

# Vision

## PARTS LONG-TERM VISION: WORKING TOGETHER FOR A SAFER TRAFFIC SYSTEM

### Purpose

Convene the safety community to improve its collective ability to identify risks and assure traffic safety as industry rapidly innovates and deploys new automated technologies.



### The Safety Systems Approach

Analyzes interactions and linkages across entire safety system to identify trends, risks, insights.

- **Community:** Provide a neutral forum for industry partners and NHTSA to collaboratively discover new safety insights.
- **Operational Insights:** Gain a real-world indication of safety performance using data including crash, vehicle fleet and equipage, driver experience, traffic, weather conditions, and more.
- **Proven Framework:** Approach is grounded in MITRE's experience of what works in aviation and other industries, including industry-leading practices in safeguarding highly sensitive and proprietary data.

# Prototype

## PROTOTYPING THE DATA SHARING PARTNERSHIP: VALUE PROPOSITION

- **Specific Insights:** Receive new performance insights based on NHTSA 17-digit VIN crash data not otherwise available
- **Benchmark Performance:** Learn about performance in the field as compared to the aggregated industry as a whole
- **In-House Analytic Capabilities:** Receive standards and methodologies used during prototype
  - Descriptions of algorithms used for standardization and text mining
  - Classification model used to identify ADAS-related warranty reports
  - ADAS-specific taxonomy to characterize driver experience
- **Enhanced Datasets:** Receive crash datasets enhanced with publicly available ADAS-related information and weather data
- **Leadership:** Establish standards and the rules for sharing safety information among a government and industry partnership

## PARTNER RESOURCE COMMITMENT

### Funding Commitment

- OEM partners do not provide funding to participate in the prototype

### Data Commitment

- Share limited vehicle features/content data and warranty data with MITRE

### Time Commitment

- Participate in bi-weekly, 1-hour conference calls and bi-monthly in-person meetings
- Participate in occasional calls with the MITRE technical team to provide insights, reactions, and advice
- Time to coordinate with internal data owners/analysts to identify and access the data being provided to MITRE

# Data & Analysis

## RESEARCH QUESTIONS

**Q1: How effective are vehicles equipped with advanced driver assistance systems (ADAS) in reducing the risk of crashes?**

**Q2: What is the driver experience with ADAS?**

## ANALYSIS



MITRE will fuse VIN-level vehicle features/content data with VIN-level NHTSA and state crash data, and then fuse weather data at the time and location of crash. Analysts will then apply proven statistical approaches to develop interactive dashboards.



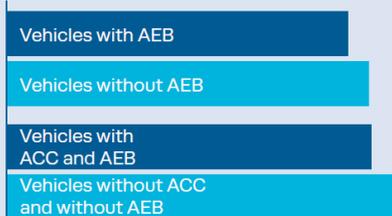
MITRE will fuse VIN-level vehicle features/content data with warranty data and apply text mining techniques, (e.g., topic modeling and text classification) to discover insights related to driver experience with ADAS.

## EXAMPLE RESULTS

### Aggregate

Q1

What is the crash rate performance with and without Automatic Emergency Braking (AEB), and with combinations of Adaptive Cruise Control (ACC) and AEB?

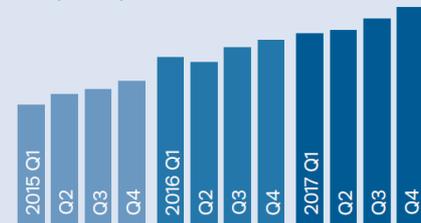


VEHICLE CRASH RATE

### Aggregate

Q2

What is the rate of driver-reported ADAS complaints per vehicle?



What are the trends in driver understanding of ADAS?

### Benchmarks

Q1

How does my company's LKA performance compare to the anonymized, aggregated industry as a whole?



VEHICLE CRASH RATE

# Data & Analysis

## DATA SOURCES

### Crash Data



- NHTSA FARS & CRSS data with 17-digit VIN (full reports)
- State Data (from selected states, some of which is not available to OEMs)
- Access to other NHTSA research data not publicly available

### Warranty Data (OEM Provided)



- Surrogate for driver experience
- Make, Model, Year, VIN, Mileage
- Date of Repair (data scope is the first sale date for model year '15-12/31/17)
- Labor codes and definitions
- Dealer repair location (zip code)
- Transaction number
- Verbatim of complaint, cause, and correction
- Warranty policy
- No warranty data associated with recalls, price or number of hours

### Vehicle Features/Content (OEM Provided)



- Limited to select safety features for approx. 6-10 makes/models that allow for comparison across OEMs
- 2015, 2016, and 2017 model years only
- VINs
- Build date and sold date (for normalizing trends)
- Descriptions on select fields

### Secondary Information (Other Sources)



- Standard ADAS vehicle features/content by trim level (publicly available and purchased)
- VIN-level vehicle features/content for OEMs other than PARTS participants (purchased)

### Weather



- At the time and location of crashes