
Identifying contributory factors leading to accidents and resulting injuries in Kolkata, India

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Overview

- **780 fatal accidents were registered** by police in Kolkata city in the years 2015 and 2016.
 - Of 780 fatal accidents, **404 were examined in-depth** by JPRI.
 - **Contributing factor determined** for in-depth examined accidents.
- Comparison of Police data and Government published reports.
- Police data and in-depth accidents compared to check for relevance.

Methodology

- Each crash was studied in three different phases of an accident; Pre-crash, Crash and Post-crash.
- Factors under Pre-crash considered to have contributed to the accident occurrence and those under crash and post-crash phase considered to have resulted in injuries.
- For each accident, injury and accident contributing factors were determined separately and ranked based on the number of injury occurrences and accidents influenced respectively.

	Accident factors	Injury factors	
	Pre crash	Crash	Post crash
Human			
Vehicle			
Infrastructure			

Contributing factors: Accident occurrence

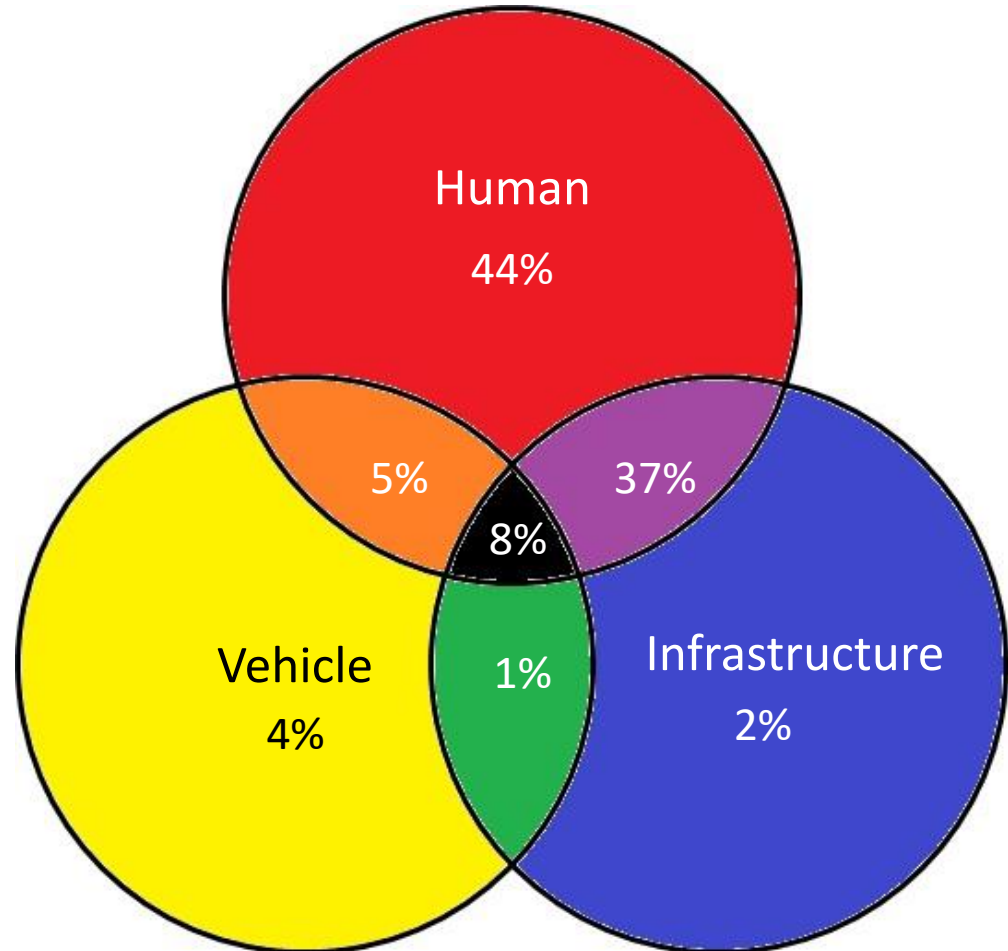
N = 378 fatal accidents

Number represents % of accidents influenced.

Human : 94%

Vehicle : 18%

Infrastructure : 48%



Top 3 contributing factors: Accidents

Contributing Factor	# Accidents Influenced	% Influence
HUMAN FACTORS		
Speeding	195	52%
Pedestrian inattention	86	23%
Pedestrian dangerous behaviour on roadway	81	21%
VEHICLE FACTORS		
Vision obstruction due to vehicle interiors	39	10%
Bus door not available	12	3%
Overloading - people	10	3%
INFRASTRUCTURE FACTORS		
Poor road marking/signage	104	28%
Poor pedestrian infrastructure - Crossing	53	14%
Poor pedestrian infrastructure - Walking alongside	27	7%

Contributing factors: Fatal injury

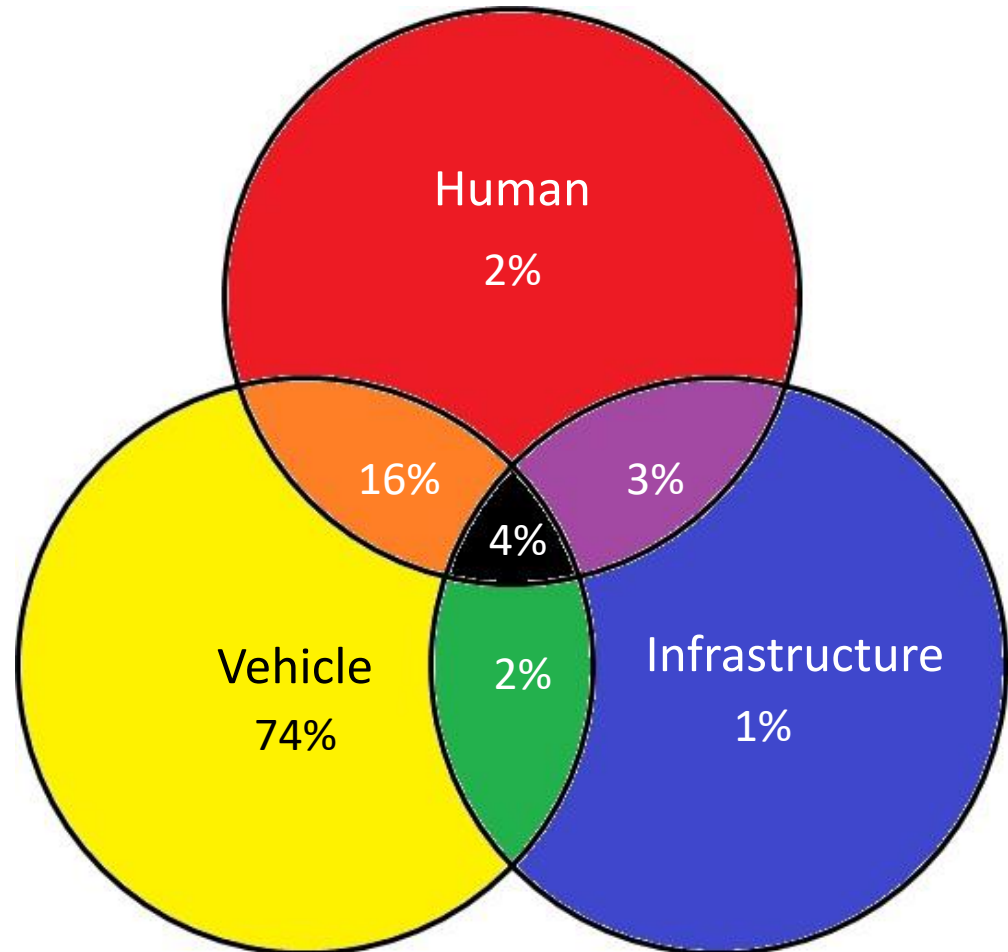
N = 401 fatal accidents

Number represents % of accidents influenced.

Human : 25%

Vehicle : 96%

Infrastructure : 10%



Top 3 contributing factors: Fatal injury

Contributing Factor	# Accidents Influenced	% Influence
HUMAN FACTORS		
Helmet Not used	78	19%
Seatbelt not used	16	4%
Occupants in cargo area	3	1%
VEHICLE FACTORS		
Knockdown for Pedestrian	214	53%
Knockdown for Bicyclists, M2W	83	21%
Runover for Pedestrian	61	15%
INFRASTRUCTURE FACTORS		
Object impact - road side - manmade structure	30	8%
Object impact - other	3	1%
Object impact - road side - trees/plantation	2	0.5%

Data Comparison

Data Source	# Fatal Accidents	# Fatalities
Road Accidents in India - 2015	412	422
Accidental Deaths and Suicides in India -2015	Not Available	421
Data collected from Kolkata Traffic Police - 2015	400	406
Road Accidents in India - 2016	388	407
Accidental Deaths and Suicides in India - 2016	Not Published yet	Not Published yet
Data collected from Kolkata Traffic Police - 2016	380	398

Although base data is collected from same source counts of fatal accidents and fatalities does not match.

Source: Kolkata Police Data (2015-2016), ADSI-2015 Report, Road Accidents in India-2015,2016.

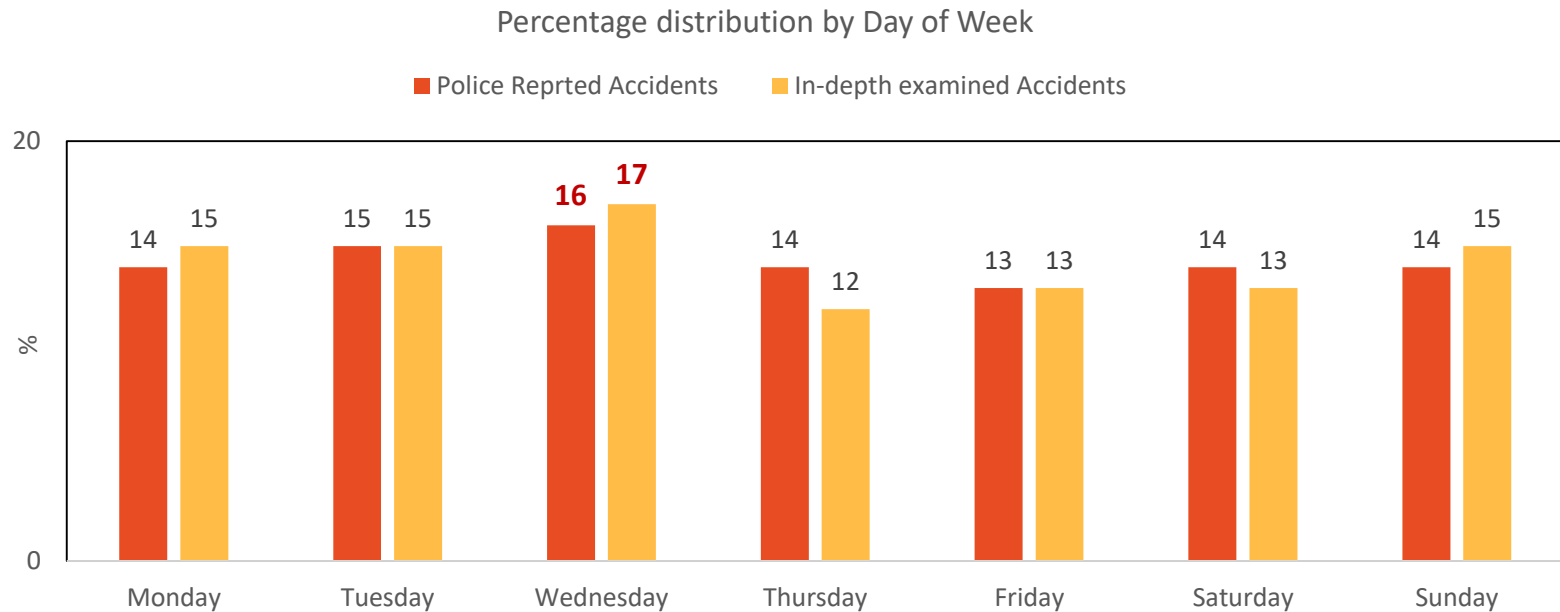
Comparison of NCRB and Police data

Fatality by Road users	Kolkata Police Data - 2015	Accidental deaths and Suicides in India - 2015	% change
Pedestrian	222	78	-65%
M2W	110	70	-36%
Bus	28	80	186%
Car	11	74	573%
Truck	7	78	1014%
M3W	10	41	310%
Bicycle	17	0	-100%
Tricycle	1	0	-100%
Total	406	421	4%

For vulnerable road users, fatality counts does not match.

Source: Kolkata Police Data (2015), ADSI-2015 Report

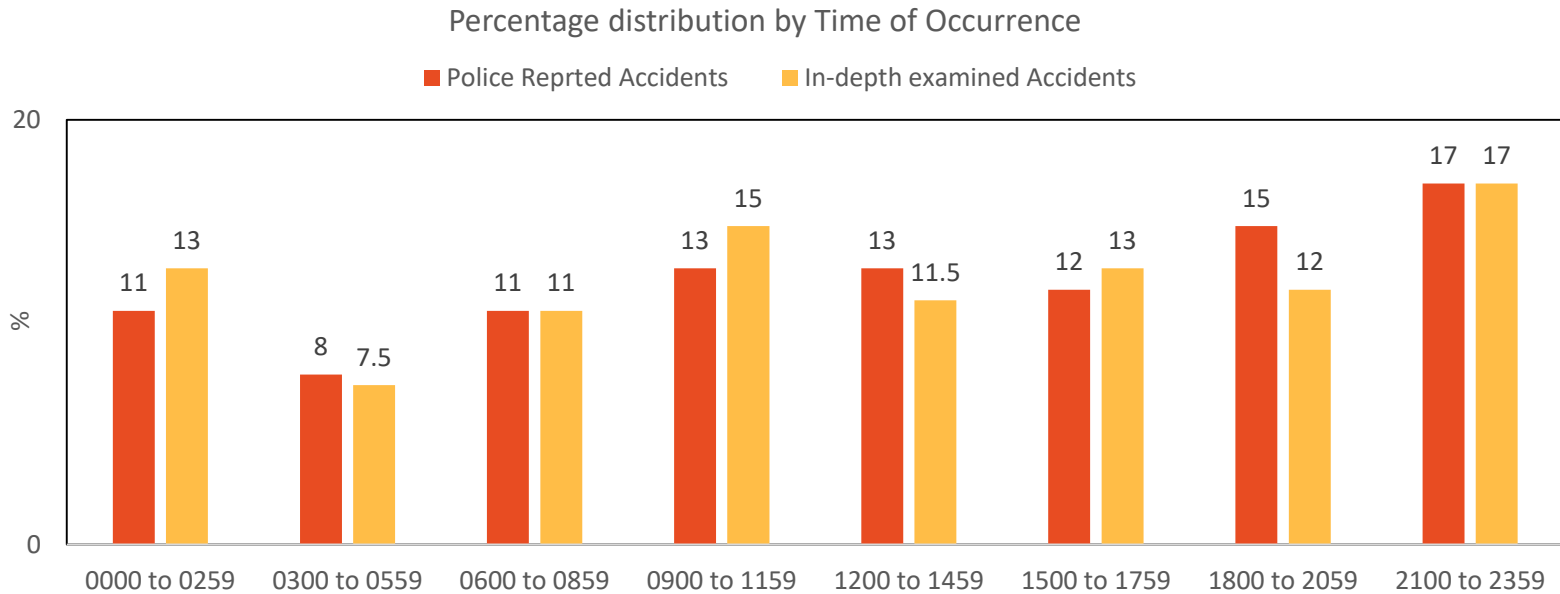
Percentage distribution by Day of Week



Wednesday witnesses more fatal accidents than any other day.

Source: Kolkata Police Data (2015-2016), N= 780. In-depth examined Data (2015-2016), N=404

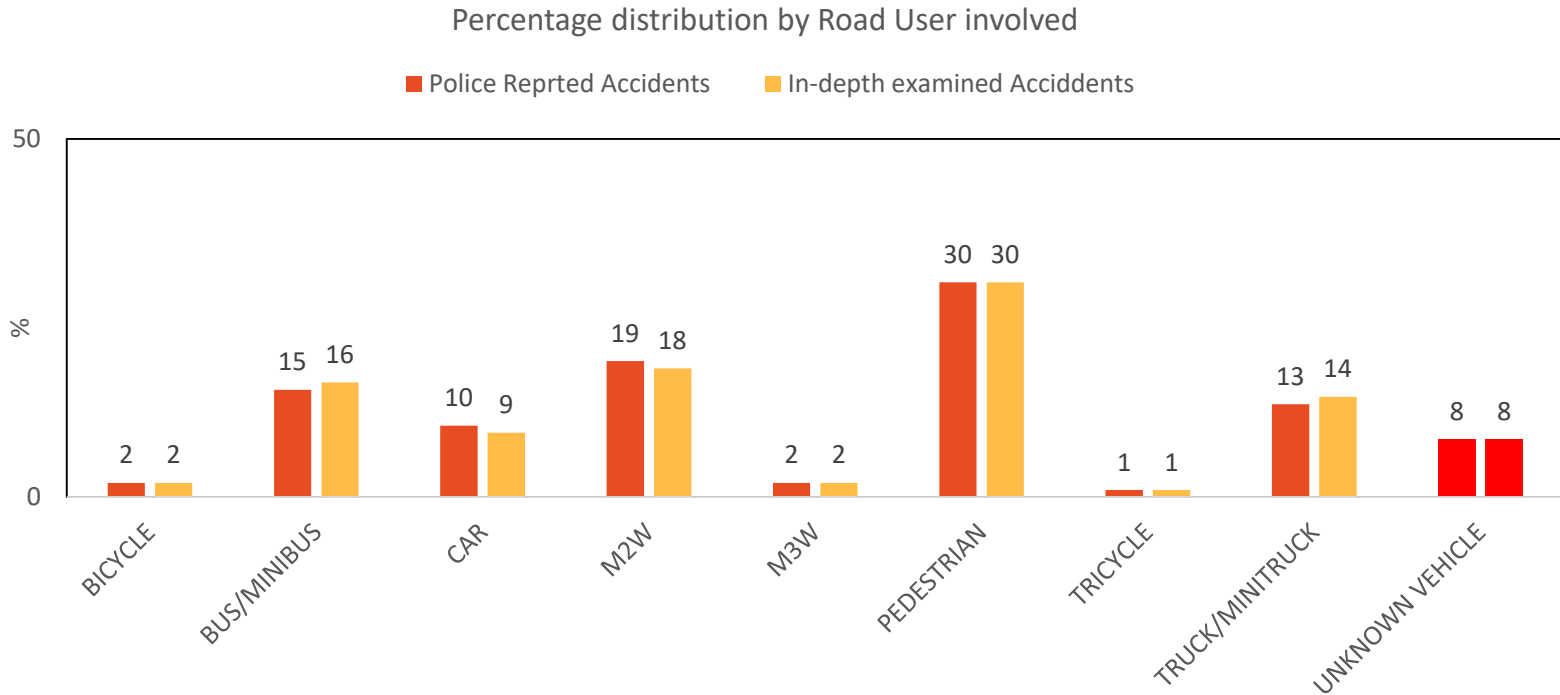
Percentage distribution by Time of Occurrence



Time period of 21:00 hrs. to 23:59 hrs. witnesses highest number of crashes compared to other time periods.

Source: Kolkata Police Data (2015-2016), N= 780. In-depth examined Data (2015-2016), N=404

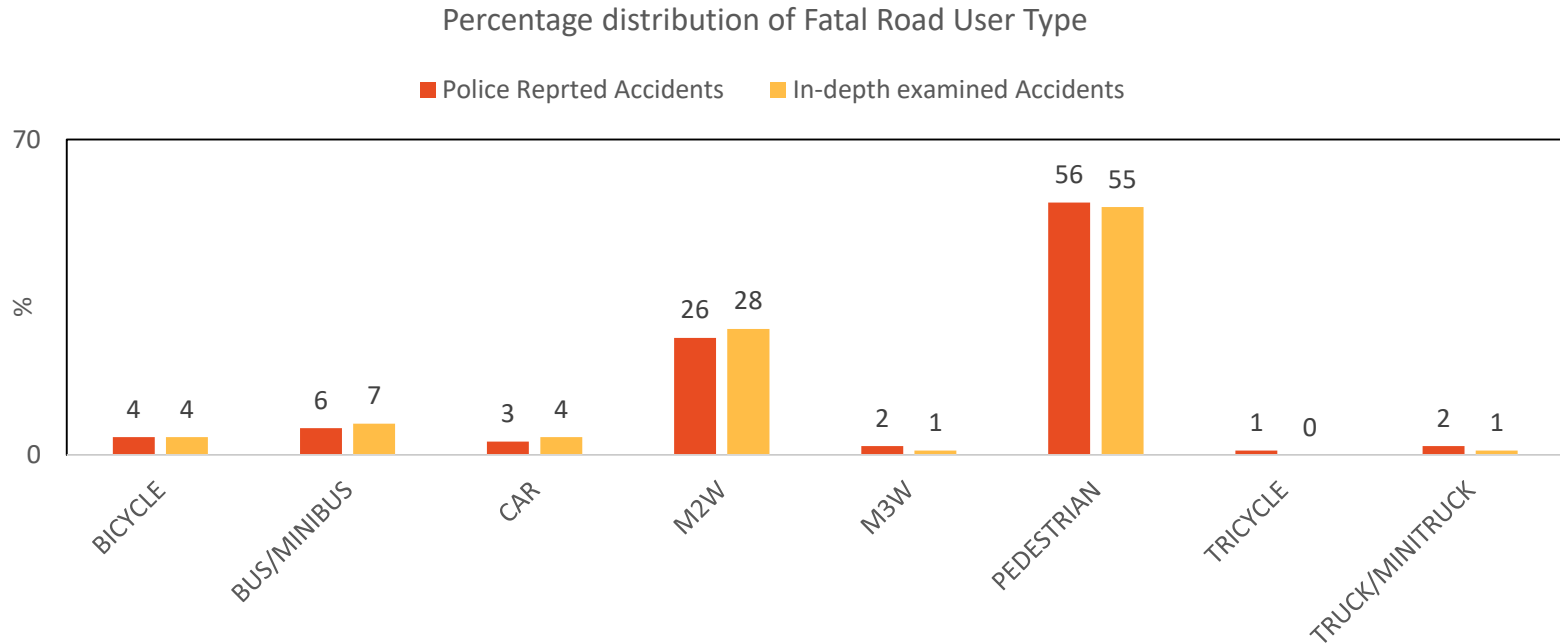
Percentage distribution by Road Users involved



- *Pedestrians and M2Ws together constitute nearly ½ of total road users.*
- *8% of total road users are unknown vehicles.*

Source: Kolkata Police Data (2015-2016), N= 1474. In-depth examined Data(2015-2016), N=770

Percentage distribution by Fatal Road User Type



Pedestrians and M2Ws together constitute 82% of total fatal road users.

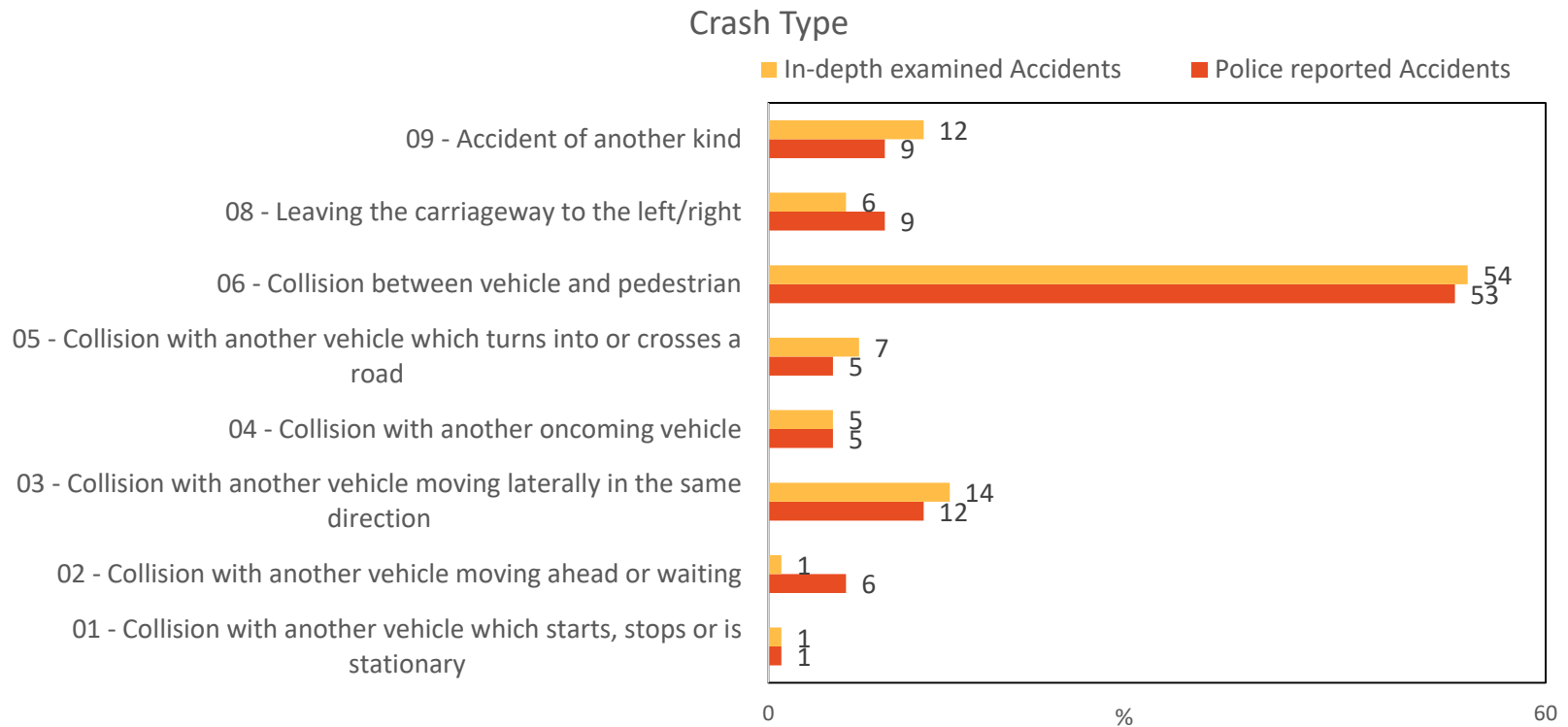
Source: Kolkata Police Data (2015-2016), N= 787. In-depth examined Data (2015-2016), N=408

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Percentage distribution by Crash Type



Collision between Vehicle and Pedestrian constitutes more than 50% of total accident types.

Source: Kolkata Police Data (2015-2016), N= 780. In-depth examined Data (2015-2016), N=404

Conclusion

- Human factor contributed to the occurrence of 94% crashes, Infrastructure factors at 48% and Vehicle factors at 18%.
- Vehicle factors contributed in 96% crashes resulting in fatal injuries, Human factors 25% and infrastructure factors at 10%.
- Speeding contributed to 52% of total fatal occurrence.
- Pedestrian inattention and pedestrian dangerous behaviour together contributed to 44% of Injury occurrence.
- Poor road markings/signage and poor pedestrian infrastructure together contributed to 49% of total fatal crash occurrence.
- The numbers in the Government published reports doesn't match with the source data.
- Only 52% of police registered fatal accidents had sufficient data to explore. This results in undermining the actual accident trends.

*With good data comes good decisions,
With good decisions come good results.*

Thank You