

Midwest Transportation Center



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Overview of Safety Related Activities

March 19, 2015

Midwest Transportation Center

Region 7 UTC

Data Driven Performance Measures for Enhanced Infrastructure Condition, Safety, and Project Delivery

Partners

Iowa State University

Creighton University in Omaha, Nebraska

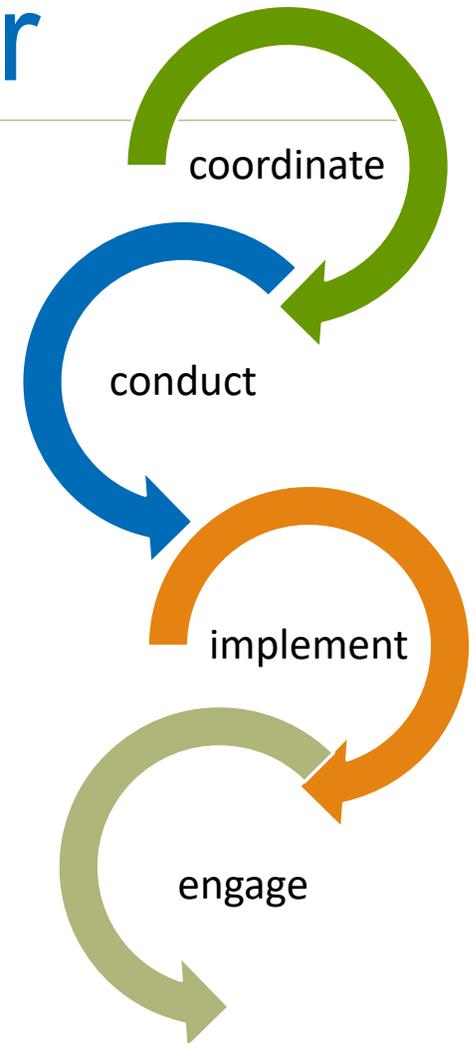
Harris-Stowe State University in St. Louis

University of Missouri, Columbia in Columbia, Missouri

University of Missouri, St. Louis in St. Louis, Missouri

Wichita State University in Wichita, Kansas

Collaborator: Seward Community College



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Coordinate

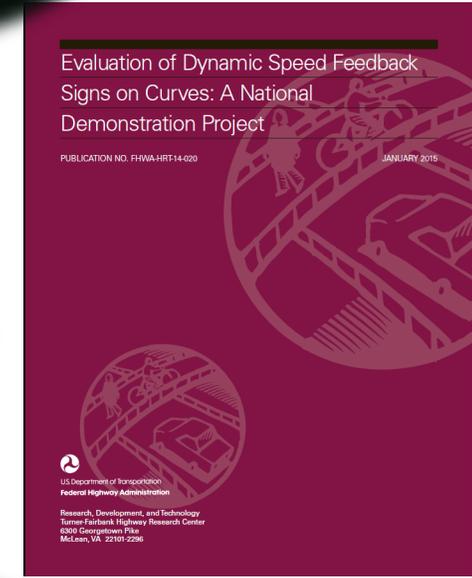
- Conduct annual focus group with partners and regional agencies
 - MTC focus group
 - Smart Work Zone Deployment Initiative focus group
- Identify common priorities among DOTs
- Align with federal priorities
 - Toward Zero Deaths
 - Every Day Counts
 - Connected vehicles
 - Speed management
 - FHWA safety focus areas (intersections, roadway departures, pedestrian)
- Identify opportunities for team members to collaborate
 - Develop regional CMFs (share data among partners)



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Conduct Research

- Roadway departure
 - rural curve countermeasures
 - development of CMFs for roadway departure countermeasures
 - demonstration projects – implementation of Safety Edge with PCC
 - Safety Edge
 - paved shoulder
 - usRAP/IRAP
 - high friction surface treatments
 - cable median barrier
- Speed management
 - rural community speed management
 - work zone speed management
 - high to low speed transition zones
 - maximum speed limits for interstates and two-lane highways
 - differential speed limits for trucks and buses



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Conduct Research

- Work zone
 - Driver behavior in work zone merges
 - Relationship between driver behavior, speed, and safety critical events
 - Work zone pavement marking

- Traffic operations and safety
 - Access management
 - Development of safety performance functions
 - Vision based traffic conflict detection

- Road safety assessment
 - usRAP/IRAP
 - SHRP 2 Roadway Information Database

UTC Spotlight

University Transportation Centers Program

November 2009

This month: Iowa State University's Midwest Transportation Consortium



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). The UTC Program is administered by the U.S. Department of Transportation's Research and Innovative Technology Administration.

usRAP: A New Tool for Road Safety Management

Roadway crashes are a leading cause of death in the United States. Yet, little information on crash risks is readily available to travelers and highway planners. Raising public awareness of these risks is one of the primary objectives of the U.S. Road Assessment Program (usRAP) pilot program, initiated in 2004 by the American Automobile Association Foundation for Traffic Safety (AAAFTS).

The objectives of the usRAP pilot program are to assess crash risk on U.S. roads and provide that information to the public and to highway agencies in accessible formats. Crash-risk information can help roadway users make informed driving decisions and help agencies make strategic decisions about route standards and roadway improvements and countermeasures. The overall goal of usRAP is to reduce fatal and serious-injury crashes in the United States.

Overview of usRAP

Eight states—Florida, Illinois, Iowa, Kentucky, Michigan, New Jersey, New Mexico, and Utah—are participating in the pilot program.

Midwest Research Institute (MRI) in Kansas City, MO, is the lead organization. MRI acts as liaison to participating state highway agencies, develops program methodologies, collects crash data and other road safety-related data from state agencies, and addresses related organizational issues.

The Midwest Transportation Consortium (MTC) at Iowa State University, a University Transportation Center Tier One center, is a technical partner to MRI in the usRAP work for AAAFTS. Iowa State University's role in the project focuses on mapping crash and other safety data from the pilot states in various formats, using data integration, geospatial analysis, and MRI-developed rating systems. Three protocols are being conducted in the participating states:

- Creation of roadway risk maps
- Development of roadway star ratings maps
- Performance tracking

Risk Maps

Based on crash history data, risk maps identify the locations of greatest crash risk on roadway segments. One type of risk map cannot tell the entire story, so usRAP has developed four types with differing risk measures:

Map 1: Crash density
Map 2: Crash rate
Map 3: Crash rate ratio
Map 4: Potential crash savings

Using several years of crash data provided by state and local road agency crash databases, Iowa State University has created risk maps for all eight pilot states.



U.S. Department of Transportation
Research and Innovative Technology
Administration



Center for Transportation Research and Education

SHRP 2 - Roadway Information Database

Sample RID Data Request

The SHRP 2 Roadway Information Database is a spatially enabled database, or Geodatabase, which is designed to store, query, and manipulate geographic data, including points, lines, and polygons. The Geodatabase includes a number of Classes used to store attribute and spatial data, relationships between Classes, and Domains of valid attribute values.

A sample of the Roadway Information Database with data from the mobile data collection project (5048) has been provided from the Tampa, FL study site. This sample RID dataset only includes data from the mobile data collection. Once the RID is complete (by the end of 2014), state existing data, and supplemental data will be added to the sample dataset.

- Background
- Roadway Information Database
- Sample RID Request

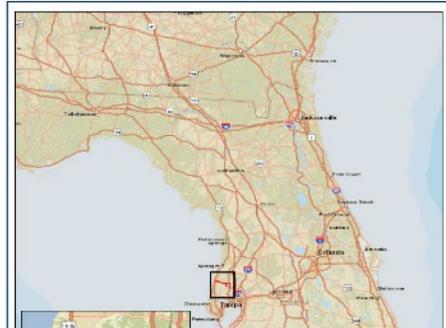
CTRE is an Iowa State University center, administered by the Institute for Transportation.

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Website: www.ctre.iastate.edu/

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Research to Live

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Innovative Funding/Partnerships

- Projects with innovative partnerships
 - Harris Stowe conducted “Economic Sustainability of Inner City Streets”
 - 3 City of St. Louis wards/Missouri DOT/ST. Louis Street department/MTC
- Projects sponsored with multiple funding sources
 - Evaluation of dynamic speed feedback signs & Evaluation of Dynamic Sequential Chevrons
 - FHWA/MTC/Iowa Highway Research Board (IHRB)/Iowa DOT
 - Use of SHRP2 NDS Data to Evaluate Roadway Departure Characteristics
 - FHWA/MTC/Iowa DOT
 - Evaluation of Work zone Safety Using the SHRP 2 Naturalistic Driving Study Data
 - FHWA/MTC/Iowa DOT
 - Evaluation of LED Stop Signs at Rural Intersections & Evaluation of Rumble Stripes
 - FHWA/MTC/Iowa Highway Research Board (IHRB)/Iowa DOT
 - Seed funding for innovative research with IHRB
 - High-risk
 - Proof-of-concept
 - Basic research
 - Open to all universities in region



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STATE UNIVERSITY
ANHEUSER-BUSCH SCHOOL OF BUSINESS



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Implement

- Establish impact/value of select past research projects
- Each research project is required to have an implementation plan, technical advisory committee, and tech briefs
- Development of toolboxes, synthesis web pages, guides
- Webinars
 - FHWA Roadway Departure Focus State Initiative
 - FHWA Office of Safety's webinar on Speed Management for Pedestrian and Bicycle Safety
 - TRB High to Low Speed Transition Zone Design and Mitigation Webinar

Speed Management Toolbox for Rural Communities



Final Report
April 2013



Sponsored by
Federal Highway Administration
Iowa Department of Transportation
Iowa Highway Research Board
(IHRB Project TR-630)
Midwest Transportation Consortium
(InTrans Project 11-393)

Home | Roadway Departures | Rural Intersections | Rural Speed Management

Synthesis of Safety-Related Research

The objective of this web page was to synthesize safety research to address the top traffic safety needs in Iowa. Information about [roadway departures](#), [rural intersections](#), and [rural speed management](#) that was relevant to Iowa was summarized to allow agencies to more effectively target specific types of crashes in Iowa.

Development of this website was financed in part through funds provided by the Iowa Department of Transportation and the Federal Highway Administration. The contents of this website reflect the views of the authors, who are responsible for the facts and the accuracy of the information presented herein. The opinions, findings and conclusions expressed in this website are those of the authors and not necessarily those of the sponsors.

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Implement

Safety Edge

Design Manual
Chapter 3
Cross Sections
Originally Issued: 04-15-10
Revised: 02-10-12

- Research has been translated into policies, guidance, best practices
 - Paved shoulder, Safety Edge incorporated into Iowa DOT Design manual
- Identify opportunities to translate research to training/workshops in conjunction with Local Technical Assistance Program
- Implementation series
 - Mid-continent
 - Workshop series

Introduction

The safety edge is a beveled pavement edge to help lessen the severity of roadway departures. When a driver drifts off the paved surface, the safety edge provides greater ease re-entering the roadway, and reduces the risk of over steering and loss of control of the vehicle.

At the February 2010 meeting, the Highway Division Management Team decided to incorporate safety edge into DOT projects as detailed in this section effective with the October 2010 letting.

Where to Use

Safety edge is required on all primary highways unless one of the following conditions is met:

- the roadway is an interchange ramp or loop,
- the roadway or shoulder is curbed, or
- the paved shoulder width is 4 foot or greater.

The poster for the 2015 Mid-Continent Transportation Research Symposium features a blue and white color scheme. At the top, it includes logos for the Mid-Continent Transportation Research Symposium, Iowa State University Institute for Transportation, and Iowa DOT. Below the logos is a navigation bar with links for Home, About the symposium, and Call for abstracts. The main title is '2015 Mid-Continent Transportation Research Symposium' with the tagline 'Today's Innovation, Tomorrow's Best Practice'. The dates 'August 19-20, 2015' and location 'Gateway Hotel and Conference Center Ames, IA' are prominently displayed. It also states the event is hosted by the Iowa Department of Transportation and Iowa State University's Institute for Transportation. A call to action 'Submit an Abstract (Due Monday, April 13, 2015)' is included. At the bottom, there are links to download the 2015 save the date postcard and to see abstracts and presentations from the 2012 symposium.



Engage



- K-12
 - Go! Online e-zine to interest teenagers in transportation
 - Distracted driving workshops (Developed in conjunction with UTC at University of Iowa's National Advanced Driving Simulator)
 - Transportation outreach kits based on AASHTO TRACS/RIDES in partnership with the Iowa DOT
 - Sponsoring teach for NSF research experience for teachers
 - Coordinating K-12 with NSF Engineering Research Center for Biorenewable Chemicals (CBIRC)



- Graduate/Undergraduate
 - Summer internship
 - MTC scholars
 - Spring seminar
 - Study abroad

- Partners with Midwest Transportation Workforce Center



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