



2023 FTA JOINT STATE SAFETY OVERSIGHT AND RAIL TRANSIT AGENCY WORKSHOP

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Session 14

Risk-Based Inspection Panel Discussion: Data Sharing and Analysis

Data Management & Analysis

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RAIL

MOVING AMERICA
FORWARD



FTA Workshop

Partnership - Federal Railroad Administration (FRA), Federal Transit Administration (FTA), and State Safety Oversight Agency (SSOA)

Office of Research, Data, and Innovation – RDI-12

Content Outline

This presentation will be broken down into 5 main categories:

1. How FRA collects data
2. How FRA analyzes data
3. How FRA uses data analysis to prioritize inspections
4. Guidance for inspectors
5. Benefits of data-driven inspections (why collecting and sharing the data is valuable)

How FRA collects data - Forms (reported by the railroads) and inspection data

6180.3 - Hours of Service Report - Railroads
6180.14 - False Proceed Signal Report
6180.49a (Fillable version) - Locomotive Insp. & Repair Record
6180.54 - Rail Equipment Accident/Incident
6180.55 - Injury/Illness Summary
6180.55a - Injury/Illness Continuation Sheet
6180.56 - Annual Report of Hours & Casualties
6180.57 - Hwy-Rail Accident/Incident
AIRG - Accident Incident Report Generator Request Form
6180.71 - U.S. DOT Crossing Inventory Form
6180.78 - Notice of RR Employee - Human Factor
6180.81 - Employee Human Factor
6180.83 - Hwy-rail Crossing Warning Activation Failure
6180.97 - Initial Rail Equipment Accident/Incident
6180.98 - RR Employee Injury/Illness Record
6180.99x - 31 & 92 Service Day Report
6180.107 - Alternative Record for Illness claimed to be work related
6180.150 - Highway User Injury Inquiry Form
6180.167 - Bridge Inspection Report Public Version Request Form
NOA - Notice Of Office Of Management And Budget Action (Bridge Safety Standards)
NOA - Notice Of Office Of Management And Budget Action
Steam locomotive Form 1
Steam locomotive Form 2
Steam locomotive Form 3
Steam locomotive Form 4
Steam locomotive Form 5
Steam locomotive Form 19

The scope of this presentation will focus on the following:

6180.54 - Rail Equipment Accident/Incident
6180.55 - Injury/Illness Summary
6180.55a - Injury/Illness Continuation Sheet
6180.57 - Hwy-Rail Accident/Incident
6180.97 - Initial Rail Equipment Accident/Incident
6180.98 - RR Employee Injury/Illness Record



The following Form is “internal” and is provided to the railroad by State and Federal Inspectors



6180.96 - FRA State and Federal Inspection Form

FRA Safety Inspectors

FRA's Office of Railroad Safety includes 6 disciplines of safety inspectors:

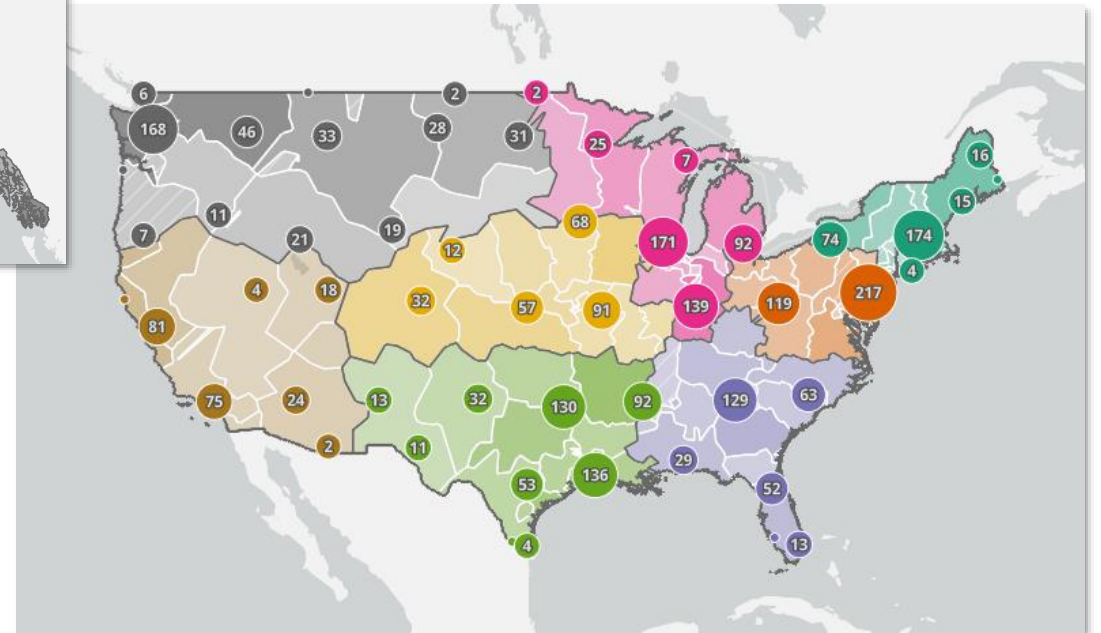
1. Hazardous Materials (Hazmat)
2. Operating Practices
3. Motive Power and Equipment
4. Track
5. Signal and Train Control
6. Highway-Rail Grade Crossing



Occasionally inspections can be performed by minor Disciplines (example: PTC, Industrial Hygienist and HQ auditing)

Additionally, the FRA has 8 Districts throughout the United States

Example District Map and Inspection Locations for Operating Practices from TOPS



Determining Inspection Locations

FRA relies on two databases for structuring inspection activities

Asset Inventory of Railroads and Shippers (AIRS)

- Internal FRA database to identify locations and attributes for inspections
- Developed and completed by each discipline with attributes that influence inspection effort
- Used to assign inspectors to territories/AIRS locations
- Basis of mapping inspection locations in the Territory Optimization Planning System (TOPS)

Grade Crossing Inventory System (GCIS)

- Database maintained by the FRA for State DOT and railroad reporting of highway-rail crossing inventory
- Includes active and passive crossings, type of crossing, and relative traffic
- Provides U.S. DOT crossing numbers and locations for grade crossing inspectors
- Basis of mapping inspection locations in TOPS

How FRA analyzes data

The FRA analyzes data both publicly and internally. The below is how the public can select, view, and categorize the data.

[Accident/Incident Dashboards & Data Downloads | FRA \(dot.gov\)](#)



[Home](#) / [FRA Safety Data and Reporting](#) / [Accident and Incident Reporting](#) / [Overview Reports](#)

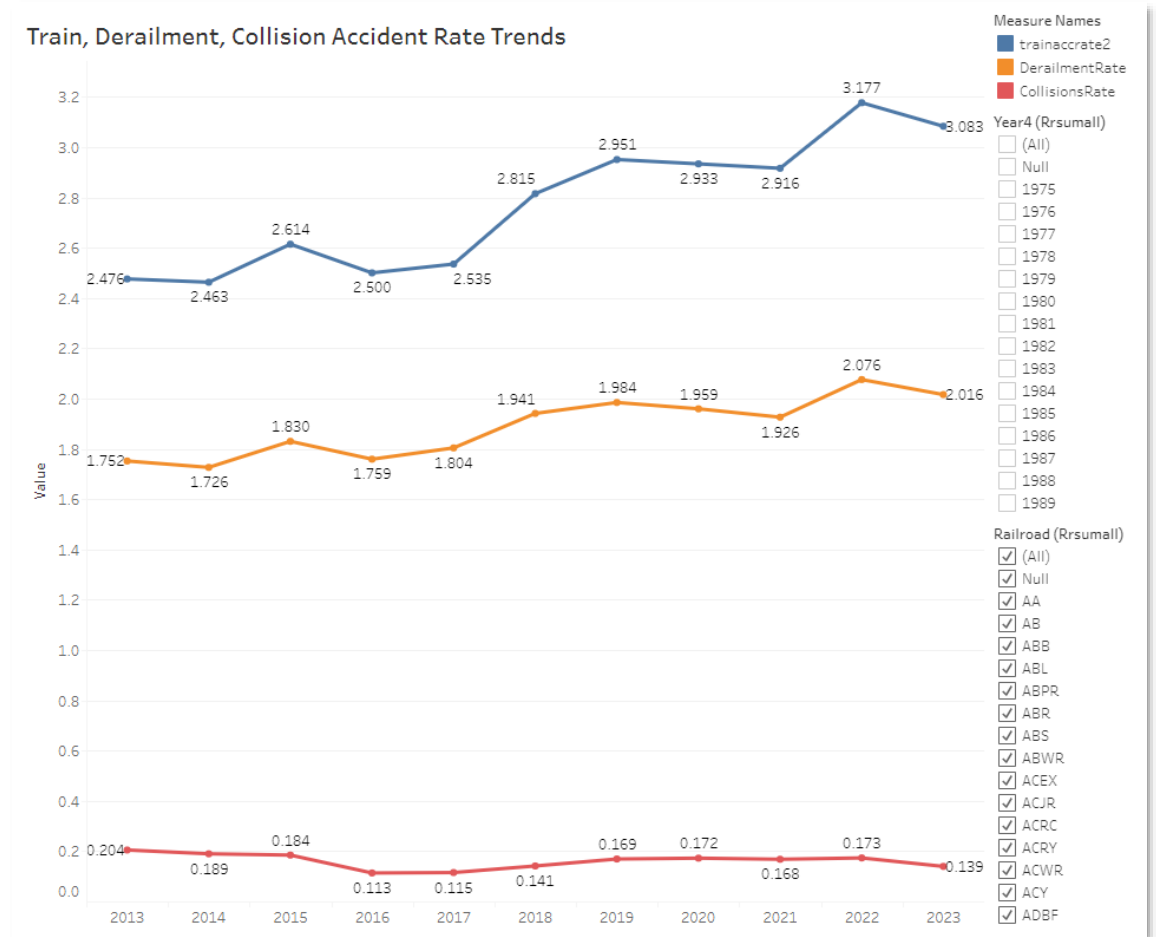
Accident/Incident Overview

- Overview Dashboards
- Train Accident Dashboards
- Casualty Dashboards
- Trespasser Dashboards
- Highway/Rail Grade Crossing Incident Dashboards

How FRA analyzes data

FRA normalizes data across railroads of various sizes using incident rates. The two main rates are:

1. Train Accident Rate - train accidents (incidents) per million train miles
2. Injury Rate - injuries per 200,000 employee hours



How FRA uses data analysis to prioritize inspections

The below is only an example (the railroad name and locations are removed for privacy). This is how top Injury and Train Accident data, for various crafts, is compared to inspection data. **Note:** dates, locations (Districts), and crafts are all considered to ensure inspectors are properly addressing trends.

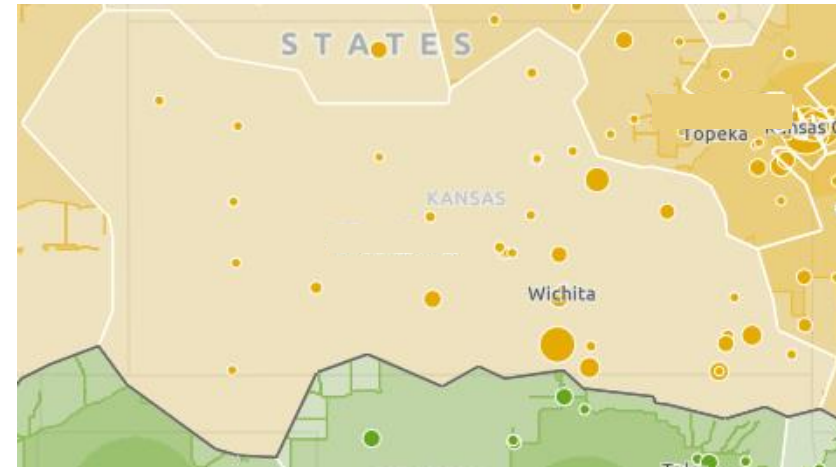
Injuries		Train Accidents		FRA Defect Violations	
Physical Act	Injuries	Primary Title	Incidents	Defect Code	Defect Violations
TRANSPORTATION, TRAIN AND ENGINE	1138	Train operation - Human Factors	1029	Track	
Walking	472	H307 Shoving movement, man on or at leading end of movement, failure to control	363	213.0143.A1 GUARD CHECK GAGE LESS THAN ALLOWABLE.	186
Riding	292	H607 Failure to comply with restricted speed or its equivalent not in connection	284	213.0123.B METAL OBJECT BETWEEN THE BASE OF THE RAIL AND THE BEARING SURFACE OF THE TIE PLATE	182
Sitting	131	H318 Kicking or dropping cars, inadequate precautions	161	213.0241.E3 ELECTRONIC SYSTEM ALLOWS RECORD OR AMENDMENTS TO BE MODIFIED.	165
Lining switches	123	H702 Switch improperly lined	122	213.0241.E2 ELECTRONIC STORAGE NOT INITIATED WITHIN 24 HOURS.	139
Descending	120	H306 Shoving movement, absence of man on or at leading end of movement	99	213.0241.G2 ELECTRONIC STORAGE NOT INITIATED WITHIN 24 HOURS.	126
MAINTENANCE OF WAY AND STRUCTURES	519	Miscellaneous Causes Not Otherwise Listed	598	Operating Practices / Human Factors	
Walking	155	M302 Highway user inattentiveness	297	218.0103.B8 HAND-OPERATED SWITCHES, INCLUDING CROSSOVER SWITCHES not locked	365
Using hand tool	139	M411 Passed couplers (automated classification yard)	90	HSL.21103A2 Hours of Service Violation	345
Standing	95	M101 Snow, ice, mud, gravel, coal, sand, etc. on track	78	218.0101.B LEAVING EQUIPMENT IN THE CLEAR: EQUIPMENT LEFT IMPROPERLY FOULING	183
Driving (motor vehicle, forklift, etc.)	79	M105 Extreme environmental condition - EXTREME WIND VELOCITY	75	218.0109.B1 HAND-OPERATED FIXED DERAILS: RAILROAD AND EMPLOYEE FAILURES	109
Lifting equipment (tools, parts, etc.)	51	M308 Highway user deliberately disregarded crossing warning devices	58	218.0109.C6 HAND-OPERATED FIXED DERAILS: EMPLOYEE FAILED TO DETERMINE THAT THE DERAIL WAS SECURED	92
MAINTENANCE OF EQUIPMENT AND STORES	295	Track, Roadbed and Structures	414	Signal	
Walking	109	T110 Wide gage (due to defective or missing crossties)	125	234.0209.A1 INTERFERENCE WITH NORMAL FUNCTIONING OF WARNING SYSTEM WITHOUT TAKING MEASURES	142
Using hand tool	60	T207 Broken Rail - Detail fracture from shelling or head check	91	236.0004.A1 INTERFERENCE WITH NORMAL FUNCTIONING OF DEVICE WITHOUT TAKING MEASURES	28
Standing	46	T111 Wide gage (due to defective or missing spikes or other rail fasteners)	76	236.0018.C5 SOFTWARE VERSION OR CONFIGURATION IN SERVICE WITHIN A SIGNAL OR TRAIN CONTROL SYSTEM	11
Repairing	43	T001 Roadbed settled or soft	67	234.0229.A1 TRAIN DETECTION CIRCUIT DOES NOT DETECT THE APPLICATION OF A SHUNT OF .06 OHMS RESISTANCE WHEN T	10
Descending	37	T314 Switch point worn or broken	55	236.0011.A2 COMPONENT, ESSENTIAL TO THE SAFETY OF TRAIN OPERATION, FAILING TO PERFORM ITS Function	6
TRANSPORTATION, OTHER THAN TRAIN AND	65	Mechanical and Electrical Failures	152	Motive Power & Equipment	
Descending	16	E61C Broken rim	43	232.0103.N1 FAILURE TO APPLY SUFFICIENT NUMBER OF HAND BRAKES TO HOLD EQUIPMENT	564
Walking	15	E53C Journal (roller bearing) failure from overheating	34	232.0103.N4 FAILURE TO ADOPT OR COMPLY WITH A PROCESS OR PROCEDURES TO SECURE AN UNATTENDED LOCOMOTIVE	271
Driving (motor vehicle, forklift, etc.)	12	E46C Truck bolster stiff, improper swiveling	28	232.0103.F FREIGHT CAR AIR BRAKES ARE NOT IN EFFECTIVE OPERATING CONDITION (CUT-OUT)	180
Operating	12	E33C Coupler retainer pin/cross key missing	27	231.0136.A2 LADDER TREAD OR HANDHOLD BROKEN	148
Sitting	10	E64C Worn flange	20	232.0103.F3 FREIGHT CAR AIR BRAKES ARE NOT IN EFFECTIVE OPERATING CONDITION- OTHER (EXPLAIN IN DETAIL)	136
		Signal and Communication	71	Hazmat	
		S016 Classification yard automatic control system - Inadequate or insufficient control	28	174.0026.A NOTICE TO TRAIN CREW OF PLACARDED CARS.	136
		S011 Power switch failure	16	174.0026.B COPY OF A DOCUMENT FOR THE HAZARDOUS MATERIAL	62
		S006 Classification yard automatic control system switch failure	14	174.0050. NONCONFORMING OR LEAKING PACKAGES	58
		S007 Classification yard automatic control system retarder failure	9	174.0024.A MUST RECEIVE A SHIPPING PAPER	40
		S099 Other signal failures (Provide detailed description in narrative)	4	174.0009.A GROUND LEVEL INSPECTION FOR PLACARDING, MARKING, AND SECUREMENT	37

TOPS in Development for FRA Internal Use

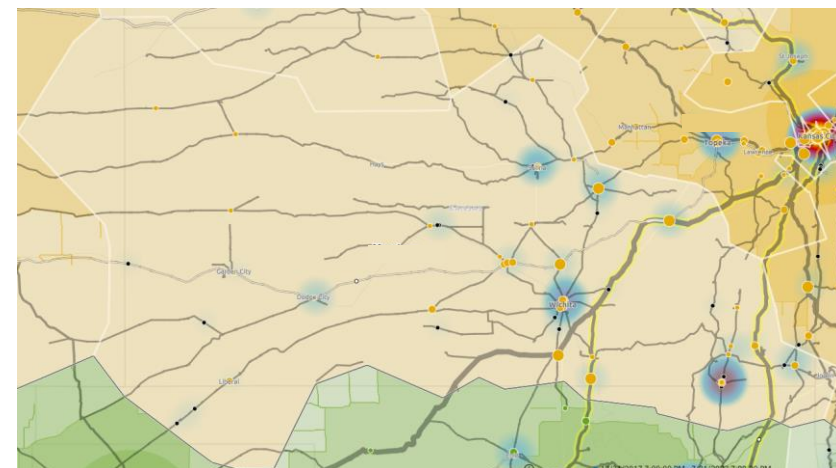
TOPS overlays:

- Relative inspection effort at each location
- Heat map of relevant incidents to each discipline (past 5 years) and individual incident reports
- Level of rail traffic from latest Waybill, including high-hazardous flammable routes
- Risk scores from latest discipline-specific risk model

Example Effort Map



Example Risk Map



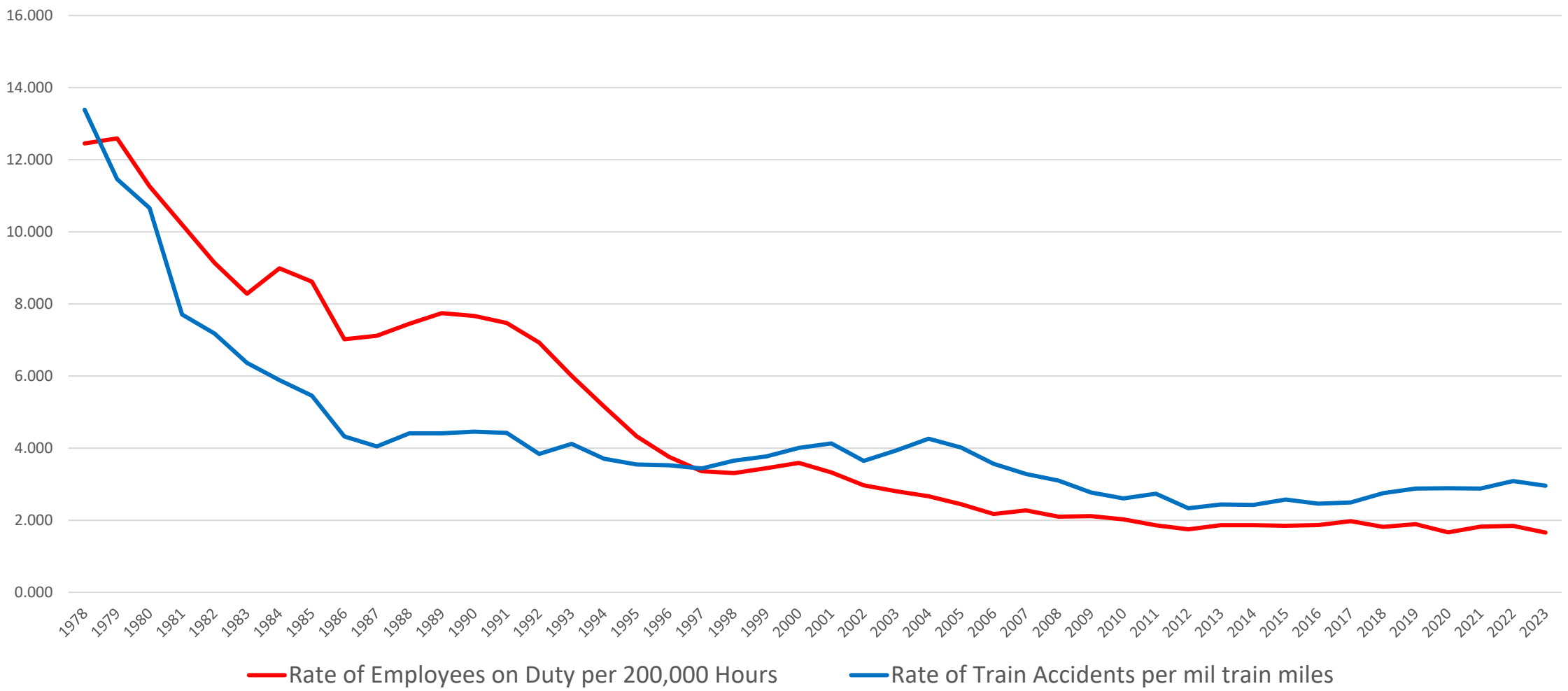
Guidance for Inspectors (State and Federal)

Guidance for State and Federal Inspectors derives from the Inspector's Supervisory Specialist and the following:

- Code of Federal Regulations
 - Updated and distributed as regulations change
 - Electronic version of Title 49, Chapter II [eCFR :: Title 49 of the CFR – Transportation](#)
- TTSD (Technical Training Standards Division) located in Pueblo, CO
 - Compliance Manual for each Discipline
 - Technical Bulletins
- Federal Register / Publications <https://www.federalregister.gov>
 - Safety Bulletins
 - Safety Advisories
 - Letters from the Administrator (to all or specific railroads)

Benefits of data-driven inspections (why collecting and sharing the data is valuable)

The main benefit of data-driven inspections is to continue to improve the train accident rate and Employee-on-Duty injury rate



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U.S. Department of Transportation
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Agency Safety Plan Requirements

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PTASP Requirements for ASP Review and Update

- 49 CFR Part 673.11(a)(5) requires applicable transit agencies to establish a process and timeline for conducting an annual review and update of their Agency Safety Plan (ASP)
 - Applicable transit agencies that operate a rail fixed guideway public transportation system must also follow any additional requirements for ASP updates established by their State Safety Oversight agency (SSOA)

PTASP Requirements for ASP Review and Update (cont.)

IF A SAFETY COMMITTEE IS NOT REQUIRED

Per 49 CFR Part 673.11(a)(1):

- The Accountable Executive must sign the updated ASP
- The Board of Directors or Equivalent Authority must approve the updated ASP

In both instances, for rail fixed guideway public transportation systems, the SSOA must review and approve the ASP (49 CFR Part 673.13(a))

IF A SAFETY COMMITTEE IS REQUIRED

Per 49 CFR Part 673.11(a)(1) and 49 U.S.C. 5320(d)(1)(A):

- The Accountable Executive must sign the updated ASP
- **The Safety Committee must approve the updated ASP**
- The Board of Directors or Equivalent Authority must approve the updated ASP

Considerations for Updating Your ASP

Changes to your organization structure and/or system characteristics

Changes to processes that affect your SMS or safety in general

- Updated transit agency safety objectives and safety performance targets
- Updated Employee Safety Reporting Program
- New or updated training or safety promotion initiatives
- Other updates or changes to safety programs described in the ASP

Compliance with new or revised FTA regulations

Compliance with SSO Program Standard or other SSO action

PTASP - Frequently Asked Questions

- New section covering Risk-Based Inspections in the [Public Transportation Agency Safety Plans \(PTASP\) Frequently Asked Questions](#)
- Access and search the FAQs at transit.dot.gov/PTASP-FAQs

An official website of the United States government Here's how you know

United States Department of Transportation

Federal Transit Administration

About Funding Regulations & Programs

Home / Regulations and Programs / Safety / Public Transportation Agency Safety Program

PTASP Overview

FAQs

PTASP Technical Assistance Center and Resource Library

Agency Safety Plan (ASP) Directory

Using SMS to Mitigate Infectious Disease Exposure

Webinars

Related Links

- [Sign Up for Updates](#)
- [Safety Rulemaking](#)
- [Transit Safety & Oversight](#)
- [Safety Training](#)
- [Agency Safety Plan \(ASP\) Directory](#)

Contact Us

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If you are deaf, hard of hearing, or have a speech disability, please dial 7-1-1 to access telecommunications relay services.

Public Transportation Agency Safety Plans (PTASP) Frequently Asked Questions

These frequently asked questions (FAQ) cover the [Public Transportation Agency Safety Plans \(PTASP\)](#) final rule. The PTASP rule requires certain operators of public transportation systems that receive federal funds under the FTA [Urbanized Area Formula Grants](#) to develop an Agency Safety Plan (ASP) that includes the processes and procedures to implement a Safety Management System (SMS), a comprehensive, collaborative approach to managing safety. This FAQ covers a broad range of topics, including Bipartisan Infrastructure Law changes to PTASP requirements.

Search

Please enter search term and click on search

FAQ Category

Risk-Based Inspection Questions

Search Reset

Risk-Based Inspection Questions

What is the risk-based inspection requirement?

How does the risk-based inspection requirement relate to the Public Transportation Agency Safety Plans (PTASP) regulation?

Are transit agencies required to add risk-based inspection language to their Agency Safety Plan (ASP)?

What is the compliance date for SSOAs to meet the risk-based inspection requirement?

How should State Safety Oversight Agencies (SSOAs) submit initial documentation demonstrating a developed risk-based inspection program for FTA review?

Where can I find technical assistance for the risk-based inspection requirement?

RBI Development Plan: ASP Submission

- **RTAs must update their ASP to include policies and procedures for:**
 - Providing SSOAs with **access** to the RTA to conduct risk-based inspections (Category 2)
 - Sharing with the SSOA, **the data the RTA collects when identifying hazards and assessing and mitigating safety risk** (Category 3)
- **To streamline the ASP update process, some SSOAs have asked:**
 - If the RTA can submit proposed language for the ASP, and
 - Wait until after FTA approves the RBI development plan to incorporate the language into the ASP
- **Why?**
 - To avoid potentially updating their ASP twice
 - While RTAs are required to update their ASPs annually, timing for ASP updates may not align with RBI plan submission deadline

RBI Development Plan: ASP Submission (cont.)

EXPECTED APPROACH

SSOA submits proposed ASP language related to RBI requirements. Submission includes:

- a. **Full ASP**, citing pages/sections that address RBI requirements
- OR**
- b. **Section of the ASP** that addresses RBI requirements
- AND**
- c. **Program Standard** that cites where language related to each requirement appears in the submitted ASP document



ASP

Includes **proposed ASP language**

ASP language may change if plan changes based on FTA feedback

SSOA provides **final ASP language to RTA** to update ASP

SSOA must submit a **document certifying that FTA-approved ASP language has been incorporated into the ASP**

Sensitive Security Information (SSI)

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What is Sensitive Security Information (SSI)?

- Information that is not already easily accessed or observed by the public.

1	The information is obtained or developed in the conduct of safety and security activities;
2	That, if released to the public, would be detrimental to transportation security or safety; and
3	Falls within at least 1 of 16 categories of SSI listed within 49 CFR 15.5(b)(1)–(16) or 49 CFR 1520.5(b)(1)–(16). <ul style="list-style-type: none">▪ For SSOs, that is generally accident reports (vulnerability assessments)

Your Duty to Protect SSI

Once SSI has been identified, FTA recipients must:



- Adequately limit access to the SSI to only those with a “need to know” as defined in 49 CFR § 15.11 and § 1520.11.



- Ensure that all records are properly marked as SSI in accordance with 49 CFR § 15.13 and § 1520.13.



- Destroy SSI completely to preclude recognition or reconstruction of the information when the record custodian no longer needs the SSI to carry out transportation security and safety measures as described in 49 CFR § 15.19 and § 1520.19.

For more information, visit the Transportation Security Administration (TSA) website:

<https://www.tsa.gov/for-industry/sensitive-security-information>

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