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**PASSENGERS' PERCEPTIONS ON SECURITY AND SAFETY IN PUBLIC TRANSPORTATION IN ETHIOPIA: A CASE STUDY OF ADDIS ABABA**

**Summary.** Due to its low fares, public bus transportation as a means of urban road mobility is a popular choice, particularly among city inhabitants. However, owing to its high level of crowdedness, it poses a greater risk of security and safety, particularly during peak hours. Moreover, passengers have continued to voice their dissatisfaction about the services offered, as well as the criminality that occurs in the station and on the bus. The problem is exacerbated in developing countries due to increased travel demand and a lack of appropriate and integrated solutions. Consequently, the purpose of this study is to evaluate commuters' perceptions of their concerns about using public bus transportation in the city, with an emphasis on security and safety in bus operations. A questionnaire survey was used to obtain data from 500 users in the city for the study. Using the SPSS software, the data was analyzed. To find out what they think, a descriptive analysis was used. Overcrowding of buses, personal insecurity, and infrequent bus service are the three biggest concerns in using public bus transportation in the city, according to the results. Furthermore, most of the respondents were concerned about crime; specifically, pickpockets, inappropriate touching, and disrespectful language of

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drivers and conductors are the three top types of crime that concern passengers who use public bus transportation in the city. Additionally, most people felt more insecure while riding the bus and getting on/off the bus, particularly in the evening and between 9:00 and 12:00 p.m. local time. Thus, it is advised that the Addis Ababa City Transport Authority, the Public Bus Transport Enterprise, and other interested parties place a strong emphasis on security and safety when providing public transportation in the city. Furthermore, it is critical to perform regular victim surveys of passengers (as well as operators) to establish whether they have been criminally victimized on the bus system and by what type of crime. Equally important, regularly assess the likely usefulness of new crime prevention measures for reducing bus-related offenses and prepare an annual bus crime reduction strategy.

**Keywords:** public bus; safety; security; perception; Addis Ababa; Ethiopia

## 1. INTRODUCTION

By providing mobility access to employment, recreation, and other activities, public transit has played an important role in decreasing social exclusion, showing apparent environmental benefits by lowering the burden of cars and other non-public transportation journeys [1]. Furthermore, many people agree that the safety and security aspects of public transportation operations are critical, as a large number of people use public transit [2].

Nonetheless, despite security and safety being prominent concepts in our daily lives, research into these topics in the public transportation sector, particularly in developing countries, has been limited [3]. This study aims to assess passengers' perceptions of security and safety in the functioning of public transportation in Addis Ababa, Ethiopia. Currently, several illegal acts have become more aggressive and frequent, with criminals becoming more daring in their actions. Addis Ababa's crime rate has risen faster than ever, and these incidents have been reported in numerous media outlets, including newspapers and television.

Crimes are divided into two types: violent and property crimes. Rape, robbery, murder, attempted murder, and armed robbery are examples of violent crimes. While car theft, motorbike theft, and burglary are examples of property crimes [4]. Existing and potential users of public transportation are affected by crime in a variety of ways. As such, identifying the prevalence of crime and the kinds of crime in the city is fundamental to responding appropriately. Thus, the main objective of this study is to investigate passengers' perceptions of security and safety while using public bus transportation in the city.

It also has the following specific goals:

- to identify passengers' concerns about using public bus transportation in the city,
- to analyze the types and incidences of crime that occur when using public bus transport in the city.

## 2. SECURITY AND SAFETY IN PUBLIC TRANSPORT

Public transportation provides its users with mobility, while somehow having a large impact on the system. Accordingly, it should be operated in such a way as to achieve an efficient and effective transportation system. To fulfill this, the quality of service must be examined as a way of evaluating its performance [2]. The issue of security and safety, in particular, is one of

the most crucial factors in determining the quality of transport, which should be thoroughly researched. This is because these attributes have a wide range of effects on existing and potential public transit customers [5].

Walking to, from, or between transportation facilities or stations; waiting at boarding points and facilities; and traveling onboard a form of transportation such as a bus, train, or cab exposes one to the different kinds of crimes committed on public transportation [6]. The targets of criminality range from the system itself (vandalism, fee evasion), to staff (assaults on ticket collectors), and passengers (pickpocketing, assault). The real and perceived risk of being a victim of a crime while using public transportation is covered by security [7]. Thus, transit systems employ several security measures onboard transit vehicles, including the installation of surveillance cameras [4]. Similarly, one of the most significant factors in determining the quality of transport is the issue of safety. While riding a train, one runs the risk of being involved in a collision or being a victim of a crime. Safety concerns were identified as a barrier to people using public transportation as a means of transportation [7]. Moreover, pickpocketing, overhanging facilities, overcrowding, and lack of monitoring are the most common safety concerns for users [7, 8].

### 3. METHODOLOGY

#### 3.1. Study area

Addis Ababa is the capital city of Ethiopia (Figure 1). It is often regarded as Africa's "political capital" due to its historical, diplomatic, and political significance. It is situated in the middle of the country, at a height of 2,400 meters above mean sea level, with a rolling hilly surface. The city covers a total area of 527 square kilometers. Addis Ketema, Akaki Kality, Arada, Bole, Kolfe Keranio, Gulele, Kirkos, Lideta, Nifasilk Lafto, and Yeka are among the city's ten sub-cities. These sub-cities are further divided into 116 woredas levels for administrative purposes.

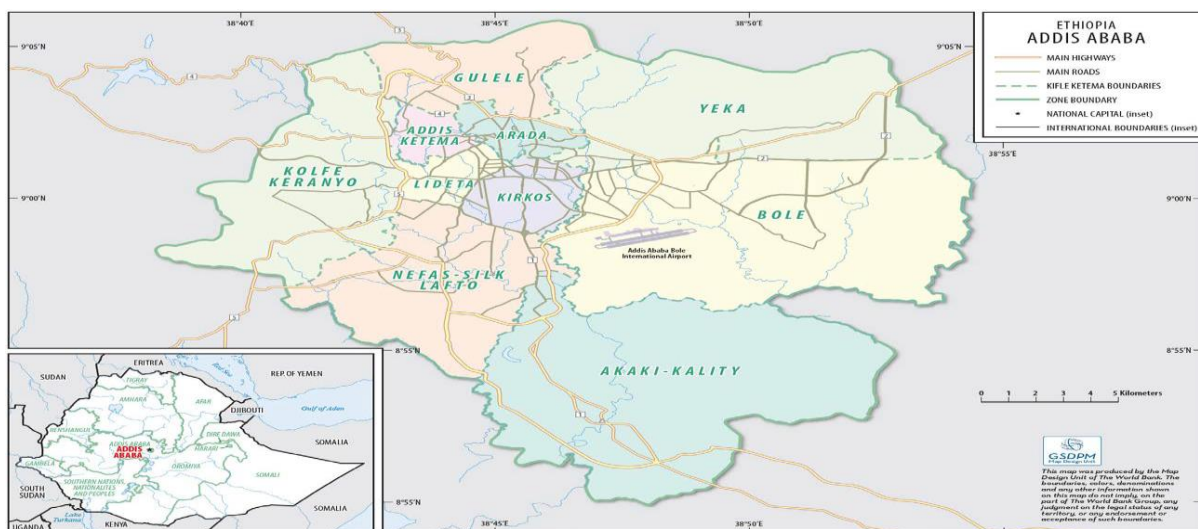


Fig. 1. Map of Addis Ababa City

Source: Enhancing Urban Resilience: Addis Ababa, Ethiopia [9]

### 3.2. Data collection and analysis method

To reach genuine respondents for this survey, a multistage sampling procedure was used. Accordingly, stratified sampling was used to choose terminals first, followed by systematic sampling to select route lines from those terminals for the study. Finally, convenience sampling was used to select respondents while they were traveling on a certain bus route (number). The study has a sample size of 500 people. Yamane's (1967) formula was used to discover it.

Consequently, both qualitative and quantitative metrics were used in this study's methodology. The qualitative metrics were collected by observing the amenities provided in the terminals, which included lighting, parking, and a pedestrian walkway to the station. Data was obtained from travelers using a questionnaire for quantitative measures. The data was then analyzed using the SPSS software (Statistical Packages for the Social Sciences). Frequencies analysis was used in this study to acquire the respondent's characteristics and their perceptions on the subject of security and safety of the city's public transportation system.

## 4. RESULTS AND DISCUSSION

### 4.1. Profile of sample respondents

There were 297 males (59.4%) and 203 females (40.6%) in the sample group. A considerable percentage of the participants (35.0%) were between the ages of 26 and 35, while 30.6 % were between the ages of 36 and 50. In terms of employment status, the majority (38.8%) work in private institutions, whereas 28.8% were engaged in their firm. Table 1 shows the summary statistics for the other variables.

Tab. 1

Socio-economic and travel characteristics of the survey sample

Variables	Response	Frequency	Percent
Gender	Male	297	59.4
	Female	203	40.6
Age category	Under 18 years	11	2.2
	18-25 years	107	21.4
	26-35 years	175	35.0
	36-50 years	153	30.6
	51-60 years	52	10.4
	Above 61	2	0.4
Education level	Read and write	8	1.6
	Primary school graduate	27	5.4
	High school Graduate	90	18.0
	Vocational/ diploma graduate	176	35.2
	BA graduate	185	37.0
	MA and above	14	2.8
Average Monthly Income	Less than and equal to 600 birr	57	11.4
	601-1650 birr	70	14.0
	1651-3200 birr	106	21.2

	3201-5250 birr	131	26.2
	5251-7800 birr	94	18.8
	7801-10900 birr	34	6.8
	10901 and above	8	1.6
Travel Frequency	Daily	134	26.8
	4-5 times a week	182	36.4
	2-3 times a week	126	25.2
	Sometimes, not always	58	11.6
Journey Purpose	Work	192	38.4
	Education	134	26.8
	Market/shopping	67	13.4
	Social activities	89	17.8
	Other	18	3.6

#### 4.2. Users' Concern about using public bus transport

To begin, an attempt was made to identify the major concerns of passengers who use the city's bus system. Following which the top concerns of passengers using public bus transport in the city were identified and ranked (Figure 2).

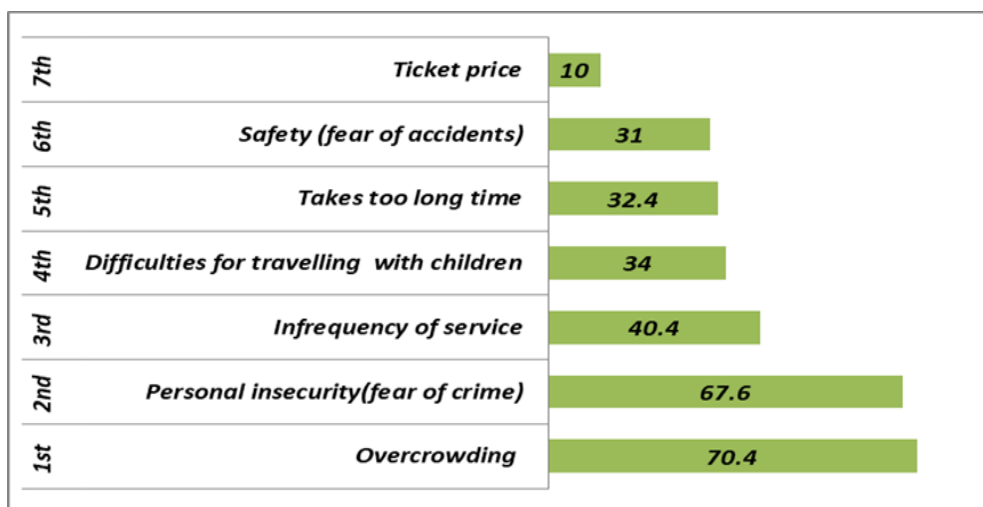


Fig. 2. Concerns about using bus transport in rank (%)

As seen above, the first main concern of passengers using public bus transport in the city was overcrowding of buses with travelers (70.4 %). The second and third biggest concerns of travelers using public bus transport in the city were personal insecurity (fear of crime) and infrequency of service, with 67.6 and 40.4%, respectively. However, when it came to taking public transportation in the city, fares were the last issue on the people's minds. It implies that ticket prices are not a major concern for bus riders in the city; they are content with the service fare.

This finding is related to a study [10], which found that personal security is the second-highest limiting factor in public transportation use, after reliability. Accordingly, alleviating such anxieties could result in a considerable increase in bus usage. Furthermore, this study aims to determine the level of consumers' concern about crime and accidents when using public bus

transportation in the city. In addition, the photographic images depict the scenario of overcrowding on buses, and clients waiting for bus services in the city (Figure 3).



Fig. 3. Scenario of public transport service in the city  
Source: field survey

### 4.3. Personal insecurity on public bus transport

#### 4.3.1. Fear of crime

This study aimed to determine the rate of fear of crime and related difficulties associated with public transportation in the city. Figure 4 reveals that 25.8 and 23.2% of respondents said they are afraid of crime to some extent and moderately, respectively. On the contrary, 20.6% said they were not worried about crime when using the city's public bus service.

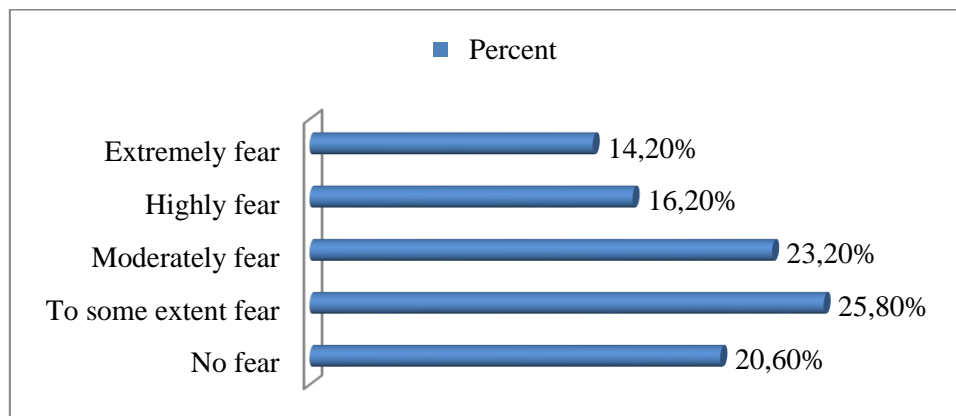
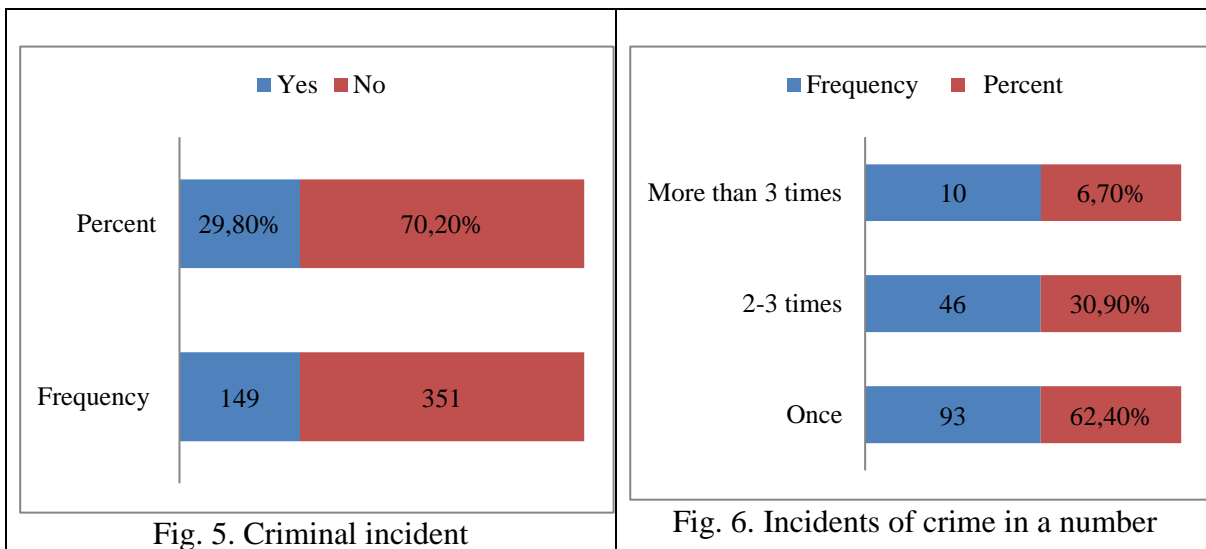


Fig. 4. Rate of fear of crime in using bus transport

#### 4.3.2. Criminal incidents

Furthermore, this study attempts to determine whether respondents have ever had a crime incidence while using public transportation in the city. Resultantly, 29.8% of respondents said they have previously encountered criminal occurrences when riding a bus in the city, while 70.2% said they had never faced this problem. Likewise, 93 (62.4%) of the participants who had been victims of crime had experienced crime episodes at least once. Additionally, while using transport services in the city, 46 (30.9%) and 10 (6.7%) of them had encountered such 2-3 times and more than three times, respectively.



### 4.3.3. Place and hours users feel insecure

Respondents were asked questions about the precise circumstances in which they feel anxious when taking public transportation to learn more about the specific situation in which they feel insecure. As shown in Figure 7, most respondents (43.4%) and (33.8%) believed that they felt more unsafe while riding the bus and getting on/in/out of the bus, respectively. Similarly, 14.0% of respondents felt unsafe waiting at boarding points and amenities such as bus stops and stations. Finally, 8.8% of participants declared that they feel more insecure when walking to, from, or between bus stops/stations.

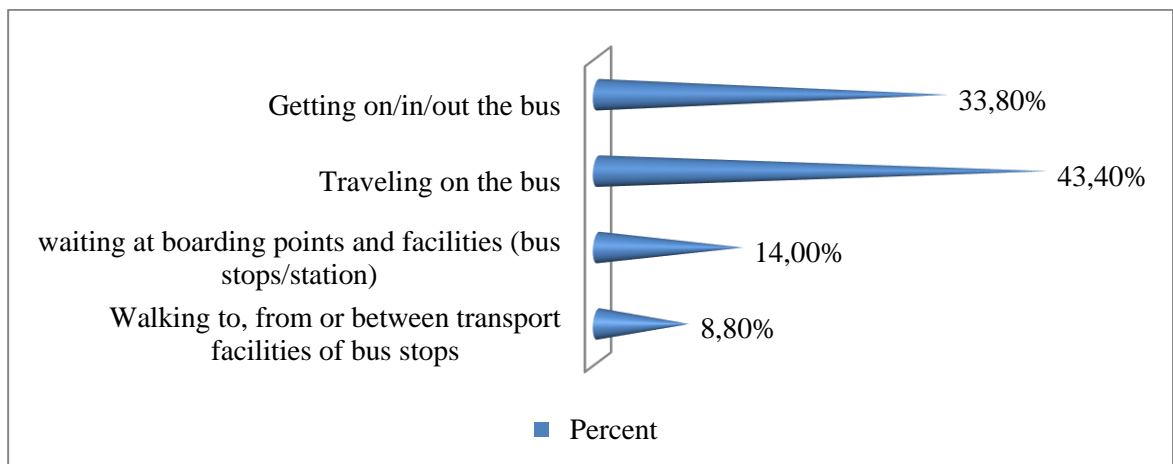


Fig. 7. Place or situation respondents' feel insecure (%)

In addition, this study aims to determine which hours of the day customers are more fearful of using public bus transport in the city. As can be seen in the graph below, most of the research participants (46.0%) agreed that they felt insecure at night (Figure 8). Further, 23.6% of them said they felt insecure from 9:00 to 12:00 a.m. local time in the evening. Also, 15.0 and 9.6% said they are insecure between the hours of 1:00 to 3:00 a.m. local time and early morning at dark, respectively. Finally, the least (5.8%) of respondents felt insecure between the hours of 4:00 to 8:00 a.m. local time.



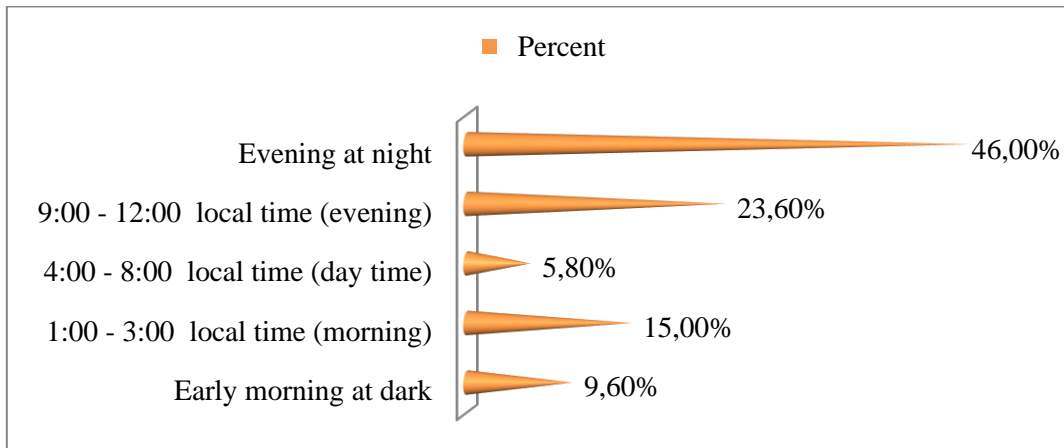


Fig. 8. Hours users feel most insecure

Subsequently, most users are anxious during peak hours and at night, as evidenced by the overall results. This is primarily due to bus overcrowding at this particular time and place. The following images depict the service situation at peak hours and at night, making people feel uncomfortable when using public transportation in the city (Figure 9).



Fig. 9. Service delivery of bus  
Source: field survey

#### 4.3.4. Types of crime which concerns users

Respondents were also asked which sort of crime worry them the most when taking public transportation in the city. As shown in Figure 10, the first two kinds of crime that concern users in the city are pickpockets (65.2%) and inappropriate touching (45.0%). Pickpocketing is the most common type of crime experienced by passengers when using mass transit services [11], and these incidents all occurred in locations specifically associated with public transit, such as train stations, taxi ranks, bus stops, or modal interchanges as well as onboard trains and taxis [11].

Furthermore, the biggest crimes that occur on the train include pickpocketing, sexual harassment, and theft of passenger belongings [12]. Finally, the third and fourth most common types of crime that affect users of public bus transportation in the city are the disrespectful language of drivers and conductors (35.4%) and mugging (29.0%). The next figure in rank shows the detailed findings for the other variables.



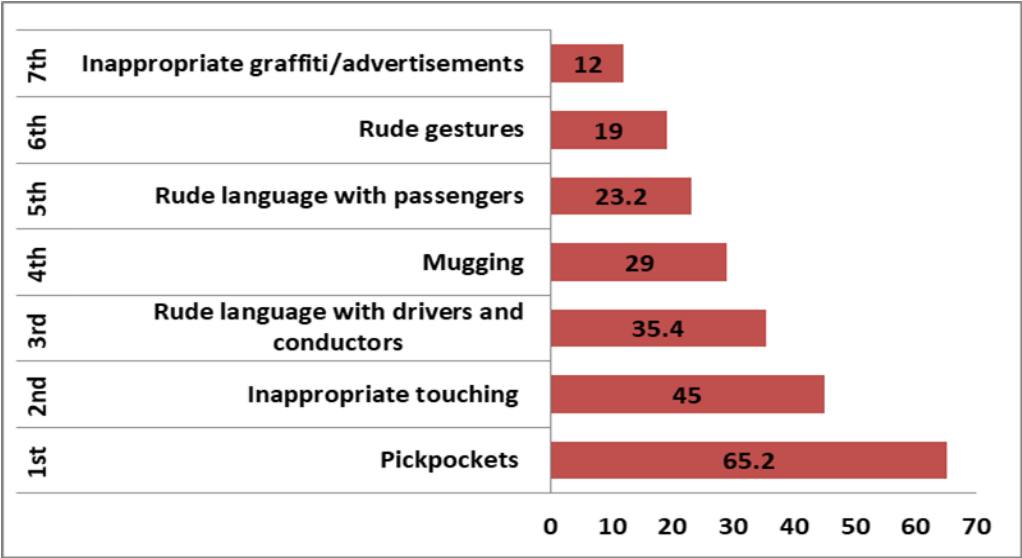


Fig. 10. Crime type concerns of users of bus transport (in rank %)

As the preceding facts demonstrate, pickpockets and inappropriate touching are the most common sorts of crimes affecting passengers using Addis Ababa's public transport system.

**4.4. Safety on public bus transport**

**4.4.1. Fear of accidents**

Another key topic addressed in this study is the issue of safety when using public transportation in the city. Hence, respondents were asked questions about their view of safety (fear of accidents), their experience with accidents, and the severity degree of the accidents if they were a victim of the city's public bus problem.

As seen in the graph below, 31.8% of the study's participants said they were not afraid of accidents while riding the city's public bus. While 12.4 and 9.4% of respondents stated that when using the bus, they are very afraid and extremely afraid of accidents, respectively. The following diagram depicts the details (Figure 11).

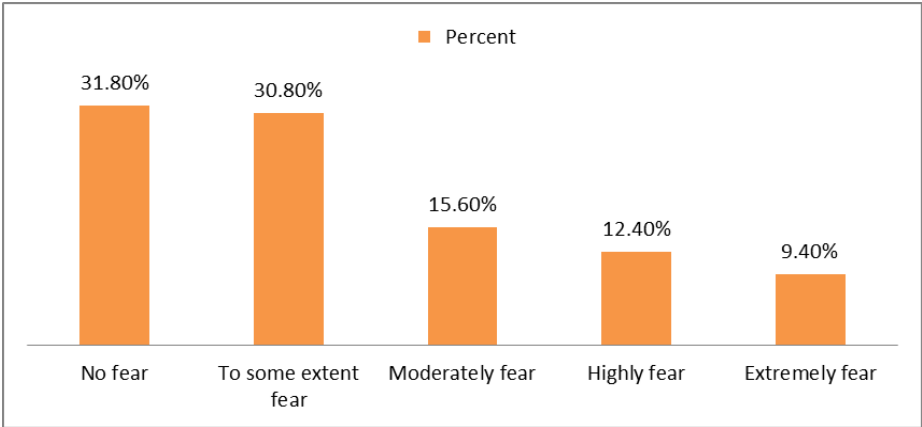


Fig. 11. Fear of accidents (%)

#### 4.4.2. Accidental occurrences

Thereafter, they were questioned whether they had been in an accident while using bus transportation; upon which, 11.4 % responded that they had been in an accident while using bus transportation, while the majority, 88.6% declared that they had not (Figure 12).

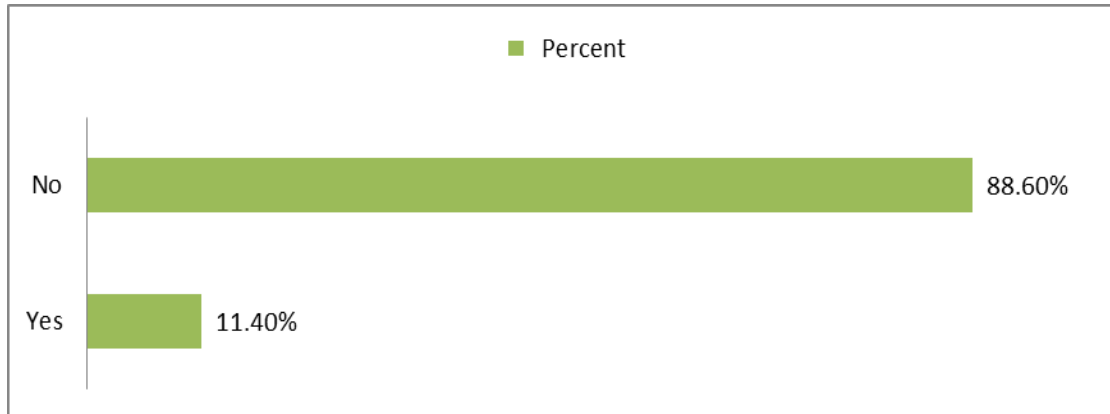


Fig. 12. Accident victims/incidents

Respondents were also asked how many times they encountered car accidents and how serious the incidents were based on their replies to the previous question. As shown in Figure 13, 9% of participants answered having been in an accident once, and 2.4 % reported having been in an accident 2-3 times when riding the public bus in Addis Ababa. However, no one has been in an accident more than three times while riding the bus. Similarly, when asked about the severity of the accidents, 3.6 % said they had very little, and 2.6% said the incident level was serious.

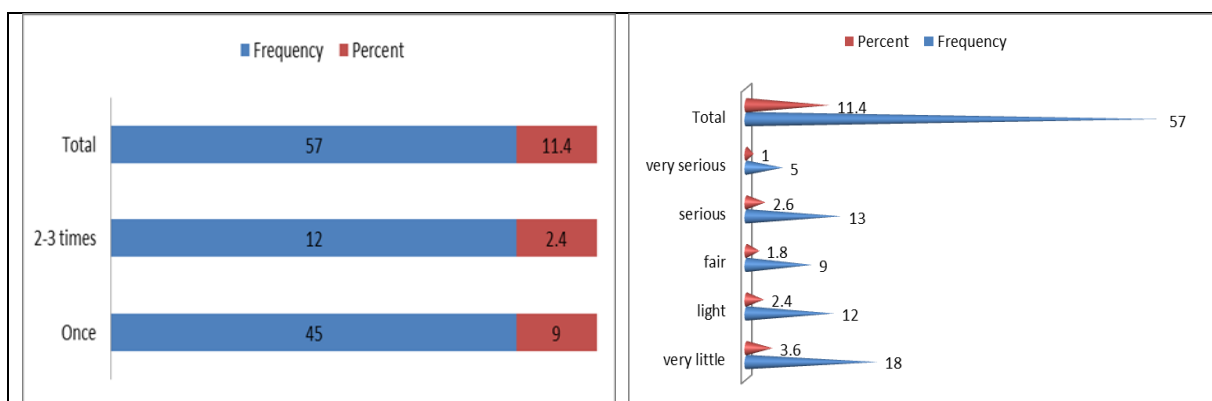


Fig. 13. The number of episodes and the intensity of each

## 5. CONCLUSION AND RECOMMENDATIONS

The purpose of this study was to investigate users' concerns about using public bus transportation in the city. In addition, it attempts to analyze users' perceptions of security and safety in the context of urban public transportation. The study used both qualitative and quantitative methods to attain its goals.

The findings of this study revealed that overcrowding of buses with passengers, personal insecurity, and infrequent service are the three primary worries of city public bus riders. However, the users' least worry about using bus transportation was the ticket price (fee), which received 7.5%. This shows that users are quite pleased with the city's public transportation fares. Furthermore, fear of crime is now commonly acknowledged as a deterrent to using public transportation [13]. Similarly, it is a major source of concern for most city bus riders. A substantial proportion of respondents said they are concerned about crime in varying degrees while using public transportation. In addition, most of the participants have experienced crime incidents at least once when traveling on public transportation. Users particularly feel insecure while riding the bus and getting on/off the bus.

Next, to know the exact hours that users feel insecure, it is identified that most feel insecure from 9:00 to 12:00 p.m. local time and evening time. It is because, at this time, the number of passengers increases and overcrowding of buses is the major cause of various problems that occur on the bus and bus station. Pickpockets, unwanted touching, the disrespectful language of drivers and conductors, and mugging are among the most common crimes affecting passengers using Addis Ababa's public bus system. Furthermore, as the aggregate result demonstrates, pickpocketing is a big issue for bus users in the city. This is primarily due to overcrowding on buses, particularly during peak hours of the day. However, when it came to safety, most respondents said they were not concerned about getting into an accident while riding a city bus. This demonstrates that users have full faith in the competence of city bus drivers.

Subsequently, this study suggests the following points based on the above findings:

1. One of the most important methods for addressing the prevalent crime on public transportation is to increase the supply of public transportation. Furthermore, in the provision of bus services, better scheduling to reduce overcrowding, and increasing employment of drivers in a security position are all important considerations.
2. It is critical to pinpoint certain bus shelters/bus stops that have a criminal concern. Police patrols in such areas should be enhanced to address recognized stops with higher rates of robberies and/or assaults. Another option is to move stops away from pubs or schools that appear to have an impact on crime rates.
3. Bus stops or shelters should be well-lit, and crowding should be minimized through proper vehicle flow and separation of bus passengers from walkers.
4. To protect the safety and security of passengers traveling alone, more manpower/guards at the station and in the commuter would be beneficial.
5. Closed-circuit television (CCTV), for example, should be available on public buses and other important locations.
6. A media campaign promoting self-awareness for safety and security when using public transportation could benefit the community, particularly the elderly, pregnant women, and women who travel by bus in the city.

Finally, it is suggested that the Public Bus Transport Enterprise, the Addis Ababa Transport Authority, and other interested parties conduct regular victim surveys of passengers (as well as operators) to determine whether they have been criminally victimized on the bus system and what type of crime they have been victimized by. In addition, the aforementioned bodies should evaluate the likely benefit of new crime prevention methods to reduce bus-related crimes regularly and develop an annual bus crime reduction strategy.

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