Grade Crossing and Trespasser Suicides – Current Research and Future Directions

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Acknowledgements & Stakeholders

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Project Goals

- Develop GIS mapping tool which can:
  - Track all incidents on railroad rights-of-way
  - Identify possible causes for these incidents and pinpoint locations at higher risk for future incidents
  - Evaluate the effectiveness of countermeasures

- Provide relevant and useful information to key decision makers
Motivation for this effort

- No easy way to track and visualize where trespasser incidents occur
- Expansion of high-speed rail in the United States
- Pair individual/incident with information about the location
- Identify stakeholders who should be made aware of findings, for example:
  - Railroad
  - Local community
  - Schools
- A visual map of these incidents will provide an easy and quick way to identify areas of concern
Previous Work

- Demographic profiles of trespasser and suicide victims
  - More extensively investigated in Europe and Australia
  - Some have been conducted in the US (e.g., FRA 2008)
- GIS software used to identify hotspots
  - Mapping of trespasser and suicide incidents on Google Maps by Dr. Brian Mishara and Dr. Cecil Bardon – Universite du Quebec a Montreal
  - Trespass prevention research study in West Palm Beach, FL (daSilva and Carroll, 2011)
Current Effort: GIS Mapping Tool

ArcGIS Software – ArcMap 10
GIS Mapping Tool
GIS Mapping Tool

Data Sample

- Incidents occurred in the State of Florida
- Trespasser incidents between 6/2011 and 2/2012

- Trespasser Fatality
- Mental Health Facility
GIS Mapping Tool

Data Sample

- Incident occurred in the State of Florida
- Trespasser incidents between 6/2011 and 2/2012
- Incident was less than 2 miles from a mental health facility
GIS Mapping Tool
GIS Mapping Tool

- Data to be included:
  - Demographics of the individual
  - Intentional vs. Unintentional
  - Characteristics of the site and surrounding area
  - Hospitals, schools, parks & playgrounds
  - Grade crossings
  - Quiet zones
  - Date of incident
  - Time of day
  - Location
GIS Mapping Tool

- **Likely Benefits**
  - Visualization tool that is user friendly and easy to maintain
  - Identification of hot spots and target demographics
  - Insight into why an event occurred (e.g., shortcut to a nearby school)
  - Identify community based interventions
  - Explore effectiveness of past and current countermeasures

- **Possible Roadblocks**
  - Data from the FRA before June 2011 is only specified at the county level
  - Available data is not detailed or consistent due to current data reporting protocols
Other GIS Mapping Tool Uses

- Investigation of existing/past countermeasures to look for evidence of effectiveness
  - Signage
  - Media training
  - Means restriction (e.g., fencing)
  - Public outreach

- Investigate the difference between trespasser and suicide hot spots

- Once a hot spot is identified:
  - Why at that location?
    - Media driven
    - Geographical
    - Characteristics of the individual (age, gender, etc.)
  - Who needs this information?
    - Communities
    - Schools
    - Railroads
Next Steps

- Work with key stakeholders to identify uses (and potential misuses) of the data

- Identify additional data sources to compliment existing FRA/Carrier data

- Work with data users to design and implement a useful tool
Questions?