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Human factors reduce aggression and fare evasion



Photo: TfL, London



Photo: TPG, Geneva

Left: Partnerships between the police and the operator are considered the main tool in frameworking actions to fight and prevent violent acts
Right: Many operators, like TPG, cooperate with schools for prevention measures and actions directed at youth

In 2008 and 2009, the Bus Committee and Human Resources Commission joined forces to conduct some research on the issue of aggression and fare evasion in public transport. The study, based on data provided by 31 operators from 19 states all around the world, representing about 300,000 employees and 20 billion passengers per year, aims to quantify the problem of aggression and fare evasion in urban and suburban areas, establish current trends and evaluate the level of efficiency of prevention measures and actions taken. The study was conducted in two steps: first the analysis of the phenomenon of aggression; and second that of fare evasion. Both results are presented in this article⁴.

Aggression in Public Transport

In the current study, aggression is defined as a violent physical contact or a threat with a weapon towards public transport staff or passengers. The sample surveyed represents companies transporting more than one billion passengers per year and less than one billion, either belonging to the public or private transport sector. The study revealed that in 2007, 1.9% of drivers and 4% of inspectors were the victims of aggression. On the passengers' side, the study showed that the level of aggression between passengers is on the rise,

with an increase by 19%, as the phenomenon is not systematically measured by operators but by police forces, it is difficult to assess and to provide precise figures.

When does the aggression occur?

There is a prevailing time for aggressions happening in public transport. Aggressions towards public transport staff occur more frequently late in the afternoon for surface transport and in the evening for underground transport. Aggressions between passengers happen more frequently in the evening no matter the mode of public transport.

Naturally the time of the aggression may vary, but the first important conclusion is that in the great majority of situations, public transport operators highlight that the concentration in time (certain hours during the day) of aggressions is quite significant.

Where does the aggression occur most frequently?

The location of the aggressions occurring towards public transport staff is particularly important for the implementation of prevention tools. In the sample surveyed, 68% of aggressions happen inside the vehicle: 42% inside the driver's cabin

and 26% elsewhere in the vehicle. However 32% of aggressions happen outside the vehicle: 14% by the driver's window and 18% outside the vehicle. Concerning geographical space (certain areas of the city) the conclusion is less evident and depends from one city to another. Dangerous areas are generally well recognized by the operator and measures are taken accordingly.

What is the tendency?

It has been noted that between 2006 and 2007 the number of aggressions towards drivers and inspectors decreased by 13% for the sample surveyed. However, as mentioned above, the phenomenon is on the rise on the passengers' side, with an increase by 19% in companies recording the data.

What are the prevention tools and actions, and what are their levels of efficiency?

The most commonly used technological tools are video-surveillance, radio alarm and protected drivers' cabins or windows. In addition to these technologi-

cal measures, several actions are taken by operators to prevent aggressions. To evaluate the levels of efficiency of these different tools, both the operator and the driver have been questioned. Results have proven to be quite similar. The study has indeed revealed that from both points of view, the most efficient actions are:

- partnerships with police forces;
- the on site presence of staff in charge of security; and
- staff training (drivers and inspectors).

The graphs below show the results according to four levels of efficiency: high, middle, low, or negligible.

Many operators also cooperate with schools for prevention measures and actions directed at youth, such as, for example, TPG in Geneva, Arriva in the UK, Bogestra in Bochum, or Translink in Belfast.

Police partnerships

Police partnerships refer to actions taken in cooperation with police forces to prevent aggressions and ensure the

protection of public transport passengers. These actions can be of various kinds, such as: on the spot automatic or simplified complaints registration in case of aggressions, regular meetings of the operator with police forces to analyse data and the efficiency of measures taken (such as, for example, GTT in Turin), the installation of a video-surveillance system which broadcasts live images of the public transport network to the Police headquarters, or the use of centralized alarms between the operator and the Police. It is important to stress that some operators tend to consider that security is a problem for the police forces (only or mainly) to handle especially when it refers to the security of passengers. On the other hand, other operators consider it more an issue to be dealt with internally, especially as regards staff security. In this sense, partnerships between the police and the operator are considered the main tool in frameworking actions to fight and prevent violent acts.

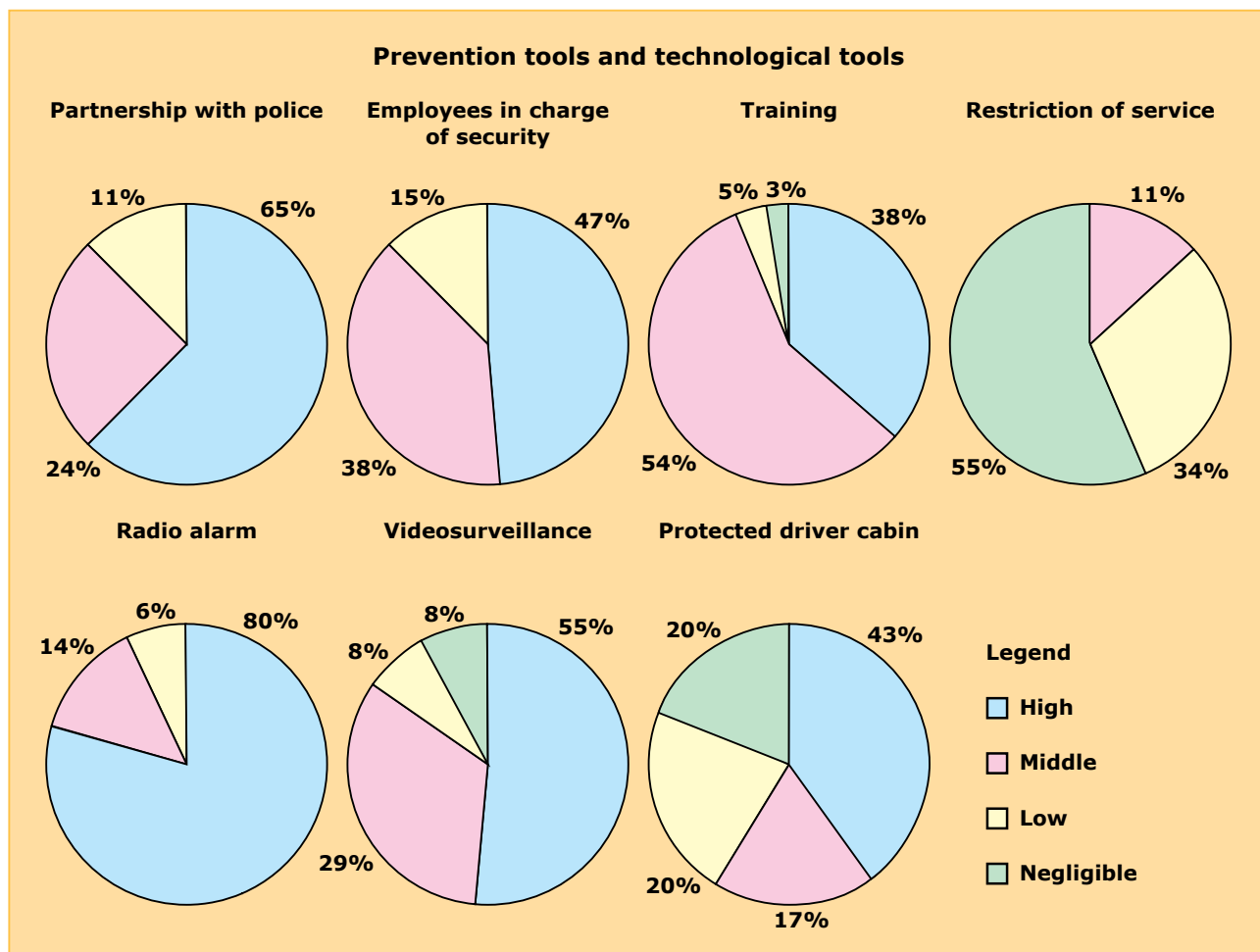
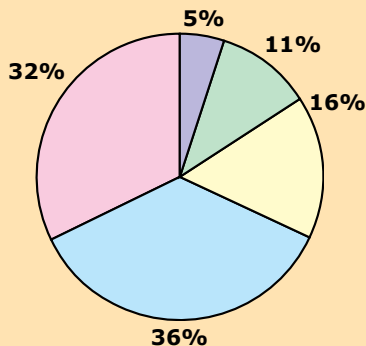




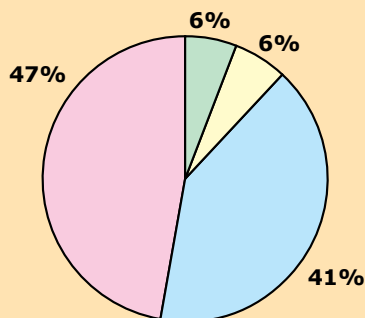
Photo: TfL, London

To get around faster, London police travel by bike

Aggression to driver
Perception of problem



Aggression to passenger
Perception of problem



Legend

- High and increasing
- High but stable
- High and decreasing
- Low but increasing
- Low but stable

Staff training

Training of staff is also an essential tool to prevent aggressions. Drivers and inspectors are trained in conflict and stress management, management of conflictive situations, communication, self defence, etc. Managing teams are also trained in communication in order to support staff that have suffered from acts of violence.

Restriction of service

The study has also revealed that in almost all cases, the reduction or restriction of service (no service at certain hours or in certain parts of the town) does not appear to be an efficient prevention tool although it may be used in some extreme cases.

Technological tools

A radio-alarm placed near the driver's seat is considered the most efficient technological tool, ahead of video-surveillance and the protected driver's cabin. Please refer to the graphs on the previous page.

On the other hand, the protected driver's cabin is not unanimously considered very efficient. Actually the decision to introduce protected drivers' cabins mainly depends on the operator's policy in training drivers in conflict management, the marketing policy, and more particularly, contacts with passengers and on board ticket selling.

Networks that have chosen to fully or partly equip their bus fleet with protected cabins have favoured:

- the driver's decision to open or close the driver's cabin window,
- the harmonisation of the bus fleet, and
- a secured access to specific areas.

Networks that have chosen not to equip their buses with protected drivers' cabins have favoured:

- contacts with the passenger,
- driving comfort (reflections in the window), and
- drivers' training in conflict management.

Generally, many measures are taken at the same time to limit aggressions; it is thus impossible to assess the impact of the protected cabin on the level of aggression. However it is important to stress that a human presence and training are considered major factors in fighting aggressions.

What are the current levels of technological equipment and what are the current trends?

Most public transport companies equip or plan to equip their buses with video surveillance and on-board radio-alarm. It has however been noted that the use of protected drivers' cabins is decreasing. See table below.

How do operators currently perceive the problem?

For a majority of operators, aggressions towards drivers are considered either low and stable (31%) or low and increasing (36%). Concerning aggressions towards passengers it is slightly higher but perception is more or less identical. See graphs opposite.

Conclusions

Security is an essential element of public transport activities and a key factor driving the perception of quality. The phenomenon is quite stable but slightly increasing on the passengers' side. The evolution of technological prevention

Bus fleet equipment and trends

Bus	Situation in 2007	Trend for future bus acquisitions
	Fleet level of equipment	Company's equipment choice
Video surveillance	57%	94%
Radio-alarm	64%	73%
Driver's cabin	67%	50%

tools and all the actions based on good practices should be able to curb the progression of the problem.

Aggressions towards public transport staff are often related to ticket checking and fare evasion and both phenomena are closely linked. The results of the second part of the survey focusing on fare evasion are presented below right.

Fare evasion in public transport

Fare evasion is a component of society, in the same way as shoplifting or fraud at gas stations. However, public transport companies have been trying to fight against fare evasion for several years by implementing controls and proposing new pricing possibilities. In the current study, fare evasion is defined as the “violation of rules of law or regulation or contract for which violation there is a fine, provided that the fact does not represent a crime” (e.g. refusal to give his or her personal data) (definition by ASSTRA). Most figures presented here were provided by bus operators but also contain data from tramway and metro operators². A distinction is made between calculated (measured) fare evasion from ticket checking and the estimated fare evasion levels taking into account the numbers of passengers. The percentage of customers fined and customers controlled is generally the declared percentage of fare evasion. Fines are indeed the main if not only indicator of the phenomenon. For this reason, it is hard to say that the quantity of collected fines is a good measuring instrument.

What is the size and scope of fare evasion?

Of a sample of 800 million passengers, the average of measured fare evasion is 4.2%. The best situations are found in Hong Kong, Madrid, Porto and Copenhagen where fare evasion is calculated to be under 2.7%. Some French and Italian cities, however, have an average level of calculated fare evasion above 5.7%. There is a ratio of one inspector for 28,000 passengers. It is important, however, to consider that for this ratio most of the companies use drivers to control transport tickets. Other companies hire mainly ticket inspectors. Both control methods do not seem to have any influence on the level of fare evasion. The number of inspected passengers per hour varies a lot, the average value is 17 inspected passengers per employee per hour, on an annual basis of 1,600 working hours per employee. In practice, however, the extremes go from

a minimum of five to a maximum of 64 inspected passengers per hour.

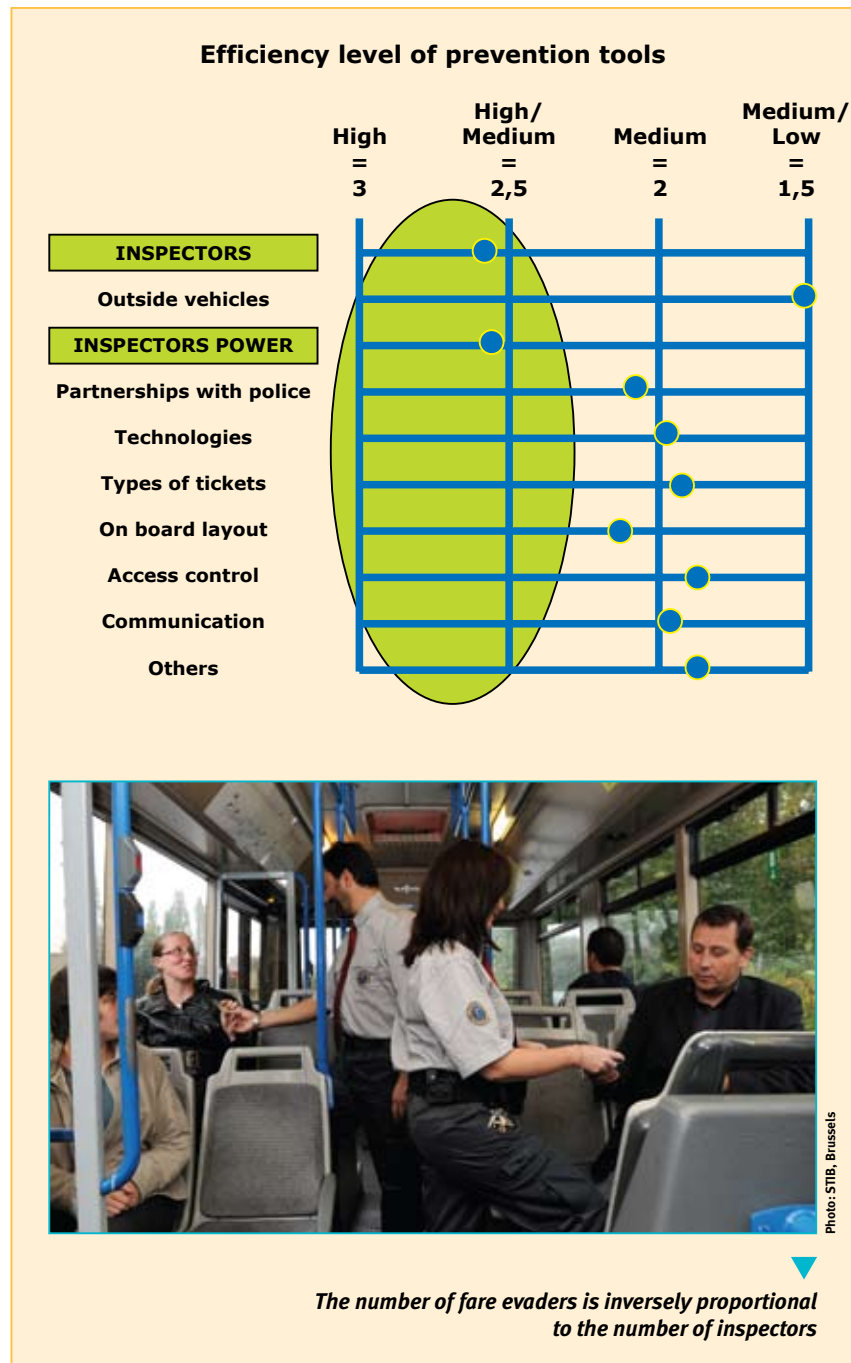
It is interesting to note that the number of fare evaders is inversely proportional to the number of inspectors. This situation varies, however, when it is put in relation with a high increase in the number of inspectors and thus higher investments.

On average, 43% of controls lead to fine collection. Companies that have an average level of calculated fare evasion of 6.5% have a collection level of under 40%.

Companies that have an average level of fare evasion of 4% have a collection level of over 45%. The percentage of fines collected is inversely proportionate to the percentage of fare evasion, which puts forward the importance of the penalty.

How is the problem perceived by operators and how is it evolving?

Of the companies surveyed, 53% consider the problem of fare evasion to be quite high and this is explained



The administrative procedures of fare evasion

Administrative procedures	Companies	Outsourcing
Check	94%	6%
Sanction/Penalty	90%	10%
Procedure appeal	73%	27%
Procedure execution	66%	34%
Cash	71%	29%

by the level of fare evasion itself. Indeed, companies considering the problem of fare evasion to be important have an average level of fraud of 5.2% while others have an average level of 2.9%. On the other hand, 59% of the companies consider that fare evasion is stable, but either increasing or decreasing.

What are the actions taken by operators to prevent fare evasion and how efficient are they?

The study has revealed that the most efficient tools to fight against fare evasion are:

- employing inspectors,
- Police partnerships,
- the duties and level of power given to ticket inspectors, and
- innovative types of tickets (such as contactless cards for example).

Communication and the evolution of on-board technologies, such as video surveillance, are also recognized as efficient prevention tools to fight against fare evasion whereas the use of access control and controls outside the vehicles are considered less effective. Please refer to the graph on page 31.

For most companies, human tools to prevent and fight fare evasion have a high level of effectiveness, which underlines the important role of employees engaged in controls and the power and duties given to inspectors. Partnerships with police forces are also considered quite efficient, whereas technical tools are considered to have a medium level of effectiveness.

The administrative procedures of fare evasion

The great majority of companies are in charge of all the administrative procedures (check, fines, appeal, enforcement, cash), such as STIB in Brussels, Movia in Copenhagen or companies in Italian cities, but many companies also share the final phases of the procedure with authorities or subcontractors.

Of the sample surveyed, only two operators, TMB in Barcelona and Victoria Bus in Melbourne, outsource 80% of the administrative procedures.

Conclusion

Fraud represents a turnover loss of more than one thousand million EUR in the sample analysed, which is a huge problem for the financing of public transport through revenues. To fight against this

social phenomenon, it is crucial to put forward the benefits of the human factor since it is the most efficient tool in terms of prevention and protection, and also in terms of passenger and staff security. Partnerships with police forces remain an important factor for improving the situation as well. One can also underline the schizophrenic role of ticket checking. It is obviously the main tool of prevention: the more checks there are, the fewer fare evaders there are, but, as it is also the main measuring instrument, the more controls there are, the more fare evaders there will be.

Figures and graphs are available on demand at UITP. The Excel files including the detailed data will be kept anonymous and are available on demand to members of the Bus Committee and Human Resources Commission only, and naturally to all the contributors to the survey.

The present study was presented at the Security Conference in Montreal in November 2009. The PowerPoint presentation from the Montreal conference can be downloaded from MOBI+.

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¹ Data collected for year 2007.

² Data collected for year 2007.

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