



Massachusetts Bay Transportation Authority

MBTA Quarterly Safety Report

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Overview

- Regulatory Updates
 - Public Transportation Agency Safety Plan
- Workplace Safety Improvement Initiative
 - Accomplishments & In Progress
 - Safety, Health, and Wellness
- Safety Data Review
 - Employee Injuries & Assaults
 - Transit 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
 - Implementation Date: July 20, 2020
 - 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

- PTASP Development
 - SMS Steering Committee and Task Team created to oversee plan development and implementation
 - MBTA meets regularly with DPU on PTASP/SMS Transition
 - MBTA Safety and the DPU met with Cape Air, who implemented a SMS program in 2011
 - Discussed development of an employee reporting program and best practices.
 - PTASP Draft Policy and Implementation Guide are drafted and under review



Workplace Safety Improvement Initiative

- MBTA Safety is incorporating lessons learned and best practices into the existing OHS Plan, with the intent to make the revised plan available by July 1, 2019.
- Occupational Health & Safety (OHS) Program Status:
 - In November, MBTA Safety completed and released twenty-six (26) safety bulletins which will serve as guidance documents throughout the OHS Rollout process.
 - On February 1, 2019 Department of Labor Standards (DLS) OHS oversight became effective – MBTA will be held to OSHA standards 29 CFR 1903, 1904, 1910, & 1926.
 - The MBTA OHS program is now moving from OHS Bulletins into integration, promotion, and implementation phases.
 - MBTA Safety is collaborating with DLS throughout the transition process.
 - MBTA Safety Department facilitated a meeting with DLS, DPU and MBTA GM and Safety Department representatives on March 20th to provide a introduction between DLS, DPU and the MBTA GM and present an overview of each Department's regulatory oversight.
 - MBTA Safety has so far drafted 3 OSHA-compliant written safety programs to be reviewed by OHS steering committee and facilitated the formation of OHS Steering Committee & OHS Working Group to provide input, direction, and review of each draft program.



Workplace Safety Improvement Initiative

- The OHS Steering Committee has approved the Personal Protective Equipment (PPE) Program and is moving to full program development and implementation.
- Electrical Safety and Lock-Out/Tag-Out will be reviewed by the OHS Steering Committee at the next committee meeting.
- MBTA Safety is also working with the OHS Steering Committee to initiate and implement OHS Capital Improvement Projects.
- Safety, management, and labor have been conducting comprehensive facility inspections to determine high priority safety-related Capital Improvement projects.

| OHS Program | Estimated Program Publication Date |
|---------------------------------------|------------------------------------|
| Personal Protective Equipment (PPE) | Quarter 2 – 2019 |
| Electrical Safety | |
| Lockout/Tagout | |
| Confined Space | Quarter 3 – 2019 |
| Hot Work | |
| Respiratory Protection | |
| Fire/Life Safety and Emergency Egress | |
| Hearing Conservation | Quarter 4 – 2019 |
| Bloodborne Pathogens | |
| Fall Protection | |
| Chemical Hazardous Communication | |



Workplace Safety Improvement Initiative

- Safety, Health, and Wellness
 - MBTA Safety is working with the Harvard T.H. Chan School of Public Health to evaluate MBTA Rail Transportation work and break facilities (operator lobbies, break rooms, etc.).
 - The project team visited all rail operator lobbies and major break areas to document conditions and interview employees.
 - The team also received a grant to conduct an operator survey in the spring to further assess linkages between work/break spaces and operator health and wellness (including fatigue).
 - MBTA Safety has begun to further expand the scope of this initiative to assess bus and other areas' work and break facilities.
 - Findings and recommendations will be documented in a report that will be shared with MBTA management, and will help inform future capital improvement project spending.



Workplace Safety Improvement Initiative

- Winter/Extreme Weather Safety and Training Initiatives
 - In January, MBTA Safety released four separate Safety Flashes that focused on worker safety during cold temps, snow removal, driving, and walking surfaces.
 - These Safety Flashes were used by Engineering & Maintenance as part of their tool box talks before crews entered the field to start work.
 - Subway Training performed an outreach Training Blitz for transportation employees focused on identifying weather related hazards.
 - The collaborative efforts from Safety and Transportation was to heighten situational awareness of workers when outside on foot and during operations of rail/motor vehicles in winter weather.
 - The safety messages were discussed with forepersons, supervisors, and higher level management in monthly safety meetings and in person at field locations throughout the system.

SAFETY FLASH

WALKING SURFACES DURING SNOWSTORM

MBTA employees suffer an inordinate number of slip, trip & fall incidents due to slippery or uneven walking surfaces due to ice, snow, water or other hazards, especially during winter storm events. Slip, trip & fall incidents are the majority of worker injury incidents. The number of injuries are severe and disabling and approximately 15% of falls result in total injuries.

During snowstorm cleanup efforts MBTA employees may fall while exiting trains, buses, vehicles and equipment or performing field duties, which can result in injuries. Falls can also occur while entering or exiting buildings due to ice and snow while at the entrance, or from melted snow on floors into buildings, or when working on the edge of a hole.

Slip, trips & falls are preventable by:

- Understand how slip, trip & fall accidents occur
- Be aware of more ice, water or other hazards that may result in a slip, trip & fall
- Exercise walking surfaces and bare feet of snow, ice, water or other hazards
- Take appropriate action to eliminate hazards and/or provide warning devices (E.g. cones)
- Identify troubled areas and notify your supervisor immediately

Slip, trips & fall prevention includes:

- Remove snow/ice, water/ice and parking lot walking areas are cleared of snow and ice
- Use sand or salt to reduce or eliminate slip & falls risk
- Perform warning signs devices that are well placed, remove water buildup frequently
- Reserve our power and use used on work zones (BOM, in field vehicles/equipment repair)
- Provide good lighting, especially during night hours
- Use the handbook on stairs. Maintain an unobstructed view of the stairs
- Conduct a job safety analysis before working to determine risks, hazards & mitigations
- Conduct safety toolbox talks before each shift to discuss slip, trip & fall safety precautions



TRAINING FLASH!

DERAILMENTS

During this winter season, there have already been several derailments. The snow and ice build-up between the rails caused equipment to derail because of the lack of a flange way for the wheels to ride in on the inside edge of the rail.

Switches are vulnerable to being easily clogged, preventing it from working properly. When the switch point does not make contact with the rail, it is called "spike" the switch and derail.

A lot of time and resources goes in to re-railing the vehicles. It is a quicker and easier to clean out the snow and ice and to assign responsibility to the MBTA and the riding public to mitigate the risk.

- Employees should be extra cautious and vigilant during snow and icy conditions.
- If in doubt, ALWAYS take the safest course of action and STOP.
- Immediately report any unsafe condition to the OCC (Dispatcher).



MBTA Safety Training - Collaborated by Training the Standard of Training
 Employee (Date Issued: 1/24/18)





Employee Injuries

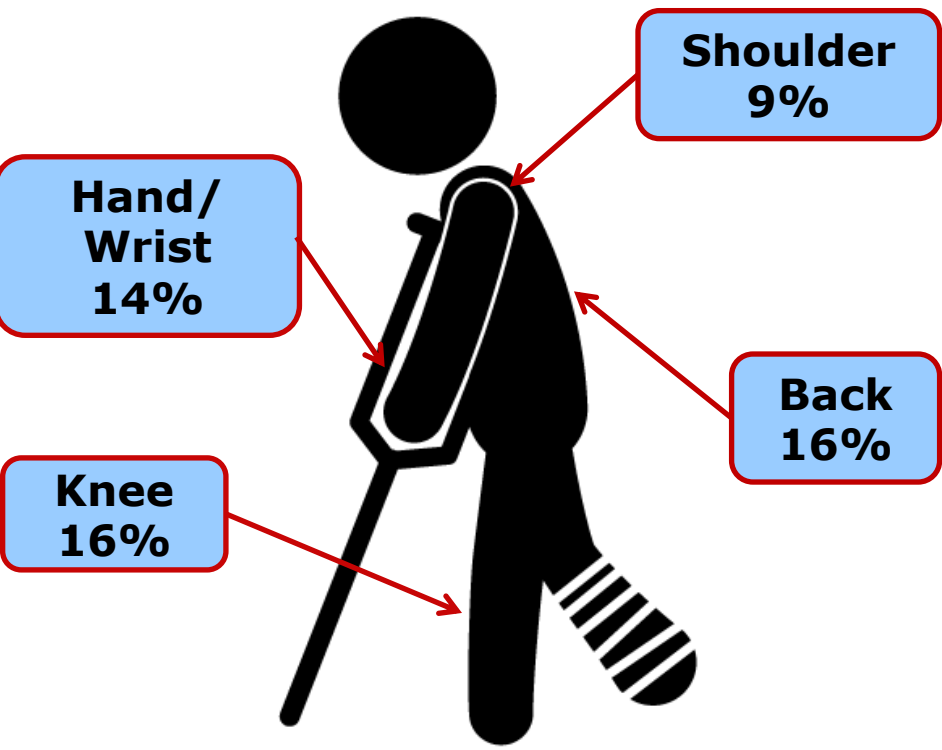
Most Commonly Treated Body Part Injury in Quarter 1 – 2019

Most Commonly Treated Injury Types in Quarter 1 – 2019

| Injury Type | Total | % |
|--------------------|-------|-----|
| Sprains / Strains | 23 | 33% |
| Contusion / Bruise | 16 | 23% |
| Cut / Laceration | 6 | 9% |

Sprains / Strains by Department

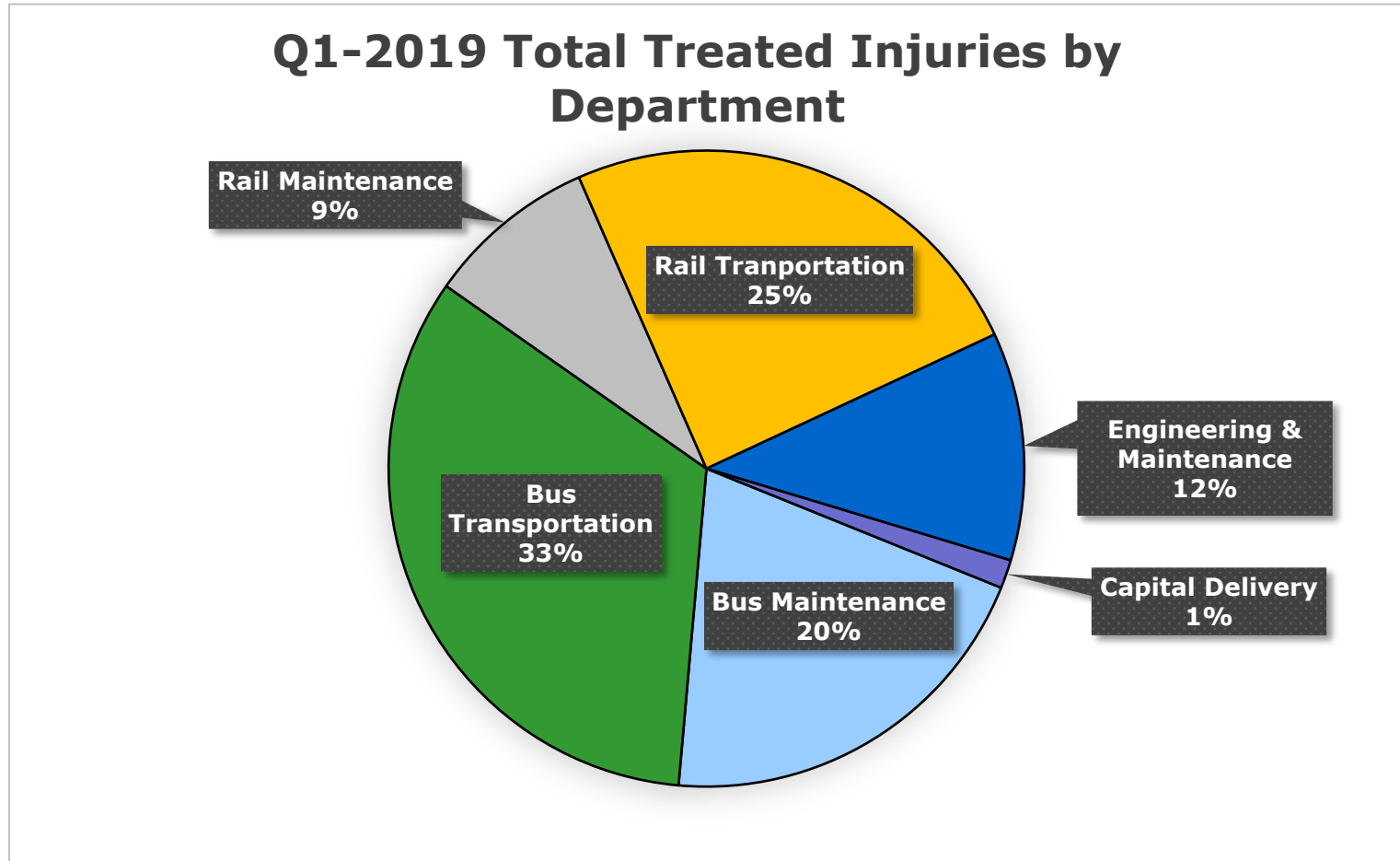
| Department | Total | % |
|---------------------|-------|-----|
| Bus Transportation | 12 | 52% |
| Bus Maintenance | 5 | 21% |
| Rail Transportation | 2 | 9% |
| Rail Maintenance | 2 | 9% |
| E & M | 2 | 9% |



Quarter 1 data is pending final verification with reporting departments and Worker's Comp.



Employee Injuries

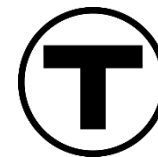


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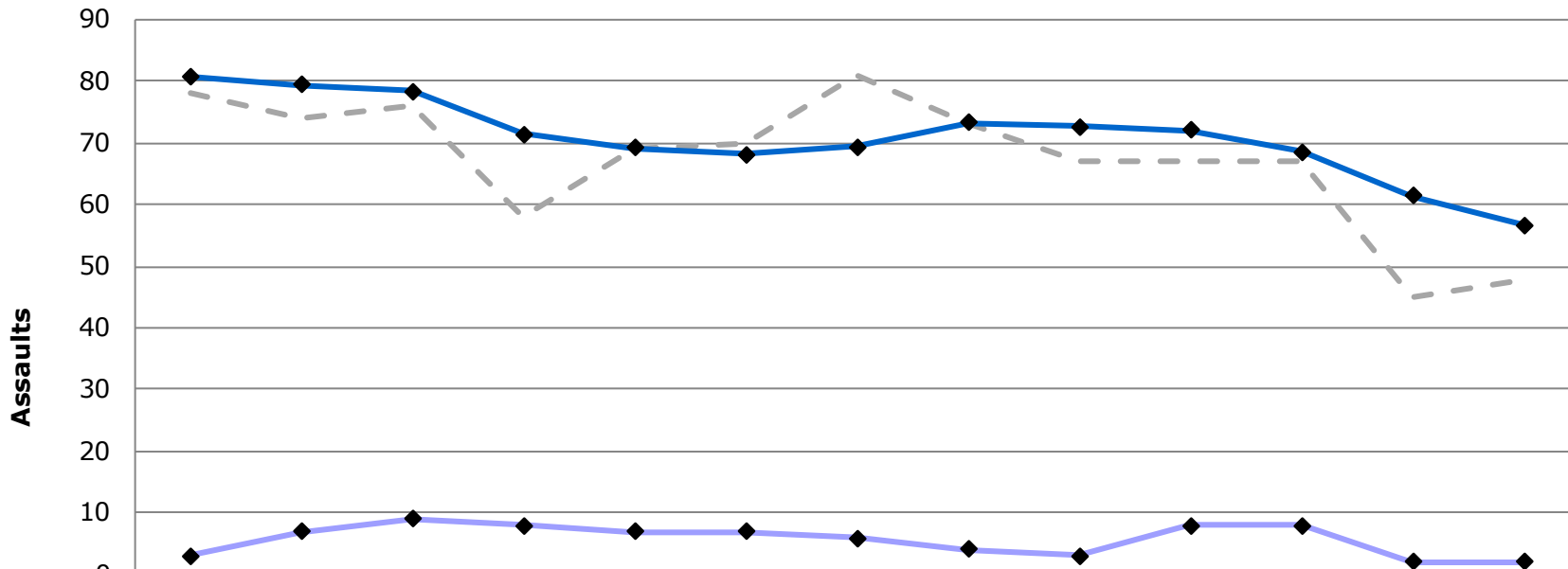
Employee Injuries

- Most common lost time injury type was sprains & strains, accounting for one-third of all treated injuries in Q1-2019.
- Bus Transportation and Maintenance Departments experienced the highest rates of sprain & strain injuries.
- 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.
 - Capital improvements to maintenance facilities including the Quincy Bus and Lynn Bus Garages as well as the Everett Bus and Rail facilities.



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 | 2019-Q1 |
|-------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Physical Assault | 45 | 40 | 44 | 33 | 43 | 23 | 37 | 27 | 30 | 38 | 36 | 35 | 21 |
| Verbal/Threat | 33 | 34 | 32 | 25 | 26 | 47 | 44 | 46 | 37 | 29 | 31 | 10 | 27 |
| — Total Assaults | 78 | 74 | 76 | 58 | 69 | 70 | 81 | 73 | 67 | 67 | 67 | 45 | 48 |
| ◆ With Time Lost | 3 | 7 | 9 | 8 | 7 | 7 | 6 | 4 | 3 | 8 | 8 | 2 | 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 | 56.8 |



Assaults on Employees

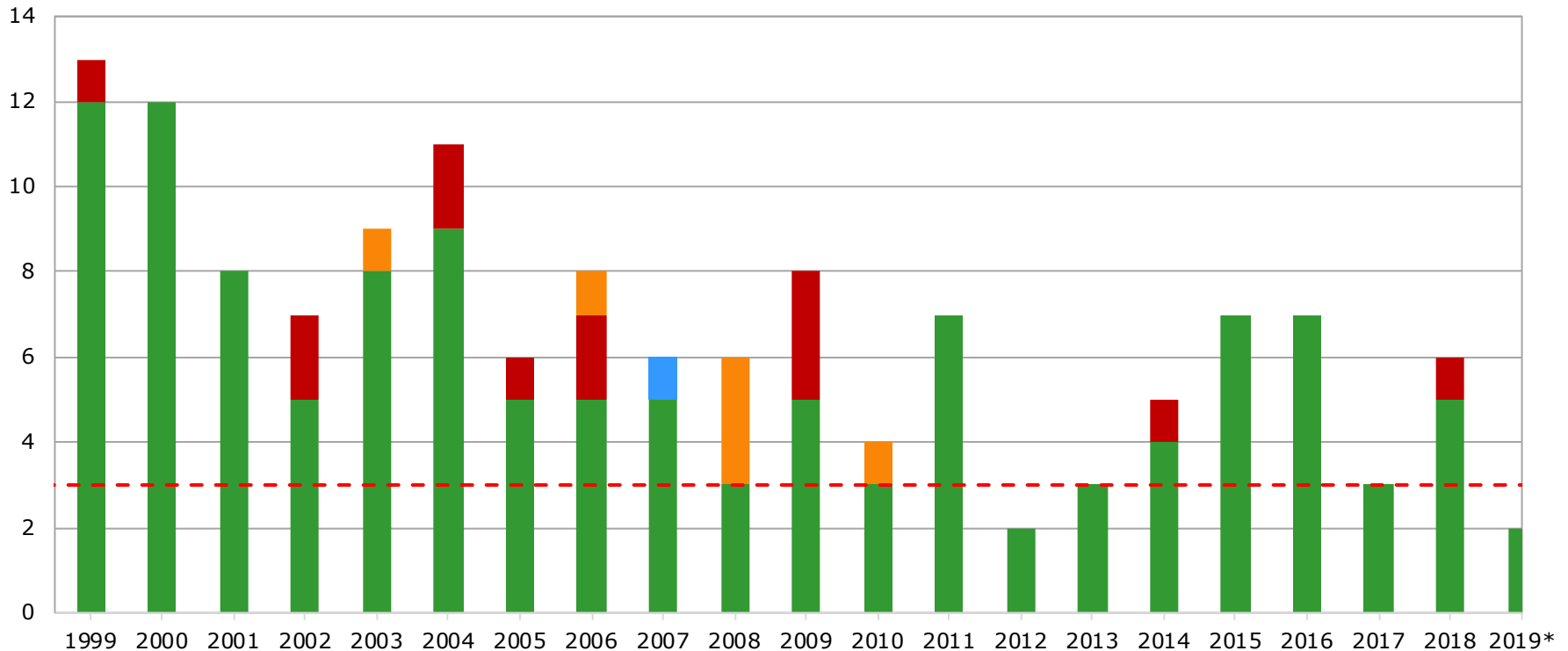
- Central focus is on reducing bus operator assaults.
- Initial Q1-2019 numbers indicate a 28% decrease in employee assaults when compared to Q1-2018.
- Reduction has been seen in both verbal and physical assaults in both Q4-2018 & Q1-2019.
- MBTA is continuing to install driver barriers on board buses 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

Transit Main Line Derailments 1999-2019

■ Green Line ■ Red Line ■ Orange Line ■ Blue Line

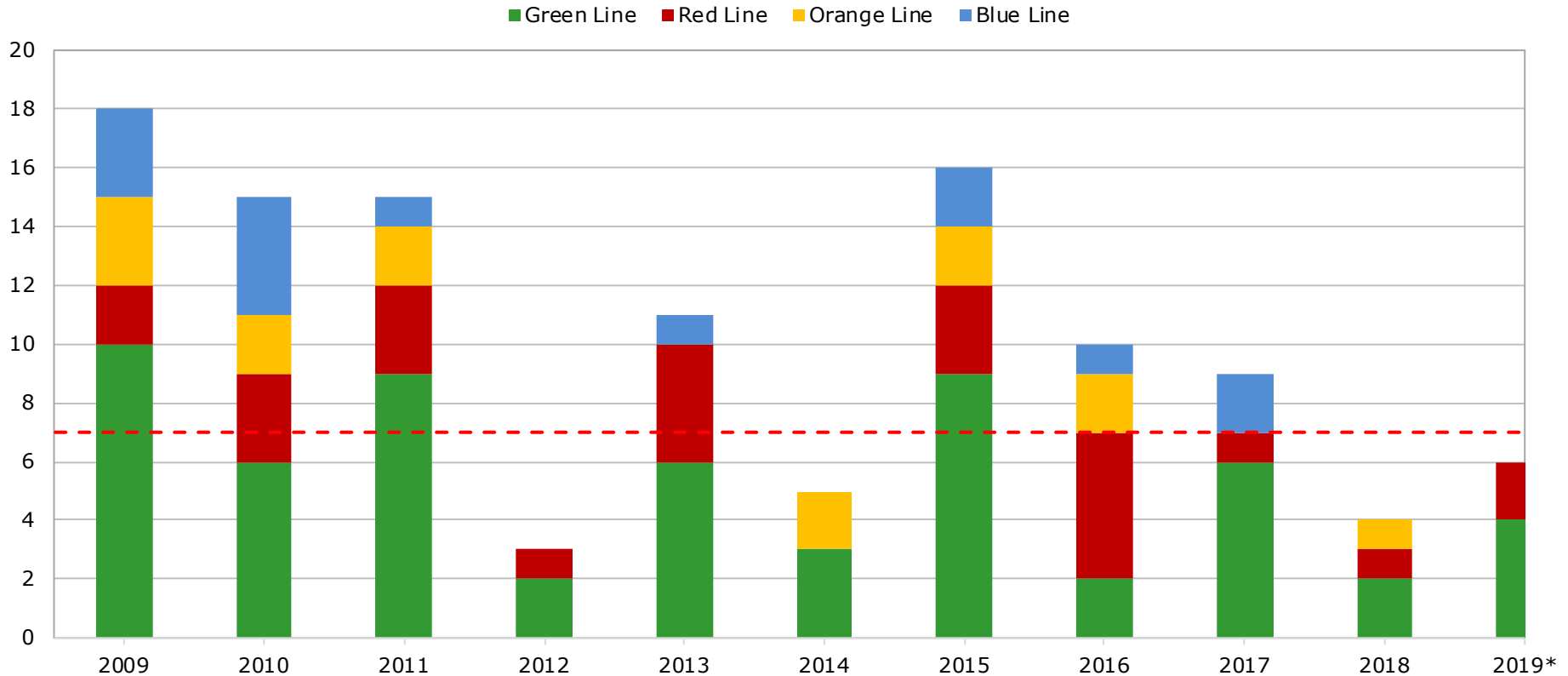


Excludes Hi-Rail Maintenance Vehicle Derailments - Derailment numbers above the Safety Performance Indicator goal signify a need for greater focus on the examination of causal factors and mitigations.



Derailments – Data Review

Transit Yard Derailments 2009-2019



Excludes Hi-Rail Maintenance Vehicle Derailments - Derailment numbers above the Safety Performance Indicator goal signify a need for greater focus on the examination of causal factors and mitigations.



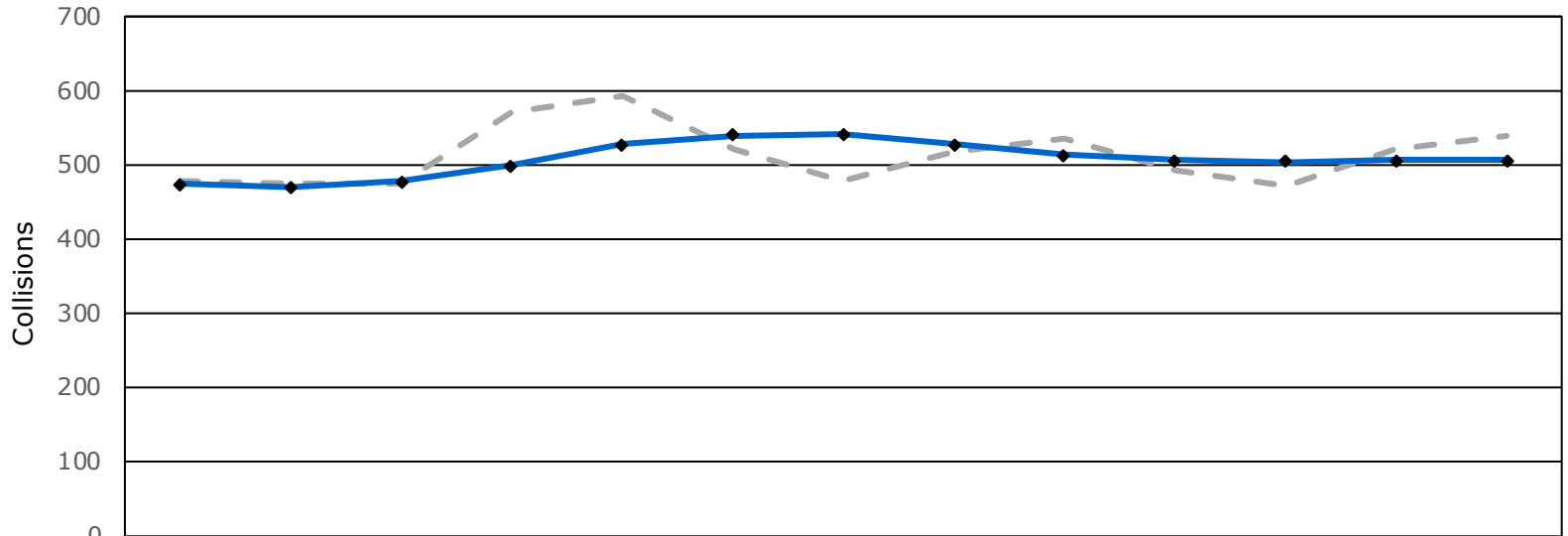
Derailment

- Yard Derailments experienced a significant increase in Q1-2019.
- Four out of the six yard derailments occurred on January 21 & 22 and were related to adverse weather conditions.
- Cold temperatures experienced on January 21 caused accumulated precipitation to freeze, resulting in significant ice buildup in switches across the system.
- In response, Safety and Training conducted an outreach training blitz for employees focused on identifying hazards during inclement weather.
- In Q1-2019 there was one revenue service derailment on the Green Line on Feb 5, 2019.
 - Revenue trolley derailed while traveling between Brookline Hills and Beaconsfield Stations.
 - Fifty passengers evacuated with no injuries reported.
 - Initial assessment identified a track defect as the probable cause.
 - Collaborative investigation by Safety, Transportation, Vehicle Maintenance, and Maintenance of Way is currently ongoing.
- Most recent derailment occurred on March 30 at Blandford Siding on the Green Line.
 - Non-Revenue trolley derailed while moving over a switch into the siding.
 - The switch has been taken out of service while testing is conducted.
 - Final investigation is currently pending.



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 | 2019-Q1 |
|-------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Bicyclist | 4 | 7 | 4 | 6 | 3 | 5 | 6 | 5 | 2 | 3 | 4 | 1 | 2 |
| Object | 61 | 55 | 67 | 65 | 133 | 74 | 75 | 62 | 81 | 67 | 88 | 65 | 91 |
| Person | 11 | 8 | 5 | 13 | 15 | 10 | 4 | 10 | 7 | 7 | 5 | 7 | 10 |
| Vehicle | 402 | 404 | 398 | 488 | 442 | 433 | 395 | 440 | 445 | 417 | 375 | 450 | 436 |
| — Total Collisions | 478 | 474 | 474 | 572 | 593 | 522 | 480 | 517 | 535 | 494 | 472 | 523 | 539 |
| ◆ 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 | 507.0 |

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



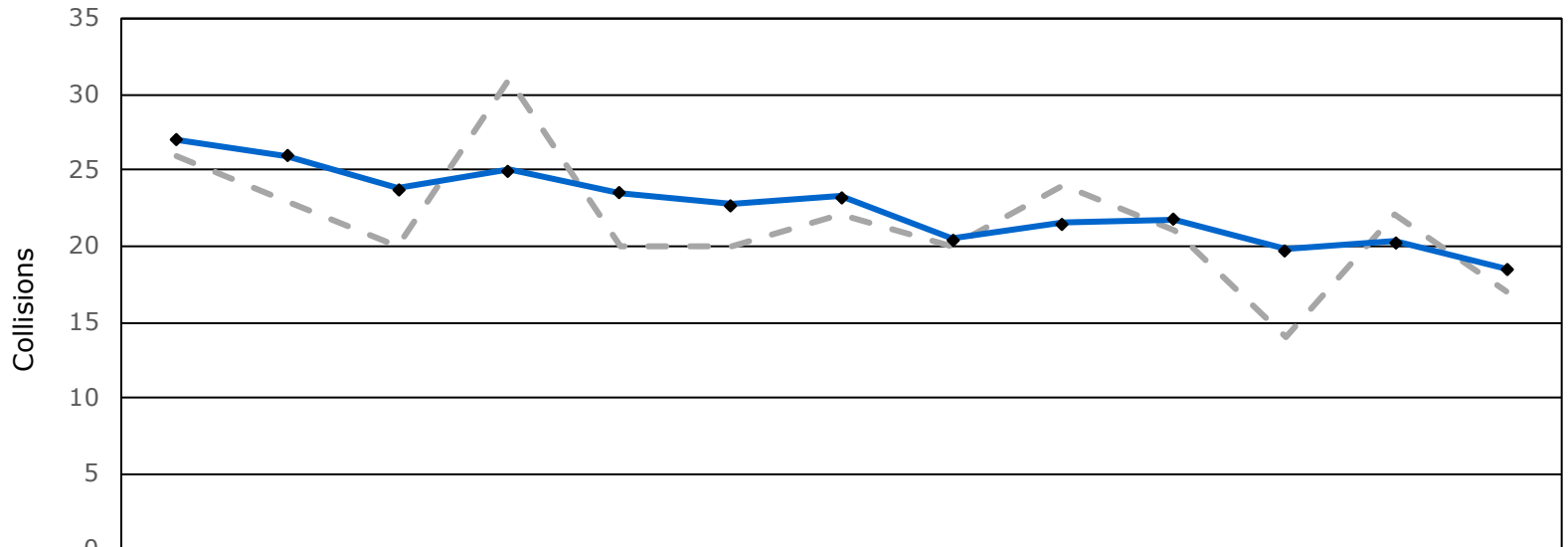
*Totals based on a review of Operations Logs and incident reports submitted to MBTA Safety.

Draft for Discussion & Policy Purposes Only



Bus Collisions

Reportable Bus Collisions



| | 2016-Q1 | 2016-Q2 | 2016-Q3 | 2016-Q4 | 2017-Q1 | 2017-Q2 | 2017-Q3 | 2017-Q4 | 2018-Q1 | 2018-Q2 | 2018-Q3 | 2018-Q4 | 2019-Q1 |
|-------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Bicyclist | 0 | 1 | 0 | 4 | 0 | 1 | 0 | 0 | 0 | 1 | 2 | 0 | 0 |
| Object | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| Person | 7 | 3 | 2 | 11 | 4 | 4 | 0 | 5 | 3 | 3 | 1 | 3 | 7 |
| Vehicle | 18 | 19 | 18 | 16 | 16 | 15 | 22 | 15 | 21 | 16 | 11 | 18 | 10 |
| — Total Collisions | 26 | 23 | 20 | 31 | 20 | 20 | 22 | 20 | 24 | 21 | 14 | 22 | 17 |
| ◆ Total Rolling Average | 27.0 | 26.0 | 23.8 | 25.0 | 23.5 | 22.8 | 23.3 | 20.5 | 21.5 | 21.8 | 19.8 | 20.3 | 18.5 |

On Jan 24, 2019, the reportable thresholds were updated to collisions resulting in a fatality, serious injury, substantial damage, at a grade crossing, or with a person or bicyclist requiring transport to a medical facility.





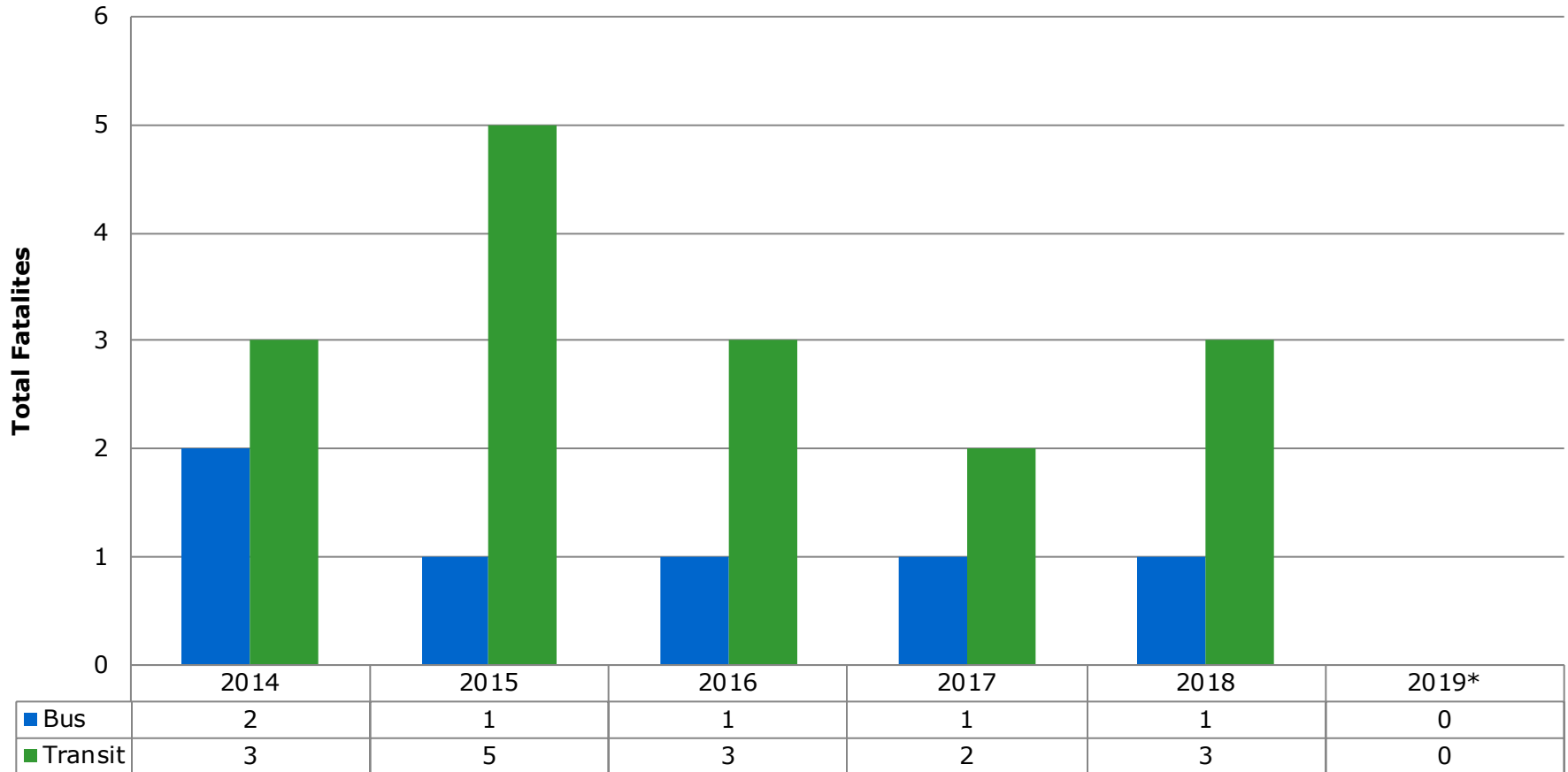
Bus Collisions

- On January 24, 2019, the DPU reportable collision thresholds for buses were updated to better align with the FTA transit thresholds.
- These reporting changes may have contributed to the decrease seen in reportable events observed in Q1-2019.
- The Bus Accident Reduction Committee continues to meet monthly to review accident and incident trending.
- Incident heat mapping of bus/pedestrian and bus/automobile accidents has lead to a focus around the Dudley Station area.
- The committee is reviewing station configuration, traffic patterns, pedestrian movement, and operating procedures.
- MBTA Safety and Training have been conducting outreach with bus operators focused on reducing collisions and injuries.



Bus & Transit Fatalities – 2014-2019

Bus and Transit Fatalities 2014-2019



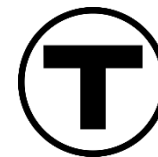
Totals are organized by Calendar Year





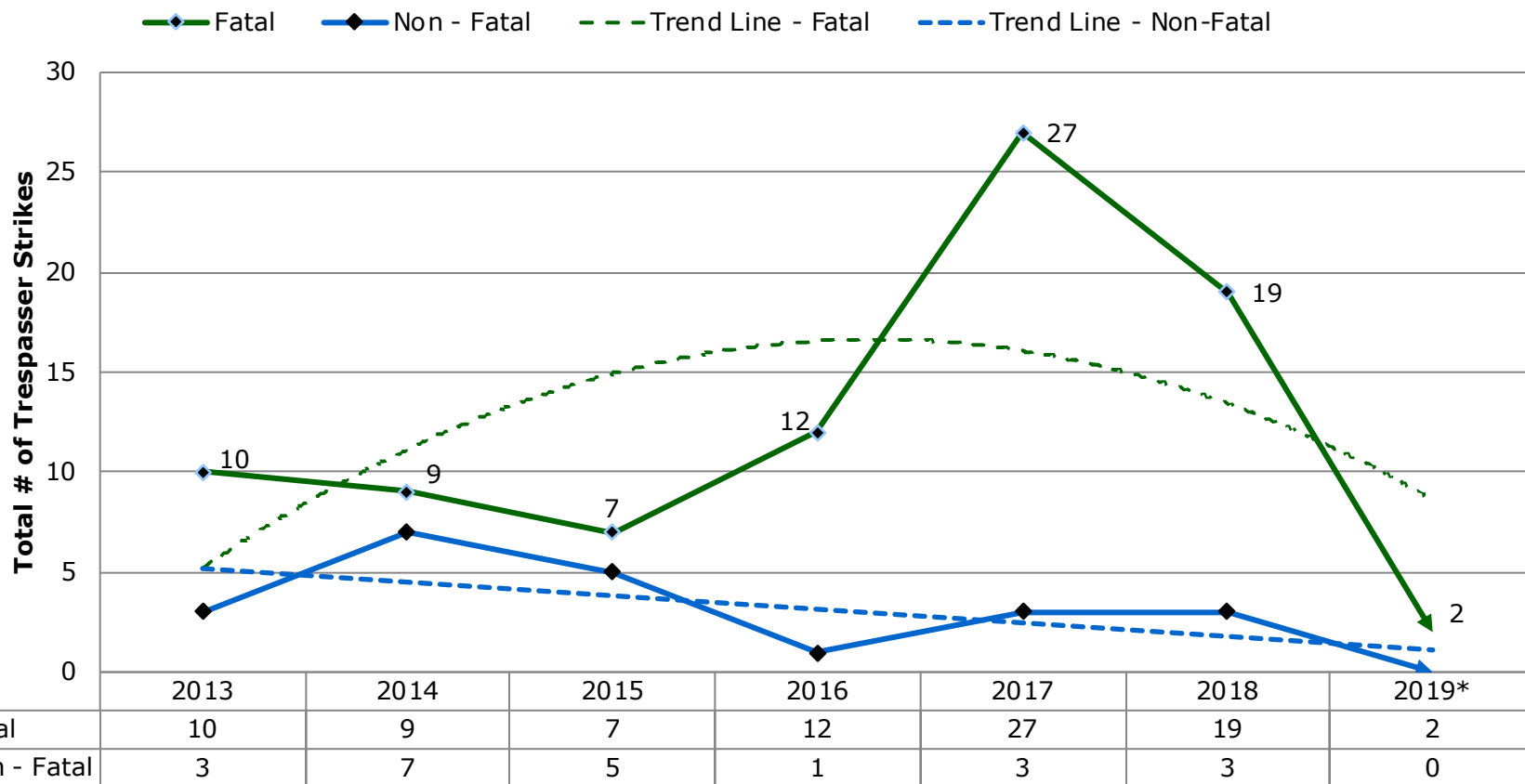
Bus & Transit Fatalities – 2014-2019

- Except for a spike in 2015, the number of both bus and transit fatalities have remained consistent over the past 5 years.
- As of March 31, 2019, there have not been any reported bus or transit related fatalities.



Commuter Rail Trespasser Strikes

Commuter Rail Trespasser Strikes



Totals based on a review of Commuter Rail incident and Safety Summary Reports



* As of 3/31/19



Commuter Rail Trespasser Strikes

- While early, 2019 is trending toward a significant overall decrease in trespasser strikes.
- Two (2) strikes were reported in Q1-2019 compared to eight (8) in Q1-2018.
- The frequency of trespasser strikes increased significantly in 2017 and, while it decreased in 2018, it remained at an overall elevated level when compared to 2013 thru 2016.
- The increase in commuter rail fatalities paralleled 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.