



PREVENTING RAIL-RELATED INJURIES AND DEATHS IN CANADA

A submission to the Railway Safety Act Review Panel

September 11, 2017



**OPERATION
LIFESAVER**



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Introduction

Operation Lifesaver is pleased to provide this submission to the *Railway Safety Act* Review Panel. This submission is intended to inform the Panel members about the leading cause of rail-related injuries and deaths in Canada – namely, people engaging in unsafe behaviour around railway tracks and trains – and about the important education and outreach work that OL and its partners undertake to prevent these needless deaths and injuries from happening. Operation Lifesaver will also highlight a few areas that the Panel might consider for improving rail safety in Canada.

About Operation Lifesaver

Operation Lifesaver (OL) is a not-for-profit that is funded by Transport Canada and the Railway Association of Canada. Its mandate is to raise public awareness about the hazards associated with railway tracks and trains.

First established in 1981 by Roger Cyr, OL's first National Director, Operation Lifesaver has worked for more than 35 years to forge successful relationships with railways, governments, law enforcement agencies, labour groups, and other safety organizations across Canada to promote rail safety. OL has also established a network of provincial committees that work to disseminate its safety messaging across the country.

Operation Lifesaver has a proven track record of improving rail safety in our country. The results of its initial crossing safety outreach efforts in the 1980s were incredibly positive, with the number of crossing collisions dropping from 826 to 386 between 1980 and 1990, and the number of deaths falling from 83 to 48 during that same period. By 1989, OL added an anti-trespassing component to its mandate, to help further reduce the number of preventable rail-related injuries and deaths in Canada.

In 1996, Transport Canada launched "Direction 2006", with the goal of reducing the number of crossing and trespassing incidents by 50 per cent by the year 2006. Thanks to a generous increase in funding in support of this initiative, OL was able to develop its first website, a database to track volunteers and their outreach, and a successful public awareness campaign consisting of billboards and public service announcements that aired on TV and radio stations across Canada. OL also launched Canada's first Rail Safety Week in 2003. These initiatives led to an impressive decrease in both crossing and trespassing incidents (a reduction of 26 per cent and 34 per cent, respectively, between 1996 and 2006), despite an increase in road and rail traffic during that time.

Over the next decade, Operation Lifesaver turned its attention to producing communication tools and training materials to reach more focused target audiences. An interactive website for newly-licensed drivers – www.traintodrive.net – was launched, as was www.olkids.ca, and the look and feel of its public website was also refreshed. With the advance of social media, OL harnessed platforms such as [Twitter](https://twitter.com), [Facebook](https://facebook.com) and [Instagram](https://instagram.com) to reach those most likely to be involved in rail-related incidents: 18 to 35-year-olds.

OL's New Look. Listen. Live. Campaign



OL's new virtual-reality campaign immerses users in a 3D environment, and gives them the shocking – and hopefully unforgettable – experience of being hit by a train.

In April 2017, Transport Canada announced that it would again increase OL's funding – this time to \$1.5 million over three years. Thanks to this additional support, OL was able to launch its new, innovative [Look. Listen. Live.](#) campaign during Rail Safety Week at the end of April.

The campaign centres around [two virtual-reality \(VR\) videos](#) that immerse users in a 3D environment, and give them the shocking – and hopefully unforgettable – experience of being hit by a train. The VR videos feature all-too-common scenarios: the first shows a person trespassing on railway property while listening to music on their headphones, while the other places the viewer in the passenger seat of a vehicle which is driven around the lowered gates at a railway crossing.

OL is promoting its Look. Listen. Live. campaign on social media using the hashtags #SHARETHESCARE and #LOOKLISTENLIVE. In addition, its paid digital, social media and billboard advertisements will generate more than 9.3 million impressions for the campaign in 2017 alone. OL has also produced a [public service announcement](#) showing people experiencing the VR videos, which is intended to pique the viewer's interest and drive them to the campaign website – [LookLiveLive.ca](#) – to experience the videos for themselves. This PSA is currently airing on the Aboriginal Peoples Television Network – which has more than 2.3 million viewers a week – through the network's generous in-kind donation of airtime. OL has also used earned media to spread its rail safety message; the story of its new campaign was pitched to newsrooms across the country during Rail Safety Week, resulting in coverage by the Canadian Press, CTV News, CBC, and Radio-Canada, among others.

Canadian Railway Crossing & Trespassing Incident Statistics

While incidents such as the tragic derailment in Lac-Mégantic, Que. understandably garner a lot of media attention, collisions at rail crossings and as a result of trespassing on railway property account for more than 85 per cent of all rail-related injuries and deaths in Canada over the last 10 years.¹

More than 100 Canadians are killed or seriously injured in our country each year because they engage in unsafe behaviour around railway tracks and trains. Put another way, a train collides with a vehicle or a person almost every day in Canada.

Below is a snapshot of railway crossing and trespassing-related incidents and deaths in Canada in 2016. A total of 66 people were killed and another 44 were seriously injured in these incidents last year alone.



Figure 1: Canadian crossing and trespassing incident data for 2016. Source: Transportation Safety Board of Canada.

For comparison purposes, below is the death and injury rate, and incident rate, per 1,000 miles of track and per 100,000 people, in Canada and the U.S.²

	Death/injury rate per 1,000 miles of track	Incident rate per 1,000 miles of track	Death/injury rate per 100,000 people	Incident rate per 100,000 people
Canada	4.011	7.401	0.303	0.559
U.S.	15.044	21.794	0.643	0.931

¹ Railway Association of Canada. (October 12, 2016). *Canada's railways support new federal rail safety program*. Retrieved from: <https://www.railcan.ca/news/canadas-railways-support-new-federal-rail-safety-program>

² Source: Railway Association of Canada. Calculations were based on:

- 2016 U.S. population estimate of 324,304,407
- 2016 Canadian population estimate of 36,286,400
- 2012 U.S. railroad track estimate of 138,524 miles
- 2015 Canadian railway track estimate of 27,428 miles

As this comparison shows, Canada’s rail-related death and injury rates are significantly lower than those of the U.S., which has a much larger rail network, and almost 10 times the population. Nevertheless, Canada has seen an increase in some types of rail-related incidents in recent years, and OL’s concern is that these numbers will continue to rise as rail traffic grows and our country’s rail network expands. As Figure 1 illustrates, trespassing incidents and deaths were trending above the five-year average in 2016. Unfortunately, this concerning trend has continued in 2017. The latest available data, for the month of July 2017, shows trespassing incidents, deaths and serious injuries trending above the year-to-date statistics for 2016, and above the five-year average as well.³

Who Is Being Injured or Killed in Rail-Related Incidents?

What is particularly concerning about rail-related incidents in Canada is that young people are often those injured or killed. In 2016, OL collected five years’ worth of demographic incident data from its partner railways⁴ – CN, CP, Metrolinx, Genesee & Wyoming Canada’s railways, and Montreal’s Réseau de transport métropolitain (formerly the Agence métropolitaine de transport). OL’s analysis showed that young people – aged 18 to 35 years old – made up a large proportion of those injured or killed in crossing and trespassing incidents during that five-year period, with a second “spike” occurring with 42 and 63 year-olds. Males were three times

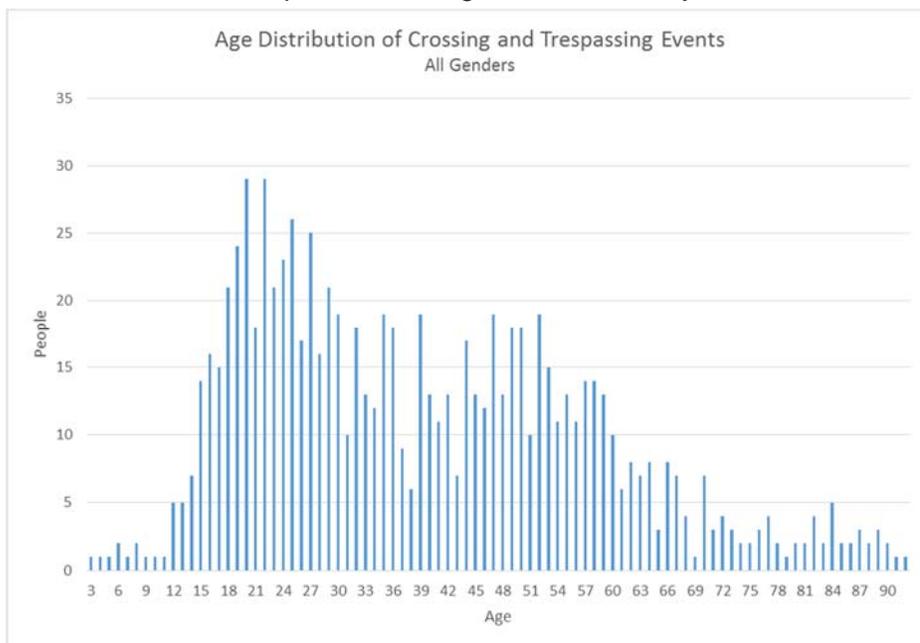


Figure 2: Graph of railway trespassing and crossing incident demographic data for 2012-2016. Source: CN, CP, Genesee & Wyoming Canada, Metrolinx and Agence métropolitaine de transport.

³ Transportation Safety Board of Canada. (July 2017). *Monthly Rail Occurrence Statistics*. Retrieved from: <http://www.bst-tsb.gc.ca/eng/stats/rail/2017/07/r2017-07-t1.asp>

⁴ Currently, the Transportation Safety Board of Canada does not collect demographic data on those injured or killed in railway crossing or trespassing incidents.

more likely to be involved in a rail crossing or trespassing incident than females, and males outnumbered females in their risk of being injured or killed in a rail incident by a ratio of 5:2.

The impacts of rail-related incidents cannot be understated. Those lucky enough to survive a rail incident are often left with debilitating injuries such as lost limbs, severe burns or paralysis. Family and friends of the victims, railway workers (such as the locomotive engineers who are unable to stop a train in time), and emergency responders who are among the first on the scene of these tragic incidents, are all affected. There is also a financial cost to these incidents – such as the loss or damage to property, healthcare costs, and lost productivity. A railway stops running when there is an incident, and that downtime affects commuters, shippers, and all aspects of our economy – losses which amount to millions of dollars each year. And the most frustrating part is that virtually all of these incidents could be avoided.

Where Do Rail Incidents Occur in Canada?

In 2017, OL used Transportation Safety Board incident data from 2004 to 2016 to identify the top-10 crossing and trespassing “hotspots” across Canada, and to map these using the Railway Association of Canada’s Canadian Rail Atlas. This initiative will allow OL to geo-target its advertising campaign and its face-to-face outreach to the most at-risk areas across the country. Below is a graphic identifying some key hotspots that OL plans to target over the next three years:

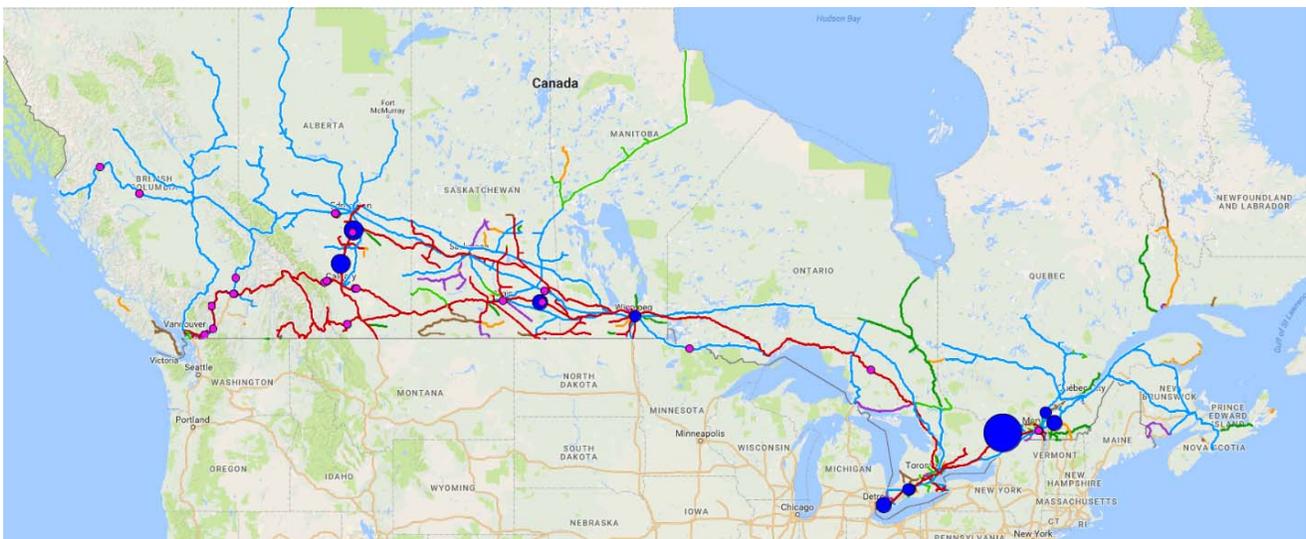


Figure 3: Map of railway crossing and trespassing hotspots across Canada. Blue dots indicate general hotspots, while pink dots indicate hotspots within 250 m of indigenous lands. Source: Canadian Rail Atlas, Transportation Safety Board of Canada.

Why Do These Incidents Occur?

Railway crossing and trespassing incidents occur for a myriad of reasons. In March 2017, OL commissioned Earncliffe Strategy Group to conduct a survey of rail-safety awareness and attitudes across Canada. The results of this survey showed that most Canadians (64 per cent) have either engaged in or witnessed questionable behaviour near railway tracks or trains:

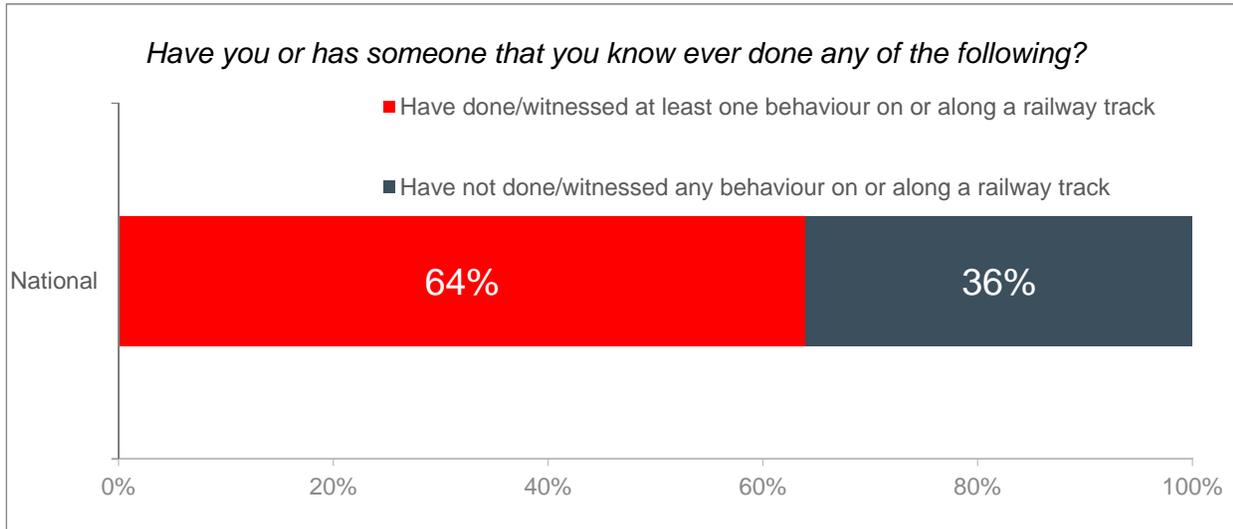


Figure 4: Source: Earncliffe Strategy Group. (March 2017). *Public Awareness and Attitudes Survey*.

The most commonly reported behaviour was trespassing, with 39 per cent of respondents indicating that they themselves had crossed a railway track at a point that was not a designated crossing, or had witnessed someone else doing this:

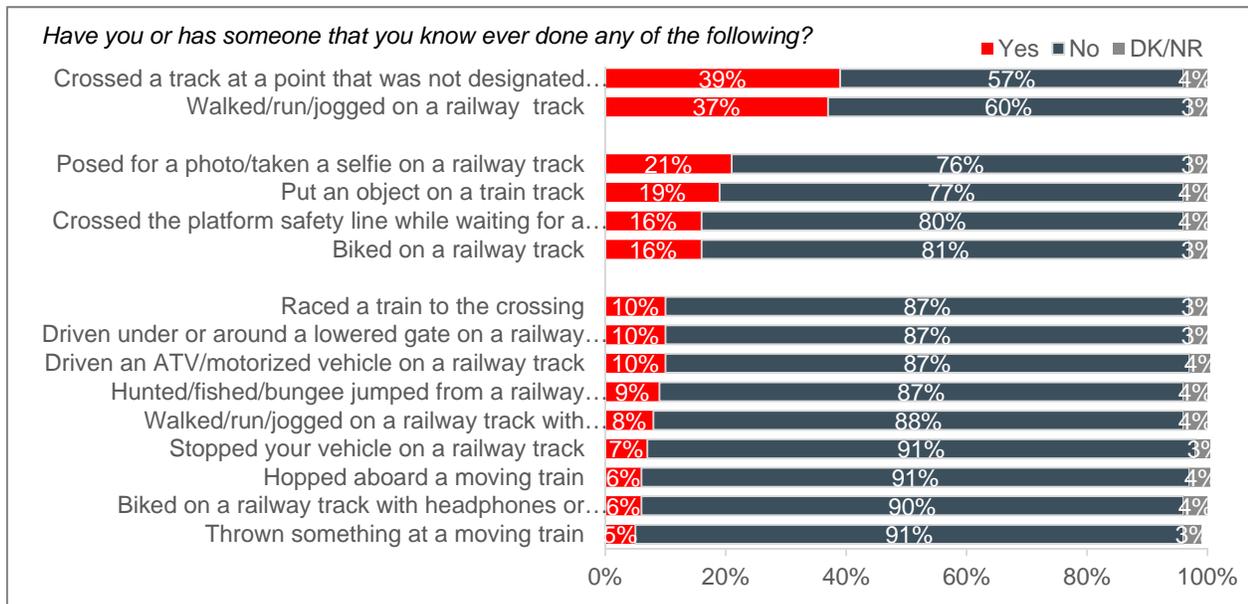


Figure 5: Source: Earncliffe Strategy Group. (March 2017). *Public Awareness and Attitudes Survey*.

Interestingly, when asked to assess the perceived risk associated with this activity, trespassing was only viewed as “very dangerous” by 40 per cent of respondents, and the perceived risk decreased the closer the respondent lived to a rail line. Further emphasizing the need for a rail-safety public awareness campaign such as OL, 63 per cent of survey respondents agreed that “railway safety is not something I have thought about very often.”

Suicides on Railway Rights-of-Way

Not all railway trespassing or crossing deaths are accidental. A recent study by researchers at the Université de Québec à Montréal found that 37.9 per cent of railway fatalities in Canada between 1999 and 2008 were suicides.⁵ This represents roughly 1.3 per cent of all suicides in Canada each year.⁶ While the study found large annual variations between 1999 and 2008, the average number of rail-related suicides per year was 42.8. According to the study, the majority of people who commit suicide on rail lines are men (76.6 per cent) and the mean age is 39.52 years old.

The study also found that most rail-related suicides in Canada occurred on open track (66.7 per cent), rather than in other locations on the railway network such as crossings (29.1 per cent) or at stations (2.2 per cent). Most suicides occurred in urban areas (85.4 per cent), and involved commuter or other passenger trains, as opposed to freight trains.

While the study did not find any statistically significant hotspots for railway suicide in Canada (likely because of our country’s vast rail network, coupled with a relatively dispersed population), 50 suicide “clusters” were identified – where two or more suicides occurred within 0.8 km of tracks in a city, or 3.2 km of tracks in a rural area, over the ten-year period the authors studied. Interestingly, 18 of these clusters occurred within 3.2 km of a mental health facility, and a third of the suicide victims were diagnosed with depression, and 10 per cent with psychosis. Substance use was also found to be prevalent among both suicide victims (with 45.8 per cent of victims having alcohol or drugs in their system) and accident victims (75 per cent).

These findings suggest some possible interventions for preventing railway suicides in Canada, which will be essential for reducing the overall number of rail-related injuries and deaths in Canada.

⁵ Mishara, B. L. & Bardon, C. (2017). *Characteristics of railway suicides in Canada and comparison with accidental railway fatalities: Implications for prevention*. *Safety Science*, 91, p. 251-259.

This research, which was funded by Transport Canada, gathered all available data and incident reports from the Transportation Safety Board and railways on rail-related deaths in Canada between 1999 and 2008, as well as detailed investigations conducted by coroners and medical examiners, when available. The researchers classified fatalities as suicides when any or all of the following characteristics were present:

- there were clear indications of intent to die (suicide threats, suicide note, etc.)
- the person did not act to remove themselves from harm’s way
- the person had a history of mental health problems or suicidal behaviour

In some cases, deaths that had been deemed “accidental” were re-classified as suicides in this study.

⁶ Ibid.

Recommendations for Improving Rail Safety in Canada

The federal government has demonstrated its commitment to reducing the number of crossing and trespassing incidents in Canada by recently increasing OL's funding to \$1.5 million over three years. But as rail lines continue to expand to meet the demand for commuter service in urban centres, and as freight rail traffic also increases, more funding will be needed for public rail-safety education and suicide prevention efforts than ever before. OL's recommendation is that the government should adopt a model of "continuous improvement" regarding rail safety, one that emphasizes:

1. More awareness and engagement from all levels of government

Safety is a shared responsibility, and it's only with the engagement of municipalities, provincial and federal governments and other partners that we will be able to educate the public about rail safety, and ultimately reduce the number of rail-related injuries and deaths in Canada.

Currently, a number of Canadian provinces do not include rail safety information in drivers' handbooks, or require at least one rail safety question on their drivers' exams. This should be compulsory material for anyone seeking a driver's licence in Canada.

At the municipal level, OL has made some good headway in engaging towns and cities during its annual Rail Safety Week, however, a sustained year-long commitment on the part of municipalities would go a long way towards improving safety. In addition, municipalities should be encouraged to adopt the [Guidelines for New Development in Proximity to Railway Operations](#), which was co-authored by the Federation of Canadian Municipalities and Railway Association of Canada, and would require new developments to erect barriers to prevent trespassing, and municipalities to carefully plan road-railway crossings. Montreal was the first major urban centre to adopt the guidelines back in 2015. Today, ten other major cities across Canada are reviewing them, and more than 175 other municipalities have adopted or are using them in their permitting processes. However, the guidelines must be much more broadly adopted if we are to fully realize their potential for preventing rail-related incidents.

Finally, while the federal government has increased OL's funding, it has otherwise scaled back its participation in the organization's activities in recent years. By playing a more active role in OL – through the provision of in-kind services, the engagement of its public-safety focused agencies, and involvement in OL's provincial committees – the federal government would lead by example, and hopefully encourage other levels of government to make rail safety a priority within their jurisdictions.

2. More investment in and transparency about data-gathering

Currently, the Transportation Safety Board of Canada does not publish demographic data related to crossing and trespassing incidents. OL was able to gather some demographic data from its partner-railways for the last five years in order to confirm the target audience for its new campaign, however this data is not comprehensive. Accurate

data about rail-related suicides and potential suicide “clusters” would also provide valuable information for designing interventions. Access to these sources of data would allow OL to be much more strategic and impactful with its rail safety outreach and campaigns.

3. Harnessing existing technologies to improve safety

Mapping applications such as Google Maps, Apple’s iMaps, Waze and Garmin are ubiquitous nowadays, yet most don’t currently include Canadian railway crossing information. The U.S. National Transportation Safety Board recently requested that technology companies include audio and visual alerts of upcoming railway crossings in their mapping applications following a tragic collision between a truck and commuter train in California.⁷ OL has made a similar request of Google Canada (see Appendix 1), and would recommend that the federal government encourage inclusion of this information in all mapping applications in Canada. The Railway Association of Canada has collected location data for all crossings as part of its Canadian Rail Atlas project, and could make this information available to technology companies for this purpose.

4. Suicide prevention

Preventing suicides on railways is an “all of society” problem, not just a railway problem. Unfortunately, given the unique pattern of railway suicides in Canada – the vast majority occur along stretches of main track, rather than at stations or crossings – common prevention strategies, such as training railway station staff to identify pre-suicidal behaviour and intervene, are not likely to be effective.

Instead, OL would recommend that the government provide additional funding to design and implement evidence-based interventions that are supported by Canadian railway suicide prevention research. Such interventions might include:

- developing an easy-to-use, portable suicide prevention/intervention training – perhaps in the form of a mobile app⁸ – to railway track maintenance workers and mental health service providers, particularly those working in identified railway suicide “cluster” areas;

⁷ Wakabayashi, D. (December 19, 2016). *Rail crossing warnings are sought for mapping apps*. The New York Times. Retrieved from: https://www.nytimes.com/2016/12/19/technology/google-digital-maps-railroad-crossings-ntsb.html?_r=0

⁸ Network Rail in the U.K. has partnered with the Samaritans, a charity focused on assisting those in emotional distress, to train more than 15,000 of its frontline rail workers in suicide intervention. The company has also developed a smartphone app, which summarizes the key emergency numbers and tactics for approaching people in distress. According to a recent Network Rail press release, suicides on the company’s lines have fallen by 18 per cent in the last two years: <https://www.networkrailmediacentre.co.uk/news/life-saving-interventions-on-rail-network-up-40-in-one-year>

- building on the work of railways – such as Metrolinx in Toronto⁹ – to install suicide-prevention signage and “help phones” along key rail corridors, and linking these to the federal government’s planned national suicide prevention service¹⁰; and
- using innovative technologies, such as drones¹¹ or fibre-optic detection systems¹² to monitor stretches of track for individuals potentially contemplating suicide in railway suicide “cluster”/urban areas.

In conclusion, Operation Lifesaver is committed to working to reduce the number of rail-related suicides, and all rail-related injuries and deaths in Canada, however OL can’t be alone in trying to address this problem. It requires long-term investment in OL’s outreach and other activities, appropriate data gathering, and partners in all levels of government and sectors of society, including mental health service providers and technology companies, in order to effect change and save lives.

⁹ Metrolinx has installed more than 800 suicide-prevention signs featuring a 24-7 crisis help line number on platforms and at level crossings across its network.

¹⁰ Government of Canada. (November 24, 2016). *Government of Canada supports the development of a national suicide prevention service*. CNW Telbec. Retrieved from: <http://www.newswire.ca/news-releases/government-of-canada-supports-the-development-of-a-national-suicide-prevention-service-602897586.html>

¹¹ Hot Rail Security, LLC is experimenting with using drones to prevent suicides in Nevada. A YouTube video demonstrating the technology is available here: <https://www.youtube.com/watch?v=JVeJEJi6TQ>

¹² Calgary-based company OptaSense offers one such system. According to its [website](#), a rail network equipped with two of the company’s fibre-optic sensors can be used to simultaneously monitor up to 100 km of track for trespassers, and will alert railway personnel of any authorized activity in real time.

Appendix 1: Letter to Google Canada

**Operation Lifesaver**

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Sam Sebastian
Managing Director,
Google Canada
111 Richmond Street West, 12th Floor
Toronto, ON M5H 2G4

February 9, 2017

Dear Mr. Sebastian,

Over the past 10 years, nearly 1,200 Canadians have been killed or seriously injured as a result of collisions at railway crossings and trespassing on railway property. These tragic incidents not only impact victims, but their families, railway workers, emergency responders and communities. And virtually all of these incidents could be avoided.

Operation Lifesaver (OL) – which is co-funded by the Government of Canada and the Railway Association of Canada – works to prevent these needless incidents from happening. I'm reaching out to you in the hopes that Google will consider partnering with OL to help make Canada's roads and railways safer.

OL is about to launch an exciting and innovative three-year rail safety public-awareness campaign, in partnership with i2 advertising, during Rail Safety Week (April 24–30, 2017). The campaign will centre around a series of virtual reality videos, aimed at giving Canadians the shocking (and hopefully unforgettable) experience of a near-miss with a train. We will be promoting our rail safety message through digital and social media ads, and we would like Google to consider an in-kind donation of ad impressions and Google Cardboards to support our campaign.

Google can also support rail safety by providing railway crossing location information – and visual and audio warnings about upcoming crossings – in its Google Maps application. As I'm sure you're aware, the [U.S. National Transportation Safety Board recently made a similar request of technology companies, following a tragic collision between a truck and commuter train in California](#). The Railway Association of Canada has already collected location data for all railway crossings in Canada, and would happily make this information available to Google for this purpose.

Safety is a shared responsibility, and our hope that Google Canada will consider partnering with OL to reduce rail-related injuries and deaths. We look forward to discussing a potential partnership with you at your earliest convenience.

Sincerely,

Sarah Mayes
National Director (Interim)



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