Evaluating the Significance of Car-Free Streets in Developing Countries: The case of Nairobi, Kenya

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Abstract

Central Business Districts (CBDs) in developing countries continue to experience adverse effects of automobile dominance but most car-free initiatives are concentrated in developed countries. This study evaluates the significance of car-free streets in developing countries by evaluating perceptions of street users and the priorities of key decision makers in Nairobi, Kenya. Based on structured interviews, the results indicate differences in perceptions towards safety comfort and connectivity in varying traffic conditions. From in-depth interviews, it is clear that decision makers have focused on smooth flow and parking of automobiles, order, and security of adjacent premises while side-lining the affairs of pedestrians.

Keywords: Car-free; pedestrians; livability; Street

1.0 Introduction

Car-free streets in central business districts (CBDs) are gaining prominence as critical elements in the functioning of many cities globally; they provide a pedestrian centered mobility structure that eases shopping activities, social interactions, and other aspects of urban life associated with pedestrians. As car ownership across the globe surges, traffic accidents, financial losses attributed to traffic congestion, air pollution, and declining aesthetics in urban areas have continued to undermine the progress made by increased mobility. Unfortunately, although automobile dominance is of enormous concern in most developing countries, most of the car-free initiatives are in developed countries such as Germany and the Netherlands.

Several studies have discussed the negative effects of automobiles such as traffic accidents, pollution, and economic losses in cities of developing countries. For example, studies on pedestrian injuries in cities such as Nairobi, Kenya have depicted the great human suffering and deaths of pedestrians caused by automobiles (Ogendi, Odero, Mitullah & Khayesi, 2013). Others have evaluated problems associated with pollution as well as secondary effects such as crime. Studies have also demonstrated the tendency of many governing authorities to prioritise automobiles and the side-lining of pedestrians in urban areas of developing countries. Clearly, there is a general consensus on the need for schemes that protect pedestrians from automobile traffic. However, the support and opposition towards these schemes varies widely among pedestrians, car owners and other stakeholders. Although a casual observation tends to show general acceptance to car-free plans, the details often cause divisions especially regarding the cars to be excempted, enforcement measures, and the provision of public transport. Restricting of automobiles also has effects on the city and regional scales; limiting of auto traffic in one area may lead to problem in others.

Control over motorization in CBDs has been left to capitalist forces such as shop owners' perceived sales, clients' convenience, and city governments' parking revenues. Consequently, the needs of people utilizing the street spaces in daily life have been neglected; representation and political power of vulnerable groups is minimal particularly in developing countries where power plays considerably favor the elite. Additionally, cities in developing countries have many peculiarities such as high proportions of informal traders, a large mix of vehicles including carts and motor cycles, disorganized informal trades, as well as limited financial capabilities. As such there is need for tailor-made interventions to address the challenges of people on foot. Unfortunately, compared to their developed counterparts, there has been little research dedicated to car-free schemes in Central Business Districts (CBDs) of these cities.

Based on Nairobi, the capital city of Kenya, and one of the biggest business hubs in Africa, the primary aim of this paper is to present pedestrians' evaluation of safety, comfort, and convenience in varying levels of traffic. The study explains the differences between the perceptions of day-to-day street users and the priorities of key decisionmakers. Three street types (typical car-free street, one-way street, and car-free street) are examined to expose the implications of vehicular traffic and the effect of car-free streets on pedestrians` wellbeing; interviews with stakeholders attempt to unearth the underlying factors that have shaped the

current prioritization of automobiles and consequent neglect of pedestrian affairs. In particular, it investigates two research questions: firstly, how do decisions of government agencies and the private sector priorities automobiles at the expense of people's stay activities? and second, what is the level of consciousness that people in Nairobi have towards automobiles and current automobile restrictions?

2. 0 Literature Review

Central Business Districts (CBDs) generally consists of a high concentration of activities such as shopping, office, cultural, administrative, entertainment, wholesales, and industries in contrast to the homogenous residential and industrial land uses in their surroundings (Funsho, Bukola, & Omoyeni, 2013). Unlike neighborhoods, these areas have a wider variety of user groups including visitors, traders, and residents. Additionally, walking is the best way to experience these areas because of high development density and congestion that do not allow for a pleasant driving experience (Zakariah & Ujang, 2015).

Livability of urban streets regards how well a street caters to the needs of its users. Many studies have used walkability as a measure of livability due to its environmental sustainability and promotion of physical health (Shamsuddin, Hassan, & Bilyamin, 2018; Wicramasinghe & Dissanayake, 2017). Azmi, Karim, & Amin (2012) characterized walkability based on aspects of walking behavior: speed, direction, walking experience, group formation, and density. Pedestrian friendliness has also been used to measure livability (Rahman, Sakip, & Nayan, 2018). Streets are also livable if they satisfy a user's feeling of safety, comfort and convenience, as well as access and connectivity (Rahman, Sakip, & Nayan, 2018; Zakaria & Ujang, 2015). Additionally, Jeong, Heo, & Jung (2015) note that intensity of shopping activities, traditional characteristics, and the sense of place attachment are key contributors of liveliness of streets.

Safety on streets is a measure of how much a street user is free from both real and subjective dangers based on factors such as the amount of vehicular traffic, presence of other street users, police security, and signs of vandalism (Rahman, Sakip, & Nayan, 2018). Presence of people may enhance the feeling of safety although overcrowding has negative impacts due to the possibility of pickpockets and sexual harassment.; the extents differ between men and women (Rahman, Shamsuddin, Ghani, 2015). Sham, Omar, & Amat, (2012) note that most women, 74.2 % reported encountering crime while walking to or from public transport points in Malaysia. According to Shokoohi, Hanif, & Dali (2012), parents` judgment of children's safety depends on the number of other pedestrians on the street.

Comfort and convenience regards the pleasantness of a street regarding elements such as weather and climate, spaciousness, and support facilities (Rahman, Sakip, & Nayan, 2018). It is also influenced by the type of users especially the presence of students and tourists (Jalaladdini & Oktay, 2013).

Access and connectivity regard how well a street user is able to navigate smoothly through the street and effectively reach points of interest such as bus stops; the presence of obstacles and the directness of walkways are some of the determinants (Zakariah & Ujang, 2015). Rahman (2015) posits that a place is accessible when there is an equal opportunity

for everybody to use public spaces. Wicramasinghe & Dissanayake (2017) studying the Central Business District of Kandy in Sri-Lanka observe that presence of obstacles and flow rate are key determinants of pedestrians avoiding walkways and instead using dangerous carriageways.

Best practices on mobility across the globe have in recent times emphasized on vulnerable people but most developing countries lag behind. For example, Daodu & Said (2018) have observed that 70% of studies on the independent mobility of children between 2007 and 2008 were done in developed countries of Europe and little or nothing on Africa. In general, existing academic and technical discourses regarding motorization though numerous, have tended to be overly narrow and emanating from Engineers and economists (Klopp, 2012). However, Khayesi, Monheim and Nebe (2010) note that there is little research in the way of conceptualizing urban streets as contested spaces that need to be shared by different users for different functions and activities. Most of the studies have focused on the separation of car traffic from pedestrians and the provision of pedestrian and cycling infrastructure. Vasconcellos (1997) opines that developing countries need safer streets more than cleaner cars, and that a change in current priorities is necessary. He continues to posit that unlike air pollution that mostly affects vulnerable people such as the elderly with coronary or respiratory diseases, traffic accidents affect all ages and are direct causes of death or injury due to the numbers killed or injured and the mostly one-sided nature of this violence.

Current research on mobility in developing countries shows a gap in articulating issues of automobile restrictions and the effects thereof. Although there are many studies on the existing challenges, recommendations have often emphasized on improving the physical infrastructure for increased automobility. Other studies regarding streets in developing countries have often focused on heritage of historical streets (Yunus, Samadi, & Omar, 2015; Samadi, Omar & Yunus, 2012). Others such as Sholihah & Heath (2016) have also studied the conflicts that arise between shop owners and street vendors due to competition.

Kumar & Ross (2006) have shown that in addition to making streets safer and more pleasant, pedestrianization and traffic calming has benefits to the retailing and commercial community through increases in sales volumes. Based on data from 400 UK towns and a significant number of German towns, Hass-Klau (1993) has demonstrated a general positive effect of pedestrianization on retailing with some variations such as shops inside pedestrian areas being more successful than outside ones and more extensive schemes having more substantial positive effects than the less extensive schemes. However, the author notes that there can be a reduction in turnover during a transition period of 1-2 years with fringe shops just outside the developed area disadvantaged. However, Topp & Pharaoh (1994) mention that precedents such as pedestrian zones and traffic-calmed areas which initially received opposition eventually increased in economic activities. Some specific contestations by the business community regard the timing of car-free programs. For example, although evenings are optimal time for car-free arrangements due to the accumulation of people after work, bar and club owners oppose night-time ban on cars since it is the peak for their businesses (Pojani, 2007). In general, evidence from previous studies shows that impediments to car-free schemes are more political than they are technical (Topp & Pharaoh, 1994; Pojani, 2007). Retailers and organizations representing them often oppose schemes to reduce or

eliminate car access and parking to their businesses even though there is some evidence of improved business that comes with pedestrianization (Melia & Shergold, 2016).

Meanwhile, governments in developing countries are still making policies and directing funds to projects that improve the flow of motorized modes while neglecting those using more vulnerable means such as cyclists and pedestrians (Klopp, 2012; Kumar & Ross, 2006). Gakenheimer (1999) demonstrates that issues such as driver discipline, the mix in types of vehicles, centralization of local transportation development and desire for auto ownership are very prevalent in developing countries compared to their developed counterparts. The informal sector represented in activities such as hawking is also unique in developing countries. Unfortunately, as Crawford (2000) observes, the Middle Class in developing countries has continued to model its life from the US styles seen on television. Meanwhile, Klopp (2012) cautions that imagining that the solution to urban motorization is pegged on constructing more roads is not only short term but also expensive.

Many scholars have presented recent efforts to introduce car-free schemes in CBDs for reasons such as safety, visual attractiveness, reducing air pollution, and economic revitalization (Nieuwenhuijsen & Khreis, 2016; Kumar & Ross, 2006). Unfortunately, initiatives for restricting cars in major cities of developing countries are rare even though they experience similar or worse challenges compared to their developed counterparts. Ogendi, Odero, Mitullah & Khayesi (2013) while studying pedestrian injuries in Nairobi found that pedestrians constituted the largest proportion of those admitted in hospital for road traffic injuries (59.1%) when compared to motor vehicle passengers and motorcyclists; among motorized four-wheeler vehicles involved in collisions with pedestrians, cars lead (39.4%) followed closely by matatu, 14-seater mini-buses (35.5%). Even though pedestrians are the most vulnerable, most government policies in developing countries are directing funds to the affairs of motorised modes of transport while sidelining pedestrians (Kumar & Ross, 2006; Adejumo, 2010). Meanwhile, Masuri, Isa, & Tahir, (2012) note that most traffic crashes are a result of negative human behaviors and not inadequacies of infrastructure.

2.1 Background to the study area

Nairobi is the capital city of Kenya with a population of 3.5 million people. Its foundations as an urban area began in 1896 as a transport depot with stores and stables, and became a railway station by 1899 for the British colonial government; it had a population of 11,512 in 1906 and 108,900 in 1948 (White, Silberman & Anderson,1948). Currently, public transport is dominated by Matatu, 14-seater private-owned vans. Matatu fares fluctuate depending on demand and do not operate on a time schedule hence very unreliable; they are also a major contributor to congestion since most of the routes in the city terminate within the CBD.

White, Silberman & Anderson (1948) note that by 1906 differentiation of Nairobi was largely based on racial segregation in addition to the Railway-related developments. Decades after the end of the British Colonial Government in 1963, there are general distinctions between the uptown on the Western side of Tom Mboya Street (figure 1) and the downtown on the Eastern side: the uptown has a higher proportion of older buildings inherited from the colonial era, and is generally dominated by high-end boutiques, banks, and restaurants. The downtown is dominated by cheaper restaurants, shops for motor vehicle spare parts,

electronics, clothes, and shoes; buses and matatu are also concentrated on this side. Streets in the uptown such as Mama Ngina Street (figure 2) have less traffic congestion compared to the Downtown.

Figure 1: Tom Mboya Street
Source: Author. 2018

Figure 2: Mama Ngina Street.
Source: Author, 2018

Mama Ngina Street is a lively one-way street that hosts a variety of business entities such as exclusive restaurants, banks and foreign fashion chains, in what is considered as a prestigious part of Nairobi CBD in contrast to the downtown. Its width of around 20 meters stretches for roughly 450 meters from City Hall to Moi Avenue. It is currently a 'traffic calming' street without roadside parking. However, the street is not free from the usual incongruities and quiet contestations in Nairobi: fast food restaurants face exquisite banks, beggars and street children stare at suit clad expatriates as pedestrians evade cars.

The Aga Khan Walk (figure 3) is the only major street within the CBD that is car-free. It is approximately 20metres wide and extends for around 300meters from City-Hall way to Harambee Avenue. Popular buildings along it include Uchumi Supermarket, Kenya Cinema and Kencom building.

Figure 3: Aga Khan Walk.
Source: Author, 2018

3.0 Methodology

This study is based on a questionnaire survey of pedestrians, as well as structured interviews with key stakeholders in Nairobi. A pilot survey with open questions was first administered on thirty-one respondents to test the effectiveness of the questionnaire; some of the answers were used in the final questionnaire as choices for the close-ended questions. Traffic density and physical conditions of streets in both the downtown and the uptown areas were analyzed.

Due to time and financial constraints, three streets were selected. In total, 399 questionnaires were administered to pedestrians on Tom Mboya Street, a typical street with high traffic volumes (169), Mama Ngina Street, a one-way Street with minimal vehicular traffic (115), and Aga Khan Walk, a car-free street (115). The questionnaire consisted of four main sections: 1. respondents use characteristics such as the objective and frequency of using the street, 2. users' satisfaction on aspects of safety, comfort, and connectivity based on a Likert scale of five points, 3, attitudes towards car restrictions, and 4. respondent's personal attributes such as age, occupation, and gender. Structured interviews involved 6 people: 2 engineers from City Government, 1 former director of planning in the City Government, 1 former leader of the Nairobi Business District Association, and 2 academics in Planning and Landscape Architecture in Nairobi. The interviews aimed at getting a deeper understanding of the intricacies undermining the needs of pedestrians and the prioritization of automobiles.

4.0 Results and Discussion

### 4.1.0 Attributes of questionnaire respondents

Respondents to the questionnaires comprised of 60.3% male and 39.7% female; respondents in the 20s-age group constituted the highest proportion (49.2%) followed by 30s (23.8%), 40s (12.3%), below 20 (7.8%), 50s (5.1%), 60s (1.6%), and the lowest were those in the 70s age-group (0.3%). Only 28.1% of respondents own cars. Regarding street usage, 47.3% of respondents generally use the streets daily and only 6.1% were on the streets for the first time. However, 26.6% of respondents did not enter any establishment on the streets they were interviewed in; 29.2% had entered restaurants followed by finance-related establishments such as mobile-money bureaus (11.7%). Regarding the purpose of being in

the CBD, respondents who came to meet a friend comprise the largest proportion, 30.6%, followed by those doing business (22%), and those work in the CBD (20%).

4.2.0 Restrictions

Regarding vehicles that respondents want restricted from accessing the CBD, most respondents were concerned by matatu (41.1%) followed by motorcycles (39.5%), and private cars (10.6%). Although not included among the choices, 8.7% of respondents proposed the exclusion of hard-push carts. Although Matatu were perceived as the greatest threat, it is clear from the interviews that most decisions to restrict Matatu have not been implemented because of the political influence of people involved in Matatu business. From interviews, a lot of the mobility problems are related to poor public transport that is dominated by low-capacity vehicles instead of mass transit systems.

Regarding streets that need temporary restriction of vehicles, Tom Mboya Street leads at 40.7% among the choices given; it also leads at 35.3% regarding streets where cars should be permanently restricted. Other streets mentioned are shown in figure 4.

Figure 4: Streets suggested for car restriction
Source: Author, adopted from GoogleMaps.
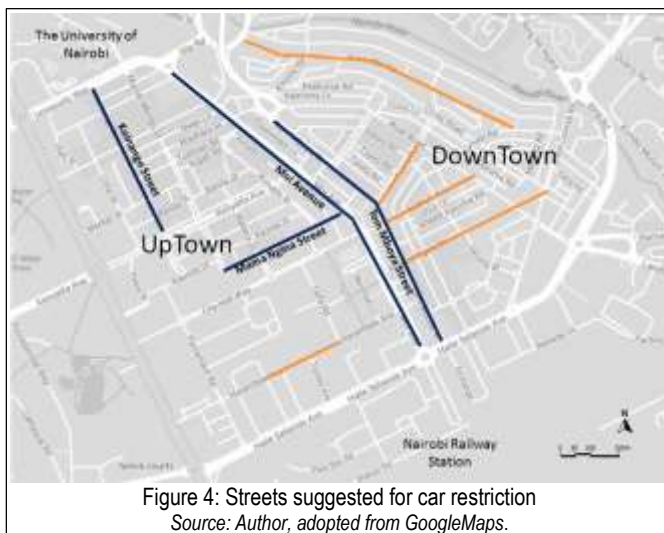
4.3.0 Satisfaction with safety

In general, respondents were most satisfied with safety on the car-free street followed by one-way street; the street with many cars has least perceived safety. Variations among the three streets were statistically significant for all variables except "safety at night" and "actions of beggars" as shown in table 1.

Table 1: Safety

Variable name	Car Street		One-way Street		Car-free Street		p value
	Mean	SD	Mean	SD	Mean	SD	
Safety from strangers	2.83	1.106	2.90	1.144	3.28	1.148	.003**
Safety from crime	2.64	1.193	3.08	1.119	3.16	1.231	.000***
Safety from vehicular traffic	3.21	1.039	3.14	1.138	3.66	1.135	.000***
Antisocial activities	2.93	1.049	2.73	1.048	3.37	1.115	.000***
Safety at night	2.79	1.211	3.07	1.103	2.87	1.182	.149
Safety for children and elderly	2.56	1.117	2.96	1.141	3.35	1.178	.000***
Actions of beggars	2.37	1.229	2.54	1.072	2.47	1.169	.469
Actions of preachers	2.59	1.227	2.78	1.120	3.01	1.306	.020*
Actions of hawkers	2.78	1.271	2.59	1.247	3.01	1.331	.049*

Source: Author

* statistical significance ≤ 0.05   ** statistical significance ≤ 0.01   *** statistical significance ≤ 0.001

Safety at night was evaluated unfavorably on the car-free street; this could be as a result of the trees and shrubs where criminals can hide as well as low volumes of pedestrian traffic due to poor proximity to matatu stops. Safety at night ranks highest on the one-way street; this may be attributable to the presence of bars and restaurants that operate at night. In general, non-criminal activities of other people such as beggars and preachers were evaluated as satisfactory as compared to perceptions regarding crime and stranger danger. The ranking for activities of beggars is almost the same for the three street types.

4.3.1 Correlation of safety against respondents' personal attributes

When Safety is correlated against car ownership, there is a weak correlation and no statistical significance in the relationship; same for gender, age, the frequency of using the street, and objective of coming to the CBD. However, although, there is a weak correlation, level of education is statistically significant in predicting safety, p=0.026 as shown in table 2.

Table 2: Correlation of Safety against respondents' personal attributes

	R value	p value
Car ownership	.028	.879
Gender	.112	.123
Age	.138	.505
Level of education	.195	.026*
Frequency of using the street	.091	.742
Objective	.205	.119

Source: Author   * statistical significance ≤ 0.05

4.4.0 Satisfaction with Comfort and Convenience

In general, the car-free street, Aga Khan walk is ranked higher in terms of satisfaction on most elements of comfort and convenience, followed by the one-way street, and lastly, the street with cars. Variations among Car Street, One-way Street, and the Car-free street were statistically significant for all variables except satisfaction with "shade" and "dustbins" as

shown in table 3.

Opportunities for sitting on the car-free street have the highest score in the whole set; seating ranks poorly in the other two street types. The Aga Khan walk has furniture. In addition to pedestrian movement and sitting, it is host to various stay activities such as music and theatre performances as well as street vendors.

Table 3: Comfort and convenience

Variable name	Car Street		One-way Street		Car-free Street		p value
	Mean	SD	Mean	SD	Mean	SD	
Condition of pavement	2.51	1.266	2.86	1.137	3.26	1.285	.000***
Surroundings` attractiveness	2.95	1.127	3.19	1.167	3.55	1.165	.000***
Opportunities to stand	3.11	1.103	3.12	1.153	3.59	1.022	.001***
Opportunities to sit	2.63	1.086	2.32	1.080	3.78	1.080	.000***
Congestion	2.49	1.202	2.91	0.996	3.28	1.121	.000***
Ability to talk or hear	3.10	1.074	3.27	1.013	3.68	1.028	.000***
Free from obstacles	2.98	1.189	3.17	1.070	3.63	1.066	.000***
Ability to participate in activities	2.88	1.145	3.07	1.038	3.36	1.179	.002**
Shade/cover	2.63	1.226	2.59	1.215	2.53	1.280	.788
Width/spaciousness	3.02	1.216	3.39	1.250	3.43	1.308	.009**
Greenery	2.92	1.241	2.92	1.239	3.52	1.235	.000***
Pleasantness of smell	2.75	1.173	3.21	1.260	3.00	1.363	.012*
Pleasantness of noise	2.37	1.106	3.04	1.085	3.24	1.219	.000***
General cleanliness	2.79	1.250	3.11	1.226	3.13	1.383	.046*
Mix of uses	3.25	1.107	3.19	1.138	3.63	.984	.003**
Dustbins	2.65	1.253	2.83	1.051	2.78	1.354	.442
Toilets	2.61	1.203	2.27	0.947	3.16	1.295	.000***
Opportunities to interact	3.03	1.139	3.12	1.053	3.70	.976	.000***
Liveliness	3.12	1.135	3.20	1.060	3.75	1.091	.000***

Source: Author.   * shows statistical significance ≤ 0.05   ** shows statistical significance ≤ 0.01   *** shows statistical significance ≤ 0.001

4.4.1 Correlation of Comfort against respondents' personal attributes

When Comfort is correlated against car ownership, there a weak correlation and no statistical significance in the relationship; same for gender, age, level of education, frequency of using the street, and objective of coming to the CBD as shown in table 4.

Table 4: Correlation of Comfort against respondents' attributes

	R value	p value
Car ownership	.110	.196
Gender	.073	.483
Age	.177	.290
Level of education	.151	.284
Frequency of using the street	.086	.848
Objective	.177	.488

4.5 Satisfaction with Access and Connectivity

In general, respondents are more satisfied with access and connectivity for the car-free street compared to the one-way street; the street with cars ranks lowest in regard to access and connectivity. Variations among Car Street, One-way Street, and the Car-free street were

Table 5: Access and Connectivity

Variable name	Car Street		One-way Street		Car-free Street		p value
	Mean	SD	Mean	SD	Mean	SD	
Ease of accessing the street on foot	3.01	1.221	3.20	1.166	3.87	1.019	.000***
No physical barriers e.g. walls & fences	3.07	1.078	3.15	1.084	3.64	1.063	.000***
No need to cross busy traffic street	2.81	1.157	3.01	1.037	3.51	1.173	.000***
Directness of the street	3.31	1.000	3.28	.944	3.62	1.057	.021*
Access to your destination	3.48	1.004	3.38	1.130	3.58	1.059	.404
Access to matatu/bus stage	3.22	1.160	2.94	1.188	3.10	1.329	.169
Access to car parking	2.64	1.230	2.68	1.062	3.48	1.275	.000***
Connection with neighbouring streets	3.36	1.171	3.28	1.068	3.65	1.006	.030*
Visibility of other activities from the street	3.16	1.162	3.13	1.140	3.53	1.107	.012*

Source: Author   * shows statistical significance ≤ 0.05   ** shows statistical significance ≤ 0.01   *** shows statistical significance ≤ 0.001

statistically significant for all variables except satisfaction with "access to destination," and "access to matatu/bus stop" as shown in table 5.

The variable with highest average score in this set is Car-free Street's "Access by foot." The one-way street ranks lowest with regards to access to bus stop since the uptown area is not served by public transport.

4.5.1 Correlation of Connectivity against respondents' personal attributes

When connectivity is correlated against car ownership, there is a weak correlation and no statistical significance in their relationship; the same goes for gender, age, level of education, the frequency of using the street, and objective of coming to the CBD as shown in table 6.

Table 6: Correlation of Connectivity against respondents' attributes

	R value	p value
Car ownership	.134	.052
Gender	.095	.231
Age	.168	.237
Level of education	.128	.375
Frequency of using the street	.148	.208
Objective	.145	.649

Source: Author

4.6.0 Correlation of Safety, Comfort and Connectivity in predicting the livability of the streets

The relationship between safety, comfort, and convenience, and connectivity was done by computing the Pearson correlation as represented in table 7. A strong positive correlation was found between Safety and Comfort, r=.587 as well as between Comfort and Connectivity,

r=.676. There was a moderate correlation between Safety and Connectivity, r=.475. These results show a stronger correlation to a study by Zakaria & Ujang (2015) that established .492, .499, and .448 respectively in their study on the comfort of walking in Kuala Lumpur. Although studies have shown high density of people enhances vibrancy of a street (Samadi, Yunus, Omar, & Bakri (2015), this study demonstrates that automobiles are hindrance to the enjoyment of street spaces. Even though Tom Mboya street is very vibrant, pedestrians evaluated it negatively for safety, comfort and connectivity. On the other hand, the potential in a car-free street like Aga Khan walk is not exploited optimally because it is situated away from the main sources of pedestrian traffic. Unlike other studies that have found the influence of respondents such as gender and age on perceptions of the street environment (Bohari, Bachok, & Osman, 2016; Rahman, 2015), this study did not establish such.

Table 7: Correlation of Safety, Comfort, & Convenience, and Access & Connectivity

	1	2	3
1 Safety	----	.587**	.475**
2 Comfort & Convenience	.587**	----	.676**
3 Access & Connectivity	.475**	.676**	----

*Source: Author   **. Correlation is significant at the 0.01*

4.1 Side-lining of pedestrian needs by decision makers

From the interviews, the current sidelining of pedestrians in Nairobi in favor of cars is a complex issue that goes beyond mere designation of streets as car-free. Similar to many cities in developing countries, contestation for urban space involves pedestrians, motorists, on street parking, motorcycles, encroachments from commercial buildings, as well as informal traders.

Both the city government of Nairobi and the national government do not have the human resource capacity required to articulate functions of streets as mobility spaces and as spaces for stay activities. As Ahmed (2017) notes, it is difficult to achieve balanced use of street space without allowing compromises between streets' function for movement and streets' function as open spaces. The limitation in knowledge and experience regarding the benefits of pedestrians` safety, comfort, and connectivity has hindered efforts to priorities issues of car-free streets proposed decades ago. Additionally, sidelining of planners and landscape architects has also undermined design of high-quality streets that respond to needs of users of space especially regarding design and placement of open space elements such as furniture. This was a major issue during efforts to pedestrianize Mama Ngina street; most decisions on behalf of the city government were made by engineers. During discussions between the City Council and local traders before pedestrianization of Mama Ngina Street, traders opposed the project because in their view, their clientele required car parking in the immediate outside of the establishment they were visiting (Karssenberg, Laven, Glaser, & van't Hoff, 2016). This ended in a compromise—the current one-way street that was done in place of full-scale pedestrianization. Despite this progress, the sitting areas established during this phase were later removed due to security threats.

Financial challenges have been a key in transforming typical car streets into car-free or one-way. As such, projects funded by the private sector have been prioritized but this often ignores public welfare in favor of the funding entities. For example, from interviews, funding from one of the major business owners drove the initiative to convert Mama Ngina Street into a one-way street; the urgency was based on security considerations for high profile offices above the usability of the street space. Among ordinary pedestrians, there is a greater concern for streets in the downtown area compared to those in the uptown area. This contradicts current progress that has focused on pedestrianizing uptown streets. Rahman, Sakip, & Nayan (2018) also observe this tendency to make decisions favorable to business entities while disregarding pedestrians and vitality of streets.

Power plays among government agencies and departments in allocation of funds and responsibilities have also undermined implementation of projects that could improve the welfare of pedestrians. Existence of agencies with overlapping mandates has also caused abdication of responsibilities as well as sabotage. For example, the newly established Nairobi Metro Area Transport authority is in charge of issues also handled by the city government as well as the ministry of transport in the national government.

Challenges in handling informalities has discouraged car-free initiatives. Illegalizing of informal trade activities such hawking and peddling of goods has also generated unnecessary conflicts on street spaces. Most interviewees agreed that the solution for informal traders is proper management of space and time to allow their co-existence with formal businesses. In addition, outdated by-laws prohibiting the use of the outpouring of café sitting areas onto the street (Karssenberg, Laven, Glaser, & van't Hoff, 2016) as common in other jurisdictions have curtailed the perceived safety and security promoted by outdoor street activities.

All interviewees were eager to use public transport if availed; the key argument revolves around the quality of such a system. The success of car-free streets is dependent on the public transport connecting the car-free districts to other parts of the city. It is difficult to get people to relinquish their cars for walking, cycling, or public transport since cars are images that people project whether false or otherwise and is not limited to developing cities. Klopp, (2012) advises on the need to provide public transport systems that offer more choice to the majority of city dwellers as a way of levelling historical injustices regarding the access to open spaces and opportunities. Gunn (2013) also notes that an urban strategy that prioritizes automobile over public transport works against the groups in the city's composition that are already disadvantaged regarding mobility such as the poor, elderly, women and children who also form the majority in urban areas. Efforts at restricting automobile access and circulation have not been applied where the greatest need is—reducing matatu access for streets in the downtown area. Since Matatu stops are major generators of human traffic, reducing automobile restriction should be in phases otherwise the reclaimed streets will be abandoned. Adoption of reliable high-capacity public transport will ensure that people can easily access the CBD from other places and then connect within the CBD on foot in comfort and safety from traffic dangers.

In practice, class differences among users of public transport and car owners has created a gap in articulation of pedestrian needs since most decision makers do not use public

transport. The establishment of out-of-the-city shopping and leisure zone is also a threat to the sustainability of the city Centre. This presents a two-edged challenge: declining urban quality from over motorization pushes out people while exquisite access and parking for the middle-class in other places pulls them outwards. Additionally, middle class and high income use certain sections of the city. Although big malls allow for car-free shopping experiences, they serve a certain class, and the pedestrianization continues to enhance the class separations.

The lack of political will in streamlining mobility challenges has derailed many brilliant ideas. In addition, changes in political regimes cause inconsistencies in implementation of existing policies. Cycles of electioneering have had a major impact on the influence of state power on urban planning issues in Kenya. Many radicle decisions are reversed during election periods through executive actions aimed at raising the popularity of regimes in power. At the policy level, the halting of a ban on 16-seater matatus towards the 2013 polls is a good example. Corruption has also given undue influence on decision-making to favor certain sections of the citizenry against others.

In sum, major decisions have not been based on research but the political and financial impetus of business owners hence a disregard for vulnerable groups. The huge gap between normative approaches of decision makers (mostly car users) and the experiences of low-income earners alienates mobility policy from reality.

5.0 Conclusion

This study attempted to explain the potentials and challenges in initiating car-free schemes for cities in developing countries by evaluating perceptions towards three streets in Nairobi with varying density of vehicular traffic. The results depict the importance of understanding various elements of the three composite variables, safety, comfort and connectivity of streets in enhancing livability. It is clear that users' perception of safety, comfort, and connectivity varies greatly among the three street types: car-free street (Aga Khan Walk) ranks highest followed by the one-way Street (Mama Ngina Street), while the street with many cars (Tom Mboya Street) ranks lowest regarding users' satisfaction with the three variables. Even though car-free streets and spacious one-way streets are highly appreciated by pedestrians, support infrastructure, landscape design, and connectivity to major sources of pedestrians is insufficient. Efforts to instill order brings more conflicts when government agencies discourage stay activities and informalities such as overflow cafes, and street vendors.

Nairobi, a city envisioning a 24-hour economy and one of the leading business hubs in Africa cannot afford to ignore opportunities or to escape the challenges of contemporary urban mobility if it is to survive in regards to providing quality of life. Meanwhile, current planning prioritizes automobile traffic while side-lining pedestrians. Evidence of increased liveliness of the street is apparent in the movement, interactions and congregation of people in streets such as Mama Ngina and Aga Khan Walk. However, the impact on the economic interests of the traders has not been sufficiently quantified. The ability to initiate such and even better steps towards having more car-free streets in the CBD is partly pegged on demonstrating the costs and tangible benefits.

This study contributes to the current body of knowledge by exposing the incongruence between pedestrian's perceptions on their daily use of streets and the priorities of key decision makers such as the Nairobi City Government and the business owners. Nevertheless, as Jalaladdini & Oktay (2013) note, the vitality of public spaces is not based on a single reason but may vary from one street to another; this study cannot exclusively attribute the key differences in the results to the number of cars. Since this study relied on one city, and did not find significant influences of respondents' attributes such as level of education, future studies on car-free schemes for other developing and developed countries are necessary in order to clarify the key influences on perceptions towards safety, comfort and connectivity.

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