TRANSPORTATION POOLED FUND PROGRAM
QUARTERLY PROGRESS REPORT

Lead Agency (FHWA or State DOT): Federal Highway Administration (FHWA)

INSTRUCTIONS:
Lead Agency contacts should complete a quarterly progress report for each calendar quarter during which the projects are active. Please provide a project schedule status of the research activities tied to each task that is defined in the proposal; a percentage completion of each task; a concise discussion (2 or 3 sentences) of the current status, including accomplishments and problems encountered, if any. List all tasks, even if no work was done during this period.

Transportation Pooled Fund Program Project # *TPF-5(470)*	**Transportation Pooled Fund Program - Report Period:** ☐ Quarter 1 (January 1 – March 31) ☐ Quarter 2 (April 1 – June 30) ☐ Quarter 3 (July 1 – September 30) ☒ Quarter 4 (October 1 – December 31)

TPF Study Number and Title:
TPF-5(470): Traffic Signal Change and Clearance Interval Pooled Fund Study

Lead Agency Contact: Jamie Mackey	**Lead Agency Phone Number:** 385-831-4262	**Lead Agency E-Mail** jamie.mackey@dot.gov
Lead Agency Project ID:	**Other Project ID (i.e., contract #):** 693JJ322A000005_693JJ323F00330N	**Project Start Date:** 09/22/2023
Original Project Start Date: 09/22/2023	**Original Project End Date:** 09/21/2026	**If Extension has been requested, updated project End Date:** N/A

Project schedule status:
☐ On schedule ☒ On revised schedule ☐ Ahead of schedule ☐ Behind schedule

Overall Project Statistics:

Total Project Budget	Total Funds Expended To Date	Percentage of Work Completed to Date
$1,036,655.77	Labor $341,000 Travel $18,823	45%

Project Description:
Define a sound, data-driven, research approach and work plan to address the current limitations and challenges in the determination and assessment of traffic signal change and clearance intervals (CCI). Conduct research based on statistically valid data and robust methods to establish a defensible and practical methodology for agencies to use for assessing and making CCI decisions. Provide a report, companion data, and materials to support review and understanding of the findings, including presentation slides, factsheets, practical documented summary examples, to facilitate building awareness among traffic signal operators.

Progress this Quarter (includes meetings, work plan status, contract status, significant progress, etc.):

- Continued collection and analysis of BSM/CV, video, crash, and LiDAR data, initiated a telematics data study.
- CV data study: Performed driver behavior analysis for left turn and through movements, expanding data set based on identified variables, continued critical distance investigation.
- Video data study: Created algorithms to classify trajectories according to movement type, created transferable algorithms to generate hard braking surrogate measures, developed scalable methods for generating primary and secondary metrics, improved code for video syncing between multiple cameras, created first version of code that can intake manually reduced data and output distance from stopbar and vehicle speed from start of yellow.
- Telematics data study: Developed big data analytics-driven algorithms to integrate OpenStreetMap data with telematics data, enabling the simultaneous identification of trajectories by approach and movement type for hundreds of intersections. The algorithm also classifies vehicles as either stopping or going.
- Crash data study: Continued data collection to include additional sites (i.e., intersection legs) from Utah. Coordinated with UDOT to identify corridors with short and long yellow durations. Obtained crash data for those corridors to understand the feasibility of including those sites for the crash data analysis and safety modeling.

Anticipated work next quarter:

- Continue data collection and analysis of BSM/CV, video, historical crash, LiDAR, and telematics data.
- Develop safety risk functions and extract driver behavior performance measures.
- Continue crash data collection from additional Utah corridors and from Oregon. Assign crashes to intersection legs for those legs that will be included in the analysis. Collect intersection variables data for the modeling such as AADT, posted speed limit, number of lanes, yellow and red clearance durations, and left turn phase type (i.e., permitted, permitted/protected, protected only).

Significant Results:

- Preliminary analyses of CV and LiDAR data indicate certain kinematic equation and extended kinematic equation assumptions may require further evaluation.
- Gained access to one month of commercially available telematics data.
- Expanded collection of historical crash data to include intersections from Utah. Refined certain variables to include in the modeling based on the initial data collection.
- Expanded collection of LiDAR data to include one more intersection from Utah.
- Improved accuracy of estimating turning movement trajectories for the CV data investigation.

Circumstance affecting project or budget. (Please describe any challenges encountered or anticipated that might affect the completion of the project within the time, scope and fiscal constraints set forth in the agreement, along with recommended solutions to those problems).

In Q4, the team successfully executed a contract modification to transfer a portion of the available equipment/materials and travel funding to labor, to improve the sample size of data collection/analysis that will be needed to address the top-priority research questions. This contract mod also included a schedule modification request to provide an additional three months of data collection and analysis, pushing subsequent deliverable due dates back by approximately three months.

Potential Implementation:

The research team will turn its focus to implementation considerations (e.g., developing a practical new CCI methodology and field validation method) in May 2025, following twelve months of data collection and analysis.

Task	Deliverable	Complete?
1	Kick-off Meeting	Y
1	Project Management - Final Work Plan	Y
2	Technical Panel Meeting 1	Y
2	Feasibility and Gaps White Paper	Y
2	Technical Panel Meeting 2	Y
2	Final Project Research Work Plan	Y
3	Final White Paper on Survey Results	Y
3	SQL Database and Dashboard	Y
4	Data Collection and Analysis*	Ongoing
4	Technical Panel Meeting 3**	Y
5	Technical Panel Meeting 4	Fall 2025
5	Final White Paper - Final Methodology	Summer 2025
6	Project Report Annotated Outline	Summer 2025
6	Final Project Report	Fall 2025
6	Technical Panel Meeting 5	Fall 2025
7	Final Outreach Plan Report	Fall 2025
7	Final Outreach Plan Materials	Fall 2025

7	External Webinar 1	Y
7	External Webinar 2	Y
7	External Webinar 3	Fall 2025
8	Travel Estimate Log	Y
8	Detailed Travel Reimbursement Log	Fall 2025

* Monthly time and materials (T&M) payments.

** No milestone payment for Technical Panel Meeting 3.