Scientific Crowd Management

Mains: *GS III – Disaster management*

Why in News?

Recently, a political rally by actor and Tamilaga Vettri Kazhagam (TVK) founder Vijay in Tamil Nadu's Karur district ended in a fatal crowd crush in which 41 people were killed.

What were the recent major stampedes in India?

- **M Chinnaswamy Stadium, Bengaluru (June 4, 2025)** – 11 fans were killed in a stampede while celebrating the Royal Challengers Bengaluru's IPL victory.
- **Puri Gundicha Temple, Odisha (June 29, 2025)** – A crowd crush at the Gundicha temple during the annual Rath Yatra festival killed at least three people.
- **Shree Lairai Devi Temple, Goa (May 3, 2025)** – At least seven people died during the annual Lairai Jatra festival when a crowd fell on a slope.
- **New Delhi Railway Station (February 15, 2025)** – 18 people were killed and more than a dozen injured after a headload fell in an overcrowded section of the station.
- **Prayag Maha Kumbh Mela, Uttar Pradesh (January 29, 2025)** – A crowd crush during a holy dip on Mauni Amavasya killed at least 30 people.
- **Lord Venkateswara Swamy Temple, Andhra Pradesh (January 8, 2025)** – At least six devotees were killed while jostling for free ticket passes.

What has India done to manage crowds?

- **BPR&D guidelines** – At the national level, the Bureau of Police Research and Development (BPR&D) published its most recent Comprehensive Guidelines on Crowd Control and Mass Gathering Management in June 2025.
- These guidelines, intended for police and other law enforcement agencies, emphasise scientific crowd management practices.
- **NDMA Recommendations** – The National Disaster Management Authority has maintained its *"Managing crowd at events and venues of mass gathering"* guide since 2020 alongside "*suggestive frameworks*" for crowd management plans.
- These documents recommend advance risk assessment, detailed site layout plans, predetermined ingress and egress routes, real-time monitoring, and communication protocols.
- **NIDM training modules** – The National Institute of Disaster Management (NIDM) has run training modules to handle large congregations as part of its capacity-building programmes.
- **Indian railways manual** – The Indian Railways updated its manuals for around 60

stations with high footfall by introducing holding areas, better dispersal zones and crowd monitoring, among others.
- These measures are mostly advisory, however, and not statutory.

What measures have been introduced by states?

- **Bengaluru** – The Karnataka government tabled the Crowd Control (Managing Crowd at Events and Venues of Mass Gathering) Bill, 2025.
- This instrument covers political rallies, conferences, cultural programmes, and other events, and fixes responsibility on organisers.
- It also empowers district magistrates to cancel or redirect events, regulate the use of loudspeakers, and impose fines and imprisonment for violations.
- **Uttar Pradesh** – The Uttar Pradesh State Disaster Management Authority issued the Guidelines for Managing Crowd at Events of Mass Gathering, 2023 , a document that formalises measures for religious and cultural events.
- **Gujarat** – The Gujarat Institute of Disaster Management prepared training materials that include technical instructions on calculating site capacity, planning exits, training volunteers, and ensuring first aid and fire safety.
- **Uttrakhand** – The Uttarakhand government ordered safety arrangements at major temples to be updated and directed authorities to remove encroachments around shrines.
- **Maharastra** – The Maharashtra government introduced a Bill in 2025 empowering the Nasik-Trimbakeshwar Kumbh Mela Authority to authorise temporary townships and bypass certain urban planning norms so that facilities can be created for large gatherings.
- **Role of local enforcement agencies** – They have supplemented these steps with operating protocols.
    - **For instance**, the Karnataka police circulated a new Standard Operating Procedure to control crowds at public functions and detailed responsibilities for coordination between departments, medical preparedness, and fire safety.
- **Directions from police** – In many districts across States, the police have also directed organisers of large religious or political gatherings to
    - Prepare crowd management plans
    - Limit crowd size
    - Deploy medical teams
    - Set up temporary barricades
    - Divert routes.
- These orders are still only administrative and aren't backed by a law.

What is scientific crowd control?

- **Controlling crowd density** – According to prevailing scientific wisdom, safely navigating a crowd depends on controlling its density and sidestepping hazardous flow patterns.
- Modelling studies have shown that the risk of a deadly crush escalates when crowd density approaches 5 persons per sq. m.
- **Increased use of drones** – Since cameras on drones linked to computers on the

ground can continuously monitor crowd density, not using such technologies to manage crowds is seen as a shortcoming.

- **Avoiding narrow areas** – Crowds should never be channelled into bottlenecks, slopes or counter-flows because they magnify pressure and destabilise movement.
- **Managing the movement** – In a moving crowd, individuals are advised to move diagonally, towards the less dense edges, and to avoid resisting the flow.
- **Compressive asphyxia** – It is the main cause of fatalities rather than trampling.
- Individuals should keep their forearms across the chest to protect their breathing space and maintain balance with staggered footing.

Compressive asphyxia *is a type of mechanical asphyxiation where external force presses on the chest or abdomen.*

This prevents the lungs and diaphragm from functioning normally, leading to lack of oxygen supply.

- If one is knocked down, rolling to the side and shielding the head and neck while attempting to rise quickly is recommended.
- **Avoiding rigid barriers** – People should avoid rigid barriers such as fences, walls or stages where pressures against the body can rise dangerously.
- Stopping to retrieve dropped items or to film in dense flows must be avoided since even brief obstructions can create waves of turbulence.
- **Best practices for organisers** – It requires
  - Real-time monitoring by trained crowd managers,
  - Routing the passenger traffic in only one direction,
  - Arranging for multiple exits,
  - Using unambiguous signage,
  - Public address messaging, and on-site medical facilities.

Reference

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