Defining Characteristics of Intentional Fatalities on Railroad Rights-of-Way in the US

2013 National Highway-Rail Grade Crossing Safety Conference

Trespass and Suicide Countermeasures
Project Partners

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- Stephanie Chase, Ph.D. – Volpe National Transportation Systems Center

- Michael Martino – Association of American Railroads (AAR)/Railroad Research Foundation (RRF)

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Background

• Trespassing is the leading cause of rail-related death in the United States (US)
• A proportion of fatalities on the rights-of-way are suicides

* NOTE: Only one full year of suicide data is currently available through the FRA database
Background

- 38,364 suicide deaths in the US in 2010 and rising*
  - Middle to older, white males are highest risk

- Exact number that occur on the right-of-way in the US is known, estimated to be between 150 and 300 annually

* 2010 numbers according to the 5/3/2013 CDC Morbidity and Mortality Weekly Report
Background

• Effort to understand more about suicide on railroad right-of-way initiated in 2005

• Railroad Research Foundation (RRF) with subcontractor American Association of Suicidology (AAS)
  - Initial efforts included a literature review of existing US and international efforts
  - Two separate documents were developed detailing the findings from this work
Background

- The following reports were completed through this contract with the RRF and AAS:
  - *Demographic Profile of Intentional Fatalities on Railroad Rights-of-Way in the United States*
    - An estimation of the yearly number of suicides on the railway and basic demographics of those individuals
    - Report: DOT/FRA/ORD-13/36
    - [https://www.fra.dot.gov/eLib/Details/L04734](https://www.fra.dot.gov/eLib/Details/L04734)

    - A better understanding of the characteristics that make railway suicide victims unique from other suicide victims
    - Report: DOT/FRA/ORD-13/25
    - [http://www.fra.dot.gov/eLib/Details/L04566](http://www.fra.dot.gov/eLib/Details/L04566)
Demographic Profile of Intentional Fatalities on Railroad Rights-of-Way in the United States

  - 497 trespasser fatalities
  - 268 suicides (minimum of 35% of all fatalities)

  - 1,341 trespasser fatalities
  - 428 suicides (minimum of 24% of all fatalities)

<table>
<thead>
<tr>
<th>Age</th>
<th>Study 1</th>
<th>Study 2</th>
<th>US Suicides (2009)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;25yrs</td>
<td>20%</td>
<td>19%</td>
<td>13%</td>
</tr>
<tr>
<td>25 – 54yrs</td>
<td>72%</td>
<td>72%</td>
<td>56%</td>
</tr>
<tr>
<td>&gt;54yrs</td>
<td>8%</td>
<td>9%</td>
<td>32%</td>
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</table>

<table>
<thead>
<tr>
<th>Gender</th>
<th></th>
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<th></th>
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</thead>
<tbody>
<tr>
<td>Male</td>
<td>72%</td>
<td>72%</td>
<td>79%</td>
</tr>
<tr>
<td>Female</td>
<td>28%</td>
<td>28%</td>
<td>21%</td>
</tr>
</tbody>
</table>

• Psychological Autopsy of 55 cases
  – Next of kin of suicide decedents interviewed

• Demographics (n = 55)

<table>
<thead>
<tr>
<th>Age</th>
<th>Psychological Autopsy (N = 55)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;30yrs</td>
<td>33% (18)</td>
</tr>
<tr>
<td>31 – 50yrs</td>
<td>40% (22)</td>
</tr>
<tr>
<td>&gt;50yrs</td>
<td>27% (15)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender</th>
<th>Psychological Autopsy (N = 55)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>84% (46)</td>
</tr>
<tr>
<td>Female</td>
<td>16% (9)</td>
</tr>
</tbody>
</table>
Defining Characteristics of Intentional Fatalities
on Railroad Rights-of-Way in the United States, 2007-2010

• Mental Health (n = 55)
  – 53 (96%) decedents reported to have mental disorder
    • 25 of the 53 prescribed medication
      – Only 10 of the 25 taking medication as prescribed
    • 12 of the 53 in therapy

• Substance Abuse (n = 55)
  – 34 (62%) heavy consumers of alcohol
  – 32 (58%) abusing drugs

• Toxicology Report from Autopsy (n = 43)
  – 22 (51%) toxicology screens were positive for alcohol or drugs

• Location (n = 55):
  – 54 (98%) of cases occurred on open track
  – 6 of the 55 directly witnessed by bystanders (and 23 were witnessed near site prior to incident)

• Last known address (n = 46):
  – 40 (87%) last known address within 2 miles of incident site
  – 35 (76%) last known address within 1 mile of incident site

• Time of day (n = 55):
  – All throughout the day, but more often afternoon or early evenings

• Location (n = 52):
  – 46 (84%) had nothing restricting access to track

• Personal Possessions (n = 29)
  – Fewer than 5 had a cell phone with them at time of death

• Prior Attempts (n = 55)
  – 24 (44%) had previously attempted suicide
  – 5 (21%) had previously attempted suicide on the railroad rights-of-way
International Context

- **United States:**
  - 501 trespasser fatalities per year *(11 year avg)*
  - Number of suicides not well established – best FRA estimates indicate an average of 246 per year

- **Canada**\(^1\):
  - 46 trespasser fatalities per year *(10 year avg)*
  - 42 railway suicides on railway per year *(10 year avg)*

- **United Kingdom**\(^2\):
  - 40 trespasser fatalities per year *(5 year avg)*
  - 220 railway suicides or attempted suicides per year *(5 year avg)*

- **Germany**\(^1\): 955 railway suicides per year *(7 year avg)*

- **Sweden**\(^1\): 48 railway suicides per year *(3 year avg)*

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Current Efforts

• GIS Mapping of Trespass and Suicide Incidents
• Countermeasure Development
• Defining Trespass and Suicide
• Effects of Media Reporting
GIS Mapping Effort

- Map of fatal and non-fatal incidents on the right-of-way
- Identify unique attributes of trespass versus suicide incidents
- Evaluate effectiveness of existing countermeasure implementations
GIS Mapping Effort

Legend
- Trespass Fatality
- Trespass Injury
- GRX Ped Fatality
- GRX Ped Injury
Proposed Countermeasures

• Physical Obstructions
  – Fencing
  – Pedestrian Gates at Crossings
  – Platform Edge Doors

• Changing Behavior
  – Media Guidelines
  – Public Awareness Campaigns
  – Signage

• Other Measures
  – Anti-Suicide Pits
  – Blue Lighting
  – Gatekeeper Training
  – Track Surveillance
  – Train Modification
  – Train of Mental Health Providers
Stakeholders Contacted

- **International**
  - Rail Safety Standards Board (RSSB), UK
  - TrackSAFE, Australia
  - Trafikverket (Swedish Transport Administration), Sweden
  - Transport Canada
  - VTT Traffic Safety, Finland
  - University of Quebec at Montreal

- **US Government**
  - Center for Disease Control (CDC)
  - Federal Railroad Administration (FRA)
  - Federal Transit Authority (FTA)
  - Federal Working Group on Suicide Prevention
  - National Institute of Mental Health (NIMH)
  - Substance Abuse and Mental Health Safety Administration (SAMHSA)
  - Volpe Center

- **Academic**
  - George Washington University
  - Harvard School of Public Health
  - Kansas City University of Medicine

- **Non-Profit**
  - American Association of Suicidology
  - Suicide Research Prevention Center (SPRC)

- **Railroad Industry**
  - Amtrak
  - Association of American Railroads (AAR)
  - Caltrain
  - Long Island Railroad
  - Massachusetts Bay Commuter Railroad (MBCR)
  - Metra
  - Metrolink
  - New Jersey Transit
  - Norfolk Southern
Next Steps

- Continue to work with FRA sponsor, Office of Safety, and railroad carriers to collect and map trespass and suicide data
- Understand unique characteristics of trespass and suicide incidents to better inform countermeasure development
- Continue to explore potential countermeasures for trespass and suicide
- Better understand how the terms trespass and suicide are used internationally and in the US
- Better understand the effects of media on railway suicide rates
Questions?

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