



Links between bus related crime and other crimes: a briefing paper

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Summary

Research indicated two links between bus-related crime and other crimes:

- Joint operations between police and revenue protection staff on the buses have assisted the police in clearing up other crime and apprehending offenders, some of them prolific.
- Following a police operation on buses there was a statistically significant reduction in the level of assault and theft from vehicle in the zone that extended up to 400m from the bus route.

Introduction

In 2003 the Department for Transport commissioned Crime Concern and Liverpool University's Environmental Criminology Research Unit (ECRU) to examine the links between bus-related crime and other crimes, and the extent to which initiatives to tackle bus-related crime can provide a 'gateway' to apprehend the perpetrators of other crimes 1.

The study included a review of crime and disorder audits and strategies to identify whether reducing public transport crime is fully integrated; establishing if the links between bus-related crime and other crimes exist; identifying what the links are; and good practice in tackling bus-related crime.

A review of crime and disorder audits and strategies

A Home Office database provided access to a substantial majority of the crime and disorder audits and strategies prepared by the 376 Crime and Disorder Partnerships in England and Wales, and revealed that many more refer to public transport in 2002 than did in 1999 ². Despite still being only a minority of the total, those audits that refer specifically to public transport crime have increased between three and four fold (from around 25 in 1999 to over 90 in 2002), and the quality of data gathering and analysis has improved considerably.

The most commonly used data in the audits for crime and disorder on public transport came from the British Transport Police, with about a fifth of audits making use of this source. Where audits included incident data only from the British Transport Police, most did not refer to the absence of bus-related data as a deficiency in the collection process. Indeed, some appeared to equate train related incidents with public transport as a whole in their District.

Very few strategies included tackling crime and disorder on public transport as a specific priority, or made an *explicit* link between crime on public transport and crime in the wider environment. However, the priority to tackle increased violence and alcohol related crime and disorder in town and city centres was a common feature in many, and public transport was sometimes referred to in this context. Only very few strategies made the link to the need to work with partner agencies to provide adequate and secure homeward travel whether by bus, train, taxi or private hire vehicle.

Home Office Circular 016/2004, issued on 05.03.04, states that Passenger Transport Authorities and Executives, and public transport providers and operators should be invited to participate in Crime and Disorder Reduction Partnerships. It is therefore anticipated that there will be a further increase in the number of audits and strategies that refer to transport crime in the future.

¹ Full reports of the research are available from the Department for Transport's Mobility and Inclusion Unit on 020 7944 5222.

² Crime Concern produced an analysis of the Crime and Disorder Audits and Strategies produced in 1999 for the Department for Transport, which provided a comparator for the analysis in 2002.

Establishing the links

Recording bus-related crime

Comprehensive and accurate data is a vital prerequisite to identifying the relationship between bus-related crime and other crime, and measuring the impact of preventive measures.

For the purposes of this study, 'bus-related crime' was taken to include:

- The 'walking' environment (walking from destination point to a bus stop, transferring between bus stops, or walking from bus stop to arrival point)
- The 'waiting' environment (waiting at a bus stop)
- The 'on-bus' environment (travelling on a bus itself)

In the first place, bus passengers and staff need to be encouraged to *report* all incidents of crime and disorder. It is important that those who do report incidents are kept informed of any action taken as a result, so that they and others can see the benefit of reporting and will feel encouraged to do so again in future.

There are problems related to the *recording* of bus-related crime, by both Passenger Transport Executives (PTEs) and the police.

For PTEs, the study concluded that employing dedicated staff specifically for the task of collecting, inputting and analysing data on bus-related incidents is important in ensuring that operators complete and return incident-reporting forms correctly, and facilitating the collation of such information into a single system.

Incidents that occur at stops, shelters and bus stations can be identified and recorded by stop number, for example. Within larger bus stations the specific location where the crime event occurred should be recorded. When a crime incident occurs on a moving bus, however, it is more difficult to pinpoint its precise location. An added complication is that for some incidents, for example, graffiti or a slashed seat that may not be discovered until later in the day, it is not possible to define where or when they happened.

Ideally, the location of a crime should be reported by its geographical position, for example an x and y co-ordinate. The most common example of this in the United Kingdom is the Ordnance Survey's National Grid. Data can be entered into a geographical information system (GIS). A GIS is a computerised system for the capture, storage, retrieval, display, and analysis of spatial data. In addition to capturing the location of a crime, a GIS can also hold further data about the crime, for example the date, day of week, time, details of the offender, or details of the victim. Thus, a GIS can be used to analyse by location the link between bus-related crime and other crimes. It can hold data on both these types of crime that can be cross-referenced. Furthermore, information about the area where the crime occurred can be incorporated, such as land use or the physical infrastructure (the physical layout of buildings), plus socio-economic and demographic information.

Police data is also limited and this may have important repercussions for analysis. For example, 'bus crime' is not a crime type for police recording purposes. Moreover, there is a difference between police recorded crime data and using logs of command and control incidents. The latter of these are not crimes per se but represent calls made by the public for police assistance, and have been described as a measure of the public's demand for police service (Hirschfield and Bowers, 2001). Recorded crime data is susceptible to the problems of under-reporting of crime, as highlighted by the British Crime Survey conducted by the Home Office. The level of under-reporting varies by crime type. Furthermore, there are a number of additional problems found with the geo-referencing of police data, and some common problems that need to be addressed include:

- Certain locations are known to be used as dumping sites if the location of the incident is not known (for example, the police station that received a command and call if the place where the incident happened is not reported)
- Data with a lack of x,y co-ordinates
- Crimes reported within grids or to the midpoint of streets, as opposed to actual locations
- Duplications of records entered
- Changes in the Home Office incident counting rules ³ can result in apparent increases or reductions in crime, which are a result of the change in the recording procedure, and not a change in actual crime levels.

With regard to measuring the impact of police targeted operations, it is important to record and monitor both actual incidents and passenger perceptions, before, during and after an operation.

Analysing bus-related crime

If the location of a bus route can be plotted, together with the bus-related crime that occurred along that route and other crimes in the surrounding area, then a number of analytical techniques can be employed to analyse the relationship between these crimes. These include buffer analysis, user defined boundary analysis, and non-boundary defined analysis.

Buffer analysis can be used to examine the relationship between bus-related crime and other crimes in the area immediately surrounding the bus routes (for example, within 50 metres of the route), and then at distances further away from the bus route (up to a reasonable distance e.g. 400 metres). It is possible that the link between bus-related crime and other crimes is strongest in those areas immediately adjacent to the bus route.

User or predefined analysis is useful to identify areas to target future preventive measures based on operational units (such as police beats). It is also useful when seeking to incorporate other contextual information, using aggregated data such as census variables or geodemographic datasets. Geodemographic classifications seek to identify residential neighbourhoods that are similar in terms of their demographic, socio-economic, ethnic and housing composition. Examples of these include ACORN, MOSAIC, and the SuperProfile Lifestyle Classifications.

Non-boundary defined analysis is an alternative technique to examine the distribution of crimes, and its advantage is that it presents a more realistic representation of crime. Offenders will not refrain from committing crimes because they are in a different police beat, or census area, or other administrative boundary. Therefore it is important to examine the patterns and manifestations of crime without using such boundaries. In the bus environment this is particularly important, as bus routes will naturally traverse multiple administrative units.

Developing a minimum set of data requirements

The table below suggests what information should be captured on bus-related crimes for further analysis, in order to develop an evidence base to inform future prevention measures. These are separated into essential (E) and desirable (D).

Variable	Essential (E) or Desirable (D)
For recording bus-related crime incidents	
Incident Number (individual to each incident)	E
Date	E
Time (of incident if known)	E
Time (of incident reported)	E
Route Number	E
Location (x,y co-ordinate)	E
From stop and to stop (i.e. between which stops)	D
Police crime number (if reported to police)	E
Incident type as a code e.g. 1 = assault, 2 = criminal damage, 3 = disorder, etc Note at present no standardised system exists and codes need to be as specific as possible to reduce the amount of multi-user subjectivity	E
Incident description (text based)	E
Cost of damage	D
Details of victims (if known, numbers involved, names and addresses etc)	D
Details of perpetrators (if known, number of persons, names and addresses, descriptions etc)	D
School (if appropriate)	D
Other (free text field for other information)	D
For analysing bus-related crime data	
Digitised coverage of bus routes and bus stops (i.e. within GIS)	E
Disaggregate Police Data (essential for multi-agency operations with police)	D/E
Other contextual data (land use, passenger volumes, route frequency, geodemographic data, census data, base maps: OS 1:50,000 and 1:10,000, OS Landline data, OS MasterMap)	D
Action Taken	
If police informed, if led to a successful prosecution, if school contacted, if letter sent out as a result, if driver or person reported notified of action taken.	E

3 These are rules developed by the Home Office for the counting and classifying of notifiable offences recorded by the police forces in England and Wales.

Results

What examining the links between bus-related crime and other crimes revealed

In-depth mapping and analysis of the crime statistics along sections of bus routes in four case study areas (South Yorkshire, Merseyside, London and Lancashire) was undertaken to examine the relationship between bus-related crime and other crimes.

This revealed:

- Bus-related crime (to passengers, staff and vehicles) is positively correlated with levels of crime in the surrounding area. It is therefore suggested that schemes to tackle high crime bus corridors should be used in conjunction with schemes to tackle high crime areas, and that bus operators should work in partnership with the police and other agencies to ensure that bus crime reduction operation are integrated within wider crime reduction strategies.
- This relationship holds true for a number of crime types, and these include
 - Criminal damage
 - Robbery/Assault
 - Theft of/from motor vehicle
 - Theft from person/shoplifting/handling stolen goods/going equipped for theft
 - Disorder, and specifically youth disorder
 - Violence against the person
- Routes that go through high crime areas with relatively high numbers of stops are at greatest risk of crime (multiple entry and exit points).
- Bus route crime is concentrated by route and location, and by time of day and incident type. For example, in Merseyside 100% of all incidents occurred along 33% of all bus routes, thus for two thirds of all bus routes there were no bus-related crime incidents reported. Again in Merseyside, 25% of all shelter damage occurred at 6% of all bus shelters, 50% of incidents at 16% of shelters and 75% at only 35% of the shelters. This kind of information is crucial to any effective crime prevention strategy.
- There is a need to encourage good practice schemes that facilitate the reporting, capture and analysis of bus-related crimes. The Metropolitan Police/Transport for London Transport Operational Command Unit system is currently the most comprehensive system for this in England and Wales, using both bus-related crime data provided by both the operators and extracted from police records.

Good practice in tackling bus-related crime

Some bus operators, PTEs and police forces have 'known' for some time (without perhaps being able to produce hard evidence to support this) that by tackling crime on buses they can apprehend the perpetrators of crime in the wider environment. Three case studies were chosen (in Merseyside, the West Midlands and London) of joint police/bus operations, to enable an exploration of the impact of interventions for tackling bus-related and other crimes; and to identify the features of good practice.

Operation Bream in Merseyside was a pilot for high visibility policing on a bus route in April/May 2002. An evaluation revealed that arrest rates were 3 to 5 times higher during the operation; there were 325 stop and searches (of passengers without a valid ticket) and 18% resulted in an arrest. Of these, 28% were for possession of illegal drugs, 17% for theft, 7% for public disorder offences, and 8% for burglary, assault or robbery. As a result of this success it has formed the basis for further collaboration between Merseyside Police and Merseytravel in developing targeted operations on buses.

'Gateway Checks' are joint operations that demonstrate a unified police and revenue inspector presence on the West Midlands bus network. There were 171 'Gateway Checks' in 2003, with over 750,000 passengers checked, resulting in 255 arrests for 'other offences', including shoplifting, carrying offensive weapons, and drug dealing. It has been estimated that the average cost of a 'Gateway Check' with six police officers, six revenue inspectors and a vehicle is Â£1,410.

In London, the Transport Operational Command Unit is a partnership between Transport for London and the Metropolitan Police. Revenue Protection Inspectors board buses to inspect tickets. If a passenger fails to produce a ticket and refuses to give their name and address, the police are called and the passenger is taken to a police station for fingerprinting and searching. In the course of 7.5 million passenger checks in 2003/04, over 13,500 penalty fares and 35,000 notices for prosecution were issued (including for theft, deception, handling stolen goods, disorderly behaviour, and drug offences).

Key conclusions from these case studies were:

- The existence of a police officer seconded to work within a Passenger Transport Executive or bus company can be instrumental in enabling information exchange, developing a strategic approach to crime reduction on the bus network, and establishing collaborative working on operations.
- The presence of a team of police officers (that may include community support officers) dedicated to working on the bus network is crucial in providing a reliable, consistent and informed approach to reducing crime on buses. It facilitates trust, exchange of information, and effective partnership working between police and bus staff. The police are able to develop an appreciation of the crime related issues and the most effective ways of responding to them. Bus operators are able to manage crime problems that arise, assured that the police will assist and not be called to deal with other priorities. The morale of drivers is improved, knowing that calls for assistance in emergencies will be responded to immediately.
- Joint operations between police and revenue protection staff on the buses can assist the police in helping them clear up other crime and apprehending offenders, some of them prolific.
- Sustained funding is important in enabling a planned approach to joint operations, rather than responding to problems as they arise. It also provides the basis for the long-term deployment of police officers to bus operations, so that they can develop their knowledge of the network and its crime issues.

- Police operations on buses work effectively in apprehending offenders when they are intelligence-led, and planned and implemented jointly with revenue protection staff. Some police forces have developed sophisticated systems for recording and mapping crime along bus routes for these purposes. Stop and search of passengers without a valid ticket provides the police with a means of investigating their involvement in other offences, and with the evidence needed to prosecute them.
- Static checks, whereby passengers without a valid ticket are taken off the bus before the police begin their investigation, appear to be the most effective; whereas moving checks could have potential health and safety implications for staff and passengers. In addition, the logistics of static checks make it possible to detain a person for questioning without leaving revenue protection staff on the bus without the presence of any police officers.
- Police and bus operators involved in these joint initiatives to reduce fare evasion and crime on buses are firm in the belief that they are successful, and can provide evidence to support this. However, there is a lack of routine and detailed analysis of the impact on crime on the buses and along the route. Moreover, no cost-benefit analysis has been conducted to ascertain whether they provide value for money.
- The potential for wider partnerships involving the British Transport Police, Customs and Excise and Immigration officers, and Education Welfare services have been demonstrated by these case studies. Joint operations with these agencies have revealed that they can provide a 'gateway' for apprehending people who are of interest to them.

Tackling bus crime: an assessment of the potential to reduce other crime

An analysis of crime along the route of Operation Bream in Merseyside (before, during and after its implementation) was used in order to test not only whether crime reduced in the area immediately adjacent to the route at the time of the operation but whether there was any evidence that crime was being displaced to surrounding areas, or whether there was a diffusion of benefit with reductions of crime in the surrounding areas.

This was done by:

- Disaggregating data on selected crime types: all crimes, burglary, criminal damage, theft from vehicle, theft of vehicle, assault, robbery, theft, and fraud.
- Obtaining data for the 'before', 'during', and 'after' periods.
- A 200m buffer zone surrounding the action route was constructed, and the precise location of crimes (they are reported to 1m grid references) mapped using a GIS.
- Computing odds ratios $\frac{4}{1}$ for all crimes, and repeating this for all remaining crime types to evaluate the effect of operation on the action area (within 200m), controlling for seasonal variations using a control area (the reference area used was again the rest of Merseyside) for the before and during periods.

The main findings from this analysis were:

- There was a reduction in all recorded crime in the action area in which Operation Bream took place, relative to the remainder of Merseyside, although this was not statistically significant.
- For all crime types (except for theft of vehicle and burglary non-dwelling), reductions were observed.
- Reductions in the action area that were statistically significant were assault and theft from vehicle.
- There were no significant changes to the levels of crime in the areas surrounding the action area, and

this suggests that displacement of crime did not occur during the operation.

- After the termination of the scheme levels of crime returned to their pre-operation levels.
- The crime reductive effects of the scheme were observed in a zone that extended up to 400m from the bus route (crime data was collected up to 500m from the route).

4 Odds ratios indicate the proportional change in an action area relative to a comparison area