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Research Reports

Following are transportation-related research reports by University of Minnesota researchers, published by CTS, the Minnesota Department of Transportation (MnDOT), the Minnesota Local Road Research Board, and other sponsors, from January 2011 through December 2011. These reports are available in PDF format at www.cts.umn.edu/Publications /ResearchReports/.

Transportation and the Economy

Advancing Public Interest in Public-Private Partnership of State Highway Development
Zhirong Zhao, Emily Saunoi-Sandgren, Avital Barnea
Report no. MnDOT 2011-09
http://www.cts.umn.edu/Publications /ResearchReports/pdfdownload.pl?id=1500
(2 MB) 66 pp.

From Fuel Taxes to Mileage-Based User Fees: Rationale, Technology, and Transitional Issues
David D. Coyle, Ferrol Robinson, Zhirong Zhao, Lee Munnich, Adeel Lari
Report no. CTS 11-08
http://www.cts.umn.edu/Publications /ResearchReports/pdfdownload.pl?id=1530
(955 KB) 31 pp.

Funding China’s Urban Infrastructure: Revenue Structure and Financing Approaches
Zhirong Zhao, Chengxin Cao
Report no. CTS 11-10
http://www.cts.umn.edu/Publications /ResearchReports/pdfdownload.pl?id=1534
(1015 KB) 33 pp.

Transportation Safety and Traffic Flow

How Affordable is Transportation? A Context-Sensitive Framework
Yingling Fan, Arthur Huang
Report no. CTS 11-12
http://www.cts.umn.edu/Publications /ResearchReports/pdfdownload.pl?id=1532
(1 MB) 48 pp.

Optimal Contract Mechanism Design for Performance-Based Contracts
Diwakar Gupta, Aditya Vedantam, Justin Azadivar
Report no. MnDOT 2011-18
http://www.cts.umn.edu/Publications /ResearchReports/pdfdownload.pl?id=1562
(2 MB) 53 pp.

Update of a Web-Based Economic Impact Calculator for Small and Medium-Sized Airports and a Study of the Economic Impact of Minnesota Airports
William C. Gartner, Brigid Tuck, Daniel L. Erkkila
Report no. CTS 11-01
http://www.cts.umn.edu/Publications /ResearchReports/pdfdownload.pl?id=1482
(357 KB) 33 pp.

Transportation Planning and the Environment

How Affordable is Transportation? A Context-Sensitive Framework
Yingling Fan, Arthur Huang
Report no. CTS 11-12
http://www.cts.umn.edu/Publications /ResearchReports/pdfdownload.pl?id=1532
(1 MB) 48 pp.

Counting Empty Parking Spots at Truck Stops Using Computer Vision
Pushkar Modi, Vassilios Morellas, Nikolaos P. Papanikolopoulos
Report no. CTS 11-08
http://www.cts.umn.edu/Publications /ResearchReports/pdfdownload.pl?id=1530
(955 KB) 31 pp.

Data-Driven Support Tools for Transit Data Analysis, Scheduling and Planning
Chen-Fu Liao
Report no. CTS 11-15
http://www.cts.umn.edu/Publications /ResearchReports/pdfdownload.pl?id=1556
(1 MB) 125 pp.

Development of Mobile Accessible Pedestrian Signals (MAPS) for Blind Pedestrians at Signalized Intersections
Chen-Fu Liao, Mick Rakauskas, Anvanish Rayankula
Report no. CTS 11-11
http://www.cts.umn.edu/Publications /ResearchReports/pdfdownload.pl?id=1552
(2 MB) 135 pp.

Development of the Next Generation Stratified Ramp Metering Algorithm Based on Freeway Density
Nikolas Gerosiminis, Anupam Srivistava, Panos Michalopoulous
Report no. CTS 11-05
http://www.cts.umn.edu/Publications /ResearchReports/pdfdownload.pl?id=1510
(3 MB) 94 pp.
Dual Frequency, Carrier Phase Differential GPS Augmentation
Edmund Arpin V, Bryan Newstrom, Craig Shankwitz
Report no. CTS 11-09
http://www.cts.umn.edu/Publications /ResearchReports/pdfdownload.pl?id=1526
(1 MB) 43 pp.

Enhancement and Field Test Evaluation of New Battery-Less Wireless Traffic Sensors
Seal Pruden, Krishna Vijayaraghavan, Rajesh Rajamani
Report no. CTS 11-22
http://www.cts.umn.edu/Publications /ResearchReports/pdfdownload.pl?id=1590
(3 MB) 110 pp.

Field Testing and Evaluation of a Wireless-Based Transit Signal Priority System
Chen-Fu Liao, Gary A. Davis
Report no. CTS 11-25
http://www.cts.umn.edu/Publications /ResearchReports/pdfdownload.pl?id=1570
(2 MB) 82 pp.

A High Accuracy Vehicle Positioning System Implemented in a Lane Assistance System when GPS is Unavailable
Edmund Arpin V, Craig Shankwitz, Max Donath
Report no. CTS 11-18
http://www.cts.umn.edu/Publications /ResearchReports/pdfdownload.pl?id=1570
(2 MB) 247 pp.

In-Vehicle Decision Support to Reduce Crashes at Rural Thru-Stop Intersections
Caroline Hayes, Daniel Drew
Report no. CTS 11-17
http://www.cts.umn.edu/Publications /ResearchReports/pdfdownload.pl?id=1558
(3 MB) 247 pp.

ITS and Transportation Safety: EMS System Data Integration to Improve Traffic Crash Emergency Response and Treatment - Phase II Report
Ben Schooley, Tom Horan, Roni McClintock, Yoonmi Lee
Report no. CTS 11-19
http://www.cts.umn.edu/Publications /ResearchReports/pdfdownload.pl?id=1580
(2 MB) 52 pp.

ITS and Transportation Safety: EMS System Data Integration to Improve Traffic Crash Emergency Response and Treatment - Phase III Report
Ben Schooley, Tom Horan, Brian Hilton
Report no. CTS 11-26
http://www.cts.umn.edu/Publications /ResearchReports/pdfdownload.pl?id=1598
(1 MB) 73 pp.

Low-Cost Portable Video-Based Queue Detection for Work-Zone Safety
Ted Morris, Jory A. Schwach, Panos Michalopoulos
Report no. CTS 11-02
http://www.cts.umn.edu/Publications /ResearchReports/pdfdownload.pl?id=1518
(1 MB) 53 pp.

Snow Rendering for Interactive Snowplow Simulation—Supporting Safety in Snowplow Design
Peter Willemesen
Report no. CTS 11-23
http://www.cts.umn.edu/Publications /ResearchReports/pdfdownload.pl?id=1594
(1 MB) 61 pp.

Usability Evaluation of a Smart Phone-based Teen Driver Support System (TDSS)
Janet Greaser, Alec Gorjestani, Michael Manser, Max Donath
Report no. MnDOT 2011-13
http://www.cts.umn.edu/Publications /ResearchReports/pdfdownload.pl?id=1528
(513 KB) 65 pp.

Response Modification for Enhanced Operation and Safety of Bridges
Andrew Gastineau, Arturo E. Schultz, Steven Wojtkiewicz
Report no. CTS 11-14
http://www.cts.umn.edu/Publications /ResearchReports/pdfdownload.pl?id=1566
(938 KB) 54 pp.

Synthesis of Performance Testing of Asphalt Concrete
Eshan V. Dave, Philip Koktan
Report no. MnDOT 2011-22
http://www.cts.umn.edu/Publications /ResearchReports/pdfdownload.pl?id=1584
(678 KB) 90 pp.

Performance Assessment of Oversized Culverts to Accommodate Fish Passage
Brad Hansen, John L. Nieber, Sara Johnson, Jeff Marr
Report no. MnDOT 2011-19
http://www.cts.umn.edu/Publications /ResearchReports/pdfdownload.pl?id=1576
(4 MB) 92 pp.

Potential Viability of Automated Rapid Transit at the Minneapolis-St. Paul Airport
Ferrol Robinson, Matt Schmit, Lee Munnich
Report no. MnDOT 2011-14
http://www.cts.umn.edu/Publications /ResearchReports/pdfdownload.pl?id=1536
(577 KB) 32 pp.
Rationale for Funding a Feasibility Study for an Automated Rapid Transit Application in the Twin Cities
Ferrol Robinson
Report no. MnDOT 2011-17
http://www.its.umn.edu/Publications/ResearchReports/pdfdownload.pl?id=1582
(390 KB) 24 pp.

Suggested Design and Management Techniques for Enhancing Public Engagement in Transportation Policymaking
Kathryn S. Quick, Zhirong Zhao
Report no. CTS 11-24
http://www.cts.umn.edu/Publications/ResearchReports/pdfdownload.pl?id=1616
(1 MB) 52 pp.

The Urban Partnership Agreement: A Comparative Study of Technology and Collaboration in Transportation Policy Implementation
John M. Bryson, Barbara C. Crosby, Melissa M. Stone, Emily Saunio-Sandgren, Anders S. Imboden
Report no. CTS 11-07
http://www.cts.umn.edu/Publications/ResearchReports/pdfdownload.pl?id=1514
(398 KB) 74 pp.

Research Summaries

Funding Surface Transportation in Minnesota: Past, Present and Prospects
CTS Research Brief 2011-01
http://www.its.umn.edu/Publications/ResearchReports/pdfdownload.pl?id=1650
(144 KB) 2 pp.

A New Approach to Understanding and Measuring Transportation and Land Use: An Access to Destinations Study Research Brief
CTS Research Brief 2011-02
http://www.its.umn.edu/Publications/ResearchReports/pdfdownload.pl?id=1682
(221 KB) 2 pp.

Nonmotorized Transportation Pilot Program Community-Wide Evaluation Study
CTS Research Brief 2011-03
http://www.its.umn.edu/Publications/ResearchReports/pdfdownload.pl?id=1596
(212 KB) 2 pp.

Annual Reports

2011 ITS Institute Annual Report
(2.71 MB PDF) 58 pp.

Newsletters

CTS Report
A monthly report on transportation research, education, and outreach at the University of Minnesota (monthly)

ITS Institute Sensor
Research advances from the Intelligent Transportation Systems (ITS) Institute (periodic)

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

E-mail Newsletters

CTS Research E-News
The latest announcements and findings in transportation research (monthly)

Rural Safety News
The latest research and resources concerning rural safety from the Center for Excellence in Rural Safety, or CERS (quarterly)

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

Transportation Education E-News
Informs university faculty of tools, initiatives, and activities for improving transportation education, especially in the field of transportation engineering (semiannual)

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

AirTAP Briefings
News and how-to information for personnel operating, maintaining, and administering Minnesota’s public-used airports (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
http://www.jtlu.org

Videos

2010-11 CTS Highlights Video: Sowing the seeds of collaboration
Highlights of research, education, and outreach initiatives in 2010-11.

CTS Seminar Series—Fall 2011

September 15
“The Role of Transportation Researchers in Rehabilitation Hospitals to Keep Patients Mobile”
Advanced Transportation Technologies Seminar
Johnell Brooks, Assistant Professor, Department of Psychology, Clemson University

September 29
“An Observational Study of Pedestrian and Bicycle Crossing Experience in Two Modern Urban Roundabouts”
Advanced Transportation Technologies Seminar
John Hourdos, Director, Minnesota Traffic Observatory, and Adjunct Assistant Professor, Department of Civil Engineering, University of Minnesota

October 6
“Exploring Models of Regional Sustainability Planning and Implementation”
CTS Research Seminar
Carissa Schively Slotterback, Associate Professor, Humphrey School of Public Affairs, University of Minnesota

October 13
“Advanced Transportation Technologies Seminar: Detection of Road and Bridge Surface Conditions”
Advanced Transportation Technologies Seminar
John Evans, Professor, Department of Chemistry and Biochemistry, University of Minnesota Duluth

October 20
“Implementing Distance-Based User Fees as a Replacement for the Fuel Tax”
CTS Research Seminar
Lee Munnich, Senior Fellow, Humphrey School of Public Affairs, University of Minnesota

October 27
“Development of a Traffic Information and Dissemination System for Work-Zone Environments”
Advanced Transportation Technologies Seminar
M. Imran Hayee, Professor, Department of Electrical Engineering, University of Minnesota Duluth
and Computer Engineering, University of Minnesota Duluth

November 3

“Response Modification for Enhanced Operation and Safety of Bridges”
CTS Research Seminar
Arturo Schultz, Professor, Department of Civil Engineering, University of Minnesota
Steven Wojtkiewicz, Assistant Professor, Department of Civil Engineering, University of Minnesota

November 10

“Cyclopath: Personalized Routing and Open Collaboration for Bicyclists”
Advanced Transportation Technologies Seminar
Loren Terveen, Professor, Department of Computer Science and Engineering, University of Minnesota

December 1

“Transportation Safety Issues and Priorities in Minnesota”
Advanced Transportation Technologies Seminar
Brad Estochen, Assistant State Traffic Engineer, Minnesota Department of Transportation

December 8

“Toward Universal Access to Seamless Travel of Indoor and Outdoor Spaces With and Without Vision”
Advanced Transportation Technologies Seminar
Nicholas Giudice, Assistant Professor, Department of Spatial Information Science and Engineering, University of Maine

Research and training videos
These and other videos are available at www.cts.umn.edu/Publications/Videos/.

MnDOT Snowplow Driver Simulator Training
The Minnesota Local Technical Assistance Program (LTAP) offers a workshop by the Minnesota Department of Transportation to train snowplow drivers in a driving simulator.

Safe Teen Car System
Researchers from the HumanFIRST Program at the University of Minnesota’s ITS Institute and the private research company Westat have developed a prototype system for new cars, called the Safe Teen Car System. It gives teens feedback to help them develop safer driving habits. Sponsored by the National Highway Traffic Safety Administration, the project is an extension of a national focus on teen driving safety.

Teen Driver Support System (TDSS) project
The ITS Institute at the University of Minnesota, with the support from MnDOT and USDOT, has developed a new version of the Teen Driver Support System (TDSS). The system is a GPS-enabled smart phone mounted on the dashboard to provide the driver real-time visual and audio feedback about driving performance. The TDSS is intended as a tool for parents to encourage teens to build safe driving habits in their early years on the road.

U of M HumanFIRST Lab tour (a component of the Distraction Dodger online game)
This tour of the University of Minnesota HumanFIRST Lab gives viewers insight into research aimed at reducing distracted driving, a factor in many crashes. HumanFIRST lab director Michael Manser provides a narrated overview of the lab and information on why distracted driving is such an important issue. This video is a segment of the Distraction Dodger online game. The Distraction Dodger game (http://www.its.umn.edu/DistractionDodger/) is designed to help teens and young adults understand the importance of concentrating on driving.

U of M bus driver-assist project
A partnership made up of University of Minnesota researchers and local, state, and federal government agencies hopes to tackle the congestion challenge by implementing cutting-edge technologies along the first bus rapid-transit corridor in the Twin Cities metro area. The project includes new express lanes, electronic signage, and 10 futuristic buses are being tested to improve transit times and traffic flow

How to Obtain These Publications
This 2012 update supplements the CTS Publications Catalog published in 2004 and subsequent annual updates. It lists transportation-related research reports produced by faculty and researchers at the University of Minnesota and published by CTS, the Minnesota Department of Transportation (MnDOT), or the Minnesota Local Road Research Board (LRRB). This update also features publications, videos, and other materials produced by CTS and its affiliated programs.

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

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