VREF PROGRAM "MOBILITY AND ACCESS IN AFRICAN CITIES" 2022 RESEARCH GRANTS FOR EXPLORATORY COMPARATIVE RESEARCH PROJECTS

Thematic Cluster 4: Safety, Health and the Urban Environment

PROJECT TITLE

A comparative Assessment of the Quality of Walking and Cycling Infrastructure in Nakuru (Kenya) and Jinja (Uganda)

PROJECT LEAD

Name: Dr. Gladys M. M. Nyachieo

Function: Principal Investigator (P.I)

Affiliation: Multimedia University of Kenya

Email: gnyachieo@mmu.ac.ke or gmasomo@gmail.com

Other team members

Dr. Calvine Kayi -Kenyatta University, Esther Bayiga –Makerere university, Pachalin Basil –University of Nairobi & Leonard Mwesigwa- Inclusive Green Growth Uganda

About VREF

- The Volvo Research and Educational Foundations (VREF) is an independent foundation that inspires, initiates and supports research and educational activities that can contribute to new knowledge on broad issues related to urban mobility and access.
- VREF research grants support projects under the VREF programme “Mobility and Access in African Cities” (MAC).
- VREF supports support the development of research on ideas, approaches and solutions that can contribute to equitable access and sustainable urban mobility in ways that can radically reduce transportation’s negative local and global environmental impacts.
- In addition, VREF supports educational programmes in these areas, as well as facilitate dissemination and implementation of research findings among both university researchers, practitioners, decision-makers and other relevant stakeholders.

Reference: VREF- Research Projects (www.vref.se).

Cont’

- VREF current programme runs from 2019 – 2024.
- The MAC programme seeks to contribute to forming a new generation of highly skilled sub-Saharan university researchers and teachers, as well as to engage professionals, policy makers and actors within civil society who are committed to achieving goals of sustainable and equitable urban mobility and access.
- Leading international experts contribute to the programme through collaborative research projects with their sub-Saharan African counterparts- Like this study
- The MAC programme is implemented through four activity streams: 1. Building academic capacity and skills 2. Supporting next generation African scholars 3. Research and knowledge building 4. Building communities of learning – dissemination and dialogues

Introduction

• Transport policy in Africa is beginning to recognize the integral role of walking and cycling in any sustainable transport system (Christopher et al., 2018).

• These policies call for a safe, affordable, comfortable, and convenient environment for pedestrians and cyclists.

• Many African states are therefore acknowledging the value of walking and cycling as crucial forms of affordable transport that do not only enable the accomplishment of primary trips, but also accrue significant health benefits.

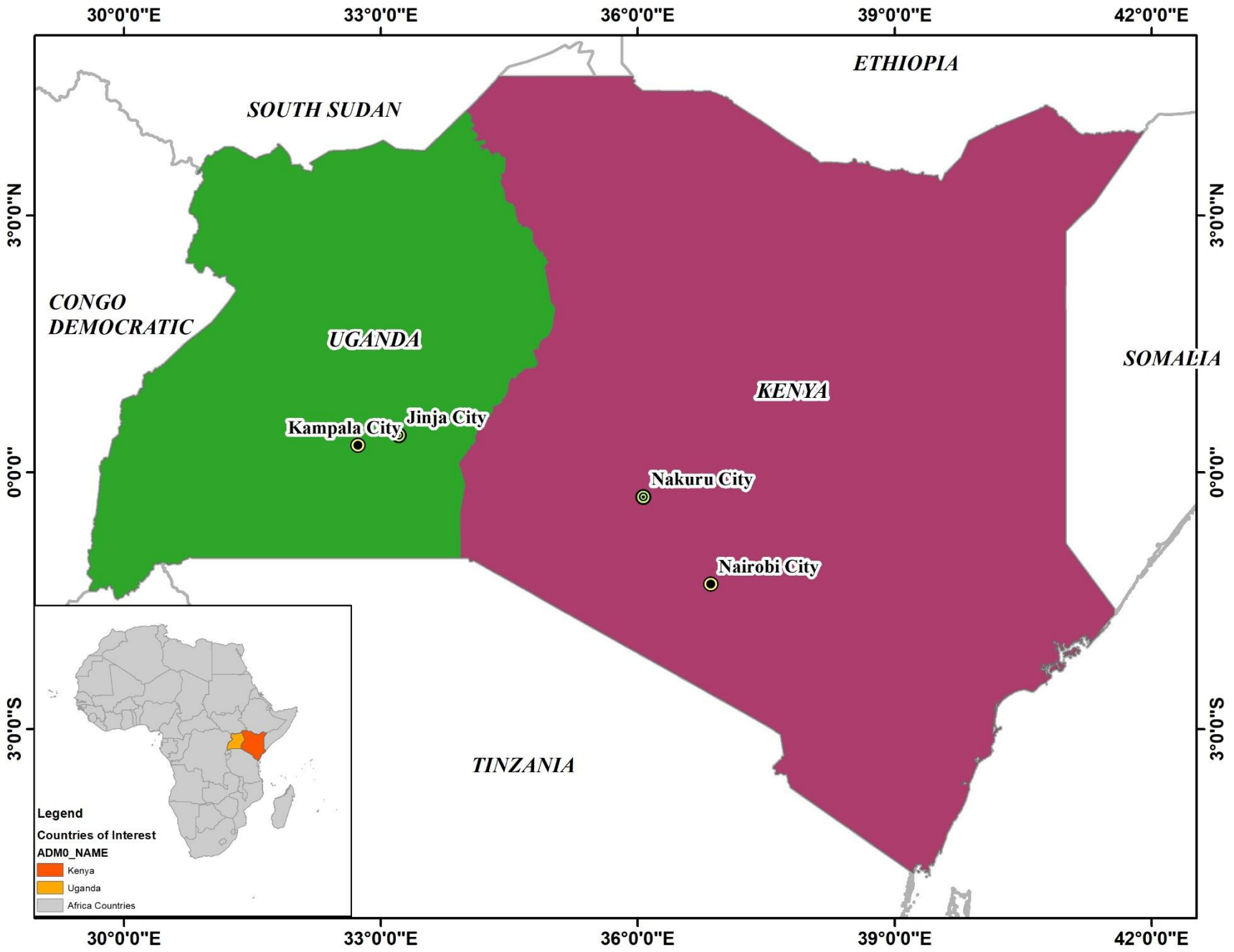
Introduction Cont’

- Quality walking and cycling infrastructure contributes to safety, accessibility and health in the urban environment and its availability and quality need to be key in urban development.
- Lack of quality walking and cycling infrastructure is responsible for the bulk of pedestrian deaths that happen in Africa are due to traffic crashes (WHO, 2018).
- The quality of the pedestrian environment is key to encouraging people to choose walking over driving (Southworth, 2005).
- Factors such as connectivity, and the provision of sidewalks have been shown to be associated with walking as a mode of active travel (Saelens et al., 2003

Why Second Tier Towns?

- Nakuru City is located 0°17'16.87"S and 36° 3'56.00"E, 160 km North West of Nairobi City- became a city on 1st December 2021.
- Jinja City is located 0°25'54.73"N and 33°12'51.45"E, 80 km east of Kampala the Capital City of Uganda- Jinja is the second largest town in Uganda.
- There is a lot potential to do the right 'thing' as these towns transitions from a municipalities to a cities (Nakuru is at that stage right now).
- The sustainable mobility path can be charted **now** to show the significant role of NMT and the need to recognize NMT and factored it into public transport and road infrastructure planning and investments-for equitable and sustainable urban mobility.
- Co-assessment as a methods presents and opportunity for increasing knowledge on the importance of walking and cycling infrastructure

Project Area of Interest and the countries Capital Cities



Objectives

1. To assess the availability and quality of walking and cycling infrastructure according to the key LOS criteria in selected roads in Nakuru and Jinja

1. To examine user experience and perspective on quality of walking and cycling infrastructure in Nakuru and Jinja.

Conceptual Framework

- The study adopted the Level of Service (LOS) -Trip Quality Method.
- The method combines urban design architectural principles with practical safety and capacity considerations to come up with evaluation measures used to analyze pedestrian sidewalks for pleasantness, safety, and functionality.
- Evaluation measures include are; enclosure , complexity of path network, building articulation, buffer, shade trees, overhangs/awning and physical components/condition (Sisiopiku et al., 2007).

Methods

- Task 1
- *Assess the level of availability and quality of walking and cycling infrastructure in selected roads in Nakuru and Jinja.*
- **Methods: Trip quality method in Levels of Service (LOS):**
- Pedestrian sidewalks are examined for pleasantness, safety, and functionality.
- Together with the city authorities, co-assessment is done and each measure chosen on the check-list given a score between 1 and 5, with 1 being very poor and 5 being excellent. An average score will then be calculated for each facility under consideration (*average will be done when all data is collected for both Nakuru and Jinja)*

Methods

- Task 2
- *To explore user experience and perspective on quality of walking and cycling infrastructure in Nakuru and Jinja.*
- **Methods:** A survey using the Neighborhood/surrounding Environment Walkability Scale (NEWS-Africa) tool. The tool will be used to collect information on perceptions of walkers and cyclists based on neighborhood attributes.
- Focus Group Discussions (FGDs) PWDs, business community, cyclists
- Key-informant interviews (KIIs) to gather necessary information from the relevant safety, town planning and engineering departments as well as policy makers in Nakuru and Jinja towns.

Study sites for Level of Service (LOS)Assessment

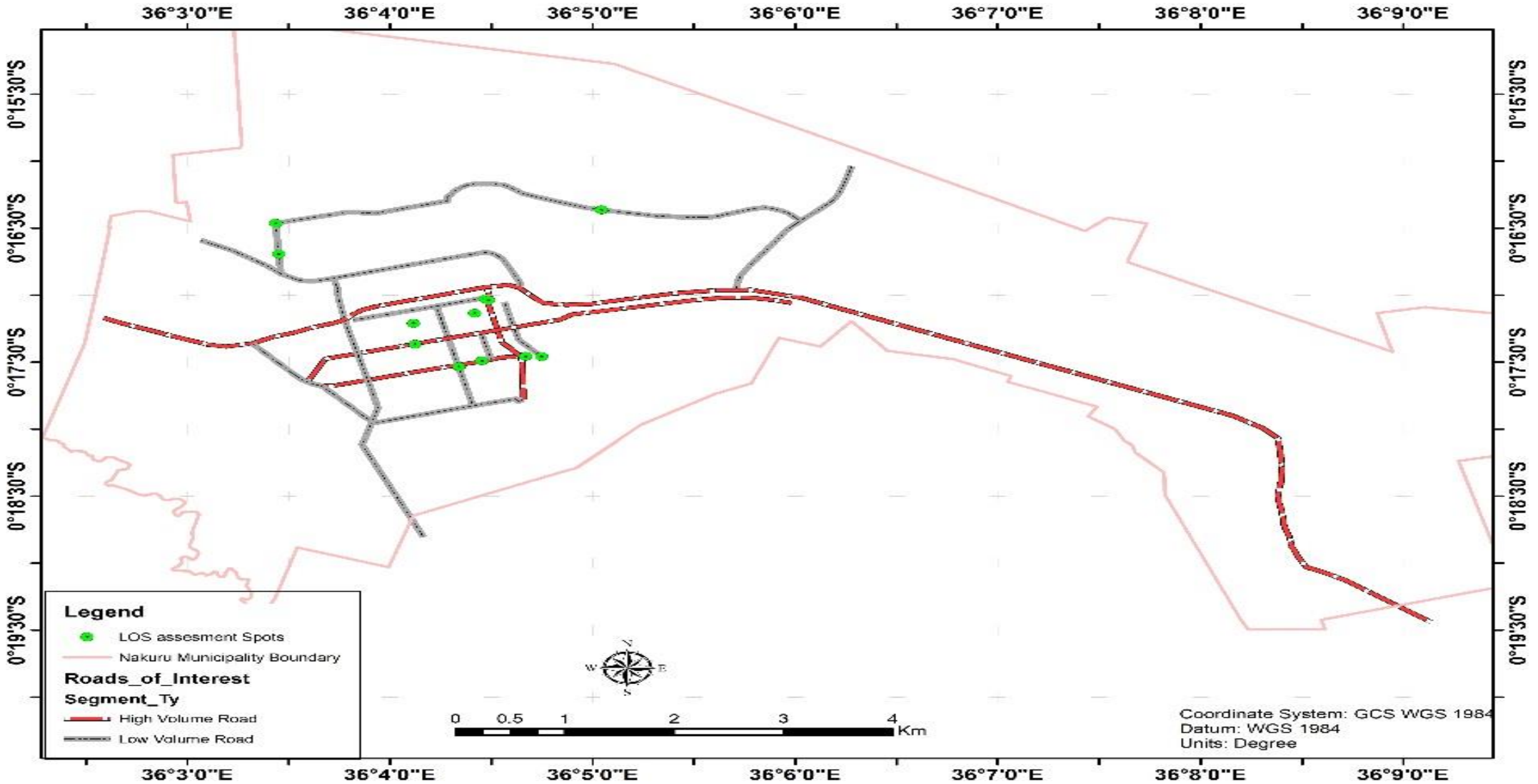
Roads in Nakuru

1) Shadrack Kimalel 2.43 Km
2) Ronald Ngala 1.92Km
3) East Road Km 0.86 Km
4) Kenyatta Avenue 1.3 Km
5) Mburu Gichua km 1.55 Km
6) Prison road 1.38 Km
7) Government road 1.2 Km
8) Maragoli road 3.45K
9) Oginga odinga 7.5 km
10) Moi road 1.54 Km

Roads in Jinja

1) Alice Mulokyi road
2) ClIve road,
3) Muzirata road
4) Nizam road
5) Kutch road
6) Bell avenue
7) Gokale east road,
8) Alidina road
9) Nile Crescent road

Traffic volume of the carriageway- Nakuru



Availability and quality of Walking and Cycling Facilities

NAKURU

- Some roads in Nakuru have a form of walking facilities
- NMT policy is non-existent in Nakuru, thus adhoc interventions
- Cycling facilities provision is nearly non-existent
- NMT is factored in the cities transport planning but little weight is given to cycling facilities/ infrastructure
- The NMT infrastructure circulation completeness is not evident in the most of the city roads.

JINJA

- There is no proper NMT plan for the city and the NMT network is being developed in piecemeal fashion.
- City planners acknowledged that they do not have a clear map of where NMT facilities are being demanded by the population
- Currently the city does not have any specific budget allocated to improving NMT facilities.

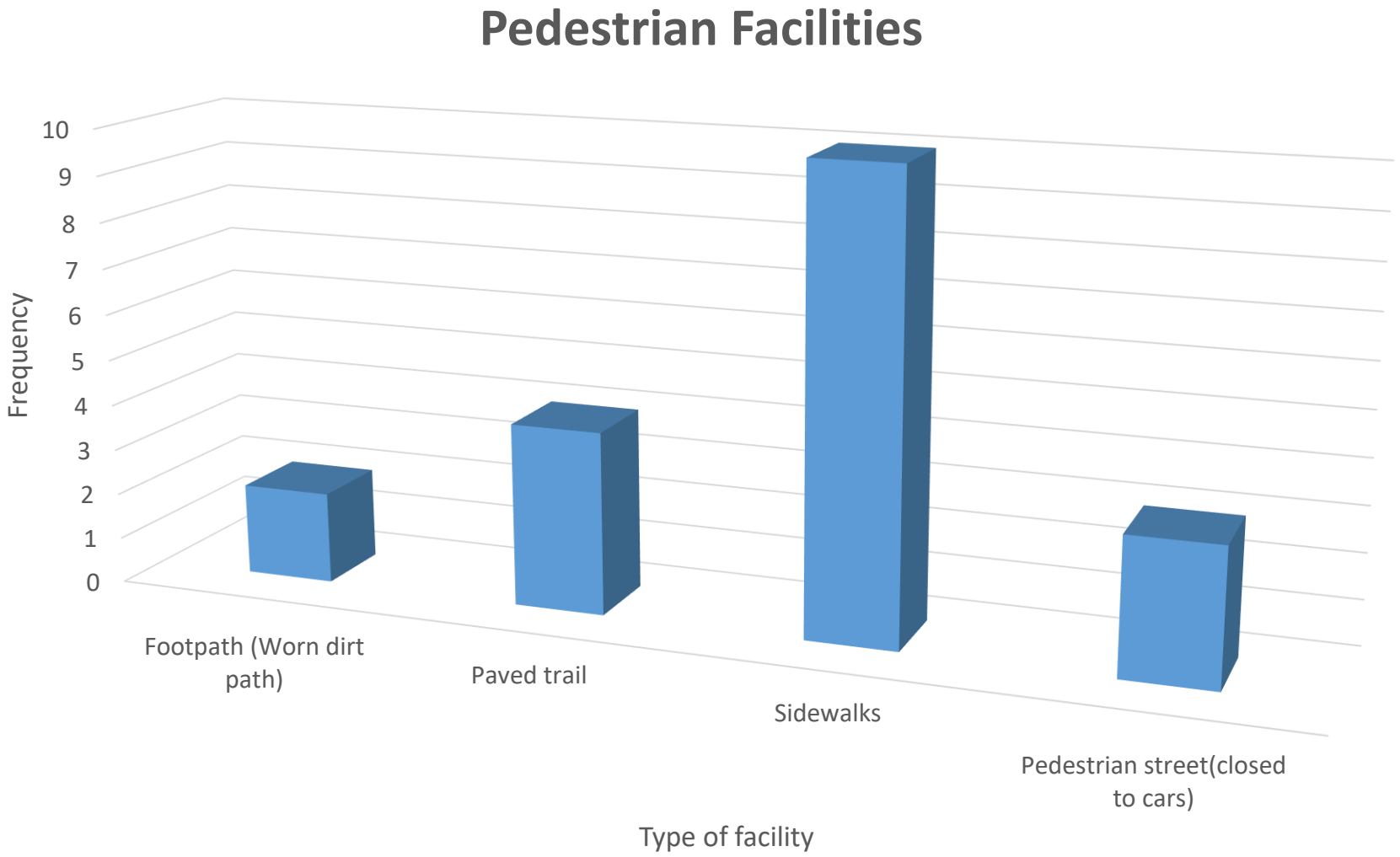
Some Components used for Pedestrian LOS Analysis

Parameter	Components
Pedestrian convenience	✓ Availability of shades/trees for pedestrians ✓ Availability of ramps to access sidewalk by pedestrians ✓ Availability of amenities (e.g. seating facility) for pedestrians ✓ Routine sidewalk maintenance for cleanliness ✓ Availability of covered dustbin at regular interval ✓ Presence of regular designated at grade crossing with zebra crossing mark ✓ Presence of traffic control/police at crossing location
Safety and security	✓ Traffic control devices such as marker, signs and signals ✓ Buffer zone between sidewalk and carriageway ✓ Availability of lighting facility at night ✓ Regular police patrolling during night ✓ Availability of CCTV cameras to record crime
Sidewalk infrastructure	✓ Footpath width ✓ Type of footpath surface (concrete/paved block/marking) ✓ Presence of pedestrian footbridges
Encroachments	✓ Effective sidewalk [illegible]

LOS Analysis-Nakuru

- The level of service (LOS) trip quality method is used.
- Co-assessment is being done together with city authorities - (still on going).
- Preliminary results indicate that:
- The Nakuru municipality slope elevation ranges from 2200m to 1769m above sea level, this therefore indicates that the slope is gentle steep-cycling is possible.
- That 67% of the sidewalks are incomplete while 33% are complete hence incomplete circulation.
- This indicates inadequate continuity on the pedestrian sidewalks making it difficult for connectivity between sidewalks.

Type of Pedestrian Facility in Nakuru



LOS cont’

Assessment Variable	Assessment Results
Path distance from curb	In most of the assessed roads and paths, there is no distance from the paths to the curb, this shows that the paths are at the edge of the curb. 50% are at the edge while 33% within <5feet and 17% >5feet distance.
Sidewalks width	67% are within 4 to 8 feet width, 25% less than 4feet and 8% greater than 8feet
Curb Cuts	From the assessment data 59% less than 4curb cuts, 33% no curb cuts and 8% 1-4 curb cuts

LOS Cont’

Shadrack Kimalel street near Kingdom seekers

Ronald Ngala Street

Quality of NMT Facilities

Assessment Aspect	Observation
Sidewalks connectivity	There is an average of 5 connections between one sidewalk to others. However there is lack of **continuity** of NMT infrastructure nearly in all the segments surveyed.
Conditions of the road segments	The road segments assessed shows a 50% good and 50% fair conditions. A number segments assessed had sidewalks segregated, **but poorly maintained**, thus discouraging usage. At the time of the study, a number of streets e.g. Kenyatta & Moi were being renovated and incorporated NMT.
Traffic controls, speed limit signage	About **67%** of the assessed road had **no signs** for speed limit to alert drivers, and control the vehicle traffic
Traffic control devices availability	Most roads within the Nakuru city do not have traffic control devices. The only sign available in a few locations is the stop signs.
Bicycle Facilities	About **90%** of the roads have no bicycle facilities. Those that have are **poorly maintained** and **lack connectivity** & **continuity.** Additionally, **no waiting bays** or **bicycle parking facilities.**

Quality of NMT Facilities Cont….

Assessment Item	Observations
Roadway/Path lighting	Only road-oriented lighting in some roads while other roads assessed did not have lighting in Nakuru.
Way finding routes availability	About **75%** of roads do not have any way/route finding signs. Makes it difficult for pedestrians and commuters alike to easily access their destinations.
Number of trees shading walking area	Only about **16%** have fully covered canopy enclosure within the sidewalks.
Power line along the walkways/Sidewalks	Majority, **90%** of the roads have a mixed power lines-high and low voltage
Building setbacks\building articulation from sidewalk	The building setbacks along the sidewalks are within 4-8 feet from the sidewalk. However, there are circumstances where there are no setbacks and the building line is on sidewalks. Some scenarios also indicate road reserve encroachment from informal businesses.
Amenities	Large majority, **90%** of the assessed roads did not have any amenities. Only 10% had some amenities such as benches e.g. along club road, and others having public garbage collection points (Kenyatta avenue). No water fountain was observed on any road.

Types of Separation-Nakuru

Safety Bollards

Open Storm water drains

Type of Separation cont’

Bicycle lane and side walk

No side walk-no separation

User Experiences

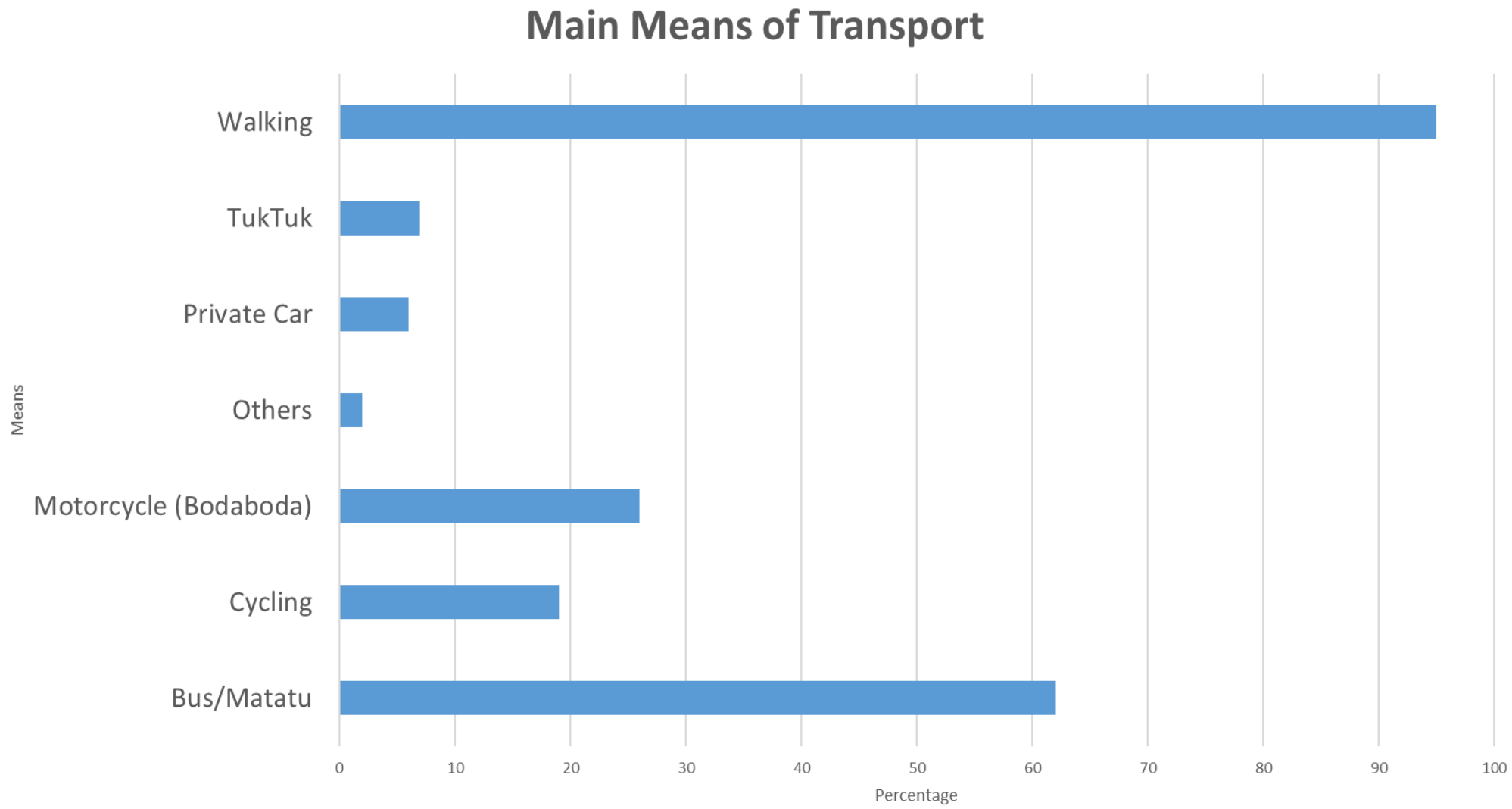
In Nakuru

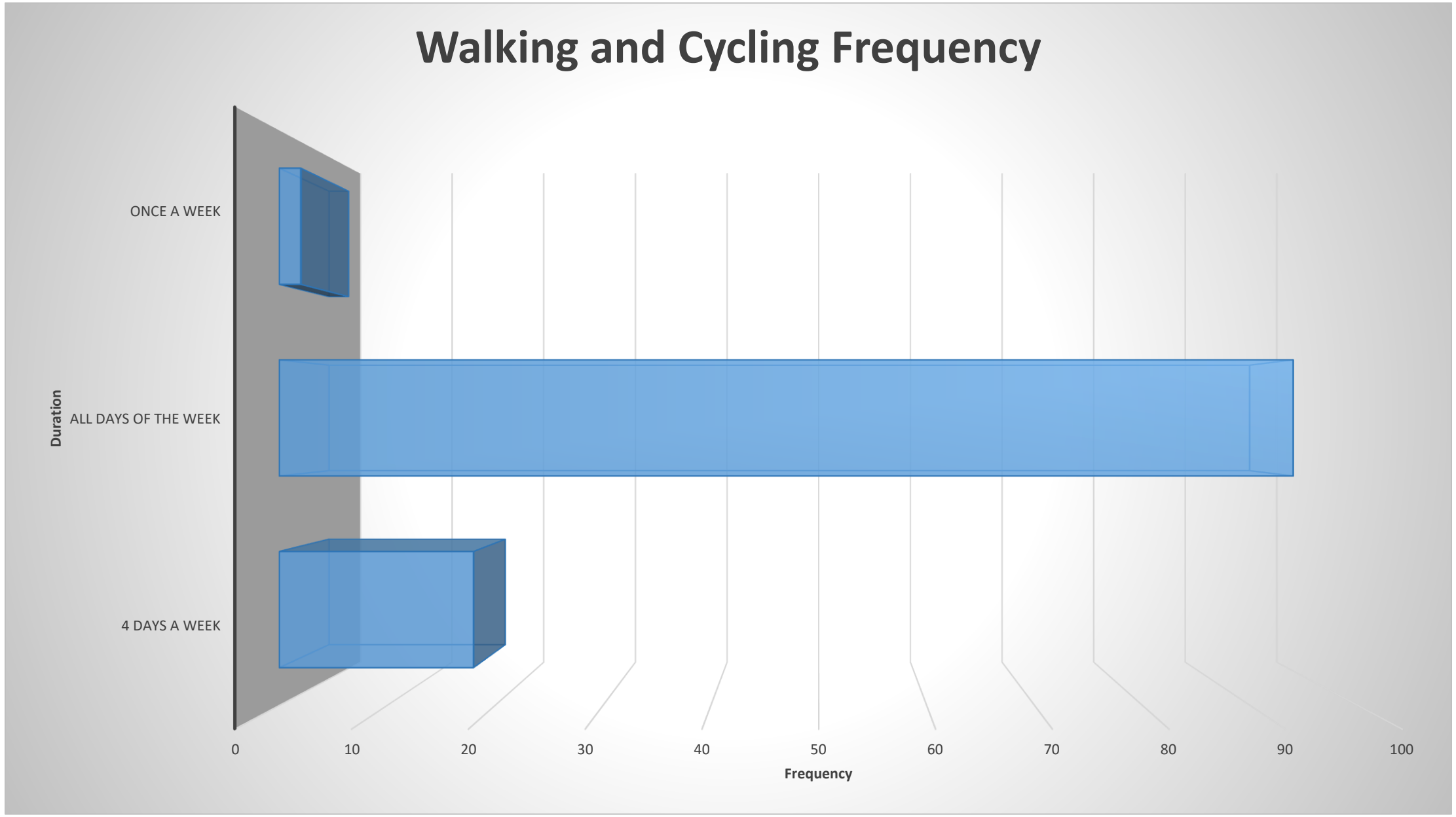
Background Information of Respondents -Nakuru

Demographic Variable	Frequency
Type of residency	Permanent 93% Visitor 7%
Gender	Female36% Male 64%
Level of education	Majority (73%) had diploma and 1st degree
Area of residence	Majority (60%) outside CBD
Type of work/occupation	Majority Informal (78%) formal (31) others 8%

Location	Area of stay (Frequency)	Area of work (frequency)
Outside CBD	130	19.0
Outside the city	4	6.0
Visitor	5	0.0
Within the city	78	192.0
Total	217	217

Modal Split/share in Nakuru




Walking and Cycling Frequency
ONCE A WEEK
ALL DAYS OF THE WEEK
4 DAYS A WEEK
Duration
0
10
20
30
40
50
60
70
80
90
100
Frequency

Common NMT user Challenges in Nakuru City

A matatu parked on the side walk at the junction of shadrack kimalel and Mburu Gichua *road*

Car packed on the pedestrian walkway right outside the government offices at Government road

Cont’

Open drainage Shadrack Kimalel and Mburu Gichua road junction

Garbage on the walkway near a public service vehicle station on Shadrack Kimalel road.

Mobility and accessibility struggles for PWDs in Nakuru

A woman with a child on the wheelchair carrier going to her small business *Image replaced due to stretch*

A young man going to the market where he has a small business *Image replaced due to stretch*

PWDs FGD-summary

- A focus group discussion conducted with the PWDs indicated that they have a lot of challenges moving around as well as accessing almost all premises like government offices, bus stations, banks markets among other.
- They said that there is a lot of improvement but it is still unsafe for them on most roads because of lack of speed pacifiers.
- The other challenge is lack of connectivity –they use pedestrian walkways which end abruptly or have to use very long routes.
- They complained of lack of involvement as stakeholders
- Therefore there in no ***equitable access*** for PWDs

More Mobility and Accessibility Challenges for PWDs (&all users) in Nakuru

A big dust bin on the sidewalk Image replaced

An open manhole on a sidewalk

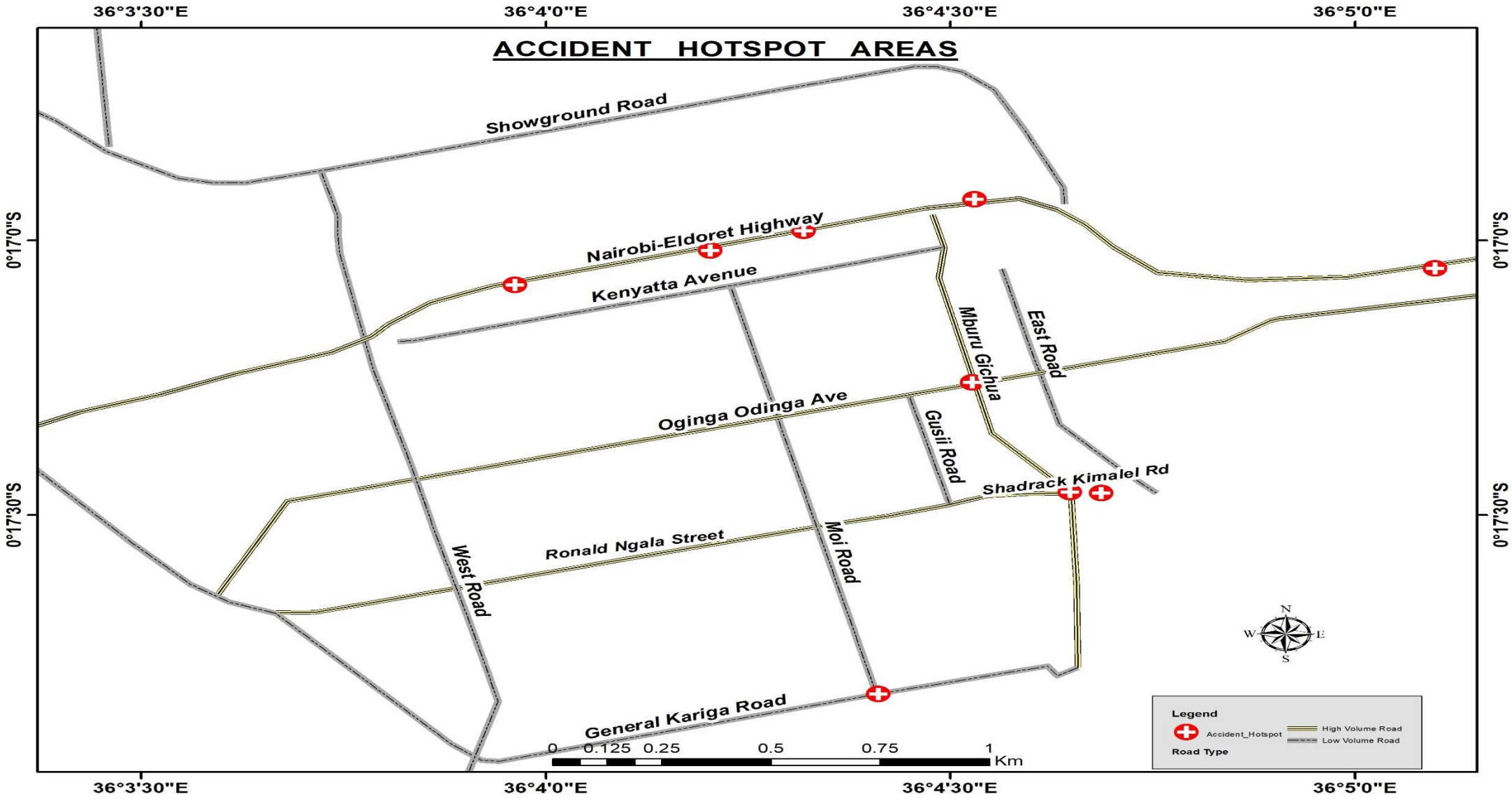
Cyclist challenges

Lack of parking facilities for cyclists

Concerns

- Cycling infrastructure is almost nonexistence.
- Single existing one is in bad condition thus not utilized
- While pedestrian mobility issues are in plan –cyclists are not

Pedestrian-safety Concerns in Nakuru City



On going repair and construction of NMT Infrastructure-Nakuru

Sidewalk Construction on Kenyatta Avenue

Sidewalk Repair on Kenyatta Avenue

Common challenges for those walking or cycling in Jinja Town

Businesses occupying walkways

Nile Gardens, one of the roads leading to another recreation space in Jinja, surrounded by green

Preliminary Concluding Notes

1. In Nakuru, NMT is a new concept that is yet to be appreciated by many…….including City management-as quoted.
2. “*There is a general lack of understanding of the importance and benefits of walking -the concept is not understood- It is very hard to push the agenda because majority of members do not understand why we could prioritize NMT while there other important issues like…….roads for vehicles*”

Preliminary Recommendations

- Growing/second tier cities have the potential of making a difference in transport planning and policy for sustainable urban mobility.
- There is need to plan for NMT interventions for both development and maintenance and to establish a coherent strategy for improving NMT as a network
- There is an opportunity to avoid making mistakes other cities made in planning for equitable access.
- Co-assessment brings the mobility and access challenges to stakeholders.
- For sustainable mobility, the significant role of NMT needs to be recognized and factored into public transport and road infrastructure investments.
- Political and community support in regards to developing NMT infrastructure is necessary for success.

Hope to share more when the study is concluded

PROJECT TITLE

A comparative Assessment of the Quality of Walking and Cycling Infrastructure in Nakuru (Kenya) and Jinja (Uganda)

THANK YOU!