



Gendered Dimensions of Transport and Women's Social Exclusion in Abidjan (Côte d'Ivoire)

Bassirou Bande*¹ , Hülagü Kaplan¹ 

¹ Faculty of Architecture, Department of City and Regional Planning, Gazi University, 06570 Maltepe Ankara, TÜRKİYE

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Abstract

This paper explores the gendered dimensions of transport in Abidjan and how transport dynamics influence women's out-of-home activity participation, leading to their social exclusion. Using a gender-sensitive analysis approach, the research revealed that Abidjan's transportation system is inadvertently gendered and excludes vulnerable people and women. The findings highlighted women's significant concern about public transportation availability while transportation costs emerged as the primary concern for both genders (54.3 % reported costs as an extreme/major concern while only 23.6 % expressed it as a minor/negligible issue). Women highly cancel trips due to transportation issues (women "always" cancel educational activities 4.5 times more than men); and generally participate in fewer out-of-home activities than men. On a daily basis, men travel more for job and education-related activities (respectively 35.3% and 9.5%) than women (22.6% and 6.0%).

The research recommends targeted interventions to bridge the gender gap in Abidjan by improving women's mobility through safe, reliable, affordable and gender-sensitive public transport. These proposals contribute to equitable transport access for all citizens, essential for social and economic development. Therefore, the research addresses a significant gap in transport-related social exclusion studies on African cities, by offering insights to improve transportation planning and policy in similar urban contexts.

Key Words

"Social exclusion, transport, gender, abidjan, women, activity participation"

1. Introduction

In urban studies and transportation research, the relationship between transportation and social exclusion is a critical aspect, as it influences mobility and opportunities for individuals. Transport is one of the vital aspects of day-to-day urban life, enabling individuals to access places, services, opportunities, and social activities. Though, the extent to which individuals can fully participate in society through transportation varies, and the issue of social exclusion in the transport sector can enormously affect certain groups of individuals.

Transport-related social exclusion (TRSE) is the process of individuals or social groups being excluded from full participation in society as a result of restricted access to transportation services (Kenyon et al., 2002). It is a multidimensional concept that encompasses aspects like affordability, availability, accessibility and acceptability (Lucas, 2012). Previous research has demonstrated that TRSE can negatively affect various aspects of people's lives, such as employment, education, health or social interaction (Hine & Mitchell, 2001; Currie, 2004; Lucas, 2012). Although transportation-related social exclusion can vary widely depending on the local context, including social, economic and geographical factors (Lucas, 2012).

Many factors in previous studies have been identified as contributing to TRSE such as income, gender, age, disability status, household composition and location of residence (Cass et al., 2005; Lucas, 2012; Currie & Delbosc, 2010). Low-income individuals and residents of disadvantaged neighbourhoods are particularly at risk of transportation-related social exclusion due to limited access to transport services or inability to afford them (Lucas, 2012; Currie, 2011). Similarly, gender norms and societal expectations may restrict women's mobility and access to transportation services, further exacerbating their social exclusion (Hanson, 2010).

Despite the extensive attention given to these issues in many regions worldwide (Church et al., 2000; Lucas, 2012; Adeel, 2016), studies on TRSE in Sub-Saharan African cities, such as Abidjan received less attention. Over the past decades, Abidjan, the economic capital of Côte d'Ivoire has experienced rapid urbanization, resulting in many transport and accessibility challenges (Banister, 2005). These challenges have increased social exclusion by restricting individuals' mobility and participation in society (Lucas, 2004). As such, a comprehensive understanding of transport-related social exclusion in a particular context such as Abidjan needs an in-depth analysis that takes various factors into account at different levels, specifically its intersection with gender. Access to transportation is essential for people to engage in various activities, including employment, education, healthcare, and social interactions. However, women face unique challenges and barriers that limit their mobility and access to public transport.

Furthermore, some research on gender differences in travel patterns and transport-related constraints in Abidjan suggested that women were excluded from the transportation sector. These researches suggested that women in Abidjan have lower mobility levels than their male counterparts, with limited access to public transport modes and hence limited access to essential services (Gupta et al., 2018). Abidjan's transport system is gendered and socially excludes women who face significant barriers to access public transport, such as safety concerns, inadequate infrastructure, and limited access to informations. These barriers restricted women's mobility and restricted access to employment, healthcare, education, and other essential services. The males were given more priority, increasing their mobility to access essential services. Also, gender segregation in out-of-home activities in Abidjan is highly gender-segregated, with men engaging in economic activities while women are responsible for domestic tasks and childcare (Das & Kotikula, 2019). Women's limited access to economic opportunities and increased dependency on public transportation for necessary activities were both influenced by the gendered division of labour (Chamseddine & Ait Boubkr, 2021).

Specific initiatives and ideas for public policy have been put in place to close the gender gap in transportation accessibility and to advance women's emancipation (Singhai & Singhai, 2021). In recent years, the current gender pay gap evaluations and analyses have uncovered significant gender inequality within the industry, impacting most transport areas (Wright, 2016). Governments should recognize the significance of gender mainstreaming in transportation planning and policy formation and make it a priority to do so. This will reduce the exclusion of women from the transportation industry and stress the necessity for inclusive public transportation systems that prioritize the safety, comfort, and accessibility of women, taking into consideration the distinct mobility patterns and requirements of women (Zhen, 2021). Therefore, this paper aims to analyse the gendered dimensions of transport and women's social exclusion in Abidjan, Côte d'Ivoire's business centre and economic capital city. By investigating women's experiences in their day-to-day mobility, this research seeks to understand the production of gendered accessibility and women's exclusion in the public transportation system of Abidjan.

2. Context of the Study

Abidjan, the largest city and economic capital of Côte d'Ivoire, is located on Ébrié Lagoon on the Gulf of Guinea (Atlantic Ocean). As one of the largest cities in Africa, Abidjan has 6.3 million inhabitants in an area of 629 km², representing 21.5% of the country's population. By 2040, Abidjan will be home to over 10 million people according to World Bank projections (2019a).

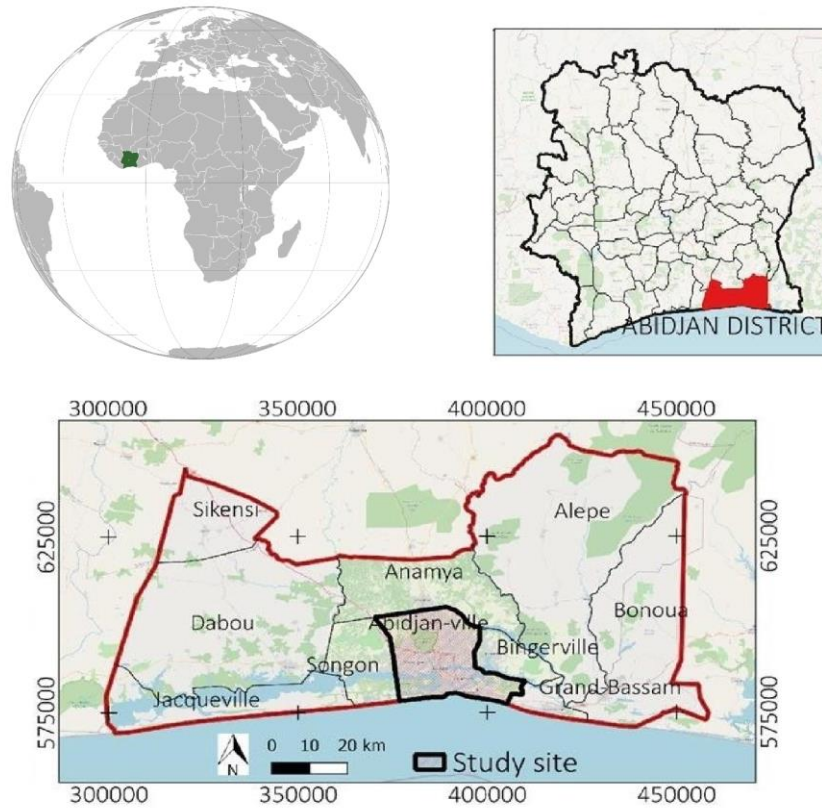


Figure 1: Map of Abidjan District (Ramiaramanana et al., 2021)

According to Ramiaramanana et al. (2021), Abidjan City is facing several problems such as unemployment 19%, poverty 13%, health 9%, transportation 5% and housing 4% etc. A World Bank report (2019b, p.11) stated that more than 10 million trips are made in the city. Domestic travelling costs are among the highest in the world. Less than 1% of trips are made via public transport (Berrou et al., 2017). Transport policies adopted by the city do not consider the needs of the lower and middle classes because most transport projects are geared towards the upper classes. The cost of daily trips made in the city accounts for more than 30% of the income of poor families (Berrou et al., 2017). Private modes of transport i.e. Gbaka, meter taxis, Worro-Worro and inter-communal taxis account for 85% of trips (Berrou et al., 2017).



Figure 2: Public transport modes in Abidjan

These operators pose a high risk to safety, pollution and congestion. The most popular modes of transportation in the city are informal (Gbaka “minibuses” and Woro-woro “informal taxis”) and private cars. People also travel by walking or bicycle for short trips. While public transit and motorcycles are negligible (Johnstone & Ratanavaraha, 2020). Motorcycles are not a common mode of transportation in Abidjan compared to other cities (Doumbia et al., 2021).

Recent research has shed light on the connection between transportation vulnerability and social exclusion. An efficient public transportation system in Abidjan seeks to normalize the usage of modes equally among all members of society (Johnstone & Ratanavaraha, 2020). In particular, automobile travel costs are expensive for lower and middle-income people. Also, disabled people, women and the elderly have difficulties travelling and crossing roads. It is essential to provide affordable and accessible transportation services in order to address social exclusion. The choice of different travel modes, such as bicycles, private cars, or buses, can result in varying actual travel times, ultimately affecting out-of-home activities. Limited transportation options, particularly for those unable to drive, can lead to time-consuming journeys to access services and goods.

In Abidjan, women commute less than men, and female mobility is usually restricted by societal conventions, safety concerns, and lack of public transport availability. Females are susceptible to assault and harassment due to their gender while using public transportation, which limits their freedom of movement. Women in Abidjan feel uneasy using the public transportation system. Their movement is restricted by fear, hindering their access to vital services like jobs, education, and healthcare. These journeys often include many stops and short distances, necessitating adaptable and practical transportation solutions. However, Abidjan's current public transportation system is primarily intended for long-distance travel and needs to provide more connections between neighbourhoods and communities to meet these demands fully. The absence of dependable and safe transportation options further impacts women's economic prospects. Due to safety concerns and the need for better transportation options, women are less likely to obtain work opportunities that entail lengthy commutes. This exacerbates gender disparities in the workforce and the gender pay gap. The absence of accessible and inexpensive transportation choices also makes it difficult for women to participate in social and communal events, aggravating their marginalization.

3. Materials and Methods

The study analysed gendered transportation and women's social exclusion to explore how gender influences transportation access and experiences. A comprehensive mixed-method approach has been used through quantitative and qualitative surveys to explore women's social exclusion in Abidjan. This approach captured statistical trends as well as individual experiences and viewpoints (Kowalczyk, 2019). Quantitative data provided patterns and trends while the qualitative part illuminated women's transportation challenges and social inclusion through their personal stories.

The research involved a mixed-method approach to reveal Abidjan's complex transport infrastructure and its effects on women and vulnerable groups. The research was methodical and stratified by random sampling of selected individuals from varied neighbourhoods and income ranges for representation and diversity. Participants were randomly recruited from each stratum. Random selection ensured that all population members had an equal chance of being selected (Martínez-Mesa, 2016). Interviews allowed qualitative investigation of people's experiences, viewpoints, and narratives. Surveys and interviews took into account Abidjan's gender and social dynamics and involved consent from every participant.

Two sets of data are chosen to gather a large pool of relevant information to examine gendered transportation trends in Abidjan. The first set of information and data is gathered from an academic literature review, open interviews with resource persons and consultation with transportation stakeholders. The collected knowledge about public transport and gendered accessibility trends as well as social exclusion issues in developing cities and Abidjan, helps identify key issues and current trends concerning women's accessibility and exclusion in the city. In semi-structured interviews, a representative sample is used to derive conclusions about the population's experiences and issues. These interviews illuminated participants' limits, obstacles, and perceptions of transport-related social exclusion. Qualitative interactions helped the researcher identify women's distinct impediments to accessing public transport and other activities. The interviews added context and fascinating narratives to the quantitative data.

The second set of data and information is extracted from the results of a direct survey in the 19 communes of Abidjan and its suburbs with a sample of 402 individuals. The survey questionnaires were carefully designed to gather quantitative data on demographics, travel habits, public transport access, gender, and social exclusion. By using a standardized survey questionnaire, the researcher collected quantitative data from a representative sample of Abidjanians. The aim of the survey was explained to all respondents and their willingness to participate was requested, ensuring voluntary participation and anonymity (Bhandari, 2022). The data collected was also treated confidentially and used solely for research purposes. Travel patterns, public transport access, education, vulnerability, monthly income, mobility constraints, and social exclusion experiences were carefully included in the questionnaire. The poll sought to understand participants' mobility dynamics and their impact on social inclusion by including these various aspects (Al-Rashid et al., 2020). Recognizing the importance of diversity, the survey questionnaire was given to men and women, young and old, poor and rich.

Table 1: Data Sources and Collection Details

Data/Information	Sample	Source	Level of relevance
General information on transport, accessibility and social exclusion	Unlimited	Academic literature review	Macro-level (Worldwide, developing countries)
Information on the transportation issues and challenges in Abidjan	10	Interviews by the author (resource persons)	Macro-level (Abidjan city, other cities)
Transportation trends and accessibility patterns in Abidjan	Unlimited	National Institute of Statistics (INS)	Macro-level (Greater Abidjan Area)
Direct survey in Abidjan Metropolitan area	402	Questionnaire by the author	Micro-level

This survey questionnaire was conducted in two waves (a total of 402 questionnaires) and each wave covered half of the sample (201 questionnaires) from 10 mixed sites with various levels of public transport accessibility. The first wave was conducted between November and December 2020. And the second wave was completed in July 2021. The two-wave approach was chosen to account for seasonality and minimize climate effects on the study. The sample was also distributed between neighbourhoods accordingly. It presents results from the 19 communes of the Great Abidjan Metropolitan Area.

The collected survey data were digitized and analysed in SPSS. To measure the main TRSE trends in the city, clustering, frequency, mean, weighted average and median were analysed according to their capability to highlight each hypothesis. The chi-square tests, ANOVA and correlation were performed to measure the relationship between variables. Multivariate regression and logistic regression analysis were also used to predict the relationship level between dependent and independent variables.

By using this mixed-methods approach, including a structured survey questionnaire and semi-structured interviews, this comprehensive methodology gave the study a complete grasp of gendered travel and social exclusion in Abidjan. It permitted quantitative and qualitative investigation of statistical trends, human experiences, perspectives, and obstacles. The mix of approaches enabled a more rigorous and complete analysis. This revealed the transportation system's complex dynamics and effects on women's social inclusion in Abidjan.

4. Results and Discussions

4.1. Socioeconomic Characteristics of The Respondents

A preliminary analysis of the respondent's age, gender, education level, and monthly income was performed prior to analysing the study objectives. All the respondents were aged between 10 to above 60 years. The age distribution of the respondents indicates that 33 (8.2%) respondents were from the age group 10-19 years, 97 (24.1%) were between 20-29 years, 96 (23.9%) were between 30-39 years, 98 (24.4%) were from 40-49 years old, 28 (7.0%) were from 50-59 years old and 41 (10.2%) were above 60 years old. Regarding the gender distribution, the majority of the survey respondents 240 (59.7%) were male while 162 (40.3%) were female.

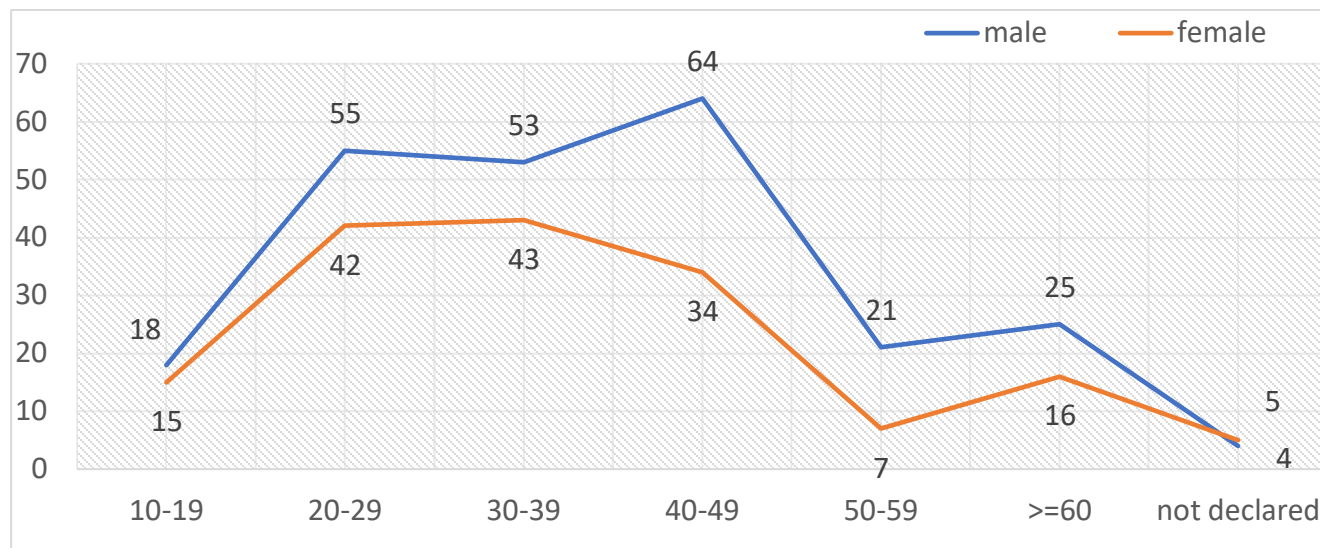


Figure 3: Gendered Profile of the Respondents According Age

The findings in Figure 3 below indicate that, based on the distribution of ages, the highest percentage of respondents were aged between 40-49 years, constituting 24.4% of both. However, women (34) are less represented than men (64); followed by 20-29 years, accounting for 24.1%, 30-39 years, corresponding to 23.9%, and those aged 60 years and above accounted for 10.2%. Those between 50-59 years, with 7%, and 10-19 years, with 8.2%, had the lowest number of respondents.

4.2. Regression, Variance and Reliability Analyses

The value of (R) shows the shared variance between the dependent and independent variables. In the model presented, the value of (R) is 0.728. R-squared is a model used to measure goodness-of-fit. From the analysis, the R-square was 0.529 with an adjusted R-square of 0.4661, which implies that 52.9% of the relationship is explained by the variables under the study. This means that other factors not considered in this study contributed to 47.1% of the dependent variable variance.

Variance analysis was used to examine the model's significance in the study. During significance interval testing, a P-value equal to or less than 0.05 is considered statistically significant. From the analysis, the model has a p-value of 0.000 which is a value less than the minimum threshold of 0.05. This, therefore, means that the model was statistically significant in predicting the factors affecting women's exclusion in the transportation sector in Abidjan at a 95% level of confidence interval. The analysis indicated a relatively high reliability of the study results. The ANOVA results indicated that the regression model was significant at F (representing a test of the null hypothesis) = 7.723, p = 0.000.

Cronbach's Alpha analysis was applied to check the internal consistency and reliability of each submitted question in the data set. Cronbach's Alpha is used for multiple scale items to determine whether the items included converge or not for this gender analysis of out-of-home activity participation. According to (Gliem & Gliem, 2003), a value above .7 is considered acceptable and reliable. To make certain that all designed questions are reliable, six variables i.e., frequency of participation in out-of-home activities, mode of access to out-of-home activities, transport service ranking, issues reducing access, reasons for activities missing/cancellation and frequency of missing events were separately tested. Results show that all the variables except the frequency of out-of-home activities participation are reliable.

Table 2: Internal Consistency and Reliability in the Data Set

Variables	Cronbach's Alpha	No. of items
Frequency of participation in out of home activities	0.524	9
Mode of access to out of home activities	0.734	9
Transport service ranking	0.836	8
Those issues reduce your access	0.708	7
Reason of activities missing/cancellation	0.754	8
Frequency of missing the events	0.844	9

4.3. Gendered Differences in Frequency of Out-Of-Home Activity Participation

One of the hypotheses in this study is “Women have a lower frequency of out-of-home activity participation than men”. By testing this hypothesis, the aim is to assess whether women have a lower frequency of out-of-home activity participation than men. The cross-tabulation results show that there exists no relationship between gender and some out-of-home activities i.e., work ($p=0.365>0.05$), education ($p=0.192>0.05$), shopping ($p=0.305>0.05$), cultural events ($p=0.175>0.05$) and political events ($p=0.087>0.05$). Contrary to this, there exists a statistically significant relationship between gender and religious activities ($p=0.000<0.05$), recreational ($p=0.000<0.05$), healthcare ($p=0.020<0.05$) and socializing ($p=0.044<0.05$). These results suggest that gender shapes out-of-home activities and transport behaviour in the city. Both males and females displayed distinct patterns of out-of-home activity. That means gender is definitely a crucial factor when considering out-of-home activities participation in Abidjan.

Transport behaviour differences have been well-documented in many previous studies. Due to gender-based differences in transport in Abidjan, as in many cities, men are expected to work first and foremost above other activities, resulting in unequal opportunities for women. In this way, men may receive work-related priority while women may face disadvantages in accessing job opportunities. Inequality between men and women persists due to this gendered division of labour. Compared to women, men have more time to devote to their careers and profession. Women tend to take on more unpaid household work and their ability to access resources such as healthcare and education may be affected. This contributes to a lack of opportunity for women and perpetuates a cycle of inequality difficult to break.

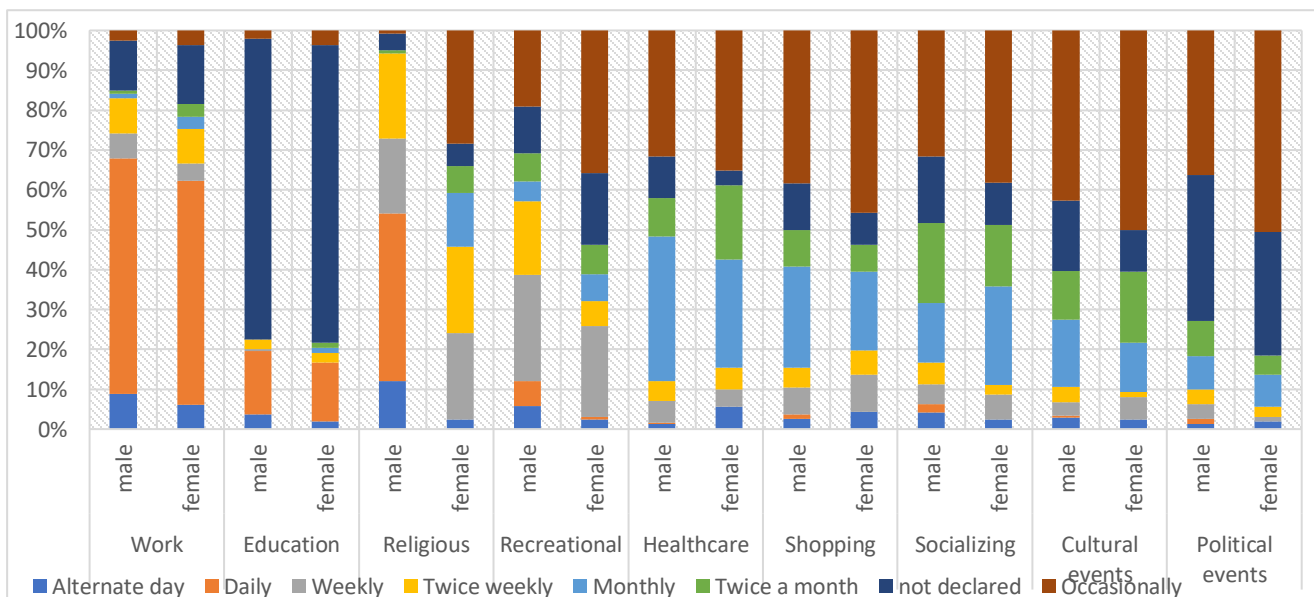


Figure 4: Frequency of Activity Travel by Gender

Figure 4 shows that men travel more frequently for most out-of-home activities than women. Work and education activities were reported to require daily travel by 35.3% and 9.5% of men, respectively. As compared to 22.6% and 6.0% of women, respectively, this percentage is higher for men. Men reported travelling daily to religious activities in 25.1% of cases, but women indicated no such travel (0%). As for participating in social activities and recreational activities, 1.2% and 3.7% of men travel every day, respectively, while only 0.2% and 0% of women do.

However, women reported higher alternate-day shopping and healthcare trips (1.7% and 2.2%, respectively) compared to men (1.5% and 0.7%). These data suggest that men are more likely to engage in activities outside the home than women. In contrast, women are more likely to engage in shopping and healthcare activities. Overall, men travel more than women daily. This difference in behaviour is possibly due to gender roles and expectations. Men are more likely to be the primary breadwinners of the family and expected to work outside the home. Women, on the other hand, are often expected to take care of the household and family members, and so are more likely to engage in shopping and healthcare trips.

As mentioned by Goel et al. (2022), the issue of limited access to public transport restricts women's mobility and hinders their ability to participate in education, employment, healthcare, and other crucial activities (Goel et al., 2022). The findings supported the hypothesis that women have a lower frequency of out-of-home activity participation than men and use public transport less frequently. There is a gender-based difference in access to public transport, and women are more likely to face exclusion in public transport.

4.4. Frequency of Activity Cancellation Based on Gender

An independent sample t-test has been applied to see the difference between males and females regarding cancellation of any activity participation. The results indicate statistically significant differences in activity cancellation between males and females in work-related activities (p-value of 0.019), education activities (p-value of 0.021), shopping activities (p-value of 0.001), socializing-associated activities (p-value of 0.000) and cultural events (p-value of 0.000). The most significant differences were found in socializing-associated activities and cultural events, where p-values were 0.000. This suggests an underlying reason why males and females cancel these activities at different rates.

Table 3: Cancellation of Activity Participation

Cancellation of event	Gender	N	Mean	Std. Deviation	p-value
Work	male	188	1.6915	.76033	.019
	female	111	1.4955	.57007	
Education	male	61	1.9836	1.00816	.021
	female	43	2.5814	1.43481	
Religious	male	223	1.4843	.68344	.485
	female	152	1.4342	.67766	
Recreational	male	216	2.0231	1.08023	.165
	female	131	2.1985	1.22424	
Healthcare	male	220	2.0909	.93677	.462
	female	156	2.1731	1.14815	
Shopping	male	219	2.5297	.96393	.001
	female	147	2.8980	1.09002	
Socializing	male	211	2.3934	.94201	.000
	female	148	2.9122	1.11226	
Cultural	male	206	2.6650	1.02145	.000
	female	137	3.0949	1.19363	
Political	male	155	2.9161	1.16750	.749
	female	110	2.9636	1.21857	

Contrarily, the results indicate no statistically significant differences in activity cancellation between males and females in religious activities (p-value of 0.485), recreational activities (p-value of 0.165), healthcare (p-value of 0.462) and political events (p-value of 0.749). This suggests that there is no gender bias when cancelling religious, recreational, healthcare and political activities. Males and females are equally likely to cancel activities in these categories regardless of their gender.

These findings are particularly interesting because it suggests that gender is an influential factor in the decision-making process for work, education, shopping, socializing and cultural activities' cancellation. Further research should be conducted to understand the underlying reasons for this gender-based discrepancy: why do males and females make such different decisions for these activities' cancellations? This could include a deeper analysis of gender social dynamics or interviews with those who cancelled their activities. Understanding the nuances of this discrepancy phenomenon could help us better understand and predict transport behaviour in similar scenarios. Its findings could be used to reduce gender-based discrepancies, implement gender-sensitive decision-making policies and create an equitable and inclusive environment.

The p-value indicates only that there is a statistically significant difference, not its size or direction. Taking into account the specific frequencies for males and females in each activity may enable us to determine which gender participates more often in each category.

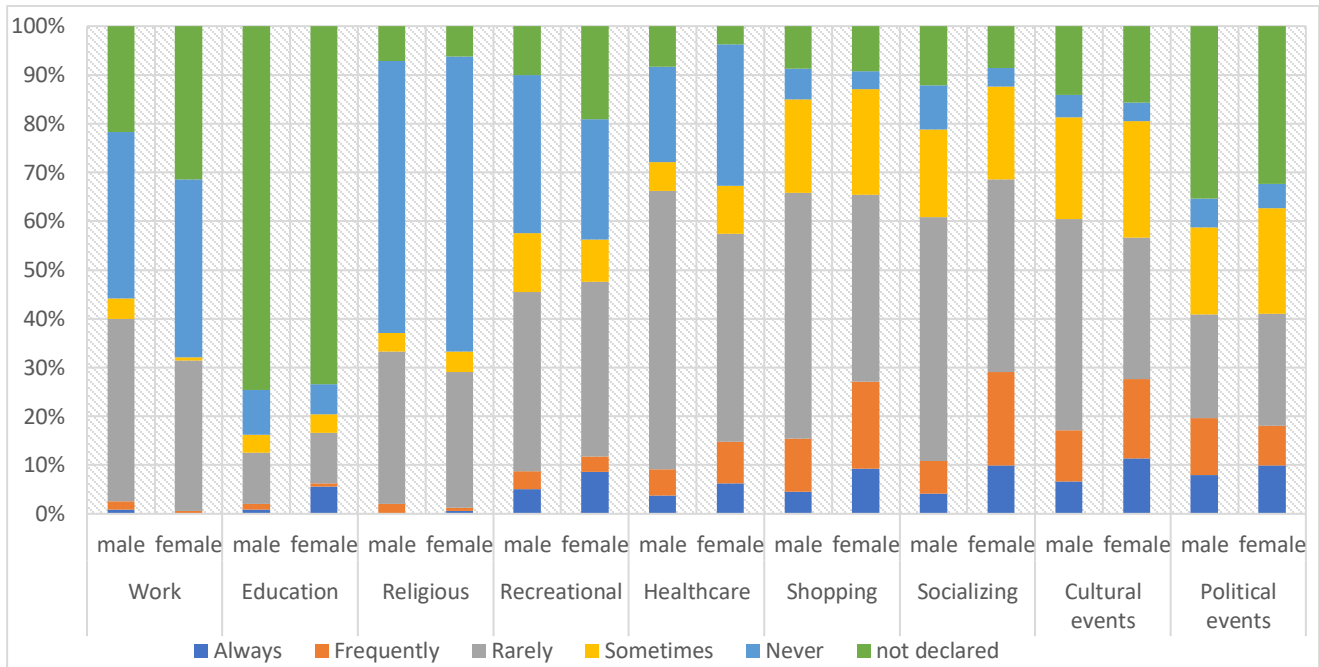


Figure 5: Out-Of-Home Activities Cancellation Based on Gender

As shown in Figure 5, women report cancelling activities more often than men. Results show that women cancel "always" most of their activities (education, religious, recreational, healthcare, shopping, cultural, and socializing), except for work and political events. Interestingly, the discrepancy between the genders is most notable when it comes to "education", where women are 4.5 times more likely to "always" cancel their educational activities. There is a clear gender-based difference in the prioritization of educational activities, with women more likely to sacrifice their own educational activities to take care of other responsibilities. This finding suggests a profound gender gap in educational engagement, which could adversely affect women's access to education, career advancement, and socioeconomic mobility.

In addition, women cancel more "frequently" healthcare, shopping, cultural, and socializing activities than men (socializing being the most frequently cancelled activity, almost two times). This is likely due to women's increased responsibilities both in terms of family care and work. Women often have to juggle multiple tasks and prioritize certain ones over others, which can lead to more activity cancellations specifically leisure-related ones.

On the other hand, men tend to "rarely" cancel activities of any form (work, education, religious, recreational, healthcare, shopping, socializing, cultural, and political). Thus, men face fewer barriers to participating in different activities and have better access to transportation. However, this doesn't necessarily mean men are more active than women in all of these domains, but rather they encounter fewer barriers or circumstances that require cancellation.

The results indicate a gender disparity in cancelled activity frequency across different domains. These activities' cancellations and lack of transportation access affect both women's quality and quantity of activities and negatively impact their overall well-being. Women are more likely to face constraints such as limited access to education, healthcare, employment opportunities, and social services. This can ultimately lead to gender inequality and women's social exclusion. Thus, providing safe and reliable transportation access for women is essential to create more equitable opportunities for them to participate in economic and social activities. Moreover, it can help promote gender equality and break down social exclusion barriers.

4.5. Choice of Usual Travel Mode According to Gender

Yeh and Chow, (1996) stated that walking remains the predominant mode of transportation in developing nations, so a nearby availability of basic land uses remains vital for the community. Figure 6 illustrates how gender differs in transport mode choice depending on the type of activity. In Abidjan, walking appears to be the primary mode of transportation for all out-of-home activities, followed by Sotra transport. In terms of active travel, men were more likely to engage in this activity than women. Men reported walking 23.9% of the time to attend religious activities, and women reported walking 20.6% of the time. Women reported walking to their jobs only 14.2% of the time, while men reported walking 16.2% of the time. Additionally, 18.4% of men and 15.2% of women reported walking to recreational activities. Furthermore, 6% of men reported walking to healthcare and social activities, compared to 5% and 3.5% respectively for women.

By contrast, 3.5% and 4% of women reported walking to cultural and shopping activities, while 2.5% and 3.7% of men reported doing the same.

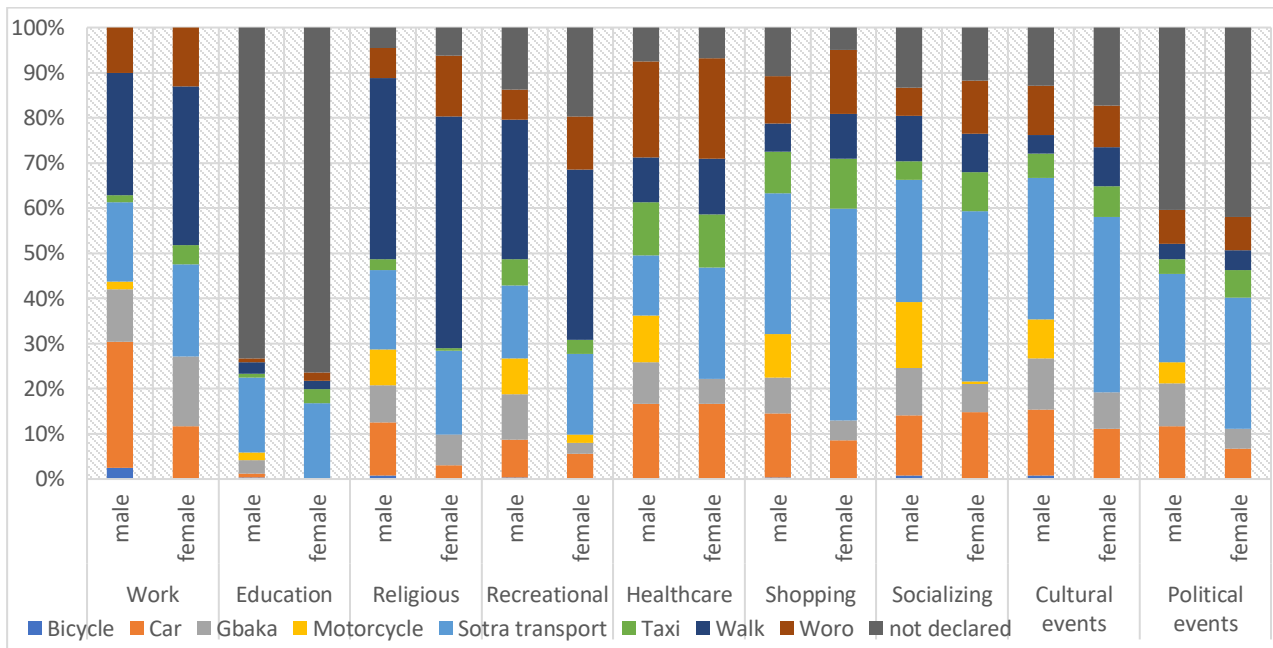


Figure 6: Choice of Usual Travel Mode by Activity

As a result, men are more likely to walk to religious and work activities, while women are more likely to walk to cultural and shopping activities. Therefore, there are differences between men and women in terms of the types of activities they engage in. Men tend to work in areas farther from their homes, which may explain this phenomenon. Women, on the other hand, are more likely to work closer to their homes. In addition, it appears that women are more likely than men to engage in leisure activities near their homes, such as shopping and cultural activities. This could explain why men tend to walk further than women, since they are more likely to walk to work, while women have a tendency to walk for leisure purposes. Additionally, this suggests that women may benefit more from improved access to walking trails and other amenities near their homes.

After walking, men used public transport (both formal and informal) more frequently than women. Women were more likely to use private vehicles to travel. This difference in transportation mode use may be due to differences in access to resources and mobility restrictions. Men reported using public transport modes (SOTRA, Gbaka, Taxi and Woro-woro) for work at a rate of 24.4%, while women reported using them at a rate of 21.3%. The proportion of men who use public transport for educational purposes was 12.7%, while the proportion of women was only 8.6%. Also, 33.2% and 21.2% of men reported using public transport for healthcare and recreational activities, respectively, compared to 25.9% and 14.1% of women. Men reported using public transport for religious activities at a rate of 20.9% compared to women at 15.9%. The difference between the two genders is statistically significant, as evidenced by the p-value of 0.03. These results suggest that men are more likely to access transportation for religious activities than women. Additionally, this indicates that cultural factors may influence the gender gap in transportation access for religious activities.

Overall, walking is the primary mode of transportation for all out-of-home activities for both genders. However, men walk for the majority of activities, while women walk more often for cultural and shopping activities. In addition, men are more likely to use public transportation while women are more likely to use private vehicles. According to World Bank (2008), due to limited private car ownership, much of the population in developing countries relies on public transportation due to the lack of basic land uses within walking distance. In terms of daily trips, men reported participating in out-of-home activities more frequently than women. Men are more likely to travel daily to/from work and education activities than women. Shopping and healthcare activities are the only exception trips, where women reported a higher frequency of participation than men on alternate days.

In conclusion, these results indicate that men are more likely to use all modes of transport for a variety of activities than women. These numbers show that there is a gender gap in transport access, with men travelling more frequently than women. This gap is particularly relevant for educational and recreational purposes.

4.6. Issues to Access Public Transport By Gender

Public transport can be unreliable, overcrowded, and unsafe. It can also be expensive, with fares increasing faster than inflation. Additionally, public transport is not always available in some peripheral areas, leaving residents with limited options. This research asked respondents to rank different issues (availability, cost, and quality) of public transport, on a scale of 1 to 5, representing the problem from lowest to highest concern. The results showed that cost was the highest concern, followed by availability and quality.

This indicates that people are more concerned about public transport affordability than its availability and quality. This could be an indication that people are more likely to use public transport if it is more affordable.

The results show that women report experiencing issues that limit their access to transportation to participate in out-of-home activities. Within the population, women have higher concerns regarding issues that reduce their accessibility to work, education and social activities while men report lower concerns.

Not surprisingly, Figure 7 shows 54.3 % of respondents expressed transportation costs as an extreme or major concern. According to Morisset (2019), the daily struggles of urban life include the cost of public transportation. It is difficult to envision a productive and efficient city when travel is slow and expensive. Abidjan’s poorest continue to use public transportation to get around and currently spend an average of 20% to 30% of their income on transportation and 200 minutes each day using or waiting for transportation. Moreover, Berrou et al. (2017) stated that the cost of daily trips made in the city account for more than 30% of the income of poor families.

Only 23.6 % of the population reported transportation costs as a minor or negligible issue with public transport. However, those who did not use public transportation reported transportation costs as a minor concern, with some calling it a negligible issue. This indicates that public transportation is an affordable option for many people, despite their concerns.

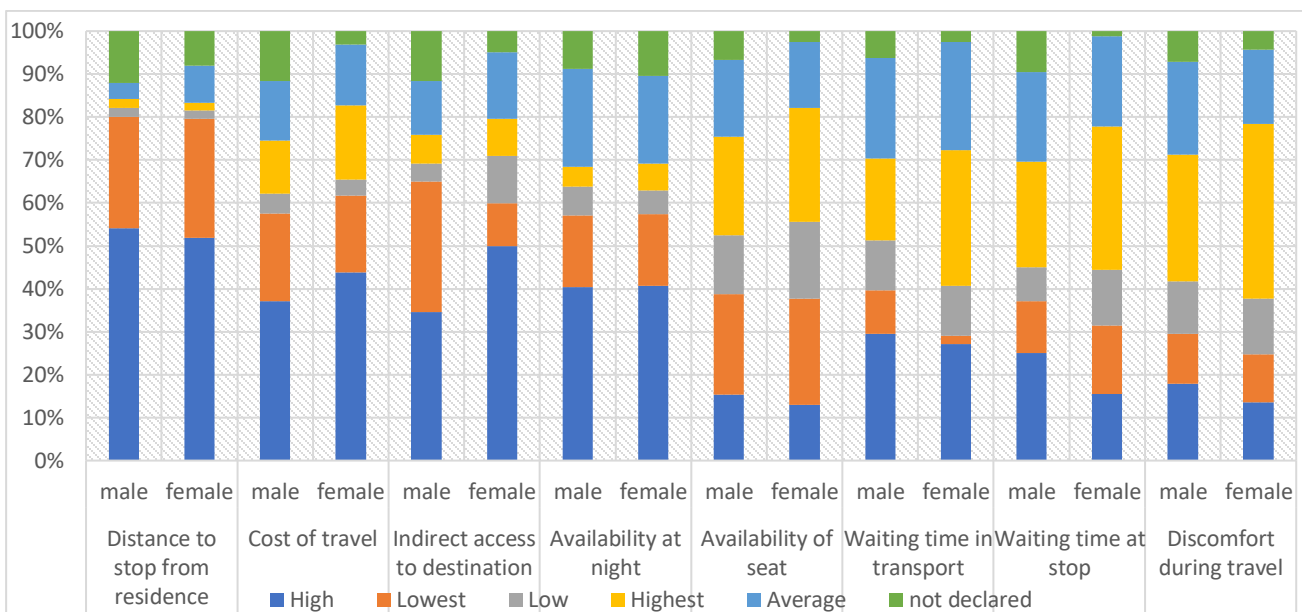


Figure 7: Ranking of Issues Reducing Access to Transport Based on Gender

The issues related to public transport availability (Distance to stop from residence, Indirect access to destination, and Availability at night) were identified as a higher concern specifically for women. Men ranked them as the lowest issue at 15.5%, 18.2%, and 10%, compared to women who ranked them at 11.2%, 4%, and 6.7% respectively. This difference in the ranking of public transport availability issues by gender indicates that women are more affected by these issues than men. Women feel these issues more acutely than men, likely due to the fact that women tend to feel more vulnerable in public spaces, especially at night, which makes public transport availability an important factor in their everyday lives. This lack of access has had a significant negative impact on their quality of life. This has, in turn, led to lowered confidence, and reduced opportunities for personal and professional growth. Women are consequently at a disadvantage compared to men in many areas. There is a need to improve public transport access for women in particular by increasing the number of stops, providing more direct routes to destinations and ensuring availability during late hours.

The results are consistent with previous studies that show women often face gender-based transport inequality. Additionally, women are more likely to use public transport, and are more likely to face safety issues, particularly in urban areas. As such, it is important to identify and address these issues to ensure women have safe and reliable access to public transport. This highlights the need for increased safety measures and better transport access for women.

5. Conclusion and Recommendations

The research was based on the gendered transport dimensions and women's social exclusion in Abidjan, Côte d'Ivoire. The study has successfully explored and illuminated gendered differences in transportation behaviours, activity participation, trip cancellation rates, mode choices and perceived barriers to access public transportation in Abidjan City. According to the research findings, gender is a significant variable influencing the way that individuals interact with transportation systems and participate in out-of-home activities. As Hanson (2010) explains, gender and mobility are inexplicably intertwined and influence one another in visible and invisible ways. The mobility system contributes to resourcefulness, freedom, and change to the existing power structure between genders. Conversely, denial of mobility or imposed immobility is seen as a way to 'keep women in a subordinate position' (Adeel and Yeh, 2018).

The research on the gendered dimensions of transport and women's social exclusion in Abidjan provided an essential understanding of women's challenges in accessing public transport. The data analysis revealed significant gender disparities in access to public transport in Abidjan. As mentioned by Gupta et al. (2018), in urban environments, gender-based transportation inequalities may be more prevalent among women; and women in Abidjan face significant obstacles and constraints in accessing public transport, which has led to transport-related social exclusion (Gupta et al., 2018). In this study, we have identified several key aspects of gender-based differences in transportation behaviour and activities in Abidjan.

A notable finding in this study is: women generally participate in fewer out-of-home activities than men, with some exceptions. On a daily basis, men in Abidjan travel more frequently for job and education-related activities than women (respectively 35.3% and 9.5% for men and 22.6% and 6.0% of women); contrasting with women who are more likely to travel more for shopping and healthcare on alternate days. From the analysis, we observed that the larger part of the population who feel excluded from the transport sector are women. Women experienced higher levels of transport-related social exclusion, hindering their ability to participate in economic, social, and cultural activities fully. Men were given greater opportunities than women; which concurs with that of Chamseddine & Ait Boubkr (2021), where transportation is influenced by the gendered division of labour; women have limited access to economic opportunities and increased dependency on public transportation. Issues related to the affordability, availability and quality of public transportation were identified as significant factors affecting activity participation, particularly among women. Women are reported to face more barriers and constraints in utilizing public transportation than men; including safety concerns, inadequate infrastructure, limited availability of public transport options, and restricted access to information on transport services.

The research results indicate that women face significant barriers and challenges in accessing public transport, which leads to transport-related social exclusion. The issue of gender-based differences in accessing public transport is evident: women's frequency of out-of-home activities participation is lower than that of men. This showed that there is limited mobility and restricted access to economic opportunities and women experience higher levels of exclusion in transport than their male counterparts. Vulnerable groups, including elderly individuals, persons with disabilities, and those from low-income backgrounds, also faced discriminating social and economic barriers in accessing the public transport system. Furthermore, men in Abidjan are more likely to participate in out-of-home activities than women, particularly in the fields of jobs and education. On a daily basis, men travel more frequently for job and education-related activities; contrasting with women who are more likely to travel for shopping and healthcare on alternate days. The reason behind these disparities may be primarily attributed to the sociocultural constructs of gender roles that influence the division of labour and time allocation between men and women.

A significant gender difference is also observed in the rate of cancelled activities, with women reporting higher numbers of trip cancellations due to transportation issues. Women are more likely to face barriers or constraints that force them to cancel some activities participation. There is a clear gender-based difference in the prioritization of educational activities, where women are 4.5 times more likely to "always" cancel their educational activities. Consequently, this leads to the reduction of women's quality of life, self-esteem, sociability, professional and personal opportunities. Child caregiving or family responsibility may be a significant barrier that limited women's ability to use public transportation effectively. The lack of accessible infrastructure such as ramps, elevators and designated seating, further exacerbated the exclusion experienced by women and generally vulnerable groups. The study also found that men are more likely to use active modes of transportation like walking and public transportation for a variety of purposes while women use private vehicles more frequently. Here, various socioeconomic factors and safety concerns may be the reason that limit the mobility of women.

Among the issues related to public transportation in Abidjan, cost emerges as the primary concern for both genders (54.3 % of respondents expressed transportation costs as an extreme or major concern while only 23.6 % reported costs as a minor or negligible issue). However, women express greater concern about the availability of public transportation, suggesting that they are more adversely affected by these issues than men. Men's travel patterns are also likely to be influenced by the fact that they are more likely to have a driver's license and access to a private car. Men are also more likely to engage in business-related trips such as work, seminars or conferences opportunities. Women, on the other hand, maybe more limited in their ability to travel due to a lack of transportation options. Women are more likely to be underemployed or unemployed, leading to further disparities in income and economic opportunities. This leads to a perpetuation of the gender gap in the workforce, where women are less likely to be promoted or receive higher wages. This may be because women are still underrepresented in many industries and are not afforded the same

opportunities as men. Therefore, it is crucial to address gender disparities in transport to ensure equal opportunities for all. Moreover, public transportation options available for women must be safer, more reliable and easily accessible.

The research findings highlight the importance of gender-sensitive transportation policies and planning in Abidjan to ensure equal access to transportation and consequently equal access to opportunities for all. The gender-based differences in transport behaviours and activity participation in Abidjan emphasize the need to address the issue through inclusive transportation planning and policymaking. Addressing these gendered dimensions of transport is essential to contribute to women's empowerment, improve their economic opportunities and promote social equity in the city. Thus, there is an urgent need for targeted interventions to address the gender gaps in public transport and promote women's empowerment and social inclusion. This is crucial to improve women's access to opportunities, enhance their economic and social participation and ensure their safety and well-being in public transportation. Policymakers, transport specialists and urban planners should incorporate gender-specific concerns and needs when improving the city's transportation landscape, with a particular focus on ensuring that women have access to safe, affordable, and reliable transportation networks. Safe, affordable, accessible and equitable transportation can have a positive impact on the health, well-being and economic opportunities for all citizens. By promoting social inclusion and gender equality in Abidjan and beyond in other cities, these efforts could be significant to mitigate women's social exclusion. It will enable women to access more resources and have more opportunities for professional development and will help Abidjan and other cities improve gender equity and inclusivity in transportation.

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