Session IV: Safety and Security in different aspects of mobility

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Assessment of the perceived security among public transport users in Europe

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Abstract

Passenger experiences with public transport are expected to be safe, secure, comfortable, convenient and pleasant. However, this experience is often disrupted by harassment incidents, such as sexual, theft and verbal harassment that may affect passengers' perspective towards public transport services. Security perceptions and harassment experiences may vary according to gender and age. This study analyses the perceptions of 2413 citizens in six European cities over security aspects of public transport and potential measures that can improve these perceptions. Harassment experiences are also illustrated, and their patterns are discussed. The paper concludes with some recommendations to operators of public transport over enhancing the feeling of security and ameliorating negative experiences related to harassment.

Introduction

Travellers' security perceptions have consistently been among the most critical aspects that determine travel satisfaction. Security concerns the incidents "the actual degree of safety from crime or accidents and the feeling of security resulting from that and other psychological factors" (Joewono and Kubota, 2006). Ensuring security in door-to-door public transport trips is a fundamental challenge for service providers. There is a strong link between travellers' security perceptions and overall travel satisfaction, affecting public transport customer retention and recommendation (Abenoza et al., 2018). In this context, harassment incidents are common occurrences on public transport. This study aims to analyse the security aspects of public transport users in six European metropolitan areas. Additionally, it analyses incidents of harassment and their reporting to Authorities. Passenger data was collected through an online survey disseminated in social media channels, platforms, and networks. At the same time, data handling, analysis and processing were carried out through GIS software, Python codes and SPSS. The data from Paris (279 answers), Torino (420 answers), Thessaloniki (231 answers), Valencia (442 answers), and Malmo (210 answers) was collected from November 2020 until March 2021. In Lisbon, the 373 responses were collected in April and August 2021.

Theoretical background or state of the art

In general, women of all ages and backgrounds are more concerned about safety and personal security because they face higher levels of violence as transport users: this affects the selection of transport mode when there are different options and their possibility of choice. They may seek a less efficient or more costly alternative when there is a perceived threat (Singh, 2020). According to reality and

documented research, more than 80% of women and girls have experienced harassment in public, and 80% are afraid of being harassed in public transport. However, a high level of underreporting is found (ITF, 2018). Women are more frequent transit users, and thus, they should be allowed to get off the vehicles closer to their final destination, even if outside the approved bus stops, especially in the evening and at night. Providing adequate lighting is also essential in this respect: bus stops outside residential areas, in bad or remote neighbourhoods, or inside empty parking lots affect a woman's decision about how and when to use the public transportation system (Hasson and Polevoy, 2011).

The findings of Yavuz and Welch (2010) indicate that female passengers tend to be concerned about social incivilities in the transit environment, while they are less likely to be comforted by the presence of video cameras. Factors that may help to alleviate safety concerns are stated as the following: increasing periodic random police or security personnel presence, employing greater enforcement of the rules on the train or inside the stations (or in both), preventing overcrowding in transit vehicles, preventing loitering and soliciting and other social incivilities, and making operators and customer assistants/staff more available and visible to handle such problems when they occur. Focusing on railway services, women feel both carriages and train stations as vulnerable spaces (Pirra et al., 2021). On one side, they could be crowded spaces where harassment could occur; on the other, they could have isolated areas where there is no one available to intervene and help in case of an emergency. Also, bus stops and the paths leading to bus stops must consider women's needs, particularly accessibility to vehicles and safety (European Parliament, 2012). Gender influences the perception of crowding, too. Women's lower satisfaction and higher importance might result from a more negative crowding experience due to a lack of security, as the risk of harassment and unwanted touching might increase. Moreover, women are on average shorter than men, and shortness makes crowding more of a nuisance, making it hard to reach poles and grab handles, not having good sightlines when standing among taller people (Börjesson and Rubensson, 2019).

Analysis of harassment incidents and the perceived security of public transport users
A survey was designed and distributed to six European metropolitan areas in the native language of each country. Aspects related to respondents' mobility behaviour, perception of security aspects and means to improve it were asked. Negative experiences (harassment incidents) were stated in one of the following ways: indication of the location where the harassment occurred on the map or indication of the street or place name. When possible, answers were geocoded, and the incidents mapped. The hotspot analysis allowed the identification of clustering of the spatial phenomenon through Microsoft Excel, GIS software and Python codes. The respondents' replies on the security aspects and possible interventions were analysed. With a focus on gender and age, passengers' perceptions with/without harassment experiences were compared. All the statistical analysis was conducted in SPSS software.

In total, 1955 replies were collected, and 372 respondents stated they had a harassment experience as travellers. A pattern appears across all the metropolitan areas analysed. In this sample, the percentage of harassment incidents ranged from 6 (Valencia) to 39% (Malmo). However, a relatively low percentage of travellers has reported the incident, from 17% (Malmo) to 35% (Paris). Table 1 presents the total number of replies obtained in each city and the number of harassment incidents.

Table 1. Harassment incidents in six European metropolitan areas and reasons for not reporting by popularity (1 - most voted)

Metropolitan areas	Lisbon	Malmo	Paris	Turin	Thessaloniki	Valencia
Sample size	373	210	279	420	231	442
Harassment incidents (No.)	96	81	34	62	73	26
Harassment incidents (%)	26%	39%	12%	15%	32%	6%
Reported (No.)	19	14	12	12	16	5
Reported (%)	20%	17%	35%	19%	22%	19%

Metropolitan areas	Lisbon	Malmo	Paris	Turin	Thessaloniki	Valencia
Reason for not reporting						
Afraid	3	4	2	4	4	4
Not aware of the process	2	5	3	3	2	1
No time to waste	4	2	4	2	3	2
Not a big deal	1	3	1	3	1	3
No trust in the police	5	1	2	1	3	3
Not my responsibility	6	6	5	5	5	5

Furthermore, it is presented in Table 1 some reasons why passengers did not report the incident to the Authorities by popularity, being one the most voted reason (each traveller could choose several motives). On the one hand, Malmo and Turin's respondents seem not to trust the police. In contrast, in Lisbon, the reasons behind underreporting are not connected with a lack of trust in the police. Furthermore, Lisbon, Paris, and Thessaloniki's travellers do not describe the harassment experienced as a big deal. Moreover, it should be highlighted that, in Malmo, Turin and Valencia, the respondents with a harassment experience stated that they received below the average income. While in Lisbon and Thessaloniki, most of the affected ones belong to the "average" monthly income category.

Nevertheless, there is a lack of information regarding the harassment reporting process (procedure and time spent) in all metropolitan areas. This situation may impede the improvements of security aspects, and the monitoring of the incident frequency in the cities analysed.

Regarding the sample, a description per city follows.

- **Paris Metropolitan Area**: The reports are distributed between the men (47%) and women (53%), with a higher number of reports from young women. Most incidents occurred while walking on the street and using public transport, such as metro and rail stations. Only 35% of people have said to have reported the incidents to authorities. According to the table below, people choose not to report a situation of harassment, in general, because they do not trust that the authorities will give the necessary attention to the problem or ignore the importance of the incident. This information aligns with previous evidence Malandrino and Berman (2020). They conducted several focus groups, and 14 participants stated that many users do not report the incidents because of their lack of trust in the justice system, believing that it would not result in anything and that the administrative procedures were considered too complicated. Consequently, it has been agreed to instruct public transport employees to assist victims in reporting incidents to act against this lack of confidence.
- **Thessaloniki Metropolitan Area:** The respondents from this city were the ones to report a higher number of incidents, with a similar distribution between gender (48% of men and 52% of women) and across age groups. Regarding the approximate location of each harassment, most of the reports occurred in the centre of the city, near bus/train stations, with a maximum of 27 occurrences in the same 1 km radius. The distribution between men and women does not follow any geographical pattern as both are concentrated in the city centre.
- **Valencia Metropolitan Area:** In Valencia metropolitan area, incidents were primarily reported by women (77%), people between 18 and 54 years of age (92%), and people with an average income below the average of the country (46%). It is also worth noting that 22% of people that have reported an incident have some disability. Incidents are predominantly located in the centre of Valencia. The maximum number of incidents is 4, located near Nord Adif station. Incidents reported by women are located in the centre of the city, near public transport waiting areas, while incidents reported by men do not show a clear pattern.

- **Turin Metropolitan Area:** Similar to the data collected in Valencia, most cases of harassment were reported by women (72%) and primarily by people in the 25-34 age group (51%). The maximum number of incidents is 5 in a radius of 1 km, located in Castello square next to the public transport stations located here. Only 19% of the people complained to the authorities. The two leading causes for people not filing a complaint are the lack of trust in the authorities to pursue the case and the unwillingness to waste any more time on the situation.

- **Lisbon Metropolitan Area**: The respondents from the Lisbon metropolitan area were the ones who reported the most incidents of harassment, with a similar distribution between gender (52% of women and 46% of men). Incidents are primarily in the Arroios parish, where 23 incidents were reported. The leading cause for people not filing a complaint is that they do not think it was a big deal and do not know how to proceed. 45% of those affected belong to the "below average" monthly income category. Figure 1 illustrates an example of the geographical analysis. It presents the results obtained for the Lisbon metropolitan area.
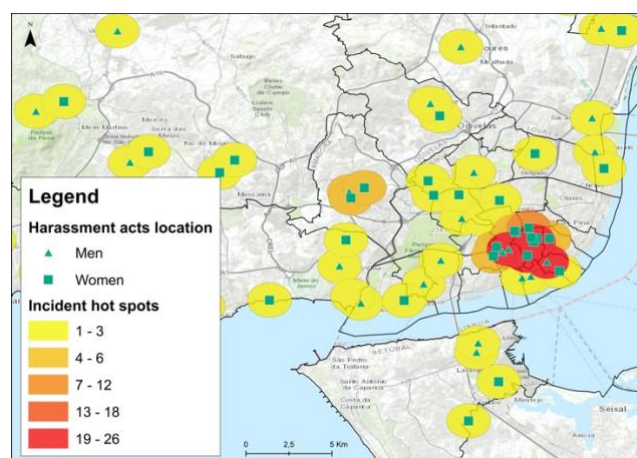

Figure 1. Incidents of harassment in the Lisbon Metropolitan Area

- **Malmo Metropolitan Area**: 81 incidents were reported in the Malmo metropolitan area, with a similar distribution between gender (49% of women and 51% of men). 46% of those affected belong to the "below average" monthly income category. The maximum number of incidents is 15 in a radius of 5 km. The leading cause for people not filing a complaint is the lack of trust in the authorities to pursue the case and the unwillingness to waste any more time on the situation.

4.2 Differences in harassment incidents according to gender and age

The areas where the harassment incidents are concentrated indicate potential urban spaces to which interventions could be introduced to increase public transport security. Statistical analysis demonstrated differences in the perception of security attributes among people who reported harassment experiences and those who did not. Table 2 demonstrates these differences ("+"), and it is observed that people with previous harassment experiences feel less secure at stations than other passengers in all metropolitan areas. While gender was not proved to affect passengers' perceptions, women of older ages rated lower in many security aspects when compared to younger women. This situation was observed in Turin, Paris and Lisbon, indicating that age can play a role in the perception of security.

Table 2. Differences in security aspects with and without harassment experiences

Metropolitan areas	Paris	Turin	Valencia	Thessaloniki	Lisbon	Malmo
Less satisfied with the number of security staff visible	+	+		+		

Less satisfied with crowding levels in vehicles or waiting areas	+	+		+		
Less satisfied with security cameras in waiting areas	+				+	
Feel less secure at stations	+	+	+	+	+	+
Feel less secure inside vehicles	+	+		+		
Overall, less satisfied with the security aspects		+	+	+	+	

5. Discussion and conclusions

Transport security is a critical factor in the choice of transport mode. Reports of incidents are generally related to the use of public transport. Findings indicate that certain security aspects of public transport are lower-rated after a negative experience. Most incidents are not reported to the authorities because of fear, lack of knowledge on how to proceed, lack of will to invest time, or belief that the police would not be taking allegations seriously. Additionally, both physical and social characteristics of transit environments and individual factors impact the occurrence of harassment incidents, thus affecting the passengers' security within the public transport. Contrary to what might be expected, the reported incidents do not skew towards any gender category due to the general characterisation of harassment, including sexual harassment, thief harassment, and verbal harassment.

In this analysis, Valencia's low percentage of harassment experiences indicates that the efforts to tackle these issues in the last few years have been successful compared with the other metropolitan areas. In particular, the transport authorities have taken measures to make passengers feel more secure in the transport stations and vehicles and prevent harassment incidents: (1) surveillance cameras are used, and the passengers are informed of their operation through announcements, (2) bus drivers are responsible for the security of the bus security and a harassment protocol placed on bus wallpapers presents a number phone where people are informed of the specific numbers to contact the police to report the situation, (3) stop-on-demand is possible in specific bus routes at night. In addition, more insights on the security topic were obtained through a workshop held by the Valencia hub under the TinnGO project.

In general, the results show that the women's perception of security could increase first by having more stops closer to their residences during the day and secondly by the availability of a smartphone application to communicate with the operators or police in case of potential incidents. On the other hand, men's perception of security could increase, first with a smartphone application to communicate with the operators or police and second with flexible stops to reduce walking distances at night. In this context, considering Valencia's successful results and what travellers stated in this survey regarding security aspects, public operators and authorities should consider developing applications to assist users in potentially dangerous situations and offer more flexible services. Notably, it was revealed that people feel less secure at the tram stations because there are no cameras in the public spaces. In contrast, there are higher perceptions of security in railway stations, where only people with a valid ticket can enter.

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Quantifying the effectiveness of 20mph speed limits in rural areas: empirical evidence from the Scottish borders area

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Introduction

Vehicles' speeds have been widely acknowledged as one of the key factors affecting road safety globally. High speeds have been linked with higher frequencies of road collisions and with more severe injuries. To address the consequences of high speeds on road safety, various traffic calming measures have been introduced, and implemented by local Highway Authorities. Over the last few years, the introduction of the 20mph speed limit (30kmph) has proven an effective measure for reducing the frequencies of collisions and KSI casualties and assuaging the public health concerns arising from the presence of excessive speeds and especially in urban populations (Steinbach et al., 2013). According to Cleland et al. (2020), 20mph speed limits are mainly implemented in urban areas. However, evidence on 20 mph speed limits in rural areas is limited in the literature to date. This present study aims to fill in the research gap on the effectiveness of 20mph speed limits in predominantly rural areas.

The objective of this study is to provide empirical evidence about the effectiveness of a 20mph trial in the area of Scottish Borders, UK, which started in October 2020. The Scottish Borders are located in the Eastern part of the Southern Uplands of Scotland and is a largely rural area with most settlements having populations significantly less than 5,000. This trial constitutes one of the first-of-its-kind, large-scale 20mph speed limit scheme not only in the UK, but also across the globe.

Methods

A quantitative approach was adopted in this study to quantify the speed shift and determine the impact of the 20mph speed limit on several dimensions of vehicle speeds. Specifically, a "before-after" analysis of vehicle speeds was conducted. Data generated from four different survey waves were analysed for 156 sites, whereas approximately 5 million individual speed observations were