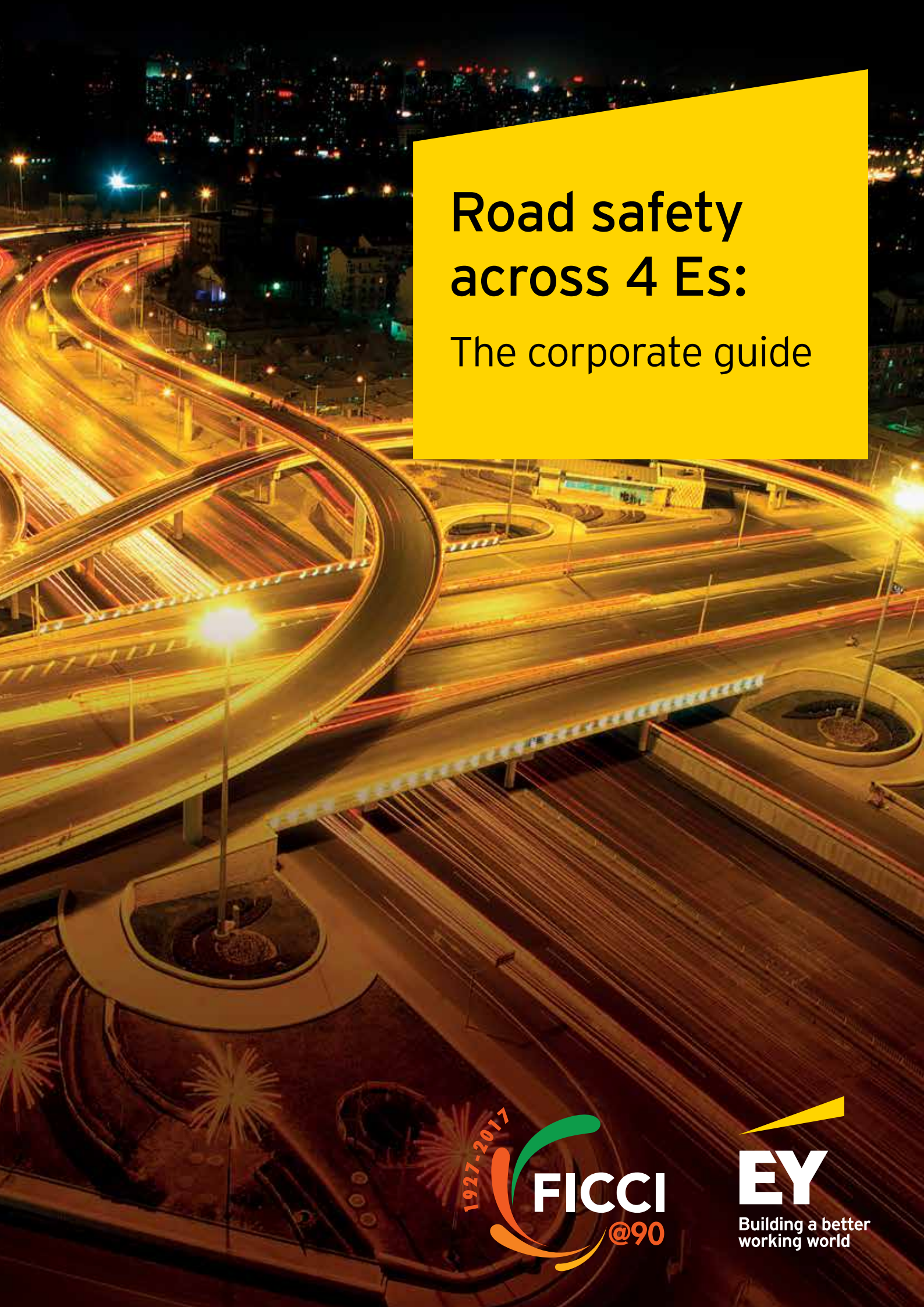


Road safety across 4 Es:

The corporate guide

1927-2017 FICCI @90

EY Building a better working world



Foreword

In India, the economic costs which road accidents entail are close to 3% of its GDP. A recent report released by the Indian Government claims that road accidents in India have decreased by 4.1% in 2016. The Government need to undertake many proactive measures in addressing the issue of road safety, as in the same year the road fatalities have increased by 3.2%.

FICCI believes that involving India Inc. can further boost the efforts of the government. The United Nations has proclaimed 2011-20 as the Decade of Action on Road Safety, hence there is a need for collective action by the Government, Industry and Civil Society.

The report on 'Road Safety across 4Es: The corporate guide' attempts to highlight shared responsibilities to contribute to road safety in areas on Education, Engineering, Enforcement & Emergency Care. Beyond the fundamental responsibility to keep employees safe, companies also have a clear financial incentive to improve road safety. In addition, some of the winning entries of FICCI Road Safety Awards 2017, have been documented in this report and could be replicated by other corporates.

I sincerely hope that this report will offer important and useful insights to all stakeholders.



Mr. G K Pillai
Chair, FICCI Committee on Homeland Security

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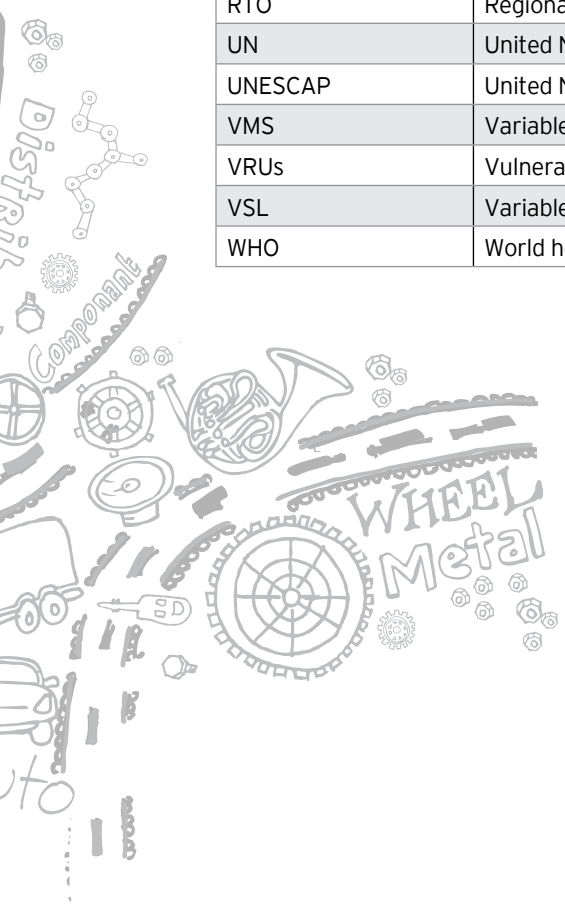
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Glossary of terms

Abbreviation	Definition
ABS	Antilock Braking System
ADAPT	Anticipatory Driving and Accident Prevention Training
BAC	Blood Alcohol Content
BPO	Business Process Outsourcing
CBT	Computer Based Training
CMV	Central Motor Vehicle
CSR	Corporate Social Responsibility
DVLA	Driver Vehicle and Licensing Agency
EMT	Emergency Medical Technicians
EMS	Emergency Medical Services
FIR	First Information Report
GDP	Gross Domestic Product
HAS	Highway Advisory Service
IRTE	Institute of Road Traffic Education
IDTR	Institute of Driver training and research
IRF	International road Federation
MoRTH	Ministry of road transport and Highways
OECD	Organization for Economic Co-operation and Development
RCVIS	Road Crash and Victim Information System
RTO	Regional Transport Office
UN	United Nations
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
VMS	Variable Message Signs
VRUs	Vulnerable Road Users
VSL	Variable Speed Limit
WHO	World health Organization





Executive summary

The road crash fatalities have been on rise in India. As per the MoRTH Report on Road Accidents in India: 2016, the overall number of road accidents declined by 4.1% but fatalities went up by 3.2%[1]. In order to combat and effectively monitor road safety concerns, the WHO has defined the following multi-pronged approach to road safety with focus on the four E's:

- **Education:** Creating awareness about road safety among the community to make them conscious about following road safety rules
- **Enforcement:** Ensuring better regulations and compliance with traffic rules to prevent road crashes
- **Emergency care:** Ensuring aid to road crash victims in the platinum/golden hour
- **Engineering:** Bringing about improvements to infrastructure to prevent road crashes

It has been found that India accounts for 10%[2] of global road deaths, highest in the world, of which one-third road crashes claim lives and almost half of these road crash victims are in the economically active age group of 18-35 years[1]. The facts that road accidents primarily affect the working class and that 25%[3] of these crashes happen during a work-related commute should make corporates more serious about the road safety of employees. Considering the associated losses: financial, operational and brand value of the company with road crashes, which corporates have to face; they have an added incentive to encourage road safety initiatives in their organization and the community.

[1] Report of MoRTH on Road Accidents in India:2016
[2] https://auto.economictimes.indiatimes.com/news/industry/india-ranks-first-in-road-deaths-in-the-world/56221070
[3] Report of TSF on advancing Road Safety Best Practices for Companies and Their Fleets: 2016



The corporates can build road safety programs along a simple "plan, do, check, act" (P-D-C-A) approach to ensure safe drivers, safe vehicles and safe journey in their organization.

- **Plan:** To manage road safety in your organization
- **Do:** Prioritize and evaluate risks, consult employees and provide training and information
- **Check:** Measure success and deviation of road safety plan
- **Act:** Learn from experience and take actions

Further, corporates can undertake initiatives across the 4Es to ensure road safety of their employees:

- By informing, educating and empowering employees with knowledge about road safety hazards
- By ensuring their employees drive safer vehicles and maintain safe speeds along safer routes
- By having a road crash response plan, road crash aid resources and crash notification system
- By enforcing regulatory policies and using behavioral sciences to avoid road safety hazard

A government-corporate collaboration for road safety initiatives may result in a win-win situation for both parties wherein the government can benefit from innovation, data, reach and financial resources of businesses while businesses can benefit from safer roads, better laws and vehicle standards for ensuring increased road safety of their employees and reduced losses for their organization due to road crashes.

The initiatives and the roadmap for corporate organizations are discussed in detail in this knowlegde paper. Also, we have complied some international and national case studies which have been honoured at road safety awards, on leading road safety practices by corporates

Overview of **road safety** in India



In year 2016 nearly 1.5 lakh people[1] died and many more were injured in India as a result of road crashes. According to the World Health Organization (WHO)[2], road traffic injuries are the seventh leading cause of death in India, with a greater share of hospitalization, deaths, disabilities and socio-economic losses in the young and middle-aged population.

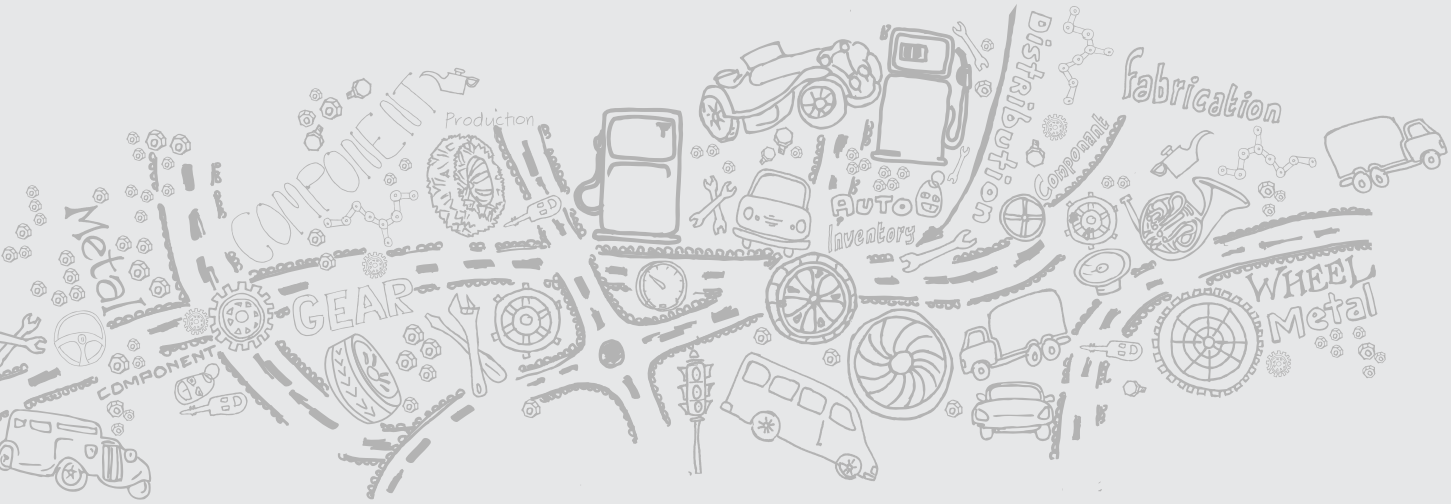
India accounts for 10%* of global road deaths. During the calendar year 2016, there were close to 4.8 lakh road accidents in India, which claimed more than 1.5 lakh lives[1], or one road accident every minute and one road accident death every 4 minutes.

Accident severity index highlights that one-third of all accidents in India claim lives and almost half of the victims are in the economically active age group of 18-35 years.

The facts that road accidents primarily affect the working class and that 25%[3] of these crashes happen during work-related commute should make corporates more serious about the road safety of employees. Corporates can and should play a major role in furthering road safety initiatives for employees and the community, especially considering the associated financial losses, operational losses and brand value loss.

1.1 Road crash statistics in India

In India, the Ministry of Road Transport and Highways (MoRTH) is the apex body that regulates road safety policies in India. It is also responsible for coordinating road safety efforts among various stakeholders to reduce road crashes. The following are a few statistics published by MoRTH in its annual road safety report, 2016.

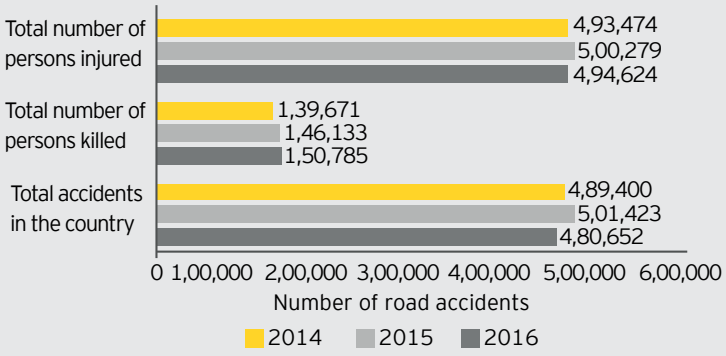


[1] Report of MoRTH on Road Accidents in India:2016
[2] Report of WHO on Road safety injuries statistics
[3] Report of TSF on advancing Road Safety Best Practices for Companies and Their Fleets: 2016
*https://auto.economictimes.indiatimes.com/news/industry/india-ranks-first-in-road-deaths-in-the-world/56221070



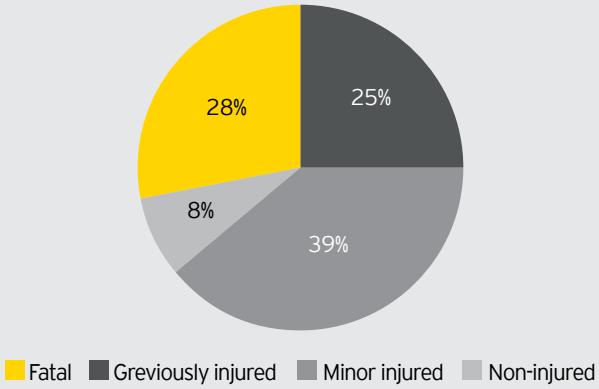
The chart below provides details of the total number of road accidents in the past three years in India along with the total injuries and fatalities

Road accident statistics: India[1]



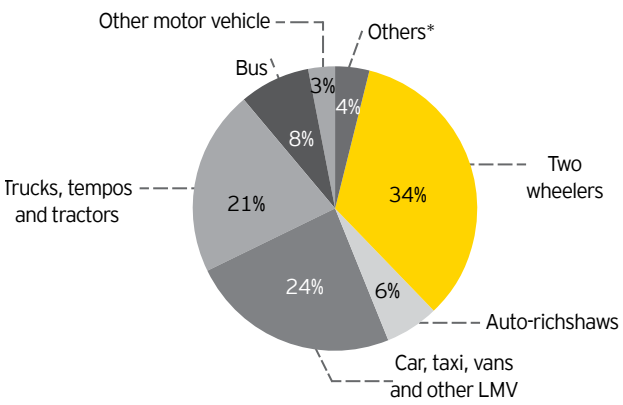
Overall road accidents declined by 4.1% but fatalities went up by 3.2%, i.e., more than 400 people lost their lives on the roads every day.

Types of road accidents[1]



From the total number of accidents we have further drilled down the type of road accidents as per MoRTH classification. In its annual report titled road accidents in India- 2016, most of the accidents in India fall under the "fatal" and "greviously injured" categories.

Break-up of road user categories involved in road accidents in India[1]

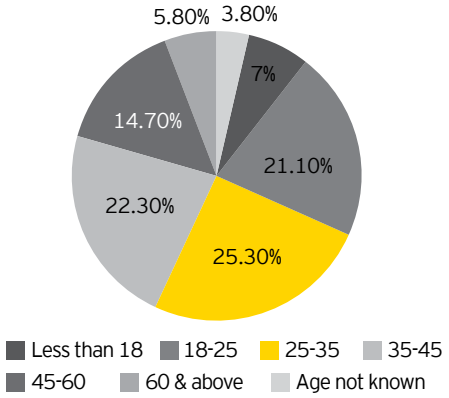


*Non-motorized vehicles & other objects

Most of the accidents shown in the above charts can be further specified based on the type of vehicle used. Clearly, two-wheelers are the most vulnerable segment, comprising more than one-third of the total road accidents.

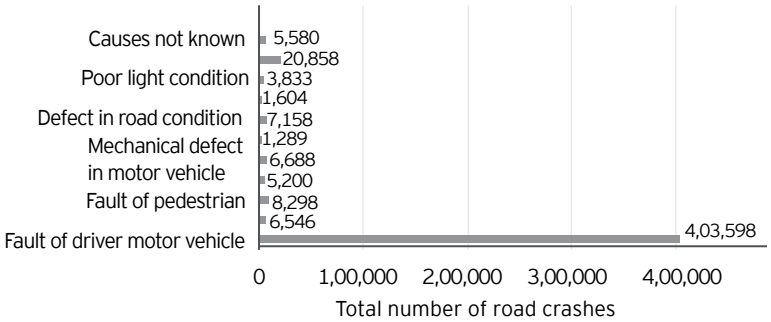
[1]Report of MoRTH on Road Accidents in India:2016

Age wise % break-up of road accident victims in India[1]



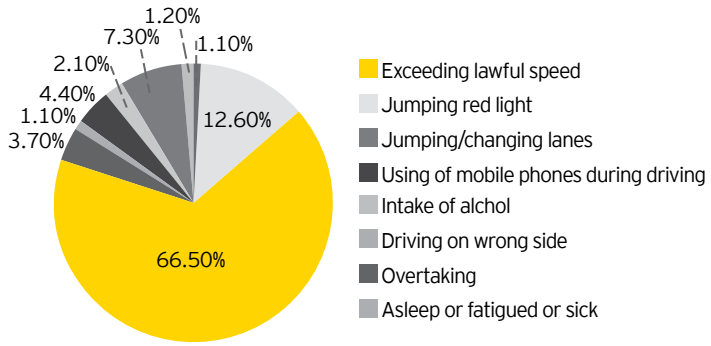
The productive age group of 18 to 35 years accounted for the highest share of 46.3% of the total road accidents fatalities.1 The working age group of 18-60 years accounted for 83.3% of road accident fatalities

Break-up of road crash in India by cause[1]



The fault of the driver was the cause of more than 84% of all road accidents, 80.3% of fatalities and 83.9% of injuries on Indian roads during 2016

Fault of drivers[1]



As seen from the previous chart that in most of the accident it's the driver who is at fault. The adjacent chart further describes the reasons behind the driver's fault. Clearly, more than two-third of accidents were due to exceeding lawful speeds.

1.1.1 Impact of road crashes in India

Road crash injuries and/or fatalities impact the personal, social and economic lives of people and the nation. While direct financial losses due to accidents can be measured by adding medical costs, legal and court costs, lost productivity, property damages, etc., indirect costs resulting from a victim's inability to continue earning or from the reallocation of work required are difficult to measure and empathize.

According to a study by the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) covering 19 Asia-Pacific countries, the impact of road accidents on the Indian economy was 3% of GDP or over US$58,000[4] million in terms of value in the year 2015. India is only behind Japan (US$63,000 million) in terms of value, while in terms of GDP loss it comes behind Iran, which is at 6% (US$30,697 million).

1.2 Key stakeholders involved in the road safety ecosystem in India

Stakeholder	Role in road safety	Challenges faced
Government institution	▶ Defining road safety regulations and, policies ▶ Funding road safety initiatives ▶ Bringing together road safety stakeholders for implementing road safety plans	▶ Lack of good road crash data to take targeted actions ▶ Involvement of multiple agencies and their guarded interests, making it difficult to implement policies and initiatives
Police/ Enforcement agencies	▶ Generally the first responders to road crash incidents ▶ Filing the FIR in case of a road crash ▶ Investigating road crashes ▶ Compiling road crash data and sharing with the Ministry of road transport and highways. ▶ Enforcing road rules and regulations for ensuring road safety	▶ Loss of information on road crashes due to situational factors leading to biased reporting and investigation ▶ Lack of resources to file long reports on road crashes ▶ Lack of information on the exact location of an accident

[4]Source: https://auto.economictimes.indiatimes.com/news/industry/india-losses-3-of-its-gdp-to-road-accidents-un-study/55700816

Stakeholder	Role in road safety	Challenges faced
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Health sector	▶ Providing first aid and emergency response to road crash victims ▶ Sending ambulance to the accident scene ▶ Ensuring appropriate treatment of victims ▶ Coordinating with the police and victims' families	▶ Lack of trauma centers and staff to provide response to the victims ▶ Lack of sufficient ambulances and other infrastructure ▶ Difficulties in getting patients to the hospital in the platinum/golden hour, resulting in worsening of injuries
Road authorities	▶ Identifying and reducing the black spots on roads ▶ Putting up signage and boards for road users ▶ Designing the roads in a manner to ensure safe driving	▶ Lack of information on the exact location of an accident, making it difficult to identify black spots ▶ Loss of information on road crashes, leading to biased investigation that may hide the reasons due to road engineering defects
Education/ Research institutes	▶ Educating citizens on the road safety measures ▶ Conducting pilot projects where innovative road crash prevention measures can be tested ▶ Conducting expert analysis on road conditions ▶ Providing recommendations for reducing road accidents	▶ Lack of good crash data to do analysis
Corporates	▶ Developing internal safety policies for their staff ▶ Taking initiatives under their CSR policy ▶ Providing for road safety of employees in industries such as ecommerce and logistics, where a large number of employees are on the road transporting goods from one place to another, as well as the BPO industry, where a lot of employees work in shifts, leading to fatigue and decreased concentration	▶ Getting approvals from government agencies to implement initiatives ▶ Lack of awareness among employees who transport goods; insufficient technology use in vehicles

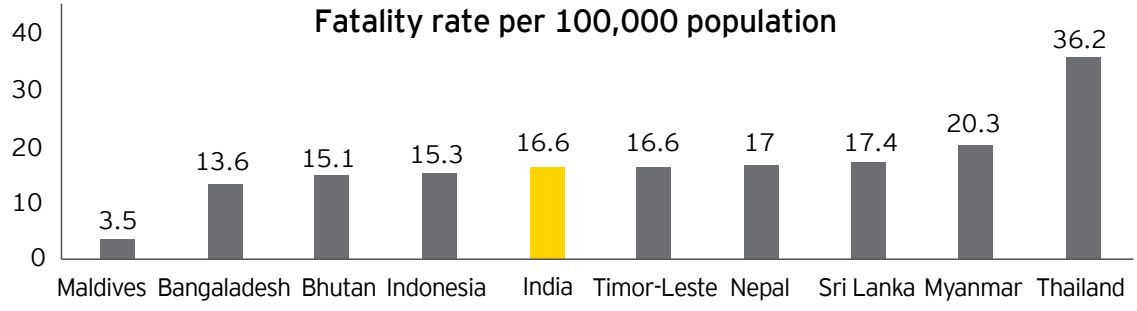
Stakeholder	Role in road safety	Challenges faced
Media	▶ Increasing the awareness of road safety policies, impact and initiatives among citizens ▶ Reporting road crash incidents	
Insurance agencies	▶ Settling claims on property/ lives loss after a road crash	▶ Lack of proper road crash investigation reports
NGOs	▶ Raising awareness on road safety ▶ Providing recommendations, highlighting problems and giving ideas to government for various road safety initiatives ▶ Providing emergency care to road crash victims	▶ Lack of funds and support ▶ Lack of road crash data to take targeted actions
Private concessionaires for toll roads	▶ Providing emergency response on toll roads in case of a road crash ▶ Providing necessary information such as sign boards to the road users ▶ Maintaining the roads and conducting re-engineering of accident prone areas ▶ Conducting road safety audits	▶ Lack of information on the exact location of accidents ▶ Lack of infrastructure to provide quick response

1.3 Where does India stand?

Globally, road traffic injuries claim more than 1.2 million* lives each year and have a huge impact on health and development. The rise in global road traffic deaths has been largely driven by the escalating death toll on roads in low- and middle-income countries – particularly in emerging economies where urbanization and motorization accompany rapid economic growth.

There are approximately 316,000 road traffic deaths each year in the South-East Asia Region, which includes India, accounting for approximately 25% of the world's road traffic deaths. WHO published a report on road safety in 2015 wherein these South East Asian countries (Maldives, Bangladesh, Bhutan, Indonesia, India, Timor-Lest, Nepal, Sri-Lanka, Myanmar and Thailand) were compared across some indicators on road safety to assess the road safety situation in this region.

The chart below compares India with various other South East Asian countries as per the fatality rate per 100,000 population.[5]



*http://www.who.int/violence_injury_prevention/publications/road_traffic/world_report/en/

[5]Report of WHO on Road Safety in the South East Asia region: 2015

The table below highlights where India stand vis-à-vis South East Asian countries along certain road safety parameters, distributed across five pillars of road safety defined under the United Nations (UN) Decade of Action for Road Safety (2011-2020)[6].

Indicator	Maldives	Bangladesh	Bhutan	Indonesia	India
Road safety management					
Estimated GDP cost due to road traffic crashes	NA	1.6%	NA	2.9-3.1%	3%
Lead agency	Transport Authority, Ministry of Economic Development	National Road Safety Council (NRSC)	Road Safety and Transport Authority (RSTA)	National Planning Agency (Badan Perencanaan Pembangunan Nasional - BAPPENAS)	Department of Road Safety, Ministry of Road Transport and Highways (MORTH)
Funded in national budget	No	No	Yes	Yes	Yes
National road safety strategy	No	Yes	Yes	Yes	Yes
Safer roads and mobility					
Formal audits required for new road construction projects	No	Yes	No	Yes	Yes
Regular inspections of existing road infrastructure	No	Yes	No	Yes	No
Policies to promote walking or cycling	No	No	Yes	Yes	Yes
Policies to encourage investment in public transport	Subnational	Yes	Yes	Yes	Yes
Policies to separate road users and protect Vulnerable Road Users (VRUs)	No	No	No	Subnational	Subnational
Safer vehicles					
Total registered vehicles	61,412 (year 2013)	2,088,566 (year 2014)	68,173 (year 2014)	104,211,132 (year 2013)	210,023,289 (year 2015)[7]
Most deaths by road user category	Pedestrians (33%)	Pedestrians (32%)	Passengers 4-wheeled cars and light vehicles (49%)	Riders of motorized two-or three-wheelers (36%)	Two wheelers (32%)
Post-crash care					
Emergency room injury surveillance system	Yes	No	No	No	No
Emergency access telephone numbers	119	None	112	Multiple numbers	Multiple numbers

[6] Report of WHO on Road Safety in the South East Asia region: 2015
[7] Source: https://community.data.gov.in/registered-motor-vehicles-in-india-as-on-31-03-2015/

Timor-Leste	Nepal	Sri Lanka	Myanmar	Thailand
Road safety management				
NA	0.8%	NA	0.5%	3%
National Directorate of Transport	Road Safety Council, Ministry of Physical Infrastructure and Transport	National Council for Road Safety	Traffic Rules Enforcement Supervisory Committee (TRESC)	National Road Safety Directing Center
Yes	Yes	No	No	Yes
Yes	Yes	No	Yes	Yes
Safer roads and mobility				
Yes	Yes	No	Yes	No
Yes	No	No	Yes	No
No	No	No	No	No
No	No	No	Yes	Yes
No	No	No	Subnational	No
Safer vehicles				
63,533 (2006-2013)	1,178,911 (Year 2011)	5,203,678 (year2013)	4,310,112 (year 2014)	32,476,977 (year 2012)
NA	NA	Rider motorized two- or three-wheeler (41%)	Pedestrians (26%)	Rider motorized two- or three-wheeler (73%)
Post-crash care				
Yes	No	No	No	Yes
110	None	119	192	1669

Indicator	Maldives	Bangladesh	Bhutan	Indonesia	India
Safe road users					
Speed	Meets some of criteria for best practice	No law/ law does not meet best practice	Meets criteria for best practice	No law/law does not meet best practice	Legislation set at subnational level
Drunk-driving	No law/law does not meet best practice	No law/law does not meet best practice	Meets some of criteria for best practice	No law/law does not meet best practice	Meets some of criteria for best practice
Use of helmets	Meets some of criteria for best practice	No law/law does not meet best practice	Meets criteria for best practice	No law/law does not meet best practice	No Law/ law doesn't meet best practice
Use of seat belts	Meets some of criteria for best practice	No law/law does not meet best practice	Meets criteria for best practice	Meets some of criteria for best practice	Meets criteria for best practice
Child restraints	No law/law does not meet best practice	No law/law does not meet best practice	No law/law does not meet best practice	No law/law does not meet best practice	No law/law does not meet best practice



Timor-Leste	Nepal	Sri Lanka	Myanmar	Thailand
Safe road users				
Meets some of criteria for best practice	No law/law does not meet best practice	Meets some of criteria for best practice	Meets criteria for best practice	No law/law does not meet best practice
Meets some of criteria for best practice	No law/law does not meet best practice	Meets some of criteria for best practice	Meets some of criteria for best practice	Meets some of criteria for best practice
Meets criteria for best practice	No law/law does not meet best practice	No law/law does not meet best practice	Meets some of criteria for best practice	Meets criteria for best practice
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Meets criteria for best practice	No law/law does not meet best practice	No law/law does not meet best practice	No law/law does not meet best practice	No law/law does not meet best practice



1.4 Understanding the role of 4 Es in improving road safety

Given the fact that road crash fatalities are on the rise in India and population density and vehicular movement are increasing, it is essential to not only improve the condition of roads and vehicles, but also change the mindsets of the citizens – from victims, to offenders to rescuers and more so the crowd. To combat and effectively monitor all road safety problems, WHO has defined the following multi-prong approach for road safety with focus on four E's:

- **Education:** Creating awareness about road safety among the community to make them conscious of following the road safety rules
- **Enforcement:** Ensuring better regulations and compliances to follow traffic rules to prevent road crashes
- **Engineering:** Bringing about improvements to infrastructure to prevent road crashes
- **Emergency Care:** Ensuring aid to road crash victims in the platinum/golden hour (30/60 minutes after road crash)

Education

Road safety education is important in shaping the attitudes and behaviors of people:

Primary education

Various governments around the globe have included road safety in their curriculum with chapters on traffic signs, highway codes, road norms, traffic hazards and overall safety, emergency response etc. to positively affect students' attitude towards road safety.

Awareness campaigns

To engage the community and help change unsafe behavior on the roads, awareness campaigns undertaken around the globe are as follows. Campaigns focusing on creating awareness on fatigue-related crashes – Driver fatigue is one of the main causes of road, but unlike drink driving, there are no laws regulating driver fatigue. Campaigns focusing on over-speeding and speed breakers to break the mental model that good roads are for speeding

Training and health campaigns

Regular trainings and workshops for drivers and first responders to road crashes have shown to play an important role in ensuring safe driving and emergency care.

- Model institutes such as the Institute of Road Traffic Education (IRTE) Drivers Training and Institute of Driver Training and Research (IDTR) provide systematic driver training courses and assessments through research-based training courses and interactive technologies.
- Health and eye check campaigns are conducted for commercial drivers.
- First aid and lifesaving training is provided to first responders such as locals, police and ambulance drivers.



Digital campaigns

On the back of the Digital India campaign and the increasing online outreach of public, many digital campaigns and courses have been introduced in the country with focus on road safety, for example, the use of various social media platforms for road safety campaigns; simulation games focusing on road safety and importance of traffic signals and signs etc.

Enforcement



Some of the critical regulations that governments have been trying to enforce upon the society for better road safety are given as below:

- Limiting the speed of traffic
- Encouraging helmet use
- Discouraging drunk driving
- Seat belt use
- Ensuring distraction-free driving
- Restricting children on front seats

Some of the enforcement techniques being used by governments to provide a stricter environment for road safety are given as below:

- Interceptor gypsies : In some states in India, the traffic police has been provided with state-of-the-art vehicles equipped with handycams (for spot videography), speed radars, sensors to check drunk driving and light transmission of window films, first-aid kits, and public address systems.
- E-challans: The following are some of the features of the app:
  - Real-time access to the past records of the offender while issuing a challan
  - Integration of data with several other database such as those of courts and the RTO
  - Acceptance of digital payments of the challan amount
- Enforcement through crowd sourcing: Mobile applications have been developed for getting information on road regulation violators through crowd sourcing.
- Body-worn cameras: These are being used by the police in different states and provide high-resolution audio-visuals that can be stored in a memory card or transmitted live from a police control room through 4G technology.
- Drones: Camera-equipped unmanned aerial vehicles fly over highways and city roads and send timely information on traffic flow and help in improving traffic and incident management.
- Integrated city command and control center: It includes setting up a series of CCTV cameras across the city along with environment sensors, public address systems, emergency call boxes and automatic number plate readers.
- Artificial intelligence (AI): High-definition cameras and onboard sensors are used to capture the environment around the driver and the vehicle. This information is analyzed in real time using powerful integrated processors and deep learning algorithms

E-Challan, Andhra Pradesh[9]

In Vijayawada, the Government has introduced an e-challan and e-ticket system, which involved police constables using a digital camera to capture pictures of traffic violations. An e-challan is generated along with a photograph of the violation and posted to the address linked with the vehicle registration number. Sub-inspectors and above can issue e-tickets using POS machines and android tabs; The fine amount is not collected at the spot but can be paid through an online payment gateway or at any Mee Seva or AP online centers anywhere in the state.

[8] Rehttp://www.chandigarhtrafficpolice.org/about_chandigarh_traffic_police/safety_enforcement_gadgets.php
[9] Source: http://www.ficci.in/Smart-Policing-awards-compendium.pdf

Engineering

Proper engineering practices can be one of the most important factors for risk mitigation and prevention of road accidents. Solutions and initiatives under this pillar of road safety can be further categorized into infrastructure design related solutions and technology related solutions.

Infrastructure design

The engineering aspect of road safety looks at improving the road designs, locations of roadside barriers, speed bumps, creation or improvement-service lanes, pedestrian crossings, bicycle lanes., strategic placement of traffic and speed limit signs etc. The following are some of the innovative road design ideas for influencing behavioral changes among drivers to help reduce road crashes:[10]

- Receding white lines are used to enhance the perception of speeding, thereby reducing speed non-consciously.
- Some road construction sites use smiley signs to influence driver behavior and keep drivers alert.
- Building empathy by humanizing signage. The black silhouettes on roads are one example, and large posters showing shocking pictures of a man's face in a crash are another.

Technology

There have been several advancements in technology related to road safety engineering. These technology interventions can be categorized as vehicle-related technology solutions and road-related technology solutions.

A **Vehicle related**[11]**:**

- Advanced airbags[12] : Car airbags now include knee airbags, front center airbags, window airbags, inflatable seatbelts, pedestrian head protection Airbags etc. Airbags for motorcycles have also been introduced.
- Various new braking technologies such as Advanced Emergency Braking System (AEBS), Advanced Antilock Braking System (ABS) and air brakes are now available.
- Alcohol lock system: This system automatically detects the alcohol level of the driver and stops the engine from starting if the level is not appropriate.
- Smart helmet: Smart helmets are interconnected with motorcycles, preventing motorcycles from starting until the helmet is worn and locked by the driver. This product has not yet been commercialized.
- Advanced sensors, speed cameras and point-to-point systems are used to detects speeding vehicles and automatically create alerts at central enforcement systems[13].
- Lane support systems monitor the position of vehicles in road lanes and warn drivers by detecting unintentional lane changes.
- Improving vehicular safety standards based on vehicle class: Trucks are prohibited from carrying protruding rods, ABS is mandatory on heavy vehicles, Automatic headlight on feature has been made mandatory for two-wheelers to make them more conspicuous, Bus Body Code and Truck Body Code have been implemented to make buses and trucks safer, Fitment of speed governors has been made mandatory on transport vehicles to avoid over speeding

[10] http://finalmile. in/
http://www.bbc.com/future/story/20140417-road-designs-that-trick-our-minds
[11] https://www.forbes.com/sites/kbrauer/2015/01/19/top-10-advanced-car-technologies-by-2020/#187c2f186705
[12] https://www.edmunds.com/g00/car-safety/the-future-of-car-airbags.html?i10c.encReferrer=
[13] http://roadsafety.transport.nsw.gov.au/research/roadsafetytechnology/cats/index.html

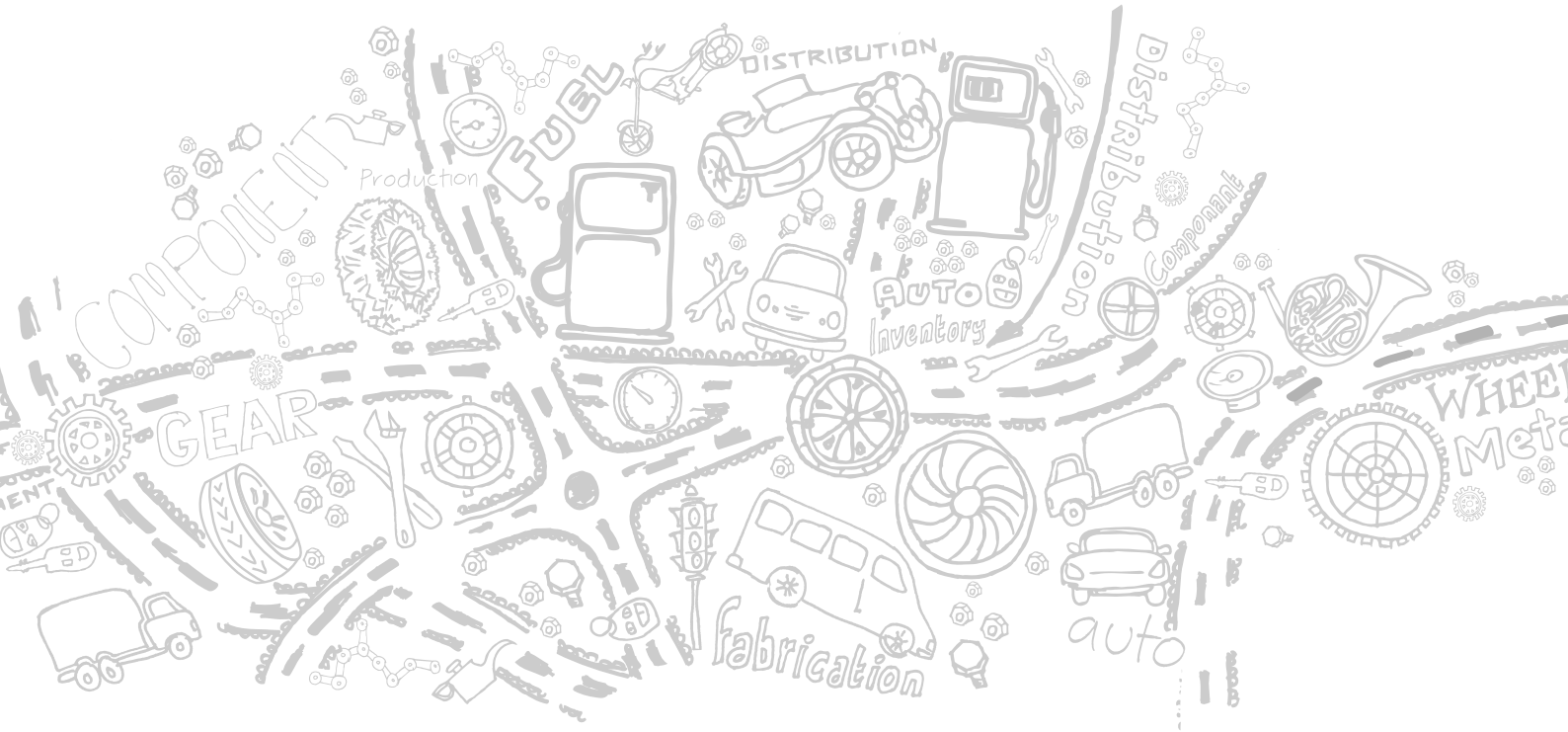
B Road related:

Some of the initiatives of the Government of India to improve road safety are as follows:

- Use of automatic laser measuring in highway engineering to guide the equipment
- State-level initiatives for improving road accident data collection and reporting system
- Highway Advisory System (HAS), a free-to-air information distribution system that involves collection of highway information, its analysis at the HAS control center and broadcast by All India Radio
- Installation of advanced radars, speed cameras, point-to-point system, tailgating cameras, variable message signs (VMS), variable speed limit (VSL) signs for effective enforcement and reducing road crashes

IDEAS: A web-based project for the Punjab Roads & Bridges Development Board (PRBDB)

Integrated Data Evaluation System on Accidents [IDEAS-Punjab] is being set up to improve existing road crash accident reporting so as to collect more robust data for decision making and prompt action. The police department would be adding accident data to this software. It is designed to process non-aggregate data relating to accidents involving fatalities and injuries. The software would publish information gathered based on standard parameters to study and analyze the trends and plan countermeasures. The web-based reporting and analysis system would have open reporting to so that other agencies or organizations can use the data and can come up with some useful analysis.



Emergency care

Effective care of the injured requires a series of time-sensitive actions, beginning with the activation of the emergency response system and continuing with medical care at the scene, transport and facility-based emergency care. Some of the emergency response solutions being implemented in India and globally are listed below:

Integrated emergency response system

In this system, a single point helpline is established where victims or locals helping the victims can call and give information about the accident. This system integrates all relevant stakeholders such as police, hospitals and road authorities to prevent delays.

Care during transport

Transfer of the injured from the accident scene to a health care center or between health care centers in a well-equipped ambulance with trained staff can reduce the risk of death by 25%[14].

Providing basic training (on hemorrhage control and safe positioning, for example) to those who usually transport the injured is a low-cost means of improving safety when ambulance transport is not available.

Hospital-based emergency care

Hospitals require a dedicated emergency unit with a group of trained non rotating staff, protocols and checklists to ensure a systematic approach to every injured patient, and essential equipment for diagnosis and treatment of injuries. Data on crash injuries is analyzed and used to optimize post-crash services and equip hospitals with required tools and staff.

Predictive software to prevent crashes[15]

In Tennessee, analysts use a software to predict when and where serious or fatal traffic accidents are most likely to happen by factoring in weather patterns, special events, home football schedules, festivals, historic crash data etc. This helps the Tennessee Highway Patrol (THP) to send troopers to problem spots ahead of time, either to stop the predicted crashes from happening or to be immediately on-hand to help. The program is officially dubbed "Crash Reduction Analyzing Statistical History" or C.R.A.S.H. In the six months the highway patrol has been piloting C.R.A.S.H, the system has been accurate 72% of the time.

[14] Post-Crash response report by WHO- 2016http://www.bbc.com/future/story/20140417-road-designs-that-trick-our-minds
[15] Source: http://www.govtech.com/em/safety/Software-Predicts-Serious-Traffic-Accidents.html



2

Role of corporates in promoting **road safety** in India across 4 Es



2.1 Guidelines for corporates for promoting road safety for their employees along 4 Es

It is estimated that 25 %[16] of global road accidents are work-related. A total of 36%[17] of occupational deaths worldwide are due to road crashes. It is clear that action must be taken to improve the safety of commercial transportation activities. Road crashes have massive financial, legal, reputational, and social implications for companies. Investing in road safety programs for employees can benefit corporates by improving employee safety, protecting their own assets, decreasing productivity losses and enhancing the company's perception in the eyes of its own employees and their families.

It is important that companies develop a culture that fosters and inspires road safety among its employees.

The Road Safety Awards organized by FICCI are an endeavor in this direction, to encourage corporates to proactively take up road safety initiatives. FICCI invited entries from corporates and industries in India on their road safety initiatives, giving a bird's eye view of the leading initiatives already being undertaken by corporates.

In the following section, we have tried to touch upon an approach framework for corporates to make their work in road safety more systematic and measurable. We have considered the leading initiatives being taken by corporates in India under the 4E framework of WHO.

[16] World Health Organization. (2015). "Global Status Report on Road Safety 2015." Quoted in Together for Safer Roads. (2015). "Advancing Road Safety: Best Practices for Companies and their Fleets,"

[17] World Health Organization. (2015). "Global Status Report on Road Safety 2015." Quoted in Together for Safer Roads. (2015). "Advancing Road Safety: Best Practices for Companies and their Fleets,"



2.1.1 Building a road safety program in a corporate organization[18]

Organizations should feel responsible to put in place suitable arrangements to manage work-related safety. This is a wide-ranging requirement, and the approach should be practical and collaborative in nature. A simple "plan, do, check, act" (P-D-C-A) approach can be followed by corporates to ensure their employees' safety on the road:

Plan: To manage road safety in your organization

- Assess the risks from work-related road safety in your organization to ensure the possibility of anyone getting injured/killed due to road crashes is minimal
  - Identify the sources of hazards that may lead to road safety risks in your organization
  - Identify who all can be harmed from such hazards: drivers, passengers etc.
  - Evaluate and prioritize the risks to ensure you are able to at least address the main ones
- Define a health and safety policy for the organisation
- Make sure there is top-level commitment to work-related road safety in your organization
- Clearly set out everyone's roles and responsibilities for work-related road safety. Those responsible should have enough authority to exert influence and be able to communicate effectively to drivers and others

Do: Prioritize and evaluate risks, consult employees and provide training and information

- Ensure co-operation among different departments to work toward work-related road safety
- Put in place adequate systems to manage work-related road safety effectively. For example, do you ensure your vehicles are regularly inspected and serviced according to manufacturers' recommendations?
- Consult employees and their families on the road safety plan; incorporate their suggestions
- Provide training and instruction where necessary; use written instructions and guidance, training sessions or group meetings to help communicate road safety policy more effectively

[18] Driving at work: Managing work related road safety – published at http://www.hse.gov.uk/pubns/indg382.pdf

Check: Measure success and deviation on road safety plan

- Regularly review and monitor the progress on road safety policy and plan
- Encourage your employees to report all work-related road incidents or near misses

Act: Learn from experience and take actions

- Establish a process for collecting, analyzing and reporting data for tracking driver performance, monitoring program outcomes, identifying areas for improvement, and measuring program success; take informed decisions on the existing road safety plan and the need for changes
- Regularly review the road safety to plan to update any changes, if required
  - Regularly review risk assessment to ensure
  - Changing work-related situations may also require review, e.g., introducing new outes, new equipment or a change in vehicle specification

Corporates can refer to a quick checklist to plan for their work-related road safety plan for ensuring safe drivers, safe vehicles and safe journey:

Ensuring safety of the driver



Evaluating the competency and capability of your drivers

- Specify levels of skill and expertise required to do the job safely
- Check the validity of driving licenses on recruitment and periodically
- Make drivers and employees are aware of company policy on work-related road safety and understand what is expected of them



Training the drivers

- Assess the training needs of your drivers and employees periodically
- Ensure the training providers are competent to deliver the training
- Provide clear instructions to drivers/employees to ensure they know and work on their vehicle's safety equipment
- Educate drivers/employees on the risks of drug abuse, using mobile phone and other such distractions while driving



Allowing only fit and healthy drivers to drive

- Encourage drivers to report health related issues
- Encourage them to regularly get eye checkup done
- Make them aware about the risks of fatigue-related road crashes

Ensuring vehicles are fit to drive



Evaluating the fitness of vehicles

- Prepare and follow regular maintenance schedules for corporate vehicles
- Ensure the maintenance is of standard quality
- Ensure the defects on vehicle are properly reported and get closed
- Investigate, when buying new vehicles, which ones are most suitable for driving
- Provide safety tool kits for drivers in case of road crash incidents
- Ensure vehicle is equipped with protection accessories in case of incidents: seatbelts, head restraints or airbags
- Take into account ergonomic considerations (e.g., driving position and how accessible the controls are) before buying

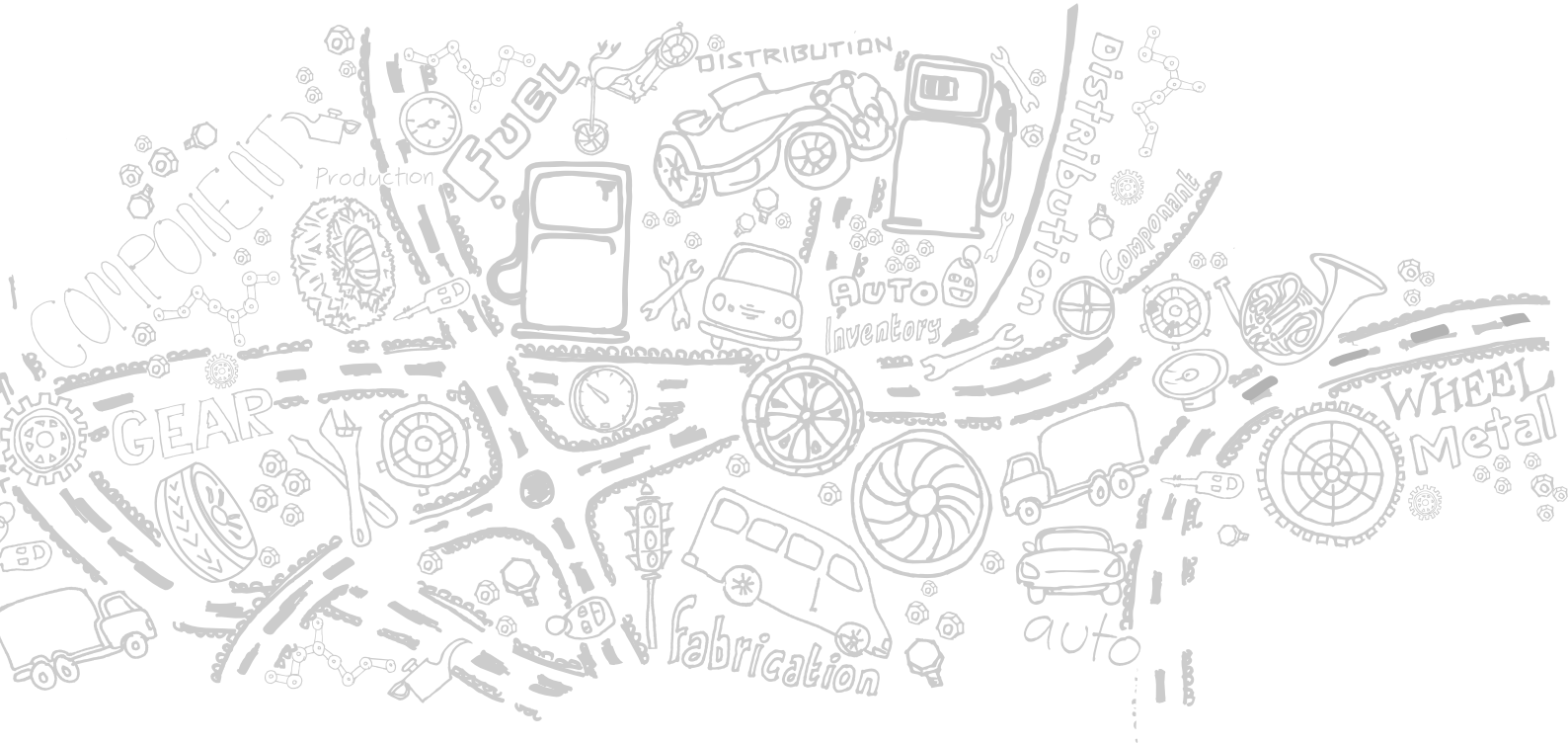
Ensuring work-related journeys are safe for employees



Planning routes and schedules realistically

- Plan routes and schedules in consultation with drivers
- Take into consideration the road condition, designs, overhead restrictions etc. that may pose danger while driving
- Plan shorter routes
- Take into consideration the sleeping patterns and work load of drivers before assigning them duties
- Plan schedules keeping in mind the condition of road traffic
- Keep the journey time realistic, considering road, traffic, skill level of the driver etc.

Taking into consideration external factors when allowing journeys: Weather conditions, law and order situation etc.



2.1.2 Road Safety corporate solutions across 4 E's

RoIn line with the P-D-C-A approach and the checklist provided above and also taking into consideration the gist of corporate entries received for the FICCI Road Safety Awards, we have enlisted below certain initiatives that corporates can undertake across the 4E's to ensure their employees' road safety:it comes behind Iran, which is at 6% (US$30,697 million).

Educate

Corporates can keep their employees safe from road hazards by informing, educating and empowering them with knowledge on road safety hazards:



- Make your employees aware about the implications of road crashes on their personal lives, job and family
- Try to make your employees realize the importance of following road safety in their daily lives



- Provide clear instructions on the rules to be followed on the road
- Specify the behaviors to avoid while on the road
- Specify skills and expertise required to do the job (in case of drivers/conductors) safely



- Create trainings, workshops and courses to instill road safety behavior among employees
- Involve employees participation in making your road safety plan stronger
- Do medical check-ups on drivers' health fitness levels

Enforcement

Corporates can keep their employees safe from road hazards by enforcing regulatory policies and using behavioral sciences to avoid road safety hazards:



- Define compliance requirement on driving practices for employees
- Prohibit drinking and driving, and encourage the use of seat belts in cars and helmets on two-wheelers
- Check the validity of the driving license of employees



- Incentivize good driving practices and penalize non-compliances
- Ensure regular communication on the corporate road safety agenda to increase its significance

Engineering

Corporates can ensure that their employees drive safer vehicles, and maintain safer speeds along safer routes:

Safer vehicles

- Ensure regular maintenance and check-up of the company vehicles
- Ensure regular check-up on vehicle insurance of the company vehicles
- Proactively adopt technologies such as ABS

Safer speeds

- Collect data to monitor drivers' performance in terms of speed on routes
- Prepare realistic schedules so that drivers do not have to over-speed to meet the deadlines

Safer routes

- Plan safer routes
- Reduce long journeys for employees as it results in driver fatigue

Emergency care

Corporates can reduce the severity of injuries to their employees in case of a road crash by having in place a road crash response plan, road crash aid resources and crash notification system:

Road crash response plan

- Clearly define the roles and responsibilities of the staff identified for providing emergency care
- Define the action steps to be taken by the trained office staff in case of road crash incidents involving employees

Road crash aid resources

- Provide a road safety toolkit to the employees
- Tie up with medical services to rush to the aid of the victims
- Rush the trained company to the site and administer first aid to the victims
- Develop tool/system/protocol to notify doctors and police about a crash

Crash notification system

- Set up alarms in the vehicles to go off in case of a crash
- Set up an emergency centralized number for employees to notify a crash and seek aid

2.2 Areas for government–
corporate collaboration in promoting road safety in India

Businesses contribute significantly to the traffic congestion and movement in a city. By working closely with enterprises in developing and piloting road safety programs, the Government can hope to leverage the innovation, knowledge, networks, data, reach and financial resources of businesses. Businesses, on the other hand, can benefit from safer roads for employees health and safety, protection of assets, reduced productivity losses and healthcare costs, and enhanced efficiency and effectiveness of their supply chains.

Some of the areas where the Government and the private sector can come together for driving road safety in Indian are as follows:

Advancing technology innovation



Given their financial resources, CSR obligations and employee safety concerns, companies continually strive to adopt and support advanced technologies to enable safer vehicles, enhanced communication channel and analytics. Corporates can partner with government agencies and help in research studies to collect more data on how best to deploy these innovations.

Creating safe road environment



Given that road accidents are one of the major causes of deaths of employees, corporates can advocate for and ensure better public infrastructure and emergency aid services in terms of road conditions, traffic regulation and emergency response resources. They can collaborate with the public sector on projects for road safety audits, road safety corridors etc. Corporates can also act as proponents of enhancements to government policy on road design and funding, vehicle standards, driver licensing, speed limits, safety standards and compliance with traffic rules.

Enriching data sources



Companies with vehicle fleets, insurance companies, telecommunications enterprises and healthcare companies have a wealth of data on road-related topics, such as claims, driver behavior, travel speed, road crashes, road crash injuries, rehabilitation, speed and use of mobile phones. Companies can share this data with government agencies, and similarly government agencies can share their infrastructure and safety data, to enable road safety planners to improve road conditions for all.

Increasing awareness among community



Companies can help governments in championing the cause of avoiding drunk driving, rash driving, over-speeding, not using seat belts/helmets etc by bolstering education and sponsoring mass media campaigns around risks leading to road crashes. Companies can educate and train their employees about the potential dangers of texting and talking on the phone while driving and other such distractions while on the road.



International **case studies** of corporates' **road safety** initiatives



The following are some initiatives that have been recognized internationally in prestigious global road safety awards.

Enforcing road safety through violation reporting[19]

Company: Iron Mountain
Sector: Information storage and management
Fleet: 500 vehicles across Western European operations: Vans, HGVs, articulated trailers, specialized vehicles for containers, bins and moving floors, and compactors.

Iron Mountain installed a Driver Behavior Telematics System across their UK and Ireland fleets in 2011. The system monitors and reports on various driving behavior such as acceleration, braking, cornering, lane handling and speeding.

The system has a small display alert showing different colors: Green, yellow and red display. The display color is based on the score generated against the manner the driver is driving the car. <20 is green, 21-50 is yellow and over 50 is red. The objective for the driver is to remain in the green during the drive.

Iron Mountain considered that <20 was too easy a target as their drivers had received one-to-one training and were very professional, so they created a target of <10. Despite this reduced level, 99% of their drivers have been consistently achieving this target.

The company holds weekly conference calls to discuss and evaluate daily and weekly reports from the telematics supplier, the risk management team (vehicle incidents) and operational managers. They have defined key performance indicators to improve safer drives based on telematics scores and speed.

To ensure the employees take this initiative seriously, the company has personal objectives tied into the bonus scheme to reduce risk and each of the five dedicated driver trainers is tasked with incident reduction within their regions.

- Since 2008, they have reduced vehicle incidents by 74%.
- Own damage and third party costs have reduced by 60%.
- Insurance premiums have been reduced in three of the last four years with 14%, 8% and 9% reductions respectively.
- The business plan delivered a return on investment within 8 months.
- They have now installed systems across the rest of Western Europe.

[14] Source: http://etsc.eu/managing-road-risk-at-work-case-study-iron-mountain/
http://www.roadsafetyawards.com/winners/view.aspx?winnerid=329



Engineering road safety through fleet safety[20]

Company: Nestle
Sector: Swiss Transitional food and Drink Company
Fleet: More than 30,000

In 2004, Nestle calculated that in Europe it would need to sell 235 million Kit Kats per annum to generate the revenue to finance its motor fleet insurances. This led to Nestlé undertaking road safety initiatives under a 10 Point Safe Driving Program Checklist which forced on:

- Risk prioritizing motor fleet loss prevention procedures, programs and processes framed by the Haddon Matrix systems-based approach
- Establishing Global road safety committee and KPIs
- Collaborating across key business functions: Group Risk, Fleet, Safety Health & Environment (SHE), Human Resources and Procurement
- Developing a global fleet safety tool kit for countries entering the program
- Building in driving safety into the Global Nestlé Occupational Safety and Health Standard
- Conducting driver risk assessment, monitoring and improvement supported by VRM globally.
- Continuously engaging with local managers to focus on fleet risk management
- Doing gap analysis and developing standards for contractors and vendors
- Increasing focus on emerging markets with low road safety standards
- Contributing to industry leadership through participation in the US Global Road Safety for Workers project, the United Nations Road Safety Collaboration, the Global Road Safety Partnership, the Fleet Safety Benchmarking project and events hosted by its insurer Zurich

Under the program, Nestlé's Mexico fleet of cars, trucks, buses and motor cycles, which faces the world's most dangerous traffic conditions, implemented:

- In-classroom defensive driving courses and communications for staff.
- Analysis of collision statistics to determine deviations
- Vehicle purchase criteria, to include safety, environmental impact and security
- Safe and defensive driving module integrated into training courses for sales personnel
- VRM across all businesses including contract drivers

Overall, Nestlé's programs show that:

Fleet safety is an important factor in ensuring community road safety.

- Driver risk assessment, monitoring and improvement programs can help in creating a crash-free culture with online tools providing a standardized approach .
- Effective collaboration and leadership is important for successful fleet safety programs.

[20] Source: https://www.edriving.com/awards-posts/nestle-receives-nafa-2014-excellence-in-corporate-fleet-safety-flexy-award/ http://www.roadsafetyawards.com/winners/view.aspx?winnerid=390



Building road safety culture in organization through an integrated approach[21]

Company:ASDA Grocery Home Shopping
Sector: Grocery shopping

ASDA began as Associated Dairies & Farm Stores Limited in 1949 in Leeds. Now, as part of Wal-Mart, it operates 550+ UK stores, employing 180,000+ people. ASDA expanded its fleet by approximately 80% between 2008 and 2013. Being in the home delivery business requires ASDA to be operating mostly in densely populated urban areas within time-sensitive schedules, where the potential for human and asset damage is high.

ASDA Grocery Home Shopping (ASDA HS) has evolved from limited, fragmented road safety interventions in 2009 to an integrated program including online risk assessments, Driver Vehicle and Licensing Agency (DVLA) checks, targeted driver coaching and communications.

Looking at the risks involved, the company transformed its work-related road safety policies, programs, processes and performance. The company recruited compliance, transport and safety managers and formed a Fleet Safety Steering Group (FSSG) which undertook numerous initiatives:

- Focused on driver training and worked with RoSPA on a driver "buddy" training program
- Tried to build road safety into the organizational DNA through management coaching and events
- Prepared a short film, for its management community to reinforce the importance of doing the right things to lead their drivers to safety
- Targeted behind-the-wheel training courses for at-risk drivers with AADrivetech
- Developed new disciplinary and grievance procedures for drivers
- Developed compliance and good practice resources, including a "Corrective Action" program

ASDA also focused on telemetry, better claims handling and incident management

- Developed "Grab Pack" to better manage claims reporting, recording and collision investigation
- Conducted fleet auditing with FTA and more recently Zurich
- Utilized Virtual Risk Manager
- Introduced The One Best Way project

ASDA's efforts in road safety reduced incidents from 93 per million miles in 2008 to 54 in 2012, halving its incident rate from 6 to 3 per £1,000,000 of sales revenue.

[21] Source: http://www.virtualriskmanager.net/main/casestudies/asda.php
http://www.roadsafetyawards.com/winners/view.aspx?winnerid=373



Applying road safety management to prevent work-related injuries[22]

Company: British Telecommunication Provider (BT)
Sector: Multinational telecommunications services provider | Fleet: 33,000 Vehicles

Since BT identified road safety as its biggest and most expensive risk in 2003, the company has developed a holistic program leading to a range of ground-breaking initiatives to manage driver safety. The program initiatives include extensive driver assessment and training, collision investigations, safe vehicle selection, and trials of technological interventions such as telematics.

Besides doing detailed claims analysis, applying online tools and linking data sets, BT endeavored to develop targeted interventions. BT realized that most of its employees drive their own private vehicles on BT business and therefore it had a duty to protect them. BT introduced grey fleet process in line with industry good practice and compliance requirements. BT's Safe Driving program grey fleet module includes questions about vehicle and insurance details based on the minimum level of information BT is required to hold as part of the risk assessment process for managing its "grey fleet" drivers. If a personal vehicle is used for work, more questions are asked from the driver in an online Travel for Work Questionnaire. This allows BT to assimilate this data within Virtual Risk Manager and do a risk analysis. From a risk perspective, BT needs to ensure that employees hold a current, valid driver's license, that the insurance is valid and covers business use that drivers have valid technical inspection and roadworthiness certification as well as that appropriate vehicle maintenance is in place.

Through Virtual Risk Manager, BTs Safe Driving program provides a self-certification process where employees complete an online driver risk assessment process, including:

- Travel for Work Questionnaire
- Privacy notice: To ensure data is securely managed
- Driver details compliance module and DVLA/DVA check in GB and Northern Ireland
- Policy notice module to confirm understanding of BT policies
- Safe Driver Undertaking to commit to BT policy and legal requirements
- Road risk profile, defensive driving and feedback to assess risks and provide coaching
- Risk-based one-to-one review between managers and drivers as required

These details are captured within the system and assigned against an individual's record. The managers and drivers can be alerted through automated exception reporting when periodic technical inspection or insurance is due for renewal.

Since 2001, more than 130,000 drivers have completed the online process, supported by relevant targeted training to more than 6,000 managers and 18,000 drivers.

[15] http://pib.nic.in/newsite/PrintRelease.aspx?relid=155056

4

Leading corporate **case studies** of road safety initiatives in **India**

FICCI has instituted 'Road Safety Awards' to felicitate the initiatives taken by corporates and individuals in Road Safety. The objective is to promote initiatives taken by the Corporates that mitigate or reduce occupational road risk. This can help corporates to learn about the best practices and also adopt the same in their organisations. FICCI received entries in the following categories:

- Corporate Safe Driving
- Road Safety Analysis & Action
- Road Safety Product & Solution
- Road Safety in the Community
- Global Road Safety
- Safe Vehichles
- Road Safety Innovator
- Road Safety Manager of the Year
- Outstanding Commitment to Road Safety

This section of the report documents the select entries felicitated with FICCI Road Awards 2017.





Transystem Logistics International Pvt. Ltd.

- **Industry sector:** Logistics solutions for automotive manufacturers
- **Road safety initiative:** Safety first operation
- **Award category and description:** Corporate safe driving- for the organization that has implemented initiatives that do most to promote and achieve safer driving among employees.



Overview of the Initiative

The Moto of Transystem is "safety. " The company's first and foremost importance is human life, which includes its drivers, public and surrounding environment. The company also aims to ensure safety of materials carried in the fleet. Under Indian traffic and working conditions, TLI is managing safe and on-time operations by conducting daily key performance indicator (KPI) monitoring and Kaizen (continuous improvement) activities. TLI manages over 1,500 trucks, all of which are fitted with GPS and TLI does the real time monitoring of GPS to track the trucks as well as monitoring en-route driver behavior and abnormalities. TLI also uses GPS for warning drivers of any potential accidents through data collection about over speed, neutral driving, night driving, delay/early arrival, continuous driving for more than 16 hours and harsh braking. In addition, TLI uses IT software (ERP) for effective utilization of its fleet. TLI has its own maintenance shop for periodical preventive maintenance, due to which the number of breakdowns has reduced dramatically.

TLI also believes in just in time (JIT) delivery where logistics plans are developed every month based on production plans.

TLI is bringing in steel-mesh woven fabric body instead of steel body for carriers. This will not only reduce the weight of carriers but will also be more adaptable to increasing car sizes by manufacturers.

Key benefits

To improve drivers' skills, reduce their risk of an accident and lower fuel and maintenance costs by enrolling them in TLI driver training plan along with organizing skill contests for drivers. As most of the drivers are under educated, induction training to tune the drivers for safe operation requirement is crucial and significant. TLI has taken an initiative of safe operation by effective training to the drivers to reduce risk of an accident on human life and property.

Key benefits

- Reduced accidents and incidents (no fatal and major injury cases)
- Less en-route abnormalities of drivers (over speed, night driving, continuous driving etc.)
- 100% SOP-based safe operation
- 100% driver registration and maintenance of database
- Legal compliance
- On-time delivery without any damage
- JIT supply
- Increased productivity
- En-route hazard identification by drivers and sharing with others
- Continuous improvement in operation
- Cost kaizen to the organization

Monsanto India Limited

Industry sector: Agriculture

Road safety initiative: A decade of driving vehicle safety program improvements

Award category and description: Corporate safe driving- for the organization that has implemented initiatives that do most to promote and achieve safer driving among employees.



Overview of the Initiative

Monsanto India Vehicle Safety Team (IVST) started its road safety program and the effort to transform the organization's safety culture in 2006. The strategy has been implemented in three stages, focusing first on raising awareness, then instilling a sense of individual ownership, and finally fostering team accountability. As the India road safety program delivers three organizational benefits – engaging employees, engaging stakeholders and performance excellence – Monsanto India Limited takes initiatives in all these three areas.

The program comprises a diverse set of activities and tools, including structured training sessions, the development of new policies and procedures, ongoing data analysis through vehicle data recorder (VDR) technology and the appointment of team-based driving safety champions (DSC).

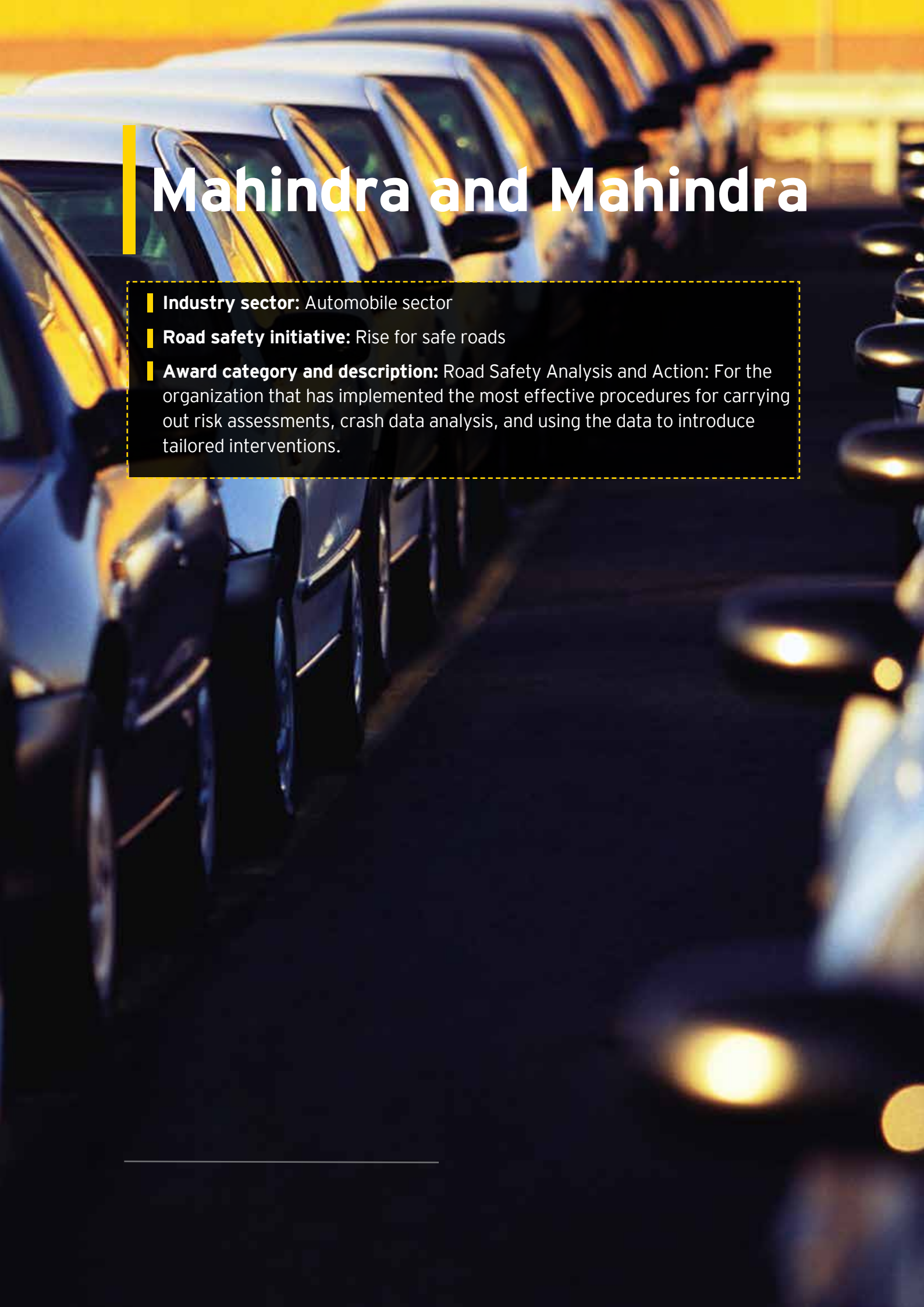
The structured training includes a mix of annual computer based training (CBT) sessions, classroom and on-road behind the wheel (BTW) assessments. The employees also went through commentary drives and peer drives by their managers and DSC, respectively. Journey risk assessment were done for key high-risk or often utilized routes.

The VDR was a GPS gadget fitted in each vehicle to track driver behavior. The company also implemented a strong management system to make required management interventions based on leading indicator insights from VDR data. The technology flagged employees who deviated from norms in areas of speed (maximum limit of 80 km/hour), total distance driven per day (maximum 250 km/day), continuous driving (minimum 15 minute break after maximum 2 hours of driving) and night time driving (between 11 p.m. and 5 a.m.). Every deviation was noted and the concerned driver coached by involving people manager. This proved effective and no driver was found to violate IVST norms twice in any season. The company successfully correlated the relation between VDR deviations (leading indicator) and actual collisions (lagging indicator). Each functional management demonstrated increased accountability of their functional performance by proactively tracking their IVT deviations and nipping at-risk behavior in the bud by coaching their teams for demonstrating safe behavior on the road.

Financial implication: INR65 lakhs per year

Key benefits

- Collision per million miles (CPMM) have reduced by more than 85%
- Off-the-job safety program that has benefited almost 1.5 million people in the last four years
- Monsanto India highlights various safety initiatives on its Facebook page, which has reached nearly 3.8 million individuals
- Monsanto invited to share its vehicle safety program best practices in various prestigious industry forums across India
- Awards and recognition
- Monsanto India vehicle safety program continues to improve employee engagement within India region



Mahindra and Mahindra

- **Industry sector:** Automobile sector
- **Road safety initiative:** Rise for safe roads
- **Award category and description:** Road Safety Analysis and Action: For the organization that has implemented the most effective procedures for carrying out risk assessments, crash data analysis, and using the data to introduce tailored interventions.

Overview of the Initiative

M&M in partnership with SaveLIFE Foundation (SLF), a non-profit non-government organization, committed to improving road safety in India, initiated an innovative project Rise for Safe Roads. The project has two broad objectives: (i) Reduce the number of road crash deaths on the Mumbai-Pune Expressway (MPEW) by converting it into a "Zero Fatality Corridor" by the year 2020 and (ii) train 5,000 commercial drivers in techniques of anticipatory driving to enable them to avoid accidents.

The project aims to minimize the contribution of infrastructure, human and vehicular factors on road crashes on the MPEW. Through extensive investigations and data analysis, 15 infrastructure risk factors, seven human risk factors and seven vehicular risk factors have been identified that contribute to road crashes on the MPEW. To reduce the contribution of these factors, interventions across road engineering/infrastructure, enforcement, post-crash emergency care and commuter education have been planned and are being implemented. Some safety measures suggested that can mitigate accidents and injuries are as follows:

- Impact attenuators placed in front of the concrete structures can reduce the crash severity by decreasing the rate of deceleration of the vehicle.
- Accidents involving steep slopes/drop-offs can be reduced by installing roadside barriers.
- Design and placement of road signage can reduce accidents and injuries.
- Adequate advance warning signage, such as chevron markers, can give drivers sufficient time to react to the scenario and adapt the speed and steering maneuver accordingly.
- A directional gap in the median with the deceleration lane is convenient for all the road users. Signage indicating the existence of a gap should be adequately and effectively positioned.
- Unguarded overhead bridge pillars can create catastrophic vehicle damage leading to fatal or serious injuries. Impact attenuators installed in front of them can reduce the crash severity.
- The open ends of unguarded bridge/jersey walls should be covered with guardrails or wired rope safety barriers to deflect vehicles approaching them. Other barrier structures such as impact attenuators can also be used to cover open bridge wall ends.
- Considering the operating speed of the expressway, underpasses need to be guarded from at least 100 meters before they occur. The barrier should also be strong enough to prevent all types of vehicles (including heavy vehicles) from going off the road.
- Financial implication: INR2 crore per year

Key benefits

- Dip in the number of monthly road crash deaths on the MPEW: Over 40% reduction in average monthly road crash fatalities on the expressway.
- Engineering outlay: Installation of over 40 km of metal beam crash barriers and over 20 km of wire rope safety barriers, road signages, road markings, removal of vision obstructers and safety-proofing of existing road infrastructure have reduced fatalities.
- Emergency care: Placement of five 108 ambulances on the MPEW has benefited commuters and also surrounding rural areas, which have limited access to medical facilities and ambulances.
- Anticipatory Driving and Accident Prevention Training (ADAPT): For the ADAPT program, M&M Limited tracked close to 1,000 drivers, who were trained under the program to capture if they had been involved in a crash. It was found that only 0.7% of those drivers were involved in a crash with 0 reported fatalities.

JP Research India Pvt. Ltd.

- **Industry sector:** Road safety research
- **Road safety initiative:** RASSI- Mumbai Pune expressway
- **Award category and description:** Road Safety Analysis and Action: For the organization that has implemented the most effective procedures for carrying out risk assessments, crash data analysis, and using the data to introduce tailored interventions.



Overview of the Initiative

The initiative involves on-site crash investigation and in-depth accident data collection of crashes occurring on the MPEW. This involves visiting the crash site and examining the crash scene and vehicles, reconstructing the accident, studying the injuries sustained by the victims and finally determining the human, vehicle and infrastructure factors influencing the occurrence of the crash and the resulting injuries.

JP Research India Pvt. Ltd. (JPRI) has analyzed the data collected using the above methodology for a number of crashes over a period of many years and determined the percentage contribution of the various factors that in crashes and injuries. This data-driven approach helps quantify the problem, identify cost-effective interventions and their expected reductions in fatalities and crashes, and determine the benefit to cost ratios of each intervention.

Since 2008, JPRI has developed the technical skills and Road Accident Sampling System India (RASSI) methodology for crash investigations in India. JPRI's expertise is in the following areas of road safety:

- Crash investigation and in-depth accident data collection
- Crash reconstruction and injury data analysis
- Road safety surveys and audits
- Data analysis and reporting
- Road safety awareness

With limited funds and resources for improving road safety, this methodology helps in planning a cost-effective and result-oriented road safety improvement strategy. The total cost of the initiative comes to around INR 50 lakh per year.

Key benefits

- Using in-depth crash data collected through on-site crash investigations, JP Research India Pvt. Ltd. was able to determine the main infrastructure, vehicle and human factors that contributed to injuries and crashes on the Mumbai Pune Expressway
- JP Research India Pvt. Ltd. used the data to help an innovative road safety project called "Zero Fatality Corridor" on the MPEW, which is being conducted under a MoU between SaveLIFE Foundation, Maharashtra State Road Development Corporation (MSRDC) and Mahindra. The factors related to road engineering, which are influencing crashes and injuries, were identified and quantified for every kilometer of the expressway. Countermeasures were identified for each road engineering factor and a benefit to cost ratio was provided for each intervention. This was published as a Road Safety Survey Report.

Goodyear India Limited

- **Industry sector:** Automobile sector
- **Road safety initiative:** Safer Roads Safer You
- **Award category:** Road Safety in the community: For the organization that is working with its local community to improve road safety for all road users. This organization will have road safety at the heart of its corporate social responsibility ethos.



Overview of the Initiative

Goodyear India Limited (Goodyear) initiated a unique program "Safer Roads, Safer You" to provide complementary trainings to independent taxi drivers and fleet operators with a focused view to curb traffic rule violations and to enhance the overall experience of users of the taxi services.

The program was first initiated in 2015-16 in association with the Institute of Road Traffic Education with the objective of efficient driving and having a reliable driving culture.

Trainings through workshops: Drivers and fleet operators (in batches) were trained on the following major aspects of safe driving through workshops of 8-10 hours each:

- Rules and regulations of driving (as enumerated in various laws)
- Defensive driving
- Passenger comfort and safety
- Vehicle maintenance
- Personal management
- Unlearn the faulty information and procedures
- Incident management
- With limited funds and resources for improving road safety, this methodology helps in planning a cost-effective and result-oriented road safety improvement strategy. The total cost of the initiative comes to around INR 50 lakh per year.

Based on the positive feedback received from the taxi drivers and fleet operators in the initial year, the workshop schedule for 2016-17 included Yoga sessions and post-training assessment.

Beneficiaries of the program: The main beneficiaries of this program were the selected group of taxi fleet operators and independent taxi drivers operating in Delhi NCR and Mumbai.

Incentivization: The participants were given an incentive of INR500 along with a complimentary accidental death insurance policy of INR200, 000 and certificate of successful completion of the workshop along with a handbook for easy reference to the rules and regulations as well as the applicable laws.

For the aforesaid, the total cost of the initiative comes to around ~ INR2.54 crore per year.

Key benefits

- Good retention value of the training: Mean scores for drivers increased from pre-test 34.76% to post-test 85.98%
- Uber ratings for 367 (out of 763) drivers who underwent the training showed a 62% improvement.
- Feedback obtained by fleet operators indicated positive behavioral change and improvement.

Abott India Ltd.

Industry sector: Pharmaceutical sector

Road safety initiative: iCare Road Safety Project

Award category and description: Road Safety in the Community: For the organisation that is working with its local community to improve road safety for all road users. This organisation will have road safety at the heart of its corporate social responsibility ethos.



Overview of the Initiative

Abbott's iCare Safety Drive is geared toward spreading awareness about road safety measures to prevent road accidents and save lives. Originally started in 2010 as an internal training program for Abbott's employees, iCare Safety Drive has evolved into a nationwide road safety awareness drive. Since 2014, through this campaign, Abbott has spread the message of road safety to over 1.2 million people across 480 locations in 26 states.

The focus of the drive is on four key aspects: Usage of helmets and seatbelts, emphasis on avoiding distractions such as mobile phones while driving, control on speed and adherence to alert driving techniques.

The campaign is solely driven by Abbott's employee. They are visit medical clinics and advise individuals on road safety guidelines. Using the opportunity made available to them by the drive, the employees are sharing simple, actionable safe driving principles. To ensure public participation in the event and adherence to the safety norms propagated as a part of the program, beneficiaries are being encouraged to take a pledge to drive safely and cautiously. Abbott partnered with the distinguished Indian actor Mr. Amitabh Bachchan to further the cause of the drive.

The total cost of the initiative comes to around ~ INR2.01 crore per year.

Key benefits

- Around 1.5 million people have been reached out to through the campaign.
- 6,236 Abbott employees came forward to support the cause leading to the signing of 496,635 pledges by the general public.
- It received the Guinness World Records for "Receiving Most Pledges for a Safety Campaign."
- Engagement sessions conducted in schools helped familiarize young minds with the notion of road safety and protect children from road accidents near schools

Bal Bharati Public School

- **Industry sector:** Education
- **Road safety initiative:** Share the Road – Vroom Club and Safer Roads, Safer India
- **Award category:** Road Safety in the community: For the organization that is working with its local community to improve road safety for all road users. This organization will have road safety at the heart of its corporate social responsibility ethos.

Overview of the Initiative

Safer roads, safer India

In this initiative, the focus is on creating awareness and emphasizing the importance of wearing seatbelts/ helmets, ensuring a mobile free and safe driving and needing to follow road signs and traffic rules for safety on road. Through this project, the school has been able to achieve the following:

- An atmosphere in the school where the children have become responsible
- Yellow lines demarcated in schools to make children understand that when they are moving in lines they have to keep to the left
- A PowerPoint depicting the trauma experienced by road accident victims shown to the students
- A mobile exhibition put by the Delhi Traffic Police at the school campus
- Other activities such as street plays, awareness campaigns and workshops

Share the Road- VROOM Club

Bal Bharati Public School, Pitampura, initiated the road safety project in assistance with Delhi Traffic Police and PVR Nest in August 2014. The key activities under this initiative were as follows:

- Road signs put up outside the school premises indicating:
  - Driving slow
  - School ahead
  - No U-turn
  - One way
- Marker or message boards put up on the road to mark parking zones to avoid traffic congestion
- Guards/School road safety team to keep a check so that it becomes a routine for everyone
- Carpool and use of school vehicles promoted to reduce congestion on the roads
- Training of school bus drivers
- Mapping of parking lots around the school premises to allow dissipation of parked traffic from the roads
- Street plays and rallies planned and conducted for spreading of awareness

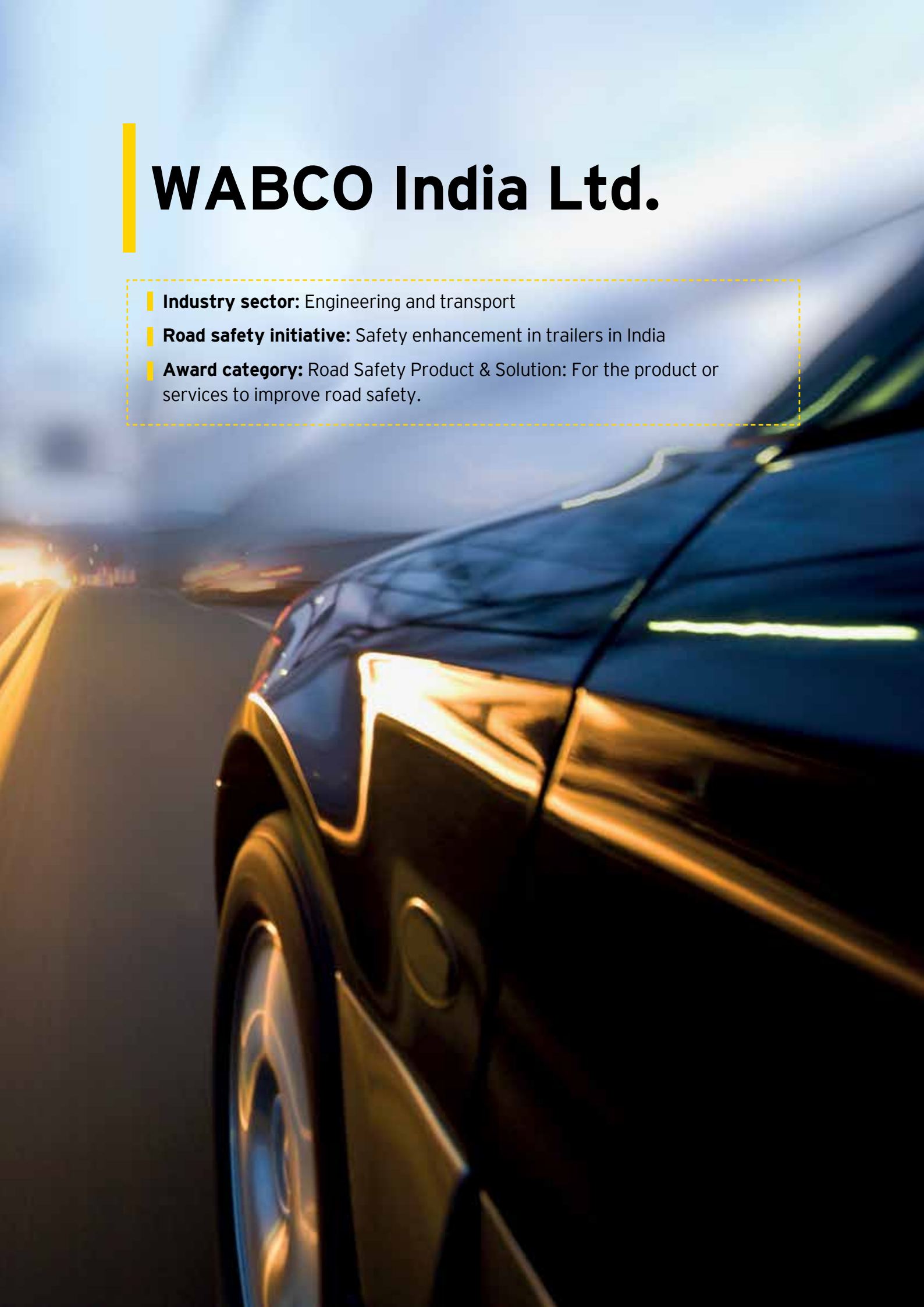
The total cost of the initiative comes to around ~INR80 lakh per year.

Key benefits

- Propagation of a safety culture among young minds and helping students and teachers learn about road safety
- Sensitizing students on the need for inculcating the importance of following road safety rules
- Decision making skills enabling the children to make choices and take responsibility of their own safety
- Banning the use of two-wheelers in the school premises by the students
- Practicing carpool among staff members and parent

WABCO India Ltd.

- **Industry sector:** Engineering and transport
- **Road safety initiative:** Safety enhancement in trailers in India
- **Award category:** Road Safety Product & Solution: For the product or services to improve road safety.



Overview of the Initiative

Development and expansion of road infrastructure and highways in India has accelerated bulk transport such as tractor-trailer combination, which can carry from 24 tons to 70 tons. Due to inadequate vehicle control technology, tractor-trailer accidents were on the increase and ABS legislation was mandated only for Tractors in 2007. However, without ABS in trailers, they were skidding and overturning.

WABCO India took the initiative to implement the system to improve the safety of the trailers. WABCO started communicating with 50 organized trailer manufacturers, large trailer operators and the Transport Commissioner for effective implementation.

WABCO developed and supplied trailer ABS to meet the specifications. At the first stage, five leading trailer manufacturers were brought to the company's proving ground for a demonstration of vehicle performance with ABS and without ABS. After that, WABCO manufactured three different kits to suit the double and triple axel trailers depending on the trailer OEM requirements.

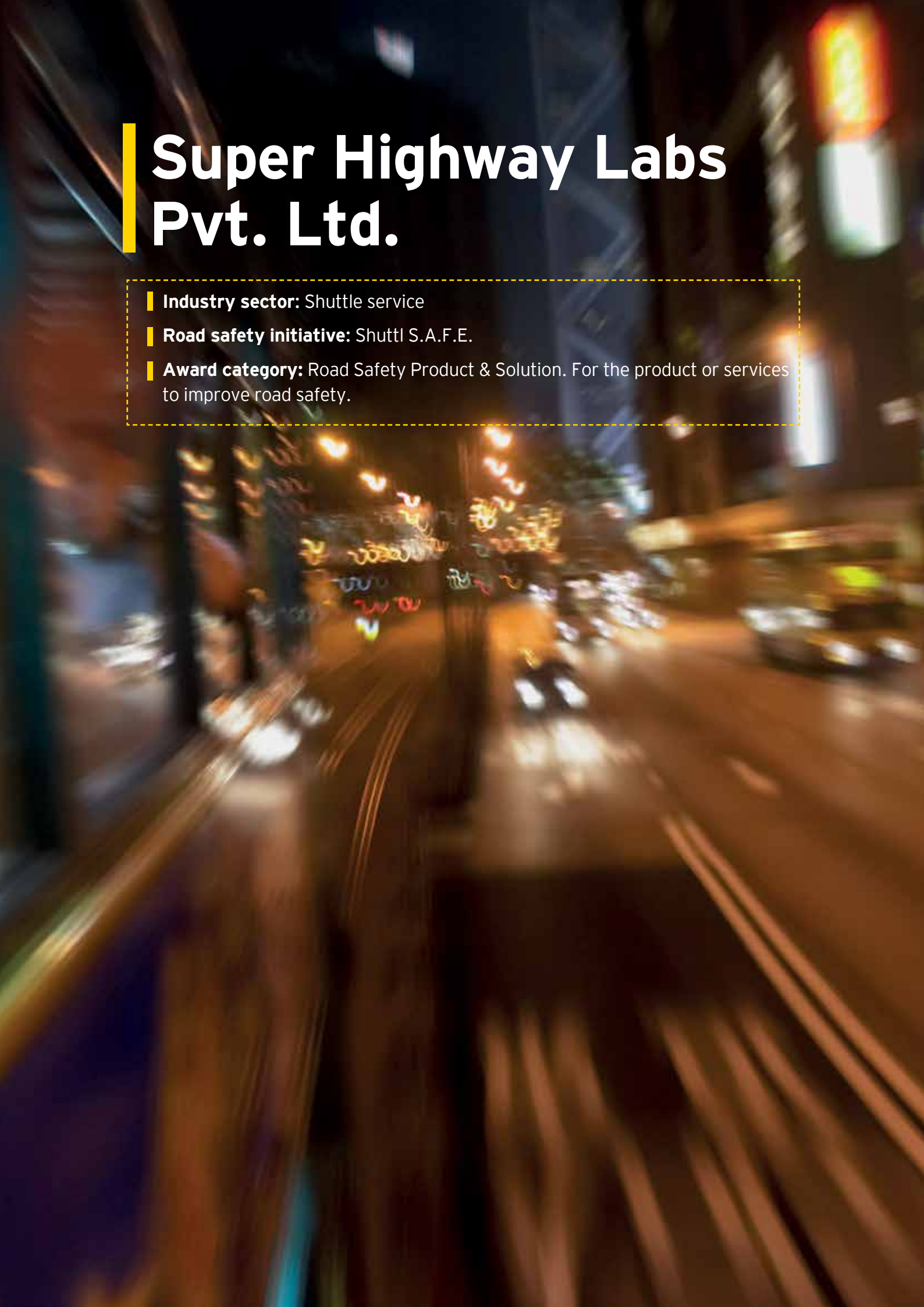
WABCO facilitated trailer OEMs to obtain homologation certificate from the certifying authorities, which involved providing engineering support in the WABCO proving ground. WABCO communicated the implementation of trailer homologation and its necessity to all the state registering authorities and regional transport officials by inviting them to its proving ground at Chennai and demonstrating the safety enhancement in the trailers.

The concerted multi-prong approach by WABCO facilitated the final notification of trailer homologation on 1 April 2017.

The total cost for the initiative included: Product development: INR12 lakh, Engineering support for trailer manufacturer for homologation: INR84 lakh, Training, awareness program and communication: INR4 lakh

Key benefits

- Homologation of the trailers which includes Trailer ABS prevented skidding and swinging of trailers during sudden braking which is the reason for many of the accidents and rollovers.
- The homologation also ensured drivers were in control of the trailers during critical maneuvers. During sudden braking results in spotty wear due to wheel lock which is avoided by the antilock brake system the tire life has increased.
- The hazardous goods trailers like petroleum & industrial Gases fitted with WABCO ABS prevented skidding, swing and roll over.
- Trailer OEMs and trailer operators acknowledged the benefits of the WABCO ABS system.



Super Highway Labs Pvt. Ltd.

- **Industry sector:** Shuttle service
- **Road safety initiative:** Shuttl S.A.F.E.
- **Award category:** Road Safety Product & Solution. For the product or services to improve road safety.

Overview of the Initiative

Shuttl is pioneer of app-based bus service. Under the flagship project "Shuttl S.A.F.E." (Secure Anxiety Free Experience), Shuttl has redefined safety in commute. Shuttl has designed and launched innovative safety solutions that comprehensively enable pre-emption, prevention and resolution of safety incidents. The safety solutions map each leg of the commute – namely, pre-boarding, post-boarding and post-deboarding – with respective stakeholder(s) such as driver, commuter, bus, Govt., and third parties. Accurate tracking of events and clear accountability of stakeholders make the entire Shuttl ecosystem safe and secure. The following are some of the steps taken by the company toward road safety:

- **Captain on-boarding:** Shuttl Captains (drivers) are recruited through a stringent evaluation and verification process.
- **Captain authentication:** Digital photographs of captains recorded during on-boarding are used as the base to authenticate mandatory selfie of Captains before and during trips.
- **Speed monitoring:** Live GPS tracking of Shuttl enables over-speeding or rash-driving triggers for corrective actions.
- **Alcohol detection:** The bus ignition is linked with a tech-based alcohol detection device installed in the bus near the Captain's seat, ensuring zero incidences of drunk driving.

Pre-boarding

- Face-based check-in: A seamless boarding experience for commuters via audio-authentication to ensure only genuine commuters board Shuttl.

Post-boarding

- SOS and panic button on the Shuttl App as well as a physical panic button on each Shuttl S.A.F.E. bus.
- Live CCTV feed with a gesture-based auto alert feature, which triggers an alarm if anyone inside the bus is in danger
- Ride-share feature to allow commuters to share their ride details with a friend or a family member who can track their journey

Post de-boarding

- Homecheck, a call-back confirmation to ensure that commuters have reached home safely

Key benefits

- Tracking of commuters (with their permission) from the time they book a seat in the bus till the time they reach home
- Ensuring that the coaches on road maintain speed limits to avoid road mishaps
- Captain's face recognition and alcohol detection features to ensure authentic and fit captains drives the vehicles
- Commuter's audio-authentication while boarding ensures only genuine commuters board Shuttl
- Increase in female ridership.

Cairn Oil & Gas, Vedanta Limited

Industry sector: Oil and Gas

Road safety initiative:
Vehicle Tag System

Trailer Air Brake Hose Safety Improvement

Bumper removal in light passenger vehicles to improve compliance with vehicle and pedestrian safety

Award category and description: Safe vehicle



Overview of the Initiative

In this initiative, the focus is on creating awareness and emphasizing the importance of wearing seatbelts/ helmets, ensuring a mobile free and safe driving and needing to follow road signs and traffic rules for safety on road. Through this project, the school has been able to achieve the following:

Vehicle Tag System

All Cairn contractors and sub-contractors are required to maintain vehicles in a roadworthy condition at all times while on duty. In order to meet this corporate objective, Cairn vehicle tag inspection scheme is implemented in RJ field

Vehicles that clear the No-Go criteria and defined inspection checklist are provided with a Cairn Vehicle Inspection Tag with validity. This Tag is mandatory for vehicle deployment at Cairn sites.

Trailer air brake hose safety improvement

Air brake hose condition is critical to ensure the safe transfer of air pressure via the air-line to the trailer rear brakes every time the driver applies brakes from the prime mover (cabin). Since 31 December 2015, the trailer Air brake Hose (Suzie hose) at Cairn are verified for Automotive Industry Standard (AIS) approved fitments and it is ensured that color coded hoses are fitted.

Air Brake Hoses Standard Fitment is part of the routine checks on trailers since then, which is controlled by a vehicle TAG system (as stated above). Over 96 trailers are currently deployed at Cairn at RJ field, all of which comply with this requirement.

Bumper removal in light passenger vehicles to improve compliance on vehicle and pedestrian safety.

Key benefits

Vehicle Tag System

- Zero vehicle accidents due to poor vehicle condition since September 2015
- 100% compliance with statutory and regulatory requirements at all times of each vehicle
- No stoppage of vehicle by police/Transport Department due to non-availability of statutory and regulatory documents
- Assurance mechanism to senior management on vehicle road worthiness assurance

Trailer Air brake hose safety improvement

- Zero vehicle accidents due to poor vehicle condition since September 2015
- 100% compliance with AIS standards
- Awareness and driver behavior improvement

Bumper bar removal

- Awareness and driver behavior improvement
- 100% compliance with CMV (Central Motor Vehicle) rule requirement on unauthorized fitment

FICCI Security Department

FICCI has many specialised committees where key concerns of the industry are debated and discussed with the specific aim of presenting the recommendations to the Government for favourable decisions.

Considering internal security is the backbone of growth and overall development of a nation, FICCI has constituted two specialised committees to look into various aspects of security –

- Committee on Homeland Security (HLS) is chaired by Mr. G. K. Pillai, Former Union Home Secretary, Govt. of India, which is working towards bridging the gap between policing and technology.
- Committee on Private Security Industry (PSI) is chaired by Ms. Manjari Jaruhar, Former Special DG – CISF, Govt. of India. The committee has been advocating for key policy issues confronting the industry.

Some of the focus areas:

- **SMART Policing**:FICCI has instituted the first ever SMART Policing Awards in India for best practices in SMART Policing, with the objective to promote initiatives taken by the Police for safety and security of Indian citizens. This can change public perception and build positive and progressive image of the police among people. FICCI SMART Policing Awards provide a platform to police officials across India to learn from the experiences of other states and also for possible adoption of the best practices to further enhance policing in their respective states.
- **Police Modernisation**: FICCI is working towards bridging the gap between policing and technology. We engage with various enforcement agencies and provide them a platform to interact with industry, to articulate their requirements and to understand new technologies for security. This initiative is under our umbrella theme of "Modernisation of India's Internal Security Mechanism".
- **Smart Border Management**: FICCI is working towards addressing the emerging challenges faced by India in smart border management, by bringing stakeholders together to discuss how India can create smart borders that, on the one hand, allow enhanced trans-border movement of peoples, goods and ideas, and on the other, minimise potential for cross-border security challenges.
- **Indian Unmanned Aerial Vehicle (UAV) Policy & Regulations**: FICCI has set-up Working Groups in areas of: (a) enabling regulations for developmental use of UAVs, and prevention of rouge UAVs; (b) framework for permission and licencing for manufacturing of UAVs; and (c) technological structure for detection and neutralisation of unidentified UAVs. FICCI has recently submitted its preliminary suggestions and recommendation for Indian UAV Policy & Regulations to the NITI Aayog, Ministry of Home Affairs and Directorate General of Civil Aviation.
- **Policy for Public Procurement in Internal Security**: FICCI is working towards advocacy for bringing well-defined procedures for fair and transparent procurement of security products and solutions, so as to provide level playing field to the industry. Although the Central Armed Police Forces (CAPFs) and State Police Forces are guided by the same policies and guidelines for public procurement as other government organizations, the nature and requirements of public procurement process for police forces is different from that of the general government departments. FICCI has provided policy inputs to the Government of India for numerous challenges in regard to procurement by Internal Security forces, in the areas of policies and regulations, processes, technological advancements and capacity-building.
- **Road Safety**: United Nations has proclaimed 2011-20 as the Decade of Action on Road Safety. FICCI feels that the Indian Industry can play a significant role in addressing the issue of road safety.
- **India Risk Survey**: FICCI every year conducts survey of risk as perceived by corporates, which could affect business continuity. The objective of the report is to inform and sensitise all stakeholders about the emerging risks for a developing economy like India, so that well planned and strategic policy decisions can be made.
- **Security Standards and Guidelines**: FICCI is working with the Bureau of Indian Standards (BIS) for creation of standards and guidelines for electronic security.

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- **Enforcement of Private Security Agencies Regulation (PSAR) Act 2005**: Major portion of the private security industry is unorganised. FICCI is advocating the proper enforcement of the Act.
- **Armed Security for Cash Logistics**: FICCI is advocating for a well-articulated policy for deployment of armed private security guards for protection of cash vans, which carry crores of public money every day.
- **Private Security Workers' Categorisation as Skilled / Highly Skilled Workers**: FICCI is working towards appropriate categorisation of the private security guards.
- **Minimum Standards/Guidelines for Cash Logistics Companies**: FICCI is advocating for establishment of standards and operating guidelines for cash logistics companies.
- **Capacity Building Programmes**: FICCI has initiated capacity-building programmes and workshops as an attempt to increase awareness about Women Safety at Work Place, Forensics of Fraud Detection, White Collar Crimes, etc.

- **Enforcement of Private Security Agencies Regulation (PSAR) Act 2005**: FICCI is working towards bridging the gap between policing and technology. We engage with various enforcement agencMajor portion of the private security industry is unorganised. FICCI is advocating the proper enforcement of the Act.
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- **Private Security Workers' Categorisation as Skilled / Highly Skilled Workers**: Re-categorisation notified vide a Gazette notification S.O.191 (E). Security guards without arms have been categorised as 'Skilled Workers' and Security guards with arms have been categorised as 'Highly Skilled Workers'.
- **Minimum Standards/Guidelines for Cash Logistics Companies**: FICCI is advocating for establishment of standards and operating guidelines for cash logistics companies.

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Established in 1927, FICCI is the largest and oldest apex business organisation in India. Its history is closely interwoven with India's struggle for independence, its industrialisation, and its emergence as one of the most rapidly growing global economies.

A non-government, not-for-profit organisation, FICCI is the voice of India's business and industry. From influencing policy to encouraging debate, engaging with policy makers and civil society, FICCI articulates the views and concerns of industry. It serves its members from the Indian private and public corporate sectors and multinational companies, drawing its strength from diverse regional chambers of commerce and industry across states, reaching out to over 2,50,000 companies.

FICCI provides a platform for networking and consensus building within and across sectors and is the first port of call for Indian industry, policy makers and the international business community.

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