

The evolution of the seat belt, and why it is literally a matter of life and death

By IASToppers | 2022-09-06 17:10:00



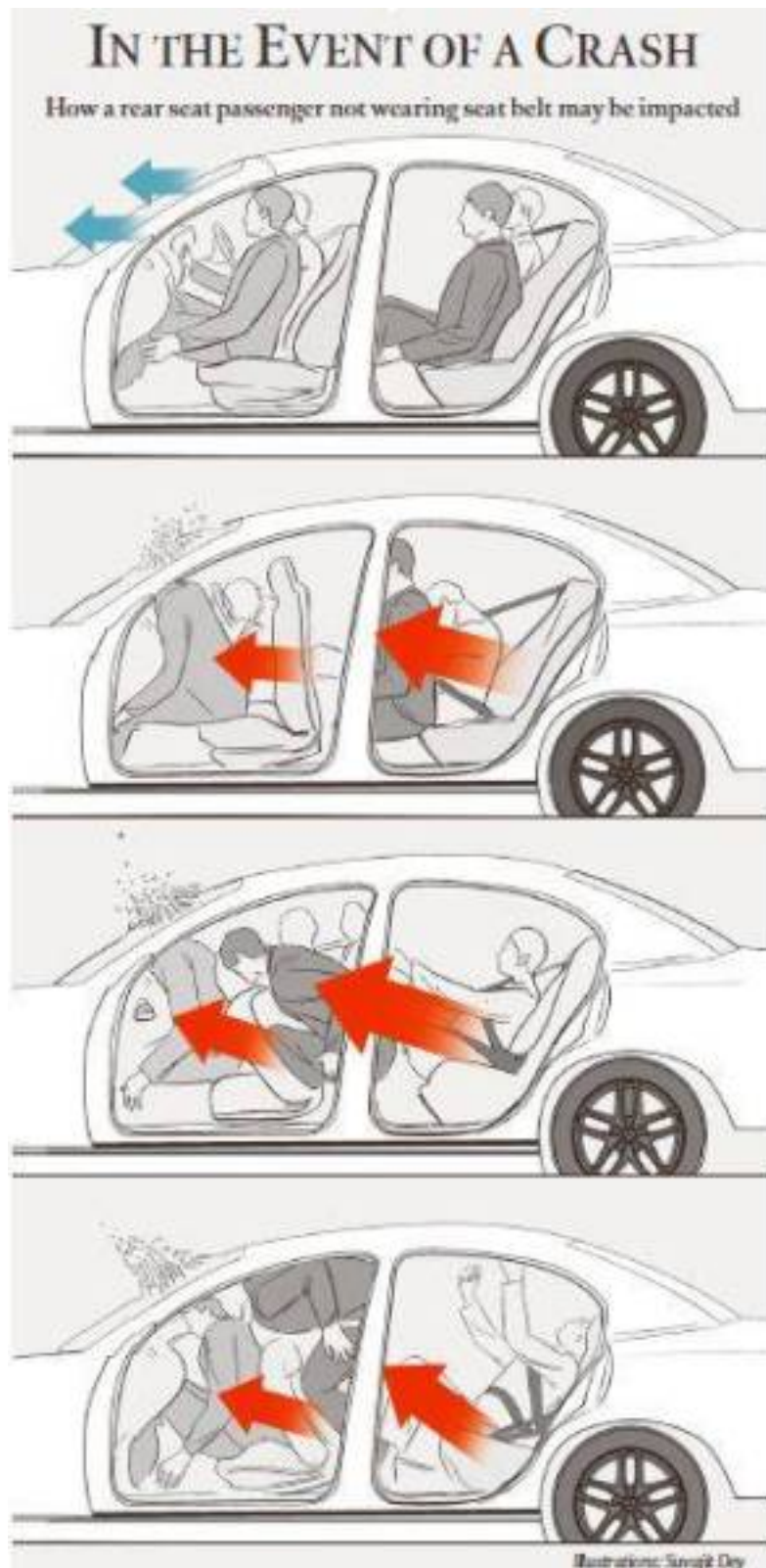
The evolution of the seat belt, and why it is literally a matter of life and death

National Crime Records Bureau's Accidental Deaths & Suicides in India (ADSI) report showed that 1.55 lakh individuals died in accidents on India's roads in 2021, up from the 1.33 lakh deaths in the pandemic lockdown year of 2020.



[ref: Renault.com]

Seat belts



[ref: Indianexpress]

- It came into existence in the **late 1800s**.
- Invented by **George Cayley**, an English aviation innovator, the original purpose behind their creation was to **ensure that pilots were kept inside their gliders**.
- In 1885, the **first patented seat belt came into existence**.
 - Created by Edward J Claghorn, it was meant to keep tourists safe in New York City taxis.

- Without an airbag, and no seat belt restraint, a severe crash leads to the occupant of the rear seat striking the seat in front.

3-point seat belt

- The currently used 3-point seat belt came into existence in 1959 after Swedish engineer Nils Bohlin invented **the V-type three-point seat belt**.
- It provides much better protection to drivers and passengers in the event of a road crash.

Law on seat belts

- **National Highway Safety Bureau (NHTSA)** and the **Federal Highway Administration (FHWA)** had mandates to regulate safety standards for vehicles and highways.
- **Section 194 (B)(1) of The Motor Vehicles (Amendment) Act, 2019:** Whoever drives a motor vehicle without wearing a safety belt or carries passengers not wearing seat belts shall be punishable with a fine of one thousand rupees.
- Through a draft notification, Government has made it **mandatory for automakers to provide three-point seat belts** for all front-facing passengers in a car, including the middle seat in the rear row of a car.
 - This applies to all vehicles coming under the **M1 category (for carriage of passengers comprising not more than eight seats in addition to the driver's seat)**, for vehicles manufactured from October 1.
 - It also stipulated relevant Indian Standards to be followed by the manufacturers for both seat belts and reminder systems alerting occupants to wear them.
- **Rule 138(3) of the Central Motor Vehicles Rules, 1989**, makes it mandatory for the rear passengers too to wear seat-belts.

Advantages of wearing a seat belt:

ADVANTAGES OF HAVING SEAT BELT FASTENED

Reduces risk of a fatal injury up to 50% in case of front seat passengers

In front row, buckling up protects passengers from impact of expanding airbags

Experts say airbags and seat belts are designed to complement each other



Belts save lives sometimes even in old cars which don't have airbags

Airbags are designed to cushion the impact while the belt serves to restrain movement. Without belt, airbags are ineffective



PAST STUDIES ON REAR-END SEATBELTS

2019 study by SaveLIFE Foundation, a non-profit involved in road safety, found

only 7% respondents across 11 cities said they used rear seat belts

only 28% were aware that use of seat belts was mandatory

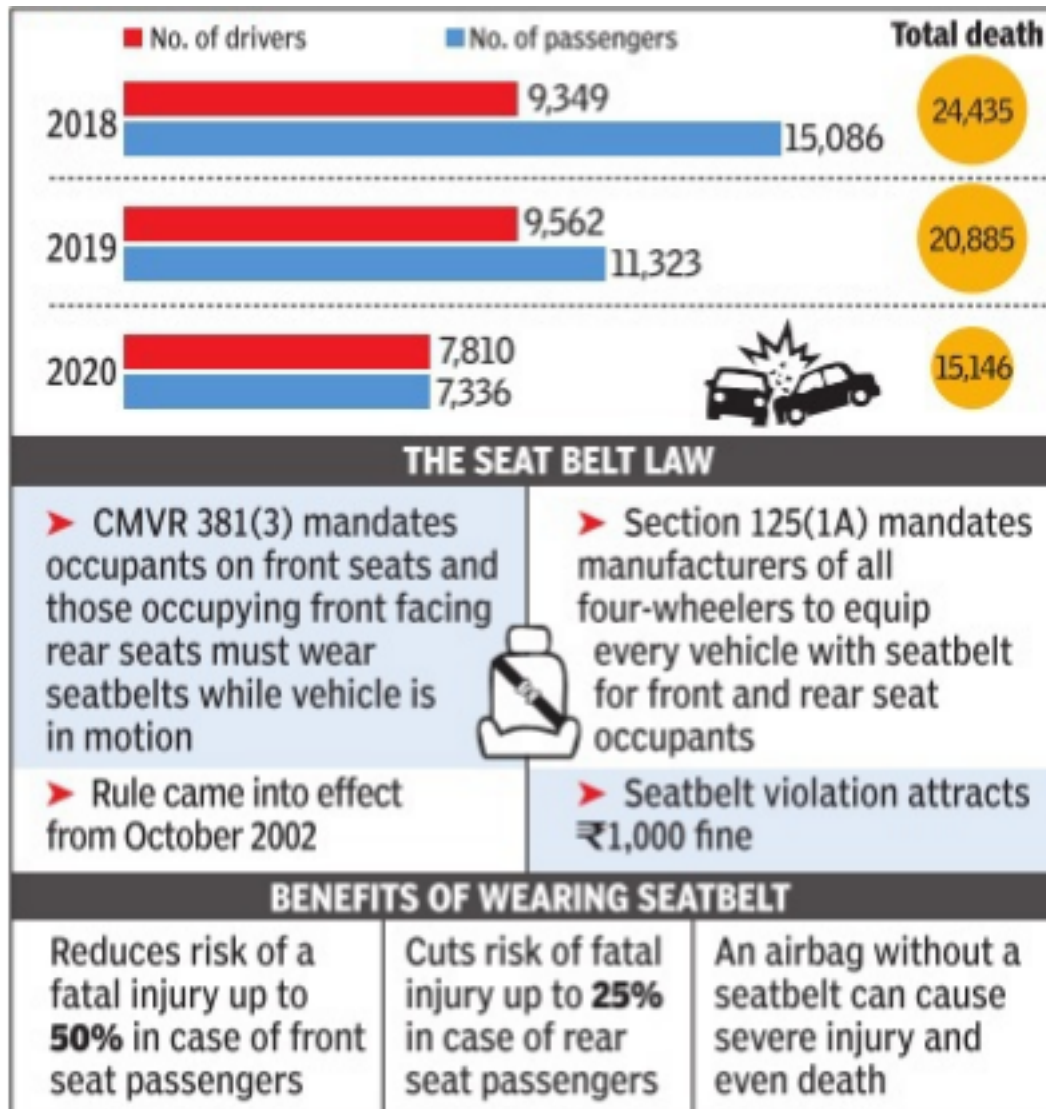
WHO study says use of rear seat belts can cut probability of death by **25%**

Seat belts also prevent excess injury or death for the front seat passenger

Local Circles survey done recently showed 7 out of 10 Indians do not wear a seatbelt when seated in the rear of a vehicle

[ref: TimesofIndia]

- Wearing a seat **belt reduces the impact** of an accident by 80 per cent.
- It **provides safety** to everyone in the vehicle and other motorists by:
 - Slowing the speed of occupant's body at the same rate as the vehicle,
 - Distributing the physical force in a crash across the stronger parts of the body,
 - Preventing collisions with objects within the vehicle and sudden ejection
- It prevents the person to be **thrown out of the car** in case of severe accident.
- Protects against **brain and spine injuries**.



[ref: TOI]

IMPACT OF A CRASH

➤ Purpose of belt is to restrain you so that you stop with the car. Without the belt, inertia continues to move the body forward at the same velocity until it hits an object inside the car

➤ Experts said even if a person is strapped in and airbags cushion the impact, person may still suffer some injuries

depending on the force of the impact. It could prevent fatalities, but result in abrasions, fractures of the jaw, neck and sometimes, the spine

➤ Belts keep you in your seat, prevent person from being thrown against the windshield, or flung inside or outside the vehicle, which is fatal in most cases, police officials said

➤ In a high-speed crash, an unbuckled passenger can turn into a heavy projectile and hurt/kill other vehicle occupants wearing belts

➤ Though seat belts prevent deaths by reducing head injuries, they can still damage by the impact associated with the force of restraint on a passenger

[Ref: TimesofIndia]

Reasons for not wearing seatbelts:

- Indians **don't care about their safety**
- Indians **don't want to spend more on safer cars**
- India **suffers from poor enforcement of laws**

ROAD DEATHS OVER THE LONG TERM, 1900 TO 2016

Annual number of reported deaths resultant from any type of road accident. This includes vehicles, pedestrians and cyclists



Source: OECD & National Statistic Divisions, via Our World in Data

[ref: Indian Express]