
Accident Research Study Mumbai-Pune Expressway

for the month of
April 2016 – October 2016

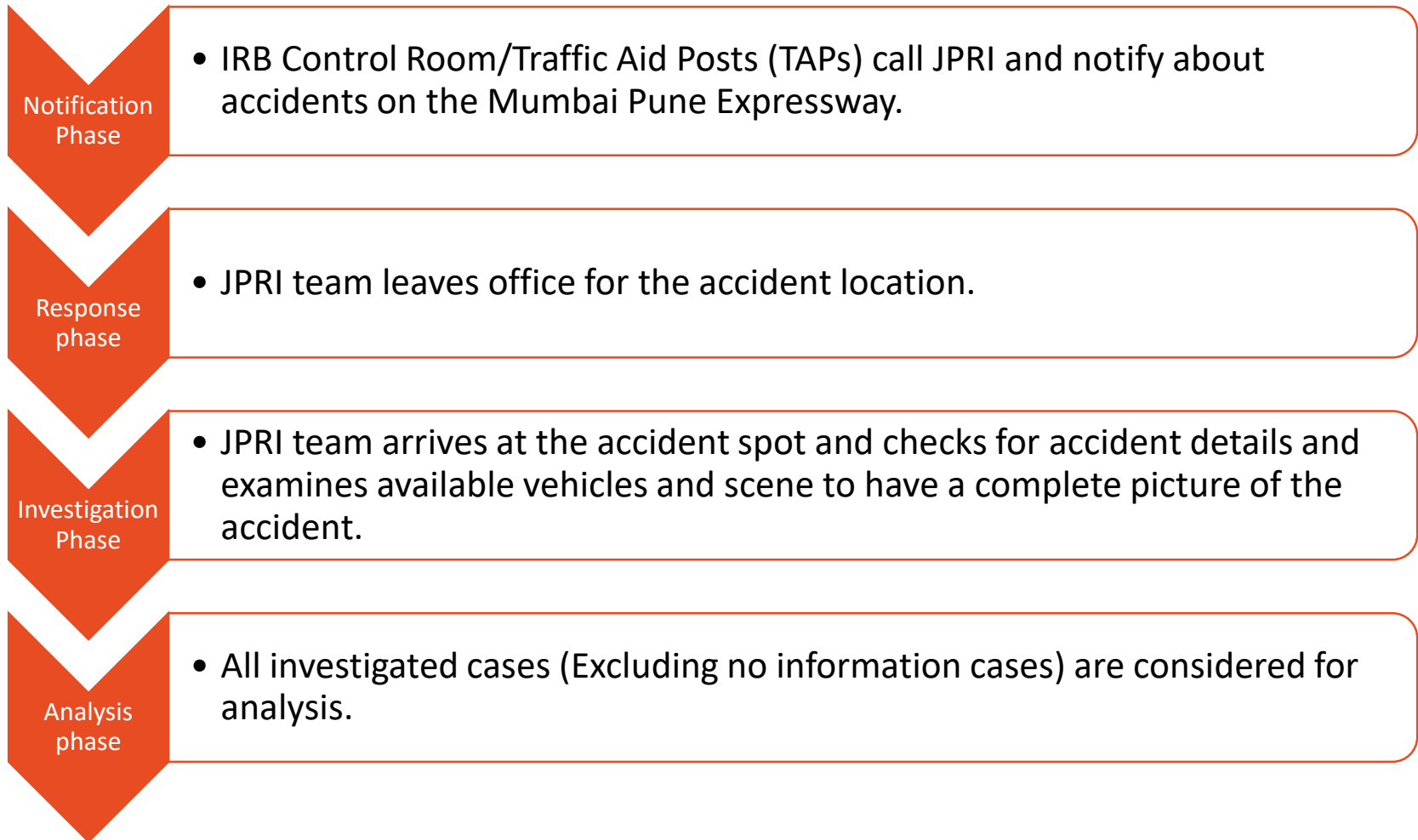
submitted to
Additional Director General of Police (Traffic),
Maharashtra State

Overview



- Accidents examined by JPRI
- Causal and Contributing Factors
 - Factors affecting accidents
 - Factors affecting injuries
- Conclusions

JPRI Accident Response Process



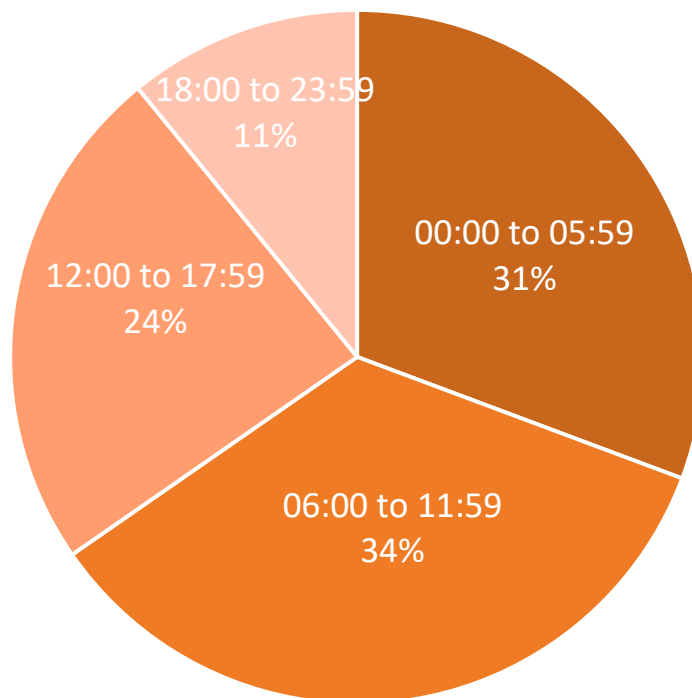
Accidents Examined by JPRI



- From 1st April, 2016 to 31st October, 2016: **101 cases**
 - Including 39 fatal accidents resulting in a total of 83 fatalities
- District wise
 - Raigad District: 45
 - Pune District: 56
- Notification of Accidents
 - Notification received from TAP: 2 cases
 - Dasturi : 0
 - Wadgaon : 0
 - Palaspe : 2
 - Khandala : 0
 - Notifications received from IRB Control Room : 42 cases
 - Self notification*: 57 cases

** JPRI got these cases while on rounds and through continuous follow-up with IRB Control Room by regularly calling them.*

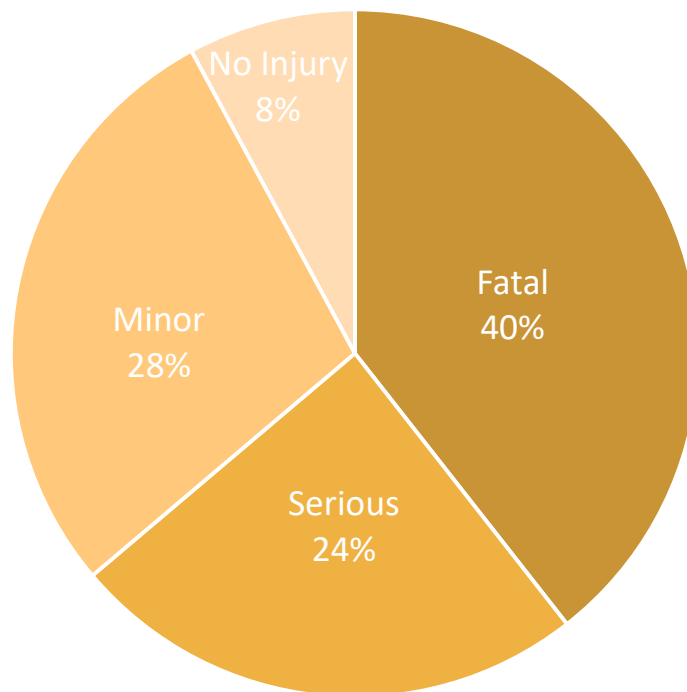
Distribution by Time



58% of accidents occur during daylight hours (06:00 to 17:59)

Number of accidents = 101

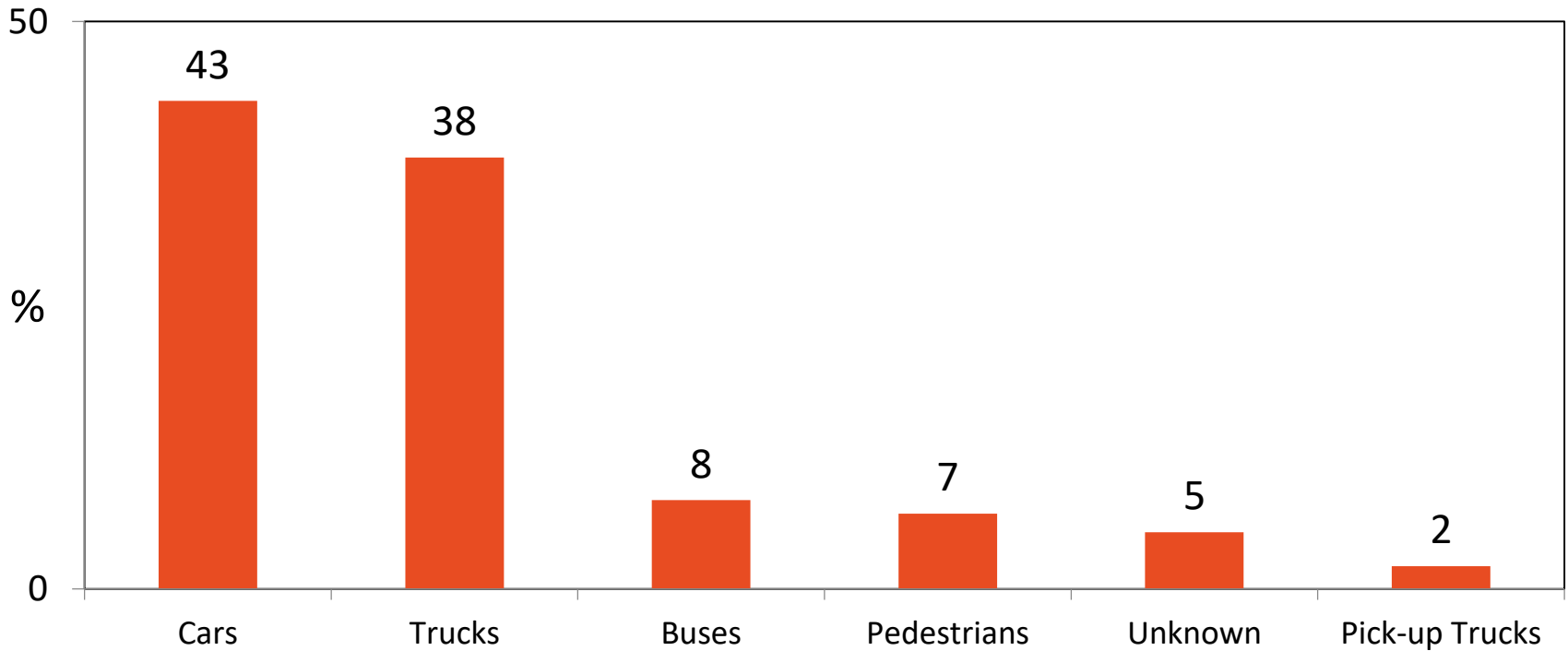
Distribution by Highest Injury Severity



64% of the accidents examined resulted in Serious and Fatal injury victims.

Number of accidents = 101

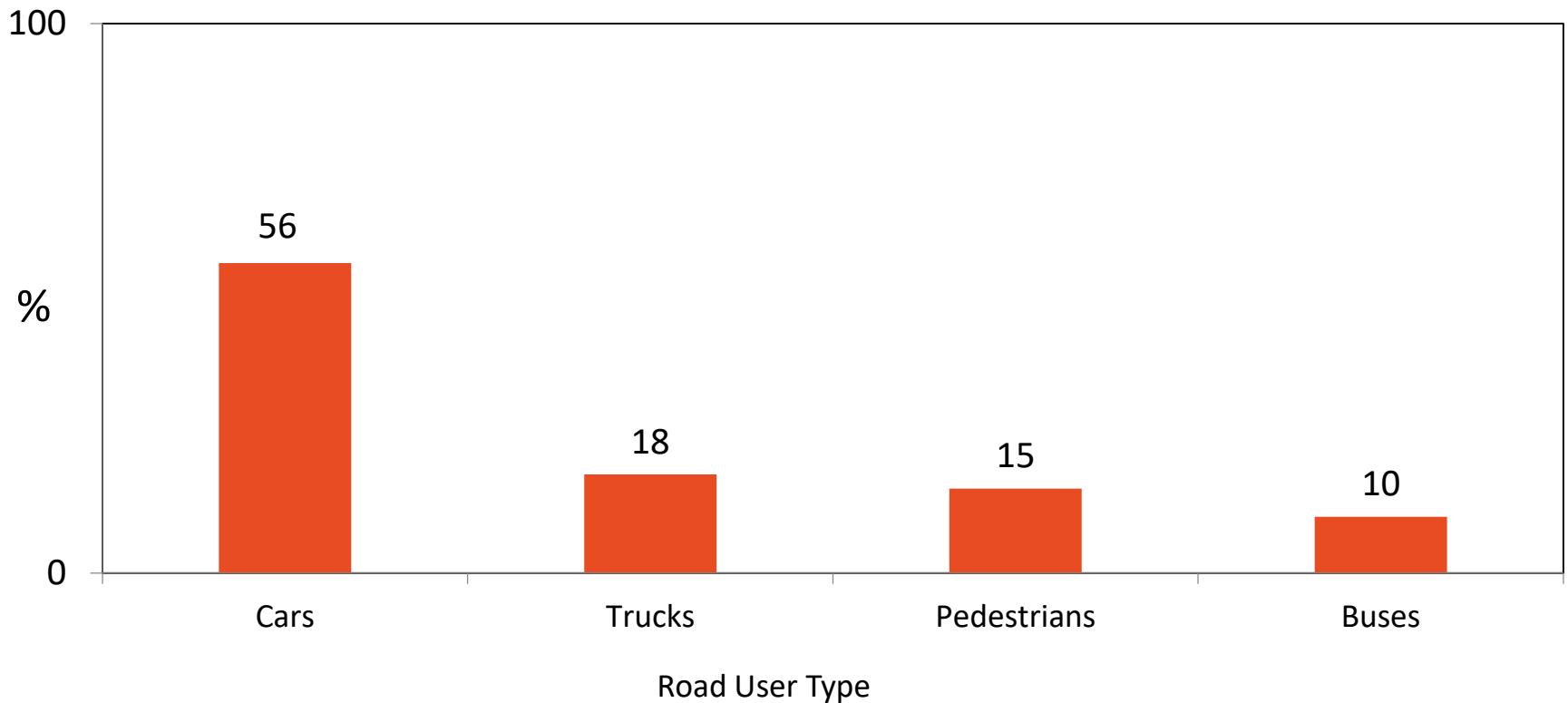
Percentage Distribution by Road User Types Involved



Cars and Trucks constitute 81% of involved road users.

No. of road users involved = 166

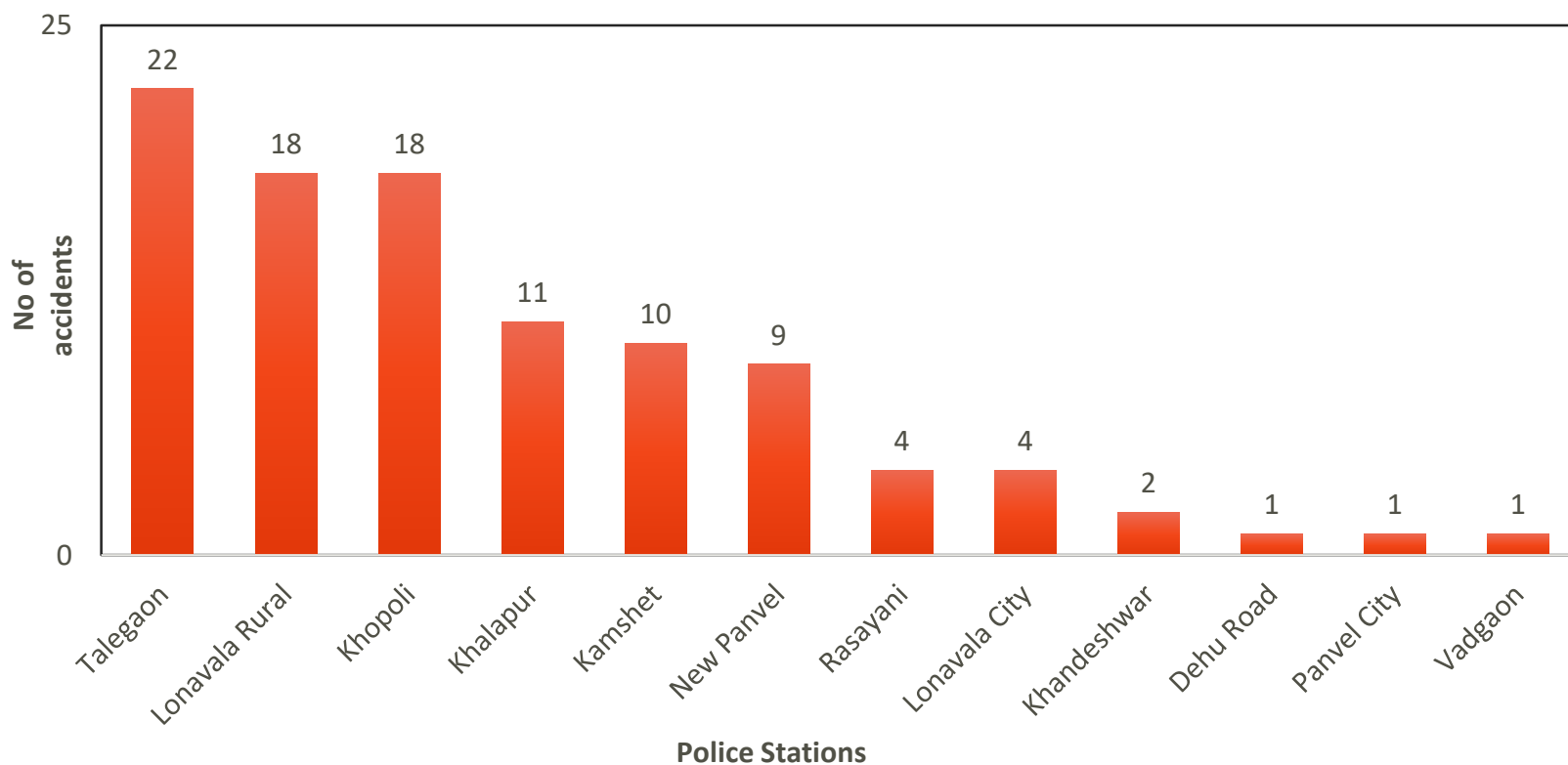
Percentage Distribution by Road Users with Fatalities



Cars constitute 56% of fatal road user types.

Number of road users = 39

Distribution by Police Station Jurisdiction

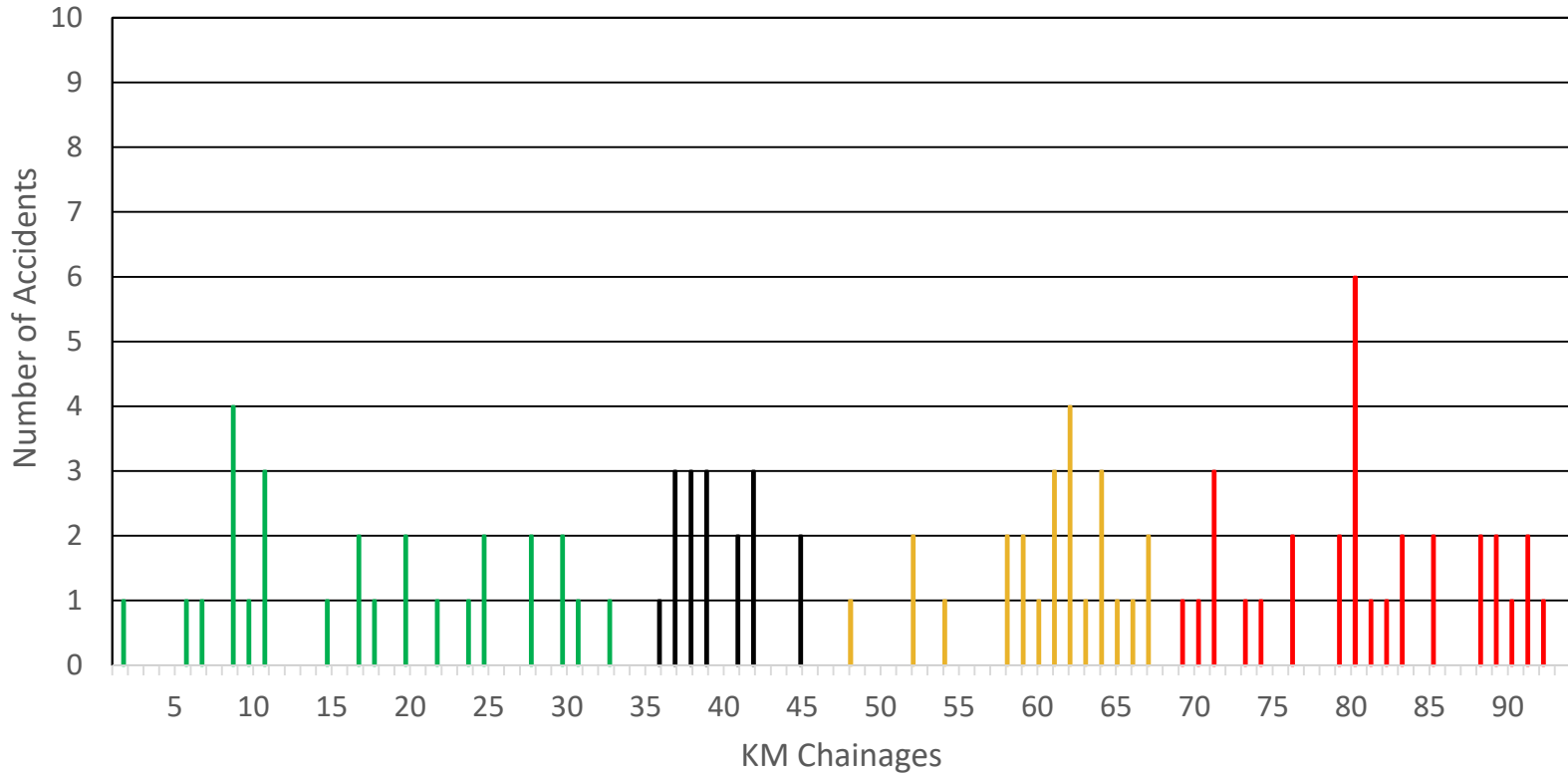


Number of accidents = 101

Accident Locations



Distribution of Accidents by Kilometre Milestones



TAP JURISDICTIONS : ■ Palaspe ■ Dasturi ■ Khandala ■ Wadgaon

Number of accidents = 101

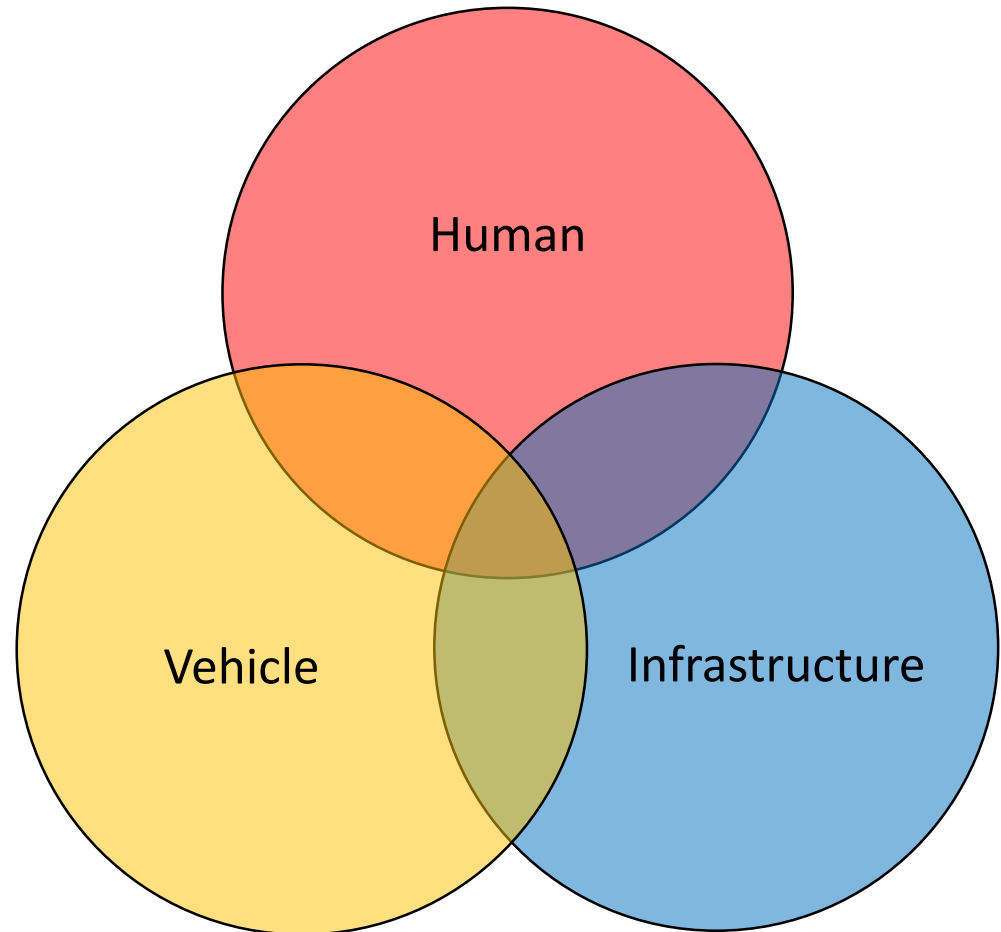
Causal and Contributing Factors



Road traffic accidents and injuries are primarily influenced by three main factors :

- Human
- Vehicle
- Infrastructure

Each of these factors can influence an accident or injury causation independently...



Causal and Contributing Factors

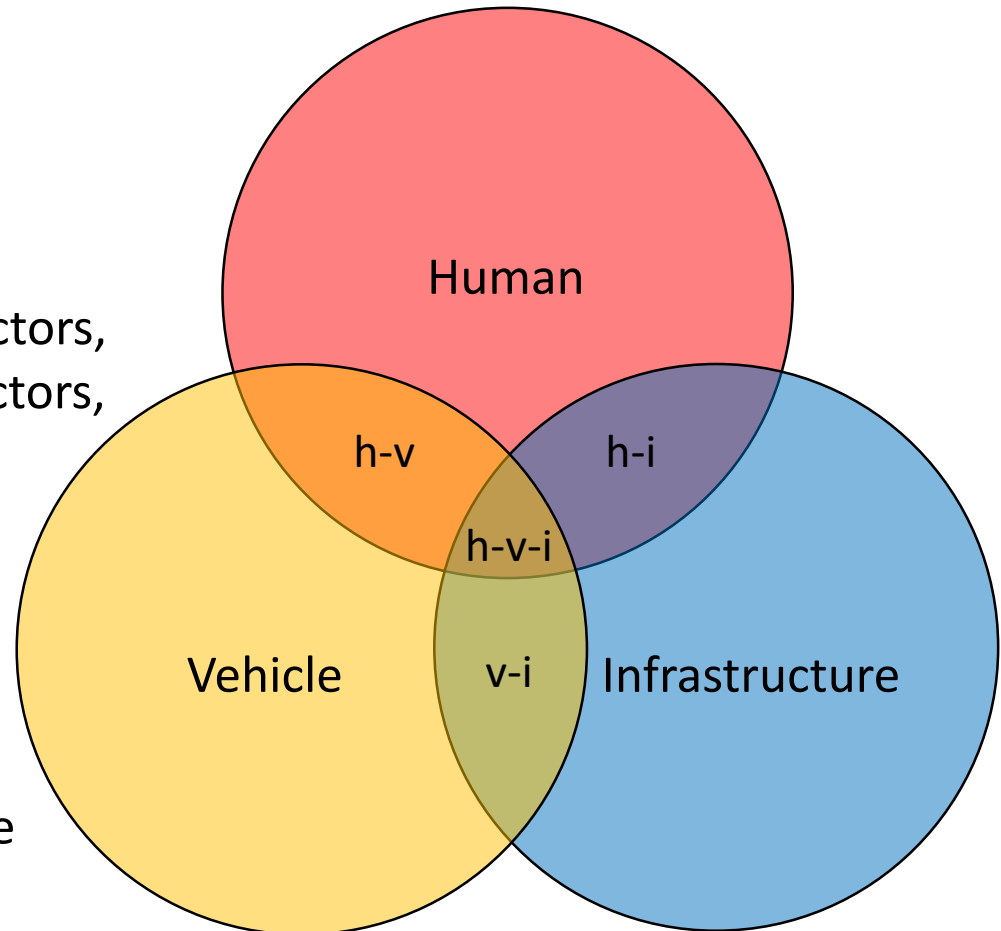


... or as a combination.

For e.g.

Human and Vehicle factors,
Human and Infrastructure factors,
Vehicle and Infrastructure factors,
or all three together.

This aims to
determine the
various factors influencing
expressway accidents and the
subsequent injuries.



Contributing Factors for Accidents

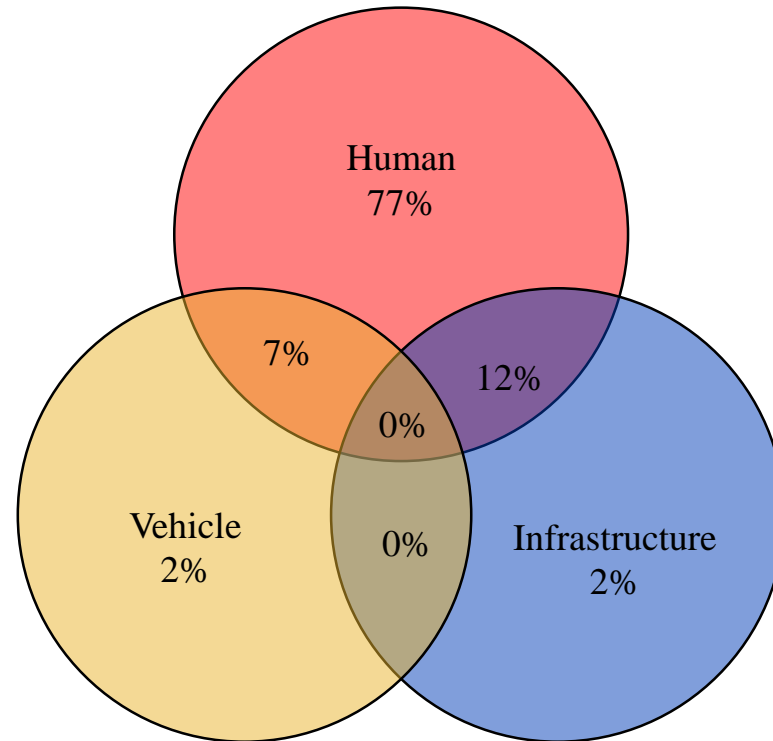


The 101 accidents examined have been distributed by their contributing factor(s) and shown in the figure alongside.

Note: Only 100 cases have been considered for this analysis as contributing factors for 1 case has not been determined yet as the case needs more detailed investigation.

The numbers in the figure are percentage of the total number of accidents examined.

Hence, the influence of each factor for causation of accidents is:



Human	: 96%
Vehicle	: 9%
Infrastructure	: 14%

Human Factors Influencing Accidents



Conditions	No. of Accidents	% Influenced
Over speeding	39	39%
Improper lane change/lane usage	36	36%
Driver - Sleep/Fatigue/Drowsiness	31	31%
Driver Inattention	10	10%
Parking – Vehicle on road (full or partial)	5	5%
Overtaking from the left	5	5%

Number of Accidents = 100

Vehicle Factors Influencing Accidents



Conditions	No. of Accidents	% Influenced
Defective Tyres	5	5%
Absence of Reflectors	3	3%

Number of Accidents = 100

Infrastructure Factors Influencing Accidents



Conditions	No. of Accidents	% Influenced
Inadequate Warning of Parked/Accident Vehicles	4	4%
Slippery Road Surface	3	3%
Sharp Curvature	3	3%
Work Zone	2	2%
Gap-in-Median	1	1%
Roadside Trees	1	1%

Number of Accidents = 100

Contributing Factors for Injury



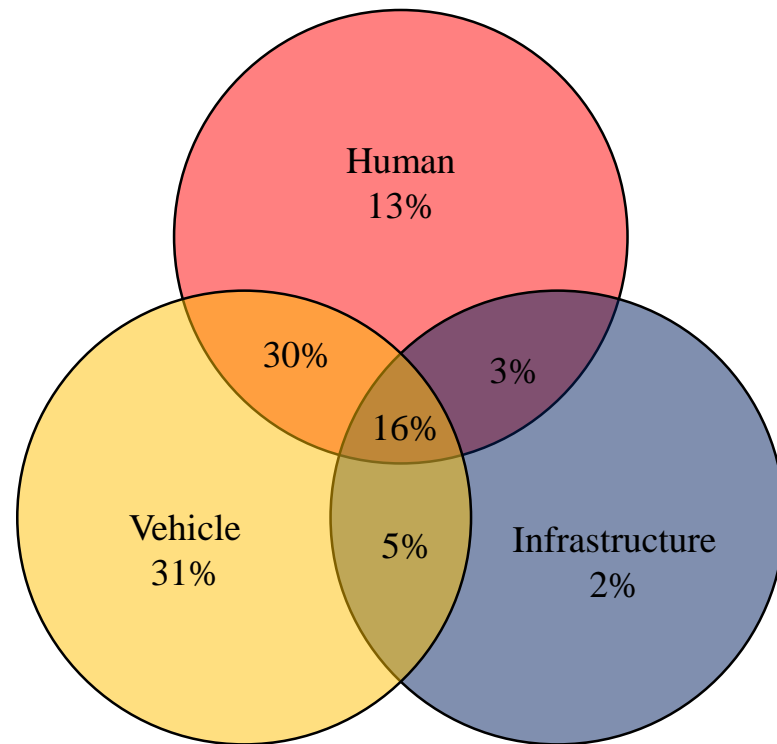
The 64 accidents resulting into fatal or serious injuries examined have been distributed by their contributing factor(s) and shown in the figure alongside.

Note: Only 63 cases have been considered for this analysis as contributing factors for 1 case has not been determined yet as the case needs more detailed investigation.

The numbers in the figure are percentage of the total number of accidents examined which resulted into serious or fatal injuries.

Hence, the influence of each factor for causation of injury is:

- Human : 62%
- Vehicle : 82%
- Infrastructure : 26%



Human Factors Influencing Injury



Conditions	No. of Accidents	% Influenced
Seat Belt Not Used	40	64%

Number of Accidents = 63

Vehicle Factors Influencing Injury



Conditions	No. of Accidents	% Influenced
Passenger Compartment Intrusions	40	64%
Seatbelts Not Available/Usable	11	18%
Ejection	10	16%
Pedestrian Knock Down/ Run over	6	10%
Protruded/Oversized/Unsecured Cargo	4	6%
Entrapment	4	6%

Number of Accidents = 63

Infrastructure Factors Influencing Injury



Conditions	No. of Accidents	% Influenced
Object impact – Roadside - Manmade structures	10	16%
Object impact - Roadside - trees/plantation	4	6%
Roadside - Steep Slope/ Drop off	3	5%
Object impact - road side - Other	2	3%

Number of Accidents = 63

Conclusions



- 58% of accidents occur during Daylight hours (06:00 to 17:59).
- Cars and Trucks constitute 81% of involved road users.
- 64 of the accidents resulted in Serious or Fatal injury victims.
- Cars constitute 56% of fatal road user types.
- Trucks constitute 18% of fatal road user types.

Note: The above is based on 101 accidents examined from 1st April 2016 to 31st October 2016

Conclusions – Top 3 Factors (Accident)



Human (96%)	Vehicle (9%)	Infrastructure (14%)
Over speeding (39%)	Defective Tyres (5%)	Inadequate Warning of Parked/Accident Vehicles (4%)
Improper Lane Change / Lane Usage (36%)	Absence of Reflectors (3%)	Sharp Curvature (3%)
Sleep/Fatigue (31%)		Slippery Road Surface (3%)

Note: The above is based on 100 accidents examined from 1st April 2016 to 31st October 2016. 1 case is pending for further investigations.

Conclusions – Top 3 Factors (Injury)



Human (62%)	Vehicle (82%)	Infrastructure (26%)
Seat Belt Not Used (64%)	Passenger Compartment Intrusion – Other (64%)	Object impact – Roadside Manmade structures (16%)
	Seatbelts Not Available/Usable (18%)	Object impact – Roadside trees/plantation (6%)
	Ejection (16%)	Roadside Steep Slope (5%)

Note: The above is based on only 63 fatal/serious accidents examined from 1st April 2016 to 31st October 2016. 1 case is pending for further investigations.

Support Required



- Number of accident notifications from the Police is less. We look forward for the better support and cooperation.
- We also hope to get on site crash investigation assistance from Police.
- Assistance to collect crash victim's personal contact details to conduct victim interviews to get victim's version of the crash for better understanding and verification of crash facts.



We look forward to your continued support in this joint initiative towards a safer Mumbai Pune Expressway.