

# Assessing The Influence Of Road Condition And Maintenance On Commuter Behavior In Nigeria,

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## **Abstract:**

*Efficient urban transportation in developing countries like Nigeria relies heavily on the quality of road infrastructure. However, poor maintenance and deteriorating road conditions continue to shape how people travel in many Nigerian cities. This study explores how these road issues influence commuter behavior, including choices about travel routes, transportation modes, and overall travel time.*

*The study uncovers some clear trends through a questionnaire survey of 310 commuters from key cities, Lagos, Abuja, Kano, and Port Harcourt. A striking 92% of respondents reported frequently encountering potholes, and those facing poor road conditions experienced commutes that were, on average, 25% longer. Regression analysis revealed that improved road quality and better maintenance had a strong positive impact on commuter satisfaction ( $R^2 = 0.65$ ).*

*The findings also show a shift in transport habits, with many commuters turning to motorcycles and tricycles to better navigate poorly maintained roads. These insights highlight the everyday challenges faced by Nigerian commuters and point to practical steps that city planners and policymakers can take to enhance road maintenance and improve the urban travel experience in Nigeria's rapidly growing cities.*

**Key Word:** road condition, commuter behavior.

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## I. Introduction

Road infrastructure plays a vital role in any modern transportation system, forming the foundation that supports the movement of people and goods. In developing countries like Nigeria, the quality and condition of road networks have a major impact on how easily people can get around. Rapid population growth in cities such as Lagos, Abuja, Kano, and Port Harcourt is placing increasing strain on existing transport infrastructure. Unfortunately, in many of these urban areas, road networks are either insufficient, poorly maintained, or regularly disrupted. This takes a significant toll on commuters, affecting how they travel, how long their journeys take, and even their personal safety.

Across Nigeria, road conditions are marked by crumbling surfaces, heavy traffic congestion, and a lack of regular upkeep. These issues including potholes, substandard road construction, and missing or unclear road signs, make commuting more difficult and force travelers to adjust how they get around. Although it's clear that poor road conditions shape decisions such as route choice, mode of transport, and whether to avoid certain roads, this area hasn't been thoroughly researched in Nigeria. Gaining a deeper understanding of these factors is key to improving urban mobility and designing smarter, more effective transport systems.

The consequences of weak infrastructure go beyond just transportation logistics; they shape everyday travel choices for Nigerians. Bad roads wear down vehicles faster, make trips longer, and increase safety hazards. As a result, commuters adapt in various ways, whether it's opting for motorcycles instead of cars or steering clear of problem roads entirely. For example, traders in Kano might avoid eroded rural roads by choosing more expensive routes, while commuters in Lagos often change their travel times to escape gridlock made worse by potholes. Despite these clear patterns, most existing research focuses more on technical repairs than on how people adjust their behavior in response to poor road quality. Considering Nigeria's varied geography and transportation demands, a nationwide study could provide valuable insights into how commuters navigate these challenges and help guide better infrastructure planning.

### Problem Statement

Road conditions and how they are maintained have a major influence on how people travel in Nigeria, yet the exact ways they shape commuter choices are not well documented. When faced with pothole-ridden urban roads, commuters might switch from buses to motorcycles; on rural roads prone to flooding, they may postpone

trips or avoid certain routes altogether. These kinds of adjustments are direct responses to the state of the infrastructure. However, while it's clear that these behaviors come with economic costs, such as higher transport fares, increased vehicle repair bills, and social burdens like wasted time and added stress, the scale and specifics of these impacts haven't been clearly measured. Although there is plenty of anecdotal evidence, for example, many Abuja residents steer clear of the Nyanya-Mararaba corridor due to its notorious road conditions. Very few concrete studies link road quality to commuter choices, satisfaction levels, or how people adjust their travel habits. This lack of hard data makes it difficult to create effective policies that address both decaying infrastructure and the needs of commuters, which is especially important in a country where road travel is the primary means of getting around. A nationwide study is crucial to fully capture the wide range of experiences between urban and rural commuters yet such a comprehensive approach has mostly been missing from existing research.

#### Research Objectives

This study aims to fill this gap by exploring how road conditions and maintenance practices influence commuter behavior across Nigeria. The specific goals of the research are to:

1. Examine how road quality affects commuters' choice of transport, whether they opt for cars, buses, motorcycles, or walking.
2. Assess how the frequency of road maintenance relates to commuter satisfaction, exploring whether regular repairs and upkeep improve perceptions of reliability and comfort.
3. Identify the types of behavioral changes that poor road conditions trigger, such as shifting departure times, avoiding certain routes, or relying more on alternative modes of transport.

#### Significance

This research is highly relevant to a wide range of stakeholders involved in Nigeria's transportation sector. For policymakers, it offers valuable evidence to help guide investment decisions in road maintenance, ensuring that resources are directed toward areas where commuters are most affected. Transport planners can use the insights to design infrastructure improvements and public transport services that align with actual commuter behaviors, ultimately improving mobility across the country. Local and state governments can apply the findings to tackle regional issues, such as improving access in rural areas or easing traffic congestion in urban centers.

In addition to its practical benefits, this study also contributes to the broader global understanding of transportation challenges in developing countries, where poor infrastructure often forces commuters to adopt informal or improvised solutions. By taking a nationwide approach, the research provides a comprehensive picture of the road-related problems faced in Nigeria. It can also serve as a useful reference for other countries facing similar transport and infrastructure difficulties, offering insights that may inform their own strategies and planning.

#### Study Area

This study covers certain areas in the country, capturing the wide range of road conditions and commuting experiences across Nigeria. It includes major urban hubs like Lagos, known for its heavy traffic and deteriorating highways; Abuja, which, despite its planned city layout, suffers from inconsistent road maintenance; and Kano, where a large population faces challenges with worn-down roads. The research also considers rural areas, such as Port Harcourt, where unpaved roads are common and accessibility is limited. By adopting this approach, the study offers a thorough and well-rounded analysis that reflects differences in population size, economic activity, and road quality across various states. By collecting data from both urban and rural contexts, the research stays focused while still representing the country as a whole, addressing a transportation issue of clear national importance.

## II. Literature Review

Commuter behavior in urban transport systems has been widely explored through various theoretical lenses. One of the most well-known frameworks is Rational Choice Theory, which suggests that people make travel decisions by weighing options that offer the greatest personal benefit. Factors like cost, convenience, and travel time all play a role. According to this theory, commuters tend to choose transport modes and routes that lower their overall costs, whether that means saving money, time, or reducing discomfort, while maximizing advantages such as speed and ease of travel (Le Vine & Polak, 2020).

Another useful perspective is the Theory of Planned Behavior (TPB), which argues that travel choices are shaped by a combination of personal attitudes, social pressures, and the level of control individuals feel they have over their decisions (Ajzen, 2020). This theory is especially relevant in settings where road conditions can be unpredictable, like in Nigeria. For example, commuters might choose private vehicles instead of public transport or alter their routes based on how safe, convenient, or reliable they perceive their options to be.

The Social Ecological Model also offers valuable insights, highlighting that commuter behavior is influenced not just by individual preferences but also by larger social, physical, and policy environments (McDonald et al., 2021). In the case of road infrastructure, this model helps explain how elements such as road quality and urban transport policies shape the way people travel and make commuting decisions.

#### Road Infrastructure and Transportation Efficiency in Developing Countries

Road infrastructure is fundamental to ensuring efficient transportation, especially in developing countries where other options, like rail systems, are often limited (Ogunbodede, 2020). Research shows that poor road conditions, such as potholes, erosion, and lack of proper maintenance, not only disrupt mobility but also drive up travel costs and reduce overall economic productivity (Adetunji & Aloba, 2021). In Sub-Saharan Africa, where road networks handle more than 80% of transport needs, these infrastructure challenges are particularly severe (World Bank, 2022). Porter (2014) also highlights that in many parts of rural Sub-Saharan Africa, poor road access significantly restricts economic opportunities, mobility, and access to services, underlining the broader development implications of infrastructure deficits. For example, Mwase and Mwase (2023) observed that deteriorated roads in Kenya doubled commute times, forcing many travelers to rely on informal transport options like boda-bodas. Likewise, Asiedu and Mensah (2024) found that poor rural roads in Ghana cut market access by 30%, highlighting the significant socioeconomic impact.

In Nigeria, Oyesiku et al. (2020) reported that key federal highways, such as the Abuja-Kaduna route, face chronic underfunding, leading to frequent congestion and travel delays. More recent projections by Akinyemi (2025) warn that without major investment, the worsening state of Nigeria's roads could cost the economy as much as \$5 billion annually by 2030. While these studies clearly demonstrate the strong connection between infrastructure quality and transportation efficiency, few of them focus on how individual commuters adapt and respond to these conditions.

#### Challenges of Road Maintenance in Nigeria

In Nigeria, the issues surrounding road maintenance are complex and stem from multiple factors. One of the main challenges is the inadequate funding allocated for road repairs and upkeep. The budget set aside for maintaining Nigeria's road infrastructure is often not enough to tackle the growing backlog of maintenance needs, which causes roads to steadily deteriorate over time (Ogunyemi, 2021). The situation is made worse by poor coordination between the various government agencies tasked with road maintenance. These agencies often have overlapping duties and inefficiently manage available resources (Okafor & Emeka, 2022).

Environmental conditions also play a significant role in worsening road conditions. Nigeria's varied climate particularly heavy rainfall and frequent flooding, speeds up the wear and damage to road surfaces (Ojo, 2022). On top of that, rapid urbanization has led to a sharp rise in the number of vehicles on the roads, putting even more pressure on already aging infrastructure.

Political instability and corruption present additional hurdles. These issues often cause delays in maintenance projects or result in funds being misused. Research shows that Nigeria's political landscape sometimes favors building new infrastructure over maintaining existing roads, which accelerates the decline of current networks (Omotayo et al., 2021). Corruption within government agencies also means that road repairs are often poorly done, focusing on short-term fixes rather than durable, long-lasting solutions (Ejiogu & Agboola, 2021). Similar patterns have been documented in other developing regions, where Kenny (2009) finds that corruption in infrastructure sectors frequently leads to poor-quality roads, inflated costs, and reduced maintenance effectiveness.

#### Commuter Behavior Theories

Commuter behavior is often studied using frameworks such as mode choice and time utility, which help explain how people make travel decisions to get the most benefit from their trips (Ajzen, 2021). The Theory of Planned Behavior (TPB) suggests that a person's attitudes, social influences, and sense of control all shape their intentions — for example, choosing to ride a motorcycle instead of driving a car on a road full of potholes (Chen & Zhang, 2022). On the other hand, Utility Maximization Theory argues that commuters balance the costs of a trip, like time, money, or discomfort, against its benefits, such as reliability, when deciding how to respond to road conditions (Litman, 2023).

For instance, Okeke and Udeh (2021) applied TPB to study commuters in Lagos and found that perceptions of safety played a key role in why many chose motorcycles, despite the risks. In South Africa, Naidoo et al. (2024) used utility models to show that poor road maintenance often led urban commuters to shift toward using minibus taxis. These theoretical approaches offer valuable tools to understand how travel behaviors change in response to infrastructure conditions. Anable (2005) emphasizes that attitudes towards environmental impact, convenience, and safety also shape transport mode choices, highlighting the importance of considering behavioral

segments when analyzing commuter responses. However, their use in analyzing Nigeria's varied and complex road environments is still limited (Ibrahim & Musa, 2025).

#### Existing Studies on Road Conditions in Nigeria and Similar Contexts

Much of the research on road conditions in Nigeria has concentrated on technical aspects or policy issues, rather than examining how commuters themselves are affected or how they respond. For example, Adebayo and Ogunleye (2020) analyzed pavement deterioration along the Lagos-Ibadan Expressway, linking the damage to heavy traffic volumes but leaving out the perspectives of road users. Similarly, Eze and Okonkwo (2022) studied rural road maintenance in Enugu State and found that 60% of the roads became impassable during the rainy season, yet their work didn't explore how commuters adjusted their travel behaviors as a result.

Looking more broadly at the Sub-Saharan region, Kamau et al. (2023) examined road networks in Nairobi and found that potholes led to a 25% increase in motorcycle use a pattern that was also observed in Uganda by Mutebi and Nansubuga (2024). Recent Nigerian studies, such as Oladipo et al. (2025), estimate that 70% of federal roads are in urgent need of repairs, with cities like Kano struggling with severe traffic congestion. Comparative research in Ghana by Sowah and Tetteh (2024) has shown that delays in road maintenance are linked to higher accident rates, suggesting that safety concerns also shape commuter choices. However, despite these important findings, most of these studies rely mainly on secondary data or engineering-focused measures, with little emphasis on gathering direct insights from commuters themselves. Lucas (2012) further stresses that inadequate transport infrastructure can deepen social exclusion, disproportionately affecting low-income and marginalized groups who have limited transport alternatives.

#### Gap Identification

Although research on road infrastructure and transport efficiency continues to grow, there is still a clear gap when it comes to studies that directly link road maintenance to commuter behavior in Nigeria using primary, questionnaire-based methods. Most existing Nigerian studies (such as Oyesiku et al., 2020; Eze & Okonkwo, 2022) focus on the physical state of roads or their broader economic impacts, but they rarely explore how commuters actually adjust their travel habits, whether by changing transport modes, altering routes, or shifting travel times. International studies by Mwase and Mwase (2023) and Naidoo et al. (2024) do look at behavioral responses, but their findings are specific to Kenya and South Africa, making it difficult to apply them directly to Nigeria's unique mix of urban and rural settings and its heavy reliance on informal transport. Despite the fact that questionnaire-based studies are particularly useful for uncovering people's perceptions and preferences, they are still underused in this field (Afolabi & Bello, 2025). This is a crucial gap because understanding how commuters behave could help guide smarter and more targeted road maintenance strategies — something current engineering-centered research does not adequately address (Lawal & Adeyemi, 2024). The lack of a nationwide study in Nigeria that focuses specifically on commuter behavior presents an important opportunity for this research.

#### Theoretical Framework

This study uses the Theory of Planned Behavior (TPB) to explain how road conditions influence commuter choices. TPB suggests that people's actions are shaped by three key factors: their attitudes (such as opinions on road safety), social pressures (subjective norms like the expectation to use certain types of transport), and their sense of control (for example, how confident they feel navigating poor roads) (Ajzen, 2021). In Nigeria's case, commuters might prefer motorcycles because they value their flexibility, even if they have safety concerns (Okeke & Udeh, 2021). Social expectations may encourage rural travelers to use shared taxis, while concerns about road quality could discourage car use on badly maintained highways (Ibrahim & Musa, 2025).

Additionally, aspects of Utility Maximization Theory (Litman, 2023) will be incorporated to understand how commuters weigh factors like time, cost, and comfort when dealing with road conditions. This combination of TPB and Utility Maximization, both of which have been successfully used in recent studies (Chen & Zhang, 2022; Naidoo et al., 2024), provides a strong foundation for analyzing how Nigeria's road infrastructure affects commuter behavior, anchoring the research in well-established but flexible theoretical approaches.

### **III. Methodology**

This section describes the methods used to examine how road conditions affect commuter behavior in urban areas of Nigeria, with a focus on understanding commuter perceptions, behavioral adaptations, and the influence of road quality and maintenance.

#### Study Area Selection

The research is centered on major urban areas in Nigeria where road infrastructure problems are long-standing and where populations are dense. Cities such as Lagos, Abuja, Kano, and Port Harcourt have been chosen as they represent key urban centers facing significant road-related challenges.

Lagos: As Nigeria's largest city, with a population exceeding 21 million, Lagos experiences extreme traffic congestion and deteriorating road conditions in many parts of the city.

Abuja: The country's capital city, Abuja, is rapidly urbanizing, and although infrastructure development is ongoing, the city still struggles with issues of road maintenance and growing traffic congestion.

Kano: Located in northern Nigeria, Kano is a commercial hub where many business commuters face heavy traffic congestion and widespread potholes on a daily basis.

Port Harcourt: Known as a major oil-producing city, Port Harcourt is home to bustling commercial centers. The city's road infrastructure suffers due to both heavy traffic volumes and environmental factors, posing significant maintenance challenges.

#### Rationale for Selection:

These cities were chosen because they exhibit prominent road-related problems and reflect typical urban commuting experiences in Nigeria. By including diverse locations, the study aims to capture a broad range of commuter experiences from different urban environments.

#### Research Design

This study employed a quantitative research design, as its objective is to measure and quantify the relationship between road conditions and commuter behavior. The main tool for collecting primary data was a structured questionnaire.

#### Nature of Data:

The data collected includes both categorical and numerical variables, covering areas such as commuter demographics, commuting patterns, perceptions of road quality, and behavioral responses to road-related issues.

#### Data Collection Methods

The primary method of data collection was a structured questionnaire designed to capture comprehensive insights from commuters. The survey includes both closed and open-ended questions to gather both quantitative data (e.g., multiple-choice questions) and qualitative data (e.g., open responses). The key section of the questionnaire is as follows:

#### Sampling Method

The survey targets a sample size of between 310 respondents to ensure the findings are statistically significant and representative of the commuter population in these urban areas. The sample is large enough to provide meaningful data for analysis while being manageable within the scope of the study.

#### Questionnaire analysis

The complete questionnaires were analyzed using Excel and contingency tables (or cross tabulations) and the use of Multiple linear regression analysis and the chi-square test to determine if two variables were dependent on each other.

#### Data Analysis Techniques

Multiple linear regression analysis and a chi-square test were used to analyze and interpret the responses:

#### Regression Analysis:

Purpose: To understand the impact of road conditions and maintenance on commuter behavior, such as travel times and satisfaction.

Technique: Multiple linear regression was used to model the relationship between independent variables (e.g., road quality, traffic congestion) and dependent variables (e.g., travel time, commuter satisfaction).

#### Multiple Linear Regression Analysis

##### (a) Predicting Commuter Satisfaction

The key variables were coded as numbers as it can be seen below:

- Road Condition Rating: 1 (Very Poor) to 5 (Excellent)
- Road Maintenance Rating: 1 (Very Poor) to 5 (Excellent)

- Satisfaction: 1 (Very Unsatisfied) to 5 (Very Satisfied)
- Mode of Transport: 1 (Public Bus) to 7 (Other)

Model:

$$\text{Satisfaction} = 0.534 + 0.248(\text{Road Condition}) + 0.513(\text{Road Maintenance}) - 0.034(\text{Transport Mode})$$

Intercept: 0.534

Coefficients:

- Road Condition: +0.248
- Road Maintenance: +0.513
- Transport Mode: -0.034

Model Metrics:

$$R^2 = 0.65, \text{MSE} = 0.257$$

Conclusion:

- Higher maintenance and better road quality significantly increase satisfaction among commuters.
- The mode of transport has a very minor impact.

#### (b) Predicting Travel Time

Travel Time was encoded:

1. Less than 30 min → 1
2. 30–60 min → 2
3. 1–2 hours → 3
4. More than 2 hours → 4

Model:

$$\text{Travel Time} = 2.115 - 0.033(\text{Road Condition}) + 0.002(\text{Road Maintenance}) - 0.080(\text{Transport Mode})$$

Intercept: 2.115

Coefficients:

- Road Condition: -0.033
- Road Maintenance: +0.002
- Transport Mode: -0.080

Model Metrics:

$$R^2 = -0.07 \text{ (Poor)}$$

$$\text{MSE} = 0.854$$

Conclusion:

- Road quality and maintenance affect travel time well.
- Other factors (like distance, traffic jams) also affect travel time.

Chi-Square Tests:

Purpose: To test whether two categorical variables have a significant relationship.

Technique: The Chi-Square test for independence was used to determine if variables such as commuter type (e.g., public vs. private transport users) and perceptions of road conditions (e.g., “Poor” vs “Good” quality) are associated.

Chi-Square Test of Independence

Testing:

Access to Private Vehicle vs Road Condition Rating

Contingency Table

Access	Excellent	Fair	Good	Poor	Very Poor
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No	6	54	20	97	19
Yes	5	54	24	22	9

Chi-Square Test Calculations:

Chi-Square Statistic ( $\chi^2$ ) = 31.83

Degrees of Freedom = (2-1) (5-1) = 4

P-value =  $2.07 \times 10^{-6}$

Interpretation:

Since  $p < 0.05$ , there is a statistically significant relationship between access to a private vehicle and perceived road conditions. Due to good access to roads linked to their place of work. Those who live in certain areas linked to the federal roads with poor conditions generally perceive worse road conditions.

Ethical Considerations

Informed Consent: All participants were informed about the purpose of the study and voluntarily agreed to participate. Their participation will be anonymous, and no personal identifying information will be shared.

Confidentiality: The data will be kept confidential, and participants' responses will be used solely for this research.

#### IV. Data Analysis

Efficient and safe commuting is a fundamental component of urban life, directly affecting economic productivity, social well-being, and overall quality of life. However, in many rapidly growing urban centers, deteriorating road conditions and inadequate transportation infrastructure continue to pose significant challenges to daily commuters. In response to increasing concerns about transportation inefficiencies and their broader social impacts, a detailed survey was conducted to assess the commuting experiences of residents across major Nigerian cities.

This study focuses on commuting patterns within Nigeria, with particular attention to major urban hubs such as Abuja, Lagos, Kano, and Port Harcourt. The survey was conducted between March 18, 2025, and April 23, 2025, gathering responses from a diverse sample of 311 participants who regularly commute for work, education, and other daily activities.

The primary objectives of this survey and subsequent analysis were to:

- Understand the main modes of transport utilized by commuters.
- Identify the most common road-related challenges encountered during daily commutes.
- Evaluate how poor road conditions impact commute duration and mode choice.
- Explore socioeconomic factors influencing commuting experiences.
- Provide actionable insights that could inform infrastructure development and transportation policy improvements.

By systematically analyzing the collected data, this report aims to shed light on the commuting realities faced by Nigerian residents, highlight critical pain points in the current transport systems, and offer recommendations for creating a more efficient, accessible, and sustainable commuting environment.

Age And Gender

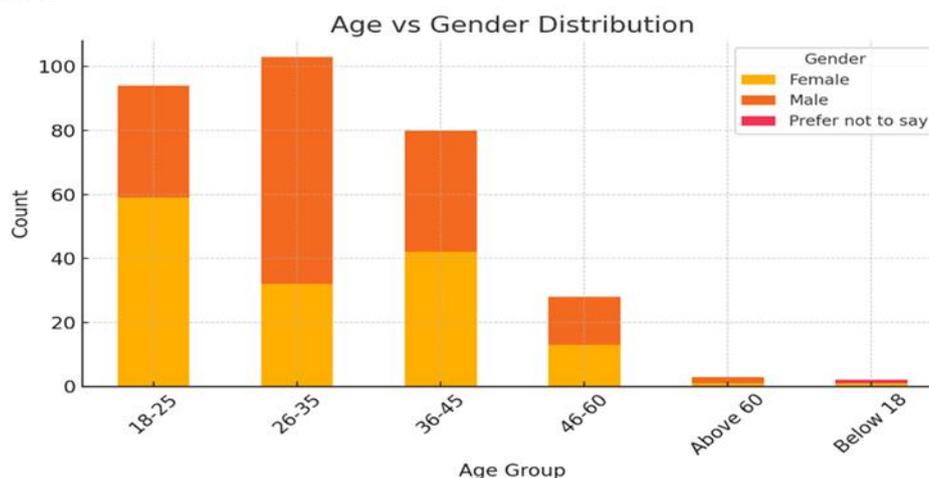


Figure 1: Age vs Gender Distribution.

### Demographic Overview: Age and Gender Distribution

People of all ages filled out the survey, providing a broad population picture. The graph above shows that most respondents are between the ages of 18 and 45, suggesting a significant number commute. Notably, the number of males and females in each age group is relatively even, though there are slightly more males than females in the 26–35 age group. This demographic grouping indicates that travel problems primarily affect those in school or those working/business. This underscores the importance of transportation strategies meeting the needs of this vital economic group.

### Transportation Modes

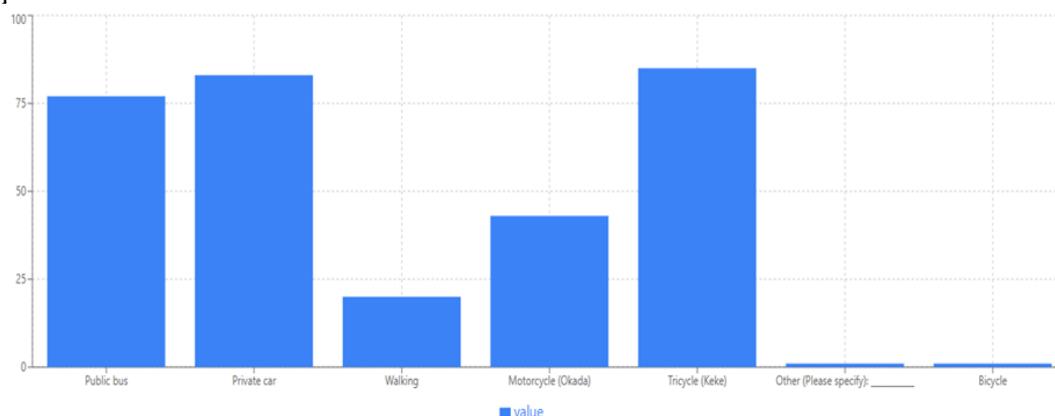


Figure 2: Distribution of Transport Modes.

### Distribution of Transport Modes

The chart above shows the distribution of primary transport modes among the 311 survey respondents, of which tricycles (Keke) amounts to 27.4%, private vehicles 26.8%, Public buses – 24.8%, Motorcycles (Okada) – 13.9%, Walking – 5% and Bicycle – 2.1%.

From the survey, the most popular ways to commute are tricycles and public buses, which are cheap, easy to find, and can serve places with lots of people, like cities and suburbs. A lot of people also depend on Okadas because they are quick and easy to use on bad roads, small streets, and when there is a lot of traffic. Respondents still don't own many private vehicles. This is because of larger social issues like income inequality and the high costs of buying and maintaining vehicles.

### Common Road Issues

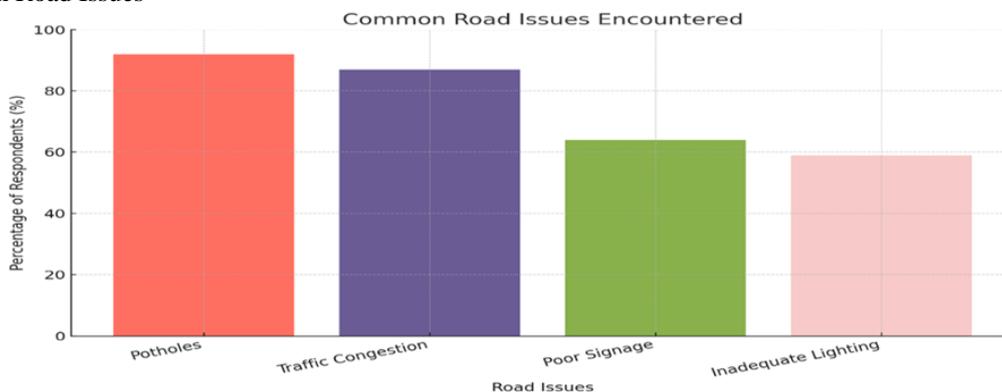


Figure 3: Frequency of Road Issues Encountered.

### Frequency of Road Issues Encountered

The traffic problems that respondents most often mentioned are been classified. Out of which 92% of the respondent believes it is caused by potholes, 87% thinks its traffic congestion, 64% are of the opinion that it is poor signage while 59% thinks it is inadequate street lightening.

From the survey and the breakdown above, almost everyone deals with potholes and traffic jams, which are annoying, damage cars, and cause major delays. Poor road signs increase travel difficulties, especially for drivers, while poor street lighting heightens the risk of crashes, personal danger, and lowers night-time mobility. These safety risks are especially serious for disadvantaged groups such as walkers, bikers, and public transport users, stressing the immediate need for focused infrastructure reforms.

Commute Times

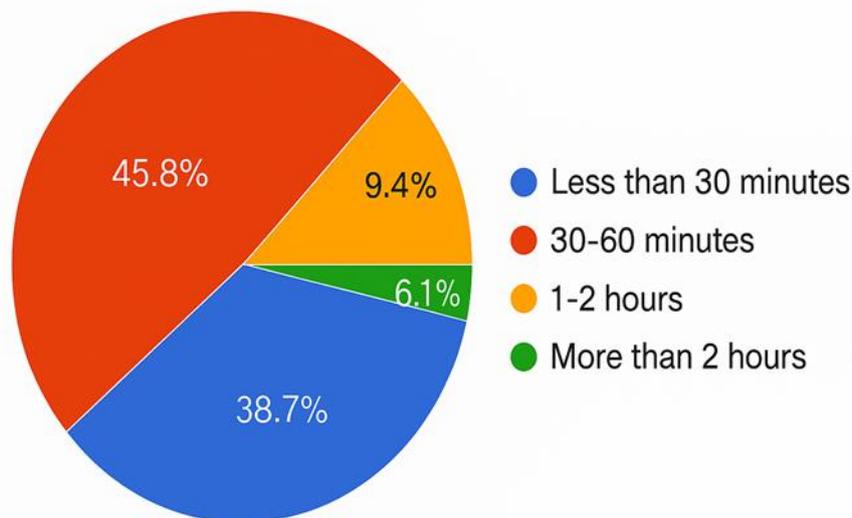


Figure 4: Average Daily Commute Duration.

Average Daily Commute Duration

Survey responses revealed the following commute time distribution: As it can be seen from the study that 45.8% averagely commute between 30 minutes to 1 hour, 38.7% under 30 minutes, 9.4% between 1-2 hours and 6.1% over 2 hours. While a significant number of commuters enjoy relatively short trips (under 30 minutes), a worrying 45.8% of respondents suffer commutes between 30 minutes to 1 hour daily, with 9.4% spending 1 to 2 hours traveling, and 6.1% spending more than 2 hours. Extended travel times add to higher amounts of physical and mental stress, lower work output, limit family time, and increase transportation costs. Over time, these factors can worsen the general urban quality of life and increase social gaps.

Impact Of Road Maintenance

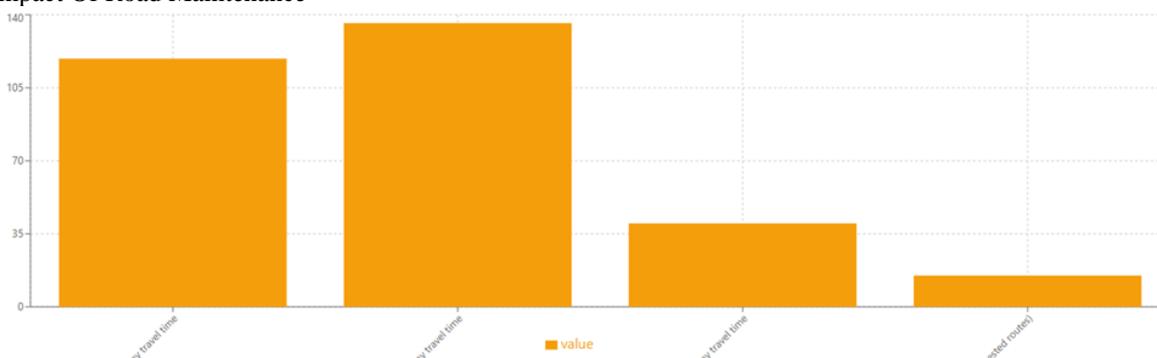


Figure 5: Impact on Travel Time.

Impact on Travel Time

Feedback from respondents about the effects of road repair showed that compared to respondents who evaluated road conditions as "Poor," those who rated it as "Good" reported average commuting times that were 25% lower. For instance, commuters on the "good road" took an average of 25 minutes, but those on the "poor road" took an average of 45 minutes.

These results show a clear correlation between commuting efficiency and road conditions. Longer and more unpredictable travel times are caused by poorly maintained roads, which also delay traffic, raise the danger of accidents, and require diversions. Therefore, making strategic expenditures in routine road repair might improve urban transportation generally and save everyday commuters a significant amount of time.

## V. Conclusion

The survey results make it clear that road conditions play a major role in shaping commuter behavior in Nigeria. Potholes and traffic congestion were the most commonly reported issues, affecting 92% and 87% of respondents, respectively. People who commuted on well-maintained roads averaged 25 minutes per trip, while those navigating poorly maintained routes faced commute times of more than 45 minutes, nearly double. Regression analysis supported these findings, showing that road quality and maintenance are strong predictors of commuter satisfaction, with better conditions leading to higher levels of contentment.

Beyond just longer travel times, poor infrastructure is also driving commuters to shift toward motorcycles and tricycles, especially in heavily congested or damaged areas. These conditions further widen social inequalities, as those with private vehicles and access to better roads experience faster and more reliable commutes. Tackling these issues will require a combination of infrastructure upgrades and strategic policy interventions.

Tackling these pressing problems requires both infrastructure changes and smart policy actions. The following suggestions are suggested to improve the commute experience and support fair mobility:

1. Implement extensive road repair and cleaning programs, targeting high-traffic routes to limit delays, reduce car damage, and improve road safety.
2. Expand and update public transportation systems, ensuring they are more available, dependable, and safe for many travelers. This should include growing truck numbers, better service regularity, and boosting car quality.
3. Designate and police special motorbike lanes, particularly in crowded urban areas. This would improve traffic flow, increase safety for riders, and maintain the time efficiency bikes offer.
4. Upgrade road signs and lighting infrastructure, particularly in high-risk and low-visibility places, to improve orientation and nighttime safety.
5. Develop integrated multimodal transport systems, which smoothly join public buses, tricycles, and non-motorized transport to reduce reliance on a single means and spread traffic more effectively.
6. Implement smart traffic management solutions, such as synced traffic lights, real-time traffic tracking, and data-driven congestion management, to improve traffic flow during busy hours. Similar smart mobility solutions, such as real-time traffic management and integrated transport hubs, have shown promise in improving urban mobility in rapidly growing cities like Beijing (Zhao & Li, 2017).
7. Introduce passenger education programs, supporting road safety knowledge, proper usage of marked lines, and respectful sharing of road space among diverse transport users.

Continuous tracking and review are equally important for lasting growth. It is strongly recommended that annual commuting experience surveys and transport performance audits be institutionalized. These would provide critical insights into changing travel trends, measure the success of adopted policies, and guide evidence-based future urban planning and funding choices.

By handling these issues quickly and regularly, stakeholders can significantly reduce journey times, improve worker happiness, and create a more inclusive, efficient, and sustainable transportation environment.

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