



# Main characteristics of train–pedestrian fatalities on Finnish railroads

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## ARTICLE INFO

### Article history:

Received 9 August 2011

Received in revised form

10 November 2011

Accepted 13 November 2011

### Keywords:

Railways

Suicide

Accident

## ABSTRACT

The aim of this study was to describe the frequency of fatalities, timing of collisions and characteristics of persons killed in train–pedestrian collisions on Finnish railways during 2005–2009. In addition, the Finnish results were compared with those collected in Sweden. The Finnish data were combined from five different sources. The results showed that 311 pedestrians were killed in train–pedestrian collisions, including 264 suicides, 35 accidents and 12 unclassified events. For each event type, most of the victims were male. Most suicide victims were in the 20–29 year age group and on average younger than people who chose some other form of suicide. About half of all victims were intoxicated by alcohol, medicines and/or drugs. Both suicides and accidents occurred most often at the end of the week but no specific peak for time of year was found. Suicides occurred most frequently from afternoon to night and accidents during the rush hours. Most train–pedestrian fatalities happened in densely populated areas. In conclusion, the effective prevention of railway suicides and accidents calls for a systems approach involving effective measures introduced by authorities responsible for urban planning, railways, education and public health.

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## 1. Introduction

Among all fatal railway accidents in Finland, train–pedestrian fatalities are the most frequent accident type (European Railway Agency, 2010). During 2006–2008 a total of 211 people were killed in railway accidents in Finland; if road users, railway passengers and railway personnel involved in railway accidents are excluded, 185 fatalities remain. Thus 87.7% of all the fatalities on Finnish railroads are train–pedestrian fatalities, sustained by trespassers (i.e. pedestrians walking on the track or crossing the track outside level crossings) and people who commit suicide.

The statistics of the European Railway Agency (2010) show that 80% of train–pedestrian fatalities on Finnish railways were suicides during 2006–2008. However, it is frequently challenging to determine whether or not a given death is an (unintentional) accident or a (intentional) suicide, since in many cases there is insufficient information to make a definitive classification (Mishara, 2007). This concerns both railway fatalities (Mishara, 2007) and road traffic fatalities (Hernetkoski and Keskinen, 1998). In addition to practical issues (such as insufficient information), the accurate identification of railway suicides can be complicated due to the social, legal, financial or ethical implications of assigning suicide as a cause of death (Lobb, 2006). Given that such a classification is needed

for statistical purposes, the European Railway Agency (2008) has developed guidelines for distinguishing suicides from trespassing accidents. Specifically, the evidence of suspected suicide includes factors such as a suicide note, behaviour demonstrating suicidal intent, previous suicide attempts or prolonged depression.

On average, 1000 suicides per year have been committed in the 21st century in Finland (Official Statistics of Finland, 2011a). Compared with the neighbouring countries, suicides are more common per inhabitant in Finland than in Denmark, Norway or Sweden, but less common per inhabitant than for example in the Baltic countries or Russia (National Institute for Health and Welfare, 2008).

Official Statistics of Finland (2011b) shows that the most frequently used suicide method in Finland during 2006–2008 was hanging for men (32%) and poisoning with medicines for females (52%). Four to five per cent of all suicides were railway suicides. In other European countries the proportion of railway suicides has been relatively similar, for example 5% in Sweden (Rådbo et al., 2005), 6% in Austria (Deisenhammer et al., 1997), 7% in Germany (Baumert et al., 2005) and 5% in England and Wales (Symonds, 1994).

Railway suicides constitute a relatively small percentage of total suicides committed in Finland. However, the societal costs of suicides, as well as unintentional train–pedestrian fatalities, are high. In addition to the loss of human life, train–pedestrian collisions cause considerable delays (primary and secondary) to railway traffic and a serious work-related stress factor and trauma for engine drivers, other railroad and rescue employees and to people who witness the event (e.g. Mishara, 2007; Rådbo et al., 2005; Wildson,

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