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Regular Article

Lessons learnt through gender-based travel data collection and related sexual harassment in Sub-Saharan Africa

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ABSTRACT

Background and objective: Key motivations for the study described in this paper were to gain insights into the differences in travel behaviour between males and females, as well as gender-based sexual harassment exposure in public transport in sub-Saharan Africa. The mobility and sexual harassment results, based on data collection in two African cities (Blantyre in Malawi and Lagos in Nigeria), is presented in this paper, to document the true extent of sexual harassment and ways in which sexual harassment practices affected women's mobility on the continent. The analysis aims to illuminate gender-based mobility differences and sexual harassment experiences, as well as provide some guiding principles towards addressing sexual harassment challenges.

Method: and Data: This study developed a standardised gender-based travel and sexual harassment perception questionnaire that was applied via pen-and-paper, as well as technology (offline tablets) in the cities of Lagos (Nigeria) and Blantyre (Malawi). Overall, 1478 respondents participated. Approximately 58% of the sample in both cities were women. The data collected was analysed to highlight differences between male and female travel behaviour and differences in relation to exposure to sexual harassment whilst in the transport system.

Results: Data revealed that women make more, shorter trips, while they carry a significantly higher sexual harassment burden. All parts of public transport trips are affected, including travelling to/from the system, while waiting for the vehicle and in the vehicle. The need for transfers increases the risk of crime and sexual harassment. This paper concludes that there is a need for improved policy frameworks, educational campaigns, for men and women, as well as the creation of safe reporting structures when sexual harassment does occur. Actions are needed in the two case study cities and beyond.

1. Introduction

Since the early 2000s, the topic of 'gender[1]-based development' has gathered momentum. Many of the Sustainable Development Goals look to embed gender equity and female empowerment into the International Agenda 2030. UNDP's Human Development Report (1995) highlighted that 70% of the 1.2 billion people living in poverty worldwide are women. This figure has remained stubbornly high ever since (Azcona et al., 2020). In practice, the sheer pace and volume of urbanisation compounds the under representation and difficulties of addressing gender issues. This is especially pronounced in Africa, where almost 900 million new urban dwellers are expected by 2030 (https://www.moibrahimfoundation.org). Today, half of Africa's urban dwellers live in precarious conditions in informal settlements. Some 75% of new urban inhabitants are younger than 35 years old, with a high share of them being female (https://www.citiesalliance.org).

Across the world, women face real and perceived threats of gender-based violence, assault, and harassment, while negotiating their daily travel in public spaces. In developing countries, limited access to, and the safety of, transport is estimated to reduce female labour force participation by 16.5% (SuM4All, 2019). This paper focuses on the individuals' perception of their own security, which is defined as their

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[1] Sex is the biological classification of males and females, determined at birth, while gender is a culturally defined set of economic, social, and political roles, responsibilities, rights, entitlements, and obligations associated with being female, male and LGBTQIA+. In this paper the term *gender* is used interchangeably with *women*.

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perception of risk or threat from an intentional personal act, attack, or aggression.

Women living in informal settlements primarily rely on public transport for their daily travel needs. Besides common concerns related to the use of (informal) public transport, such as affordability and road safety, women have the added concerns related to personal security (Jackson et al., 2013; Vanderschuren et al., 2019).

Sexual harassment of women in public space is widespread. A large-scale survey of street harassment, in 42 cities in 2015, based on a sample of 16 600 female respondents spread across the world, revealed that approximately 84% had experienced street harassment for the first time before they were 17 years old (Hollaback! and The ILR School, 2015).

Allen et al. (2018), who interviewed female and male public transport users in Santiago (Chile), Buenos Aires (Argentina) and Quito (Ecuador), found both sexes pointed to personal safety as a major concern, but women (between 61% and 73%) were more worried about personal safety while using public transport than men (between 58% and 59%). Orozco-Fontalyo et al. (2019) found similar results (more than 60%) regarding the exposure to sexual harassment related to the use of Bus Rapid Transit (BRT) use in the city of Barranquilla.

Feelings of insecurity were even higher for mothers with children under 15 years old (78%). Some 60% of the women who claim to have felt insecure were between 18 and 40 years old. Furthermore, nearly 90% of women in Buenos Aires had experienced some level of sexual harassment, at least once while using public transport in the previous 12 months. The study found that 36% of those who felt higher levels of insecurity belong to households with the lowest level of income (less than approximately US$85 per month), compared to 14% of women who live in households with the highest income in the sample (more than approximately US$190 per month), confirming that the sense of insecurity decreases as income increases.

In India, 91% of women felt that public transport was very unsafe, unsafe, or somewhat unsafe (Shah & Raman, 2019). In Loukaitou and Ceccato's recent book (2020), the Lagos (Nigeria) case study found that female college students were 2.2 times more likely to experience non-verbal sexual violence than males. Only 5% of students reported always feeling safe walking to or waiting at the bus, keke napep (tricycle), or motorcycle taxi stops after dark. About a third (31%) of the students had never felt safe walking to the transport stops at night, and about one-fifth (21%) rarely felt safe (Loukaitou-Sideris & Ceccato, 2020). Capasso da Silva and Rodrigues da Silva (2020) established that over 20% of the respondents from a Brazilian University campus have been victims of violence on their trips to or from the campus. Concerns over personal security perception can lead to trip avoidance (Jeong et al., 2017; Piscitelli & Perrella, 2017) or a change in mode choice (Delbosc & Currie, 2012; Verma et al., 2017).

Fears about female personal safety and security are well documented in both the global north and south, but there is little evidence from sub-Saharan African cities currently available in the literature. In Africa, transport data is generally poor, resulting in disaggregated information on urban transport, which is rarely robust or widely available (Gwilliam, 2013).

2. Research Aim

Key motivations for the study described in this paper were to gain insights into the differences in travel behaviour between males and females, as well as gender-based sexual harassment exposure in public transport in sub-Saharan Africa. The work included the development of a survey instrument for data collection, as well as a methodology which can be replicated in other cities of Africa, and beyond.

This paper sets out to provide insight into travel behaviour differences between men and women, and their exposure to gender-based sexual harassment, based on data collection in the two above mentioned African cities, to document the true extent of sexual harassment, and ways in which sexual harassment practices affect women's mobility on the continent. The analysis aims to illuminate gender-based mobility differences and sexual harassment experiences, as well as provide some guiding principles towards addressing gender-based mobility and sexual harassment challenges.

The research approach and the findings are being used as part of a wider project, that develops a user-friendly online decision-support tool for urban transport planners and related stakeholders, with a focus on addressing sexual harassment in public transport in Africa.

3. Data Collection methodology

This study focussed on collecting data from urban public transport users and key stakeholders in two African cities with distinctly different transport profiles – Lagos (Nigeria) and Blantyre (Malawi). Lagos is a large mega city (over 10 million inhabitants) with a wide variety of public transport modes, including formal (Bus Rapid Transit and ferries) and informal (minibus taxis, motorcycle and cycle taxis) modes; Blantyre has just over 1 million inhabitants and the modes available are predominantly minibus taxis and sedan taxis (no formal public transport services are available).

Data was collected in both cities using the same questionnaires, slightly adapted for the local context. Both technology- (offline tablets) and paper-based survey collection methods were used to randomly intercept people at main transport hubs, while the survey findings were validated in focus groups in each city. Interestingly, the response rates were influenced by the data collection method, where digital collection rendered better response rates.

Before data collection commenced, ethics clearance was obtained via the University of Cape Town. This was explained to questionnaire and focus group participants. The consent description that was shared with participants first, elaborated on the fact that participation was voluntary and that opting out was possible at any time. Participants provided consent in the very first questions answered.

In Blantyre, 686 respondents participated in the survey while the response rate in Lagos was 792 participants. The data was collected in the period between 5 March and March 12, 2021, between 9h30 and 18h00 daily. For both cities, the response rate falls comfortably within the 95% reliability sample size margin. For Blantyre, based on a statistical Confidence Interval (CI) calculation, there is a 96.26% certainty that the sample is representative for the inhabitants in the city. In Lagos, the statistical reliability that sample participants represent the urban population in the city is even higher with 96.52% reliability. By design, in both cities, more females were targeted and, therefore, participated in the survey. In Blantyre 58.1% of respondents were female, while this was 57.9% in Lagos. Nonetheless the total numbers of respondents (male/female) fall within one standard deviation, representing a lack of bias.

Although the sample size of respondents in both cities is considered high, in Blantyre, there was answer fatigue towards the latter part of the questionnaire, which affects the sample size for some analysis conducted. The useable sample size is indicated throughout the analysis in this paper.

A T-test comparison between the sample groups was carried out. Where statistically significant differences were found, this is indicated in the paper.

4. Respondent profiles

Most respondents in Blantyre (55%) and Lagos (56%) were between the ages of 26–46 years. The second largest respondent age category was 19–25 years (28% of respondents in Blantyre and 30% in Lagos - see Fig. 1).

In Lagos, the average age for males and females was approximately 28 years, while the Blantyre females were on average 27 years old, and males a little older (average 30 years old). These averages are calculated, assuming a normally distributed sample. Surveyors also documented

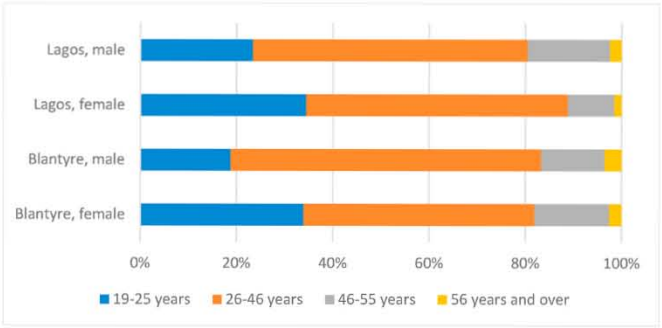

Fig. 1. Age Distribution of Respondents (Blantyre n = 686; Lagos n = 792).

those who refused to participate in the survey and found that more women than men were interested in participating once they had been made aware of the subject matter. Furthermore, more males tended to omit answering some questions, affecting the response rates of individual questions presented in this paper.

Respondents in Lagos have a particularly high education level. Over 80% attended college or university, while this was only the case for 35% of Blantyre's respondents. The high education level in Lagos was expected. Based on previous surveys in or around the BRT system in Lagos, as verbally indicated by the Lagos Metropolitan Area Transport Authority (LAMATA), responses were in line with the typical passenger profile of the BRT. The percentage males with college or university level education in Lagos was higher than for females (see Fig. 2). These high average education levels indicate that the BRT was used mainly for commuter trips when the surveys were done.

Blantyre respondents overall had a lower college/university education rate than in Lagos. However, the sample showed that there is a noteworthy higher proportion of male college/university graduates (42%) than females (29%) in Blantyre. Overall (see Fig. 2), between 71% (female) and 81% (male) of respondents in Blantyre have at least completed high school, while the proportion of female high school only graduates (41%) is higher than males (39%). In Lagos, the average education level is substantially higher, i.e., between 98% (females) and 99% (males) of respondents have completed at least high school level.

Most respondents were employed, business owners or self-employed. In both Lagos and Blantyre, male respondents occupy more formal employment posts than female respondents. The occupation category in Lagos with the largest share was found to be 'formal employment', especially for males (49% vs. 42%). In Blantyre, the occupation category with the largest share was found to be 'self-employed', with 49% of females selecting this category. Remarkably, a substantially lower proportion (33%) of males selected this category. This may be caused by the inaccessibility of formal jobs by females, while the education levels may also play a role. Students comprised a slightly higher proportion of survey respondents in Blantyre than in Lagos: males (13% vs. 11%) and females (19% vs. 17%) respectively (see Fig. 3). Regarding those who answered 'other' as their occupation, the most cited occupation for

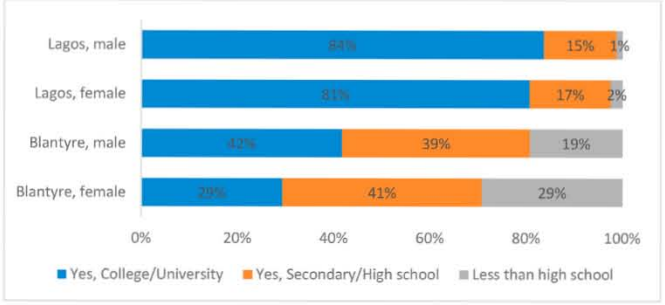

Fig. 2. Education Level of Respondents (Blantyre n = 686; Lagos n = 790).

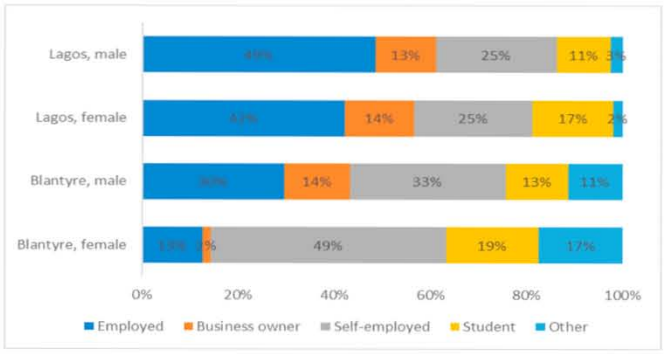

Fig. 3. Employment Profiles of Respondents (Blantyre n = 315; Lagos n = 792).

women was 'homemaker', 'housewife' or 'staying at home', while men indicated that they were 'looking for work' or 'doing nothing'. It is noteworthy that Blantyre had a high number of respondents not willing to answer this question. The two cities, thus, vary greatly in terms of average education level and employment status of commuters and, consequently, in terms of gender equality.

5. Trip profiles

Most respondents in both cities indicated that they were making a typical trip at the time they were surveyed (64% of trips in Blantyre and 65% in Lagos). In both case study cities, more men were undertaking typical trips than the female respondents. In Blantyre, 68% of men and 61% of women were undertaking typical trips. In Lagos, 63% of women were undertaking typical trips, slightly more often than their counterparts in Blantyre, while it was the same for men (68%) in both cities. This is in line with the occupation statuses; as more men in our sample have regular employment it is, therefore, more likely that they will be making more typical (often commuter) trips (see Fig. 4).

In Lagos, typical trips were mainly for work (62%). This is to be expected based on the high education levels and employment profiles in Lagos. There are notable differences between males and females regarding typical work trips, however. Some 68% of trips by males were work related, while this was only 58% for females. Shopping trips in Lagos were profoundly higher amongst females, 15% of typical trips, verses 5% for men. Males in Lagos made more social trips (11%) than their female (8%) counterparts (see Fig. 5).

Looking at Blantyre, 29% of typical trips by men were to work, while for women, just 10% of typical trips were to work. The highest proportion of trip purposes in Blantyre was reported to be shopping (26%). Compared to Lagos, the proportion of shopping trips for males (30%) was much higher than that for females (23%). Conversely, in Blantyre females made more social trips (15% vs. 9% for their male counterparts), while 'other' trip purposes were a major portion of trips, i.e., 33% of

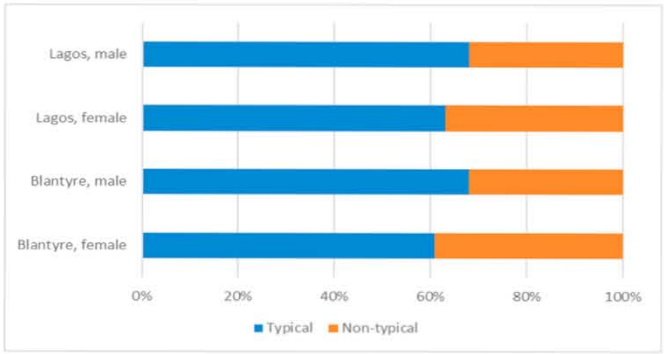

Fig. 4. Typical Trip Profile (Blantyre n = 685; Lagos n = 786).

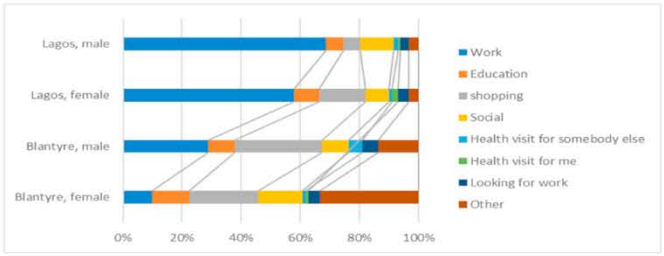

Fig. 5. Trip purposes of Respondents (Blantyre n = 315; Lagos n = 791).

typical trips for females and 14% for males (see Fig. 5). When unpacking the substantial portion of other trips, respondents mentioned these were most commonly business related. However, 'buy goods for business', 'visit child at school', 'pick up relatives', and 'returning home' were also mentioned.

In Blantyre, more respondents made direct journeys, with 25% of respondents having to transfer during their trip, compared with 35% in Lagos. For those who have to transfer, the average number of transfers in Blantyre was higher (2.28), compared to Lagos (1.95). It can, therefore, be concluded that more people are able to take direct trips (without the need to transfer) in Blantyre, but the ones that do, make more transfers per trip.

Since respondents in Lagos predominantly used the BRT system, a formal public transport service with fixed routes along specific corridors, more transfers are to be expected than in Blantyre, where most respondents used informal paratransit, such as sedan and minibus taxis, which offer more flexible routing. In addition, many people in Lagos may need to take an informal service to be able to access the BRT system, thus a larger number of those who take the BRT may have had to transfer prior to accessing the BRT system.

In Blantyre, 85% of respondents who deviated from their typical trip pattern indicated that this was due to a change in trip purpose, while this reason was cited by 69% of respondents who deviated from their typical trip pattern in Lagos. In Lagos, over 20% of respondents that diverted from their regular travel behaviour, changed their route. It is striking that females in Blantyre may make trips for other purposes but are unlikely to change their route (see Fig. 6).

In both cities most respondents travelled alone (Blantyre, 76%, and Lagos, 89%). The authors are cognisant of the fact that the data collection took place during the Covid-19 pandemic in 2021. It is not clear if this has resulted in fewer people travelling in groups. Closed schools and job losses also likely influenced this finding, although the extent of their impact is unknown. Amongst those who were travelling with others, most respondents travelled with friends (41% in Blantyre and 59% in Lagos); with children (30% and 19%, respectively) or relatives (20% and 22%, respectively).

The largest proportion of respondents in the surveyed cities travel between 16 and 30 min (31% of respondents in Blantyre and 37% in Lagos - see Fig. 7) per trip. There were, however, a noteworthy number

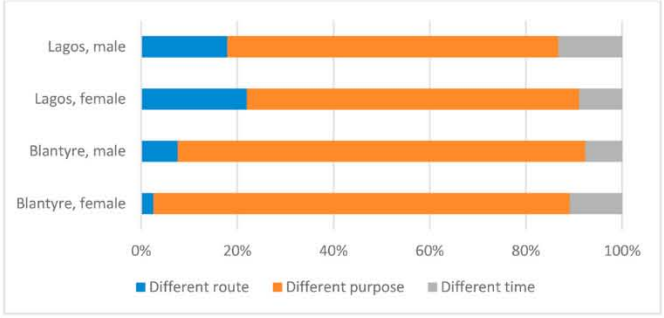

Fig. 6. Trip Diversion Reasons (Blantyre n = 248; Lagos n = 274).

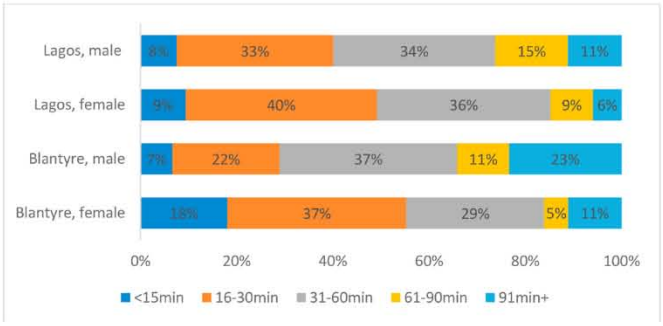

Fig. 7. Travel Time Categories (Blantyre n = 685; Lagos n = 788).

of respondents who travel longer. The average travel time in the survey cities were established to be 44 min in Blantyre and 41 min in Lagos. When analysing gender differences, interesting insights were drawn. In both cities, the largest portion of males have travel times between 31 and 60 min, but females have shorter average travel times overall. In both cities females travel approximately 37 min, while males in Blantyre travel an average of 54 min (some 23% travel even over 90 min), and their counterpart in Lagos travel 46 min (see Fig. 7). International literature suggest that women make more frequent short trips, which may result in longer total travel times (Allen & Vanderschuren, 2016).

Analysis of the modes of transport used by travellers shows a revealing differences between the two cities surveyed. In Blantyre, most respondents (61%) used informal public transport (sedan taxis and MiniBus Taxis (MBT)), followed by walking (13%). In Lagos, the main mode of transport for survey respondents was the formal bus system (45%), followed by mixed modes (17%). The latter is in line with the finding that 35% of respondents in Lagos make transfers. Furthermore, the reader should keep in mind that bus rapid transit passengers were targeted in Lagos, so the high volume of respondents in this category is to be expected. The informal transport share among survey participants was relatively low (14%), while walking barely features as a main mode (2% - see Fig. 8). The latter is surprising in the African context but is plausible given the high levels of well educated, working respondents surveyed in Lagos.

6. Harassment perception and experience

6.1. Respondent perceptions on safety in public transport

The respondents were asked "what do you worry about most when you use public transport in this city?" and they could choose multiple answers. Most worried about the fare (Blantyre 26% and Lagos 20%) and arrival times (Blantyre 15% and Lagos 32%). The fare concern was not surprising, as the informal transport service costs had increased in response to the Covid-19 restrictions imposed on operators to reduce

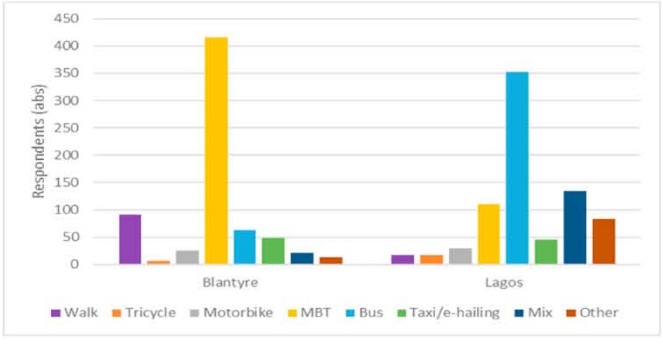

Fig. 8. Main Mode of Transport (Blantyre n = 686; Lagos n = 792)
The bus trips recorded in Blantyre are long distance trips.

passenger loads (to increase social distancing). Although harassment and personal safety feature as concerns, the combined percentage is only half of those that worry about fares in both case cities, and a third of those that worry about arrival time in Lagos. This was likely, due to respondents being formally employed, and were mostly intercepted on their way to work. In the view of the authors, this does not mean that women do not worry about being sexually harassed when travelling, but it provides insights into where these concerns may sit in a hierarchy of other concerns (see Fig. 9), and that this may vary according to occupation and trip purpose. For example, overcrowding was also chosen by many, and this is documented in other studies as being linked to high levels of sexual harassment (Allen et al., 2018; SuM4All, 2019). Additionally, literature shows that women often limit their travel to the daytime, and will not use public transport at night, primarily due to concerns about their personal safety (Allen et al., 2018).

In Blantyre, 11% of respondents voiced concerns with sexual harassment, in particular, while fewer respondents (5%) in Lagos selected sexual harassment as one of their concerns (see Fig. 9). It is hypothesised that harassment may be less apparent in Lagos because respondents were mostly BRT users. The Lagos BRT system is heavily policed, with security guards at the stations, as well as high volumes of passengers, which travellers perceive to make the system safer, by deterring potential offenders who are less inclined to act when witnesses (and help) are nearby.

When prompted regarding fears for personal safety, most respondents (men and women in both cities) admitted feeling quite unsafe when travelling, but this notion was more prevalent in Blantyre than in Lagos. In Blantyre, over 60% of respondents admitted to feeling unsafe, while this was almost 43% in Lagos. Females felt less safe than their male counterparts. In Blantyre, 64% of females felt unsafe, compared to 57% of males. In Lagos, 53% of females felt unsafe, while men in Lagos felt quite safe when travelling in general (only 29% felt quite unsafe) - see Fig. 10.

Unpacking the reasons why respondents felt unsafe, crime and Covid-19 featured in both cities, but there were differences between the most cited reasons for their feelings of insecurity. In Lagos, crime and violence were most important, followed by Covid-19. In Blantyre, crime and Covid-19 were followed by sexual harassment (see Fig. 11). The responses indicate that fear of sexual harassment is more profound for females than for males, in both cities. In Blantyre, 17% of female respondents listed this as the main reason for feeling unsafe, while this was 9% for females in Lagos. In both places crime was also a concern for females, but it is noteworthy that the poor perception of safety for males in Lagos was clearly dominated by crime. As indicated by respondents, and confirmed in the focus groups, sexual harassment is not always considered to be a crime in the same vein as violence and theft. This is in line with other studies on female mobility in Africa that were conducted after the start of Covid-19, where concerns about sexual harassment had diminished, due to the imposed social distancing during Covid-19 (see for example: Jennings et al., 2021).

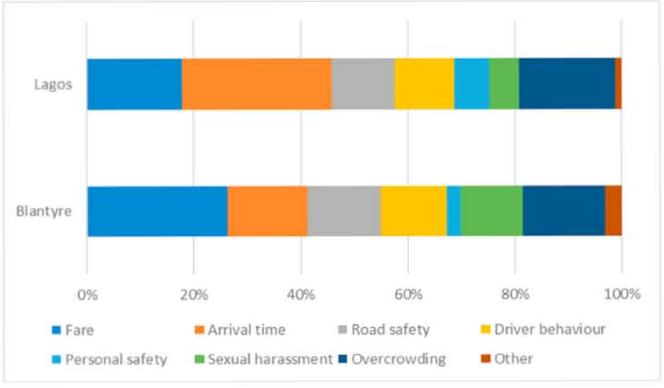

Fig. 9. Public Transport users' main concerns when travelling (Blantyre m = 1554; Lagos m = 1773)
Responses measured in answers - multiple answers possible per respondent.

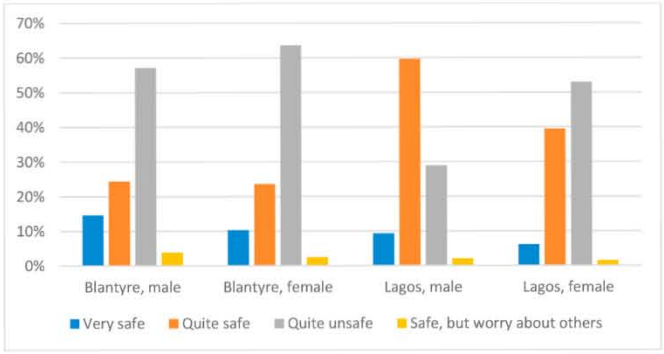

Fig. 10. Personal Safety Perception while Travelling (Blantyre n = 685; Lagos n = 789).

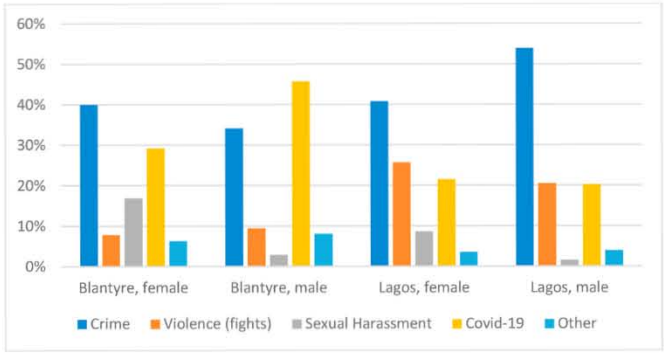

Fig. 11. Reasons for Feeling Unsafe while Travelling (Blantyre n = 685; Lagos n = 789).

6.2. *Respondent perceptions regarding sexual harassment*

During the pilot testing of the survey, it became clear that the understanding of sexual harassment was quite different between men and women in the case study cities, and there was also some confusion between sexually motivated harassment, and harassment by hawkers or those selling goods or services, potentially leading to misjudged analysis. For this reason, the authors developed visual prompts (pictograms) that were used in the final survey, to ensure a consistent understanding of what constitutes sexual harassment among survey respondents (see Fig. 12). Use of the pictograms also made it easier for people to respond, by enabling those who felt self-conscious about verbalising their experiences in public, to rather point toward an image reflective of their experiences.

Findings show that there is a revealing difference between the two case cities regarding the personal experiences and witnessing of sexual harassment while travelling on public transport, or in associated public spaces. More people admit to having witnessed sexual harassment in both cities than having experienced it personally. In Blantyre, almost 80% of respondents reported that they had witnessed sexual harassment, while 68% of respondents in Lagos reported the same. When asked about their own experience, in Blantyre, 66% of respondents indicated that they sometimes (from time to time or weekly) experience sexual harassment, while in Lagos 84% indicated that they have *not* personally experienced sexual harassment, which corroborates the findings about their main concerns (see Fig. 13).

There was no major difference in regular (weekly) sexual harassment exposure for males based on transfer requirements. However, in Lagos,

Fig. 12. Pictograms Developed and Tested in this Study
(A = inappropriate touching; B = intimidation by a group/physical pushing and shoving; C = groping/stroking; D = verbal abuse/shouting; E = people staring; F = someone following another person).

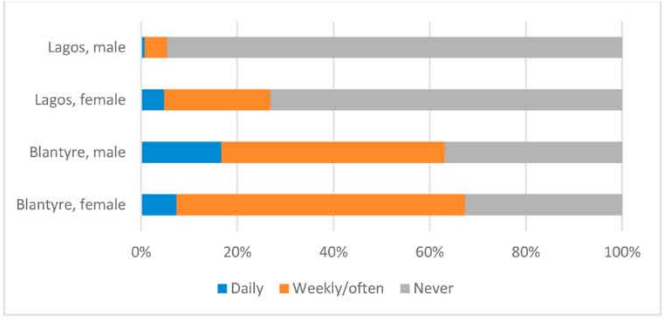

Fig. 13. Exposure to Sexual Harassment Depending on Transfers (Blantyre n = 179; Lagos n = 274).

exposure to regular sexual harassment by female respondents was significantly larger than for males, by around 17%. In Blantyre, the difference between females and males was notably less, at 4% (see Fig. 13).

The survey results show that having to make a transfer between modes or vehicles during a trip increases the potential for exposure to sexual harassment, for females in both Blantyre and Lagos, by between 6% and 7%. This is also in line with expectations, as more frequent use of public spaces (for waiting and transferring) increases the risk of sexual harassment. This is well documented in the literature on sexual harassment in public spaces (for example: Madan & Nalla, 2016).

In Blantyre, between 67% and 83% of all female respondents (depending on their occupation, self-employed and students being at most risk) indicated that they experience sexual harassment (regularly). The literature indicates that income levels (and age) do influence the level of perceived personal safety (Allen et al., 2018).

In Lagos, there was a remarkable difference regarding the exposure to sexual harassment between males and females, but not substantially between different vocations. Female exposure to sexual harassment in Lagos varied by between 21% and 25%, while the male categories varied by between 5% and 8% (see Fig. 14). The reader should note that the number of respondents in other categories, entrepreneurs for example, became too low to conduct statistically reliable analysis.

The surveyors prompted the respondents about the types of sexual harassment they had witnessed and/or experienced. The findings in both cities combined showed that sexual harassment of women is common, with 38% of all female respondents reporting it as 'common', while 15% stated that it is 'very common'. Inappropriate touching, verbal harassment, and intimidation with pushing and shoving were the three most frequent types of sexual harassment personally experienced or witnessed.

In Blantyre, verbal abuse is clearly a major issue - it was cited as the most frequent type of sexual harassment (both for personal experience, 39% and witnessing this happening to others, 42%). This appears to be a much greater problem than in Lagos. Intimidation by a group and pushing and shoving was also worse in Blantyre. Groping or stroking (43% in Blantyre and 54% in Lagos) was widespread (see Fig. 15). It is interesting to note that inappropriate touch seems to occur frequently in both case cities, for both genders.

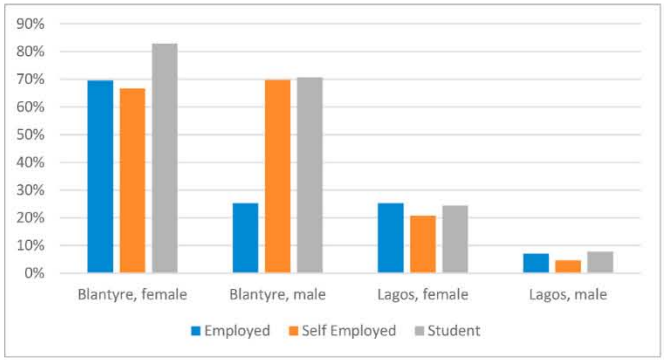

Fig. 14. Exposure to Sexual Harassment while Travelling related to Gender and Occupation (Blantyre n = 315; Lagos n = 792).

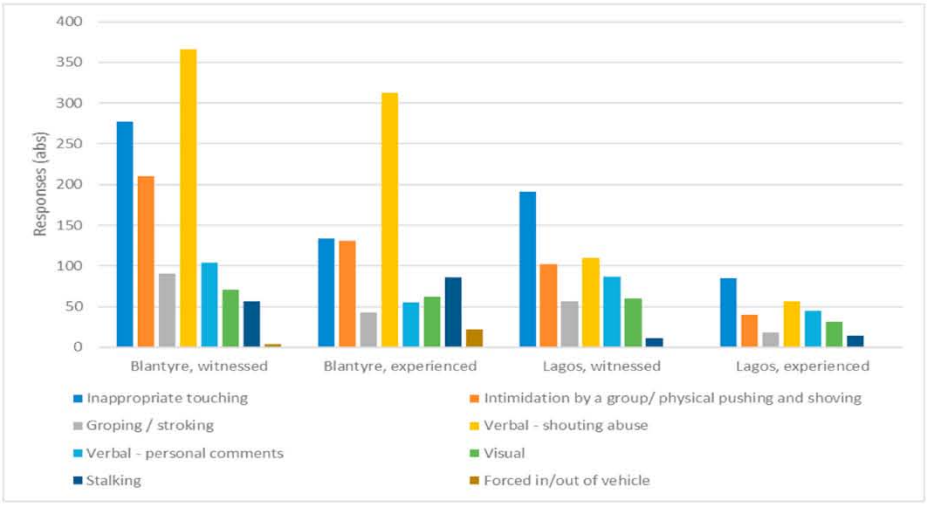

Fig. 15. Witnessed and Experienced Sexual Harassment while Travelling (Blantyre, witnessed $m^2 = 1190$; Blantyre experienced m = 869; Lagos, witnessed m = 619; Lagos experienced m = 292).

While the survey intentionally avoided asking questions relating to more violent forms of sexual harassment, to avoid re-traumatisation of victims, cases of observed rape and molestation were mentioned by some respondents.

The respondents were asked where the sexual harassment crimes typically occur. In Lagos, 35% of incidences were in the vehicle, while walking to (22%), and waiting at stops or stations (22%), were also areas prone to sexual harassment (also see Fig. 16). For females in Lagos, the risk of sexual harassment in vehicles was reported to be slightly higher than for males, while the perception of risk at stops or stations was significantly higher for females (24%), than males (18%).

In Blantyre, sexual harassment reportedly occurs mostly while waiting for transport (30%), followed by in vehicles (27%) and walking to public transport (23%). It is interesting that males in Blantyre feel more exposed to crime while waiting for transport, while sexual harassment when walking to/from a stop presents a higher (18%) risk for Blantyre females, compared to any other population group in Blantyre or in Lagos. These findings are in line with international literature (Allen et al., 2018; Orozco-Fontalyo et al., 2019; Vanderschuren et al., 2019, pp. 1–12), who cite the most likely places for sexual harassment to occur are: in vehicle (especially if overcrowded or nearly empty) and walking to and from transport (specifically during off-peaks and at night).

In both cities, incident reporting is low, which is also reported in the literature (Allen & Vanderschuren, 2016; Osmond & Woodcock, 2015; Ceccato, 2017; Uteng, 2021). This is true for both the global south and the global north. Many respondents indicated that they do not know where to report incidents and, additionally, they are not motivated to report incidents, due to a lack of trust in the security agencies (police) taking action. Only 6% of respondents in Blantyre and 3% of respondents in Lagos have reported the crimes witnessed. In Blantyre, reports were made primarily to the police or public transport operator, while in Lagos, half of the crimes reported were to family or the pastor, followed by the police and the vehicle driver. In both cities, according to respondents, the police show little interest when people report cases, contributing to a lack of trust in the security authorities. This was confirmed by several comments made by respondents in the surveys.

The respondents were asked to rate the significance of sexual harassment when travelling: "On a scale of 1 (lowest) to 10 (highest), how much of a concern is sexual harassment to you when on public transport?". Fig. 17 provides an overview of the scores, segregated by gender. In both cities, females tend to score the importance of sexual harassment in public transport higher than males, indicating they are generally more concerned about sexual harassment. Furthermore, both males and females in Lagos score sexual harassment lower than their counterparts from Blantyre (which is line with other results). The average score for Blantyre is 5.7 points, while this is 4.0 points in Lagos. In Blantyre, females scored it 1.03 points higher (i.e., indicating that they are more concerned) than males on average, while they only scored 0.36 points higher in Lagos. Concerns about sexual harassment are clearly more severe in Blantyre. The authors interpret this to be a consequence of the more secure travelling environment associated with the BRT in Lagos.

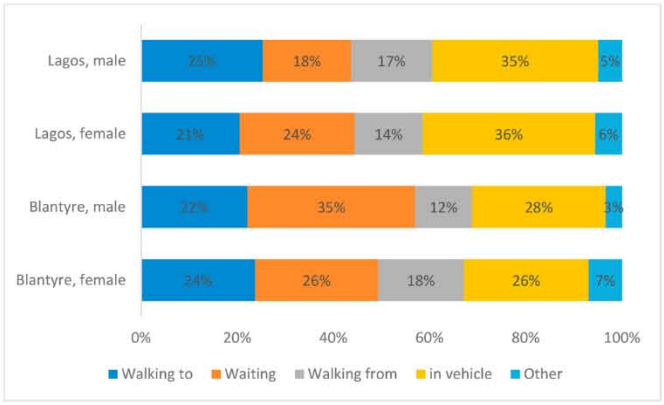

Fig. 16. Unsafe locations (Blantyre $m^2 = 884$; Lagos m = 410).

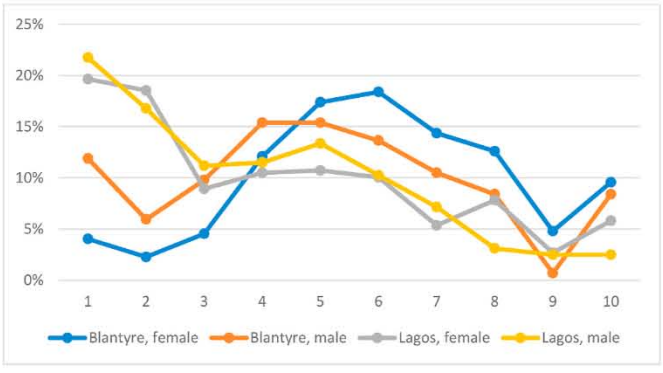

Fig. 17. Scores for Sexual Harassment by Gender (Blantyre n = 678; Lagos n = 762).

As many of the respondents were captive passengers (i.e.: they have no other motorised mode choice), few of them can change their mobility behaviours, even when they have either experienced or witnessed sexual harassment. In Blantyre, 90% of respondents indicated that they did not change their travel behaviour, while 80% of respondents in Lagos continued their original behaviour. This is in line with findings in other studies (see for example Phayane & Vanderschuren, 2021). Additionally, Allen et al. (2018) found that women's behaviour is influenced as much by third party reports of sexual harassment, as by personal experience. This is often translated into a heightened level of fear when travelling.

There were many reasons listed by respondents as to the cause of sexual harassment in their cities. These included overcrowding, the behaviour of other passengers, bad or rude behaviour by the driver or conductor, perpetrators who appear to consider it to be fun, or who seem to be trying to impress their friends. Alcohol and/or drugs were perceived to be more of a problem in Blantyre than Lagos, as well as the likelihood that perpetrators do not perceive sexual harassment to be a criminal offence. Blantyre respondents cited the 'poor' behaviour of other passengers as being a major issue.

In Lagos, women are frequently accused of provoking harassment by dressing in a certain way. However, there is widespread agreement that there is a lack of education about respecting women and girls (Uteng et al., 2021). Rudeness and poor behaviour are seen as being worse than overcrowding (although this was more of a problem in Lagos) and only a few respondents felt that men's attitudes to harassing women could not be changed (see Fig. 18).

When asked what measures should be implemented to combat sexual harassment, Blantyre respondents clearly favoured a dedicated hotline and more police or security personnel. In Lagos, the same measures were highlighted, but more respondents felt that CCTV systems would be beneficial, compared to Blantyre. Fining of perpetrators was also considered to be a deterrent worth consideration (see Fig. 19). A further analysis to establish if there was a difference in perception of the listed measures from a gender perspective showed that it was not significant.

7. Guiding principles towards addressing sexual harassment challenges

Based on the literature review, the questionnaire design, data collection and analysis in this study, which includes an overview of mode and travel behaviour use to inform the sexual harassment research approach, it can be concluded that addressing travel-related sexual harassment effectively will require action on many levels. As most African cities are predominantly served by the private transport sector, characterised by fragmented markets, and have numerous role players to consider, it is important that transport authorities and decision

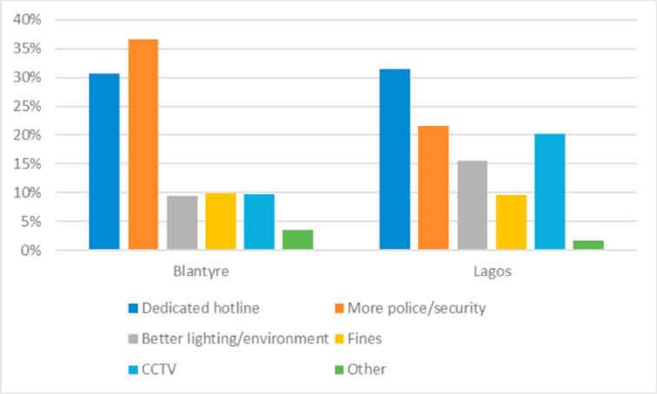

Fig. 19. Suggested Measures to Combat Sexual Harassment (Blantyre m^2 = 1038; Lagos m = 627).

makers take the lead on making public transport safer.

The SUM4ALL report (2019) states that only 32 countries have legislation on sexual harassment in public spaces. In a recent (currently unpublished) study by the Centre for Transport Studies at the University of Cape Town, only five out of 29 countries in Africa have policies around gender equity. There is, thus, a clear lack of adequate policy and legal frameworks that address the issue at present. Moreover, conducting the surveys highlighted the different views and widespread misunderstandings about what sexual harassment is. Updating policy frameworks to provide clear definitions of sexual harassment, and to set legal boundaries, would support improved recognition and policing of these offences.

The reasons cited by survey participants as to why sexual harassment occurs point towards general societal ignorance on the topic, and cultural norms that desensitise people to the problem. Educational campaigns and events to educate women, as well as men, to drive behaviour and culture changes, and foster understanding and awareness, could be a powerful tool in the fight against sexual harassment.

Although this study has shed light on the prevalence of sexual harassment in public transport in two African cities, a large data void exists. This inhibits the ability of governmental stakeholders to make decisions with this issue in mind. The improvement of disaggregated data collection exercises, and the inclusion of sexual harassment related information in such endeavours presents another opportunity to help combat sexual harassment and could lead to better management practice.

The literature, as well as the data collected in this study, point towards low rates of incident reporting. Providing grievance reporting

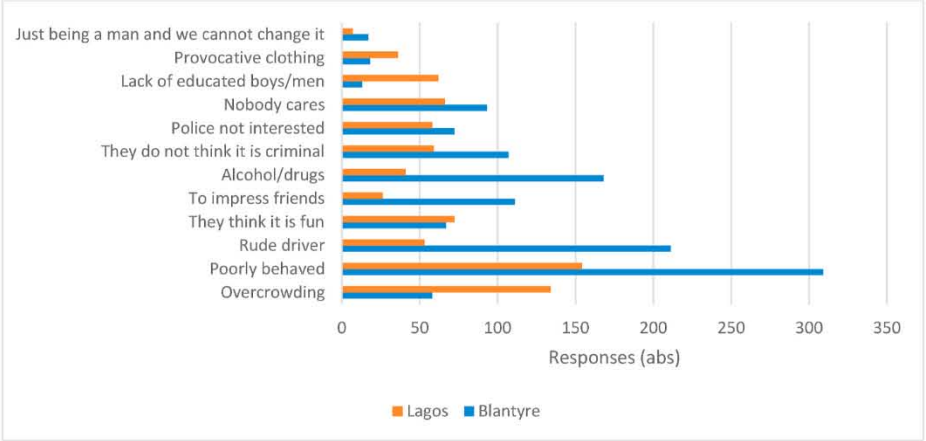

Fig. 18. Reasons Sexual Harassment Happens (Blantyre m^2 = 1244; Lagos m = 768).

structures that are user friendly, trustworthy, and physically easily accessible is expected to improve reporting rates. This may require the appointment of females, to improve the approachability of the reporting structure, as well as incorporating the ability to follow up with victims and witnesses at a later date. This could change the perception of many that nothing is being done, and reporting is not worthwhile.

A review of (public) transport systems, their planning, infrastructure, and vehicle design to decrease the risk of sexual harassment is another promising approach. This analysis has shown that transport system design issues, ranging from the number of transfers required, and service frequencies provided, to the provision of adequate lighting or CCTV cameras, can all affect the perception of safety, and sometimes even directly influence the likelihood of sexual harassment offences.

Though this list is not exhaustive, implementation of the interventions described could aid transport authorities and decision makers to get a foothold in terms of managing sexual harassment in their spheres of influence.

8. Conclusions

Analysis of the survey results clearly showed a distinct difference in the travel behaviour of men and women. The data also established that sexual harassment is happening in all parts of the transport system, and to both genders, although the burden on female travellers is higher than for males. It is, thus, not surprising to find that the attitudes between men and women on the topic are very different. Women are, generally, more concerned about sexual harassment, while men are quicker to dismiss the issue. The latter also reflects in quicker fatigue by men when answering survey questions.

The results and comparison of Lagos and Blantyre allowed the project team to conclude that women (and men) with higher incomes and education are less concerned by travel-related sexual harassment. The data suggests that premium formal transport modes (such as BRT), and their (more affluent) users seem to be at lower risk than poorer, often captive users of informal transport. This appears to have a direct influence on attitudes towards the issue. There are, however, ways to address these problems, such as updating policy frameworks, educating the public on the topic, collecting and consulting more appropriate datasets, installing better incident reporting and response structures, as well as reviewing the design and operations of transport systems from a gender perspective.

Our findings suggest that technology-aided survey platforms were more effective instruments. Furthermore, people's understanding of what constitutes sexual harassment was aided using pictograms. The pictograms also made it easier for people to respond when verbalisation was difficult.

This paper illuminates the situation in Blantyre and Lagos. The authors are aware that there are limitations to this study. Data was only collected in two African cities, during the daytime, by intercepting travellers. Persons that omit travelling, due to actual or preserved sexual harassment risks, are not included, neither are users of other modes of transport. There is, therefore, still much ground to be cover in terms of addressing sexual harassment in the two case cities, Africa, and the rest of the world. It is recommended that this work be followed up by longitudinal studies, to enable performance measurement by comparison, and by conducting similar studies elsewhere, to allow comparison across different contexts, and generalise findings into various typologies, so that a range of tailored responses can be developed.

Authors contribution

Ms Allen took the lead during the conceptualisation and methodology development of the work presented in this paper, supported by the other authors, as well as groups and individuals listed in the acknowledgement. Mr Krause was responsible for the data collection, while Prof Vanderschuren took the lead during the data analysis and visualisation. Prof Vanderschuren drafted the first version of this paper and all authors have made noteworthy contributions during the review and editing process.

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References

Allen, H., Cárdenas, G., Pereyra, L., & Sagaris, L. (2018). *Ella se mueve segura (ESMS) – a study and toolkit on women's personal security in three Latin American cities*. Caracas: CAF and FIA foundation. Available at: http://scioteca.caf.com/handle/123456789/1405.

Allen, H., & Vanderschuren, M. (2016). *Safe and Sound - international research on women's personal safety on public transport*. Published by the FIA Foundation. Available at: https://www.researchgate.net/publication/326588267_SAFE_AND_SOUND_INTERNATIONAL_RESEARCH_ON_WOMEN%27S_PERSONAL_SAFETY_ON_PUBLIC_TRANSPORT.

Azcona, G., Bhatt, A., Duerto Valero, S., & Uteng, T. P. (2020). *Harsh realities: Marginalized Women in Cities of the developing world (New York: UN women)*. Available at: https://www.unwomen.org/en/digital-library/publications/2020/02/harsh-realities-marginalized-women-in-cities-of-the-developing-world.

Capasso da Silva, D., & Rodrigues da Silva, A. N. (2020). Sustainable modes and violence: Perceived safety and exposure to crimes on trips to and from a Brazilian university campus. *Journal of Transport & Health, 16*, Article 100817. https://doi.org/10.1016/j.jth.2019.100817

Ceccato, V. (2017). Women's transit safety: Making connections and defining future directions in research and practice. *Crime Prevention and Community Safety, 19*, 276–287. https://doi.org/10.1057/s41300-017-0032-5. Available at:.

Delbosc, A., & Currie, G. (2012). Modelling the causes and impacts of personal safety perceptions on public transport ridership, 2012 *Transport Policy, 24*, 302–309. issue C http://www.sciencedirect.com/science/article/pii/S0967070X12001576.

Gwilliam, K. (2013). *African transport infrastructure, mainstreaming maintenance and management*. © world bank. Available at: http://elibrary.worldbank.or.

Hollaback, & The, I. L. R. S. (2015). *Street harassment: The largest international cross-cultural study*. Internet]. Available at: https://www.ilr.cornell.edu/worker-institute/news/ilr-and-hollaback-release-largest-analysis-street-harassment-date.

Jackson, J., Allum, N., & Gaskell, G. (2013). Bridging levels of analysis in risk perception research: The case of fear of crime. *Forum qualitative Sozialforschung/Forum Qual. Soc. Res., 7*(1). Art. 20, ISSN 1438-5627. Available at: http://eprints.lse.ac.uk/15516/.

Jennings, G., Allen, H., & Arogundade, E. (2021). *Gaining or losing ground - ensuring that 'post-COVID-19' transportation serves the needs of women with low-income in Sub-Saharan African (SSA) cities*. Available at: http://transport-links.com/download/gaining-or-losing-ground-ensuring-that-post-covid-19-transportation-serves-the-needs-of-women-in-low-income-sub-saharan-african-cities/.

Jeong, K., Hyun, K., & Ritchie, S. (2017). Influence of personal concerns about travel on travel behaviour. In *Presented at the 96th annual meeting of transportation research board* (Washington D.C).

Loukaitou-Sideris, A., & Ceccato, V. (2020). Sexual violence in transit environments: Aims, scope, and context. In V. Ceccato, & A. Loukaitou-Sideris (Eds.), *Transit crime and sexual violence in cities: International evidence and prevention*. Abingdon: Routledge, 2020.

Madan, M., & Nalla, M. K. (2016). Sexual harassment in public spaces: Examining gender differences in perceived seriousness and victimization. *International Criminal Justice Review, 26*(2), 80–97. https://doi.org/10.1177/1057567716639093

Orozco-Fontalyo, M., Soto, J., Arévalo, A., & Oviedo-Trespalacios, O. (2019). Women's perceived risk of sexual harassment in a Bus Rapid Transit (BRT) system: The case of Barranquilla, Colombia. *Journal of Transport & Health, 14*, Article 100598. https://doi.org/10.1016/j.jth.2019.100598

Osmond, J., & Woodcock, A. (2015). *An everyday occurrence: Sexual harassment and public spaces*. CIEHF. Available at: https://coventrywomensvoices.files.wordpress.com/2013/04/an-everyday-occurence-april-2013.pdf.

Phayane, S., & Vanderschuren, M. (2021). *Social Study on Gender & Social Inclusion for the K69 Corridor, funded by C40 Cities Finance Facility and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)*.

Piscitelli, A., & Perrella, A. (2017). Fear of crime and participation in associational life. *The Social Science Journal, 54*(2), 179–190. https://doi.org/10.1016/j.soscij.2017.01.001. Available at:.

Shah, S., & Raman, A. (2019). *What do women and girls want from urban mobility systems?* Ola Mobility Institute.

SuM4All. (2019). *'Global roadmap of action toward sustainable mobility: Gender.' sustainable mobility for all.* Available at: http://pubdocs.worldbank.org/en/229591571411011551/Gender-Global-Roadmap-of-Action.pdf.

United Nations Development Programme (UNDP). (1995). *Human development report 1995: Gender and human development.* Available at: http://www.hdr.undp.org/en/content/human-development-report-1995.

Uteng, T. P., Allen, H., Turner, J., & Cristea, L. (2021). *EMPOWER consortium literature review, research funded by UKAID through the UK Foreign.* Commonwealth & Development Office under the High Volume Transport Applied Research Programme, managed by IMC Worldwide.

Vanderschuren, M., Phayane, S., & Gwynne-Evans, A. (2019). *Perceptions of gender, mobility, and personal safety: South Africa moving forward* (pp. 1–12). Transport Research Record. https://doi.org/10.1177/0361198119854087

Verma, M., Manoj, M., Rodeja, N., & Verma, A. (2017). Service gap analysis of public buses in Bangalore with respect to women safety. *Transportation Research Procedia, 25*, 4322–4329.