

# RAIL

*MOVING AMERICA FORWARD*



**Southeast Florida:**

**Lunch and Learn Virtual Series**

**Railroad Trespassing, Tools & Funding Solutions**

# Treasure Coast Regional Planning Council



Kim DeLaney, Ph.D.  
**Director of Strategic Development and Policy**

For nearly two decades, Dr. DeLaney has been with the Treasure Coast Regional Planning Council, which serves Palm Beach, Martin, St. Lucie, and Indian River counties. She is a statewide resource for economic development, land use, transportation, and public engagement. Dr. DeLaney is a Florida native with degrees from the University of Florida and Florida Atlantic University.



# Treasure Coast Regional Planning Council

If you have any technical difficulties,  
please email Kim at [kdelaney@tcrpc.org](mailto:kdelaney@tcrpc.org)  
or call (772) 221-4060.

Thank you to our safety partners at the  
Treasure Coast Regional Planning Council  
for assisting with this webinar.

# Railroad Trespassing, Tools & Funding Solutions



Monica Shaw - Federal Railroad Administration

As a Transportation Specialist Mrs. Shaw coordinates the Federal Railroad Administration (FRA) involvement in trespass prevention programs, serves as Project Manager overseeing the Operation Lifesaver Inc. Grant, FRA's Law Enforcement Trespass and Suicide Prevention Grant Programs. Mrs. Shaw holds a Bachelor of Business Administration Degree in Project Management. Mrs. Shaw has an extensive career with FRA for 34 years.



Michail Grizkewitsch - Federal Railroad Administration

Since 2004 Michail Grizkewitsch has been a part of the Federal Railroad Administration's (FRA) Office of Railroad Safety as a Railroad Trespassing Program Specialist. He partners with federal, state, and local government officials throughout the United States to establish and implement trespass prevention programs.



# Railroad Trespassing, Tools & Funding Solutions

- This is one of a series of webinars planned for Southeast Florida. Our topic today is to raise awareness of the dangers and effects of trespassing, to seek out low-cost solutions to local trespassing issues, to discuss practicable ideas for technological improvements and provide you with funding solutions.
- In the future FRA and our stakeholders will hold additional webinars and possibly an in-person summit to expand on these topic areas. We are also looking for topics from you, please feel free anytime during this webinar to suggest future topics on our chat. Or if you prefer, you can always drop Mike or Monica an email.
- During the webinar if you have any questions, please use the chat box. At the end of the webinar the team will answer questions received



# The Experts



Mike Long



Scott H. Gabree, Ph.D.

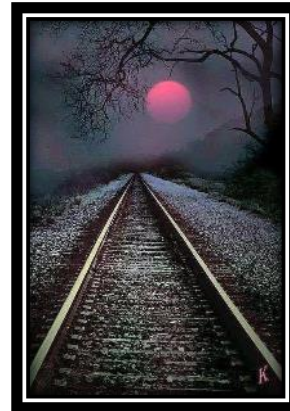


Marco daSilva



Francesco Bedini Jacobini

Matthew Lorah



James Payne



Daniel Manley

# Agenda

- Welcome Remarks
- FRA's National Strategy to Prevent Railroad Trespassing
- Railroad Trespassing Trends
- Railroad Treatments, Tools and Funding Solutions
- Next Steps



# Welcome

**Mike Long**

**Director of Railroad Operations and Outreach  
Federal Railroad Administration**

Mike is responsible for safe rail operations, as well as outreach to the rail industry, associations, and labor. Mike was the Senior Safety and Operations Manager for the Short Line Safety Institute prior to returning to FRA in 2018





# James Payne, Staff Director, Grade Crossing & Trespassing Outreach

**DEPARTMENT OF TRANSPORTATION**  
UNITED STATES OF AMERICA

**WORKING TOGETHER** • LAW ENFORCEMENT • FEDERAL AGENCIES • NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION • RAILROADS

**HOW YOU CAN HELP** • ENFORCE TRAFFIC & TRESPASSING LAWS • CONDUCT ACCIDENT INVESTIGATIONS • DETER NON-COMPLIANCE

**INITIATIVES** • PROMOTE EDUCATION • IMPROVE WARNING DEVICES • PROMOTE RESEARCH • CONSOLIDATING REDUNANT CROSSINGS

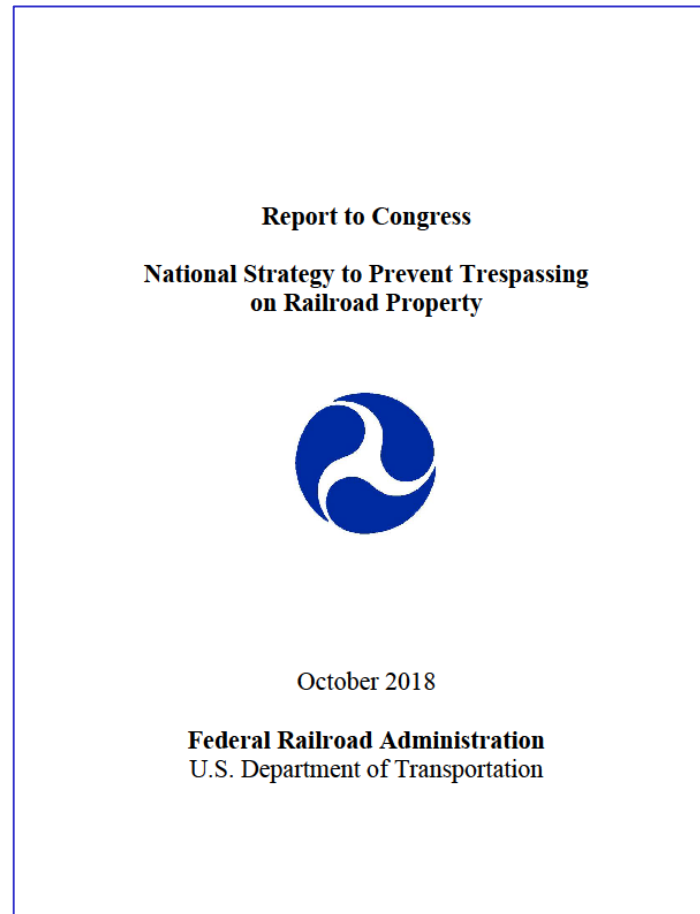
We're making communities safer.

James spent nearly 10 years in the United States Marine Corps. Joined the Automated Track Inspection Program (ATIP) in 2004 spending 8 years on the ATIP cars. James joined FRA in 2012 as the ATIP Program Manager. In 2019 James was selected as the Staff Director for Grade Crossing and Trespass Outreach RRS 30.3

# National Strategy to Prevent Trespassing on Railroad Property

In its report on the Fiscal Year 2018 budget, the House Committee on Appropriations requested the FRA to:

- Identify and study the causal factors that lead to trespassing incidents on railroad property
- Develop a National Strategy



FRA Developed a National Strategy, focusing on four strategic focus areas:

1. Data Gathering and Analysis,
2. Community Site Visits,
3. Funding,
4. Partnerships with Stakeholders.

# Strategic Area 4. Partnerships

1. Develop system of sharing trespasser hot spot data with advocacy organizations to focus their activities where they will yield the greatest return on investment and establish communication and reporting procedures to share information and provide feedback on effectiveness of efforts.
2. Collaborate and partner with government agencies, such as the Substance Abuse and Mental Health Services Administration, to develop and implement targeted outreach to address suicides by train.



FRA awarded four grants through its FY 2019 and 2020 Railroad Trespassing Suicide Prevention Grant Program.

# Railroad Trespassing Enforcement Grants

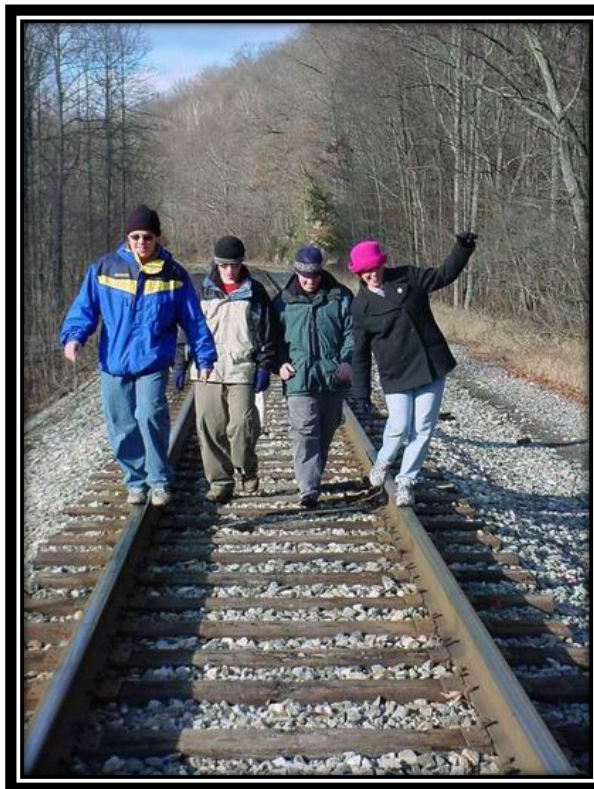
The objective of the program is to deter railroad trespass in the most prone areas through law enforcement activities.

- Fitchburg MA. Subject passed out in between railroad tracks, officers came upon subject, administered Narcan and removed subject from tracks and taken to hospital.
- Greensboro, NC.: 1<sup>st</sup> qtr. of FY21, Greensboro reported officers discovered a subject attempted to commit suicide by train. Subject was taken to a medical hospital.
- Hollywood, FL: 1/29/2021, officers located an intoxicated male passed out on the tracks, they were able to pull him off the tracks prior to any train strike.

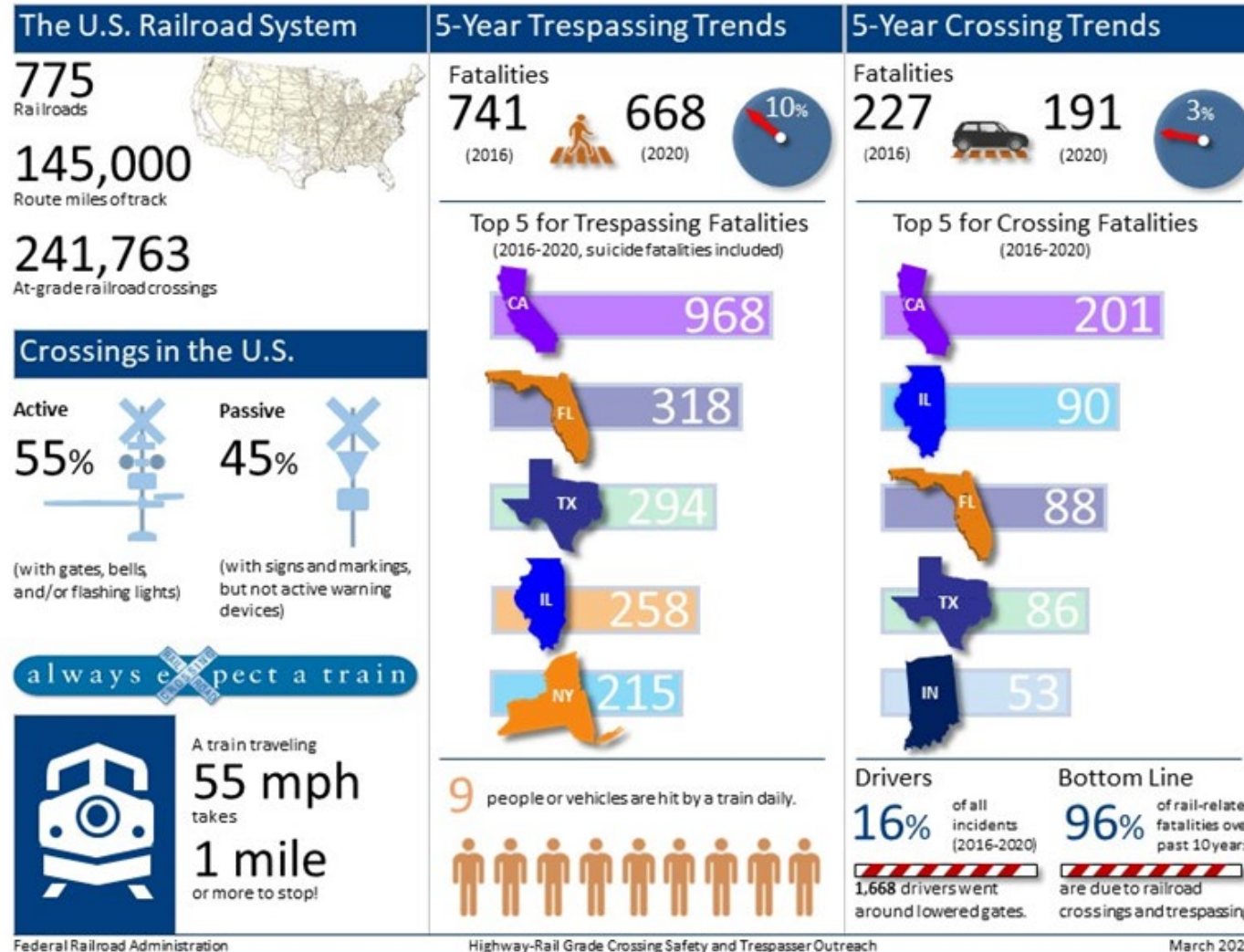
2020 Law Enforcement Grant Totals				
Total Contacts	Total Summons/Arrest	Total Warnings	Trespass Warnings	Other Warning
649	214	435	379	56
106	0	106	98	10
114	34	80	57	10
0	0	0	0	21
713	1	148	148	8
876	397	758	776	245
15	0	15	5	10
14	6	12	9	3
29	0	29	15	14
184	69	115	88	27
474	398	76	0	76
3174	1119	1774	1575	480

**In 2021 FRA announced \$2.3 million in available funding under the 2021 CRSIS Grant Program.**

# Highway-Rail Grade Crossing and Trespassing Trends



# National Highway-Rail Grade Crossing and Trespassing Trends



# Trespassing Casualties – State of Florida

State of Florida						
Trespassing Casualties						
	2016	2017	2018	2019	2020	Total
Fatalities	42	58	44	57	38	239
Injuries	39	34	43	59	22	197
Suicide Casualties						
Fatalities	15	17	20	18	10	80
Injuries	2	4	1	1	1	9
Total Casualties						
Fatalities						319
Injuries						206



Palm Beach County is 4<sup>th</sup> in the Nation for most trespassing fatalities.

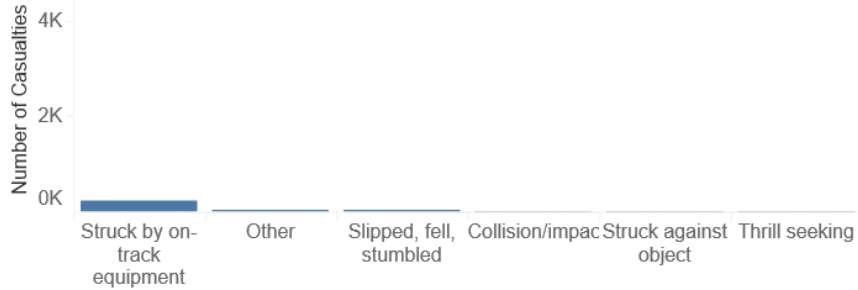
Broward is 7<sup>th</sup> in the Nation for most trespassing fatalities.

# Trespassing Actions – State of Florida

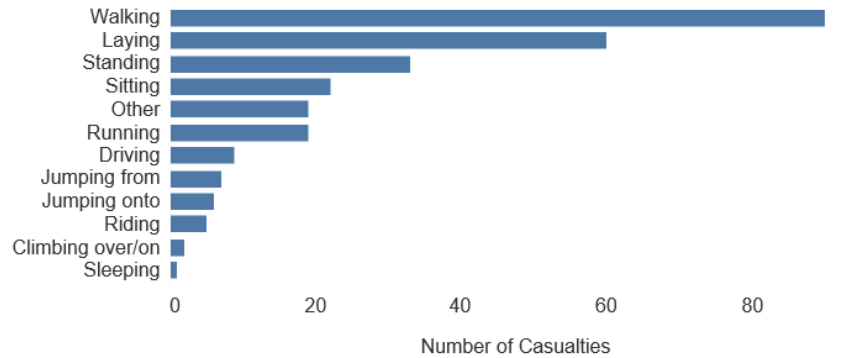


**Trespass Details**  
 Years Selected: 2016, 2017, 2018 and 2 more  
 Month Selected:

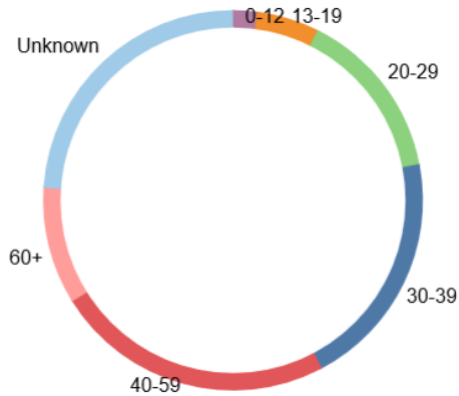
**Event Causing Casualty**



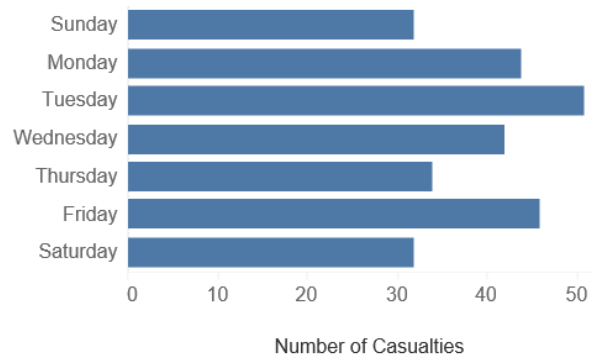
**Physical Act Before Collision**



**Trespassers by Age**

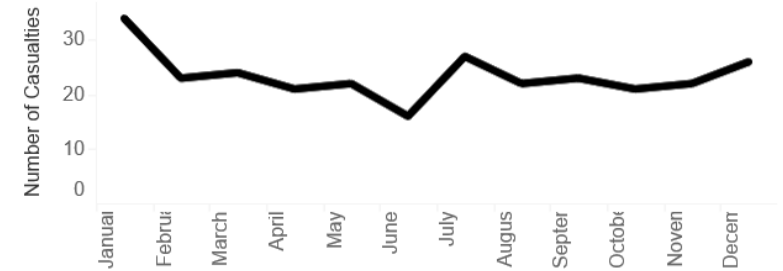


**Trespassing by Day of the Week**

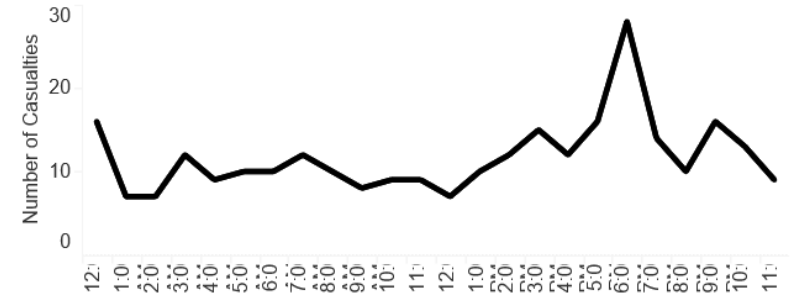


Casualty: (All) Year: (Mu... Month: (All) State: Florida County: (All) Railroad: (All)

**Trespassing by Month**



**Trespassing by Time of Day**





# Trespassing Casualties – Palm Beach County

Palm Beach County Specific						
Trespassing Casualties						
	2016	2017	2018	2019	2020	Total
Fatalities	8	9	11	16	9	53
Injuries	5	5	8	11	3	32
Suicide Casualties						
Fatalities	3	5	11	1	2	22
Injuries	1	0	0	1	0	2
Total Casualties						
Fatalities						75
Injuries						34



Palm Beach County is 4<sup>th</sup> in the Nation for most trespassing fatalities.

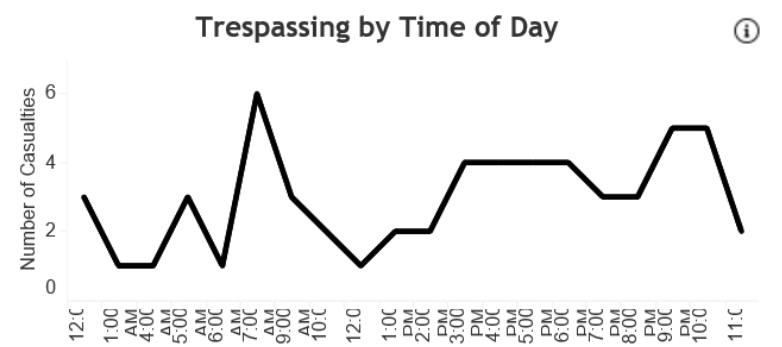
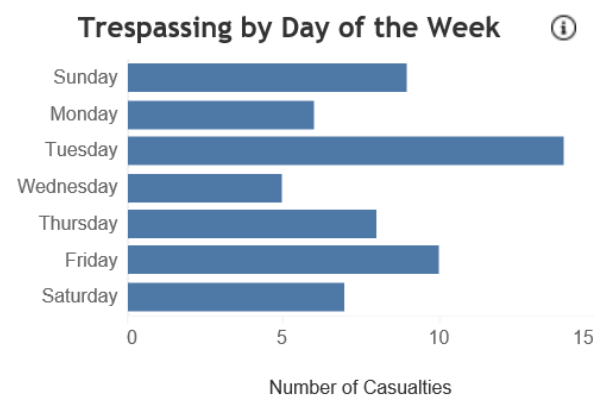
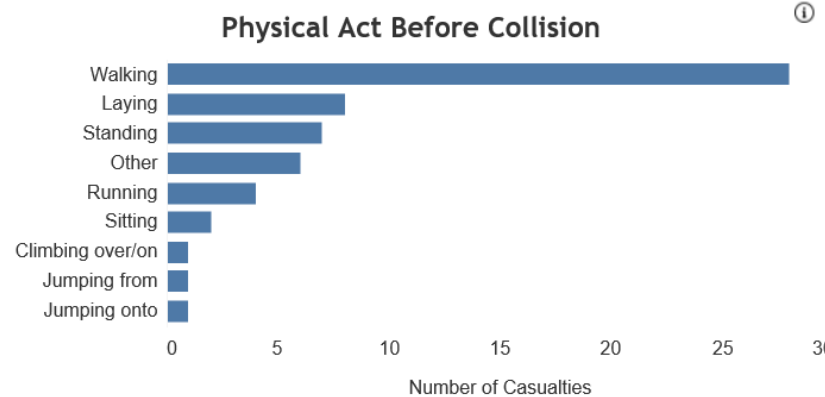
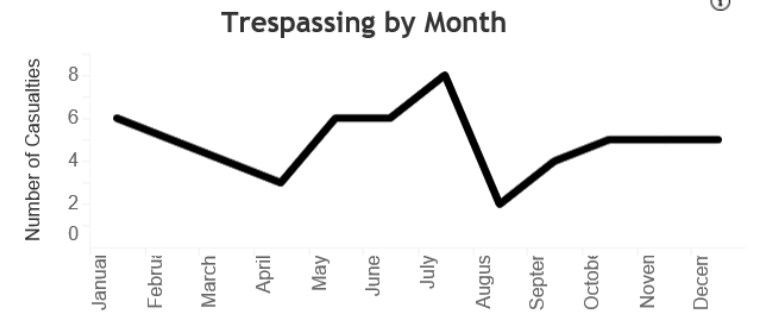
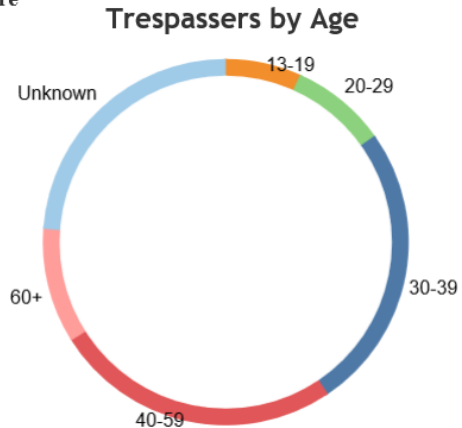
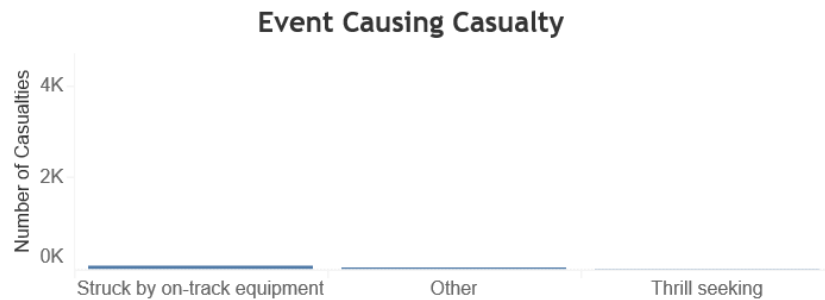
# Trespassing Actions – County of Palm Beach

Trespass Overview | **Trespass Details** | Suicides Overview | Trespass & Suicide Prevention | Index



**Trespass Details**  
 Years Selected: 2016, 2017, 2018 and 2 more  
 Month Selected:

Casualty: (All) | Year: (Mu... | Month: (All) | State: Florida | County: PALM... | Railroad: (All)



# Trespassing Casualties – Broward County



Broward County Specific						
Trespassing Casualties						
	2016	2017	2018	2019	2020	Total
Fatalities	4	14	10	15	9	52
Injuries	5	5	13	11	9	43
Suicide Casualties						
Fatalities	3	5	1	5	0	14
Injuries	1	0	0	0	1	2
Total Casualties						
Fatalities						66
Injuries						45

Broward is 7<sup>th</sup> in the Nation for most trespassing fatalities.

# Trespassing Actions – Broward County

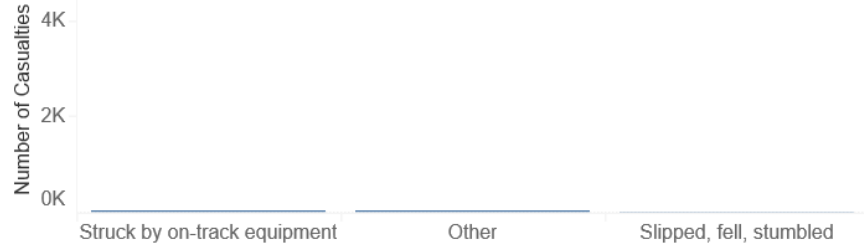
Trespass Overview | **Trespass Details** | Suicides Overview | Trespass & Suicide Prevention | Index



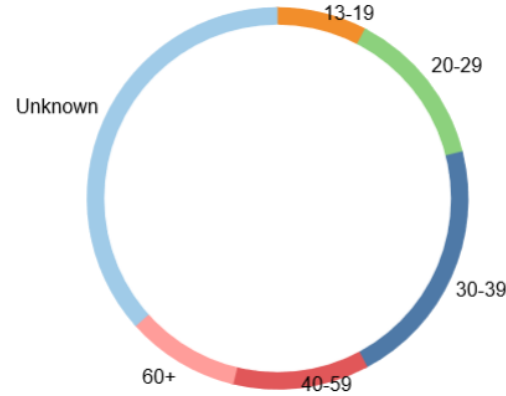
**Trespass Details**  
 Years Selected: 2016, 2017, 2018 and 2 more  
 Month Selected:

Casualty: (All) | Year: (Mu...) | Month: (All) | State: Florida | County: BRO... | Railroad: (All)

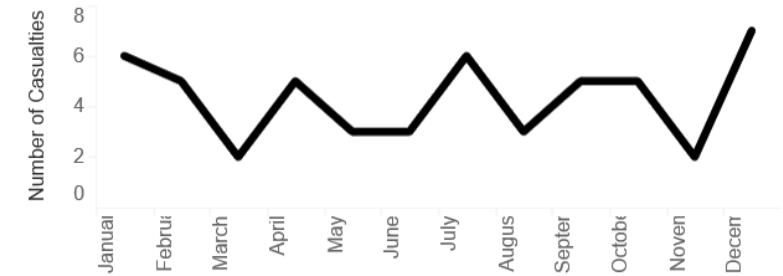
**Event Causing Casualty**



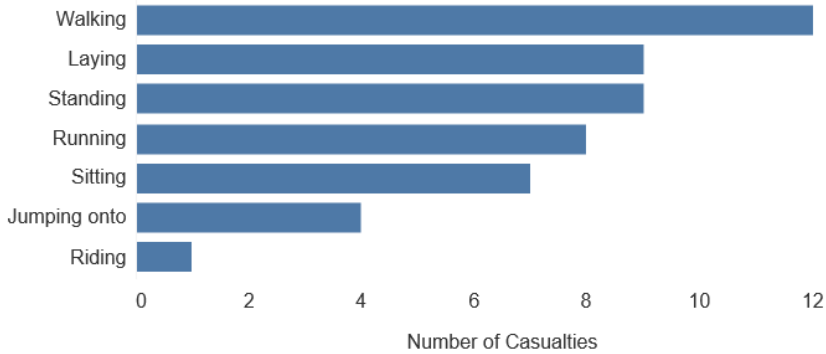
**Trespassers by Age**



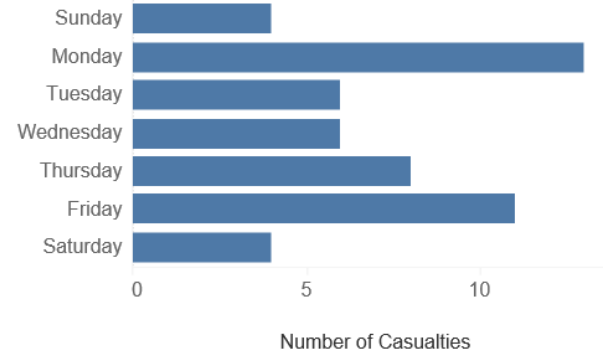
**Trespassing by Month**



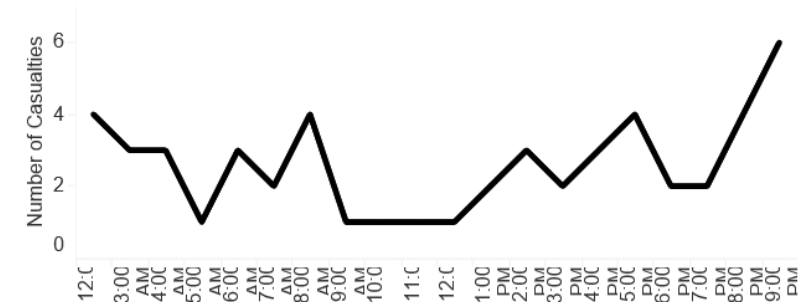
**Physical Act Before Collision**



**Trespassing by Day of the Week**

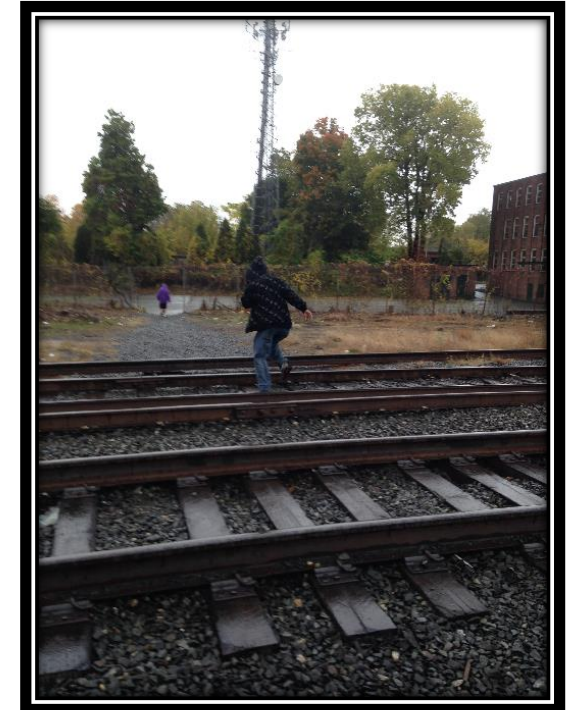


**Trespassing by Time of Day**



# Trespassing Casualties – Miami-Dade County

Miami County Specific						
Trespassing Casualties						
	2016	2017	2018	2019	2020	Totals
Fatalities	2	6	4	7	3	22
Injuries	7	0	3	5	2	17
Suicide Casualties						
Fatalities	0	0	0	1	0	1
Injuries	0	1	0	0	0	1
Total Casualties						
Fatalities						23
Injuries						18



# Trespassing Actions – Miami-Dade County

Trespass Overview | **Trespass Details** | Suicides Overview | Trespass & Suicide Prevention | Index



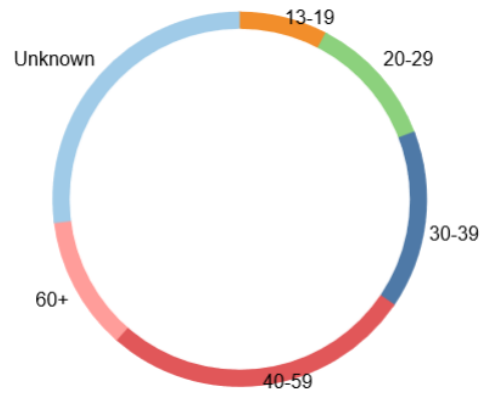
**Trespass Details**  
 Years Selected: 2016, 2017, 2018 and 2 more  
 Month Selected:

Casualty: (All) | Year: (Mu... | Month: (All) | State: Florida | County: MIAM... | Railroad: (All)

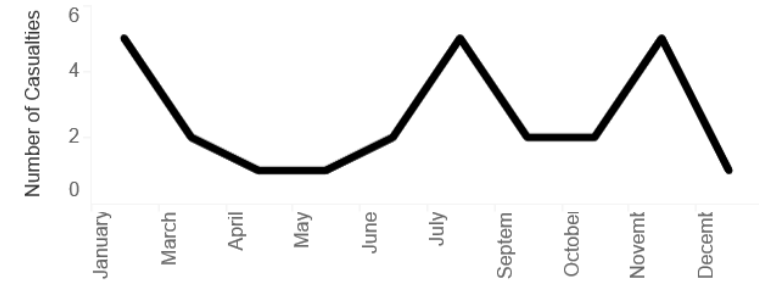
Event Causing Casualty



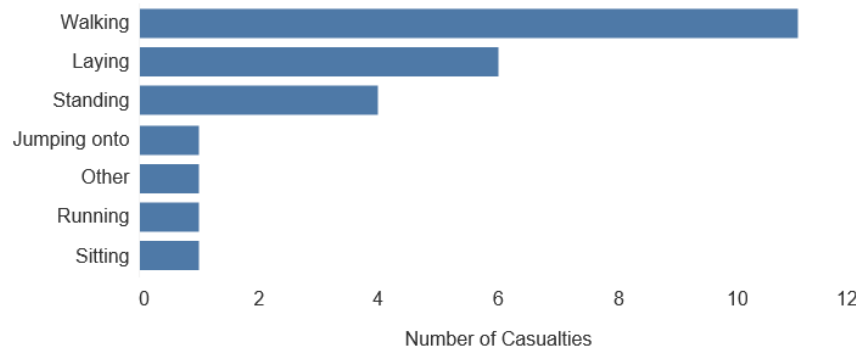
Trespassers by Age



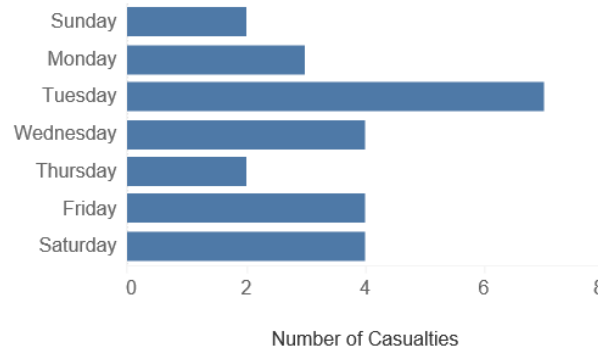
Trespassing by Month



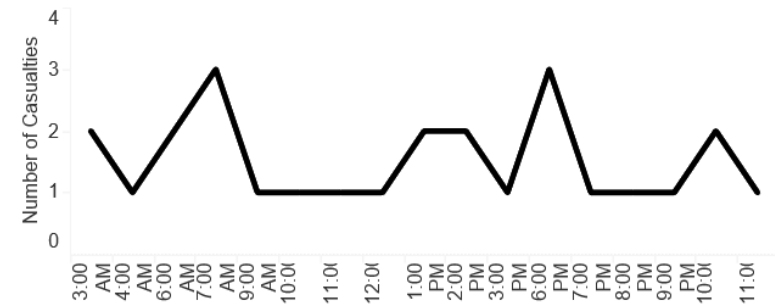
Physical Act Before Collision



Trespassing by Day of the Week



Trespassing by Time of Day



# Railroad Trespassing, Tools, & Funding Solutions



**Francesco Bedini Jacobini**  
**Federal Railroad Administration**

Mr. Francesco Bedini Jacobini joined the FRA in 2017 where he currently serves as Program Manager for Grade Crossing and Trespass Research within the FRA's Office of Research, Development and Technology. He previously worked for four years with the Illinois Department of Transportation on the Chicago to St. Louis High Speed Rail project. He holds a Bachelor and Master of Science degrees in Civil Engineering, both from the University of Illinois at Urbana-Champaign.

# Railroad Trespassing, Tools, & Funding Solutions



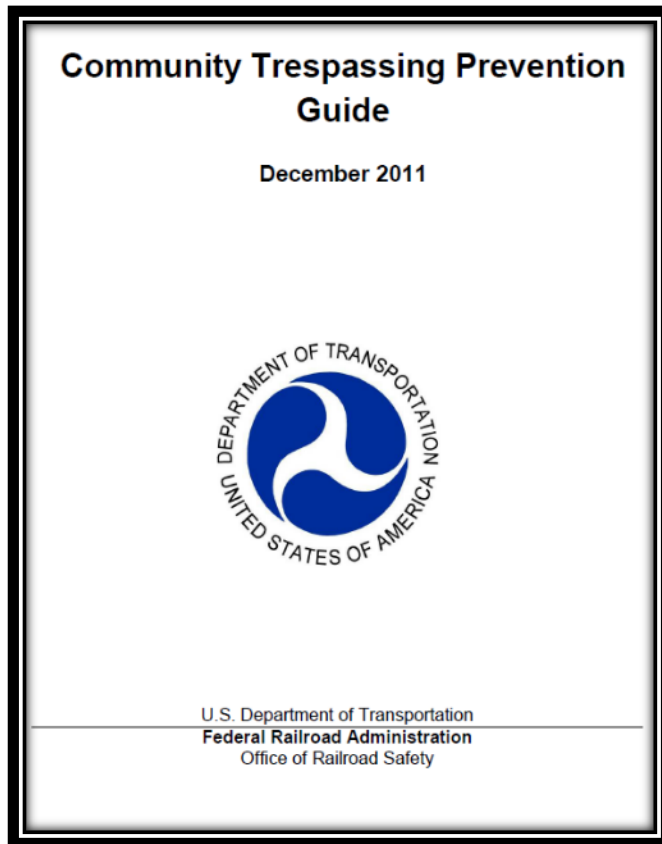
**Marco daSilva**  
**USDOT Volpe Center**

Mr. Marco daSilva is a Senior Engineer at the U.S. Department of Transportation's Volpe Center in Cambridge, Massachusetts. His work portfolio includes management of the Volpe Center's Highway-Rail Grade Crossing and Trespass Research program in support of the Federal Railroad Administration. Mr. daSilva holds a Bachelor degree in Mechanical Engineering from Boston University and a Master of Science degree in Transportation Engineering from Northeastern University.



# Problem-Solving Guide

## C.A.R.E.: Community, Analysis, Response, and Evaluation



Community	Analysis	Response	Evaluation
<p>Identify and describe the trespass problem.</p> <p>Identify community resources and begin involvement.</p> <p>Organize a problem-solving committee with community stakeholders and develop an action plan.</p>	<p>Develop data collection and analysis plan.</p> <p>Collect trespass data.</p> <p>Analyze the data to determine the underlying causes of the trespass problem.</p> <p>Establish baseline and identify measures to determine program's effectiveness.</p>	<p>Identify and implement feasible countermeasures</p> <ul style="list-style-type: none"> <li>- Develop countermeasures (CM) implementation plan.</li> <li>- Implement CM, such as: education, enforcement, engineering, and other strategies developed by the committee.</li> </ul>	<p>Assess impact of the response, and determine whether the trespass problem was displaced, reduced, unchanged, or eliminated.</p> <p>Evaluate the process used and assess whether the key stakeholders were identified and included, the underlying causes correctly identified, the response implemented as planned, and reasons why parts of the plan may not have been implemented.</p> <p>Develop and implement a long-term program monitoring plan if needed.</p>

# Goal

- Create safer communities by fostering the development of long-term trespass prevention strategies through collaborative community problem-solving partnerships.
- **It's a collaboration between different entities, it is a shared responsibility between railways and other stakeholders.**

# Strategy

- “Problem-solving model designed to provide a step-by step approach for addressing railway trespassing issues in communities.”
- “Based on lessons learned during actual collaborative community problem-solving projects.”
- Help solve existing trespassing problems or potential trespass issues resulting from re-zoning or planned construction.
- **Dissemination of good practices can make the difference.**



# Problem-Solving Guide

## C.A.R.E.: Community, Analysis, Response, and Evaluation

### Step 1 – Community

- Identify the trespassing problem in the community and potential community stakeholders.
- Develop a general statement to describe the problem. (e.g. Children are crossing the railway tracks where the street dead ends at the tracks.)
- Organize a community problem-solving meeting to discuss the issues and develop an action plan for your Trespass Prevention Program.



*Stakeholder group in West Palm Beach, FL  
Trespass Study (2010-2012)*



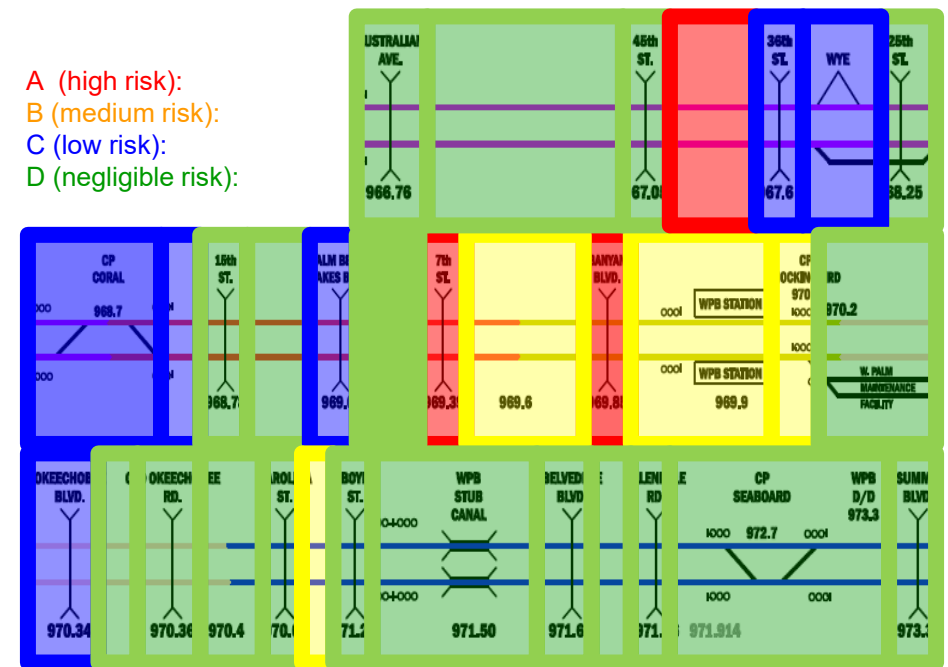
# Problem-Solving Guide

## Step 2 – Analysis

Collect more detailed information about the trespassing problem and determine its underlying causes.

Examples of information:

- Incident data from the law enforcement partners
- Trespass site surveys
- Trespasser survey by law enforcement partners
- Locomotive and stationary video data
- Train crew interviews by railroad officials
- Survey of residents, businesses, and schools at problem locations



# Problem-Solving Guide

## Step 2 – Analysis (continued)

Answer the following in as much detail as possible:

- **Who** is trespassing, and what are their ages? (students, residents, workers...)
- **What** are they doing while on the tracks? (walking, crossing the tracks, riding a bicycle, playing, drinking...)
- **When** does it happen: time, day of the week, month, season?
- **Where** are they entering an exiting the railroad property? Where are they going? Coming From? Where is the desired path?
- **How** are they entering and exiting the railroad property? (no barrier present, hole in fence, climbing, jumping, at a crossing...)



# Problem-Solving Guide

## Step 2 – Analysis (continued)

- Determine the underlying cause(s) of trespassing
  - Analysis of information collected and analysis of common factors (time, location, point of entry, or point of exit...)
- Develop statement describing the underlying cause(s) in detail and a goal to describe what you want to achieve from the program.
- Identify scale of the problem:
  - Large scale: whole community or many organizations needed to solve
  - Medium scale: focused group can solve
  - Small scale: one or two people or organizations can solve
- Identify measures that will be used to determine effectiveness of the program (trespass reduction/elimination, increased public awareness...)



# Problem-Solving Guide

## Step 3 – Response

Identify and implement the most effective and feasible response(s) that will help solve the underlying cause(s) of trespassing:

- Education (e.g. school presentations, media, other)
- Engineering or Environmental Design (e.g. fences, signs, crossing)
- Enforcement
- Other Strategy
- **Implement the plan**





# Problem-Solving Guide

## Step 4 – Evaluation

**Process:** Determine if the process was effective and why or why not.

- Were the key stakeholders and resources identified and included?
- Were the underlying causes correctly identified?
- Was the response implemented as planned? If not, why?
- Was any part of the plan not implemented? Why?
- Was the trespass problem displaced, reduced, unchanged, or eliminated?

Based on the implemented response, will this project require a long-term commitment and monitoring? Who will need to be involved? What could happen if the response is left in place? What could happen if it's taken away?



# Summary

- The approach is collaboration between different players, it is a shared responsibility between railways and other stakeholders.
- Dissemination of good practices can make the difference.
- Guide Implemented and Evaluated in a research study in the city of West Palm Beach, FL from 2009-2013.

Guide: <https://www.fra.dot.gov/eLib/Details/L02716>

Research Report: <https://www.fra.dot.gov/eLib/details/L05307>

Research Article: <http://onlinepubs.trb.org/onlinepubs/trnews/trnews322TrespassPreventionModel.pdf>



# Rail Trespass Treatments/Countermeasures

- ❑ Detection and Warning
- ❑ Anti-trespass technologies/treatments
- ❑ Education Initiatives
- ❑ Enforcement Strategies



# Detection and Warning

## Fixed Systems

PTZ cameras, includes a speaker and microphone

Uses video motion detection as a sensor

Live video fed into police dispatch center

Dispatchers can control PTZs and speak to trespassers

Sensors or Machine Learning (ML) algorithms

Research Report (2020): <https://rosap.ntl.bts.gov/view/dot/50849>

## Mobile (drone) Systems

Mobile camera on a drone by the police

Provide coverage over a significant amount of ROW

Used to identify and track trespassers in areas of the ROW that are difficult to access by the police.

Research Report (2020): <https://rosap.ntl.bts.gov/view/dot/50848>



# Anti-Trespass Technologies/Treatments

## Non-crossing Locations

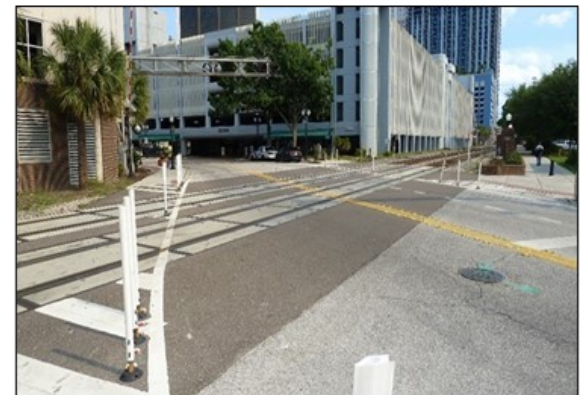
- Warning Signs
- Right-of-way Fencing
  - [Effect of three countermeasures against the illegal crossing of railway tracks](#): Fencing reduced trespassing by 94.6 percent, landscaping 91.3 percent and prohibitive signs 30.7 percent
  - High-Security Fencing for Rail Right-of-way Applications Research Report (2015): <https://rosap.ntl.bts.gov/view/dot/12237>
- Landscaping
- Obstruction removal to increase visibility
- Grade Separation



# Anti-Trespass Technologies/Treatments

## At Crossings

- Anti-Trespass Guard Panels
  - Anti-trespass guard panels reduced the number of pedestrians who trespassed on railroad ROW by 38 percent. (Report 2019: <https://rosap.ntl.bts.gov/view/dot/41716>)
- Pedestrian Gate Skirts & Channelization
  - 56 percent reduction in pedestrian violations while the gates were descending; 19 percent reduction in pedestrian violations while the gates were horizontal. (Report 2020: <https://rosap.ntl.bts.gov/view/dot/53572>)
- Right-of-Way Incursion Treatments
  - Pavement markings through the crossing and reflective markers and flexible delineators on both sides and in between the tracks.
  - 85 percent reduction in frequency of vehicles turning onto the tracks in initial study. (Report 2018: <https://rosap.ntl.bts.gov/view/dot/37006>)



# Enforcement Strategies

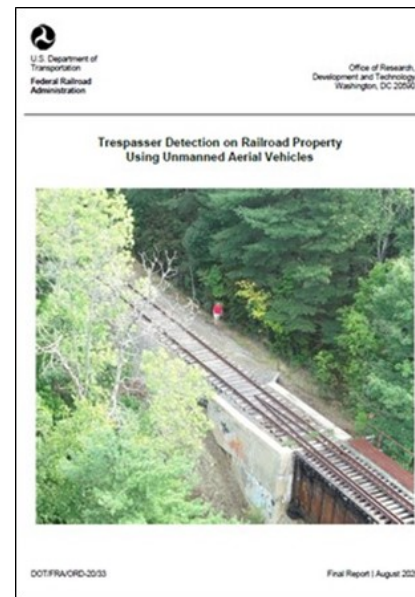
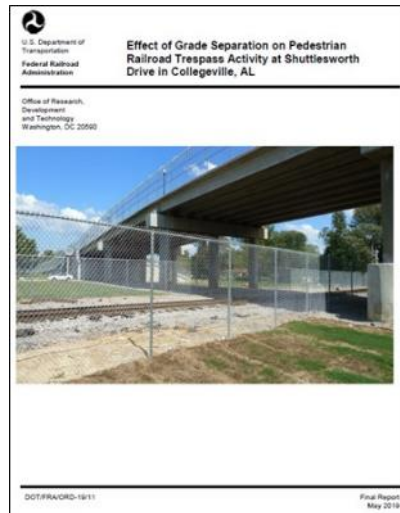
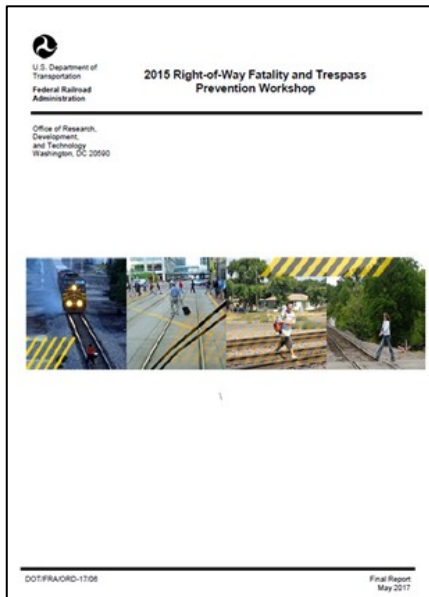
Law Enforcement Strategies for Preventing Rail Trespassing  
Research Report (2016): <https://rosap.ntl.bts.gov/view/dot/12258>

Law Enforcement Strategies for Reducing Trespassing Pilot Grant  
Program Results (2020): <https://rosap.ntl.bts.gov/view/dot/53546>



# FRA References

- FRA Research Repository: <https://railroads.dot.gov/elibrary-search>
- FRA's National Strategy for Trespass Prevention on Railroad Property: <https://www.fra.dot.gov/eLib/Details/L19817>
- RosaP: <https://rosap.ntl.bts.gov/>





# Railroad Trespassing, Tools, & Funding Solutions



**Scott Gabree**  
**USDOT Volpe Center**

Scott Gabree joined the Volpe Center in 2009 and is the manager of the research program for grade crossing safety and trespass prevention for Volpe's Transportation Human Factors Division. The trespass prevention program seeks to better understand trespass and suicide incidents on the US rail system and what rail carriers may be able to do, in coordination with other groups, to help reduce the frequency and impact of these events. Scott and his team at Volpe are currently working with several rail carriers from around the country to try to improve our understanding of rail suicide.

# Trespass and Suicide Prevention Toolkit

Inspired by RESTRAIL toolbox through European Union (EU)

The screenshot shows the RESTRAIL Toolbox website. At the top left is the RESTRAIL Toolbox logo, which features a yellow triangle with a red exclamation mark and a black banner with the text 'RESTRAIL TOOLBOX'. To the right of the logo is the text: 'RAILWAY SUICIDES & TRESPASSING ACCIDENTS: HOW TO PREVENT THE INCIDENTS AND MITIGATE THE CONSEQUENCES?'. Below this is a link: 'Visit the RESTRAIL project website'. In the top right corner is the European Union flag and a text box stating: 'This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement Nr 285153.' Below the header is a navigation menu with links: 'General guidance', 'Full list of measures', 'Glossary', 'References', 'FAQ', 'Contact us', and 'Advanced Search'. A search bar is located to the right of the navigation menu. Below the navigation menu is a section titled 'Analyse the problem' and 'Explore measures by'. Under 'Analyse the problem', there are two red buttons: 'Prevention of incidents' and 'Mitigation of consequences'. Under 'Explore measures by', there are five columns of buttons: 'Type' (Organisational & procedural, Physical & technological, Public awareness & educational), 'Target problem' (Suicide, Trespass, Suicide & Trespass, Mitigation), 'Effect mechanism' (Improve practice & processes, Influence decision, Deter access, Influence behaviour, Reduce consequences), and 'Study results' (No studies, Yes (general), Yes (RESTRAIL)).

# Trespass and Suicide Prevention Toolkit

## TRESPASS & SUICIDE PREVENTION TOOLKIT

Home > Search

### Refine Your Search

#### Incident Type

- Trespass (38)
- Suicide (35)

#### Location

- Station (38)
- Right-of-Way (34)

#### Implementation Strategy

- Data: Application and Planning (12)
- Education: Outreach and Messaging (12)
- Enforcement: Policy Development and Implementation (3)
- Engineering: Technical and Physical Deterrents (15)

#### Measure Group

- Risk Assessment (5)
- Policy Enforcement (4)
- Collaboration, Training, and Education (8)
- Public Communication (6)
- Physical Barriers (7)
- Detection and Lighting (5)
- Infrastructure Modification (4)
- Post-Incident Management (2)
- Employee Wellbeing (1)

## Risk Assessment

- ### Identify access points for potential trespassers ↗

Identify access points where individuals are entering the track area to determine appropriate mitigations.
- ### Identify and monitor hotspots ↗

Identify and monitor locations where the number of trespass and/or suicide incidents are higher than expected.
- ### Planning for events with increased traffic ↗

Develop a plan to ensure safety when an increase in foot or vehicle traffic near the tracks is expected.
- ### Rail corridor risk assessment ↗

Identify locations along railroad corridors with the potential for increased trespass and/or suicide incidents based on characteristics of the surrounding communities.
- ### Risk assessment using forward facing CCTV ↗

Use FFCCTV to review trespass, suicide, and close call incidents to better understand the actions of individuals in the moments before a strike or near miss..

# Characteristics of FRA version

- U.S. audience
- Filterable and searchable
- Information summarized and presented succinctly
- External links for additional detailed information
- Regularly updated

The screenshot displays the 'TRESPASS & SUICIDE PREVENTION TOOLBOX' website. On the left, a 'Refine Your Search' sidebar includes filters for Incident Type (Trespass: 38, Suicide: 35), Location (Station: 39, Right-of-Way: 34), Implementation Strategy (Data: Application and Planning: 12, Education: Outreach and Messaging: 12, Enforcement: Policy Development and Implementation: 3, Engineering: Technical and Physical Deterrents: 15), and Measure Group (Risk Assessment: 5, Policy Enforcement: 4, Collaboration, Training, and Education: 8, Public Communication: 6, Physical Barriers: 7, Detection and Lighting: 5, Infrastructure Modification: 4). The main content area features a 'Your Selections' box and a 'Risk Assessment' section with four items: 'Risk assessment using forward facing CCTV', 'Rail corridor risk assessment', 'Planning for events with increased traffic', and 'Identify and monitor hotspots'. Each item includes a brief description and an external link icon.

# Characteristics of FRA version

The screenshot shows a search filter interface with the following sections:

- Refine Your Search**: A search input field with a "GO" button.
- Incident Type**:
  - Trespass (38)
  - Suicide (35)
- Location**:
  - Station (39)
  - Right-of-Way (34)
- Implementation Strategy**:
  - Data: Application and Planning (12)
  - Education: Outreach and Messaging (12)
  - Enforcement: Policy Development and Implementation (3)
  - Engineering: Technical and Physical Deterrents (15)
- Measure Group**:
  - Risk Assessment (5)
  - Policy Enforcement (4)
  - Collaboration, Training, and Education (8)
  - Public Communication (6)
  - Physical Barriers (7)
  - Detection and Lighting (5)
  - Infrastructure Modification (4)
  - Post-Incident Management (2)
  - Employee Wellbeing (1)

- Incident Type
  - Suicide
  - Trespass
- Location
  - Station
  - Right-of-Way
- Implementation Strategy
  - Data: Application and Planning
  - Education: Outreach and Messaging
  - Enforcement: Policy Development and Implementation
  - Engineering: Technical and Physical Deterrents
- Measure Group
  - Risk Assessment
  - Policy Enforcement
  - Collaboration, Training, and Education
  - Public Communication
  - Physical Barriers
  - Detection and Lighting
  - Infrastructure Modification
  - Post-Incident Management
  - Employee Wellbeing

# Measure Elements

- For each type of measure, 7 tabs with information

- Description
- Notable Practices
- Advantages
- Drawbacks
- Images
- References
- Related Measures

## Physical Barriers

### Anti-trespass panels [↗](#)

Material installed alongside and across the tracks that make footing unreliable in order to deter entry to the right-of-way.

Description	Notable Practices	Advantages	Drawbacks	Images	References	Related Measures
<p>Although trespassing casualties can occur anywhere along railroad right-of-way (ROW), according to the FRA report to congress, National Strategy to Prevent Trespassing on Railroad Property, about 74 percent of trespass casualties occur within 1,000 feet (less than one-quarter mile) of a grade crossing. Installation of anti-trespass panels is one of many measures that can restrict access to the railroad ROW from a crossing. It works by making an individual's footing unreliable due to the panel's surface profile. The panels are often made from recycled rubber or timber and can have a repetitive skewed profile or a raised pyramid design.</p> <p>The anti-trespass panels are most effective when combined with proper channelization to prevent people from walking around the panels. As such, it can also be effective at tunnel or bridge locations where there is natural/infrastructure channelization. These panels may also be used at the end of a platform to prevent people from using the railroad ROW as a short cut or to intentionally put themselves in front of a train.</p> <p>There are numerous research studies that have evaluated the effectiveness of anti-trespass panels on railroad trespasser activity including one in the US. The one study in US reported a 38 percent reduction in the number of trespassers following the installation of the anti-trespass panels at a crossing in Fayetteville, AR [1]. The remaining research studies were conducted in Europe and evaluated the effectiveness of anti-trespass panels in combination with other physical and behavioral measures. These studies reported between a 30 and 98 percent reduction in the number of trespassers following the installation [2, 3, 4].</p>						

# Example Measure: Anti-Trespass Panels

## Anti-trespass panels [↗](#)

Material installed alongside and across the tracks that make footing unreliable in order to deter entry to the right-of-way.

Description	Notable Practices	Advantages	Drawbacks	Images	References	Related Measures
<p>Although trespassing casualties can occur anywhere along railroad right-of-way (ROW), according to the FRA report to congress, National Strategy to Prevent Trespassing on Railroad Property, about 74 percent of trespass casualties occur within 1,000 feet (less than one-quarter mile) of a grade crossing. Installation of anti-trespass panels is one of many measures that can restrict access to the railroad ROW from a crossing. It works by making an individual's footing unreliable due to the panel's surface profile. The panels are often made from recycled rubber or timber and can have a repetitive skewed profile or a raised pyramid design.</p> <p>The anti-trespass panels are most effective when combined with proper channelization to prevent people from walking around the panels. As such, it can also be effective at tunnel or bridge locations where there is natural/infrastructure channelization. These panels may also be used at the end of a platform to prevent people from using the railroad ROW as a short cut or to intentionally put themselves in front of a train.</p> <p>There are numerous research studies that have evaluated the effectiveness of anti-trespass panels on railroad trespasser activity including one in the US. The one study in US reported a 38 percent reduction in the number of trespassers following the installation of the anti-trespass panels at a crossing in Fayetteville, AR [1]. The remaining research studies were conducted in Europe and evaluated the effectiveness of anti-trespass panels in combination with other physical and behavioral measures. These studies reported between a 30 and 98 percent reduction in the number of trespassers following the installation [2, 3, 4].</p>						



# Example Measure: Anti-Trespass Panels

## Anti-trespass panels [↗](#)

Material installed alongside and across the tracks that make footing unreliable in order to deter entry to the right-of-way.

Description	Notable Practices	Advantages	Drawbacks	Images	References	Related Measures
<ul style="list-style-type: none"><li>• When determining the width of the panel needed, consider the potential for individuals to jump over the panel [1].</li><li>• Consider adding snow plow lift signs if this measure is installed in snowy areas so that they do not get damaged during snow plowing [2].</li><li>• Consider safety and operational impacts on both train and roadway users when scheduling installation at the crossing.</li><li>• Develop a strategy for who is responsible for maintaining the panel so that they do not get filled up with dirt, fallen debris, or snow. Without proper maintenance, the panels' effectiveness could be reduced.</li><li>• Ensure that there are escape routes for train passengers during emergency evacuation [4].</li><li>• Consider adding entry gates along the fence for railroad workers to access the railroad ROW [4].</li><li>• Ensure that warning and prohibitive signs are posted along with this measure.</li><li>• Ensure that there is proper channelization along the railroad ROW so that people cannot walk around the panels.</li><li>• Effectiveness of anti-trespass panels in a given location can be estimated by collecting trespass frequency before and after installation.</li></ul>						





# Example Measure: Anti-Trespass Panels

## Anti-trespass panels [↗](#)

Material installed alongside and across the tracks that make footing unreliable in order to deter entry to the right-of-way.

Description	Notable Practices	Advantages	Drawbacks	Images	References	Related Measures
<ul style="list-style-type: none"><li>• Anti-trespass panels are simple to install [2].</li><li>• The panels made of rubber can be cut to fit around existing infrastructure (e.g., columns, signs).</li><li>• Anti-trespass panels are relatively low cost. The cost of this measure is primarily associated with the materials as it can be installed by in-house staff.</li><li>• Unlike (link: rock treatment to deter access) measure, which can only be installed outside the tracks, the anti-trespass panel can be installed between the rails as well as outside the tracks.</li><li>• Anti-trespass panels may act as a visual deterrent in addition to a physical one. Reflective paint can be used to increase panels' visibility on the ground [4].</li><li>• This measure can be used to mitigate both trespass and suicide incidents on the ROW and at stations.</li><li>• Research shows some effectiveness of anti-trespass panels in reducing the number of people that trespass onto railroad ROW [1, 2, 3, 4].</li></ul>						

# Example Measure: Anti-Trespass Panels

## Anti-trespass panels [↗](#)

Material installed alongside and across the tracks that make footing unreliable in order to deter entry to the right-of-way.

Description

Notable Practices

Advantages

Drawbacks

Images

References

Related Measures







- The anti-trespass panels can make it difficult for railroad maintenance workers and law enforcement officials to access the railroad ROW.
- Anti-trespass panels are intended to deter/delay access to the railroad ROW and as such, it can also make it more difficult for passengers to exit the railroad ROW during an emergency evacuation.
- The surface profile of the anti-trespass panels makes it difficult to walk on, but without proper upkeep, the panels can get filled up with dirt, fallen debris, or snow thus reducing their effectiveness.



# Example Measure: Anti-Trespass Panels

## Anti-trespass panels [↗](#)

Material installed alongside and across the tracks that make footing unreliable in order to deter entry to the right-of-way.

Description	Notable Practices	Advantages	Drawbacks	Images	References	Related Measures
						

# Example Measure: Anti-Trespass Panels

## Anti-trespass panels [↗](#)

Material installed alongside and across the tracks that make footing unreliable in order to deter entry to the right-of-way.

Description

Notable Practices

Advantages

Drawbacks

Images

References

Related Measures

[1] Ngamdung, T. and daSilva, M. (2019). [Effect of Anti-Trespass Guard Panels on Pedestrian Behavior](#). Technical Report No. DOT/FRA/ORD-19/23. Washington, DC: U.S. Department of Transportation, Federal Railroad Administration.

Abstract: The U.S. Department of Transportation's (DOT) John A. Volpe National Transportation Systems Center (Volpe Center), under the direction of DOT's Federal Railroad Administration Office of Research, Development and Technology, conducted a research study that evaluated the effectiveness of anti-trespass guard panels installed on a railroad right-of-way (ROW) adjacent to the West Dickson Street grade crossing in Fayetteville, AR. The goal of the panels was to reduce the number of pedestrians that trespass onto railroad ROWs. Data was collected over 10 weekends before and another period of 10 weekends after the installation of the anti-trespass guard panels. Results indicated that the number of trespassing pedestrians was reduced by 38 percent, from 166 trespassers before installation to 103 after installation. Though these results seemed to indicate that this safety enhancement was effective in improving pedestrian behavior, it is important to note that no measure of pedestrian traffic was collected and this safety enhancement has only been studied at one unique crossing. Additional field testing is necessary before recommendations for wider use can be made.

[2] Svensson, K. and Dahlstrand, A. (2019). [Pyramid Rubber Mats Obstructing Rail Track Trespassers](#). The Swedish Transport Administration.

No abstract available from published work. This report describes a study, conducted by Swedish Transport Administration, to evaluate the effectiveness of anti-trespass panels installed at six test site locations throughout the rail network in Sweden. The test site locations include three at rail yard, one at grade crossing, one at tunnel, and one at station platform. The report includes data on the effects of anti-trespass panels on the number of trespassers at these locations.

[3] RESTRAIL. (2014). Evaluation of measures, recommendations and guidelines for further implementation: Pilot test #7, [A combination of measures at Ayden Station – TCDD](#).

No abstract. This document describes a pilot test of various physical and behavioral measure including anti-trespass panels to reduce the occurrence of suicides and trespasses on railway property as part of the RESTRAIL project.

[4] RESTRAIL. (2020, September 30). [8.5 Anti-trespass panels](#).

## Additional Resources

Metrolinx. (2019, September 26). [Metrolinx is exploring innovative ways to reduce deaths on our tracks](#).

No abstract. This news article describes an effort by Metrolinx in Canada to increase safety along its ROW by installing the anti-trespass panels at high risk locations.

# Example Measure: Anti-Trespass Panels

## Anti-trespass panels [↗](#)

Material installed alongside and across the tracks that make footing unreliable in order to deter entry to the right-of-way.

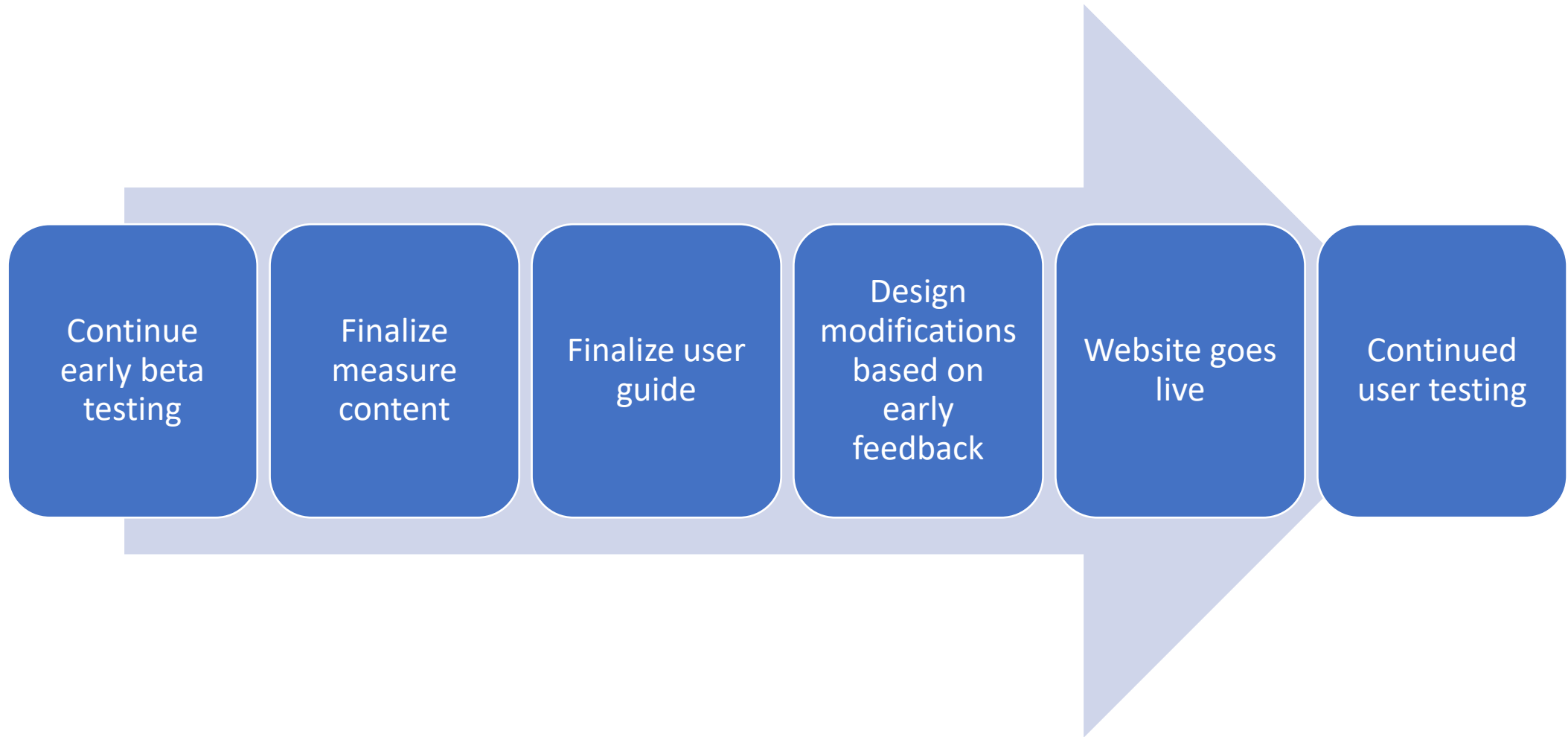
Description	Notable Practices	Advantages	Drawbacks	Images	References	Related Measures
<a href="#">Fencing between tracks at stations</a>						
<a href="#">Landscaping treatments to restrict access</a>						
<a href="#">Physical barriers at bridges</a>						
<a href="#">Right-of-way fencing</a>						

# Intended Audience

- FRA field staff
- Railroad employees
- Community members
- Local government officials
- Researchers
- Suicide prevention groups
- Anyone interested in trespass or suicide prevention



# Current status and next steps



# Highway-Rail Grade Crossing & Trespass Prevention Research Program



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# USDOT Finding Opportunities

## Matthew Lorah Federal Railroad Administration

Matthew Lorah is the acting Chief of the Grants & Program Management Division at FRA. He has worked in Federal grants for 16 years. He has spent the past 10 years working with FRA's grant programs in the Office of the Chief Financial Officer and Office of Railroad Policy & Development. Previously, he has worked on federal grants with the Department of Justice and Department of Homeland Security. Prior to working in grants, he worked as an auditor for the Department of the Army. He has an accounting degree from Bloomsburg University of Pennsylvania. He resides with his wife and 3 children in Virginia.



# FY21 CRISI – Program Overview



**\$362M**

In available  
funding

## The Consolidated Rail Infrastructure and Safety Improvements (CRISI) Grant Program

*For projects that improve the safety, efficiency, and/or reliability of intercity passenger and freight rail systems*

**\$25M**

## CRISI set-aside targeting trespassing

**\$2.3M**

## Non-CRISI funding to reduce trespassing

*Available funding for trespassing mitigation projects has been folded into the CRISI Grant Program under Track 4*

# FY21 CRISI – Grants to Reduce Railroad Trespassing



<b>CRISI Set-Aside:</b> <b><i>\$25M</i></b>	For projects for capital and engineering solutions targeting trespassing
<b>Railroad Trespassing Enforcement Grant Program:</b> <b><i>\$2,034,296</i></b>	For railroad trespassing enforcement activities at trespassing hot spots
<b>Railroad Trespassing Suicide Prevention Grant Program:</b> <b><i>\$207,000</i></b>	For the implementation or expansion of targeted outreach campaigns to reduce the number of railroad-related suicides

# FY21 CRISI – Grants to Reduce Railroad Trespassing



## CRISI Funding

### \$25M Set-Aside

- For projects for capital and engineering solutions targeting trespassing located in counties with the most pedestrian casualties as identified in [FRA's National Strategy to Prevent Trespassing on Railroad Property](#)
- No predetermined minimum or maximum dollar thresholds

# FY21 CRISI – Grants to Reduce Railroad Trespassing

## Non-CRISI Funding



### Railroad Trespassing Enforcement Grant Program **\$2,034,296**

- For railroad trespassing enforcement activities at trespassing hot spots on FRA-regulated track
- Funds only hourly wages for law enforcement officials
- Maximum grant award \$120,000, with no minimum
- No non-Federal match required; Federal share of total project costs can be up to 100%
- Applicants must meet the CRISI Grant Program eligibility requirements

#### **Applicants must include the following information:**

- Date, time, number of officers
- Location and description of Enforcement Activity
- Justification or reason for selected enforcement activity
- Number of contacts (encounters with trespassers)
- Number of warnings and/or citations issued
- Deterrence effect of such activities and method for measuring such deterrence (including explanation of how they determine deterrence effect)

# FY21 CRISI – Grants to Reduce Railroad Trespassing

## Non-CRISI Funding

### Railroad Trespassing Suicide Prevention Grant Program *\$207,000*

- For the implementation or expansion of targeted outreach campaigns to reduce the number of railroad-related suicides that involve railroad trespassing on FRA-regulated track
- Maximum grant award \$100,000
- No non-Federal match required; Federal share of total project costs can be up to 100%
- Applicants must meet the CRISI Grant Program eligibility requirements



#### **Trespass Suicide Prevention Activities**

- Applicants must include indicators of success (e.g., anticipated reach of messaging efforts or contacts made by personnel with individuals at risk or reduced suicide incidents)
- FRA maintains the right to re-publish and use information under this grant for the advancement of safety

# FY21 CRISI – Program Overview

## Eligible Applicants

- A State or group of States
- Public agencies or publicly chartered authorities
- Local governments
- Amtrak or other intercity passenger rail carrier
- Class II or III railroads
- Rail carrier or equipment manufacturer partnering with a state or local government entity
- The Transportation Research Board (TRB) together with any contractor to develop rail-related research
- A university transportation center for rail-related research
- A non-profit labor organization

## Eligible Projects

- Wide Range of Rail Capital Projects--including grade crossings, track and bridges, equipment
- Railroad Safety Technology
- Track, Station, and Equipment Improvements for Intercity Passenger Rail
- Grade Crossing Improvements
- Rail Line Relocation and Improvement
- Regional, State, Corridor Planning and Environmental Analyses
- Safety Programs and Institutes
- Research, Workforce Development, and Training

**At least 25% of funds is reserved for rural projects**



# FY21 CRISI – Program Overview

## Evaluation Criteria

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- **Technical Merit:** SOW aligns with expected outcomes, project readiness, technical capacity of applicant to carry out proposed project, innovative overall approach, consistency with planning documents
- **Project Benefits:** Effects on system performance, safety, integration with other modes, ability to meet demand

## Selection Criteria

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- **Preference:**
  - Federal share of total project costs is 50 percent or less
  - Maximized net benefits
  - Pre-construction elements for new intercity passenger rail routes set-aside
  - Projects targeting trespassing in areas with documented incidences



# FY21 CRISI – Program Overview

## Key Departmental Objectives

DOT will assess the project's ability to meet one or more of these objectives. Such considerations can include, but are not limited to, the extent to which an application:

### ***Safety***

Improves safety at highway-rail grade crossings, reduces incidences of rail-related trespassing, and upgrades infrastructure to achieve a higher level of safety.

### ***Equitable economic strength, improving core assets***

Invests in vital infrastructure assets, addresses capital needs to connect farms, factories, and shippers to the rail network, and provides opportunities for families to achieve economic security through rail industry employment.

### ***Resilience, addressing climate change***

Reduces emissions, promotes energy efficiency, increases resiliency, and recycles or redevelops existing infrastructure.

### ***Racial equity, economic inclusion***

Improves or expands transportation options, mitigates the safety risks and detrimental quality of life effects that rail lines can have on communities, and expands workforce development and training opportunities to foster a more diverse rail industry.

### ***Transformation of our nation's transportation infrastructure***

Adds capacity to congested corridors, builds new connections, and ensures assets will be improved to a state of good repair.

# What is a NOFO?

## Notice of Funding Opportunity (NOFO)

### A Notice of Funding Opportunity (NOFO):

- Announces the grant opportunity
- Contains details about the application requirements and procedures to request Federal funding for eligible projects
- See the [FY 2021 Notice of Funding Opportunity](#) in the Federal Register



The screenshot displays the Federal Register website interface. At the top, there is a navigation bar with links for Sections, Browse, Search, Reader Aids, and My FR. The main header features the National Archives logo, the text 'FEDERAL REGISTER The Daily Journal of the United States Government', and the Presidential Seal. A blue bar below the header contains a 'Notice' icon. The main content area is titled 'Notice of Funding Opportunity for Consolidated Rail Infrastructure and Safety Improvements' and includes a sub-header 'A Notice by the Federal Railroad Administration on 08/31/2021'. Below this, there are two columns of information: 'PUBLISHED DOCUMENT' and 'DOCUMENT DETAILS'. The 'PUBLISHED DOCUMENT' column contains sections for AGENCY (Federal Railroad Administration (FRA), Department of Transportation (DOT)), ACTION (Notice of Funding Opportunity (NOFO or notice)), SUMMARY (This notice details the application requirements and procedures to obtain grant funding for eligible projects under the Consolidated Rail Infrastructure and Safety Improvements (CRISI) Program, and related Trespass Prevention projects. The opportunities described in this notice are made available under Assistance Listings Number 20.325, "Consolidated Rail Infrastructure and Safety Improvements."), and DATES (Applications for funding under this solicitation are due no later than 5:00 p.m. ET, November 29, 2021. Applications that are incomplete or received after 5:00 p.m. ET on November 29, 2021 will not be considered for funding. See Section D of this notice for additional information on the application process.). The 'DOCUMENT DETAILS' column contains information about the printed version (PDF), publication date (08/31/2021), agencies (Federal Railroad Administration), dates (Applications for funding under this solicitation are due no later than 5:00 p.m. ET, November 29, 2021. Applications that are incomplete or received after 5:00 p.m. ET on November 29, 2021 will not be considered for funding. See Section D of this notice for additional information on the application process.), document type (Notice), document citation (86 FR 48798), page (48798-48812 (15 pages)), and document number.



# What information is in a NOFO?

## Key Parts of a NOFO

- Program summary
- Key Dates
- Addresses
- FRA Contact Information
- Table of Contents
  - Program Description
  - Federal Award Information
  - **Eligibility Information**
  - **Application and Submission Information**
  - **Application Review Information**
  - Federal Award Administration Information
  - Federal Awarding Agency Contacts





# How do I Apply?

## Key Steps

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- Obtain a Dun and Bradstreet number (DUNS)
- **Register early** in the Federal government's System for Award Management (SAM)
  - **NOTE: SAM registration can take up to 2 weeks**
- For Grants.gov, complete an **Authorized Organization Representative profile** and create a username and password
- Submit an application addressing all requirements outlined in the NOFO

# Grant Application Process Information

The image shows a computer monitor displaying the Federal Railroad Administration's website. The website header includes the U.S. Department of Transportation logo and navigation links for About FRA, Railroad Safety, Rail Network Development, Research & Development, Legislation & Regulations, Grants & Loans, and FRA eLibrary. The main content area is titled "Competitive Grants Application Process" and includes a sidebar with links like "Grant Administration Overview" and "Applying for Grants". The main text describes the process in compliance with President Trump's Management Agenda E-Gov Initiative and outlines four key phases. A "CLICK TO VIEW FULL INFOGRAPHIC" button is visible.

Overlaid on the right side of the monitor is a vertical infographic titled "COMPETITIVE GRANTS APPLICATION PROCESS". It details the following steps:

- PHASE 1 - Typical time frame: UP TO 1 MONTH**
  - STEP 1:** Get a Dun&Bradstreet Number (DUNS) by calling (866) 705-5711 or visiting [www.dunsmicro.com](http://www.dunsmicro.com).
  - STEP 2:** Register with System for Award Management (SAM) at [www.sam.gov](http://www.sam.gov). After registration, send SAM 1) a notarized letter, and 2) An Employer Identification Number (EIN)/Tax Identification Number (TIN).
  - STEP 3:** Register with Grants.gov and create an applicant profile. After registration, send SAM: 1) A notarized letter, 2) An Employer Identification Number (EIN)/Tax Identification Number (TIN).
- PHASE 2 - Typical time frame: 1 MONTH**
  - STEP 4:** Complete and submit application in Grants.gov Workspace addressing all NCFQ requirements.
- PHASE 3 - Typical time frame: 4-8 MONTHS**
  - STEP 5:** Verify FRA's receipt of application using Grants.gov tracking number.
  - STEP 6:** Project selections announced.
- PHASE 4 - Typical time frame: 6-12 MONTHS**
  - STEP 7:** Grant Pre-Obligation Period. Grantees work with FRA to complete required documentation before funds can be obligated. Includes: Grant Agreement, Terms and Conditions, and NEM Agreements.
  - STEP 8:** Grant Funds Obligated\*. FRA reimburses grantees for eligible expenses.

The infographic also includes a section for "APPLICATION RESOURCES" such as FRA NOFO, FRA Training and Guidance, Workspace on Grants.gov, and support@grants.gov. A footer note states: "\*Check with your obligee, grantees before Grant Agreement and Conditions for award/grant systems." and the URL [www.fra.dot.gov/grants](http://www.fra.dot.gov/grants).

<https://railroads.dot.gov/grant-administration/applying-grants/competitive-grants-application-process>

# Grant Awards

- FRA anticipates making multiple awards with the available funding
- FRA may not be able to award grants to all eligible applications even if they meet or exceed the stated evaluation criteria (see Section E of NOFO, Application Review Information)
- Projects may require more funding than is available
  - Applicants should propose projects or components of projects that have operational independence and can be completed and implemented with funding under this NOFO as a part of the total project cost together with other, non-Federal sources.



# Brightline Update

**Ali Soule is the VP of Community Relations at Brightline Trains and has led the external affairs for 9 years. She has more than 12 years of experience developing and executing strategic public affairs, government relations and public relations campaigns for privately funded startups, state agencies, cities and counties. She has received several awards for her leadership and work in public relations.**



# Brightline update

- Brightline will return to service in early November
- During temporary suspension, Brightline worked to complete installation of Positive Train Control between Miami and West Palm Beach
- Other safety improvements and initiatives include Buzz Boxx, community greening project in Palm Beach County, partnerships with law enforcement and school districts, PSAs and tri-lingual safety materials





# Closing

- **Next Steps**
- **Topics for future webinars**
- **Spring of 2022**

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**Thank you to our safety partners at the Treasure Coast  
Regional Planning Council for assisting with this webinar.**

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