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A HISTORICAL DOCUMENTATION OF PANDEMIC MANAGEMENT STRATEGIES IN THE 'AURANGABAD CITY MODEL' AND A CRITICAL ANALYSIS OF CITIZEN PERCEPTIONS.

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Abstract: This paper documents the experiences, planning processes, and management strategies adopted during the COVID-19 pandemic in Aurangabad (now Chhatrapati Sambhajinagar), while also analysing citizen perceptions through a structured survey. The COVID-19 pandemic posed unprecedented challenges to urban governance systems worldwide, unfolding as a historical marathon in which safeguarding human life became the paramount goal. In response, Aurangabad-one of Maharashtra's rapidly expanding urban centres-developed a distinctive administrative model characterised by efficiency, innovation, and adaptive governance. This study presents a chronological account of the city's pandemic-management trajectory between early 2020 and early 2022, examining institutional mechanisms, technological interventions, health-system readiness, and community-centred initiatives. A mixed-method approach was employed, integrating administrative and archival records with a citizen-satisfaction survey conducted across all 10 municipal zones. The survey assessed public perceptions of healthcare accessibility, transparency, emergency responsiveness, essential-services delivery, and overall governance performance. Descriptive statistical analysis indicates high administrative preparedness, sustained public trust, and effective crisis coordination across the study period. The research makes a substantive contribution to the fields of History and Urban Health Management by proposing an evidence-based ready reckoner model for strengthening future public-health preparedness and resilience in Indian cities.

Keywords: *Pandemic Management, Urban Governance, Citizen Satisfaction, Aurangabad City Model, Public Health, Emergency Response.*

I
Introduction

Aurangabad, a city known for its rich historical legacy, cultural heritage, and strategic economic importance, confronted an unprecedented public-health challenge with the onset of the COVID-

19 pandemic in early 2020 (Office of the Registrar General & Census Commissioner, 2011). The crisis tested the city's administrative preparedness, public-health infrastructure, and capacity to safeguard socio-economic stability. As a member of the Indian Administrative Service, I assumed charge as the Municipal Commissioner of the Aurangabad Municipal Corporation (AMC) on 9 December 2019 and later served as the AMC Administrator from 29 April 2020 to 31 July 2022- an administrative period that coincided with the most critical phases of the pandemic (Chhatrapati Sambhajinagar Municipal Corporation, 2024). Aurangabad reported its first COVID-19 case on 15 March 2020 in a 59-year-old woman with a travel history to Kazakhstan and Russia (Pandey, 2025). This event marked the beginning of a transformative phase for the city administration, which swiftly shifted to crisis-management mode. Essential actions included intensive surveillance, contact tracing, expansion of healthcare facilities, and the uninterrupted delivery of critical services such as water supply, sanitation, electricity, and food distribution core functions that became increasingly difficult under strict lockdown conditions (Ministry of Housing and Urban Affairs, 2020). Despite these constraints, the administration ensured continuity of essential services and prioritised citizen safety. Aurangabad often referred to as the "Tourism Capital of Maharashtra" is home to two UNESCO World Heritage Sites, Ajanta and Ellora Caves, along with several major historical monuments such as Daulatabad Fort, Himayat Bagh, Panchakki, and the iconic 52 gates that give the city its identity as the "City of Gates" (Aurangabad Smart city website, November 18, 2025). It is the largest urban centre in the Marathwada region and the fourth-most populous city in Maharashtra, with a population of 11, 75,116 according to the 2011 Census (Office of the Registrar General & Census Commissioner, 2011). Although the region has experienced epidemics in earlier centuries, the scale and complexity of COVID-19 demanded a multi-layered, technology-enabled governance approach that integrated digital surveillance, decentralised field operations, and rapid administrative coordination (Franch-Pardo et al., 2020). This study documents the measures adopted by the Aurangabad City Administration in a chronological manner and complements the administrative record with a structured citizen-satisfaction survey. Integrating public perceptions into the analysis helps minimise administrative subjectivity and provides a balanced, evidence-based assessment of the "Aurangabad City Model" of pandemic management (Pandey, 2025; Markel & Stern, 2012).

Objectives of the Study: The study was undertaken with the following key objectives:

1. To chronologically document the pandemic-management strategies implemented by the Aurangabad City Administration during the COVID-19 crisis.

2. To examine administrative preparedness, health-system strengthening, technological innovations, and community-based interventions, supplemented with empirical insights from the citizen-satisfaction survey.

3. To assess citizens' satisfaction with the planning and management efforts of the city administration, based on structured quantitative and qualitative responses.

4. To identify the strengths, innovations, and lessons of the "Aurangabad City Model" that may serve as reference points for future public-health and crisis-management frameworks.

Methodology and Research Design: This study adopts a descriptive research design to systematically document and analyse Aurangabad's pandemic-management strategies. The research integrates multiple data sources, including administrative records, official documents, government notifications, press releases, video material, and chronological reports generated during the pandemic. To incorporate public perspectives and minimise administrative subjectivity, a structured field survey was conducted among 300 respondents selected through random sampling across all 10 zones of the city. This combined approach strengthens the validity of the findings by situating administrative actions within the lived experiences of citizens.

Tools Used: A structured questionnaire served as the primary data-collection tool. It included: Five-point Likert-scale items to quantify citizen satisfaction across governance parameters such as administrative preparedness, healthcare services, essential services, communication, and crisis responsiveness. Likert-based measurement is widely used in public-health perception studies (Honavar, 2020).

Chronology of Covid-19 Management in Aurangabad: Aurangabad's management of the COVID-19 pandemic unfolded as a historically significant sequence of administrative, technological, and community-driven interventions between March 2020 and early 2022. The narrative began in March 2020, when the Aurangabad Municipal Corporation (AMC), even before the nationwide lockdown, had already closed public spaces and initiated thermal screening at major transport points. The city reported its first COVID-19 case on 15 March 2020, detected in a 59-year-old woman returning from Kazakhstan and Russia. Although no additional cases emerged for several weeks, the administration strengthened surveillance, appointed Nodal and Health Officers, established a 60-bed isolation facility, expanded mechanised sanitisation, and adopted an early trace–test–isolate strategy. During the nationwide migrant crisis, AMC also provided shelter homes and deployed Smart City buses to safely transport stranded migrants, reflecting an early commitment to inclusive governance. (Health Dept. AMC, RTI Responses, 2024)

In April 2020, Aurangabad had shifted into a high-intensity response phase. A massive door-to-door screening exercise was mobilised through 490 teachers, 90 *anganwadi* workers, and paramedical staff, who together formed 77 survey teams operating in containment zones (AMC, Minutes of Meeting, 31 March 2020, RTI Response, p. 231). To maintain physical distancing, 150 open spaces were reserved for vegetable markets and 21 for fruit markets. On 22 April, AMC Order no. 114, the city formed its COVID-19 Task Force comprising administrative officials, cyber-cell experts, Smart City professionals, and retired defence personnel. This body pioneered data-driven strategies such as mobile-tower-based contact tracing, aligning the city with global practices in digital epidemiology. (Officer order of AMC, 144)

In a *Times of India* article dated 4 May 2020 titled *"Lockdown violators primary carriers of Covid-19, reveals cell tower location analysis,"* it was reported that the Aurangabad Municipal Corporation's special task force, comprising cybercrime police personnel, had begun extracting Cell Phone tower locations of each COVID-19 patient and analysing the places they had travelled during the 15 to 20 days preceding their positive test. The analysis of tower-location data from

those who had tested positive revealed that the primary carriers of the infection had been individuals who had repeatedly violated lockdown orders. It further indicated that, in several cases, the primary COVID-19 patients-many of whom were later identified as silent carriers -had shared common links, particularly in relation to the locations they had visited. The Smart City project's then deputy CEO, Pushkal Shivam, who was also part of the task force, stated that scanning the tower-location details of COVID-19 patients had helped authorities identify the places they had visited in the previous 15 to 20 days, and that this data had been used to trace possible contacts who might have been exposed to the infection.

By late April, Aurangabad had conducted 2,000 tests per 10 lakh population, ranking second in India after Mumbai. In May 2020, testing surged further to 5,128 per 10 lakh population, placing the city among the nation's top three urban testing zones. A Central COVID War Room emerged as the city's real-time monitoring command centre, while public-awareness campaigns like "My Ward, Corona-Free Ward" from dated 11/05/2020- 24/05/2020 (Health Department, AMC, RTI Responses, p. 100) and "Anti-Corona Police" gained traction.

On 22 May 2020, AMC launched Maharashtra's first pandemic-focused digital tool, the MHMH app, offering features such as live bed availability, self-health reporting, plasma donor information, and downloadable test reports. Its later adoption by Nagpur validated its scalability, and its technological approach mirrored global digital-surveillance models. June 2020 brought further refinement to Aurangabad's digital-health ecosystem. Senior-citizen survey data were integrated into the MHMH app, registering 12,400 elderly individuals for targeted monitoring. Nearly 1,000 Mobile Fever Clinics -India's first such large-scale initiative were deployed to ensure decentralised medical access. Preparations for vaccination infrastructure commenced alongside the establishment of the 250-bed Meltron COVID Hospital. These developments aligned with international standards of emergency documentation and public-health digital archiving. (Health Dept. AMC, RTI, Responses2024, p.p. 20-23)

By July 2020, surveillance was further tightened through 24×7 check posts at major 6 entry points and daily testing of industrial commuters. A distinctive local strategy evolved, combining the health-monitoring app, mobile fever clinics, trade-specific testing systems, bus-ambulances, a continuous-operation war room, and a specialised tracing task force. These innovations paralleled global outbreak-control models (RTI, p.p. 2-4; 15). With 86,518 tests conducted per million population, Aurangabad city had been performing the highest number of tests per million in Maharashtra. In August, the Maharashtra Government recognized the "Aurangabad Model," recommending it to other cities during the national unlocking phase, which coincided with vaccine trials for COVAXIN and COVISHIELD.

As the year progressed into September 2020, AMC introduced technology-enabled monitoring for infected police personnel through dedicated WhatsApp surveillance groups and tele-ICU services that significantly strengthened critical-care supervision. By October and November, the city operated 16 testing centres, five functional round-the-clock, and cautiously reopened weekly markets, libraries, and other services under strict protocols. With a recovery rate crossing 91%,

Smart City buses resumed service after seven months, indicating a controlled restoration of public mobility.

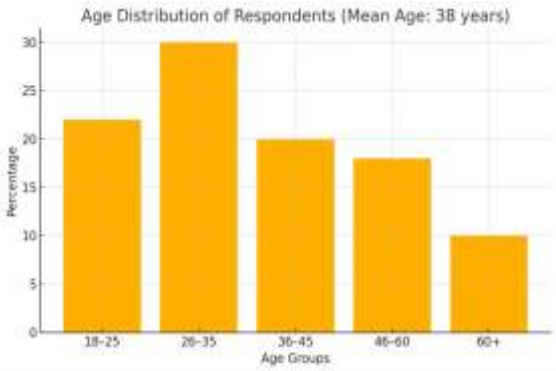
The vaccination era opened in early 2021. After India approved two indigenous vaccines, AMC conducted a dry run on 8 January 2021 and established 115 vaccination centres one in each electoral ward marking an unprecedented achievement in Maharashtra. However, rising cases in February due to public gatherings required intensified surveillance. In March, the administration launched the "My Ward, 100% Vaccinated Ward" campaign and began preparing for the anticipated second wave. Oxygen-supported beds were expanded, oxygen plants were established, and advance stocks of Remdesivir, PPE kits, and masks were secured under a 10% buffer-stock principle. The MHMH app was upgraded to display live bed availability, reducing panic and preventing unnecessary hospital rush. (Times of India, August 9, 2020)

The second wave of April–May 2021 posed immense pressure, prompting AMC to procure one lakh antigen kits, enabling 10,000 daily tests, and to restrict public movement only to vaccinated individuals after 30 April. Automatic oxygen-management systems were installed, and 26 containment zones along with eight high-risk clusters were rigorously monitored. These actions aligned with national digital-surveillance guidelines.

September 2021 marked another technological milestone with the introduction of India's first QR-coded RT-PCR test-report system integrated into the MHMH app, accessed by more than five lakh citizens. As the Omicron variant emerged toward the end of the year, AMC drafted plan, reactivated door-to-door vaccination, and began immunisation for children aged 15–18 on 4 January 2022, achieving 1,068 vaccinations on the first day. Oxygen storage capacity expanded to 35.96 MT within the city and 215.68 MT district-wide, while paediatric bed strength increased to 1,103. This period marked the culmination of Aurangabad's multi-layered, technologically integrated, and historically notable pandemic-management journey.

Survey Analysis: In this section, the analysis of the responses received from citizens is presented. Using structured questionnaires, data were collected and examined through descriptive statistical methods. This approach enabled a systematic interpretation of patterns, trends, and variations in the responses, providing deeper insight into overall public perceptions and experiences.

Demographic Profile of Respondents: The demographic characteristics help understand public evaluations of the "Aurangabad City Model," as socio-demographic variables often influence perception in studies.



Graph-1 : Age Distribution

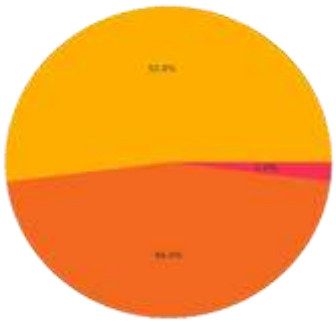
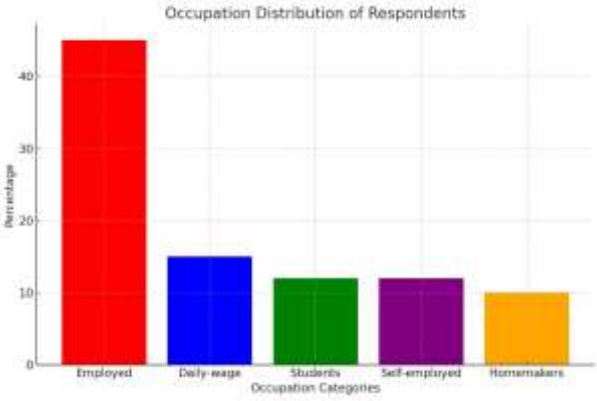


Chart-1 Gender



Age Distribution : The average age of respondents was 38 years,

Gender Distribution : Male: 52%, Female: 46% & Other: 2%

Occupation Profile : Employed: 45%, Daily-wage workers: 15%, Students: 12% Self-employed: 12%, Homemakers: 10%

This diverse occupational profile provides balanced insights across socio-economic groups, a valuable feature in public perception studies (British Online Archives, n.d.).

Administrative Preparedness: Administrative preparedness emerged as one of the strongest-performing governance dimensions, indicating the readiness of government institutions to respond effectively to crises. It reflects efficient planning, coordination, resource allocation, and timely decision-making by administrative authorities. Strong administrative preparedness helps ensure better management of public services and emergency situations.

Table 1: Administrative Preparedness Indicators

Indicator	Mean Score	Interpretation
Timeliness of Responses	4.0	Strong early Action
Containment effectiveness	3.6	Moderate success
Transparency/communication	3.9	High trust
Coordination	4.0	Cross-department synergy

Overall Mean Score= (4.0+3.6+3.9+4.0)/4 =**3.88**

Variance

Score	Deviation	Squared Deviation
4.0	+0.125	0.0156
3.6	−0.275	0.0756
3.9	+0.025	0.0006
4.0	+0.125	0.0156

Variance = 0.0268

Standard Deviation:

$$SD = \sqrt{0.02685} = 0.1638 \approx 0.16$$

Standard Deviation = 0.16

Interpretations

- The overall score of 3.88 reflects high administrative preparedness.
- The very low variance (0.0268) and low SD (0.16) indicate highly consistent responses.
- Citizens recognised timely action, good communication, and strong inter-departmental coordination.

Healthcare & Emergency Services

Indicator	Mean Score
Availability of hospitals/testing	3.8
Availability of medical staff	3.7
Ambulance response	4.1
Vaccination accessibility	4.2

Overall Mean- (3.8+3.7+4.1+4.2)/ 4 = 15.5/4= **3.95**

Variance

Score	Deviation	Squared Deviation
3.8	−0.15	0.0225
3.7	−0.25	0.0625
4.1	+0.15	0.0225
4.2	+0.25	0.0625

Variance = 0.17/4 = 0.0425

Standard Deviation

$$SD = \sqrt{0.0425}$$

Standard Deviation = **0.21**

Interpretation

- Mean score of 3.95 indicates high satisfaction with healthcare and emergency services.
- Low variance and SD show respondents agreed widely.
- Strengths included timely ambulance services and easy vaccination access.

5.3 Essential Services & Public Support

Indicator	Mean Score	Interpretation
Distribution of essentials	3.8	Adequate overall
Support to weaker section	3.5	Shortages during peak
Essential Services (Water Supply, Electricity, Was Managements)	4.1	Highly effective
Helplines	4.2	Best-rated dimension

Overall Mean= Mean= (3.8+3.5+4.1+4.2) /4 **= 3.9**

Variance

Score	Deviation	Squared Deviation
3.8	−0.1	0.01
3.5	−0.4	0.16
4.1	+0.2	0.04
4.2	+0.3	0.09

$$SD = \sqrt{0.075} = 0.274 \approx 0.27$$

Variance = 0.075

Interpretation

- A standard deviation of 0.27 indicates low variability, showing that respondents maintain generally consistent views. Essential services received high satisfaction levels, especially water supply, waste management, and helpline services.
- Slight variation reflects mixed experiences regarding support for weaker sections during peak waves

Discussion of Findings

The survey highlights several strengths of the Aurangabad City Model, including:

> Highly coordinated administrative response. Effective health-system expansion, including oxygen beds and mobile fever clinics. Innovative digital Health Management through the MHMH app. Strong communication via digital platforms. Proactive testing and surveillance across high-risk groups. Effective essential-services management even during peak lockdowns. The low variance across all domains indicates strong public consensus appreciating the city's crisis-management approach

The findings of this study reveal that the Aurangabad City Model was characterized by proactive decision-making, technological integration, decentralised execution, and strong administrative coordination. Citizen responses overwhelmingly indicate satisfaction with the city's management of the pandemic across key domains such as administrative preparedness, healthcare delivery, essential services, and communication.

A defining strength of Aurangabad's approach was the establishment of a Special Task Force and a 24×7 Central War Room, which ensured rapid decision-making, real-time information flow, and coordinated action among departments. The deployment of Mobile Fever Clinics, complemented by repurposed Smart City buses functioning as ambulances, expanded healthcare accessibility, especially in containment and high-risk areas. These mobile units reduced delays, enhanced early diagnosis, and helped break transmission chains.

Innovation in digital governance stood out as a critical pillar. The MHMH (My Health in My Hand) App provided real-time updates on bed availability, test results, plasma donors, vaccination centres, and self-assessment tools. Its QR-coded RT-PCR reporting system- first of its kind in India - ensured transparency, reduced misinformation, and improved citizen trust in the health system. The system's integration with AMC's surveillance and testing infrastructure contributed significantly to efficient monitoring and resource allocation.

The administration also managed to sustain essential civic services, including uninterrupted water supply, sanitation, electricity, and waste management, despite operational challenges. The survey results confirm that these services received some of the highest satisfaction scores, reflecting the robustness of the city's core service-delivery systems during crisis conditions.

Another notable component was the city's comprehensive testing strategy, which included targeted testing of occupational groups such as vendors, delivery personnel, industrial workers, and service-sector staff- categories identified as potential super spreaders. This approach helped in early detection and containment of micro-clusters. Additionally, the establishment of oxygen plants, buffer stock of medicines, and expansion of oxygen-supported beds proved indispensable during the second wave, when shortages were experienced nationwide.

Community engagement emerged as a critical enabler. Campaigns such as "My Ward, 100% Vaccinated Ward" successfully mobilised local leaders and volunteers, countered misinformation,

and accelerated vaccine uptake. The administration's frequent communication through Facebook, WhatsApp, and other digital platforms fostered a transparent and participatory governance environment.

Overall, the discussion highlights that the Aurangabad City Model combined technology, decentralised field action, and strong administrative leadership to manage the crisis effectively. Lessons from this approach offer valuable guidance for other cities seeking resilient and adaptive models for managing future public-health emergencies.

Conclusion

The COVID-19 pandemic posed an unprecedented challenge to urban governance, demanding rapid adaptation, coordinated planning, and innovative public-health management. The Aurangabad City Model, as documented in this study, demonstrates how a medium-sized Indian city successfully mobilised administrative, technological, and community resources to confront a complex and evolving crisis. Through chronological documentation and systematic citizen-satisfaction analysis, the study highlights the city administration's strengths in early preparedness, transparent communication, data-driven decision-making, and sustained essential-service delivery.

Survey findings reveal consistently high levels of public satisfaction across most governance parameters, validating the effectiveness of mobile fever clinics, digital monitoring through the MHMH app, decentralised vaccination centres, and targeted testing strategies. The low variance in responses indicates broad consensus and trust in the administration's actions. Challenges such as temporary shortages during peak waves were acknowledged, yet they did not undermine the overall perception of an efficient and responsive administrative system. The insights generated from Aurangabad's experience provide valuable lessons for pandemic preparedness, particularly for cities with similar demographic and infrastructural profiles. The model emphasises the importance of technological innovation, inter-departmental synergy, and community engagement in crisis situations. As India and the world prepare for future public-health emergencies, the Aurangabad City Model offers a replicable and evidence-based framework for resilient, inclusive, and effective urban governance.

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