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Preventing Crime on Transport

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Preventing Crime on Transport

Rail, Buses, Taxis, Planes

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Introduction

Crime committed on or around public transport facilities is an increasing problem in most countries and a comprehensive international review of vandalism and graffiti on Western European, North American and British railways reflects an increase in all systems and a similarity of problems and trends (Transmark 1985).

Public transportation crime problems are not just confined to graffiti and vandalism, nor to railways. Crimes committed on buses and trains, and at airports, can range from common assault through to destructive acts of terrorism.

In this crime prevention monograph specific forms of crime occurring in four transport areas are explored: trains, trams and underground transportation systems; buses and bus shelters; taxis; and in airports and on aircraft. Though many of the transportation systems mentioned are run by private operators (such as taxis and aeroplanes) they are included in this monograph as privately-owned systems are an integral part of government strategies in moving persons from place to place in modern industrial societies.

The prevention strategies have been especially influenced by one particular theoretical approach—situational crime prevention—which is itself modelled on three strands of contemporary criminology.

In the first strand—known as the rational choice perspective—potential offenders are seen as rational and self-serving, and crime prevention measures are designed with this perspective on offenders in mind (Cornish & Clarke 1986). The second—opportunity theory—shows how offenders can easily commit crimes if there are suitable targets and an absence of guardians (Cohen & Felson 1979). The third area is environmental

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criminology. Criminologists have discovered that crime is often concentrated in particular 'hot spots' located in specific geographical areas and which occur at particular times (Brantingham & Brantingham 1984).

Situational crime prevention relies upon a variety of environmental design and management procedures to increase the difficulties and risks of committing crime. Many of these procedures were developed out of the three strands of contemporary criminology theory and practice briefly outlined.

However, the basic ingredient of situational crime prevention is that it aims to remove the opportunity, and make the costs of crime greater than the benefits. To do this a number of different approaches are employed: target hardening (for example, car steering column locks, passenger and baggage screening at airports); defensible space architecture, which encourages people to exercise control over public spaces and keep intruders out; crime prevention initiatives such as Neighbourhood and Rail Watch, as well as other strategies which channel potential offenders away from potential victims.

In the pages that follow some of the successful techniques that have been employed as crime prevention measures in public transportation systems are described. Often, these methods have been implemented only after other measures were found to be inadequate. Although some of the successful techniques outlined here are transferable to new settings, this is not always the case and, before such measures are introduced, testing and evaluation should be conducted along the lines outlined in the last chapter.

As cities become larger and public transportation systems grow, criminal activities will continue to pose problems for those who manage the systems of transporting people across and between cities. However, situational crime prevention provides a theoretical and practical framework for addressing the innumerable situations that arise. This booklet presents some of the crime and public nuisance problems that have arisen in public transportation systems and the various measures that have been employed to deal with them.

Trains, trams and underground systems

The scope of the problem

Fare dodging, vandalism and assault are major problems in rail transit around the world. The distribution varies: for example, in London the main crime in 1985 was theft from the person (Department of Transport 1986a); in Moscow and Tokyo vandalism and graffiti are rare (Wilson 1987); and in New York, where anti-graffiti programs have been successful, theft and assault continue to be a problem.

The first task of any crime prevention program must therefore be to analyse existing data to establish incidence patterns including type of crime, location, time and other relevant environmental variables. Unfortunately, since these offences are both under-reported and/or not collected in a systematic fashion, a preliminary step may be necessary: the implementation of a data collection system and research analysing the data to detect the patterns and highest risk areas to target in prevention. However, transit authorities often fail to conduct victimisation or pattern analysis studies to determine the exact scope of their problems before they implement remedial measures (Strauchs 1972). Due to the lack of such research or ongoing statistical collection, it is difficult to define precisely the scope of the problem. The following summary of several major offences in rail transport is therefore limited by the paucity of information available.

Fare evasion

Since many rail companies are experimenting with measures to combat this crime, it can be assumed to be a fairly common offence. However, the very nature of fare dodging makes its

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measurement problematic. Aside from periodic inspection by rail staff who can calculate for that day how many individuals are fare dodging, by counting how many 'slugs' have been fed into machines or turnstiles, the determination of the magnitude of these offences can only be speculative.

Vandalism and graffiti

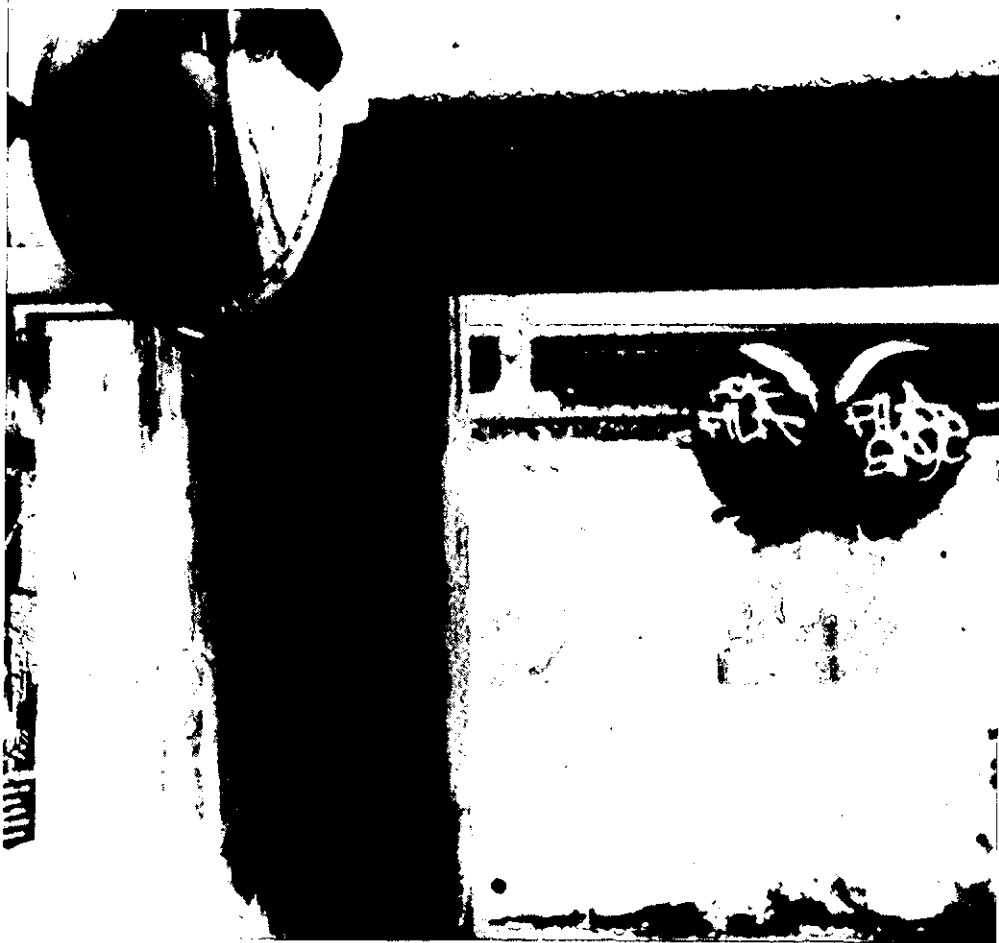


A suburban Melbourne station prior to the Victoria's Ministry of Transport massive cleanup program.

Photo: Australian Institute of Criminology

Whilst many American cities have successfully cleaned up the graffiti on their trains, the late 1980s have witnessed its growth in Paris, Hamburg, London, some Australian cities and Scandinavia. There are similarities across cultures in the kind of

harm inflicted, the age of offenders (youth) and the greater incidence of these offences in off-peak hours (Wilson 1987).



A Melbourne station's passage way. Mirrors to aid passengers' view around corners have been defaced. Cleanup program should revamp all stations.

Photo: Australian Institute of Criminology

The costs are both direct and indirect. In the United Kingdom it was estimated that in 1986 alone, graffiti cleaning would cost £410,000 which does not include monies for repairing other consequences of vandalism, for example slashed seats (Department of Transport 1986a). The cost of graffiti and vandalism on New South Wales trains for the year 1984-85 was estimated at \$4.76 million (Wilson 1987). In 1989-90, Victoria spent \$17 million repairing this type of damage and the Public Transport Corporation (PTC) estimated that \$23.7 million would be spent in repairs and implementation of prevention measures in 1990-91. But the price that rail companies pay is greater than costs incurred in repair. The presence of graffiti and vandals' wreckage increases passengers' feelings of insecurity which can translate into decreased revenue if alternative forms of transport are used (see for example, Shellow et al. 1974; Wilson 1987). Delays in travel and deaths of graffitiists (four in New South Wales in 1986) are other losses that can result (Wilson 1987). The latter increases as the vandals become more adventurous and seek the more inaccessible areas of the train system. Thus in 1990, there was one recorded death of a graffitiist in Victoria and one recorded loss of limb. Additional costs, according to the PTC in Victoria, include critical media coverage, lack of public ownership, potential safety issues such as broken lights, telephones and signs, loss of staff time and the cost of police investigations.

Crimes against passengers

One study in an unnamed American city which conducted systematic analysis of transit crime revealed that robbery was the most frequent crime with over two-thirds taking place between 6 p.m. and midnight. Physical assaults peaked when the passenger density was highest—during the evening rush hour. The vast proportion of offences occurred in the stations, particularly on the platforms, and not on the trains. The highest risk stations were located in areas with both high unemployment and high crime rates in general (Shellow et al. 1974). Felson et al. (1990) reporting crime in the Newark, New Jersey subway system concur that most transit crime occurs in the stations.

The mid to late 1970s witnessed a number of studies that emphasised the rising risk of assault in American subways, particularly New York; during the first 10 months of 1977, a murder a month took place and there were 13 reported rapes (Mazza 1978). In 1975, a Carnegie-Mellon University report states that 'subways are much less safe than the streets' and a Transportation Research Forum adds that 'the risk of a crime on a subway system is ten times greater than on bus systems' (Kiersh 1980, p. 37). Rape and other sex crimes appear to proliferate in an underground setting. Between January 1977 and June 1978, New York City Transit Police recorded 2,529 sex crime complaints (Beller et al. 1980). 'Low level' sexual offences took place primarily when trains and station platforms were crowded.

In London, crimes against the person also appear to be on the upswing. However, analysis shows that of 274 underground stations, 50 per cent of robberies occur at 25 stations with 129 having no reported cases (Department of Transport 1986a). These offences, plus violent assaults, peak in rush hours and late evening. Both the peak hours for theft and the primary locations differ from robbery and assault which exemplifies the need for the detailed environmental analysis mentioned earlier. Rail crime targets cannot be defined unless it is clear where and when the primary targets occur. Swain (1988), also looking at London underground offences a couple of years later, concludes that one-third of the crimes take place on the train and one-third on platforms with the risk increasing as the day progresses. Men are three times more vulnerable to robbery and assault than are women. In addition, user level is not necessarily an indicator of risk although, generally, robbery and theft do tend to occur more frequently in stations with the denser passenger traffic (Burrows 1980).

Australia appears to share in the problem of attacks against travellers on its cities' trains, trams and underground systems. Lack of safety in rail travel has been particularly highlighted in the last two years with a number of kidnap/murders commencing in railway station car parks. The latter emphasises that prevention strategies must not only target the vehicles and stations but must also include nearby areas where commuters

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park their cars. It should be noted, however, that a New South Wales Rail spokesperson believes that much of the dangerous rail image is due to poor media coverage. A newspaper headlined a story about an assault. 'Rail Commuter Savagely Bashed and Raped', when, in fact, the crime took place 2 km from the station. The Victorian Public Transport Commission is also concerned with media bias in reporting such offences: the Program Planning Office points out that of 34,000 reported assaults in that state in 1990, only 688 occurred on the transit system.

Prevention strategies

Aside from the obvious costs of crime to rail revenue, the indirect consequence is reduced passenger numbers. Graffiti and vandalism, as mentioned earlier, reduce the image of safety that retains customers. Further, and not surprisingly, those who have experienced train crime have lower levels of satisfaction with train safety and consequently are more prone to avoid this type of travel (Parolin 1987). There are both direct and potential revenue losses in rail crime which are generating the crime prevention programs described below. It must be stressed that such programs need to be built upon a solid base of empirical knowledge and should be holistic in their perspective. Individual remedies to specific problems, such as high-tech ticketing to combat fare evasion are effective but insufficient. '... only a balanced approach that weighs specific conditions and contributing crime patterns can produce long-lasting and meaningful results' (Strauchs 1972, p. 73).

Fare evasion

Automatic fare collection system: The London Underground implemented the Underground Ticketing System which removed the need for ticket collectors at suburban stations. As well, inner city stations were equipped with fully automatic gates to check tickets. The plan included fewer ticket office staff with most tickets being purchased from machines with a non-menu format. The passenger merely pushes the button that identifies the required destination; puts in the money which is

displayed and receives the ticket. The Washington, DC, Metro system is more complex giving tickets to the value of money inserted (Isaacson 1990). Hong Kong's Mass Transit Railway (MTR) electronic ticketing works only with exact fares and their validity expires 90 minutes after issue to discourage loitering. If a passenger attempts to use a ticket for a longer journey than purchased, the ticket is rejected at the exit gate and an illuminated message directs the individual to the appropriate office to pay the additional monies (Gaylord & Galliher 1991).

New South Wales is planning to implement machines similar to those in London (and Tokyo) which read magnetically encoded tickets both at the beginning and the end of the journey and activate the barrier which rises only if the ticket is valid. The cost of full implementation will be \$140 million but well worth the ultimate revenue savings according to a New South Wales Rail representative. With older rail systems, the costs are enlarged by architectural modifications required to install the gates.

Security officers: In the mid-1980s the Netherlands Minister of Traffic and Public Transport introduced 1,300 Security Information Control officers (VIC in Dutch) on trams and the undergrounds in Amsterdam, Rotterdam and The Hague to minimise fare dodging, vandalism and assault (Van Dijk & Junger-Tas 1988). These officers have had a great impact on reducing fare evasion, particularly during the weekday rush hours. The Security Information Control officers were recruited primarily from unemployed youth (aged 19–28) who received two to three months training with courses in criminal law, and pragmatic experience in ticket inspection. Their role and powers vary depending on the city. In Amsterdam, working in units of two to four, the Security Information Control officers randomly check trams and trains and are authorised to impose fines which they may also do in Rotterdam. In the latter city, however, they permanently work at the metro stations providing information and only check tickets on the trams. The Hague's officers cannot administer fines and each pair stays on the same tram for its entire route. In all three cities they can get additional support from police within minutes (Van Anel 1989).

In New South Wales in 1990, CityRail added 200 uniform officers to stand at some barriers, collect and examine tickets and give out penalty notices. These 'Revenue Protection' officers work in groups, carrying portable two-way radios that enable them to contact the central radio centre. They have the authority to ask pass holders for further identification and can verify the address and the validity of the pass with the despatcher.

Vandalism and graffiti

Design and materials modification: Using materials which are vandal resistant is one way to reduce the opportunities of would-be vandals. Hauber (1989) believes that materials which are not easily broken but still have an expensive appearance, such as unbreakable glass, are ideal. Newer stations and trains are using plastic laminates which facilitate cleaning. In Paris seats are covered in Texoid in a colour that inhibits writing; in Chicago fibreglass seats and melamine interior walls are used; in the Tyne and Wear Metro in England solid aluminium coated seats are used (*International Railway Journal* 1979). Surfaces that are either of an exposed rock-cement mixture, slanted cedar sidings and deeply grooved surfaces reduce 'design' opportunities for graffitiists (Wilson 1988, p. 32).

New double-decker Sydney trains are made with graffiti-resistant surfaces and large windows which increase visibility from the outside to deter interior vandals. Sydney's CityRail is testing a new wallpaper on interior walls already in use in Germany, the United Kingdom, Spain, Belgium and Denmark (Timmins 1991). Graffiti-proof, marks can be easily erased due to a special graffiti-resistant surface. CityRail also employs a process that involves applying liquid vinyl over any train seat graffiti.

Aside from changing the materials, the design and/or general ambience of trains and stations can be improved with more lighting and shorter repainting cycles, for example, New York City stations are now painted every three years instead of the previous 20 (Vuchic & Bata 1989).

The Washington Metro designed its stations with recessed platform walls and put a brass rail in passages to separate the

walls from the public (Swain 1988). Wilson and Healy (1986) add that the environment can be upgraded by murals produced by graffitiists, thus channelling their acts into legitimate enterprises. Victoria has picked up on this idea and such paintings by 'would-be vandals' will soon be displayed at one station as part of a \$1 million clean-up project (Burke 1990b).

Quick cleaning and repair: New York city has successfully combated graffiti; within four years of mounting their cleaning program, 94 per cent of railway carriages were clean; reputedly 100 per cent a year later. What was their strategy? They started with a small unit, completely cleaned it and, from that point on, ensured that every scribble was removed within two hours. These clean cars were never put with vandalised ones in the same train. If cars were not cleaned within the two hours, they were taken out of service (Vuchic & Bata 1989; Sloan-Howitt & Keeling 1990). Crews worked at both ends of the line; police rode trains full-time while they were in operation and clean trains were kept in high security yards when not in use. As more terminals were equipped with cleaners, the numbers of clean cars increased. Concurrently, New York has targeted its stations; those that are part of the program have any graffiti removed within 72 hours. These efforts have been enhanced by new technology which enables paint to be removed from cement surfaces with high pressure, hot water jets. Interestingly, one possible by-product of the opportunity reduction for vandalism on subways in New York has been displacement with an increase of graffiti on white rubbish trucks.

SEPTA, the Philadelphia transportation authority, also reduced its rate of vandalism and graffiti by 75 per cent in little more than one year by employing the same principle: remove it quickly (Scott 1989). The French city Lille's VAL, the first unmanned metro in the world, maintains clean stations and trains with a similar program of removing graffiti daily from walls; in addition, trains are taken off active service as soon as any graffiti is located (Daulmerie 1988).

New South Wales Rail has made major inroads on cleaning up its carriages with a \$25 million annual cleaning program. The New York City model has been implemented with a specialist

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team of cleaners ensuring that 'clean' cars are kept in that condition within 24 hours of vandalism. By late 1990, a security spokesperson reported that 90 per cent of the carriages were graffiti-free. Efforts have been aided by a team of 'graffiti spotters' whose job involves locating the graffiti and feeding the identification numbers of the vandalised train into a computerised system which immediately alerts the cleaners (Burke 1990a).



Clean Sydney Train.

Photos: Australian Institute of Criminology

According to descriptive material on its clean-up program, one feature of the Victorian PTC anti-graffiti strategy is the on-

going quick removal of graffiti from trains. Each carriage is currently cleaned at least once every three days. In addition, all suburban stations are having all graffiti removed by either transport staff or community groups. Once thoroughly clean, the PTC is committed to removing any graffiti at that station within one day.

Increased security: Cleaning and new design must also be accompanied by increased security at the stations, on the trains, and in the yards or depots. New York City, for example, added more depot lighting, used 24-hour cleaners (some undercover police), and repaired and maintained fences on a daily basis (Sloan-Howitt & Kelling 1990). Philadelphia assessed the stations that were most damaged, assigned plain clothes officers to them and installed closed circuit television cameras (CCTV) which the management believes cut down on graffiti in the stations (Hackney 1978). In London, one depot has a system which surrounds the train with an infra-red beam. If the beam is broken, an alarm automatically turns on a television camera and notifies rail personnel. Graffiti at this location has dropped to zero (Swain 1988).

The VAL metro supplements its quick cleaning with its own transit security force that patrols the stations on a 24-hour basis. And, in the Netherlands, the Security Information Control officers discussed previously, are reported to have impacted on vandalism with a 30 per cent reduction on internal metro station walls in Rotterdam (Van Andel 1989). Passengers' and staffs' subjective impressions were that vandalism in general had decreased with the officers presence.

Sydney, as is the case with many other cities, has been hampered by inadequate collection of data from stations reporting on vandalism damage. Appropriate application of security is thus problematic. However, a staff member states that data gathering is being improved with information soon to come from all stations. Then, the Transit Police service, currently a part of the New South Wales Police Department, (previously CityRail employees) can be more effectively deployed. In the 'stables' where trains go after service peak hours, increased surveillance with guards and dogs has

reputedly brought graffiti down to almost nil in what formerly were primary locations for this type of vandalism. Victoria is currently applying a new technology at its train stabling sites—an electronic surveillance robot that watches a display screen and emits an alarm if certain areas of the video camera picture change.

Technology has contributed to the dramatic reduction of vandalism and graffiti throughout the Sydney rail network with 13 stations housing CCTV surveillance devices and more to come (James 1990). Costing about \$50,000 each, a CityRail spokesperson believes these television cameras act both as a deterrent and as evidence in court proceedings. Melbourne's railway clean-up project also plans to include more closed circuit cameras and patrol staff (Burke 1990b). The former have been installed at selected stations and on particular trains. Large signs indicate to the public that the station is under CCTV surveillance.

Security of trains and stations can integrate community involvement with a Rail Watch program (Wilson & Healy 1986; Wilson 1987). In this scheme, rail staff would have a clear role in reporting and receiving public reports of incidents. Passengers would require a quick and confidential means of reporting with their assistance promoted through flyers and poster ads.

Other avenues of prevention: Designing the rail system in a way that discourages loitering reduces the opportunity for vandalism and graffiti (and other crimes). Hong Kong's MTR has employed a variety of measures that deter such lingering. These include the limited 'life' of the tickets, and the lack of chairs, public toilets, fast-food facilities and luggage lockers (Gaylord & Galliher 1991).

The Victorian clean-up campaign includes legislation that empowers magistrates to sentence vandals to remove their work. Hauber (1989) proposes a similar program for The Netherlands in which youthful culprits could avoid judicial proceedings by spending a day cleaning and repairing trams.

Community education can be an important prong of prevention, although it is important to remember that publicity about graffiti can glorify the behaviour and actually generate

more vandalism. Thus a careful balance must be struck between educating school children about the dangers and unacceptableness of such behaviour whilst not indirectly encouraging the activity. In Victoria, school curriculum materials are being developed for dissemination and members of the Transit Patrol Department regularly visit schools to lecture on these subjects. The Public Transport Commission is encouraging the community to recognise that transit offences are community problems. An example of the community acting in this framework is the Croydon Entertainment Train which, on Saturday evenings, hosts a live band or other such entertainment to provide transport to and from the city for young people.

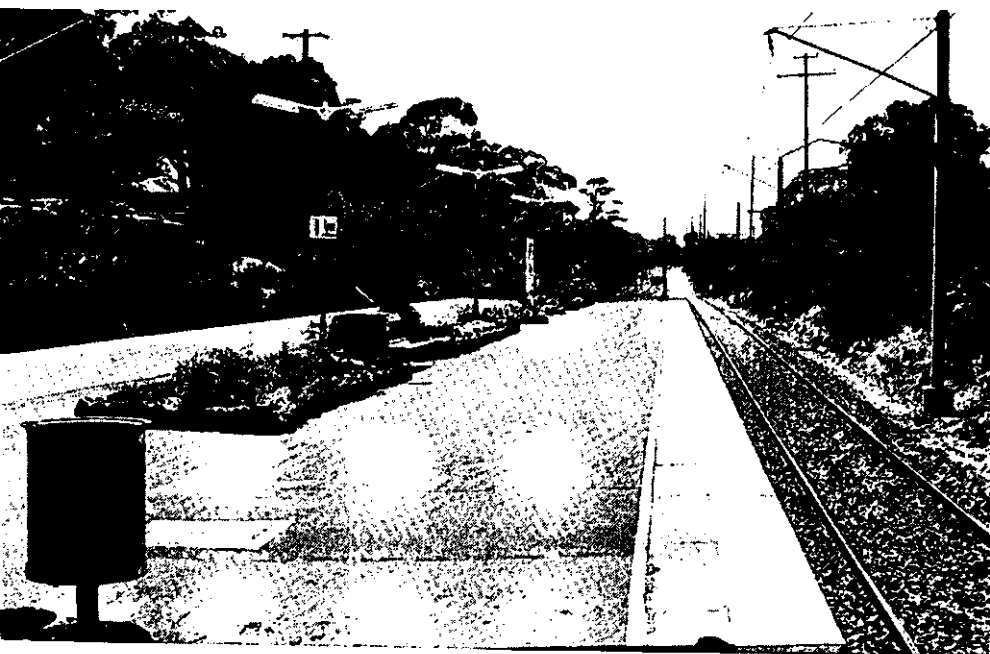
All of the measures outlined above must be evaluated after implementation to assess their impact. Reliable evaluation is dependent upon accurate and comprehensive data collection and systematic analysis of the variables in order to ascertain what has worked, where and what has not (Wilson 1988).

Crimes against passengers

Design of station: Many rail systems are renovating their stations to create a brighter, less run-down appearance and to eliminate or reduce recesses and dead-end hallways that are conducive to assaults against passengers. London has been engaged in such a program, closing off certain passageways during off-peak times to ensure that there are no dark corners (Department of Transport 1986a). New South Wales Rail is removing nooks and crannies and closing down toilets in high crime areas. In addition, the older stations have been given a limited life and will be reconstructed with safety as a primary feature. Victoria is currently upgrading the lighting at stations using the Australian Standard as the minimum acceptable level.

An excellent example of new station design is the Metro in Washington. Before building the system, architects examined rail operations worldwide to see how safety could be enhanced. As a result, columns were eliminated with vaulted arches used instead. Public lavatories were excluded (Crosby 1978). When Vancouver built its automated subway/elevated transit system, advertising hoardings over the tracks were eliminated

permitting people on opposite platforms to see each other. Further, advertising on exterior walls was cut back to allow some surveillance of the station's interior by people outside (Brantingham & Brantingham 1988). Hong Kong also designed its MTR stations with few 'alcoves, dog-leg passage-ways and columns, thus denying would-be criminals hiding-places and points of ambush' (Gaylord & Galliher 1991, p. 19).



An up-graded Sydney station.

Photos: Australian Institute of Criminology

Reducing the waiting area on platforms can be implemented with movable barriers or gates increasing passenger density which reduces the risk of robbery or physical assault. It also creates a smaller area to focus security measures upon. For these reasons, Sydney has constructed blue light safety zones on most platforms. The area is well lit for about the length of two cars and is opposite the guard on each train. There is a blue light outside the guard's compartment.



A blue light safety zone is clearly indicated with white stripes.

A blue light carriage, with employee, stops in the safety zone.

Photos: by CityRail 1990



Other suggestions have been made for improving security where the station is located below the street level (Felson et al. 1990). These include closing down redundant stairways thus creating a passenger flow over the least potential routes; placing platforms for both directions directly across from each other; and off-hour waiting areas above ground requiring the driver to wait for travellers to descend.



Improved lighting in station car parks and proximity to station may reduce assault risk.

Photo: Australian Institute of Criminology

Design of station car parks needs to be appropriately modified, emphasising good lighting and proximity to the station.

Design of trains: Washington, Hong Kong and Hamburg trains include an intercom in each carriage that allows passengers to speak to the driver or to police (Kiersh 1980). These are available on some Sydney trains. The London Underground, afraid that this type of device would be abused, have experimented with a modified version, an emergency alarm that stops the train and then allows for intercom capability.

One-way vision glazing on the train guard's compartment can act as a deterrent since would-be perpetrators are unable to detect whether the cubicle is staffed. However, other psychological deterrents in design, such as 'colour, texture and spatial relationships' that could affect motivation, have been ignored (Strauches 1982, p.74)

Alarms: Some rail companies have installed alarms in stations for passengers' safety. The London Underground, through analysis of crime data, has tried to place these in the highest risk areas (Swain 1988). These devices do not appear to be used extensively worldwide due to potential 'problems with vandalism and/or false alarms.

Closed circuit television (CCTV): A more common prevention strategy throughout the world has been the installation of CCTV in rail stations. A large part of the Washington Metro's annual budget is spent on electronic surveillance with a minimum of eight cameras on every platform, which monitor entrances, exits and waiting areas (Kiersh 1980; Crosby 1978).

Burrows (1980) evaluated the effectiveness of cameras in the mid-1970s in use on the London Underground and found that their installation in four high-crime stations significantly reduced the incidence of theft and robbery. Deterrent value may have been enhanced by the cameras' conspicuous locations plus posters notifying the public about the observation equipment. Careful monitoring is an essential contributor to efficacy. Monitors should be placed where a staff person will watch the screen; for example, in Washington the station attendant's kiosk. In the Atlanta Georgia, MARTA network, pictures are received at the closest police precinct (Department of Transport 1986a). The most effective deployment of CCTVs is fixed cameras with one console operator responsible for

monitoring at each location with access to speedy communication and response (Strauchs 1972).

CityRail in New South Wales currently has about 23 to 25 of its stations 'covered' by cameras, coupled with signs announcing their existence. These have been targeted at the highest risk stations with 54 cameras at Redfern and over 40 at North Sydney station. Rail staff believe that the high-tech system has reduced both assault and graffiti through their ability to see 98 per cent of the station, and constant monitoring by a station assistant (James 1990). However, since other prevention methods, for example, increased security guards, have been introduced concurrently, without a control-type study, it is impossible to isolate the preventative value of the cameras.

Human surveillance: Rail transit companies either employ their own security force, private security guards, train their staff in security and/or rely upon the police. In some cities, the Guardian Angels, a civilian para-police type of group, voluntarily guard passengers on trains and in stations. The Guardian Angels began in New York City in 1979. Initially only 13 in number, their aims were to deter subway crime and make citizen arrests. Their numbers increased exponentially in correlation with large scale media attention; by 1985, there were approximately 5,000 members, including 1,000 in New York City. Kenney (1986; 1987) measured their effectiveness through a controlled experiment (the Angels cooperated by conducting normal, none or intensive patrols at certain times and areas). The study concluded, quite surprisingly, that victimisation was so low that it was impossible to ascertain whether the Angels had any impact. The presence of Guardian Angels appears to have a temporary effect on fear reduction but they may contribute to evoking an image of potential danger.

The Washington Metro system employs their own security officers who are trained for six months. The surveillance force includes undercover officers—the 'power squad' (Kiersh 1980). Other cities appear to be opting for a higher proportion of plain-clothes security people since experiments such as 'Operation Decoy' in New York have illustrated their value in increasing felony arrests.

One major problem in any kind of patrolling is the need for adequate radio communication, particularly if unarmed staff are engaged in these duties. Radio blind spots in underground areas need to be located and remedied with 'leaky feeder radio antennae' (Swain 1988).

Sydney relies primarily upon security guards hired from private companies who are deployed at 42 metropolitan stations from 8 p.m. to 4 a.m. Thursdays, Fridays and Saturdays. Train services cease at midnight, but the guards are present at the station until 4 a.m. CityRail also has a nine person Aboriginal security team, trained and licensed as security guards who work out of Redfern Station, a locality with a high concentration of Aborigines. They liaise with the New South Wales Police who are the primary law enforcement branch responsible for rail safety. In Victoria, the PTC has an internal security force which is responsible for the security of customers, staff and material property. However, the Victoria police are ultimately responsible for crime detection, investigation and prevention on public transport. In addition, according to the PTC, a Train Monitoring Exercise has been implemented whereby desk-bound managers walk through trains at the highest risk times and/or on the highest risk lines. This has reputedly reduced the frequency of incidents and has improved managers' comprehension of the operational facets of the train system.

Queensland has recently placed private security guards on some night-time Brisbane trains (7 p.m. to 1 a.m.). Called 'Night-watch' the guards are trained but not armed and work in pairs. Their employment, additional to regular police patrols, was precipitated by 'brutal attacks on nurses time and time again ... even schoolgirls have fallen victim to bashings and gang-style attacks' (Church 1990, p.1).

Other prevention methods: Since the incidence of certain crimes peak at low traveller density times, such as late at night, a primary way of reducing opportunities for criminal acts is to close stations and cease running night-time trains. Thus, Washington's Metro only runs until midnight. In Sydney, 'nightrider' buses are replacing trains after midnight with many stations closing between 10—11 p.m.

Training of staff and clear delineation of their responsibilities vis-a-vis passenger safety needs to be conveyed. The assault of a 16-year-old teenager on a Victorian train in which a conductor allegedly played no preventive role, dramatically exemplifies these needs (*Herald-Sun*, 2 January 1991). Victoria is responding to the need for increased safety measures in numerous ways. One is the implementation of a safety audit program, an idea developed in Toronto, Canada. It involves community groups working alongside the police, local government and the Public Transport Corporation. Inspections of suburban stations are carried out both in daylight and at night to identify potential hazards to safety, such as poor lighting or overhanging bushes in car parks.

Summary

If a city is constructing a new rail system, it is obviously easier to design an effective preventative model. Hong Kong did this with great success. First, other cities' systems were thoroughly examined and their successes and failures were integrated into the planning of the MTR. Aside from other measures outlined in this chapter, the Hong Kong design includes: stations with few entrances so that a station could quite easily be closed down to capture an offender; escalators that place passengers at the ends of platforms which encourages a wider distribution of people instead of a dense clustering; trains with a 'straight-through' format that allows a view of the entire interior of all cars; and a high-tech communications system of walkie-talkies, CCTVs and alarm intercoms in each car (Gaylord & Galliher). The benefit of both analysis prior to construction and the model of situational prevention has been illustrated by the resulting, almost crime-free, environment.

If the train or subway stations are already in place, implementation of preventative strategies are more difficult but not impossible as shown overseas and in the two Australian examples cited—New South Wales and Victoria. By employing a variety of situational measures that reduce the opportunities for criminal behaviour, and through education, fare evasion, vandalism and crimes against passengers can be reduced.

Buses and bus shelters

The scope of the problem

Crime prevention programs dealing with bus travel target both offences and locations. The former includes fare evasion, vandalism, graffiti, and assaults against employees and passengers. Buses, depots and shelters must all be considered as potential locations for some or all of these crimes. As the range of the problem is broad, the prevention program must therefore be appropriately targeted.

Fare evasion

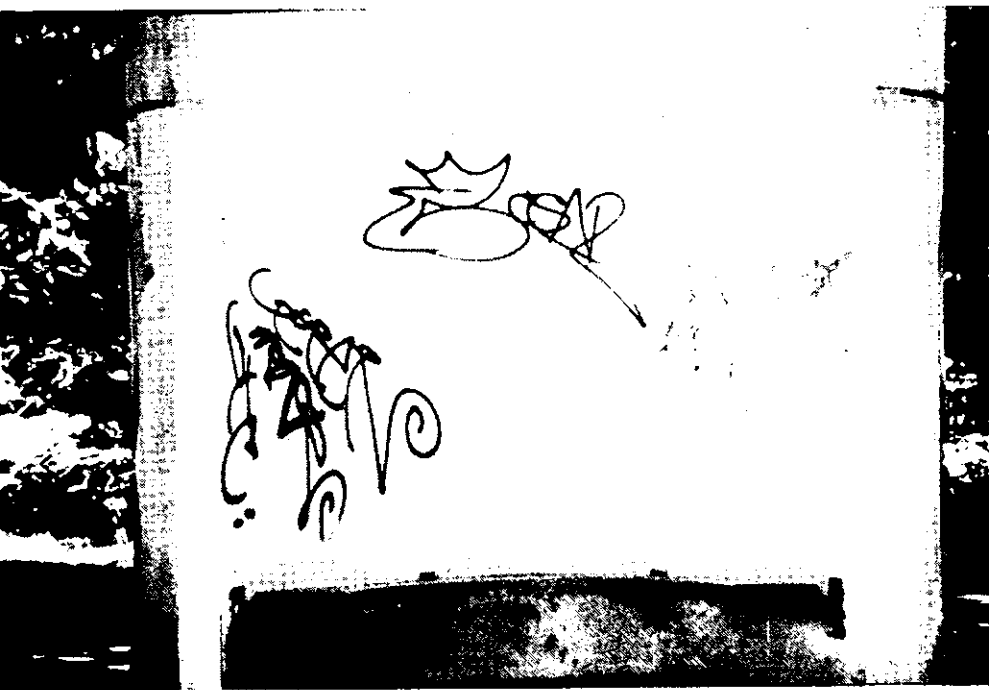
A spokesperson for New South Wales State Transit estimates that \$A8 million a year is lost in that state alone through fare evasion. An ACTION (Australian Capital Territory) bus administrator states that although this crime is not specifically monitored, it probably reduces revenue by 10 to 25 per cent. Fare evasion encompasses a range of activities from over-riding beyond the paid distance to lying about age; using outdated or forged tickets or passes, to refusal to pay the fare. Fare evasion appears to be fairly commonplace throughout the world although the last 10 years have witnessed the implementation of various preventive strategies, discussed later, that it is hoped will reduce its incidence.

Vandalism and graffiti

Broken windows, ripped seats and graffiti (in that order) are the three primary bus vandalism costs. For one bus company in northern England with 700 buses, vandalism repairs (prior to a prevention program discussed later) were costing about

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\$250,000 a year (Poyner 1988). Children were the primary culprits smashing windows, slashing seats, spraying paint and throwing various objects. Seats on the upper floor of double decker buses, those on buses without conductors and back seats are more likely to be damaged since surveillance of them is lessened (Sturman 1980). Every year each French bus loses



A Canberra bus shelter covered in graffiti.

Photo: Australian Institute of Criminology

three or four seats due to vandalism contributing to an annual cost of FF20 million (Quidort 1989). A New South Wales State Transit maintenance supervisor believes that much of the graffiti on their buses is done in depots with 'kids and spray cans of paint'; however, his impression is that such activity peaked in 1983 and has been reduced considerably, with better security in the garages.

Vandalism is not restricted to windows, seats and graffiti. One transit company's chief engineer reports that holes in the ceilings of buses have had to be repaired; these were caused by persons swinging on the hand rails and actually kicking their feet through the ceiling.

Assaults on staff

Assaults on bus drivers appear to be quite commonplace throughout the world. For example, in Great Britain in the five-year period 1979-83, there were almost 10,000 attacks reported. These assaults were widespread, not restricted to large urban areas and there was a trend toward more serious attacks occurring (Department of Transport 1986b). Another British study found that the major causes of aggression towards bus staff are disputes over fares, hooliganism and traffic incidents (Oxley 1987). Alcohol appears to play a major causative role with a peak in aggressive behaviour taking place in the late evening when pubs close. Another peak occurs in late afternoon when children are en route from school to home.

Crimes against passengers

Bus drivers are not the only potential victims of assault or robbery; attacks on passengers, particularly at stops or shelters, may be much higher than official police figures indicate, and they may be increasing. In France crimes against passengers were rising at a significantly higher rate than the increase in passengers (Quidort 1989). A low rate of reporting is shown by Levine and Wachs (1986) who conducted a telephone survey in Los Angeles and found that only 42 per cent of victims had reported crimes. Victimization was correlated with frequency of bus use; overcrowded conditions (on the bus and at the shelter); the rear section of the bus; late afternoon and early evening. Certain types of bus stops were more conducive to higher crime rates; those with heavy pedestrian traffic, proximity to secondary school(s) and, at one location, a possible drug trade. Bus stops are the more frequent location of victimisation towards bus travellers; 57 per cent of crimes in one study occurred outside of the bus (Levine & Wachs 1985).

Crime prevention

The financial costs of fare evasions, vandalism and lost staffing time are indeed significant, but they are not the only costs. As with trains, fear of crime can cut down on passenger travel which translates into reduced revenue for the bus company. As a result, many companies have adopted crime prevention programs in part based on a situational model.

Prior to devising specific strategies, environmental correlates must be ascertained. The capability of isolating significant variables is restricted by the existing crime data collection and analysis. Since police statistics often do not differentiate assaults in buses from other locations, the targeting of high-crime routes or shelters is problematic. Further, if the transport authority or company does not maintain records of vandalism—for example which part(s) of the vehicle, which routes—once again the implementation of an effective prevention program is difficult. In fact, if incidents are not recorded, bus systems are not able to determine if they have a vandalism problem. New South Wales State Transit used to monitor such destructive activities, however a divisional maintenance supervisor indicated that since the Authority was split into Divisions in July 1988, records are no longer kept.

Thus, it is important to stress that the success of any of the models described below is directly proportionate to the amount of research and data available that reveal the geographical and other environmental factors that correlate most significantly with criminal acts. It is suggested that the first line of prevention should be standardised forms for each state's transit system on which all criminal incidents are recorded.

Fare evasion

The deployment of inspectors, at least on a periodic basis, is one means of ensuring that tickets or passes are valid and genuine. In mid-November 1990, New South Wales State Transit ran a 'Be Fare Aware Week' which included uniformed revenue inspectors riding the buses (and ferries) and checking one in 25 passengers.

The New South Wales program included a public education component with the theme 'Pay the fare, the right fare, or pay

the price'. The latter refers to the \$50 penalty for fare evasion.

Other cities' buses, such as Minneapolis-St Paul in the United States, rely upon a two-way radio system with a silent alarm (Harris 1972). If a rider refuses to pay or appears to be using a forged pass, the driver relays a request for assistance to the police and to transit street supervisors via a central control centre. The latter patrol by car which enables them to respond quickly.

The ultimate response to these offences may lie in high-tech innovations. New South Wales State Transit has called for tenders for an on-board bus ticketing system which would presumably be sophisticated enough to be less vulnerable to misuse than the existing technology. ACTION buses in the ACT are looking at advanced technology as a long-term solution. Experience in the Netherlands with automatic on-bus machines showed, however, that fare-dodging increased (Van Andel 1989). As a result, the ticketing system was removed and replaced by a system in which all passengers must enter by the door near the driver either showing their ticket or purchasing a new one (Van Dijk & Junger-Tas 1988).

1991 and 1992 are witnessing the implementation of pass and ticket modifications in the ACT aimed at drastically reducing the current fraudulent misuse. FAREGO passes (concession cards) had not changed in appearance for a number of years and were visually the same for all types of concession. ACTION is introducing four different cards aimed at levels of driver recognition, for example colour to designate type of card. The new passes contain devices in their printing that render them unable to be photocopied unlike the former type which could be duplicated. Quarterly tickets will also be markedly transformed in appearance with the important information, for example month/year, much more visible to the driver. In addition, passes will have to be removed from wallets, preventing another fraudulent practice—the placement of cards in such a way as to obscure dates or type of pass.

ACTION is aware of fare evasion practices that originate with their employees. Currently, FAREGO tickets, which come in packets of 10 and are supposed to be detached in front of the driver, are resold by some personnel. The passenger either

pretends to tear a ticket out of a used booklet or enters the bus with just a ticket. To prevent this misuse, the new tickets will be serrated and the passenger will have to rip one on entering to preclude reselling.

An analysis of passenger flow with the appropriate usage of buses would act to minimise offences since bus drivers are better able to monitor the proffering of fares if the buses are not overly crowded. In the latter situation, inspectors could be deployed.

Vandalism and graffiti

Buses: are vulnerable to vandalism both while on the road and in the garage or depot. The opportunity for crime against garaged buses can be reduced by employing security officers, a closed circuit televising (CCTV) system or some alarm mechanism. In both the garage or whilst working, vandal-resistant materials in buses are one method of reducing opportunity and can be used in both windows and seats. Windows can be made of safety glass and be glued, instead of being held by rubber, to reduce the ability to break or kick them in. Since most seat damage is caused by cutting or ripping, 'hard' seats, made of fibreglass, may be a solution (Schnell et al. 1973). Slash-resistant fabrics are also available. Thus in France, during a two-year trial on two routes, a 'vandal-proof seat' was employed which was not damaged. These seats have a covering reinforced with slash-resistant trellis work (Quidort 1989). Some companies such as ACTION in the ACT have targeted the two rear seats, putting stainless steel backing on them. They are hoping to change the entire seat design using a plastic frame, formed plywood and fabric stapled to the wood. Thus, no stitching would be required for repairs.

Since most buses lack conductors, supervision of passengers is more limited. There are three ways of compensating and enhancing the surveillance of activities on buses: design of vehicle, inspectors, and video cameras. Los Angeles has used special undercover agents on their buses to monitor passenger behaviour. Other cities have inspectors but the people hours required limit the efficacy of this method.

Poyner (1988) describes the experimentation with video cameras by one northern England company in which 24 buses were actually equipped with the remainder having dummy cameras installed to save financial input. Coupled with publicity and a 'Bus Watch' program described below, a significant reduction in vandalism resulted. It should be noted that displacement does not appear to have resulted; in fact offences have been reduced on all the buses.

Opportunities for vandalism and graffiti can be reduced by: ordinances prohibiting eating and drinking on the vehicle; flat surfaces which are coloured in such a way that felt-tip markers will not show up; the use of non-flammable materials; and by affixing fixtures and fittings in a way that decreases the possibility of removal (Sturman 1980). In addition, restrictions on the sale of spray paint have been implemented in a number of states in America.

Some companies point to speed in repairing and cleaning the vehicles as a primary prevention method. As described in the chapter Trains, trams and underground systems, maintaining a clean vehicle is a primary deterrent to further graffiti; the same is true for other destructive activities.

In addition, community involvement can play a major role in combating vandalism. Most campaigns have been aimed at youth, striving to have the children feel that the buses are a part of their world. In France, the 'cool bus' project outfitted some buses, externally and internally, as more suited to schoolchildren. The latter submitted designs for the exteriors and music facilities, coloured seats and platforms were installed (Quidort 1989). After two years, these buses were reported as damage-free.

American cities have tried to improve students' attitudes about their bus system with inclusion of football players in public relations campaigns; visits of children to transit repair garages to get a better idea of what is involved in bus maintenance; competitions for anti-graffiti posters; and in some urban systems, an employee who acts as liaison with schools (Thrasher & Schnell 1974).

The Bus Watch program in northern England, mentioned above, brings a video equipped bus to a school. After a formal

talk, the children go for a ride on the top deck to the depot and through the bus wash. The camera is turned on for part of the time so that, after returning to the school, the children watch the video and are able to see how future misbehaviour could be detected. The Victorian Public Transport Company is launching a similar program—'Travel Safe Bus'. The bus contains dynamic audio-visual displays and other material; content can be adjusted to different age groups.

Another English transit company has hoped to combat both vandalism and driver assault with an 'Adopt a Bus' plan in which a school 'adopts' a particular bus. A photo is received along with the vehicle's biographical details encouraging the children to think of it as their bus. The program has been successful in reducing vandalism (Department of Transport 1986b).

Bus shelters: are popular sites for graffiti. Canberra's ACTION buses (and other Australian transit authorities), working with local schools and the community, have implemented a creative anti-graffiti program.



Canberra bus shelters painted by school students.

Photo: Australian Institute of Criminology

In an annual painting competition, primary and secondary schools compete for \$1,000 from a paint company and \$300 worth of bus hire by painting murals in a bus shelter close to the school. Designs prove to be very creative, ranging from Aboriginal motifs to bush scenes. ACTION is hoping to develop this program further and have schools, companies and government offices 'Adopt a Shelter', undertaking to maintain it in pristine condition throughout the year. Future plans also extend to implementing 'Adopt an Interchange' with a college or other nearby institution assuming responsibility for the walls and platforms of a station.

Assaults on staff

Early experience in London has shown that the installation of a screen around the driver results in a 30 per cent decrease in assaults (Oxley 1987). In France, the seat is not often enclosed since it is neither believed to be effective nor perceived positively by passengers (Quidort 1989). New South Wales State Transit experimented with partitions at night on 20 buses but these partitions were not employed during peak hours when they proved to be 'in the way'. As the deterrent value did not outweigh other variables, it was decided to discard them. One British evaluation presented the various pros and cons of the polycarbonate screens fitted above the door into the driver's section (Department of Transport 1986b). Negative driver responses included glare and reflections at night, separation from passengers with consequent difficulties in communication and feelings of claustrophobia. However, these protective partitions, along with a new fare system, that reduced passenger/driver conflict, significantly reduced assaults on the drivers (Poyner & Warne 1988).

Instead of partitions, New South Wales State Transit relies on a two-way radio, emergency buttons that are activated either by foot or by removing the cash tray, and a hidden microphone linked to the bus office. An interviewed employee felt the latter was particularly effective because the driver could verbally (in a covert way) give the location of the bus. A radio may not decrease the number of assaults significantly but does appear

to increase the proportion of those apprehended. Radios can be connected with police and/or with bus employees/street supervisors. Los Angeles buses are equipped with the above plus four-way flashing lights which, when illuminated, indicate an emergency. Vehicles have their numbers painted on the roofs for easy identification by police helicopters (Hebert 1978).

Radios, silent alarms, flashing lights and cameras are morale boosters for the drivers; however, in preventing assault, their potential value is delineated and limited by both the drivers' ability to reach the apparatus and the speed of response by the police. A surprise attack and/or the assailant's knowledge of the alarm may preclude its use. Further, police may not prioritise bus alarms highly if there has been a precedent of false alarms (Thrasher & Schnell 1974). Some buses that display electronic digital destinations on the front and/or side are equipped (by silent alarm) to flash messages such as 'send police' (Pearlstein & Wachs 1982). The primary value of closed circuit cameras (CCTV) lies in deterrence and eventual apprehension of the perpetrator. One problem in the effective utilisation of cameras on buses is the difficulty in providing sufficient lighting to enable quality photos yet not enough to make night driving problematic.

Suggestions about the design and procedures in buses have been generated. Centre exit doors may reduce assaults since some attacks on staff occur when the passenger disembarks. If (s)he leaves by a centre, or rear door, opportunity is obviously reduced. Other ideas include the careful placement of mirrors so that would-be assailants would actually see themselves; cut-out mechanisms on bells, for example a sign 'bus stopping' which turns off the bell after it is rung once, since continuous ringing can cause tempers to rise; and pay systems whereby the driver has a minimum amount of money, for example, exact fare, passes, tickets, since robbery is often an aspect of assaults. As conflicts about fares are the most common source of assaults, a fare system based on zones and passes reduces the frequency of attacks on drivers (Oxley 1987). Another secondary prevention method, advocated by an ACTION bus executive, is gearing numbers of vehicles to passenger volume. A lengthy wait can exacerbate negative attitudes whilst a quick response rate

to travel needs improves the general relationship between the transit authority and the public.

Many companies are including a component in their drivers' training that illustrates in what ways the employees can defuse potentially aggressive interactions. In Paris, this involves discussion of types of passengers, the use of role-playing and transactional analysis (Quidort 1989). Some British firms include assertiveness training and stress management (Department of Transport 1986b).

Increased liaison with the police and the community can also act to prevent assaults. The British Department of Transport study found that some police departments have helped to design and implement the training programs while in London, the 'hop-on-a-bus' program involves all uniformed officers travelling on a bus a minimum of one time during each shift and visiting bus depots in order to become acquainted with staff. The public can play a role through publicity campaigns and rewards. Publicity is a two-edged sword, however, since fear of violence may reduce ridership.

Crimes against passengers

As stated above, American studies on crime at bus stops and on buses isolated certain environmental factors that correlate with risk of robbery or assault. Any city or town targeting these offences would need to precede such an endeavour with detailed collection of data aimed at isolating high risk shelters and then analysing the particular physical and/or cultural variables that seem conducive to passenger assault. The construction and maintenance of such a database is an essential element of crime prevention.

Buses: Levine and Wachs' (1985) random survey of households in Los Angeles revealed a number of suggestions for improving passenger safety while on the bus. These included better scheduling to minimise overcrowding, designing the rear of the vehicle in a manner that would permit improved passenger flow, and increased employment of the drivers in a security role. Specifically, ideas included: seats in the back that could be set up in a circular fashion to reduce isolation and lack of visibility

by other passengers and/or the driver; rear or central doors to generate a passenger traffic flow that could interrupt a criminal offence; and better mirrors to facilitate drivers' view of that section. However, the latter implies a security role by drivers who may be reluctant to add another duty to their job requirements. Since such a role of employee surveillance is one of the cornerstones of situational prevention, staff on buses and other transport need to be encouraged to provide this service to their employers.

Bus shelters: If it is known which stops have higher incidence of robberies and/or assaults, police patrols in those areas can be increased. Another alternative is to relocate the stop, moving it away from the pub or school which appears to affect the crime rate. Levine and Wachs (1985) note that such action may not help since the offences might just move with it. Further, passengers may become confused and older people may be hampered by additional walking distances.

Bus stops or shelters should be well lit and crowding reduced by both appropriate vehicle flow (particularly at school closing times) and by separating bus passengers from pedestrians. The latter is possible by a number of arrangements including peninsulas that either extend into the street or are the consequence of erecting physical objects, for example stone pillars in a circular fashion that make a speedy escape by culprits more difficult (Levine & Wachs 1985).

Community involvement through local merchants' surveillance and school programs ('Adopt a Bus Stop') are other prevention strategies.

Summary

All crimes committed on buses and appropriate prevention methods have not been mentioned. For example, companies may experience robbery of fare monies if some type of locked money box and/or exact fare system is not employed. Installing safes on New York City buses (along with flat fares) resulted in the almost total elimination of robberies of bus drivers in that city (see Clarke & McGrath 1990 for discussion).

This is another example of how to reduce the opportunity for committing a crime. As discussed in this chapter, there are many possible measures that can be used to 'harden the targets'. When implementation is both preceded and followed by careful consideration of the specific patterns and factors involved in the particular situation, the prevention methods are likely to be effective and cost efficient.

Taxis

The scope of the problem

There is a plethora of aggressive acts which passengers can perpetrate against taxi drivers and their vehicles. These fall into various types of assault ranging from verbal harassment to murder and property-type crime including theft, fare evasion and vandalism. Much of the preventive measures discussed in detail below are designed to counteract all of these criminal behaviours; some are more specific in their target.

The actual incidence of taxi crime in Australia is impossible to ascertain accurately, for a number of reasons. Police data do not differentiate the cab offences from others. Data gathered by individual taxi companies are, according to the Industry, markedly conservative since there are a number of factors that lead to under reporting of incidents by the drivers. This occurs due to: the despatchers discouraging police action; the time involved in reporting to the police; lack of knowledge concerning the whereabouts of the perpetrators; fear that (s)he will inadvertently be blamed; and general apathy (Scott & Morley 1990). The same report indicates that in Queensland there have been four murders in the past three years and at least 10 drivers who have been seriously assaulted. These crimes have generated newspaper headlines such as 'Taxi Drivers Put Their Lives on the Line Every Shift' and 'Drivers Take No Chances'. Such publicity certainly gives the impression that taxi driving is a high-risk occupation. This is, in fact, confirmed by overseas studies such as Davis's (1987, p.1291) research. He found that men working as taxi drivers had the highest rate of workplace homicides for the years 1975-1984; 78.2 per 100,000 male workers as compared to the overall rate of 2.1 per 100,000.

Both violent taxi crimes and their consequent press in Australia have not been restricted to Queensland. Sydney's *Daily Telegraph* (15 November 1990) led an article with 'Four Taxis Attacked in One Hour'. The incidents included attempted theft, assault on two taxis with rocks, and assault. '... attacks in the area were increasing. Every week we have some kind of problem ...', a taxi company manager is quoted as saying.

In an interview, an Australian Capital Territory taxi driver expressed his belief that drivers in Australia's capital are under great threat. A taxi manager in the ACT confirmed that very few offences are reported in Canberra since most drivers feel that there is no need to do so.

A study of Newcastle taxi drivers reveals that the occupation experienced 28 times the risk of non-sexual assault and 66.7 times the rate of robbery as compared to the community at large. These numbers are undoubtedly higher but drivers often express the view that police would not act on complaints if made and/or potential earnings would be reduced by lost time. The Newcastle research also showed that the majority of drivers believe that passenger aggression is on the increase. Crime against the person is perceived as the most common (verbal), with vandalism, fare evasion and robbery seen as much less frequent (Swanton & Scandia 1990, p.13).

A number of articles/studies concur that night is the highest risk driving period for cabbies, particularly Fridays and Saturdays. Not unexpectedly, as in other types of violence, intoxication appears to play a role in inciting violence. The President of United Cab Drivers Guild of Queensland sums up the role of alcohol, 'The worst passengers are the ones who have had three or four beers and think they can take on the whole world. They'll throw stubbies at you or kick in your door if you don't let them jump the queue' (Cruise 1988).

It has been suggested that poor communication, for example immigrant taxi drivers' inability to speak or understand English well, may generate frustration and contribute to passenger aggression. Drivers' lack of knowledge about the locality, leading to needlessly long rides, can increase the potential for friction. Long queues with subsequent lengthy times of waiting for a taxi may exacerbate tempers and lead to abuse.

Driver-initiated prevention strategies

A number of confidential sources indicate that some drivers carry clubs, knives or even guns as illegal means of crime prevention. In Brisbane, drivers began to wedge sticks and screwdrivers between seats after three of their colleagues had been killed in one year (Cruise 1988).

Another informal strategy is to refuse fares to or from certain areas and from 'suspicious' people. Many cabbies in Sydney are refusing to go to certain parts of the city such as The Rocks, Kings Cross and parts of Redfern where attacks on drivers and their cars have increased (Meade 1990). The NSW Taxi Council president states that 'Despite the hard times, no one is desperate enough to put his life on the line or his vehicle at risk by entering the no-go areas....[Drivers can] terminate a fare if the passenger behaves in an offensive manner' (Meade 1990).

The drivers interviewed in the Newcastle study felt that an important way of minimising passengers' aggression is the attitude of the drivers: developing 'a conciliatory manner' (Swanton & Scandia 1990, p.23). An ACT driver with 12 years' experience agrees that a positive manner and discussing whatever the passenger wanted is the most essential crime prevention technique.

Prevention strategies

Technological

Two-way radio: Taxis are, of course, equipped with two-way radios which are linked to the central control which, in many cities, is staffed continuously. Alarms can be given over the radio but a quick response is not always possible since the exact location of the cab may not be known. The Queensland Taxi Guild believes that such audio coded messages are severely limited due to the ferocity of assaults today. Additionally, radio systems in converted sedans are too easily disabled. However, for less serious situations, the radio can be effective in deterrence or in getting quick assistance.

Digital alarms: Black & White Taxis digital alarms used by some taxis provide extra security. Such units are widely used

throughout Europe. A hidden microphone activator sets off the alarm at the home station and subsequent movements and conversation are automatically recorded. Another advantage is that it works even if the car radio has been destroyed. Some Yellow Cabs in Queensland use a modification of this system that works on FM frequency. However, the Guild believes that the switch is poorly located since it is not activated by releasing the microphone. That organisation strongly advocates a different system using a locator light, as outlined below.

One Queensland driver is reported to have crashed and rolled his taxi to escape attackers. He had already tried to hit the alarm button but failed to reach it. He adds 'But even if I could push the button it would only have alerted base to what was happening and help would have been a long time away' (Jenkins & Bissett 1990, p.3). A Yellow Cab driver in Brisbane was brutally assaulted and raped which the *Daily Sun* (19 June 1990) reported may have been preventable if an 'attack alarm' as described above had been fitted in her taxi. At that time the taxi fleet was in the process of alarm installation.

Safety screens: One type of protection is for drivers to be separated from the passengers by means of a screen device. The *Courier-Mail* (14 November 1990) reports that two taxi operators in Brisbane have developed such a screen made of polycarbon, that scarcely showed any marks after being bashed with an axe in a test. Costing \$195, several have already been fitted and have received the approval of the Queensland Taxi Council. The low cost and ability to be fitted in any type of car may counteract some of the arguments against their use discussed later in this chapter.

Dome light alarms: Another safety device is the employment of an external dome light that activates simultaneously with a radio or digital alarm, or by depressing a switch with the foot. Queensland taxis are currently required by the Department of Transport to have such a distress light, green in colour, fitted to their roofs which costs about \$100 to install. Other measures used or advocated overseas include a concealed switch which extinguishes the lights on one side of the car. This indicates to police a possible emergency without alerting the perpetrator.



Without a safety screen, the passenger in the back seat can easily assault the driver from behind.

Photo: Australian Institute of Criminology

Systems have been proposed that actually locate the vehicle since a dome light in itself is only as effective as its visibility. Some sort of radar system, either as part of the radio or separate from it, would locate all vehicles on a map at the control centre.

Electric seats and other items: In Paris, taxi drivers in six of the city's licensed cabs can push a hidden pedal and shock the passenger with a bolt of electricity for a minute (Cruise 1988). Apparently 52,000 volts can have a strong deterrent effect. Other technological devices that could potentially be valuable include miniature surveillance cameras and computerised maps (Swanton & Scandia 1990).

Locked money box: These attach to the frame of the car and the driver inserts the fares as they are earned. Keys are kept at the home base with the process well advertised within the cab. It is reported that after these were made mandatory in Los Angeles, robberies fell from an average of 15 a night to only two a week (Claxton 1982).

Drivers

Training: Since communication skills and other attitudinal factors are perceived as important in preventing crime, training that includes such skills, plus knowledge of the physical environment, could help to defuse potentially volatile situations. The Queensland Taxi Guild President believes that 50 per cent of incidents would be eliminated if training was compulsory. This would include a refresher course. Swanton and Scandia (1990) suggest that individual companies provide driver development information with videotapes, audio tapes and pamphlets.

English language requirements: In order to avoid inadequate comprehension and communication, it could be mandatory for taxi drivers to have English language skills. Inability to communicate with the passenger can lead to frustration and the potential for abuse is enhanced.

Image: Applicant drivers need to be screened closely and provisions need to be made for dismissing those already employed who fail to maintain appropriate behaviour. Drivers' hygiene (and that of their cars) must be kept at an acceptable standard. Just as graffiti breeds graffiti, an unkempt appearance is more conducive to inappropriate behaviour.

Seat belts: It has been suggested that crime prevention may supersede safety; cab drivers could be given the option of not wearing their seat belts. Such a provision would facilitate a quick exit from the taxi.

Fare prepayment: One way of minimising fare evasion is to empower drivers to require prepayment if there are any grounds to suspect that the passenger will not pay upon reaching his/her destination.

Taxi ranks

Tempers can be exacerbated by lengthy waits at a taxi rank. It has been suggested that major ranks should include seats, overhead cover, lighting and direct phone contact to the despatchers. Additionally, in areas with heavy concentration of drinking establishments, the construction of an additional rank in the near vicinity would reduce the numbers of intoxicated passengers at a single rank (Swanton & Scandia 1990).



Long queues may exacerbate tempers.

Photo: Australian Institute of Criminology

Problems in implementation

Unlike the United States or the United Kingdom, passengers in Australia often sit in the front seat of taxis which makes any sort of screening device problematic. In fact, cultural values of mateship in this country almost dictate such a seating arrangement. An ACT driver adds that the same type of cultural norm mandates sociability by the driver. A screen mitigates against the socially required friendly banter. This situation occurs less frequently in other Western countries where sitting in the front of a taxi is not the norm.

In addition, due to import difficulties, custom-made taxi vehicles are not widely used. Drivers convert normal cars which are not constructed to hold a screen securely. Only half screens can be used since many of the renovated sedans lack air conditioning and, without it, full width screens create heat which is uncomfortable for both drivers and passengers. States which depend upon the tourist industry would be particularly concerned about this latter point. Since a taxi is often the first point of contact in Australia, comfort is an issue. Furthermore, a screen is a symbol of crime (prevention) which gives an image that the tourism and associated industries would prefer not to promote.

The implementation of many of the strategies described above requires both financial resources and the working together of taxi companies and the taxi industry with state governments to promulgate the requisite legislation mandating preventative equipment. In reference to the financial expenditure required, many taxi owners are small-scale business people and would find additional outlay above licensing cost problematic.

Need for governmental intervention is necessary since, due to costs involved, most cabbies will not incur the costs unless it is mandatory. Thus, some Sydney drivers tried to have the government make locked money boxes compulsory (Claxton 1982). The New South Wales Transport Minister declined stating that the boxes are inappropriate since they can be removed and their presence could lead would-be robbers to hijack the taxi to a remote area to dislodge the device. Also, since a state

regulation states the drivers must be able to provide change, the box concept could only be implemented if such a regulation were dropped.

One means of at least ameliorating some of these difficulties is the formation of taxi guilds or associations to act as lobbying forces for legislation and/or governmental financial assistance. Thus, in 1982, the Sydney Taxi Drivers' Association was formed as a result of two murders in the previous year and estimates that upwards of 10 assaults or robberies were taking place each night (Claxton 1982). It was effective in pushing through a mandatory alarm system. The United Cab Drivers' Guild of Queensland, created in 1983, has also been influential in lobbying for various state-wide prevention plans.

Summary

Unlike buses and trains, taxis are not a type of public transport. Since crime prevention costs must be incurred by the individual or private business, implementation across the board is more difficult. Further, the problem is exacerbated by cultural factors; what works in one country (for example screens), may not be acceptable in another cultural setting. This exemplifies the need for in-depth background research and analysis prior to planning any prevention program. Reports from both the media and taxi guilds in Australia indicate that taxi driving can be a high risk occupation which would be greatly improved with specific situational crime prevention measures.

Aircraft and airports

The scope of the problem

Airline companies and airport management are faced with a similar range of criminal activities as are other forms of public transportation, for example vandalism, attacks on passengers and assault of staff. There is, however, a type of criminal act which both eclipses these in property and personal costs and in a way involves all three, often concurrently—aviation terrorism. The exclusive focus of this chapter on these heinous crimes does not therefore negate the need for prevention strategies targeted at crimes such as graffiti, pick-pocketing and harassment of airline clerks and attendants. Many of the preventive responses employed by road or rail transport are, or should be, employed by the air travel industry.

In 1988, an explosion of a Pan Am flight over Scotland resulted in the highest number of deaths from sabotage in the air and the onset of revelations about the inadequacies of prevention techniques. The following history of aircraft skyjacking and bombings, and the international response to these acts is dedicated to the 270 people who died as a result of that 1988 disaster. This human loss was preventable had there been more assessment, research and monitored implementation of a situational prevention program described below.

Early history

Skyjacking goes back to the early 1930s; however it was not until 1961 that it came to be perceived as a criminal act (Hawkins 1975). The pivotal incident was the first skyjacking of a United States airliner. Earlier acts had involved individuals attempting to escape from repressive governments. From the early 1960s to

the early 1970s three types or motives of skyjacking became apparent in the United States: escape; political terrorism; and extortion (Minor 1975). In the first stage, which peaked in 1968, most skyjackers attempted to get to Cuba; in that year, 18 of 22 attempts were successful. The following year, political terrorism was directed at the United States and Israel when members of the Popular Front for the Liberation of Palestine (PFLP) skyjacked an American aircraft to Syria. This wave of terrorism culminated in 1970 with the destruction of four jets. The third stage—extortion—began with its only successful attempt in 1971 when the skyjacker received \$US200,000 from Northwestern Airlines, then parachuted. During the next three years 21 other such attempts in the United States failed (Minor 1975).

Skyjacking peaked in the period 1968-72 with 326 attempts around the world (Holden 1986, p.874). During the following decade, numbers dropped significantly to an average of 9.3 attempts per year in the United States compared to 29 per annum during 1968-72 (Holden 1986, p.885). The dramatic drop may be attributed to the implementation of many deterrent and prevention measures described below.

Early deterrence and prevention

Following the 1961 skyjacking to Cuba, air piracy became punishable under American law with imprisonment for a maximum of 20 years or death (Chauncey 1975). International agreements such as the 1963 Tokyo Convention followed; return of planes, passengers and prosecution of perpetrators were mandated (Hawkins 1975). These measures constitute components of a deterrence model. The move to a prevention model was slow; early attempts were rejected by airlines, reluctant to alienate passengers (Minor 1975). For example, in 1961, pre-flight passenger searches, with consequent refusal to board anyone who refused, were raised by the Pilots Association but were not accepted by the airline industry. The first preventive strategy took place in the United States in 1964 when the FAA (Federal Aviation Authority) specified that cockpit doors must be locked during flights. Five years later, it

authorised physical searches of passengers at the airlines' discretion. Weapon detection devices were used with travellers who conformed to the 'profile' of past perpetrators. These moves failed to affect the incidence of skyjacking significantly.

Consequently in 1970, armed skymarshals were introduced in the United States and were given a widely-publicised mandate to shoot to kill. 1972 witnessed more stringent screening of passengers and their baggage. The following year, airlines in America were required to inspect all hand luggage and to screen all passengers with metal detectors. These strict preventive tactics were apparently the result of a continuing high rate of skyjacking and the reluctance of some airlines to implement screening procedures without legislative pressure. These controls appeared to be successful and in 1973 and 1974 there were no successful hijackings of United States air carriers. In 1974, 25 hijack attempts were averted with 2,400 firearms discovered at American airports (Wilkinson 1977). However, worldwide terrorist groups recognised that attacks on airlines were both possible and could reap benefits. Thus, they have continued skyjacking during the ensuing years, and have added other methods and locations in their terrorist assaults on the aviation industry.

The weapons and methods of terrorism

Various weapons have been employed by terrorists in their attacks on airlines:

Hand-guns: When taken apart and packed skilfully in hand luggage, these avoid detection except by the most sophisticated and careful screening techniques. Thus although a significant system of prevention exists, it is not infallible.

Bombs: Liquid explosives and those with low vapour pressures with detonators disguised as cassette recorders have passed detection devices for hand luggage and in-hold baggage.

Grenades: A variety exists that can be masked as other objects (MacKenzie-Orr 1989).

Tables 1 and 2 exemplify the validity of the above. Even with

pre-board screening, 17 skyjackers successfully smuggled weapons on board aircraft from 1985 to 1989.

Table 1 *Weapons used by hijackers of U.S. carriers, 1985-1989*

Type of Weapon	Actual Weapon	Alleged ¹ (or fake)	Total
Explosives	3	5	8
Incendiaries	0	2	2
Firearms	8	1	9
Knives	2	0	2
Totals	13	8	21 ²

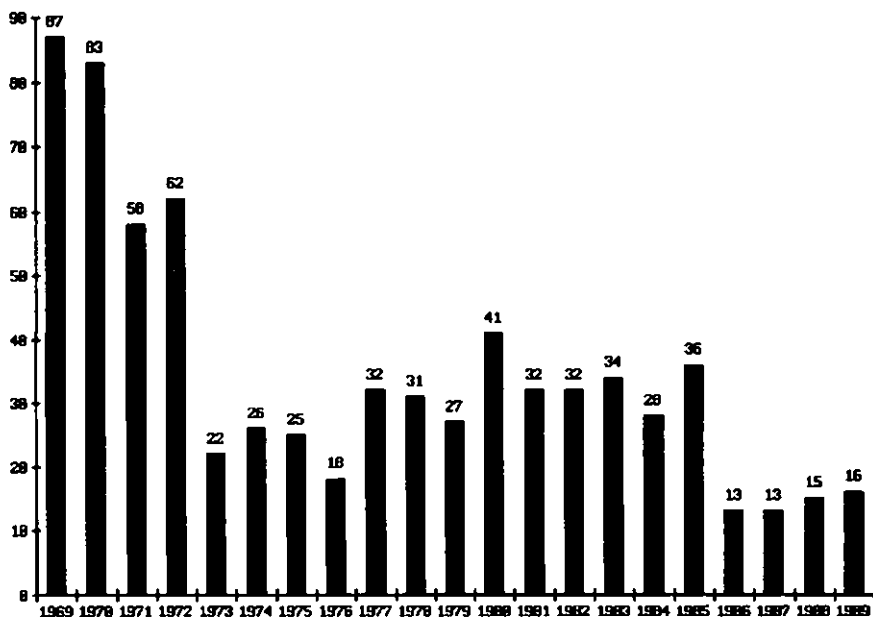
1 When no weapon was actually seen or its authenticity could not be established, the weapon is categorised as 'alleged'.

2 The total number of times each weapon was used does not correspond to the total number of hijackings (16) as multiple weapon types were claimed in some incidents.

Table 2: *Weapon types used by hijackers of U.S. air carriers who went through pre-board screening, 1985-1989*

Type of Weapon	Actual Weapon	Alleged (or fake)	Total
Explosives	2	5	7
Incendiaries	0	2	2
Firearms	5	1	6
Knives	2	0	2
Totals	9 ³	8	17

3 This figure can be put in perspective when compared with the total number of persons screened at U.S. airports and weapons discovered. From 1985 through 1989, over 5.3 billion persons were screened while 15,132 firearms and 74 explosive or incendiary devices were detected. Source: *Criminal Acts Against Civil Aviation 1989*, reproduced with the kind permission of the FAA, Washington.

Figure 1 *Hijackings from 1969–1989*

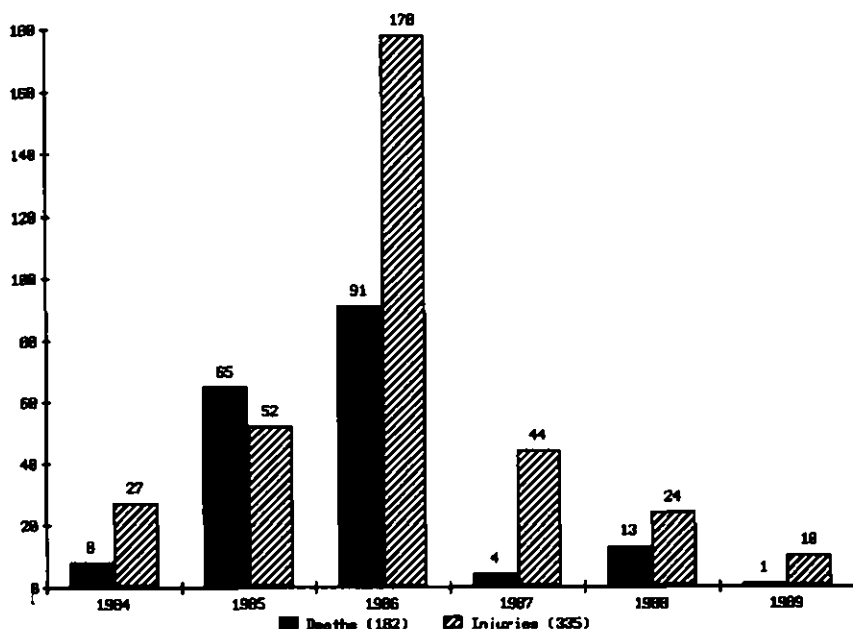
Source: *Criminal Acts Against Civil Aviation* 1988 and 1989.

As Figure 1 shows, screening procedures did result in a fall of hijacking numbers; note the drop from 1972 to 1973. However, skyjackers do get through due to the heavy flow of aircraft and the need in many of the world's airports to move the traffic through without lengthy delays. Intensive security costs time, and lost time translates into lost revenue.

Those who successfully skyjacked in 1989 were not, according to the FAA, motivated by political terrorism but were operating out of personal, criminal or obscure motives which makes prevention more problematic since there is no established pattern in their methods.

The mortality rate in these incidents is markedly lower than in the bombings described next. As Figure 2 indicates, in 1989, there was one fatality; the preceding year, nine deaths resulted from a Soviet Aeroflot flight.

Figure 2 *Hijack-related casualties 1984–1989*



Source: *Criminal Acts Against Civil Aviation* 1988 and 1989.

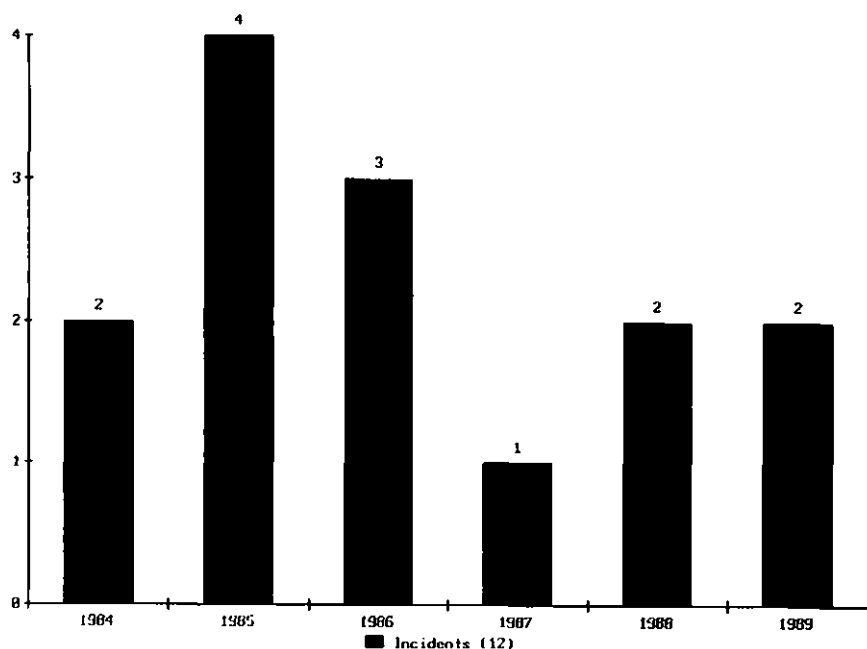
Explosions on board aircraft: Figure 3 indicates that each year from 1984 to 1989 there has been at least one bomb explosion on an aircraft. Both of the 1989 mid-air incidents—Niger, West Africa and Colombia, South America—resulted in the deaths of all passengers and crew members (see Figure 4). In the Niger case, it is believed that an explosive had been placed in a

suitcase; in Colombia, a bomb was set off in the cabin.

The previous year, on 21 December 1988, an explosive was detonated in the forward baggage container of Pan Am flight 103 above the village of Lockerbie, Scotland, killing a total of 270 people. President Bush convened a commission to investigate this disaster; their report reveals that a number of gaps existed in the screening of passengers on that flight (discussed in the next section). The Lockerbie explosion was the work of political terrorists; the other 1988 bombing in South Africa that killed 17 was the work of a suicidal man who had bought a large life insurance policy prior to the flight.

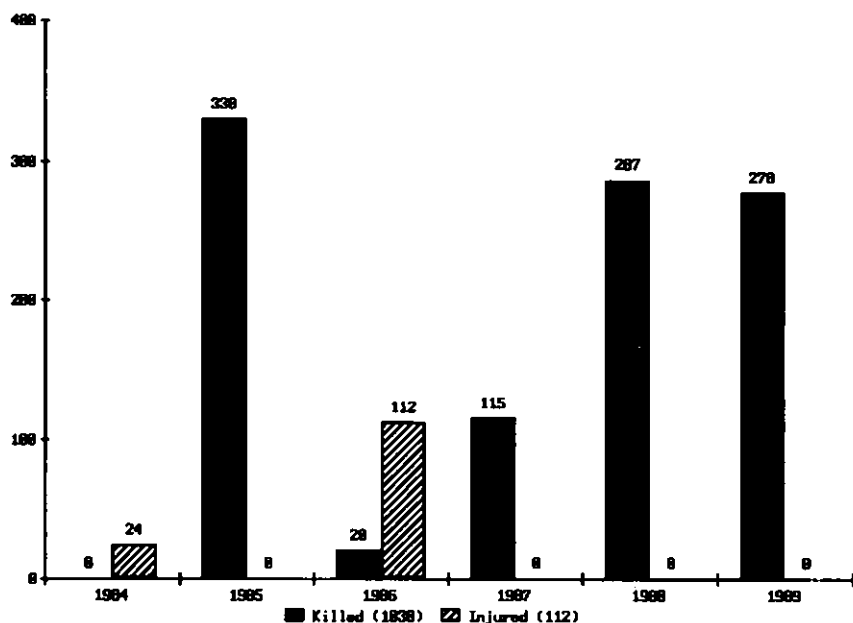
In recent years, there have been attempts at aircraft explosions where the devices were either discovered or faulty.

Figure 3 *Explosions aboard air carrier aircraft 1984–1989*



Source: *Criminal Acts Against Civil Aviation 1988 and 1989*.

Figure 4 *Casualties caused by explosions aboard air carrier aircraft, 1984–1989*



Source: *Criminal Acts Against Civil Aviation 1988 and 1989*.

Attacks on aviation facilities: Some aviation experts have speculated that as air travel security is tightened, terrorist activity will be displaced to other aviation facilities such as airports and ticket offices—it is certainly easier to leave a bomb somewhere in an airport than to get it on board an aircraft. As Table 3 shows, these incidents have been noticeably absent from North America.

Table 3 *Bombing attacks against airports and airline ticket offices 1988-1989*

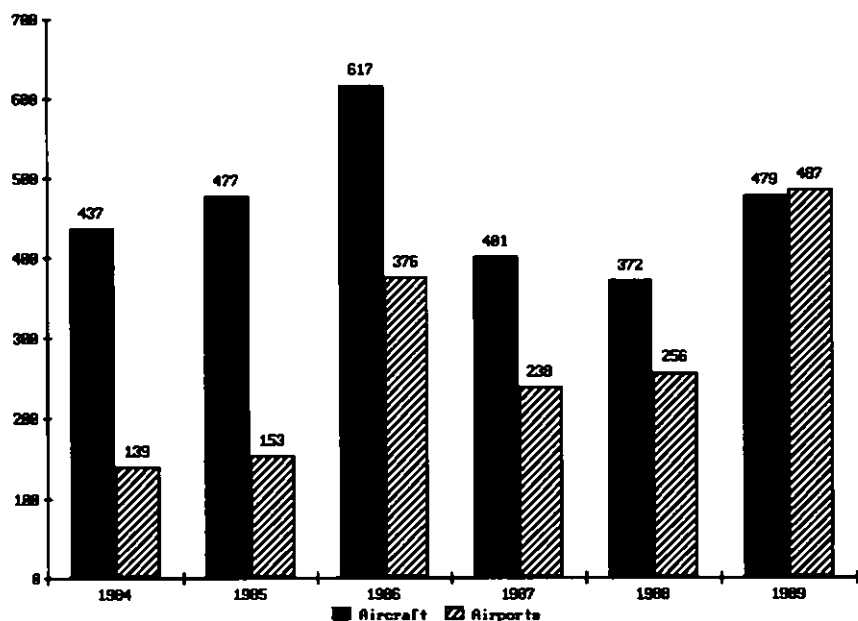
	Airports		Ticket Offices	
	1988	1989	1988	1989
U.S. & Canada	0	0	0	0
Latin Am/Caribbean	2	0	2	0
Europe/Middle East	0	3	4	1
Africa/Asia	0	0	1	0
Far East	2	1	2	0
Total	6	5	9	1

Source: *Criminal Acts Against Civil Aviation* 1988 and 1989.

Other terrorist assaults have not involved bombs. For example, in 1988 the crew of an Alitalia flight were fired on outside the passenger terminal in Bombay. In 1989, ticket offices were occupied and/or damaged by Iranian political protesters in France and Iran. According to the FAA, since civil aviation sites are both highly visible and identifiable, they may be chosen by politically-motivated terrorists for their symbolic value and the publicity that results.

Bomb threats: The number of bomb threats, which often act to disrupt routine flights, is quite overwhelming. In the United States alone, 1989 witnessed 966 threats. As Figure 5 shows, the annual frequency over the past six years is fairly constant with over 600 threats per annum. The FAA speculates that the particularly high number in 1986 may reflect the massive amount of media attention that the explosion of Pan Am 103 received. Non-United States bomb threat data are not available but the FAA believes that the American patterns may be the norm elsewhere.

Figure 5 *Bomb threats against United States aircraft and airports 1984-1989*



Source: *Criminal Acts Against Civil Aviation* 1988 and 1989.

International preventive responses

The International Civil Aviation Organization (ICAO), has implemented both legislative sanctions as deterrents in member countries, and Annex 17 which sets standards and recommended security procedures. The latter outlines specific measures that relate to hand or cabin baggage, checked baggage and passengers. Unfortunately, not all countries have implemented these safety standards due, in part, to financial considerations. For example, even a country like Britain has failed to adequately refurbish Heathrow airport where outgoing

and incoming passengers are not adequately separated and perimeter fences are inadequate. Since the airport's perimeter extends 32 km, terrorist-proof fences would be prohibitively expensive (Airport Security 1988). The ICAO makes grants and low interest loans for equipment and security training available to poorer countries.

Although the ICAO standards mandate a low level of security, that organisation lacks sanctioning powers. The FAA is, however, empowered by the *Foreign Airport Security Act 1985* to assess the foreign international airports which are used by American airlines. Their assessments are guided by the minimum ICAO requirements. If deficiencies are identified, the government of that country has 90 days to remedy the situation. If adequate corrections are not made, a number of sanctions are imposed which include: advice against travelling to the particular country; publication of that airport in the Federal Register and other public forum; and possibly suspension of air services. The FAA presently conducts these investigations in 247 airports in 99 countries (President's Commission on Aviation Security and Terrorism 1990, p.28).

Australia

Australia has not been a major centre of terrorist acts. From 1970 to 1988, 35 such incidents took place (MacKenzie-Orr 1989). Currently 24 airports in Australia are 'DSA's'—designated security airports, which means that they adhere to the ICAO standards (see Figure 6). The Department of Transport and Communications (DT&C) is the regulatory body in Australia that ensures airlines' compliance. Each of the 35 international carriers and major domestic airlines that use Australian airports must supply the DT&C with their security program as must each airport which has its own security plan. In November 1989, the containment role at selected airports, previously the responsibility of the Australian Federal Police, was assigned to the Australian Protective Service by the Government. Their officers, uniformed and armed, cooperate with other law enforcement branches throughout Australia. In addition, several Department of Transport and Communications field

officers are located at each major city and conduct routine supervision and assessment.

Deregulation of the airline industry in Australia in 1990 increased air traffic in general and added more foreign airliners' flights that have only the minimum required level of security thus increasing the risk of terrorism. Further, as a result of the onset of the Gulf War in early 1991 and Saddam Hussein's call for worldwide terrorist actions, many countries, including Australia, adjusted their usual anti-terrorist program and implemented additional measures for high alert situations.

Figure 6 *Designated security airports, Australia 1990*



Source: Civil Aviation Authority, Canberra

Specific screening procedures overseas and in Australia

Even if a nation's airports have adhered to Annex 17, each screening stage is fallible.

Before checking in: intelligence organisations worldwide provide information to airlines about possible terrorist assaults. The Lockerbie disaster was preceded by a flow of such information to carriers. This included repeated expressions of concern about retaliation for the downing of Iran Air 655 in July and information about: signs of terrorist activity in Western Europe; the discovery in Frankfurt of an explosive device masked as a cassette player; security procedures at the Frankfurt airport having been 'tested' by unknown persons; an anonymous caller to the United States Embassy in Helsinki who had warned that a Pan Am flight from Frankfurt to the United States would be blown up (President's Commission on Aviation Security and Terrorism 1990). Unfortunately, this information was not translated into increased prevention measures as it often did not reach those at the grassroots security level.

Passport control: this area can be problematic with forgery a distinct possibility. A suggested security control would be the manufacture of machine-readable passports that would convey electronic data and help identify known terrorists.

Metal detectors: most machines are calibrated in order to allow some metal, for example coins, to pass through undetected. Plus, new plastic weaponry does not set off the alarm. FAA equipment tests only require the detector to be activated two out of three times that an inspector walks through with a weapon. Further, in these tests, there is no attempt to disguise the weapon and it is always carried at a certain location on the body (The President's Commission on Aviation Security and Terrorism 1990).

Hand searching: some airports randomly search a proportion of travellers which can act as both detection and deterrence. The procedures are not as thorough as a strip search and in some cultures, norms make this practice difficult to enforce (Airport Security 1988).

Cabin luggage X-ray: FAA testing of X-ray machines is inadequate. Test weapons are not disassembled and little attempt is made to obscure their presence. In reality, a potential terrorist would probably do both. New plastic explosives such as Semtex are particularly problematic. In one bombing attempt, the plastic was rolled paper-thin and placed at the bottom of the baggage whilst the detonator was hidden in a pocket calculator. This was found by physical search and not by X-ray (The President's Commission on Aviation Security and Terrorism 1990).

Baggage in the hold: as it is time-consuming to check all baggage, especially on jumbo jets, not all hold luggage is X-rayed or tested for explosives. Instead the FAA has developed a profile of a potential security risk passenger and if passengers fit this profile, their baggage is scrutinised. However, with kerbside check-ins, this screening for potential terrorists does not occur. As well, it may not occur, as in the Pan Am 103 tragedy, due to staff unfamiliarity or misunderstanding of the procedures.

In the Lockerbie case, there was no regulation regarding the movement of the baggage container from terminal to aircraft and the flight's container sat outside Pan Am's area, uncovered and unattended.

Although potential tampering of hold cargo (non-passenger luggage) will not be discussed in detail, it should be noted that many similar problems exist and need to be remedied. These include gaps in the chain of custody, handling by 'baggage' employees who have not been adequately scrutinised and access to cargo by 'non-baggage' airport workers and others.

Reconciliation of luggage: this is based on the assumption that most terrorists are not suicidal and do not intend to travel on a plane which they are blowing up. The security process ensures that everyone who has checked in baggage boards the aircraft. Therefore, passengers who change planes must be matched with their luggage before each leg of the trip. The Lockerbie disaster was a result of Pan Am's failure to reconcile baggage. Although all interline luggage in Frankfurt and Heathrow was X-rayed, it was then loaded on to connecting flights without matching or a physical search (FAA procedures). Further, Pan

Am did not reconcile the number of interline bags for the flight with the number of bags checked in by interline travellers who boarded the flight. Baggage checked through to New York from Frankfurt was just transferred at Heathrow and one registered passenger did not board the plane which left with the luggage. FAA requirements prohibit this practice, but apparently the duty manager thought he had the discretionary power to allow it to occur.

Airline staff security checks and training: airport staff can jeopardise security in numerous ways, both directly and indirectly. In some countries weapons have been left on aircraft by cleaners, and in Australia, theoretically, terrorists can get jobs at any international airport since no security checks are conducted for contracted employees, for example, a cleaning company (*Daily Telegraph Mirror*, 16 November 1990). Possible safety measures, aside from background checks, include passes permitting limited movement around the airport and/or the screening of employees by detectors before they enter baggage areas or aircraft.

There are a number of staff failures that may have resulted in the Lockerbie air disaster. It is unclear whether baggage handlers were even aware of the FAA bulletin concerning radio cassette recorders. Certainly few understood the correct security procedures for passengers and their baggage; 38 passengers boarded without any security markings and baggage reconciliation was negligible. Staff training in these specifics and in X-ray detection were found to be deficient but not unique to that airport nor that particular airline. For instance, inquiries at Baltimore-Washington International Airport revealed an employee failure in discerning 'an obvious explosive device in a briefcase ... The screener was incapable of understanding questions posed to him in English concerning the extent of any training he may have received' (The President's Commission on Aviation Security and Terrorism 1990, p.55).

Aside from deficiencies in training, human fallibility, laziness and low motivation are additional staff factors that contribute to prevention deficiencies (Wilkinson 1977; MacKenzie-Orr 1989). The latter paper describes a visit to a European airport

to observe security arrangements and the dramatic differences seen between the formal tour and his unscheduled return at 2 a.m. In the middle of the night, in part due to several delayed flights, the security system basically broke down with people going to and from the waiting areas unchecked.

Summary

Each component of air travel security has problems which, if not remedied, might well result in a fairly continuous pattern of skyjackings and bombings. Within days after Lockerbie, the FAA modified their Security Program to ensure total reconciliation between passengers and their luggage. However, FAA inspections in Frankfurt and Heathrow during the following two months revealed violations and 'erratic application of guidelines and poorly trained and supervised security ...' (President's Commission on Aviation Security and Terrorism 1990, p.15). It should be noted that no sanctioning response was enforced. It is not enough to design changes, they must be strictly implemented which requires international cooperation and an empowered international organisation.

The flaws in security which Pan Am 103 investigation revealed are undoubtedly not the only deficiencies. It would be tragic if such problems are only discovered in the aftermath of disaster. On-going assessment and surveillance by experts needs to be conducted in order to ensure that existing procedures are being employed properly and to ascertain if and where gaps exist. ICAO has offered countries the services of such experts and Australia is an active participant in this ICAO technical assistance program.

Communication to staff and their training and security screening are often inadequate. Intelligence information is without value if those reading the X-ray machines or searching neither know what to be alert for, nor how to detect it. Human fallibility will always be a risk factor but it can be greatly minimised by increasing and updating training requirements. Infiltration by potential terrorists should be checked including both exhaustive background checks and limited access passes.

Existing detection equipment is inadequate to meet the

technological innovations of the weapon and explosive industries. In fact, the President's Commission on Aviation Security and Terrorism (1990, p.63) concludes that 'these weapons defy reliable detection by X-ray or any other equipment now operational at airports'. It therefore includes a number of recommendations in this area promulgating increased research and marshalling of expertise in the relevant fields.

Conclusion

There are always difficulties in implementing new crime prevention measures, not the least of which are those relating to cost. For example, on certain train systems, the loss from vandalism may be so small as to make it distinctly uneconomic for managers to develop and institute a prevention plan. Although it is always possible to minimise expenditures, for a program to maximise its efficacy it should involve research and analysis as described further below. The increase in outlay will be well recompensed through the optimal reduction in losses previously incurred from the variety of crimes discussed in this monograph.

There are also political problems in implementing new measures. For example, in some European countries it is an offence to leave parked cars unlocked. However, in Australia with seven state and territory governments, it might be difficult to introduce this type of ordinance or other legislation (as shown earlier in the difficulties encountered by taxi guilds vis-a-vis state governments). In addition, the lack of political power and/or an effective regulatory body on public transport may curtail the potential effectiveness of crime prevention. This was illustrated dramatically by the Lockerbie air disaster. The lack of effective governmental sanctions or a worldwide ruling authority have made both implementation and monitoring of aviation security problematic.

Most of all, though, there is the problem of displacement. One of the difficulties associated with some of the crime prevention techniques discussed is that, while they may affect criminal behaviour, they do not necessarily affect criminal motivation. In some situations an offender who sees that opportunity has been reduced below an acceptable level in a given situation will

probably seek a better opportunity. Thus, teenagers determined to vandalise a railway carriage may not do so when a guard is in the carriage, but could wait until he leaves. Or, as described earlier, train vandals may seek a lower risk site and switch their activities to the exteriors of rubbish trucks as occurred in New York City.

Many opportunistic impulsive criminals—especially younger, less experienced individuals—will only displace their activities to a limited degree. If opportunity is denied they may go elsewhere and commit a crime but, then again, they might not. The exact nature of limits of displacement and the exact degree to which displacement occurs in any given situation is not known. In a variety of situations there is probably some displacement of time, place and type of crime but there is undoubtedly what has been called absolute displacement in which some proportion of the crimes that might statistically be expected do not occur at all.

Displacement in public transportation situations has to be carefully considered in planning effective crime prevention campaigns. What is important is a systematic approach to particular crime prevention campaigns. Any application of situational prevention has four stages.

1. Analysis of the conditions that allow or facilitate the commission of a particular form of crime (for example, subway muggings, and assaults on taxi-drivers).
2. A systematic study of the possible means of blocking opportunities for these particular crimes, including analysis of costs.
3. The implementation of the most promising and practicable measures in a way that will permit evaluation (including the evaluation of possible displacement).
4. Dissemination of the results of the evaluation. (Clarke 1988).

Though all stages in this process are important, it is critical that attempts are made to undertake the third stage of this process—evaluation. Before claims regarding the effectiveness of measures designed to improve the safety and security of public transportation systems are made, some evidence should be forthcoming to support the claim. Case studies have

sometimes revealed substantial crime reductions that nobody was aware of and, conversely, a number of major claims of reducing crime in public transportation have evaporated on closer examination.

Consequently those concerned with improving crime prevention measures in any of the areas discussed in this monograph should plan comprehensive evaluation strategies before implementing new prevention techniques.

Finally, a situational approach to preventing crime in public transportation systems is a versatile and potentially effective approach. It can be applied not only to a wide range of crimes, but to a variety of different transportation methods and settings. Managers concerned with security on public transport should familiarise themselves with this approach. Other Australian Institute of Criminology booklets in this series (see preliminary pages for full list of Crime Prevention Series titles) will provide useful background information.

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Crime prevention series

General Editor Paul R. Wilson

Far broader than the title might suggest, this handbook will be of value to primary and secondary school teachers, town councils, planning authorities, even sporting venue managers as well as public and private transport companies.

Crime committed on or in proximity to transport runs the range from petty theft and graffiti to rape, murder and hijacking. It affects all citizens and the communities in which they live.

Many of the principles discussed in this book have been used widely overseas as well as in Australia, and innovative approaches used outside Australia are explained in detail.