



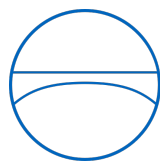
DEPARTMENT OF CIVIL, GEO AND
ENVIRONMENTAL ENGINEERING

TECHNISCHE UNIVERSITÄT MÜNCHEN

Bachelor's Thesis in Civil Engineering

**Gender Impact on Travel Choice: A Case
Study in Cairo, Egypt**

Carine Khalil





DEPARTMENT OF CIVIL, GEO AND
ENVIRONMENTAL ENGINEERING

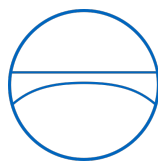
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Gender Impact on Travel Choice: A Case Study in Cairo, Egypt

Der Einfluss des Geschlechts auf die Wahl der Mobilität: Eine Fallstudie in Kairo, Ägypten

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Submission Date: April 20, 2021



I confirm that this bachelor's thesis in civil engineering is my own work and I have documented all sources and material used.

Munich, April 20, 2021

Carine Khalil

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Emma, Δευτερα Κλειδια.

Joy, thank you for believing in me and for the everyday positive vibes.

To Papa, thank you for everything you have done and are doing for me, no words are enough to describe my love to you.

To Mama, thank you for believing in me, for being the symbol of power, sacrifice, perseverance and unconditional love.

To Teta and Bella, likewise.

Abstract

Gender-based violence (GBV) is a critical topic with many fundamental factors and consequences. It is a serious violation of human rights and can result in considerable, life-threatening suffering for victims and survivors. Although both men and women are frequently victims of GBV, the likelihood of incidence is greater for women. Gender-based violence can be a frightening prospect that must be addressed. Awareness of the society is still low towards the forms of violence against women. Recognizing the dimensions of this global issue, along with women's feelings of shame and guilt that they blame themselves for can help to explain interrogations, for example as why women do not report sexual harassment.

The study investigates the implications of violence together with harassment in transport systems on women's travel choice and livelihoods based on the experiences of victims. The elemental aim is to explore women's experiences of gender-based violence within the house of transport, together with their perceptions of the transport modes and also the relevant areas. This study measures the scope of assessment of the effects and the impact of those incidents on women's travel behavior and patterns over time.

A 35 minutes survey is used in the study to question respondents about their experiences of violence linked with the use of public transportation in the city of Cairo in Egypt.

Keywords Gender-based Violence, Gender Mobility Patterns

Kurzfassung

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1. Introduction

1.1. Background

Gender Mobility Patterns

Gender differences, often referred to as the gender gap, have long been of concern, not only in academic research, but also in political and economic perspectives [1]. Unfortunately, the consent of factors shaping the gender differences are not consistently unreserved. Factors involved are most of the time forcing and not allowing space to the women's confidential preferences, so far it is more of demanding to serving the greater purpose of social cohesion, fitting in the fixed frame of gender-roles. Gender gaps exist within occupations and are experienced by women, especially as they start their responsibility for their families [2]. The role assigned to women within the family impose on them as responsibilities for household affairs, child-rearing and caring for the elderly. This premise is used as a pretext for distributing work according to gender. The gender pay gap is an important indicator of economic inequality in society. Women spend much more time with their children in the house than men do, this leads to the reduction of women's wages. Some studies examine through gender differences in behaviors, choices and activities such as housing, schooling, household contributions and relate these difference to the mobility patterns. The individuals' choices are the decision-maker of their mobility patterns, therefore the mobility patterns are dependent on the individuals' life decisions. These decisions comprise the employment choice, the job selection, the education choice and the house arrangements. Serving millions of people daily, transportation networks are the gateway to accessing the opportunities. The distribution of the social roles in a gender-conditioned arrangement plays a dominant role in the decisions taken by the individuals, and thus their opportunities.

1.2. Motivation

Gender Equality and Equity in the Mobility Context

UN Women defines gender equality as the equal rights, responsibilities and opportunities of women and men and girls and boys. Equality does not mean that women and men will become the same but that women's and men's rights, responsibilities and opportunities will not depend on whether they are born male or female. The 1993 United Nations Conference on Human Rights in Vienna and the 1995 United Nations World Conference on Women in Beijing paved the way for a greater global emphasis on gender discrimination as one of the most worrying aspects of gender inequality [3]. Gender equity is defined as the provision

of fairness and justice in the distribution of benefits and responsibilities between women and men. Though equality and equity are often used as interchangeable terms, both of them are affecting women's mobility. The mobility service is originally designed to be a gender-neutral service, providing an equal service to everyone. Nevertheless, the reflection of a set of gender inequalities is carried. Challenges to equitable public space use, including transportation opportunities continue to be perceived. Women exhibit behaviors in public spaces that suggest that men and women use the space differently, with men controlling the space and women fighting to claim their right to the space [4]. A study suggested that the challenges that women face in public spaces and on public transportation in particular, hinder their ability to exercise their right to freedom of travel, as well as their right to access public spaces and work opportunities [5]. According to a survey conducted in that study, 47 percent of female respondents said they had turned down job opportunities because of the inadequate state of public transportation [5].

1.3. Justification of the Research

Gender-based Violence in the Mobility Context

There remains a critical gap in understanding challenges faced by gender and their mobility-related decisions. One of these unconcerned factors is the gender-based violence. A survey conducted by GfK in 2018 showed that a public place is the most frequently reported place for a person's first experience of sexual harassment, also according to another recent survey, two out of every three women reported becoming victims of sexual harassment and abuse while in transit, with half of them taking public transportation [6]. Gender is rarely included in transportation policy and planning, and as a result, the area of gender and transportation is a fairly recent concern [3]. Many countries have implemented workplace sexual harassment legislation; however, the majority of countries do not have legal provisions for harassment on the street or in public transportation [7]. In the bargain, The problem of gender-based violence in Cairo has gained some coverage, but there is still a long way yet before finding common ground. Precisely, few have attempted to investigate why sexual harassment occurs in Egypt, and why Egypt is unusual in the developing world in terms of the prevalence of public sexual abuse [7]. Considering developing a framework to incorporate gender and social approaches into the public transit system is needed in order to better meet the needs of women's free mobility [3]. There is a good amount of existing research that investigates the gender travel patterns and the factors playing roles in shaping these patterns, yet few literature regards the violence in the transportation context. So far, the promotion of equal access rights for women through the interrelation between gender-based violence and travel choices has not yet gained increasing support.

1.4. Description of Study Area

1.4.1. Country Profile

Egypt is classified as a developing country with structural economic issues. This is demonstrated in the shortage of job opportunities as well as the rise in unemployment [8]. Given its identity as an Arab and a North-African country, the Egyptian society is a conservative traditional one, with obvious patriarchal characteristics witnessed and dominant in almost every corner of the society. 95 percent of the population lives within 20 kilometers of the Nile River and its delta; large parts of the country are sparsely occupied or uninhabited [9]. The mobility options in Egypt are mainly its rapid transit system in Greater Cairo known as "Cairo Tunnel Metro", its public buses network, minibuses being an informal public transportation option, and ride-hailing (taxis) along with e-hailing options.

1.4.2. Country Demographics

Formerly, women had their traditional roles of caring for children, cooking and cleaning the house. With the development of civilization and the system of life, the roles of women differed. Yet, some societies still adhere to those ideas and entrench them in the mind, giving more power to concepts like conservative traditions which are still the ones that determine the forms of behavior of individuals. For instance, traditional societies rely on informal social control. A specific form of patriarchy structure is found in the way women and men arrange themselves domestically and socially in most Egyptian families[10]. The so-called feminine and masculine nature has served the legitimacy of the continued supremacy of men over women and continues to do so. Egyptian society is almost entirely dominated by men whose cultural and religious legacies do not allow women to enter public life except within narrow limits, such that women's participation in public life remains effectively limited. The marginalization of women from participating in a social role similar to men in the Egyptian society is not an isolated or an individual act, but a widely practiced one. The gender roles are often linked to a set of behaviours and beliefs that reflect the values prevailing in the society, and subsequently determine the relevancy of both genders to their role and the degree to which society accepts them. In other words, the role distribution is linked to the expectations of society from the individual based on its prevailing values.

1.4.3. Gender and Mobility in the Country

The issue of sexual harassment in Egypt has become an increasing public threat, with no appropriate measurement or interventions in place [11]. In the nineteenth century, the public space in Egypt was a part of where women's and children's activities were supervised and restricted by male members of the family, neighborhood elders, and religious representatives. From this reason the streets were very narrow with many dead ends, so that the unnecessary mobility inside and between neighbourhoods could be avoided [10]. Afterward in the twentieth century, several transformations allowed people to have increasingly more interaction, to travel regularly in and from public spaces, and to have the

essential physical articulations to initiate social life outside of homes and neighborhoods and more into public spaces [10]. There has been a rise in the interaction between men and women on the streets and in other public places in the twenty-first century, the Egyptian family continues to function in conservative ways [10]. Women bearing, in most Egyptian families, the burden of spending on the family and the responsibility to manage it, makes them more vulnerable to various forms of violence. The deep-rooted patriarchal culture gives husbands the right to decide within the family, which increases the likelihood of violence against women. Women end up facing limited mobility, due to such mentioned prevailing cultural norms of gender. Nevertheless, in the public sphere, sexual harassment cases have been recorded on a daily basis during most Egyptian holidays and feasts, as well as on a daily basis in Egyptian public spaces, including public transportation. "El Ataba Girl" is a well-known sexual harassment incident that took place in the early 1990s, when a girl was sexually assaulted in Downtown Cairo in daylight during one of the feast holidays. Later in 2006, Egypt experienced the first public sexual assault cases in Downtown Cairo, also during a feast holiday. In 2008, a worse mass sexual harassment event occurred during the feast holidays as well [11]. Egypt Independent reported that more than 700 incidents of sexual harassment cases were identified to the police during only the first two days of the feast holiday in 2012. According to a 2008 survey undertaken by the ECWR ¹, 83 percent of Egyptian female respondents appeared to have been sexually harassed, with the types of abuse ranging as physical harassment, verbal harassment, ogling of women's bodies, stalking or following, and indecent exposure. The ECWR defines public space harassment as unwanted behaviors that are intentionally committed by the perpetrator and result in sexual, physical, or psychological exploitation of the victim [10]. The de facto authorities have increasingly imposed paternal rule and laws, with strict interpretation, through the use of state institutions and public discourse, as a means of controlling women and girls. The absence of deterrent laws in Egypt is one reason violence against women is widespread. Often, perpetrators are not held accountable for their crimes, and many survivors do not receive the support they need to fully recover. As of 2005, movements in Egypt have solely targeted public violence against women with numerous community-based anti-sexual harassment campaigns [3]. The ECWR started tackling street sexual violence against women in Egypt in 2005, seeking to criminalize and alter social perceptions of such practices [3]. According to Peoples (2008), the mass violence seen in public life in Egypt started with the Egyptian economy's liberalization in the early 1980s, which resulted in a collapse of economic conditions for many Egyptians, affecting established social systems, and increasing unemployment has disrupted the age of marriage, preventing men from joining adult worlds. A study suggested that Egyptian families did not spread violent behaviors, but rather that the acts of violence shown by young men on public spaces are linked to social issues that have been emerging since the 1970s and have become exponentially worse in the last ten years [10].

¹Egyptian Centre for Women's Rights

1.5. Research Objectives

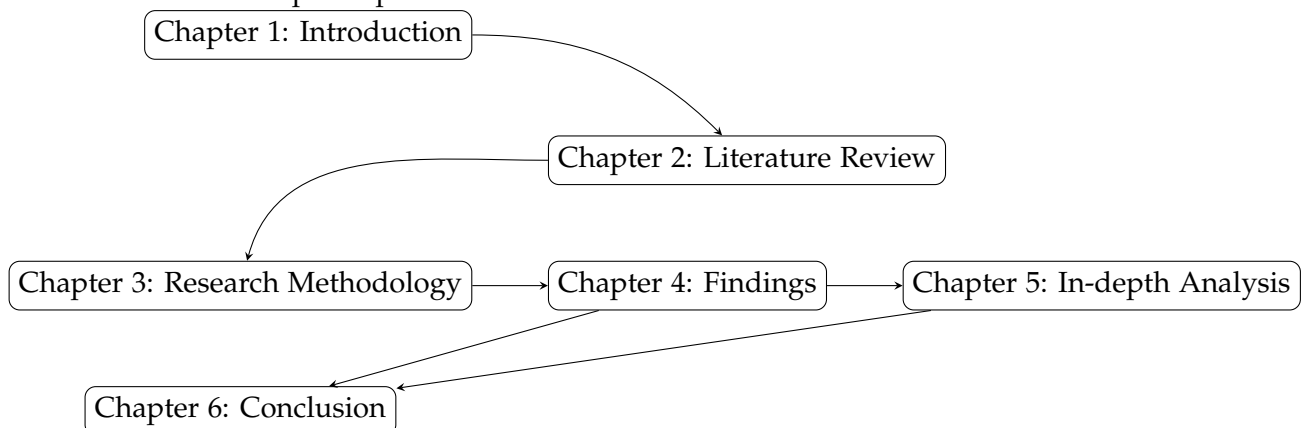
The gender gap, also regarded as gender differences between men and women, is substantial in this research. Yet, this research focuses solely on how the gender gap, as represented in the study by gender-based violence and gender-based activities, can lead to gender-biased mobility choices within and around the transportation context. The main objective of this work is to generate a study on gender-based violence in the context of transportation systems and investigating the perception of its impacts on the travel choices made by female commuters in Cairo, Egypt, along with examining the differences in mobility patterns from a gender-biased perspective.

Research Questions

1. Do genders have different travel patterns in Cairo?
2. Does gender-based violence exist in the transportation systems in Cairo?
3. Does gender-based violence in transportation systems have impact on the mobility of women commuters in Cairo?

1.6. Thesis Framework

This thesis consists of six chapters. The first chapter (1) includes the introduction, where the research problem and research questions as well as the description of the study area are defined. The second chapter (2) covers the literature review, covering the gender travel patterns (2.1) and the gender-based violence (2.2) literature work. The third chapter (3) concerns the research methodology and it explains the research methods used in this thesis in detail. The fourth chapter (4) presents the data analysis of the collected responses from the questionnaire used in the methodology. The fifth chapter (5) presents the in-depth analysis of the findings, in which the variables of the questionnaire are connected to answer the research questions. The sixth chapter 6 presents the conclusion of the work.



2. Chapter Two: Theoretical Framework and Literature Review

The first section of the literature review draws together information on our understanding of perceptions of different gender-based activities (job market, household tasks and educational activities) and their impact on shaping the mobility patterns of females and males in Cairo. The second part of the literature review examines perceptions of personal security and concerns about violence when using public transport. Another goal of this section is to review the measures that have been introduced to tackle the personal security concerns in public spaces. Key reviews are used to provide background for evaluating the main research findings.

2.1. Gender Travel Patterns

Women and men are assigned to different social roles. Gender affects men and women differently in terms of access to, and control of finances and earnings, jobs, wages, stable and secure housing, political participation, and other positions in the society [12]. Their responsibilities are often regulated by dictates and practices in the society [13]. These responsibilities have clearly resulted in women's travel patterns varying significantly from men's in important respects [14]. Although significant progress has been made towards gender equality and women's empowerment, women's conditions remain largely unsatisfactory, especially in developing countries [15]. Patriarchy was highly symbolic in Egypt not only for spatial and gender based entity within the private family sphere, but also for dividing up mobility and involvement in the public sphere [16]. People of more conservative views in Egypt promote gender complementarity and denounce equality as a Western and unattainable aim [17]. Egypt's gender inequality remains high, ranked 25th out of 130 in 1995 and 23rd out of 152 in 2013, implying that progress toward gender equality has been slower in Egypt than most other countries [18]. The equality of genders appears to be more fictitious than real: a woman's opinion is worth half that of a man's, and a woman's worth is half that of a man's; men with inalienable inheritance rights receive twice as much as women [17].

2.1.1. Gender Activities - Mobility Relationship

There are travel pattern differences between men and women, as gender has been shown to be a major factor in everyday travel-activity behaviour [19]. Female roles and activities are given as causes for this difference [article32]. Women use public transportation mainly for household tasks, childcare, education, and health purposes [20]. Women are more probable

to have their full-time job switched to part-time when they return to work following the birth of their first child, shaping their transportation trends differently through making the time spent by women in their daily commutes to work considerably less [21]. Similarly, guaranteeing women's access to secure and equal mobility offers is critical for providing more opportunities for economic activities and facilitating access to education and occupations [22]. Women's economic situation is directly proportional to their level of mobility, hence, effective public transit services is used to enable women to access jobs and economic opportunities. According to one study, 80.5 percent of the women surveyed agree that public transit is important for women's economic participation [20]. Moreover, 60 percent of women in the Middle East and North Africa believe that a lack of transportation has hindered their ability to increase their earnings. 52 percent believe that inadequate transportation keeps them from getting to places of work, while 47 percent believe it has a negative effect on their jobs [20]. Furthermore, 80 percent of women in the Middle East and North Africa claim that inadequate transportation restricts women's autonomy [20].

2.1.2. Job Market

“Yet not for a single moment did I have any doubts about my own integrity and honour as a woman. I knew that my profession had been invented by men, and that men were in control of both our worlds, the one on earth, and the one in heaven. That men force women to sell their bodies at a price, and that the lowest paid body is that of a wife. All women are prostitutes of one kind or another.” — Nawal El Saadawi¹, *Woman at Point Zero*

Traditional perceptions of gender roles, laws and policies such as personal status and employment laws like gender segregation and wage discrimination, which offer males more instrumental resources and perpetuate prejudices about women's skills, are all examples of patriarchal norms and attitudes [24]. According to World Development Indicators (WDI), women's economic activity rates are among the lowest in the world: in 2014, the percent of women in the labor force to men was 32 in Egypt, compared to a global average of 68 [25]. The significant majority of young women support women's right to work, with approval rates of over 90 percent among employed women, and over 85 percent among young female house workers who are not employed, with the belief that women should be assigned leadership roles within society [26].

Employment Gap

Women are less likely than men to be employed [27]. Conservative countries, such as Egypt, have gendered labor relations and organizational structures, which maintain gender-segregated work spaces and, by default, gender-segregated occupations [28]. The majority of women work in health, education, and social care, indicating that occupational systems are

¹Dr. Nawal El Saadawi is an Egyptian author and activist who became a symbol of the Arab world's struggle for women's rights by defending women's rights in the light of social and religious limitations and advocating against female genital mutilation [23].

highly gendered [28]. Only teaching is listed as a job for which women are more appropriate than men by some employers as women were thought to be less appropriate for some roles than men because they lacked muscle ability, lacked supervisory abilities, and some jobs were considered 'male jobs' [17]. In Egypt, few managers are willing to employ women for managerial, technical, skilled, and unskilled positions [17]. Even within this narrow sphere, women face additional barriers: the female labor market is highly segmented, and certain typically "female" roles are now deemed unacceptable for women [17]. Women being assigned to less qualified and repetitive tasks has a detrimental impact on their job opportunities, as these tasks are often replaced by machines [17]. In Egypt, women remain financially dependent on their husbands or relatives, restricting their financial independence [29]. Their chances of finding work remain reduced than those of men in the market. Women are particularly vulnerable to unemployment, with young women withdrawing from the labor market because of cultural barriers and a lack of available job opportunities [30]. Indeed, their access to good jobs remains limited. Women are usually discouraged from working outside the home [13]. Male unemployment in Egypt increased from 9 percent in 2010 to 13 percent in 2014, while female unemployment increased from 23 percent to 25 percent. At the same time, youth unemployment rose by 19 percentage points for young men to 34 percent, while it remained stable for young women at around 53 percent [25]. In every society, the rate of female labor force participation (FLFP) is the primary and most significant factor to consider when looking at women's economic activity [31]. Egypt was ranked at the bottom of a list of 58 countries surveyed in a 2005 World Economic Forum report on women's empowerment, earning the lowest ranking in all five areas of the analysis: economic participation, economic opportunity, political, health, and well-being [32]. The Arab Spring revolutions are thought to have been sparked by a shortage of jobs for increasingly educated youth [33]. When evaluating the NEET (Not in Education, Employment, or Training) situation (aged 18–29) in Egypt between 2011 and 2014, the situation worsened slightly, rising 3.4 percent to 59.6 percent. The unemployed make up the largest subgroup of NEETs. In both years 2011 and 2014, the chance of a young woman becoming a NEET was significantly higher than that of a young man, with a 62.4 percent difference in Egypt in 2014 [30].

Pay Gap

The gender pay gap is the average difference between the wages women and men receive per hour of work. Women tend not to work for pay, and if they do, it is from home, since paid jobs outside the home is in the sphere of men, and women are required to provide care and deliver services and products for their families at home [31]. Overall, women are more likely to work longer hours than men in both paid and unpaid work. When they work in paid jobs, women are paid substantially less for equivalent jobs, and their earned income is significantly lower than men's [27]. In Egypt, wage inequalities between men and women expanded dramatically in both the public and private sectors, exceeding 50 percent in the latter, which is exceptionally high by international standards [24].

There are several reasons that could lead to a gender pay gap. There is discrimination against the jobs that women work in more than men. Male-dominated occupations have

higher salaries. Women are found in the professions of education and health, and there are low wages. This is a clear distinction towards professions that are classified as more suitable for women. Wage standards are set below normal standards. Another possible explanation of this wage gap is that women are more willing to accept less-paid or less-stable jobs in the labor market, such as domestic care and cleaning jobs. The wage assessment in the Arab countries is not based on efficiency, but rather on gender. In 1998, the median real hourly wage in the industrial sector was 1.97 Egyptian Pounds (EGP) for males and 1.41 Egyptian Pounds (EGP) for females, resulting in a male–female wage ratio of approximately 140 percent, by 2006, the ratio had risen to 180 percent [34]. The wage difference is justified by claiming that the women’s for the family is an additional disposable income, and men’s income is a basic income. This gap is a reflection of the discrimination women suffer in the labor market. Many new mothers may prefer to work close to home, which may limit their employment opportunities and reduce the likelihood of them being employed by more profitable, higher-paid firms.

Jobs in the public sector are typically preferred by young women and approved by their families because of some kind of higher expected quality. On the contrary many jobs in the private sector are often seen as inappropriate for young females so because subjectively evaluated risk of sexual harassment in small- and medium-sized private enterprises is high due to possible face-to-face engagement with individuals [article14]. Despite a long history of legislation intending to endorse fair pay for equal work, and a public sector that was recognized to discriminate positively against women, giving them flexible maternal and child care leaves, gender wage inequality rose, worsening women’s labor market status [34].

2.1.3. Household

A specific type of patriarchy defines how women and men structured themselves domestically and publicly in the majority of Arab families [16]. According to society, a woman’s most important role is that of a homemaker and mother, while a man’s duty is to help and protect his wife and family. Even when the woman contributes significantly to the family’s profits, the man is considered the head of the household [28]. Young women’s responsibilities at home are influenced by strong traditional standards [26]. Two-thirds and more than three-quarters of men believe that a woman’s primary function is to care for the family [35]. In Egypt, there is evidence that young women who grew up in families with a greater proportion of brothers have a higher risk of being full-time houseworkers [26]. Getting married for the first marriage before leaving school substantially raises the likelihood of becoming a domestic worker [26]. In Egypt, more than 90 percent of unemployed women, as well as more than 80 percent of working women, are solely responsible for home duties such as cooking, washing, doing dishes, laundry, and ironing [26]. Only one-tenth to one-third of men reported recently performing a more traditionally female task in their home [36]. This is due to the complex definition of employment, which covers all types of dependent jobs, self-employment, and family work [26]. 57 percent of all Egyptian young women look after children or sick or elderly family members, compared to 43 percent of working young women. Similarly, 40 percent of inactive unemployed women combine childcare with other home tasks, compared

to 31 percent of working women [26]. As opposed to the other category of working women, unemployed women not only provide care more often, but they often spend more time providing care if they do so: Unemployed women devote approximately 22 hours per week to this task alone, while employed women devote 16 hours per week [26].

2.1.4. Education

“We neglect the education of Egyptian women so that they become unqualified for work.” — Nabawiya Mousa ²

Gender gaps in some aspects of human development — specifically in school completion rates — and gender differences in educational disciplines remain apparent. In terms of education and demography, MENA countries are substantially patriarchal, as higher education is often regarded as a tool to a financially stable future through marriage, rather than a key to work, financial independence, and empowerment [31]. According to the 2015 survey, illiteracy continues to affect nearly 52 million adults in the Arab World, the majority of whom are women [35]. According to a survey in Al-Ahram in 2009, girls account for 95 percent of non-enrolled children in Egyptian primary education. However, literacy rates among women aged 15 and up in Egypt has improved from 22.4 percent in 1976 to 65.8 percent in 2012 [29]. Women’s social empowerment through education signifies many girls’ integration into public life and improves employment opportunities for women [37]. Education structures, on the other hand, continue to reinforce gender roles by diverting women into appropriate vocational and female education programs in social work and education [28]. Moreover, according to research into the understanding of women’s gender roles, men prefer to see women as lacking skills, less productive when compared to men, and have restrictive views toward women’s education, as well as women going out alone and mingling with men [38].

2.2. Gender-based Violence

Gender-based Violence Definition

The United Nations 1993 Declaration on the Elimination of Violence Against Women (CEDAW) precisely describes violence against women as any act of violence that causes or is likely to cause physical, sexual, or psychological harm or distress to women, including threats of such actions, intimidation, or unlawful deprivation of liberty, whether occurring in public or private life.

Gender-based Violence Forms

Gender-based abuse covers a wide range of behaviors, ranging from verbal assault and social oppression to enslavement and murder, it also involves, but is not limited to, acts of physical,

²Nabawiya Mousa was the first Egyptian woman to go to high school and describes in her memoirs explicit aspects in which Egyptian women were marginalized in the early twentieth century, as well as how one woman conquered social and behavioral oppression. [1]

sexual, emotional, verbal, financial, and psychological abuse by intimate partners or family members; sexual abuse including child sexual assault, stranger rape, acquaintance rape, marital rape, and any unwelcome contact, kissing, or other sexual acts); sexual harassment and intimidation; and forced prostitution [39].

Almost all else that goes into making up a well-functioning society requires basic security—the protection from violence [30]. Gender-related violence was historically described as violence perpetrated by men against women, but it is now widely understood to include a broader spectrum of hostilities based on sexual identification and sexual preference, including those types of violence perpetrated against men who do not represent the prevalent forms of masculinity [39]. Although substantial change has been made in gender equality around the world in recent years, significant problems of gender injustice against women, in the private or domestic sphere, continue to require to be resolved [40]. Social inequality facilitates violence against women, and gender-based violence against women is seen as a key contributor to gender inequality [12]. Patriarchy and the associated gender inequality are crucial concepts that come into effect when discussing Gender-based Violence (GBV) against women [41]. Cultural expectations about gender roles and violence can affect the likelihood of witnessing GBV [42]. In addition to traditional forms of violence such as wife-battering and sexual assault, Arab women face types of domestic violence during their lives, such as female genital mutilation, child marriages, forced marriages, honor-related violence aimed at both married and unmarried women, and abuse by other family members [35]. According to a new World Health Organization survey, more than 35 percent of women worldwide have witnessed physical or sexual violence.

2.2.1. Security-Mobility relationship

The spread of violence leads to impacts on women, part of them is restrictions on freedom of movement. According to Article 13 of the Universal Declaration of Human Rights (UDHR): "everyone has the right to free movement and residence within the borders of each state." and as a measure, mobility rights are regarded as fundamental principles, as people should be able to travel from one location to another conveniently, openly, and securely [20]. New cases of sexual harassment and/or violence on the metro, buses, and taxis are reported almost every day by Egyptian women of all ages [43]. Despite the efforts of numerous campaigns and some NGOs to tackle harassment in public spaces, and despite the notable attention paid to the subject by various organizations, harassment remains a constant daily struggle faced by Egyptian women that endangers their well-being, restricts their mobility, and obstructs their public involvement [44]. The question of women's safety in public transportation is even more critical because it is women, not men, who rely on public transportation to fulfill their mobility needs [22]. According to a study, women's worries and doubts about safety have a detrimental impact on their travel decisions as they would ignore using public transportation at all if they feel they would be abused or victimized during their ride [45]. To resist public spaces violence, women in the Middle East follow impractical travel patterns, such as taking the first safest accessible transportation route rather than the most appropriate and reliable option [20].

2.2.2. GBV as a global problem

Violence toward women and girls is a global crisis that is not limited to any geographical area, race, gender, society, community, age group, or socioeconomic status [35]. Gender-based violence (GBV) has its roots in women's lack of power, violence-supportive attitudes, and violent childhoods [36]. The UN General Assembly reported in 2006 that violence against women reinforces women's limited social position and the numerous inequalities between men and women. The initial concept of violence against women has evolved to comprise not only aggressive physical attacks but also psychological, mental, and financial abuse. Sexual harassment has grown to encompass not only physical assaults by strangers, but also less obvious and covert forms of abuse at work, in date rape and other forms of intimidation between acquaintances [12]. GBV affects about one-third of women worldwide; with about half of the world's population being female, the 30 percent estimate means over a billion women victims, including young girls [41].

2.2.3. GBV in Egypt

Gender-based violence, particularly intimate partner violence and sexual harassment in the public spaces, is believed to be common in all Arab countries, but it is poorly reported, with the exception of Egypt [36][39]. Along with the gradual rise of violence, this violence has taken on more vicious ways, including verbal harassment, threats, stalking, groping, sexual misconduct, robbery, gang rape, and even murder [43]. According to a 2013 United Nations report titled "Entity for Gender Equality and Women's Empowerment," 99.3 percent of Egyptian women have experienced some form of sexual harassment and up to 46 percent reported experiencing it on a daily basis [46]. According to an ECWR survey, almost 72 percent of sexual harassment victims in Egypt wear the Islamic headscarf. Moreover, sexual harassment was recorded by 23.7 percent of girls aged 10 to 14 [44].

Between 2005 and the start of the revolution in 2011, the population perceived, and continues to see, violence against women as a minor problem, if one at all. When allegations of sexual assault develop, often people see them as religious or psychological disputes between men and women [47]. Long-standing customs and religious values that normalize GBV, serve to keep a veil of secrecy around various harmful and often life-threatening behaviors that affect women in place [41]. The presumption that harassment is a violation of women's rights is unfamiliar [44]. In 2005, 96 percent of women aged 15–49 had undergone genital cutting, with the majority having done so by the age of nine [41]. Sexual violence against women was planned and executed on a political level. Evidence from Egyptian women's groups suggests that over 100 women were attacked by mobs of men while participating in political protests [16]. During Egypt's 2011 revolution, gang rapes enhanced in and around Tahrir Square, fanning the flames of violence and fear for female protestors [41]. The state's position here is reported to be limited to its inability to act and do its duty to prevent such violence crimes against women [43].

GBV and Masculinity

Men in Egyptian society identify with traditional gender norms that are reinforced as part of their upbringing as children in their households where manliness and authority - and their polar opposites - are formed and then reinforced by culture and social tradition [17]. Policing women's bodies and promoting men's physical dominance over women are fundamental ideals of traditional masculine in North African society, as they are in most patriarchal societies [48]. Women and girls are often subjected to violence in places where they are supposed to feel safe, for example, in their homes or in their social surroundings. With the need to be respectful of older people, such as male instructors who sexually abduct them and parents who give out underage girls in marriage or impose rituals like female genital mutilation/cutting (FGM/C), women are often manipulated against their will or moral conscience into acts that are destructive to their own rights [41]. Some resort to violence against women through verbal coercion that directly affect them. Others use physical violence against women, which sometimes leads to death. The perpetrators are usually current or former partners and spouses, parents, siblings or colleagues. The term flirtation is often used, with many men using it to refer to sexual harassment, as it has been documented that males associate sexual harassment with severe damage, while women consider catcalls, ogling, and facial expressions as harassment [44]. According to several surveys, most men admitted to harassing women not because their clothing is provocative, but to fulfill repressed sexual impulses or because harassment makes them feel masculine or merely because they have been used to harassing women since they were young [48]. The majority of males believe that women rarely react to sexual assault, which they believe gives the appearance that they are enjoying or supportive of it and may inspire the harasser to go forward [44].

GBV in public spaces

For the past few years, sexual assault became more widespread as verbal and physical abuse of women became more prevalent in the public domain [43]. Public spaces harassment happens commonly on the streets and on public transportation and does not always involve physical contact or verbal comments, but is frequently manifested as provocative stares that evoke fears and concerns of being violated [16]. In Egypt, women became more vulnerable to sexual harassment in public spaces in the aftermath of the 2011 revolution, due to fragile security and a chaotic political situation [2]. Nonetheless, Cairo has an ongoing reputation as a city where women are harassed regularly, regardless of their age, nationality, class, race, or religious affiliation [16]. By far the most prevalent form of violence is sexual harassment in public places. The prevalent phenomena is a constant challenge that Egyptian women must undergo, and in many cases tolerate, when in public [44]. 95.3 percent of Egyptian females reported being assaulted in the past, with the majority experiencing harassment on the streets or on public transportation [44]. So even though perpetrators of street harassment easily meld into the anonymity of the crowd, testimonies or evidence are difficult to acquire [16]. Male-to-female harassment in Cairo in the period from 2005 to 2009 received national, regional, and international attention, and as a result, street harassment was discussed publicly

as a national issue [16]. Public space harassment is a social phenomenon that represents social factors such as unemployment, changing family values, and economic hardship, all of which have made it more difficult to accomplish masculine desires [16]. Public space harassment in Cairo is classified into three types: gestures, verbal remarks, and physical harassment [16]. Between 31 percent and 64 percent of men said they had engaged in street-based sexual harassment, primarily sexual comments, stalking/following, or staring, whereas up to 60 percent of women said they had ever experienced it, and up to 90 percent of men– said they did it for fun, with two-thirds to three-quarters blaming women for dressing provocatively [36].

GBV from a legal perspective

Honor and dignity are values outlined in Egyptian penal code articles that sentence gender violence crimes such as rape, incest, child molestation, and adultery and tie them all in a moral degradation system [47]. In particular, sexual violence is not explicitly and specifically addressed in Egyptian legislation or constitution; however, it is addressed ambiguously under three separate articles of Egyptian criminal law [49].

Article 267 – Whoever lies with a woman without her consent shall be punished with permanent or temporary hard labor. If the felon is from the victim’s ancestors, or is a paid servant to her or to the aforementioned persons, he shall be punished with permanent hard labor.

Article 268 – Whoever indecently assaults a person by force of threat, or attempts such assault, shall be punished with hard labor for 3 to 7 years. If the victim of said crime has not attained complete 16 years of age, or the perpetrator of the crime is among those prescribed in the second clause of

Article 278 – Whoever commits in public a scandalous act against prudence be punished with detention for a period not exceeding one year or a fine not exceeding three hundred pounds.

[47]

Conversely, there is a lack of compliance for such regulations in both the administrative and judiciary branches; victims reported that police officers refused to file or record their allegations, and several reported that police officers observed sexual assault incidents and did not respond [49]. The explanations for this remain unclear; officers may be expressing sympathy with the perpetrator, or they may actually be hesitant to raise the workload for what they may consider to be "trivial" and "everyday hassle" that women face on the streets [44]. In Egypt, there is no mandatory sex education or sexual harassment awareness in classrooms, and sexual and reproductive health content was eliminated in 2010, therefore misunderstanding and inconsistency in reporting are vast [49]. As observed by Anti-sexual harassment organizations, people associate between sexual harassment and sexual attraction [47]. Women seldom report acts of aggression, even if they do, social norms force the victim to withdraw the case before the suspect is convicted [41]. Women are passive in rape cases for fear of being labelled of complicity – for their clothing choices and for welcoming the assault [41]. Women are more concerned that responding to the harasser would worsen the

situation and lead to a physical encounter [44]. Many victims of violence are unable to speak about or reveal their experiences because of stigma and guilt [44]. In all of the cases, the new factor was not only societal denial, but also collusion. If a woman dared to object to abuse on a commuter bus or in the street, she will be met with everyone averting their gaze or ordering her to remain silent in order to prevent a scandal [40]. Furthermore, survivors' contact information is used in police reports, is available to the defendant's lawyers, and is often released in headlines, removing the prospect of anonymity. As a consequence, the defendant's family will often track down the woman who filed the lawsuit and either harass or emotionally intimidate her, causing the majority of her to drop her complaint [50]. 83.3 percent of females said they would not investigate sexual harassment cases using an internet reporting system due to various fears over safety and anonymity [44].

Impact of GBV on women

“Il faut que la honte change de camps” — Harassed women. Toulouse, France ³

Gender-based violence against women has both short- and long-term consequences on women, including physical injuries and depression, psychiatric illness, post-traumatic stress disorder, opioid and alcohol use, poverty, and homicide/femicide [12]. Registered assaults and violence against women have increased in proportion due to the increase in aggressive behavior against women in most states of the country. The published numbers on this phenomenon reflect the bad size of the suffering of many Egyptian women because of violence. Violence has a significant psychological impact on those who are assaulted, with 81.8 percent acknowledging feeling offended or disgusted by their encounter [44]. According to research on violence against women, cultures with strong patriarchal systems are more likely to have high levels of violence, where in the patriarchal belt, female virtue is directly related to family honor, so there are strict codes of conduct for women [31]. When the women's guardians turn out to be the offenders of abuse, they find themselves in a tough psychological traumas [41]. Females who have been touched are the most likely to feel agitation and distress, those who have received sexual invitations are the most avoidant to going out on the street and have the great sense of vulnerability, and those who have been followed and stalked have the great sense of terror, weakness, and insecurity of public spaces [44].

Responding to harassment and social support mechanisms

“ يختفي العار عندما نروي قصصنا في مساحات امنه ” — Egypt, 2020 ⁴

International agreements such as the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW), especially General Recommendations 12 and 19, and the

³“It is necessary that the shame changes sides”: Awareness against violence culture campaign in Paris, as 75 000 women are still victims of violence each year in France

⁴“Shame disappears when we tell our stories in safe spaces”: A growing MeToo campaign took Egypt by flood in 2020, with anonymous testimonials garnering huge public attention on social-media accounts, questioning the stigma of victim-blaming in a country where gender-based abuse has been all too prevalent, with the goal of being legally protected from sexual violence in all its forms [3].

1993 UN Declaration on the Elimination of Violence Against Women, uphold women's right to live free from violence [35]. A safe zone is a public or private location where women and girls can feel physically and emotionally secured: The absence of trauma, unnecessary stress, abuse, or fear of violence is referred to as "safe" [41]. Globally, efforts that empower men and women against gender-based violence are pilots of gender equity movements [37]. Many efforts are being made in awareness campaigns to end violence against women in order to break free from the syndrome and to demand their rights, and break the male dominance amid the great changes taking place in the world, and the Arab countries are part of it. In their discursive practices and advertising, community-based organizations counter social stereotypes that privilege and justify male misconduct by blaming women for causing themselves to be abused [47]. The majority of the initiatives were promoted during religious and national holidays, which are prime times for sexual harassment in Egypt [49]. HarassMap⁵, launched in 2010 as a workaround to Egypt's enduring issue of sexual violence on the streets, is a digital tool that allows the tracking of gender-based violence, aggregating data, and exposing places where gender-based violence is widespread. The app makes recognizable social structures that would perpetuate violence, such as dominant attitudes against women in the public sphere [51]. This tool helps women to trace where they were sexually harassed to demonstrate the degree to which violence arises across public spaces in the country [43]. A new MeToo surge started hitting the country in July 2020, bringing more change to Egyptian women's rights and generating a long-overdue discussion about gender-based violence. The epicenter of the campaign is Nadeen Ashraf's ⁶ Instagram account Assault Police (@AssaultPolice) ⁷, which has almost 300,000 followers, including Egyptian public figures and feminist activists. Egyptian women have welcomed the chance to truly tell their stories. Egyptian officials urged witnesses to come forward, to speak out and to report violence cases. In reaction to Egypt's Assault Police Instagram page, current Egyptian President Abdel Fattah el-Sissi has introduced a law amendment to safeguard the identities of victims [53][54][55][56].

⁵<https://harassmap.org/en>

⁶Nadeen Ashraf is a 22 year-old Egyptian philosophy student who founded the Assault Police account [52].

⁷<https://www.instagram.com/assaultpolice/?hl=en>

3. Chapter Three: Research Methodology

This chapter outlines the methods and therefore the strategies that are adopted for this research.

3.1. Research Design

The research included a literature review, a survey request for data and quantitative data analysis. The core of the research is a questionnaire that questioned respondents about their mobility patterns in terms of their most frequent trip and its correspondent mode, time, purpose and duration, as well as their experiences of unwanted behaviors linked with the use of public transit, their reactions, the impacts of such behaviors on their mobility and the safety precautions they believe would make public transit safer. The survey consisted of 5 sections. In the first section of the questionnaire 'Screening Questions', respondents were asked about their gender and their trips with public transport (including e-hailing) frequency, and based on that section, the later relevant questions were showed to them. The research was conducted through a questionnaire formed of both closed [Likert Scale Multiple Choice Questions, Checklist type Multiple Choice Questions and Multiple Choice Questions] and open ended questions.

3.2. Research Locale

The web-based platform, LimeSurvey, was used to administer the questionnaire. The survey was unfold solely on on-line platforms and there was not permit for face-to-face interviews due to the COVID-19 pandemic restrictions.

3.2.1. Data Collection Activities

Given the nature of the research, the social context in which the conservative Egyptian identity plays a significant role, that the norms drive many of the people to be hesitant as it comes to speaking about taboo issues like violence and harassment, and where it would be prohibited by social custom in some communities as the mentioned topics are viewed as a threat to ancestral traditions, also conjointly on account of the COVID-19 pandemic-related social distancing measures that restricted the human contact and did not permit for face-to-face interviews, the survey was unfold solely on on-line platforms.

3.3. Research Ethics

The survey took into consideration the protection of all respondents. Respondents were assured of complete anonymity. Furthermore, they were offered the choice that they did not have to be compelled to answer any question they felt uncomfortable regarding.

3.4. Research Instrument

3.4.1. Questionnaire Development

The web-based platform, SurveyLime, was used to administer the questionnaire, consisting of 9 sections and 66 questions. The invitation to fill out the online questionnaire included a link to the questionnaire.

3.4.2. Questionnaire Design

The questionnaire is divided into nine parts:

1. Questionnaire Part One (A.1)
2. Questionnaire Part Two (A.1)
3. Questionnaire Part Three (A.1)
4. Questionnaire Part Four (A.1)
5. Questionnaire Part Five (A.1)
6. Questionnaire Part Six (A.1)
7. Questionnaire Part Seven (A.1)
8. Questionnaire Part Eight (A.1)
9. Questionnaire Part Nine (A.1)

Questionnaire Part One

This part of the questionnaire included screening questions that investigate the gender of the respondents and the frequency of riding transport modes. It consisted of two questions. The next subsection shows the questions and their correspondent answers.

Q1.1. Gender of the Respondent: The question asked the respondent to choose their gender.

Q1.2. Frequency of Riding Transport Modes: The question asked the respondent to choose the frequency of their use of transport modes.

Questionnaire Part Two

This part of the questionnaire included questions about the country and the city of the respondents. It consisted of two questions. The next subsection shows the questions and their correspondent answers.

Q2.1. Country of the Respondent: The question asked the respondent to choose their country of residence.

Q2.2. City of the Respondent: The question asked the respondent to choose their city of residence.

Questionnaire Part Three

This part of the questionnaire included questions that investigated the travel behavior of the respondents. It consisted of six questions. This part of the questionnaire was answered by male and female respondents. The next subsection shows the questions and their correspondent answers.

Q3.1. Driving License: The question asked the respondent if they owned a driving license.

Q3.2. Access to a car: The question asked the respondent if they have access to a car.

Q3.3. Purpose: The question asked the respondent to choose their primary reason of using the transport modes.

Q3.4. Purpose-Frequency: The question asked the respondent to choose the frequency of their transport use for some purposes.

Q3.5. Purpose-Mode: The question asked the respondent to choose the most frequent mode of their transport use for some purposes.

Q3.6. Number of Transport Modes: The question asked the respondent to choose how many transport modes they use between the departure and arrival point on their most frequent trip for some purposes:

Questionnaire Part Four

This part of the questionnaire included questions about the travel patterns of the respondents. It consisted of six questions. The next subsection shows the questions and their correspondent answers.

Q4.1. Frequent Mode: The question asked the respondent to choose their most frequent used mode.

Q4.2. Mode Access: The question asked the respondent to choose how they reach their most frequent used mode.

Q4.3. Length of the trip, in minutes: The question asked the respondent to choose how long their most frequent trip is in minutes.

Q4.4. Length of the trip, in kilometer: The question asked the respondent to choose how long their most frequent trip is in kilometers.

Q4.5. Access Distance to Point of Departure: The question asked the respondent to choose how far their access to the departure point of their most frequent used mode is.

Q4.6. Access Distance from Point of Arrival: The question asked the respondent to choose how far their access to the arrival point of their most frequent used mode is.

Questionnaire Part Five

This part of the questionnaire included questions about the travel choices of the respondents. It consisted of eight questions. The next subsection shows the questions and their correspondent answers.

Q5.1. Employment Location - Travel Challenges: The question asked the respondent if they would prefer an employment place closer to their home only to avoid transport challenges.

Q5.2. Employment Condition - Travel Challenges: The question asked the respondent if the transport conditions would condition the choice of their employment in terms of level, location and other factors.

Q5.3. Trip Duration - Safety: The question asked the respondent if they would rather make a longer trip where the security level is higher, than a short trip, where they are not sure about the personal safety.

Q5.4. Trip Duration Addition The question asked the respondent how long additional time would still make them choose the longer safer trip than the shorter not so safe one.

Q5.5. Reasons for not Using Transport: The question asked the respondent to rate the possible reasons that prevent them from using public transportation on regular basis.

Q5.6. Factors to Transport Attractiveness: The question asked the respondent about the factors that might increase their attractiveness to use public transportation on regular basis.

Q5.7. Plans Cancellation - Transport Challenges: The question asked the respondent about the possible cancellation of their plans because of the transport challenges.

Q5.8. Expensive Trip for Special Occasion: The question asked the respondent whether

they would consider using a more expensive mean of transport if there are dressed for a special occasion.

Questionnaire Part Six

This part of the questionnaire included questions about the travel challenges of the respondents. It consisted of five questions. The next subsection shows the questions and their correspondent answers.

Q6.1. Frequency of Unwanted Behavior: The question asked the respondent about the frequency of experiencing unwanted behaviors in the context of transportation systems.

Q6.2. Type of Unwanted Behavior - Frequency: The question asked the respondent about the type and frequency of unwanted behaviors that they experience in the context of transportation systems.

Q6.3. Reaction to Offences: The question asked the respondent about their reaction to some types of unwanted behaviors that they experience in the context of transportation systems.

Q6.4. Frequency of Unwanted Behaviors - Timing: The question asked the respondent about the frequency of experiencing unwanted behaviors during some time-slots in the context of transportation systems.

Questionnaire Part Seven

This part of the questionnaire included questions about the most severe incident of the respondents. It consisted of seventeen questions. The next subsection shows the questions and their correspondent answers.

Q7.1. Type of Offence: The question asked the respondent about the most severe unwanted behavior she faced in the context of transport.

Q7.2. Time of the Incident: The question asked the respondent to choose the time slot when the incident took place.

Q7.3. Place of the Incident: The question asked the respondent to choose the place where the incident took place.

Q7.4. Mode of Travelling: The question asked the respondent to choose the transport mode she was riding as the incident took place.

Q7.5. Age: The question asked the respondent to specify her age as the incident took place.

Q7.6. Status during Travelling: The question asked the respondent to choose how she was travelling as the incident took place.

Q7.7. Purpose of the Trip: The question asked the respondent to choose their purpose of travelling as the incident took place.

Q7.8. Level of Crowdedness: The question asked the respondent to choose the level of crowdedness as the incident took place.

Q7.9. Harasser: The question asked the respondent to choose the person who harassed her.

Q7.10. Reaction of the Victim to the Incident: The question asked the respondent about her instant reaction to the unwanted behavior.

Q7.11. Feeling of the Victim after the Incident: The question asked the respondent to describe her feeling as the incident took place.

Q7.12. Conditions of the Transport Context: The question asked the respondent about the conditions that have contributed to the incident.

Q7.13. Help during the Incident: The question asked the respondent if someone helped her as the incident took place.

Q7.14. Type of Help: The question asked the respondent to specify the type of help she received, in case she received any.

Q7.15. Reporting the Incident: The question asked the respondent if she reported the incident to the police.

Q7.16. Reasons of Not Reporting: The question asked the respondent to choose her reasons for not reporting the incident to the police, in case she did not report.

Q7.17. Effect of the Incident: The question asked the respondent if the incident affected her use of transport.

Q7.18. Type of Effects: The question asked the respondent how the incident affected her use of transport.

Q7.19. Impact of the Incident: The question asked the respondent about the impact the incident caused to her use of transport.

Questionnaire Part Eight

This part of the questionnaire included questions about the gender-biased safety perceptions in the context of transport. It consisted of seven questions. The next subsection shows the questions and their correspondent answers.

Q8.1. Gender-based Violence: The question asked the respondent what the word 'Gender-based Violence' means to her.

Q8.2. Level of Comfort in Central Areas during the rush Hours: The question asked the respondent to choose the level of comfort they find in some situations in the transport context, in central areas during the rush hours.

Q8.3. Level of Comfort in Central Areas during the non-rush Hours: The question asked the respondent to choose the level of comfort they find in some situations in the transport context, in central areas during the non-rush hours.

Q8.4. Level of Comfort in Outskirts Areas during the rush Hours: The question asked the respondent to choose the level of comfort they find in some situations in the transport context, in outskirts areas during the rush hours.

Q8.5. Level of Comfort in Outskirts Areas during the non-rush Hours: The question asked the respondent to choose the level of comfort they find in some situations in the transport context, in outskirts areas during the non-rush hours.

Q8.6. Witnessing of Unwanted Behaviors: The question asked the respondent if they have ever seen or witnessed an act of harassment against another female passenger.

Q8.7. Solutions against GBV: The question asked the respondent to rate solutions they find helpful against GBV faced by female passengers in the transport context.

Q8.8. Equality in Mobility Opportunities: The question asked the respondent if she thinks she has the same mobility opportunities/conditions as the other gender.

Questionnaire Part Nine

This part of the questionnaire included questions about the socio-demographic aspects of the respondents. It consisted of twenty-two questions. The next subsection shows the questions and their correspondent answers.

Q9.1. Age of the Respondent

Q9.2. Marital Status of the Respondent

Q9.3. Highest Education

Q9.4. Employment Status

Q9.5. Occupational Group

Q9.6. Living Arrangements

Q9.7. Household

Q9.8. Children The question asked the respondent to choose if they have biological, adopted, foster, or step children.

Q9.9. Household Size

Q9.10. Personal Responsibilities: The question asked the respondent to choose their personal responsibilities regarding dependent children/other(s).

Q9.11. Household Gross Monthly Income

Q9.12. Personal Gross Monthly Income

3.4.3. Research Population

The survey addressed women and men who are using public transportation in Cairo in Egypt. Some sections in the survey addressed only women respondents. The research used purposive sampling, the respondents were selected to see some questions in some sections based on the following:

1. Gender Travel Patterns and Behaviors

- a) Use of public transportation

for the questionnaire sections:

- a) Questionnaire Part One (A.1)
- b) Questionnaire Part Two (A.1)
- c) Questionnaire Part Three (A.1)
- d) Questionnaire Part Four (A.1)
- e) Questionnaire Part Five (A.1)
- f) Questionnaire Part Six (A.1)
- g) Questionnaire Part Nine (A.1)

and

Gender-based Violence

- | | |
|---|--|
| 1. Gender, only females | 3. Experiencing Challenges in the Transportation Context |
| 2. Use of Public Transportation Systems | |

for the questionnaire sections:

- | | |
|-----------------------------------|-----------------------------------|
| 1. Questionnaire Part Seven (A.1) | 2. Questionnaire Part Eight (A.1) |
|-----------------------------------|-----------------------------------|

3.5. Response Rates

Survey respondents include 1516 responses, only 291 were fully completed. The difference in the incomplete and complete responses is believed to be present because of the length of the survey. Filtration of the data was done on two levels. One level was regarding the travel patterns sections, resulting in 890 complete responses, and the second level was regarding the travel challenges. The sample size varies from one variable to another due to the exclusion of some answers like 'I do not know' and 'I prefer not to answer'. Men's and women's data were first analyzed separately, and later they were merged in the write-up.

Table 3.1.: Sample characteristics Summary Statistics

Variables	Level	Percent
Gender	Female	84.6
	Male	15.4
Age	<18	9.9
	18–24	62.3
	26–34	21.2
	36–44	4.5
	45–54	1.0
	Over 55	1.0
Employment Status	Student	51.7
	Full-time employment	26.7
	Part-time employment	7.5
	Unemployed	8.2
	Keeping house or raising children full-time	0.7
	Other	5.1
Use of public transport	Daily	31.9
	2-3 times per week	29.4
	2-3 times per month	14.6
	Rarely	20.3
	Never	3.7
Driving License	Yes	42.2
	No	57.8

4. Chapter Four: Research Findings and Analysis

This chapter of the thesis presents the findings of the data collected. The findings are calculated and presented using the R Project for Statistical Computing and Microsoft Excel Spreadsheet Software. The Findings of the data collected are divided in this chapter in four main sections and their corresponding sub-sections, which are:

- | | |
|---|-----------------------------------|
| 4.1 Socio-Demographic Profiles of the Respondents | 4.3 Part B: Gender-based Violence |
| 4.2 Part A: Gender Travel Patterns | 4.4 Part C: Mobility Choices |

The quantitative data of the findings is presented in this chapter in tables and plots for a better comparative understanding of the trends of the variables observed.

4.1. Socio-Demographic Profiles of the Respondents

This part of the questionnaire was addressing male and female respondents, where they were asked about their socio-demographic profiles, and to answer the following:

- | | |
|------------------------|------------------------------|
| 1. Age | 7. Household Arrangements |
| 2. Employment Status | 8. Children |
| 3. Marital Status | 9. Personal Responsibilities |
| 4. Qualification | 10. Household Income |
| 5. Occupational Group | 11. Personal Income |
| 6. Living Arrangements | |

Table 4.1 shows a summary statistics of the socio-demographic profiles of the responses.

Table 4.1.: Socio-demographic Profiles Summary Statistics

Variables	Level	Survey(Pct)
Gender	Female	84.6
	Male	15.4
Age	<18	9.9
	18–24	62.3
	26–34	21.2
	36–44	4.5
	45-54	1.0
	Over 55	1.0
Employment Status	Full-time employment	26.7
	Part-time employment	7.5
	Unemployed and looking for work	6.2
	Unemployed and not currently looking for work	2.1
	Self-employed	4.5
	Keeping house or raising children full-time	0.7
	Retired	0.3
	Student	51.7
	Unable to work	0
Marital Status	Single	84.6
	Married or domestic partnership	13.0
	Divorced	2.1
	Separated	0.0
	Widowed	0.3
Qualification	No schooling completed	5
	Less than a high school diploma	1.7
	High school degree, diploma or the equivalent	27.1
	Trade/technical/vocational training	0.7
	Bachelor’s degree	59.9
	Master’s degree	7.5
	Doctorate	0.7
	Professional degree	0.0
Occupational Group	Professional	33.2
	Managerial and technical	10.7
	Skilled non manual	5.0
	Skilled manual	3.9
	Unskilled	1.8
	Not applicable	48.9

Table 4.1.: Socio-demographic Profiles Summary Statistics

Variables	Level	Survey(Pct)	
Living Arrangements	Living alone	5.9	
	Living with a parent/s	80.7	
	Living with a partner	1.0	
	Living with spouse + children	9.3	
	Living without spouse and with children	0.7	
	Living with friends	2.4	
Household Arrangements	Single workers: one adult, no children	12.5	
	Single-parent families: one adult and one or more children	8.2	
	One-worker couples: two adults, one of whom is employed, no children	1.1	
	Two-worker couples: two adults, each of whom is employed, no children	2.1	
	One-worker families: households consisting of one working and one non-working adult and one or more children aged 18 or less	15	
	Multiple-worker families: households consisting of two or more working adults and one or more children aged 18 or less	23.9	
	Multiple working adults: households consisting of three or more adults at least two of whom are employed, no children aged 18 or less are present	17.9	
	Shared common residence	3.2	
	Other households	18.9	
	Biological, adopted, foster, or step children	None	56.1
		Yes, one child	3.2
Yes, two children		3.9	
Yes, three children		0.7	
Yes, four children		0.7	
Yes, more than four children		0	
	Not applicable	38.6	

Table 4.1.: Socio-demographic Profiles Summary Statistics

Variables	Level	Survey(Pct)
Personal Responsibilities	None	0
	I am not a carer for any dependent children/other(s)	40.4
	I am the prime carer of dependent children/other(s)	2.9
	I am a carer of dependent children/other(s) but someone else is the prime carer	6.8
	I equally share the care of dependent children/other(s) with other person	5.7
	Not applicable	46.4
Personal Income	2K EGP or less	27.3
	2K to 5K EGP	16.6
	5K to 10K EGP	11.8
	10K to 15K EGP	6.2
	15K to 25K EGP	2.1
	25K EGP to 40K EGP	2.4
	40K to 60K EGP	0.7
	More than 60K EGP	0.3
Household Income	Not applicable	32.5
	2K EGP or less	4.5
	2K to 5K EGP	17.4
	5K to 10K EGP	20.5
	10K to 15K EGP	15.6
	15K to 25K EGP	18.4
	25K EGP to 40K EGP	11.5
	40K to 60K EGP	6.6
More than 60K EGP	5.6	
Not applicable	0	

Age Profile

As regards the variable age, 228 females and 62 males responded to this question. The age range that had the highest number of respondents is 18-24 years old, both for female and male participants. On the other hand, the age ranges 35 years old to above 55 years had few respondents from the female participants, and a relatively bigger response for the age range 35-44 years old from the male respondents.

Age Profile, by Gender

n = 290, female: n = 228, male: n = 62

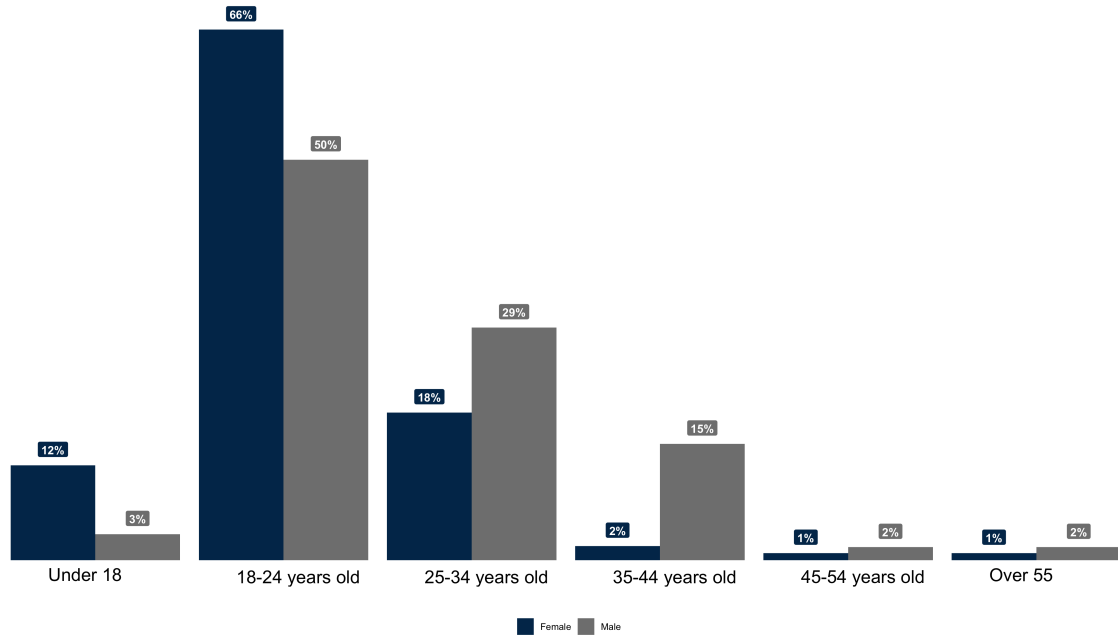


Figure 4.1.: Age Profile, by Gender.

Marital status

As regards the marital status, we can mainly distinguish between single and married respondents.

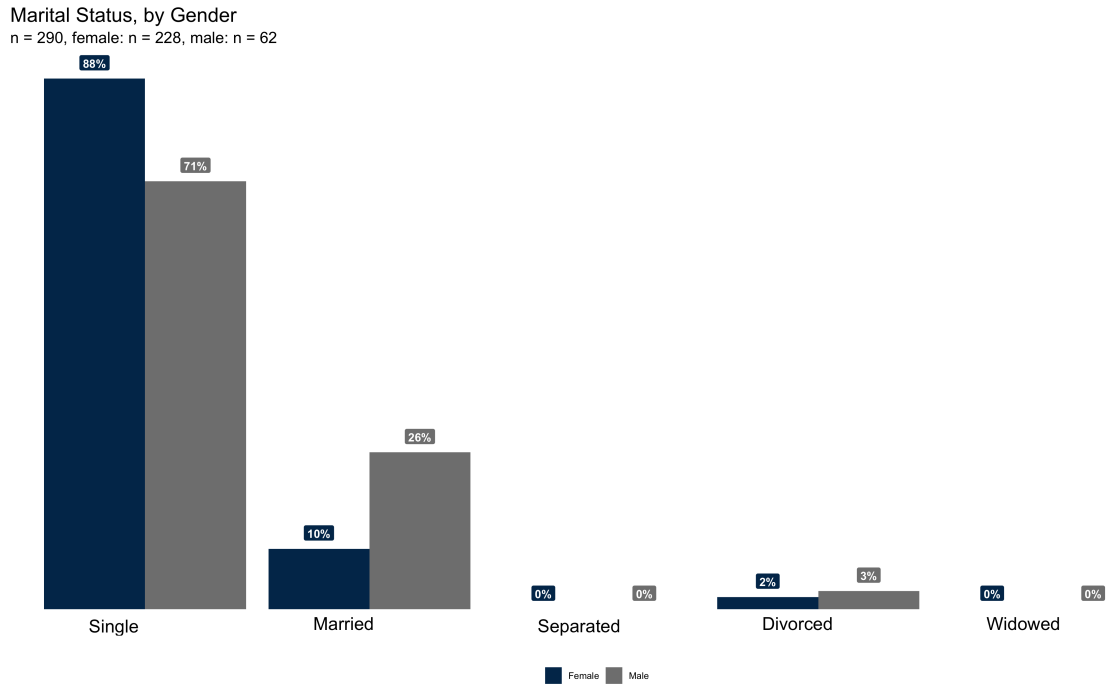


Figure 4.2.: Marital Status, by Gender.

Household Monthly Gross Income

When observing each gender closer, figure 4.3 shows the distribution of household monthly gross income for males and females separately. 228 females and 62 males responded to this question.

Household Gross Monthly Income, by Gender
n = 290, female: n = 228, male: n = 62

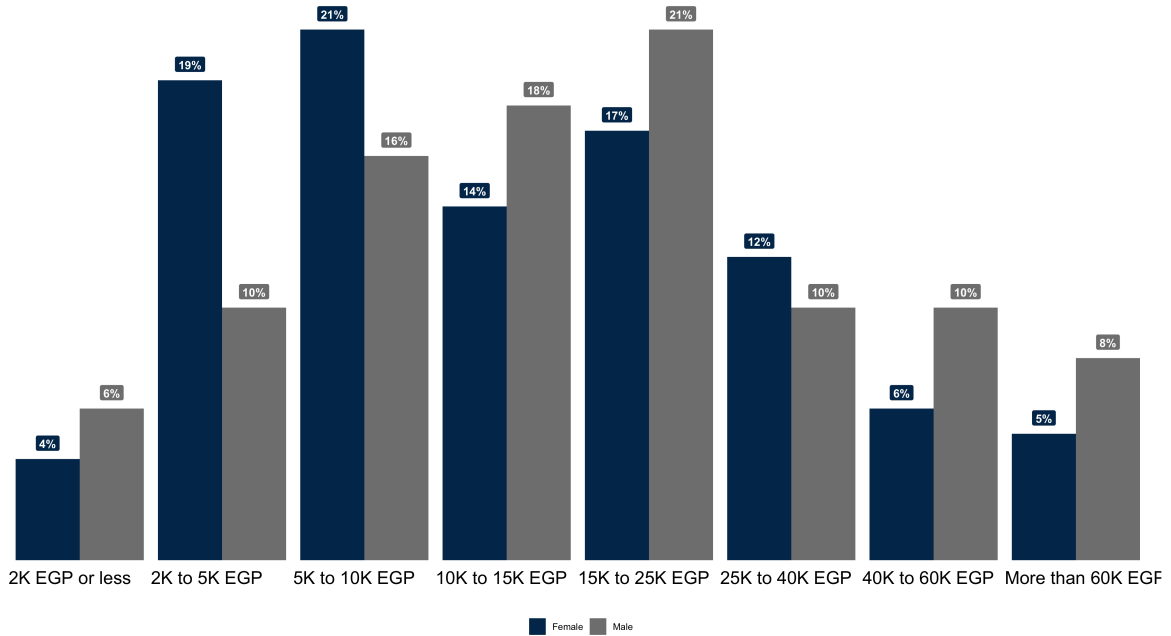


Figure 4.3.: Household Monthly Gross Income, by Gender.

Personal Monthly Gross Income

When observing each gender closer, figure 4.4 shows the distribution of personal monthly gross income for males and females separately. 228 females and 62 males responded to this question.

Household Gross Monthly Income, by Gender
 n = 290, female: n = 228, male: n = 62

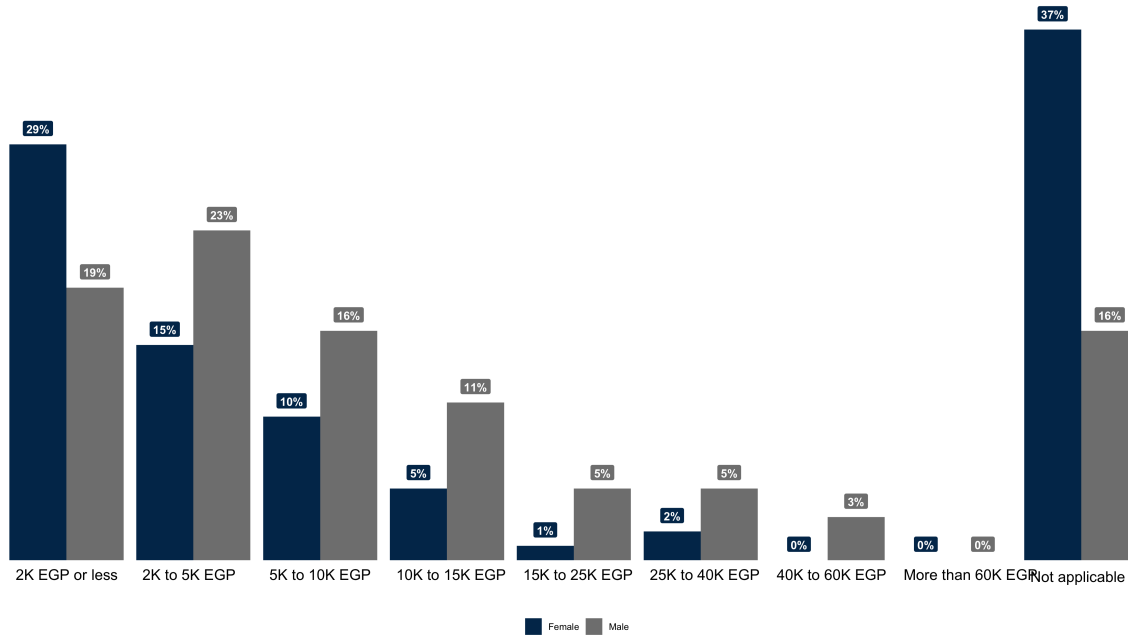


Figure 4.4.: Personal Monthly Gross Income, by Gender.

4.2. Part A: Trends in Gender Travel Patterns

This part of the questionnaire was addressing male and female respondents, where they were asked about their travel patterns, and to answer the following:

4.2.1 Frequency of Transportation Use

4.2.4 Duration of Commuting

4.2.2 Reasons of Transportation Use

4.2.3 Mode Choice

4.2.5 Length of Commuting

As indicated in the literature, men and women have different travel patterns. The purpose of this part of the questionnaire is to examine this difference closer in the area of study (Cairo, Egypt). Female and male respondents were asked to choosing statements that best describes their use of transportation.

Table 4.2 shows a summary statistics of the gender travel patterns of male and female responses in Pct.

Table 4.2.: Trends in Gender Travel Patterns Summary Statistics in Pct

Variables	Level	Female	Male
Frequency of Transportation Use	Daily	15.0	10.0
	2-3 times per week	30.0	26.0
	2-3 times per month	32.0	32.0
	Rarely	3.0	7.0
	Never	20.0	24.0
Access to a Car	Yes, I have one	9.9	24
	My family has one and I can use it	62.3	24
	I have company car	21.2	24
	No	4.5	24
Reasons of Transportation Use	I do not own a private vehicle	34.0	13.0
	I do not have another option	47.0	52.0
	It's affordable	7.0	8.0
	It's convenient	8.0	17
	It's relaxing	3.0	8.0
	It's safe	0.0	2.0
	It reduces my ecological footprint	1.0	0.0
Mode of Transportation	Ride hailing (Taxi)	9.0	3.0
	E-hailing (Uber/Careem)	46.0	35.0
	Microbus	28.0	40.0
	Bus	8.0	8.0
	Metro (underground)	8.0	14.0
Duration of Commuting	Below 5 minutes	1.0	1.0
	5 - 10 minutes	8.0	5.0
	10 - 15 minutes	14.0	10.0
	15 - 30 minutes	36.0	26.0
	30 - 60 minutes	31.0	38.0
	60 - 120 minutes	9.0	15.0
	2 hrs +	0.0	5.0
Length of Commuting	Less than 1 km	2.0	6.0
	1 - 5 km	7.0	3.0
	5 - 10 km	11.0	12.0
	10 - 25 km	0.0	30.0
	25 - 50 km	18.0	23.0
	50 - 100 km	5.0	7.0
	100+ km	2.0	3.0
	I don't know	55.0	17.0

4.2.1. Frequency of Transportation Use

Figure 4.5 illustrates the proportion of women and the proportion of men in regard to their frequency of using public transportation. 24 percent of male respondents do not ever use public transportation, in comparison to 20 percent of female respondents. While 7 percent of male respondents rarely use public transportation, 3 percent of female respondents do. Male and female respondents are seen to be using public transportation at the same rate of 2-3 times per month, with a percent of 32 percent of the survey population, while that slightly more female respondents (30 percent) use public transportation from 2-3 times per week than male respondents (26 percent). In particular, more female respondents (15 percent) are observed to use public transportation at daily basis than male respondents (10 percent) also in the survey population.

Frequency of Transportation Use, by Gender
 n = 879, female: n = 743, male: n = 135

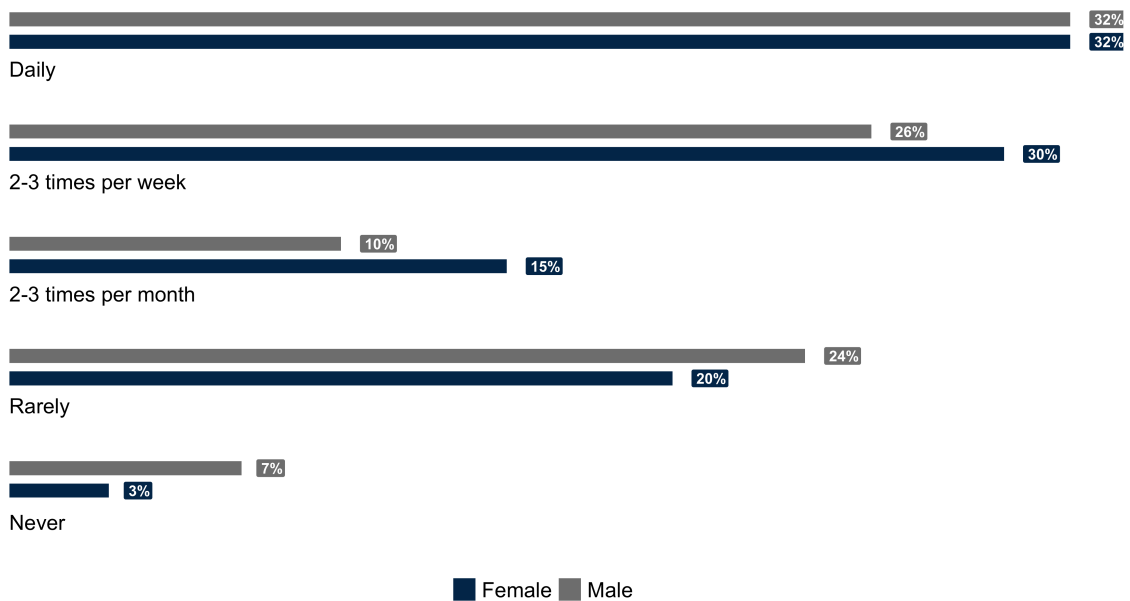


Figure 4.5.: Frequency of Transportation Use, by Gender.

4.2.2. Reasons of Transportation Use

Respondents, both male and female, were asked to choose statements that best described their reasons of using public transportation. The female respondents are using public transportation

because it is their only option (47 percent) or because they do not own a private car (34 percent), with the latter being significantly higher than the male's proportion (13 percent) for the same reason. And while no woman reported using public transportation for being a safe option (0 percent), a small proportion of male respondent (2 percent) chose this option. Also, a greater proportion of men (17 percent) is using public transportation because it is convenient, than women (8 percent). The proportion of men (8 percent) and that of women (7 percent), seeing public transportation as an affordable option, is close.

Reasons of Transportation Use, by Gender
 n = 679, female: n = 587, male: n = 92

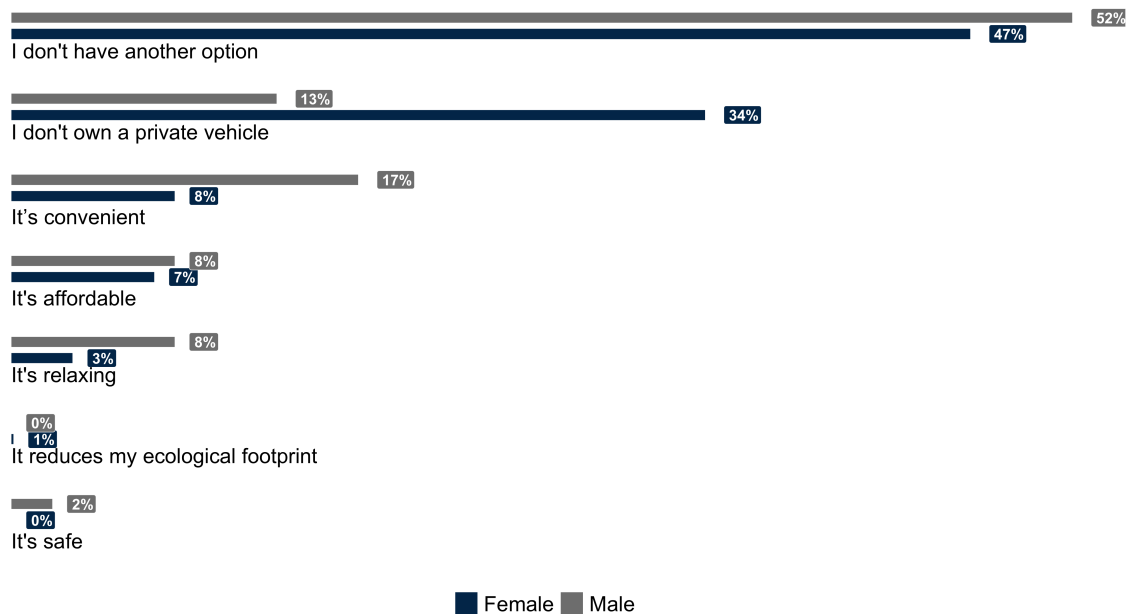


Figure 4.6.: Reasons of Transportation Use, by Gender.

4.2.3. Mode of Transportation

46 percent of female participants are using E-hailing as their most frequent mode of transport, while 40 percent of male respondents are using the microbus as their most frequent mode of transport. In the second place is the microbus the second most frequent mode of transport for women participate with a contribution of 28 percent of the survey population, and men have the E-hailing as also their second most frequent mode of transport (35 percent). The bus share is the same for female (8 percent) and male (8 percent) respondents.

Most used Mode of Transportation, by Gender
n = 680, female: n = 592, male: n = 88

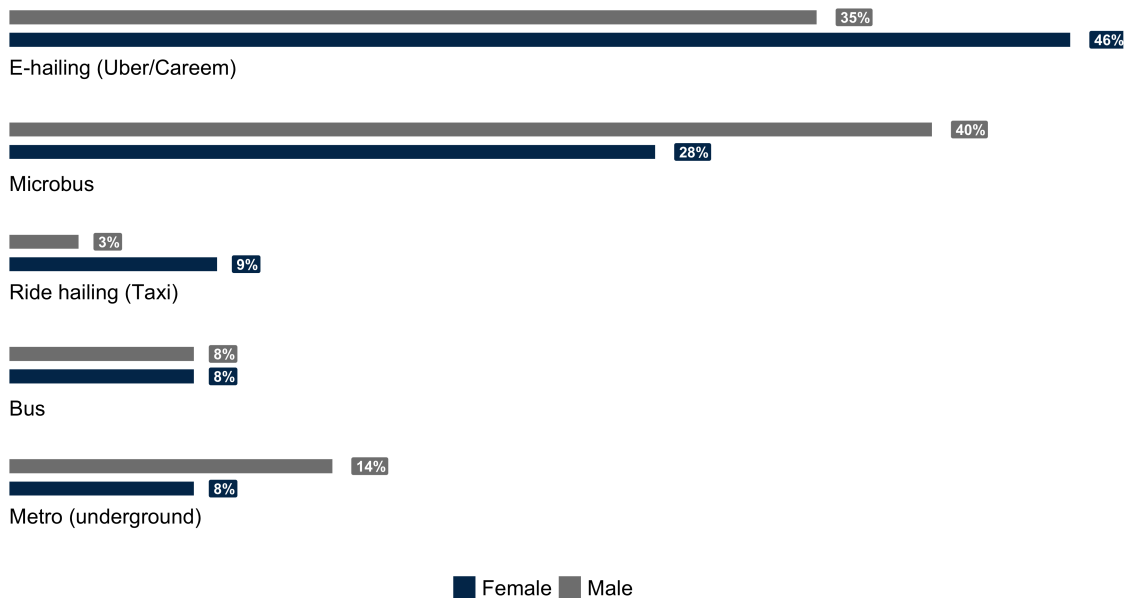


Figure 4.7.: Mode of Transportation, by Gender.

4.2.4. Duration of Commuting

Men commute slightly longer than women in their most frequent trip. The survey results show that 38 percent of male respondents have their most frequent trip lasting between 30-60 minutes, while 31 percent of female respondents have their most frequent trip lasting the same duration. Yet, it's observed that more women (36 percent) have their most frequent trip lasting for 15-30 minutes than men (26 percent). It's also observed that while 5 percent of male respondents have their most frequent trip lasting for more than two hours, there is no female share for the same duration.

Duration of Commuting in Minutes, by Gender
 n = 739, female: n = 629, male: n = 110

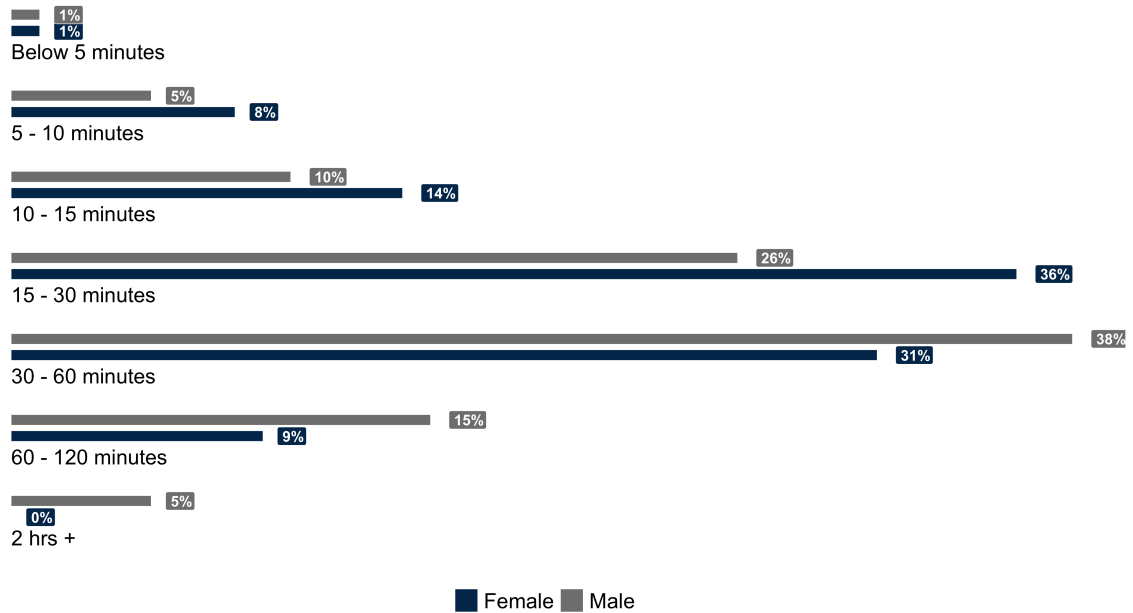


Figure 4.8.: Duration of Commuting, by Gender.

4.2.5. Length of Commuting

It is observed that men have the length of their most frequent trip longer than women, as 23 percent of male respondents commute for 25-50 kilometers while the female contribution to this range is 18 percent. However, a larger portion of female respondents (55 percent) did not indicate the length of their most frequent trip.

Duration of Commuting in Kilometers, by Gender
n = 607, female: n = 500, male: n = 107

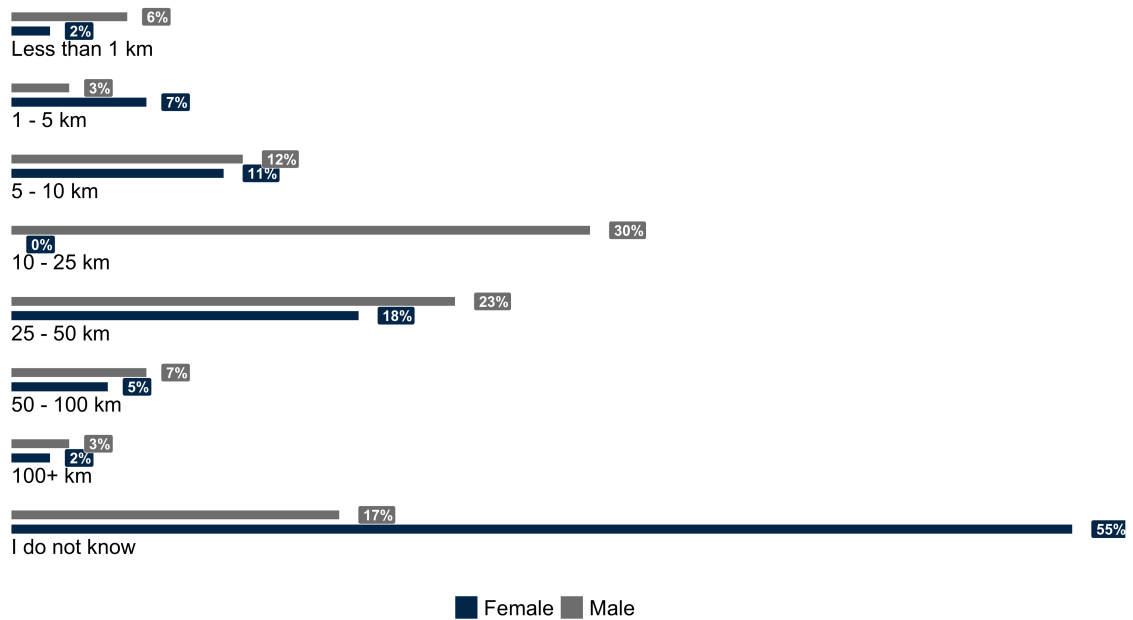


Figure 4.9.: Length of Commuting, by Gender.

4.3. Part B: Gender-based Violence

Part B of the questionnaire was divided in two sub-parts. The first sub-part 'Trends in Gender-based Travel Challenges' (4.3.1) questioning the travel challenges from a gender-biased experience, and addressing male and female respondents. The second sub-part 'Experience of Violence: Most Severe Incident, by female respondents' (4.3.2) questioning the most severe incident experienced in the context of transportation, and addressing only female respondents.

4.3.1. Trends in Gender-based Travel Challenges

This part of the questionnaire was addressing male and female respondents, where they were asked about the travel challenges they experienced in the context of transportation.

Challenges is defined in this section as the unwanted behavior in context of transportation that range between:

[1.] Non-verbal harassment

- | | |
|--|---|
| 1. Stalking or being followed | around another person with the intention of making a woman feel uncomfortable |
| 2. Staring/Leering | |
| 3. Making facial expressions such as winking | 7. Exposing body parts |
| 4. Blocking the path or the way | 8. Masturbation in public |
| 5. Displaying sexually suggestive visuals | 9. Threatening |
| 6. Touching or rubbing oneself sexually | 10. Sexual invitations |

[2.] Verbal harassment

- | | |
|---|----------------------------------|
| 1. Offensive name-calling (cat calling) | 3. Sexual comments and/or noises |
| 2. Using rough and offensive language | |

[3.] Physical harassment

- | | |
|---|-------------------|
| 1. Invasion of privacy, pushing against you and/or rubbing body | out permission |
| 2. Inappropriate touching/groping with- | 3. Sexual assault |

Frequency of Challenges

While 5 percent of survey female respondents have never faced an unwanted behavior in transport context, 95 percent have been victims of violence. 18 percent of the female

respondents have faced harassment once and 14 percent have faced it daily. The highest percent of the respondents is that of female respondents who experienced harassment at least 2 - 3 times per month, making 23 percent of survey female respondents.

Frequency of Challenges, by Gender
n = 470, female: n = 398, male: n = 72

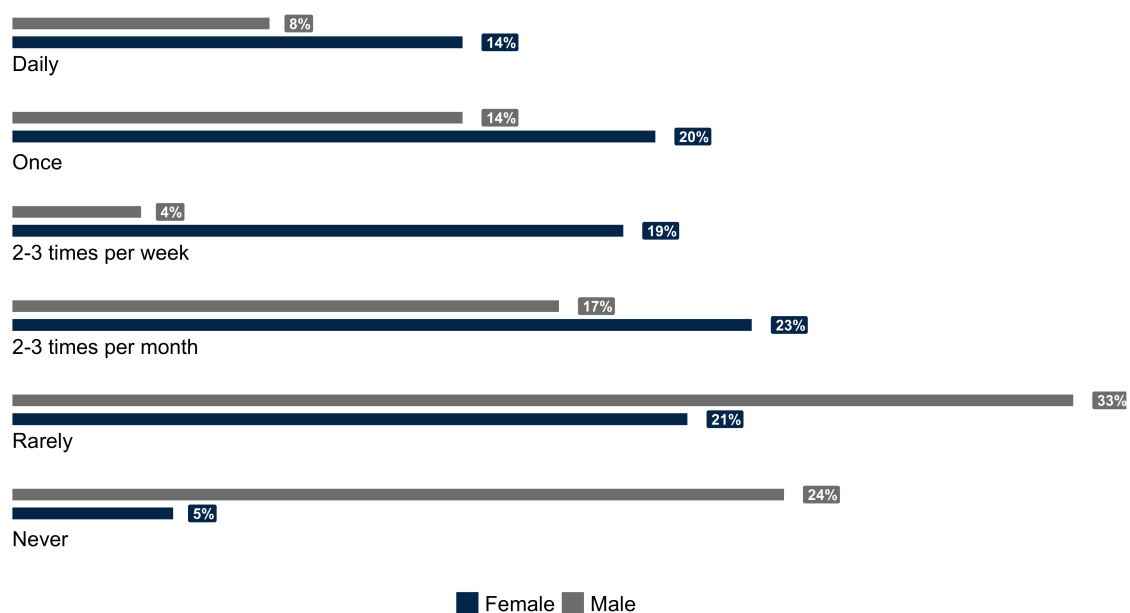


Figure 4.10.: Frequency of Challenges, by Gender.

4.3.2. Experience of Violence: Most Severe Incident, by female respondents

This part of the questionnaire was addressing female respondents, where they were asked about the most severe incident they experienced in the context of transportation and to answer the following:

1. Type of the Incident
2. Time of the Incident
3. Place of the Incident
4. Mode of the Incident
5. Purpose of Travelling
6. Status of Travelling
7. Age by the time the Incident took place
8. Perpetrator

- | | |
|------------------------------|---|
| 9. Level of Crowdedness | 12. Reporting the Incident |
| 10. Reaction to the Incident | 13. Conditions contributing to the Incident |
| 11. Seeking Help | 14. Effects of the Incident |

Table 4.3 shows a summary statistics of the most severe incidents experienced by female respondents.

Table 4.3.: Most Severe Incidents Summary Statistics

Variables	Level	n	Pct
Type of the Incident	Stalking or being followed	21	7.34
	Staring/Leering	41	14.34
	Making facial expressions such as winking	8.0	2.8
	Offensive name-calling (cat calling)	7.0	2.45
	Using rough and offensive language	7.0	2.45
	Sexual comments and/or noises	18	6.29
	Blocking the path or the way	4.0	1.40
	Displaying sexually suggestive visuals	1.0	0.35
	Invasion of privacy, pushing against you and/or rubbing body	30	10.49
	Inappropriate touching/groping without permission	71	24.83
	Touching or rubbing oneself sexually around another person with the intention of making a woman feel uncomfortable	19	6.64
	Exposing body parts	10	3.50
	Masturbation in public	18	6.29
	Threatening	0.00	0.00
	Sexual invitations	5.0	1.75
	Sexual assault	10	3.50
Time of the Incident	Morning rush hours (07:00-10:00)	27	10
	Morning non-rush hours (10:00-12:00)	24	9.0
	Afternoon (12:00-16:00)	84	30
	Evening rush hours (16:00-19:00)	74	27
	Evening non-rush hours (19:00-21:00)	50	18
	Night (21:00-00:00)	20	7.0
	After mid-night (00:00-07:00)	0.0	0.0

Table 4.3.: Most Severe Incidents Summary Statistics

Variables	Level	n	Pct
Place of the Incident	Walking to the terminal/station	38	15
	Waiting on the platform/at the stop	25	10
	Waiting in the ticket line	3.0	1.0
	On-board the vehicle	3.0	1.0
	While transferring at the terminal/s-tation	143	57
	Spaces outside or adjacent to the terminal entrance and exists	18	7.0
Mode of the Incident	Ride hailing (Taxi)	30	12
	E-hailing (Uber/Careem)	22	9.0
	Microbus	93	37
	Bus	62	24
	Metro (underground)	62	24
Purpose of Travelling	Work-home commute	31	11.79
	Social (such as visiting family and friends)	49	18.63
	Recreational/Leisure	23	8.75
	Shopping	16	6.08
	Educational trips (Go to school and University, attend a course)	138	52.47
	House duty relating trips (kids to school, shopping, parental care)	6.0	2.28
Status of Travelling	Alone	192	67
	With children	2.0	1.0
	With female companion(s)	78	27
	With male companion(s)	7.0	2.0
	With female and male companions	9.0	3.0
Perpetrator	Passerby	92	32.62
	Passenger	141	50
	Driver	46	16.31
	Public transit worker	3.0	1.06
	Authority member	0.0	0.00
Level of Crowdedness	Very Low	53	18
	Below Average	44	15
	Average	95	33
	Above Average	67	23
	Very High	32	11
Reaction to the Incident	I walked away	85	29
	Verbal retaliation	55	19

Table 4.3.: Most Severe Incidents Summary Statistics

Variables	Level	n	Pct
	Physical retaliation	9.0	3.0
	I didn't react: My harasser was someone from the authority/the mode driver	8.0	3.0
	I didn't react: It happened in a short interval	37	13
	I didn't react: I was in denial	46	16
	Tolerance: I have become used to such incidents	24	8
	Tolerance: I can not afford any alternative to commute	3	1
	I complained to the driver/public transit worker/authority	1.0	0.0
	I sought help from other passengers	4.0	1.0
Help	Yes	26	8.90
	No	188	64.38
	No one was there	77	26.37
Reporting the Incident	Yes	7.00	2.41
	No	284	97.59
Reasons for not Reporting the Incident	I did not realise what had happened	71	25
	I did not think anyone would listen	82	28.87
	I did not think I would be taken seriously	117	41.20
	The incident lasted in a short period	125	44.01
	I was in hurry	47	16.55
	I was afraid of the harasser/Fear of retaliation	38	13.38
	Fear of victim-blaming	65	22.89
	Fear of disapproval from others	39	13.73
	The reporting process is long	38	13.38
	Fear for my social image	42	14.79
	Embarrassment	47	16.55
	Feelings of hopelessness and helplessness	53	18.66
	Lack of witness	70	24.65
	I have a history of being sexually violated (traumatized)	16	5.63

Table 4.3.: Most Severe Incidents Summary Statistics

Variables	Level	n	Pct
	I am not fully aware of my rights and the laws	60	21.13
	Lack of information	87	30.63
	Lack of helpline number	53	18.66
	Lack of emergency tools	37	13.03
	No law against Sexual Harassment	54	19.01
	I do not trust the authorities to investigate reports of sexual harassment or violence.	101	35.56
Conditions contributing to the Incident	Poor lighting en route to the station/stop	29	9.93
	Poor lighting at the spaces outside or adjacent to the terminal entrances and exist	24	8.22
	Poor lighting around stops and platforms while waiting/transferring	17	5.82
	Unsupervised spaces: no surveillance camera	119	40.75
	Unsupervised spaces: no security guard presence at stations	103	35.27
	Unsupervised spaces: no security guard presence on-board the vehicle	71	24.32
	Lack of emergency buttons for passengers	57	19.52
	Lack of emergency tools	35	11.99
	Lack of helpline number for emergencies	52	17.81
	Overcrowding	82	28.08
	Waiting time was relatively long	25	8.56

Type of the Incident

Female passengers were asked about the most severe unwanted behavior that they faced in the context of transport. Figure 4.11 identifies the types of unwanted behaviors faced by female respondents. Female respondents with a percentage of 47 percent identified non-verbal harassment, 12 percent reported verbal harassment and 41 percent physical harassment.

Type of the Incident, by female respondents
n = 270



Figure 4.11.: Type of the Incident, by female respondents.

Female respondents with a percentage of 25 identified inappropriate touching and groping without permission as the most severe unwanted behavior they faced. The other major type of harassment accounting 14 percent responses is staring/leering. Other types of harassment like invasion of privacy, pushing against you and/or rubbing body (10 percent), stalking or being followed (7 percent), touching or rubbing oneself sexually around another person with the intention of making a woman feel uncomfortable (7 percent), masturbation in public (6 percent) and sexual comments and/or noises (6 percent) were experienced by female respondents.

Time of the Incident

Female respondents were asked about the time when the most severe unwanted behavior that they faced took place. The most frequent time of day for respondents to experience unwanted behaviors was in the afternoon - 12:00-16:00 - (30 percent) and also during the evening rush hours - 16:00-19:00 - (27 percent). Also, 18 percent of the respondents reported facing violence during the evening non-rush hours - 19:00-21:00 -, while less respondents

faced it during the morning rush hours, defined by the survey as 07:00-10:00 (10 percent), the morning non-rush hours, defined by the survey as 10:00-12:00 (9 percent) and during the night, defined by the survey as 21:00-00:00 (7 percent). No unwanted behaviors were experienced by the respondents during the after mid-night, 00:00-07:00.

Time of the Incident, by female respondents
n = 279

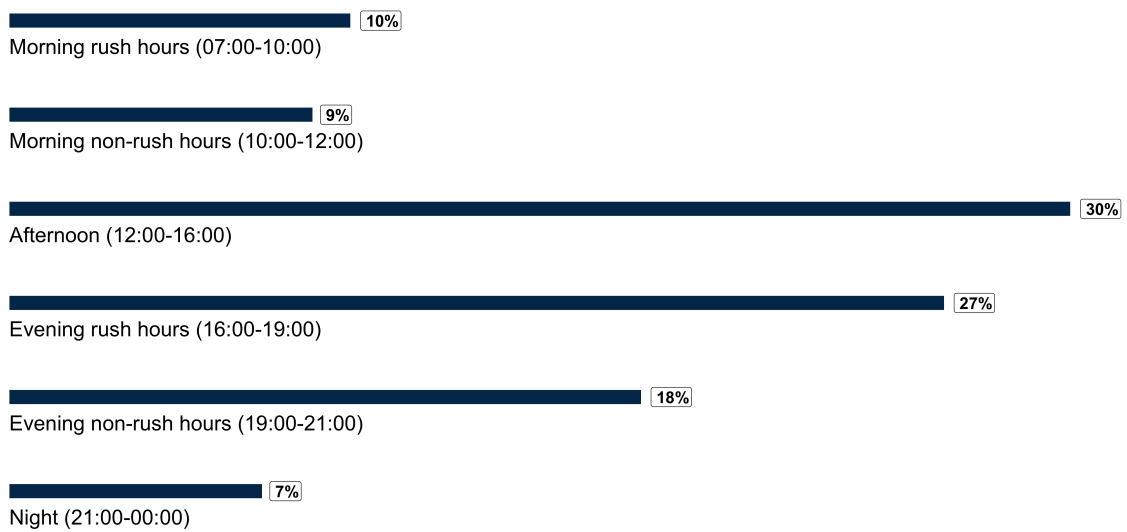


Figure 4.12.: Time of the Incident, by female respondents.

Place of the Incident

Female passengers were asked about the place where the most severe unwanted behavior that they faced took place. Respondents experienced violence mostly on-board the vehicle accounting to 57 percent, 15 percent of them while walking to the terminal/station, 10 percent while waiting on the platform/at the stop and also 10 percent in the spaces outside or adjacent to the terminal entrance and exists.

Place of the Incident, by female respondents

n = 251

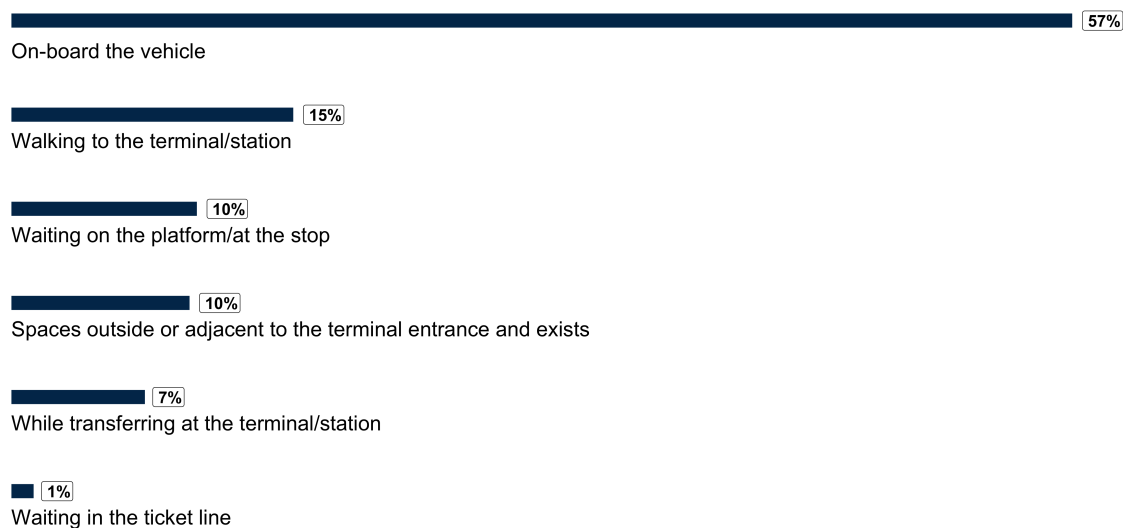


Figure 4.13.: Place of the Incident, by female respondents.

Mode of the Incident

The mode where most of the respondents were being harassed is the microbus (37 percent), followed by the bus (24 percent). Survey respondents also reported incidents of harassment in the ride hailing (taxi) and E-hailing modes, albeit at a lower rate, as shown in figure ??

Mode of the Incident, by female respondents

n = 254

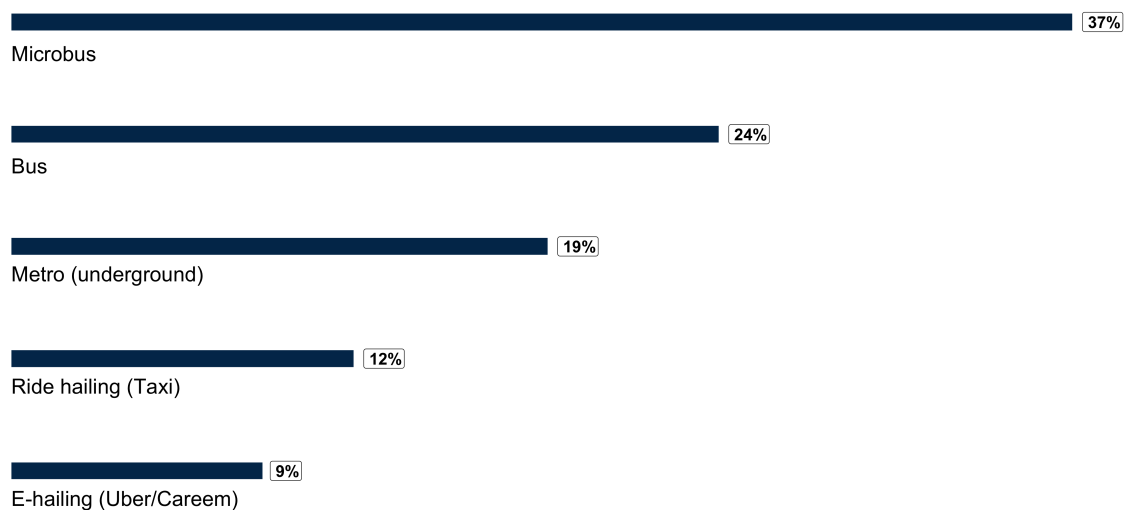


Figure 4.14.: Mode of the Incident, by female respondents.

Purpose of Travelling

52 percent of female commuters faced their most severe incident in the context of transportation while commuting for educational purposes like going to school or university or attending a course. A small share of 2 percent of the survey respondents reported being harassed while commuting for house-duty purpose like bringing the kids from school and doing parental care.

Purpose of Travelling during the Incident, by female respondents
n = 263

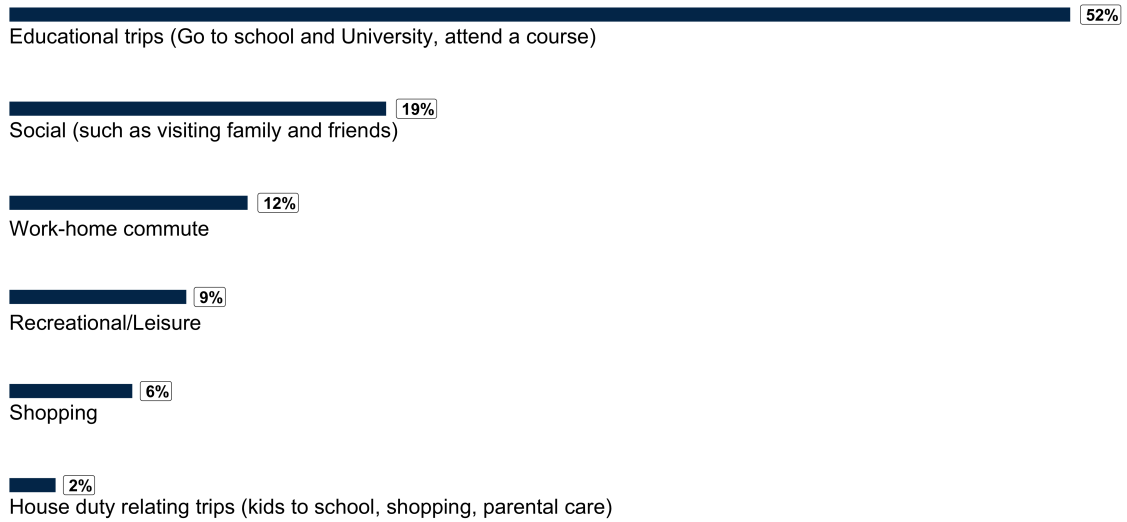


Figure 4.15.: Purpose of Travelling, by female respondents.

Status of Travelling

Based on figure 4.16, women commuting alone has the most number of experiences in harassment, accounting to 67 percent of surveyed female respondents, followed by a percentage of 27 as female passengers were being harassed while travelling with other female companions. The lowest frequency of incidents took place as female passengers were travelling with children (1 percent), with male companions (2 percent), or with both female and male companions (3 percent).

Status of Travelling, by female respondents
n = 288

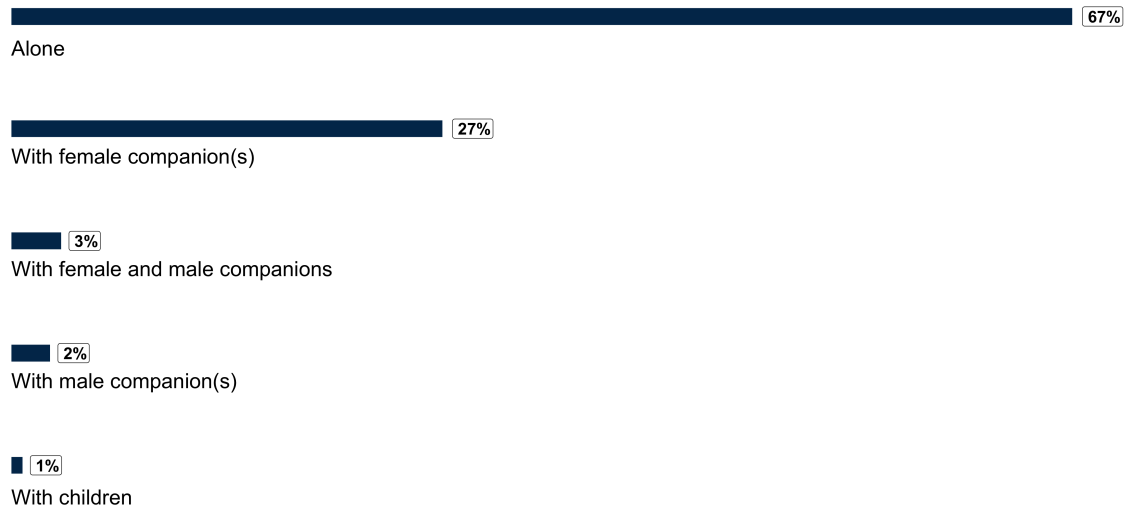


Figure 4.16.: Status of Travelling, by female respondents.

Perpetrator

The survey asked respondents to indicate their harasser. Figure 4.17 points to the perpetrator share. The major offenders are fellow passengers (50 percent), followed by passersby (33 percent) and the vehicle driver (16 percent).

Perpetrator, by female respondents
n = 282

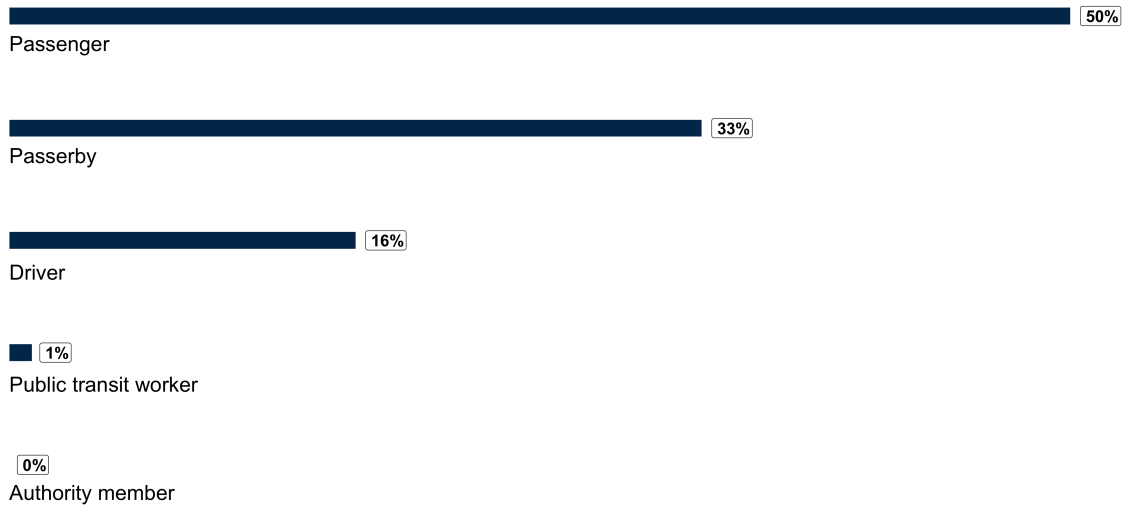


Figure 4.17.: Perpetrator, by female respondents.

Level of Crowdedness

Most harassment incidents took place in an average (33 percent) and above average (23 percent) level of crowdedness. Figure 4.18 shows the responses of the surveyed female passengers about the level of crowdedness as they faced the most severe incident of violence while commuting.

Level of Crowdedness,, by female respondents
n = 291

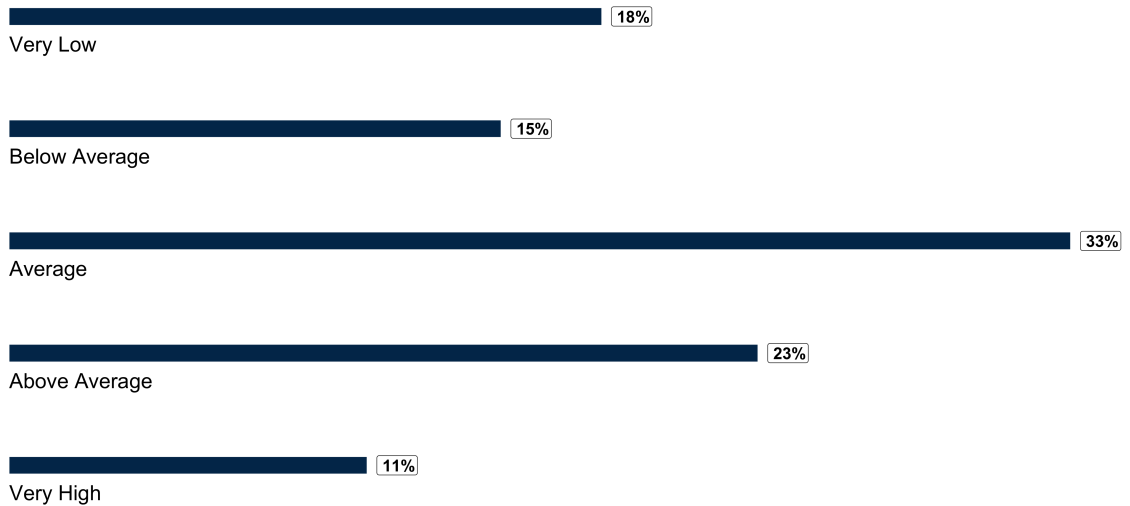


Figure 4.18.: Level of Crowdedness, by female respondents.

Reaction to the Incident

When asked for their instant reaction to the incident, 31 percent of the female respondents said they walked away. Some reacted with verbal retaliation (20 percent) and some did not react for reasons like being in denial (17 percent) or for the short interval of the incident (14 percent). Tolerance for reasons like being used to such behaviors (9 percent) or not being able to afford another alternative to commute (1 percent) are also reported. Even sometimes, no reaction was taken because of the harasser belonging to the authority or being the mode driver (3 percent) rose.

Reaction to the Incident, by female respondents
n = 272

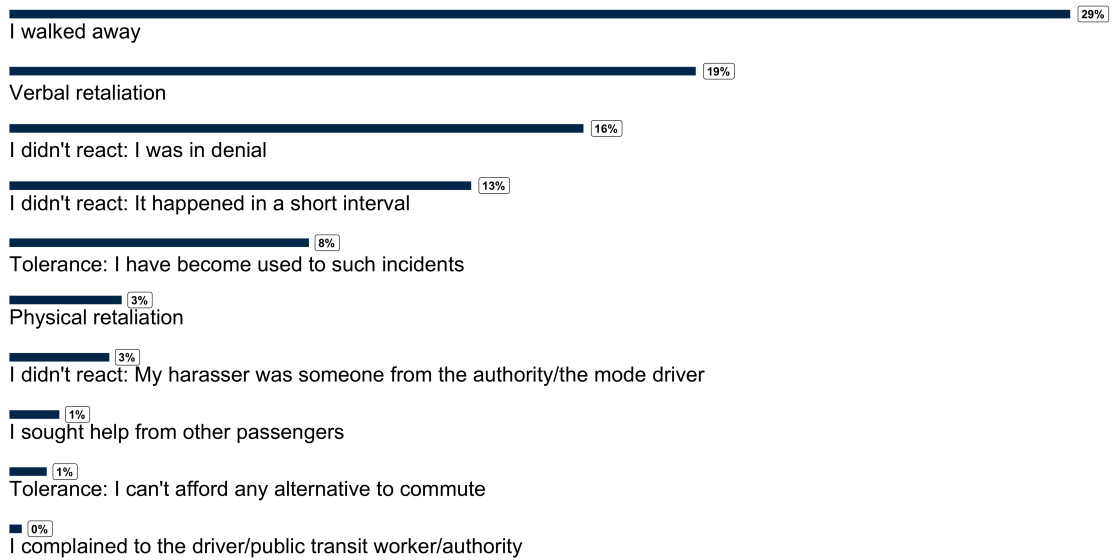


Figure 4.19.: Reaction to the Incident, by female respondents.

Reporting the Incident

Notably, 97.6 percent of the respondents who were harassed, did not file a report or seek assistance, while only 2.4 percent reported the incident to the police.

Reporting the Incident, by female respondents
n = 291



Figure 4.20.: Reporting the Incident, by female respondents.

The respondents were asked to choose one reason or more, as figure 4.21 shows, why they did not report the incident to the police. The main reasons for not reporting the incident were that the incident lasted for a short period (44 percent), the victims thought they would not be taken seriously (41 percent), the victims do not trust the authorities to investigate reports of sexual harassment or violence (36 percent) and the lack of information (twenty nine percent).

Reasons for not reporting, by female respondents
n = 284

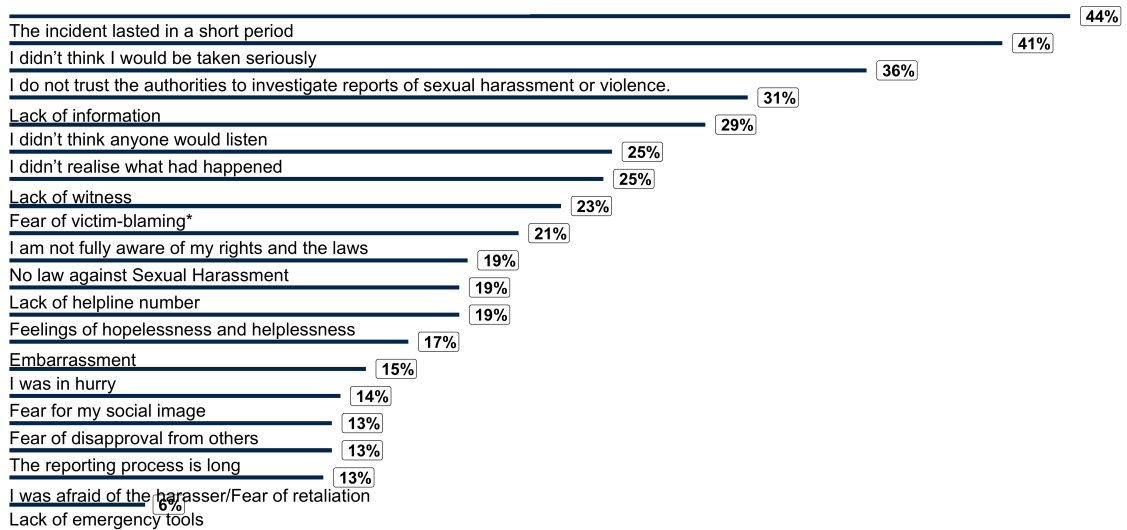


Figure 4.21.: Reasons for not reporting, by female respondents.

Conditions contributing to the Incident

Figure 4.22 shows the contributory factors on violence in transportation systems as reported by the violence survivors. Respondents were asked to choose one or more factor. The highest contributory factors were unsupervised spaces where there are no surveillance camera (41 percent) and unsupervised spaces where there no security guard presence at stations (35 percent). Lack of emergency buttons (20 percent) and lack of helpline (18 percent) and emergency tools (12 percent) are also contributing factors to the incidents.

Conditions contributing to the Incident, by female respondents

n = 292

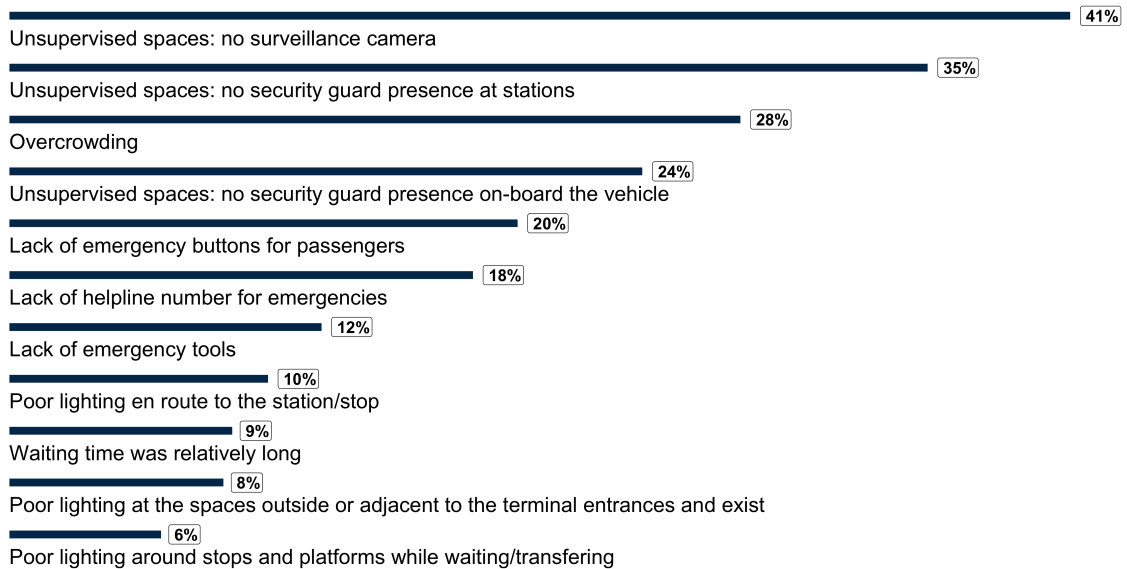


Figure 4.22.: Conditions contributing to the Incident.

4.3.3. Effects of the Incident

The survey questioned the impact of experiencing an incident on people and their public transport use. Although that 47 percent of the surveyed female passengers were not affected in what concerns their travel patterns and transportation use, a vast majority tend to be affected by the acts of violence against women regarding their personal security, as 53 percent reported their mobility to have been influenced.

Affected by the Incident, by female respondents
n = 291



Figure 4.23.: Affected by the Incident, by female respondents.

In total, 19 percent of respondents answered that they used the mode, where their most incident took place, very seldom and only if it is not crowded, and 17 percent started using private modes to feel safer. Using the mod in case of emergency only (14 percent) or even not using it at all again (11 percent) were also reported as effects of the incident.

Effects of the Incident, by female respondents

n = 314

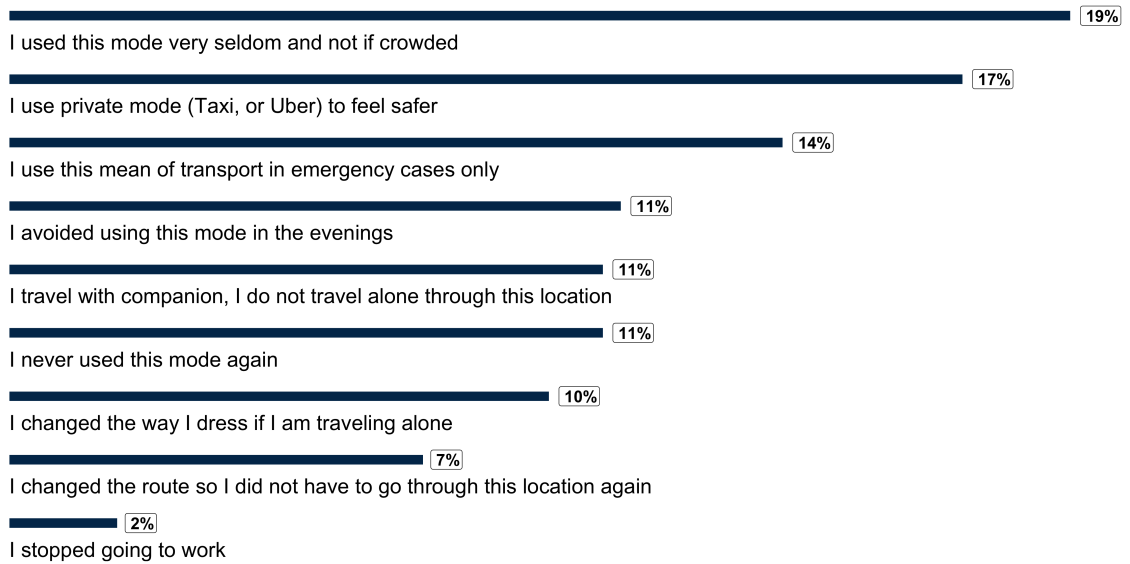


Figure 4.24.: Effects of the Incident, by female respondents.

When asked about the impact of the most severe incident on their travel behavior, 28 percent of female respondents reported mode change and 19 percent claimed financial burdens, also 17 percent reduced their activity levels, as shown in figure 4.25

Impacts of the Incident, by female respondents
n = 256

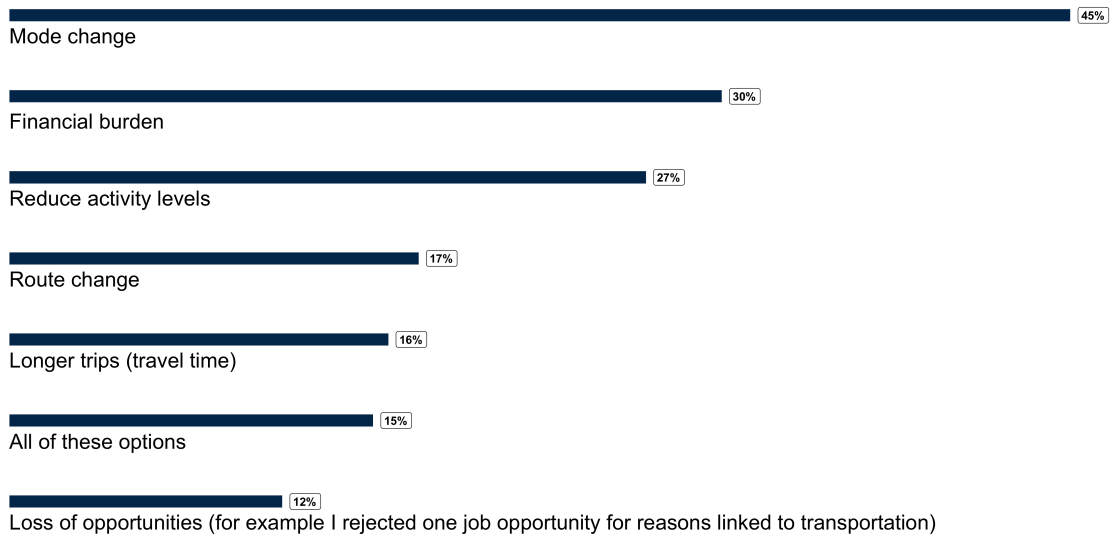


Figure 4.25.: Impacts of the Incident, by female respondents.

4.4. Part C: Mobility Choices

This part is divided into three sub-parts and it questions the different perceptions of mobility choices by female and male respondents, in terms of: ??

genderchoices Gender Choices 4.4.2 Trans- spondents against Transportation Challenges portation Safety ?? Recommendations by Re-

Respondents were asked to choose from five statements which one best described their use of public transport and perceptions of personal security. For the same variables, the participants were asked to rate on a 1–5 scale (1: Very unlikely, 2: Somewhat unlikely, 3: Neither likely nor unlikely, 4: Somewhat likely, 5: Very likely).

Mann-Whitney two-sample U-test is used in this section to decide the differences and/or similarities between the two genders, the p- values are used to indicate the strength of the evidence of the effect of gender on the choices.

4.4.1. Gender Choices

This sub-part is divided into:

1. Transportation Conditions and Employment Choices
2. Transportation Challenges and Employment Location

Transportation Conditions and Employment Choices

Female and male respondents were asked whether avoiding the transport conditions, like timing, safety and accessibility, would play a role in conditioning the choice of their job, in terms of level, location and other aspects. The figure 4.26 represents the preferences of both genders.

Transportation Conditions and Employment Choices, by Gender
 n = 488, female: n = 418, male: n = 70

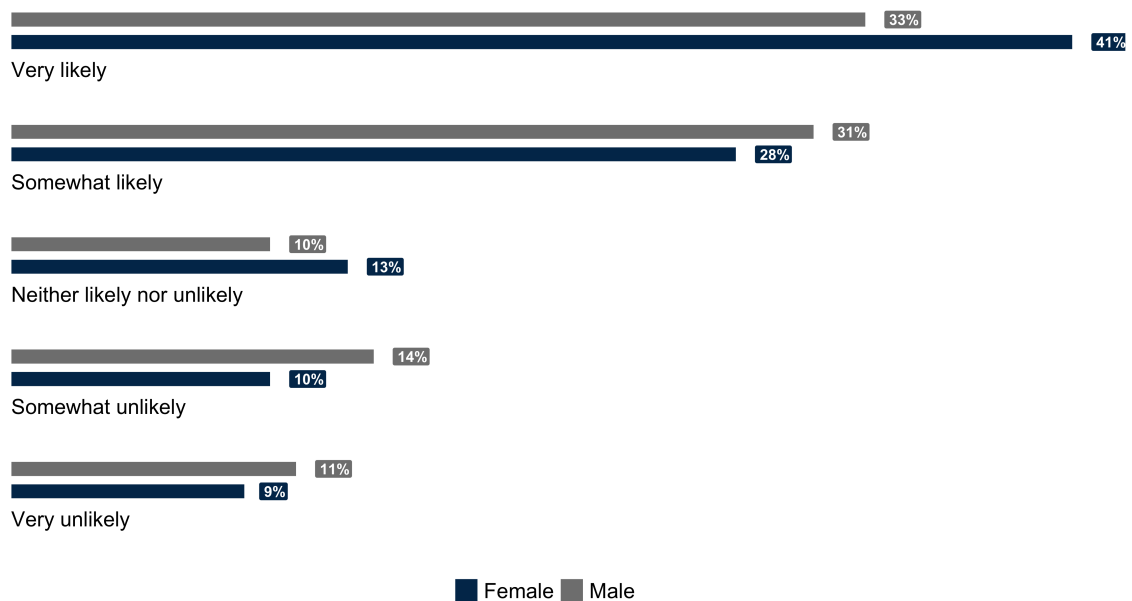


Figure 4.26.: Transportation Conditions and Employment Choices.

The Mann-Whitney two-sample U-test showed the following results: The z-score is 1.27067. The p-value is .20408., making the result not significant at $p < .05$. In other words, the conditions of transportation would not play a role in choosing the conditions of the employment for both men and women surveyed.

Table 4.4.: Transportation Conditions and Employment Choices

Gender	Sum of ranks	Mean of ranks	Expected sum of ranks	Expected mean of ranks	U-value	Expected U-value
Female	103589	247.82	102201	244.5	13242	14630
Male	15727	224.67	17115	244.5	16018	14630

Transportation Challenges and Employment Location

Female and male respondents were asked whether avoiding the transport challenges would play a role in choosing the location of their employment. The figure 4.27 represents the preferences of both genders.

Transportation Conditions and Employment Location, by Gender
 n = 474, female: n = 409, male: n = 65

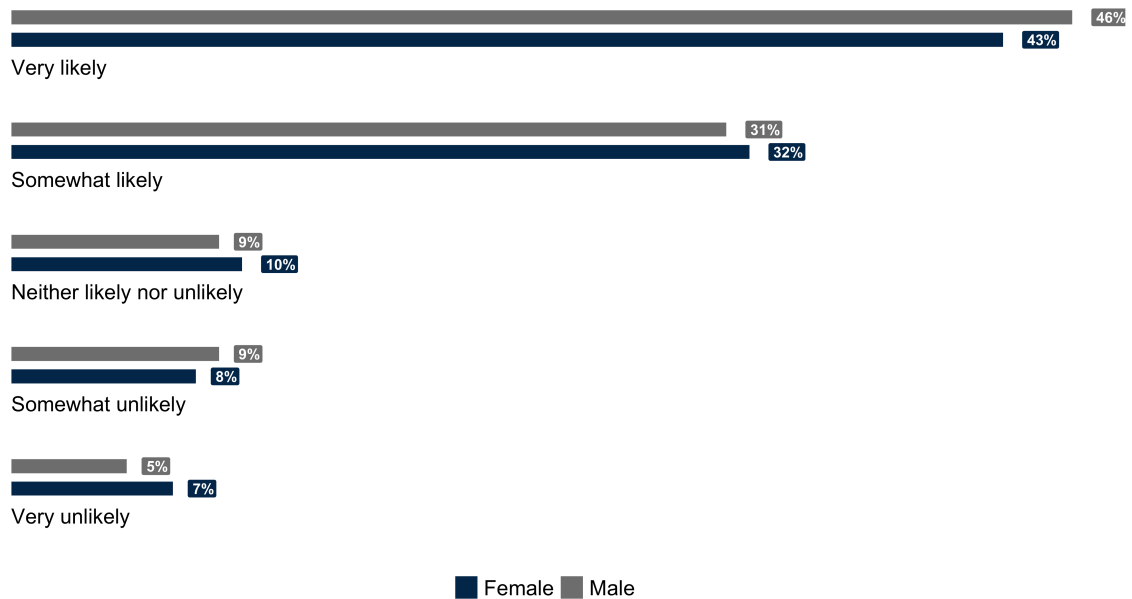


Figure 4.27.: Transportation Conditions and Employment Location.

The Mann-Whitney two-sample U-test showed the following results: The z-score is -0.50155. The p-value is .61708, making the result not significant at $p < .05$. In other words, avoiding the transport challenges would not play a role in choosing the location of the employment for

both men and women surveyed.

Table 4.5.: Transportation Challenges and Employment Location

Gender	Sum of ranks	Mean of ranks	Expected sum of ranks	Expected mean of ranks	U-value	Expected U-value
Female	96622.5	236.24	97137.5	237.5	13807.5	13292.5
Male	15952.5	245.42	15437.5	237.5	12777.5	13292.5

4.4.2. Transportation Safety

This sub-part is divided into:

1. Transportation Safety and Trip Cost
2. Transportation Safety and Trip Duration
3. Transportation Safety and Trip Cancellation

Transportation Safety and Trip Cost

Female and male respondents were asked whether they would rather use a more expensive mode of transportation, where the personal safety is higher than another cheaper one, especially if they are dressed for a special occasion. The figure 4.28 represents the preferences of both genders.

Transportation Safety and Trip Cost, by Gender
 n = 543, female: n = 469, male: n = 74



Figure 4.28.: Transportation Safety and Trip Cost.

The Mann-Whitney two-sample U-test showed the following results: The z-score is 2.95816. The p-value is .00308, making the result significant at $p < .05$. In other words, women would rather take a costly trip with the personal safety guarantee, than men would, in the case of being dressed for a special occasion.

Table 4.6.: Transportation Safety and Trip Cost

Gender	Sum of ranks	Mean of ranks	Expected sum of ranks	Expected mean of ranks	U-value	Expected U-value
Female	131279	279.91	127568	272	13642	17353
Male	16417	221.85	20128	272	21064	17353

Transportation Safety and Trip Duration

Female and male respondents were asked whether they would rather use a longer trip, where the personal safety is higher than another shorter one. The figure 4.2.4 represents the preferences of both genders.

Transportation Safety and Trip Duration , by Gender
 n = 513, female: n = 438, male: n = 75



Figure 4.29.: Transportation Safety and Trip Duration.

The Mann-Whitney two-sample U-test showed the following results: The z-score is 3.73355. The p-value is .0002, making the result significant at $p < .05$. In other words, women would rather take a longer trip with the personal safety guarantee, than men would.

Table 4.7.: Transportation Safety and Trip Duration

Gender	Sum of ranks	Mean of ranks	Expected sum of ranks	Expected mean of ranks	U-value	Expected U-value
Female	126902.5	277.08	122286	267	12558.5	17175
Male	15408.5	205.45	20025	267	21791.5	21791.5

The respondents from both genders, who indicated their preference of taking a longer trip with a higher personal safety standards, were asked about the accepted additional duration added to the original trip duration, where they would still choose to take it a anyways.

Transportation Safety and Trip Cancellation

Surveyed commuters were asked whether they would rather cancel their trips because of personal safety for the following purposes:

1. Work-home commute
2. Social (such as visiting family and friends)
3. Recreational/Leisure
4. Shopping

Social (such as visiting family and friends)

The z-score is 0.13155. The p-value is .89656. The result is not significant at $p < .05$.

Table 4.9.: Trip Cancellation: Social

Gender	Sum of ranks	Mean of ranks	Expected sum of ranks	Expected mean of ranks	U-value	Expected U-value
Female	113456	257.85	113300	257.5	16124	16280
Male	18899	255.39	19055	257.5	16436	16280

Recreational/Leisure

The z-score is 1.56434. The p-value is .11876. The result is not significant at $p < .05$.

Table 4.10.: Trip Cancellation: Recreational/Leisure

Gender	Sum of ranks	Mean of ranks	Expected sum of ranks	Expected mean of ranks	U-value	Expected U-value
Female	116114.5	262.7	114257	258.5	14496.5	16354
Male	17271.5	233.4	19129	258.5	18211.5	16354

Shopping

The Z-Score is 0.23418. The p-value is .8181. The result is not significant at $p < .05$.

Table 4.11.: Trip Cancellation: Shopping

Gender	Sum of ranks	Mean of ranks	Expected sum of ranks	Expected mean of ranks	U-value	Expected U-value
Female	109818	253.62	109549	253	15319	15588
Male	17947	249.26	18216	253	15857	15588

Educational trips (Go to school and University, attend a course)

The z-score is 1.22617. The p-value is .2187. The result is not significant at $p < .05$.

Table 4.12.: Trip Cancellation: Educational trips

Gender	Sum of ranks	Mean of ranks	Expected sum of ranks	Expected mean of ranks	U-value	Expected U-value
Female	104708	248.12	103390	245	12819	14137

Table 4.12.: Trip Cancellation: Educational trips

Gender	Sum of ranks	Mean of ranks	Expected sum of ranks	Expected mean of ranks	U-value	Expected U-value
Male	15097	225.33	16415	245	15455	14137

House duty relating trips (kids to school, shopping, parental care)

The z-score is 0.85821. The p-value is .38978. The result is not significant at $p < .05$.

Table 4.13.: Trip Cancellation: House duty

Gender	Sum of ranks	Mean of ranks	Expected sum of ranks	Expected mean of ranks	U-value	Expected U-value
Female	40130.5	158.62	39594.5	156.5	6927.5	7463.5
Male	8697.5	147.42	9233.5	156.5	7999.5	7463.5

4.4.3. Factors for increasing Transportation Attractiveness

When asked about the factors that might contribute to increase the attractiveness of using public transportation, and given the options of choosing many variants, women commuters expressed improvement of security on-board different vehicles (74 percent) to play a main role in encouraging them using the public transportation service. The hygiene levels at vehicles and stops were the concern of male respondents (70 percent). Improving the security at stations was also expressed by 63 percent from the female part, followed by improving vehicle conditions from 60 percent of their fellow male commuters. Figure 4.30 shows a detailed representation about the preferences of both genders.

Table 4.14.: Influence of Gender on Decisions Summary Statistics, statistically significant p-value < 0.05

Variable	Gender				Test				
	Women		Men		parameters				
	m	mdn	sd	m	mdn	sd	relation	U	p-value
Gender Choices									
Employment Choice	3.83	4.00	1.29	3.6	4.00	1.38	1.27067	13242	0.20408
Employment Location	3.95	4.00	1.22	4.05	4.00	1.16	-0.50155	12777.5	0.61708
Rating of Personal Security									
Safety and Trip Cost	4.76	5.00	0.76	4.38	5.00	1.09	2.95816	13642	.00308
Safety and Trip Duration	4.41	5.00	1.07	3.83	4.00	1.35	3.73355	12558.5	0.0002
Safety and Trip Cancellation:									
Work	2.78	3.00	1.51	2.45	2.00	1.38	1.54027	11982.5	0.12356
Social	3.30	4.00	1.37	3.27	3.00	1.41	0.13155	16124	0.89656
Recreational/Leisure	3.56	4.00	1.35	3.28	4.00	1.41	1.56434	14496.5	0.11876
Shopping	3.54	4.00	1.37	3.49	4.00	1.41	0.23418	15319	0.8181
Educational Trips	2.51	2.00	1.46	2.25	2.00	1.32	1.22617	12819	0.2187
House duty:	2.92	3.00	1.43	2.75	3.00	1.48	0.85821	6927.5	0.38978

Public Transportation Attractiveness, by Gender
 n = 579, female: n = 493, male: n = 86

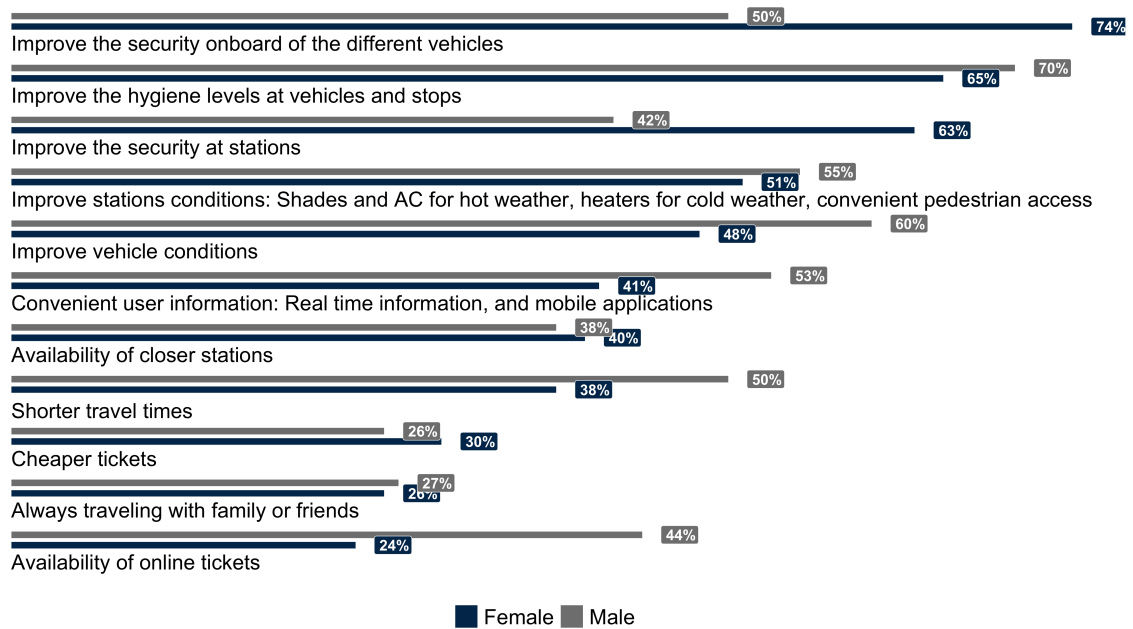


Figure 4.30.: Factors for increasing Transportation Attractiveness.

5. Chapter Five: In-depth Analysis

This chapter of the thesis addresses the study's findings and their dependence to one another. The results interpretation is primarily determined by the research questions of the thesis.

A limitation is the Chi square test was used to examine the dependency between the variable, yet many cells had expected frequency less than 5. Due to the presence of some observations that were less than the number 5 and the need to compare more than two levels of variables, the Fisher's Exact Test of independence was used instead to test the dependence of the categorical variables, however, also rejected due to the big numbers of groups and levels to be compared. The dependence of contributing variables is only examined based on the visualization of data variables in relation to one another.

5.1. Frequency of Violence

The following factors were considered to examine the occurrence of violence in association to them:

5.1.1. Dependence: Frequency of Violence - Age

Is there an age range more frequent to experiencing violence than another?

Harassment is regarded to be tackling the age range 18-24 years old than another range. The age range 18-24 years old had a contribution of 77 percent in regard to the whole survey population who experienced non-verbal harassment, 66 percent for verbal harassment and 55 percent of physical harassment, in addition to the respondents under 18 years old experiencing 12 percent of the non-verbal harassment, 18 percent of verbal harassment and 11 percent of physical harassment.

However, the survey respondents' socio-demographics aspects show a bigger share of this age-range than the others in the survey population.

Dependence: Frequency of Violence - Age, by femal respondents
 n = 195

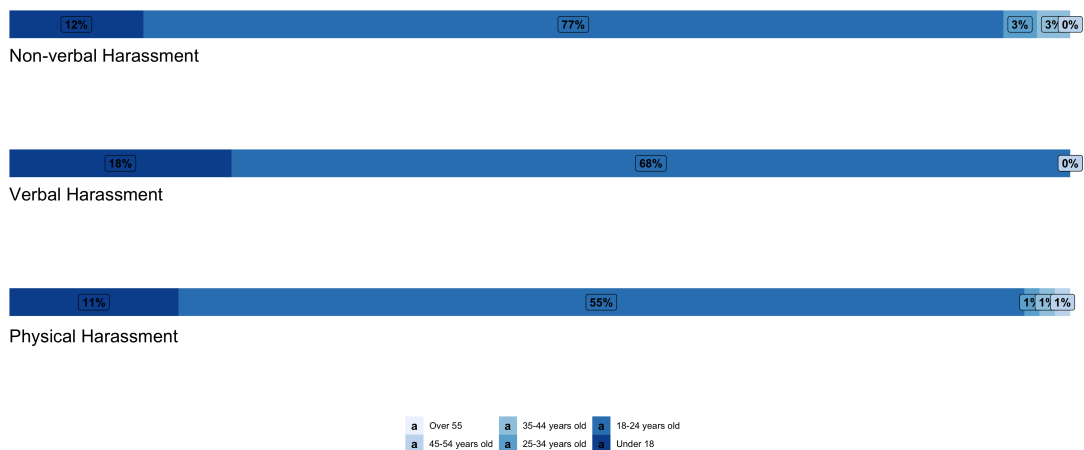


Figure 5.1.: Dependence Frequency of Violence - Age.

5.1.2. Dependence: Frequency of Violence - Status of Travelling

Is there a higher frequency of experiencing violence when a woman is travelling alone?

Figure 5.2 presents the relation between experiencing harassment and the status of travelling while experiencing the harassment. It is observed that 71 percent of the women who experienced non-verbal harassment, 74 percent of the women who experienced verbal harassment and 58 percent of the women who experienced physical harassment were travelling alone. It is also observed that a considerable share of women experiencing these kinds of harassment, on-verbal harassment (23 percent), verbal harassment (26 percent) and physical harassment (27 percent), were travelling with female companions.

Dependence: Frequency of Violence - Status of Travelling, by femal respondents
n = 273

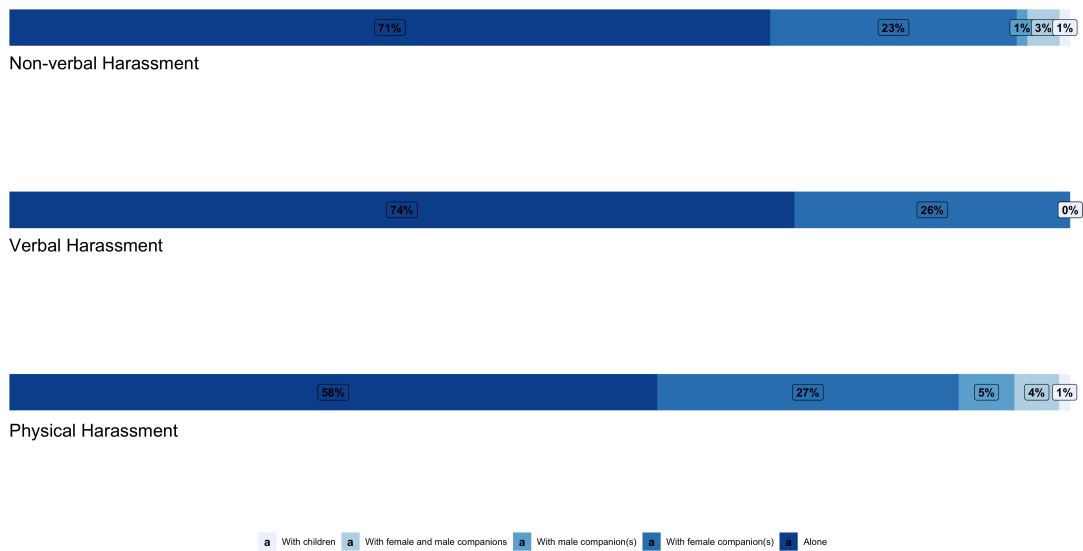


Figure 5.2.: Dependence Frequency of Violence - Status of Travelling.

5.1.3. Dependence: Frequency of Violence - Time of Travelling

Is there a higher frequency of experiencing violence in some time slots of the day than another?

Non-verbal harassment is observed during the afternoon (27 percent), the evening rush (20 percent) and non-rush hours (24 percent), as well as verbal harassment, being experienced mostly during the evening rush hours by a percent of 38 percent. Physical harassment is reported with 35 percent of all physical harassment incidents during the afternoon.

Dependence: Frequency of Violence - Time, by femal respondents
n = 274

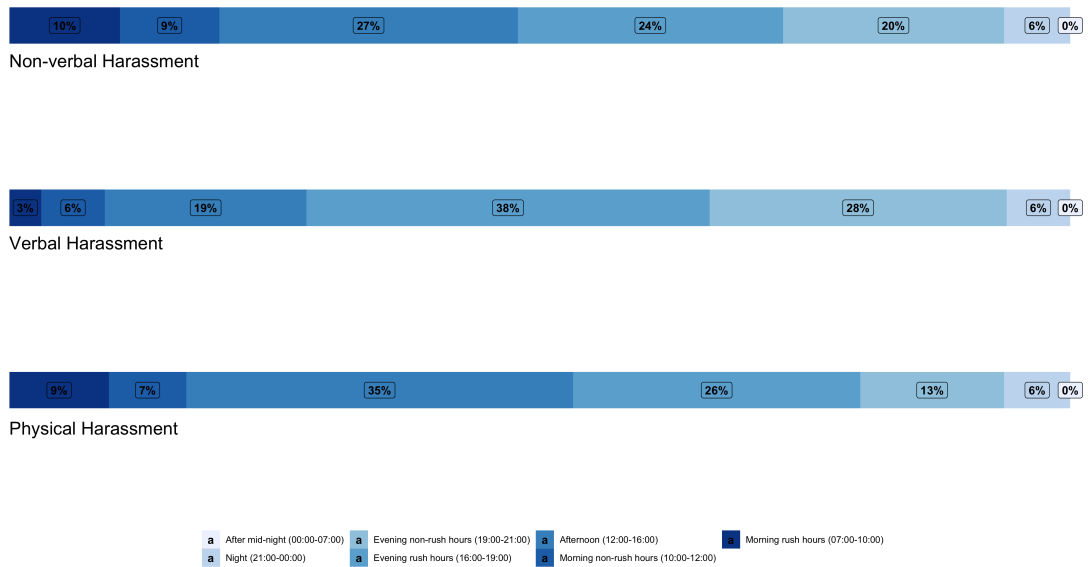


Figure 5.3.: Dependence Frequency of Violence - Time of Travelling.

Dependence: Frequency of Violence - Mode of Travelling

Is there a higher frequency of experiencing violence in some modes than the others?

The microbus is reported to be the mode where 26 percent of non-verbal harassment incidents, 31 percent of verbal harassment incidents and 40 percent of physical harassment incidents are witnessed. The bus is observed to have the second highest rate of experiencing non-verbal harassment (17 percent), the taxi for verbal harassment (16 percent) and the bus for physical harassment (30 percent).

Dependence: Frequency of Violence - Mode, by femal respondents
n = 273

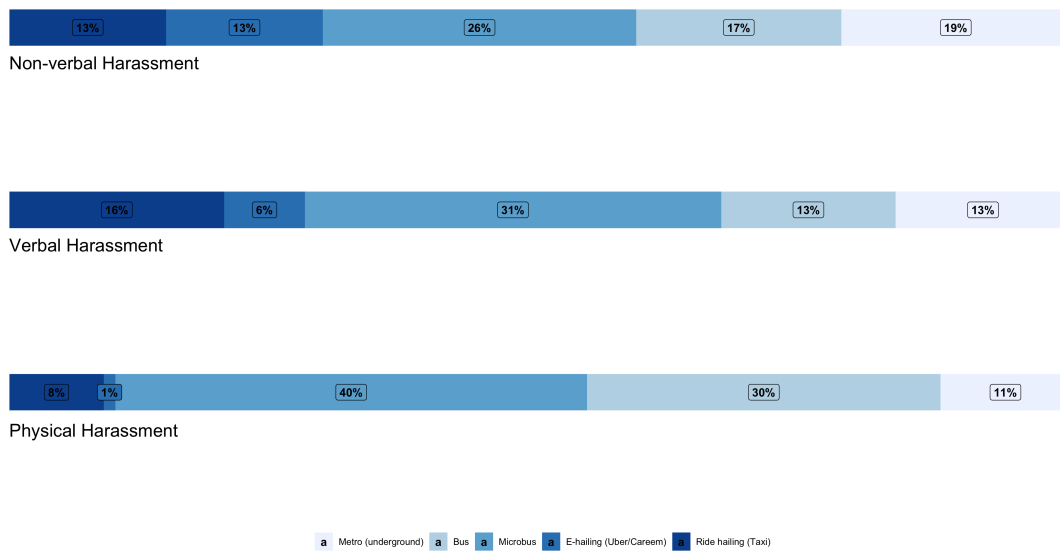


Figure 5.4.: Dependence Frequency of Violence - Mode.

5.1.4. Dependence: Frequency of Violence - Place

Is there a higher frequency of experiencing violence in some places in the context of transportation than the others?

On-board the vehicle is observed as place of the transportation context that witness the majority of non-verbal harassment incidents (43 percent) and physical harassment (68 percent). Walking to the terminal/station is detected with biggest verbal harassment incidents (38 percent).

Dependence: Frequency of Violence - Place, by femal respondents
 n = 270

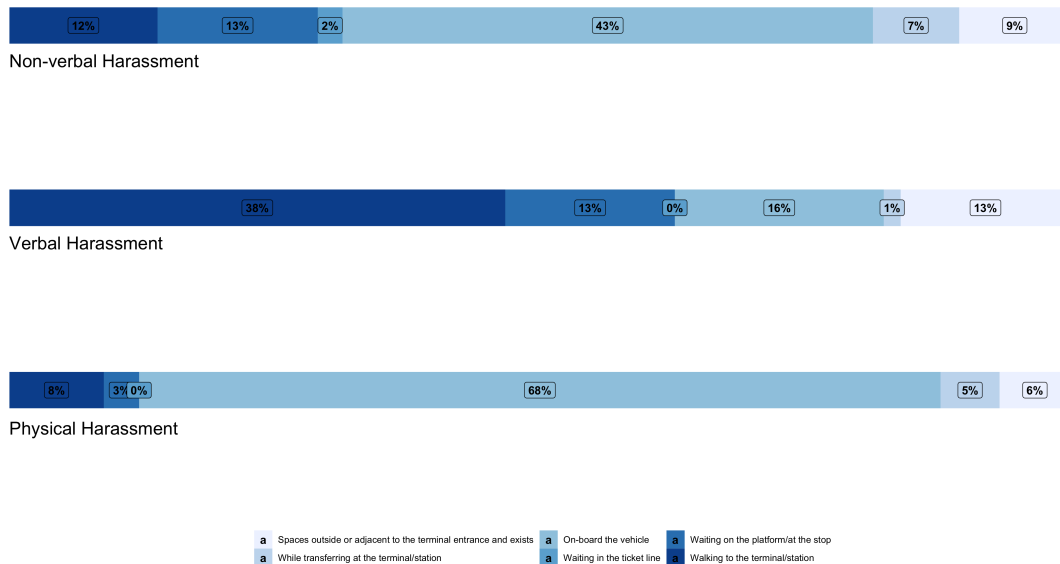


Figure 5.5.: Dependence Frequency of Violence - Place.

5.2. Key Findings for the Reactions to Violence

5.2.1. Dependence: Reaction to Violence - Status of Travelling

It is detected that 71 percent of the respondents who walked away and 64 percent who did not react were travelling alone, followed by 21 percent and 30 percent respectively for the same causes were travelling with another female companions.

Dependence: Reaction to Violence - Status of Travelling, by femal respondents
n = 272

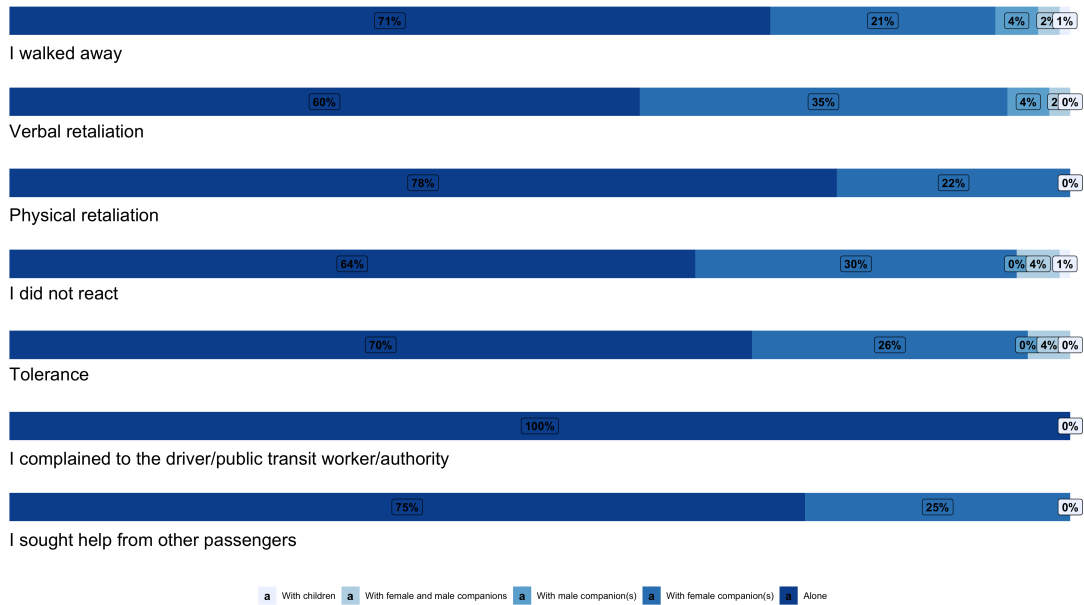


Figure 5.6.: Dependence Reaction to Violence - Status of Travelling.

5.2.2. Dependence: Reaction to Violence - Level of Crowdedness

It is observed that female respondents tend not to walk away when the level of crowdedness during the incident is very low to average. 21 percent, 13 percent and 29 percent walked away when experiencing violence in very low, below average and average level of crowdedness, and not to react with 12 11 and 35 percent also in very low, below average and average level of crowdedness.

Dependence: Reaction to Violence - Level of Crowdedness, by femal respondents
n = 272

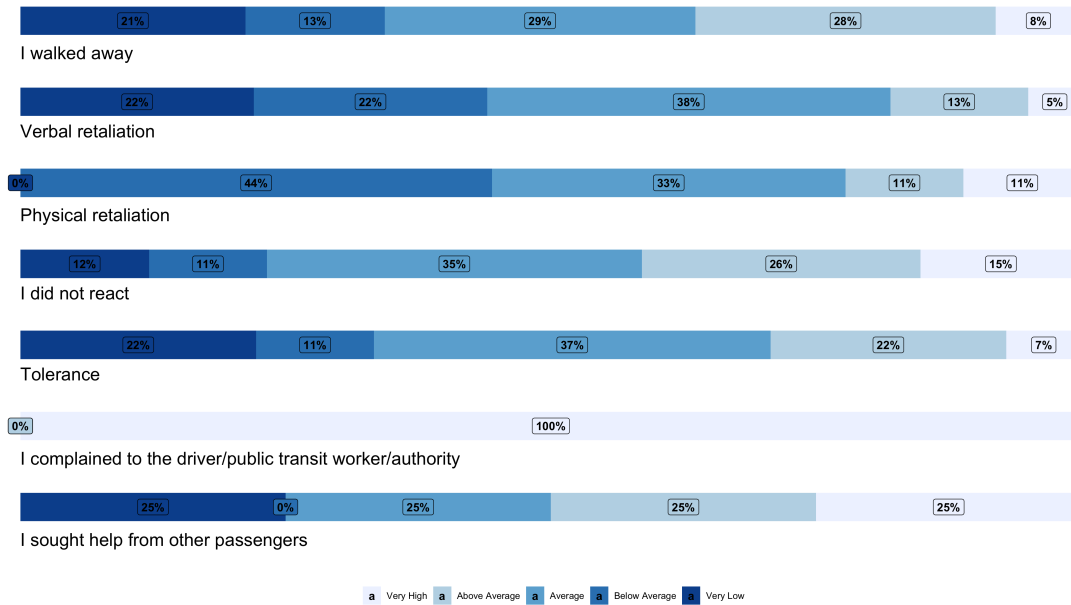


Figure 5.7.: Dependence Reaction to Violence - Level of Crowdedness.

5.3. Key Findings for the Effects of Violence

Effects on experiencing violence on travel patterns in the survey are defined as following:

1. I never used this mode again
2. I used this mode very seldom and not if crowded
3. I avoided using this mode in the evenings
4. I changed the route so I did not have to go through this location again
5. I travel with companion, I do not travel alone through this location
6. I use private mode (Taxi, or Uber) to feel safer
7. I stopped going to work
8. I changed the way I dress if I am traveling alone
9. I use this mean of transport in emergency cases only

5.3.1. Dependence: Effects of Violence - Age

Are the effects of violence different from one age range to another?

From the respondents whose travel patterns have been affected (n = 107), the majority's age range is 18-24 years old.

Table 5.1.: Travel Patterns Affected by Violence: Age

Age	n	Pct
Under 18	14	13
18-24 years old	63	59
25-34 years old	25	23
35-44 years old	3	3
45-54 years old	1	1
Over 55	1	1

From the respondents whose travel patterns have not been affected (n = 100), From the respondents whose travel patterns have been affected (n = 107), the majority's age range is also 18-24 years old.

Table 5.2.: Travel Patterns Not Affected by Violence: Age

Age	n	Pct
Under 18	10	10
18-24 years old	76	76
25-34 years old	13	13
35-44 years old	1	1
45-54 years old	0	0
Over 55	0	0

It can not be observed if the age is a factor that decides the effects of violence on travel patterns and choices

5.3.2. Dependence: Effects of Violence - Access to a Car

From the respondents whose travel patterns have been affected (n = 155), 37 percent do not have access to a car, while 63 percent do have access.

Table 5.3.: Travel Patterns Affected by Violence: Access to a car

Access to a Car	n	Pct
Yes	97	63
No	58	37

From the respondents whose travel patterns have not been affected (n = 136), 55 percent do not have access to a car, while 45 percent do have access.

Table 5.4.: Travel Patterns Not Affected by Violence: Access to a car

Access to a Car	n	Pct
Yes	61	45
No	75	55

It can be concluded that the respondents who do not have another option but the public transportation, remained tolerant to the violence.

5.3.3. Dependence: Effects of Violence - Income

Are the effects of violence different from one income range to another?

From the respondents whose travel patterns have been affected (n = 105), the table 5.5 shows their household gross income.

Table 5.5.: Travel Patterns Affected by Violence: Household Gross Income

Household Gross Income	n	Pct
2K EGP or less	4	4
2K to 5K EGP	19	18
5K to 10K EGP	24	23
10K to 15K EGP	18	17
15K to 25K EGP	14	13
25K EGP to 40K EGP	11	10
40K to 60K EGP	8	8
More than 60K EGP	7	7

From the respondents whose travel patterns have not been affected (n = 100), the table 5.6 shows their household gross income.

Table 5.6.: Travel Patterns Not Affected by Violence: Household Gross Income

Household Gross Income	n	Pct
2K EGP or less	5	5
2K to 5K EGP	23	23
5K to 10K EGP	22	22
10K to 15K EGP	12	12
15K to 25K EGP	22	22
25K EGP to 40K EGP	11	11

Table 5.6.: Travel Patterns Not Affected by Violence: Household Gross Income

Household Gross Income	n	Pct
40K to 60K EGP	4	4
More than 60K EGP	1	1

It can not be concluded that the effects on the travel patterns because of violence and the income have a strong since both low and high incomes have relatively similar share.

6. Chapter Six: Conclusion

In this chapter of the thesis, the key findings of the study are represented, as the following:

- 6.1 Key Findings: Gender Travel Patterns 6.3 Key Findings: Gender-based Violence
6.2 Key Findings: Gender-biased Choices

Only the findings of the research are represented in this chapter and a discussion is not presented.

6.1. Key Findings: Gender Travel Patterns

1. More female respondents are examined to be using transportation on daily basis, than the male respondents.
2. More women are using public transportation for the reason of not owning a private car than men do for the same reason.
3. No woman is using public transportation because she believe it's a safe option. More men are choosing public transportation because it's convenient to them, than women.
4. Men and Women reported equally that public transportation is affordable.
5. The majority of the female respondents (46 percent) is using E-hailing as their most frequent mode of transport, compared to the microbus being the most frequent mode of transport for male respondents.
6. Men commute slightly longer than women in their most frequent trip for the range 30-60 minutes for a trip, yet the women proportion is larger for trips lasting 15-30 minutes.
7. No clear finding is detected for the length of the most frequent trip in kilometers per gender, as more than half of the female respondents chose "I do not know" as an answer to the correspondent question.

6.2. Key Findings: Gender-biased Choices

1. The conditions of transportation is not an important aspects in the choice of the employment conditions choice for both men and women. Similarly, the transportation challenges do not play a role in choosing the location of the employment for both genders.

2. Women commuters would rather choose a costly mode of transportation, where the personal safety is promised, given that they are dressed for a special occasion, in contrast to their fellow men commuters who did not show concerns about personal safety in relation to cost.
3. Women commuters would rather choose a longer trip, where the personal safety is promised, in contrast to their fellow men commuters who did not show concerns about personal safety in relation to trip duration.
4. Women and men are not likely to cancel their trips for different purposes because of lack of personal safety.
5. Women are encouraged to use public transportation through improving the security on-board the vehicles, while men are concerned about the improvement of hygiene levels at vehicles and stops as a main factor to increase their attractiveness to public transportation.

6.3. Key Findings: Gender-based Violence

1. Only five percent of survey female respondents have never faced an unwanted behavior in transport context in Cairo, while 95 percent have been victims of violence.
2. 47 percent of female respondents experienced non-verbal harassment, 12 percent verbal harassment and 41 physical harassment.
3. Afternoon (12:00-16:00) and Evening rush hours (16:00 - 19:00) are the time slots when female respondents have mostly experienced harassment in Cairo.
4. The majority of unwanted behaviors experienced by females took place on-board a vehicle, followed by walking to the terminal/station. Waiting in the ticket line and transferring at the station are observed as the least places where unwanted behaviors are witnessed.
5. The microbus is observed to be the most potential mode where unwanted behaviors take place, followed by the bus. The E-hailing is reported as the least mode where violence is perceived.
6. The majority of the female respondents of the survey faced unwanted behavior in the context of transportation while commuting for educational purposes.
7. Female respondents were being harassed while commuting alone or with female companions. The presence of children shows less record of unwanted behavior against women commuters.
8. Principally, the perpetrator is a passenger or a passerby. It is also reported to be the driver of the vehicle in some cases.

9. Most incidents of violence took place in a average and above average level of crowdedness.
10. Reported reactions to the incident ranged between walking away, verbal retaliation and not reacting. A small share of physical retaliation is reported.
11. 97.6 percent of survey respondents did not report the incident to the police. The main reasons for not reporting were the short period of the incident, the victims thought they would not be taken seriously, the victims do not trust the authorities to investigate reports of sexual harassment or violence and the lack of information.
12. Unsupervised spaces (lack of surveillance camera) and unsupervised spaces (lack of security guards) are reported by the victims to be contributory factors to the violence.
13. Effects of severe incidents on the respondents' mobility ranged between using some modes only in case they are not crowded, switching to private modes (mainly e-hailing and ride-hailing), using some modes only in emergency cases, avoiding using some modes in the evenings, and even never using some modes again.
14. The impacts of the change in travel patterns to avoid violence are reported by the female respondents to cause mode change, financial burdens and reduction in the activity levels. Some reported experiencing all of the mentioned impacts.
15. The age range under 18 and the age range 18-24 years old experience non-verbal harassment, verbal harassment and physical harassment the most in the survey findings.
16. Travelling alone or with female companions is more potential to experiencing all kinds of unwanted behaviors like non-verbal, verbal and physical harassment.
17. The microbus is reported to have the most physical harassment incidents, followed by the bus.
18. Non-verbal and physical harassment take place mostly on-board the vehicle, while verbal harassment happens while walking to the terminal/station.
19. Female respondents, when experiencing violence, tend not to react and walk away when travelling alone or with other female companions.
20. Female respondents, when experiencing violence, tend not to react and walk away when in a very low to average level of crowdedness.
21. Female Respondents who have access to a car are observed to have switched changes in their use of public transport, however that the ones who do not have access to a car and have the public transportation remained with their patterns.

A. General Addenda

A.1. Questionnaire

Questionnaire Part One

Q1.1. Gender of the Respondent: The question asked the respondent to choose their gender. The respondent had the following seven options:

- | | |
|----------------------|--------------------------------------|
| 1. Male | 5. Intersex or other related terms |
| 2. Female | 6. A gender identity not listed here |
| 3. Transgender Man | 7. Prefer not to Answer |
| 4. Transgender Woman | |

Q1.2. Frequency of Riding Transport Modes: The question asked the respondent to choose the frequency of their use of transport modes. The respondent had the following five options:

- | | | |
|-----------------------|------------------------|----------|
| 1. Daily | 3. 2-3 times per month | 5. Never |
| 2. 2-3 times per week | 4. Rarely | |

Questionnaire Part Two

Q2.1. Country of the Respondent: The question asked the respondent to choose their country of residence.

Q2.2. City of the Respondent: The question asked the respondent to choose their city of residence.

Questionnaire Part Three

Q3.1. Driving License: The question asked the respondent if they owned a driving license. The respondent had the following options:

1. Yes
2. No

Q3.2. Access to a car: The question asked the respondent if they have access to a car. The respondent had the following options:

1. Yes, I have one
2. My family has one and I can use it
3. I have company car
4. No

Q3.3. Purpose: The question asked the respondent to choose their primary reason of using the transport modes. The respondent had the following options:

1. I don't own a private vehicle
2. I don't have another option
3. It's affordable
4. It's convenient
5. It's relaxing
6. It's safe
7. It reduces my ecological footprint

Q3.4. Purpose-Frequency: The question asked the respondent to choose the frequency of their transport use for some purposes. The respondent had the following options:

(a) Work-home commute:

1. Never
2. Rarely
3. Sometimes
4. Often
5. Always
6. Not Applicable

(b) Social (such as visiting family and friends):

1. Never
2. Rarely
3. Sometimes
4. Often
5. Always
6. Not Applicable

(c) Recreational/Leisure:

- | | | |
|-----------|--------------|-------------------|
| 1. Never | 3. Sometimes | 5. Always |
| 2. Rarely | 4. Often | 6. Not Applicable |

(d) Shopping:

- | | | |
|-----------|--------------|-------------------|
| 1. Never | 3. Sometimes | 5. Always |
| 2. Rarely | 4. Often | 6. Not Applicable |

(e) Educational trips (Go to school and University, attend a course):

- | | | |
|-----------|--------------|-------------------|
| 1. Never | 3. Sometimes | 5. Always |
| 2. Rarely | 4. Often | 6. Not Applicable |

(f) House duty relating trips (kids to school, shopping, parental care):

- | | | |
|-----------|--------------|-------------------|
| 1. Never | 3. Sometimes | 5. Always |
| 2. Rarely | 4. Often | 6. Not Applicable |

Q3.5. Purpose-Mode: The question asked the respondent to choose the most frequent mode of their transport use for some purposes. The respondent had the following options:

(a) Work-home commute:

- | | | |
|----------------------------|-------------|------------------------|
| 1. Ride hailing (Taxi) | 3. Microbus | 5. Metro (underground) |
| 2. E-hailing (Uber/Careem) | 4. Bus | 6. Not Applicable |

(b) Social (such as visiting family and friends):

- | | | |
|----------------------------|-------------|------------------------|
| 1. Ride hailing (Taxi) | 3. Microbus | 5. Metro (underground) |
| 2. E-hailing (Uber/Careem) | 4. Bus | 6. Not Applicable |

(c) Recreational/Leisure:

- | | | |
|----------------------------|-------------|------------------------|
| 1. Ride hailing (Taxi) | 3. Microbus | 5. Metro (underground) |
| 2. E-hailing (Uber/Careem) | 4. Bus | 6. Not Applicable |

(d) Shopping:

- | | | |
|----------------------------|-------------|------------------------|
| 1. Ride hailing (Taxi) | 3. Microbus | 5. Metro (underground) |
| 2. E-hailing (Uber/Careem) | 4. Bus | 6. Not Applicable |

(e) Educational trips (Go to school and University, attend a course):

- | | | |
|----------------------------|-------------|------------------------|
| 1. Ride hailing (Taxi) | 3. Microbus | 5. Metro (underground) |
| 2. E-hailing (Uber/Careem) | 4. Bus | 6. Not Applicable |

(f) House duty relating trips (kids to school, shopping, parental care):

- | | | |
|----------------------------|-------------|------------------------|
| 1. Ride hailing (Taxi) | 3. Microbus | 5. Metro (underground) |
| 2. E-hailing (Uber/Careem) | 4. Bus | 6. Not Applicable |

Q3.6. Number of Transport Modes: The question asked the respondent to choose how many transport modes they use between the departure and arrival point on their most frequent trip for some purposes:

(a) Work-home commute:

- | | | |
|------|------|----------------|
| 1. 1 | 3. 3 | 5. 5 |
| 2. 2 | 4. 4 | 6. More than 5 |

(b) Social (such as visiting family and friends):

- | | | |
|------|------|----------------|
| 1. 1 | 3. 3 | 5. 5 |
| 2. 2 | 4. 4 | 6. More than 5 |

(c) Recreational/Leisure:

- | | | |
|------|------|----------------|
| 1. 1 | 3. 3 | 5. 5 |
| 2. 2 | 4. 4 | 6. More than 5 |

(d) Shopping:

- | | | |
|------|------|----------------|
| 1. 1 | 3. 3 | 5. 5 |
| 2. 2 | 4. 4 | 6. More than 5 |

(e) Educational trips (Go to school and University, attend a course):

- | | | |
|------|------|----------------|
| 1. 1 | 3. 3 | 5. 5 |
| 2. 2 | 4. 4 | 6. More than 5 |

(f) House duty relating trips (kids to school, shopping, parental care):

- | | | |
|------|------|----------------|
| 1. 1 | 3. 3 | 5. 5 |
| 2. 2 | 4. 4 | 6. More than 5 |

Questionnaire Part Four

Q4.1. Frequent Mode: The question asked the respondent to choose their most frequent used mode. The respondent had the following options:

- | | | |
|----------------------------|-------------|------------------------|
| 1. Ride hailing (Taxi) | 3. Microbus | 5. Metro (underground) |
| 2. E-hailing (Uber/Careem) | 4. Bus | 6. Other |

Q4.2. Mode Access: The question asked the respondent to choose how they reach their most frequent used mode. The respondent had the following options:

- | | | |
|------------------------------------|---|----------|
| 1. Walking to the terminal/station | 3. Ride hailing (Taxi) or E-hailing (Uber, etc) | 5. Other |
| 2. Car | 4. Microbus | |

Q4.3. Length of the trip, in minutes: The question asked the respondent to choose how long their most frequent trip is in minutes. The respondent had the following options:

- | | | | |
|--------------------|--------------------|--------------------|---------------------|
| 1. Below 5 minutes | 2. 5 - 10 minutes | 4. 15 - 30 minutes | 6. 60 - 120 minutes |
| | 3. 10 - 15 minutes | 5. 30 - 60 minutes | 7. 2 hrs + |

Q4.4. Length of the trip, in kilometer: The question asked the respondent to choose how long their most frequent trip is in kilometers. The respondent had the following options:

- | | | | |
|-------------------|---------------|----------------|-----------------|
| 1. Less than 1 km | 3. 5 - 10 km | 5. 25 - 50 km | 7. 100+ km |
| 2. 1 - 5 km | 4. 10 - 25 km | 6. 50 - 100 km | 8. I don't know |

Q4.5. Access Distance to Point of Departure: The question asked the respondent to choose how far their access to the departure point of their most frequent used mode is. The respondent had the following options:

- | | |
|--|---|
| 1. less than 1 block (less than 100 meters) | 4. 8-16 blocks (800 meters to 1600 meters) |
| 2. 1-4 blocks (about 100 meters to 500 meters) | 5. More than 16 blocks (more than 1600 meter) |
| 3. 4-8 blocks (500 meter to 800 meters) | 6. Don't know |

Q4.6. Access Distance from Point of Arrival: The question asked the respondent to choose how far their access to the arrival point of their most frequent used mode is. The respondent had the following options:

- | | |
|--|---|
| 1. less than 1 block (less than 100 meters) | 4. 8-16 blocks (800 meters to 1600 meters) |
| 2. 1-4 blocks (about 100 meters to 500 meters) | 5. More than 16 blocks (more than 1600 meter) |
| 3. 4-8 blocks (500 meter to 800 meters) | 6. Don't know |

Questionnaire Part Five

Q5.1. Employment Location - Travel Challenges: The question asked the respondent if they would prefer an employment place closer to their home only to avoid transport challenges. The respondent had the following options:

- | | | |
|---------------------------|--------------------|-------------------|
| 1. Very unlikely | likely | 6. Don't know |
| 2. Somewhat unlikely | 4. Somewhat likely | |
| 3. Neither likely nor un- | 5. Very likely | 7. Not applicable |

Q5.2. Employment Condition - Travel Challenges: The question asked the respondent if the transport conditions would condition the choice of their employment in terms of level, location and other factors. The respondent had the following options:

- | | | |
|---------------------------|--------------------|-------------------|
| 1. Very unlikely | likely | 6. Don't know |
| 2. Somewhat unlikely | 4. Somewhat likely | |
| 3. Neither likely nor un- | 5. Very likely | 7. Not applicable |

Q5.3. Trip Duration - Safety: The question asked the respondent if they would rather make a longer trip where the security level is higher, than a short trip, where they are not sure about the personal safety. The respondent had the following options:

- | | | |
|---------------------------|--------------------|-------------------|
| 1. Very unlikely | likely | 6. Don't know |
| 2. Somewhat unlikely | 4. Somewhat likely | |
| 3. Neither likely nor un- | 5. Very likely | 7. Not applicable |

Q5.4. Trip Duration Addition The question asked the respondent how long additional time would still make them choose the longer safer trip than the shorter not so safe one. The respondent had the following options:

- | | | |
|----------------------|----------------------|----------------------------|
| 1. 15 minutes longer | 3. 45 minutes longer | 5. More than 1 hour longer |
| 2. 30 minutes longer | 4. 1 hour longer | |

Q5.5. Reasons for not Using Transport: The question asked the respondent to rate the possible reasons that prevent them from using public transportation on regular basis. The respondent had the following options:

(a) There is no access to any form of transport modes where I live

- | | | |
|---------------------|--------------------------|------------------|
| 1 Very unlikely | 3 Neither likely nor un- | 5 Very likely |
| | likely | |
| 2 Somewhat unlikely | 4 Somewhat likely | 6 Not applicable |

(b) Transport modes do not reach my place of purpose (work, study, shopping ...)

- | | | |
|---------------------|--------------------------|------------------|
| 1 Very unlikely | 3 Neither likely nor un- | 5 Very likely |
| | likely | |
| 2 Somewhat unlikely | 4 Somewhat likely | 6 Not applicable |

(c) Timing and schedules of transport modes do not match my daily travel

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- | | | |
|---------------------|-------------------------------|------------------|
| 1 Very unlikely | 3 Neither likely nor unlikely | 5 Very likely |
| 2 Somewhat unlikely | 4 Somewhat likely | 6 Not applicable |

(d) Long distance to the nearest stop

- | | | |
|---------------------|-------------------------------|------------------|
| 1 Very unlikely | 3 Neither likely nor unlikely | 5 Very likely |
| 2 Somewhat unlikely | 4 Somewhat likely | 6 Not applicable |

(e) Stops conditions are not adequate to use

- | | | |
|---------------------|-------------------------------|------------------|
| 1 Very unlikely | 3 Neither likely nor unlikely | 5 Very likely |
| 2 Somewhat unlikely | 4 Somewhat likely | 6 Not applicable |

(f) Trips with the available transportation modes are very long for me

- | | | |
|---------------------|-------------------------------|------------------|
| 1 Very unlikely | 3 Neither likely nor unlikely | 5 Very likely |
| 2 Somewhat unlikely | 4 Somewhat likely | 6 Not applicable |

(g) I need to perform multiple transfers using transport modes to reach my destinations

- | | | |
|---------------------|-------------------------------|------------------|
| 1 Very unlikely | 3 Neither likely nor unlikely | 5 Very likely |
| 2 Somewhat unlikely | 4 Somewhat likely | 6 Not applicable |

(h) I do not feel safe in stations

- | | | |
|---------------------|-------------------------------|------------------|
| 1 Very unlikely | 3 Neither likely nor unlikely | 5 Very likely |
| 2 Somewhat unlikely | 4 Somewhat likely | 6 Not applicable |

(i) I do not feel safe regarding using transport modes in general

- | | | |
|---------------------|-------------------------------|------------------|
| 1 Very unlikely | 3 Neither likely nor unlikely | 5 Very likely |
| 2 Somewhat unlikely | 4 Somewhat likely | 6 Not applicable |

(j) Transport modes conditions are poor (seats, hygiene, ..)

- | | | |
|---------------------|-------------------------------|------------------|
| 1 Very unlikely | 3 Neither likely nor unlikely | 5 Very likely |
| 2 Somewhat unlikely | 4 Somewhat likely | 6 Not applicable |

(k) I have physical disability

- | | | |
|---------------------|-------------------------------|------------------|
| 1 Very unlikely | 3 Neither likely nor unlikely | 5 Very likely |
| 2 Somewhat unlikely | 4 Somewhat likely | 6 Not applicable |

Q5.6. Factors to Transport Attractiveness: The question asked the respondent about the factors that might increase their attractiveness to use public transportation on regular basis. The respondent had the following options:

- | | |
|--|--|
| 1. Shorter travel times | 7. Improve the hygiene levels at vehicles and stops |
| 2. Convenient user information: Real time information, and mobile applications | 8. Improve vehicle conditions |
| 3. Cheaper tickets | 9. Improve stations conditions: Shades and AC for hot weather, heaters for cold weather, convenient pedestrian access like safe crossing |
| 4. Availability of online tickets | 10. Availability of closer stations |
| 5. Improve the security on board of the different vehicles | 11. Always traveling with family or friends |
| 6. Improve the security at stations | |

Q5.7. Plans Cancellation - Transport Challenges: The question asked the respondent about the possible cancellation of their plans because of the transport challenges. The respondent had the following options:

(a) Work-home commute

- | | | |
|---------------------|-------------------------------|------------------|
| 1 Very unlikely | 3 Neither likely nor unlikely | 5 Very likely |
| 2 Somewhat unlikely | 4 Somewhat likely | 6 Not applicable |

(b) Social (such as visiting family and friends)

- | | | |
|---------------------|-------------------------------|------------------|
| 1 Very unlikely | 3 Neither likely nor unlikely | 5 Very likely |
| 2 Somewhat unlikely | 4 Somewhat likely | 6 Not applicable |

(c) Recreational/Leisure

- | | | |
|---------------------|-------------------------------|------------------|
| 1 Very unlikely | 3 Neither likely nor unlikely | 5 Very likely |
| 2 Somewhat unlikely | 4 Somewhat likely | 6 Not applicable |

(d) Shopping

- | | | |
|---------------------|-------------------------------|------------------|
| 1 Very unlikely | 3 Neither likely nor unlikely | 5 Very likely |
| 2 Somewhat unlikely | 4 Somewhat likely | 6 Not applicable |

(e) Educational trips (Go to school and University, attend a course)

- | | | |
|---------------------|-------------------------------|------------------|
| 1 Very unlikely | 3 Neither likely nor unlikely | 5 Very likely |
| 2 Somewhat unlikely | 4 Somewhat likely | 6 Not applicable |

(f) House duty relating trips (kids to school, shopping, parental care)

- | | | |
|---------------------|-------------------------------|------------------|
| 1 Very unlikely | 3 Neither likely nor unlikely | 5 Very likely |
| 2 Somewhat unlikely | 4 Somewhat likely | 6 Not applicable |

Q5.8. Expensive Trip for Special Occasion: The question asked the respondent whether they would consider using a more expensive mean of transport if there are dressed for a special occasion. The respondent had the following options:

- | | | |
|---------------------|-------------------------------|---------------|
| 1 Very unlikely | 3 Neither likely nor unlikely | 5 Very likely |
| 2 Somewhat unlikely | 4 Somewhat likely | 6 Don't know |

Questionnaire Part Six

Q6.1. Frequency of Unwanted Behavior: The question asked the respondent about the frequency of experiencing unwanted behaviors in the context of transportation systems. The respondent had the following options:

- | | | |
|----------|------------------------|-----------|
| 1. Once | 3. 2-3 times per week | 5. Rarely |
| 2. Daily | 4. 2-3 times per month | 6. Never |

Q6.2. Type of Unwanted Behavior - Frequency: The question asked the respondent about the type and frequency of unwanted behaviors that they experience in the context of transportation systems. The respondent had the following options:

(a) Stalking or being followed

- | | | |
|----------|-------------|------------------|
| 1 Never | 3 Sometimes | 5 Always |
| 2 Seldom | 4 Often | 6 Not applicable |

(b) Staring/Leering

- | | | |
|----------|-------------|------------------|
| 1 Never | 3 Sometimes | 5 Always |
| 2 Seldom | 4 Often | 6 Not applicable |

(c) Making facial expressions such as winking

- | | | |
|----------|-------------|------------------|
| 1 Never | 3 Sometimes | 5 Always |
| 2 Seldom | 4 Often | 6 Not applicable |

(d) Offensive name-calling (cat calling)

- | | | |
|----------|-------------|------------------|
| 1 Never | 3 Sometimes | 5 Always |
| 2 Seldom | 4 Often | 6 Not applicable |

(e) Using rough and offensive language

- | | | |
|----------|-------------|------------------|
| 1 Never | 3 Sometimes | 5 Always |
| 2 Seldom | 4 Often | 6 Not applicable |

(f) Sexual comments and/or noises

- | | | |
|----------|-------------|------------------|
| 1 Never | 3 Sometimes | 5 Always |
| 2 Seldom | 4 Often | 6 Not applicable |

(g) Blocking the path or the way

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1 Never	3 Sometimes	5 Always
2 Seldom	4 Often	6 Not applicable

(h) Displaying sexually suggestive visuals

1 Never	3 Sometimes	5 Always
2 Seldom	4 Often	6 Not applicable

(i) Invasion of privacy, pushing against you and/or rubbing body

1 Never	3 Sometimes	5 Always
2 Seldom	4 Often	6 Not applicable

(j) Inappropriate touching/groping without permission

1 Never	3 Sometimes	5 Always
2 Seldom	4 Often	6 Not applicable

(k) Touching or rubbing oneself sexually around another person with the intention of making a woman feel uncomfortable

1 Never	3 Sometimes	5 Always
2 Seldom	4 Often	6 Not applicable

(l) Exposing body parts

1 Never	3 Sometimes	5 Always
2 Seldom	4 Often	6 Not applicable

(m) Masturbation in public

1 Never	3 Sometimes	5 Always
2 Seldom	4 Often	6 Not applicable

(n) Threatening

1 Never	3 Sometimes	5 Always
2 Seldom	4 Often	6 Not applicable

(o) Sexual invitations

- | | | |
|----------|-------------|------------------|
| 1 Never | 3 Sometimes | 5 Always |
| 2 Seldom | 4 Often | 6 Not applicable |

(p) Sexual assault

- | | | |
|----------|-------------|------------------|
| 1 Never | 3 Sometimes | 5 Always |
| 2 Seldom | 4 Often | 6 Not applicable |

Q6.3. Reaction to Offences: The question asked the respondent about their reaction to some types of unwanted behaviors that they experience in the context of transportation systems. The respondent had the following options:

(a) Stalking or being followed

- | | | |
|------------------|---------------------------------------|--|
| 1 I didn't react | 4 Verbal retaliation | 7 I complained to the driver/authority |
| 2 Tolerance | 5 Physical retaliation | 8 I prefer not to answer |
| 3 I walked away | 6 I sought help from other passengers | 9 Not applicable |

(b) Staring/Leering

- | | | |
|------------------|---------------------------------------|--|
| 1 I didn't react | 4 Verbal retaliation | 7 I complained to the driver/authority |
| 2 Tolerance | 5 Physical retaliation | 8 I prefer not to answer |
| 3 I walked away | 6 I sought help from other passengers | 9 Not applicable |

(c) Making facial expressions such as winking

- | | | |
|------------------|---------------------------------------|--|
| 1 I didn't react | 4 Verbal retaliation | 7 I complained to the driver/authority |
| 2 Tolerance | 5 Physical retaliation | 8 I prefer not to answer |
| 3 I walked away | 6 I sought help from other passengers | 9 Not applicable |

(d) Offensive name-calling (cat calling)

- | | | |
|------------------|---------------------------------------|--|
| 1 I didn't react | 4 Verbal retaliation | 7 I complained to the driver/authority |
| 2 Tolerance | 5 Physical retaliation | 8 I prefer not to answer |
| 3 I walked away | 6 I sought help from other passengers | 9 Not applicable |

(e) Using rough and offensive language

1 I didn't react	4 Verbal retaliation	7 I complained to the driver/authority
2 Tolerance	5 Physical retaliation	8 I prefer not to answer
3 I walked away	6 I sought help from other passengers	9 Not applicable

(f) Sexual comments and/or noises

1 I didn't react	4 Verbal retaliation	7 I complained to the driver/authority
2 Tolerance	5 Physical retaliation	8 I prefer not to answer
3 I walked away	6 I sought help from other passengers	9 Not applicable

(g) Blocking the path or the way

1 I didn't react	4 Verbal retaliation	7 I complained to the driver/authority
2 Tolerance	5 Physical retaliation	8 I prefer not to answer
3 I walked away	6 I sought help from other passengers	9 Not applicable

(h) Displaying sexually suggestive visuals

1 I didn't react	4 Verbal retaliation	7 I complained to the driver/authority
2 Tolerance	5 Physical retaliation	8 I prefer not to answer
3 I walked away	6 I sought help from other passengers	9 Not applicable

(i) Invasion of privacy, pushing against you and/or rubbing body

1 I didn't react	4 Verbal retaliation	7 I complained to the driver/authority
2 Tolerance	5 Physical retaliation	8 I prefer not to answer
3 I walked away	6 I sought help from other passengers	9 Not applicable

(j) Inappropriate touching/groping without permission

1 I didn't react	3 I walked away	5 Physical retaliation
2 Tolerance	4 Verbal retaliation	6 I sought help from other

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passengers	driver/authority	9 Not applicable
7 I complained to the	8 I prefer not to answer	
 (k) Touching or rubbing oneself sexually around another person with the intention of making a woman feel uncomfortable		
1 I didn't react	4 Verbal retaliation	7 I complained to the driver/authority
2 Tolerance	5 Physical retaliation	8 I prefer not to answer
3 I walked away	6 I sought help from other passengers	9 Not applicable
 (l) Exposing body parts		
1 I didn't react	4 Verbal retaliation	7 I complained to the driver/authority
2 Tolerance	5 Physical retaliation	8 I prefer not to answer
3 I walked away	6 I sought help from other passengers	9 Not applicable
 (m) Masturbation in public		
1 I didn't react	4 Verbal retaliation	7 I complained to the driver/authority
2 Tolerance	5 Physical retaliation	8 I prefer not to answer
3 I walked away	6 I sought help from other passengers	9 Not applicable
 (n) Threatening		
1 I didn't react	4 Verbal retaliation	7 I complained to the driver/authority
2 Tolerance	5 Physical retaliation	8 I prefer not to answer
3 I walked away	6 I sought help from other passengers	9 Not applicable
 (o) Sexual invitations		
1 I didn't react	4 Verbal retaliation	7 I complained to the driver/authority
2 Tolerance	5 Physical retaliation	8 I prefer not to answer
3 I walked away	6 I sought help from other passengers	9 Not applicable

(p) Sexual assault

- | | | |
|------------------|---------------------------------------|--|
| 1 I didn't react | 4 Verbal retaliation | 7 I complained to the driver/authority |
| 2 Tolerance | 5 Physical retaliation | 8 I prefer not to answer |
| 3 I walked away | 6 I sought help from other passengers | 9 Not applicable |

Q6.4. Frequency of Unwanted Behaviors - Timing: The question asked the respondent about the frequency of experiencing unwanted behaviors during some time-slots in the context of transportation systems. The respondent had the following options:

(a) Morning rush hours (07:00-10:00)

- | | | |
|----------|-------------|------------------|
| 1 Never | 3 Sometimes | 5 Always |
| 2 Seldom | 4 Often | 6 Not applicable |

(b) Morning non-rush hours (10:00-12:00)

- | | | |
|----------|-------------|------------------|
| 1 Never | 3 Sometimes | 5 Always |
| 2 Seldom | 4 Often | 6 Not applicable |

(c) Afternoon (12:00-16:00)

- | | | |
|----------|-------------|------------------|
| 1 Never | 3 Sometimes | 5 Always |
| 2 Seldom | 4 Often | 6 Not applicable |

(d) Evening rush hours (16:00-19:00)

- | | | |
|----------|-------------|------------------|
| 1 Never | 3 Sometimes | 5 Always |
| 2 Seldom | 4 Often | 6 Not applicable |

(e) Evening non-rush hours (19:00-21:00)

- | | | |
|----------|-------------|------------------|
| 1 Never | 3 Sometimes | 5 Always |
| 2 Seldom | 4 Often | 6 Not applicable |

(f) Night (21:00-00:00)

- | | | |
|----------|-------------|------------------|
| 1 Never | 3 Sometimes | 5 Always |
| 2 Seldom | 4 Often | 6 Not applicable |

(g) After mid-night (00:00-07:00)

- | | | |
|----------|-------------|------------------|
| 1 Never | 3 Sometimes | 5 Always |
| 2 Seldom | 4 Often | 6 Not applicable |

Q6.5. Frequency of Unwanted Behaviors - Mode: The question asked the respondent about the frequency of experiencing unwanted behaviors in some modes in the context of transportation systems. The respondent had the following options:

(a) Ride hailing (Taxi)

- | | | |
|-------------|------------------------|------------------|
| 1 Never | 4 Often | 7 Not applicable |
| 2 Seldom | 5 Always | |
| 3 Sometimes | 6 Prefer not to answer | |

(b) E-hailing (Uber/Careem)

- | | | |
|-------------|------------------------|------------------|
| 1 Never | 4 Often | 7 Not applicable |
| 2 Seldom | 5 Always | |
| 3 Sometimes | 6 Prefer not to answer | |

(c) Microbus

- | | | |
|-------------|------------------------|------------------|
| 1 Never | 4 Often | 7 Not applicable |
| 2 Seldom | 5 Always | |
| 3 Sometimes | 6 Prefer not to answer | |

(d) Bus

- | | | |
|-------------|------------------------|------------------|
| 1 Never | 4 Often | 7 Not applicable |
| 2 Seldom | 5 Always | |
| 3 Sometimes | 6 Prefer not to answer | |

(e) Metro (underground)

- | | | |
|-------------|------------------------|------------------|
| 1 Never | 4 Often | 7 Not applicable |
| 2 Seldom | 5 Always | |
| 3 Sometimes | 6 Prefer not to answer | |

Questionnaire Part Seven

Q7.1. Type of Offence: The question asked the respondent about the most severe unwanted behavior she faced in the context of transport. The respondent had the following options:

- | | |
|---|--|
| 1. Stalking or being followed | 11. Touching or rubbing oneself sexually around another person with the intention of making a woman feel uncomfortable |
| 2. Staring/Leering | 12. Exposing body parts |
| 3. Making facial expressions such as winking | 13. Masturbation in public |
| 4. Offensive name-calling (cat calling) | 14. Threatening |
| 5. Using rough and offensive language | 15. Sexual invitations |
| 6. Sexual comments and/or noises | 16. Sexual assault |
| 7. Blocking the path or the way | 17. I prefer not to answer |
| 8. Displaying sexually suggestive visuals | 18. Not applicable |
| 9. Invasion of privacy, pushing against you and/or rubbing body | 19. Other |
| 10. Inappropriate touching/groping without permission | |

Q7.2. Time of the Incident: The question asked the respondent to choose the time slot when the incident took place. The respondent had the following options:

- | | |
|---|---|
| 1. Morning rush hours (07:00-10:00) | 5. Evening non-rush hours (19:00-21:00) |
| 2. Morning non-rush hours (10:00-12:00) | 6. Night (21:00-00:00) |
| 3. Afternoon (12:00-16:00) | 7. After mid-night (00:00-07:00) |
| 4. Evening rush hours (16:00-19:00) | 8. I prefer not to answer |

Q7.3. Place of the Incident: The question asked the respondent to choose the place where the incident took place. The respondent had the following options:

1. Walking to the terminal/station
2. Waiting on the platform/at the stop
3. Waiting in the ticket line
4. On-board the vehicle
5. While transferring at the terminal/station
6. Spaces outside or adjacent to the terminal entrance and exists
7. I prefer not to answer
8. Other

Q7.4. Mode of Travelling: The question asked the respondent to choose the transport mode she was riding as the incident took place. The respondent had the following options:

1. Ride hailing (Taxi)
2. E-hailing (Uber/Carrem)
3. Microbus
4. Bus
5. Metro (underground)
6. I prefer not to answer
7. Other

Q7.5.Age: The question asked the respondent to specify her age as the incident took place. The respondent had the following options:

Q7.6. Status during Travelling: The question asked the respondent to choose how she was travelling as the incident took place. The respondent had the following options:

1. Alone
2. With children
3. With female companion(s)
4. With male companion(s)
5. With female and male companions
6. I prefer not to answer

Q7.7. Purpose of the Trip: The question asked the respondent to choose their purpose of travelling as the incident took place. The respondent had the following options:

1. Work-home commute
2. Social (such as visiting family and friends)
3. Recreational/Leisure
4. Shopping
5. Educational trips (Go to school and University, attend a course)
6. House duty relating trips (kids to school, shopping, parental care)
7. I prefer not to answer
8. Other

Q7.8. Level of Crowdedness: The question asked the respondent to choose the level of crowdedness as the incident took place. The respondent had the following options:

- | | | |
|------------------|------------------|--------------|
| 1. Very Low | 3. Average | 5. Very High |
| 2. Below Average | 4. Above Average | |

Q7.9. Harasser: The question asked the respondent to choose the person who harassed her. The respondent had the following options:

- | | | |
|--------------|--------------------------|---------------------------|
| 1. Passerby | 3. Driver | 5. Authority member |
| 2. Passenger | 4. Public transit worker | 6. I prefer not to answer |

Q7.10. Reaction of the Victim to the Incident: The question asked the respondent about her instant reaction to the unwanted behavior. The respondent had the following options:

- | | |
|---|---|
| 1. I walked away | 7. Tolerance: I have become used to such incidents |
| 2. Verbal retaliation | 8. Tolerance: I can't afford any alternative to commute |
| 3. Physical retaliation | 9. I complained to the driver/public transit worker/authority |
| 4. I didn't react: My harasser was someone from the authority/the mode driver | 10. I sought help from other passengers |
| 5. I didn't react: It happened in a short interval | 11. Other |
| 6. I didn't react: I was in denial | |

Q7.11. Feeling of the Victim after the Incident: The question asked the respondent to describe her feeling as the incident took place. The respondent had the following options:

- | | | | |
|--------------------|-----------------|------------------|------------------|
| 1. Denial | 5. Helplessness | 9. Dissociated | 13. Overwhelming |
| 2. Low self-esteem | 6. Outrage | 10. Shame | 14. Guilt |
| 3. Hopelessness | 7. Abuse | 11. Confusion | |
| 4. Terror | 8. Sickness | 12. Minimization | 15. Other |

Q7.12. Conditions of the Transport Context: The question asked the respondent about the conditions that have contributed to the incident. The respondent had the following options:

1. Poor lighting en route to the station/stop
2. Poor lighting at the spaces outside or adjacent to the terminal entrances and exist
3. Poor lighting around stops and platforms while waiting/transferring
4. Unsupervised spaces: no surveillance camera
5. Unsupervised spaces: no security guard presence at stations
6. Unsupervised spaces: no security guard presence on-board the vehicle
7. Lack of emergency buttons for passengers
8. Lack of emergency tools
9. Lack of helpline number for emergencies
10. Overcrowding
11. Waiting time was relatively long
12. Other

Q7.13. Help during the Incident: The question asked the respondent if someone helped her as the incident took place. The respondent had the following options:

1. Yes
2. No
3. No one was there

Q7.14. Type of Help: The question asked the respondent to specify the type of help she received, in case she received any. The respondent had the following options:

1. Confronted the harasser
2. Engaged with you and showed you support
3. Called the police
4. Reported to the driver/public transit worker
5. Other

Q7.15. Reporting the Incident: The question asked the respondent if she reported the incident to the police. The respondent had the following options:

1. Yes
2. No

Q7.16. Reasons of Not Reporting: The question asked the respondent to choose her reasons for not reporting the incident to the police, in case she did not report. The respondent had the following options:

A. General Addenda

- | | | |
|---|---|---|
| 1. I didn't think anyone would listen | 8. The reporting process is long | 15. Lack of information |
| 2. I didn't think I would be taken seriously | 9. Fear for my social image | 16. Lack of helpline number |
| 3. The incident lasted in a short period | 10. Embarrassment | 17. Lack of emergency tools |
| 4. I was in hurry | 11. Feelings of hopelessness and helplessness | 18. No law against Sexual Harassment |
| 5. I was afraid of the harasser/Fear of retaliation | 12. Lack of witness | 19. I do not trust the authorities to investigate reports of sexual harassment or violence. |
| 6. Fear of victim-blaming | 13. I have a history of being sexually violated (traumatized) | 20. I prefer not to answer |
| 7. Fear of disapproval from others | 14. I am not fully aware of my rights and the laws | 21. Other |

Q7.17. Effect of the Incident: The question asked the respondent if the incident affected her use of transport. The respondent had the following options:

- | | |
|--------|-------|
| 1. Yes | 2. No |
|--------|-------|

Q7.18. Type of Effects: The question asked the respondent how the incident affected her use of transport. The respondent had the following options:

- | | |
|--|---|
| 1. I never used this mode again | alone through this location |
| 2. I used this mode very seldom and not if crowded | 6. I use private mode (Taxi, or Uber) to feel safer |
| 3. I avoided using this mode in the evenings | 7. I stopped going to work |
| 4. I changed the route so I did not have to go through this location again | 8. I changed the way I dress if I am traveling alone |
| 5. I travel with companion, I do not travel | 9. I use this mean of transport in emergency cases only |

Q7.19. Impact of the Incident: The question asked the respondent about the impact the incident caused to her use of transport. The respondent had the following options:

- | | | |
|-------------------------------|--|---|
| 1. Longer trips (travel time) | 4. Financial burden | one job opportunity for reasons linked to transportation) |
| 2. Route change | 5. Reduce activity levels | |
| 3. Mode change | 6. Loss of opportunities (for example I rejected | 7. All of the above |

Questionnaire Part Eight

Q8.1. Gender-based Violence: The question asked the respondent what the word 'Gender-based Violence' means to her.

Q8.2. Level of Comfort in Central Areas during the rush Hours: The question asked the respondent to choose the level of comfort they find in some situations in the transport context, in central areas during the rush hours. The respondent had the following options:

(a) Walking to the terminal/station

- | | | |
|---------------------|-------------------------------|-------------------|
| 1 Very unlikely | 3 Neither likely nor unlikely | 4 Somewhat likely |
| 2 Somewhat unlikely | | 5 Very likely |

(b) Waiting on the platform/at the stop

- | | | |
|---------------------|-------------------------------|-------------------|
| 1 Very unlikely | 3 Neither likely nor unlikely | 4 Somewhat likely |
| 2 Somewhat unlikely | | 5 Very likely |

(c) Waiting in the ticket line

- | | | |
|---------------------|-------------------------------|-------------------|
| 1 Very unlikely | 3 Neither likely nor unlikely | 4 Somewhat likely |
| 2 Somewhat unlikely | | 5 Very likely |

(d) On-board the vehicle

- | | | |
|---------------------|-------------------------------|-------------------|
| 1 Very unlikely | 3 Neither likely nor unlikely | 4 Somewhat likely |
| 2 Somewhat unlikely | | 5 Very likely |

(e) While transferring at the terminal/station

- | | | |
|---------------------|-------------------------------|-------------------|
| 1 Very unlikely | 3 Neither likely nor unlikely | 4 Somewhat likely |
| 2 Somewhat unlikely | | 5 Very likely |

(f) In spaces outside or adjacent to the terminal entrance and exit

1 Very unlikely 3 Neither likely nor un- 4 Somewhat likely
2 Somewhat unlikely likely 5 Very likely

Q8.3. Level of Comfort in Central Areas during the non-rush Hours: The question asked the respondent to choose the level of comfort they find in some situations in the transport context, in central areas during the non-rush hours. The respondent had the following options:

(a) Walking to the terminal/station

1 Very unlikely 3 Neither likely nor un- 4 Somewhat likely
2 Somewhat unlikely likely 5 Very likely

(b) Waiting on the platform/at the stop

1 Very unlikely 3 Neither likely nor un- 4 Somewhat likely
2 Somewhat unlikely likely 5 Very likely

(c) Waiting in the ticket line

1 Very unlikely 3 Neither likely nor un- 4 Somewhat likely
2 Somewhat unlikely likely 5 Very likely

(d) On-board the vehicle

1 Very unlikely 3 Neither likely nor un- 4 Somewhat likely
2 Somewhat unlikely likely 5 Very likely

(e) While transferring at the terminal/station

1 Very unlikely 3 Neither likely nor un- 4 Somewhat likely
2 Somewhat unlikely likely 5 Very likely

(f) In spaces outside or adjacent to the terminal entrance and exit

1 Very unlikely 3 Neither likely nor un- 4 Somewhat likely
2 Somewhat unlikely likely 5 Very likely

Q8.4. Level of Comfort in Outskirts Areas during the rush Hours: The question asked the respondent to choose the level of comfort they find in some situations in the transport context, in outskirts areas during the rush hours. The respondent had the following options:

(a) Walking to the terminal/station

1 Very unlikely	3 Neither likely nor un-	4 Somewhat likely
2 Somewhat unlikely	likely	5 Very likely

(b) Waiting on the platform/at the stop

1 Very unlikely	3 Neither likely nor un-	4 Somewhat likely
2 Somewhat unlikely	likely	5 Very likely

(c) Waiting in the ticket line

1 Very unlikely	3 Neither likely nor un-	4 Somewhat likely
2 Somewhat unlikely	likely	5 Very likely

(d) On-board the vehicle

1 Very unlikely	3 Neither likely nor un-	4 Somewhat likely
2 Somewhat unlikely	likely	5 Very likely

(e) While transferring at the terminal/station

1 Very unlikely	3 Neither likely nor un-	4 Somewhat likely
2 Somewhat unlikely	likely	5 Very likely

(f) In spaces outside or adjacent to the terminal entrance and exit

1 Very unlikely	3 Neither likely nor un-	4 Somewhat likely
2 Somewhat unlikely	likely	5 Very likely

Q8.5. Level of Comfort in Outskirts Areas during the non-rush Hours: The question asked the respondent to choose the level of comfort they find in some situations in the transport context, in outskirts areas during the non-rush hours. The respondent had the following options:

(a) Walking to the terminal/station

1 Very unlikely 3 Neither likely nor un- 4 Somewhat likely
2 Somewhat unlikely likely 5 Very likely

(b) Waiting on the platform/at the stop

1 Very unlikely 3 Neither likely nor un- 4 Somewhat likely
2 Somewhat unlikely likely 5 Very likely

(c) Waiting in the ticket line

1 Very unlikely 3 Neither likely nor un- 4 Somewhat likely
2 Somewhat unlikely likely 5 Very likely

(d) On-board the vehicle

1 Very unlikely 3 Neither likely nor un- 4 Somewhat likely
2 Somewhat unlikely likely 5 Very likely

(e) While transferring at the terminal/station

1 Very unlikely 3 Neither likely nor un- 4 Somewhat likely
2 Somewhat unlikely likely 5 Very likely

(f) In spaces outside or adjacent to the terminal entrance and exit

1 Very unlikely 3 Neither likely nor un- 4 Somewhat likely
2 Somewhat unlikely likely 5 Very likely

Q8.6. Witnessing of Unwanted Behaviors: The question asked the respondent if they have ever seen or witnessed an act of harassment against another female passenger. The respondent had the following options:

- | | | |
|----------|--------------|-----------|
| 1. Once | 3. Seldom | 5. Often |
| 2. Never | 4. Sometimes | 6. Always |

Q8.7. Solutions against GBV: The question asked the respondent to rate solutions they find helpful against GBV faced by female passengers in the transport context. The respondent had the following options:

(a) Female controllers

A. General Addenda

1 Strongly oppose	3 Neutral	5 Strongly favor
2 Somewhat oppose	4 Somewhat favor	

(b) Female drivers

1 Strongly oppose	3 Neutral	5 Strongly favor
2 Somewhat oppose	4 Somewhat favor	

(c) The availability of a police officer/security on-board public transit modes Strongly oppose

1 Strongly oppose	3 Neutral	5 Strongly favor
2 Somewhat oppose	4 Somewhat favor	

(d) Increasing police presence at stations

1 Strongly oppose	3 Neutral	5 Strongly favor
2 Somewhat oppose	4 Somewhat favor	

(e) Improved lighting

1 Strongly oppose	3 Neutral	5 Strongly favor
2 Somewhat oppose	4 Somewhat favor	

(f) Surveillance cameras in stations, in waiting/transferring areas and in vehicles

1 Strongly oppose	3 Neutral	5 Strongly favor
2 Somewhat oppose	4 Somewhat favor	

(g) Separate doors/entrances for men and women

1 Strongly oppose	3 Neutral	5 Strongly favor
2 Somewhat oppose	4 Somewhat favor	

(h) Electronic emergency kiosks in stations, in waiting/transferring areas and in vehicles

1 Strongly oppose	3 Neutral	5 Strongly favor
2 Somewhat oppose	4 Somewhat favor	

(i) E-tickets to avoid queueing at kiosks/ticket machines

- | | | |
|-------------------|------------------|------------------|
| 1 Strongly oppose | 3 Neutral | 5 Strongly favor |
| 2 Somewhat oppose | 4 Somewhat favor | |

(j) Spread community awareness: Anti-sexual harassment videos in stations, in waiting/-transferring areas and in vehicles Strongly oppose

- | | | |
|-------------------|------------------|------------------|
| 1 Strongly oppose | 3 Neutral | 5 Strongly favor |
| 2 Somewhat oppose | 4 Somewhat favor | |

(k) Information-campaigns about sexual harassment and their possible implications

- | | | |
|-------------------|------------------|------------------|
| 1 Strongly oppose | 3 Neutral | 5 Strongly favor |
| 2 Somewhat oppose | 4 Somewhat favor | |

(l) Installing emergency buttons

- | | | |
|-------------------|------------------|------------------|
| 1 Strongly oppose | 3 Neutral | 5 Strongly favor |
| 2 Somewhat oppose | 4 Somewhat favor | |

Q8.8. Equality in Mobility Opportunities: The question asked the respondent if she thinks she has the same mobility opportunities/conditions as the other gender. The respondent had the following options:

- | | | |
|----------------------|------------------------------|-------------------|
| 1. Strongly disagree | 3. Neither agree or disagree | 4. Agree |
| 2. Disagree | | 5. Strongly agree |

Questionnaire Part Nine

Q9.1. Age of the Respondent:

- | | |
|--------------------|--------------------|
| 1. Under 18 | 4. 35-44 years old |
| 2. 18-24 years old | 5. 45-54 years old |
| 3. 25-34 years old | 6. Over 55 |

Q9.2. Marital Status of the Respondent:

- | | | |
|------------------------|-------------|--------------|
| 1. Single | partnership | 4. Divorced |
| 2. Married or domestic | 3. Widowed | 5. Separated |

Q9.3. Highest Education:

- | | |
|--|------------------------|
| 1. No schooling completed | 5. Bachelor's degree |
| 2. Less than a high school diploma | 6. Master's degree |
| 3. High school degree, diploma or the equivalent | 7. Doctorate |
| 4. Trade/technical/vocational training | 8. Professional degree |

Q9.4. Employment Status:

- | | |
|--|--|
| 1. Full-time employment | 6. Keeping house or raising children full-time |
| 2. Part-time employment | |
| 3. Unemployed and looking for work | 7. Retired |
| 4. Unemployed and not currently looking for work | 8. Student |
| 5. Self-employed | 9. Unable to work |

Q9.5. Occupational Group:

- | | |
|-------------------------|-------------------|
| 1. Professional | 4. Skilled manual |
| 2. Managerial technical | 5. Unskilled |
| 3. Skilled non manual | 6. Not applicable |

Q9.6. Living Arrangements:

- | | | |
|---------------------------|----------------------------------|--|
| 1. Living alone | 3. Living with a partner | 5. Living without spouse and with children |
| 2. Living with a parent/s | 4. Living with spouse + children | 6. Living with friends |

Q9.7. Household:

ace

1. Single workers: one adult, no children
2. Single-parent families: one adult and one or more children
3. One-worker couples: two adults, one of whom is employed, no children
4. Two-worker couples: two adults, each of whom is employed, no children
5. One-worker families: households consisting of one working and one non-working adult and one or more children aged 18 or less
6. Multiple-worker families: households consisting of two or more working adults and one or more children aged 18 or less
7. Multiple working adults: households consisting of three or more adults at least two of whom are employed, no children aged 18 or less are present
8. Shared common residence
9. Other households

Q9.8. Children: The question asked the respondent to choose if they have biological, adopted, foster, or step children. The respondent had the following options:

1. None
2. Yes, one child
3. Yes, two children
4. Yes, three children
5. Yes, four children
6. Yes, more than four children
7. Not applicable

Q9.9. Household Size

Q9.10. Personal Responsibilities: The question asked the respondent to choose their personal responsibilities regarding dependent children/other(s). The respondent had the following options:

1. None
2. I am not a carer for any dependent children/other(s)
3. I am the prime carer of dependent children/other(s)
4. I am a carer of dependent children/other(s) but someone else is the prime carer
5. I equally share the care of dependent children/other(s) with other person
6. Not applicable

Q9.11. Household Gross Monthly Income:

- | | |
|-------------------|-----------------------|
| 1. 2K EGP or less | 5. 15K to 25K EGP |
| 2. 2K to 5K EGP | 6. 25K EGP to 40K EGP |
| 3. 5K to 10K EGP | 7. 40K to 60K EGP |
| 4. 10K to 15K EGP | 8. More than 60K EGP |

Q9.12. Personal Gross Monthly Income:

- | | |
|-------------------|-----------------------|
| 1. 2K EGP or less | 5. 15K to 25K EGP |
| 2. 2K to 5K EGP | 6. 25K EGP to 40K EGP |
| 3. 5K to 10K EGP | 7. 40K to 60K EGP |
| 4. 10K to 15K EGP | 8. More than 60K EGP |

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