



TRESPASSER INTENT DETERMINATION AND EVALUATION (TIDE) CRITERIA

SUMMARY

The John A. Volpe National Transportation Systems Center (Volpe), under direction of the Federal Railroad Administration (FRA), developed the Trespasser Intent Determination and Evaluation (TIDE) criteria to assist railroads in making consistent and expeditious probable intent determinations of individuals involved in trespasser strikes. This work supports the FRA National Strategy to Prevent Trespassing on Railroad Property (2018) in improving rail trespasser data.

The TIDE criteria standardizes the assessment of information from an incident to determine the probable intent of an individual involved in a trespasser strike on a railroad right-of-way (ROW). Based on the criteria, one of three determinations for probable intent is made for each incident that results in a death or injury:

- Probable suicide
- Probable accident
- Inconclusive

A flowchart summarizing the TIDE factors and determinations is shown in [Figure 1](#).

Volpe partnered with two railroad carriers, which provided access to their trespasser strike incident report data, to demonstrate the use of TIDE criteria on incident data from 2009–2017.

Findings showed that probable suicide determinations were similar between the official determination by a medical examiner or coroner and the TIDE criteria. However, TIDE was more likely to see accidents as inconclusive due to the absence of evidence. The lack of information available in some incident reports makes it impossible to render a determination.

In addition to fatalities, incident evidence on injuries can also be used to determine the probable intent of the individual, which is helpful in understanding the true extent of the trespass or suicide risk for a railroad ROW.

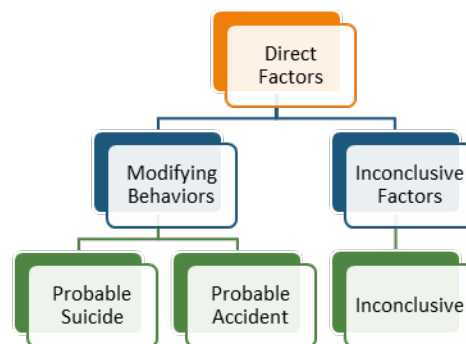


Figure 1. TIDE Factors and Intent Determination

BACKGROUND

Trespassing is the leading cause of death on railroad ROWs in the U.S. (FRA, 2018). Trespass fatalities, including suicides, impact not only the individual involved but also rail crews and the traveling public. Thus, understanding and preventing these incidents is of critical importance to public safety.

In 2011, FRA revised its Guide for Preparing Accident/Incident Reports (FRA, 2011) to include a requirement that railroads try to obtain documentation regarding the cause of death for trespassers and, in particular, suicides. Official cause of death determinations by coroners or medical examiners are conducted for each fatality on railroad ROWs.

It can take over a year for the railroad to receive a final determination, which is quite problematic (Chase, Hiltunen, & Gabree, 2018). Quickly



determining the intent behind these incidents is important for mitigation and prevention, especially when a series of incidents occurs in close proximity to one another or in a short period of time.

When a trespasser strike results in an injury and not death, no official determination is given, and the intent is rarely provided. However, information gleaned from incidents resulting in injuries can provide railroads and other stakeholders with a more reliable rate of both accidents and suicide incidents. Without a consistent system for determining intent for fatalities and injuries, the number of suicide incidents may be underestimated, and opportunities for more effective mitigation and prevention strategies may be missed.

Given the challenges associated with consistent and expeditious reporting, Volpe explored a secondary method using standardized criteria to determine the probable intent of the individual in a trespasser strike. The U.K. has criteria already in use, but it is not transferrable to the U.S. due to strict privacy laws.

OBJECTIVES

The TIDE criteria was developed so that U.S. railroads can expeditiously determine the intent of the individual in incidents occurring on their ROWs. This information can also support the implementation and subsequent evaluation of mitigation strategies while still allowing railroads to report determinations using the official cause of death. The TIDE criteria can also be used for incidents resulting in injuries where official determinations are not given. Determinations of intent from injuries are important to generating a reliable rate of attempted suicides and simple trespassing that occur along a ROW.

METHODS

Volpe partnered with two railroad carriers who provided access to their trespasser strike report data resulting from fatalities and injuries. This included, in some combination, police reports, witness statements, death certificates (as

applicable), Railroad Equipment Accident/Incident Report form, and FRA Injury and Illness Summary form. Using incident data from 2009–2017, official determinations were compared with determinations made from the TIDE criteria.

The TIDE criteria includes an assessment of information based on the data provided for each incident:

Direct Factors: Direct factors determine if the probable intent was intentional or accidental. Examples include suicide note, statement of intent, behavior, or explicit wording in the railroad's report.

Modifying Behaviors: Behaviors that can be considered with other factors to infer a probable suicide or accident such as distractions, audio or visual warnings, recent emotional state, or reactions to an event.

A flowchart summarizing the TIDE process and outcomes is shown in [Figure 2](#).

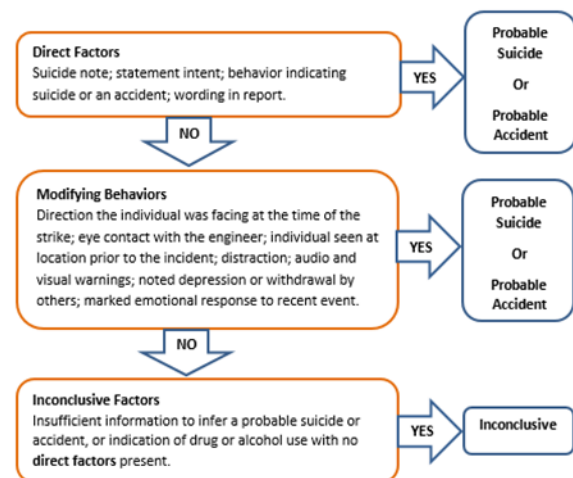


Figure 2. TIDE Flowchart

However, there may be insufficient data to determine a probable suicide or accident (i.e., no direct factors present), or there is an indication of drug or alcohol use. No determination is possible in these cases.



From the information described above, one of three determinations can be made for incidents resulting in death or injury:

Probable Suicide: The individual's actions were intentional (includes attempts).

Probable Accident: The individual's actions were unintentional.

Inconclusive: There is insufficient information to determine probable intent of the individual, or there is indication of drug or alcohol use.

RESULTS

Using incident data from 2009–2017, probable suicide determinations using the TIDE criteria were similar to official suicide determinations. Seventy-one percent of fatalities were officially determined to be suicides; TIDE found that 72 percent of fatalities were probable suicides criteria.

Twenty-one percent of official death determinations were accidents, while only 19 percent were identified as probable accidents using TIDE criteria. Conversely, only 8 percent of incidents were officially determined to be inconclusive, whereas TIDE considered 17 percent to be inconclusive. The higher number of inconclusive determinations using the TIDE criteria was primarily due to the lack of information in the incident report data (refer to [Figure 2](#)).

Only 8 percent of fatalities that were officially ruled an accident were changed to probable suicide using TIDE criteria. [Figure 3](#) compares official and TIDE determinations for fatalities and injuries.

TIDE criteria results show that, of the incidents resulting in injuries, 42 percent were probable suicides, 30 percent were probable accidents, and 28 percent were inconclusive due to a lack of information.

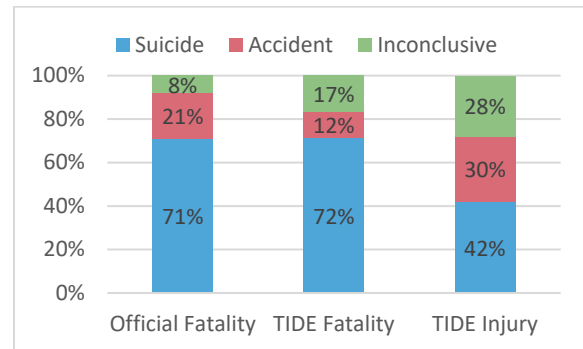


Figure 3. Trespasser Strike Determinations 2009–2017

This project also examined injury data by season, as past research has shown that suicides are more frequent in the spring (Postolache, et al., 2010). Results from TIDE show that probable suicide fatalities and attempts resulting in an injury occur most often in the spring, while probable accidental injuries and fatalities happen most often in summer.

CONCLUSIONS

Using a probable intent determination has three potential advantages for railroads:

- The determination of intent can be made in a short timeframe from when an incident occurs.
- The determination is standardized for each incident, providing consistency and reliability in the determinations within and between railroads.
- A probable determination of intent can be made for both injuries and fatalities. This can provide railroads with a more accurate and comprehensive representation of the incidents occurring on their tracks and help to design and evaluate mitigation strategies.

The TIDE criteria requires complete and reliable data to provide the most benefit to railroads. Detailed data that is consistently collected for both trespass fatalities and injuries is of critical importance in making conclusive intent determinations. High quality data can be



facilitated by using the components TIDE to guide data collection after a strike occurs.

FUTURE ACTION

Volpe is seeking to partner with additional railroads in order to implement the TIDE criteria in different U.S. locations. Additionally, focus groups will be conducted to gather railroad employees' input and experiences regarding trespasser strikes and potential mitigation strategies. This information will provide an opportunity to further refine the TIDE criteria. In addition, a how-to document would benefit all railroads interested in using TIDE criteria as a tool to make internal intent determinations.

REFERENCES

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