

Research Incentive Programs for Closures of Public and Private Grade Crossings

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Promoting safety by developing incentive programs that can be used to entice voluntary closure of public and/or private crossings

In the United States, highway-rail incidents at public and private crossings are a major concern because of the loss of lives and injuries that result from such incidents. In addition, these events place a massive financial burden on state agencies and railroad administrators due to delays in services and damage to trains, tracks, and other equipment. Preliminary statistics show that for 2016, 2,025 accidents resulted in 798 injuries and 265 fatalities nationwide. Louisiana has been ranked 7th in the top states with highway-rail grade crossing fatalities with 10 fatalities in 2016. Hence, there is a need to identify ways to address this issue and improve safety, one of which is to close redundant public and private grade crossings. This study seeks to identify and evaluate incentive programs already being used to encourage closure of private road/driveway crossings. It will also identify potential new programs that will encourage the closure of such crossings for both public and private crossings. The research outcomes will include recommendations to assist state transportation departments (DOTs), local governments, railroad entities, and other industries that rely on rail service in their effort to reduce the number of potential vehicle-train collision points, and hence improve safety.

Problem Statement

Considering the country's approximately 212,950 grade railroad crossings (including open crossings, reopened crossings, and new crossings), the United States has always faced safety challenges involving collisions between trains and vehicles/pedestrians. In addition to the loss of life and injuries resulting from these incidents, railroad administrators and state agencies incur massive financial burdens due to delays in services, and liability issues including damage to trains, tracks, and equipment. Some possible solutions to reduce the number of collisions at grade crossings are road active alarms, auditory alarms, in-vehicle alarms, visibility improvements, gates, corridors, grade separations, track relocation, grade crossing closures, and, crossing consolidation. It is usually difficult to prioritize

which grade crossings to close or consolidate since every crossing has unique attributes. Moreover, residents are usually opposed to closing a crossing because they believe it will become a loss of property or it will inconvenience them. With limited state budgets, it is imperative that a state agency identifies the balance between the amount of available budget for incentives and the amount for its other programs. Therefore, each state has to continually evaluate its incentive programs to determine which ones offer the best value to its citizens. However, no such study to date synthesizes all of the current incentive programs provided by each state. Maintaining such a document will provide an easy and comprehensive means for state agencies and railroad entities to evaluate their programs in relation to other states nationwide. This study aims to contribute valuable information to the practice by offering state agencies and railroad entities a comprehensive reference document that lists the current incentive programs adopted by each state.

Summary

In order to find out which incentive programs each state employs to reduce their number of at-grade railroad crossings, this study utilized a combination of public online resources, as well as a survey distributed among railroad crossing safety experts and personnel from state Departments of Transportation (DOT). The survey was distributed to 240 railroad company experts, as well as 52 verified experts working in DOTs nationwide. Overall, there were 60 completed responses obtained, which included 33 responses from railroad companies, and 27 from state DOTs. The only states with no responses from either a railroad company or a state DOT were California, Arizona, Connecticut, Hawaii, Iowa, Maryland, Missouri, Nevada, New Hampshire, Rhode Island, Pennsylvania, and Vermont.

Findings

The results show that approximately 53 percent of participants believe their states have a specific



incentive program for consolidation or closure while the remaining 47 percent could not identify an existing incentive program. As shown in Figure 1, 15 states offered cash incentive programs. 8 states offered road improvement programs, 6 states offered nearby crossing grade separation programs, 13 states offered nearby crossing improvement programs, and 4 states offered track relocation programs.



Figure 1. Cash incentive programs by state.

Illustrated in Figure 2 is the effectiveness of various incentive programs based on the responders’ knowledge. The data analysis section of Qualtrics software provided the overall average efficiency of each choice. Based on the choice counts, the most common incentive program is the cash incentive even though it is the least effective.

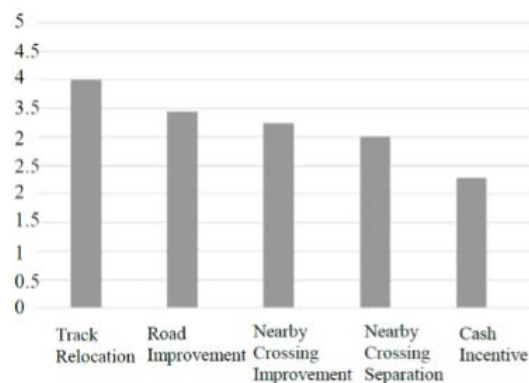


Figure 2. Efficiency of available incentive programs for railroad closure.

Figure 2 shows that the track relocation program is the most effective even though it is rarely utilized according to Figure 1. The road improvement, nearby crossing improvement, and adjacent crossing grade separation programs have an efficiency value of approximately 3.45, 3.25, and 3, respectively. The high cost of upgrade and renovation of infrastructures prevents the future success of any improvement-based incentive programs. Finally, the cash incentive program had the lowest effectiveness value with 2.29, even though this incentive program is the most popular one among states. Most of the existing incentive programs are not very useful because

communities are emotionally protective of redundant crossings and local political pressure against the closure of crossings is substantial. In addition to the most common incentive programs, the study discovered three other types of programs in Utah, Ohio, and Illinois that include compromising two closures in exchange for a new one, supporting a quiet zone establishment, and considering alternative routes to offset the removal of an at-grade crossing. The information gathered from online resources reveal that most incentive programs provide funding to cover a portion of a safety improvement project regarding a railroad-highway crossing, with the applicant having to provide the remaining costs.

Impacts

Prior to this research, a comprehensive study of all the states’ incentive programs for crossing consolidation was mostly unknown. This research aims not only to attract attention to current incentive programs, but also to give individual states the opportunity to compare their processes with that of the rest of the nation. The results of this study will provide agencies (DOTs, local governments, railroad companies, etc.) with information to develop policies to reduce the number of public and private grade crossings. This will enhance the efficiency of railroad operations and potentially increase the safety of both the traveling public and the owners of the private crossings. Furthermore, it will identify effective incentive programs that can be readily deployed to reduce safety hazards at grade crossings. It will also increase the efficiency of rail operations in areas where private road/driveway crossings otherwise hamper railroad operations and efficiency.

Tran-SET

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