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# “It is just annoying and time-wasting”: Understanding jaywalkers’ disdain for footbridge use in urban Ghana

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## ABSTRACT

**Background and objectives:** Unsafe road crossing behaviours result in severe but avoidable 68% of pedestrian fatalities in Ghana. Strategies to promote pedestrian crossing facility usage, especially footbridges, have chalked limited success. This study examines pedestrian crossing behaviours, profiles jaywalkers, and unravels the reasons for jaywalking using the Health Belief Model as an explanatory framework.

**Methods:** Primary data were generated at two pedestrian crossings, including a pedestrian footbridge and an informal crossing in the Adentan Municipality of Accra, Ghana. This involved an eclectic mix of techniques, such as observations (of 674 pedestrians), questionnaire surveys (involving 395 jaywalkers), and short qualitative interviews (involving 15 jaywalkers). The rest include a transect walk using the My Tracks app and desktop reviews of media reports. Survey data were analysed using descriptive statistics. Thematic narrative analyses were performed on the qualitative interviews obtained directly from the field research and the media desk reviews. We analysed the transect walk data in Microsoft Excel and annotated it on Google Maps.

**Results:** Observations show that more pedestrians use the informal crossing (59%) than the nearby footbridge (41%). The largest category of jaywalkers are the young and educated female pedestrians who typically undertake work-related trips. Jaywalkers perceive the expected benefits of jaywalking, including proximal siting, timeliness, safety, convenience, and better informal crossing illumination, to be over the anticipated costs of safe behaviour, such as using a footbridge.

**Conclusions:** The study concludes with policy strategies to address unsafe road crossing among pedestrians. These include designing people-oriented road systems that meet the psychological needs of road users and well-tailoring road safety campaigns to target female and young adult pedestrians. In addition, adequate law enforcement and the erection of physical barriers to restrain informal crossing use are highly recommended. Study limitations and potential avenues for future studies are also presented.

## 1. Introduction

Globally, it is estimated that road traffic crashes (RTCs) result in 1.35 million deaths and 50 million injuries every year, with over

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90% of these occurring in Low-Middle Income Countries (LMICs) (Turner et al., 2021). The associated economic costs of deaths and injuries are close to USD 1.7 trillion and over 6.5 per cent of the GDP of LMICs (World Bank, 2019). Evidence shows that road safety generally improved in 2020, partly due to the COVID-19-induced lockdowns (ITF, 2021). However, more must be done to attain a significant worldwide reduction in fatalities.

Unsafe behaviour of road users, described as the violation of road traffic safety laws and regulations (Ding et al., 2015), is directly linked to road crashes (Papadimitriou et al., 2009; Rosenbloom, 2009). Due primarily to unsafe behaviours, pedestrian crashes account for about 35% of RTCs, with almost half occurring in Sub-Saharan Africa (GRSF, World Bank, 2019). Among young African children, pedestrian crashes significantly cause death (Tefe et al., 2020). Thus, pedestrian safety continues to receive considerable attention from road safety experts and researchers (Koekemoer et al., 2017). The provision and use of pedestrian facilities such as zebra crossings, pedestrian walkways, and footbridges have been promoted to mitigate pedestrian crashes (Diogenes and Lindau, 2010). Footbridges appear relatively safer since pedestrians are physically removed from fast-moving vehicles. However, footbridge use among pedestrians is relatively minimal (Rizati et al., 2013).

Ghana is no exception to this worrying trend. About 68% of road traffic deaths involve pedestrians due to inadequate crossing facilities and unsafe behaviours (Ojo et al., 2019; Setorwofia et al., 2020; Obeng-Atuah et al., 2017). Consequently, the government has approved €28.5 million (approximately USD 31 million) for constructing three additional footbridges on the N1 Highway in Accra and eleven others at crash hotspots in the Ashanti and the Central regions, respectively. These footbridges complement the existing 16 footbridges, primarily found in Accra, with Kumasi and Cape Coast having one each. In addition, legislation has been promulgated to ensure the use of existing pedestrian facilities. Specifically, section 154(3) of the Road Traffic Regulations, 2012 (LI 2180) stipulates that “a pedestrian who fails to use a footbridge or an underpass where one is provided commits an offence”. Furthermore, “persons who engage in jaywalking are liable to summary conviction or a term of imprisonment for not more than seven days or both”. Regrettably, in Ghana, as in most LMICs, most pedestrians jaywalk and refuse to use the footbridges (Tefe et al., 2020; Ojo et al., 2019).

It is argued that “it is only by studying their [pedestrians’] behaviour in detail that an attempt can be made to ascertain to what extent behaviour contributes to these accidents” (Firth, 1982, p. 42). Accordingly, we expand the scientific frontiers by triangulating data sources to assess pedestrians’ disdain for using newly constructed footbridges in Accra. Specifically, this paper aims to (1) identify pedestrian crossing behaviour, (2) describe their socio-demographic background (3) assess the rationale for unsafe crossing behaviour particularly among jaywalkers.

## 2. Pedestrian crossing behaviours: theoretical perspectives

Aspects of the Health Belief Model (HBM) were used to analyse and interpret qualitative findings made in this study. Postulated in the 1960s, the HBM was conceptualised to explain preventative behaviours among the populace (Rosenstock, 1974). The HBM conceptualises the preventive health behaviours of individuals on the premise that humans generally desire to avoid harm or injuries. Thus, people undertake certain specific health actions that prevent or minimise their injury risks. Therefore, the HBM postulates that human behaviour is a function of various cognitive factors. These include “cues to action, such as information regarding the importance of the behaviour; perceived threat, which consists of perceived susceptibility and perceived seriousness of the risk factor; perceived benefits, and barriers related to the behaviour” (Yagil, 2000, p. 2). Also, the socio-demographic profile of an individual and personality factors, and pressure from their peers and loved ones, are known to influence safety-related behaviour. We contend that pedestrians’ risk-taking behaviours, notably jaywalking, are a function of their perceived susceptibility and severity in case of crashes, on the one hand, and on the other, their perceived utility from engaging in unsafe behaviour, including convenience and timeliness.

The HBM was used as an explanatory framework due to its extensive application in recent studies that explain preventative behaviours. These include bicycle helmet use among tertiary students in the USA (Ross et al., 2010) and in Turkey (Kilinc and Kartal, 2022); and among motorcycle riders in Iran (Aghamolaei et al., 2011), as well as seat belt use among Iranian car drivers (Tavafian et al., 2010). A recent study has also adopted the HBM to gauge and explain the compliance of public transport operators to the COVID-19 mitigation protocols, particularly on the use of facemasks in Ghana (Agyemang and Yaro, 2023; Agyemang et al., 2021).

As explained above, the traditional focus on the behaviour of individual road users has typically characterised road safety studies and policies. However, in recent times, the Safe System Approach has gained traction in the “road safety policies and plans of every UN Member State” (Alessandrini et al., 2021, p. 129). The Safe System Approach (SSA) sees road crashes “as a consequence of latent failures created by decisions and actions within the broader organisational, social or political system which establishes the context in which road users act” (ITF, 2016, p. 27). Thus, the SSA hinges on five elements: safe road users, safe vehicles, safe speeds, safe roads, and post-crash care. According to Ritter et al. (2022), the SSA incorporates the 5 Es of traffic safety—equity, engineering, education, enforcement, and emergency medical services (EMS). Towards reducing crashes involving pedestrians in the study area, we argue that the insistence of local authorities on road users’ (both motorists and pedestrians) full compliance with laid down traffic rules through proper education and law enforcement, coupled with proactive safer infrastructure and prompt response to accidents will go a long way to keep the highway safe.

## 3. Context and methods

### 3.1. Case study area

The data used in this study were obtained at two pedestrian crossings, including a pedestrian footbridge found near the West African Senior High (WASS) school junction and an informal crossing at the ‘Latex Foam’ bus stop. According to Google Map estimates,

these two crossings are about 450 m apart and are situated within the Adentan Municipality in the Greater Accra region (see Fig. 1).

The Municipality, which is located on latitude 5° 43' north and longitude 0° 09' west, is home to some 237,546 inhabitants as of 2021 (Adentan Municipal Assembly, 2022). Regarding land use, the study area can be characterised as a high-density, mixed-use residential area. Most residents live in close proximity to work, recreational facilities and restaurants, the popular ones being the Adenta KFC, Cheezy Pizza, Barita's Restaurant, Kenkey House, Broadway Pub and the Bonds Gym. In addition to the GOIL and Total Energies filling stations which serve motorists, sidewalk trading or street hawking in food and drink are typically found along the N4 highway during peak hours. Also, there are many commercial enterprises that deal in the sales of housing and construction materials, electronics, groceries, beauty supplies, and foam products, the most popular being Latex Foam Rubber Products Limited. Religious centres, including mosques and churches, are also found along the study location. The West Africa Senior High School (WASS), a mixed gender, second-cycle institution with no on-campus accommodation for its over 1500 students, and the Tot-to-Teen International School, which runs kindergarten to junior high education for close to about 1000 pupils, represent the two important educational land use types found close to the N4 highway in Adenta.

Residents of the Municipality, particularly those who stay near or conduct socio-economic functions near the ten-lane N4 highway, named the J.J. Rawlings Avenue, rely on the pedestrian crossings to connect with other parts of the Municipality and beyond. Before 2019 when the footbridge was completed and open for use, most pedestrians jaywalked at different sections of this major highway. Most did so from the informal crossing near the 'Latex Foam' bus stop to the 'SDA junction' bus stop and vice versa. As can be seen in Fig. 2, jaywalkers typically cross this section of the highway by timing oncoming vehicles and making a quick dash onto the dividing median curb until such a time that they can 'safely' cross over to the other side of the road.

Subsequently, highway authorities temporarily marked this portion of the road with black and white stripes to ensure pedestrian safety. Over time, the lines have faded, and no efforts have been made to deepen the markings (see Fig. 3).

The high number of vehicles that plied this major highway, often at top speeds, usually results in serious pedestrian injuries and deaths. The Ghana Highway Authority is expected to conduct a traffic inventory to see traffic volumes. Unfortunately, due to resource constraints, this dataset is seldom available.

Without an official dataset, the lead author draws on primary data on modal share generated at Adenta on 14th February 2021. These data were developed as part of a research consortium the lead author was a member of. In the said study, the lead author stationed research assistants along the N4 Highway, specifically at geographic coordinates 5.705994939964382, -0.1715800050123034, with a checklist to observe and count passengers per transport mode during the morning peak hour (06:00 a.m.–09:00 a.m.); off-peak (12:00 p.m.–2:00 p.m.) and afternoon peak hour (5:00 p.m.–7:00 p.m.). Out of the 25,288 passengers observed, 70% travelled by jitney-type public transport, popularly known as trotro, while other modes (i.e. taxi, car and formal bus) carried the remaining 30%. While this study is limited in terms of its coverage, it does indicate how busy this corridor has become for daily commutes in the city. According to the Ghana Road Traffic Regulations (L.I.2180), motorists are mandated not to exceed the



Fig. 1. Location of the two study sites (Source: Google Maps; Authors' annotation).



Fig. 2. A street view of J.J. Rawlings Avenue, with pedestrians attempting to cross (Source: Google Maps; Authors' annotation).



Fig. 3. Pedestrians taking the risk of using the informal crossing (one with a piece of head luggage) despite its faded, marked stripes.

maximum permissible speed limits of 50 km/h and 30 km/h in built-up and school areas, respectively, at the study area. Section 164 (2) of L.I.2180 states that a person who contravenes this provision “is liable on summary conviction to a fine of not less than ten penalty units [approximately USD 10] and not more than twenty-five penalty units [approximately USD 25] or to a term of imprisonment of not more than thirty days or to both”.

The reality, however, is that motorists typically disregard this provision and overspeed. According to the police, between January and November 2018, 24 deaths and 164 injuries were recorded on this highway. However, media reports quoting residents suggest a much higher figure of around 195 deaths over the period (Ghana Plus, 2018). The discrepancy between the police and media reports may suggest distrust between law enforcement and the local community. This may also explain residents' anger at the seeming apathy of the government to completing the abandoned nearby footbridge. The grievances reached a melting point on Thursday, 8th November 2018, when a female WASS student was knocked down and killed in front of the school in her attempt to cross the road to

attend classes. Violent demonstrations ensued (Frimpong, 2018). The government responded by quickly completing the footbridge to allow for the safer crossing of pedestrians along the highway.

It is noteworthy that besides the WASS junction footbridge, the government also hurriedly completed five additional footbridges to mitigate road traffic crashes along the highway, which runs through the Madina and Adentan municipalities, as seen in Fig. 4.

Unfortunately, after completing the footbridges, and despite occasional police arrests, the authorities have been unsuccessful at getting some pedestrians to quit jaywalking (Ghana Web, 2021a,b; Ola-Morris, 2020; City Newsroom, 2019).

Indeed, the municipal authorities at the La-Nkwantanang Madina Municipality took the extraordinary step of deploying guards to physically restrict the use of all other informal crossings except the footbridges.

In addition, they have fenced the dividing median curb of the highway that runs through its jurisdiction. See Figs. 5 and 6. Corporal punishment is meted out to recalcitrant pedestrians who still refuse to use the footbridge by city guards (Kojo, 2021) and the police (Ghana Web, 2021a,b).

As a result, the two footbridges at Zongo Junction and Redco Junction in Madina have witnessed massive patronage. According to municipal guards deployed to ensure the usage of the footbridge at Madina Zongo junction, the Municipal Chief Executive of the La-Nkwantanang Madina Municipal Assembly and the Greater Accra Regional Minister authorised their use of force to punish recalcitrant pedestrians who refused to utilise the footbridge. Perhaps, criticisms by sections of the public about the legality of this corporal punishment (Ghana Web, 2021b) may explain the hesitancy to adopt this seemingly draconian measure by the local authorities at the Adentan municipality. However, it is unclear why the Adentan municipal authority could not erect physical barriers to force pedestrians to use the WASS footbridge. This justifies the choice of the footbridge and the informal crossing as the case study in this paper.

### 3.2. Methods and data

The study involved simultaneous observations of pedestrian activities at the WASS footbridge and the informal crossing. First, observations were undertaken from 19th to 26th July 2021 by enumerators under the direct supervision of the authors. The authors

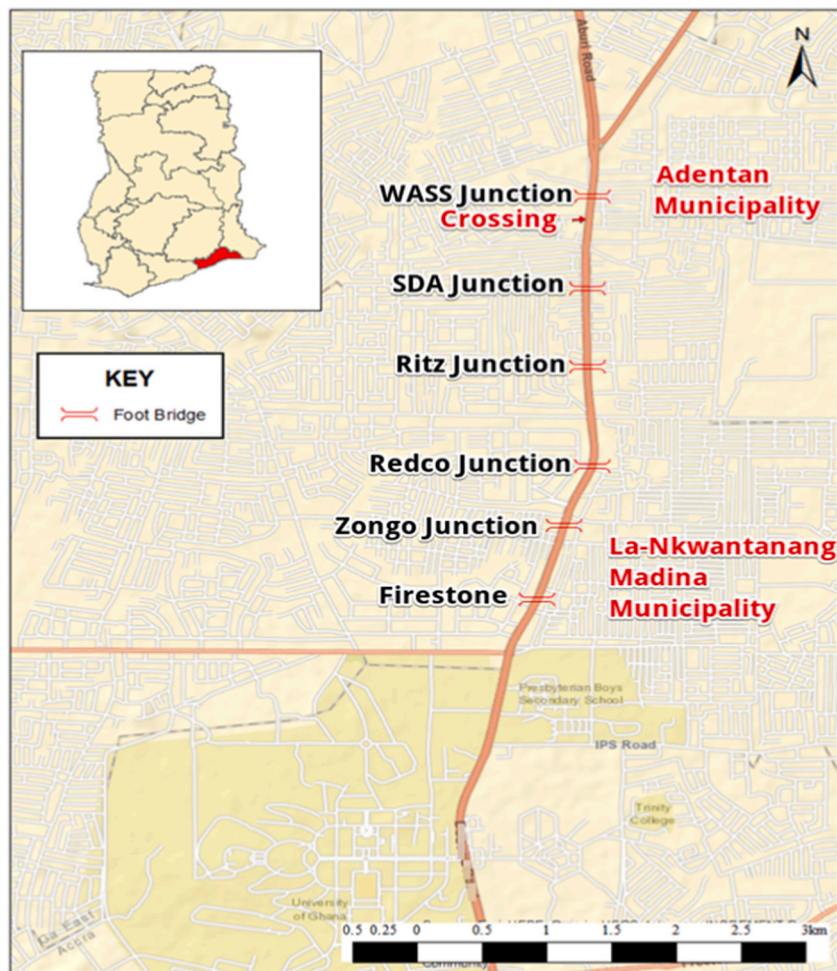


Fig. 4. Footbridges along the J.J. Rawlings Avenue (Source: Authors' construct, 2022).



Fig. 5. Wire mesh used as road safety barrier (arrowed red) at the Redco Junction Footbridge .



Fig. 6. Pedestrian safety measures (Note: Audio (A) and visual (B) warnings together with a City Guard (C) to enforce pedestrian) adopted near the Zongo Junction Footbridge.

identified specific time windows (i.e., 7–8 am, 12–1 pm and 5–6 pm) for the observations.

Second, each enumerator had a smartphone with short online semi-structured survey questions. This intercept survey measured the socio-demographic (i.e., gender, age, education, and residential location) of survey participants, their pattern of use of the two crossing

facilities, perceptions of safety and risk and the reasons for using their preferred crossing facility type. The jaywalkers were intercepted in front of the 'Latex Foam' bus stop and at the opposite side of the road (see Figs. 1 and 2). Regarding the use of the crossing facilities, three items (i.e., specific day, time, and trip purpose) were measured. Pre-coded answer options were presented to the respondents, and they were encouraged to honestly "select the applicable one". On safety perceptions, two items (i.e., alternate use of footbridge and perception of safety while crossing) were measured. The answer options for the former were either "Yes" or "No", and the latter were "Yes", "No", and "Maybe". In establishing the rationale for the various crossing behaviour among participants, nine items each were measured among the informal crossing and the footbridge users, respectively. For an overview of these items and other questions used in the survey, see the survey instrument availability statement at the end of the paper. In establishing the validity of the survey questions, the researchers showed the questions to colleague faculty members to assess how effectively the survey instrument measured the items it sought to measure. In addition, the researchers and their teaching assistants piloted the instrument among a section of pedestrians at the footbridge located at the Kaneshie First Traffic Light in Accra. The feedback from the pilot was used to improve the final survey tool significantly.

Third, jaywalkers were engaged in short interviews, and they were asked "which other reasons do you have for NOT using the nearby footbridge besides the ones mentioned already?". Overall, the data collection lasted, on average, 10–15 min, as cautioned in an earlier study involving busy participants (Popoola et al., 2013).

After our initial analyses of the data, we realised that most jaywalkers subjectively perceived the use of the footbridges as 'inconvenient'. Therefore, our fourth approach involved a transect walk of the two facilities to have first-hand knowledge of how 'inconvenient' the footbridge use was vis-à-vis the informal crossing. We used the *My Tracks* APK 5.5 route recording internet application to measure walk time and distance covered at the two pedestrian crossing facilities.

The transect walk started from the right side of the highway (heading towards Adenta) at the 'SDA Junction' bus stop, and we walked through the informal crossing to the 'Latex Foam' bus stop. From here, we walked along the pedestrian walkway northward to the WASS footbridge and used the facility to travel to the other side of the road at the 'Adenta Barrier' bus stop.

As our fifth approach, we mined the media landscape to gauge the attitudes of the public and drivers towards pedestrians who refuse to use the completed footbridges. This involved a desk review of news articles containing the unedited direct quotes of interviewees who had expressed anger at some pedestrians' refusal to use the completed footbridges.

The survey data were analysed using descriptive statistics in the Statistical Package for Social Sciences (SPSS), version 20 software.

Thematic narrative analyses were performed to identify key patterns in the qualitative interviews obtained directly from the field research and the media desk reviews.

Data obtained from the transect walk were extracted from the *My Tracks* APK, analysed in Microsoft Excel and annotated on Google Maps.

## 4. Results

### 4.1. Pedestrian crossing behaviour in the Adentan Municipality

The results of the simultaneous observations of the use of pedestrian facilities are illustrated in Fig. 7. The data show relatively high use of the informal crossing (59%) compared to the nearby footbridge (41%) during the survey period.

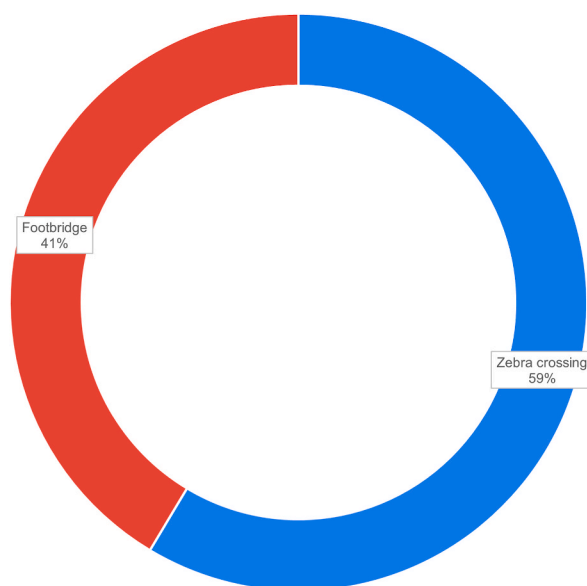


Fig. 7. Observed use of pedestrian crossing facilities at Adenta (N = 674).

#### 4.2. Socio-demographic characteristics of observed pedestrian facility users

Regarding the socio-economic background of survey participants, females (51%) are observed to use the informal crossing slightly higher than males (49%). Meanwhile, during the observations, more males (54%) were found to use the footbridge, which is a less risky option. [Table 1](#) further shows that users of both facilities were typically between the ages of 25–39 (i.e., 46.3% of jaywalkers and 45.5% of footbridge users). This is followed up by persons between the ages of 18–24 years (i.e., 28.6% of jaywalkers and 28.7% of footbridge users). In addition, most users of the pedestrian facilities had obtained their senior high school education at the time of the survey or were still pursuing studies for the senior high certificate (i.e., 45.1% of jaywalkers and 45.9% of footbridge users). The next category of persons using the facilities had obtained or were yet to get their primary education (i.e., 28.3% of jaywalkers and 29.7% of footbridge users). Many users of the facilities lived nearby in the suburbs of Adenta, including Barrier, Sakora, Filling Station, Washing Bay, WASS, and Housing Down (i.e., 93.7% of jaywalkers and 55.9% of footbridge users).

As illustrated in [Table 2](#), the largest category of respondents used the pedestrian facilities for work-related trips (i.e., 26.6% of jaywalkers and 58.8% of footbridge users) or school-related trips (i.e., 17.7% of jaywalkers and 20.8% of footbridge users). Accordingly, usage of the facilities is less during the weekends (i.e., 22.3% of jaywalkers and 10.7% of footbridge users).

Quite expectedly, the facilities are highly used in the early morning (i.e., 31.5% of jaywalkers and 44.8% of footbridge users). The usage of both facilities picks up again in the early afternoon (i.e., 23.4% of jaywalkers) and late afternoon (19.7% of footbridge users).

Participants typically used both crossing facilities at least twice daily (i.e., 48.9% of jaywalkers and 52.7% of footbridge users), reflecting pedestrians' round-trip journey between home and work or school.

#### 4.3. Rationale for varying crossing behaviour

As illustrated in [Fig. 8](#), among critical reasons for jaywalking include the proximal location (17%), faster walking/crossing time (15%), safety from criminalities (14%), friendliness of the informal crossing (14%) and enhanced illumination even at night (13%).

Meanwhile, among footbridge users, the critical determinants for usage include safety from a collision with speeding vehicles (26.4%). The rest are the proximal location of the facility (20.2%) and accessing public transport at nearby bus stops (15.3%).

The data further reveal that most respondents (81%) who were observed jaywalking at the time of the survey reportedly used the nearby footbridge occasionally. Having experienced both facilities, more than half of these persons disagreed that the informal crossing is relatively safer to use in crossing the highway than the nearby footbridge (see [Fig. 9](#)).

Against this backdrop, one wonders why some pedestrians still opt for jaywalking when they agree it is not a safer option. To this end, the results obtained from a transect walk of the two crossing facilities may suggest what pedestrians considered a reasonable detour distance. We hypothesised that this detour distance's reasonableness could influence pedestrians' choice of the informal crossing over the footbridge. See [Fig. 10](#).

Assuming there are two pedestrians who both alight from a means of public transport at the 'Latex Foam' bus stop. If pedestrian A decides to cross the highway using the informal crossing, he or she will walk roughly in less than 2 min.

If pedestrian B decides to make a detour to use the footbridge to cross the highway, he or she would have to walk for close to 11 min. That translates into 91% more effort than pedestrian A, who crossed the street using the informal crossing. This extra effort seems to dissuade most pedestrians from using the footbridge, whose location is further away from the main lorry stop.

In addition, findings from the qualitative interviews on jaywalkers' rationale for their unsafe behaviours, extracted through the analytical lenses of the health belief model, have been summarized in [Table 3](#).

These are also highlighted in the selected verbatim quotes of participants, as follows:

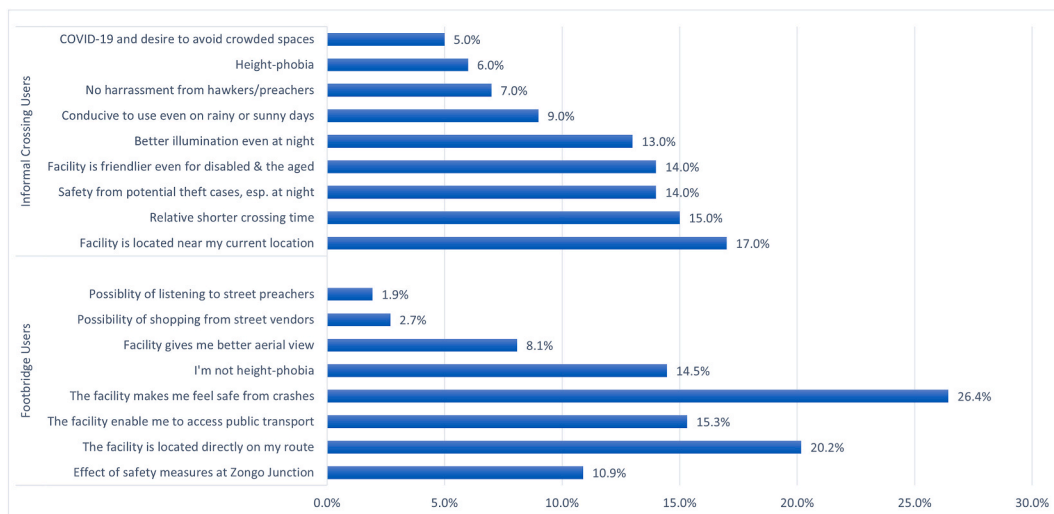
**Table 1**  
Profile of survey participants.

Variable	Categories	Informal Crossing Users (n = 395)		Footbridge Users (n = 279)	
		Frequency	Percentage (%)	Frequency	Percentage (%)
Gender	Male	194	49.1	150	53.8
	Female	201	50.9	120	46.2
Age	<18	63	15.9	38	13.6
	18–24	113	28.6	80	28.7
	25–39	183	46.3	127	45.5
	40–54	34	8.6	30	10.8
	55+	2	0.5	4	1.4
Education	No formal Education	25	6.3	11	3.9
	Basic (Primary + Junior High School)	112	28.3	83	29.7
	Senior High	178	45.1	128	45.9
	Tertiary	80	20.3	57	20.4
Residential location	Adenta	370	93.7	156	55.9
	Others (Madina, Oyarifa, Pantang, Abokobi, Aburi, Accra, Achimota, Adabraka, Amanfrom)	25	6.3	123	44.1

**Table 2**  
Trip behavioural patterns of observed survey participants.

Item	Categories	Informal Crossing Users		Footbridge Users	
		Frequency	Percent	Frequency	Percent
Trip purpose (Jaywalkers: n = 395; Footbridge Users: n = 279)	To/from work	105	26.6	164	58.8
	Unspecified purpose	54	13.7	0	0
	To/from recreational or social	61	15.4	21	7.5
	To/from visiting family and friends	30	7.6	9	3.2
	To/from the market	39	9.9	15	5.4
	To/from a hospital/pharmacy	4	1	4	1.4
	To/from school or lectures	70	17.7	58	20.8
Days of the week* (Jaywalkers: n = 1462; Footbridge Users: n = 977)	To/from a public transport stop/terminal	32	8.1	8	2.9
	Monday	255	17.4	193	19.8
	Tuesday	221	15.1	172	17.6
	Wednesday	213	14.6	164	16.8
	Thursday	220	15	177	18.1
	Friday	227	15.5	166	17
	Saturday	171	11.7	72	7.4
Times of the day* (Jaywalkers: n = 625; Footbridge Users: n = 431)	Sunday	155	10.6	33	3.4
	Early Morning (i.e., 5 a.m.–8 am)	197	31.5	193	44.8
	Late Morning (i.e., 9 a.m.-12:00 noon)	90	14.4	54	12.5
	Early Afternoon (i.e., 1 p.m.–3 pm)	146	23.4	48	11.1
	Late Afternoon (i.e., 4 p.m.–6 pm)	79	12.6	85	19.7
	Early Evening (i.e., 7 p.m.–9 pm)	99	15.8	43	10
Frequency of use of facility* (Jaywalkers: n = 395; Footbridge Users: n = 279)	Night (i.e., 10 p.m.-4 am)	14	2.2	8	1.9
	Once	112	28.4	84	30.1
	Twice	193	48.9	147	52.7
	Thrice	28	7.1	16	5.7
	Four times	38	9.6	13	4.7
	Five times & more	24	6.1	19	6.8

\* Multiple responses allowed.



**Fig. 8.** Factors influencing the choice of crossing facility type among jaywalkers (n = 1521\*) and footbridge users (n = 927\*). \*Multiple responses allowed.

*By the time you finish crossing the road using the footbridge, you will be sweating, and I don't like it since I am going to class [to study] (A 17-year-old female student)*

*It is just annoying and time-wasting. It is not convenient to use the footbridge, and it drains a lot of energy climbing it. Sometimes it makes you very tired because of climbing and descending (A 32-year-old male).*

Some respondents also identified the fast-crossing time involved in using the zebra crossing, compared to the footbridge, and the

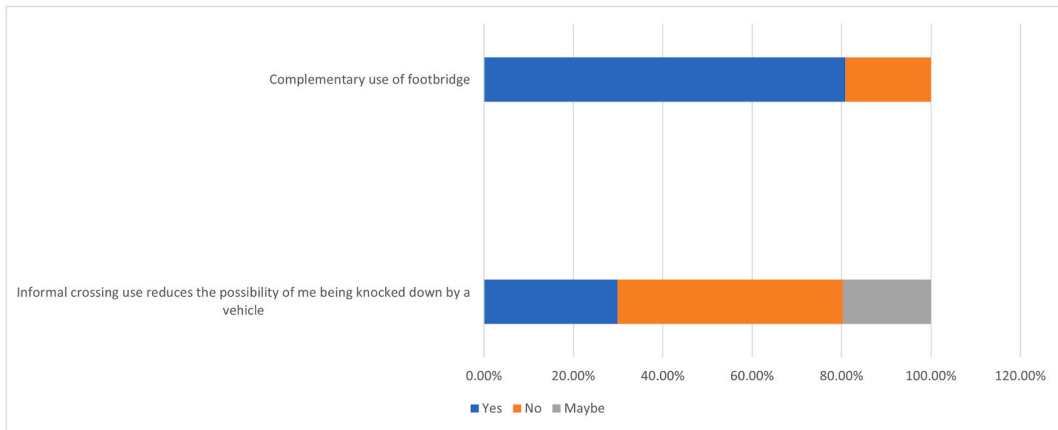


Fig. 9. Jaywalkers' self-reported complementary use of footbridge and perception of safety at the informal crossing (N = 395).



Fig. 10. Walk times involved in traversing the highway using the two pedestrian crossing facilities.

crossing behaviour of other pedestrians, as their reasons for refusing to use the latter. This is reflected in the comments below:

*If you ask me, the zebra crossing is faster to use. The footbridge takes a much longer time to use. Time, too, is money. So, usually, when I need to get to my destination faster, I use this route (A 38-year-old male).*

**Table 3**  
Perceptions of jaywalkers towards footbridge use based on concepts of the Health Belief Model.

Drivers	Perceived susceptibility	The informal crossing is perilous as drivers notoriously speed on this highway. Drivers sometimes ignore you when you signal them to slow down or stop.
	Perceived severity	Some pedestrians have been killed or maimed during crashes with fast-moving vehicles around this area. The death or disability of a breadwinner through crashes affects their families too.
	Perceived benefits	The informal crossing takes less time and effort to use The informal crossing is relatively shorter. Other pedestrians also use this facility regularly. The siting of the informal crossing allows me easy access to my destination. The siting of the informal crossing allows me to quickly access public transport. Unlike Madina, no law enforcers will arrest or harass you for using this spot.
Barriers	Perceived barriers	Footbridge makes me sweaty and uncomfortable Footbridge use wastes my time and can be frustrating. I'm naturally afraid of heights, but the footbridge is too high. I can be attacked by thugs on the footbridge at odd hours. The footbridge is too long. Motorcyclists sometimes use the footbridge, making it unsafe for pedestrians.

*The informal crossing is shorter for me as compared to [using] the footbridge. Besides, there are more persons [pedestrians] also using this route. I don't see why I should walk all the way and use the footbridge (A 19-year-old male).*

Others complained about the siting of the footbridge vis-à-vis the locations of the homes, workplaces and other trip destinations.

*As you can see, my job is located very close to the Latex Foam shop. If I cross the road at the informal crossing, it helps me a lot. However, if I were to use the footbridge, it would take a lot of time, seeing that the trotro stop is also found here. I think they [the engineers] didn't put the footbridge at the desired location for most of us (A 25-year-old female).*

The results obtained from the media desk review indicate that the general public and motorists have become impatient and intolerant of the recalcitrancy of pedestrians who refuse to utilise the completed footbridges.

While some members of the public have commended the Police Service for arresting and punishing some pedestrians for jaywalking, others feel the law enforcement must be extended to include the use of more brute force to compel usage of the footbridges. Yet still, the general view is that jaywalkers are lazy and are responsible for the outcome should a fast-moving vehicle or motorcycle run into them. Some of these sentiments are expressed below:

*Scores of recalcitrant people are being punished for refusing to use [the] footbridge. I understand some have knelt for over an hour. It gladdens my heart. Thank you, Ghana Police (A sports journalist, Accra; Source: Ghana Web, 2021a).*

*They have finished the bridge, yet people still cross the road. They have to enforce compliance so that anyone who crosses the road should be arrested (A taxi driver, Accra; Source: Ghana Business News, 2019)*

## 5. Discussion

This paper has three-pronged objectives. These are to (1) identify pedestrian crossing behaviour, (2) describe their socio-demographic background (3) assess the rationale for unsafe crossing behaviour, particularly among jaywalkers. Using an eclectic research approach, primary data were generated through observations of pedestrian activities, intercept surveys, short interviews, and a transect walk using My Tracks APK 5.5 and complemented with media reports.

The data show relatively high use of the informal crossing (59%) compared to the nearby footbridge (41%). Pedestrians' preference for informal crossings over other forms of crossing facilities has been well articulated in previous studies (Rasanen et al., 2007). When the data was split by gender, females (51%) are observed to use the informal crossing slightly higher than males (49%). Meanwhile, during the observations, more males (54%) were found to use the footbridge, which is a less risky option. These findings seem to challenge previous studies which found that females are more risk-averse than males (Useche et al., 2021; Ojo et al., 2019; Umar et al., 2019; Wang et al., 2018; Hasan and Napiyah, 2018; Damsere-Derry et al., 2010). The implication of this finding for road safety cannot be overemphasised. This is mainly due to the physiological makeup of females and the likelihood of far more significant bodily harm in the event of a crash with fast-moving vehicles. Male and female brains may respond to injuries during accidental collisions differently. Female athletes, for instance, according to Robson (2020), are twice as likely as men to experience more severe and life-threatening concussions (i.e., changed neurological function as the result of a sudden violent bump, blow or jolt to the head, which can lead neural tissue to swell and reduce the flow of blood to the brain). Perhaps, our study may be highlighting the changing perceptions of road safety, especially as the women have multiple tasks to perform, including accompanying their school-going children, shopping etc. and may be willing to trade off personal protection over their children getting late to school, for instance.

The study also found that users of both pedestrian facilities were typically as young as 18 and as old as 39. Most participants typically utilised the facilities in the morning to connect to their workplaces and schools and in the afternoons to return home. In contrast to Ojo et al. (2019) and Noora et al. (2016), who found that most jaywalkers had no formal education, as high as 45% of the

respondents we observed in this study jaywalking had received formal education at least at the senior high level. Judging from the age and education of participants, as well as the purpose of their trips, which is to work or school, one may not be far from correct in arguing that their involvement in road crashes constitutes a substantial human and economic burden (Ghandour et al., 2020; Akple et al., 2020).

The findings also show that while most footbridge users prioritise safety, jaywalkers, on the other hand, prioritised convenience, including the proximal location of the crossing facility and perceived faster crossing/walking time. These findings do not differ much from earlier similar studies on factors promoting jaywalking in LMICs (including Ghana, Iran, Malaysia and Nigeria). These studies also blamed time savings, laziness, the inappropriateness of footbridge use, the lack of barriers, and the lack of security personnel for unsafe crossing behaviour among pedestrians (Mohtasham-Amiri et al., 2022; Noora et al., 2016).

Adopting the HBM analytical framework, very useful insights were obtained from the qualitative interviews on health beliefs and perceptions of vulnerability to crashes by consistent use of the informal crossing. While admitting that they were susceptible to injuries and potential deaths from collisions with fast-moving vehicles, most jaywalkers identified several perceived barriers to using the nearby footbridge. These include discomfort, inconvenience, and relatively longer commute time. Meanwhile, their continued use of the informal crossing is a function of their perceived benefits, including convenience, the popularity of jaywalking among other pedestrians, and access to public transport.

### 5.1. Limitations of the study

This study has two main limitations, which readers need to be aware of. First, the study was conducted only during rush hours, and the profile might differ at other times of the day. Second, several pedestrian crossing facilities are along the J.J. Rawlings Avenue and, indeed, in Accra. Thus, restricting the study to only two of such facilities reduces the representativeness of the conclusions to the broader region. Despite these limitations, a significant strength of our research lies in its novel data collection techniques involving observations, questionnaire surveys, short qualitative interviews, a transect walk using the *My Tracks* app and desktop reviews of media reports. Unlike previous studies, this mixed method approach offers the study a broader and full understanding of the research theme under consideration. Also, this study highlighted the variations in gender, age and trip purpose regarding pedestrian facility use with implications for road safety policy and practice.

## 6. Conclusion

In a nutshell, this paper has three-fold objectives. These were to (1) identify pedestrian crossing behaviour, (2) describe their socio-demographic background (3) assess the rationale for unsafe crossing behaviour, particularly among jaywalkers. The study concludes that most pedestrians chose the informal crossing over the footbridge when crossing the J.J. Rawlings highway. Females aged 25–39 and participants who obtained a senior high-level formal education constituted the largest group of jaywalkers. Jaywalkers typically use this highway for embarking on work-related trips throughout the weekdays.

The fundamental rationale for jaywalking includes proximal siting, timeliness, safety, friendly nature, and better informal crossing illumination than the pedestrian footbridge.

It seems the crossing behaviour of pedestrians was not factored in the siting of this pedestrian footbridge at Adenta. Thus, we concur with Ding et al. (2015, p. 5), who argue that “to reduce the incidence of unsafe behaviour by pedestrians when crossing roads, road managers should focus on people-oriented road systems, carry out an analysis of crossing behaviour from the angle of pedestrian psychology, and meet the psychological needs of pedestrians”. To this end, traffic authorities and city planners must appreciate the complexity of road safety and move beyond “blaming the victim” attitude to adopting the Safe System Approach which provides an all-encompassing framework to keep pedestrians safe in Ghana, and elsewhere.

In addition, we believe that road safety efforts made by the National Road Safety Authority should include well-tailored road safety measures targeting female and young adult pedestrians. Leaflets can be shared periodically, together with overhead public address systems announcements on this stretch of the road to pedestrians on the need to use the footbridges. In phrasing public safety messages on pedestrian crossing behaviour, we concur with an earlier study (Yagil, 2000, p. 11) which suggested that “unsafe crossing should be presented as a deviant behaviour which does not agree with the general conduct of law-abiding citizens”. Also, the safety campaigns must increase risk perception among pedestrians. If this is not done, as found elsewhere, reduced susceptibility perceptions among the populace usually lead to complacency and adversely affect preventive behaviour (Shiina et al., 2020; Jones and Salathe, 2009).

Finally, the traffic police must intensify road surveillance as they do at Madina. This can serve as a deterrent to jaywalkers. Officials of the Ghana Highway Authority should erect a barricade from the informal crossing location to the footbridge location.

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### Survey instrument availability statement

For a list of all the survey questions and informed consent statement, kindly visit [https://ugedugh-my.sharepoint.com/:f/g/personal/eagyemang\\_ug\\_edu\\_gh/EnKdBPxIdBKpC719-70JB0BWhpjxg5Z8EJ2tuT8O6POTg?e=nGPE7J](https://ugedugh-my.sharepoint.com/:f/g/personal/eagyemang_ug_edu_gh/EnKdBPxIdBKpC719-70JB0BWhpjxg5Z8EJ2tuT8O6POTg?e=nGPE7J).

## Author statement

Conceptualization, E.A. and T.K.O.; methodology, E.A. and T.K.O.; software, E.A.; validation, E.A. and T.K.O.; formal analysis, E.A. and T.K.O.; investigation, E.A. and T.K.O.; resources, E.A. and T.K.O.; data curation, E.A.; writing—original draft preparation, E.A.; writing—review and editing, E.A. and T.K.O.; visualisation, E.A.; supervision, E.A. and T.K.O.; project administration, E.A. All authors have read and agreed to the published version of the manuscript.

## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper

## Data availability

Data will be made available on request.

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