Partnership for Analytics Research in Traffic Safety (PARTS): Demonstrating the Value of the Partnership

Joseph Kolly, Ph.D.
Chief Safety Scientist, NHTSA

Tim Czapp
Senior Manager, FCA US LLC
What is PARTS?
- Voluntary, data sharing partnership between government and industry for collaborative safety analysis

Why was PARTS developed?
- Rapidly changing technologies demand new analytic approaches to ensure safety
- Proactive analysis of emerging safety issues

What is unique about PARTS?
- Data pooling improves the problem of limited data
- Collaborative analysis among industry experts
- Gives insights that cannot be obtained by any one individual partner (benchmarking, aggregation)
- Dynamic, continuous and timely capability
- New, complimentary tool for the safety toolbox
HOW THE PARTNERSHIP WORKS

Current partners are NHTSA and six OEMs representing 63% of U.S. market

**INDUSTRY**
- OEM data
- Subject matter expertise

**GOVERNANCE**
Comprised of partners working toward consensus decisions

**INDEPENDENT THIRD PARTY**
- Program Management
- Data safeguards
- Analytics

**GOVERNMENT**
- Funding
- Government data
- Expertise

Partnership for Analytics Research in Traffic Safety (PARTS):
Demonstrating the Value of the Partnership

Copyright © SAE International. Further use or distribution is not permitted without permission from SAE.
# PARTS GUIDING PRINCIPLES

<table>
<thead>
<tr>
<th>Strictly for Safety Advancement</th>
<th>Equal Voice</th>
<th>Transparency within Partnership</th>
<th>Voluntary</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Not competitive</td>
<td>• 1 partner, 1 vote</td>
<td>• Open decisions</td>
<td>• Participation is completely voluntary</td>
</tr>
<tr>
<td>• Not punitive - Data and results from PARTS not to be used for punitive action</td>
<td></td>
<td>• Documented data and security processes</td>
<td>• Partners can leave at anytime</td>
</tr>
</tbody>
</table>

- **Collaborative**
  - In good faith

- **Protection of Data**
  - Aggregated, de-identified and anonymized

- **Equitable Contribution**
  - Aligned to research participation
REAL-WORLD ADAS EFFECTIVENESS

Initial Research Question: How effective is AEB in reducing crash rates?

Data Sources

- Vehicle Features/Content
  - 10 million vehicles in study
  - 26 make/models
  - Model Year 2015 – 2017

- State Crash Data
  - 4 million crashes from nine states
  - All police-reported crashes

Collaborative Analysis

Governance Collaboration Security

Results

- Aggregate Results
- OEM Benchmarks
### INTERACTIVE DASHBOARD

**Mock Results. For Demonstration Purpose Only.**

**Aggregate Results:**
How effective is equipage of AEB in reducing rear-end strike rate?

<table>
<thead>
<tr>
<th>% Reduction in Crash Rate</th>
<th>76.58</th>
<th>45.95</th>
<th>42.5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed Limit (MPH)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 - 25</td>
<td>32%</td>
<td>45%</td>
<td>47%</td>
</tr>
<tr>
<td>30 - 45</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50 - 80</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vehicle Segment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large</td>
<td>27%</td>
<td>43%</td>
<td>45%</td>
</tr>
<tr>
<td>Midsize</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roadway Alignment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curved, Level</td>
<td>46%</td>
<td>55%</td>
<td>58%</td>
</tr>
<tr>
<td>Straight, Grade</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Straight, Level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weather Condition</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clear</td>
<td>48%</td>
<td>46%</td>
<td>45%</td>
</tr>
<tr>
<td>Cloudy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rain</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface Condition</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dry</td>
<td>44%</td>
<td>45%</td>
<td>45%</td>
</tr>
<tr>
<td>Wet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light Condition</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dark, Lighted</td>
<td>45%</td>
<td>42%</td>
<td>42%</td>
</tr>
<tr>
<td>Dark, Not Lighted</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daylight</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Highest Injury Level</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Shown to demonstrate interactive capability of dashboard**
PRELIMINARY AGGREGATE RESULTS

Our study indicates that vehicles equipped with AEB measurably reduce rear-end strike crashes compared to vehicles without AEB

- Largest study of its kind
- Result is consistent with other studies

Dynamic Research Capability

- Developed interactive dashboards that enable partners to drill-down on results, which can be updated and customized
- Can view results in various environmental and road conditions obtained from the state crash data

Study Limitations

- Limited to selected models / model years from partner OEMs
- Based on VIN-level AEB equipage, not usage
- Does not account for the presence of other ADAS features
- Limited to 9 states, not necessarily representative of U.S. crashes
- Does not account for differences in state reporting practices
- Does not adjust for driver-related differences
NHTSA, OEM Partners and MITRE established trusting and collaborative working relationships

Partners willing and able to transfer sensitive data (10M OEM build records, 4M warranty records, and 4M state crash records) and worked collaboratively to conduct safety research

Developed methodologies to aggregate, standardize, and analyze disparate data from across 6 OEMs and 9 states as a basis for analysis

Partners agree that this model offers an improved ability to gain real-world insights into the performance of safety technologies
Partnership for Analytics Research in Traffic Safety (PARTS): Demonstrating the Value of the Partnership
CONTACT INFORMATION

Tim Czapp
Senior Manager, Vehicle Safety & Regulatory Compliance (VSRC), FCA
tim.czapp@fcagroup.com

David Liu
Manager, Regulatory Safety, Product Regulatory Office, American Honda
david_liu@ahm.honda.com

Joseph Kolly, Ph.D.
Chief Safety Scientist, NHTSA
Joseph.Kolly@dot.gov

Chris Hill, Ph.D.
Surface Transportation Director, MITRE
cjhill@mitre.org