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## ABOUT THIS PROJECT

**PROJECT NAME:** Real User Friction for Winter Maintenance Operation and Evaluation

**PROJECT NUMBER:** TPF-5(435)

**PROJECT FUNDING PROGRAM:** Aurora Pooled Fund, a 19-state collaborative research effort

**PROJECTED END DATE:** April 2024

**PROJECT CHAMPION:**  
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# RESEARCH IN PROGRESS

## Crowdsourcing road friction data to support winter operations

Keeping winter roads clear is resource intensive. In addition to costs for deicing materials, maintenance crews and equipment, state departments of transportation (DOTs) must have capabilities to deploy crews to the locations that need them the most. Road weather information systems, which measure actual road conditions, are expensive and provide limited spatial coverage. While snowplow operators and plow cams provide valuable road condition information, the geographic and temporal coverage also can be limited.

As lead state for the Aurora pooled fund program, Iowa DOT is interested in working with other member states to evaluate potential new data sources, including connected vehicles (CV). A previous

research project, for example, explored the feasibility of a machine learning model for predicting road friction over broad areas using available road friction sensor data.

“Ideally, we want a source of road friction data at a more granular level,” explained Tina Greenfield, Iowa DOT’s road weather information system coordinator. “Connected vehicles could possibly provide road data in areas where we have gaps in coverage.”

Working with existing CV models, researchers have developed methods to use data from the engine, drivetrain, and wheel sensors to detect microslippage and roadway friction. Case studies will provide an analysis of the accuracy and coverage provided by the data collected from these models.

In addition to evaluating the viability of using CV data for improving road condition reporting, this project will illustrate the coverage they currently provided by the CV models. “We need to understand how many of these cars we need on the road to make this potential solution worthwhile,” Greenfield noted. “Crowdsourced data could provide broad coverage if we have a large enough crowd.”

The research is expected to conclude in July 2024.

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