



**Massachusetts Bay  
Transportation Authority**

# Safety Data Analysis Report

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## May 2022

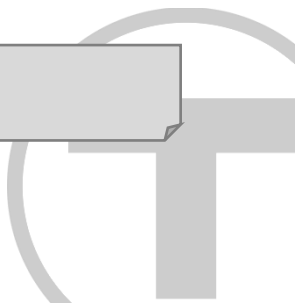
Matthew DeDonato  
Deputy Director Safety Oversight and Planning

# BUS

## SAFETY PERFORMANCE INDICATORS

Bus - Safety Performance Indicators																				
Bus	2021 Monthly Target	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	2021 Target	2021 Total	2022 Monthly Target	Jan-22	Feb-22	Mar-22	Apr-22	May-22	2022 Target	2022 YTD	
Fatalities - Total <sup>1</sup>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NTD Reportable Safety Events - Rate per million revenue miles	6.00	4.25	2.56	2.00	4.29	5.33	3.46	1.02	6.65	6.00	3.71	5.21	4.26	2.37	3.63	3.83	4.35	5.21	3.71	
NTD Reportable Injuries - Rate per million revenue miles	15.50	8.50	11.24	11.53	11.93	13.86	9.90	10.22	17.90	15.50	11.01	14.00	9.59	12.42	9.86	11.50	9.80	14.00	10.59	
Customer Injuries - Rate per million passenger trips	2.95	2.14	3.44	2.51	2.40	3.31	2.62	2.23	4.71	2.95	2.99	2.93	2.18	3.30	2.74	2.57	2.29	2.93	2.61	
Collisions - Rate per million revenue miles	85.63	61.90	64.39	57.64	59.18	73.02	60.37	58.27	64.44	85.63	58.60	57.42	74.58	79.83	77.88	63.51	81.08	57.42	75.34	
with Vehicle - Rate per million revenue miles	N/A	47.72	49.06	43.60	46.29	59.16	48.00	47.53	48.59	N/A	45.08	44.18	59.66	61.50	60.75	53.11	64.21	44.18	59.84	
with Object - Rate per million revenue miles	N/A	10.39	10.73	11.53	8.59	9.59	9.40	9.71	11.25	N/A	9.93	9.73	11.72	14.78	13.50	7.67	14.15	9.73	12.34	
with Person - Rate per million revenue miles	N/A	2.83	1.53	0.50	3.34	1.07	2.47	1.02	1.53	N/A	1.54	1.51	0.53	1.77	2.08	1.10	1.09	1.51	1.31	
with T Vehicle - Rate per million revenue miles	N/A	0.94	3.07	2.00	0.95	3.20	0.49	0.00	3.07	N/A	2.04	2.00	2.66	1.77	1.56	1.64	1.63	2.00	1.86	
Reportable Smoke/Fire Incidents	1	3	0	3	2	1	1	3	2	15	16	1	1	0	0	1	2	15	4	
Mean Miles between Mechanical Failures	18,000	34,707	32,075	32,018	23,284	29,301	26,073	22,281	31,775	18,000	28,638	25,000	18,531	22,047	26,099	25,623	25,199	25,000	23,262	

In May 2022, bus ridership was at approximately 69% of the 2019 ridership.



# Bus Collision Mitigation

To reduce bus collision rates Bus Transportation and Bus Training are undertaken the following initiatives:

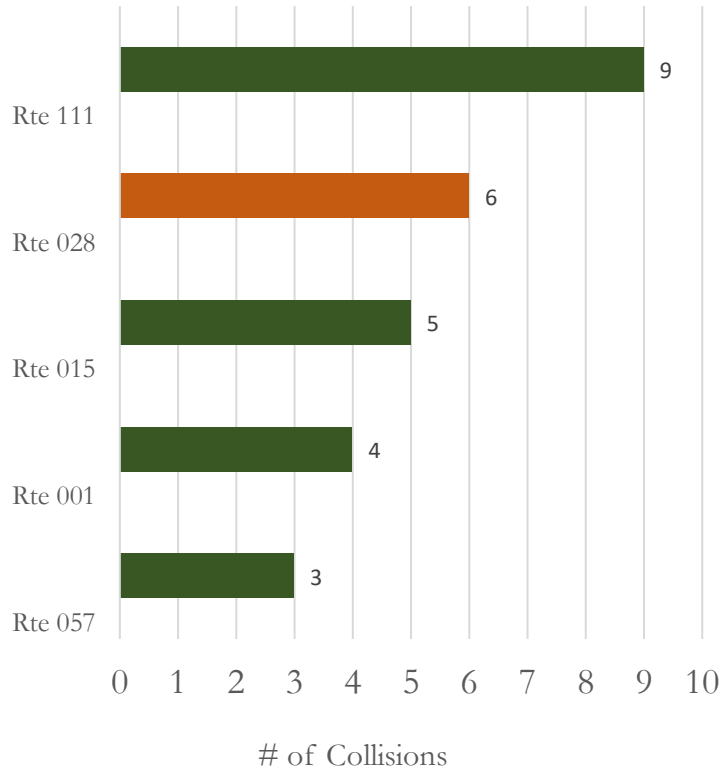
- Continued rollout of revamped Bus Operator Recertification Program
- Training flash and operator focused campaign on bus stop approach
- Disseminated rule reminder on procedure for reversing a bus
- Increased Safety Rules Compliance auditing



# BUS

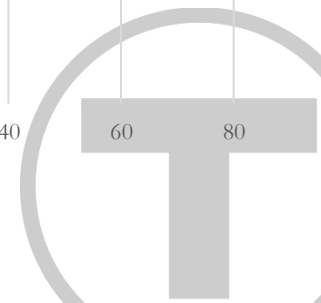
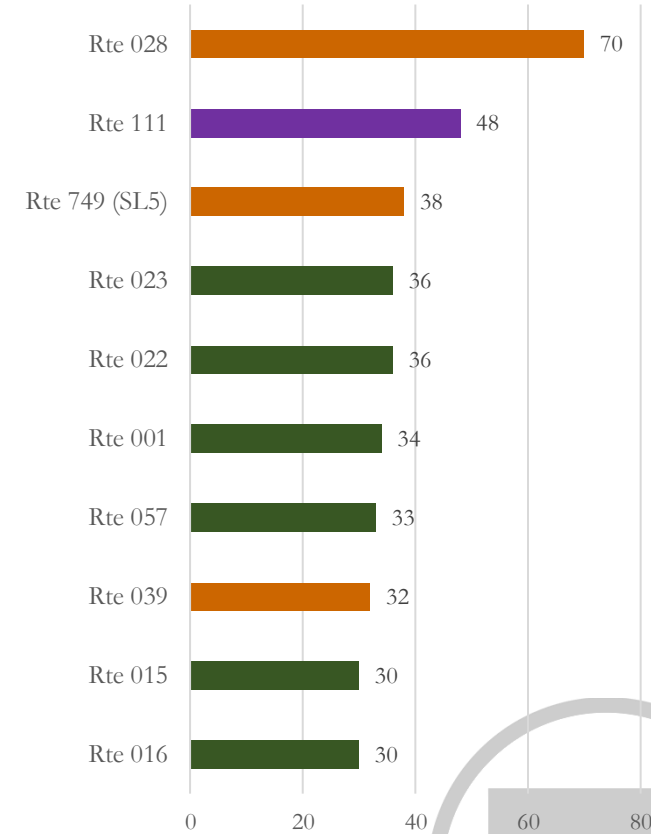
## Collision Breakdown

Top 5 Routes with Highest # of Collisions



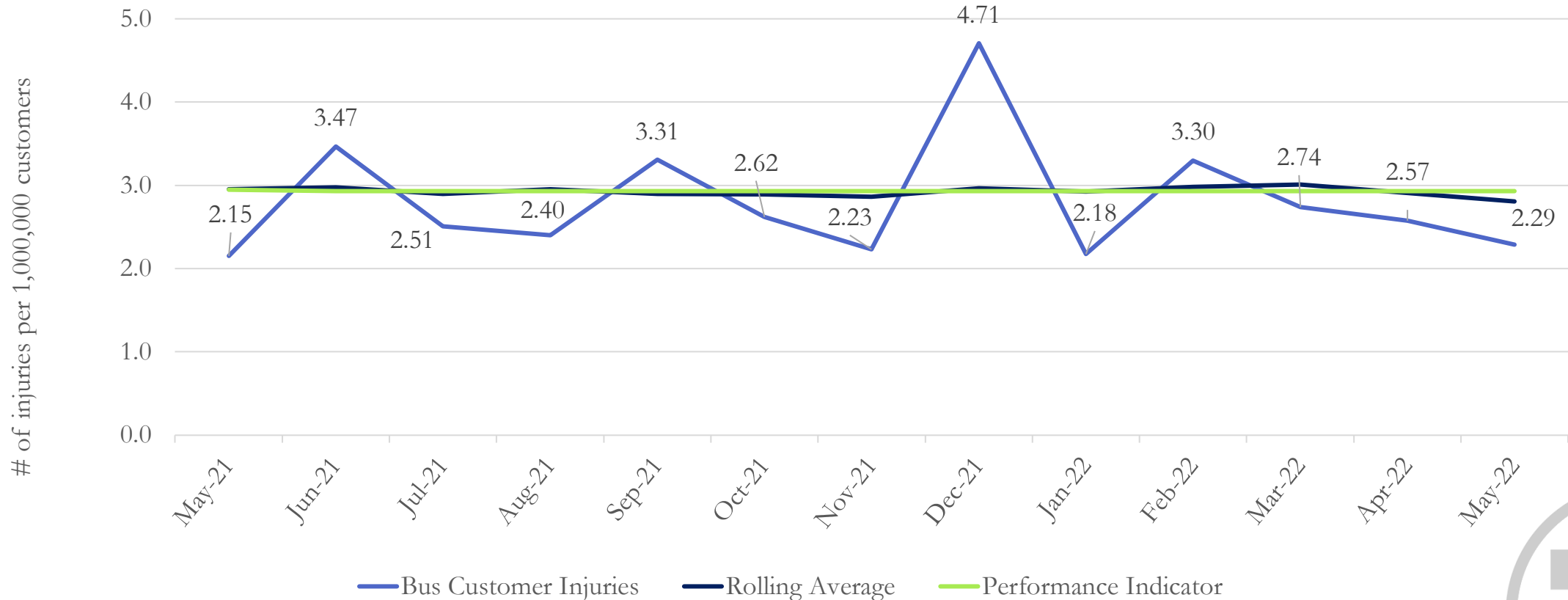
Route	Description
111	Woodlawn to Haymarket Station
28	Mattapan Station to Ruggles Station
15	Fields Corner Station or Kane Sq to Ruggles Station
1	Harvard Square to Nubian Station
57	Watertown Yard or Oak Square to Kenmore Station

Top 10 Routes with Highest # of Collisions Past 12 Months



# BUS

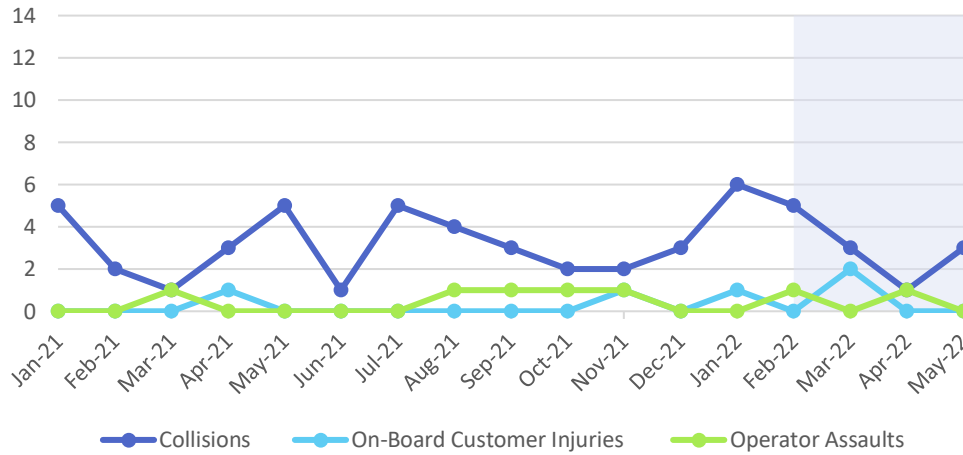
## CUSTOMER INJURIES PER 1,000,000 CUSTOMERS, PAST 13 MONTHS



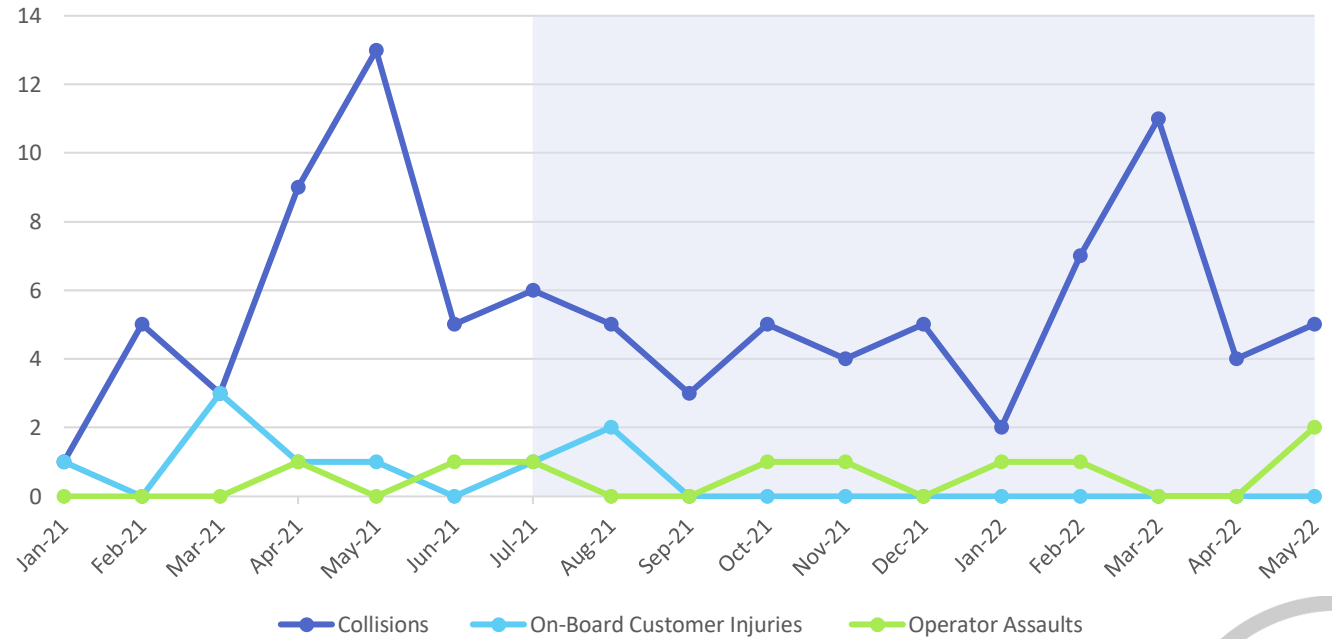
# BUS

## Free Bus Route Safety Incidents

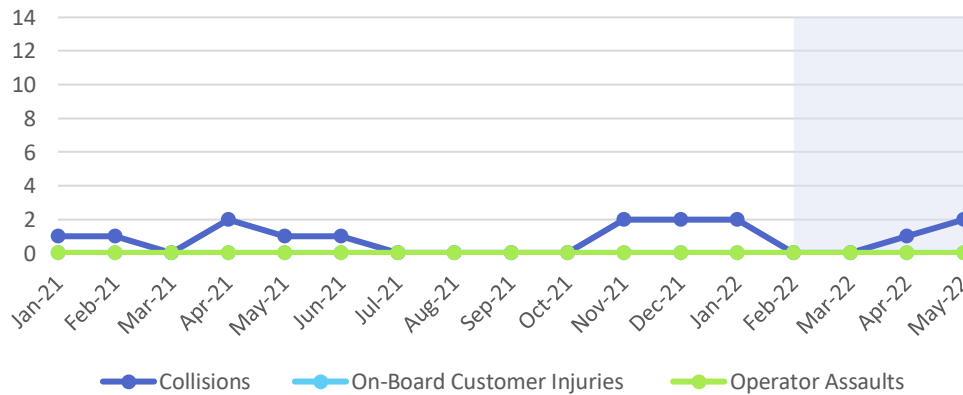
### Route 23 Safety Incidents



### Route 28 Safety Incidents



### Route 29 Safety Incidents



# RAIL

## SAFETY PERFORMANCE INDICATORS - Heavy Rail

Heavy Rail - Safety Performance Indicators																			
Heavy Rail	2021 Monthly Target	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	2021 Target	2021 Total	2022 Monthly Target	Jan-22	Feb-22	Mar-22	Apr-22	May-22	2022 Target	2022 YTD
Fatalities - Total <sup>1</sup>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
NTD Reportable Safety Events - Rate per million revenue miles	1.00	1.74	1.76	0.51	1.00	1.62	0.52	1.63	1.04	1.00	1.09	1.00	0.00	1.78	0.52	1.09	2.75	1.00	1.21
NTD Reportable Injuries - Rate per million revenue miles	9.45	5.81	8.78	6.67	6.02	7.02	13.12	10.34	8.87	9.45	8.39	8.46	12.54	10.66	9.32	12.56	9.36	8.46	10.88
Mainline Revenue Train Derailments	0	0	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0
Mainline Non-Revenue Train Derailments	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1
Mean Miles between Mechanical Failures	47,000	41,955	47,064	48,344	51,118	40,399	29,975	39,987	42,484	47,000	44,617	47,500	26,193	33,891	43,898	51,980	73,942	47,500	40,653
<b>Orange Line</b>	<b>2021 Monthly Target</b>	<b>May-21</b>	<b>Jun-21</b>	<b>Jul-21</b>	<b>Aug-21</b>	<b>Sep-21</b>	<b>Oct-21</b>	<b>Nov-21</b>	<b>Dec-21</b>	<b>2021 Target</b>	<b>2021 Total</b>	<b>2022 Monthly Target</b>	<b>Jan-22</b>	<b>Feb-22</b>	<b>Mar-22</b>	<b>Apr-22</b>	<b>May-22</b>	<b>2022 Target</b>	<b>2022 YTD</b>
Customer Injuries - Rate per million passenger trips	2.99	2.26	3.53	2.78	2.20	1.52	4.95	3.09	2.53	2.99	3.12	3.06	1.57	3.25	3.02	3.39	3.03	3.06	2.91
Collisions - Rate per million revenue miles	0.77	4.28	2.25	0.00	3.54	2.01	2.12	0.00	2.13	0.77	2.32	2.27	0.00	0.00	0.00	0.00	0.00	2.27	0.00
Reportable Smoke/Fire Incidents	5	6	2	3	1	2	0	3	2	56	29	2	1	5	2	7	2	28	17
<b>Red Line</b>	<b>2021 Monthly Target</b>	<b>May-21</b>	<b>Jun-21</b>	<b>Jul-21</b>	<b>Aug-21</b>	<b>Sep-21</b>	<b>Oct-21</b>	<b>Nov-21</b>	<b>Dec-21</b>	<b>2021 Target</b>	<b>2021 Total</b>	<b>2022 Monthly Target</b>	<b>Jan-22</b>	<b>Feb-22</b>	<b>Mar-22</b>	<b>Apr-22</b>	<b>May-22</b>	<b>2022 Target</b>	<b>2022 YTD</b>
Customer Injuries - Rate per million passenger trips	4.36	2.08	2.26	2.45	2.33	1.98	1.79	3.55	1.89	4.36	3.05	3.01	5.75	3.99	2.51	3.15	1.84	3.01	3.24
Collisions - Rate per million revenue miles	0.48	0.00	2.14	1.89	0.00	0.00	0.00	2.85	0.91	0.48	0.90	0.88	1.88	0.00	0.84	0.00	0.00	0.88	0.53
Reportable Smoke/Fire Incidents	5	4	9	2	6	3	5	4	5	63	71	5	6	11	5	5	0	70	27
<b>Blue Line</b>	<b>2021 Monthly Target</b>	<b>May-21</b>	<b>Jun-21</b>	<b>Jul-21</b>	<b>Aug-21</b>	<b>Sep-21</b>	<b>Oct-21</b>	<b>Nov-21</b>	<b>Dec-21</b>	<b>2021 Target</b>	<b>2021 Total</b>	<b>2022 Monthly Target</b>	<b>Jan-22</b>	<b>Feb-22</b>	<b>Mar-22</b>	<b>Apr-22</b>	<b>May-22</b>	<b>2022 Target</b>	<b>2022 YTD</b>
Customer Injuries - Rate per million passenger trips	1.02	1.23	0.00	0.00	0.00	0.00	2.65	1.07	3.52	1.02	1.07	1.05	3.88	0.00	0.00	1.01	0.00	1.05	0.90
Collisions - Rate per million revenue miles	0.21	3.06	0.00	0.00	2.74	0.00	0.00	0.00	0.00	0.21	0.73	0.72	6.03	0.00	2.79	0.00	4.69	0.72	2.62
Reportable Smoke/Fire Incidents	1	1	1	1	0	0	0	0	1	6	11	1	0	0	0	1	0	11	1

In May 2022, heavy rail ridership was at approximately 49% of the ridership compared to 2019.



# Injury Reduction and Mitigation

To reduce reportable injury rates Rail Transportation is undertaken the following initiatives:

- Improved in-station safety audio messaging
- Hazard and defect reporting
- Safety Rules Compliance auditing and train operation observations





# RAIL

## SAFETY PERFORMANCE INDICATORS – Light Rail

Light Rail - Safety Performance Indicators																			
Light Rail	2021 Monthly Target	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	2021 Target	2021 Total	2022 Monthly Target	Jan-22	Feb-22	Mar-22	Apr-22	May-22	2022 Target	2022 YTD
Fatalities - Total <sup>1</sup>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NTD Reportable Safety Events - Rate per million revenue miles	5.83	2.65	2.48	4.72	11.67	0.00	2.10	2.07	3.99	5.83	3.21	5.58	6.27	6.79	8.05	4.16	4.10	5.58	5.87
NTD Reportable Injuries - Rate per million revenue miles	17.25	21.20	9.93	68.38	9.33	10.94	10.52	8.29	9.97	17.25	16.60	14.70	10.45	22.64	14.09	10.41	22.57	14.70	15.93
Mainline Revenue Train Derailments	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0
Mainline Non-Revenue Train Derailments	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Mean Miles between Mechanical Failures	7,000	7,814	7,280	5,721	6,077	7,308	7,516	8,393	7,817	7,000	7,780	7,500	7,329	5,311	7,558	9,806	8,150	7,500	7,452
Green Line	2021 Monthly Target	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	2021 Target	2021 Total	2022 Monthly Target	Jan-22	Feb-22	Mar-22	Apr-22	May-22	2022 Target	2022 YTD
Customer Injuries - Rate per million passenger trips	4.23	1.60	2.00	14.37	1.60	1.69	1.60	1.55	1.56	4.23	3.53	3.48	2.00	3.00	2.21	1.70	4.73	3.48	2.73
Collisions - Rate per million revenue miles	6.65	5.30	2.48	9.43	4.67	2.19	2.10	4.14	7.98	6.65	4.53	4.44	6.27	11.32	6.04	6.24	2.05	4.44	6.29
Reportable Smoke/Fire Incidents	4	2	3	0	2	1	0	7	5	45	34	3	3	8	4	2	2	33	19

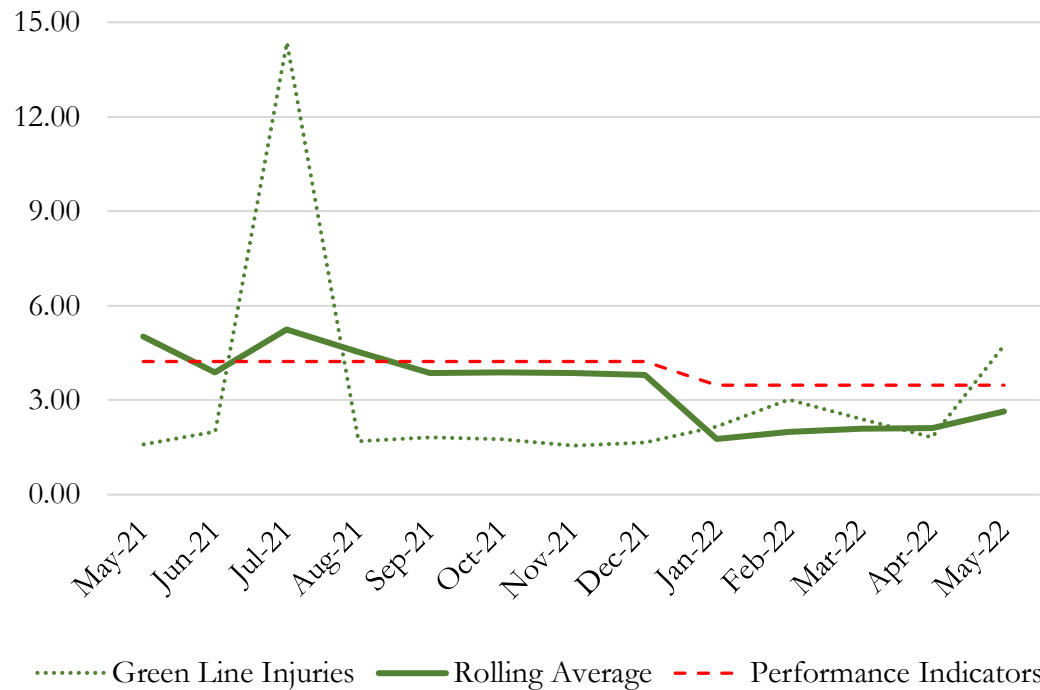
In May 2022, light rail ridership was at approximately 45% of the ridership compared to 2019.



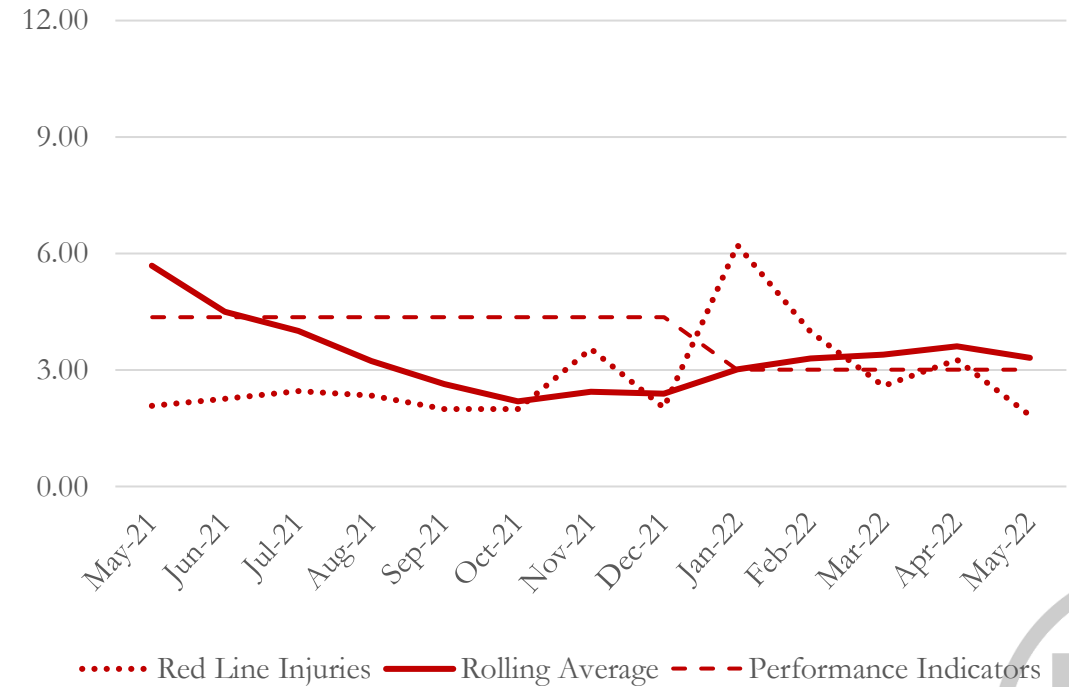
# RAIL

## CUSTOMER INJURIES per 1,000,000 Customers PAST 13 MONTHS

**Green Line Customer Injuries per 1,000,000 Customers**



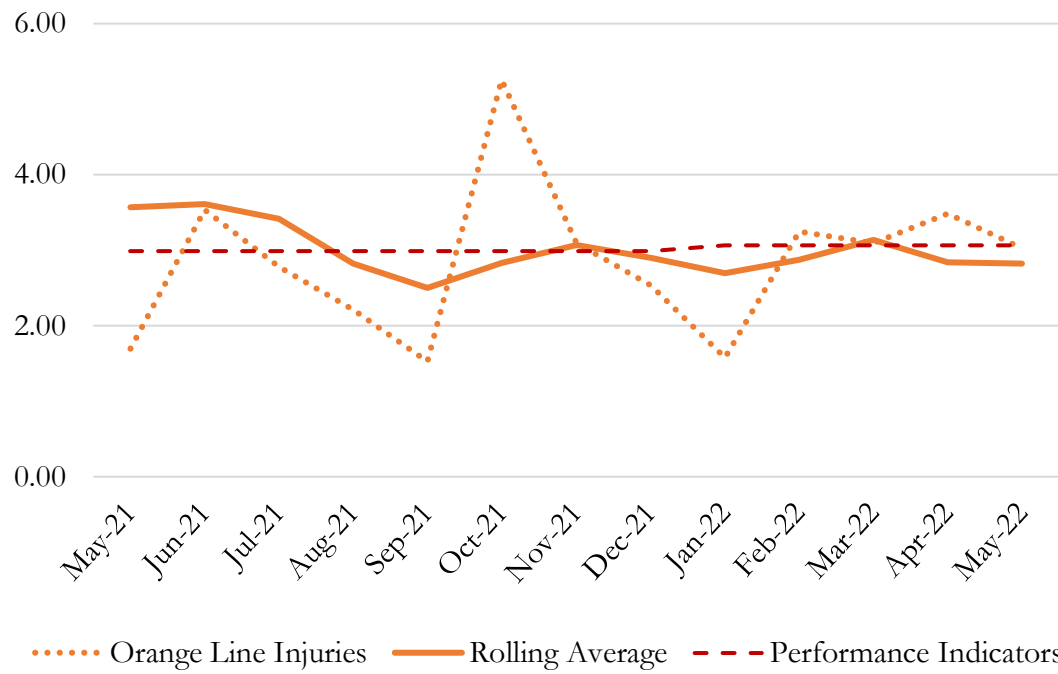
**Red Line Customer Injuries per 1,000,000 Customers**



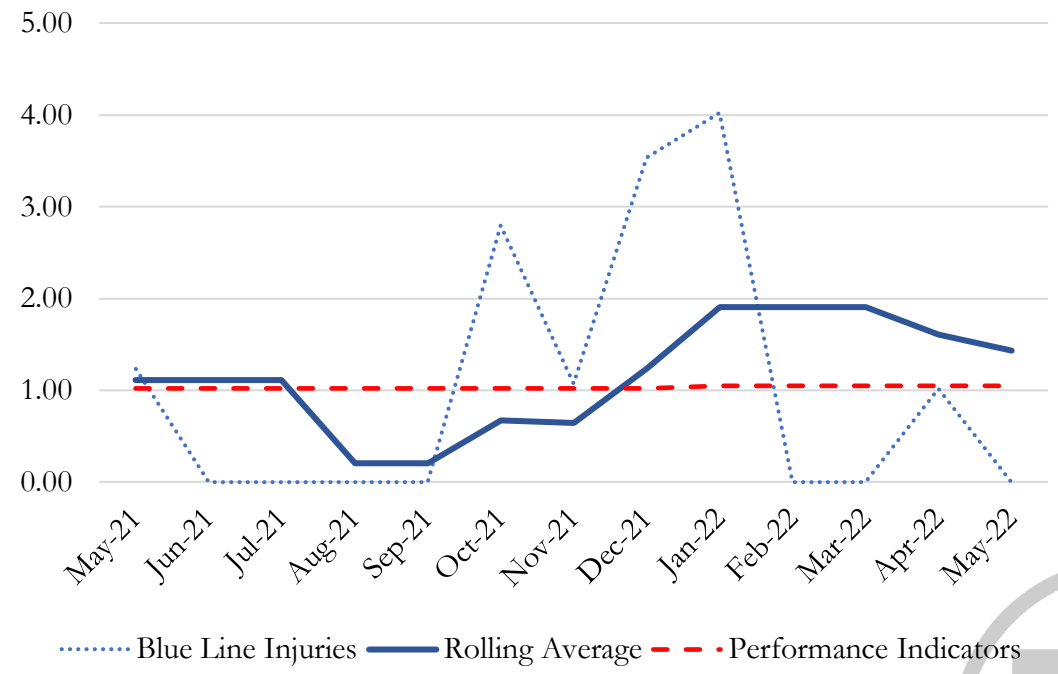
# RAIL

## CUSTOMER INJURIES per 1,000,000 Customers PAST 13 MONTHS CONT'D

**Orange Line Customer Injuries per 1,000,000 Customers**



**Blue Line Customer Injuries per 1,000,000 Customers**



# FIRE/SMOKE

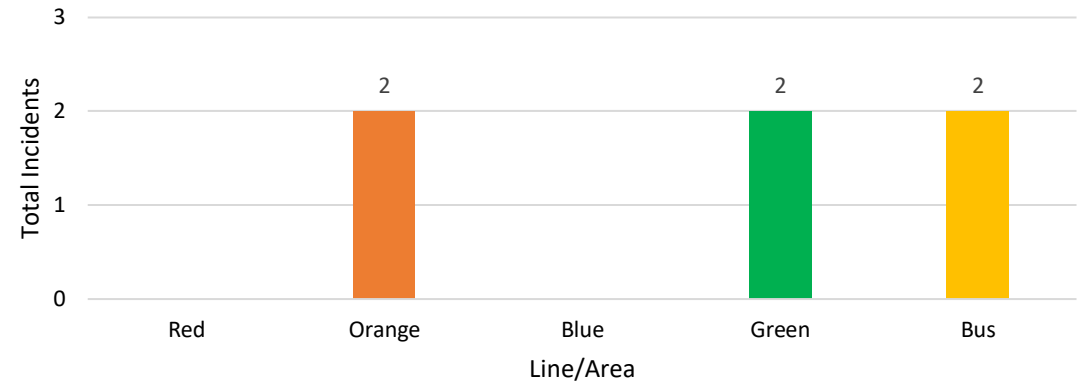
## Code 1 Reportable Incidents

- fire/smoke with 1 or more injuries requiring transport  
OR
- fire/smoke that requires suppression but not evacuation  
OR
- fire/smoke with an evacuation onto the ROW

## Code 1 Non-Reportable Incidents

- fire/smoke with **NO** injury transport, suppression or evacuation

TOTAL REPORTABLE INCIDENTS - May 2022



May Total Code 1: Fire/Smoke Incidents		
NTD Criteria	Non-Reportable	Reportable
Rail	15	4
Bus	8	2
<b>May Total Incident</b>	<b>23</b>	<b>6</b>
<b>2021 Total Monthly Avg</b>	<b>17.7</b>	<b>12.8</b>

May Total Reportable Incidents - AREA		
	May-22	May-21
Red	0	3
Orange	2	6
Blue	0	1
Green	2	2
Bus	2	4
<b>TOTAL</b>	<b>6</b>	<b>16</b>



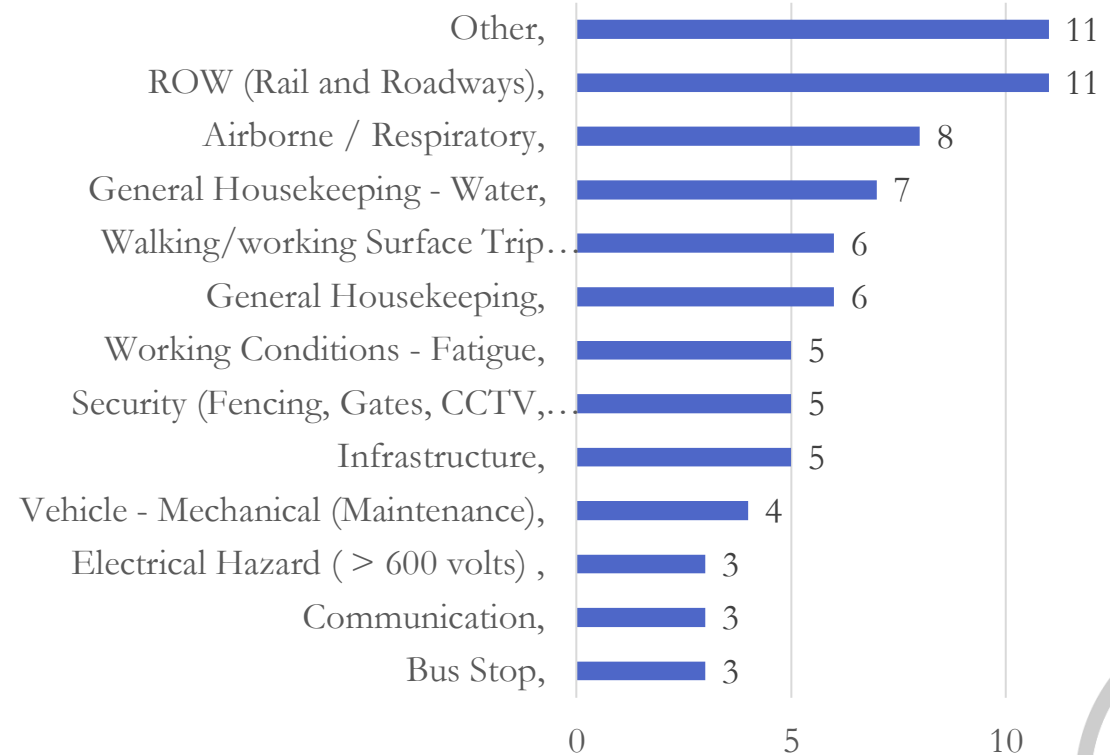
# SAFETY HOTLINE

## Safety Hotline Reporting Options

- Safety Hotline
- Safety Notification email
- Direct reporting to an MBTA Safety official
- Submitting Form B by email, to an MBTA Safety official, or by fax

Month	Total Reports	Closed
Mar 2022	23	17
April 2022	25	15
May 2022	27	14
<b>Total</b>	<b>75</b>	<b>46</b>

Safety Hotline Reports by Hazard Types (3 or more):  
Last 3 months



# SAFETY HOTLINE

Below are examples of MBTA Safety Hotline reports received and investigated in May 2022.

- REPORT – A switch at the Copley Junction is difficult to throw and takes a few people to do so.

**Complete - MBTA Safety contacted Signals Dept and coordinated a meeting with the Track Dept at the switch. It was determined that there was an incorrect heel block bolt that was installed. The Track Dept performed a temporary repair, followed by a later permanent repair.**



- REPORT – A Green Line employee reported poor radio reception, including inability to transmit, on the westbound between Haymarket and Government Center.

**Pending - IT Communication System is investigating this ongoing issue in which the wireless service is overpowering radio frequency through the tunnels and platforms.**

- REPORT – A Heavy Rail Maintenance employee reported a need for reinforcement of a bug procedure. Also, the 600-volt emergency shut-off was not functioning in the carhouse.

**Pending – A toolbox meeting was held for all shifts at the carhouse for existing SOPs, including working safely around energized vehicles. A project to repair the shut-off is underway with the team procuring the equipment necessary to install the new disconnect switches and complete the work.**

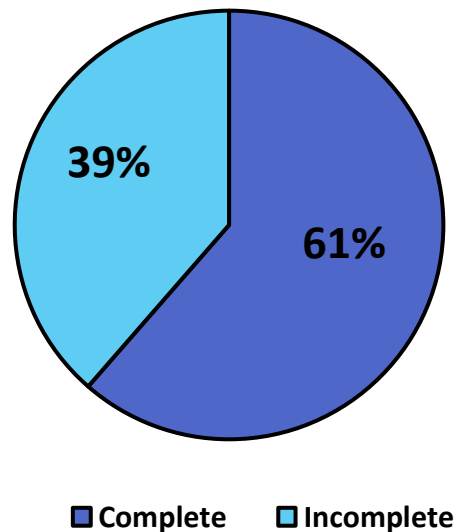


# SAFETY INITIATIVES

## SMS Fundamentals Course

Announced in April 2021, the MBTA SMS Fundamentals Course, which is the baseline Safety Management System introduction for the MBTA Workforce has been released to all MBTA employees via the MassDOT LearningHub. The course objectives include defining SMS, reviewing SMS roles and responsibilities, identifying and reporting hazards, and how safety reports are managed. Below are the MBTA wide completion percentages and course completion by month.

Overall Course Completion



COURSE COMPLETION BY MONTH, ALL TIME

