



Massachusetts Bay Transportation Authority

MBTA Quarterly Safety Report

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January 14, 2019





Overview

- Regulatory Updates
 - Public Transportation Agency Safety Plan
- Workplace Safety Improvement Initiative
 - Accomplishments & In Progress
 - GM Safety Awards
- Safety Data Review
 - Employee Injuries & Assaults
 - Derailments
 - Bus Collisions
 - Subway & Bus Fatalities
 - Commuter Rail Trespasser Strikes



Regulatory Updates

- FTA Final Rule 49 CFR 673 – Public Transportation Agency Safety Plan (PTASP)
 - Requires development of an agency safety plan that establishes processes and procedures to support implementing Safety Management Systems (SMS)
 - Supersedes System Safety Program Plan requirements of 49 CFR 659
 - Effective Date:
 - July 19, 2019 – One year from publication of rule per 220 CMR 151.03
 - Applies to:
 - Transit Rail
 - Bus
 - Para-transit
 - Exempt:
 - Commuter Rail – Overseen by FRA
 - Ferry Service – Overseen by US Coast Guard





Regulatory Updates

- PTASP General Requirements
 - Document SMS Implementation Processes and Activities
 - Establish an Employee Safety Reporting System that allows employees to report safety conditions to senior management
 - Set Safety Performance Targets
 - Signed by the agency's Accountable Executive and approved by the Board of Directors
 - Reviewed and approved by the DPU (sections related to transit rail)
 - Updated annually
- Benefits of SMS
 - Creates top-down accountability for safety performance throughout the agency
 - Improves safety risk analysis and control
 - Creates clear lines for safety communication
 - Empowers employees through their role in the Employee Safety Reporting System
 - Allows for earlier detection of safety problems through improved communication
 - Formalizes safety risk assessment and risk acceptance processes



Workplace Safety Improvement Initiative

- Accomplished:
 - Occupational Health & Safety (OHS) Plan
 - In November, MBTA Safety completed the safety bulletin creation process
 - A total of 26 bulletins were developed and released.
 - The bulletins will serve as interim guidance documents during the OHS Rollout process.
 - The creation process was completed 7 weeks ahead of schedule.
 - The process now moves into the integration, promotion, and implementation phases.
 - MBTA Safety will distribute Job Hazard Analysis Survey Questionnaires to departments.
 - Facility Inspections: Round 2 inspections were completed in December
 - Inspection results are being compiled into a report for the General Manager.



Workplace Safety Improvement Initiative

- Department of Labor Standards (DLS) OHS oversight becomes effective February 1, 2019.
- Since October, the final 13 safety bulletins were released covering the following topics:
 - Office Safety
 - Working Conditions – Fitness for Duty
 - Cranes & Derricks
 - Demolition
 - Excavations
 - Concrete & Masonry Construction
 - Motor Vehicles, Mechanized Equipment, and Marine Operations
 - Machine Guarding
 - Industrial Trucks
 - Hearing Conservation
 - Tools – Hand and Power
 - Materials Handling and Storage
 - Bloodborne Pathogens
 - Chemical Hazard Communication

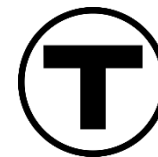




Workplace Safety Improvement Initiative

- General Manager Safety Excellence Awards
 - Award ceremony to recognize employees that demonstrated safety excellence or provided safety input to effect a positive change in 2018.
 - Management across the MBTA submitted nominees.
 - From the nominations, 34 employees were selected for commendation with an additional 21 honorable mentions.
 - Award ceremony to be held on January 22, 2019.

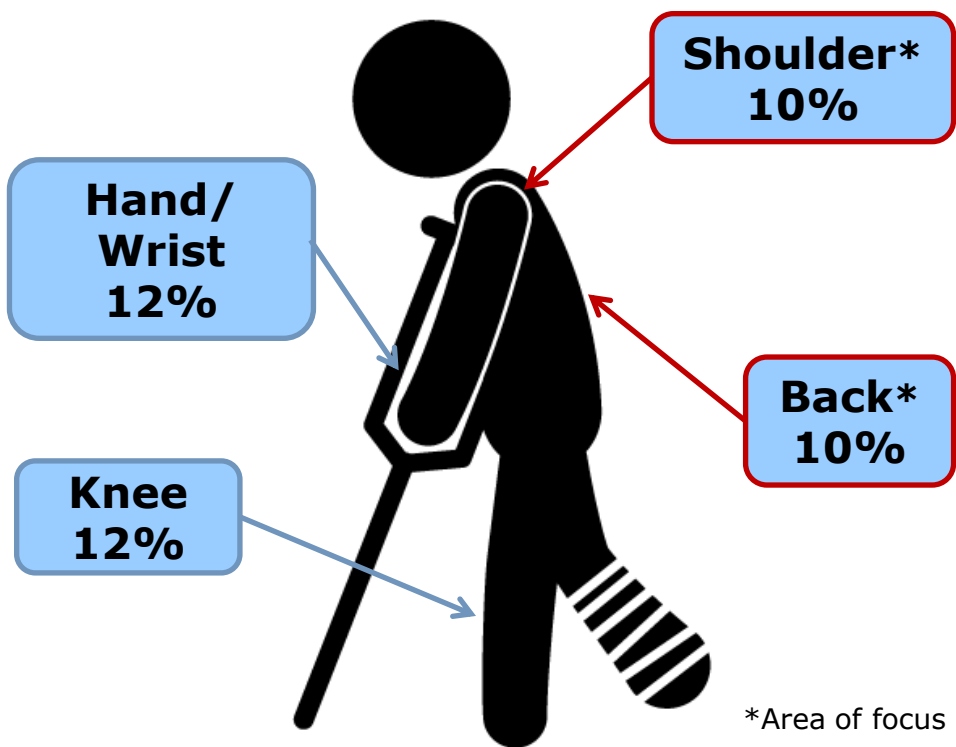




Employee Injuries

Most Commonly Treated Body Part Injury in Quarter 4 – 2018

Most Commonly Treated Injury Types in Quarter 4 - 2018



Injury Type	Total	%
Sprains / Strains	25	30%
Contusion / Bruise	15	18%
Cut / Laceration	11	13%

Quarter 4 data is pending final verification with reporting departments and Worker's Comp.



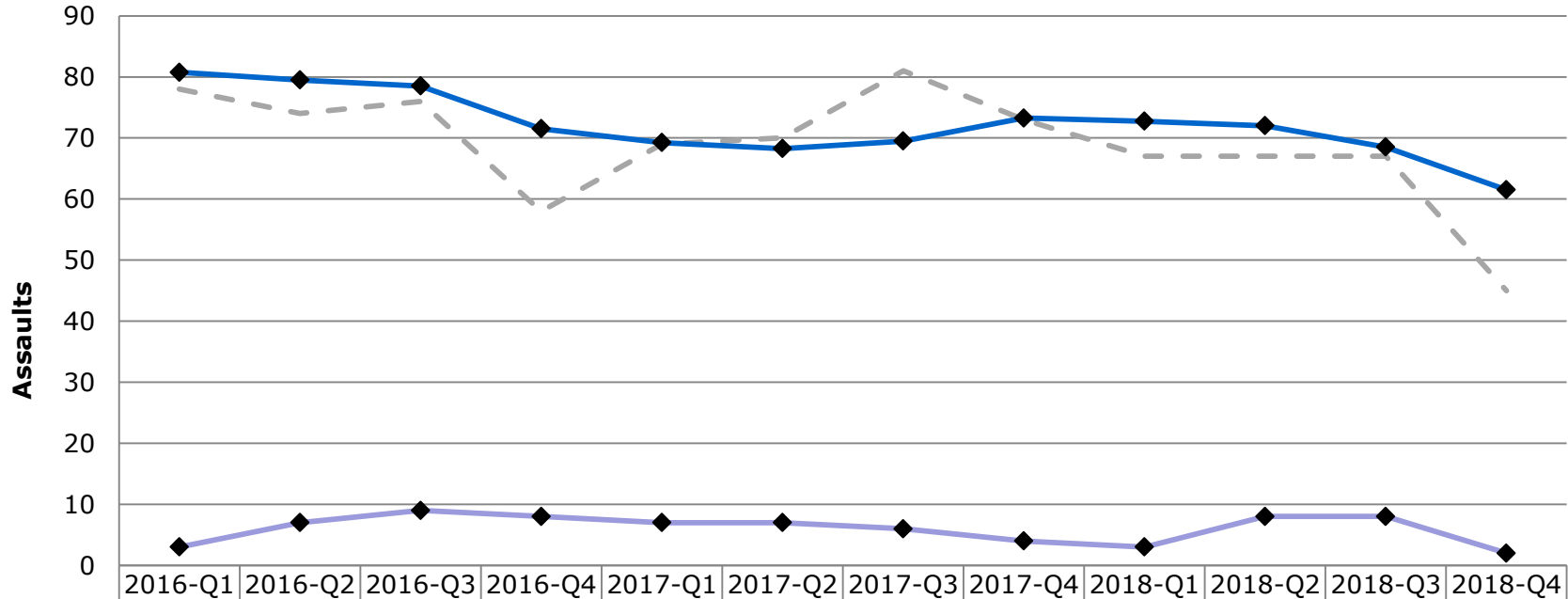
Employee Injuries

- MBTA OSHA Recordable Incident Rate for Calendar Year 2017 was **7.45**.
 - Rate is based on the number of employees involved in a recordable injury or illness per 100 full time employees.
 - Rate for Calendar Year 2018 will be calculated once injury data is finalized.
- The Bureau of Labor Statistics 2017 average rate for urban transit systems was **5.0**.
- MBTA is working to reduce rates through:
 - Implementation of safety programs starting with safety bulletins.
 - Improved injury reporting and investigation including the release of Safety Bulletin SB18-002 “Employee Injury Reporting.”
 - Regular facility inspections.
- MBTA Safety will continue to monitor with regular progress updates to management.

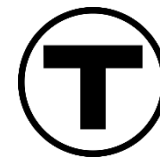


Assaults on Employees

Assaults on Employees



	2016-Q1	2016-Q2	2016-Q3	2016-Q4	2017-Q1	2017-Q2	2017-Q3	2017-Q4	2018-Q1	2018-Q2	2018-Q3	2018-Q4
Physical Assault	45	40	44	33	43	23	37	27	30	38	36	35
Verbal/Threat	33	34	32	25	26	47	44	46	37	29	31	10
— Total Assaults	78	74	76	58	69	70	81	73	67	67	67	45
◆ With Time Lost	3	7	9	8	7	7	6	4	3	8	8	2
◆ Rolling Average	80.8	79.5	78.5	71.5	69.3	68.3	69.5	73.3	72.8	72.0	68.5	61.5



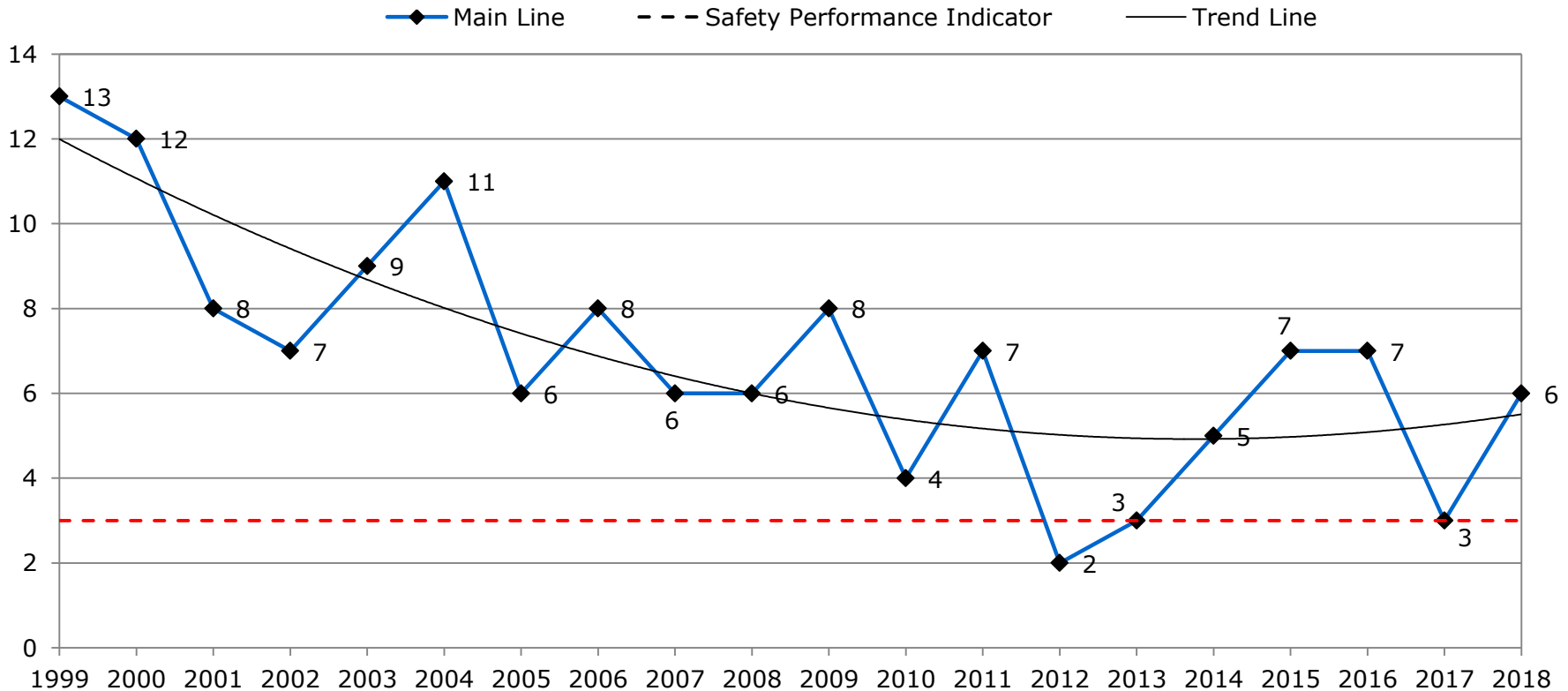
Assaults on Employees

- Central focus is on reducing bus operator assaults.
- Initial 2018 numbers indicate a 16% decrease in employee assaults when compared to 2017.
- Majority of reduction was in verbal assaults, physical assaults remain unchanged.
- MBTA is continuing to install driver barriers on board buses to protect operators and reduce physical assaults.
- New York's MTA reported a 35% reduction in operator assaults in the first year after barriers were installed across their bus fleet.
- MBTA Safety is currently developing metrics to measure effectiveness of program.



Derailments – Data Review

Main Line Derailments 1999-2018

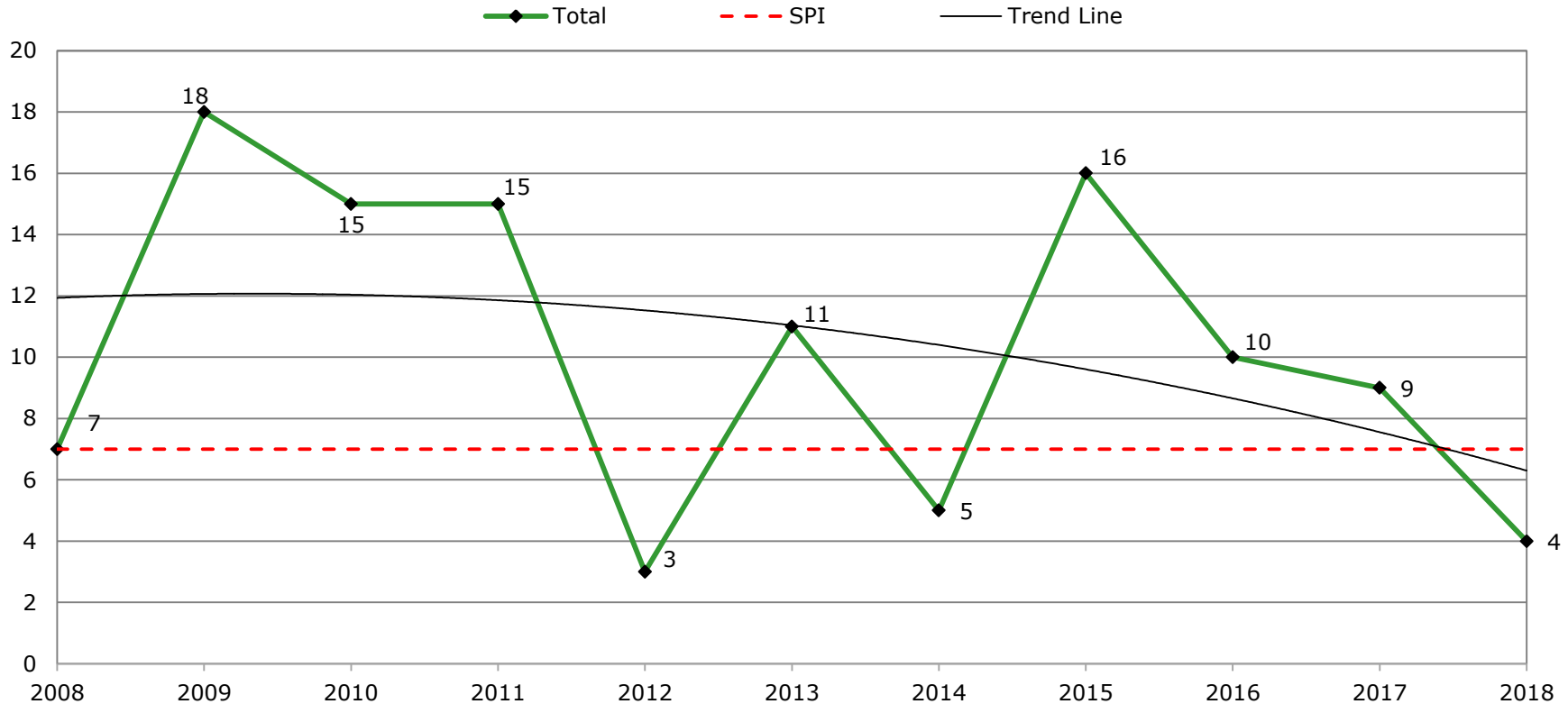


MBTA Safety has coordinated with Transportation Management to improve Investigation processes & procedures.



Derailments – Data Review

Yard Derailments 2008-2018

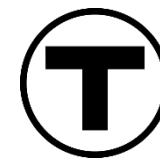


Derailment numbers above the Safety Performance Indicator goal signify a need for greater focus on the examination of causal factors and mitigations.



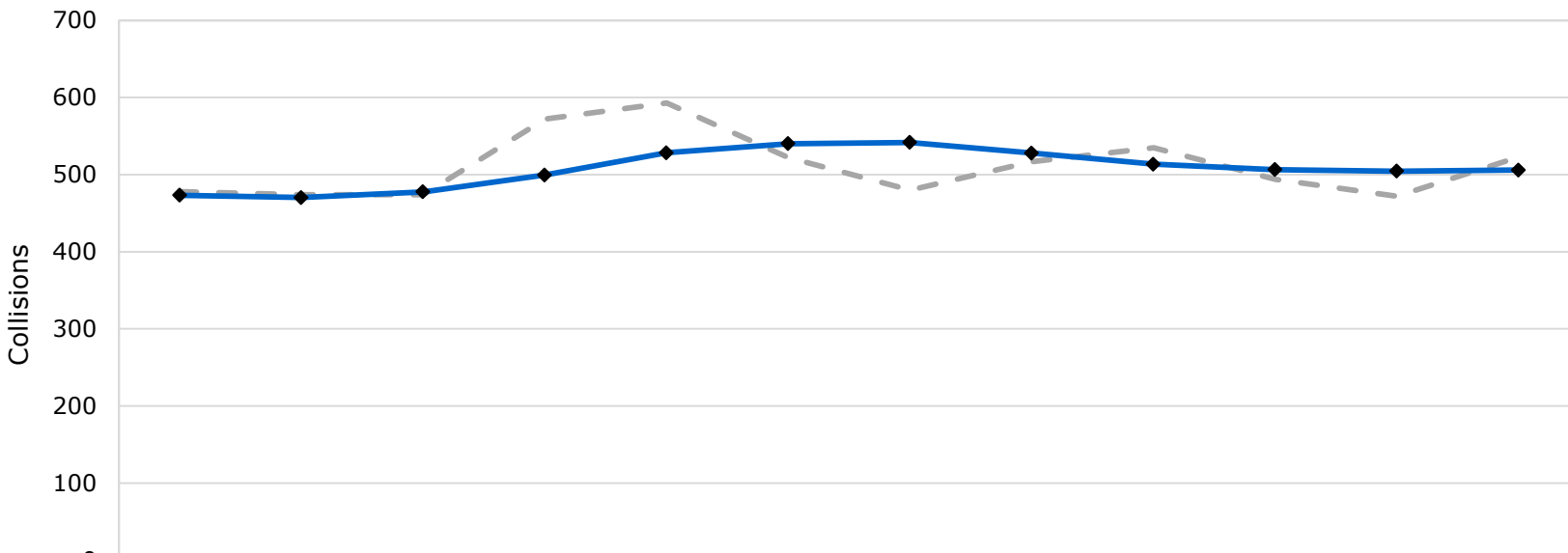
Derailment

- In 2018 there were a total of 10 transit derailments, compared to 13 in 2017.
- Mainline derailments increased while yard derailments decreased.
- Most recent derailment occurred on Dec. 8 at Blandford Siding on the Green Line.
 - Non-revenue trolley derailed while moving off the siding and onto the mainline.
 - No injuries reported.
 - Collaborative investigation by Safety, Light Rail Vehicle Maintenance and Transportation is currently ongoing.
- Overall focus is on reducing human factor derailments.
 - Human factors identified as probable cause in 45% of 2017 derailments and 50% of 2018 derailments.
- Common issues include:
 - Improperly setting switches
 - Failing to ensure switches are properly aligned
 - Violating a red signal aspect
- MBTA Safety issued a Safety Directive to examine the issue and determine strategies to reduce human factor derailments.
- MBTA Safety audited Light Rail Transportation as part of the 2018 Internal Safety Review.



Bus Collisions

Total Bus Collisions*



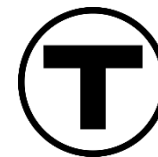
	2016-Q1	2016-Q2	2016-Q3	2016-Q4	2017-Q1	2017-Q2	2017-Q3	2017-Q4	2018-Q1	2018-Q2	2018-Q3	2018-Q4
Bicyclist	4	7	4	6	3	5	6	5	2	3	4	1
Object	61	55	67	65	133	74	75	62	81	67	88	65
Person	11	8	5	13	15	10	4	10	7	7	5	7
Vehicle	402	404	398	488	442	433	395	440	445	417	375	450
— Total Collisions	478	474	474	572	593	522	480	517	535	494	472	523
◆ Total Rolling Average	473.3	470.3	477.8	499.5	528.3	540.3	541.8	528.0	513.5	506.5	504.5	506.0

Total Bus Collisions include all incidents where there is reported or alleged contact with a MBTA bus regardless of the collision severity.



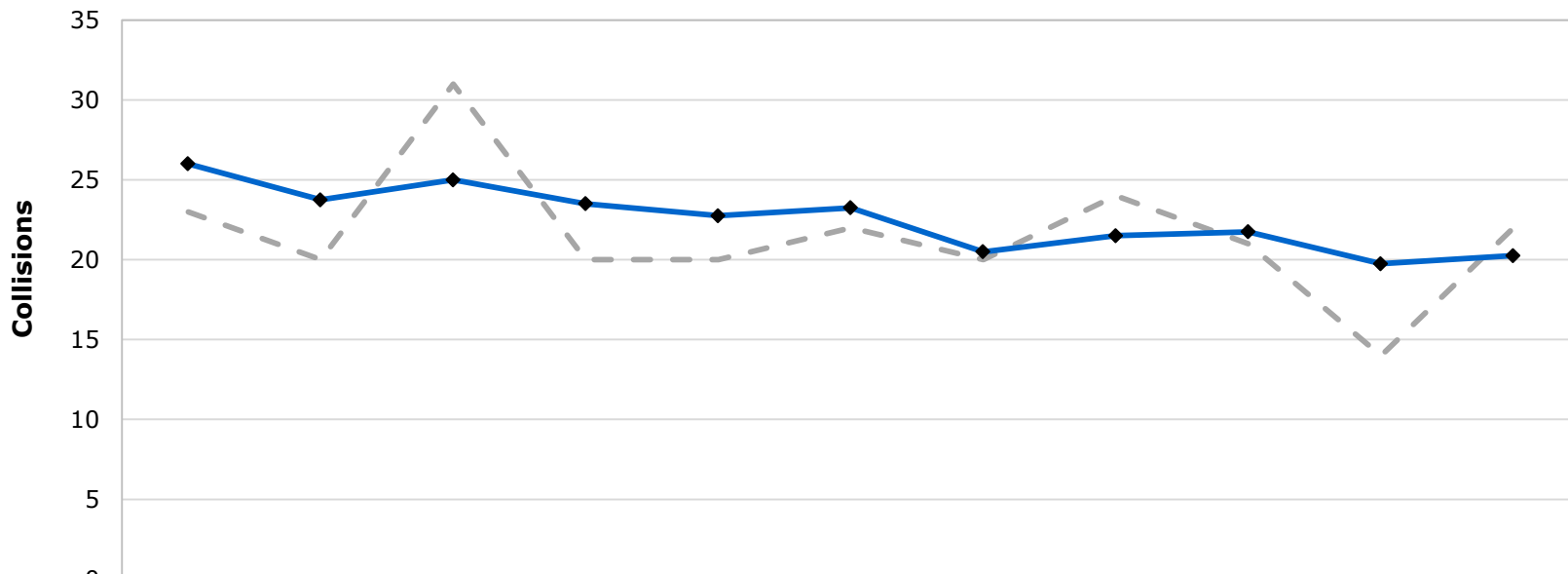
*Totals based on a review of Operations Logs and incident reports submitted to MBTA Safety.

Draft for Discussion & Policy Purposes Only



Bus Collisions

Reportable Bus Collisions



	2016-Q2	2016-Q3	2016-Q4	2017-Q1	2017-Q2	2017-Q3	2017-Q4	2018-Q1	2018-Q2	2018-Q3	2018-Q4
Bicyclist	1	0	4	0	1	0	0	0	1	2	0
Object	0	0	0	0	0	0	0	0	1	0	1
Person	3	2	11	4	4	0	5	3	3	1	3
Vehicle	19	18	16	16	15	22	15	21	16	11	18
— Total Collisions	23	20	31	20	20	22	20	24	21	14	22
◆ Total Rolling Average	26.0	23.8	25.0	23.5	22.8	23.3	20.5	21.5	21.8	19.8	20.3

Reportable bus collisions are collisions with a person requiring transport to a medical facility, involving three or more transports for medical treatment, involving 2 or more transit vehicles, or result in property damage \geq \$50,000.





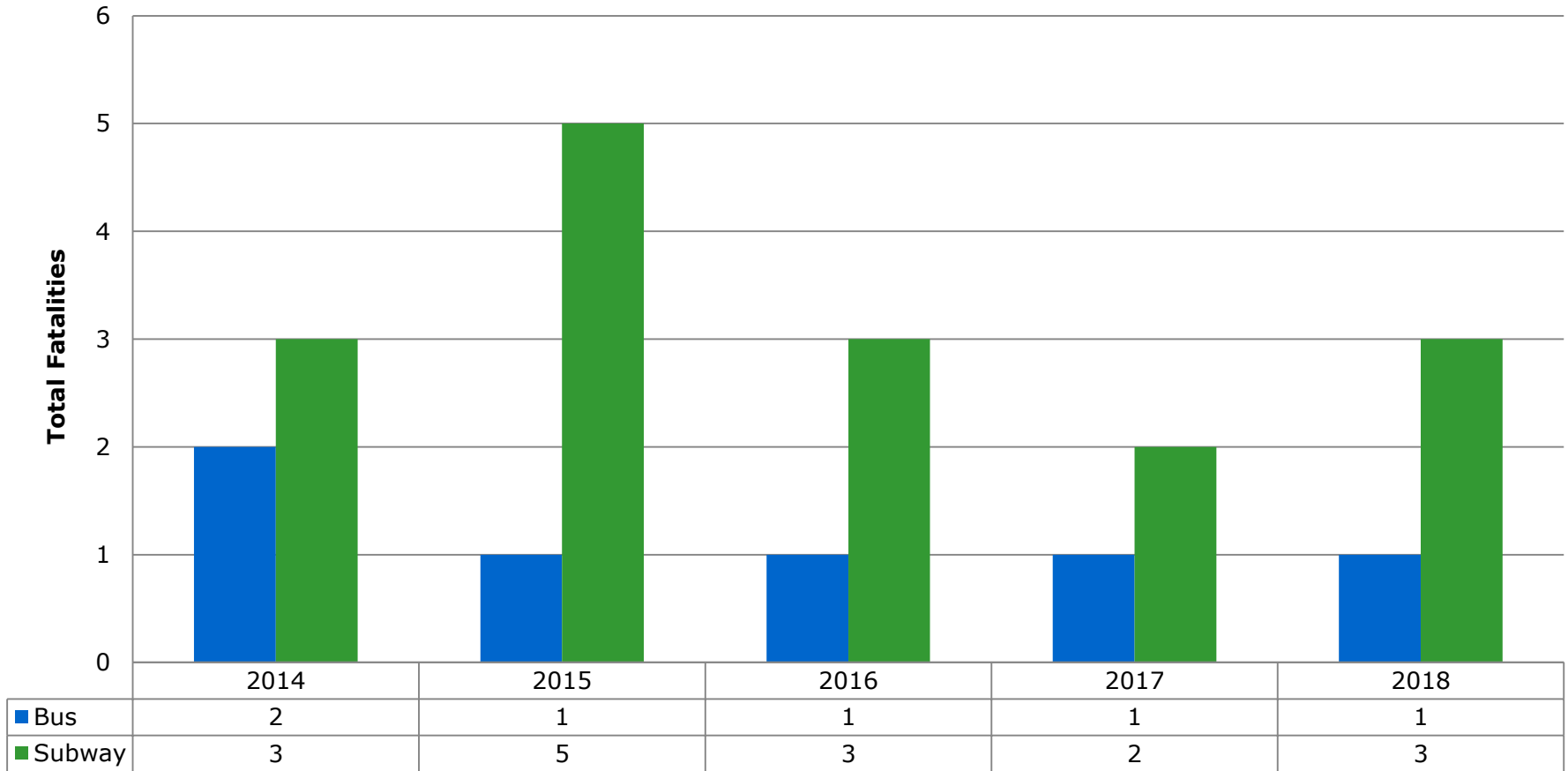
Bus Collisions

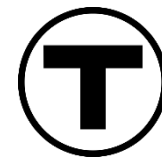
- The Bus Accident Reduction Committee continues to meet monthly to review accident and incident trending.
- MBTA Safety and Training have been conducting outreach with bus operators focused on reducing collisions and injuries.
- Bus Accident Reduction Committee has also been researching the installation of a Video Based Safety System onboard buses.
 - The system uses onboard data, video, and analytics to actively assess bus operator performance and create personalized driver profiles.
 - Properties that have adopted similar systems report collision reductions up to 50%.



Bus & Subway Fatalities – 2014-2018

Bus and Subway Fatalities 2014-2018





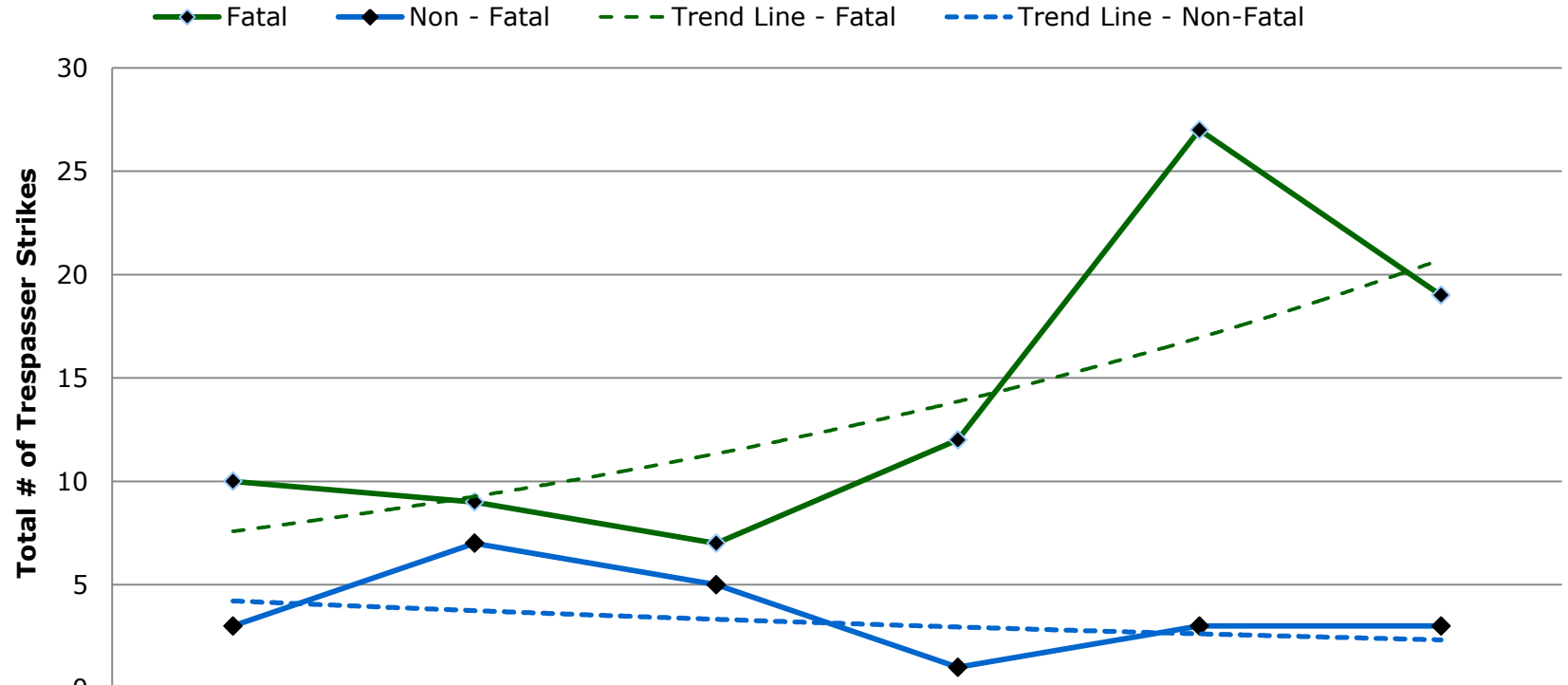
Bus & Subway Fatalities – 2014-2018

- Except for a spike in 2015, the number of subway fatalities have remained consistent over the past 5 years.
- 2018 Fatalities:
 - May 13 - Bus collision in Saugus
 - An auto struck a parked vehicle and then crossed into the bus's travel lane resulting in a head-on collision.
 - The automobile operator succumbed to injuries sustained in the collision.
 - August 18 – Orange Line trespasser fatality near Green Street Station
 - Trespasser entered ROW and made contact to the 3rd Rail.
 - September 9 – Red Line trespasser strike at Porter Square Station
 - Trespasser was struck by a train after climbing into the pit area and walking into the station tunnel.
 - October 25 – Orange Line trespasser strike at Green Street Station
 - Trespasser jumped into ROW and was struck by a train entering the station

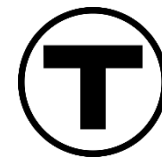


Commuter Rail Trespasser Strikes

Commuter Rail Trespasser Strikes



	2013	2014	2015	2016	2017	2018
◆ Fatal	10	9	7	12	27	19
◆ Non - Fatal	3	7	5	1	3	3



Commuter Rail Trespasser Strikes

- Trespasser strikes increased significantly in 2017 and remained elevated in 2018.
- The increase in commuter rail fatalities parallels a reported nationwide increase in trespasser strikes.
- FRA data comparing CY2016 and 2017 indicate a 22% increase in trespasser strike fatalities nationally.
- MBTA has created a Commuter Rail Collision Reduction Committee, with stakeholders and subject matter experts on the national, state, and local level working collaboratively to study the issue.
- Partners include MBTA, MassDOT, Keolis, the Massachusetts Department of Health, the Federal Railroad Administration, Samaritans Inc., and Operation Life Saver.
- The committee continues to meet regularly and focuses on public education, identification of pattern locations, and implementation of mitigation strategies.