

# MPC-667

September 17, 2021

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## **Project Title**

Trespasser and Suicide Prevention Training for Rail Transportation Workers

## **University**

University of Denver

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## **Research Needs**

According to recent reports approximately 289 individuals commit suicide each year on the U.S. rail system accounting for almost one third of the fatalities related to railroad operations in the U.S. Railroad carriers alone cannot solve this tragic loss of life. What is needed is a systematic, systems-oriented approach that involves the entire ecosystem that US rail operates within. Thoughtful, purposeful and consistent collaboration between all stakeholders, including the Railroad Carriers, communities, law enforcement, educators, and mental health organizations is needed to properly address this problem of which the number of fatalities on railroad rights of way is only a symptom – the tip of the iceberg.

Trespassing is the leading cause of rail-related casualties (injuries and fatalities) in the U.S. and many of these trespass deaths are the result of an intentional act of suicide. The increasing number of fatalities resulting from trespassing prompted Congress to direct FRA to create a National Trespass Prevention Strategy. In its strategy, FRA identified approaches to reduce the occurrence of trespassing, including collaboration with stakeholders to address the issue of suicide.

On January 19, 2021, the US Surgeon General Released a Call to Action to Implement the National Strategy for Suicide Prevention. The report outlines the “actions that communities and individuals can take to reduce the rates of suicide and help improve resilience.” (HHS, 2021)<sup>1</sup> The Call to Action lists seven key factors thought to prevent suicide: 1) Help other people build life skills (e.g., coping, problem solving) and resilience; 2) Increase social connectedness and support; 3) Identify and support people at risk; 4) Support lethal means safety; 5) Support access to effective care; 6) Seek help, support, and care when experiencing suicidal thoughts; 7) Support individuals who have been affected by a suicide attempt or death.

Kidda (2020) summarized Federal Railroad Administration (FRA) trespasser data from 2012–2017, including intentional and accidental fatalities along the right-of-way (ROW). Figure 1 charts the number of fatal suicide and non-suicide strikes by year, showing consistent numbers throughout the time period. The FRA statistics reveal that California, New York, Florida, and Texas had the highest number of fatalities. Persons involved averaged between 15 and 34 years of age for all fatalities. Fatal suicides most often involved lying down, while for non-suicides, individuals were likely walking along or stepping on or over tracks. Freight trains more than passenger or commuter trains were more often identified as related to suicides.<sup>2</sup> Trespasser casualties, including intentional acts of suicide, were the “leading cause of rail-related death in the United States” (FRA, 2018).<sup>3</sup> It should be noted that the impact of these incidents reaches beyond the loss of life: train crews experience trauma; railroads and their surrounding communities experience disrupted service and road closures with an estimated overall economic impact of 4.6 million per incident (FRA, 2018).

Based on the FRA data published on the FRA Dashboard<sup>4</sup>, out of the 15 counties with the highest number of trespasser fatalities in the 2011 to 2020 period nationwide, eleven of the top 15 counties are in California. (See Figure 1)

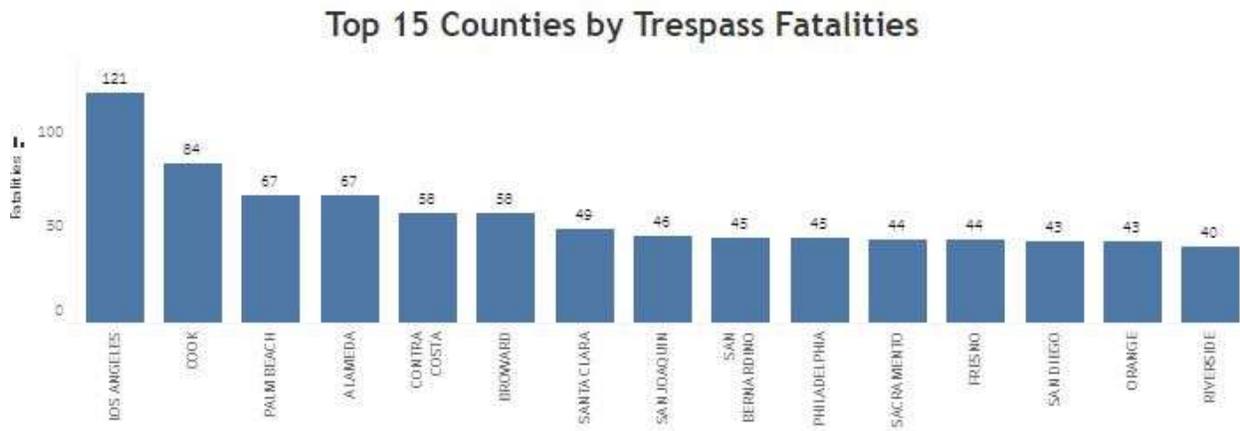
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<sup>1</sup> <https://www.hhs.gov/about/news/2021/01/19/the-surgeon-general-releases-call-to-action-to-implement-the-national-strategy-for-suicide-prevention.html>

<sup>2</sup> <https://railroads.dot.gov/sites/fra.dot.gov/files/2020-01/Fatal%20Trespasser%20Strikes.pdf>

<sup>3</sup> Federal Railroad Administration. (2018). *National Strategy to Prevent Trespassing on Railroad Property*. Washington, DC: U.S. Department of Transportation.

<sup>4</sup> <https://railroads.dot.gov/divisions/highway-rail-crossing-and-trespasser-programs/see-data-new-way-interact-trespassing-and>



*Figure 1. Trespasser fatalities nationwide - Top 15 Counties national wide*

Over the past four years, California, the Greater Los Angeles area including Orange County and Santa Clara County in the Bay area have been experiencing several different challenges that have significantly impacted railroads. Also, as the following graph shows, Los Angeles, Orange, Santa Clara, and Riverside counties are in the top 25 counties nationwide with the highest numbers of rail-related suicides (See Figure 1). This pattern is also mirrored in similar numbers for reported trespasser incidents. Consequently, the present proposal is being undertaken to attempt to reduce the number incidents, increase public awareness and response, and to provide additional support to the rail and related community in the hope of mitigating a growing problem.

On the Southern California Regional Rail Authority (SCRRA) Metrolink suicides have occurred system-wide and generally along the right-of-way and grade crossings. The current SCRRA Suicide Prevention Program is designed to prevent and reduce the number of incidents on Metrolink property and promote awareness of the resources available for those at risk of harming themselves. The activities and efforts described in this proposal will extend and expand the existing Suicide Prevention Program to include more in-depth training and more extensive outreach.

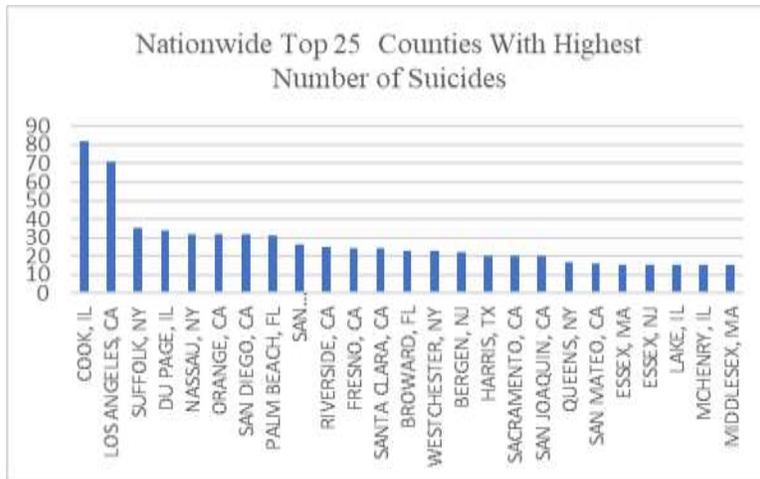


Figure 2. Top 25 Counties in Trespasser Suicide Fatalities

The suicide rate in Santa Clara County (SCC), California dropped to 6.95 suicides per 100,000 people in 2017. In 2016 the rate was 6.98 and 7.77 in 2015. Across the U.S., the suicide rate rose. In 2017 the U.S. suicide rate was 14.0 suicides per 100,000 people, compared to 13.0 in 2016 and 13.3 in 2015. The California rate remained higher than in Santa Clara County, and has increased since 2015. The 2017 California suicide rate was 10.5 suicides per 100,000 people; the same rate of 10.5 per 100,000 people in 2016 and 10.3 per 100,000 people in 2015.<sup>5</sup> Unfortunately, after a three-year decline from 2014-17 SCC's suicide count and rate increased to 148 deaths (7.6 per 100,000) in 2018 and 2019 with 169 deaths (8.8 per 100,000 see Figure 4). The SCC's suicide rate continues to be lower than the California state suicide rate, which was 10.9 per 100,000 in 2018 and which has increased each year since 2015 (2019 state suicide data is not yet available).

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<sup>5</sup> Santa Clara County Health Systems (2019). <https://www.sccgov.org/sites/hhs/news-and-stories/Pages/suicide-rate-declined.aspx>

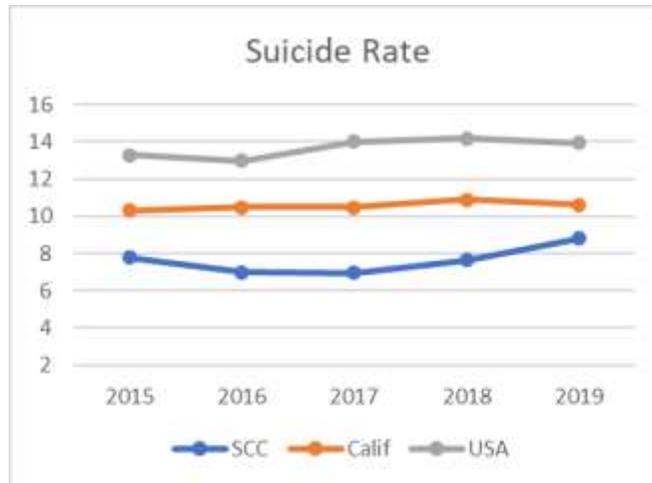


Figure 3. Source: ASFPS Fact Sheet and Santa Clara County 2019-2020 Annual Report

The National Suicide Prevention Plan and other research call for a multifaceted eco-system approach that envisions a multi-pronged approach to the identification prevention of suicides. In the rail industry, the railroad personnel are the last line of defense against intentional death by rail. Many other individuals and community groups, systems, organizations, and programs may have contact with an individual before he or she acts toward deliberate death. Accordingly, this proposed intervention approach is multifaceted. (See Figure 4).

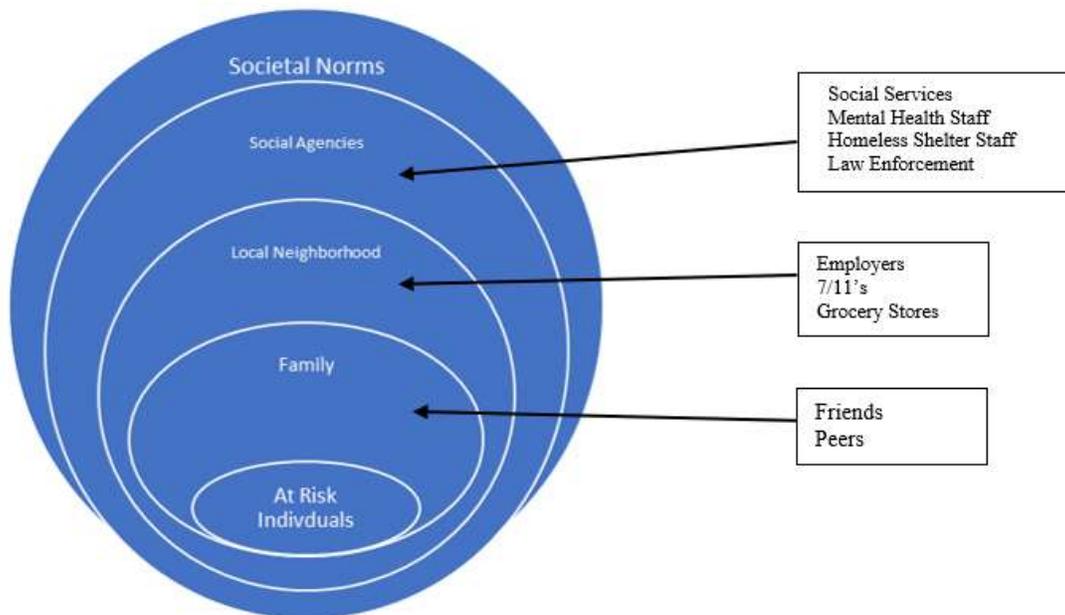


Figure 4. Community Eco System for Intentional Death by Rail

The essence of this conceptual approach is that an individual is embedded in a set of systems and subsystems that influence each other. The individual dealing with their needs and issues comes into contact with these systems at many different touchpoints and points of contact. At each

point, there is an opportunity to influence the person. Consequently, an effective program of prevention must address multiple points within the community eco-system.

In a railroad suicide situation, railroad personnel are typically the LAST line of defense in that they may observe the individual on or near the tracks. Their job in responding to a suicidal individual will be to identify them as a risk and help them to seek assistance from other resources in the community.

The proposed project will address trespass & intentional death by suicide on railroads in select areas by evaluating the impact of conducting awareness and prevention training and outreach with key railroad staff, first responders, and community members proximate to the railroad right of way. Previous research has identified the need for more effective training and intervention for gatekeepers and other persons associated with or proximate to individuals considering intentional death by suicide using rail. (Aini, 2017; Berman, et. al. 2014; Dumensil & Verger, 2009; York, et. al., 2012)). The project will produce a checklist for railroad personnel and first responders for engaging trespassers at risk for intentional death by rail. (Chase, et. al., 2018) The project will attempt to increase public awareness and responsiveness in the community to intervene when trespassers and individuals are at risk for harming themselves using railroads. (Torok, et. al. 2017). In addition, following the suggested outline for interventions with veterans (Bagley, et. al., 2010; Green, et. al. 2017). a checklist for railroad personnel that identifies steps in intervention with trespassers will also be developed. The targeted groups will be railroad staff, first responders, community mental health providers, and other key stakeholders and members of the community. In addition, a pre post measure of attitudes & knowledge of suicide myths and intervention techniques will also be used. Lastly, there will also be a survey of community members and railroad employees' attitudes, knowledge regarding suicide, available resources and the impact on health and well-being following any incidents of suicide and intentional death involving railroads. Evaluation of the project will look at the number of trespassers, utilization of community resources, increases in knowledge skill, and self-efficacy among railroad staff, first responders, and members of the community.

The proposed project will benefit several different groups and organizations. First, it will help persons who are distressed and at risk for intentionally harming themselves through suicide on the railroad. By increasing training and public awareness, it is expected that at-risk persons will be identified, approached, and referred to appropriate sources of care and assistance. Other beneficiaries of the program will be the commuter rail customers who are indirectly affected by trespass and suicide incidents on the rail, which shut down sections of the railroad. Lastly, persons intentionally harming themselves by rail have a direct impact on the lives and emotions of the frontline and other personnel who work on and for the railroad. Dealing with the tragic occurrences has been well-documented as being a detrimental effect to the mental health and well-being of the persons who work on the railroad. We hope that all these individuals and groups will benefit from the activities outlined in this proposal.

## **Research Objectives**

The proposed project will address trespass & intentional death by suicide on railroads in select areas by:

1. Evaluate the impact of conducting awareness and prevention training and outreach with key railroad staff, first responders, and community members proximate to the railroad right of way.
2. Conduct suicide risk factor awareness training with mental health and community services personnel who may have access to railroad trespassers and those at risk for intentional death by rail.
3. Produce a checklist for railroad personnel and first responders for engaging trespassers at risk for intentional death by rail.
4. Promote community and public awareness in the community to intervene when trespassers and individuals are at risk for harming themselves using railroads.
5. Evaluate the effectiveness of training and awareness promotion using pre and post measures of attitudes, knowledge of practices and behaviors following training.
6. Writing of report & development of recommendations.
7. Conduct workshop to facilitate technology transfer regarding what has been learned.
8. Presentations at key conferences.
9. Post final report on web site.

## **Research Methods**

The current project will evaluate the effectiveness of a training program for railroad personnel, first responders and community members consisting of intervention checklists, identification of signs and symptoms and the provision of questions and referral behaviors. mental health professionals

**Training Program.** The training program will consist of education on the topics of 1) Warning signs and risk factors, 2) Common Misunderstandings and Myths regarding suicide 3) Using the Question, Persuade Refer (QPR)<sup>6</sup> method, and 4) education on the components of the suicide Safety Prevention Plan (Stanley, 2020) technique which has been shown to be an effective tool in preventing suicide with at-risk veterans. The training will consist of a) general Identification of Warning signs, b) understanding Myths associate with suicide c) using the questions persuade and refer (QPR) approach and d) understanding the components of a suicide safety prevention planning (SPP).

Efforts to involve gatekeepers, community members and volunteer organizations in the prevention of suicide has received some attention in various locations. In the current project these individuals will be invited to participate in awareness efforts and training. Local businesses within the proximity of the railroad in hotspot areas will also be invited to participate. In addition, the proposed project will attempt to increase the awareness of mental health professionals and other social services workers and those that work with homeless shelters or substance abuse treatment facilities. The training sessions for members of the local community on Warning Signs and Risk factors. Question. Persuade, and Refer, Myths, and also the development of a safety plan (SPP) will also be covered for members of the community. These individuals will also be invited to attend the training programs. (Details of the content of the

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<sup>6</sup> Quinnett, P. (2012). QPR Gatekeeper Training for Suicide Prevention: The Model, Theory and Research. QPR Institute. <https://www.qprinstitute.com/uploads/main/QPR-Theory-Paper-Master-Final-2019.pdf>

training sessions are described in more detail in the supporting document, found on the web: [Suicide Prevention Training Content Parts A, B, C, & D](#))

**Public & Community Awareness.** Efforts to increase public and community awareness will be attempted through the following methods. 1) Railroad Suicide Safety Summit 2) Public Awareness Messaging using social media and 3) Training of community gatekeepers and Community Volunteers Local Business Leaders and Mental Health & Homeless Shelter Training - Training of nearby mental health and homeless shelter staff and professionals.

**Railroad Suicide Safety Summit.** A conference will be held in September 2021 will also be a community outreach effort designed to increase public awareness and engagement. Sessions will focus on an overall approach to intentional death by rail and trespassing. The involvement of key officials from local governmental agencies and social and mental health agencies is imperative. In addition, local business leaders operating near railroad identified hot spots will also be included. Business leaders will be invited to share their insights and suggests as to how current approaches to suicide and trespass prevention might be utilized in their businesses. Based on the "hot spot" locations signage and public service announcements will be used to alert individuals and other community members of services available. This will also involve an outreach effort to education and training programs. Advertising will be disseminated through traditional outlets (e.g., press releases, interviews, newsletters, etc.) and also on Facebook and Twitter. The proposed project will disseminate the Media Reporting Guidelines<sup>7</sup> recommendations on language and terminology to be used in publications and media reports regarding intentional death by rail endorsed by the Action Alliance and the American Association of Suicidology. (Bohanna & Wang, 2012). Training of community gatekeepers and key members of the community, independent of the railroad staff, that will likely come in contact with persons who may be considering intentional death by rail will be undertaken.

**Evaluation of Program.** The major outcome and evaluation measures will be the examination of the number of participants and their presence in the training programs. In addition, the utilization of pre and post measures of attitude, knowledge and behavior relative to the identification and prevention of suicide. Lastly, while such data are influenced by a number of factors not directly controlled in this study, measures of the number of intentional deaths by suicide reported, attempted, and prevented will be gathered. Suicide data will be tracked by Metrolink using Industry Safe Safety Management Software. In addition, we will endeavor to ascertain the number of near misses, the number of calls to suicide prevention lines, and the number of face-to-face interventions. We will survey the attitudes and perceptions of persons in the railroad industry to see if they have reported any change in their attitudes and perceptions. Lastly, we will examine changes in community awareness through surveys and interviews.

### **Expected Outcomes**

The proposed project will benefit several different groups and organizations. First, it will benefit persons who are distressed and at risk for intentionally harming themselves through suicide on

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<sup>7</sup> Best Practices for Reporting on Suicide (2015). <https://reportingonsuicide.org/wp-content/themes/ros2015/assets/images/ROS-001-One-Pager-1.13.pdf>

the railroad. Second it will benefit railroad employees and the public by increasing prevention interventions by railroad employees and increased public awareness, it is expected that at-risk persons will be identified, approached, and referred to appropriate sources of care and assistance. Other beneficiaries of the program will be the commuter rail customers who are indirectly affected by trespass and suicide incidents on the rail, which shut down sections of the railroad. Last, persons intentionally harming themselves by rail have a direct impact on the lives and emotions of the frontline and other personnel who work on and for the railroad. Dealing with the tragic occurrences has been well-documented as being a detrimental effect to the mental health and well-being of the persons who work on the railroad. We hope that all these individuals and groups will benefit from the activities outlined in this proposal.

### Relevance to Strategic Goals

This project will contribute to the two of the USDOT Strategic Goals, namely safety and economic competitiveness. The primary goal will be the **safety** of the employees and the public will be enhanced by the development of a technology that can be used to reduce the likelihood of impaired drivers (e.g., as a result of fatigue or sleepiness) operating vehicles. In addition, the secondary goal will be the **economic competitiveness** of the transportation system is also influenced by the improving safe practices and safety culture in that safety is directly tied to the bottom line of a transportation organization. Decreasing accident injuries and fatalities ensures the safe, ethical operation and economically competitive nature of the system.

The proposed study is also relevant to the strategic goals will also contribute to the transportation industry by contributing to the development of an innovative technology that will that Improve the Safety and Performance of the Nation's Transportation System. the project will enhance the existing federal effort by contributing to safety, increasing economic competitiveness and efficiency, developing the work force, and contributing to innovation in the transportation system in the US.



Lastly, the project will supplement the efforts of the FRA which has engaged in a Strategic Plan to reduce trespasser incidents and fatalities nationwide. Lastly, the proposed study will also be related to the strategic goals in that it parallels the activities of the US DOT namely, the “National Strategy to Prevent Trespassing on Railroad Property.”<sup>8</sup> In its report on the Fiscal Year 2018 budget, the House of Representatives Committee on Appropriations requested the Federal Railroad Administration (FRA) to identify and study the causal factors that lead to trespassing incidents on railroad property and develop a National Strategy. FRA’s National Strategy to prevent trespassing on

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[https://railroads.dot.gov/sites/fra.dot.gov/files/fra\\_net/18320/ROA%206310005\\_Congress\\_TrespasserPreventionStrategy\\_2018.pdf](https://railroads.dot.gov/sites/fra.dot.gov/files/fra_net/18320/ROA%206310005_Congress_TrespasserPreventionStrategy_2018.pdf)

railroad property includes four strategic focus areas: data gathering and analysis, community site visits, funding, and partnerships with stakeholders.

### **Educational Benefits**

Several graduate students will assist with the project thereby contributing to the development and education of graduate students who will later be employed in the industry. These students will gain experience in the data collection techniques commonly used in the transportation industry. In addition, they will gain an understanding of the theory and best practices associated with safety and workforce development.

### **Technology Transfer**

In order to facilitate the technology transfer obtained in the present investigation three separate events will be undertaken.

1. Educational briefing for stakeholders in the immediate project held on the site or the premises of the research sites.
2. A conference with invitees from local DOT and other community agencies to review and discuss key findings.
3. Web pages with training materials and intervention checklists will also be developed that can be accessible to the public and railroad professionals
4. The development of a video and webinar on the findings to be posted on NCIT web page.

### **Work Plan**

Achieving the overarching goal of this project requires the completion of several different tasks. Since the project will be built upon the previous work and studies, we anticipate that the results will be a significant contribution to the existing literature.

#### **Task 1 - Literature Review**

Review relevant psychological, operational, and experimental studies and papers to determine the measurement of fatigue and alertness relative to transportation safety.

#### **Task 2 – Development of Training Materials**

Training materials will be developed in conjunction with key personnel, railroad stakeholders based on the published literature and modified to appeal to the railroad employee work force. The training materials will draw upon the FRA summarized findings of characteristics of individuals who have intentionally died by rail.

#### **Task 3 – Delivery of Training**

Training sessions will be developed and scheduled to accommodate the three groups: frontline railroad employees, community volunteers and mental health providers.

#### **Task 4 – Collection of Data – Pre and Post**

Surveys of attitudes, knowledge, interventions and practical behaviors will be administered to potential participants prior to training and to persons who have completed the training. Additional data on number of contacts, participants, and overall numbers of suicides will be monitored and gathered at the end of the project.

**Task 5 – Railroad Suicide Safety Conference**

A workshop on railroad suicide safety will be held prior to the end of 2021.

**Task 6 – Data Analysis**

Data will be analyzed to assess the relationship between the various measures, relative to attitudes, knowledge and behaviors related to suicide awareness and prevention efforts.

**Task 7 - Reporting Writing**

Draft report will be discussed with stakeholders describing the results of the research and identification of hypothesized linkages.

**Task 8 - Stakeholder Feedback**

Following the completion of the draft report stakeholders’ relevant feedback will be integrated into the report.

**Task 9 – Additional Tech Transfer Meetings**

The draft report will be shared with stakeholders and relevant findings will be disseminated.

**Task 10 – Project Closeout**

The final report will be shared and disseminated.

Task	Months			
	1 – 2	3 – 6	7 - 9	10 – 12
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

**Project Cost**

Total Project Costs: \$292,750  
MPC Funds Requested: \$146,375  
Matching Funds: \$146,375  
Source of Matching Funds: Metrolink, Valley Transit Authority, Inc., in-kind support

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