How Can Emerging Data and Technology Help Combat Distracted Driving?

Thursday, May 27, 2021

3:00 PM ET / 2:00 PM CT / 1 PM MT / Noon PT
Hosted by NCSL’s Natural Resources and Infrastructure Committee

- Energy You Can Count On: State & Federal Efforts to Enhance Energy Resilience
- Agriculture Workforce: Challenges and State & Federal Responses
- How Can Emerging Data and Technology Help Combat Distracted Driving?
- State Outdoor Recreation: Climbing to New Heights
- Energy Security: Planning for Every Threat

For more information on the webinars, and how to register visit NCSL’s Webpage
Laws Addressing Cellphone Use While Driving

- **Primary enforcement hand-held phone use ban for all drivers**
- **Primary enforcement texting ban for all drivers**
- **Secondary enforcement texting ban for all drivers**
- **Primary enforcement texting ban for novice/beginner drivers**
- **No bans on cell phone use**
Speakers

Ryan McMahon
Vice President of Insurance and Government Affairs
Cambridge Mobile Telematics

Mike Hanson
Director
Minnesota Office of Traffic Safety

Samantha Bloch
Policy Associate
NCSL
Why Telematics?

- Telematics is truly predictive of crash risk
- Consumers gain more control over their insurance premiums
- Raises awareness of risky driving behaviors and how to improve them
- Aligns with public safety efforts to lower crashes
- More equitable and fair measure of risk
- Provides incentives to reduce carbon emissions
Mobile Telematics - What Data is Collected?

The following data is used to accurately assess driving risk and motivate drivers to improve:

Smartphone app

- **Accelerometer data** helps identify mileage and is used in the calculation of phone motion, screen interaction, and acceleration-based (hard braking, acceleration, and excessive speeding) events.
- **Gyroscope data** is used in the calculation of phone motion, screen interaction, and acceleration-based events.
- **GPS data** helps detect when the vehicle is moving, provide a view of the trip route, and determines the speed limits encountered for speeding events, but location is not its own measurement.

DriveWell Tag

- **High-frequency accelerometer data** detects when and how the vehicle is moving, is used to calculate overall mileage, and identifies acceleration-based events.

What smartphone permissions are required?

- **Location**: to collect GPS data
- **Bluetooth**: to connect to the Tag
- **Motion & activity**: helps to detect when a trip starts & stops
Privacy Practices

**No Data is Sold**
Consumer data is not used for any other services besides those offered by CMT.

**Minimum Amount of Data**
CMT only collects the minimum personal information necessary to provide its services. In general, the only PII CMT collects is Unique Identifier, GPS coordinates, and IP address.

**End-to-End Encryption**
From collection to storage, data is encrypted at transfer and at rest.

**Transparency**
CMT provides a clear explanation to its users of what data is collected and how it is used.

**Retention**
Data is only stored for as long as it’s necessary to provide CMT’s services.

**Consent**
Users can withdraw consent to CMT processing their data at any time.
How is Telematics Data Analyzed?

Converting raw data from mobile sensors into precise trip details

- Extract vehicle dynamics: braking, acceleration, velocity
- Map-matching algorithm handling noisy position data with *prepending*
- Extract phone distraction metrics
- Machine learning to classify transport mode and driver/passenger
- Mileage & speed estimation from accel data
- Unique data: Millions of users using phone *and* optional Tag
How Drivers Engage with Telematics

- Discounts
- Rewards
- TBYB
- Low Mileage
- Family Safety
Predicting Crash Risk

Lift Charts Show Predictivity Between a Score or Risk Factor and Likelihood of Incident

Mean Lift: 2.08
[1.97-2.2 Quartile Range]

Mean Lift: 3.22
[2.88-3.59 Quartile Range]

Approved score validated by 46 U.S. state departments of insurance
Driver Behavior Before and After Hands-Free Driving Law Introduction

Toughest Laws on Distraction in the US, on a scale from 1-4
All Studied States Respond to Hands-Free Law, Then Regress

<table>
<thead>
<tr>
<th>State</th>
<th>3 Weeks Before (Distracted Minutes per Drive Hour)</th>
<th>1 Week After (% Change)</th>
<th>11 Weeks After (% Change)</th>
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<tbody>
<tr>
<td>GA</td>
<td>1.58</td>
<td>-23.70</td>
<td>-17.90</td>
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<td>RI</td>
<td>2.42</td>
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<tr>
<td>TN</td>
<td>1.57</td>
<td>-16.20</td>
<td>-13.50</td>
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</tbody>
</table>
Distraction Free Drives in Minnesota

![Graph showing the percentage of drives without distraction before and after the implementation of a hands-free law in Minnesota and a control group in New York. The graph indicates a significant increase in distraction-free driving in Minnesota compared to the control group.](graph.png)
Covid-19 | Risk Increased Dramatically

Distraction

Speeding

7-day average

Distraction risk per Km

WHO declares pandemic

Speeding risk per km

WHO declares pandemic

Chart 1: Distraction risk index over time

Chart 2: Speeding risk index over time
VISION ZERO SUCCESS STORY — BEHAVIORAL

Safest Driver Contest — Boston, Massachusetts

FHWA is pleased to present this vision zero success story. While behavioral initiatives don’t typically fall under FHWA’s purview, they play a critical role in reaching our goal of zero deaths, and our part of our shared responsibility to reduce fatal or serious injuries. For more information on safe driving behaviors, please visit our partner agency, the National Highway Safety Administration (NHTSA) at https://www.nhtsa.gov/road-safety.

Key Successes

Two seasons of the Boston “Safest Driver Contest” yielded the following results. During the first season, the top 25% of drivers showed:

- **47%** reduction in distraction.
- **37%** reduction in harsh braking.
- **35%** reduction in speeding.

During the second season, 35 days after registration, participants showed:

- **48%** reduction in distraction.
- **57%** reduction in harsh braking.
- **38%** reduction in speeding.

Mayor Martin J. Walsh commented, “I’m proud of our winners and their contribution to make our streets safer. The City of Boston is committed to ensuring our streets work for everyone, and by investing in programs such as Boston’s Safest Driver, we will continue to emphasize the importance of safe streets, and safe driving habits.”

There was positive public response to the contest. “Interest in the contest was contagious,” said the 2019 Slow and Steady Driver prize winner Jenn Brandel. “Once my family and friends learned about the competition, they started trying to outdo each other and get higher scores. While I’m joking myself for jokes about being the Slow and Steady winner, I’ve learned to become a more patient and careful driver.”

Background

The City of Boston’s Mayor’s Office of New Urban Mechanics (MONUM) championed the inaugural “Safest Driver Contest.” As a partnership between the Vision Zero Task Force, MONUM, and the Transportation Department, the Safest Driver Contest held its first season in 2016 and a second season in 2019. Similar contests have been held in other cities including Seattle, San Antonio, and Los Angeles.

The contest aimed to change driver behavior by offering incentives to participants who adopted safe practices while behind the wheel. Participants downloaded an app that used five performance evaluation metrics to assess each driver including braking, acceleration, speeding, cornering, and distraction. The app made calculations for these metrics based on the phone’s GPS, accelerometer, and gyroscope. The app collected and stored the monitored behaviors of individual drivers for each trip.

Contest Details

Season 1 (2016): The first season of Boston’s Safest Driver Contest occurred from October 3, 2016 to December 3, 2016 and included nearly 5,000 participants. The app assessed and ranked the drivers by their overall safety scores. Weekly prizes included the top three drivers of the week and the most improved driver.


Through Safest Driver Contest partnerships with these cities, CMT was able to provide the technology necessary to combat distracted driving by incentivizing drivers to change their behavior.

**BOSTON'S SAFEST DRIVER 2016**
- 47% reduction in distraction
- 37% reduction in hard braking
- 35% reduction in speeding

**SEATTLE'S SAFEST DRIVER 2017**
- 35% reduction in distraction
- 30% reduction in hard braking
- 28% reduction in speeding

**SAN ANTONIO'S SAFEST DRIVER 2018**
- 29% reduction in distraction
- 17% reduction in hard braking
- 45% reduction in speeding

**LA'S SAFEST DRIVER 2019**
- 25% overall reduction
- 35% reduction in speeding
- 30% reduction in distraction

**BOSTON'S SAFEST DRIVER 2019**
- 48% reduction in distraction
- 57% reduction in hard braking
- 38% reduction in speeding
What Does Risk Reduction Look Like:

- **Streaks**
- **Daily Summaries**
- **Weekly Summaries**
- **Rewards**
- **Communication**
Telematics - Causation vs Correlation

Telematics enables equitable risk reduction

✓ Assesses driving factors truly predictive of claims, including phone distraction, at-risk speeding, and hard braking
✓ Measures the driver’s real-world crash risk, regardless of income, race, education level or national origin
✓ Provides coachable factors that drivers can improve
✓ Empowers consumers with more control over their final premium

Key elements for rating factors
• Causational
• Controllable
• Non-discriminatory
THE MINNESOTA SOLUTION TO THE USE OF AN ELECTRONIC DEVICE WHILE DRIVING DISTRACTION CHALLENGE

Minnesota Department of Public Safety
A multi-year effort to pass our Hands Free law: MSA 169.475

Evolution from Texting only prohibition to full hands free law

Language and best practices developed using multiple references including GHSA resources and TRB/BITCRP “Using Electronic Devices while Driving: Legislation and Enforcement implications”
Key to a successful law is simple and straightforward language:

Use of Wireless Communications device:
....while as a part of traffic
....only when utilizing Voice activated or Single Touch commands

....Prohibitions:
electronic message
Voice or video call w/o hands free
Video, audio, images, games,
software
apps.

Escalating fine penalties for second + offenses
DRIVEN BY AN EXPANSIVE AND DIVERSE COALITION OF PUBLIC AND PRIVATE SECTOR STAKEHOLDERS:

MN-DPS: MSP, OTS, OOC MSC, AAA, MTA, IF-MN, MSD, 40 + INTEREST GROUPS

MOST IMPORTANTLY, THE FAMILIES, SURVIVORS, AND VICTIMS

EFFORT LED BY REPS. HORNSTEIN, UGLEM AND SENATORS CARLSON AND NEWMAN—AND MANY OTHERS. A TRUE BIPARTISAN EFFORT

MSP COLONEL MATT LANGER WAS ALSO A KEY PARTNER
UPON PASSAGE, THE REAL WORK BEGINS.

ALL HANDS ON DECK EFFORT FOR A STATEWIDE OUTREACH AND EDUCATION PROJECT

$350,000 IN FEDERAL TRAFFIC SAFETY FUNDS DEDICATED TO INITIAL PAID MEDIA AND DEVELOPMENT EFFORT

EXPANSIVE, MULTI-PLATFORM EARNED MEDIA EFFORT COORDINATED BY DPS-OOC

SIGNIFICANT EFFORT TO REACH TRADITIONALLY UNDERSERVED COMMUNITIES
MINNESOTA’S SECRET SAUCE FOR SUCCESS:

THE MINNESOTA TOWARD ZERO DEATHS TRAFFIC SAFETY PROGRAM

MN DOT, MN DPS, & MN MDH COLLABORATION
FOLLOWING AUGUST 1, 2019 EFFECTIVE DATE, A STATEWIDE HIGH VISIBILITY ENFORCEMENT PROJECT COMMENCED.

FEDERAL SECTION 402 FUNDING LED BY MN STATE PATROL SUPPORTED BY OVER 300 LOCAL LE AGENCIES

INITIAL COMPLIANCE WAS FOUND TO BE QUITE HIGH, I.E. NOT THE NUMBER OF CITATIONS INITIALLY ANTICIPATED

BUT SOME DRIVERS NEEDED THE EXTRA INCENTIVE TO CHANGE THEIR BEHAVIOR/HABITS—SOMETIMES MORE THAN ONE REMINDER....
SIMILAR TO WHAT WE SAW AFTER PASSING OUR PRIMARY SEATBELT LAW, WE EXPECT TO SEE DECREASING CITATION NUMBERS AS COMPLIANCE IMPROVES.

PRELIMINARY CRASH STATISTICS* INDICATE THE LAW IS HAVING A POSITIVE EFFECT ON DRIVER BEHAVIOR, BUT WE HAVE MORE WORK TO DO.

2016—44 DISTRACTED FATALITIES
2019—34 DISTRACTED FATALITIES
2020—30 DISTRACTED FATALITIES

IMPROVING TECHNOLOGY AND POSITIVE REINFORCEMENT WILL BE KEY TO CONTINUED IMPROVEMENTS IN DRIVER COMPLIANCE.
THANK YOU FOR THE PRIVILEGE OF YOUR TIME TODAY.

MICHAEL HANSON
DIRECTOR
MN DEPARTMENT OF PUBLIC SAFETY
OFFICE OF TRAFFIC SAFETY

Minnesota Department of Public Safety
Questions?

• Questions re: distracted driving? | Samantha.Bloch@ncsl.org

• Questions re: webinar series? | Kristen.Hildreth@ncsl.org