Measure Name Rail safety education in schools

Definition Educating students in schools located near the rail system about safety near the right-of-way.

Tags

Incident Type	Trespass only
Location	Both station and right-of-way
Intervention Strategy	Education: outreach and messaging
Measure Group	Collaboration, training, and education

Description

This measure seeks to raise awareness of rail safety and encourage safe behaviors in the rail environment. Rail safety education can be presented to students both inside and outside of classrooms.

Rail safety education can reach students in several ways. For example, rail safety professionals (e.g., OLI, local rail carriers, or local law enforcement) can give presentations that directly address rail safety topics. Schoolteachers can also integrate rail safety messaging into existing curriculum—including in disciplines such as math, science, and history—by using examples and discussion topics that include rail safety themes. A combination of presentations and classroom follow-up activities can also be used.

Operation Lifesaver, Inc. (OLI) is a non-profit rail safety organization that leads rail safety education efforts to reduce incidents at highway-rail grade crossings in the United States [1]. 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).

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].

Additional search terms: *community, educate, outreach, public, teaching, workshop*

Advantages

- Research shows that rail safety education increased students' knowledge of the dangers of trespassing and trespassing laws, and that students' knowledge of rail safety improved after participating in educational activities [2][3].
- Research supports the effectiveness of educational efforts for reducing the number of rail trespassing incidents, specifically at highway grade crossings [1][6].
- Research supports the use of educational efforts to increase safer behaviors in the rail environment. Unsafe crossing behaviors decreased after a combination of countermeasures were implemented that included educational activities [4][5].

Drawbacks

- The effectiveness of this measure relies on individuals modifying their behaviors to improve safety.

Notable Practices

- Develop a plan that identifies specific goals and resources for the rail safety education program [6].
- Identify the target audience and tailor the approach and materials to best reach those students [7]. For example, programs for teenagers may directly address the risks of trespassing, while programs for a younger age group may need different visuals and wording to be understood [2].
- Education materials and delivery should consider the ethnicities, languages, and ability status represented in the student population. Any special considerations for individuals living with disabilities should also be included.
- Identify education goals and resources based on the student group you would like to reach, including age, language, and culture. Also consider whether the group is a first-time audience [7].
- Coordinate with the local school system to understand specific rules and guidelines about distributing information and materials to students [2][7].
- Rail safety educators may need to initially train teachers on how to effectively cover rail safety topics in the classroom [2].
- Evaluation measures for the education program can include tracking changes trespass behavior, reductions in trespass incidents or behavior, and evaluating whether students' rail safety knowledge and/or attitudes improved after program completion.
- Rail safety education may take place annually or at other regular intervals as a refresher for students.

References

[1] 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.

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

Document 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.

[3] Silla, A., & Kallberg, V. P. (2016). Effect of railway safety education on the safety knowledge and behaviour intention of schoolchildren. *Evaluation and Program Planning*, *55*, 9-16.

Abstract: This study was designed to evaluate whether railway safety lessons are effective in increasing schoolchildren's safety knowledge and behaviour intention. The railway safety education in schools included a 45-min lesson on safe behaviour in a railway environment directed at 8–11 year old schoolchildren. The lessons were held in four schools located near railway lines in Finland. The effectiveness of this measure was evaluated based on a short survey directed at pupils before the lesson (base level) and around 2–3 months later (post-lesson) based on three variables which are considered as strong determinants of actual behaviour: behaviour intention, estimated dangerousness of the behaviour, and level of knowledge on the legality of the behaviour. The results show that the change in the share of correct answers was positive regarding all questions except for one question in which the difference was not significant. Based on this we can reasonably assume that railway safety education in schools can have a positive effect for all the measured variables, although the effect is not necessarily large. The results indicate that these positive changes can have a positive effect on the frequency of trespassing (i.e. fewer unsafe crossings in the future). We can further assume that reduction in the frequency of trespassing would reduce the frequency of trespassing accidents.

[4] Lobb, B., Harre, N., & Suddendorf, T. (2001). An evaluation of a suburban railway pedestrian crossing safety programme. *Accident Analysis & Prevention*, *33*(2), 157-165.

Abstract: This study evaluated a programme of educational and environmental (access prevention) interventions designed to reduce the incidence of illegal and unsafe crossing of the rail corridor at a suburban station in Auckland, New Zealand. Immediately after the programme of interventions, the proportion of those crossing the rail corridor by walking across the tracks directly rather than using the nearby overbridge had decreased substantially. Three months later, the decrease was even greater. However, the educational and environmental interventions were introduced simultaneously so that the effects of each could not be separated; nor could other unmeasured factors be ruled out. Anonymous surveys administered immediately before and 3 months after the interventions indicated that while awareness of the illegality of walking across the tracks had increased slightly, perception of risk had not changed. This suggests that the educational interventions may have had less effect than the access prevention measures.

[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] 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* (No. DOT-VNTSC-FRA-09-01). United States. 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.

[7] Operation Lifesaver, Inc. (2018, June.) *Best practices for Rail Safety Education*.

Document 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.

Additional Resources

The webpages below provide examples of rail safety education materials for children of various ages from OLI, Canadian Pacific Railroad, and TrackSAFE Foundation Australia:

- Operation Lifesaver Inc. education materials for kids: https://oli.org/info/kids
- Operation Lifesaver Inc. request a rail safety presentation: https://oli.org/request-presentation

- Canadian Pacific Railroad rail safety education materials: https://www.cpkcr.com/en/safety/public-safety
- TrackSAFE Foundation school education materials: https://tracksafefoundation.com.au/school-education/

Related Measures

- Collaboration with communities and law enforcement
- Identify funding opportunities
- Incident cost estimation
- Public messaging to prevent trespassing
- Rail safety education in communities