



## Disaster Management and Stampedes

**For Prelims:** [National Disaster Management Authority](#), [Disaster Management Act, 2005](#), [Radio Frequency Identification \(RFID\)](#)

**For Mains:** Disaster Management, Strategy to address Stampede Management challenges.

**Source:** [TH](#)

### Why in News?

Recently, India witnessed another tragic **stampede that claimed over 100 lives in Uttar Pradesh's Hathras district.**

- This **devastating incident adds to a long list of similar tragedies** that have occurred during religious gatherings and festivals across the country over the past two decades.
- These events highlight the ongoing **challenges of managing large crowds** in confined spaces and underscore the urgent need for improved safety measures.

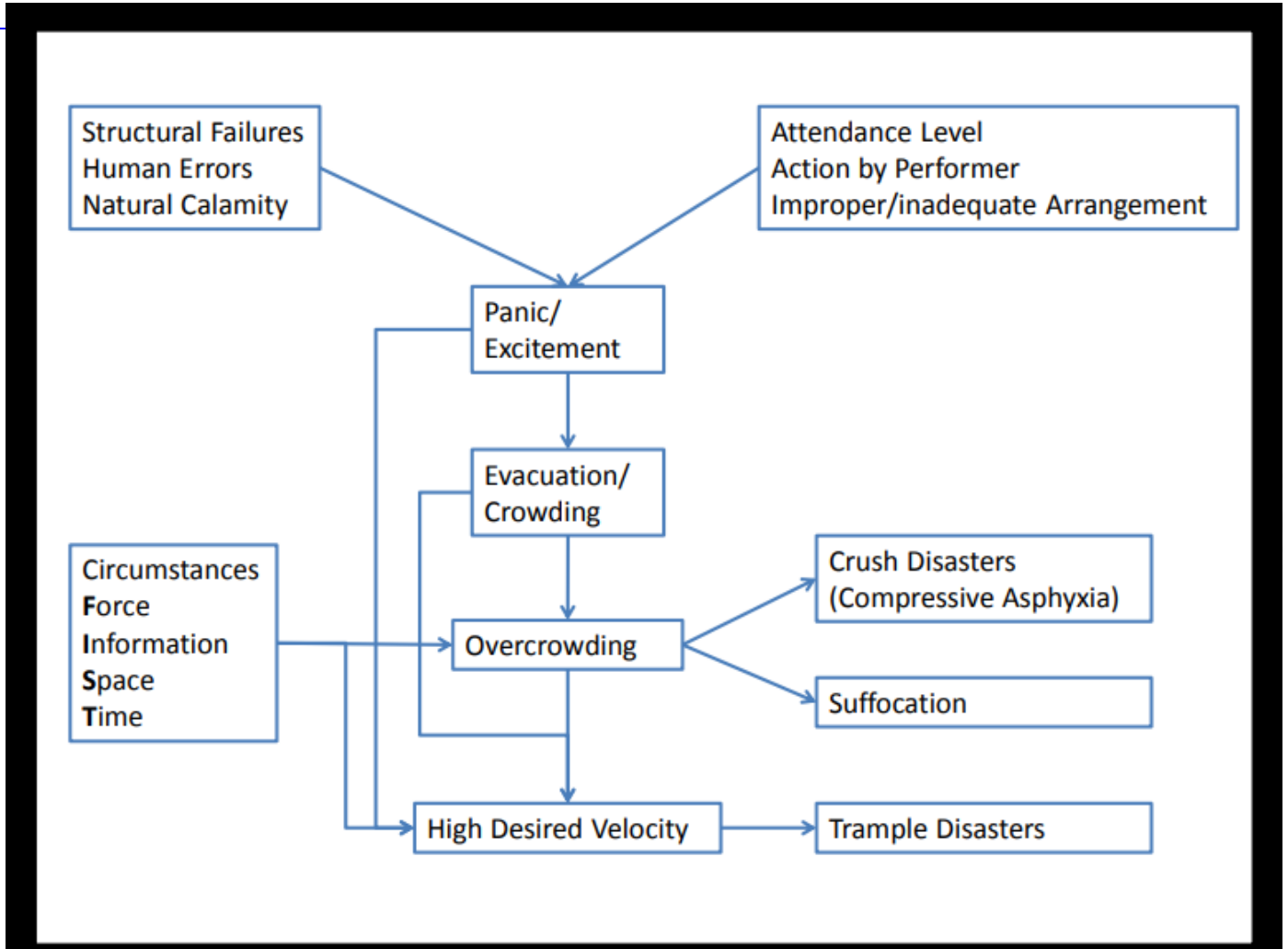
### What is a Stampede?

- **About:** A stampede is an impulsive mass [movement of a crowd](#) that often results in injuries and deaths. It is often triggered by response to a perceived danger, loss of physical space and a collective will to attain something seen as gratifying.
- **Types: Two main types of stampedes are Unidirectional stampedes** occur when a crowd moving in the same direction encounters a sudden change in force, triggered by forces like sudden stops or negative forces like broken barriers.
  - **Turbulent stampedes** happen in situations with uncontrolled crowds, induced panic, or crowds merging from multiple directions.
- **Fatalities in Stampedes: Stampedes can cause fatalities through:**
  - **Traumatic Asphyxia: It is the most common cause that occurs** due to external **compression of the thorax or upper abdomen.** Can happen even in moderate crowds of 6-7 people pushing in one direction.
  - **Other causes:** Myocardial infarction (heart attack), Direct crushing injuries to internal organs, Head injuries and Neck compression.
- **Factors Contributing to Stampedes:**
  - **Psychological Factors:** Panic is a primary trigger or amplifier of stampedes.
    - Loss of cooperative behaviour in emergencies. In panic-producing situations, cooperation is initially beneficial. Once cooperative behaviour is disturbed, individual survival instincts take over and result in stampedes.

- **Environmental and Design Elements:**

- Lack of proper lighting.
- Poor crowd flow management (Failure to divide crowd flow for different groups).
- Collapse of barriers or buildings.
- Blocked exits or evacuation routes.
- Fire hazards.
- **High crowd density**, when density approaches 3-4 persons per square metre. At this density, evacuation time increases dramatically, raising panic and stampede risk.

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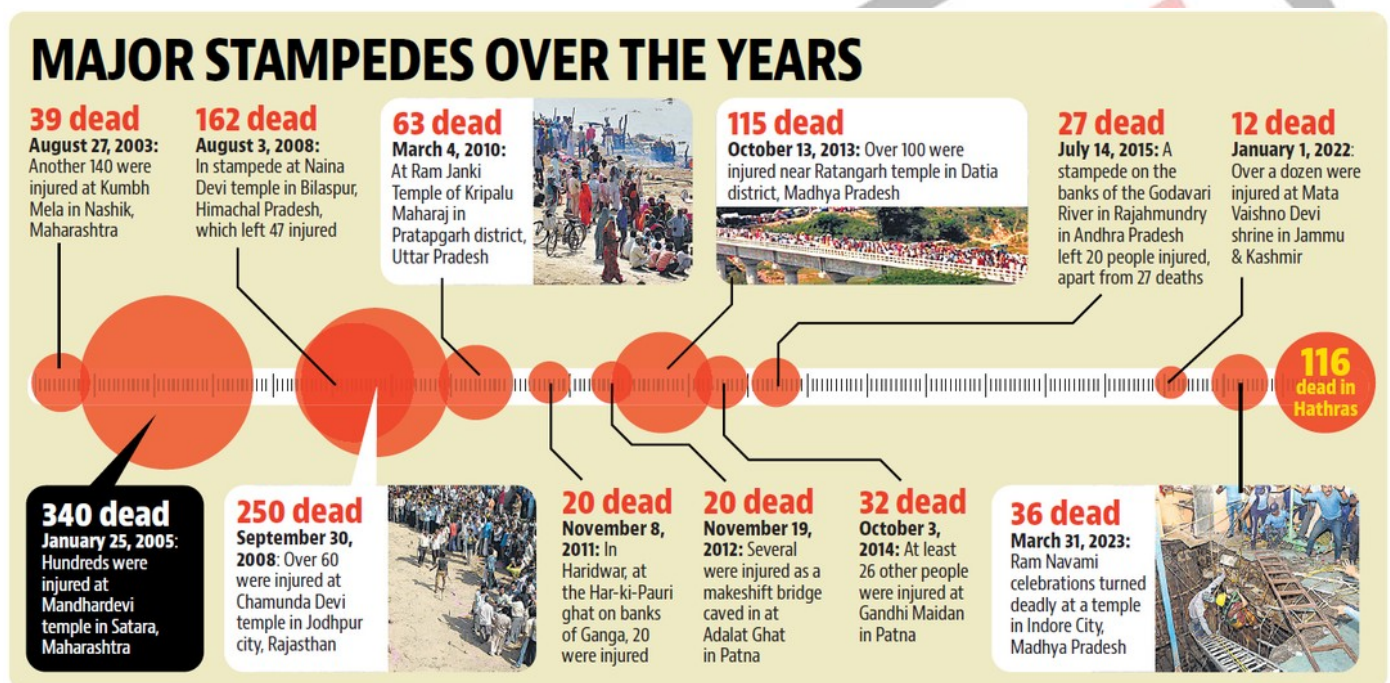
- **Impact of Stampedes:**

- **Psychological Trauma:** Survivors and witnesses may experience long-term psychological trauma, including [Post-traumatic Stress Disorder \(PTSD\)](#).
- **Economic Consequences:** Stampedes primarily affect economically disadvantaged individuals, **leaving families without primary earners** and causing significant economic hardship in the community.
  - Medical expenses, compensation, legal costs, and loss of economic productivity due to injuries.
- **Social Impact:** **Includes loss of trust in event organisers and authorities, social unrest and blame, and negative impact on community morale and cohesion.**

- The aftermath can have far-reaching consequences, requiring efforts to address the underlying issues and prevent similar incidents.
- **Impact on Infrastructure:** It can cause damage to physical infrastructure, such as barriers and buildings. The costs associated with repairs and upgrades to infrastructure can be significant.

## What were the Circumstances of Previous Deadly Stampedes in India?

- **Mata Vaishno Devi Shrine (2022):** 12 killed in a crowd surge during a Hindu pilgrimage in Kashmir.
- **Mumbai Pedestrian Bridge (2017):** 22 died in a stampede during rush hour.
- **Varanasi Bridge (2016):** 24 killed crossing a crowded bridge for a religious ceremony.
- **Godavari River (2015):** 27 dead in a stampede during a Hindu bathing festival.
- **Ratangarh Temple (2013):** 115 died in a stampede caused by a collapsing bridge.
- **Allahabad Train Station (2013):** 36 killed due to a platform change during Kumbh Mela.
- **Jodhpur Temple (2008):** 168 deaths in a stampede during Navratra festival celebrations.
- **Naina Devi Temple (2008):** 145 killed in a stampede triggered by rumors of a landslide.
- **Wai Temple (2005):** 258 lives lost in a stampede and subsequent fire.



## What are the Initiatives of India to Control Stampedes?

- The **National Disaster Management Authority (NDMA)** provides guidelines for safe crowd management and precautions during festive seasons.
  - **Traffic and Crowd Management:** NDMA advises **regulating traffic, displaying route maps**, and using barricades to control pedestrian flow around festive venues.
  - **Security Measures:** Emphasising **CCTV surveillance** and increased police presence to deter crimes, NDMA urges organisers to manage unauthorised parking and stalls effectively.
  - **Medical Preparedness:** NDMA recommends having **ambulances** on standby and medical staff ready, with clear signage directing to nearby hospitals.
  - **Crowd Safety Tips:** Educating attendees on exit routes and calm behaviour during gatherings, NDMA stresses preparedness for handling stampede scenarios.

- **Fire Safety:** NDMA highlights precautions such as safe electrical wiring, monitoring LPG cylinder usage, and caution with fireworks to prevent fires.
- **Disaster Risk Reduction:** NDMA supports government initiatives and upcoming conferences like the Asian Ministerial Conference in collaboration with [United Nations International Strategy for Disaster Reduction \(UNISDR\)](#), focusing on disaster resilience and recognizing the [sendai framework](#).
- **Community Responsibility:** NDMA underscores collective responsibility in disaster prevention and promoting safety during festive events.

## National Disaster Management Authority (NDMA)

- The NDMA, led by the Prime Minister of India, is the **apex statutory body for Disaster Management** in the country. It was established as per the [Disaster Management Act, 2005](#) to create institutional mechanisms at the State and District levels.
- NDMA is **responsible for setting policies, plans**, and guidelines for Disaster Management, with a focus on prevention, mitigation, preparedness, and response.
- It aims to create a safer and disaster-resilient India through a proactive and sustainable development strategy.

## What Can be Done Better to Prevent Stampedes?

- **Real-time Density Monitoring:** Deploy a [network of sensors \(thermal, LiDAR\)](#) to monitor crowd density in real-time. This data can feed into AI models to predict crowd surges and trigger early warnings.
  - Introduce [Radio Frequency Identification \(RFID\) tags](#) in tickets or wristbands. This allows for real-time tracking of crowd movement, identifying congested areas, and enabling targeted communication via displays.
  - **Utilise drones equipped with high-resolution cameras** and thermal imaging for real-time crowd surveillance and anomaly detection. These can also project calming messages or announcements on large screens.
- **Intelligent Lighting Systems:** Implement crowd-responsive lighting that can adjust brightness and colour based on crowd density to guide movement or calm situations.
  - Implement pathways and walkways embedded with [bioluminescent materials](#) that **automatically glow brighter** in case of emergencies. This can guide movement and reduce panic in low-light situations.
- **Interactive Communication Displays:** Install interactive displays that show real-time wait times, evacuation routes, and essential information in multiple languages.
- **Campaigns:** Launch public awareness campaigns to educate people on crowd safety protocols and proper behaviour during large gatherings.

### Drishti Mains Question:

**Q.** Analyse the effectiveness of disaster risk reduction initiatives by the Indian government in the context of stampede prevention. What improvements can be made?

## UPSC Civil Services Examination, Previous Year Questions (PYQs)

### Mains

**Q.** Discuss the recent measures initiated in disaster management by the Government of India departing from the earlier reactive approach. **(2020)**

