TRANSPORT DEPARTMENT
Government of NCT of Delhi

दिल्ली सरकार
आप की सरकार

Road Safety Lead Agency

2020

DELHI ROAD CRASH FATALITIES REPORT

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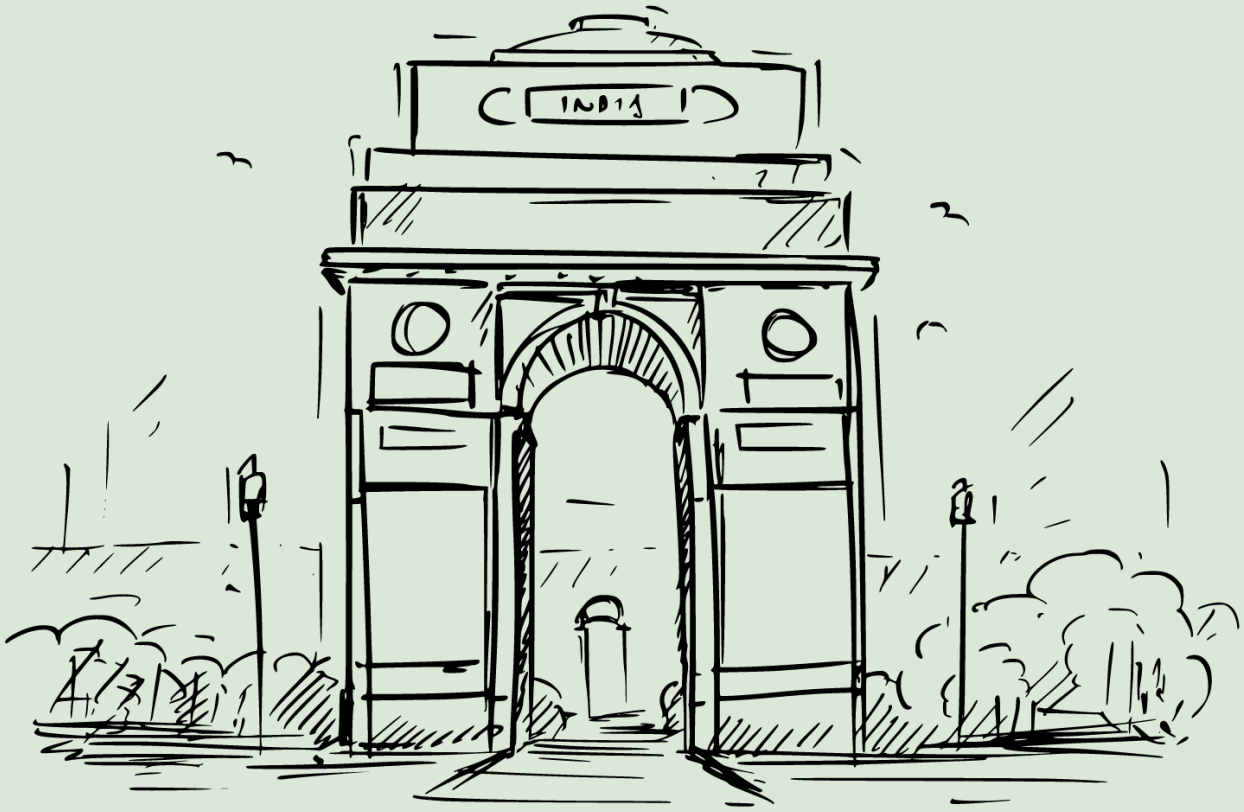


ACKNOWLEDGEMENTS

Delhi is one of the multiple cities globally participating in the Bloomberg Philanthropies Initiative for Global Road Safety (BIGRS). In the year 2020, BIGRS started supporting the Delhi government in implementing evidence-based road safety interventions to reduce road injuries and deaths. One of the elements of the initiative is to strengthen road safety data, available with city authorities in order to improve data-led intervention planning, monitoring, and evaluation.

This work was possible with the support of the Delhi Traffic Police, Transport Department, BIGRS, and all the partners working together to bring this report together.

We gratefully acknowledge the financial support received from Bloomberg Philanthropies, which made the production of this report possible.

ABBREVIATIONS

BIGRS	Bloomberg Philanthropies Initiative for the Global Road Safety
DND	Delhi Noida Delhi
FIR	First Information Report
FOB	Foot Over Bridge
GDP	Gross Domestic Product
GTK	Grand Trunk Karnal
ITO	Income Tax Office
MORTH	Ministry of Road Transport and Highways
NH	National Highway
RTIs	Road Traffic Injuries
UN	United Nations
WHO	World Health Organization

EXECUTIVE SUMMARY

Road traffic injuries (RTIs) are the eighth leading cause of deaths globally, with approximately 1.35 million people getting killed in preventable crashes each year. Between 20 to 50 million people suffer non-fatal injuries, with many of them incurring life-long disabilities. RTIs result in economic losses to the individuals involved, their families, and the nation as a whole. These losses are due to the cost of treatment, loss of income for those killed or disabled by the injury, and family members taking time off to care for the disabled[1]. Road traffic crashes costs India between three to five percent of its GDP[2]. The second UN Decade of Action for Road Safety 2011-2020 did make some progress, but the burden of deaths and injuries still remains high[3]. According to the WHO's 2018 Global Status Report on Road Safety, 50 percent of the world's road deaths are among motorcyclists (23%), pedestrians (22%), and cyclists (5%), also known as "vulnerable road users".

As per the report of the Ministry of Road Transport and Highways (MORTH) on 2019 crash statistics,[4] 1,51,113 persons were killed in road crashes in India. Road traffic injuries continue to be the leading cause of deaths, hospitalization, and disabilities in the country. India has one percent of the vehicle population but accounts for 11 percent of all the fatalities globally. According to 2019 crash statistics[4], motorcyclists (37%), pedestrians (17%), and cyclists (3%) account for 57 percent of all the fatalities. A 2021 World Bank Report states that the fatality rate post-crash and socio-economic burden of care are higher among low-income households[5].

In 2019[6] Delhi reported 1,433 fatal crashes and 1,463 fatalities, which reduced to 1,163 fatal crashes and 1,197 fatalities in 2020. The reduction in fatal crashes and fatalities may be attributed to the nation-wide lockdown due to the pandemic. In 2020, motorcyclists (45%) and pedestrians (40%) accounted for 85 percent of all the fatalities. A total of 89 percent of the deaths occurred among vulnerable road users (pedestrians,

[1] World Health Organization. (2021, June 21). Road Traffic Injuries Fact Sheets (https://www.who.int/news-room/fact-sheets/detail/road-traffic-injuries)
[2] Hartwig Schafer, Piyush Tewari.(2021, March 28). How do the poor cope with road crashes in India?. *World Bank* (https://blogs.worldbank.org/endpovertyinsouthasia/how-do-poor-cope-road-crashes-india)
[3] World Health Organization. (2015). *Global status report on road safety 2015*. World Health Organization.
[4] Ministry Of Road Transport and Highways.(2020). Road Accidents in India 2019
[5] World Bank. (2021). Traffic Crash Injuries and Disabilities: The Burden on Indian Society.
[6] Delhi Police.(2021). Road Accidents in Delhi 2020.

motorcyclists and cyclists), which is higher than the national average of 57 percent. Of all the fatalities, 90 percent of deaths occurred among males and 10 percent among females. The largest proportion of deaths occurred among male adults aged between 20 to 39 years. Among women, road traffic fatality risk was highest over the age of 60. The fatalities peaked on weekends, with highest fatalities recorded on Sundays between 2400 to 0200 hours. Car/Jeep/Van/Taxi and heavy vehicles were responsible for 72 percent of all the deaths reported. For 51 percent of the crashes, the responsible vehicle type was unknown, which denotes that 51 percent of the crashes were hit-and-run crashes. This may indicate lack of adequate enforcement in high risk areas, which in turn, results in hit-and-run crashes.

The data source for this report is FIR data and police crash data records. This data shows the need for action on motorcycle helmets, seatbelt, speed management, enhanced enforcement during high risk times, and safer streets for motorcyclists and pedestrians. This report is intended to inform and provide guidance to all city stakeholders.

INTRODUCTION

This report documents the situation of road crash deaths in Delhi during the pandemic, in 2020. One element of this work is to enhance road safety surveillance systems for data including crashes, injuries, and deaths. In Delhi, the surveillance system is composed of a web of actors including the Transport Department, Traffic Police Department and the Health Department. These agencies work together to leverage the available data to understand how and why crashes happen, respond to them, and prevent them.

In 2017, as per the directives of the Supreme Court Committee on Road Safety, a Road Safety Lead Agency has been set up at the Transport Department. The lead agency has been mandated to collate road injury crash data periodically, and analyze the data to identify high risk areas/road stretches and at risk road user types. The Transport department in collaboration with BIGRS produced this report as a further step in enhancing road crash data monitoring in Delhi. The following report presents an analysis of the data extracted from FIRs of the fatal crashes reported in 2020. It represents a process of mapping, analyzing, and compiling it.

This report aims to increase the understanding of the type, times, and locations of fatal crashes, and the profiles of those involved, so that more targeted interventions can be undertaken to prevent fatal crashes. Social marketing campaigns can be aimed at specific evidence-based audiences; police can be trained and deployed to target the most relevant risk factors, times, and places; and intersections and corridors can be made safer in zones identified as high risk areas.

Additionally, in order for stakeholders to manage the effort to reduce fatal crashes, they need to be able to measure and monitor them. This report is a step in that process, and the BIGRS partners look forward to continuing to support the government to enhance Delhi's road crash surveillance system, thereby helping the city reduce crashes, injuries, and deaths.

METHODOLOGY

Data Sources

A list of Delhi Police First Information Reports (FIRs) of 2020 fatal crashes in the National Capital Territory of Delhi was provided to the Delhi Transport Department in March 2021 by the Accident Research Cell of Delhi Traffic Police. Using the FIR numbers, the embedded staff of the Bloomberg Philanthropies Initiative for Global Road Safety - India, individually queried and entered into a database, each FIR using the Delhi Police's public database (https://www.delhipolice.nic.in/view-fir.html).

Analysis

The narrative data from the FIRs were manually parsed for important variables, and text location descriptions were assigned geo-coordinates using Google Maps. Corridor lengths were measured on Google Maps and some of the corridor lengths were available on GeoIQ (https://geoiq.io/). Geospatial analysis was done with ArcGIS and QGis. Statistical analysis was done with Microsoft Excel.

Limitations

Some crash variables are inconsistently or rarely captured. Crash location information is not very precise, and crash locations are manually pinned based on the available description. Information on speeding, helmet use, seat-belt use and drink driving is not available. These data have not yet been reviewed and validated by Delhi Traffic Police.

Report preparation

This effort was made possible with the support of the Delhi Transport Department, the Delhi Traffic Police, and the Bloomberg Philanthropies Initiative for Global Road Safety. Yatin Pimple, Surveillance Coordinator, BIGRS-Delhi, was responsible for data cleaning and analysis with support from Dr Sara Whitehead and Grant Ennis, Vital Strategies; and Rohit David, Farhan Shaikh and Mr KL Yadav from BIGRS Delhi, provided critical guidance and support throughout the process.

RESULTS
TREND IN ROAD CRASH DEATHS IN DELHI

Fatal crashes and deaths, 2011 to 2020

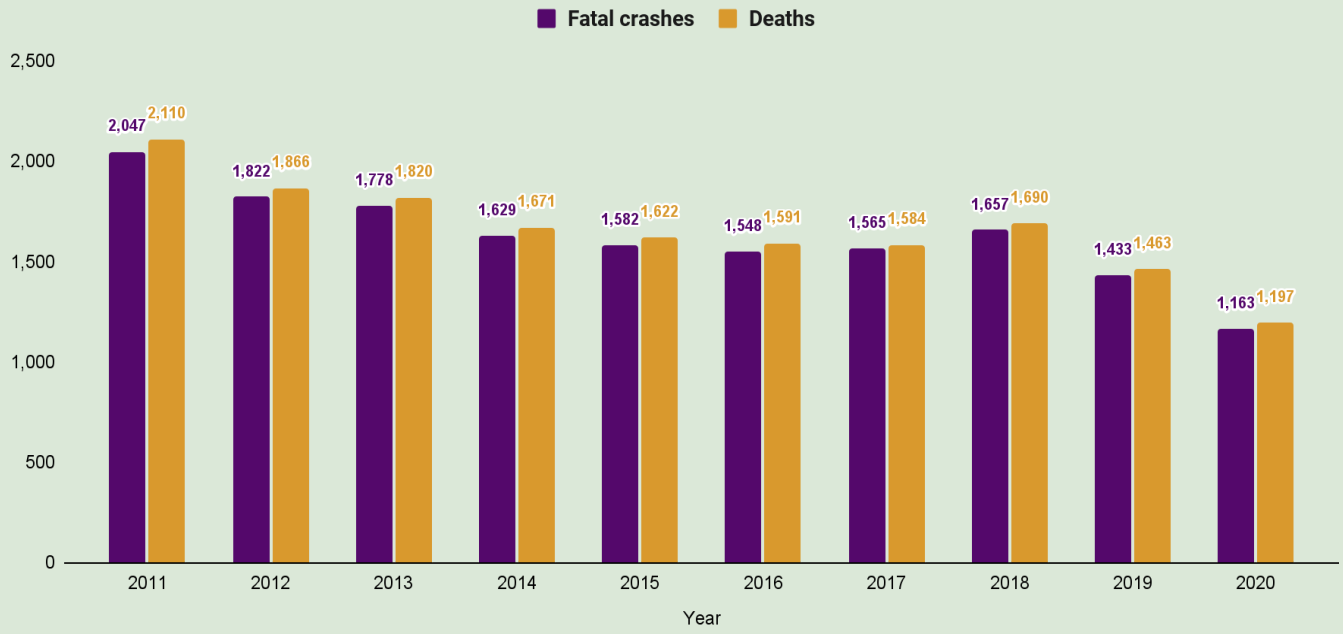


Figure 1

In 2020, 1,197 persons were killed as compared to 2,110 persons killed in 2011. There is a 43 percent decline in deaths reported since 2011 and a drop of 25 percent since 2016. The decline of 18 percent in road crash deaths since 2019 may be partly attributed to the nationwide lockdown due to the COVID-19 pandemic.

DEATHS BY ROAD USER TYPE

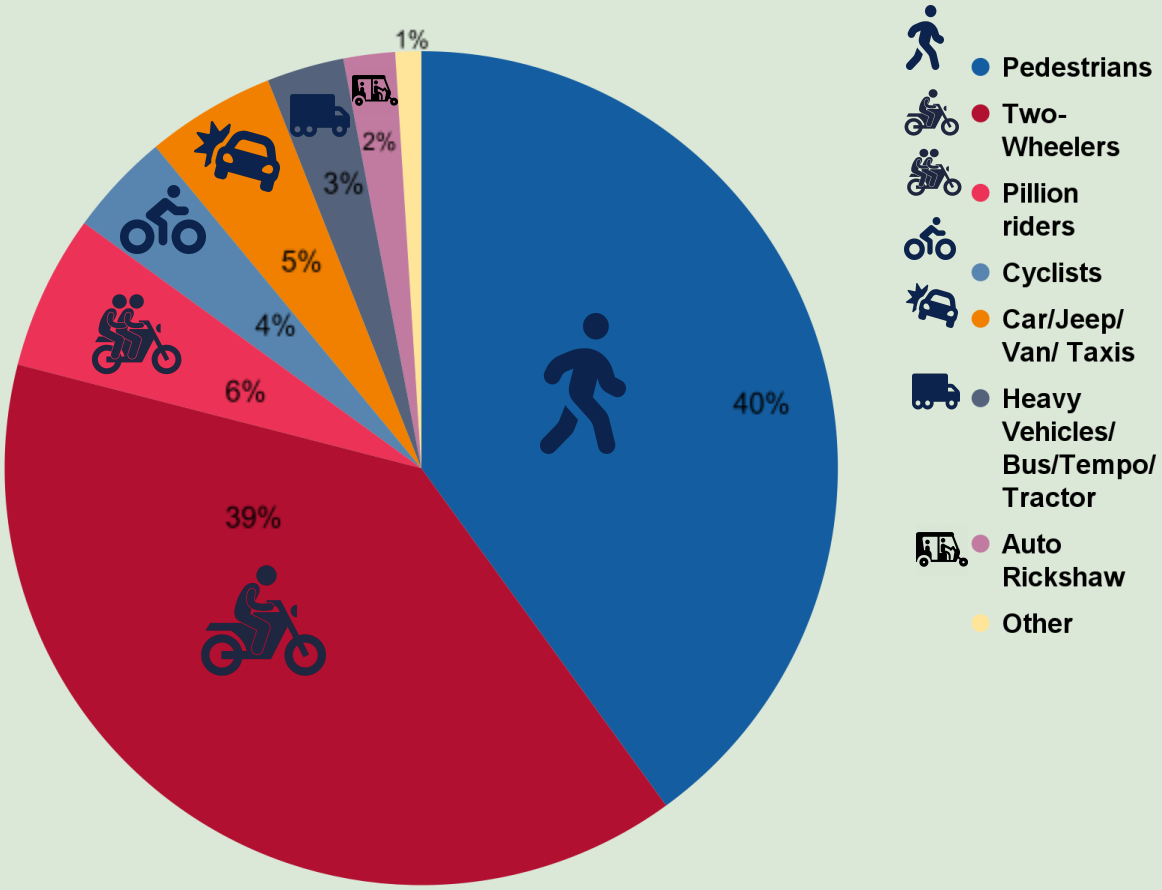


Figure 2

Motorcyclists (both riders and pillion riders) accounted for 45 percent and pedestrians for 40 percent of all the deaths. A total of 89 percent of the deaths occurred among vulnerable road users (pedestrians, motorcyclists and cyclists).

Crash deaths by road user type and gender, 2020

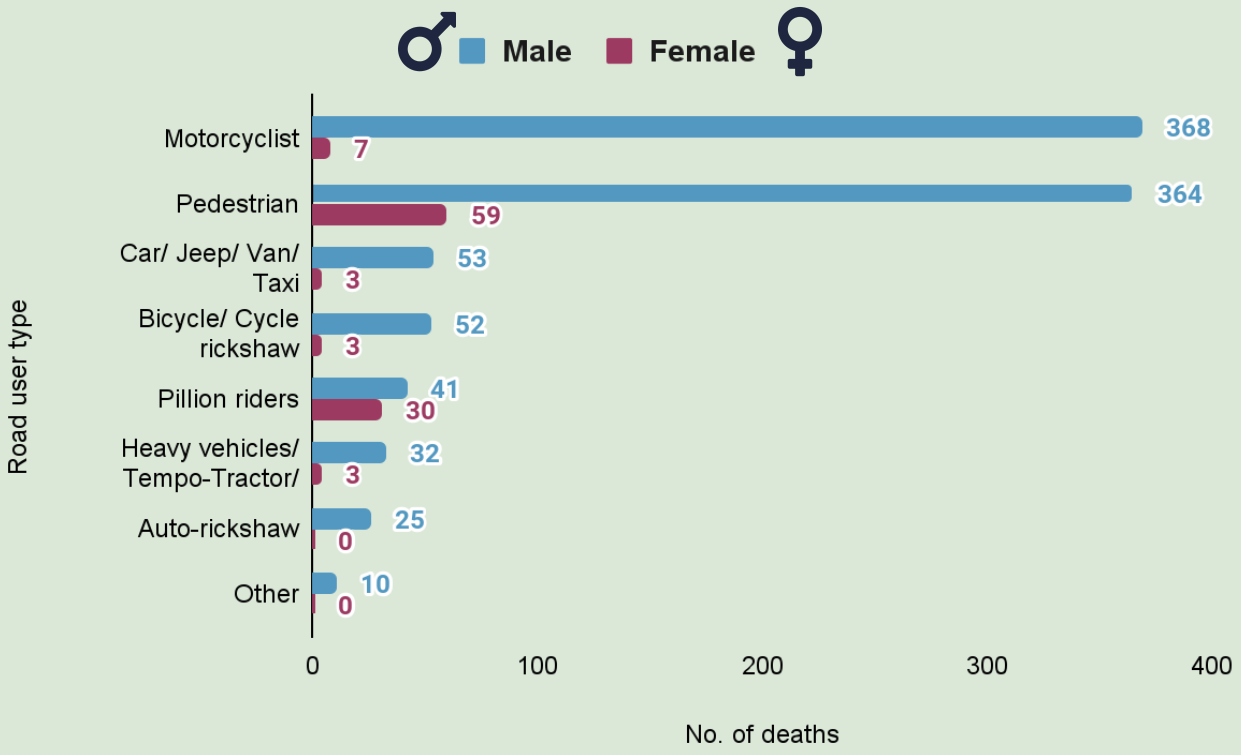


Figure 3

Of all the male deaths, 368 were motorcyclists and 364 were pedestrians. Of all the female deaths, 59 were pedestrians and 30 were motorcycle-pillion riders.

ROAD CRASH DEATHS BY AGE AND GENDER

Road crash deaths by gender distribution, 2020

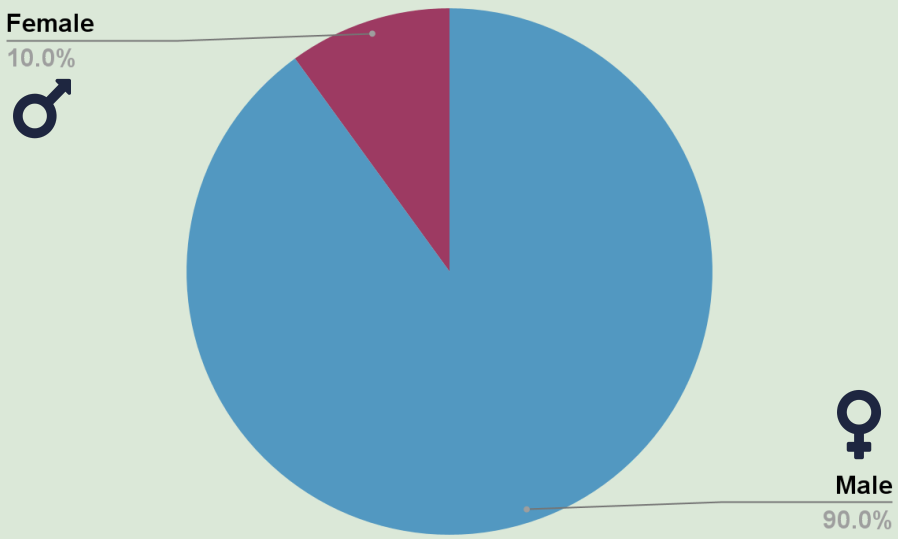
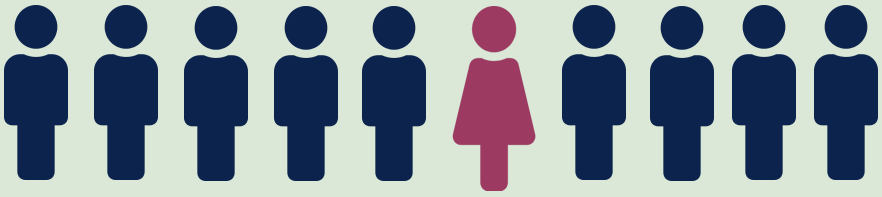


Figure 4



Males accounted for 90 percent of total road crash deaths.

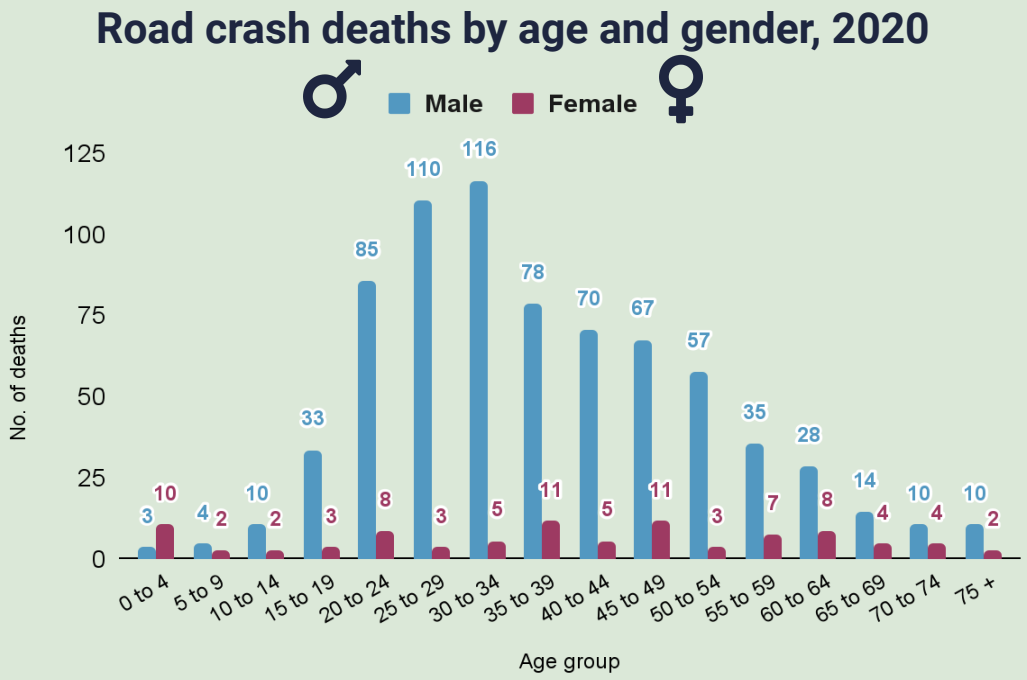


Figure 5

The largest proportion of road deaths occurred among adults aged between 20 to 39 years old. Among females, there was no pronounced age pattern among road crash deaths.

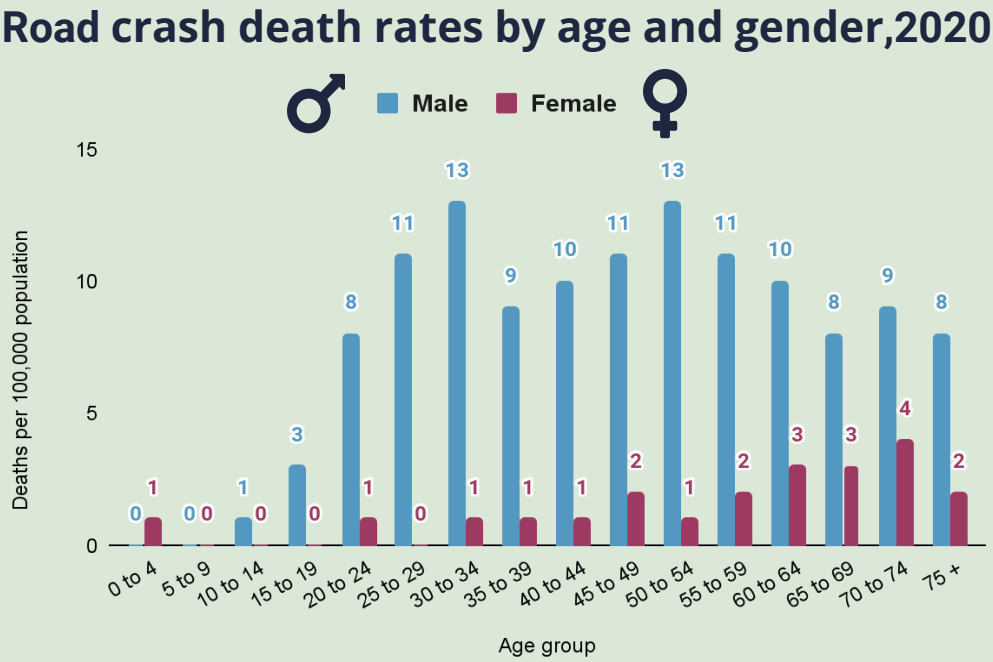


Figure 6

Death risk is relatively higher for men aged between 30 to 34 and 50 to 54 years. Among women, road traffic death risk was highest over age 60.

Motorcyclist deaths by age and gender, 2020

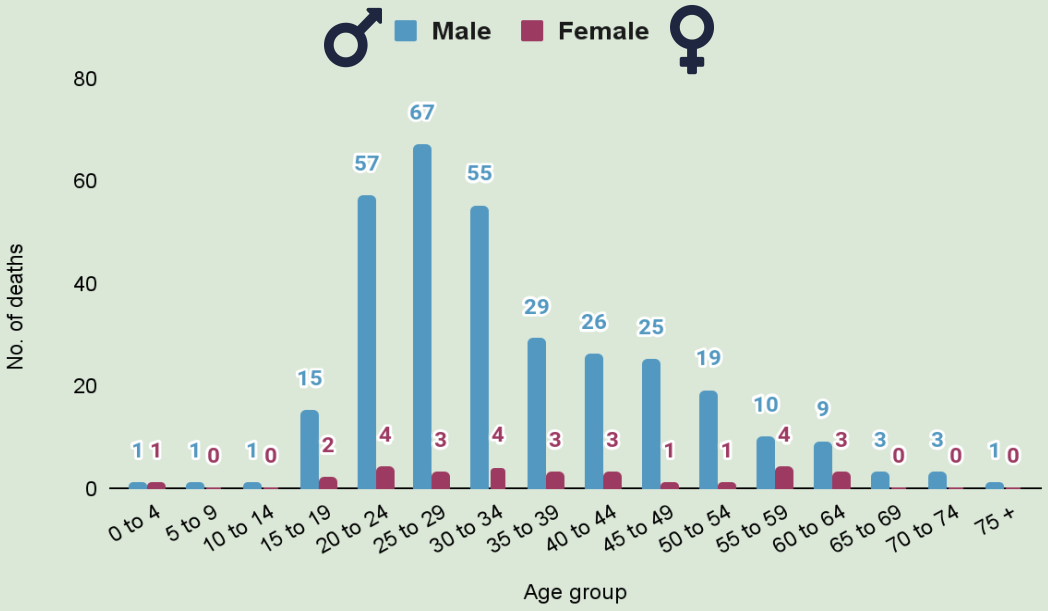


Figure 7

Younger men aged 20 to 34 years accounted for the highest number of deaths among motorcyclists.

Motorcyclist death rates by age and gender, 2020

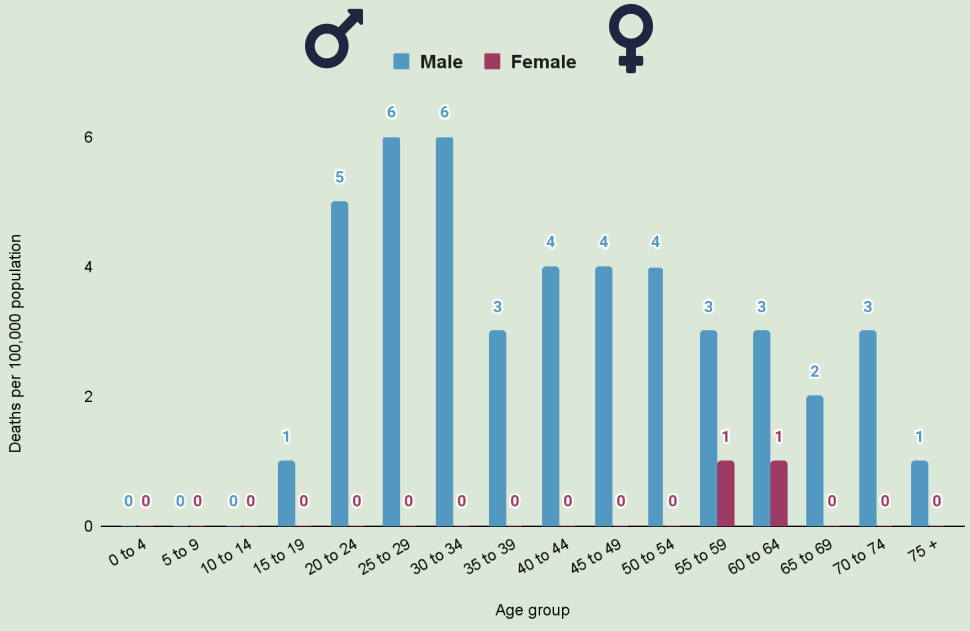


Figure 8

Age-specific deaths among motorcyclists per lakh population were also highest among 20 to 34-year-old men.

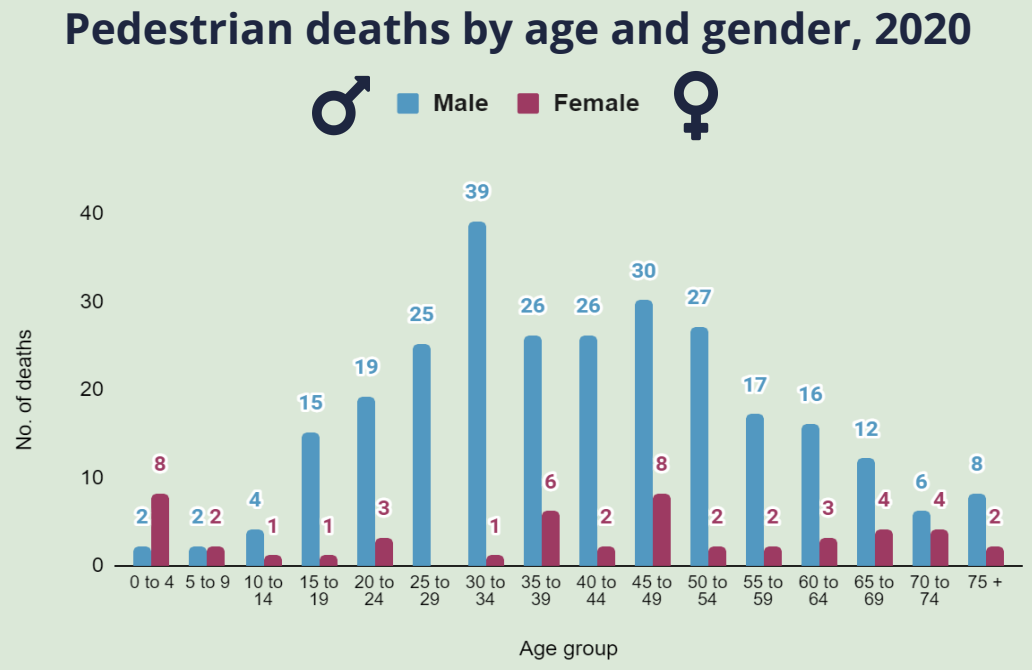


Figure 9

Pedestrian deaths were highest among men aged between 30 to 34 years.

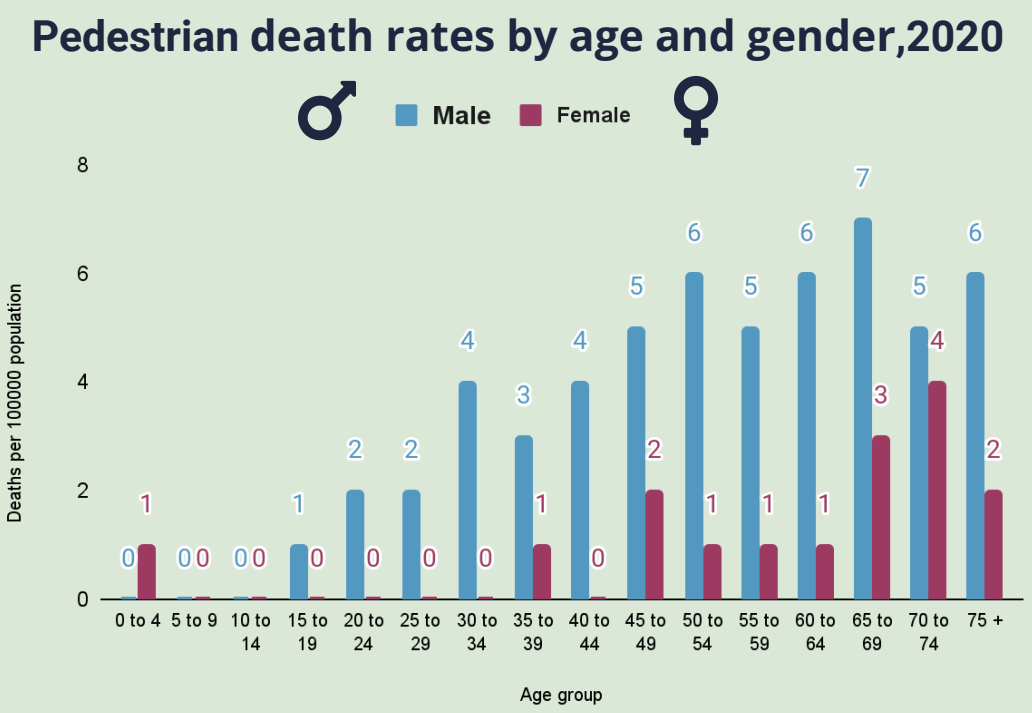


Figure 10

Pedestrian death rates increased gradually with age for both men and women. The pedestrian death rate per lakh population was highest among men aged between 65-69 years and highest among women aged 70-74 years.

ROAD CRASH DEATHS BY MONTH, TIME & DAY

Fatal crashes and deaths by month, 2020

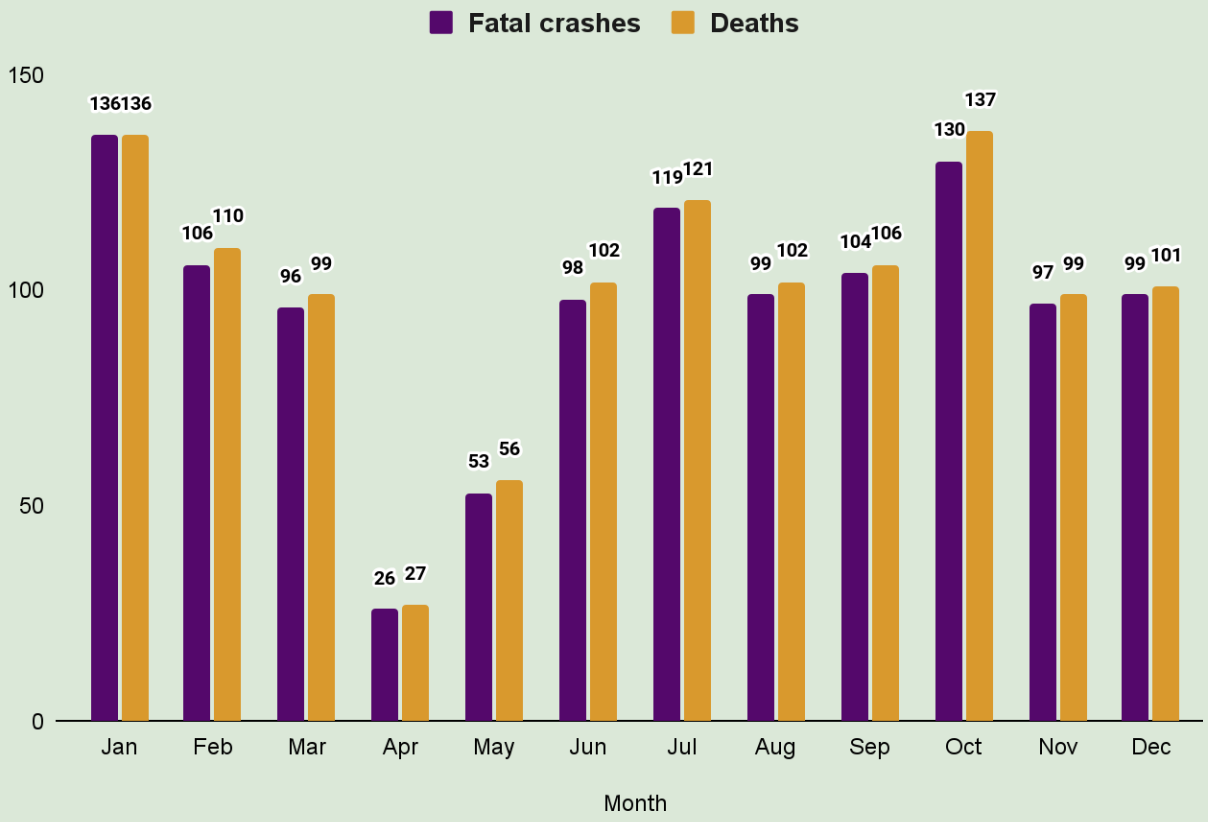


Figure 11

The number of fatal crashes as well as deaths was highest in January and October. There is a sudden decline in crashes in April and May at the time of the nationwide lockdown due to the COVID-19 pandemic.

Fatal crashes by time of day, 2020

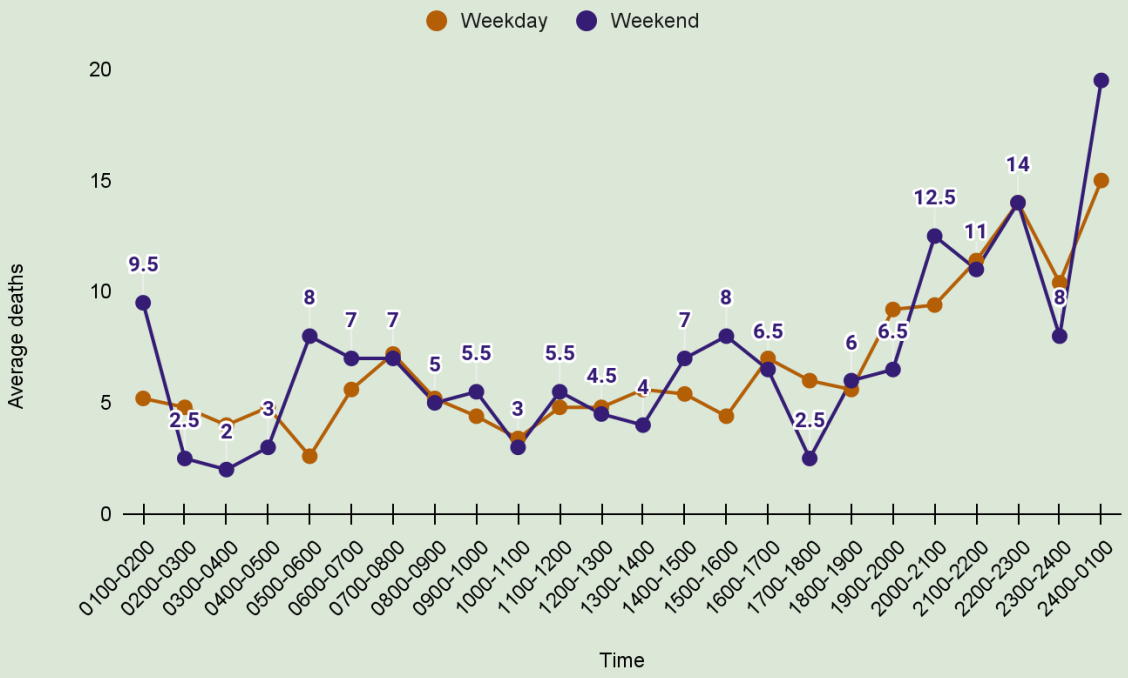
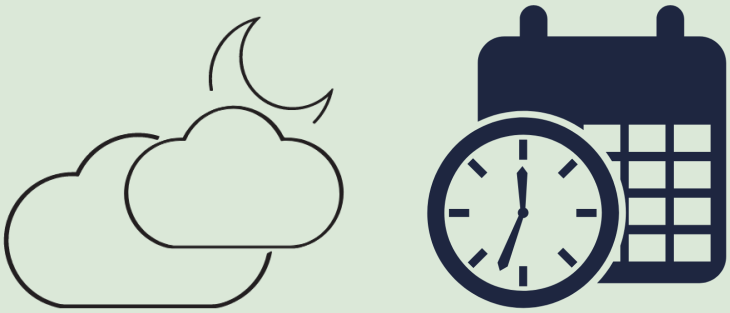


Figure 12

Fatal crashes occurred most frequently between 2000 to 0100 hrs on both weekdays and weekends, with a peak at 2400 to 0100 hrs.



Road crash deaths by day and time of week, 2020

Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Total
2400-0200	20	25	13	19	24	23	35	159
0200-0400	8	9	7	13	7	2	7	53
0400-0600	1	10	11	5	10	9	13	59
0600-0800	13	11	14	13	13	19	9	92
0800-1000	9	9	12	7	11	10	11	69
1000-1200	7	13	4	6	11	8	9	58
1200-1400	5	12	7	17	11	9	8	69
1400-1600	13	14	8	6	8	12	18	79
1600-1800	14	16	13	8	14	9	9	83
1800-2000	10	15	22	15	12	11	14	99
2000-2200	23	20	19	22	20	20	27	151
2200-2400	22	20	19	31	30	13	31	166
Total	145	174	149	162	171	145	191	1,137

Table 1

Road crash deaths were most frequent on Thursdays, Fridays, and Sundays between 2200 hours to 2400 hours and also peaked between 2400 hours-0200 hours on Sunday.

AT-FAULT VEHICLE TYPES & DRIVERS

Known at-fault vehicle types, 2020

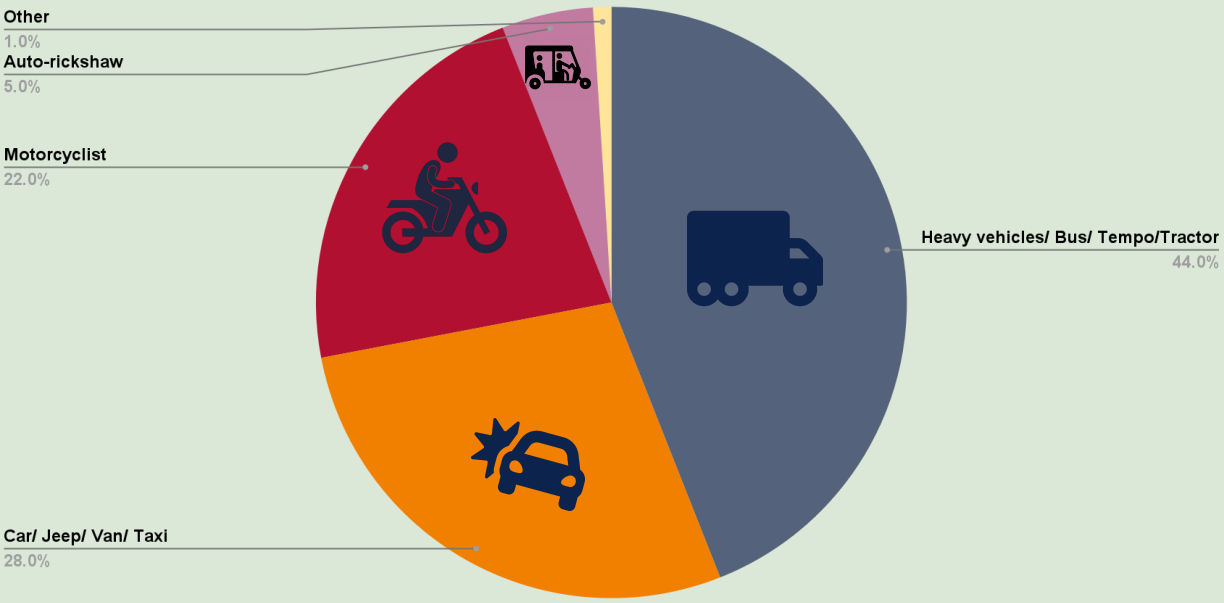


Figure 13

Heavy vehicles/Bus/Tempo and Tractors were responsible for 44 percent of the crashes where the causal vehicle was known, followed by Car/Jeep/Van/Taxi and motorcyclist. Note that the colliding vehicle was not known in the 51 percent of fatal crashes.

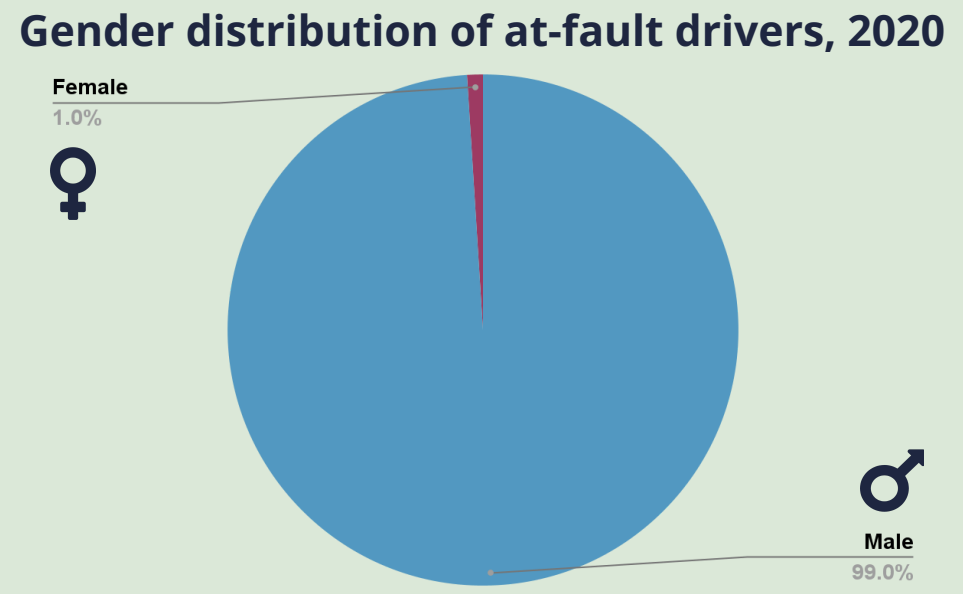


Figure 14

Males were responsible for most of the fatal crashes in Delhi. Cases with unknown gender were excluded and these cases reflect hit-and-run crashes in which gender was not recorded.

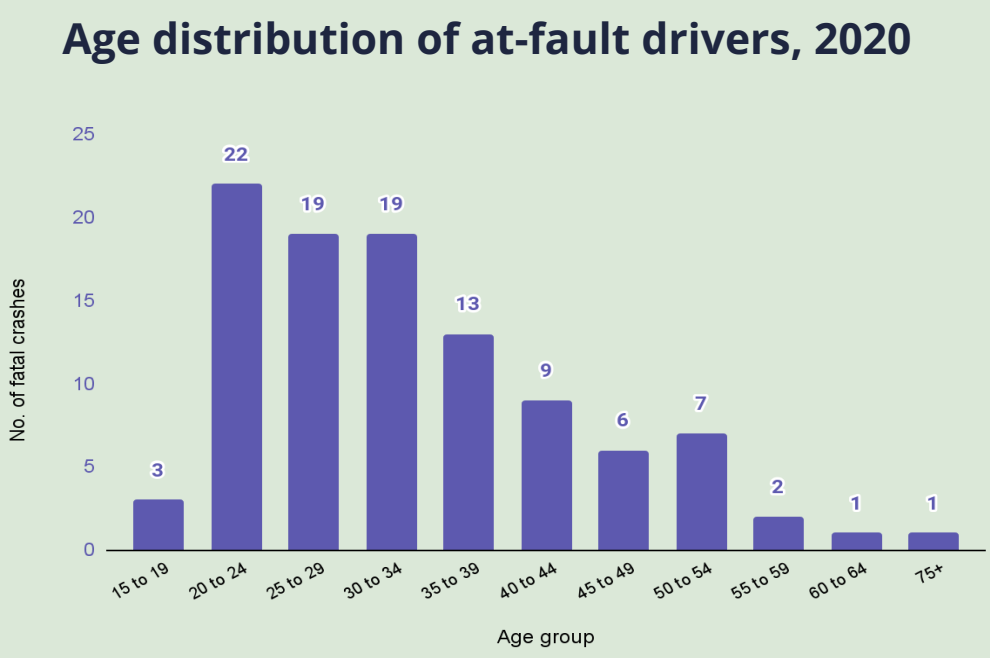


Figure 15

Among drivers whose age was documented, 20 to 34 years old were responsible for most of the fatal crashes in 2020. The age of at-fault drivers was not recorded in most of the crashes. Cases with unknown age were excluded and these cases reflect hit-and-run crashes in which age was not recorded.

At-fault vehicles and fatal crash victims by road user type

Victim road user type	At-fault vehicles							
	Car/ Jeep/ Van/ Taxi	Heavy vehicles (goods carrier)	Motor-cycles	Tempo/ Tractor	Bus	Auto Rickshaw	Single vehicle crashes	Unknown
Pedestrian	59	46	38	26	24	9	0	297
Motorcyclist and pillion riders	63	65	68	30	22	6	25	263
Auto-rickshaw	7	2	0	3	0	10	2	6
Bicycle/ Cycle rickshaw	14	5	6	7	3	4	0	20
Car/ Jeep/Van/ Taxi	27	10	0	5	1	0	1	14
Heavy vehicles/ Tempo/ Tractor/ Bus	1	11	0	0	10	0	2	1
Other	4	0	0	2	1	0	0	4
Total deaths	175	139	112	82	61	29	30	605

Table 2

Car/Jeep/Van/Taxis and Heavy vehicles (goods carriers) were responsible for most of the pedestrian and motorcyclist deaths. Whereas, most cyclists were killed by Car/Jeep/Van/Taxis and Tempo/Tractors. At-fault vehicles were unknown for 605 deaths which reflect the deaths caused due to hit-and-run crashes.

FATAL HIT-AND-RUN CRASHES, 2020

TOTAL FATAL HIT-AND-RUN CRASHES **600**

605
HIT-AND-RUN DEATHS

OF ALL THE HIT-AND-RUN DEATHS

48% WERE PEDESTRIANS

43% WERE MOTORCYCLISTS

Fatal hit-and-run crashes, 2014 to 2020

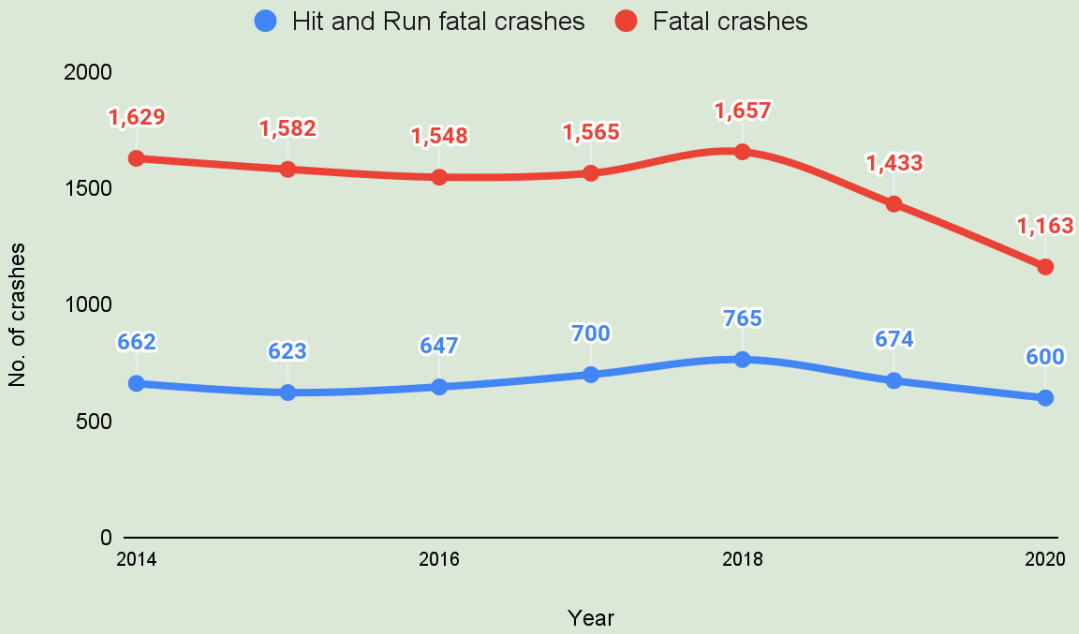


Figure 16

Hit-and-run crashes have decreased slightly from 765 in 2018 to 600 in 2020. Hit-and-run crashes continue to account for 51 percent of fatal crashes.

Pedestrians deaths: Hit-and-run crashes vs other crashes, 2020

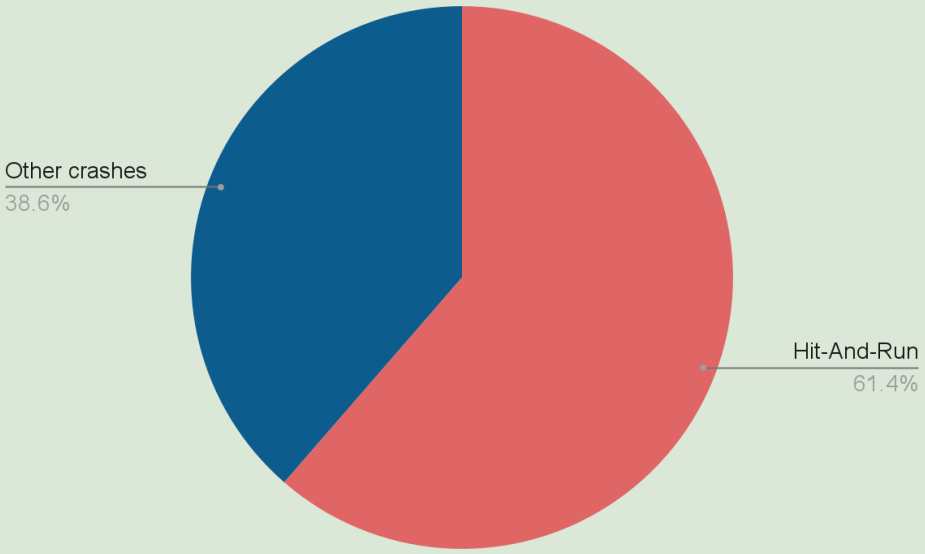
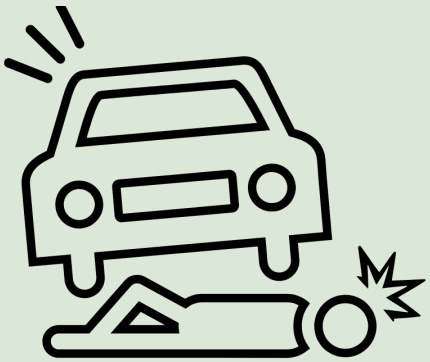


Figure 17

More than 60 percent of all pedestrian deaths occurred due to hit-and-run crashes.



Age wise distribution of fatal hit-and-run crash victims, 2020

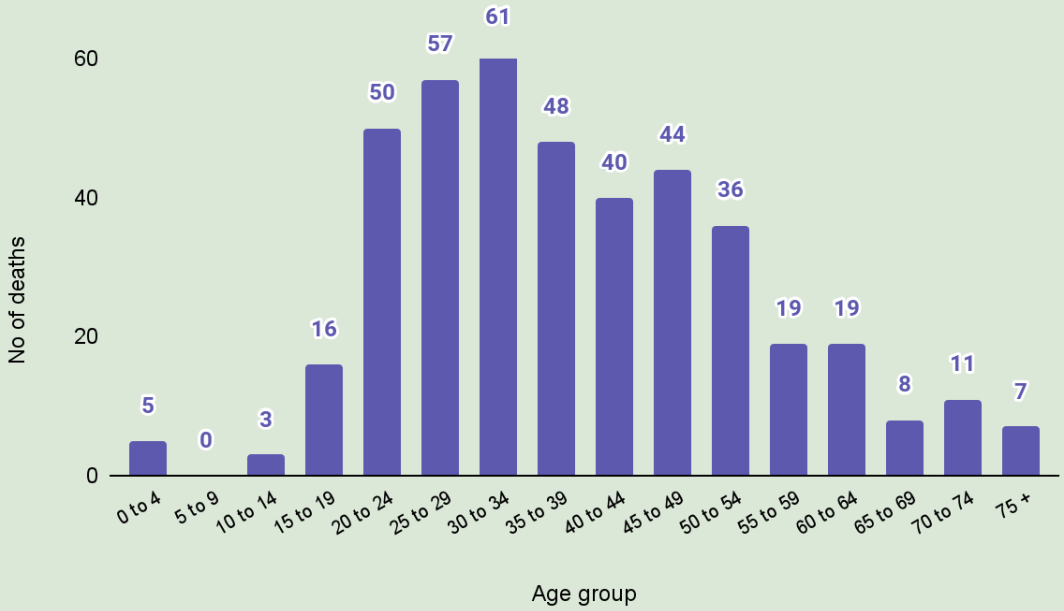


Figure 18

Most of the victims of hit-and-run crashes were in the age group of 30 to 34 years and 25 to 29 years old.

Hit-and-run crash death rates by age and gender, 2020

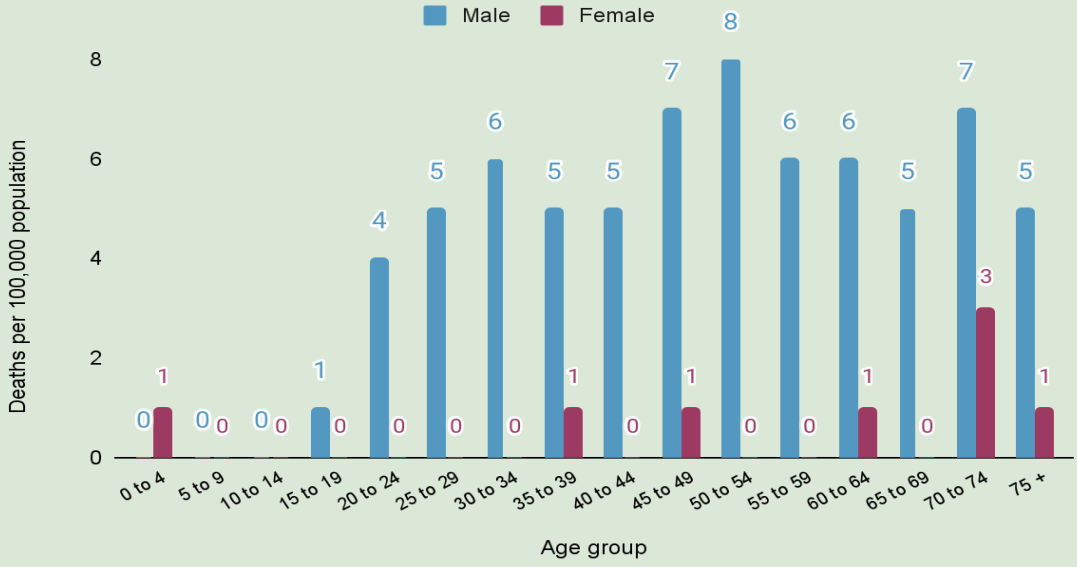


Figure 19

Age and gender-specific deaths per 100,000 population were highest among men aged between 50 to 54 years, while for women it was highest between 70 to 74 years old.

DISTRIBUTION OF FATALITIES BY LOCATION

High-risk corridors with over 10 fatalities, 2020

Sr. No.	Corridor/ Road name	Persons Killed	Deaths per km
1	GTK Road- Azadpur roundabout to Singhu (20 km)	47	2.4
2	Wazirabad Road (11.1 km)	25	2.3
3	Pusta Road (4.78 km)	10	2.1
4	NH-8- Delhi-Haryana SouthWest border to Pratap chowk, Delhi Cantonment (13 km)	27	2.1
5	201 No. Road (5.3 km)	10	1.9
6	Najafgarh Road (10.86 km)	20	1.8
7	Outer Ring Road (47 km)	82	1.7
8	Rohtak Road (18.79 km)	31	1.6
9	Mehrauli Badarpur Road (12.4 km)	19	1.5
10	NH-24- Ghazipur border to Indraprastha Park (8.6 km)	12	1.4
11	Ring Road (55 km)	75	1.4
12	Bawana Road (10.31 km)	14	1.4
13	Grand Trunk Road (10.6 km)	14	1.3
14	Dr. KB Hedgewar Road (14.51 km)	18	1.2
15	Mathura Road (15.7 km)	16	1.0
16	Kanjhawala Road (24.7 km)	11	0.4

Table 3

GTK Road and Wazirabad Road recorded the highest number of persons killed per kilometer. Outer Ring Road and Ring Road reported the highest number of persons killed in 2020.

Corridors with over 10 fatalities due to hit-and-run crashes, 2020

Sr No.	Corridor/ Road name	Persons Killed	Fatalities per km
1	NH-8- Delhi-Haryana SouthWest border to Pratap chowk, Delhi Cantonment (13 km)	19	1.5
2	GTK Road (20 Kms)	26	1.3
3	Wazirabad Road (11.1 Kms)	13	1.2
4	Mehrauli Badarpur Road (12.4 Kms)	13	1.0
5	Najafgarh Road (10.86 Kms)	11	1.0
6	Outer Ring Road (47 Kms)	45	1.0
7	Dr. KB Hedgewar Road (14.51 Kms)	13	0.9
8	Rohtak Road (18.79 Kms)	13	0.7
9	Mathura Road (15.7 Kms)	10	0.6
10	Ring Road (55 Kms)	28	0.5

Table 4

NH-8 and GTK Road recorded the most deaths per kilometer. Outer Ring Road reported the most deaths (45) due to hit-and-run crashes.

Corridors with more than one cyclist killed, 2020

Sr No.	Corridor/ Road name	Cyclists Killed	Fatalities per KM
1	Mathura Road (15.7 Kms)	3	0.2
2	Rohtak Road (18.79 Kms)	2	0.1
3	Ring Road (55 Kms)	3	0.1

Table 5

Corridors with more than 10 pedestrians killed, 2020

Sr No.	Corridor/ Road name	Pedestrians Killed	Fatalities per KM
1	GTK Road (20 Kms)	28	1.4
2	Wazirabad Road (11.1 Kms)	11	1.0
3	Rohtak Road (18.79 Kms)	10	0.5
4	Outer Ring Road (47 Kms)	25	0.5
5	Ring Road (55 Kms)	27	0.5

Table 6

GTK Road has recorded the highest number of pedestrian deaths and deaths per kilometer.

Corridors with more than 10 motorcyclists killed, 2020

Sr No.	Corridor/ Road name	Motorcyclists Killed	Fatalities per KM
1	NH-8- Delhi-Haryana SouthWest border to Pratap chowk, Delhi Cantonment (13 km)	15	1.2
2	Najafgarh Road (10.86 Kms)	11	1.0
3	Wazirabad Road (11.1 Kms)	10	0.9
4	Outer Ring Road (47 Kms)	41	0.9
5	Rohtak Road (18.79 Kms)	15	0.8
6	GTK Road (20 Kms)	15	0.8
7	Ring Road (55 Kms)	31	0.6

Table 7

NH-8 has recorded the highest number of motorcyclist deaths per kilometer and Outer Ring Road has reported the highest number of motorcyclist deaths in 2020.

High-risk areas for all road users
(Persons killed within 250 meters radius of location, 2020)

Sr No.	Junction/ Intersection/ Location	Persons Killed
1	Azadpur Chowk	8
2	Intersection of Outer Ring Road and Wazirabad Road	7
3	In front of Forensic Science Laboratory Rohini, Sector 14- Outer Ring Road	6
4	Mukarba Chowk	6
5	Nirankari Chowk	6
6	Ghazipur Roundabout	6
7	Mundka Metro Station	5
8	Azadpur Fruit and Vegetable Market- GT Karnal Road	5
9	Chirag Delhi bus-stop FOB on LBS Marg	5
10	Lokesh Cinema Bus stop at Nangloi	4
11	Roundabout near Tilak Nagar metro station	4
12	Intersection of Goswami Girdhari Lal Marg and Dev Prakash Shastri Marg- Naraina	4
13	Junction opposite GT Karnal DTC Depot	4
14	Majnu Ka Tila- Outer Ring Road	4
15	Kashmiri Gate Chowk	4
16	Delhi Gate Junction	4
17	Nehru Enclave Metro Station	4
18	Seelampur Chowk	4
19	Khajoori Chowk	4
20	Loni Gol Chakkar	4
21	Pushta Road opposite CRPF camp	4
22	Intersection of GT Road and Railway Road	4

Table 8

High-risk areas for pedestrians
(Persons killed within 250 meters radius of location, 2020)

Sr No.	Junction/ Intersection/ Location	Fatalities, 2020
1	Azadpur Fruit and Vegetable Market- GT Karnal Road	5
2	Ghazipur Roundabout	4
3	Nehru Enclave Metro Station	4
4	Kashmiri Gate	4
5	Akshardham Metro Station	3
6	Mukarba Chowk	3
7	Mundka Metro Station	3
8	Junction opposite GT Karnal DTC Depot	3
9	Delhi Gate Junction	3
10	Intersection of GT Road and Railway Road	3
11	Kanjhawala Chowk	3
12	Dabri Crossing roundabout	3
13	Intersection of Mahatma Gandhi Marg and Shyama Prasad Marg near Yamuna Bazar	3
14	Sanjay Gandhi Transport Nagar	3
15	Intersection of Rohtak Road and Najafgarh Nangloi Road	3
16	Roundabout near Tilak Nagar metro station	3
17	Nand Nagri Depot	3
18	Peera Garhi Chowk	3
19	Ayodhya Chowk- Sector 3- Rohini	3
20	Loni Gol Chakkar	3

Table 9

High-risk areas for motorcyclists
(Persons killed within 250 meters radius of location, 2020)

S. No.	Junction/ Intersection/ Location	Fatalities
1	In front of Forensic Science Laboratory Rohini, Sector 14- Outer Ring Road	6
2	Mukarba Chowk	4
3	Chirag Delhi bus-stop FOB on LBS Marg	4
4	Majnu Ka Tila- Outer Ring Road	4
5	Intersection of Outer Ring Road and Wazirabad Road	3
6	Nirankari Chowk	3
7	Baba Prakash Puri Chowk- Bijwasan	3
8	Intersection of Grand Trunk Road and Main Libaspur Road	3
9	Haiderpur Metro Station	3
10	Intersection of Raja Ram Kohil Marg and Nishad Raj Marg near Shantivan	3
11	Intersection of Jammu-Delhi Road and Manchand Dhania Road	3
12	Intersection of Mahatma Gandhi Marg and Lala Jagat Narayan Marg opposite Netaji Subhash Place Metro	3
13	Intersection of Pankha Road and Major Deepak Tyagi Marg - Tilak Pul Bus stop	3
14	Ghazipur Roundabout	3
15	Seelampur Chowk	3
16	Intersection of Raja Ram Kohli Marg and Pushta Road	3
17	Intersection of DND Flyway and Mahatma Gandhi Marg	3
18	ITO Chowk	3
19	Intersection of Aurobindo Marg and Baba Banda Singh Bahadur Setu	3
20	Roundabout in front of the Radisson Blu Plaza Delhi Airport	3

Table 10

CRASH HEAT MAPS

Heat map of fatal crashes, Delhi 2020

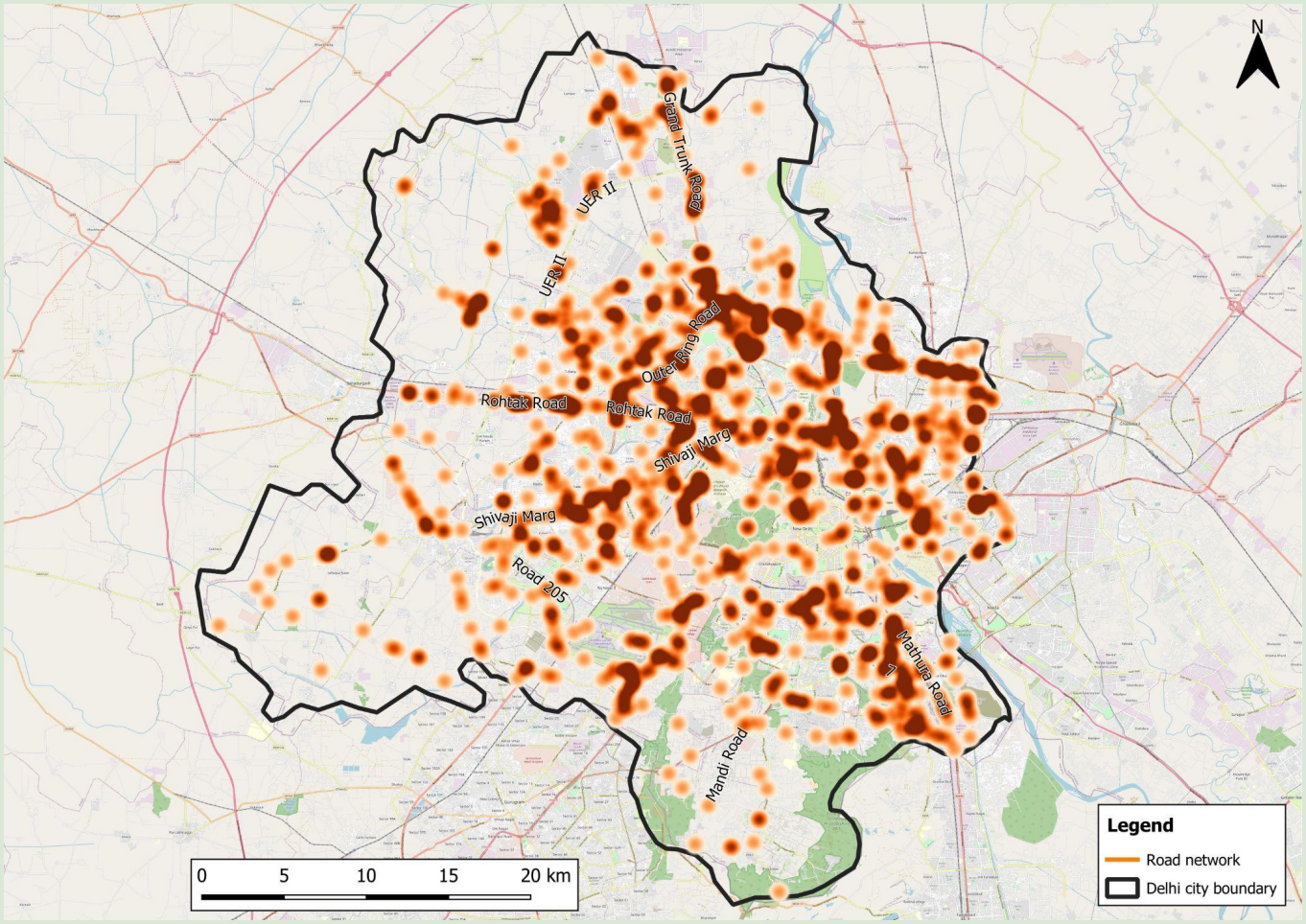


Figure 20

This heat map shows the fatal crashes and the locations where they happen. The areas in red represent areas with a high incidence of fatal crashes.

Heat map of motorcyclist fatal crashes, 2020

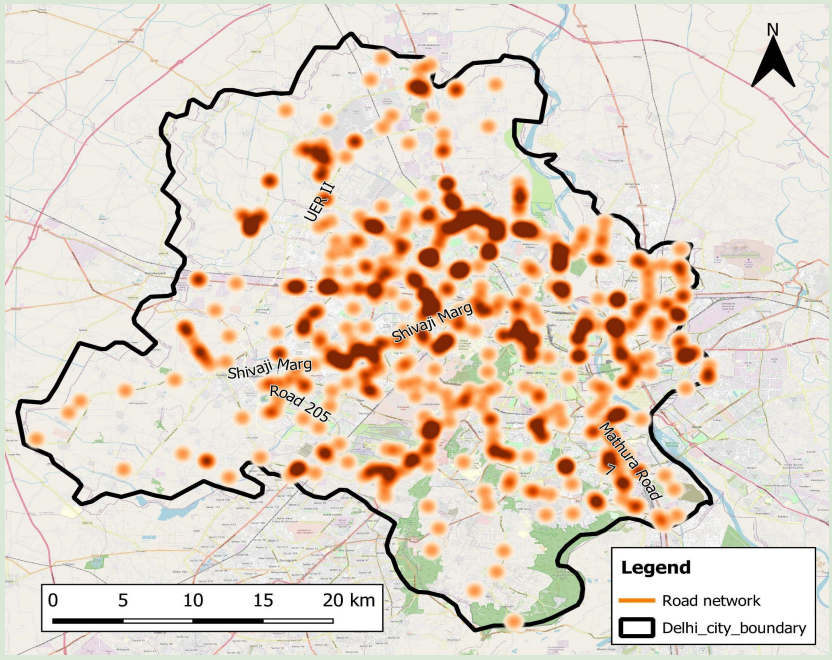


Figure 21

Heat map of pedestrian fatal crashes, 2020

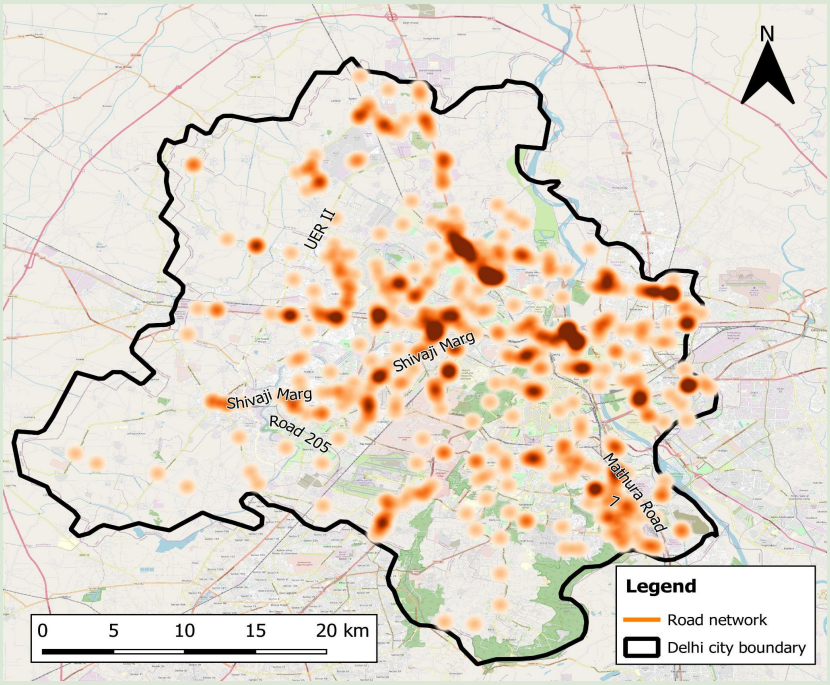


Figure 22

NOTES

TRANSPORT DEPARTMENT
Government of NCT of Delhi

दिल्ली सरकार

Road Safety Lead Agency

2020