Income Inequality and Access to Public Transport: Lessons for Inclusive Urban Development Reform from Ibadan, Nigeria

Julius O. Ajayi, Ph.D.
Centre for Economic Policy and Development Research, Ota, Nigeria

Abstract

Public transport accessibility is a key determinant of urban quality of life in emerging cities. Income levels primarily shape disparities in access to transport and other socioeconomic opportunities. This research explores how income inequality affects travel behaviour and public transit access in Ibadan, Nigeria, from a social equity perspective. Using cross-sectional survey data from 375 commuters at ten (10) major transit stops, the study categorises respondents into poor and non-poor groups based on the National Bureau of Statistics (NBS) poverty line and employs descriptive analysis and Spearman's rank correlation. Findings reveal that the poor allocate a higher proportion of their income to transportation, make fewer trips, and spend more time accessing public transport, indicating both financial and spatial inequities. A significant positive correlation ($\rho = 0.244$, $p < .01$) was found between income and travel characteristics, suggesting that higher-income groups enjoy greater mobility and accessibility. The study concludes that mobility inequality mirrors broader socioeconomic disparities and recommends targeted fare subsidies, equitable infrastructure planning, and integrated urban governance. These interventions would promote inclusive urban mobility and advance Nigeria's ongoing reform agenda towards sustainable and equitable growth, consistent with Sustainable Development Goals (SDGs) 10 and 11.

Introduction

Access to public transport has become more difficult and inequitable in the Global South, impacting mobility and access to key socioeconomic activities. Due to rapid urbanisation and the absence of adequate, functional public transport services, dependence on automobiles is prevalent, leading to an unequal distribution of transport services in a manner that is socially inequitable (Starkey & Hine, 2014; Lucas et al., 2016; van Wee et al., 2011; van der Veen et al., 2020). A 2020 study covering 1,507 cities across 126 countries revealed that only about 50 percent of the urban population enjoys convenient access to public transport, with disparities strongly linked to socioeconomic status and demographic factors (UN-Habitat, 2022). Hence, individuals who face this difficulty in access are called 'transportation disadvantaged' (El-Geneidy & Levinson, 2007; Cui et al., 2020).

Income serves as a standard indicator of socioeconomic status and inequality in access to opportunities, and its impact is particularly evident in transport poverty- a condition that arises from the combination of inadequate transport services and social disadvantage (Schiller et al., 2010; Mercado et al., 2012). Further, income determines residential location and, by extension, access to public transport and other urban amenities. In most developing countries, rapid rural-urban migration, urban sprawl, and inadequate housing policies have pushed low-income populations into informal or peripheral settlements that are poorly served by transportation infrastructure (Schiller et al., 2010).

Two main dimensions explain how income influences transport access: first, urban transport investments are often concentrated in central, high-income areas, leaving peripheral, low-income settlements underserved. Secondly, lower-income groups disproportionately bear the negative externalities of unequal urban development, including longer commuting times, greater exposure to pollution, and higher travel costs. Consequently, the poorer urban residents are less mobile and spend a larger proportion of their income on transportation (Lucas et al., 2016; Titheridge et al., 2014). This reflects exclusion, unequal distribution of opportunities, and social injustice in the urban transportation scenario.

Empirical evidence from West African cities confirms these inequalities. Studies in five countries show that low-income neighbourhoods experience restricted mobility due to poor infrastructure and weak connectivity (Diaz Olvera et al., 2013, 2015). High-income areas, by contrast, enjoy better accessibility, while people with low incomes not only travel less but also pay more in relative terms (Bocarejo & Oviedo, 2012; Oviedo & Guzman, 2020; Cervero, 2000). Informal and paratransit systems have addressed some of these gaps by offering first- and last-mile connectivity. However, users frequently experience long waiting times, discomfort, and unsafe conditions, which contribute to fatigue and reduced productivity (Starkey & Hine, 2014).

Although research on accessibility has expanded, the influence of income on public transport in Nigerian cities has not been sufficiently explored. This study, therefore, examines how income levels influence travel behaviour and access to public transport in Ibadan through the lens of social equity. It contributes to Sustainable Development Goals (SDGs) 10 and 11, which focus on reducing inequalities and fostering sustainable cities. It would also inform equitable transport planning and policy frameworks, thereby advancing inclusive growth and shared prosperity.

Methodology

Study Area and Data Collection

This study was conducted in Ibadan, Nigeria's largest city, which is characterised by rapid urban growth, a diverse population, and limited formal public transport. A cross-sectional survey collected data from 375 randomly selected commuters at ten major transit stops. The respondents represented a variety of income and occupational groups.

Poverty Classification and Analytical Method

Income groups were classified as poor or non-poor based on the National Bureau of Statistics (NBS, 2020) poverty line of N137,430 per person per year (approximately N376.5 per day). Respondents spending less than this benchmark were considered poor. Descriptive statistics were used to explore travel characteristics and spending patterns, and Spearman's rank correlation was used to assess the association between income and travel behaviour.

Results and Discussion

Travel Characteristics by Income Groups

The distribution of travel characteristics across income groups (Table 1) reveals distinct variations in travel purpose, frequency, and accessibility patterns. Among the poor, education (33.2 percent) and work (26.2 percent) constitute the primary purposes for travel by public transport. Similarly, for the non-poor, work (38.7 percent) and education (31.2 percent) are the most common travel purposes. In contrast, trips for social, health, and religious activities account for smaller shares in both income groups, indicating that the poor primarily engage in essential trips related to livelihoods and education. At the same time, discretionary travel remains limited due to economic constraints.

Regarding trip frequency, most respondents in both income groups travel twice daily (42.6 percent among the poor; 32.4 percent among the non-poor), reflecting typical round-trip patterns for work or school. However, a higher proportion of non-poor respondents undertake three or more daily trips, suggesting greater travel flexibility and higher mobility demand.

Modes of public transport access also differ across income levels. Among the poor, the most common modes are taxi/shuttle (27.2 percent) and walking (25.2 percent), followed by private cars (24.8 percent) and motorcycles (15.8 percent). In the non-poor category, taxis/shuttles (35.3 percent) are also the most prevalent, followed by motorcycles (22.5 percent), walking (20.8 percent), and private cars (16.2 percent). This indicates that while both groups depend on semi-formal and informal modes, the non-poor enjoy greater modal diversity and greater ease of access to public transport.

Regarding time spent accessing public transport, most respondents across both groups spend 6–20 minutes reaching a transit stop, though the poor are more likely to spend over 20 minutes. This finding reflects the residential geography of Ibadan, where poorer households often occupy peripheral or underserved settlements farther from main transport corridors. This aligns with the observations of Schiller et al. (2010) and Díaz Olvera et al. (2015), who emphasised the role of income and spatial distribution in shaping accessibility in developing urban contexts.

Table 1: Distribution of Travel Characteristics by Income Group (n = 375)

Travel Characteristic	Category	Poor (n = 202)	Non-Poor (n = 173)
Trip Purpose	Work	53 (26.2 percent)	67 (38.7 percent)
	Education	67 (33.2 percent)	54 (31.2 percent)
	Health	26 (12.9 percent)	23 (13.3 percent)
	Social/Leisure	30 (14.9 percent)	18 (10.4 percent)
	Religion	7 (3.5 percent)	3 (1.7 percent)
	Family/Home Affairs	19 (9.4 percent)	8 (4.6 percent)
Number of Daily Trips	Once	37 (18.3 percent)	36 (20.8 percent)
	Twice	86 (42.6 percent)	56 (32.4 percent)
	Thrice	41 (20.3 percent)	43 (24.9 percent)
	Four or more	38 (18.8 percent)	38 (22.0 percent)
Primary Means of Access	Walking	51 (25.2 percent)	36 (20.8 percent)
	Private Car	50 (24.8 percent)	28 (16.2 percent)
	Taxi/Shuttle	55 (27.2 percent)	61 (35.3 percent)
	Tricycle	14 (6.9 percent)	9 (5.2 percent)
	Motorcycle	32 (15.8 percent)	39 (22.5 percent)
Time to Access Transport	1–5 minutes	49 (24.3 percent)	26 (15.0 percent)
	6–10 minutes	56 (27.7 percent)	53 (30.6 percent)
	11–20 minutes	64 (31.7 percent)	55 (31.8 percent)
	21–30 minutes	20 (9.9 percent)	25 (14.5 percent)
	Above 30 minutes	13 (6.4 percent)	14 (8.1 percent)

Note. Percentages are within income groups| Source: Author's Field Survey

Expenditure on Public Transport

Patterns of transport expenditure further underscore income-related disparities. As shown in Table 2, 62.9 percent of the poor spend less than N250 daily on transport, while none spend above N500. In contrast, more than 90 percent of individuals with higher incomes spend over N250 daily on transport, with nearly 40 percent spending between N501 and N1,000. This suggests that lower-income individuals limit their trips and travel distances to remain within affordability constraints.

Table 2 further illustrates the percentage of monthly income spent on public transport. More than half (56.8 percent) of respondents allocate above 20 percent of their income to transport, with 20.3 percent spending over 50 percent of their monthly earnings. These figures significantly surpass international affordability benchmarks, which consider transport costs exceeding 10–15 percent of household income to be unsustainable (Lucas et al., 2016). Such disproportionate spending indicates that transportation represents a significant financial burden for many households, particularly the poor. This financial strain diverts limited resources from essential needs such as food, shelter, health care, and education, reinforcing cycles of poverty and social exclusion (Gómez-Ibáñez & Meyer, 1993; Suzuki et al., 2013).

Table 2: Percentage of Monthly Income spent on Public Transport

	Frequency	Percentage
Less than 10 percent	17	4.5
10 percent-20 percent	120	32.0
21 percent-40 percent	137	36.5
41 percent-50 percent	25	6.7
Above 50 percent	76	20.3
Total	375	100

Source: Author's Field Survey

Relationship Between Income and Travel Behaviour

The Spearman's rank correlation analysis (Table 3) reveals a positive and statistically significant relationship between income class and travel characteristics composite ($\rho = 0.244$, $p < .01$). This relationship indicates that as income increases, travel behaviour improves across dimensions such as trip frequency, purpose, and accessibility to public transport.

The significance level ($p = .000$) confirms that this association is not due to chance, highlighting income as a strong determinant of travel behaviour and accessibility. This finding aligns with prior studies (Cui et al., 2020; Martens & Di Ciommo, 2017), which found that low-income populations face greater mobility restrictions and depend more on public transport, making them vulnerable to fare increases and service inefficiencies. Hence, while lower-income groups spend a higher proportion of their income on transportation, they make fewer trips and experience longer access times.

Table 3: Spearman's Correlation Between Income Class and Travel Characteristics Composite

Variables	1	2
1. Income Class	—	.244**
2. Travel Characteristics	.244**	—
N	375	375
Sig. (2-tailed)	—	.000

Source: Author's Data Analysis

Policy Implications and Recommendations

The study's findings reveal that income inequality contributes directly to mobility inequality in Ibadan. To address this challenge, three broad actionable policy directions are proposed:

(1) Targeted Fare Subsidies

- Expand Pacesetter Transport Services (PTS):
  - Increase the fleet size to serve the demand of more low-income populations for affordable transport.
- Implement a Transparent Subsidy System:
  - The Oyo State Park Management System (PMS) should establish clear, income-based eligibility criteria (e.g., for students and minimum-wage earners).
  - Develop a digital payment system linked to ward-level population registers to streamline subsidy distribution.

(2) Equitable Infrastructure Planning:

- Prioritise Underserved Communities:
  - The Oyo State Ministry of Works and Transport should identify and upgrade transport infrastructure in peripheral and low-income neighbourhoods.
  - Install safe bus stops, shelters, and well-lit pathways to improve connectivity for informal settlements.
- Equity Impact Assessments:
  - Screen all new transport projects using a standardised Equity Impact Assessment to ensure fair allocation of public funds.

(3) Integrated Urban Governance:

- Establish a Multi-Agency Task Force:
  - Create a coordinating body involving transport, housing, and urban planning agencies to oversee equitable transport policies.
  - Regulate government initiatives such as PTS and PMS to ensure transparency and accountability.

- *Strengthen Inter-Agency Coordination:*

o Foster collaboration among agencies to monitor urban transport investments and ensure the sustainability of interventions.

Contribution to Knowledge

This study contributes new evidence to the policy discourse on transport equity in Nigeria by demonstrating how income disparities shape mobility outcomes in an emerging African city. The study further establishes a statistically significant link between income level and travel behaviour, underscoring income as a determinant of equitable mobility.

Conclusion

The study concludes that income remains a decisive factor shaping access to public transport and mobility outcomes. Poorer residents are disadvantaged both economically and spatially, limiting their participation in urban opportunities. These inequities translate into unequal access to jobs, education, and other urban opportunities, which contradict the principles of social equity and inclusive mobility. Bridging this divide requires prioritising social and infrastructural equity towards ensuring that all citizens, regardless of income, can move affordably and efficiently within urban spaces.

References

Bocarejo, J. P., & Oviedo, D. R. (2012). Transport accessibility and social inequities: A tool for identification of mobility needs and evaluation of transport investments. *Journal of Transport Geography, 24*(1), 142–154.

Cervero, R. (2000). *Informal transport in the developing world*. United Nations Centre for Human Settlements (Habitat).

Cui, B., Boisjoly, G., Miranda-Moreno, L., & El-Geneidy, A. (2020). Accessibility matters: Exploring the determinants of public transport mode share across income groups in Canadian cities. *Transportation Research Part D: Transport and Environment,* 80, 102276.

Diaz Olvera, L., Plat, D., & Pochet, P. (2013). The puzzle of mobility and access to the city in sub-Saharan Africa. Journal of Transport Geography, 32, 56–64.

Diaz Olvera, L., Plat, D., & Pochet, P. (2015). Transport poverty and urban mobility in sub-Saharan Africa. *Journal of Transport Geography*, *32*, 56–64.

El-Geneidy, A., & Levinson, D. (2007). Mapping accessibility over time. *Journal of Maps*, *3*(1), 76–87.

Gómez-Ibáñez, J. A., & Meyer, J. R. (1993). *Going private: The international experience with transport privatisation.* Brookings Institution Press.

Lucas, K., Mattioli, G., Verlinghieri, E., & Guzman, A. (2016). Transport poverty and its adverse social consequences. *Proceedings of the Institution of Civil Engineers - Transport*, *169*(6), 353–365.

Martens, K., & Di Ciommo, F. (2017). Travel time savings, accessibility gains and equity effects in cost–benefit analysis. *Transport Reviews, 37*(2), 152–169

Mercado, R., Páez, A., & Newbold, K. B. (2012). Explaining transport mode use of low-income persons for journey to work in urban areas: A case study of Ontario and Quebec. *Transportmetrica*, *8*(3), 157–179.

National Bureau of Statistics (NBS). (2020). 2019 Poverty and Inequality in Nigeria Report.

Schiller, P. L., Bruun, E., & Kenworthy, J. (2010). *An introduction to sustainable transportation: Policy, planning and implementation*. Earthscan.

Starkey, P., & Hine, J. (2014). *Poverty and sustainable transport: How transport affects poor people with policy implications for poverty reduction- A literature review* Paul Starkey Consultant in integrated transport.

Suzuki, H., Cervero, R., & Iuchi, K. (2013). *Transforming cities with transit: Transit and land-use integration for sustainable urban development.* World Bank.

Titheridge, H., Christie, N., Mackett, R., Oviedo Hernandez, D., & Ye, R. (2014). *Transport Poverty: Concepts, Measurement and Policy Perspectives*.

van der Veen, A. S., Annema, J. A., Martens, K., van Arem, B., & Correia, G. H. de A. (2020). Operationalising an indicator of sufficient accessibility – a case study for the city of Rotterdam. *Case Studies on Transport Policy*, *8*(4), 1360–1370.

van Wee, B., & Geurs, K. (2011). Discussing Equity and Social Exclusion in Accessibility Evaluations. *European Journal of Transport and Infrastructure Research*, Vol 11 No 4 (2011).