



PEDESTRIANIZATION AND NON-MOTORIZED TRANSPORT ISSUE 2: SAFETY

Pedestrians in Nairobi. © Ben Welle, Flickr.

Over 3,000 Kenyans die on our roads every year, the majority of whom are young people between the ages of 20 and 44.¹ **In Nairobi, pedestrians account for 64.5% of all traffic fatalities, translating into an estimated 320 pedestrians dying annually.** Road accidents cost our economy in excess of \$50 million annually.² This newsletter issue on pedestrian safety is dedicated to all the precious lives that have been lost on our roads and is a call to action to make our roads safe spaces for all.

In our last issue on 'Users', we highlighted the safety concerns of pedestrians, which included road accidents, muggings, open ditches, health risks from air pollutants, and poor street lighting. Though this issue tackles each of these concerns, it emphasizes road accidents as a top threat to pedestrian safety. The content of this issue is largely informed by five-year crash data (2015-2019) from the National Transport and Safety Authority (NTSA),³ and a safety survey using questionnaires, observation and

photographs of the deadliest roads in Nairobi. The survey was conducted in December 2020 by Nairobi Metropolitan Services (NMS), in partnership with the Climate and Development Knowledge Network.

The following questions are addressed in this newsletter:

- 1. Who** are we losing on the roads?
- 2. What** causes these traffic accidents?
- 3. Where** do most of these accidents occur?
- 4. When** do most of these accidents occur?

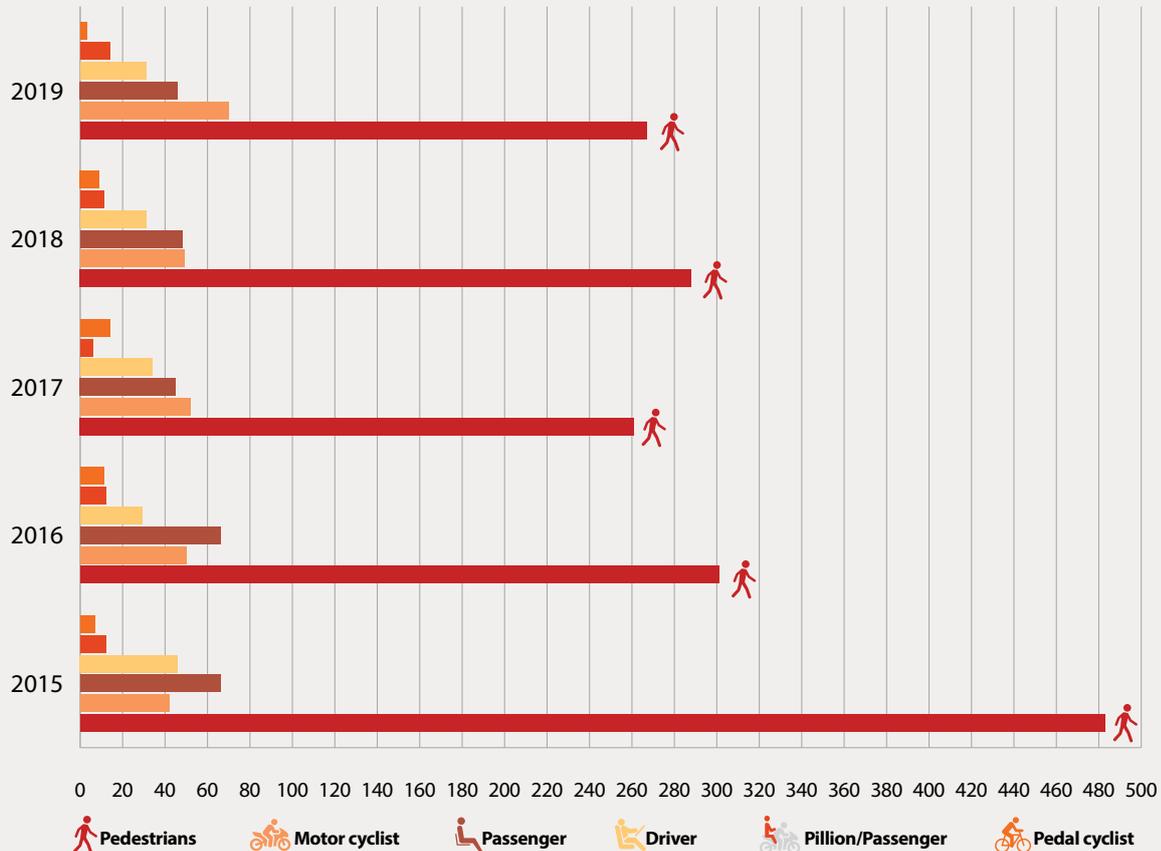
These insights can support decision-making by those authorities who have mandates related to road safety. These include: NTSA, the Kenya Police, NMS and, by extension, the Kenya Urban Roads Authority (KURA) and Kenya National Highways Authority (KeNHA).

WHO ARE WE LOSING ON THE ROADS?

The NTSA five-year crash data was disaggregated by types of road users, their gender and age.

Nairobi traffic fatalities by type of road user

Figure 1: Traffic fatalities by type of road user (2015-2019)



- The five-year crash data consistently show that, **by far, the most vulnerable road users are pedestrians**, followed by motor cyclists (the majority of whom are *bodaboda* riders), vehicle passengers, vehicle drivers, passengers on *bodabodas* (pillion) and pedal cyclists.
- **Pedestrians accounted for an average of 64.5% of traffic fatalities from 2015-2019.** This is in line with several studies⁴ and the broader literature showing that Nairobi city's design is largely not people-oriented, and **the greatest danger to a pedestrian's life is a private car.** With 2.27 million pedestrian trips made daily in the city, and the high risk of

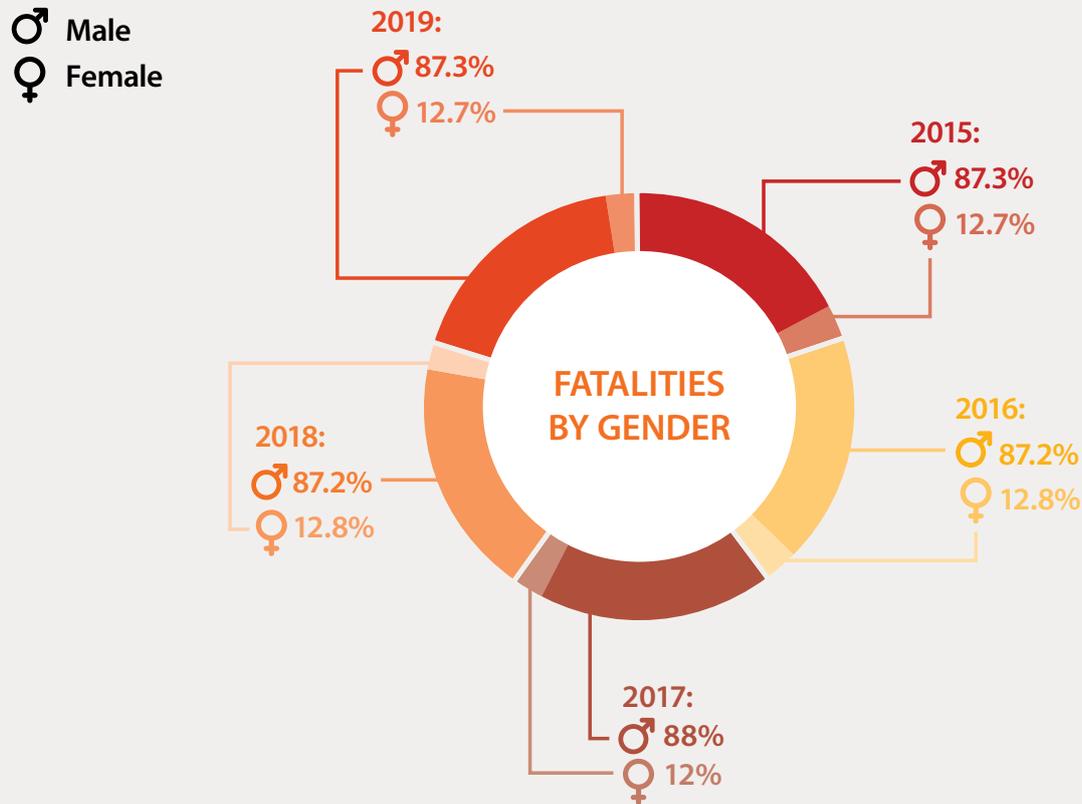
pedestrian traffic fatalities, there ought to be a shift towards a more people-oriented approach in land-use planning and mobility infrastructure. In addition, measures to address careless driving that endangers pedestrians need to be taken. These factors will be discussed below under 'What causes these traffic accidents?'

Plans by NMS to roll out well-designed and connected NMT networks across the city are one of the measures that promise to move us towards a city designed for people, and not one built primarily for cars.

Nairobi traffic fatalities by gender

The NTSA crash data was disaggregated by gender, noting that in some instances the gender of the deceased was unspecified at the time of reporting.

Figure 2: Traffic fatalities by gender (2015-2019)



Observations and recommendations

- **Males account for an average of 88.3% of all traffic fatalities** compared to 11.8% for females. This is a stark difference, which calls for further inquiry, as the reasons are not completely clear. In our previous issue on 'Users', it was highlighted that **significantly more men are pedestrians**. In fact, the **data collected on the busiest corridors showed an average of 50% more men compared to women, at all times**, on all 12 corridors surveyed.
- Giving more attention to gender considerations has often been focused on the plight of women. However, **road crash data challenges us to consider gender concerns equally from a male perspective**. Do road safety campaigns or street design guidelines adequately recognize men's vulnerability? **How often are men categorized as vulnerable road users?** We repeatedly focus on children, persons with disabilities, women and the elderly, yet we are losing more men, in particular young men, on the roads. It may mean viewing **every road user as potentially vulnerable, as we develop street designs and safety campaigns**.

Nairobi traffic fatalities by age

Figure 3: Age brackets recording the highest number of traffic fatalities (2015-2019)

	0-4 YEARS	5-9 YEARS	10-14 YEARS	15-19 YEARS	20-24 YEARS	25-29 YEARS	30-34 YEARS	35-39 YEARS	40-44 YEARS	45-49 YEARS	50-54 YEARS	55+ YEARS
2015	13	12	13	21	57	93	100	79	58	19	21	31
2016	4	7	5	8	21	54	43	30	23	7	5	18
2017	6	12	4	2	18	31	31	29	17	13	4	15
2018	2	6	7	9	33	38	39	39	19	9	12	21
2019	9	11	10	7	38	59	57	47	35	56	27	75

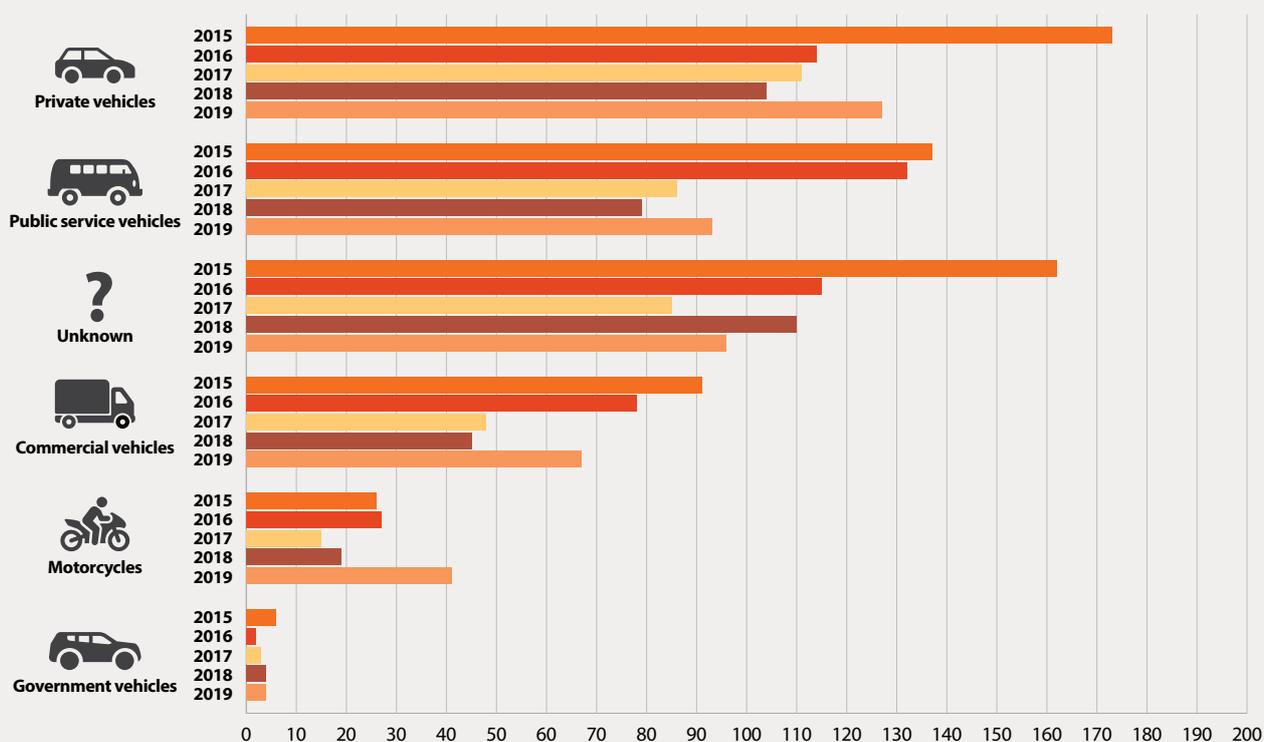
Observations

- On average, **46.4% of traffic fatalities were people aged between 20 and 44 years**. This confirms that Nairobi is losing a very youthful population to traffic crashes, in particular young men.
- We can assume many of these fatalities are pedestrians, if pedestrians make up 64.5% of fatalities and 86.8% of pedestrians fall under the age of 18-44.

WHAT CAUSES THESE TRAFFIC ACCIDENTS?

Since pedestrians make up 64.5% of traffic deaths, understanding which vehicles cause traffic accidents can help us understand what makes pedestrians vulnerable.

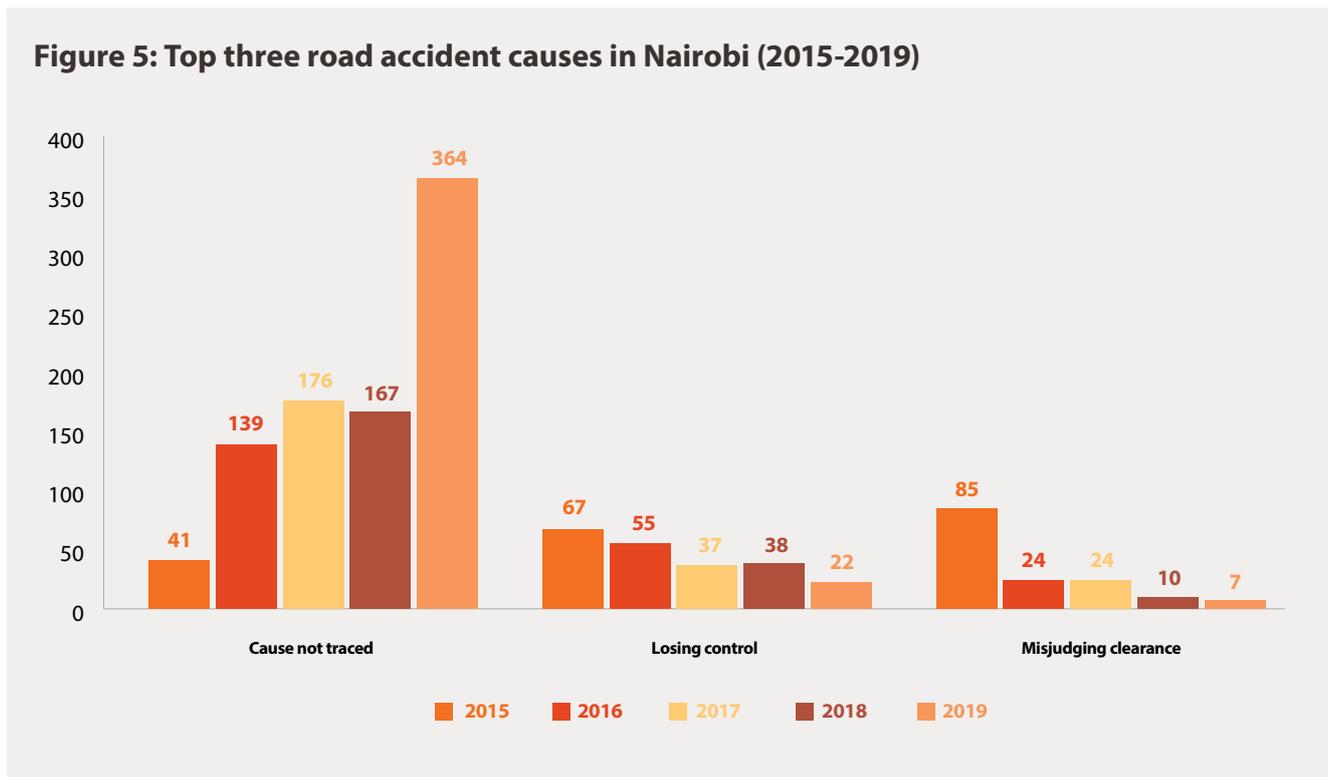
Figure 4: Types of vehicle causing road accidents in Nairobi (2015-2019)



Observations

- Private vehicles were the leading cause of accidents in 2015, 2017 and 2019.
- Public Service Vehicles (PSV) appear in the top three types of vehicles causing accidents.
- Unfortunately, there is a significant data gap. 'Unknown vehicle' appears in the top three causes of accidents. The Kenya Police provide NTSA with daily crash data, which is then categorized. One of the major reasons for 'unknown vehicle' being recorded is hit-and-runs. In this case, the drivers fled the scene of the crime before the police arrived.

WHAT FACTORS CONTRIBUTE TO THESE ROAD ACCIDENTS?



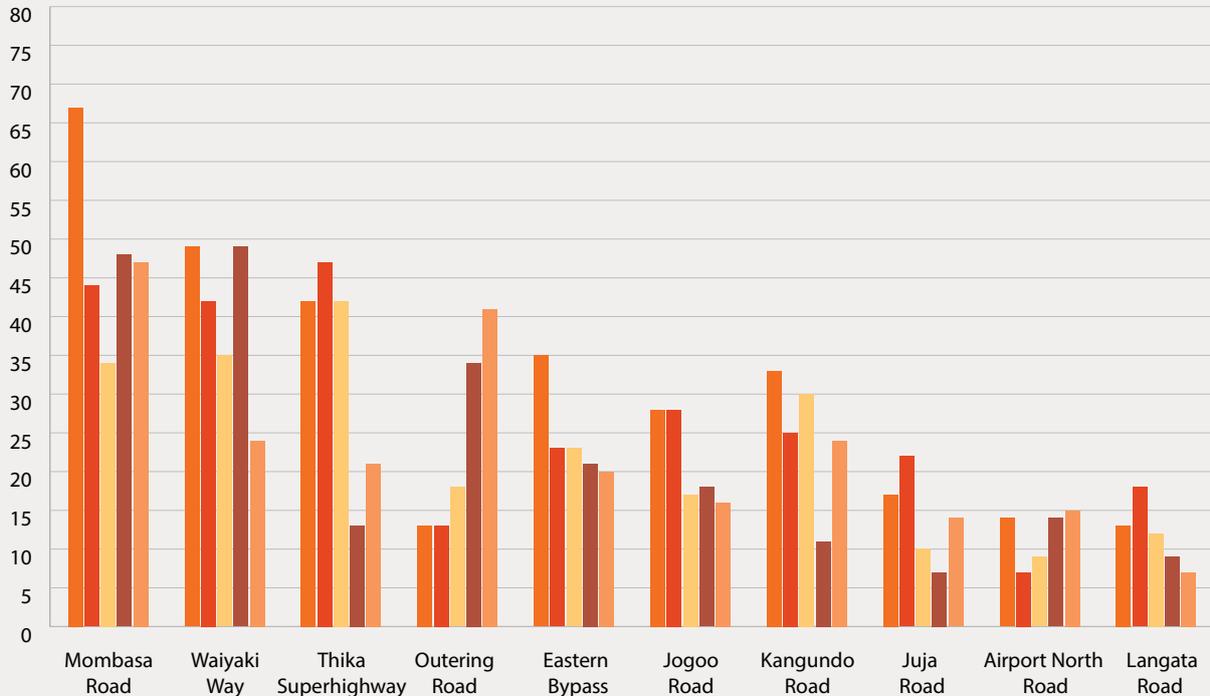
Observations

- Unfortunately, **the causes of 44.6% of crashes that occurred from 2015-2019 have gone untraced.** This statistic demands we ask the question: what factors contribute to poor tracing of the accident causes and how can they be addressed? This also correlates with the fact that 'unknown vehicle' ranks in the top three of the type of vehicle causing accidents, and hit-and-runs are a major factor.
 - Losing control** appears consistently as a **top three crash cause** in all five years, while **misjudging clearance, distance or speed of vehicles and objects** followed by **recklessness** both **appear twice in the top three** for the five years recorded.
- We want to find out more about these untraced causes, as well as the factors contributing towards losing control, misjudging clearance, and recklessness. To effectively address these questions, the subsequent section examines more information about the accidents: where accidents are happening, on which days and at what times.

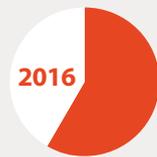
WHERE DO MOST OF THESE ACCIDENTS OCCUR?

Having knowledge of where the majority of these accidents occur sheds light on which areas deserve priority for intervention. There are 10 roads identified below, which are in need of urgent attention.

Figure 6: Nairobi's top 10 deadliest corridors (2015-2019)



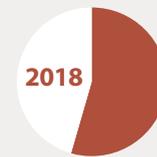
52.8%
of all fatalities
occurred on
these corridors



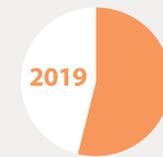
58.6%
of all fatalities
occurred on
these corridors



57.5%
of all fatalities
occurred on
these corridors



54.7%
of all fatalities
occurred on
these corridors



54%
of all fatalities
occurred on
these corridors

Observations

- **Mombasa Road** appears **every time in the top three deadliest roads** during the five-year period. **Waiyaki Way** appears **four times** in the top three, while **Thika Superhighway** appears **three times**, and **Outering Road** appears **twice** in the top three, during the five years.
- **Eastern Bypass**, **Jogoo Road** and **Kangundo Road** all appear **five times in the top 10 deadliest roads**, while **Juja Road** appears **four times**, **Airport North** appears **three times**, and **Langata Road** appears **twice in the top 10**.
- These **deadliest corridors account for 55.5% of all traffic fatalities** in Nairobi.

According to the Kenya Police Annual Crime Report (2018),⁵ the major causes of road accidents include speeding, overloading, drunk driving, fatigue, incorrect use of the road by pedestrians, poor road infrastructure and non-observance of traffic laws. The safety survey sought to find out what makes these roads so dangerous, while considering contributing factors from motorists, pedestrians and infrastructure.

The survey was conducted along **Mombasa Road** (City Cabanas), **Waiyaki Way** (James Gichuru, Kangemi Flyover and Uthiru), **Airport North Road**, **Thika Superhighway** (Shell Petrol Station), **Eastern Bypass** (Kamakis, Kihunguro and Corner), **Kangundo Road**, **Outering Road**, **Jogoo Road** and **Landhies Road**.

Table 1: Causes of road accidents on Nairobi's deadliest corridors

Note: Where ✓ is indicated, the practice was observed. Non-observance of the practice during the safety audit does not imply the practice may not exist.

Area	Motorists				Pedestrians			Infrastructure			
	Speeding	Careless driving	Encroaching on NMT spaces	Pick up and drop offs at non-designated zones (esp. PSVs)	Careless crossing	Crossing at non-designated zones which are dangerous	Lack or inadequate pedestrian paths	Lack of adequate pedestrian crossings	Footbridges being underutilized by pedestrians	Poor lighting especially at night	Lack of clear road signs
Mombasa Rd (Cabanas)	✓	✓			✓	✓	✓	✓	✓		
Waiyaki Way (Kangemi)	✓	✓	✓	✓	✓		✓	✓		✓	
Waiyaki Way (Uthiru)	✓	✓	✓		✓		✓	✓			
Waiyaki Way (James Gichuru)	✓	✓		✓			✓	✓			✓
Eastern Bypass	✓	✓	✓				✓	✓		✓	✓
Airport North Rd	✓	✓		✓	✓	✓	✓	✓	✓	✓	
Landhies Rd	✓	✓			✓		✓	✓		✓	
Outering Rd	✓	✓			✓		✓			✓	
Jogoo Rd	✓	✓			✓	✓	✓	✓			
Thika Superhighway (Shell station)	✓	✓	✓	✓	✓		✓				
Kangundo Rd	✓	✓		✓	✓		✓	✓			

Survey findings and recommendations

- **All surveyed roads** recorded **careless driving by motorists**, and **careless pedestrian crossing** was recorded on most roads. This calls for increased road safety education among all road users, which should be instilled via school curriculums from primary school up to university level.

It is commendable to see that road safety campaigns by Kenya Police and NTSA are conducted using the media, especially on proper use of the roads by pedestrians since they are the most affected by these accidents. It is also important to ensure that drivers get harsh penalties, such as license suspension, to deter careless driving.

In addition, regulations seeking to curb careless driver behavior such as banning drunken driving, random breath testing, enforcing seat belt-wearing and forbidding the use of hand-held mobile phones are all useful. However, the World Health Organization (WHO) rates the enforcement of these laws in Kenya as relatively low.⁶ For example, drunken driving enforcement levels are at 50% and seat belt-wearing at 40%. This implies that Kenya Police and NTSA have a lot of room for improvement in the enforcement of these regulations.

- **Speeding** was noted on most roads. WHO rates Kenya's enforcement of speed limit levels at 40%.⁷ This shows the need for better enforcement of speed limits – maximum 50 kilometers per hour (km/h) on urban roads – by Kenya Police in collaboration with NTSA. Some of the measures undertaken – such as speed-guns and permanent camera

traps, and tamper-proof speed governors for all PSVs – are useful. Digital fines issued for speed trap cameras can also support a more efficient and transparent process of enforcing traffic rules.

- **Lack of adequate pedestrian infrastructure** was recorded on most roads. This naturally results in congestion when all road users struggle for limited space, which increases the risks of traffic accidents. It is hoped that the NMT infrastructure developed by NMS will follow recommended design guidelines that secure safety and, most importantly, will provide a network that can seamlessly connect people to the services they need. As development happens in phases, NMS should prioritize corridors with the highest volume of users and those with the highest fatalities.
- **Lack of pedestrian crossings** was recorded on most roads. Pedestrian crossings are necessary, especially on busy roads, not only to secure pedestrian safety, but also to alert motorists to slow down. Tabletop crossings (raised pedestrian crossings) have been installed along Ngong Road, near Coptic and Kenyatta hospitals, and ought to be considered for most urban roads, as they increase the visibility of pedestrian crossings.
- **Poor lighting**, especially at night, is a big challenge on Kangemi Kawangware, Eastern Bypass, Airport North Road, Landhies Road and Outering Road. This correlates with the fact that most accidents occur between 7:00pm-9:00pm, as will be illustrated in the next section. **Muggings** were



Pedestrian crossing along Thika Road. © CDKN

mentioned by pedestrians as a major concern for both male and female pedestrians, especially at night, since many streets are poorly lit. NMS launched a street lighting initiative, which should maintain momentum until every street in Nairobi is well-lit.

NMS is in charge of street lighting in Nairobi and should continue with the street lighting initiatives launched in 2020 to prioritize these dangerous corridors claiming more lives. Commendably, Kangundo, James Gichuru, Uthiru and Thika Superhighway all have good lighting.

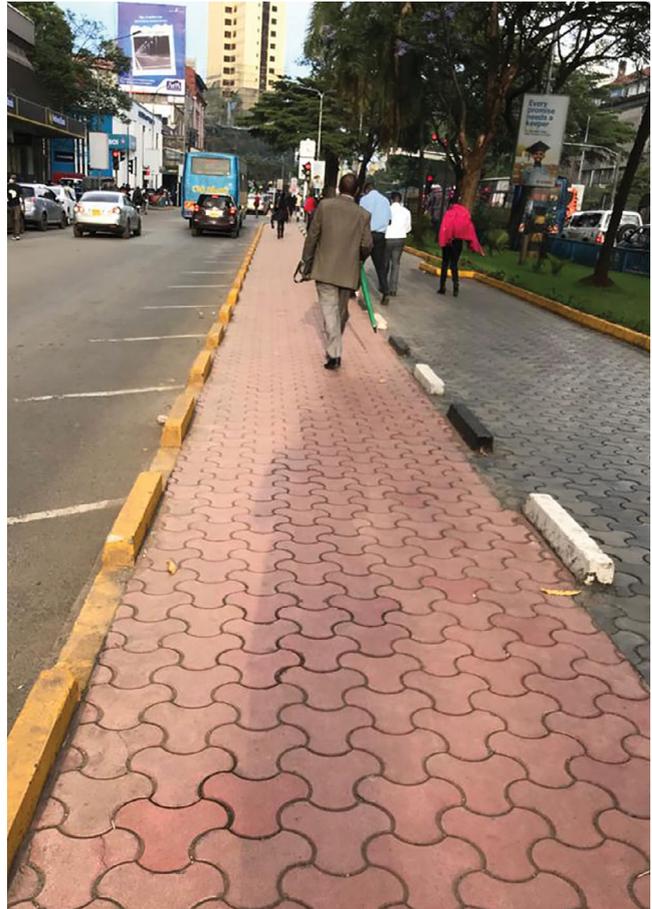
- **Picking up and dropping off passengers at non-designated zones is rampant** in Kangemi Kawangware, James Gichuru Road, Airport North Road, Kangundo Road, and Thika Superhighway. Designated pick up and drop-offs points should be designed in a manner that does not interfere with the movement of traffic. Traffic police should be deployed in these areas to enforce traffic rules.
- In the case of City Cabanas on Mombasa Road and Airport North Road, the **footbridges erected to increase pedestrian safety are underutilized**. Most pedestrians interviewed stated that the footbridges make for longer journeys, and they would rather cross the road at very risky spots to save time. Globally, there are different views on pedestrian footbridges. Some claim that they make cities less walkable and reinforce that pedestrians do not belong on the street. On the other hand, some claim that they can significantly reduce traffic fatalities and best utilize limited space.

All the same, pedestrians want safe and convenient options, and, in some instances, safety is sacrificed for convenience. Agencies with mandates relating to transport planning and infrastructure, such as KURA, KenHA, NMS, Nairobi Metropolitan Transport Authority and Kenya Roads Board, should bear in mind the competing interests and strike a balance.

- In some of the instances where **a lack of road signs was noted, vandalism was mentioned as a challenge**. For example, in the case of James Gichuru, respondents shared

that road signs once erected are stolen and sold as scrap metal. NTSA, KURA, NMS could consider using alternative materials for road signs, such as recycled plastics, which are hardy but do not attract vandals.

- **Open ditches** are a safety concern that was observed on almost all 12 of the busiest pedestrian corridors. Pedestrians can easily have an accident when infrastructure is not properly maintained by authorities. For Nairobi, the road is either managed by NMS if it is a County Road, KURA if it is an Urban Road, and KenHA if it is a highway.



NMT infrastructure from reclaimed parking space on Kenyatta Avenue. © NMS

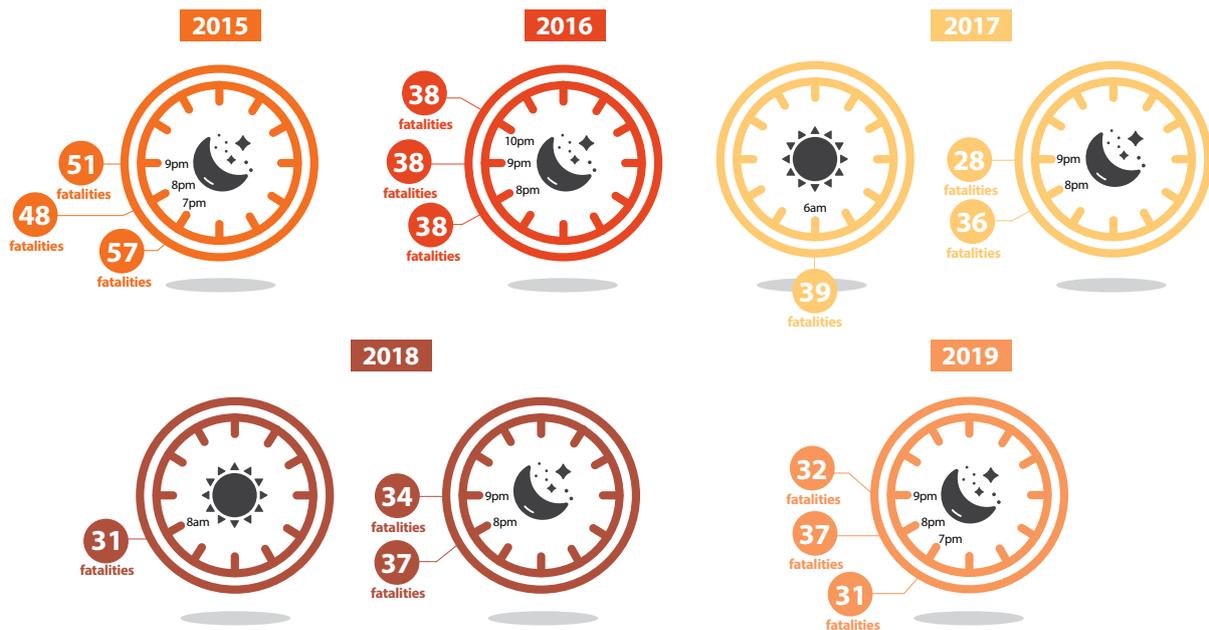
WHEN DO MOST OF THESE ACCIDENTS OCCUR?

A look at which days of the week record the highest number of accidents, as well as the time of these accidents, also gives us further insights. This information can guide the relevant agencies as to which days and times need increased deployment of resources, such as police check points to discourage careless driving and responsible pedestrian crossing, as well as more random alcohol blow tests to check for drunken driving.

Figure 7: Days of road accident occurrence in Nairobi (2015-2019)

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
2015	83	83	84	68	103	120	115
2016	70	48	51	53	64	96	87
2017	36	40	53	52	76	75	80
2018	51	52	54	46	68	75	92

Top three deadliest times of road accident occurrence in Nairobi (2015-2019)



Observations

- **Most fatalities occur on Friday, Saturday and Sunday making these the most dangerous days of the week to be on the road.** Kenya Police Crime Report confirms fatigue and drunk driving are some of the leading causes of accidents. This may explain why the majority of accidents occur after a long week and perhaps at a time when road users have indulged in alcohol.
- On average, **most accidents occur at night compared to daytime, with 7:00pm-9:00pm being the most dangerous time on Nairobi roads.** This suggests that there

may be more need for police stops, speed cameras and breathalyser testing used by NTSA at this time, especially from Friday to Sunday.

- The fact that 7:00pm-9:00pm is the most dangerous time also correlates with the survey findings that **poor street lighting, especially at night, is a contributing factor to accidents.** This may further relate to the fact that **miscalculating speeds and distances of vehicles and objects is a top three cause of accidents in Nairobi.**

DID YOU KNOW?



Vision Zero is a strategy to eliminate all traffic fatalities and severe injuries, while increasing safe, healthy and equitable mobility for all.⁸ First implemented in Sweden in the 1990s, Vision Zero has proved successful across Europe, and is gaining momentum in major American cities.

Kenya is losing too many lives on the roads. Is it time to implement #KenyaVisionZero? The difference between Vision Zero and the status quo approach is:

Traditional approach:

- Traffic deaths are **inevitable**
- **Perfect** human behaviour
- Prevent **collisions**
- **Individual** responsibility
- Saving lives is **expensive**

VS

Vision Zero:

- Traffic deaths are **preventable**
- Integrate **human failing** in approach
- Prevent **fatal and severe crashes**
- **Systems** approach
- Saving lives is **not expensive**



We have compiled information on the most vulnerable road users, the causes for these accidents, and where and when the majority of these accidents occur. The recommendations made to authorities concerning increased road safety education, improved pedestrian infrastructure, harsher penalties for speeding and careless driving as well as better street lighting, will go a long way in realizing a #KenyaVisionZero. Together, let's save lives!

MEET YOUR CITY CHAMPIONS



Asumpta Lagat

Road Safety Officer, National Transport and Safety Authority.

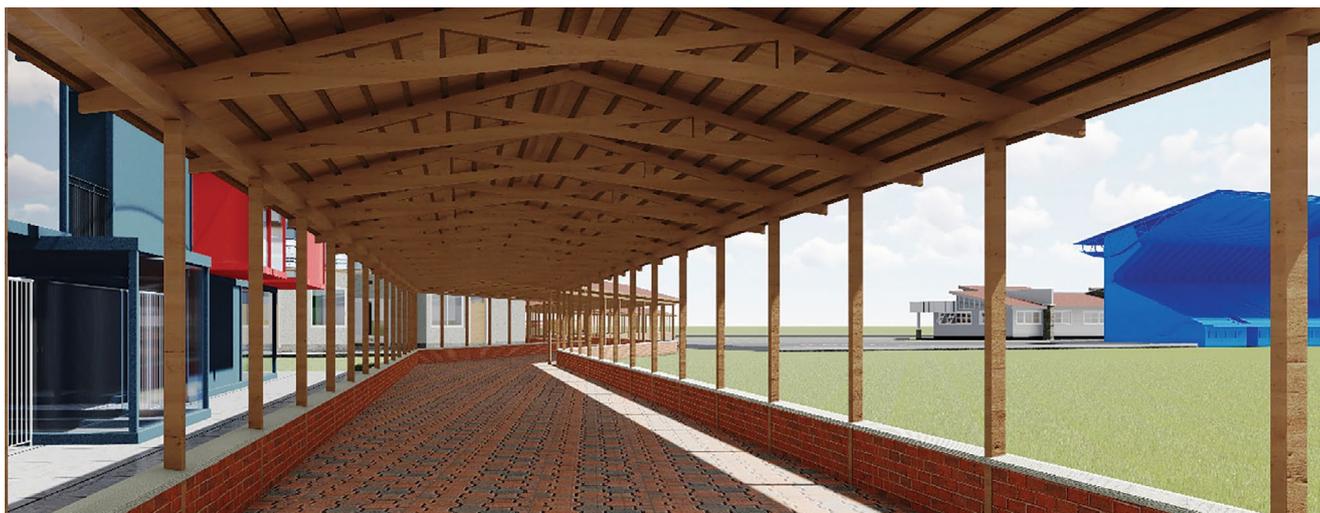
Vision: "To achieve safe, efficient, and reliable NMT in Nairobi City through multisectoral collaboration and partnership."



Samson Kigen

Transport Engineer, Nairobi Metropolitan Services.

Vision: "An efficient, integrated transport system that is socially fair and makes a positive impact on the environment."



Design impression of NMT infrastructure along upcoming Green Park Terminus. © NMS

ENDNOTES

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3. National Transport and Safety Authority - NTSA (2020). Internal documentation.
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ABOUT CDKN

CDKN works to enhance the quality of life for the poorest and most vulnerable to climate change. We support decision-makers in designing and delivering climate compatible development.

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