Journal of Urban and Environmental Engineering, v.18, n.1, p.52-59

ISSN 1982-3932
doi: 10.4090/juee.2024.v18n1.052059

Journal of Urban and Environmental Engineering

www.journal-uee.org

# DETERMINANTS OF TRAFFIC CONGESTION IN THE HARARE METROPOLITAN REGION

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Received 21 November 2023; received in revised form 16 May 2024; accepted 18 June 2024

**Abstract:** During the peak rush hour, motorists and residents spend considerable time trying to weave their way through between their work places and homes. This article is based on a study that examined determinants of traffic congestion in the Harare Metropolitan Province. The researchers adopted a mixed method approach and a cross-sectional survey design. The study population was comprised of urban planning and zoning officials, transport planners, residents, motorists and other stakeholders in the Zimbabwean transport sector. Stratified sampling and purposive sampling technique were used to select respondents. Data were collected using self-administered questionnaires. The questionnaires were translated from English to Shona to cater for monolingual respondents. The researchers read out and explained the questions to the respondents where necessary. The questionnaires used were closed ended with five-point Likert scale. Respondents were given the chance to tick or rank the most appropriate response(s). The data gathered was presented in descriptive statistics using the statistical package for social sciences (SPSS) version 20. Descriptive data was analysed using, mean and standard deviation. The study concluded that poor land-use planning, increase in vehicle ownership, uncivil driving behaviour; inadequate road capacity and poor traffic control were the key determinants of traffic congestion in Harare Metropolitan Region. The study recommended the integration land-use between transportation plans can play a crucial role in alleviating traffic congestion. Furthermore, the police and other traffic law enforcement agencies such as the Traffic Safety Council of Zimbabwe, Zimbabwe National Roads Authority among others should encourage the enforcement of traffic laws and offer public enlightenment or traffic education to road users. These programmes should be designed not merely as means to raise revenue but to create awareness.

**Keywords:** Congestion; Peak-hour; Population; Urbanization



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## INTRODUCTION

Traffic congestion in cities has been an issue since the beginning of the 20th century and it continues to be one of the most persistent problems facing road users and planners, across the world (Zhang & Batterman, 2013; Bigazzi & Figliozzi, 2015; Grote *et al.* 2018; Fan *et al.* 2019). The continuing increase in the number of automobiles, combined with the concentration of urban populations, has made congestion a pre-eminent focus of many communities worldwide (Andoh, 2014; Jones *et al*., 2014; Chang & Park, 2018). Currently, 55% of the world's population lives in urban areas, a proportion that is expected to increase to 68% by 2050 (United Nations, 2018). However, motor vehicle ownership and use are growing even faster than population, with vehicle ownership growth rates of 15-20% per year common in some developing countries. In 2014, there were just over 42.5 million registered vehicles in use in Africa. The average distance travelled per vehicle is also increasing in all but the largest, most-congested cities. This growth exceeds the ability to increase road space and the major impediment to the efficient working of the urban economies in large-size cities and, particularly, in megacities, is the level of road traffic congestion (Agyemang, 2009; Wu *et al*., 2019).

The Traffic Index Report released by TomTom (2019) noted some significant differences between continents: for example, decreases were measured in Asia, with a large decrease in congestion (-8%) in Jakarta, while nearly every city in South America posted increases, the largest (8%) taking place in Lima, Peru (TomTom, 2019). Likewise, a survey by INRIX (2019) into the state of congestion in 200 cities in 38 countries highlights the impact of snarled traffic by looking at how much time and money it wastes. For instance, in the United States, the total cost of lost productivity caused by congestion to be $87 billion. In terms of lost hours, the three worst cities in the US for motorists are Boston, Chicago and Washington DC. Using a time travel index to measure peak period congestion, Stapleton *et al*. (2017) found that congestion has risen in cities of all sizes in the United States since 1982. The Canadian Press (2015) estimated that the average Canadian commuter spent 79 total hours in traffic in 2014, representing a 2% increase from the year before. Travel speeds are decreasing and the travel environment for pedestrians and people-powered vehicles is deteriorating. Downtown weekday traffic speeds are reported to average 10 kilometres per hour (km/h) or less in Bangkok (Thailand), Manila (Philippines), Mexico City (Mexico) and Shanghai (China) 15 km/h or less in Kuala Lumpur (Malaysia) and São Paulo (Brazil).

Most African cities are generally characterised by sprawl and unplanned urban expansion (Saghir & Santoro, 2018; Stucki, 2015). Due to limited disposable income and the high cost of new vehicles, second-hand vehicles dominate the African continent's automotive retail sector (OICA, 2016). Based on in-market research, Deloitte estimates that in the three African countries (Ethiopia, Kenya and Nigeria) at least 8 out of 10 imported vehicles are used vehicles. This is a common trend across the region given that Africa imports four times more automotive products than it exports, with automotive imports worth US$48 billion in 2014 and exports worth only US$11 billion that year (Black & McLennan, 2015). Owing to this high level of motorization, most African cities have witnessed a very significant proportion of traffic congestion. For instance, Andoh (2014) observed that Ghanaian cities, such as Accra, Cape Coast, Kumasi, Takoradi and Tamale, are not immune to the fundamental challenges of traffic congestion. By the same token, Olayiwola *et al.* (2014) notes that in Lagos, Nigeria, traffic congestion is mostly compounded by weak enforcement of traffic rules and regulations, especially in Ikeja Central Business District and its environs.

Some cities in Africa with heavy congestion costs are Lagos, Nigeria, Dar es Salaam, Tanzania, Lusaka, Zambia, Kenya, Johannesburg, South Africa; Cairo, Egypt; Addis Ababa, Ethiopia, Kinshasa, Democratic Republic of Congo and Luanda, Angola (Das & Keetse, 2015; Olagunju, 2015). In addition, vehicular congestion and traffic jams cost millions of dollars every day through wasted time, environmental pollution and increased stress. For instance, the Nairobi city traffic jam costs Kenya 37 billion shillings annually (This is Africa, 2014). Equally, Zimbabwe's capital city Harare is now on the verge of imploding under its own traffic burden. It is apparent that there is a clear mismatch between increases in the number of vehicles plying the streets of Harare and provision of road space. In addition, the proportion of urban population in Zimbabwe has increased drastically from 10.64% in 1950 to 38.25% in 2010 and it is expected to rise to 64.35% by 2050 (Water Utility Partnership (WUP), 2009). Such large influx of people to the urban areas could be partly explained by the relaxation of some repressive laws, such as the Vagrancy Act (1968) and the Areas Accommodation Act (1972) that *affected* the rights of *Africans* to own land, to live or travel where they chose and to enjoy job security (Chirisa & Dumba, 2012).

Notwithstanding the fast growing of the city in terms of population and spatial dimensions her urban roads are grossly inadequate to meet up the mobility needs of the dwellers; the available ones are often poorly designed

and maintained. For example, the capacity of the intersection at Simon Mazorodze and Chitungwiza Road have been exceeded due to increase in traffic volumes passing through this intersection resulting in poor performance of the intersection, especially during peak hours (Philip *et al.* 2018). Mbara (2015) observes that the diffusion of second-hand vehicles has worsened traffic congestion in Harare. A recent report released by the Zimbabwe Motor Industry Development Policy (ZMIDP) (2018) shows that the Central Vehicles Registry (CVR) processed 14 470 second-hand vehicles imported into the country in 2017. In total, statistics from CRV found that since 2007 to the end of the first quarter of 2017 at least 510 275 second-hand vehicles have been imported into the country. In like a manner, the Zimbabwe National Roads Authority (ZINARA) (2018) estimates that there are over 1, 2 million vehicles in the country. Mutami and Gambe (2015), Rogerson (2016) and Madziba (2017) reveal that vendors have become a threat to the urban transport system as they display their goods in the traffic while relating with their customers, thus slowing down the movements of vehicles.

The public transport system in Harare is highly informalised, with all conventional buses that were good for mass transit disappearing from the system and being replaced by the disorganised and unregistered pirate taxis popularly known as the '*mushika-shika*' (Dube & Chirisa, 2012; Bandauko & Mandisvika, 2015; Dumba, 2017). Tichagwa (2016) echoed that unlicensed pirate taxi drivers block the streets in the city centre at will whenever they are picking or dropping passengers resulting in traffic congestion. Traffic congestion in Harare is observed though vehicle delays on major junctions and interchanges, vehicle queuing, traffic jam and accidents that characterise the morning, mid-afternoon and evening traffic peak periods (Cheure *et al*., 2015; Chikwaya, 2015; Dumba *et al*., 2017; Munuhwa *et al*., 2020). There has been an escalating public outcry over the failure by responsible authorities to deal with traffic congestion in the Harare Metropolitan Region (Chikwaya, 2015). However, there has been little agreement among planners and policy makers on what actions should be taken, or indeed, whether special initiatives are warranted; hence this study investigated the relationship between land-use and traffic congestion in the Harare Metropolitan Region to address the problem. There is a dearth of empirical research geared towards determinants of traffic congestion in the Harare Metropolitan Region. This study therefore intends to fill this gap by examining the causes and proffer solutions to reduce traffic congestion. Additionally, findings from this study will elicit further studies to issues raised in this study.

## LITERATURE REVIEW

To examine the determinants of traffic congestion in Harare Metropolitan Region, the study borrowed from the Systems Theory and queuing theory.

### Systems theory

Aristotle claims that knowledge is derived from the understanding of the whole and not that of the single parts. The Systems theory is an interdisciplinary theory about every system in nature, in society and in many scientific domains and a framework with which a phenomenon can be investigated from a holistic approach (Capra, 1997). Systems thinking come from the shift in attention from the part to the whole (Checkland, 1997; Weinberg, 2001; Jackson, 2003), taking into account the perceived reality as an integrated and interacting phenomena where the individual properties of the single parts become indistinct. On the other hand, the relationships between the parts themselves and the events they produce through their interaction become much more important, with the result that "system elements are rationally connected" towards a shared purpose (von Bertalanffy, 1950; Von Bertalaffy (1956) Luhmann, 1990; Golinelli, 2009). A fundamental notion of the systems theory is its focus on interactions. The centre in relationships lead to sustain that the behaviour of a single autonomous element is different from its behaviour when the element interacts with other elements. Another core tenet is the distinction between open, closed and isolated systems. In open systems there are exchanges of energy, matter, people and information with the external environment. In closed systems there are no exchanges of information and matter, just exchanges of energy. In isolated system there is no exchange of elements. Building on general systems theory many approaches developed. Among others there are open system theory, viable system model and viable system approach. This theory will guide the study in identifying how the various elements of urban transport systems in Hare Metropolitan Region interact.

### Queueing Theory

Generally queuing theory begins in the early 1900's with the work A.K. Erlang on telephone traffic. In his work Elrang sought to answer such questions as what number of phone circuits and administrators are required to fulfil a given request (Erlang 1909, 1917). Queuing theory is the mathematical study of waiting lines, or the act of joining a line (queues). In queuing theory, a model is developed with the goal that queue lengths and waiting times can be predicted (Sundarapandian, 2009). The theory considers the concept that data packets arrive at some rate λ, are held in an input buffer while

**Fig. 1** Components of Queueing Theory

waiting to be serviced by a server at rate μ before passing to the discharge or output medium. The flow rate is determined by λ when if the input is not saturated or by μ (and the discharge medium) when the input is saturated. Queueing theory can be illustrated using the following diagram (**Fig. 1**). Altiok and Melamed (2007) posit that a queue occurs when service rendered is low compared to the high-level demand in a particular place and time. Waiting lines are probably going to form in all circumstances where customs are involved. Wherever there is competition for limited resources queuing is probably going to happen. Ordinarily any queuing system is made out of units, alluded to as customers, requiring some sort of service and who arrive at a service facility, join a queue if service is not immediately available and, in the end, leave after receiving the service. A server refers to mechanisms that deliver service(s) to the customers. If upon arrival a customer finds the server busy, then he or she may form a queue, joint it or leave the system without receiving any service even after waiting for some time (Waters, 2008; Gupta and Khanna, 2007). Vehicles arriving at an intersection can be considered as the customers of a queuing system. In that regard, this theory will help the researcher to ascertain the level of traffic congestion at various intersections in the Harare Metropolitan Region.

## EMPIRICAL REVIEW

Koźlak and Wach (2018) examined the relationship between various factors contributing to congestion in urban traffic and the level of congestion in Polish cities. They found that the most statistically significant relationships have occurred in the case of the number of business entities and the number of passenger cars. They also concluded that the demand side factors are more important in Polish cities than the supply side factors or perhaps the current transport policy is ineffective. When effectively applied, transport policy instruments can play a special role. These instruments can contribute to reducing congestion in various ways, i.e. by implementing various sub-objectives, including reducing the need to travel, reducing the use of passenger cars, improving the functioning of public transport and use of the infrastructure. On the other hand, using a case study approach, Uniyal and Gandhi, (2018) conducted a study in Kota City an industrial city of Rajasthan, India. They revealed that Kota city is swiftly moving towards being a "Smart City" but lack of parking space and road jam and encroachment on road. The study recommended that there is need for road capacity expansion, improved road Infrastructure, restricting routs for auto rickshaw financial penalty to the traffic law brokers and application of flyover most importantly, proper traffic management system along with appropriate implementation of traffic rules is necessary to mitigate the problem of traffic congestion.

Jalagat and Jalagat (2016) conducted a study to determine the common causes of traffic jam in Muscat City in Oman. They employed focus group discussion as the main gathering tool with the use of both semi-structured and open-ended questions to solicit responses. Findings revealed that traffic jam were caused by: the use of mobile phones while driving causing accidents on the road, using the roads by motorists at the same time, reckless driving, too much roundabouts, lack of alternative routes, lack of discipline by drivers, growing constructions anywhere and lack of education by young motorists. They recommended the government of Oman to: construct of more flyovers; adapt public transport; eliminate roundabouts; provision of alternative routes; educate young drivers on road safety and allow carpooling as alternative solution to reduce the magnitude of cars running on the roads.

Research on the determinants of traffic congestion has become intensive in the African continent. Using experimental and theoretical approaches, Raheem *et al*. (2015) examined traffic congestion in Basorun-Akobo Road in Ibadan Oyo State in Nigeria. To carry out effective research work on the case study road, they performed traffic counting and traffic delay survey. They found that the effect of traffic congestion on the study area is waste of time, delay movement, accident, inability to forecast travel time, fuel consumption, road rage and environmental pollution. They recommended the dualization the roads, provision of adequate parking space, construction of proper drainage and installation of traffic control devices. On the other hand, Popoola *et al*. (2013) investigated the causes, effects and remedies of traffic congestion using a case study of Mowe/Ibafo section of the Lagos-Ibadan expressway in Nigeria.

Three hundred (300) structured questionnaires were distributed among the road users comprising drivers, passengers, pedestrians, traffic officers, church

congregations, community leaders, Mowe/Ibafo residents and other users of the road. The study established that the causes of traffic congestion include: inadequate road capacity, poor road pavement, poor traffic management, poor drainage system poor driving habit, poor parking habit, poor design junctions/round-about, presence of heavy trucks, lack of pedestrian facilities, lack of road furniture, lack of parking facilities and others. To drastically reduce these negative effects; they recommended the provision for adequate parking space, construction of proper drainage, enlarging the width of the road, rehabilitate all roads needing attention, public enlightenment, traffic education, hack down all illegal buildings/shops built on the right of way, create a separate/alternative root for trucks and heavy vehicles, provision of pedestrian facilities, In-depth training of transport/traffic personnel, ban all form of road trading/hawking and reduce the number of bus-stop where necessary.

Furthermore, using case study of Kimberley City, Das & Keetse (2015) conducted a study on the Evaluation of Traffic Congestion and Re-engineering Solutions for Central Areas of South African Cities. The major aim of the study was to assess the causes and degree of traffic congestion on the roads in and around the CBD area; and examined the impact of plausible re-engineering measures to alleviate the challenge. Survey research methods were used to collect data. Data were collected through physical and traffic survey at different selected road sections and junctions of the CBD area by following appropriate survey protocols. Besides, road user perception and travel behaviour survey were conducted among 208 (N= 208) road users by using random sampling process at important nodes of the city. Findings suggest an appreciable level of traffic congestion is experienced currently in some of the roads of the CBD area and the situation will be aggravated in future, specifically during the peak hours, whereas a number of roads are highly underutilised. Re-engineering solutions, such as appropriate traffic assignment and modal split, i.e., traffic diversion ranging between 9.0% and 40.5% from different congested roads and restriction of plying of heavy vehicles on the congested roads during peak hours and assigning them to connected underutilised roads could ease traffic congestion, increase speed and reduce travel time and consequently enable optimal use of the majority of the roads in and around the CBD area of the city.

Munuhwa *et al*. (2020) conducted a study to assess the management of traffic congestion in Harare urban. The study employed an exploratory design to sample 315 respondents. First-hand data were collected through the administration of questionnaires and in-depth interviews. The study revealed that massive influx of motor vehicles in the city, bad attitude of drivers (especially commuter omnibus and tax drivers), poor or no urban transport policy framework, vendors all over the traffic ways; massive pedestrians' population in the CBD and Road Traffic Crashes (RTCs) were the main causes of traffic congestion. The study recommended the implementation of mass transit system in transporting public within the CBD, public education, strict enforcement of road traffic regulations, construction of proper vendor selling points in the CBD, provision of adequate parking spaces to help manage traffic congestion in Harare CBD and implementation of smart urban transportation and mobility technologies**.**

Likewise, Mudzengerere and Madiro (2013) examined the rapid ownership of cars in Zimbabwe's second largest city of Bulawayo and how this is influencing the smooth flow of traffic. They employed focus group discussions and field observations to collect data. Primary and secondary data were collected from the field, city council, government ministries and the Zimbabwe Republic Police and they were analysed and tabulated. They concluded that shortage of parking space and an increase in car ownership in the city of Bulawayo is posing traffic congestion, delays in movement, road traffic accidents and polluting the environment. Public transport still plays a crucial role in the movement of people in cities of developing countries and this is mainly provided by the private sector in form of minibuses and taxis. The operation of these private public transporters causes many accidents, traffic congestion and bad commotion in the cities. They recommended that decentralisation of activities to smaller cities and towns will help develop them and ease congestion in the big cities. Legislation must be put in place for urban traffic management as a way of promoting sustainable development and protecting the environment.

## RESEARCH METHODOLOGY

The study adopted a cross-sectional survey design because it allows the use of large samples. Primary data used for the study was obtained from field data where three hundred and eighty-four (384) respondents comprised of urban planning and zoning officials, transport engineers, transport planners, residents, motorists and other stakeholders in the Zimbabwean transport sector, such as officials from Traffic Safety Council of Zimbabwe (TSC), Ministry of Transport and infrastructure Development (MOTID) and Zimbabwe National Roads Authority (ZINARA). Both self-administered questionnaires were used for the study. This allowed for responses from the respondents with varying characteristics, some of whom required further assistance in providing responses. The questionnaires

**Table 1:** Determinants of Traffic Congestion

| Determinant | Mean Score | Mean Response | SD |
|---|---|---|---|
| Land-use Changes | 3.85 | Agree | 0.861 |
| Increase in vehicle ownership | 3.91 | Agree | 0.857 |
| Uncivil driving behaviour | 4.25 | Agree | 0.952 |
| Events occurring on the edges or roadsides | 4.10 | Agree | 0.853 |
| Longer commuting | 3.66 | Agree | 0.992 |
| Vehicle crashes and breakdown | 2.87 | Not sure | 0.845 |
| Inadequate road capacity | 3.89 | Agree | 0.828 |
| Poor traffic control devices | 3.90 | Agree | 0.897 |
| Overall | 3.80 | Agree | 0.886 |

Source: Survey data (2021).

used were closed ended with five-point Likert scale, ranging from 1= Strongly Disagree to 5=Strongly Agree. Respondents were given the chance to tick or rank the most appropriate response(s). The questionnaires were delivered to the respondents by the researchers. In addition, questionnaire was translated from English language to Shona version to cater for monolingual respondents. The researchers read out and explained the questions to the respondents where necessary. The data gathered was presented in descriptive statistics using the statistical package for social sciences (SPSS) version 20.

## RESULTS

This section presents descriptive statistics for determinants of traffic congestion in the Harare Metropolitan Region. The study used arithmetic means (M) and standard deviation (SD) to rate responses on a five-point like scale of 1−5 (1 = strongly disagree, 2 = disagree, 3 = neutral 4 = agree, 5 = strongly agree). The standard deviation relates to the extent to which responses provided by respondents are consistent or the extent to which responses are distributed around the mean. Table 1 shows the determinants of traffic congestion.

As can be seen **Table 1**, an overall mean of (M=3.80, SD=0.886) was registered indicating that most respondents agreed that traffic congestion in the Harare Metropolitan Region was a result of various factors. Table 1 also shows that vehicle crashes and breakdowns had mean scores of (M=2.87, SD=0.845) indicating that the majority if the respondents were not sure if this traffic congestion was a product of vehicle crashes and breakdowns. On the other hand, a mean score of (M=4.25, SD=0.952) was registered in respect to uncivil driving behavior implying that an overwhelming majority of the respondents agreed that traffic congestion in Harare Metropolitan Region was due to poor driving.

## DISCUSSION

This section discusses the findings of the study. The major objective of the study was to examine the determinants of traffic congestion in the Harare Metropolitan Province. Based on the results presented in the previous section, it was found that there was inadequate road capacity in the Harare Metropolitan Region suggesting that the level of transport infrastructure is no longer in keeping with the growing volumes of traffic. The results tie well with earlier studies wherein Philip *et al.* (2018) revealed that the capacity of the intersection at Simon Mazorodze Road and Chitungwiza Road have been exceeded due to increase in traffic volumes passing through this intersection resulting in poor performance of the intersection, especially during peak hours. In addition, the study findings also publicised that there are poor traffic control devices in the Harare Metropolitan Region. This suggests that severe congestion prevails at many intersections on the trunk road network during peak periods due to malfunction of traffic signals. However, this does mean that an increase road capacity and improvement in traffic control would eliminate traffic congestion. Convectional thinkers on traffic congestion such as Downs (2004) observed that expanding road capacity is subject to "trip convergences". First, drivers using alternative routes begin using the expanded roads. Second, drivers that had previously been travelling during off-peak costs (either immediately before or after the peak) shift to the peak hours (rescheduling behaviour). Third, commuters using public transport begin driving their own vehicles. As a result of triple convergence and induced demand, it appears impossible to remove peak-hour congestion from highways and roads simply by expanding road capacity.

The study revealed that there was an increase in vehicle ownership. The increase in vehicle ownership can be attributed to changes in real disposable income of people, especially during the Government of National Unity (GNU) of 2009-2013 era, where the multi-currency regime was used. Mbara (2015) observed that in the past, traffic congestion in Harare was often a result of malfunctioning traffic lights, that forced drivers to crawl in and out of the city, but the influx of second-hand vehicles from Japan has worsened the situation.

By the same token, Olawole *et al.* (2015) found that in most of the developing countries, particularly in Nigeria, most of the vehicles on the roads are used vehicles, popularly known as 'tokunbo' imported from Europe or America. Such vehicles are left at the mercy of near illiterate mechanics and fake spare parts vendors, often break down and cause the already narrow road to further get choked. A similar conclusion was reached by Detroit of the East (2013) and Jitsomboon (2012) who affirm that the desire to use personal vehicles increases the more the city is prone to traffic congestion. The study also established that there were events occurring on the edges or roadsides suggesting that street vending exacerbated traffic congestion in the Harare Metropolitan Region. This finding is consistent with other previous findings. For instance, Olagunju (2015) found that when vendors display their wares in the traffic and while relating with their customers, they slow down movements of vehicles and pedestrians thus reducing the lanes from two to one in major areas. Furthermore, the study findings also revealed that there was uncivil driving behaviour in the Harare. This can be attributed to a tendency to disregard traffic laws and regulations, tailgating, honking at the slightest provocation, making dangerous and excessive lane changes, overlapping, overtaking in undesignated areas, picking and dropping passengers in undesignated areas by drivers in the Harare Metropolitan Region. This finding is in agreement with other previous studies. For instance, Olagunju (2015) found that many motorists in Nigeria, especially in cities, like Lagos, violate traffic rules and regulations resulting in traffic congestion. This finding is also confirmed by Dumba (2017) who found poor driver behaviour is continuously demonstrated by informal public transport drivers in Harare Metropolitan Region. This view is consistent with Tichagwa (2016) who noted that unlicensed taxi drivers block the city centre streets at will, whenever they are picking or dropping passengers sometimes at undesignated spots on the road.

## CONCLUSION AND POLICY DIRECTIONS

The study has brought into focus the issue of traffic congestion in the Harare Metropolitan Region. The study uncovered that the key determinants of traffic congestion in the Harare Metropolitan Region are vehicle usage and infrastructure deficiencies. This shows that there is a weak institutional framework for transportation investment and use of vehicles that exacerbates traffic congestion in the Metropolis. It is important to note that conventional attempts such as road construction and widening to catch the worsening of congestion in Harare have proved to be expensive, unfeasible, and even short-sighted. Therefore, a different arsenal is needed in battling Harare's future congestion problems.

In order to alleviate traffic congestion, there is need for a comprehensive urban plan that takes into account changes in land-use and transport in Harare. The fact that travel is a derived demand should encourage planners and policymakers to consider directing land-use as an alternative approach to handling traffic congestion. Coordinated land-use planning can provide the most lasting mobility dividends over the long-run, thus it has to be resurrected as a bona fide approach to managing traffic. Furthermore, the police and other road enforcement agencies such as the Traffic Safety Council of Zimbabwe, Zimbabwe National Roads Authority and the Central Vehicle Registry among others should encourage the enforcement of traffic laws and offer public enlightenment or traffic education to road users. These programmes should be designed not merely as means to raise revenue but to create awareness.

**Acknowledgements** The authors thank individuals who voluntarily shared their perspectives on traffic congestion in Harare Metropolitan Region.

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