

THE COVID-19 PANDEMIC: A COMPREHENSIVE REVIEW OF THE GLOBAL AND MAHARASHTRA CRISIS

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<https://doi.org/10.5281/zenodo.17492586>

Abstract

The COVID-19 pandemic, caused by the virus SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2), represents the most significant global public health crisis since the 1918 influenza pandemic. Studies suggest that the virus was initially transmitted from bats to humans, resulting in a rapid and unpredictable world-wide spread. First identified in Wuhan, China, in December 2019, the virus affected approximately 500 to 700 million people globally to date, with ongoing cases. The pandemic has caused considerable physiological and psychological challenges. This review, drawing on contemporary scientific and epidemiological data, provides a scholarly perspective on the lessons learned from the COVID-19 pandemic. It highlights the constant mutation of the virus and discusses vaccine developments, emphasizing the necessity for effective pandemic prevention and management strategies in the future.

Introduction

The COVID-19 pandemic began with a series of atypical acute respiratory events occurring in late December 2019 in Wuhan, China[1,14]. It was rapidly established that a novel coronavirus was responsible for these events[1]. The virus was named Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), which led to acute respiratory distress syndrome (ARDS)[12]. The infection quickly spread globally, developing into a full-blown pandemic within months and affecting over 150 countries and territories[8]. In January 2020, the World Health Organization (WHO) declared COVID-19 a public health emergency of international concern and officially designated it a global pandemic on January 30, 2020[1]. The first case in India was reported on January 27, 2020, in the state of Kerala[2]. Case identification worldwide was primarily conducted using Reverse Transcription Polymerase Chain Reaction (RT-qPCR) and Rapid Antigen Tests (RAT)[1,13]. The pandemic has irreversibly reshaped global healthcare systems, economies, and societies[1]. According to WHO reports, despite variations in surveillance and testing policies, the virus continues to circulate worldwide[1].

Methods and Methodological Approaches

Study Design

This study follows a descriptive and analytical review approach to examine the progression and impact of the COVID-19 pandemic in Maharashtra, India. It combines quantitative data—such as confirmed cases, deaths, and recoveries—with qualitative insights on government actions, community behavior, and healthcare challenges to provide a clear and balanced

Information was gathered from reliable national and international agencies, official reports, and scholarly literature. Key sources included:

- World Health Organization (WHO) reports and dashboards
- Ministry of Health and Family Welfare (MoHFW), Government of India
- Public Health Department, Government of Maharashtra
- Indian Council of Medical Research (ICMR) publications
- Worldometer and MyGov.in for statistical updates
- Newspaper archives (The Times of India, Hindustan Times, Indian Express, Lokmat, Sakal) for regional data
- Academic books and articles on pandemic

Study Period

The study covers the period from January 2020 to October 2025, encompassing the outbreak, peak waves, and recovery phase of the pandemic globally and Maharashtra.

Data Collection Methods

Quantitative data: were drawn from WHO, MoHFW, and ICMR databases, along with state bulletins detailing district-wise case counts and demographic patterns.

Qualitative data: came from government circulars, media reports, and academic reviews describing state responses, social effects, and healthcare measures during the pandemic.

Geographical Distribution

In late December 2019, several patients with severe cold and pneumonia of unknown etiology were admitted to hospitals in Wuhan, China. On January 2,

2020, WHO reported 44 patients diagnosed with an unknown virus, with 10 patients severely ill. On March 11, 2020, WHO declared SARS-CoV-2 a pandemic as cases were confirmed in over 115 countries. By the end of March 2020, COVID-19 had spread to more than 160 countries.

By August 2020, the Americas held the highest global burden of COVID-19, accounting for nearly half of all new cases reported in the final week of August. During this period, America reported over 100,000 cases daily, which later declined to approximately 40,000 cases per day by July 2020. The Americas remained the most affected WHO region, with the United States, Argentina, and Colombia reporting the highest numbers of new cases by late September 2020.

In India, the spread of COVID-19 showed a notable geographic clustering. The southern states, including Kerala, Maharashtra, Tamil Nadu and Telangana, reported higher case numbers compared to northern re-

gions. This clustering correlated with population density, travel patterns, and economic activity. Kerala and Maharashtra consistently recorded high case numbers for several months. As of January 17, 2021, COVID-19 had affected over 93 million people globally, with 60 countries reporting either imported cases or community transmission of the VOC 202012/01 variant. Currently, according to Worldometer, more than 704 million cases have been reported worldwide, with over 7 million deaths.

COVID-19 Cases Trend (2020 - 2025)

This chart shows the COVID-19 trend from 2020 to 2025 for selected countries. The peaks represent major waves of infections, with the United States and France showing the highest spikes, particularly around late 2021 to early 2022. After 2023, case numbers in all countries declined significantly, indicating better control measures and widespread vaccination

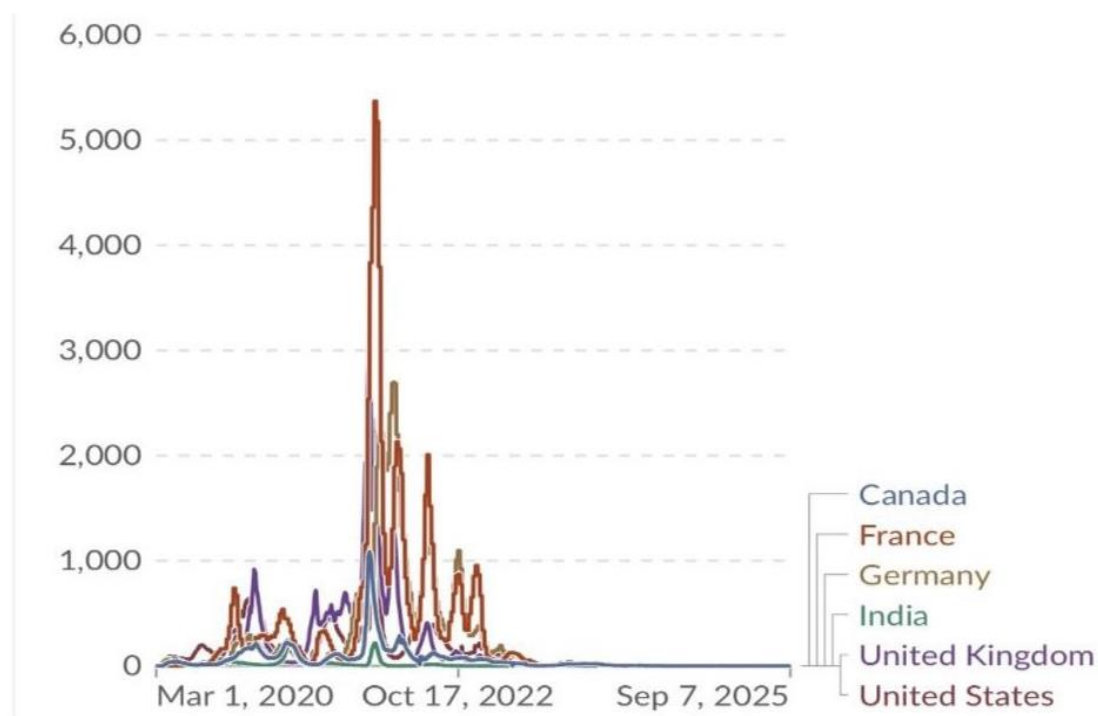


Figure 1. COVID-19 Cases Trend (2020 - 2025)

Summary by Country:

United States: Highest infection peaks, around 2021- 2022

France: Noticeable surges similar to the US but slightly lower.

Germany: Multiple smaller waves observed.

India: Significant spike during mid-2021 (Delta variant).

United Kingdom: Sharp but short-lived waves.

Canada: Lowest infection rates among listed countries.

After mid-2023, all countries experienced a sharp decline in reported cases.

Top 10 Most Affected Countries Globally

Country	Total Cases	Total Deaths	Total Recovered
World	704,753,890	7,010,681	675,619,811
USA	111,820,082	1,219,487	109,814,428
India	45,035,393	533,570	N/A
France	40,138,560	167,642	39,970,918
Germany	38,828,995	183,027	38,240,600
Brazil	38,743,918	711,380	36,249,161
S. Korea	34,571,873	35,934	34,535,939
Japan	33,803,572	74,694	N/A
Italy	26,723,249	196,487	26,361,218
UK	24,910,387	232,112	24,678,275
Russia	24,124,215	402,756	23,545,818

Figure 2. Most Affected Countries Globally

Maharashtra: India's Worst-Affected State

Maharashtra was the most affected state in India, recording the highest number of positive cases. The first confirmed case in Maharashtra was reported on March 9, 2020, in Pune—a couple returning from Dubai tested positive and were admitted to Naidu Hospital, Pune. Within six days of this first case, the total number of cases reached 32, reported in various cities including Nagpur, Ahmednagar, Pune, and Sambhajnagar. By the end of March, the case count in Maharashtra rose to 153.

In response to the escalating cases, the Government of India declared COVID-19 a pandemic on March 13, 2020, and imposed lockdowns in several cities, closing all commercial and educational establishments and banning public gatherings. By 20 March, workplaces were closed, and “work from home” became a new norm. On March 22, Section 144 was imposed, and a nationwide lockdown was declared. Despite these measures, cases continued to rise exponentially, with 5,000 confirmed cases and a fatality rate of 1.5% by April 2020. India experienced one of its largest single-day spikes of 68,631 cases on April 18, 2021. By June 2020, India had overtaken China in the number of confirmed cases.

Within Maharashtra, Mumbai and Pune emerged as major hotspots. The state's government undertook continuous efforts to control the spread of COVID-19, but the pandemic remained a significant challenge. A particular concern was the Dharavi slum in Mumbai, Asia's largest slum, with a population of about one million within an area of approximately 2.39 square kilometers. Controlling the spread in such a densely populated area was challenging. In May 2020, there was a surge in cases in Dharavi. The state government implemented the “Dharavi Model,” which encouraged voluntary testing by the residents, free of cost, to identify and isolate asymptomatic carriers. By mid-June, Dharavi reported a zero-case day for the first time, marking a significant success, and this model was subsequently applied to other parts of the state.

Maharashtra accounted for approximately 22.35% of India's total COVID-19 cases and about 30.55% of all deaths. Pune and Mumbai were the most affected districts.

From January 2020 to October 2025, Maharashtra reported approximately 8,173,792 cases, with around 148,571 deaths and about 8,024,339 recoveries.

COVID-19 District-wise Summary: Maharashtra

District	Confirmed Cases	Deaths	Recovered
Pune	10,99,851	18,679	10,66,447
Mumbai	7,38,239	15,968	7,15,650
Thane	5,92,025	11,092	5,74,998
Nagpur	4,93,063	9,137	4,83,591
Nashik	4,03,658	8,561	3,94,257
Ahmednagar	2,94,758	6,304	2,83,222
Satara	2,26,151	5,471	2,14,414
Kolhapur	1,99,490	5,647	1,89,411
Solapur	1,94,066	4,986	1,83,777
Sangli	1,92,215	5,217	1,80,025

Figure 3.District-wise Summary

Summary:

Pune recorded the highest number of confirmed cases (10.9 lakh) and deaths (18,679), but also achieved a high recovery count of over 10.6 lakh.

Mumbai followed with 7.38 lakh cases and 15,968 deaths.

Thane and Nagpur reported around 5-6 lakh total cases with strong recovery rates.

Districts like Sangli, Solapur, and Kolhapur had lower case counts but consistent recovery outcomes.

Overall, the recovery rate across Maharashtra remained above 95%, indicating effective management of the pandemic at the district level.

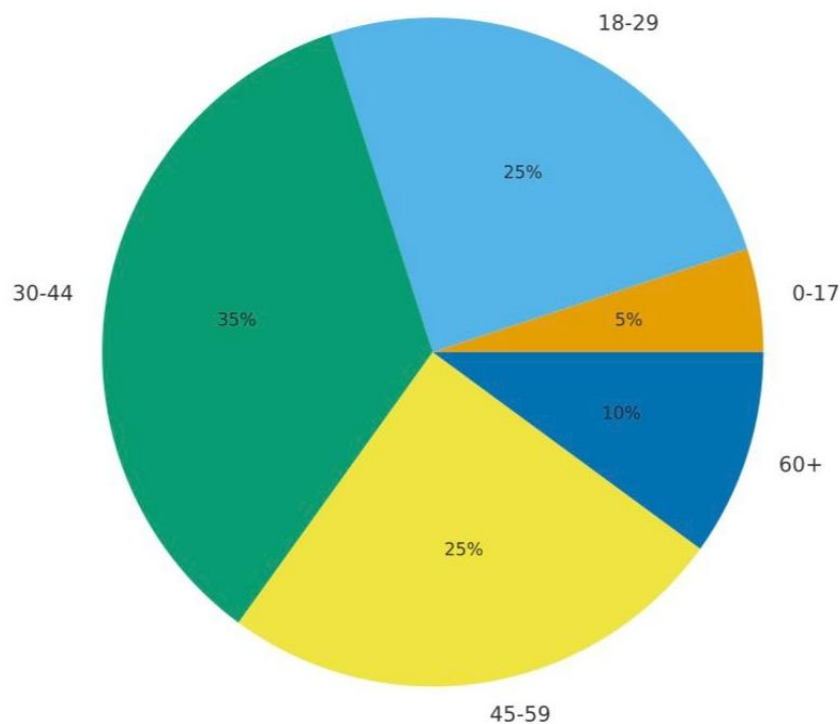
Age distribution of Covid 19 cases -Maharashtra

Figure 4.Age distribution of Covid 19 cases -Maharashtra

Summary

The data reveals that the 30–44 age group was the most affected, accounting for 35% of all cases — representing more than a third of the total. Combined, the working-age adult population (18–59 years) made up the vast majority of infections at 85%. In contrast, younger individuals (0–17 years) and older adults (60+ years) represented smaller proportions, at 5% and 10% respectively. This distribution highlights that the pandemic disproportionately impacted the middle-aged and adult population

Steps Taken by the Maharashtra Government to Fight against COVID-19

Before the lockdown was announced, the Maharashtra state government took several important steps to prepare for and limit the spread of COVID-19 as cases started to rise.

Health Actions

On March 14, the government introduced specific COVID-19 regulations. These required hospitals to screen patients for the virus and advised people who had traveled to affected areas to stay in home quarantine. They also set rules for areas where the virus was spreading rapidly to control the situation.

Restrictions on Movement

By March 15, when the number of cases jumped to 31, the government ordered places like cinemas, gyms, swimming pools, theatres, and museums to close until the end of March. The next day, all schools, colleges, and hostels were shut down, with teachers instructed to work from home. All exams were postponed until March 31.

Administrative approach

On March 13, a special committee was formed to monitor the situation daily and to make sure the state followed advice from health experts like the World Health Organization. After the first COVID-19 death in the state on March 17, the government limited meetings in offices and instructed safety measures for those meetings.

Due to rising cases in cities like Mumbai, Pune, and Nagpur, government offices reduced employee attendance to just 25% on March 20, and by March 23, this was cut further to 5%.

Lockdown and Further Restrictions

To stop the virus from spreading even more, the state government imposed a full lockdown starting March 23 until March 31. This included closing state borders, stopping public transport, and banning gatherings of more than five people. Essential services like food supply were allowed to continue.

Soon after, the central government enforced a nationwide lockdown from March 25, which was initially until April 14 but later extended to May 3. Before this extension, Maharashtra extended its state lockdown until April 30. In mid-April, guidelines were released to gradually allow some activities in areas less affected by the virus, like farming, construction, and certain industries, with safety rules in place.

Support for People

The government also focused on helping people during the lockdown. On March 30, schools were told

not to collect fees while closed. Assistance was arranged to provide food to vulnerable groups like tribal women and children. Employers were instructed to pay full salaries to their staff despite the shutdowns.

On April 7, the government decided to supply subsidized wheat and rice to those above the poverty line and offer meals at very low prices through Shiv Bhojan centers for three months. Later, on April 17, landlords were asked to postpone collecting rent for three months, and evictions for non-payment during this period were banned.

These early actions by Maharashtra aimed to slow down the spread of COVID-19 while trying to ease the challenges faced by residents during the lockdown.

IMPACT OF COVID 19 ON MAHARASHTRA

The human toll of COVID-19 in Maharashtra was profound, leaving a scar on the state's collective well-being. It wasn't just a news headline it was a period where the very measure of a human life our life expectancy took a step back, dropping by nearly a year. Behind this statistic are countless families who lost loved ones, with the virus claiming a significant portion of all lives lost in the state during that first year.

The tragedy extended beyond the final number of deaths. The pandemic stole years of potential, cutting lives short and resulting in over a million collective years of life lost. The overall burden of disease and premature death weighed heavily on the population, a silent measure of the pandemic's true cost.

Maharashtra found itself at the epicenter of the storm, witnessing infection and death rates that outpaced most of the country. Our hospitals became the front line in a battle that often felt overwhelming. The images of overwhelmed ICUs, the desperate scramble for oxygen, and the stretched limits of testing are etched into our memory, a stark reminder of a healthcare system pushed to its breaking point.

The economic shockwaves were just as devastating. The state's economy, the engine of much of India's growth, contracted sharply. The vibrant industrial and service sectors, usually bustling with activity, fell silent and shrank dramatically. While the agricultural heartland showed remarkable resilience, thanks to generous rains, the urban economic landscape was battered.

The lockdowns emptied our streets, shuttering the small shops, hotels, and trade that form the backbone of our local economies. Thousands of these small enterprises vanished. But the deepest suffering was felt by the invisible workforce the daily wage laborers, the street vendors, the helpers who saw their livelihoods evaporate overnight, leaving many to struggle for basic necessities without a safety net.

The government poured billions into fighting the virus, procuring essential equipment and supplies. Yet, the cost of pressing pause on public life was astronomical, with a single lockdown phase estimated to have wiped out tens of thousands of crores from the economy.

Perhaps the most haunting images of the pandemic were social. The sight of thousands of migrant workers, stranded and desperate, walking hundreds of miles to reach their home villages, exposed a deep vulnerability.

The state eventually facilitated the return of over a million people, but the exodus revealed the fragile existence of a vast population living on the margins.

The crisis didn't create inequality; it magnified it. Access to testing and healthcare became a tale of two realities, divided between urban and rural, between the haves and the have-nots. As the health system focused entirely on COVID, other essential care routine immunizations, maternal health checks, and management of chronic diseases was disrupted.

The classroom moved online, but this shift only widened the chasm between students with resources and those without, deepening the digital divide. And beneath it all, in the silence of isolation and the anxiety of uncertainty, a silent mental health crisis took root, leaving an invisible scar that would long outlast the virus itself.

Conclusion

It's difficult to overstate just how much COVID-19 changed our world. The pandemic was more than a health crisis; it was a profound human tragedy that upended lives on a global scale. It didn't just strain our hospitals; it shook the very foundations of how we work, eat, and connect with each other, pushing millions into poverty and hunger and reminding us of the delicate balance that holds our societies together.

The economic shockwaves were immediate and brutal. From farms to airlines, construction sites to tourist hotspots, the gears of the global economy ground to a halt. Powerhouse nations like the US, Germany, and China saw their economies shrink—a rare and sobering event. The recovery has been a slow, uphill climb.

The crisis also revealed the hidden frailties in our systems. A single disruption showed how easily our food supply chains and job markets could fracture, with the hardest blow falling on those with the least security—the daily wage laborers, the informal workers, and the poor who were left without a safety net. The clear lesson for the future is that we can't afford to be caught off-guard again; the world must invest in being prepared to prevent such devastating human and economic costs down the line.

Here in India, Maharashtra found itself on the front lines of this global war. The state was hit harder than almost any other, with the first case detected in early March 2020. As the virus spread, the numbers became staggering—at its peak, Maharashtra was bearing over a fifth of the nation's cases and nearly a third of its

heart-wrenching losses. Cities like Mumbai and Pune became household names for all the wrong reasons, synonymous with the fight against the virus.

We lived through those terrifying days of record-breaking case counts, watching the news with a knot in our stomachs. While the intense crisis eventually subsided, the threat never fully disappeared, with new waves and variants causing periodic concern. The state's response was a massive undertaking, a race to ramp up testing, set up containment zones, and bolster a healthcare system pushed to its absolute limit. It was a battle fought street by street, hospital by hospital, and one that has left a lasting mark everyone who called maharashtra home during those difficult years.

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