Jaipur Engineering College & Research Centre

Department of Electronics & Communication Engineering

Disaster Management

ROAD TRAFFIC ACCIDENTS (RTA)

What is Accident?

1. An unexpected, unplanned occurrence that may involve injury.

2. Unpremeditated event resulting in recognizable damage **(WHO Advisory Group)**

3. Occurrence in a sequence of events, which usually produces unintended injury, Death or Property-Damage.

Classification of Accidents

1. Road Traffic Accidents

2. Domestic Accidents, Drowning, Burns, Falls, Poisoning, Injuries from sharp Bites and other injuries from animals

3. Industrial Accidents

4. Railway Accidents

5. Aircraft crash

6. Maritime accidents

7. Violence

Road Traffic Accidents (RTA): These are also known as Road Traffic injuries, Motor vehicle collision, Motor vehicle accident, Automobile accident and Road traffic collision in some countries. It is a leading cause of Injuries, Deaths & Disabilities.

A Road Traffic Accident (RTA) can be defined as, an event that occurs on a way or street open to public traffic; resulting in one or more persons being injured or killed, where at least one moving vehicle is involved.

Thus RTA is a collision between vehicles; between vehicles and pedestrians; between vehicles and animals; or between vehicles and geographical or architectural obstacles. Road traffic accidents are a human tragedy. They involve high human suffering and socioeconomic costs in terms of premature deaths, injuries, and loss of productivity.

Mortality

- Proportional Mortality Rate
- Number of Deaths per million population
- Death Rate per 1000 (or 1 lakh) registered Vehicles per year.
- Number of Accidents or Fatalities as a Ratio of number of vehicles per km or passengers per km.
- Deaths of vehicle-occupants per thousand vehicles per year.
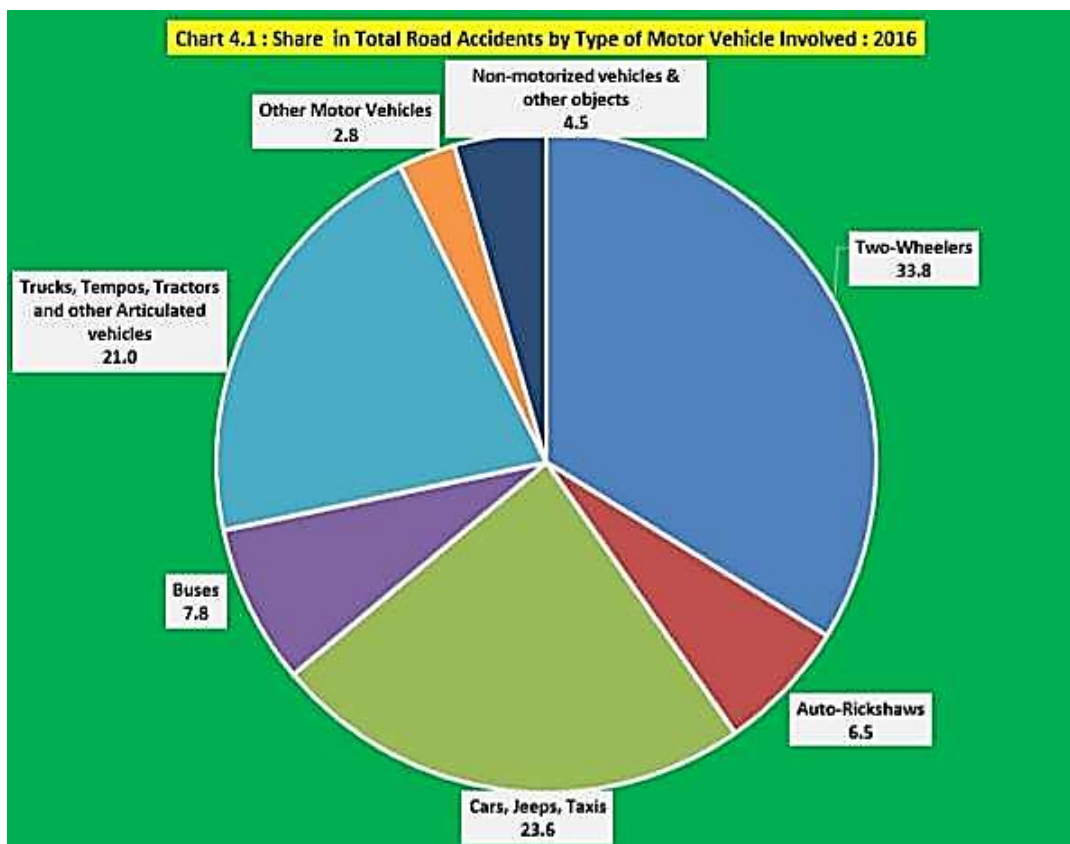
Indian Scenario

India has one of the largest road networks in the world, of 3.314 million kilometers, consisting of National Highways, Expressways, and State Highways etc. About 65 per cent of freight and 86.7 per cent passenger traffic is carried by the roads

Stats: India-2016
- **Accidents – 4,80,652**
- **Deaths – 1,50,785**
- **Person Injured – 4,94,624**

In Every Day : **1,317 Accidents /day and 413 Persons killed/day**
In Every Hour: **55 Accidents /Hour and 17 Persons killed /Hour**

Chart 4.1 : Share in Total Road Accidents by Type of Motor Vehicle Involved : 2016

Non-motorized vehicles & other objects 4.5
Other Motor Vehicles 2.8
Two-Wheelers 33.8
Trucks, Tempos, Tractors and other Articulated vehicles 21.0
Buses 7.8
Auto-Rickshaws 6.5
Cars, Jeeps, Taxis 23.6

CLASSIFICATION OF ACCIDENTS

The Road Accidents can be classified in the following manners:

1. Classification of Persons by Injury Severity

- Person with fatal injury
- Person with Grievous Injury
- Person with minor injury
- Person with no injury

2. Classification by Vehicle Type

- Motorized two Wheeler accident
- Motorized three wheeler accident
- Car/Jeep/Van/Taxi accident
- Bus Accident
- Light Transport Vehicle accident
- Heavy Articulated Transport Vehicle accident
- Tractor with Trolley accident
- Bicycle/Pedestrian accident
- Animal/Hand Drawn Cart accident

3. Classification by Number of Vehicles

- Single-vehicle accident
- Two-vehicle accident
- Three-vehicle accident
- Multiple Vehicle accident

Main Causes of Road Accidents

- Over Speeding
- Drunken Driving
- Using Mobile Phones while Driving
- Child Restraint
- Not wearing of helmets and seatbelts

Other Causes of RTA

- Driver fatigue: Driver fatigue is a very dangerous condition created when a person is suffering symptoms of fatigue resulting from the hypnotic effect leading to diminished driver's vigilance level.
- Not obeying or following traffic rules.
- The attitudes of the "right of the might" bigger vehicles toward the smaller vehicles.
- Overloading of transport vehicles.
- Poor maintenance of the vehicles.
- Appalling condition of the already
- Chocked roads and encroachment

HUMAN FACTORS IN RTA

- Human factor contributes significantly to increasing number of road accidents in India.
- Most drivers continue to be acting like maniacs in a tearing hurry and error in judgment often leads to major accidents.
- Reckless driving, over speeding, decline to follow traffic rules, and drunken driving are main reasons for road accident.

Risk Factors

1. Speed: Pedestrians has 90% chance of surviving a car crash at 30Km/h or below.

2. Drink – Driving: Blood Alcohol Concentration (BAC) of 0.05g/dl or below reducing the alcohol related crashes.
Enforcing Sobriety Check points & Random breath testing can reduce 20%of alcohol related crashes.

3. Motor cycle Helmets: Reduce the risk of death by 40% and risk of severe injury by 70%
Strict Laws should be enforced

4. Seat –Belts and Child Restraints: Reduces risk of fatality among Front seat passengers by 40-50% and Rear –seat passengers by 25-75%

5. Mobile Phone usage - 4 times the risk of crash increases

6. Factors influencing exposure to risk:

- Rapid motorization
- Demographic factors
- Transport, land use and road network planning
- Increased need for travel
- Choice of less safe forms of travel

7. Risk factors influencing crash involvement:

- Speed
- Pedestrians and cyclists
- Young drivers and riders
- Alcohol
- Medicinal and recreational drugs
- Driver fatigue
- Hand-held mobile telephones

8. Risk factors influencing injury severity:

- Lack of in-vehicle crash protection
- Non-use of crash helmets by two-wheeled vehicle users

- Non-use of seat-belts and child restraints in motor vehicles
- Roadside objects

9. Risk factors influencing post-crash injury outcome:

- Pre-hospital factors
- Hospital care factors

Reasons for more Accidents in Developing countries

- Large numbers of pedestrians and animals share the common roadway
- Large number of old , poorly maintained vehicles
- Large numbers of buses often overloaded
- Large number of motor cycles, scooters and mopeds
- Low driving standards
- Widespread disregard of traffic rules
- Defective roads, poor street lighting, defective layout of cross roads and speed breakers
  Unusual behaviour of men and animals

Risk Prevention

- Data collection
- Safety education
- Promotion of safety measures
- Alcohol and other drugs
- Primary care
- Elimination of causative factors
- Law enforcement
- Rehabilitation
- Accident research

By:

1. **Mr. Ankur Gangwar**
2. **Mr. Bhoopesh Kumawat**
3. **Mr. Naresh Kumar**

(Assistant Professors, Dept. of ECE)

JECRC, Jaipur