



U.S. Department  
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## SHORT LINE SAFETY INSTITUTE: 2021 SYSTEMATIC REVIEW

### SUMMARY

The Short Line Safety Institute (SLSI) is dedicated to the continuous improvement of safety and safety culture across all short line and regional railroads in the United States. Strengthening a railroad's safety culture may result in less frequent or severe accidents and create a safer working environment. SLSI defines safety culture as the shared values, actions, and behaviors that demonstrate a commitment to safety over competing goals and demands, based on the U.S. Department of Transportation (DOT) Safety Council's safety culture definition (Morrow & Coplen, 2017). SLSI is able to provide its services via a partnership with the Federal Railroad Administration's (FRA) Office of Research, Development and Technology (RD&T).

SLSI conducts an annual analysis to assess the status of safety culture in the industry. This report summarizes findings from a systematic review of the nine SLSI Safety Culture Assessment Reports created in 2021 as shown in [Figure 1](#). This report also discusses industry trends in the strengths and gaps related to safety culture practices. These strengths (e.g., employees are willing to talk to their coworkers when they see an unsafe action or condition) and gaps (e.g., hazardous materials (HAZMAT) drills are not conducted/have not been conducted recently) provide insight to and indicators of the status of safety culture in the short line and regional railroad industry. Lastly, this report highlights new ways for SLSI to continue to serve the rail industry.

### BACKGROUND

Since 2015, SLSI has conducted voluntary, non-punitive, and confidential assessments of the safety culture at participating short line and regional freight railroads (i.e., Class II and Class III railroads) across the United States. SLSI uses a multi-method model, which has been recognized as "the most robust assessment model in the industry" by a Volpe National Transportation Systems Center evaluation (Kidda & Howarth, 2019). SLSI's Safety Culture Assessment (SCA) model, which includes interviews, on-site observation, and surveys, continues to provide tangible, action-oriented results for participating railroads.



**Figure 1. SLSI created nine Assessment Reports in 2021**

After an SCA, the participating railroad receives an Assessment Report. Organized around the 10 Core Elements of a Strong Safety Culture (Morrow & Coplen, 2017), this report presents "Findings" about the strength of safety culture at that railroad, as well as "Opportunities for Improvement" (i.e., Opportunities). SLSI also offers Technical Assistance to railroads that seek to implement changes with the goal of strengthening their safety culture. SLSI also conducts follow-up SCAs to further assist participating railroads in their efforts to improve safety culture. As of April 2022, SLSI has conducted 111 SCAs.



## OBJECTIVE

The objective of the systematic review is to examine the strengths and gaps in safety culture across the short line and regional railroad industry, based on SLSI’s 2021 SCAs. The annual systematic review informs SLSI of the industry’s needs as it continues to develop its programs, resources, and service offerings.

## METHODS

SLSI collected and reviewed the 2021 SCA Assessment Reports (N = 9). SLSI analyzed the Findings (both positive and negative) and Opportunities in each report (see Figure 2).

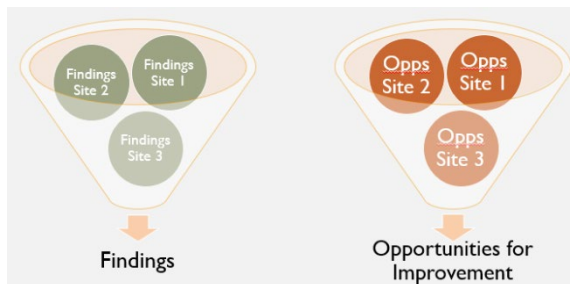


Figure 2. Findings and Opportunities for each site

**Report Elements.** The Findings are descriptions of safety culture indicators that the Assessors identified at a railroad. These indicators are based on the 10 Core Elements of a Strong Safety Culture (Morrow & Coplen, 2017). SLSI aggregated, analyzed, and then classified the Findings as either positive or negative across the reports.

The Findings classified as “positive” identify areas in which a railroad demonstrates a characteristic supporting strength in safety culture. The Findings classified as “negative” identify areas in which a railroad demonstrates a weakness in characteristics supporting a strong safety culture, thus indicating a gap. Following the Findings in the SCA Assessment Reports, Assessors list Opportunities that suggest organizational changes or actions that, if implemented, may strengthen a railroad’s current safety culture. Assessment Reports present Opportunities that address any identified

gaps in safety culture (i.e., negative Findings). For example, a Finding may be that employees do not always use Personal Protective Equipment (PPE) provided by the railroad. Subsequently, an Opportunity may be that the railroad could clearly define and communicate criteria for PPE usage across all crafts and ensure that PPE is readily available.

## ANALYSIS

The strengths and gaps in safety culture identified in the reports were reviewed, themed, and coded into a two-level categorical hierarchy (see Figure 3). The prevalence of themes and the categories that comprised them were then estimated by calculating their frequencies across reports. The high-level themes that were identified in these reports closely align with safety culture constructs that have previously been established in the scientific literature. These themes and their measures have further been adapted and used as part of the SCA process (Kidida & Coplen, 2016).



Figure 3. Overview of the data hierarchy

Note the sample size of 9 railroads in 2021, as compared to 19 railroads in 2019. This limitation in sample size reduces the data’s generalizability.

## RESULTS

Frequency analyses revealed the prevalence of the strengths and gaps as organized by the safety culture categories. Key results in order of prevalence are listed under Safety Culture Strengths and Safety Culture Gaps.



### Safety Culture Strengths

- Coaching/Mentoring/Modeling: Managers/supervisors are modeling safe behaviors while in the field and during interactions with employees.
- Mutual Trust/Respect: There is evidence of respect and mutual trust throughout the railroad.

Approaching Coworkers with Safety Concerns: Employees are willing to talk to their coworkers when they see an unsafe action or condition.

### Safety Culture Gaps

- Safety Action Plan: Some railroads do not have a safety action plan that is well communicated.
- HAZMAT Exercises/Training: Some railroads do not conduct hazardous materials (HAZMAT) drills or have not conducted them recently.
- Leadership/Management Training: Some railroads do not have formal training programs for management or non-management employees. Such programs that align with a strong safety culture are those that include training for supervisors or senior employees on how to become effective leaders.
- Recognition of Safe Work Practices: Some employees express a desire for more recognition and reinforcement in the field for engaging in safe practices.
- Safe Work Practices: There is a perception at some railroads that work practices sometimes allow unsafe behaviors to get the job done faster.

### CONCLUSIONS

SLSI's systematic review of nine Safety Culture Assessment Reports from 2021 suggests there

are prominent strengths in safety culture across the short line and regional railroad industry. However, there are noteworthy gaps in the industry as well. By assessing safety culture and examining the practices of the short line and regional railroads, SLSI can gain insight into the industry at large. With this information, SLSI can report generally on the needs of the industry and take action to create and offer resources that address identified railroad safety Opportunities.

### FUTURE ACTION

The 2021 systematic review demonstrates needs of the industry that can be addressed by SLSI. For example, SLSI continues to expand and improve its Hazardous Materials Training Programs to further educate short line and regional railroads. The services offered include Hazardous Material Regulation Training in both the train, the trainer and direct employee formats, emergency response plans, drills, exercises, and online training videos.

SLSI also continues to provide mentoring and coaching training through its Leadership Development Training, which is offered online and in-person. As of May 2022, SLSI has conducted 20 training courses and is frequently offering them to interested railroads across the country.

SLSI's online Resource Library can provide additional assistance to railroads to further address the demonstrated needs of the industry (i.e., safety action plan template). SLSI is equipped to help railroads address current industry gaps and assist railroads in developing systems they need for creating a strong safety culture. SLSI will continue to conduct its annual systematic reviews to identify these gaps. Lastly, as SLSI continues to connect with short line and regional railroads, it can further stress the importance of a strong safety culture and the need for safety to always take priority over competing goals and demands.



## REFERENCES

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Freight railroads, regional railroads, short line railroads, safety culture assessment, safety culture measurement, state of rail industry, human factors

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