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The Role of Public Transport Modes in Reducing Congestion and Enhancing Sustainable Infrastructure in Ibadan, Nigeria

Adebare Samuel Abegunde
Department of Estate Management, Lead City University, Ibadan

Babajide Femi Oguntokun
Department of Estate Management, Lead City University, Ibadan

Babatunde Emmanuel Arowolo
Department of Estate Management and Valuation, The Polytechnic, Ibadan

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Abstract

Rapid urbanization in Sub-Saharan Africa has intensified the challenges of achieving sustainable mobility, particularly in cities where informal public transport dominates. This 1 study examined the relationship between the use of minibuses, tricycles (keke), and bicycles (okada) and their effects on urban congestion levels and travel efficiency in Ibadan, Nigeria. Anchored on the Urban Mobility Theory, the study adopted a descriptive survey design using a structured questionnaire administered to 429 respondents drawn from major transport corridors across the city. Findings revealed a significant relationship between transport mode and urban congestion ($R = 0.589$, $R^2 = 0.347$, $F(2,380) = 88.037$, $p < 0.001$), indicating that minibuses and tricycles are primary contributors to congestion, while bicycles emerged as a congestion-mitigating alternative. Similarly, the analysis showed that public transport mode significantly affects travel efficiency ($R = 0.652$, $R^2 = 0.425$, $F(2,380) = 87.945$, $p < 0.001$), with minibuses ($B = -0.421$, $p < 0.001$) and tricycles ($B = -0.193$, $p < 0.001$) negatively influencing efficiency relative to bicycles. The results emphasize on the dual nature of informal transport systems in Ibadan. enhancing mobility access but simultaneously worsening congestion and travel delays. The study concludes that achieving sustainable urban mobility requires integrating non-motorized transport, particularly bicycles, into urban transport planning and regulating informal modes for improved efficiency. It recommends multimodal transport planning, investment in bicycle-friendly infrastructure, stricter regulation of informal operators, and institutional coordination through a metropolitan transport authority.

Keywords: Urban mobility, Congestion, Travel efficiency, Informal transport, Minibus, Tricycle, Bicycle, Ibadan, Sustainable transport.

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1. Introduction

Rapid urbanization across Sub-Saharan Africa has compounded sustainability difficulties, with transportation and environmental management emerging

as intertwined concerns. Inadequate transport infrastructure, dependence on informal modes, and weak policy enforcement have exacerbated congestion, environmental degradation, and infrastructure strain in many cities (Stewart, 2024; Zehra et al., 2025; Ikechukwu, et al., 2025). These challenges not only undermine productivity and travel reliability but also accelerate road deterioration, increase greenhouse gas emissions, and inflate commuting costs, thereby threatening broader sustainable urban development goals.

Ibadan, the largest indigenous metropolis in Nigeria, illustrates this dichotomy. The city's transport system is dominated by informal public transport modes such as minibuses, commercial tricycles (keke), and, to a lesser extent, bicycles (okada). These modes are central to daily mobility due to their affordability and accessibility, yet they are also associated with congestion, safety risks, and environmental externalities (Afolabi & Akibo, 2020). Understanding their dual role; both as essential providers of mobility and as contributors to urban inefficiencies, is critical for advancing sustainable growth in Ibadan.

Previous research on urban transportation in Nigeria has focused on overarching policy issues (Ahijo, 2022; Ogbonna et al., 2023) and infrastructural shortcomings (Effiom & Ubi, 2016; Ezeudu & Fadeyi, 2024). However, there remains a scarcity of mode-specific, empirical research that quantitatively examines how informal transport systems shape congestion dynamics, travel efficiency, and infrastructure sustainability. Without such evidence, policymakers lack the analytical foundation to design interventions that reconcile mobility needs with long-term environmental management and sustainable urban growth.

This study addresses this gap by assessing the role of minibuses, tricycles, and bicycles in Ibadan's urban transport system. While the specific objectives are to:

1. assess the relationship between the use of minibuses, tricycles (keke), & bicycles (okada) and urban congestion levels in Ibadan; and
2. evaluate the impact of these public transport modes on travel efficiency in Ibadan.

1. Literature Review

Theoretical underpinning

Urban Mobility Theory

Urban mobility is a primary focus in modern urban studies, particularly in the swiftly expanding cities of the Global South, where the development of infrastructure frequently fails to keep pace with population growth and transportation demands. The Urban Mobility Theory provides a robust lens for examining the interactions between transportation systems, urban form, and sustainability outcomes. At its core, the theory emphasizes that mobility extends beyond the mere movement of people and goods; it encapsulates accessibility, efficiency, equity, and the quality of life within urban spaces (Colleoni, 2016). It posits that sustainable mobility can only be achieved when transportation systems minimize environmental and social costs while enhancing accessibility and economic productivity.

The theory is especially pertinent to growing economies like Nigeria, where towns such as Ibadan exhibit significant dependence on informal transportation networks, including minibuses, tricycles (keke), and, increasingly, bicycles (okada). These modes serve as the backbone of daily commuting, providing affordable and flexible services in the absence of well-developed mass transit systems. While these modes enhance accessibility for urban residents, they simultaneously introduce significant challenges such as congestion, air pollution, safety risks, and premature deterioration of road infrastructure. The Urban Mobility Theory explains these trade-offs, drawing attention to the dual role of transport systems as both enablers of urban growth and contributors to urban stress (Venter et al., 2019).

According to the theory, achieving sustainable mobility requires a shift from focusing solely on supply (road expansion, vehicle numbers) to a broader framework that incorporates demand management, policy interventions, and integration of diverse transport modes (Litman, 2021). In this regard, non-motorized options like cycling are seen as critical for reducing congestion and minimizing environmental impacts, while improved regulation and coordination of paratransit systems can enhance efficiency and reduce infrastructure pressure. The theory further emphasizes that sustainable urban transport must align with long-term planning strategies that consider social equity, such as ensuring access for low-income populations, alongside environmental and economic objectives.

Utilizing the Urban Mobility Theory in Ibadan offers a

valuable analytical framework for assessing the efficacy of current public transportation systems in alleviating congestion and fostering infrastructure sustainability. It enables an assessment of how minibuses and tricycles contribute to urban accessibility while simultaneously exacerbating congestion and road deterioration. It also highlights the potential of bicycles as a sustainable alternative that aligns with global calls for greener urban transport (Omirin, & Olaniyan, 2024). Moreover, the theory emphasizes on the importance of policy integration, linking transportation planning with environmental management and urban development goals.

Empirical Review

Empirical studies on urban transportation in Sub-Saharan Africa repeatedly demonstrate that informal public transport (paratransit), such as minibuses and tricycles, plays a predominant role in daily mobility, particularly in areas where formal mass transit is limited (Hernandez Berga, 2024). Studies examining paratransit across African cities report that these modes increase accessibility and fill critical service gaps, yet they are also associated with operational inefficiencies, route overlap, and safety issues that contribute to localized congestion (Bruun, & Behrens, 2016; Mitullah, 2024; Behrens et al., 2016). Evidence from multi-city and country reviews highlights how paratransit's flexibility makes it resilient to institutional shortfalls but complicates coordinated traffic management (Fong, 2019; Stavropoulou et al., 2024).

Tricycles and minibuses in the city have been experimentally studied for their operational features, geographical concentration, and service quality in a number of Ibadan-specific studies. According to Ibadan traffic counts and corridor analysis, tricycles have significant modal shares on particular routes (such as the Mokola–Agodi and Challenge corridors), where their presence quantifiably affects traffic flow patterns during peak hours. Additionally, local surveys of operators and passengers reveal that although tricycles and minibuses satisfy latent demand for short-distance travel, their operational procedures; such as frequent pauses, crowding, and lane encroachment, are commonly blamed for delays and unstable routes (Senamolele, 2020; Plano, 2020).

Empirical work from Nigeria and similar contexts links informal modes to infrastructure wear and higher maintenance burdens. Case studies investigating informal economic activities and vehicle operations across Nigerian cities indicate that overloading, poor adherence to axle/load regulations, and disorderly stopping increase pavement distress and accelerate the need for maintenance (Odede, 2021; Rotimi, 2024). These findings are consistent with engineering assessments that correlate high concentrations of small commercial vehicles and aggressive operational patterns with increased road maintenance costs.

A study presents a complex relationship between congestion and paratransit. While some studies contend that paratransit might lessen traffic by offering high-frequency, demand-responsive services, others discover that route duplication, dead-heading, and careless stops result in micro-bottlenecks that lengthen travel times (de Almeida, & Felipe, 2018; Kaufman, 2022). The net effect is mostly dependent on local institutional structures, route management, and the availability of separated places for boarding and alighting, according to empirical evaluations employing traffic counts and travel-time surveys in Nigerian cities (Oluwakoya, 2019; Akanmu et al., 2024). In summary, the context-sensitive impact of paratransit on congestion necessitates a quantitative evaluation at the corridor level, which is the exact gap this study fills for Ibadan.

Non-motorized transport (NMT), especially cycling, is increasingly studied as a low-impact alternative that can reduce congestion and infrastructure pressure when supported by appropriate infrastructure (Makarewicz et al., 2018). Natural-experiment and quasi-experimental studies from other urban contexts demonstrate that protected cycling facilities and network improvements reliably increase cycling uptake and reduce short motorized trips; although direct evidence from Nigerian cities is still limited, exploratory work and perception studies suggest latent demand for cycling where safe facilities exist (Mesic, 2023; Bergman, 2009). These findings recommend investigating bicycle travel empirically in Ibadan both for congestion relief potential and for its low-wear impact on road surfaces.

Recent Nigerian empirical papers also emphasize on data gaps and methodological limitations that hinder policy translation (Mbachu et al., 2024; Ogundeji et al., 2023). Many local studies are descriptive, small-sample, or focused on perceptions; few combine corridor traffic counts, ridership surveys, and statistically rigorous models to quantify how specific informal modes affect objective congestion and infrastructure outcomes. This uneven evidence base constrains planners' ability to

design targeted interventions (e.g., designated pickup/dropoff zones, route rationalization, or NMT investments) with measurable impacts on congestion and maintenance costs. The literature therefore calls for corridor-level, mode-specific quantitative studies that link user behaviour and traffic metrics to infrastructure indicators; a need that the present Ibadan study is designed to fill.

2. Methodology

This study employed a descriptive survey research design within a quantitative framework. The choice of this design was informed by the need to gather measurable evidence on how informal public transport modes; namely minibuses, tricycles (keke), and bicycles (okada), affect congestion levels, travel efficiency, and infrastructure sustainability in Ibadan. By relying on primary data from transport users, the study sought to establish statistical relationships that could inform sustainable urban mobility planning.

The study was carried out in Ibadan, Oyo State, Nigeria, a city that provides an ideal case for transport research in Sub-Saharan Africa. As one of the country's fastest-growing urban centres, Ibadan faces persistent challenges of congestion along major transport corridors such as Iwo Road, Dugbe, Bodija, Gate, and Challenge. These locations were purposively selected because of their high traffic volume and concentration of informal public transport activities, making them suitable for capturing diverse travel experiences and perceptions.

The target population comprised users and operators of minibuses, tricycles, and bicycles within the Ibadan metropolis. These groups were selected because they represent the backbone of daily commuting in the city and are directly implicated in both mobility and infrastructure outcomes. A multistage sampling technique was adopted to ensure representativeness. In the first stage, five major transport corridors were identified. In the second stage, respondents were stratified into three categories based on the dominant transport modes; minibuses, tricycles, and bicycles. A proportionate random sampling technique was then used to select participants from each category.

Using Cochran's formula for large populations ($Z = 1.96$ at 95 percent confidence, $p = 0.5$ for maximum variability, and $e = 0.05$ margin of error), the minimum required sample size was estimated at 385 respondents. To account for potential non-responses and incomplete questionnaires, the figure was increased by 10 percent, yielding a total of 429 respondents. For analytical clarity and to permit robust comparisons between transport modes, the adjusted sample was allocated equally across the three strata, resulting in 143 respondents each for minibuses, tricycles, and bicycles. In the event of low representation of bicycle users in certain corridors, oversampling will be conducted at locations where they are more prevalent, with a minimum threshold of 100 bicycle respondents maintained to ensure statistical reliability.

Primary data were collected using a structured questionnaire consisting of closed-ended questions organized into four sections. The first section captured the socio-demographic characteristics of respondents. The second addressed patterns of transport mode usage, such as trip frequency, purpose, and distance. The third focused on indicators of congestion and travel efficiency, including travel time, waiting time, and cost. The fourth assessed respondents' perceptions of infrastructure sustainability, with emphasis on road durability, maintenance challenges, and safety conditions. Responses were measured on a four-point Likert scale ranging from "Strongly Disagree" (1) to "Strongly Agree" (4).

Data analysis was conducted using the Statistical Package for the Social Sciences (SPSS version 26). Descriptive statistics, including means, frequencies, and percentages, were employed to summarize respondents' characteristics and overall perceptions. Inferential statistics were used to test the study's objectives: correlation analysis was employed to examine the relationship between transport mode usage and congestion, while multiple regression analysis was applied to evaluate the effect of informal transport modes on travel efficiency and infrastructure sustainability.

To ensure the robustness of the research instrument, the questionnaire was subjected to content validation by experts in transport planning and urban studies. A pilot study involving 30 respondents outside the selected transport corridors was also carried out to pre-test the instrument. Reliability was assessed using Cronbach's Alpha coefficient, with values equal to or greater than 0.70 considered acceptable.

Finally, ethical considerations were given priority throughout the research process. Respondents were fully briefed about the objectives of the study and assured that their participation was voluntary, anonymous, and

confidential. Informed consent was obtained before administering the questionnaires, and all ethical standards guiding social research were strictly adhered to.

3. Presentation of Results

A total of 383 valid questionnaires were retrieved and analyzed, representing the final sample size for this study.

Table 1: Demographic Data Analysis of Respondents

Variable	Category	Frequency	Percentage (%)
Gender	Male	257	67.1
	Female	126	32.9
Age	Below 20 years	40	10.4
	21–30 years	144	37.6
	31–40 years	117	30.5
	41–50 years	53	13.8
	Above 50 years	29	7.6
Education	No formal education	16	4.2
	Primary education	38	9.9
	Secondary education	131	34.2
	Tertiary education	172	44.9
	Postgraduate	26	6.8
Occupation	Student	102	26.6
	Civil servant	84	21.9
	Trader/Businessperson	90	23.5
	Transport operator	68	17.8
	Others	39	10.2
Income	Less than ₦20,000	115	30.0
	₦20,001 – ₦50,000	143	37.3
	₦50,001 – ₦100,000		

Source: Field Result, 2025

The demographic distribution of respondents reveals that males constituted the majority at 67.1%, while females accounted for 32.9%. In terms of age, the largest proportion of respondents fell within the 21–30 years category (37.6%), followed by 31–40 years (30.5%), while those aged above 50 years represented only 7.6%. Educational attainment was relatively high among the respondents, with 44.9% having tertiary education and 34.2% having completed secondary education, while only 4.2% reported no formal education.

Regarding occupational status, students (26.6%) and traders/businesspersons (23.5%) were the most represented groups, followed closely by civil servants (21.9%) and transport operators (17.8%). In terms of

income distribution, the majority of respondents earned between ₦20,001–₦50,000 per month (37.3%), while 30.0% earned less than ₦20,000, and only 8.6% reported earning above ₦100,000 monthly.

On the choice of transport mode, bicycles were the most frequently used (35.8%), slightly ahead of minibuses (34.7%), while tricycles accounted for 29.5% of respondents' main mode of transport. This distribution reflects the dominance of informal public transport modes in Ibadan, with bicycles emerging as a relatively competitive option alongside motorized alternatives.

$H_0$1: There is no significant relationship between the use of transport mode (minibus, tricycle, and bicycle) and urban congestion levels in Ibadan

Table 2: Summary of Regression Analysis for the Relationship between Transport Mode (minibus, tricycle, and bicycle) and Perceived Congestion Levels in Ibadan

Model		**F(df)**	**Anova Sig**
R	0.589		
R Square	0.347	88.037 (2,380)	0.000
Adjusted R Square	0.324		
Coefficients	**Unstandardized Coefficients**	**T**	**Sig**
(Constant)	2.307	22.501	0.000
Minibus	.887	12.880	0.000
Tricycle	.581	8.193	0.000

Source: Field Result, 2025

The regression analysis in Table 2 examined the relationship between transport mode (minibus, tricycle, and bicycle) and perceived congestion levels in Ibadan. The model yielded an R = 0.589, indicating a moderately strong positive relationship. The R^2 value of 0.347 shows that approximately 34.7% of the variance in congestion perception is explained by the transport modes, while the adjusted R^2 of 0.324 confirms the robustness of the model after accounting for predictors. The ANOVA results, $F(2,380) = 88.037$, $p < 0.001$, reveal that the model is statistically significant, demonstrating that transport mode is a strong determinant of congestion levels in Ibadan.

The coefficients further indicate that minibus users reported significantly higher congestion ($B = 0.887$, $t = 12.880$, $p < 0.001$), followed by tricycle users ($B = 0.581$, $t = 8.193$, $p < 0.001$), when compared to the reference category, bicycles. This suggests that bicycles contribute least to congestion and may serve as a more sustainable mode of transport for short-distance travel.

Overall, the findings confirm that transport mode has a significant impact on congestion in Ibadan, with informal motorized modes; particularly minibuses and tricycles, intensifying traffic bottlenecks, while bicycles provide a congestion-mitigating alternative. Hence, the null hypothesis ($H_0$1) is rejected in favour of the alternative, which affirms a significant relationship between the use of minibuses, tricycles, and bicycles and congestion levels in Ibadan.

$H_0$2: Public transport modes has no significant impact on travel efficiency in Ibadan.

Table 3: Summary of Regression Analysis for the Impact of Transport Modes (minibus, tricycle, and bicycle) on Travel Efficiency in Ibadan

Model		**F(df)**	**Anova Sig**
R	0.652		
R Square	0.425	87.945 (2,380)	0.000
Adjusted R Square	0.421		
Coefficients	**Unstandardized Coefficients**	**T**	**Sig**
(Constant)	2.312	4.213	0.000
Minibus	-0.421	-8.732	0.000
Tricycle	-0.193	-4.551	0.000

Source: Field Result, 2025

The regression analysis was conducted to evaluate the impact of different public transport modes; minibuses, tricycles, and bicycles, on travel efficiency in Ibadan. The model produced a coefficient of determination (R^2 = 0.425), indicating that approximately 42.5% of the variation in travel efficiency can be explained by the choice of transport mode. This suggests that the type of public transport utilized plays a substantial role in shaping how efficiently commuters are able to move across the city. The model was statistically significant ($F(2,380) = 87.945$, $p < 0.001$), confirming the robustness of the relationship between transport modes and efficiency.

The coefficients reveal important differences across transport modes. The use of minibuses was found to have a significant negative effect on travel efficiency ($B = -0.421$, $t = -8.732$, $p < 0.001$), suggesting that commuters relying on minibuses are more likely to experience delays, longer travel times, and greater congestion-related inefficiencies. Similarly, tricycles also exerted a negative influence ($B = -0.193$, $t = -4.551$, $p < 0.001$), although the magnitude of this effect was smaller compared to minibuses. Bicycles (okada), serving as the reference category in the model, emerged as the most efficient mode, highlighting their advantage in navigating congested urban areas, particularly in short-to-medium distance trips.

Overall, these findings provide empirical evidence that while both minibuses and tricycles are integral to the urban transport mix in Ibadan, they contribute less to travel efficiency when compared to bicycles (okada). This underscores the need for urban mobility planning that promotes non-motorized transport alternatives, alongside improvements in the operational efficiency of minibuses and tricycles.

Discussion of Findings

The results of the study provide compelling evidence that the mode of transport significantly affects both urban congestion and travel efficiency in Ibadan. The findings from the regression analyses for both hypotheses demonstrate clear patterns regarding how different modes; minibuses, tricycles, and bicycles (okada), contribute differently to the dynamics of urban mobility.

For $H_0 1$, the results revealed a statistically significant relationship between transport mode and perceived congestion levels in Ibadan, with an R value of 0.589 and an R^2 of 0.347, indicating that 34.7% of the variation in congestion can be explained by the type of transport mode used. The findings further showed that minibuses and tricycles have a strong positive association with congestion, while bicycles were associated with the least level of congestion. Specifically, the coefficients indicated that minibuses ($B = 0.887$, $p < 0.001$) and tricycles ($B = 0.581$, $p < 0.001$) contribute substantially to traffic buildup, particularly in high-density areas such as major roads and market corridors. This outcome aligns with the observation by Afolabi, & Akibo (2019) that the proliferation of informal motorized transport modes; such as minibuses and tricycles, has intensified urban congestion in Nigerian cities due to poor route coordination and excessive competition for passengers.

The findings, therefore, reinforce the argument that bicycles offer a congestion-mitigating alternative, especially for short-distance mobility, as they occupy minimal road space and allow for smoother navigation through traffic.

The findings from $H_0 2$ further revealed a statistically significant impact of transport mode on travel efficiency in Ibadan. The model's R^2 value of 0.425 indicates that 42.5% of the variation in travel efficiency is explained by the mode of transport. Both minibuses ($B = -0.421$, $p < 0.001$) and tricycles ($B = -0.193$, $p < 0.001$) were found to negatively influence travel efficiency, while bicycles emerged as the most efficient mode of transport. This suggests that although minibuses and tricycles remain the dominant modes of public transportation due to their accessibility and affordability, they tend to reduce travel speed and reliability; mainly due to frequent stops, overloading, and poor adherence to traffic regulations. This finding supports earlier studies by Moyo, & Olowosegun, (2020), which noted that the inefficiency of informal transport modes is often linked to weak regulatory enforcement, congestion at terminals, and inadequate traffic management systems.

Collectively, these findings underscore the dual challenge facing urban transport management in Ibadan: while informal motorized transport modes (minibuses and tricycles) provide essential mobility for low- and middle-income residents, they also exacerbate traffic congestion and reduce overall travel efficiency. Conversely, the relatively positive role of bicycles highlights the potential of non-motorized transport in improving urban mobility outcomes. This is consistent with the growing advocacy for sustainable transport systems that integrate non-motorized options into city planning (Collins et al., 2025).

From a policy and planning perspective, the results suggest that achieving sustainable urban mobility in Ibadan requires a multimodal approach. Such an approach should combine the efficiency and environmental benefits of bicycles with strategic reforms in the minibus and tricycle sectors. Introducing dedicated bicycle lanes, regulating the number and routes of minibuses and tricycles, and promoting infrastructure that supports mixed transport systems could significantly enhance travel efficiency and reduce congestion.

This study contributes to the growing empirical evidence that transport mode plays a critical role in shaping urban congestion and travel efficiency. While minibuses and tricycles continue to meet the mobility needs of many residents, their unregulated proliferation poses a major challenge to traffic flow. On the other hand, bicycles (okada) offer a viable pathway toward sustainable urban mobility, particularly in the context of Ibadan's expanding population and increasing vehicular pressure. The findings, therefore, call for targeted policy interventions aimed at promoting balanced, efficient, and sustainable transport systems in Nigerian cities.

4. Conclusion and Recommendation

The study examined the relationship between the use of informal public transport modes; minibuses, tricycles (keke), and bicycles (okada), and urban congestion levels and travel efficiency in Ibadan, Nigeria. The findings revealed that transport mode significantly influences both congestion and travel efficiency within the city. Specifically, minibuses and tricycles were found to be major contributors to congestion, owing to their high volume, frequent stops, poor route coordination, and lack of traffic discipline. In contrast, bicycles emerged as a more sustainable and efficient mode of transport, particularly for short-distance travel, due to their minimal space requirements and flexibility in navigating congested routes.

The regression analyses demonstrated that transport mode explains a substantial proportion of the variance in both congestion (34.7%) and travel efficiency (42.5%). These results confirm that informal motorized transport modes, though essential to urban mobility for low- and middle-income residents, also impose significant costs on traffic flow and travel reliability. The study thus underscores the dual role of informal transport: while it enhances mobility access, it simultaneously exacerbates congestion and reduces efficiency, threatening the broader goal of sustainable urban growth in Ibadan.

From a theoretical standpoint, the findings affirm the relevance of Urban Mobility Theory, which posits that the efficiency and sustainability of urban transport systems depend on the balance between accessibility, speed, and spatial organization. In the context of Ibadan, this balance remains skewed toward informal and unregulated transport systems, necessitating policy interventions that integrate non-motorized and environmentally friendly modes such as bicycles into mainstream transport planning.

Based on the findings, the study recommends that:

1. Policymakers and urban planners should develop a

comprehensive, multimodal transport framework that integrates formal, informal, and non-motorized transport modes. This would ensure that minibuses and tricycles complement rather than compete with more sustainable alternatives such as bicycles.

2. The government should prioritize the construction of dedicated bicycle lanes, safe crossings, and parking facilities to encourage the use of bicycles. Integrating such infrastructure into city master plans would not only improve mobility but also contribute to cleaner air and reduced road congestion.

3. There is a need for stricter regulation of the informal transport sector through route planning, licensing, and capacity limits. Enforcing operational standards for minibuses and tricycles would minimize reckless driving, reduce competition for passengers, and enhance overall traffic flow.

4. The introduction of eco-friendly mass transit systems such as Bus Rapid Transit (BRT) or light rail should be explored for high-demand corridors. Such investments would reduce overdependence on informal transport and improve long-term travel efficiency.

5. Awareness campaigns should be launched to promote the benefits of using bicycles and other sustainable modes of transport. Encouraging behavioural change among commuters can support a cultural shift towards more efficient and environmentally responsible travel choices.

6. Effective urban mobility requires strong institutional coordination among transport agencies, local governments, and planning authorities. Establishing a metropolitan transport authority for Ibadan could help streamline policy implementation and ensure consistency in transport management across the city.

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