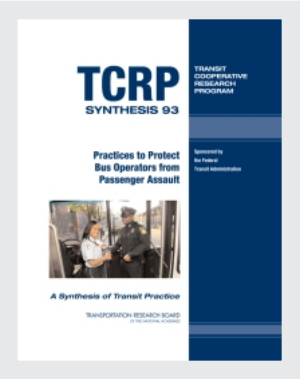

Practices to Protect Bus Operators from Passenger Assault

DETAILS

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TRANSIT COOPERATIVE RESEARCH PROGRAM

TCRP SYNTHESIS 93

Practices to Protect Bus Operators from Passenger Assault

A Synthesis of Transit Practice

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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 Transportation 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 TCRP includes a variety of transit research fields including planning, service configuration, equipment, facilities, operations, human resources, maintenance, policy, and administrative practices.

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Cover figure: Massachusetts Bay Transit Authority police officers interact daily with bus operators to ensure their security and safety. (*Courtesy:* Massachusetts Bay Transit Authority and Detective Bruce Dolloff.)

FOREWORD

Transit administrators, engineers, and researchers often face problems for which information already exists, either in documented form or as undocumented experience and practice. This information may be fragmented, scattered, and unevaluated. As a consequence, full knowledge of what has been learned about a problem may not be brought to bear on its solution. Costly research findings may go unused, valuable experience may be overlooked, and due consideration may not be given to recommended practices for solving or alleviating the problem.

There is information on nearly every subject of concern to the transit industry. Much of it derives from research or from the work of practitioners faced with problems in their day-to-day work. To provide a systematic means for assembling and evaluating such useful information and to make it available to the entire transit community, the Transit Cooperative Research Program Oversight and Project Selection (TOPS) Committee authorized the Transportation Research Board to undertake a continuing study. This study, TCRP Project J-7, "Synthesis of Information Related to Transit Problems," searches out and synthesizes useful knowledge from all available sources and prepares concise, documented reports on specific topics. Reports from this endeavor constitute a TCRP report series, *Synthesis of Transit Practice*.

This synthesis series reports on current knowledge and practice, in a compact format, without the detailed directions usually found in handbooks or design manuals. Each report in the series provides a compendium of the best knowledge available on those measures found to be the most successful in resolving specific problems.

PREFACE

By Donna L. Vlasak
Senior Program Officer
Transportation Research Board

The purpose of this synthesis was to document the state of the practice and report on the practices and policies implemented by transit agencies to deter and mitigate assaults on bus operators. The report incorporates workplace violence issues and up-to-date information on bus operator security measures and practices.

The report offers a literature summary of relevant materials; results of a survey distributed to transit agencies in different regions in the United States and Canada; and the results of interviews conducted with key agency personnel. The results of these telephone interviews are presented as profiles with increased coverage of specific security methods and practices used by selected transit agencies.

Survey responses from 66 of 88 transit agencies in the United States and Canada, a 75% response rate, are discussed. Twenty-two transit agency profiles offer increased coverage of special security methods or practices of operator security measures used by selected transit agencies, and an appendix of supplemental information contains information about state laws.

Yuko J. Nakanishi, Nakanishi Research and Consulting, LLC, Rego Park, New York, collected and synthesized the information and wrote the report, under the guidance of a panel of experts in the subject area. The members of the topic panel are acknowledged on the preceding page. This synthesis is an immediately useful document that records the practices that were acceptable within the limitations of the knowledge available at the time of its preparation. As progress in research and practice continues, new knowledge will be added to that now at hand.

CONTENTS

Note: Many of the photographs, figures, and tables in this report have been converted from color to grayscale for printing. The electronic version of the report (posted on the Web at www.trb.org) retains the color versions.

PRACTICES TO PROTECT BUS OPERATORS FROM PASSENGER ASSAULT

SUMMARY

This synthesis report addresses the important issue of protecting bus operators from passenger assault. The key elements of the synthesis study included a survey of transit agencies with a 75% (66/88) response rate, profiles of security practices, and a literature summary.

Although serious crime in transit systems is relatively rare and constitutes a small percentage of overall crime, even one serious incident of violence can make media headlines and diminish the perception of security, especially if the crime is against the transit operator.

Assaults on operators have caused worker absence, productivity issues, and increased levels of stress for the victim and for coworkers. Minor incidents can be precursors to more serious violence against operators. Therefore, it is important that transit agencies address the issue of operator assaults before they become problematic.

"Assault" of a bus operator is defined broadly in this synthesis and includes acts of aggression that may or may not cause physical injury to the operator. Assault is defined as: Overt physical and verbal acts by a passenger that interfere with the mission of a bus operator—to complete his or her scheduled run safely—and that adversely affect the safety of the operator and customers.

Bus operator protection measures ranging from policing, personnel, and training to technology, information management, policy, and legislation were identified and explored in this synthesis study. Transit agencies face different challenges and problems, along with different sets of institutional, legal, and budgetary constraints; these issues typically are considered when agencies select and implement security measures. Some measures are more appropriate for preventing certain types of attacks. For instance, conflict mitigation training is appropriate for reducing assaults emanating from disputes, whereas barriers may be more useful in protecting the operator against spontaneous attacks. Some measures, such as emergency communications and vehicle location technologies, focus on improving incident response. Video surveillance is useful for deterrence as well as for identification and prosecution of assailants. Audio surveillance is especially useful in addressing verbal attacks and threats. Agencies have helped to enact legislation on enhanced penalties for operator assault and have established agency policies such as suspending service for violating transit agency rules. The characteristics of assailants also influence the protection method. If most are teenagers, a school outreach program may mitigate assaults. If gang-related assaults are increasing, close cooperation with local law enforcement could be key.

The synthesis survey requested respondents to describe their bus system and security characteristics; their policies on fare and rules enforcement; characteristics of bus operator assaults; and their assault prevention and mitigation practices, including training, hiring, use of officers and patrols, technology, and self-defense tools and training. The survey was distributed to 88 multimodal and bus-only transit agencies representing large, medium, and small U.S. agencies; the survey was also sent to several Canadian agencies and to one Chinese bus rapid transit system. Survey respondents represented large, medium, and small agencies and were geographically diverse. In general, the primary security provider for the respondents was

local, county, or state or provincial police; more than a third used a combination of security providers. Respondents that indicated having transit police departments were generally large or midsize agencies. Practically all agencies have a standard operating procedure in place for response to bus operator assaults. About half of the survey respondents stated that their local laws provided more severe punishments for assaults against bus operators than for some other assaults.

The following are highlights of the survey findings:

- *Assault characteristics*—The time period when bus operator assaults typically occur was evening/late night/early morning, followed by the afternoon peak period, and by school dismissal times. The assault type considered to be most problematic for agencies was verbal threats, intimidation, or harassment. The next most problematic assault type was spitting. All large agencies reported that they consider spitting to be problematic. Some agencies reported that assaults involving projectiles thrown at the bus and inside the bus were a concern. Because aggravated assaults that result in physical injuries can be preceded by minor assaults, even minor incidents need to be reported and closely monitored. Primary factors contributing to bus operator assaults were fare enforcement and intoxicated passengers or drug users, followed by rule enforcement other than fare enforcement, school/youth-related violence, and individuals with mental illness. Larger and midsize respondents were more likely to indicate that fare enforcement and intoxicated persons or drug users were contributing factors to operator assaults.
- *Fare enforcement*—Fare enforcement issues are important because a high percentage of assaults are instigated by fare issues, such as fare evasion, short pay, transfer disputes, questionable fare media, or the lack of valid ID for special fares. Agencies reported a variety of fare enforcement policies, ranging from conflict avoidance to zero tolerance. Agencies that practice a zero-tolerance approach instruct operators to enforce fare payment and codes of conduct strictly, in the belief that making exceptions can confuse and anger passengers. Agencies that instruct their operators to use their judgment on a case-by-case basis believe that the operator is the best judge of the situation.
- *Other rules enforcement*—Most agencies typically train their bus operators to enforce strictly those rules that coincide with state or local laws, such as weapons, narcotics, and liquor laws, whereas agency policies differ on less serious rules, such as no littering or no eating on the bus. As with fare payment policies, agency policies run the spectrum from conflict avoidance to zero tolerance.
- *Policing/security*—Many agencies use some type of policing and patrols on their buses, although they are limited by staffing and budgetary constraints. Visibility of officers through onboard or vehicle patrols was indicated as one of the most effective measures to deter assaults. Some agencies use plainclothes officers to target offenders on problematic routes.
- *Operator training*—Agency managers noted that a significant number of assaults may have been instigated by the behavior or action of the bus operator, and may have been prevented by the operator. Therefore, bus operator training is considered a very important measure: *all* responding agencies indicated that they provide customer relations training, and the majority stated that they provide conflict mitigation and diversity training. Self-defense training was provided by some agencies. It is interesting to note that the majority of agencies that provide self-defense training to their operators are located in states with more permissive (“shall-issue”) concealed firearms carry laws.
- *Onboard technologies*—Onboard technology measures included radio or phone communications, video surveillance, emergency silent alarms and panic buttons, and panic buttons connected with a headsign. Many also had automatic vehicle location (AVL) systems to track the location of their bus fleet, and some had audio surveillance. A few systems had real-time video streaming capability, with a few more planning to install this functionality. Several agencies reported using or testing operator barriers or partial enclosures on buses. None reported using full enclosures or compartments.

- *Workplace issues*—Issues experienced by bus operators or bus operations as a result of violence against bus operators included injury-related claims and increased anxiety and stress. Absenteeism, diminished productivity, and union grievances were also reported.
- *Effective measures*—Technology measures were mentioned most often as the most effective measures. Next most frequently mentioned were policing and personnel measures, followed closely by policy measures. The final category was training and human resource measures. In terms of specific measures, video surveillance, bus operator training, and officer presence and patrols were cited most often by the respondents. It can be noted that agencies do not rely on one or even a few of these measures but on combinations of these measures to protect their operators.
- *Additional comments*—Survey respondents emphasized the importance of operator behavior, attitude, and words, as well as the importance of customer service in preventing operator assault. One respondent noted that passenger disregard for agency rules "mirrors a larger problem of 'incivility' in society and disrespect for authority." The importance of supervisor involvement in resolving disputes was also noted.

Profiles of measures to protect bus operators were developed. Various transit agencies were contacted to obtain information on the following categories of operator protection measures:

- Technology and information management (chapter four);
- Personnel, policing, and training (chapter five); and
- Agency policies and legislation (chapter six).

Protective measure categories covered in chapter four are technologies including video surveillance, audio surveillance, AVL, Transit Operations Decision Support System (TODSS), emergency communications, DNA kits, and barriers separating the operator from passengers, as well as information management. Video surveillance has been in use by some agencies for years, and it is still considered one of the most effective measures against operator assault. Video surveillance is also viewed by agencies as a versatile and cost-effective solution for numerous other issues, including general crime, accident, and workers compensation investigations. Newer digital systems offer improved video quality, allow wireless uploads, and are easier to integrate with other systems, increasing their versatility.

- *Audio surveillance*—Verbal assaults can be precursors to physical assaults and can contribute to increased stress. Audio surveillance has been useful for agencies seeking to address verbal assaults against operators; it also facilitates the resolution of verbal disputes between the operator and passenger and provides a recording of verbal exchanges leading up to an assault. Audio surveillance has been implemented in conjunction with existing video equipment, although not as many agencies are using audio as video.
- *Reminders about video/audio surveillance*—Although agencies post signage to inform customers about video/audio surveillance, some passengers may not be aware of or have read the signs. Two agencies noted that their bus operators remind unruly passengers about the surveillance on the buses; these reminders have prevented disputes or conflicts from escalating into operator assaults.
- *Barriers*—Several agencies are using or testing operator barriers or partial enclosures on buses to deter or mitigate assaults. None reported using full enclosures or compartments. Miami–Dade Transit, one of the first two adopters of the security measure, reports that barriers installed in its bus fleet have been very effective in preventing operator assault, even though the barrier provides only partial protection. Agencies in the United States and Canada that have recently installed or are currently testing barriers have also been included in the profile study. These agencies have raised concerns related to customer service, operator comfort issues, glare and reflection, and noise.
- *Information management*—Crime management and analysis can help law enforcement identify trends and predict crime. For example, one of the larger transit systems in

Canada, Edmonton Transit System, uses a model incorporating hot spots and annual trends and patterns to forecast crime, and issues a daily crime forecast to its officers. Performance measures integrated into the system's adapted CompStat process are used to motivate officers and security personnel to perform desired security actions. These strategies, along with supplemental technologies (computer-aided dispatch or CAD system, records management system and security portal, trespasser tracker, scheduling software), have resulted in a 52% decrease in calls for service.

- *Transit Operations Decision Support System* (*TODSS*) improves the functionality of AVL and CAD systems. Although it is not currently widely utilized by agencies, it has the potential to address information overload experienced by dispatchers by managing and prioritizing data emanating from these systems.
- *DNA kits*—In London, bus operators are provided with DNA kits to collect samples when they are spat upon. The samples are compared against the U.K. national DNA database to identify and prosecute offenders. As in London, spitting is one of the most problematic assault types for U.S. and Canadian agencies, especially for larger agencies. Further research would be needed to determine how feasible this measure would be, particularly in terms of public acceptance and cost.

Chapter five covers personnel, policing, and training. With regard to *personnel,* the excellent bus operator selection systems developed by APTA and the Canadian Urban Transit Association (CUTA) and the importance of selecting an individual with appropriate experience and attributes are discussed. *Policing* techniques and practices and how they are being used by agencies are presented. Employing uniformed officers is considered a very effective measure against operator assault and other crimes. *Self-defense training and tools* provide bus operators with a protection measure that is available to the operator immediately during an attack. No matter how fast responders arrive on the scene, even a few minutes can be enough to cause significant injury to the operator. Agencies are concerned about liability issues and have also reported reluctance by some operators to carry self-defense tools; in states with more permissive weapons-carry laws and easier gun-acquisition procedures, operators may be more willing to carry self-defense tools to assure their security. Houston METRO is the only U.S. agency, as of the date of this report, that issues a self-defense tool—pepper gel—to its bus operators. One agency, Metro Transit in Minneapolis, offers pepper spray training to its operators who request it. Both agencies operate in states (Texas and Minnesota) that have permissive concealed firearms carry laws. Oleoresin capsicum, the main ingredient in pepper spray and pepper gel, irritates the skin, eyes, and upper respiratory tract. It is considered generally safer than other nonlethal tools and effective in subduing violent individuals. Questions, have been raised, however, regarding its effectiveness on individuals under the influence of narcotics and alcohol, and few scientific safety studies have been performed. Permitted concentrations and allowable use vary by state in the United States. Its use is not permitted in Canada. Agencies are more willing to provide self-defense training to their operators, although liability concerns still exist. Self-defense from a seated position, taught by Pierce Transit (Lakewood, Washington) and Calgary Transit (Alberta, Canada), and self-defense training provided by Transit Authority of River City (TARC, River City, Kentucky) to their bus operators, are included in the profiles for this chapter. Note that both Washington and Kentucky are permissive concealed-carry states and that Kentucky requires no license to open carry. Washington is considered an open carry friendly state; residents are permitted to carry firearms in plain sight in public without a license. *Customer service training* and *behavioral assessment training* profiles are also included in this chapter.

Chapter six covers legislation and agency policies. The primary legislation pursued by transit agencies has been increased penalties for operator assault. Almost half of U.S. states now have enhanced penalties for operator assault; transit agencies have worked with the Amalgamated Transit Union to support passage of this legislation to protect operators from passenger assault. Currently, no Canadian province has passed this type of legislation. Some transit agencies also have sought to change state or municipal laws to establish suspension-

of-service policies that would exclude rules violators from their transit system. Workplace violence policies are required under state and federal laws, and transit agencies usually establish workplace violence standards at least as stringent as Occupational Safety and Health Administration standards. Effective policies are explicit about reporting and incident handling, response, and follow-through responsibilities.

Fare issues are the source of many operator assaults by passengers, and fare payment policies can prevent payment from becoming an issue. *Off-board fare payment* eliminates the need for the operator to interact with passengers about fare payment and is offered by some bus rapid transit (BRT) systems. The MAX line in Las Vegas, a BRT system with off-board fare payment, reports a much lower operator assault rate for its BRT system than for regular bus service. *Fare-free systems* would be expected to have lower assault rates as well; however, anecdotal evidence indicates that service problems may be caused by overcrowding and may lead to a number of incidents. TCRP synthesis studies currently under way concerning off-board fare payment systems and fare-free systems may shed more light on these issues.

School and community outreach is a longer-term and indirect method of preventing operator assault. In particular, the direct effect of school outreach programs on operator assault is difficult to ascertain and may take years to realize. However, agencies that perform school outreach do so in the belief that familiarizing students with the public transportation system and bus operators will lessen the likelihood that students will at some point assault an operator or commit other crimes on their systems. Most programs target preteens or teenagers. Greater Cleveland Regional Transportation Authority, San Antonio VIA, and Edmonton Transit System have unique school outreach programs that are designed to accommodate very young children; VIA even has a program for pre-kindergarten children. Community outreach programs educate and familiarize the public with their transit agencies and workers, including bus operators; address areas of concern; and initiate or support community activities. These efforts typically enhance the agencies' public image, boost ridership, and strengthen their relationship with their ridership, diminishing the likelihood of operator assault. Rochester Genesee Regional Transportation Authority created a community foundation to provide financial assistance for transportation to youth-oriented groups or organizations and the Honor Foundation to help individuals with disabilities pay for their paratransit service if they are unable to do so on their own. These foundations are the first of their kind for U.S. transit agencies. Edmonton Transit System is noteworthy in regard to the number of community activities in which it participates or has initiated—an annual community fair, Donate-a-Ride program providing Edmonton's social services clients with free rides, Stuff-a-Bus campaign to collect food donations for Edmonton's food bank, a Read 'n Ride initiative to promote adult literacy, and a musical band that has also been designated the official band of the city of Edmonton.

Remaining seated policy—During some disputes, operators have challenged passengers by standing up or pursuing them, resulting in assaults. Agencies that have instituted the policy that operators remain seated while operating the bus have done so to mitigate these situations.

The following items were identified during the synthesis study as potential topics for further research:

Barriers—Barriers are new to many agencies in the United States and Canada. Reviews from agencies and operators testing the barriers have included concerns about glare and reflection, operator discomfort and claustrophobia, and customer service difficulties. Further research into barrier design can address these issues.

Behavioral assessments—A few agencies have indicated that they are providing behavioral assessment training to their bus operators to identify suspicious behavior and activity. Liability issues and questions about the effectiveness of this technique in other

transportation security uses have been raised. More research may be indicated to determine its effectiveness in identifying criminals and preventing crime.

Operator perspective—More research on the perceptions of security measures and policies from the operator perspective would assist agencies in developing measures and policies amenable to the operator.

Self-defense tools—More research into less-than-lethal tools appropriate for bus operators would help agencies. Effectiveness of self-defense tools against assailants, safety of the tools for the operator and passengers, and safety for the assailant in the bus environment are major concerns of agencies.

Video content analysis—Researchers are developing behavioral recognition algorithms that are being tested and used in subway and rail settings. Although further research and development of these algorithms is needed for their use in buses, they have the potential to recognize and even predict violent behavior and provide immediate alerts to the command center regarding dangerous situations. When an alert is received, the police or dispatcher may then communicate directly with the potential assailants.

Workplace violence data—The National Transit Database does not capture the true extent of workplace violence. This database does not accommodate the reporting of minor assaults that do not result in an arrest. Although an assault such as spitting or verbal insults may not cause physical harm to the operator, it can cause significant emotional distress. Research into an expanded database can help agencies identify emerging trends, incident types, perpetrators, and dangerous individuals and provide agencies with information to forecast violence against operators and other employees.

CHAPTER ONE

INTRODUCTION

BACKGROUND

Although serious crime within transit systems is relatively rare and constitutes a small percentage of overall crime, even one serious incident of violence can make media headlines and diminish the perception of security, especially if the crime is against the transit operator. Less serious assaults against bus operators are much more frequent (*1*). Even seemingly minor assaults, such as spitting and verbal threats, can cause psychological trauma and affect the work force. About 1,100 bus transit systems in the United States employed 195,181 workers and provided 5.57 billion passenger trips in 2008 (*2*). Violence against operators creates a stressful work environment for victims and their coworkers, making it more challenging for them to serve their customers. Transit agencies report lost productivity, increased absenteeism, and workers' compensation claims as a result of assaults against their bus operators.

Transit workers are at higher risk for violence than are workers in many other occupations. According to the Bureau of Labor Statistics and the National Institute for Occupational Safety and Health, there is an increased risk of workplace violence for workers who have direct contact with the public, have mobile workplaces or deliver services, work in community settings, deliver passengers, handle money, and work in small numbers (*3, 4*).

When a passenger assaults a bus operator while the operator is driving the vehicle, other passengers, along with other drivers and pedestrians, are placed at risk. In California, Omnitrans bus operator Lawrence Kester was stabbed on May 7, 2010, while operating a bus. After Kester was attacked, the bus veered off the road and crashed into a tree. The operator, a 15-year veteran of Omnitrans, died, leaving behind a wife and eight children. A 33-year-old man was charged with his murder. The agency made grief counselors available to Kester's family and his coworkers (*5*). Some assaults, such as this one, occur out of the blue, and there was probably nothing the operator could have done differently to prevent this attack.

Other assaults are preceded by disputes, often fare-related. On December 3, 2009, a veteran Edmonton Transit bus operator, Thomas Bregg, was severely injured in an assault during the morning peak hour. A man who boarded the 10 Clareview bus in northeast Edmonton began arguing about the fare and then attacked the operator, causing severe head and eye injuries that required surgery. The assailant was charged with attempted murder and aggravated assault. This incident spurred the Edmonton Transit System to take additional initiatives to address bus operator assaults (*6*). NYC Transit bus operator Edwin Thomas, 46, was attacked and killed on December 1, 2008, at a B46 bus stop on Malcolm X Boulevard in Brooklyn, N.Y. A paroled felon, Horace Moore, had used an invalid Metrocard and subsequently asked for a transfer at Gates Avenue. When operator Thomas refused, Moore punched him twice in the head and exited. Moore then returned and stabbed Thomas repeatedly with a knife. Thomas, a 7-year veteran of NYCT and the father of two teenage children, was pronounced dead at 1:11 p.m., less than 45 minutes after the attack had taken place (*7, 8*).

There is a consensus among those in the transit community that violence against bus operators is a continuing and serious problem, and more needs to be done to prevent it.

Bus operators are especially vulnerable because they interact with the public on a daily basis. They make use of a complex skill set, which includes communications and problem-solving skills, and need the right temperament to succeed at their jobs. Bus operators have been the victims of assaults by passengers for decades. However, there have been positive changes that have decreased the number of assaults over the years. In the 1960s, exact-fare policies were implemented by U.S. transit systems, and operators no longer had to carry change. The Automated Fare Collection systems were installed in the 1990s and helped mitigate fare-related disputes, although transfer issues persist. Also, the notion that the bus operator is the "enforcer" of fare payment and other rules has been changing. In the past decade, in response to the terrorist attacks of September 11, 2001, extensive investments in counterterrorism efforts have been made by federal and local agencies. Some of these investments are also useful in protecting bus operators against passenger assault. To optimize limited resources, Homeland Security Presidential Directive 8 on National Preparedness required the establishment of an all-hazards preparedness goal. All-hazards preparedness for transit agencies is defined as integrated planning and capability building for safety, security, and emergency management to optimize and continuously improve the use of resources and the management of risks from hazards, threats, vulnerabilities, and adverse events or incidents (*9*). Using the all-hazards approach to risk management, transit agencies have been seeking to leverage homeland

security grants and stimulus monies to implement protective measures for bus operators.

Bus Operator Protection Measures

A wide range of methods to protect bus operators includes technology, policing, training, information management, policies, and outreach. Methods can be direct and preventative or indirect and longer-term. Others are primarily for incident response, offender identification, and prosecution. School outreach programs, especially those directed at younger children, are indirect and longer-term. Although most methods have deterrent capability, few are physically preventative. Some assaults are entirely unprovoked and are likely to be caused by individuals with mental illness or alcohol or drug problems, or by youths or gangs. The bus operator may be a stellar, veteran employee doing his or her job perfectly and still be attacked out of the blue. Physically preventative methods, such as the barrier and self-defense tools and training, may be the only methods that can deflect these types of attacks. The barrier that separates the operator from passengers is one of the few measures designed to prevent an assailant from physically accessing the operator. Self-defense training can prevent injury to the operator by teaching the operator techniques to defend himself or herself; the physical contact required for self-defense does pose a risk of injury to the operator. Self-defense tools are another preventative measure, may be used at a distance, and do not require physical contact with the assailant. Although these measures are primarily for operator protection, most other measures protect the passengers as well as the operator. Self-defense tools and training require the operator's active participation in the training—if the operator has not undergone training on the appropriate use of the self-defense tool or self-defense techniques, both the agency and the operator could face liability for use of excessive force. Agencies in states that have weak firearm carry laws may be more amenable to issuing self-defense tools and providing self-defense training.

Carry laws for concealed and open carry differ by state and can also vary by jurisdiction within a state. These laws influence the operator's perception of his or her security. In states or jurisdictions with lenient firearms laws, greater proportions of households own firearms and there is greater likelihood that any resident will carry them on their person and onto a transit vehicle. Carry laws pertaining to *concealed firearms* are categorized into the following groups:

- "No-issue" states do not allow any private citizen to carry a concealed firearm.
- "May-issue" states may issue permits for concealed firearms, partially at the discretion of local authorities.
- "Shall-issue" states require a permit to carry a concealed firearm, but the granting authority must issue a permit when minimum criteria are met, making the acquisition of a permit relatively easy.
- "Unrestricted" states allow residents to carry a concealed firearm without a permit.

Only three states are "unrestricted"—Alaska, Vermont, and Arizona. "No-issue" states are Hawaii, Illinois, New Jersey, and Wisconsin, along with the District of Columbia. Although Hawaii and New Jersey are technically "may-issue," they are "no-issue" in practice. Other "may-issue" states include California, Delaware, Maryland, Massachusetts, New York, and Rhode Island. In some of these states, county authorities have discretion and carry laws can vary greatly within the state. For example, in New York state, New York City is "no-issue" in practice, whereas upstate areas practice "shall-issue" permit-granting policies. The remainder of the state is "shall-issue" (*10*).

With regard to *open carry* or the ability of a private citizen to openly carry a firearm in public, states and jurisdictions also have varying levels of permissiveness. States may be categorized into the following groups:

- Open carry state—Open carry is allowed without a license on foot and inside vehicles. Open carry states include Alaska, Arizona, Idaho, Kentucky, Montana, Nevada, New Mexico, North Carolina, North Dakota, Vermont, Virginia, and Wyoming.
- Open carry friendly state—Open carry is allowed without a license but not inside a vehicle. Open carry friendly states include Alabama, Colorado, Kansas, Louisiana, Maine, Michigan, Missouri, Nebraska, New Hampshire, Ohio, Oregon, Pennsylvania, Washington, West Virginia, and Wisconsin.
- Licensed open carry state—Open carry is allowed with a license on foot and inside vehicles. Licensed open carry states include Connecticut, Georgia, Indiana, Iowa, Maryland, Massachusetts, Mississippi, Minnesota, New Jersey, Rhode Island, Tennessee, and Utah.
- Nonpermissive open carry state—Open carry is highly restricted or banned. Nonpermissive open carry states include Arkansas, Florida, Illinois, New York, Oklahoma, South Carolina, and Texas.
- Rural open carry state—Open carry is allowed in nonincorporated areas. California is the only rural open carry state (*11*).

Agencies experiencing assaults on operators owing to fare disputes, rules violations, and customer service issues may consider refresher training for operators, customer service improvements, or changes in agency policy and supervision role. For verbal assaults, audio surveillance may help determine the nature of the incidents and what may be done to prevent them, and in developing operator training in verbal techniques such as verbal judo. Also, a good operator selection practice can help agencies identify individuals who are resilient to the many stresses bus operators face on the job.

The decision-making process on which measures and policies to deploy is based on many factors, including purpose, effectiveness, cost, feasibility, liability issues, and oper-

ator and customer perspectives. The institutional and legal milieus in which the agency operates influence the security methods most relevant for its transit system. The ability of a measure to address other crimes, such as crimes against passengers, vandalism, safety, and accident investigations, is a significant benefit for the agency. Also, agencies implement multiple methods simultaneously, and some methods, such as community and school outreach, are less direct and require time for their effects to become manifest. Other variables that will affect effectiveness may or may not be under the direct control of the agency. Customer service, which can have a significant effect on the likelihood of passenger assaults against operators, is in the direct control of the agency. However, the general crime rate and proportion of youths in the system are exogenous variables. Hence, it may be difficult for agencies to determine the effectiveness of a single policy or measure.

Definition of Assault

Transit agencies have differing definitions of operator "assault." A broad definition is used in this report. Assaults are defined in this synthesis as follows:

> Overt physical and verbal acts by a passenger that interfere with the mission of a bus operator—which is to complete his or her scheduled run safely—and that adversely affect the safety of the operator and customers.

This definition includes acts of aggression that may or may not result in injury to the operator, and is somewhat broader than the definitions used by the FBI Uniform Crime Reporting Program. The Uniform Crime Reporting categories related to the definition of "assault" used in this synthesis are aggravated assault, simple assault, robbery, rape, and homicide. Aggravated assault, homicide, robbery, and rape are Part I offenses, which are more serious than Part II offenses. Aggravated assault is defined as "an unlawful attack by one person upon another for the purpose of inflicting severe or aggravated bodily injury. This type of assault usually is accompanied by the use of a weapon or by means likely to produce death or great bodily harm" (*12*). The weapon may be a firearm, knife or cutting instrument, other dangerous weapon, or parts of the body such as hands, fists, or feet. Simple assault is defined as:

> . . . an unlawful physical attack by one person upon another where neither the offender displays a weapon, nor the victim suffers obvious severe or aggravated bodily injury involving apparent broken bones, loss of teeth, possible internal injury, severe laceration, or loss of consciousness. To unlawfully place another person in reasonable fear of bodily harm through the use of threatening words and/or other conduct, but without displaying a weapon or subjecting the victim to actual physical attack (e.g., intimidation)" (*13*).

Section 265(1) of the Criminal Code of Canada states that a person commits an assault when (*a*) without the *consent* of another person, they apply force intentionally to that person, directly or indirectly or (*b*) they attempt or threaten, by act or gesture, to apply force to another person, if they have, or cause that other person to believe upon reasonable grounds that they have, *present ability* to effect their purpose.

The National Transit Database follows the Uniform Crime Reporting definitions and guidelines and requires all Part I and Part II assaults that result in an arrest to be reported in the Safety & Security 40 and 50 summary reports. Part II assaults not resulting in an arrest are not reportable to the National Transit Database.

Recent Incidents

The following incidents that have recently occurred on U.S. and Canadian transit systems highlight the need for increased protection of bus operators.

- On March 8, 2010, on International Women's Day, a Maple Ridge Coast Mountain Bus Company female bus operator was gripped by the neck by a disgruntled passenger and dragged from her seat. Passengers quickly summoned help (*14*).
- On September 1, 2009, at 1:15 a.m., a 15-year-old drunken teen punched a Coast Mountain Bus Company operator in the right eye so severely that he lost control of the bus, which started weaving in traffic. The punch broke the operator's glasses and the orbital bone in his right eye (*15*).
- On June 4, 2009, 17-year-old Darrion Scott boarded a New Orleans Regional Transit Authority bus with her baby and was repeatedly asked to fold her stroller. She not only refused, but poured the contents of her baby's milk bottle on Hanella Johnson, an RTA operator for 18 years, before stabbing her. Luckily, the operator survived (*16*).

Many assaults are caused by fare disputes. The following examples highlight the importance of agency policies and operator training inasmuch as many assaults are preceded by interactions and disputes between the operator and patron:

- On March 23, 2010, at 3:10 p.m., a Chicago Transit Authority operator was attacked with a blunt object and injured on a bus after a fare dispute. The operator was taken to Mount Sinai Hospital in serious condition (*17*).
- In Edmonton, Canada, on January 26, 2010, a female passenger demanded a transfer even though she had not paid. The passenger then hit the operator, who was also female, twice. The operator, afraid for her safety, gave the passenger a transfer and politely asked her to sit down (*18*).
- In January 2010, in Minneapolis, a male passenger assaulted a female bus operator after a passenger inserted the fare card incorrectly. As the operator was explaining what had happened, the passenger began verbally attacking the operator, and she asked him to exit the bus. He punched her in the stomach, and the operator returned the hit, which led to additional punches (*19*).

- On May 15, 2008, a Milwaukee County teenager assaulted a bus operator whom he mistakenly believed was the operator who had previously expelled him from a bus for displaying a fake pass. After attacking the operator, the teen took control of the bus and crashed it into a tree. The teen was a 17-year-old former Milwaukee public school student. His identification and capture was facilitated by footage from a video surveillance system (*20*).
- On December 27, 2007, a NJ Transit bus operator was injured in Newark by a cane-wielding passenger after a fare dispute escalated into a physical fight. The passenger caused serious trauma to the operator's left eye and was charged with aggravated assault (*21*).
- A rough ride, whether or not the operator was responsible, can also instigate assaults. On December 22, 2006, in Dorchester, Massachusetts, an MBTA bus operator slammed on his brakes after being cut off. One of the passengers became upset and initiated a fistfight with the operator, who had to be treated at a hospital. The passenger was taken into custody (*22*).

PROJECT OBJECTIVES

The primary objectives of this synthesis study were to document the state of the practice and report on the practices and policies implemented by transit agencies to deter and mitigate passenger assaults of bus operators. This report incorporates workplace violence issues, up-to-date information on bus operator security measures and practices, and other related issues.

Relevant resources for the synthesis project were reviewed, and the contractor team participated in a conference call to obtain feedback on the project objectives, survey, and desired outcomes of the project. This information led to the development of a technical approach to the project. A project timeline was created based on the technical approach, specific tasks needed to complete the project, and the deadlines provided by TRB.

Issues mentioned but not explored extensively in the synthesis were the impact of fare-free systems and off-board fare payment systems. Synthesis projects on these topics began in the fall of 2010.

TECHNICAL APPROACH TO PROJECT

The objectives of the project were met by performing the following tasks:

- A literature summary of relevant materials was conducted.
- A survey was developed and distributed to 88 large and small transit agencies in various geographic regions of the United States and Canada, and one system in China.
- Profile studies on specific security practices and measures were conducted.

Literature Summary

A literature summary of relevant materials on workplace violence, operator assault, and transit security measures was performed by consulting various sources. International studies were also reviewed.

Survey

The objective of the survey was to obtain information about bus system and security characteristics; agency policies on fare and rules enforcement; characteristics of bus operator assaults; and their assault prevention and mitigation practices, including training, hiring, use of policing, technology, and self-defense tools and training. The draft survey instrument was developed, pilot-tested, and finalized on the basis of panel comments and input. The survey was distributed electronically or by mail to 88 multimodal and bus-only transit agencies. Survey recipients included the 50 largest U.S. transit agencies operating bus services as well as randomly selected agencies representing medium and small agencies. Several Canadian agencies and a Chinese BRT system were also included in the distribution. Of the 88 agencies contacted for the survey, 66 agencies, or 75%, responded. The survey tool and list of respondents are presented in Appendices B and C.

Profiles

The profiles are studies focused on a specific security practice or measure category. The objectives of the profile studies were to obtain increased coverage of specific security methods and practices used by the selected transit agencies. The organizations to be interviewed were selected on the basis of survey responses, panel recommendations, and the results of the literature summary. Effort was made to obtain information from diverse agencies; in some cases an agency was able to provide profile information on more than one category. Open-ended questions covering a range of issues were developed for each security measure featured in the profile.

Profiles were developed by contacting relevant agency practitioners on the following categories of operator protection measures:

- Technology and information management;
- Personnel, policing, and training; and
- Agency policies and legislation.

The profile agencies are presented in Table 1.

TABLE 1
PROFILE STUDIES

TECHNOLOGY AND INFORMATION MANAGEMENT	
Barriers	Miami-Dade Transit, SF MUNI, Milwaukee County Transit System, Rochester Genesee RTA, NYC Transit, Coast Mountain Bus Co., Toronto Transit Commission, Winnipeg Transit
Information Management	Edmonton Transit System
Video Surveillance	Greater Bridgeport Transit, Rochester Genesee RTA, King County Metro, IndyGo, Miami-Dade Transit, Pinellas Suncoast TA, Coast Mountain Bus Co., Toronto Transit Commission
Audio Surveillance	Greater Cleveland RTA, Madison Metro Transit, King County Metro, IndyGo, Pinellas Suncoast TA, San Antonio VIA
AVL	Greater Cleveland RTA, Madison Metro Transit, Pinellas Suncoast TA, San Antonio VIA, Coast Mountain Bus Co., Winnipeg Transit
TODSS	Pace Suburban Bus
Emergency Communications	Pinellas PSTA, Cleveland GCRTA
DNA Kits	London TFL
PERSONNEL, POLICING, TRAINING	
Operator Selection	CUTA, NYC Transit, Winnipeg Transit
Policing	Pierce Transit, Edmonton Transit, MBTA
Self-defense tools	Houston METRO, Minneapolis Metro Transit
Self-defense training	Pierce Transit, River City TARC, Calgary Transit, Winnipeg Transit
Customer service training	Pierce Transit, NYC Transit, Coast Mountain Bus Co.
Behavioral Assessment	Hampton Roads, Pinellas Transit
AGENCY POLICIES AND LEGISLATION	
Suspension of Service	Albany, NY CDTA, Madison Metro Transit, Montgomery County Transit, Pierce Transit, SUN METRO, Edmonton Transit, Charlotte CATS
Workplace Violence	WMATA, Pierce Transit
Fare Policy	Las Vegas Max Line, Cleveland GCRTA, King County Metro, Coast Mountain Bus Co.
Legislation with Enhanced Penalties	CTTRANSIT, WMATA
Employee Assistance	CTTRANSIT, Pierce Transit, Toronto Transit Commission
Passenger Outreach	NYC Transit, NJ Transit, Edmonton Transit, Hampton Roads, Albany, NY CDTA, Toronto Transit Commission
School, Community Outreach	Chicago CTA, Greater Cleveland RTA, King County Metro, San Antonio VIA, Rochester Genesee RTA, WMATA, Edmonton Transit
Other Policies	Toronto Transit Commission, Las Vegas Veolia Transportation

REPORT ORGANIZATION

The report is organized into seven chapters, including this introductory chapter. The literature summary is presented in chapter two, and the survey results are described in chapter three. Chapter four contains the profiles on technology and information management. Chapter five contains the profiles on personnel, policing, and training. Chapter six contains the profiles related to agency policies and legislation. Finally, chapter seven summarizes the findings of this project, provides highlights of practices to prevent and mitigate bus operator assaults, discusses related issues, and presents items for further research. The appendices contain supplemental material on agency practices, legislation and policies, the survey instrument, and participating agency list.

CHAPTER TWO

LITERATURE SUMMARY

Significant investments in transit security have been made and new transit security initiatives implemented since September 11, 2001. Although some of these initiatives have focused solely on counterterrorism, many are all-hazards in approach and are effective in mitigating operator assaults as well. Therefore, transit security literature items that cover both counterterrorism and general crime are summarized. Workplace violence literature is included because passenger assault of operators is a subset of workplace violence and strategies developed to address workplace violence can assist in addressing violence against operators. In addition to relevant transit security and workplace violence literature, literature on operator training and selection, self-defense, video surveillance, and international studies and practices have been summarized as well.

TRANSIT SECURITY

Transit security investments and preparedness strategies are now being determined based on an all-hazards approach. Because bus operators are considered to be the first line of defense against violent incidents on buses, including terrorism, security of buses and bus operators is of prime importance to the DHS, the TSA, and the FTA. Reports released by these agencies have bearing on the protection of bus operators to a greater or lesser extent. A TCRP synthesis report released in 2009, Transit Security Update, includes security measures, technologies, and policing methods applicable to the protection of bus operators. These transit security documents are reviewed in this subchapter.

Chandler, K. L., P. J. Sutherland, and H. Saporta, *An Introduction to All-Hazards Preparedness for Transit Agencies,* Federal Transit Administration, Washington, D.C., 2010.

All-hazards preparedness for transit agencies is a risk prioritization and management process to allocate resources effectively to reduce safety, security, and emergency management risks continually and to prevent, protect, control, and mitigate incidents and adverse events. This document defines and describes all-hazards preparedness and provides a high-level process and illustrative examples for applying an all-hazards preparedness process that is consistent with the national guidance on all-hazards preparedness presented in the National Preparedness Guidelines. The report is based on two FTA publications—Hazard Analysis Guidelines for Transit Projects (2000), the Public Transportation System Security and Emergency Preparedness Planning Guide (2003)—and the National Incident Management System issued by DHS (2008).

Nakanishi, Y., *TCRP Synthesis 80: Transit Security Update,* Transportation Research Board of the National Academies, Washington, D.C., 2009.

TCRP Synthesis 80: Transit Security Update, by Dr. Yuko Nakanishi, describes security practices and policing methods implemented by transit agencies in the United States. It focuses on new post–September 11, 2001, initiatives and measures that address both terrorism and crime.

The author states that violent crimes occurring within transit systems evoke strong emotions in the public, along with intense media coverage, and have a significant impact on passenger perception of security. Chapter five of TCRP Synthesis 80 focuses on conflict mitigation, which is especially pertinent to preventing operator assaults.

Bus security measures including policing methods, video surveillance and issues related to image quality and storage requirements, Crime Prevention Through Environmental Design (CPTED), communications, school outreach efforts, and bus operator training are discussed in the report. The literature summary in Appendix B includes coverage of relevant FTA and TSA reports, TCRP and NCHRP reports, and literature on CompStat, CPTED, and interoperable communications.

The literature summary included the following relevant information:

- TSA, *Mass Transit Annex to Transportation Systems Sector Security Plan* [Online]. Available: http://www.tsa.gov/. This document presents a coordinated security-enhancement strategy for public transportation and passenger rail systems. TSA's system-based risk management methodology and transit security fundamentals are discussed.
- FTA Safety and Security website, http://transit-safety.volpe.dot.gov/Security. The website contains information about FTA's security initiatives, Transit Watch program, guidelines and best practices, training tools, and other strategic and research products of interest to transit agencies.
- FTA, *Transit Agency Security and Emergency Management Protective Measures,* 2006. Six security categories

addressed in the report are information and intelligence; security and emergency management; regional coordination; information technology and communications systems; employee and public communications.

- Kelling, G. and C. Coles, *Fixing Broken Windows: Restoring Order and Reducing Crime in Our Communities,* Simon and Schuster, New York, N.Y., 1997. Kelling and Coles expressed the importance of targeting minor incidents and maintaining order to prevent more serious ones from arising.
- McDonald, P. P., *Managing Police Operations: Implementing the NYPD Crime Control Model Using CompStat,* Wadsworth Publishing, New York, N.Y., 2001. A description of CompStat and how it was implemented and operated within NYPD to prevent and address crime problems was provided.
- Banerjee, R., "The ABCs of TCO (Total Cost of Ownership): The True Costs of IP Video Surveillance," Video Technology and Applications, Feb. 2008. A breakdown of the Total Costs of Ownership for video surveillance technology is provided, and video recorder types and storage issues are also addressed.
- TRB, *TCRP Web Document 18: Developing Useful Transit-Related Crime and Incident Data,* April 2000. Primary data sources of crime statistics are described. Issues of crime under-reporting and crime definitions are addressed.
- Allan, D. and J. Volinski, *Cops, Cameras, and Enclosures: A Synthesis of Effectiveness of Methods to Provide Enhanced Security for Bus Operators,* Report No. 392-12, National Center for Transit Research, CUTR, May 31, 2001. This study's overall survey results revealed that the violence prevention operator training was ranked highest in cost-effectiveness, followed by in-house security and plainclothes security. In terms of onboard security, in-house security and plainclothes security were considered to be the most effective. In terms of cost, contracted personnel were considered to be more expensive than in-house personnel. In terms of technology, video surveillance was considered to be the most effective, although the panic button connected with the headsign was considered the most cost-effective. At the time of the report, Miami–Dade Transit and San Francisco MUNI had started to implement partial enclosures on their bus fleets.

WORKPLACE VIOLENCE

Workplace violence literature and training materials generally recommend the training of workers who deal with the public in recognizing and diffusing potentially violent situations, as well as the establishment of a workplace violence policy and reporting process. According to the American Society of Industrial Security, the top strategy for preventing workplace violence was employee training, and the second place strategy was zero-tolerance policies. According to the Society for Human Resources Management, verbal threats were the most common form of workplace violence. The literature emphasizes the importance of reporting all incidents and threats and of a supportive and responsive employer in all aspects of workplace violence, including prevention, employee support, proper reporting, and handling. In addition, the literature emphasizes the importance of employee support after violence has occurred.

Survey of Workplace Violence Prevention, 2005, News Release, Bureau of Labor Statistics, U.S. Department of Labor, Washington, D.C., Oct. 27, 2006.

The Survey of Workplace Violence Prevention was conducted by the Bureau of Labor Statistics for the National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention. The topics covered included incidence of workplace violence, types of security, and programs and policies. Interested observations included the following: Half of the largest establishments (employing 1,000 or more workers) reported an incident in the past year, whereas only 5% of all establishments had a violent incident, and, not surprisingly, service-providing industries had much higher percentages of customer, criminal, and domestic violence than goods-producing industries. State governments, followed by local governments, had higher percentages of all types of workplace violence incidents. The authors concluded that the higher incidences for state and local governments were the result of their work environment—working in direct contact with the public, having mobile workplace or delivering goods or services, working in high-crime areas, working in small numbers, working in community-based settings, and working with unstable or volatile persons. In terms of effects of the violence, 36% of establishments had employees that were negatively affected, with more than 20% experiencing impacts on fear levels and morale.

Workplace Violence: Issues in Response, FBI Academy, U.S. Department of Justice, Quantico, Va., Feb. 2001.

The FBI Workplace Violence report was based on the proceedings of the Workplace Violence Intervention Research Workshop. It notes the importance of workplace culture in encouraging employees to report incidents and in training employees to identify threats. The report highlights the negative impact of emotional distress caused by workplace violence, whether physical or verbal, and the importance of providing counseling and support immediately after a violent event has occurred. Workplace violence prevention measures are grouped into environmental methods, organizational and administrative practices, programs and policies, and behavioral or interpersonal issues. The importance of incident management strategies, including addressing employee reactions and concerns, provision of professional support, proper communication, and improving preventive measures are mentioned. Also included in the Workplace Violence report are case studies on threatening behavior, threat to kill, frightening behavior, disruptive behavior, intimidation, and threat assessment, as well as recommendations on what employees

could do in each scenario. Sample response protocols and workplace violence policy statements are also provided.

BUS OPERATOR TRAINING AND SELECTION

Bus operator training prepares the bus operator for a range of stressful situations, including fare issues, rules violations, and irrational or combative passengers, and assists the operator in remaining calm and prudent during the situation. Bus operator selection is important because an operator skilled at and experienced in customer relations and in handling stressful situations may be less likely to be the victim of an assault. Also, recruiting the wrong candidate is costly to the agency—if he or she stays and performs badly, lives may be endangered. APTA's recommended practice documents are useful for transit agencies in training operators and their supervisors.

American Public Transit Association, *Recommended Practice for Transit Bus Operator Training,* APTA BTS-BO-RP-001-07, Washington, D.C., updated June 2009.

The recommended practice states that bus operator training programs contain the following topics: regulatory, agency-specific requirements, customer service, technical, and safety and security. The topics that pertain to this synthesis include safety and security, customer service, and technical training. In the safety and security section, recommended training topics include assault prevention, stress management, defensive driving and road rage, security awareness and emergency procedures, security emergencies including assaults and threats, weapons, and incident investigation and documentation procedures. Customer service training includes understanding the role of the professional transit operator, understanding the customer (different levels of abilities, socioeconomic status, age, cultural issues, and diversity), communications, difficult situations and emotional or personal "hot buttons" and triggers, and customers with disabilities. Technical training includes understanding bus features, including safety and security technologies, and driving in adverse conditions. Note that APTA has also issued a Recommended Practice for Transit Supervisor Training, APTA BTS-BO-RP-002-07.

Thompson, G. J. and J. Jenkins, *Verbal Judo: The Gentle Art of Persuasion,* Quill, New York, N.Y., 2004.

Thompson and Jenkins describe verbal judo as the use of communications skills to mitigate conflict situations and defuse them before they become violent. Training in verbal judo is provided to many law enforcement personnel and has been adapted and incorporated into bus operator training content provided by some transit agencies. Although judo is a martial art, it does not promote violence or aggression but, instead, focuses on empathy, harmony, and respect. Similarly, verbal judo training emphasizes dignity, professionalism, and respect in communicating with the public and teaches participants how to speak without escalating conflict, how to be efficient in speech—saying it right the first time—and how to deal with individuals who may be mentally impaired or under the influence of drugs or alcohol. The authors stress the importance of listening, empathizing with others, looking for a win/win solution, and seeing the situation from another's perspective. The five tools in voluntary compliance are explained. Verbal judo techniques may be similar to some verbal de-escalation and conflict mitigation strategies being taught to new and existing bus operators.

FTA's Safety and Security website, http://transit-safety.fta.dot.gov/.

Relevant security and safety information and courses delivered through the National Transit Institute (NTI), Transportation Safety Institute (TSI), The Johns Hopkins University, and the Volpe Center are found on the FTA's Safety and Security website. *Violence in the Transit Workplace Prevention, Response and Recovery* is a 4-h NTI course. It provides transit employees, supervisors, and labor representatives with information on how to prevent, respond to, and recover from violence in the workplace. The course is provided free of charge to relevant employees of the transportation industry. Prevention methods covered in the course include system and personal security measures; recognizing and reporting the warning signs of potentially violent behavior; and using effective interpersonal skills in dealing with different, difficult, and dangerous people. Response strategies focus on self-preservation and the importance of accurate reporting. The recovery portion addresses the stress associated with violence and what employees can do to mitigate it.

TSI's *Transit Bus System Safety* course helps agencies create a Transit Bus System Safety plan and addresses passenger incidents, vehicle collisions, and selection and training of bus operators. Other training courses provide customer relations skills, including understanding of diverse populations. Note that there are other relevant courses that focus on training transit managers. TCRP Project A-36, Command-Level Decision-Making for Transit Emergency Managers, is expected to provide interactive training for transit managers in incident response and emergencies. Although there are significant differences between passenger assaults against bus operators and terrorism, training courses focused on terrorism awareness can be useful for conveying the importance of awareness and spotting suspicious behaviors.

Terrorist Activity Recognition and Reaction (*TARR*) is an NTI course that provides employees with training on how to recognize behaviors associated with terrorist activity. *Warning Signs,* a video produced by the NTI with FTA support, reinforces system security concepts, including what to look for and what to do when confronted with suspicious activities, objects, and behavior. *System Security Awareness for Transit Employees* is a 3- to 4-h NTI course for frontline transit employees and a 5- to 6-h course for instructors. Although the course primarily addresses suspicious incidents and identification of terrorist activity, elements of the course

are also useful for responding to and reporting violence against operators. The NTI site is accessible at www.ntionline.com and the Transportation Safety Institute site, at www.tsi.dot.gov.

American Public Transit Association, *Recommended Practice: Recruiting and Retaining Bus Operations Employees,* APTA BTS-BO-RP-003-09, Washington, D.C., Dec. 2009.

The document aims to assist transit agencies recruit and retain bus operators. It describes the Bus Operator Selection Survey, a process software with a preemployment screening survey and a structured interview process. It also mentions other testing or screening methods, such as Wonderlic Testing, which measures cognitive ability and general intelligence; Manpower, Personnel Selection Inventory; and TotalView Assessment. The candidate selection steps are listed (application, drug testing, reference check, DMV record check, job stability, driving experience, age, criminal background check, interviews). START Training, a video-based training package for new and existing operators, is also described.

VIDEO SURVEILLANCE

As noted in *TCRP Synthesis 80,* video surveillance is widely used by transit agencies and is "an excellent, scalable security solution and addresses multiple security needs" (*2*). At the same time, issues such as image quality and storage requirements need to be considered for agencies to obtain the full benefit of video systems (*2*). Transit agencies have been converting their legacy analog systems to digital systems and are exploring wireless solutions. Advanced systems enable wireless uploads of video to central servers at depots or control centers. The most advanced systems have real-time video, allowing police or dispatch to view what is happening inside of a bus.

American Public Transit Association, *Technical Recommended Practice for the Selection of Cameras, Digital Recording Systems, and Digital High-Speed Networks and Train-lines for Use in Transit-Related CCTV Systems,* APTA IT-RP-001-08 V3, Washington D.C., 2008.

APTA's Recommended Practice document for closed circuit television (CCTV) systems assists agencies planning to install or upgrade their CCTV systems. APTA's Technical Working Group issued a Technical Recommended Practice in 2007 and amended it in 2008 for the selection of cameras, digital recording systems, and high-speed digital train-lines for new installations of CCTV systems in transit applications, including buses (onboard and external) and depots. The document provides recommendations on camera specifications and system design, analog and digital recording systems, transmission, and system testing methodology. Recommendation on real-time video wireless transmission is also provided.

American Public Transit Association, Draft Recommended Practice for Video Content Analytics (VCA) Recommended Practice for Transit Applications, VCA Recommended Practice Working document, Washington, D.C., Mar. 2010.

Video Content Analytics (VCA) technology, also known as Automated Video Surveillance or Intelligent Video, can provide continuous analysis of CCTV images that automatically alerts dispatch when a specific alarm event is detected. APTA has produced a draft Recommended Practice document for the implementation of VCA technology. Events that may be detected include individuals in distress, objects being thrown inside the bus, objects being thrown at the bus or operator, and fighting. Currently, VCA is not being utilized for bus operator protection applications. In using this technology, agencies need to consider probability of detection, false alarm rate, false negatives for events that occur but are not detected, and factors such as weather and lighting that can affect detection ranges and performance.

Casciari, D., "Bus CCTV Could Predict Assaults," *BBC News,* Sept. 24, 2009.

A Queens University Belfast research team from the Centre for Secure Information Technologies is working on a CCTV system that can predict crime, including operator assaults, before it happens. Once the system identifies a potential crime, images would be sent to a command center and a controller/dispatcher would intervene if necessary by communicating directly with the potential assailant. The system would analyze data on the bus's location, time of day, and historic crime rate as well as information obtained by the CCTVs on individuals boarding the bus.

SELF-DEFENSE

Nonlethal self-defense tools include pepper spray or gel, Taser, kubotan, and physical self-defense without tools. Oleoresin capsicum (OC), commonly known as pepper spray or pepper gel, is obtained from dried chili peppers ground into a fine powder. An emulsifier is added so that it can be used as an irritant to control violent people. The Taser fires electrified darts to immobilize an individual by causing neuromuscular incapacitation. A kubotan is a small stick that can be used as a self-defense tool. The principal areas for attacks in self-defense include bony, fleshy, and nerve targets. Currently, Houston METRO is the only transit agency that issues a self-defense tool and associated training to its bus operators. Although there have been post-use studies on OC in subduing individuals by law enforcement personnel, there have not been many controlled scientific studies on the safety and effectiveness of OC because they are difficult to do. An evaluation of less-than-lethal weapons that may be suitable for use by bus operators was performed by Officer Trevino of Houston METRO and is summarized here. Also summarized later is a National Institute of Justice report describing the results of two studies, one on injuries occurring in three North Carolina police jurisdictions and the other on the deaths of 63 individuals who had died in police custody.

Officer Trevino, Houston METRO, Police Study on Less-than-Lethal Options for Bus Operators.

A Houston METRO police study on less-than-lethal options for bus operators was performed prior to the agency issuing self-defense tools to its operators. The following options were evaluated: Taser, self-defense training, pepper spray and gel, and the kubotan. The study also obtained input from several large transit agencies and TSA Air Marshals to assess their experiences with self-defense tools for operators. The Air Marshals indicated that flight attendants had the option of undergoing a 2-day self-defense training. According to the study, no transit agency had issued self-defense tools to their operators—Houston METRO would be the first U.S. agency to do so. The following summarize the outcome of the evaluation:

Taser—Advantages of Taser include the ability of the user to keep a safe distance (about 15 ft) from the assailant, along with contact stun capability. In addition, the Taser may be used anywhere on the body. The Taser has been more than 95% effective in stopping attackers in actual law enforcement encounters, even if the attacker was under the influence of alcohol or drugs. To ensure responsible use, the new owner must complete a background check. Although independent medical reports have attested to its safety, negative publicity about police Taser use may make it hard to justify to the public its provision to bus operators. Compared with other self-defense options, errant discharges of this tool may be more likely to strike bus patrons if not used properly. Although training would address this issue to a certain extent, use in a stressful situation would be much harder than in training. The cost of this unit is higher than the other options, at about $499 per unit. The higher unit cost, along with the required training and maintenance, make this option the most expensive of the ones presented, and the least recommended less-than-lethal option.

Pepper spray and gel—Several products were investigated in this category of OC products. Two were selected for further examination; for the purpose of this synthesis, they will be called pepper gel 1 and pepper gel 2. Minimal cross-contamination and ease of cleanup were a few of the factors that made these two pepper gel products more appropriate than others. Advantages of both pepper gel 1 and 2 were their far-reaching spray distance; their small size, which makes them light and portable, and their safety in a tubular environment—because they have the least amount of airborne contaminants, the possibility of cross-contamination is minimized. Should cross-contamination occur, the water-based product may easily be decontaminated with water. The author noted that negative press can be managed with good outreach to the public and passengers on the benefits of these products. Pepper gel 1 had the highest concentration of OC, at 1.42%, and its retail cost per unit was $19.95, making it more affordable than other options. Pepper gel 2 had a slightly increased risk of cross-contamination and a higher retail cost. at $41.99. The costs may be reduced through volume purchases. The report noted pepper gel 1 as the most appropriate less-than-lethal self-defense option for METRO bus operators based on cost per unit and effectiveness. The study noted that the product was ideal for a tubular environment and would provide security for operators as they wait for police assistance during assaults and other incidents.

Self-defense training—Advantages of self-defense training were its short training time, low cost, and the absence of a weapon visible to the public. Another advantage was its ease of development; self-defense classes and courses already exist and are being used for transit and airline personnel. Disadvantages included exposure of operators to more physical harm as a result of the hands-on nature of this defense technique. The training also does not make the operator completely proficient in techniques; in addition, it must be practiced regularly or the ability to use the techniques in stressful situations might be lost.

Kubotan—Kubotan is one of the few martial arts weapons that is legal and unregulated. It can be used for painful blows to soft tissue areas or disabling blows to an opponent's vital points, or for hooking, trapping, and pain-compliance techniques to immobilize an adversary. The kubotan has not received negative publicity and is not as controversial as other impact weapons. It is lowest in terms of unit cost, at $5 per unit. Also, training may be developed from a DVD available for purchase. The primary disadvantages are that, if the user is not trained properly, the kubotan may cause major damage to bones or cartilage and, because its use requires physical proximity and contact with the assailant, it poses a risk of injury to the operator. As with self-defense training, techniques must be practiced regularly or the ability to use it during emergency situations might be lost.

Based on a variety of factors, including the advantages and disadvantages listed in this section, Houston METRO decided to issue pepper gel 1 to its bus operators. Additional information about pepper gel is provided in chapter five.

National Institute of Justice, *The Effectiveness and Safety of Pepper Spray,* Office of Justice Programs, U.S. Department of Justice, Washington, D.C., 2003.

The National Institute of Justice report focused on two studies it had funded on the effectiveness and safety of pepper spray use by law enforcement. One study examined injuries in three North Carolina police jurisdictions, and the other explored the in-custody deaths of 63 suspects on whom pepper spray had been used. The first study revealed that the number of injuries to both officers and suspects had gone down after the introduction of pepper spray. The second study concluded that of the 63 individuals who had been in police custody when they died, in only two of them was pepper spray contributory to their deaths. Both of the individuals were asthmatics. The other deaths were caused by the indi-

viduals' drug use, disease, or positional asphyxia. It was noted that the arresting officers reported that pepper spray was only effective in 20% of these 63 cases. Toxicological information revealed that 62% of the 63 individuals had some drugs in their body. Studies that were done with individuals not on drugs demonstrated that pepper spray was effective. A 1999 study of 690 incidents concluded that pepper spray was effective in 85% of them. The percentage dropped to 13% when individuals displayed behavior consistent with drug use. The document also includes the results from a third study at the University of California, San Diego that had tested the effects of pepper spray on healthy subjects by comparing their reactions with a placebo group. This study found that pepper spray did not compromise respiratory function even when used in conjunction with a sitting or handcuffed position.

Evaluating the pepper spray risks under real-world conditions is difficult because every situation is unique, the number of in-custody deaths is very low, and it is impossible to replicate certain scenarios safely for testing purposes. Therefore, the National Institute of Justice report states that it "cannot prove that pepper spray will never be a contributing factor in the death of a subject resisting arrest." (The implications of the researcher's conclusions are that pepper spray or the gel form of the same substance would be effective for bus operators trying to stop an assault, but may not be that effective on persons who are on drugs, and that the possibility of injury or death cannot be ruled out.)

Broadstock, M., "What Is the Safety of 'Pepper Spray' Use by Law Enforcement or Mental Health Service Staff?" *New Zealand Health Technology Assessment Tech Brief Series,* 1(2), Sep. 2002.

Broadstock examined studies published up to May 2002 on the topic of pepper spray use by law enforcement or mental health service staff and had samples of at least 20 participants with medium- and long-term adverse health effects. Broadstock discovered that of the seven studies that fit her criteria, only three had been published in scientific and medical journals and four were unpublished. Zollman et al. (2000) found corneal sensitivity and corneal erosions partially recovered after 1 h. All were single-dose exposures at a distance of 1.5 m, and none required medical treatment. Broadstock notes that in actual cases the doses are often higher and are administered at closer distances. Two large studies were done by Brown et al. (2000) and Watson et al. (1996). All of the subjects in the two studies required medical attention, with 7% to 9% of these subjects having significant adverse events, such as corneal abrasions and pulmonary toxicity. Broadstock concludes that these outcomes may have resulted from pepper spray use or misuse, possibly in combination with other factors. Stopford (1996) was the largest of the seven studies. The work involved a sample of 6,000 officers exposed to pepper spray. Medical treatment was required for a "small but significant" proportion of cases. Eye problems, chest problems, and headaches persisting longer than 1 week were observed, although rarely. Broadstock notes that studies done using autopsy reports can be biased because the reports are usually nonspecific in nature. She cites as an example a study done by the ACLU of Southern California in 1995 that cited pepper spray as the cause of death for all of the subjects in its study. At the same time, a study done by law enforcement (Granfield et al. 1994) in a similar time period concluded that there was no link between pepper spray and the deaths.

Broadstock concludes that most of the seven studies did not provide details on the type of pepper spray used, its manufacturer or strength, and whether it was used as recommended. Therefore, it is possible that the adverse events reported in the studies might have been caused by improper use of the pepper spray.

BUS OPERATOR PERSPECTIVE

Bruyere, D. and J. M. Gillet, *National Operator Assault Survey Results 2005,* ATU Transit Operators.

In 2005 an Assault Survey was undertaken by the ATU and its Ottawa local 741 owing to member perceptions that "the issue of potential violence for operators in an uncontrolled environment is paramount" and that "it is an issue that demands analysis and the development of strategies to prevent acts of violence in the workplace for transit operators" (p. 5). The objectives of the survey were to assess violence in the workplace, outline how operators perceive violence in the daily work environment, create an up-to-date document for legislative application to address transit worker safety, strengthen lines of communication, focus resources to implement education and training programs, and create awareness of the risks in the occupation based on operator perceptions. The survey involved 1,468 operators at seven union locals in Canada. Of these, 36% had experienced physical assault(s) and 55% had experienced verbal threats. Of the physical assaults, 16% were not preceded by verbal threats.

In physical assaults, the following were contributing factors:

- 77%, passenger misconduct;
- 60%, nonpayment of fares;
- 51%, alcohol or drugs; and
- 11%, weapons.

In verbal assaults, contributing factors were the following:

- 80%, passenger misconduct;
- 71%, nonpayment of fares;
- 50%, alcohol or drugs; and
- 9%, weapons.

Forty-five percent of the responding drivers indicated that training was a concern; many requested additional training in violence awareness and response and in self-defense techniques. What to do after an assault had taken place and how to contact sources of support were also mentioned as desir-

able training content. Recommendations based on the survey analysis included development of a database for documentation of incidents over time, pursuit of funding, lobbying for more violence prevention regulations, progress evaluations, and increased sample sizes for future surveys.

INTERNATIONAL STUDIES

International practices to protect bus operators by transit systems can provide U.S. and Canadian agencies with ideas on innovative measures. Many European cities have had problems with violence within their transit systems and have developed and implemented methods to counter this violence. A recent International Union of Public Transport aggression study and the results of a 2003 TCRP study are described in this section.

Bonfanti, G. and T. Wagenknecht, *Human Factors Reduce Aggression and Fare Evasion,* Jan./Feb. 2010, PTI, pp. 28–32.

The authors describe the results of the International Union of Public Transport aggression study performed by the Bus Committee and Human Resources Commission in 2008 and 2009 with data provided by more than 30 transit agencies and operators from 19 nations. Aggression is defined as violent physical contact or threat with weapons towards transit personnel and other passengers. Results of the study indicated that aggression toward bus personnel was more frequent and problematic than aggression toward rail personnel, and occurred most often in the late afternoon. The majority of the aggressions were located inside the vehicle in the operator's area. Technological tools that were most widely employed by the responding operators were video surveillance, alarms linked to radio communications, and protected operators' cabins or windows. Alarms connected to radio communications were believed to be the most effective technological security measure, followed by video surveillance. System operators planned to increase usage of video surveillance and alarms in their bus fleet, but planned to decrease use of barriers. Systems with barriers have made them optional for operators. Systems that had considered but decided not to install barriers have made the decision on the basis of operator comfort, reflection and glare issues, and diminished customer contact; they have also increased or initiated operator training in conflict management. The study concluded that the barriers were not considered to be very effective. The best nontechnological prevention tools were believed to be partnerships with police, security personnel, and operator training.

TCRP Research Results Digest 58: Safety and Security Issues at All-Bus Systems in Small- to Medium-Sized Cities in Western Europe, International Transit Studies Program. Transportation Research Board of the National Academies, Washington, D.C., 2003.

This TCRP Research Results report described security problems experienced by bus transit systems in Western Europe and the methods used to combat them. The researchers concluded that the best approaches, based on these Western European experiences, were to establish good policies, including zero tolerance-type strategies, and to address problems caused by youths by influencing social values and educating transit users at a very early age. Sheffield provided an incentive for schools to assist them in combating violence. Each day their students behave, the school receives bus miles that may be exchanged for free school trips. Other methods included support pay, locating bus layovers in safe locations, use of glazed windows, and a concealed starter switch. Barriers and compartments were adopted by Translink in Belfast, Arriva in Liverpool, First in Sheffield, and others. Translink's screen has a small opening that may be opened in case the operator has a medical emergency. Translink also provides an escape hatch for operators because the barrier glass cannot be broken. Translink operators have reported that they did not like the enclosure. In terms of video surveillance, Translink had real and dummy video cameras installed on their buses to mitigate vandalism. Arriva and Manchester had visible and hidden video cameras, also designed to address vandals.

CHAPTER THREE

SURVEY RESULTS

The survey inquired about methods to address operator assaults, including technologies, policing, policy and legislation, fare and rules enforcement policies, definition of "assault" used by the agency, assault characteristics, contributing factors, training, employee assistance, data collection and reporting practices, bus operator selection methods, impact of violence against operators, and respondent characteristics. Results were differentiated based on bus fleet size, with large agencies corresponding to those with >1,000 peak buses, medium agencies to 250 to 1,000 peak buses, and small agencies to <250 peak buses.

Sixty-six responses, a 75% response rate, were obtained. The 88 survey recipients included the 50 largest U.S. transit agencies, multimodal or bus-only, as well as randomly selected agencies representing medium and small agencies. Several Canadian agencies and a Chinese BRT system were also included in the survey distribution list. See Appendix E to better understand the responses.

CHARACTERISTICS OF SURVEY RESPONDENTS

Survey respondents were geographically diverse; they represented every region of the United States, along with three Canadian provinces. Based on bus fleet size, about half of the 66 respondents, or 47%, were small agencies (<250 peak buses), and the other half were either midsize or large agencies (see Figure 1). Forty-one percent of the 66 respondents reported having annual bus ridership of at least 50 million, as shown in Figure 2.

SECURITY PROVIDER

The type of security being provided for bus operations can affect the effectiveness and efficiency of the security response. Agencies were requested to indicate their primary security provider(s). Multiple responses were allowed. Forty-four percent of the 66 respondents to this question indicated that their primary security provider for the respondents was local, county, or state or provincial police, and 35% used a combination of providers as shown in Figure 3. Respondents that indicated having transit police departments were generally large or midsize agencies operating in metropolitan areas. The smallest agencies indicated that they used local law enforcement. These results were expected because smaller agencies typically have fewer resources as well as fewer incidents than larger agencies have, and therefore cannot afford or do not require their own police or security personnel.

Many agencies use a combination of methods. The details of the "combination" category, which received 23 responses, are shown in Figure 4. Although none of the agencies used supervisors or bus operators as their sole primary security provider, four agencies indicated that they use a combination of employees, including operators and supervisors, and local, county, state or provincial law enforcement as their primary security providers.

FARE AND RULES ENFORCEMENT

Because fare and rules disputes between operators and passengers contribute to passenger assaults of bus operators, enforcement policies are relevant to this study. Both questions allowed multiple responses. In developing these questions, the fact that there may be a disparity between actual practice and agency policy was noted by the contractor team. However, because actual practice would be difficult to determine in the context of this study, the team focused on agency policy and instruction provided to the bus operator.

Fare Payment Enforcement

Agencies reported a variety of fare payment enforcement policies, ranging from conflict avoidance to zero tolerance. Zero tolerance emanates from the "Broken Windows" theory of policing. The theory states that minor quality-of-life violations, if unchecked, can lead to serious crimes, owing to the image of an out-of-control transit environment presented to potential criminals. At the same time, no agency expects its bus operators to enforce fare payment by physically escorting passengers off the bus. Conflict avoidance is at the other end of the enforcement spectrum—although the operator may be expected to state the required fare, benefit of the doubt is amply provided to passengers who may underpay or do not pay. Figure 5 presents the survey results to this fare payment enforcement policy question. Eighty-six percent of the 64 respondents stated that bus operators are instructed to state the required fare. Systems with automated announcements reminding passengers about fare payment may not require bus operators to state the required fare. Systems with off-board fare payment or other payment systems that use the honor system would not require operators to state the required fare either. Fifty-three percent indicated that they instruct their bus operators to use their judgment. These agencies allow the operator to determine when and to what extent to

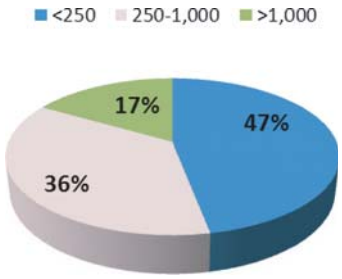

FIGURE 1 Respondents by bus fleet size.

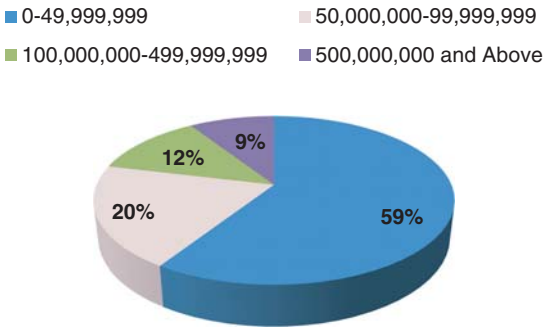

FIGURE 2 Respondents by ridership.

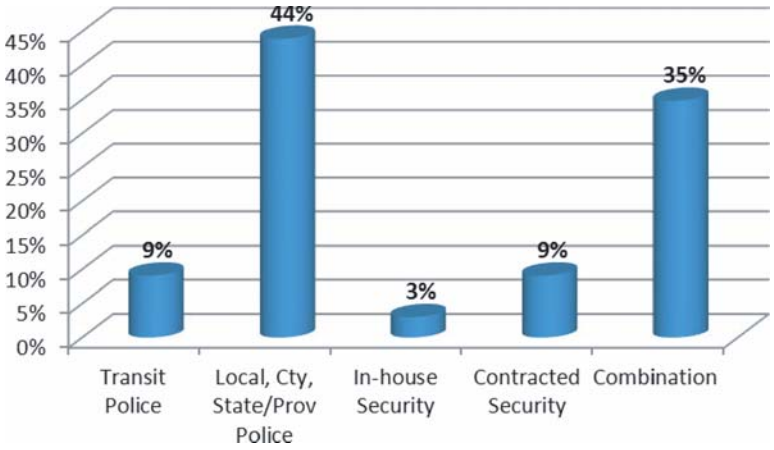

FIGURE 3 Primary security provider.

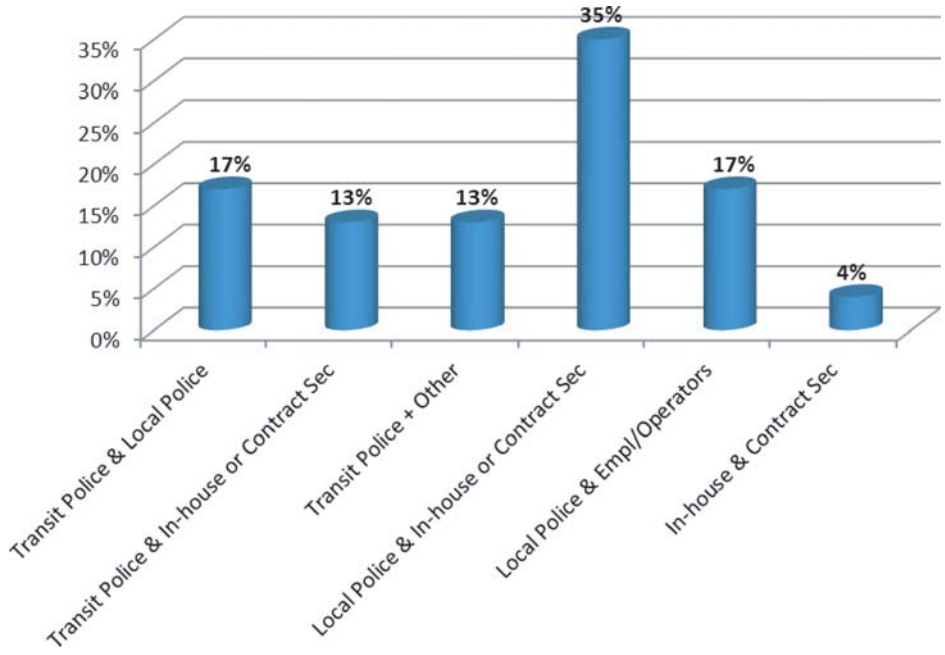

FIGURE 4 Primary security provider—respondents who selected combination.

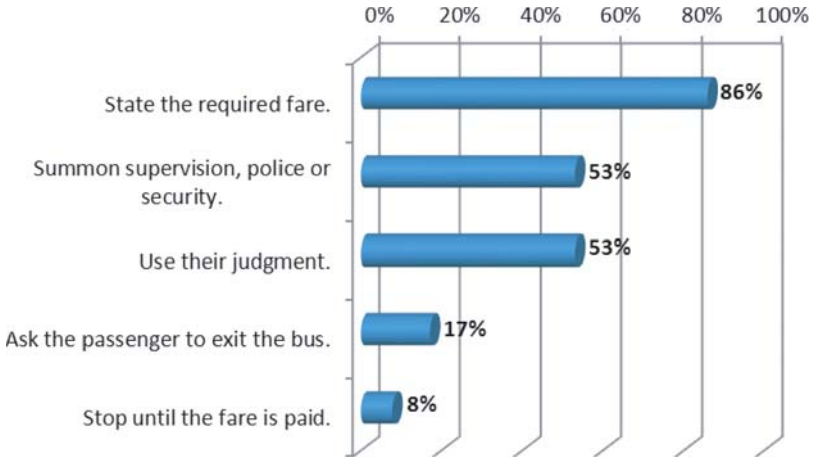

FIGURE 5 Fare payment enforcement; bus operators are instructed to . . .

perform fare enforcement actions based on the situational context of each event. Fifty-three percent indicated that bus operators are instructed to summon supervision, police, or security. Seventeen percent instruct operators to ask fare evaders to de-board the bus. Five agencies instruct their operators to stop the bus until the fare is paid. A greater percentage of the larger agencies instruct their operators to indicate the required fare, and about three-quarters of the larger agencies instruct their bus operators to use their judgment.

Comments indicated that, in general, agencies expect the bus operator to give the patron the benefit of the doubt if it is a first or infrequent offense. However, if the fare evasion becomes chronic or rampant, the operator is expected to take action. "Bus operators are instructed to remind customers of how much the fare is but not to argue with someone who refuses to pay. After the person takes their seat and it is safe to do so, call dispatch." "Operators are instructed to ask for the fare only once and then allow passenger to board without further challenge. They are told they may summon transit police for chronic repeat offenders." Other agencies provide specific instructions on what operators might do in specific circumstances and minimize the amount of judgment that operators can make, and make more use of supervision than others. One respondent noted that making exceptions angers other passengers and can provoke aggression against that operator. One agency instructs bus operators to contact supervision for assistance if there is a fare dispute, and asks operators not to attempt to resolve it on their own. Another agency requires the bus operator to contact supervision for permission to continue in service if there is a fare evader. One respondent stated that underpayment of the fare is considered to be accidental. One agency provides fare adjustment envelopes (containing an IOU or refund slip) to bus operators to give to passengers if there is underpayment, no payment, or overpayment; another also allows the operator to make arrangements for future payment of the fare. Several respondents noted that their bus operators are required to state the fare but are not to become involved in fare disputes.

Other-Rules Enforcement

Transit agencies establish a code of conduct for passengers, a set of rules that are to be followed in their system. Many states and localities have liquor and narcotics laws, vagrancy laws, and the like, which are incorporated into the code of conduct. When these laws are violated, bus operators would be expected to enforce them and summon the police or supervision if the passenger does not comply. However, there are other agency rules the violation of which may not be illegal; these would be more difficult for the operator to enforce.

According to the survey results presented in Figure 6, 81% of the 63 respondents instruct their bus operators to state the rule being violated. Sixty-seven percent instruct their operators to summon supervision, police, or security. That the percentage is higher for other-rules enforcement may imply that there are other rules that are more important than fare enforcement or that agencies do not have an automated recording reminding passengers to follow agency rules. Forty-four percent instruct their operators to use their judgment. Less than a third (30%) instruct the operator to ask the passenger to exit the bus. Almost 20% of respondents instruct the operator to stop the bus until the violation has ceased. Note that there are many transit agency rules the violation of which is not considered criminal and, therefore, the offender cannot be arrested unless and until the agency has had the local or state ordinance changed. For the rules violations that are already illegal, bus operators are typically required to stop operating the bus, ask the passenger to exit, summon supervision or the police, or a combination of these measures. One respondent stated that the operator is encouraged to call transit police in the event of "disorderly passengers or groups of passengers violating rules."

Agencies noted that the action taken by the bus operator depends on the rule being violated. A profile participant, Metro Transit of Madison, Wisconsin, noted that inappropriate conduct is grouped into three categories or levels of severity, and

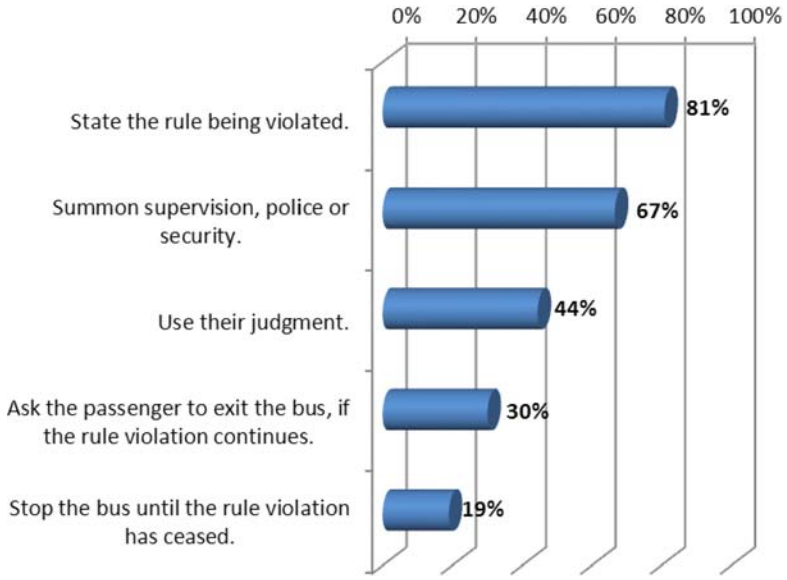

FIGURE 6 Other rules enforcement; bus operators are instructed to . . .

the actions that the bus operator may take are based on the corresponding level of the conduct.

STANDARD OPERATING PROCEDURES

Practically all responding agencies, 92% of 64 respondents, reported having standard operating procedures (SOPs) in place for responding to bus operator assaults. SOPs provide bus operators and responders—including agency police and security, supervision, human resources and support staff—with information on what to do should an assault occur. This finding is a significant improvement from the lower percentage of 53% reported by Larry Thomas in *TCRP Legal Research Digest 20* in 2005 on the transit agencies with procedures for responding to incidents (*23*). SOPs that are carefully crafted, when accompanied by appropriate training and sufficient resources, increase the effectiveness of the response and decrease response time. Transit agencies may have multiple SOPs—for example, transit police may have an SOP for responding to an assault, bus operations may have an SOP focusing on dispatcher responsibilities, and human resources may have a separate SOP for the provision of counseling and support.

The typical SOP addresses various types of accidents and other incidents, not just operator assaults. SOPs generally instruct the operator to secure the bus to protect the passengers, the operator, and the bus, and to summon emergency assistance using the appropriate communications device. Normal channels would be used if the operator believes it is safe to do so. If not, an emergency channel allowing dispatch, police, or both to listen to all audio around the operator's compartment would be used. Witness cards may be used to collect contact information from passengers who have witnessed the incident. Reports, including all pertinent details of the incident, are typically requested from the operator on the same day. If emergency assistance is needed, the dispatch center would notify transit police or local law enforcement and emergency medical personnel.

SOPs for operators may be included in agency-issued handbooks or manuals. The Greater Cleveland Regional Transportation Authority (GCRTA), for example, has a section on emergencies in its Bus Operators' Handbook, and in the subcategory "violent and disruptive passengers," GCRTA operators are provided with instructions on how to handle emergencies. (See Appendix A for a copy of these instructions.)

DEFINITION OF "ASSAULT"

The definition of operator assault is important. If an agency does not consider an incident to be an assault, the operator may not receive certain benefits and support, and the incident may be considered by supervisors and others as insignificant. The survey question on the definition of "assault" allowed multiple responses. As shown in Table 2, all 61 responding agencies consider simple assaults such as kicking and punching and aggravated assaults involving weapons to be assaults. Sexual assaults were considered an assault by 95% of the respondents. Five percent, or 3 agencies, indicated that sex-

TABLE 2
DEFINITION OF ASSAULT

Definition	%
Aggravated assaults involving weapons	100
Simple assaults (e.g,, kicking, punching)	100
Sexual assault	95
Spitting	84
Verbal threats/intimidation/harassment involving weapons	74
Projectiles thrown inside the bus (including liquids)	72
Verbal threats/intimidation/harassment without weapons	62
Projectiles thrown at the bus	48
Total Responses	61

ual assault was not considered an assault. These agencies noted that sexual assault is considered to be a separate crime category and therefore not included with other assaults. One agency noted that sexual assaults are handled by a special unit that specifically focuses on sexual incidents. Eighty-four percent of respondents considered being spat upon an assault. About three-quarters of the respondents also categorize verbal threats, intimidation, or harassment involving a weapon such as a knife or firearm as assaults. Seventy-two percent state that throwing projectiles inside the bus is considered to be assault, and 62% state that verbal attacks without weapons are considered assaults. Almost half of the respondents indicate that throwing projectiles at the bus is an assault. It is interesting to note that large agencies are more likely to consider each definition an assault.

ASSAULT CHARACTERISTICS

Assault characteristics, such as frequently occurring assault types, time period of occurrence, assault frequency, and causes of assaults (or contributing factors) are addressed in this section. Understanding these characteristics can help agencies address and mitigate assaults.

Assault Types

When asked which operator assault type(s) is or has recently been problematic for the responding agency, the assault type considered to be most problematic for agencies was verbal threats, intimidation, or harassment, as indicated in Table 3. This result mirrors those of workplace violence studies that indicate that verbal attacks are the most common form of workplace violence. The next most problematic assault type was spitting. Although seemingly minor, being spat upon can be temporarily traumatic to the victim. Also, because aggravated assaults that result in physical injuries can be preceded by minor assaults, even minor incidents need to be reported and closely monitored. Note that 100% of large agencies reported that they consider spitting to be problematic, whereas 70% of midsize and 26% of smaller agencies reported it as problematic.

A lower percentage of respondents (38%) reported that assaults involving projectiles thrown at the bus was problematic, and 26% reported that assaults involving projectiles thrown inside the bus was a problem. One respondent mentioned indecent exposure as a problematic assault type. Another noted a "general lack of civility." The total number of respondents was 58, and multiple responses were allowed.

Contributing Factors

Although some assaults occur without reason, many assaults do have one or more contributing factors. Primary factors mentioned by respondents are displayed in Table 4. They are fare enforcement and intoxicated passengers or drug users, followed by rule enforcement other than fare enforcement, school- and youth-related violence, and individuals with mental illness. Larger and midsize respondents were more likely to indicate that fare enforcement and intoxicated persons or drug users were contributing factors to operator assaults. Also, most of the respondents who indicated that routes in high-crime areas and service problems were contributing factors were larger and midsize agencies. This is expected because these agencies operate in metropolitan areas where crime is generally more prevalent than in suburban or rural areas.

Only two (3%) respondents indicated cash transactions were a contributing factor. Because most U.S. transit bus systems have exact-fare policies and automated fare collection systems, the operator does not need to provide cash change. Other answers included Halloween pranks (objects thrown at the bus), overly aggressive operators, operators who make exceptions, verbal altercations, and attempting to aid a passenger. Multiple responses were allowed.

Assault Frequency

Survey participants were asked to state the number of bus operator assaults that occurred in the previous year. There were 59 responses, ranging from zero to over 500. As expected, the results correlated with agency size based on the number of peak buses and bus ridership. Figures 7 and 8 demonstrate that, as expected, the average number of assaults is related to fleet size (peak buses) and to annual bus ridership.

TABLE 3
PROBLEMATIC ASSAULT TYPES

Problematic Assault Type	%
Verbal threats/intimidation/harassment	81
Assaults involving spitting	60
Assaults involving projectiles thrown at the bus	38
Assaults involving projectiles thrown inside the bus (including liquids)	26
Assaults while vehicle is in motion	9
Assaults due to operator race/gender/size	5
Simple assault	3
Assaults involving weapons	2
Total Responses	58

TABLE 4
CONTRIBUTING FACTORS

Contributing Factors	%
Fare enforcement	67
Intoxicated passengers or drug users	66
Other rule enforcement	53
School/youth-related violence	48
Individuals with mental illness	40
Routes operating in high-crime areas	26
Service problems (delays, service reductions, etc.)	24
Gang-related violence	12
Cash transactions	3
Total Responses	58

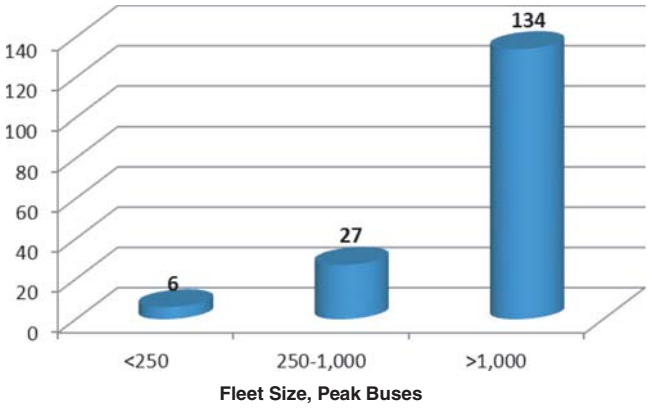

FIGURE 7 Average annual number of assaults by fleet size.

Time Period of Assaults

As shown in Table 5, most assaults, not surprisingly, occurred in the evening–late night–early morning period. Working in isolation has been cited as a factor contributing to workplace violence. Because school- and youth-related violence was noted as a contributing factor by almost half of the respondents, the next two periods with the highest number of responses—the afternoon peak period and school dismissal times—were not surprising. Thirty-three percent indicated "no discernible pattern," with smaller agencies more likely to indicate "no discernible pattern."

TABLE 5
TIME PERIODS OF ASSAULTS

Time Periods	%
Evening/late night/early morning	48
PM peak period	38
School dismissal times	28
During school runs	12
AM peak period	8
Midday	7
No discernible pattern	33
Total Responses	61

TRAINING

Training of bus operators was cited by survey respondents as a very effective security measure to prevent assault. Transit agencies provide a variety of training to new and veteran bus operators. Training that specifically addresses customer relations, conflict management and de-escalation techniques, and diversity training bolsters the ability of the bus operator to deal with stressful situations that may arise and understand the perspectives of individuals with different backgrounds and experiences.

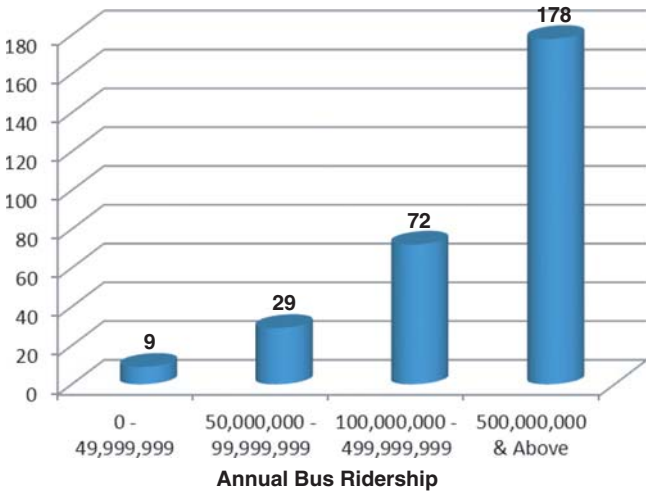

FIGURE 8 Average annual number of assaults by ridership.

- *Customer relations training*—All 61 respondents to this question indicated that they provide customer relations training. Essential in increasing customer satisfaction and mitigating and preventing disputes is professionalism, courtesy, and confidence when interacting with passengers and the public. Most agencies stated they provide customer relations training to their new hires at time of employment and either periodically thereafter or when scheduled by supervision.
- *Conflict mitigation training*—Knowing how to respond, what to do and say and what not to do and say when a dispute arises is important in preventing its escalation. Ninety percent of respondents indicated that conflict mitigation training is provided to their bus operators. Almost half provide the training at time of employment and periodically thereafter.
- *Diversity training*—This training is important because public transportation ridership represents the entire spectrum of economic and social backgrounds, ethnicities, and cultures. Certain phrases or gestures may be construed as offensive to individuals from a specific culture. Communication problems may arise when an operator does not speak the same language as the passenger. These issues are addressed in diversity training classes. As testament to the importance of understanding individuals from different walks of life and backgrounds and the diversity of the transit ridership, almost all agency respondents noted that they provide diversity training to their new hires at time of employment and periodically thereafter or when scheduled by supervision.
- *Self-defense training*—About a third of respondents reported that they provide self-defense training to their bus operators. One agency makes it available to operators upon request. Although physical self-defense training was the intended training category, some agencies providing verbal self-defense or verbal judo-type training may have responded that they provide self-defense training. About 70% of agencies that provide self-defense training to their operators are located in states with more permissive ("shall-issue") concealed firearms carry laws. There was no clear association between open carry laws and the states in which these agencies operate.

- *Self-defense training using a self-defense tool*—This training is not provided by most of the responding agencies. One agency, Metro Transit in Minneapolis, indicated that pepper spray training is available upon request. One hundred of its 1,400 operators have requested and undergone the training. Another agency, Houston METRO, which did not participate in the survey but is included in the profiles in chapter five, issues pepper gel and provides associated training to its operators. Both Texas and Minnesota have permissive "shall-issue" firearms laws for concealed carry. Several agencies that do not provide self-defense training, with or without tools, noted that they believe that this type of training goes beyond the responsibilities of the bus operator. A TWU representative supported this notion by noting that the task of the bus operator is already complex, that any type of self-defense training would add to the complexity of the task, and that they should not be expected to perform law enforcement-type activities.
- *Frequency of training*—Respondents typically provided training on conflict mitigation, diversity, and self-defense without weapons at time of employment and periodically thereafter. For customer relations, respondents also noted that it was provided at time of employment, periodically thereafter, and when scheduled by supervision. Some agencies provide individual operators with refresher training when the situation warrants, as determined by supervision. One agency noted that its training program is tailored to meet the needs of the operator. Another stated that operators involved in frequent incidents (three or more in a 2-year period) are referred for further training.

EMPLOYEE ASSISTANCE

In the aftermath of an assault, the provision of appropriate and comprehensive employee support can make a positive difference in the victim's overall recovery and ability to return to work, and lessen the impact of the assault on other employees. Transit agencies use different methods to support their bus operators who have been assaulted. Larger agencies tend to have more comprehensive programs and more support staff to assist assault victims. However, all agencies realize the importance of providing employee assistance in bolstering overall employee morale after an incident and providing a caring workplace for their employees. As shown in Table 6, most of the 62 respondents to this question, 92%, reported that they actively encourage operators to report assaults, and most respondents, 82%, provide counseling. About half provide trained supervisors to assist operators who have been victims of assaults. Forty-two percent provide legal support, with larger and midsize agency respondents more likely to provide such support. Legal support is important in the prosecution of the offender. It is important that the assault victim be informed of the legal process, including the timeline of the hearings and how to prepare for court appearances, and be kept apprised of relevant developments and the results of the process. Twenty-seven percent of responding agencies offer work resumption plans. A work resumption plan tailors the work schedule and conditions to the needs of the victim. For example, a physical injury may prevent the operator from driving but he or she may be allowed to do other work at the agency until he or she has healed completely.

TABLE 6
EMPLOYEE ASSISTANCE

Assistance	%
Encourage operators to report assaults	92
Provision of counseling	82
Trained supervisors assist operators	48
Provision of legal support	42
Implementation of work resumption plans	27
Total Responses	62

Additional forms of assistance provided by the respondents included provision of medical or worker's compensation assistance (which includes medical help and counseling), prosecution of offenders, employee assistance programs, critical incident support team of peers, pay for court time, and stress management. One agency mentioned that it has a district attorney embedded in the agency. The district attorney works with the victims and provides 24-h access. Others stated that the victims receive case progress updates and results when they become available. One respondent indicated that it provides plainclothes security and marked police escorts when necessary for operators who return to work. Several respondents also cited the proactive measures their agencies take to prevent assaults.

DATA COLLECTION AND REPORTING

Reporting to law enforcement and the National Transit Database is required for Part I and Part II assaults, including simple assaults, aggravated assaults, sexual assaults, and homicides. For Part II assaults, incidents that result in an arrest are reportable. Survey respondents described a variety of ways in which assault data are collected and reported. Several agencies noted that operator assaults are not tracked separately and are combined with assaults on passengers. Concerns about underreporting of nonphysical assaults were raised by some of the respondents.

According to the respondents, the following data elements were being collected by the agencies:

- Date and time of the incident;
- Description or type of incident;
- Operator name;
- Run/line;
- Seniority of the operator;
- Whether other incidents involving the operator had occurred;
- Assailant information;
- Police involvement (officer name, badge no.);

- Weapon(s) used, if any;
- Cause or situational factors;
- Whether the customer was removed and/or arrested;
- Injury description; and
- Treatment received.

When video or audio surveillance recordings are available, they are typically tagged and saved as evidence. In regard to the uses of the data, respondents indicated that the data along with video or audio recordings were being used for law enforcement purposes—identifying and prosecuting assailants and to enforce suspension-of-service policies that bar offenders from accessing their services. Another use of the data included crime management and monitoring efforts, which include determination of incident location (routes) and frequency (crime rate), identifying trends, reporting trends on specific routes to the police and transit management, and police and security resource deployment. National Transit Database reporting, identification of training needs, program and policy development, request for additional police or security funding, and employee injury-tracking were other uses of the information. One agency forwards the information to elected officials; another, to the media.

When asked to which entities they report operator assault, agencies responded that operator assaults are reported to the local police or transit police, the National Transit Database, Canadian Urban Transit Association, Uniform Crime Reports, and the National Incident Based Reporting System. Other responses identified internal security personnel, state department of transportation, municipal officials, public disclosure requests, and prosecutors as report recipients. Larger and midsize agencies were, as expected, more likely to report to transit police than small agencies that do not have their own police departments.

METHODS TO ADDRESS OPERATOR ASSAULTS

Methods to address operator assaults covered in this section include onboard police and personnel, onboard technologies, and nonpolicing methods, including agency policies and initiatives.

Onboard Police and Personnel

Use of onboard police and personnel is an effective crime-fighting measure: uniformed officers deter all types of criminal behavior, including assaults. The visible presence of other personnel can also help prevent assaults; one respondent commented that high visibility by supervisors is a good security measure. Plainclothes officers can stop offenders who commit various types of crime by arresting them and getting them out of the system. The responses elicited by the question regarding onboard policing methods are shown in Table 7. There were 61 respondents to this question. Agencies typically allocate security personnel to locations (routes) with high crime rates. Forty-four percent had police patrols, 39% used plainclothes officers, 21% used security personnel, and 15% stated that they had fare enforcement officers or personnel on board. Note that this does not mean that these respondents have specified personnel on every bus at all times. Resources need to be deployed strategically because police and security personnel are limited and cannot be present on every bus all the time. Two respondents (3%) indicated use of supervisors for onboard security, and another agency reported the use of volunteers. A significant percentage of large agencies, about half of midsize agencies, and a fifth of small agencies use police patrols. Large agencies were also more likely to use plainclothes officers and security personnel. Those agencies responding that they use none of these security methods were more likely to be midsize and small agencies. As noted earlier, smaller agencies tend to have fewer incidences of violence and tend to have more restricted budgets and thus rely more on local law enforcement for their security needs.

TABLE 7
ONBOARD POLICE AND PERSONNEL

Personnel	%
Police patrols	44
Plainclothes officers	39
Security personnel	21
Fare enforcement officers or personnel	15
Supervisors	3
Volunteers (e.g., Guardian Angels)	2
None of the above	31
Total Responses	61

Onboard Technologies

Onboard technologies support the bus operator during emergencies by facilitating communication with supervisors and responders, and fast response to incidents. Surveillance systems can deter attacks and, should one occur, can assist police in identifying and prosecuting the assailant.

Emergency communications technologies can help operators communicate with dispatch or police during emergency situations. Vehicle location and monitoring technologies can help dispatchers alert police if a bus is in distress or goes off-route without reason. Video and audio surveillance systems can assist police in identifying and prosecuting assailants, assist supervision in determining what was actually said and done during an incident, and can deter assaults. Survey respondents indicated that video surveillance is one of the most effective and proven assault-prevention measures they have implemented, as is shown in Table 8. CPTED techniques such as enhanced lighting and use of improved bus design to eliminate hiding places and increase visibility within the bus are also used by agencies to address crime. Barriers separating the bus operator from passengers have been implemented by several agencies and are undergoing testing in others. Two-way radio or phone communications available on most

TABLE 8
ONBOARD TECHNOLOGIES

Technologies	%
Radio/phone communications	89
Video surveillance/video recording	85
Silent alarm/panic button	82
Automatic vehicle location (AVL)/GPS systems	64
Audio surveillance/audio recording	61
Electronic distress sign visible to other operators	52
Crime Prevention through Environmental Design (CPTED)	28
Real-time audio streaming	18
Assault prevention screens/partial enclosures	10
Total Responses	61

bus fleets may be used for emergency communication. Also, covert and overt panic buttons open up an immediate and direct line of communication with a dispatcher or control center. Covert panic buttons provide covert one-way communication with the dispatcher or police; they can hear what is occurring inside the bus but cannot communicate with the operator, ensuring that the assailant does not know about the operator's request for assistance. Covert panic buttons may also activate an electronic headsign stating "call police" or "call 911" to alert the public to summon assistance. Agencies have reported that these headsigns have been effective in summoning rapid, emergency response.

AVL systems can work in conjunction with these communications systems to supply dispatchers and emergency responders with the exact location of a bus in distress. For example, if the panic button is connected with the AVL system, then an alarm may be activated at the dispatch center and the dispatch display can highlight the bus that is in distress. Even if it is a standalone system, AVL technology can provide valuable information about the location of the bus in cases where emergency response is necessary. Although most modern AVL systems use Global Positioning System (GPS) technology, some agencies still use the older signpost technology, which limits the ability of the system to provide accurate vehicle location, especially if the bus goes off-route. Agencies with video surveillance systems find that they may be used for multiple purposes: video recording is often used as legal evidence to identify and prosecute criminals. Video can be used to resolve disputes between the operator and passenger, serve as a training aid, prevent and identify false liability claims, and assist in accident investigations. Although video systems are expensive, grants provided by DHS and other agencies have helped agencies install and upgrade their systems. Video surveillance systems typically consist of several CCTV cameras within the bus and may also have a few external cameras. Unions have requested that cameras be pointed away from the operator owing to concerns that the video recordings may be used for disciplinary purposes. The movement from analog to digital video systems and wireless uploads of video recordings has been taking place. Because of bandwidth issues, many agencies have not yet implemented real-time video transmission functionality, which would allow emergency responders to view onboard video in real-time. Audio surveillance is typically deployed along with CCTV cameras, and can assist law enforcement in identifying and prosecuting offenders and in quickly resolving disputes between operators and passengers. Legal issues regarding whether an agency is able to conduct audio surveillance differ by state and jurisdiction. Therefore, an agency's legal division is usually consulted before a decision to provide the measure is made.

The question concerning onboard technologies asked about technologies being used to protect bus operators on board their buses. Multiple responses were allowed. Eighty-nine percent of the 61 respondents stated that they use radio or phone communications on board their buses; 85% use video surveillance and recordings; 82% offer their operators a silent alarm and panic button for emergencies; 64% have an AVL/GPS system; and 61% use audio surveillance and recordings. More than half of the respondents have electronic distress signs that are activated with a panic button. Twenty-eight percent practice CPTED techniques. Six agencies, or 10%, indicated that they use barriers or partial enclosures on their bus fleets; no respondent stated that they use compartments or full enclosures. Two agencies reported having real-time video streaming, with two more planning to install it. Larger agencies were more likely to use each of these measures: all of the larger agencies reported having silent alarms or panic buttons in their bus fleet, and 91% reported using video surveillance.

Other Methods to Address Operator Assaults

Transit agencies undertake numerous initiatives to prevent and mitigate operator assaults. The majority of agencies indicated that they cooperate with law enforcement. These efforts include familiarizing local responders with an agency's buses, including its emergency equipment, dispatch system, and the agency's incident response procedures. Other initiatives include periodic meetings about problematic routes, incidents, and trend analysis. Some agencies engage in public and passenger awareness initiatives. These initiatives include informing the public and passengers about the problem of operator assaults and what they can do to help assist the agency and police in preventing assaults. An example of such an initiative is WMATA's High Intensity Target Enforcement Program: officers in uniform board buses and distribute information about safety and security to passengers. Agencies may also undertake media campaigns to announce security initiatives or policies addressing crime and transit operator assault. Since many incidents are caused by youths and schoolchildren, school outreach efforts are important. School outreach efforts teach children how to ride a bus, how to be respectful to bus operators, and other information useful to students. Community outreach activities have also been performed by the respondents and include participation in community events and presentations on bus safety and security. Some respondents engage in high visibility prosecution of offenders and

have been lobbying for more stringent penalties. Other responses included the following:

- Use of CompStat—CompStat is a crime management tool that uses crime-mapping technology and analysis to identify areas of potential incidents and hotspots, and assesses the effectiveness of various policing measures.
- Suspension-of-service policy—CDTA bans offenders from CDTA services. If the offense is serious enough, the offender may be banned permanently. The suspension-of-service policy and other agency policies are discussed in chapter six.
- Bus operator committee—The Chicago Transport Authority (CTA) has a bus operator assault committee composed of bus operators, union officials, management, and police. They discuss assault statistics, locations of the assaults, the number of individuals in custody, and measures being taken to reduce the number of assaults.

Transit agencies and the ATU believe that tougher penalties for operator assaults deter assaults, although the TWU does not. When asked about enhanced local or state statutes for operator assaults, 52% of the respondents stated that their local laws provided more severe punishments for assaults against bus operators. As of the date of this report, 23 states and no provinces currently have enhanced penalties for operator assaults, and about a fifth of the respondents had indicated on a different question that they are currently lobbying for more stringent penalties. There were a total of 62 respondents to this question.

Self-Defense Tools

Oleoresin capsicum or OC, commonly known as pepper spray or pepper gel, has been used by law enforcement since the late 1980s. Because exposure to OC irritates the skin, eyes, and the upper respiratory tract, it is considered to be generally useful and effective in subduing violent individuals and stopping assailants. It is also regarded by the law enforcement community to be safer than other forms of less-than-lethal options. Concentrations and use are limited on a state-by-state basis, and OC is prohibited in Canada. Though rare, in-custody deaths of asthmatics have occurred as a result of the use of OC, and its effectiveness on mentally ill individuals and individuals under the influence of drugs or alcohol has been questioned. As of the date of this report, OC is the only self-defense tool that is being issued to bus operators or for which training is provided by transit agencies, to the best of the contractor team's knowledge.

Of 61 agencies that had responded to the question regarding whether the agency *issues* self-defense tools to operators, 59 indicated that their agency does not issue self-defense tools to their operators and two noted that they were uncertain regarding the issue. With respect to whether the agency *allows* operators to carry any type of self-defense tool, two agencies out of 61 responded that they allow operators to carry one. One agency reports that the tool must not be a firearm or a blade longer than 4 in. The other agency indicated that operators who undergo the agency's pepper spray training are allowed to carry pepper spray as a self-defense tool. Many agencies are concerned about the liability that they might face if an operator were to use the tool, even if it is used appropriately. Additionally, the unions report that their members are not in favor of carrying self-defense tools, as they increase the complexity and responsibility of a job that is already rife with complex tasks and responsibilities. In the profile section on self-defense tools in chapter five, an agency that did not participate in the survey, Houston METRO, was identified as issuing a self-defense tool—pepper gel canisters—to their bus operators.

BUS OPERATOR SELECTION METHODS

Hiring individuals suited for all aspects of the bus operator position can lessen the incidence of passenger assault. The position requires not only a good driving record but also excellent people and problem-solving skills, and the ability to handle daily pressure and stress. Driving records are checked to ensure that the candidate has a clean driving record. Background checks are performed by agencies to screen out candidates who have criminal records, outstanding warrants, or other factors that could affect their job performance. Agencies also routinely conduct physicals and drug tests before candidates are hired, and random drug and alcohol tests are typically conducted after they have started their jobs to confirm that the operators are still fit for duty. Note that U.S.DOT requires drug and alcohol testing of safety-sensitive transportation employees, including bus operators, under the Omnibus Transportation Employee Testing Act of 1991 (49 Code of Federal Regulations (CFR) Part 40). FTA's rule 49 CFR Part 655 conforms to the U.S.DOT regulations. Drug and alcohol testing is required in the following situations: reasonable suspicion and random, post-accident, and return-to-duty/follow-up (periodic). Drug testing is also required, but alcohol testing is optional for preemployment screening. FTA Office of Safety and Security provides guidance for transit agencies on the implementation of the testing program.

Many agencies conduct interviews; some indicated that they conduct a job aptitude test, video-based screening, and/or a psychometric/personality test. Large agencies were more likely to conduct a psychometric/personality test than midsize or small agencies; because they have larger human resource budgets, larger agencies may be able to use additional screening mechanisms to help them identify appropriate candidates.

IMPACT OF VIOLENCE AGAINST OPERATORS

Operator assaults can have significant consequences for the victimized operators, for their coworkers and families, and for bus operations in the form of injury-related claims, absences, diminished productivity, and union grievances. Operators

TABLE 9
IMPACT OF VIOLENCE ON BUS OPERATORS

Impacts of Violence	%
Injury-related claims	68
Operators showing increased anxiety/stress	52
Absenteeism/diminished productivity	28
Union grievances	20
None	6
Total Responses	50

may experience increased levels of anxiety and stress, which can cause them to become distracted while on duty or less calm under pressure. When asked about issues experienced by bus operators or operations as a result of violence against bus operators, as shown in Table 9, 68% of the 50 respondents to this question reported that they have had injury-related claims, and more than half reported that their operators showed increased anxiety and stress. Twenty-eight percent reported that their bus operations were affected by absenteeism and diminished productivity, and 20% reported union grievances. A few respondents noted that their bus operations have experienced none of these issues. Small agencies were less likely to report that their operators have been showing increased anxiety or stress. Larger agencies tended to report more injury-related claims and absenteeism or diminished productivity than midsize agencies, and midsize agencies were more likely to report absenteeism or diminished productivity than small agencies. Multiple responses were allowed.

EFFECTIVE MEASURES

Survey respondents were asked in an open-ended question to provide the five most effective security measures that can protect bus operators from passenger assault. Forty-seven respondents provided their opinions regarding the most effective measures and listed up to five measures. A few respondents provided more than five because some of the measures were considered ties. The responses are summarized in Figure 9. The percentages of effective measures with 1 and 2 rankings from each category of measures are indicated in parentheses in the chart.

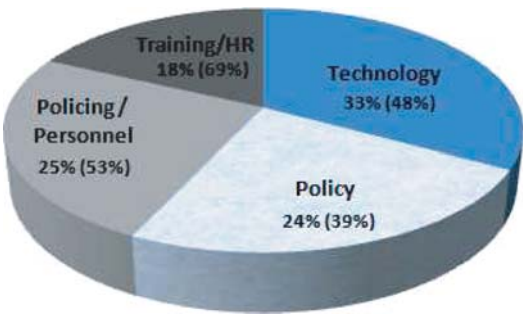

FIGURE 9 Effective measures.

A total of 195 measures were mentioned by the respondents, of which 33% were technology measures, 24% policy-related measures, 25% were policing and personnel methods, and 18% training/HR, as shown in Figure 9. Of those mentioned, 99 measures received a ranking of 1 or 2. Of the technology measures, 48% received a 1 or 2 ranking; of the policy measures, 39% received a 1 or 2 ranking, as did 53% of the policing and personnel measures, and 69% of the training/HR measures. It can be noted that agencies typically do not rely on a single measure to prevent assaults and other crime against their operators. The importance of using a layered security strategy or combinations of measures was indicated by some of the respondents. For instance, one respondent noted that the combination of security cameras and increased uniformed police presence has minimized the potential for confrontation between passengers and operators.

Technology

Of the 65 responses provided in the technology category, 34 cited video surveillance and six mentioned audio surveillance. As seen in Figure 10, 20 or almost 60% of the 34 respondents ranked video surveillance first or second. Although seven cited silent alarm or panic button, none ranked it first or second. Of the five respondents who cited barriers, two ranked it first or second. There were two other respondents who noted that their agencies were considering or were planning to implement barriers because these were expected to mitigate operator assault. Other technologies mentioned were radio/other communications, AVL/location grids, fare collection changes, and integration of systems.

Policy

In terms of policy measures, no one policy measure dominated the responses (see Figure 11). Of the 46 responses in the policy category, eight mentioned cooperation with the police, and eight stated work rules or policies and procedures. Six indicated signage as an effective measure, including signage alerting passengers and the use of video or audio surveillance and information about the penalty for operator assault. Prosecution of offenders was cited five times, and management support and media campaign, along with outreach to unions and zero tolerance/suspension-of-service policies, were each mentioned four times. Three responses were in the category of community and school outreach, various committees. Two indicated legislation to increase penalties for assaults against operators, and various committees. With respect to their agency's suspension-of-service policy, one respondent stated that the policy has been "extremely successful" and "not one of the patrons has resurfaced as a subsequent violator." One respondent noted that the following change mitigated assaults: In the past, problems with customers were to be resolved at the scene (on the bus); this policy was changed so that the passenger would be separated from the operator. A supervisor now arrives at the scene,

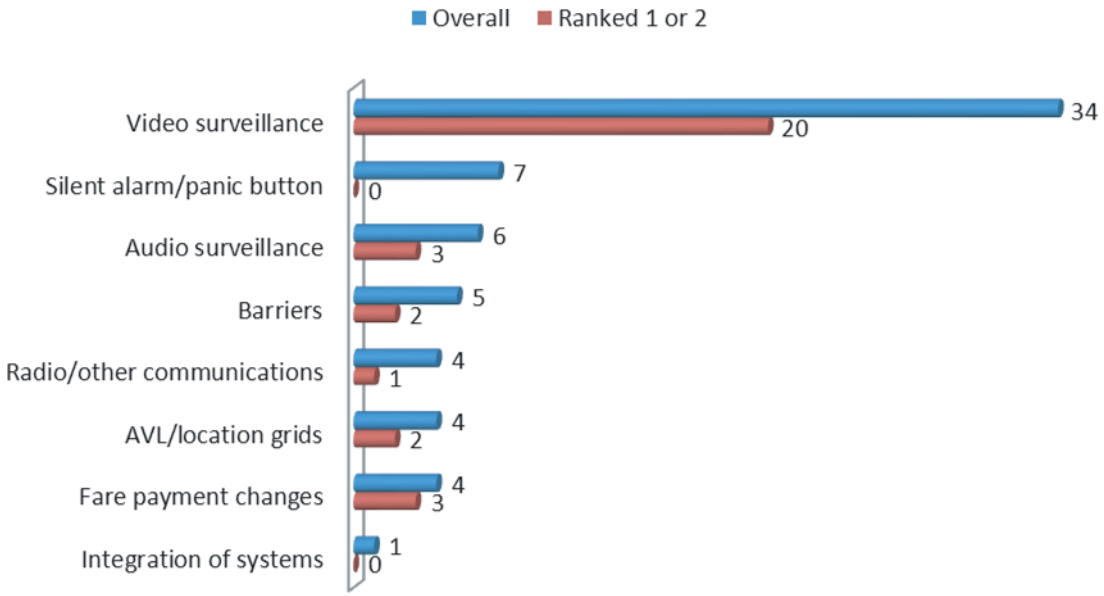

FIGURE 10 Effective technology measures.

escorts the passenger off the bus, and drives the passenger to his or her destination. Another respondent mentioned that restructuring school routes so that the same operator is used on specific school routes was an effective measure. Several policy-related insights were provided in the additional comments question of the survey, some of which are included in what follows.

"The best prevention is good Customer Care and Service. Taking care of passengers by using techniques that indicate compassion, consistency, and fairness reduce the likelihood of assaults." The respondent also recommends, regarding fare payment and other agency rules, that operators "should avoid [making] exceptions, which confuse passengers" and may ultimately result in an assault. Another respondent believed that the agency's policy of "having operators only challenge a passenger that is violating a rule once" is the key to mitigating operator assaults, because continued "heated discussion" with passengers would increase the likelihood of an assault. "The vast majority of assaults occur over fare enforcement issues. In spite of training advising operators not to pursue the matter with irate customers, the fact remains that many get caught up in the moment, push the issue, and ultimately end up getting assaulted." "Drivers are instructed

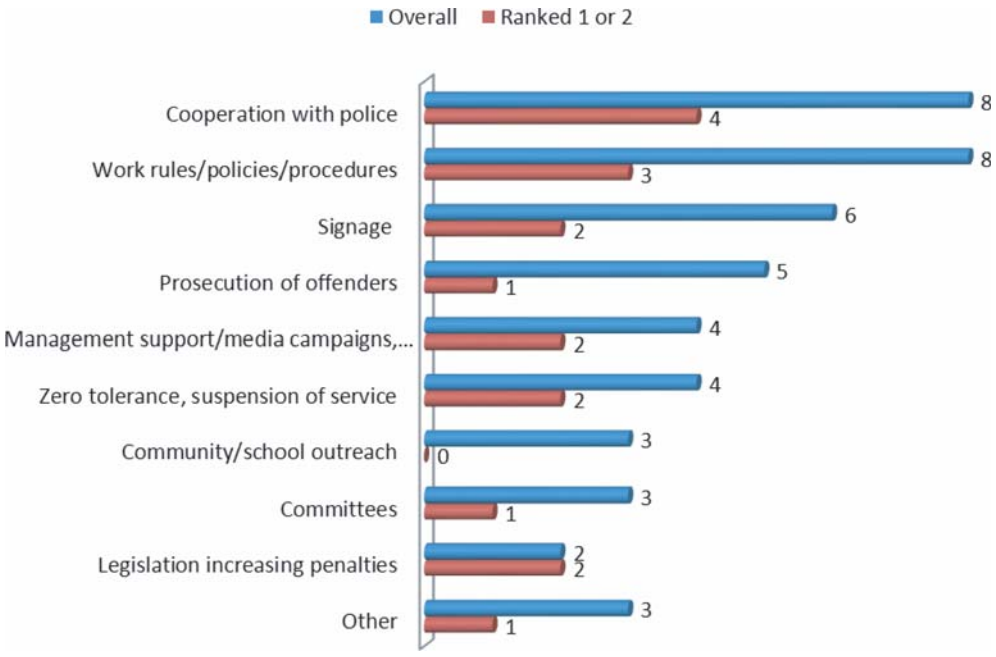

FIGURE 11 Effective policy measures.

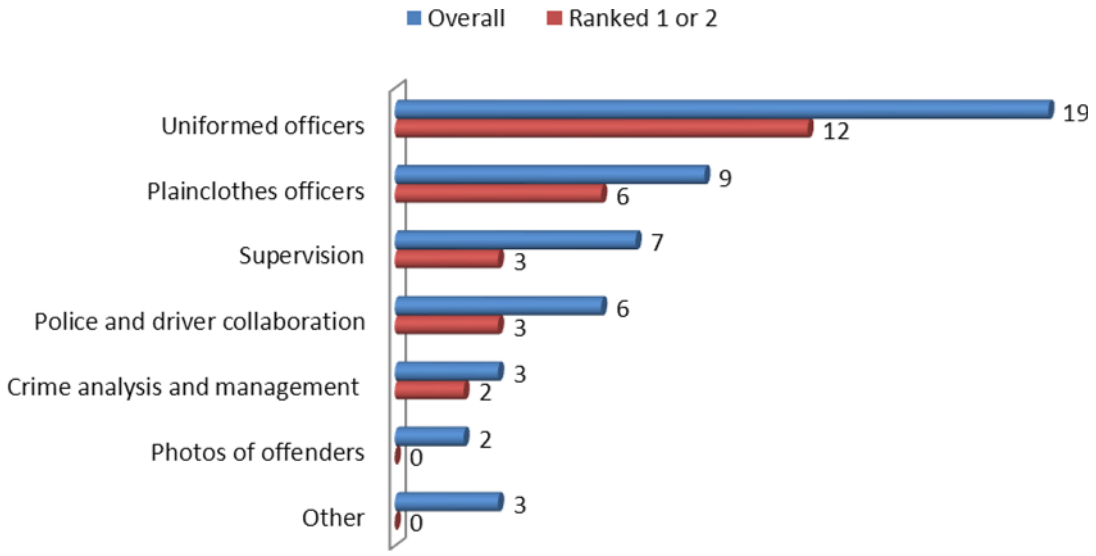

FIGURE 12 Effective policing and personnel measures.

to never leave the driver's seat to confront a passenger or to interdict in a criminal act upon others on the vehicle." The respondent goes on to note that the operator may only leave the seat to flee an attacker or in the act of self-defense. The authors have a caveat regarding the policy to never assist passengers—although the policy does protect the bus operator, if an incident does occur and a passenger is injured, negative publicity against the agency and the operator may arise. Another respondent stated that "partnership with law enforcement is key" and cited the importance of making local police aware of agency "schedules and routines" and "equipment and practices."

Policing and Personnel

Forty-nine responses were received in the policing and personnel category (see Figure 12). The presence and visibility of uniformed officers, which include patrols, bus checks, and officers at bus terminals, constituted 19 of these responses, with more than half ranking it first or second. Nine responses indicated plainclothes officers and seven cited supervision. Police–driver collaboration was mentioned six times. Other responses included supervision and crime analysis and management techniques, such as CompStat, and posting and distributing photos of offenders. One respondent provided the following comment: "[T]he CompStat methodology and partnering with local police jurisdictions that our operators service, has proven that it is effective in reducing crime as well as providing a safe riding environment for our employees and patrons."

Training/Human Resources

Thirty-five of the measures were in the training/human resources category (see Figure 13). The top response, bus operator training, was mentioned 20 times. Fifteen or 75% of the

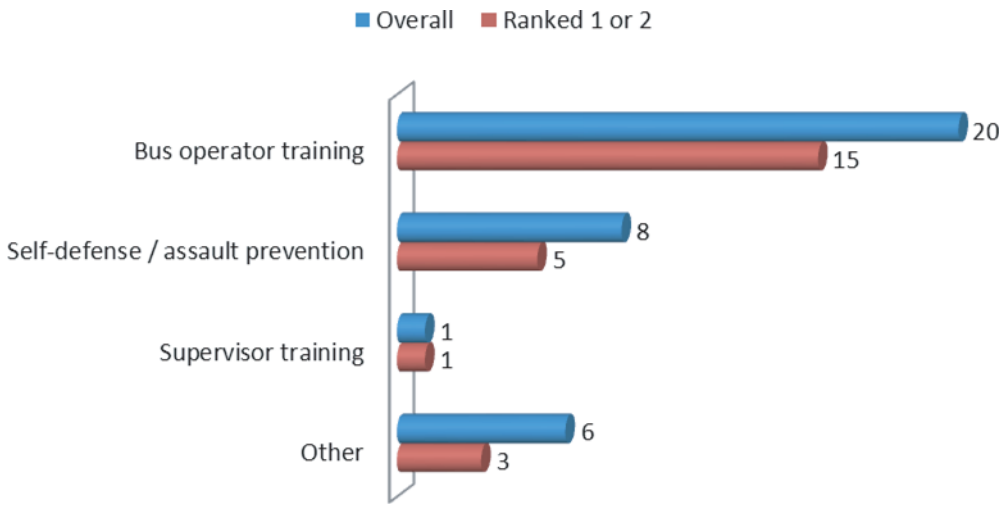

FIGURE 13 Effective training/human resources measures.

20 ranked it first or second. The types of bus operator training cited by respondents were customer service, conflict mitigation, and diversity training or generic training with no specific training area specified. Eight respondents mentioned self-defense or assault prevention training, and seven indicated "other," which included operator discipline, performance monitoring, targeted training for operators involved in frequent incidents, and supervisor training.

Training-related insights were offered by several respondents in the open-ended request for additional comments. Several noted the importance of operator behavior and attitude, provision of good customer service, the operator's verbal skills, and the importance of treating passengers fairly. A respondent stated that the bus operators "prevent assaults on a daily basis. Training is the only way to prepare an operator for this type of event [conflict situations]. The bus operator must know when to 'let it go' and report the situation to a supervisor or officer." Another respondent notes that their agency has "utilized recurrent training in passenger relations for those operators with a disproportionate number of negative customer encounters." "National curriculum for bus operators" is proposed by one respondent. A few noted the importance of supervisor involvement in resolving disputes. Video recordings of incidents are used by some agencies as a training tool for operators.

CHAPTER FOUR

OPERATOR PROTECTION MEASURES: TECHNOLOGY AND INFORMATION MANAGEMENT

Technology, including onboard technologies, operator barriers, and information management are covered in this chapter. Onboard technologies such as radio or phone communications and emergency communications—silent alarm/panic button and an electronic distress sign linked to panic buttons—are installed in most North American bus fleets and are helpful to operators in summoning assistance. Video surveillance was cited by survey respondents as one of the most effective security measures. Video surveillance systems can deter crimes against operators as well as passengers and help police identify and prosecute assailants. Recordings are used for incident review and training purposes. Profile participants noted the versatility of the measure and its ability to effectively address multiple issues. Audio surveillance systems have similar benefits and also assist police and agency management in determining what was said during verbal altercations. There is a trend toward the use of digital video and audio surveillance systems and wireless uploading of recordings. A few agencies also have the capability to stream real-time video and audio to police cruisers. In the past decade or so, AVL deployment has increased significantly; AVL systems shorten response times by providing the exact location of a bus to dispatch or police.

Barriers have not been used extensively in transit buses in North America except in a few cities. Miami–Dade Transit, one of the two early adopters of the security measure, reported that barriers installed in its bus fleet have been very effective in preventing operator assault, even though the barrier provides only partial protection. Recently, several transit agencies have begun testing and installing them. The results of the tests, and agency and bus operator feedback, are included in this section. Full-compartment designs in use in European systems have not yet been evaluated by bus transit systems in the United States as of the writing of this report. Information management assists transit police and law enforcement in addressing and solving crime and in strategically allocating resources. Information management includes crime management and information/data analysis by monitoring trends in assault types and perpetrators, intelligence gathering, and assessment. CompStat uses information management tools to manage and monitor police officers.

BARRIERS

Barriers shield the bus operator from passengers and are believed to be useful in protecting bus operators against passenger assault. Partial barriers have been used and are being tested by U.S. and Canadian agencies. These barriers are usually made from Plexiglas. Plexiglas is a clear, lightweight material, which is thermoplastic (flexible and elastic in high heat). It is characterized by high-impact strength and shatter-resistant properties, which make it an ideal substitute for glass. However, the one factory in the United States that manufactures Plexiglas has been out of commission for almost a year, causing difficulties for transit agencies to procure Plexiglas barriers. Full-compartment barriers are being used by some European systems. The first adopters of operator barriers in the United States were Miami–Dade Transit and San Francisco MUNI. Miami–Dade Transit has had a positive experience with barriers and believes the barriers have been very effective in protecting its bus operators against assault, even though it only provides partial protection. It is important that in the design of the barriers, appropriate SAE standards and recommended practices be consulted, including SAE J833 Human Physical Dimensions. APTA's bus procurement guidelines contain sections on the operator's area, objects and instruments within the area, and barriers between seated passengers and the operator. Though these guidelines do not specifically address barriers between the operator and boarding passengers, they can also help agencies develop a request for proposal (RFP) that includes specifications for these barriers. The importance of minimizing glare in the operator's work area and reducing the reflection of light onto the windshield is clearly stated in the guidelines. The section on "Driver Area Barrier" TS 73.1 between the operator and the front passenger seat notes that "the barrier shall minimize glare and reflections in the windshield directly in front of the barrier from the interior lighting during night operation." In addition, the section states that "location and shape must permit full seat travel and reclining possibilities that can accommodate the shoulders of a 95th-percentile male." Isolation of the panel for noise control is also mentioned (*24*).

Several agencies have pilot-tested or have recently installed barriers. Glare and the reflection of the shields in operators' mirrors and windows were mentioned as concerns by the profile agencies. The second concern is related

to customer service. Bus operators typically communicate with passengers using gestures to help convey information and use visual cues from customers to better understand their questions or issues. Also, operators often assist passengers experiencing problems with the fare payment system by showing them how to swipe the smart card or doing it for them. This aspect of customer service would therefore be hindered by the physical barrier between the operator and passenger. In addition, some bus operators have reported feelings of anxiety and claustrophobia. They have also expressed concerns that partial barriers may allow a determined attacker to slide open the barrier or go around it to reach the operator.

Advantages and Disadvantages

Advantages

- Bus operator perspective—increased perception of security and management support for operators.
- Availability of optional barriers—operators who believe they are more secure using the barriers can use them, whereas those who dislike them have the option of not using them.

Disadvantages

- Bus operator perspective—feelings of confinement, glare and reflection, noise.
- Customer service—communication barrier between operators and customers, operators may be less able to assist customers with fare payment.
- Perception of security—public and passenger perception of bus security may diminish: if barriers are needed to protect bus operators, the passengers may start to question their own security.

Agency Experience

Miami–Dade Transit, Miami, Florida

Miami–Dade Transit (MDT) is Florida's largest transit agency, serving Miami, the fifth largest urbanized area in the United States. Some 741 buses delivered 29.2 million revenue-miles and produced more than 83 million passenger trips in 2007. MDT's bus enclosures were deployed as a response to a rash of assaults in the late 1990s. The assaults involved punching, spitting, and urine being thrown at the operator. MDT noted that the barriers were their most effective security measure against bus operator assault and mentioned that "the compartment door provides only partial protection, but serves as a good deterrent." The partial enclosure, shown in Figure 14, is attached to the operator's modesty panel in the form of a hinged door made of metal and Plexiglas. The enclosures cost $1,600 to $1,900 per bus, including installation, and are built into each bus purchased by MDT according to its specifications.

FIGURE 14 Miami–Dade Transit barrier. (*Courtesy:* Miami–Dade Transit.)

MDT Operator Enclosure Specifications are as follows:

> An operator's area enclosure shall be provided for the operator's security and personal protection. The enclosure shall prevent passengers from reaching the operator or operator's personal effects. A rear barrier between the operator and the left front passenger seat shall extend from the floor level to the ceiling. A side barrier shall be located on the right side of the operator's area extending from the rear barrier forward. The exterior skin of the rear and side barrier shall be constructed of stainless steel with a slight corrugated texture. It shall be constructed so as to prevent unauthorized entry or intrusion into the operator's area, yet allow the operator to converse with passengers. All passenger seat positions shall be visible to the operator either directly or by mirror. The barrier shall not hinder the operator's performance in any manner. It shall not be a source of any rattling or noise. A door, which can be secured from the inside, shall allow for easy access into and out of the operator's area. The handle to open the enclosure door shall be flush-mounted so that clothing or other articles cannot be caught on it. The upper portion of the enclosure door shall be a fixed ½″ polycarbonate window [that] must not interfere with the operator's view through the front windshield or the rearview mirrors. The window shall be covered on both sides with a removable, clear scratch guard, Lexan Nu-View or approved equivalent. Operator's area trim must be satin black.

San Francisco Municipal Transportation Agency, San Francisco, California

The San Francisco Municipal Transportation Agency (SF MUNI) in San Francisco, which carries 200 million customers annually, is another early adopter of barriers. The implementation of the barriers took place with the input of MUNI's operators. They are currently installed on 10% of the buses and are available at the request of the operator (see Figures 15 and 16). MUNI bus operators are satisfied with them. No study has been done by MUNI with regard to the actual effectiveness of the barriers at preventing operator assaults.

Milwaukee County Transit System, Milwaukee, Wisconsin

The Milwaukee County Transit System (MCTS) serves the city of Milwaukee and its suburbs, and has 429 buses and

FIGURE 15 SF MUNI barrier. (*Courtesy:* SF MUNI.)

FIGURE 16 SF MUNI barrier, upper portion. (*Courtesy:* SF MUNI.)

operates 55 routes. In 2008, average weekday ridership was 140,000. MCTS has been testing operator barriers, with the MCTS Maintenance Director leading this program. With input from its bus operators, the agency developed the prototype, ordered supplies, and constructed and installed 25 barriers on MCTS buses in March 2009. The shields, which cost $650 each, were evaluated by more than 600 bus operators over a 6-month period. A survey of operators and passengers indicated that the shield needed to be extended, the latch needed improvement, and a magnetic catch installed to reduce vibration of the shields. Glare concerns were expressed by 40% of the survey respondents, even though an adhesive glare-control window film had been added. To address these concerns, the barriers were extended by 18 in., the angle of the barrier was changed, and vertical slots were added, as shown in Figure 17. The slots are expected to improve noise and ventilation issues. The improved prototypes were developed and evaluated in September 2009. Although the glare concern had been addressed, the union requested further changes to the hinge and magnetic latch. Further testing is currently being conducted.

Rochester Genesee Regional Transportation Authority, Rochester, New York

The Rochester Genesee Regional Transportation Authority (RGRTA) serves a seven-county area with a population of 1.2 million in Rochester, New York. The Authority has a 400-bus fleet, 800 employees, and an annual ridership of 15 million. RGRTA has installed barriers in some of its buses, as shown in Figures 18 and 19, in response to the homicide of an operator. The cost of the barrier was $1,317 per bus, including installation. One manufacturer used by RGRTA was able to provide the barriers according to RGRTA's specifications, whereas another was not able to. RGRTA has also fabricated its own barrier for its newly acquired articulated buses. The RGRTA mandates use of the barrier and discourages the tie-back of the barrier, which its operators do at times with garbage bags.

NYC Transit, New York, New York

New York City Transit (NYCT), the largest transit agency in the United States, operates more than 4,500 buses, has 12,500 bus stops, 208 local and 36 express routes, and serves 2.3 million customers on an average weekday in New York City's five boroughs. After the brutal murder of bus operator Edwin Thomas by a passenger angry about not receiving a transfer, NYCT decided to test operator shields. In 2009, several NYCT buses in the Flatbush Depot were outfitted with test barriers from different manufacturers developed with input from a safety committee of about 15 operators from the TWU Local 100. The latest test barrier

FIGURE 17 Milwaukee County Transit System prototype barrier with slots. (*Courtesy:* Milwaukee County Transit System.)

is made of glass because the factory producing Plexiglas suspended production. The testing of the glass barrier has been completed and the procurement process is slated to begin soon. NYCT plans to install these barriers on all new buses, although older ones may be retrofitted. Once installed, the barriers will be mandatory. The operator feedback was mixed, with some feeling more secure with the barriers, whereas others felt

FIGURE 18 Rochester Genesee RTA barrier, closed. (*Courtesy:* Rochester Genesee Regional Transportation Authority.)

FIGURE 19 Rochester Genesee RTA barrier, open. (*Courtesy:* Rochester Genesee Regional Transportation Authority.)

uncomfortable and had feelings of claustrophobia. The Local did not consider any of the tested barriers to be fully effective against assaults because there is space above the farebox area that makes it possible for an assailant to attack the operator. Therefore, the Local prefers implementation of a full enclosure, similar to the one used in Lisbon, Portugal, which offers operators the option of keeping it open. As shown in the photos in Figures 20 to 22, this barrier is a full enclosure extending from the floor of the bus to its ceiling. It has a sliding partition, allowing the operator the option of keeping the enclosure open or opening a small "window" to assist and interact with passengers, and provide transfers. The "window" moves up and down at the option of the bus operator. It is usually left open until a threat is perceived by the bus operator; then it is closed, and the police called if needed.

Coast Mountain Bus Company, British Columbia, Canada

Coast Mountain Bus Company (CMBC) provides 700,000 daily trips on 201 bus routes and serves the 1,800-km^2 Greater Vancouver region, the largest transit service area in Canada. The key issue for CMBC has been the glare in operator mirrors caused by the barriers. Secondary issues for operators have included the reduced ability of operators to communicate with passengers, ventilation restrictions, discomfort, and fear that they might become trapped. An agency concern was that barriers might cause operators to become more aggressive. The glare issue in operator mirrors was addressed by trimming the barriers. CMBC evaluated the New Flyer's prototype shield and determined that it does not have the capability to prevent assaults. The shield would have cost $1,000 to $1,200 each. CMBC has not been able to find a product meeting their needs despite extensive communications and visits with other transit agencies and vendors. CMBC has decided to work directly with a plastics fabrication company to design a shield that will meet the agency's specifications.

FIGURE 20 Lisbon enclosure, passenger service window open. (*Courtesy:* Dr. Frank Goldsmith, TWU Local 100.)

FIGURE 21 Lisbon enclosure. (*Courtesy:* Dr. Frank Goldsmith, TWU Local 100.)

Toronto Transit Commission, Toronto, Canada

The Toronto Transit Commission (TTC) serves the greater Toronto metropolitan region. TTC has approximately 12,000 employees, 1,644 buses, 140 bus routes, and operated 124 million bus kilometers in 2010. TTC began installing barriers in 2009, so its entire bus fleet could have them by the end of 2010. The lower portion is metal and the upper portion is Plexiglas, as shown in the photo in Figure 23. Because the union was not in favor of mandatory barriers, TTC decided to make the barriers optional—although the bottom half of the barrier is closed during revenue service, the top half can be opened or closed at the discretion of the operator. There have been concerns noted by the operators about glare in the front and side windows caused by the barriers.

Winnipeg Transit, Manitoba, Canada

Winnipeg Transit serves Winnipeg, the capital of Manitoba, an ethnically diverse city. Winnipeg Transit is evaluating various safety barriers, including a sliding barrier and enclosures. Many of Winnipeg's operators have voiced various concerns about shields and do not currently support the installation of the barriers.

INFORMATION MANAGEMENT AND CRIME ANALYSIS

Information management includes intelligence gathering, crime data analysis, and strategic resource allocation. Although many transit agencies perform some type of crime monitoring, as noted in *TCRP Synthesis 80,* the larger transit agencies tend to employ more advanced crime management and analysis procedures such as CompStat (COMParative STATistics) to manage crime in a systematic manner. CompStat is a crime management tool that uses crime mapping technology, crime data analysis, and accountability meetings to identify trends and areas of potential incidents and hotspots. The effectiveness of various policing measures and relative performance of precincts or units can be assessed using CompStat.

FIGURE 22 Lisbon enclosure. (*Courtesy:* Dr. Frank Goldsmith, TWU Local 100.)

FIGURE 23 Toronto Transit Commission barrier. (*Courtesy:* Toronto Transit Commission.)

Advantages

- Intelligence and crime analysis allow for more efficient and effective resource allocation, including officer deployment throughout the system.
- Crime analysis provides insights into crime trends, specific crime categories, hot spots, problematic time periods, and perpetrators; use of specific algorithms/models may help law enforcement predict crime hotbeds.
- CAD systems incorporate mapping technology to dispatch units to incidents, keep track of ongoing incidents, and provide officers with remote access to the systems.

Agency Experience

Edmonton Transit System, Alberta, Canada

Edmonton Transit System (ETS) is one of the larger transit systems in Canada, with 900 buses, more than 6,200 bus stops, 189 routes, and a light rail system. ETS has a service area of 700 km^2 and a service area population of 782,439. Two serious incidents in 2004 prompted ETS to conduct a thorough security review. A crime analysis unit was initiated as part of a larger information management strategy. The Daily Crime Forecast, which was implemented in January 2006, provides actionable intelligence in a user-friendly format. The forecast analyzes 12 months of data to identify trends and patterns, and uses spatial hot spots optimized for time of day, day of week, day of month, and month. The forecast, automatically updated daily, includes the latest trends and focuses on all crime types for which there is an identified incident time. The forecast is based on the notion that it is more prudent to send officers to locations/times with higher crime predictability, and incorporates a predictability crime score. Although overall crime rates did not change significantly after the implementation of this information management strategy, the manner in which officers responded to incidents did. There was a 52% decrease in reactive calls for service. There was a proportionate increase in officer-initiated calls, where officers intervene *before* a call for service was made. Early intervention means that criminal activity, including operator assault, and level of violence are minimized. ETS has received a Canadian Urban Transit Association (CUTA) award for these efforts.

ETS Records Management System and Security Portal—ETS uses an electronic records management system that captures all relevant incident information and

makes it immediately available to all other users of the system. This type of information sharing has assisted ETS police in apprehending assailants and other criminals, and bringing them to justice. The system utilizes a customized web portal to streamline its intelligence dissemination process. The intelligence disseminated includes the daily forecast, daily security highlights, Be on the Lookout For (BOLF) bulletins with information about missing and wanted persons, information about individuals who have been banned from ETS and modifications to those bans, street information reports with reports of suspicious activity, special duty calendar, special events calendar, special projects, discussion board for officers, monthly security incident summaries, and administrative links and forms.

ETS CAD system—ETS Computer Aided Call-Taking and Dispatch (CAD) system allows security resources to be dispatched to incidents, viewing of unit status updates, clearing units from incidents, and updating incident type or location. The CAD "intelligent" mapping and data-entry system seamlessly integrates an interactive, real-time map display with call handling, dispatching, records and information management, remote access, and mobile data. Front-line officers on the street have remote access to the CAD system and have secure access to live information and the ability to search for needed information. It is the same CAD software in use by the Edmonton Police Service.

Trespasser Tracker—There are, on average, more than 125 persons banned from the system at any one time. To assist officers in tracking and locating banned individuals, the Trespasser Tracker application was created. It provides photos of the individuals and information about where the offender is likely to be, and when. This information is ranked by how reliable it is.

Scheduling software—ETS Security uses a custom-built shift scheduling software application allowing peace officers to manage shift coverage and record time worked for payroll generation. ETS Security also uses a custom-built employee database containing officer information. In addition, a Fare Evasion Database was developed specifically to address fare evasion monitoring requirements.

CompStat—ETS Security adapted the CompStat process that was originally created by NYC Transit Police and subsequently adopted for use by NYPD for the entire city of New York in the mid-1990s. To facilitate CompStat's crime management process, in 2004 to 2005 ETS Security developed performance measures that are presented in a dashboard format. The following performance measures are used to motivate and monitor performance of their security unit, officers, and officer teams:

- Crimes per 1 million riders, percent difference from previous year categorized into violent crime, property crime, and other crime;
- Percent correlation between incidents and deployments;
- Hot spot ratio—the amount of time officers spend in hot spots divided by the amount of time hot spots exist during the officers' shifts;
- Reporting—the amount of time, in days, it takes to complete a report;
- Officer-initiated reporting (street information checks and trespass reports); and
- Number of reports submitted by officers.

Another transit agency currently using CompStat is the Massachusetts Bay Transportation Authority (MBTA). Other agencies use selected elements of these crime management techniques. Incident mapping, for instance, is a compelling and easily implementable way to understand the geographical location of crimes and is also used by transit agencies such as the TTC to map assaults and distribute the information to operators.

VIDEO SURVEILLANCE

Video surveillance is widely used by transit agencies and is believed to address a number of important issues, including crime and terrorism, accident and incident investigations, and passenger injury claims. Video surveillance was considered the most effective technology by survey participants in the prevention of operator assaults. Although the capital expenditure to deploy video surveillance for a bus fleet can be significant, its versatility and ability to meet multiple needs of transit agencies make video surveillance a desirable security measure. Agencies have been moving toward wireless systems that enable easy uploading of video recordings. The systems also offer the ability to set up real-time transmission of video to a dispatch vehicle or police cruiser. However, this capability is not being widely utilized owing to the additional costs and complexity of adding this functionality. Intelligent video analytics are under study by transit agencies for use by rail modes and for transit facilities; they have the potential to be used in onboard bus applications to automatically identify and alert dispatchers or law enforcement of suspicious behavior.

Privacy concerns by operators have been successfully addressed by informing operators of the primary nondisciplinary purpose of the surveillance or by configuring the system so the cameras are not directed towards operators. Many disputes and incidents, however, occur near the operator's seating area and would not be captured with this configuration. Several agencies noted that their operators and unions were initially against the installation of video surveillance technology, but after implementation, operators realized the usefulness of the system and have now accepted it. Privacy concerns by the public can be addressed by placing appropriate signage visible to passengers as they board the bus. Because video surveillance is now prevalent in many public places, the public has become accustomed to video surveillance and many passengers welcome it. One agency noted that because only a portion of their fleet is equipped with video surveillance, they assign buses so equipped to routes with higher incidences of crime.

Advantages

- Agency perspective—serves multiple purposes, including the deterrence of assaults and crime, provision of legal evidence, and facilitation of the disposition of cases/incidents. Significant savings can be realized by eliminating or mitigating fraudulent claims. Video is also useful as a training and post-incident analysis tool. Wireless systems are able to transmit performance reports of equipment to the agency and can automatically save tagged video to the agency server. In addition, video systems are scalable—the number of cameras on each bus and the number of buses with cameras can be increased as needed when budget allows.
- Bus operator perspective—increased perception of security; video recordings can support their version of an incident, and can be used to support worker's compensation claims. If an operator is physically assaulted or verbally threatened, the video provides legal evidence of the attack and can be used to identify and prosecute the attacker.
- As noted by an agency, their bus operators who have reminded aggressive or threatening passengers that they are being recorded have been able to stave off the escalation of disputes.
- Customer perspective—increased perception of security.

Disadvantages

- Bus operator perspective—feelings of invasion of privacy, feelings of unease about video being used for disciplinary purposes, and questionable effectiveness against assaults that are spontaneous in nature.
- Customer perspective—feelings of invasion of privacy.
- Requires substantial capital investment and yearly operations and maintenance (O&M); requires time and effort to transfer video from a bus to a central server, especially if the system is not wireless; also, time and effort are needed to tag/store video and retrieve video.
- Other requests, including those for public disclosure, may increase.

Agency Experience

Greater Bridgeport Transit Authority, Bridgeport, Connecticut

Greater Bridgeport Transit (GBT) provides local, regional, and express bus services in the Bridgeport metropolitan area, including Milford, Norwalk, Derby, and Monroe. GBT uses video surveillance but does not record audio, because Connecticut state law requires consent of both parties to record audio. The video surveillance system was installed 6 to 7 years ago and has been very beneficial in reducing false liability claims and deterring assaults. If there is an incident, the operator tags the video by pressing a button. The video is then uploaded manually onto a PC after the bus returns to the depot. Currently, wireless uploading is not possible because of bandwidth issues.

Rochester Genesee Regional Transportation Authority, Rochester, New York

The video system installed in 2005 in most of the RGRTA fleet is a mobile digital video recording system. According to the RGRTA risk manager, the RGRTA's video system is extremely cost-effective. Because 75% of its lawsuits are frivolous, fraudulent, or exaggerated, the agency saves hundreds of thousands of dollars by using video evidence to eliminate or effectively address these claims. Video evidence has allowed RGRTA to institute a no-pay policy for nuisance and fraudulent claims, and has helped RGRTA resolve more than 50 false liability claims out of court and successfully defended itself against another 25. One case alone can amount to $15,000 for defense, $7,000 for medical expenses, and $100,000 for a settlement in the absence of the video evidence. With regard to the impact on the assault rate, the overall impact is unchanged at this time because the routes that have not been equipped with video surveillance are the ones that serve Rochester schools and have the highest assault rates.

RGRTA had originally equipped its standard-sized buses with five cameras, but added three more to capture incidents occurring outside the bus. RGRTA operators or staff tag video for uploading when there is an assault and in response to customer complaints, accidents, slips and falls, and onboard incidents. The download process occurs at the depot and is efficient because it uses a wireless system.

RGRTA works with law enforcement to locate and identify the assailant and provides police with still images of the assailant. Once caught, the assailant is aggressively prosecuted. Video recordings are provided to the district attorney's office. To ensure that the video recording can be used as legal evidence, the video needs to be time- and date-stamped, and a chain of custody established for pulling and storing it. RGRTA's transit staff are prepared to attest to the authenticity of the video evidence and explain how the system records and stores video.

The new digital video system provides more coverage of the operator. Initially, the union was concerned, but the agency assured the union that video would only be pulled in event of an incident. Operators now accept the video system and are open to using it as a training tool. Many who see themselves on video during an incident are shocked by their own behavior.

King County Metro Transit, Seattle, Washington

Metro Transit serves King County residents with a fleet of 1,300 vehicles within a 2,134 mi^2 service area. Currently, Metro Transit has 275 buses with cameras and is expecting to

have another 100 buses equipped by end of 2010 and another 200 in the next few years. Therefore, by end of 2012, over half of the fleet of 1,400 buses should have video and audio surveillance. Metro Transit's video surveillance system consists of four to eight cameras per bus—on 60-ft buses, six to eight cameras and on 40-ft buses, at least four cameras. Rapid Ride System buses have 10 cameras. The system has been useful for multiple purposes, including capturing and prosecuting assailants who attack Metro Transit operators and the mitigation of purse snatchings. Instances in which it has been used include the following:

- An intoxicated person boarded the bus and took a seat without paying and was asked for the fare by the operator. By the time he located his fare, another passenger was boarding. The intoxicated individual became impatient and belligerent, and when the operator asked him to exit the bus, he punched the operator on the side of his head. When the photo of the individual taken from the video camera was provided to the Department of Corrections, they immediately identified him. He was taken into custody and is now serving 41 months in prison.
- One night in January 2010, the operator was following the policy of keeping the back door of the bus closed during evening and late-night hours. When she refused to open the back door, teenage passengers on the bus became angry and beat her to unconsciousness. The video recording of the assault enabled police to identify and capture her attackers.

IndyGo, Indianapolis, Indiana

IndyGo provided more than 8 million passenger trips in 2009, has 481 employees, 28 fixed routes, and more than 5,000 bus stops within the city of Indianapolis. IndyGo utilizes both video and audio recording devices on each bus. The equipment has wireless functionality, allowing wireless uploading of recordings. IndyGo has had several instances (supported by video evidence) where the operator has reminded troublesome or unruly passengers that they are being recorded, and the hostile threats from the passengers have stopped. In the last year, IndyGo has had only two operator assaults. IndyGo's union grieved the installation of the equipment and the use of the equipment to be used in matters of discipline after the fact. Significant time and effort was expended on this matter. The arbitrator ruled in IndyGo's favor, noting that the agency management has the full right to pull video at any time, and any operator can be disciplined based on findings from the video. However, IndyGo management decided to pull video only to investigate customer complaints, accidents, and other reported problems; IndyGo managers still keep a log showing the reason each piece of video is pulled. In general, bus operators have now accepted the video surveillance system.

IndyGo has not had any chain-of-custody issues. When the police request video for evidence, IndyGo provides them with the original hard drive and retains a copy of it. Additionally, the system data is "water-marked" so IndyGo can prove that video and audio have not been altered. Each bus has signage informing passengers that video and audio recording is taking place, and that passengers who do not wish to be recorded can choose not to use IndyGo. IndyGo has also extensively communicated the existence of the video and audio recording technology to its riders and to the general public. Public perception of the technology has been excellent. The cost was about $6,000 per bus, and O&M cost is $170,000 per year for 220 buses. The O&M contract provides for the complete replacement of defective parts and a full-time on-site technician.

Miami–Dade Transit, Miami, Florida

MDT operates more than 1,000 buses and started deployment of video surveillance on its buses in 1999 as a response to the increase in assaults that had occurred in the early to mid-1990s. About 80% of the bus fleet now has digital video surveillance—there are five cameras on each bus; new buses have six cameras. There are also three cameras on the outside of the bus. Concurrent audio recording also takes place from one of the channels from the DVR in the bus operator's compartment. The most recent 75 buses and future purchases have cameras that face the operator. Concerns about the surveillance system were voiced by the union some time ago, but now the union and operators acknowledge the effectiveness of the cameras in deterring assaults against bus operators and other crime. In 2005 to 2006, MDT began installing a new video surveillance system in its new buses and started replacing its older devices as warranties expired. MDT also purchased a GPS option that allows it to identify the location and speed of the vehicle for tagged video. Legacy DVRs had required MDT staff to board the bus to upload video and make changes at the start and end times of Daylight Savings Time.

For MDT, the primary issue concerning the video systems revolves around the amount of additional work and effort needed to make good use of the video. The effort involves a considerable amount of labor in terms of staff to burn, store, track, view videos and write reports on a daily basis. In addition, further investigations of some of the incidents need to be conducted, and copies may need to be made for local law enforcement or for departments within the agency for internal use. The newer buses have wireless uploading capability that reduces the workload on the staff. As the buses pull into the depot, the video recordings for the day are automatically uploaded onto a main server. MDT is working toward the ability to view video from its surveillance cameras in real-time.

Pinellas Suncoast Transit Authority, St. Petersburg, Florida

Pinellas Suncoast Transit Authority (PSTA) serves 12.2 million riders a year. Pinellas Transit's entire bus fleet has four to

five cameras in each bus and external cameras as well (one forward-facing camera and, for half of the fleet, a curbside camera; in the future, a driver-side camera will be added). Real-time wireless transmission capability, though desired, is not possible at this time because of bandwidth issues. Wireless uploading of video and audio recordings will be possible with the new system. Pinellas Transit also cooperates with St. Petersburg, Clearwater, and other local law enforcement by making video and audio recordings available to them upon request. Because the recordings have been requested frequently for all types of crime, addressing these requests has been time-consuming for Pinellas transit staff. The surveillance system recordings have been used on a daily basis by the agency for incidents between operators and passengers, passenger complaints, accident investigations, and liability claims and have been useful in prosecuting criminals. PSTA's new video and audio surveillance system cost less than $1 million and will have wireless download capability. This system will be funded through stimulus grants.

Coast Mountain Bus Company, British Columbia, Canada

Since the first phase of camera installation was completed in 2009, benefits in terms of identifying, locating, and prosecuting operator assailants have been seen by CMBC. There have also been numerous requests from various jurisdictional police for video clips of criminals. In addition, the video footage has facilitated accident investigations and passenger and driver claims.

Toronto Transit Commission, Toronto, Canada

Video cameras (see Figure 24) were installed in the entire TTC fleet between 2005 and 2006 at a cost of $17 million. The deployment of the surveillance system was prompted by increased violence in the system, in particular, the wounding of a girl in 2004, and the shooting of an operator in 2005. When a crime occurs on TTC buses, the photo of the assailant is obtained from the video recording and posted in TTC's operating divisions (depots). There are five cameras in each bus, and one forward-facing camera on the windshield (see Figure 25). Video serves as legal evidence and has been extremely useful in prosecuting assailants. Also, operators have a favorable opinion of the video system because the technology is able to support their versions of incidents.

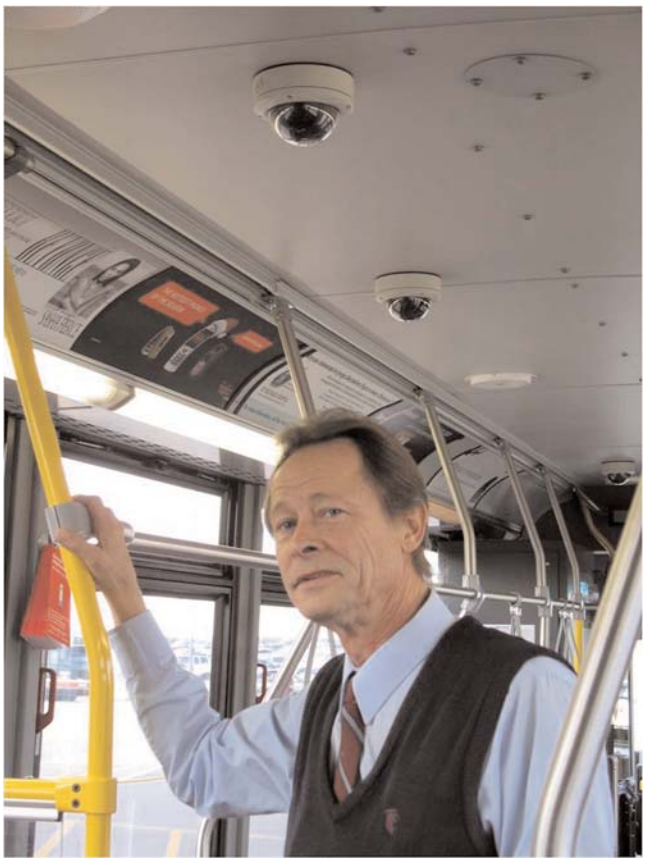

FIGURE 24 Video cameras in TTC buses. (*Courtesy:* Toronto Transit Commission.)

AUDIO SURVEILLANCE

Studies have shown that verbal assaults can often be precursors to physical assaults (*25*). Therefore, addressing verbal assaults can prevent physical attacks, provide data on the types of verbal assaults that are occurring, and help create training content and response strategies for bus operators. Typically, video surveillance systems also offer audio surveillance capability. There are two "live" microphones within the bus, each attached to one of the cameras. One is usually near the operator's seating area and the second one may be placed in the middle of the bus. Legal issues may arise in states in which two-party consent is necessary for audio recordings. For instance, Connecticut state law requires consent of both parties to record audio; this dissuaded GBT from pursuing audio surveillance. Agencies in these states that decide to implement audio surveillance have addressed the legal concerns by posting appropriate signage about the audio surveillance on their buses.

Advantages

- Agency perspective—serves multiple purposes, including the deterrence of assaults and crime; provision of legal evidence to help identify, capture, and prosecute offenders; and the efficient disposition of cases/incidents. Significant savings can be realized by eliminating or mitigating fraudulent claims. Audio is also useful as a training and post-incident analysis tool. If video surveillance system is already installed, audio capability should be present and does not require the installation of additional equipment. Wireless systems are able to transmit performance reports of equipment to the agency and can automatically save tagged audio to the agency server.

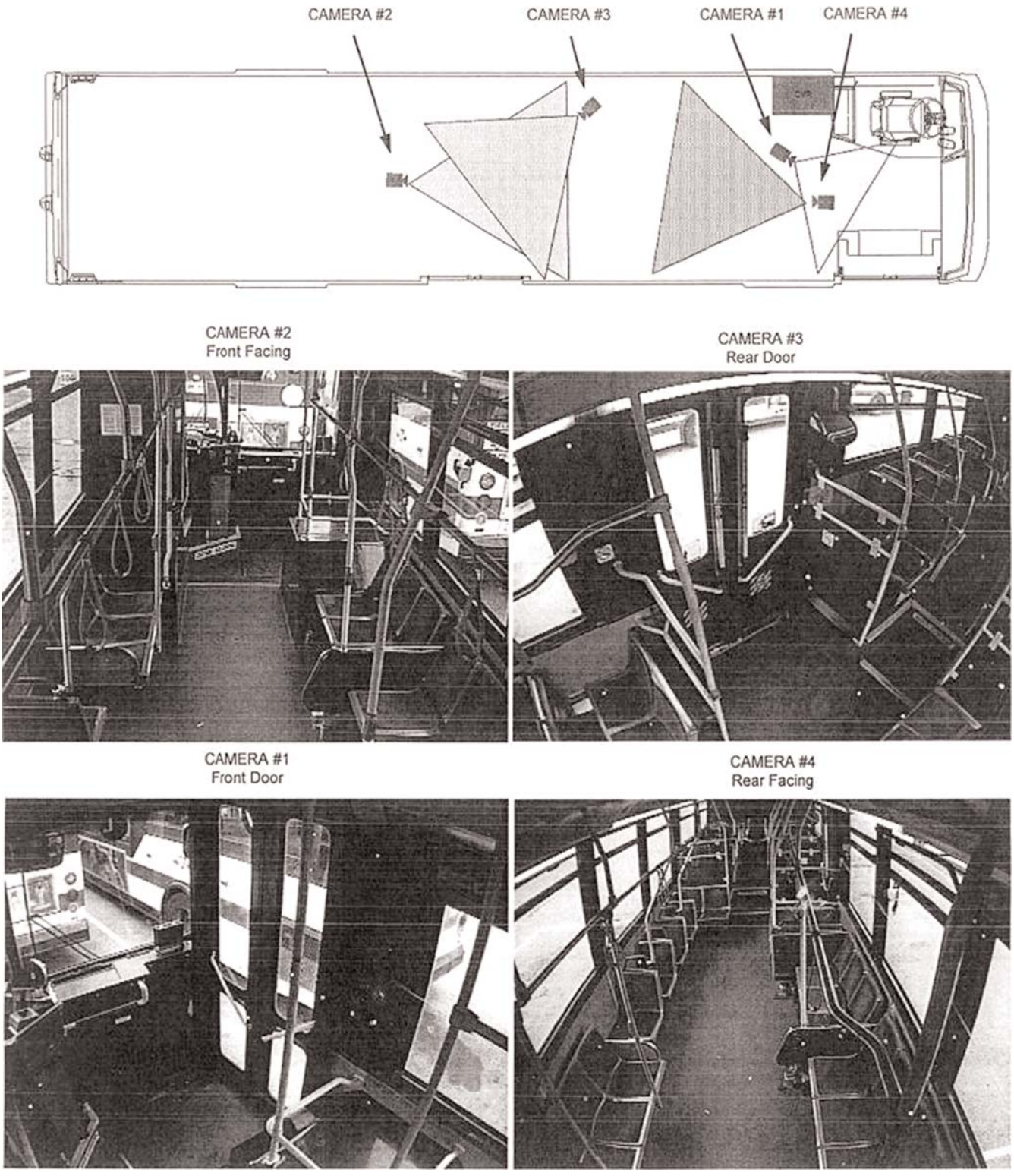

FIGURE 25 Images from four of the six video cameras in a TTC bus. (*Courtesy:* Toronto Transit Commission.)

- Bus operator perspective—increased perception of security; audio recordings can also support their version of an altercation or incident. If they are physically assaulted or verbally threatened, the recording can help law enforcement identify and capture the perpetrator.
- Customer perspective—increased perception of security.

Disadvantages

- Bus operator perspective—feelings of invasion of privacy, feelings of unease about audio being used for disciplinary purposes.
- Customer perspective—feelings of invasion of privacy.
- Requires time and effort to transfer audio from a bus to a central server, especially if system is not wireless; also, time and effort are needed to tag, store, and retrieve audio.
- Other requests, including those for public disclosure, may increase.

Agency Experience

Greater Cleveland Regional Transportation Authority, Cleveland, Ohio

GCRTA has installed digital video and audio surveillance on 21 of its 500 buses. Also, all future bus purchases will have both video and audio surveillance. Within the first week of use of the surveillance system, a GCRTA passenger sliced another passenger's throat. Although the video recording had image clarity problems, the audio recording was instrumental in identifying, locating, and prosecuting the assailant.

Metro Transit, Madison, Wisconsin

Madison Metro serves the Madison, Wisconsin area. Metro recently completed installing a digital video and audio system on all of its 211 buses. Signage about the audio and video surveillance system is posted on Madison's buses. Compared with the older super-8 system, the new digital system is significantly better in terms of video and audio quality and storage capacity. Inside the bus, the system has four cameras along with four audio microphones. The audio records simultaneously with the video. The DVR stores up to 160 GB or about several days of information. When a driver or police reports an incident, agency staff manually obtains the data from the DVR by connecting it with a PC—this requires two full-time staff members. The surveillance system has been used frequently for multiple purposes—identifying and prosecuting assailants and other criminals, determining what occurred during an incident (e.g., disputes between operator and customer), facilitating accident investigations, assessing liability claims. Archived recordings, both audio and video, can be reviewed by police or others authorized to access the system. An incident that occurred on April 20, 2010 involved a middle-aged man who started fighting with a 15-year-old boy. The operator succeeded in breaking up the fight, and the man exited the bus. However, he returned and assaulted the operator. The audio and video surveillance recording is being used to identify and prosecute the perpetrator of this incident. About a decade ago, when Metro's original surveillance system was installed, unions and operators were apprehensive about it, fearing that it might be used to discipline operators. Therefore, the agency informed their operators that the system will not be used for disciplinary purposes and has been careful not to do so. The operators now perceive the system to be a positive one and support its use.

King County Metro Transit, Seattle, Washington

All King County Metro Transit buses with video surveillance also have audio surveillance. Because the state of Washington requires second-party consent for recordings, signs alerting customers to the video and audio surveillance system are posted on the bus. Passengers, however, are not often aware of the signage. Therefore, bus operators are taught to inform problem passengers about the video and audio surveillance system and that their behavior and speech are being recorded. This has helped stop conflict situations from escalating into assaults.

IndyGo, Indianapolis, Indiana

IndyGo utilizes audio recording devices that are attached to video surveillance equipment on each bus. Each IndyGo bus is equipped with two audio microphones. There is a microphone at the front of the 40-ft bus that captures audio between the operator and passengers, and one near the center of the bus that captures conversations in the back portion of the bus. The audio records simultaneously with the video. IndyGo has not experienced any legal issues surrounding the use of audio surveillance equipment.

Pinellas Suncoast Transit Authority, St. Petersburg, Florida

PSTA installed audio along with video surveillance in its bus fleet in 2004. One microphone is attached to each camera, and uploading of video and audio recordings is wireless. To address the legal department's concerns about the use of audio surveillance, signage regarding video and audio recordings was placed on all buses.

VIA Metropolitan Transit, San Antonio, Texas

VIA provides transit service to the San Antonio area, which spans 1,226 mi^2. VIA served 46.8 million passengers in FY 2007–2008. VIA provides audio as well as video surveillance on board its buses. A separate audio system is connected with VIA's video surveillance system. Recordings have been used by the agency and police to identify and prosecute offenders,

resolve disputes and claims, investigate accidents, and for operator training.

AUTOMATIC VEHICLE LOCATION SYSTEM

The *TCRP Synthesis 73* report on AVL Systems for Bus Transit: Update describes the AVL system "as the central software used by dispatchers for operations management that periodically receives real-time updates on fleet vehicle locations" (*26*). AVL systems, along with CAD systems, assist dispatchers in bus fleet management by providing them with real-time information about bus locations. AVL systems typically consist of an onboard computer, GPS receiver, and mobile communications. The older signpost systems are less precise than GPS-based systems and cannot locate a bus that has gone off-route because signposts are only deployed along a bus route. Currently, most AVL systems use GPS systems. On dispatcher displays, buses can be color-coded so that off-route buses and buses that are not on time may be highlighted. TODSS, described in the following section of this report, can provide additional functionality and value to AVL systems.

Although AVL systems can be expensive, they afford agencies a wide range of uses and benefits, including faster incident response, accident investigation, adjudication, and policing. If an operator presses a panic button, the dispatcher will know the exact location of the bus in distress. Even if the panic button is not pressed, the dispatcher will be able to recognize a bus that is off-route and send assistance. AVL systems also enhance schedule adherence, provide next-bus information at bus stops and/or through mobile devices, and can work in conjunction with automated bus stop announcements. According to *TCRP Synthesis 73,* for fleets with less than 750 buses, the following equation can be used to estimate capital costs for an AVL system: Contract Award = $17,577(Fleet Size) + $2,506,759

Advantages

- Location of a bus can be transmitted to central control and security/police in case of an emergency.
- Decrease response times to emergencies, incidents.

Agency Experience

Greater Cleveland Regional Transportation Authority, Cleveland, Ohio

GCRTA's AVL system was installed in GCRTA's bus fleet several years ago and is used for multiple purposes: incident response, next-bus arrival information, fleet management, improving schedule adherence, determining bus location and speed for accident investigations, and for grievance hearings. Although it is a stand-alone system, dispatchers use it in conjunction with emergency communications and radio system. Both the AVL system and radio system use the 900 MHz frequency.

Metro Transit, Madison, Wisconsin

Madison Metro's AVL system was installed in 2004. The AVL system is used to help dispatchers and police respond to incidents and improve bus operations including schedule adherence, and is linked with emergency audio communications. If the operator presses the overt or covert alarm, the AVL system automatically displays a map. In the dispatch center, the bus is shown in flashing red and a loud alarm is activated. In order to deactivate the alarm, the dispatcher is required to take action. The 911 center can access the real-time maps during emergencies and incidents.

Pinellas Suncoast Transit Authority, St. Petersburg, Florida

PSTA installed an AVL system in 2006 in its fleet of 205 buses at a cost of $5 million. The system uses GPS and is connected with its emergency communications. When the covert or overt emergency button is pressed, the system automatically highlights the bus in distress (as a flashing display) on the CAD screen. There is also an audible alarm that sounds in the dispatch center. It has been useful for fast response to general crime as well as to accidents. In one case, an operator had an accident and could not tell the dispatcher her location. The dispatcher was able to determine that the bus was in an accident and the operator had been incapacitated. Rapid response was possible because the AVL system informed the dispatcher of the location of the bus, and responders arrived quickly.

VIA Metropolitan Transit, San Antonio, Texas

VIA's AVL system was installed on VIA's bus fleet approximately 13 years ago. The AVL system, which uses GPS, is integrated with the fleet's radio communications system. The total cost for both systems was $14 million—the majority of the cost was for the AVL system. The systems were installed in 451 buses, 210 paratransit vans, and 75 service and police vehicles. O&M costs $600,000 to $700,000 per year and includes software upgrades. The AVL system is used on a daily basis for incident response and has greatly shortened response times. There are four communications channels available to the operator—regular, priority, emergency, and covert. Each channel activates an open microphone with the dispatch center. The emergency mode has been used several times over the past 10 years. Dispatchers are able to view the locations of the bus fleet and police vehicles as well, and are able to advise police on the route officers should take to reach the bus in distress. The bus dispatchers and police are located in the same operations center.

Coast Mountain Bus Company, British Columbia, Canada

In 2006, CMBC experienced 241 operator assaults. After deployment of the AVL, advanced communications systems, and video surveillance, the number of assaults decreased to 144 in 2009. The reduction in the number of assaults is attributed to the combination of these new technologies. AVL and the advanced communications systems also significantly reduced incident response times, increasing the likelihood of the apprehension of offenders and lessening the severity of attacks.

Winnipeg Transit, Manitoba, Canada

Installation of the AVL systems was completed in Winnipeg Transit's fleet of 545 buses as part of iBus in November 2009. iBus includes advanced radio communications, automated real-time schedule tracking, automated next-stop announcements and displays, and a security camera system. The AVL system is already being used for incident response. In December 2009, less than a month after the system was installed, two teens assaulted an operator with pepper spray; passengers were also affected by the spray. The responder, using the AVL system, was able to reach the bus in 3 min. The two assailants were caught within 10 min and were charged with assault with a weapon and breach of probation. The video and audio of the attack were recorded and used to identify and charge the assailants. A bus was hijacked on April 15, 2009, with the hijacker demanding to be taken to a particular destination. The operator immediately exited the bus. Because of the iBus system on the bus, it was found by emergency responders within a short time, and the hijacker was successfully captured and prosecuted. Winnipeg's iBus system uses GPS-based automatic vehicle location and communication systems to monitor the location of each bus, compare it to its schedule, and automatically report deviations to Winnipeg's Transit Control Centre.

TRANSIT OPERATIONS DECISION SUPPORT SYSTEM

TODSS improves the functionality of AVL and CAD systems for dispatchers by addressing information overload. Transit agencies have made significant investments in AVL and CAD systems in the past 10 years. These technologies have helped agencies improve their service effectiveness, response times to incidents, and collection of valuable operating data to make service improvements. At the same time, dispatchers have been overwhelmed at times by large amounts of real-time information they need to evaluate. The activity level is often intense at the dispatch centers, and dispatchers do not have the time to study and recognize the patterns of operational problems displayed by the CAD system. Each vehicle in the fleet routinely sends real-time data that contributes toward information overload. Data messages that provide early notification of a service disruption may go unnoticed. The FTA had published an industry consensus for requirements of a TODSS in 2002, and Pace Suburban Bus was awarded the demonstration project for the TODSS prototype that has been developed and has been at use at Pace since April, 2009. Pace's TODSS prototype was recently awarded ITS America's 2010 Best Project Award.

Advantages

- Faster incident response.
- Better fleet management.
- Is adaptable to the operating rules of individual agencies.

Agency Experience

Pace Suburban Bus, Aurora, Illinois

Dispatchers were surveyed and performed field tests before the TODSS project. The results showed that they were using far fewer AVL/CAD functions than expected. They cited the following as reasons for underutilization of the AVL/CAD system: lack of time, high pressure of their job requirements, and lack of training on advanced functionality.

TODSS is designed to make better use of Pace's existing AVL/CAD by evaluating events based on Pace operating rules to determine incident priority. Sources of information are continuously monitored and only those events requiring dispatcher attention are displayed along with corresponding service restoration options. The TODSS guides the dispatcher through the AVL/CAD system to quickly gain situational awareness. TODSS then provides a checklist of action items to perform in order to resolve the incident. External events are integrated into the AVL/CAD by TODSS and communication with other centers and systems is automated through the web, RSS feeds, and e-mail.

Through advance configuration of incidents, triggering rules, priority, and restoration strategies that conform to Pace's operating procedures, the dispatchers are now guided through the AVL/CAD tools and the specific data related to an incident. Pace expects that the amount of data presented to the dispatchers will be reduced; at the same time, the data being evaluated to maintain and restore service will increase, resulting in a more uniform response throughout the system.

EMERGENCY COMMUNICATIONS

Bus operators typically have within reach of their seats emergency panic buttons that open up emergency communication with a dispatch or control center. The communication can be covert or overt. Covert communication is used when the operator is being threatened or otherwise believes that overt contact with a dispatcher or police would not be advisable. To ensure

that the dispatcher does not accidentally say something, covert channels are usually one-way—the dispatcher cannot talk back to the operator but can hear the goings-on inside the bus. The covert button may be linked with an electronic distress sign that alerts the public to emergency situations on a bus. Signs usually state "call police" or "call 911." Overt communication allows two-way communication between the dispatcher and the operator. A button, either covert or overt, linked with an AVL system would alert the dispatch center about the emergency and provide the dispatcher with the location of the bus in distress. In some cases, this information may also be delivered directly to the police.

Advantages

- Operator is able to immediately alert police or dispatch of an emergency.
- Communications can be done covertly if necessary.
- Response time is reduced.

Agency Experience

Greater Cleveland Regional Transportation Authority, Cleveland, Ohio

GCRTA operators are instructed to utilize the covert emergency alarm to notify Transit Police if the operator believes that he or she is in danger. The emergency communications system enables the police dispatcher to hear conversations in the operator's compartment. Otherwise, operators are instructed to use the overt alarm button, followed by the emergency message code for immediate assistance. The overt button allows unrestricted two-way communication between the operator and the police.

Pinellas Suncoast Transit Authority, St. Petersburg, Florida

When the covert or overt emergency button is pressed, the AVL/CAD system automatically highlights the bus in distress (as a flashing display) on the CAD screen. There is also an audible alarm that sounds in the dispatch center. This system has been useful in responding quickly to operator assaults, along with general crime and accidents. The emergency electronic distress sign on the headboard has been effective in getting the public's attention. When the operator accidentally hit the panic button and the distress sign "call 911" flashed, the public notified law enforcement right away and police response was very rapid. In such a situation, the SWAT team arrives at the scene and directs the bus to the side of the road. The bus is secured until the team confirms that the driver of the vehicle is indeed the operator assigned to the bus and had unintentionally pressed the button.

DNA KITS

DNA kits have been typically used by law enforcement agencies around the world to address sexual crimes. Samples collected from DNA kits can be used to identify and prosecute assailants. They are being used by the Transport for London to identify and prosecute those who spit on bus operators. London is currently the only city in which the kits are being used for this purpose. In London, the rate of serious attacks on bus operators has been low; however, TFL acknowledges that nonserious incidents can have a significant psychological impact on operators. The most problematic of the nonserious incidents has been spitting. There were more than 1,000 incidents of spitting assaults on London buses, many of them aimed at bus operators. In response, a workplace violence unit has been established to locate assailants of bus operators, and DNA kits have been issued to bus operators. Police use the DNA collected by the operators to identify and prosecute individuals who attack operators by spitting on them by comparing the samples with the national UK DNA database. The kits are also being used successfully in London's subway system—there are DNA kits at every station and these have been used in at least a hundred prosecutions against those who attack subway personnel in the previous year. The use of the kits is followed through by legal team in conjunction with the London Metropolitan Police. Transit industry experts believe that major reasons other nations with large national DNA databases are not using these kits is the cost of DNA analysis, along with public concerns about individual rights.

CHAPTER FIVE

OPERATOR PROTECTION METHODS: PERSONNEL, POLICING, AND TRAINING

The prevention of an assault begins with the transit agency's hiring process. The requirements for being a successful bus operator are many and include not only good driving skills but also interpersonal and communications skills. The right temperament, ability to handle stressful situations, and ability to communicate with diverse populations are essential. Good candidates can be identified through objective and comprehensive bus operator selection systems. APTA's BOSS and CUTA's STRADA systems are discussed in this chapter.

Policing is an effective bus operator protection method. Uniformed officers providing visible security are a strong deterrent against all types of crime, including passenger assault of bus operators. Plainclothes officers can witness crimes being committed and apprehend the perpetrators. Fast and effective response to an assault can mitigate its consequences by preventing further injuries and through the provision of timely medical attention. Furthermore, fare evaders and perpetrators of minor violations often progress to more serious crimes, including operator assault; targeting them is believed to mitigate crimes on operators.

Operator training in customer relations, conflict mitigation, diversity, stress management, and verbal techniques such as verbal judo is vital for new bus operators in facing the daily challenges of their job. Refresher training for current operators is important as well in preventing operator assaults. Self-defense training and tools provide bus operators with a protection measure that is immediately available to the operator during an attack. No matter how fast responders arrive on the scene, even a few minutes can be enough to cause significant injury to the operator. At the same time, agencies are concerned about liability issues and the reluctance of its operators to carry self-defense tools. If an agency does choose to implement self-defense training or issue a self-defense tool, the reason for its use and assurance regarding its safety will help agencies justify the security measure to the public. Also note that weapons carry and acquisition laws differ on a state-by-state basis. In states with more permissive laws, operators may believe themselves to be more vulnerable and may be more willing to use self-defense tools and techniques to assure themselves of their own security, and agencies may be more willing to implement self-defense training and tools. Houston METRO is the only U.S. agency, as of the date of this report, that issues a self-defense tool to its operators. One agency, Metro Transit in Minnesota, does offer pepper spray training to operators who request it. Both agencies operate in "shall-issue" states for concealed firearms—the granting authorities have no discretion over permit applications, and must automatically issue permits to their residents if minimum criteria are met. Oleoresin capsicum, the main ingredient in pepper sprays and gels, irritates the skin, eyes, and the upper respiratory tract. It is considered to be generally safer than other nonlethal tools and effective in subduing violent individuals and stopping assailants. Questions, however, have been raised regarding its effectiveness on individuals under the influence of narcotics and alcohol, and few scientific safety studies have been performed. Permitted concentrations and allowable use vary by state in the United States. It is not permitted for use in Canada. Some agencies provide self-defense training to their operators in the use of pepper sprays and gels.

BUS OPERATOR SELECTION

The prevention of assaults starts in the agency's hiring process. In order to identify the best bus operator candidates, understanding what "success" is, what characteristics and other factors lead to "success," and how to identify these characteristics and factors is important. An individual who is skilled at handling stressful situations and at interacting with the public would be less likely to be the victim of an assault as a bus operator. Recruiting the wrong candidate is costly to the agency. If a candidate decides to leave in the middle of the training program, screening and hiring another candidate takes time and resources. If candidates stay and perform badly, they may endanger their own lives and the lives of their passengers and expose the agency to liability suits.

The Bus Operator Selection System (BOSS), developed by APTA and its member transit systems and training directors, U.S.DOT, U.S. Department of Labor, and EB Jacobs, consists of a preemployment screening survey and a structured interview process. The survey contains 75 questions and is administered online or through paper-and-pencil tests. Immediate results are available for the online system. The optional structured interview process is a set of standardized questions and behaviorally anchored rating scales linked to elements of the bus operator's job. The transit agency's HR personnel are instructed to focus on certain questions based on each candidate's survey results. The annual fee for BOSS,

including BOSS and eBOSS platform access, access to BOSS scores and online reports, program updates, and two hours of support is $1,000 per property; additional support is available for purchase. The scoring fee for the set of customer service, attendance, safety, and honesty measures is $13.50 per candidate. The interview tool includes standardized questions, rating scales to assess different performance dimensions, training materials, and 3 h of phone support. The fee is $1,800 for individual properties, $1,500 per property within a group of four to nine properties, or $1,200 per property for 10 or more properties. Additional support and on-site training are also available at additional cost. A study of more than 800 bus operators hired using the BOSS system was performed by APTA. An average of seven fewer missed days per operator and 20% fewer accidents per year was expected. Also, a savings of $2,500 per operator in the first year's costs was estimated by transit agencies. The savings consisted of diminished absenteeism and tardiness, reductions in accident/incident liability, reductions in training dropouts, and the need to interview fewer candidates.

The STRADA Toolkit is another example of a comprehensive operator selection system. It was initiated by the transit industry in 2007 based on a CUTA survey that showed that qualified bus operator candidates were being screened out using existing hiring techniques. The STRADA system was developed with the input of many transit human resources professionals and extensive research across North America to eliminate bias or discrimination in the hiring process. CUTA's testing partner, Assess Systems of Dallas, Texas, regularly monitors the results and upgrades the test as required. The STRADA Toolkit includes the following elements:

- *Competency Modeling* identifies the actual core job competencies necessary for success as a transit bus operator.
- *Effective Interviewing Techniques* result in greater knowledge of the candidate, which then leads to a more informed hiring decision.
- *Comprehensive Candidate Assessments* allow transit systems to find individuals who are the best "fit" for operator positions. The new STRADA assessment survey was developed and validated with current bus operators in 15 transit systems across Canada.

Advantages

- Agency perspective—Standardized, objective, and consistent process is likely to result in a fair and faster hiring process and the selection of individuals most likely to succeed as bus operators. Selecting the wrong candidate can be costly: (1) if the candidate decides to leave after undergoing training or (2) if the candidate stays but performs poorly, he or she can become a liability for the agency.
- Bus operator perspective—hiring individuals with the appropriate temperament means higher likelihood of job satisfaction.

Agency Experience

Canadian Urban Transit Association

The STRADA Recruitment Toolkit, developed by CUTA in conjunction with Assess Systems, is designed to increase the probability of selecting the best candidates for the position of bus operator. The Toolkit includes prescreening and realistic job previews, testing, and interviewing. As part of its STRADA Toolkit, CUTA created a bus operator competency framework. Competency areas within the framework included customer service (interpersonal communication, problem-solving competency, safety and emergency response), professional image and work environment, vehicle monitoring and driving, and personal management. A customized situational judgment module provides candidates with realistic situations they are likely to encounter (e.g., customer complaint) and asks them to identify the best and worst responses to the situation. Information gathered from experts and job observations were used to select the set of 20 scenarios. Each agency receives a review of its HR process, and agency personnel participate in a 2-day Train the Interviewer training session. There is a one-time subscription fee that includes the Toolkit along with the training session and ongoing access to testing and support. The cost is determined by agency size and ranges from $7,500 to $30,000. Because the STRADA has not yet been extensively implemented, its precise impact on the reduction of the number of operator assaults is not yet known. However, agencies that purchase the Toolkit anticipate significant benefits—Edmonton Transit System, for example, expects annual savings of almost $200,000 a year.

NYC Transit, New York, New York

NYC Transit participated in the development of APTA's Bus Operator Selection System (BOSS) and now uses the system to select bus operators. The BOSS has led to a more qualified set of bus operators and has significantly reduced bus accidents. Also, all new hires are included in an extensive evaluation review program. Once operators depart the training center and are assigned to their initial depot, they are monitored and have interaction with supervision on a monthly basis, up to their 1-year probationary period. Their job performance may lead to dismissal or an extended probationary time.

Winnipeg Transit, Manitoba, Canada

Winnipeg's Bus Operator Selection System consists of five steps. Bus operator candidates must meet the standard on each step before they can proceed onto the next step. The candidates demonstrating the greatest potential are offered positions at Winnipeg Transit. Step 1 is the initial application and public relations test. Fifty scenes of bus operators interacting with the public are shown to the candidate by means of video. The candidate needs to choose the best response to the situation. In Step 2, a study guide is provided to the candidate to help the candidate prepare for the written test. The test consists of 75 multiple-choice questions in the following

areas: knowledge of the city of Winnipeg; knowledge of the Manitoba Driver's Handbook; ability to work with money, time, and schedules; and the ability to learn policy and procedure. Step 3 is the driving aptitude test. Step 4 consists of a competency-based interview, criminal records investigation, reference checks, and medical examination. The interview questions are based on the following competencies: Citizen and Customer Focus; Respecting Diversity, Ethics, and Values; Integrity and Trust; Results Oriented; Composure; Patience; Approachability; Compassion; Informing; Humor; Listening; Time Management; Conflict Management; and Work/Life Balance. Step 5 is the operator selection process in which the candidates with the greatest potential will be selected.

POLICING

Uniformed officers are very effective in preventing operator assaults and other crimes. At the same time, it is cost-prohibitive for officers to ride every bus on every route. Therefore, a strategic allocation of resources to high-crime locations and routes is important to enable rapid response to crime and to identify and capture offenders. Use of plainclothes officers on board buses is effective in apprehending offenders and getting them out of the system. Marked vehicle patrols can serve as a visible deterrent to crime and can shadow buses on routes with high numbers of incidents. Larger systems have their own transit police or security personnel and do ride checks and inspect buses for problems. Some agencies reimburse local law enforcement or use off-duty officers for protection. Smaller agencies without their own police or security personnel need to work closely with local law enforcement to ensure good response when incidents and crimes occur. Many agencies allow officers to ride their system free of charge. Agencies that have their own officers or security use patrol and other policing techniques, including the following:

- *Marked police vehicle patrol*—Marked vehicle patrols enable quick response to crimes in progress along bus routes.
- *Directed patrol*—Directed patrols proceed to designated locations and board random buses to check on the well-being of the operator and the riding public.
- *Park and ride*—An officer in a marked vehicle parks his or her vehicle at a terminal, boards a bus, and rides the bus until it returns to the terminal.
- *Plainclothes operations*—Undercover officers may be assigned to patrol buses. Compared with uniformed officers, plainclothes officers are more likely to observe offenders in the act of committing a crime, including operator assault, fare evasion, and quality of life violations such as vandalism. Targeting fare evaders and quality of life offenses have been shown to reduce the likelihood of more serious crimes.
- *"Trojan" buses*—Plainclothes officers, appearing to be ordinary passengers, are assigned to ride buses equipped with reinforced windows. If an individual throws a projectile at the bus or the bus operator, the bus is immediately stopped and the police apprehend the suspect.
- *Bicycle and motorcycle patrols*—In crowded locations and congested streets, the increased mobility of the bike or motorcycle patrol officer allows faster response to calls for assistance by the bus operator.
- *Canine patrol*—Some agencies utilize highly trained canine units for mobile patrols along designated bus routes. These units are often utilized to track down subjects who have assaulted operators and find evidence at a crime scene.
- *Fixed post assignments*—These officers are assigned to secure key bus or intermodal terminals.

Advantages

- Officers are specifically trained to prevent crime and enforce the law, respond to incidents, locate and apprehend criminals, and understand the legal justice system.
- Visible patrols on foot or in squad cars deter crime and operator assaults, and enhance passenger perception of security.
- Plainclothes officers are able to apprehend suspects and criminals, taking them out of the system.
- Flexible deployment is possible; if there is a sudden increase in crime on certain bus routes, officers can easily be redeployed to the routes.
- Officers patrolling the system can interact with the operators and the public to obtain potentially important information about suspicious individuals, incidents, and activities, and get better situational awareness.

Agency Experience

Pierce Transit, Lakewood, Washington

Pierce Transit serves a population of more than 710,000; its bus system consists of 929 buses and 37 light-rail trains. Pierce Transit formed the first official Transit Police Department (PD) in Washington State in 2006. Pierce Transit works collaboratively with local law enforcement on various transit security initiatives. In 2009, Pierce Transit created the Uniformed Security Division with "Special Commissioned Officers," a more cost-effective solution than its contracted services. Transit Police consists of the full-time unit with nine officers, and the off-duty unit with off-duty officers from the Tacoma and Lakewood police departments. Pierce Transit has reduced the overall criminal activity in the transit system, including operator assault, by more than 60% in the last 3 years as a result of the Pierce Transit Police Department's successful implementation of initiatives including the following:

- *Proactive enforcement team*—The Proactive Enforcement Team focuses on problem-oriented policing methodologies and may work either in uniform or plain clothes, with marked or unmarked cars.

- *Emphasis patrols*—These patrols are normally conducted in conjunction with other law enforcement agencies to focus on high-crime areas.
- *Transit boarding teams*—The Transit Boarding Teams are normally composed of plainclothes officers who ride a bus on a specific route that has been identified as a source of operator or employee assaults. The perpetrators are typically apprehended prior to an assault being committed.
- *Passenger exclusion program*—This program was established to modify unacceptable behavior within the transit environment. The individual causing the disruption is served with an exclusion order that lasts no less than 90 days and is also arrested if the situation warrants it.

Edmonton Transit System, Alberta, Canada

The ETS Security force consists of 47 peace officers. They are organized into six teams of seven Community Peace Officers along with two Security Call Takers/Dispatchers, providing 24-h coverage, 7 days a week. One team is on duty during days and two teams are on duty during evenings. Four marked patrol units are available for their use. Officer duties include passenger security and safety, order maintenance, patrolling the system (visibility and deterrence), and ensuring that passengers are in possession of "Proof of Payment." ETS officers are peace officers equipped with expandable batons and pepper spray but do not carry a firearm. Since they are not allowed to pursue criminal investigations or make arrests, they work closely with the local Edmonton police force to ensure that offenders are arrested and prosecuted. ETS Security has an information management system—including a daily crime forecast—which assists deployment of resources to hot spots, and a performance management system based on CompStat. Also, ETS officers, shown in Figure 26, communicate with ETS operators frequently to address potential problems and issues.

FIGURE 26 ETS officers communicate with ETS operators. (*Courtesy:* Edmonton Transit System.)

FIGURE 27 MBTA Transit Police outreach to MBTA operators. (*Courtesy:* MBTA.)

Massachusetts Bay Transportation Authority, Boston, Massachusetts

After violent incidents on MBTA's Routes 23 and 28, the MBTA is now formally escorting buses through high-crime neighborhoods, and has placed more transit officers on its most notorious line, Route 28. Transit police follow the roughly 16 buses that travel the route and monitor live video feeds; this allows officers to immediately address incidents and potential crimes and the flexibility to focus on crowded buses. Officers also ride the route during peak afternoon hours, when high school students head home and there is an increase in the number of incidents. In October 2010, MBTA Transit Police started visiting bus garages on an informal monthly basis to communicate with bus operators about security and safety concerns, and any problematic issues on their routes. This allows the MBTA Transit Police to anticipate problems and address both serious and minor crimes. A poster from the outreach program is shown in Figure 27.

SELF-DEFENSE TOOLS

As of the time of this report and as far as the contractor team is aware, the only agency in the United States and Canada issuing self-defense tools to bus operators is the Houston METRO. Houston METRO has been issuing pepper gel and providing training on its use to its operators on a voluntary basis. Note that in Canada, pepper spray, along with pepper gel, is classified as a prohibited weapon. In the United States, state laws regulating its use and the permitted concentration and range of use vary. Liability is a significant concern for transit agencies as well as for operators themselves. Without witnesses or video or audio recording of an attack, it may be difficult to prove that the bus operator was defending himself

or herself. Also, appropriate use of the tool (using it effectively without excessive force) requires good judgment. Comprehensive training by qualified experts is required to ensure that operators know how and when to use this self-defense tool. In addition, bus operators need to be instructed on basic legal issues involved with the use of the tool and any potential liability that their agency and they themselves could face. These liability issues also apply to self-defense. Union and operator perspective is that this type of responsibility is the domain of law enforcement and, thus far, a small percentage of Houston METRO's operators have decided to carry the pepper gel. It can be noted that Texas is a "shall-issue" state for concealed firearms, meaning the state has a liberal permit-granting policy; its granting authority has no discretion and is required to automatically issue a concealed carry permit to any applicant meeting minimum criteria. Metro Transit bus operators in Minneapolis have effectively and appropriately used pepper spray against attackers in several instances. One of the survey respondents (also located in Texas) noted that their bus operators are allowed to carry short blades because the agency considers them to be more of a tool rather than a weapon. Metro Transit provides training to bus operators on pepper spray, though Metro Transit does not directly issue the canister to its operators. Minnesota, like Texas, is a "shall-issue" state for concealed firearms.

Advantages

- Bus operator perspective—Increased perception of security and management support for operators, especially in states with more lenient weapons purchase and carry laws; the tool can be optional for operators.
- Agency perspective—Ease of procurement and deployment.
- Of the less-than-lethal options, pepper spray and pepper gel are based on OC, which is generally effective in subduing violent individuals from a distance; physical contact with the assailant would not be needed for self-defense. Pepper gel is water-based, cannot be inhaled, and is appropriate in a tubular environment.

Disadvantages

- Agency perspective—improper use of the tool may expose the agency to lawsuits and negative publicity and may potentially encourage operators to be more aggressive with customers.
- Bus operator perspective—improper use of the tool may expose the bus operator to lawsuits or even criminal charges; some operators may view the tool as another element that the operator needs to learn how to use and take responsibility for.
- Transit agency experience with the tool is limited.
- With pepper spray and pepper gel, there is risk of cross-contamination (splatter on operator and passengers); this is minimal for pepper gel, but still possible; also, effectiveness may diminish when used against those under the influence of drugs or alcohol or mentally disturbed individuals.

Agency Experience

Houston METRO, Houston, Texas

The decision to issue a self-defense tool was made by Houston METRO after the need for increased bus operator protection was determined. Though METRO has its own transit police, its service area is large and affects METRO's response times to emergencies. After conducting research into basic self-defense training, pepper spray/gel, the kubotan, and taser, METRO selected the pepper gel. METRO's objective is to give bus operators the option to carry the pepper gel, which is to be used in times of conflict only after every attempt to resolve the situation has been exhausted, including verbal de-escalation, and if the bus operator believes a threat of bodily injury from a capable source exists. Operators who elect to carry the pepper gel are required to carry only METRO-issued pepper gel canisters and to complete the training developed and provided by METRO. Agency experience with the tool is limited because no METRO bus operator has used the pepper gel in any instance. Thus far, only 36 of approximately 1,500 bus operators, or 2.5%, have elected to carry the pepper gel and undergo training. However, there has been increasing interest from bus operators and an agreement has been reached with the union to train all new bus operators in the use of the pepper gel during their orientation phase, and then provide them with the option of carrying it after they have completed the training. Guidelines for the use of pepper gel by METRO's bus operators are summarized in this section. The full text of the guidelines is provided in Appendix A. The pepper gel is to be used for defensive purposes only, and operators must make every effort to neutralize or avoid potentially violent situations through verbal and nonverbal tactics, including retreat, before using the tool.

Metro Transit, Minneapolis, Minnesota

Metro Transit offers pepper spray training to its bus operators who choose to carry pepper spray. Of Metro Transit's 1,400 operators, 100 have undergone pepper spray training, which is available to operators who request it. This training is provided by a law enforcement training and consulting group. To undergo training, operators need to agree to background checks and purchase training materials, and must retrain every two years. Operators have successfully used the pepper spray to defend themselves against assault in several incidents. There have been no customer complaints with regard to the use of the tool. The cost of the pepper gel is $19.95 per canis-

ter. In large quantities, the cost can be reduced by 50% or more. Each canister has a shelf life and warranty of 4 years.

SELF-DEFENSE TRAINING

Self-defense training for bus operators has been implemented by some agencies. Because self-defense can subject the agency and the user of the techniques to civil or criminal liability, it is important to have an instructor with a law enforcement background or, at a minimum, familiarity with the legal aspects of self-defense. Self-defense-from-a-seated-position training is provided to their operators by some transit agencies, such as Pierce Transit. Experts believe that it is the best self-defense position for operators because (1) the operator while on duty is usually in the seated position; (2) there is only one angle from which the operator can be attacked when seated; (3) in such position, it is more difficult for the attacker to knock an operator down; and (4) emergency communications is within reach of the seated operator. Agencies that have not implemented self-defense training have not done so owing to potential liability issues. TTC, for instance, decided not to provide self-defense training to its bus operators because of liability concerns. Although some operators believe that their responsibilities should not include physical self-defense because they are not police officers, others are eager to avail themselves of the training. The two U.S. transit agencies discussed in the self-defense training profile summaries operate in "shall-issue" states for concealed firearms, Washington and Kansas. These states are also considered permissive, open carry friendly states.

Advantages

- Bus operator perspective—increased perception of security, empowerment, and management support for operators.
- Customer perspective—because the self-defense training is not visible, unlike self-defense tools, customers may not experience an increased concern for their security on their route.
- Ease of deployment—training content and format may be based on existing training being provided to bus operators or on self-defense classes being provided to airline personnel.

Disadvantages

- Use of self-defense techniques is hands-on and may expose operators to further attacks and incite assailants to increase the intensity of the attacks.
- Training is required, including refresher training.
- Bus operator perspective—feelings that enforcement-type actions are not be a part of his or her job, discomfort with this type of training; improper use of the technique may expose the bus operator to lawsuits or even criminal charges; some operators may view it as another element that the operator needs to learn about and take responsibility for.
- Agency perspective—potential for increased operator aggression towards customers, increased risk of agency liability.

Agency Experience

Pierce Transit, Lakewood, Washington

Pierce Transit's police department provides self-defense-from-a-seated-position training to its bus operators. The training, developed by a police officer, consists of handouts, a quiz, and a video. The training is mandatory for bus operators, but the physical portion is voluntary to ensure that operators do not aggravate any existing condition. Typically, most operators do participate in the physical portion of the training. Physical self-defense has been used about 10 times by Pierce Transit bus operators during the past 20 years. The self-defense technique has been used properly, and no lawsuits have been filed as a result of its use.

Defensive techniques are demonstrated in the classroom using chairs similar to bus seats. Students perform the techniques initially in the classroom, and on the four types of buses driven by operators. The training also involves how to reduce fear, importance of wearing the right types of shoes, and importance of physical fitness. Demonstrations of the rear hammer fist, back elbow, palm heel strike, knee-shin-toe, and kicking, as well as proper use of the bus controls are also provided. This self-defense training has been taught by Pierce Transit instructors not only to Pierce Transit bus operators but to operators at several other transit agencies as well.

Transit Authority of River City,
River City, Kentucky

Self-defense training is provided by a martial arts and tae kwan do instructor who works as a contractor for TARC. The 3-h training class is provided to new operators. Current operators receive refresher training on a periodic basis. Much of the training focuses on the ability of the operators to defend themselves from a seated position. This training was initiated about 2 years ago and was chosen as a security measure over barriers and compartments, which were viewed by TARC as a possible hindrance to customer service and operations. TARC has a relatively high number of wheelchair passengers, and a barrier or compartment would impede the operator's ability to serve them in a speedy manner and could cause service delays, diminishing the reliability of TARC service. The cost of the training is $300 per 3-h class; the number of participants allowed in each class is unlimited.

Calgary Transit, Alberta, Canada

Calgary Transit's "Out of the Blue" course objective is to provide operators with the skills to create a safe and secure workplace by recognizing and managing conflict. The course elements are perspective, recognition, understanding, and support/follow-up. Instruction on several defensive maneuvers from a seated position is provided to operators, who are advised to stay in their seat at all times, if possible, while in customer service. Operators are encouraged to practice the self-defense techniques on their own. What to do after an assault, including calling control, obtaining witness information, and reporting incidents are also taught. Of the operators participating in the course, 75% to 80% have provided a positive assessment of the training. Calgary Transit received a CUTA award for Best New Project in 2007 for this course.

Self-defense techniques are one of the several key elements of the course. The other portions of the course—perspective, recognition, and understanding—seek to instruct operators on ways in which conflict situations might be defused before they escalate. The perspectives portion of the course provides operator assault statistics and trends at the agency. The instructor discusses the different types of assaults—verbal, physical, and sexual—and the three steps to managing the situation—recognition, understanding, and acting. In *recognition,* operators are taught to use all of their faculties—including sight, hearing, smell, and past experiences—and to take behavior, appearance, language/tone of voice, groups, and location/time of day into consideration to recognize potential conflict situations. In *understanding,* the operator is instructed on Calgary Transit's policies and procedures, the legal definition of an assault, and what the options are in specific situations and what steps can be taken before, during, and after a conflict to avoid an assault. Each operator is required to carry Calgary Transit's "Rules and Procedures Manual" at all times while on the job. In particular, understanding the following rules from the manual, believed to be important in minimizing customer disputes, is achieved during the course:

- Rule 806: operators shall not pursue fare disagreements with a customer to the point of confrontation and where personal safety may be jeopardized.
- Rule 714: when requesting customers to comply with Calgary Transit rules and policies, operators must be respectful and civil. If the customer fails to comply with the request, the operator shall not pursue the matter if doing so will jeopardize personal safety.
- Rule 101: operators must determine a safe course of action by using common sense and good judgment.
- Rule 403: operators shall not insist on the enforcement of rules to the point of conflict or get off the bus to pursue anyone for the purpose of a confrontation.

The section of the course on *acting* includes passenger interaction techniques shown in Figures 28 and 29, specific guidance on how to avoid or deter conflict, a discussion of personal appearance, and treating customers with respect. Once a physical assault is imminent or has started, the operator is instructed to:

FIGURE 28 Calgary Transit's Out of the Blue self-defense training. (*Courtesy:* City of Calgary 2005 Out of the Blue presentation.)

- Call control;
- Open both doors;
- Release seat belt;
- Not get out of seat unless moving to a point of safety; and
- Not leave the bus unless moving to a point of safety.

Winnipeg Transit, Manitoba, Canada

Winnipeg Transit provides a 1-day course on self-defense. The course adopted the "Out of the Blue" training that was

FIGURE 29 Calgary Transit's Out of the Blue self-defense training. (*Courtesy:* City of Calgary 2005 Out of the Blue presentation.)

originally developed by Calgary Transit. The first half of the day focuses on assault prevention training—recognizing disturbed/intoxicated individuals, how to deal with problematic passengers and conflict situations, verbal judo and de-escalation techniques. During the second half of the course, bus operators practice physical self-defense techniques. All of Winnipeg's 1,100 operators have undergone the training. Note that Winnipeg does not have its own police or security personnel.

CUSTOMER SERVICE TRAINING

Customer service training is an extremely important aspect of assault prevention because some incidents can be avoided through specific operator behaviors. Maintaining a professional demeanor at all times and staying calm in stressful situations are important. Training can teach operators personal de-stressing techniques. A bus operator trained in verbal judo or de-escalation techniques can calm a hostile customer and defuse a potentially violent situation. Bus operators need to know and understand how to apply agency rules and regulations.

The FTA administers a variety of bus operator training, including customer relations and safety and security training, through the Transportation Safety Institute (TSI), the National Transit Institute (NTI), Johns Hopkins University, and the Volpe National Transportation Systems Center at low cost or no cost to transit agencies. Many transit agencies have taken advantage of these training opportunities. Some of the larger agencies have developed an internal training division that delivers various classes to bus operators. Also, transit police may develop and deliver security-related training to bus operators.

The TSI train-the-trainer Instructor's Course in Bus Operator Training is a 4-day course that teaches participants to train qualified, professional bus operators. At a cost of $100 per participant, instructors are trained in presentation and creative learning techniques; facilitation methods; and adult learning principles in customer relations, vehicle operations, and emergency management. Upon completion, the participants are certified by the U.S.DOT to train bus operators.

The Transit Ambassador Program is a comprehensive training course on customer service for transit employees and managers. The program, designed by CUTA, is a Train-the-Trainer (TTT) certification course that allows agencies to deliver the program themselves once their staff has been certified. About 50 Canadian agencies, 35 U.S. agencies, and 20 European and Australian agencies are using the program. The feedback from agency managers and transit workers regarding the program has been positive. The program started in the 1980s and was updated and revised in 2007. The four core modules of the program are the "essentials of customer service" module, "effective communications" module, "managing customer feedback" module, and "managing stress" module. Bus operators are taught using a combination of techniques, including interactive discussions with bus operators, basic instruction, and video. Also, real-life scenarios are brought into the modules.

Advantages

- Reduces likelihood of disputes.
- Increases overall customer satisfaction.
- Frequency of training may be increased if necessary for operators needing more training.

Agency Experience

Pierce Transit, Lakewood, Washington

The agency instructs operators about policies and procedures, workplace violence policy, and use of force policy. They are taught to be respectful, courteous, and informative, and to make a reasonable effort to collect the fare. Pierce Transit provides operators with a booklet that describes rules for bus safety, which they may provide to passengers. The booklet includes a comprehensive list of Pierce Transit's "rules of the road" code of conduct. The training includes interactive discussions about various scenarios (e.g., short fare). Operators are asked to describe potential actions they might take and the consequences of the actions. The training also includes procedures on what to do in emergencies and when and how to use the silent alarm. Operators are advised to report all incidents and suspicious activity, and if a firearm is sighted, they are instructed to use a specific radio code to report it but warned not to challenge the passenger. Assault prevention and robbery and theft prevention tips are also provided to the operators. Assault prevention tips include: "remain seated when interacting with customers," "do not detain or trap individuals inside the bus," "once a passenger has exited the bus 'let it go.' "

NYC Transit, New York, New York

NYCT has a comprehensive training program for new operators as well as refresher training for existing operators. Because most assaults against NYCT operators are the result of fare disputes, the agency believes that addressing fare disputes and mitigating them will help prevent operator assault. Operators are taught that the first priority is safe, reliable, and efficient bus service, and the second priority is collecting revenue. Operators are presented with various realistic scenarios during training courses, including passengers who refuse to pay their fare, who violate other agency policies, and are rude or challenging. They are then asked to respond to these difficult situations. Operators are taught to use their judgment, to simply state the fare or other rule being violated, and allow fare evaders and other rule violators to continue to ride the

bus. In the past, operators were expected to challenge passengers who did not pay the proper fare. However, this led to confrontations with passengers, causing them to become verbally or physically aggressive toward the operator. Therefore, the operators are now taught to let the rider know that he or she is aware of the situation, but are taught to avoid conflicts and confrontations. A recommended phrase to address potential fare evaders is "Excuse me, sir. The fare is _____." NYCT operators are instructed to keep track of fare evaders, and if there is rampant fare evasion by multiple persons, the operator would be expected to contact the Bus Command Center through radio or silent alarm. If the same individual engages in fare evasion multiple times, the operator is also expected to report this to supervision. Operators are reminded not to take the bus out of service or argue with the passenger. If, however, the operator believes he or she is threatened, he or she is taught to proceed to the nearest bus stop, open the doors, and call the Command Center for assistance. During training, bus operators are advised not to take personally anything the customer says, even if he or she starts yelling insults or slurs.

To assist operators in improving their handling of conflict situations, operators participate in a conflict management program. The program participants learn about:

- How to define and understand conflict;
- Identifying the major causes of conflict;
- Identifying the difference between constructive and destructive conflict;
- Recognizing the signs of conflict; and
- Assessing and evaluating personal conflict approach.

Operators are taught about the different styles of dealing with conflict—competing, accommodating, avoiding, collaborating, and compromising. Although collaborating (both the operator and passenger work together to find a solution to the problem at hand) may be an ideal technique for other situations, this can disrupt bus operations; therefore operators are taught to compromise, accommodate when necessary, and to avoid conflict at all cost. Communication techniques are taught in a 1-h training module that was created in 2008. As a supplement to their training, bus operators are provided with a comprehensive Guide to Customer Service. The Guide covers bus security; all key aspects of bus operations, including fare evasion and customer service issues; and what to do in case of an emergency.

Coast Mountain Bus Company,
British Columbia, Canada

For operators involved in incidents, Coast Mountain bus operators have been encouraged to attend a voluntary 2-day refresher course that includes a module on conflict resolution. The module includes a video with vignettes of various challenging situations commonly faced by operators. Although this training was suspended on January 1, 2010, the training was well received by those who had taken it.

Comments from Survey Respondents

Listed below are some of the training-related comments provided by survey respondents:

- "We use every incident as a potential training opportunity. In approximately half of all assaults, the operator may have contributed to escalating a confrontation with the passenger."
- "Prevention, for the most part, is in the control of the Operator. Bus Operators prevent assaults on a daily basis. Training is the only way to prepare an Operator for this type of event. The Bus Operator must know when to 'let it go' and report the situation to a Supervisor or Officer."
- "I believe many assaults can be prevented if the operators had verbal skills to diffuse situations."
- One respondent provides a caveat about violence-prevention training: "After training all the Bus Operators in violence prevention, we realized that we were having an increase in assaults by Operators on customers! We are still not sure why, and this is currently not a problem. Perhaps we somehow, in our efforts to protect Operators, over-empowered them."

BEHAVIORAL ASSESSMENT TRAINING

Security-related training has been encouraged at the federal level by the FTA and TSA and widely implemented by transit agencies since September 11, 2001. In addition to basic awareness training that emphasizes the importance of observation and reporting of suspicious activity, behavioral assessment training may also be useful in addressing passenger assault of bus operators. The University of Tennessee TO SPOT training became available in February 2008 and, according to the University of Tennessee Law Enforcement Innovation Center, many employees of various agencies, including bus operators, have undergone training, although attendance information by organization is not available. The participants are taught to identify and report suspicious individuals, which may help in the apprehension of criminals. Because liability issues (e.g., racial/ethnic profiling) and questions of effectiveness of the techniques associated with use of behavioral assessment have been raised, consulting the transit agency's legal counsel is essential. *TCRP Report 86, Volume 13, Public Transportation Passenger Security Inspections: A Guide for Policy Decision Makers* contains a section discussing the legal implications of behavioral assessment.

Advantages

- Short implementation time.
- Availability of training.

Disadvantages

- Possibility of racial/ethnic profiling claims.
- Its effectiveness has been questioned.

Agency Experience

Hampton Roads Transit, Hampton Roads, Virginia

Hampton Roads Transit provides behavioral recognition-type training to all of its bus operators. Because bus operators are usually the first line of defense against criminals, Hampton Roads Transit believes that training them to recognize suspicious individuals is important and can mitigate operator assault, along with other crimes, by helping operators sharpen their observational skills and identifying criminals and taking them out of the system.

Pinellas Transit, St. Petersburg, Florida

Since February 2010, TO SPOT behavioral assessment training has been provided to new Pinellas Transit bus operators by the University of Tennessee. Existing operators are also being trained, and, currently about half of all operators have been trained.

CHAPTER SIX

OPERATOR PROTECTION MEASURES: AGENCY POLICIES AND LEGISLATION

Agency policies and legislation can be effective in mitigating operator assaults. *Suspension-of-service policies* against those who assault operators and violate agency rules serve to exclude dangerous individuals from using the system and may deter potential criminals or rules violators from committing criminal acts. These policies may require changes to state and/or municipal laws so that those who have been excluded from the system would be legally prevented as well from using the system. Although passing new legislation can take time and effort, agencies that have participated in such efforts believe that it is a worthwhile initiative. Legislation for enhanced penalties for operator assaults has been enacted in almost half of U.S. states. *Workplace violence policies* establish the importance of addressing and eradicating all types of workplace violence and put in place good response and reporting practices as well as a comprehensive interdepartmental support system to provide helpful resources to workplace violence victims. *Fare payment policies* contribute to disputes between operators and passengers, and these disputes can lead to operator assaults. Fare enforcement issues were cited as a leading contributor to operator assaults by survey respondents. In cases where the fare payment process occurs off-board the transit vehicle, or the fare payment process is not otherwise identified with the operator, operator assaults caused by fare disputes are minimal. BRT systems are the prime example of this practice. *Employee assistance and trained supervisors* are helpful to victims of assaults, and mitigate the negative impact of the assaults on the employee and his or her coworkers. *Passenger outreach* initiatives can deter assaults and make the public and passengers more aware of incidents against operators and the agency's commitment and support of its employees. *School and community outreach* programs are also believed to be useful as a longer-term method to protect operators against violence. As a reminder, the definition of assault used in this study is: Overt physical and verbal acts by a passenger that interfere with the mission of a bus operator—which is to complete the scheduled run safely—and that adversely affect the safety of the operator and customers.

SUSPENSION-OF-SERVICE POLICY

Suspensions of service or passenger bans demonstrate the agency's commitment to improving the security of bus service. These suspension-of-service policies have been implemented at agencies such as Capital District Transportation Authority in Albany, New York; Metro Transit in Madison, Wisconsin; Montgomery County Transit in Maryland; Las Vegas RTC; Pierce Transit; SUN METRO in El Paso, Texas; and the Edmonton Transit System in Canada. These were reported to be effective in reducing repeat offenders. The transit agencies worked with their municipalities to adopt laws that enable them to exclude individuals who violate their fare payment and other policies or codes of conduct. Any excluded individual who attempts to board a bus would be considered trespassing on agency property. This policy deters potential offenders through the threat of not being allowed onto the transit system. Other agencies, such as CATS in Charlotte, North Carolina, have established ordinances that prohibit violations of agency rules.

Advantages

- Bus operator perspective—increased perception of security and management support for operators; lets bus operators know that management is serious about their security.
- Customer perspective—lets customers know that the agency is serious about security and might not allow violations of their codes of conduct.
- Does not require significant investments in equipment or security personnel.

Disadvantages

- Agency perspective—agency needs to change the municipal or provincial ordinance to introduce legislation stating that an individual violating an agency's code of conduct might be banned from accessing the transit system for X days. This may take time and effort.
- Without support of legal system and prosecutors in ensuring that offenders who try to access the system might be charged, the policy may not be effective.
- Larger systems may have difficulty enforcing the policy because identifying the banned individuals could be problematic.

Agency Experience

Capital District Transportation Authority, Albany, New York

CDTA instituted a suspension-of-service policy for patrons on CDTA buses and facilities in April 2009. New York State

legislation 21 NYCRR 5300 states that the "provisions of section 1307(4) of the Public Authorities Law provide CDTA and its subsidiaries with power to make rules and regulations governing the conduct and safety of the public in the use and operation of the transit facilities of the authority and its subsidiaries." When an individual violates CDTA Rules of Conduct or the laws of New York State, the bus operator, supervisor, or other CDTA employee or law enforcement officer has the authority to enforce this policy. No court order is required because the suspension policy is allowed by state law. Violators who violate the suspension are subject to trespassing charges. Twenty persons have been suspended by CDTA so far, and not one of them has been found to have violated the terms of their suspension, which may be attributed to the establishment of the CDTA Suspension-of Service-program. Prosecution of offenders became easier for CDTA after the Rules of Conduct was legislated into state law. The program, especially in combination with the enhanced NYS penalties, sends a strong message to the public that CDTA does not tolerate offenses. Furthermore, this legislation demonstrates CDTA's commitment to the safety of its employees. Fines and penalties include ejection from the facility or conveyance at the time of the violation and/or criminal prosecution for trespass and/or the violation, in the criminal court of the jurisdiction where the violation occurs. The complete policy, rules, and procedures are included in Appendix A of this Synthesis report.

The CDTA Rules of Conduct are similar to those of many transit systems. The rules include fare payment, no assaults or other interferences against the operator, no vandalism, no alcohol consumption, and no smoking. Bus operators initially attempt to enforce the suspension by asking the suspended individual to leave the bus; if the individual fails to do so, the police are called, and he or she may be arrested. CDTA mails the individual a notice and the duration of suspension, rule or law violated, and an explanation of CDTA's internal review and hearing process. Barring a successful appeal, the suspension becomes effective. The time period of the suspension varies based on the number of violations within a 5-year period: a 7-day suspension for the first violation, 30 days for the second violation, 90 days for the third violation, and 180 days for each successive violation.

Madison Metro Transit System,
Madison, Wisconsin

Metro Transit's Rules of Conduct and Inappropriate Conduct Transit Exclusion Procedure was adopted on July 12, 2005, and prohibits individuals from engaging in inappropriate conduct on buses and other facilities. Individuals who do engage in "repeated or serious incidents of inappropriate conduct" can be excluded from Metro's services. Inappropriate activity is defined as any activity "disruptive or injurious to other individuals lawfully using Metro facilities or services; damaging or destructive to transit facilities or services; or disruptive, harassing, threatening or injurious to transit employees." An individual may be excluded from Metro Transit services even if he or she is not charged or convicted. If an individual who has received an exclusion order boards a bus, the individual will be subject to arrest for trespassing under Madison City Ordinance 23.07 (2). The entire text of the rule can be found on Metro Transit's website at: http://www.cityofmadison.com/metro/HowToRide/TransitExclusionPolicy/TransitExclusionPolicy.htm. Inappropriate conduct is grouped into the following three categories:

- *Level I inappropriate conduct* includes willfully refusing to pay a fare or show specific fare media to the operator, eating or drinking, having distracting conversations with the bus operator, and otherwise disorderly or inappropriate conduct. For these behaviors, a warning is provided by the operator. If further warnings are required, a supervisor may be called to the scene. If the supervisor asks the passenger to leave the bus and he or she refuses, the passenger is subject to arrest and prosecution for trespassing and/or disorderly conduct. Continuous infractions may result in exclusion for at least 7 days and a maximum of 6 months.
- *Level II inappropriate conduct* includes fighting, bringing on board dangerous items such as weapons, threatening behaviors, and drinking or possessing open containers of alcoholic beverages. For level II violations, the operator or supervisor can tell the individual to leave the bus immediately, and call for police assistance when necessary.
- *Level III inappropriate conduct* or emergency situations is the most serious level and includes assault or threat of assault, use of counterfeit or stolen fare media, obstructing or interfering with the operator's safe operation of the bus, indecent exposure, and lighting an incendiary device, including a match. The operator is authorized to request police assistance in these cases.

Once it is determined that an individual should be excluded from transit services, the transit service manager issues a written exclusion letter that includes a description of the appeals process.

Montgomery County Transit,
Montgomery County, Maryland

Montgomery County Transit's Disruptive Behavior policy is believed to discourage repeat violations of agency rules. Individuals who violate the disruptive behavior rule by engaging in prohibited behavior are subject to a 90-day suspension of service and/or fines or imprisonment for up to 6 months. Prohibited behaviors include interfering with the operation of the vehicle, eating/drinking/smoking, fighting, spitting, yelling, threatening the driver or others on board, tossing or throwing articles or projectiles, and unwanted touching or conversation with another passenger. The exclusion is enforced by transit

FIGURE 30 Montgomery County Transit's suspension of service policy signage. (*Courtesy:* Montgomery County Transit.)

supervision with assistance from local law enforcement when needed. The policy signage, shown in Figure 30, is displayed in Montgomery County buses.

Pierce Transit, Lakewood, Washington

Pierce Transit's Passenger Exclusion Program has been established as a means to modify behavior that is unacceptable in the transit environment. In addition to being arrested (if the behavior is criminal), the individual causing the disruption is also served with an exclusion order that lasts no less than 90 days. The exclusion may be permanent if the act is violent. The program also has an appeals process that allows for due process. Pierce Transit has issued 3,000 exclusion orders since the program's inception and maintains a recidivism rate of less than 2%. Periodic enforcement operations targeting rules violators are performed. In fall 2009, for instance, a 3-week enforcement operations called "not on our bus" focused on bus routes, bus stops, and transit centers near high schools. Officers conducted spot checks, and violators of agency rules were subject to immediate exclusion from Pierce Transit services for at least 90 days.

SUN METRO, El Paso, Texas

SUN METRO has had their refusal-of-service policy in place for at least 20 years. The Passenger Rules ordinance states "an operator may refuse to transport any person whose observed conduct or behavior constitutes a violation of this section." SUN METRO's Passenger Rules state that the following acts on board a bus or streetcar transporting passengers are considered illegal:

1. Smoke or carry any lighted or smoldering pipe, cigar, or cigarette in or upon any such vehicle;
2. Consume food or drink in or upon any such vehicle;
3. Discard, throw, or place any litter or trash in or upon any such vehicle;
4. Operate any radio, cassette recorder, or any such device, except where such device is connected to an earphone that limits the sound emitted therefrom to the individual user;
5. Carry, possess, or allow to be kept any flammable or combustible liquids, explosives, acids, live animals, birds or reptiles, or any item inherently dangerous or offensive; provided, that this prohibition shall not apply to seeing-eye dogs properly harnessed and accompanied by a blind passenger;
6. Stand in front of any white line marked on the forward end of the floor of any such vehicle, or otherwise obstruct the view of the operator thereof;
7. Board any such vehicle through any rear-exit door, unless so directed or authorized by the operator;
8. Fail or refuse upon request of the operator to move further back in the vehicle so as to make room for other passengers in the front; and
9. Use loud or abusive language toward passengers or the operator, which interferes with the safe operation of the vehicle.

SUN METRO's Reinstatement Policy contains a provision for individuals to appeal refusal-of-service decisions. The provision requires a written statement containing the following: reason(s) for restoration of use of service; commentary explaining why the event(s) that led to being refused service may now be disregarded going forward; commitment in writing that the event(s) in question will not happen again. Also required is a restitution for any damage or harm resulting from the event(s) that led to the refusal of service as well as an acknowledgement that should another event result in refusal of service, a lifetime ban from use of SUN METRO Transit services will be imposed. The provision letter notes that "our Operators are recognized as the passengers' greatest and immediately available asset; and as such, our Coach Operators should be treated with courtesy and respect. . . ."

Edmonton Transit System (ETS), Alberta, Canada

As part of the ETS zero tolerance policy that began in late 2009, 125 individuals have been banned from ETS for fare evasion and other rules violations. Repeat offenders receive a 1-year ban. Their photos, obtained from the CCTV cameras on buses, are provided to all bus operators and ETS peace officers. Although Edmonton police are very cooperative and ETS Security has developed the Trespasser Tracker application to help officers track and locate frequent offenders, this ban has been difficult to enforce.

Charlotte Area Transit System, Charlotte, North Carolina

Although CATS does not have a suspension-of-service policy, it instituted a change in the municipal law to prohibit inappropriate acts on their transit buses and light-rail vehi-

cles. The law allows CATS to issue a civil penalty of $50 or arrest individuals who commit these acts. According to Charlotte Code Sec. 15-272 and 15-273, prohibited acts include:

- Riding a CATS or LYNX vehicle without paying the proper fare;
- Smoking;
- Consuming any alcoholic beverage or possessing an open container of any alcoholic beverage;
- Engaging in disruptive, disturbing behavior including: loud conversation, profanity or rude insults, or operating any electronic device used for sound without an earphone(s);
- Carrying, possessing, or having within immediate access any dangerous weapon;
- Littering; and
- Excreting any bodily fluid or spit upon or at another person.

Advantage

- Zero tolerance–type policies reflect the agency's seriousness about enforcing agency rules and policies. Demonstrating intolerance of even minor rules violations by excluding violators from the transit system can deter serious violence from occurring.

Disadvantages

- Enforcing exclusion policies may be challenging for larger transit systems.
- Legislative changes may be needed to establish an exclusion or suspension-of-service policy. These changes may require considerable time and effort.

WORKPLACE VIOLENCE POLICIES

States are required to establish workplace violence standards at least as effective as Occupational Safety and Health Administration standards; some states have established stricter standards. Transit agencies set policies that meet or exceed these standards that are believed to prevent and address all types of violence against operators and usually establish a clear response mechanism.

Washington Metropolitan Area Transit Authority, Washington, D.C.

WMATA has established a zero tolerance workplace violence policy. WMATA's policy specifically states that the agency "has zero tolerance for workplace violence in whatever form it may take." WMATA defines workplace violence as including, but not limited to, "behavior occurring in the workplace that results in violent, harassing, intimidating, or other disruptive behavior that communicates a direct or indirect threat of physical or emotional harm, property damage, and/or disruption of the Authority's business operations." The full workplace violence policy may be found on WMATA's website at: http://www.wmata.com/about_metro/docs/pi_7_33_0.pdf. These policies clearly state the roles of each staff member, the definition of workplace violence, and the proper responses to incidents of workplace violence. The employee's responsibility is to report any alleged incident immediately, ensure that the report is documented and submitted to the Workplace Violence coordinator, and cooperate in investigations. Emergencies must be reported to the Metro Transit Police Department (MTPD). The policy states that employees who report incidents must not be retaliated against. Supervisors and managers are required to provide needed medical attention, notify family members, complete the reporting form and submit it to the Workplace Violence coordinator, and coordinate investigations with him or her, ensuring that each alleged incident is investigated, evaluated, and resolved by implementing appropriate disciplinary actions and a remedial plan to address workplace violence.

Pierce Transit, Lakewood, Washington

Pierce Transit's Workplace Violence Policy defines workplace violence as "physical or verbal behavior that endangers or harms another employee, customer, contractor, or vendor, or that a reasonable person would constitute a threat of harm." Examples are cited: "Deliberate actions or behavior resulting in a physical assault against a person or property, such as hitting, pushing, holding/restraining, spitting on, or blocking the movement of another person. Verbal or written threats communicated directly or indirectly that a reasonable person would perceive to intimidate, frighten or otherwise cause fear of physical or emotional harm. . . . Inappropriate verbal or physical behavior that causes a reasonable person to feel unsafe, such as angry outbursts, throwing things, or expressions of hostility." The policy is included in Appendix A of this report. It clearly states that all reported incidents will be investigated and that retaliation against employees reporting workplace violence is prohibited.

Advantages

- Encourages entire organization (all divisions of an agency) to take violence against operators seriously.
- Enhances operator perception of management support.

FARE POLICY

Fare policy, including fare payment and enforcement, is important because it can contribute to fare disputes between the operator and passenger. Complex fare structures and transfer policies can cause confusion on part of both the passenger and operator, and lead to disputes. Also, agencies that have strict fare policies believe that these policies minimize

confusion on part of both the operator and passenger and prevent assaults against operators. Strategies that attempt to disassociate the operator with fare enforcement include automated fare reminders and supervision intervention with unruly passengers. NYC Transit, for example, provides automated fare reminders and is testing a public address system that allows the dispatcher to directly address the passenger. TTC policy was changed in April 2010 to provide more supervisor support to operators. Operators are now able to deflect issues to supervisors who are assigned to particular locations and can be summoned in a timely manner. Other strategies include fare-free systems and off-board payment systems, which mitigate most fare-related disputes.

Standard Fare Payment Systems

The typical fare payment system requires operators to take some type of action if a passenger does not pay the proper fare. Operator training is important in ensuring that the operator understands agency policies and procedures with regard to fare payment and enforcement. Although some agencies provide the benefit of the doubt to a customer, others have zero tolerance approaches. Also some agencies place more responsibility on the operator than others agencies do with regard to fare collection. There are pros and cons associated with each of these agency policies. TTC, recognizing that fare issues are bound to arise because TTC has a relatively complex fare system, instructs operators to "read" the situation. For example, if there is a rainstorm and the bus is very late, the operator may conclude that, in this situation, most passengers are already frustrated and agitated. Therefore, the operator may provide the benefit of the doubt to passengers who do not pay the proper fare.

Off-Board Fare Payment Systems

In North America, some BRT systems have off-board payment systems, whereas regular bus transit systems do not. Some BRT systems offer customers a choice of either off-board or onboard fare collection. Customers purchase tickets or pay the fare at off-board payment sites and may board the transit vehicle using any of its access points. They have no interaction with the operator with regard to fare payment and simply retain the ticket or receipt while on board as proof of payment. Off-board payment systems contribute to increased customer satisfaction by facilitating the boarding process, reducing dwell times, and increasing vehicle speeds and reliability; off-board payment also decreases the likelihood of fare disputes and, in turn, mitigates operator assaults. Before deciding on a fare payment policy, transit agencies need to consider both the benefits and costs of the policy. Major costs involve the installation and maintenance of ticketing machines in station-stops and the initiation and expenses related to fare inspection. Instituting fare inspection requires hiring or transferring and training personnel and may also require changes in local or state laws authorizing enforcement. A TCRP synthesis study focusing on off-board fare payment for BRT and LRT systems, initiated in the fall of 2010, is expected to more closely explore the impact of these systems on operator assaults.

Fare-Free Systems

Goals of fare-free systems and agencies that offer fare-free zones include transit promotion, mobility, support of the local economy, and congestion reduction. Because fare payment has been eliminated as a source of operator–passenger disputes, these systems may be expected to experience fewer operator assaults compared with similar systems that do charge fares. At the same time, issues such as overcrowding and delays owing to excessive demand, an increase in problem riders, operator dissatisfaction, and a decrease in revenues have arisen in these systems. Fare-free systems include Chapel Hill, North Carolina's fixed-route buses; Clemson, South Carolina's bus service for area universities; and Amherst, Massachusett's bus service for its colleges and communities. Some limited fare-free systems, such as King County Metro in Seattle, Washington, do not necessarily reduce the numbers of operator assaults. King County Metro has a fare-free zone in the downtown Seattle area. Passengers traveling to outlying points need to pay at their destinations. This has caused concern for operators because they are more vulnerable to assault in these areas with fewer riders and police. A TCRP synthesis study examining successes and challenges of a fare-free policy was initiated in the fall of 2010.

Agency Experience

MAX Line, the first BRT in North America, began service in Las Vegas in June 2004. It is operated by Veolia Transportation on behalf of the Regional Transit Commission or RTC. The MAX has 2.5 million riders a year, and part of its route is on the heaviest ridership corridor in the system, the 7.5-mile Las Vegas strip from Las Vegas Boulevard to North Las Vegas. All MAX vehicles have AVL/CAD systems and traffic signal prioritization that gives MAX buses green-light priority through intersections, increasing reliability of its transit service. Most assaults occurring in the system have been caused by fare payment issues. Because fare payment for the MAX Line is processed completely off-board, MAX Line operators are less associated with fare payment than operators of regular buses with onboard fare payment. Furthermore, because there are recorded announcements on the MAX Line about fare payment, operators do not need to directly remind passengers about the fare. As a result, the number of operator assaults on the MAX Line is much lower than the rate for regular bus service.

Greater Cleveland RTA (GCRTA) has a BRT system with off-board fare payment. However, GCRTA generally has few assaults, so the impact of the fare payment system on operator assault is difficult to assess.

King County Metro Transit is planning to initiate BRT service and expects that its off-board fare payment system will lessen the likelihood of operator assaults.

Coast Mountain Bus Company in British Columbia, Canada, introduced the Fare Paid Zone initiative in 2007 to transfer the proof of payment and any fare enforcement responsibility from the bus operator to a member of the Transit Police or security staff. By 2009, the bus operator assault rate had significantly decreased. However, because this initiative was integrated with other security measures, it is not possible to determine what impact this particular initiative had on the assault rate.

LEGISLATION INCREASING PENALTIES FOR OPERATOR ASSAULTS

The transit community (ATU and transit agencies) has been advocating for tougher penalties against those who assault transit operators. It is believed that this legislation, when well publicized and enforced, can deter assaults. The TWU, however, has questioned the effectiveness of the legislation. According to a TWU representative, assailants do not consider the consequences of their actions and it has not been proven that assaults have been prevented as a result of the legislation. At the time of this synthesis publication, almost half of all U.S. states have enacted stronger penalties. See Appendix A for a list of the states, provisions, and penalties. A few localities and states mandate the posting of signage regarding the enhanced penalties. For example, Illinois requires a notice to be prominently displayed in each vehicle used for the transportation of the public for hire stating,

> "Any person who assaults or harms an individual whom he knows to be an operator, employee or passengers of a transportation facility or system engaged in the business of transportation for hire and who is performing in such capacity or using such public transportation as a passenger, if such individual is assaulted, commits a Class 'A' misdemeanor, or if such individual is harmed, commits a Class 3 felony."

Many agencies within these jurisdictions display signage regarding enhanced penalties in their buses, even if they are not required to do so by law.

Agency Experience

CT Transit, Hartford, Connecticut

CT Transit, in conjunction with other transit agencies in Connecticut, worked with its union to pass legislation making bus operator assaults a felony. This legislation mandates "an enhanced penalty for specified criminal acts committed on a transit worker performing his or her duties." It requires the offender to be fined or imprisoned up to 150% of whatever the maximum fine or prison term would be for the subject criminal act. Criminal acts subject to the enhanced penalty include murder, manslaughter, assault in the first degree, assault with a deadly weapon or dangerous instrument, sexual assault, robbery, threatening in the second degree, and kidnapping.

WMATA, Washington, D.C.

Metrobus operators experienced fewer assaults in 2009 than in 2008. WMATA reports that the decrease is believed to have been the result of more stringent penalties for assaulting operators in D.C., and the elimination of paper transfers.

The penalties vary by state. For instance, in Oklahoma and New Mexico, verbally threatening the operator with intent of seizing control of a bus is considered a felony. In New Jersey, a simple assault against an operator is upgraded to third-degree aggravated assault if the operator is injured and to fourth degree if the operator is not injured. In Colorado, interfering with a transit employee in the proper discharge of his duties is a misdemeanor. Maximum prison times and fines also vary considerably. In Georgia and Oklahoma, the perpetrator may be imprisoned up to 20 years for aggravated battery and/or fined up to $20,000 in Oklahoma. In Rhode Island, a bus operator assault is a felony that may be punishable by up to 3 years in prison, a $1,500 fine, or both. In South Carolina, a bus operator assault is a misdemeanor that may be punishable by up to 1 year in prison, up to $1,000 fine, or both. NYC Transit places appropriate signage regarding the law near bus doors and inside buses.

EMPLOYEE ASSISTANCE

As noted in the workplace violence literature, employee assistance and support are important in the aftermath of an assault. Encouraging bus operators to report all incidents, including verbal threats or intimidation, can be a deterrent and can assist law enforcement in proactively policing buses and bus routes. Because a series of minor incidents has the potential to result in a major assault, addressing them promptly can prevent a serious crime from happening. Transit officers and security personnel can also encourage operators to report all incidents and assist them in reporting details of an incident, which can help identify the assailant. Support after an assault occurs can help the operator heal more rapidly from any emotional or psychological effects of the incident. Immediately after an assault, the operator could receive prompt medical treatment and care, and support from supervision. Agencies generally offer support to their employees after an assault by offering counseling and other forms of assistance. Trained supervision can help operators in various ways after an assault, including provision of training or retraining operators on customer relations and how to deal with difficult individuals. This training may assist operators who have been victims of multiple assaults. Legal support is also important. Informing operators of the legal process and the results of the process (e.g., disposition of the legal case) is helpful. Aggressive prosecution of

offenders serves as a deterrent to these and potential assailants and assures the operator that the agency stands behind its employees.

Advantages

- Bus operator perspective—increased perception of management support for operators.
- Agency perspective—the Employee Assistance programs can help operators recover and return to work sooner; the programs are relatively inexpensive and can create goodwill between the agency management and operators; they also demonstrate to the community that the agency cares about its workers.

Agency Experience

CTTRANSIT, Connecticut

CTTRANSIT Hartford operates more than 30 local and 12 express bus routes, serving 26 counties in the Hartford capital region. CTTRANSIT New Haven operates over 22 routes, and CTTRANSIT Stamford operates 15 routes. CTTRANSIT has been committed to supporting operators after an assault and creating a culture of "trust" so that operators can feel comfortable turning to the agency for help and support after an incident. CTTRANSIT's Employee Assistance Program provides its transit workers with any necessary counseling and legal assistance after an assault has occurred. Many years ago, a female operator was sexually assaulted and needed several months of psychological counseling and support before she felt ready to return to work. The support included actions that specifically addressed the operator's need for reassurance about her personal safety; her supervisors monitored her progress until she was ready to resume her job. Once she returned to work, supervisors periodically checked on her to ensure her safety.

CTTRANSIT management and the union encourage operators to report all incidents. Operators may also be motivated to report an incident to protect themselves against a customer complaint. Management believes that there is 100% reporting of serious incidents. However, minor incidents, including verbal assaults, may be underreported. When an incident occurs, the operator completes a form describing the incident to formally report an incident. Reporting incidents allows CTTRANSIT to address each incident by taking action to seek out and capture the perpetrator and by using the incident to train other operators so that a similar incident does not occur again.

Pierce Transit, Lakewood, Washington

Pierce Transit established a Memorandum of Understanding (MOU) between the agency and the ATU Local 758. The MOU indicates that the agency supports its employees, will take every measure to ensure their safety, provides an Employee Assistance Program, and indicates that the Union (ATU) supports additional training of its members in personal protection and safety and in techniques in conflict resolution.

Toronto Transit Commission (TTC), Toronto, Canada

TTC has had an employee assistance program since the 1960s. Victims are offered trauma counselors and are provided on-site intervention by division managers, referral to the Employee & Family Assistance Program, follow-up through management contact from incident to court disposition, and referral to a Court Support/Employee advocate. TTC has initiated a study with St. Michael's hospital to provide effective treatments and return-to-work approaches for acute traumatic events.

TTC's court support elements include the following:

- Contact the victim and provide court system information;
- Prepare victim for court and "Victim Impact Statements";
- Attend Court for bail hearings and trial/sentencing hearings;
- Consult with Crown Attorney to ask that Operator assaults be treated more seriously;
- Track case dispositions and ongoing investigations;
- Maintain contact with victim regarding case investigations and/or court dispositions until conclusion; and
- Report to Commission Prosecutor/Court Liaison.

PASSENGER OUTREACH

Passenger outreach efforts, including media campaigns and the placement of prominent signage regarding the penalty for operator assault on buses, affirms to the operators that the agency stands firmly behind them and cares about their well-being. Some states and cities mandate the placement of these signs on buses; agencies contacted indicated that they would use this signage even in the absence of these laws. The signage also discourages passengers from assaulting operators, although the extent to which they are a deterrent has been questioned. A TWU representative noted that the majority of assaults are not premeditated and may not be influenced by signage. Media campaigns against operator assault demonstrate agency support for their employees and generate goodwill among operators toward management and within the community as well.

Advantages

- Operator perspective—goodwill among operators is created through management support of operators by demonstrating that management is concerned and serious about their security.

FIGURE 31 NYC Transit bus signage. (*Courtesy:* Dr. Yuko Nakanishi.)

FIGURE 32 NYC Transit assault penalty bus signage. (*Courtesy:* Dr. Yuko Nakanishi.)

- Public perspective—promotes the image that the agency is a good employer that cares about its workers.
- Is relatively inexpensive.

Agency Experience

NYC Transit and NJ Transit display clear signage on buses indicating penalties associated with an assault on a bus operator. NYC Transit also provides fare information on the left hand side of the bus exterior adjacent to the front door, clearly visible to passengers as they board (see Figures 31 to 33). Additionally, NYC Transit has automated announcements reminding customers about fare payment, which minimizes the potential for fare-related disputes.

Capital District Transportation Authority, Albany, New York

CDTA has a security awareness program for their passengers and their operators. Signage stating "if you see something,

FIGURE 33 NJ Transit assault penalty signage. (*Courtesy:* NJ Transit.)

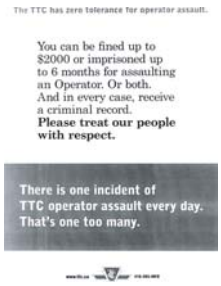

FIGURE 34 Toronto Transit Commission zero tolerance signage. (*Courtesy:* Toronto Transit Commission.)

say something" has been placed on buses. There is also a monetary reward offered to patrons for information regarding operator assaults. The signage and the reward offer encourage patrons to report all crimes, including suspicious incidents. Apprehending criminals and solving open cases are effective in getting potentially violent individuals off the streets and out of CDTA's system.

Toronto Transit Commission, Toronto, Canada

The TTC in Toronto communicates the social unacceptability of operator assaults and its commitment to protect its employees through posters on board buses, signage regarding video surveillance, and aggressive prosecution of offenders. An example of TTC signage is shown in Figure 34.

Edmonton Transit System, Alberta, Canada

In collaboration with the city of Edmonton and the local police department, ETS initiated a "Zero Tolerance" media campaign in which the mayor and the chief of police participated and proclaimed that the entire city will not tolerate further assaults on Edmonton bus operators. As part of this campaign, "Zero Tolerance" stickers are being placed on all buses (see Figures 35 and 36). Several years ago, ETS created a BOB persona as part of its Behaviour on Buses (BOB) program. The BOB persona, now well known in the community, provides friendly reminders to ETS users about positive bus behaviors. The BOB program received the National Transit Corporate Recognition Award for 2006 from CUTA. In 2010, ETS also introduced a Captain Commute character that is knowledgeable about all aspects of ETS and attends school and community events to promote public transit.

FIGURE 35 Edmonton Transit System signage. (*Courtesy:* Edmonton Transit System.)

FIGURE 36 Edmonton Transit System signage. (*Courtesy:* Edmonton Transit System.)

SCHOOL AND COMMUNITY OUTREACH

Community and school initiatives are believed to build stronger relationships between the transit agency and the public. Transit agencies with a relatively high proportion of youths and agencies that transport students to and from their schools experience problems associated with unruly behavior and violence against bus operators. These agencies have initiated various forms of outreach to schools and communities in their service areas. Although it may take time for the benefits of outreach efforts to be realized in terms of operator assault prevention, agencies believe that these efforts are valuable, because increased familiarity and understanding of the transit system and the job of the operator may make operator assaults less likely.

Advantages

- Operator perspective—goodwill among operators is created through management support of operators by demonstrating that management is concerned and serious about their security.
- Public perspective—promotes the image that the agency is a good citizen of the communities it serves.
- Agency perspective—is relatively inexpensive and can address multiple objectives (e.g., operator assault, passenger safety, passenger security).

Disadvantage

- Agency perspective—can take time for the positive effects of school outreach initiatives to be seen.

Agency Experience

Greater Cleveland Regional Transportation Authority, Cleveland, Ohio

GCRTA buses are used for transporting high school students to and from their schools. These students have been the source of most incidents. The most problematic time is during afternoon school dismissal times. To address this issue, GCRTA decided to perform outreach to younger children (first through eighth graders) before they reach high-school age. GCRTA created a special bus that has become an integral part of its outreach efforts and helps GCRTA staff teach

FIGURE 37 GCRTA school outreach. (*Courtesy:* GCRTA.)

younger children how to ride the bus and the importance of good behavior. GCRTA's marketing, safety, and police divisions are all involved in the school outreach effort, which takes place, at a minimum, on a monthly basis. The school bus, shown in Figures 37 and 38, contains computers, a fingerprinting device, and other equipment.

Hampton Roads Transit, Hampton, Virginia

HRT serves 1.3 million residents in seven cities in Virginia: Chesapeake, Hampton, Newport News, Norfolk, Portsmouth, Suffolk, and Virginia Beach. HRT has been providing "how to ride" presentations to community groups, assisted living facilities, organizations catering to people with disabilities, schools, and special events. HRT also plans or participates in various special events designed to raise awareness about HRT services and its safety outreach program. Other community outreach efforts include the creation of a board-sanctioned advisory committee composed of Hampton Roads Transit customers. HRT is developing an Ambassador Program in which HRT staff will work as liaisons to the community to improve their transit experience.

FIGURE 38 GCRTA school outreach. (*Courtesy:* GCRTA.)

VIA Metropolitan Transit, San Antonio, Texas

VIA has developed a comprehensive educational outreach program. Its school and community outreach programs are unique in that some of these programs are designed to accommodate very young (pre-K) children as well as older ones. VIA has a "Classroom on Wheels" safety presentation using a specially designed VIA bus. The 30-min program, which can include a bus ride, is targeted toward pre-K through fifth-grade students and teaches students the benefits of public transportation and bus safety. VIA also provides VIA facility tours to school children. VIA also has a character, Buster, who represents a bus and visits schools and community events to educate school children and the public about VIA (see Figure 39). VIA holds a Youth Art Contest in March of every year for students in pre-K through twelfth grade. Student artwork is displayed inside VIA buses, and contest winners receive savings bonds and recognition. VIA's Adopt-a-Bus Shelter Program encourages local groups, including schools, to adopt a bus shelter and help maintain it and, in exchange, VIA recognizes the group by installing a plaque at the bus shelter. Fare discounts encourage children and teenagers to use VIA and become familiar with the system. A Class Pass Program

Select from the list below to view the video.

How To Ride
How To Ride - Spanish
Classroom on Wheels Video
Classroom on Wheels Video - Spanish
VIA On the Town: Route 92
VIA On the Town: Riding Safety
VIA On the Town: Streetcars
VIA On the Town: Transfer Points

FIGURE 39 VIA Metropolitan Transit "Classroom on Wheels" video. (*Courtesy:* VIA Metropolitan Transit.)

encourages youth group trips to attractions along VIA bus routes by offering discounted fares.

Rochester Genesee RTA, Rochester, New York

The Greater Rochester Community Transportation Foundation, created by RGRTA in 2000, is the first foundation of its kind (501-C-3, Type 1) in the United States established by a transit agency to provide financial assistance for transportation to youth-oriented groups or organizations. This initiative fosters a positive image of RGRTA within the community and among children and teenagers. GRCTF funds of about $100,000 have helped transport more than 7,500 children thus far to tutoring and support services, college tours, museum visits, and sporting and other activities. For instance, Flower City Soccer, with GRCTF funding, succeeded in getting more than 2,000 inner-city children a year to Recreation Centers to participate in soccer games, which keeps them off the streets. RGRTA's HONOR Foundation is also the first of its kind in the nation. It is a nonprofit foundation created by a transit agency that assists customers who may experience challenges paying fare for Lift Line services and is based on the belief that, with the availability of dependable and affordable public transportation, individuals with disabilities can participate in community life. More information about these foundations can be found at RGRTA website www.rgrta.com.

WMATA, Washington, D.C.

On Halloween, WMATA Metro's "Boo Bus," along with WMATA police and employees in Halloween costumes and McGruff the crime-fighting dog, entertains children at the Anacostia Metrorail station and gives them Halloween treats.

The interior of the "Boo Bus" contains fake cobwebs, ghosts, and other Halloween decorations. This event is supported by donations from Metro employees. This community outreach activity promotes a positive image of WMATA and its employees, and is an effort to discourage assaults and pranks against bus operators on Halloween, when such incidents are common.

Edmonton Transit System, Alberta, Canada

School outreach—The annual First Riders program is designed to provide travel and safety information to students making the transition to junior high school, who will be taking public transit to school for the first time. A Grade 2 Slideshow presentation is offered to second graders on the history of transportation in Edmonton.

Community outreach—ETS participates in many community outreach activities. A *community fair* is held annually. ETS participates in parades by providing ETS vintage and current buses and providing the Pipes and Drums band. The band was initiated in 1964 by ETS operators and became an official city of Edmonton band in 2005. The ETS Street Team showcases the transit lifestyle and its benefits, and new projects at ETS. The team also submits a monthly commentary article to *Metro News.* The Donate-a-Ride program is a charitable initiative in which farebox donations throughout January and corporate donations throughout the year provide ETS tickets to Edmonton agencies that assist individuals in crisis situations. All proceeds of the popular Christmas Lights Tours, for which ETS employees volunteer their time, go to the Donate-a-Ride program. The Read 'n Ride initiative is a partnership between ETS and the Edmonton Public Library to promote adult literacy and reward readers on ETS buses. When passengers are "caught" reading, they are rewarded with various prizes.

Stuff-a-Bus campaign—Each winter since 1995, ETS volunteers collect food donations for Edmonton's Food Bank. Since its inception, the campaign has collected 247,902 kg of food and $297,773 in cash donations to help feed Edmontonians in need.

Chicago Transit Authority, Chicago, Illinois

CTA operates bus and rail transit systems and serves Chicago and 40 surrounding suburbs. CTA, one of the largest agencies in the United States, makes more than 25,000 bus trips daily, and serves nearly 12,000 bus stops. Operator assaults are a continuing concern for the agency, with teens and preteens instigating many of these assaults. On Halloween, high school students throw eggs and other objects at CTA bus operators. A few years ago, CTA began an initiative to address this issue by starting a school outreach program at high schools. CTA sends representatives to area high schools with high numbers of incidents to speak to the students.

King County Metro Transit in Seattle, Washington, has a detective assigned to address school issues and visit Seattle public schools. Pinellas Transit in St. Petersburg, Florida, participates in the Great American Teach-In, which teaches students what it is like to be a bus operator. Coast Mountain Bus Company's Transit Police in British Columbia, Canada, visits the schools in their service area and discusses any concerns or issues with the students and principals. Toronto Transit Commission created a presentation on transit safety for sixth graders, who are also taught to behave and be respectful of others, especially the bus operators. Schools call upon the agency to schedule this presentation.

OTHER POLICIES

Other policies that are believed to mitigate operator assault are peer feedback and remain-seated policies:

- *Peer Feedback—Toronto Transit Commission, Toronto, Canada*—TTC has been encouraging bus operators to

engage in safe behaviors and to become more aware of any unsafe behaviors they may be practicing. This is done through a peer feedback program on a "no-name, no-blame" basis. TTC management worked closely with the union to implement the program and identify the 25 operators who would become peer observers. Feedback is provided by a peer observer to the bus operator immediately after a trip has been completed. An operator–facilitator was appointed and trained on the observation technique by a consultant. The facilitator then trained the other operators. Operator injuries, including those caused by assaults, have decreased by 10% since the inception of this program in 2008.

- *Operators-to-Remain-Seated Policy, Veolia, Las Vegas, Nevada*—Veolia's policy for its bus operators in Las Vegas is for operators to remain seated when interacting with customers, which is believed to prevent some operator assaults. Prior to the establishment of this policy, many assaults occurred when operators decided to pursue fare evaders or arose from their seat during a dispute to confront a passenger. Operators are now trained to remain in their seats even if provoked. Assaults including punches and spitting still take place, but are fewer in number than previously. Other agencies, such as Calgary Transit, also instruct their operators to remain seated during customer service.

CHAPTER SEVEN

CONCLUSIONS

Passenger assault of bus operators continues to be a significant concern of transit managers, bus operators, and their unions. One of the survey respondents observed that it "mirrors a larger problem of 'incivility' in society and disrespect for authority." Although deaths and serious injury of bus operators resulting from these assaults are rare, when they do happen they send shock waves throughout the transit community and the riding public, and make media headlines. Because aggravated assaults that result in serious physical injuries can be preceded by minor ones, all incidents need to be reported, monitored, and taken seriously. Assaults on bus operators have affected bus operations in terms of increased injury-related claims and operator anxiety, stress, and reduced productivity. Therefore, transit agencies have been working with their Transit Police, security personnel, and local law enforcement to implement effective security measures to address violence against their employees.

SUMMARY OF FINDINGS

Agencies are using a range of methods and combinations of measures to protect their bus operators from passenger assault. In the measure selection process, they consider several key factors including effectiveness and cost, feasibility, versatility, liability issues, and operator and passenger perspectives. Another key factor includes the types of assaults the agency has been experiencing, because certain measures are more appropriate for some assaults than for others. For example, some assaults are completely unprovoked and can occur out of the blue to even stellar operators. For these assault types, barriers, self-defense training, and self-defense tools may be more effective than other methods. For assaults preceded by a fare or other dispute, operator training or policy changes may be considered. Audio surveillance can be useful for addressing verbal attacks, and if school-related violence is a problem, expanded school outreach initiatives may be considered.

Survey Findings

The synthesis survey was distributed to 88 multimodal and bus-only agencies in the United States, Canada, and China. A 75% response rate was achieved.

Survey findings indicated, in general, that the most effective measures are considered to be video surveillance, operator training, and officer presence and patrols. The most problematic assault type was verbal threats, intimidations, or harassment. The next most problematic was being spat upon. Primary factors contributing to operator assaults were fare enforcement and intoxicated passengers or drug users, followed by rule enforcement other than fare enforcement, school/youth-related violence, and individuals with mental illness. The time period when the assaults against operators typically occur were reported to be evening/late night/early morning, followed by the afternoon peak period and school dismissal times.

Almost all responding agencies indicated having a standard operating procedure in place for response to operator assaults. About half stated that their local laws provided more severe punishments for those who assault bus operators. Fare enforcement and other rules enforcement policies ranged from zero tolerance to lenient. Operators were typically expected to be stricter with those rules that were also illegal according to state or local laws.

All responding agencies indicated that they provided customer relations training and the majority provided conflict mitigation and diversity training. A third of the respondents provided self-defense training. Onboard technologies to protect operators included radio or phone communications, silent alarm or panic button, panic button connected with a headsign, video surveillance, audio surveillance, and automatic vehicle location (AVL) systems. A few agencies reported having real-time video streaming capability. Several reported using or testing operator barriers (partial enclosures); none reported using or testing full enclosures or compartments.

Although not a specific security measure, the importance of customer service in assault prevention was mentioned by survey respondents. It stands to reason that excellence in customer service would generate highly satisfied customers who would be less likely to assault their bus operators.

Profile Findings

The profile studies highlighted many different measures. These measures were grouped into the following categories—technology and information management; personnel, policing, and training; and agency policy and legislation.

Onboard technologies—Video surveillance is considered to be a versatile and very effective solution for operator assault. Newer systems offer improved video quality, allow wireless uploads, and are easier to integrate with other technologies. Audio surveillance is useful in addressing verbal attacks and has been implemented by some agencies, along with video surveillance. Although agencies post signage regarding surveillance, some passengers may not be aware of it. A few agencies noted that their operators have successfully defused potentially violent situations by reminding passengers that they are being recorded. AVLs have been effective in improving incident response times. Transit Operations Decision Support System is an innovative technology that supports the dispatch function by managing and prioritizing the many pieces of data produced by AVL and computer-aided dispatch systems.

DNA kits—DNA kits are used in London to help identify and prosecute offenders who spit upon London bus and train operators; further research would be needed to determine feasibility in terms of public acceptance and cost of these kits in the United States.

Information management—With regard to information management, Edmonton Transit System in Canada is using a model incorporating hot spots and annual crime trends to forecast crime. The model is part of a broader information management strategy and is used in conjunction with an adapted CompStat process, computer-aided dispatch system, records management and security portal, trespasser tracker, and scheduling software.

Barriers—One of the two early adopters of this security measure reported that barriers installed in its bus fleet have been very effective in preventing operator assault, even though the barrier provides only partial protection, and that it was the most effective bus operator protection method that had been implemented. Several agencies have recently installed or are testing barriers. These agencies have noted concerns about customer service, operator comfort issues, glare and reflection, and noise.

Self-defense tools and training—Self-defense tools and training are immediately available to the operator during an attack. Self-defense-from-a-seated-position training is provided by Pierce Transit, Calgary Transit, and other agencies. One of the tenets of this training is that the seated position is the safest position from which to defend oneself. Houston METRO is the only U.S. agency, as of the date of this report, that issues a self-defense tool to its operators who request it and undergo the required training. One agency, Metro Transit in Minnesota, offers pepper spray training to operators who request it and reports that their operators have used pepper spray to effectively defend themselves against assault. Both agencies operate in "shall-issue" states for concealed firearms—the granting authorities have no discretion over permit applications, and must automatically issue permits to their residents if minimum criteria are met.

Operator training—Agencies report that a number of incidents may have been prevented through a change in the operator's actions, words, or demeanor. Therefore, customer service, conflict mitigation, and diversity training are believed to be very effective measures against assault.

Policing—Uniformed officers are considered to be a very effective measure against operator assault. Some agencies also use plainclothes officers to apprehend assailants, fare evaders, and rules violators.

Agency policies and legislation—Almost half of U.S. states have enhanced penalties for operator assault. Currently, no Canadian province has such legislation. Because fare payment policies cause disputes between operators and passengers, adjustments to these policies can mitigate assaults against operators. Off-board fare payment eliminates interaction between operators and passengers with regard to fare payment.

School and community outreach—School and community outreach is a longer-term method to prevent operator assault. Outreach programs familiarize students and the community with the public transportation system and its workers. Although most school outreach programs target preteens or teenagers, a few have programs for very young children. Community outreach involves the transit agency becoming an integral part of community activities. These efforts enhance the agencies' public image, lessening the likelihood of assault against their operators.

FURTHER RESEARCH

The following topics were identified during the Synthesis study as requiring further research:

Barriers—With the exception of a few agencies, barriers are new to transit agencies in the United States and Canada. Concerns about glare and reflection, operator discomfort and claustrophobia, and customer service difficulties have come to light. Further research into barrier design can address these issues.

Behavioral assessments—A few agencies have indicated that they are providing behavioral assessment training to their bus operators to identify suspicious behavior and activity. Because questions about the effectiveness of this technique in aviation security have been raised, more research may be indicated to determine the effectiveness of behavioral assessment in the identification of criminals and prevention of crime within transit systems.

DNA kits—To determine the feasibility of this measure in terms of public acceptance and cost and other factors, further research is required.

Operator perspective—More research on the perceptions of security measures and policies from the operator perspective would assist agencies in developing measures and policies amenable to the operator.

Self-defense tools—Effectiveness of self-defense tools against assailants, safety of the tools for the operator and passengers, and safety for the assailant in the bus environment are major concerns of agencies. More research into less-than-lethal tools appropriate for bus operators would help agencies.

Video content analysis—Researchers are developing behavioral recognition algorithms that are being tested and used in subway and rail settings. With further research and development of these algorithms, violent behavior may be automatically identified and even predicted, and immediate alerts may be sent to dispatch or law enforcement.

Workplace violence data—The National Transit Database does not accommodate the reporting of minor assaults that do not result in an arrest. Research into an expanded database can help agencies capture the true extent of workplace violence and understand the details of violent incidents and identify emerging trends.

ACRONYMS AND ABBREVIATIONS

ATU	Amalgamated Transit Union
AVL	Automated vehicle location
CAD	Computer-aided dispatch
CCTV	Closed-circuit television
CFR	Code of Federal Regulations
COMPSTAT	COMParative STATistics
CUTA	Canadian Urban Transit Association
DHS	U.S. Department of Homeland Security
DOT	U.S. Department of Transportation
GPS	Global Positioning System
HSPD	Homeland Security Presidential Directive
NIMS	National Incident Management System
NPG	National Preparedness Guidelines
NRF	National Response Framework
NRP	National Response Plan
OMB	Office of Management and Budget
OSHA	Occupational Safety and Health Administration
SCADA	Supervisory control and data acquisition
SSI	Sensitive security information
TCL	Target Capabilities List
TODSS	Transit Operations Decision Support System
TSA	Transportation Security Administration
TVA	Threat and vulnerability assessment
TWU	Transportation Workers Union
Volpe Center	Volpe National Transportation Systems Center

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GLOSSARY

Glossary definitions are primarily derived from Transit Safety & Security Statistics & Analysis 2003 Annual Report; National Infrastructure Protection Plan (NIPP—July 2006) or the National Response Plan (NRP—Dec. 2004)

All Hazards—An approach for prevention, protection, preparedness, response, and recovery that addresses a full range of threats and hazards, including domestic terrorist attacks, natural and man-made disasters, accidental disruptions, and other emergencies.

Arson—The unlawful and intentional damaging, or attempt to damage, any real or personal property by fire or incendiary device.

Assault, Aggravated—An unlawful attack by one person upon another wherein the offender:

- uses a weapon in a threatening manner, or
- the victim suffers obvious severe or aggravated bodily injury.

Assault, Other—An unlawful attack or attempt by one person upon another in which no weapon is used or that does not result in serious or aggravated injury to the victim.

Attack or Active Incident—An actual emergency, which might include a terrorist attack, accident, or natural disaster.

Automated Vehicle Location (AVL) System—The core bus AVL system is defined as the central software used by dispatchers for operations management that periodically receives real-time updates on fleet vehicle locations and typically have a Global Positioning System receiver and mobile data communications capability. They may also have other features, such as schedule adherence monitoring, onboard mobile data terminals, managed voice communications, text messaging, next-stop announcements, and automatic passenger counting and real-time passenger information using dynamic message signs at selected stops (*TCRP Synthesis 73,* p. 1).

CompStat (COMParative STATistics)—CompStat is a crime management tool that uses crime mapping technology and analysis to identify areas of potential incidents and hot spots, and assesses the effectiveness of various policing measures.

Concealed Carry—Carrying a firearm hidden on one's person.

Crime Prevention Through Environmental Design (CPTED)—CPTED is a method of SCP by which the transit environment discourages offenders from making the choice to commit a crime by increasing the risks and required efforts. There are many CPTED measures; they include bright lighting, unobstructed sightlines, and natural and formal surveillance.

Criminal Activity—An activity that violates the law.

Derailment/Bus Going Off Road—A non-collision incident in which either one or more wheels of a transit vehicle unintentionally leaves the rails, a bus leaves the roadway, or there is a rollover.

Detection—The identification and validation of potential threat or attack that is communicated to an appropriate authority that can act. General detection activities include intelligence gathering, analysis of surveillance activities, and trend analysis of law enforcement reporting. For specific assets, examples include intrusion-detection systems, alarms, surveillance, and employee security awareness programs.

Deterrence—An activity, procedure, or physical barrier that reduces the likelihood of an incident, attack, or criminal activity.

Directly Operated—Transportation service provided directly by a transit agency, using their employees to supply the necessary labor to operate the revenue vehicles. This includes instances in which an agency's employees provide purchased transportation services to the agency through a contractual agreement.

Emergency Incident—An incident in which emergency response is required; specifically, an imminent threat to human life.

Employee—An individual who is compensated by the transit agency.

Evacuation—A condition requiring all passengers and employees to depart a transit vehicle and enter onto the transit right-of-way or roadway under emergency circumstances.

Fare Evasion—The unlawful use of transit facilities by riding without paying the applicable fare.

Fatality—A transit-caused death confirmed within 30 days of a transit incident, which occurs under the collision, derailment, fire, evacuation, security incident, vehicle leaving the roadway, or not otherwise classified categories.

Fire—Uncontrolled combustion made evident by flame and/or smoke that requires suppression by equipment or personnel.

Forcible Rape—The carnal knowledge of a person forcibly and/or against that person's will. This includes assault to rape or attempt to rape.

FTA Urbanized Area Formula Program Funds—Financial assistance from Section 5307 of the Federal Transit Act. This program makes federal resources available for capital projects and to finance the planning and improvement costs of equipment, facilities and associated capital maintenance items for use in mass transportation. The program also allows funds for operating assistance in urbanized areas of less than 200,000 population.

Graduated Security Response—A security response that increases in a modular or continuous fashion as the defined threat level increases in severity; protective measures implemented at lower threat levels build to the higher threat level protective measures in a cumulative fashion.

High Visibility Patrols—High visibility patrols are made highly visible through the saturation of specific locations with multiple specially uniformed officers and the use of visible tactical vests.

Hijacking—Seizing control of a transit vehicle by force.

Homicide—The killing of one or more human beings by another, including the following:

- Murder and non-negligent manslaughter—the willful (non-negligent) killing of one or more human beings by another.
- Negligent manslaughter—the killing of another person or persons through gross negligence.

Incident—*Major* (*episodic*): Existence of one or more of the following:

- A fatality other than a suicide;
- Injuries requiring immediate medical attention away from the scene for two or more persons;
- Property damage equal to or exceeding $25,000;
- An evacuation owing to life safety reasons;
- A collision at a grade crossing resulting in at least one injury requiring immediate medical attention away from the scene or property damage equal to or exceeding $7,500;
- A mainline derailment;
- A collision with person(s) on a rail right-of-way resulting in injuries that require immediate medical attention away from the scene for one or more persons; or
- A collision between a rail transit vehicle and another rail transit vehicle or a transit non-revenue vehicle resulting in injuries that require immediate medical attention away from the scene for one or more persons.

Non-major (*summary*): Incidents not already reported on the Major Incident Reporting form (S&S-40). Existence of one or more of the following conditions:

- Injuries requiring immediate medical attention away from the scene for one person;
- Property damage equal to or exceeding $7,500 (less than $25,000); and
- All non-arson fires not qualifying as major incidents.

Injury—Any physical damage or harm to persons as a result of an incident that requires immediate medical attention away from the scene.

Kubotan—A small stick that can be used as a self-defense tool. The principal areas for attacks in self-defense include bony, fleshy, and nerve targets.

Larceny/Theft—The unlawful taking, carrying, leading, or riding away of property from the possession or constructive possession of another person. This includes pocket picking, purse snatching, shoplifting, thefts from motor vehicles, thefts of motor vehicle parts and accessories, theft of bicycles, theft from buildings, theft from coin-operated devices or machines, and all other theft not specifically classified.

Less-Lethal or Less-Than-Lethal Weapons—Weapons designed to temporarily disable or stop individuals without killing them.

Mitigation—Activities designed to reduce or eliminate risks to persons or property or to lessen the actual or potential effects or consequences of an incident.

Mode—A system for carrying transit passengers described by specific right-of-way, technology, and operational features.

Motor Vehicle Theft—The theft or attempted theft of a motor vehicle. A motor vehicle is a self-propelled vehicle that runs on the surface of land and not on rails.

National Transit Database—The system through which the FTA collects uniform data needed by the secretary of transportation to administer department programs.

Not Otherwise Classified (Personal Casualty)—A major or non-major incident in which person(s) are injured or die in transit-related operations, but not as a result of a collision, derailment/vehicle leaving roadway, evacuation, or fire. These incidents can include the following:

- Injuries or fatalities that occur in slips, trips, or falls on stairs, escalators, elevators, passageways, platforms, or transit right-of-ways;
- Injuries or fatalities that occur in sudden braking or unexpected swerving on transit vehicles; and
- Injuries or fatalities that occur in slips, falls, door closings, or lifts while getting on or off a transit vehicle.

Non-Arson Fires—An incident involving uncontrolled combustion manifested by flame or smoke resulting in evidence of charring, melting, or other evidence of ignition of transit property. These are reported as in-station, on right of way or other, or in vehicle.

Non-Lethal Weapons—These are explicitly designed and primarily used to incapacitate personnel and materiel while minimizing fatalities, permanent injury to personnel, and undesired damage to property and the environment.

Non-Violent Civil Disturbance—Non-violent public demonstrations that may or may not be disruptive.

Oleoresin Capsicum (OC)—OC is obtained from chili peppers that have been dried and ground into a fine powder. When mixed with an emulsifier, it may be sprayed from a variety of dispensers and used as an irritant to control violent people or vicious animals and/or to restore and maintain order.

Open Carry—Carrying a firearm in public in plain sight.

Other—An individual who is neither a transit passenger, transit facility occupant, employee/other worker at a transit agency, nor a trespasser.

Other Assault—An unlawful attack or attempt by one person upon another where no weapon is used or which does not result in serious or aggravated injury to the victim.

Passenger—A person who is on board, boarding, or alighting from a transit vehicle for the purpose of traveling without participating in the operation of the vehicle.

Passenger Miles—The cumulative sum of distances ridden by each passenger.

Pepper Gel—Pepper gel consists of oleoresin capsicum or OC, which is derived from the cayenne pepper plant.

Pepper Spray—Pepper spray consists of oleoresin capsicum or OC, which is derived from the cayenne pepper plant.

Population Density—Population divided by the area for which the population is measured. In the NTD, the number of people is the most recent census urbanized area population divided by the square miles of that urbanized area.

Property Damage—The dollar amount required to repair or replace all vehicles (transit and nontransit) and all property/facilities (track, signals, and buildings) damaged during an incident, to a state equivalent to that which existed before the incident.

Protective Measures—Planned activities that reduce vulnerability, deny an adversary opportunity, or increase response capability during a period of heightened alert.

Purchased Transportation—Transportation service provided to a public transit agency or governmental unit from a public or private transportation provider based on a written contract. The provider is obligated in advance to operate public transportation services for a public transit agency or governmental unit for a specific monetary consideration, using its own employees to operate revenue vehicles. Purchased transportation does not include franchising, licensing operations, management services, cooperative agreements, or private conventional bus service.

Recovery—Development, coordination, and execution of service- and site-restoration plans for affected areas and operations.

Response—Activities that address the short-term, direct effects of an incident, including immediate actions to save lives, protect property, and meet basic human needs.

Risk—A measure of potential harm that encompasses threat, vulnerability, and consequence.

Robbery—The taking or attempting to take anything of value under confrontational circumstances from the care, custody, or control of another person by force, threat of force, or violence and/or by putting the victim in fear of immediate harm. The use or threat of force includes firearms, knives or cutting instruments, other dangerous weapons (clubs, acid, explosives), and strong arm techniques (hands, fists, feet).

Sabotage—Sabotage or tampering with transit facilities' assets may be a means to achieve any of the above events, such as starting a fire or spreading an airborne chemical agent, or it may be a stand-alone act, such as tampering with track to induce derailment.

Security Vulnerability/Risk Assessment—A systematic assessment approach for security vulnerability/risk and includes threat and vulnerability analysis.

Sensitive Security Information—Any information or records the disclosure of which may compromise safety or security of the traveling public and transit workers. The use is intended to restrict the material from automatic Freedom of Information Act disclosure.

Situational Crime Prevention—The theoretical basis is rational choice. The offender decides to commit a crime based on risks, efforts, and rewards. Situational crime prevention attempts to make the risks and efforts greater than the rewards.

Taser—Tasers fire electrified darts to immobilize an individual by causing neuromuscular incapacitation.

Terrorist Attack—An intentional act of violence with intent to inflict significant damage to property, inflict casualties, and produce panic and fear.

Threat—A potential action or situation that may cause harm to people or property.

Transit Facility Occupant—A person who is inside the public passenger area of a transit revenue facility. Employees, other workers, or trespassers are not transit facility occupants.

Trespass—To unlawfully enter land, a dwelling, or other real property.

Unlinked Passenger Trips—The number of passengers who board public transportation vehicles. Passengers are counted each time they board vehicles no matter how many vehicles they use to travel from their origin to their destination.

Vandalism—The willful or malicious destruction, injury, disfigurement, or defacement of any public or private property, real or personal, without consent of the owner or person having custody or control by cutting, tearing, breaking, marking, painting, drawing, covering with filth, or any other such means as may be specified by local law.

Vehicle Miles—The total number of miles traveled by transit vehicles. Commuter rail, heavy rail, and light rail report individual car miles rather than train miles for vehicle miles.

Vehicles Operated in Annual Maximum Service—The number of revenue vehicles operated to meet the annual maximum service requirement.

Vulnerability—A weakness in the design, implementation, or operation of an asset, system, or network that can be exploited by an adversary, or disrupted by a natural hazard or technological failure.

APPENDIX A

Supplemental Information

State laws providing for specific penalties in connection with harming transit and school bus employees

State	Section	Provision	Penalty
CA	Cal Pen Code 190.25	Murder of a transportation worker.	Life without parole.
CA	Cal Pen Code 212.5	Robbery of a transportation worker.	First degree robbery.
CA	Cal Pen Code 241.3	Assault of transportation worker or passenger.	$2,000 fine, 1 year in jail, or both.
CA	Cal Pen Code 243.3	Battery of transportation worker or passenger.	$10,000 fine or 1 year in jail, or both. If injury occurs, up to 3 years prison.
CA	Cal Pen Code 245.2	Assault with deadly weapon on transportation worker.	Up to 5 years prison.
CO	C.R.S. 32-9-160	Wrongfully interfering with any RTD employee in the proper discharge of his duties.	Misdemeanor. Fine of not more than $300, or by imprisonment in the county jail for not more than 90 days, or both.
CT	Conn. Gen. Stat. § 14-223	Assault of Public Transit Employee	Class C felony
DC	§22-3751 et seq.	Enhanced penalties for offenses committed against transit operators and Metrorail station managers.	Up to 1½ times the maximum term of imprisonment otherwise authorized by the offense, or 1½ times the maximum fine, or both.

State	Section	Provision	Penalty
DC	§22-1309	Notice of enhanced penalties.	Requires WMATA to post signs regarding the enhanced penalties on all buses, trains, and at or near Metrorail station kiosks.
FL	Fla Stat 784.07	Assault of transit employee.	1st degree misdemeanor.
FL	Fla Stat 784.07	Battery of transit employee.	3rd degree felony.
FL	Fla Stat 784.07	Aggravated assault of transit employee.	2nd degree felony.
FL	Fla Stat 784.07	Aggravated battery of transit employee.	1st degree felony.
GA	OCGA 16-5-20	Simple assault committed in a transit vehicle or station.	Misdemeanor of a "high & aggravated nature."
GA	OCGA 16-5-21	Aggravated assault committed in a transit vehicle or station.	3 to 20 years in prison.
GA	OCGA 16-5-23	Simple battery committed in a transit vehicle or station.	Misdemeanor of a "high & aggravated nature."
GA	OCGA 16-5-23.1	Battery committed in a transit vehicle or station.	Misdemeanor of a "high & aggravated nature."
GA	OCGA 16-5-24	Aggravated battery committed in a transit vehicle or station.	5 to 20 years in prison.
HI	HRS 711-1112	Interference with operator of public transit vehicle.	Class 'C' felony.
ID	ID Code 18-1522	Disruption or interference with school bus driver.	Misdemeanor.

State	Section	Provision	Penalty
IL	625 ILCS 50/1	Requires a notice to be prominently displayed in each vehicle used for the transportation of the public for hire which must substantially state the following: "Any person who assaults or harms an individual whom he knows to be a driver, operator, employee or passenger of a transportation facility or system engaged in the business of transportation for hire and who is then performing in such capacity or using such public transportation as a passenger, if such individual is assaulted, commits a Class 'A' misdemeanor, or if such individual is harmed, commits a Class 3 felony."	N/A
IL	720 ILCS 5/12-2	Aggravated assault on a driver, operator, employee, or passenger of any transportation facility or system engaged in the business of transportation of the public for hire.	Class 'A' misdemeanor.
IL	720 ILCS 5/12-4	Aggravated battery (intentionally or knowingly causing great bodily harm) to a driver, operator, employee, or passenger of any transportation facility or system engaged in the business of transportation of the public for hire.	Class 3 felony.
LA	R.S. 14:34.5.1	Battery of bus operator or cable car operator while that person is on duty in course and scope of his or her employment.	Fine not more than $500 and prison for not less than 48 hours nor more than 6 months without benefit of probation, parole, or suspension of sentence.

State	Section	Provision	Penalty
MA	Mass Ann Laws Ch.265, Sect 13 D	Assault & battery on certain public officers & employees (including bus, trackless trolley, rail, or rapid transit motorman, operator, gateman, guard, or collector).	90 days to 2½ years prison or fine of $500 to $5000.
MD	Md. Transportation Code Ann. § 7-705	Prohibited Acts: Obstruct, hinder, or interfere with the operation or operator of a transit vehicle, or railroad passenger car, or a person engaged in official duties as a station agent, conductor, or station attendant.	Misdemeanor subject to a fine of not more than $1,000, imprisonment not exceeding 90 days, or both.
MN	Minn Stat 609.855	Unlawful interference with transit operator.	Up to 3 years in prison or $5000 fine, or both if violation was accompanied by force or violence or a communication of a threat of force or violence. If no force or violence or threat of force or violence, up to 90 days in jail or fine not to exceed $700.
MO	578.305 R.S. Mo	Assault with intent to commit bus hijacking (intimidation, threat, assault or battery toward any driver, attendant, or guard of a bus so as to interfere with the performance of duties by such person).	Class 'C' felony. Class 'A' felony if a dangerous weapon is employed.
MO	578.305 R.S. Mo	Bus hijacking (seizure or exercise of control, by force or violence, or threat of force or violence, of any bus).	Class 'B' felony.

State	Section	Provision	Penalty
NC	G.S. 14-33(c)(7)	Assault on a public transit operator, including a public employee or a private contractor employed as a transit operator, when the operator is discharging or attempting to discharge his or her duties.	Class A1 Misdemeanor.
NV	Nev Rev Stat Ann 193.161	Felony committed on a school bus while bus operator engaged in official duties.	Imprisonment for a term equal to & in addition to term prescribed by statute for that crime.
NV	Nev Rev Stat Ann 200.030	Murder of the first degree. Among other types of murder, it includes murder committed on a school bus while the bus operator was engaged in official duties.	Class 'A' felony.
NV	Nev Rev Stat Ann 200.471	Assault on a transit operator.	Gross misdemeanor. If assault is made with a deadly weapon, or the present ability to use a deadly weapon, upgraded to a 'B' felony (1–6 years prison or up to $5000 fine, or both).
NV	Nev Rev Stat Ann 200.481	Battery of transit operator who sustains substantial bodily harm.	Class 'B' felony (minimum 2–10 years prison or up to $10,000 fine, or both). No substantial bodily harm needed if deadly weapon used. Gross misdemeanor if no substantial bodily harm & no deadly weapon.

State	Section	Provision	Penalty
NM	NM Stat Ann 30-7-12	Seizure or exercising control of a bus by force or violence or by threat of force or violence.	3rd degree felony.
NM	NM Stat Ann 30-7-12	Intimidating, threatening, or assaulting any driver of a bus with intent of seizing or exercising control of bus.	4th degree felony.
NJ	NJ Stat 2C:12-1	Simple assault upon any operator of a motorbus or any employee of a rail passenger service, or school bus driver.	Upgraded to 3rd degree aggravated assault if victim suffers bodily injury. 4th degree aggravated assault if no injury.
NY	NY Penal Law 120.05, sub. 11	Assault on train operator, ticket inspector, conductor, bus operator, or station agent while such employee is performing an assigned duty on, or directly related to, the operation of a train or bus.	2nd degree assault.
OH	ORC Ann. 2903.13	Assault of a school bus driver.	5th degree felony.
OK	21 Okl St. 1903	Using force or violence or threat of force or violence to seize or exercise control over a bus.	Felony (up to 20 years prison or $20,000 fine, or both). Intent to seize control of bus by intimidation, threat, or assault punishable by 'A' felony (up to 10 years prison or $5,000 fine, or both). For either offense, the more severe penalty applies if deadly weapon is used.

State	Section	Provision	Penalty
OR	ORS 163.165	Assault in the third degree (including the causing of physical injury to the operator of a public transit vehicle while the operator is in control of or operating the vehicle).	Class C felony.
PA	18 Pa.C.S. § 2702	Intentionally, knowingly, or recklessly causing serious bodily injury to an employee of an agency, company, or other entity engaged in public transportation, while in the performance of duty.	Felony of the 1st degree.
RI	RI Gen Laws 11-5-5	Assault of public officials (including Rhode Island Public Transit Authority bus drivers).	Felony punishable by up to 3 years prison or $1,500 fine, or both.
SC	SC Code Ann 16-3-612	Student committing assault & battery against school personnel (including bus drivers).	Misdemeanor punishable by up to 1 year in prison or up to $1,000 fine, or both.
SC	SC Code Ann 58-23-1830	Obstructing, hindering, interference with, or otherwise disrupting or disturbing the operation or operator of a public transportation vehicle.	Misdemeanor. First offense: Up to 30 days jail or $200 fine. Second offense: Up to 60 days jail, or $500 fine, or both. Third or subsequent offense: Up to 90 days jail or $1,000 fine, or both.
SC	SC Code Ann 59-67-245	Interference with operation of a school bus (includes threats to driver).	Misdemeanor ($100 fine or 30 days jail).

State	Section	Provision	Penalty
TN	TN Code Ann 39-13-102	Aggravated assault with intent to cause physical injury to an employee of a transportation system while the transportation system employee is performing an assigned duty on, or directly related to, the operation of a transit vehicle.	Class A misdemeanor.
UT	UT Code Ann 76-10-1504	Assault with intent to commit bus hijacking (intimidation, threat, assault, or battery toward any driver, attendant, or guard of a bus so as to interfere with the performance of duties by such person).	2nd degree felony. 1st degree felony if dangerous weapon used.
UT	UT Code Ann 76-10-1504	Bus hijacking (seizure or exercise of control, by force or violence, or threat of force or violence, of any bus).	1st degree felony.
WA	Rev Code Wash (ARCW) 7.48.140	Interference with the provision or use of public transportation services, or obstructing or impeding a municipal transit driver, operator, or supervisor in performance of duties.	Public nuisance.
WA	Rev Code Wash (ARCW) 9.66.010	Interference with municipal transit vehicle or station.	Public nuisance.

State	Section	Provision	Penalty
WA	Rev Code Wash (ARCW) 9.91.025	Unlawful bus conduct (includes intentional obstruction of municipal transit vehicles or interference with provision of public transportation services.	Misdemeanor.
WA	Rev Code Wash (ARCW) 9A.36.031	Assault upon a person employed as a transit operator or driver, immediate supervisor, mechanic, or security officer. Includes public or private transit company or a contracted transit service provider. Also includes assault on a school bus driver or mechanic employed by a school district transportation service.	3rd degree assault (Class 'C' felony).
WI	Wis Stat 940.20	Battery to public transit vehicle operator, driver, or passenger.(Occurring on the vehicle, if offender forces victim to leave vehicle, or if victim is prevented from gaining access to the vehicle).	Class 'E' felony.
WV	W. Va. Code § 61-2-10b	Assault, battery, unlawful assault, or malicious assault on an employee of a mass transportation system acting in his or her official capacity.	Jail time ranges from 24 hours to 15 years, depending on severity and number of violations.

State	Section	Provision	Penalty
WV	W. Va. Code § 61-2-16a	Malicious assault; unlawful assault; battery and recidivism of battery; assault on a driver, conductor, motorman, captain, pilot, or other person in charge of any vehicle used for public conveyance.	Up to 15 years in prison.

Prepared by ATU Legislative Department
Updated July 26, 2010

Pierce Transit—Unlawful Transit Conduct

Tacoma Municipal Code TMC 8.52.020 (numbers below) and the Revised Code of Washington RCW 9.91.025 (letters below) state a person is guilty of unlawful transit conduct and/or unlawful bus conduct if, while on or in a municipal transit vehicle as defined by RCW 46.04.355 as now or hereafter amended or reenacted, or in or at a municipal transit station, he or she:

TMC (8.52.020) / RCW (9.91.025)
2. / b. Discards litter other than in designated receptacles; or
3. / c. Plays any radio, recorder, or other sound producing equipment, except that
nothing herein shall prohibit the use of such equipment when connected to earphones which limit the sound to individual listeners or the use of a communication device by an employee of the owner or operator of the municipal transit vehicle or municipal transit station; or
4. / d. Spits or expectorates; or
5. / e. Carries flammable liquid, explosive, acid, or other article or material likely to cause harm to others; except that nothing herein shall prevent a person from carrying cigarette, cigar, or pipe lighter or carrying a firearm or ammunition in a way that is not otherwise prohibited by law.
7. / f. Intentionally obstructs or impedes the flow of municipal transit vehicles or
passenger traffic, intentionally hinders or prevents access to municipal transit vehicles or stations, or otherwise unlawfully interferes with the provision or use of public
transportation services; or

In addition to these codes, TMC 8.52.020 also includes:
1. Smokes or carries a lighted or smoldering pipe, cigar, or cigarette; or
6. Consumes or is under the influence of any intoxicating beverage or illicit drug; or
8. Engages in loud, raucous, unruly, harmful, or harassing behavior that disturbs the peace, comfort, or repose of a reasonable person of normal sensibilities; or
9. Skates on roller skates or in-line skates, or rides in or upon or by any means a coaster, skateboard, toy vehicle, or any similar device; provided that a person may walk while wearing skates or carrying a skateboard while on or in a municipal transit vehicle or in or at a municipal transit station if that conduct is not otherwise prohibited by law; or
10. Engages in conduct not described in subsections 1 through 9 which is inconsistent with the intended use and purpose of the transit station or transit vehicle and refuses to obey the lawful command(s) of an agent of the transit authority or a peace officer to cease such conduct.

Penalty. Any person violating this section is guilty of a misdemeanor. The penalty shall be a maximum fine of $1,000, incarceration for a term of 90 days, or both such fine and imprisonment.

In addition to these codes, RCW 9.91.025 also includes:
g. Intentionally disturbs others by engaging in loud, raucous, unruly, harmful, or harassing behavior; or
h. Destroys, defaces, or otherwise damages property of a municipality as defined in RCW 35.58.272 or a regional transit authority authorized by chapter 81.112 RCW employed in the provision or use of public transportation services.

Unlawful Bus Conduct is a Misdemeanor.

Assault in the Third Degree RCW 9a.36.031
A person is guilty of assault in the third degree if he or she, under circumstances not amounting to assault in the first or second degree:
(b) Assaults a person employed as a transit operator or driver, the immediate supervisor of a transit operator or driver, a mechanic, or security officer, by a public or private transit company or a contracted transit service provider, while that person is performing his or her official duties at the time of the assault.
Assault in the third degree is a Class C Felony.
For information about the State of Washington and the City of Tacoma's Unlawful Transit Conduct Codes, visit http://www.piercetransit.org/alerts/rcw.htm.

TMC (8.52.020) / RCW (9.91.025)
2. / b. Discards litter other than in designated receptacles; or
3. / c. Plays any radio, recorder, or other sound producing equipment, except that
nothing herein shall prohibit the use of such equipment when connected to earphones which limit the sound to individual listeners or the use of a communication device by an employee of the owner or operator of the municipal transit vehicle or municipal transit station; or
4. / d. Spits or expectorates; or
5. / e. Carries flammable liquid, explosive, acid, or other article or material likely to cause harm to others; except that nothing herein shall prevent a person from carrying cigarette, cigar, or pipe lighter or carrying a firearm or ammunition in a way that is not otherwise prohibited by law.
7. / f. Intentionally obstructs or impedes the flow of municipal transit vehicles or
passenger traffic, intentionally hinders or prevents access to municipal transit vehicles or stations, or otherwise unlawfully interferes with the provision or use of public transportation services; or

In addition to these codes, TMC 8.52.020 also includes:
1. Smokes or carries a lighted or smoldering pipe, cigar, or cigarette; or
6. Consumes or is under the influence of any intoxicating beverage or illicit drug; or
8. Engages in loud, raucous, unruly, harmful, or harassing behavior that disturbs the peace, comfort, or repose of a reasonable person of normal sensibilities; or
9. Skates on roller skates or in-line skates, or rides in or upon or by any means a coaster, skateboard, toy vehicle, or any similar device; provided that a person may walk while wearing skates or carrying a skateboard while on or in a municipal transit vehicle or in or at a municipal transit station if that conduct is not otherwise prohibited by law; or
10. Engages in conduct not described in subsections 1 through 9 which is inconsistent with the intended use and purpose of the transit station or transit vehicle and refuses to obey the lawful command(s) of an agent of the transit authority or a peace officer to cease such conduct.

Penalty. Any person violating this section is guilty of a misdemeanor. The penalty shall be a maximum fine of $1,000, incarceration for a term of 90 days, or both such fine and imprisonment.

In addition to these codes, RCW 9.91.025 also includes:
g. Intentionally disturbs others by engaging in loud, raucous, unruly, harmful, or harassing behavior; or
h. Destroys, defaces, or otherwise damages property of a municipality as defined in RCW 35.58.272 or a regional transit authority authorized by chapter 81.112 RCW employed in the provision or use of public transportation services.

Unlawful Bus Conduct is a Misdemeanor.

Assault in the Third Degree RCW 9a.36.031

A person is guilty of assault in the third degree if he or she, under circumstances not amounting to assault in the first or second degree:

(b) Assaults a person employed as a transit operator or driver, the immediate supervisor of a transit operator or driver, a mechanic, or security officer, by a public or private transit company or a contracted transit service provider, while that person is performing his or her official duties at the time of the assault.

Assault in the third degree is a Class C Felony.

Capital District Transportation Authority-Suspension of Service Policy & Procedures

Effective on the date of adoption, the following policy and procedures shall govern any suspension of service provided by the Capital District Transportation Authority and/or its subsidiaries ("CDTA"):

1. In addition to other measures provided for violation of CDTA Rules of Conduct, or the laws of the State of New York, CDTA may suspend service to an individual from all facilities and conveyances for a violation of any provision of these CDTA Rules of Conduct, or a violation of any criminal law of the State of New York while using a facility or conveyance, for a period of time not to exceed six months. Conduct specified in paragraph 16 may result in a permanent ban from using CDTA service and/or facilities.

2. A person whose access to CDTA facilities and conveyances is suspended under this Article may not during the period of suspension, enter or remain in any facility or on any conveyance from which said person's service is suspended. An individual whose service is suspended who enters or remains upon any facility or conveyance may be charged with the crime of Criminal trespass in the third degree (N.Y Penal law section 140.10).

3. Any Manager or Transit Supervisor of CDTA may issue a notice of Suspension of Service, as may any other person authorized by the General Manager or his designee based upon probable cause that an individual has engaged in conduct in violation of CDTA's Rules of Conduct, in violation of any law of the State of New York, or in violation of the criminal law of a municipality in which the conduct occurred. The General Manager of CDTA is the Executive Director, or any person designated to serve as the Executive Director.

4. The types of violations on which a suspension of service may be based are set forth in these Rules of Conduct. The duration of such suspension of service shall be dictated by the number of violations committed over a period of five years. There shall be a suspension of seven (7) days for a first violation, thirty (30) days for a second violation, ninety (90) days for a third violation, and one-hundred-eighty (180) days for each successive violation occurring in a five year period. The General Manager is further authorized to appoint a Hearing Officer(s), establish hearing procedures, and establish any other administrative requirements necessary to effectively implement the provisions of this Article. The General Manager is further authorized to review, investigate, invalidate or rescind any Suspension of Service, at any stage during, or after, the processing of a Suspension of Service, when the General Manager determines, in the General Manager's sole discretion, that justice so requires. Nothing in this Chapter shall be interpreted as an abrogation or restriction of this discretion of the General Manager.

5. An individual shall be provided notice concerning the rights to which the individual is entitled upon receipt of a Notice of Suspension of Service from a Manager or Supervisor. Such notice shall include:
    a. A statement of the source of rule or law violated by reference to the title of the violation or crime, by reference to the citation of the violation or crime, or both;
    b. An explanation of CDTA's internal review procedure, a description of the hearing process, and an explanation of the evidentiary burdens; and
    c. A statement of the duration of the Suspension of Service, or alternatively, a statement of the mechanism by which the duration of the Suspension of Service may be determined in accordance with administrative rules promulgated by the General Manager.
    d. Every person who receives a Notice of Suspension of Service shall be entitled to an administrative review by the General Manager or his designee, provided that they demand such review within ten (10) business days from the date on which the Notice of Suspension of Service was issued. The purpose of the administrative review shall be to determine whether a violation of the Rules of Conduct occurred, and, if so, whether the duration of the suspension of service is appropriate. At such an administrative hearing, the manager or transit supervisor who issued the Suspension of Service shall have the burden of proving, by a preponderance of the evidence, that the Rules of Conduct were violated as well as any history of prior violations used to establish the duration of the suspension. At such a hearing the records, reports, and/or signed statements of witnesses, whether sworn or unsworn shall be accepted as evidence of the violation of the Rules of Conduct. The individual whose service has been suspended may present evidence in their defense but must demand, at the time that the hearing is demanded, the attendance of any CDTA employees. If the administrative review confirms that a Notice of Suspension of Service was issued in conformity with these rules, it shall be deemed valid, and the Suspension of Service shall take effect on the tenth (10th) day following the date of the administrative determination unless the Hearing Officer determines, in his or her sole discretion, that a later date is warranted or necessary.

6. All Suspension of Services shall be subject to a stay pending administrative review and opportunity for a hearing. A stay on a Suspension of Service shall remain until the tenth (10th) day following the issuance of the Notice of Suspension of Service or, if a hearing has been requested, the date on which the Hearing Officer's final order is effective following a hearing.

7. Effect of a Failure to Schedule or Attend a Hearing. If a Notice of Suspension of Service is deemed valid by the Hearing Officer, and the person who has been issued the suspension fails to schedule a hearing or appear at a scheduled hearing, the Suspension of Service shall automatically take effect on the tenth (10th) business day following the issuance of the Notice of Suspension of Service, in accordance with the terms of the Notice of Suspension of Service.

8. In conducting a hearing and reaching a decision, the Hearing Officer may rely upon any evidence that a reasonable person would rely upon in making an important decision or conducting personal business. Hearsay is admissible, except where its admission would offend due process. The Hearing Officer shall have the authority to compel testimony or evidence deemed necessary, in the Hearing Officer's sole discretion, to a fair decision. The mechanisms available for compelling testimony or evidence shall be established through administrative rules promulgated by the General Manager.

9. Notwithstanding any other provision of this Article, the General Manager, or his or her designee, upon a review of sufficient evidence, and the Hearing Officer, upon review of the Notice of Suspension of Service or the evidence presented at the hearing, must modify or set aside an Suspension of Service under the circumstances provided for below:

10. An individual with a disability shall not be issued a complete Suspension of Service from the District Transit System unless the person engaged in violent, seriously disruptive or criminal conduct, or in conduct posing a serious threat to the health or safety of others or to the operation of the transit system. Absent such a finding, if a Hearing Officer determines that a violation was more probable than not, the Hearing Officer shall order a qualified Suspension of Service to permit an individual with a disability to use the District Transit System for trips of necessity, including travel to and from medical and legal appointments, school or training classes, places of employment, obtaining food, clothing and necessary household items, or for accessing any critical services.

11. A transit dependent person shall not be issued a complete Suspension of Service for the facilities and conveyances unless the person engaged in violent, seriously disruptive, or criminal conduct, or in conduct posing a serious threat to the health or safety of others or to the operation of the transit system. Absent such a finding, if a Hearing Officer determines that a violation was more probable than not, the Hearing Officer shall order a qualified Suspension of Service to permit a transit dependent individual to use the District Transit System for trips of necessity, including travel to and from medical and legal appointments, school or training classes, places ofemployment, obtaining food, clothing and necessary household items, or for accessing any critical services. Any person asserting the right to a qualified Suspension of Service on the basis of transit dependence shall have the burden of establishing transit dependence by a preponderance of the evidence.

12. A person issued a Notice of Suspension of Service for conduct determined to be expressive conduct protected by the First Amendment to the U.S. Constitution and the New York Constitution, shall not be whose service is suspended on the basis of such conduct. If the Hearing Officer finds that a violation was more probable than not, but also finds that the conduct involved expressive conduct or the expression of a religious opinion, the Notice of Suspension of Service shall be set aside, unless the Hearing Officer also finds that the effect of the conduct endangered public safety, disrupted service, or interfered with transit operations. For the purposes of this paragraph, the parameters of the free expression and religious protections afforded under this Article shall be coextensive with constitutional guarantees.

13. Effect of Failure to Provide an Address. When a person receiving a Notice of Suspension of Service is not able, or refuses, to provide a mailing address at the time of issuance, the Notice of Suspension of Service shall set forth the procedure for picking up any letters, notices or orders produced by the Manager, Transit Supervisor or Hearing Officer, in accordance with administrative rules promulgated by the General Manager.

14. A final order shall be deemed issued on the date of mailing to all parties at the addresses provided by the parties, through regular U.S. Mail, and effective ten (10) business days from the date of issuance.

15. At any time during the pendency of a hearing, during the course of an administrative review, or following the exhaustion of administrative review, any person whose service is suspended may petition in writing to the General Manager, or designee, for a temporary waiver of the Suspension of Service or modification of the terms of an Suspension of Service, based upon a showing of need or changed circumstances. The General Manager, or designee, has the sole discretion to grant or deny the petition.

16. In cases where it is determined that a person initiated a physical altercation with a CDTA employee and or uses a weapon which cause an injury to any person or damage to CDTA property said person will be permanently banned from using CDTA service and facilities.

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Effective April 1, 2009 ***Raymond J. Melleady, Executive Director***

TACOMA MUNICIPAL CODE (2008)

.52.020 Unlawful transit conduct.

A. A person is guilty of unlawful transit conduct if, while on or in a municipal transit vehicle as defined by RCW 46.04.355 as now or hereafter amended or reenacted, or in or at a municipal transit station, he or she:
1. Smokes or carries a lighted or smoldering pipe, cigar, or cigarette; or
2. Discards litter other than in designated receptacles; or
3. Plays any radio, recorder, or other sound producing equipment, except that nothing herein shall prohibit the use of such equipment when connected to earphones which limit the sound to individual listeners or the use of a communication device by an employee of the owner or operator of the municipal transit vehicle or municipal transit station; or
4. Spits or expectorates; or
5. Carries any flammable liquid, explosive, acid, or other article or material likely to cause harm to others; except that nothing herein shall prevent a person from carrying a cigarette, cigar, or pipe lighter or carrying a firearm or ammunition in a way that is not otherwise prohibited by law; or
6. Consumes or is under the influence of any intoxicating beverage or illicit drug; or
7. Intentionally obstructs or impedes the flow of municipal transit vehicles or passenger traffic, intentionally hinders or prevents access to municipal transit vehicles or stations, or otherwise unlawfully interferes with the provision or use of public transportation services; or
8. Engages in loud, raucous, unruly, harmful, or harassing behavior that disturbs the peace, comfort, or repose of a reasonable person of normal sensibilities; or
9. Skates on roller skates or in-line skates, or rides in or upon or by any means a coaster, skateboard, toy vehicle, or any similar device; provided that a person may walk while wearing skates or carry a skateboard while on or in a municipal transit vehicle or in or at a municipal transit station if that conduct is not otherwise prohibited by law
10. Engages in conduct not described in subsections 1 through 9 which is inconsistent with the intended use and purpose of the transit station or transit vehicle and refuses to obey the lawful command(s) of an agent of the transit authority or a peace officer to cease such conduct.

B. Municipal Transit Station Defined. For the purposes of this section, "municipal transit station" means all facilities, structures, stop shelters, lands, interest in lands, air rights over lands, and rights-of way of all kinds that are owned, leased, held, or used by a public agency for the purpose of providing public transportation services.

C. Penalty. Any person violating this section is guilty of a misdemeanor. The penalty shall be a maximum fine of $1,000, incarceration for a term of 90 days, or both such fine and imprisonment.

D. Severability. If any provision of this section is held invalid, such invalidity shall not affect any other provision, or the application thereof, which can be given effect without the invalid provision or application, and to this end the provisions of this section are declared severable. (Ord. 27712 Ex. A; passed May. 13, 2008: Ord. 25235 § 1; passed Dec. 22, 1992: Ord. 23658 § 1; passed Jul. 8, 1986)

Pierce Transit's Workplace Violence Policy

Workplace Violence Prevention Policy

Pierce Transit is committed to promoting a work environment in which employees can perform their jobs with a reasonable expectation of safety and security. This policy identifies and prohibits behavior that undermines the safety and security of the work environment, and outlines responsibilities for dealing with violations. It works in concert with our Anti-Harassment Policy and the Memorandum of Understanding regarding workplace violence signed by Pierce Transit management and the Amalgamated Transit Union on July 25, 1994. The policy applies to all Pierce Transit employees, contractors, vendors, and visitors to Pierce Transit headquarters, shops, facilities or offices. Customer-initiated acts of violence will be addressed through criminal proceedings.

1. **Pierce Transit will not tolerate workplace violence in any form.**

   We define workplace violence as physical or verbal behavior that endangers or harms another employee, customer, contractor or vendor, or that a reasonable person would perceive to constitute a threat of harm. Acts of violence may occur between fellow employees; between customers, contractors, or vendors and employees; or between employees and non-employees who have a personal relationship. The Pierce Transit workplace consists of all locations in which Pierce Transit business is conducted and surrounding areas, including but not limited to buildings, vehicles, transit centers, parking lots, sidewalks, driveways, and other facilities.

   Acts of violence may take a variety of forms, including but not limited to:
   - Deliberate actions or behavior resulting in a physical assault against a person or property, such as hitting, pushing, holding/restraining, spitting on, or blocking the movement of another person.
   - Verbal or written threats communicated directly or indirectly that a reasonable person would perceive to intimidate, frighten or otherwise cause fear of physical or emotional harm. Using agency mail, email, or telephones to communicate threats is expressly prohibited.
   - Inappropriate verbal or physical behavior that causes a reasonable person to feel unsafe, such as angry outbursts, throwing things, or expressions of hostility.

2. **Pierce Transit prohibits the possession or use of firearms and other dangerous weapons by its employees while performing job duties or in the Pierce Transit workplace. Visitors, vendors, or contractors are likewise prohibited from bringing firearms and other dangerous weapons into Pierce Transit headquarters, shops, facilities or offices. This prohibition applies regardless of whether the person is licensed to carry the weapon or not.**

   We define a dangerous weapon as any object, instrument or chemical that is designed to inflict harm on another person or is used in a manner threatening harm or injury to another person. These include but are not limited to the following examples: firearms, knives (excluding pocketknives), switchblades, brass knuckles, clubbing instruments, dangerous chemicals, or explosives. Objects not designed as weapons, but used to inflict or threaten bodily harm will also be considered dangerous weapons.

   Where it has sufficient cause or reason to believe that a threat to workplace security or public safety exists, or where a violation of any Pierce Transit policy has occurred, Pierce Transit reserves the right to conduct a search of employee work spaces. Searches may include, but are not limited to desks, computer equipment, lockers, backpacks, purses, toolboxes or other locations such as vehicles.

   Exception:
   - Law enforcement or authorized security personnel who carry firearms in the performance of their duties, may do so under this policy.

3. **Pierce Transit encourages any employee who is a victim of domestic violence to report behavior that threatens the employee at work.**

   Domestic violence is abusive behavior that is physical, sexual, psychological, or economic and intended to establish and maintain control in a domestic relationship.

   Reports may be made to the employee's supervisor, a manager, Human Resources, or the Transit Public Safety division. Pierce Transit will work with the employee to enhance his or her safety and security at work, at the same time endeavoring to maintain privacy.

   Pierce Transit employees are prohibited from using any agency resources, including telephones, email, or vehicles, to perpetrate domestic violence against another person.

4. Pierce Transit will investigate all reports of workplace violence.

Investigations will be made promptly, impartially and discreetly. When appropriate, disciplinary action will be taken, up to and including discharge. Violators may also be subject to criminal prosecution, if applicable. The Human Resources and Transit Public Safety Divisions have the responsibility for investigating such reports.

Responsibilities:

- Pierce Transit employees at all levels, including supervisors, managers and department heads, are responsible for upholding this policy by refraining from prohibited behaviors.
- Any Pierce Transit employee who believes the words or actions of another employee, contractor, vendor, or visitor constitute a violation of this policy has the responsibility to report such behavior immediately to one or more of the following: a supervisor, manager, Human Resources, or Transit Public Safety.
- As in the Anti-Harassment policy, supervisors, managers, Human Resources, and Transit Public Safety staff who receive reports of workplace violence or observe such, behavior directly have the responsibility to take prompt action to see that an investigation is initiated.
- In the event of an immediate threat or danger, employees should not confront the threatening party. In such case, employees should immediately retreat and call 9.1.1, then the Communications Center, if a supervisor is not available. The incident should be reported to a supervisor, manager, Human Resources, or Transit Public Safety as soon as possible.
- Retaliation against employees who report acts of workplace violence is prohibited. Instances of retaliation will be investigated and appropriate disciplinary action taken against the actor, up to and including discharge and possible criminal and civil prosecution.

Don S. Monroe, Chief Executive Officer
August, 2004

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY POLICY/INSTRUCTION

1.0 POLICY

1.1 The Washington Metropolitan Area Transit Authority ("WMATA", or the "Authority") has zero tolerance for workplace violence in whatever form it may take as defined in this Policy/Instruction 7.33/0 ("P/I 7.33/0").

2.0 PURPOSE

2.1 The purpose of this P/I is to establish a pro-active policy as well as procedures intended to assist in maintaining a safe work environment at WMATA through education, reporting, early intervention, and follow-up.

3.0 SCOPE

3.1 This P/I applies to all employees and shall remain in effect until rescinded in writing, or superceded by another P/I or revision.

4.0 DEFINITIONS

4.1 Employee - Any person who is hired by the Authority on its payroll on a salaried or wage basis who is not a consultant or contractor for the Authority.

4.2 Workplace Violence - Workplace Violence includes, but is not limited to, behavior occurring in the workplace that results in violent, harassing, intimidating, or other disruptive behavior that communicates a direct or indirect threat of physical or emotional harm, property damage, and/or disruption of the Authority's business operations.

4.3 Types of Workplace Violence:

4.3.1 Violence by Strangers. The workplace violence is committed by a stranger who has no legitimate relationship to the employee or workplace and enters the workplace to commit an unlawful act.

4.3.2 Violence by Customers. The workplace violence is committed by someone who receives a service provided by WMATA. The workplace violence can be committed either in the workplace or outside the workplace but while the employee is performing a job related function.

4.3.3 Violence by Employees. The workplace violence is committed by an employee. The employee can be a supervisor or a manager.

4.3.4 Violence in Personal Relationships. The workplace violence is committed by someone who has a personal relationship with the employee, such as a current spouse, former spouse, domestic partner, a relative, or a friend.

4.3.5 Violence by Consultants, Vendors or Contractors. The workplace violence is committed by a consultant, vendor or contractor who provides a service, materials, and/or equipment to WMATA.

4.4 Workplace - The workplace may be any location, either permanent or temporary, where an employee performs any act in connection with his/her employment relationship.This includes all WMATA transit facilities, such as, buildings and the surrounding perimeters, rail cars and buses, parking lots, stations and field locations.

4.5 Workplace Violence Coordinator - This position is primarily responsible for the administration of this P/I. The role and responsibilities are more specifically referenced at section 5.5 of this P/I.

4.6 Critical Incident Stress Debriefing - The process used by an organization to remedy the effects of workplace violence. This may include, but is not limited to, involving mental health professionals to debrief affected employees and coordinating with other Authority departments/offices or other professionals to provide support services to affected employees.

4.7 Zero tolerance - Zero tolerance means that the Authority will impose an appropriate form of progressive discipline for violations of this policy based on an investigation into the facts giving rise to the alleged violation.

5.0 ROLES AND RESPONSIBILITIES

5.1 Employee -

5.1.1 Reports any alleged incident under this policy to a supervisor, manager, Metro Transit Police ("MTPD"), the Workplace Violence Coordinator, or any other Authority official.

5.1.2 Ensures that the report is documented on the "Workplace Violence Program Incident Reporting Form" ("Reporting Form") and submitted to the Workplace Violence Coordinator.

5.1.3 Cooperates in any investigation, assessment or other activity under this policy, as appropriate.

5.1.4 Employees who make reports, in good faith, will not be intimidated, coerced, retaliated against, or discouraged from reporting alleged incidents of workplace violence. Employees who report false or misleading incidents, and/or provide false or misleading information in connection with a report of an alleged incident of workplace violence will be disciplined in accordance with the Authority's policies and/or the appropriate collective bargaining agreement, including termination from employment.

5.2 Supervisor/Manager -

5.2.1 In the case where medical attention is needed, ensures that appropriate officials are notified to respond.
5.2.2 Where appropriate, notifies an employee's emergency contacts, which may include family members.
5.2.3 Completes or ensures completion of the Reporting Form and submission, without delay, of the Reporting Form to the Workplace Violence Coordinator prior to the end of the work shift/day within which a report of an alleged incident of workplace violence was received.
5.2.4 Coordinates activity, investigations or assessments pertaining to workplace violence with the Workplace Violence Coordinator.
5.2.5 Ensures that employees cooperate in any investigation, evaluation and/or resolution of any alleged incident.
5.2.6 Ensures that each alleged incident is investigated, evaluated and resolved.
5.2.7 Recommends or takes appropriate discipline consistent with Authority policies or an appropriate collective bargaining agreement.
5.2.8 Coordinates, with appropriate officials, and implements a remedial plan that is intended to eliminate the current and future potential for workplace violence with the assistance of the Workplace Violence Coordinator.
5.2.9 Ensures employee confidentiality to the extent feasible consistent with the investigation concerning any alleged incident, including, but not limited to any oral or written communication, as appropriate.
5.2.10 Ensures no retaliation against any employee reporting, in good faith, any alleged incident.

5.3 Office Directors/General Superintendents or Equivalents -

- 5.3.1 Disseminates and enforces this P/I.
- 5.3.2 Oversees proper reporting and investigations of any alleged incident of workplace violence.
- 5.3.3 Assists Authority officials in the investigation of reports of alleged incidents of workplace violence.
- 5.3.4 Ensures that all subordinate employees cooperate in the implementation of this policy.
- 5.3.5 Ensures the application of appropriate discipline consistent with Authority policies or an appropriate collective bargaining agreement.
- 5.3.6 Oversees implementation of a remedial plan that is intended to eliminate the current and future potential for workplace violence
- 5.3.7 Provides appropriate communication to the Workplace Violence Coordinator and/or members of the Workplace Violence Committee on a need-to-know basis.
- 5.3.8 Ensures employee confidentiality to the extent feasible consistent with the investigation concerning any alleged incident including, but not limited to, any oral or written communication, as appropriate.

5.4 Chief, Labor and Civil Rights Officer

- 5.4.1 Appoints the Workplace Violence Coordinator.
- 5.4.2 Ensures the proper administration of this P/I.

5.5 Workplace Violence Coordinator -

- 5.5.1 Administers and coordinates the Authority's Workplace Violence Policy.
- 5.5.2 Establishes a data collection system for retrieval of relevant information and for tracking of trends.
- 5.5.3 Coordinates and/or conducts activity pertaining to workplace violence, as appropriate, to include notification to appropriate levels of supervision.
- 5.5.4 Consults with members of the Workplace Violence Committee, as appropriate.
- 5.5.5 Assists management with the development and/or implementation of a remedial plan that is intended to eliminate the current and future potential for workplace violence.
- 5.5.6 Assists in the notification and referral of affected employees to the Authority's Employee Assistance Program ("EAP"), as appropriate.
- 5.5.7 Arranges and/or conducts individual or group debriefings, as appropriate.
- 5.5.8 Receives and maintains the confidentiality, to the extent feasible, of any information submitted to the Workplace Violence Coordinator on the Reporting Form or contained in other reports received by the Workplace Violence Coordinator of alleged incidents.
- 5.5.9 Coordinates and/or conducts workplace violence training, training refresher courses or "train the trainer" sessions, as appropriate.

5.6 MTPD

- 5.6.1 If appropriate, investigates reports of alleged criminal activity under this P/I and takes appropriate action.
- 5.6.2 Coordinates with SAFE to conduct, jointly, an initial assessment and periodic assessments of the security and hazards that may exist at the Authority.
- 5.6.3 Establishes and administers appropriate General Orders for responding to major incidents of workplace violence in coordination with other appropriate Departments/Offices.
- 5.6.4 Provides appropriate communication to the Workplace Violence Coordinator and/or members of the Workplace Violence Committee on a need-to-know basis.
- 5.6.5 Ensures employee confidentiality, to the extent feasible, consistent with the investigation concerning any alleged incident including, but not limited to, any oral or written communication, as appropriate.

5.7 ADMN

5.7.1 Reviews medical records, as appropriate.
5.7.2 Contacts private treating physicians and secures appropriate medical information with the employee or other authorized person's consent.
5.7.3 Provides appropriate communication to the Workplace Violence Coordinator and/or members of the Workplace Violence Committee on a need-to-know basis.
5.7.4 Receives, schedules and coordinates referrals for assessments as appropriate.
5.7.5 Leads the Critical Incident Stress Debriefing efforts as appropriate.
5.7.6 Ensures employee confidentiality, to the extent feasible, throughout EAP's handling of reports under this policy.
5.7.7 Coordinates with the Workplace Violence Coordinator and the Workplace Violence Committee to provide training on this P/I.
5.7.8 Coordinates and provides support to victims of workplace violence as described by this P/I.

5.8 SAFE

5.8.1 Provides support with safety aspects of alleged incidents of workplace violence under this P/I.
5.8.2 Coordinates with MTPD to conduct, jointly, an initial assessment and periodic assessments of the security and hazards that may exist at the Authority.
5.8.3 Provides appropriate communication to the Workplace Violence Coordinator and/or the Workplace Violence Committee on a need-to-know basis.
5.8.4 Ensures employee confidentiality, tothe extent feasible, consistent with the investigation concerning any alleged incident including, but not limited to, any oral or written communication, as appropriate.

6.0 COMPOSITION, ROLE AND RESPONSIBILITIES OF THE WORKPLACE VIOLENCE COMMITTEE

6.1 The composition of the Workplace Violence Committee includes the Workplace Violence Coordinator and a representative from LRCR, COUN, MTPD, HRMP (EAP), ODEV, SAFE, RISK, BUS, RAIL and from any other department affected by workplace violence.

6.2 The Workplace Violence Committee, chaired by the Workplace Violence Coordinator, shall meet on a regular basis or at such other times as the Authority's needs dictate to discuss workplace violence as it pertains to the Authority.

6.3 The responsibility of the Workplace Violence Committee is to consult, as requested, when alleged incidents of workplace violence are being investigated and to meet and discuss issues of workplace violence affecting the Authority. Each member of the Committee will provide expertise from their respective fields and participate in making recommendations, intending to eliminate the current and future potential for workplace violence. Coordination with any other area of the Authority, including but not limited to AUDT and/or CIVR, will be conducted as needed.

7.0 PROCEDURE FOR RESPONSE

7.1 Immediately report any incident where it is believed that a violation of this policy is imminent, has occurred, or is occurring.

7.2 For emergency matters, immediately call MTPD at x2121 or Central Control at either x1811 or x1652 to report the emergency matter. If workplace violence is imminent, has occurred, or is occurring, try to avoid a physical confrontation. If the circumstances permit, immediately notify your supervisor/manager and/or the Workplace Violence Coordinator of the alleged incident(s) of workplace violence. Complete and submit the Reporting Form as soon as possible after the incident has occurred.

7.3 For non-emergency matters, report any incident of alleged workplace violence to your supervisor, manager or the Workplace Violence Coordinator(x1308 or x2089). Reports of workplace violence can also be made by using the General Manager's Hotline at x2400 (or via the Self-Control Assessment Process) or using the Reporting Form. Complete and submit the Reporting Form as soon as possible after the incident has occurred.

7.4 When a report of an alleged incident of workplace violence is made to a person other than the Workplace Violence Coordinator or the police, that person shall inform the Workplace Violence Coordinator, or his/her designee, of the report within twenty-four (24) hours of receipt of such report.

7.5 Coordination of the activity to address the alleged incident of workplace violence is to be done by the Workplace Violence Coordinator in conjunction with appropriate Authority officials. Consultation with members of the Workplace Violence Committee is to be conducted as needed. In the case of a report alleging criminal conduct, coordination with MTPD is to be performed without delay after receipt of the report of the incident. The decision by MTPD to pursue the report as a criminal matter shall be final.

Appropriate management officials shall be informed of the results of the activity, the recommendations made thereon or the status of the activity either within a reasonable amount of time after the report is made to the Workplace Violence Coordinator or every thirty (30) calendar days thereafter, whichever is sooner.

8.0 Exceptions

8.1 There are no exceptions to this policy.

Houston METRO Pepper Gel Guideline

METRO

Guideline			Ref. No.
Title: Bus Operators use of Take Down 10% Pepper Gel	Effective Date: 2007	Revision Date:	Revision No.:
Prepared By:	Approved By:		Page 1 Of 3

PHILOSOPHY:

The Metropolitan Transit Authority places the highest value on its employees, their lives and safety; it is then only reasonable to expect they would take every precaution to preserve the welfare of their most valuable commodity.

This policy recognizes the risks to which bus operators may be exposed as they carry out their duties. Operators who elect to carry TAKE DOWN 10% Pepper Gel™ are required to complete training and follow approved procedures in the use of the product for defensive purposes. The training curriculum, more fully described below, was developed by METRO Police incorporating information from the manufacturer of TAKE DOWN 10% Pepper Gel™. Training may be conducted by an approved authority trainer or by qualified police personnel.

Following the training, operators will be issued a 45 gram unit of TAKE DOWN 10% Pepper Gel™ which is the type of personal self-defense device that may be carried by any citizen in the State of Texas. Only METRO approved and issued canisters will be allowed for use by bus operators in the performance of their duties.

The TAKE DOWN 10% Pepper Gel™ is to be used for defensive purposes only. Bus operators should make every effort to neutralize or avoid potential assaultive situations by means of verbal and non verbal tactics, including retreat. If, despite these tactics, the operator reasonably believes that the use of TAKE DOWN 10% Pepper Gel™ is immediately necessary against an individual, the operator must be sure that the use is appropriate and conforms to policy. An operator's unauthorized discharge of the Pepper Gel may result in disciplinary action, including termination of employment, and criminal prosecution, if applicable.

It is the desire of the authority to protect its employees from unreasonable assaults and aggression by equipping them with reasonable means of defending themselves against unprovoked acts.

It is the intent of the Authority to give bus operators the option to carry TAKE DOWN 10% Pepper Gel™. The gel is to be used in times of conflict only after every attempt to resolve the situation has been exhausted, including verbal de-escalation, and the bus operator reasonably believes a threat of bodily injury from a capable source exist.

PROCEDURE:

A. Authority of Use of Force: Operators will only use the force necessary to accomplish lawful objectives. Operators should consider the following circumstances when making a decision to use TAKE DOWN 10% Pepper Gel™:

1. The nature and seriousness of risk of bodily injury to the operator.
2. The age, physical condition, and behavior of the subject with whom the operator is confronted.
3. Conditions at the scene of confrontation.
4. The feasibility and availability of other alternative options.
5. The opportunity and actual ability of the subject to injure the operator.

METRO 0113-2

METRO	Guideline			Ref. No.
Title Bus Operators use of Take Down 10% Pepper Gel		Effective Date	Revision Date	Revision No.

B. Procedural Statement

1. TAKE DOWN 10% Pepper Gel™ is an irritant that causes discomfort to the eyes and skin and should only be used in self-defense to fight off an attacker.

2. TAKE DOWN 10% Pepper Gel™ should be directed at the face of an assailant at close range in a spray stream and never in a crowd. The user should be wary of spray backsplash or splatter.

3. An operator shall use every reasonable means of persuasion before using the TAKE DOWN 10% Pepper Gel™. Force may only be employed to the extent necessary to stop the aggressive and assaultive contact.

4. Only METRO approved and issued, less than lethal product will be used by the operator, and then, only in a manner in which the weapon was designed.

5. An operator's use of force will de-escalate in direct response to a subject's lessening aggressiveness, threat level, or use of force.

6. Guidelines to remember when using TAKE DOWN 10% Pepper Gel™:

   • Examine your reason for using the device. Does the aggressor have the :

      1. Intent
      2. Capability to commit the assaulting behavior?
      3. Opportunity

   • Use the device only in self defense.
   • Use only in dire emergencies to aid in escape.
   • Distance yourself from the aggressor and call police. (911 or #MPD)
   • Complete a Pepper Gel Use Form before going off duty or as soon as possible.

7. The Pepper Gel is to be used for defensive purposes only, in accordance with Metropolitan Transit Authority policies and as specified in training. Operators will make every effort to neutralize or avoid potentially assaulting situations through verbal and nonverbal tactics, including retreat. If, despite these tactics, the operator reasonably believes that the use of the device is immediately necessary as a defense against an individual, the pepper gel use is appropriate.

8. If the device is used, the operator must immediately contact the control center and request to report the incident.

METRO	Guideline			Ref. No.
Title Bus Operators use of Take Down 10% Pepper Gel		Effective Date	Revision Date	Revision No.

9. The operator will complete the Use of Pepper Gel form and notify their supervisor as soon as possible. By the end of the working day, the operator must submit the report to the facility superintendent. In addition, a copy must be forwarded to the appropriate safety officer for review within one work day. The purpose of the review is to assess the use of the Pepper Gel under the circumstances, develop or modify any related policies or procedures and identify training issues. This review is also an opportunity to assist the operator in dealing with the aftermath of an assaultive situation.

10. TAKE DOWN 10% Pepper Gel™ is not to be used carelessly or as a means of punishing someone. Pepper Gel may cause injury and should be used with the utmost care.

C. Training

Prior to being issued a TAKE DOWN 10% Pepper Gel™ canister, bus operators must successfully complete a training program on the proper use and physiological effects of the gel spray. The training will include but not be limited to:

- Pre-Test and a Post-Test
- Polices on the use of this type of device
- Proper use and handling
- Verbal de-escalation tactics
- Incident reporting and debriefing
- Liability issues
- Practicum in the use of the product

D. Equipment and Certification

1. Operators who receive a certificate in training for TAKE DOWN 10% Pepper Gel™ will be issued a 45 gram unit of TAKE DOWN 10% Pepper Gel™. An Equipment Authorization form will be signed by the operator and maintained for records. Operators issued the TAKE DOWN 10% Pepper Gel™ must carry an identification card issued by the training officer. It is the operator's responsibility to maintain the device as instructed in training. It is also their responsibility to secure the device in order to prevent its use by an unauthorized person. In the event of theft, loss, and/or allegations of misuse or accidental discharge, the proper authorities will be notified immediately.

2. Used, inoperable or expired devices must be turned in to the proper authorities prior to the issuance of a new canister. The canisters must be turned in upon resignation, retiring, or when instructed to do so.

3. If at any time those charged with reviewing, overseeing and enforcing the Pepper Gel policy determine that an operator is unfit to carry Pepper Gel for any reason, the operator's permission to carry the gel may be revoked and the gel canister ordered to be returned to METRO.

VIA METROPOLITAN TRANSIT ANNOUNCES THE YOUTH ART CONTEST 2010

RIDING VIA IS THE SMART WAY IN MANY WAYS:
IT HELPS THE ENVIRONMENT, EASES YOUR COMMUTE, SAVES YOU MONEY AND PLANS FOR THE FUTURE.

THEME:

Riding VIA is the SMART WAY SA

JUDGING:
JUDGING WILL BE BASED ON THE FOLLOWING CRITERIA:

- APPROPRIATENESS TO VIA'S THEME
- SUPPORT OF VIA OR TRANSIT IN GENERAL
- ORIGINALITY AND CREATIVITY
- OVERALL VISUAL APPEAL

- OPEN TO ALL STUDENTS, PRE-KINDERGARTEN TO 12TH GRADE IN SAN ANTONIO.
- **BEGINNING MONDAY, MARCH 1,** POSTERS MAY BE PICKED UP FREE OF CHARGE AT VIA HEADQUARTERS, 800 W. MYRTLE, BETWEEN THE HOURS OF 7 A.M. - 5 P.M., MONDAY - FRIDAY. LIMITED SUPPLY AVAILABLE ON A FIRST-COME, FIRST-SERVED BASIS.

- ONLY POSTER BOARDS (11" X 17") PROVIDED BY VIA WILL BE ACCEPTED.
- ARTWORK SHOULD BE DRAWN ON PRINTED SIDE OF POSTER BOARD.
- ANY TYPE OF MEDIUM MAY BE USED.
- EACH ENTRY MUST BE AN ORIGINAL DESIGN CREATED BY ONE STUDENT. TEACHERS AND PARENTS SHOULD NOT PROVIDE ANY HANDS-ON ASSISTANCE. ONLY ONE ENTRY PER STUDENT WILL BE ACCEPTED.
- PLEASE INCLUDE STUDENT'S NAME, TEACHER'S NAME, GRADE, AND SCHOOL ON EACH POSTER SUBMITTED. WITHOUT THIS INFORMATION, POSTER CANNOT BE JUDGED.
- THE POSTER MAY NOT CONTAIN COMMERCIAL CARTOON CHARACTERS, BRAND NAMES OR LOGOS, AN INDIVIDUAL'S NAME OR LIKENESS, OR ANY COPYRIGHTED IMAGES OR MARKS.
- ORIGINAL ARTWORK WILL BE DISPLAYED INSIDE VIA BUSES.

- POSTERS CANNOT BE RETURNED.

DEADLINE FOR ENTRIES: FRIDAY, APRIL 9

PRIZES TO BE AWARDED:

$500 SAVINGS BOND - BEST OF SHOW
$100 SAVINGS BOND - 1ST PLACE WINNER IN EACH GRADE
$50 SAVINGS BOND - 2ND PLACE WINNER IN EACH GRADE

EACH WINNER WILL RECEIVE A RADIO DISNEY BACKPACK.

PLEASE SEPARATE AND BUNDLE BY GRADE LEVEL.
ALSO ATTACH A SHEET WITH SCHOOL NAME, ADDRESS, PHONE NUMBER, AND PRINCIPAL.

WINNERS WILL BE HONORED AT A LUNCHEON MAY 12TH AT ALDACO'S AT HISTORIC SUNSET STATION.

FOR MORE INFO, CALL 362-2570 OR VISIT WWW.VIAINFO.NET OR WWW.SMARTWAYSA.COM.

ALDACO'S sunset station mexican cuisine
San Antonio Express-News mySA.com
Radio Disney AM 1160
VIA Metropolitan Transit

SECTION 500: Accidents/Incidents

501 Protect your passengers, yourself, and the coach.

501.1 Stop and secure the coach

501.2 Assess the situation for severity/danger level

a. Evacuate the coach if a life-threatening condition exists.

(1) Check for fire (In case of fire, See section 601.2 – Smoke or Fire.)

(2) If you smell Natural Gas or are aware of the release of natural gas, always evacuate passengers and follow precautions outlined in section 601.3–Gas Leak. Move passengers to a safe location, approximately 300 feet away from the bus.

501.3 Check passengers to determine need for medical assistance. If medical assistance is required, request medical assistance by pushing the **911 (overt) alarm** button on the MDT ***Message #1–RTA Accident–EMS Required*** or calling Transit Police 216-566-5163. Advise the 911 Dispatcher of the exact location of the situation and provide details.

501.4 If emergency assistance is not required, notify Service Quality by Category 1: *Service Quality Assistance Required*: Message *#0–RTA Accident–No Injury.*

501.5 If operating a CNG coach

a. Shut off the master control switch.

b. If possible, open the front roof hatch.

c. Keep people away from the bus. Set-up emergency triangles.

d. Tell police and others not to use flares because this is a CNG bus.

e. Follow standard operating procedures regarding obtaining information from driver(s) of other vehicle(s) involved in the collision.

f. Keep off the bus. If you need to contact Service Quality, use a telephone.

g. Follow instructions issued by Service Quality and RTA Supervisory personnel.

501.6 Obtain the names of injured persons.

501.7 Notify Service Quality giving the block number coach number, location, direction, and information regarding injuries.

501.8 Protect customers and yourself from any hazards created by the accident.

501.9 Deploy warning devices (see section 311.1c)

501.10 Do not move the coach until instructed by the police, Service Quality, RTA Safety Officer, or other authorized RTA official or supervisor.

502 Communicate and Obtain information

502.1 Inform customers of the accident/incident, what action has been taken, and how they will be affected.

502.2 Write down license number, color, make, and model of the other vehicle(s) involved.

502.3 Distribute witness cards to customers. The operator should always have two complete accident kits in his/her possession. (Section 102.1f) Obtaining the names of as many customers as possible is very important in the event legal action is taken against the RTA and/or the person operating the coach.

502.4 Obtain the information about other vehicles involved including:

a. The names, drivers license numbers, and addresses of the operator(s)
b. Names of other occupants
c. Names of street witnesses
d. Your assessment of damage to the vehicles.

502.5 If police are on the scene, write down the employee I.D. number(s) of police on the scene and the number of the police, ambulance, and/or fire unit vehicle(s).

502.6 Give the police and/or other driver(s) only the following information:

a. Name
b. Employee I.D.
c. Commercial Drivers License (CDL) number
d. Coach number
e. RTA's name, address and telephone number

502.7 The operator should never admit guilt.

502.8 The operator should not give a signature (except for a traffic citation) or make any statement to anyone other than a properly identified RTA representative. (See Section 503.3.) If the operator is required to fill out a report, he/she must notify Service Quality.

502.9 If the police take an operator's license, he/she should request the location of the police department and the officer's employee I.D. number.

502.10 If a citation is issued as a result of the accident, the operator should include this information in his accident/incident report and inform his Transportation Manager of the nature of the citation.

502.11 If the operator is arrested, he/she should notify Service Quality and secure the coach before leaving it unattended. If unable to contact Service Quality, ask the police officer to do so.

502.12 The operator should not move the coach until a representative of the Service Quality or Safety Department arrives and directs him/her to do so. If, prior to the arrival of an RTA Officer, the operator is directed by the municipal police to move the coach to a specific location, he/she should comply. However, if the direction is not specific i.e., "move the coach, or clear this intersection," the operator should move the coach to the nearest safe location and notify Service Quality.

502.13 Upon completion of his assignment, the operator must report to the district and complete the appropriate written report (accident or incident/witness, (See section 504–Reports). The report must be completed before the close of that working day.

502.14 The operator must see the Transportation Manager or his designee at this time, and by no later than the next working day.

502.15 The operator must fully cooperate with the RTA Safety investigators.

503 Accident/Incident Information

503.1 When an operator is involved in an accident certain information is considered privileged and must only be communicated by telephone or in person to authorized, properly identified, RTA representatives only. No statements are to be given to the police.

503.2 Privileged information includes:

a. Orientation of vehicles
b. Speed of vehicles
c. General conditions
d. Names/addresses of injured
e. Names/addresses of victims
f. Names of owner, driver, and all occupants of other vehicles.
g. Description and license number of and damage to other vehicle(s)
h. Any other information describing injuries, damage to property, etc.

503.3 Authorized RTA representatives include:

a. Service Quality Coordinator
b. Service Quality Supervisors
c. District Directors and Transportation Managers
d. Claims and Safety Department representatives
e. RTA Executives
f. Transit Police Officers

503.4 In communicating information about an accident or incident:

a. Speak in a voice that cannot be overheard when giving details to Service Quality (telephone only) or other authorized personnel.
b. Do not criticize RTA's equipment or rules.
c. Never say that you will contact anyone directly regarding damages or injuries.

504 Reports

504.1 When an accident occurs involving a coach, it is a potential source of legal action. Whether or not certain accidents actually result in liability costs to RTA depends on RTA's having a good defense against unwarranted claims. A good defense begins with a complete, factual, and accurate report by the operator involved including the names of customers and others on the scene to substantiate the facts.

504.2 An accident or incident report must be completed:

a. When accidents involve other vehicle(s) or object(s) and diagrammed.
b. For accidents/incidents involving customer(s) or pedestrian(s).
c. When a passenger falls or makes contact with anything inside the coach.
d. For customer disturbances (fights, illness, ejections, etc.).
e. When fire extinguishers are used.
f. For broken window (Collision Report); diagrammed when requested.
g. When the emergency alarm is used for any reason.
h. For any other incident that could result in a legal claim against RTA.

504.4 All reports should be completed by the end of the run. The operator must see the District Director or Transportation Manager by no later than the close of the next business day.

505 Post Accident Drug and Alcohol Testing

505.1 Following an accident, you may be required by Federal law and/or RTA policy to be tested for drugs and alcohol.

505.2 Do not leave the scene of the accident until released by the RTA supervisor investigating the accident or transported to the drug and alcohol testing facility.

505.3 If you are injured and are transported to the hospital by the emergency response personnel, you must contact Service Quality immediately upon your release from the hospital in accordance with the Authority's policy on post-accident drug and alcohol testing. Failure to do so will result in disciplinary action.

SECTION 600: Emergencies

601 On Your Coach

601.1 Violent and disruptive passengers.

a. When the operator believes use of the radio will place him/herself in danger and Transit Police are required, utilize the **Emergency Alarm** to notify Transit Police. Depressing the Emergency Alarm will enable Transit Police to hear all conversations in the Operator's compartment. You can enhance this communication with the Police Dispatcher by speaking to your assailant in a manner that indicates the problem, e.g. "Don't shoot", "Please don't hit me", etc.

b. When Transit Police are needed but the Operator does not feel endangered, press the **911 (overt) alarm** button on the MDT followed by Message #3. ***Disturbance on Bus–Transit Police Required*** when the situation requires an immediate response such as robbery, sexual imposition/rape, or disorderly conduct.

c. For any other situation that requires Transit Police assistance, e.g. fare evader, sleeper on board, etc. press the **911 (overt) alarm** button followed by **Message #4–*Transit Police Required–Other***.

601.2 Smoke or Fire

In the event of smoke or fire on your coach, use the following procedures:

a. Bus Rapid Transit —Stop and remain in the busway lane.

b. All other locations — Pull over to the curb lane, away from other vehicles and buildings, if possible.

c. Evacuate passengers through the door furthest away from the fire. If doors are inoperable or the fire is blocking the exit through the doors, evacuate passengers through the windows. Move the passengers to a safe location, approximately 300 feet away from the bus. When operating a Rapid Transit Vehicle in the busway, determine if exiting should be from the left side, right side or both based on the location of the fire and/or the traffic in adjacent lanes., Insure that passengers do not walk into the path of oncoming vehicles.

d. Contact Transit Police by pressing the **911 (overt) alarm** button on the MDT followed by **Message #0 – *Fire on Vehicle*** or via landline at 216-566-5163. Advise the 911 Dispatcher of the exact location of the situation and provide details.

e. Notify Service Quality of the situation.

f. Shut off master control switch.

g. If fire is small, use your fire extinguisher to put it out by spraying at the base of the fire.

h. Attempt to keep people away from the bus.

i. Follow instructions issued by Service Quality or RTA Supervisory personnel.

601.3 Gas Leak

a. In the event of a CNG leak not due to a collision, the following procedures shall be followed:

b. Complaint from a Passenger

(1) If you receive a complaint from a passenger that they smell gas, do the following:

(2) Confirm the leak. Go to the area where the passenger is sitting and attempt to confirm the presence of gas yourself. If you do smell gas, follow the procedures in section 601.3c.

(3) If you are not able to confirm the smell of gas, inform the passenger of such and offer to open the roof hatch for fresh air. If you receive more than one complaint, contact Service Quality for instructions.

c. Confirmed Leak (you smell gas or you confirm a passenger complaint)

(1) Pull over to the curb lane, away from other vehicles or buildings if possible.

(2) Evacuate passengers to a safe location approximately 300 feet from the bus. Attempt to count heads of alighting passengers.

(3) Notify Service Quality by use of the **PRTT** button. Inform them that you smell gas, suspect a CNG leak, and have evacuated all the passengers.

(4) Shut off the master control switch.

(5) If possible, open the front roof hatch.

(6) Keep people away from the bus.

(7) Deploy warning triangles (see section 311.1c.)

601.4 Sick or Injured Passenger

a. Determine the nature of the passenger's illness if possible.

b. Contact Transit Police by pressing the **911 (overt) alarm** button on the MDT followed by **Message #2—Passenger/Operator Sick–EMS Required** or via landline at 216-566-5163. Advise the 911 Dispatcher of the exact location of the situation and provide details.

c. Follow the instructions of the Transit Police Dispatcher who may ask you to wait for assistance or proceed to a particular location.

d. Notify Service Quality of the situation.

601.5 Passengers may be asked to transfer to another coach. Operators will assist passengers as described in section 311.2b

602 Along a Route or at a Station

602.1 Fire

a. Contact Transit Police by pressing the **911 (overt) alarm** button on the MDT followed by **Message #1—Fire** or via landline at 216-566-5163. Advise the 911 Dispatcher of the exact location of the situation and provide details.

b. Notify Service Quality of the situation. If unable to notify Transit Police and Service Quality, the Operator/Employee must use judgment in protecting the passengers, the interests of GCRTA and minimizing the inconvenience to the public.

c. Certain situations may require evacuation of the area prior to the arrival of emergency responders (e.g. vehicle unable to proceed away from the area in danger.) If an evacuation is necessary, Operators will follow the procedures described in section 601.2c.

602.2 Illness or injury of person – not an RTA passenger, employee, or as the result of an accident involving an RTA vehicle

- Contact Transit Police by pressing the **911 (overt) alarm** button on the MDT followed by **Message #6–*Non-RTA Related – EMS Required*** or via landline at 216-566-5163. Advise the 911 Dispatcher of the exact location of the situation and provide details.

602.3 Other emergencies.

The operator will immediately notify Service Quality upon encountering any other emergency.

APPENDIX B

List of Survey Participants

AGENCY	CITY	STATE
Berkshire Regional Transit Authority	Pittsfield	MA
Broward County Transit	Pompano Beach	FL
Calgary Transit	Calgary	Alberta
Capital District Transportation Authority (CDTA)	Albany	NY
Central Florida Regional Transportation Authority dba LYNX	Orlando	FL
Central Ohio Transit Authority	Columbus	OH
Chicago Transit Authority	Chicago	IL
Chongqing Bus Rapid Transit Development Co. Ltd	Chongqing	China
City of Detroit Department of Transportation	Detroit	MI
Coast Mountain Bus Company	Surrey	BC
Community Transit	Everett	WA
Connecticut Transit	Hartford	CT
Citibus	Davenport	IA
Decatur Public Transit System	Decatur	IL
Edmonton Transit System	Edmonton	AB
Estuary Transit District	Centerbrook	CT
First Transit	Rancho Dominguez	CA
First Transit (Pioneer Valley Transit Authority)	Springfield	MA
Greater Cleveland Regional Transportation Authority (GCRTA)	Cleveland	OH
Golden Gate Transit	San Rafael	CA
Greater Bridgeport Transit	Bridgeport	CT
Greater Peoria Mass Transit District (CITYLINK)	Peoria	IL
Green Bay Metro	Green Bay	WI
Hampton Roads Transit	Hampton	VA
Indianapolis Public Transportation Corporation (IndyGo)	Indianapolis	IN
Jacksonville Transportation Authority	Jacksonville	FL
King County Metro Transit	Seattle	WA
L.A. Metro	Los Angeles	CA

AGENCY	CITY	STATE
Laredo Transit Management/El Metro	Laredo	TX
Madison Metro Transit	Madison	WI
Manchester Transit Authority	Manchester	NH
MBTA Transit Police Department	Boston	MA
Metro Transit Police Department	Minneapolis	MN
Metropolitan Transit System (MTS) San Diego	San Diego	CA
Miami–Dade Transit	Miami	FL
Milwaukee County Transit System	Milwaukee	WI
Minnesota Valley Transit Authority	Burnsville	MN
Montgomery County Department of Transportation Ride On	Rockville	MD
MTA Police Force (Maryland)	Baltimore	MD
MV Transportation/Foot Hill Transit	Arcadia	CA
MVRTA	Haverhill	MA
NJ Transit	Newark	NJ
North County Transit District	Oceanside	CA
NYC Transit	New York	NY
Pace Suburban Bus	North Aurora	IL
Palm Tran	WPB	FL
Pierce Transit	Lakewood	WA
Pinellas Suncoast Transit Authority	St. Petersburg	FL
Port Authority of Allegheny County	Pittsburgh	PA
Regional Transportation District	Denver	CO
Riverside Transit Agency	Riverside	CA
Rochester Genesee Regional Transportation Authority	Rochester	NY
Sioux Area Metro	Sioux Falls	SD
Sun Metro	El Paso	TX
Toronto Transit Commission	Toronto	Ont
Transit Authority of River City (TARC)	Louisville	KY
TriMet	Portland	OR
VIA Metropolitan Transit	San Antonio	TX
Winnipeg Transit	Winnipeg	MB
Washington Metropolitan Area Transit Authority (WMATA)	Washington	DC

Anonymous Agencies = 6

APPENDIX C

Survey Instrument

TCRP Synthesis Survey on Practices to Protect Bus Operators from Passengers Assaults

Survey Introduction

To help improve the security and safety of transit bus operations, the APTA Bus Safety Committee has initiated a TCRP Synthesis project on **Practices to Protect Bus Operators from Passenger Assaults**.

The main goal of the project is to identify bus operator assault prevention and mitigation practices. Please complete this survey on this important topic by **January 31**. A copy of the Final Synthesis Report will be available to all interested transit agencies.

Assaults are defined in this survey as overt physical and verbal acts by a passenger that interferes with the mission of a bus operator, which is to complete their scheduled run safely, and adversely affects the safety of the operators and customers.

Please respond to the questions to the best of your knowledge. Contact TRB Consultants Dr. Nakanishi at Nakanishi@transresearch.net or Lt. Fleming at Wf1019@netscape.net should you have any questions regarding this survey.

Survey options:

Complete this survey ONLINE at: http://www.surveygizmo.com/s/219161/tcrp-bus OR

Complete this survey and EMAIL back to Nakanishi@transresearch.net
or Wf1019@netscape.net OR

Print out and complete the survey, and FAX to Dr. Nakanishi at (347) 572-0494.
Fax cover page is not necessary. OR

Print out and complete the survey, and MAIL to Dr. Nakanishi at:

Nakanishi Research and Consulting, LLC
93-40 Queens Blvd, Suite 6A
Rego Park, NY 11374

Respondent Information

1. First Name:

   Last Name:

   Title:

   Agency/Organization:

   Street Address:

   City:

   State/Province:

   Zip/Postal Code:

   Country:

   Email Address:

   Phone Number:

Surface Operations Characteristics

Please tell us about your Agency's surface operations:

2. Bus Fleet Size
(Select one.)

__>1,000 Peak Buses
__250–1,000 Peak Buses
__<250 Peak Buses

3. Total Passenger Trips by Bus for FY2008 or most recent fiscal year
(Select one.)

__0–49,999,999
__50,000,000–99,999,999
__100,000,000–499,999,999
__500,000,000 and above

Surface Operations Security

4. Who is the primary security provider for your bus operations?
(Select all that apply.)

__Transit Police Department
__Local, County, and/or State/Province Police
__In-house Security Personnel
__Contracted Security Personnel
__Transit Employees/Bus Operators (specifically trained to perform security function)
__Combination of the above
__Other, please specify_____

5. Does your Agency have Standard Operating Procedures (SOPs) in place that offer operators and supervisors guidelines for responding to assaults?
(Select one.)

__Yes
__No
__Not certain

6. Are bus operators instructed by the Agency to enforce fare payment?
(Select all that apply.)

__Bus operators are instructed to state the required fare.
__Bus operators are instructed to stop the bus until the fare is paid.
__Bus operators are instructed to summon supervision, police or security.
__Bus operators are instructed to ask the passenger to exit the bus, if the fare is not paid.
__Bus operators are instructed to use their judgment.
__Not certain
__Other, please specify_____

7. Are bus operators instructed by the Agency to enforce rule violations other than fare payment?
(Select all that apply.)

__Bus operators are instructed to state the rule being violated.
__Bus operators are instructed to stop the bus until the rule violation has ceased.
__Bus operators are instructed to summon supervision, police or security.
__Bus operators are instructed to ask the passenger to exit the bus, if the rule violation continues.
__Bus operators are instructed to use their judgment.
__Not certain
__Other, please specify_____

Characteristics of Bus Operator Assaults

8. Please indicate all definitions of assault used by your Agency.
(Select all that apply.)

__Simple assault (e.g, kicking, punching)
__Aggravated assault involving weapons
__Projectiles thrown at the bus
__Projectiles thrown inside the bus (including liquids)
__Sexual assault
__Spitting
__Verbal threats/intimidation/harassment without weapons
__Verbal threats/intimidation/harassment involving weapons
__Other, please specify_____

9. Which of the following bus operator assault types is or has recently been problematic for your Agency? (Select all that apply.)

__Assaults while vehicle is in motion
__Assaults in the course of a robbery
__Assaults due to operator race/gender/size
__Assaults involving weapons
__Assaults involving spitting
__Assaults involving projectiles thrown at the bus
__Assaults involving projectiles thrown inside the bus (including liquids)
__Sexual assaults
__Verbal threats/intimidation/harassment
__Other, please specify_____

10. Which of the following have significantly contributed to bus operator assaults? (Select all that apply.)

__Attempting to aid a passenger
__Cash transactions
__Fare enforcement
__Other rule enforcement
__Gang-related violence
__Individuals with mental illness
__Intoxicated passengers or drug users
__Routes operating in high-crime areas
__School/youth-related violence
__Service problems (delays, service reductions, etc.)
__Other, please specify_____

11. How many bus operator assaults have occurred in the past year? Approximate answer is fine.

_____

12. When do most bus operator assaults occur? (Select up to 3 time periods.)

__AM Peak
__Midday
__PM Peak
__Evening/late night/early morning
__School dismissal times
__During school runs
__No discernible pattern

Bus Operator Assault Prevention and Mitigation Practices

13. Please indicate the training your bus operators undergo and how often they receive it.

	Training Frequency, please select one				
	At time of employment	At time of employment & periodically thereafter	At time of employment & when scheduled by supervision	Other	Not Provided
Conflict mitigation	__	__	__	__	__
Customer relations	__	__	__	__	__
Diversity training	__	__	__	__	__
Self-defense (no weapons or tools)	__	__	__	__	__
Self-defense (using pepper gels, kubotans, etc.)	__	__	__	__	__
Other, please specify	__	__	__	__	__
_____ _____					

14. How does your Agency assist operators when they become victims of assaults?
(Select all that apply.)

__Encourage operators to report assaults
__Implementation of work resumption plans
__Provision of counseling
__Provision of legal support (courtroom training, legal assistance)
__Trained supervisors assist operators
__Other, please specify_____

15. Does your Agency collect data on operator assaults? If "yes," please specify what data are collected and how the data are used.
(Select one.)

__Yes
__No
__Not certain

16. To which entities does your Agency report bus operator assaults?
(Select all that apply.)

__Transit police
__Local police
__National Transit Database (NTD)
__National Incident Based Reporting System (NIBRS)
__Agency does not record/report assault data
__Other, please specify_____

17. Do your city/state/province statutes have more severe punishments for assaults against bus operators? (Select one.)

__Yes
__No
__Not certain

18. Which methods are being used or have recently been used by your Agency to address violence against bus operators? (Select all that apply.)

__Community outreach
__Cooperation with law enforcement
__High visibility prosecution of offenders
__Lobbying for more stringent penalties
__Public/passenger awareness initiatives
__School outreach
__Does not engage in programs of this kind
__Other, please specify_____

19. Which of the following security methods does your Agency use on board your buses? (Select all that apply.)

__Police patrols
__Security personnel
__Plainclothes officers
__Fare enforcement officers or personnel
__Volunteers (e.g., Guardian Angels)
__None of the above
__Other, please specify_____

20. Which of the following security measures does your Agency use on board your buses? (Select all that apply.)

__Assault prevention screens/partial enclosures
__Automatic vehicle location (AVL) / GPS systems
__Compartment/full enclosures for operators
__Crime Prevention through Environmental Design-CPTED
__DNA kits
__Electronic signage/distress signals visible to other drivers
__Radio/phone communications
__Real-time video streaming (to dispatch/control ctr/police cruisers)
__Real-time audio streaming (to dispatch/control ctr/police cruisers)
__Silent alarm/panic button
__Video surveillance/video recording
__Audio surveillance/audio recording
__Other, please specify_____

21. Are self-defense tools issued to bus operators? If "yes," please specify the tools that have been issued to operators. (Select one.)

__Yes
__No
__Not certain

22. Are bus operators allowed to carry self-defense tools (e.g., pepper gels) not issued by the Agency? If "yes," please specify which ones are allowed.
(Select one.)

__Yes
__No
__Not certain

23. Please indicate which hiring methods your Agency uses to hire bus operators.
(Select all that apply.)

__Job aptitude test
__Psychometric/personality test
__Video-based screening
__Interview
__Driving record check
__Background check
__Other, please specify_____

24. As a result of the violence against your bus operators, which issues have your bus operators or bus operations been experiencing?
(Select all that apply.)

__Injury-related claims
__Operators showing increased anxiety/stress
__Absenteeism/diminished productivity
__Recruitment issues
__Union grievances

25. Please list up to the 5 most effective measures your Agency has implemented to address bus operator assaults, in order of their effectiveness. Also, please indicate the relative cost of each measure.

26. Please provide any other comments you may have about bus operator assault prevention and mitigation practices. Observations about your Agency's experience with specific measures would be appreciated.

Abbreviations used without definitions in TRB publications:

AAAE	American Association of Airport Executives
AASHO	American Association of State Highway Officials
AASHTO	American Association of State Highway and Transportation Officials
ACI–NA	Airports Council International–North America
ACRP	Airport Cooperative Research Program
ADA	Americans with Disabilities Act
APTA	American Public Transportation Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATA	Air Transport Association
ATA	American Trucking Associations
CTAA	Community Transportation Association of America
CTBSSP	Commercial Truck and Bus Safety Synthesis Program
DHS	Department of Homeland Security
DOE	Department of Energy
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
HMCRP	Hazardous Materials Cooperative Research Program
IEEE	Institute of Electrical and Electronics Engineers
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
ITE	Institute of Transportation Engineers
NASA	National Aeronautics and Space Administration
NASAO	National Association of State Aviation Officials
NCFRP	National Cooperative Freight Research Program
NCHRP	National Cooperative Highway Research Program
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
PHMSA	Pipeline and Hazardous Materials Safety Administration
RITA	Research and Innovative Technology Administration
SAE	Society of Automotive Engineers
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (2005)
TCRP	Transit Cooperative Research Program
TEA-21	Transportation Equity Act for the 21st Century (1998)
TRB	Transportation Research Board
TSA	Transportation Security Administration
U.S.DOT	United States Department of Transportation