



PARTNERING TO ADVANCE TRAFFIC SAFETY

Rapidly evolving technologies in motor vehicles have the potential to reduce the rates of collisions and their devastating consequences. The Partnership for Analytics Research in Traffic Safety (PARTS) is using data and analysis to maximize these benefits.

In recent years, vehicle manufacturers have designed, tested, and deployed various advanced driver assistance systems (ADAS)—such as automatic emergency braking (AEB)—that help to mitigate and correct for human error. ADAS, and the more highly automated vehicles of the future, have the potential to further improve safety for vehicle occupants, vulnerable road users, and other travelers sharing the road.

To realize these breakthrough benefits, we must adopt innovative approaches that accelerate industry-wide safety research. It begins with providing data-driven evidence of the real-world effectiveness of increasingly automated safety features. That's where PARTS comes in.

Convened by the National Highway Traffic Safety Administration (NHTSA) and MITRE in 2018, [PARTS](#) is a Public-Private Partnership (PPP) enabling government and automotive industry stakeholders to share their data with MITRE for collaborative analysis—to gain greater safety insights than any organization could achieve on its own.

PARTS 2025 STUDY FINDINGS

49% REDUCTION IN FRONT-TO-REAR CRASHES FOR VEHICLES WITH AEB

9% REDUCTION IN FRONTAL CRASHES WITH NON-MOTORISTS FOR VEHICLES EQUIPPED WITH PAEB

SYSTEMS WITH ACTIVE INTERVENTIONS (LDW, LKA, LCA) SHOW EFFECTIVENESS IN REDUCING SINGLE-VEHICLE ROAD-DEPARTURE CRASHES

How PARTS Works: A Snapshot

Today, PARTS participants include NHTSA and 11 automobile manufacturers representing nearly 80 percent of the U.S. market for sales of passenger cars and light commercial vehicles:

- American Honda
- Ford Motor Company
- General Motors
- Hyundai Motor North America
- Kia America
- Mazda North America Operations
- Mitsubishi Motors R&D of America
- Nissan North America
- Stellantis
- Subaru of America
- Toyota Motor North America

These automobile manufacturers and NHTSA voluntarily share data with MITRE. As an independent third party, MITRE serves as the consortium's program integrator, data steward, and technical analysis lead.

After receiving partners' data, MITRE provides robust security and data protection safeguards. MITRE integrates, enhances, and analyzes the data and provides anonymized, aggregated results back to the group. All participants receive aggregate results in the form of metrics, interactive dashboards, and datasets. Individual industry participants also receive custom benchmark results available only to them.

Participants can use the results to take action within their own organizations to advance safety.

A Research Example

A recent PARTS study illustrates the PPP's power to generate insights that can inform future vehicle safety system design.

In 2023, the U.S. Department of Transportation (USDOT) funded a study to learn how five ADAS features perform in real-world scenarios. These features include AEB, pedestrian AEB (PAEB), lane departure warning (LDW), lane keeping assistance (LKA), and lane centering assistance (LCA) systems.

To support the study, participating automobile manufacturers submitted vehicle feature content for 98 million vehicles—representing more than 168 different models across 10 vehicle segments from 2015 to 2023 model years. These data were linked to police-reported crash data on 21.2 million crashes involving 36.8 million vehicles from 16 states.

[Completed in January 2025](#), the study showed that vehicles equipped with AEB reduced front-to-rear crashes by 49%. In addition, the study showed a statistically significant reduction in rear-end crashes in newer vehicles, from 46% across model years 2015-2017 to 52% across model years 2021-2023, indicating that advancements in AEB over time have yielded tangible benefits.

Additionally, the study measured a 9% reduction in single-vehicle frontal crashes with non-motorists for vehicles equipped with PAEB, marking the first time PARTS has quantified a statistically significant measure of PAEB effectiveness.

Researchers also concluded that vehicles equipped with active intervention technologies that help drivers stay in their lane—LDW, LKA, and LCA—are effective in reducing single-vehicle road-departure crashes, although rates were low and varied with speed limit.

As more automakers adopt and refine ADAS features based in part on this research, the benefits extend far beyond saving lives—they transform the way we approach road safety and vehicle design. ADAS technologies not only prevent crashes but also reduce the strain on emergency services, minimize roadway disruptions, and enhance public confidence in safer transportation systems.

PARTS' current focus on ADAS lays the foundation for higher levels of driver assistance, connected vehicles, and other advanced technologies in the future.

Current Studies

In 2025, USDOT and NHTSA funded a new phase of PARTS to build upon what was learned in previous research. This phase focuses on conducting novel analyses leveraging existing PARTS data wherever possible. The goal is to balance rigorous statistical analyses to deepen understandings of ADAS feature effectiveness with exploratory analyses to expand analytical capabilities and prepare for future research.

In this phase of research, PARTS researchers will:

- Measure and assess the relationship between vehicle miles traveled and crash occurrences.
- Examine the effectiveness of ADAS and their impact on crash severity reduction, measured by injury reduction and fatal crash prevention.
- Explore system-relevant crashes that are not prevented by ADAS features.
- Explore crashes that are not prevented by current ADAS features, thereby informing future development and improvements.
- Investigate collaborative opportunities to improve understanding of crashes involving vulnerable road users.

PARTS partners are exploring the use of vehicle telematics—the use of on-board sensors to collect and transmit vehicle data—to gain deeper insights into system performance. PARTS is also broadening its partnerships to include more states, industry stakeholders, and research institutions. Through these efforts, PARTS is ensuring it has access to a more diversified dataset and will continue to be an authoritative source of real-world, data-driven traffic safety information.

Roles of Government, Industry, and MITRE

USDOT works alongside industry participants to oversee and direct the work of PARTS. Within PARTS, NHTSA and automakers work as peers, with each having an equal voice in the strategy, processes, and overall execution of the partnership. USDOT only has access to aggregate results, never to another partner's data or benchmark results.

Along with USDOT, industry partners actively identify and scope research studies, contribute data, and support analyses by providing expertise on the effective use and interpretation of their data. Partners also participate in the exploration of new ideas and prototyping to help inform partnership decisions related to future research.

MITRE's role is threefold. The first is to act as the independent convener and program integrator/manager for PARTS. MITRE also serves as the data steward, providing the secure data environment and infrastructure to protect and manage partner data and results. Lastly, MITRE leads the technical analytic work for the program, to include ingesting sensitive data from partners, processing it, conducting neutral and unbiased analysis, and providing results in a safe and secure manner.

The MITRE Role:



Program Integrator



Technical Analysis Lead



Data Steward

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Through our public-private partnerships and federally funded R&D centers, MITRE works across government and in partnership with industry to tackle challenges to the safety, stability, and well-being of our nation.

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