

Reducing Pedestrian Collisions Through Blended Outreach and Engineering

by Michael J. Conlon
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Many are familiar with the traditional “three Es” of safety: Engineering, education and enforcement. In the transit industry, we routinely apply these in our pursuit of forward-looking hazard management. This article documents how Metro Transit in the Minneapolis/St. Paul, Minnesota area blended public outreach (education) and engineering to enhance pedestrian safety.

The Problem

Metro Transit in the Minneapolis/St. Paul, Minnesota area experienced six collisions — with three fatalities — in the 31-day period from December 4, 2015 to January 3, 2016. These collisions included four pedestrian accidents, as well as one bicycle and one mobility device. Although the circumstances varied, one theme emerged: a disregard for active warning devices and a lack of situational awareness around light rail transit (LRT) grade crossings.

At the time, Metro Transit had just secured some funding for grade-crossing awareness from Operation Lifesaver, and added those resources to its own to create a two-pronged campaign with the goals of:

- Highlighting the philosophy that safety around trains is a *shared* responsibility
- Making LTR more visible and obvious in its operating environment

The Solution

Public Outreach

During 2016, an aggressive public outreach campaign was implemented. The campaign included a variety of advertising and public relations strategies, such as:

- **Billboards** — more than 1.25 million impressions
- **Train Ultra Super King Ad Panels** (on four trains) — more than 50 million impressions
- **“See Tracks – Think Train” Rolling Stock Door Stickers** — more than 2 million impressions
- **Live Radio Spots** — more than 200,000 impressions
- **Social Media** (Facebook and Twitter) — more than 700,000 impressions

- **Schedule-Sized Brochures** — offered in English, as well as Somali, Hmong and Spanish
- **Station Safety Blitzes** — handing out trinkets with safety messaging, and engaging in conversation with patrons about safe behavior at stations and around trains
- **Operation Lifesaver Activity Books** — aimed at daycare, elementary and preschools near the LRT

Engineering

In addition to the public outreach campaign, a variety of engineering improvements were applied. These include:

- **“Wig Wag” Train Headlamps** — A new campaign was launched to change front markers on the train from “steady state” lighting to “alternating brightness” when the horn or bell is activated. The fleet is 66 percent complete.
- **Green Line Pedestrian “Train Approaching” Signals** — These ground-mounted pedestrian walkway indicators at station entrances were changed from static LED lighting to flashing when a train is approaching.
- **Fencing Extensions** — The existing right-of-way fencing was extended to discourage pedestrians from taking shortcuts across the tracks. Also, at certain station locations, railings were added to channel pedestrians to the crossing and force them to turn to face oncoming traffic.
- **Grade Crossing Warnings** — Crossings were enhanced by keeping at least one bell sounding when gates are fully deployed. Also, advance flashers were added to a bike path for added notification of a train approaching a nearby crossing.

Results and Conclusions

Effectiveness

We are grateful that we cannot show that this collision problem existed for years; a one-month period is all it took to stimulate a multiple-approach response. Table 1 shows the before and after data.

We can also infer some measure of effectiveness from our “close-call” reporting (operators are required to report emergency braking events). Our 2016 experience showed a *reduction of 235 close calls* compared to the previous year.

The logical challenge of proving the negative — that certain mishaps did *not* occur — applies here. However, looking at the mishaps and near misses both before and after the program, we are comfortable drawing the conclusion that our engineering and outreach was effective. Further, we communicated our outreach messages to different target audiences — Baby Boomers, Generation Xers and Millennials — with varied approaches using radio, print, billboards and social media.

In the third quarter of 2016, an American Public Transportation Association (APTA) peer review committee assessed our outreach, engineering and management practices. We believe the overall observations serve to validate the effectiveness of the blended program. Here are some excerpts from that assessment:

- “Metro Transit is a very good system, with excellent staff dedicated to the safe transportation of its customers.”
- “Recent operational enhancements have increased safety in the corridors.”
- “The peer review team commends Metro Transit for diligently striving to promote safety in all its activities throughout the agency.”

Safety Program Benefit Level

We estimate that hundreds of staff hours are spent on one high-profile mishap. Staff representing safety, police, risk, public information and virtually *all* rail operating departments have roles in response, investigation, restoration, final reporting, media interface, etc. To the extent this program contributed to safer interaction with LRT (accidents cut in half, and no fatalities), the response and

investigation cost to the agency was reduced considerably. Consequently, agency departments were able to devote more resources to forward-looking hazard management, as opposed to incident response and investigation efforts.

The cost of the engineering (\$275,000) and outreach (\$25,000 to \$27,000 of which was Operation Lifesaver grant funding) is estimated at approximately \$300,000. We look forward to these investments reducing pedestrian mishaps going forward.

The cost to local society was reduced even more dramatically. While we hesitate to assign a value to a human life, a quick Internet search found that, in the U.S., societal value on one life is estimated to be approximately \$5 million. So in this case, the

value of the reduction in human tragedy was about \$15 million in one year.

An important indirect, non-financial benefit is that of community goodwill. Metro Transit believes strongly that safety is the cornerstone of what we do. Our mission statement reflects this: *We at Metro Transit deliver environmentally sustainable transportation choices that link people, jobs and community conveniently, consistently and safely.*

Not only did an investment of just over \$300,000 allow better allocation of agency resources, it saved lives and reassured the region that Metro Transit continues to operate with the safety of its employees, patrons and the public in mind.

Safety Program/Project Innovation: A Blended Approach

The hierarchy of hazard mitigation recommends engineering a hazard out of a system if possible. Other

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Table 1 — LRT Pedestrian Collisions

	Blue Line	Green Line	Total	Increase/Decrease
Jan. 4, 2015 to Jan. 3, 2016 ¹	7	7	14	7 fewer after program ²
Jan. 4, 2016 to Jan. 3, 2017 ¹	3	4	7	

¹The year-long comparison begin and end dates have been shifted to account for the last accident of the six that prompted this program.

²There were zero pedestrian fatalities (three fewer) during the year of the blended outreach/engineering program.

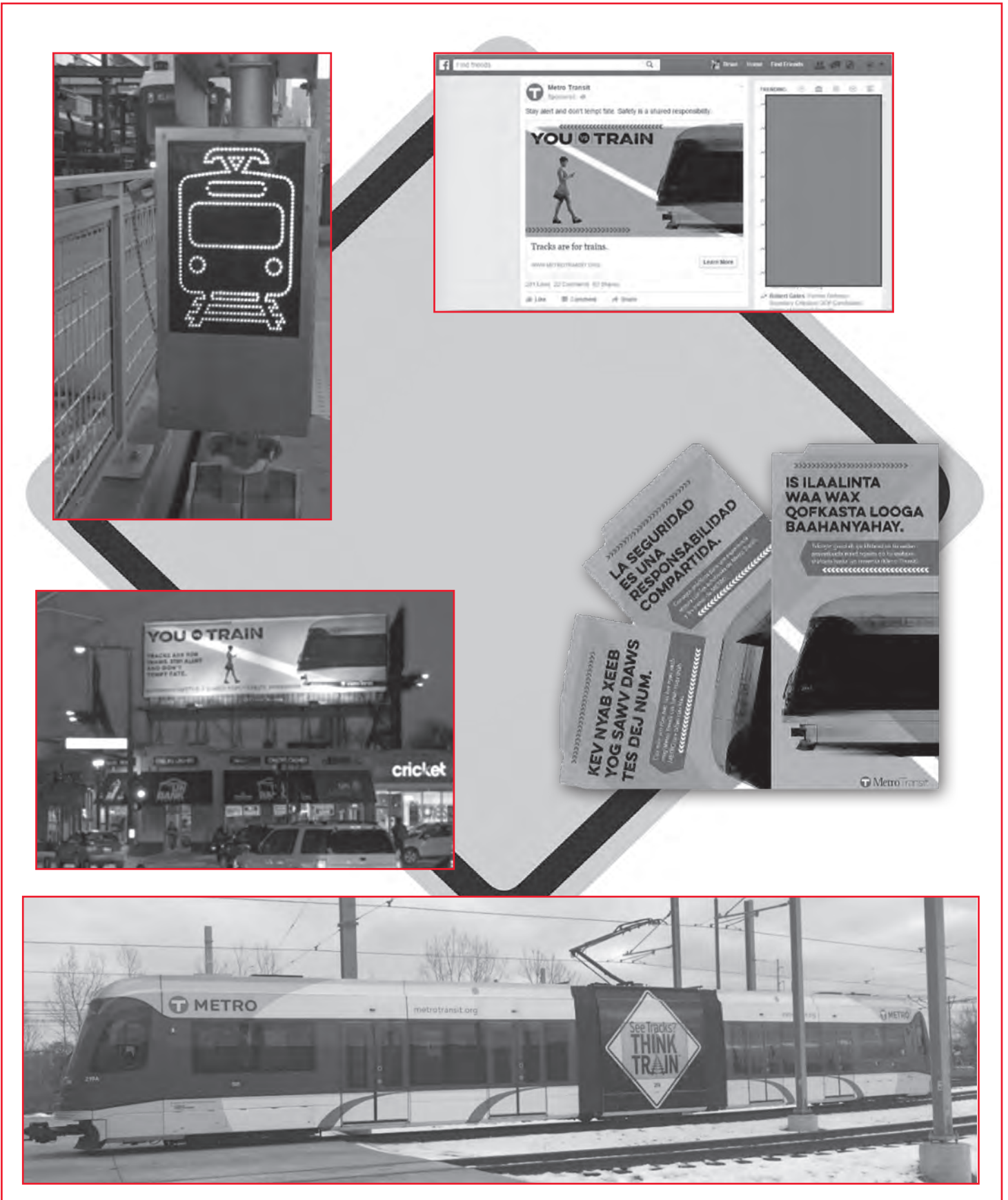


Figure 1 — Metro Transit in the Minneapolis/St. Paul, Minnesota area recently launched a multi-element safety effort that blended public outreach and engineering to enhance pedestrian safety. Some of these initiatives included, clockwise from top, better indicators at pedestrian crossings, social media outreach, brochures in languages most spoken in the area, PSA panels on trains and billboards.

mitigations include active warning devices and instruction (outreach). This is not new, and the Federal Transit Administration (FTA) demonstrates its high regard for hazard management in the latest “Safety Management System” rulemaking. Metro Transit continues to apply the hazard management process to its business.

What is new here is *how* we applied these mitigations. Our blended approach included engineering, warning and outreach, depending on which aspects of the pedestrian/LRT interface in the operating environment were better served by one approach over another.

The outreach was mindful that not all ages are reached by the same message or medium. A general statement that has some anecdotal accuracy goes like this: Boomers call, Generation Xers email and Millennials text. We used social media wherever possible, posting and tweeting certain messages for the benefit of those who follow us.

The tricky business of what to say and how to say it was gleaned from discussions with individuals representing these various generational audiences. The “Boomer” mentality in some of us was used to craft billboard and other messages, all the while keeping a certain “flavor” for other age groups.

For the Hmong, Spanish and Somali brochures, we enlisted copy editing from those who speak the language and know the culture. Further, virtually all of our public messaging included the mantra “safety is a shared responsibility.” We recognize that our efforts are ineffective without public cooperation.

Safety Program/Project Transferability

Pedestrian interfaces continue to challenge the LRT operating environment. Varying profiles with the alignment — including semi-exclusive line sections in one neighborhood and median street running in another — require consideration. It is no secret to operating and safety professionals nationwide that the issue has never been solved once and for all. We believe our approach is highly transferable, assuming collaboration between the marketing, engineering, operating and safety staffs. Our engineering enhancements considered available budget, and our outreach considered target audience differences.

Conclusion

At Metro Transit, we know that we don’t have all the answers. And while that could be a bit unsettling from a certain perspective, it motivates us to keep looking for the next good way to enhance system safety.

Engineering and outreach exist at virtually every

transit agency. We must assess what can be engineered, and what resources can be applied to those engineering enhancements.

Public outreach is absolutely essential. Everyone who interacts with our rail systems needs to know what is expected of them. We cannot assume that everyone knows

what to do, and we must continue to work hard to make warning devices obvious to everyone, and to craft messages with target audience differences, including generational differences, in mind.

Most important, we must never stop looking for the next enhancement.

About the Author

Mike Conlon is director of rail and bus safety for Metro Transit in Minneapolis/St. Paul, Minnesota, a post he has held since February 2000. As the senior safety professional for Metro Transit, Conlon is responsible for all safety aspects of the agency’s bus and rail operations. He also leads system safety planning and safety certification efforts for LRT and Commuter Rail projects. His experience spans more than 30 years in the transit and railroad industries, primarily in operations and safety. Prior to Metro Transit, Conlon worked as an associate for Booz-Allen & Hamilton, an international consulting firm, working on projects for a number of transit agencies. Preceding agency work includes nine years in operating and safety positions at Maryland Mass Transit Administration.

Conlon earned a BS degree from Gannon University and an MBA degree from the University of Baltimore in Maryland. He is certified by the World Safety Organization as a certified safety and security director (CSSD) and as an OSHA outreach trainer.

He joined the Transit Associate Staff Program of the Transportation Safety Institute (TSI) in August 2008. He currently teaches transit rail system safety, safety management systems and rail incident investigation. ●

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