

**Gender- and Income-Specific Inequalities in Accessing Mobility: A  
Comparative Study of Kenya and Laos**

**By Alfie Saunders**

**Supervised by Professor Aruna Sivakumar and Dr. Tang Li**

**Laidlaw Foundation, Imperial College London**

**[As4722@ic.ac.uk](mailto:As4722@ic.ac.uk)**

## **Abstract**

Mobility is more than moving from A to B; it underpins access to education, employment, healthcare, and social participation. This study compares gender- and income-specific inequalities in mobility in Kenya and Laos, two culturally distinct countries, to distinguish between structural and context-specific barriers.

Primary survey data from both countries were analysed alongside existing literature to examine travel patterns, attitudes, and expenditures. Graphical and statistical comparisons reveal consistent disparities: women and low-income groups are less likely to hold licences or own vehicles, rely more on walking and public transport, and travel shorter distances at slower speeds. In Laos, motorcycles partly offset income-related barriers, whereas in Kenya, the limits of public transport mean inequalities persist. Across both contexts, low-income women emerge as the most disadvantaged group. Attitudes towards sustainable travel highlight additional inequalities that may affect the future transition to electric vehicles.

These findings inform policy recommendations at both national and international levels. In Kenya, priority should be given to expanding public transport safety and affordability, alongside initiatives to support licence access for women and low-income groups. In Laos, where motorcycles dominate, expanding licence schemes and developing inclusive public transport could improve mobility. Addressing these inequalities is essential not only for fairer transport systems but also for enabling equitable access to education, healthcare, and employment.

## Introduction

Before examining mobility inequalities, it is important to explore what mobility means. Traditionally, mobility has been defined as the physical act of travelling from an origin to a destination (Rodrigue, 2020). However, to reflect its overall impact on quality of life, a more comprehensive definition frames mobility as a set of social practices shaped by economic, cultural, and political contexts, meaning the physical act of travelling from A to B is experienced differently across groups (Cresswell, 2010; Urry, 2007).

From a public health lens, mobility can also be described as the “sixth vital sign” due to its ability to predict healthcare outcomes (Fritz & Lusardi, 2009; Sirois et al., 2013). This definition emphasises the significant impact of mobility on health, positioning it as a fundamental indicator of wellbeing. Mobility is also recognised as a basic human right in Article 13 of the Universal Declaration of Human Rights (United Nations, 1948). Inequalities in mobility extend beyond restricted movement; they can limit access to education, employment, healthcare, and social participation. Reducing these inequalities is essential for social equity.

Whilst mobility indicates health status, immobility can contribute to poor health. Lack of mobility increases the risk of obesity, cardiovascular disease, and joint pathology while also limiting access to healthcare services. Transport can also negatively impact health through accidents or pollution (Acheson, 1998, p. 34). A pilot programme at Birmingham Women’s and Children’s Hospitals NHS Foundation Trust found that offering free transport to hospital appointments reduced the number of children not brought to appointments, benefitting children living in areas of deprivation (NHS England, n.d.). Such examples demonstrate the central role mobility plays in both preventing and treating illness.

Mobility also shapes educational access and outcomes. Attendance is linked to transport, directly influencing performance and future opportunities. In rural Morocco, enrolment in primary school for girls increased significantly when access to roads improved (Transport – the Essential Connector, n.d.). Conversely, low-income groups often live further from essential services, including schools, as seen in Greater Maputo, Mozambique (Mittal, Takahiro Yabe and Fatima Arroyo Arroyo, 2022). These disparities illustrate how unequal access to mobility can perpetuate cycles of disadvantage.

Another critical dimension is the relationship between mobility and social exclusion. The concept of ‘mobility-related social exclusion’ describes the process by which people are prevented from participating fully in economic, political, and social life due to insufficient mobility (Kenyon, Lyons and Rafferty, 2002). Immobility therefore not only limits access to specific services, but also undermines broader participation in society, exacerbating existing inequalities.

Mobility is also central to the achievement of the United Nations’ Sustainable Development Goals (SDGs). Without safe, sustainable, and inclusive mobility, progress towards many goals becomes unlikely. Limited access to employment, education, and healthcare compromises SDGs 1, 3, 4, 5, 8, 9, and 10. Sustainable transport links directly to SDGs 7 and

11 (United Nations, n.d.). Addressing mobility inequalities is therefore a prerequisite for advancing global development agendas.

The examples and definitions above illustrate the interdependence of mobility with a functioning society. Vulnerable groups are disproportionately affected by mobility inequalities, stressing the need for tailored interventions. While inequalities vary across contexts, recurrent patterns are evident in the literature: women and lower-income groups are consistently the most affected.

This study therefore focuses on Kenya and Laos, two countries with distinct social and cultural contexts but common challenges of mobility inequality. By analysing travel patterns, attitudes, and expenditure, the research explores gender- and income-specific barriers to mobility. Identifying similarities may point to structural inequalities, while differences may reflect context-specific disparities. On this basis, policy recommendations can be developed that address mobility as a determinant of health, education, employment, and participation in society, rather than simply facilitating travel from A to B.

## Literature review

Mobility inequalities manifest differently across regions and populations. In Sudan, 50% of parents are unable to take their children to a hospital due to the high cost of transport (Transport – the Essential Connector, n.d.). In Pakistan, women with road access are twice as likely to attend pre-natal consultations, increasing attendance from 14% to 28% (Transport – the Essential Connector, n.d.). These cases demonstrate the close relationship between mobility and public health, supporting the concept of mobility as the “sixth vital sign” (Fritz & Lusardi, 2009; Sirois et al., 2013). Collectively, these examples illustrate how transport costs, infrastructure, and gender interact to shape healthcare access. They suggest that targeted interventions can improve health outcomes, though affordability and infrastructure remain key limiting factors for vulnerable groups.

The same World Bank correspondence also emphasises the relationship between mobility and education: in rural Morocco, enrolment of girls in primary school increased from 17% to 54% when access to roads improved (Transport – the Essential Connector, n.d.). Educational opportunities are strongly linked to transport infrastructure; improved access not only raises school attendance but also broadens long-term life chances by enabling continuity in education and enhancing future employment prospects.

A major barrier to equitable mobility is the lack of safety for women. In Karachi, 75% of working women and 69% of students reported that they felt harassed more than once while commuting (SPDC, 2014, p. 27). Similarly, in Jakarta, 89% of women rated rail safety as ‘poor’ or ‘very poor’, compared to 35% of men. Furthermore, 100% of women, compared to 48% of men, supported the existence of dedicated women’s carriages (Turner, 2013). These findings emphasise that gender-specific barriers, such as harassment and inadequate safety measures, restrict mobility and exacerbate social exclusion. Effective interventions must therefore address both infrastructure and safety to enable inclusive access.

The implications of gender-specific mobility inequalities extend beyond safety. In Chile, women experience reduced trip frequency, spatial localisation, and reduced trip entropy, a pattern intensified by income inequality (Gauvin et al., 2020). In Pakistan, women are consistently less mobile than men across all modes of travel and for almost every purpose of travel (Adeel, Yeh and Zhang, 2016). These studies collectively demonstrate that mobility inequalities are multidimensional, influenced by both structural factors like income and contextual factors such as social norms. A female-friendly transport system, addressing affordability and safety, is essential for promoting equitable participation in education, employment, and broader societal engagement (Adeel, Yeh and Zhang, 2016).

Income-specific inequalities create major barriers to mobility and social participation. In Greater Maputo, Mozambique, lower-income groups live significantly further from essential services such as schools, healthcare, and employment (Mittal, Takahiro Yabe and Fatima Arroyo Arroyo, 2022). This locational disadvantage is compounded by poorer accessibility via driving, transit, and walking, making everyday participation in society more difficult. Globally, similar patterns are observed: in many large cities, less than 20% of jobs can be reached within an hour’s commute, with low-income workers disproportionately affected and

spending up to 15% of their income on transport (World Bank, n.d.). Collectively, these findings show how geographical isolation, high costs, and limited infrastructure reinforce income-based mobility inequalities. They suggest that lower-income groups stand to benefit most from infrastructural improvements, and that affordable, well-connected transport is essential for enabling equitable access to work, education, and services.

In Kenya, gendered mobility inequalities reflect wider global patterns. Women's travel is often shorter, indicating restricted mobility, and concentrated in morning off-peak hours (Kishiue, Dominguez Gonzalez and St. John, 2020). Qualitative evidence further highlights the disproportionate risks women face, including harassment and unfair fare negotiations—pressures that are intensified when travelling with children (Kishiue et al., 2020). These findings reinforce how affordability and safety intersect to limit women's access to urban opportunities.

Income-specific inequalities are also prevalent in Kenya. In Nairobi's slum population, there is a 14-percentage-point gap in the likelihood of riding a matatu to work between poor and non-poor workers, comparable to a 12-percentage-point gender gap (Salon and Gulyani, 2010). Among children, the disparity is even more pronounced, with a 41-percentage-point gap (Salon and Gulyani, 2010). These income-related differences shape educational and employment opportunities, as lower-income individuals are often constrained from travelling farther for better options. Consequently, mobility limitations reinforce existing socioeconomic disadvantages. Targeted interventions that ensure affordable and inclusive transport for lower-income populations could help mitigate these barriers and improve access to higher-quality education and employment opportunities.

While Kenya's inequalities are well documented, evidence from Laos is more limited but indicates similar trends. Only two-thirds of births occur in a healthcare setting, dropping to 38% and 34% among those without road access and in the poorest wealth quintile, respectively (Lao Statistics Bureau, 2018a, cited in World Bank, 2019). Postnatal care is also lower for women without road access, in the poorest quintile, and among ethnic minorities. Limited mobility restricts women's economic opportunities, with poor infrastructure cited as a key barrier (Asian Development Bank, n.d.). These findings indicate that while road access and income affect all groups, women are disproportionately impacted: inadequate mobility can compromise maternal and child safety and hinder economic participation.

In Vientiane, Laos, travel mode and commuting time reflect income disparities. Limited public transport options mean lower-income groups rely more on motorcycles and experience longer commute times than higher-income groups. Personal vehicle ownership becomes necessary to access economic and social opportunities. Consequently, lower-income groups are constrained to the slower, cheaper motorcycles, while higher-income groups can afford faster, more expensive cars. Improving public transport accessibility could help reduce these mobility-related inequalities, diminishing reliance on personal vehicles.

Overall, literature on gender- and income-specific mobility inequalities is substantial and shows consistent patterns: women and low-income groups are disproportionately less mobile. While the specific barriers differ, the outcomes are similar. Safety concerns and harassment

restrict women's mobility, leading to altered travel patterns, spatial localisation, and societal exclusion. For low-income groups, geographical isolation and unaffordable transportation produce comparable effects, limiting access to healthcare, education, employment, and societal participation. Addressing these challenges requires accessible, safe, and inclusive transport systems, tailored to the specific inequalities in each context.

Despite substantial research on mobility inequalities, few studies compare such inequalities across vastly different contexts, such as Kenya and Laos. Research in Laos is particularly limited, with little attention to gender- and income-specific disparities. This study aims to identify similarities and differences between the countries, distinguishing structural inequalities from context-specific ones. Understanding these patterns will enable more effective, targeted policy recommendations in Kenya and Laos and highlight broader structural trends with potential global relevance.

## Methodology

This study explores gender- and income-specific inequalities in accessing mobility in Kenya and Laos using two primary datasets.

The Kenya data were collected from 1,016 respondents between 31 March and 7 June 2023. Participants were asked demographic questions, as well as items on travel patterns and attitudes towards transport modes and electric vehicles. The sample included 537 men (52.9%) and 479 women (47.1%). Income was classified into four categories: Informal Settlement (21.0%), Low Income (34.5%), Medium Income (27.3%), and High Income (17.2%). The age distribution skewed younger, with 25–35 years (39.8%) as the largest group, followed by 18–24 years (25.7%).

The Laos dataset comprised 547 respondents interviewed between 24 November 2024 and 2 January 2025. The survey followed a similar structure to Kenya, with 275 men (50.3%) and 272 women (49.7%). Income was originally reported across 12 household income brackets; for comparability, these were consolidated into four groups: Below 4,000,000 KIP (16.6%), 4,000,001–8,000,000 KIP (29.3%), 8,000,001–12,000,000 KIP (23.8%), and Above 12,000,000 KIP (30.3%). Laos had an older sample overall, with the modal age group 46–59 years (30.3%).

Some differences between the two datasets must be considered. The Kenya dataset is nearly twice the size of Laos, though both are sufficiently large for analysis. Income is defined differently across the surveys: Kenya by classification and Laos by household income; consolidation into four broader groups enables clearer comparison. Age distributions also differ, with Kenya skewed younger and Laos older; however, age-specific inequalities were not analysed. Finally, the method of recording travel patterns varied: Kenya used frequency scales (e.g., ‘Never’ to ‘5–7 days/week’), whereas Laos respondents completed a travel diary of weekday and weekend trips. For comparison, results are presented primarily as percentages within each group.

Attitudes towards transport and electric vehicles were captured on a 1–5 Likert scale, from ‘strongly disagree’ to ‘strongly agree’. Responses of ‘agree’ and ‘strongly agree’ were combined to avoid small subgroups and allow clearer cross-country comparison.

AI-based tools were used only in a supportive role. ChatGPT (OpenAI, 2023) assisted in editing draft text for clarity, and Gemini (Google, 2025) helped with code generation for data processing and visualisation. All research design, data collection, analysis, and interpretation were conducted by the authors.

## Results

The following sections explore gender- and income-specific inequalities in Kenya and Laos, using descriptive statistics, graphs, and tables to highlight disparities.

### Driver's Licence Ownership

Driver's licence ownership is a key measure of mobility, providing independence from public transport, which can have infrastructural and safety limitations.

In Kenya, substantial gender differences exist in driver's licence ownership. Overall, men are twice as likely as women to have any form of licence (52.9 vs. 25.5%). Regarding only licenced individuals, women are more likely to have a car licence (92.6% vs. 82.0%), while men are more likely to have a motorcycle licence (6.7% vs. 5.7%) or a commercial licence (22.2% vs. 5.7%).

Inequalities are also marked across income groups. Including multiple licences, 19.2% of individuals in informal settlements have a driver's licence, compared with 83.4% in the high-income group – over a fourfold difference. Informal settlement residents are more reliant on motorcycle licences (3.8% vs. ~2% in other groups), while high-income groups overwhelmingly possess car licences (73.7% vs. 8.9% in informal settlements) (Figure 1).

Importantly, gender and income intersect to widen the gender gap (Figure 2). In informal settlements, men are nearly eight times more likely to have a licence than women (33.3% vs. 4.3%). At the other end of the spectrum, in high-income groups, the gender gap narrows (85% of men vs. 62.7% of women) but remains statistically significant. Z-tests confirm gender differences across all income classifications, as well as significant gaps between income groups for women (all comparisons) and for men (low vs. medium and medium vs. high).

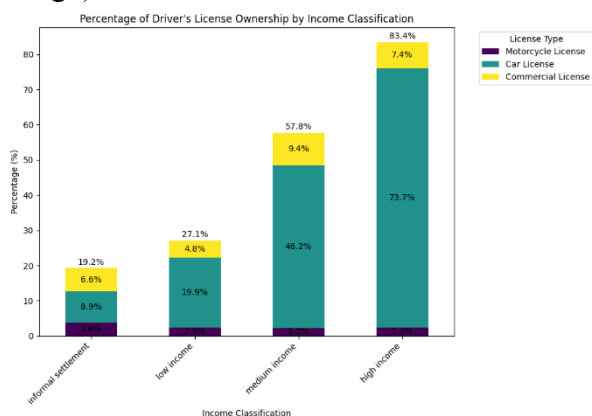


Figure 1, Kenya driver's licence by income

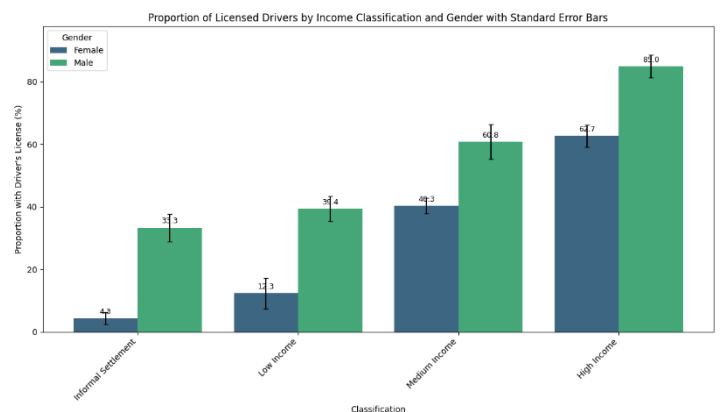


Figure 2, Kenya gender licence income gender

In Laos, driver's licence ownership shows similar gendered patterns to Kenya, though the disparities are less pronounced. Men are significantly more likely than women to possess any type of licence (67.3% vs. 40.1%). Among licence holders, women are more likely to have a motorcycle licence (96.3%) than a car licence (75.2%), whereas men have a more balanced distribution (91.3% motorcycle vs. 89.2% car).

Income status also affects licence ownership. Among the lowest-income group, 41.8% have a licence. By contrast, 63.9% of the highest-income group have a licence, with a greater share having a car licences (Figure 3).

Notably, licence disparities in Laos are less extreme than in Kenya, and low income does not appear to widen gender disparity. Z-tests confirm that gender differences are statistically significant across most income groups, but the lowest-income group is the only case where the male-female difference is not significant (Figure 4).

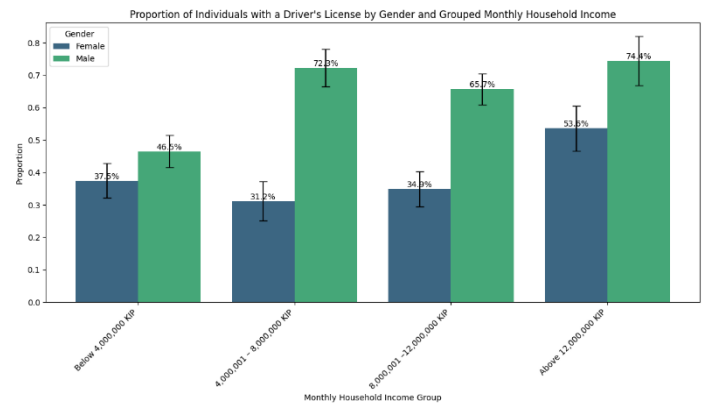
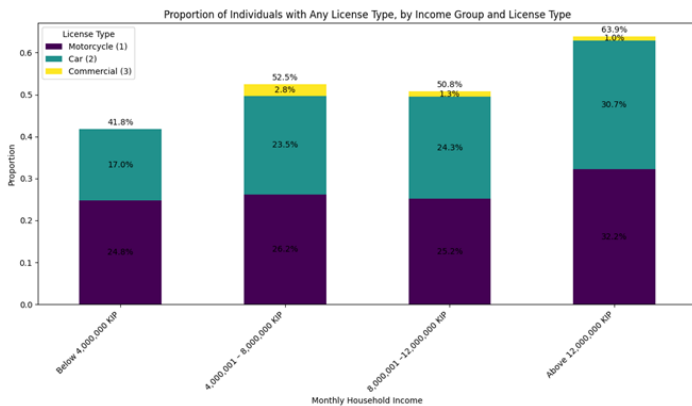


Figure 3, Laos Driver's licence by income

Figure 4, Laos Driver's licence frequency by gender and income

In summary, gender- and income-specific inequalities exist in licence ownership in both Kenya and Laos. Overall, Kenya exhibits greater disparity in licence ownership, particularly among women and lower-income groups.

### Vehicle Ownership

Vehicle ownership is a key indicator of mobility, as holding a licence does not guarantee independence without access to a vehicle.

In Kenya, men are more likely to own all vehicle types (car, motorcycle, bicycle, and tuktuk). Overall, 70.1% of women own no vehicles, compared with 54.6% of men. Among respondents with a car licence, a higher proportion of women own a car (66.4% vs. 62.2% of men), whereas among those with a motorcycle licence, men are more likely to own one (57.9% vs. 42.9%).

Income further intensifies ownership patterns. Residents of informal settlements are 28 times less likely to own a car than high-income groups. Among licenced individuals, car ownership is still 3.6 times lower in informal settlements (Figure 5). Across all vehicle types, informal settlement residents have the highest motorcycle ownership but the lowest ownership of other vehicles.

In Laos, patterns show both similarities and differences. Men are more likely than women to own a car (68.0% vs. 57.7%) and slightly more likely to own a motorcycle (97.8% vs 95.6). Among licenced respondents, gender differences largely disappear: motorcycle ownership remains similar (97.6% for men vs. 95.2% for women), and car ownership is slightly higher among women (87.8% vs. 86.1% of men).

Income has a stronger effect on vehicle ownership in Laos. Only 36.3% of the lowest-income group own a car, rising to 57.9% among licenced individuals. In contrast, 82.5% of the highest-income group own a car, increasing to 92.3%, among licenced individuals. Motorcycle ownership, however, remains consistently high across all income groups (92-99%) (Figure 6).

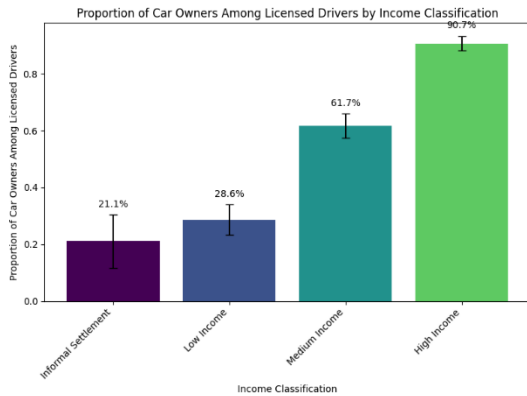


Figure 5, Kenya car ownership by income

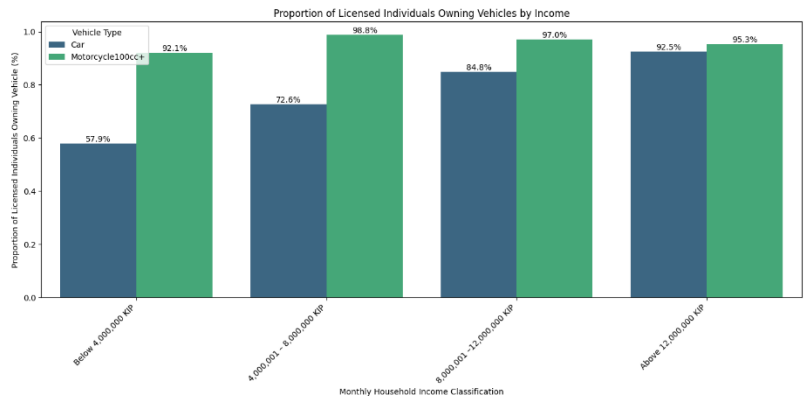


Figure 6, Laos Licenced vehicle ownership by income

### Travel Distance, Time, and Speed

Travel distance, time, and speed offer another lens to assess mobility inequalities. Speed, calculated from reported journey distance and time, reflects travel efficiency and reliance on different transport modes.

In Kenya, gender and income disparities are evident. Women travel shorter distances to work than men – 6.5km compared with 8.3km, a 22% difference – and at slower speeds (18.5km/h vs 19.8km/h) (Table 1). T-tests indicate these differences in travel speed are statistically significant.

Gender	Mean distance to work (km)	Mean travel time to work (min)	Mean km/h
Female	6.5	21.2	18.5
Male	8.3	25.2	19.8

Table 1, Kenya distance, time and speed to work by gender

Travel patterns also vary by income: higher-income groups travel farther and faster. Residents of informal settlements travel 8.2km less than high-income groups on average, yet spend 6.7 minutes longer commuting, highlighting slower and less efficient modes (Figure 7).

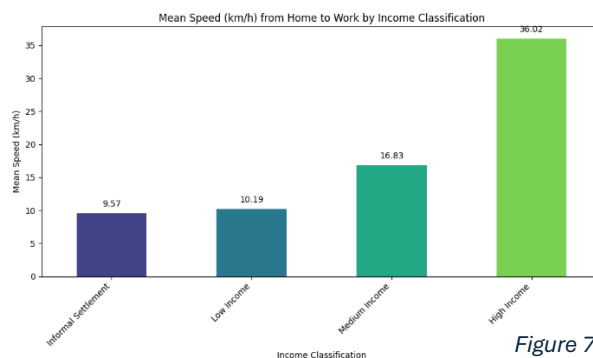


Figure 7, Kenya mean speed to work by income

In Laos, gendered patterns are apparent, with richer data allowing comparison of weekday and weekend travel. On weekdays, men travel nearly twice as far as women (18.5km vs. 9.39km) at higher speeds (21.2km/h vs. 16.6km/h). On weekends, the gap narrows: women travel 21.1km at 27.8km/h, compared with 24.2km at 29.6km/h for men. T-tests indicate that these weekend differences are not statistically significant. When combining weekday and weekend data, women still travel shorter distances at significantly slower speeds ( $p < 0.05$ ). Distance and speed were also calculated for work-related travel alone, revealing similar trends and enabling more uniform comparison (Table 2).

Gender	Mean Work Distance (km/week)	Mean Work Duration (minutes/week)	Mean Average Speed (km/h)
Female	34.6	76.2	19.7
Male	48.9	96.7	25.8

Table 2, Laos work distance, time and speed travel by gender

Income-based patterns in Laos vary between weekdays and weekends. On weekdays, travel distance and speed are generally similar across income groups, except from the lowest-income group, which travels the least and slowest. On weekends, a clear income gradient emerges: both distance and speed increase with income. The lowest-income group travels 9.6km at 20km/h, while the highest-income group travels 36.5km at 31.9km/h. Overall, travel distance increases with income, but associations with speed are evident primarily on weekends.

### Travel Frequency, Mode, and Purpose

Travel frequency, mode, and purpose provide another perspective on mobility patterns. As with previous analyses, these measures help highlight inequalities and suggest potential underlying causes.

In Kenya, women make fewer monthly journeys than men (64 vs. 68) and are more likely to walk multiple days per week (80.2% vs. 75.8%). Men are more likely to drive cars regularly (25.1% vs. 11.9%), while women are more often passengers 5–7 days per week (5.2% vs. 3.0%). Men also use matatus more frequently (42.6% vs. 37.4%), whereas women rely on taxis more often (10.0% vs. 4.8%) (Figure 8).

Examining travel by purpose reveals gendered mobility roles. Men walk slightly more to work than women (48.8% vs. 46.6%), whereas women are more likely to walk for leisure or to drop children at school (26.7% vs. 11.2%). Car use shows a consistent pattern, with men driving more across all purposes, while women travel more frequently as passengers. Taxi use is higher among women for all purposes, whereas matatu use differs: men rely on it for work and social visits, and women for school runs and leisure.

Income further accentuates these inequalities. While it has little effect on trip frequency, residents of informal settlements are far more likely than high-income groups to walk (87.3% vs. 58.9%) or use public transport (48.8% vs. 22.9%). High-income respondents are more likely to use faster, private modes such as driving cars (54.3% vs. 1.9%), travelling as car passengers (18.3% vs. 4.2%), or taking taxis (14.9% vs. 1.4%) (Figure 9). These patterns are consistent across purposes; for instance, 59.6% of informal settlement residents walk to work multiple times per week, compared to only 21.1% of high-income respondents. Greater reliance on less efficient modes may partly explain the spatial localisation and slower travel speeds of lower-income groups.

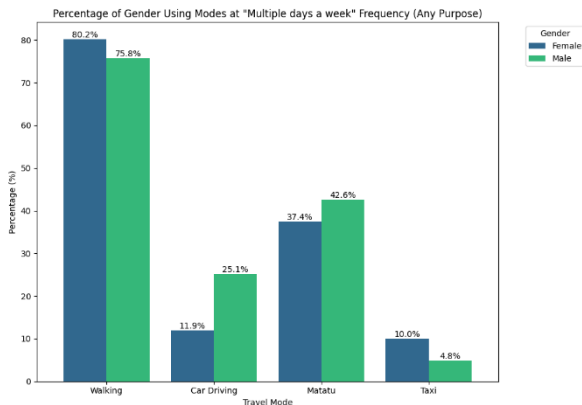


Figure 8, Kenya travel modes by gender

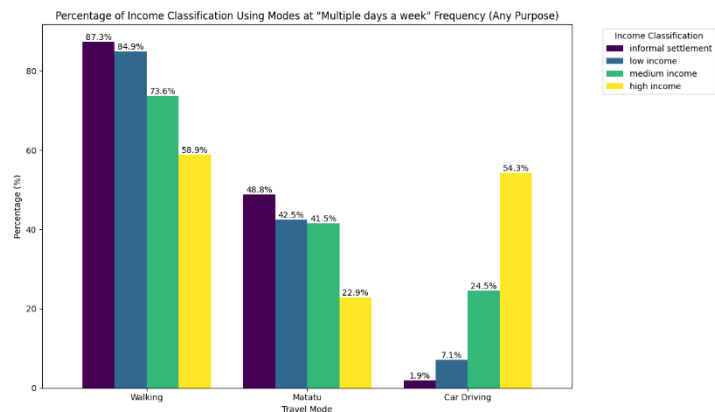


Figure 9, Kenya travel modes by Income Classification

In Laos, gender differences in trip frequency, mode, and purpose indicate clear mobility inequalities. Women are more likely than men to make no trips on both weekdays (16.9% vs. 10.2%) and weekends (56.6% vs. 51.6%). Overall, women rely more on motorcycles (60.2% vs. 56.9%), walking (10.7% vs. 4%), and bicycles (1.6% vs. 0.3%) (Figure 10). Men are more likely to use cars (38.3% vs. 26.8%). Differences are most pronounced on weekdays, with gaps narrowing on weekends – except for motorcycles, where men (53.3%) slightly surpass women (47.5%).

Weekend travel behaviour shows pronounced contrasts. Women's car use rises sharply from weekdays to weekends (18.0% vs. 45.2%), reflecting greater access to shared or household vehicles outside of workdays. Travel purposes also vary by gender and day: on weekdays, women are less likely than men to travel for leisure (0.0% vs. 1.8%) or to visit friends and family (6.7% vs. 7.3%). On weekends, this pattern reverses – women are more likely than men to travel for leisure or shopping (33.9% vs. 31.8%) and to visit friends and family (32.2% vs. 24.8%).

Lower-income groups are more likely to report no trips on both weekdays (22.0%) and weekends (67.0%) compared with 9.6% and 44.6% in the highest-income group. Travel modes vary by income: the lowest-income group walks the most (12.1%) and is the only group to report cycling (5.3%) (Figure 11). Motorcycle use declines with income (62.1% vs. 54.1%), while car use rises (18.5% vs. 39.0%). Travel purposes also differ: on weekdays, school travel and shopping increase with income, whereas the lowest-income group travels most for social reasons and personal business. On weekends, the lowest-income group

remains most likely to travel for social visits but least likely to travel for leisure or shopping (16.7% vs. >30% in all other income groups).

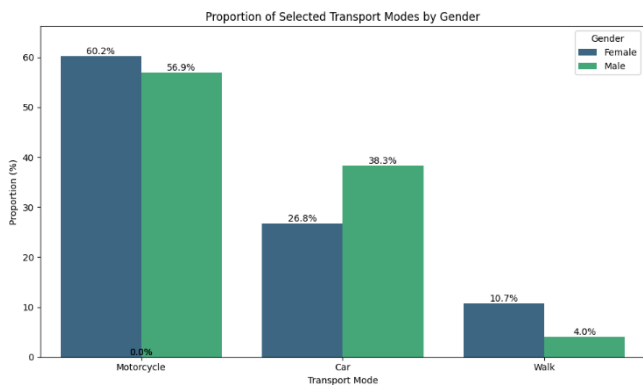


Figure 10, Laos travel modes by Gender

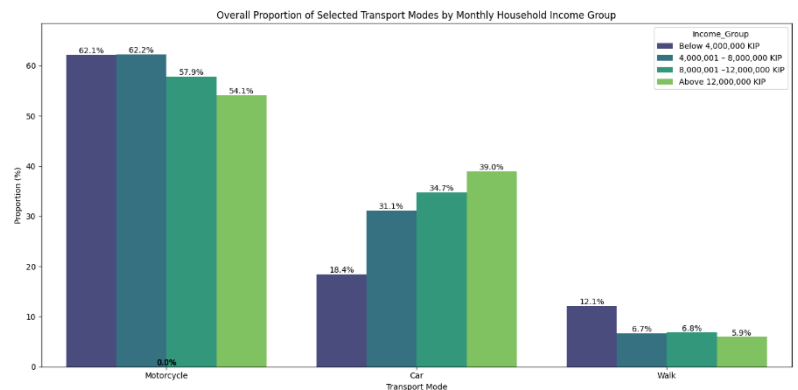


Figure 11, Laos travel modes by Income

### Taxi Expenditure

The use of taxis can imply differences in travel patterns: without a personal vehicle, taxis can be safer and more efficient than alternative methods, while being more expensive.

In Kenya, women spend 17% more than men on taxis (1208.89 KES vs. 1032.25 KES), (Figure 12), representing the only transport area where women’s expenditure exceeds men’s. All genders spend more on taxis if they dislike public transport. Regarding safety (Table 3), women who perceive public transport as unsafe spend more on taxis (1361.66 KES vs. 954.03 KES), whereas men show the opposite pattern (1002.24 KES vs. 1077.50 KES). T-tests confirm that gender differences in taxi costs for those who strongly disagree are statistically significant ( $p < 0.05$ ). In Laos, no respondents reported using taxis during weekdays or weekends.

Gender	Public transport unsafe (Agree/Strongly agree)	Public transport unsafe (Disagree/Strongly disagree)
Male	1002.24	1077.50
Female	1361.66	954.03

Table 3, Taxi cost

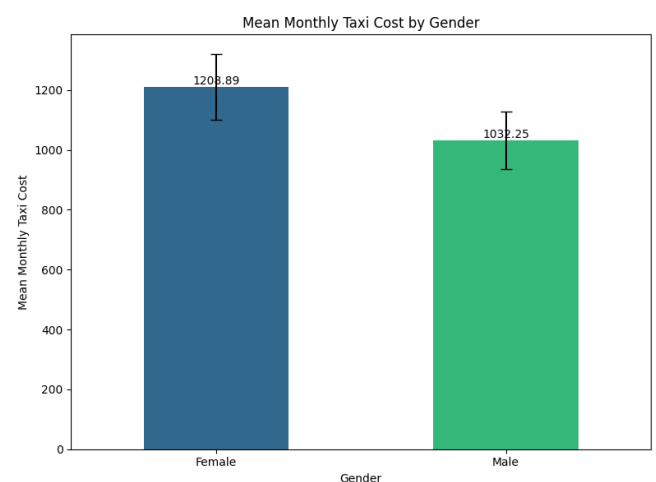


Figure 12, Mean monthly taxi cost (KES) by gender

## Parking

In Kenya, work parking availability shows a strong income gradient. Informal settlement residents are almost nine times more likely than high-income groups to lack work parking (60.2% vs. 6.8%) and nearly three times less likely to have free parking (28.0% vs. 77.1%) (Figure 13). In Laos, disparities are smaller: over 85% of all income groups have free work parking. The lowest-income group is slightly more likely to have no work parking (11.5% vs. 3.9% for the highest-income group), while other groups show little variation.

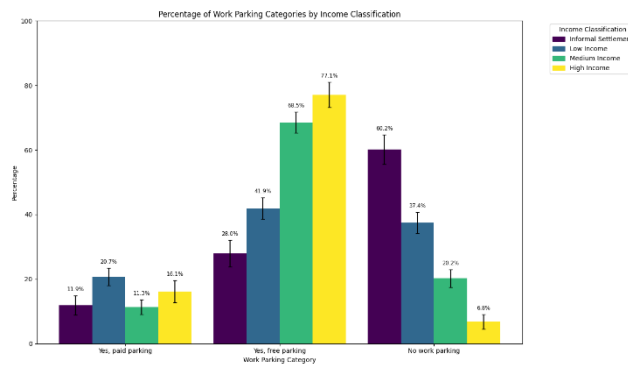


Figure 13, Kenya work parking

## Attitudinal statements

Both datasets include attitudinal data, ranked from strongly disagree to strongly agree, which provide insights into travel behaviour.

In Kenya, women were more likely than men to agree they could not manage without public transport (68.8% vs. 59.5%) and to view it as expensive (41.3% vs. 36.7%), unsafe (66.5% vs. 64.5%), and dislikeable (40.1% vs. 33.3%) (Figure 14). Women also more frequently agreed that public transport benefits the environment (47.4% vs. 42.9%). Driving was reported as more stressful by women (73.5% vs. 61.4%), a pattern also observed among non-drivers (39.5% vs. 29.8%). For motorcycles, men reported greater reliance (56.5% vs. 31.8%) and more traffic stress (56.5% vs. 40.9%), whereas women highlighted financial concerns, including cost (40.9% vs. 28.3%) and reduced use due to higher fuel prices (72.7% vs. 60.9%).

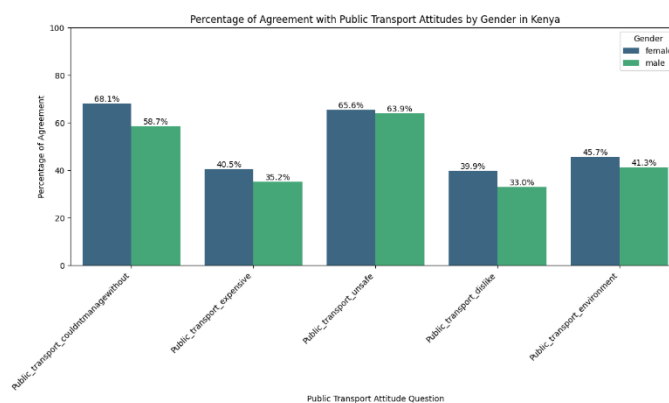


Figure 14, Public transport attitudes by gender in Kenya

Income differences in Kenya were also pronounced. Reliance on public transport decreased with income (71.6% for the lowest-income group vs. 41.9% for the highest), while lower-income groups were more likely to agree that it is expensive (58.3% vs. 22.2%). The lowest-income respondents were most likely to agree that public transport benefits the environment (52.7% vs. 36.9%). Over 60% of the three lowest-income groups reported that fuel prices increased their use of public transport, compared with 47.9% of the highest-income group. Driving was perceived as most expensive by the lowest-income group, among both drivers (83.3%) and non-drivers (66.1%). Attitudes toward motorcycles also varied with income: the lowest-income group reported the highest reliance and lowest stress levels among both drivers and non-drivers.

Gendered patterns in Laos indicate that women were more likely than men to rely on public transport (59.9% vs. 53.5%), find it expensive (38.6% vs. 31.3%), and consider it convenient (35.3% vs. 29.5%), while men were more likely to report disliking it (32.4% vs. 23.9%) (Figure 15). Driving was reported as more stressful by women (51.5% vs. 41.4%), and non-drivers anticipated greater pressure if they were to drive (40.1% vs. 23.6%). Women also reported greater reliance on motorcycles (68.4% vs. 64.9%), more stress from traffic, and more reductions in travel due to fuel costs. Among non-owners, women more often agreed that life would be easier with a motorcycle (77.3% vs. 70.8%), whereas men more frequently considered motorcycles unsafe (66.7% vs. 45.5%) and anticipated social pressure (50.0% vs. 27.3%).

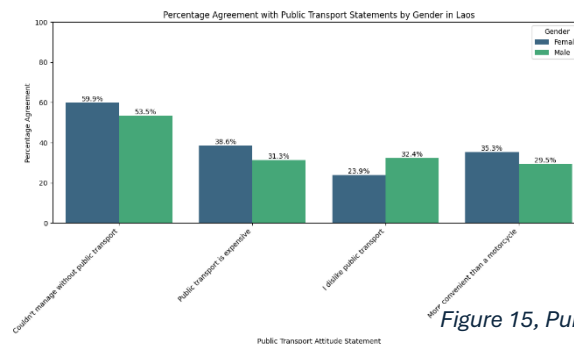


Figure 15, Public transport attitudes by gender in Laos

Income differences were also observed. The lowest-income groups were most likely to agree that they could not manage without public transport (71.4%), found it most expensive and stressful, and wished it was more reliable. Higher-income groups were more likely to prefer using a motorcycle over public transport. For cars, the lowest-income groups were most likely to agree that they could not manage without one (75% vs. 54.3% for the highest-income group) while also reporting it was most expensive. Motorcycle attitudes similarly showed that the lowest-income group had the highest reliance (77.3%) and perceived the lowest expense, both among drivers (17%) and non-drivers.

### Electric Vehicle Statements

Analysing electric vehicle (EV) attitudes is essential for understanding future sustainable travel.

In Kenya, pronounced gender differences exist in EV attitudes. Women report less experience, being less likely than men to have travelled as a passenger (16.3% vs. 36.5%) or

know a friend who owns an EV (14.6% vs. 34.6%). Knowledge-based responses show a similar pattern: fewer women understand the difference between hybrid and battery vehicles (21.5% vs. 52.5%) or feel informed about them (41.3% vs. 66.3%). Women also express lower agreement that EVs benefit the environment, air quality, and health, whereas men are slightly more likely to consider these benefits exaggerated. Men report greater EV suitability, agreeing more that they meet their needs (68.3% vs. 61.0%) and would attract others. Overall, Kenyan women demonstrate consistently lower experience, knowledge, and perceived suitability than men.

Experience and knowledge of EVs rise with income. Higher-income groups are more likely to have travelled in an EV, know someone who owns one, and feel informed about them. Environmental attitudes also differ: wealthier respondents are more likely to believe that EVs improve air quality, health, and reduce reliance on fossil fuels, while at the same time being more inclined to view these benefits as exaggerated. Suitability perceptions reflect a mixed picture: higher-income groups are more concerned about running out of charge and difficulties finding spare parts, yet also report that EVs fit their needs and are more willing to pay more for them.

In Laos, gender differences in EV attitudes were smaller and less consistent. Women reported slightly lower direct experience and knowledge of EVs (differences of 2–3%), though they more often reported that a family member owns one. Perceptions of environmental benefits were broadly similar across genders, with differences under 5%. Attitudes towards suitability were mixed: women expressed more concern about breakdowns and battery health but also reported greater agreement that EVs suit their needs (64.7% vs. 56.0%) and that others would find them attractive. Unlike Kenya, gendered patterns fluctuated, with women showing both greater concerns and stronger perceptions of suitability.

Income-based patterns were less systematic. The lowest-income group reported the least knowledge and experience of EVs, and the highest reported the most, though trends were not linear across all categories. Environmental attitudes varied little by income, except that the lowest-income group agreed most with air-quality benefits (76.9% vs. 63.3% in the highest-income group). Suitability opinions fluctuated: the lowest-income group were least likely to agree that EVs suited their needs (56.0% vs.  $\geq 60\%$  for all other groups) and least likely to believe others would find them attractive (30.0% vs.  $\geq 40\%$ ). Concern about running out of charge decreased as income increased.

## Discussion

After performing various data analyses, some overarching inequalities have remained consistent: women and lower-income groups are consistently the least mobile.

### Gender-specific inequalities

In both Kenya and Laos, women hold fewer driving licences than men, and among licence holders, licence types differ, with women in Kenya favouring car licences, and women in Laos favouring motorcycle licences. This limits women's ability to operate personal vehicles and pushes them towards alternatives such as taxis in Kenya, bicycles in Laos, or walking in both contexts. These slower or less flexible modes contribute to women's relative immobility compared with men. Expanding women's access to licences could reduce these inequalities, but where this is not possible, investment in safe and efficient alternatives is essential. Notably, disparities are more pronounced in Kenya, suggesting a different relationship with driver's licences compared with Laos.

Patterns of inequality extend to vehicle ownership, which further constrains women's freedom of movement. Women in both countries own fewer vehicles overall, though gaps are more apparent in Kenya. In Laos, disparity largely disappears among those who hold a licence, whereas in Kenya, structural barriers persist. This suggests that in Kenya, women's disadvantage stems from both low licence ownership and unequal access to vehicles, compounding immobility.

Differences in travel distance and speed reinforce this picture. Women are more spatially localised, travelling shorter distances to work at slower speeds. This echoes findings from Chile (Gauvin et al., 2020) and Pakistan (Adeel, Yeh and Zhang, 2016), where women's daily movements are similarly restricted. Slower travel suggests reliance on less efficient modes of transport, pointing to broader infrastructural inequalities that limit women's choices.

Travel frequency and mode provide further evidence. Women are more likely to make no trips at all, and when they do, walking features more prominently. In Laos, gendered patterns vary across weekdays and weekends: women's travel distances and car use increase on weekends, reflecting reduced household and work constraints, whereas weekday travel remains more spatially localised. These weekend purpose and mode changes coincide with a reduced gender gap for distance and speed.

Taxi use highlights a Kenya-specific dimension. Women spend more on taxis, particularly when they perceive public transport as unsafe. By contrast, men spend less in the same situation. This points not only to women's heightened vulnerability in public transport – supporting previous Kenya literature (Kishiue *et al.*, 2020) – but also to possible gendered differences in how safety is understood and experienced. Improving the safety and reliability of public transport could therefore reduce women's financial burden and reliance on taxis.

Attitudinal data reveal how structural inequalities translate into perceptions. Women in both Kenya and Laos report greater reliance on public transport and find it more expensive, reflecting limited alternatives and financial strain. This helps to explain higher levels of

dissatisfaction among women in Kenya. Attitudes toward motorcycles show cultural variation: women in Laos rely on them more heavily, while Kenya shows the opposite. In both settings, women highlight financial concerns, suggesting targeted subsidies or support for women could help to address these barriers.

Finally, gendered differences in attitudes towards electric vehicles are more pronounced in Kenya than in Laos. Women in Kenya report lower levels of experience and knowledge, and are less convinced of environmental benefits, while in Laos the differences are minimal. This points to the role of information and awareness campaigns, with educational initiatives potentially narrowing the gender gap in sustainable transport.

### **Income-specific inequalities**

Driver's licence ownership in both Kenya and Laos increases with income, although this disparity is far more pronounced in Kenya. In Kenya, lower-income groups are much less likely to have a car licence and slightly more likely to have a motorcycle licence. This pattern not only reflects income-based structural barriers but also illustrates intersectionality: lower-income women experience compounded disadvantage, as their mobility is restricted by both gender inequalities and economic constraints (Crenshaw, 1989). In contrast, Laos shows less pronounced gender differences among lower-income groups, suggesting that the interaction of gender and income plays a smaller role. These findings indicate that initiatives to improve licence uptake for low-income women could be particularly impactful in Kenya.

Vehicle ownership follows a similar pattern. Car ownership increases with income in both countries, again most notably in Kenya. With motorcycles being less common in Kenya, lower-income individuals without a car are reliant on slower or less flexible alternatives, such as walking or public transport. In Laos, widespread motorcycle ownership provides a relatively income-independent alternative, which appears to buffer mobility inequality. These patterns align with the concept of transport disadvantage (Lucas, 2011): lower-income groups have fewer choices, which limits access to essential services such as education, employment, and healthcare (Mittal, Takahiro Yabe and Fatima Arroyo Arroyo, 2022). Where affordable alternatives exist – as in Laos – the impact of income on mobility is less severe.

Income also influences travel distance and speed, particularly in Kenya. Lower-income groups tend to be more spatially localised and travel at slower speeds, reflecting reliance on less efficient transport modes. In Laos, these differences vary between weekdays and weekends: the lowest-income groups are particularly restricted on weekends, highlighting that mobility inequalities persist even outside work-related travel and routine weekday activities.

Travel mode patterns reinforce these disparities. Lower-income individuals rely more on walking in both countries; in Kenya, public transport use is also higher, while in Laos, cycling is more common among lower-income groups. Motorcycle use decreases with income in Laos, while car use increases with income in both countries. Despite higher motorcycle use among lower-income groups in Laos, their overall mobility remains restricted, emphasising that affordability alone does not eliminate transport inequalities.

Parking availability further highlights income inequalities in Kenya. Free work parking is more common among higher-income groups, and lower-income groups face limited access, compounding barriers to personal vehicle use. In Laos, most individuals have free work parking, suggesting the issue is structural in Kenya rather than universal. This demonstrates that infrastructure and environmental factors can interact with income to shape mobility opportunities.

Attitudinal data on transport and expenditure reinforce these patterns. Lower-income groups in both countries report higher reliance on public transport and perceive it as more expensive. They also rely more on motorcycles and find cars less affordable, although motorcycles are viewed as a cost-effective option in Laos. These patterns suggest that targeted investments in affordable, safe transport alternatives could mitigate income-based mobility disparities.

Finally, lower-incomes have less knowledge and experience of electric vehicles in both countries and are less likely to perceive them as suitable for their needs. Addressing these gaps through education and increased accessibility will be essential for promoting equitable, sustainable mobility in the future.

### **Policy recommendations**

After identifying these inequalities, policy recommendations can be drafted to address the specific barriers faced by vulnerable groups.

In the immediate term, improving the quality and safety of alternatives to personal vehicles is crucial. In Kenya, where public transport is widely used, policies should focus on convenience, affordability, and especially safety. Measures could include investment in infrastructure, clearer regulation of services, and initiatives targeting gender-specific barriers such as harassment. Awareness campaigns or women-only carriages could reduce the safety gap and make public transport a more reliable option. In Laos, motorcycles already provide a relatively affordable alternative, but public transport services could be expanded to reduce dependence on motorcycle travel and provide more inclusive mobility options.

Licence ownership remains a major structural barrier. Expanding access through affordable lessons, subsidised tests, and targeted outreach could increase uptake, particularly among low-income women in Kenya. Vehicle ownership subsidies could also play a role in reducing disparities. While both countries show inequalities, Kenya presents the most acute gaps in car ownership, suggesting targeted programmes there would have the most impact. In Laos, where motorcycles are widely accessible across income groups, the focus should instead be on ensuring car ownership is not limited to higher-income households. In Kenya, improvements in parking infrastructure could make car ownership more feasible, particularly for low-income groups who currently face the double barrier of low ownership and reduced workplace parking access.

Looking ahead, the global shift towards electric vehicles (EVs) risks compounding existing inequalities. Women and lower-income groups in both countries report less knowledge and experience of EVs, while women in Kenya reported reduced suitability. To prevent future disparities, early interventions are needed. These could include educational programmes that

familiarise vulnerable groups with EVs, subsidies to support access, and infrastructure development ensures that EV use is practical beyond wealthy households.

Taken together, these recommendations highlight that addressing transport inequality is not simply about mobility itself, but about improving access to employment, education, healthcare, and wider social participation. Without targeted interventions, women and low-income groups – especially in Kenya – will remain disproportionately excluded from the benefits of mobility.

### **Strengths, limitations, and future directions**

This study drew on two large datasets with overlapping survey structures, enabling meaningful cross-country comparison. By analysing proportions rather than absolute values, potential confounding from unequal group sizes was reduced, allowing more reliable visualisation of inequalities. The inclusion of Kenya and Laos – two countries with very different cultures, economies and transport systems – provided both context-specific insights and evidence of more systemic inequalities. This approach strengthened the relevance of findings, making them useful for local policy and for wider global data on transport inequalities.

However, some limitations must be considered. Differences in sample sizes and survey questions introduced challenges for direct comparison, and variations in income distributions may have confounded results. More standardised data collection across countries would strengthen future comparisons. In addition, this study focused on gender and income, while other factors such as education and age are also likely to shape mobility. Exploring the intersection of these variables would provide a more nuanced picture of transport inequalities.

A further limitation is the reliance on quantitative metrics, which could overlook lived experience. Complementary qualitative approaches – such as interviews or focus groups – could highlight these perspectives and allow for more refined policy recommendations.

Future research should therefore build on these findings:

1. Collecting more harmonised cross-country data to reduce comparability issues.
2. Exploring age and education as additional barriers to inequality, and their interaction with gender and income.
3. Integrating qualitative methods to capture the complexity of barriers to mobility and to inform more targeted policy recommendations.

## **Conclusion**

This study has highlighted persistent gender- and income-specific inequalities in mobility across Kenya and Laos. Women and lower-income groups remain consistently less mobile, with disparities in licence and vehicle ownership, travel distance and speed, and reliance on less efficient modes of transport. These inequalities are particularly pronounced in Kenya, while in Laos the widespread use of motorcycles reduces—but does not remove—income-related barriers.

The consequences of these findings extend beyond transport alone. Limited mobility constrains access to education, healthcare, employment, and wider social participation, reinforcing cycles of disadvantage. While this study focused on transport-specific policies, the implications for social equity and well-being are broader, underlining mobility as a foundational requirement for inclusion.

Mobility is more than the ability to move from place to place; it is a gateway to opportunity. Addressing gendered and income-based inequalities in transport is therefore central not only to building fairer mobility systems, but also to advancing progress in health, education, and economic participation. As countries move towards more sustainable transport futures, ensuring that the most vulnerable groups are not left behind will be critical in realising the wider goals of a more just and equitable society.

## References

- Acheson, D. (1998). *Independent Inquiry into Inequalities in Health Report* (Cm 4100). London: The Stationery Office. Available at: <https://assets.publishing.service.gov.uk/media/5a759e7c40f0b67b3d5c7e6f/ih.pdf> [Accessed 24 Aug. 2025].
- Adeel, M., Yeh, A.G.O. and Zhang, F. (2016). Gender inequality in mobility and mode choice in Pakistan. *Transportation*, 44(6), pp.1519–1534. doi:<https://doi.org/10.1007/s11116-016-9712-8>.
- Akiko Kishiue, Karla Dominguez Gonzalez, and Elise St. John. 2020. *Gender in Urban Transport in Nairobi, Kenya Volume I: Mobility*. © World Bank.
- Aryal, A., Clarke-Deelder, E., Souksanh Phommalangsy, Sengchanh Kounnavong and Fink, G. (2024). Health system inequities in Lao People’s Democratic Republic: Evidence from a nationally representative phone survey. *TM & IH. Tropical medicine and international health/TM & IH. Tropical medicine & international health*. doi:<https://doi.org/10.1111/tmi.13997>.
- Asian Development Bank (n.d.) *Gender action plan: Greater Mekong Subregion Tourism Infrastructure for Inclusive Growth Project (Loan 46293-003)*. Asian Development Bank. Available at: <https://www.adb.org/sites/default/files/project-documents/46293-003-gap.pdf> (Accessed: 25 August 2025).
- Crenshaw, K. (1989). Demarginalizing the Intersection of Race and sex: a Black Feminist Critique of Antidiscrimination doctrine, Feminist Theory and Antiracist Politics. *University of Chicago Legal Forum*, [online] 1989(1), pp.139–167. Available at: <https://chicagounbound.uchicago.edu/cgi/viewcontent.cgi?article=1052&context=uclf>.
- Cresswell, T. (2010) ‘Towards a politics of mobility’, *Environment and Planning D: Society and Space*, 28(1), pp. 17–31.
- Fritz, S. and Lusardi, M. (2009) ‘White paper: “Walking speed: the sixth vital sign”’, *Journal of Geriatric Physical Therapy*, 32(2), pp. 46–49.
- Gauvin, L., Tizzoni, M., Piaggese, S., Young, A., Adler, N., Verhulst, S., Ferres, L. and Cattuto, C. (2020). Gender gaps in urban mobility. *Humanities and Social Sciences Communications*, [online] 7(1), pp.1–13. doi:<https://doi.org/10.1057/s41599-020-0500-x>.
- Kenyon, S., Lyons, G. and Rafferty, J. (2002). Transport and social exclusion: investigating the possibility of promoting inclusion through virtual mobility. *Journal of Transport Geography*, 10(3), pp.207–219. doi:[https://doi.org/10.1016/s0966-6923\(02\)00012-1](https://doi.org/10.1016/s0966-6923(02)00012-1).
- Lao Statistics Bureau. 2018a. “Lao Social Indicator Survey II 2017, Survey Findings Report.” Lao Statistics Bureau and UNICEF, Vientiane, Lao PDR.
- Lucas, K. (2011). Making the connections between transport disadvantage and the social exclusion of low income populations in the Tshwane Region of South Africa.

Journal of Transport Geography, 19(6), pp.1320–1334.

doi:<https://doi.org/10.1016/j.jtrangeo.2011.02.007>.

- Mittal, S., Takahiro Yabe and Fatima Arroyo Arroyo (2022). Linking Poverty-Based Inequalities with Transportation and Accessibility Using Mobility Data: A Case Study of Greater Maputo. *Transportation Research Record*, 2677(3), pp.668–682. doi:<https://doi.org/10.1177/03611981221116623>.
- Mittal, S., Takahiro Yabe and Fatima Arroyo Arroyo (2022). Linking Poverty-Based Inequalities with Transportation and Accessibility Using Mobility Data: A Case Study of Greater Maputo. *Transportation Research Record*, 2677(3), pp.668–682. doi:<https://doi.org/10.1177/03611981221116623>.
- NHS England. (n.d.). *Free transport reduces ‘was not brought’ rates for children at Midlands trust*. Available at: <https://www.england.nhs.uk/about/equality/equality-hub/case-studies/free-transport-reduces-was-not-brought-rates-for-children-at-midlands-trust/> [Accessed 25 Aug. 2025].
- OXFAM (2019). Kenya: Extreme Inequality in Numbers | Oxfam International. [online] Oxfam International. Available at: <https://www.oxfam.org/en/kenya-extreme-inequality-numbers>.
- REPORT ON GENDER EQUITY ASSESSMENT OF NAIROBI’S PUBLIC MINIBUS TRANSPORT SERVICES. (2018). Available at: <https://unhabitat.org/sites/default/files/download-manager-files/GEA%20Report%20FINAL.pdf> [Accessed 25 Aug. 2025].
- Rodrigue, J-P. (2020) *The Geography of Transport Systems*. Routledge.
- Salon, D. and Gulyani, S. (2010). Mobility, Poverty, and Gender: Travel ‘Choices’ of Slum Residents in Nairobi, Kenya. *Transport Reviews*, 30(5), pp.641–657. doi:<https://doi.org/10.1080/01441640903298998>.
- Sirois, M.-J., Griffith, L., Perry, J., Vedel, I. and Berbiche, D. (2013) ‘Measuring mobility in older emergency patients: the “sixth vital sign”’, *Academic Emergency Medicine*, 20(6), pp. 584–590.
- SPDC (2014) *Rapid Assessment of Sexual Harassment in Public Transport and Connected Spaces in Karachi Pilot Project Final Report*. Available at: <https://www.adb.org/sites/default/files/project-documents/44067-012-tacr-19.pdf> (Accessed: 24 August 2025).
- *Transport – the Essential Connector*. (n.d.) Available at: [https://thedocs.worldbank.org/en/doc/157201585683713721-0190022020/original/WBTransportNarrative.pdf?intcid=ecr\\_hp\\_dataC\\_en\\_ext](https://thedocs.worldbank.org/en/doc/157201585683713721-0190022020/original/WBTransportNarrative.pdf?intcid=ecr_hp_dataC_en_ext) [Accessed 24 August 2025].
- Turner, J. (2013) Urban mass transit and social sustainability in Jakarta, Indonesia. Case study prepared for Global Report on Human Settlements 2013. Nairobi: UN-Habitat. Available at: [https://unhabitat.org/sites/default/files/2013/06/GRHS.2013.Case\\_Study\\_Jakarta.Indonesia.pdf](https://unhabitat.org/sites/default/files/2013/06/GRHS.2013.Case_Study_Jakarta.Indonesia.pdf) (Accessed: 25 August 2025).

- UNDP. (n.d.). Gender Equality and Women’s Empowerment | United Nations Development Programme. [online] Available at: <https://www.undp.org/laopdr/gender-equality-and-womens-empowerment>.
- United Nations (1948) *Universal Declaration of Human Rights*. Available at: <https://www.un.org/en/about-us/universal-declaration-of-human-rights> (Accessed: 24 August 2025).
- United Nations (n.d.) *Sustainable Development Goals*. United Nations. Available at: <https://sdgs.un.org/goals> (Accessed: 24 August 2025).
- Urry, J. (2007) *Mobilities*. Polity Press.
- Vongpraseuth, T., Song, E.Y. and Choi, C.G. (2022). Mode of Transport and Inequity in a Least Developed Country: The Case of Vientiane, Lao PDR. *Sustainability*, 14(10), p.5959. doi:<https://doi.org/10.3390/su14105959>.
- World Bank. (n.d.). Promoting Livable Cities by Investing in Urban Mobility. [online] Available at: <https://www.worldbank.org/en/results/2024/03/13/promoting-livable-cities-by-investing-in-urban-mobility>.
- World Bank. 2019. “Lao People’s Democratic Republic Poverty Assessment 2020: Catching Up and Falling Behind.” World Bank, Washington, DC. Licence: Creative Commons Attribution CC BY 3.0 IGO