

Section V

GUIDELINES FOR DEPLOYMENT

INTRODUCTION

This section on deployment tactics defines and describes 26 basic techniques used by large and small transportation agencies to address crime and patron perceptions of crime on their systems. Many of the tactics can be used to achieve more than one goal, either by switching them from uniformed to plainclothes deployment or by using them in combination to address a specific problem in a particular agency.

Some large agencies with their own police departments use virtually all of the tactics described. Smaller agencies may use only a few of these strategies. The majority of these deployment options may be used regardless of whether an agency employs police or security officers. Although some of the strategies are highly apprehension-oriented and may need to be modified to meet the legal restrictions placed on non-sworn officers, others rely on establishing a uniformed presence that need not specifically be maintained by police officers. Moreover, in a number of jurisdictions, transit officers, even if not in possession of full arrest powers, are authorized to issue citations for code-of-conduct, quality-of-life, or fare-evasion violations, justifying use of a number of the techniques described in this portion of the Guidelines.

A few of the techniques, such as emergency service units, homeless outreach, mounted and K-9 patrol units, are costly. They are meant to respond to highly particularized problems. As a result they are being used by only a small number of agencies. Even in the case of these specialized deployments, some of the methods described can be modified to meet the needs of smaller agencies.

Armed with the knowledge that such tactics are being used by a number of transit systems, agencies that contract with their local police for patrol services may be encouraged to suggest more innovative use of the officers assigned to transit units. Therefore, agencies without their own police or security departments should review these tactics carefully to determine whether it would be fruitful for their contract provider to use some of these approaches to address problems that may be occurring on their systems. Particularly in smaller jurisdictions, where local police may not be faced with regular issues of crowd control or quality-of-life enforcement, knowledge of what other agencies are doing may assist transit managers in devising strategies to combat transit-specific problems.

Most transit agency police or security departments are small and must use relatively few officers to cover miles and miles of transit right-of-way or numerous bus routes travelling through a variety of neighborhoods. Therefore, personnel resources—always the most costly investment for a police or security department—must be used wisely. It is well-known within policing that personnel costs consume as much as 80 percent of the department's budget. This percentage may be even higher in transit agency police units, which are able to depend on their parent organizations for a number of services which a municipal or county police department must perform for itself. Relieved of budgeting for legal, human resources, or finance departments, as well as for independent purchase of vehicles or communications equipment, many transit police managers may sometimes forget how heavily weighted toward officers' salaries and related costs their budgets actually are.

Agencies that rely on security officers, whose salaries and accompanying costs are below that of police officers, are spending less per officer but are also probably spending the largest portion of their security budgets on personnel. In the vast majority of agencies, particularly newer ones, the decision on which police or security configuration to adopt is as much based on budget considerations as on predictions about the amount and type of crime with which the system will be faced. This, no doubt, accounts for the large number of newer agencies that are foregoing full-service police departments as part of their organizational design.

Once an agency decides to employ its own police, contract police, proprietary or contract security, it must then decide how to deploy these officers. Any police or security organization revolves around patrol. The patrol officer is the agency's representative to the public. His or her actions and the ways in which she or he is deployed will have a large impact not only on actual crime but also on whether or not riders view the system as safe.

Actual versus perceived crime is a crucial distinction for transit agencies, especially for new systems in areas where public transit is discretionary because travellers have become private-auto-dependent and are not faced with complex or costly parking options at either end of their trips. The distinction between reality and perception also plays a role in policing and security.

Despite the changing orientation of police from a purely reactive to a more proactive mode, apprehension-oriented police and security managers often favor plainclothes

deployments. On the other hand, operations managers, more concerned with patron perceptions, frequently prefer uniformed deployment of the scarce number of officers available at any time. To assist in making the most basic of deployment decisions—uniformed or plainclothes officers—this section is divided into three parts:

- Uniformed deployment tactics
- Uniformed or plainclothes deployment tactics
- Plainclothes deployment tactics

In reviewing these patrol deployment tactics, a manager must ask first, "what are my goals?" and, second, "to what extent am I applying my limited resources toward the attainment of those goals?"

Each tactic in each section is followed by a list of agencies using that particular form of deployment. The lists are not all-inclusive—they are based on agencies that responded to questionnaires and with whom the researchers had personal contact. The list is a partial fulfillment of a major aim of this research project, namely, to encourage discussion among transit agency managers. Toward that end, managers are encouraged to contact agencies utilizing a deployment tactic that seems suited for their own environment.

Small agencies, particularly those without full-time security managers, can use these ideas to enhance patron and employee safety by adjusting the tactics to meet the needs of their own systems. Agencies relying on local police can share these tactics with their police department liaison, possibly broadening the local department's understanding of the unique needs of transit agencies in meeting the security concerns of their numerous publics.

OBSERVATIONS AND CONCLUSIONS

The deployment tactics discussed in this section can be used by transit agencies regardless of their size and regardless of whether security is provided by an in-house police department, contract policing, proprietary or contract security, or some combination of these organizations.

While it is self-evident that agencies with their own police departments or with proprietary or contract security officers possess greater control over the deployment of

their officers, all agency managers can benefit from a better understanding of the techniques available to enhance crime prevention and detection on transit systems.

This section of the Guidelines has concentrated on deployment tactics for officers whose sole or primary functions are security. In recent years, a number of transit systems have begun exploring crime prevention mechanisms that rely on customer relations and marketing departments or that utilize bus operators to address community groups. Others have instituted Transit on Patrol programs that provide bus operators with radio communications to encourage them to report crimes along their routes. Other popular approaches are variations on Request a Stop programs, which permit riders, particularly at night, to ask a driver to let them off at any corner along the route, even if it not a marked bus stop. While many of these efforts have met with high levels of customer satisfaction and are actively supported by police and security managers, they were not the focus of these Guidelines since they do not directly involve police or security personnel in their application.

A well-rounded police or security program requires not only imaginative use of limited patrol resources but also coordination with other transit system departments. These types of customer-oriented programs are less taxing on limited patrol resources while at the same time permitting members of the police/security department to contribute to projects that can increase ridership and enhance patron and employee safety. The fact that these strategies are not discussed here in no way minimizes their importance, it merely reflects the primary orientation of this section toward specific tactics for the deployment of police and security personnel.

Chapter 7

UNIFORMED DEPLOYMENT TACTICS

Uniformed deployment tactics emphasize visibility over apprehension. They form the backbone of any police or security operation. Although research conducted by the Kansas City, MO, Police Department in the early 1970s questioned the value of routine patrol,¹ even amid the continuing discussions of community-oriented policing, virtually all police agencies in the nation continue to rely on uniformed patrol as the basis of their deployments.

While uniformed deployments do not totally rule out apprehensions, their aim is to provide a safe and security environment by providing a sense of omnipresence that is meant to assure patrons that officers are available to assist them and to discourage criminals and miscreants from congregating in the area. Because many transit patrons are elderly or unaccompanied women, uniformed patrol is also relied upon to prevent loitering by loud and unruly teenagers and young adults, who often have the effect of discouraging potential patrons from using the system—particularly during after-school hours, nights, and weekends.

Many transit agencies, particularly those that do not employ sworn police officers, rely almost totally on uniformed deployment. Even those agencies with in-house police departments assign the largest proportion of their officers to some or all of the uniformed patrol tactics described here. In this regard they are no different from other police agencies.

¹ George L. Kelling, Tony Pate, Duane Dieckman, and Charles E. Brown, Kansas City Preventive Patrol Experiment: A Technical Report (Washington, DC: Police Foundation, 1974).

TECHNIQUE: FIXED POSTS

Definition: The stationing of an officer at a post, with limited mobility and specific instructions directing his/her activities. Fixed posts may be placed throughout the transportation system, including near points of public access/egress, near turnstiles, near restrooms, within passenger boarding/alighting areas, in parking lots, and in administrative facilities.

Commentary: Fixed posts are commonly used in the transit environment to provide a variety of functions, including:

- Police/security officer visibility
- Access control
- Information distribution
- Passenger assistance
- Fare payment monitoring
- Facility observation

Some agencies, such as Metro-Dade Transit in Miami, known as MetroRail, require officers stationed at fixed posts to maintain highly visible contact with the riding public by providing passenger assistance, system information, and crime prevention activities. Other agencies, such as the Metropolitan Boston Transit Authority (MBTA) and the Washington Metro Area Transit Authority (WMATA), utilize fixed posts primarily to monitor passenger compliance with agency rules and regulations, including fare payment and codes of conduct.

A few agencies assign officers to specific "information booth" posts where they are centrally located in a waiting area and are specifically directed not to vacate that post.

In parking lots, fixed posts are used to monitor access and egress, to maintain vehicle logs, and to observe passengers using parking facilities. Officers may also be assigned at fixed posts in elevated guard roosts to enhance observation capabilities in parking lots.

In non-revenue areas, officers stationed at fixed posts are often used to provide access control, to distribute temporary badges, to maintain a visitor's log, and to issue temporary parking permits.

In order to improve cost effectiveness, many agencies are assigning non-sworn security personnel to fixed posts and saving police resources for other activities. Agencies such as Bay Area Rapid Transit (BART), Los Angeles County Metropolitan Transportation Authority (LACMTA), Washington Metro Area Transportation Authority (WMATA), and MetroRail fill most of their fixed post positions with contracted non-sworn personnel or with in-house security guards. Other agencies, such as Tri-Met in Portland, Oregon, utilize light duty bus and rail operators to fill fixed post positions in parking lots and administrative facilities.

Agencies Using Fixed Posts:

- Amtrak Police Department Philadelphia, PA
- Birmingham Transit Authority Birmingham, AL
- Bi-State Development Agency St. Louis, MO
- C-Tran Vancouver, WA
- Chicago Transit Authority (CTA) Chicago, IL
- City of Albuquerque Transit Department Albuquerque, NM
- City Utilities Transit Springfield, MO
- Dallas Area Rapid Transit (DART) Dallas, TX
- Greater Cleveland Regional Transit (GCRTA) Cleveland, OH
- HartLine Tampa, FL
- Intercity Transit Olympia, WA
- Long Island Rail Road (LIRR) Jamaica, NY
- Los Angeles County Metropolitan Transportation Auth. (LACMTA) Los Angeles, CA
- Mass Transit Administration of Maryland Baltimore, MD
- Metro-Dade Transit (MetroRail) Miami, FL
- Metro-North Railroad (MNR) New York, NY
- Metropolitan Boston Transit Authority (MBTA) Boston, MA
- Metropolitan Council Transit Operations (MCTO) Minneapolis, MN
- New Jersey Transit (NJT) Newark, NJ
- New York City Transit (NYCT) New York, NY
- Niagara Frontier Transit Authority (NFTA) Buffalo, NY
- Orange County Transportation Authority Santa Ana, CA
- Pierce Transit Tacoma, WA
- Phoenix Transit System Phoenix, AZ

- Pocotello Regional Transit Pocotello, ID
- Port Authority of New York and New Jersey (PANYNJ) New York, NY
- Port Authority Trans Hudson (PATH) Jersey City, NJ
- Port Authority Transit Commission (PATCO) Lindenwold, NJ
- Port Authority of Allegheny County Pittsburgh, PA
- Salem Area Transit Salem, OR
- San Diego Trolley, Inc. San Diego, CA
- Santa Clarita Transit Santa Clarita, CA
- Santa Cruz Metro Transit District Santa Cruz, CA
- South Bend Public Transportation Corporation South Bend, IN
- Southern California Regional Rail Authority (Metrolink) Los Angeles, CA
- Southeastern Pennsylvania Transportation Authority (SEPTA) Philadelphia, PA
- Spokane Transit Authority Spokane, WA
- Staten Island Railroad (SIR) Staten Island, NY
- Transportation Utility City of Terre Haute Terre Haute, IN
- Tri-County Rail (Tri-Rail) Ft. Lauderdale, FL
- Tulsa Transit Tulsa, OK
- Utah Transit Authority (UTA) Salt Lake City, UT
- VIA Metropolitan San Antonio, TX
- Visalia City Coach Visalia, CA
- Washington Metro Area Transit Authority (WMATA) Washington, DC

TECHNIQUE: RANDOM FOOT PATROL WITHIN POST AREA

Definition: The patrolling of a post area by an officer in a random and unscheduled manner. This type of patrol relies heavily on an officer's own discretion and initiative. The officer is expected to actively patrol the post and maintain control of activity within his/her span of control.

Commentary: Random patrol within a post area is meant to deter criminal activity in that area by providing a visible police presence at unpredictable times, conveying to would-be violators an impression of police omnipresence throughout the transit system.

Officers on random patrol within a post area are not provided with specific instructions for activity. Rather, patrol is guided by a series of general objectives, including:

- Immediately reducing or eliminating conditions which may support criminal activity
- Rapidly responding to all requests for police service
- Conducting preliminary investigations, including the completion of field interview cards, to improve the apprehension rate of the department
- Enforcing the rules and regulations of the agency, including the ejecting, citing, or arresting of violators
- Providing assistance and a sense of security to passengers

Officers performing this type of patrol for rail agencies enhance the quality of the transit environment by actively enforcing laws and preserving the peace, often maintaining zero-tolerance policies for graffiti, vandalism, disorderly behavior, and other quality-of-life issues.

Officers on random foot patrol are often called upon to enforce a system's codes of conduct. These are published behavior rules that are enforceable through ejection from the transit system's property or which may be violations of city or county ordinances for which criminal or civil summonses may be written and issued by patrol officers. Codes of conduct can range from felony assault to disorderly conduct and "unlawful transit conduct," which can be smoking, spitting, creating unnecessary noise, lounging across two or more seats, or other quality-of-life violations that deter ridership and other normal uses of the transit facility.

Because these rules are often more stringent than those enforced outside the transit facility, policies must be explained prior to implementation. An example of this occurred when Virginia officials initially misunderstood the Washington Metro Area Transit Authority's (WMATA) policy on ejecting non-patrons from its facilities located within the state when those observed were in violation of published codes of conduct.

For bus agencies, random patrol within a post area is used to patrol pedestrian malls and other locations with a large number of bus stops/transfer centers. Agencies such as Houston's Metropolitan Transit Authority of Harris County (METRO), Los Angeles County's Metropolitan Transportation Authority (LACMTA), and Minneapolis/St. Paul's Metropolitan Council Transit Operations (MCTO), assign officers to post areas that cover blocks or street corners with multiple transfer points. Using their discretion, officers monitor bus stops, shelters, and/or terminals, making themselves visible to patrons and bus operators while also answering questions and solving problems.

Agencies Using Random Foot Patrols:

- Amtrak Police Department Philadelphia, PA
- Bay Area Rapid Transit (BART) Oakland, CA
- Birmingham Transit Authority Birmingham, AL
- Bi-State Development Agency St. Louis, MO
- CalTrain San Jose, CA
- Chicago Transit Authority (CTA) Chicago, IL
- City of Albuquerque Transit Department Albuquerque, NM
- Dallas Area Rapid Transit (DART) Dallas, TX
- Five Seasons Transportation & Parking Cedar Rapids, IA
- Greater Cleveland Regional Transit (GCRTA) Cleveland, OH
- Greenville Transit Authority Greenville, SC
- HartLine Tampa, FL
- Long Beach Public Transportation Company Long Beach, CA
- Long Island Rail Road (LIRR) Jamaica, NY
- Los Angeles County Metropolitan Transportation Auth. (LACMTA) Los Angeles, CA
- Mass Transit Administration of Maryland Baltimore, MD
- Metro-Dade Transit (MetroRail) Miami, FL
- Metro-North Railroad (MNR) New York, NY

- Metropolitan Atlanta Rapid Transit Authority (MARTA) Atlanta, GA
- Metropolitan Council Transit Operations (MCTO) Minneapolis, MN
- Metropolitan Transit Authority of Harris County (METRO) Houston, TX
- Milwaukee County Transit Milwaukee, WI
- New Jersey Transit (NJT) Newark, NJ
- New York City Transit (NYCT) New York, NY
- Niagara Frontier Transit Authority (NFTA) Buffalo, NY
- Oneonta Public Transit Oneonta, NY
- Orange County Transportation Authority Santa Ana, CA
- Phoenix Transit System Phoenix, AZ
- Pocatello Regional Transit Pocatello, ID
- Port Authority of New York and New Jersey (PANYNJ) New York, NY
- Port Authority Trans Hudson (PATH) Jersey City, NJ
- Port Authority Transit Commission (PATCO) Camden, NJ
- Port Authority of Allegheny County Pittsburgh, PA
- Regional Transportation Commission (RTC) /Citifare Reno, NV
- Roaring Fork Transit Agency Aspen, CO
- Santa Clara County Transit District San Jose, CA
- Santa Cruz Metro Transit District Santa Cruz, CA
- Shreveport Transit System (SPORTRAN) Shreveport, LA
- Southern California Regional Rail Authority (Metrolink) Los Angeles, CA
- Southeastern Pennsylvania Transportation Authority (SEPTA)..... Philadelphia, PA
- Spokane Transit Authority Spokane, WA
- Staten Island Railroad (SIR) Staten Island, NY
- Tri-County Rail (Tri-Rail) Ft. Lauderdale, FL
- Tulsa Transit Tulsa, OK
- Utah Transit Authority (UTA) Salt Lake City, UT
- VIA Metropolitan San Antonio, TX
- Washington Metro Area Transit Authority (WMATA) Washington, DC

TECHNIQUE: DIRECTED PATROL WITHIN POST AREA

Definition: Based on the results of crime data analysis, officers on patrol within a given post area perform pre-planned, crime- and location-specific activities to deter crime and respond to criminal incidents that occur.

Commentary: To address concerns arising from both the expense of random patrol and the difficulty of measuring the effectiveness of individual officer performance, some transit police departments such as Washington Metro Area Transit Authority (WMATA), Minneapolis/St. Paul's Metropolitan Council Transit Operations (MCTO), the Los Angeles County Metropolitan Transportation Authority (LACMTA), and the New York City Police Department (NYPD) have initiated directed programs to guide the activities of officers patrolling post areas. Directed patrol assignments address specific problems on an officer's beat; departmental effectiveness can often be measured against goals established in advance.

Unlike random patrol within a post area, this deployment technique does not rely solely on officer initiative and discretion. Rather, it requires the preparation of directions to guide officer assignments. These directions, developed from crime data analysis, enumerate activities to be performed by the officer at certain locations within the post area and at certain times.

Generally, officers on directed patrol assignments perform many of the same activities performed by officers on random patrols within a post area. However, by performing these activities at locations and times identified as problematic for the transit system, or by only performing certain activities at certain times, there is a greater likelihood that the officers' presence will either deter crime or permit the officers to intercede during the commission of a crime.

Agencies Using Directed Patrol Within Post Area:

- Los Angeles County Metropolitan Transportation Auth. (LACMTA) Los Angeles, CA
- Metropolitan Council Transit Operations (MCTO) Minneapolis, MN
- New York Police Department (NYPD) New York, NY
- Washington Metro Area Transit Authority (WMATA) Washington, DC

TECHNIQUE: VISIBILITY POSTS

Definition: The stationing of uniformed officers at points where they will be most visible to the travelling public. Officers are typically assigned to these posts during early morning and evening rush hours and are then re-assigned to either random or directed patrol during non-peak periods.

Commentary: This tactic is designed to provide the travelling public with a sense of protection and safety. The presence of a uniformed officer tends to reassure commuters, passersby, and shopkeepers that the police are close at hand and are monitoring the activities of people using the transportation facility.

Officers are assigned to points of high traffic flow, such as near escalators, turnstiles, or entrances and exits of the facility, making them visible to as many people as possible.

This tactic is often employed in relatively large stations to which foot patrol officers are normally assigned, although it can be modified to use officers in marked vehicles in parking lots or other high-traffic areas.

Unlike fixed posts, visibility posts are usually limited to peak commuter hours, after which officers are assigned elsewhere, often to roving patrol posts.

Agencies Using Visibility Posts:

- Metropolitan Transit Authority of Harris County (METRO) Houston, TX
- Port Authority of New York and New Jersey (PANYNJ) New York, NY

TECHNIQUE: SYSTEM OR ZONE-WIDE RANDOM PATROL

Definition: Officers are assigned to patrol the entire system, or sections of the system referred to as zones, in an irregular and unscheduled manner. Patrol may be conducted on foot if the zone is within a large, urban transit center such as New York City's Grand Central Terminal or Philadelphia's Penn Station, but more often system or zone patrol will be conducted using two-, three-, or four-wheeled vehicles.

Commentary: This technique requires officer initiative and discretion in the conduct of patrol activities. On this type of assignment, an officer, when not providing response to calls for service, must engage in activities aimed at improving patron perceptions of safety and deterring criminal activity through fear of apprehension.

Patrol activities are randomly scheduled to provide unexpected police presence at unpredictable times on the system or in the zone. Uniformed officers using this technique must enforce zero-tolerance policies, protect the agency's property, and monitor the behavior of patrons and others on the system. Officers observe the stations, tracks, and facilities; ride trains or buses; and may work closely with transit operations personnel and patrons to identify any unlawful activity that may be occurring on the system.

Throughout their tours, uniformed officers converse with the riding public, provide assistance, and demonstrate both their presence and their availability to assist. Active interaction with patrons conveys to would-be violators an impression of police control over the system.

This patrol technique is often supported by the use of decentralized facilities that enable an officer to report directly to his or her assigned location, thereby saving the travel time normally required to report to central headquarters and then travel to his/her tour destination. In addition, advances in technology, such as communications equipment, mobile digital terminals, and portable citation devices, have increased officer productivity from remote locations, further reducing the need for travel to and from headquarters or a central staging area.

Agencies Using System or Zone-wide Random Patrol:

- Metro-North Railroad (MNR) New York, NY
- Southeastern Pennsylvania Transit Authority (SEPTA) Philadelphia, PA

TECHNIQUE: SYSTEM OR ZONE-WIDE DIRECTED PATROL

Definition: Based on crime analysis data, officers are given instructions to patrol the system, or zones within the system, utilizing pre-planned, crime- and location-specific activities to deter crime and respond to incidents that occur. Patrol may be conducted on foot if the zone is within a large, urban transit center such as New York City's Grand Central Terminal or Philadelphia's Penn Station, but more often system or zone-wide directed patrol will be a form of vehicle patrol.

Commentary: This patrol technique assigns uniformed officers to those routes or areas of the system where criminal incidents have been determined as likely to occur based on analysis of past criminal complaints. Specific patrol activities are performed at certain locations and times throughout the system/zone. Officers are briefed on the types of incidents that occur, and, if possible, the names and physical characteristics of the perpetrators.

Unlike System or Zone-Wide Random Patrol, this deployment technique does not rely on officer initiative and discretion. This type of patrol allows maximum resources to be directed at problem routes and areas.

A highly structured form of this patrol tactic is directed deterrent patrol (DDP). DDP attempts to attack a highly specific crime problem at a precise location. Officers are briefed in detail on how to approach the problem during their tours and are given little discretion in determining alternative strategies.

A number of large systems use directed patrol to combat disorderly behavior by juveniles during regular school hours. These directed truancy patrols utilize officers to check school transit passes used during the hours young people would be expected to be in classes. Officers may either contact adult guardians or school officials when youths have been determined to have been skipping school. A few systems, most notably New York City Transit (NYCT), assign officers to escort truant youths out of the facility or equipment by returning them to their own school or to nearest school.

A different type of directed patrol is practiced by the Washington Metro Area Transit Authority (WMATA), which assigns directed vehicle patrol units on a sector basis and coordinates patrol unit activities with its foot patrol officers located at key stations.

As with System or Zone-Wide Random Patrol, this patrol technique is often supported with the use of decentralized facilities.

Agencies Using System or Zone-wide Directed Mobile Patrol:

- CalTrain San Jose, CA
- Dallas Area Rapid Transit (DART) Dallas, TX
- Gardena Municipal Bus Lines Gardena, CA
- Greater Cleveland Regional Transit Cleveland, OH
- Hudson Bus Lines Lewiston, ME
- Metro-North Railroad (MNR) New York, NY
- Metropolitan Atlanta Rapid Transit Authority (MARTA) Atlanta, GA
- Metropolitan Boston Transit Authority (MBTA) Boston, MA
- Metropolitan Council Transit Operations (MCTO) Minneapolis, MN
- Metropolitan Transit Authority of Harris County (METRO) Houston, TX
- Milwaukee County Transit Milwaukee, WI
- New York City Transit (NYCT) New York, NY
- Niagara Frontier Transit Authority (NFTA) Buffalo, NY
- Orange County Transportation Authority Santa Ana, CA
- Phoenix Transit System Phoenix, AZ
- Port Arthur Transit Port Arthur, TX
- Port Authority of New York and New Jersey (PANYNJ) New York, NY
- Port Authority Transit Commission (PATCO) Camden, NJ
- Port Authority of Allegheny County Pittsburgh, PA
- Santa Clara County Transit District San Jose, CA
- Shreveport Transit System (SPORTRAN) Shreveport, LA
- Southern California Regional Rail Authority (Metrolink) Los Angeles, CA
- Tri-County Rail (Tri-Rail) Ft. Lauderdale, FL
- VIA Metropolitan San Antonio, TX
- Washington Metro Area Transit Authority (WMATA) Washington, DC

TECHNIQUE: VEHICLE PATROL

Definition: The utilization of motorized vehicles to permit officers to tour system property, primarily to deter crime and to respond to calls for service. Vehicle patrol may be random within a patrol area too large to patrol on foot or may be directed based on crime analysis.

Commentary: Mobile response to calls generally is provided in the transit environment through the deployment of marked automobiles, staffed with one officer. A few systems, overwhelmingly in urban, high crime areas, assign two officers in the same vehicle to patrol all or parts of their property. Officers are deployed in zones or sectors throughout the transit agency's service area to reduce the time required for response. Vehicle patrols are also used to safeguard system property, to transport arrested persons, and to provide a visible police presence.

Vehicle patrol is the most common patrol tactic used by virtually all police agencies in the United States, including transit agencies. The major advantages are that officers in vehicles can cover large geographic areas quickly, the vehicle provides a mobile office for the officer, and it allows for the easy transportation of prisoners, stranded passengers, or operations personnel who must often reach derailments, accidents, or other emergencies.

The disadvantage of mobile patrol is that it isolates officers from the public.

To improve efficiency, some transit agencies install mobile digital terminals and automatic citation systems within the police vehicle. This technology enables the officer to search databases—including National Crime Information Center (NCIC), local warrant files, and state departments of motor vehicles. After stopping individuals, officers may also use in-vehicle computers to issue citations and to file incident reports electronically. These technologies enhance data collection and monitoring activities, as well as reduce the time required to complete and administer paperwork. Such technology has been demonstrated to improve police response capabilities at Long Island Rail Road (LIRR), New York City Transit (NYCT), the Mass Transit Administration of Maryland in Baltimore, and the Los Angeles County Metropolitan Transportation Authority (LACMTA).

See Trailing Equipment in a Vehicle for a specialized use of vehicle patrol.

Agencies Using Vehicle Patrols:

Vehicle patrol is employed by virtually every police department in the United States as a means of deterring crime and responding to calls; transit agencies are no different in this deployment technique.

TECHNIQUE: MOUNTED PATROL

Definition: The use of horse-mounted officers to patrol a targeted area or to provide crowd control.

Commentary: A number of municipal police departments (as opposed to transit police departments) maintain mounted patrols which are typically deployed in downtown areas such as pedestrian malls or city centers. The technique of mounted patrols permit highly visible police presence in a crowded environment in which an officer on foot patrol, for example, would not have the same noticeable effect.

In addition to offering an ideal location for mounted patrols, urban areas with high levels of pedestrian traffic typically serve as transfer points for local bus service. Therefore, municipalities electing to deploy mounted police officers usually have major bus stops within the selected patrol area. For example, mounted officers are deployed on Minneapolis' downtown pedestrian mall—also the location of several of the busiest bus stops in the city.

Mounted officers generally are used in two ways:

- Random or directed patrol in high-traffic areas
- Crowd control at special events or riot conditions

Mounted patrols afford many of the advantages of foot patrol, while increasing officer mobility without sacrificing the level of interaction with the public. Mounted officers spend much of their time answering questions and providing information. Due to the visibility and the novelty of mounted officers, the public often finds them more approachable than their counterparts assigned to foot or vehicle patrol.

Because of their visibility, mounted officers are ideal for use in crowd control. Municipal mounted patrols are suitable for providing an orderly flow of persons arriving at, attending, and departing events such as parades, festivals, concerts, or public rallies, especially at transit connection points.

Agencies Using Mounted Patrols:

- New York Police Department (NYPD) New York, NY
- Metropolitan Council Transit Operations (MCTO) Minneapolis, MN
- Metropolitan Boston Transit Authority (MBTA) Boston, MA
- Regional Transportation District (RTD) Denver, CO

TECHNIQUE: K-9 PATROL

Definition: The use of trained canines, teamed with officer handlers to perform patrol activities.

Commentary: Canine patrols are used by relatively few transit agencies. Due to cost considerations (such as the initial expense of the canine; initial and refresher training and certification of the canine and handler; and food, shelter, veterinary, and associated expenses), canine patrols are usually deployed in specialized situations.

Canines are used in the transit environment to:

- Facilitate high-risk arrests that present a potential for violence
- Provide directed patrol in high crime areas
- Handle situations that take advantage of the canine's sniffing abilities, such as narcotics, cadaver, or explosives searches
- Search buildings
- Locate lost persons—frequently children and the elderly—who seem particularly prone to wander onto transit properties

Due to their ability to detain perpetrators, canines are often used by officers to make high risk arrests. Canines are also called upon to locate perpetrators who have fled the scene of a crime. Once located, perpetrators are usually hesitant to attempt an escape in the presence of a police canine, reducing the risk of a struggle and, consequently, limiting the chance of injury to the canine's human partner.

For most agencies, the cost of canines dictates that patrols be limited to high crime areas of the transit system. Used in this manner, the canine/officer team provides a visible police presence on the system intended as a powerful deterrent to criminals and one that reinforces patron perceptions of security.

When Southeastern Pennsylvania Transportation Authority (SEPTA) reinstated its canine program, directed patrols were designed to meet trains and patrol stations in high crime portions of the downtown area. Officers and their canine partners may also be assigned to ride the system, most often on selected routes that originate, terminate, or travel through high-risk areas or that have been pinpointed as trouble spots through

crime analysis. Using a somewhat different approach, Chicago Transit Authority (CTA) has hired an outside service to supply the agency with muzzled canines and civilian (non-sworn) handlers.

Canines may receive training to perform specialized activities, such as narcotics searches. Properly trained, they can also be used by bomb squads to locate explosive devices, thus reducing the risk of human injury. Washington Metro Area Transportation Authority (WMATA), for example, has one narcotics canine in its unit. Due to the expense of this training, the animal is loaned to other local law enforcement agencies on request. In exchange, WMATA's police department receives a share of property forfeitures resulting from narcotics arrests affected with the help of the canine. New York metropolitan area's Metro-North Railroad (MNR) has both narcotics and explosives-sniffing dogs, although this is rare. These dogs and their handlers are available to assist local police agencies as a form of interagency cooperation.

Agencies Using K-9 Patrols:

- AMTRAK Washington, DC
- Bay Area Rapid Transit (BART) Oakland, CA
- Chicago Transit Authority (CTA) Chicago, IL
- Metro-North Railroad (MNR) New York, NY
- Metropolitan Boston Transit Authority (MBTA) Boston, MA
- New York Police Department (NYPD) New York, NY
- Niagara Frontier Transit Authority (NFTA) Buffalo, NY
- Port Authority of New York and New Jersey (PANYNJ) New York, NY
- Port Authority Transit Commission (PATCO) Camden, NJ
- Port Authority Trans Hudson (PATH) Jersey City, NJ
- Southeastern Pennsylvania Transportation Authority (SEPTA) Philadelphia, PA
- Tri-County Rail (Tri-Rail) Ft. Lauderdale, FL
- Washington Metropolitan Area Transit Auth. (WMATA) Washington, DC

**TECHNIQUE: VEHICLE OTHER THAN AUTO
(BICYCLE, SCOOTER, ELECTRIC CART)**

Definition: Random or directed patrols at transit facilities, at bus stops, or in parking lots using uniformed officers deployed on bicycles, motor scooters, or motorized carts.

Commentary: The use of bicycles for sworn officer deployment has become more common in the transit environment in recent years. Bicycles provide more mobility than do foot patrols, while offering a level of visibility and personal interaction with the public not attained through the use of automobile patrols. Bicycles offer the advantages of speed, maneuverability, and silence of operation. Bicycle patrols also facilitate the ability of the officer to apprehend some suspects fleeing on foot. Some transit agencies, Washington Metro Area Transportation Authority (WMATA) and Metropolitan Atlanta Rapid Transit Authority (MARTA), for example, find that bicycles are an effective means of covering special areas, such as parking lots, where mobility within a limited area is essential.

Similarly, officer deployment on motor scooters provides levels of visibility, presence, and citizen-police interaction similar to foot patrol without sacrificing officer mobility or response time, or detracting from the amount of territory which can be covered by the officer, or causing officer fatigue. Covered, three-wheel scooters are popular because they provide weather protection for the officer and allow for storage of supplies and equipment within the covered cabin portion of the scooter.

Finally, electric carts are used by some transit agencies in parking lots or in areas similarly difficult to patrol. Within staffed parking facilities, carts provide mobility for officers performing scheduled or random patrols; for officers responding to calls for service within a limited area; or, occasionally, for escorting patrons to their cars during off-peak hours. For infrequent use, such as in parking lots or structures, carts offer a more cost effective alternative than do patrol cars. Metro-Dade Transit in Miami (MetroRail) and WMATA use carts within parking garages.

Agencies Using Vehicles Other than Autos:

Bicycles

- Metropolitan Atlanta Rapid Transit Authority (MARTA) Atlanta, GA
- Metro Transit Seattle, WA
- Santa Clara County Transit District San Jose, CA
- Tri-Met Portland, OR
- Washington Metropolitan Area Transit Authority (WMATA) Washington, DC

Carts

- Metro-Dade Transit (Metro-Rail) Miami, FL
- Metro-North Railroad (MNR) New York, NY
- Washington Metropolitan Area Transit Authority (WMATA) Washington, DC

Motorcycles

- Los Angeles County Metropolitan Transportation Auth. (LACMTA) Los Angeles, CA

Relevant Practical Field Test

- Metropolitan Atlanta Regional Transportation Authority (MARTA) Atlanta, GA

TECHNIQUE: FARE INSPECTION

Definition: Random checks by uniformed officers to ensure that patrons have paid the correct fare. This technique is utilized within barrier-free, proof-of-payment systems.

Commentary: Several transit agencies, for example, St. Louis' Bi-State Development Agency (Bi-State), the Los Angeles County Metropolitan Transportation Authority (LACMTA), the Mass Transit Administration of Maryland in Baltimore, the San Diego Trolley, and Tri-County Rail (Tri-Rail) in Ft. Lauderdale, FL, utilize barrier-free systems, relying on patron proof-of-payment rather than traditional fare collection equipment (tokens, turnstiles, and the like). Under the proof-of-payment system, patrons are required to purchase fare media, typically from automated ticket-vending machines outside of a designated "fare paid zone." Uniformed officers perform random, unannounced inspections of patrons to ensure that the full fare has been paid.

Transit agencies select this technique for a number of reasons. Barrier-free systems eliminate the need for traditional fare-collection equipment, such as turnstiles and tokens, which are sometimes subject to counterfeiting. This results in a streamlined revenue collection process. In addition, the absence of turnstiles, which often present an obstacle to persons in wheelchairs and others, facilitates agency compliance with the Americans with Disabilities Act.

Many agencies with proof-of-payment policies report very low rates of fare evasion (consistently less than 1 percent), although it is often difficult to discern how this figure is arrived at. In these cases, agencies rely on the fact that the loss of revenue from non-payment/underpayment is more than offset by savings related to the elimination of traditional fare-payment policies and equipment or token agents.

Fare inspectors may be sworn or non-sworn personnel. Since fare-evaders are normally ticketed, rather than arrested, for the offense, some agencies, for example, Bi-State, Buffalo's Niagara Frontier Transit Authority (NFTA), San Diego Trolley, Sacramento Regional Transit District, and Tri-County Rail, elect to use non-sworn security guards or dedicated fare inspectors for the purpose. These non-sworn personnel provide a lower-cost alternative to sworn personnel, and they perform a routine, repetitive assignment not typically favored by police officers. Other systems, however, such as LACMTA, and the Maryland MTA prefer to use sworn personnel for fare inspections. Use of sworn personnel provides additional flexibility over the use of

security guards or fare inspectors. For example, a police officer may detain the offender and perform a warrant check—an option not usually available to a non-sworn guard. In addition, police officers receive more training than do security guards, and may be better equipped to handle fare disputes if they arise.

Agencies Using Fare Inspection:

- Bi-State Development Agency (Bi-State) St. Louis, MO
- Los Angeles County Metropolitan Transportation Auth. (LACMTA) Los Angeles, CA
- Mass Transit Administration of Maryland Baltimore, MD
- Niagara Frontier Transit Authority (NFTA) Buffalo, NY
- Sacramento Regional Transit District Sacramento, CA
- San Diego Trolley San Diego, CA
- Tri-County Rail (Tri-Rail) Ft. Lauderdale, FL

Relevant Practical Field Test

- San Diego Trolley San Diego, CA

TECHNIQUE: EMERGENCY SERVICES UNITS

Definition: Members of these units are trained and equipped to deal with such diverse activities as confrontations with emotionally disturbed persons, hostage/barricaded subject encounters, and extrication of accident victims trapped in automobiles, trains, buses, or structures.

Commentary: Emergency service units are often called upon to augment patrol personnel who encounter aggressive or potentially dangerous emotionally disturbed persons. Often armed with less than lethal weapons, such as pepper spray, Tasers, nets and Velcro restraints, these officers are expected to subdue the disturbed person with the least amount of harm to officers on the scene or to the person him/herself.

Highly trained members of these units are also equipped with heavy weapons and enhanced body armor and ballistic shields essential when encountering a hostage taker or barricaded subject who may be armed. Officers may perform the functions of hostage negotiators or they may provide a tactical response to rescue hostages or subdue a barricaded subject.

At the scene of disasters and vehicular accidents, emergency services personnel are responsible for attempting to free trapped individuals and extricate persons from autos, trains, buses, or other conveyances.

Agencies Using Emergency Services Units:

- New York Police Department (NYPD) New York, NY
- Port Authority of New York and New Jersey (PANYNJ) New York, NY

Chapter 8

UNIFORMED OR PLAINCLOTHES DEPLOYMENT TACTICS

Tactics that can be used either by uniformed or plainclothes officers are often proactive techniques that involve interacting with various segments of the transit public before a problem has occurred. In some cases the techniques are geared to interaction with patrons and employees; in other cases these strategies involve gang- or homeless-related outreach.

One basic transit tactic—riding the equipment—can rely on either uniformed or plainclothes officers, depending on whether it is used to enhance patron perceptions of safety or to arrest offenders. The identical differentiation exists for station or transfer-point patrol, where generally uniformed officers are less apprehension-oriented than those assigned in plainclothes.

Various community outreach programs, here joined under the general heading of crime prevention, can also be conducted by officers either in or out of uniform. The decision is more than one of mere convenience, since a uniformed officer presents a different image from one in street clothes. An agency must decide whether it is trying to achieve a formal, zero-tolerance policy impression or a somewhat friendlier, more casual feeling. It must determine if it wants to approach community or senior citizen groups differently from the way in which it interacts with students of different ages. Each agency must decide which message it wants to transmit to each of its many publics; but no agency should forget that whether it sends its officers out in uniform or in civilian business attire it will be influencing the message it is sending.

TECHNIQUE: MONITORING SURVEILLANCE CAMERAS

Definition: The monitoring of patron or employee behavior on closed circuit television (CCTV), digital transmission and image storage systems, and/or still photography.

Commentary: CCTV and other new-generation, digital technologies provide surveillance capabilities in rail stations, restricted areas, parking lots, bus terminals, elevators, and on-board rail and bus vehicles. This technology can be used to document incidents in progress, to facilitate officer response, and to assist in the prosecution of observed and recorded criminal offenders. Combined with other deployment techniques, this technology may also serve to deter criminal activity and to enhance patron perceptions of safety.

A number of surveillance technologies are currently utilized in the transit environment:

- Fixed focal length and zoom lenses, in both black-and-white and color, are used for indoor applications at most large rail and bus agencies, including New York City Transit (NYCT), Bay Area Rapid Transit (BART), Washington Metro Area Transportation Authority (WMATA), Metropolitan Atlanta Rapid Transit Authority (MARTA), and New Jersey Transit (NJ Transit)
- While lighting levels have limited cameras to black-and-white in most outdoor applications, color is now available and growing in popularity. Newly constructed stations at BART, Metro-Dade Transit (MetroRail), and Los Angeles County Metropolitan Transportation Authority (LACMTA) utilize this technology
- Micro-cameras can be installed in ticket-vending machines, such as at Long Island Rail Road (LIRR); in passenger assistance devices, like those at LACMTA; on-board buses, as on the Southeastern Pennsylvania Transit Authority (SEPTA); and in rail vehicles, such as on the Metropolitan Transportation Administration of Maryland. These technologies continue to be improved to address issues such as vibration, climate changes, dust, and suitability of recorded images for admission as evidence in criminal proceedings

- Fiber optic cable and digital technology allow images from multiple locations to be transmitted via phone lines to computer-driven monitors for digital storage, such as at NJ Transit. These technologies permit centralized monitoring of remote locations

Agencies Using Surveillance Cameras:

- Bay Area Rapid Transit (BART) Oakland, CA
- Greater Cleveland Regional Transit (GCRTA) Cleveland, OH
- Los Angeles County Metropolitan Transportation Auth. (LACMTA) Los Angeles, CA
- Mass Transit Administration (MTA) Baltimore, MD
- Metro Dade Transit (MetroRail) Miami, FL
- Metropolitan Atlanta Regional Transportation Authority (MARTA) Atlanta, GA
- Long Island Rail Road (LIRR) Jamaica, NY
- New York City Transit (NYCT) Brooklyn, NY
- New Jersey Transit (NJ Transit) Newark, NJ
- Regional Transportation District (RTD) Denver, CO
- Southeastern Pennsylvania Transit Authority (SEPTA) Philadelphia, PA
- Washington Metropolitan Area Transit Authority (WMATA) Washington, DC

TECHNIQUE: MAINTAINING TIP LINES

Definition: The gathering of information on transit crime directly from patrons, employees, and others via special phone lines, the numbers of which are posted in prominent locations on equipment and in transit facilities. To encourage participation, cash rewards and other incentives are usually offered in exchange for information resulting in an arrest or conviction.

Commentary: Tip lines encourage passengers and employees to provide information on incidents ranging from graffiti and seat slashing to violent crimes, such as homicide, assault, and rape. Agencies such as Washington Metro Area Transportation Authority (WMATA), Metropolitan Atlanta Rapid Transit Authority (MARTA), Minneapolis/St. Paul's Metropolitan Council Transit Operations (MCTO), and Los Angeles County Metropolitan Transportation Authority (LACMTA) routinely post advertisements for tip lines to support on-going police investigations; to aid in the reporting of graffiti and to facilitate the rapid dispatch of maintenance personnel for clean-up; and to provide patrons and employees with a positive way in which to assist the agency in fighting crime.

Tip lines, when integrated with customer relations activities, maintenance, or safety information, can also be used for reporting potentially dangerous situations, such as faulty lighting, safety hazards, illegal dumping, and quality of life issues.

Some bus systems, such as MARTA, MCTO, Greater Richmond Transit Company, Seattle's Metro-Transit, and Miami's Metro-Dade Transit (MetroRail), place signs on buses advertising cash rewards for information leading to the arrest of those individuals who have assaulted bus operators. These programs may improve operator security and enhance the gathering of intelligence concerning this type of criminal activity.

National programs such as Crime Stoppers (initiated in 1976 after a homicide in Albuquerque, NM) provide information and assistance to transit police and security departments regarding the implementation and maintenance of tip lines.

Some agencies, such as New York City Transit, use tip lines for patrons to report fraud or other employee misconduct. These are separate from the tip lines maintained for more traditional crime reporting.

Agencies Using Tip Lines:

- Greater Richmond Transit Company Richmond, VA
- Metro-Dade Transit (MetroRail) Miami, FL
- Metro-Transit Seattle, WA
- Metropolitan Atlanta Rapid Transit Authority (MARTA) Atlanta, GA
- Metropolitan Council Transit Operations (MCTO) Minneapolis, MN
- Metropolitan Transit Authority of Harris County (METRO) Houston, TX
- New York City Transit (NYCT) New York, NY
- Regional Transportation District (RTD) Denver, CO

**TECHNIQUE: ANTI-GANG ACTIVITIES
(PATROL, INTELLIGENCE, SCHOOL OUTREACH)**

Definition: Programs targeted at controlling or alleviating problems caused by gang members on equipment and in transit facilities; may include the use of foot and vehicle patrol officers to gather intelligence, to maintain a deterrent presence, and to enforce the rules and regulations of the agency.

Commentary: Gang activity can be extremely disruptive in the transit environment. This type of activity includes drug dealing, "tagging" (through graffiti or etching) agency property to mark gang areas, vandalizing equipment and facilities, and engaging in disruptive or violent behavior. Collectively these activities serve to erode passenger perceptions of safety and may discourage ridership among legitimate system users.

To deter gang-related activity, agencies such as New York City Transit (NYCT), Los Angeles County Metropolitan Transportation Authority (LACMTA), Chicago Transit Authority (CTA), Metropolitan Atlanta Rapid Transit Authority (MARTA), and Washington Metro Area Transportation Authority (WMATA), have officers complete field identification cards on trespassers and others ejected from their systems for rule violations. This assists in identify gang members and the likely locations of gang-related activities. In addition, these agencies collect intelligence from local police anti-gang and narcotics units, school police and administrators, and social service organizations.

Gang members who commit crimes on the transit system are also likely to participate in similar off-system activity. Coordination of anti-gang measures with local agencies may help to increase effectiveness of crime abatement activities both on and off the system.

Analysis of information concerning gang operations, including the identification of gang-related clothing, "signing" signals, tagging activity, and local drug distribution patterns, enables transit police and security departments to undertake patrol activities in areas vulnerable to gang activity. Foot and vehicle patrol, targeted specifically at gang activities, can prevent an escalation of violence and protect patrons and employees using agency facilities and vehicles in locations with a high incidence of gang activity.

Agencies Using Anti-Gang Activities:

- Chicago Transit Authority (CTA) Chicago, IL
- Los Angeles County Metropolitan Transportation Auth. (LACMTA) Los Angeles, CA
- Metropolitan Atlanta Rapid Transit Authority (MARTA) Atlanta, GA
- New York City Transit Authority (NYCT) New York, NY
- Washington Metro Area Transit Authority (WMATA) Washington, DC

TECHNIQUE: HOMELESS OUTREACH

Definition: Establishment of programs, policies, and procedures to respond to the special dilemmas created by the presence of the homeless and the mentally ill in transit facilities.

Commentary: Many homeless and mentally ill persons seek shelter in stations, terminals, subways, and other transportation facilities. Homeless and mentally ill persons inhabiting a transit facility often compromise and disrupt its normal functioning. These individuals, lacking the prerequisites for hygiene, may disturb the aesthetic quality of the transit environment; prevent the travelling public from utilizing amenities, such as bathrooms or benches; engage in bizarre conduct that intimidates patrons and employees; and sometimes engage in conduct ranging from public urination and panhandling to serious assault. Persons who are mentally ill or under the influence of alcohol or drugs also become easy targets for predatory criminals, whose crimes must be responded to by the transit system. In addition, the homeless and mentally ill population may be more likely to experience medical problems requiring emergency service.

In many cases, management of the homeless and mentally ill population is beyond the resources and capabilities of transit police or security departments; it requires close collaboration with social service agencies and volunteer groups. Specialized training is required to assess the condition of homeless and mentally ill persons, to coax information from these individuals, and to persuade them to leave the transportation facility for a shelter or other location.

Transit systems, such as New York City's Metropolitan Transportation Authority (MTA), the Port Authority of New York and New Jersey (PANYNJ), Chicago Transit Authority (CTA), Los Angeles Metropolitan Transportation Authority (LACMTA), and the Metropolitan Boston Transit Authority (MBTA), have implemented a number of techniques for responding to the homeless and mentally ill population, including the following:

- Coordinating homeless response activities with local social service and volunteer groups to identify resources for the homeless and mentally ill, to clarify appropriate referrals for different situations, and to train personnel in the screening and management of homeless and mentally ill individuals with the

aim of removing such persons from the transit system and into social service settings

- Establishing joint homeless outreach teams comprised of police and civilian social service and volunteer personnel to respond to the needs of the homeless and mentally ill population by attempting to get them to shelters, where social service intervention can be initiated
- Creating a "social services coordinator" position at the transit system to assist in referring homeless and mentally ill persons to the appropriate agency or location. This position can be occupied by either a police/security officer or by a civilian employee of the transit agency. In some areas where these positions have been developed, the coordinator is an employee of the municipality or of a social service group overseeing the program under contract.

Agencies Using Homeless Outreach:

- CalTrain San Jose, CA
- Chicago Transit Authority (CTA) Chicago, IL
- Gardena Municipal Bus Lines Gardena, CA
- Long Island Rail Road (LIRR) Jamaica, NY
- Metro-Dade Transit (MetroRail) Miami, FL
- Metro-North Railroad (MNR) New York, NY
- Metropolitan Boston Transit Authority (MBTA) Boston, MA
- Metropolitan Transit Authority of Harris County (METRO) Houston, TX
- Metropolitan Transportation Authority (MTA) New York, NY
- New York City Police Department (NYPD) New York, NY
- Niagara Frontier Transit Authority (NFTA) Buffalo, NY
- Phoenix Transit System Phoenix, AZ
- Port Authority of Allegheny County Pittsburgh, PA
- Port Authority Trans Hudson (PATH) Jersey City, NJ
- Port Authority Transit Commission (PATCO) Camden, NJ
- Southeastern Pennsylvania Transportation Authority (SEPTA)..... Philadelphia, PA
- Southern California Regional Rail Authority (Metrolink) Los Angeles, CA
- Staten Island Railroad (SIR) Staten Island, NY
- Tri-County Rail (Tri-Rail) Ft. Lauderdale, FL

TECHNIQUE: RIDING EQUIPMENT

Definition: Officers ride trains or buses to deter crime, interact with patrons and transit operations personnel, and cite/apprehend violators.

Uniformed officers riding equipment are normally deployed in directed patrols due to the costs involved in dedicating an officer to one route or section of the system. Officers are often permitted some discretion as to the number of stops to ride in either direction before deboarding.

Plainclothes officers may be assigned on-board buses and rail vehicles to observe passenger/employee behavior and to apprehend those who commit crimes. This technique is usually directed, but may allow the officer some discretion based on assessment of the opportunity to observe crimes in progress.

Commentary: A uniformed presence on-board rail and bus vehicles is utilized to prevent criminal incidents, to maintain order, and to improve patron perceptions of security.

Uniformed officers patrol trains, riding and walking through them, moving from one car to another, as indicated by the results of crime analysis or by using officer discretion. Some agencies, such as Metropolitan Atlanta Rapid Transit Authority (MARTA), assign one officer to each train in service during evening hours to promote passenger perceptions of security. Others, such as Los Angeles County Metropolitan Transportation Authority (LACMTA) and Southeastern Pennsylvania Transportation Authority (SEPTA), assign several officers to ride trains within a given area, usually encompassing several stations that are grouped as a zone.

Uniformed officers may ride buses, switching from bus to bus at major transfer points as indicated by the results of crime analysis or using officer discretion. Or, uniformed officers may board buses at bus stops and walk through them, speaking with patrons and bus operators, allowing maximum visibility and maximum coverage, since many more buses can be boarded at stops than can be patrolled while buses are in motion.

In addition, to provide a heightened uniformed presence, some bus systems, such as Metropolitan Council Transit Operation (MCTO) provide free or discounted fares to uniformed personnel, including municipal police, firemen, bailiffs, and others to

encourage them to ride the system. Long Island Rail Road (LIRR) and Metro-North Railroad (MNR) permit New York City police officers to register for and obtain free passes for use on their trains.

While the primary goal of uniformed personnel on transit vehicles is to deter crime, plainclothes officers are normally deployed to effect arrests. The technique is most often used in directed response to either serious crimes or recurring problems on bus or rail vehicles. Some common applications include the apprehension of persons committing the following crimes: assault, pickpocketing, disorderly conduct, sex offenses, fare counterfeiting, liquor law violations, and narcotics offenses.

One of the advantages of this plainclothes technique is its potential for controlling criminal activity without complete police coverage of every vehicle on every line. Departments favoring this approach, such as Washington Metro Area Transportation Authority (WMATA), Bi-State Development Agency in St. Louis, MO, and New Jersey Transit, find that fewer plainclothes officers need be deployed than would be necessitated by a similar approach utilizing uniformed personnel, due to passenger perceptions that officers may be on-board. Some agencies, for example Bay Area Rapid Transit (BART), New York City Police Department (NYPD), and Metro-Dade Transit in Miami (MetroRail), highlight this effect by advertising the use of this technique to patrons, reminding riders that a plainclothes officer may be on their bus or rail vehicle. MetroRail's buses post a large sign right behind the driver advertising that plainclothes officers may be riding in an attempt to minimize fare evasion and crimes against passengers.

Relatively few agencies make use of plainclothes security guards on buses and rail vehicles, although Milwaukee County Transit, which employs Wackenhut Custom Protection Officers, is an exception. Since guards typically only have powers to detain rather than to arrest, this apprehension-oriented technique is generally not effective with security personnel. Moreover, since most guards receive less training than do police officers, systems are less likely to place them in potentially dangerous plainclothes operations.

Following Equipment in a Vehicle, a technique described elsewhere in this section, is often used in conjunction with officers riding buses. At some agencies, the plainclothes officer exits the bus along with the perpetrator and makes the arrest at the bus stop. In this way, passengers and operators do not learn the identity of the officer,

a consideration for agencies with few officers available for such assignment. In addition, the arrest can be performed in a less populated location that is more accessible to the trailing vehicle or other police backup. Making an apprehension off the bus also minimizes patron fears and schedule disruptions.

Agencies Using the Riding Equipment Technique:

- Bay Area Rapid Transit (BART) Oakland, CA
- Bi-State Development Agency (Bi-State) St. Louis, MO
- Los Angeles County Metropolitan Transportation Auth. (LACMTA). Los Angeles, CA
- Metropolitan Atlanta Rapid Transit Authority (MARTA) Atlanta, GA
- Metro-Dade Transit (MetroRail) Miami, FL
- Milwaukee County Transit Milwaukee, WI
- New Jersey Transit (NJT) Newark, NJ
- New York City Police Department (NYPD) New York, NY
- Southeastern Pennsylvania Transportation Authority (SEPTA)..... Philadelphia, PA
- Washington Metro Area Transportation Authority (WMATA) Washington, DC

Relevant Practical Field Test:

- New York City Police Department (NYPD) New York, NY
- Metropolitan Transit Authority of Harris County (METRO) Houston, TX

TECHNIQUE: FOLLOWING EQUIPMENT IN A VEHICLE

Definition: Officers ride in a marked or unmarked vehicle behind or adjacent to a bus. The officers may be uniformed or plainclothes; usually uniformed officers ride in marked vehicles and plainclothes officers ride in unmarked vehicles. The trailing vehicle is usually in radio contact with the bus operator or with an officer on board.

Commentary: This is a form of directed patrol that can be effective in response to a series of crimes having a predictable pattern. Outbreaks of juvenile disorderly conduct and graffiti/etching are common targets of this technique.

In instances where arrests are the desired result of the tactic, trailing officers most often work in conjunction with plainclothes officers riding the bus to observe crimes in progress. In these instances, plainclothes officers in unmarked cars are favored since there is less opportunity for them to be observed and identified by potential offenders.

Deployment of officers in unmarked vehicles offers the following advantages:

- Passengers with a history of criminal behavior, unaware of police/security surveillance, are more likely to be apprehended
- Officers and guards may more accurately observe crime patterns and levels on buses than can be done by random boardings or uniformed deployment on-board the bus
- The use of an unmarked vehicle in conjunction with undercover personnel on equipment provides backup and can be used to transport persons under arrest with minimum impact to bus operations

In instances where the desired result is deterrence to on-board crime, officer(s) will more likely be assigned in marked vehicles very obviously trailing the bus. This tactic involves stopping the marked vehicle at each bus stop directly behind or as close as possible to the bus being trailed. A number of cities using this technique have done so in response to operators expressing concerns for their personal safety.

Agencies Using Following Equipment in a Vehicle:

- Chicago Transit Authority (CTA) Chicago, IL
- Dallas Area Rapid Transit (DART) Dallas, TX
- Gardena Municipal Bus Lines Gardena, CA
- Greater Cleveland Regional Transit (GCRTA) Cleveland, OH
- Long Beach Public Transportation Company Long Beach, CA
- Metropolitan Atlanta Rapid Transit Authority (MARTA) Atlanta, GA
- Metropolitan Council Transit Operations (MCTO) Minneapolis, MN
- Metropolitan Transit Authority of Harris County (METRO) Houston, TX
- Milwaukee County Transit Milwaukee, WI
- New York City Police Department (NYPD) New York, NY
- Phoenix Transit System Phoenix, AZ
- Port Authority of Allegheny County Pittsburgh, PA
- Metro-Dade Transit (Metro-Rail) Miami, FL

TECHNIQUE: CRIME PREVENTION

Definition: The use of environmental controls and training/outreach programs to reduce the number of criminal incidents occurring on a transit system.

Commentary: This technique encompasses a number of activities that share the primary goal of preventing crime, including:

- Crime Prevention Through Environmental Design (CPTED). By designing physical space to limit the environment's ability to support criminal behavior, transit systems such as Bay Area Rapid Transit (BART), Washington Metro Area Transportation Authority (WMATA), Long Island Rail Road (LIRR), Metropolitan Transit Authority of Harris County (METRO), and Los Angeles County Metropolitan Transportation Authority (LACMTA), use CPTED techniques to improve the quality of life on their systems. The CPTED concept is based on the principle that crime can be reduced by creating an environment that increases a criminal's perceived risk in attacking a particular target while decreasing the number of available targets. The principles of CPTED call for designing physical space in the context of the needs of legitimate users of the space, the normal and expected use of the space, and the predictable behavior of both users and criminals. Typical CPTED-based designs focus on improved lighting, bright colors, the "defensible space" concept, and the construction of "passenger corridors" that move patrons through facilities along paths that reduce isolation and enhance officer observation and response capabilities
- Employee and passenger training programs. Training programs used by agencies such as New York City Transit (NYCT), LIRR, Southeastern Pennsylvania Transportation Authority (SEPTA), Metro-Dade Transit (MetroRail), Houston's METRO and New Jersey Transit, heighten awareness of the types of crimes that occur on the system and provide guidelines for the safest response to a criminal incident. These programs, supplemented with brochures describing crime prevention activities, can be effective for both employees and passengers. Employee training programs designed to teach conflict management provide transit personnel with essential tools for defusing potentially violent situations. An additional goal of many employee training programs is to enhance communication and interaction between transit system employees (such as bus operators and police/security). Properly trained

employees often can notify the appropriate police/security personnel, who can respond. They can also spot potential criminal activity and collect incident data to support crime analysis

- School and community outreach programs. School programs educate students on the rules and regulations of the transit system, as well as on the dangers of the transit environment, thus reducing the likelihood of juveniles committing crimes or being victimized themselves. Community outreach programs encourage neighborhood groups and local government to work with the transit system to report criminal occurrences, to coordinate activities, and to share information. Some systems, such as LACMTA in Los Angeles and Metro-North Railroad (MNR) in the New York metropolitan area, have elaborate programs devised in conjunction with public affairs personnel. These programs are often conducted at community events. Others, such as Houston's METRO and New York City Transit, work closely with school district police or security personnel to identify problem stations, stops, and routes so that seamless, safe corridors can be provided for students, school personnel, and other transit riders, particularly during the hours of 1:00 p.m. and 4:00 p.m., when most students are using transit systems to travel from school to home.

Agencies Using Crime Prevention Tactics:

Within the last two decades, responding to demands for more proactive policing, virtually all transit agencies have adopted crime prevention techniques as part of their security and customer relations programs.

TECHNIQUE: SWEEPS

Definition: A technique that employs a large number of uniformed or plainclothes officers assigned to a specific location under close direction of supervisors.

Uniformed officers may be deployed to intensively target an area to prevent crimes and to cite/arrest offenders for specific violations, most often in response to continuing complaints to transit managers by system riders.

Plainclothes officers may be used when sweeps are solely apprehension-oriented, particularly in response to fare evasion, low level drug activity, or other quality-of-life offenses.

Commentary: Sweeps by uniformed officers require officers to focus on identifying and citing/apprehending perpetrators for specific violations. Uniformed sweeps attract attention, from both passengers and the media. This type of deployment, while prohibitively expensive for consistent use, can convey to would-be violators a sense of police omnipresence and control when utilized periodically.

This technique is also used for addressing new patterns of criminal activity that may emerge in a given station or along a rail or bus route.

Sweeps by plainclothes officers require officers to focus their activities on identifying and citing/apprehending perpetrators for specific violations. For example, the New York City Police Department Transit Bureau (NYPD) uses this technique on a regular basis at specific locations to address fare evasion and quality-of-life violations. To reduce the time required for processing arrests made during sweeps, the Transit Bureau utilizes mobile digital terminals located on board a specially outfitted bus (referred to locally as the "bust bus") to file preliminary paperwork and to conduct warrant searches. Local media coverage of these sweeps further enhance the effect of this technique.

Uniformed sweeps offer the following benefits:

- Attract immediate attention from passengers, potential offenders, and the media
- Convey to would-be violators a sense of police omnipresence and control when utilized periodically

Plainclothes sweeps offer the following benefits:

- Provide officers with the opportunity to observe specific types of criminal activity occurring on the system, enhancing the quality and quantity of information collected for crime analysis
- Well-advertised use of this technique may deter criminal activity in areas other than where officers are deployed

Agencies Using Sweeps:

- New York Police Department (NYPD) New York, NY

TECHNIQUE: SATURATION

Definition: A large concentration of officers deployed at a specific location to maximize uniformed visibility and enforcement of laws. Officers are relieved of the responsibility for responding to routine calls for service, so full attention can be devoted to patrol of the target area, thus intensifying its impact.

This tactic may also utilize plainclothes officers deployed at a specific location to maximize enforcement of local laws and posted system rules. As with most plainclothes techniques, plainclothes saturation patrol is apprehension-oriented. Use of this tactic by plainclothes officers is often related to the Sweeps tactic, which is discussed elsewhere in this section.

Commentary: Saturation is used in a variety of situations, but is most frequently employed when a specific type of crime has been increasing and/or patron complaints have increased. In some cases, uniformed and plainclothes deployments overlap and may be used together. In other instances, they are used to achieve different ends.

Situations that may result in use of saturation deployment are:

- Crowd control
- Enforcement of agency rules and regulations
- Enforcement of zero-tolerance policies
- Fare enforcement
- Maintenance of order during special events
- Support for the opening of new stations or lines
- Traffic control

Officers performing this type of patrol for rail service enhance the quality of the environment by actively enforcing laws and by maintaining zero-tolerance policies for graffiti, vandalism, disorderly behavior, and other quality-of-life issues.

Many transit agencies make limited use of saturation patrols for crowd control and traffic control during special events, such as sports games, parades, and concerts. For example, saturation patrol is used by Bi-State Development Agency in St. Louis, MO,

to facilitate transit agency operations after sporting events (the agency serves professional baseball, football, and hockey venues).

Officers primarily assigned to crowd control details are used to deter crime by providing a uniformed presence and to enforce quality-of-life regulations (for example, liquor law violations). Officers assigned to traffic control maintain open and accessible roadways by ticketing and towing cars parked in bus zones; directing buses in and out of loading zones; and redirecting passenger vehicles away from bus right-of-ways.

New York City Police Department's Transit Bureau (NYPD) has, for a number of years, used saturation by uniformed officers to assure that students leaving schools in large groups are in possession of authorized transit passes and that they do not commit crime or cause safety problems to one another or to other riders.

Due to the expense of patrolling a target area in an intense, concentrated fashion, most agencies, such as NYPD, Southeastern Pennsylvania Transportation Authority (SEPTA), and Bay Area Rapid Transit (BART), utilize saturation only when analysis or experience indicates that the agency needs to provide a constant, visible, uniformed police presence throughout an area.

Some agencies, such as BART, Los Angeles County Metropolitan Transportation Authority (LACMTA), and New Jersey Transit (NJT), consistently deploy a large number of plainclothes officers in conjunction with the opening of new stations or rail service to establish a presence and to reinforce agency rules and regulations.

In conjunction with local police initiatives, some transit agencies deploy plainclothes officers during special events to observe crowds, to identify and arrest perpetrators, and to provide additional protection for high-profile public officials or celebrities.

Agencies Using Saturation:

- Bay Area Rapid Transit (BART) Oakland, CA
- Bi-State Development Agency St. Louis, MO
- Los Angeles County Metropolitan Transportation Auth. (LACMTA) Los Angeles, CA
- New Jersey Transit (NJT) Newark, NJ
- New York City Police Department (NYPD) New York, NY
- Southeastern Pennsylvania Transportation Authority (SEPTA) Philadelphia, PA

TECHNIQUE: HAZARDOUS MATERIAL INSPECTIONS

Definition: Officers are assigned to check bills of lading and physically inspect the cargo areas of trucks and recreations vehicles, including campers or hazardous materials.

Commentary: This tactic is most often used by agencies responsible for roads, bridges and tunnels and by rail agencies which share track or yard facilities with freight railroads.

Hazardous materials such as flammables and explosives may be restricted from entering designated areas or being transported through confined areas such as tunnels. Vehicles containing such materials would be denied through-access due to the potential danger to others using the facility or to possible damage to the structure itself. Such vehicles would be diverted to safer areas or alternate throughways, such as bridges.

Agencies Using Hazardous Materials Inspections:

Port Authority of New York and New Jersey (PANYNJ) New York, NJ

Chapter 9

PLAINCLOTHES DEPLOYMENT TACTICS

This last group of tactics are oriented either toward responding to crime patterns or to special problems such as pickpocketing, repeated vandalism to emergency stop mechanisms on trains, repeated vandalism to stored equipment or materials, or copper thefts on rail lines. Such deployments, as well as those oriented toward intelligence-gathering or apprehending offenders for crimes which occurred well before apprehension, are most often assigned to plainclothes officers. This is the smallest category of deployment techniques, since few agencies without their own police departments will use these strategies on a regular basis.

TECHNIQUE: SURVEILLANCE

Definition: Observation of individual suspects or areas of suspected criminal activity by an officer for the purposes of gathering intelligence or apprehending persons committing crimes.

Commentary: This technique enables officers to observe criminal activity in rail and bus facilities, at bus stops, and in parking lots. Surveillance is used primarily to:

- Gather evidence
- Build criminal cases
- Make arrests
- Support enhanced crime data analysis

Agencies such as Metropolitan Council Transit Operations (MCTO) in Minneapolis, New York City Transit (NYCT), and Long Island Rail Road (LIRR) supply plainclothes officers with cameras and other surveillance equipment to support observational activities. MCTO officers set up portable cameras and video recorders at high-crime bus stops for a week or more to track crime patterns and levels. NYPD Transit Bureau officers use night vision equipment to identify persons committing vandalism and graffiti in rail yards. Members of the LIRR Auto Crime Unit carry multi-channel radios to speed communications with other agencies providing information or requesting response.

Using various types of surveillance equipment, transit police/security departments can detect criminal activity, identify offenders, and capture criminal incidents on videotape for use in prosecution. Information collected from surveillance activities, especially videotapes and photographs, can also provide insights into the exact mechanics of specific criminal activity and support the development of improved patrol and response techniques. In addition, videotapes and photographs can supplement training programs by providing real-life situations and examples.

Agencies Using Plainclothes Patrols:

- Bay Area Rapid Transit (BART) Oakland, CA
- Bi-State Development Agency (Bi-State) St. Louis, MO

- Chicago Transit Authority (CTA) Chicago, IL
- Gardena Municipal Bus Lines Gardena, CA
- Greater Cleveland Regional Transit (GCRTA) Cleveland, OH
- Long Beach Public Transportation Company Long Beach, CA
- Los Angeles County Metropolitan Transportation Auth. (LACMTA) Los Angeles, CA
- Metropolitan Boston Transit Authority (MBTA) Boston, MA
- Metropolitan Transit Authority of Harris County (METRO) Houston, TX
- Milwaukee County Transit Milwaukee, WI
- New York City Transit (NYCT) New York, NY
- Niagara Frontier Transit Authority (NFTA) Buffalo, NY
- Orange County Transportation Authority Santa Ana, CA
- Phoenix Transit System Phoenix, AZ
- Pierce Transit Tacoma, WA
- Port Authority of New York and New Jersey (PANYNJ) New York, NY
- Port Authority of Allegheny County Pittsburgh, PA
- Port Authority Trans Hudson (PATH) Jersey City, NJ
- Port Authority Transit Commission (PATCO) Camden, NJ
- Regional Transit Authority New Orleans, LA
- San Diego Trolley, Inc. San Diego, CA
- Southeastern Pennsylvania Transportation Authority (SEPTA) Philadelphia, PA
- Staten Island Railroad (SIR) Staten Island, NY
- Tri-County Rail (Tri-Rail) Ft. Lauderdale, FL
- Washington Metro Area Transit Authority (WMATA) Washington, DC

Relevant Practical Field Test:

- Long Island Rail Road (LIRR) Jamaica, NY

TECHNIQUE: PLAINCLOTHES STATION PATROL

Definition: An apprehension-oriented technique in which plainclothes officers patrol entire stations, or designated areas within a station, including points of passenger access/egress, turnstiles, restrooms, and parking lots. Patrols may be random or directed.

Commentary: Station patrol by plainclothes officers is generally performed to affect arrests or cite offenders. Unlike uniformed patrol, which is focused on deterring criminal incidents and providing passenger assistance, plainclothes station patrol enables the transit system to deploy a small number of officers to identify perpetrators and provide immediate response to offenses. The existence of a police/security presence not easily detected by potential offenders may reduce the vulnerability of passengers and employees to crime. In addition, advertising campaigns highlighting the presence of plainclothes officers may further enhance the deterrent effect of this technique, since perpetrators do not know if and when an officer may be watching them.

Agencies such as the New York City Police Department Transit (NYPD), Bay Area Rapid Transit (BART), San Francisco Municipal Railway (MUNI), and Washington Metro Area Transportation Authority (WMATA) use this technique to apprehend or cite violators for the following crimes: fare evasion, theft, sex offenses, disorderly conduct, graffiti/vandalism, and narcotics offenses. NYPD and WMATA also have specialized squads trained to apprehend pickpockets.

Agencies Using Plainclothes Station Patrols:

- Bay Area Rapid Transit (BART) Oakland, CA
- Metro-North Railroad (MNR) New York, NY
- New York City Police Department (NYPD) New York, NY
- San Francisco Municipal Railway (MUNI) San Francisco, CA
- Washington Metro Area Transit Authority (WMATA) Washington, DC

TECHNIQUE: DECOY OPERATIONS

Definition: An apprehension-oriented technique in which officers dressed to simulate potential victims are assigned to areas where a recent pattern of criminal activity indicates a strong similarity in victim selection.

Commentary: This tactic is performed to affect arrests where crime analysis indicates that a pattern has developed in the type of victim chosen as a target of criminal activity. Examples include young women riding the system by themselves during late evening hours or elderly persons using the system during non-peak hours. It might also include foreign or out-of-town visitors unfamiliar with the system or any late-night revelers who appear slightly under the influence of alcohol.

Officers disguised so as to appear similar to others within the victim group are assigned to high crime locations during those hours determined to be high risk. Their function is to draw the criminal toward them and away from the actual victim group. With the assistance of back-up officers, their objective is to arrest offenders attempting to perpetrate their crime on the decoy officer.

Agencies Using Decoy Operations:

- Port Authority of New York & New Jersey (PANYNJ) New York, NY
- Metro-North Railroad (MNR) New York, NY
- New York City Police Department (NYPD) New York, NY

Section VI

BIBLIOGRAPHY

INTRODUCTION

The Bibliography is based on research of books and book chapters; government documents; dissertations; articles from various types of publications, including technical journals, police journals and magazines, and transit journals and magazines; and a selection of newspaper articles on transit policing issues.

Comprised of more than 250 items, it contains published and unpublished material and is the most complete listing on transit policing in existence, covering virtually all important writings since 1980. To assure its value to transit police and security managers, the most important source material on general crime deterrence and fear-related issues has been included. The Bibliography should be of particular interest to transit managers involved in police or security decision-making matters who are specialists in other areas of transit management. They may find it provides them with a quick overview of relevant materials in the policing field.

The Bibliography contains a wide scope of source material. The nature of transit policing is such that it has resulted in coverage in police publications, security publications, and transit publications. All these are brought together here. Similarly, a diversity of government oversight agencies has precipitated a broad range of studies and reports which have rarely been collected in one document.

Whatever problem an agency may be facing, it is probably not alone. A review of what has been done elsewhere is an excellent place to begin the search for solutions.

Chapter 10

PUBLISHED MATERIALS

In general, rail policing or security has received considerably more attention than have similar issues on buses. Bus material is meager, and most of what exists is in the form of government reports or local newspapers articles highlighting crime problems and fears on particular lines at particular times. This, no doubt, reflects the fact that transit policing has historically been more rail-oriented, and that the vast majority of in-house transit policing units are in rail agencies.

Bus systems, which service a large proportion of the transit riding public and which are today faced with crime problems that many rapid transit systems have brought under control, have neither the dedicated police agencies nor the research findings on which to rely as they are asked more and more frequently to address patrons' concerns about peak and off-peak safety. Fortunately, this lack of attention to and coordination by bus systems seems to be reversing. Recently, as concepts of Crime Prevention Through Environmental Design (CPTED) expand beyond station design, available technological advances to enhance bus rider safety are more frequently featured in security and transportation publications.

Among the rail-specific articles are a number documenting the development of individual transit police forces, providing background information on their creation and their growth over a period of years. Accompanying statistics often discuss particular crime problems and techniques the agencies have employed to address them. These articles should not be overlooked by transit managers seeking ways to combat their own problems. Because agencies, often regardless of size or mode, indicate similar concerns, material that addresses how comparable systems have attempted to solve these problems can preclude the necessity to waste time, money, or staff power without the frame of reference of how others have attacked similar issues.

Parking lots are an example of a common problem with many possible solutions. Virtually all agencies featured in narrative articles note the problems of theft and vandalism to autos, as well as the accompanying problem of theft of riders' personal

items from inside car passenger compartments and trunks, and even the theft of batteries from under the hoods of parked vehicles. A review of these articles, though, provides a vast array of possible solutions, ranging from a series of patrol deployment techniques, to electronic surveillance, to stationary guard posts, to methods of generating traffic in the lots during the business day as a form of crime deterrence.

Another item frequently addressed in the literature is graffiti—probably the most universal vandalism problem facing public transportation for at least the last 20 years. As large cities have erased the problem, it has moved to many smaller cities' transit systems. In a number of areas, particularly in California and the western United States, the problem is linked to the larger issue of gang tagging as a form of territorial marking. Again, depending on the size of the problem, the size and configuration of the policing presence, and other local factors, solutions have ranged from an all-agency assault on the problem to tip lines, to school outreach programs, and to joint efforts with area law enforcement agencies.

A special report: crime prevention through environmental design
Nation's Cities (December 1977), pp. 15-28

An early but comprehensive group of short articles on crime prevention through environmental design (CPTED) that mentions WMATA's low crime rate during its first year of operation; a Tri-Met experiment using specially designed bus shelters to aid in a neighborhood redevelopment project; and Jacksonville, FL's redesign of traffic patterns to permit greater utilization of buses to control crime and aid downtown street traffic flow.

Ahern, Don

MTC to patrol downtown stop after complaints of panhandlers
St. Paul Pioneer Press [MN] (Aug. 15, 1992), p. 1A

Describes changing deployment to respond to citizen complaints.

Ahern, Don

Uniformed cops, new squad cars help boost arrest rate on buses
St. Paul Pioneer Press [MN] (March 18, 1991), p. 1c

Anderson, Teresa

Legal Reporter

Security Management (Nov. 1995), p. 86

In a case involving a woman who was raped, robbed, and beaten in a subway station passenger tunnel, the New York State Court of Appeals ruled in *Clinger v. New York City Transit Authority*, No. 1008, that a public transportation authority has no duty to protect patrons from the violent acts of others. The decision overturned a lower court ruling that the authority was liable in the case.

Andrews, William

Envoys to the homeless: The New York City Transit Police Homeless Out-Reach Unit
Transit Policing, 3 (Winter/Spring 1993), p. 21

Unit Profile.

Applebome, Peter

Parents face consequences as children's misdeeds rise
New York Times (Apr. 10, 1996), p. 1:1-2

A number of transit agencies employ parental restitution as a method of deterring vandalism and property crime by juveniles. According to the National Conference of State Legislatures, states and cities around the country are following the same strategy as they enact laws making parents responsible for their children's misbehavior.

Arko, Robert L.

Contract security rolls into the transit industry
Security Management (July 1992), pp. 26-31

Attack by gunmen in Israel kills teen-ager at a bus stop

New York Times (May 14, 1996), p. A8:1-2

Terrorism in Israel continues to endanger public transit, as one teenager is killed and another wounded in a drive-by shooting at a West Bank bus stop.

Attack by gunmen in Israel kills teen-ager at a bus stop
New York Times (May 14, 1996), p. A8:1-2

Terrorism in Israel continues to endanger public transit, as one teenager is killed and another wounded in a drive-by shooting at a West Bank bus stop.

Austin, Thomas L. and Eve S. Buzawa
Citizens perception on mass transit crime and its deterrence: a case study
Transportation Quarterly (Jan. 1984), pp. 103-119

Detailed discussion of the authors' experiment on the Detroit PD's Bluebird Unit's effects on crime and fear of crime on DDOT buses. Questions put to riders dealt with ridership patterns, perception of safety and victimization, transit security knowledge, attitudes toward the Bluebirds, and preferences for alternate security measures.

Baehr, Guy
Joint meeting voted on security complaints
Newark Star-Ledger (March 1, 1995)

Complaints about the police department by other NJT unions.

Balog, John N., Anne N. Schwartz, and Bernard C. Doyle
Transit security procedures guide
Washington, DC: Dept. of Transportation (FTA), 1994.

This FTA guide, a companion to its transit system Security Program Planning Guide, discusses a systems approach to transit security planning and implementation, provides procedures for immediate and follow-up responses to incidents, and highlights a number of common transit security problems as well as possible defensive actions systems might employ to minimize these problems.

Balog, John N.; Anne N. Schwartz, and Bernard C. Doyle
Transit security procedures guide
Washington, DC: Dept. of Transportation (FTA). 1994.

A companion to the transit system security program planning guide, this study includes information on how to apply the systems approach to transit security; prevention of incidents; response guidelines; and specific evaluations of a variety of security problems.

Balog, John N., Anne N. Schwarz, and Bernard C. Doyle
Transit system security program planning guide
Washington, DC: Dept. of Transportation (FTA), 1994.

The FTA encourages all transit agencies to develop, implement, and maintain a system security plan program. This guide discusses each aspect of such a plan and describes how to create, evaluate, and modify an agency plan. The guide also includes a transit security bibliography of approximately 200 items.

Barberic, Shari V.
Miracle on Broadway: Los Angeles MTA Transit Police Department
Transit Policing, 4 (Spring 1994), p. 29

Agency profile.

Barry, Dan
The selling of store security
New York Times (Feb. 6, 1996), p. B1:2-5

Describes steps taken by Green Acres Shopping Mall to enhance safety in its customer parking lot. Mall parking lot security is identical to issues facing transit agencies hoping to address customers safety concerns.

Benjamin, Julian M., David T. Hartgen, Tim W. Owens, and Malcolm L. Hardiman
The perception and the incidence of crime on public transit in small systems in the southeast.

Transportation Research Board, Paper #940787 (Washington, DC), Feb. 20, 1994

One of the few academic studies of a small system.

Block, Sherman and Willie L. Williams

Transit policing in Los Angeles County

Los Angeles County Sherriff's Dept. and Los Angeles Police Dept, 1993.

This joint proposal by LA County Sheriff Sherman Block and Los Angeles PD Chief Willie Williams was submitted to the LA MTA to provide law enforcement services to the transit system. Although the MTA decided to expand its in-house police force rather than accept this proposal, the document is an excellent example of the issues, costs, and jurisdictional questions raised when contracting out police services.

Bloom, Jennifer Kingson

When city walls speak

New York Times (Jan. 8, 1995), Sec. 13, p. 3:1-5

Importance of enforcement and related crimes. Story is not transit-related but may be of interest to graffiti units.

Boston "beefs up" transit police force with 33 new officers

Passenger Transport (March 30, 1992), p. 12:1-2

MBTA General Manager heralds swearing in of new officers, commenting on the deterrent and fear reduction effects of uniformed officers riding trains.

Boyd, Annabelle and Patricia Maier

An assessment of transit data collection: looking toward the future

Transit Policing, 5 (Spring 1995), pp. 19-24

Aimed possibly at agencies which do not have in-house police forces, discusses the strengths and weaknesses of the FBI Uniform Crime Reports as a data collection base for transit crime. Dispatch logs, operator reports, and incident report forms are analyzed as a means to enhance data collection mandated by the FTA Section 15 program.

Brantingham, Paul J., Patricia L. Brantingham and Paul S. Wong

How public transit feeds private crimes: notes on the Vancouver Skytrain experience

Security Journal, 2 (1991), pp. 91-95

A research piece calling for more attention to be paid to the relationship between crime and public transit.

Brennan, Clarke

Taking the writing off the wall. Metro area expected to pour \$2 million into graffiti cleanup this year

Rocky Mountain News (Denver) (Aug. 22, 1994), p. 4A

Highlights the high costs of graffiti cleanup.

Browning, Dan

MTC: A safe ride? Crime: some routes a war zone, agency says

St. Paul Pioneer Press [MN] (June 12, 1994), p. 1A

Budds, Harry

Los Angeles transit police: a unique agency taking on unique challenges

Police Chief (Feb. 1984), pp. 30-31

General article on development of the Los Angeles Transit PD, which began operation on July 1, 1978; its current role; and its policing techniques. At the time of its creation, it was the only all-bus property police department.

Bureau of Alcohol, Tobacco and Firearms

Bomb threats and physical security planning

Washington, DC: Government Printing Office, 1987.

This 24-page pamphlet provides information and sample forms to help agencies prepare for the potential threat of explosives-related threats and actual violence. It stresses the importance of a bomb incident plan to reduce personal injury and property damage.

Buzawa, E. S. and T. Austin

The Bluebirds: Detroit's response to mass transit crime

Police Chief (Dec. 1984), pp. 32-33

Discusses crime issues that led, in October 1976, to the creation of the Bluebird unit in the Detroit PD: The unit's financing is also explained.

Castleman, C.

Getting Up: Subway Graffiti in New York

Cambridge, MA: MIT Press, 1982.

Chaiken, Jan M., Michael W. Lawless and Keith A. Stevenson

Exact fares on buses

Ronald V. Clarke, ed. Situational Crime Prevention. NY: Harrow & Heston, 1992.

A specific study looking at the inter-relationship between buses and subway robberies in NYC, looking at crime displacement issues. Study period is 1968-1970.

Chin, Richard

MTC bus cops will get uniforms, 2 cars

St. Paul Pioneer Press [MN] (July 12, 1990), p. 2B

Ciconte, Marie

Tracking vehicles

Metro Magazine (March-April 1987), pp. 36-39

This discussion of the use of automatic vehicle location systems briefly describes how crime can be deterred through vehicle location and how drivers can assist in crime prevention by notifying dispatchers of problems on their routes.

Cooper, Michael

Doctor is shot during dispute aboard bus

New York Times (Sept. 9, 1995), p. 21:2

A dispute between passengers ends in a shooting. Article describes the driver's successful effort to empty the bus of all passengers except those involved in the dispute.

Daley, Suzanne
15 are killed as commuters stampede in South Africa
New York Times (Aug. 1, 1996), A3:1-4

An effort by the Metro Suburban Train Service in Johannesburg, South Africa, to combat years of mass fare evasions that were politically motivated, resulted in 15 deaths and more than 50 injuries as rush hour commuters stampeded when security officers closed off exits and access to a commuter train.

Dart, Robert W.
Urban transportation security
FBI Law Enforcement Bulletin (Oct. 1991), pp. 1-3

Describes how CTA reduced actual crime and the fear of crime on its subway; discusses personnel, patrol, canine, tactical units, crime assault and ordinance enforcement units.

DC agencies target terrorism in transit: strike force aims at bio/attacks
Law Enforcement News (Dec. 15, 1995), p. 4:1-2

Spurred by the nerve-gas attack in a Tokyo subway that killed 11 people and sickened 5,000 others in March 1995, Washington, DC, officials created a "metropolitan strike team" of physicians and emergency medical personnel to act as first responders in a disaster.

Decoding graffiti to solve bigger crimes: police experts identifying gangs fueds, drugs and personal signatures
New York Times (Oct. 4, 1996), p. B1:2-4

Just as a number of police departments learned years ago, the NYCPD has expanded graffiti enforcement as it learned that tags often relate to gang activity, drug sales, and other violent crimes, including arson. More than 100 officers and detectives are assigned to the Transit Bureau, the Housing Bureau, and citywide to deter graffiti and improve intelligence gathering.

DeGeneste, Henry I. and John P. Sullivan
Transit terrorism: beyond Pelham 1-2-3
Police Chief (Feb. 1996), pp. 44-49

Summarizes incidents of rail-and bus-related terrorism since 1974; discusses the rationales for terrorist groups selecting public transit systems as targets; discusses the importance of preparedness, training, prevention, and responses to terrorist activity.

DeGeneste, Henry I. and John P. Sullivan
Policing transportation facilities
Springfield, IL: Charles C. Thomas, 1994.

DeGeneste, the retired Director of Public Safety and Superintendent of Police for the Port Authority of New York and New Jersey, and Sullivan explain security problems confronting police at airports, waterfront terminals, and rail and transit facilities of every kind, and outline the measures that have proved successful in meeting them. Of particular interest to transit police will be chapters on commuter rail and subway crime, public bus/rail terminal crime, transportation terrorism, and problems associated with the homeless and mentally ill in urban transportation centers.

Del Castillo, Vincent
Fear of crime in the New York subway
Ann Arbor, MI: University Microfilms International, 1994.

Graffiti's effect on crime and perception of crime and disorder; how the TA solved the problem.

Del Castillo, Vincent
Fear of crime: the police response
Transit Policing, 3 (Winter/Spring 1993), p. 1

Denver RTD embraces camera surveillance
Transit Policing, 5 (Spring 1995), p. 28

Based on a pilot program that documented a decrease in crime and vandalism on a 24-hour bus route, RTD has equipped all its light rail vehicles with surveillance cameras and plans to equip 150 buses with the devices.

Deutsch, Claudia H.
A former haven of sleaze is now a refuge of retail
New York Times (Mar. 17, 1996), Sec. 9, p. 11:1-5

Written from a real estate perspective, this article describes how the Port Authority of New York and New Jersey's 42nd Street bus terminal was transformed from an area perceived as unsafe and unsavory into a retail hub where space now rents for as high as \$125 a square foot.

Dietz, David
1,000 beat cops to ride MUNI daily: Brown says officers must board buses twice each shift.
San Francisco Chronicle (Jan. 24, 1996), p. A11

Based on a directive from Mayor Willie Brown, the San Francisco PD directed all 1,000 beat officers to ride MUNI vehicles at least during their tours of duty. Officers, who are not in favor of the plan, will sign in with the driver, announce their presence, ride for a few blocks and then resume their regular patrol patterns.

Dimeo, Jean
Security a top priority on D.C.'s Metrorail
Access Control (Dec 1991), p. 1:1

Agency case study.

Dizon, Lily and Leslie Berkman
Transit bus hijacked; driver leads officers on 35-mile freeway
Los Angeles Times (Sept. 13, 1985), p. 18 A:5

Transient hijacks occupied bus.

Donohue, Kenneth J.
Terrorism: real life experiences, the American perspective
Paper presented at the Federal Transit Administration Conference on Transit Security in the '90s
Atlanta, GA, Feb. 27, 1996.

Provides a detailed description of common errors in emergency response and suggests planning devices to combat these mistakes. Includes a copy of an interagency emergency preparedness exercise conducted by NYC emergency response agencies in September, 1995.

Dougherty, Joe
High-profile incidents foster false perceptions
Passenger Transport (Jan. 16, 1995), p 5: 1-2

Noting that, "Nationwide, there are no statistics one can use to show transit crime rates are falling," this article quotes a number of police managers who are concerned that fear of crime continues to be unrealistically high on public transit despite efforts of police and marketing professionals to dispel these perceptions.

Drop that snack in the name of the law!
Cleveland Plain Dealer (July 18, 1992), p. 3C: 1-4

Juveniles being arrested for eating on buses and streetcars upsets parents.

Easteal, Patricia W. & Paul R. Wilson
Preventing crime on transport: rail, buses, taxis, planes
Canberra, Aus: Australian Institute of Criminology, 1991.

A variety of crime prevention strategies are discussed for acts committed on or in proximity to public transportation facilities. Crimes discussed range from petty theft to rape. Prevention strategies are influenced by the theoretical model of situational crime prevention.

Eastman, James A.
Analysis—cord pulls on the New York City subway
Transit Policing, 3 (Fall 1993), p. 5

Analysis of a serious criminal mischief problem for the New York subway system.

Eck, John and William Spelman
Thefts from vehicles in shipyard parking lots
Ronald V. Clarke, ed. Situational Crime Prevention. NY: Harrow & Heston, 1992.

Although this pertains to a shipyard parking lot, the issues and analysis should interest transit managers.

Edwards, Marmie
Operation Lifesaver emphasizes rail safety first
Passenger Transport (Jan. 16, 1995), p. 8:1-4

Discusses programs used by a number of passenger transit systems to introduce commuters, school children, and others to Operation Lifesaver programs to maximize safety and minimize accidents on tracks.

Egan, Timothy
Police surveillance of streets turn to video cameras and listening devices
New York Times (Feb. 7, 1996), p. A12:1-6

As Transit agencies increase their usage of surveillance equipment, cities, too, are turning to technology to enhance safety on streets.

Falanga, Michael
Reducing crime through design on the Chicago subway system
Ann Arbor, MI: University Microfilms International, 1989.

This study, a University of Michigan dissertation, describes high crime stations in the Chicago subway system and presents guidelines for designing stations that reduce crime costs effectively. Crime prevention through environmental design (CPTED) principles proposed include creating predictable crowd involvement matters, minimizing around congestion and individuals isolation, minimizing opportunities to view victims, and minimizing exits and escape alternatives.

Ferguson, Greg
Lock the house, here comes the train
U.S. News & World Report (Aug. 15, 1994), p. 18:1

Residents of Linthicum, MD, complain that crime has risen since a light rail stop opened in their community.

Following the fleet
Security Management (Feb. 1995), pp. 16-18

Example of small system crime prevention through monitoring bus locations.

Frank, Marshall
Custom protection officers give Miami right level of security
Passenger Transport (March 30, 1992), p. 12:1-4

Introduction of Wackenhut Corp's. Custom Protection Officers on Metro-Dade's MetroRail system in 1989 has resulted in reduced crime rates and higher levels of customer satisfaction.

Frank, Marshall
Private security setting trend in rapid transit
Passenger Transport (Jan. 16, 1995), p. 11: 1-4

The Wackenhut Corp's manager of transit systems discusses use of his firm's Custom Protection officers in Miami, Ft. Lauderdale, Milwaukee, and Denver and use of other private security contractors in San Diego and St. Louis to provide patrol coverage in lieu of police patrols.

From security to route assistance, NJ Transit Police are on the job
Passenger Transport (Jan. 16, 1995), p. 4:1-4

General discussion of the range of duties performed by NJT's 111 police officers and an explanation of three special safety programs, Transit on Patrol, Police on Board, and Request a Stop.

Garner, Joel H. and Christy A. Visher
Policing experiments come of age
Washington, DC: Dept. of Justice (NIJ Research in Action), September/October, 1988.

Two researchers explain the importance of having policy makers—either chief executives or mid-level managers—involved with each step of a research project in their agency beginning with its design, and continuing through implementation and interpretation of the findings.

Geason, Susan and Paul R. Wilson
Preventing graffiti and vandalism
Canberra, Aus: Australian Institute of Criminology, 1990.

This small, soft-covered book discusses criminological theories on vandalism; describes planning, management, and crime prevention through environmental design (CPTED) strategies for minimizing graffiti, and other vandalism on trains, buses, and other public space. Among the transit agencies mentioned are: New South Wales, Australia; Victoria and London, England; Houston, Texas; New York City; Washington D.C., and Oakland, California. Buses in the United Kingdom are also discussed.

Gee, Gary
BART's underground cops
Journal of California Law Enforcement (Summer 1993), pp. 107-109

Policing did not become an issue at BART until 12 years after its opening. Article traces the development of BART PD.

Gellman, Barton
Israel's day of terror: 2 bombings kill 26
Miami [FL] Herald (Feb. 26, 1996), p. 1:1-3

Two bombings in two Israeli cities point up the vulnerability of public transit to terrorist activities. Article includes a chronology of 10 bombings in Israel from April 6, 1994 to Feb. 25, 1996.

Gilbert, Susan

Surveillance technologies: electronically leveraging transit security forces.

Police Chief (July 1995), p. 22

This survey article provides an overview of surveillance measures employed by a variety of large and small transit police/security departments.

Gladwell, Malcolm

In today's cities there's no room for seclusion; fear forces New York to pry wide open its intimate havens

Washington Post (Feb 11, 1995)

General article on how fear of crime has altered urban space planning; refers to Port Authority Bus Terminal and Washington, DC, Metrorail stations.

Gordon, Michael R.

Moscow bomb complicates Yeltsin's war against crime

New York Times (July 12, 1996), p. A11:1

Five people, including the bus driver, were wounded when a bomb went off in a Moscow trolley, continuing the increasing use of public transportation by terrorist groups to sow upheaval in many countries around the world.

Gostl, Robert G.

New Orleans Police Department: transit policing in Crescent City

Transit Policing, 3 (Winter/Spring 1993), p. 23

Agency profile.

Grabosky, Peter and Marianne James, eds.,

Public transport safety in Victoria

The promise of crime prevention: leading crime prevention programs. Canberra, Aus.: Australian Institute of Criminology, 1995.

A brief (2 pages) description of the Travel Safe Program instituted in 1990 by the Victoria, Australia, Public Transport Corp to enhance passenger safety by reducing vandalism and graffiti on trains, trams, and buses. Crimes against persons decreased by 42 percent over two years.

Grabosky, Peter and Marianne James, eds.,

Reducing crime on public transport in the Netherlands

The promise of crime prevention: leading crime preventing programs. Canberra, Aus.: Australian Institute of Criminology, 1995.

A brief (2 pages) description of a program started in December 1984 by the Netherlands government to hire unemployed young people to patrol public transit to deter vandalism and fare evasion. While not truly cost effective, the program has contributed to reductions in vandalism and has provided work to unemployed people between the ages of 19-28.

Gutierrez, Hector

Buses to get surveillance cameras

Rocky Mountain News Denver (Jan 2, 1995), p. 54

Haberman, Clyde

Graffiti wars in the subway: it's round 2

New York Times (Dec. 19, 1995), p. B1:1

Vandals etching into the glass windows and door panels of NYC subway cars have become the 1990s version of graffiti. Despite a number of arrests of etchers, the problem continues to cost the TA time and money and to raise fear levels of passengers who had become accustomed to clean, damage-free cars.

Hargadine, Eileen O.
Case studies of transit security on bus systems
Washington, DC: Dept. of Transportation (UMTA), 1993.

Discusses common and unique features of four bus system's response to crime and the perception of crime, including use of police/security, communications equipment, community programs, and operator training. Comparative costs, perception of crime, and effectiveness of the various measures are also discussed.

Hargadine, Eileen O. and Carl Scott
Documentation and assessment of transit security data reporting and its utilization
Washington, DC: U.S. Dept. of Transportation (UMTA), 1995.

Documents and assesses reporting systems in use by 23 transit police and security departments; discusses the division of responsibility for security between local law enforcement and transit agencies; identifies three alternative reporting systems based on whether an agency has a small security department, a large security department, or a police force with sworn officers.

Hendrie, Edward M.
Searching locked containers incident to arrest
FBI Law Enforcement Bulletin (Jan. 1996), pp. 26-31

As public transit locations become more frequently involved in drug and terrorism activities, the searching of locked containers incident to arrest takes on added significance. This article reviews current case law.

Henneberger, Melinda
U.S. to offer housing vouchers to lure homeless from the subways
New York Times (Nov. 18, 1994), p. B14

Henry, Bryan G. and Dean M. Esserman
Metro-North Police: restructuring for the future
Transit Policing, 4 (Spring 1994), p. 24

Agency profile.

Hin, Stewart
Car thefts increase sharply at train station
New York Times (June 20, 1993), Sec. 13, p. 1: 1-4

Discusses decision to assign police personnel to deter parking lot thefts.

Hoffmann, John
Minimizing risk in bus arrests
Law and Order (Sept. 1991), pp. 32-34

Officer and passenger safety in on-bus arrests.

Holloway, Lynette
Bumping on subway leads to a slashing
New York Times (Mar. 19, 1996), p. B4:4-6

In exactly the type of stranger-to-stranger crime that strikes fear in subway riders, a psychiatric outpatient slashed the face of another subway rider for bumping her and failing to apologize.

James, George
Man convicted in bombing on subway
New York Times (March 8, 1996), p. B1:6

The computer analyst who set off two firebombs on Dec. 15 and Dec. 21, 1994 on New York City subway trains was found guilty of attempted murder and assault. The jury could not decide whether Edward J. Leary intended to extract money from the Transit Authority to pay mounting debt or whether he was suffering from medically-induced depression.

Judge tells Amtrak not to bar homeless
New York Times (Mar. 30, 1996), p. 7:2

In a ruling that may affect other transportation facilities, a Federal judge in New York City barred Amtrak from ejecting homeless people and others from Pennsylvania Station without evidence that they have committed a crime.

Kabundi, M. and A. Normandeau
Crime in the Montreal subway
International Criminal Police Review (May/June 1987), pp. 24-27

Review of research on crime trends in the Montreal subway system from 1979-1985; contains bibliography of articles in English and French.

Kangas, Scott E.
The fundamentals of parking protection
Security Management (July 1996), pp. 44-50

A primer for those responsible for indoor parking facilities, describing the steps for conducting security audits and recommending steps to solve problems highlighted by the audit.

Kelling, George L.
What Works-Research and the Police
Washington, DC: Dept. of Justice, National Institute of Justice (Crime File Study Guide), 1988.

A general discussion by a well-known researcher on police topics that reviews past research and discusses the requirements for successful experimentation, including: 1) collaboration between agency personnel and researchers; 2) random selection of experimental areas, 3) random selection of a control group; 4) relevant data testing immediately before and after the experiment; and 5) independent evaluation.

Kelling, George L. and William J. Bratton
Transit police and their communities
Transit Policing, 1 (Fall 1991), p. 1

Kenney, Dennis Jay
Crime on the subways: measuring the effectiveness of the Guardian Angels
Justice Quarterly (Dec. 1986), pp. 481-496

The Guardian Angels are one of the largest and best-known citizen action groups targeting transit crime and fear. Based on a controlled experiment, Kenny found that although the Angels presence seemed to have a temporary effect on the fear of crime, there was no proof that their presence reduced actual crime.

Kenney, Dennis Jay
Crime, fear, and the New York City subways-the role of citizen action
New York: Praeger Publishers, 1987.

This examination of the impact of citizen action on crime and the fear of crime uses citizen and police data collected in 1983 and 1984. During this period, the Guardian Angels withdrew and reintroduced either normal or intensive patrols in selected sections of the New York subway system. Onsite interviews were conducted with 2, 700 nighttime riders to ascertain their extent of prior victimization, fear of crime, and attitudes toward the Angels. Results indicate that, contrary to public expectations, crime on the subway was remarkably low. Fear of crime was found to be relatively high, but not exceptional when compared to fear of crime found in above-ground settings. Comparisons of areas having no, normal, or intensive patrols indicated that the Angels had no apparent effect on crime rates or on overall fear of crime, nor did patrols increase the willingness of passengers to help one another.

Kleinfield, N.R.
Police reach out to the homeless, but often find efforts rejected
New York Times (Nov. 16, 1994), p. 1:5-6

Kleinig, John
Policing the homeless: An ethical dilemma
Journal of Social Distress and the Homeless, 2 (1993), pp. 289-303

Ethical issues involved in ejecting the homeless.

LA's Metro Blue Line: the first year
Transit Policing, 1 (Fall 1991), p. 7

Short history of the sheriff's department providing contract policing for the Southern California rapid transit district.

Labaton, Stephen
Transit police get funds to put officers on buses
New York Times (Oct. 13, 1994), p. B6:1-2

Lambert, Thomas
Proactive policing keeps Houston METRO secure
Passenger Transport (Jan. 16, 1995), p. 6: 1-4

General discussion of the METRO PD (formed in 1982) and special programs in effect since 1987, highlighting the Transit On-Watch program which includes Adopt-A-Shelter, Adopt-A-Transit Center, Anti-Vandalism, and Safe-Haven as parts of a systems approach to crime and fear reduction.

Lancaster, Miriam D.
Carjacking: new name for an existing crime
Transit Policing, 3 (Fall 1993), p. 29

Law Enforcement News (Feb. 14, 1996), p. 2:2

MBTA undertakes saturation patrol of stations to combat an increase in crime; officers are also assigned 4-5 station beats, rather than patrolling entire routes.

Leitner, Judith
San Diego's multi-faceted approach to security
Passenger Transport (Jan. 16, 1995), pp. 10-11

Programs designed to reduce property crimes on buses and trolleys include a confidential tip-line staffed by Crime Stoppers operations, use of off-duty police officers to ride buses, and setting up volunteer-staffed Goodwill Industries, Inc. donation centers in park-and-ride lots.

Lempert, Richard O. and Christy A. Visher
Randomized Field Experiments in Criminal Justice Agencies
Washington, DC: Dept. of Justice (NIJ Research in Action), October, 1988.

An abbreviated report on a workshop convened to review the techniques involved in successful randomized field experiments in criminal justice, this monograph briefly describes seven key issues raised by the 90 participants. Any practitioner considering undertaking full-scale or quasi-experiments should review this document before beginning.

Lesser, Harriet
Car thieves wheel and deal here
South Shore [NY] Record (Mar. 31, 1994)

During its first three weeks of operation, the LIRR Auto Crime Unit, consisting of four plainclothes officers and a supervisor, made 13 arrests at stations in Nassau and Suffolk counties.

Levine, Lenny
OCTA gets more bang for its police buck
Metro Magazine (Sept- Oct. 1996), pp. 94-102

Feature article that describes how the Orange County Sheriff's Department Transit Unit replaced an in-house police force of eight people and private guards. The OCSO's unit, which has reduced graffiti-related costs from \$1.2 million to \$85,000, is comprised of a lieutenant, a sergeant, five deputies, and 16 special officers. Cost to OCTA is \$1.8 million annually.

Levine, Ned and Martin Wachs
Tracking crime on buses
TR News, (Nov.-Dec. 1986), pp. 18-22

Article is based on the Levine and Wachs study which determined that the incidence of bus crime in west central Los Angeles was much greater than previously documented. The study, based on a telephone survey, found that frequency of bus use was the most important correlate of victimization.

Levine, Ned and Martin Wachs
Bus crimes in Los Angeles: 2-victims and public impact
Transportation Research, 20A, 4 (1986), pp. 285-293

Based on same study as part 1, above. Characteristics of victims, perceptions of safety in using the system, and factors predicting these perceptions are analyzed.

Levine, Ned and Martin Wachs
Factors affecting the incidence of bus crime in Los Angeles, vol. 1
Washington, DC: Dept. of Transportation (UMTA), 1985.

Based on a telephone survey, this study estimated bus crime to be far higher than reported by SCRTA. Generalizing for all transit systems, the authors attributed this information "leakage" to such factors as: bus-related crimes occur outside the buses, many crimes are not reported to the police, the police may not investigate a crime, even if it is reported, and local police reporting forms do not identify transit-related incidents.

Levine, Ned and Martin Wachs
Factors affecting the incidents of bus crime in Los Angeles, vol. 2
Washington, DC: Department of Transportation (UMTA), 1985.

See Vol. 1 above; this volume contains appendices of documents used in the study.

Levine, Ned, Martin Wachs and Elham Shirazi
Crime at bus stops: a study of environmental factors
Journal of Architectural and Planning Research 3, no. 4 (Nov. 1986), pp. 339-361

Article is based on the Levine and Wachs study which determined that the incidence of bus crime in West Central Los Angeles was much greater than previously documented. The study, based on a telephone survey, recommended that an environmental database that incorporates information on land use and social behavior would strengthen police reporting procedures and help focus public safety planning.

Lewis, D. A. & G. Salem
Fear of crime: incivility and the reduction of a social problem
New Brunswick, NJ: Transaction Books, 1986.

Linton, Gordon J.
FTA plans for safer, more secure transit
Passenger Transport (Jan. 16, 1995), p. 5: 1-2

FTA Administrator Linton explains his strategic plan and his four key goals: to improve personal security, to improve operational safety, to develop and demonstrate new and innovative security and safety technologies, and to improve emergency management planning.

LIRR Police Department establishes new auto crime unit for station parking lot. Surveillance in Nassau and Suffolk
South Shore Tribune [NY] (Feb. 17, 1994)
Announces establishment of the Auto Crime Unit.

Longmore-Etheridge, Ann
Security works minding the road.
Security Management (Sept. 1995), pp. 24-25

Use of a video surveillance system by the Savannah/Chatham County (GA) Board of Education has improved student behavior on buses and in December 1994 was instrumental in the capture and prosecution of an armed man who had hidden in the bus and forced the driver to take him to downtown Savannah.

Lyall, Sarah
At least 8 reported hurt as blast rips bus in London
New York Times (Feb. 19, 1996), p. A7:1-4

A bomb placed in the middle of a London Transport bus explodes, causing the double-decker vehicle to cave in.

Lynch, Clark
Looking forward: transit policing in California
Transit Policing, 4 (Spring 1994), p. 1

MacFarquhar, Neil
Modernize a subway? Not so fast, critics say
New York Times (Apr. 2, 1995), p. B5:1-4

In an example of how public perceptions and fear of crime affect transit planning, New Jersey Transit is meeting resistance to its subway expansion plans by community residents who cite "macabre crimes" elsewhere on the system as the reasons they do not want a subway station and maintenance yard in their community.

Longmore-Etheridge, Ann
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MacLean, Angus B.
The Metro Transit Police: metropolitan Washington's tri-state force
Police Chief (Dec. 1984), pp. 29-30

General article on the development of WMATA'S Metro transit police force, which began operation on June 4, 1976; its current role; and its policing techniques. MTP was the first tristate transit force in the United States.

"Man's best friend" joins SEPTA police force
Transit Policing, 1 (Fall 1991), p. 9

Introduction of K-9 teams.

Manegold, Catherine S.
Port Authority helps homeless find an exit
New York Times (Aug. 17, 1992), p. A1

In-depth article on Operation Alternative, the Port Authority of New York and New Jersey's program that combines police enforcement with treatment and delivery of social services to clear Manhattan's midtown bus terminal of large numbers of homeless people who had taken up residence there.

Martin, Glen
Police presence seems to work: MUNI crime down 31% Fewer incidents in March
San Francisco Chronicle (Apr. 23, 1996), p. A13

A directive by San Francisco Mayor Willie Brown in January that called for city police officers to board MUNI buses appears to be linked to a dramatic decrease in crime in February and March despite the fact that officers were unhappy about the assignment.

Middleton, William D.
Design for transit: what can Cleveland teach us?
Transit Connections (June 1995), pp. 25-30

One of three RTA rules is to get passengers to their destinations safely; article discusses how safety and security are addressed in station renovations.

Minneapolis Route 5: It's MTC's wildest ride
St. Paul Pioneer Press (MN) (June 12, 1994), p. 1A

Reporter's view of riding the worst of the city's bus lines; teenage vandals and toughs create fear for passengers and drivers.

Molloy, Joseph T. and Ted Labahn
"Operation GETUP" targets taggers to curb gang-related graffiti
Police Chief (October 1993), pp. 120-125.

A description of the Anaheim PD's school undercover program to catch graffiti makers, many of whom are also involved in gang and gang related activities. Caltrans was one of a number of agencies whose properties were tagged.

Myers, Steven Lee
Giuliani wins police merger in M.T.A. vote
New York Times (April 1, 1995), p. 1:5

Mayor wins battle to merge NYC Transit Police Department into larger city department.

N.Y.S. Senate Committee on Transportation
National Conference on Mass Transit Crime and Vandalism (Compendium of Proceedings, Oct. 20-24, 1980). Report No. UMTA-NY-06-0083-81-1.
Washington, DC: Dept. of Transportation (UMTA), 1980.

This document presents edited versions of speeches and comments made during a conference attended by 150 U.S. and Canadian participants focusing on mass transit crime and vandalism.

National Review (March 20, 1995), p. 12:2

Discussion on the federal district court limiting ejections of the homeless.

Nelson, Kurt R.
Stop in the name of the law!
Mass Transit (March/April 1995), pp. 38-44

General article on types of crimes that occur on transit systems.

Nelson, Kurt R.
Tri-Met and the Portland Police Bureau
Police Chief (July 1995), pp. 28-29

This agency profile describes the activities of the 14-officer unit of the Portland Police Bureau that, under contract to Tri-Met, polices both the bus and light rail systems. The unit has existed since May 1989, when Tri-Met disbanded its own transit police agency.

Nelson, Kurt R.
The problem with buses: the risk to officers is different with lawbreakers
Law and Order (June 1996), pp. 77-79

Discusses the risks involved for officers who must respond to incidents on buses, providing tips on boarding, communicating with the operator, and taking into consideration passenger safety.

New custom security force to patrol Milwaukee buses
Passenger Transport (July 12, 1993), p. 5

Introduction of Wachenhut Corp's Custom Protection Officers on the County Bus System is discussed.

New Jersey Transit "TOP" programs provides emergency assistance
Transit Policing, 3 (Winter/Spring 1993), p. 19

Bus drivers use their radios to call in emergency situations along their routes.

Northwest Dade: busdriver, riders robbed at gunpoint
Miami Herald (Aug. 13, 1995), p. 213: 5

Armed men board bus, pistol whip driver, and rob passengers.

O'Leary, Albert W.

Transit policing and the media—or why Mother Theresa was wrong
Transit Policing, 3, No.2 (Fall, 1993), p. 1

Article deals with press relations and the transit police.

O'Mahoney, Timothy

Keeping watch over mass transit
Security Management (Jan. 1990), pp. 50-54

O'Mahony, Timothy V.

Avoiding a subway disaster
Transit Policing, 3 (Winter/Spring 1993), p. 10

Article deals with the earthquake of Oct 17, 1989.

Obremski, Frank

Workin' on the railroad
Security Management (Oct. 1994), pp. 43-46

Discusses establishment of the Long Island Rail Road auto crime unit to combat thefts from parking lots.

Ostrowe, Brian B. and Rosanne DiBiase

Citizen involvement as a crime deterrent: a study of public attitudes toward an unsanctioned civilian patrol force.

Journal of Police Science and Administration 11, no. 2, (1983), pp. 185-193

Discussion of the police and subway riders attitudes toward the Guardian Angels.

Researchers found both support for and reservations about the Angels from the public, but very little support from police officers.

Papa, Sharon K.

Transit industry needs to develop a set of policing standards
Passenger Transport (Jan. 16, 1995), p. 7: 1-4

Papa, LAMTA Chief of Police, outlines the need for developing comprehensive transit policing industry standards and for undertaking strategic planning to address general and specific developments in policing.

O'Mahoney, Timothy
Keeping watch over mass transit
Security Management (Jan. 1990), pp. 50-54

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Pate, Antony M., Mary Ann Wycoff, Wesley G. Skogan and Lawrence W. Sherman
Reducing fear of crime in Houston and Newark: a summary report
Washington, DC: The Police Foundation, 1986.
A review of experimental attempts by two cities to reduce fear, improve the quality of neighborhood life, and increase citizen satisfaction with police services. Part of Newark's experiment included uniformed officers boarding buses to enforce quality of life/code of conduct regulations.

Pawner, Jean-Michel
Paris Metro counters crime
Railway Gazette International (Oct. 1990), pp. 781-782

Penner, Stan
Transit motors debut on Los Angeles' Metro
Transit Policing, 4 (Spring 1994), p. 32

Perez-Pena, Richard
Amtrak is ordered not to eject the homeless from Penn Station
New York Times (Feb. 22, 1995), p. 1:5-6
Discussion on the decision in federal district court limiting ejections of the homeless.

Pierre-Pierre, Gary
Subway panhandlers make comeback
New York Times (June 19, 1996), p. B1:2-4

Approximately a year after the NY Transit Authority disbanded a 10-member team of police officers assigned to keeping panhandlers and illegal peddlers off the subways, riders report an upsurge in both activities. Unit officers were especially skilled at recognizing repeat offenders. In the first three months of 1996, the number of summons issued has risen 50% over 1995, but has not curtailed the problem.

Plotkin, Martha and Tony Narr
Police Response to the Homeless
Washington, DC: Police Executive Research Forum, 1994.

Police response to problems of homelessness; of interest to transit chiefs who face similar issues.

Poyner, Barry
Situational crime prevention in two parking facilities
Ronald V. Clarke, ed. Situational Crime Prevention. NY: Harrow & Heston, 1992.

British study of two public parking garages and a university parking facility; the issues and analysis should interest transit managers, particularly since one lot was adjoining a bus station.

Poyner, Barry
Video cameras and bus vandalism
Ronald V. Clarke, ed. Situational Crime Prevention. NY: Harrow & Heston, 1992.

Documents use of video equipment on buses in England. It is a limited experiment that could be replicated in U.S. cities.

Private security plan for mass transit ruffles Milwaukee Sheriff feathers
Law Enforcement News (Feb. 28, 1993), p. 8:2-5

Debate over switching from contract policing by the Sheriff's Department to private security coverage.

Protzman, Ferdinand
Inventor fights Berlin graffiti plague
New York Times (Jan 4, 1993), p. D1:4-6

Although graffiti began appearing in Germany in the 1970s, since the mid-1980 it has spread, particularly on the transit system. This article discusses some of the steps taken to combat the problem.

Public Safety Division, SEMCOG
Crime and security measures on public transportation systems: a national overview
Detroit, MI: Southeast Michigan Council of Governments, 1979.

An assessment of transit crime reported by transit systems in the U.S. and Canada using 1977 data. Based on responses from 66 agencies, comparisons are made between systems of similar size and passenger volume. There is also a discussion of prevailing security measures.

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An update of SEMCOG's 1979 report, supplements that data by comparing 1980 transit crime data with baseline data collected in 1977. Information is based on 73 U.S. and Canadian systems as well as data from Paris, France, and Singapore.

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An assessment of transit crime reported by transit systems in the U.S. and Canada using 1977 data. Based on responses from 66 agencies, comparisons are made between systems of similar size and passenger volume. There is also a discussion of prevailing security measures.

Rail safety is RTD's top priority

Passenger Transport (Oct. 10, 1994), p. 6:1-3

Article discusses RTA and Denver PD's steps to insure safety along the new light rail's right of way; mentions use of surveillance equipment on each vehicle and the contract security officers' and plainclothes police officers' ability to monitor the system.

Richards, Larry G. and Lester A. Hoel

Planning procedures for improving transit station security

Washington, DC: Dept. of Transportation, 1980.

Describes procedures for designing safe and secure transit (bus and rail) stations. Discusses real and perceived security issues; reviews crime statistics; and examines three target crimes (assault, vandalism and robbery) as well as their countermeasures. Designed as a procedures manual for transit station planners, it outlines a seven-step planning procedure for transit station security planning. Bibliography contains more than 40 pre-1980 references.

Richardson, John W. and Robert Angone

Chicago Police Department's public transportation section: facing the mass transit challenge

Transit Policing, 2 (Summer/Fall 1992), p. 12

Agency profile.

Rumford, Jr. William B. and Frances Cooper
Transit security: exploring new concepts in managing social problems, Sept. 16-18, 1992 (Report & Recommendation).
Washington, DC: Dept. of Transportation, 1992.

Four issues- 1) intergenerational, ethnic and cultural conflicts; 2) drug-free environments; 3) homelessness; and 4) order and cleanliness - are discussed at this 3-day transit security conference.

Safe as trains? Washington's Metro mass transit policing innovation
The Economist, 330 (Jan. 8, 1994), p. A31

Success of WMATA'S "zero tolerance" policy in keeping down crime.

Sampson, Fraser
Dealing with the awkward customer
Police Journal 68, no. 1 (Jan.-March 1995), pp. 29-31

Briefly considers the problems for police in being "customer oriented" when the term customer may encompass unwilling recipients of police attention. The author, a British Transport Police Inspector, suggests police differentiate types of stakeholders with whom they interact.

Sampson, Fraser
Killing the customer
Police Journal 68, no. 2 (April-June 1995), pp. 117-119

Continues the discussion of "customer base" as this term pertains to BTP and the effects of privatization on system users.

Santa Clara Sheriff initiates transit bike patrol
Transit Policing, 2 (Summer/Fall 1992), p. 11

Saville, Gregory J.

Transdisciplinarity, environmental criminology and the transit subway security audit
Security Journal, 2 (1991), pp. 219-226

Crime prevention and implementation of those programs; details 1988 experiment in Toronto subway system.

Schmemmann, Serge
2 suicide bombings in Israel kill 25 and hurt 77, highest such toll
New York Times (Feb. 26, 1996), p. 1:2-5

Two bombings in two Israeli cities point up the vulnerability of public transit to terrorist activities. In Jerusalem, a public bus approaching the main bus terminal exploded, killing 23 passengers, including the bomber. Less than an hour later, two people-one the bomber-were killed in Ashkelon when the bomber entered an area known to be a hitchhiking center for Israeli soldiers.

Schmemmann, Serge
Israeli rage rises as bomb kills 19, imperiling peace
New York Times (March 3, 1996), p. 1:5-6

A suicide bombing on the same bus line as an attack exactly one week earlier kills 19 people as the bus is totally destroyed by the power of the blast.

Schulz, Dorothy M.
Staying on track while making the transition from a railroad to a transit police department
Criminal Justice The Americas, (Feb.-March 1995), pp. 1, 8-10

Discusses changes in the NJT Police Department since the takeover of bus operation beginning in 1980; agency profile touches on various crime and internal issues.

Schulz, Dorothy M. and Susan Gilbert
Developing strategies to fight crime and fear
Police Chief (July 1995), pp. 20-27

This survey article provides an overview of police techniques and deployment strategies currently employed by a variety of large and small transit police/security departments.

Schwartz, Rita
The homeless: the impact on the transportation industry
NY: The Port Authority of New York and New Jersey, 1988.

This one-year study under the auspices of the Port Authority of NY & NJ, was aimed at defining homelessness in the context of transportation facilities, assessing its impact and developing programs and strategies to address the issue. Cities visited as part of the research included: Atlanta, GA; Boston, MA; Chicago, IL; Los Angeles/Santa Monica, CA; Minneapolis, MN; Philadelphia, PA; Portland, OR; San Francisco, CA; Seattle, WA; Louisville, KY; Madison, WI; Portland, ME; and Montreal, Canada. A variety of other cities responded to surveys and phone interviews.

Scott, David
Policing mass transit: the SEPTA system
FBI Law Enforcement Bulletin (July 1993), pp. 1-4

Adopt-a-school program and other crime prevention techniques.

Scott, David
Graffiti wipeout
FBI Law Enforcement Bulletin (Dec. 1989), pp. 10-14

In 1981, SEPTA instituted a systemwide assault on its graffiti vandals. With cooperation from the Philadelphia PD, the district attorney and the courts, vandals were prosecuted and school officials were notified.

Security cameras backed for buses
Milwaukee Journal Sentinel (Sept. 25, 1995), p. 2B:1

The County Board's Mass Transit Committee endorsed installing security cameras on up to 150 new buses, by shifting \$825,000 from elsewhere in the Milwaukee County Transit System's budget. The full rationale was that even though crime was low on county buses, the cameras would help give passengers a greater sense of security.

Security works: strictly speaking
Security Management (July 1993), pp. 17-18

Although primarily a product endorsement, the discussion on interactive CCTV provides ideas on safeguarding parking lots, stations or bus transfer points where vandals may congregate, or locations where a sole employee must work or close a facility at night.

Signs of the times: cities getting tougher with graffiti vandals
Law Enforcement News (June 15, 1995), p. 7:1-2

Using the Phoenix bus system as the focus, the article discusses what that city and others are doing to deter graffiti vandals.

Silberfarb, Edward
Crime fighting efforts yield higher ridership in New York
Passenger Transport (Jan. 16, 1995), p. 5:3-4

General article on crime reduction in the New York subways; provides statistic on crimes; explains roles of a number of special-purpose police squads.

Simons, Marlise
Police link Algerian militant group to Paris train bombing
New York Times (July 30, 1995), p. 9:1-6

French police attribute the July 25 bombing of a commuter train, during which seven people were killed and more than 80 injured, to an Algerian militant group. The bombing highlights the vulnerability of public transit systems to terrorist attacks.

Sims, Calvin
Despite curbs, fare beating is surging again in subways
New York Times (Aug. 16, 1991), p. 1:1-2

Singh, Raj K.
Applying trend projection to forecast transit crime
Transit Policing, 5 (Spring 1995), pp. 37-38

Provides police/security department crime analysts with specific techniques for projecting activity for use in budget and deployment decision making.

Singh, Raj K.
Forecasting methods for transit policing
Transit Policing, 4 (Spring 1994), p. 20

Sloan-Howitt, M. and George L. Kelly
Subway graffiti in NYC: "gettin up" vs. "meanin it & cleanin it"
Ronald V. Clarke, ed. Situational Crime Prevention. NY: Harrow & Heston, 1992.

A brief review of the TA's CUP (Clean Up Program) graffiti removal program, 1984-1988.

Smeets, Marnix E. and Marc A. Jacobs
Feel safe, be safe on public transport
Police Chief (Sept. 1996), pp. 32-33

Written by a consultant to the Dutch Ministry of Transport, this article discusses steps taken in the Netherlands to combat crime and fear of crime on the rail and bus system. Measures discussed are identical to those employed in the US.

Smith, Mary S.
Crime prevention through enviromental design in parking facilities
Washington, DC: Dept. of Justice, April, 1996.

Noting that parking facilities comprise a large amount of space with relatively low levels of activity, making them prime locations for violent crime, this NIJ Research in Brief discusses ways to incorporate principals of crime prevention through enviromental design (CPTED) into new construction and redesign of existing facilities.

SORTA drivers reach out to communities to end vandalism
Passenger Transport (Jan. 16, 1995), p. 12:1-4

Two different types of community outreach programs instituted by bus operators are aimed at reducing the problem of young people stoning buses as they travel through two low-income Cincinnati communities.

Southern California Rail Consultants
Long Beach-Los Angeles Rail Transit Project: Station Security Evaluation
Los Angeles: Los Angeles County Transportation Commission, 1986.

A station by station evaluation of security problems, mitigating measures, and recommendations for the 21 stations in the system.

Southern California Rail Consultants
Long Beach-Los Angeles Rail Transit Project: Security Risk Analysis
Los Angeles: Los Angeles Transportation Commission, 1986.

Risk analysis of potential problems facing the transit system, its passengers, and its employees. The analysis presents the identified risks, possible causes, potential effects on the system, and potential solutions or mitigations for the risks.

Southern California Rail Consultants
Long Beach-Los Angeles Rail Transit Project: Preliminary Security Operation Plan
Los Angeles: Los Angeles Transportation Commission, 1987.

The plan outlines the development of the overall staffing, operations, and security forces to be used in connection with the rail project. It is an example of a deployment plan for a high crime transit corridor.

Specter, Michael
Another trolley bombing in Moscow leaves 30 hurt
New York Times (July 13, 1996), p. 4:5-6

In what was believed to be terrorism pertaining to the war in Chechnya, a second bomb exploded in a Moscow trolley bus less than 24 hours after a similar event. The explosion, which wounded 30 people, was caused by a bomb left in a black bag under an empty trolley seat.

Strauchs, J.J.
Urban mass transit security
Security Management (Feb, 1982), pp. 72-75+

Methods of solving the problems of mass transit security programs are discussed, with attention to a systems approach to security. The Metropolitan Transit Commission (MTC) of St. Paul and Minneapolis relies on local law enforcement to protect the transit system. MTC staff cooperates with local authorities by reporting rapidly any instances of danger to the public safety. Police officers are employed part-time by the MTC to ride certain problem-prone bus routes in plainclothes.

Sudetic, Chuck
Five minutes of terror after man hijacks bus: suspect subdued as police board vehicle.
New York Times (Aug. 21, 1995), p. B3:5-6

Sole individual claiming to be armed commandeers bus with driver and passengers; passenger subdues hijacker while driver brings bus to nearby police station; hijacker, who was not armed, is arrested. Later the same day, a bus without passengers is hijacked, subject flees after ordering driver to travel approximately 1/2 mile.

Sullivan, John
Port Authority is trying to cut police overtime
New York Time (Mar. 23, 1996), p. 27:1-2

Minimum staffing obligations at Port Authority facilities result in police officers averaging \$16,000 a year in overtime. The PA wants to eliminate contractually agreed upon work plans, preferring to let the department adjust staffing as needed without resorting to overtime.

Sullivan, John P.
No barriers, few fare evaders
Railway Age (Nov. 1992), pp. 78-79

Sullivan, John P.
Transit security: lights, cameras, action
Transit Connections (June 1995), pp. 37-40

General article on the relationship between transit usage and fear of crime, including discussion on steps to combat existing crime at a number of transit police departments.

Sullivan, John P.
Managing homelessness in transportation facilities
New England Journal of Human Services, 6, no. 2 (1986), pp. 16-19

Using NYC transportation hubs, describes how, particularly in the 1980s, many waiting rooms became "essentially psychiatric units, without medical or support services" for the homeless and provides approaches to handling this problem such as outreach teams, med-psych teams and drop-in centers.

Sullivan, Ronald
Dispute on bus ends in gunfire on busy street
New York Times (Aug. 31, 1995), p. B3:6

Police chase and exchange shots with fleeing passengers whose dispute began on a bus. Information about the armed men was conveyed to police via radio by the driver after the suspects fled his bus and boarded one that had stopped in front. No passenger or pedestrians on the street were injured despite a number of shots having been fired by the police and the suspects.

Swarns, Rachel L.
Woman dies after push under train by robber, police say
New York Times (Feb. 19, 1996), p. B1:2-5

In the type of crime guaranteed to increase patron fear, a 15 year-old emotionally disturbed youth pushes a woman to her death when she falls between two moving rail cars during a robbery attempt.

Swarns, Rachel L.
Cheering a conviction, but living with scars
New York Times (March 8, 1996), p. B4:1-2

Reaction interviews with victims who were burned in the December 1994 subway firebombings by Edward J. Leary upon his having been found guilty of attempted murder and assault.

Taking back the subway for the people of New York
NY: New York City Transit Authority, 1992.

General vision piece of what they've done, and what they hope to do.

Terrorism in surface transportation: a symposium
San Jose, CA: Norman Y. Mineta International Institute for Surface Transportation Policy Studies, 1996.

Proceedings of a March 1996 symposium, this IISTPS Report 96-1 provides remarks on terrorism response and prevention by Tom Savage, NYCTA Chief Security Officer; Ernest Frazier, Chief of Amtrak Police; and SA Patrick J. Webb, FBI, Counter-Terrorism Squad. Chief Frazier provides an in-depth discussion of the Sunset Limited derailment.

The Newark foot patrol experiment
Washington, DC: The Police Foundation, 1981.

One of the classic works on the issues of foot patrol, fear of crime, and citizens perception of safety when they observe police patrolling in their areas.

The Rail Thing
Law Enforcements News (April 30, 1996), p. 4:4-5

Barry McDevitt, new WMATA chief, discusses his concerns about the threat of terrorism on the 89-mile subway system as well as the agency's concerns about park-and-ride lot crime in Virginia and Maryland, where deployment includes plainclothes, canine, and bike patrol officers.

Toronto transit request stop gives women a ride home
Passenger Transport (Jan. 16, 1995), p. 13:1-4

Since 1991, under the Request Stop Program, female riders traveling alone at night can request their stop on any TTC bus route in metropolitan Toronto. About 85 request stops are made nightly on the system.

Toronto's safety message uses hollywood film heroes
Passenger Transport (March 30 1992), p. 12: 1-2

TTC attempts to use humor from Hollywood film classics as a way to enhance safety messages.

Treaster, Joseph B.
Joining forces, police officers don't miss a beat
New York Times (April 3, 1995), p. B2:1-6

Describes the first tour of duty of transit police officers now merged into the city department.

Trombley, William
L.A. bus crime data disputed. RTD understates the figures, study says
Los Angeles Times (April 15, 1985), p. 1:3

Article discusses Levine and Wachs' findings on bus crime; reply from RTD.

Tyler, Patrick E.
Beijing journal: for 6, you too can be a Sichuan-style sardine
New York Times (Nov. 17, 1995), p. A4:2-6

On the Beijing subways, 26 miles of underground track are used to transport 1. 46 million people a day. Patrons and the press complain of a lack of "civilized behaviors," overcrowding, fare evasion, and petty crime.

U.S. Congress, Senate Committee on Appropriations
Crime in mass transit facilities
98th Cong., 2nd sess., Field Hearing (New York, NY), 1985.

These hearings, held in New York City, were in response to actual crime and fear of crime in public transportation facilities (primarily subways) in the early 1980s, a time during which subway passengers in NYC reported fear of crime as their single greatest concern about the transit system.

U.S. Congress, Senate Committee on Appropriations
Crime in mass transit
101 Cong., 2nd. sess., Special Hearing (New York, NY), 1990.

The fatal assault of tourist Brian Watkins on a N.Y. subway platform led to this hearing, which reiterated views expressed in 1985 hearings relating to crime and fear of crime on mass transit, particularly subways.

Underground attack
Security Management (April 1995), p. 10

Crackdown on fare evasion by plainclothes officers lead to drop in serious crime.

Underground under control
NY: NYC Transit Authority, 1994.

Publicity brochure on NYC Transit Police Department

Use of Focus Group Interviews to Evaluate Bus Transit Security (Final Report).
Washington, DC: Dept. of Transportation, 1993.

A focus group interview of TRT users was developed to determine what makes transit users perceive the environment as unsafe and what steps the system can take to alleviate fear.

Walker, Jayme S.
Transportation facility interdictions: applying an understanding of the fourth amendment.
Police Chief (July 1995), pp. 44-47

Written by a DEA attorney, this article reviews Supreme Court decisions involving search and seizure issues that have arisen during drug interdiction activity at transportation facilities.

Wallace, Paul Stanley
Urban mass transit: crime and related problems - a brief historical review (1853-1977) with annotated bibliography
Washington, DC: Dept. of Transportation (UMTA), 1977.

Reminding readers that transit crime is not new, this report reviews criminal activity reported since the 1850s, showing how the types of crimes and enforcement mechanisms changed over time. Contains an excellent, annotated bibliography of pre-1977 documents and instructions for obtaining the cited items.

Weiner, Tim
U.S. vulnerable to terrorist chemical weapons
New York Times (Mar. 21, 1996), p. A5:1-5

Central Intelligence Agency Director John M. Deutch testified before the Senate Armed Services committee that the U.S. is "very poorly" equipped to defend itself against a terrorist group armed with nuclear, biological, or chemical weapons.

Wessells, Fred P.
Cleveland RTA integrates its security design
Access Control (Dec. 1991), p. 1:4

Agency profile.

Widawsky, I. David
Passenger security: an analysis of the Long Island Rail Road
NY: Permanent Citizens Advisory Committee to the Metropolitan Transportation Authority, 1989.

Widawsky, I. David
Passenger security: an analysis of the Metro-North Railroad
NY: Permanent Citizens Advisory Committee to the Metropolitan Transportation Authority, 1989.

Widawsky, I. David
Passenger security in the subways
NY: Permanent Citizens Advisory Committee to the Metropolitan Transportation Authority, 1989.

Wilson, James Q. and George L. Kelling
Broken windows
Atlantic Monthly (March 1992), pp. 29-38

Based in part on the findings of the Newark foot patrol experiment, this article discusses the roll of foot patrol in maintaining order in urban environments; argues that disorder, rather than serious crime, is what leads to citizens' fears of particular neighborhoods.

Winfield, David A.

Taking back the subway: a systematic approach for improving security on the New York City subway system.

Paper prepared for the APTA 1995 rapid Transit Conference: Enhancing Personal Security on the New York Subway System (June 1995)

NYC Transit Executive Vice President Winfield traces a dozen years of efforts to improve safety on New York's subways. A number of statistical charts indicate areas of improvement; text explains policing changes, particularly since 1990. While concentrating on police activity, the paper also explains the systemwide response to security issues, including creation of a Personal Security plan for 1995-2000.

WuDunn, Sheryl

On Tokyo's packed trains, molesters are brazen
New York Times (Dec. 17, 1995), p. 3:1-4

In Japan, female riders on rush hour trains are often targets of sexual touching and similar crimes, none of which are treated very seriously by rail officials.

Zaza, Robert N.

Metro Transit Police: protecting mass transit in nation's capital
Transit Policing 1, No.1 (Fall, 1991), p. 10

Agency profile.

Chapter 11

UNPUBLISHED MATERIALS

A unique feature of the Bibliography is the inclusion of unpublished reports and other materials that were received in response to the project's survey instrument. A number of systems shared information on their organizational structure, deployment tactics, and surveillance equipment, as well as describing experiments, surveys, and other issues that they were confronting. This section of the Bibliography should prove useful to transit managers and police departments, not only does it provide ideas that can be adopted but it can save systems countless hours of researching background information before each individual system undertakes to "re-invent the wheel."

Ash, Ronald W. Safety and Security Manager
Hillsborough Area Regional Transit, Tampa, FL. 1995.

HARTLINE contracts with the local police for patrol services for its transitway and with a security firm for parking areas and bus operations. Transit supervisors also conduct periodic patrols of the Park n' Ride facilities to discourage vehicle theft and vandalism. CCTV cameras are used in facilities, parking areas, and transitways, while intrusion alarms are installed in HART facilities. The agency is a member of the Tampa Downtown Security Network, which was formed so that local agencies could exchange information; this is a new organization and no statistics are available yet.

Bailor, Rick. Transportation Supervisor
Lane Transit District, Eugene, OR. 1995.

Agency recently began a security program that included formalizing regulations, using "Downtown Guide" program to patrol downtown station, and establishing a community policing program that includes regular patrolling of downtown transfer station. Lane is also paying part of a police officer's salary for coverage at transfer station. There are no patrols on vehicles. It is currently researching use of video cameras on buses in response to a major crime problem: etching of bus windows. It is waiting to see how Tri-Met's system works.

Billings, Steven. Director of Parking and Transit
Parking & Transit Utility Commission, Sheboygan, WI. 1995.

Facilities include a major transfer point for buses, at which there is a problem with school children using intimidating behavior. To deal with this problem, two contracted security guards were hired to monitor passenger behavior. The facility has 4 fixed-mounted, real-time surveillance cameras, mainly focused on the waiting area. Currently, the agency is procuring 2 swing cameras with video recorders to monitor the entire length of the platforms. Plans also include installation of 8mm cameras on new vehicles that are to be operator-activated and focused on passengers. The existing fleet is being retrofitted with on-board video cameras.

Billings, Steven. Superintendent of Transportation
Kansas City Area Transportation Authority, Kansas City, MO. 1995.

In response to attacks on bus drivers, the agency implemented an on-board security presence. The Transit agency worked with local police who used individuals to patrol in either plainclothes or uniforms. Individuals were pre-qualified by the PD. All officers, in pairs, used radios to keep in contact with dispatchers; plainclothes teams had uniformed officer in chaser vehicle. The result of this program was a reduction in the attacks.

Browne, Joe. District Director
Caltrans, San Francisco, CA. 1995.

In order to handle the problem of 300 homeless people residing in the Transit Terminal, Caltrans initiated a proactive program that included: increasing the number officers at the site to three, with two making continuous patrols and one available to the public at the substation; adding a full-time supervising sergeant; redesigning and moving the police substation to a more accessible location for the public; installing emergency call boxes at various locations; and changing the hours of operation in order to close the waiting area each night. Program resulted in decrease in all crimes and, in particular, violent crimes.

Burke, Victor H. Executive Vice President
DART, Dallas, TX. 1995.

DART has an in-house transit police force. It uses contracted security guards at eight facilities to deter property crime. However, it replaced contract security guards with station agents at 13 transfer centers during 1994 in response to customer complaints about guards. As a result, complaints decreased. The agency uses its limited resources for car patrols, foot patrols (downtown), and boarding/riding buses. Currently it is testing video cameras on buses and at one transit center, although no decision has been made regarding buses. Wiring has already been installed at rail stations. The agency is considering implementing a community policing program. For communications, it relies on bus dispatchers, but it is looking to hire separate police dispatchers. DART's plan for policing its light rail system includes using contracted security guards in addition to transit police officers.

Colby, Chester. Director
Metro-Dade Transit, Miami, FL. 1995.

Currently, MDTA uses a mix of the Transit Unit of Metro-Dade Police Department and Wackenhut. The system opened in 1984 with 56 sworn officers in the Transit Unit. By 1990, because of budget constraints, the force was reduced to 8. The present unit is comprised of 8 officers and 1 sergeant. The day shift is 1 sergeant and 4 officers, from 10 AM to 6 PM, and 4 officers from 3 PM to 11 PM.

In 1989, Wackenhut was hired to supply armed security officers. Each officer must be a graduate of a certified law enforcement or military police training program with three years experience. The current contract is for 7,000 hours of security a week: 1 security officer is assigned to each MetroRail station, 4 supervisors ride trains throughout the hours of service; 9 officers and 1 supervisor are assigned to the downtown Miami PeopleMover. Uniformed officers also patrol 5 station parking garages and 2 parking lots during revenue hours. Decoy and plainclothes, saturation, and sweep operations are used for specific problems or when a trend indicates that they are warranted. Metro-Dade has a K9 unit that is available to the Transit Unit.

The transit agency has installed video monitoring devices at all stations. They are used by the Transit Unit for investigations. MDTA, the Transit Police Squad, and Wackenhut work with schools to address issues involving students who use the system. Metro-Dade police maintain a Crime Stopper Unit, with a tipline.

Recordkeeping is primarily the responsibility of Wackenhut. The Transit Squad uses the records to develop a database to monitor crime trends. Local police maintain records for occurrence outside the paid area. These statistics are monitored by the Transit Squad only for robberies.

DiJohn, Joseph. Executive Director
PACE, Arlington Hgts, IL. 1995.

PACE is testing and evaluating video cameras on buses in 3 of its 9 divisions. Notices have been posted on buses to alert passengers that they are being taped. Agency tried to hire offduty police officers but ran into liability issues.

Drake, Peter G. General Manager
South Coast Area Transit, Oxnard, CA. 1995.

Agency has contract with local security guard firm for security of SCAT facility after employee work hours. Either security guards or retired police officers work as undercover operatives on in-service bus operations. They also check for compliance with agency and local rules. Agency developed training video for local police so that they can respond to acts of terrorism on buses. There is emergency police notification equipment on all vehicles that directly contacts central dispatch center.

Evans, John J. Deputy Chief, Police Department
Niagara Frontier Transit Authority, Buffalo, NY. 1995.

NFTA has a transit police department consisting of 65 sworn officers; 19 are assigned to either detective duties, special assignments, or special units. The department uses K9 units. It also works closely with the school board to curb juvenile crime. Video surveillance cameras are used in facilities and on vehicles.

Francis, Betty Hager. Acting Director
Prince George's County DPW and Transportation, Landover, MD. 1995.

Parking Authority, responsible for six commuter parking lots, installed CCTV surveillance equipment at five lots (the sixth will have installation at a later date) to reduce incidents of vandalism and theft. Authority had maintenance personnel and enforcement officers make daily inspections of all lots as an additional deterrence. As a result of these actions, number of incidents was dramatically reduced.

Frank, Raymond H., Chief of Transit Security.
Metro Transit., Seattle, WA. 1996.

The Seattle, WA, area's Metro Transit maintains a very small in-house security staff, but, through innovative use of local police and a driver-based community program, has seen assaults on drivers decrease 64 percent between 1993 and 1994. Year end statistics for 1995 indicate that both driver and passenger injury assaults have continued to drop.

Raymond H. Frank, transit security supervisor, makes use of more than 300 Seattle and King County police officers working for the Department of Transportation part-time, some in shifts as small as four hours. With the help of two security chiefs, an administrative assistant, and a computer, the staff may oversee and pay as many 150 part-time officers in any two-week period. Seattle PD officers cover most of the tours, but King County officers assist at 35 park and rides that are outside Seattle city limits. Officers are assigned to vehicle patrol and bike patrol in uniform, to fixed posts in tunnel (underground) stations, and to four-officer bus boarding teams.

The bus-boarding teams, as well as all on-duty Seattle police officers who may respond to calls on buses, are strongly encouraged to enforce a zero tolerance policy regarding code of conduct violations, which cover serious crimes, vandalism, and quality-of-life offenses. Handouts to riders and laminated palm cards publicize the code and the zero tolerance policy. Riders are encourage to assist in code compliance by informing drivers of problems they observe or by calling 9-1-1 after they exit the bus. To assist in crime reporting, all buses display a coach number on the entry side of the bus. Additionally, all buses are equipped with two-way radio communications. There is also a special graffiti hotline.

Metro Transit Security efforts are enhanced by two programs involving bus drivers. Since June 1994 a transit operator has been detailed to the security staff to work as a liaison with Seattle municipal and district courts to follow up on cases involving operators and other Metro employees. After an initial two year assignment, the first liaison was replaced by another, after the job was re-posted in conformance with union rules. Acting as an advocate for quick adjudication and staff sentences, from June 1995 to the end of 1995, the liaison was involved with 135 cases, resulting in 83 convictions, 5 findings of not guilty, and 17 dismissals. Other cases were without dispositions at the end of 1995.

The second program involving drivers—the Public Safety Partnership—also uses public relations department personnel. Funded by a two-year Federal Transit Administration grant and supported by Local 587 of the Amalgamated Transit Union, PSP involves more than 50 bus drivers who, since October 1994, have attended more than 200 public meetings, speaking briefly and then answering questions from attendees.

Gambaccini, Louis. General Manager
SEPTA, Philadelphia, PA. 1995.

SEPTA utilizes a variety of community education programs as part of its policing efforts.

Halsey, Lynn R. Customer Service/Security Manager
C-Tran, Vancouver, WA. 1995.

C-TRAN has a good working relationship with its local police and sheriff's departments. Currently, the police provide 20 hours of on-site bike patrol each week. C-TRAN is using contracted security 1,750 hours per month in 1995 for its transit centers. The agency also bans passengers who jeopardize the safety of other passengers or employees. In addition, graffiti is removed upon discovery, which reduces repeat incidents. The 1995 security enhancement program includes: emergency alarms on vehicles, tied to head signs on front of buses; training; on-board surveillance cameras on new coaches; and increased bike patrol to 40 hours per week.

Hicklin, D. Kent. Manager of Operations
Santa Cruz Metropolitan Transit District, Santa Cruz, CA. 1995.

Agency uses non-sworn contract officers at its downtown transfer site. Officers have radios for "instant" contact with the local police dispatcher. It is currently developing a 2- camera, multi-positional security surveillance system that will be on line 24 hours per day, monitored occasionally by security officers.

Hoekstra, William. Transportation & Parking Director
Five Seasons Transportation, Cedar Rapids, IA. 1995.

Agency has security program for its Transportation Center that includes: video monitoring of bus pull-in areas; reverse lighting motion control system outside of building; contract security personnel, with radio communications; silent alarm system connected to security main office; and policy that does not permit endless "hanging out." In addition, classical music is played in the center, which deters people, particularly the young, from congregating in the area. The reverse lighting motion control system and the silent alarm system are also used in the maintenance facility. There is random use of cameras on-board vehicles, and all vehicles are radio- equipped.

Joyce, John K. Chief of Police
RTA, Cleveland, OH. 1995.

RTA's police department is composed of full-time sworn transit police officers, municipal officers, deputy sheriffs, and civilians. The uniform division uses non-directed patrol, which gives officers flexibility. Large facilities have an officer on stationary assignment; directed patrol is used in response to complaints. A centralized computer system is utilized for crime analysis and deployment. RTA has an Anti-Vandalism Task Force whose program focuses on educating school children. A variety of equipment is employed: there are key card sensors in many facilities, emergency call boxes at key locations, a surveillance van, mobile radios, and video cameras at the revenue facility and some rapid transit stations.

Kiepper, Alan. President
NYCTA, Brooklyn, NY. 1995.

The NYC Transit Police Department is responsible for the security of the country's largest subway system: it has 3.5 million daily passengers, 469 stations, and 17,000 miles of track. The department uses a patrol strategy called district-based policing, in which decision-making responsibility is vested in the 12 Transit Police district commanders. They are assisted by a district problem-solving team, from all ranks, who analyze problems, design tactics, and evaluate the success of the field initiatives. There are three major components to this patrol strategy: robbery/crime; station/train order maintenance, and fare evasion.

The department developed a series of proactive patrol and investigative tactics to address robberies and other serious crimes, including plainclothes anti-crime teams. Plainclothes interception sweeps teams are assigned to a particular station that has had an increase in crimes or to those stations where it is known that a large number of felons enter the system. The intent of this deployment is to stop those who are disposed to committing crimes from entering the system. Enhanced station patrols are used at stations designated as high crime locations; they are selected after the previous weeks' crime patterns have been reviewed. In addition, during the evening rush hour, officers are assigned to fixed posts on platforms at selected stations. The canine unit and decoy teams are also employed to address robberies and felonies. Cases involving juvenile offenders are given immediately to detectives for investigation since 50 percent of those arrested for robbery are in this age group.

The Transit Police aggressively address "quality of life" violations through a series of programs, including full enforcement efforts; train order maintenance, involving random train inspections; scooter patrol, for fast mobility; transit community oriented policing; homeless assistance; terminal station coverage; and school outreach, including a Safe Passage Program involving an officer patrolling the last three cars of a train during school release time so that students can feel safe in those cars.

The Transit Authority estimates that it loses \$80 million annually because of fare evasion. In addition, fare evasion contributes to the sense of disorder in the system. The police department has instituted a program to combat this problem that includes fare abuse posts, a mobile arrest processing center (Bust Bus), plainclothes mini-sweeps, and summons teams.

Police officers also use handheld computers to identify persons apprehended for violations and for those known to have committed crimes on the system. This allows officers to determine whether the issuance of a summons is appropriate.

Leary, Jr., John K. Executive Director
Bi-State Development Agency, St. Louis, MO. 1995.

The Bi-State security system, comprised of sworn police officers from two departments (the City and County of St. Louis); off-duty police officers, and contracted security company, provide security for rail, bus, and paratransit services. Off-duty officers ride buses, while contract police officers ride light rail. The security company protects stations and parking lots. Video cameras are used for rail platform surveillance; they are presently being tested on board buses. The contract police officers are trained in community policing.

Lee, David A. Assistant General Manager, Transit Services
CTTransit, Hartford, CT. 1995.

All buses are equipped with two-way radios that include a silent alarm that the driver can activate. The silent alarm also activates an emergency message on the bus' destination sign. Agency recently implemented a silent witness, on-board video monitoring system, on a trial basis.

Millar, William. Executive Director
PATransit, Pittsburgh, PA. 1995.

The agency's police and security department is comprised of 20 Port Authority police officers, 18 security officers, and 10 county deputy sheriffs. While this mix presents certain problems—such as different visions, procedures, and allegiances—overall, it is a workable approach. PATransit believes that there are numerous advantages to in-house security. In addition, PATransit uses CCTV, monitored by security personnel, in its subway system. Some of the cameras are obvious, while others are not. Cameras are also used in light rail facilities and park and ride lots. The agency also conducts operator training programs. It has established a uniform police riding program, whereby officers, assigned in pairs, ride buses or light rail vehicles as well as talk to passengers. Plainclothes officers concentrate on pickpockets, youth, and other particular problems. Saturation patrols are used in response to specific problems.

Morton, J. Roger. Senior Vice President, Director of Operations
Oahu Transit Services, Honolulu, HI. 1995.

Agency has a direct line to HPD via telephone. Transit video cameras, similar to those being used in Denver, will be tested in the near future.

Oller, Stephen C. Superintendent of Transportation
Riverside Transit Agency, Riverside, CA. 1995.

Agency uses a combination of closed circuit video surveillance, electronic doors/gates, and 24-hour personnel coverage for its facility security. Operational security is provided by an AVL system with silent panic alarm and radio-dispatched field supervisors. RTA is currently in discussion with county sheriff's department for contracted officers. It also trains bus personnel in conflict avoidance and has implemented strategies for reducing graffiti and vandalism.

Pagano, Phillip A. Executive Director
Metra, Chicago, IL. 1995.

Metra has its own transit police force. For special events that require additional personnel, it contracts with an outside vendor. There is limited video surveillance—at the former Illinois Central stations only. Wide-angled cameras watch the ticket machines. Uniformed officers patrol all property in marked cars. Large, downtown facilities are patrolled by foot.

Plainclothes officers are used where there is a high incidence of pickpocketing, robbery, or car thefts from parking lots.

Papa, Sharon. Chief of Police
LACMTA, Los Angeles, CA. 1995.

LACMTA has an in-house, sworn transit police department of 350 who are responsible for all rail and bus operations. It uses 58 security guards for fixed post locations within its operating divisions, primarily within facilities. The agency covers 1,500 square miles in LA County; there are 40 localities and 5 counties that it has cojurisdiction with. There are 100 officers assigned to the 22-mile light rail line and 25 to the 4.4-mile heavy rail line. The agency has developed a program to deal with juvenile incidents, its biggest bus problem: it uses a decoy bus during school hours, 2:30 PM to 5:00 PM; has a graffiti cleaning program; works with school police; and deploys car patrols. In 1994, the agency instituted a transit community-based policing program for South Central Los Angeles, called TOPS. It covers a 56-mile service area; 34 MTA transit lines form a grid that has been subdivided into segments so that the police can establish better working relationships with community organizations. The rail systems have extensive passenger communications systems, and there is CCTV coverage at all stations.

Pressley, Jr., R.N. Director
Charlotte Transit System, Charlotte, NC. 1995.

Agency instituted a program that revokes patron's riding privileges for offenses. Violators' photographs are displayed in drivers' room. In addition, off-duty officers ride routes with high crime profile.

Reuter, Lawrence G. General Manager
WMATA, Washington, DC. 1995.

Part of WMATA's strategy is to address "small crimes," such as fare evasion, panhandling, disorderly school children, and vandalism. Among the techniques used are motorcycle patrols, bicycle patrols, a canine program, and plainclothes work. WMATA transit police have primary responsibility for trains, tunnels, stations, and facilities, while local police have primary responsibility for parking lots and along bus routes. The original design of the system incorporated security and safety features. Trains and stations have a sophisticated communications system, including public intercoms on each rail car and CCTVs in each station. The agency also provides special training for its officers in the transit environment.

Robinson, Pilak. General Manager
Regional Transit, Sacramento, CA. 1995.

RT conducted a peer review in March 1993 and, as result, switched from a private security company to contracted sworn police officers (from the Sacramento Police and the Sheriff's Department). The agency has a security company patrol the light rail park and ride lots. Video cameras are being tested in one light rail vehicle; this may be expanded. There is a countywide radio conversion to 800 megahertz this year to improve communications. Because it operates in three different law enforcement jurisdictions, accurate recordkeeping and statistical data are difficult tasks. RT conducts fare enforcement saturations using RT supervisors, fare inspectors, and police officers. These saturations are generally successful. Decoy operations are also used at the system's high crime stations. In addition, RT makes presentations to and solicits input from local businesses.

Ropers, Werner. Asst. Chief, Police Department
New Jersey Transit, Newark, NJ. 1995.

NJT is the country's only statewide operator of both rail and bus services. The police department, created in 1983, consisted of 36 officers, and had responsibility for policing railroad property. In 1992, its powers were expanded off the railroad to include bus enforcement, and its jurisdiction was increased to cover the entire state. The force currently has 126 officers to cover 6,500 square miles.

NJT police department has established various partnerships with local municipalities and instituted a variety of programs: Transit on Patrol (TOP) uses bus operators and supervisors to report criminal or suspicious activities along routes to local police via bus mobile radio systems; Police on Board (POB) allows local police to ride buses in high crimes areas as a deterrent; National Night Out promotes crime prevention; and the School Safety Program educates children to possible dangers.

The agency uses a variety of surveillance equipment: CCTV systems in facilities; motion detection in police holding facilities; intrusion detection alarm systems in stations and facilities and on the right of way. An AVL system for bus locations is currently being installed.

In 1994, NJT conducted a focus group study to determine ways to improve riders' confidence in security of its rail lines. The study indicated that security appears to be more of a problem for off-peak passengers at boarding station than on vehicles or at destinations. On-board trains, security was not considered a major issue. Participants felt that uniformed police are more reassuring to see than knowing that plainclothes officers are aboard.

Sauter, Jim. Security/Safety
Community Transit, Everett, WA. 1995.

There is a good working relationship between CT and Sheriff's Department of Snohomish County, which includes a community policing program. Deputies ride buses in uniform or plainclothes, and/or monitor service area in patrol cars. The agency has established an employee training program for coach operators, which includes conflict resolution, deescalation of aggressive behavior, and verbal-nonverbal communication skills. There have been no assaults on operators since the inception of the program.

Simmons, Eugene F. Chief of Security
Santa Clara County Transit District, Santa Clara, CA. 1995.

Agency developed and instituted a vandalism restitution program that focuses on juvenile offenders. The program draws a parent into the situation, which has resulted in a reduced recidivism rate. Under consideration at the present time is the development of a comparable program for those people who are unable to pay.

Sorrels, William, Superintendent of Safety and Training
, Pompano Beach, FL. 1995.

A 300-square mile area covered by 161 buses daily is policed under contract with the Broward County Sheriff's Department, which provides one sergeant and three uniformed deputies in marked cars. There is little reliance on plainclothes work due to the small number of officers, who are augmented by local police as needed. Use is made of technology, including: panic alarm buttons from drivers for emergency response to a vehicle; silent messages flashed outside the bus which indicate "please send help" (these have a high rate of false alarms, either due to inadvertent pushing of the button by drivers or due to overresponse); and radio communications with a priority request to talk override. Drivers receive passenger relations training but report that they feel they must be too accommodating to unruly riders. Attempts are being made to perfect a system of both internal and external video surveillance. Internal surveillance is to observe situations on the bus; external surveillance is to provide evidentiary tapes for accidents and other claims. It is estimated that the system will reduce liability by \$5,000 per bus.

Talbot, Terry S. Operations Manager
LINK, Wenatchee, WA. 1995.

The agency has instituted a program in which bus riding privileges are revoked for unruly passengers.

Tillinghast, Steve. Security Director
Tri-Met, Portland, OR. 1995.

Tri-Met originally had its own in-house sworn police force (in 1974). Currently, the Portland Police Department has a Tri-Met Unit (TMU), which officers rotate through. The agency believes that this fosters greater cooperation with the entire police department as well as with other city agencies. Because of the rotation, more officers have a special appreciation of transit policing. This concept is being expanded to include police agencies of the other three counties served by the transit system. Tri-Met also contracts with two private security agencies for patrol of garages, Park & Ride lots, and on board rail vehicles, for special events. The agency is working on a plan to incorporate this function as an in-house position for employees on light duty. A Rider Advocate group, consisting of a supervisor and eight people from a nonprofit neighborhood coalition, randomly rides buses that have a high rate of gang-related incidents. TMU's basic deployment is marked-car response to calls. However, undercover officers make sweeps of shelters that are used by drug dealers; bicycle-mounted officers make these arrests.

Surveillance equipment, PTZ CCTVs, will be installed soon on 60 buses and at transit centers and Park & Rides, which will also have emergency phones. An AVL system is being installed and incorporated into the dispatch system.

Van Beek, Lori. Transit Manager
Moorhead, Moorhead, MN. 1995.

Contracted security personnel monitor transfer facility during evening hours, from 6:15 p.m. to 9:15 p.m. Video monitors are used to observe passengers and autos at the transfer facility. Vandalism has occurred at bus shelters, but no technique has been tried to stop the activity.

Whittle, Thomas. Transportation Superintendent
Gardena Municipal Bus Line, Gardena, CA. 1995.

Buses are equipped with silent alarm system. Agency contracts with the Los Angeles MTA Transit Police for dedicated service, consisting of two-person team of sworn officers. Prior to establishing this program in 1993, the agency relied on local police response, which was not meeting its needs, in part because of jurisdictional boundaries. Agency program includes security training sessions for bus operators and vehicle service operators by the police; involvement of local police department; and establishment of procedures and protocols. Special graffiti abatement program was developed to deal with gang tagging.

Williams, Helena, President
MTA Long Island Bus, Garden City, NY. 1995.

Agency relies on county and village police for crime fighting. However, it has installed an extensive surveillance camera system in its facilities.

Section VII

APPENDICES

Appendix A

RESEARCH MANUAL

**WHAT'S COMIN' UP
WHAT'S GOIN' DOWN:**

**A Primer on Practical Field Research
for Transit Policing**

**Interactive Elements Inc.
1996**

**WHAT'S COMIN' UP
WHAT'S GOIN' DOWN:**

**A Primer on Practical Field Research
for Transit Policing**

**Prepared for Transportation Research Board
TCRP, F-6:
Guidelines for the Effective Use of Uniformed Transit
Police and Security Personnel**

**This manual is released for use by participants in the above-referenced Transit
Cooperative Research Program**

**Interactive Elements Inc.
1996**

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CHAPTER ONE

Overview of the Process

What does this manual contain and how can it be used?

This Research Manual has been designed to provide a practical overview of social science research applied to a police setting. It has been specifically written for employees of a police agency who have been given the task of conducting research, but who may not have had formal training in research design and implementation.

Well-designed research is the tool used by scientists (like sociologists who might be studying youth gangs, or research physicians who might be studying the effects of a new drug or piece of surgical equipment) that identifies them as professionals. Following the established rules of research insures that conclusions are logical and based on the actual results of experiments. It is this type of research that causes a profession to increase its knowledge and provide a higher quality of service.

For a police department to provide a high quality of service to its community, it needs to constantly assess its deployment strategies to insure that they are working. It also needs to analyze Criminal Complaint Reports (CCRs) to pinpoint trends, similarities, times and locations of crimes committed, victims' ages, and other relevant data to help determine whether changes in patrol strategies (use of non-uniformed personnel, increased physical security, enhanced education of the public, or other courses of action) will likely reduce criminal acts.

In this manual, every aspect of designing and conducting research has been covered in practical terms. By reading and following the steps outlined in each chapter, agency personnel can design and carry out studies with the confidence that the data obtained and the conclusions drawn will be accurate and appropriate.

Throughout this manual, real world police examples are used to show actual experiments that can be conducted and general themes upon which a department can pattern its own experiments.

A Glossary of research terms has been included as a reference and aid in determining which procedures are appropriate for a given experiment.

Chapters have been included on getting started, defining the problem, research design, overseeing the project, collecting data, data analysis, interpreting the results, sampling, validity and reliability, time-lines and common problems and pitfalls. Each is an essential step in conducting research professionally. Terms and concepts that may not be familiar to the reader have been carefully explained.

What is an experiment?

An experiment is a controlled event. A selected change is made in that event and the results of that change are observed or recorded. The essential features of an experiment are the use of an independent variable and control of non-relevant factors in the experimental situation itself.

In every experiment there are one or more independent variables and dependent variables. An experimenter controls the independent variables and observes what effect they have on the dependent variables.

An independent variable is something that the experimenter can vary or change. Deciding to patrol a parking lot with uniformed officers or non-uniformed personnel is an example of two options for the independent variable. Whether to patrol or use video surveillance is another example of two alternative choices. The point is that an independent variable is something within the control of the experimenter.

A dependent variable by itself cannot be controlled; rather it reacts to or reflects changes in independent variables. In the above parking lot examples, one dependent variable might be the number of auto thefts from the parking lot. Another dependent variable might be the number of automobile break-ins or acts of vandalism. All of these dependent variables, although unable by themselves to change, may vary based on the use of different independent variables.

By the control of non-relevant factors, an attempt is made to insure that only one change (one independent variable) is working at a time. In the parking lot example, if we assigned uniformed officers to patrol a commuter parking lot from 12:00 AM to 8:00 AM and had no patrol from 8:00 AM to 4:00 PM, two factors would be working (patrol and time of day). If parking lot crime decreased when officers patrolled the lot, but was high when there was no patrol, we would not know if the lack of crime was due to the presence of the officers or the fact that criminal acts were more likely to occur when the lot was full and the commuters unlikely to return to their cars for some hours.

Experimental procedures should insure that every eligible person or case in the experiment has the same probability of being exposed to the independent variable as

the others. Any subsequent changes in the dependent variables can be attributed with a high degree of confidence to the independent variable.

By patrolling the parking lot for seven consecutive days on the 8:00 AM to 4:00 PM shift and then not patrolling the lot on that same shift for the next seven days we could compare the incidence of crime between these two weeks. If a difference in crime rates appeared, we could reasonably assume that it was a reflection of the patrol strategy.

Even here though it is important to make sure that nothing else might have been at work to interfere with the experiment. What if the calendar week chosen for patrol was a holiday week? Social scientists use the phrase "exogenous variables" to cover those factors outside the control of the experimenter. Other examples might be the weather (did it snow during one week but not the other), "gridlock alert days," (which might have increased parking lot use in one week and not the other). Experimenters must be vigilant in evaluating whether or not their results might be effected by such "exogenous" or external factors.

It is very important to insure in an experiment that only one independent variable is at work. It is also important to insure that the duration of the experiment is sufficient to include the events being studied. What if the incidence of auto thefts is only one car per month?

What if those who usually commit crimes in the parking lot noticed the new patrol during the first week of the experiment? Might they have stayed away from the lot during the second week? Crime figures for the second week might then have been lower than usual. A better approach might have been to compare the crime rates of the week prior to implementing patrol, rather than the week after the patrol strategy was implemented.

Control groups

When a researcher observes or records change after an independent variable has been introduced, the obvious conclusion is that the introduction of the independent variable caused or impacted that change. This may very well be the case. It is also possible that some unobserved or unknown factor played a part or actually caused the change. While a skilled researcher will attempt to control (or account for) all extraneous factors, there is always the chance that some factors have been missed.

The way this potential problem is dealt with in research is through the use of a control group. A control group is a sample or segment of the population that is identical to the group being exposed to the independent variable, but which is not exposed to any

experimental factor. When data is collected on the group exposed to the independent variable, data is also collected on the control group.

If crime decreased by 10 percent after introducing a new patrol strategy, the reduction could be interpreted as resulting from the new patrol strategy. If crime did not decrease in an identical sample (the control group) where the new strategy was not used, there is a strong reason to believe the change was, in fact, a result of the patrol strategy.

If crime decreased in the control group by the same 10 percent over the same period of time that the new patrol strategy was being used, the researcher would be forced to draw the conclusion that something else, some factor not accounted for, was responsible for the decrease in crime.

If crime decreased in the control group by some percentage less than 10 percent, for example 5 percent, then the researcher could conclude that the new patrol strategy was at best contributing to 5 percent of the decrease, but certainly not to the entire decrease.

Without the use of a control group, the researcher would never be sure that an observed change was due to the introduction of an independent variable.

What is applied police research?

Applied police research, unlike research that is basic (research that has no immediate, direct application), is research that has a practical application. It is research that can be used to make job-related decisions.

This type of research can help a department decide which of two or more competing strategies is likely to be effective. For example, will the use of random patrol be a greater deterrent to the commission of robberies in a transit facility or will fixed posts be more effective?

Applied research can help to determine real issues or concerns. While at one time there was a general belief that citizens were most concerned about serious crimes, such as rape and murder, past applied police research demonstrated that they consider lesser crimes and disorder to be of more immediate concern.

While most people do not expect to be killed or raped on any given day, they regularly encounter aggressive panhandlers, or squeegee men who insist on "washing" automobile windshields, or youths who block access to doors or entrance-ways.

These, it turns out, are perceived to be threatening and therefore have become important to many members of the commuting public.

Without applied police research, departments might overlook the importance of these "lesser crimes" and continue to focus attention solely on the more serious issues. The public's fear of crime might therefore not have lessened despite the well-intended efforts of the police agency.

Applied police research is scientifically sound research that studies real social issues and results to produce findings that can be used by police departments in providing more effective services to the public they serve.

How are experiments conducted?

Experiments are conducted by choosing an area to be studied and formulating questions about that problem. For example, the area to be studied might be crime on subway cars. This is a fairly broad area, so it needs to be defined more clearly. Perhaps one problem that might be studied is the incidence of pickpocket theft during rush hours.

The next step is to decide if there are strategies (independent variables) that could be implemented that might reduce the problem. Perhaps there are several. One might be to assign a uniformed officer to ride the train during the high crime hours; another to have plainclothes officers ride the train. A third might involve posting signs alerting patrons to the problem and recommending actions they could take to put themselves at less risk.

The next step would be to select a base measure of the type of crime to be studied. A base measure is simply a measure taken prior to conducting the experiment, prior to changing anything. In this example it might be the number of Criminal Complaint Reports (CCRs) for pickpocket theft reported during the last month, last quarter or last year. We would now have a measure, a baseline, to compare future CCRs after we had introduced the independent variable. This is sometimes referred to as a "control."

We might then assign uniformed officers to the train for a period of time and collect CCRs for that period. We would compare the number of complaints for theft when the officers were on the trains to the number (the base measure) before the officers were assigned. If the number decreased it would suggest that the presence of the officers probably had a positive effect.

What if crime did not decrease? Our experiment might have been too simply designed to draw useful conclusions. In order to draw more meaningful conclusions

we might need to enhance the experiment. One way would be to give the officers assigned to the trains some guidelines or instructions. In our simple experiment the officers assigned to the trains may have stayed in the first car, never patrolling the train.

If we did get a decrease in crime, would the decrease have been greater if non-uniformed officers were assigned? Our experiment could have answered that question if uniformed and non-uniformed officers were assigned to every other train. But this is actually a second experiment with a different independent variable (namely, uniformed patrol vs. non-uniformed patrol).

For experiments to be meaningful, it is important that the researcher think through as many aspects of the problem as possible before actually conducting the experiment. Prior to implementation an experimenter needs to consider not only what problem is being studied, but what baseline measurements can be used, what independent variables might be included, what instructions need to be given, what schedules and timeframes will be most meaningful, how the data will be tabulated and analyzed and what conclusions can be drawn. He or she should also think long and hard about potential "exogenous" variables.

By careful planning at the beginning, a researcher can more readily see if something has been missed or if the end results will not answer the original questions proposed. In such a case, there would still be time to revise the experiment. Too often the focus is on running the experiment and collecting the data. Only later is it apparent that more time should have been put into designing the experiment and thinking it through. This advice is the social scientist's equivalent of "Measure twice, cut once!" Good advice in any endeavor.

CHAPTER TWO

Getting Started

Defining the problem

The problem selected for study should be stated clearly and simply, but it should include all issues involved. The more precise the statement of the problem, the greater the likelihood that the research will answer the questions raised by the problem. However, the problem statement should reflect the KISS principle: "Keep it simple, Stupid."

A second aspect of defining the problem requires creating a model of the problem. A model is a description of the factors that contribute to creating the problem and the likely outcomes caused by the problem.

For example, a problem might be crime at a bus station. This is a little too vague to be a well-stated problem, so we have to be more specific: the problem might be panhandling near the ticket counters. This is better, but still lacks a complete understanding of the problem. Let's try once more. Aggressive panhandling at ticket counters appears to create fear and discomfort for commuters during weekday evening hours.

Modelling this problem would look like this:

Aggressive panhandlers create fear

The presence of uniformed officers will deter aggressive panhandlers

The presence of uniformed officers will reduce fear

The research design (to be covered in the next chapter) uses the model to organize the experiment in order to answer the questions raised by the problem.

Is a Practical Field Test (experiment) feasible?

One of the advantages of carefully defining the problem is that by doing so you can determine if an experiment (a Practical Field Test or PFT in this manual) is feasible.

Many problems lend themselves to experimentation, but others do not. Those that do, for example, are those for which crime is observable or quantifiable and for which one or more police strategies can be employed. Both dependent and independent variables can be identified and included in the research design.

Eviction of the homeless from a public space as a police strategy is not feasible, since to implement this strategy in order to deal with the problem would violate the constitutional rights of the homeless.

To choose to do something else other than arrest during a felony is also not feasible in most jurisdictions: police officers cannot use discretion when dealing with felony crimes.

Practical Field Tests that violate or ignore existing laws or statutes should not be designed. In addition, while it might be interesting to see if police officers, not in uniform, can perform as well as, or better than, detective personnel, to implement such a PFT might violate union contracts or other agreements.

In addition to concerns of methodology, a researcher must therefore consider all real world concerns, issues, or written directives when designing Practical Field Tests, to insure that the experiment is actually feasible and can be carried out.

Is it measurable?

Experimenters attempt to quantify data, so that the data can be tabulated, analyzed, correlated, and compared to other data. For this to be possible, the effect of changes in our independent variable must be measurable.

If we had no way to measure thefts of automobiles from a parking lot, there would be no purpose in experimenting with the impact of patrol strategies in these lots on car thefts. We would not be able to distinguish between one strategy and another.

But auto thefts can be measured. A Criminal Complaint Report is almost always generated when someone's car is stolen. We have access to these CCRs and can count the number of auto thefts in a given month or year.

What if we decided to assess the value of increased roving patrols on the ability of the department to protect life and property. How would we measure "protecting life"? If a transit facility experienced one homicide every three to four years, or never, would it be possible to measure an increase in "protecting life"?

What about, "enhanced vigilance," "dedicated service," or "good judgment"? These and other terms like them are very difficult to measure directly and to quantify at all.

If possible, it is better to choose dependent variables that can be recorded and quantified. Such things as number of arrests, number of aided cases, types of medical treatment most often provided, number of complaints, types of services provided, or number of referrals, are examples of quantifiable, measurable data.

Sometimes what you want to measure cannot be measured directly, but can be inferred or estimated. "Improved confidence in police service provided" cannot be directly measured. A questionnaire could, however, be designed asking citizens to respond to questions relating to their attitudes toward the police. Such questions might include:

How safe do you feel when you can see a uniformed police officer?

Have you ever called for police service?

If "yes," please rate the quality of service from 5 (Very Good) to 0 (Very Poor)

If a detailed questionnaire of this type were administered before the independent variable was introduced (the base measure of confidence), a similar questionnaire could be administered afterward. The difference in numerical ratings, pre- and post-experiment, could then be calculated. This number would reflect the change, if any, in "confidence in police service provided." When the measurement of one variable is used to infer the behavior of another, the first is called a "proxy" for the second.

Can sufficient data be gathered?

Although some problems might be interesting to study, if the number of occurrences is few or the time between occurrences is lengthy, then the total number of cases studied may be insufficient for meaningful analysis.

Crimes like rape and murder may occur too infrequently to lend themselves to statistical analysis. Not that we want them to increase just so that we could measure them.

Other types of criminal behavior or police services happen more frequently, and sufficient data can be gathered for meaningful statistical analysis. Such acts as farebeating, loitering, vandalism, and luggage theft, for example, probably occur in sufficient numbers to lend themselves to experimentation.

In some areas to be studied, the cases may be in the hundreds or even greater (number of traffic tickets issued) over a reasonable period of time. In other cases, only a handful or a dozen or two incidents may be available for study.

While even as few as ten cases might permit some analysis, a number in this range would certainly prohibit dividing this group into sub-groups for multiple alternate strategy experimentation.

Let's say you anticipated a dozen cases of auto theft in a three-month period (the timeframe allocated for your study). If you wanted to evaluate two different patrol strategies (roving and fixed), each to be conducted for six weeks, the number of auto thefts occurring in each six-week period will only be about 6.

If we wanted to add a third strategy (assignment only to areas of the lots where auto thefts had been reported), the time for each of these strategies would be reduced to four weeks. The number of auto thefts in each four-week block would decrease to 4.

If during the course of conducting the PFT, there were only one less act of auto theft, which could very well happen by chance alone (or weather conditions, or changing seasons, and the like) there would be a reduction of auto thefts by 25 percent. This is a rather large percentage change, but it might have absolutely nothing to do with the patrol strategy utilized.

Because the number of incidents was so small to begin with, any change in this number would appear to be significant. Most important, it would really be quite misleading. The larger the sample size, the greater the likelihood that chance occurrences would have little, if any, affect on the outcome of experiments.

As a rough rule of thumb, no PFT should be undertaken unless each sub-set to be tested can anticipate at least ten cases in the base period. That is, if there will be three strategies tested, the sample should be at least 30. If these three strategies will each be tested at two separate locations, then the sample should be at least 60.

What questions will this research answer?

It has often been said that a question well-stated is a question half-answered. When designing a Practical Field Test, the researcher should decide what questions the findings will be able to answer. The research design should then be scrutinized to insure that when it is followed, the resulting data can actually answer these questions.

Let's say that you wanted to know whether there was an increase in the number of 9mm handguns being used in the commission of crimes at a transit facility. You

proposed to study this by reviewing the arrest reports generated over the last three years.

Your intent is to review the data on the forms that specifies weapons confiscated, if any. The plan calls for tabulating the number of 9mm handguns confiscated in each year. You then intend to calculate the percent these weapons represented of the entire number of cases where weapons of any kind were confiscated. You could then compare one year's percent to prior years to see if there was an increase, decrease, or no change.

This is a reasonable plan that theoretically would answer the question, "Has there been an increase in the number of 9mm handguns being used in the commission of crimes ...?"

Since this study is a retrospective one, that is, you will be looking back in time at data that have already been collected, a critical step will be to insure that the data are reported in a manner that will answer your question.

If you looked at existing arrest forms, you might find that the only entries relating to firearms were: handgun, rifle, or shotgun. If the caliber of handguns confiscated was not called for by the form and was not entered by the arresting officer in all cases, you would not be able to answer your question.

By carefully planning and formulating your questions at the beginning, you can determine if the research will be able to answer these questions. If not, you will have to revise the design.

If you were researching the effectiveness of canine units, you might design a form to be completed by K-9 officers after each call for service. The form might include questions relating to the time it took to respond to the call, whether the dog made contact with anyone, or whether the mere presence of the dog appeared sufficient to gain compliance with the officer's instructions.

After the data collection phase, you then decide that you would like to know if the dogs had interfered with non-canine officers at the scene. If the form developed did not contain such questions, it would be too late to ask them. It is better to determine all of the questions you want to ask before designing any forms that will be used in your study.

CHAPTER THREE

Research Design

What is the research population?

A population, from the standpoint of an experiment, is the total number of cases, or the total number of subjects within a given grouping or classification. The population of police officers in a department is all of the police officers. The population of aided cases in 1995 is all of the aided cases in 1995.

Some populations are extremely large (number of residents of a town), while others are less so (number of police captains on the force). Wherever possible, it is desirable to experiment on the entire population of interest. Obviously this cannot be done where the population is very large. As we will discuss later, in these instances a sample of the population will be chosen for study.

A sample is intended to be an accurate representation of the entire population. Research findings based on samples are intended to be generalized back to the population. We will see, though, that there are sampling errors that can occur. These errors can distort the research findings, making them less useful. If we can use the entire population, we avoid these sampling errors.

The more specifically a researcher defines a population, the smaller it becomes. A fairly large population might be all commuters. This population would be reduced in size if we studied only bus commuters.

Our population could further be reduced if we specified that the population was bus commuters using the terminal during the hours of 4:00 PM and 7:00 PM. If we targeted this group as our total population, that is, the entire group in which we are interested, then it might be possible to include everyone in our study.

If we were interested in attitudes or opinions of this group toward some new police strategy, we could design survey questionnaires and place them on bus seats of all the buses that depart the terminal between the hours selected for study. By including all of the buses, we would insure that every member of our population had a chance to read and respond to our questionnaire.

What are the variables?

Variables are things that can change or be changed. As explained in Chapter 1, in every experiment there are independent and dependent variables. The independent variables are those things we decide to vary to see if by doing so we cause a change in the dependent variables.

In a simple experiment there is one independent and one dependent variable. For instance, we might want to assess the impact visibility posts have on commuters' sense of security. Initiating the visibility post is the independent variable, while commuter's sense of security is the dependent variable. In more complex experiments we might have more than one independent variable. We might also have more than one dependent variable.

Perhaps our experiment relates to order maintenance at our transit facility. We might want to have police officers try several strategies and see what affect each has on the perception of order by commuters.

In one instance, officers might only give a warning to those violating the rules relating to smoking, loitering, or panhandling. In other instances we might have officers eject individuals who were violating the rules, and in a third we might have officers issue a summons to an offender.

Each of the above three strategies represents a different value for the independent variable. The dependent variable might be the same for each sub-set. In this case it might be a measure of the public's sense that order was being maintained at the transit facility.

We might have more than one dependent variable that we want to measure. In addition to a sense of order, we might want to measure usage of the facility, to see if people took public transportation more frequently if they thought the transit facility was safe and free of disruptive elements. We might also want to see if the public lingered at the terminal longer, increasing their patronage of the shops there.

An important point to remember is that where we have more than one independent variable, the research must be designed so that we can isolate the impact of each variable separately, or we will not know which one is dependent or how much each one is contributing to the change in the dependent variable(s).

What measurement instruments will be used?

Measurement instruments measure dependent variables. They are the tools we will use to assess the change, if any, caused by independent variables.

A measurement instrument is something that can provide a numerical rating. Without a numerical rating we could not, for instance, make comparisons between the impact of policing strategies that we introduced.

Some measurement instruments already exist and do not have to be developed. Some of these are Criminal Complaint Reports, aided reports, traffic summonses, crime statistics, and calls for service. These data are prepared or accumulated as part of the day-to-day operations of a police agency.

Since they already exist, a researcher can utilize these data to prepare baselines against which future data can be compared, once an independent variable has been introduced.

A researcher requires less time to conduct a Practical Field Test when using existing data. Records prepared over the last twelve months for example could be summarized in a short period of time, without first having to collect the data over that one year period.

Existing forms and records have a second advantage: new, unfamiliar forms do not have to be introduced, and therefore, police agency personnel will not have to complete additional forms. There is always the danger with new forms designed for research purposes that they will not be completed accurately or fully by agency staff.

If existing records or forms do not contain the information needed, however, new measurement instruments will have to be developed. These might, for instance, be forms to be completed by police officers or attitude surveys to be completed by commuters.

Whether using existing instruments or newly devised ones, it is important to insure that the measurement instrument is capable of collecting all relevant data. Refer back to the questions you expect the research to answer, and ask yourself if these questions can be answered unambiguously by using the measurement instruments chosen.

How will the data be gathered?

If the researcher is using opinion surveys, these questionnaires can be distributed to commuters on trains or buses or at gates. Questionnaires might also be placed on train or bus seats. They can also be used in an interview format, where someone reads each question to a commuter and records the answer directly onto the survey form.

It is important that simple, clear instructions are provided. Questions should be worded carefully so as not to favor one response over another.

For instance, asking, "How pleased are you with the police service provided at this facility?" is likely to get a more favorable response than, "What is your opinion of police service at this facility?"

To enhance compliance and cooperation, questionnaires and surveys should be anonymous. There should also be an easy way for completed questionnaires to be returned. You might use a large box, clearly marked near commonly used thoroughfares or near gates or ticket counters, where questionnaires can be deposited.

Before distributing questionnaires or conducting surveys, it is a good idea to pre-test the forms on a sample of respondents. Questions that initially appear to be clear may be confusing or ambiguous to those sampled. If this is so, revisions can be made before printing the full set of instruments.

It is also worth noting that people in general and commuters in particular are not likely to spend a great deal of time responding to lengthy questionnaires or interviews. It is best therefore to make these instruments as brief as possible, eliminating any extraneous questions or overly detailed instructions.

How will the data be analyzed?

Once data have been collected, the next step will be analysis. In order to analyze data they have to be converted into numerical form, if it is not already numerical. Number of arrests would already be numerical, but classification of arrests would not be. Robbery, burglary, auto theft, and other types of crimes would first have to be coded (assigning the numbers 1,2,3, and so on) for each type of crime. Once coded, each type of crime could be counted and analyzed.

Analysis usually includes counting (for example, the total number of calls for service in 1994 or auto thefts in parking lot B during the last 30 days). This is the most simple

application of mathematics, yet it is also quite useful. It may in fact be the only analysis necessary in very simple, uncomplicated experiments.

Averaging is a way of measuring a variable's "central tendency" or most likely value (the average dollar loss in cargo theft per incident or the most frequently used weapon confiscated during arrests). There are three measures of central tendency. The most frequently used one, the mean, is what we think of when we calculate an average. The mean is determined by adding up all the cases (all of the dollar values of cargo stolen) and dividing this total by the number of cases.

Another measure of central tendency is the median. This is the value that has the same number of cases above and below it. If you had five suspects and arranged them by height, the median would be the height of the third (middle) one.

The last measure is the mode. This is the value or factor most frequently encountered. In the example above, the most frequently encountered weapon might be a knife. That is, more knives were confiscated during arrests than guns, clubs, or other weapons.

These values replace a large number of values with a single one, and help to create a picture and make sense of raw numbers. It is useful, for example, for profiling drug couriers.

Another useful measure is called dispersion, or how much the data vary from case to case. A simple example of a measure of dispersion is "range." The range indicates the highest and lowest values of the variable. The range of ages of university students, for example, might be much greater than the range of ages of high school students. The average age of prostitutes might be 20, but the range might be 14 to 42. All prostitutes encountered were between the ages of 14 and 42.

Other measures of dispersion can also be used. More complex measures will be discussed in Chapter 6.

When designing research, it is useful to consider how the raw data that will be collected is to be analyzed including expected ranges and averages for the variable. This will ensure that appropriate statistical measures can be applied once the analysis phase is reached.

CHAPTER FOUR

Overseeing the Project

What should be done by the primary researcher?

The individual designated as the primary researcher has specific responsibilities, yet some aspects of the project can be delegated to others. Where delegation is appropriate, staff members will have to be supervised and provided with clear instructions for performing their tasks. Other aspects of the research should remain the sole responsibility of the primary researcher.

The primary researcher, perhaps in conjunction with higher ranking agency staff, should propose the research to be undertaken. This aspect of the project will include determining the problem and insuring that a Practical Field Test is both feasible and measurable.

It will be the primary researcher's role to formulate the questions that the research should answer. It is also his or her role to insure that sufficient data can be gathered to provide a level of confidence that the outcomes are not chance occurrences.

The primary researcher will also create the research design. This will entail defining the research population and samples of that population, if any, which will be used. Both independent variables and dependent variables will need to be identified and methods of data gathering and analysis established.

Additionally, this person will establish timeframes for the project and monitor progress to insure that the project stays on target and on time. During the early phases of data collection, the primary researcher will also have the important task of reviewing the data and correcting any misunderstandings of the staff assisting in data collection.

This researcher will also be the one who generally interprets the data and reports the findings. The primary researcher has overall control and responsibility for the project.

What tasks will be performed by others?

Actual data collection is a task usually not performed by the primary researcher, but one that is delegated to other individuals. Data collection might include interviews with

agency personnel or commuters, shop owners or other tenants of the transit facility.

It includes distributing and collecting surveys and questionnaires. It also encompasses coding and tabulating raw data. The data, in addition to survey forms, might include Criminal Complaint Report forms, aided reports, or other forms compiled by agency personnel and retained by the department.

Other tasks that might be delegated include statistical analysis of the data once it has been collected and coded. It might also include observations of cases both for initial input into the research design or as a form of data verification.

What instructions will the staff need?

In all cases where tasks have been delegated, it is essential that clear, detailed instructions are also provided. All analysis and conclusions will be drawn from the data collected. If somehow these data are inaccurate, misleading, or biased, no valid conclusions can be drawn. Since the primary researcher will not usually be collecting the data, it is very important that those who will fully understand how to do so.

When staff members are asked to code raw data, they should be provided with a written list of this data and corresponding codes. They should be instructed to refer to this list frequently to insure that data are being correctly coded.

A staff member with the responsibility of tabulating data should be provided with a calculator, to reduce the potential for mathematical errors. Forms might also be developed to facilitate the recording of the calculations.

The primary researcher, realizing that tabulating can be a somewhat boring and monotonous task, should instruct researchers to stop periodically, especially if they begin to lose focus or attention. When a repetitive task is carried out over a lengthy period of time, there is a strong likelihood for mis-tabulation to occur.

The most complex task, requiring the greatest level of instruction is that of interviewing. The face-to-face contact a researcher has with another person is the more likely to suffer from subjective bias than that encountered, for example, by someone completing a survey questionnaire found on a bus seat.

Instructions for interviewers should begin by telling the researcher how subjects should be selected. You do not want the researcher to choose who he or she will contact to interview. People have a tendency to gravitate toward others with whom they are alike in one or more ways.

If the researcher is young or male or conservative in dress, for instance, there would be an unconscious but very normal tendency to seek out people to interview who were also young or male or conservatively dressed. Should this occur, the interview results would not be a true reflection of the population, or sample, originally identified.

To avoid this error, the researcher should either be instructed to select candidates randomly or to interview all persons within the group or class being studied.

Random selection is most likely to occur if the researcher is informed to approach every third or tenth person, for instance, regardless of what they look like. The number chosen would depend on how many people there were to begin with, for how long they would be at a given location, and how long it would take to conduct a single interview. This approach would likely be used if interviewing commuters disembarking a bus or train, for instance.

Another method involves interviewing all members of a group. You might use this approach to interview all police officers assigned to the same tour of duty.

Once an interviewee is selected, it is useful to explain briefly, but clearly, why the research is being conducted, and, if possible, how the research might benefit the subject.

In the case of commuters, you might be able to emphasize how the research could enhance the safety of those using the transportation system. In the case of police officers, you might explain how the research could result in more effective law enforcement strategies.

Explaining the research and telling people how it could benefit them will increase their cooperation and candor. An additional means of insuring candor is to explain that responses given will be recorded anonymously or that respondents will not be identified by name or shield number.

A further instruction should be to inform the researcher to remain neutral and nonjudgmental to any responses provided by the subject. You do not want the researcher to phrase questions or use a tone of voice or mannerism that would suggest either agreement or disagreement with any question. Subjects are likely to sense this position and people generally want to be accepted. They will either try to conform with the researcher's view or provide a neutral response. In either case, the response will have been biased by the researcher.

The researcher's interpretation of a response is also of concern. Here again, the researcher's preference can surface. If a response by a subject is not complete or is ambiguous, the researcher should be instructed not to suggest a response. Instead,

the researcher should restate what the subject has said and ask the subject to elaborate on the response so that his or her answer is clear.

Detailed written instructions, supplemented by trial runs or role-playing will help assure that data collection and interpretation errors are minimized.

How can compliance with protocol be assured?

Compliance with the protocol can be assured by developing detailed, complete instructions for research staff. These should then be provided and discussed with the researchers to insure that they fully understand them, prior to actually conducting a Practical Field Test.

A formal training program might also be provided, where participants can play the role of researcher and subject, to demonstrate proper interviewing techniques. Role-play familiarizes the researcher with the research situation and is a particularly good way to observe unintentional body language or tone of voice cues that reveal a researcher's bias, if any. Heightened awareness of these cues will help to reduce them.

Periodic observation of field researchers is an important method for insuring that protocols are being closely followed. Should any variance from the established protocol be noticed, the primary researcher can readily alert the researcher to the discrepancy and suggest an appropriate correction.

CHAPTER FIVE

Collecting Data

Types of data

Data can be classified as either discrete or continuous. Discrete data are: sex (male or female), day of the week (Monday, Tuesday, and so on), or type of crime (felony, misdemeanor). Continuous data include such things as: value of property stolen (dollars) and response time to calls for service (minutes).

These two types of data differ primarily in the types of computations that can be done on them. For example, while it is common (and simple) to calculate an average temperature, or the average amount of dollars lost through pickpocketing, it is meaningless to calculate an average "Type of Crime" by adding felonies and misdemeanors and dividing by two.

Continuous data is frequently converted into discrete data by creating levels or categories: dollar value of stolen property SMALL (\$0 - 100), MEDIUM (\$100 - 1,000), LARGE (over \$1,000), for example. The value of this conversion is that from a statistical point of view, we are rarely interested in the exact value of stolen property. But it can be quite useful to know whether thefts are primarily in one of these categories or another.

Discrete data can take several forms:

- The categories set up can be arbitrary. This is called "nominal" categorization. For example

1 = CRIMES IN PARKING LOT A
2 = CRIMES IN PARKING LOT B
3 = CRIMES IN ALL OTHER LOTS

- The data could be categorized in a meaningful order ("ordinal" categories), such as the rank of the arresting officer:

1 = Police Officer
2 = Sergeant
3 = Lieutenant
...

In this case, a calculation of the average rank might, in some research, have both meaning and value. A score of 1.85, for example, might show an unusually high involvement of higher ranks in routine arrests.

- "Interval" categories might be days of the week or eight-hour shifts or other periods of time. Most frequently, the intervals are of equal duration and are set in the order in which they normally occur.

Recency of data

When survey questionnaires are designed and administered, or interviews conducted, the data gathered will be relatively current. The more recent the data collected, the greater the likelihood that it reflects current opinion or existing criminal activities. This is important because generalizing from findings based on this data will most likely result in changes to police strategies to combat crime as it presently exists.

In some cases, data may not be current but may reflect past conditions. This is the case, for instance, when using the FBI Uniform Crime Reports as an indicator of crime. By the time all police agencies report this data for a calendar year, and it is tabulated and compiled into a single volume, it is at least one year old.

Crime patterns change, demographics change, and priorities for police service change. It is therefore important to take into consideration the recency of the data being used. If the data are too out of date, the researcher should seek an alternate data source. At the very least, the age of the data should be reported in the findings to alert others to its potential lack of recency.

Comprehensiveness of data

For meaningful analysis and interpretation to take place, it is important that the data collected be comprehensive and closely reflect the population being studied.

If we only interviewed five or six officers in a large urban police department, we might not accurately reflect the views of all police officers. Often, however, it is not practical to survey all members of a population. Where this is so, it is important to insure that the sample chosen is a very good representation of the whole.

A pharmaceutical company once developed a pill to combat seasickness and requested a cruise ship captain to distribute the pills to half the people on board the ship. The captain was asked to note if there was a greater or lesser incidence of seasickness experienced by those given the pills versus the control group, those not

issued the pills. After the cruise, the captain reported to the pharmaceutical company that no one issued the pills had become seasick, while many of the others had. The drug company was elated at the results until one researcher asked the captain how he had chosen the group which received the pills. He explained that he did not want to bother the passengers, so he gave the pills to the crew.

Systematic gathering of data

Consistency is one of the hallmarks of good research. The more similarly subjects are treated, the less likely it is that bias will interfere with or contaminate the data or the conclusions.

There may be a natural tendency for field researchers to get bored asking the same questions over and over again with each new subject interviewed. This tendency can lead the researcher to rephrase the questions, not ask all questions, or vary the order of questions asked. This is a mistake. Each subject should be presented the same questions in the same sequence.

By being systematic, we limit the possibility of introducing something into the process which, subtle as it might be, will affect the responses provided or data collected.

CHAPTER SIX

Data Analysis

Statistical analysis

The purpose of statistical analysis is to obtain concrete useful information from large numbers of observations. In Chapter 3 we discussed measures of central tendency (mean, median, mode) which provide a single number to describe the average value of the data collected. In this chapter we will explore additional statistical procedures.

Tabular data

One of the clearest, most simple ways to display data is through the use of a frequency distribution. This is the presentation of the collected data in a table:

CRIME BY HOUR OF THE DAY

Hourly Block Beginning	Frequency of Reported Crime
12:00 AM	66
1:00 AM	47
2:00 AM	35
3:00 AM	35
4:00 AM	23
5:00 AM	41
6:00 AM	57
7:00 AM	103
...	

The above frequency distribution requires twenty-four categories, one for each hour of the day. For ease of presentation and interpretation, the hourly intervals might be grouped to give:

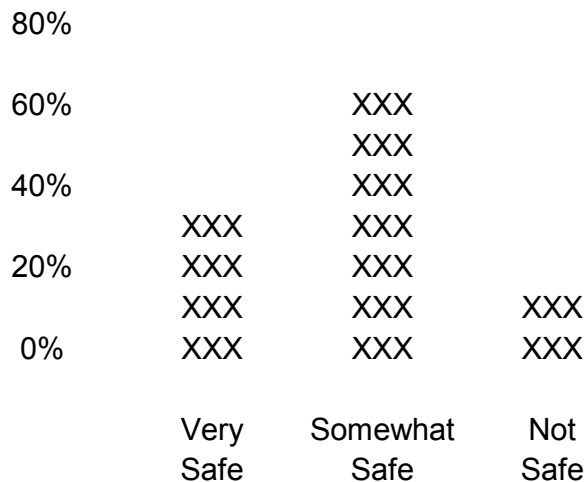
**CRIME BY HOUR OF THE DAY
(For the 3 Month Period: 1/1/95-3/31/95)**

Time of Day (Four Hours Starting)	Frequency of Reported Crime
12:00 AM	183
4:00 AM	224
8:00 AM	417
12:00 PM	323
4:00 PM	651
8:00 PM	314
Total	2,112

These tables can be shown very effectively as graphs known as Histograms or Bar Graphs. If we wanted to graph the results of a commuter survey relating to perception of safety at a transportation facility, a histogram would be useful. The following Histogram graphically demonstrates that 30 percent of the respondents rated the facility Very Safe, 60 percent of the respondents rated it Somewhat Safe, and 10 percent rated it Not Safe.

**1995
COMMUTER SAFETY SURVEY
N = 1,680**

% Response



Another useful table is the crosstabulation or matrix. It is particularly well suited to illustrate the relationship between variables.

	ARRESTS	
	Uniformed	Non-uniformed
Parking Lot A	13	25
Parking Lot B	11	18

Crosstabulations can be used for more complex analysis, such as the impact of witness availability on frequency of arrests for two or more types of crime. As an example, the rate of arrests for pickpocket theft is 58 percent when a witness is present, but only 4 percent when there is no witness.

**IMPACT OF WITNESS AVAILABILITY
ON ARREST RATE FOR
PICKPOCKET AND LUGGAGE THEFT**

	Witness		No Witness	
	Pickpocket	Luggage	Pickpocket	Luggage
Arrest	58% 49	71% 44	4% 9	12% 17
No Arrest	42% 35	29% 18	96% 209	88% 127
Total	100% 84	100% 62	100% 218	100% 144

Standard deviation

We previously discussed "range" as a simple measure of dispersion. Range is very easy to calculate, since it is merely the difference between the lowest and the highest

values of a group of numbers. It has limited use, though, since it only provides the outermost limits of a group of data.

A much more useful measure of dispersion is the Standard Deviation. This more complex statistic indicates the nearness of a given case to the Mean.

Theoretical research in mathematics and statistics has established certain properties of the Standard Deviation. For example,

- A little more than two-thirds of all cases are between one standard deviation below the mean to one standard deviation above the mean.
- 95 percent of all cases fall between two standard deviations below the mean to two standard deviations above the mean.
- 99 percent of all cases fall between three standard deviations below the mean to three standard deviations above the mean.

These make the standard deviation extremely useful. Before we discuss how to calculate this measure of dispersion, let's look at an example, assuming we have already made such a calculation:

Let's say that the mean number of traffic tickets issued by a police officer each month is 70. We also know that Officer Smith issued 80 tickets last month. If we also know that one standard deviation equals 5 tickets, we could tell what percentage of officers exceeded Officer Smith's record. Officer Smith's record of 80 tickets is 10 above the mean. It is therefore 2 standard deviations above the mean.

The following chart illustrates the percent of cases included at different standard deviations from the mean:

0%	0.5%	2.5%	16%	50%	84%	97.5%	99.5%	100%
	-3SD	-2SD	-1SD	MEAN	+1SD	+2SD	+3SD	

Two standard deviations above the mean account for 97.5 percent of all cases. Officer Smith's record was exceeded by only 2.5 percent of that of all other officers last month.

The following example indicates how to calculate a standard deviation. Let's say you had 10 cases represented by the numbers

16, 14, 12, 11, 10, 10, 9, 9, 8 and 6.

These might be, for example, tickets written in one day by a sample of 10 officers.

You would begin by calculating the mean for these cases by adding up all of the raw numbers (Sum = 105) and dividing by the number of cases (10) to arrive at a mean of 10.5.

You would then subtract the mean (10.5) from each raw score (16, 14...) to determine the deviation of that score from the mean. The deviation for the first raw score is 5.5 (16 - 10.5). For the second it is 3.5 (14 - 10.5)...

Next you would square each of the deviations (5.5 x 5.5 = 30.25, 3.5 x 3.5 = 12.25, -4.5 x -4.5 = 20.25,...). Then you would add up all of the squared deviations. So far your calculations might look like those in the chart below.

Raw Score	Deviation from Mean	Deviation Squared
16	5.5	30.25
14	3.5	12.25
12	1.5	2.25
11	.5	.25
10	-.5	.25
10	-.5	.25
9	-1.5	2.25
9	-1.5	2.25
8	-2.5	6.25
6	-4.5	20.25
TOTAL	105	76.50

Next, divide the sum of the deviations squared (76.50) by the number of cases (10), which would equal 7.65. Finally, calculate the square root of 7.65 to arrive at a standard deviation of 2.77.

Significance levels

When analyzing research results, a frequently asked question is whether the results are significant? This is not an easily answered question.

First one needs to distinguish between important differences and significant differences in data. Two or three rape a years might be the norm in your jurisdiction, but one year four rapes might occur.

Is this additional incident significant? That is, is it statistically different from the rate experienced in previous years, or might it have occurred by chance factors alone?

This is a very different question than whether the rate of rapes is important. Even a single additional case might cause great concern or alarm to the community the police serve and even if not significant, might be very important.

Let's focus, though, on statistical significance. To some degree this is a subjective evaluation. A researcher determines in advance of tabulating data what the odds are that any differences occurring between two or more variables could have occurred by chance.

Traditionally, there are two standards that are used. One is referred to as the .05 level of significance. This means that the likelihood that the differences could have been caused by chance are only 5 percent or, 5 chances in 100.

A second, more stringent level is the .01 level, which means that the likelihood of the differences occurring by chance is only 1 in 100.

It should be noted that these benchmarks, while traditional in social science research, are not etched in stone. Other levels could be chosen, if they make sense to the researcher. An important point, though, is that the level should be chosen prior to and not after data analysis has taken place. If not determined earlier, one could choose a level of significance that confirms one's expectations. This is bad science.

There is also a practical factor in significance levels. Let's use an example of research on two officer patrol versus single officer patrol. Let's also say that the results of the research indicated a small, but statistically significant enhancement in service when two officer patrol was utilized. From a pragmatic point of view, the gain might not justify the cost involved in converting to two officer patrol. It might well be argued that the additional staffing could be better used where a greater productivity gain could be realized.

There are a variety of formulas that are used to calculate significance levels. These formulas and their appropriate application are beyond the scope of this manual. The researcher should refer to a text on social science statistics for a more complete discussion of these formulas.

Correlation vs. causation

The statistical technique most often used to assess the relationship between two variables is Correlation. A correlation coefficient is expressed as a number between

-1.0 and +1.0. A coefficient of +1 means that the two variables move together exactly in the same way, while -1 means that they always move in exactly opposite directions. Where there seems to be little or no relationship, the coefficient will be closer to zero.

For example, one might find that the greater the number of police officers assigned to patrol a given sector, the greater the number of arrests that will be made.

Where an increase in one variable is associated with a decrease in the other, the correlation coefficient will be a negative number approaching -1.0. For example, increased sensitivity training might relate to decreased citizen complaints of verbal abuse by police officers.

Correlation is sometimes confused with causation. A high correlation does not necessarily mean that an increase in variable A is causing an increase in variable B. Homicides have been related to phases of the moon, but no one is about to indict the moon.

Even though there might be a high positive or negative correlation coefficient, there may also be other factors, not studied by the researcher, which could be causal factors.

In classic research conducted in the 1920's and referred to as the Hawthorne Studies, a high positive correlation was discovered between the intensity of illumination in a factory and productivity. The greater the illumination, the greater the worker productivity. The researchers at first thought the increase in illumination caused the increase in productivity. The researchers then found that when they decreased illumination, even below the original starting level, productivity continued to increase.

They ultimately discovered that a factor they were totally unaware of was causing the increase in productivity. The workers who were selected for the experiment thought they had been singled out by management to participate because management thought they were special or better or had some kind of potential.

The workers did not want to disappoint their bosses and wanted to show that they were worthy of selection. Management had no idea this is what they thought, since they randomly selected workers for the experiment. So strong was the workers' perception and so impressive their reaction that this phenomenon has ever since been referred to as the Hawthorne Effect. That is, there is always the possibility that some unidentifiable factor is influencing the behavior of the subjects aside from the independent variable used by the researcher.

Where the number of cases being studied is 30 or fewer, an appropriate statistical technique to use to calculate a correlation coefficient is known as the Rank Difference

Correlation Method. The following section provides an example of this method for calculating the correlation coefficient by hand. It is worthwhile to work through such an example as a learning experience. In actual practice, one of several readily available computer programs can be used to perform these calculations.

Suppose that you wanted to determine if there was a high correlation between the age of fare beaters and their number of past arrests. You knew their ages and had access to their arrest records. Let's also say that you had 10 cases.

First order the observations by one factor, perhaps age, with rank number one for the oldest and rank number ten for the youngest. Next to those ranks you would put their rank based on prior arrests, where rank number one would go to the individual with the most arrests and rank ten to someone with the fewest or no prior arrests.

It might be that some individuals have the same number of arrests or no prior arrests. Each should be given the same rank, as seen in this example:

A person with the most arrests, say six, is ranked number 1, but the next two both have four arrests each. They are both equal and should fill slots 2 and 3. To make their ranking equal, assign each one rank 2.5. The next person, with three arrests gets ranked 4, since slots 2 and 3 have already been taken. If the last three people have no prior arrests, they too, should receive equal ranks. We know that they will fill up slots 8, 9 and 10. Give each one a rank of 9 and they will be equal.

Next indicate the differences in ranks for each person. For instance, if someone was ranked 5 on age and 7 on prior arrests, the difference would be 2. Square these differences and total that column. So far your calculations appear as follows:

Age	Prior Arrests	Rank Age	Rank Arrests	Difference	Difference Squared
23	1	1	6	5	2.5
21	0	2	9	7	49
20	3	3.5	3	.5	0.25
20	1	3.5	6	2.5	6.25
19	6	5	1	4	16
18	2	7	4	3	9
18	4	7	2	5	25
18	0	7	9	2	4
16	1	9	6	3	9
15	0	10	9	1	1
TOTAL					144.5

Next square the number of cases (10), and subtract 1, leaving 99.

Then multiply 99 by the number of cases (10), which yields 990.

Take the sum of the squared differences (144.5) and multiply it by 6, yielding 867.

Divide this number (867) by the 990 you arrived at earlier. This equals .876.

Finally, subtract this number from 1 ($1 - .876$), to get a correlation coefficient of .124.

This is not a very strong correlation (close to zero). There does not appear to be a strong relationship between age and prior arrests in our example.

Other more sophisticated methods exist for calculating correlation coefficients, but they are beyond the scope of this discussion. One, the Pearson Product-Moment Method, applies when there are more than 30 cases. The researcher is again referred to a statistics textbook for a more detailed discussion.

CHAPTER SEVEN

Interpreting The Results

Reporting the findings

A written report of the research findings should generally include three distinct parts:

- a summary of the research design, including a statement of the problem, any significant findings, and recommendations based on these findings
- a full report of the research, explaining each phase of the project in sufficient detail so that another researcher could replicate (or duplicate) the study
- an appendix to the full report including sample questionnaires or surveys, data collected, and other background information from which the findings were drawn.

When writing both the summary and the full report, it is important to present an unbiased view of any weaknesses in the research design, data collection, or analysis that are uncovered.

Perhaps after the data were gathered, it becomes obvious that some useful questions that should have been included in a survey form were never asked. Perhaps the number of officers who were interviewed was relatively few. It might be that the base data used was several years old. These are examples of factors which could influence the findings or their application in other settings. Good research requires that they be reported, so that others can understand the limitations of the research. It is also helpful to other researchers who might want to replicate this work. By understanding any potential deficiencies, future research might then control for these factors, resulting in even more useful and accurate findings.

What questions were answered?

In Chapter 1, we pointed out that when formulating a problem for study, questions about that problem should be developed. Once the data have been analyzed, the researcher should refer back to those questions and assess how well the study answered them. The more clearly and unambiguously those questions were worded, the more likely the research design yielded data that could answer the questions.

Factors that normally affect the ability of the researcher to answer the questions include the actual number of subjects who responded to survey questionnaires, if used. If survey forms were placed on bus or train seats for commuters to complete, but only 10 or 15 riders responded, no matter what the findings, it would be inappropriate to assume that those participating accurately represented the entire population identified.

Weather conditions, unanticipated emergencies, lack of funds, or other disruptive forces could have curtailed the length of time or staffing of experimental patrol strategies. Perhaps only two officers could be assigned to a parking lot and not the original six anticipated in the study.

Perhaps a change in priorities in the agency reduced the support needed to successfully complete the project. This would not be surprising if the project had an extended time frame of six months or more. Things do change.

What questions have been raised?

Almost as important as the questions that have been answered, are the questions that have been raised. Regardless of how much time was initially put into designing the study, no researcher could expect to anticipate everything that might occur. Only once a project has been completed can a researcher look back and assess the completeness of the research design.

An important step in reporting the results of research is to point out questions the research has raised. Perhaps a research project relating to counseling runaway adolescents did not consider the sex of the officer making contact. Data analysis might suggest some pattern or strong correlation, yet too few female officers might have participated in the study for the results to have been significant.

If not sex, the issue might have been age of the officer or years of experience, or any other factor that was not controlled when the research was designed. Only after the data have been tabulated and analyzed does it surface that this factor could be meaningful.

By raising questions, the researcher identifies areas for future exploration. If the entire project has not yet been completed, there may still be time to incorporate these questions into the remaining study.

CHAPTER EIGHT

Sampling

Relation to population

In Chapter 3, we defined a population as the total number of cases, or the total number of subjects within a given grouping or classification. A population might be all robbery victims in a calendar year or from a geographical area of a city. It might be all citizens over the age of sixty, a potentially very large population, or all victims of a serial killer, in which case the population might number no more than three or four.

It is the researcher who determines what characteristics define a population. They are not pre-defined. Where populations are relatively small, it is desirable to include all members of the population in the research study. The results of such a study will inevitably reflect the entire population.

In some cases, the population will be so large that it will not be possible to include everyone in it. One way to reduce the size of the population is to define it more specifically. An example of this approach has already been provided in this manual. This approach is not always possible and therefore a sample of the population will have to be used.

A sample is a subset of the entire population. It might be 1 percent or 50 percent, but it is something less than the entire group. Whatever the sample size, the sample should be carefully chosen to accurately reflect the population from which it comes. If this is not the case, then the research findings will not reflect that population. As a general rule, the larger the sample, the greater the chance that it reflects the population ... but the larger the sample, the more expensive the research effort.

Sampling methods: random vs. non-random

A random sample is not merely whatever one can collect. If the researcher has decided that one hundred cases are necessary, simply selecting the first one hundred cases is not selecting a random sample.

For a sample to be random, each subject or case has to have an equal chance of being selected. If we need fifty officers for a sample and chose the first fifty from an

alphabetical listing, names starting with an A would be included, while those starting with Z would be less likely to be selected.

While this example might seem obvious, others are less so. Selecting the first 50 employee numbers might appear random, since the researcher is unlikely to know any particular officer by the officer's employee number and employees are not usually hired alphabetically. These numbers are, however, usually assigned sequentially. Selecting by employee number automatically would be selecting older officers, those with the greatest number of years of service. It would eliminate younger, less experienced officers. If the intent was to select a random sample representing all members of the force, this procedure would be flawed.

An alternative method would be to select every tenth name, if a 10 percent sample were desired, or every twentieth name if you wanted a 5 percent sample.

An additional and more sophisticated system would be to use a table of random numbers (a list of numbers that are totally random) from which to draw the sample. A good substitute for a table of random numbers is the white pages of a phone directory.

Let's say you had a population of one hundred people and you wanted a 10 percent sample. First you need a list of those people; the order of the list does not matter.

Assign a number next to each name from 0 to 99. Open up a phone book to any page at random. Go to the top of any column and look at the last two digits of each phone number.

Go down the column and select the first ten different numbers that you come to. If you cannot get ten from that column, go to the next column and so on. The procedure would look like this:

Telephone No.	Last 2 Digits	Selected
674-8518	18	yes
273-1818	18	no
676-1898	98	yes
674-9152	52	yes
744-0996	96	yes
227-9177	77	yes
672-4202	02	yes
669-3705	05	yes
994-4053	53	yes
676-2168	68	yes
675-0835	35	yes

Go back to your original list of one hundred people and select the 18th, 98th, 52nd, 96th, and so on.

If you had a population greater than one hundred, use the last three digits of the telephone numbers, or four digits, if necessary.

The procedure above is appropriate for a simple random sample, one where everyone has an equal chance of being selected. There are times, however, where a simple random sample will not be appropriate.

Let's say that you were interested in the way members of the force who had attended the FBI National Academy viewed their potential for promotion to command rank, versus officers who had not attended this training. If only 8 percent of the force had ever graduated from the NA, a simple random sample might not even result in one NA graduate being selected.

In this case, you would use a stratified random sample. You would first stratify officers by attendance, that is, you would make up two lists. One would include all officers who had not attended and the other would be all NA graduates. Next you would randomly select 10 percent from each list. Stratified random sampling insures that an equal percentage of subjects is included in the study.

In addition to random sampling, there are non-random samples. Let's say a researcher, assigned to headquarters, wanted to elicit the opinions of police officers on some topic. The researcher proceeds to ask each officer assigned to headquarters to complete a questionnaire. There are a sufficient number of officers at headquarters to meet the researcher's sampling needs. Has he used a random sample? No. What the researcher has used is referred to as a convenience sample. It was easier to distribute questionnaires to officers at headquarters than it would have been to distribute them to the various districts or precincts.

In another instance, a researcher wants to survey bus commuters. Weekdays are quite busy, so the researcher assigns field researchers to interview commuters on Saturday and Sunday. Here again, the researcher has not used a random sample, but in this case an accidental sample. The responses to the survey by people using the system on weekends will probably not reflect the entire population, since it omits commuters using buses Monday through Friday.

Random sampling is generally the preferred method to use, except where the population itself is small. Reducing this population any further by sampling would not be desirable.

Sample size

The first rule of thumb is that the larger the sample, the closer it will approximate the population from which it comes. Having said that, let's consider other factors.

One factor is the homogeneity of the population itself. A homogeneous population is one where all of the members are very much alike. If the population is highly homogeneous, the sample need not be very large. The age of citizens in a town might vary from less than one year old to close to one hundred. The population is very diverse and not homogeneous on this characteristic.

If the population was only senior citizens, then it would be more homogeneous as to age. We could select a smaller sample of senior citizens and still accurately reflect the varied ages represented by members of this group. We would have to select a larger sample, if we wanted an accurate representation of ages in the total population of the town. Of course, the senior citizens might be diverse with respect to race, ethnic background, health, or other relevant characteristics.

Another factor affecting sample size is the number of variables to be studied. If we have one independent and one dependent variable the sample need not be so large as a study where two or three independent and dependent variables are included.

A study of auto theft, where we were only interested in total cases, might not require a large sample. If we wanted to analyze sub-sets (type or make of automobile, age of offender, prior arrests, or presence of an automobile alarm or steering wheel locking device) the sample would have to be much larger to insure that each sub-set had sufficient subjects to permit statistical analysis.

There are no hard rules for the size of samples. They vary, depending on the population being studied, the research design, and the level of confidence desired for the results.

CHAPTER NINE

Validity and Reliability

Definitions

Validity and reliability are two factors that need to be considered when analyzing research findings. Validity relates to the "truthfulness" of the findings, while reliability refers to consistency.

Reliability is the easier of the two to define and measure. It basically asks the question, how likely would the results occur if the research were conducted again, or on another group? No matter what the research, if the results are not reliable, the findings are useless.

If a patrol strategy appears to result in reduced crime one month, but seems to have no effect on crime in another similar month, it is not reliable. We cannot depend on it. It will not always produce the same results.

Validity is more difficult to address. We may have consistent results, but how do we know that the results mean what we think they mean? We might be able to reduce response time to calls for service, but has this actually helped to reduce crime? Is a reduction in response time a valid crime control measure?

A commuter completes a survey questionnaire relating to feelings of safety at a transportation facility. Is the questionnaire a valid (or true) measure of the commuter's sense of safety?

Recruits receive training in the use of deadly force. They all score 100 percent on the exam that follows the training. Is the exam score a valid measure of what they will do a year later, when they are out in the street?

Simply because we have a test score, survey response, computer tape of response times, or whatever, does not in itself guarantee that we have a valid indication of anything.

Types of validity (face validity vs. statistical validity)

Face validity is a non-statistical form of validity. Something has face validity if it looks like it measures what it claims to measure.

If we design a performance appraisal form for detectives that asks for ratings on such factors as: ability to establish rapport easily with witnesses, knowledge of how to secure a crime scene, or ability to lift latent prints, we have a face valid performance appraisal. The factors (or traits) that make up the appraisal appear to relate to the work of detectives.

Face validity is not a guarantee that we have a statistically valid appraisal, but it is an important form of validity. If we ask questions that do not appear relevant, even if they might be, respondents may not view the research form as relevant. If this occurs, the respondents either will not respond or they will not take the instrument seriously. Their responses may be different if they thought the survey was on-target and the researcher knew what questions to ask.

Another type of validity is referred to as content validity. This form of validity means that the content of a survey questionnaire, test, performance appraisal, or other instrument accurately reflects the content of the job (or function) we are measuring.

A content valid instrument inherently has face validity. Content validation is more complex, though. The content itself should be the important and significant functions or those that are performed most frequently.

The items listed above on the detective performance appraisal might qualify, but an understanding of how to investigate art theft might not qualify, if this is not a type of crime handled by an agency.

The remaining forms of validity are statistical in nature. They consist of predictive validity, concurrent validity, and construct validity.

Predictive validity involves the correlation of a test, appraisal form, and other measures with some future measure. It attempts to determine if the "test" predicts future performance. For instance, you might correlate the incidence of initial contacts made by a youth services unit with the incidence of arrests of juveniles six months or a year later. You might want to know if early intervention had a positive affect on reducing the likelihood of crime (as measured by arrests in this example) by juveniles subjected to one intervention approach as opposed to another. You would be asking the question: Does intervention A correlate with the likelihood of arrest at a future date?

Concurrent validity correlates one factor with another at the same time. You might want to correlate the impact of aggressive patrol tactics at a train station with the rise in crime in neighboring areas. In effect, have you reduced crime or merely displaced it?

Unlike a predictive validation study, you do not have to wait until some future date to collect the criterion measure. You can collect all of the data at the same time, since the data are concurrent.

Construct validity may be the most subjective form of validity. It requires inferring a construct (an abstract concept) from other data. For example, leadership is a construct: age and height are objective, leadership is not.

Your study might want to identify members of the force who exhibit leadership or have leadership potential. First you would have to define what you meant by leadership. Next you would have to identify factors which you believe contribute to the development or expression of leadership. Then you would have to identify a measure of leadership and identify the factors that correlate with the measure selected.

One factor might be military bearing. Military bearing, you might believe, is a factor which correlates positively to leadership. You would rate individuals on military bearing and correlate those ratings with, perhaps, a ranking of officers by subordinate staff on the staff's view of them as exhibiting leadership.

Construct validity requires many inferential leaps. How you define something and how you measure it, can be open to debate. Nevertheless, real world policing often involves the assessment of such constructs as: good judgment, the ability to react appropriately to crisis situations, maintaining composure under pressure, and the like.

Importance of reliability

It has been said that consistency is the hobgoblin of little minds. If there is an exception to that saying, surely it applies to research.

We have previously discussed how consistency is important in both data gathering and analysis. The greater level of confidence the researcher has that the same result would occur if the Practical Field Test were carried out again, the greater the value of these results. Decisions can be based on reliable results. It would not make sense to base decisions on inconsistent ones.

In addition to consistency in data collection, there are other factors that can affect reliability. One is the length of a questionnaire or time it takes to complete a survey.

People will begin to lose interest if they are asked too many questions, or the researcher takes too much of their time.

There is no hard rule here, but it makes sense to ask only truly important questions and take up as little of a subject's time as possible. A commuter is not likely to give you fifteen minutes of his or her time to respond to your questions. A questionnaire with numerous questions is likely not to be completed.

The way questions are asked or phrased is also a factor that can influence reliability. Simple questions, requiring yes or no answers result in responses that are unambiguous. Open-ended questions, which require the subject to develop a response, will be open to interpretation and therefore less reliable.

Another factor is the degree of accuracy with which a researcher expects a subject to respond to a question. Using a three, or at most five point scale (rating), will tend to result in a more reliable response than using scales with a greater number of choices, requiring more precise distinctions.

Let's say the researcher wanted to ask questions relating to the public's awareness of uniformed officers at a train station parking lot. One question might be phrased:

On average, I have seen uniformed police officers at this parking lot each month:

- A - Never
- B - Once or twice
- C - Three to five times
- D - More than five times

A subject is likely to provide the same response (be reliable) if asked that question again. The choices are few and easy to distinguish.

The choices to the above question might also be:

Number of times (circle one): 1 2 3 4 5 6 7 8 9 10

In this example a subject who selected 6, might on another occasion pick 5 or 7, or perhaps some other number. Most subjects would not accurately recall exactly how many times they saw an officer. The researcher is forcing the subject to select a specific number. That response would likely change if the subject were asked the question again.

This is an example of the error of false precision. The researcher should not put a subject in a position where a level of precision is required that goes beyond the knowledge or expertise of the subject.

CHAPTER TEN

Time-Lines

Managing a research project is similar to managing any activity. Planning and monitoring help in maintaining progress, making mid-course adjustments, and avoiding unnecessary mistakes. Applied research in critical areas like law enforcement can sometimes be subject to considerable pressure of changing priorities, altered budgets, and policy, staffing, and scheduling adjustments.

Establishing and maintaining a schedule will assist in accommodating such changes as are necessary and may help to deflect some changes that are not.

Flow charts and Gantt charts

In order to insure that a research study meets pre-established deadlines, the researcher should prepare a flow chart or a Gantt chart incorporating all of the phases of the project and the amount of time each is estimated to take. Once the time for all of the parts are estimated, the total time necessary to complete the research can be determined.

This should result in a realistic approach to estimating total project time. Doing the reverse, that is, establishing total project time first and then fitting each phase of the research into that pre-established timeframe is less likely to provide a realistic estimate of completion time. The existence of such a chart can assist in gaining and maintaining departmental support for the research.

There are no hard rules for estimating time, but if there were rules they would certainly have something to do with the fact that things generally take longer to accomplish than anticipated. Some flexibility has to be built in to allow for unforeseen contingencies.

Field researchers may need more training time than anticipated. The number of questionnaire response forms completed and returned is far fewer than anticipated, requiring a second series of seat drops. Interviews take longer than planned. Errors in data tabulation or analysis are not discovered until well into the analysis process. Decisions required by senior level staff are postponed, since some crisis has occurred, requiring their full attention. These and any number of other factors can play havoc with time-lines.

The one way to insure that a researcher will be derailed with a Gantt chart or a flow chart is to assume that everything will work smoothly and on time. It won't! A researcher should not be overly optimistic when establishing timeframes. This may create unnecessary pressure on staff assigned to various aspects of the study. They may rush to meet the restrictive timeframe and in so doing, make errors which in the long run will only create further delays.

Once the researcher has estimated the time each aspect of the project will take, a chart should be prepared. This will provide a graphic display of the entire project. It might look something like the example below:

WEEK	1	2	3	4	5	6	7	8	...
Task 1: Design PFT	█								
Task 2: Prepare Survey Questionnaire			█						
Task 3: Train Field Researchers				█					
Task 4: Pre-test Forms						█			
Task 5: Revise Forms							█		
Task 6: Collect Data								█	
Task 7: ...									

By preparing such a chart, the researcher can see if there is more than one task that could be accomplished at the same time. For instance, in the example above it might be possible to prepare the survey questionnaire and train the field researchers in interviewing techniques at the same time or in an overlapping timeframe. This is particularly so if different people are designated these tasks and are able to work at the same time without waiting for one another to complete certain parts of the project.

In a more complex study, you might have a Gantt chart, part of which looked like this:

WEEK	1	2	3	4	5	6	7	8	...
Task 1: Prepare Commuter Survey	█								
Task 2: Administer Survey			█						
Task 3: Analyze Survey Results				█					
Task 4: Assign Plain- clothes Officers to Lot A				█					
Task 5: Assign Uniformed Officers to Lot A							█		
Task 6: Debrief Plain- clothes Officers							█		
Task 7: ...									

Reasonableness of timeframe

Timeframes should be reasonable. That is, they should neither be too long nor too short. Too short a timeframe will contribute to errors caused by rushing and will throw the remaining timeframes off schedule. On the other hand, people will generally take as much time as allotted to complete a task. Providing substantially more time than required to complete a task will only delay the research and may undermine management support.

Another approach is to consider the total number of steps, or tasks, within the research project. As this number increases it is quite likely that overruns will occur at some of these steps. The researcher will not know in advance where these overruns will occur, but can build a free week into the schedule every so often. These unaccounted for weeks can act as buffers and provide the needed time to bring the entire time-line back on schedule. The basic rule here is that the greater the number of steps, or the greater the length of time the entire PFT will take, the more of these buffers should be added to the schedule.

Meeting pre-established deadlines

Once these charts and a schedule have been established, the primary researcher should refer to them regularly. Meeting the deadlines incorporated into the project schedule requires that the researcher monitor the progress of field researchers and other staff. If delays are encountered, the primary researcher can attempt to identify the cause of the delay and intercede on behalf of the research staff.

Some tasks may require advance work, such as identifying a printer who can schedule the duplication of survey questionnaires in sufficient time to have them ready when surveys are to be conducted. Similarly, when the primary researcher knows that secretarial staff, computer time, agency personnel who can conduct statistical analysis, or other support staff and services will be needed at some point during the research, the primary researcher can arrange for this support in advance, to insure that it will be available when needed.

Keeping an open mind and being flexible are two attributes that will assist a researcher in meeting pre-established deadlines. Perhaps obstacles surface which were not foreseen. While these might cause a delay in the schedule, perhaps some other tasks that are slated to occur later in the schedule can be rearranged so that down time is reduced or eliminated. Maybe an alternate approach can be used. Being flexible and open to alternative strategies can help the researcher find ways of keeping the project on track and on time.

CHAPTER ELEVEN

Common Problems and Pitfalls

Sample size too small

Underestimating the size of a sample can create problems in statistical significance for a researcher. If the sample is limited in size, there may not be sufficient subjects, or survey responses, to meet the needs of significance testing. The researcher may have a high positive or high negative correlation, but will not know if that correlation is significant, or if it might have occurred by chance.

A frequent reason for too small a sample is not that the original sample size chosen was too small, but rather that the response rate was less than anticipated. To guard against this problem, the researcher should try to pre-test the survey or group. If pretesting suggests an even lower response rate than anticipated, the number of subjects should be increased accordingly.

Ambiguous questions

Questions that are ambiguously worded can be very problematic for the researcher. The data will be open to interpretation and in some instances will be quite useless. The problem can be avoided if questions are carefully constructed. It is also a good idea to have several individuals read each question to determine if any of them find the questions confusing or ambiguous. A pre-test on a small segment of the sample population will prove even more useful.

When writing items for a survey questionnaire, the researcher should use simple sentences. Vocabulary should be selected to insure that unfamiliar words or police jargon are not used, especially when the respondents will be non-police personnel.

Statements and questions should be direct and not require the subject to re-read the question several times in order to understand it. Items should not be written in a way to encourage the reader to select one choice over another. All choices should be of approximately equal length wherever possible.

Poorly defined problem

If the data gathered, analyzed, and summarized do not answer the original questions raised by the research design, the findings will be of limited use. The first step in the research process, defining the problem, is extremely important. The problem needs to be carefully defined and the measurement instruments crafted in a way to lead to a clear interpretation of the findings.

It is not sufficient to develop findings that could account for the problem under study. It is also important to account for as many of the factors that affect the problem as possible. Finally, the use of control groups is essential to insure that factors beyond the researcher's knowledge have not been at work.

Timeframe inadequate

Developing a timeframe that is very restrictive can cause the researcher numerous problems. Needless pressure may be placed on field researchers to expedite their work. This will doubtlessly lead to errors and may impact on the respondent's perceptions that they are being rushed to respond to survey questions. Field researchers may not probe incomplete responses, or insure that they have received full responses.

Too short a timeframe may not permit the gathering of critical data. If a type of crime being studied does not occur with great frequency and the timeframe for police strategies or observations is short, the crime may not occur at all during the PFT.

Too short a timeframe may also not permit officers to become familiar with an experimental patrol strategy and not utilize it fully, if their own timeframe to fully learn the strategy is close in length to the amount of time permitted for the strategy to be implemented.

Poorly trained staff

The primary researcher cannot directly observe all field researchers, other research staff, or police officers assigned to PFTs. If only minimal training or sketchy instructions are provided, it is likely that personnel will misinterpret their roles, collect data incorrectly, or perform deficiently in some other way.

What may appear obvious to the primary researcher may be quite unfamiliar to others involved in the research. The primary researcher should make no assumptions about the skill level of PFT personnel.

Only through well-designed and methodically administered formal training can the primary researcher be reasonably assured that staff will carry out their functions correctly.

Factors outside of the researcher's control

Despite all of the planning that can be done to insure a PFT is conducted smoothly, there are always factors beyond the control of the researcher.

Management priorities change and emergencies arise. Staffing cuts and reassignments of key personnel can result in the loss of important team members. Budgeting constraints can curtail the length and scope of experiments. Policy changes and changes of police leadership can affect the priority of experiments and direction of the department.

There is truly little the researcher can do to control or even influence any of the above. The seasoned researcher will attempt to design PFTs that are not especially vulnerable to unforeseen influences, but even so, changes may have to be made during the course of the experiment.

Studies that require a substantial amount of time to complete might be divided into discrete phases that can stand alone. It is sometimes possible to design research so that even if all phases are not completed, some or most of the questions posed by the research can be answered.

It is also possible to design the research so that if it is curtailed, initial phases will not have to be repeated. When funding, time or staffing permit, the research may be continued without having to begin the process all over again.

The researcher should consider these factors when creating the research design. This is especially true if there are any expectations of significant changes in the agency during the time the research is to be carried out.

Good luck.

GLOSSARY

ACCIDENTAL SAMPLE: A non-random sample chosen without regard to its representation of the larger population from which it comes.

APPLIED POLICE RESEARCH: Research that results in findings that have a practical application for a police agency.

AVERAGING: Obtaining a measure of central tendency.

BAR GRAPH: A graphic means of displaying data which uses vertical or horizontal bars to express quantities.

BASELINE: A starting point used in research and identified prior to experimentation as a point of comparison with data after experimental variables are introduced.

BASE MEASURE: See Baseline.

CAUSATION: The ability of one event to create or control another event.

CODING: Assigning numbers to types of data so that they can be readily tabulated.

CONCURRENT VALIDITY: A statistical form of validity that compares two or more sets of data that have been gathered simultaneously.

CONSTRUCT VALIDITY: A statistical form of validity that attempts to utilize an abstraction, a construct, to infer some behavior that cannot itself be directly measured.

CONTENT VALIDITY: A non-statistical form of validity that assesses the similarity of the content of a measure with the content of that which is being measured.

CONTINUOUS DATA: Data that has no natural or discrete break, such as time, height.

CONTROL GROUP: Subjects in an experiment who are not exposed to changes in the independent variables.

CONVENIENCE SAMPLE: A non-random sample chosen for the convenience or ease of gathering by the researcher.

CORRELATION: A measure of the degree of relationship between two variables.

CROSSTABULATION: A matrix used to arrange groups of data or variables to display relationships in research design or research findings.

DATA: Pieces of information.

DEMOGRAPHICS: Statistics relating to groups of people, such as births, deaths, ages, ethnic composition.

DEPENDENT VARIABLE: An outcome variable, where the outcome depends on changes in the independent variables.

DISCRETE DATA: Data that can be grouped into separate categories, such as sex, ethnic origin.

DISPERSION: A measure of the extent to which values of a variable differ.

ERROR OF FALSE PRECISION: A type of error made by a researcher when using the precision of mathematics to suggest a level of accuracy that does not really exist.

EXPERIMENT: A controlled event designed to determine the relationship between two or more variables.

FACE VALIDITY: A non-statistical form of validity where the content of a measurement instrument looks like it relates to the area being studied.

FREQUENCY DISTRIBUTION: A table where all score units are listed in one column and the number of individuals or cases receiving each score are indicated as frequencies in the second column.

GROUPED FREQUENCY DISTRIBUTION: A frequency distribution where individual score units are grouped together, reducing the number of discrete categories listed in the score column.

HAWTHORNE EFFECT: The potential for some unidentified factor(s) to influence the behavior of subjects in an experiment and thereby inadvertently influence the outcome of the experiment.

HISTOGRAM: See Bar Graph.

HOMOGENEITY: Uniformity of a factor within a group of subjects or data, such as age, occupation, religion.

INDEPENDENT VARIABLE: A variable that causes, effects, or influences the outcome of an experiment.

MEAN: A measure of central tendency, usually referred to as the average.

MEASURE OF CENTRAL TENDENCY: A number that represents the average of a group of data.

MEASUREMENT INSTRUMENT: A form designed to assess the influence of independent variables in an experiment.

MEDIAN: A measure of central tendency that represents the middle number of a group of data that is arranged from smallest to largest.

MODE: A measure of central tendency that represents the number most frequently encountered within a group of numbers.

NOMINAL: An assignment of a number solely for the purpose of naming categories of data. The number has no mathematical value.

ORDINAL: An assignment of a number used to rank categories of data in order, such as smallest to largest.

PEARSON PRODUCT-MOMENT METHOD: A statistical correlation technique used to assess the relationship between two or more variables when the size of the group being measured is greater than thirty.

POPULATION: Everyone or everything defined to be within a class, category, or grouping of subjects or data.

PRACTICAL FIELD TEST: A non-theoretical experiment designed to produce results which can be applied or used to make decisions.

PREDICTIVE VALIDITY: The ability of a measure to forecast, or predict, the occurrence of something else.

PRE-TESTING: Administering a measurement instrument to a small group of subjects, prior to administering it to the entire group.

PRIMARY RESEARCHER: The individual designated with overall responsibility for carrying out the research.

PROTOCOL: The research design or specific steps involved in conducting a research project.

RANDOM: Totally by chance.

RANGE: A simple measure of dispersion.

RANK DIFFERENCE CORRELATION METHOD: A statistical correlation technique used to assess the relationship between two variables when the size of the group being measured is thirty or less.

RAW DATA: Data that have not yet been transformed.

RELIABILITY: Consistency in data measurement.

RETROSPECTIVE: Looking back at or examining data that have already been acquired.

SAMPLE: A representative sub-set of a population.

SAMPLING ERRORS: Errors in the extent to which a sample represents a population.

SIGNIFICANCE LEVELS: The likelihood that numerical correlation values are reflective of real relationships and are not due to chance occurrences.

STATISTICAL ANALYSIS: The application of mathematics to large amounts of raw data to yield meaningful summary measurements.

STRATIFIED RANDOM SAMPLE: The subdivision of a population into strata, or layers by some classification, such as age, education level, sex, from which random samples are taken to insure that each classification is proportionately represented.

VALIDITY: The extent to which differences in scores reflect true differences among subjects or groups of data in the characteristic that the measurement instrument attempts to measure.

Appendix B

PARTICIPATING AGENCIES

Small Surface Agencies Responding to Statistical Survey

Anchorage Transit
Anchorage, AK

Birmingham Transit Authority
Birmingham, AL

Pine Bluff Transit
Pine Bluff, AR

Chico Area Transit
Chico, CA

City Of Commerce
Commerce, CA

Gardena Municipal Bus Lines
Gardena, CA

Laguna Beach Transit
Laguna Beach, CA

The Vine & Napa Valley Transit
Napa, CA

Omnitrans
San Bernardino, CA

San Luis Obispo Transit
San Luis Obispo, CA

Santa Clarita Transit
Santa Clarita, CA

Santa Cruz Metro Transit District
Santa Cruz, CA

Santa Maria Area Transit
Santa Maria, CA

Sunline Transit Agency
Thousand Palms, CA

Visalia City Coach
Visalia, CA

Foothill Transit
West Covina, CA

Roaring Fork Transit Agency
Aspen, CO

City of Greeley - The Bus
Greeley, CO

Southeast Area Transit District
Norwich, CT

Space Coast Area Transit
Cocoa, FL

Lakeland Area Mass Transit District
Lakeland, FL

HartLine
Tampa, FL

Palm Tran
West Palm Beach, FL

Albany Transit System
Albany, GA

Bettendorf Transit
Bettendorf, IA

Five Seasons Transp & Parking
Cedar Rapids, IA

Sioux City Transit System
Sioux City, IA

Pocatello Regional Transit
Pocatello, ID

South Bend Public Transportation Corporation
South Bend, IN

Transportation Utility City of Terre Haute
Terre Haute, IN

Kosciusko Area Bus Service (KABS)
Warsaw, IN

Topeka Metro Transit Authority
Topeka, KS

Atrans
Alexandria, LA

Lake Charles Transit
Lake Charles, LA

Shreveport Transit System (Sportran)
Shreveport, LA

Greater Attleboro-Taunton Regional Transit Authority (GATRA)

Attleboro, MA

Berkshire Regional Transit

Pittsfield, MA

Worcester Regional Transit

Worcester, MA

ColumBus

Columbia, MD

The Bus

Prince George's County, MD

Hudson Bus Lines

Lewiston, ME

Bay Metro Transp. Authority

Bay City, MI

Jefferson City Transit

Jefferson City, MO

City Utilities Transit

Springfield, MO

St. Joseph Express

St. Joseph, MO

Grand Forks City Bus

Grand Forks, ND

Cooperative Alliance for Seacoast Transportation (COAST)

Durham, NH

City of Albuquerque Transit Department

Albuquerque, NM

Regional Transportation Commission (RTC)/Citifare

Reno, NV

Chemung Transit

Elmira, NY

Oneonta Public Transit

Oneonta, NY

Salem Area Transit

Salem, OR

Lanta

Allentown, PA

Mid-County Transit
Kittanning, PA

Greenville Transit Authority
Greenville, SC

Clarksville Transit System
Clarksville, TN

Jackson Transit Authority
Jackson, TN

CityLink
Abilene, TX

Amarillo City Transit
Amarillo, TX

The Transportation Authority
Ft. Worth, TX

Island Transit
Galveston, TX

Port Arthur Transit
Port Arthur, TX

Waco Transit
Waco, TX

Wichita Falls Transit
Wichita Falls, TX

Intercity Transit
Olympia, WA

Jefferson Transit Authority
Port Townsend, WA

Spokane Transit Authority
Spokane, WA

C-Tran
Vancouver, WA

Link
Wenatchee, WA

Yakima Transit
Yakima, WA

Janesville Transit System
Janesville, WI

LaCrosse Municipal Transit
LaCrosse, WI

Madison Metro
Madison, WI

Sheboygan Transit
Sheboygan, WI

Medium Surface Agencies Responding to Statistical Survey

Phoenix Transit System
Phoenix, AZ

Long Beach Public Transportation Company
Long Beach, CA

San Diego Transit Corp.
San Diego, CA

San Diego Trolley Inc.
San Diego, CA

Santa Clara County Transit District
San Jose, CA

Orange County Transportation Authority (bus)
Santa Ana, CA

Connecticut (CT) Transit
Hartford, CT

Metro Dade Transit (surface)
Miami, FL

Metro Atlanta Rapid Transit (bus)
Atlanta, GA

Oahu Transit Services (The Bus)
Honolulu, HI

PACE
Arlington Heights, IL

Transit Authority Of River City
Louisville, KY

Regional Transit Authority
New Orleans, LA

Mass Transit Admin. Police/surface
Baltimore, MD

City of Detroit Department of Transportation (D-DOT)
Detroit, MI

Metropolitan Transit Police Services
Minneapolis, MN

Bi-State Development Agency
St. Louis, MO

Charlotte Transit
Charlotte, NC

Niagara Frontier Transit Police
Buffalo, NY

MTA Long Island Bus
Garden City, NY

Greater Cleveland Regional Transit (surface)
Cleveland, OH

Tulsa Transit
Tulsa, OK

Tri-Met
Portland, OR

Port Authority Of Allegheny County
Pittsburgh, PA

Memphis Area Transit Authority
Memphis, TN

Dallas Area Rapid Transit (DART)
Dallas, TX

Metropolitan Transit Authority of Harris County
Houston, TX

VIA Metropolitan
San Antonio, TX

Utah Transit Authority
Salt Lake City, UT

Greater Richmond Transit Company (GRTC)
Richmond, VA

Metro Transit (formerly King County Transit)
Seattle, WA

Pierce Transit
Tacoma, WA

Milwaukee County Transit
Milwaukee, WI

Large Surface Agencies Responding to Statistical Survey

Los Angeles County Metropolitan Transit Authority (LACMTA)/surface
Los Angeles, CA

Muni
San Francisco, CA

Washington Metro Area Transit Authority (bus)
Washington, DC

Chicago Transit Authority (bus)
Chicago, IL

MBTA Police/surface
South Boston, MA

New Jersey Transit (surface)
Newark, NJ

New York City Transit (bus)
New York, NY

Southeastern Pennsylvania Transportation Authority (SEPTA)/Surface
Philadelphia, PA

Heavy Rail Rapid Agencies Responding to Statistical Survey

Los Angeles County Metropolitan Transit Authority (LACMTA)/heavy
Los Angeles, CA

Bay Area Rapid Transit
Oakland, CA

Washington Metro Area Transit Authority (metro)
Washington, DC

Metro Dade Transit (heavy)
Miami, FL

Metro Atlanta Rapid Transit (heavy rail)
Atlanta, GA

Chicago Transit Authority (heavy rail)
Chicago, IL

MBTA Police/heavy rail
South Boston, MA

Mass Transit Admin. Police/heavy rail
Baltimore, MD

(Patco) Port Auth Transit Police
Camden, NJ

Port Authority Trans Hudson
Jersey City, NJ

New York City Transit (heavy rail)
New York, NY

Staten Island Rapid Transit Operations Authority
Staten Island, NY

Greater Cleveland Regional Transit (heavy rail)
Cleveland, OH

Amtrak Police Department
Philadelphia, PA

Southeastern Pennsylvania Transportation Authority (SEPTA)/Heavy
Philadelphia, PA

Commuter Rail Agencies Responding to Statistical Survey

Southern California Regional Rail Authority (Metrolink)
Los Angeles, CA

CalTrain (formerly CALTRANS Peninsula Commute Service)
San Jose, CA

Orange Co. Transp Authority (commuter rail)
Santa Ana, CA

Tri-County Rail
Ft. Lauderdale, FL

Northern Indiana Commuter Transportation District
Chesterton, IN

MBTA Police/commuter rail
South Boston, MA

Mass Transit Admin. Police/Commuter rail
Baltimore, MD

New Jersey Transit (commuter rail)
Newark, NJ

MTA-LIRR
Jamaica, NY

Metro-North Police
New York, NY

Southeastern Pennsylvania Transportation Authority (SEPTA)/Commuter
Philadelphia, PA

Northern Virginia Transportation Commission (Va Railway Express)
Springfield, VA

Appendix C

SURVEY INSTRUMENT

By now you are probably familiar with the study of transit policing and security deployment practices that Interactive Elements is conducting for the National Academy of Science's Transit Cooperative Research Program.

We thank those of you who have already sent us material in answer to our request for unpublished information on police/security initiatives you have undertaken. We are now requesting that you complete the attached brief survey so that our research can address the broadest spectrum of our industry's needs.

Our study, due for completion in November 1996, is a program of the Transit Cooperative Research Program (TCRP), which was established in 1992 to provide applied research on transit issues. The program is sponsored by the Federal Transit Administration (FTA) and is carried out under a three-way agreement among the National Academy of Science (NAS), acting through its Transportation Research Board (TRB); the Transit Development Corporation, an educational and research arm of the American Public Transit Association (APTA); and the FTA.

This is the first TCRP project to look specifically at police and security concerns. Your participation is important to assure the relevance of this project to your agency.

To aid us in developing meaningful research and accurate information on crime problems and patrol deployment tactics used around the nation, we must have information from as many systems as possible. Through your participation, we can assure that the deployment guidelines that will be a featured portion of our user's manual will reflect your needs.

This survey is an opportunity for you to significantly influence the relevance of this study, the largest of its type ever undertaken. We look forward to your response.

If you have any questions or are interested in providing additional information or participating as a test site, please contact one of us c/o the TRB/TCRP Transit Policing Project at the address provided below.

Thank you for your assistance and valuable contribution.

Sincerely,


Dorothy Schulz
Principal Investigator


Susan Gilbert
Project Manager



TRB / TCRP Transit Policing Project Transit System Survey

Instructions: Please provide the information requested to the best of your knowledge. For multiple choice questions, you may circle the relevant letter that is in **BOLD** type. Skip any questions that are not relevant to your agency. Survey information will only be reported as summary tables, neither you nor your agency will be identified by name.

System Name: _____ Location (City, State): _____

Name of Person Filling Out Form: _____ Title: _____

Phone Number: _____ System Section 15 ID Number: _____

System Type (Circle all that apply)

Commuter Rail Heavy Rail Rapid Transit Light Rail Motor Bus Trolley Bus

Other (specify): _____

System Characteristics

Number of Stations: ___ Total ___ Elevated ___ Subway ___ At Grade

Number of Bus Stops: ___ Total ___ Sheltered ___ On-street Number of Parking Lots ___

Operating Hours: Weekdays ___ 24-Hour Operation ___ Peak Hours Only ___ Night Closure

Weekends ___ 24-Hour Operation ___ Peak Hours Only ___ Night Closure

Number of Passengers: _____ Annual _____ Weekday

Police/Security Staffing

What type of organization has primary responsibility for the security of your transit agency? (Circle one)

SWorn Transit Police Contract Local Police Non-Contract Local PD Contract Security

Other (specify): _____

Indicate the approximate number of personnel in each category that serve your agency:

_____ Sworn Transit Police _____ Contract Local Police

_____ Contracted Security _____ Non-Contract Local PD _____ Other

If your transit agency does not employ or contract police or security personnel, does your local police force maintain a dedicated unit for transit crime?

Yes No

Do you use fare inspectors or code compliance officers?

Yes No

Does your transit agency have formal interagency agreements or committees with local police departments that patrol the agency's service area?

Yes No

Statistical Data

Do you maintain data on security incidents on your system? Yes No

Are reports files in accordance with the FBI UCR program? Yes No

If you do not maintain statistics/logs on crime incidents, do local police responding to your system segregate transit-related calls for service? Yes No

How long do you retain crime data? _____ Years

How is crime data stored? (Circle all that apply)

Computer records Annual Reports Monthly Reports Filing System

Other _____

Research Areas

Has your agency conducted police/security-related studies, passenger security studies, or any research evaluating the effectiveness of specific patrol tactics within the past five years? Yes No

If yes, please describe or attach: _____

Has your agency conducted any studies on passenger perception of crime? Yes No

If yes, please describe or attach: _____

Police/Security Budgets

What does your transit agency spend annually for: Security personnel? \$_____ Equipment? \$_____

Does your agency certify that it spends 1% of its Section 9 funds on security? Yes No

Does your agency certify that it does not need these funds for security? Yes No

Thank you for your assistance. Please return this survey to: Dorothy M. Schulz, Principal Investigator
Interactive Elements Inc.
TRB / TCRP Transit Policing Project
228 East 45th Street
New York, NY 10017
212 490-9090 FAX: 212 490-9611