

TRANSIT COOPERATIVE RESEARCH PROGRAM

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TCRP Synthesis 21

IMPROVING TRANSIT SECURITY

A Synthesis of Transit Practice

**Transportation Research Board
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TRANSIT COOPERATIVE RESEARCH PROGRAM

Synthesis of Transit Practice 21

Improving Transit Security

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TRANSIT COOPERATIVE RESEARCH PROGRAM

The nation's growth and the need to meet mobility, environmental, and energy objectives place demands on public transit systems. Current systems, some of which are old and in need of upgrading, must expand service area, increase service frequency, and improve efficiency to serve these demands. Research is necessary to solve operating problems, to adapt appropriate new technologies from other industries, and to introduce innovations into the transit industry. The Transit Cooperative Research Program (TCRP) serves as one of the principal means by which the transit industry can develop innovative near-term solutions to meet demands placed on it.

The need for TCRP was originally identified in *TRB Special Report 213--Research for Public Transit: New Directions*, published in 1987 and based on a study sponsored by the Federal Transit Administration (FTA). A report by the American Public Transit Association (APTA), *Transportation 2000*, also recognized the need for local, problem-solving research. TCRP, modeled after the longstanding and successful National Cooperative Highway Research Program, undertakes research and other technical activities in response to the needs of transit service providers. The scope of vice configuration, equipment, facilities, operations, human resources, maintenance, policy, and administrative practices.

TCRP was established under FTA sponsorship in July 1992. Proposed by the U.S. Department of Transportation, TCRP was authorized as part of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). On May 13, 1992, a memorandum agreement outlining TCRP operating procedures was executed by the three cooperating organizations: FTA, the National Academy of Sciences, acting through the Transportation Research Board (TRB), and the Transit Development Corporation, Inc. (TDC), a nonprofit educational and research organization established by APTA. TDC is responsible for forming the independent governing board, designated as the TCRP Oversight and Project Selection (TOPS) Committee.

Research problem statements for TCRP are solicited periodically but may be submitted to TRB by anyone at anytime. It is the responsibility of the TOPS Committee to formulate the research program by identifying the highest priority projects. As part of the evaluation, the TOPS Committee defines funding levels and expected products.

Once selected, each project is assigned to an expert panel, appointed by the Transportation Research Board. The panels prepare project statements (requests for proposals), select contractors, and provide technical guidance and counsel throughout the life of the project. The process for developing research problem statements and selecting research agencies has been used by TRB in managing cooperative research programs since 1962. As in other TRB activities, TCRP project panels serve voluntarily without compensation.

Because research cannot have the desired impact if products fail to reach the intended audience, special emphasis is placed on disseminating TCRP results to the intended end-users of the research: transit agencies, service providers, and suppliers. TRB provides a series of research reports, syntheses of transit practice, and other supporting material developed by TCRP research. APTA will arrange for workshops, training aids, field visits, and other activities to ensure that results are implemented by urban and rural transit industry practitioners.

The TCRP provides a forum where transit agencies can cooperatively address common operational problems. TCRP results support and complement other ongoing transit research and training programs.

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The members of the technical advisory panel selected to monitor this project and to review this report were chosen for recognized scholarly competence and with due consideration for the balance of disciplines appropriate to the project. The opinions and conclusions expressed or implied are those of the research agency that performed the research, and while they have been accepted as appropriate by the technical panel, they are not necessarily those of the Transportation Research Board, the Transit Development Corporation, the National Research Council, or the Federal Transit Administration of the U.S. Department of Transportation.

Each report is reviewed and accepted for publication by the technical panel according to procedures established and monitored by the Transportation Research Board Executive Committee and the Governing Board of the National Research Council.

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PREFACE

A vast storehouse of information exists on many subjects of concern to the transit industry. This information has resulted from research and from the successful application of solutions to problems by individuals or organizations. There is a continuing need to provide a systematic means for compiling this information and making it available to the entire transit community in a usable format. The Transit Cooperative Research Program includes a synthesis series designed to search for and synthesize useful knowledge from all available sources and to prepare documented reports on current practices in subject areas of concern to the transit industry.

This synthesis series reports on various practices, making specific recommendations where appropriate but without the detailed directions usually found in handbooks or design manuals. Nonetheless, these documents can serve similar purposes, for each is a compendium of the best knowledge available on those measures found to be successful in resolving specific problems. The extent to which these reports are useful will be tempered by the user's knowledge and experience in the particular problem area.

FOREWORD

*By Staff
Transportation
Research Board*

This synthesis will be of interest to transit agency general managers, police and security, operations, training, and human resources staffs, and to local police officials. It offers information on a variety of approaches to improving transit security. The nature and extent of transit crime, effective strategies to combat problem situations, and case studies of specific control practices deemed successful by transit agency professionals (with no distinctions drawn between bus and rail modes) are discussed.

Administrators, practitioners, and researchers are continually faced with issues or problems on which there is much information, either in the form of reports or in terms of undocumented experience and practice. Unfortunately, this information often is scattered or not readily available in the literature, and, as a consequence, in seeking solutions, full information on what has been learned about an issue or problem is not assembled. Costly research findings may go unused, valuable experience may be overlooked, and full consideration may not be given to the available methods of solving or alleviating the issue or problem. In an effort to correct this situation, the Transit Cooperative Research Program (TCRP) Synthesis Project, carried out by the Transportation Research Board as the research agency, has the objective of reporting on common transit issues and problems and synthesizing available information. The synthesis reports from this endeavor constitute a TCRP publication series in which various forms of relevant information are assembled into single, concise documents pertaining to a specific problem or closely related issues.

This report of the Transportation Research Board focuses on the concerns that selected transit agencies addressed when developing programs to combat an increase in violence, ranging from those dealing with daily service operations to those involving coordination of efforts with local law enforcement authorities, schools, and community groups.

To develop this synthesis in a comprehensive manner and to ensure inclusion of significant knowledge, available information was assembled from numerous sources, including a number of public transportation agencies. A topic panel of experts in the subject area was established to guide the researchers in organizing and evaluating the collected data, and to review the final synthesis report.

This synthesis is an immediately useful document that records practices that were acceptable within the limitations of the knowledge available at the time of its preparation. As the processes of advancement continue, new knowledge can be expected to be added to that now at hand.

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This study was managed by Donna L. Vlasak, Senior Program Officer, who worked with the consultants, the topic panel, and the J-7 project committee in the development and review of the report. Assistance in topic panel selection and project scope development was provided by Sally D. Liff, Senior Program Officer. Linda S. Mason was responsible for editing and production. Cheryl Keith assisted in meeting logistics and distribution of the questionnaire and draft reports.

Information on current practice was provided by many transit agencies. Their cooperation and assistance were most helpful.

IMPROVING TRANSIT SECURITY

SUMMARY

Violence and disorder, actual and perceived, undermine the value and potential of public transit. Ridership drops, revenue decreases, equipment is damaged, workdays are lost, and compensation payments increase all as direct consequences. General managers, security directors, and other transit industry professionals are aware of and sensitive to the consequences of even marginal incidence of crime and the appearance of disorder. Accordingly, American transit agencies are functioning aggressively in both bus and rail environments to increase passenger safety and security. A range of strategies is being employed to help prevent and control crime, violence, and disorder that can occur while traveling on the bus, while waiting at or walking to or from a stop, and at rail stations and on rail vehicles. Strategies are used in combination to solve problems in the areas of order maintenance, crime prevention, and general deterrence. The selection of strategies is based in many cases on recognition of two relationships: disorder to crime and less serious crime to serious crime.

Responses to a survey (in which no distinction was made between modes) used as a basis for this synthesis show that transit agencies use uniformed officers as their main strategy. "Target-hardening" technology is also prevalent, and is considered highly effective for protecting passengers, transit workers, and transit property. In addition to relying on traditional uniformed patrols and other related strategies, auxiliary community policing and problem-solving techniques are also gaining widespread acceptance.

Among the many strategies employed, transit security professionals most frequently cite uniformed patrol strategies as "most effective." Concentrated patrols on buses and trains, fixed-post assignments at heavily trafficked transit centers, task forces, truancy sweeps, and a variety of "high visibility" options, backed by strong law-and-order philosophy and follow-through, have been singled out for emphasis.

Television and video cameras on buses, trains, and at bus stops, stand out as "targethardening" strategies. Community outreach strategies are considered particularly successful by practitioners. Conflict management training for operators, gang awareness training, court-mandated revocation of riding privileges, "Crime Stoppers" programs that solicit information from the public to identify targeted offenders, and partnership programs with schools are also considered to be highly effective. Judgments concerning effectiveness are based primarily on observation and experience, and only occasionally on formal program evaluation.

The dimensions of transit crime in the United States are not currently subject to reliable assessment and buses create special problems that rail systems avoid. Only recently have efforts begun to compile a national database. Data that are available, using Uniform Crime Report (UCR) classifications, suggest that transit crime is of a less serious nature although serious crime does occur regularly. Disorderly conduct, public drunkenness, fare evasion, theft, and simple assaults appear to be the five most frequently occurring offenses. Among serious crimes, robbery appears to be as prevalent as assault. As would be expected, serious and violent crime is more characteristic of larger transit systems, measured both by statistical incidence and crime per passenger trip.

Transit community sensitivity to the incidence of crime and the presence of fear, and to the destructive potential of emerging trends--the growth of a criminally oriented youth subpopulation, and the unpredictable possibility of transit-targeted terrorist acts--argue

compellingly for continuing development of transit agency capacities to control and reduce crime and fear. The transit community seems poised to upgrade capacities to protect passengers, workers, and property by building on a security environment that is still under control and based on a solid foundation of programming. Important strides can still be made in the areas of security control data systems, core strategy reevaluation, strategy innovations, development of a national clearinghouse for strategies information, intensified training and training standards, and system security program plans.

CHAPTER ONE

INTRODUCTION

THE IMPACT OF TRANSIT VIOLENCE

Violent crime is perceived as pandemic by the American public. The rate of violent crime--murder, rape, robbery, and aggravated assault--has increased nine times faster than the population during that last 30 years. Violence and the fear of violence profoundly affect the way we think and act and where and how we live our lives. It lowers our expectations for a secure future for ourselves and our families.

Violence and the fear of violence is regarded as a preeminent national issue. The costs of violence are multidimensional and cumulative. Most obvious and consequential is the often irreversible physical, emotional, and financial suffering of victims and their families. The restructuring of behavior in neighborhoods, parks, workplaces, and schools--normally a narrowing of preferred behavior and a concomitant loss of freedom--is a less tangible but omnipresent and powerful consequence of violence. Colleges and universities, cultural institutions, and business enterprises must cope with lost enrollment, patronage, customers, and revenues.

Public transit agencies are no less influenced by violence and fear of violence than other major institutions. Personal security affects many peoples' decisions to use public transportation. Both acts and perceptions of violence cause loss of ridership and revenues. Passenger service and revenue generation objectives demand that transit agencies minimize violence and the threat of violence based on the distinctly unique characteristics of the bus and rail modes.

Acts and threats of violence impair the functioning of the transit workforce. Whether measured in workdays lost, compensation payments, worker anxiety, or more guarded, less service-oriented interaction with passengers, violence and fear inhibit workplace productivity, motivation, and potential. Worker protection requirements obligate transit agencies to minimize violence and the threat of violence.

Acts of violence have legal and financial consequences for transit agencies. Passengers have a right to expect protection and safety in, around, and on public bus and rail transit facilities and equipment. Victims of transit violence have a right to legal redress when transit agencies are negligent. Passenger protection and liability avoidance also demand that transit agencies minimize crime and threat of violence.

Violence is a community problem. As partners in America's cities and neighborhoods, public transit agencies have an essential contribution to make to crime- and violence-free communities. Failure to serve as a reliable partner in this weakens the entire effort. Evidence is mounting that transit agencies have recognized the significance of their crime reduction potential. As following pages note, transit agencies are eagerly embracing opportunities to engage in crime prevention efforts in the communities where they operate.

SYNTHESIS OBJECTIVES

The principal objective of this synthesis is to identify violence prevention and control practices deemed successful by transit agency professionals with no distinctions drawn between bus and rail modes. As they pose very different problems and solutions, the diverse bus and rail transit environments continue to be studied individually, for the variety of needs they exhibit. Some of this extensive research literature is listed in the bibliography. Corollary objectives included an examination of factors that illuminate violence and security issues for public transit:

- the extent and nature of transit violence,
- victimization patterns,
- the consequences of transit violence, and
- research and development directions.

That the findings contained within this report might serve as the basis for larger industry efforts on a more comprehensive basis is also implied.

This synthesis comes at a particularly critical time. Criminologists, demographers, and other social scientists predict that the stabilization in serious crime that has characterized the middle years of this decade will give way to measurable increases in the later years of the 1990s and early years of the 21st century. The upsurge will be powered by a dramatic increase in our country's youth population, which contains a sizable crime-prone subpopulation. It is reasonable to expect that an expanding crime-prone subpopulation will affect transit systems as well as other institutions and the general public. Dissemination of the information assembled for this document (in addition to other Federal Transit Administration (FTA) safety and security publications) can enable transit agencies to take actions to strengthen violence prevention and to control programming through networking with agencies already using a range of interventions, replicating the most successful, and engaging in other forms of intensified collaboration.

Transit security practices were first successfully cataloged in a 1984 FTA document, *Transit Security: A Description of Problems and Countermeasures* (1). In 1994, two other FTA publications updated this information (2,3). A June 1996 FTA publication adds substantially to the body of transit crime and violence prevention and control knowledge, *Perspectives on Transit Security in the 1990s: Strategies for Success* (4).

SYNTHESIS METHODS

Three methods were employed to assemble information for this synthesis:

- Literature and research review,
- Survey questionnaire, and
- Field interview and observation--site visits.

Members of the Topic Panel contributed a substantial number of observations and insights, many of which are reflected in this synthesis.

A 33-item questionnaire was mailed to 90 transit agencies. The questionnaire focused on:

- System characteristics,
- Nature and extent of violence,
- Consequences of violence,
- Violence prevention and control strategies,
- Effectiveness of strategies, and
- Research requirements.

Forty-five responses were received, a 50 percent response rate. The questionnaire appears as Appendix A. Respondent agencies are listed in Appendix B.

Field visits were made to Los Angeles, Houston, Phoenix, Philadelphia, Chicago, and Ann Arbor. Information gathered during these visits, supplemented by survey questionnaire responses and follow-up phone work, form the basis for several of the case studies presented.

SYNTHESIS ORGANIZATION

This chapter has addressed the costs of transit violence, objectives of the synthesis, and the methodology employed. Chapter 2 discusses the dimensions of transit crime and violence. Chapter 3 presents strategies that transit professionals use to address crime and violence, singles out those considered most effective, and examines how strategies are evaluated. Chapter 4 outlines the combination of responses selected by four agencies to combat disorder and violence in their systems. Chapter 5 highlights current research and literature. Chapter 6 summarizes salient findings of the synthesis and suggests next steps that can help transit agencies cope with crime, violence, and fear.

CHAPTER TWO

NATURE AND EXTENT OF TRANSIT CRIME**MEASURING TRANSIT CRIME**

Definitions and classification of crimes are determined by federal criminal laws, state criminal statutes, and local laws and ordinances. Crime reporting, measurement, analysis and comparison must meet the requirements established by the FBI's Uniform Crime Reporting system (UCR). This classification system was established in 1930 as part of a joint effort between the International Association of the Chiefs of Police (IACP) and the Department of Justice. The UCR system has been successful in developing standardized crime categories that encourage consistency in reporting among the nation's law enforcement agencies. The UCR segregates crime as serious and less serious. Serious crime includes four violent "persons" crimes: homicide, rape, robbery, and aggravated assault; and four "property" crimes: burglary, larceny, auto theft, and arson. Less serious crime consists of 21 other types of offenses, including liquor law violations, disorderly conduct, drug abuse, vagrancy, vandalism, and prostitution. Transit agencies employ the UCR system, with their own variations, to record and measure crime.

The FTA's transit security program planning guide (2) offers an alternative crime and offense classification scheme:

- General Security--drunkenness, disorderly conduct, crowd control, drug law violations, minor sex offenses, solicitation, homelessness, miscellaneous misdemeanors/nuisances;
- Crimes Against Passengers--robbery, theft, physical assault, and sexual assault;
- Crimes Against the Transit Agency--fare evasion and fare theft, suicide attempts, vandalism, trespassing and physical security intrusions, theft, burglary, robbery, and attacks on personnel; and
- Crimes Against the Public--critical incidents/acts of terrorism that include hostages, hijacking, and bomb threats.

How many transit agencies employ this classification in lieu of or in addition to UCR is not known.

THE TRANSIT CRIME PROFILE

Transit crime is predominantly less serious in nature, but serious crime occurs with regularity. Forty-five agencies surveyed recorded just over 37,000 offenses in 1994. Of the total, approximately 29,000 (78 percent) were less serious, and 8,000 (22 percent) were serious. Of the serious crimes, 2,700 were violent, approximately 34 percent of serious crimes and 7 percent of total reported crime--about one of every 14 crimes. Serious and violent crime is far more characteristic of larger systems, measured both by statistical incidence and crime per

passenger trip. Transit crime is believed to be underreported, a condition which the FTA hopes to remedy.

Transit crime and violence does not appear to be cause for undue alarm, yet given the sensitivity of transit clientele to even one major crime, reported incidence argues persuasively for diligent monitoring and increasingly effective interventions.

Highest Frequency Crimes

The five most prevalent transit crimes include four in the less serious crime category and one in the serious crime category. Disorderly conduct is the most frequently occurring transit offense, almost 16 percent of the total, followed by public drunkenness (12 percent), fare evasion (11 percent) and theft (10 percent), and simple assault and battery (5 percent) (see Table 1).

TABLE 1
MOST FREQUENTLY REPORTED CRIMES

Offense	Number Reported	Percent of Total	Number of Agencies Reporting
Disorderly Conduct	5,942	15.9	38
Public Drunkenness	4,491	12.0	37
Fare Evasion	4,020	10.8	33
Theft	3,887	10.4	39
Simple Assaults and Batteries	1,968	5.3	37

Less Serious Crime

Disorderly conduct, public drunkenness, fare evasion, and theft are the most frequently occurring of separately reported less serious transit crimes, accounting for just over 60 percent of the total (see Table 2). "Other" crime, which includes vandalism, destruction of property, and deceptive practices, accounts for almost 26 percent of all less serious crime. Narcotics and weapons violations, two crimes of special concern because of their potential to escalate to more serious offenses, account for just under 5 percent of recorded crimes in this category.

Serious Crime

Simple assaults and batteries and robberies and attempted robberies account for almost half of separately reported serious transit crime (see Table 3). "Other" crimes, which include attempted sexual assault, stalking, assault with a deadly

TABLE 2
NUMBER OF LESS SERIOUS INCIDENTS

Offense	Number Reported	Percent of Total
Other (including vandalism, destruction of property, deceptive practices	7,552	25.7
Disorderly conduct	5,942	20.2
Public Drunkenness	4,491	15.3
Theft of Service	4,020	13.7
Theft	3,887	13.2
Harassment/Threat	1,762	6.0
Narcotics	808	2.8
Weapons Violation	609	2.1
Purse Snatching	303	1.0
Total	29,374	100

Source: Synthesis survey.

TABLE 3
NUMBER OF SERIOUS CRIMES

Offense	Number Reported	Percent of Total
Other (including attempted sexual assault, stalking, assault with a deadly weapon)	3,287	41.0
Simple Assaults and Batteries	1,968	25.0
Robberies and Attempts	1,951	25.0
Aggravated Assaults	579	7.0
Sexual Assaults	110	1.5
Rapes and Attempts	23	0.3
Homicides and Attempts	12	0.2
Total	7,930	100

Source: Synthesis survey.

weapon, and a variety of minor sex crimes, account for over 40 percent of serious transit crime. Homicides and attempts, and rapes and attempts occur in modest numbers, statistically less than 1 percent of the total reported. Their impact, however is profound.

CRIME AND AGENCY SIZE

As expected, larger agencies experience more crime than either mid-sized or smaller agencies. The largest agencies have transit police who more accurately track crime and specific types of crime. Mid-sized agencies experience more crime than smaller agencies. The pattern is consistent with respect to total crime, less serious crime, serious crime, and violent crime.

Almost 87 percent (86.7 percent) of all crime was reported by agencies in the 30 largest systems survey group. The midsized group, agencies that serve over 200,000 population accounted for 10.7 percent of the total crime reported and agencies that serve under 200,000 population reported 2.6 percent of all crime.

Agencies in the 30 largest systems group reported 84.1 percent of all less serious crime. Agencies in the over 200,000

population category reported 12.6 percent of all less serious crimes. Agencies in the under 200,000 population group reported 3.1 percent of all less serious crimes.

Agencies in the 30 largest systems group reported 96.2 percent of all serious crime. Agencies in the over 200,000 population group reported 3.6 percent of all serious crime. Agencies in the under 200,000 population group reported 0.2 percent of all serious crimes.

Agencies in the 30 largest systems group reported 97.3 percent of the violent crimes. Agencies in the over 200,000 population group reported 2.5 percent of violent crimes. Respondents in the under 200,000 population group reported 0.2 percent of the violent crimes.

CRIME TRENDS

Although transit crime is increasing for some agencies, overall, it seems to be stabilizing and declining. Of the agencies able to comment, almost half (46 percent) estimate that the number of violent and confrontational incidents is stabilizing. Almost 30 percent judge crime to be decreasing, while almost 25 percent suggest that crime is increasing. All trends are estimated. Reliable longitudinal crime incidence data are not generally available.

If estimates are reliable, crime is decreasing on the largest transit systems. Half of the agencies in this size group estimate a decrease. Half of the remaining agencies estimate stabilization. Agencies serving the smallest populations (under 200,000) report stabilization most frequently. Inability to estimate characterized the over 200,000 population group.

ADDITIONAL INFORMATION GAPS

To target crime prevention and control resources most costeffectively, transit agencies must produce detailed and timely victimization data. Rudimentary victimization data would profile minimally and separately, offenses committed against females, males, youth, elderly, the disabled, transit workers, urban residents, suburban residents, minorities, and nonminorities. Very few agencies have reliable victimization data available.

Effective analysis and decision making is only possible when detailed and timely data are available that trace the consequences of violence, crime, and fear. Agencies are not routinely examining the relationship between incidence of crime or fear and ridership, passenger complaints, passenger requests for increased protection, worker days lost due to crime related incidents, and crime related legal actions, nor do they appear to be systematically assembling the data to do so.

Judging from survey responses, ridership data are available. However, most agencies cannot easily link worker days lost to crime incidents, readily produce information on crime related legal actions by passengers, or give even a rough estimate of the number of offenses against system workers.

NEED FOR RELIABLE TRANSIT CRIME DATA

While giving some indication of the extent and nature of transit crime, the above data provide only rough information. Many transit agencies, even those with police divisions, do not appear to have the capacity to produce reliable crime counts. Compounding internal data shortfalls is the absence of interagency exchange mechanisms to supply reports of transit crimes, which transit agencies never receive, the absence of these reports, the number or proportion of which is unknown,

accounts for the unchallenged assumption that transit crime is underreported.

The Federal Transit Administration has recognized the need for comprehensive and reliable crime reporting. Beginning in Fiscal Year 1996 (Fall 1995), it is mandatory to report crime statistics along with other information required by the FTA Section 15 Report. The history of Uniform Crime Reporting system development underscores clearly how much developmental work lies ahead for the FTA in its effort to establish a national reporting system. Still, the effort represents a monumental step forward for transit agencies in their effort to address crime and violence.

CHAPTER THREE

EFFECTIVE STRATEGIES

To prevent and control crime and violence, the public transit agencies surveyed (Appendix B) use numerous strategies, many locally tailored variations of core strategies common throughout the industry. Some are problem-specific, directed, for example, against fare evaders. However, most are directed toward general deterrence. Uniformed patrol is the most obvious example. Strategies are employed in "packages" or combinations, an approach based on recognition of the cumulative and self-perpetuating nature of crime and disorder and the belief that preventing or addressing one type of crime or criminogenic condition (including order maintenance conditions), will have a positive "echo" effect on other crimes and criminogenic conditions. Order maintenance involves law enforcement activities designed to reduce signs of disorder and increase a sense of community security. Removal of loiterers, dispersal of bands of congregating youth, and elimination of excessive noise are examples. It also involves the regulation of minor disputes that might otherwise escalate. Order maintenance calls for enforcement of codes of public conduct against minor violations such as liquor laws and trespass. It relates to crowd and traffic control. Briefly, it gives government and its police the right to require its citizens to behave so that they can function, free of confrontation, and with regard for personal privacy.

Transit agencies are employing seven classes of strategies: uniformed officer; nonuniformed officers; employee involvement; education and information; community outreach; technology; architecture and design. (Strategies considered most successful are referenced first). Judgments concerning effectiveness emerge almost exclusively from the observations, experience, and expertise of transit professionals, and only marginally from systematically conducted process and program evaluation. Strategy "diagnostic and support" practices--crime analysis, customer surveys, and training--are also examined below.

STRATEGIES OF CHOICE

To prevent crime and violence, transit agencies are placing their greatest reliance on technology and use of uniformed officers. Employee involvement and education strategies are prominent (see Table 4). The 45 responding agencies reported use of 365 strategies, an average of eight strategies per agency (reported). The number of references from respondents was substantial in all categories, indicating that employment of clusters of strategies is the norm, especially among the largest systems.

THE MOST EFFECTIVE STRATEGIES

Twenty-three strategies have been singled out by survey respondents as most effective (see Table 5). Strategies are grouped by class according to the survey questionnaire. (See Appendix A). Uniformed officer strategies are cited most often, followed with roughly equal frequency by a combination of technology, community outreach, and "other" strategies. One nonuniformed officer strategy was cited. Selections are based on impression and practical experience. Formal evaluation or anecdotal evidence is available from only four of the agencies that cited successful strategies.

TECHNOLOGICAL STRATEGIES

More than half of the transit agencies surveyed report use of technology to prevent and control crime. Television and video are used prominently, as are telephonic communications, automated ticketing and access systems, and security lighting.

TABLE 4

NUMBER AND TYPE OF STRATEGIES EMPLOYED (Defined in Table 5)

Strategy Class	Strategy References Total	Percent of Total Responses	Number of Agencies Reporting One or More Strategies
Technological	88	24	26
Uniformed Officer	68	19	19
Employee Involvement	47	13	25
Education and Information	43	12	23
Architectural	37	10	18
Community Outreach	33	9	18
Nonuniformed Officer	30	8	20
Other	19	5	13
Total	365	100	162

Source: Synthesis survey

TABLE 5

MOST EFFECTIVE STRATEGIES

Strategy Class	Strategy	Employing Transit Agency
Technological	<ul style="list-style-type: none"> Cameras on coaches--reduce juvenile disturbances Emergency telephone and CCTV Video boxes Keyless entry--greatly reduces number of people wandering in off the street 	San Francisco (MUNI) Pittsburgh (PAT) Grand Rapids (GRATA) Savannah (CAT)
Uniformed Officer	<ul style="list-style-type: none"> Concentrated patrols--officers riding buses or routes with high number of incidents On-site fixed-post uniformed security at busy centers Strong law and order approach, recognized law enforcement agency with community reputation More visible vehicular patrol Police and security intervention--at time of occurrence to prevent/control violence (A short-term solution.) Uniformed police presence--stops crime Police/security presence--very effective for dissuading criminal activity Anti-vandalism task force Truancy sweeps--weekly, picks up students who should be in school; additional officers from outside agencies to assist; reduces vandalism, passenger disturbances, and provides detectives with information and identification of theft and robbery subjects Police visibility 	Dallas (DART) Orange County (OCTA) Orange County (OCTA) Pittsburgh (PAT) Santa Clara (SCCTD) Philadelphia (SEPTA) Chicago (CTA) Cleveland (RTA) Miami (MDTA) New Orleans (TRA)
Nonuniformed Officers	<ul style="list-style-type: none"> Plain clothes transit officers--teaming up with Pittsburgh police department plain clothes officers 	Pittsburgh (PAT)
Community Outreach	<ul style="list-style-type: none"> Interaction with schools and board of education Crime Stoppers Partners in Life Program On-board camera systems--reduce disorderly behavior and virtually eliminate assault and fights on buses 	Pittsburgh (PAT) Cincinnati (SORTA) Cincinnati (SORTA) Phoenix Transit System
Other	<ul style="list-style-type: none"> Coach operator update training--annual, with law enforcement Gang and violence awareness training--for operators Taking persons through the court system--requesting revocation of riding privileges Training--effective because it boosts officer confidence 	Orange County (OCTA) Pittsburgh (PAT) Charlotte (CTS) Savannah (CAT)

Source: Synthesis survey

CCTV/Video Cameras/VCR's

TV and video monitoring and recording is an omni-present feature of crime prevention and control packages. Agencies use this technology in and around transit stations, on buses, and in support facilities, such as maintenance yards. A number of agencies conduct statistical analysis to determine camera placement.

Closed-circuit television cameras are monitored in the Miami MDTA Station Operations Central Control Center. Cameras are mounted at restroom entrances and fare collection and elevator/escalator areas. Washington, D.C. (WMATA) has CCTV cameras mounted in every rail station that station managers are tasked to monitor. The Los Angeles (LACMTA), Houston (Metro), and Atlanta (MARTA) agencies monitor television surveillance systems centrally. Tri-Met (Portland) and San Francisco Municipal Railway (MUNI) are two of

several agencies that have fitted buses with video recording equipment. MUNI has placed cameras on 10 vehicles of one bus line with a high incidence of vandalism and juvenile disturbances. Signs alert passengers to the presence of cameras.

Buffalo's Niagara Frontier Transportation Authority equips all levels of all train stations with CCTV surveillance cameras. The cameras are monitored by police dispatchers who tape all activity deemed necessary. The Tucson Mass Transit System (Sun Tran) has cameras at blind spots that are not visible from the central information booth. The Grand Rapids Area Transit Authority (GRATA) videotapes most school bus trips and any bus with a history of crime and disorder problems.

Green Bay Transit (GBT) has surveillance cameras on three of its buses and in a terminal. The Santa Cruz Metropolitan Transit District has mounted surveillance cameras in the main transit center and in the operations yard.

Emergency Phone/Intercom/Radio

Telephone and radio communications devices to enable passengers to seek assistance from transit personnel or local police are common. MD MTA (Baltimore) has intercom systems in metro rail stations and cars to permit immediate passenger communication with station attendants or local police. The Chicago Transit Authority's (CTA) newest rail cars are equipped with two-way intercoms to enable passengers to communicate with the conductor in cases of emergency. The Port Authority of Allegheny County (PAT) and the Southeastern Pennsylvania Transportation Authority (SEPTA) are two of several agencies that have emergency phones in subways with direct lines to police dispatchers. SCCTD (Santa Clara) equips all train operators, fare inspectors, and bus and rail supervisors with two-way radios. SCCTD also has public telephone access to 911 emergency services at all transit bus centers and light rail stations, as well as loudspeakers with direct links to the rail operations control center.

The Niagara Frontier Transportation Authority reports that all trains and rail stations have emergency communication panels that are readily accessible to passengers. Panels allow passengers to speak directly to either police personnel or train operators. The Savannah CAT agency has two-way radios on all vehicles, while the Biloxi-Mississippi Coast Transportation Authority (Coast) in Gulfport has a VHF radio in each vehicle.

Automated Ticketing, Vehicle Location, and Access Systems

Automated systems are used to harden targets of potential opportunity, make facilities more secure, and reduce exposure of transit employees to crime and threats. Ticketing systems, vehicle locators, and access systems are prevalent. MD MTA (Baltimore), OCTA (Orange County) and Tri-Met are among several agencies that use automated ticket vending machines or expect to do so in the near future. SCCTD machines have intrusion and other alarms and communications capabilities for service employees. Ticket purchasing is fully automated at the Niagara Frontier Transportation Authority. Random checks are made for proof of ticket purchases.

All MD MTA buses are fitted with automatic locators. Cincinnati's SORTA and the Phoenix Transit System are considering automatic vehicle locator systems. Bremerton-Kitsap Transit in Bremerton, Washington is installing an automatic vehicle locator system.

Connecticut Transit Hartford-Conn DOT uses automated keycard access in its building as well as at entry to bus parking lots. Savannah's CAT employs keyless entry control at its facility.

Lighting

Lighting is a popular and proven crime prevention technique applicable in both transit and nontransit settings. Having long recognized its value, transit agencies are continuously expanding use of lighting and upgrading its performance

quality. Chicago's CTA is continuously adding new lighting on platforms, at bus turnarounds, and at rail yards. Orange County's OCTA and Cleveland's RTA report lighting improvements and increased lighting. Miami's MDTA places lighting strategically at all stations to deter crime. The Santa Cruz Metropolitan Transit District has installed high-intensity lighting at all yards, park-and-ride lots, and transit centers. Bremerton-Kitsap Transit lights all lots. Gulfport's Coast Transportation Authority uses lighting around nighttime bus stops, particularly where it provides restroom facilities for passengers. Located along a beach route, the facilities are also used by the general public.

Fencing

Fencing is used to restrict access to property and minimize exposure of passengers and workers. WMATA reports that rights-of-way, parking lots, and rail yards are secured by chain-link fences, equipped with three-strand top-guard barbed wire, angled 45° outward. All grade-separated light rail station entrances on the SCCTD are security-gated to control access. Fencing is strategically installed at all MDTA stations to deter crime. Santa Cruz's METRO has added outward sloping barbed wire to fence the main yard. Gulfport's Coast Transportation Authority has several bus stops built on pilings along the beach. Fencing is used around the underside of these stops to prevent vandalism to the pilings and to prevent loitering underneath the stops. Savannah's CAT also reports fencing as a technological strategy.

Alarms

Alarms are used in public and private security settings to deter criminality and to summon police and security assistance. Orange County's OCTA uses a silent alarm system. SCCTD uses two-way, silent alarm, mobile unit radio communication on board all buses and light rail vehicles. All trains on GO Transit (Toronto) are equipped with passenger assist alarms and all stations are equipped with alarm and public address systems.

UNIFORMED OFFICER STRATEGIES

Uniformed patrols appear to remain the core strategy of transit agencies that have police forces. Random and fixed-post patrol in and around stations, on trains and buses, and at bus stops are the primary patrol techniques. Basic coverage is supplemented by directed patrols, including special foot patrols, bicycle patrol, bus and train boardings, and patrols formed to address special situations and clientele, such as juveniles and the homeless.

Foot and Bicycle Patrol

The Los Angeles County Metropolitan Transit Authority (LACMTA) assigns foot officers in the "Broadway Corridor,"

an area served by 87 bus routes that originate throughout Los Angeles. The objectives of the strategy are to encourage transit ridership to the area and promote neighborhood revitalization through increased business activity and enhanced security. The Houston Metropolitan Transit Authority of Harris County (METRO) expanded the number of foot patrols at downtown bus stops in response to a request by Central Houston, Inc., an organization of businesses in the downtown area. Numerous other agencies report use of foot patrols.

WMATA has a bicycle patrol. SEPTA and GO Transit are in the early stages of researching and developing bicycle patrol programs.

Bus and Train Boardings

"Boardings" are employed to guard vehicles, check fares, deter crime, familiarize police with regular riders, and protect revenue. Officers of the Chicago Police Voluntary Special Employment Force of the Chicago Transit Authority (CTA) trail buses in marked vehicles. One officer of a two-person team boards a bus and rides for a minimum of 1.5 miles. The Phoenix Transit System boards uniformed officers on buses on troubled routes. Officers confer with drivers, then walk the aisle.

Special Problem Patrols

Dallas Area Rapid Transit (DART) stations officers at high-incident transit centers. The Miami Metro-Dade Transit Agency (MDTA) posts at least one contract security officer at each of 21 heavy-traffic rail stations during all hours of revenue service.

High incidence of crime by juveniles, particularly vandalism and confrontational incidents, plagues many systems. Several have fashioned strategies to target juvenile misbehavior. To prevent confrontations between students from rival schools, Maryland MTA assigns teams of officers to patrol metro stations during peak student travel hours. MDTA in Miami conducts weekly truancy sweeps to pick up students on the system who should be in school. SEPTA Transit Police work with school officials and local police to target times and locations where confrontational incidents between juveniles are likely to occur; they then deploy accordingly. Officers from schools, local police, and SEPTA enforce collaboratively. SEPTA officers stop school-age individuals during school hours.

Ann Arbor Area Transit Authority (AATA) funds two Ann Arbor police officers to staff a mini-station in the main downtown transit station, a meeting point for juveniles from rival high schools. By targeting gang leaders, and detaining them when appropriate, the strategy has drastically reduced the number of confrontational incidents.

Canine Patrol

The Chicago Transit Authority and SEPTA use canine patrol units. A private security force has been engaged to

conduct canine activity for the CTA. Originally the canine teams were deployed at many locations within the system. Guards and dogs are now clustered at higher crime locations. The clusters are moved frequently to give the appearance of a larger force. SEPTA began canine patrol in 1991. Seven teams--handlers and Malinois dogs--are available for patrol. The Malinois is an intelligent breed and has a temperament that is suitable for patrol in SEPTA's urban subway environment. (5) Crime has decreased in those stations where canine units are used.

NONUNIFORMED OFFICER STRATEGIES

Law enforcement agencies deploy undercover or plainclothes officers in a variety of ways to identify or surface habitual or repeat offenders who are often engaged in serious crime, such as sexual assaults and robberies, or less serious crime that often leads to serious crime, such as drug offenses. Faced with similar situations, transit police employ conventional nonuniformed officer strategies including decoy operations, targeted surveillance, and an unconventional strategy--use of transit system civilian employees.

Plainclothes Deployment

Several agencies use plainclothes officers in high crime areas. PAT plainclothes officers team with city (Pittsburgh) plainclothes officers to clean up downtown problem transit stops, areas plagued with drinking, prostitution, drug sales, and disorderly conduct. MDTA and the CTA deploy plainclothes details at times and places indicated by crime analysis information. DART, SEPTA, the Phoenix Transit System, and MARTA report use of similar plainclothes operations. OCTA plainclothes details ride buses, follow buses in undercover vehicles, wait at bus stops and transit centers, and follow up incidents that are likely to escalate.

Surveillance

Toronto's GO Transit assigns nonuniformed officers to parking lot surveillance as a response to sex offenses. To investigate parking lot offenses, interdict crimes in progress, and apprehend offenders, Cleveland's RTA deploys unmarked cars and a van equipped with scope and recording devices, timelapse recorders, miniboard cameras, and accessories.

Decoy Operations

SCCTD will soon equip a light rail vehicle (LRV) with CCTV surveillance cameras, which will be monitored by deputies. Plainclothes officers on board the LRV will act as passenger decoys in apprehending offenders who commit passenger assaults, robbery, intimidation and other crimes. They will also be used for "sting operations." The dedicated LRV

will operate during selected revenue service hours and on a predetermined trackway.

Civilian Deployments

The Duluth Transit Authority (DTA) couples civilian supervisors with police on problem buses. The teams prepare a detailed report on each incident that occurs. Reports are analyzed to identify patterns and to devise an appropriate solution. Richland-Ben Franklin Transit uses additional drivers or supervisors to ride bus routes with frequent student problems.

EMPLOYEE INVOLVEMENT STRATEGIES

Transit agencies engage nonpolice employees to help achieve crime prevention and control objectives through conflict resolution, self-defense, and crime reporting.

Conflict Resolution

Conflict resolution training of a transit agency workforce is quite prevalent. One-third of the agencies engaged in the survey reported this employee involvement strategy. Employees trained range from bus operators in Dallas to contract security guards in Miami. MARTA requires all employees to complete 8 hours of customer service training that includes techniques for reducing or eliminating confrontational incidents.

Crime Prevention and Self-Defense

DART skill enhancement training for bus operators includes a 1-hour robbery/assault prevention course. New bus recruits must take the course. PAT's gang awareness training emphasizes operator and patron safety and familiarizes operators with the local gangs. Self-defense training delivered by municipal police is included in the new-hire operator training in Charlotte (CTS)

Eyes and Ears Programs

MD MTA, MDTA, Tri-Met, TRA (New Orleans) and DTA (Duluth Transit Authority) are among the systems that encourage employees to observe and report criminal behavior. GO Transit awards cash for reporting. SCCTD allows all transit district employees and nonagency peace officers to ride the system free of charge, in or out of uniform, to promote opportunities for the observation and reporting of crime.

EDUCATION AND INFORMATION STRATEGIES

Literature and public presentations are the most prevalent techniques for communicating crime prevention guidelines to

the riding public and members of transit agency workforces. Crime Stoppers programs, and variations, are used as well.

Pamphlets/Posters/Films

Use of crime prevention literature is widespread. The CTA and the RTA are just two of many systems that distribute "Safety Tips" brochures to the riding public. PAT mounts crime prevention posters in buses and light rail vehicles. WMATA places crime prevention posters on every floor of its headquarters in an effort to educate its employees. Cincinnati-Southwest Ohio Regional Transit Authority (SORTA) uses posters, stickers, wall cards, and magnets. SORTA uses a rap video to encourage better on-bus behavior by public school students. The CTA is producing a transit crime prevention film.

Presentations and Programs

DART (Dallas) sets up crime prevention booths at events and exhibitions to address crime and safety issues with citizens and employees. Uniformed officers of the MD MTA work with and make presentations to schools, neighborhood associations, senior citizen groups, churches, and business groups to educate audiences to ride public transit safely. The Duluth Transit Authority's School Safety Program conveys information to students regarding crimes and conduct that will initiate police action.

Reward Programs

Crime Stoppers programs concentrate on soliciting information from the public to identify targeted offenders, normally through radio and television descriptions of criminal incidents and offenders. Cincinnati's SORTA pays rewards through Crime Stoppers for information leading to arrest and conviction of perpetrators of transit crime. Savannah's CAT offers cash rewards for information about destruction of property or physical assaults on employees.

Signage

MD MTA, OCTA, and the Niagara Frontier Transportation Authority post crime prevention and security information signs in all stations and trains. Examples include "Police," indicating police presence in the station; "No trespassing," to prevent entrance into restricted areas; "Proof of Payment Zone," warning all passengers that proof of payment is required beyond this sign. Richland-Ben Franklin Transit fareboxes state that drivers do not carry change.

ARCHITECTURAL AND DESIGN STRATEGIES

This class of strategies gives programmatic form to defensible space concepts--the application of physical design and

construction to crime prevention and security. Architectural design strategies are widespread. More than one-third of the agencies engaged in the synthesis survey report this class of strategies. Crime/vandal-resistant building materials and landscape designs are common. Design collaborations are reported by several agencies.

Design Collaborations: Crime Prevention Through Environmental Design (CPTED)

Crime prevention and control, especially in the transit environment, begins with facility and vehicle design. This involves creating and maintaining an environment that will not tolerate criminal activity. This environment is designed and preserved by transit professionals including engineers, architects, planners, managers, operators, and maintenance personnel. Extensive research demonstrates the connection between the environment and criminal activity, as seen in *Broken Windows*, the landmark article published by Wilson and Kelling in the early 1980s (6).

This approach reduces the number of criminal incidents occurring in the system by minimizing both the opportunity and the motivation of the criminal to commit the crime. By manipulating the physical environment to produce effects that deter criminal behavior, transit agencies improve the quality of life in their systems by reducing fear and the incidence of crime. CPTED seeks to prevent certain specified crimes within a well-defined area by manipulating environmental variables based on an assumed relationship between a station, vehicle, or building and its user. To be effective, CPTED requires close cooperation among all levels of transit personnel.

CPTED theory maintains that crime can be reduced by minimizing the number of available targets, and creating an environment that increases a criminal's perceived risk in attacking a particular target.

WMATA's CPTED program requires a transit police crime prevention officer, transit system engineer, and an architect to work together to reflect security considerations in design prior to construction of rail stations. Security design focuses on lights, locks, alarms, fencing, CCTV cameras, and landscaping. Houston METRO's CPTED program features three basic strategies: natural access control, natural surveillance, and reinforcement of territory.

Phoenix Transit System security personnel participate in the design of new facilities and in the remodeling of existing facilities.

Crime-Resistant Building Materials

MD MTA uses high-impact glass in station attendants booths as well as on buses and light rail cars. MDTA uses shatterproof glass at the Omni Transit Service Center in transit token and pass sales areas. METRO Shelters are built with vandal-resistant materials.

Worker and Revenue Protection Techniques

Cleveland's RTA has enclosed fare collection booths, uses drop boxes, and has an exact fare policy. Phoenix has a secured revenue counting facility in a secure fenced bus yard to protect cash handling, sorting, and counting. SCCTD also has a secured revenue counting facility. Its central station alarm system includes intrusion and holdup emergency response. GO Transit blankets ticket sales areas with surveillance cameras. Rochester's RTS bus operators do not handle cash or give change. Niagara Frontier Transportation Authority reports that all train operators are confined and protected in an enclosed and locked operation compartment while operating the train.

Landscaping and Sightlines

To resolve a vandalism problem on an outdoor wall of a transit station, SEPTA landscaped with climbing thorny bushes. The bushes proved to be attractive as well as an effective deterrent to vandals. Portland's Tri-Met is designing three parking structures. Sightlines are conscious design considerations, as is lighting. MD MTA ensures that shrubs do not overgrow and obscure important signs. To ease a sightline problem in underground tunnels, SEPTA placed benches in front of the ticket booths along with a light that blinks when a train is about to arrive. Passengers feel much safer waiting near the ticket booth than on the out-of-sight platform.

COMMUNITY OUTREACH STRATEGIES

Like progressive municipal, county, and state law enforcement organizations, transit police agencies and their parent systems recognize the value of community involvement and partnerships for addressing crime and violence more successfully. Schools and community organizations are widely courted as important partners. Eighteen systems report use of 33 variations of outreach programs.

School Programs

An MDTA school resource officer speaks to Dade County students regarding safety and how to avoid confrontations and violence. School principals participate in these transportation safety programs. Student Safety Tips literature is distributed at the presentations, as well as throughout the Dade County School System. MDTA also conducts Drug Awareness Resistance Education (D.A.R.E.) and Police Athletic League (PAL) programs. D.A.R.E programs emphasize self-reliance and self-esteem as character traits to be developed to resist pressures from drug-involved peers. PAL programs feature varying formats. All, however, bring youth and police together in positive settings to promote appropriate attitudes and behavior among youth.

Employees of the SCCTD conduct an "Adopt a School" program to foster positive interaction among children, youth, teachers, parents, and the public transit "family." Crime prevention posters, created by young persons, are placed on buses and trains. Transit deputy sheriffs and fare inspectors deliver crime prevention lectures. Students ride buses and rail vehicles and tour district facilities. Cleveland's RTA sends an antivandalism unit to schools to educate pre-teens on the consequences and penalties of vandalism. Programs of the Houston METRO include stranger awareness, latchkey schools, and child fingerprinting.

Cincinnati's SORTA conducts "Partners in Life," an outreach program for fifth- and sixth-graders. Bus drivers volunteer to partner with student participants. Field trips are common. The program is credited with eliminating vandalism in what was a high-vandalism area. Rochester-Regional Transit Service, Inc. & Lift Line, Inc. (RTS) instructs students from kindergarten through high school on how to ride safely and behave properly. The Phoenix Transit System addresses high school students on transit safety and provides transit safety coloring books to younger children.

Community Programs

Many agencies, including Chicago's CTA, send representatives to meetings of community organizations to discuss personal safety measures while using public transportation. DART in Dallas selects specific months throughout the year to flood schools and senior citizen organizations with crime prevention information. National Night Out and Senior Citizen Month are target periods. A WMATA crime prevention officer hosts "Travel Safety/Crime Prevention Tips" lectures, on request from colleges, student organizations, businesses, and civic and neighborhood watch groups. New Orleans Regional Transit Authority (TRA) delivers crime prevention lectures. Charlotte's CTS sends members of the transit staff to monthly community crime prevention meetings.

Houston METRO's Adopt-A-Shelter program links citizens and METRO Police to deter vandalism and criminal activity at bus shelters. Citizens are encouraged to commit to bus shelter "ownership" with the expectation that they will perceive negative action against a bus shelter as a direct attack against "their" property. Personalized citizen involvement is also expected to result in immediate reporting of criminal or potentially criminal activity to METRO police.

Tri-Met hires citizens from poverty-stricken neighborhoods to ride transit buses as visibly identifiable "Tri-Met Rider Advocates." Advocates, who carry radios on board the buses, constitute a security presence. Advocates spend most of their time with "at-risk" passengers such as juveniles who are potential gang members.

DIAGONSTIC AND SUPPORT PRACTICES

To fashion effective responses to crime prevention and control, and to maximize the impact of strategies, agencies

engage in prerequisite and support activities that include customer surveys, crime analysis, and training.

Customer Surveys

Houston METRO, Atlanta's MARTA, and SEPTA are among several agencies that rely on customer surveys for crime control planning guidance. Perception of security and desired security measures are among the survey topics.

METRO's survey entailed a five minute personal interview of a structured sample of 1,255 riders. The primary goals of the survey were to assess the perceived risk of riding a bus and waiting for a bus, measure the relative risk of using METRO compared with other means of transportation, evaluate how good a job METRO is doing to meet personal security concerns, identify areas in need of personal security enhancement and specific solutions for reducing perceived personal security risks, collect information on crimes that occur while using METRO, and measure patrons' general awareness of METRO police (7). To avoid alarming passengers, the survey was designed as a service perceptions questionnaire as well as a personal security survey. The mixed format enabled METRO to compare personal security responses to general perceptions. One complimentary round trip was offered as an incentive for participating in the survey.

Crime Analysis

Agencies that have formed analysis capabilities to assist in deploying resources to highest crime areas and in tailoring responses include MARTA, LACMTA, and Houston METRO.

Training

Conflict resolution training is prevalent. Eighteen agencies reported engaging in this type of training. MDTA police sergeants and lieutenants receive 16 hours of conflict resolution training. Most OCTA law enforcement employees receive 4 to 8 hours. MD MTA managers and first-line supervisors receive approximately 16 hours of conflict resolution training.

Charlotte Department of Transportation bus operators spend 8 hours in a "Strategies" training course and 24 hours in the "Transit Ambassador" program. "Strategies" is a course in dealing with difficult people. The course teaches communication and verbal control techniques for handling tense situations. The "Transit Ambassador" program teaches operators to be helpful, friendly, and courteous to customers. New Orleans' TRA provides 2 hours of conflict resolution training to bus and streetcar operators. Richland-Ben Franklin Transit coach operators receive 6 to 8 hours of scenario training involving passenger confrontations. The Greater Portland Transit District will be sending drivers to a one-day seminar on dealing with difficult persons.

Violence prevention and control training is prevalent. Police/security officers of 10 systems receive violence prevention/control

training, as do nonsecurity workers of four systems. Two systems report that management employees receive violence-prevention training. All sworn personnel of Cleveland's RTA receive domestic violence training in compliance with state mandate. All of Portland's Tri-Met employees undergo 2 days of anger-reduction training. DART conducts a 1-hour robbery/assault prevention course for bus operators and a verbal conflict course to equip operators to use nonphysical crime prevention techniques and to diffuse potential physical attacks. This agency also conducts crime prevention classes for agency employees and the transit community as a whole. All employees receive crime prevention literature and bus safety tips. Crime prevention booths and fairs are set up to address crime and safety issues with employees and citizens.

The Phoenix Transit System conducts a 2-hour self-defense and security awareness class, while the New Orleans Regional Transit Authority conducts in-service training for police officers. Bremerton-Kitsap Transit reported using "Strategies," an 8-hour course on verbal control.

Mass Transit Systems Security

"Mass Transit Systems Security," a course offered by the DOT's Transportation Safety Institute in Oklahoma City, is heavily attended by transit industry personnel. The curriculum of the course is sponsored by the Federal Transit Administration. These week-long courses cover all aspects of security, including protection of passengers, facilities, and revenue. FTA-sponsored research at TSI has resulted in a series of wide-ranging reports. These reports are distributed to transit agency personnel and other interested parties.

Another important means of information dissemination is the American Public Transit Association's (APTA) Policy Security Committee, which meets regularly at locations around the country. At these meetings, transit agency representatives describe the kinds of security projects they are working on, and suppliers may describe security related products. The APTA Transit Security Committee first published a *Transit Security Guidelines Manual* in 1979, presenting various approaches to transit security problems based on the experiences of transit systems. The manual is continually revised.

APTA workshops focused on particular security problems common to more than one system are another technique cited for information dissemination. Such sharing is important because many transit agencies have designed system-specific problem solutions using their own ingenious modifications to standard equipment.

THE CONTINUING SEARCH FOR EFFECTIVE STRATEGIES

Transit industry practitioners and researchers continue to search for concepts, policies, and practices to reduce crime and fear of crime, and to enhance security and perceptions of security. Current directions are suggested by the following program innovations and research efforts, on-going or recently completed.

Contemporary Research and Literature

Crisis management, effective use of uniformed officers, violence on buses, violence prevention training, and security standards are subjects of research and professional literature, as evidenced by the following list:

- Gaumer and Hathaway of the Volpe National Transportation Systems Center developed a set of crisis management guidelines in the fall of 1996. This study was sponsored by the Federal Transit Administration.
- Gilbert and Schultz of Interactive Elements are conducting the TCRP project F-6, *Study of Effective Use of Uniformed Transit Police and Security Personnel*. The study will measure effects of uniformed and undercover police deployment and examine crime rates and public perceptions of safety.
- Boyd and Maier published *Security in the Transit Environment: Issues and Solutions* in February of 1996. This study was prepared for the Federal Transit Administration, by the Volpe National Transportation Systems Center.
- Lewis and Lede of Southern Texas University are currently studying the *Impact of Transit Routes on Neighborhood Crime*. This study is sponsored by the Office of University Research, Research & Special Programs Administration, Department of Transportation.
- Renee Haider of the National Transit Institute at Rutgers University and Debbie Horan of the San Francisco Municipal Railway are using focus groups and survey research to design a course called Violence Prevention Training. This project is sponsored by the Federal Transit Administration's National Transit Institute and the Transit Cooperative Research Program as Transit IDEA 11.

Recently completed research pieces include *A Typology and Analytical Model of Violent Incidents in Public Transit*.

Findings were presented at the annual meeting of the Transportation Research Board in January of 1996 (8). A second study, currently in progress, is examining characteristics of persons and operators involved in bus violence.

In *Transit Industry Needs To Develop a Set of Policing Standards*, Sharon Pappa suggests formation of a task force to develop industry norms and comprehensive baseline data on deployment, staffing levels, vehicle usage, transit police tactics, crime statistics, and budgetary allocations. Norms and statistical standards would serve as benchmarks for operational, administrative, and budget decisions (9).

AGENCY INNOVATIONS

Transit agencies are implementing new approaches to fare evasion, pan handling, and general security measures.

- New York City Police Department/Transit--Plainclothes Interceptions Sweeps:

A team of plainclothes police officers and a sergeant are assigned to a designated station experiencing an increase in

felony crime or to those stations where it has been determined that a large number of known felons enter the subway system. Every fare evader is stopped and transported to a district command and checked for active warrants. If the violator has no active warrants he or she is issued a summons. If the individual has an active warrant, he or she is arrested.

The initiative differs from the fare evasion plainclothes mini-sweeps in that the emphasis is not on fare evasion but is designed to prevent those predisposed to commit crimes from entering the subway system. Experience shows that those who commit crimes on the subway also enter the subway system illegally.

- New York City Police Department/Transit--Homeless Bus Transportation:

In cooperation with the Transit Authority Surface Department, the Police Department implemented procedures to provide transportation to shelters for homeless persons either ejected from the subway system for rule violations or for those homeless persons seeking assistance. The Transit Authority provides six buses during the winter months and one bus during the summer months. Juice, sandwiches, and snacks are provided to homeless who elect to be taken by bus to the shelter.

- New York City Police Department/Transit--Fare Evasion Mobile Arrest Processing Center (Bust Bus):

The Police Department has instituted a Mobile Arrest Processing Center to facilitate the processing of fare evaders apprehended at mini-sweeps throughout the city. This "Bust Bus" eliminates the need to transport prisoners to district commands to conduct background and warrant checks. Computers, cellular phones, and fax machines allow police to process fare evaders immediately.

- New York City Police Department/Transit--Fare Evasion Mini Sweeps:

A plainclothes mini-sweep consists of the deployment of plainclothes officers and a supervisor to a subway station to apprehend fare evaders and other fare evasion related offenders. Offenders are detained, handcuffed, and generally taken to the Mobile Arrest Processing bus for processing. The deployment of these officers coincides with those times of the day when fare evasion activities at selected stations are at their peak.

A city and state warrant and a Police Department recidivist check is conducted on all those apprehended for evading the fare during these mini-sweeps. If the offender is wanted on a warrant or is a repeat offender, an arrest takes place. Weapons are often seized at this time.

- Toronto Transit Commission--Designated Waiting Areas:

A Designated Waiting Area (DWA) is located on all subway and RT platforms. A DWA has brighter lights as well as an intercom, a closed circuit television camera, a public telephone, and a bench for passengers to sit on while waiting. On the subway the DWA is located where the guard's car stops. The guard's car is easily identified by the orange or white light on the outside. On the RT, the DWA is located where the driver's car stops. DWAs are marked with a sign and an information panel.

- Toronto Transit Commission--Request Stop:

Women traveling alone on buses between 9:00 pm and 5:00 am can use the Request Stop program. The program allows a woman to get off the bus at locations between regular stops. A woman must tell the driver at least one stop ahead of where she wants to exit the bus. The driver must be able to stop safely in order to accommodate the request. The woman must leave the bus by the front doors. The rear doors remain closed so that no one can follow her from the bus.

CHAPTER FOUR

CRIME AND RESPONSE: FOUR CASE STUDIES

How transit agencies have approached a variety of crime-and fear-generated problems is illustrated by the following case studies. The problems that are common to many agencies are:

- decreasing ridership related to intensifying perceptions of crime;
- spiraling costs of vandalism;
- bus system disruption; and
- perceptions of disorder.

INTENSIFYING PERCEPTIONS OF CRIME LEAD TO DECREASING RIDERSHIP: THE HOUSTON METRO EXPERIENCE

The Metropolitan Transit Authority of Harris County (METRO) operates a large fleet of buses that serves a 1,279-sq-mi area in and around Houston, Texas. The METRO system serves a population of 3,398,800 and carried 59,645,000 passengers in 1993. METRO Transit also has its own police force, which was formed in 1982 and today consists of 175 full-time sworn officers, 19 part-time sworn officers, and 50 full-time nonsworn employees.

Perception of crime has been a major issue for METRO. While "snatch and grabs" have been a problem on buses, and the system has had problems with drug dealing and vandalism, actual crime has been much lower than the public perceives. The METRO Transit Police discovered this disparity after surveying ridership and comparing survey results to actual crime statistics. The disparity is powerfully illustrated by comparing the actual and perceived crime in the downtown Houston and the Galleria areas. Downtown Houston has a high density of transit riders as well as a high population of homeless people. The Galleria is upscale and modern. The perception is that downtown Houston has a much higher crime rate than the Galleria area. The reality is that crime, particularly auto theft, is higher in the Galleria area.

When the perception problem and the resulting decrease in ridership seemed to grow worse in the late 1980s and early 1990s, METRO's Police Department, Marketing Division, and Capital Planning Division addressed the issue jointly. They recognized the need to find a way to make people feel safe in order to increase ridership. Two strategies were selected: Crime Prevention Through Environmental Design (CPTED) and community involvement.

METRO has used CPTED concepts to design new transit centers as well as to revamp older centers and shelters. METRO is so committed to CPTED that any architect hired by METRO must be trained in CPTED principles. Using CPTED, METRO Police officers and planners first asked

themselves, "What opportunities do criminals have?" They surveyed bus stops and shelters at night and noted crime potential. They were able to take several immediate actions including: increasing lighting in poorly lit areas; cutting weeds around shelters; and relocating bus shelters away from drug-dealing locations. METRO increased cleanliness and maintenance to make people feel safer.

Additional examples of CPTED applications are abundant. In one new transit center, the community wants a parklike atmosphere, but the grassy area set aside as a park attracts loitering, drinking, and drug dealing. To eliminate loitering, METRO Transit plans to redesign the area, which will become a parking lot. Another new transit center has a raised platform that makes it easy for police or passersby to observe everything. METRO has attempted to make all of its transit centers highly visible to police with no obstructions.

The METRO Police Department works with the community to stop crime and convince potential riders that the transit system is concerned with their safety. METRO surveyed its riders in 1994 and found that most people felt comfortable riding the bus, but did not feel comfortable going to and coming from the bus. In response, transit police officers have been speaking to community groups as well as riders waiting for buses. Officers teach people how to ride the bus, what body language people should use, what conditions they should be aware of. The METRO Assistance Center (MAC) has been established for customers to call with any complaint or concern, safety or otherwise. Calls are assigned to a supervisor who recontacts the person with advice or resolution of the problem.

The police work with the community to end ongoing criminal activity. For example, the manager of an apartment building worked with police to put an end to drug dealing taking place at a bus shelter in front of the building. The building manager allowed police to occupy an apartment so that they could set up a surveillance of the shelter. Undercover officers bought drugs at the shelter and several arrests were made as a result of the joint effort. The METRO Police Department has used both plainclothes and uniformed officers on buses to catch purse stealers and increase police visibility. Visibility of patrol units has been increased by using a "cluster" strategy to give the illusion that there are many more patrol cars than actually exist. Patrol cars are concentrated in one area and the concentration is moved frequently.

The METRO Police Department did not experience any difficulty when they implemented the CPTED concept and community programs. On the contrary, people found the plans new, exciting, and different, and eagerly participated. So far, the feeling is that METRO was on target in using CPTED strategies. While it is still difficult to measure the success quantitatively, METRO Police believe the programs are

working. They are currently conducting another ridership survey and will compare the results of this survey with the last one, as well as compare crime statistics from before and after the start of the program.

SPIRALING COSTS OF VANDALISM: THE LOS ANGELES COUNTY EXPERIENCE

The Los Angeles County Metropolitan Transit Authority (LACMTA) operates a fleet of buses and light-rail trains and subway trains over a 1,966-sq-mi area in and around Los Angeles, California. The LACMTA system serves a population of 9,087,715 and carried 1,549,329,766 passengers in 1993. LACMTA has its own police force.

LACMTA is an enormous transit system that has always had problems with graffiti. For years, LACMTA considered a \$2 million per year clean-up bill simply a cost of doing business. Beginning in 1989, however, graffiti, tagging (marking a piece of property with one's own particular signature or sign), and general vandalism problems became worse. The annual clean-up cost climbed to \$10 million dollars and peaked at \$14 million. In response to the spiraling costs, the General Manager and Chief of Transit Police created a 20-officer task force dedicated exclusively to this problem.

This vandalism task force selected several measures to drastically reduce the incidence of graffiti, tagging, and vandalism, most aimed at juveniles since they were responsible for 90 to 95 percent of the vandalism. Officers of the Graffiti Habitual Offender Suppression Team (GHOST) rode "school tripper" buses (routes that take full busloads of students to school) undercover and videotaped students painting graffiti. The officers showed the videotapes to parents and teachers to get them involved. Previously, officers experienced difficulties convincing parents and teachers of the magnitude of the problem and of their children's role in these acts of vandalism.

The Chief of the Transit Police believed that it was important to convince police officers that while arrests were likely to result in rehabilitation attempts by the juvenile justice system, getting parents involved could provide more meaningful punishment for the offending juveniles. In one incident, a videotape of kids painting graffiti was shown to students, parents, and teachers. One mother seated with her son, recognized him in the videotape. She immediately "backhanded" him and "grounded" him on the spot.

The LACMTA police also use the Claim at Arrest Program to get parents to take responsibility for the actions of their children. Under this program, when a child is arrested for vandalism, his or her parents receive a bill for the damages. The largest bill was \$38,000. A judge decides how much the parents will have to pay. If a juvenile is arrested for tagging, the child's parents will be billed for every piece of property damaged by his or her tag. The police keep computer records of taggers and all tagging symbols to make it easier to identify the vandals.

LACMTA police have devised other schemes to stop juveniles who commit or are likely to commit vandalism. A common tactic used by juveniles committing vandalism is to

"mob" a bus when it stops to pick them up. Thirty to 40 juveniles will surround the bus and try to cover it with graffiti from end to end. On one occasion, LACMTA had an undercover police officer drive the bus and several other undercover officers pose as passengers. When the juveniles "mobbed" the bus, the officers got off, arrested the juveniles and put them on the same bus and transported them for processing.

While LACMTA police are concerned with apprehension and restitution, they also recognize the importance of educating younger children about the cost of vandalism before they become involved. The local school curriculum for K-6th grade features the No TAG Program, TAG standing for Transit Against Graffiti. Patterned after a nationally recognized program called D.A.R.E., the No TAG program aims to teach respect for the transit system by using a bilingual, talking robot bus named Mr. No TAG. The bus says things to the children such as "I feel bad when I'm vandalized." Small children respond overwhelmingly to Mr. No Tag by hugging or kissing him to cheer him up. The idea for the bus came from Houston, which used a talking policeman in schools. Cost of the bus, about \$15,000, is expected to be easily offset by preventing future vandalism.

While new laws prohibiting the sale of spray paint to minors have been effective in reducing the amount of painted on graffiti, juveniles have discovered a new way to vandalize transit property--etching. The practice involves etching of one's tag or some other words or symbols into the windows of a bus or light rail vehicle, often with a sharp rock or nail. LACMTA places undercover officers on the buses, but still has a difficult time catching etchers on a crowded bus because the act is generally much less conspicuous than painting. LACMTA is trying new materials to save itself the cost of replacing windows. "Sacrificial windows" are often used. These windows provide a removable coating of plastic that protects the actual window from damage caused by etching.

While the programs employed seem to be having a positive effect, measured by increased arrests and citations, reduced spending for graffiti removal, (which has leveled off and is decreasing), and improved physical appearance of the system, there are continuing problems. The transit police chief has to continually emphasize to officers the importance of enforcing misdemeanor crimes. The officers are much more eager to hunt down felons than to arrest juveniles for misdemeanor vandalism. The chief has also had to educate the courts to convince them to punish the juveniles for what seem like petty crimes, in light of many other violent cases the courts carry.

Overall, the LACMTA police department has made significant progress in this area, but in hindsight, more aggressive intervention early on would have kept vandalism under control much better. The same is true of LACMTA's fare evasion problem. Increasing numbers of people were evading fares by simply not paying when they got on the bus. This problem was not reported to the police until it had become widespread. In response to the increasing fare evasion, undercover officers were placed on the buses to issue citations. Beginning this year, bus drivers will be trained in conflict resolution so that they can resolve more fare evasion problems themselves. Fare evasion, ranging from 1 percent to 3 percent, also occurs on the rail system, but it is not a widespread problem.

Community policing tactics are used on the rail system. Police officers walk through the system and inspect 25 percent of the ridership by asking for proof of payment of the fare. These officers are also able to learn who rides the system daily, which makes it easier for them to spot and solve problems.

BUS SYSTEM DISRUPTION: THE ANN ARBOR EXPERIENCE

The Ann Arbor Transit Authority (AATA) covers a 71-sq-mi area in and around Ann Arbor. The system serves a community of approximately 189,205 people who took 15,641,563 bus trips in 1993. Once a relatively quiet, crime-free system, AATA began to develop problems in the mid to late 1980s when drivers began reporting problems with disruptive passengers. High school students began meeting at the main bus station in Ann Arbor to settle their differences with fist fights. Certain passengers continually harassed particular drivers. Drug dealing became a regular occurrence at AATA's main bus station and on many of its buses, buyer and seller would arrange to meet on a particular bus route at a particular time to make their deal.

AATA's safety and training (S&T) coordinator and the senior supervisor of operations recognized the changes and the need for aggressive response. When a bus driver tried to break up a teenage fight on his bus and was threatened with a knife, the S&T coordinator and the senior supervisor knew response had to be aggressive. They formed a two-person team to search for solutions.

The S&T coordinator reported finding little guidance in transit research journals. She began to contact other agencies. In the meantime she and the senior supervisor of operations discussed options. They considered a city ordinance to make disruptive behavior on buses a crime, but decided the expense of lobbying and hiring an attorney would be too high, and media attention on the crime problem could cost ridership. Long-term restraining orders were sought from local judges, but were denied. Top management was persuaded to pay for security guard service at the main bus station.

The security guards did not prove to be the solution they were looking for. The streetwise high school kids hanging around the bus station quickly learned that they could intimidate many of the guards. The guards, many of whom had previously guarded empty buildings, had no training in conflict management. The guards received very little supervision from the company that employed them. The S&T coordinator stresses the need to work closely with security guards, to observe problems with guards and talk with them about how to resolve the problems.

The S&T coordinator continued to look for a solution and found help from Portland's Tri-Met Authority. Using Portland's programs as examples, the S&T coordinator and the senior supervisor of operations tailored a program to meet their own needs. This two-member team developed a system of "banishment." A rider who causes a disruption that a driver is not able to resolve immediately is identified and informed, by letter, that his or her riding privileges are suspended for a

term of months or years. An individual may then petition AATA to have a banishment reviewed and possibly modified, based on the individual's circumstances, remorse, and willingness to cooperate. The driver is consulted with regard to modification or suspension of a banishment.

The identification process starts with the S&T coordinator or the senior supervisor of operations taking pictures of "bus bandits," people who are continually disruptive. Photographs are shown to other drivers and to Ann Arbor police officers who, more often than not, are able to identify the individuals and provide addresses. A photo of the individual is posted at the bus garage so that other drivers are aware of the banishment and are prepared not to let the offending individual onto their buses.

The team was surprised by the success of the banishment program. Individuals who had caused problems on the buses for years contacted them after being banished and asked to have riding privileges restored. AATA sets up a meeting with the person and the person's social worker if the individual is mentally disabled, or a police officer if the offender has had previous contact with the police. Banished individuals are informed of AATA behavioral expectations and asked to sign a contract. The individual is put on probation that allows use of the AATA buses two days per week and receives a card to show to drivers. The card states exactly what days the person is allowed to ride buses. Banished individuals have caused almost no problems on buses once their banishment ends. The team attributes this reformed attitude in part to the person's need for public transportation.

The AATA team employed additional strategies to restore order on their buses and in the central station. They contacted LAWNET, area law enforcement agencies that work jointly under the direction of the Michigan state troopers. They informed LAWNET of the drug dealing going on at the station. LAWNET responded with one month of successful undercover operations in and around the bus station.

The AATA approached the Ann Arbor police department (AAPD) about establishing a permanent post at the bus station. By October of 1993, an agreement had been worked out. AATA set up a small office in the bus station, which now acts as a mini-police station, and contracted with AAPD to pay the salaries of two officers. In exchange, the AAPD has permanently assigned two officers to the bus station and an eight-block radius surrounding the station. The police officers also patrol the nearby public library and YMCA. During the first six months at the bus station the officers made many arrests as a tactic to discourage certain behavior. They had to develop a rapport with the regular bus patrons as well as the drivers. "Now we address each other by first name and when there are problems people listen to us more than they would to an officer in a patrol car they don't know," said one officer.

Officers ride bus routes at random, both in and out of uniform. "The ride is definitely more enjoyable when we're in uniform" commented one officer, meaning people react to the uniform. Officers also board a bus before it reaches a stop where there has previously been a problem. In one case a bus driver reported fights and harassing behavior at a stop where he picked up high school summer school students. An officer

boarded the bus ahead of time and stepped to the doorway of the bus when it pulled up to the stop. The officer then lectured the students on the consequences of their behavior before he let them board the bus. One student who continued to be disruptive was handcuffed and taken to a waiting patrol car. "That has impact on the other kids, when they actually see someone pay for their actions," stated AATA's safety and training coordinator.

This same approach has worked in dealing with gang members. The police target a gang leader. When the other members see their leader removed from the system they tend to change behavior patterns. If necessary, the police will arrest banished individuals and charged them with trespassing but so far this hasn't been necessary.

To prevent violence, AATA is experimenting with surveillance cameras. A camera has been placed on one bus and seems to be producing the desired effect of modifying and preventing disruptive behavior. In one instance, two teenage girls were harassing a bus driver and refused to pay their fare until one of them looked up and saw the camera. They immediately paid their fare and stopped their harassment.

AATA employs what is now generally labeled "problem solving." Many of the AATA bus stops are not lit at night. The senior supervisor of operations hopes to find low-cost ways of illuminating the stops. He has been successful in getting local shopping centers to turn on lights near the bus stop in the early morning hours. In one instance, a bus stop was used to stage robberies. The robber would stand near a bus stop located next to an ATM machine. When someone came to use the ATM machine, he would rob them. Once AATA was informed of the situation, the stop was moved 100 feet away within 24 hours.

The AATA team stresses the importance of training drivers to face realistic situations. In selecting new drivers, applicants are given a multiple-choice videotape test, which simulates real-life situations a bus driver will face, such as a rider who claims to have forgotten his fare. An applicant then selects an answer that best reflects how she or he thinks the problem should be handled. This test of judgment, designed by Carla Schwander & Associates in Seattle, Washington, is called "Working with the Public." AATA previously used psychological testing but found that they were selecting drivers with overly authoritative personalities.

Drivers then go through an 8- to 12-hour interactive training program that was designed by the Crisis Prevention Institute. Demonstrations, lectures, and role playing are used to teach both conflict management and physical safety. Drivers are taught how to be versatile in a given situation and to be aware of all their options. The safety and training coordinator teaches drivers the importance of confidence and of taking a consistent approach to problems. "I try to teach them how not to be victims; how to achieve a look of strength in their eye."

AATA emphasizes the prevention value of setting forth rules and enforcing them consistently. Drivers are instructed to set forth the rules within the first 10 days of school. "A driver should tell the kids what he expects of them and what they should expect of him. We don't want them to take too forceful of an approach, but rather try to establish a relationship of respect." Many drivers have gotten to know the students by their

first name, which gives the bus an entirely different atmosphere. A driver is instructed to act on problems immediately.

AATA has taken a very direct approach with its riders. It has tried to avoid using the courts because of the time and expense involved as well as the often futile result. By getting to know riders and both asking for and demanding respect for the system, AATA has drastically reduced incidents of conflict. The safety and training coordinator and the senior supervisor of operations spend much less time addressing disruptive incidents.

Lack of a transit crime reporting system is cited as one weak area of AATA's crime strategy program. Crime reported to the police in any of the jurisdictions served by AATA--AAPD, Ypsilanti Police Department, Washtenaw County Sheriff's Department--is not reported to AATA. The safety and training coordinator and the senior supervisor of operations often find out about violent crimes committed on or near AATA property, such as robberies and sexual assaults, from the newspaper.

Unfortunately, AATA has not been able to develop the same kind of partnership with other police departments as it has with the AAPD. Ypsilanti has quite a lot of serious crime and does not view transit crime as an urgent problem.

The AATA team again stresses the importance of looking at all options. They have successfully worked with the AAPD, Department of Social Services, Ann Arbor public schools and even emergency medical services staff, who will take away mentally disturbed individuals if necessary.

"Safe Transit Practice and Procedures," AATA's program, has not become official AATA policy. Rather, it is, in the words of the safety and training coordinator, an arsenal of "guerilla tactics."

PERCEPTIONS OF DISORDER: THE SEPTA EXPERIENCE

The Southeastern Pennsylvania Transportation Authority (SEPTA) operates a fleet of approximately 1,850 trains and buses over 1,164-sq-mi area in and around Philadelphia. SEPTA serves a population of over four million people, who took 1,251,841,547 trips in 1993. SEPTA currently employs 261 sworn officers for crime prevention on the transit system.

Like many transit systems in large cities, SEPTA began having a greater problem with vandalism in the late 1980s and early 1990s. SEPTA was experiencing a growing number of robberies, pickpockets, and panhandlers, which made passengers feel unsafe. In 1990, SEPTA surveyed its ridership and found that passengers felt that law enforcement needed improvement and that the transit system was dirty; passengers associated this with a lack of security.

In response to the survey, SEPTA created a Resource Management Review Group to suggest ways to improve cleanliness and security on the system. The group recommended that officers be assigned to geographic zones within the transit system and that an identifiable supervisor be made responsible for each zone. The SEPTA system is now divided into zones. SEPTA's two subway/elevated lines are divided into seven

zones encompassing a total of 52 stations. A lieutenant heads each zone, which includes a sergeant and a variable number of uniformed patrol officers for each shift, depending on the crime rate for that zone. The zone system allows police officers to work regularly with the same station personnel; the resulting rapport translates into valuable information being provided to the police by the station personnel concerning criminal activity, creating a unique bond between police officers and station staff.

SEPTA's policing system now encourages supervisors to make decisions that once were made exclusively by upper management. As a result, both officers and supervisors feel an increased sense of accountability, exhibit more concern and put forth a greater effort when combating crime. Officers are encouraged to recommend ways to improve operations by participating in periodic, informal "roundtable" discussions. The zone system increases police visibility by enabling police officers to process offenders on site at a mini-station. Before the zone system, an officer could spend two to three hours transporting an offender to a police district in order to complete paperwork.

SEPTA officers usually patrol the subway systems downstairs, the rationale being that from a passing train, several hundred passengers can see a platform being patrolled and this makes transit customers feel safer. This patrol strategy, along with crime prevention education, was also very effective in reducing the number of robberies on the subway platforms. Now, however, people are being robbed at the top of the stairs. In response, SEPTA police officers have taken thorough reports from the victims and found that most of the victims had come from a bank or check-cashing establishment and that the robbers had followed them to the subway. SEPTA is using more officers at the top of the subway entrances and trying to teach its passengers to be alert and not show large sums of money in public. SEPTA is also taking a proactive approach by looking for patterns that show several victims living or working in the same place. SEPTA then sends police officers to those workplaces and residences to give crime prevention presentations. SEPTA also uses undercover plainclothes operations to address nuisance offenses, particularly public drinking, prostitution, selling drugs, and disorderly conduct,

Eight things pickpockets don't want you to know

Travel Tips from
SEPTA Police



1.

Never display money in a crowd



2.

Immediately check your wallet or purse when you are jostled in a crowd



3.

Beware of loud arguments and commotions aboard vehicles or on station platforms. Many times these incidents are staged to distract your attention while your pocket is picked



4.

Carry your handbag tightly under your arm with the clasp toward your body. Never let it dangle by the handle. Keep it with you at all times and always keep it closed. Never place it on a seat beside you.



5.

Men should carry wallets in their inside coat pocket or side trouser pocket — never in the rear trouser pocket



6.

Never wear necklaces, chains or other jewelry in plain view



7.

If your pocket is picked, call out immediately to let the operator and your fellow passengers know there is a pickpocket on the vehicle



8.

If you suspect pickpockets at work on a particular transit route or subway station, call the SEPTA Police Hotline, 580-4131. It's answered 24 hours a day. You do not have to give your name. Trained personnel will take your information and see to it that something gets done



Southeastern Pennsylvania Transportation Authority

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FIGURE 1 Example of SEPTA's crime-tip cards designed to help customers avoid becoming victims of crime on transit vehicles and in stations.



Nine Tips to Slam the Brakes on Auto Theft

Provided by SEPTA Transit Police Department



1. Never leave your car unoccupied and running



2. Don't leave your car before securing windows, doors, glove compartment, window vents and trunk.



3. Lock your car and take the keys with you.



4. Don't leave packages or valuables in plain view, secure them in the glove compartment or trunk prior to arriving at the parking location.



5. When possible, park in well lighted areas



6. Keep vital information on a card inside your purse or wallet with the cars year, make, model, color, license plate and vehicle information number (VIN) and any other information that makes your vehicle unique



7. Remember exact location where you parked



8. Contact police immediately if your car is stolen.



9. When utilizing SEPTA parking facilities, report any suspicious persons or vehicles to SEPTA POLICE 580-4131 24-hours a day.

Don't Drink and Drive

Southeastern Pennsylvania Transportation Authority
© SEPTA 1992 3 92 09642 1 538



Vehicle Information

Make _____	Dents, Decals _____
Model _____	etc _____
Year _____	_____
License _____	_____
VIN _____	_____

SEPTA Police	580-4131
SEPTA Police Community Affairs Unit	580-3625
SEPTA Information	580-7800
Lost and Found	580-7800
SEPTA Parking Information	580-7933
SEPTA Dial a Schedule	580-7777
Keystone Auto Club (AAA)	864-5000

FIGURE 2 Crime-tip card suggests precautions for patrons of SEPTA parking facilities and provides emergency phone numbers.

and is in the early stages of researching and developing bicycle patrols.

SEPTA made several other changes in response to the Resource Management Review Group's recommendations. These include the creation of a security agent unit, a canine unit, and several community policing programs. The security agent unit consists of about 80 former bus drivers, mechanics, and employees who were injured and disqualified from previous occupations. The agents complete a vocational rehabilitation course that allows them to act as the eyes and ears of the police. The agents generally work as armed security guards and protect employees and property through their presence in train and bus yards. The agents do not have the power to arrest and wear different uniforms than SEPTA police officers.

SEPTA began using canine patrols in 1991. The unit has seven Malinois dogs. They are similar in appearance to German Shepherds but slightly smaller. The breed is known for intelligence and a temperament suitable for patrol in an urban environment like that found in SEPTA's subways. The dogs

are trained to respond only to commands spoken in Dutch, which provides an extra measure of security.

The dogs generally act as a deterrent to crime, which has decreased in those stations where the canine unit is deployed. SEPTA has one dog for drug and bomb detection, which is sufficient for the amount of drug activity on the subway. SEPTA's dogs get training once a week for eight hours and can be loaned to other departments.

SEPTA has tried to work with the community in a number of ways. They regularly survey their customers with a very short questionnaire designed to elicit information about crime trends. They have designed different crime-tip cards to educate customers about how to avoid becoming victims of crime (Figures 1 and 2). Additionally, as mentioned above, SEPTA makes crime prevention presentations to local community groups and residences.

SEPTA tries to work with juveniles in a number of ways. The officers make a point of stopping school-aged individuals during school hours as a check for truancy. SEPTA Transit Police also meet with school officials and local police

to discuss school dismissal times and locations where confrontational incidents between juveniles are likely to occur. Officers are then deployed accordingly.

SEPTA works with younger juveniles through its "Adopt a School Program," which has become increasingly popular. Under this program, SEPTA police officers work with elementary and secondary students by making classroom and assembly presentations and providing tours of SEPTA installations. The officers also provide tutoring to students.

SEPTA has adopted various technological strategies to deal with crime and with vandalism in particular. Emergency phones that connect directly to a police dispatcher are located in the subway. Also, in tunnels with obstructions between the waiting area and cashier, patrons can wait on a bench located near the cashier until a light signals the approach of a train.

SEPTA now uses easy-to-clean materials at all of its new transit stations, which allow workers to remove vandalism within 24 hours of its appearance. When SEPTA had a regular vandalism problem on an outdoor wall at one of its transit stations, the wall was landscaped with climbing thorny bushes. The bushes proved to be an attractive, but effective deterrent to vandalism.

Over all, crime on the SEPTA system has decreased. From 1991 to 1993, serious crime on the system decreased by 43 percent. But as SEPTA finds new ways to battle criminals, the criminals find new ways to commit crimes. For example, while painted and marker graffiti have been on the decline, juveniles are now etching windows—using a rock to carve graffiti into a window. Thus, reducing crime means constantly coming up with new strategies.

CONCLUSIONS: A TRANSIT SECURITY AGENDA

Reliable measures of the incidence of transit crime still elude the industry generally, and many local agencies. While reliable data would enhance security analyses and responses profoundly, the statistical deficiency does not appear to be inhibiting crime control and fear reduction efforts. General managers, security directors, and other transit professionals are keenly aware of and sensitive to the consequences of even marginal incidence of crime and disorder. Accordingly, American transit agencies are working aggressively to increase safety and security for both bus and rail modes. An impressive range of strategies across diverse environments is being employed to prevent and control crime, violence, and disorder. Agencies employ packages or combinations of strategies, some of the individual bus and rail strategies directed toward order maintenance, some directed toward general deterrence, and some directed against specific problems and conditions. Recognizing the relationship of disorder to crime and of less serious crime to serious crime and violence, transit agencies are attacking criminogenic conditions broadly and specifically. Further understanding of the unique environments of, in, and through which bus and rail modes operate is required if these efforts are to succeed.

The primary strategy of choice of transit agency professionals and the class of interventions considered most effective is deployment of uniformed officers, riding trains or buses, manning fixed posts, conducting directed patrols and engaging in problem solving. Target-hardening, technological strategies are considered highly effective for protecting transit passengers and property. Reliance on traditional uniformed patrol and target hardening is augmented by adapting community policing innovations, principally outreach, to engage students and members of important citizen organizations in crime prevention and safety activities.

The fundamental sensitivity of transit interests to incidence of crime and the presence of fear, and the destructive potential of emerging trends, namely the predictable growth of a criminally oriented youth subculture and a less predictable but still alarming possibility of transit-targeted terrorist acts, argue compellingly for continuing advancement of the transit agency's capacity to deal with crime and fear. Significantly, the transit community seems poised to upgrade capacities to protect passengers, workers, and property by building effectively on a security environment that is under control and on a solid foundation of programming. Important strides can be made by attending to a series of currently unmet needs and underdeveloped capabilities which, if addressed effectively, will measurably enhance the ability of bus and rail transit agencies to successfully confront crime, disorder, and fear.

- Security Data Systems--While most agencies possess data on serious and less serious crimes, many do not have

nor can they generate reliable data on passenger victimization, criminal offenders, crime patterns, and other fundamental crime and disorder analysis information. Crime trend information is generally unavailable, as is information on victimization of workers, and other data on consequences of crime and violence. Transit agencies do not, in general, possess information on transit crimes reported only to local police--a major cause of underreporting. Comprehensive crime control data bases are a priority need.

- Strategy Evaluation--To a far greater extent than is desirable, judgments concerning the impact of currently employed crime and disorder prevention and control strategies are based on anecdotes and impressions. To improve passenger and employee safety and security, an ambitious program to scientifically evaluate core strategies employed by transit agencies is called for. Evaluations should be problem focused, revealing the value of a strategy or combination of strategies, in terms of problem reduction or other desired objectives or outcomes.
- Strategy Experimentation and Production--A robust evaluation program is certain to surface ideas for new strategies and variations of current strategies. A search for new or emerging strategies should be continuous, with funding for experiments made available by federal, state, and local authorities to nurture successful experimentation.
- A Strategies Clearinghouse--Transit agencies could benefit from creation of a national clearinghouse for strategies information. A comprehensive network of information is needed that describes strategies, objectives of strategies, programming and operational characteristics, staffing requirements, and when possible, outcomes, both successful and unsuccessful. A data base of case studies could also prove to be of great value.
- Training and Training Standards--Crime and violence prevention and control training is increasingly recognized as vital. Still, measured by nonresponse to training items in the synthesis survey, it appears that training may not be a priority for many agencies. The transit field might consider establishing mandatory training requirements, a core value and requirement of the law enforcement and public safety profession. Minimum requirements for nonsworn personnel could be considered as well as for sworn officers.
- System Security Program Plans--The security, safety, and performance of public transit agencies is also likely to

benefit from preparation of system security program plans, declaration by governing bodies of passenger safety as a core value of systems, and organizational positioning to ensure that security chiefs are able to influence all matters that have safety implications.

Elements of a system security program plan (SSPP) as described by FTA are:

- An overall security strategy for the system.
- An enhanced mechanism for gathering, analyzing, and acting on security related information.
- A mechanism to control costs associated with security problems.
- An effective, proactive security marketing tool to approach the public, employees, media, and unions.
- Definition of internal (interdepartmental) relationships among security.
- Divisions and respective roles in support of security. (2)
- Bus and Rail Security Environment Research--Better understanding of the dissimilar environments of the two modes could help target efforts to improve security on the most appropriate methods.

REFERENCES

1. Mauri, R.A., N.A. Cooney, and G.J. Prowe, *Transit Security: A Description of Problems and Countermeasures*, Report No. UMTA-MA-06-0152-84-2, FTA, 1984.
2. Balog, J.N., A.N. Schwarz and B.C. Doyle, *Transit System Security Program Planning Guide*, Report No. FTA-MA-90-7001-94-1, 1994, and *Transit Security Procedures Guide*, Report No. FTA-MA-90-7001-94-2, Federal Transit Administration, 1994.
3. Knapton, D., *Exploring How to Make System Safety Work in Transit*, Report No. FTA-NY-90-A002-94-1, FTA, 1990.
4. Boyd, A., M.P. Maier and P.J. Kenney, *Perspectives on Transit Security in the 1990s: Strategies for Success*, Report No. FTA-MA-90-7006-96-1, FTA, 1996.
5. Scott, D., "Policing Mass Transit: The SEPTA System," *FBI Law Enforcement Bulletin*, July 1993, Vol. 62, No. 7.
6. Wilson, J.Q. and G.L. Kelling, "Broken Windows," *The Atlantic Monthly*, Vol. 249 (1982), pp. 29--38.
7. *Community Services Programs*, Metropolitan Transit Authority of Harris County, Texas, 1994.
8. Hundenski, R.J., "A Typology and Analytical Model of Violent Incidents in Public Transit" in *Transportation Research Record 1521*, Transportation Research Board, National Research Council, 1996, pp.129--136.
9. Papa, S.K., "Transit Industry Needs to Develop a Set of Policing Standards," *Passenger Transport*, Vol. 53, No. 3, p. 7 (1995).

BIBLIOGRAPHY

- Austin, T.L. and E.S. Buzawa, "Citizen Perceptions on Mass Transit Crime and its Deterrence," *Transportation Quarterly*, Vol. 38, No. 1 (January 1984) pp. 103-120.
- Balog, I.N., A.N. Schwarz, Hathaway, and Watson, Maximization of Transit Security through Effective Use of Procedures, in *Transportation Research Record 1433*, TRB, National Research Council, Washington, D.C.
- Barberic, "Focus on Revenue Protection," *Transit Policing*, Vol. 4, No. 2, Spring, 1994.
- Bartel, E.W., Cooley, and R. Shellow, "An Electronic Surveillance/Response System to Reduce Crime on a Mass Transit Facility," *IAS*, 1975.
- Benjamin, J., Hartgen, Owens, and Hardiman, Perception and Incidence of Crime on Public Transit in Small Systems in the Southeast, in *Transportation Research Record 1433*, TRB, National Research Council, Washington, D.C.
- "Blue Line "AutoCITE" Project Nears Full Implementation," *Transit Policing*, Los Angeles, Vol. 1., No. 1, Fall 1991.
- Boyd, A., *Mass Transit System Security Course*, sponsored by the Federal Transit Administration, (In Progress).
- Briefing Item; Overview of the Toronto Transit Commission Report Entitled, "Moving Forward; Making Transit Safer for Women."
- Cooley, E.W. Bartel, and R. Shellow, "Crime and Perception of Crime on a Metropolitan Mass Transit System," *IAS*, 1975.
- DeGeneste, H. and J. Sullivan, "Policing Transportation Facilities" published by Charles C. Thomas, Inc., Springfield, Illinois, 1994.
- Del Castillo, "Fear of Crime: The Police Response," *Transit Policing*, Vol. 3, No. 1, Winter/Spring 1993.
- Eastman, "Analysis--Cord Pulls On the New York City Subway," *Transit Policing*, Vol. 3, No. 2, 1993.
- Eastman and Yuan, "Analysis--The relationship between misdemeanor arrests and reported felonies on the New York City Subway," *Transit Policing*, Vol. 4, No. 2, Spring 1994.
- Federal Transit Administration, Transit Safety and Security Bulletin Board-E Mail.
- Feldman and Vellenga, "The Role of Security in Marketing Urban Mass Transportation," *High Speed Ground Transportation Journal*, Summer 1977.
- Forte and Fleming, "Police Command College: Port Authority of NY & NJ Adopts European Model," *Transit Policing*, Vol 2, No. 1 Summer/Fall 1992.
- Ghobrial and Poister, "Evaluating Security of Rail Transit Systems: A Metric System Approach," *Journal of Advanced Transportation*, Vol. 29, No. 2, pp. 251-262.
- Guberman, "Making Transit Safer for Women," *Transit Policing*, Vol. 4, No. 1, Spring 1994.
- Gray, "Robbery and Assault of Bus Drivers," *Operations Research*, 19, No.2 (March-April 1971), pp. 257-69.
- Hoel, L.A., "Public Transportation Security" in *Public Transportation*, 2nd ed., G.E. Gray and L.A. Hoel, editors, Prentice Hall, Englewood Cliffs, New Jersey, 1992, pp. 509-524.
- Hargadine, E.O., "Case Studies of Transit Security on Bus Systems," Sponsoring Agency Report No. UMTA-VA-060088-83-1.
- Hawkins and Sussman, *Proceedings of Workshop on Methodology for Evaluating The Effectiveness of Transit Crime Reduction Measures in Automated Guideway Transit Systems*, 1977, Report No. UMTA-MA-06-0048-77-1, Urban Mass Transit Administration.
- Ingalls, Hartgen, Owens, "Public Fear of Crime and It's Role in Bus Transit Use," in *Transportation Research Record 1433*, TRB, National Research Council, Washington, D.C.
- Johnson, R.C., "Mass Transit Security in Chicago," in *Proceedings-Fifteenth Annual Meeting, Transportation Research Forum*, Vol. 15, No. 1 (San Francisco) (Oxford, Ind., The Richard B. Cross Company, 1974) pp. 22534.
- Kelling, G.L. and W.J. Bratton, "Transit Police and Their Communities," *Transit Policing*, Vol. 1, No. 1, Fall 1991.
- Lambert, T.C., "Proactive Policing Keeps Houston Metro Secure," *Passenger Transport*, Vol. 53, No. 3, p. 7.
- Levine, N. and M. Wachs, "Bus Crime in Los Angeles, I: Measuring the Incidence, II: Victims and Public Impact," *Transportation Research*, 20A, No. 4, (July 1986) pp. 27396.
- Levine, N. and M. Wachs, "Tracking Crime on Buses," *TRNews 127*, (November-December 1986) Transportation Research Board, Washington, D.C., pp. 18-21.
- Levine, N., M. Wachs and E. Shirazi, "Crime at Bus Stops: A Study of Environmental Factors," *Journal of Architectural and Planning Research*, Vol.3, No. 4 (November 1986) pp. 339-361.
- Lynch, G. and S. Atkins, "The Influence of Personal Security Fears on Women's Travel Patterns," *Transportation*, Vol. 15, No. 3, (1988) pp. 257-77.
- McDonald, P., "Developing Patrol Tactics & Strategies For Transit Policing," *Transit Policing*, Vol. 2, No. 1, Summer/ Fall 1992.
- Marston, P.P. and L.A. Hoel, *The Use of Focus Group Interviews to Evaluate Bus Transit Security*, Report No. UVA/529685/CE93/102, University of Virginia, 1993.
- Maxwell and Porter, "Lessons Learned from Stinging the Taggers," *Transit Policing*, Vol. 2, No. 1, Summer/Fall 1992.
- "National Conference on Transit Security," Philadelphia, Pennsylvania, March 1995, *Report and Recommendations*.
- "NYC Subway Crime Lowest Since 1987," *Transit Policing*, Vol. 3, No. 2, Fall 1993.
- Obremski, "Workin' on the Railroad," *Security Management*, October 1994.
- O'Leary, "Transit Policing and the Media--Or Why Mother Teresa Was Wrong," *Transit Policing*, Vol. 3, No. 2, Fall 1993.
- Passenger Personal Security Report*, Metropolitan Transit Authority of Harris County, Texas, March 1992.
- Passenger Transport*, Washington, D.C., Jan. 16, 1995.

- Pearlstein, A. and M. Wachs, "Crime in Public Transit Systems: An Environmental Design Perspective," *Transportation*, Vol. 11, No. 3 (September 1982) pp. 277-297.
- "Personal Security as a Transport Issue: A State-of-the-Art Review," *Transport Reviews*, Vol. 10, No. 2, 1990 pp. 111--125.
- Richards, L.G. and L.A. Hoel, "Planning Procedures for Transit Station Security," *Traffic Quarterly*, July 1980.
- Richardson and Angone, "Chicago Police Department's Public Transportation Section: Facing the Mass Transit Challenge," *Transit Policing*, Vol. 2, No. 1, Summer/Fall 1992.
- Rumford, "Link Between Crime and Community Problems Explored In Transit Security Workshop," *Transit Policing*, Vol. 3, No. 2, Fall 1993.
- Scott D., "Graffiti Wipeout," *FBI Law Enforcement Bulletin*, Dec. 1989, Vol. 58, No. 12.
- Shellow, R., J.P. Romualdi, and E.W. Bartel, "Crime in Rapid Transit Systems: An Analysis and a Recommended Security and Surveillance System."
- Sherman, "Police Crackdowns," *Transit Policing*, Vol. 4, No. 2, Fall 1994.
- Sinha and Roemer, Personal Security in Buses and its Effects on Ridership in Milwaukee, in *Transportation Research Record 487*, TRB, National Research Council, Washington, D.C. 1974.
- Singh, "Forecasting Methods for Transit Policing," *Transit Policing*, Vol 4, No. 1, Spring 1994.
- Singh, "Application of Smoothing Methods to Forecast Crime for Transit Policing," *Transit Policing*, Vol. 4, No. 2, Fall 1994.
- Sullivan, J.P., "Transit Security: Lights, Cameras, Action," *Transit Connections*, June 1995.
- Southeast Michigan Council of Governments, *Public Safety Division, Crime and Security Measures on Public Transportation: A National Overview* (Detroit, Mich., Southeast Michigan Council of Governments, 1979).
- Southeast Michigan Council of Governments, *Public Safety Division, Crime and Security Measures on Public Transportation Systems: A National Assessment* (Detroit, Mich., Southeast Michigan Council of Governments, July 1981).
- Thrasher, E.J. and J.B. Schnell, Scope of Crime and Vandalism on Urban Transit Systems, in *Transportation Research Record 487*, TRB, National Research Council, Washington, D.C., 1974.
- Thrasher, E.J. and J.B. Schnell, Studies of Public Attitudes Toward Transit Crime and Vandalism, in *Transportation Research Record 487*, TRB, National Research Council, Washington, D.C. 1974.
- Thrasher, E.J. and J.B. Schnell, Summary Report on Vandalism and Passenger Security in the Transit Industry, in *Transportation Research Record 487*, TRB, National Research Council, Washington, D.C. 1974.
- Toronto Transit Commission, Metro Action Committee on Public Violence Against Women and Children (METRAC), Metropolitan Toronto Police Force, *Moving Forward Making Transit Safer for Women, A Joint Study of Security on the Rapid Transit System Relative to Sexual Assaults*, 1989.
- "Transit Security: Exploring New Concepts in Managing Social Problems Workshop," Oakland, California, September 16-18, 1992, *Report and Recommendations*.
- Zaza, R.N., 'Metro Transit Police: Protecting Mass Transit in Nation's Capital,' *Transit Policing*, Vol. 1, No. 1, Fall 1991.

GLOSSARY OF TERMS

BOARDINGS--The practice of having police or security officers ride for a distance in transit vehicles on troubled routes.

CRIME--Combination of three factors:

1. The desire of the perpetrator to commit the crime
2. The perpetrator's ability to carry out that desire
3. The opportunity presented by the victim.

CRIME PREVENTION--The anticipation, recognition, and appraisal of a crime and the initiation of some action to keep it from occurring.

DESIGN--Physical, social, management, and law enforcement directives that seek to influence or interact with the environment.

EYES AND EARS--Employment of non-police, non-security workers and/or citizens to observe and report crime, potential crime, and security breaches.

PHYSICAL ENVIRONMENT--Employees, patrons, and other system users and their structural and social surroundings.

RISK--Probability that a security incident will occur.

SECURITY POLICY--Statement of the expectations of the transit agency regarding the behavior of its personnel and the operation of its system in the prevention of security incidents.

SECURITY PROCEDURE--The steps or methods required by the transit agency to implement its security policies.

SYSTEM--A system contains four elements-people, equipment and facilities, procedures, and environment.

SYSTEM SECURITY--The use of operating and management principles to reduce the security vulnerabilities of a transit system to the lowest level practical.

SYSTEM SECURITY PROGRAM PLAN--The formal document that describes the planned security tasks required to meet the System Security requirements. It will outline organizational responsibilities, levels of commitment, methods of accomplishment, scheduling milestones, depth of effort, and integration with other design and management activities.

THREAT--Any real or potential condition that can result in a security incident.

VULNERABILITY--Any condition or act that endangers human life or property.

APPENDIX A

Survey

VIOLENCE PREVENTION AND CONTROL ON PUBLIC TRANSIT SYSTEMS

Agency Name: _____

Address: _____

Respondent Name: _____ Title: _____

Telephone No.: _____ Fax No.: _____

I. SYSTEM CHARACTERISTICS

1. Does this system operate: (Check One)
- a. Trains
 - b. Buses
 - c. Trains and Buses
2. How many passengers did the system carry in calendar year 1994? If actual data is not available, estimate if possible. Indicate whether the number provided is actual, estimated, or whether data is not available.

	<u>NUMBER</u>	<u>ACTUAL</u>	<u>ESTIMATED</u>	<u>DATA NOT AVAILABLE</u>
a. On Trains	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. On Buses	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
a. Total	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. How many persons does the system employ? If actual data is not available, estimate if possible. Indicate whether the number provided is actual, estimated, or whether data is not available.

	<u>NUMBER</u>	<u>ACTUAL</u>	<u>ESTIMATED</u>	<u>DATA NOT AVAILABLE</u>
a. Train Operators	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Bus Operators	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Station Workers (all types)	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Other	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. Does the system have a police department/security force?

- a. Yes
- b. No

If yes, proceed to question 5. If no, proceed to question 6.

5. How many members does the police department have? If actual data is not available, estimate if possible. Indicate whether the number provided is actual, estimated, or whether data is not available.

	<u>NUMBER</u>	<u>ACTUAL</u>	<u>ESTIMATED</u>	<u>DATA NOT AVAILABLE</u>
a. Full-time - Sworn	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Full-time - Non-Sworn	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Part-time- Sworn	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Part-time - Non-Sworn	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Total	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. How many hours does the system operate each day?

	<u>DAY</u>	<u>HOURS</u>
a.	Monday	From _____ To _____
b.	Tuesday	From _____ To _____
c.	Wednesday	From _____ To _____
d.	Thursday	From _____ To _____
e.	Friday	From _____ To _____
f.	Saturday	From _____ To _____
g.	Sunday	From _____ To _____

II. NATURE AND EXTENT OF VIOLENCE

7. During the calendar year 1994, how many of the following violent offenses occurred on your system? If actual data is not available, estimate if possible. Indicate whether the number provided is actual, estimated, or whether data is not available.

NOTES: "System" includes all vehicles, platforms, facilities, and property under your jurisdiction.

The number of offenses recorded, actual or estimated, should include those for which a formal action was taken, such as an arrest or citation, or formal record made, a report written, for example. Informal resolutions are countable (to be included) if a record was made.

	<u>NUMBER</u>	<u>ACTUAL</u>	<u>ESTIMATED</u>	<u>DATA NOT AVAILABLE</u>
a. Homicide	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Attempted Homicide	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Forcible Rape	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Attempted Forcible Rape	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Robbery	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Attempted Robbery	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Aggravated Battery	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Aggravated Assault	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Sexual Assault - Other	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Aggravated Sexual Assault - Other	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Battery - Simple	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. Assault - Simple	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m. Other	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TOTAL	_____			

<u>TYPE OF OFFENSE</u>	<u>NUMBER ACTUAL</u>	<u>NUMBER ESTIMATED</u>	<u>DATA NOT AVAILABLE</u>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>

8. During the calendar year 1994, how many of the following potentially violent, confrontational offenses occurred? If actual data is not available, estimate if possible. Indicate whether the number provided is actual, estimated, or whether the data is not available.

	<u>NUMBER</u>	<u>ACTUAL</u>	<u>ESTIMATED</u>	<u>DATA NOT AVAILABLE</u>
a. Harassment/Threat	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Public Drunkenness	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Narcotics Violations	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Purse Snatching	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Theft of Service	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Theft	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Disorderly Conduct	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Weapons Violations	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Other	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TOTAL	_____			

<u>TYPE OF OFFENSE</u>	<u>NUMBER ACTUAL</u>	<u>NUMBER ESTIMATED</u>	<u>DATA NOT AVAILABLE</u>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>

9. During 1994, how many violent offenses were committed against female passengers? (List up to 10 most frequently occurring offenses.)

<u>TYPE OF OFFENSE</u>	<u>NUMBER ACTUAL</u>	<u>NUMBER ESTIMATED</u>	<u>DATA NOT AVAILABLE</u>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>

<u>TYPE OF OFFENSE</u>	<u>NUMBER ACTUAL</u>	<u>NUMBER ESTIMATED</u>	<u>DATA NOT AVAILABLE</u>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>

10. During 1994, how many violent offenses were committed against male passengers? (List up to 10 most frequently occurring offenses.)

11. During 1994, how many violent offenses were committed against elderly passengers?(List up to 10 most frequently occurring offenses.)

12. During 1994, how many violent offenses were committed against disabled passengers? (List up to 10 most frequently occurring offenses.)

<u>TYPE OF OFFENSE</u>	<u>NUMBER ACTUAL</u>	<u>NUMBER ESTIMATED</u>	<u>DATA NOT AVAILABLE</u>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>

13. During 1994, how many violent offenses were committed against system workers? (List up to 10 most frequently occurring offenses.)

<u>TYPE OF OFFENSE</u>	<u>NUMBER ACTUAL</u>	<u>NUMBER ESTIMATED</u>	<u>DATA NOT AVAILABLE</u>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>

14. Does your offense data system: (Check One)

- a. Accurately record numbers of offenses
- b. Under-report numbers of offenses
- c. Can't answer/Unknown

15. Is the number of violent and confrontational incidents on your system: (Check One)

- a. Increasing
- b. Decreasing
- c. Remaining Stable
- d. Can't Answer/Unknown

16. Can you justify your answer to item 15 statistically? (Check One)

- a. Yes
- b. No

If yes, please provide statistical data if readily available.

III. CONSEQUENCES OF VIOLENCE

17. During the last full calendar year (1994) did: (Check Each Box)

	<u>DECLINE</u>	<u>INCREASE</u>	<u>CAN'T ANSWER</u>	<u>NUMBER</u>
a. Ridership	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
b. Offenses against workers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
c. Passenger complaints of violence or potential violence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
d. Passenger requests for increased protection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
e. Worker days lost due to violence-related incidents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
f. Violence-related legal actions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

NOTE: "legal action" includes any criminal or civil proceeding which your agency is involved in because of some violent act.

18. Can you attribute negative consequences, statistically or impressionistically, to levels or types of violence? (Check One)

- a. Yes
- b. No

Comment on answer if you wish to.

20. What types of strategies are being employed by non-uniformed police/security officers to prevent or control violence and confrontational incidents on your system?

Examples: Plain clothes and decoy details; verbal judo/transactional analysis language; non-verbal techniques/body language; escalation of control; restraining techniques.

Describe each strategy separately.

- _____

- _____

- _____

- _____

- _____

(Use back of page for continuation if necessary.)

22. What types of education/information strategies are being employed to prevent or control violence and confrontational incidents on your system?

Examples: Crime prevention literature and posters; crime prevention lectures; teen-oriented videos.

Describe each strategy separately.

- _____

- _____

- _____

- _____

- _____

(Use back of page for continuation, if necessary.)

24. What types of technological strategies are being employed to prevent or control violence?

Examples: Lighting; fencing; communication access systems; CCTV surveillance; taping passenger traffic; fully automated ticket purchasing; hot-line/emergency access to security/police.

Describe each strategy separately.

- _____

- _____

- _____

- _____

- _____

(Use back of page for continuation, if necessary.)

26. What other strategies are being employed to prevent violence and confrontational incidents on your system?

Examples: Customer surveys to assess problems and risks; crime analysis and problem solving programs; quality management teams.

Describe each strategy separately.

- _____

- _____

- _____

- _____

- _____

(Use back of page for continuation, if necessary.)

30. Do any of the following classes of personnel routinely receive violence prevention and control training?

	<u>YES</u>	<u>NO</u>	<u>CAN'T ANSWER</u>
a. Police/Security Workers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Non-Security Workers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If yes, for any class, please describe training, including hours and topic coverage:

VII. RESEARCH REQUIREMENTS

31. Is your system currently pursuing any policy or program innovation aimed at preventing or controlling violence and confrontational incidents? (Check One)

- a. Yes
- b. No
- c. Can't Answer

If yes, please describe the policy(ies) or innovation(s):

32. Are you aware of policy or program innovations being pursued by other transit systems or the research/development community? (Check One)

- a. Yes
- b. No
- c. Can't Answer

If yes, please identify the system, researcher, and nature of innovation:

APPENDIX B

SURVEY RESPONDENTS

Annapolis Department of Public Transportation, Maryland

Biloxi-Mississippi Coast Transportation Authority (Coast),
Gulfport, Mississippi
Bremerton-Kitsap Transit, Bremerton, Washington
Brownsville Urban System, City of Brownsville (BUS),
Texas

Central Oklahoma Transportation and Parking Authority,
Oklahoma
Champaign-Urbana Mass Transit District (MTD), Illinois
Charlotte Department of Transportation (CTS), North
Carolina
Cincinnati-Southwest Ohio Regional Transit Authority
(SORTA), Ohio
City of Tucson Mass Transit System (Sun Tran), Arizona
City of Jackson Transit System (JATRAN), Mississippi
Connecticut Transit Hartford-Conn DOT Contract Services
(CT Transit, Hartford Division), Connecticut

Duluth Transit Authority (DTA), Minnesota

Erie Metropolitan Transit Authority (EMTA), Pennsylvania

Grand Rapids Area Transit Authority (GRATA), Michigan
Greater Portland Transit District (METRO), Maine
Green Bay Transit (GBT), Wisconsin

Greensboro Transit Authority (GTA), North Carolina

Hillsborough Area Regional Transit Authority (HartLine),
Tampa, Florida
Honolulu Public Transit Authority, Hawaii

Lincoln Transportation System (Star TRAN), Nebraska

New Orleans-Regional Transit Authority (TRA), Louisiana
Niagra Frontier Transportation Authority, Buffalo, New
York

Phoenix Transit System, Arizona
Pueblo Transportation Company (CityBus), Colorado

Richland-Ben Franklin Transit, Richland, Washington
Rochester-Regional Transit Service, Inc. & Lift Line, Inc.
(RTS), New York

Santa Cruz Metropolitan Transit District (METRO),
California
Savannah-Chatham Area Transit Authority (CAT), Georgia
Sioux City Transit System, Iowa

Topeka Metropolitan Transit Authority, Kansas

THE TRANSPORTATION RESEARCH BOARD is a unit of the National Research Council, which serves the National Academy of Sciences and the National Academy of Engineering. It evolved in 1974 from the Highway Research Board, which was established in 1920. The TRB incorporates all former HRB activities and also performs additional functions under a broader scope involving all modes of transportation and the interactions of transportation with society. The Board's purpose is to stimulate research concerning the nature and performance of transportation systems, to disseminate information that the research produces, and to encourage the application of appropriate research findings. The Board's program is carried out by more than 270 committees, task forces, and panels composed of more than 3,300 administrators, engineers, social scientists, attorneys, educators, and others concerned with transportation; they serve without compensation. The program is supported by state transportation and highway departments, the modal administrations of the U.S. Department of Transportation, the Association of American Railroads, the National Highway Traffic Safety Administration, and other organizations and individuals interested in the development of transportation.

The National Academy of Sciences is a private, nonprofit, self-perpetuating society of distinguished scholars engaged in scientific and engineering research, dedicated to the furtherance of science and technology and to their use for the general welfare. Upon the authority of the charter granted to it by the Congress in 1863, the Academy has a mandate that requires it to advise the federal government on scientific and technical matters. Dr. Bruce Alberts is president of the National Academy of Sciences.

The National Academy of Engineering was established in 1964, under the charter of the National Academy of Sciences, as a parallel organization of outstanding engineers. It is autonomous in its administration and in the selection of its members, sharing with the National Academy of Sciences the responsibility for advising the federal government. The National Academy of Engineering also sponsors engineering programs aimed at meeting national needs, encourages education and research, and recognizes the superior achievements of engineers. Dr. Robert M. White is president of the National Academy of Engineering.

The Institute of Medicine was established in 1970 by the National Academy of Sciences to secure the services of eminent members of appropriate professions in the examination of policy matters pertaining to the health of the public. The Institute acts under the responsibility given to the National Academy of Sciences by its congressional charter to be an adviser to the federal government and, upon its own initiative, to identify issues of medical care, research, and education. Dr. Kenneth I. Shine is president of the Institute of Medicine.

The National Research Council was organized by the National Academy of Sciences in 1916 to associate the broad community of science and technology with the Academy's purposes of furthering knowledge and advising the federal government. Functioning in accordance with general policies determined by the Academy, the Council has become the principal operating agency of both the National Academy of Sciences and the National Academy of Engineering in providing services to the government, the public, and the scientific and engineering communities. The Council is administered jointly by both Academies and the Institute of Medicine. Dr. Bruce Alberts and Dr. Robert M. White are chairman and vice chairman, respectively, of the National Research Council.