

IMPROVING PUBLIC TRANSIT SAFETY

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Public transit offers one of the safest ways to travel. According to the latest statistics published by the National Safety Council, a person is two to three times safer on a train or a bus than on an airplane and 33 to 47 times safer than in an automobile (1). There were .02 bus fatalities and .04 rail fatalities per 100 million passenger miles on average for 1994–1996; the comparable figures for airplanes and automobiles are 0.6 and .94, respectively.

Moreover, the public transit safety record shows continuing improvement. Data reported to the Federal Transit Administration from 336 transit systems indicate that from 1990 to 1996, the number of incidents per passenger mile decreased by 36 percent, while the number of fatalities per passenger mile decreased by 35 percent. Nonetheless, the public transit industry continues to pursue a zero tolerance goal—no fatalities or crashes.

APTA Safety Programs

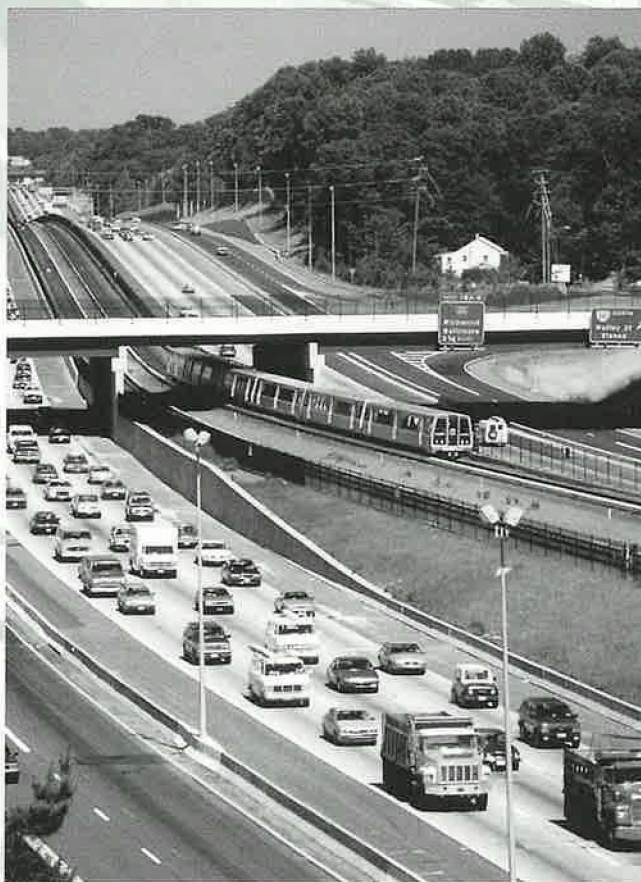
During the past 10 years, the American Public Transit Association and its members have been examining every area of their operations, from the way their employees are trained to the education of their passengers, in an effort to identify opportunities for safety improvements. To this end, transit operators and APTA have worked in cooperation with the U.S. Department of Transportation, FTA, the Federal Railroad Administration, and the National Transportation Safety Board. Several comprehensive programs have been implemented as a result.

In 1991 APTA implemented the Rail Safety Audit Program, which established system safety program guidelines and provided a triennial auditing program. Currently 32 rail systems participate in this program.

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In 1997 a specialized Commuter Rail System Safety Program was established to develop standardized system safety management guidelines and an auditing tool that could be used to gauge the incorporation of system safety elements into commuter rail operations. Since that time, 18 commuter rail systems have joined the program, which includes an auditing process carried out by APTA in conjunction with FRA. This program is based on a systemwide approach in which every employee and supervisor is responsible for the safety of operations. All aspects of operations are analyzed to identify potential safety

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risks, and corrective actions to address those risks are then undertaken. The ultimate goal is to improve safety by determining whether a system's safety programs are effective and how they can be improved, and to ensure that required actions are taken. This program is closely coordinated with FRA's Safety Assurance and Compliance Program.

A Bus System Safety Management Program has also been initiated. Transit agencies that enlist in this program are guided by APTA professionals through a series of safety management processes, including a site safety evaluation, triennial safety audits, and the development of individual system safety plans that include 26 specific elements. Among the areas reviewed at each agency are accident/incident reporting and investigation; emergency response planning, coordination, and training; hazard identification and resolution; configuration management; employee safety programs; and contractor safety coordination.

Each of the above three safety audit programs includes a peer review process. At the request of a transit operator, APTA will form a peer review panel comprising subject matter experts in the transit industry to address safety or operational issues. These panels conduct full assessments of the issues identified and provide a report to the transit agency.

Development of Safety Standards

APTA has been involved in the research and development of much-needed safety standards. In recognition of the need for formal safety standards for the construction of passenger railcars, the Passenger Rail Equipment Safety Standards (PRESS) Task Force was established. The commuter railroads provided \$1.2 million from their budgets for this effort to update and revise the safety standards and inspection and maintenance practices for passenger rail locomotives and cars.

During the past 3 years, the PRESS Task Force—comprising some 150 representatives of passenger railroads, rail labor organizations, rail equipment builders and suppliers, the Association of American Railroads, and government agencies such as FRA—has been reviewing the standards and inspection and maintenance practices of passenger railroads to identify needed railcar improvements. As a result of this work, in May 1999 APTA published a Manual of Standards and Recommended Practices—a safety “bible” for the manufacture and maintenance of vehicles for commuter rail service. A total of 57 standards and recommended practices, ranging from battery maintenance to seating, have been adopted and included in the manual. All commuter rail systems in the United States have voluntarily agreed to

incorporate these standards and recommended practices in new railcar purchases. These voluntary standards, in conjunction with the federal mandatory standards, will go a long way toward improving the safety of railcars.

Another standards effort is under way to improve bus safety. Among the specifications being developed are those for a standard 40-foot bus, low-floor bus, and compressed natural gas bus.

Research and Development

APTA and its members recognize that research and development is key to improving safety, and are therefore actively supporting reauthorization of the Rail Safety Act and advocating increased funding for rail safety research. The Association also worked closely with FRA as that agency developed a 5-year research plan. In addition, further research has been encouraged in the following areas.

Full-Scale Crash Testing. Unlike the airline and automobile industries, the passenger railroads have never before conducted full-scale crash testing. APTA and FRA are working together to conduct a series of crash tests that will improve and supplement the use of computer modeling and allow the industry to build safer passenger railcars. A round of more sophisticated tests will be conducted this summer at the Transportation Testing Center, Inc., in Pueblo, Colorado.

Testing of Railcar Windows. Over the years, the windows on most existing railcars have been improved such that when struck on the exterior by an object, the glazing will not shatter. Nevertheless, small interior pieces of the window glazing occasionally spall or break off and fall from the window. In some cases, moreover, the windows are now stronger than the metal frames that hold them; thus the frame gives way and the entire window falls into the railcar when struck by a large object. In an effort to standardize the testing and improve the strength and durability of railcar windows and their frames, APTA continues to work closely with FRA to conduct tests and recommend improvements. As a result of these efforts, a new standard for window glazing is expected late this year.

Development of Risk Assessment Tools. APTA has encouraged and assisted FRA in the development of a method for use by passenger railroads in conducting risk assessments that will aid in prioritizing safety risks and determining corrective actions. Thus it will be possible to apply safety funds in the areas of greatest need.

Other safety-related research is being carried out through the Transit Cooperative Research Program under the Transportation Research Board. In



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addition, individual transit systems have their own research and development projects under way to improve safety. For example, NJ Transit is implementing an automatic train control project that is based on fail-safe systems developed in Europe.

Other Safety Efforts

Safety Focus at Conferences

Sessions on safety are held at most of APTA's meetings and conferences. In 1998, for example, the Association, along with FRA, FTA, and NTSB, sponsored a 3-day symposium on fatigue in transit. Experts on the issue discussed the effects of sleep deprivation on the transit industry and recommended steps agencies might take to reduce the risk of incidents caused by fatigue.

Employee Selection, Training, and Incentive Programs

Transit agencies throughout the United States face the challenge of selecting and properly training highly qualified candidates for operations positions, including vehicle operators. APTA has created tools such as the Bus Operator Selection Survey to help these agencies make sound hiring decisions. Once employees have been hired, the agencies use a variety of training methods and equipment to develop them into knowledgeable and safety-conscious personnel. Every transit agency provides

comprehensive training that includes a combination of classroom instruction and, for operators, time behind the wheel. In some cases, agencies have incorporated technology, in the form of simulators, to train their drivers before training on the road begins. And of course once an employee begins providing regular service, refresher training is important to sustain and improve safe practices.

Safety is also prominent among the criteria required to win annual bus and rail rodeos—competitions to identify the best transit vehicle operators. Besides being held in high esteem by their colleagues, local rodeo winners are eligible to compete in APTA's international bus and rail rodeos, where they can win both recognition and valuable prizes. Agencies provide other incentives for their employees with outstanding safety records, from uniform patches to awards dinners to cash bonuses. To further encourage safety, APTA annually recognizes bus systems with outstanding safety records, as well as those that have made significant improvements.

Whatever the means, transit agencies today know they must continually remind and encourage all of their employees to be safety conscious. This organizational safety culture reflects an awareness that safety starts at the top with the commitment of senior management, as well as the involvement of agency boards of directors, most of which require that their staffs provide them with regular updates on operational safety.

Websites Related to Transportation Safety—Air, Marine, Transit, Rail

The following websites provide information related to safety in the areas of aviation, marine transport, public transit, and rail transport. Links were active as of July 14, 1999.

United States

Federal Aviation Administration: www.faa.gov

This site of the federal agency with primary responsibility for the safety of civil aviation covers topics such as flight standards, system safety, air traffic services, and civil aviation security.

National Transportation Safety Board: www.nts.gov

NTSB's responsibility is to investigate every civil aviation accident, plus significant marine, railroad, pipeline, and highway accidents. Aviation is the strength and emphasis of the website, which has a searchable database of more than 42,000 aviation accidents and aviation accident statistics.

United States Coast Guard: www.uscg.mil

The Coast Guard provides services related to a number of safety areas associated with marine transportation, such as navigation aids; port safety; safety for small craft; search and rescue; environmental response; and licensing, enforcement, and inspection for commercial vessels. The website includes information about each Coast Guard service, plus major sections on topics such as marine safety and environmental protection, boating safety, and law enforcement.

Federal Transit Administration, Office of Safety and Security: transit-safety.volpe.dot.gov/

This FTA division focuses on the safety and security of buses, passenger rail, subways, commuter ferryboats, and people movers. The website contains sections on transit safety and training and provides reports focused on guidelines and recommendations.

Federal Railroad Administration: www.fra.dot.gov/site/index.htm

FRA is responsible for railroad safety throughout the United States. The website includes a section specifically devoted to safety, including accident data, regulations, alerts, and special reports. An overview of the agency's railroad safety initiatives is also provided.

Operation Lifesaver: www.oli.org

Operation Lifesaver is a nationwide initiative to prevent injuries and deaths at railroad crossings. The website includes features such as statistics, definitions, and educational materials.

National Transportation Library: www.bts.gov/NTL/

The National Transportation Library website includes a collection of documents on aspects of transportation safety associated with the various modes.

Transportation Research Board: www.nas.edu/trb/about/pubindex.html

TRB provides a searchable index of its publications and articles, which cover all modes and aspects of transportation.

International

Transport Canada: www.tc.gc.ca/nov1_96/safety_e.htm

Transport Canada is Canada's national transportation agency. The website includes a safety page, with links to additional information on such topics as aviation, marine, and rail safety.

U.K. Department of the Environment, Transport and the Regions: www.detr.gov.uk/

This U.K. agency has a wide range of responsibilities that go beyond transportation. The website includes several safety-related reports related to rail and aviation transportation.

Information on websites related to transportation safety compiled by Kay Nichols, Associate Research Librarian, Texas Transportation Institute.

Passenger Information Campaigns

One key to improving safety is building safety awareness among passengers. A 1996 study of transit safety practices conducted by TRB revealed that 96 percent of the nation's transit agencies were providing educational and/or training programs for their customers (2). For example, the Dallas Area Rapid Transit system furnishes educators with curricular materials and supplies, including teachers' guides and a video. Virtually every transit agency provides its customers with written safety information by such means as brochures, posters, and fliers, as well as on operating schedules or tickets.

Grade-Crossing and Trespasser Safety

More than 90 percent of the fatalities associated with railroad operations are the result of grade-crossing and trespasser incidents. APTA has therefore called for unified attention to these issues on the part of federal and state transportation departments, the freight and commuter railroads, and local municipalities. The Association's members have undertaken a range of efforts designed to improve grade-crossing and trespasser safety. For example, Caltrain, which operates in the suburban San Francisco area, posted its entire 48-mile right-of-way with no trespassing signs and started an enforcement campaign with its own and local police agencies. As a result, the number of fatalities dropped from 26 in 1996 to just 6 in 1997. Several APTA members, including the Connecticut Department of Transportation, are experimenting with the use of four gates to isolate the entire grade crossing so that automobiles cannot cross when the gates are lowered. Effective public outreach safety campaigns have also been developed for school children and the general public.

Conclusion

The transit industry's commitment to safety is reflected in dramatic declines in the frequency of transit accidents. Ongoing improvement in the transit safety record is the goal as the industry continues to work cooperatively with federal agencies and other transportation organizations and agencies toward identifying safety-related problems and implementing effective solutions.

References

1. *Accident Facts: 1998 Edition*. National Safety Council, Itasca, Ill., 1998.
2. *Bus Occupant Safety*. Synthesis of Transit Practice 18. TRB, National Research Council, Washington, D.C., 1996.