

Challenges and Opportunities in Cycling Safety in Nairobi City, Kenya.

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1 INTRODUCTION

The road transport in Kenya is the most common means of transport for people living in both urban and rural areas. The use of bicycles for transport dates back in the pre-colonial time and has been used as a mode of transport until 2008 when the use of motorcycles became a popular mode of travel in the rural and urban areas. However, the use of bicycle as a means of travel has declined consistently over the years until now and many have shifted to the use of car, public transport and most commonly motorcycles which are popularly known as ‘boda boda’ in Kenya. This modal shift can be attributed to a number of factors identified as challenges in the use of bicycles as a common mode of transport in comparison to other emerging modes of transport both in rural and urban areas. However, despite this modal shift, there are a substantial number of road users who would still prefer to use the bicycle mode amid prevalence in road traffic fatalities and injuries in Kenya. The government of Kenya has established initiatives to provide safe and inclusive transport system by investing in transport infrastructure that includes cycle tracks especially for roads located in the urban cities. This has been enabled by innovation in design, mixed traffic composition, change of legislation and road design standards especially in regards to non-motorized transport in Kenya. Cycling is still low in cities in Kenya despite this effort to improve geometric design of roads. This paper explores these challenges and opportunities in cycling in Kenya focusing on Nairobi city as a case study.

2 LITERATURE REVIEW

Cycling is a mode of transport in most parts of the World including Nairobi City in Kenya. From pre-colonial period, road transport technology has evolved from the use of animal drawn carts, bicycles, motor-vehicles. However, the rate of change of technology has been progressive across the world depending on different stages of development and industrialization in each country. A bicycle was invented in Europe in the 19th century whereby the first bicycle vehicle did not possess pedals. Cycling in Kenya has reduced gradually over the years especially with the advent of motor vehicle technology. There has been a significant mode shift from bicycle to public transport, car and motorcycle respectively in Kenya. In the years before technology, cycling was a primary means of transport for work trips, household trips and recreation activities. This mode of transport was reliable among people of all ages and gender like it is today in European countries.

Over the years, cycling has evolved to low numbers and varying patterns among cyclists such as gender, age, physical ability, income levels, size of household and place of residence in Nairobi. Cycling is still considered the fastest means of Non-Motorized Transport (NMT) in Kenya. Cycling bears a great number of benefits including health and physical fitness amongst users, reduced pollution, low cost of purchase and maintenance, low investment in infrastructure, quick connectivity for short distance travel, use in recreation and leisure activities. The government of Kenya has invested in a number of road infrastructure to improve safety of all road users including cyclists by providing infrastructure and space for non-motorized transport in Nairobi.

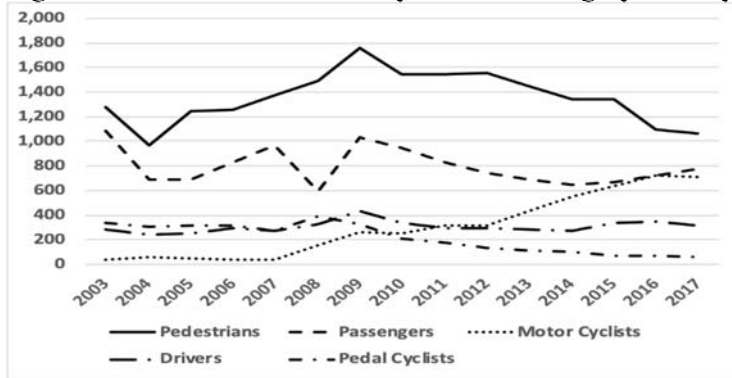
The burden of road traffic accidents (RTAs) still escalates and bicyclists are not an exception to fatalities and injuries. Most fatal and serious injuries collisions in Nairobi involve pedestrians and cyclists based on accident records across police divisions in Nairobi. The challenges of underreporting is still prevalent and some collisions are still recorded as hit and run with bicyclists involved as victims. This statistics however represents

a low population considering the level of deterioration in cycling safety in Nairobi. The use of motor vehicles such as motorcycle, cars, public transport vehicles and commercial vehicles is still dominant in the road transport system in Kenya. Cyclists compete for reduced spaces in the transport system and most commonly along arterial roads in the city. Safety is a function of speed of motion and mass of vehicle involved in collision. Considering low speed and mass of a bicycle in the transport system indicates a higher level of vulnerability in case a crash occurs involving a cyclist and other motorists. Usually the result of such an impact is fatal if not leading to serious injury. The recent surge in economy due to shortage of petroleum fuels for motor-vehicles has sparked interest in the use of bicycles amongst many road users especially for short distance travel. This paper investigates these challenges and opportunities in cycling and recommends best practices for adoption in design and operation of road transport system in Kenya.

2.1 Road Safety Statistics in Kenya

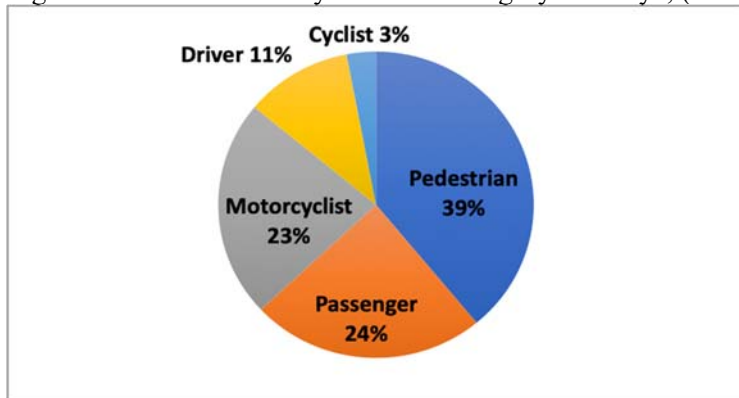
Road traffic fatalities and injuries are still prevalent in Kenya despite measures put in place to curb injuries and fatalities amongst various categories of road users. The decade of action helped Kenya to achieve establishment of the road safety lead agency, increased vehicle safety standards and road safety management. However, more work is still anticipated especially on non-motorized transport (NMT) users such as bicyclists who constitute about 3% of all road deaths in Kenya, [1].

Figure 2: Trends in road deaths by road user category in Kenya (NTSA, 2018)



2.2 Cycling Safety Statistics in Nairobi

Figure 1: Road fatalities by road user category in Kenya, (NTSA, 2018)



2.3 Challenges in Cycling Safety in Nairobi

In Kenya in general, cycling mode of transport is not popular in urban areas and this is evident in the low number of cyclists in the cities such as Nairobi. However, this situation in mode share in the transport system is not by design but could be a factor of a number of challenges facing cycling as a mode of transport in Kenya despite all the advantages it has such as health, reduced emission, low speeds and low maintenance cost and low cost of operation. In Nairobi, cyclists faced a number of challenges such inadequate infrastructure, non-segregated bike lanes, no signal phase for cyclists, inadequate cyclist education on traffic rules, non-marked

cyclist routes, lack of policies for cyclists safety and lack of integrated transport plans for terminal and stations which includes parking facilities for cyclists. There are increasing safety concerns for cyclists in the city ranging from speed differentials in the road network, lack of speed calming measures on approach to intersections and junctions, lack of visibility for cyclists, non-helmet wearing rates amongst cyclists and lack of proper designs for bicyclist which could be contrary to human ergonomics. Many cases of road traffic accidents involving cyclists have not been resolved to the best level of satisfaction of the public. A case of an accident involving a student cyclist caused an uproar amongst stakeholders and this attracted the attention of the minister in charge of transport. There is lack of clear reporting for accidents involving cyclists and no follow up on litigation on road accidents involving cyclist as evident in the newspaper article [5].

2.4 Opportunities in Cycling Safety in Nairobi

In the current development trends, the Nairobi Metropolitan services has put considerable measures to improve sustainable modes of transport by building infrastructure for cycling and walking around local streets in Nairobi. Today, there are arterial roads and ring roads whose designs include cycling track and pedestrian walkways for safety. This has been enhanced considering the number of road fatalities and injuries amongst pedestrians and cyclists. According to the National Transport Safety Authority, pedestrians and cyclists contributed to about 40% of all fatalities in Nairobi [2]. Investment in cycling infrastructure will promote cycling amongst all road users, improve health of residents in Nairobi, increase social activities and wellbeing of people in Nairobi. According to many researchers on cycling safety, there is a proposed integrated transport plan which includes pedestrians and cyclists [6]

3 METHODOLOGY

The methodology adopted in this study is a mix of desk study and online opinion survey through questionnaires amongst people living in nine districts in Nairobi such as Westlands, Dagoretti, Kasarani, Langata, Starehe, Kamukunji, Embakasi, Njiru and Makadara. The online questionnaire targets road users of all categories such as drivers, passengers, motorcyclists, pillion passengers, pedestrians and bicyclists.

4 CONCLUSIONS

This paper unveils the opportunities and challenges in cycling safety in Nairobi, a city in a developing country in the global south. It gives an analysis of road users' opinion on cycling safety and compares road users' willingness to shift from the common modes such as use of car and public transport to cycling. It further gives a concise discussion of areas of improvement to promote cycling through improvement in infrastructure, priority for cyclists in traffic management, awareness creation on safety regulations for cyclists, policy formulation for implementation of speed zones for cyclists in residential areas and comparison to international standards on bicycle design for safer cycling.

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