



CYCLING AND NON-MOTORIZED TRANSPORT

Critical Mass Nairobi during a pro-cycling campaign. © Critical Mass Nairobi

An estimated **55,000 daily trips in Nairobi are made by cycling**, accounting for 1.1% of the share of journeys made by different modes of transport. This statistic shows that **there is significant opportunity to raise the profile of cycling as a convenient and healthy means of mobility, for all ages**. As an active means of transport, cycling is relatively fast for short and medium journeys, does not contribute to pollution, and has the added health benefits of physical activity.

Having concluded a three-part newsletter series on pedestrianization, this issue focuses on cycling. As such, the newsletters offer readers a complete perspective of the two major non-motorized transport (NMT) user groups: pedestrians and cyclists. With similar objectives to the pedestrianization series, this cycling issue will examine the demography of cyclists, to better understand this group of road users, as well as highlighting the safety and infrastructure challenges they face.

Data was collected from interviews with 703 randomly distributed cyclists along Nairobi's major NMT corridors. Survey respondents were profiled by age, income, education and gender and were asked about their trip's purpose, the ease of cycling, and safety concerns they face. Observation and photographs were also used as data collection methods.

These interviews were collected in two NMT surveys. The first was commissioned by the Ministry of Lands, Housing and Urban Development (now, Ministry of Lands and Physical Planning) and the Nairobi City County Government in 2016. It was conducted by Sai Consulting International Ltd and CAS Consulting Engineers. This was then updated by Nairobi Metropolitan Services (NMS) in partnership with the Climate and Development Knowledge Network (CDKN) in December 2020, to gain a deeper and more current understanding of NMT user needs. Additionally, this newsletter is informed by five-year crash data (2015-2019) from the National Transport and Safety Authority (NTSA).

The selection of the key corridors was based on a number of factors, which include:

-  1. Urban centers with high-volume commercial activity
-  2. Public transport stations (bus terminus and railway stations)
-  3. Neighborhood markets
-  4. Low-income settlements and access routes that impact the mobility of the vast population to and from densely populated areas
-  5. Primary schools, secondary schools, colleges and universities
-  6. Public service facilities (hospitals, markets, public offices, city hall)
-  7. Recreational hubs (like parks and green corridors)
-  8. Completing missing links to provide connectivity between different road corridors for continuous flow

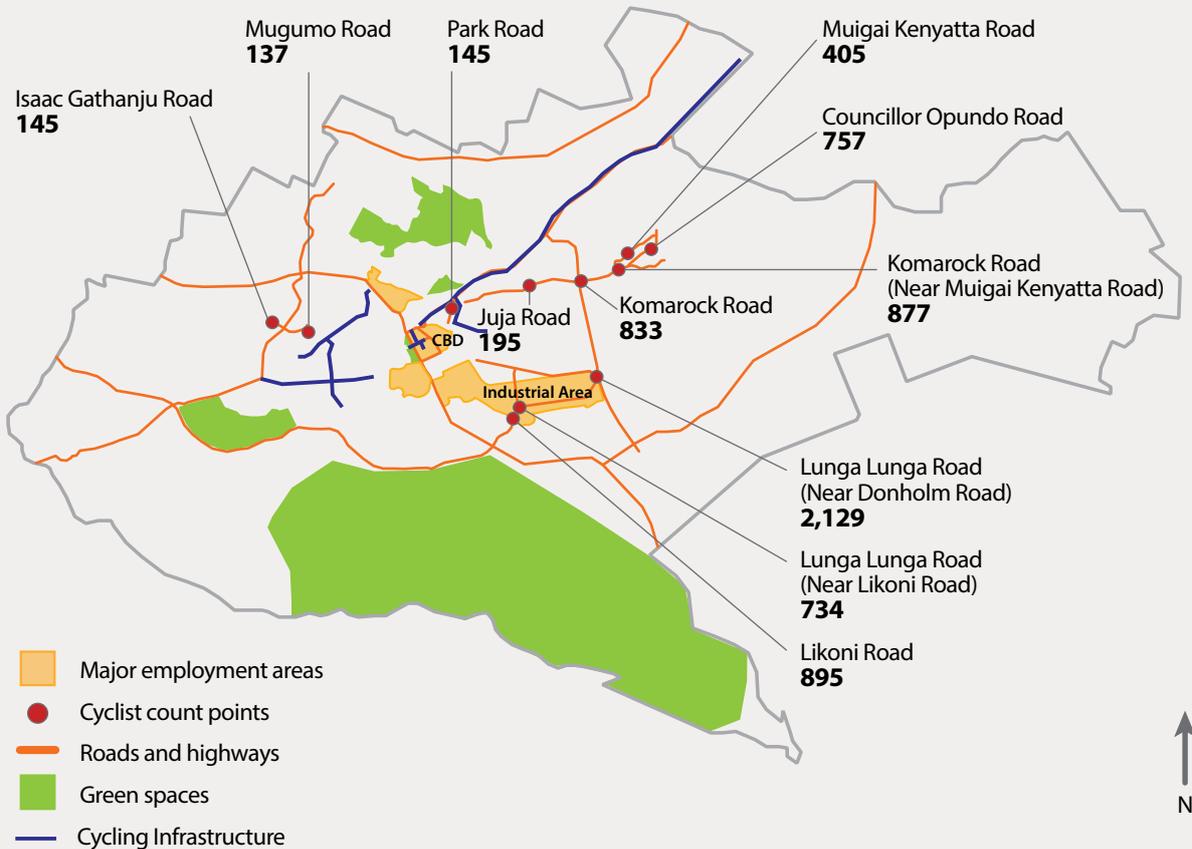


A beneficiary of the Bicycles for Educational Empowerment Program. © World Bicycle Relief

AN OVERVIEW OF NAIROBI'S MAJOR CYCLING CORRIDORS

Let's first get an overview of where most of the cycling happens in Nairobi.

Figure 1: Nairobi's major NMT corridors showing number of cyclists per day



Survey findings

Careful consideration of the **location of cycling infrastructure is important to assess whether mobility needs of the masses are met.** Similar to the pedestrian findings, a majority of cycling corridors are located in the east of the city, with close proximity to the Industrial Area – a major employment zone in Nairobi. Komarock (near Muigai Kenyatta Road), Lungalunga Road (near Donholm Roundabout), and Likoni Road recorded the most cyclists. Komarock Road and Muigai Kenyatta Road are also in close proximity to dense working-class neighborhoods like Dandora and Kariobangi, where NMT is a popular mode of mobility.

Despite this need, recent projects have seen cycling infrastructure developed within up-market neighborhoods, such as Kilimani and Kileleshwa, leaving **road expansion programs in the working-class neighborhood of Eastlands (for example, Outering Road) with a high volume of cyclists lacking safe cycling infrastructure.** It is important to ensure that transport infrastructure is inclusive and serves the needs of the masses. NMS should ensure that well-designed cycling networks linking

dense neighborhoods and major employment areas, such as the Industrial Area, are factored into NMT development plans.

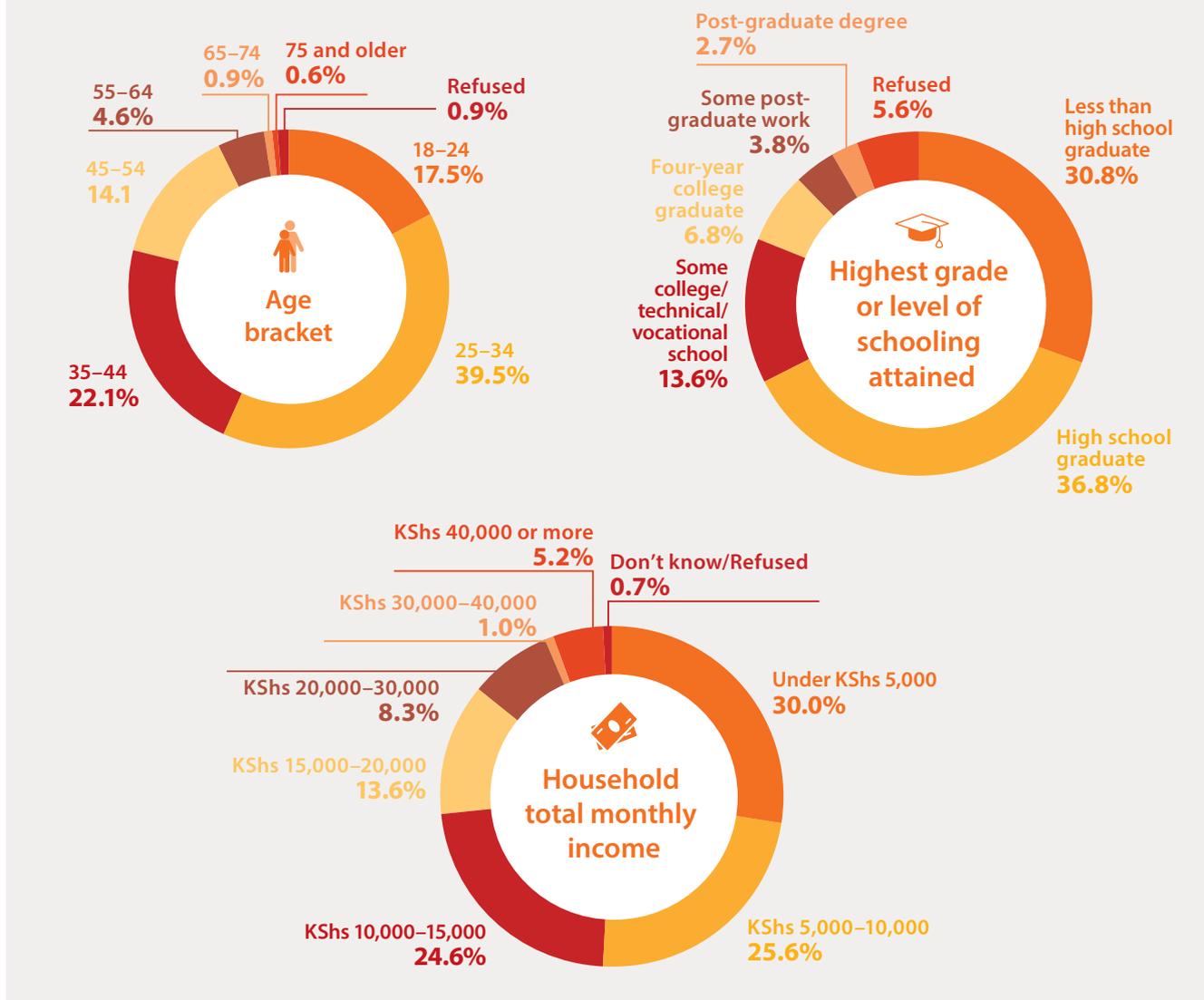
The **lack of cycling lanes and sufficient cycling networks continue to be a challenge** in the city. An observation from the map shows how cycling infrastructure, which has been developed along some of the new roads, has a lot of gaps with several dead ends, and is not well-linked throughout the city.

The major pollutants present on cycling corridors are **dust, vehicular emissions, roadside garbage, open sewage and industrial smoke.** It is important to prioritize the improvement of air quality, particularly in congested areas that serve as socio-economic hubs for thousands of city residents.

Cycling corridors have limited access to green spaces, as was also pointed out in the pedestrianization user issue. This emphasizes the need to green NMT infrastructure to provide for a more enjoyable journey with protection from direct sunlight, better air quality and improved aesthetics.

WHO ARE NAIROBI'S CYCLISTS?

Figure 2: Profiling Nairobi's cyclists across age, education, income and gender



Age: From the cyclists interviewed along the major NMT corridors, the largest frequency of cyclists is 25-34 year olds (39.5%), followed by those between 35-44 years old (22.1%).

79.1% of the of cyclists interviewed were below the age of 44, indicating that most cyclists are youthful. The number of cyclists decrease as age increases, indicating a similar trend to pedestrians, as noted in the pedestrianization newsletter issue.

Income: More than half of cyclists earn a monthly income within the range of KShs 5,000 to KShs 10,000 (55.6%). This indicates that most cyclists are low-income earners, with little choice regarding other forms of transport, such as public transport and private vehicles because of affordability.

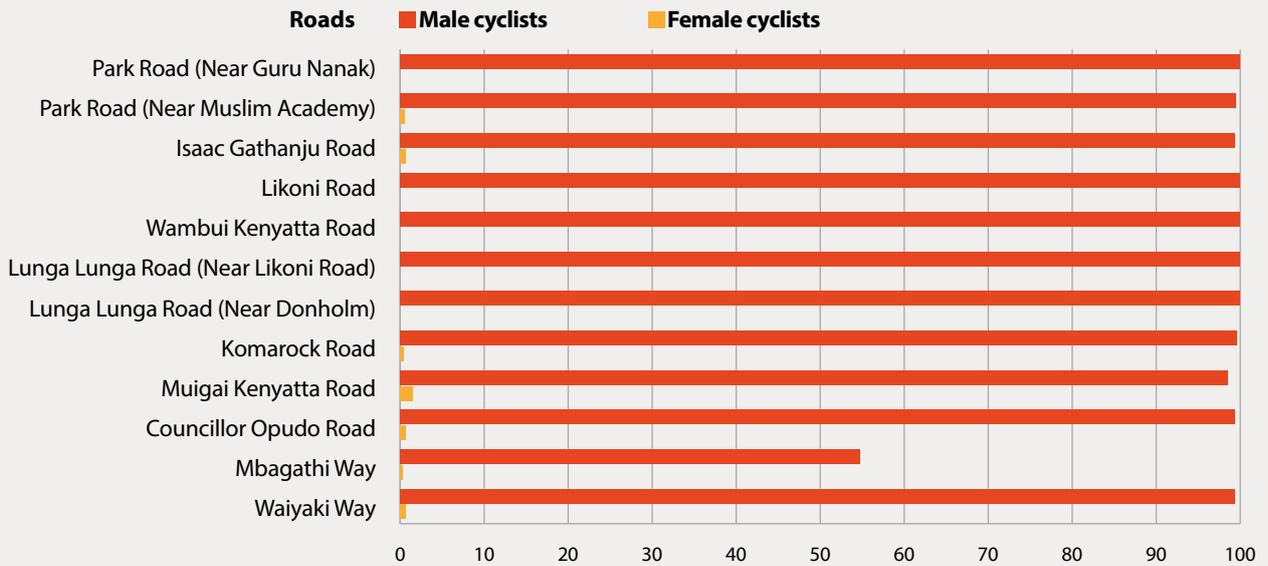
Education: 63.7% of interviewed cyclists range from high school graduates to holders of postgraduate degrees, indicating high levels of literacy. This can be useful in guiding the design of communication strategies and public

awareness campaigns on NMT. The number of cyclists reduces as education increases. For example, we observed more cyclists having a high school diploma, compared to those with college and postgraduate degrees. As highlighted in the pedestrianization series, there is need for more public awareness encouraging people to view NMT as a healthy mode of transport, rather than a preserve for low-income groups.

Gender: All 10 corridors examined had an average ratio of 99.6% male cyclists to 0.4% female cyclists.

This may confirm some of the cultural stereotypes that cycling is a domain for men, and often viewed as "unladylike". However, Nairobi has seen a number of women take up cycling as a means of transport and physical activity. A number of cycling groups, such as Dada Rides, Spin Queens and Critical Mass Nairobi, have strong female leadership, and they are challenging the stereotypes related to women and cycling.

Figure 3: Gender profile of cyclists on Nairobi's major NMT corridors



SERVICES ACCESSED BY CYCLISTS AND FREQUENCY OF TRIPS

A majority of cyclists cycle every day to work (67.2%), followed by shopping trips (11.1%). These statistics are similar to the pedestrian patterns observed in the pedestrianization series. The recent commuter rail service has integrated the use of cycling by allowing cyclists to go on board with their bikes. This can make it more convenient for those who work close to the Central Business District to use their bicycles for last mile connectivity to their destinations.

Figure 4: Services accessed by cyclists

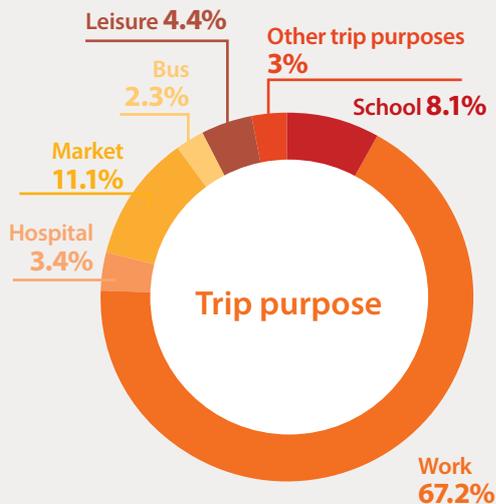
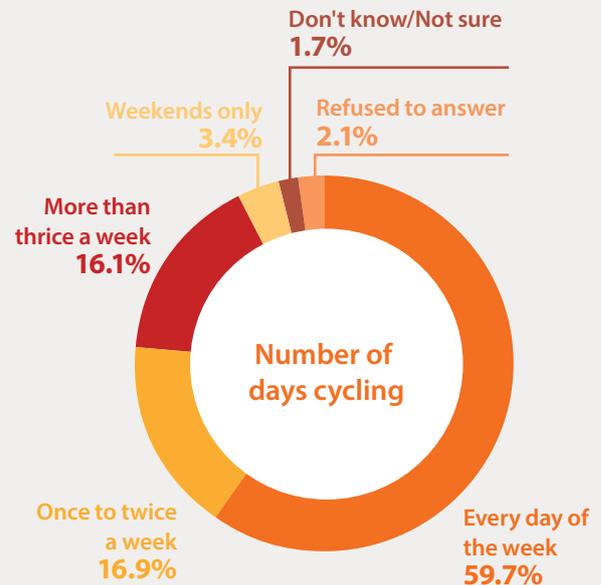


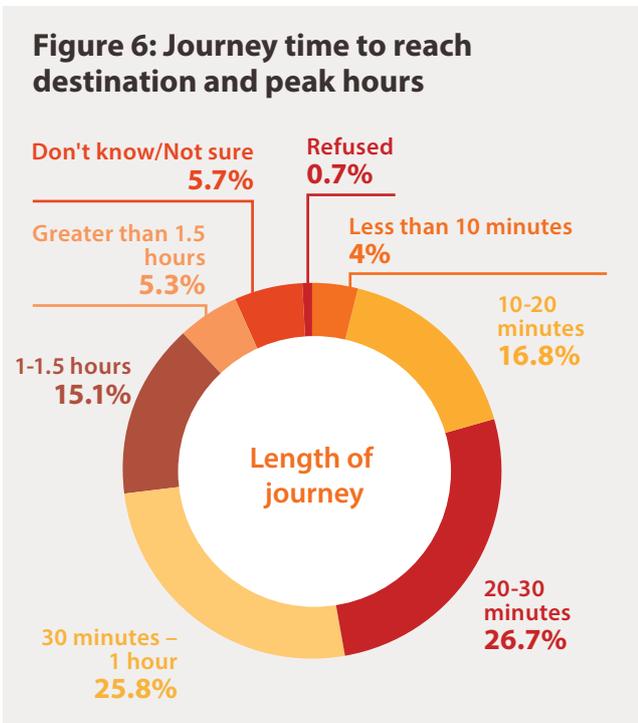
Figure 5: Frequency of cycling trips



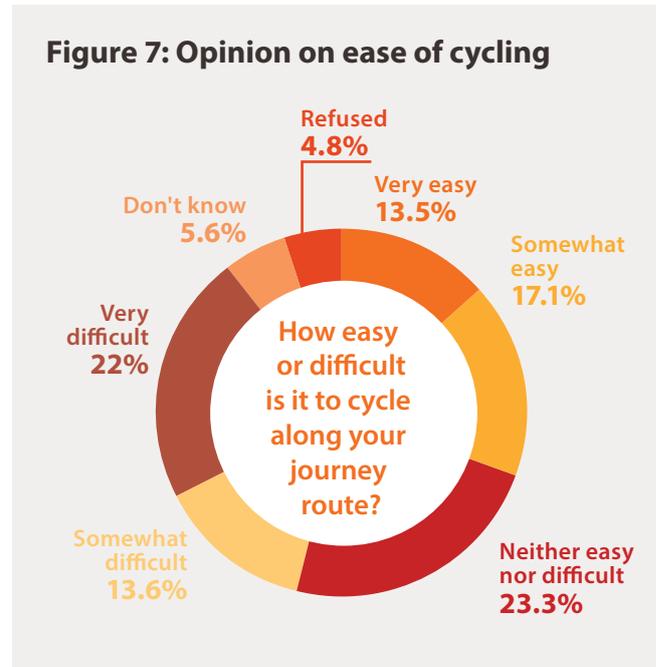
JOURNEY TIME TO REACH DESTINATION AND PEAK HOURS

Most cycling journeys range from 20 minutes to an hour (52.5%). Morning peak hours range from 6.30am-8:30am, while evening peak hours range from 5:00pm-6:45pm, when most cyclists are commuting to and from work. Trends regarding peak times can be useful in informing traffic-calming measures to

increase cyclists' safety and decrease motorized congestion and pollution. This calls for inter-agency collaboration with NMS, the NTSA and the Kenya Police. These trends can also support "car-free day" initiatives by providing evidence-based information on which days and areas are most suitable to kick off these initiatives.



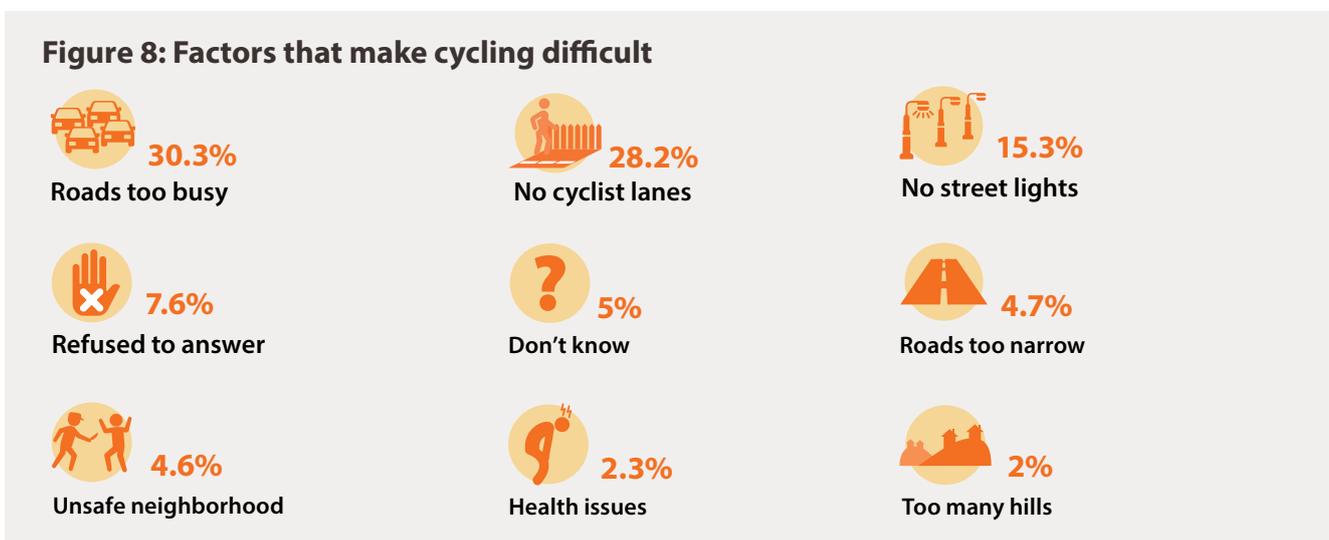
Do cyclists enjoy cycling?



FACTORS CURTAILING CYCLING

35.6% of cyclists find it somewhat difficult to very difficult to cycle along their journey route compared to 30.6%, who find it very easy to somewhat easy. A significant number of cyclists (23.3%) find it neither easy nor difficult. This indicates that the opinions of cyclists regarding the comfort of their journeys are fragmented. 58.5% of cyclists **rate lack of safe, adequate cycle lanes and motorized**

congestion as their top two factors curtailing cycling, while **poor lighting** comes in third at 15.3%. The importance of cycling infrastructure that meets minimum design guidelines cannot be overstated. Details on cycling infrastructure will be addressed in the infrastructure section.



OPPORTUNITIES FOR MORE CYCLING

For this question 4,370 pedestrians and 701 cyclists (as part of the NMT survey conducted in 2016 referred to in the introduction) were asked if they would cycle if an operational bicycle was available to them. **While a large majority of cyclists (65%) said they would like to cycle more, almost a quarter of the cyclist respondents would not like to continue cycling perhaps due to the difficulties experienced while cycling.**

These include lack of cycling tracks, congestion and pollution. An equal proportion of pedestrians would like to cycle (43%), compared to those who would not cycle (43.1%), even if a bicycle became available. This indicates that efforts are needed to improve not only the cycling experience, but also to shift public behavioral attitudes towards embracing cycling.

PEDESTRIANS AND CYCLISTS RATE PREFERENCE FOR CYCLING

Figure 9: Pedestrians rate preference for cycling

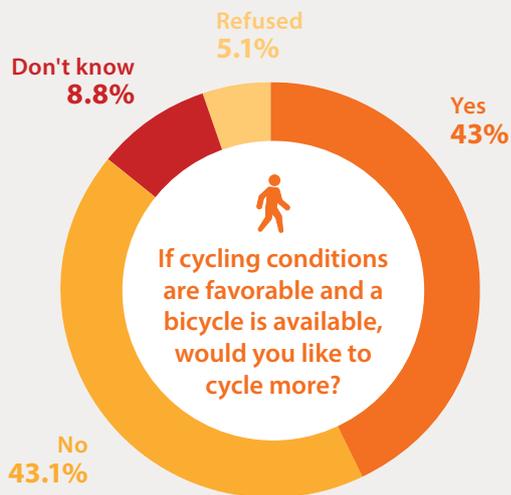
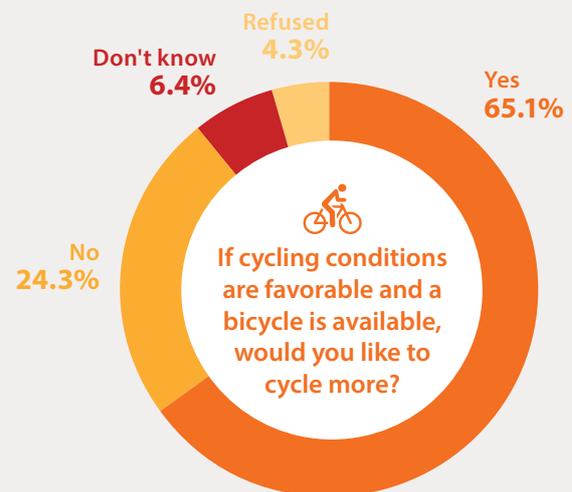


Figure 10: Cyclists rate preference for cycling



CYCLISTS' RECOMMENDATIONS TO IMPROVE CYCLING

Most cyclists interviewed singled out **provision of more cycling facilities (41%) as an important recommendation to improve the cycling experience**. These facilities include cycle lanes, bike parking racks, improved street lighting, safe signals and intersections.

Which of these changes would you recommend be made along your journey route to make it easier for you to cycle more?	Percent
Provide more cycling facilities, such as cycling paths, cycle lanes, bike parking racks, better street lighting, safe signals and intersections	41.0%
Making areas for cycling safer	17.8%
Improve existing facilities	15.8%
Don't know	7.4%
Change laws related to cycling and motorists	5.4%
Enforce laws governing cycling	4.8%
Refused	4.7%
Initiating bicycle safety education	2.0%
Something else	1.1%
Total	100%

CYCLING SAFETY

This section is informed by five-year crash data (2015-2019) from the NTSA.¹ **Cyclists account for 1.8% of traffic fatalities**. Though these numbers may appear low, they need to be considered in direct proportion to the share of cyclists in the city who account for 1.1% of the trips made by different modes of transport. In 2020, a number of avoidable cyclist fatalities were witnessed in the city, which led a parliamentarian to table a bill requiring road authorities to prioritize the safety of cyclists and pedestrians in Kenya.²

Table 2: Nairobi cyclists' fatalities (2015-2019)

YEAR	NUMBER OF CYCLIST FATALITIES	TOTAL NUMBER OF FATALITIES	PERCENTAGE
2015	7	656	1.0%
2016	11	469	2.3%
2017	14	412	3.0%
2018	9	438	2.0%
2019	3	431	0.7%

CYCLING INFRASTRUCTURE

Lack of adequate and well-designed cycling infrastructure compromises the safety and comfort of cyclists. The Street Design Manual for Urban Areas in Kenya provides standard design guidelines for cycle lanes.

Cycle tracks should be positioned between the footpath and carriageway. To increase cyclists' safety, cycle tracks should be physically separated and elevated from the carriageway with a space that is at least 0.5 meters wide rather than painted cycle lanes, which offer little protection to cyclists.



Well-designed cycle track. © Street Design Manual for Urban Areas in Kenya

The recommended width for cycle tracks is a **minimum of two meters for one-way movement, and two-and-a-half meters for two-way movement**. A **smooth surface material should be used**, such as asphalt or concrete. Paver blocks are to be avoided.



Cyclists during a pro-cycling campaign organized by Critical Mass Nairobi. © Edna Odhiambo

Selecting the side of the road for cycle tracks



The **side with fewer obstructions** (shops, kiosks, street traders) and the one **not frequently used by pedestrians is more attractive to cyclists**, as there are fewer "obstructions" or "hindrances". Most cyclists are actually transit travellers and are not very interested in roadside shopping. The concept of hindrances is more directly related to the comfort and convenience of cyclists.



The **side with a wider space and fewer side roads** that links well with other network roads at intersections is the better choice. It is inconvenient for cyclists to keep stopping and crossing the road to different sides each time they meet another road.



If the track is to be used by cyclists as a two-lane-two-way path, **cyclists travelling in the same direction should not be allowed to ride side-by-side. A dividing line should be marked on the track to indicate two-way usage**. This design has one distinct advantage: the cyclist moving in the same direction as the motor vehicles will be further away from the motor vehicles; and the one travelling in the opposite direction will be closest to the motor vehicles. This provides some safety at side roads for those travelling in the same direction with the motor vehicles; and more safety for cyclists travelling in the opposing direction, as there is clear visibility of the motor vehicles at all times.³

DID YOU KNOW?

Bicycles are being used as tools for empowerment to enable access to education in Kenya. **Bicycles For Educational Empowerment Program (BEEP) is a World Bicycle Relief flagship program mainly targeting students in rural areas where distance affects their ability to obtain an education.**⁴

Thousands of girls and boys can look to a brighter future having completed their primary and secondary school education thanks to the power of a bicycle!

BICYCLES FOR EDUCATIONAL EMPOWERMENT PROGRAM (BEEP)

Across the globe, to date BEEP has provided over 209,743 life-changing Buffalo Bicycles to students in rural areas.

2019 KENYA BEEP IMPACT

Girl/boy students received bicycles	2,833/1,233
Total schools reached	54
New bicycle supervisory committees trained	9
New mechanics trained	26
Existing mechanics upskilled	20
Schools that attended termly coordination meetings (TCMS)	100%
Average bicycle usage	80%
Average student attendance	90%



Beneficiaries of the Bicycles for Educational Empowerment Program (BEEP). © World Bicycle Relief



Cyclists during a pro-cycling campaign organized by Critical Mass Nairobi. © Edna Odhiambo

The current volumes of cycling are low, and Nairobi has great potential to increase the profile of cycling as an efficient and environmentally-friendly means of transport. Improving cycling infrastructure is the foremost step in securing the safety and comfort of cyclists, and in so doing encouraging more residents to take up this mode of transport. NMS has a mandate over County NMT infrastructure and Kenya Urban Roads Authority in charge of infrastructure on urban roads and, as such, these agencies are responsible for the development of a well-designed cycling network in Nairobi. Apart from infrastructure improvements, access to bicycles is a major factor hindering the uptake of cycling. Globally, many cities have launched affordable bike share programs in partnership with the business community, enabling residents to get convenient access to bicycles without having to own and maintain one. Such initiatives can be encouraged at scale in Nairobi to promote cycling.



A beneficiary of the Bicycles for Educational Empowerment Program. © World Bicycle Relief

ENDNOTES

1. National Transport and Safety Authority – NTSA. (2020). Internal documentation.
2. Business Today. (December 2020). 'New Bill Seeks to Prioritize Cyclists, Pedestrians on Kenya's Roads.' Retrieved from: <https://businesstoday.co.ke/new-bill-seeks-to-prioritize-cyclists-pedestrians-on-kenyas-roads/>
3. Sai Consulting International Ltd and CAS Consulting Engineers. (2016). Internal documentation.
4. World Bicycle Relief. (2019) 'Kenya Impact Report.' Retrieved from: https://worldbicyclerelief.org/wp-content/uploads/2020/05/2019-Kenya-Impact-Report_FINAL-051320.pdf

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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