

UTC Spotlight

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This monthly report from the University Transportation Centers Program highlights some of the recent accomplishments and products from one of the University Transportation Centers (UTCs) managed by the U.S. Department of Transportation's Research and Innovative Technology Administration.

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Innovative Use of Spatial Data Assists in Solving Truck Parking Shortage

Adequate truck parking at public arrest areas and commercial truck stops and travel plazas is a nationwide concern for the freight transportation industry. Most of the nation's freight moves by truck, and experts project that this traffic will increase significantly in the coming years. A shortage of safe and affordable truck parking facilities increases congestion, decreases overall road safety, hinders compliance with hours of service rules designed to reduce fatigue-related accidents, and impedes national commerce. Researchers at the National Center for Freight and Infrastructure Research and Education (CFIRE) developed innovative tools to help analyze this shortage.



Researchers use the CFIRE tools to understand truck parking issues in the 10-state Mississippi Valley region of the Midwest and to develop low-cost strategies to expand truck parking options. CFIRE researchers inventoried the public and private truck parking facilities along the major freight truck routes in the region and developed an interactive map strategy to pinpoint and define locations where parking is a challenge. Through these efforts, over 200 trouble areas have been identified, labeled, and defined, leading to preliminary low-cost recom-

mendations to increase spaces, such as restriping parking stalls and first in/first out parking patterns. Some identified sites, however, would require costly land purchases or the expansion of existing truck stops. Unfortunately, these high-cost locations are often in the areas of greatest need.

The project is sponsored by the Mississippi Valley Freight Coalition (MVFC), a unique 10-state regional organization dedicated to improving the planning, operation, preservation, and enhancement of freight related transportation infrastructure in the American Association of State Highway and Transportation Officials (AASHTO) Mississippi Valley Conference. CFIRE also coordinates the MVFC.

Data Collection

With the growing popularity of the Internet and the explosion in mapping and GPS uses, routing and map information tools are readily available, especially since the release of Google Maps Application Programming Interface in 2006. CFIRE researchers developed the first use of the Google Maps interface to interactively collect data from truckers, dispatchers, transportation planners, and enforcement officers. CFIRE's data tool differs from those already available in that it captures information and promotes interaction between public and



private sector stakeholders. The tool is versatile and will be used for other data collection efforts across the Mississippi Valley.



After using commodity flow and freight planning information, CFIRE researchers aggressively pursued data collection opportunities and

worked collaboratively with state patrols and trucking associations across the region. Among the key initiatives were data collection at Iowa and Wisconsin trucking expositions. Students and researchers set up exhibit booths and got the opportunity to talk with and learn from freight carriers and to collect invaluable survey data, industry contacts, and overall project input. One of the highlights was survey collection at the Iowa Truckers Jamboree along Interstate 80 in July 2008 – the Jamboree is purported to be the largest truck show in the world and the I-80 Truck Stop in Walcott, IA, is the nation's largest.

Data identified that large parking sites tend to fill up at peak times, compelling truckers to park overnight on highway ramps or in customer parking lots, sometimes requiring them to move midway through their required rest periods. Some truckers end up circling around looking for spaces and miss deadlines, resulting in lost pay, disciplinary action, or both. From nearly 250 surveys, researchers found that truckers ranked refueling, restroom facilities, and food as the most important amenities at truck parking facilities, followed by level spaces with ample lighting and minimal noise, security, and proximity to their destination.

Because the project aims to provide information necessary for states to consider increasing short term truck parking availability along the interstate highways in the region, the

research team has begun to evaluate underutilized parking areas and focus on incentives for making truck parking spaces available in private sector locations. Identified strategies include modifying local ordinances to require industrial or business parks and areas of high truck traffic to include truck parking facilities in site plans. Legislation allowing off-hour deliveries during nonpeak times could also reduce the demand for overnight truck parking.

Dissemination of Results Using the CFIRE tool

A companion data visualization tool maps and presents the data to public sector transportation officials and freight professionals using Google Maps. Locations with need of additional or reengineered truck parking facilities appear repeatedly in the data. The visualization tool categorizes these and filters locations for each participant. The tool also displays likely causes and solutions suggested by participants in pop-up windows on markers.

This web-based survey tool helps decision makers understand trends in truck parking, identify and evaluate low-cost solutions, and make parking information available to the larger freight community. The analysis identifies where new or expanded facilities may be needed along with operational issues causing the parking shortages. This data also comprises the first regional inventory of truck parking locations in the Mississippi Valley. The next steps are to prioritize and identify major freight corridors, complete the regional inventory of truck parking spaces, and select additional interview participants to identify trouble spots in the region. 🔄

About This Project

Teresa Adams, Ph.D. (adams@engr.wisc.edu), is the director of CFIRE at the University of Wisconsin, Madison, and is the principal investigator. Bruce X. Wang and graduate students Ravi Pavuluri, Praveen Srivastava, and Kaushik Reddy are the primary researchers. Consultant services have been provided by Libby Ogard, PrimeFocus LLC. This project builds on the 2002 Federal Highway Administration's Study of Adequacy of Parking Facilities. The urgency of this issue is a result of the increasing volume of commercial traffic on the Interstate Highway System, new Hours of Service regulations implemented by the Federal Highway Administration in 2005, growing incidents of truck parking ramps, and increasing awareness of the connection between driver fatigue and traffic collisions. The CFIRE research team is also conducting a related targeted project for the Wisconsin DOT.

More survey results are available at:
<http://mvfcpraveen.cae.wisc.edu/visualizer>