

Analysis of Bus Collision Incidents Using Data Driven Tools in Developing and Building a Safety First Culture



AMERICAN
PUBLIC
TRANSPORTATION
ASSOCIATION

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Overview

Rate Calculation

Data Review

Observations

Next Steps



Bus Accident March 2019

1. 2564_Bus 2564 Cam1



2. 2564_Bus 2564 Cam2



3. 2564_Bus 2564 Cam3



4. 2564_Bus 2564 Cam4



5. 2564_Bus 2564 Cam5



6. 2564_Bus 2564 Cam6



7. 2564_Bus 2564 Cam7



8. 2564_Bus 2564 Cam8



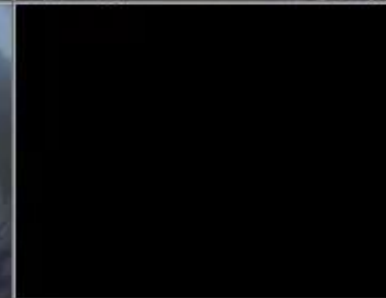
9. 2564_Bus 2564 Cam9



10. 2564_Bus 2564 Cam10



11. 2564_Bus 2564 Cam11



File View Layout Window Help

Map

You are using a browser that is not supported by the Google Maps JavaScript API. Consider changing your browser. [Learn more](#) [Dismiss](#)

Auxiliary Data

2019-03-13 15:05:48

Route Id: 32
 Vehicle Id: 2564
 Driver Id: 27731
 Block Id: 01
 Run Id:

1. 2564_Bus 2564 Cam1
 2. 2564_Bus 2564 Cam2
 3. 2564_Bus 2564 Cam3
 4. 2564_Bus 2564 Cam4
 5. 2564_Bus 2564 Cam5
 6. 2564_Bus 2564 Cam6
 7. 2564_Bus 2564 Cam7
 8. 2564_Bus 2564 Cam8
 9. 2564_Bus 2564 Cam9
 10. 2564_Bus 2564 Cam10
 11. 2564_Bus 2564 Cam11

2019-03-13 15:05:40

Speed Graph

MPH = 37.4 @ 15:05:40

Accelerometer Graph

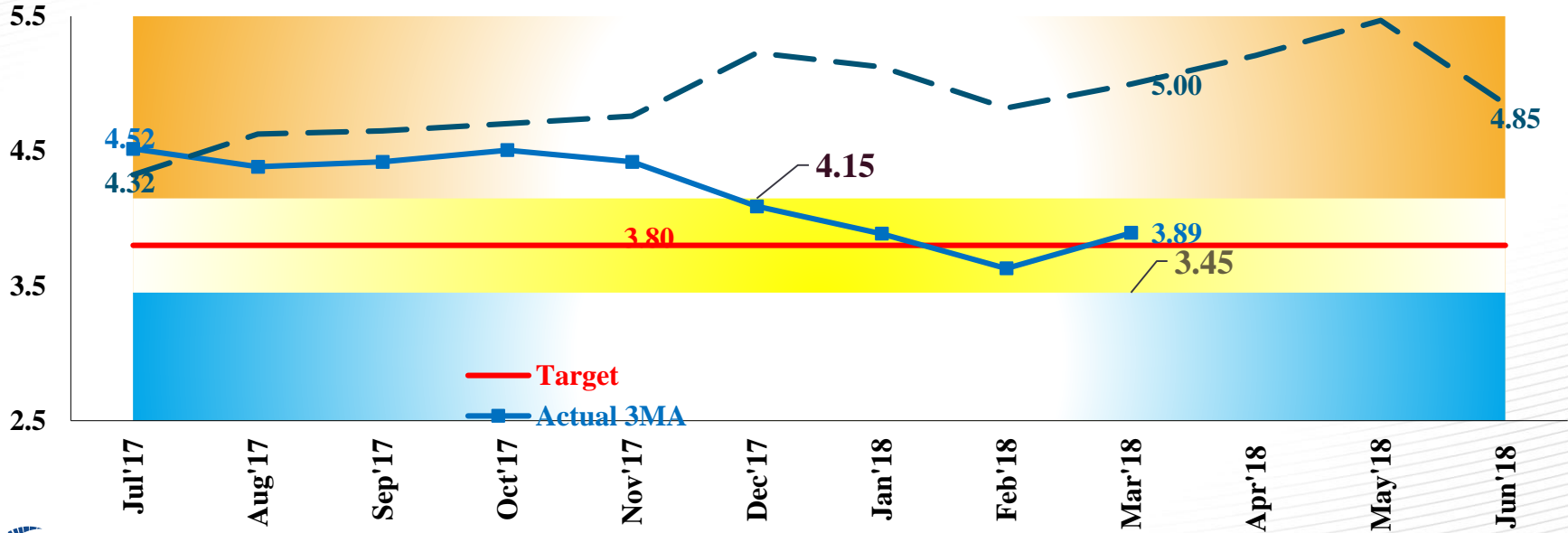
The screenshot displays a comprehensive bus monitoring interface. At the top, a menu bar includes 'File', 'View', 'Layout', 'Window', and 'Help'. Below this is a toolbar with various icons for navigation and control. The main area is divided into several sections: a 'Map' section on the left with a warning message about browser compatibility; a central grid of 11 camera feeds labeled '1. 2564_Bus 2564 Cam1' through '11. 2564_Bus 2564 Cam11'; an 'Auxiliary Data' section on the left showing vehicle details for route 32, vehicle 2564, driver 27731, block 01, and run ID; a 'Speed Graph' section showing a speed profile over time with a peak of 37.4 MPH at 15:05:40; and an 'Accelerometer Graph' section showing acceleration data over time. The bottom of the interface features playback controls and the 'POLLO' logo.

Bus Collision Rate

Measured as the number of collisions involving bus service per 100,000 miles.

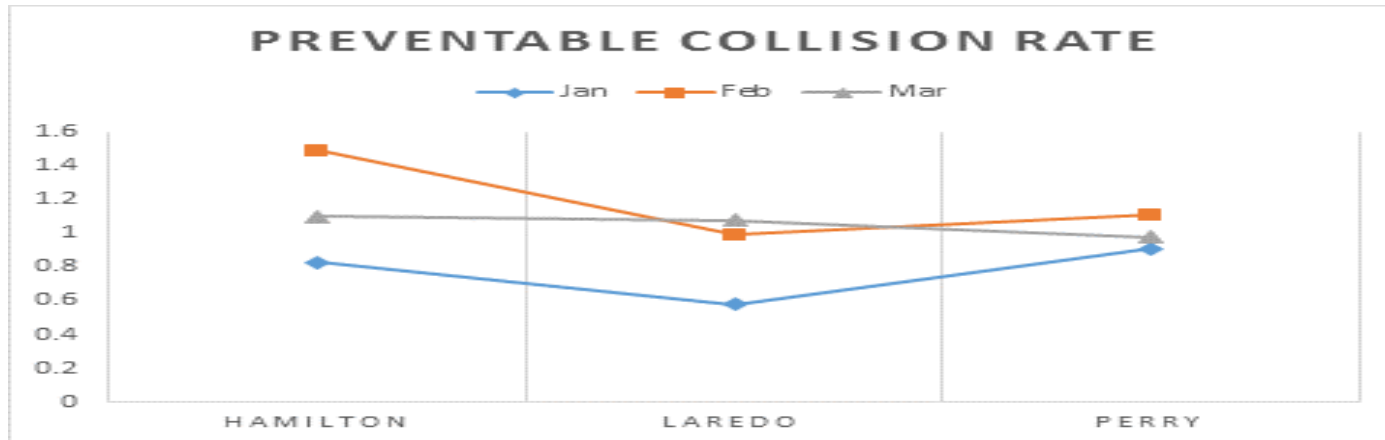
$$\frac{(\# \text{ of collisions}) (100, 000)}{\text{Mileage}}$$

Bus Collisions per 100K Miles measured as the number of collisions involving bus service per 100,000 hub miles.



Preventable Bus Collision Rate Per 100,00 Miles

	Hamilton	Laredo	Perry
Jan	.83	.58	.91
Feb	1.49	.99	1.11
March	1.1	1.08	.98



October 2018 to December 2018 total collisions = 325

Total Bus Collision Rate
= 4.6

Non-Preventable Bus
Collision Rate = 2.72

Preventable Bus
Collision Rate = 1.44

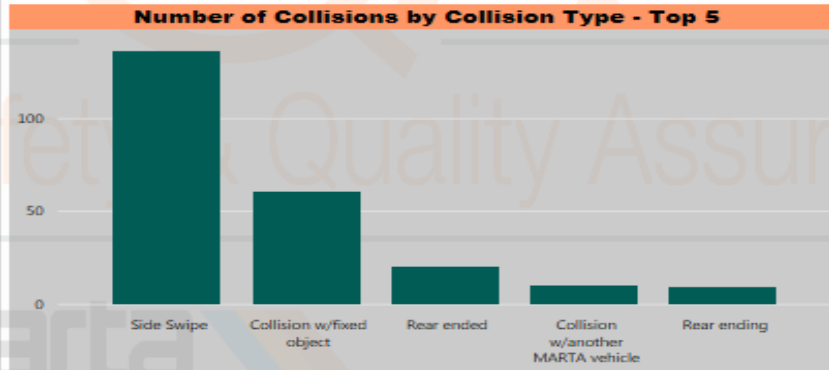
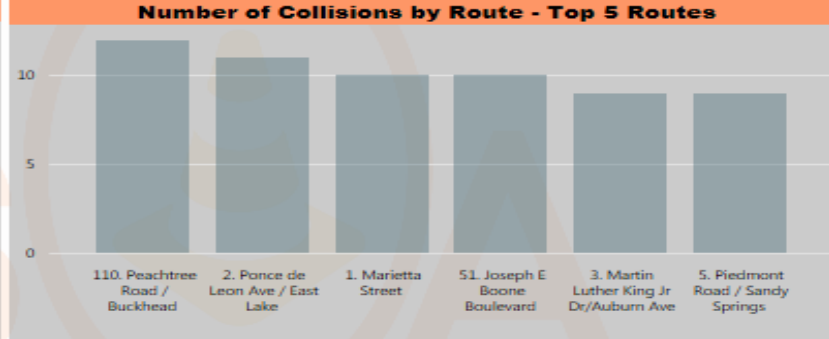
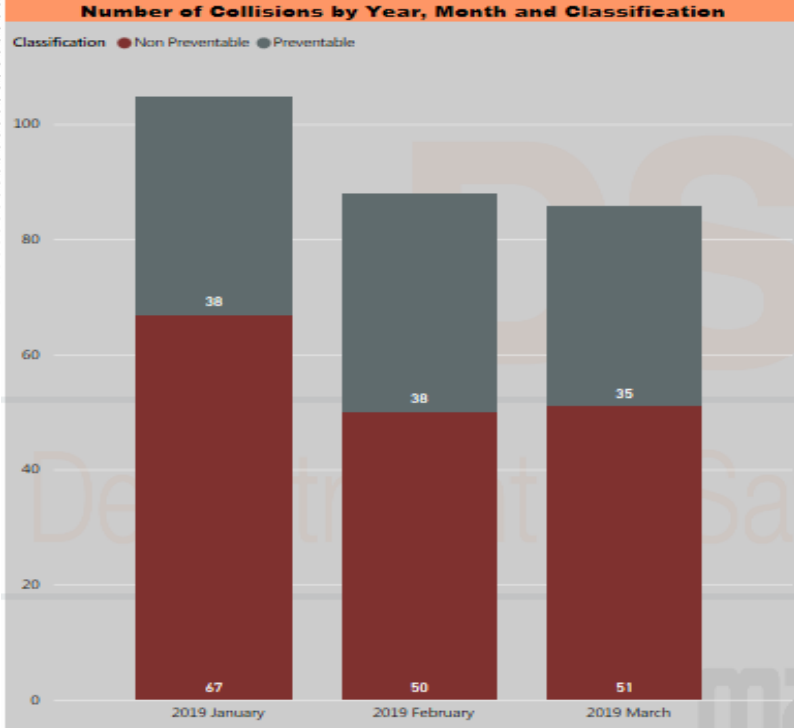
January 2019 to March 2019 total collisions = 279

Total Bus Collision Rate
= 4.04

Non-Preventable Bus
Collision Rate = 1.98

Preventable Bus
Collision Rate = 1.36

COLLISION REVIEW



Classification

- Non Preventable
- Preventable

Facility

- Hamilton
- Laredo
- Perry

Year

- 2019
- 2018
- 2017

Month

- January
- February
- March
- April
- May
- June
- July
- August
- September
- October
- November
- December

What a Collision Costs

July 2016 to June 2017

981 Claims Average Total Paid = \$1600

Average Maintenance Cost = \$5300

July 2017 to June 2018

Average Maintenance Cost = \$4683

Field Observations

Rule
Violations

Inconsistent
use of
Defensive
Driving
techniques

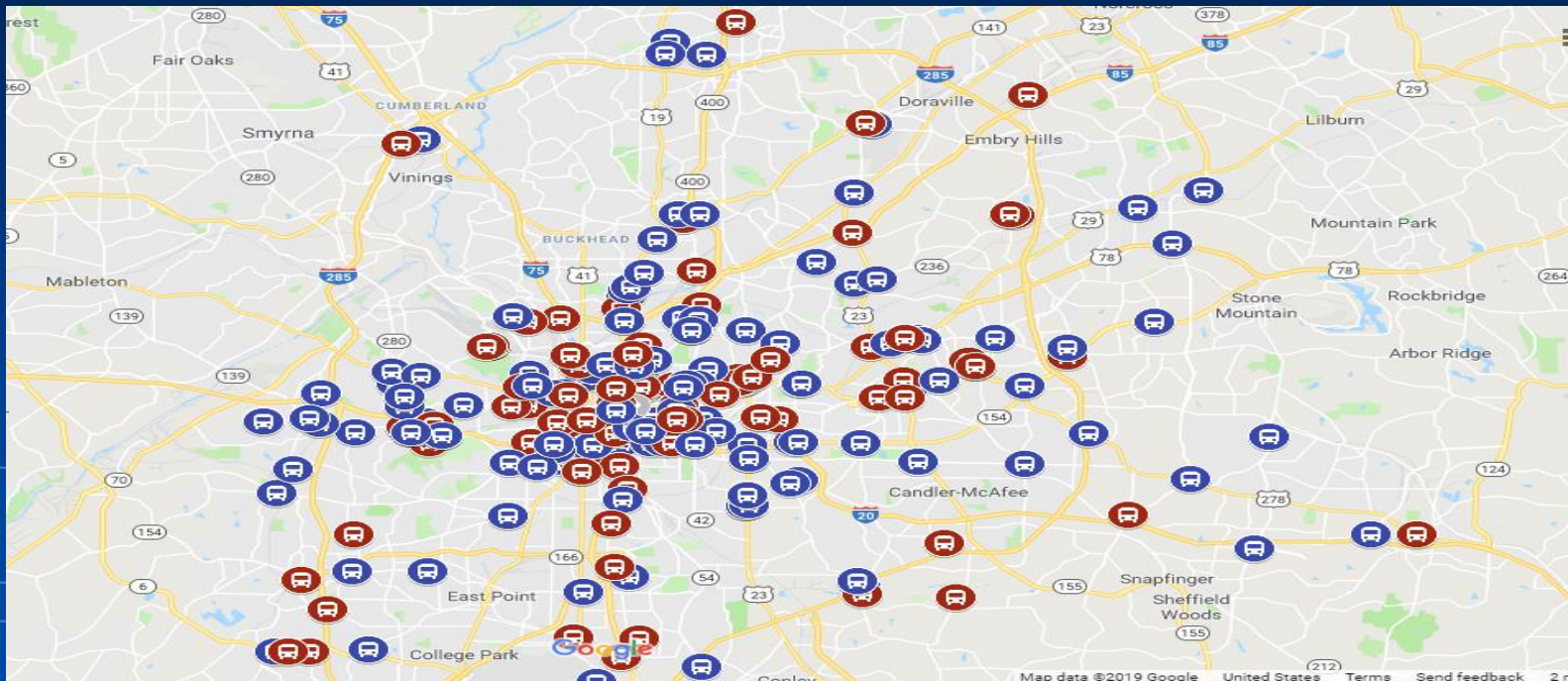
Distracted
Driving

Scheduling
Issues

Route Issues

Collision Mapping

(Preventable/Non-Preventable Collisions)



Corrective Action Plan

Continue coaching sessions and evaluations with operators

Collision reduction committee

Route Hazard Analysis observations of top five accident routes

Hiring Criteria
Line Instructor
Re-Certification

Strategic radar and line observation checks

Safety Modules incorporated into training
Mentoring Program
Operator Safety Recognition

Weekly contact with operators to deliver safety messages/coaching

Route Analyses/Ride Checks
Surveys are performed (Revamped Survey form in Survey Monkey)

Progress in
FY19

Establishing of additional Safety Committees, addressing Safety First Concerns, and HEAT tickets

Collision mapping is being utilized to identify where to perform line observations and hotspots

Questions?