

Threat and Hazard Identification and Risk Assessment (THIRA) for the Ministry of Health and Family Welfare, Mumbai, Maharashtra

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Natural	Technological	Human-caused
Resulting from acts of nature	Involves accidents or the failures of systems and structures	Caused by the intentional actions of an adversary
<ul style="list-style-type: none"> • Highly Infectious Diseases: The first case of COVID-19 was declared in India in late January of 2020, and the first case in Maharashtra was reported in March of 2020. The pandemic continued to rampage throughout the country, leading to an official three-month quarantine, as well as wide-spread panic, PPE insufficiency, healthcare worker shortage. The COVID-19 pandemic has led to, since the onset of the pandemic, roughly 44 million deaths.¹ Additionally, Rotavirus causing diarrheal diseases has led to an increase in under-five and child mortality. • Air Pollution: One of the leading causes of death in Maharashtra is COPD and ischemic heart disease. Maharashtra has high levels of particulate matter 10 (PM₁₀) which is created from power plants, open burning, the commercial food sector, etc. and then serves to be a pollutant for humans. The air pollution then leads to chronic illnesses in residents and further drives health-related economic costs.² 	<ul style="list-style-type: none"> • Traffic-Accidents: Road Accident Injuries are a leading cause of death worldwide but are at a critical limit within Maharashtra. Road-accident injuries in Maharashtra have been shown to have been caused by impairment of the driver by alcohol, vehicle malfunction, or speeding. Road-accidents lead to high morbidity and mortality as well as high health-related costs.⁴ Additionally, a leading cause of death in Maharashtra is rail-road accidents, in 2021 an estimated 16,000 people died.³ • Collapse of a structure: A leading cause of death in Maharashtra is from collapse of structures. In 2021, the collapse of a structure allotted for an estimated 1500 deaths.³ 	<ul style="list-style-type: none"> • Mental Health: A leading cause of death in young adults (15-39 years old) is suicide. Coinciding with the COVID-19 pandemic, increased rates of uncertainty, stress, depression, and isolation have further decreased the mental health of young adults.⁵ Furthermore, mental health is highly stigmatized in India leading to few channels and resources to address mental health, increasing the risk of worsening conditions.⁵ • Substance Abuse: Substance abuse correlates with mental health, as decreased mental health is associated with increased substance abuse.⁵ The increased occurrence of drinking alcohol and smoking leads to numerous chronic diseases such as hypertension, renal failure, stroke, myocardial infarction, etc. Additionally, utilizing substances whilst driving can increase risk of road-accident injuries or mortality. • Water Pollution: As a result of rapid urbanization creating a poor disposal system on land, the majority of water pollution in Maharashtra is man-made. Water pollution also originates from industrial, agricultural, and domestic wastes, for example fertilizer usage. Water pollution can then lead to diarrheal diseases, primarily in neonates and

children, further increased under-five mortality.⁶

- **Heat-related Mortality:** Increased temperature leads to heat stroke, and an estimated 1071 deaths in 2010, but decreased to a total of 374 in 2021.³
- **Lightning:** In 2021, 40.4% of deaths were attributable to lightning. A majority of these deaths were amongst those 60 years and older.³
- **Accidental Fires:** In 2021 a total of 8,491 of fire accidents were reported, these resulted in over 8,000 deaths and roughly 450 injured persons.³

References

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