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## Research Reports

**Transportation-related research reports by University of Minnesota researchers, published by CTS, MnDOT, the Minnesota Local Road Research Board, and other sponsors in 2013. These reports are available in PDF format at [www.cts.umn.edu/Publications](http://www.cts.umn.edu/Publications).**

### Transportation and the Economy

**Case Studies of Transportation Investment to Identify the Impacts on the Local and State Economy**

Michael Iacono, David M. Levinson  
Report no. MnDOT 2013-03  

**Mitigating Highway Construction Impacts Through the Use of Transit**

Carol Becker  
Report no. MnDOT 2013-13  

**Understanding the Economic Effects of Flexibility through Three Employer Case Studies**

Emily Sauni-Sandgren, Adeel Lari  
Report no. MnDOT 2013-07  

### Transportation Infrastructure

**Design and Construction Guidelines for Thermally Insulated Concrete Pavements**

Lev Khazanovich, Mark Watson, Nicholas J. Santero, John Harvey, Jose T. Balbo, Luke Johanneck, Rita Lederle, Mihai O. Marasteanu, Priyam Saxena, Derek Tompkins, Mary Vancura, James Signore  
Report no. MnDOT 2013-28  

### Transportation Planning and the Environment

**Wakota Bridge Thermal Monitoring Program Part I: Analysis and Monitoring Plan**

Christopher J. Scheevel, Krista M. Morris, Arturo E. Schultz  
Report no. MnDOT 2013-11  

**Wakota Bridge Thermal Monitoring Program Part II: Data Analysis and Model Comparison**

Krista M. Morris, Arturo E. Schultz  
Report no. MnDOT 2013-12  

**Performance-Based Measurement of Optimum Moisture for Soil Compaction**

Bradley J. Hansen, John L. Nieber  
Report no. MnDOT 2013-28  
Complete Streets from Policy to Project The Planning and Implementation of Complete Streets at Multiple Scales
Carissa Schively Slotterback, Cindy Zerger
Report no. MnDOT 2013-30
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2336

A Fast, Auction-Based Algorithm for Paratransit Vehicle Assignment
John Gunnar Carlson, Jason Houle
Report no. CTS 13-28
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2375

Feasibility of Using GPS to Track Bicycle Lane Positioning
Greg Lindsey, Steve Hankey, Xize Wang, Alec Gorjestani, Junzhou Chen
Report no. CTS 13-16
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2264

The Minnesota Bicycle and Pedestrian Counting Initiative: Methodologies for Non-motorized Traffic Monitoring
Greg Lindsey, Steve Hankey, Xize Wang, Junzhou Chen
Report no. MnDOT 2013-24
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2328

Quality of Life: Assessment for Transportation Performance Measures
Ingrid E. Schneider, Tian Guo, Sierra Schroeder
Report no. MnDOT 2013-05
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2273

Transport of Perfluorochemicals to Surface and Subsurface Soils
Feng Xiao, John S. Gulliver, Matt Simcik
Report no. CTS 13-17
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2277

Transportation Impact of Transitways: A Case Study of Hiawatha Light Rail Transit in Minneapolis
Jason Cao, Jessica Schoner
Report no. CTS 13-13
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2266

Transportation Safety and Traffic Flow
Analysis of Single Frequency, Carrier Phase Based GPS Positioning Performance and Sensor Aiding Requirements
Demoz Gebre-Egziabher, Hamid Mokhtarzadeh
Report no. CTS 13-01
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2218

Bus Driver Intersection Task Analysis: Investigation of Bus-Pedestrian Crashes
Chia Wei, Ensar Becic, Christopher Edwards, Michael Manser
Report no. CTS 13-04
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2222

Detection of Water and Ice on Bridge Structures by AC Impedance and Dielectric Relaxation Spectroscopy Phase II
John F. Evans
Report no. CTS 13-25
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2306

Detection of Water and Ice on Bridge Structures by AC Impedance and Dielectric Relaxation Spectroscopy, Phases III and IV: Continued Field Testing and Refinement of Novel Water and Ice Sensor Systems on Bridge Decks
John F. Evans
Report no. CTS 13-26
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2310

Developing an Intelligent Decision Support System for the Proactive Implementation of Traffic Safety Strategies
Hongyi Chen, Fang Chen, Chris Anderson
Report no. CTS 13-12
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2250

Development of Hybrid DSRC-PCMS Information Systems for Snowplow Operations and Work Zones
Umar Ibrahim, M. Imran Hayee
Report no. CTS 13-08
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2252

Development of a Multiple-Camera Tracking System for Accurate Traffic Performance Measurements at Intersections
Hua Tang
Report no. CTS 13-10
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2254

Development of an Innovative Prototype Lane Departure Warning System
Jiann-Shiou Yang
Report no. CTS 13-14
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2258

Effectiveness of Urban Partnership Agreement Traffic Operations Measures in the I-35W Corridor
John Hourdos, Seraphin C. Abou, Stephen Zitzow
Report no. CTS 13-22
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2302

Field Study of Driver Behavior at Permitted Left-Turn Indications
Gary A. Davis, Abhishek Mudgal
Report no. CTS 13-18
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2288

Improving Freeway Traffic Speed Estimation Using High-Resolution Loop Detector Data
Henry Liu, Jie Sun
Report no. CTS 13-21
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2272

Improving Traffic Signal Operations for Integrated Corridor Management
Henry Liu, Heng Hu
Report no. MnDOT 2013-17
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2292

Improving the Safety and Efficiency of Roadway Maintenance Phase II: Developing a Vision Guidance System for the Robotic Roadway Message Painter
Ryan G. Rosandich
Report no. CTS 13-09
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2244

Instrumentation of Navistar Truck for Data Collection
Lee Alexander, Gridsada Phanomchoeng, Rajesh Rajamani
Report no. MnDOT 2013-01
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2226

Monitoring the Use of HOV and HOT Lanes
Eric Holec, Gunuprasad Somasundaram, Nikolaos P. Papanikolopoulos, Vassilios Morellas
Report no. CTS 13-07
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2238
A Pilot Study on Mitigating Run-Off-Road Crashes
Christopher Edwards, Nichole Morris, Michael Manser
Report no. CTS 13-23
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2296

A Prototype System for Chemical Hydrogen Generation and Storage for Operating ITS Devices
Steven P. Sternberg, A. Rashid Hasan, Venkatram R. Mereddy
Report no. CTS 13-11
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2276

Research Implementation of the SMART SIGNAL System on Trunk Highway (TH) 13
Henry Liu, Jianfeng Zheng, Heng Hu, Jie Sun
Report no. MnDOT 2013-06
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2246

SMART-Signal Phase II: Arterial Offset Optimization Using Archived High-Resolution Traffic Signal Data
Henry Liu, Heng Hu
Report no. CTS 13-02
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2220

Snow Rendering for Interactive Snowplow Simulation - Supporting Safety in Snowplow Design
Peter Willemsen
Report no. CTS 13-06
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2228

Thermal Image-Based Deer Detection to Reduce Accidents Due to Deer-Vehicle Collisions
Debao Zhou
Report no. CTS 13-05
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2240

Video Detection and Classification of Pedestrian Events at Roundabouts and Crosswalks
Ted Morris, Xinyan Li, Vassilios Morellas, Nikolaos P. Papanikolopoulos
Report no. CTS 13-27
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2314

Research Summaries

Ridership and Pedestrian Impacts of Transitways: A Case Study of Hiawatha Light-Rail Transit in Minneapolis (Research Brief)
Jason Cao, Jessica Schoner
Report no. CTS Research Brief 2013-01

Spurring Private-Sector Development Along Transit Corridors (Research Brief)
Yingjing Fan, Andrew Guthrie
CTS Research Brief 2013-02
www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2298

Transforming Community: Transitway Impacts Research Program (Research Synthesis)
Report no. CTS 13-29

Annual Reports

2013 CTS Annual Report

Newsletters
CTS publishes print and electronic newsletters covering many facets of transportation. Subscribe online at www.cts.umn.edu/Publications/subscribe/.

CTS Catalyst
A monthly publication on the latest transportation innovations at the University of Minnesota. Available in both print and electronic formats.

Minnesota LTAP Exchange
A newsletter of the Minnesota Local Technical Assistance Program (LTAP) (quarterly)

AirTAP Briefings
News and how-to information for personnel operating, maintaining, and administering Minnesota’s public-use airports (periodic) Available in print and e-mail.

CTS Freight & Logistics E-News
News and events from the community of freight and logistics professionals (periodic).

Roadway Safety Institute News
E-mail news update about research and educational activities at the Roadway Safety Institute (quarterly).

Minnesota LTAP Exchange Express
New publications and resources from various sources, plus other items of interest to local agencies (periodic).

TERRA E-News
A newsletter for the Transportation Engineering and Road Research Alliance (quarterly).

Journals

Journal of Transport and Land Use
An open-access, peer-reviewed online journal publishing original interdisciplinary papers on the interaction of transport and land use. www.jtlu.org

Videos
These and other videos are available at www.cts.umn.edu/Publications/videos/ and on the CTS YouTube channel: www.youtube.com/cts.umn.

2013-14 CTS Research Highlights Video
Highlights of 2013-14 include the new Accessibility Observatory, “super hybrid” buses, a study of what manufacturers in southwest MN value in the state’s transportation system, developers desires for transit-oriented development, a portable roadside traffic information system to warn drivers of upcoming congestion, and quality of life performance measures for MnDOT.

2013-14 CTS Education Highlights Video: Where Are They Now? University of Minnesota Transportation Graduates
Four recent graduates from the University of Minnesota discuss how their transportation-related classes and activities helped them find their current positions and advance their careers.

Minnesota Bicycle and Pedestrian Counting Initiative research study video
Describes the collaborative research that has made Minnesota in the vanguard of monitoring bike and pedestrian traffic, using the data for planning bike and pedestrian facilities in cities like Minneapolis and Duluth, analyzing safety, contributing to state goals, and contributing to federal traffic monitoring standards.

2012-13 CTS Research Highlights Video
Highlights of 2012-13 include a smartphone app for people with visual impairments, research on safety in roundabouts for pedestrians and bicyclists, bicycle tracking using GPS, and a filter for removing phosphates from storm water.
How to Obtain These Publications

Titles of publications are listed in alphabetical order under subject area. Most publications, where noted, are available in electronic format online at no charge. Publications also may be requested from CTS. A complete listing of all publications available from CTS and ordering information may be found online at:

www.cts.umn.edu/publications