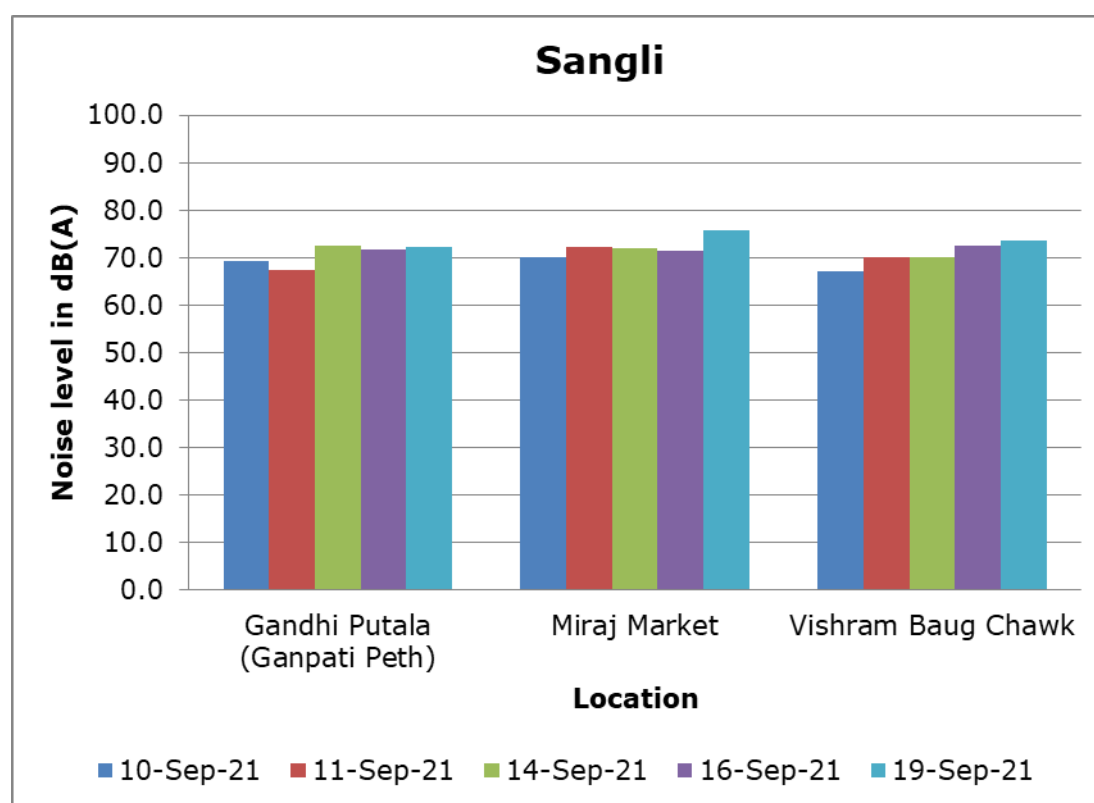
12. Sangli

Out of the three locations monitored in Sangli region, the highest noise level of 75.7 dB(A) was observed at Miraj market on 19th September.

Table 4.12: Noise Levels (L_{eq}) dB(A) during Ganesh Festival, 2021 in Sangli

Location	10-Sep-21	11-Sep-21	14-Sep-21	16-Sep-21	19-Sep-21
	(L _{eq}) dB(A)				
Miraj Market	70.0	72.3	72.0	71.6	75.7
Vishram Baug Chowk	67.1	70.2	70.1	72.5	73.6
Gandhi Putala	69.4	67.3	72.5	71.8	72.2

Chart 4.12: Noise Levels during Ganesh Festival, 2021 in Sangli



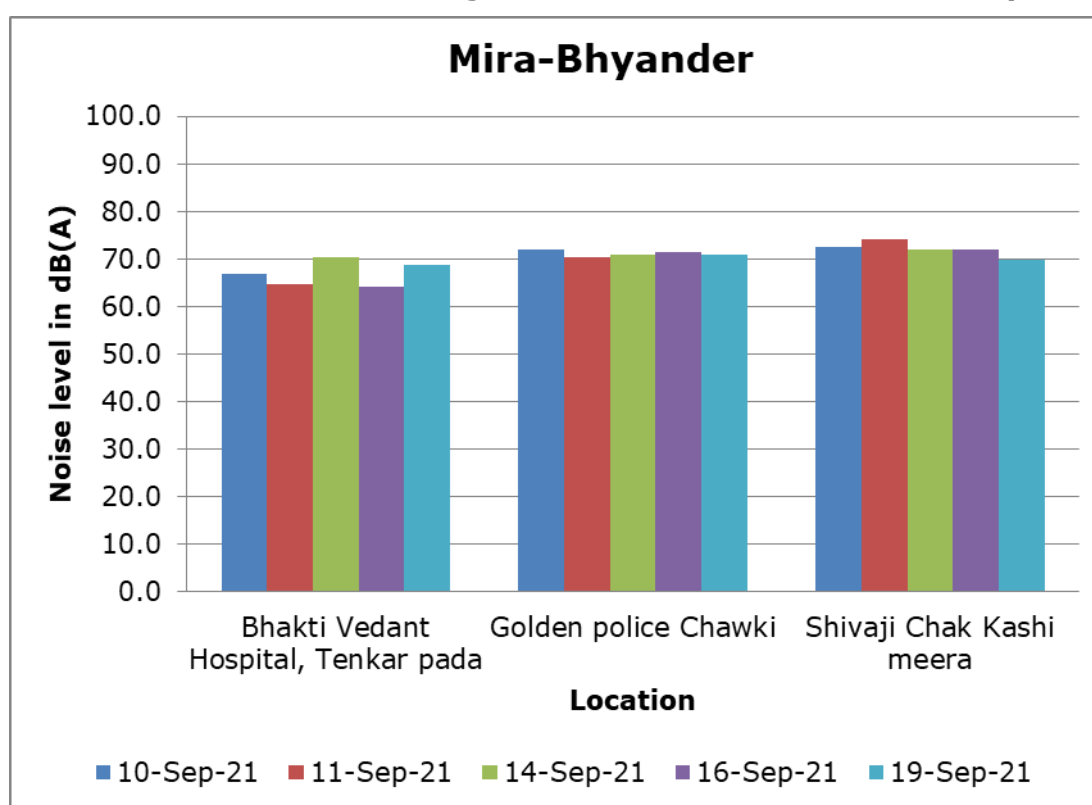
13. Mira-Bhayander

In Mira-Bhayander the highest noise level was observed at Shivaji Chak Kashi meera with 74 dB(A) on 11th September and the reason for increase in noise level was due to the Traffic and rain.

Table 4.13: Noise Levels (L_{eq}) dB(A) during Ganesh Festival, 2021 in Mira-Bhayander

Location	10-Sep-21	11-Sep-21	14-Sep-21	16-Sep-21	19-Sep-21
	(L _{eq}) dB(A)				
Bhakti Vedant Hospital, Tenkar pada	66.8	64.7	70.5	64.2	68.7
Golden police Chowki	71.9	70.3	70.8	71.4	71.0
Shivaji Chowk Kashi meera	72.6	74.0	72.0	72.0	69.8

Chart 4.13: Noise Levels during Ganesh Festival, 2021 in Mira-Bhayander



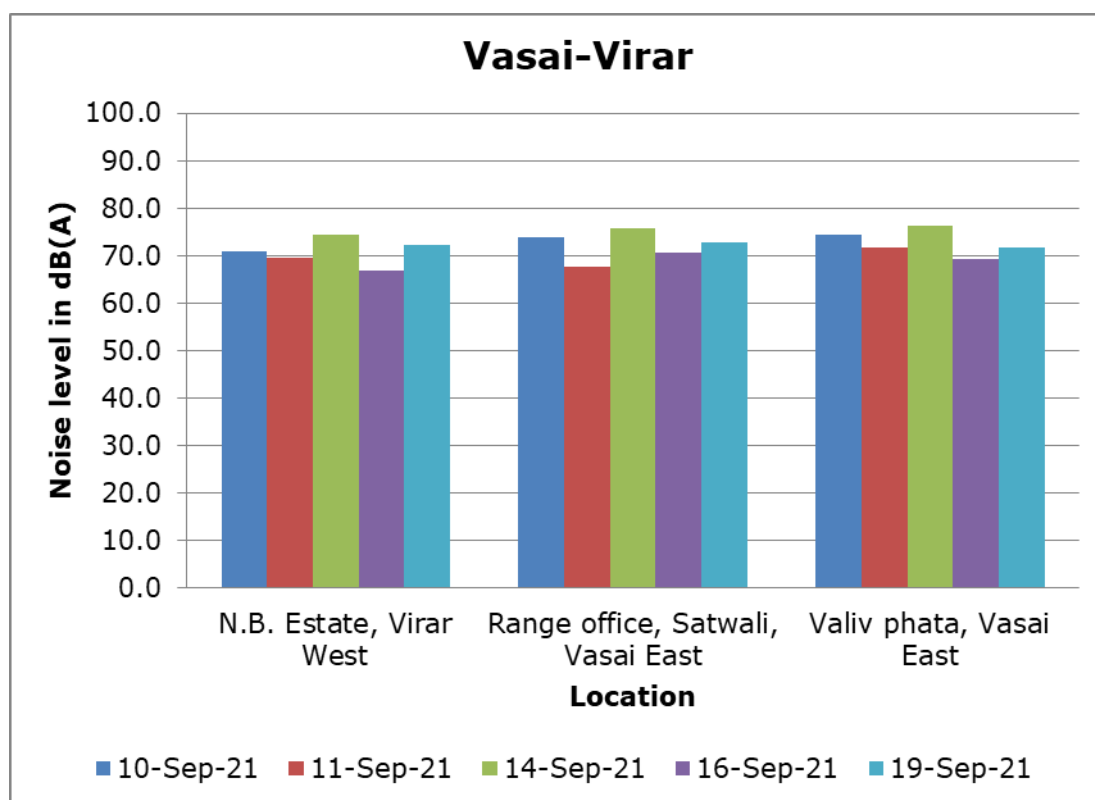
14. Vasai-Virar

At Vasai-Virar also three locations were monitored for checking the noise level during Ganesh Festival. The highest noise level was observed at Valiv phata on all five days of noise monitoring and the reason was due to honking and traffic.

Table 4.14: Noise Levels (L_{eq}) dB(A) during Ganesh Festival, 2021 in Vasai-Virar

Location	10-Sep-21	11-Sep-21	14-Sep-21	16-Sep-21	19-Sep-21
	(Leq) dB(A)				
Range office, Satwali, Vasai East	73.8	67.6	75.8	70.7	72.7
Valiv phata, Vasai East	74.5	71.8	76.4	69.3	71.8
N.B. Estate, Virar West	70.9	69.5	74.3	67.0	72.3

Chart 4.14: Noise Levels during Ganesh Festival, 2021 in Vasai-Virar



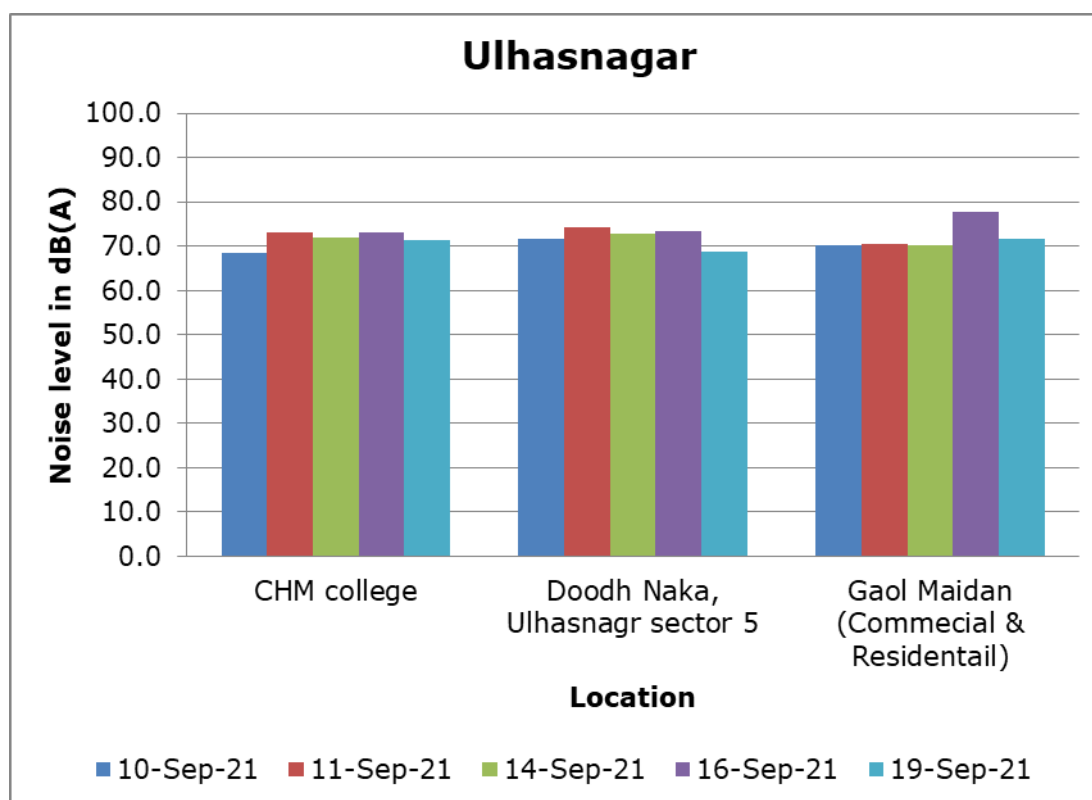
15. Ulhasnagar

The highest noise level in Ulhasnagar was observed at Gaol Maidan with 77.7 dB(A) on 16th September and was mainly due to traffic congestion.

Table 4.15: Noise Levels (L_{eq}) dB(A) during Ganesh Festival, 2021 in Ulhasnagar

Location	10-Sep-21	11-Sep-21	14-Sep-21	16-Sep-21	19-Sep-21
	(L _{eq}) dB(A)				
Gaol Maidan	70.4	70.6	70.3	77.7	71.7
Doodh Naka, Ulhasnagr sector 5	71.7	74.3	72.9	73.4	68.8
CHM college	68.4	73.2	72.0	73.1	71.4

Chart 4.15: Noise Levels during Ganesh Festival, 2021 in Ulhasnagar



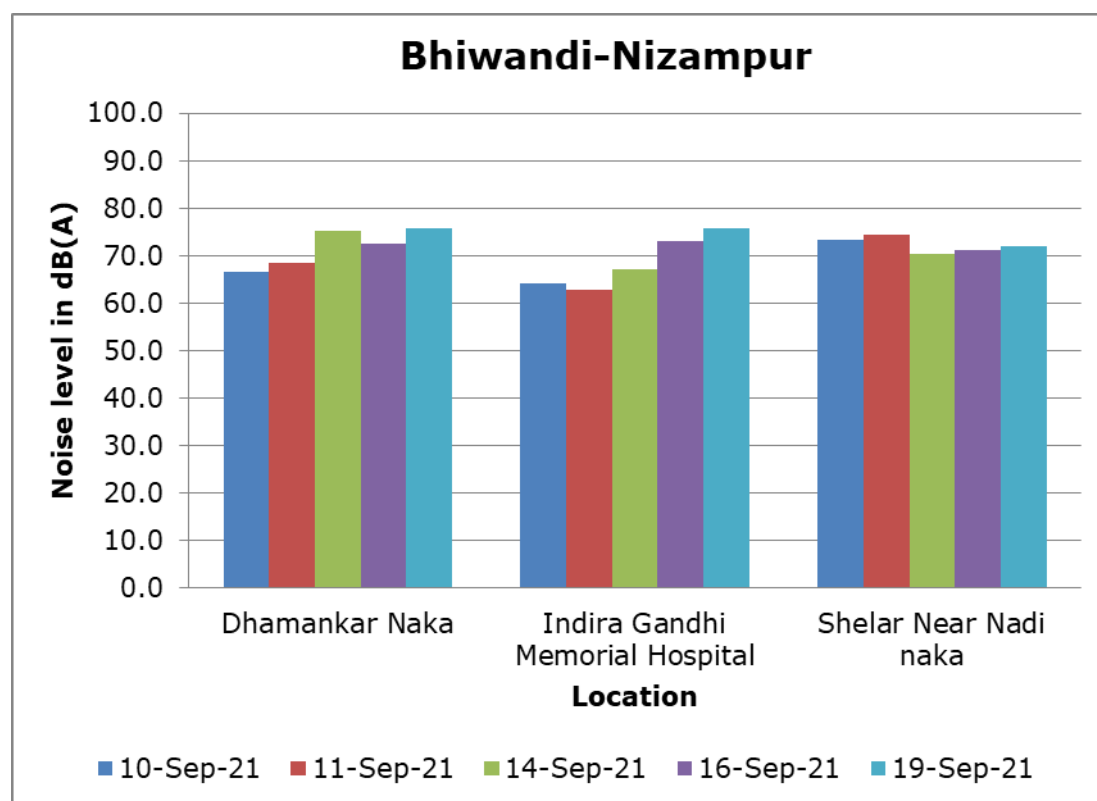
16. Bhiwandi-Nizampur

The noise levels of Bhiwandi-Nizampur was observed at Indira Gandhi Memorial Hospital with 75.8 dB(A) on 19th September and the reason for increase in noise level was due to the use of crowd for visargan.

Table 4.16: Noise Levels (L_{eq}) dB(A) during Ganesh Festival, 2021 in Bhiwandi-Nizampur

Location	10-Sep-21	11-Sep-21	14-Sep-21	16-Sep-21	19-Sep-21
	(L _{eq}) dB(A)				
Dhamankar Naka	66.6	68.6	75.3	72.6	75.7
Indira Gandhi Memorial Hospital	64.3	62.9	67.0	73.2	75.8
Shelar Near Nadi naka	73.4	74.4	70.5	71.2	72.0

Chart 4.16: Noise Levels during Ganesh Festival, 2021 in Bhiwandi-Nizampur



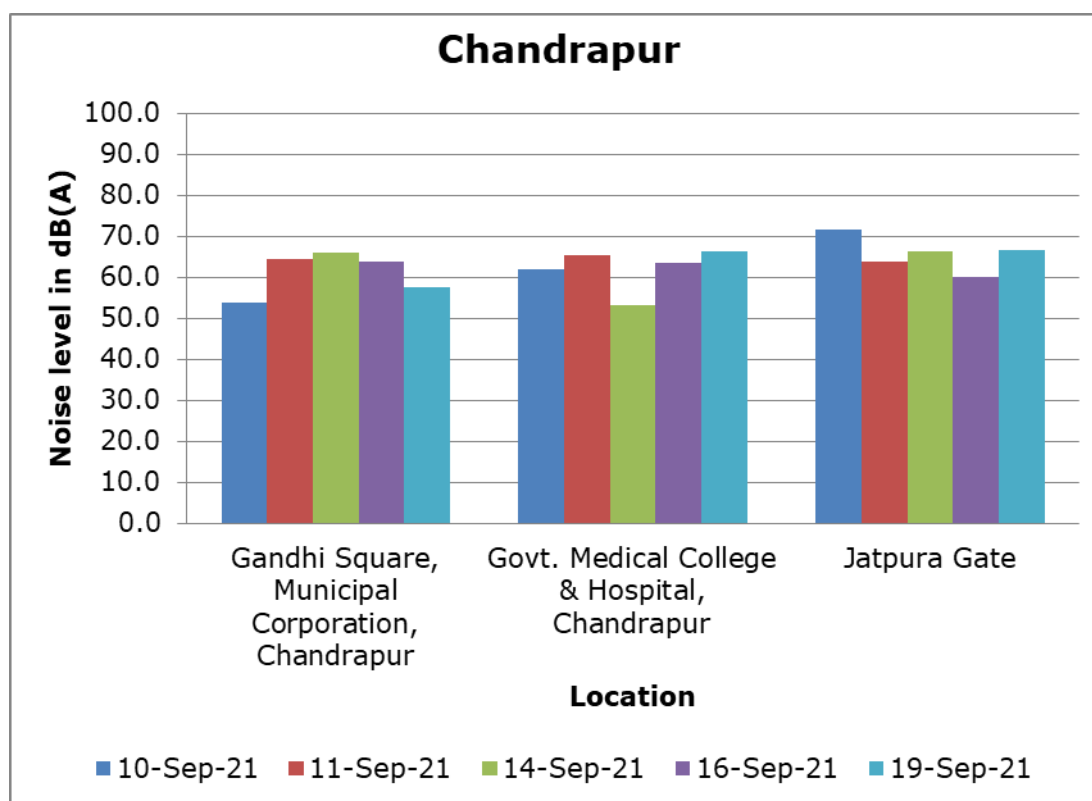
17. Chandrapur

In Chandrapur region also three locations were monitored. The highest noise level was observed at Jatpura Gate with 71.7 dB(A) on 10th September and the reason for increase in noise level was due to traffic.

Table 4.17: Noise Levels (L_{eq}) dB(A) during Ganesh Festival, 2021 in Chandrapur

Location	10-Sep-21	11-Sep-21	14-Sep-21	16-Sep-21	19-Sep-21
	(L _{eq}) dB(A)				
Govt. Hospital	61.9	65.4	53.1	63.4	66.2
Gandhi Square	53.8	64.5	65.9	63.7	57.4
Jatpura Gate	71.7	63.9	66.4	59.9	66.6

Chart 4.17: Noise Levels during Ganesh Festival, 2021 in Chandrapur



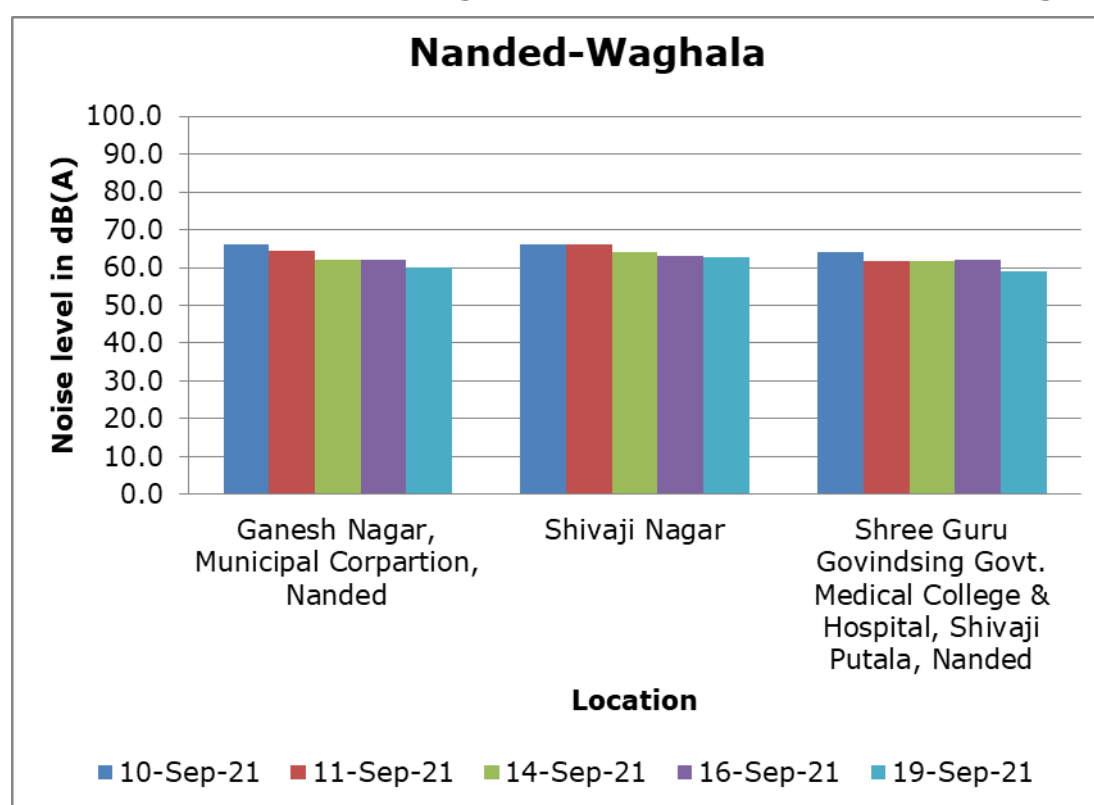
18. Nanded-Waghala

At Nanded-Waghala also 3 locations was monitored. The highest noise level was observed at Shivaji Nagar with 66.2 dB(A) on 11th September and the increase in noise level was due to crowd and traffic jam in front of hospital.

Table 4.18: Noise Levels (L_{eq}) dB(A) during Ganesh Festival, 2021 in Nanded-Waghala

Location	10-Sep-21	11-Sep-21	14-Sep-21	16-Sep-21	19-Sep-21
	(L _{eq}) dB(A)				
Ganesh Nagar	66.1	64.6	62.0	62.2	60.0
Shivaji Nagar	66.1	66.2	64.1	63.0	62.9
Shree Guru Govindsing Govt. Medical College & Hospital	64.1	61.7	61.7	61.9	59.1

Chart 4.18: Noise Levels during Ganesh Festival, 2021 in Nanded-Waghala



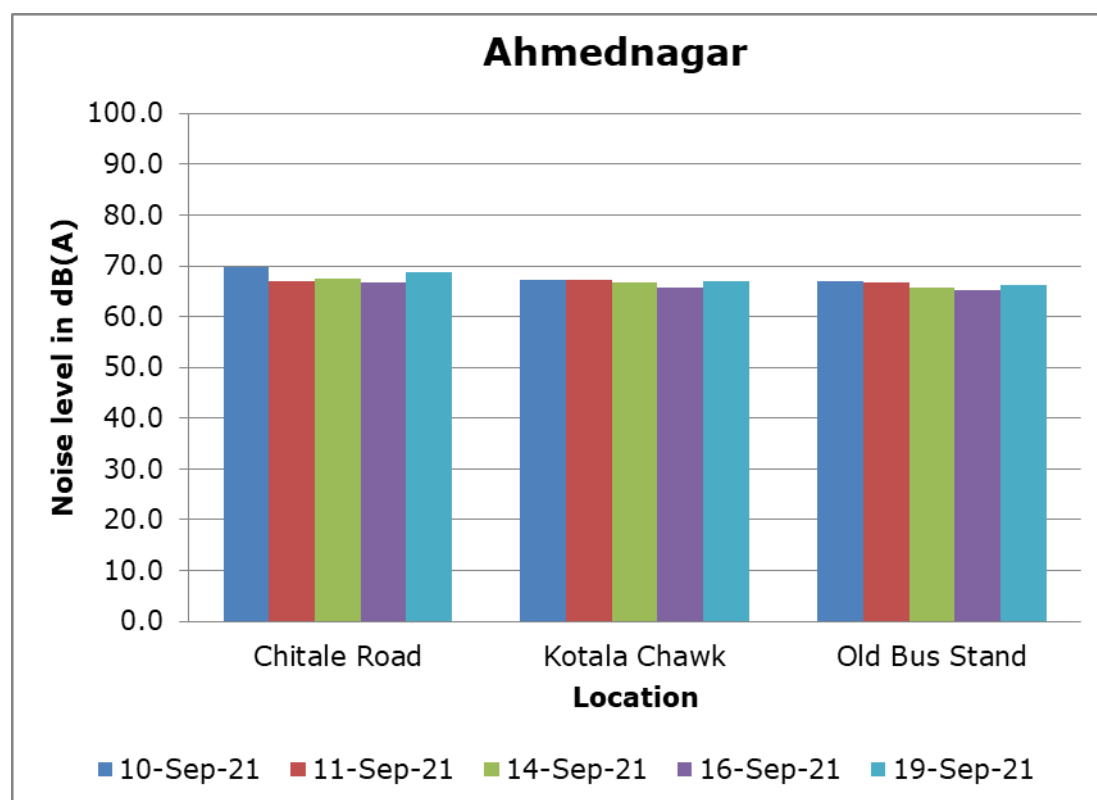
19. Ahmednagar

The highest noise level in Ahmednagar was observed at Chitale Road on 10th September with 69.8 dB(A) and the increase in noise was mainly due to traffic.

Table 4.19: : Noise Levels (L_{eq}) dB(A) during Ganesh Festival, 2021 in Ahmednagar

Location	10-Sep-21	11-Sep-21	14-Sep-21	16-Sep-21	19-Sep-21
	(L _{eq}) dB(A)				
Kotala Chowk	67.2	67.3	66.6	65.6	67.1
Chitale Road	69.8	67.0	67.4	66.8	68.8
Old Bus Stand	66.9	66.7	65.7	65.1	66.3

Chart 4.19: Noise Levels during Ganesh Festival, 2021 in Ahmednagar



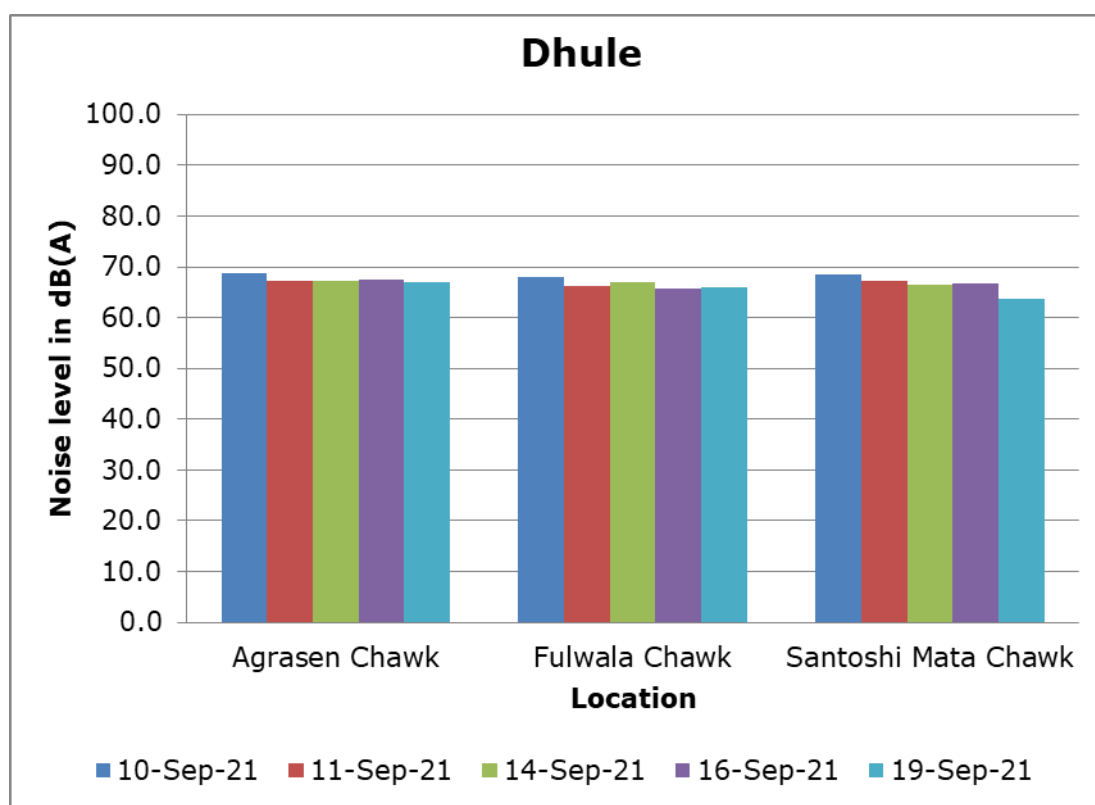
20. Dhule

At Dhule the highest noise level was observed at Agrasen Chowk with 68.8 dB(A) and the increase in noise was mainly due to traffic.

Table 4.20: Noise Levels (L_{eq}) dB(A) during Ganesh Festival, 2021 in Dhule

Location	10-Sep-21	11-Sep-21	14-Sep-21	16-Sep-21	19-Sep-21
	(Leq) dB(A)				
Agrasen Chowk	68.8	67.1	67.2	67.5	67.0
Fulwala Chowk	68.1	66.3	66.9	65.6	66.0
Santoshi Mata Chowk	68.6	67.2	66.5	66.8	63.8

Chart 4.20: Noise Levels during Ganesh Festival, 2021 in Dhule



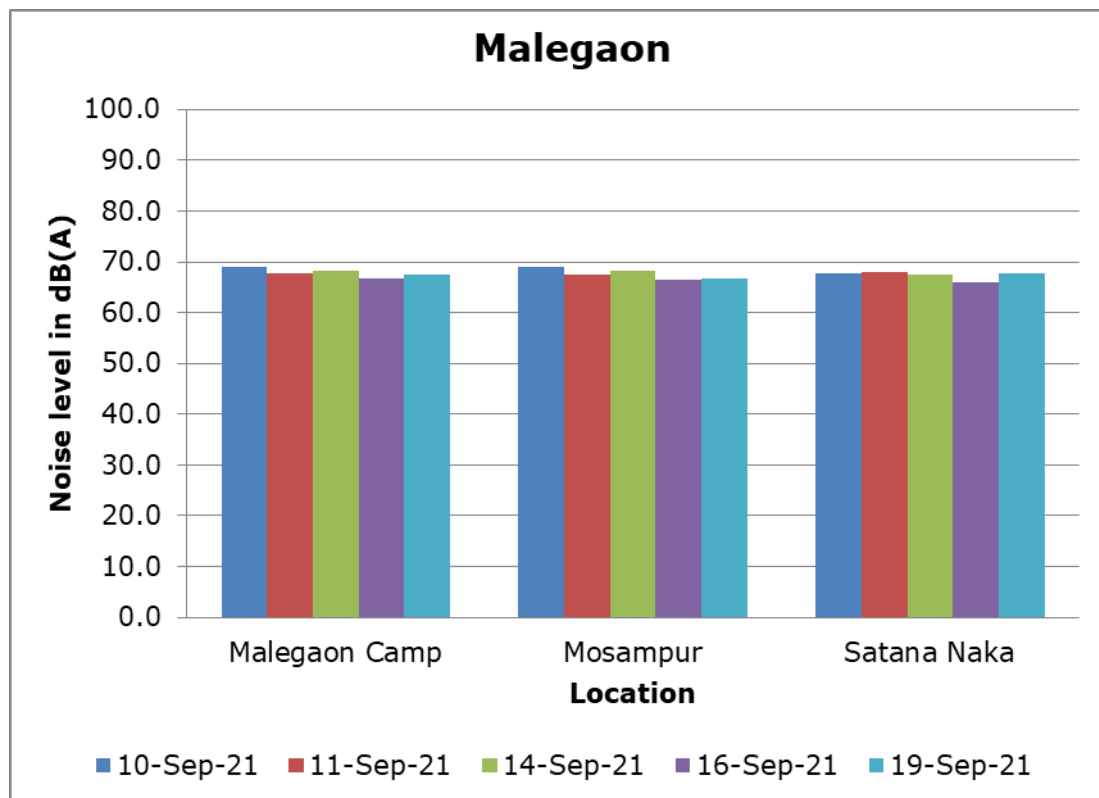
21. Malegaon

The highest noise level at Malegaon region was observed during first day of Ganesh Festival at Malegaon Camp with 69 dB(A). The reason for increase in noise pollution is due to traffic.

Table 4.21: Noise Levels (L_{eq}) dB(A) during Ganesh Festival, 2021 in Malegaon

Location	10-Sep-21	11-Sep-21	14-Sep-21	16-Sep-21	19-Sep-21
	(L _{eq}) dB(A)				
Mosampur	68.9	67.4	68.2	66.5	66.7
Satana Naka	67.7	67.9	67.4	66.1	67.6
Malegaon Camp	69.0	67.7	68.2	66.7	67.5

Chart 4.21: Noise Levels during Ganesh Festival, 2021 in Malegaon



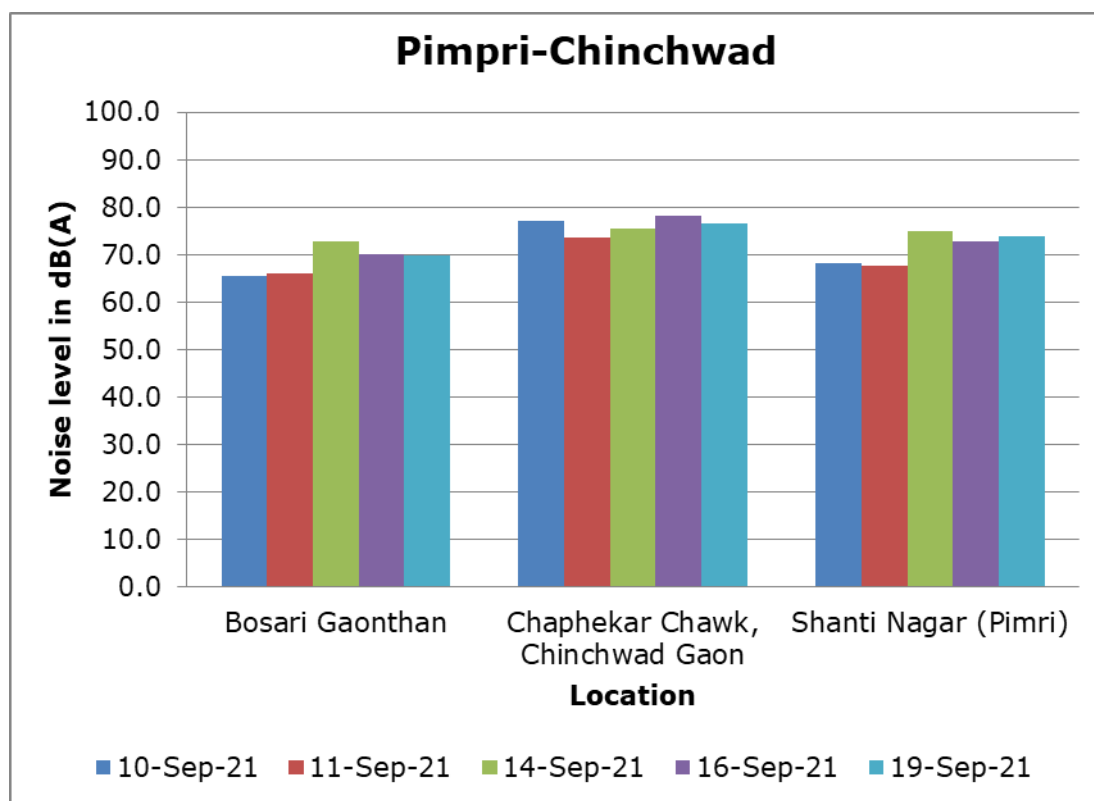
22. Pimpri-Chinchwad

In Pimpri-Chinchwad the increase in noise level was mainly due to the crowd and traffic. The highest noise level on all 5 days was observed at Chaphekar Chowk.

Table 4.22: Noise Levels (L_{eq}) dB(A) during Ganesh Festival, 2021 in Pimpri-Chinchwad

Location	10-Sep-21	11-Sep-21	14-Sep-21	16-Sep-21	19-Sep-21
	(Leq) dB(A)				
Chaphekar Chowk	77.1	73.7	75.6	78.2	76.7
Shanti Nagar	68.1	67.6	74.9	72.9	74.0
Bosari Gaonthan	65.6	66.0	72.9	70.2	69.9

Chart 4.22: Noise Levels during Ganesh Festival, 2021 in Pimpri-Chinchwad



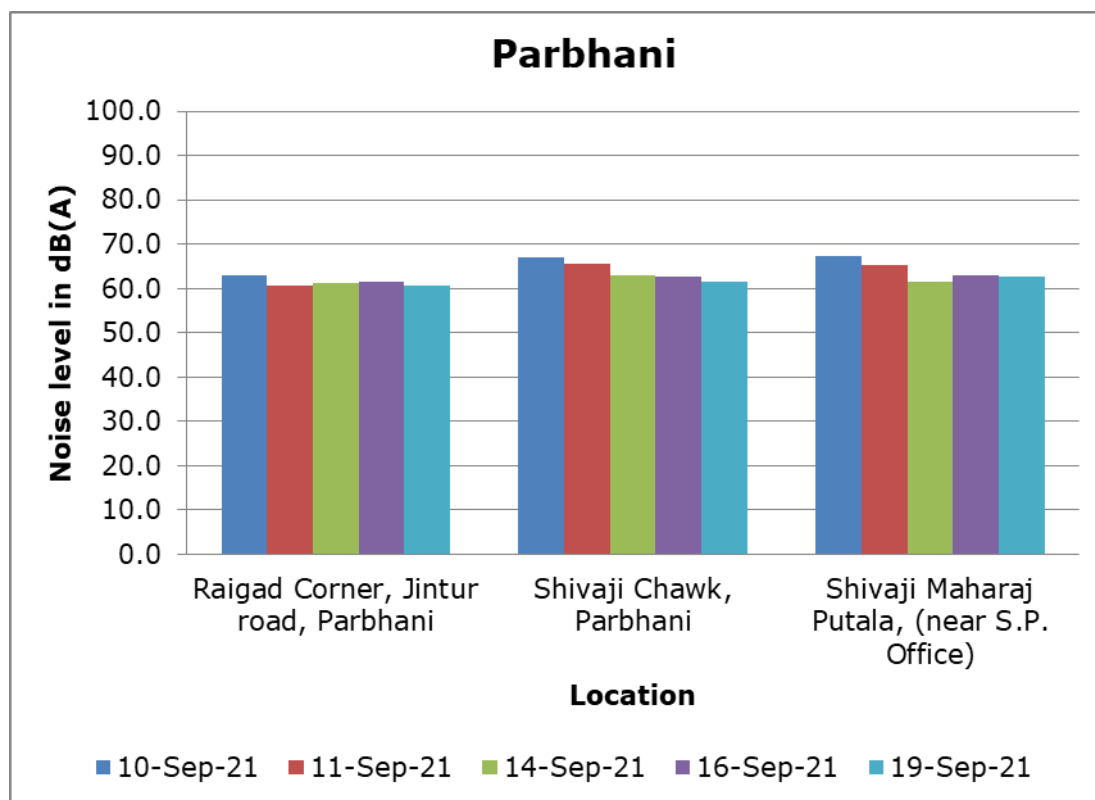
23. Parbhani

The highest noise level in Parbhani region among the three locations monitored was observed near Shivaji Maharaj Putala, with 67.4 dB(A) on 10th September. The increase in noise level was due to traffic congestion.

Table 4.23: Noise Levels (L_{eq}) dB(A) during Ganesh Festival, 2021 in Parbhani

Location	10-Sep-21	11-Sep-21	14-Sep-21	16-Sep-21	19-Sep-21
	(Leq) dB(A)				
Shivaji Chowk	67.0	65.6	63.0	62.8	61.6
Shivaji Maharaj Putala	67.4	65.5	61.6	63.0	62.7
Raigad Corner	62.9	60.6	61.1	61.6	60.7

Chart 4.23: Noise Levels during Ganesh Festival, 2021 in Parbhani



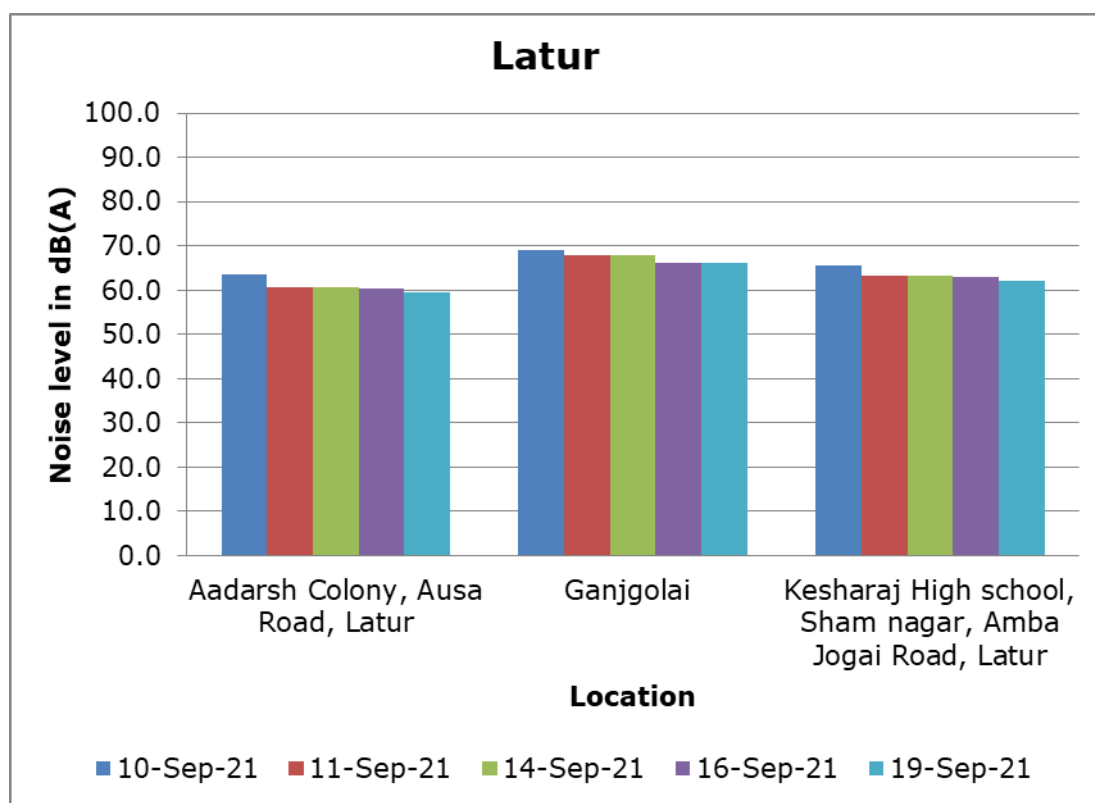
24. Latur

The highest noise level on all five days was observed at Ganjgolai. The increase in noise level was due to the rain and traffic.

Table 4.24: Noise Levels (L_{eq}) dB(A) during Ganesh Festival, 2021 in Latur

Location	10-Sep-21	11-Sep-21	14-Sep-21	16-Sep-21	19-Sep-21
	(L _{eq}) dB(A)				
Ganjgolai	69.0	67.9	67.9	66.3	66.2
Kesharaj High school	65.7	63.4	63.4	63.1	62.2
Aadarsh Colony	63.6	60.8	60.8	60.5	59.5

Chart 4.24: Noise Levels during Ganesh Festival, 2021 in Latur



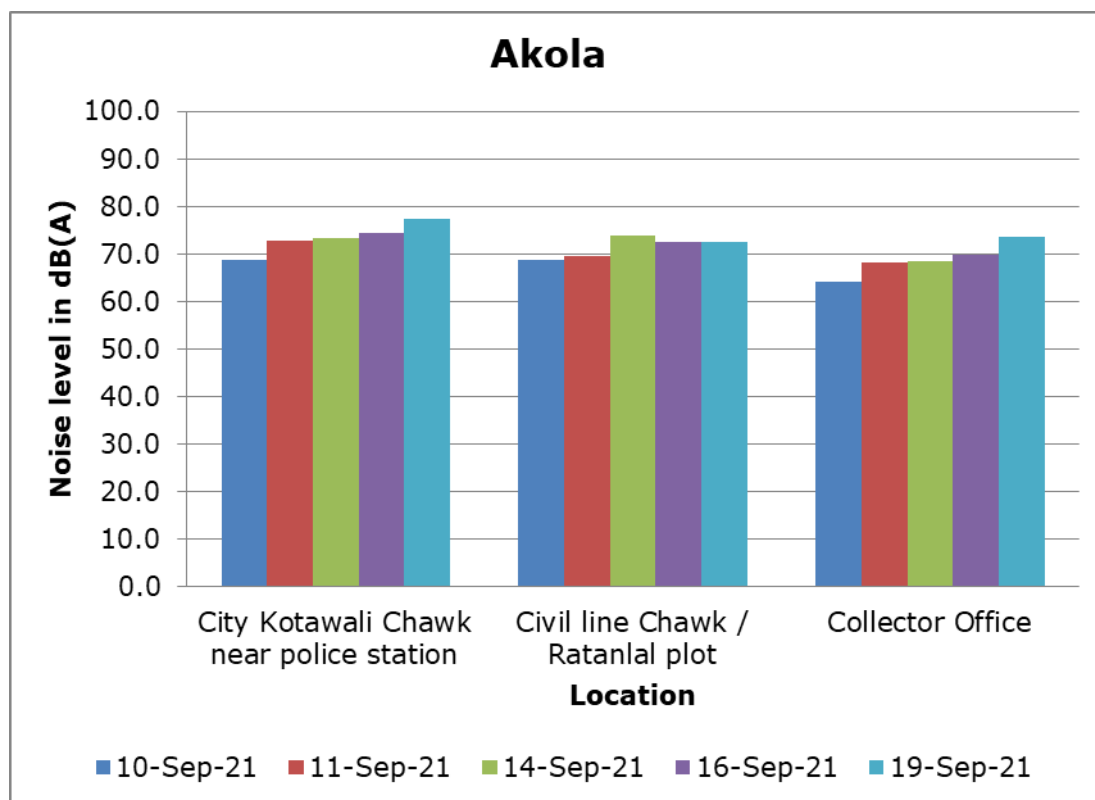
25. Akola

In Akola also three location was monitored the noise level during Ganesh festival. The highest noise level was observed at City Kotawali Chowk on 19th September with 77.4 dB(A) and the increase in noise level was due to traffic.

Table 4.25: Noise Levels (L_{eq}) dB(A) during Ganesh Festival, 2021 in Akola

Location	10-Sep-21	11-Sep-21	14-Sep-21	16-Sep-21	19-Sep-21
	(L _{eq}) dB(A)				
Collector Office	64.1	68.3	68.6	69.7	73.5
Civil line Chowk	68.7	69.6	73.8	72.5	72.6
City Kotawali Chowk	68.8	72.9	73.2	74.4	77.4

Chart 4.25: Noise Levels during Ganesh Festival, 2021 Akola



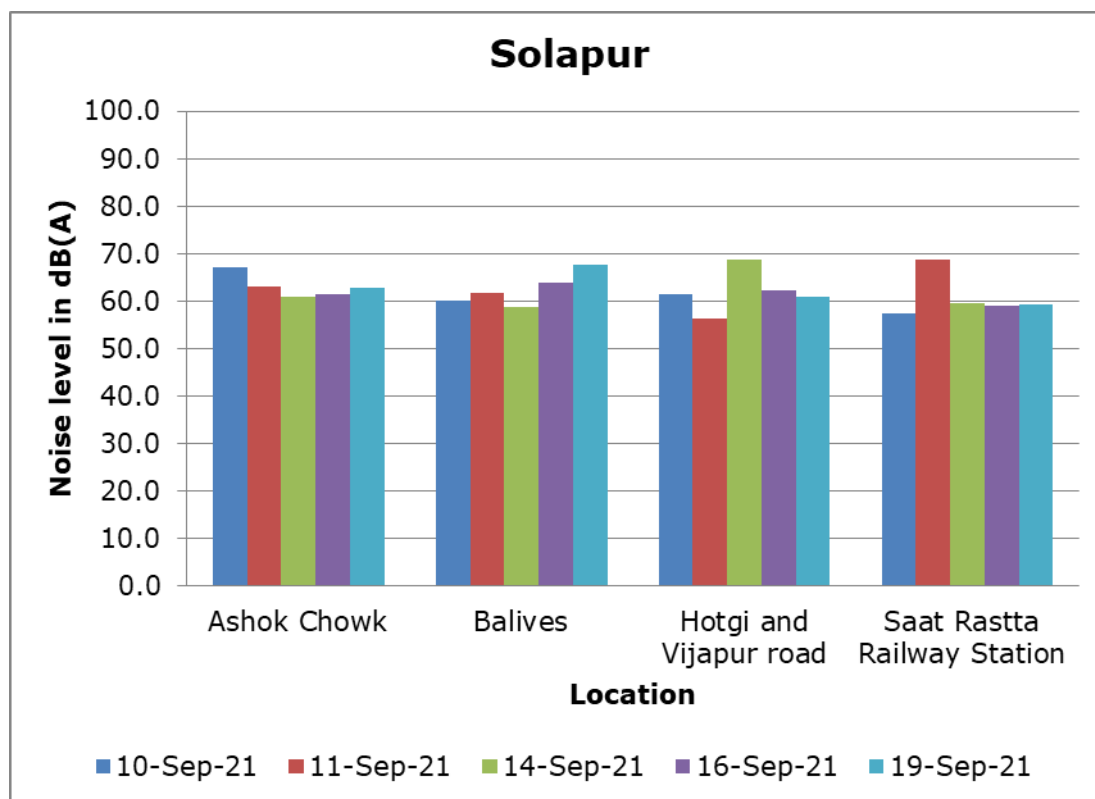
26. Solapur

In Solapur, four locations was monitored for noise level during Ganesh Festival. The highest noise level of 68.7 dB(A) was observed at Saat Rastta Railway Station On 11th September and at Hotgi and Vijapur road on 14th September.

Table 4.26: Noise Levels (L_{eq}) dB(A) during Ganesh Festival, 2021 in Solapur

Location	10-Sep-21	11-Sep-21	14-Sep-21	16-Sep-21	19-Sep-21
	(L _{eq}) dB(A)				
Balives	60.1	61.8	58.8	63.8	67.6
Ashok Chowk	67.2	63.2	60.9	61.4	62.9
Hotgi and Vijapur road	61.6	56.2	68.7	62.2	61.0
Saat Rastta Railway Station	57.3	68.7	59.7	59.1	59.3

Chart 4.26: Noise Levels during Ganesh Festival, 2021 in Solapur



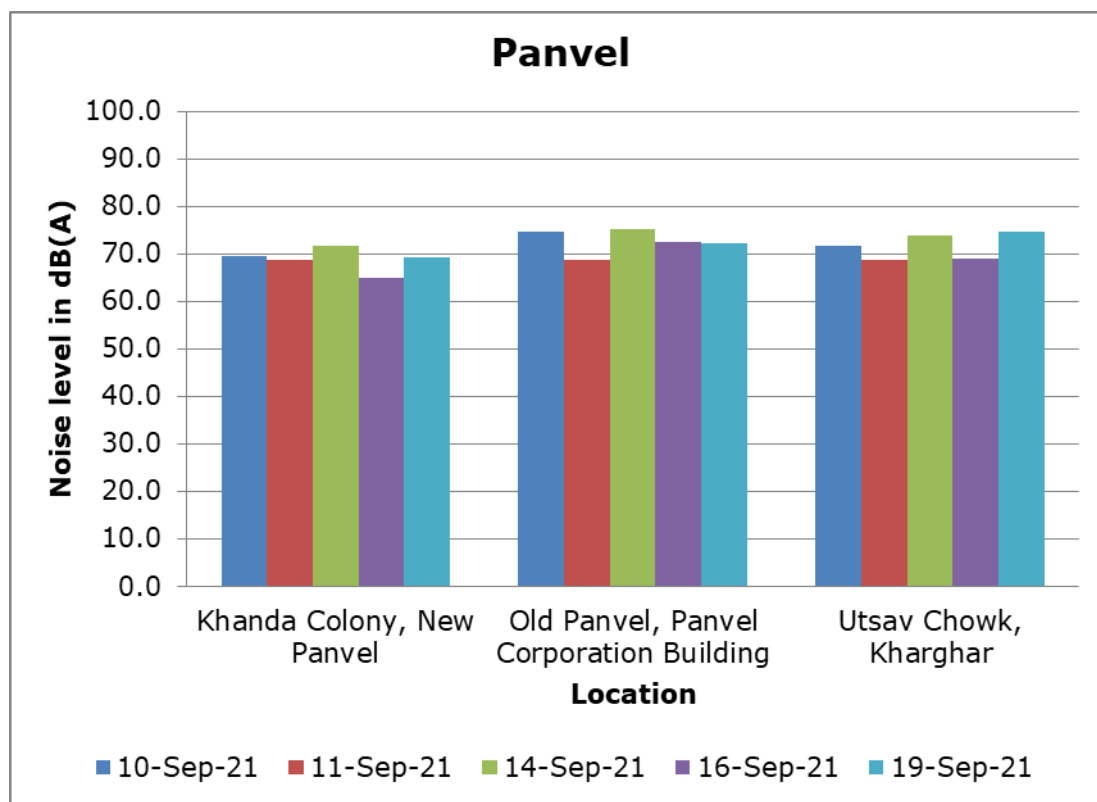
27. Panvel

Three locations were monitored from Panvel Municipal Corporation. The highest noise level out of the three locations was observed at Old Panvel, Panvel Corporation Building with 75.2 dB(A) on 14 September.

Table 4.27: Noise Levels (L_{eq}) dB(A) during Ganesh Festival, 2021 in Panvel

Location	10-Sep-21	11-Sep-21	14-Sep-21	16-Sep-21	19-Sep-21
	(L _{eq}) dB(A)				
Utsav Chowk	71.7	68.7	73.8	69.0	74.6
Old Panvel, Panvel Corporation Building	74.7	68.7	75.2	72.6	72.3
Khanda Colony	69.7	68.7	71.7	65.0	69.4

Chart 4.27: Noise Levels during Ganesh Festival, 2021 in Panvel



Comparative Study of Noise levels

Comparative study of the last two years, i.e. 2020 – 2021 shows that the average noise levels in all the cities are lesser this year in almost all the regions.

Comparative study shows the following results in different cities of Maharashtra:

Mumbai: Comparative study shows that this year the noise level observed was lesser as compared to last year in Borvali, Chembur east, Chinchpokali west, Kandivali (W), and Parel on most of the days of monitoring.

Navi Mumbai: The noise level in Navi Mumbai was less in CBD Belapur, Kopar Khairane and Uran on the first day of monitoring

Thane: Comparative study shows that this year the noise level observed was high as compared to last year in almost all locations

Pune: Ten out of eighteen locations showed lesser noise level this year as compared to last year on all five days of noise monitoring.

Nashik: The noise level of Nashik was high this year as compared to the last year on all days at all five locations.

Aurangabad: The noise level of Aurangabad was lesser this year as compared to the last year on all days at Kranti Chowk and City Chowk.

Nagpur: The noise level at Nagpur region was lesser at Reshimbag when compared to last year.

Kalyan: The noise level in Kalyan was higher at all location as compared to last year.

Amravati: The noise level in Amravati was higher at Irvin Hospital Square only as compared to last year.

Jalgaon: In Jalgaon the noise level was lesser this year as compared to the last year on all days at all five locations.

Kolhapur: In Kolhapur also the noise level was lesser this year as compared to the last year on all days at all five locations.

Sangli: In Sangli also the noise level was lesser this year as compared to the last year on all days at all five locations.

Mira-Bhayander: The noise level of Mira-Bhayander was higher on some days at all three locations.

Vasai-Virar: The noise level Valiv phata of Vasai-Virar had lesser noise level on all 5 days of monitoring as compared to last year.

Ulhasnagar: The noise level of Ulhasnagar was high at Gaol Maidan only than last year on the second day of monitoring. On all other days of monitoring at all locations the noise level was lesser than last year.

Bhiwandi-Nizampur: The noise level of Dhamankar Naka at Bhiwandi-Nizampur had lesser noise levels on all days as compared to last year.

Chandrapur: The noise level at Chandrapur region was lesser at Govt. Medical College & Hospital and Gandhi Square on all days when compared to last year.

Nanded-Waghala: The noise level of Nanded-Waghala had lesser noise level on all 5 days of monitoring as compared to last year.

Ahmednagar: Ahmednagar also had lesser noise level on all 5 days of monitoring as compared to last year.

Dhule: The noise level of Dhule was lesser on all day of noise monitoring this year as compared to last year.

Malegaon: The noise level of Malegaon was lesser this year as compared to last year at all three locations on all five days of monitoring.

Pimpri-Chinchwad: The noise level of Pimpri-Chinchwad was lesser this year as compared to last year at all three locations on all five days of monitoring.

Parbhani: The noise level of Parbhani also was lesser this year as compared to last year at all three locations on all five days of monitoring.

Latur: The noise level of Latur was lesser this year as compared to last year at all three locations on all five days of monitoring.

Akola: The noise level Civil line Chowk of Akola had lesser noise levels on all days as compared to last year.

Solapur: Solapur also had lesser noise level on all 5 days of monitoring as compared to last year.

Panvel: The noise level of Utsav Chowk of Panvel had lesser noise levels on all days as compared to last year.

Conclusion

This year 132 locations from 27 Municipal Corporation of Maharashtra for 5 days period during Ganesh Festival i.e. on 10th, 11th, 14th, 16th and 19th September 2021 for 6hours from 6 PM to 12 AM for each location which comprise of residential, commercial and silence zone. There was a significant decrease in the noise levels observed in almost all areas

Municipal Corporation like Mumbai, Pune, Thane, Kalyan, Nagpur etc. showed tremendous decrease in the noise levels. The main noise level increase is more due to the increase in traffic and lesser due to the festival. There was restriction for gathering also due the Covid-19 pandemic.

The awareness of noise pollution is increased within the public through different media like newspaper, television etc. Many people celebrate an Eco friendly Ganesh Festival to control environmental pollution. The decrease in noise pollution is also a result of this awareness.

Definitions

A-Weighting

"A-weighting" is the frequency weighting characteristic as specified in IEC 123 or IEC 179 and intended to approximate the relative sensitivity of the normal human ear to different frequencies (pitches) of sound.

A-weighted Sound Pressure Level

The "A-weighted sound pressure level" is the sound pressure level modified by application of the A-weighting. It is measured in dBA, A-weighted, and denoted as dBA.

Decibel

The "decibel" is a dimensionless measure of sound level or sound pressure level; see sound pressure level.

Equivalent Sound Level

The "equivalent sound level" sometimes denoted L_{eq} , is the value of the constant sound level which would result in exposure to the same total A-weighted energy as would the specified time-varying sound, if the constant sound level persisted over an equal time interval. It is measured in dBA.

Fast Response

"Fast response" is a dynamic characteristic setting of a sound levelmeter meeting the applicable specifications.

Percentile Sound Level

The "x percentile sound level", designated L_x , is the sound level exceeded x percent of a specified time period, It is measured in dBA.

Sound

"Sound" is an oscillation in pressure, stress, particle displacement or particle velocity, in a medium with internal forces (e.g. elastic, viscous), or the superposition of such propagated oscillations, which may cause an auditory sensation.

Sound Level

"Sound level" is the A-weighted sound pressure level.

Sound Level Meter

A "sound level meter" is an instrument which is sensitive to and calibrated for the measurement of sound.

Sound Pressure Level

The "sound pressure level" is twenty times the logarithm to the base 10 of the ratio of the effective pressure (p) of a sound to the reference pressure (P_r) of 20 μ Pa. Thus the sound pressure level in dB = $20 \log_{10} P/P_r$.

ANNEXURE I

Annexure I - Detailed list of locations

Sr. No.	City	Location name (details)
1.	Mumbai	Andheri - Azad Nagar, Sarvajanik Utsav Samiti
		Bandra - Sarvajanik Ganeshutsav Mandal
		Bhandup - Jay Bajrang Mitra Mandal
		Borivali - Manav Mitra Mandal
		Byculla - Sarvajanik Ganeshutsav mandal
		Chembur (East) - Near Ashish Talao / Ashish Theatre
		Chembur (West) - Sahyadri Krida Mandal Tilak Nagar
		Chinchpokali (E) - Lalbaug Raja Sarvajanik Ganeshutsav Mandal
		Chinchpokali (W) - Parsiwadi Mitra Mandal
		Dadar (East) - Khodadad Circle, Dadar TT
		Dadar(West) - Sai Ganesh Sadan, Senapati Bapat Marg, Sarvajanik Ganeshutsav Mandal, Sunder Nagar
		Elphinstone - Shiv Sai Sarvajanik Ganeshutsav Mandal, B.M. Marg
		Ghatkopar - Amar Mitra Mandal, Tilak nagar
		Girgaon Chowpati - Akhil Chowpati Bhirvi Lane, Sarvajanik Ganeshutsav Mandal
		Grant Road - Saltar Road Sarvjanik Ganeshutsav Mandal
		Juhu Chowpati - Om Kareshver Shiv Mandir (Trust)
		Kandivali (East) - Thakur Village
		Kandivali (W) - Balla Mitra Mandal
		Khar - Sarvajanik Ganeshutsav Mandal
		Mulund - Sargam Mitra Mandal
		Mumbai Central - Belasis Road, B.I.T. Chawl
		Parel - Sarvajanik Ganeshutsav Mandal Bal Gopal Mandal
		Santacruz (East) - Milan Subway, Neet & Geet Society
		Vikhroli - Balmitra Kala Mandal

		Wadala - G.B.S. Sarvajanic Ganeshutsav Mandal, Shree Ram Mandir
2.	Navi Mumbai	Airoli - Traffic Police Chouki (before Mulund Airoli Bridge)
		CBD Belapur - MGM Hospital Chowk, Near Police Chowki
		Kopar Khairane - Sector-10, D-Mart Main Road
		Uran - Ganpati Chowk
		Vashi - Shivaji Chowk Near Bus Depot
3.	Thane	Gokhale Road-Malhar Cinema
		Jambli Naka- Lake immersion Point
		Main Road- Gaondevi Mandir, Naupada
		Wagle Estate- Raila Devi Lake
		Court Naka
		Mental Hospital
		Bedekar Hospital
		Kalwa- Chatarpati Shivaji Maharaj Hospital
4.	Pune	Shivaji Nagar (Sakhar Sankul)
		Karve Road (Nul stop)
		Swar Gate (Tilak Road)
		Satara Road (Balaji Nagar)
		Shaniwar Peth (Shanivar Wada)
		Yerawada (Near Gunjan Theatre)
		Laxmi Road (Shagun Chowk)
		Kothrud (Near Shivaji Putala)
		Mahatma Phule Madai (Near Mandai)
		Sarus Baug (Mitra Mandal Chowk)
		Hadapsar (Nera Bhaji Mandai)
		Parvati

		Koregaon Park
		Khadaki (Near Bazar)
		M G Road (Babajan Chowk)
		University Road Chowk
		Aundh Parihar Chowk
		VishrantWadi
5.	Nashik	Nashik Road/ Ramkund on - 12.09.2019
		Panchvati/ Near Ashok Stambh on - 12.09.2019
		Civil Hospital / Near Gadge Maharaj Statue on - 12.09.2019
		Trimurty Chowk / River Bank of Waldevi on - 12.09.2019
		Satpur Bus Stand / CIDCO (Behind PF Off.) on - 12.09.2019
6.	Aurangabad	Gulmandi
		City Chowk
		Kranti Chowk
		CIDCO Residential
		Usmanpura
7.	Nagpur	Ramdaspath (KRIMS Hospital) / (Sonegaon lake on - 12.09.2019)
		Cotton Market (Jayshree Talkies)/ (Gandhisagar on - 12.09.2019)
		Golibar Chowk / (Futala lake on - 12.09.2019)
		Reshimbag (Saraswati Vidyalaya)/ (Sakkardara lake on - 12.09.2019)
		Gandhiputala (Taori TV Showroom) / (Naik lake on - 12.09.2019)
8.	Kalyan	Khadakpada Chowk
		Shivaji Chowk
		Ulhasnagar Station
9.	Amaravati	Bhudhwara

		Rajkamal Square
		Irvin Hospital Square
10.	Jalgaon	Subhash Chowk
		Shashtri Tower Chowk
		Shanipeth Police Station
11.	Kolhapur	Rajaram Puri (Near Rajaram Puri)
		Mahalaxmi Mandir
		Khas Baug Maidan (Near Khas Baug Maidan)
12.	Sangli	Miraj Market
		Vishram Baug Chowk
		Gandhi Putala (Ganpati Peth)
13.	Mira-Bhyander	Bhakti Vedant Hospital, Tenkar pada
		Golden police Chowki
		Shivaji Chak Kashi meera
14.	Vasai-Virar	Range office, Satwali, Vasai East
		Valiv phata, Vasai East
		N.B. Estate, Virar West
15.	Ulhasnagar	Gaol Maidan (Commercial & Residential)
		Doodh Naka, Ulhasnagr sector 5
		CHM college
16.	Bhiwandi-Nizampur	Dhamankar Naka
		Indira Gandhi Memorial Hospital
		Shelar Near Nadi naka
17.	Chnadrapur	Govt. Hospital
		Gandhi Square
		Jatpura Gate

18.	Nanded-Waghala	Ganesh Nagar, Municipal Corporation, Nanded
		Shivaji Nagar
		Shree Guru Govindsing Govt. Medical College & Hospital, Shivaji Putala, Nanded
19.	Ahmednagar	Kotala Chowk
		Chitale Road
		Old Bus Stand
20.	Dhule	Agrasen Chowk
		Fulwala Chowk
		Santoshi Mata Chowk
21.	Malegaon	Mosampur
		Satana Naka
		Malegaon Camp
22.	Pimpri-Chinchwad	Chaphekar Chowk, Chinchwad Gaon
		Shanti Nagar (Pimri)
		Bosari Gaonthan
23.	Parbhani	Shivaji Chowk
		Shivaji Maharaj Putala, (near S.P. Office)
		Raigad Corner, Jintur road
24.	Latur	Ganjgolai
		Kesharaj High school, Sham nagar, Amba Jogai Road
		Aadarsh Colony, Ausa Road
25.	Akola	Collector Office
		Civil line Chowk / Ratanlal plot
		City Kotawali Chowk near police station
26.	Solapur	Balives
		Ashok Chowk

		Hotgi and Vijapur road
		Saat Rastta Railway Station
27.	Panvel	Utsav Chowk, Kharghar
		Old Panvel, Panvel Corporation Building
		Khanda Colony, New Panvel

ANNEXURE II

**Annexure II - Noise Pollution (R & C) Rules, 2000
amendment dt. 21st April 2009**

ANNEXURE III

Annexure III - Noise Levels during Ganesh Festival for last 2 years in different cities of Maharashtra

ANNEXURE IV

Annexure IV - Hourly Noise Levels on 10th, 11th, 14th, 16th and 19th September 2021 during Ganesh Festival at different locations in Maharashtra

Glimse of the Event