U.S. Department of Transportation
Federal Railroad Administration

RESEARCH RESULTS
FRA OFFICE OF RESEARCH, DEVELOPMENT & TECHNOLOGY

RR 26-06 | September 2026

USING PROCESS EVALUATION TO IDENTIFY AND TRACK SHORT LINE SAFETY INSTITUTE OPPORTUNITIES FOR IMPROVEMENT

SUMMARY

The Short Line Safety Institute (SLSI) conducts Safety Culture Assessments (SCAs) primarily for short line and regional railroads to measure safety culture. Sponsored by the Federal Railroad Administration (FRA), a Volpe National Transportation Systems Center (Volpe) evaluation team observed components of an SCA and reviewed aspects of SLSI's website and documents used by SCA Assessors. The Volpe team evaluated ongoing programmatic activities and resources and provided SLSI with potential Opportunities for Improvement. This document summarizes Volpe's categorization and tracking of SLSI's responses to the opportunities as well as associated completion status.

BACKGROUND

The Volpe team has worked in an external evaluation role since 2014. Initially tasked in a formative evaluation capacity, Volpe focused on the development of the SCA process in its pilot stage. The team's current focus remains: to evaluate SLSI's efforts to help railroads strengthen their safety culture. With the maturation of SLSI as an organization, Volpe now approaches evaluative activities with a process evaluation lens (National Academies of Sciences, Engineering, and Medicine, 2023).

Following the pilot program, SLSI formed as a non-profit organization, and since 2016 has conducted voluntary, non-punitive, confidential SCAs for short line and regional railroads across the U.S., as well as some commuter, passenger, historic, scenic, and tourism operations. These SCAs involve multi-method data collection and analysis of a railroad's safety culture at the time of the Assessment. At the end of each Assessment, SLSI provides the participating railroad with a final report outlining its findings and suggesting associated Opportunities for Improvement for the railroad to strengthen its safety culture.

In 2024, Volpe reviewed aspects of the SLSI website, documents used by SCA Assessors, and observed SCA report-writing and close-out process at a railroad. Volpe sought to help SLSI more effectively collect, code, and analyze data and deliver its findings and resources to participating railroads (National Academies of Sciences, Engineering, and Medicine, 2023; Theodoulou & Kofinis, 2004).

The Volpe team provided SLSI with written feedback to identify and articulate potential areas for improvement and ways in which SLSI could more effectively formulate and deliver its services. In addition to this feedback, Volpe and SLSI held several discussion meetings where Volpe offered SLSI the 18 Opportunities for Improvement analyzed and presented in this report.

OBJECTIVES

The objective of this effort was to document and categorize Volpe evaluation activities and feedback, framed as Opportunities for Improvement, as well as the extent to which SLSI took action in response to this feedback.

Delivery dates and opportunity sources are shown in Table 1.

Table 1: Dates and method of opportunity delivery

Date	Delivery Method
4/30/24	Volpe-hosted in-person meeting at DOT HQ
5/24/24	SLSI-hosted Teams meeting
8/29/24	Volpe-authored SCA observation memo
9/5/24	Volpe-hosted in-person meeting at Volpe Center
12/9/24	Volpe-hosted Teams meeting

METHODS

The Volpe team supplied and tracked opportunities offered to SLSI during 2024. The opportunities stemmed from the data sources listed in Table 2.

Table 2: Data sources and source descriptions for Volpe-provided opportunities

Data Source	Description
Interactions with SLSI Team	In-person and virtual meetings, presentations
Safety Culture Assessment	Observation of SCA report-writing process
SCA Document review	SCA reports, SCA protocol materials
SLSI Website	Technical resources and templates available for download

Volpe created a comprehensive spreadsheet to document and track opportunities provided to SLSI, as well as opportunities for its own improvement (not reported here). The spreadsheet tracked information such as opportunity category, description, and rationale; date offered; and data source. After logging this information, the Volpe team supplied the tracking spreadsheet to SLSI to solicit responses to the stated opportunities. SLSI subsequently added the requested data regarding opportunity implementation status, implementation date, status update (where applicable), and follow-up questions.

Volpe and SLSI met several times following the spreadsheet's initial completion to clarify opportunities and discuss follow-up questions. This iterative process helped the Volpe team refine the Opportunity Status column to reflect six options, shown in Table 3.

Table 3: Opportunity status categories and status description

Opportunity Status	Description
Complete	Fully implemented at the time of analysis
Complete/ Ongoing	Fully implemented but requires ongoing review, updates, or execution
In-Process	Implementation started but not fully complete
Not Started	Planned for but not started
Not Planned at This Time	Either not planned or not prioritized at the time of analysis; may take place in the future if certain conditions change
Archived	Not feasible due to constraints outside either party's control

Once the spreadsheet was finalized, the Volpe team developed a matrix to tally opportunities by category, status, and status by category as a way to summarize the data.

RESULTS

Volpe and SLSI agreed that two opportunities should be "archived" because they were not feasible to address, and thus are neither

reported nor factored into any analysis. Table 4 shows a breakdown of the opportunity categories that group related individual opportunities. With the exception of the SLSI Website Resources category, all related directly to components of the SCA process. The category covering SCA report generation and reporting-out to the railroad comprised the greatest percentage of opportunities at 44%, followed by SCA data coding and analysis (28%) and the SCA survey (17%). Categories pertaining to the SLSI website and the SCA interview process contained one opportunity each (i.e., 6%).

Table 4: Opportunity categories, tallies by category, and associated percentages

Opportunity Category	Opportunity Category Tally	Percent of Total
SCA Reporting	8	44%
SCA Data Coding and Analysis	5	28%
SCA Survey	3	17%
SLSI Website Resources	1	6%
SCA Interviews	1	6%
Total	**18**	**100%**

Note: Totals >100% due to rounding

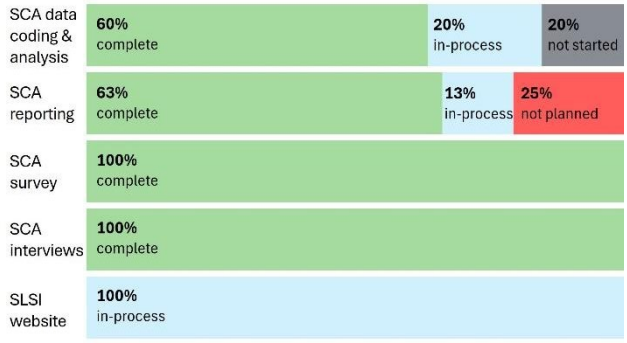
As a way to simplify the opportunity status data, Volpe combined Complete and Complete/Ongoing categories (see Figure 1), where seven of 12 opportunities qualified as Complete and 5 as Complete/Ongoing. An example of a completed opportunity that is planned to continue on an "ongoing" basis is comparing railroad SCA survey results from an initial SCA with follow-up SCAs. This status category accounted for the highest percentage, at 67% of all opportunities, while in-process opportunities accounted for 17% of the total. An example of an "in-process" opportunity is SLSI's efforts to increase their use of web metrics to understand website and resource usage. Taken together, Complete and Complete/Ongoing and In-Process opportunities accounted for 15 of 18, or 84%, of the Volpe-provided opportunities. Not started opportunities (6%) or those not planned (11%) for implementation at the time of the analysis accounted for a combined 17% of the total. SLSI supplied a logical rationale for the 11% of opportunities offered by Volpe that fell into the Not Planned at This Time category.

Note: Totals >100% due to rounding

Figure 1: Opportunity tally by completion status and associated percentages

Figure 2 depicts opportunity categories by their completion status. The chart shows that the top two most frequently suggested opportunity categories — SCA Reporting and SCA Data Coding and Analysis — also contained the largest degree of variability across opportunity status codes. Eight opportunities made up the SCA Reporting category; of those, SLSI completed five (63%) by the time of this analysis, one remained in-process (13%), and two are not currently planned (25%) for implementation. The SCA Data Coding and Analysis category consists of five opportunities; of those, SLSI completed three (60%) by the time of this analysis, one opportunity remained in-process (20%), and one has yet to be initiated (20%). Of the three SCA Survey opportunities, SLSI completed 100% of them by the time of this analysis. SLSI had also fully implemented the single opportunity pertaining to SCA Interviews. The one opportunity related to SLSI Website

Resources opportunity remains in-process.



Note: Totals >100% due to rounding

Figure 2: Proportion of completion status by opportunity category

CONCLUSIONS

As a product of Volpe's process evaluation, the current analysis suggests, in general, that SLSI takes action in response to opportunities for improvement provided by Volpe to further support railroads seeking its services. Of the 18 opportunities offered, 15 (84%) are either complete or in-process.

For two completed opportunities, SLSI informed the Volpe team about how well the assessed railroads implemented the suggested improvements. This feedback demonstrates the usefulness of the current methodology as a way to both strengthen SLSI's programmatic activities and improve target audience outcomes.

FUTURE ACTION

Volpe's ongoing evaluation efforts allow for the team to continue to support SLSI by tracking opportunities. Opportunities that are not yet started or planned may evolve into future evaluation work. Efforts to implement opportunities show SLSI's commitment to continuous improvement.

REFERENCES

National Academies of Sciences, Engineering, and Medicine. (2023). *Evaluation Types and Data Requirements*. Washington, DC: National Academies Press.

Theodoulou, S. Z., & Kofinis, C. (2004). *The Art of the Game: Understanding American Public Policy Making.* Belmont, CA: Wadsworth Publishing Company.

CONTACT

Starr Kidda, Ph.D.
Division Chief
Federal Railroad Administration
1200 New Jersey Avenue, SE
Washington, DC 20590
202-306-2011
starr.kidda@dot.gov

Heidi Howarth, Ph.D.
Engineering Psychologist
U.S. DOT Volpe Center
Transportation Human Factors Division
220 Binney Street
Cambridge, MA 02142
617-494-2522
heidi.howarth@dot.gov

KEYWORDS

Process evaluation, evaluation, safety culture, safety culture assessment, railroad, opportunities for improvement