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# Demographic Profile of Intentional Fatalities on Railroad Rights-of-Way in the United States

## SUMMARY

One of the Federal Railroad Administration's (FRA) primary safety concerns is trespassing on railway rights-of-way. Some trespasser events end as fatalities which can be intentional or unintentional. This project reviews available trespasser data to establish a baseline estimate of intentional trespasser fatalities that occur on railroad rights-of-way and to obtain a basic demographic profile of the individuals involved. This project was especially valuable since at the time of data collection, railroads were not required to report trespasser fatalities and FRA did not collect trespasser incidents on railway rights-of-way that resulted in an intentional death.

Two studies were conducted. Study 1 (June 1, 2006, to May 31, 2007) concluded that 268 trespasser fatality incidents were identified as intentional acts based on a review of railroad trespasser fatality records (RTFRs), state mortality systems, and media reports. During this 1-year time frame, 497 trespasser fatalities were reported by FRA. If no intentional fatalities are included in this FRA number (reporting guidelines do not require intentional incidents to be reported), then 35 percent of all trespasser fatalities during this time should be considered intentional. Study 2 (June 1, 2007, to May 31, 2010) concluded that 428 trespasser fatalities were determined to be intentional through an active analysis of RTFRs and state mortality

systems from the period in question. Those intentional fatalities account for 24 percent of all trespasser fatalities reported during that time frame (1,341 FRA reported fatalities). For Study 2's 3-year period, inconsistencies in data reported by railroads did not permit a precise baseline estimate of intentional trespasser fatality. It can be assumed that those estimates (although not precise) represent the minimum number of intentional deaths that occurred during the studies' time frames, and thus provide an estimate of the overall percentage of railroad right-of-way fatalities.

Results from both studies found that approximately three-quarters of the individuals involved in intentional fatalities were male, which closely mirrored the national gender distribution of suicides by other means. The age of the individuals who completed suicide on railroad rights-of-way tended to be younger than those who completed suicide by other means. No significant patterns were noted for time of day or monthly variation.

Incidents were also examined by State of the participating railroads. The studies showed that Minnesota and Illinois consistently ranked among the States with the highest number of intentional trespass fatalities when adjusted by State population. When adjusted by miles of track within each State, New Jersey, California, and Florida consistently ranked among the highest.



## BACKGROUND

Despite significant improvements in many railroad safety related areas, trespasser incidents, both intentional and unintentional, have remained steady. Understanding more about trespasser incidents, including how many of them are intentional acts, may help with the development of more effective mitigation strategies. This effort was the first cooperative attempt by FRA and the U.S. railroad industry to estimate the number of intentional trespasser fatalities occurring on railroad rights-of-way in the United States. Two studies conducted at different time periods provide approximate frequency estimates of the number of intentional trespasser fatalities in the years surveyed.

## OBJECTIVES

The main objective of this effort was to assess the prevalence of intentional trespasser fatalities on railroad rights-of-way in the United States. Inconsistencies in data reporting throughout the study time frame made it difficult to provide a precise prevalence estimate; however, this study was able to provide estimates of the minimum number of intentional trespasser fatalities that occur in a 12-month time period, as well as some basic demographic information about the individuals involved. This effort also provides information about time, month, and location (by State) patterns in the cases identified for the study time frame.

## METHODS

As noted above, the demographic profiles of suicides on railroad rights-of-way are established through the following two components:

- Study 1: A one-time single year data collection (June 1, 2006, to May 31, 2007)
- Study 2: A continuous 3-year data collection (June 1, 2007, to May 31, 2010)

Study 1 involved a one-time data collection effort during which intentional trespasser fatality data from June 1, 2006, to May 31, 2007, were obtained and reviewed for indication that a trespasser fatality was a suicide that occurred on railroad rights-of-way. The source for this component of the study was data maintained in State mortality surveillance systems, media reports (newspaper articles), and railroad trespasser fatality records (RTFRs).

Study 2 built upon the foundation established in Study 1; however, instead of obtaining all of the data at one time, the investigators actively worked with data sources to acquire data quarterly between June 1, 2007, and May 31, 2010. These data sources included RTFRs and data maintained in State mortality surveillance system. Media reports were not used in Study 2. Some railroads were unable to consistently report during the entire 3-year timeframe of Study 2. Therefore, estimates from Study 2 likely underrepresent the number of intentional fatalities on railroad rights-of-way during those years.

In both studies, duplicate information was often found between sources. In cases where the information between sources was inconsistent, information from FRA/Railroad (e.g., RTFRs) was considered the baseline. State mortality records were then considered followed lastly by media reports (for Study 1 only).



## RESULTS

Results from Study 1 and Study 2 are presented separately due to the different data collection strategies employed (see Methods section). Also, note that the data available from each data source varied resulting in different sample sizes for some variables.

### Study 1

In Study 1, 268 trespasser fatalities were determined to be intentional. When considering the 497 trespasser fatalities reported by FRA during the same 1-year time frame, intentional fatalities accounted for at least 35 percent of the fatalities on railroad rights-of-way. Information on race/ethnicity was rarely reported in most data sources. Although individual death certificates included this information, retrieving such information was beyond the scope of both studies. For the 268 intentional trespasser fatalities, the following patterns were found in the data:

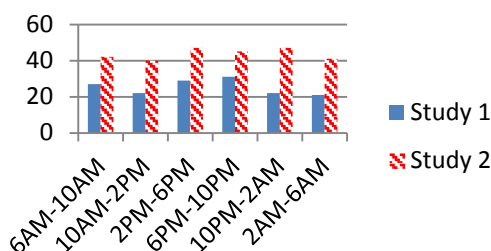
- A higher proportion of intentional fatalities were male (72 percent). [n = 268]
- Results were analyzed on a State-by-State basis revealing: [n = 268]
  - Top five states for intentional trespasser fatalities after adjusting for population: WI(1), NC, MN, IL, and WA(5)
  - Top five states for intentional trespasser fatalities after adjusting for miles of track: NJ(1), CA, FL, NC, and MA(5)
- Age: Individuals who completed suicide on the railroad right-of-way tended to be younger than individuals who completed suicide by other means (See Table 1). [n = 268]

Age (years)	Study 1	Study 2 (avg.)	Suicides, U.S. - 2009*
<25	20%	19%	13%
25-54	72%	72%	56%
≥55	8%	9%	32%

**Table 1. Intentional Fatalities by Age**

\*Data from the CDC WISQARS database. Percentages are rounded to the nearest whole number.

- Time: The time of day when individuals completed suicide on the railroad right-of-way did not reveal an obvious pattern; however, the most common times were between 6 a.m. and 10 a.m. and between 2 p.m. and 10 p.m. (See Figure 1—blue bars). [n = 152]



**Figure 1. Intentional Fatalities by Time of Day**

- Month: The highest incidence was in June, July, and August; the lowest was in February. [n = 268]

### Study 2

In Study 2, 428 total intentional trespasser fatalities were identified: 187 in 2007–2008, 157 in 2008–2009, and 84 in 2009–2010. This decline in the number of incidents is more likely due to changes in the number of railroads reporting each year than to an actual decline in the rate of intentional fatalities. FRA trespasser fatality data of this same time frame revealed 488 in 2007–2008, 429 in 2008–2009, and 424 in 2009–2010. A minimum of 24 percent of the trespasser fatalities from this time frame were determined to be intentional. Over this 3-year span, the following patterns were found in the intentional fatality data:

- A higher proportion of intentional fatalities were male (72 percent). [n = 428]
- Results were analyzed on a State-by-State basis revealing: [n = 428]
  - Top five states for intentional trespasser



fatalities after adjusting for population:  
NJ(1), IL, WV, MN, and FL(5)

- Top five states for intentional trespasser fatalities after adjusting for miles of track: NJ(1), FL, CA, NY, and IL(5)
- Age: The individuals who completed suicide on the railroad right-of-way tended to be younger than individuals who completed suicide by other means (See Table 1). [n = 428]
- Time: The time of day when individuals completed suicide on the railroad right-of-way did not reveal an obvious pattern; however, the most common times were after 2 p.m. but before 2 a.m. (See Figure 1 – striped red bars). [n = 283]

Month: Data for the month-to-month variation could not be analyzed due to inconsistent data collection from month to month.

## CONCLUSIONS

Although U.S. rail carriers are required to report trespasser incidents—including fatalities that occur on the railway rights-of-way—to FRA, as of the time this study was conducted, they were not required to report incidents determined to be suicides. This effort cross-referenced information gathered from States with railroad-supplied trespasser data to identify which trespasser deaths were likely intentional (i.e., suicides). The data allowed us to examine the characteristics of intentional trespasser fatalities on railroad rights-of-way in order to see how they compare, in terms of age, gender, and other pertinent factors such as geographic location and seasonal patterns, with suicides completed by other means. Analyses of this information indicated that approximately three-

fourths of intentional trespass fatalities on the railroad rights-of-way involved males; this finding corresponds with national statistics on suicides by other means. The results also showed that individuals involved in intentional trespasser fatalities on the railroad right-of-way tend to be younger than individuals who completed suicide by other means. The data do not allow a precise determination of the prevalence of suicide on the U.S. railroad rights-of-way; however, they do indicate that a minimum of 24 percent (and likely considerably higher than 35 percent) of all trespasser fatalities are intentional acts.

## ACKNOWLEDGEMENTS

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## KEYWORDS

trespassing, trespass, railroad, intentional death, suicide, right-of-way, fatality

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