# Mixed-Use Housing and Urban Efficiency in Awka, Nigeria: Implications for Accessibility, Mobility and Sustainable Urban Development

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**Abstract**
Nigerian cities are experiencing rapid urban growth, which has increased the strain on housing, transportation, infrastructure, and urban land. With a focus on accessibility, travel distance, traffic congestion, walkability, land utilization, and infrastructure sustainability, this study investigates the perceived contribution of mixed-use housing to urban efficiency in Awka, Nigeria. An empirical design based on surveys was used in the study. A standardized questionnaire using a five-point Likert scale was used to gather information from 400 Awka inhabitants. Residents' opinions on how mixed-use housing contributes to particular aspects of urban accessibility and efficiency were investigated in the questionnaire. Frequencies, percentages, and weighted mean scores were utilized to analyze the data; agreement was assessed using a mean threshold of 3.00. With a stated Cronbach's alpha of 0.81, the questionnaire showed respectable internal reliability. There was broad consensus among respondents that mixed-use housing can enhance urban efficiency. Improved sustainability and infrastructure efficiency had the highest mean score (4.17), followed by decreased travel distance and walkability promotion (both 4.15), better service accessibility (4.12), and less traffic congestion (4.09). According to the results, locals believe that more walkable neighborhoods, shorter daily commutes, and increased convenience are associated with the spatial integration of residential and complementary urban functions.
**Keywords:** mixed-use housing; urban efficiency; accessibility; urban mobility; walkability; Awka

## Introduction

In developing nations, urbanization is changing the way cities are structured both physically and functionally. Land, housing, transportation, and infrastructure are under a lot of strain due to population increase, shifting household demands, growing economic activity, and rising demand for urban services. The problem is not just that cities are expanding, but that expansion often takes the form of spatial patterns that divide homes from places of work, commerce, education, recreation, and other daily activities. Residents may need to travel farther to fulfill daily needs in areas where these functions are widely distributed, which would increase reliance on motorized transportation and put further strain on already limited urban infrastructures (UN-Habitat, 2022; OECD, 2020). As a result, the connection between mobility and urban form has grown in importance in modern planning studies. Because the closeness of complementing land uses can affect how people travel around the city, compact and functionally integrated urban landscapes are becoming more and more popular as alternatives to low-density, spatially fragmented urbanization. Although the strength and direction of these relationships vary depending on local context, transportation availability, and socioeconomic conditions, research on the built environment has demonstrated that density, diversity, and design are associated with travel behavior (Ewing and Cervero, 2010; Stevens, 2017). As part of larger plans for sustainable urban transportation, more recent work on proximity-based design also highlights the significance of placing daily services closer to households.

This conversation revolves around mixed-use development. Mixed-use development, in its broadest definition, refers to the integration of several urban services within a geographical setting that is reasonably related. Within a building, block, neighborhood, or larger district, residential, commercial, institutional, recreational, and service activity may coexist. The basic planning reasoning is simple: residents have more options to meet daily needs without having to make long trips when complementing activities are situated closer together. In addition to promoting accessibility, this may improve the environment for bicycling, walking, and public transportation (Grant, 2002; Talen, 2019).

However, mixed-use development's potential advantages shouldn't be taken for granted. Accessibility and sustainable mobility are not ensured by merely placing various users in the same location. Whether or not spatial closeness results in significant mobility benefits depends on a number of factors, including the quality of pedestrian infrastructure, street connection, safety, public transportation, development density, and building design and management. The relationship between land-use mix and the physical characteristics of streets and public places, rather than just land-use diversity, is what shapes walkability, according to recent research (Fonseca et al., 2026). In a similar vein, studies on sustainable mobility are increasingly taking into account the larger urban system in which mixed-use development functions rather than relying solely on compactness to achieve desired results. These problems are especially pertinent to African cities that are expanding quickly. In many African

contexts, urban growth has coincided with inadequate infrastructure, disjointed planning processes, and rising transportation demand. Households without dependable private transportation may find it challenging to obtain services due to the resulting spatial patterns. At the same time, the fast expansion of cities offers chances to reevaluate traditional zoning strategies and residential development. Thus, discussions about sustainable urbanization in the Global South are becoming more and more pertinent to integrated neighborhood planning, compact development, and better access to daily services.

Nigeria offers a crucial background for this conversation. The nation's urban population has grown quickly, yet many cities still struggle with poor infrastructure, traffic, housing pressure, and development control issues. Similar factors in Awka, such as fast physical expansion, urban sprawl, rising traffic demand, and pressure on infrastructure and urban services, were noted in the article's thesis. These circumstances make one wonder if different patterns of urban growth could enhance the effectiveness of the use of land, infrastructure, and transportation systems.

Due to its unique position between the traits of a rapidly growing urban area and those of a regional administrative center, Awka presents an intriguing case. As the capital of Anambra State, it has governmental operations, educational facilities, business ventures, housing, and transportation links for the surrounding area. According to the theory, the city, which includes places like Aroma, Ifite, and Zik Avenue, is a fast growing urban center where residential and commercial activity are increasingly taking place side by side. This new trend offers a helpful framework for analyzing the perceived connection between mixed-use housing and urban efficiency.

There is still a dearth of empirical data from medium-sized Nigerian cities, despite the growing body of worldwide research on compact cities, mixed-use development, and sustainable mobility. Cities like Awka have received relatively less attention than major metropolitan centers like Lagos and Abuja, according to the literature assessment conducted for the underlying study. This is significant because it is not always possible to directly apply planning solutions created in very big urban areas to smaller, differently structured communities. Therefore, the primary focus of this study is on how Awka locals believe mixed-use housing might improve urban efficiency. The focus is purposefully more limited than the larger premise that forms the basis of the work. The article focuses on accessibility and mobility-related outcomes and how they relate to land and infrastructure efficiency rather than looking at all aspects of mixed-use housing.

The study aims to answer the following research question: How do locals in Awka, Nigeria, view mixed-use housing's contribution to mobility, accessibility, and urban efficiency?
Therefore, the study's goal is to determine how inhabitants in Awka, Nigeria, perceive mixed-use housing's contribution to urban efficiency, accessibility, and mobility.

The paper makes the case that mixed-use housing should be viewed as a component of a larger spatial plan that aims to improve the link between residential and complementary urban services rather than just as a housing typology. According to the empirical results, inhabitants of Awka believe that this type of development will result in less travel time, better access to services, better walkability, less traffic, and more effective use of urban resources. However, the study acknowledges that these are perceived advantages rather than causal impacts that can be measured by experimentation.

**Literature Review**

*Mixed-use housing and urban efficiency*

Although the concept of combining land uses has a long history in urban planning, worries about scattered urban expansion and reliance on automobiles are intimately linked to its current significance. Residential, commercial, institutional, and recreational activity are often kept apart by conventional zoning regulations. Excessive separation can increase the spatial distance between locations where people live, work, shop, study, and receive services, even while functional separation can help regulate incompatible activities and control land use. An option is provided by mixed-use development, which brings some of these functions closer together spatially.

Grant (2002) makes a distinction between various types of mixed-use development and points out that its goals might go beyond straightforward land-use diversification to include urban liveliness, accessibility, and more effective infrastructure utilization. Therefore, from a planning standpoint, mixed use is valuable in part because of the connections it makes between various activities. Compared to a residential area where the majority of services are located many kilometers away, a residential area with close-by stores, schools, workplaces, and recreational facilities offers a different mobility environment.

Numerous studies have looked at the relationship between travel behavior and land-use variety. Land-use diversity, destination accessibility, density, and street design are among the key factors linked to travel outcomes, according to Ewing and Cervero's (2010) synthesis of built-environment and travel research. But the authors also show that the effects of the built environment are complicated and differ depending on the kind of journey and the situation. This is a crucial requirement for mixed-use planning: whereas spatial integration can lead to shorter travel times, actual travel patterns are influenced by a variety of factors outside of land-use arrangement.
In a similar vein, Stevens (2017) warns against viewing compact development as a surefire way to overcome reliance on cars. The availability of transportation options, household characteristics, and regional accessibility all have an impact on the relationship between urban form and travel. This implies that mixed-use housing is best viewed as a part of a larger urban system rather than as a stand-alone solution that may address traffic or mobility issues.

The significance of closeness in sustainable urban development has been reaffirmed by more recent studies. The ability of neighborhoods to deliver necessary services within comparatively short travel times has come back into focus with the rise of the "15-minute city" concept. The idea's main tenet is aligned with the logic of mixed-use development: urban environments can be planned so that daily activities are accessible without necessitating long-distance travel, notwithstanding disagreements over its measurement and application. Mixed-use, compact, and walkable neighborhoods are still linked to sustainable transportation goals in recent empirical and conceptual research (Almatar, 2026; Fonseca et al., 2026). The efficiency argument for growing cities goes beyond transportation. Existing infrastructure and public services can serve a variety of purposes and customers by concentrating compatible activity inside interconnected urban areas. Efficient land use and infrastructural efficiency are also identified as significant aspects of mixed-use housing's contribution in Awka by the study's underlying premise. However, sufficient capacity and management are necessary for infrastructure efficiency. Without matching infrastructure, intensification can easily shift the strain from transportation networks to public areas, waste management, drainage, water supply, and energy.

**Accessibility and urban mobility**

Despite their close relationship, mobility and accessibility are not the same thing. While accessibility is essentially concerned with how easily people may reach desired opportunities and destinations, mobility is concerned with the movement of people. For families with private vehicles, a planning system that necessitates significant travel to obtain necessary services may offer mobility, but it may still result in poor accessibility for people who are less mobile or have fewer transportation options.
In sustainable urban planning, this distinction is becoming more and more crucial. Because individuals can move farther and faster, a city does not necessarily become more efficient. In many cases, it may be better to improve accessibility by shortening the distance between houses and daily destinations rather than just expanding transportation capacity. This strategy can be supported by mixed-use neighborhoods that locate complementary services within walking or short travel distances.
Proximity-based planning has also rekindled interest in the connection between accessibility and land-use diversity. The potential of mixed-use and walkable landscapes to cut down on needless travel and give locals more options for how they get to daily destinations is highlighted by recent studies on sustainable mobility. For instance, the growing body of research on the 15-minute city connects active travel, land-use diversity, and closeness as interrelated aspects of urban accessibility (Shoina and Voukkali, 2024; Almatar, 2026).
Walkability is especially important because a neighborhood cannot be made walkable by proximity alone. Street connectivity, safety, crossing facilities, pavement quality, shade, appeal, traffic conditions, and destination locations all affect pedestrian mobility. Instead of viewing walkability as a straightforward effect of density, research is increasingly treating it as a multifaceted environmental feature. For instance, Fonseca et al. (2026) note that comprehending walkability in modern neighborhoods depends on the interaction of urban form, pedestrian perceptions, and proximity.
Because pedestrian infrastructure and public transportation systems frequently expand more slowly than urban populations and land uses, these problems can be especially noticeable in African cities. While a well-connected mixed-use neighborhood can offer more meaningful walking options, a mixed-use neighborhood with inadequate pedestrian infrastructure may nonetheless result in significant automobile usage. This emphasizes how crucial it is to combine infrastructure provision, urban planning, and land-use integration.

*Mixed-use development, congestion and sustainability*

One of the most obvious effects of ineffective spatial interactions between land users is traffic congestion. Many residents may make comparable excursions at similar times in areas where housing, work, education, and commerce are geographically dispersed. As a result, mixed-use development has been suggested as a way to lessen the necessity of some cross-city travel.

Rather than relying solely on congestion control, the process is based on proximity. Some trips may become shorter or switch from motorized to non-motorized modes if a portion of daily needs can be satisfied within the neighborhood. Because mixed-use areas can also draw more visitors and commercial activity, this does not always mean that congestion is eliminated. In fact, poorly designed mixed-use construction can lead to delivery traffic, parking pressure, and disputes between residential and business operations.

Therefore, mixed-use development has conditional sustainability implications. More effective urban systems can be supported by compactness and land-use integration, but the results depend on the quality of the planning. Rather than focusing on discrete interventions, recent research on sustainable mobility increasingly emphasizes coordinated land use, transportation, and public space planning. For instance, research on transit-oriented development keeps highlighting the significance of walkability, mixed uses, compactness, and public transportation access. Land usage is another aspect of the broader sustainability case. Roads, utilities, and other infrastructure must be extended over ever-larger areas due to urban sprawl. Potentially, more compact patterns can lessen the need for outward expansion and make better use of already urbanized areas. Strong respondent support for the idea that mixed-use housing can promote sustainable urban expansion and more effective land use was also found in the underlying concept.

However, sustainability and compact development are not synonymous. If open space, drainage, waste management, and infrastructure capacity are overlooked, increased development intensity may put more strain on the environment. Therefore, creating well-connected, sufficiently supplied, and suitably controlled mixed-use settings is a more acceptable planning goal than just maximizing density.

*Mixed-use development in the Nigerian urban context*

The context of urban growth in Nigeria adds another level of complexity to the conversation. Inadequate infrastructure, dispersed institutional duties, and poor development control have often coexisted with rapid urban growth. Rather than through planned planning, these variables may result in development patterns that mix residential and commercial uses informally.

It's crucial to distinguish between intended and unplanned mixed use. Many Nigerian cities currently exhibit mixed-use activity, but this does not always imply that the resulting environment is effective, secure, or sustainable. Whether mixed use creates a functional neighborhood or an overcrowded one depends on the quality of the roadways, drainage, parking, waste management, utilities, building setbacks, and pedestrian paths.

The underlying Awka study reflects this problem. Mixed-use development was seen by locals as having potential advantages for convenience and accessibility, but the larger study also revealed worries about poor infrastructure, lax planning regulations, noise, crowding, and insecurity. These results support the idea that rather than being promoted as an unfettered combination of activities, mixed-use housing should be accompanied by suitable development constraints.

In a similar vein, recent research from Nigeria emphasizes the significance of institutional coordination, infrastructure capacity, and integrated planning in attaining sustainable urban growth. Instead of addressing land-use planning, accessibility, public infrastructure, and environmental performance as distinct planning issues, current study on Nigerian cities increasingly looks at how these factors interact.

*Research gap and conceptual position*

The literature reveals three relevant gaps. First, despite extensive international research on the relationship between urban form, mixed land use, accessibility, and mobility, the majority of the empirical data is found in cities with comparatively developed transportation and planning infrastructure. It is not always possible to apply findings from these contexts to Nigerian cities that are fast becoming more urbanized. Second, larger metropolitan regions have typically received the majority of research focus in Nigeria. As a medium-sized but quickly growing state capital, Awka received relatively little empirical attention, according to the thesis literature review. Third, inhabitants' perceptions of the implications of mixed-use housing for urban efficiency across a number of interrelated aspects have received comparatively little consideration. This is crucial because how locals perceive and comprehend the connection between urban form, accessibility, and everyday mobility affects how well planning interventions work.

In order to close these gaps, this study looks at people' opinions in five main areas: walkability, traffic congestion, service accessibility, travel distance, and sustainability/infrastructure efficiency. According to the study's conceptual stance, mixed-use housing can increase urban efficiency through spatial proximity, but this effect is mediated by the standard of infrastructure, planning, and urban design.

## Methodology

*Research design*

The study used a questionnaire-based empirical research design to find out how Awka locals felt about mixed-use housing's contribution to urban efficiency. According to the underlying thesis, the broader research uses both

quantitative and qualitative methods, such as administering questionnaires and observing trends of urban growth. However, the quantitative questionnaire data that directly addresses the chosen objective is the main empirical support for this piece.

***Study area***

Awka, the capital of Anambra State in southeast Nigeria, served as the study's site. Awka has had significant physical expansion and serves as a commercial, educational, administrative, and transportation hub. According to the underlying analysis, the city has grown from a traditional settlement into a more complex urban environment with rising residential growth, business activity, and infrastructure demand.

The city's expansion makes it pertinent to inquiries about the integration of land uses. The city nevertheless has issues with infrastructure, development regulation, and transportation, while residential, commercial, and other urban services are increasingly concentrated in the same regions. Respondents' identified areas, such as Aroma, Ifite, and Zik Avenue, show how residential and commercial roles coexist within the current urban fabric.

***Population, sample and sampling***

Residents and urban users in Awka, Anambra State, were the focus of the study. Using the Taro Yamane formula at a 5% level of precision, the sample size was calculated using a population estimate of 300,000, yielding roughly 400 respondents. Of the 450 surveys that were sent out, 400 were found to be valid, yielding an 88.9% response rate.

To obtain spatial coverage across six locations, Aroma, Ifite, Amawbia, Temporary Site, Zik Avenue, and Agu Awka, a stratified sampling technique was employed. Residents and urban users, such as landlords, tenants, business owners, students, and other users acquainted with the study area, were given questionnaires directly.

Aroma (70), Ifite (80), Amawbia (60), Temporary Site (70), Zik Avenue (80), and Agu Awka (90) received the 450 questionnaires. The corresponding valid answers were 63, 72, 54, 63, 72, and 76 respectively.

***Respondents' Demographic Profile***

There were 216 men (54.0%) and 184 women (46.0%) among the 400 respondents. The largest age group was 26–35 years old (33.0%), followed by 18–25 years old (24.0%) and 36–45 years old (22.0%). 39.0% of respondents were single, and 47.0% of respondents were married. HND/B.Sc. holders made up the largest group (37.0%) in terms of education, followed by postgraduate respondents (21.0%). The primary occupational groups were students (21.0%), business owners (26.0%), and civil servants (22.0%). The majority of responders (36.0%) had been residents of Awka for five to ten years.

***Instrument and reliability***

Items on the perceived connection between mixed-use housing and urban efficiency were included in the questionnaire. The tool examined whether mixed-use housing could decrease travel distance, enhance accessibility to services, ease traffic, encourage walkability, and increase sustainability and infrastructural efficiency for the chosen goal.

The underlying thesis is that the questionnaire instrument's internal consistency is acceptable, with a Cronbach's alpha coefficient of 0.81. This validates the use of the responses for the study's descriptive analysis.

***Data analysis***

Frequencies, percentages, and weighted mean scores were used to analyze the responses. Responses were given weights between 1 and 5 for each Likert-scale item, and the weighted mean was computed as follows:

$$\underline{X} = \frac{\Sigma FX}{N}$$

where N is the total number of valid responses, X is the numerical weight given to each response category, and F is the response frequency.

The decision threshold was set at a mean score of 3.00. ratings below 3.00 were considered to indicate disagreement, while ratings above 3.00 were considered to indicate agreement. The methodology employed in the underlying thesis is followed in this analytical process.

Instead of being causal, the analysis is descriptive. As a result, the results are seen as proof of respondents' opinions regarding the possible benefits of mixed-use housing. They do not prove that actual commute distance or congestion has decreased as a result of mixed-use housing.

**Results**

*Respondents' assessment of mixed-use housing and urban efficiency*

The study's goal regarding mixed-use housing's impact on Awka's accessibility and urban efficiency is addressed by the findings in this section. Travel distance reduction, service accessibility, traffic congestion reduction,

walkability promotion, and increased sustainability and infrastructure efficiency were the five metrics that were looked at. The mean ratings for all five variables were higher than the study's acceptance criterion of 3.00, suggesting that respondents' assessments were generally favorable.

Table I. Respondents' assessment of mixed-use housing and urban efficiency

| S/N | Urban-efficiency indicator | Strongly agree | Agree | Undecided | Disagree | Strongly disagree | Mean | Decision |
|---|---|---|---|---|---|---|---|---|
| 1 | Mixed-use housing reduces travel distance | 188 (47.0%) | 144 (36.0%) | 24 (6.0%) | 28 (7.0%) | 16 (4.0%) | 4.15 | Accepted |
| 2 | Mixed-use developments improve accessibility to services | 180 (45.0%) | 152 (38.0%) | 24 (6.0%) | 24 (6.0%) | 20 (5.0%) | 4.12 | Accepted |
| 3 | Mixed-use housing reduces traffic congestion | 176 (44.0%) | 148 (37.0%) | 32 (8.0%) | 24 (6.0%) | 20 (5.0%) | 4.09 | Accepted |
| 4 | Mixed-use housing promotes walkability | 184 (46.0%) | 144 (36.0%) | 28 (7.0%) | 24 (6.0%) | 20 (5.0%) | 4.12 | Accepted |
| 5 | Mixed-use housing improves sustainability and infrastructure efficiency | 188 (47.0%) | 148 (37.0%) | 24 (6.0%) | 24 (6.0%) | 16 (4.0%) | 4.17 | Accepted |

Source: Authors' Field Survey, 2026

With a mean score of 4.17, infrastructure efficiency and sustainability showed the highest degree of agreement. Mixed-use housing could enhance these aspects, according to a total of 84.0% of respondents who either strongly agreed or agreed. This finding is significant because it shows that respondents saw mixed-use homes as more than just a way to increase residential convenience. Instead, they linked the integration of urban services to more extensive enhancements in the utilization of urban infrastructure and resources.

83.0% of respondents said they agreed or strongly agreed with the reduction in travel distance, with a mean score of 4.15. According to the research, one of the main benefits of mixed-use development in Awka is thought to be the close proximity of homes to common areas. Respondents specifically linked shorter commutes and less stress from transportation to being close to places of employment, markets, schools, and recreational amenities. With a mean score of 4.12, accessibility to services also garnered significant support. Mixed-use developments enhance service access, according to 83% of respondents who agreed or strongly agreed. This result is in line with the fundamental accessibility logic of mixed-use planning, which states that the spatial distance between homes and important locations can be decreased when complementary activities are situated inside the same neighborhood. The outcome is especially pertinent in a city where respondents noted that one of the effects of fast urbanization is pressure on the current transportation infrastructure. Among the five indicators, the claim that mixed-use housing can lessen traffic congestion had the lowest mean score, at 4.09. However, 81.0% of respondents chose "agree" or "strongly agree," indicating significant agreement. Respondents linked this possible advantage to fewer lengthier daily travels within the city. The significantly lower score is significant because it indicates that respondents are aware that land-use integration might not be sufficient to fully alleviate traffic. The average score for walkability was 4.12. Mixed-use housing encourages walkability, according to 82% of respondents who agreed

or strongly agreed. Although the poll does not determine if respondents really walk more frequently in mixed-use areas, the outcome supports the idea that placing routine destinations closer together can provide possibilities for walking.The distinction is crucial since the quality and safety of pedestrian infrastructure, street connection, and the public realm's character all affect walkability.

Overall, all five indications showed a consistently positive assessment, with mean values ranging from 4.09 to 4.17. The study's hypothesis that Awka inhabitants believe mixed-use housing may enhance urban efficiency, accessibility, and mobility is thus empirically supported by the results.

**Discussion**

*Mixed-use housing as an accessibility strategy*

A key tenet of integrated land-use planning is supported by the robust response to the accessibility indicator: urban efficiency is partially dependent on how simple it is for people to get to the places they need for daily living. The outcome is in line with well-established built-environment research that demonstrates the significance of destination accessibility and land-use diversity in the relationship between urban form and travel behavior (Ewing and Cervero, 2010).

This relationship has been articulated more and more around proximity in more recent scholarship. For instance, the 15-minute-city literature centers neighborhood design around the availability of daily amenities within comparatively short walking or bicycle distances. The 15-minute-city concept's emphasis on closeness is strongly related to the current findings, even though it shouldn't be applied carelessly to other contexts. According to recent evaluations, walking access, mixed land use, and accessibility are all crucial elements of proximity-oriented urban planning (Pira and Hansson, 2026).

The Awka findings imply that locals are aware of this connection on an instinctive level. According to the accessibility mean of 4.12, respondents believe that mixed-use housing makes it easier to go to markets, schools, medical facilities, places of employment, and leisure activities. Practically speaking, this indicates that the benefits of mixed-use housing go beyond the actual mix of purposes. Establishing a spatial relationship between those uses is its potential urban advantage.

This finding is especially pertinent to a city that is growing quickly. Residents become reliant on travel to other areas of the city when new residential development takes place in the urban perimeter without matching employment, business, and social service opportunities. On the other hand, incorporating suitable services within residential neighborhoods might enhance local accessibility and lessen the need for certain trips across cities. In a similar vein, the underlying thesis identifies pressure on urban infrastructure and unchecked outer expansion as significant aspects of Awka's urbanization process.

*Travel distance and mobility*

One of the study's most compelling results was the travel-distance reduction mean of 4.15. The claim that mixed land use can lessen the spatial distance between origins and destinations is supported by this outcome. The distance needed to do daily tasks may decrease when housing is situated close to complementing usage. Wider research relating urban form to travel patterns lends credence to this interpretation. Ewing and Cervero, (2010) discovered a relationship between travel behavior and destination accessibility, diversity, and design; however, subsequent studies have emphasized that this association goes beyond density. Destinations' layout and accessibility are equally important. The results are particularly pertinent to Nigerian cities, where households may face significant financial hardship due to transportation expenses and travel delays. Therefore, mixed-use housing may have social as well as spatial implications: access may become less reliant on private vehicle ownership if daily activities are closer together.

The evidence should be read cautiously, though. Instead than measuring actual kilometers traveled before and after mixed-use development, the questionnaire assessed perceived reductions in travel distance. Therefore, rather than demonstrating a quantifiable causal influence, the outcome demonstrates a strong resident perception. This restriction is crucial because the research as a whole cautions against assuming that changes in urban form inevitably result in corresponding changes in travel behavior (Stevens, 2017).

*Traffic congestion: potential benefit rather than guaranteed outcome*

The link is more complex when there is traffic congestion. Mixed-use housing can help reduce traffic, according to respondents, who gave the congestion indication a mean score of 4.09. The reasoning for this is that fewer trips across the larger metropolis may be required if people can get goods and services closer to their homes. However, the marginally lower mean when compared to the other metrics is instructive. While mixed-use development can cut down on some trips, it can also increase traffic related to parking, deliveries, business activities, and guests. Therefore, rather than being automatic, the relationship between mixed use and congestion should be viewed as conditional. This accreditation aligns with current research on sustainable mobility. The demand for travel can be influenced by urban form, but the results of transportation rely on how land use, infrastructure, travel habits, and

available modes interact. A mixed-use neighborhood may nonetheless see a significant amount of automobile traffic if it is connected by subpar roads and lacks a secure pedestrian infrastructure. The results thus lend credence to a more nuanced planning proposal for Awka: rather than being viewed as a stand-alone congestion remedy, mixed-use housing should be linked with transportation planning. This entails taking into account traffic management, parking, loading zones, pedestrian pathways, public transportation access, and street hierarchy during the planning phase. According to the theory, main business routes, Zik Avenue, and Aroma Junction are locations where traffic congestion occurs during peak hours. The need to avoid making the oversimplified assumption that introducing commercial uses to residential neighborhoods will inevitably improve traffic issues is reinforced by this local research.

*Walkability and the quality of the public realm*

The walkability outcome is noteworthy as well. According to a mean score of 4.12, respondents believe mixed-use housing encourages pedestrian mobility. This is in line with the idea that walking becomes more possible when locations are close enough to houses to allow for quick journeys.

However, there is a crucial contrast between walkability and proximity in the planning literature. Even when a place is geographically close, it may still be difficult or unpleasant to get there on foot due to bad pavement, dangerous road crossings, dim illumination, excessive traffic, or an ugly public area. Therefore, the combined significance of land use, accessibility, street structure, and pedestrian experience is highlighted in recent assessments of walkable environments (Fonseca et al., 2026).

Awka is directly impacted by this distinction. The survey's encouraging results shouldn't be taken as proof that mixed-use neighborhoods are already pedestrian-friendly. Instead, data shows that locals believe mixed-use housing has the ability to encourage walking. The practical implication is that pedestrian-oriented design, which includes continuous walkways, safe crossings, suitable setbacks, street lighting, shade, and accessible public areas, should go hand in hand with mixed-use development.

The results of the thesis independently corroborate this view by identifying public open spaces and pedestrian-friendly architecture as two of the elements that locals believed were essential for successful mixed-use development.

*Land and infrastructure efficiency*

Sustainability and infrastructure efficiency had the highest mean score (4.17) in the survey. This implies that respondents view the advantages of mixed-use housing not just at the level of individual households but also at the size of the larger metropolitan system.

Because many uses can be accommodated in a smaller geographical area, mixed-use construction may increase land efficiency. Existing infrastructure networks may support a more compact pattern of growth where this lessens the pressure for outward expansion. According to the underlying study, respondents also linked mixed-use development to less urban sprawl and effective land use.

More qualification is needed for the infrastructure dimension. When networks are properly planned and maintained, concentrating development can improve the efficiency of infrastructure providing. On the other hand, intensifying development without boosting infrastructure capacity may have the opposite effect. Public areas, garbage management, water supply, energy, drainage, and roads can all become overburdened.

This is especially important in Awka because the broader study revealed that respondents were very concerned about the strain that growing urbanization was placing on infrastructure. It follows that zoning approval alone should not be used to promote mixed-use housing. It ought to be connected to coordinated investment and infrastructure evaluation.

As a result, the outcome favors planned intensification over unconstrained densification. When the intensity and mix of uses are in line with infrastructure capacity and are backed by efficient development regulation, mixed-use housing is most likely to improve urban efficiency.

**Implications for Sustainable Urban Development in Awka**

The combined results suggest a planning strategy that views mixed-use housing as a component of an integrated urban development plan. Accessibility, shorter travel distances, walkability, and infrastructural efficiency are the most well regarded advantages, yet they are interrelated rather than separate results.

Planning authorities should first determine where residential growth and suitably scaled commercial, institutional, and community services can coexist. This does not mean that all potential uses should be accommodated in every residential development. Instead, complementary applications should be chosen based on infrastructural capability and neighborhood needs.

Second, planning for pedestrian and public transportation should be linked to mixed-use housing. Residents enjoy closeness, according to the positive walkability finding, however if pedestrian paths are dangerous or unreachable,

proximity will not be very useful. Similar focus is placed on the connection between accessible destinations and active mobility in modern proximity-based planning (Almatar, 2026).
Third, before increasing the intensity of development, infrastructure capacity should be evaluated. The good infrastructure efficiency and environmental scores shouldn't be seen as approval for unchecked intensification. Land-use changes must be coordinated with the planning of roads, drainage, water, power, waste management, and public areas.
Fourth, development control is crucial. The evidence for the thesis demonstrates that locals firmly believe that improved infrastructure and planning laws are necessary for mixed-use development to be effective. Beneficial mixed-use development can be distinguished from incompatible combinations that result in excessive noise, traffic, overcrowding, or environmental issues with the aid of appropriate legislation.
Lastly, the implementation method ought to include community involvement. As the users of the resulting urban environment, residents can offer information regarding issues related to accessibility, pedestrian conditions, service requirements, and conflicts between uses. Community involvement in mixed-use development is well supported by the broader thesis findings.

**Conclusion**

This study looked at how people in Awka, Nigeria, perceived mixed-use housing's impact on mobility, accessibility, and urban efficiency. All five of the variables under investigation have mean scores above the 3.00 acceptability criteria based on responses from 400 people. As a result, respondents' opinions on mixed-use housing as a strategy for enhancing urban conditions were consistently positive. Sustainability and infrastructure efficiency had the best results, with a mean score of 4.17. Walkability and service accessibility each scored 4.12, while transport distance reduction came in second with 4.15. 4.09 was the possible contribution to lessening traffic congestion. When taken as a whole, these results show that locals view mixed-use housing as being closer to daily destinations, easier access to services, walking opportunities, possibly reduced travel times, and more effective use of urban resources.
However, the results show how crucial it is to discern between potential and outcome. Residents' opinions are established by the survey; real reductions in automobile kilometers, traffic, walking frequency, and infrastructure costs are not independently measured. Therefore, mixed-use housing shouldn't be offered as a surefire way to address Awka's urbanization and mobility issues.
Rather, the study finds that well-designed mixed-use housing is a promising part of a more comprehensive sustainable urban development plan for Awka. When land-use integration is combined with sufficient infrastructure, efficient development control, pedestrian-oriented design, public transportation, and community involvement, its potential advantages are most likely to materialize.
The main conclusion for policymakers and urban planners is that the question should not be whether mixed-use housing should be pushed in isolation, but rather where, how intensely, with what complementary uses, and under what infrastructure and design conditions it should be implemented. With this strategy, Awka might pursue urban intensification without merely replicating the issues brought on by unchecked urbanization.

***Research limitations and future research***

This study's use on self-reported perceptions is its main drawback. Perception does not directly evaluate travel behavior or infrastructure performance, even though the sample of 400 responses offers valuable evidence of inhabitants' opinions. Thus, questionnaire data should be combined with spatial analysis, road network data, journey logs, pedestrian counts, traffic flow measurements, and GIS-based accessibility indicators in future studies.

Comparative analysis is a second topic for further research. Research comparing current mixed-use and residential neighborhoods in Awka could determine if the perceived advantages found in this study are correlated with quantifiable variations in accessibility, trip distance, and mode of transportation.
The infrastructural threshold at which mixed-use intensification is still advantageous could be the subject of future research. This would assist in figuring out how much more population or commercial activity the current waste, water, energy, drainage, and road systems can handle until infrastructure demand outweighs efficiency gains.
Such studies will shift the conversation from locals' opinions about the potential benefits of mixed-use housing to empirical data about the actual effects of various types of mixed-use development in Nigerian cities.

**References**

1. Afful, D.S., Poku-Boansi, M., Doe, B. and Asibey, M.O. (2026), "Policy coherence in mixed-use development and its implications for sustainable urban development", Discover Cities, available at: https://doi.org/10.1007/s44327-026-00347-4
2. Al Balushi, H., Alalouch, C., Al-Hashim, A. and Ling, G.H.T. (2026), "Are urban futures converging? How smart, sustainable, livable, and X-minute city paradigms intersect in urban research", Land, Vol. 15 No. 7, Article 1262. Available at: https://doi.org/10.3390/land15071262
3. Almatar, K.M. (2026), "Redesigning cities for sustainable mobility: a mixed-methods analysis of public perceptions and implementation feasibility of the 15-minute city concept in Dammam", Frontiers in Sustainable Cities, Vol. 8, Article 1895053, available at: https://doi.org/10.3389/frsc.2026.1895053
4. Boeing, G. (2018), "Measuring the complexity of urban form and design", Urban Design International, Vol. 23 No. 4, pp. 281-292, available at: https://doi.org/10.1057/s41289-018-0072-1
5. Dinç, G., Gül, A., Zucaro, F. and Gargiulo, C. (2025), "Developing an integrated framework for walkability assessment: a case study of Cankaya's urban mobility", Town and Regional Planning, Vol. 86. https://doi.org/10.38140/trp.v86i.8944
6. Dindar, S. (2025), "A systematic review of urban regeneration's impact on sustainable transport: traffic dynamics, policy responses, and environmental implications", Sustainable Development, available at: https://doi.org/10.1002/sd.70007
7. Ewing, R. and Cervero, R. (2010), "Travel and the built environment: a meta-analysis", Journal of the American Planning Association, Vol. 76 No. 3, pp. 265-294, available at: https://doi.org/10.1080/01944361003766766
8. Etminani-Ghasrodashti, R. and Arif Khan, M. (2022), "Modeling the structural relationships between travel distance, built environment, and cancer outcomes", Journal of Urban Planning and Development, Vol. 148 No. 4, available at: https://doi.org/10.1061/(ASCE)UP.1943-5444.0000843
9. Fonseca, F., et al. (2026), "Walkability, urban form and proximity: recent perspectives on pedestrian-oriented neighbourhoods", Cities & Health.
10. Grant, J. (2002), "Mixed use in theory and practice: Canadian experience with implementing a planning principle", Journal of the American Planning Association, Vol. 68 No. 1, pp. 71-84, available at: https://doi.org/10.1080/01944360208977192
11. Gras-García, E.M. and Ruiz-Azarola, A. (2026), "Walkability, right to the city and right to health: pathways toward equity and justice – a systematic mixed-methods review", Cities & Health, available at: https://doi.org/10.1080/23748834.2025.2535240
12. Guerra, E. (2014), "The built environment and car use in Mexico City: is the relationship changing over time?", Journal of Planning Education and Research, Vol. 34 No. 4, pp. 394-405, available at: https://doi.org/10.1177/0739456X14545170
13. Jin, S.T., Wang, L. and Sui, D. (2023), "How the built environment affects e-scooter sharing link flows: a machine learning approach", Journal of Transport Geography, Vol. 109, Article 103592, available at: https://doi.org/10.1016/j.jtrangeo.2023.103592
14. Lyu, C., Liu, Y., Liu, Z., Wu, X. and Yang, X. (2020), "Exploring multi-scale spatial relationship between built environment and public bicycle ridership", Journal of Transport and Land Use, Vol. 13 No. 1, pp. 1-20, available at https://doi.org/10.5198/jtlu.2020.1568
15. Mazzetto, S., Furlan, R., Awwaad, R. and Sirror, H. (2026), "Sustainable Urban Renewal: Planning Transit-Oriented Development (TOD) in Riyadh", available at: https://doi.org/10.3390/su17104310
16. OECD (2020), Cities in the World: A New Perspective on Urbanisation, OECD Publishing, Paris, available at: https://doi.org/10.1787/d0efcbda-en
17. Petrea, M., Gheorghe, C. and Soica, A. (2026), "Accessibility in bus-based public transport across European cities: a bibliometric and thematic review of bus stop and station infrastructure for inclusive urban mobility", Urban Science, Vol. 10. Available at: https://doi.org/10.3390/urbansci10070399
18. Pira, M.L. and Hansson, E. (2025), "Analyzing equity in transport planning using the 15-minute city approach. A case study of Oslo city, Norway", https://doi.org/10.1016/j.tra.2025.104633
19. Samuelsson, K. (2021), "The topodiverse city: urban form for subjective well-being", Frontiers in Built Environment, Vol. 7, Article 735221, available at: https://doi.org/10.3389/fbuil.2021.735221
20. Stevens, M.R. (2017), "Does compact development make people drive less?", Journal of the American Planning Association, Vol. 83 No. 1, pp. 7-18, available at: https://doi.org/10.1080/01944363.2016.1240044
21. Talen, E. (2019), Neighborhood, Oxford University Press, New York, NY, available at https://doi.org/10.1080/02665433.2021.1993088
22. UN-Habitat (2022), World Cities Report 2022: Envisaging the Future of Cities, United Nations Human Settlements Programme, Nairobi, available at: https://unhabitat.org/wcr/

23. Voulgaris, C.T., Taylor, B.D., Blumenberg, E., Brown, A. and Ralph, K. (2017), "Synergistic neighborhood relationships with travel behavior: an analysis of travel in 30,000 US neighborhoods", Journal of Transport and Land Use, Vol. 10 No. 1, pp. 437-461, available at: https://doi.org/10.5198/jtlu.2016.840
24. Zhu, B. W., Zhang, Y. F., Xiong, L., Wu, Y. D., & Zhang, M. C. (2025). Configurational effects of microscale walking environment conditions on pedestrian perceptions in transit-oriented development. International Journal of Urban Sciences, 1-28.(SSCI Q1 in URBAN STUDIES) https://doi.org/10.1080/12265934.2025.2603402
25. Wang, K., Li, X. Y., Zhu, B. W.*, Xiong, L.* & Tzeng, G. H. (2025). A data mining approach to explore the causal rules between environmental conditions of neighborhood parks and seniors' satisfaction. https://10.1016/j.cities.2025.105897
26. Jamhawi, M., Alsmadi, M., Ma'bdeh, S. and Nofal, E. (2026), "Assessment of urban sprawl mitigation measures: a case study of Amman's metropolitan growth plan in selected neighborhoods", Facilities, available at: https://doi.org/10.1108/F-02-2025-0042
27. Yadav, K., Dehalwar, K. and Sharma, S.N. (2026), "Determinants of first and last mile connectivity within transit-oriented development: insights from global literature", Transportation in Developing Economies, available at: https://doi.org/10.1007/s40890-026-00278-0