Road Safety Cell
Transport Department
Govt. of Rajasthan

Safer Roads

Safer Vehicles

Safer Mobility

Safer Users

Draft Road Safety Action Plan
(2018-2020)
October 2017

Contents

1. Introduction

1.1 About Rajasthan

Rajasthan is India's largest state by area (342,239 square kilometres (132,139 sq mi) or 10.4% of India's total area). It is located on the north-western side of the India, where it comprises most of the wide and inhospitable Thar Desert (also known as the "Rajasthan Desert" and "Great Indian Desert") and shares a border with the Pakistani provinces of Punjab to the northwest and Sindh to the west, along the Sutlej-Indus river valley. Elsewhere it is bordered by five other Indian states: Punjab to the north; Haryana and Uttar Pradesh to the northeast; Madhya Pradesh to the southeast; and Gujarat to the southwest.

The state was formed on 30 March 1949 when Rajputana – the name adopted by the British Empire for its dependencies in the region was merged into the Dominion of India. Its capital and largest city is Jaipur. Other important cities are Jodhpur, Udaipur, Bikaner, Kota and Ajmer. According to 2011 Census of India, Rajasthan has a total population[1] of 68,548,437.

1.2 Road Network

With steady rise in urbanization, the road network and road infrastructure is also expanding accordingly which sum up to 2,17,707.25 kilometres[2]. The summary of category-wise road network in Rajasthan up to March 2016 is as follows:

Rajasthan Road Network (in Km)

Road Length	
National Highway	8168
State Highway	15607
Major District Road	7646
Other District Road	30313
Village Road	155972

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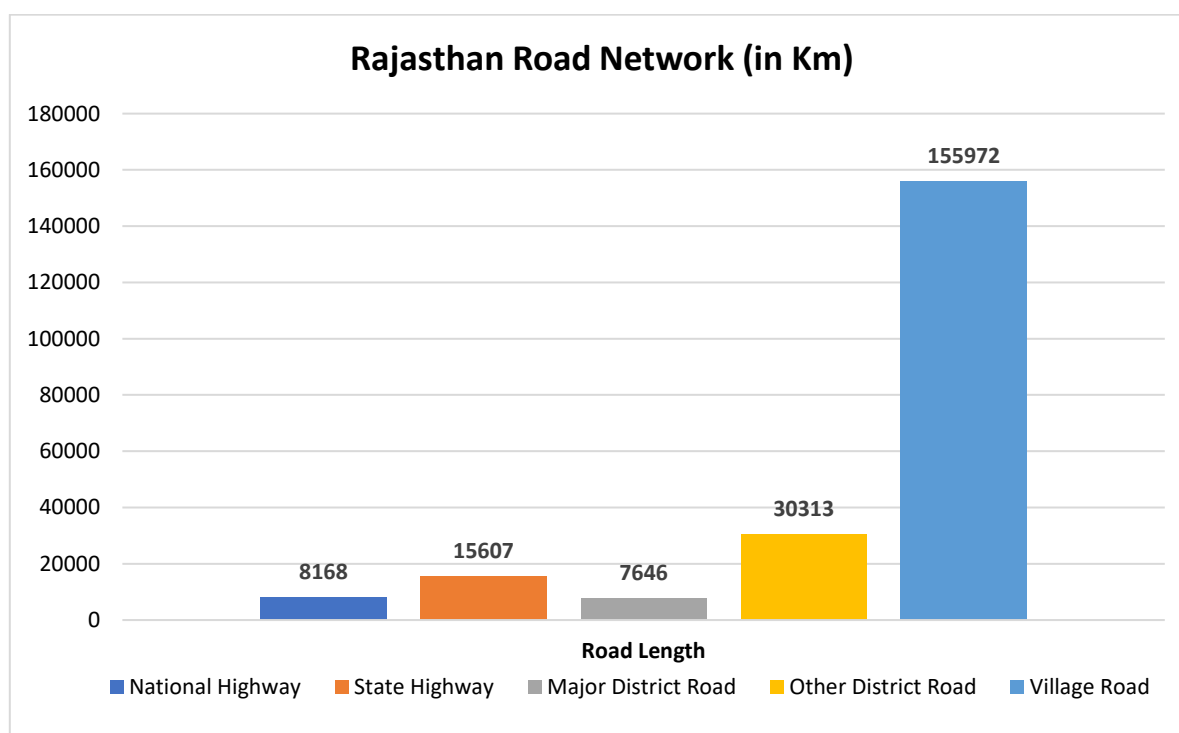
[1] www.rajasthan.gov.in
[2] Annual Report 2016-17, Public Works Department, Government of Rajasthan

1.3 Vehicle Population

Rajasthan has been experiencing significant growth in motor vehicles. The registered motor vehicles in Rajasthan are increasing with an average growth rate of 11.11% per annum. Total number of registered vehicles in the state were 47,54,027 in year 2005-06 which apparently has increased to 1,49,00,562 vehicles in 2016-17[3]. The highest growth is recorded in number of Powered Two Wheelers which constitute to 75.25% of the total vehicle population after Cars and Jeeps having total share of 9.50%. Powered Two Wheelers and Cars (including Jeeps) combined involvement in accidents is steadily increasing from 49.89% in 2009 to 54.81% in 2015. Powered Two Wheelers are the highest risk form of motorized road transport. The vehicle density in the state recorded 49.80 vehicles per kilometres in year 2015.

Growth of Registered Vehicles in Rajasthan 2007-08 to 2015-16

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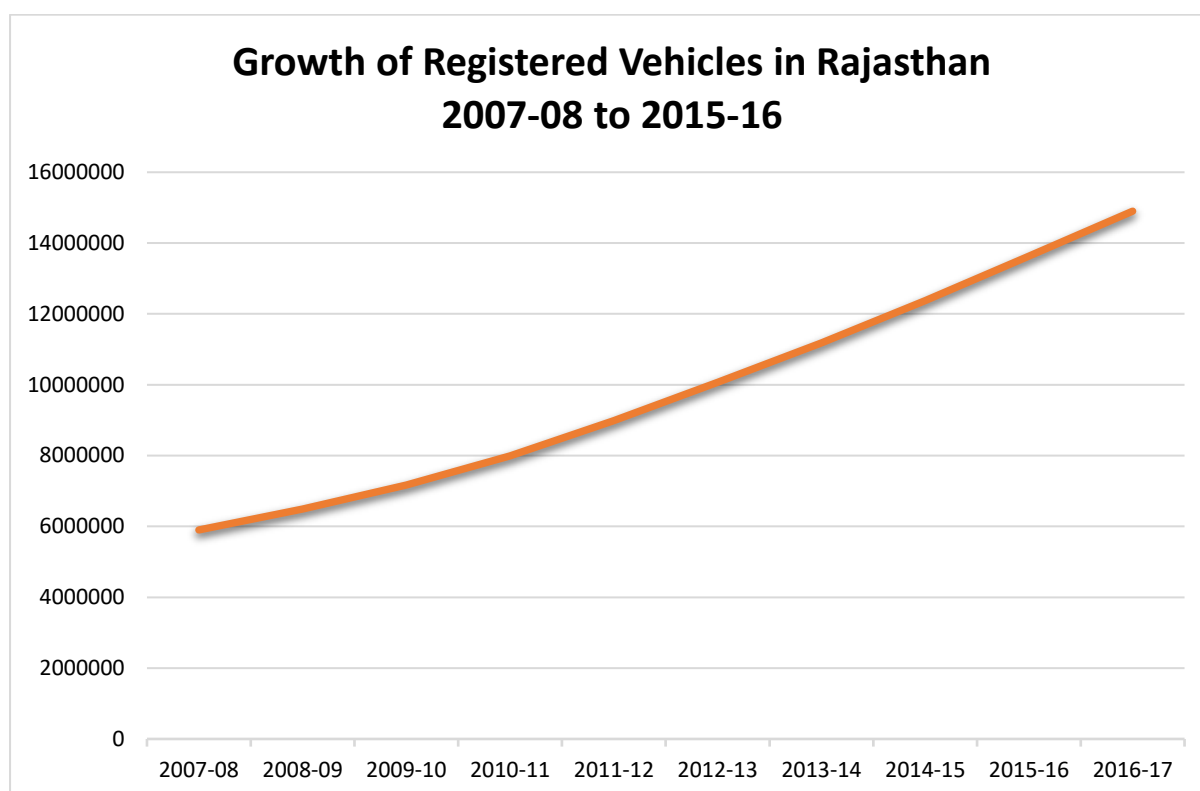
[3] Statistical Abstract 2016-17, Transport Department, Government of Rajasthan

2. Problem Statement

2.1 Road Crashes in Rajasthan

Not much variation has been noticed in terms of road crashes happening every year in Rajasthan in past ten years. On the contrary, the fatalities had been steadily rising, almost doubled to 10289 in year 2014 as compared to 5187 fatalities reported in year 2001. The year 2016 marked a turning point in the state road safety crisis for the first time in the last decade. Against 10510 fatalities in 2015, a marginal reduction of 45 fatalities were reported in year 2016 with 10465 fatalities.
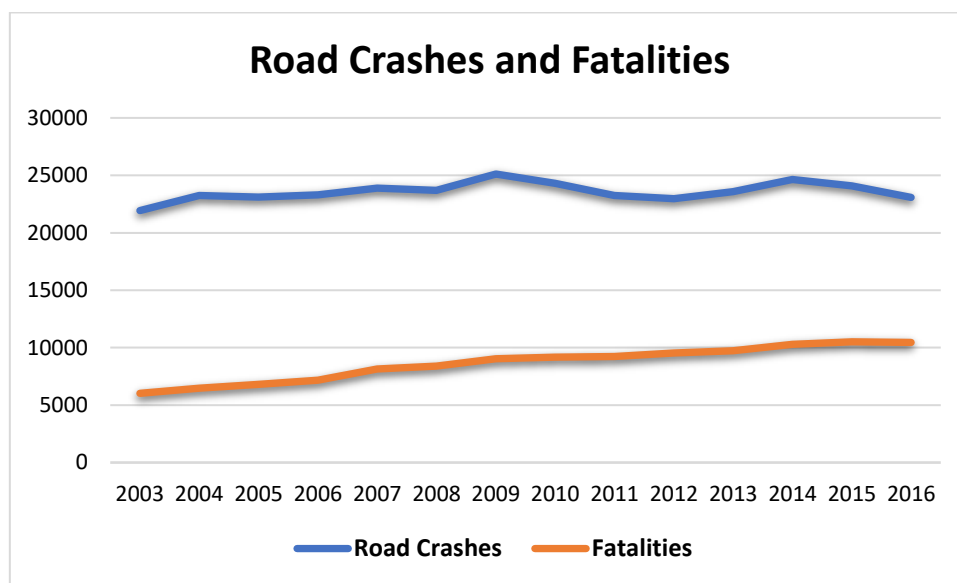
2.2 District-wise Statistics

Rajasthan is largest state of India with area of 342,239 square kilometres which accounts for accounts for 10.41 percent of total country's area. The state is divided into 7 divisions having 33 districts in all. Jaipur, the capital of the state, is highly populated city accounts for highest road crash fatalities in the state. Ajmer, Alwar, Jodhpur and Udaipur are the next four districts in terms of higher rate of road crash fatalities. The top ten districts according to the high road crash fatality reported in year 2016 are:

Districts with High Road Crash Fatality During the Year 2016

S. No.	District	Fatalities	%age Share
1	Jaipur	1406	13.44
2	Ajmer	602	5.75
3	Alwar	563	5.38
4	Jodhpur	540	5.16
5	Udaipur	534	5.10
6	Bhilwara	451	4.31
7	Sikar	435	4.16
8	Nagaur	395	3.77
9	Pali	395	3.77
10	Bharatpur	338	3.23

Fatalities - Districtwise (2016)

District	Fatalities
Karauli	101
Pratapgarh	104
Jaisalmer	107
Bundi	123
Sawai Madhopur	141
Jalore	171
Baran	175
Jhalawar	179
Banswara	190
Dhaulpur	192
Ganganagar	196
Hanumangarh	199
Dungarpur	202
Chittaurgarh	224
Kota	232
Sirohi	251
Churu	263
Rajsamand	271
Tonk	274
Bikaner	278
Jhunjhunu	297
Barmer	299
Dausa	337
Bharatpur	338
Pali	395
Nagaur	395
Sikar	435
Bhilwara	451
Udaipur	534
Jodhpur	540
Alwar	563
Ajmer	602
Jaipur	1406

2.3 High Fatality Districts Based on Comparative Analysis (2015-2016)

S. No.	District	Fatalities		Increase in Fatalities
		2015	2016	
1	Bhilwara	369	451	82
2	Tonk	211	274	63
3	Bharatpur	294	338	44
4	Rajsamand	230	271	41
5	Dholpur	158	192	34
6	Udaipur	500	534	34
7	Churu	241	263	22
8	Hanumangarh	178	199	21
9	Ajmer	582	598	16
10	Barmer	284	299	15

2.4 Comparison with National Data

The total number of road accidents, resultant persons killed and injured in the country in 2016 were 4,80,652, 1,50,785 and 4,94,624. The share of top ten States in total number of road accidents, persons killed and persons injured in the country [4]are provided below.

Percentage Share of Rajasthan During Year 2016

Parameter	India	Rajasthan	%age Share
Area (Lac Sq. Km.)	32.87	3.42	10.40
Road Length (Lac Km.)	55.00	2.17	3.95
Accidents	4,80,652	23,066	4.80
Injury	4,94,624	24,103	4.87
Fatalities	1,50,785	10,465	6.94
Vehicles (Crores)	18.50	1.49	8.05

Share in Total Number of Road Accidents (in %age) During Year 2016

Rank	State	%age Share	Road Accidents
1	Tamil Nadu	14.9	71,431
2	Madhya Pradesh	11.2	53,972
3	Karnataka	9.2	44,403
4	Maharashtra	8.3	39,878
5	Kerala	8.2	39,420
6	Uttar Pradesh	7.4	35,612
7	Andhra Pradesh	5.2	24,888
8	Rajasthan	4.8	23,066
9	Telangana	4.7	22,811
10	Gujrat	4.5	21,859

Share in Total Number of Persons Killed in Road Accidents (in %age) During Year 2016

Rank	State	%age Share	Persons Killed
1	Uttar Pradesh	12.8	19,320
2	Tamil Nadu	11.4	17,218
3	Maharashtra	8.6	12,935
4	Karnataka	7.4	11,133
5	Rajasthan	6.9	10,465
6	Madhya Pradesh	6.4	9,646
7	Andhra Pradesh	5.7	8,541
8	Gujarat	5.4	8,136
9	Telangana	4.8	7,219
10	West Bengal	4.3	6,544

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[4] Road Accidents in India – 2016, MoRTH, Government of India

Share in Total Number of Persons Injured in Road Accidents (in %age) During Year 2016

Rank	State	%age Share	Persons Injured
1	Tamil Nadu	16.6	82,163
2	Madhya Pradesh	11.7	57,873
3	Karnataka	11.0	54,556
4	Kerala	8.9	44,108
5	Maharashtra	7.3	35,884
6	Andhra Pradesh	6.1	30,051
7	Uttar Pradesh	5.1	25,096
8	Telangana	4.9	24,217
9	**Rajasthan**	**4.9**	**24,103**
10	Gujarat	4.0	19,949

2.5 Analysis of Road Crashes

The number of reported fatalities is likely to be underestimated as compared to the number of actual fatalities in the State. The World Health Organization's global surveillance program estimates that for every three fatalities in India, only two are reported (WHO, 2015) but this is an estimate only. Many countries are estimated by WHO to have much greater differences between reported and actual fatalities. According to a latest report "Advancing Road Safety in India" it is estimated that fatalities due to road crashes is 12,612 instead of 10,510 (reported) in 2015[5].

**A Comparative Analysis of Road Crashes, Fatalities and Injuries (2015 and 2016)**

Parameter	2015	2016	+/-
Road Crashes	24072	23066	-1006
Fatalities	10510	10465	-45
Injuries	26153	24103	-2050

Trend of Fatal Crashes and Severity in the State

The severity of crash, i.e. person killed per 100 accidents, is steadily rising in the State[6]. The severity trend of past four years is continuously increasing. Severity reported in year 2013 was 41.2 which straightaway increased to 45.4 in 2016. Total 9282 crashes were reported fatal out of 23066 crashes in year 2016 whereas the accident severity in the country was reported 31.4 in year 2016. In respect to increasing number of vehicles, the approximate fatality rate per thousand vehicles has come down from 1.34 in 2006 to 0.70 in 2016.

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[5] Advancing Road Safety in India – Facts and Figures, National Institute of Mental Health and Neuro Sciences
[6] Road Accidents in India – 2016, MoRTH, Govt. of India

Severity of Crashes in Rajasthan
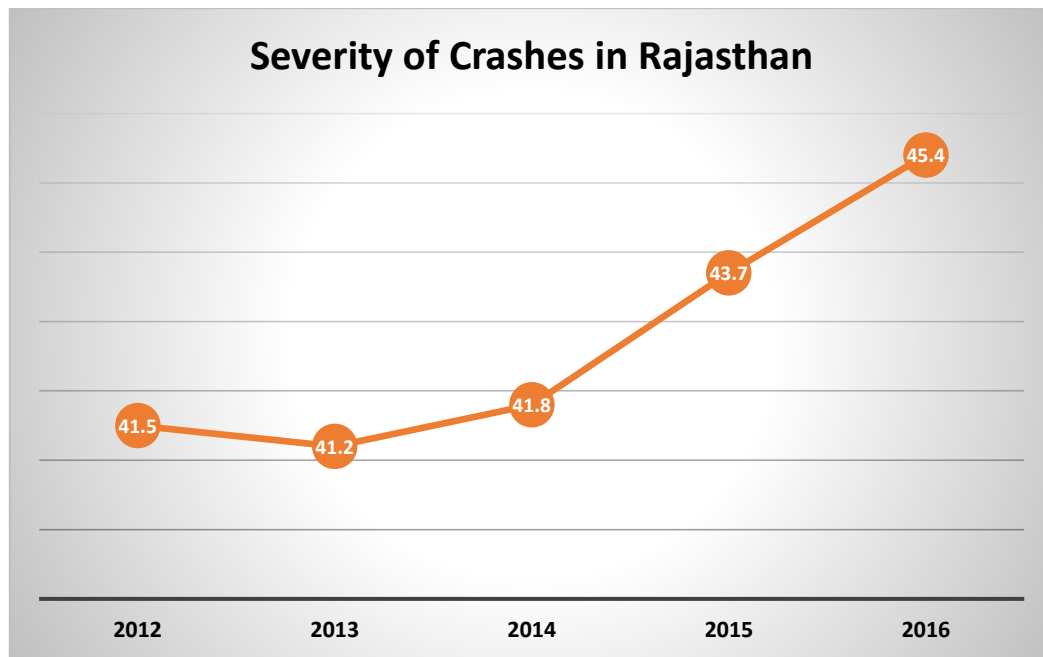
Classification of Crashes

During the year 2016 total 23066 road crashes took place in the state. Their classification according to the type of injury is given as below:

Fatal Crashes (9282)

Minor Injury (9260)

Grievous Injury (3786)

Non Injury (738)
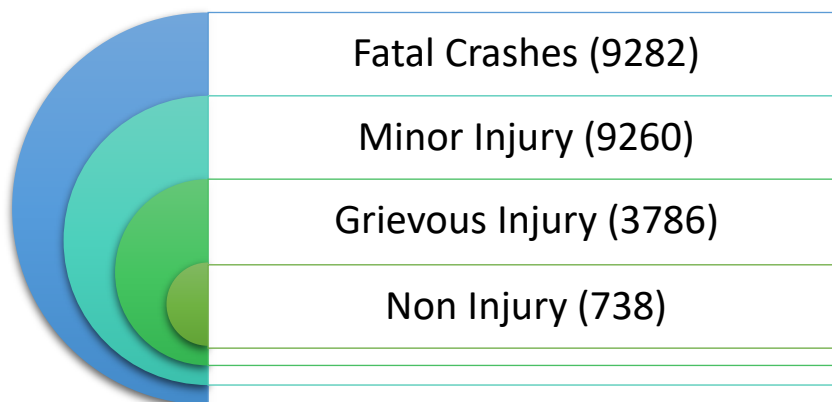
Accidents and Fatalities According to the Type of Road

The total road network in Rajasthan comprises of 2,17,706 kilometres of roads. The share of National Highways is only 3% whereas State Highways comprises of 7% of the total road network. Rest are Major District Roads, Other District Roads and Village Roads collectively grouped as Other Roads. Goods and passenger traffic is highest on National Highways and in contrary crashes and fatalities are higher on Other Roads.

Crashes and Fatalities According to Type of Road (2016)

Type of Road	Crashes	Fatalities
NATIONAL HIGHWAY	6567	3737
STATE HIGHWAY	3695	1928
OTHER ROADS	12804	4800

Crashes ■ **Fatalities** ■
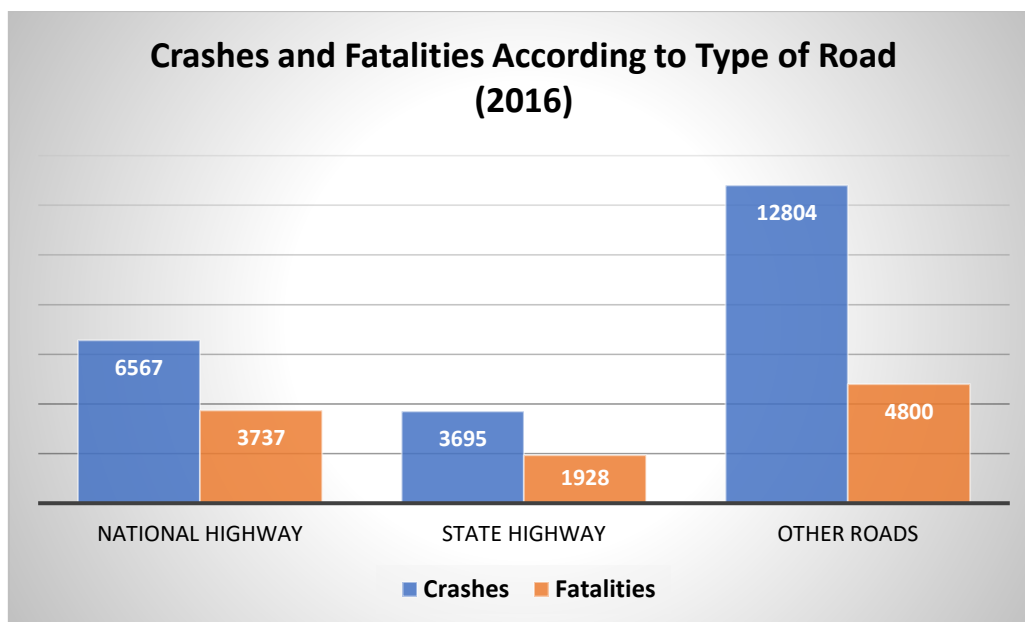
Fatalities According to the Road Users Involved

Fatalities According to Road User (2016)

- Pedestrians 9%
- Bicyclist 1%
- Motor Cycle/Scooter 28%
- Auto Rickshaw 2%
- Car, Jeep, Taxi 27%
- Truck, Bus 20%
- Other 13%

Legend:
- ■ Pedestrians
- ■ Bicyclist
- ■ Motor Cycle/Scooter
- ■ Auto Rickshaw
- ■ Car, Jeep, Taxi
- ■ Truck, Bus
- ■ Other
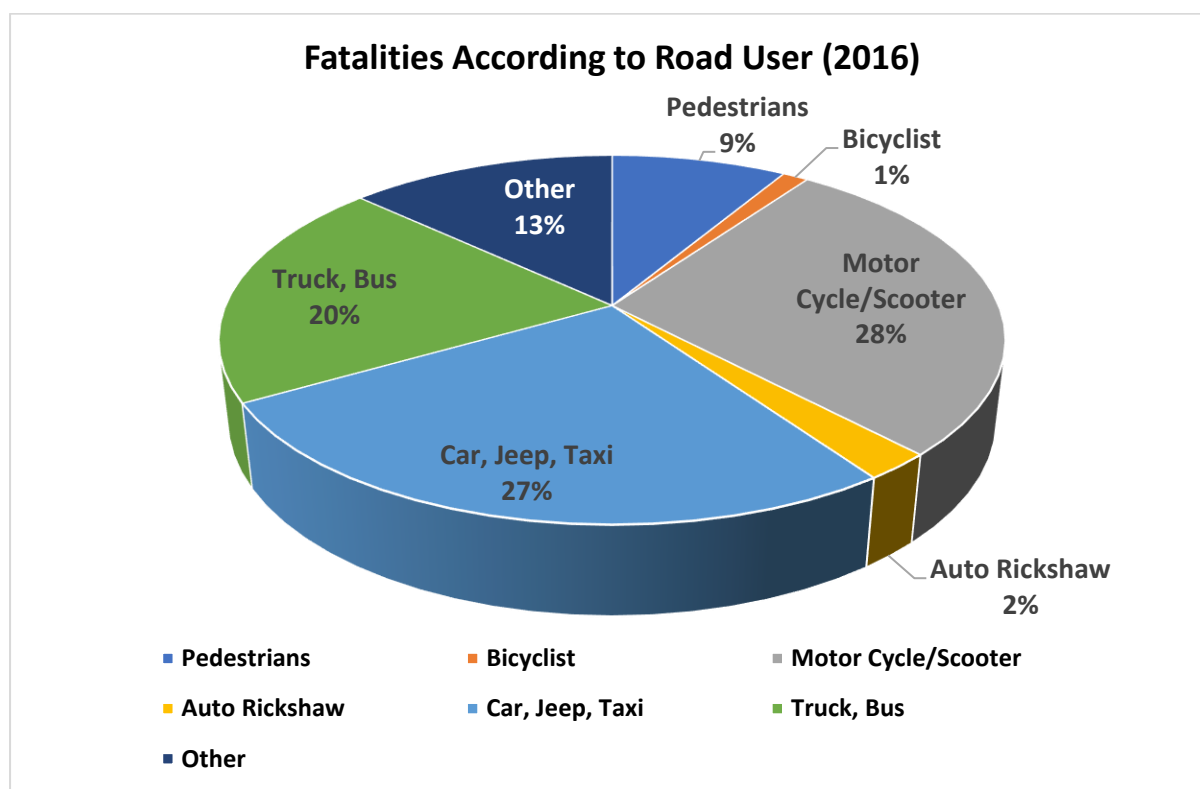
Fatalities According to the Type of Vehicle Involved (2016)

Fatalities According to the Type of Vehicle Involved (2016)

Other Motor Vehicles 7%
Other Objects 3%
Auto Rickshaw 2%
Tractor 8%
Car/Jeep 31%
Motor Cycle/ Scooter 20%
Truck/Bus 29%

■ Car/Jeep ■ Truck/Bus ■ Motor Cycle/ Scooter ■ Tractor
■ Other Motor Vehicles ■ Other Objects ■ Auto Rickshaw

Fatalities According to the Age Group of Road User

Fatalities According to Age Group (2016)

> 60 3%
Unknown 1%
45-60 14%
< 18 5%
35-45 23%
18-25 25%
25-35 29%

■ < 18 ■ 18-25 ■ 25-35 ■ 35-45 ■ 45-60 ■ > 60 ■ Unknown
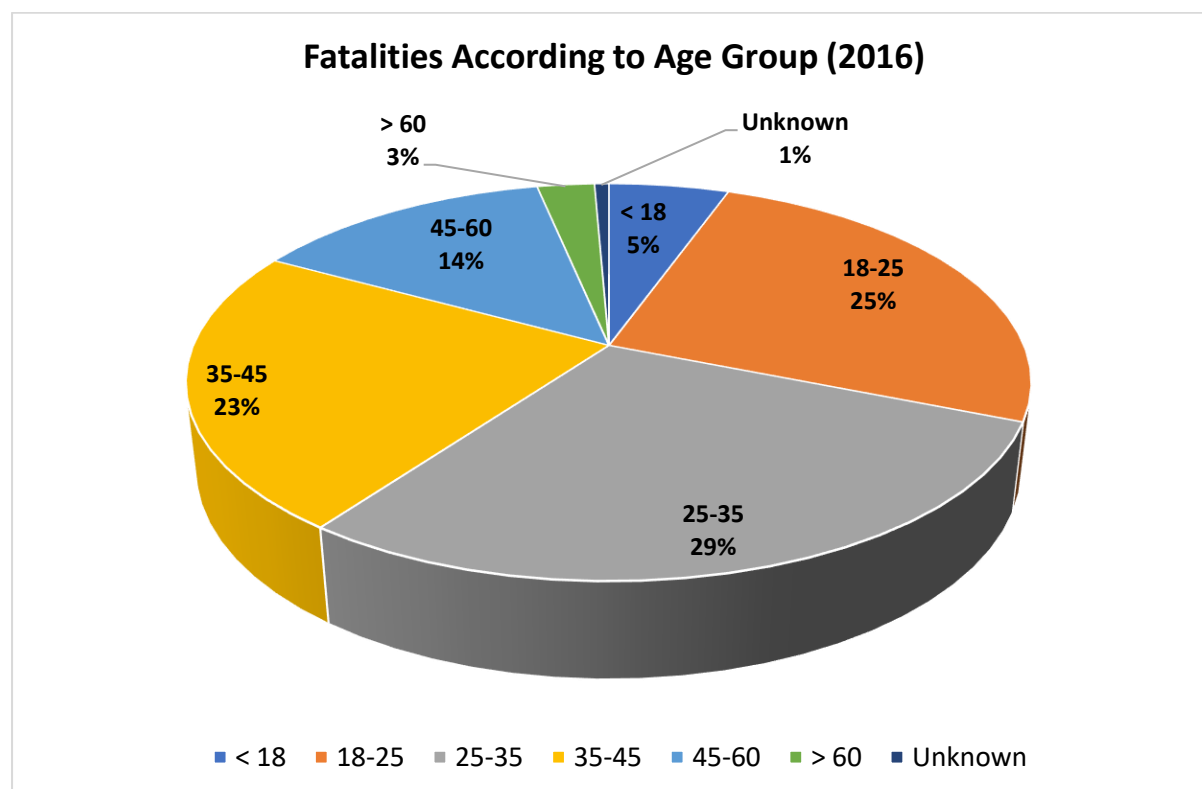
Fatalities Classified According to Type of Junction

Fatalities According to Type of Junction (2016)

Round about Junction
7%

Rail Crossings
0%

Four Armed Junction
18%

T-Junction
58%

Y-Junction
17%

■ T-Junction ■ Y-Junction ■ Four Armed Junction ■ Round about Junction ■ Rail Crossings
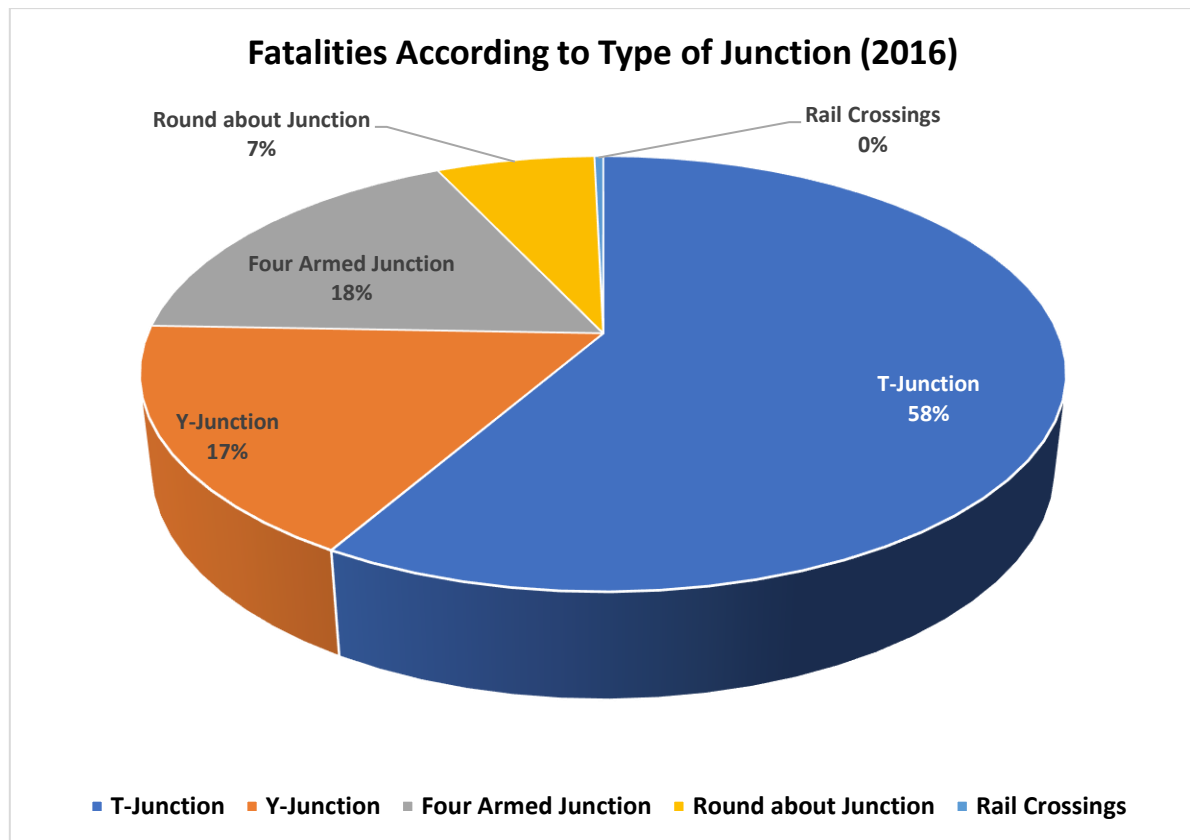
Fatalities According to Type of Traffic Control

Fatalities According to Type of Traffic Control (2016)

Traffic Light Signal
3%

Stop Sign
0%

Police Controlled
4%

Flashing Signal/Blinker
0%

Uncontrolled
93%

■ Traffic Light Signal ■ Police Controlled ■ Stop Sign ■ Flashing Signal/Blinker ■ Uncontrolled

Fatalities According to Time of Accident

Fatalites According to the Time of Accident (2016)

Time Period	Urban	Rural
06.00 TO 09.00	298	798
09.00 TO 12.00	425	1096
12.00 TO 15.00	406	1330
15.00 TO 18.00	483	1534
18.00 TO 21.00	481	1376
21.00 TO 00.00	349	787
00.00 TO 03.00	174	324
03.00 TO 06.00	187	417

■ Urban ■ Rural
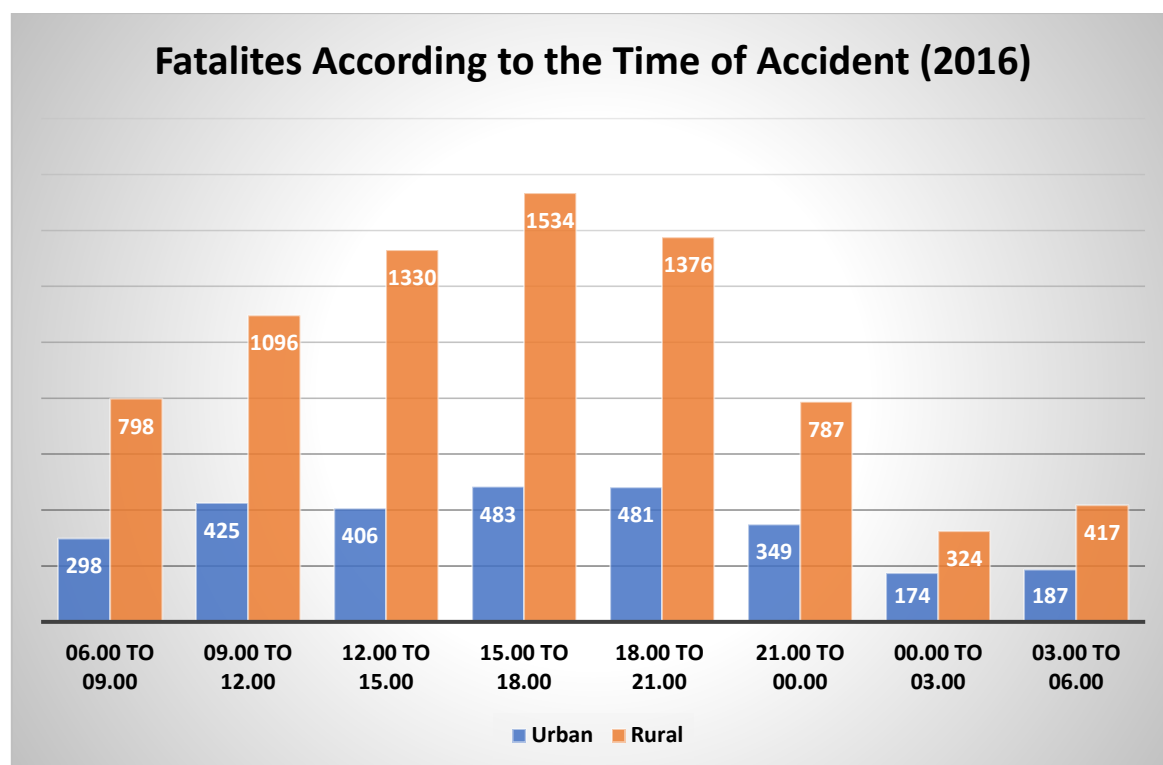
Segregation of Fatalities in the State (2016)

Legend:
- >1000
- 800-1000
- 500-800
- 200-500
- <200
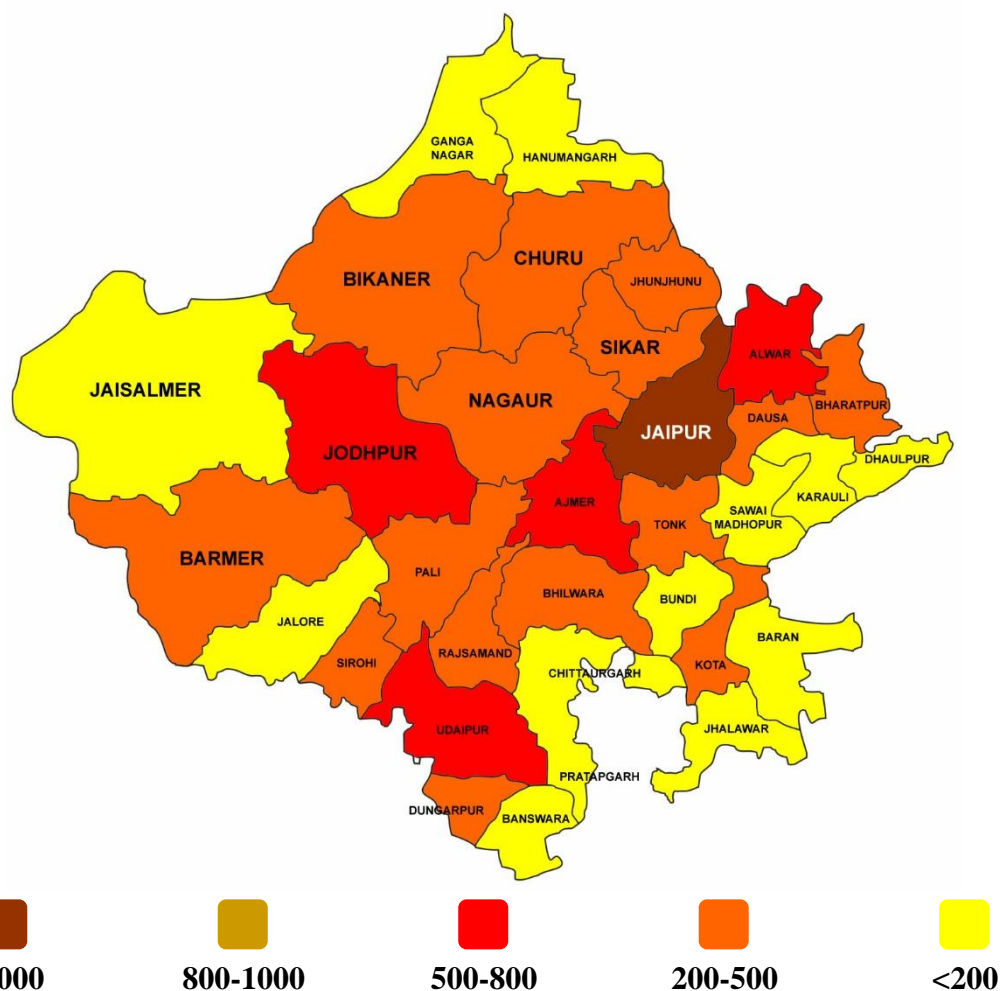
2.6 Identified Key Focus Areas

Based on the detailed analysis of road crashes, fatalities and road crash injuries, the following key focus areas have been identified which need immediate attention in order to reduce the crash fatality rate in the state:

1. **Uncontrolled Vehicle Growth**

   Growth in number of vehicles and expansion of roads is always deemed as an essential component for growing economy. But on the other side, uncontrolled vehicle population also exhibit certain side effects. The composite annual growth rate of vehicles per annum in the state is was recorded 11.11% during the year 2016. Majority of them are two-wheelers which is affecting the road safety scenario in the state in two ways. First, the increasing vehicular congestion on roads and secondly, more involvement of two-wheeler riders in road crashes resulting in higher fatality ratio. The rapid growth of vehicles is also encouraging unexperienced and vulnerable drivers on road, which also needs a serious consideration. Some of the immediate remedies to overcome the situation can be:

   - Design and implement vehicle phase-out policy to lower the burden by removing old and unfit vehicles from the road.

   - Enhance sustainable public transportation system and encourage road users to shift the paradigm from private vehicle commuting to public transport.

   - Prepare and implement a policy to map ownership of the vehicle by ensuring that a person should not own more than one personal vehicle of a particular category.

   - Strictly enforce the availability of parking space at the time of buying vehicle and submitting the affidavit of availability of parking place.

   - Take strict traffic management measures to reduce congestion on road such as, One Way Traffic, No Entry, Odd-Even Scheme, Higher Parking Charges at Peak Hours, Congestion Pricing, Variable Toll Collection Based on Number of Occupants in a Vehicle etc.

2. **Accidents on Different Types of Roads**

   The state comprises of around 2,17,706 kilometres of road network out of which 3% is National Highways and 7% is State Highways. Approximately 65% of freight and 80% of passenger traffic is carried by roads which in turns also leads to road crashes. Irrespective of the fact, the ratio of crashes and fatalities is higher on other roads which implies that there is an immediate need of improvement in road infrastructure. Other safety measures which are required to support the cause includes stringent enforcement drives, trauma care, speed calming measures and vehicle safety initiatives on highly vulnerable roads.

3. **High Fatality Districts**

   Focussing on high fatality districts can prove an immediate measure to control the rising graph of fatalities in the state. There can be two ways to consider high fatality districts.

First, the district where the total number of fatalities is higher during a year and secondly, the districts where the number or road crashes have increased in comparison to the previous year i.e. in year 2015 and 2016.

4. **Rising Severity of Crashes**

The severity of crashes (deaths per 100 accidents) has been recorded the all-time high 43.7% in year 2016 in the state. Along with rise in road crashes and fatalities, the severity of crashes is also showing an upward trend which certainly is a very disturbing fact. The main cause behind the increased severity level is crashes of vehicles travelling at excessive speed. The maximum national speed limit notified by Ministry of Road Transport and Highways is 100 km/hr in the country but irrespective of the notified limit the vehicles ply with excessive speeds resulting in much severe and fatal road crashes.

5. **Vulnerable Road Users**

According to the analysis of road crashes and fatalities happened in 2016, the highly affected group of vulnerable road users comprises of two-wheeler riders (28%), car/jeep drivers (27%) and pedestrians (9%) which aggregates a total of 64% of the total fatalities. Thus, making it mandatory to plan and design the plan of action keeping in mind the above most vulnerable user group. Good practices are required to promote use of helmet, wearing seatbelt, enhancing conspicuity for pedestrians and driving in the permissible speed limits through education for all community groups which can bring a positive change in the scenario.

6. **Vulnerable Age Group**

From the analysis of road accident data of year 2016 it is imperative that around 77% of the fatalities comprise of road users of age group 18-45 years which is a very shocking fact. The upcoming generation and the bread earner is being killed in road crashes which evidently increases burden on he the family of the victim and eventually it also causes huge loss to the economy as well. A proactive action plan is needed to address the issue through simultaneous education and enforcement drives, offering safer roads infrastructure and by providing spontaneous accident reporting and aid dispatch system.

7. **Type of Junction and Junction Control**

Out of the total crashes that happened on various types of junctions, 58% crashes took place on T-Junctions and 93% crashes happened on Uncontrolled Junctions. It clearly signifies that either it is imperative to modify the designs of the T-Junctions or implement speed calming measures at the required area. On the other hand, suggestive speed control measures, automated enforcement system in place can prevent a majority of road crashes at uncontrolled junctions. All uncontrolled junctions must be taken on top priority to reduce the number of crashes and resulting fatalities.

8. **Time of Crash and Area**

From the analysis of accident data, it has been evident that most of the crashes and fatalities have occurred in rural area. On further intervention, the facts reveal that most

of these accidents have taken place between 9:00 am to 9:00 pm again with higher fatality in rural areas. On dividing the time slab of three hours each, the time slab 9:00 am to 12:00 pm, 12:00 pm to 3:00 pm, 3:00 pm to 6:00 pm and 6:00 pm to 9:00 pm shows higher fatality ratio. Thus, the main concentration should remain fixed preventing accident in rural areas between 09:00 am to 09:00 pm.
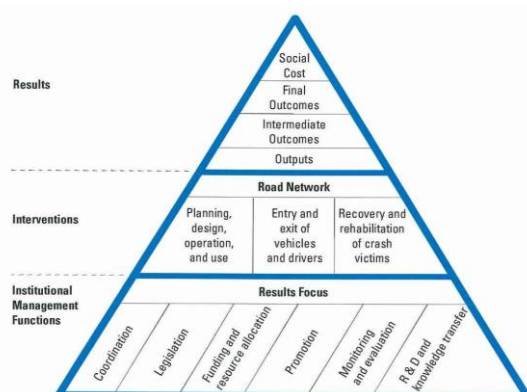
3. Road Safety Framework

3.1 Road Safety Management Framework

The rapid escalation of road traffic injury in low and middle-income countries led the World Health Organisation (WHO) to publish the "World Report on Road Traffic Injury Prevention" in 2004,[7] making just six recommendations to countries seeking to tackle their road safety problem:

- nominate an agency within government to lead the country's road safety efforts
- assess road safety policies, institutional settings and capacity
- prepare a national road safety strategy and action plan
- allocate financial and human resources to address the problem
- implement the action plan
- support further capacity development.

In response to the WHO report, the World Bank analysed a number of successful road safety management practices and institutions around the world, and developed a road safety management framework which would be applicable for low, middle and high-income countries. The resulting guidelines published in 2009 (and revised in 2013) codified for the first time a set of core institutional management functions for road safety, and set out a comprehensive process and for assessing road safety management capacity, particularly within government institutions.[8]

A key feature of the framework is the institutional management functions, which drive more effective interventions and better results. When given full effect, these functions provide direction on how cost-effective interventions are identified, prioritized, scoped, funded, targeted and delivered. They also assist in building support for sustained road safety improvement and for building the human, financial and institutional capacity needed to sustain that support, and transform it into improved safety results within the community.

Source: Bliss and Breen, building on the frameworks of Land Transport Safety Authority, 2000; Wegman, 2001; Koornstra et al, 2002; Bliss, 2004.

The emerging consensus which identified road safety management as the vital element required for a country to significantly and sustainably reduce road fatalities was reinforced by the United Nations Decade of Action on Road Safety 2011-2020, which established road safety management as the first of five pillars of action. Strengthening road safety management systems would facilitate far stronger action in the four other pillars: safer roads and mobility; safer vehicles; safer road users; and post-crash response.

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[7] Peden M, Scurfield R, Sleet D, Mohan D, Hyder A, Jarawan E, Mathers C, eds (2004). *World Report on Road Traffic Injury Prevention*, World Health Organisation, Geneva.

[8] Bliss A, Breen J (2013). *Road Safety Management Capacity Reviews and Safe System Projects Guidelines*. Global Road Safety Facility, Washington DC

3.2 Decade of Action for Road Safety

General Assembly resolution 64/2551 of March 2010 proclaimed 2011–2020 the Decade of Action for road safety, with a global goal of stabilizing and then reducing the forecasted level of global road fatalities by increasing activities conducted at national, regional and global levels.

Resolution 64/255, requested the World Health Organization and the United Nations regional commissions, in cooperation with the United Nations Road Safety Collaboration and other stakeholders, to prepare a Plan of Action for the Decade as a guiding document to support the implementation of its objectives. In addition, Resolution 64/255 invited the World Health Organization and the United Nations regional commissions to coordinate regular monitoring, within the framework of the United Nations Road Safety Collaboration, of global progress towards meeting the targets identified in the plan of action through global status reports on road safety and other appropriate monitoring tools.

Road traffic injuries can be prevented. Experience suggests that an adequately funded lead agency and a national plan or strategy with measurable targets are crucial components of a sustainable response to road safety. Effective interventions include incorporating road safety features into land-use, urban planning and transport planning; designing safer roads and requiring independent road safety audits for new construction projects; improving the safety features of vehicles; promoting public transport; effective speed management by police and through the use of traffic-calming measures; setting and enforcing internationally harmonized laws requiring the use of seat-belts, helmets and child restraints; setting and enforcing blood alcohol concentration limits for drivers; and improving post-crash care for victims of road crashes.

Public awareness campaigns also play an important role in supporting the enforcement of legislative measures, by increasing awareness of risks and of the penalties associated with breaking the law.

The Commission for Global Road Safety issued a call for a Decade of Action for Road Safety in its 2009 report. Endorsements for the proposal have come from a wide range of public figures as well as the United Nations Road Safety Collaboration. The United Nations Secretary-General, in his 2009 report to the General Assembly, encouraged Member States to support efforts to establish a Decade. A Decade would provide an opportunity for long-term and coordinated activities in support of regional, national and local road safety.

Goal and Specific Objectives

The overall goal of the Decade will be to stabilize and then reduce the forecast level of road traffic fatalities around the world by 2020. This will be attained through:

- adhering to and fully implementing the major United Nations road safety related agreements and conventions, and use others as principles for promoting regional ones, as appropriate;

- developing and implementing sustainable road safety strategies and programmes;

- setting an ambitious yet feasible target for reduction of road fatalities by

- 2020 by building on the existing frameworks of regional casualty targets;

- strengthening the management infrastructure and capacity for technical implementation of road safety activities at the national, regional and global levels;

- improving the quality of data collection at the national, regional and global levels;

- monitoring progress and performance on a number of predefined indicators at the national, regional and global levels;

- encouraging increased funding to road safety and better use of existing resources, including through ensuring a road safety component within road infrastructure projects;

- building capacities at national, regional and international level to address road safety.

Activities

Activities over the Decade should take place at local, national, regional and global levels, but the focus will primarily be on national and local level actions. Within the legal constructs of national and local governments, countries are encouraged to implement activities according to five pillars below.

Pillar 1	Pillar 2	Pillar 3	Pillar 4	Pillar 5
Road Safety Manag-ement	Safer Roads and Mobility	Safer Vehicles	Safer Road Users	Post Crash Response
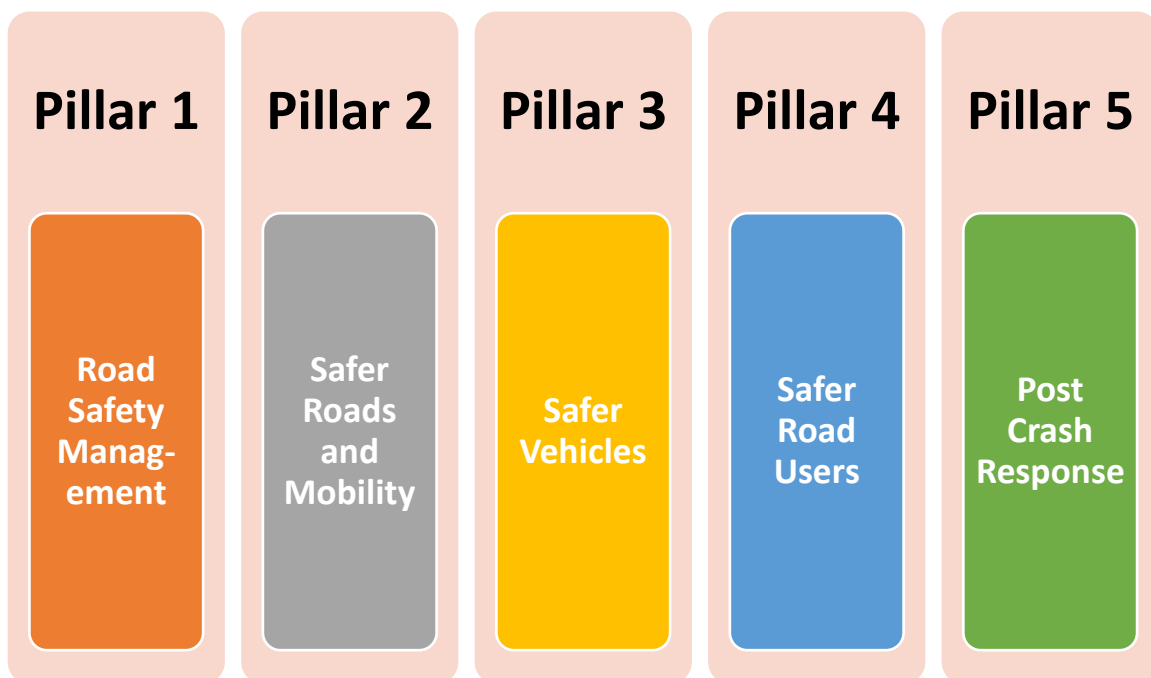
3.3 Rajasthan State Road Safety Policy

In compliance of directions of Hon'ble Supreme Court Committee on Road Safety and decision taken in the State Level Transport Management Committee, the State Cabinet vide its order no D.146/Cabinet/2016 dated 07.12.2016 approved State Road Safety Policy. The State Road Safety Policy outlines the policy initiatives to be framed/taken by the Government at all levels to improve the road safety activities in the state. The State Road Safety Policy is as under:

1. **Preamble**

   The growing number of road accidents and resultant injuries and fatalities is a matter of serious concern. Road accidents are mainly man made unfortunate mishaps causing immeasurable social and economic loss to the society. In recent years road accidents have become a major contributor of accidental deaths by un-natural causes. The Government of

Rajasthan is deeply concerned of safety situation within the state and through this road safety policy framed on the lines of National Road Safety Policy, states its firm commitment to reduce the road accident fatalities in the state by 50% of the base line figure of 2015, by 2020. This will require well-co-ordinated, dedicated and concerted efforts from all stakeholder departments and other agencies.

2. **Policy Statement**

To fulfil the objective of reducing mortality and morbidity due to road accidents, the Government of Rajasthan is committed to take the following measures: -

(i) Strengthening Institutional & Legal Environment

The Government will take steps to ensure that the required Institutional & Legal Environment for Road Safety is further strengthened and a mechanism for effective coordination for various stake holders is put in place with active and extensive participation of the community at large, of the private sector, academia and civil society.

(ii) Strengthening Financial Environment

The Government shall strive to create a regular dedicated road safety fund for the state from various possible sources like part of fines & compounding fees from traffic offences etc.

(iii) Ensure Safer and Efficient Road Infrastructure

The Government will take conscious measures to introduce, review, improve and maintain standards pertaining to safety in the design of rural and urban roads and bring them in consonance with international best practices keeping in view the local traffic conditions of the State. The planning, design, construction and management of road development projects and improvement and maintenance of existing roads should invariably consist of road safety component. Continuous identification, survey, budget allotment, rectification and monitoring of accident prone spots shall be done regularly in a time bound manner. Continuing application of Intelligent Transport System (ITS) and regular road safety audits to establish a safe and efficient transport system will be encouraged. Way side amenities/ facilities will be developed.

(iv) Improving Quality of Drivers

The Government recognizes the fact that improving the man power and driving skills both qualitatively and quantitatively will go a long way in improving road safety. The Government will provide and strengthen efficient and effective driver training and testing infrastructure aiming at transparency and objectivity through automation and modernization. Countermeasures against defaulters will be ensured to promote road discipline among drivers.

(v) Safer Vehicles

The Government will take steps to promote safety standard in vehicles through statutory periodic and qualitative inspection as an essential check on road worthiness of all vehicles, phasing out old vehicles and ensuring compliance of provisions of

Motor Vehicle laws as well as pollution and safety norms. The aim of the Government will be to bring transparency and objectivity through automation and modernization.

(vi) Safety for Vulnerable Road Users

The design and construction of all road facilities (rural and urban) will take into account the needs of non-motorized transport and the vulnerable and physically challenged in an appropriate manner. The Government will seek to disseminate 'best practices' in this regard to town planners, architects and highway and traffic engineers. Steps shall be taken to strengthen public transport system. Comprehensive town planning with specific parking policy keeping in mind all important aspects related to road safety shall be strived for.

(vii) Enforcement of Safety Laws

The Government will endeavour to establish permanent, exclusive, dedicated and well-equipped teams involving officials of stakeholder departments to strengthen and improve the quality of enforcement for effective and uniform implementation of road safety laws. The Government will work in coordination with Government of India for establishment and strengthening of Highway patrolling on National, State and Express highways. System of toll free help lines and social networking connectivity for assistance of public will be ensured

(viii) Road Safety Education and Training

Road Safety knowledge and awareness will be created amongst the population through education, training and publicity campaigns. Road Safety education will also focus on school children and college going students, while road safety publicity campaigns will be used to propagate good road safety practices among the community. The Government will encourage training of all professionals associated with road design, road construction, road network management, road safety audit, traffic management, law enforcement etc. to attain adequate knowledge of road safety issues through extensive capacity building programs. First aid training to help road accident victims and training of trainers in road safety will be made an integral part of capacity building.

(ix) Emergency Care and Medical Services for Road Accident Victims

The Government will make sincere efforts to ensure that all persons involved in road accidents benefit from speedy, sufficient and effective trauma care and management. Both pre-hospital care and hospital based injury management shall be provided to crash victims through a comprehensive Trauma Care Policy. The Government will strive to provide and improve sufficient emergency medical service response. The Government will also implement the clause of Right of Way for ambulances. Steps shall be taken for training of human resources and creating facilities.

(x) HRD and Research for Road Safety

The Government will encourage increased activity in programmes of road safety research by identifying priority areas, funding research in those areas adequately and establishing centre of excellence in research and academic institution. The State Government will facilitate dissemination of the result of the research and identifying

examples of good practices through publication, training, conferences, workshops and websites. The Government will also encourage research by establishing a research system to leverage latest technology in improving enforcement, engineering and emergency care.

(xi) Establish a Road Safety Information Database

The Government will establish state level road safety information system by having a state-wide Road Accident Database Management System connecting all trauma centres, hospitals and ambulances and integrating the database of Medical and Health, Traffic Police, Transport Departments and Insurance companies into the information system. Scientific investigation, restructuring and analysis of road accident shall be ensured for providing actual and accurate database for further research and analysis.

3. Implementation Strategy

The Government will take appropriate measures to implement and oversee the issues related to Road Safety through an exclusive, adequate and dedicated road safety cell (lead agency) which may include representatives of stake holder departments like Transport, PWD, Medical & Health, Police, UDH, LSG, Law, Education along with other members. The lead agency will be provided with the authority and resources to evolve effective strategies for implementation of the State Road Safety Policy. The Government will also provide dedicated, adequate and regular fund to finance and implement road safety activities through the lead agency.

3.4 Safe Systems Approach

Safe systems is an approach to road safety management, based on the principle that our life and health should not be compromised by our need to travel. No level of death or serious injury shall be acceptable on the road transport network.

Safe systems is designed with the human being at its centre, taking human fallibility and vulnerability into account, and accepting that even the most conscientious person will make a mistake at some point. The goal of safe systems is to ensure that these mistakes do not lead to a crash; or, if a crash does occur, it is sufficiently controlled to not cause a death or a life-changing injury.
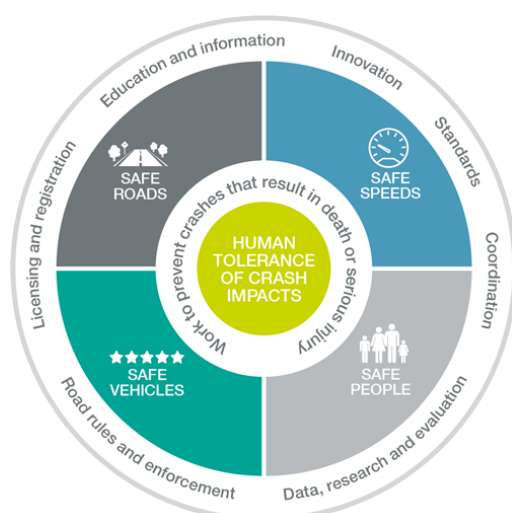
Responsibility for the system is shared by everyone. Policy makers, planners, engineers, vehicle manufacturers, fleet managers, enforcement officers, road safety educators, health agencies and the media are accountable for the system's safety; while every road user, whether they drive, cycle or walk, is responsible for complying with the system's rules.

A safe systems approach also aligns road safety management with broader ethical, social, economic and environmental goals. By creating partnerships where government or transport agencies work closely with other groups, safe systems tackles other problems associated with road traffic, such as

congestion, noise, air pollution and lack of physical exercise. Safe systems is made up of four main components:

1. Safer Roads
2. Safer Speeds
3. Safer Vehicles
4. Safer Road Use

Safe Systems Approach – A Conceptual Shift from User to System

Outmoded Concept – User Blame   *Modern Concept – System Failure*
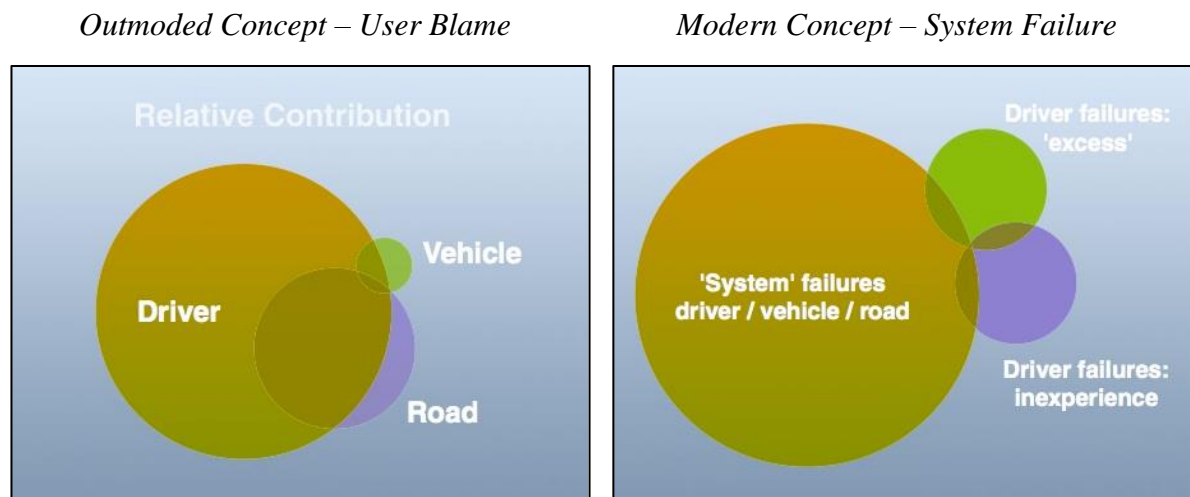
(1) Safer Roads

According to a safe systems approach, roads are designed to reduce the risk of crashes occurring, and the severity of injuries if a crash does occur. Safety features are incorporated into the road design from the outset, for example:

- **Segregating Road Users:** One of the key dangers on our roads is that different types of road user share the same space. As far as possible, a safe systems approach seeks to segregate different road users, developing and enhancing safer routes for vulnerable users. For example, a local council or transport authority may focus on creating or expanding a cycle route network; construct and maintain footways; or work with schools to develop safer walking routes for children.

- **Segregating Traffic:** It is also desirable to segregate traffic that is moving in different directions or at different speeds – for example, by crash barriers separating opposite lanes of traffic. Crash barriers and other physical measures should be "soft" and give in the event of a crash, and verges made safer.

- **Speed:** If segregation of people and traffic is not possible, then appropriate speed limits are put in place to protect the most vulnerable of road users. As part of their safe systems approach, for example, point 16(5) of G.S.R.634(E) states that: No driver shall drive at a speed exceeding 25 kilometres per hour or such lower speed as may be specified on the road signage while passing by a construction site or a school or a hospital, wherever indicated by signage, or on roads without footpaths and soft shoulders where pedestrians use a part of the carriageway to walk.

- **Self-explaining Roads:** Safe systems roads are "self-explaining", i.e. they are designed so that the driver is aware of what is expected of them and behaves appropriately. Each class of road is immediately distinctive, with its own carriageway width, road markings, signing and use of street lighting that are consistent throughout the route. The simplicity and consistency of the road's design reduces driver stress and driver error.

- There is also an emphasis on a proactive approach to road safety, with improvements made to improve both the actual and perceived risks of road safety. Crash hot spots are identified, and targeted engineering measures taken to remedy them, e.g. by improving road surfaces, removing roadside obstacles to vision, or installing traffic lights.

(2) Safer Speeds

Speed limits in safe systems are based on aiding crash avoidance and a human body's limit for physical trauma. An unprotected pedestrian hit at over 30 km/hr has a significant risk of death or life-changing injury. A car in a side-on collision can protect its occupants up to around 45 km/hr; a car in a head-on collision up to around 65 km/hr. Safe systems seeks to:

- **Establish Appropriate Speed Limits:** These are set according to road features and function and the known physical tolerances of road users, e.g. by rolling out a 20mph speed limit across a city centre or residential streets.

- **Enforce Existing Limits:** Transport authorities work with the police to develop and evaluate speed enforcement. They may also work with community groups such as Community Speed-watch (CWS), a locally-driven initiative where community members use speed detection devices to monitor vehicle speed, with the support of the police.

- **Educate Road Users:** Authorities can mount speed enforcement and education campaigns. They might also ensure speed limit compliance by working directly with fleet drivers, licenced taxi companies or contractor vehicles.

(3) Safer Vehicles

Vehicles are designed, built and regulated to minimize the occurrence and consequences of crashes, with the emphasis on collision survivability. There are two main strands to safer vehicles – technology and road-worthiness:

- **Technology:** *Active Safety* measures that help to prevent crashes include collision-avoidance systems, semi-autonomous vehicles, stability control, improved road-vehicle interaction, automatic braking systems, air cushion technology, alcolocks, and speed limiters on fleet vehicles. *Passive Safety* covers vehicle components that protect occupants if a crash does occur include three-point seat belts, padded dashboards and airbags.

- **Road Worthiness:** Consumers and businesses are encouraged to purchase safer vehicles. Vehicles are then maintained to the highest safety standards.

(4) Safer Road Use

Everyone who uses roads is encouraged to use roads safely and comply with road rules. Emphasis is placed on a philosophy of shared and proportionate responsibility. Safe systems encourages safer road use in various ways, including:

- **Traffic Reduction:** Authorities work to reduce the volume of motor vehicle traffic, for example, by encouraging greater use of safer modes of travel such as public transport.

- **Education:** Safe systems creates risk-aware drivers through education and publicity; for example, making new drivers aware of the risks they face, and encouraging all road users to travel unimpaired, alert, at safe speeds and without distraction, complying with road rules at all times. In-vehicle technologies may be used to give safety feedback and reduce risky behaviours by monitoring how a vehicle is driven, and feeding back information on speed, seatbelt use, hard acceleration and braking. Drivers who do not follow rules are required to undertake further education, for example, through the UK's National Driver Offender Retraining Scheme (NDORS) course.

- **Use of Streets for Other Purposes:** By encouraging streets to be used for a range of community purposes, everyone is encouraged to have a stake in their streets. This may be small-scale, street-wide activities or larger-scale municipal closures like closing traffic on a particular road on Sundays.

- **Examine New Ways of Measuring Safety:** Traditionally, casualty statistics have been the primary method of measuring road safety. Safe systems looks to additional ways of measuring safety, e.g. the public's perception of road danger.

- **Integrated School Travel Planning Initiatives:** Children are encouraged to use roads more safely. Transport authorities might work closely with schools to create safe walking routes for children, or expand the number of School Crossing Patrols in the area. Similarly, community should be educated to admit children to nearby schools to avoid longer travelling by children.

4. Road Safety Action Plan

4.1 Pillar 1: Road Safety Management

> **Rajasthan State Road Safety Policy Highlights**
>
> i. **Strengthening Institutional & Legal Environment**
> ii. **Strengthening Financial Environment**
> x. **HRD and Research for Road Safety**

4.1.1 Road Safety Vision, Mission and Strategy

(1) Vision

Within the sphere of State Road Safety Policy, incorporate the Safe System Approach to introduce sustainable and safe transportation for all types of road users to reduce road crash mortality in the state.

(2) Mission

Within Sustainable Development Goal (SDG) 3 of the 2030 Agenda for Sustainable Development, by 2020, halve the number of global deaths and injuries from road traffic accidents.

(3) Strategy

Curb road crash mortality by introducing an integrated, target oriented Road Safety Action Plan covering all five pillars of road safety by complying State Road Safety Policy through the Safe Systems Approach.

4.1.2 Institutional Framework for Road Safety

The current road safety governance structure is bifurcated. One stream is focused entirely on road safety. Another stream is focused on a large number of traffic management issues – only some of which are safety related.

The Road Safety Stream

- A *State Road Safety Council* was established in July 2009, and then re-established in December 2015 with the aim of ensuring comprehensive participation in the council. It is chaired by the Transport Minister, and has significant representation by heads of Government Departments, as well as by industry representatives, and non-government organisations.

- A *Road Safety Steering Committee* was established in October 2011, with the simple focus of ensuring that decisions by the State Road Safety Council are being implemented. It was intended to meet on a monthly basis. It is chaired by the Principal Secretary of the Transport Department.

- In June 2015, the Government of Rajasthan established a ***Ministerial Sub-Committee on Road Safety*** – a formal Cabinet body to monitor road safety related activity in the state. The Cabinet sub-committee comprises the Home & Justice, Medical & Health, and Public Works & Transport Ministers. This represents welcome road safety leadership support for the Minister of Transport, and reflects a healthy political mandate for progress in reducing road trauma within Rajasthan.
- Most recently, in April 2017, the establishment of a dedicated Road Safety Fund and a has also led to the establishment of a further body. The ***Operational Committee*** is charged with implementing the State Road Safety Policy, approve proposals for funding and monitor implementation, and coordinate the Road Safety Cell's work program, and is supported by an ***Implementation Committee***. The *Operational Committee* is chaired by the Transport Secretary, and has very senior membership from relevant government departments.[9]

The Traffic Management Stream

The Traffic Management Stream appears to reflect an early attempt to create a governance oriented approach, but parts of it have now been superseded by the Road Safety Stream.

- The first entity to be established was the ***Traffic Management Committee***, in 2007, in order to strengthen transport management generally, and pollution and road accidents specifically. It is a very senior administrative body, chaired by the Chief Secretary. Road safety is one of many objectives including transport efficiency, transport reliability, road development, and pollution. The Committee meets at most once a year, having held its 8th meeting in 2016.
- Subsequently, ***District Traffic Management Committees*** were established in 2008, under the chair of the District Collector. While many of the operational issues have a bearing on road safety, the focus of these District Traffic Management Committees largely mirrors the state-wide Committee. Reduction in fatalities and serious injuries on the road is one of many objectives being sought.
- ***Sub-District Road Safety Committees*** were established in July 2016 under the chair of the Sub-District or Tehsil Officer. The overall purpose of the Committee is the same, with a focus on transport management, control pollution and reduce road crashes.

4.1.3 Road Safety Cell – The Lead Agency

Recently, in June 2016, in compliance to the directions of Hon'ble Supreme Court Committee on Road Safety and in order to fulfil the State Government's commitment towards reduction of road accidents/ fatalities/ injuries a State Road Safety Cell had been constituted on 29.06.2016 vide order no F.10(699) Trans/PD/20l4/12165 in Transport Department. The Road Safety Cell comprising officials of various stakeholder departments including Police, Medical & Health, PWD, LSG, UDH and Education have been deputed for improved inter departmental coordination. The following officials of various stakeholder departments have been deputed for fulltime and presently serving the Lead Agency:

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[9] Other members of the Operational Committee are: Additional Dirisctor General Police, Traffic; Deputy Secretary representation from the Finance Department, the Urban Development and Housing Department, the Local Self Government Department, the Medical and Health Department, the Education Department, the Home Department, and the Deputy Transport Commissioner, Road Safety.

S. No.	Name	Designation	Department
1	Ms. Nidhi Singh	Dy. T.C. and Officer In-charge	Transport Department
2	Mr. Tejpal Singh	Dy. Superintendent of Police	Police
3	Mr. L.N. Pandey	State Nodal Officer	Medical & Health
4	Mr. Anil Jain	Regional Transport Officer	Transport Department
5	Mr. Mahesh Sharma	Executive Engineer	Local Self Government
6	Mr. Gopal Lal Arora	Executive Engineer	Public Works Department
7	Mr. Bhim Singh Yadav	Assistant Statistical Officer	Transport Department
8	Mr. Prakash Thawani	Assistant Accounts Officer II	Transport Department
9	Mr. Ashwini Bagga	Road Safety Consultant	World Bank RRSMP Project
10	Ms. Swati Dixit	Motor Vehicle Inspector	Transport Department
11	Mr. Ramveer Singh	Motor Vehicle Inspector	Transport Department
12	Mr. Anil Sharma	Motor Vehicle Inspector	Transport Department
13	Mr. Manoj Sharma	Motor Vehicle Sub Inspector	Transport Department
14	Mr. Govind Purohit	Upper Division Clerk	Transport Department
15	Ms. Pooja Prajapat	Information Assistant	Transport Department
16	Ms. Namita Mahawar	Information Assistant	Transport Department
17	Mr. Charan Singh	Computer Operator	Contractual Services
18	Mr. Dharam Singh	Computer Operator	Contractual Services

**The Present Structure of State Road Safety Cell**
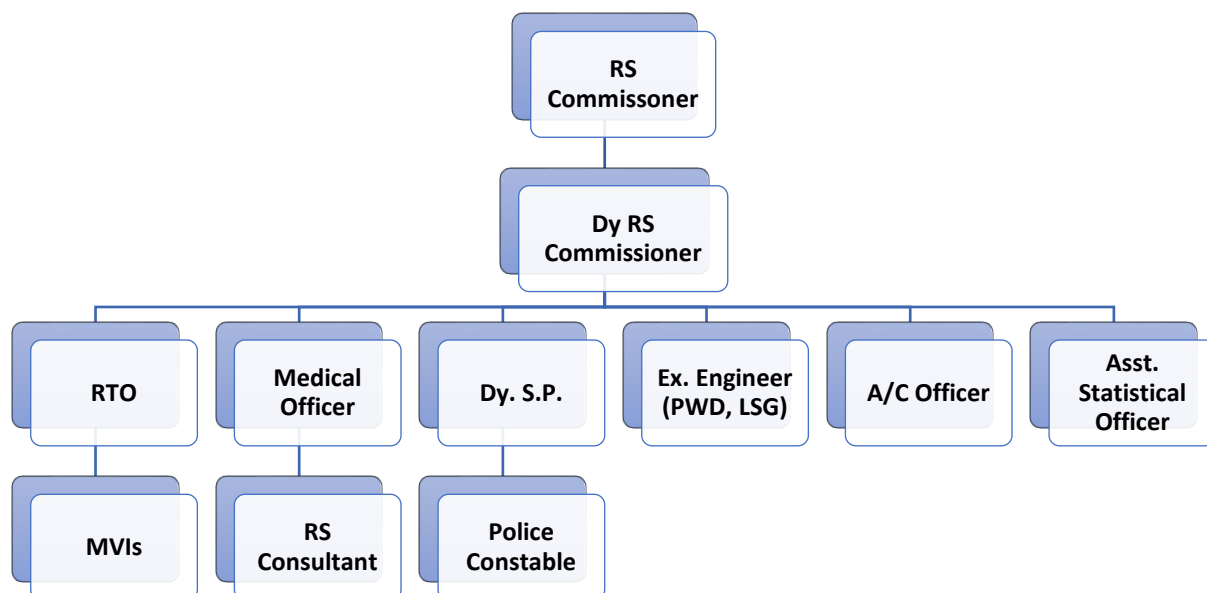
Need for Strengthening the Present Structure

It is likely that burden on the State Road Safety Cell will continuously increase in the time to come. The paradigm shall definitely require expansion of its human resource capacities and people having a definitive vision towards road safety goals of the state.

At present, the officers deputed from other stakeholder departments in the State Road Safety Cell are chiefly engaged in coordinating with their respective departments for various inter-departmental issues related to road safety. Transport Department being the nodal department and the State Road Safety as Lead Agency for Road Safety is primarily engaged in managing issues at the apex level such as framing policy, issuing guidelines, disseminating information etc. down the line. In the periphery of the set of tasks being undertaken the Lead Agency strongly feels need of a mechanism that can assist in other imperative activities such and Monitoring and Evaluation at ground level.

The Proposed Structure of the State Road Safety Cell
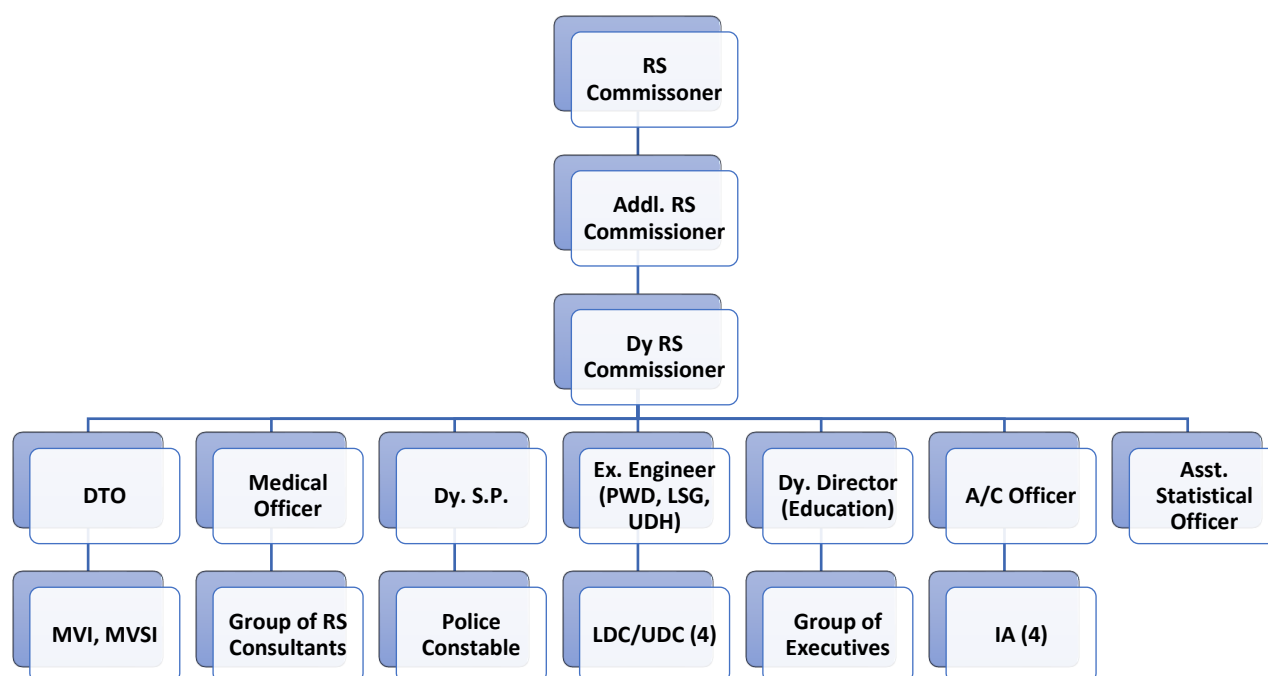
Constitution of District Road Safety Cells

For improved coordination with districts, to analyse the district specific road safety issues and to prepare district level road safety action plan. The lead agency issued orders vide letter no. 37173 dated 06.06.2017 to form a District Road Safety Cell in each district chaired by the District Collector of the district. Meanwhile the District Road Safety Cell has been constituted in many districts and some are yet in the process of forming. At present the District Road Safety Cells being constituted are just like committees who will convene a meeting on monthly basis to discuss their road safety issues, which in terms is not sufficient looking at the goals and targets being set under the Decade of Action. Thus, the District Road Safety Cell must be constituted in lines of the State Road Safety Cell wherein officers from various stakeholder department function for cause dedicatedly under one roof.

Looking at the present deficiency of the workforce in stakeholder departments it is evident it will be difficult to form the independent District Road Safety Cell in all districts at one go. Considering the fact, the District Road Safety Cell could be constituted at seven Divisional Head Quarters namely Jaipur, Jodhpur, Ajmer, Kota, Bharatpur, Bikaner and Udaipur in the first phase. The District Road Safety Cell formed at the Divisional Head Quarter shall coordinate with their respective districts till the time independent cells are formed in the district. The proposed structure of the District Road Safety Cell shall comply the structure given below:

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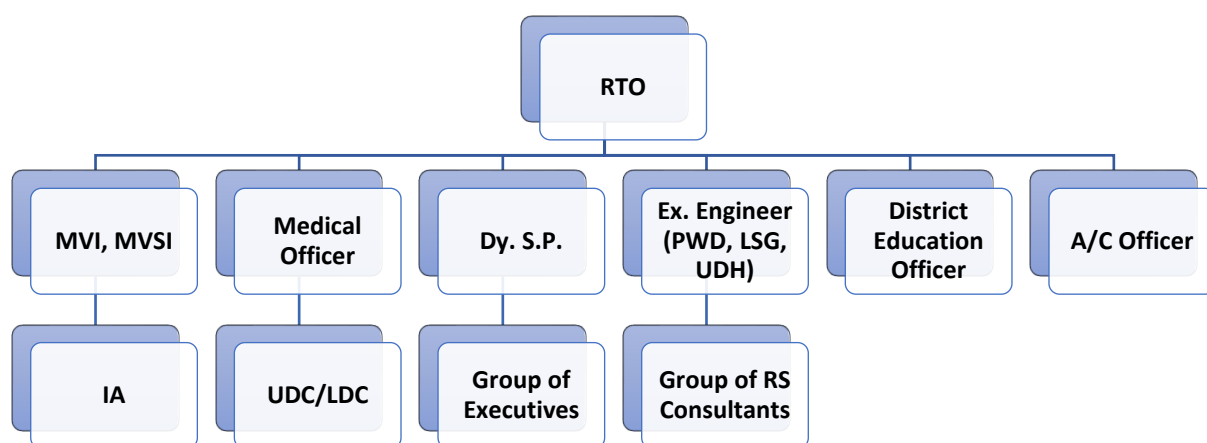
4.1.4 Targets for Reduction in Fatalities

In compliance to the Brasilia Declaration 2015 under the Decade for Action for Road Safety 2011-2020 and the statement covered under the Rajasthan State Road Safety Policy, the Lead Agency is committed bring down the road crash fatalities in the state. As per the definitive goals the following targets have been set for the next three years to reduce the number of road crash fatalities:

S. No.	Year	Reduction in Fatalities
1	2018	15%
2	2019	15%
3	2020	20%

4.1.5 Dedicated Road Safety Fund

In compliance to the Road Safety Policy, the Government has constituted Dedicated Road Safety Fund in order to effectively implement and financial management of various road safety measures. The non-lapsable fund has been constituted by accumulating twenty-five percent of the compounding fee collected by two enforcement departments, Transport and Police. Transport Department has issued guidelines for utilization of fund vide order number 8/2017 dated 03.04.2017.

4.1.6 Implementation Plan

The State Road Safety Cell will prepare a plan to strengthen its present structure and form independent District Road Safety Cell at seven Divisional Head Quarters. The cell shall also organize orientation meetings at all districts to elaborate the vision and methodology behind preparing state-wide Road Safety Action Plan. In the orientation program the concerned departments would be given the overview of this action plan and steps to be taken to analyse road crash data of the respective district and accordingly they will be provided guideline to mend their action plan for the coming year in pretext of Safe System Approach. During the orientation the stakeholder departments shall also be given specific targets based on the prevailing road traffic scenario. Apart from the targets the State Road Safety Cell will also highlight the key focus areas where the district administration shall focus to plan their activities to meet the targets for the year.

4.1.7 Monitoring and Evaluation

The State Road Safety Cell shall prepare the monitoring and evaluation plan after the orientation meeting have been organized in the districts and plan of action have been drafted by them. The State Road Safety Cell shall work in accordance with region-wise (twelve transport regions) with a focused approach on all pillars.

4.2 Pillar 2: Safer Roads and Mobility

> ### Rajasthan State Road Safety Policy Highlights
>
> iii.   **Ensure Safer and Efficient Road Infrastructure**
> vi.   **Safety for Vulnerable Road User**

4.2.1 Short Term Measures

Road Engineering

- Installation of Speed Limit Sign Boards on Roads.
- Comprehensive Speed Calming Measures to be adopted especially on roads connecting with Major Roads or Highways and inhabited areas.
- Removal of Encroachment
- Removal of Road Side Objects causing obstruction in flow of traffic or distract the drives such as like hoardings, banners, electronic LED displays running commercials.
- Other engineering measures to be implemented: Road Marking, Zebra Crossing, Divider Line, Speed Breaker/Rumble Strip, Patch Work, Reflectors, Cats-Eye, Lighting and Painting/Repainting Signage.

Safety Bicyclist, Two-Wheeler Drivers, Non-Motorized Vehicles

- Proper lighting management at highways crossing from inhabited areas as well as for city traffic.
- Enhance conspicuity of bicycle and non-motorized vehicles.

4.2.2 Long Term Measures

Road Engineering

- Develop comprehensive Road Accident Data Management System.
- Identification, Rectification and Post Rectification Audit of Black Spots
- Third Party Audit for all Roads during design, construction and operation phase costing above 10 crores.
- Improve design of junctions wherever necessary.
- Develop a Safe Demo Corridor and Evaluate Results.
- Develop Road Repair Ambulance and deploy at the locations according to the requirement.
- Develop wayside amenities, truck and bus bays for trucks and buses.

Safety of Vulnerable Bicyclist, Two-Wheeler Drivers, Non-Motorized Vehicles

- Enhance facilities for pedestrians: Construct footpaths, remove encroachment from existing footpaths, develop pedestrian crossings, foot over bridge and subways and educate through IEC activities.
- Build separate bicycle lanes.

4.2.3 Tentative Targets Year-wise 2018-2020 (Road Owning Agencies)

S. No.	Activity	Target 2018	Resources Required		Target 2019	Resources Required		Target 2020	Resources Required	
			Human	Financial		Human	Financial		Human	Financial
1	Road Safety Audit	10% existing roads (NH, SH, MDR)	Out of existing resources	Regular budget of the agency / Road Safety Fund.	10% existing roads (NH, SH, MDR)	Out of existing resources	Regular budget of the agency / Road Safety Fund.	10% existing roads (NH, SH, MDR)	Out of existing resources	Regular budget of the agency / Road Safety Fund.
2	Rectification of Black Spots	Minimum 50% of the remaining the black spots.	Out of existing resources	Regular budget of the agency / Road Safety Fund.	Minimum 50% of the remaining the black spots.	Out of existing resources	Regular budget of the agency / Road Safety Fund.	Minimum 50% of the remaining the black spots.	Out of existing resources	Regular budget of the agency / Road Safety Fund.
3	Road Safety Capacity Building & Training Programs for Engineers	Minimum 100 Engineers	Out of existing resources	Regular budget of the agency / Road Safety Fund.	Minimum 100 Engineers	Out of existing resources	Regular budget of the agency / Road Safety Fund.	Minimum 100 Engineers	Out of existing resources	Regular budget of the agency / Road Safety Fund.
4	Installation of Speed Limit Sign Boards and Other Road Furniture to Ensure Safer Roads	Minimum 200	Out of existing resources	Regular budget of the agency.	Minimum 200	Out of existing resources	Regular budget of the agency.	Minimum 200	Out of existing resources	Regular budget of the agency.
5	Removal of Road Side Encroachment and Other Obstructions	Instructions have been issued, it is a regular process.	Out of existing resources	Regular budget of the agency.	Instructions have been issued, it is a regular process.	Out of existing resources	Regular budget of the agency.	Instructions have been issued, it is a regular process.	Out of existing resources	Regular budget of the agency.

6	Speed Calming Measures on Dangerous Zones on Roads	Minimum 100	Out of existing resources	Regular budget of the agency.	Minimum 100	Out of existing resources	Regular budget of the agency.	Minimum 100	Out of existing resources	Regular budget of the agency.
7	Development of Wayside Amenities, Truck Lay Bays and Bus Bays	Minimum 25	Out of existing resources	Regular budget of the agency.	Minimum 25	Out of existing resources	Regular budget of the agency.	Minimum 25	Out of existing resources	Regular budget of the agency.
8	Development of Pedestrian Facilities (Zebra Crossings, Subways, FOB)	Minimum 100	Out of existing resources	Regular budget of the agency.	Minimum 100	Out of existing resources	Regular budget of the agency.	Minimum 100	Out of existing resources	Regular budget of the agency.
9	Lighting Management on Highway Crossings and Near Inhabited Areas	Minimum 500	Out of existing resources	Regular budget of the agency.	Minimum 500	Out of existing resources	Regular budget of the agency.	Minimum 500	Out of existing resources	Regular budget of the agency.
10	Improvement of Junctions and Control of Uncontrolled Junctions	Minimum 50	Out of existing resources	Regular budget of the agency.	Minimum 50	Out of existing resources	Regular budget of the agency.	Minimum 50	Out of existing resources	Regular budget of the agency.
11	Rajasthan Road Sector Policy	To be approved by the state cabinet.								

4.2.4 Implementation Plan

A comprehensive Rajasthan Road Sector Policy has been developed for year 2018-2030. A vide variety of Road and Infrastructure Development Tasks have been included in the policy covering several aspects of Road Safety as well. The policy has yet to get approval from the State Cabinet. Once approved, the road related safety measures will be carried out in tune with the guidelines laid in the policy.

4.2.5 Monitoring and Evaluation

Road & Infrastructure Development and Maintenance involves innumerable activities as stated above in the Action Plan. For continuous and effective evaluation, it becomes essential to monitor the development on a regular basis. Therefore, the Lead Agency has decided to prepare a common evaluation format which shall be finalized after discussing it with all Road Owning and Managing Agencies. After finalization of the format, the same shall be required to be filled and submit to the Lead Agency which will be maintained and evaluated on quarterly basis.

4.3 Pillar 3: Safer Vehicles

Rajasthan State Road Safety Policy Highlights

v.   Safer Vehicles

4.3.1 Short Term Measures

- Compulsory installation of GPS in Commercial Vehicles.
- Compulsory installation of speed governors on transport vehicles according to rule 118.
- To increase visibility at night reflective tapes be put as prescribed as per AIS 090 standards for three wheelers, Taxi, LCV, HCV, and Buses. This should also be followed for trucks and trailers.
- Under protection devices in trucks and buses should be fitted as required under rules and checked for the same.
- Under CMVR Rule 104, AIS standards are prescribed for installation of mirrors on different category of vehicles.
- Rule 93 of the CMVR 1989 defines the overall dimensions of the various categories of motor vehicles.
- Conspicuity of Bicycles and other non- motorized vehicles.
- Fitness of school buses and other school transport should be carried on regular basis.

4.3.2 Long Term Measures

- Safety of in-use Vehicles- Inspection and Certification (I&C) Regime Implementation.
- Auditing Vehicle Inspection Centres by third party agencies like Automotive Research Association of India (ARAI).
- Facilities for maintenance need to be developed for vehicles diagnosed with faults during inspections
- Human Resource Development: Training modules need to be developed targeting staff, attendants, inspectors, auditors and mechanics.

4.3.3 Implementation Plan

Innovative Vehicle Technology in respect to the safety of occupants and other road users is a national agenda. The Lead Agency in close coordination with enforcement agencies shall ensure that ample provisions are made to check and enforce on the aspects which directly or indirectly relates to the safety of road users. A variety of measures cover activities like enhancing conspicuity of commercial and non-motorized vehicles, enforcing speed governors in commercial vehicles etc.

4.3.4 Monitoring and Evaluation

The Lead Agency is continuously monitoring the activities in the state. The agency in close coordination with District Road Safety Cells shall evaluate the results on timely basis.

4.4 Pillar 4: Safer Road Users

> ## Rajasthan State Road Safety Policy Highlights
>
> iv. **Improving Quality of Drivers**
> vii. **Enforcement of Safety Laws**
> viii. **Road Safety Education and Training**

4.4.1 Short Term Measures

Capacity Building Programs

- Scientific Crash Investigation, Crash Data Collection and Analysis, Road Safety and Traffic Management Training with main focus on Police Officials.
- Road Safety and Traffic Management Training for officials of Police and Transport Department.
- Basic Life Support and First Responder Training for all community groups.
- Capacity Building for Doctors and Nurses for development of Trauma Centre System.
- Advance Trauma and Life Support (ATLS) for Doctors and Nursing Staff.
- Road Safety Audit for Highway Engineers.
- Urban Transport Development and Planning for officers of Police, Transport, Road Owning Agencies and Urban Planning Department.
- Road Safety Capacity Building for officials of Road Safety Cell.
- Road Safety Orientation and First Responder Training for Corporate, Government Officials and Other Staff Members.

Road Safety Publicity and Awareness

- District Level Road Safety Education and Awareness Campaigns.
- Road Safety Education and Awareness Program in Gram Panchayats, Panchayat Samitis and Municipal Bodies.
- Mass Sensitization through Print and Electronic Media (Newspaper, TV, Radio, Hoardings, IEC Material at public places and petrol pumps etc.).
- Initiate dedicated drives for safety of vulnerable road users and promote use of helmet and seat belt.
- Social Media Marketing – Through Facebook, Twitter, Instagram etc.
- Special awareness drives for pedestrians and vulnerable road users.

Road Safety Education for Students

- Organize Road Safety Orientation Programs for school/college children.
- Activate Road Safety Club in all schools/colleges.
- Promote Road Safety through training camps organized for NCC, NSS and Scouts.

Law Enforcement

- Strengthen Highway Patrolling for all NH, SH and Other Roads.
- Facilitate Police Stations to curb fatal road crashes.
- Equip and strengthen District Road Safety Cells.

- Digitization of Challan System.
- Develop Culture of Lane Discipline.
- Strict enforcement for conspicuity of heavy and commercial vehicles and underrun protection devices in buses, trucks and trailers etc.
- The validity for the fitness certificate, details of parameters to be checked including items of safety and environment and a Code of Practice need to be amended/ incorporated.
- Strict enforcement of traffic offences like helmet, seatbelt use, over-speeding, using mobile phone while driving, drunken driving, overloading, overcrowding, carrying passengers in goods vehicle, jumping red light etc. on NH, SH and other roads.

4.4.2 Long Term Measures

Road Safety Publicity and Awareness

- Develop Road Safety Mobile Van first of all for Lead Agency for promoting Road Safety through Audio/Visual Mode and then subsequently in rest of the Divisional Head Quarters.
- Self Help Road Safety Portal for Sharing Road Safety Knowledge through Text, Multimedia, Audio/Video. A similar kind of portal has been developed by Kerala Government http://safesavari.com.
- Introduce State Level and District Level Road Safety Awards for Individual and Institutional Categories.
- Prepare a plan for observing State Rajasthan Road Safety Day.
- Promote Good Samaritan by awarding appreciation certificate/award who help the accident victim.
- Introduce and establish an integrated single toll-free helpline.

Road Safety Education for Students

- Special Road Safety Drives to be launched for school and colleges Situated on Highways.
- Develop mandatory road safety module for school and college going students.
- Introduce Road Safety in all competitive examinations conducted by RPSC.

Law Enforcement

- Make provisions for controlling on uncontrolled junctions to monitor and manage traffic (automated and manual).
- Increase Enforcement Using Traffic Management System on NH and SH.
- Enforce over-speeding and other comprehensive road safety measures at accidents prone highways/stretches through automated enforcement system using high resolution speed cameras.
- Implement red light violation detection system.
- Develop Automated Inspection and Certification Centres.
- Develop Automated Driving Testing Tracks.

4.4.3 Tentative Targets Year-wise 2018-2020 (Transport Department)

S. No.	Activity	Target 2018	Resources Required Human	Resources Required Financial	Target 2019	Resources Required Human	Resources Required Financial	Target 2020	Resources Required Human	Resources Required Financial
1	Road Safety Awareness Program for Public at Large (Urban and Rural)	50	Out of existing resource.	Road Safety Fund	50	Out of existing resource.	Road Safety Fund	50	Out of existing resource.	Road Safety Fund
2	Road Safety Awareness Program for School and College	100	Out of existing resource.	Road Safety Fund	100	Out of existing resource.	Road Safety Fund	100	Out of existing resource.	Road Safety Fund
3	Capacity Building Programs for Officers of State, District Road Safety Cell and Other Stakeholders	10	Out of existing resource.	Road Safety Fund	10	Out of existing resource.	Road Safety Fund	10	Out of existing resource.	Road Safety Fund
4	Organize Media Sensitization Workshops	10 to 15	Out of existing resource.	Road Safety Fund	10 to 15	Out of existing resource.	Road Safety Fund	10 to 15	Out of existing resource.	Road Safety Fund
5	Mass Sensitization Through Print and Electronic Media	Regularly through TV, FM, Newspapers, Hoardings	Out of existing resource.	Road Safety Fund	Regularly through TV, FM, Newspapers, Hoardings	Out of existing resource.	Road Safety Fund	Regularly through TV, FM, Newspapers, Hoardings	Out of existing resource.	Road Safety Fund
6	Awareness Campaign to Promote Helmet and Seatbelt Use Followed by Stringent Enforcement Drive	50	Out of existing resource.	Road Safety Fund	50	Out of existing resource.	Road Safety Fund	50	Out of existing resource.	Road Safety Fund

7	Special Awareness Drives for Pedestrians and Drivers of Non-Motorized Vehicles	30	Out of existing resource.	Road Safety Fund	30	Out of existing resource.	Road Safety Fund	30	Out of existing resource.	Road Safety Fund
8	Special Drives for Schools Situated on Highways	100	Out of existing resource.	Road Safety Fund	100	Out of existing resource.	Road Safety Fund	100	Out of existing resource.	Road Safety Fund
9	Training for Commercial Drivers including Bal Vahini and Ambulance	50	Out of existing resource.	Road Safety Fund	50	Out of existing resource.	Road Safety Fund	50	Out of existing resource.	Road Safety Fund
10	Develop Automated / Driving and Testing Tracks	12+25	Out of existing resource.	Road Safety Fund						
11	Set up an agency to conduct Accident Investigation and Research on Road Safety issues	1	Out of existing resource.	Road Safety Fund						
12	Establish Automated Traffic Management System on National and State Highways on Identified Accident-Prone Stretches	1	Out of existing resource.	Road Safety Fund	10	Out of existing resource.	Road Safety Fund	10	Out of existing resource.	Road Safety Fund
13	Installation of GPS in Transport and Commercial Vehicles	1	Out of existing resource.	Road Safety Fund						

14	Develop Road Accident Management and Data Analysis System	1	Out of existing resource.	Road Safety Fund						
15	Region-wise focussed activities on all pillars	4	Out of existing resource.	Road Safety Fund	4	Out of existing resource.	Road Safety Fund	4	Out of existing resource.	Road Safety Fund
16	Orientation Workshop in Districts for Road Crash Analysis, Safe Systems Approach and Action Plan	33	Out of existing resource.	Road Safety Fund						

4.4.4 Tentative Targets Year-wise 2018-2020 (Rajasthan Police)

PREAMBLE:

Road accidents are the prime killers in the world today. Rajasthan Police is deeply concerned and committed to save precious lives on roads. In compliance to the directions of Hon'ble Supreme Court Committee on Road Safety and the priorities identified for the year 2017, following are the focus areas to improve the road safety scenario in the State of Rajasthan:

1. **Increase enforcement using traffic management systems on NH and SH:**
    Majority of road crash deaths are happening on National and State highways as per MORTH annual reports. Speed is the major cause of fatal crashes on roads. World Health Organisation has also appealed all UN member countries to take counter measures to reduce Speed on roads. **This year the theme of 4th UN Global Road Safety week is "#Slow Down – Save Lives".**

    Best practices indicate that use of Interceptors is an efficient way to enforce Speed regulations till we have automated traffic surveillance system. Presently we have **64 Interceptors** deployed at various districts of Rajasthan which is very less as compare to the vehicle population and number of road crashes fatalities.

    It is proposed to deploy Interceptor at every 50 kms on National and State Highways of the State by 2020 in phased manner to effectively enforce the Speed regulations and check other traffic violations to curb the fatal road crashes.
    Total interceptors required is 388. Rs 320.00 lakh has been sanctioned for the procurement of 20 interceptor from the road safety fund for the Year 2017-18. However if Automated traffic surveillance system is instituted, the requirement can be revisited.

2. **Facilitate Police Stations to curb fatal road crashes:**
    Police Station is the first responder invariably in all cases of accident. Given the manpower crunch, not every police station is equipped with traffic management equipments not has traffic policemen. In cases of accident or traffic congestion, the Officer in Charge of Police Station has to manage the situation on its own. An institutionalized system of financial support is proposed to facilitate the staff at police station level while handling situations of road accidents and traffic congestion.
    It is proposed to provide one-time financial assistance of Rs. 10000/- each year to 840 Police Stations of the State, to undertake required measures to improve road safety scenario in their jurisdiction.

    A grant of Rs 10,000/- each has been sanctioned for all police station of state from the road safety fund for the Year 2017-18.For remaining years similar grant would be required.

3. **Institutionalized mechanism to develop data collection and analysis system:**
    The accident details like location, collision, driver, passenger, pedestrian, vehicle, casualties, death etc. are being recorded in paper form. The extraction of any information from these records is hence difficult and complicated. At present, there is hardly any established method of road accidents analysis based on accidents history except 17 column format of MORTH. There is an urgent need to establish an advance and accurate data collection and analysis system to achieve the target of reducing deaths on roads.

It is proposed to launch **"Road Accident Management & Data Analysis System (RAMDAS)"** in all range headquarters by 2018-19 in the first phase followed by all districts by 2019-20.

Centre For Development of Advanced Computing (C-DAC) of Government of India has submitted Detailed report to Road Safety Cell, Transport department Govt of Rajasthan in this regard. The same needs to be examined on priority.

4. **Digitalization of Challaning system (Digital India):**
   e-Challan is a comprehensive digital solution for Transport enforcement wing and Traffic Police delivered through an Android based mobile application and a web portal. It is an initiative of Government of India and aims at improving service access and transparency in the system. Presently it is practiced only in Jaipur.

   It is proposed to introduce e-challan system in all districts starting with all range headquarters of the State in first phase during current financial year followed by introducing in all districts of the State in next phases by 2020.

   A grant of Rs 205.24 lakhs has been sanctioned for digitalization of Traffic challan of the state for the first phase from the road safety fund for the Year 2017-18. The **process has been initiated and during the three year period, it is proposed to cover the entire state.**

5. **VMS: It is proposed to have VMS at every 50 kms of NH, SH and other roads and in prominent places of the city by 2020.**

6. **Automated Barrier System:** It is proposed to install Automated Barrier system at all the entry and exit points of cities, highway thanas, traffic aid posts etc by 2020.

7. **Automated Speed Enforcement:** Another major factor contributing to the increased no. of road accidents is Over speeding. The Public fails, to follow the speed limits especially on the highway. This has resulted in more than 40% of the total deaths due to road accidents in India.
   a. It is proposed to deploy fixed speed cameras on National, State highways and other accident prone roads.
   b. Every police station should be equipped with one speed laser gun by 2020.

   Rs 18.00 lakh has been sanctioned for the procurement of two speed laser gun for speed enforcement from the Road safety fund for the Year 2017-18. More equipments for speed checking will be required for subsequent years.

8. **Procurement of Traffic and Road Safety Products:**
   - All the traffic personnel should be provided with safety apparels like reflective jackets, nose mask safety light bar (baton) and rain coat by 2020.
   - They should be equipped with Body Worn Camera and Breath Alcohol Analyser.
   - All the police station in Rajasthan should have minimum 2 portable Speed Breaker and 2 Breath Alcohol Analyser.
   - The following equipments are needed for the Road Safety:-
     - Barricading Bollards With Reflective Sign Board
     - Warning Bollard Pole with chain connector and with message plate
     - Barricading Bollard with MS Trolly
     - Flexible Post (Hazard & Object marker)
     - Scissors Road Barriers

Rs. 117.75 lakh has been sanctioned for the procurement of Road safety equipment from the Road safety fund for the Year 2017-18.For covering the entire state more funds will be needed.

9. **Capacity Building Programs:**
    Preparing a workforce to deal efficiently with emerging challenges requires a comprehensive, structured and coordinated response. Individuals within road safety stakeholder organisations require competencies with technical skills and knowledge to apply within their work place. Thus it is proposed to build capacities and skills of ground police officials in following areas:

    a. **Crash Investigation and Crash data collection training:** This training will focus on the methods and techniques of scientific crash investigation involving on-site crash scene examination, crash vehicle examination and injury data examination. **Every year 100 police officers will be trained.**

    b. **Traffic Management training:** This will focus on the skills to implement a traffic management plan, set up traffic control equipment, use signs and devices to direct and coordinate traffic through a work zone, traffic guidance scheme or road works. **Every year 200 traffic police officers will be trained.**

    c. **Basic Life Saving and Good Samaritan Law Course (BLS):** To enhance the skills they need to care for severely injured people in the moments before medical professionals arrive at the scene or while transporting to the hospital. To create awareness about the rights of good Samaritan and how the law offers protection to the good Samaritans. **Every year 1000 police officers will be trained.**

    d. **Traffic Training Parks:**
        All the districts should have Traffic Training Park with Traffic Training simulators for the training purpose.

10. **IEC and Education programs:**
    Community awareness and participation is an important aspect to effectively enforce road regulations to curb the road crashes fatalities.

    It is proposed to organise State-wide community awareness and education campaigns at various schools, colleges, major community gathering places, shopping malls etc, to spread awareness about various road safety norms with emphasis on Speed reduction, Helmet-Seat belt Uses, consequences related to use of mobile and drunk & drive, overloading etc. Similar campaigns will be launched through virtual mediums such as print/electronic and social media i.e. Facebook, Twitter, WhatsApp etc.

    a. There will be various special enforcement campaigns to be run in all districts of Rajasthan through local district police offices to bring public awareness to follow traffic rules and regulations which will help in curbing the road crash fatalities in the State.

    b. The IEC material includes banners, leaflets and other related material and publication of advertisement in various local newspapers etc. will be developed and disseminated based on special enforcement drives in all districts. (1. For NH 1 hoarding and 5 flex boards will be placed at entry and exit point of 25 kms stretch both sides and 1 hoarding, 5 flex board and 5 flex banners at rest every 100 kms stretch on an average 2. For SH 1 hoarding, 5 flex boards and 5 banners at every 100 kms stretch on an average)

    c. Education Programme:

(i) Traffic Park in each district for creating awareness about Traffic rules.

(ii) Traffic Education Van: Each district should be equipped with one Traffic education Van.

For the IEC and Education programme, Rs 21.61 lakh has been sanctioned from the road safety fund for the Year 2017-18 . More budget will be needed to cover activities as detailed above.

11. **Focussed Campaigns for Vulnerable Road Users:**

(a) **Helmet Advocacy Workshops in sub-districts of Rajasthan:**
Among all motor vehicles fatalities, motorcycles are the most dangerous type of vehicle to drive. They have a great pick up and high speed; which may lead to road traffic accidents. According to MORTH*, two-wheelers have highest share in total annual road accidents in 2016. "Nearly 60 to 70% of injured or killed two-wheeler riders sustain injury to the brain in a crash. A helmet primarily reduces the impact of the collision and thereby consequent injury to the brain" as per NIMHANS* report.

The main purpose of this project is 'to bring behavioural change among local enforcing personnels and community through organising focussed group advocacy workshops at sub-district level of the State of Rajasthan.'

This is a focused advocacy cum sensitization workshop especially meant for local field level officers from administration, police, transport, education, PRI, Municipal, local politicians, Community based organizations, NGOs, CLG, Asha sehyogi, Health workers, Management officials of govt./ private college, schools, other educational institutions, members of trade and other associations, media etc to enhance their understanding on the various key risk factors of road crashes and to develop their own local level action plans to overcome with the problems.

Workshops will be organised in every year to cover the entire state.

Rs 25.87 lakh has been sanctioned to conduct to helmet advocacy workshops at the Tehsil level between Jan-18 to June-18

(b) **Seat-belt Convincer Campaign at all districts to increase the use of Seat-belts by all occupants :**
The Seat Belt Convincer is an easy-to-use educational tool that allows riders to experience force, up to five times their body weight, similar to that of a 5-7 mph crash.

The Convincer was developed to educate the general public of how beneficial the use of seat belts can be even when involved in a low speed collision. It is a very effective tool for safety presentations at high schools, businesses, fairs, community events, drivers' education programs or any event where the "entertainment" and safety education factors associated with the Convincer would be of benefit. It allows the rider to experience the surprising amount of force generated with such a low speed collision and to gain respect for the benefit that a seat belt can provide.

It is proposed to run focused awareness workshops in all districts in phases using Seat belt Convincer to increase the use of Seat belt by all occupants.

(c) **Continuous Driver Engagement for Safe Driving (Commercial Drivers) :**
Scientific driving risk assessment program to improve driving behaviour and positive driving engagements. Deviant Driving Behaviour which is a huge socio-economic burden on Society & Economy and causes 80% accidents and is included in top 10 business risk factors. A pilot Scientific driving risk assessment program is proposed to improve driving behavior and positive driving engagements in Jaipur city followed by in other districts of Rajasthan.

(d) **Foccused Campaign for Pedestrians :** Pedestrians are most vulnerable group among all types of road users and thus are on high risk of deaths and casualties. The reason for this is non availability of proper and safe infrastructure and unsafe behavior of pedestrians on road. Thus a special awareness campaign is proposed to create awareness among pedestrians regarding safe use of roads while walking and crossing. The workshops will be organized in phased manner in all districts of Rajasthan.

12. <u>**Establishment of Centre of Excellence for Research & Analysis of Road Crashes:**</u>

    Absence of any systematic study on traffic related issues is a major handicap while planning for better and safer traffic management policies. Most of the actions are of reactive nature coming up as a response to events as they unfold in the form of accidents or traffic jams.

    In order to develop a road transport system that is better able to accommodate human error and take into consideration the vulnerability of the human body there is a clear and emergent need for research and development and capacity building. <u>Further, clause 135(1)(a) of Motor Vehicles Act, 1988 of India also highlights the importance of "an in depth study on causes and analysis of motor vehicle accidents".</u>

    It is proposed to establish a dedicated Centre of Excellence for Research & Analysis of road crashes.

    "Centre for Road Safety" of the Sardar Patel University of Police, Security and Criminal Justice has sent a proposal to the State Transport Department for funding for the same which may be considered on priority.

13. <u>**Increase enforcement through use of Integrated Traffic Management System:**</u>

    Increased and strict enforcement of traffic regulations is a pre requisite for safer roads. Considering the length of roads and increasing number of vehicles it is practically impossible to enforce rule of law through physical deployment of police personnel only. Need of the hour is **"Integrated Traffic Management System"** using automation and gadgets with minimum requirement of manpower.

    a) An intelligent Transport System comprising of Automatic Signal Control System, Separate Signal System for pedestrians, Traffic Management Centre at state level, area Traffic Control System, Corridor Management, Dynamic Traffic Indicators need to be established. Such system will facilitate smooth operation of traffic system and its management.

    b) Traffic Survey:

    For the effective management of Traffic regulation, Traffic survey using portable vehicle Counter can be used. Based on the survey, deployment of man power and equipments will be planned for enforcement.

    c) Disaster Management Vehicle:

    Every District should be equipped with this vehicle fitted with Crane, Electric Cutters, Emergency Lights etc. for use in severe accident cases for removal of obstacles and other purposes.

    d) For the purpose of making the traffic system of the State more effective a scheme named **"Integrated Traffic Management System" is proposed** to be launched in phased manner. In first phase, it could be launched in all range headquarters followed by in all district headquarters in next phases by 2020.

14. <u>**Create culture of Lane discipline:**</u>

At some places of the State, for the smooth operation of the traffic, the main roads and vehicles that go to the left side of crossroads/intersections, a slip line has been made from the **Barriers** which help in keeping roads free for vehicles moving to the left commonly known as "**Left Free**". This has resulted in maintaining Lane discipline on the roads.

It is proposed to promote the use of Barriers (size and shape could be selected as per feasibility of area) at all major intersections/crossroads of all district headquarters to maintain the Lane discipline. In addition to this, in major cities campaigns are proposed to educate public about benefits of lane driving and ensure lane disciplines.

- **The budget estimates of this plan are being sent separately.**

4.4.5 Implementation Plan

Safety of road users is one of the major priorities of stakeholder departments. Capacity Building Programs for stakeholder departments, Road Safety Cells, Continuous Road Safety Education and Awareness Programs and Stringent Enforcement Drives can certainly being a notable change in the state. The Lead Agency in coordination with other stakeholder departments shall design a comprehensive plan for each year in compliance with this Action Plan to meet the laid targets for reducing down the accident fatality rate in the state.

4.4.6 Monitoring and Evaluation

The Lead Agency is continuously monitoring the activities in the state. The agency in close coordination with District Road Safety Cells shall evaluate the results on timely basis.

4.5 Pillar 5: Post Crash Response

> ## Rajasthan State Road Safety Policy Highlights
>
> ix.   Emergency Care and Medical Services for Road Accident Victims
> xi.   Establish a Road Safety Information Database

4.5.1 Cost of a Crash

The human impact of road crashes, fatalities and injuries is immediately obvious to those who have suffered from this escalation in road trauma. However, the ongoing social and economic costs are not always understood or effectively articulated. A national project is underway to prepare an estimate of the socio-economic cost of road crashes in India.

One established method of estimating this cost in low and middle-income countries is now widely used, and is useful for identifying the order of magnitude in a jurisdiction such as Rajasthan.[10] The estimate is based on the cost of a fatality being assessed at 70 times the per capita GDP of Rajasthan, and the cost of a serious injury being assessed at 17 times. With the likelihood that the fatality figures are much more accurate, serious injuries are conservatively estimated at ten times the number of fatalities. Table 1 below applies the methodology to Rajasthan.

Est. cost of a fatality (70 X GDP per capita, $1610)	$112,700
Reported 2016 fatalities	10,465
Est. 2016 fatalities cost	*$1,179,405,500*
Est. cost of a serious injury (17 X GDP per capita)	$27,370
Est. 2016 serious injuries (10 X fatalities)	104,650
Est. 2016 serious injuries cost	*$2,864,270,500*
Est. 2016 cost of road trauma	$4,043,676,000

This suggests the socio-economic cost of road trauma in Rajasthan during 2016 alone was around $4 Billion, or Rs 260,500,000,000. The national study will provide greater insight to the real cost of crashes, however this annual cost estimate is important to policy making within the State. It allows for much better economic evaluations of safety-focused investment in infrastructure and enforcement, and in policy measures.

The Global Burden of Disease Study provides further insight into the scale of road trauma in Rajasthan through its analysis of road traffic injury in India. This study monitors the full range of causes and risks associated with societal death and disability. Amongst the full range of causes, in 2015, the study estimates that road traffic injury in India was estimated to be the:[11]

- 3rd biggest cause of death for people aged 5-49
- 12th biggest cause of Disability Adjusted Life Years for the whole population

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[10] Dahdah S and MacMahon K (2008) *The True Cost of Road Crashes: Valuing Life and the cost of a serious injury,* International Road Assessment Programme, Basingstoke.

[11] Institute for Health Metrics and Evaluation (IHME). **GBD Compare Data Visualization.** Seattle, WA: IHME, University of Washington, 2016. Available from http://vizhub.healthdata.org/gbd-compare. Accessed June 2017.

Road traffic injury is a non-communicable disease, related to mobility, and disproportionately affects the young. In Rajasthan, road traffic injury is striking at the most productive parts of society. Figure 2 illustrates that 18-45 year olds comprised 77.5% of fatalities in Rajasthan in 2016. The same age group comprised 76.1% of reported injuries.

4.5.2 Present Trauma Care Facilities

Medical and Health Department, Government of Rajasthan is committed to strengthen structural development of medical institutions in the state in to provide medical health facilities to every individual in urban and rural area in planned fashion in accordance with National Health Policy. The status of Medical Health Facilities[12] in the state is in year 2016 is as follows:

Sr. No.	Type of Health Facility	Strength
1	Hospital (Medical College Hospital, District Hospital, Sub District Hospital and Satellite Hospital)	114
2	Community Health Centre	579
3	Primary Health Centre (Rural)	2079
4	Primary Health Centre (Urban)	52
5	City Dispensary	194
6	Mother and Child Welfare Centre	118
7	Health Sub-Centre	14407
8	Aid Post (Urban)	13
9	Beds	47241
10	Trauma Centre	56
11	Ambulance (Jeevan Vahini)	1548

4.5.3 Trauma Registry and Surveillance

One of the major gap in the planning and implementation of injury related prevention strategy is the lack of realistic data on the exact nature and spectrum of injuries coming to our hospitals. There is also lack of actual data on the level of care being offered to these trauma/injury victims. Most of the injuries data coming out of Rajasthan from National Crime Record Bureau (NCRB). The aim is to establish Trauma Registry and Surveillance is to collet, compile, analyse and disseminate injury related information to the communities and the policy makers for reducing burden of morbidity and mortalities resulting due to injuries and to build capacity for providing quality care to the injury victims.

To develop a Trauma Registry and Surveillance a multi-centric project is being run by ICMR, New Delhi in collaboration with IIHMR, Jaipur. Road Safety Cell is also participating in this project. After successful pilot implementation of this project, the similar kind of program will be implemented in other Trauma Centres.

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[12] Annual Report 2016, Medical and Health Department, Government of Rajasthan

4.5.4 Short Term Measures

Emergency Care

- Establish Basic Life Support (BLS) Training Centre at SMS Medical College Trauma Centre in association with JPN Apex Trauma Centre, AIIMS, New Delhi.
- Prepare BLS Training Manual in association with JPN Apex Trauma Centre, AIIMS, New Delhi.
- Deploy ambulance on accident prone sites.

4.5.5 Long Term Measures

Emergency Care

- Develop a Trauma Care Policy for the State of Rajasthan.
- Make provisions to establish BLS Training Centres at all Divisional Head Quarters (Ajmer, Bikaner, Jodhpur, Udaipur, Kota and Bharatpur) in phased manner after successful implementation of the BLS Training Centre in Jaipur.
- Strengthen Trauma and Emergency Care in the State of Rajasthan by upgrading 20 existing PHCs and CHCs as Trauma Stabilization Unit every year according to red zone.
- Rehabilitation and counselling of road crash trauma victims.
- Initiate Trauma Surveillance Program.

4.5.6 Tentative Targets Year-wise 2018-2020

S. No.	Activity	Target 2018	Resources Required Human	Resources Required Financial	Target 2019	Resources Required Human	Resources Required Financial	Target 2020	Resources Required Human	Resources Required Financial
1	Promote Good Samaritan Law	All Govt, Private Hospitals and Police Stations	Out of existing resource.	Regular budget or Road Safety Fund	All Govt and Corporate Offices, Bus Stands, Railway Stn.	Out of existing resource.	Regular budget or Road Safety Fund	All Schools and Colleges	Out of existing resource.	Regular budget or Road Safety Fund
2	Develop BLS Training Manual	In Process by JPN Apex Trauma Centre, AIIMS, New Delhi	Out of existing resource.	Road Safety Fund	NA			NA		
3	Establish BLS Training Centre	1	Out of existing resource.	Regular budget or Road Safety Fund	3	Out of existing resource.	Regular budget or Road Safety Fund	3	Out of existing resource.	Regular budget or Road Safety Fund
4	Organize BLS Training for First Responder / Bystander for all Community Groups	100 Sessions	Out of existing resource.	Regular budget or Road Safety Fund	400 Sessions	Out of existing resource.	Regular budget or Road Safety Fund	700 Sessions	Out of existing resource.	Regular budget or Road Safety Fund
5	Organize Capacity Building Programs for Doctors and Nurses for Strengthening	52 Sessions	Out of existing resource.	Regular budget or Road Safety Fund	52 Sessions	Out of existing resource.	Regular budget or Road Safety Fund	52 Sessions	Out of existing resource.	Regular budget or Road Safety Fund

#	Activity									
	Trauma Care System									
6	Organize ATLS Training and TOT for Capacity Building Program for Doctors and Nurses	3 Sessions	Out of existing resource.	Regular budget or Road Safety Fund	3 Sessions	Out of existing resource.	Regular budget or Road Safety Fund	3 Sessions	Out of existing resource.	Regular budget or Road Safety Fund
7	Develop Trauma Care Policy	By Medical & Health Dept.	Out of existing resource.	Regular budget or Road Safety Fund	NA			NA		
8	Upgrade Health Facilities as Trauma Stabilization Unit (TSU)	20	Out of existing resource.	Regular budget or Road Safety Fund	40	Out of existing resource.	Regular budget or Road Safety Fund	100	Out of existing resource.	Regular budget or Road Safety Fund
9	GIS Mapping of Black Spots and Deploy Ambulance on Accident Prone Sites	Shall be done by NHM, Medical Health Dept.	NHM Medical and Health Dept.	Regular budget or Road Safety Fund	Shall be done by NHM, Medical Health Dept.	NHM Medical and Health Dept.	Regular budget or Road Safety Fund	Shall be done by NHM, Medical Health Dept.	NHM Medical and Health Dept.	Regular budget or Road Safety Fund
10	Rehabilitation and Counselling of Road Crash Trauma Victims	Shall be incorporated in Trauma Care Policy	NHM Medical and Health Dept.	Regular budget or Road Safety Fund	Shall be incorporated in Trauma Care Policy	Regular budget or Road Safety Fund	Regular budget or Road Safety Fund	Shall be incorporated in Trauma Care Policy	NHM Medical and Health Dept.	Regular budget or Road Safety Fund
11	Develop Injury Surveillance System	Being done at Jaipur in collaboration	Resources of IIHMR	Regular budget or Funded by	Shall be done in Bikaner in collaboration	Out of existing resource	Regular budget or Road	Shall be done in other districts in collaboration	Out of existing resource	Regular budget or Road

		with IIHMR and ICMR		Central Govt.	of JPNAT, AIIMS, New Delhi		Safety Fund	of JPNAT, AIIMS, New Delhi		Safety Fund
12	Establish a Model Trauma Centre	Being done in Trauma Centre, SMS Hospital, Jaipur	Out of existing resource.	Regular budget or Road Safety Fund	Shall be done in Trauma Centre, SP Medical College Bikaner	Out of existing resource.	Regular budget or Road Safety Fund	Shall be done in Trauma Centre, Kota, Ajmer, Jodhpur and Udaipur Medical College	Out of existing resource.	Regular budget or Road Safety Fund

4.5.7 Implementation Plan

The Lead Agency in association with Medical & Health Departments shall strengthen Trauma Care facilities in the sate in a phased manner. In addition, the Lead Agency shall also support in setting up BLS Centres at all District Headquarters in the state and will organize various Capacity Building Programs for all community groups as stated in the Action Plan to strengthen pre, and post-crash management in different phases from 2018 to 2020. Majority of activities related to Medical & Health shall be carried out from the Dedicated Road Safety Fund.

4.5.8 Monitoring and Evaluation

The Lead Agency is continuously monitoring the activities in the state. The agency in close coordination with District Road Safety Cells shall evaluate the results on timely basis.