FTA RESEARCH
FEDERAL TRANSIT ADMINISTRATION

FTA STANDARDS DEVELOPMENT PROGRAM: MITIGATIONS FOR TRESPASSER AND SUICIDE FATALITIES AND INJURIES

Background

FTA established the Safety Management Systems (SMS) framework as the basis for its National Public Transportation Safety Program. Key aspects of this framework include building on existing safety foundations to detect and correct safety problems earlier and holistically by analyzing safety data to ensure that resources are applied effectively to mitigate risks. One such risk faced by the transit industry is the growing number of suicide and trespasser fatalities and injuries occurring on rail transit agency (RTA) system properties throughout the U.S.

Suicide is the leading cause of rail transit related fatalities in the U.S. Based on National Transit Database (NTD) data reported to FTA, between 2011 and 2019 approximately 70% of all rail transit-related fatalities were the result of suicide and trespassing. Through detailed RTA suicide and trespassing data analysis, an extensive literature review, and case studies, this research sought effective and promising strategies, practices, and technologies that may mitigate suicide and trespasser fatalities and injuries.

Objectives

This project focused on identifying mitigation strategies and countermeasures that may be used by RTAs to reduce trespasser and suicide fatalities and injuries.

Findings and Conclusions

Homogenous industry-wide standards to define trespass incidents and suicide attempts would help to fully understand the extent of the hazards associated with trespassing and suicide incidents.

Researchers conducted detailed NTD and FRA data analysis, performed an extensive literature review, conducted 11 RTA and FRA-regulated agency case studies, summarized approaches implemented by the agencies, and explored existing and emerging technology applications for RTAs to consider. Major findings include the following:

- RTAs can benefit from reviewing the statistics, trends, and risk factors associated with trespassing and suicides to identify specific problems and implement effective strategies and countermeasures.
- Strategies with examples illustrated in the RTA case studies can be adopted or customized by transit agencies to mitigate trespassing and suicide problems.
- Technology applications may present effective countermeasures to mitigate trespasser and suicide injuries and fatalities.
- RTAs could review the promising technology applications identified and explore the applications of interest for future adoption or pilot testing.

- Collaboration with organizations such as Operation Lifesaver to conduct rail safety campaigns and with Samaritans on suicide prevention targeting at-risk demographics were the most common and effective community outreach practices for case study agencies.

- Effective countermeasures include installing "No Trespassing" signage at strategic or trespassing hot spot locations and with suicide hotline messages to provide distressed users with resources, preventing access to rail transit ROW or stations by restrictions/fencing or platform edge doors, using refuge spaces, improving infrastructure or construction in conjunction with adding technology to detect and monitor trespassing activities, deploying smartphone apps to help report trespassing or suspicious activities, regularly patrolling and collaborating with transit agency police or local law enforcement to respond to reported trespassing and reduce trespassing incidents, using aerial drones or UAS to assist in monitoring and enforcing trespassing on rail transit ROW in a large-scale deployment, and using connected vehicle technology to detect and warn trespassers and rail operators. Future research is recommended to explore and develop connected train (CT) technology.

- To effectively perform safety risk assessment and management activities, it would be beneficial for RTAs to have more granular, robust data associated with near-miss and trespassing events.

Benefits

This report provides useful information, valuable insights, RTA practices, and practical and promising strategies and countermeasures and can serve as a toolbox for RTAs providing mitigation strategies identified from literature review and employed by RTAs, promising existing and emerging technology applications to detect and/or prevent rail transit trespassing and suicides, and key research findings for mitigating injuries and fatalities associated with trespassing and suicide events.

FTA Report No. 0227
Project Information