

TRANSPORTATION POOLED FUND PROGRAM QUARTERLY PROGRESS REPORT

Lead Agency (FHWA or State DOT): Wisconsin DOT

INSTRUCTIONS:

Project Managers and/or research project investigators 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 # <i>(i.e., SPR-2(XXX), SPR-3(XXX) or TPF-5(XXX))</i> TPF-5(274)	Transportation Pooled Fund Program - Report Period: <input type="checkbox"/> Quarter 1 (January 1 – March 31) <input checked="" type="checkbox"/> Quarter 2 (April 1 – June 30) Quarter 3 (July 1 – September 30) Quarter 4 (October 1 – December 31)	
Project Title: Midwest Freight Pooled Fund – Technology Transfer Agreement		
Name of Project Manager(s): Lori Richter	Phone Number: (608) 264-8435	E-Mail Lori.Richter@dot.wi.gov
Lead Agency Project ID: 0092-13-10	Other Project ID (i.e., contract #):	Project Start Date: 11/19/2012
Original Project End Date: 11/18/2014	Current Project End Date: 11/18/2014 - completed	Number of Extensions: 0

Project schedule status:

On schedule
 On revised schedule
 Ahead of schedule
 Behind schedule

Overall Project Statistics:

Total Project Budget	Total Cost to Date for Project	Percentage of Work Completed to Date
\$40,000	\$10,428	100%

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
\$0; 0%	\$0	0%

Project Description:

The purpose of this interagency agreement is to provide the following technology transfer activities and services related for Midwest Freight Research:

1. Attendance at pooled fund research presentations
2. Presentation of pooled fund research findings at Mid-Continent Forum
3. Research documents and communication materials

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

None

Anticipated work next quarter:

None

Significant Results:

n/a

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).

n/a

Potential Implementation:

n/a

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Lead Agency (FHWA or State DOT): _____

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Transportation Pooled Fund Program Project # <i>(i.e., SPR-2(XXX), SPR-3(XXX) or TPF-5(XXX))</i>		Transportation Pooled Fund Program - Report Period: <input type="checkbox"/> Quarter 1 (January 1 – March 31) <input type="checkbox"/> Quarter 2 (April 1 – June 30) <input type="checkbox"/> Quarter 3 (July 1 – September 30) <input type="checkbox"/> Quarter 4 (October 1 – December 31)	
Project Title:			
Name of Project Manager(s):	Phone Number:	E-Mail	
Lead Agency Project ID:	Other Project ID (i.e., contract #):	Project Start Date:	
Original Project End Date:	Current Project End Date:	Number of Extensions:	

Project schedule status:

- On schedule
 On revised schedule
 Ahead of schedule
 Behind schedule

Overall Project Statistics:

Total Project Budget	Total Cost to Date for Project	Percentage of Work Completed to Date

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date

Project Description:

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

Anticipated work next quarter:

Significant Results:

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).

Potential Implementation:

TRANSPORTATION POOLED FUND PROGRAM QUARTERLY PROGRESS REPORT

Lead Agency (FHWA or State DOT): Wisconsin Department of Transportation

INSTRUCTIONS:

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Transportation Pooled Fund Program Project # S2458 PP14	Transportation Pooled Fund Program - Report Period: <input type="checkbox"/> Quarter 1 (January 1 – March 31) <input checked="" type="checkbox"/> Quarter 2 (April 1 – June 30) <input type="checkbox"/> Quarter 3 (July 1 – September 30) <input type="checkbox"/> Quarter 4 (October 1 – December 31)	
Project Title: EFFECT OF PRIMARY AND SECONDARY CRASHES: IDENTIFICATION, VISUALIZATION AND PREDICTION		
Name of Project Manager(s): Sabyasachee Mishra	Phone Number: (901) 678-5043	E-Mail smishra3@memphis.edu
Lead Agency Project ID:	Other Project ID (i.e., contract #):	Project Start Date: 01/01/2014
Original Project End Date: 12/31/2014	Current Project End Date: 12/31/2014	Number of Extensions: None

Project schedule status:

On schedule
 On revised schedule
 Ahead of schedule
 Behind schedule

Overall Project Statistics:

Total Project Budget	Total Cost to Date for Project	Percentage of Work Completed to Date
\$150,000	\$149,876.16	99%

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
99% and 0%	0.00	99%

Project Description:

Traffic crashes are a major source of congestion on freeway and arterial system. A "Primary crash" leads to reduction of roadway capacity which may result in another crash, known as "a secondary crash". Earlier studies suggest that up to 15% of reported crashes have occurred partly or entirely as the result of a primary crash. Though a relatively small proportion of all the crashes are secondary crashes, it is important to identify the contributing factors as well as their characteristics because secondary crashes can increase congestion (up to 50% in urban areas), delays, fuel consumption and emissions. Also, United States Department of Transportation (USDOT) estimates that 18% of freeway traffic related fatalities are attributed to secondary crashes. A number of states have proposed various programs to reduce secondary crashes and estimate their benefits in crash reduction. Reducing the occurrence of secondary crashes is also a major concern for traffic incident management (TIM) agencies, especially when dispatching rescue vehicles to clear the affected traffic lanes. Therefore, understanding the characteristics of primary and secondary crashes can help decision makers' select better traffic operation and safety programs.

The purpose of the study is to identify secondary crashes, develop prediction models for incident duration, probability of secondary crash occurrence, associated delays and queue length and apply them to Shelby County, TN. Once the models are established, frameworks will be developed for Hot Spot Visual Tool (HSVT) - to identify the locations which are likely to encounter secondary crashes and Crash Identification Toolbox (CIT) - to obtain specifics of a crash for a set of criteria. Part of the research also will study impact of secondary crashes on freight operations and consequently identify and evaluate strategies that could be used to reduce the impact for hot spots. Identification of the secondary crashes involves extensive literature review to learn different temporal/spatial threshold, methodologies used in the past studies. It also includes developing an algorithm. Developing prediction models would involve identifying the contributing factors using data analysis and based on that, statistical models will be generated that can predict incident duration, probability of secondary crash occurrence, associated delays and queue length.

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

The project is completed.

Anticipated work next quarter:

The project is completed and no more work is anticipated.

Significant Results:

Final report is delivered and the project is completed.

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).

None

Potential Implementation:

The team has developed “Secondary Crash Hotspots Map” to identify the locations where SCs are more likely to occur which can be a useful visualization tool for various TIM and planning agencies. These locations of the hotspots are of great importance to transportation agencies because studying those locations to a great deal would reveal the primary contributing factors and also the strategies that need to be undertaken to mitigate the secondary crashes. At the end of study use the data for following implementation:

- Clear set of guidelines and a model to distinguish primary and secondary crashes
- Identifying secondary crash locations by user defined thresholds
- Determining same direction and opposite direction secondary crash
- Visualizing predominant crash locations
- Ability to determine incident duration, secondary crash occurrence and associate delays (based on primary incident characteristics)

Also identifying hotspots is necessary to explore how it can impact freight operation. Hotspots with a higher-than-average incidence involving trucks, hot spots in close proximity to major freight generators and hot spots on designated truck routes may be of great interest for various agencies. The prediction model also can be used to planning purposes to reduce congestion, delay, and safety hazards.

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Transportation Pooled Fund Program Project # SPR-2563PY14		Transportation Pooled Fund Program - Report Period: <input type="checkbox"/> Quarter 1 (January 1 – March 31) <input checked="" type="checkbox"/> Quarter 2 (April 1 – June 30) <input type="checkbox"/> Quarter 3 (July 1 – September 30) <input type="checkbox"/> Quarter 4 (October 1 – December 31)	
Project Title: A GUIDEBOOK FOR FREIGHT TRANSPORTATION PLANNING USING TRUCK GPS DATA			
Name of Project Manager(s): Dr. Sabya Mishra	Phone Number: 901.678.5043	E-Mail: smishra3@memphis.edu	
Lead Agency Project ID: 0092-14-16	Other Project ID (i.e., contract #):	Project Start Date: 1/1/2014	
Original Project End Date: 12/31/14	Current Project End Date: 12/31/14	Number of Extensions: None	

Project schedule status:

On schedule
 On revised schedule
 Ahead of schedule
 Behind schedule

Overall Project Statistics:

Total Project Budget	Total Cost to Date for Project	Percentage of Work Completed to Date
\$150,000	\$148,418.70	99%

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
99% and 0%	\$---	99%

Project Description:

One of the main difficulties in freight transportation planning is the lack of accurate and detailed truck trip data. The majority of truck movement data is reported at the inter-county level and is represented by aggregated tonnages that should be split into truck trips. The American Transportation Research Institute (ATRI) in collaboration with the Federal Highway Administration (FHWA) developed the Freight Performance Measures Web-Based (FPMweb) Tool. The FPMweb Tool estimates the operating speed of highway segments using truck GPS devices for 25 interstate corridors. The suggested research will produce a guidebook for TDOT on how truck GPS data can be used for long term transportation planning and for development of operational transportation strategies in the State of TN.

This project has the following objectives: 1) Develop performance measures for transportation facilities (travel times, flows, demand, bottlenecks, etc.); 2) Provide key performance indicators for freight intermodal terminals in TN; 3) Develop truck trip generation rates for different intermodal and transmodal terminals; 4) Analyze TN truck corridors with a particular focus on travel time and flow; 5) Analyze inter- and intra-city truck travel patterns; 6) Provide data to support development, calibration, and validation of TN's State and MPO's travel demand models (both for the freight and passenger components).

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

The project is completed..

Anticipated work next quarter:

Final report is delivered and the project is completed.

Significant Results:

Final report is delivered and the project is completed.

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).

None

Potential Implementation:

The proposed DOI algorithm is a novel approach for estimating link FPMs, and it can be useful for researchers and

practitioners. The designed ArcGIS tool will be able to assist the analyst to identify freight transportation corridors that may require future improvement within the ArcGIS domain. The developed OIDA and TDA algorithms will be efficient in a detailed analysis of truck trips based on the available GPS data. The developed algorithms and a new ArcGIS tool may be applied in freight transportation planning, identification of bottlenecks, calculating various FPMs, prioritizing busy freight transportation corridors for improvement projects (based on total truck volumes, average TT, TT reliability, etc.), and achieving MAP-21 objectives.