



U.S. Department
of Transportation
**Federal Railroad
Administration**



RR 11-25 | December 2011

EVALUATION OF EDUCATION AND OUTREACH PROGRAMS

SUMMARY

Education and outreach are acknowledged, if only anecdotally, for contributing to an overall safer rail environment. The use of education and outreach programs as a means to improve highway-rail safety has expanded over the years since 1970 and the inception of Operation Lifesaver, Inc. (Figure 1). These programs are commonly used to supplement safety measures, especially where engineering solutions are not feasible or less effective.

Other than small-scale case studies, the effectiveness of education and outreach programs on highway-rail grade crossing safety has not been thoroughly researched. Evaluation of education and outreach programs can quantify the benefits of the programs, lead to identifying areas of improvement, and justify

the value of the program. The U.S. Department of Transportation's (USDOT) Federal Railroad Administration (FRA) has sponsored the USDOT Research and Innovative Technology Administration's John A. Volpe National Transportation Systems Center to investigate education and outreach evaluation strategies and methods.

The purpose of this research is to identify strategies and methods that have been used successfully in evaluating education and outreach programs in other transportation modes or countries or other industries. The study covers the potential applications, benefits, limitations, and success stories. The intent is that this research will provide direction and assistance to those who wish to implement a rail safety education or outreach program and to measure the effects of the program.

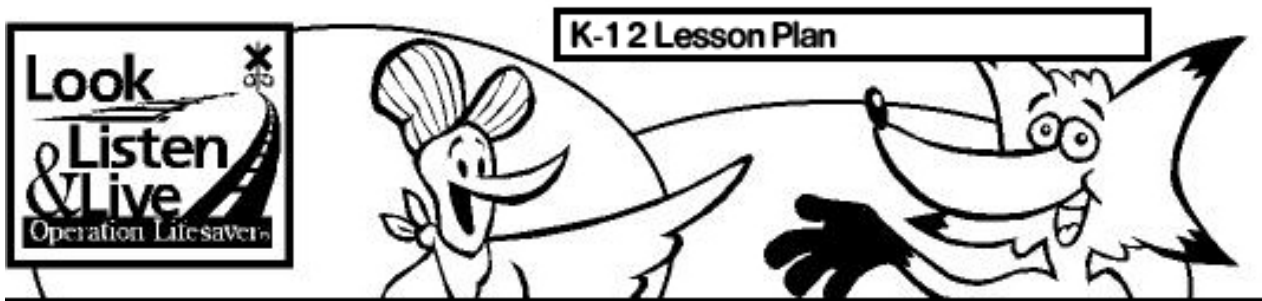


Figure 1. Operation Lifesaver Classroom Presentation Lesson Plan Graphic.



BACKGROUND

Education and outreach activities are a well recognized component of an overall rail safety program. Operation Lifesaver, Inc., is the most recognized provider of rail safety education. It has grown nationwide since its inception. The *Final Rule on the Use of Locomotive Horns at Highway-Rail Grade Crossings* (www.fra.dot.gov/rpd/freight/1318.shtml) identifies education and enforcement as alternative safety measures for reducing the risk at a crossing. However, quantifying the benefits, outcomes, or impacts of rail safety education and outreach programs has long been a challenge for researchers and practitioners. Some studies, such as the *Public Education and Enforcement Research Study* [1], have evaluated outreach programs at the community level but with varying results, based on demographics and program implementation characteristics.

At the 2003 and 2009 FRA Highway-Rail Grade Crossing and Trespass Prevention Research Needs Workshops, evaluating rail safety education and outreach programs was identified as a high-urgency research need. The 2009 FRA Research Needs Workshop working group on Education and Public Awareness stated, "It is crucial to assess the impact and effectiveness of existing education and outreach strategies in changing public behavior."

Although rail safety education and outreach programs are widely used, evaluating the impact of these programs is a necessary next step to refine the activities and to substantiate the value of investing in such programs.

OBJECTIVES

This research identifies evaluation methods and strategies that can be implemented to determine the impact and effectiveness of rail safety education and outreach programs. The intent is to document the benefits, limitations, and successful applications of specific strategies and methods and to provide guidance on their use.

FINDINGS

Types of Education and Outreach Programs

There are many ways to reach an intended audience, and the type of program depends on a variety of factors including demographics, funding levels, geographic area, social climate, and environment. The main types of education and outreach programs are listed below (for an example, see Figure 2):

- Classroom style
- Traditional media (radio, television)
- Print media
- Electronic media
- Enforcement
- Focused events

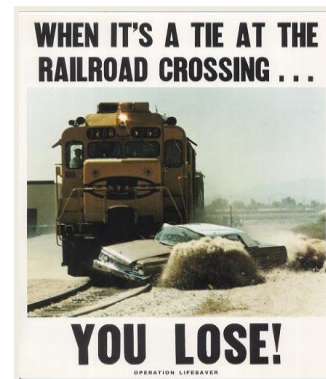


Figure 2. Operation Lifesaver Print Media Campaign

Benefits of Education and Outreach Program Evaluation

Evaluating education and outreach programs can serve two main goals: to justify the value of and to identify areas of improvement within the program. Measuring the performance of a program can improve the program delivery or outcome, provide a basis for policy or regulations, validate expansion, and justify the need for funding.

Steps in the Evaluation Process

Before beginning a program evaluation, two key questions must be answered. What will be evaluated? And, how will that evaluation be conducted? Following steps to form a program evaluation will ensure that no important pieces



of information are omitted unintentionally. One example of steps to forming an evaluation plan is shown in the list below; another is shown in Figure 3.

- Describe the action plan and expected outcomes.
- Define the purpose for evaluation.
- Identify who will use the results.
- Prioritize evaluation questions and use them to sketch out an analysis plan.
- Determine sources and methods to collect information.
- Revise the plan according to available resources.

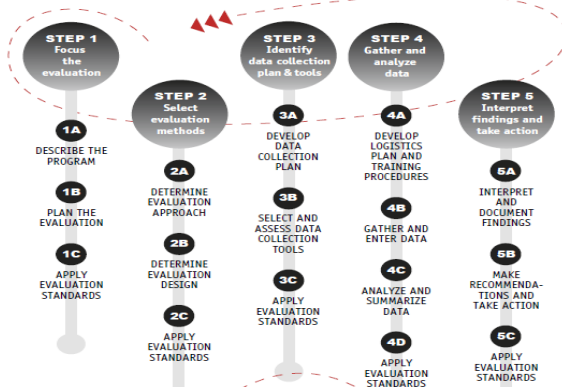


Figure 3. Overview of Evaluation Steps [2].

Education and Outreach Program Evaluation Strategies and Methods

The evaluation design is based on the questions that need to be answered and the data that needs to be collected. The evaluation strategies and methods are designed on the basis of specific programmatic conditions and purposes. The strategies and methods outlined can be used to complement one another to achieve the identified goals. The most appropriate type of evaluation should be selected based on the needs of the program.

Logic Model

A logic model is a tool to describe the program and the relationship between the inputs (resources), outputs (activities), and outcomes (benefits). It is referred to as the evaluation framework and aids in the identification of what and when to evaluate. The logic model is not a stand-alone tool for evaluating the impact

of a program but is designed to plan the program and subsequent evaluation to achieve usable results.

Control Group

A control group evaluation compares the behavior of a population that is exposed to an education or outreach program to a population that has been excluded. A control group evaluation is designed to separate the effects of a program from the impact of any extraneous or environmental factors.

Before-After Study

A before-after study measures the outcomes before the program implementation and compares them with the outcomes measured afterward. The differences in the results of the two groups are usually attributed to the impact of the program.

Historical Data

Historical data can be used to measure the effect of an education or outreach program by obtaining past information about driver behavior, violations, or incidents and comparing to the current state. This evaluation strategy is useful for retrospective evaluations that are conducted after program completion and for determining the long-term effects of a program.

Cost-Benefit Analysis

A cost-benefit analysis weighs the total expected costs for a program against the total expected benefits and uses the ratio to determine the effectiveness of the program. A cost-benefit analysis relies heavily on monetary estimates of the benefits. The rigor with which the estimates are developed can affect the accuracy of the evaluation results.

Survey

Surveys are tools to collect quantitative data on participant knowledge, behavior, or impressions before, during, and after the program. Surveys are a fixed set of questions often with a fixed set of answers. Because the data gathered from a survey is limited to the questions and answers, it must be well planned to collect the desired information.



Focus Group

Focus groups are a means of data collection, similar to surveys. Focus groups allow researchers and practitioners to obtain feedback from a select group of people in an interactive setting. This produces a wealth of insight, but a focus group must be moderated expertly to keep the participants focused on the objective.

Media Exposure

This evaluation strategy involves designing an effective media outreach strategy and collecting useful media exposure data. Tracking the types of outreach activities, amount of exposure (audience size), costs, and interest generated can be correlated with behavioral changes to determine the program impact.

CONCLUSIONS

Evaluations are crucial tools used to determine a program's impact and to identify potential areas for improvement. The primary objectives of a program evaluation are to measure performance, to help maximize and justify the program's effectiveness, and to ultimately help achieve its goals.

The design of a program evaluation is highly dependent on the program characteristics. The evaluation should be carefully constructed to select the best applications for the program. By selecting the appropriate evaluation tools, researchers can estimate program impact and identify potential areas for improvement.

The goal of this research is to communicate methods of evaluation for education and outreach programs. This knowledge serves as guidance in developing future education and outreach program evaluation studies. Over the long term, effectiveness values could be calculated for different rail safety education and outreach programs.

REFERENCES

- [1] Sposato, S., Bien-Aime, P., & Chaudhary, M. (2006 Dec.). *Public education and enforcement research study* (Publication No. DOT/FRA/ORD-06/27). Washington, DC: FRA.
- [2] Clinton, K. M., & Lonero, L. (2006 Oct.). *Evaluating driver education programs: Comprehensive guidelines*. Washington, DC: AAA Foundation for Traffic Safety.

AUTHOR

Suzanne Horton (corresponding author)

John A. Volpe National Transportation
Systems Center
Systems Engineering and Safety Division
55 Broadway, Cambridge, MA 02142
Tel: (617) 494-3678

Suzanne.Horton@dot.gov

ACKNOWLEDGMENTS

This work is performed under an interagency agreement between FRA's Signals, Train Control, and Communications Division and the Volpe National Transportation Systems Center's System Engineering and Safety Division.

CONTACT

Leonard W. Allen III

Federal Railroad Administration
Office of Railroad Policy and Development
1200 New Jersey Avenue, SE – Mail Stop 20
Washington, DC 20590
Tel: (202) 493-6329

Leonard.Allen@dot.gov

KEYWORDS

Education and outreach, highway-rail grade crossings, railroad safety, evaluation

Notice and Disclaimer: This document is disseminated under the sponsorship of the United States Department of Transportation in the interest of information exchange. Any opinions, findings and conclusions, or recommendations expressed in this material do not necessarily reflect the views or policies of the United States Government, nor does mention of trade names, commercial products, or organizations imply endorsement by the United States Government. The United States Government assumes no liability for the content or use of the material contained in this document.