Historically, agencies have been reliant on physical infrastructure, crash data, and manual data collection, and modeling to evaluate their road networks. Over the past several years, enhanced probe data has become commercially available and has shown itself to be a relatively inexpensive and scalable way to evaluate the performance of road networks. In January 2022 alone, 11.3 billion passenger vehicle trajectory waypoints and 279 million passenger vehicle event records were logged in the state of Indiana. This data, typically segmented into vehicle trajectory waypoints and vehicle event records, contain a variety of information including, but not limited to, location, speed, heading, and timestamp.

One use for this enhanced probe data is the evaluation of traffic signals for safety improvements. Typically, agencies require 3 – 5 years of crash data to be able to statistically identify intersections in need of safety improvements. This study compared crash data over a 4.5-year period at 8 signalized intersections to weekday hard-braking and hard-acceleration data from July 2019. A Spearman's rank-order correlation test was used, and a strong to very strong correlation between event data and crashes could be found indicating that just one month of event data could be an adequate substitute for 3 – 5 years of crash data.

The representativeness of this data is often a major concern for many agencies as the usefulness of the data is only as good as the data itself. This study also looked at 1.7 billion count station vehicle counts and 70 million connected vehicle records across 386 count stations across 11 different states (California, Connecticut, Indiana, Ohio, Pennsylvania, Wisconsin, Utah, Minnesota, Georgia, Texas, and North Carolina). Across all 386 stations in 11 states, the average percent penetration was 3.7% in August 2020 and 3.9% in August 2021. For Indiana, the analysis was extended to 15 months between July 2019 and February 2022. Save July 2019, Indiana's percent penetration has generally hovered between 4% and 5%.