



# Creation of a Sustainable Collaborative Transportation and Safety Model

tech transfer summary

March 2018

## MTC RESEARCH PROJECT TITLE

Creation of a Sustainable Collaborative Transportation and Safety Model

## SPONSORS

Midwest Transportation Center  
U.S. Department of Transportation Office  
of the Assistant Secretary for Research  
and Technology (USDOT/OST-R)

## PRINCIPAL INVESTIGATOR

Fara Zakery, Dean  
ZakeryF@hssu.edu, 314-340-5096  
Harris-Stowe State University

## CO-PRINCIPAL INVESTIGATOR

Joyce Eisel, Assistant Professor and Chair,  
Health Care Management Department  
EiselJ@hssu.edu, 314-340-5026  
Harris-Stowe State University

## TEAM MEMBERS

Charles Sykes, Assistant Dean  
Robert Kamkwalala, Associate Professor  
and Chair of Business Administration  
Harris-Stowe State University

## MORE INFORMATION

[intrans.iastate.edu](http://intrans.iastate.edu)

## MTC

**Iowa State University**  
**2711 S. Loop Drive, Suite 4700**  
**Ames, IA 50010-8664**  
**515-294-8103**

The Midwest Transportation Center (MTC) is a regional University Transportation Center (UTC). Iowa State University, through its Institute for Transportation (InTrans), is the MTC lead institution.

MTC's research focus area is State of Good Repair, a key program under the 2012 federal transportation bill, the Moving Ahead for Progress in the 21st Century Act (MAP-21). MTC research focuses on data-driven performance measures of transportation infrastructure, traffic safety, and project construction.

The opinions, findings, and conclusions expressed in this publication are those of the authors and not necessarily those of the project sponsors.

A sustainable asset management transportation and safety model can better help determine the infrastructure and safety needs in metropolitan areas.

## Objective

The objective of this project was to create a sustainable asset management transportation and safety model for a designated area of St. Louis, Missouri, that can be replicated in other municipalities.

## Problem Statement

The transportation and safety needs in urban areas, particularly inner-city blocks, are not well understood.

## Project Description

The research team identified a 45-block area in downtown St. Louis, Missouri, for the study. The team conducted a feasibility study that examined road conditions; vehicle and pedestrian control at streets, sidewalks, crosswalk lights, and bike paths; street lighting; needed repairs; and associated costs with a future projection of asset allocation.

The research team employed quantitative, qualitative, and observational research methods, including present serviceability ratings (PSRs) and pavement condition ratings (PCRs). They also identified economic, social, and safety variables to help establish a transportation asset management program.

The team also employed outreach activities engaging various constituents that included the city of St. Louis, its street and sidewalk departments, the Missouri Department of Transportation, elected officials, businesses, and local residents.

## Key Findings

The research team successfully created a sustainable asset management transportation and safety model. The technologically driven economic, social, and safety model was developed for the St. Louis Street Department within the designated area of the metropolitan area, which can be replicated by similar municipalities.

## Recommendations

The research team made recommendations, based on its study, to the St. Louis Street Department for repairs and replacement that totaled \$3,846,542 in the 45-block area.

The specific breakdown of the costs is as follows:

- Street repairs: \$3,620,600
- Sidewalks: \$186,542
- Bike paths: \$33,800
- Crosswalk lighting: \$5,600
- Street lighting: \$0

The team also presented strategies for more proactive street, sidewalk, and lighting maintenance and repairs.

## **Implementation Readiness and Benefits**

The team developed a sustainable asset management transportation and safety model that can be replicated in other urban areas.

The team is also moving forward with an assessment of other factors in the community that they studied, including real estate values, bus stop shelters, crime rates, and accident rates. Their work has also led to a closer collaborative relationship with national and community constituents.