Description of document:	Federal Transit Administration (FTA) Office of Safety and Security, Safety Data Management Working Group records 1) FTA Safety Data Management Action Plan 2017 and 2) Safety and Security Data Needs Assessment Report 2011
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May 10, 2021

Our File No.: FY21-0050

This is in response to your e-mail of December 4, 2020, requesting information under the Freedom of Information Act (FOIA). Specifically, you requested "A copy of the following seven documents/records in the FTA Office of Safety and Security, Safety Data Management Working Group: 1) The Data Management Plan Phase 2 Final Report; 2) Accountability, Management and Use of Transit Agency Safety and Security Data - Internal Office Resource Document; 3) Safety and Security Event Notification and Reporting to Federal Agencies - A Resource Document for Transit Agencies; 4) Harmonization of Definitions, Criteria and Thresholds for NTD and SSO Notification and Reporting; 5) Independent Assessment of SSO Data Reporting and Validation Processes; 6) Section 5329 Position Paper Re Safety Performance Criteria; and 7) Safety Research Roadmap Analysis of Transit Safety Data Trends and Data Gaps."

A search of the FTA files has disclosed two documents responsive to your request which are enclosed. FTA did not have any documents responsive to the other items in your request. To the extent that some of the material is not available, this is a partial denial of your request. If you are not satisfied with this response, you may appeal by writing to the Deputy Administrator of the Federal Transit Administration, 1200 New Jersey Avenue, S.E., East Building, 5th Floor, Washington, D.C. 20590. If you prefer, your appeal may be sent via electronic mail to FTA.FOIA.Appeals@dot.gov. An appeal must be received within ninety calendar days from the date the initial determination is signed and should include the FTA file or reference number assigned to the request and any information and arguments upon which you may wish to rely. The envelope in which a mailed appeal is sent or the subject line of an appeal sent electronically should be prominently marked "FOIA APPEAL." The Deputy Administrator's determination will be administratively final.

The duplication fee is negligible and is waived pursuant to the FOIA and the Department of Transportation regulations, 49 C.F.R. § 7.43 (c). I hope this information meets your needs.

For additional information, please see the contact information above.

Sincerely,

Nancy Sipes

Nancy Sipes
Office of Management Planning

Enclosure

U.S. Department of Transportation

Federal Transit Administration

FTA Safety Data Management Action Plan

Sponsored by:

Federal Transit Administration

Produced by:

FTA Transit Safety Data Management Working Group

December 1, 2017

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In 2017, FTA chartered the Safety Data Management Working Group (SDMWG), comprised of a cross-functional team from TSO, the Office of Research, Demonstration, and Innovation (TRI), the Office of Budget and Policy (TBP), and the Office of Administration (TAD).

The goal of this plan is to recommend a process to continuously improve FTA's internal safety risk management business processes, with a focus on providing the safety data necessary for completing risk-based decision-making to achieve the FTA's safety mission. The SDMWG recommends the following four associated actions be undertaken to support the development and operation of an effective FTA-wide SMS.

One of the *Action 4 – Establish a Framework for Defining Safety Performance Measures and Targets* – FTA is required to establish safety performance measures. This framework will help FTA create a process to develop safety performance measures and associated targets for the performance measures. TBP will be the responsible office for implementing this action.

The requirements under the Public Transportation Program are consistent with the SMS approach. For example, Section 5329 establishes a performance management framework that includes: the use of safety performance criteria and safety targets to monitor program implementation and effectiveness; requirements for executives and boards to be accountable to hire qualified safety managers as direct reports and, annually, to certify safety plans; and requirements for comprehensive staff safety training programs. Also, Section 5329 calls for the collection of information on safety risk management methods and safety assurance strategies to minimize the exposure of the public, transit agency personnel, and property to safety hazards and unsafe conditions.

FTA'S SAFETY MISSION

In July of 2013, FTA established TSO to oversee transit safety activities and safety management in the industry. TSO's mission is to make transit safer through policy development, hazard investigation, data collection, risk analysis, oversight programs and information sharing. These activities rely on coordination with other offices within FTA, including TRI, TBP, and TAD.

While this action plan describes data usage for the purpose of safety risk management by FTA itself, other stakeholders have important roles in both providing and consuming safety data. The primary consumers of safety data outside FTA are transit agencies and State Safety Oversight Agencies (SSOA), but the National Transportation Safety Board (NTSB) and other users also have an interest in transit safety data. Appendix A of this Recommendation provides additional detail on office roles as well as a list of stakeholders benefiting from this recommendation.

PRIORITIZED ACTIONS

The FTA chartered the SDMWG to identify safety data priorities, management processes, and critical actions. The group identified four priority actions fundamental to developing FTA's SMS framework. Additionally, the FTA has already planned and designed the development of these actions so they are obvious choices for immediate implementation.

ACTION 1 – ESTABLISH AND SUPPORT THE SAFETY ASSESSMENT TEAM AND THE EXECUTIVE SAFETY REVIEW BOARD

As part of its SMS, FTA is establishing a process to manage transit safety risks utilizing an internal SAT with leadership and oversight provided by an internal ESRB. The process ensures that FTA identifies safety concerns, assesses safety risks, develops and prioritizes mitigations, coordinates resourcing issues with executive leadership, and monitors the effectiveness of its actions in an ongoing manner. This process requires delivery of SMS training to FTA employees. Additional information on FTA's SAT/ESRB implementation can be found in Appendix B.

Safety Assessment Team (SAT)
The SAT is the primary group responsible for implementing the Safety Risk Management Process within FTA. The SAT will use safety-related data and other sources to identify and analyze safety risks to the transit industry and determine appropriate mitigation strategies. The SAT will be responsible for implementing and tracking mitigations and monitoring their effectiveness. The Safety Risk Management Coordinator manages the SAT. The SAT will be comprised of Directors in TSO, TBP, TAD and TRI, as well as subject matter experts and other FTA representatives, as required.

Executive Safety Review Board (ESRB)
The ESRB will be the executive level decision-making body that oversees the SAT. The ESRB will focus on reviews of the SAT's risk assessments, mitigations requiring policy development or substantial resources, and issues pertaining to other organizations and agencies outside of FTA. The ESRB will be comprised of Senior FTA Executives from FTA's Policy Council.

Table 1 presents a timeline of milestones in the development of the FTA's SAT/ESRB.

Table 1. SAT/ESRB Implementation Timeline

Milestone	Months from Start
1. Develop & approve SAT/ESRB charter, order & operating procedures	9
a. Identify membership roster	
b. Identify roles & responsibilities of other FTA Offices	
c. Review & approve proposed six-step SAT/ESRB process	
2. Implement SAT/ESRB process	12
3. Identify improvements needed for each step in the SAT/ESRB process	Ongoing

ACTION 2 – INTEGRATE STATE SAFETY OVERSIGHT ANNUAL REPORTING WITH THE NATIONAL TRANSIT DATABASE

Integrating the SSO Program Annual Reporting process into the NTD will provide FTA, the SSO community, and the rail transit industry significant efficiencies, reducing data reporting burden, improving the quality of FTA rail event data, and supporting more timely risk assessments as well as consistency in reporting.

FTA currently maintains two distinct rail event collection systems, the SSO Annual Reporting Process and the NTD, applying a cross-validation process to resolve discrepancies between systems. The NTD currently serves as FTA's system of record for rail events. After integration, SSOs will add causal factors to their reporting requirements and the NTD will collect data such as corrective action plans, hazards, and findings from SSO onsite reviews. Any proposed changes to the current safety data reporting system will require an industry notice and comment process.

Table 2 presents a timeline of milestones for integrating the SSO Annual Reporting process into the NTD event data.

Table 2. SSO Annual Reporting and NTD Integration Timeline

Milestones	Months from Start
1. Develop SSO Annual Reporting Functional Requirements for NTD Modification a. Publish proposed modifications in Federal Register for public comment b. Update proposed modifications based on docket comments	9
2. Develop new NTD functionality to support SSO Annual reporting	12
a. Development	
b. Testing	
c. Pilot phase	
3. Training and Guidance for SSO Community	15
4. SSO Annual Reporting Launch in NTD (Calendar Year 2018 data)	January 2019

ACTION 3 – DEVELOP A DETAILED SAFETY EVENT CAUSAL TAXONOMY

Multiple internal and external assessments of FTA safety data have identified the current SSO Program causal categories as a limitation of FTA's ability to perform robust risk assessments using rail event data (see Appendix C for current taxonomy). FTA's transition to the SMS framework and a data-driven, risk-based approach to safety decision-making necessitates detailed analyses that would be supported by a more structured and comprehensive causal taxonomy. For events that have occurred, cause is perhaps the most valuable data point for performing risk analyses and developing effective and targeted mitigation strategies. A more detailed causal taxonomy will allow FTA to better understand why safety events occur. Assessing the underlying factors of events will help FTA identify emerging industry-wide risks that can be proactively addressed, thus preventing future events from occurring with more effective mitigation strategies.

Reportable events that include detailed causal information about environmental, system, operational, organizational, and human factors are consistent with other agencies' reporting requirements. Statutory data protection is typically requested for non-reportable events, or risk-based data, required under new SMS-based regulations to further encourage proactive mitigation efforts at the organizational level. FTA will consider additional data collection efforts for risk-based data on non-reportable events in the future, depending on statutory data protections that may be provided.

Table 3 presents a timeline of milestones in the development of a safety event causal taxonomy.

Table 3. Safety Event Causal Taxonomy Implementation Timeline

Milestones	Months from Start
1. Research/select taxonomy	12
a. Review taxonomies from other safety management agencies	
b. Draft taxonomy based on other programs that can be used across multiple modes	
c. Test taxonomy with list of actual events	
d. Complete substantive review the proposed taxonomy within FTA and with industry	
2. Complete Policy Review	18
a. Develop benefit-cost analysis of use of proposed taxonomy (to be included in Federal Register)	
b. Send to Policy Council for approval	
c. Determine whether PRA is required i. If so, complete OMB Review	
3. Publish proposed taxonomy in Federal Register for public comment	21
a. Update taxonomy responding to public comment	
4. Complete final review	24
a. Send to Policy Council for approval	
5. Publish new final taxonomy/data requirements in Federal Register for use in next annual update (which occurs in January for safety data)	26
6. Develop new NTD functionality	27
7. Training and Guidance developed	30
8. Launch Causal Taxonomy in NTD	30

ACTION 4 – ESTABLISH A FRAMEWORK FOR DEFINING, MONITORING, AND EVALUATING SAFETY PERFORMANCE MEASURES

Safety performance monitoring and measurement is critical to FTA's effective operation of an SMS. Effective performance measurement ensures that mitigations are implemented, adhered to, appropriate, effective, and sufficient in addressing the potential consequences of identified hazards.

FTA's first NSP relies on measures that can be applied to all modes of public transportation and are based on data currently in the NTD, focusing on improving transit safety performance through the reduction of safety events, fatalities and injuries. As stated in the NSP, FTA intends to identify and incorporate SMS-based proactive measures—leading safety performance measures—in future updates to the NSP. This action will analyze the gap in the current safety performance measures and recommend new or revised measures that will more fully assess the

transit industry's safety record and the effectiveness of FTA's safety policies, training requirements, standards, and regulations.

The timeline for this process is dependent on the quantity of additional data needed and collected for the performance measures selected. In some cases, existing data may be sufficient; in other cases, establishing a new process for collecting data may require an entirely new research initiative.

Table 4 presents a timeline of milestones for selecting new performance measures and for establishing a framework for defining performance measures and collecting the safety data needed to calculate the additional safety performance measures.

Table 4. Performance Measurement Framework Timeline

Milestones	Months from Start
1. Review existing performance measures evaluation efforts	3
2. Develop process to support performance measure development and definition	6
3. Implement performance measure development and definition process	Ongoing
4. Conduct data collection and data management gap analysis	6
5. Prioritize data collection and data management change recommendations	12
a. Evaluate recommendations to support performance measure and target development	
b. Coordinate with stakeholders regarding potential changes	
6. Get approval for resulting data collection or data management changes	24
7. Develop new data collection and/or data management processes	36

ONGOING ACTIVITIES

Implementing the actions identified in this recommendation will establish the foundation for the operation of FTA's SMS. Effective safety risk management and safety assurance are ongoing processes, and these actions are initial steps in FTA's process for continuous improvement. FTA's SMS will be driven by the availability and quality of transit related safety data. As the SAT begins to assess and mitigate safety risks, they will identify areas where additional actions are required to inform their decision making, or where process improvements would allow them to more effectively mitigate safety risk. Following the implementation of the actions in this recommendation, FTA will continue to proactively monitor and address the future of transit safety.

APPENDIX A: FTA SAFETY MISSION AND OFFICE ROLES

TSO Business Process
TSO is responsible for safety activities within FTA, and thus the responsibility for identifying and addressing risks will primarily fall within TSO. Through TSO, FTA administers a national transit safety program and program compliance oversight process to advance safe, reliable, and equitable transit service throughout the United States. TSO safety activities include policy development, hazard investigation, data collection, risk analysis, oversight programs and information sharing.

The Office of System Safety (TSO-10) leads FTA's efforts to transition to a Safety Management Systems (SMS) approach to safety at FTA and throughout the transit industry. The office conducts SMS Pilots at transit agencies and develops guidance and tools to support FTA and industry SMS operation. In particular, the Office of Safety Assurance and Risk Management (TSO-11) includes researchers, investigators, and analysts that use FTA safety data. Their analysis of the safety data will identify potential safety issues that need to be addressed through the safety risk management process.

The Office of Safety Review (TSO-20) oversees transit safety regulatory compliance through a comprehensive program that includes audits, assessments and technical assistance to the transit industry. TSO-20 is responsible for the State Safety Oversight (SSO) Program; their databases contain all SSO program data, including rail event investigation results, corrective action plans, and SSO audit findings and corrective action plan resolution status.

The Office of Program Oversight (TSO-30) conducts oversight reviews to ensure that funding recipients remain compliant with the requirements of FTA's assistance programs. Review findings and corrective actions are tracked through FTA's OTRAK database.

FTA Organizational Business Process

A successful safety risk management strategy cannot solely be the responsibility of TSO. It will require data, guidance, and expertise from other offices within FTA to be successful.

FTA Office of Research, Demonstration, and Innovation (TRI)
TRI directs FTA's research program. TRI support is essential for research projects that require substantial outside resources, (e.g., TSO identifies a risk mitigation strategy that requires developing new technologies).

FTA Office of Budget and Policy (TBP)
TBP is responsible for policy development, strategic and program planning, program evaluation, budgeting, and accounting. TBP manages the NTD. If TSO requires additional data collection to support the SAT or other safety programs, and the appropriate channel for collecting this data is through the NTD, TBP is responsible for implementing the necessary changes to the system. Data collection through the NTD is most appropriate when it is a consistent, long standing data need.

FTA Office of Administration (TAD)

TAD contains TAD-20, the Office of Information Technology. TAD-20 is responsible for FTA's Enterprise Data Infrastructure, data warehousing, and business intelligence platform. TAD-20 is also responsible for implementing the Information Technology systems necessary for collecting and using safety data. TAD-20 will build the tools necessary for the SAT to identify, prioritize, analyze, and monitor safety risks and their associated mitigations and performance measures.

Safety Data Users

Systematic collection, analysis, and automated reporting of causal factors from safety events, and more robust risk-based assessments and reporting of safety trends in the transit industry will strengthen evidence-based safety policy and decision-making both internal and external to FTA.

FTA

As one of the primary intended uses of more robust safety data, FTA will be able to more easily identify trends and act proactively to address emerging safety critical risks as they arise as opposed to reacting to catastrophic events after they occur. This publicly available data will provide transparency and accountability to Congress, the NTSB, and the general public, as well as offer a valuable source of information to guide policy and decision-making of transit agencies and the SSOs alike.

Transit Agencies

Transit agencies are the primary source of data used by FTA. Transit agencies are responsible for providing data on all reportable events through the NTD. They are required to provide a monthly report of these events, although at their discretion they may report them sooner. Transit agencies maintain their own internal databases to monitor and control their own sources of risk. As consumers of FTA data, one of their main concerns is ensuring that they have good safety performance relative to the rest of the transit industry. They are interested in information targets to which they can compare their own safety performance, whether this be clearly defined thresholds for performance measures or comparisons to other transit agencies of a similar size and capacity.

State Safety Oversight Agencies (SSOAs)

SSOAs are the primary source of investigation and oversight data. SSOAs are responsible for overseeing the safety performance of the rail transit agencies in their jurisdiction. SSOAs monitor the rail transit agencies' hazard management activities; oversee the implementation of corrective action plans, and conduct onsite reviews of transit agency safety programs, issuing findings and monitoring mitigation progress. Currently these data are captured through the SSO Program annual reporting process.

SSOAs are also responsible for investigating events that occur at the rail transit properties they oversee. SSOAs submit the results of these investigations annually to FTA, including the causes of investigated events. SSOAs maintain their own internal databases to manage transit agency performance. SSOAs currently do not have access to the data that the rail transit agencies submit to the NTD.

National Transportation Safety Board (NTSB)

The NTD is the primary source of transit data available at the national level. FTA collects and manages RTA and SSOA data submitted by RTAs on a monthly basis and by SSOAs on a yearly basis. This data is accessible to the NTSB. FTA is invited as a party to NTSB transit accident investigations and participates as colleagues with the NTSB investigative team. As needed, our investigators will utilize NTD data and information gathered from accident investigations to assist in NTSB investigations.

Other Users

Apart from these main users, several other users are also interested in FTA safety data, including GAO, the DOT Inspector General, Congress, researchers, transit planning organizations, and the general public. Each of these users has different data needs, but broadly FTA should have the capability to produce high level dashboards of safety performance that they can share outside the agency; they should also consider the process of making a certain amount of their raw data publicly available, after stripping out any protected information, so it can be used for research or planning purposes.

APPENDIX B: SAT/ESRB OVERVIEW

The safety risk management process consists of six steps (Figure 1 is a graphical representation of the process):

Step 1: Safety Risk Issue Identification – collect and analyze safety data and other input information needed to identify and define potential safety risk issues. The SAT will use NTD and SSO safety data to identify trends and monitor agency submissions for different categories of transit safety events (such as fatalities, injuries, collisions, derailments, etc.). Data will also be analyzed by mode of transit and other factors to identify differences in safety risks across modes and other categories. Enhancements to the safety data system, such as developing a safety event causal taxonomy, integrating SSO event data into the NTD, and adding data elements associated with creating leading indicators (such as close call/near miss events) will improve the quality of the safety data and thus the analytical capabilities of the SAT's safety risk identification efforts.

Step 2: Safety Risk Assessment – For each identified safety risk issue (from step 1): analyze and evaluate the safety risk level to determine if there is a need for developing a proposed mitigation plan (to reduce the risk rating from an unacceptable to an acceptable level); this step would apply the frequency and severity matrix model to assess the risk level. Safety data is needed to calculate both the frequency (using safety trend data) and severity (using historical event data) to conduct risk assessments.

Step 3: Mitigation Development – Develop the proposed mitigation plan, choosing from the menu of available mitigation tools/strategies (listed in Figure 1); the SAT will select mitigations based on their impact of contributing to reducing the risk to an acceptable level

Step 4: Mitigation Plan Approval – Review and approve the proposed mitigation plan; depending on the extent and cost of the proposed mitigation plan, approval by the ESRB would be required.

Step 5: Mitigation Plan Implementation – Implement the mitigation plan based on the schedule of activities and milestones for the plan; the SAT will lead inter-agency efforts to initiate the components of the mitigation plan.

Step 6: Safety Assurance – Monitor and assure the effectiveness of the completed mitigation plan; identify and capture "lessons learned" to continuously improve processes, data sources, etc. The SAT will re-calculate the frequency and severity risk assessment to determine the reduction in risk based on the mitigations and determine if the risk has been effectively lowered to an acceptable level or if additional mitigation efforts are warranted.

On-going communication, information-sharing and industry outreach occurs throughout the six-step SAT/ESRB process.

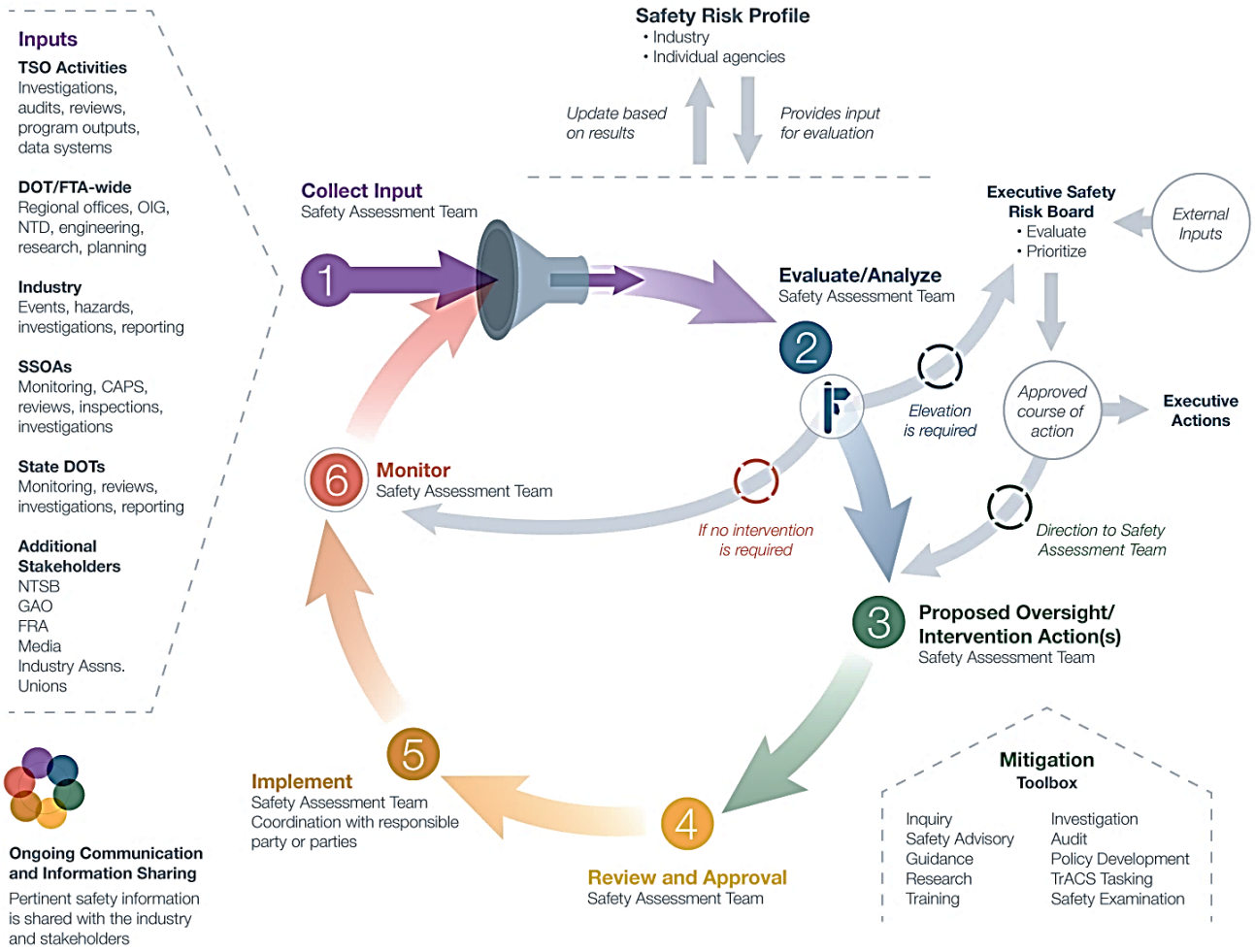

Figure 1. FTA's Proposed Safety Risk Management Process (SAT/ESRB)

APPENDIX C: CURRENT CAUSAL TAXONOMY

Current SSO data reporters select probable cause from a dropdown list of eleven options for rail events that meet the thresholds for the SSOA to conduct an investigation. These options are listed in Table 5.

Table 5. Current Causal Categories Used in SSO Annual Reporting

Cause	Description
1. Equipment Failure	System component failure
2. Poor Maintenance	System not properly maintained
3. Operating Rule Violation/Human Factor	Employee error or organizational issue
4. Slips and Falls	Slips and falls in station or vehicle
5. Imprudent Customer Actions	Inappropriate patron or passenger behavior on vehicles or in stations
6. Medically Related	Illness, heart-attacks, found deceased
7. Action of Motorist	Non-transit auto driver at fault
8. Pedestrian Actions	Pedestrian at fault
9. Trespasser	Trespasser action
10. Suicide	Suicides and suicide attempts
11. Other	Acts of Nature/Unknown

U.S. Department of Transportation

Federal Transit Administration

Safety and Security Data Needs Assessment Report

FTA's Safety and Security Data Management Program Initiative

Sponsored by:
Office of Safety and Security
Federal Transit Administration

In partnership with:
Volpe National Transportation Systems Center

Conducted by:
Boyd, Caton & Grant Transportation Group, Inc.

August 26, 2011

Boyd Caton & Grant
INNOVATION | QUALITY | RESULTS

Executive Summary

The Federal Transit Administration's (FTA) Office of Safety and Security (TPM-30) collects, analyzes, uses, and distributes vast amounts of data and information each day. This safety and security data and information are gathered through ongoing program activities from a variety of sources that are both internal and external to the agency. Increasing demand for safety and security performance indicators – for both the industry and FTA's own programs – has necessitated more effective data collection, analysis and presentation strategies.

The Office of Safety and Security is tasked with managing the high volume of data as well as requests for analysis and reports from industry, Congress, the media and other industry stakeholders such as educational centers and industry associations. However, given the volume of safety and security data that is collected and the limited level of resources FTA has devoted to safety and security data management efforts, FTA has not yet been able to fully develop and implement a plan to manage its safety and security data to ensure that activities developed to fulfill its mission are strategically aligned with safety and security goals, implemented based on quality data and through effective data processes, and can be measured frequently for performance.

FTA's Safety and Security Data Management Program Initiative

In acknowledgement of the growing importance of safety and security data to FTA's mission as well as the mission of public transportation agencies across the Nation, in 2008, FTA's Office of Safety and Security began its ***Safety and Security Data Management Program Initiative*** as a means to evaluate FTA's strategies, processes and protocols for managing and using safety and security data as well as identifying the data it needs to fulfill its mission. The goal of the initiative is to identify ways in which FTA can continually improve on its safety and security data practices to benefit and strengthen the industry as well as its own internal programs. Initiative outcomes will drive FTA's desire to implement performance-based programs. FTA chose to implement its new initiative in three phases.

1. **Phase I** - The evaluation of internal processes and the development of a comprehensive safety and security data inventory.
2. **Phase II** - The conduct of a *Needs Assessment* to ensure that FTA 1) collects the data it needs, 2) has the necessary infrastructure (including both information technology and people processes) in place, 3) has established strategies and action plans to carry out its objectives, and 4) measures performance of its own internal data management process in an ongoing manner.
3. **Phase III** – The implementation of prioritized recommendations and the ongoing monitoring of safety and security data management practices.

The purpose of the Phase I effort was to assess Office of Safety and Security data management infrastructure, processes and internal program data use and provide key recommendations to help the initiative advance to the next phase. Phase I primary objectives included:

- Identification and development of a comprehensive inventory of internal and external safety and security data elements;
- Identification of the purpose, role, and relationship each safety and security data element has with FTA program and strategic goals and objectives; and
- Determination of areas of need, where safety and security data management processes within FTA could be immediately enhanced and improved.

The Office of Safety and Security learned through its Phase I Study that there are inherent challenges to managing large volumes of data. Findings from Phase I activities resulted in the identification of immediate actions the Office of Safety and Security could implement to move forward on the assessment and improvement continuum. A key recommendation included the establishment of a Data Management Working Group (DMWG) to facilitate further investigation into FTA's safety and security data needs, effective practices implemented by external agencies, the identification of gaps and determination of recommendations that would help FTA prioritize and execute an implementation plan.

This report documents the **Phase II** *Needs Assessment*. The purpose of Phase II was to conduct a *Needs Assessment* to determine:

- Effective data management strategies and processes to carry out FTA's safety and security mission;
- The safety and security data most needed by FTA's Office of Safety and Security to carry out its mission;
- The safety and security data and performance indicators currently in place in industry as well as those needed by industry; and
- How the data can be best used, prioritized, and presented to support FTA's programs and activities.

The *Needs Assessment* consisted of the following elements:

- **Assessment of current and emerging issues** – includes a review of all relevant research, reports and studies regarding safety and security data management; analysis of Phase I activities; interviews with FTA representatives; review of TPM-30 program needs; evaluation of minutes from Transit Rail Advisory Committee for Safety (TRACS) meetings; review of FTA's performance plans.

- **Benchmarking study** – includes detailed interviews, document reviews and analysis of Federal and industry practices to identify gaps, needs and adaptable effective practices.

- **Safety and Security data point needs review** – includes detailed review and analysis of specific indicators used by government oversight agencies and industry agencies to measure safety and security performance in support of identified strategic goals and targets.

Analysis and findings

The team analyzed collected information and data to identify gaps in FTA practices, needs associated with FTA's safety and security mission as well as those to address identified disparities between FTA and the state of the practice for Federal oversight, and specific indicators that would support FTA's mission and implementation of a performance measurement system for internal programs and industry safety and security performance. The team identified and used ranking systems to assist FTA in prioritizing needs and recommendations as well as in identifying effective practices that would be most adaptable. An overview of the results of the team's *Needs Assessment* is presented below.

Results in Brief

This *Needs Assessment* was designed to answer the following questions:

1. How can *strategic planning and management* better link FTA's safety and security data to its mission?
2. How can improved technical processes increase the value of safety and security data to internal FTA operations and the industry?
3. What indicators are necessary for FTA to assess its internal program performance and the safety and security performance of the public transportation industry?

The results of the *Needs Assessment* suggest that FTA's current ***Safety and Security Data Management Program Initiative*** provides FTA a mechanism to improve its data management capabilities in the near future through implementation of effective practices at other peer Federal agencies and the recommendations provided in this report. Results indicate that, as with any program in its nascent stages, there are vast opportunities to advance along the continuum toward a more effective safety and security data management process. Activities conducted for this *Needs Assessment*, and their resulting recommendations, provide a framework from which FTA can:

1. Immediately implement high priority recommendations to improve its internal controls and its assistance to industry; and
2. Through its working group, draft a comprehensive safety and security data management plan to serve as a roadmap moving forward.

The table below presents recommendations from all elements of this Phase II *Needs Assessment*, including current and emerging FTA safety and security data issues, the benchmarking study, and the safety and security data point needs review. Recommendations in bold represent those actions deemed "high-priority" by FTA's Data Management Working Group (DMWG), supported by findings from external Federal oversight agency reports and an analysis of TPM-30's safety and security mission. Column one contains the recommendation; columns two through four indicate the corresponding data management category type (Strategy, Process, and Indicator (performance); column five identifies the gap value rating and column six the level of adaptability based on a review of benchmarked practices and FTA's current capabilities.

Recommendations	Strategy	Process	Indicator	Gap Rating	Level of Adapt.
Online reporting system – remove redundancy in incident information that is reported through both the SSO Program and NTD program by establishing a single web-enabled integrated safety and security data online reporting system. This new reporting system should move beyond the current NTD capabilities to ensure it addresses program and regulatory requirements of the SSO Program (and other programs), including easy document uploading, causal data, corrective action tracking and analysis reporting. The system should incorporate capability to collecting and distinguishing between real-time, near-term and long-term data.		**X**		4	4
Data Management Plan – expedite plans to develop a data management plan that establishes organizational strategies, roles and responsibilities, necessary systems and supporting infrastructure, and policies and protocols for all aspects of safety and security data management.	**X**			4	4
Reinstitute collection of non-major security data – ensure new web-enabled reporting system includes both major and non-major security data.		**X**		4	3
Determine performance indicator data to be collected – consider initiating a comprehensive safety and security data review to catalog all safety measures captured by the NTD and other safety data collection mechanisms. This review should identify the source(s) for each data, the use for each data (current and planned), and link to current FTA safety and security performance measure. ***NOTE*: Consider collection of probable cause data through NTD to 1) accurately prioritize safety concerns, 2) allocate resources to address highest safety concerns and 3) measure effectiveness of program performance over time. Recommend investigating use of all data points identified in the Phase II Data Points Review with a KPI Utility Rating of 3 or higher.**		**X**		4	4
Safety Strategic Plan – consider developing plan with clear performance indicators to measure safety throughout the transit industry; define specific goals/targets for each indicator; specify activities FTA would undertake to achieve goals.	X			4	4
Safety and security performance measure development guidance - build on current research (such as the OSU study) to support the development of models to support transit industry development of leading and lagging safety and security performance measures.	X			4	3
Performance measures working group - building on TRACS activities, consider establishing a working group made up of SSO agency representatives and rail transit agency safety personnel to review existing measurement processes and solicit input on future revisions to FTA's rail oversight legislation and the establishment of performance measurement standards	X			4	3
Strategic Planning – elevate awareness of Office of Safety and Security strategic planning activities and encourage participation by executive leadership at FTA.	X			4	3
Strategic Plan Development – continue progress to establish stronger links between collected and analyzed data and the strategies developed to improve industry safety and security performance.	X			4	3

Recommendations	Strategy	Process	Indicator	Gap Rating	Level of Adapt.
Monitoring strategies – identify data performance indicators for ongoing monitoring of strategies to determine if strategies implemented are effective.	X			4	3
Safety Action Plan – consider development of a safety action plan that addresses rail and bus public transportation that targets identified safety issues based on comprehensive data analysis – consider reinstituting the use of the Office of Safety and Security action plan (FY 2008).	X			4	3
Internet access to safety and security data – consider providing a comprehensive and timely data set for the industry and general public with web-based tools for queries, filtering, and downloading.		X		3	4
Safety and Security Data Quality Program - FTA should investigate the development of a sustainable program that sets targets and emphasizes the use of internal controls and industry-facing tools to improve the quality of data collected from transit agency reporters.		X		4	3
Web-based display of safety and security performance measures - FTA should investigate the development or a web-based interface to provide the transit community with data that promotes the development and monitoring of safety performance measures.		X		4	3
Standardized reports for executive management – consider the development of templates to guide the reporting of key safety and security performance data to FTA's executive management team.		X		3	3
Internal safety and security performance guidance for FTA offices and Regions – consider developing and implementing technical assistance to HQ and Regional Offices to support the use and tracking of established performance measures for activities they are tasked to carry out.		X		3	3
Data Warehousing – investigate data warehousing options that will streamline data storage and improve access to safety and security data across offices and programs.		X		3	3
Close call reporting – Initiate talks with FRA and NASA representatives to gather greater detail on necessary steps for development of a non-punitive safety reporting system. The DMWG should formulate a shortlist of first steps, including coordination with FTA legal and outreach to agencies with existing overlap with the FRA pilot system and the FTA concept.		X		3	3
Establish and maintain regular bi-weekly DMWG conference calls.		X		4	4
Key performance indicators - analyze key performance indicators presented in Phase II for selection, measurement and tracking. Please see Performance indicator table in Phase II Report.			X	4	3

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1.0 Introduction

The Federal Transit Administration's (FTA) Office of Safety and Security collects, analyzes, uses, and distributes vast amounts of data and information each day. This safety and security data and information is gathered through ongoing program activities from a variety of sources that are both internal and external to the agency. The Office of Safety and Security's objective for data collection is to identify initiatives to improve safety and security performance in the transit industry through oversight, training and technical assistance targeted at the areas of greatest need. These initiatives support the Office of Safety and Security's mission and are carried out in numerous oversight and technical assistance programs aimed at overseeing and supporting the public transportation industry.

Mission

FTA's Office of Safety and Security mission is to provide leadership and vision in the development and management of initiatives to continually improve the safety and security of passengers, employees, emergency responders, and all others who come into contact with the public transportation system.

Increasing demand for safety and security performance indicators – for both the industry and FTA's own programs – has necessitated more effective data collection, analysis and presentation strategies. FTA collects a wealth of safety and security data through several oversight programs, as well as under various statutory and regulatory requirements, such as the State Safety Oversight (SSO) Program, Drug and Alcohol (D&A) Testing Program and the National Transit Database (NTD). The Office of Safety and Security is tasked with managing the high volume of data as well as requests for analysis and reports from industry, Congress, the media and other industry stakeholders such as educational centers and industry associations.

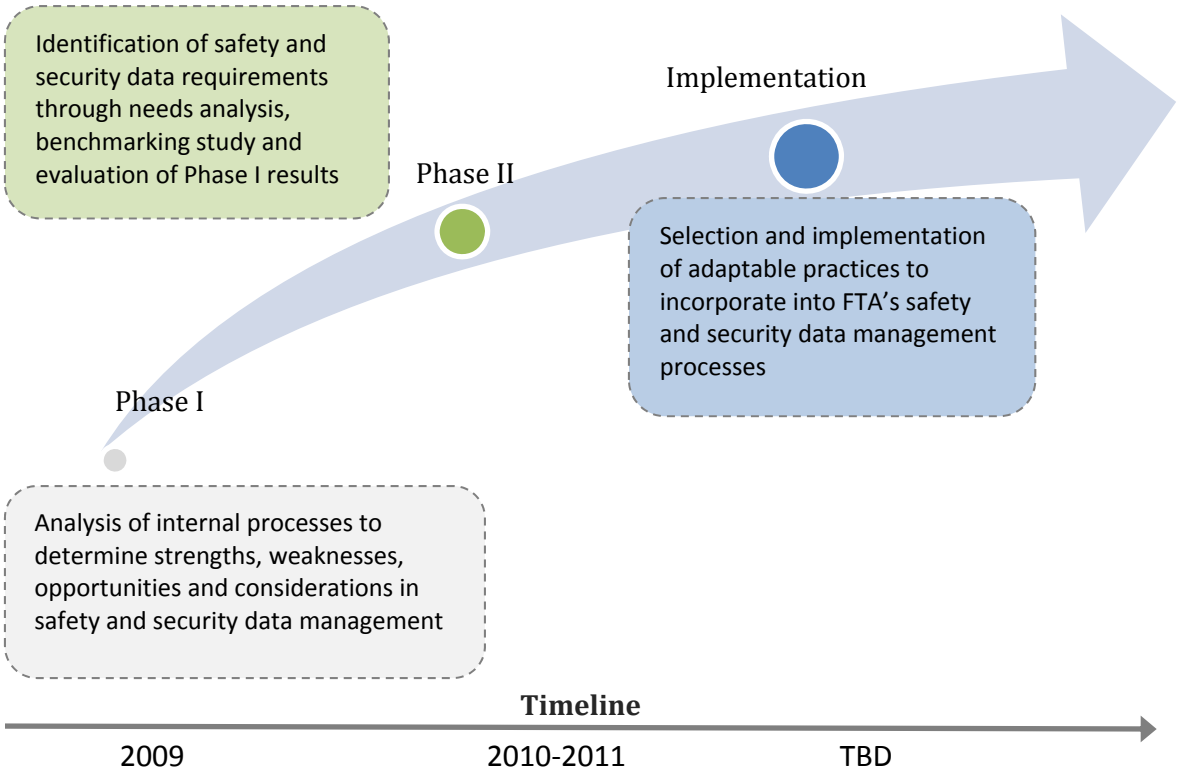
To date, however, FTA has not yet been able to fully develop and implement a plan to manage its safety and security data to ensure that activities developed to fulfill its mission are strategically aligned with safety and security goals, implemented based on quality data and through effective data processes, and can be measured frequently for performance. It is an extensive burden that is often carried out by no more than one to two people within the Office of Safety and Security.

1.1 FTA's Safety and Security Data Management Program Initiative

In acknowledgement of the growing importance of safety and security data to FTA's mission as well as the mission of public transportation agencies across the Nation, in 2008, FTA's Office of Safety and Security began its ***Safety and Security Data Management Program Initiative*** as a means to evaluate FTA's strategies, processes and protocols for managing and using safety and security data as well as identifying the data it needs to fulfill its mission. The goal of the initiative is to identify ways in which FTA can continually improve on its safety and security data practices to benefit and strengthen the industry as well as its own internal programs. Initiative outcomes will drive FTA's desire to implement performance-based programs. FTA chose to implement its new initiative in three phases:

1. **Phase I** - The evaluation of internal processes and the development of a comprehensive safety and security data inventory;
2. **Phase II** - The conduct of a *Needs Assessment* to ensure that FTA 1) collects the data it needs, 2) has the necessary infrastructure (including both information technology and people processes) in place, 3) has established strategies and action plans to carry out its objectives, and 4) measures performance of its own internal data management process in an ongoing manner; and
3. **Phase III** – The implementation of prioritized recommendations and the ongoing monitoring of safety and security data management practices.

The graphic below illustrates FTA's phased approach and key activities within each.



This report documents the Phase II *Needs Assessment* and identifies recommendations for FTA as it moves forward into Phase III. However, the team believes it is necessary to provide a brief background on both Phase I *and* Phase II activities as Phase I results were evaluated during the *Needs Assessment*.

1.2 Phase I

The purpose of the Phase I effort was to assess Office of Safety and Security data management infrastructure, processes and internal program data use and provide key recommendations to help the initiative advance to the next phase. Phase I primary objectives included:

- Identification and development of a comprehensive inventory of internal and external safety and security data elements;
- Identification of the purpose, role, and relationship each safety and security data element has with FTA program and strategic goals and objectives; and
- Determination of areas of need, where safety and security data management processes within FTA could be immediately enhanced and improved.

During the Phase I study, the project team used a multi-tiered approach that consisted of detailed program reviews, development of a detailed data index, and interviews with project stakeholders internal and external to FTA. Based on these activities, the team was able to identify data management strengths, weaknesses, and considerations for moving forward to support key recommendations. The Office of Safety and Security learned through its Phase I Study that there are inherent challenges to managing large volumes of data. Beyond the common challenges of governance, integrity and quality, additional potential obstacles that must be negotiated include:

- Integration of data management activities across departments or offices to streamline data processing and avoid redundant practices;
- Using data to ensure cause and effect relationship between strategic goals and program activities;
- Improving data utility both internally and externally;
- Ensuring demand for data does not outpace programmed resources; and
- Maintaining effective technologies to ensure an open, robust and manageable data architecture.

The project resulted in the identification of strengths, weaknesses, opportunities and considerations for improved data management efforts. Findings from Phase I activities resulted in the identification of immediate actions the Office of Safety and Security could implement to move forward on the assessment and improvement continuum. A key recommendation included the establishment of a Data Management Working Group (DMWG) to facilitate further investigation into FTA's safety and security data needs, effective practices implemented by external agencies, the identification of gaps and determination of recommendations that would help FTA prioritize and execute an implementation plan.

Phase I established a baseline from which to compare FTA's current data management practices with other agencies and to identify the discreet data points necessary for FTA to fulfill its mission and carry out its oversight and technical assistance activities.

1.3 Phase II

The purpose of Phase II was to conduct a *Needs Assessment* to determine:

- Effective data management strategies and processes to carry out FTA's safety and security mission;
- The safety and security data most needed by FTA's Office of Safety and Security to carry out its mission;

- The safety and security data and performance indicators currently in place in industry as well as those needed by industry; and
- How the data can be best used, prioritized, and presented to support FTA's programs and activities.

Based on a key recommendation from Phase I, FTA's Office of Safety and Security (TPM-30) stood up a Data Management Working Group (DMWG) that consists of personnel from FTA's Office of Safety and Security with overall responsibility to implement data management initiatives and oversee contracted support efforts for the Phase II tasks and beyond. The team participated in DMWG meetings and teleconferences to help build consensus on the scope of the *Needs Assessment* and identify the methodologies to be employed by the team during Phase II activities.

The DMWG agreed that the objectives of Phase II requires that the following elements be implemented to support the *Needs Assessment*:

- **Assessment of current and emerging issues** – includes a review of all relevant research, reports and studies regarding safety and security data management; analysis of Phase I activities; interviews with FTA representatives; review of TPM-30 program needs; evaluation of minutes from Transit Rail Advisory Committee for Safety (TRACS) meetings; review of FTA's performance plans.
- **Benchmarking study** – includes detailed interviews, document reviews and analysis of Federal and industry practices to identify gaps, needs and adaptable effective practices.
- **Safety and Security data point needs review** – includes detailed review and analysis of specific indicators used by government oversight agencies and industry agencies to measure safety and security performance in support of identified strategic goals and targets.

The team identified three distinct attributes of effective data management that provided a valuable means through which the collected information could be categorized for the presentation of analysis and results. In this report, the team addressed the following questions:

1. **Strategy**: How can *strategic planning and management* better link FTA's safety and security data to its mission?
2. **Process**: How can improved technical processes increase the value of safety and security data to internal FTA operations and the industry?
3. **Indicators**: What indicators are necessary for FTA to assess its internal program performance and the safety and security performance of the public transportation industry?

Phase II activities are detailed in the following *Methodology* section and all *Findings and Recommendations* are represented in this *Needs Assessment Report.*

2.0 Methodology

This section presents a description of the methodology employed for each of the initiative's key tasks.

The team's approach to the *Needs Assessment* is best categorized as follows:

(1) **Assessment of current and emerging issues** – addresses the strengths, opportunities and considerations identified during Phase I as they relate to FTA's current data management processes and practices, and interprets the gaps and needs analyses identified, including emerging issues and needs identified by Federal Government oversight agencies and past research efforts.

(2) **Benchmarking study** – identifies the successful practices and key factors for adaptability of data management programs currently in place at Federal and local stakeholders that share a similar mission with FTA's Office of Safety and Security.

(3) **Safety and security data point needs review** – based on the activities in Phase II, documents the specific data needs for FTA's Office of Safety and Security through reconciliation of conducted analyses with FTA's mission and presents justifications.

2.1 Evaluation of Current and Emerging Safety and Security Data Needs

FTA's internal analysis of its safety and security data management practices during Phase I identified areas of opportunity for improvement. It also identified strengths and weaknesses at both the "process" and "program-specific" level and recommendations were made based on feedback from FTA's Office of Safety and Security. The method employed was a *quasi-SWOT* (Strengths, Weaknesses, Opportunities, and Threats) analysis that, in addition to the strengths and weaknesses, identified considerations for each recommendation, instead of identifying threats. Process-level findings focused on the following data management categories:

- Data Management Plans and Policies
- Data Collection Methods
- Data Storage and Access
- Data Usage and Utility
- Data Communication and Presentation

Program-specific findings were identified based on the assessment of FTA programs that collect and/or utilize safety and security data. This included programs such as the State Safety Oversight Program, Drug and Alcohol Testing Program and the National Transit Database Program. The entire study resulted in key recommendations to support the Office of Safety and Security's advancement into Phase II, as well as detailed recommendations by both process and program-level analyses.

During Phase II, the team reviewed each finding as well as the associated considerations, opportunities and recommendations to identify safety and security data needs that could be carried forward into the Phase II *Needs Assessment* results. Critical to the assessment was to continue to distinguish between the process- and program-based findings, all the while categorizing them within the basic data management framework listed above. All Phase I results were reviewed by the DMWG to support the identification of needs that would be presented in this report.

Since the completion of FTA's Phase I study in 2009, there have been many changes in the use of and request for safety and security data. Over the last 18 months, audits by the Government Accountability Office (GAO) of FTA's State Safety Oversight (SSO) and National Transit Database (NTD) Programs, FTA's proposed legislation for rail safety oversight, Transit Cooperative Research Program (TCRP) studies on performance measures, and the Oklahoma State University (OSU) "Transit Safety Management and Performance study have provided additional reference material regarding the management and use of safety and security data. In addition, annual strategic and action plans within FTA, at U.S. DOT and even external agencies have also informed Phase II activities and provide a challenge given the dynamic landscape of safety and security in the public transportation industry and its impact on governing agencies.

With this in mind, the project team has worked with FTA's Office of Safety and Security to consistently review and refine the scope of the *Needs Assessment*, most importantly ensuring sufficient attention was paid to rail safety oversight given FTA's proposed legislation in Congress and the establishment of the TRACS. This refinement in scope has allowed FTA to focus on the most critical data management program needs moving forward.

To assess FTA's current and emerging safety and security data demands, the team assessed relevant documentation such as the Phase I report, GAO's report GAO-11-199 entitled "Rail Transit: FTA Programs Are Helping Address Transit Agencies' Safety Challenges, but Improved Performance Goals and Measures Could Better Focus Efforts" and report GAO-11-217R entitled "Rail Transit: Reliability of FTA's Rail Accident Database" as well as the FTA's Office of Inspector General (OIG) discussion draft "Challenges to Improving Oversight of Rail Transit Safety and Implementing an Enhanced Federal Role."

Reports generated through FTA's programs, such as the Rail Safety Statistics Report, the draft Bus Safety Statistics Report, NTD reporting manuals, and Annual Reports were reviewed to determine current uses for safety and security data. To better understand FTA's strategic approach to data management, the team also reviewed internal documents such as FTA's Annual Performance Plan, the Office of Safety and Security Five Year Strategic Plan FY2008 to FY2012, as well as plans that contained safety and security goals for public transportation such as U.S. DOT's and FTA's strategic plans.

To better understand demands for data to support research efforts as well as inquiries from Congress and media outlets, the team reviewed emails, letters and published reports such as the Oklahoma State University, Transit Safety Management and Performance Measurement - Volume 1: Guidebook, 2011 and each of the Transit Cooperative Research Program Report 141, Transit Cooperative Research Program Report 88, and Transit Cooperative Research Program

Report 137. For analysis purposes, the team catalogued the documents into the following five categories (**a complete list of documents and materials reviewed is in Appendix B of this report**):

- *Government Oversight*: Reports and recommendations from Federal Government Oversight agencies (i.e., GAO, NTSB) that impact FTA's safety and security data management practices or needs
- *FTA Regulatory/Oversight*: TRACS, updates to regulatory programs, and documents generated by FTA that utilize safety and security data
- *Inquiry*: External and internal requests and inquiries for safety and security data
- *Research*: Documents developed by research institutions
- *Internal*: Ongoing internal program assessments and performance

The team reviewed each document within the categories listed above and assessed their relevance to FTA's safety and security mission as well as their impact on current and future data needs and the processes in place at FTA to manage data.

To better understand FTA's safety and security data management processes, the team reviewed the analysis and results from Phase I and interviewed FTA personnel to identify gaps in data collection, warehousing, quality, analysis, reporting, prioritization, visualization and transparency. The team's internal interviews consisted of representatives from FTA's offices of Safety and Security, Research, Development and Innovation, Oversight, Engineering and Budget and Policy. In addition, we interviewed officials from FTA's Regional Offices to obtain their perspectives on safety and security data needs.

2.2 Benchmarking study

Many different agencies have used the concept of benchmarking as a widely accepted mechanism to evaluate and measure their own practices against the practices of others in an effort to make management and operational improvements. The Office of Safety and Security chose to benchmark their management of safety and security data in order to better understand FTA's internal processes as well as the processes in practice at similar Federal entities, as well as the industry itself. Benchmarking provided FTA an opportunity to identify and understand performance differences across its benchmarking partners and determine if practices in whole or in part could be integrated into the scope of its own operations.

The benchmarking process is usually centered upon performance indicators, which also operate as a means of self-analysis and help to identify key differences between participating agencies.

The DMWG chose to conduct *strategic benchmarking* and *process benchmarking* to best compare practices and methods related to safety and security data management. Strategic benchmarking allowed FTA to evaluate strategic choices and dispositions made by other agencies for the purpose of identifying areas in which FTA could improve its own strategic planning and use of safety and security data. Process benchmarking provided FTA the opportunity to go beyond analysis of performance data and identify the design and characteristics

of effective processes that lie behind the good performance of other agencies. The project team did look at how each agency develops and uses key performance indicators, however, as a means to evaluate safety and security performance in their respective systems (for the transit agencies) or the performance on the industry for which the agency oversees (Federal partners). The team used the following approach to complete the *Benchmarking Study*:

- Initiation and Planning
- Data Collection
- Data Analysis
- Document Findings

Initiation and Planning

FTA held a kick-off meeting amongst its DMWG members to identify the areas, critical factors and processes to be benchmarked. During the meeting, the DMWG reviewed findings from Phase I activities to inform determinations with regard to the key practices FTA would eventually benchmark in Phase II of FTA's Data Management Program.

The kick-off meeting was used to frame the benchmarking study and resulted in the following outcomes:

- Identification of the critical performance factors/processes to be benchmarked
- Scope of the benchmarking efforts
- Identification of guiding objectives
- Identification of data requirements
- Identification of potential benchmarking partners

The DMWG decided to focus the scope of the study stay within the parameters of previously identified needs and capabilities and, when possible, widen that scope on a case-by-case basis depending upon the partner being benchmarked and the resources available to the project. The benchmarking team consisted of the same individuals that led the Phase I internal assessment. The team, therefore, was familiar with FTA's own internal processes and needs and this allowed the team to quickly identify the processes that should be benchmarked. The team proposed that identified practices to be categorized in the following manner:

Benchmarking Partners

Group 1: Federal Agencies with Similar Mission

- Federal Motor Carrier Safety Administration
- Federal Railroad Administration
- National Highway Traffic Safety Administration
- UK Rail Standards Safety Board

Group 2: International Agencies

- Rail Safety and Standards Board
- Transport Canada

Group 3: U.S. Transit Industry

- Chicago Transit Authority
- Bay Area Rapid Transit
- Santa Clara Valley Transportation Authority
- Minneapolis Metro Transit
- Washington Metropolitan Area Transit Authority

Group 4: Internal FTA Offices

- Office of Budget and Policy
- Office of Research, Demonstration and Innovation

- **Strategic comparison** - What strategic objectives are used, how are resources focused, what standards do they use, and how is data linked to strategic activities
- **Process comparison** - How does the benchmarked agency carry out same or similar data management processes
- **Performance indicator comparison** - What indicators are being used both internally and externally, how are they measured, tracked and presented

The next step in the initiation and planning phase was to determine which agencies would serve has good benchmarking partners. FTA looked to identify a cross-section of agencies that either serves a similar Federal mission to FTA or demonstrated experience the practices to benchmarked. The DMWG identified a number of agencies that would support the study's efforts and grouped them in a logical manner that would support the development of questionnaires. The team believed that the four groups: Federal agencies with similar missions, international agencies, U.S. transit industry agencies and internal FTA offices provided the most benefit in the development of questionnaires and topics to discuss with each partner.

Data Collection

Based upon the results of the kick-off meeting, the team proposed the practices to be benchmarked based largely on the results of Phase I and the team's familiarity with typical elements of data management programs.

Prior to the collection phase, the team collaborated to define the individual data points to be collected from the benchmarking partners. The team developed a matrix of questions to be used during interviews of the benchmarking partners. FTA drafted and sent official request letters to each potential benchmarking partner, requesting a point of contact so that interviews could be scheduled and carried out. For each partner that accepted FTA's invitation to participate, the team set up and held process reviews and used the developed matrices to categorize and collect data and information. The text box above shows only those partners that accepted FTA's invitation to participate.

Data Analysis

Most of the information collected during the reviews was anecdotal and described processes rather than depicting quantitative data points. This was helpful as the team benefitted from process-based discussions to obtain a much greater understanding of the practices being implemented by the benchmarked partners. The team analyzed results from each interview and evaluated each presented practice for its merit, utility to FTA, its significance to previously identified needs, and its level of adaptability.

Each recorded benchmarked practice received a ranking regarding significance to FTA's needs (Gap Rating) and level of adaptability. The team used Harvey Ball indicators as follows:

1 = practice does not exactly fit FTA's identified need, but has merit. It may require too extreme a transition from current FTA authorities, mission or budget to be adaptable.

2 = practice would satisfy a component of FTA's identified need, however it would require modification to address need in its entirety. Practice is adaptable but needs executive level commitment to address necessary changes to FTA's current authority, strategies or budget.

3 = practice addresses FTA's identified need but may need slight revision to be incorporated more easily. Practice is adaptable with minor changes in FTA's authority, strategies or budget.

4 = practice completely satisfies FTA's identified need. Practice is easily adaptable within the current FTA authority, strategy and budget.

Document Findings

Once the analysis was complete, the team worked to identify the best methodology for presenting the findings to FTA. A summary of effective practices table was developed to depict those practices that the team believed met the criteria as a practice FTA could implement, albeit with considerations to be addressed prior. The team extracted from the summary table – and documented in detailed discussion, organized by benchmarked partner – practices that clearly stood out and warranted additional detail and FTA consideration. Each practice discussed is measured for its level of significance to FTA's identified needs (Gap Rating) and its level of adaptability. In addition, considerations for implementation are provided for FTA's review. Finally, the team made recommendations to FTA based on its assessment of the practices and evaluation of FTA's needs.

2.3 Analysis of safety and security data point needs

As discussed above, the team identified and compiled a list of the numerous sources and data demands that have emerged since the completion of the Phase I study. This set presented FTA with a clear picture of the specific data needs that must be managed by the Office of Safety and Security or other offices within FTA. In order to effectively address data needs, FTA must ensure that it collects the data necessary to support performance measurement development and must also ensure that data is collected in a manner and format that lends itself to this process.

Need / Data Measurement Linkage

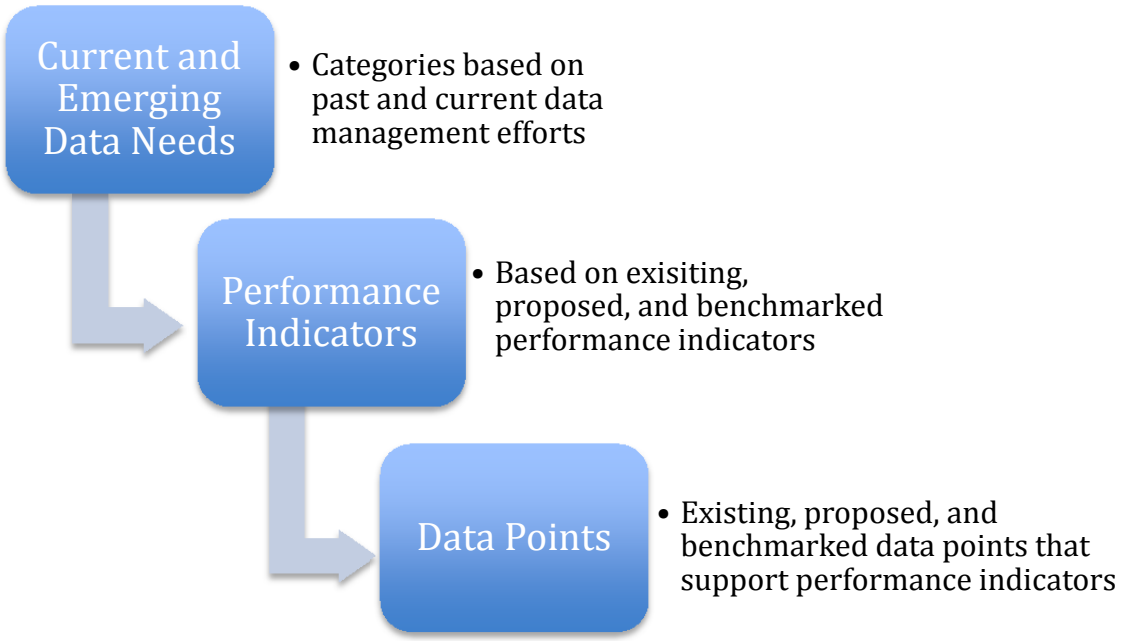
Building on its evaluation of current and emerging safety and security data needs, the team identified specific performance indicators associated with each data need specified in its evaluation effort. This process created a linkage between each identified need and the associated performance indicators. The team created this list of Key Performance Indicators (KPI) based on existing practices at FTA, existing KPIs, proposed KPIs, benchmarked practices at other federal

agencies and transit systems, and direct recommendations from other Federal entities, such as OIG, GAO, and NTSB.

The team divided the KPIs into three groups:

1. Lagging Indicators – data points that change before a realized impact in safety performance
2. Leading Indicators – data points that change with or after a realized impact in safety performance
3. Data Quality Indicators – data points that change with variation in quality of reported safety and security data

The team then took the next step of reviewing the individual safety and security data points collected by FTA through its various data collection mechanisms that can be used to support the development and monitoring of each performance indicator and coupled this list with other industry data point collection practices gathered through the benchmarking portion of the Phase II effort. For example, a need may have included a recommendation to monitor the safety culture at rail transit systems. The team then identified existing, proposed, and benchmarked data points that can be used by FTA to support the development and monitoring of safety culture performance indicators.



Sensitivity and Utility

FTA currently collects safety and security related data through a number of different sources. However, to date FTA has not performed an assessment of the collected data's ability to support the development of needed performance measures and ultimately help address safety and security concerns by providing accurate assessments of transit industry performance. The team's

goal during this phase of the project was to do just that – assign a value to each data point, assessing its ability to support performance measurement and thereby addressing FTA's identified data need.

The team reviewed two aspects of each data point's ability to support performance measurement:

- *Sensitivity*: The team has presented any perceived difficulty in collecting the data point related to data sensitivity. Concerns may stem from causal and ultimately liability issues, workforce/union resistance, and quantification/reporting difficulties. This information is presented in text form and should be considered in conjunction with the *KPI Utility* measure when determining whether or not to begin, continue, or cease data point collection.

- *KPI Utility*: The team devised a rating system to assign a *KPI Utility* value to each data point. The following definitions were used to guide KPI Utility valuation.

KPI Utility	Description
5	This data point is a critical component of satisfying current performance measurement and/or analysis requirements
4	This data point supports currently identified performance measurement and/or analysis requirements
3	This data point could support additional performance measurement and/or analysis efforts
2	This data point could support additional performance measurement and/or analysis efforts but is not recommended at this time
1	This data point is not recommended for performance measurement and/or analysis efforts at this time

The team reviewed each data point based on experience to date using the data point to support performance measurement, knowledge of existing challenges related to both collection and analysis, as well as the benchmarked practices of other agencies in the transit community and assigned *KPI Utility* accordingly, using the above tiers to stratify. The team framed all *KPI Utility* designations based on development experience from and needs identified through the following mechanisms:

- FTA's Annual Performance Plan
- FTA Goals
- USDOT Goals
- FTA Reports to Congress
- FTA Rail Safety Statistics Report
- FTA Bus Safety Statistics Report
- Public and Media Inquiries
- Research Efforts

Additionally, for each data point, the team identified existing reports that require collection of the data to satisfy existing reporting or publication requirements. All this information was synthesized into a table that is arranged according to the hierarchy discussed above:

1. Current and emerging data needs
2. Associated performance indicators
3. Relevant data points

The resulting table provides FTA with a basis – derived from FTA experience, analysis expertise and benchmarked practices – from which to determine whether or not to begin, continue, or cease collection of each data point. The table allows FTA to make decisions that will most effectively address the agency's data management needs identified to date.

3.0 Findings, Analysis and Recommendations

This *Needs Assessment Report* documents the results of activities described in the previous section, includes relevant findings and analyses, and presents recommendations for implementation during Phase III of FTA's ***Safety and Security Data Management Program Initiative***.

As mentioned earlier, the *Needs Assessment* comprised of the following major activities:

- **Evaluation of Current and Emerging Safety and Security Data Needs** – includes a review of all relevant research, reports and studies regarding safety and security data management; analysis of Phase I activities; interviews with FTA representatives; review of TPM-30 program needs; evaluation of minutes from TRACS meetings; review of FTA's performance plans.
- **Benchmarking study** – includes detailed interviews, document reviews and analysis of Federal and industry practices to identify gaps, needs and adaptable effective practices.
- **Safety and Security data point needs review** – includes detailed review and analysis of specific indicators used by government oversight agencies and industry agencies to measure safety and security performance in support of identified strategic goals and targets.

Mission

FTA's Office of Safety and Security mission is to provide leadership and vision in the development and management of initiatives to continually improve the safety and security of passengers, employees, emergency responders, and all others who come into contact with the public transportation system.

The findings and analyses presented herein take into account FTA's current mission as well as enhancements that could be made to close the gap between FTA's safety and security data management practices and those of other sister Federal agencies as well as those identified that would address identified needs. Narratives within each analysis section provide supporting information assessment of FTA's data management needs by:

1. Identifying the specific need
2. Providing supporting information from Federal oversight entities, research bodies, and benchmarked agencies
3. Presenting current FTA gaps
4. Identifying current or recent initiatives undertaken by FTA to address the need
5. Discussing what other benchmarked agencies have done to address the same need

The table below presents a summary of the needs that have been identified during the team's analysis of findings from Phase II activities. Needs are discussed in detail in the following sections. The source indicator is based on the Phase II activity (EMG – emerging trends, BM – benchmark study, and IN – indicator review). The attribute column identifies the data management program element the need refers to (S – strategy, P – process, I – indicator).

Needs at a Glance

Identified Need	Source	Attribute
Safety and security data management plan and protocols	EMG, BM	S
Safety action plan	EMG, BM, IN	S
Safety and security strategic planning and working group	BM	S
Understanding of strategic safety and security data needs	EMG, BM	S
Strategic performance measurement, guidance and dedicated function	BM	S
Link between strategy development and collected/analyzed data	EMG, BM	P
Ability to monitor internal compliance programs	EMG, BM	P
Safety and security data quality program	EMG, BM	P
Improved data warehousing for easy access and retrieval	BM	P
Remove duplicative safety and security reporting	EMG, BM	P
Web-enabled integrated safety and security online reporting system	EMG, BM	P
TPM-30 stewardship of safety and security data	BM	P
Resumed collection of industry security data	EMG, IN	I
Near miss data	EMG, IN	I
Ability for industry to conduct peer group analyses	EMG, IN	I
Improved data transparency, availability and presentation	EMG, IN	I
Collection of leading indicators	BM, IN	I
Identification of key performance indicators	ET, IN	I

3.1 Evaluation of Current and Emerging Safety and Security Data Needs

Since 2006, the Office of Safety and Security has taken steps to improve its strategies for managing and implementing safety and security oversight. The efforts have included the development of a *Strategic Planning Working Group* (SPWG), Rail Safety Action Plans, internal Office of Safety and Security Action Plans, safety statistic reports for rail and bus and performance measures for both FTA programs and industry safety. Analysis during Phase I identified that while there was progress in certain programs, each initiative or deliverable was typically developed within the confines of the specific program and did not always extend office-wide or receive input or endorsement of FTA executive management. As such, the efforts have suffered from starts and stops, stove-piped implementation and little linkage to FTA's overarching mission and internal performance measures. For example, performance measures were established in 2006 in FTA's Safety Action Plan for the rail transit industry within the SSO Program. However, at the end of fiscal year 2007, resources were no longer being used to monitor the measures or update the plan. In addition, the plan was confined to the SSO Program and did not extend to other modes or receive executive level endorsement. GAO cited similar concerns in its January 2011 report (GAO-11-199), concluding that FTA needs to not only help transit agencies set clear performance goals and related measures for safety efforts, but "create a set of clear specific performance goals and measures that (1) are aligned with the department's strategic safety goals and identify the intended results of FTA's carious safety efforts and (2) address important dimensions of program performance."

In 2009, the Office of Safety and Security moved to rectify these identified concerns by creating the *Safety and Security Data Management Program Initiative*, an outgrowth of the SPWG, to evaluate FTA's safety and security data management efforts, needs and gaps and put forth solutions. Findings from Phase I of the initiative identified gaps in FTA's management of its safety and security data to support strategic planning. The study concluded that while FTA collected vast amounts of safety and security data that could be used to support the industry and justify programs, there was no central plan in place and, thus, the team recommended that FTA establish the Data Management Working Group (DMWG) and develop a data management plan.

Analysis of documents and trends within Phase II of FTA's safety and security data initiative highlight the need for stronger safety and security strategic planning, including the identification of targets and goals that would help align FTA's regulatory and technical assistance programs with safety and security priorities in the public transportation industry. GAO (GAO-11-199) concluded the same and stated, "Setting clear performance goals will help FTA to communicate a direction for its safety efforts and establish benchmarks for performance. Tracking progress through performance measures will help FTA in planning its future efforts and will help hold the agency accountable for achieving results."

Data Management Plans and Protocols

Data Management Plan

Identified Needs
Safety and Security Data Management Plans and Protocols

- Data management plan
- Data governance and stewardship
- Data management team
- Data policies and standards
- Data roles and responsibilities
- Assessment of budget and resources
- Safety Action Plan
- Safety targets
- Ongoing monitoring

During Phase I of FTA's *Safety and Security Data Management Program* initiative, it was identified that FTA did not have an agency-wide plan for managing its safety and security data. While it was clear that the Office of Safety and Security had established many effective internal processes and relationships, they were informal in nature and did not lead to consistent management of data transactions. Because of this FTA moved to establish its safety and security DMWG to guide *Phase II*, including this needs assessment and benchmarking study. FTA anticipates the development of a safety and security data management plan after Phase II results are analyzed and presented to FTA's executive management.

During Phase I, the team developed an inventory of data related to FTA's safety and security oversight and technical assistance activities. Currently, FTA has many programs/purposes that collect or utilize an element of safety and/or security data:

- Administrative
- Data Collection and Analysis
- Training
- Public Outreach and Communication
- Strategic Planning
- Research and Technology Development
- Standards Development
- SSO Program
- Transit Bus Safety and Security Program
- Designing in Safety, Security and Emergency Management
- Commuter Rail
- Passenger Ferry
- Regional Office Coordination
- Transportation Research Board (TRB) and TCRP Projects
- Drug and Alcohol
- Fatigue Management
- Modal Safety
- Department of Homeland Security (DHS) Counterterrorism Security Liaison Activities
- Crime Prevention and Management
- Information Sharing
- Pandemic Planning
- American Public Transportation Association (APTA) Emergency Response Program
- FTA Coordination of Emergency Operations Planning

Within each program area, the team categorized each discrete data element by its data source and owner, transfer tool (and if it is automated), whether it was internally or externally generated, the data recipient, frequency in collection, primary and secondary user, level of validation, output, and purpose.

While FTA collects and maintains a wide array of safety and security data, each data point was governed by separate project or administrative needs; no top level plan existed that discussed the fundamental elements of data management planning and control for safety and security, namely:

- Data governance
- Data team
- Data management process
- Data integration
- Data quality
- Data presentation
- Systems architecture
- Data warehousing
- Data security*

*It is important to note that security protocols do exist for some internal and reporting systems such as OTrak and NTD, for example, but not for all data tools.

During both Phase I and Phase II activities, it was evident through interviews with internal FTA representatives and benchmarked partners that absent a comprehensive data management plan, an agency struggles to 1) ensure that it collects the data it needs to support agency goals and industry needs and 2) its very strategies and activities to monitor and support the industry it oversees may not be data-driven and thus are hard to measure.

During benchmarking interviews, FTA documented recommended practices for developing and maintaining data management plans, including PHMSA's strategic planning activities. The Pipeline and Hazardous Materials Safety Administration (PHMSA) developed a *Data Management and IT Modernization Roadmap* to establish formal roles and responsibilities governing the collection, use, and processing of data and information. The PHMSA's data management plan development process included:

- Evaluation of its business processes
- Assessment of its level of internal resources (personnel) dedicated to strategic, operational, or tactical data analysis to drive program priorities, measure organizational performance and effective make safety decisions
- Identification of gaps in resources and strategies
- Addressing of the role of information technology to both strategically and tactically execute its mission regarding data in the most effective and efficient manner
- Development of a roadmap to provide details on the agency's migration strategy, including actions, prioritization, and implementation timeframes

Safety Action Plan

On May 25, 2011 OIG completed a discussion draft, *Challenges to Improving Oversight of Rail Transit Safety and Implementing an Enhanced Federal Role* (Project Number 10M3002M000). The discussion draft assesses FTA's ability to provide adequate safety oversight to rail transit systems and makes recommendations to FTA where improvements should be made to support a potential increase in oversight authority.

OIG's discussion draft also assessed the effectiveness of FTA's performance management tools. Within the document OIG notes "FTA's current use of performance measures is limited" and that "FTA's transit safety action plans are insufficient to assess the impact of its transit safety initiatives." OIG refers to the 2006 and 2008 action plans discussed above and notes, "FTA has not followed through and reported on performance progress for either of these plans." OIG continues that under an expanded oversight role, a national strategy for performance measurement would be critical but that *even without this increased role*, "improved performance management would enable FTA to better assess the impact of its current safety activities, and identify and share best practices nationwide." OIG also documents the importance of performance measurement standardization and integration with program planning: "If FTA is to successfully assume an enhanced transit safety oversight role and effectively evaluate the impact of the new program on transit safety nationwide, it will be critical that states and transit agencies periodically track and report to FTA on their safety performance."

In its January 31, 2011 report: *FTA Programs Are Helping Address Transit Agencies' Safety Challenges, but Improved Performance Goals and Measures Could Better Focus Efforts* (GAO-11-199), GAO noted that FTA has discontinued its practice of developing safety action plans that served as a means through which FTA could monitor performance of safety and security strategies. GAO recommended that the U.S. DOT direct "FTA to use leading practices to set clear and specific goals and measures for these efforts."

The Office of Safety and Security has recognized these needs and challenges and are moving forward, through this current *Needs Assessment* and benchmarking effort to identify and quantify practices that will link collected data to developed and implemented strategies.

Benchmarking interviews and research identified a recommended practice at the Federal Railroad Administration (FRA) for safety action plan development. In 2005, following several major rail accidents, FRA launched its *National Rail Safety Action Plan*, an effort to address the most critical safety issues across the Nation's rail system. The document established a set of safety objectives and defined a schedule for achieving the desired safety improvements. FRA maintained its commitment to this performance measurement structure and published its *National Rail Safety Action Plan Final Report* in May 2008. This document focused on assessing rail industry progress since the release of the earlier action plan. FRA was able to demonstrate the effectiveness of its intervention activities by documenting a 25% decrease in train accidents during the study period.

Strategic Planning and Programming

Strategic Planning

FTA's Office of Safety and Security published its *Five-Year Strategic Plan: FY2008-FY2012* in 2008, defining its mission to "provide leadership and vision in the development and management of programs and initiatives to continually improve the safety and security of passengers, employees, emergency responders, and all others who come into contact with the public transportation system." While the Five-Year Strategic Plan represents a significant first step for the Office of Safety and Security in defining and achieving its safety and security goals, the document does not comprehensively define clear and quantitative measures for monitoring progress to achieve the stated goals.

Identified Needs
Strategic Planning and Programming

- Updated Safety and Security Strategic plan
- Executive level participation in Strategic Planning Working Group
- Strategic planning schedule to coincide with FTA's budget process
- FTA internal safety and security performance measures
- Industry safety and security performance measures
- Data-driven strategic planning
- Dedicated safety and security performance measure tracking function
- Tracking system to monitor performance (internal and industry)
- Link between safety and security data and the development of regulations, oversight guidance and technical assistance
- Guidance for performance measure implementation

As mentioned earlier, in 2011 GAO released a report titled: *FTA Programs Are Helping Address Transit Agencies' Safety Challenges, but Improved Performance Goals and Measures Could Better Focus Efforts* (GAO 11-199). GAO stated that the level of safety culture—awareness of and organizational commitment to the importance of safety—varies across the transit industry and is low in some agencies and pointed to low safety culture as a contributing factor to severe rail transit safety impacts. GAO recommended that the FTA Administrator create a set of clear and specific performance goals and measures that (1) are aligned with the department's strategic safety goals and identify the intended results of FTA's various safety efforts and (2) address important dimensions of program performance.

Benchmarking activities identified a recommended practice for strategic planning at Transport Canada. Following the promulgation of the Railway Safety Management System Regulations, the agency developed a strategic plan to detail what the agency will do, how it will measure success, and how it will demonstrate progress on addressing challenges. Transport Canada uses the plan to establish clear performance measures and targets to address critical safety issues in the rail industry. The agency's strategic plan model documents the challenges, specifies the specific strategy for overcoming the challenge, and defines the achievement goal. The plan presents a series of strategic initiatives, indicators that will be used to monitor and track progress and the expected results.

Additionally, Transport Canada has clearly defined the responsibility for strategic planning related to rail safety concerns. The agency established a Rail Safety Senior Management Committee (RSSMC) and has tasked the RSSMC with addressing the challenges identified within the strategic plan with realistic and measurable strategies over the five-year planning

cycle. The Transport Canada strategic planning process provides FTA with an excellent model for developing performance measures and target concepts for issues related to safety culture that are traditionally difficult for the agency to integrate with performance measurement and strategic planning.

The team also documented recommended strategic planning practices at National Highway Traffic Safety Administration (NHTSA) during benchmarking activities. The agency has established a strategic management group to develop its internal strategic plans, which are completely data driven, and in turn drive all NHTSA programs and activities including proposed standards and legislation. All collected data is analyzed and made available to NHTSA personnel responsible for strategic planning. Additionally, NHTSA has developed an element of the strategic planning process that focuses on assessing the specific data points collected and assess the need to revise reporting and collection criteria on an annual basis to ensure that data collected helps the agency build a dataset from which it can most effectively carry out its safety mission.

Currently, FTA's SPWG does not have FTA executive level participation and, therefore, may not provide as much benefit to the agency as possible. Benchmarked partners conveyed similar challenges as they moved to a more strategic performance model and advised that inclusion of executive managers was critical to ensure top-down support as well as ensure that a link was established between the agency's mission and goals and those programs developed to achieve the identified goals.

Performance Measurement

OIG's discussion draft, *Challenges to Improving Oversight of Rail Transit Safety and Implementing an Enhanced Federal Role* assessed FTA's ability to provide adequate safety oversight to rail transit systems and makes recommendations to FTA where improvements should be made to support a potential increase in oversight authority.

OIG's discussion draft also assessed the effectiveness of FTA's performance management tools. Within the document OIG notes "FTA's current use of performance measures is limited." OIG continues that under an expanded oversight role, a national strategy for performance measurement would be critical but that *even without this increased [oversight] role*, "improved performance management would enable FTA to better assess the impact of its current safety activities, and identify and share best practices nationwide." OIG also documents the importance of performance measurement standardization and integration with program planning: "If FTA is to successfully assume an enhanced transit safety oversight role and effectively evaluate the impact of the new program on transit safety nationwide, it will be critical that states and transit agencies periodically track and report to FTA on their safety performance."

Concurrent to the OIG study, FTA's SSO Program has developed a draft performance measurement framework including a wider range of indicators to measure previously untracked aspects of safety performance, a schedule for measurement update, and a process for integration into safety and security program planning. At the time of this report, this framework was still in draft and a finalization date has not been set.

The OIG report sends a clear message to FTA in its discussion draft, that with an increase in authority comes a clear need for a data-driven, risk-based approach to safety oversight. OIG notes that such a model "will be necessary to ensure prudent use of limited oversight and enforcement resources." OIG expands on its recommendation by concluding that FTA "will need to identify and collect data on the most significant safety risks; develop a valid oversight model that identifies safety elements for assessment and uses standard tools such as weighting, progression analysis, and normalization; and periodically refine its oversight model as needed to ensure the most effective safety program."

The Office of Safety and Security recognizes these needs and has initiated efforts to develop a comprehensive set of performance measures to track safety performance for the State Safety Oversight Program, SSO agency compliance and effectiveness, and rail transit agency safety performance. In March 2011, the SSO Program developed a draft list of performance measures to be used to measure program-related performance, but at the time of this Final Phase II Report, the office has not finalized the set of measures. Moving forward, FTA will need to ensure that the final set of performance measures and any other agency-wide safety performance measures are developed according to accepted practices and take into account recommended performance measurement practices at benchmarked agencies.

Related to rail safety, during October 27-29, 2010, FTA convened a meeting of its TRACS members in Atlanta, GA to discuss and make recommendations regarding safety improvements that could be made in the rail public transportation industry. Key to the discussion was the notion of safety management systems (SMS) and their potential role and use in the industry. Many committee members embraced the idea requiring rail agencies to implement an SMS, but cautioned that successful SMS models (the Federal Aviation Administration's model was referenced several times) are data driven and use performance measures to ensure that targets and goals are being met. Committee members reached consensus that even if FTA did not move toward implementation of an SMS per se, the agency should support the development of measures that the industry could embrace and use to support monitoring of safety performance. The committee members went on to comment that without the development of useful performance measures, including leading indicators, then true risk could never be baselined. Members agreed that rail transit safety directors needed to be able to accurately convey risk to executive management to ensure that safety concerns would be prioritized and mitigated.

FTA sponsored the TCRP Report 88: A Guidebook for Developing a Transit Performance-Measurement System in 2003. The report serves as a guidebook for developing a performance-measurement program that includes both traditional and non-traditional performance indicators that address customer-oriented and community issues. TCRP Report 88 clearly defines the importance of the linkage between performance measures and goals. "When developing a performance measure, it should be clear what goal(s) the measure will help achieve. If a performance measure cannot effectively be tied to a goal, then it is necessary to either reassess the value of that performance measure or to reassess the transit agency's key goals with regard to relevance."

The report also emphasizes the fluid nature of an effective performance measurement system and the inherent flexibility required of an efficient performance measurement process. The report points out, "goals change over time, as do external factors. A performance-measurement program should provide the flexibility needed to permit change in the future, while retaining links to necessary historical measures." The report also underscores the importance of proper utilization of performance results and recommends flexible integration into agency decision-making. "Agencies must carefully consider what the performance results are indicating, and use the results both to evaluate the success of past efforts and to help develop ideas for improving future performance. Specific actions should not be mandated as a result of a particular performance measure result; rather, measures should be used to flag under- or over-achieving segments, with specific actions determined by management on a case-by-case basis, depending on the individual circumstances."

In 1999, Transport Canada amended the existing Railway Safety Act, including the definition of and requirement of a Safety Management System at each regulated railway. Two years later, in 2001, Transport Canada issued the Railway Safety Management System Regulations (SOR/2001-37) further defining the requirements for Safety Management Systems at Canadian railways. The Railway Safety Management System Regulations formally require railways to develop safety performance indicators, measure railway safety performance, and report performance to Transport Canada. The regulation requires the development of safety goals and performance targets, conduct of risk assessments, and the identification of responsibilities and authorities, rules and procedures, and monitoring and evaluation processes. The regulation standardizes railway safety performance measurement in Canada by requiring railways to maintain several specific safety performance measures. Additionally, the regulation requires railways to submit safety performance measure documentation annually to the Transport Canada, including the railway's safety performance targets and the associated safety initiatives to achieve the targets for the current year. Finally, Transport Canada monitors railway implementation of these requirements through a formalized auditing program and analysis of safety performance indicators.

The Federal Motor Carrier Safety Administration (FMCSA) developed its Safety Measurement System (SMS) to measure the safety of individual motor carriers and commercial motor vehicle drivers, and to identify and track safety problems in the industry. This system is highlighted as a recommended practice due to its identification of specific types of unsafe behaviors and use of on-road safety violation data. This specificity allows FMCSA to execute a more targeted and specialized set of interventions to address and to correct unsafe behaviors. The SMS has allowed FMCSA to ranks an entity's relative performance in the following areas:

- Unsafe Driving
- Fatigued Driving
- Driver Fitness
- Controlled Substances/Alcohol
- Vehicle Maintenance
- Cargo-Related
- Crash History

FMCSA developed a formalized methodology for the calculation of each of these individual measures. Additionally, FMCSA publishes SMS results via the Internet, providing evaluated carriers with access to SMS findings in order to assess their weaknesses in a variety of safety areas. This performance measurement transparency provides stakeholders with valuable safety information and encourages improvements in motor carrier safety.

FTA's use of funds to promote research in this area continue to demonstrate the ongoing need of the industry and the Federal Government to ensure the development of measures to monitor safety performance. FTA has taken steps to accomplish this in programs such as SSO; however, the measures are fleeting in practice and have not been institutionalized by FTA or the industry. As such, FTA currently has no benchmark from which to measure risk in the public transportation industry and the industry itself is left to identify its own measures. While this can be advantageous given the variety of operational environments and characteristics in the industry, implementation of performance measure programs is inconsistent and there is not a mechanism for FTA to determine risk from a national perspective.

Following an accident caused by distracted driving, Metro Transit, in Minneapolis, MN, developed a program aimed at curbing distracted driving and reducing similarly caused accidents. Metro Transit took steps to develop a process for measuring the effectiveness of this initiative through the documentation of related data before and during the execution of its distracted driving program. Metro Transit identified two distinct safety indicators to measure program effectiveness. Using this framework, Metro Transit was able to document an increasing trend in both measures prior to program execution and demonstrate a *decreasing* trend in both measures after launch. In addition, Metro Transit was able to demonstrate an overall decrease all transit accidents during the same period. By defining KPIs from available data sources to measure key safety performance – distracted driving – Metro Transit was able to clearly document program effectiveness and justify resource allocations.

Designated performance measurement function

Performance measurement is a critical component of any data management system. However, at Federal agencies and transit systems, individual offices or program managers are often tasked with developing appropriate performance measures and establishing plans for monitoring performance, modifying measures, and developing activities to address performance issues. This underscores the importance of performance measurement guidance and assistance needed by Federal, State and local officials in order to effectively measure safety performance.

In 2010, TRB released TCRP Report 141: *A Methodology for Performance Measurement and Peer Comparison in the Public Transportation Industry*. TCRP Report 141 complements TCRP Report 88 by providing recommended practices for implementing a peer-comparison methodology when developing and implementing a performance measurement system and analyzing transit system data. Despite this TCRP report, during benchmarking interviews, the team received feedback from participants regarding the lack of education surrounding adequate performance measurement. Most agencies (FTA included) identified the need for improved, practical assistance in not only developing the performance measures, but how the process from development to utilization and reporting would be conveyed throughout an organization.

The team documented a recommended practice at the Washington Metropolitan Area Transit Authority (WMATA) related to this issue, specifically the establishment of an Office of Performance within the agency. WMATA's Office of Performance utilizes extensive performance measurement expertise to support department heads and staff to identify what available data should be used to measure agency progress toward strategic objectives. The Office of Performance monitors established performance measures and compiles data into regular and special reports the Metro Board. The Office of Performance works closely with individual WMATA departments to define the following on a monthly basis:

- Current status of key performance indicators (KPI)
- Why performance is changing
- What is working well
- What is not working well
- Areas in need of improvement
- Actions to achieve targets

To help ensure that WMATA achieves is strategic goals and objectives, the Office of Performance encourages WMATA departments to develop executive plans and provides assistance to departments as they develop these plans and provide critical performance measure expertise to the department heads and staff as they plan is created. The Office of Performance serves as a vital resource for WMATA departments by facilitating workshops on performance measurement and providing direct assistance to address specific data measurement needs or concerns. Office of Performance staff provide WMATA employees with data measurement concepts and practices that they can marry with department-specific knowledge and experience to create useful and appropriate performance measures that describe performance realities addressed by the WMATA strategic goals and objectives.

As FTA moves to develop a comprehensive data management process and a thorough system for performance measurement, such a model offers a tremendous upside by creating a structure for the agency to standardize performance measurement techniques, including measurement development, integration with strategic planning, and informative and transparent reporting channels.

3.2 Process

Data Collection

Data Quality

A critical component of effective data management is a formal mechanism(s) to ensure the quality of data collected data. On January 31, 2011, GAO released a report GAO-11-217R, *Rail Transit: Reliability of FTA's Rail Accident Database* that identified data quality issues in FTA's rail transit safety and security data. The report focused on reliability issues caused by data collection processes, a lack of internal controls, and data validation challenges caused by multiple reporting systems. GAO noted the criticality of these data as they are "used for producing information on trends over time, which can be safety indicators to help guide FTA's safety oversight efforts."

Identified Needs
Data Collection

- Data quality program
- Improved internal controls
- Enhanced data validation
- Increased training for reporters and handlers of safety and security data
- TPM-30 data stewardship
- Removal of duplicative reporting systems
- Integration of safety and security data sets
- Definition of safety and security data to be reported by FTA internal offices
- Web-enabled integrated single reporting system for immediate, near-term and long-term safety and security data capture

GAO identified concerns with the dual reporting structure currently in place for reporting rail transit safety and security data to FTA. The two systems – the National Transit Database and the State Safety Oversight Program – use differing reporting thresholds for accidents, collect data along differing timeframes, involve different reporting entities (States vs. transit agencies), and collect different data points for reportable accidents. GAO recommended that "control activities specific for information systems would help ensure completeness and accuracy of FTA's SSO Rail Accident Database." GAO made the following formal recommendations:

- Develop and implement appropriate internal control activities to ensure that the data entered into SSO agency reporting templates are accurate. To accomplish this, the Administrator should consider data entry design features to ensure consistency in reporting across rail transit agencies.

- Incorporate appropriate internal control over the method used to review and reconcile SSO agency data with other data sources to better ensure accuracy and reliability of the SSO Rail Accident Database.

Within the report, GAO recommended the following specific control activity enhancements:

1. All authorized transactions entered into and processed by the computer
2. Reconciliations performed to verify data completeness
3. The agency's data entry design features contribute to data accuracy
4. Data validation and editing performed to identify erroneous data
5. Erroneous data captured, reported, investigated, and promptly corrected

Since report issuance, FTA has taken immediate measures to improve the internal controls of its SSO Rail Accident Database and to address the five specific control activity enhancements recommended by GAO. FTA has redesigned its collection tool to eliminate many data reporting errors; developed a draft procedure for database updates; and eliminated the possibility for manual data change, instead only allowing modifications when they have been received through the newly redesign collection tool, formally submitted by a State reporter, and have undergone post import automated validation checks. However, while these new internal controls are aimed at addressing specific concerns identified by GAO, they do not solve the overarching problems of reporting timeframes, threshold variance, and other reporting disparities between the NTD and the SSO Program.

During Phase I of FTA's *Safety and Security Data Management Program* initiative, it was identified that FTA safety and security data often lacked sufficient validation. Phase I also acknowledged that FTA's National Transit Database provided minimal validation resources to evaluate safety and security data collected prior to 2009.

TCRP Report 88 clearly defines the importance of data credibility and its effect on performance measure reliability. "The reliability of performance-measure results directly depends on the quality of the data used to calculate the measures." The report identifies reporter education as a critical component of any data quality program: "The reliability of measures derived from manual data collection efforts depends on the amount of training the data collectors receive, and the amount of time they devote to collecting data."

In 2009, the TRB released TCRP Report 137: *Improving Pedestrian and Motorist Safety Along Light Rail Transit Alignments*. The report is aimed at addressing pedestrian and motorist behaviors contributing to light rail safety and describes mitigating measures available to improve safety along light rail alignments. The report also includes recommendations to facilitate the compilation of accident data in a coordinated and homogeneous manner across these transit systems. TCRP Report 137 states, "Examination of the NTD database revealed a large disparity both in the number of collisions reported by transit agencies, and the total number of collisions reported by year." TCRP Report 137 asserts "that differences in data reporting procedures across transit agencies also accounted for a significant portion of the variation observed." The report also identifies specific light rail safety data issues within the NTD between 2002 and 2007.

During FTA's TRACS meetings, committee members were in consensus that performance measures are an absolute necessity. However, the members cautioned that without quality data, the measures will fall flat with their leadership and will ultimately not be tracked due to lack of organizational confidence.

FTA is aware of the safety data issues within the NTD dataset and has initiated multiple activities to improve data quality. Beginning in 2009, the NTD program allocated additional resources for the safety data validation function and has documented a formal validation process for safety and security data in a Safety and Security Validation Manual for use by the safety and security validation team. FTA has incorporated "front-end" internal controls to prohibit the entry of the most common types of data errors and has added logical safeguards within the forms to

prohibit entry and warn reporters when obvious mistakes have occurred. Following data submission, the enhanced validation process includes a report-by-report review of all incidents and direct follow-up with reporters to resolve any flagged data fields or to provide additional context or clarification needed for adequate validation.

NTD has also recognized the need for additional validation sources other than the submitted NTD incident reports. The new validation process includes the incorporation of daily news sources to provide not only a valuable validation source after an event is reported but also to enable analysts to contact transit agencies *when an event has not been reported*. Additionally, the new validation process incorporates the ESF-1 (Emergency Support Function) incident notification system. Any event involving an NTD report is filed for validation against submitted reports or used as a prompt to follow-up with an agency when information is not received within the thirty-day submission window. Finally, in 2011, the NTD validation process incorporated the use of predictive functions to calculate expected accident, injury, and fatality levels based on operational characteristics to identify potential over- or under-reporting and to pinpoint real emerging safety performance concerns at transit systems.

The NTD program has also revised its Safety and Security Reporting Manual to make it more useful to the reporting community, augmenting requirement text with real world examples of events, FTA interpretation, and clear directions on how to report them to NTD. In addition to this enhanced guidance, FTA has, in partnership with the National Transit Institute, developed a two-course safety and security webinar series that is delivered three times a year by NTD safety and security analysts to provide emerging reporting issues, deliver guidance on FTA interpretations, and offer an opportunity for reporters to ask direct questions to validation analysts and FTA Officials.

In addition to the revised safety and security data validation process, NTD has allocated additional resources to resolve inconsistencies between the NTD and the SSO Rail Accident Database that were noted by GAO in report GAO-11-217R. Referred to as the "Legacy Project," FTA initiated a reconciliation effort that involved a record-by-record comparison between the NTD safety and security module and the SSO Rail Accident Database between the years 2003 and 2009 for all rail transit systems. The process involved coordination with all rail transit systems and SSO agencies to provide the results of an in-depth discrepancy analysis and solicit feedback on identified issues. The outcome of the project was a reconciled NTD dataset for rail transit agencies that has been approved by the respective rail transit systems and oversight agencies. The effort is currently awaiting an NTD development effort to incorporate the results into the NTD system and allow for publication update.

During benchmark interviews, the team identified a recommended practice at FMCSA for developing a formalized data quality program. FMCSA initiated its State Safety Data Quality (SSDQ) Program in March 2004 to address data quality concerns identified by the GAO and OIG by creating progressive standards for measuring safety data quality. The SSDQ program rates States on a monthly basis according to the quality of State-reported crash and roadside inspection data submitted to the agency. FMCSA developed a formal documented methodology for its data quality rating and measurement system. The SSDQ Program is a progressive tool that applies additional quality measures over time to increase scrutiny as quality improves;

FMCSA continually raises the data quality bar. Additionally, FMCSA has emphasized the value that data transparency affords data quality by creating a webpage devoted to the SSDQ program. FMCSA uses this platform to showcase a data quality dashboard. Monthly Overall State Ratings are accessible for each State dating back to June 2004. Any public web user can access the dashboard tool to query SSDQ ratings. Through implementation of the SSDQ, FMCSA is able to quantify data quality improvement and also to identify struggling States as well as areas of data quality that require additional focus. FMCSA's combination of clear methodology, technical assistance (grant programs), progressive performance measures, and a transparent user dashboard interface has resulted in improved motor carrier safety data quality since the program's inception in 2004.

Integrated IT System and Solution

As discussed above, data quality is a critical component of effective data management. Additionally, an effective information technology (IT) solution for data collection, validation, and reporting is the cornerstone of a reliable dataset. GAO's report, GAO-11-217R, *Rail Transit: Reliability of FTA's Rail Accident Database*, identified data quality issues in FTA's rail transit safety and security data and questioned the dataset's ability to reliably identify "trends over time, which can be safety indicators to help guide FTA's safety oversight efforts."

At the heart of the issues identified by GAO are the two mechanisms that brought about concerns from GAO with the dual reporting structure currently in place for reporting rail transit safety and security data to FTA. In the Report, GAO made the following recommendation: "Incorporate appropriate internal control over the method used to review and reconcile SSO agency data with other data sources to better ensure accuracy and reliability of the SSO Rail Accident Database." The two systems used to capture rail transit safety and security data – the National Transit Database and the State Safety Oversight Program – use differing reporting thresholds for accidents, collect data along differing timeframes, involve different reporting entities (States vs. transit agencies), and collect different data points for reportable accidents (most notably, the SSO system collects probable cause information).

SSO agencies are required annually to submit data to FTA on rail transit accident and hazard investigations including date, type of accident, number of injuries, number of fatalities, probable cause, property damages, and type of individuals injured, such as passenger or worker. These annual data submissions are manually entered into a template that the SSO agencies submit to FTA. The NTD is a separate system that includes information on rail safety reporting, as well as operating statistics. Transit agencies are required to provide data monthly to the NTD through an Internet-based reporting system. NTD data include more detailed information compared with SSO agency reports, such as the incident time, location, and descriptions, but it does not contain probable cause determinations. NTD data also have an incident number unique to NTD that does not correspond to SSO agencies' tracking numbers. FTA has a clear need to remove the duplicative safety and security reporting arrangement.

An additional challenge presented by the current arrangement is that, while detailed safety and security data is captured by the NTD and validation improvements have greatly increased NTD safety data reliability, final decisions related to the collection of safety and security data are

made by the FTA Office of Budget and Policy and, unlike the SSO Rail Accident Database, the Office of Safety and Security does not have stewardship of the safety and security data that will be used to guide FTA safety and security policy or feed the strategic planning and performance measurement processes. Ultimately the Office of Safety and Security lacks control of the data that must be used as the basis of a data-driven safety performance structure.

During the last three years of safety and security validation, NTD personnel have greatly increased safety and security data publication activities. Specifically, through the development and monthly publishing of the *NTD Safety and Security Times Series files*, FTA has increased data transparency and made available unprecedented agency-specific safety and security performance data. This effort falls directly in line with the President's Open Government Initiative, which calls Federal agency's to "work together to ensure the public trust and establish a system of transparency, public participation, and collaboration. Openness will strengthen our democracy and promote efficiency and effectiveness in Government." With the elevated transparency of NTD safety and security data, the NTD program has greatly assisted the validation functions by increasing the "sets of eyes" that review the data. A direct benefit of this approach has been inquiries from transit systems, States and media outlets regarding data and additional validation flags applied to incident reports based on this "public participation and collaboration."

During benchmarking interviews, the team documented a pattern of industry reporting "gripes" with the current dual system of safety and security reporting for rail transit systems. First, reporters commonly complain of the NTD user interface and the lack of "user-friendliness," citing issues with editing submitted information, the inability revise reports without re-reporting entire events, the amount of resource required to report events to the NTD system, and lack of access to useful to performance measurement once reported. Additionally, rail transit interviewees pointed to the additional resources required to report the same event in varied formats to multiple agencies when a single supporting solution would reduce burden for all levels of users (transit system, SSO agency, and Federal analysts), as well as provided a clearer picture of rail transit safety performance for the taxpayer.

In addition to the need for elimination of duplicative reporting and development of a user friendly way for FTA and public transit systems to access, view and compare their safety and security data, there is a growing need to manage reported data on an immediate, near-term and long-term basis. Currently (and in consideration of notification thresholds), public transportation agencies might make an immediate report an incident to the NTSB, FTA Region, Department of Homeland Security/Transportation Security Administration (DHS/TSA), state oversight agency (if rail transit), FRA (commuter rail and shared track rail transit), State DOT (5311 bus operators), as well as others depending on the event. In addition, agencies must report safety and security data monthly and annually depending on their grantee designation, mode of operations, size, and the Federal jurisdiction they are under. Within only FTA, there not only exists approximately five reporting mechanisms, there are also regulations and guidance as to *when* the data must be reported.

In interviews with FTA representatives, there was discussion regarding the need to identify a single system to manage the high volume of safety and security data and information that is collected. The system would fulfill FTA's needs for:

1. Real-time incident notification and reporting to support necessary immediate actions
2. Near-term reporting to support ongoing performance evaluations
3. Long-term reporting to support forensics or trend analysis

In coordination with GAO and OIG reports, as well as feedback from industry, FTA has identified a need for a single integrated safety and security reporting system that would provide an umbrella for each reporting need. FTA representatives indicated where user privileges and access controls can protect data not meant for public consumption. These controls would instill confidence in the agency reporters and also ensure key data such as probable cause could be collected.

FTA has clear needs for an integrated IT solution for safety and security data collection that would:

- Remove duplicative safety and security reporting systems
- Integrate varied reporting thresholds and reporting timeframes
- Provide varied access levels for transit systems, States, and Federal personnel
- Ensure internal and external departments engaged in oversight activities have access to safety and security data
- Return stewardship of safety and security data to the Office of Safety and Security
- Ensure collection of probable cause data for rail transit accidents
- Ensure comprehensive and strict internal controls
- Improve the user interface
- Provide performance measurement support

Benchmarking interviews revealed a recommended practice for data collection IT solutions at FMCSA. The agency's SMS incorporates data submitted by both State and local sources. FMCSA has created a reporting mechanism and data management system that can handle both levels of users and successfully uses the data to generate on-road safety performance ratings for motor carriers in the United States. FMCSA's public-facing portal ensures a level of transparency that empowers carriers and other firms such as shippers and insurers involved with the motor carrier industry to make safety-based business decisions.

Security Data collection

Beginning in October 2010, NTD ceased collection of non-major security data, such as the occurrences of crimes on transit property and transit-specific violations. For a number of years, NTD had been faced with significant security data collection challenges for security data. In some major metropolitan cities, such as New York City, transit agencies have been unable to report crime data for their transit system. In these instances, crime data is captured and maintained by the local police department. In some instances, these police departments are unwilling or unable to release transit specific crime data to the reporting transit agency in a

manner or format that allows them to report the data to NTD. As a result, in the case of New York City bus-specific crime data has not been reported to NTD because the transit system does not have the data and cannot obtain it. After extensive talks with the New York City Transit and the New York Police Department, the NTD program provided a waiver for security reporting for the agency. The resulting NTD security dataset is thus missing an enormous segment of crime data. After deliberations, in October 2010 the Office of Budget and Policy – the FTA office responsible for implementing the NTD Program – decided to cease all non-major security data reporting. The argument used was that the crime data would be so affected by the lack of New York City data that its usefulness to the transit community would be compromised and thus collection could no longer be justified.

The team, upon review of FTA data needs, research documentation related to performance measurement, and benchmarked practices, sees a clear need to resume the collection of non-major security data reporting to FTA. FTA has a responsibility to ensure the safety and security of the riding public and is also moving toward recommended data-driven decision-making practices such as those in place at other DOT agencies. Without collecting available security data, FTA is not in a position to measure security performance, identify security trends and emerging concerns, and to make security-related programmatic decisions, and to measure the effectiveness of security initiatives. In other words, a crime dataset that excludes New York City is still a vital dataset for FTA, the transit community, and riding public.

The TRB released TCRP Report 88: *A Guidebook for Developing a Transit Performance-Measurement System* in 2003. The report serves as a guidebook for developing a performance-measurement program that includes both traditional and non-traditional performance indicators that address customer-oriented and community issues. TCRP Report 88 clearly defines the importance of customer satisfaction in transit performance measurement. Security is consistently presented within the report's examples as a key measure of customer satisfaction. Report 88 states, "Transit customers who have a pleasant experience while using transit will likely continue to use transit. Choice customers with easily available alternatives are likely to have higher expectations of satisfaction. Even so-called 'captive' or 'transit-dependent' riders will explore other travel options if their transit experience is sufficiently negative. Building ridership and market share are key objectives of most transit agencies and can be influenced by improving customer satisfaction. Transit may improve captive customers' overall quality of life if it removes an actual or perceived barrier for them." TCRP Report 88 continues, "Transit vehicles need to be comfortable, and the trip needs to take place in as safe an environment as possible. For the community, satisfied customers may result in an increased group of transit users within the community, who may be more receptive to increased funding for transit services. For transit agencies, higher levels of customer satisfaction are associated with a better public image, customer loyalty and, consequently, customer retention and increased ridership, all else being equal. Transit customers experiencing high levels of satisfaction will be more likely to encourage their friends and relatives to take transit."

Benchmarking interviews identified a recommended practice for determining data to be collected for performance measurement at NHTSA. Because of the agency's data-driven nature, the specific data that is requested and analyzed is of critical importance to the agency and the execution of programs. NHTSA uses a process that involves safety performance experts

assessing the specific data points collected and assessing the need to revise reporting and collection criteria. At least yearly, the strategic management group and agency executives meet to review safety trends and issues to determine if changes in data collected are necessary. This process ensures that data collected helps the agency build a dataset from which it can most effectively monitor safety, develop technical assistance and identify appropriate research topics. By regularly reviewing the data collected, NHTSA is able to ensure the following:

- Maximize the effectiveness of resources devoted to reporting data by confirming the relevance and utility of requested information
- Emerging safety and security trends are addressed through the collection of appropriate measures
- Maximize the value of collected data by confirming its role in the development or monitoring of performance measures
- Performance of agency safety initiatives can be measured
- Eliminate opportunities for collection of data that is not used by the agency

With current stewardship of safety and security data residing in the Office Budget and Policy, FTA has its stable of safety and security performance experts from the decision-making table regarding the collection of safety and security data. This divide between safety and security program implementation and data collection stewardship is all the more critical as FTA moves to become more data driven.

Near Miss reporting

Following the investigation of a collision between two WMATA Metrorail trains the National Transportation Safety Board made several recommendations to WMATA, the Tri-State Oversight Committee, and FTA. Included was recommendation R-10-4 made to FTA: "Facilitate the development of non-punitive safety reporting programs at all transit agencies to collect reports from employees in all divisions within their agencies and to have their safety departments; representatives of their operations, maintenance, and engineering departments; and representatives of labor organizations regularly review these reports and share the results of those reviews across all divisions of their agencies."

In addition to NTSB's recommendation, FTA has identified this need through its efforts to establish performance measures for leading indicators. Near-miss data would provide FTA with valuable information on events that, while they did not result in reportable impacts, they can serve as key drivers for safety performance by identifying emerging concerns before passengers or employees are killed or injured.

During benchmarking activities, the team pinpointed a recommended practice for near-miss reporting at the FRA. In 2002, FRA began developing a Confidential Close Call Reporting System (C^3RS) to apply a human factors-based approach to performance measurement and to ultimately reduce the accident rate more quickly. FRA had to overcome challenges related to confidentiality and the protection of information submitted by railroad employees. Without sufficient confidentiality assurances, the viability of such a reporting system is significantly compromised. FRA sought and secured partnerships with the Bureau of Transportation Statistics

(BTS) and the National Aeronautics and Space Administration (NASA) to established mechanisms for capturing and protecting close call data. Upon completion of a model Memorandum of Understanding (MOU), FRA solicited volunteer railroads to participate. Once a railroad volunteers to participate in the system, FRA then has to modify the model MOU to address regionally specific issues.

Data Analysis

Peer Group Analyses

OIG's discussion draft, *Challenges to Improving Oversight of Rail Transit Safety and Implementing an Enhanced Federal Role* assessed FTA's ability to provide adequate safety oversight to rail transit systems and makes recommendations to FTA where improvements should be made to support a potential increase in oversight authority.

Identified Needs
Data Analysis

- Collection of probable cause for transit bus incident data
- Collection of public transportation security data (non-major)
- Public transportation near-miss reporting system (in its absence, guidance to the industry on near-miss reporting systems)
- Tools to support industry ability to perform peer comparisons and analyses
- Enhanced access for industry to safety ands security data
- Web-based dashboard to support industry query and analysis of safety and security data

OIG's discussion draft assessed FTA's use of data reported to the NTD and the publication of data to support performance measurement at transit systems. Within the document OIG notes, "more can be done to maximize the usefulness of data being collected. Better grouping of data would allow transit agencies to assess their safety performance relative to similar agencies." OIG further states, "comparative analyses of NTD safety data are not feasible because transit agencies with operational similarities, such as size or design, are not grouped for comparison. Such analyses would enable transit agencies to assess their safety performance relative to similar agencies. State Safety Oversight Agency (SSOA) officials stated they do not use the NTD; rather, they focus on the incident reports."

In 2010, TRB released TCRP Report 141: *A Methodology for Performance Measurement and Peer Comparison in the Public Transportation Industry*. This document complements TCRP Report 88 by providing recommended practices for implementing a peer-comparison methodology when developing and implementing a performance measurement system and analyzing transit system data. The report incorporates a variety of nationally available, standardized factors into the peer-selection process. The report underscores the importance of peer comparison and states that, "taken by themselves, performance measures provide data, but little in the way of context. To provide real value for performance measurement, measures need to be compared to something else to provide [performance] context." The report recommends the following framework for peer comparisons:

1. Determine the purpose of the analysis, or the types of measures to be compared (a common objective).
2. Determine the metrics for formulating peer groups (which similarities should be shared among the peers).

3. Develop the peer groups based on the metrics selected and their relative importance (i.e., determine weights).

Recent data analysis efforts at FTA, specifically the development and monthly publishing of the NTD Safety and Security Times Series files, FTA has increased data transparency and made available unprecedented agency-specific safety and security performance data. The Time Series files also couple safety and security data with operational data that can serve as a basis for peer group stratification for data users, such as mode, type of service (directly operated vs. contracted), urbanized area population, FTA region, route miles, trackway miles, passenger miles, unlinked passenger trips, vehicle revenue hours, vehicle revenue miles, and fleet size. FTA has included these data points to support data user analyses and encourage performance measurement and peer group comparisons. However, these data points are not exhaustive and further data inclusion could increase safety and security data utility. Additionally, FTA has not published predefined peer group analyses; all peer group definitions and analyses are created and utilized at the sole discretion of the data user.

Benchmarking interviews also revealed a similar sentiment at participating transit systems. Safety and security performance measurement effectiveness is limited without proper guidance and education on how to use the data to benchmark and compare one agency's performance with another or with a predefined group of operationally similar systems.

Data Presentation

FTA does not have a single, readily accessible, go-to source for safety and security data. This lack of a reliable data portal causes challenges when FTA is responding to Federal inquiries, media requests and other special data pulls. FTA safety and security officials interviewed during the Phase II needs assessment discussed the need for a tool to reduce the resource and time burden and uncertainty related to inquiry responses by establishing a data visualization tool to facilitate research, analyses, trend monitoring, and report generation. Additionally, benchmarking interviews revealed that transit systems that currently report safety and security data to the NTD desire a web-based data visualization tool that would allow them to easily access reported safety and security data to assist in safety performance measurement and peer group analyses. Transit systems interviewed generally feel that they allocate significant resources to reporting data to the NTD but feel that they do not get enough useful data products back out of the system.

During Phase I of FTA's *Safety and Security Data Management Program* initiative, FTA made the following key recommendation in it Phase I Final Report:

- Explore and evaluate tools to support data integration and facilitation of data visualization for interpretation across FTA and the industry.

The Phase I effort also recommended that FTA conduct more thorough trend analyses that can then be used to better direct FTA resources and technical assistance efforts. The Phase I effort recommended that FTA devise a standardized template to present safety and security data and analysis results in a format suited for executive leadership.

OIG's discussion draft, *Challenges to Improving Oversight of Rail Transit Safety and Implementing an Enhanced Federal Role* assessed FTA's ability to provide adequate safety oversight to rail transit systems and makes recommendations to FTA where improvements should be made to support a potential increase in oversight authority. The discussion draft emphasizes the importance of peer group comparisons in performance measurement and states, our discussions with transit agency stakeholders echoed FTA's data management assessment, indicating that more can be done to maximize the usefulness of data being collected. Better grouping of data would allow transit agencies to assess their safety performance relative to similar agencies." FTA's data visualization tool dashboard should include performance measurement characteristics that enable users to establish and assess peer group safety performance.

Within the past two years, the NTD has developed and initiated the monthly publishing of the NTD Safety and Security Times Series files. While these files have served to greatly increase the level of data transparency, have complemented FTA's enhanced safety and security data validation efforts, and have made available unprecedented agency-specific safety and security performance data to enable the establishment of peer groups, interviewed agencies still feel that more assistance and performance measurement support is needed. Interviewees noted that these tools require training and guidance on how to use them to complement existing performance measurement constructs; safety and security performance measurement effectiveness is limited without proper guidance and education on how to use the data to benchmark and compare one agency's performance with another or with a predefined group of operationally similar systems.

Through the needs assessment and benchmarking interviews, the team identified the following needs for an FTA safety and security data dashboard:

- Tiered functionality for varied user activity and mission
- Flexible filtering capabilities
- Research capability
- Performance measurement and monitoring
- Web-based tutorials, training sessions and webinars
- Peer group customization and analysis
- Export capability for easy reporting
- Public facing portal.

3.3 Indicator

Identified Needs
Indicators

- Safety and security performance indicators
- Increased detail in current probable cause indicators
- Identification of effective leading *and* lagging indicators

On May 25, 2011 OIG completed a discussion draft, *Challenges to Improving Oversight of Rail Transit Safety and Implementing an Enhanced Federal Role* (Project Number 10M3002M000). The discussion draft assesses FTA's ability to provide adequate safety oversight to rail transit systems and makes recommendations to FTA where improvements should be made to support a potential increase in oversight authority. Within the discussion draft, OIG notes that, "although safety incident data, such as fatalities, injuries, and property damage, are currently captured in the NTD, the data may not be sufficient to fully identify safety risks and trends, prioritize actions, or evaluate performance."

OIG also points out that while the SSO Rail Accident Database captures causal data for rail transit accidents, "the causes were identified as "equipment failure", "workforce behavior", or other broad categories, giving FTA limited information on actions needed to identify and mitigate risks and ultimately to reduce transit incidents." OIG asserts that FTA may need to provide more specific causal categories for rail transit incidents.

The TRB released TCRP Report 88: A Guidebook for Developing a Transit Performance-Measurement System in 2003. The report serves as a guidebook for developing a performance-measurement program that includes both traditional and non-traditional performance indicators that address customer-oriented and community issues. TCRP Report 88 states, "when developing a performance measure, it should be clear what goal(s) the measure will help achieve. If a performance measure cannot effectively be tied to a goal, then it is necessary to either reassess the value of that performance measure or to reassess the transit agency's key goals with regard to relevance." The report also emphasizes the necessary variety of indicators: "The performance measures used by a given transit agency should reflect a broad range of relevant issues. Performance measures are also needed to assess past, present, and future performance." TCRP Report 88 also clearly defines the importance of customer satisfaction in transit performance measurement, including security performance measures. TCRP Report 88 states, "Transit customers who have a pleasant experience while using transit will likely continue to use transit. For transit agencies, higher levels of customer satisfaction are associated with a better public image, customer loyalty and, consequently, customer retention and increased ridership, all else being equal. Transit customers experiencing high levels of satisfaction will be more likely to encourage their friends and relatives to take transit."

Following the investigation of a collision between two WMATA Metrorail trains the National Transportation Safety Board made several recommendations to WMATA, the Tri-State Oversight Committee, and FTA. Within its report related to this accident, NTSB referenced a recommendation (R-06-3) made to FTA on April 19, 2006: "Require transit agencies, through the system safety and hazard management process if necessary, to ensure that the time off between daily tours of duty, including regular and overtime assignments, allows train operators to obtain at least 8 hours of uninterrupted sleep." FTA does not currently collect sufficient data

to establish fatigue management-related performance measures. NTSB also concluded that, "contributing to the accident [was] WMATA's lack of a safety culture." FTA does not currently utilize performance measurements to assess transit safety culture.

The Office of Safety and Security recognizes these needs and has initiated efforts to develop a comprehensive set of performance measures to track safety performance for the State Safety Oversight Program, SSO agency compliance and effectiveness, and rail transit agency safety performance. In March 2011, the SSO Program developed a draft list of performance measures to be used to measure program-related performance, but at the time of this Final Phase II Report, the office has not finalized the set of measures. Moving forward, FTA will need to ensure that the final set of performance measures and any other agency-wide safety performance measures are developed according to accepted practices and take into account recommended performance measurement practices at benchmarked agencies and recommendations made by GAO, OIG, NTSB and TRB.

As an element of this Phase II *Needs Assessment*, the team has performed a detailed Data Points Review that considers data used in the transportation industry to establish performance measures for a range of safety performance categories. **Please refer to the section of this Needs Assessment Report titled *Results from the Data Points Review* for a comprehensive list and assessment of these data points and their ability to support safety and security performance measurement needs for FTA**.

3.4 Results from Benchmarking Study

FTA's Office of Safety and Security sought a comprehensive understanding of its own data management practices (Phase I study) and how it measures up to other similar agencies, as well as considerations for improving its safety and security data information management. The *Safety and Security Data Management Program Initiative* provided a prime opportunity for FTA to:

- Benchmark against other peer Federal agencies as well as agencies within the public transportation industry to identify effective and adaptable practices
- Identify the key performance indicators in use by benchmarking partners to track safety and security performance, justify program initiatives and expenditures and increase public awareness
- Provide the details and justification for development of a roadmap for continuous improvement beyond the timeline of this project.

During Phase II of this initiative, the team conducted interviews with Federal, international, and local agencies to benchmark the practices used to develop implement and maintain data management programs. **Effective practices that were benchmarked by the team are discussed in great detail in Appendix B of this Phase II Needs Assessment Report**. The table on the following pages presents a summary of effective practices based on the benchmarking research and interviews. During the study, the team focused on practices that would support FTA's current and desired safety and security mission. Each practice was analyzed for its ability to address an identified gap in FTA's safety and security data management program and the level of adaptability of the practice. In the following table, the team also provided the agency(ies) to which the identified practice belongs and the category of data management it supports.

Effective Benchmarking Practices	Ref. No.	Correlating Agency	Strategy.	Process	Indicator	Gap Rating	Level of Adapt.
Use of a data management plan to establish organizational strategies, roles and responsibilities, necessary systems and supporting infrastructure, and policies and protocols for all aspects of safety and security data management	1	Yes - U.S. Pipeline and Hazardous Materials Safety Administration	X			4	4
Use of a strategic safety plan with clear performance indicators to measure safety throughout the transit industry; define specific goals/targets for each indicator; and specify activities undertaken to achieve goals	5 11 13	Yes – Transport Canada, Federal Motor Carrier Safety Administration and Rail Safety and Standards Board	X			4	4
Implementation of safety and security performance measure development guidance to support the development of models to support transit industry development of leading and lagging safety and security performance measures	2 3 11	Yes – Transport Canada and Federal Motor Carrier Safety Administration	X			4	3
Implementation of a performance measures working group to review existing measurement processes and solicit input on future revisions to oversight legislation and the establishment of performance measurement standards	2 3	Yes – Transport Canada and Federal Motor Carrier Safety Administration	X			4	3
Use of strategic Planning to elevate awareness of strategic planning activities and encourage participation by executive leadership	4	Yes – National Highway Traffic Safety Administration	X			4	3
Development of a safety and security strategic plan that establishes strong links between collected and analyzed data and the strategies developed to improve industry safety and security performance	4, 9	Yes – National Highway Traffic Safety Administration	X			4	3
Development of monitoring strategies using identified data performance indicators to determine if implemented safety and security strategies are effective. Include the monitoring of compliance programs (such as SSO and D&A) to better understand the effectiveness of audits.	4 21	Yes – National Highway Traffic Safety Administration and Minneapolis Metro Transit	X			4	3
Development of a Safety Action Plan that addresses rail and bus public transportation and targets identified safety issues based on comprehensive data analysis (reinstitution/reconfiguration of the Office of Safety and Security action plan (FY 2008))	6 7	Yes – National Highway Traffic Safety Administration and Federal Railroad Administration	X			4	3
Deployment of a comprehensive and timely web-based data set for the industry and general public with user tools for queries, filtering, and downloading, as well as personalize user dashboard views	14	Yes – Federal Railroad Administration, Federal Motor Carrier Safety Administration, National Highway Traffic Safety Administration		X		3	4

Effective Benchmarking Practices	Ref. No.	Correlating Agency	Strategy.	Process	Indicator	Gap Rating	Level of Adapt.
Initiation of a comprehensive safety and security data review to catalog all safety measures captured by through data collection mechanisms. Review of the source(s) for each data element, the use for each data (current and planned), and link to current safety and security performance measures *NOTE 1*: Phase II report includes this preliminary analysis *NOTE2*: Consider collection of probable cause data through NTD to 1) accurately prioritize safety concerns, 2) allocate resources to address highest safety concerns and 3) measure effectiveness of program performance over time	9	Yes – Federal Motor Carrier Safety Administration, National Highway Traffic Safety Administration		X		4	4
Development and implementation of a Safety and Security Data Quality Program that is a sustainable program that sets targets and emphasizes the use of internal controls and industry-facing tools to improve the quality of data collected from transit agency reporters	10	Yes – Federal Motor Carrier Safety Administration		X		4	3
Development and deployment of a web-based display of safety and security performance measures to provide the transit community with data that promotes the development and monitoring of safety performance measures	11 13	Yes – Federal Motor Carrier Safety Administration and Rail Safety and Standards Board		X		4	3
Development of standardized reports for executive management including the use of templates to guide the reporting of key safety and security performance data to an executive management team	16	Yes – Bay Area Rapid Transit		X		3	3
Issuance of guidance to support safety and security performance measure development to support transit industry development of leading and lagging safety and security performance measures	2 3 11	Yes – Transport Canada and Federal Motor		X		4	3
Development of internal safety and security performance guidance for FTA offices and Regions to support the use and tracking of established performance measures for activities they are tasked to carry outs	21	Yes – Washington Metropolitan Area Transit Authority		X		3	3
Use of a web-enabled dedicated safety and security data online reporting system to remove redundancy in incident information that is reported. *NOTE*: This new reporting system would move beyond the current NTD capabilities to ensure it addresses program and regulatory requirements of the SSO Program, including easy document uploading, causal data, corrective action tracking and analysis reporting. Appendix C of this report includes further recommendations on consolidating these reporting mechanisms.	24	Yes – Federal Motor Carrier Safety Administration		X		4	4

Effective Benchmarking Practices	Ref. No.	Correlating Agency	Strategy.	Process	Indicator	Gap Rating	Level of Adapt.
Use of data warehousing options that streamline data storage and improve access to safety and security data across offices and programs	25	Yes – Federal Motor Carrier Safety Administration, National Highway Traffic Safety Administration		X		3	3
Implementation of a close call reporting system *NOTE*: Initiate talks with FRA and NASA representatives to gather greater detail on necessary steps for development of a non-punitive safety reporting system. The DMWG should formulate a shortlist of first steps, including coordination with FTA legal and outreach to agencies with existing overlap with the FRA pilot system and the FTA concept.	26	Yes – Federal Railroad Administration		X		3	3

3.5 Results from Data Point Review

As evidenced in the results of the benchmarking study and discussed in the previous section, key performance indicators are extremely valuable to the evaluation of safety and security performance. The strategies, plans, systems and people in place to develop and strategically track and use key performance indicators were demonstrated by partners such as the FRA, FMCSA and Transport Canada. Practices in place for these partners have helped the agencies monitor their own program performance as well as the industry they oversee. In addition, it is clear that industry partners rely heavily on key performance indicators to set safety and security targets, direct resources and monitor system performance. The Bay Area Rapid Transit District (BART), WMATA and Metro Transit in Minneapolis presented effective practices to the project team. Results from effective key performance indicator utilization include action plans, safety and security targets and goals, prioritization of safety and security concerns and program initiatives, data dashboards to support analysis and management decisions and comprehensive monitoring systems.

This section of the report presents an inventory of Key Performance Indicators used by the benchmarked partners as well as those recently proposed for inclusion in FTA's SSO Program. The first matrix depicts safety and security performance measures in use by the agencies benchmarked, as indicated by corresponding check marks. Absence of a checkmark does not indicate that an agency does not collect or even analyze the referenced measure, only that benchmarking interviews determined that the agency does not use it as a Key Performance Indicator, tied to a formal mechanism to drive safety and security program action.

The team separated the information into three categories of KPIs:

1. Lagging Indicators – data points that change before a realized impact in safety performance
2. Leading Indicators – data points that change with or after a realized impact in safety performance
3. Data Quality Indicators – data points that change with variation in quality of reported safety and security data

LEADING INDICATORS	SSO Proposed (3/31/2011)	Transport Canada	FMCSA	NHTSA	FRA	RSSB	CTA	BART	WMATA	Sound Transit	Metro Transit	SCVTA
Rule Violations		✔	✔	✔		✔	✔			✔		
Near Misses		✔			✔	✔				✔		✔
Hazards	✔	✔		✔		✔						
Customer Comment Rates				✔			✔	✔	✔			
Maintenance Issues	✔		✔			✔	✔		✔			
Elevator/Escalator Availability									✔			
Drug Test Compliance			✔	✔			✔					✔
Seatbelt Use				✔								
Distracted Driving			✔	✔			✔					
Fatigued Operation			✔	✔								
Employee Fitness			✔									
Program Resources	✔	✔										
Federal Staffing Levels		✔										
State Staffing Levels	✔											
Training Levels	✔	✔	✔					✔				
Federal Training Levels		✔	✔									
State Training Levels	✔		✔									
Oversight Authority	✔		✔	✔								
Safety Culture	✔	✔										
State Safety Reporting Structure	✔		✔									
Provider Safety Reporting Structure	✔	✔	✔									
Number of Providers That Develop Non-Punitive Reporting Systems		✔	✔									
Inspections/Audits	✔	✔	✔		✔		✔			✔		
Number of Inspections/Audits	✔		✔									
Inspection/Audit Findings	✔	✔	✔		✔		✔			✔		
Corrective Action Plan (CAP) Time Open	✔									✔		
Regulatory Actions	✔	✔										
New Federal Authority		✔										
New State Authority	✔											
Perceived Security						✔		✔				

LAGGING INDICATORS	SSO Proposed (3/31/2011)	Transport Canada	FMCSA	NHTSA	FRA	RSSB	CTA	BART	WMATA	Sound Transit	Metro Transit	SCVTA
Fatality Rate	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Grade Crossing Collision Fatalities	✔	✔			✔	✔						
Passenger/Customer Fatalities	✔	✔	✔	✔	✔	✔						
Employee Fatalities	✔	✔	✔	✔	✔	✔						
Trespasser Fatalities	✔	✔			✔	✔						
Track Worker Fatalities		✔				✔						
Other Fatalities	✔	✔	✔	✔	✔	✔						
Injury Rate	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Grade Crossing Collision Injuries	✔	✔				✔						
Passenger/Customer Injuries	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Employee Injuries	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Trespasser Injuries		✔			✔	✔						
Track Worker Injuries		✔				✔						
Other Injuries	✔	✔	✔	✔	✔	✔						
Accident/Incident Rates	✔	✔	✔	✔	✔	✔	✔	✔		✔	✔	✔
Collisions	✔	✔	✔	✔	✔	✔						
Grade Crossing Collisions	✔	✔			✔	✔						
Mainline Derailment	✔	✔			✔	✔						
Yard/Siding Derailment		✔			✔	✔						
Fires	✔	✔			✔							
High Risk Accidents				✔		✔						
Other (Boarding, Platform, etc.)	✔					✔						
Vehicles Involved in Fatal Crashes		✔	✔	✔								
Accident Causes	✔			✔	✔	✔	✔	✔		✔	✔	✔
Accident Locations		✔	✔		✔		✔					✔
Property Damage		✔	✔				✔				✔	✔
Security Events	✔	✔			✔	✔		✔	✔			
Crime Rate								✔	✔			
Arrests, Citations and Summonses								✔	✔			
Homicides	✔							✔				
Assaults						✔		✔				
Trespasser	✔	✔			✔	✔						
Suicides/Attempts	✔				✔	✔		✔				
Vandalism						✔		✔				

DATA QUALITY	SSO Proposed (3/31/2011)	Transport Canada	FMCSA	NHTSA	FRA	RSSB	CTA	BART	WMATA	Sound Transit	Metro Transit	SCVTA
Data Accuracy			✔			✔						
Data Timeliness			✔			✔						
Data Completeness		✔	✔			✔						
Time to Resolve Data System Problems		✔										

The team next compiled a list of KPIs for FTA based on the assessment of FTA data needs, current and emerging data issues, and benchmarked practices. While not exhaustive, the Team's list of KPI's is intended to provide FTA with a menu of measures that, when developed and implemented, will satisfy the performance measurement needs defined by FTA's current and emerging issues.

Next, the team performed a gap assessment to assign values to each KPI indicating the gap between FTA's current level of activity and to address the performance measurement need and the complete development and use of the KPI. The team used a four-tiered system for assigning gap values. The following table provides the gap value system.

Gap Value	Description
4	FTA neither uses the KPI nor collects the necessary data to support its implementation.
3	FTA does not use the KPI but collects a portion of the data needed to support its development and implementation.
2	FTA does not use the KPI but collects the data to support its development and implementation.
1	FTA currently uses the KPI.

The following table lists the safety and security KPI categories defined through the team's needs assessment and benchmarking exercises.

Key Performance Indicator Category		Gap
Lagging	Accident Rate	1
	High Risk Accidents, Accident Locations	2
	Fatality and Injury Rates	1
	Accident Cost	3
	Accident Causes and Contributing Factors	3
	Security Incident Rate	4
	Transit Service	1
Leading	Potential for Accident	3
	Program Authority	2
	Program Resources	3
	Safety Culture	2
	Customer Interface/ Perception	4
	Compliance Rates	2
	Training Levels	3
Data Quality	Data Accuracy	3
	Data Timeliness	2
	Data Completeness	3
	Data Response Time	3

Next, the team drilled down further, identifying the specific data points that support each of the KPI categories identified above. Some KPI categories have a large number of data points that can support KPI development and others may be limited to one or two data points. The team compiled all of this information into tables organized by KPI category that present details about each identified supporting data point, including:

- Existing Data Source
- Benchmark Reference
- Existing Reports
- Sensitivity Concerns
- KPI Utility

The tables below provide KPI Utility ratings based on each data point's ability to support KPI development and monitoring. The team used the following rating system to assign KPI Utility scores to each data point:

KPI Utility	Description
5	This data point is a critical component of satisfying current performance measurement and/or analysis requirements
4	This data point supports currently identified performance measurement and/or analysis requirements
3	This data point could support additional performance measurement and/or analysis efforts

KPI Utility	Description
2	This data point could support additional performance measurement and/or analysis efforts but is not recommended at this time
1	This data point is not recommended for performance measurement and/or analysis efforts at this time

Additionally, the tables utilize the following acronyms and abbreviations for "Source of Need" and "Benchmarking Reference," and "Existing Report."

Abbreviation	Source of Need Category
Government Oversight	Reports and recommendations from Federal Government Oversight agencies (i.e., GAO, NTSB) that impact FTA's safety and security data management practices or needs
FTA Regulatory/ Oversight	The Transit Rail Advisory Committee for Safety, updates to regulatory programs, and documents generated by FTA that utilize safety and security data
Inquiry	External and internal requests and inquiries for safety and security data
Research	Documents developed by research institutions
Internal	Ongoing internal program assessments and performance

Abbreviation	Benchmarking Reference
TC	Transport Canada
FMCSA	Federal Motor Carrier Safety Administration
NHTSA	National Highway Traffic Safety Administration
FRA	Federal Railroad Administration
RSSB	Rail Safety and Standards Board
CTA	Chicago Transit Authority
BART	Bay Area rapid Transit District
WMATA	Washington Metropolitan Area Transportation Authority
Sound Transit	Central Puget Sound Regional Transit Authority
Metro Transit	Metro Transit (Minneapolis)
SCVTA	Santa Clara Valley Transportation Authority

Abbreviation	Existing Report Name
S&STS	NTD Safety & Security Time Series
RSSR	SSO Rail Safety Statistics Report
BSSR	Bus Safety Statistics Report
NTST	NTD National Transit Summaries and Trends
C&P	Conditions and Performance Report

Lagging Indicators

KPI: Accident Rate, High Risk Accidents, Accidents by Location; **GAP Rating:** 2

Source of Need: Government Oversight, FTA Regulatory/Oversight, Research, Inquiry, Internal

Data Point Need	Existing Data source	Note	Benchmark Reference	Existing Reports	Sensitivity Concerns	KPI Utility	Utility Note
Accident Type	NTD, SSO, ESF-1	Rail accident categories vary from NTD to SSO.	FRA, FMCSA, NHTSA, Transport Canada, RSSB, CTA, BART, Sound Transit, Metro Transit, SCVTA	S&STS, RSSR, BSSR, C&P	Challenges exist with suicide determinations; some transit agencies are not willing to report suicides.	5	Accident Type is critical to performance measurement.
Other Safety Occurrences	NTD, SSO, ESF-1	NTD captures these (non-collision, derailment, fire and security) injuries on a monthly aggregate basis. SSO captures all multiple injury events on an incident basis. Recommend synching with SSO reporting policy.	RSSB	RSSR	none	4	This accident type provides value to accident rate analyses by including transit passenger interface (station/stop) safety concerns.
Accident Address	NTD, ESF-1	Data collection needs further standardization -- Need refined guidance on reporting accident locations and/or data collection system that standardizes data for future geocoding.	NHTSA		none	4	Address entries provide validation utility, the potential to establish performance measures for specific locations, and the opportunity to geocode incidents.
Accident Location Detail	NTD, SSO, ESF-1	NTD captures selection from a predefined list of location types; not all labels are currently used for analysis. SSO also captures one of five location options.	FRA, RSSB	RSSR	none	4	While existing labels are not currently used, data contains tremendous analysis potential. RSSB Rail Safety Statistics Report offers strong example of value.
Rail alignment/ Roadway configuration	NTD, ESF-1	Rail alignment and roadway configuration categories are extensive and are not currently used for analysis.	FRA, RSSB		none	4	While existing labels are not currently used, data contains tremendous analysis potential. RSSB Rail Safety Statistics Report offers strong example of value.
Grade Crossing / Intersection Control Device	NTD, ESF-1	Grade crossing data point reported by one of nine options, intersection by one of seven; categories are extensive and are not currently used for analysis.	FRA, RSSB		none	4	While existing labels are not currently used, data contains tremendous analysis potential. RSSB Rail Safety Statistics Report offers strong example of value.
Collision With	NTD, SSO, ESF-1	NTD captures what the transit vehicle collided with (from eight categories); SSO data only notes if a collision was train-to-train. Recommend separating motorcycle from motor vehicle category as demonstrated by FMCSA and NHTSA.	FRA, FMCSA, NHTSA, RSSB	BSSR	none	4	Other DOT modes and RSSB offer excellent examples of how analysis by these categories can help to identify specific safety concerns.

KPI: Accident Rate, High Risk Accidents, Accidents by Location; **GAP Rating:** 2
Source of Need: Government Oversight, FTA Regulatory/Oversight, Research, Inquiry, Internal

Data Point Need	Existing Data source	Note	Benchmark Reference	Existing Reports	Sensitivity Concerns	KPI Utility	Utility Note
Collision Type (head-on, sideswipe, etc.)	NTD, ESF-1	NTD captures data on the impact specifics of transit collisions.	RSSB		none	3	Neither FTA nor other DOT modes have utilized this type of information to support key performance indicators. However, the data point could offer support to future crash worthiness analyses.
Transit Vehicle Type	NTD, ESF-1	NTD captures vehicle type but this is redundant because in most cases the mode clearly defines the vehicle type. Exceptions include some MB and DR vehicle distinctions.	RSSB		none	3	This data point can provide additional value to analyses based on mode to get at specific vehicle differences within a single modal category. This data point is not currently used for this purpose.
Transit Vehicle Action	NTD, ESF-1	NTD captures the physical movement of the transit vehicle at the time of the incident.	RSSB		none	3	Neither FTA nor other DOT modes have utilized this type of information to support key performance indicators. However, the data point could offer support to future crash worthiness analyses.
Vehicle Manufacturer	NTD	NTD captures the Manufacturer of the transit vehicle	RSSB		none	3	Neither FTA nor other DOT modes have utilized this type of information to support key performance indicators. However, the data point could offer support to future crash worthiness analyses.
Vehicle Fuel Type	NTD	NTD captures the transit vehicle fuel type from a list of available fuel options.	RSSB		none	3	Neither FTA nor other DOT modes have utilized this type of information to support key performance indicators. However, the data point could offer support to future crash worthiness analyses.
Other Motor Vehicle involved	NTD	NTD captures significant information related to non-transit (privately-owned) vehicles, but this information is not used for safety analysis.			none	2	Recommend removing the requirements to report detailed information on other motor vehicles involved.
Other Motor Vehicle Action	NTD	NTD captures significant information related to non-transit (privately-owned) vehicles, but this information is not used for safety analysis.			none	2	Recommend removing the requirements to report detailed information on other motor vehicles involved.
Non-Transit Collisions	NTD, ESF-1	These events include auto collisions in transit-owned parking lots and instances when autos collide with a transit shelter.		BSSR	none	1	Recommend removing the requirement to report these types of events to FTA.

KPI: Accident Rate, High Risk Accidents, Accidents by Location; **GAP Rating:** 2
Source of Need: Government Oversight, FTA Regulatory/Oversight, Research, Inquiry, Internal

Data Point Need	Existing Data source	Note	Benchmark Reference	Existing Reports	Sensitivity Concerns	KPI Utility	Utility Note
Type of Fire	NTD	NTD collects a fire type identifier (seven choices); this data point has not been used for analysis to date.		BSSR	none	3	This data point could offer support to future fire life safety analyses.
Non-major fires	NTD, ESF-1	NTD collects monthly totals of fires that do not meet a reportable threshold but require fire suppression.		S&STS	none	3	This data could offer support to fire life safety analysis. Recommend researching origin of NTD requirement and removing if no longer needed.
Hazardous Material Spill	NTD, ESF-1	NTD Collects specifics of a hazardous material spill (event must require specialized cleanup crew). Data is not currently used, nor has it been requested.			none	2	This data could offer support to future analysis, but may not be worth the additional reporting efforts.
Evacuation Details	NTD	NTD collects evacuation details if a life safety evacuation took place.			none	2	This data could offer support to future analysis, but may not be worth the additional reporting efforts.

KPI: Fatality and Injury Rates (Industry, Passenger, Customer, Employee, Trespasser, Track Worker, and Other); **GAP Rating:** 1
Source of Need: Government Oversight, FTA Regulatory/Oversight, Inquiry, Internal

Data Point Need	Existing Data source	Note	Benchmark Reference	Existing Reports	Sensitivity Concerns	KPI Utility	Utility Note
Fatalities	NTD, SSO, ESF-1	Suicide determination and perceived legal reporting constraints.	FRA, NHTSA, FMCSA, TC, RSSB	S&STS, RSSR, BSSR, C&P	Challenges exist with suicide determinations; some transit agencies are not willing to report suicides as suicides.	5	Data point is critical to performance measurement.
Injuries	NTD, SSO, ESF-1	Suicide (attempt) determination and perceived legal reporting constraints.	FRA, NHTSA, FMCSA, TC, RSSB	S&STS, RSSR, BSSR, C&P	none	5	Data point is critical to performance measurement.
Person Type	NTD, SSO, ESF-1	NTD includes many person types that are not currently used for safety analysis. NTD and SSO categories do not correlate.	FRA, NHTSA, FMCSA, TC, RSSB	S&STS, RSSR, BSSR	none	5	Data point is critical to performance measurement and defining 'risk to' groups.
Age	NTD	Data not currently used for analyses.	RSSB		none	4	Recommend using these data to cut injury and fatality totals - Ref: RSSB
Gender	NTD	Data not currently used for analyses.	RSSB		none	4	Recommend using these data to cut injury and fatality totals - Ref: RSSB

KPI: Fatality and Injury Rates (Industry, Passenger, Customer, Employee, Trespasser, Track Worker, and Other); **GAP Rating:** 1
Source of Need: Government Oversight, FTA Regulatory/Oversight, Inquiry, Internal

Data Point Need	Existing Data source	Note	Benchmark Reference	Existing Reports	Sensitivity Concerns	KPI Utility	Utility Note
Other Safety Occurrences	NTD, SSO	These injury totals are reported in monthly totals by each transit system to NTD. Recommend capturing on an incident basis.	Transport Canada, FRA, RSSB	S&STS	none	4	Recommend using these injury totals in injury analyses - recommend capturing all multiple injury events. RSSB has developed beneficial analyses based on similar data.

KPI: Accident Cost; **GAP Rating:** 3
Source of Need: Government Oversight, Research, Inquiry

Data Point Need	Existing Data source	Note	Benchmark Reference	Existing Reports	Sensitivity Concerns	KPI Utility	Utility Note
Property Damage	NTD	Variance in submitted property damage estimates through NTD. NTD Estimates are "ballpark" estimates. SSO only reports > or < $25,000.	TC, FMCSA, CTA, Metro Transit, SCVTA		Some agencies have been resistant to providing damage totals, but NTD efforts in recent years have helped assuage concerns.	3	In theory, property damage totals can provide valuable measure of accident impact on the transit system and community. FTA must tackle the issue of consistent property damage reporting across all systems.

KPI: Accident Causes and Contributing Factors; **GAP Rating:** 3
Source of Need: Government Oversight, FTA Regulatory/Oversight, Research, Inquiry, Internal

Data Point Need	Existing Data source	Note	Benchmark Reference	Existing Reports	Sensitivity Concerns	KPI Utility	Utility Note
Probable Cause	SSO	NTD does not collect causal data. Rail transit causal data is collected through the SSO Program annually. No causal data is collected for bus incidents.	RSSB, FRA, FMCSA	RSSR	Transit agencies have voiced concern at providing causal information as it can assign blame and potentially affect litigation.	5	Data point is critical to safety performance measurement and analysis.
Post Accident Drug Testing Results	D&A		NHTSA, FMCSA, FRA		Agencies have voiced concerns over reporting such data, as it can assign blame and potentially affect litigation.	4	Data point would allow FTA to clearly establish performance measures related to the affect of drug and alcohol use on the safety of public transit riders.

KPI: Accident Causes and Contributing Factors; **GAP Rating:** 3
Source of Need: Government Oversight, FTA Regulatory/Oversight, Research, Inquiry, Internal

Data Point Need	Existing Data source	Note	Benchmark Reference	Existing Reports	Sensitivity Concerns	KPI Utility	Utility Note
Distracted Driving	none	Currently, the SSO Program does not capture specifics on distracted operation/driving. FMCSA offers a strong example of reviewing detailed accident reports to identify distracted driving events.	NHTSA, FMCSA		The SSO Program only collects causal data by selection from a set causal list. SSO Program officials should consider expanding for more detailed information collection on distracted driving.	4	This causal detail would support greatly FTA's ability to monitor accident causes and measure industry safety performance.
Fatigued Operation	none	Currently, the SSO Program does not capture specifics on fatigue. FMCSA offers a strong example of reviewing detailed accident reports to identify fatigue events.	NHTSA, FMCSA		The SSO Program only collects causal data by selection from a set causal list. SSO Program officials should consider expanding for more detailed information collection on fatigue.	4	This causal detail would support greatly FTA's ability to monitor accident causes and measure industry safety performance.
Employee Fitness	none	Currently, the SSO Program does not capture specifics on employee fitness. FMCSA offers a strong example of reviewing detailed accident reports to identify events involving employee fitness for duty.	FMCSA		The SSO Program only collects causal data by selection from a set causal list. SSO Program officials should consider expanding for more detailed information collection on employee fitness.	4	This causal detail would support greatly FTA's ability to monitor accident causes and measure industry safety performance.
Weather	NTD	Data point not currently used for analysis.	RSSB		none	3	Data Point can provide support to contributing factor analyses as demonstrated by RSSB.
Lighting	NTD	Data point not currently used for analysis.	RSSB		none	3	Data Point can provide support to contributing factor analyses as demonstrated by RSSB.
Right-of-way conditions	NTD	Data point not currently used for analysis.	RSSB		none	3	Data Point can provide support to contributing factor analyses as demonstrated by RSSB.

KPI: Security Incident Rate (Crime Rate, Arrests/Citations, Homicides, Assaults, Trespassing, Suicides, Vandalism; **GAP Rating:** 4
Source of Need: Government Oversight, Inquiry, Internal

Data Point Need	Existing Data source	Note	Benchmark Reference	Existing Reports	Sensitivity Concerns	KPI Utility	Utility Note
Security event type	NTD, SSO, ESF-1	Security events meeting reporting thresholds are captured in SSO and NTD; NTD includes ten categories. NTD thresholds make suspicious packages and bomb threats reportable, inflating reportable totals. Recommend limiting evacuation threshold to vehicles to correct.	FRA, RSSB	RSSR, BSSR	Challenges exist with suicide determinations; some transit agencies are not willing to report suicides as suicides.	5	Data point is critical to security performance measurement and analysis.
Crimes (occurrences)	(none)	NTD no longer collects Non-Major security events (offenses that do not meet a reporting threshold). Additionally, data is not strictly captured and maintained according to UCR definitions. Recommend restructuring crime-reporting requirements to match FBI data products.	FRA, RSSB		NYCT is unable to report transit-specific crimes to FTA. All crime data is maintained by NYPD and at this time does not clearly delineate between transit and non-transit crimes. Other major transit systems (San Diego MTS) have also failed to report transit crime data to NTD when it was required.	5	Data point is critical to security performance measurement and analysis.
Incident Address	NTD, ESF-1	Data collection needs further standardization - recommend additional guidance on reporting address information.			none	4	Address entries provide validation utility, the potential to establish performance measures for specific locations, and the opportunity to geocode incidents.
Incident Location Detail	NTD, ESF-1	NTD captures selection from a predefined list of location types; not all labels are currently used for analysis	RSSB, FRA		none	4	While existing labels are not currently used, data contains tremendous analysis potential. RSSB Rail Safety Statistics Report offers strong example of value.

KPI: Service (for Standardization); **GAP Rating:** 2
Source of Need: Government Oversight, FTA Regulatory/Oversight, Research, Inquiry, Internal

Data Point Need	Existing Data source	Note	Benchmark Reference	Existing Reports	Sensitivity Concerns	KPI Utility	Utility Note
Passenger Miles	NTD	Captured through NTD on an annual (fiscal year) basis.		NTST, RSSR, BSSR, S&STS	none	4	Passenger miles are only captured on an annual basis and cannot be accurately applied to monthly safety totals for standardization. Nonetheless, this is a valuable data point for annual standardization.

KPI: Service (for Standardization); **GAP Rating:** 2
Source of Need: Government Oversight, FTA Regulatory/Oversight, Research, Inquiry, Internal

Data Point Need	Existing Data source	Note	Benchmark Reference	Existing Reports	Sensitivity Concerns	KPI Utility	Utility Note
Unlinked Passenger Trips	NTD	Captured through NTD on a monthly and annual (fiscal year) basis.		S&STS, NTST	none	5	Data point is critical to safety and security data standardization and performance measurement
Vehicle Revenue Miles	NTD	Captured through NTD on a monthly and annual (fiscal year) basis.		S&STS, NTST	none	5	Data point is critical to safety and security data standardization and performance measurement
Vehicle Revenue Hours	NTD	Captured through NTD on a monthly and annual (fiscal year) basis.		S&STS, NTST	none	5	Data point is critical to safety and security data standardization and performance measurement
Vehicles Operated in Maximum Service (Fleet Size)	NTD	Captured through NTD on a monthly and annual (fiscal year) basis.		S&STS, NTST	none	5	Data point is critical to safety and security data standardization and performance measurement
Trackway miles	NTD	Captured through NTD on an annual (fiscal year) basis.			none	3	Data point is not currently used for performance measurement but could be incorporated into existing standardization scenarios
Number of applicable transit systems	NTD, SSO, PMO, D&A	Captured through NTD on annual basis; new rail systems monitored through Project Management Oversight (PMO) program.		RSSR, BSSR, S&STS	none	5	Data point is critical to safety and security data standardization and performance measurement
Rail grade crossing exposure	none	Data point used by FRA to calculate true safety risk of rail grade crossings.	FRA		none	4	Data point would allow FTA to actually establish safety performance of rail grade crossings. Current analyses are limited due to absence of exposure figure.
Number of rail grade crossings	NTD	Data point captured by the NTD, but not currently used for analyses	FRA		none	3	Data point would help measure rail grade crossing safety. Also can serve to stratify light rail systems for peer group comparisons.

Leading Indicators

KPI: Potential for Accident; **GAP Rating:** 3
Source of Need: Government Oversight, FTA Regulatory/Oversight, Research, Inquiry, Internal

Data Point Need	Existing Data source	Note	Benchmark Reference	Existing Reports	Sensitivity Concerns	KPI Utility	Utility Note

KPI: Potential for Accident; **GAP Rating:** 3
Source of Need: Government Oversight, FTA Regulatory/Oversight, Research, Inquiry, Internal

Data Point Need	Existing Data source	Note	Benchmark Reference	Existing Reports	Sensitivity Concerns	KPI Utility	Utility Note
Rule Violations	none	FTA does not currently collect transit system rule violations through the NTD or the SSO Program.	TC, FMCSA, NHTSA, RSSB, CTA, Sound Transit		Potential hurdles related to disciplinary actions and Union agreements	5	Rule violations are key indicators of accident potential and preventability. This data is critical for developing Accident Potential KPIs.
Near Misses	none	FTA does not currently collect near miss information through its existing programs.	FRA, TC, RSSB, Sound Transit, SCVTA		Potential hurdles related to disciplinary actions and Union agreements.	5	A near miss reporting system (such as the system being piloted by FRA) is a valuable source for transit safety concerns before they result in loss of life or significant property damage. This data is critical for developing Accident Potential KPIs.
Hazards	SSO	There are no national standards for what constitutes a reportable hazard; For the SSO Program, States report according to thresholds approved within rail transit agency System Safety Program Plans (SSPP).	TC, NHTSA, RSSB		Because of the interpretive nature of hazard thresholds and classification methodology, the SSO program has encountered difficulty in capturing consistent data across the rail transit industry.	4	Data on Hazards, along with Near Misses and Rule Violations, provide FTA with insight into emerging safety concerns before the loss of life and property.
Maintenance Issues	SSO	Currently, SSO Program captures accident causes and hazards, both of which include maintenance issue categories. Additional data sources may include analyses of SSO Three-Year Review findings.	FMCSA, RSSB, CTA, WMATA	RSSR		4	Maintenance and equipment issues have been precursors to some of the most significant events in the rail transit community; The WMATA collision and CTA derailment are clear examples. By having a reliable data source for maintenance issues, FTA can anticipate the need for follow-up and/or intervention before tragedy.
Drug Test Results (random)	none	Transit systems maintain records on drug test results that can provide a clear picture of substance abuse issues among safety sensitive employees before an accident occurs. FTA would not need information about specific employees, only percentages and perhaps by job type.			Potential hurdles related to disciplinary actions and Union agreements.	4	This data point(s) would enable FTA to track and respond to drug and alcohol issues before they result in an incident.

KPI: Program Authority; **GAP Rating:** 2
Source of Need: Government Oversight, Research, Inquiry, Internal

Data Point Need	Existing Data source	Note	Benchmark Reference	Existing Reports	Sensitivity Concerns	KPI Utility	Utility Note
Authority to conduct unannounced inspections	SSO	Data has been collected periodically through SSO Program outreach and is now part of the annual reporting process.				5	Critical component of measuring SSO Program authority
Authority to issue Emergency Orders	SSO	Data has been collected periodically through SSO Program outreach and is now part of the annual reporting process.				5	Critical component of measuring SSO Program authority
Authority to levy fines	SSO	Data has been collected periodically through SSO Program outreach and is now part of the annual reporting process.				5	Critical component of measuring SSO Program authority
Authority to shutdown transit service	SSO	Data has been collected periodically through SSO Program outreach and is now part of the annual reporting process.				5	Critical component of measuring SSO Program authority
New State authority	SSO	Data collected through the SSO Annual Reporting process.				5	Critical component to identify trends in increasing SSO Program authority at States.
Number of rail accidents investigated by SSO agency	SSO	Collected through the SSO Annual Reporting process.				4	Valuable measure of State's involvement in RTA safety activities.
Regulatory actions	FTA	Transport Canada measures enhancement of the regulatory framework through measurement of regulatory actions initiated and regulatory actions completed.	TC			2	With FTA's current mission, this measure would not help FTA measure its authority.

KPI: Program Resources; **GAP Rating:** 3
Source of Need: Government Oversight, Internal

Data Point Need	Existing Data source	Note	Benchmark Reference	Existing Reports	Sensitivity Concerns	KPI Utility	Utility Note
Program Resources ($)	FTA	Data point valuable in measuring safety performance in specific areas against federal dollars spent.				5	Critical data point for program resources-related measurements.

KPI: Program Resources; **GAP Rating:** 3
Source of Need: Government Oversight, Internal

Data Point Need	Existing Data source	Note	Benchmark Reference	Existing Reports	Sensitivity Concerns	KPI Utility	Utility Note
Federal staffing levels (FTE)	FTA	Data point may be helpful in measuring agency performance in light of proposed FTA safety posture.				5	Critical data point for program resources-related measurements.
Federal staff training	FTA	Data tracked by Transport Canada to monitor the effective development of the Rail Safety restructuring.	TC			4	Data Point will be very useful to monitor FTA's progress ramping up its staff to address new regulatory authority and mission.
State oversight personnel FTE	SSO	Collected through the SSO annual reporting process.				5	Data point is very useful to resource analyses and performance measurement
State oversight contractor FTE	SSO	Collected through the SSO annual reporting process.				5	Data point is very useful to resource analyses and performance measurement
State oversight personnel training levels	SSO	Tracked through the SSO Program Managers Training Curriculum.				4	Data measures an important aspect of program resource commitment.
Transit Agency Safety Staffing Levels	none	Data difficult to derive at some agencies, due to varied roles and responsibilities.				4	Data point is very useful to resource analyses and performance measurement.

KPI: Safety Culture; **GAP Rating:** 2
Source of Need: Government Oversight, FTA Regulatory/Oversight, Research, Internal

Data Point Need	Existing Data source	Note	Benchmark Reference	Existing Reports	Sensitivity Concerns	KPI Utility	Utility Note
Transit Agency Safety Reporting Structure	SSO	Data point tells FTA where safety resides within the transit agency's organizational structure. Data point has been used confirm direct report from Safety to GM.	FMCSA, TC			5	Critical data point for measurement of safety culture.
Number of Providers That Develop Non-Punitive Reporting Systems	none	Not currently collected. Rail system data could be gathered through the SSO program.	TC			4	Strong example of safety culture at a transit provider. This figure could support several Safety Culture Key Performance Indicators.
Frequency that SSO PM briefs immediate supervisor	SSO	Data has been collected periodically though SSO Program outreach and is now part of the annual reporting process.				4	Allows FTA to measure SSOA commitment to SSO Program and rail transit safety.

KPI: Safety Culture; **GAP Rating:** 2
Source of Need: Government Oversight, FTA Regulatory/Oversight, Research, Internal

Data Point Need	Existing Data source	Note	Benchmark Reference	Existing Reports	Sensitivity Concerns	KPI Utility	Utility Note
Frequency that SSO PM briefs executive leadership	SSO	Data has been collected periodically though SSO Program outreach and is now part of the annual reporting process.				4	Allows FTA to measure SSOA commitment to SSO Program and rail transit safety.
Frequency SSO PM attended RTA meetings onsite	SSO	Data is now part of the SSO annual reporting process.				4	Allows FTA to measure SSOA commitment to SSO Program and rail transit safety.
Frequency SSO PM conducted other field visits at the RTA	SSO	Data is now part of the SSO annual reporting process.				4	Allows FTA to measure SSOA commitment to SSO Program and rail transit safety.
Frequency SSO PM met with RTA executive leadership	SSO	Data is now part of the SSO annual reporting process.				4	Allows FTA to measure SSOA commitment to SSO Program and rail transit safety.

KPI: Customer Interface/Perception; **GAP Rating:** 4
Source of Need: Government Oversight, FTA Regulatory/Oversight, Research, Inquiry

Data Point Need	Existing Data source	Note	Benchmark Reference	Existing Reports	Sensitivity Concerns	KPI Utility	Utility Note
Customer Comment Rates	none	Provides trends in perception from patron point of view. Surges may indicate real hazards on the system. Comment sources, format and systems will vary across the industry.	NHTSA, CTA, BART, WMATA			4	Comment rates could support performance measurement of customer perception. FTA must tackle the issue of variance across transit systems. For example, collecting % increase or decrease would standardize.
Elevator/Escalator availability	none	Frequency of elevator and escalator 'out of service' status.	WMATA			4	Elevator/escalator trouble is the source of much customer aggravation and dissatisfaction.
Perceived Security	none	Data related to customers' perceptions of threats. Not currently collected by FTA. RSSB uses a strong model for capturing perceived security based on minor offenses such as begging, graffiti, and littering, and other factors such as poor lighting, lack of information, lack of transit staff or other people, and transit crime reported by the media.	RSSB, BART			4	This information will help FTA to measure and monitor customer perception.

KPI: Compliance Rates – Transit System/State Performance; **GAP Rating:** 2
Source of Need: FTA Regulatory/Oversight, Research, Internal

Data Point Need	Existing Data source	Note	Benchmark Reference	Existing Reports	Sensitivity Concerns	KPI Utility	Utility Note
Three-Year Review Compliance	SSO	SSOA compliance with SSO Program Three-Year Review requirements includes State conduct of reviews of all required safety and security elements over a three-year cycle. Data collected in annual reporting templates and Three-Year Review final reports.				5	Data is critical to FTA's comprehensive measurement of program compliance.
Drug Testing Compliance	D&A	FTA's Drug and Alcohol Program maintains records on transit agency compliance with Federal Regulation. Data housed in DAMIS database				5	Data is critical to FTA's comprehensive measurement of program compliance.
Inspections/ Audits	SSO	Compliance with SSO Program requirements for internal reviews.				5	Data is critical to FTA's comprehensive measurement of program compliance.
Number of inspections/ audits	SSO	Compliance with SSO Program requirements for internal reviews -- specifically that all elements have been reviewed in an ongoing fashion over a three-year period.				5	Data is critical to FTA's comprehensive measurement of program compliance.
Inspection/ audit findings	SSO, Bus, D&A	Findings and categories of findings are captured and maintained through individual tracking databases at FTA.			Bus voluntary review findings are maintained in an anonymous manner. Bus systems may be resistant to FTA's use of the data to rate individual systems.	5	Data is critical to FTA's comprehensive measurement of program compliance.
Corrective Action Plan Time Open	SSO, D&A	Corrective Action time to close is calculated as the time between finding issuance and closeout.	Sound Transit			4	Response and resolution time provides FTA with valuable data from which to measure compliance performance.

KPI: Training Levels; **GAP Rating:** 3
Source of Need: Government Oversight, FTA Regulatory/Oversight, Research, Internal

Data Point Need	Existing Data source	Note	Benchmark Reference	Existing Reports	Sensitivity Concerns	KPI Utility	Utility Note

KPI: Training Levels; **GAP Rating:** 3
Source of Need: Government Oversight, FTA Regulatory/Oversight, Research, Internal

Data Point Need	Existing Data source	Note	Benchmark Reference	Existing Reports	Sensitivity Concerns	KPI Utility	Utility Note
SSO attendance at invitational training	SSO	Data maintained through the SSO Program.				4	Shows SSO commitment to Federally-funded training opportunities.
SSO attendance at Annual Meeting	SSO					4	Shows SSO commitment to SSO training opportunities.
SSO PM Training Curriculum	SSO	Data includes number of participants, number of issued certificates by Tier.				4	Data provides clear measure of State training levels.
SSO participation in RTA training	SSO	Data now collected in Annual Reporting Template.				4	Demonstrates State commitment to familiarization with overseen systems.
Transit Agency Safety Training	TSI	Data includes courses hosted by transit systems and provided to safety personnel.				4	Provides measure of transit agency training.

Data Quality Indicators

KPI: Data Accuracy; **GAP Rating:** 3
Source of Need: Government Oversight, Research, Internal

Data Point Need	Existing Data source	Note	Benchmark Reference	Existing Reports	Sensitivity Concerns	KPI Utility	Utility Note
Number of validation flags	NTD, SSO	S&S validation flags are currently manually generated and not auto-fired by the NTD system, SSO flags are manually generated.			FTA has never published data error measures as they relate to specific data reporters.	5	Data point is critical to data accuracy performance measurement.
Number of erroneous reports	NTD, SSO	This data point quantifies the number of accident reports affected by data errors.	FMCSA, RSSB		FTA has never published data error measures as they relate to specific data reporters.	5	Data point is critical to data accuracy performance measurement.

KPI: Data Timeliness; **GAP Rating:** 2
Source of Need: Government Oversight, Research, Internal

Data Point Need	Existing Data source	Note	Benchmark Reference	Existing Reports	Sensitivity Concerns	KPI Utility	Utility Note
Time between submission and deadline	NTD, SSO	Data can be calculated as time between occurrence and submit date. Preliminary NTD study revealed that 95% of reports are submitted within the required 30-day period. For the SSO Program, annual submissions are due by March 15 of each year.	FMCSA, RSSB			5	Data point is critical to data timeliness performance measurement.
Validation issue response time	NTD, SSO	Response time is measured by the number of days between validation flag notification and issue resolution.				4	Data point is important to measure reporter responsiveness.

KPI: Data Completeness; **GAP Rating:** 3
Source of Need: Government Oversight, Research, Internal

Data Point Need	Existing Data source	Note	Benchmark Reference	Existing Reports	Sensitivity Concerns	KPI Utility	Utility Note
Number of missing data elements	NTD, SSO	Data point reduced due to NTD and SSO submission system safeguards.	Transport Canada, FMCSA, RSSB			5	Data point is critical to data completeness performance measurement.

KPI: Federal Data Response Time; **GAP Rating:** 3
Source of Need: Government Oversight, Inquiry, Internal

Data Point Need	Existing Data source	Note	Benchmark Reference	Existing Reports	Sensitivity Concerns	KPI Utility	Utility Note
Time between data request and response	FTA	Transport Canada uses strong model for measuring Federal response time. FTA currently has not established a required data request response timeframe.	TC			5	Data point critical to measuring FTA response time to data inquiries and needs.
Time between reported data system issue and resolution	NTD	Transport Canada uses strong model for measuring Federal resolution time. Data should be accessible from NTD and SSO Programs.	TC			5	Data point critical to measuring FTA response time to data inquiries and needs.

3.6 Recommendations

The following table presents Recommendations from all elements of this Phase II Needs Assessment, including current and emerging FTA safety and security data issues, the Phase II benchmarking effort, and the Key Performance Indicator/Data Point inventory and assessment.

Prioritized recommendations	Strategy	Process	Indicator	Gap Rating	Level of Adapt.
Online reporting system – remove redundancy in incident information that is reported through both the SSO Program and NTD program by establishing a single web-enabled integrated safety and security data online reporting system. This new reporting system should move beyond the current NTD capabilities to ensure it addresses program and regulatory requirements of the SSO Program (and other programs), including easy document uploading, causal data, corrective action tracking and analysis reporting. The system should incorporate capability to collecting and distinguishing between real-time, near-term and long-term data.		**X**		4	4
Data Management Plan – expedite plans to develop a data management plan that establishes organizational strategies, roles and responsibilities, necessary systems and supporting infrastructure, and policies and protocols for all aspects of safety and security data management.	**X**			4	4
Reinstitute collection of non-major security data – ensure new web-enabled reporting system includes both major and non-major security data.		**X**		4	3
Determine performance indicator data to be collected – consider initiating a comprehensive safety and security data review to catalog all safety measures captured by the National Transit Database and other safety data collection mechanisms. This review should identify the source(s) for each data, the use for each data (current and planned), and link to current FTA safety and security performance measure. *NOTE*: Consider collection of probable cause data through NTD to 1) accurately prioritize safety concerns, 2) allocate resources to address highest safety concerns and 3) measure effectiveness of program performance over time. Recommend investigating use of all data points identified in the Phase II Data Points Review with a KPI Utility Rating of 3 or higher.		**X**		4	4
Safety Strategic Plan – consider developing plan with clear performance indicators to measure safety throughout the transit industry; define specific goals/targets for each indicator; specify activities FTA would undertake to achieve goals.	X			4	4
Safety and security performance measure development guidance - build on current research (such as the OSU study) to support the development of models to support transit industry development of leading and lagging safety and security performance measures.	X			4	3

Prioritized recommendations	Strategy	Process	Indicator	Gap Rating	Level of Adapt.
Performance measures working group - building on TRACS activities, consider establishing a working group made up of SSO agency representatives and rail transit agency safety personnel to review existing measurement processes and solicit input on future revisions to FTA's rail oversight legislation and the establishment of performance measurement standards.	X			4	3
Strategic Planning – elevate awareness of Office of Safety and Security strategic planning activities and encourage participation by executive leadership at FTA.	X			4	3
Strategic Plan Development – continue progress to establish stronger links between collected and analyzed data and the strategies developed to improve industry safety and security performance.	X			4	3
Monitoring strategies – identify data performance indicators for ongoing monitoring of strategies to determine if strategies implemented are effective.	X			4	3
Safety Action Plan – consider development of a safety action plan that addresses rail and bus public transportation that targets identified safety issues based on comprehensive data analysis – consider reinstituting the use of the Office of Safety and Security action plan (FY 2008).	X			4	3
Internet access to safety and security data – consider providing a comprehensive and timely data set for the industry and general public with web-based tools for queries, filtering, and downloading.		X		3	4
Safety and Security Data Quality Program - FTA should investigate the development of a sustainable program that sets targets and emphasizes the use of internal controls and industry-facing tools to improve the quality of data collected from transit agency reporters.		X		4	3
Web-based display of safety and security performance measures - FTA should investigate the development or a web-based interface to provide the transit community with data that promotes the development and monitoring of safety performance measures.		X		4	3
Standardized reports for executive management – consider the development of templates to guide the reporting of key safety and security performance data to FTA's executive management team.		X		3	3
Internal safety and security performance guidance for FTA offices and Regions – consider developing and implementing technical assistance to HQ and Regional Offices to support the use and tracking of established performance measures for activities they are tasked to carry out.		X		3	3
Data Warehousing – investigate data warehousing options that will streamline data storage and improve access to safety and security data across offices and programs.		X		3	3
Close call reporting – Initiate talks with FRA and NASA representatives to gather greater detail on necessary steps for development of a non-punitive safety reporting system. The DMWG should formulate a shortlist of first steps, including coordination with FTA legal and outreach to agencies with existing overlap with the FRA pilot system and the FTA concept.		X		3	3
Establish and maintain regular bi-weekly DMWG conference calls.		X		4	4

Prioritized recommendations	Strategy	Process	Indicator	Gap Rating	Level of Adapt.
Key performance indicators - analyze key performance indicators presented in Phase II for selection, measurement and tracking. Please see Performance indicator table in Phase II Needs Assessment Report.			X	4	3

Appendix A: Benchmarking Study Detailed Results

Federal/International Agencies

Benchmarked Practices and Key Questions	Transport Canada	FMCSA	NHTSA	PHMSA	RSSB	FRA
Strategy, Management						
Data Management Plans and Protocols						
Agency has a formal data management plan in place		✔		✔	✔	✔
Agency has an informal data management plan in place	✔		✔			
Agency has specific protocols in place to guide management of data	✔	✔		✔	✔	✔
Agency has plans in place regarding the future use of data (e.g., Action Plan)	✔	✔	✔		✔	✔
Agency provided level of resources for data management aspects	✔	✔	✔		✔	
Internal controls have been establish regarding data management		✔		✔	✔	✔
Challenges and obstacles to developing data management protocols were provided	✔	✔	✔			
Strategic Planning and Programming						
Agency uses safety and/or security data to guide strategic plan development	✔		✔	✔	✔	✔
Designated individuals are responsible for safety and/or security data during planning	✔		✔		✔	
Agency develops and aligns performance indicators with strategic goals	✔		✔	✔	✔	✔
Measures are established to monitor internal agency program performance	✔	✔	✔	✔	✔	✔
Agency uses data to guide safety and/or security program activities	✔	✔	✔	✔	✔	✔
Agency provided the frequency of data review for monitoring activity effectiveness	✔		✔	✔	✔	✔
Agency uses data analysis to guide research efforts		✔	✔	✔	✔	✔
Agency uses data analysis to guide policy and/or governance			✔	✔	✔	✔
Data is shared between different offices/departments within agency	✔	✔				
Formal mechanisms are in place for internal data sharing						
There is a planning cycle that incorporates updated data	✔		✔	✔	✔	

Benchmarked Practices and Key Questions	Transport Canada	FMCSA	NHTSA	PHMSA	RSSB	FRA
Process						
Data Collection						
Agency has a formal process for determining what data is collected		✔	✔	✔	✔	✔
Agency has identified frequency for reviewing its data collection processes		✔	✔	✔		
Agency identified the systems used to collect data	✔	✔	✔	✔	✔	✔
Agency reported resources allocated to data collection activities in FTEs or $$		✔				
Data reporting requirements have been developed	✔	✔		✔	✔	✔
Agency developed manuals to guide/assist data reporters	✔	✔		✔		✔
Agency identified the frequency of its data collection activities	✔	✔	✔	✔	✔	✔
Agency has process and protocols in place to ensure the integrity of the data (QC/verify)		✔	✔		✔	
Level of resources for quality control was provided		✔	✔			
Agency described its process and solutions for data storage and warehousing	✔	✔	✔	✔	✔	✔
Level of resources for storage and maintenance of data was provided						
Data Analysis						
Data undergoes analysis after collection	✔	✔	✔	✔	✔	✔
Level of resources for data analysis was provided	✔		✔			
Methods and frequency of analysis was provided	✔	✔	✔		✔	
Data analysis communicated internally		✔	✔	✔	✔	✔
Data analysis communicated externally		✔	✔	✔	✔	✔
Data Presentation						
Agency has a data dashboard in place	✔			✔		✔
Data dashboard allows for tiered access						
Agency generates reports that summarize data for internal use	✔	✔	✔	✔	✔	✔
Frequency of internal reports and the resources used to generate them was provided		✔	✔			

Benchmarked Practices and Key Questions	Transport Canada	FMCSA	NHTSA	PHMSA	RSSB	FRA
Agency generates reports that summarize data for external dissemination		✔	✔	✔	✔	✔
Frequency of external reports and the resources used to generate them was provided		✔	✔		✔	
Data and reports are available on the agencies website	✔	✔	✔	✔	✔	✔
Data is shared with industry associates		✔	✔	✔	✔	✔
Data is actively shared with other transit agencies		✔	✔	✔	✔	✔
Coordination						
Agency has practices for regularly reporting on data to employees						
Data management program is integrated with other agency projects	✔		✔	✔	✔	✔
Agency solicits feedback from employees on data management program	✔	✔				
Frequency of data sharing with external organizations is described		✔	✔	✔	✔	✔
Different departments within agency work to share data						
Performance Indicator Comparison						
Agency uses external data sources to supplement their analysis	✔		✔		✔	
Agency uses leading indicators	✔	✔	✔	✔	✔	✔
Agency uses lagging indicators	✔	✔	✔	✔	✔	✔
Agency has developed Key Performance Indicators based on leading and lagging indicators	✔	✔	✔	✔	✔	✔
Agency ties KPIs to priorities	✔	✔	✔	✔	✔	✔
Agency compares outcomes to KPIs	✔	✔	✔	✔	✔	✔
Specific employees are designated to manage the KPIs	✔	✔	✔		✔	
There is a review cycle for re-evaluating KPIs	✔	✔	✔		✔	
Agency has indicated the frequency used to re-evaluate KPIs	✔	✔	✔		✔	

Transit Agencies

Benchmarked Practices and Key Questions	BART	CTA	Sound Transit	WMATA	Metro Transit	SCVTA
Strategy, Management						
Data Management Plans and Protocols						
Agency has a formal data management plan in place	✔	✔				
Agency has an informal data management plan in place			✔	✔	✔	✔
Agency has specific protocols in place to guide management of data	✔	✔	✔	✔	✔	✔
Agency has plans in place regarding the future use of data (e.g., Action Plan)	✔		✔	✔		
Agency provided level of resources for data management aspects				✔	✔	✔
Internal controls have been establish regarding data management			✔			
Challenges and obstacles to developing data management protocols were provided	✔	✔	✔	✔	✔	✔
Strategic Planning and Programming						
Agency uses safety and/or security data to guide strategic plan development	✔	✔	✔	✔	✔	✔
Designated individuals are responsible for safety and/or security data during planning	✔	✔		✔	✔	
Agency develops and aligns performance indicators with strategic goals	✔	✔	✔	✔	✔	
Measures are established to monitor internal agency program performance	✔	✔	✔	✔	✔	✔
Agency uses data to guide safety and/or security program activities	✔	✔	✔	✔	✔	✔
Agency provided the frequency of data review for monitoring activity effectiveness	✔	✔	✔	✔	✔	✔
Agency uses data analysis to guide research efforts	✔	✔	✔	✔	✔	✔
Agency uses data analysis to guide policy and/or governance	✔	✔	✔	✔	✔	✔
Data is shared between different offices/departments within agency		✔	✔	✔	✔	✔
Formal mechanisms are in place for internal data sharing		✔	✔	✔		
There is a planning cycle that incorporates updated data	✔		✔			

Benchmarked Practices and Key Questions	BART	CTA	Sound Transit	WMATA	Metro Transit	SCVTA
Process						
Data Collection						
Agency has a formal process for determining what data is collected			✔			
Agency has identified frequency for reviewing its data collection processes	✔		✔			✔
Agency identified the systems used to collect data	✔	✔	✔	✔	✔	✔
Agency reported resources allocated to data collection activities in FTEs or $$			✔			
Data reporting requirements have been developed	✔	✔	✔	✔	✔	✔
Agency developed manuals to guide/assist data reporters	✔	✔	✔		✔	✔
Agency identified the frequency of its data collection activities	✔	✔	✔		✔	✔
Agency has process and protocols in place to ensure the integrity of the data (QC/verify)	✔	✔				✔
Level of resources for quality control was provided						✔
Agency described its process and solutions for data storage and warehousing	✔	✔	✔		✔	✔
Level of resources for storage and maintenance of data was provided						
Data Analysis						
Data undergoes analysis after collection	✔	✔	✔	✔	✔	✔
Level of resources for data analysis was provided	✔	✔	✔	✔		✔
Methods and frequency of analysis was provided	✔	✔	✔		✔	✔
Data analysis communicated internally	✔	✔	✔	✔		✔
Data analysis communicated externally			✔	✔		
Data Presentation						
Agency has a data dashboard in place			✔		✔	
Data dashboard allows for tiered access						
Agency generates reports that summarize data for internal use	✔	✔	✔	✔	✔	✔
Frequency of internal reports and the resources used to generate them was provided	✔		✔	✔	✔	✔

Benchmarked Practices and Key Questions	BART	CTA	Sound Transit	WMATA	Metro Transit	SCVTA
Agency generates reports that summarize data for external dissemination	✔			✔	✔	
Frequency of external reports and the resources used to generate them was provided	✔			✔		
Data and reports are available on the agencies website	✔	✔		✔		
Data is shared with industry associates						
Data is actively shared with other transit agencies			✔	✔		
Coordination						
Agency has practices for regularly reporting on data to employees	✔	✔	✔		✔	✔
Data management program is integrated with other agency projects	✔	✔				✔
Agency solicits feedback from employees on data management program	✔	✔		✔		✔
Frequency of data sharing with external organizations is described			✔			✔
Different departments within agency work to share data		✔		✔	✔	
Performance Indicator Comparison						
Agency uses external data sources to supplement their analysis			✔			
Agency uses leading indicators	✔	✔	✔	✔	✔	✔
Agency uses lagging indicators	✔	✔	✔	✔	✔	✔
Agency has developed Key Performance Indicators based on leading and lagging indicators	✔	✔	✔	✔	✔	✔
Agency ties KPIs to priorities	✔	✔	✔	✔	✔	✔
Agency compares outcomes to KPIs	✔	✔	✔	✔	✔	✔
Specific employees are designated to manage the KPIs	✔	✔		✔	✔	
There is a review cycle for re-evaluating KPIs	✔		✔		✔	
Agency has indicated the frequency used to re-evaluate KPIs	✔	✔	✔	✔	✔	

Summary Table of Effective Benchmarked Practices

Strategy, Management and Planning

No.	Area Benchmarked	Practice	Gap	Gap Rating	Level of Adaptability
1	Data management plan	PHMSA – the agency developed a *Data Management and IT Roadmap* to establish formal roles and responsibilities governing the collection, use and processing of data and information.	FTA has not defined roles and responsibilities for safety data collection and usage.	4	4
2	Relationship between data management and strategic planning	Transport Canada – the agency assigned responsibility for creating and monitoring safety-related strategic planning goals and targets to a Rail Safety Senior Management Committee (RSSMC).	FTA has not formally established responsibility for safety data target development and monitoring.	4	3
3	Relationship between data management and strategic planning	Transport Canada – the agency developed regulation that requires performance measurement and progress reporting at railway systems in Canada.	FTA does not benefit from regulation requiring performance measurement development within the transit industry.	4	3
4	Role of data in strategic plan development	NHTSA – the agency established a strategic management group to develop its internal strategic plans. NHTSA's strategic plans are completely data driven, which in turn drive all of the agency's programs and activities including proposed standards and legislation.	FTA has not formally established responsibility for safety data target development and monitoring.	4	3

No.	Area Benchmarked	Practice	Gap	Gap Rating	Level of Adaptability
5	Alignment of Performance Indicators to Strategic Goals	Transport Canada – the agency included specific Data Management and Analysis strategies, indicators and projected results as a component of its *Rail Safety Strategic Plan 2010-2015*.	FTA has not developed a formal Strategic Plan that defines specific strategies, indicators and measurable targets.	4	4
6	Use of data to guide programs and initiatives	NHTSA – collected data is analyzed to identify emerging issues that may require NHTSA to propose and promulgate legislative actions to improve safety performance.	FTA has not developed a formal mechanism to prompt legislative action based on emerging safety issues.	4	3
7	Strategic Planning and Programming	FRA – the agency developed a Rail Safety Action Plan to monitor safety risk factors, target research opportunities, and direct inspection resources.	FTA has not developed an action plan that formally directs resources toward intervention and research.	4	4

Process

No.	Area Benchmarked	Practice	FTA Practice	Gap Rating	Level of Adaptability
8	Tools used for analysis	Transport Canada – Currently developing technological solution to automate data analysis and cease reliance on multiple MS Excel spreadsheets for manual analysis efforts.	FTA does not currently utilize a single comprehensive safety data analysis tool.	4	3
9	Process used to determine data to be collected	NHTSA – At least yearly, the strategic management group and agency executives meet to review safety trends and issues to determine if changes in data collected are necessary.	FTA has not created a regular interval or mechanism for updating data collection requirements.	4	4

No.	Area Benchmarked	Practice	FTA Practice	Gap Rating	Level of Adaptability
10	Data management protocols	FMCSA – the agency developed a State Safety Data Quality Program to ensure improvement in safety data quality.	FTA devotes resources to validating safety data, but has not established a formal safety data quality program.	4	3
11	Data management protocols	FMCSA – the agency developed its SMS Methodology to formally document its process for evaluating safety performance and establishing relative measures.	FTA has not developed a documented process for safety performance measurement.	4	3
12	Data presentation - website	NHTSA – All data is available to the general public on the agency's website with tools to support queries and searches.	FTA does not have a public facing tool for safety data dissemination.	3	4
13	Data presentation - website	FMCSA – The agency makes available all its Safety Measurement System data available to the public through filterable data dashboard.	FTA does not have a public facing tool for safety data dissemination.	4	3
14	Data presentation - website	FRA – The agency developed an online portal, making safety data available through user-defined queries.	FTA does not have a public facing tool for safety data dissemination.	3	4
15	Data presentation - report	RSSB – The Board produces a detailed annual safety statistics report that focuses on safety risk in the railway industry.	FTA does not issue a comprehensive report addressing identified issues from a safety risk perspective.	4	2
16	Data presentation - report	BART – The agency produces a Quarterly Performance Report on safety measures for executive leadership.	FTA does not produce a regularly updated report on transit safety performance.	3	3
17	Data presentation - report	WMATA – The agency produces a regularly updated report documenting KPI performance and actions underway to achieve targets. The report is made publically available via the WMATA website.	FTA does not produce a regularly updated report on transit safety performance.	4	3

No.	Area Benchmarked	Practice	FTA Practice	Gap Rating	Level of Adaptability
24	Data collection – IT system and solutions	FMCSA – The agency has developed a data collection system that captures incident information reported from state and local jurisdictions	FTA currently maintains separate data collection systems for rail incident data: SSO rail accident database and NTD	4	4
25	Data collection – data storage and access	NHTSA – The agency has developed a single data repository that can be accessed by various programs and departments within the agency	FTA does not maintain a single accessible data storage systems for its all interested departments and programs	4	3
26	Data collection – near miss reporting	FRA – The agency has partnered with NASA and BTS to pilot a Confidential Close Call Reporting System (C^3RS) that captures near miss data from participating rail systems	FTA does not currently have a mechanism or legal framework to protect sensitive close call data	4	3

Indicators

No.	Area Benchmarked	Practice	FTA Practice	Gap Rating	Level of Adaptability
18	Use of leading indicators	Transport Canada – Collects data from random and targeted inspections for use as leading indicators.	FTA does not utilize a set of leading indicators of safety performance.	3	2
19	Definition of KPIs	Transport Canada – Currently establish a target number for inspections.	FTA does not target inspection/audit/intervention levels.	3	4
20	Definition of KPIs	Sound Transit – compared total number of auto accidents along proposed rail alignment with total auto accidents along alignment after initiation of service to reveal overall decrease in auto accidents.	FTA has not used such a before-and-after safety performance indicator for its projects and initiatives.	4	2

No.	Area Benchmarked	Practice	FTA Practice	Gap Rating	Level of Adaptability
21	Management of KPIs	WMATA – the agency established an Office of Performance to facilitate departmental development and tracking of KPIs, as well as periodic reporting to the Board and public.	FTA does not have an office or designated entity tasked with KPI development at regional or departmental levels.	4	2
22	Relationship of KPIs to priorities and outcomes	FMCSA – Uses KPIs to define and prioritize interventions.	FTA currently uses a three-year process to prioritize SSO audits, but does not execute a tiered intervention structure.	3	3
23	Relationship of KPIs to priorities and outcomes	Metro Transit – Established distracted driving / electronic device violation KPI to measure the effectiveness of distracted driving initiative.	FTA has not used such a before-and-after safety performance indicator for its projects and initiatives.	4	3

Discussion of Specific Practices

This section presents detailed discussion of partner practices that the team believes should be considered by FTA. For each practice, background is given, a description of the practice is provided, the level of significance to FTA's identified needs is presented (Gap Rating), recommendations are made, and an analysis of the level of adaptability to discussed.

For each detailed discussion, the team presents the *Gap Rating* and the *level of adaptability* for each practice and rates each according to a Harvey's Ball scale of one to four.

This section of the report is intended to inform FTA representatives of practices the team believes target previously identified FTA needs, benefit the mission of FTA to continuously strengthen the safety and security posture of public transportation and are adaptable if FTA deems they are appropriate and manageable given any of the identified considerations to moving forward.

Pipeline and Hazardous Materials Safety Administration

	Gap Rating	Level of Adaptability
Practice 1 – Data Management Plan	4	4

The U.S. Department of Transportation's (DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA) developed its *Data Management and IT Modernization Roadmap* in November 2009 to establish formal roles and responsibilities governing the collection, use, and processing of data and information. The Roadmap was an agency-wide effort to identify and implement "strategies to mitigate organizational gaps in the way PHMSA manages data and leverages IT to support its safety mission." Through PHMSA, U.S. DOT develops and enforces regulations for the safe, reliable, and environmentally sound operation of the nation's 2.3 million mile pipeline transportation system and the nearly 1 million daily shipments of hazardous materials by land, sea, and air.

The origin of PHMSA's effort was the result of the agency's strategic planning and desire to improve the integrity of the system and reduce system risk.[1] Integral to implementation of this strategy was the need to increase agency analytical capability and capacity to strengthen its understanding of risk that is based on sound data, to evaluate and improve PHMSA's own program data, use data to help drive program priorities and resource decisions, improve the agency's ability to detect emerging risks, and target/focus its prevention activities, as well as evaluate the effectiveness of its programs.

PHMSA evaluated the business processes within its Office of Hazardous Materials Safety, Office of Pipeline Safety, and the Office of Administration prior to developing its Roadmap. PHMSA identified areas where internal fragmentation between the offices contributed to the data analysis and IT challenges that faced PHMSA.

In 2008, PHMSA conducted a formal IT program review of information management that focused on operating principles and strategies of PHMSA. The review identified a series of gaps across its defined four domains of information management:

- Data governance
- Data management protocols and controls
- Roles and responsibilities
- Technical architecture

PHMSA concluded from the results of the review that it would benefit greatly from stronger data and information management framework with processes that would align with operational needs and strategies and the mission of the agency.

[1] PHMSA's *Strategic Plan 2007 through 2011*.

In developing the Roadmap, PHMSA assessed its level of internal resources (personnel) dedicated to strategic, operational, or tactical data analysis to drive program priorities, measure organizational performance and effective make safety decisions. PHMSA identified gaps for which it later addressed in the Roadmap. This included organizational restructuring to establish three teams: Strategic Analysis and Program Evaluation; Information Management Office; and Program Analysis and Risk Evaluation. PHMSA also evaluated its processes and developed common, repeatable processes that would ensure data quality, accessibility, security and public trust. The business process reengineering efforts were designed to align processes with mission-specific goals for each "line of business" within the hazmat and pipeline safety programs. In order to ensure collected data was in alignment with agency goals, PHMSA revised and documented its key performance indicators. The agency also accomplished the following for each of its data management activities:

- Data architecture – moved to establish standards, attribute and taxonomies and common business rules to improve data conformance and data testing
- Data quality – worked to establish data quality metrics for each data set based on accuracy, completeness, consistency, timeliness, uniqueness and validity
- Data collection – documented its plan to ensure that data collection processes are repeatable, reproducible, accurate and stable over time
- Data reporting and dissemination – documented approach to establish roles and responsibilities as well as protocols and dissemination policies

Finally, PHMSA addressed the role of information technology to both strategically and tactically execute its mission regarding data in the most effective and efficient manner. PHMSA identified its current technology state, challenges and targets for IT modernization. This included the plan for the development of a concept of operations to guide the iterative approach to improvement.

PHMSA developed its Roadmap to provide details on its migration strategy. As describe above, PHMSA included details that incorporated people, processes and technological capabilities that were necessary to enable PHMSA to leverage data to drive program priorities based on its new ability to more quickly and effectively identify risk and develop targeted prevention activities. The Roadmap details a three-year timeframe for the agency to evolve its data and information management systems.

Gap Rating 4

During Phase I of FTA's *Safety and Security Data Management Program* initiative, it was identified that FTA did not have an agency-wide plan for managing its safety and security data. While it was clear that the Office of Safety and Security had established many effective internal processes and relationships, they were informal in nature and did not lead to consistent management of data transactions. Because of this FTA moved to establish its safety and security DMWG to guide *Phase II*, including this needs assessment and benchmarking study. FTA anticipates the development of a safety and security data

management plan after Phase II results are analyzed and presented to FTA's executive management.

Recommendation

1. Data Management Plan – continue with plans to develop a data management plan that establishes organizational strategies, roles and responsibilities, necessary systems and supporting infrastructure, and policies and protocols for all aspects of safety and security data management.

Level of adaptability 4

The process used by PHMSA to develop its Roadmap is rated as a highly adaptable practice for FTA provided the following considerations are reviewed and managed:

- Commitment of management to an agency-wide effort
- Availability of resources including internal personnel and contracted services, if necessary

Transport Canada

	Gap Rating	Level of Adaptability
Practices 2, 3 – Relationship between data management and strategic planning	4	3
Practice 5 – Alignment of performance indicators to strategic goals	4	4

Transport Canada is the department responsible for transportation policies, programs and goals for the Government of Canada. Transport Canada is made up of over 4,700 employees serving program and support groups at headquarters in Ottawa and in regional offices across five regions. Similar to the U.S. DOT and FTA, Transport Canada's regional offices are headed by regional director generals responsible for the delivery of transportation programs and services in their respective regions.

Transport Canada's mission is to serve the public interest through the promotion of a safe and secure, efficient and environmentally responsible transportation system in Canada. The agency has the responsibility and authority to propose and enforce laws and regulations to ensure safe, secure, efficient and clean transportation. The agency's safety and security activities include the following:

- Aircraft services
- Civil aviation
- Marine safety
- Marine security
- Rail safety
- Road safety
- Security and emergency preparedness
- Transportation of dangerous goods
- Rail and urban transit security

Transport Canada has developed regulations governing safety activities at railroads within Canada. These regulations are formalized in Railway Safety Act (R.S., 1985, c. 32 (4th Supp.)). Within the last decade, Transport Canada has enhanced its regulations and focused on defining clear performance indicators to measure the agency's and rail industry's safety performance. The following two practices presented for FTA's evaluation and implementation consideration.

Practice - Relationship between data management and strategic planning

In 1999, Transport Canada amended the existing Railway Safety Act to further improve the legislation with the ultimate goal of making the railway system safer. These amendments were designed to modernize the legislative and regulatory framework of rail system, making railways more responsible for managing their operations safely, while providing the general public and interested parties with greater access and influence on issues of rail safety. The 1999 revisions included the definition of and requirement of a

Safety Management System at each regulated railway. The Safety Management System is a formal framework for integrating safety into day-to-day railway operations and is intended to promote a safety culture within railways, to enable railways to demonstrate their commitment to safety, and to show that they are in compliance with regulatory requirements.

Two years later, in 2001, Transport Canada issued the Railway Safety Management System Regulations (SOR/2001-37) further defining the requirements for Safety Management Systems at Canadian railways. The Railway Safety Management System Regulations require railways to assess safety performance by developing safety performance indicators, measuring railway safety performance, and reporting performance to Transport Canada. The regulation requires the development of safety goals and performance targets, conduct of risk assessments, and the identification of responsibilities and authorities, rules and procedures, and monitoring and evaluation processes. The regulation requires railways to maintain several specific safety performance measures, including:

- Employee deaths, disabling injuries and minor injuries, per 200,000 hours worked by the employees of the railway company
- Train and grade crossing accidents that meet the reporting criteria, per million train miles

Additionally, the regulation requires railways to submit safety performance measure documentation annually to the Minister of Transport, including:

- The railway company's safety performance targets
- The associated safety initiatives to achieve the targets for the current year

Transport Canada has created an expectation for railway systems to improve railway safety and measure and report this improvement formally. Transport Canada monitors railway implementation of these requirements through a formalized auditing program and analysis of safety performance indicators.

Gap Rating 4

The U.S. DOT operates under an overall strategic goal of working toward the elimination of transportation-related injuries and fatalities, including rail transit injuries and fatalities. In 2005, FTA revised its regulation creating the State Safety Oversight Program (49 CFR Part 659) for rail transit systems. FTA's revisions included modification of requirements for developing System Safety Program Plans, such as the documentation of a process for safety data acquisition and analysis. While requiring transit systems to develop and document a process to manage safety-related data, the revised rule does not specify performance measurement standards, nor does it identify reporting requirements for safety performance targets and actuals.

In 2011, the GAO released a report titled: *FTA Programs Are Helping Address Transit Agencies' Safety Challenges, but Improved Performance Goals and Measures Could Better Focus Efforts* (GAO 11-199). GAO found that the largest rail transit agencies face challenges in trying to ensure safety on their systems. GAO stated that clear and specific performance goals and measures are critical to improving transit safety and tracking results. Additionally, GAO stated that the level of safety culture—awareness of and organizational commitment to the importance of safety—varies across the transit industry and is low in some agencies.

FTA's Office of Safety and Security has recognized these needs and has already initiated the development of draft safety and security performance measures for its State Safety Oversight Program and rail transit community. However, to date, FTA has not proposed requirements or developed recommended practices for transit agencies related to the performance measurement. Both GAO and FTA agree that the alignment of performance measurement data with strategic goals is a critical function for the development of safety culture. When the management of a transit system defines specific performance goals that identify the direct results its safety activities are trying to achieve and the related measures that the system will use to track and demonstrate its progress in achieving those results, management commitment is ensured and safety culture is reinforced.

Recommendations

1. Safety and security performance measure development guidance – build on current research (such as the OSU study) to support the development of models to support transit industry development of leading and lagging safety and security performance measures
2. Performance measure working group – building on TRACS activities, consider establishing a working group made up of SSO agency representatives and rail transit agency safety personnel to review existing measurement processes and solicit input on future revisions to FTA's rail oversight legislation and the establishment of performance measurement standards

Level of adaptability 3

The Office of Safety and Security established its SPWG in 2007 in an effort to better align the Office of Safety and Security's mission to the goals and objectives of FTA and U.S. DOT and to begin the process of creating a relationship between the information and data collected by FTA and the strategies developed to improve overall safety and security performance in the public transportation industry. In 2009, FTA established the DMWG as a subgroup of the SPWG. FTA is making progress at building internal foundation for managing safety and security data policy. Once the internal framework has matured, perhaps through development and implementation of data management plan, FTA may be able to open up its performance measure activities to include representatives from the industry its oversees.

Current research such as TCRP Report 141 "A Methodology for Performance Measurement and Peer Comparison in the Public Transportation Industry," and the OSU Guidebook, "Transit Safety Management and Performance Measurement" provide FTA and the industry a framework for performance measure development. However, FTA could support the industry even further by working with it to provide templates and models for safety and security performance measures.

By developing performance measurement recommended practices for transit systems or by requiring safety performance measurement specifically through rule revision, FTA can help meet the needs identified by GAO and capitalize on the lessons learned from Transport Canada's successful model.

Practice - Alignment of performance indicators to strategic goals

In 2005, following the promulgation of the Railway Safety Management System Regulations (SOR/2001-37) four years earlier, Transport Canada developed *All Aboard, Rail Safety Strategic Plan 2005-2010*. In 2010, the agency issued the second iteration of this document: *Rail Safety Strategic Plan 2010-2015*. Transport Canada's model is to detail what the agency will do, how it will measure success, and how it will demonstrate progress on addressing challenges. Within the latest plan, Transport Canada establishes clear performance measures and targets to address critical safety issues in the rail industry, including:

- Federal recruitment and retention
- Training and development
- Data management and analysis capabilities
- Communications
- Safe introduction of new technology
- Safety culture

The *Rail Safety Strategic Plan 2010-2015* identifies ten strategies. For each strategy, the agency identifies the challenges, specifies the specific strategy for overcoming the challenge, and defines the achievement goal. For each of these ten strategies, the plan documents a series of strategic initiatives, indicators that will be used to monitor and track progress and the expected results.

Using this approach, Transport Canada is able to define key performance indicators to measure progress in areas such as safety oversight and outreach, people management, training and development, data management, and safety culture – areas of transportation industry performance that are not often measured quantitatively. Transport Canada's strategic planning model has enabled the agency to establish clear quantitative measures for many critical safety issues that are of concern to FTA but to date have not been formally measured and tracked. Measures include:

- Percentage of auditors trained in auditing and risk management
- Audit compliance rates

- Percentage turnover in safety staff
- Number of current and anticipated vacancies
- Percentage of new safety staff trained within the first year
- Percentage of planned training delivered
- Development of railway safety performance report cards
- Percentage of data system problems resolved within 24 hours
- Union satisfaction with risk management approach
- Number of requests for increased communication
- Number of railways that develop non-punitive reporting systems
- Number of railways that develop specific safety culture practices and measurement tools

Additionally, Transport Canada has clearly defined the responsibility for strategic planning related to rail safety concerns. The agency established a Rail Safety Senior Management Committee (RSSMC) and has tasked the RSSMC with addressing the challenges identified within the strategic plan with realistic and measurable strategies over the five-year planning cycle.

Transport Canada's Rail Safety Strategic Plan process provides FTA with an excellent model for developing performance measures and target concepts for issues related to safety culture that are traditionally difficult to integrate with performance measurement.

Gap Rating 4

FTA's Office of Safety and Security published its *Five-Year Strategic Plan: FY2008-FY2012* in 2008, defining its mission to "provide leadership and vision in the development and management of programs and initiatives to continually improve the safety and security of passengers, employees, emergency responders, and all others who come into contact with the public transportation system." While the Five-Year Strategic Plan represents a significant first step for the Office of Safety and Security in defining and achieving its safety and security goals, the document does not comprehensively define clear and quantitative measures for monitoring progress to achieve the stated goals.

As mentioned earlier, in 2011 GAO released a report titled: *FTA Programs Are Helping Address Transit Agencies' Safety Challenges, but Improved Performance Goals and Measures Could Better Focus Efforts* (GAO 11-199). GAO stated that the level of safety culture—awareness of and organizational commitment to the importance of safety—varies across the transit industry and is low in some agencies and pointed to low safety culture as a contributing factor to severe rail transit safety impacts. GAO recommended that the FTA Administrator create a set of clear and specific performance goals and measures that (1) are aligned with the department's strategic safety goals and identify the intended results of FTA's various safety efforts and (2) address important dimensions of program performance. In its report, GAO recommends that FTA:

- Develop non-punitive safety reporting programs
- Increase efforts to encourage a strong safety culture

- Formulate a national approach to staffing and training
- Increase technical training
- Increase federal support for training

Transport Canada's strategic planning construct and model for developing and tracking performance indicators to measure safety culture offers a valuable example to FTA as it moves to build off of its *Five-Year Strategic Plan: FY2008-FY2012* and respond to GAO recommendations by reinforcing its commitment to the improvement of safety culture throughout the transit community by developing a clear system for measuring safety culture.

Recommendations

1. Safety Strategic Plan – consider developing plan with clear performance indicators to measure safety throughout the transit industry; define specific goals/targets for each indicator; specify activities FTA would undertake to achieve goals

Level of adaptability 4

The Office of Safety and Security has already established a Strategic Planning Working Group (SPWG) and has already begun the process of creating a relationship between the information and data collected by FTA and the strategies developed to improve overall safety and security performance in the public transportation industry. The creation of the DMWG as a subgroup of the SPWG, the Office of Safety and Security is adequately positioned to advance its performance measurement links to strategic goals, including safety culture-related issues.

National Highway Traffic Safety Administration

	Gap Rating	Level of Adaptability
Practice 4 – Role of data in strategic plan development	4	3
Practice 6 – Use of data to guide programs and initiatives	4	3
Practice 9 – Process used to determine data to be collected	4	4

The National Highway Traffic Safety Administration (NHTSA) was established as the successor to the National Highway Safety Bureau in 1970, to carry out safety programs under the National Traffic and Motor Vehicle Safety Act of 1966 (Chapter 301 of Title 49, United States Code) and the Highway Safety Act of 1966 (Chapter 4 of Title 23, United States Code). The agency also administers consumer programs established by the Motor Vehicle Information and Cost Saving Act of 1972 (Part C of Subtitle VI (Chapters 321, 323, 325, 327, 329 and 331) of Title 49, United States Code).

Like FTA, NHTSA has 10 Regional offices that work on the agency's mission to save lives, prevent injuries, and reduce traffic-related healthcare and other economic costs. Each Regional office provides numerous services to its States, as well as other public and private sector customers. These services include, but are not limited to, technical assistance, administering the agency's grant fund programs, assisting in coalition building, and delivering training.

NHTSA's mission is to save lives, prevent injuries, and reduce traffic-related health care and other economic costs due to road traffic crashes through education, research, safety standards, and enforcement activity. NHTSA investigates safety defects in motor vehicles, sets and enforces fuel economy standards, helps states and local communities reduce the threat of drunk drivers, promotes the use of safety belts, child safety seats and air bags, investigates odometer fraud, establishes and enforces vehicle anti-theft regulations and provides consumer information on motor vehicle safety topics. NHTSA also conducts research on driver behavior and traffic safety, to develop the most efficient and effective means of bringing about safety improvements.

As NHTSA is primarily a data-driven agency, it uses its analysis of reported data to drive strategic planning, program activities and governance objectives. While the agency does not have a specific data management plan, it has a long history of incorporating data analysis to drive decisions made throughout the organization. The following two practices are presented for FTA’s evaluation for possible implementation.

Practice - Role of data in strategic plan development

The agency established a strategic management group to develop its internal strategic plans. NHTSA’s strategic plans are completely data driven, which in turn drive all of the agency’s programs and activities including proposed standards and legislation. All collected data is analyzed and made available to those individuals within NHTSA responsible for strategic planning. For example, in 2005, NHTSA synthesized a large

body of research findings and expert opinions and developed the Older Driver Traffic Safety Plan, which has guided research, programs, and outreach conducted through a collaborative effort involving NHTSA, its 10 regional Offices, State highway safety offices, and partners during the past 5 years.

The strategic plan focuses on how NHTSA will address the safety needs of older drivers over the next five years. To inform this plan, in 2009 and 2010 NHTSA conducted nationwide research to determine how to address the evolving needs of regional, State, and local older driver program planners. NHTSA conducted 28 in-depth telephone interviews with its regional office staff, State highway safety offices, and local partner organizations; and also convened a panel of 14 experts working in various capacities in the older driver arena. Based on this combined research, NHTSA identified program initiatives to guide the implementation of its Older Driver Traffic Safety Plan for years 2012-2017.

Gap Rating 4

In its *Five-Year Strategic Plan: FY2008-FY2012*, the Office of Safety and Security states its mission to "provide leadership and vision in the development and management of programs and initiatives to continually improve the safety and security of passengers, employees, emergency responders, and all others who come into contact with the public transportation system." The plan goes on further to state that in order to accomplish its mission, the Office of Safety and Security is charged with:

- Developing policies, requirements, and guidelines for transit oversight as authorized by Federal statute
- Implementing two congressionally mandated regulatory programs, Substance Abuse Management and State Safety Oversight of Rail Fixed Guideway Systems
- Developing and overseeing the implementation of strategic long-term FTA safety, security, and emergency management programs
- Managing national safety, security, and emergency management training programs
- Coordinating safety, security, and emergency management plans, programs, and activities within FTA and DOT and with other Federal partners and the transit industry
- Formulating, overseeing, and managing technical assistance and demonstration programs.

These activities help the office meet FTA's goals regarding safety, security and emergency preparedness. The strategic plan calls for an iterative process of data collection and analysis and determination of the data will inform strategy development. As mentioned previously, one of the objectives of the Office of Safety and Security's *Safety and Security Data Management Initiative* was to improve the relationship between collected and analyzed data and the strategies developed to support improvements in these areas in the industry.

Routinely, FTA's Office of Safety and Security conducts isolated data analysis to develop strategies and initiatives to target emerging safety and/or security trends. While this is typically an *ad hoc* exercise, it is important to note that within the areas of safety and security 1) emerging trends can be unique in that they do not have any historical or predictive characteristics that would have led to preventative action being taken and 2) ample resources must be allocated to implement more robust and comprehensive data analysis efforts. In its January 31, 2011 report: *FTA Programs Are Helping Address Transit Agencies' Safety Challenges, but Improved Performance Goals and Measures Could Better Focus Efforts* (GAO-11-199), GAO noted that FTA has discontinued its practice of developing safety action plans that served as a means through which FTA could monitor performance of safety and security strategies. GAO recommended that the U.S. DOT direct "FTA to use leading practices to set clear and specific goals and measures for these efforts."

The Office of Safety and Security has recognized these needs and challenges and are moving forward, through this current *Benchmarking Study* to identify and quantify practices that will link collected data to developed and implemented strategies.

Recommendations

1. Strategic Planning – elevate awareness of Office of Safety and Security strategic planning activities and encourage participation by executive leadership at FTA
2. Strategic Plan Development – continue progress to establish stronger links between collected and analyzed data and the strategies developed to improve industry safety and security performance
3. Monitoring strategies – identify data performance indicators for ongoing monitoring of strategies to determine if strategies implemented are effective

Level of adaptability 3

The Office of Safety and Security established its Strategic Planning Working Group (SPWG) in 2007 in an effort to better align the Office of Safety and Security's mission to the goals and objectives of FTA and U.S. DOT and to begin the process of creating a relationship between the information and data collected by FTA and the strategies developed to improve overall safety and security performance in the public transportation industry. This current *Safety and Security Data Management Program Initiative* is actually a component of the overall SPWG efforts.

The inclusion of increased data analysis to inform strategic planning as well as the use of indicators to monitor strategy implementation would benefit FTA in carrying out its mission. The results of current Office of Safety and Security initiatives under the auspices of the SPWG should greatly support its ability to adapt practices being used by NHTSA. A significant consideration in moving forward is the amount of resources FTA will be able to employ to enhance its current analysis efforts. Additionally, there are current data points that are not collected by FTA – such as probable cause information beyond that for rail transit agencies within the SSO Program – that will hinder the

development of strategies that are risk-based and target specific causes of incidents. As NHTSA's primary role is safety and its planning and activities are data driven, it is important to look for ways to scale NHTSA's practices that 1) meet the need for improvements in data-justified strategic planning and 2) incrementally strengthen data analysis efforts.

Practice - Use of data to guide programs and initiatives

In 2011, NHTSA developed its Vehicle Safety and Fuel Economy Priority Plan for calendar years 2011 to 2013. The plan describes the projects and programs that NHTSA will implement through both rulemaking and research to improve motor vehicle safety and address energy and environmental challenges. The plan was developed as an internal tool and lists only those high-priority programs and projects that require significant agency resources. This plan is also separate from NHTSA's enforcement, data collection and analysis programs, which have their own priorities. However, the programs listed in the this plan do support NHTSA rulemaking and research priorities by providing necessary safety data, economic analysis, expertise on test procedures, and technical issues gleaned from enforcement experience.

Data is used to justify programs and initiatives based on a prioritization scheme developed by NHTSA. NHTSA has developed four categories of priorities to classify programs and projects within this plan:

1. Large safety benefits
2. Vulnerable populations
3. High-occupancy vehicles
4. Other considerations

Programs and projects that are in Category 1 are seen by NHTSA as having the potential for large safety benefits based upon factors such as:

- The size of the target population
- The effectiveness of countermeasures and their potential to save lives and prevent injuries
- The availability and practicability of these countermeasures
- The potential that countermeasures could be developed in the future that could be reasonably effective against a large target population.

NHTSA stipulates in its plan that some Category 1 projects may require additional research before specific countermeasures are identified. NHTSA does this to ensure that benefits can be quantified.

Programs and projects in Category 2 affect children, older people, the vision-impaired, or other populations that are considered vulnerable. Category 3 involves buses or motor coaches and other high-occupancy vehicles. Finally, Category 4 includes priority projects

that may not be captured in the other categories, but either reduce the impact of motor vehicles on energy security and climate change or address other specific items.

Another example of NHTSA's use of data to guide program and initiatives planning and implementation is the agency's development of its 2010 *Driver Distraction Program*. The agency developed its distraction plan to help in its long-term goal of eliminating a specific category of crashes – those attributable to driver distraction. The program involves four initiatives:

- Improve the understanding of the problem
- Reduce workload from interfaces
- Keep drivers safe
- Recognize risks and consequences

NHTSA's plan is intended to communicate priorities to the public with regard to driver distraction safety challenges, namely our long-term goal of eliminating crashes that are attributable to distraction. The plan also serves as a complement to a previous NHTSA report, "Driver Distraction: A Review of the Current State-of-Knowledge."

NHTSA used three primary sources of data to assess the effects of distraction for development of its initiatives. The first two are police-accident-report-based systems. The Fatality Analysis Reporting System (FARS) is a census of fatal crash data assembled by NHTSA. In addition to fatality data, the National Automotive Sampling Systems (NASS) General Estimates System (GES) provides a sample of all police-reported crashes to estimate the number of injured people and to gather information about crashes of varying severity. The third primary source is an on-scene investigation-based crash data source that provides unique insights about distraction is the National Motor Vehicle Crash Causation Survey (NMVCCS).

NHTSA analyzed data from these primary data sets and was able to identify categories of internal vehicle distractions from which the agency could determine the odds ratio of increased risk of engaging in various secondary tasks or primary driving tasks. Through its analysis, NHTSA prioritized risk associated with the activity and was able to identify countermeasures to be implemented. NHTSA set forth its programs and initiatives in the *Distraction Plan* and coordinated with U.S. DOT to establish the Distraction.gov website and DOT-wide activities.

Gap Rating 4

In 2007, FTA published its first ever Office of Safety and Security *Fiscal Year 2008 Action Plan*. In alignment with the goals set forth by U.S. DOT and FTA, the Office of Safety and Security established six strategies to guide the office's FY 2008 program activities. The office integrated its six strategies into its 11 program areas by developing objectives from which program and project activities were identified for implementation. In October 2008, the Office of Safety and Security published its FY 2008 accomplishments, presenting the completion of each program area objectives and

activities. While the action plan presented great detail with regard to the activities FTA would take to improve safety and security performance in the industry, no formal analysis and presentation of data was used to formulate the strategies and objectives.

In contrast, in FY 2006, FTA's Office of Safety and Security (in response to GAO recommendations) developed its *2006 Rail Transit Safety Action Plan*. The actions identified in this plan were the direct result of data analysis and "included safety goals and measures, such as reducing total derailments per 100 million passenger miles, major collisions per 100 million passenger trips, and total safety incidents per 10 million passenger trips. These goals and measures are clearly linked to DOT's overall strategic goal of working toward the elimination of transportation-related injuries and fatalities, including rail transit injuries and fatalities (GAO-11-199)." However, while activities were identified to improve safety performance, they were not comprehensive and, of course, did not reach beyond rail transit.

Recommendations

1. Office of Safety and Security FY Action Plan – consider reinstituting the use of the action plan and base program activities and initiatives on the analysis of safety and security data and established performance measures
2. Safety Action Plan – consider development of a safety action plan that addresses rail and bus public transportation that targets identified safety issues based on comprehensive data analysis

Level of adaptability 3

FTA has already completed similar action planning and, therefore, the above practices are very adaptable. Considerations for adaptability would be the resources available to increase data analysis efforts and the programming of budgets to support identified safety initiatives and activities. In addition, if FTA expands to bus transit, it would need to consider the availability of resources to capture causal data to support data-driven performance improvement strategies and measures.

Practice – Process used to determine data to be collected

As mentioned above, NHTSA established a strategic management group to develop its internal strategic plans. NHTSA's strategic plans are completely data driven, which in turn drive all of the agency's programs and activities including proposed standards and legislation. All collected data is analyzed and made available to those individuals within NHTSA responsible for strategic planning.

Because of NHTSA's data-driven nature, the specific data that is requested and analyzed is of critical importance to the agency and the execution of programs. NHTSA has developed an element of the strategic planning process that focuses on assessing the specific data points collected and assess the need to revise reporting and collection criteria. At least yearly, the strategic management group and agency executives meet to

review safety trends and issues to determine if changes in data collected are necessary. This process ensures that data collected helps the agency build a dataset from which it can most effectively monitor safety, develop technical assistance and identify appropriate research topics. By regularly reviewing the data collected, NHTSA is able to ensure the following:

- Maximize the effectiveness of resources devoted to reporting data by confirming the relevance and utility of requested information
- Emerging safety and security trends are addressed through the collection of appropriate measures
- Maximize the value of collected data by confirming its role in the development or monitoring of performance measures
- Performance of agency safety initiatives can be measured
- Eliminate opportunities for collection of data that is not used by the agency

Gap Rating 4

Phase I of FTA's *Safety and Security Data Management Program* identified that there are some safety and security data that are not used or used infrequently. The Phase I report pointed out that "data reporting on behalf of the industry and data collection on behalf of FTA can be burdensome. Seldom-used data that does not support FTA programs or objectives creates unnecessary effort."

Additionally, Phase I recommended that FTA conduct more thorough trend analyses that can then be used to better direct FTA resources and technical assistance efforts. GAO recommendations also identify FTAs need to develop performance indicators to support improved safety and security performance in the industry and to track FTA's program performance.

Recommendations

1. Data Management Working Group (DMWG) – consider initiating a comprehensive safety and security data point review to catalog all safety measures captured by the National Transit Database and other safety data collection mechanisms. This review should identify the source(s) for each data point, the use for each data point (current and planned), and link to current FTA safety and security performance measure.

Level of adaptability 4

In 2009, FTA established the DMWG as a subgroup of the Strategic Planning Working Group (SPWG). Developing a process to determine safety data to be collected is rated as an adaptable practice for FTA provided the following considerations are reviewed and managed:

- Availability of DMWG resources to provide a comprehensive assessment of safety and security data points.
- Commitment of executive leadership to entrench this process and an annual exercise to preserve data utility into the future.

Federal Railroad Administration

	Gap Rating	Level of Adaptability
Practice 7 – Strategic planning and programming	4	4
Practice 14 – Data reporting – website	3	4
Practice 26 – Data collection – near miss reporting	4	3

The Federal Railroad Administration (FRA) Office of Railroad Safety's mission is to promote and regulate safety across the Nation's railroad industry. The Office includes 400 Federal safety inspectors operating out of eight FRA regional offices. Additionally, the Office oversees and participates on the Railroad Safety Advisory Committee, which provides industry recommendations on various regulatory issues.

The Office of Railroad Safety collects and analyzes rail-related accident data from the railroads and converts this information into tables, charts, and reports useful to the industry. The Office also monitors the train accidents in real time and investigates serious events to determine their cause and compliance with existing safety laws and regulations.

Practice - Strategic planning and programming

In 2005, following several major rail accidents, FRA launched its *National Rail Safety Action Plan*, an effort to address the most critical safety issues across the Nation's rail system. The document established a set of safety objectives and defined a schedule for achieving the desired safety improvements. The *Action Plan's* goals included:

- Targeting the most frequent, highest-risk causes of train accidents
- Focusing FRA oversight and inspection resources more precisely
- Accelerating research efforts that have the potential to mitigate the largest risks.

FRA published *National Rail Safety Action Plan Final Report* in May 2008. This document focused on assessing rail industry progress over the course of the plan period, (2004 to 2007). FRA was able to demonstrate the effectiveness of its intervention activities by documenting a 25% decrease in train accidents during the study period.

Gap Rating 4

During Phase I of FTA's *Safety and Security Data Management Program* initiative, it was recommended that FTA conduct more thorough trend analyses that can then be used to better direct FTA resources and technical assistance efforts. The Phase I effort also recommended that FTA devise a standardized template to present safety and security data and analysis results in a format suited for executive leadership.

Recommendation

See recommendation under NHTSA for development of safety action plan.

Level of adaptability 4

FTA has developed and maintains a safety and security data collection module within the National Transit Database (NTD). Transit agencies are required to report major safety and security event data to the NTD, as well as minor data submitted in summary format. Additionally, FTA maintains programmatic and compliance-related safety data through its Project Management Oversight (PMO) Program and State Safety Oversight (SSO) Audit Program that are the source of many valuable safety-culture related performance indicators. FTA is well positioned to initiate the development of data tool that will address identified FTA needs and achieve DOT's Open Government goals of transparency, participation, and collaboration.

The process used by FRA to develop a Rail Safety Action Plan is rated as adaptable for FTA because of the datasets immediately available to FTA personnel and because of the preliminary efforts already underway through the SSO Program to establish performance measures for traditional safety performance aspects as well as indicators of safety culture.

Practice - Data reporting - website

The FRA began developing and tracking safety performance goals under the Government Performance and Results Act (GPRA) in the mid-1990s. At the current time, FRA tracks six goals to meet the Department of Transportation's (DOT) objectives of reducing transportation-related accidents and reducing serious hazardous-materials incidents, including:

- Grade crossing incidents
- Human factors train accidents
- Track-caused train accidents
- Equipment-caused train accidents
- Signal/miscellaneous train accidents
- Non-accident hazmat releases

FRA monitors industry safety performance according to these performance measures and posts monthly performance updates on these six measures to its website.

The FRA, Office of Safety Analysis has developed an online portal, making FRA safety data accessible through a variety of user-defined queries. FRA established the site for the purpose of making railroad safety information readily available to a wide audience, including FRA personnel, railroad companies, research and planning organizations, and the public. Users can access railroad safety data including accidents and incidents, inspections, and highway-rail crossing data. Users can also access a number of safety database files, publications and forms, and view current statistical information on railroad safety.

Gap Rating 3

FTA data users (including transit agencies, state oversight personnel, federal agency staff, congressional staff, academia, the media, and the general public) have increasingly expressed the desire for access to safety and security data. Transit agency staff have requested additional access and tools to support the implementation of FTA-recommended practices such as safety and security performance measurement. By developing a clear methodology for performance measurement and coupling that with an industry-facing web interface/dashboard presenting collected safety data, FTA can provide the transit industry with a roadmap for safety performance improvement and the tools to get there.

This practice also parallels the objectives of DOT's Open Government Plan drafted in 2010. The plan and supporting methodology identify DOT goals of increasing transparency, participation, and collaboration between the Federal government and citizens. The plan further presents the following DOT objectives:

- Increase Agency Transparency and Accountability by
  - Presenting in a clear manner DOT information about programs and objectives; and
  - Continuing to release DOT data in a timely manner by proactively making it available online in consistent, open formats

Recommendation

1. Internet access to safety and security data – consider providing a comprehensive and timely data set for the industry and general public with tools for queries, filtering, and downloading

Level of adaptability 4

FTA has developed and maintains a safety and security data collection module within the National Transit Database (NTD). Transit agencies are required to report major safety and security event data to the NTD, as well as minor data submitted in summary format. Additionally, FTA maintains programmatic and compliance-related safety data through its Project Management Oversight (PMO) Program and State Safety Oversight (SSO) Audit Program that are the source of many valuable safety-culture related performance indicators. FTA is well positioned to initiate the development of data tool that will address identified FTA needs and achieve DOT's Open Government goals of transparency, participation, and collaboration.

The process used by FRA to develop an online repository for performance measure reports and detailed safety data is rated as an adaptable practice for FTA provided the following considerations are reviewed and managed:

- Commitment of FTA leadership to make publicly available agency- and incident-specific safety data.

- Availability of resources including internal personnel and contracted services, if necessary to develop performance measure summary report formats and an online data portal.

Practice – Data collection – near miss reporting

According to FRA statistics, the Nation's railroad accident rate decreased markedly until 1985. Since that time the national railroad accident rate has remained stable. FRA has made assumptions that technology and process innovations have approached the limits of their capacity to improve railroad safety and that a human factors-based approach may be needed to prompt further safety improvement in the railroad industry.

In 2002, FRA began developing a Confidential Close Call Reporting System (C^3RS) to reduce the accident rate more quickly. FRA benchmarked existing close call reporting systems and built on concepts that have been tested and implemented in other industries but that have not been used in the railroad industry previously. The issue most important to the industry is the protection of submitted data. FRA's largest obstacle in the development of the system has been ensuring the confidentiality of close call information submitted by railroad employees. Without sufficient confidentiality assurances, the viability of such a reporting system is significantly compromised.

FRA has requested specific legislation that would protect reported information from legal discovery, and a review and study are currently underway to assess the potential for such action. In lieu of specific legislation protecting submitted data, FRA identified two parallel solutions that capitalize on existing sensitive data reporting capabilities at other Federal agencies. FRA sought and secured partnerships with the Bureau of Transportation Statistics (BTS) and the National Aeronautics and Space Administration (NASA). Both of these partners have established mechanisms for capturing and protecting close call data.

BTS, a part of the Office of Management and Budget (OMB), protects submitted data under the authority provided to OMB through the Confidential Information Protection and Statistical Efficiency Act (CIPSEA) of 2002. NASA's process does not hinge on specific legislative authority for protecting data, but instead includes a mechanism for "scrubbing" submissions to eliminate all sensitive information.

Initially, FRA developed a small planning committee made up of key stakeholders to help develop the (C^3RS). The committee worked to help develop a model memorandum of understanding (MOU) that outlines the relationship and agreement between FRA and participating railroads. Upon completion of the model MOU, FRA solicited volunteer railroads to participate. Once a railroad volunteers to participate in the system, FRA then has to modify the model MOU to address regionally specific issues.

Gap Rating 4

In 2011 GAO released a report titled: *FTA Programs Are Helping Address Transit Agencies' Safety Challenges, but Improved Performance Goals and Measures Could Better Focus Efforts* (GAO 11-199). GAO stated that the level of safety culture—awareness of and organizational commitment to the importance of safety—varies across the transit industry and is low in some agencies and pointed to low safety culture as a contributing factor to severe rail transit safety impacts. GAO recommended that the FTA Administrator create a set of clear and specific performance goals and measures that (1) are aligned with the department's strategic safety goals and identify the intended results of FTA's various safety efforts and (2) address important dimensions of program performance. In its report, GAO recommends that FTA:

- Develop non-punitive safety reporting programs
- Increase efforts to encourage a strong safety culture
- Formulate a national approach to staffing and training
- Increase technical training
- Increase federal support for training

Recommendation

1. Initiate talks with FRA and NASA representatives to gather greater detail on necessary steps for development of a non-punitive safety reporting system.
2. The DMWG should formulate a shortlist of first steps, including coordination with FTA legal and outreach to agencies with existing overlap with the FRA pilot system and the FTA concept.

Level of adaptability 3

The development of the C^3RS has taken the FRA nearly ten years. The agency has overcome significant hurdles and is still trying to overcome existing challenges with the two models in use (NASA and BTS). FTA is in a fortunate position, with access sister agency expertise related to non-punitive reporting systems, as well as existing relationship with participants in the FRA system: New Jersey Transit. While these advantages are valuable, significant legal challenges lay ahead before such a system could be launched. These include coordination with NASA or other Federal agencies that could support such a structure, solicitation of pilot participants, negotiations with participant agency employee associations, and development of a technical solution to house data.

The development of a pilot non-punitive safety reporting system is rated as an adaptable practice for FTA provided the following considerations are reviewed and managed:

- Commitment of FTA leadership to launch a pilot program that may take several years of coordination prior to launch.
- Availability of resources including internal personnel and contracted services, if necessary, to develop the non-punitive safety reporting system.

Federal Motor Carrier Safety Administration

	Gap Rating	Level of Adaptability
Practice 10 – Development of a safety data quality program	4	3
Practices 11, 13 – Safety performance analysis and presentation	4	3
Practice 24 – Data collection: IT systems and solutions	4	4

The primary mission of the Federal Motor Carrier Safety Administration (FMCSA) is to reduce crashes, injuries and fatalities involving large trucks and buses. As stated on their website, to carry out its mission, FMCSA:

- Develops and enforces data-driven regulations that balance motor carrier (truck and bus companies) safety with industry efficiency;
- Harnesses safety information systems to focus on higher risk carriers in enforcing the safety regulations;
- Targets educational messages to carriers, commercial drivers, and the public; and
- Partners with stakeholders including Federal, State, and local enforcement agencies, the motor carrier industry, safety groups, and organized labor on efforts to reduce bus and truck-related crashes.

FMCSA currently implements numerous information technology (IT) tools to support the collection, analysis, intervention and reporting of safety data. FMCSA maintains the Motor Carrier Management Information System (MCMIS), a data management system that collects and houses information on the safety fitness of commercial motor carriers and hazardous material shippers subject to the Federal Motor Carrier Safety Regulations (FMCSR) and the Hazardous Materials Regulations (HMR).

Practice - Development of a safety data quality program

FMCSA initiated its State Safety Data Quality (SSDQ) Program in March 2004 to increase the quality of State-reported motor carrier safety data. FMCSA developed the SSDQ program to address concerns identified by the Governmental Accountability Office (GAO) and the Office of the Inspector General (OIG) by creating progressive standards for measuring safety data quality. The SSDQ program operates under an annual budget of $6 million dollars, half of which is dedicated to grants issued by FMCSA to support improved data reporting at State entities.

The SSDQ program rates States on a monthly basis according to the quality of State-reported crash and roadside inspection data submitted to the MCMIS. FMCSA has developed the *Methodology for State Safety Data Quality*[2] for evaluating the quality of

[2] http://www.ai.fmcsa.dot.gov/DataQuality/DataQuality.asp?redirect=methodology.asp

State-reported safety data. The program evaluates the following aspects of submitted safety data:

- Completeness
- Timeliness
- Accuracy
- Consistency

The SSDQ program assigns an Overall State Rating based on nine quality measures and a Crash Rating based on five quality measures. FMCSA's *Methodology for State Safety Data Quality* defines the quality measures and the formulae for calculating the Overall State Rating and Crash Rating. FMCSA makes the methodology document publicly available on a web page dedicated to the SSDQ program.

FMCSA designed the SSDQ Program as a progressive tool that applies additional quality measures over time to increase scrutiny as quality improves; FMCSA continually raises the data quality bar. When launched in March 2004, the program included five quality measures to determine Overall State Ratings. Over the next three years, through publication of quality ratings through the FMCSA website, FMCSA data quality grants, and State responsiveness, State ratings improved significantly. Beginning in September 2007, the SSDQ Program introduced two additional measures, initially lowering many Overall State Ratings. Over the next two years, States worked to address the new, larger set of SSDQ measures and data quality improved as before. Beginning in March 2011, the SSDQ program launched two additional measures, raising the bar continuing the progressive nature of the program's data improvement mission.

FMCSA has emphasized the value that data transparency affords data quality by creating a webpage devoted to the SSDQ program. FMCSA uses this platform to showcase a data quality dashboard. Monthly Overall State Ratings are accessible for each State dating back to June 2004. Any public web user can access the dashboard tool to query SSDQ ratings. The system presents data quality ratings in both tabular and map formats, providing the public with easy access to SSDQ data. Using this approach, FMCSA is able to quantify data quality improvement and also to identify struggling States as well as areas of data quality that require additional focus. FMCSA's combination of clear methodology, technical assistance (grant programs), progressive performance measures, and a transparent user dashboard interface has resulted in improved motor carrier safety data quality since the program's inception in 2004.

Gap Rating 4

During Phase I of FTA's *Safety and Security Data Management Program* initiative, it was identified that FTA safety and security data often lacked sufficient validation. Phase I also acknowledged that FTA's National Transit Database provided minimal validation resources to evaluate safety and security data collected prior to 2009. Additionally, in January 2011, the GAO issued a recommendation for FTA to develop additional internal controls to improve rail safety data quality.

Recommendations

1. Safety and Security Data Quality Program - FTA should investigate the development of a sustainable program that sets targets and emphasizes the use of industry-facing tools, such as a dashboard, to improve the quality of data collected from transit agency reporters

Level of adaptability 3

The process used by FMCSA to develop SSDQ program is rated as a highly adaptable practice for FTA provided the following considerations are reviewed and managed:

- Commitment of management to make public quality measures of State and/or grantee data submissions
- Availability of resources including internal personnel and contracted services, if necessary

Practice - Safety performance analysis and presentation

FMCSA has developed its Safety Measurement System (SMS) to be one of the major tools used by the agency to measure the safety of individual motor carriers and commercial motor vehicle drivers, and to identify and track safety problems.

The SMS builds on the foundation of the SafeStat measurement system, a tool developed at the John A. Volpe National Transportation Systems Center in Cambridge, MA, under a project plan agreement with the Federal Highway Administration‘s (FHWA) Office of Motor Carriers, FMCSA‘s predecessor. The SMS incorporates new requirements for identifying specific types of unsafe behaviors and expands the use of on-road safety violation data. This advancement in specificity allows FMCSA to execute a more targeted and specialized set of interventions to address and to correct unsafe behaviors.

In 2008, FMCSA launched an Operational Model Test of Comprehensive Safety Analysis (CSA) Initiative, which included the use of SMS to identify and monitor unsafe carrier and Commercial Motor Vehicle (CMV) driver behavior in nine states. FMCSA finalized version 2.1 of the SMS in December 2010, which includes revisions based on feedback from the Operational Model Test. FMCSA is committed to a continuous SMS improvement process based on results and feedback.

The SMS quantifies the on-road safety performance of individual entities to:

- Identify entities for interventions
- Determine the specific safety problems that an entity exhibits
- Monitor safety problems throughout the intervention process
- Support FMCSA’s Safety Fitness Determination (SFD) process

The SMS ranks an entity's relative performance in the following areas:

- Unsafe Driving
- Fatigued Driving
- Driver Fitness
- Controlled Substances/Alcohol
- Vehicle Maintenance
- Cargo-Related
- Crash History

FMCSA has developed a formalized methodology for the calculation of each of these individual measures and has documented this in its Safety Measurement System (SMS) Methodology, Version 2.1. The methodology document provides a detailed account of the formulae developed to rank entities as well as examples of SMS reporting outputs.

FMCSA seeks to empower carriers and other firms such as shippers and insurers involved with the motor carrier industry to make safety-based business decisions. By publishing SMS results via the internet, FMCSA provides evaluated carriers with access to SMS findings in order to assess their weaknesses in a variety of safety areas. This transparency provides stakeholders with valuable safety information and encourages improvements in motor carrier safety.

Gap Rating 4

In 2011, the GAO released a report titled: *FTA Programs Are Helping Address Transit Agencies' Safety Challenges, but Improved Performance Goals and Measures Could Better Focus Efforts* (GAO 11-199). GAO found that the largest rail transit agencies face challenges in trying to ensure safety on their systems. GAO stated that clear and specific performance goals and measures are critical to improving transit safety and tracking results.

FTA's Office of Safety and Security has recognized this need and has already initiated the development of draft safety and security performance measures for its State Safety Oversight Program and rail transit community. However, to date FTA has not developed a comprehensive methodology for its performance measure development and reporting process. The FMCSA SMS model provides a clear model for establishing effective safety performance measures based on available datasets and creating a transparent web-based interface for industry stakeholder access. Additionally, the SMS process is itself a performance-based tool with a system for ongoing revision to the ranking and analysis system based on industry feedback and safety analyses.

Additionally, FTA data users (including transit agencies, state oversight personnel, federal agency staff, congressional staff, academia, the media, and the general public) have increasingly expressed the desire for access to safety and security data. Transit agency staff have requested additional access and tools to support the implementation of FTA-recommended practices such as safety and security performance measurement. By

developing a clear methodology for performance measurement and coupling that with an industry-facing web interface/dashboard presenting collected safety data, FTA can provide the transit industry with a roadmap for safety performance improvement and the tools to get there.

Adding to this practice's alignment with Agency needs is DOT's Open Government Plan drafted in 2010. The plan and supporting methodology identify DOT goals of increasing transparency, participation, and collaboration between the Federal government and citizens. The plan further presents the following DOT objective:

- Increase Agency Transparency and Accountability by:
  - Presenting in a clear manner DOT information about programs and objectives; and
  - Continuing to release DOT data in a timely manner by proactively making it available online in consistent, open formats, while assuring accuracy and protecting privacy, security, and confidentiality.

Recommendations

See recommendation 1 under Transport Canada's practice "Relationship between data management and strategic planning."

1. Web-based display of safety and security performance measures - FTA should investigate the development or a web-based interface to provide the transit community with data that promotes the development and monitoring of safety performance measures

Level of adaptability 3

FTA has developed and maintains a safety and security data collection module within the National Transit Database (NTD). Transit agencies are required to report major safety and security event data to the NTD, as well as minor data submitted in summary format. Additionally, FTA maintains programmatic and compliance-related safety data through its Project Management Oversight (PMO) Program and State Safety Oversight (SSO) Audit Program that are the source of many valuable safety-culture related performance indicators. FTA is well positioned to initiate the development of data tool that will address identified FTA needs and achieve DOT's Open Government goals of transparency, participation, and collaboration.

The process used by FMCSA to develop an a process and formal methodology for safety performance measurement coupled with FMCSA's online system for reporting these data to the industry and public is rated as an adaptable practice for FTA provided the following considerations are reviewed and managed:

- Commitment of FTA leadership to make publicly available agency- and incident-specific safety data.

- Availability of resources including internal personnel and contracted services, if necessary to develop performance measure summary report formats and an online data portal.

Practice – Data collection – IT system and solutions

As discussed above, FMCSA has developed its Safety Measurement System (SMS) to be one of the major tools used by the agency to measure the safety of individual motor carriers and commercial motor vehicle drivers, and to identify and track safety problems.

One key aspect of the SMS is its incorporation of data submitted by both State and local sources. FMCSA has created a reporting mechanism and data management system that can handle both levels of users and successfully uses the data to generate on-road safety performance ratings for motor carriers in the United States. FMCSA's public-facing portal ensures a level of transparency that empowers carriers and other firms such as shippers and insurers involved with the motor carrier industry to make safety-based business decisions.

Gap Rating 4

In 2011, the GAO released a report titled: *Rail Transit: Reliability of FTA's Rail Accident Database* (GAO-11-217R). GAO identified a number of discrepancies between data reported to the NTD and the SSO Program and also highlighted the duplicative nature of the two reporting systems. GAO concluded its report by making the following two recommendations:

- Develop and implement appropriate internal control activities to ensure that the data entered into SSO agency reporting templates are accurate. To accomplish this, the Administrator should consider data entry design features to ensure consistency in reporting across rail transit agencies.

- Incorporate appropriate internal control over the method used to review and reconcile SSO agency data with other data sources to better ensure accuracy and reliability of the SSO Rail Accident Database.

FTA's Office of Safety and Security immediately responded to these recommendations by establishing strict internal controls for all data reporting mechanisms, as well as by drafting a detailed procedure for updating the SSO data set and resolving identified data issues. FTA also concluded an in-depth Safety & Security Legacy Data Project that looked back at all rail transit safety data reported to NTD and the SSO Program from 2003 to 2009 and made recommendations to both datasets, and solicited approval from all rail transit agencies to make the requested changes.

However, these initial responses do not get to the heart of the issues identified by GAO: duplicative FTA reporting mechanisms for safety and security data.

Recommendations

FTA should remove redundancy in incident information reported through both the SSO Program and NTD program by establishing a single safety data online reporting system. This new reporting system should move beyond the current NTD capabilities to ensure it addresses reporting requirements of the SSO Program, including easy document uploading, causal data, corrective action tracking and analysis reporting.

Ideally, this system would stand alone from the existing database framework of NTD and would allow for control by the FTA Office of Safety & Security. By moving to such an arrangement, FTA could successfully move the NTD back to its key mission of annual financial and service data reporting. FTA would also ensure that its safety and security data experts have control of its primary source for collecting safety and security data.

The new system should include all existing requirements for NTD reporting (timeframes, incident details, impacts by person type, etc.) but must also address the needs of the SSO Program by incorporating mechanisms for causal reporting, state user review and approval, quick document uploads, data analysis, and report generation.

Level of adaptability 4

In response to the recommendations of GAO-11-217R, FTA has already begun investigating the consolidation of the NTD and SSO reporting processes. FTA's office of Budget and Policy has reported that money has already been committed to the development of such a system. This consolidation is rated as an adaptable practice for FTA provided the following considerations are reviewed and managed:

- The new system is built outside of the existing, antiquated framework of the National Transit Database.
- The new system satisfies reporting requirements established by the National Transit Database and the State Safety Oversight Program.
- The new system allows for easy document uploads, corrective action tracking, and report generation.
- The new system uses a tiered user structure, allowing States to approve rail transit agency data.
- The FTA Office of Safety and Security should manage or share in the management of the new system.
- The development of the system should include review of bus (and other non-rail) data to maximize effectiveness of collected information for all modes.

Rail Safety and Standards Board

	Gap Rating	Level of Adaptability
Practice 15 – Data communication and presentation	4	2

The Rail Safety and Standards Board (RSSB) is an independent, not-for-profit company owned and funded by major stakeholders in the Great Britain railway industry. RSSB employs nearly 250 staff, including experts in a wide range of technical disciplines and other professionals such as project managers, meeting facilitators and support staff. RSSB is funded by levies on its members and grants for research from the United Kingdom (UK) Department for Transport (DfT). RSSB provides support and facilitation for a wide range of cross-industry activities through working groups and committees. RSSB's core functions include:

- Measuring safety performance
- Analyzing risk.

RSSB develops an Annual Safety Performance Report (ASPR) that examines the range of risk experienced by passengers, the railway workforce and members of the public. The document seeks to provide decision-makers with wide-ranging analyses of railway safety performance. The report also includes sections that chart progress against the RSSB Strategic Safety Plan trajectories for safety indicators and targets.

The ASPR represents a tremendous volume of data analysis. The document presents trends in incident data for a broad selection of safety topics from 2001 to present. RSSB has deftly navigated many of the most challenging safety data analysis obstacles in this detailed report, consistently focusing on how to most effectively and accurately depict trends in safety risk. To address annual fluctuations in low frequency statistical categories, RSSB utilizes rolling averages to more accurately chart safety performance. Additionally, RSSB utilizes near miss data to obtain a full understanding of underlying system risks. Throughout, RSSB uses statistical significance testing to identify where perceived changes in trends meet a 95% confidence level.

Throughout the document, RSSB uses analysis concepts such as risk profiles to identify what group is at risk from a specific concern and what group is causing the risk. RSSB has also developed a system for combining fatality total with weighted injuries (based on severity) to calculate a single factor describing overall accident impact severity. By combining these innovative safety performance analysis methods with clear and engaging graphics, RSSB produces a tremendously valuable report for the UK railway industry.

Gap Rating 4

In 2011, the GAO released a report titled: *FTA Programs Are Helping Address Transit Agencies' Safety Challenges, but Improved Performance Goals and Measures Could Better Focus Efforts* (GAO 11-199). GAO found that the largest rail transit agencies face

challenges in trying to ensure safety on their systems. GAO stated that clear and specific performance goals and measures are critical to improving transit safety and tracking results.

FTA's Office of Safety and Security has recognized this need and has already initiated the development of draft safety and security performance measures for its State Safety Oversight Program and rail transit community. However, to date FTA has not developed a comprehensive methodology for its performance measure development and reporting process. The FMCSA SMS model provides a clear model for establishing effective safety performance measures based on available datasets and creating a transparent web-based interface for industry stakeholder access. Additionally, the SMS process is itself a performance-based tool with a system for ongoing revision to the ranking and analysis system based on industry feedback and safety analyses.

Additionally, FTA data users (including transit agencies, state oversight personnel, federal agency staff, congressional staff, academia, the media, and the general public) have increasingly expressed the desire for access to safety and security data. Transit agency staff have requested additional access and tools to support the implementation of FTA-recommended practices such as safety and security performance measurement. A comprehensive reporting model such as the document produced by RSSB would afford the US transit industry with a tremendous boost in performance measurement capabilities and framework.

Recommendation

See recommendations 1 and 2 under FMCSA practice "Safety performance analysis and presentation."

Level of adaptability 2

RSSB pulls safety data from a variety of sources and benefits from strong and mature datasets that are extremely comprehensive and detailed. This allows RSSB to perform extremely detailed analysis on almost any safety and security issue that may face the UK railway community. FTA does not have this advantage, and while it does facilitate safety and security data reporting through the National Transit Database and the State Safety Oversight Program, these data sets are not as comprehensive as the RSSB data and do not yet provide easy access for data manipulation and analysis.

Bay Area Rapid Transit District

	Gap Rating	Level of Adaptability
Practice 16 – Data presentation - report	3	3

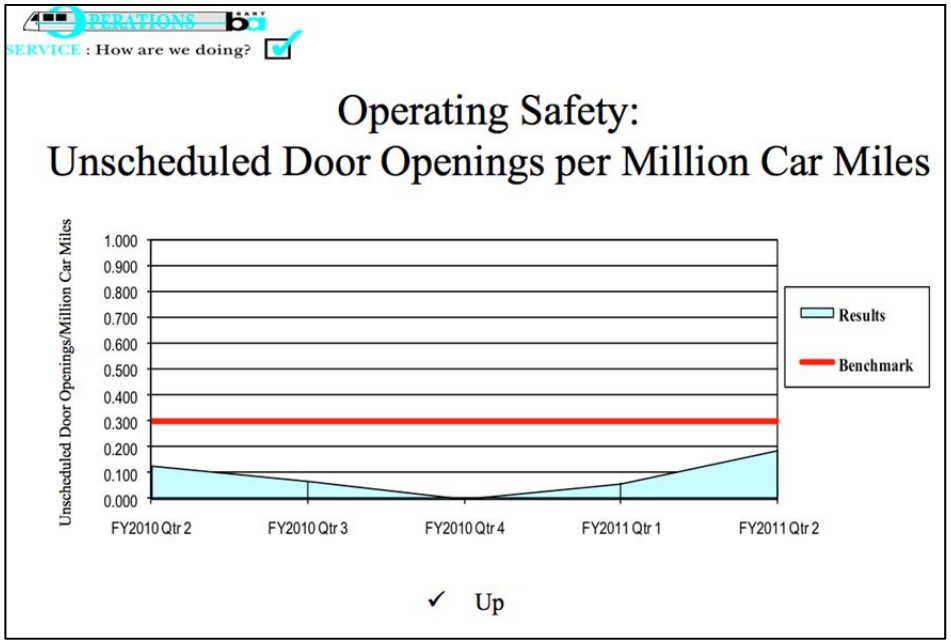
The Bay Area Rapid Transit District (BART) is a heavy rail transit system serving the San Francisco Bay Area. BART operates five lines on 104 miles of track serving 44 transit stations across four counties. BART provides an average weekday ridership of 327,629 passengers, making it one of the busiest rail transit systems in the country.

The BART Safety Department produces a Quarterly Performance Report (QPR) for internal distribution to BART leadership. The QPR documents a range of safety performance measures charted by year-over-year change to depict an increase or decrease in safety performance. Safety performance measures are organized and tracked according to the following categories:

- Patron safety incidents
- Employee safety incidents
- Operations safety incidents

The QPR also includes a number of leading indicators to measure rail transit safety performance, including:

- Unscheduled door opens (see sample slide below)
- Rule violations



The Safety Department presents detailed charts within the QPR and uses the analyses to justify resource allocations for safety initiatives, research efforts, and other targeted interventions.

Gap Rating 3

During Phase I of FTA's *Safety and Security Data Management Program* initiative, the need for a standardized template to present safety and security data and analysis results in a format suited for executive leadership was established through interviews with FTA representatives.

Recommendation

1. Standardized reports for executive management – consider the development of templates to guide the reporting of key safety and security performance data to FTA's executive management team

Level of adaptability 3

The process used by BART to develop a quarterly - or otherwise standard ongoing - safety performance report is rated as an adaptable practice for FTA provided the following considerations are reviewed and managed:

- Commitment of FTA headquarters leadership to establish nation-wide safety and security performance measures that can be established, disseminated, and monitored consistently.
- Availability of resources including internal personnel and contracted services, if necessary to provide critical performance measurement expertise

Washington Metropolitan Area Transit Authority

	Gap Rating	Level of Adaptability
Practice 21 – Management of KPIs	4	3

The Washington Metropolitan Area Transit Authority (WMATA) operates Metrorail, serving 86 stations over 106 miles of track, Metrobus, providing twenty-four hour service with 1,500 buses, and MetroAccess, a paratransit service providing about 1.5 million trips per year. Metro operates under the Metro Board of Directors, an eight-member body that determines policy and provides oversight for the funding, operation, and expansion of transit facilities.

In 2007, WMATA's General Manager, in conjunction with the Metro Board of Directors, developed a *Strategic Framework*[3] that includes five strategic goals and twelve strategic objectives. Since the development of this framework, WMATA has focused efforts on developing performance measures and targets to assess agency progress toward the established strategic goals. Under this process the WMATA General Manager is accountable to the Metro Board for meeting performance measure targets developed to realize the twelve strategic objectives.

Following the creation of the Strategic Framework, WMATA established an Office of Performance to help ensure the agency creates appropriate performance measures aimed at achieving the established strategic goals and objectives. Using five full-time employees, the Office of Performance utilizes extensive performance measurement expertise to support department heads and staff to identify what available data should be used to measure agency progress toward strategic objectives.

WMATA's Office of Performance monitors established performance measures and compiles data into regular and special reports the Metro Board. One such report, the *Vital Signs* Report, is delivered to the Metro Board on a monthly basis to report Metro's actual performance in key areas of safety, security and service reliability. The Office of Performance works closely with individual WMATA departments to define within the report:

- Current status of key performance indicators (KPI)
- Why performance is changing
- What is working well
- What is not working well
- Areas in need of improvement
- Actions to achieve targets

[3] http://www.wmata.com/about_metro/mission.cfm

The Vital Signs Report includes concise one-page snapshots of each KPI. The Office of Performance makes a companion scorecard[4] available as an online dashboard on Metro's web page where the public can access these KPI and other measures at any time. In addition, the Vital Signs Report and all KPI backing data are made available to public online.

To help ensure that WMATA achieves is strategic goals and objectives, the Office of Performance also encourages WMATA departments to develop *Execution Plans*. These documents define how the department will move to meet goals. For each applicable goal and objective defined within the strategic framework, the department will define specific measures used to assess performance, describe the actions that are required to meet the established targets, and identify the individuals accountable for carrying out each action. The Office of Performance provides assistance to departments as they develop these plans and provide critical performance measure expertise to the department heads and staff as they plan is created.

The Office of Performance also serves as a resource for WMATA departments by facilitating workshops on performance measurement and providing direct assistance to address specific data measurement needs or concerns. Office of Performance staff provide WMATA employees with data measurement concepts and practices that they can marry with department-specific knowledge and experience to create useful and appropriate performance measures that describe performance realities addressed by the WMATA strategic goals and objectives.

Gap Rating 4

In 2011, the GAO released a report titled: *FTA Programs Are Helping Address Transit Agencies' Safety Challenges, but Improved Performance Goals and Measures Could Better Focus Efforts* (GAO 11-199). GAO found that the transit industry faces challenges in trying to ensure safety. GAO stated that clear and specific performance goals and measures are critical to improving transit safety and tracking results. Additionally, GAO stated that the level of safety culture—awareness of and organizational commitment to the importance of safety—varies across the transit industry and is low in some agencies.

FTA's Office of Safety and Security has recognized these needs and has already initiated the development of draft safety and security performance measures for its State Safety Oversight Program and rail transit community. However, to date, FTA has not proposed requirements or developed recommended practices for transit agencies related to the performance measurement. Both GAO and FTA agree that the alignment of performance measurement data with strategic goals is a critical function for the development of safety culture. When FTA defines specific performance goals that identify the direct results its safety activities are trying to achieve and the related measures that the agency will use to

[4] http://www.wmata.com/about_metro/scorecard/index.cfm?

track and demonstrate its progress in achieving those results, management commitment is ensured and safety culture is reinforced.

Recommendation

See recommendation 2 under NHTSA's practice "Use of data to guide programs and initiatives"

See recommendation 1 under Transport Canada's practice "Relationship between data management and strategic planning"

1. Internal safety and security performance guidance for FTA offices and Regions – consider developing and implementing technical assistance to HQ and Regional Offices to support the use and tracking of established performance measures for activities they are tasked to carry out

Level of adaptability 3

The process used by WMATA to develop an Office of Performance is rated as an adaptable practice for FTA provided the following considerations are reviewed and managed:

- Commitment of FTA headquarters leadership to establish nation-wide safety and security performance measures that can be established, disseminated, and monitored across FTA regions.
- Availability of resources including internal personnel and contracted services, if necessary to provide critical performance measurement expertise

Metro Transit

	Gap Rating	Level of Adaptability
Practice 23 – Relationship of KPIs to priorities and outcomes	4	3

Metro Transit is one of the Nation's largest transit systems, providing the Twin Cities an transit network of buses, light rail and commuter trains as well as resources for those who carpool, vanpool, walk or bike. Metro Transit operates the Hiawatha light-rail line, Northstar commuter rail line and 123 bus routes. The agency provides approximately 90% of the 78 million annual bus trips in the Twin Cities and supplies an average of 250,000 weekday bus and train boardings.

Metro Transit became acutely aware of the hazard of distracted driving in 2004. While investigating a bus collision with a cyclist, the agency determined that operator was using a cell phone at the time of the accident. The investigation outcomes prompted Metro Transit to launch a broad review of all policies and procedures related to distracted driving. Metro Transit developed an approach to curb distracted driving through education and measured enforcement with the goal of reducing accidents caused by all types of distracted driving.

Metro Transit took steps to develop a process for measuring the effectiveness of its initiative through the documentation of related data before and during the execution of its distracted driving program. Metro Transit identified two distinct indicators to measure program effectiveness:

- Customer complaints related to cell-phone use
- Electronic devise violations

Using this framework, Metro Transit was able to document an increasing trend in both measures prior to program execution and demonstrate a *decreasing* trend in both measures after launch. In addition, Metro Transit was able to demonstrate an overall decrease all transit accidents during the same period. By defining KPIs from available data sources to measure key safety performance – distracted driving – Metro Transit was able to clearly document program effectiveness and justify resource allocations.

Gap Rating 4

During Phase I of FTA's *Safety and Security Data Management Program* initiative, it was recommended that FTA conduct more thorough trend analyses that can then be used to better direct FTA resources and technical assistance efforts. GAO recommendations also identify FTAs need to develop performance indicators to support improved safety and security performance in the industry and to track FTA's program performance.

Recommendation

See recommendation 2 under NHTSA's practice "Use of data to guide programs and initiatives"

Level of adaptability 3

The process used by Metro Transit to develop KPIs to measure the effectiveness of safety initiatives is rated as an adaptable practice for FTA provided the following considerations are reviewed and managed:

- Availability of DMWG resources to provide programmatic analysis for the identification of initiatives and performance areas for assessment.
- Availability of resources including internal personnel and contracted services, if necessary to provide critical performance measurement expertise.

Appendix B: Documents and materials reviewed

The following list represents the material reviewed and analyzed by the team.

Document Name	Source Agency	Date
Open Government Plan V 1.2	US Department of Transportation	2010
OST Suspicious Activity Reporting Database	US Department of Transportation	2011
Strategic Plan	US Department of Transportation	4/2010
Office of Safety and Security Fiscal Year 2008 Action Plan	Federal Transit Administration	2008
Office of Safety and Security Five Year Strategic Plan FY2008 to FY2012	Federal Transit Administration	2008
Safety and Security Data Management Assessment Report - Phase I	Federal Transit Administration	8/2009
FTA Annual Performance Plan	Federal Transit Administration	2010
Bus Safety and Security Program Safety Statistics Report	Federal Transit Administration	2011 (unpublished)
Rail Safety Statistics Report	Federal Transit Administration	2010
Rail Transit Safety Action Plan	Federal Transit Administration	2006
Data Management Working Group meeting minutes	Federal Transit Administration	2010 - 2011
Transit Rail Advisory Committee for Safety meeting minutes	Federal Transit Administration	2010
Transit Rail Advisory Committee for Safety reports	Federal Transit Administration	2011 (under development)
Disaster Response and Recovery Resource for Transit Agencies	Federal Transit Administration	8/2006
Draft SSO Program Safety Performance Measures	Federal Transit Administration	2011
Drug & Alcohol Testing Program Guidelines	Federal Transit Administration	2000
FTA Order 1920.1 Emergency Notification Process	Federal Transit Administration	2011 (under revision)
FTA Transit Trends	Federal Transit Administration	2011
Curriculum Development Guidelines	Federal Transit Administration	2011 (under development)
FTA/Crisis Management Center Memorandum of Understanding	Federal Transit Administration	2011 (under development)
Congressional data requests	Federal Transit Administration	2008 - 2011
Industry (transit agency) data requests	Federal Transit Administration	2008 - 2011
Media / Public data requests	Federal Transit Administration	2008 - 2011
NTD Annual Reporting Manual	Federal Transit Administration	8/2010

Document Name	Source Agency	Date
NTD Monthly Ridership Reporting Manual	Federal Transit Administration	10/2010
NTD Safety & Security Reporting Manual	Federal Transit Administration	10/2010
Suspension of NTD S&S-50 security reporting notice	Federal Transit Administration	10/2010
SSO Annual Reporting Template	Federal Transit Administration	2011
S&S Training Strategic Plan	Federal Transit Administration	2011 (under development)
Security Perception Study	Federal Transit Administration	2001 (unpublished)
Triennial Review Data/OTRAK database	Federal Transit Administration	2011
Planning Certification Database	Federal Transit Administration	2011
TEAM Database	Federal Transit Administration	2011
Conditions and Performance Report	Federal Highway Administration	2008
Model Minimum Inventory of Roadway Elements	Federal Highway Administration	8/2007
Safety Measurement System (SMS) Methodology, Version 2.1	Federal Motor Carrier Safety Administration	12/2010
Commercial Motor Vehicle Facts	Federal Motor Carrier Safety Administration	12/2010
FMCSA Analysis and Information Database	Federal Motor Carrier Safety Administration	2011
Motor Carrier Safety Progress Report	Federal Motor Carrier Safety Administration	12/2010
COMPASS Case Study	Federal Motor Carrier Safety Administration	2010
FRA Office of Safety and Analysis Database	Federal Railroad Administration	2011
Departmental Safety Performance Measures	Federal Railroad Administration	4/2011
FRA Safety Performance Measures	Federal Railroad Administration	4/2011
FRA Confidential Close Call Reporting System MOU	Federal Railroad Administration	2011
National Rail Safety Action Plan Final Report	Federal Railroad Administration	2009
Right-of-Way Research Activities	Federal Railroad Administration	9/2008
NHTSA Fatality Analysis Reporting System	National Highway Transportation Safety Administration	2011
Annual Safety Performance Report 2009/2010	Railway Safety and Standards Board	2011
Overview of Safety Performance for 2010	Railway Safety and Standards Board	2011

Document Name	Source Agency	Date
The ORR railway management maturity model and its use in benchmarking safety and securing continued improvement	Office of Rail Regulation (UK)	2010
All Aboard, Rail Safety Strategic Plan, 2005-2010	Transport Canada	2005
Rail Safety Strategic Plan, 2010-2015	Transport Canada	2010
GAO-11-199 "Rail Transit: FTA Programs Are Helping Address Transit Agencies' Safety Challenges, but Improved Performance Goals and Measures Could Better Focus Efforts"	Government Accountability Office	1/2011
GAO-11-217R "Rail Transit: Reliability of FTA's Rail Accident Database"	Government Accountability Office	1/2011
GAO-10-414 "Improved Data Quality and Analysis Capabilities Are Needed as FAA Plans a Risk-Based Approach to Safety Oversight"	Government Accountability Office	5/2010
GAO-07-149 "The Federal Railroad Administration Is Taking Steps to Better Target Its Oversight, but Assessment of Results Is Needed to Determine Impact"	Government Accountability Office	1/2007
NTSB-R-10-003	National Transportation Safety Board	8/2010
NTSB-R-10-004-005	National Transportation Safety Board	8/2010
NTSB-R-10-006	National Transportation Safety Board	8/2010
Office of Inspector General Discussion Draft: "Challenges to Improving Oversight of Rail Transit Safety and Implementing an Enhanced Federal Role"	Office of Inspector General	5/2011
Vital Signs monthly report	Washington Metropolitan Area Transportation Authority	2010 – 2011
Metro Performance Management Pyramid	Washington Metropolitan Area Transportation Authority	2010
Metro Strategic Plan Brochure	Washington Metropolitan Area Transportation Authority	2011
Strategic Goal Performance Chart	Washington Metropolitan Area Transportation Authority	2011
GM/CEO Performance Measure Target Summary	Washington Metropolitan Area Transportation Authority	2010
WMATA Public Access to Records Policy	Washington Metropolitan Area Transportation Authority	5/2005

Document Name	Source Agency	Date
Monthly Safety Report	Metro Transit (Minneapolis)	11/2010
Goal Setting for 2011	Metro Transit (Minneapolis)	2010
Hazard Analysis of the Practice of Using Cell Phones While Operating a Transit Vehicle	Metro Transit (Minneapolis)	2010
NTD Data Analysis	Metro Transit (Minneapolis)	2010
Performance Measurement – Management Briefing	Metro Transit (Minneapolis)	2/2011
BART Quarterly Safety Statistics	Bay Area Rapid Transit District	1/2011
BART Quarterly Service Performance Review	Bay Area Rapid Transit District	2/2011
Using GIS to Identify Ped-Veh Crash Hot Spots & Unsafe Bus Stops	Center for Urban Transportation Research	2011
Transit Safety Management and Performance Measurement	Oklahoma State University	2011
Bus Safety Performance Monitoring & Analysis	Portland State University	2011 (proposed project)
Transit Safety: Analysis of TriMet Bus Collision & Non-Collision Incidents	Portland State University	11/2009
TCRP Report 137 "Improving Pedestrian and Motorist Safety Along Light Rail Alignments"	Transportation Research Board – Transit Cooperative Research Program	2009
TCRP Report 141 "A Methodology for Performance Measurement and Peer Comparison in the Public Transportation Industry"	Transportation Research Board – Transit Cooperative Research Program	2010
TCRP Report 88 "A Guidebook for Developing a Transit Performance Measurement System"	Transportation Research Board – Transit Cooperative Research Program	2003
TCRP Synthesis 80, Transit Security Update	Transportation Research Board – Transit Cooperative Research Program	2009
TCRP Web Document #18 - "Developing Useful Transit-Related Crime and Incident Data"	Transportation Research Board – Transit Cooperative Research Program	4/2000
Improving railway safety: Global metro railways' precursor and safety maturity performance	Imperial College London	2009

Document Name	Source Agency	Date
Consortium Benchmarking Methodology Guide	Awwa Research Foundation	2003
Individual & Neighborhood Determinants of Perceptions of Bus & Train Security in Chicago	Transportation Research Record: Journal of Transportation Research Board	2007

Appendix C: List of Benchmark Interviews

Date	Agency	Interviewees	Site
6/16/2011	Federal Railroad Administration	Miriam Kloeppel, *Acting Staff Director, Knowledge Management* Mary Beth Butts, *Office of Safety Analysis* Han-Lin Lee, *Office of Safety Analysis*	Phone
3/17/2011	NHTSA	Melanie O'Donnell, *Office of Government Affairs and Strategic Planning*	DOT Headquarters
3/17/2011	NHTSA	Mike Brown, *Acting Associate Administrator for Research and Program Development*	DOT Headquarters
3/17/2011	FMCSA	Betsy Benkowski, *Office of Analysis, Research and Technology*	DOT Headquarters
3/31/2011	FMCSA	Bryan Price, *Compliance, Safety and Accountability*	Phone
3/8/2011	Transport Canada	Patricia Moniz, *Analyst, Audit and Quality Assessment* Michael O'Keefe, *Manager of Financial Planning and Management*	Phone
3/8/2011	Bay Area Rapid Transit District	Len Hardy, *Chief Safety Officer*	Phone
4/14/2011	Bay Area Rapid Transit District	Lt. Kevin Franklin, *BART Police Department*	Phone
4/21/2011	Washington Metropolitan Area Transportation Authority	Amy Phillips, *WMATA Police Department* Patricia Hendrin, *Office of Long Range Planning*	Phone
3/21/2011	Chicago Transportation Authority	Amy Kovalan, *Vice President of Safety* Jessica Rio, *Audits and Analysis* Sara Schwanke, *Audits and Analysis*	Phone
4/6/2011	Central Puget Sound Regional Transit Authority	Peregrin Spielholtz, *Chief Safety Officer*	Phone
3/30/2011	Metro Transit (Minneapolis)	Mike Conlon, *Director of Bus and Rail Safety*	Phone
3/9/2011	Santa Clara Valley Transportation Authority	Nanci Eksterowicz, *Risk Manager*	Phone
3/17/2011	FTA	Keith Gates, *Office of Budget and Policy* John Giorgis, *Office of Budget and Policy*	DOT Headquarters
3/1/2011	FTA	Kimberly Goins, *Community Planner*	Phone