SIAM
Society of Indian Automobile Manufacturers

Building the Nation, Responsibly

SAFE *(a SIAM initiative)*
Society for Automotive Fitness & Environment

सुरक्षित सफर
SAFE JOURNEY
An initiative by **SIAM**

Analysing India's imperatives for Road Safety

CONTEXT PAPER

About SIAM

The Society of Indian Automobile Manufacturers (SIAM) is the apex national body representing all major vehicle and vehicular engine manufacturers (45 companies) in India. It is a society with charitable objectives registered under the Societies Registration Act 1860. Its objectives include enhancing the contribution of the automobile industry in the growth and development of the Indian economy, assisting the automobile industry in meeting its social obligation, encouraging the efficiency of the industry in general, particularly in India, and improving and protecting the environment, including global warming, pollution control and safety of automobile vehicle users and public at large. Recognizing these objectives, SIAM has been granted registration under the Income Tax Act 1961 as an institution with a charitable purpose.

To meet these objectives, SIAM works closely with stakeholders to formulate economic and commercial policies, regulations, and standards relating to automobiles. It provides economic and statistical information as well as technical and public policy services to the stakeholders on behalf of the Indian Automobile Industry. It publishes Monthly Industry Statistics, Monthly Commodity Price Monitor and other periodic reports. It also organizes seminars and workshops on topics of topical relevance and interest to the industry. It also carries out various public policy activities, particularly in Road Safety and Decarbonization.

As the leading automotive industry body of the country and under its strong commitment to "Building the Nation Responsibly", SIAM advocates sustainable mobility with a prime focus on Road Safety and decarbonization aligned with national objectives of improving road safety and transition towards sustainable mobility. SIAM promotes the adoption of Electrification, Biofuels, Gas-based Mobility, Green Hydrogen and Circularity to help the Indian Automobile Industry transition towards sustainable mobility. It brings together key stakeholders in the mobility ecosystem to devise solutions to key challenges being faced in the transition and ensure the least disruptive path to the sustainable mobility transition in the country.

SIAM works closely with various Government departments, both at the Central and State level and with international bodies like the International Organisation of Motor Vehicle Manufacturers (OICA) International Motorcycle Manufacturers Association (IMMA) and coordinates with other counterpart international associations.

SIAM, jointly with ACMA and CII, organizes Auto Expo, a widely awaited biennial auto exhibition showcasing the trends in the Auto Industry. SIAM also organizes regional as well as segment-specific shows across the country.

SIAM aims to promote trade, competitiveness, market expansion, road safety, decarbonization, sustainable mobility, growth, and environmental compliance with responsibility.

About SAFE

Society for Automotive Fitness & Environment

In order to achieve advancement of Inspection and Certification I(I&C) of vehicles and increased safety on roads, the Society of Indian Automobile Manufacturers (SIAM) has incorporated an independent body Society for Automotive Fitness & Environment (SAFE) with membership from Industry, Testing Agencies and NGOs.

SAFE works to spread awareness among the various stakeholders on the concerns of in-use vehicles which would lead to safer vehicles and cleaner environment.

SAFE organizes inspection clinics for in-use vehicles and training workshops in various parts of the country for technicians in the area of pollution checking. These programmes are aimed at creating awareness amongst vehicle owners on importance of regular maintenance of their vehicles. It is one of the most effective ways to control emission levels from vehicles in the country.

In addition, SAFE also organizes seminars and interactions on these subject with State Governments and other stakeholders.

SAFE has also commenced various initiatives for imparting road safety education to students, drivers and the general public at large. Through Road Safety Awareness Programmes, SAFE tries to apprise the community on traffic rules and also to inculcate correct and responsible attitude towards fellow road users.

SAFE is a catalyst in the automobile industry's endeavour to fulfil its commitment towards a cleaner and a safer environment and will continue to support and enhance the industry's role as a responsible corporate citizen in the country.

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Executive Summary

India is an automotive behemoth with an estimation of more than two crore vehicles added every year. With an expanding middle class in this growing economy, the vehicle parc (also called vehicle population) is bound to increase exponentially. Additionally, the automotive sector contributes 6.5% to the country's GDP and 40% to the manufacturing GDP, employing over 30 million people directly and indirectly through forward and backward integration.

India has adopted the goal of decarbonizing the economy by reducing the nation's projected carbon emission by one billion tonnes and reducing the economy's carbon intensity by 45 % by 2030.

According to Government reports, India has recorded the highest number of road accidents globally, estimated at 1.5 million in 2017. India's most common causes of road accidents are over-speeding, consuming alcohol, not wearing helmets, not following traffic rules and regulations, and mechanical faults. Lack of enforcement of traffic laws is one of the major contributors to India's high number of accidents.

Besides the obvious human loss and trauma related to the citizens involved in road altercations, accidents directly affect the country's GDP. The accidents cost India approximately 3.14% of its GDP, which is further reduced due to reduced spending on services related to road accidents.

Thus, SIAM has put an exceptional focus on road safety in the Indian context with the 'सुरक्षित सफर' initiative under SAFE's banner.

SAFE spreads awareness among the various stakeholders on the concerns of in-use vehicles, which would lead to safer vehicles and a cleaner environment. SAFE organizes inspection clinics for in-use vehicles and training workshops in various parts of the country for technicians in pollution checking. These programmes are aimed at creating awareness amongst vehicle owners on the importance of regular maintenance of their vehicles, as it is one of the most effective ways to control vehicle emission levels in the country. In addition, SAFE also organizes many events on the pertinent subject of road safety with State Governments and other stakeholders.

SAFE has expressed its commitment towards road safety and the environment in the form of execution of initiatives impacting the 4Es of Environment, Education, Enforcement, Engineering and Emergency Care. SIAM-SAFE will continue to support safe motoring and improvements across the 4Es of Road Safety. SAFE is committed to working towards a healthier and cleaner environment to improve air breathability and quality of life.

Need for Road Safety

As per a report[i] by World Road Statistics (WRS) of the International Road Federation, Geneva, India contributed 26.37% of the total road accidents in the world (207 countries) in 2020, amounting to 1.5 lakh fatalities. Traffic accidents not only have a crippling effect on human lives, but also put a huge economic burden on a nation.
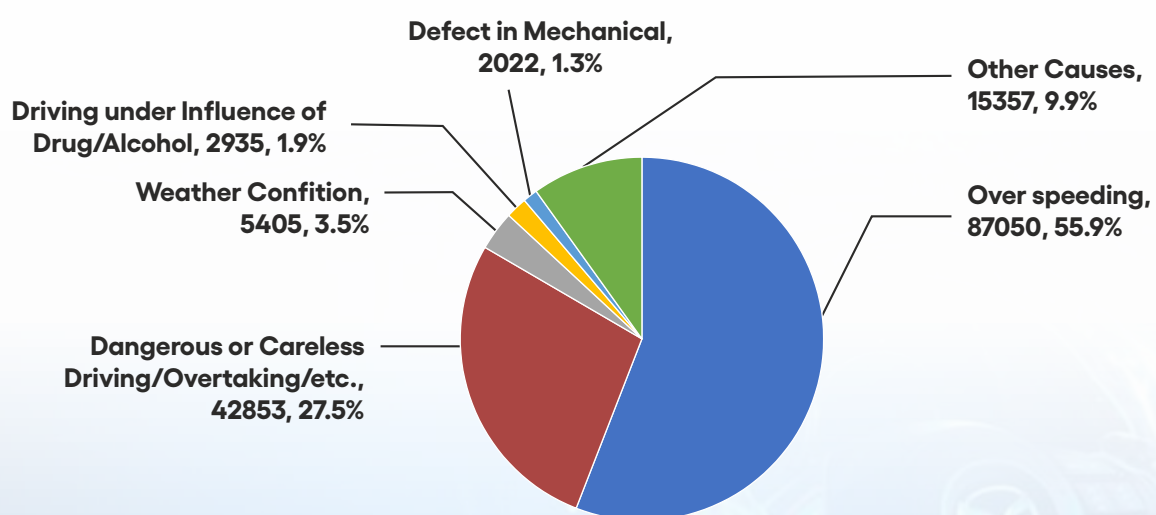
The National Crime Records Bureau (NCRB) records the data on traffic accidents across the country to better analyse and understand the trends of accidents to advise planners in devising better preventive measures.

The death rate in road accidents per thousand vehicles in the country was 0.53 in 2021.[ii] Uttar Pradesh recorded the maximum number of deaths from road accidents (24,711), while Tamil Nadu (16,685) and Maharashtra (16,446) were at a distant second and third position respectively. The three states collectively accounted for 33.3% (57,842 out of 1,73,860) of road fatalities reported in India in 2021.

As per a 2021 World Bank report,[iii] 11% of the global deaths from road accidents occur in India. The report further stated that the country recorded one death every four minutes and 53 road accidents every hour.

Over speeding (55.9%) and dangerous or careless driving (27.5%) were the two major causes of road accident deaths in 2021. Meanwhile, 44.5% of the victims were travelling on two-wheelers.

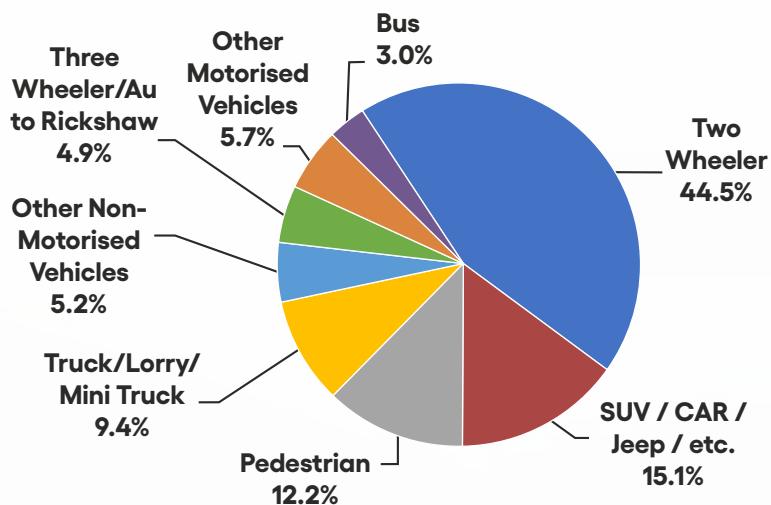## Major Causes of Road Accident Deaths during 2021

Defect in Mechanical, 2022, 1.3%
Other Causes, 15357, 9.9%
Driving under Influence of Drug/Alcohol, 2935, 1.9%
Weather Confition, 5405, 3.5%
Over speeding, 87050, 55.9%
Dangerous or Careless Driving/Overtaking/etc., 42853, 27.5%

As per data provided by States/UTs

Vehicle wise Road Accident Deaths during 2021

Pie chart showing vehicle-wise road accident deaths during 2021:
- Two Wheeler: 44.5%
- SUV / CAR / Jeep / etc.: 15.1%
- Pedestrian: 12.2%
- Truck/Lorry/Mini Truck: 9.4%
- Other Non-Motorised Vehicles: 5.2%
- Other Motorised Vehicles: 5.7%
- Three Wheeler/Auto Rickshaw: 4.9%
- Bus: 3.0%

Other Motorised Transport includes Tractor etc.

These data points demand immediate intervention from the government to introduce effective policies and regulations to stem the number of road accidents in India. The government of India, taking a cue from the developed nations, has centred its focus around four critical areas for improving road safety, collectively known as the 4Es of road safety, viz. Engineering (road and vehicle engineering), Education, Enforcement and Emergency Care. The framework has been an integral part of the government policies and programmes.

1.   Engineering: The idea of safe roads starts with good road engineering practices where road specifications and designs are continuously reviewed along with periodic road audits by the authorities. Other aspects cover setting up speed limits and barriers like guardrails (centre and roadside) to prevent collisions. Road and vehicle engineering form the first 'E' of road safety. Vehicle engineering comprises leveraging technology to make vehicles safe for roads. Usually, these technological measures are mandated by the government.

2.   Education: The second E is about spreading awareness and educating various segments of road users, like pedestrians, cyclists, school children, vehicle drivers, etc., on road safety. Governments and state authorities worldwide launch various awareness campaigns on different media – print, press, radio, and video to educate citizens on traffic rules and encourage safe road practices. It also includes mandatory traffic education for children in schools.

3.   Enforcement: Traffic authorities also take the enforcement route to make people comply with the traffic rules on the road. The idea starts with mandatory periodic quality checks for the vehicle and the issue of driving licenses, followed by penalties for offences like not wearing a seat belt, speeding, drunk driving, or not following traffic signals.

EmergencyCare : Timely emergency response activities can prove to be the difference between life and death for a road accident victim in the golden hours. Governments worldwide have given special attention to this area with provisions like the availability of ambulances and emergency telephone units on highways.

Good Practices at Global Level

Developed countries like Sweden, Germany, Netherlands and Japan have continuously promoted road safety over the years and achieved significant results. In Sweden, all road safety efforts are guided under the mission "Vision Zero", which aims to bring road fatalities to zero and avoid severe injuries on roads. The Swedish Government has set an interim target for 2030 of reducing the fatalities by 50% between 2020 and 2030, corresponding to approximately 133 road deaths in 2030.[iv] The same program has been implemented in other countries, including India. The State of Haryana implemented it in 2017 with a few variations.

Similarly, Germany has a motto, "Safe mobility – everybody is responsible, everyone is involved," under which it aims to reduce the annual number of fatalities by 40% and serious injuries significantly by 2030.[v]

In terms of the number of road fatalities per 100,000 inhabitants in 2020, Sweden (2) and Germany (3.3) ranked second and ninth, respectively, among IRTAD countries. At the same time, the number of road fatalities per 10,000 vehicles for the same year in Sweden and Germany were 0.3 and 0.5, respectively.

The following table illustrates a few key initiatives Germany and Sweden undertook to promote road safety in their countries:
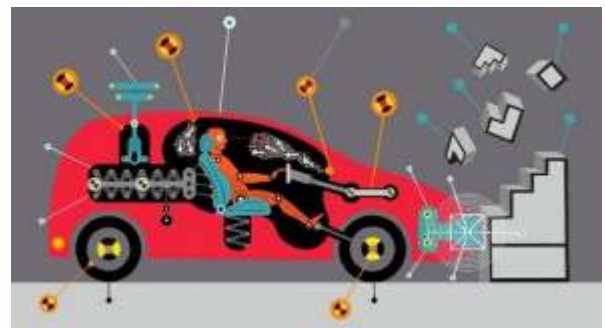
Category	Initiatives/Measures
Road Engineering	Extensive use of barriers for traffic separation using guardrails and special roads like 2 plus 1 type. This concept was invented in Sweden but is now being followed in other European countries as well including Germany.
Road Education	Sweden has implemented initiatives like ambulance tour and visit from a bus for children in schools to make them familiarise with scenarios like travelling in a bus and real life accident cases.
	In Germany, parents are handed out a school route map covering 1-1.5km radius around the school with specific instructions to be followed.
	Germany has implemented a concept called parents taxi stop beyond which children have to walk all the way to school so that they can understand and learn about road safety.
Enforcement	Extensive theory sessions before driving licence test are mandatory in both Sweden and Germany. The Germany road traffic authorities have made it compulsory to attend 12-90 minutes long theory sessions before going for a driving licence test.
	There is a mandatory probation period of 2 years on newly issued driving licenses in both Germany and Sweden.
	Sweden has made wearing of helmets compulsory during cycling too for both rider and pillion passenger.
	Germany has implemented a unique point based system for keeping track of severe administrative offenses, and felonies that affect road safety. Traffic points are awarded basis the severity of the offence and attract different penalties for different score levels.
	A medical-psychological examination report is necessary while applying for a driving licence in Germany.
Emergency Care	SOS button/ eCall system has been mandated in new vehicles in European Union that automatically gets triggered in case of an accident and connects with the helpline ecosystem.
	It is mandatory to fill a Europe-wide standard accident report form by both parties at accident site in Germany.
	It is mandatory to stay at the accident site for 30 minutes and exchange insurance information in Germany.

Road Safety Standards in India

On 15th March 2010, the Union Cabinet approved the National Road Safety Policy.[vi] based on the recommendations of the Sunder Committee. The policy document outlined initiatives and measures to be taken by the government at all levels to improve safety on Indian roads. The key takeaways from the policy are as follows:

1. Road Safety Information Database: Assist local bodies, Union Territories and States to improve the quality of crash investigation and data collection, transmission and analysis. A National Road Safety Information System was announced to provide policy guidelines for this activity.

2. Safer Road Infrastructure: Continued application of Intelligent Transport System (ITS) under a national framework and review of standards related to safety in the design of rural and urban roads and bring them at par with globally accepted standards.

3. Safer Vehicles: Ensure safety features are built in the vehicles at the stage of design, manufacture, usage, operation and maintenance of both motorized and non-motorized vehicles in line with globally accepted standards.

4. Safer Drivers: Strengthen the licensing and training system to improve drivers' competence and capability.

5. Road Traffic Safety Education and Training: Create awareness among the population through education, training and publicity campaigns. It will also include road safety education with a special focus on school children and college-going students to inculcate good road safety practices.

6. Enforcement of Safety Laws: Take appropriate measures to assist various states and governments in strengthening and improving road safety laws' enforcement. Establishing highway patrolling on National and State Highways in cooperation with the State government and union territories was also suggested.

7. Emergency Medical Services for Road Accidents: Ensure all persons involved in an accident receive timely trauma care and management. Availability of trauma care and rehabilitation alongside National Highways and State Highways was also proposed.

8. HRD & Research for Road Safety: Encourage increased effort towards road safety research by identifying priority areas, funding research, and disseminating research results.

9. Strengthening of Legal, Institutional and Financial Environment for Road Safety: Establish a mechanism for effective coordination of various stakeholders for active and extensive community participation, primarily from the private sector, academia and NGOs.

This report analyses the road accident data and preventive policy measures in place for five major Indian states, viz. Tamil Nadu, Gujarat, Maharashtra, Karnataka and Delhi. As per the Ministry of Road Transport and Highways' 2019 report,[vii] these five states accounted for the majority of road accident cases and have significantly reduced the number of accidents over the last few years. We intend to highlight the important policies and measures the respective state governments implemented.
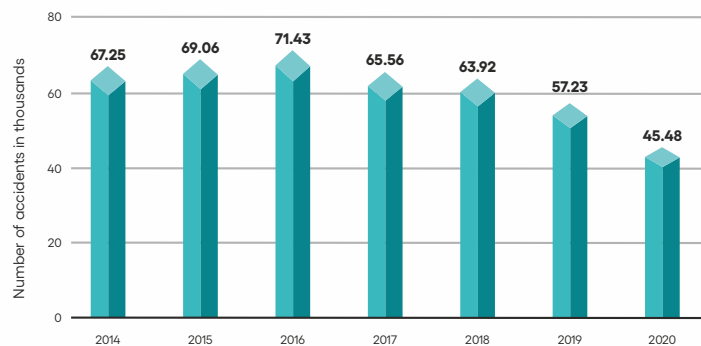
1. Tamil Nadu

The state of Tamil Nadu ranked highest in terms of the annual number of road accidents every year (2015-2019), except 2017, and registered 57,228 and 69,059 road accident cases in 2019 and 2015,

respectively. This marks a decline of 17.13% over a span of 4 years. Meanwhile, the number of road accidents reported in 2020 was around 45,480.

The Road Safety Policy for the state was issued in 2007, way before the notification of the National Road Safety Policy in 2010. Like other major states, Tamil Nadu has also prepared the skeleton of its new road safety policy document based on the National Road Safety Policy Draft. Although there is no exclusive policy document reinforcing the same.[viii]

Number of road accidents across Tamil Nadu in India from 2014 to 2020 (in 1,000s)

Year	Number of accidents in thousands
2014	67.25
2015	69.06
2016	71.43
2017	65.56
2018	63.92
2019	57.23
2020	45.48

Source
Ministry of Road Transport and Highways (India)
© Statist 2022

Additional Information:
India: 2014 to 2022

Fig 1: Number of road accidents across Tamil Nadu from 2014 to 2020 (in 1,000s)

As per a report[ix] on Road Accidents and Road Safety Measures of Tamil Nadu issued in 2017, the State Government undertook the mission of 50% reduction in total fatal accidental deaths by the year 2020. A few key initiatives announced by the government are as follows:

I) State Road Safety Council to be headed by Hon'ble Transport Minister.

ii) More responsibilities are to be given to Senior Police Officers by indicating road safety in their annual performance reports.

iii) Use of short films for spreading awareness on the following themes:

iv) Use of mobile phones while crossing the road or driving a vehicle

v) Wearing seat belts and helmets on the road

vi) Avoidance of drunk driving

vii) Safe driving and respecting traffic rules

viii) General awareness about ambulance services in the city

ix) Enforcement drives to ensure adherence to traffic laws

x) Road Safety audits on State Highways and National Highways for identification and rectification of black spots ensuring all precautionary measures are taken during the construction of roads.

xi) Plying more buses in peak hours to avoid overloading. Mandatory refresher training for drivers twice a year, along with periodic health check-ups.

xii) Implementation of 108 ambulance services for better road traffic accident response time.

xiii) Creation of a road safety fund sanctioned through the Inter-Departmental Committee on Road Safety Fund for various activities.

Other Important Measures:

a) Innuyir Kappom Thittam – Let's save all: The state government launched Innuyir Kappom Thittam – Let's save all scheme in December 2021 to pay special attention to reducing road accidents, preventing fatalities and improving road safety. The scheme was aimed at reducing deaths due to road accidents.[x]

Under the scheme, following initiatives have been taken:

• **Nammai Kakkum 48:** The first 48 hrs are the most critical period for road accident victims. This scheme aims to ensure Absolute Budgetary Certainty for Road crash victims. This aims to reduce mortality by reducing delays due to treatment denial and Inter facility transfers.

• Collaborations with 422 private and 218 Government Hospitals have been created in accident-prone stretches based on the top 500 accident grid while including the duration of bringing crash victims from the accident site to the nearest medical facility. Moreover, the district-wise 'Trauma Care Plan' is ideated to map the ambulances to the nearest enrolled
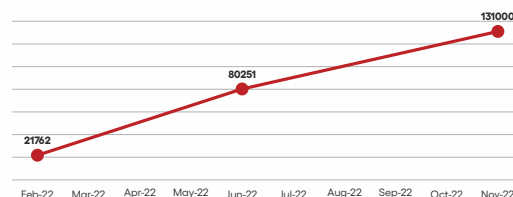
hospital. Additionally, service mapping of ambulances ensures that the right patient is taken to the right medical facility within the Golden hour.

Road accident victims benefitted under Nammai Kakkum 48

- Eighty-one treatment packages of up to 1 Lakh per individual have been created as damage control measures to be used in a cashless medium for all citizens affected by road traffic accidents.[xii]

- **Special Task Force on Road Safety:** STF to devise and implement plans by coordinating with all state departments and academic institutions was constituted by the state government.

- The STF aims to draft short-term and long-term plans to improve Road Safety to implement the same with administrative and financial powers. District Collectors and Municipal Commissioners will implement and enforce the decisions of the STF along with the Police Department.[xiii]

b) An MoU for collaboration was signed between the STF-Road Safety, the Government of Tamil Nadu and the CoERS, IIT Madras. Under this MoU, scientific methods of enforcement for road safety will be explored with the following targeted outcomes:

- Conduct forensic accident audits at identified crash spots and develops a crash investigation from multiple viewpoints

- Submit a detailed crash investigation report covering all aspects of safety and recommendations for the hotspots for preventing accidents

- Design a framework to conduct empirical ground studies, identify gaps and provide a structured methodology for data collection and analysis

- Provide recommendations on data-driven process improvements in enforcement strategies

- Perform scientific evaluation of the impact of interventions implemented

- Create a comprehensive standard operating procedure (SOP) for effective traffic enforcement

c) **Seerana Salaigal:** The initiative, which means 'Fatality Accident Incident Reduction', will be launched to develop scientific and innovative enforcement strategies and address road engineering gaps.

d) **Udhavi Sei Thittam:** This scheme that means 'Help All' has been proposed to ensure information, and education related to Road Safety. This will be done through communication campaigns.

There is a need for the state to learn from the best practices being followed across other major Indian states like Karnataka, Delhi and Maharashtra and review the existing policy on an urgent basis. Developed countries like Sweden, Germany and the Netherlands also can be used as a case study for a reduction in the total number of road accidents backed by good practices based on a vision statement.

2. Gujarat

The state of Gujarat recorded 17046 cases of road accidents in 2019 compared to 23183 such cases in 2015 , which is a decline of over 26%.

In 2018, Gujarat Road Safety Authority (GujROSA) Act was introduced to implement road safety programs in the state and act as a lead agency for road safety. In December 2020, Gujarat became the second Indian state after Kerala to establish a road safety authority under the GujROSA Act, 2018. The authority will work on the 4Es of road safety: Road Engineering, Education, Enforcement, Environment & Emergency Services.

Number of people killed in road accidents across Gujarat in India from 2014 to 2020 (in 1,000s)

Source
Ministry of Road Transport and Highways (India)
© Statist 2022

Additional Information:
India: 2014 to 2022

Fig 4: Number of road fatalities across Gujarat from 2014 to 2020 (in 1,000s)

Following are the key initiatives undertaken by the Gujarat Government in the last few years in the direction of road safety:

a) **Advanced Vehicle and Equipment:** In the past three years, a total of 48 traffic interceptor vehicles, 42 highway patrol cars, 511 motorcycles with a public announcement system, 2816 breath analyser machines with sensors, 616 first aid boxes, and 10000 body cameras have been purchased by the Home department of Gujarat with their commitment towards reducing road fatalities. These resulted in a 45% reduction in road accidents in the past nine years. A total of 27,949 accidents were registered in 2012. In 2021, State had 15,178 accidents which is approximately 45%.[xiv]

b) **Augmenting Training Practices:** Retired government officers are taking regular training of traffic police regarding new traffic rules & regulations, training the officers monitoring driving license tests to improve the reliability of the drivers and training traffic police for soft skills to deal with drivers to reduce road accidents

c) **Awareness Campaigns:** Road Safety campaigns were started in 2018 to increase awareness about road safety. Local Gujarati celebrities are spreading awareness as campaigners to connect with the citizens and tackle the vernacular language barrier. Mandatory screening of short films on road safety in cinema halls, railway stations, and other vantage points.

d) **Development of National Highways:** Fast-tracked National Highway development to improve the road conditions and reduce the blind spots through engineering interventions or including it during the new road construction plan.

e) Strict implementation of the National Road Safety Policy in Gujarat through the Gujarat Road Safety Authority Act, 2018.

f) In 2022, the state government launched Vahan Akasmat Sahay Yojana[xv] under which, the state government will provide free treatment up to INR. 50,000 to all the road accident victims in the first 48 hours of reaching the hospital.

g) In 2022, Surat Police announced "Good Samaritan Award" that will offer a reward amount up to INR 1 Lakh to those who bring injured person to the hospital within one hour after an accident.[xvi]

3. Delhi

The Indian capital registered 1463 road accidents in 2019 compared to 1690 in 2018. The total number of challans issued stood at 54,72,430 in 2019, against 67,04,560 in 2018. Road accident data reflects that pedestrians and two-wheeler drivers are involved in most accidents.

On 13th July 2018, the Delhi Government issued a notification on the "Delhi Road Safety Policy"[xvii] highlighting the need for focused efforts towards reducing road accidents on the capital roads. It mentioned that road accidents tend to increase from 8 pm to 2 am.

Number of fatalities due to road accidents in Delhi, India from 2004 to 2020

Source
Delhi Traffic Police
© Statist 2022

Additional Information:
India: 2004 to 2020

Fig: Total number of fatalities due to road accidents in Delhi in 2020 from 2004 to 2020

The government has set a mission to reduce the number of road accidents by 80% between 2018 and 2025, with a minimum reduction of 10% on a year-on-year basis. The policy document lays special emphasis on the 4Es of road safety – Education, Enforcement, Engineering and Emergency Care.

Number of fatalities due to road accidents in Delhi, India in 2020, by category

Source
Delhi Traffic Police
© Statist 2022

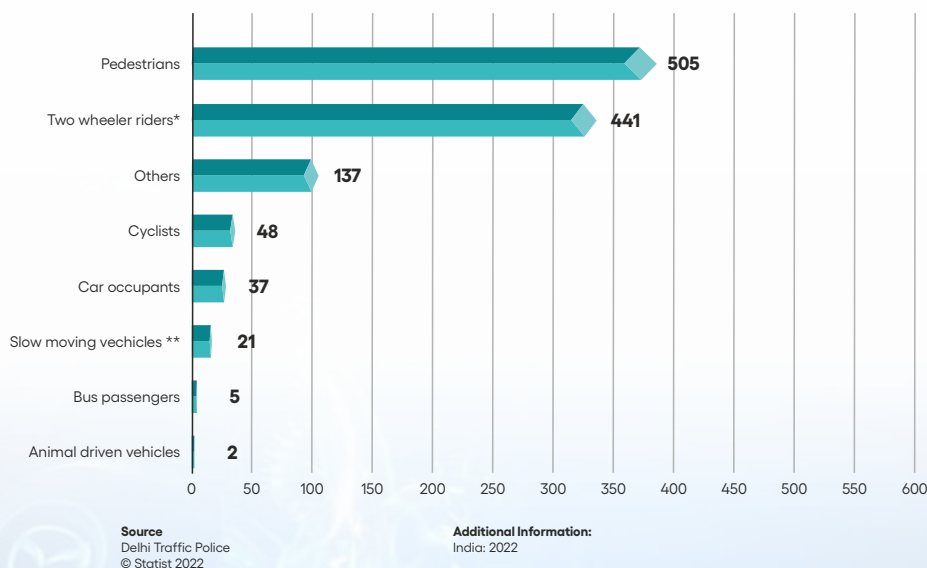**Additional Information:**
India: 2022

Fig: Total number of fatalities due to road accidents in Delhi in 2020, by category

The following headers were covered in the notification document:

i)   Awareness Regarding Road Policy

ii) Effective involvement of Print and Electronic media for creating awareness of Road Safety among citizens.

iii) Strengthening Institutional Arrangements

iv) Establishment of a Road Safety Management Information System

v)   Ensure Safe Road Infrastructure

vi) Planning and Designing of Road

vii) Safe Motor Vehicles

viii) Safe Drivers

ix) Safety for vulnerable road users

x)   Road Safety Education and training

xi) Enforcement of Traffic Laws/Rules and Regulations

xii) Emergency Medical Assistance to Road Accident Victims

xiii) Research for Road Safety

Fig: Snippet on Delhi Road Safety Policy;
Source: Times of India

Following are the major road safety initiatives taken by Delhi Police on road safety:

a) **Delhi Traffic Police Mobile App:** Two-way communication app for sharing traffic updates for various locations and inviting the public to participate in better traffic management practices. There is also a provision to lodge complaints against any faulty traffic signals in the city.

b) **Go-to-School Initiative:** An outreach programme for school children to sensitize them about road safety education.

Image: Road Awareness programme for the students of Bal Bharati public school, Source: Delhi Traffic Police

c) **Traffic Sentinel Scheme:** It allows citizens to report traffic violations observed by them on the roads. Additionally, the city police ran campaigns urging and incentivizing people for reporting violations across the city on the app.

Image: Screenshot of the Delhi Police Traffic Sentinel Promotion Campaign and App; Source: Delhi Police, Newsgram[xviii]

d) **Bicycle Patrolling:** This is a "green" initiative for patrolling the parks and other heavily congested areas around the city where it is difficult to reach by vehicles and maintain a steady presence.

Image: Delhi Police patrolling the streets on bicycle; Source: India Today News[xix]

In 2019, Delhi Police, in partnership with Maruti Suzuki India, launched the 'Automated Red Light Violation Detection and Speed Violation Detection System' in Delhi to improve road safety. The system automatically multiple offences–Red Light Violation Detection (RLVD), Speed Violation Detection (SVD), Stop Line Violation, and Wrong-Side Violation along with the registration number of the violating vehicle.

Number of challans issued by Delhi traffic police from 1991 to 2020 (1,000s)

Source
Delhi Traffic Police
© Statist 2022

Additional Information:
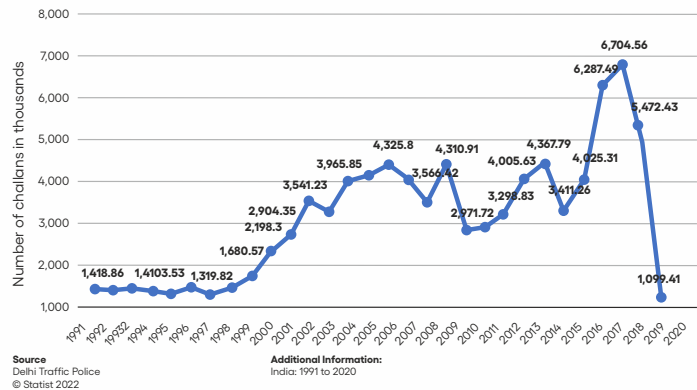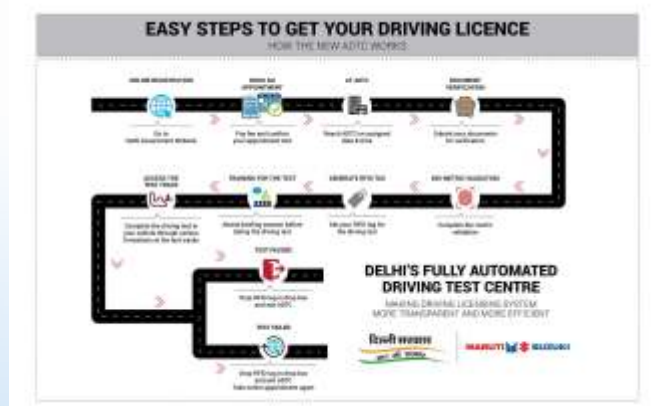India: 1991 to 2020

Fig: Number of challans issued by Delhi Traffic Police from 1991 to 2020 (1,000s)

4. Maharashtra

Maharashtra registered 32,925 road accidents in 2019 against 63,805 total accidents in 2015, which amounted to a massive decline of 48.3% over just four years. In 2017, the "Maharashtra Road Safety Policy"[xx] was issued where the Maharashtra Government. Identified the following factors as major causes of road accidents:

    i)   Unskilled Drivers

    ii)   Unskilled Vehicles

    iii)   Lack of Effective Enforcement

    iv)   Improper Road Design

    v)   Pedestrian Behaviour

    vi)   Lack of coordinated efforts to take corrective measures amongst the concerned government departments and other agencies.

The state government undertook the following measures and initiatives to improve on the issues mentioned above:

Number of road accidents across Maharashtra in India from 2014 to 2020 (in 1,000s)

Source
Ministry of Road Transport and Highways (India)
© Statist 2022

Additional Information:
India: 2014 to 2022

Fig: Number of road accidents across Maharashtra from 2014 to 2020 (in 1,000s)

Number of people killed in road accidents across Maharashtra in India from 2014 to 2020 (in 1,000s)

Source
Ministry of Road Transport and Highways (India)
© Statista 2022

Additional Information:
India: 2014 to 2022

Fig: Number of road fatalities across Maharashtra from 2014 to 2020 (in 1,000s)

a)   **Computerised Driving Test Track:** Started conducting a driving test of candidates on the computerised driving test tracks available at the Central Institute of Road Transport (CIRT), Pune.
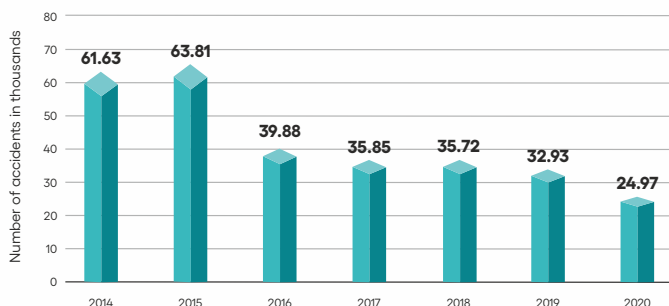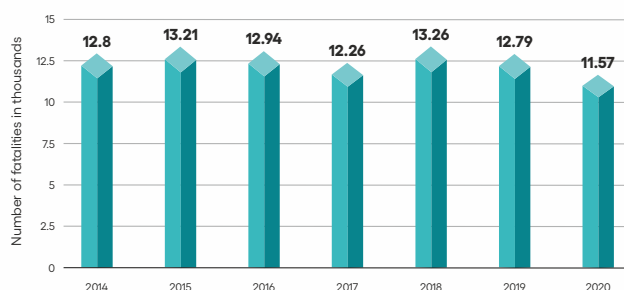

b)   Automated Vehicle Fitness Centre for transport vehicles at Nashik with plans to set-up at least one such centre in each revenue division and subsequently increase the number in a phased manner.

c)   **Coordination among different stakeholders:** The government recognised the need for the Transport Department to work closely with agencies involved in the design, construction and maintenance of roads, such as the Public Works Department (PWD), Local Self Government, and Highway Authorities to take up periodic inspections of roads and take corrective actions wherever needed. It also proposed the implementation of an Intelligent Transport System (ITS) for achieving safe and efficient transport.

d) **Awareness Campaigns:** To promote good practices among different kinds of road users, the government proposed to carry various campaigns via audio, video, print and press media throughout the State with the help of the Department of Information and Publicity, Department of Primary Education and NGOs.

e) emergency medical services for road accident victims, especially in the golden hour, the government commissioned State Emergency Medical Services as part of the National Rural Health Mission (NRHM). These services are available around the clock and operated through a central control room.

Few other key initiatives:

a) **Road Safety Campaigns:** Mumbai traffic police actively organised road safety campaigns[xxi] across the city to promote good driving habits among the citizens. Every year Road Safety Week is organised by the government per the guidelines issued by the Ministry of Road Transport and Highways.

b) **Collaboration with Bloomberg Philanthropies:** In 2015, Mumbai authorities collaborated with Bloomberg Philanthropies Initiative for Global Road Safety (BIGRS)[xxii]. This joint effort helped bring a scientific approach to examining the best practices being followed worldwide.

Progress was measured in terms of gathering and analysing data that was previously difficult to access, such as victim demographics or environmental conditions in the areas where crashes occurred. Bloomberg Philanthropies also evaluated infrastructure improvements, helping the government understand and quantify how interventions could save lives.

c) **Set up of Road Safety Cell:** In October 2022, the state government set up a road safety cell[xxiii] at *Swami Ramanand Teerth Marathwada University* in Nanded. The decision aimed to inculcate good traffic habits among the youths, who constitute a big proportion of the total road accidents in the state.
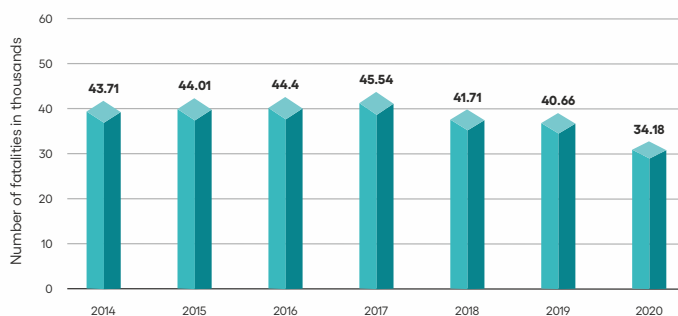
5. Karnataka

The state of Karnataka ranked 5th in the total number of accidents across India in 2019 as per data available with the Ministry of Road Transport and Highways, registering a decline of 7.6% over the accidents recorded in 2015. The graph below shows the total number of road accidents from 2014 to 2020. In 2015, the state government launched "Karnataka State Road Safety Policy"[xxiv] that aimed to reduce road accidents by 25% and fatalities by 30% by 2020. Despite being a pandemic year, the number of road accidents was still higher than the set targets in the policy. In contrast, road fatalities were also very high at around 10,960 and 9,760 in 2019 and 2020, respectively.

In 2018, Karnataka became the first state to give legislation protection to the Good Samaritans after the president of India gave assent to Good Samaritan and Medical Professional (Protection and Regulation during Emergency Situations) Bill to encourage people to come forward and help accident victims during the 'golden hour' without fear of harassment from the police and investigations.[xxv]

Number of road accidents across Karnataka in India from 2014 to 2020 (in 1,000s)

Source
Ministry of Road Transport and Highways (India)
© Statist 2022

Additional Information:
India: 2014 to 2022

Fig: Number of road accidents across Karnataka from 2014 to 2020 (in 1,000s)

Number of people killed in road accidents across Karnataka in India from 2014 to 2020 (in 1,000s)
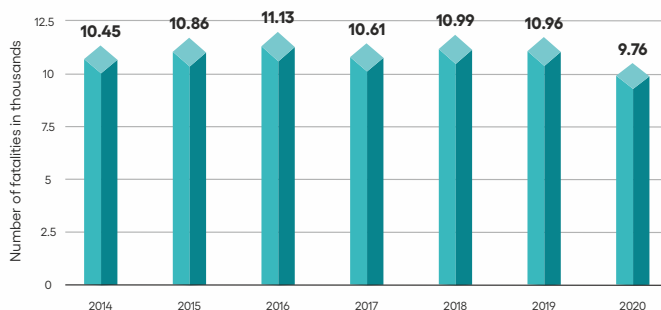

Source
Ministry of Road Transport and Highways (India)
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Additional Information:
India: 2014 to 2022

Fig: Number of road fatalities across Karnataka from 2014 to 2020 (in 1,000s)

The landmark "Karnataka State Road Safety Policy"[xxvi] document covered the following objectives:

i) Work on the 5Es of road safety - Improving road engineering and design, increasing awareness for road safety, providing timely emergency care and improving traffic law enforcement in the state.

ii) Development of an Accident Information System to implement a crash management system in the state.

iii) Develop a framework for undertaking coordinated actions and corrective measures by all concerned stakeholders.

iv) Establish the basis for accountability, evaluation, funding and research.

v) Improve outreach and work with the road safety community to support road safety programs.

To implement the above-listed objectives, a Road Safety Council was formed in Karnataka vide Gazette Notification No. SARIE 165 SAEPA 2013, dated 28th November 2014. The council was headed by the Minister for Transport, Karnataka and comprised of members from Transport, Home, Public Works, Health & Family Welfare, Education, Urban Development, Urban Land Transport, Excise, and Town Planning Departments, with representatives from voluntary organizations.

Actions taken by the Government of Karnataka:

a) **Strengthening of Road Crash Database System:** The policy document emphasizes understanding the general pattern and trends of crashes, which could provide a comprehensive analysis of crashes and insights for developing effective road safety interventions. The following are the key activities envisaged for improving the road crash database system:

   i) Creation of a database to fit the requirements of Home, Public Works, Transport, Health & Family Welfare, Urban Development Department and Research Institutions.

   ii) Connection of all the trauma care centres, district hospitals, and ambulance services to the central database.

   iii) Linking of the database with VAHAN and SARATHI database.

   iv) GPS & GIS enablement in the vehicle for real-time tracking.

b) **Safe Planning and Design of Roads:** Following measures were suggested for the implementation of safe planning and design of roads:

   i) Periodic road audits by road safety experts for identification and corrective actions at accident-prone areas and black spots based on accident intensity and severity.

   ii) Introduced a concept of "Self Explaining roads" and "Forgiving roads" in the entire state road network and implemented actions such as lane marking, safety sign boards, crash barriers, curve treatments, etc.

   iii) Removal of encroachments and obstructions affecting the full use of roads in the state.

   iv) Introduced "traffic calming measures" to reduce vehicle speed in special areas like vulnerable stretches, near schools/ hospitals/ markets/ other busy locations.

v) Development of handbooks on 'Road Safety Design Guidelines', Road Safety Audit Guideline", Road Safety Review Field Guide". "Black Spot Identification Field Guide" and "Traffic Control plans at Road Construction Field Guide" are to be used by engineers at all levels.

c) **Enforcing Safe Driving Behaviour:** Underscoring the importance of safe driving, the policy outlined the following initiatives:

i) Organisation of safety and awareness campaigns

ii) Issuance of driving licenses from Automated Driving Training Centres and "Certificate of Fitness" for vehicles from automated Inspection and Certification Centres.

iii) Regular enforcement drives checking of fastening of seat belts, wearing of helmets, check for violation of other basic safety requirements, drunken driving, etc.

d) **Awareness Programs - Education and Training for Road Users:** The recommendation is to make road safety programmes mandatory in schools and colleges and conduct training programmes for teachers, parents and citizens.

e) **Timely Emergency Medical Services for Road Accidents**

i) Ambulances and cranes at reasonable distances on national and state highways for clearance of road blockades at the accident site.

ii) Advanced Highway Patrol Vehicles[xxvii] with Live Video streaming and GPS Tracking have been deployed to smooth traffic flow and manage any impediments due to accidents on the road.

In 2018, Karnataka Police was awarded by the Federation of Indian Chambers of Commerce and Industry (FICCI) for its effective highway patrolling system.[xxviii]

Key Road Safety Initiatives across the 5 states

The following sub section illustrates the key initiatives taken by the state governments of Tamil Nadu, Gujarat, Maharashtra, Delhi, and Karnataka across the 4E's of road safety.

Road Engineering Initiatives:

Tamil Nadu	Gujarat	Maharashtra	Delhi	Karnataka
• Road Safety audits on State Highways and National Highways for identification and rectification of black spots ensuring all precautionary measures are taken during the construction of roads. • Special Task Force devises and implements plans by coordinating with all state departments and academic institutions as was constituted by the state government. • Seerana Salaigal: An initiative to develop scientific and innovative enforcement strategies and address road engineering gaps.	• Pilot projects to implement Intelligent Transportation System (ITS) on selected state highways to enable real time decision making for road user and provide recommended routes.[xxix]	• Road safety drives across selected highways to identify accident-prone black spots.[xxx] • Collaboration between Mumbai Authorities and Bloomberg Philanthropies Initiative for Global Road Safety (BIGRS) to understand best road safety practices followed worldwide.	• MoU between Delhi Police and Centre for Development of Advanced Computing (C-DAC) to operationalise the Intelligent Traffic Management System (ITMS) project. • Installation of 3D Radar based Over speed Violation Detection system and Red Light Violation Detection System.	• Concept of "Slow Streets" introduced as a traffic calming measure, where there is a speed limit of 15kmph for both motorised and non-motorised vehicles.[xxxi]

Education Initiatives:

Tamil Nadu	Gujarat	Maharashtra	Delhi	Karnataka
• Awareness campaigns on the following themes: • Use of mobile phones while crossing the road or driving a vehicle. • Wearing of seat belts and helmets on the road. • Avoidance of drunk driving. • Safe driving and respecting traffic rules. • General awareness about ambulance services in the city. • Udhavi Sei Thittam: Scheme to promote information and education related to Road Safety through communication campaigns.	• Road Safety Campaigns: Local celebrities are usually roped in for awareness programs. • Mandatory screening of short films on road safety in cinema halls, railway stations, and other vantage points. • Retired government officers take regular training of traffic police regarding new traffic rules & regulations.	• Awareness Campaigns with the help of the Department of Information and Publicity, Department of Primary Education and NGOs. • Set up of Road Safety Cell at universities to inculcate good traffic habits among the youths.	• Road Safety Campaigns for different road users like both individual and commercial vehicle drivers, pedestrians, children, etc. • Go-to-School Initiative: An outreach programme for school children to sensitize them about road safety education. • Workshops on safe and defensive driving for school bus drivers. • Road Safety Exhibition Van to sensitize public through films, shows, audio video display and announcements through PA systems. • Traffic Training Parks [xxxii] to impart practical education to different categories of road users including school children.	• Road Safety Campaigns by Traffic Police in association with NGOs and schools across the taluks.

Enforcement Initiatives:

Tamil Nadu	Gujarat	Maharashtra	Delhi	Karnataka
• Mandatory refresher training for state bus drivers twice a year, along with periodic health check-ups.	• 48 traffic interceptor vehicles, 42 highway patrol cars, 511 motorcycles with a public announcement system, 2816 breath analyser machines with sensors, 616 first aid boxes, and 10000 body cameras purchased by the Home department of Gujarat in last 3 years.	• Computerised driving test tracks available at the Central Institute of Road Transport (CIRT) in Pune. • Automated Vehicle Fitness Centres	• Traffic Sentinel Scheme: It allows citizens to report traffic violations observed by them on the roads. • Bicycle Patrolling: This is a "green" initiative for patrolling the parks and other heavily congested areas around the city.	• State Traffic police has enforced ITMS system to enforce rules in contactless way.

Emergency Care Initiatives:

Tamil Nadu	Gujarat	Maharashtra	Delhi	Karnataka
• Implementation of 108 ambulance services for better road traffic accident response time. • Nammai Kakkum 48: Scheme to ensure absolute budgetary certainty for road crash victims. • Certificate of appreciation and Rs 5000/- monetary award to people bringing road accident victims to hospital within the golden hour.	• "Vahan Akasmat Sahay Yojana" scheme under which, the state government will provide free treatment upto Rs. 50,000/- to all the road accident victims in the first 48 hours of reaching the hospital. • Introduction of "Good Samaritan Award" offering up to 1 lakh for bringing road accident victims to hospital within the golden hour.	• Commissioning of State Emergency Medical Services as part of the National Rural Health Mission (NRHM), providing round the clock service. • "Late Balasaheb Thackeray Road Accident Insurance Scheme",[xxxiii] provides a medical assistance of upto Rs 30,000/- to the road accident victims. • Good Samaritans are awarded Rs 5,000/- for rushing road accident victims to hospital during golden hour.	• Under the "Farishtey Dilli Ke" scheme, government bears the treatment expenditure for eligible road accident victims. • Good Samaritans are awarded Rs 5,000/- for rushing road accident victims to hospital during golden hour.	• In 2018, Karnataka became the first state to give legislation protection to the Good Samaritans. • Karnataka government provides free medical treatment to road accident victims for the first 48 hours after injury.[xxxiv] • Good Samaritans are awarded Rs 5,000/- for rushing road accident victims to hospital during golden hour.

Key Takeaways

It is interesting to note that the Indian Government has been quite vocal about ensuring road safety for all road users and introduced a handful of policies and measures to arrest the number of road accidents as it not only puts an emotional dent on the victim but but also impacts a country's GDP adversely .

In our analysis of the five Indian states – Tamil Nadu, Gujarat, Maharashtra, Delhi, and Karnataka, we identified that all the states have their respective road safety policies in place except Tamil Nadu, which has not updated its road policy in lines with The National Road Safety Policy, introduced by the Central Government in 2010. Nevertheless, the state has introduced several initiatives in the direction of road safety. The below list provides a summary of our key recommendations, which the state governments can look at as a reference point. Few inputs have been taken from the Delhi Traffic Police Road Crash Report 2021.

1. **Periodic Road Safety Audits:** Being an investment-heavy exercise, efforts on conducting periodic road safety audits across the states have been limited to specific cities and a few state and national highways only. Governments must spend more resources on regularly identifying accident-prone bind spots and rectifying holes on the roads.

2. **Use of Safety Barriers:** Safety barriers and roadside guardrails should be mandatorily made a part of the road design to prevent collisions. Though most urban road infrastructure has some traffic separation, rural infrastructure needs special attention.

3. **Safety of Two-Wheelers:** As of now, there are no dedicated lanes for two-wheelers on the road. On the left, they have to drive through heavy commercial vehicles, while on the right lane, they have to deal with high-speeding vehicles, and in the middle lane, they have to battle it out with lane-changing vehicles. The idea of a pseudo-thermostatic plastic lane can be considered for the same.

4. **Improving Road Conditions:** Improved road design can significantly help prevent crashes. The following things should be done to improve the condition of roads:

    a) Fixing the speed limit signs on the roadsides and using reflectors/reflective paints at the start of road dividers, on side railings, poles and trees for safe driving during the night on the state and national highways.

    b) Use speed breakers before intersections, nose of flyovers, and at the point of merging traffic.

    c) Speed calmers should be present on minor roads just before it meets any major roads to stop small vehicles from randomly entering into the fast and heavy movement of vehicles on major roads.

d) Unnecessary cuts on the road should be identified and closed. Slow-moving vehicle drivers and two-wheeler riders usually take shorter U-turns if the actual crossing passage is far away.

5. **Common database for all license holders:** It is observed that people have more than one driving license issued from different authorities, and their previous violations and offences cannot be accessed in one place. A unique Point-based system, like in Germany, should be implemented at the country level to keep track of administrative offences and felons that affect road safety.

6. **Intelligent Traffic Management System (ITMS):** Few States have already started implementing ITMS. Other state governments should also push for the adoption of the same. It will help improve mobility, discipline on the road, and congestion management through optimised signal timings based on real-time intelligent inputs from the road.

7. **Enforcement Drives:** Most states are doing fairly well in spreading awareness about road safety through different campaigns. But adherence to road safety laws remains an issue. Strict enforcement must be introduced as pre-emptive measures to maintain discipline on the road.

8. **Safer roads for Pedestrians:** There is an urgent need to construct dedicated facilities for pedestrian movement on the city roads. Footpaths are often either not continuous on the road or encroached upon by shopkeepers or vendors, forcing them to walk on the roads.

9. **Construction of Foot Over Bridges:** People in India are usually seen crossing the roads amid live traffic without waiting for traffic signals. The state authorities should carefully identify such locations, and foot-over bridges should be built for safe passage. Grills should be installed on the road barriers to prevent people from crossing the street at the accident prone points.

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