

Measure Name: Grade crossing safety education in communities

Definition: Educate individuals who live, work, or attend school near the grade crossings about crossing safety and what to do if they observe unsafe behavior.

Tags:

Type of Incident:

- ☐ Non-Motorized Users Only
- ☐ Motor Vehicles Only
- ☒ Both

Intervention Strategy:

- ☐ Data: application and planning
- ☒ Education: outreach and messaging
- ☐ Enforcement: policy development and rulemaking
- ☐ Engineering: technological and physical deterrents

Type of Problem:

- ☒ Non-Motorized Users Violating Warning Devices
- ☒ Motor Vehicles Violating Warning Devices
- ☒ Vehicle ROW Incursion
- ☒ Vehicle Congestion
- ☒ Blocked Crossing
- ☒ Vehicle Hang-up

Measure Category:

- ☐ Risk Assessment
- ☐ Policy and Enforcement
- ☒ Collaboration, Training, and Education
- ☒ Public Communication
- ☐ Physical Barriers
- ☐ Detection and Lighting
- ☐ Infrastructure Modification
- ☐ Post-Incident Management
- ☐ Warning Devices

Description

This measure aims to increase community members' knowledge about grade crossing safety and the dangers of trespassing, to encourage safe behaviors in the track area. Educational materials can include brochures, pamphlets, presentations, signage, and other written and graphical materials. It is also important to design educational materials to reach all individuals within the community, including those that conventional public service announcements may not reach [1].

There are a variety of ways to educate both children and adults about grade crossing safety. In addition to distributing materials, rail safety professionals can interact with the public to convey the importance of grade crossing safety and how to improve it. One example is International Level Crossing Awareness Day (ILCAD) held annually in countries all over the world since 2009. This highly visible campaign promotes activities to directly educate individuals about how to act safely around railroad tracks. Another example is the ongoing efforts of Operation Lifesaver, Inc. (OLI), an organization that plays an important role in educating the public about rail safety and the dangers of trespassing. OLI educational activities have been cited as a factor in reducing highway-rail grade crossing incidents [2]. OLI provides free educational materials online for children in kindergarten through eighth grade and example lesson plans for 11th and 12th grade students (see Additional Resources). Materials developed by OLI can be accessed on its website (<https://oli.org/materials>). Research outside of the United States showed that rail safety programs for school-aged children increased students' knowledge about rail safety [2][3] and decreased trespassing behavior. However, the decrease in trespassing cannot be attributed to education alone [4][5].

Rail regulators, rail carriers, and local community leaders can also collaboratively organize these types of initiatives for the public. For example, rail, state, or local police can provide rail safety education to the public through safety blitzes at grade crossings.

Additional search terms: *education, safety, campaign, awareness*

Advantages

- Research shows the effectiveness of education to increase safer behaviors [2] and reduce trespassing at grade crossings [3]. For example, in schools, rail safety education increased students' knowledge of the dangers of trespassing, trespassing laws, rail safety after participating in educational activities. [2][3]
 - Research supports the effectiveness of education efforts for reducing the number of rail trespassing incidents, specifically at highway grade crossings. [1][2]
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Drawbacks

- This measure's effectiveness relies on individuals modifying their behaviors to improve safety; therefore, ongoing educational opportunities may be needed.

Notable Practices

- Within the community education plan, it is important to identify goals that can be accomplished within available resources and other constraints [4], and outline each task for choosing and developing curricula, managing any materials, and planning activities. [6]
- To effectively use the available resources when planning educational opportunities, identify high-risk or hotspot areas and groups that will be targeted. For example, who are the passengers, pedestrians, and drivers at greatest risk, and what are the specific issues at each location? Tailor educational programs to best reach the intended location and audience. [6]
- Community education locations should include (but not be limited to) places near railroad tracks where people gather, such as shopping areas, bars, clubs, soup kitchens, and shelters. [1]
- Identify potential partners for delivering educational materials to the identified groups, such as state OLI programs and other rail safety professionals (e.g., rail carriers, and law enforcement) and other community stakeholders. [6]
- Ensure that all materials are designed to meet the goals identified for the education program, and that they are kept accurate and current. [6]
- Consider focusing on aspects of rail casualties such as debilitating injury, impacts on train crews, and delays, rather than lethality. Emphasizing lethality may inadvertently highlight rail as a method of suicide for vulnerable individuals.
- Rail safety education may be continued on a regular basis as a refresher for those who have already been through the education, and as initial education for those who are new to the community. Develop a plan that identifies specific goals and resources for the rail safety education program. [2]
- Rail safety educators may need to initially train teachers on how to effectively cover rail safety topics in the classroom. [7]
- Evaluations can include measures of safety and knowledge growth [6], for example tracking incidents at grade crossings, and surveys to assess rail safety knowledge within the community before and after education activities are completed.
- Evaluation measures for the education program can include tracking changes in behaviors at grade crossings, reductions in trespass incidents or behavior, and evaluating whether grade crossing safety knowledge and/or attitudes improved after program completion.

References

- [1] Savage, I. (2007). [Trespassing on the railroad](#). *Research in Transportation Economics*, 20, 199-224.

Abstract: Greater than half of all the fatal injuries on United States railroads are sustained by trespassers. The paper provides a statistical analysis of the demographics of trespassers, the activities they were engaged in, and the causes of injury. It also analyzes trends over time. The paper finds that the risks of injury and death are particularly acute for males in their 20s and 30s. The annual casualty count has remained relatively stable in recent decades because growing affluence, which tends to reduce risk-taking behavior, has been balanced by increases in railroad activity and the size of the population.

- [2] Horton, S., Carroll, A., Chaudhary, M., Ngamdung, T., Mozenter, J., & Skinner, D. (2009). [Success factors in the reduction of highway-rail grade crossing incidents from 1994 to 2003](#). Technical Report No. DOT/FRA/ORD-09/05. Washington, DC: U.S. Department of Transportation, Federal Railroad Administration.

Abstract: Between the years 1994 and 2003, incidents at highway-rail grade crossings declined by 41.2 percent. The reasons for this decline were unknown. The John A. Volpe National Transportation Systems Center was tasked by the Federal Railroad Administration to identify the salient success factors in highway-rail grade crossing incident reduction. The success factors were analyzed and investigated using various qualitative and quantitative methods. Ten factors were identified as the most influential safety factors. The ten factors are: Commercial Driver Safety, Locomotive Conspicuity, More Reliable Motor Vehicles, Crossing Closure and Grade Separation, Sight Lines Clearance, Warning Device Upgrades, the Grade Crossing Maintenance Rule, the Section 130 Program, Operation Lifesaver, and Railroad Mergers. Commercial Driver Safety, Locomotive Conspicuity, More Reliable Motor Vehicles, Sight Lines Clearance, and the Grade Crossing Maintenance Rule were quantitatively analyzed with data from the Railroad Accident Incident Reporting System; they impacted 54 percent of the incidents and accounted for 79 percent of the reduction in incidents.

- [3] Savage, I. (2006). [Does public education improve rail-highway crossing safety?](#) *Accident Analysis & Prevention*, 38(2), 310-316.

Abstract: Improvements in rail-highway grade crossing safety have resulted from engineering, law enforcement, and educating the public about the risks and the actions they should take. The primary form of the latter is a campaign called Operation Lifesaver which started in the 1970s. This paper uses a negative binomial regression to estimate whether variations in Operation Lifesaver activity across states and from year-to-year in individual states are related to the number of collisions and fatalities at crossings. Annual data on the experience in 46 states from 1996 to 2002 are used. The analysis finds that increasing the amount of educational activity will reduce the number of collisions with a point elasticity of -0.11, but the effect on the number of deaths cannot be concluded with statistical certainty.

- [4] Operation Lifesaver, Inc. (2018, June). [Best practices for Rail Safety Education](#).

Excerpt: OLI reviewed reports submitted by grant recipients and conducted a survey of recipients to elicit additional information and insights. The survey was conducted online from April 23, 2018 through May 11, 2018. The survey link was provided to each of the 25 grant recipients over the past three grant cycles, and 15 responses were received, for a response rate of 60 percent.

OLI sought information in the survey about transit agencies' experiences both during and after the grant period. Questions focused on the use of grant-funded materials, plans for future safety campaigns, trends in safety incidents, and an assessment of the effectiveness of various public education tools.

- [5] Lobb, B., Harre, N., & Terry, N. (2003). [An evaluation of four types of railway pedestrian crossing safety intervention](#). *Accident Analysis & Prevention*, 35(4), 487-494.

Abstract: This study evaluated a programme of interventions designed to reduce the incidence of illegal and unsafe crossing of a rail corridor at a city station by boys on their way to and from the adjacent high school in Auckland, New Zealand. The boys were observed crossing before, during, and after implementation of each intervention; in addition, surveys were carried out before and after the programme to discover the boys' attitudes. Rail safety education in school, punishment for every unsafe

crossing (continuous punishment), and punishment occasionally for unsafe crossing (intermittent punishment) were associated with significant decreases in unsafe crossing compared with that observed prior to any intervention. General communications about rail safety were not associated with significant decreases in unsafe crossing. When interventions were examined consecutively, unsafe crossing was significantly reduced between the communications and education phases, and even more so between education and continuous punishment, but there was no statistically significant difference in frequency of unsafe crossing between continuous and intermittent punishment. It was concluded that punishment may be more effective in reducing unsafe behaviour in this type of situation than targeted education, and is much more effective than communications to heighten awareness.

[6] American Public Transportation Association. (2017). [*Recommended Practice: Rail Transit Grade Crossing Public Education*](#), APTA RT-RGC-RP-002-02, Rev. 2. APTA Rail Transit Grade Crossings Working Group.

Abstract: This Recommended Practice provides guidelines for developing rail transit grade crossing public safety and trespass prevention education programs.

[7] RESTRAIL. (2014). *Evaluation of measures, recommendations and guidelines for further implementation*, [*Pilot test #2, Railway safety education programme – FFE*](#).

Excerpt: The Railway Safety Education Programme worked with primary school children (aged 8 to 10 years) and primary school teachers, to raise awareness about the dangers and consequences of railway trespassing and how to be safe in the railway environment. The overall aim of the measure was to positively influence the behaviours and habits of children and young people towards acting safely around railways, preventing risky behaviour related to trespassing, thus reducing the possibility of accidents and incidents.

Additional Resources

[International Level Crossing Awareness Day \(ILCAD\)](#)

[Operation Lifesaver, Inc. Materials](#)

Related Measures

- Collaboration with local government and communities
- Public messaging to enhance grade crossing safety
- Safety patrols to deter grade crossing violations

Images

- No image available