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The State and Local Policy Program (SLPP) of the Humphrey Institute of Public Affairs, University of Minnesota, in partnership with the Minnesota Department of Transportation (Mn/DOT) and the Metropolitan Council originally designed a project that envisioned extensive research, outreach, and education activities leading to identification and support for a demonstration project by the end of the three year project period. With early acceptance and support for the I-394 MnPASS project by the Governor and Legislature, the Humphrey Institute in collaboration with the Minnesota Department of Transportation and the Federal Highway Administration revised the project to focus on research, outreach, and education activities focused specifically on the I-394 MnPASS project. The major findings of this project are detailed in the summary and supported by the appendices. The appendices include multiple papers submitted to the Transportation Research Board, final reports from the first two waves of the longitudinal panel survey, the community task force report, and an information booklet designed to quickly educate lawmakers.

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Final Report

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State and Local Policy Program
Hubert H. Humphrey Institute
University of Minnesota

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The authors would also like to thank the members of the technical advisory panel for the guidance that they offered throughout the project. Some of them are included in the list above; others are: Patrick DeCorla-Souza, Angela Jacobs, and Susan Moe of the Federal Highway Administration, Adeel Lari, Jim Klessig, and Mike Sobolewski of Mn/DOT, and Carl Ohrn of the Metropolitan Council.

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Executive Summary

The State and Local Policy Program (SLPP) of the Humphrey Institute of Public Affairs, University of Minnesota, in partnership with the Minnesota Department of Transportation (Mn/DOT) and the Metropolitan Council, has studied value pricing since 1994. The Federal Highway Administration awarded these partners a grant in December 2002 to continue this work. This original project plan included major components of both national outreach and continuing efforts to develop political, institutional and public support for value pricing in the Minneapolis-St. Paul region.

The original project envisioned extensive research, outreach, and education activities leading to identification and support for a demonstration project by the end of the three-year project period. With early acceptance and support for the I-394 MnPASS project by the Governor and Legislature, the Humphrey Institute, in collaboration with the Minnesota Department of Transportation and the Federal Highway Administration, revised the project to focus on research, outreach, and education activities focused specifically on the I-394 MnPASS project.

Project Goals:

- Develop and support local advocates of value pricing
- Conduct survey research and focus groups to determine current public opinion on value pricing
- Implement a communications strategy to raise public awareness of value pricing as a congestion management tool.
- Develop technical designs for various value pricing alternatives in Minnesota
- Use the Humphrey Institute's Website and list serves to benchmark Minnesota's strategy and approach
- Conduct roundtables and workshops in Minnesota to learn from others and increase public awareness and support and prepare a final report
- Provide public involvement support to Mn/DOT on FAST Lane and future MnPASS initiatives (added after the project had begun)

This report summarizes the major activities that took place as part of this project. Through these activities, five lessons learned were developed for national application: having a knowledgeable, multidisciplinary team; engaging the community in the planning process; tapping into outside experts and experience; being prepared to respond quickly to problems and make corrections: and learning and sharing knowledge with others. Included as appendices are the major documents produced and agendas from major value pricing meetings both statewide and national.

Project Summary

Introduction

The State and Local Policy Program (SLPP) of the Hubert H. Humphrey Institute of Public Affairs, University of Minnesota, in participation with the Minnesota Department of Transportation (Mn/DOT), has studied value pricing since 1994. In 2002, these partners were awarded a grant by the Federal Highway Administration to continue this work in an effort to build national support for pricing projects. This project addressed national and local outreach and education efforts and was designed to garner political, institutional and public support for value pricing in the Minneapolis-St. Paul region. Success in Minnesota was to serve as an example for other states.

Unlike other Mn/DOT-sponsored projects, this effort was not organized around a single unifying question leading to a final report. Instead, surveys, Transportation Research Board (TRB) papers, roundtables, and so on, were generated in an effort to develop and promote value pricing in general and the I-394 MnPASS project in particular. The purpose of this final report is to describe the major components of this project, and to collect and present as appendices the significant documents that were produced.

During the course of the project, a technical advisory panel (TAP) met quarterly to oversee the activities. This panel consisted of all relevant SLPP staff, Federal Highway Administration's (FHWA) Value Pricing Pilot Program staff, FHWA regional staff, Mn/DOT staff, and project communication and engineering consultants. In addition to serving as a sounding board for findings, the panel helped determine project direction. Some of the tasks in the original workplan had to be modified after the State of Minnesota passed the enabling legislation, allowing High Occupancy Toll (HOT) lane to be built on existing High Occupancy Vehicle (HOV) lanes in Spring 2003. The panel restructured the workplan to reflect these changes and redirected tasks to fulfill outreach and education activities for the MnPASS project in substitution. This work afforded all involved the opportunity to better understand the outreach and education process related to pricing projects and as a result generated five lessons learned.

This report provides summaries of the work completed in accordance with each task and explains the changes made in response to the enabling legislation. The documents produced by the project have been included as appendices and are referenced in the related tasks. Additionally, a timeline was created to place events into context.

Timeline of Events

February 20, 2003 –	Roundtable: "Transportation Equity Act for 2003"
March 19, 2003 –	Roundtable: "HOT Networks: A New Idea for Addressing Congestion, Funding Roads and Improving Transit System"
April 17, 2003 –	Roundtable: "Market Choices and Fair Prices: Research Suggests Surprising Answers to Regional Growth Dilemmas"
April/May 2003 –	Minnesota legislation passed allowing HOT lanes on existing HOV lanes; Governor announces I-394 project

June 16, 2003 –	Roundtable: "FAST Lanes: Federal and State Outlooks On Minnesota's Newest Transportation Tool"
July 2003 –	Mn/DOT initiates value pricing project
September 2003 –	Community Task Force formed
October 2003 –	Community Task Force delegation visits projects in California
November 10, 2003 –	Roundtable: "How Should Transportation be Funded in the Future"
January 2004 –	Wilbur-Smith and SRF Consulting team selected
January 2004 –	Community open house on I-394 MnPASS project
Feb/March 2004 –	Five community focus groups conducted
March 19, 2004 –	Roundtable: "Transportation Funding and Minnesota's Future"
April 23-24, 2004 –	Roundtable: "Evaluating High Occupancy Toll (HOT) Lanes" Evaluation Planning Workshop
April/May 2004 –	City Council and County Board Briefings Evaluation – SLPP to conduct the panel survey, Cambridge to conduct the technical survey
June 2004 –	SLPP selects NuStats to conduct panel survey
Sept/October 2004 –	Task Force Report completed
October 8, 2004 –	Roundtable: "Bus Rapid Transit (BRT) and Road Pricing"
Nov/Dec 2004 –	Longitudinal Panel Survey Wave I conducted by NuStats; Cambridge Systematics collects technical data
December 9, 2004 –	Roundtable: "Reauthorization and the Future of Transportation Finance"
December 2004 –	Task #7 added to the project work plan
March 8, 2005 –	Roundtable: "I-394 MnPASS- A New Choice For Commuters: How Will It Be Evaluated?" – Longitudinal Panel Survey Wave I results presented
March - May 2005 –	City Council and County Board Briefings I-394 MnPASS marketing campaign
April 2005 –	Transponder sales Begin
May 16, 2005 –	I-394 MnPASS lanes open to the public
June 21, 2005 –	Roundtable: "Colorado Tolling Enterprise"
June 2005	Mn/DOT responds to 24/7 complaints, revising hours and promising auxiliary lane
October 17, 2005 –	Roundtable: "Traffic, Tolling, and the Trans Texas Corridor"
November	Mn/DOT opens auxiliary lane on I-394
November 29, 2005 –	MnPASS Transit Advantage Tour and Workshop
Nov/Dec 2005 –	Longitudinal Panel Survey Wave II conducted by NuStats
January 2006	Mn/DOT revising MnPASS pricing algorithm resulting in higher average tolls
March 23, 2006 –	Roundtable: "I-394 MnPASS: A New Choice for Commuters" Longitudinal Panel Survey Wave II results presented

1. Develop and Support Local Advocates of Value Pricing

Goal: A visible group of local leaders will advocate value pricing in Minnesota and succeed in convincing doubters that pricing should be tested and implemented. The

Humphrey Institute's project team will work with Mn/DOT Metro Division staff, Metropolitan Council transportation staff, and members of the Value Pricing Advisory Task Force to develop support for value pricing alternatives and specific projects. Specific activities will include examining the technical and political feasibility of alternative approaches, giving presentations to elected officials, transportation advocacy and other interest groups, and the formation of a local advocacy group for value pricing.

The Humphrey Institute of Public Affairs successfully facilitated community outreach efforts in the Twin Cities area related to value pricing in general and the I-394 proposal in particular. The Institute's major focus for the first year and a half of the project was coordinating, facilitating, and documenting the Community Task Force meetings.

The task force was comprised of citizen members from the cities adjacent to the corridor and formed to address equity concerns and provide careful guidance to the project. Kenneth Buckeye and Lee Munnich wrote TRB Paper No. 06-2250, *A Value Pricing Education and Outreach Model: The I-394 MnPASS Community Task Force.* The paper provides important details on the project and places MnPASS within the national context (Appendix A). By October 2004, the task force finalized and sent their final report to the Lieutenant Governor (Appendix B).

In further fulfillment of this task, Lee Munnich, in conjunction with Mn/DOT and SRF staff gave briefings on the progress of the project to the following city councils in the I-394 corridor: Plymouth, Wayzata, St. Louis Park, Golden Valley, and Minnetonka, during the early part of 2005. An open house and briefing for the Bryn Mawr neighborhood was also held. Additional briefings were held for Hennepin County, Representative Martin Sabo, Senator Scott Dibble, Representative Margaret Kelliher, and congressional staff on the project. Carol Flynn, chair of the Value Pricing Task Force that had recommended the I-394 project, played a lead roll in organizing these briefings.

2. Conduct Survey Research and Focus Groups to Determine Current Public Opinion on Value Pricing

Goal: Develop a better understanding of current public opinion on value pricing as the basis for increasing public awareness and support. The project team will conduct a survey on current public opinion toward value pricing and under what conditions pricing strategies could gain public support. This survey will contain questions about attitudes toward congestion and alternative solutions and how they might tie in with pricing. Focus groups will be held to further probe public attitudes, which must be addressed in implementing value pricing. The project team will explore alternative approaches for conducting this survey, including conducting another Citizens Jury, similar to the one conducted in 1995, and the use of electronic voting technology in a public forum.

With the passage of the enabling legislation in Spring 2003, this task was altered to focus on the I-394 MnPASS project. Five focus groups with I-394 solo drivers, carpoolers and transit users were conducted for the Humphrey Institute by Cook Research in February and March 2004 to assess attitudes to the I-394 MnPASS project. Instead of examining

public opinion throughout the metropolitan area, the survey research plan was revised to monitor public opinion before and after the conversion of the I-394 HOV lanes to HOT lanes within the I-394 corridor and the control corridor, I-35W.

A survey research firm, NuStats, was hired to conduct the three waves of the survey, one before and two after implementation of the program. In an effort to ensure that the I-394 MnPASS evaluation plan built and improved on previous HOT lane and express lane projects, a Rethinking Transportation Finance Roundtable "Evaluating High Occupancy Toll (HOT) Lanes" and Evaluation Planning Workshop were held on April 23 and 24, 2004. Both events featured prominent value pricing researchers who had evaluated pricing projects: Mark Burris, Assistant Professor at Texas A&M, Janusz Supernak, Professor at San Diego State University, and Edward Sullivan, Professor at Cal Poly State University. Through those events the visiting researchers stressed the importance of a longitudinal panel survey and offered suggestions regarding the inclusion of a travel log component to accompany the telephone survey. The details of the survey methods are included in a Transportation Research Board paper written by Frank Douma, Johanna Zmud, and Tyler Patterson, *Pricing Comes to Minnesota: Baseline Attitudinal Evaluation of the I-394 HOT Lane Project* presented during the 2006 TRB annual meeting (Appendix C).

The results of the MnPASS Evaluation Attitudinal Panel Survey – Baseline Report by NuStats is included in Appendix D. Additionally, the results from the MnPASS Evaluation Attitudinal Panel Survey – Wave II Report are included in Appendix E. The Wave III report has just been completed, following data collection in May and June 2006. Johanna Zmud, Steven Peterson, and Frank Douma have submitted a presentation only proposal for the TRB meeting in January 2007 entitled, *Preliminary Before and After Results of the I-394 HOT Lane Panel Survey*. Their proposal may be found in Appendix F. Expanded TRB papers interpreting the results are expected to follow.

In addition to the attitudinal survey being conducted by NuStats, Cambridge Systematics has conducted a parallel technical evaluation of the I-394 MnPASS drawing from a range of Mn/DOT traffic monitoring and other data sources. While the two evaluations have been coordinated, the technical evaluation was not a component of this project and therefore not included in this report.

3. Implement a Communications Strategy to Raise Public Awareness of Value Pricing as a Congestion Management Tool

Goal: Through the communications strategy, generate significant interest and support for value pricing as a transportation solution in Minnesota. The involvement of a professional communications consultant in the current value pricing program has helped in focusing the message, generating effective responses to questions and objections and helping local champions to carry the message to key groups. This is an ongoing process and must be continued over a longer period of time to have an impact on local leadership and public opinion.

The communications strategy has been a critical component this project. Joseph Loveland, of Loveland Communications, was hired to serve as an advisor to the Humphrey Institute on communications strategy. Mr. Loveland has played a primary role in helping to frame the important issues on value pricing and MnPASS and working with Mn/DOT in designing and implementing an effective communications strategy for MnPASS.

In addition to the previously mentioned community task force and briefings of public officials, on multiple occasions press releases were distributed to ensure earned media coverage at key points in the MnPASS project. Such events included the opening of the lanes in May 15, 2005 and the presentation of the evaluation results in March 23, 2006. The communications strategy also included a speakers bureau with Humphrey Institute, Mn/DOT staff and others involved with the I-394 MnPASS project giving presentations to a range of groups about the progress of the project.

The communication approach has been timely and proactive, responding to both negative events and opportunities. For example, on January 20, 2006, the Star Tribune published an article criticizing the project for not raising revenue as quickly as originally hoped. Two weeks later, on Saturday, February 4, 2006, Lee Munnich's editorial counterpoint was published in the Star Tribune, ***MnPASS is about more than toll collection***. The response refocused the discussion toward the primary purpose of the project: to get better use out of the existing capacity. The counterpoint explained how the lanes preserve transit and carpool benefits and detailed the history leading up to the decision to convert the HOV lanes to HOT lanes. In June 2006, Loveland and Munnich wrote and submitted a commentary about the success of the I-394 MnPASS project to community and neighborhood newspapers.

Lee Munnich and Joseph Loveland, in 2004, published TRB Paper No. 05-1932, ***Value Pricing and Public Outreach: Minnesota's Lessons Learned*** (Appendix G). This work detailed the difficulties and challenges associated with implementing value pricing projects and outlined strategies to address the criticisms. The paper cataloged the benefits derived from the community task force, a 'no question goes unanswered' commitment, a mobilization of champions, and other related strategies designed to garner public support.

Recognizing the need to condense the findings of the project into a digestible document for local government officials, legislators, and public policy leaders a 3,000-word glossy report was produced (Appendix H). This report includes graphs, charts, and photographs that are designed to inform those with little or no knowledge of the project. This outreach tool was distributed at the March 23, 2006, Rethinking Transportation Finance Roundtable and continues to be distributed to multiple state DOTs, elected officials, and interested citizens.

Many have identified equity concerns as one of the critical issues surrounding the implementation of HOT lanes. Toward this end, research assistant Megan Mowday submitted a research paper to TRB entitled, ***Equity and High Occupancy Toll Lanes: A***

Literature Review and Minnesotans Perceptions About the I-394 High Occupancy Toll Lanes (Appendix I). The work identifies the equity issues associated with such projects and integrates prevailing public opinion into the comprehensive report. Mowday presented the paper at the 2006 TRB Annual Meeting.

SLPP, Mn/DOT, and Metro Transit organized a Transit Advantage Workshop specifically focused on the I-394 corridor on November 29, 2005. The workshop brought together transit, highway planners and policy leaders to help guide phase two of the I-394 MnPASS project which will focus on both road and transit improvements in the corridor.

4. Develop Technical Designs for Various Value Pricing Alternatives in Minnesota

Goal: Develop value pricing implementation projects that are technically, as well as politically, feasible. Along with support for user fees by citizens, politicians and local advocates, value pricing must be technically reasonable. In the past, SRF Consulting has provided engineering and design support to Mn/DOT and the Humphrey Institute on value pricing alternatives, such as the Cross-town Commons proposal. This technical support is necessary to ensure that a proposal can meet a range of criteria necessary to integrate value pricing into project design and regional plans.

In January 2003, Ferrol Robinson of SRF Consulting Group presented a preliminary technical analysis of alternatives for adapting the HOV lanes in the I-394 corridor to HOT Lanes. This analysis was used to show legislators how a HOT lane might work in the I-394 corridor and helped to convince legislators that this was a viable option to address the underutilized HOV lane.

The analysis evaluated the impacts, the benefits, and the costs associated with conversion. It examined on and off-peak traffic flows to further practical discussion. Furthermore, SRF recognized the long-term transportation plans of the area, especially those roads slated for expansion, and provided more than a simple opening day snapshot.

The scope of the work included the following eighteen tasks.

1. Estimate the reserve capacity currently available for SOVs on I-394 under current level of service constraints (LOS C, or approximately 1,500 cars per hour per lane).

2. Establish the threshold capacity that would be allowed under the HOT lane scenario (e.g., LOS D, or approximately 1,850 cars per hour per lane).

3. Based on experience elsewhere (I-15, SR 91), estimate the potential increase in HOV demand that the priced facility is likely to experience.

4. Re-estimate the capacity available for SOV buy-in under the HOT lane scenario after considering the increase in HOV demand.

5. Estimate the level of SOV buy-in demand based on three fee levels (to be determined based on sensitivity of demand to pricing, constrained by the capacity availability on I-394 for SOVs).

6. For each of the demand/fee outcomes, estimate the corresponding revenues generated.

7. Analyze what type of detection, control and enforcement technology would be feasible for the project. Similarly, discuss what administrative procedures would be needed to collect the fees. Discuss the advantages/disadvantages of using monthly passes with unlimited use, versus prepaid transponders with a per-trip debiting of the account, and examine the cost and logistics related to each option.

8. Estimate the annual capital, operating and administration costs of the HOT lane system.

9. Estimate the beneficial impacts of the HOT lane scenario on safety and air quality.

10. Estimate Net Benefits

    - Estimate the benefits resulting from conversion (increased HOV use, increased throughput on the priced facility, reduction in demand on the general purpose free lanes, increased level of service for buy-in customers, crash reduction, lower emissions).

    - Estimate the value of reduced benefits resulting from conversion (reduced level of service for current HOV users).

    - Estimate net benefits (value of increased benefits minus value of decreased benefits).

11. Estimate the cost-effectiveness of the HOV and HOT scenarios.

12. Using the revenue and operating and administrative cost estimates, determine if the annual revenues are sufficient to cover the annual costs. If revenues exceed costs, examine how the excess revenue could be used to improve transit service in the corridor.

13. Using experience gained elsewhere in the United States, discuss the potential equity impact of the buy-in concept for low-income travelers in the corridor.

14. Identify low-to-moderate cost improvements to the I-394 Corridor that would enhance the operations of the HOT lane facility. Estimate the cost of these improvements.

15. Expand the I-394 analysis findings to estimate the benefits, cost and cost-effectiveness of implementing the HOT lane concept in other regional facilities that are being considered for expansion in the next ten to 20 years.

16. Optional Task: Address the "cost of doing nothing" issue.

17. Prepare a report summarizing the results of the analysis.

18. Assist the Team, as needed, in the preparation and submission of a funding application to FHWA.

In addition to the components of the report included in Appendix J, Ferrol Robinson provided technical advice throughout the process and contributed engineering expertise that directed the process forward.

5. Use the Humphrey Institute's Website and List Serves to Benchmark Minnesota's Strategy and Approach

Goal: Continue to use the web site and list serves as essential communication and benchmarking tools for Minnesota project. The Value Pricing web site http://www.valuepricing.org hosted by the Humphrey Institute's State and Local Policy Program has become an important resource for those wanting to learn about the current status of value pricing projects and approaches to addressing political and institutional issues. The Humphrey Institute team also manages three list serves, which allow project partners, value pricing advocates and interested citizens to participate in discussions and share current information about value pricing. The web site has been an important and cost-effective tool for Minnesota to both compare its efforts to projects in other states and to share its knowledge with others.

The general con-pric listserv continues to facilitate lively e-mail discussions. Typically focused on responding to electronic articles regarding HOT networks and facilitating general discussion from around the globe, the evacuation effort associated with Hurricane Katrina and the rising costs of gasoline highlighted recent discussions. The SLPP site continues to be updated with conference minutes, PowerPoint presentations, announcements, and related papers. The value pricing web page has fallen behind in its upkeep due to some technical difficulties associated with the conversion to a content management system. That system is now in place and the updates well underway. Additionally, Lee Munnich participates in the National HOT lane phone group, keeping both SLPP and Mn/DOT up to date on issues related to pricing innovations.

6. Conduct Roundtables and Workshops in Minnesota to Learn from Others and Increase Public Awareness and Support and Prepare a Final Report

Revised Goal: Sponsor roundtables and workshops to help raise Minnesota awareness of how value pricing is being implemented in other places. The roundtables and workshops in Minnesota will bring together value-pricing experts to focus on specific projects, learning experiences, and how these projects and experiences apply to Minnesota. The roundtables and workshops will also help raise public awareness of value pricing. Prepare final report summarizing activities, findings and outcomes.

In lieu of the annual case study conference that was originally proposed, more frequent Rethinking Transportation Finance Roundtables were held, as they were deemed more effective in facilitating pricing discussions. The topics, speakers, and approaches varied, but all were efforts to allow Minnesota to learn from elected officials, political advisors focusing on transportation finance, transportation economists, and progressive researchers. The public was invited to these events, which further served the education

and outreach mission of this project. The sessions emphasized innovative ideas that provoked new questions, thereby enriching the local discussion. On a few occasions the press was invited to attend and participate in the sessions. Below are brief descriptions of each roundtable.

- February 20, 2003 – "Transportation Equity Act for 2003"
  The kick-off roundtable featured Jeff Squires, Senior Policy Advisor to the Ranking Member of the U.S. Senate Public Works Committee. The event focused primarily on transportation finance, but other components of TEA-3 were touched on as well. Mr. Squires expressed his appreciation of the dialogue concerning Minnesotans opinions on how federal and sate governments can work together more effectively.

- March 19, 2003 – "HOT Networks: A New Idea for Addressing Congestion, Funding Roads and Improving Transit System"
  Robert Poole, Director of Transportation Studies at the Reason Public Policy Institute discussed his recently co-authored paper with Kenneth Orski entitled, "HOT Networks: A New Plan for Congestion Relief and Better Transit." The discussion centered on how the conversion of HOV lanes into HOT lanes can accomplish three goals: generate billions of dollars to connect the fragmented network of HOV lanes, provide a congestion free option for SOV drivers, and provide a congestion free right of way for bus rapid transit.

- April 17, 2003 – "Market Choices and Fair Prices: Research Suggests Surprising Answers to Regional Growth Dilemmas"
  Gary Barnes and Barry Ryan, both researchers at the University of Minnesota, focused the session on the economic connection between land use and transportation. Barnes and Ryan claimed that to address congestion issues, the pricing of land and transportation need to reflect the true cost of the service. Until that disconnect is resolved new roads and expanded transit capacity will continue to provide inadequate solutions. Carol Flynn, former Chair of the Minnesota Senate Transportation Committee, facilitated the lively discussion that followed.

- June 16, 2003 – "FAST Lanes: Federal and State Outlooks On Minnesota's Newest Transportation Tool"
  U.S. Congressman Mark Kennedy explained that FAST lanes were a new approach to addressing congested highways. He stressed that their applicability in Minnesota must be understood. Doug Differt and Marthand Nookala, both with the Minnesota Department of Transportation provided an update on the I-394 Proposed Express Lanes. This longer roundtable also featured a discussion session with panelists: Senator Ann Rest, Senator Dick Day, Natalio Diaz of the Metropolitan Council, Doug Differt of the Minnesota Department of Transportation, and Alan Steger of the Federal Highway Administration.

- November 10, 2003 – "How Should Transportation be Funded in the Future"

U.S. Congressman James Oberstar, the Ranking Member of the U.S. House Transportation and Infrastructure Committee, addressed the pending reauthorization of the Transportation Equity Act for the 21st Century (TEA-21). Specifically Congressman Oberstar focused on how transportation should be funded in the future. Moderated by Lee Munnich, the audience embraced the question and participated in an interactive session.

- March 19, 2004 – "Transportation Funding and Minnesota's Future"
  U.S. Senator Mark Dayton arrived to discuss the transportation bill passed by the U.S. Senate in February 2004. Senator Dayton reported that the bill provided for over $4.5 billion for transportation projects in Minnesota over the next six years. This 81 percent increase over the 1998, TEA-21 marked the largest increase for any state in the nation. Lee Munnich moderated the question and discussion session.

- April 23, 2004 – "Evaluating High Occupancy Toll (HOT) Lanes"
  Kenneth Buckeye of Mn/DOT moderated this panel of national of experts: John Berg, former Team Leader from the FHWA Congestion Pricing Pilot Program and Value Pricing Pilot Program, Ed Sullivan from California Polytechnic State University, Janusz Supernak from San Diego State University, and Mark Burris from Texas A&M. This elite panel fielded questions regarding HOT lane enforcement, congestion relief, revenue generation, equity, buses and carpools, and how the capacity of the corridor would change. They relied heavily on the experiences in Orange County and San Diego, CA and Houston, TX.

- October 8, 2004 – "Bus Rapid Transit (BRT) and Road Pricing"
  Carol Flynn of Transit for Livable Communities moderated the panel which included: Bob Poole of the Reason Foundations, Ed Regan of Wilbur Smith and Associates, and Dave Schmacher from San Diego Association of Governments (SANDAG). This session provided the opportunity to learn how BRT and road pricing can be integrated to create a win-win-win for transit users, drivers, and taxpayers.

- December 9, 2004 – "Reauthorization and the Future of Transportation Finance"
  Lee Munnich served as moderator for this panel of two: David Heymsfeld from the U.S. House Committee on Transportation and Infrastructure and Betsy Parker from the Minnesota Department of Transportation. Heymsfeld spoke on the prospects for reauthorization on the future of transportation finance. Parker addressed the issue from the point of view of Minnesota and suggested how changes in the federal bill would play out at the state level.

- March 8, 2005 - "I-394 MnPASS- A New Choice For Commuters: How Will It Be Evaluated?"
  The roundtable, moderated by Bob Johns, featured five panelists: Nick Thompson, Mn/DOT, Susan Sheehan, Mn/DOT, Doug Sallman, Cambridge Systematics, Lee Munnich, SLPP, and Johanna Zmud, NuStats. The results of the

baseline survey conducted in November and December 2004 were presented. Following the presentations members of the public and other transportation professionals peppered the panel with questions.

- June 21, 2005 – "Colorado Tolling Enterprise"
  Peggy Catlin, Acting Executive Director of Colorado Tolling Enterprise, spoke of Colorado's preliminary identification of possible toll facilities on existing and planned statewide corridors. She described the process involved and the future of the program. A discussion session followed that allowed for Minnesota to share some of its experiences and offer applicable comparisons.

- October 17, 2005 – "Traffic, Tolling, and the Trans Texas Corridor"
  Moderator Lee Munnich coordinated the discussion with panelists, Carlos Lopez from the Texas Department of Transportation and Katie Turnbull and Ginger Goodin, both of the Texas Transportation Institute. The presentations centered on Texas' plans for the Trans Texas Corridor and the expansion of tolling facilities. Goodin singled out the City of Tyler as one that has used toll revenue generations to speed construction of a highway project. The two states shared experiences in the lively discussion.

- March 23, 2006 – "I-394 MnPASS: A New Choice for Commuters"
  Bob Johns, of the Center for Transportation Studies, moderated the panel presentation and subsequent discussion. Panelists included, Nick Thompson, Mn/DOT, Doug Sallman, Cambridge Systematics, and Johanna Zmud, NuStats. The results from the second wave of the evaluation, collected in November and December 2005, were presented to the crowd of transportation professionals, elected officials, members of the general public, and members of the press. The results, nearly all of which were positive, spawned an energetic question and answer session.

Aside from the thirteen roundtables conducted, six Road Pricing Workshops were held in conjunction with the annual and summer meetings of the Transportation Research Board. The workshops were sponsored by the A1A01(1) – Joint Subcommittee on Pricing (promoted to full committee status in 2005). Lee Munnich chairs the Outreach and Education TRB Pricing Outreach Subcommittee, whose major task is coordinating and hosting the semi-annual workshop. In an effort to maintain interest, the presentation and discussion content varies from economics and finance to public outreach and equity. The format of the summer and winter workshops rotate, but both attempt to provoke and present new thoughts and ideas, while leaving the majority of the time for larger and breakout group discussion. Workshops included:

- July 15, 2003 in Portland, Oregon – "Value Pricing Workshop"
- January 11, 2004 – "Best Practices in Value Pricing"
- July 28, 2004 in Park City, Utah – "Road Pricing Workshop"
- January 9, 2005 – "Annual TRB Road Pricing Workshop"
- July 13, 2005 in Boston – "Road Pricing Workshop"

- January 22, 2006 – "Congestion Pricing From Soup to Nuts: Leveraging Federal Opportunities and Managing Expectations"

7. Provide Public Involvement Support to Mn/DOT on FAST Lane and Future MnPASS Initiatives

Goal: Enhance public understanding and involvement in development of FAST Lane concept in Minnesota. The Humphrey Institute will advise Mn/DOT and help to coordinate public involvement, education and outreach activities for the FAST Lanes initiative. The Humphrey Institute Team will design, develop, and implement a comprehensive public involvement and communications plan for the FAST Lanes project. The Humphrey Team will collaborate with designated Mn/DOT FAST Lane staff to identify and work with a variety of stakeholders to identify issues, present information, manage activities, document results, conduct evaluations, and related work. Humphrey Institute and Mn/DOT staff will jointly develop and routinely update phase-or project specific work plans and scoping documents. The Humphrey Institute will assist Mn/DOT in establishing and working with a community task force to obtain input on the FAST Lane Initiative. We anticipate a community task force meeting 5 to 7 times to examine the FAST lane approach in a regional context, assist in establishing criteria for FAST lane projects.

During the second quarter of 2004, Mn/DOT added $50,000 to the Humphrey Institute contract to assist Mn/DOT with stakeholder analysis and outreach activities for the Mn/DOT FAST Lane initiative (now incorporated under MnPASS). The initial agreement with Mn/DOT was amended to incorporate this new task and reflect some of the changes made to the project. Anne Carroll was hired as a consultant to conduct a stakeholder analysis and assist the MnPASS System Study steering committee in preparing its report (Appendix K).

The MnPASS System Study steering committee was formed to provide recommendations and direction to Mn/DOT on the potential for future FAST lanes and MnPASS projects in the Twin Cities region. Cambridge Systematics conducted the analysis of alternatives for the system study. From July 2004 to March 2005 the MnPASS System Study Steering Committee met and after careful review of the Cambridge report concluded that an interconnected systems of toll lanes would be an effective tool to manage congestion and provide a transit advantage within the metropolitan area. Lee Munnich served on the Steering Committee and assisted in the generation of key findings that addressed the following areas:

- Congestion Management
- Transit
- Public and Private Involvement
- Variable Tolls
- Systems Approach
- MnPASS related to future transportation plans.

The final report “MnPASS: A System for Managing Congestion” is included in Appendix L.

Conclusion

The continued support of the Minnesota value pricing effort over the past decade by the FHWA Value Pricing Pilot Program has been a critical factor in Minnesota moving forward on the I-394 MnPASS project. It demonstrates the importance of the federal government's role in promoting innovation at the state and local level and the importance of having a long-term commitment to significant new policies and tools such as value pricing. The I-394 MnPASS project specifically offers a number of lessons for transportation planners across the nation.

1. **Having a knowledgeable, multidisciplinary team**

It is important to have a knowledgeable project team with skills from multiple disciplines. The MnPASS project drew from technical, planning and engineering experts as well as academic, communications and marketing professionals. The mutual respect among team members and the willingness to work through differences in solving problems has been a critical success factor.

2. **Engaging the community in the planning process**

From the very beginning it was recognized that the community affected by the process must be involved in planning the project. A community task force representing elected officials, citizens, and transportation leaders and extensive outreach efforts before and after the project began kept the project team in tune with community concerns and helped Mn/DOT make sound decisions at key points in the process. Furthermore, those involved in the community planning process have become important advocates and supporters.

3. **Tapping into outside experts and experience**

The FHWA Value Pricing Pilot Program has created a network of experts and a knowledge base on value pricing in the U.S. as well as internationally. For example, the I-394 MnPASS project team drew extensively on the experience of the I-15 project in San Diego in designing the MnPASS project as well as providing information to the community task force and citizens about how value pricing works. Similarly, the project team drew from the experience of other HOT lane projects in designing an evaluation plan for the I-394 MnPASS project.

4. **Being prepared to respond quickly to problems and make corrections**

Being mindful of all aspects of the project and responding quickly to problems has been critical in avoiding significant problems and helped achieve success. The prompt response by Mn/DOT in dealing with increased congestion in one segment of the corridor within three weeks of opening helped convince the public that Mn/DOT was prepared to make corrections and address problems if they occurred.

5. **Learning and sharing knowledge with others**

Members of the project team continue to meet regularly with representatives of other value pricing projects through TRB meetings and workshops as well as through phone conferences and site visits among projects. For example, transportation planners for the Colorado I-25 HOT lane project, which opened a year after the I-394 project, visited Minnesota and used the knowledge gained in planning their own project.

The I-394 MnPASS project is an important demonstration project, showing policy leaders, transportation professionals, and the general public how value pricing can be used to manage congestion and address a wide range of transportation problems. Pricing is a new and powerful tool in the transportation planner's toolkit, and through this project Minnesota is forging a path for others to follow and learn from. Incorporating pricing into transportation projects, as with other complex projects, requires multiple areas of expertise, community participation, sound technical design, a collaborative team approach, and continuous attention to details to achieve success.

Appendix A:

A Value Pricing Education and Outreach Model: The I-394 MnPASS Community Task Force

Ken Buckeye, Lee Munnich

A Value Pricing Education and Outreach Model: The I-394 MnPASS Community Task Force
TRB Paper No. 06-2250
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ABSTRACT

After a decade of public discussion and political debate, the I-394 MnPASS Express Lane, Minnesota's first high-occupancy toll (HOT) lane, opened in May 2005. The MnPASS project was designed to improve the efficiency of I-394 by increasing the person- and vehicle-carrying capabilities of existing high-occupancy vehicle (HOV) lanes; maintaining free flow speeds for transit and carpools; and using electronic toll collection -- tags/transponders and readers -- for dynamic pricing and electronic enforcement. While previous road pricing initiatives in Minnesota, as in other states, have provided opportunity for public feedback, the process tends to be confrontational and less than satisfying for all parties. Both citizens and politicians often feel comments and concerns are minimized and rarely taken seriously enough to alter project plans. The I-394 Express Lane Community Task Force, on the other hand, was formed to help citizens and stakeholders fully understand the project and its goals and to provide a more effective vehicle to give advice and guidance during the development of the project. Through this process, the task force members became an informed voice regarding the project and an essential part of an extensive education, outreach and public involvement process that has been critical to the success of the I-394 MnPASS project. If proven successful in the long run, this task force model increases the likelihood that Minnesota citizens will support such projects in the future.

INTRODUCTION

Background

In May 2005, the Minnesota Department of Transportation (Mn/DOT) opened the state's first high-occupancy toll (HOT) lanes facility called the I-394 MnPASS Express Lane. Among a number of innovations on this facility was the method used to guide Mn/DOT and its partners through a challenging implementation process. The I-394 Express Lane Community Task Force was formed to help citizens and stakeholders fully understand the project and its goals. The mission of the task force was to provide advice and guidance to the Commissioner of Transportation during the development of the I-394 MnPASS project. Input from the task force was taken seriously and altered the project in several important ways: 1. Providing guidance to develop an appropriate pricing algorithm; 2. Establishing access and egress points to the HOT lanes; 3. Developing appropriate signing; 4. Setting hours of operation.

Minnesota has had a tumultuous history with other road pricing project proposals. Two previous attempts at introducing pricing as a financing and demand management tool were defeated by organized public opposition (*1*). Efforts to involve and inform decision makers and the public through effective education and outreach were determined imperative to the success of the I-394 MnPASS project.

When the Interstate 394 facility was originally opened in 1992, the high-occupancy vehicle (HOV) lanes were designated for carpools with two or more passengers, busses, and motorcycles. Shortly after opening, however, congestion in the general-purpose lanes plus a less-than-full HOV facility created a perception that the HOV lanes were underutilized.

This perception persisted and led to periodic requests that the HOV lanes be opened to solo drivers. This culminated with a request by the Legislature that Mn/DOT conduct a study to evaluate the feasibility of this action. The study, which was completed in 2001, concluded that the I-394 HOV facility was underused but that opening it to general traffic would not be cost effective and would result in a congested facility. The same study concluded that conversion to a HOT lane operation could be a more cost-effective alternative (*2*).

A Value Pricing Advisory Task Force of elected officials, business, transportation, and other community leaders laid the groundwork for the I-394 HOT lanes project by recommending that Minnesota pursue a pilot project in the corridor. Legislative action ultimately ensued in 2003 that permitted the conversion of HOV facilities to HOT lanes. The Governor and Lt. Governor (also the Transportation Commissioner) became immediate supporters of the concept realizing the project's potential to help address multiple transportation problems.

Congestion pricing has long been advocated by economists as a more efficient way of allocating scarce road space among users. For many years the technology limited the ability to apply congestion pricing since tollbooths would defeat the purpose of the congestion charge by adding delay to the systems. The widespread use of electronic tolling technology, which is now rapidly replacing tollbooths, has made toll collection simpler and more efficient without slowing down traffic.

In the 1990s the federal government encouraged states and regions to implement pilot projects to demonstrate how congestion pricing works. The Congestion Pricing Pilot Program authorized by ISTEA in 1991 and its successor the Value Pricing Pilot Program authorized in TEA-21 in 1998 and SAFETEA-LU in 2005, have encouraged states and regions to develop and implement pricing projects. The program had a slow start in the 1990s due to political and institutional issues at the state and local level. In 1994, a national Committee for Study on Urban Transportation Congestion Pricing summarized the problem as follows: "The reasons for rejection of congestion pricing in the past have not changed. Any shift from the current system of financing and using the transportation system toward more marketlike mechanisms can be expected to engender public and political resistance" (*3*).

The FHWA pilot programs helped in the initiation and evaluation of value pricing projects in southern California, Texas, Florida and New York in the 1990s, demonstrating the technical feasibility, value as well as public support for such projects (*4*) (*5*). In spite of these initial successes and broad national interest in the potential for high-occupancy toll (HOT) lanes, states have been slow in implementing projects beyond these few pilots.

Public management studies have shown that neglecting or underestimating the information needs and concerns of stakeholders frequently leads to poor performance, outright failure or even disaster (*6*). Paul Nutt in *Why Decisions Fail* (2002) analyzed 400 strategic decisions and found that half had failed in large part because decision makers failed to attend to interests and information held by key stakeholders (*7).* Aaron Wildalsky in his 1979 book on policy analysis argues that a key to effective policy change is "creating problems that could be solved," linking *technical rationality* with *political rationality* in order "to mobilize support for substance" (*8).*

Since 1994 the University of Minnesota's Humphrey Institute of Public Affairs has conducted research on congestion and value pricing and worked with the Minnesota Department of Transportation to educate stakeholders and the general public about the concept. In 1996 the Humphrey Institute in its report *Buying Time* recommended six key components for successful implementation of congestion pricing: 1) a leadership coalition representing key stakeholders, 2) elected officials leadership and support, 3) attention to equity impacts, 4) citizen understanding and involvement, 5) a marketing and media strategy, and 6) a technology plan that addresses public concerns about cost, privacy, and reliability. (*9*). All six of these components have been critical for Minnesota to get to the point where a value pricing project could move forward in 2003.

Driving Forces

Over the course of nearly a decade, Mn/DOT has pursued value pricing in various forms (*10*). Within the context of demographic and traffic forecasts for the coming decades, the department has recognized that not enough funding could be expected to expand the existing transportation system, or provide transit service at a level that would manage congestion at reasonable levels. Value pricing, on the other hand, has held promise of both 1) providing a demand management tool as well as a revenue stream to fund operations, and 2) perhaps make transit and other roadway improvements in the corridors in which funding is collected.

Road pricing in any form, however, has proven to be a highly contentious issue with the driving public. While new roads themselves, financed at least partly with tolls, have been controversial - but achievable - almost no amount of economic rationale has been able to convince the public that conversion of existing general purpose lanes to toll lanes is equitable. Conversion of the non-barrier separated diamond lanes on I-394 – partially HOV and partially open to all users – is in a sense a partial lane take-away.

The MnPASS project, authorized by the Legislature, set the department toward development of a project with many nuances that required innovation in management and technology as well as in outreach and education. The importance of achieving "informed consent" was recognized early as key to the project's success, and significant resources have been applied to this effort throughout the project development process.

Mn/DOT recognized that, given the complexity of the project, it was imperative to develop a meaningful education and outreach process in order to ensure successful implementation. At the request of Mn/DOT staff, the Governor and Lt. Governor formed the I-394 Express Lane Community Task Force composed of legislators, community leaders, interest groups, and concerned citizens. At the same time, under a federal value pricing grant, Mn/DOT pursued a comprehensive education and outreach activity modeled after an earlier effort described in the next section.

Figure 1 I-394 MnPASS High Occupancy Toll Lane.

An Early Value Pricing Advisory Task Force Model

An important precursor to the I-394 Express Lane Community Task Force was formed in 2001 after several unsuccessful attempts to introduce road pricing in Minnesota. In those earlier attempts to introduce the state to road pricing the public overwhelmingly rejected the notion as demonstrated in a Citizen's Jury process (*11*). The 30-member Value Pricing Advisory Task Force comprised of state legislators, mayors; and business, environmental and transportation association leaders was assembled to explore appropriate and feasible value pricing options in Minnesota. Over the course of time, polls conducted in conjunction with the Task Force showed a strong shift in public opinion (*12*). In concluding their work, after more than a year study, the task force concluded that the state should proceed with a demonstration project (*13*).

Members of this task force decided to continue to champion the cause of value pricing and to

communicate their reasons for supporting the concept. A project team led by the State and Local Policy Program of the University of Minnesota's Humphrey Institute of Public Affairs developed and carried out a research, education, and communications strategy for value pricing during 2002 and 2003 to help generate interest and support as the state explored various transportation funding and congestion mitigation options (*14*).

Broad political support for value pricing finally began to emerge in Minnesota after nearly a decade of effort. A number of significant social, economic and political factors contributed to this changing climate including:

- Administration promise of no new taxes
- State budget deficits exceeding $4 billion
- Growing population and congestion
- Widespread agreement that transportation issues had to be addressed
- Growing understanding and awareness of the benefits of value pricing

Largely as a result of the emergence of political champions from the Value Pricing Advisory Task Force, bipartisan support and leadership resulted in 2003 legislation supporting conversion of high-occupancy vehicle (HOV) lanes into express lanes, allowing solo drivers to access the lanes for a fee. A newly elected Governor and Lt. Governor endorsed moving forward with the conversion of HOV lanes to high occupancy toll (HOT) lanes. Nearly all associated with the project agreed that the HOV lanes on I-394 from Minneapolis through the western suburbs would provide the best early test of the HOT lane concept.

Traditional public involvement models, which may include open houses and formal hearings, fall short of providing meaningful public deliberations and decision making. These approaches allow for only limited interaction between stakeholders and transportation agencies, leaving citizens feeling that their questions and concerns are not being addressed, and giving the transportation agency too little opportunity to respond and integrate public input into the solution. More importantly, it is very difficult to establish a level of trust and ownership with public sessions that only allow limited opportunity for involvement in key decisions.

The process Mn/DOT has pursued requires sharing control of project details and decisions, making more effective use of community input during project design and implementation, and developing an atmosphere of trust while reducing confrontation.

High Occupancy Toll Lane Legislative Action

While there were divergent points of view among legislators and other political leaders, there was general consensus on at least three fundamental points:

- Something needed to be done with the underused HOV lanes.
- Opening the HOV lanes to general-purpose traffic was not a desirable or feasible option.
- Current and anticipated transportation funding is inadequate to expand capacity through construction alternatives in the I-394 corridor.

As a result of continuing discussion, and at least partially the result of Value Pricing Advisory Task Force findings, the 2003 Minnesota Legislature enacted High Occupancy Toll Lane

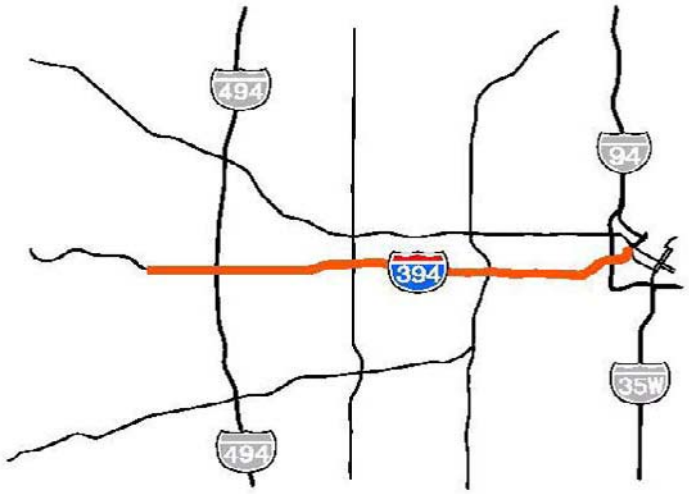
Legislation (160.93, Sec. 7) authorizing the Commissioner of Transportation to implement user fees on high occupancy vehicle lanes in Minnesota (*15*). Highlights of the legislation are as follows:

- The goal of the legislation is to improve the operating efficiency in trunk highway corridors and provide more options to travelers.
- Fees can be collected electronically or by other methods that may vary in amount by time of day, and may vary with congestion.
- Fees collected will be used to repay the trunk highway fund or other fund sources for cost of equipment and modification in the corridor, and to pay for the costs of implementing and administering the fee collection system.
- Excess revenues shall be spent as follows: One-half for capital improvements in the corridor, and one-half transferred to the Metropolitan Council for expansion and improvement of bus transit services in the corridor in which the funds are collected.
- Violators are guilty of a petty misdemeanor.

MnPASS Project Objectives

Using the legislative authority given to Mn/DOT to implement the I-394 MnPASS project, five project objectives were defined:

1. Improve the efficiency of I-394 by increasing the person- and vehicle-carrying capabilities of HOV lanes;
2. Maintain free flow speeds for transit and carpools;
3. Use excess revenue, if available, to make transit and highway improvements in the I-394 corridor;
4. Use electronic toll collection: tags/transponders and readers – no toll booths;
5. Employ new Intelligent Transportation System (ITS) technologies such as dynamic pricing and in-vehicle electronic enforcement.



Mn/DOT and the I-394 Community Task Force recognized that, in a number of aspects, MnPASS is a first-of-its-kind application in the U.S. As such, it is important to carefully monitor and evaluate its operation, and be prepared to make adjustments and improvements periodically to ensure that the project objectives are achieved.

Figure 2 I-394 MnPASS Corridor.

I-394 EXPRESS LANE COMMUNITY TASK FORCE

Establishment of the Task Force

With the authority to proceed on HOV to HOT conversions, it was clear that a new creative and responsive public involvement process was imperative to the project's success or face similar imposing obstacles as previous pricing projects had faced. Despite what appeared to be a sea change in public opinion, due to a changing political and economic climate, as well as growing congestion, public acceptance of the project was not ensured. The question of equity remained large and was sure to remain prominent as I-394 would be the only toll facility in the state, and therefore would require careful consideration.

In response to this recognition, the I-394 Express Lane Community Task Force was established. The Task Force was 22-person group of leaders and citizens appointed by the lieutenant governor, by the House and Senate leadership, and by the communities themselves. The governor appointed the chair of the task force.

A mayor or city council member and a citizen member from each of the cities in the corridor - Minneapolis, Golden Valley, Minnetonka, St. Louis Park, Plymouth, and Wayzata were represented. In addition, state legislators, private sector organizations (American Automobile Association, Minnesota Trucking Association), public organizations (Downtown Minneapolis Transportation Management Organization and Transit for Livable Communities), public agencies (Metropolitan Council, Metro Transit, Hennepin County, Mn/DOT), and private citizens were represented. The task force met monthly from September 2003 through October 2004 (*16*).

Mission Statement

The I-394 Express Lane Community Task Force mission was articulated as follows:

"Conversion of high occupancy vehicle (HOV) lanes to express lanes was authorized by the 2003 Minnesota Legislature. Express lanes permit single occupant drivers to pay tolls for the privilege of using HOV lanes. The I-394 Express Lane project is Minnesota's first facility based value pricing demonstration and is a new and significant change in highway facility management. The Minnesota Department of Transportation recognizes that community involvement and acceptance are imperative to the successful application of this concept. The I-394 Express Lane Community Task Force has been established to assist the Commissioner of Transportation in delivering a project that reflects the needs and values of the corridor and broader community to create a forum for public discourse.

The I-394 Express Lane Community Task Force will provide the Commissioner of Transportation with advice and guidance on public involvement, communications, community outreach and education. Other policy issues that the Task Force might address include operations, pricing, access, and violations and enforcement."

Decision Making Process

A former state senator who was appointed by the governor chaired the task force. Although an agenda was developed in advance of each meeting as a means to guide technical presentations

and discussions, the chair painstakingly ensured that all concerns were adequately aired by the task force members as well as citizens attending the meetings. The process focused on consent building as well as open discussion.

Early on in the deliberations the task force members were provided information on the rationale behind HOT Lanes and were briefed on projects in other parts of the country. The task force chair and five other members of the task force visited the I-15 HOT lane project in San Diego and the SR 91 Express Lane project in Orange County, California. This visit provided task force members a much better understanding of how these projects work as well as the differences between the two projects.

As the project was being designed, the task force members were briefed by members of the project team and given the opportunity to raise issues that needed to be addressed or studied further. While it was clear that Mn/DOT would make the final decisions regarding the project, the department leaders made it clear that they wanted to incorporate the recommendations of the community task force into the plans for the project and, in fact, did so.

Public-Private Partnership

With public and political patience running thin concerning the HOV lane performance on I-394, Mn/DOT used a streamlined procurement process similar to design-build as a means to deliver MnPASS at least a year earlier than under traditional project delivery. As such, a Request for Proposals for Partners (RFPP) was issued in July 2003, and Mn/DOT entered into a contract with the team of Wilbur Smith, SRF Consulting Group, Raytheon, and Cofiroute to implement the MnPass project on I-394 in December 2003.

The public/private partnership between Mn/DOT and the Wilbur Smith team is referred to as the MnPASS Partnership Team. This group became integral to the process and acted as expert consultants to the I-394 Express Lane Community Task Force.

Task Force Market Research

The Hubert H. Humphrey Institute of Public Affairs at the University of Minnesota and Mn/DOT engaged in a study to learn of the public's perception and attitudes associated with implementing HOV Buy-In capabilities on I-394. Market research among citizens who live in the western metro area of the Twin Cities was commissioned with the following objectives in mind:

- To identify the awareness and acceptance levels of an HOV Buy-In option;
- To identify the perceived benefits and concerns associated with this new program;
- To help in the design of launch-related issues (best way to purchase transponders, how to best communicate with customers, etc.);
- To understand the perceived value of the purchased trip;
- To capture changes in attitudes relating to an HOV Buy-In – compared to what had been learned earlier.

Focus group discussions were selected as the means to accomplish these objectives. Focus groups are an exploratory research technique designed to elicit insights, attitudes and issues through moderated group discussions. While the results are not statistically projectable to the

population as a whole, they can provide revealing feedback and directional data on complex topics and newly proposed ideas.

Five focus groups were conducted. Three focus groups were held with solo drivers (SOVs) who travel I-394 (or an adjacent highway) into or beyond downtown Minneapolis during peak commuting hours to and from work. One focus group was held with carpoolers (HOVs) who travel the same route as above to and from work, and a fifth focus group was held with people who ride the bus to and from work, traveling I-394 into or beyond downtown Minneapolis. The focus groups were held in February and March 2004.

The participants in the focus groups represented a general cross-section of the population from the Twin Cities (mix of age, income, employment, and gender) who commute from the western metro into or beyond downtown Minneapolis, during peak commuting hours and travel I-394 or an adjacent highway, such as Hwy 55 or Hwy 7. The participants were recruited randomly by telephone from the local areas, answered an advertisement that appeared in the Star Tribune or a local newspaper, or responded to a flyer that was distributed at downtown parking garages which offer discounted parking to carpoolers. Qualified individuals were invited to come to a central location to discuss this topic.

Focus Group Observations

The following were typical reactions by focus group members about the I-394 corridor:

- "Something needs to be done with the HOV lanes on I-394."
- HOV lanes vastly underused and far too little done to promote transit usage or to encourage carpooling.
- Many SOV drivers were angry about the "empty lane", and would prefer to open HOV lanes to all drivers all the time.

When the MnPASS project was explained to focus group members, the following were typical reactions:

- "About time" something is done with I-394 HOV lanes; may free up general purpose lanes somewhat.
- Ability to pay and drive express lane could mean difference between being late for work or meeting, or picking up a child from day care on time.
- Could reduce "stress" by offering option to sitting in congestion.
- Questions about how revenue would be used; transit dollars should be used to provide more frequent busses throughout the day.
- A few dollars a day would be an acceptable expenditure to travel in a faster lane with less stressful driving conditions.
- Carpoolers and bus riders might use pay express lane occasionally if they had to, but generally would not change behavior.
- Several participants understood how "dynamic pricing" works to keep traffic flowing in express lane, but others were unsure it would work.

The focus group participants raised the following concerns about the I-394 MnPASS project:

- Carpoolers and bus riders concerned about "clogging up sane lane" and slowing their commute; may be disincentive to carpoolers and bus riders.

- Problems of "bottlenecks" at Lowry Hill Tunnel.
- Unfair to low-income drivers. Serves "privileged" few who drive SUVs from far western suburbs.
- Safety concerns with "swerving" onto and off of express lanes west of Highway 100.
- Concerns about enforcement, interruption of traffic flow, cost of enforcement.
- Why toll during times when there is little traffic?
- Eastbound traffic heavy in afternoon. Could one of lanes between Highway 100 and downtown be opened to eastbound traffic?
- Confusion about two tolls west and east of Hwy 100.
- "Band aid" approach; lanes will be filled by those from other routes and population growth in western suburbs.

The focus groups occurred during the task force meetings, and a few of the task force members observed one or more of the focus groups. The results of the focus groups were presented to the full task force and used as additional input in their deliberations.

Public Outreach and Education

The task force encouraged and participated in public outreach and education activities during the course of the project. This included an open house for all citizens in the corridor; briefings and discussions at city council and county board meetings within the corridor; and presentations and discussions with community, business and civic organizations.

The Humphrey Institute also conducted public roundtables on topics related to value pricing and HOT lanes, which the task force members were encouraged to attend. One of these roundtables brought in the researchers who had done the evaluations of the SR 91, I-15 and Katy Freeway projects, to learn more about how they had conducted evaluations of similar HOT lane or express lane projects, and how this might apply to the I-394 MnPASS project evaluation.

A Web site was established for the project, www.mnpass.org. It included information on the MnPASS project and the task force, minutes of task force meetings, PowerPoint presentations, and related reports. The Web site was also linked to the Humphrey Institute's Web site, www.valuepricing.org, which includes more extensive information on projects in other states.

TASK FORCE DISCUSSIONS

The task force deliberated on a variety of I-394 Express Lane issues that were either determined by the project management team to be of significance or determined by the task force itself to be an area of importance to be considered. The areas of discussion included:

1. Access Points/Traffic Operations
2. Hours of Operation
3. Enforcement
4. Dynamic Message Signs

5. Toll Rates
6. Type of Vehicles Allowed
7. Transponders
8. Expected Revenues
9. Public Outreach
10. Project Evaluation

Because the I-394 MnPASS project was breaking new ground in the area of HOT lane pricing, it was imperative to evaluate these topics thoroughly, and consider realistic solutions. Meeting agendas were planned carefully to provide ample opportunity for task force members to hear technical and policy presentations on these topics, and to provide ample time to discuss topics in sufficient detail. A hallmark of the process was the receptive and respectful manner in which the chair facilitated discussion and encouraged participation.

The following principles were employed to facilitate the most meaningful input process possible:

- Developing as complete an understanding of the issues as possible
- Presenting technical and policy analysis
- Opening topics for thorough discussion
- Respecting all opinions including those of citizenry
- Considering concept changes or modified solutions based on technical or policy analysis
- Responding to all media inquiries
- Delivering project updates to local units of government
- Recognizing that the project may require technical and operational changes as experience is gained
- Leaving no question unanswered

This last point became a matter of pride for the project team, which prided itself in leaving "No question unanswered." During the course of the project, a Humphrey Institute research assistant diligently recorded all questions that were raised by the task force or in other public forums and briefings. If questions could not be answered immediately, the project team would do additional research to find the answer and report back at the next meeting of the task force. The assistant compiled answers to frequently asked questions into FAQs that were handed out at briefings and were available on the project Web site.

LESSONS LEARNED

Minnesota's experience with the I-394 Express Lanes Community Task Force offers a number of lessons for states or regions implementing HOT lane or value pricing projects:

1. The make-up of an advisory task force is important when trying to achieve informed consent on complex and controversial projects. Legislators working alongside community representatives, citizens, interest groups, and technical experts can provide a productive and meaningful deliberative opportunity.

2. An advisory task force can be a highly effective way of getting key players as well as interested citizens at the table during the design and implementation of a project. While support may exist for moving forward, the "devil is in the details," and a task force of a corridor's key stakeholders can help the project team in sifting through those that are most important to the public, and addressing them before they generate political opponents.
3. It is significant that no organized opposition emerged during the design and implementation phase of the project. While there were critics who spoke out about the project in city council meetings and other forums, the task force became an important vehicle for assuring that public concerns were addressed, and helped in assuring elected officials that their interests were represented in the design of the project.
4. Transportation agencies must address problems quickly when they occur. There were significant points of controversy during the project, in particular the 24/7 operation of the diamond lanes west of Highway 100. While most of the members agreed to go along with the project team's recommendation to charge tolls at all times rather than just the peak periods, there was a clear understanding that Mn/DOT would observe how the 24/7 operation worked and make changes if necessary. One legislative member of the task force chose to submit a minority report on this issue. When the project opened in May 2005, there was an unexpected increase in congestion in the morning in the westbound, reverse peak direction. After a few weeks of negative public reaction, a Minnesota Senate action to reverse the 24/7 decision, and exploration of various alternatives, Mn/DOT decided to reverse the 24/7 tolls and only apply them in the peak direction during peak periods, and to open an auxiliary lane utilizing existing shoulders.
5. The selection of the right chair and task force members is very important. Skillful and respectful leadership increases the confidence and trust of committee members in the process and that their concerns would be heard and addressed.
6. Site visits to other HOT lane and express lane projects played a critical role in increasing the task force understanding of how value pricing works. Early in the task force deliberations, six of the members visited the SR 91 and I-15 projects in California. The six came back with an increased understanding of how these projects work as well as the differences in the two projects. They reported what they learned to the other members of the task force, and frequently referenced these projects during the course of the task force deliberations.
7. The project team brought all details to the task force and took every problem raised by a task force member very seriously, making special efforts to provide good analysis and answers to every question. For example, in response to concerns about additional bottlenecks at the Lowry Hill Tunnel with more traffic in the HOV lane, after it was converted to a HOT lane, the project team produced a computer simulation of just how merging would occur with increased traffic in the HOT lane, and why it would not lead to increased congestion in the general purpose lanes.

CONCLUSIONS

After many years of discussion and deliberation, a number of factors converged to result in political, institutional, and public support for a HOT lane project in Minnesota. The collaboration between Mn/DOT and the Humphrey Institute on research, outreach and education, through a grant from FHWA's Value Pricing Pilot Program, was critical in building the political and institutional support for an initial project in Minnesota.

However, once the Legislature, Governor, and Mn/DOT decided to move forward on the I-394 MnPASS project, an extensive public involvement process was needed within the corridor to assure public and political support. The I-394 Express Lane Community Task Force was created as the centerpiece of this public involvement strategy, and was given full access to all details of the project in the design and pre-implementation phase. The task force served as an important element in assuring that all aspects of potential concern were addressed by Mn/DOT while implementing its first HOT lane project, and to increase the likelihood of success.

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Appendix B:

MnPASS Express Lane: I-394 Community Task Force Final Report

MnPASS I-394 EXPRESS LANE

COMMUNITY TASK FORCE FINAL REPORT

October 6, 2004

MnPASS I-394 EXPRESS LANE
COMMUNITY TASK FORCE REPORT

TABLE OF CONTENTS

GLOSSARY OF TERMS AND EXPRESSIONS

DMS:	Dynamic Message Signs used for displaying changes in toll rates in response to demand
Express Lanes:	Used interchangeably with HOT Lanes
HOT Lanes:	High Occupancy Toll Lanes for HOVs and paying solo drivers
HOV Lanes	High Occupancy Vehicle Lanes: Exclusive Carpool and Bus Lanes
MnPass:	Minnesota's Pricing Program
SOVs:	Single Occupancy Vehicles: Solo Drivers
TH:	Trunk Highway or State Highway
Toll Zones:	Areas of the MnPass lanes where the toll is charged to SOVs
Transponders:	Tags, attached to SOV windshields, which are read by overhead readers in toll zones. The toll value is electronically subtracted from the transponder's account balance at these toll zones.

I. INTRODUCTION

Background

Interstate 394 opened to traffic in October 1992. The newly-reconstructed facility was a six-lane freeway with two reversible HOV lanes through the Penn Avenue area, from TH 100 to I-94. West of TH 100, the facility was built with one Diamond Lane in each direction. The HOV facility was designated for carpools with two or more passengers and bus-use. Time restrictions were placed on the Diamond Lanes that allowed HOVs only inbound in the morning (6:00 a.m. to 9:00 a.m.) and outbound in the afternoon (3:00 p.m. to 6:00 p.m.).

Shortly after opening, congestion in the general-purpose lanes plus a less-than-full HOV facility created a perception that the HOV lanes were underutilized. This perception has persisted for the decade since I-394 opened and has led to periodic requests that the HOV lane be opened to solo drivers. This culminated with a request by the Legislature that Mn/DOT conduct a study to evaluate the feasibility of this action. The study, which was completed in 2001, concluded that the HOV facility was underutilized but that opening it to general traffic would not be cost effective and would result in a congested facility. The same study concluded that conversion to a High Occupancy Toll (HOT) lane operation would be the most cost-effective action.

Legislative Action

In 2003, the Minnesota Legislature enacted High Occupancy Toll Lane Legislation (160.93, Sec. 7) authorizing the Commissioner of Transportation to implement user fees on high occupancy vehicle lanes in Minnesota. Highlights of the legislation are as follows:

- The goal of the legislation is to improve the operating efficiency in trunk highway corridors and provide more options to travelers.
- Fees can be collected electronically or by other methods, which may vary in amount by time of day and may vary with congestion.
- Fees collected will be used to repay the trunk highway fund or other fund sources for cost of equipment and modification in the corridor and to pay for the costs of implementing and administering the fee collection system.
- Excess revenues shall be spent as follows: One half for capital improvements in the corridor and one half transferred to the Metropolitan Council for expansion and improvement of bus transit services in the corridor in which the funds are collected.
- Violators are guilty of a petty misdemeanor.

The full text of the legislation can be found in Appendix 1.

MnPass Project Objectives

Five objectives have been defined for the project:

1. Improve the efficiency of I-394 by increasing the number of people and vehicles using the HOV lanes;
2. Maintain free flow speeds for transit and carpools in the Express Lanes;
3. Use excess revenues, if available, to make transit and highway improvements in the I-394 corridor;
4. Use electronic toll collection (i.e., tags/transponders and readers) which do not require toll booths; and
5. Employ new Intelligent Transportation System (ITS) technologies such as dynamic pricing and in-vehicle electronic enforcement.

The main focus of the MnPass Evaluation being conducted by independent evaluators will be to measure the extent to which the MnPass project achieves these objectives.

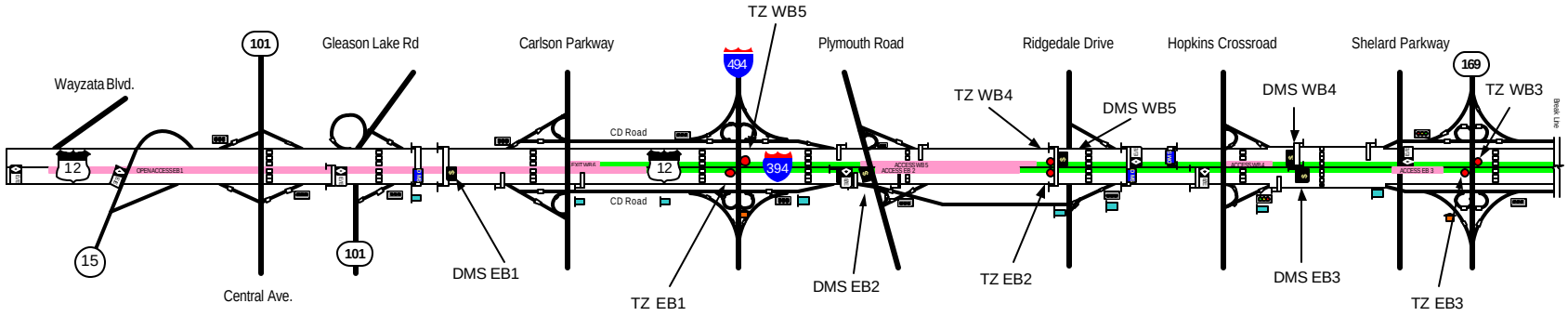
This is a first-of-its-kind application in Minnesota and, as such, its operation will be monitored and evaluated, and adjustments and improvements will be made periodically to ensure that the above MnPass objectives are achieved.

MnPass Concept Plan

Attached, shown in Figures 1A and 1B, is the proposed MnPass System Concept depicting, among other information, the following key elements for both eastbound and westbound I-394:

- Entry/exit access points (six per direction)
- Location of entrance/exit signs prior to access points
- Location of dynamic message signs prior to entrance/exit signs
- Location of toll zones (five per direction)

Figure 2 shows a typical Dynamic Message Sign (DMS) that would be placed prior to TH 100, in or before the reversible section, for westbound traffic. Figure 3 shows a typical DMS sign that would be placed in the Diamond Lane section for westbound traffic indicating, in lieu of a toll rate, that the Express Lane is closed.



Legend (Existing)

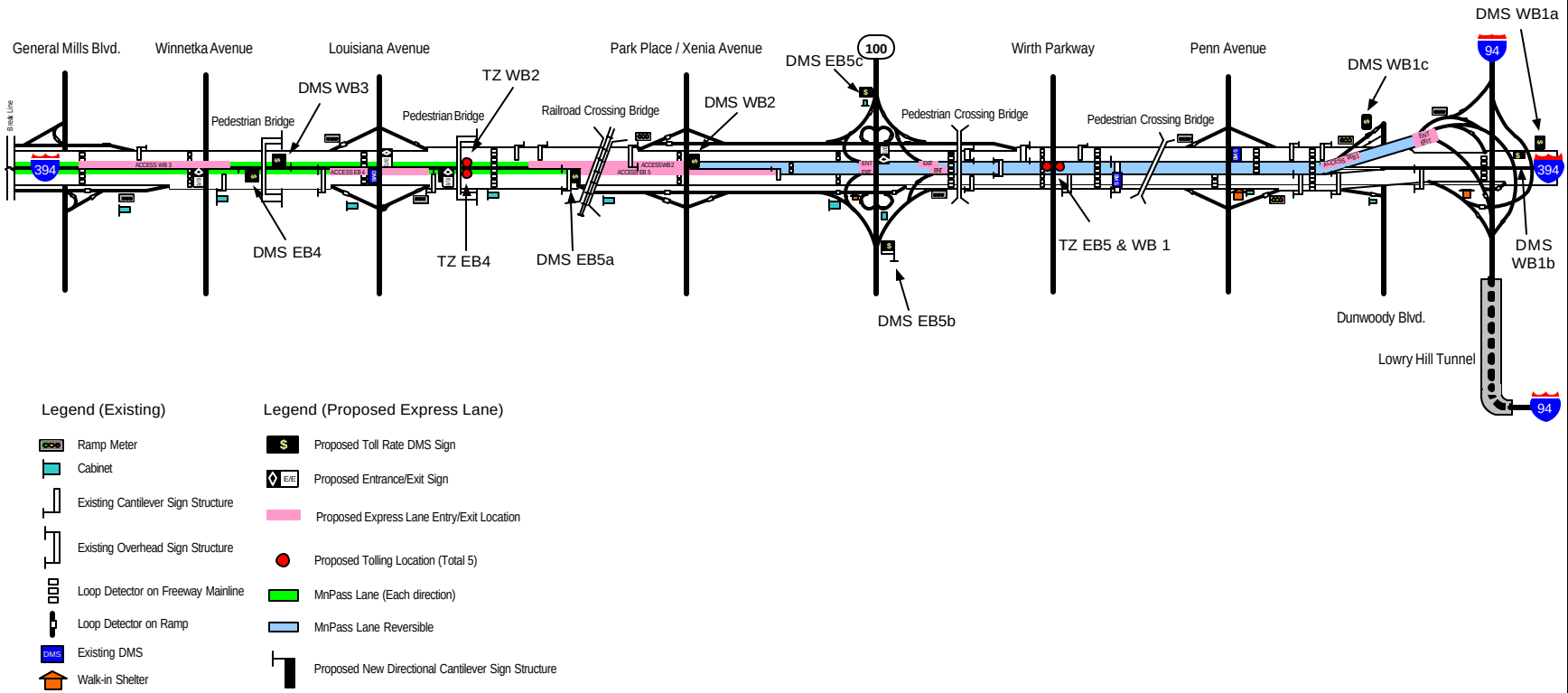
- Ramp Meter
- Cabinet
- Existing Cantilever Sign Structure
- Existing Overhead Sign Structure
- Loop Detector on Freeway Mainline
- Loop Detector on Ramp
- Existing DMS
- Walk-in Shelter

Legend (Proposed Express Lane)

- Proposed Toll Rate DMS Sign
- Proposed Entrance/Exit Sign
- Proposed Express Lane Entry/Exit Location
- Proposed Tolling Location (Total 5)
- MnPass Lane (Each direction)
- MnPass Lane Reversible
- Proposed New Directional Cantilever Sign Structure

Proposed MnPass System Concept

10/4/04 **Figure 1A**



Proposed MnPass System Concept

10/04/04 **Figure 1B**

Figure 2

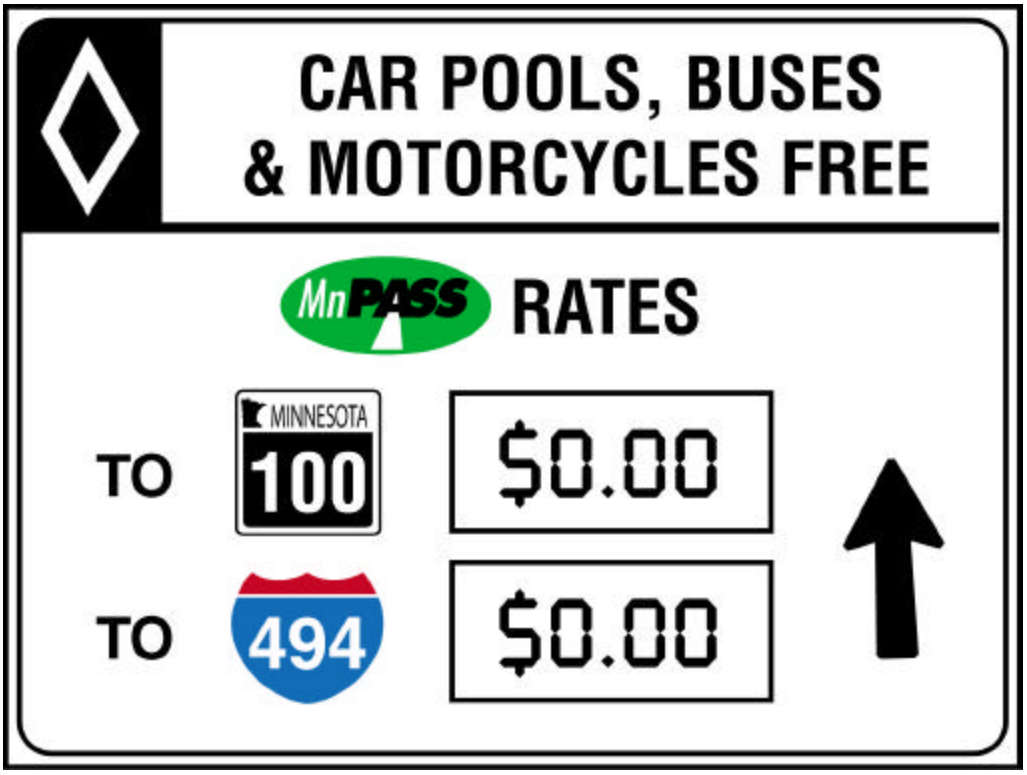
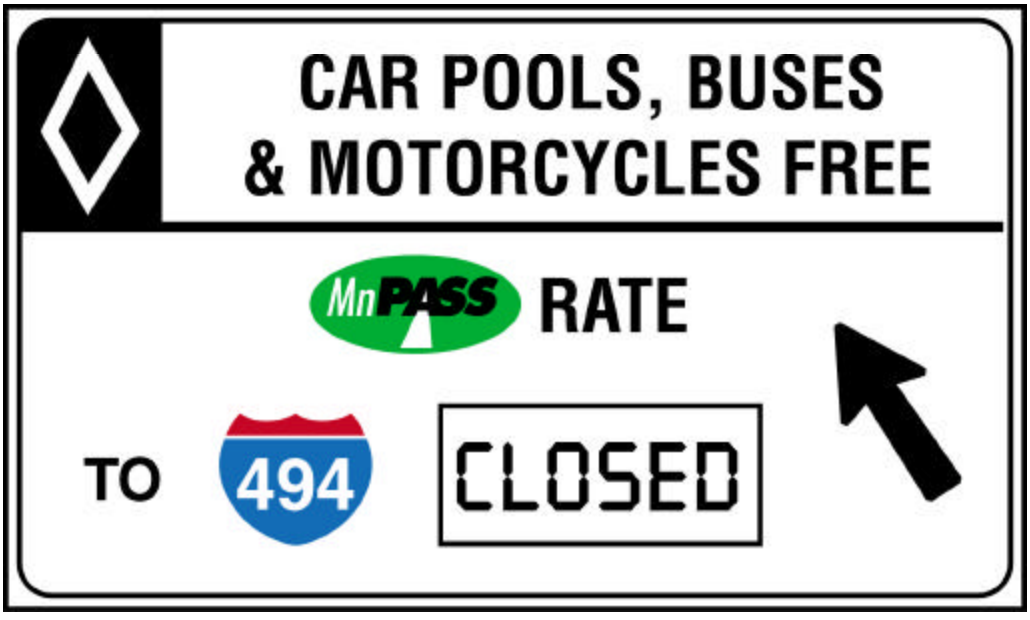


Figure 3



II. EXPRESS LANE COMMUNITY TASK FORCE

Establishment of the Task Force

The I-394 Community Task Force is a 22-person group of leaders and citizens appointed by the Lieutenant Governor, by the House and Senate leadership, and by the communities themselves. The Chairman of the Task Force, Henry Van Dellen, was appointed by the Governor.

Mayor or City Council and citizen members from the Cities of Minneapolis, Golden Valley, Minnetonka, St. Louis Park, Plymouth and Wayzata are represented. In addition, House and Senate legislators, private sector organizations (AAA Minnesota/Iowa, MN Trucking Association), public organizations (Downtown Minneapolis TMO and Transit for Livable Communities), public agencies (Metropolitan Council, Metro Transit, Hennepin County, Mn/DOT), and private citizens are represented. (A full list of the Task Force membership can be found in Appendix 2.)

The Community Task Force has been meeting monthly since September 2003, and is expected to continue to meet until the MnPass project is completed.

Mission Statement

The Community Task Force has articulated its mission as follows:

"Conversion of high occupancy vehicle (HOV) lanes to express lanes was authorized by the 2003 Minnesota Legislature. Express lanes permit single occupant drivers to pay tolls for the privilege of using HOV lanes. The I-394 Express Lane project is Minnesota's first facility based value pricing demonstration and is a new and significant change in highway facility management. The Minnesota Department of Transportation recognizes that community involvement and acceptance are imperative to the successful application of this concept. The I-394 Express Lane Community Task Force has been established to assist the Commissioner of Transportation in delivering a project that reflects the needs and values of the corridor and broader community to create a forum for public discourse.

The I-394 Express Lane Community Task Force will provide the Commissioner of Transportation with advice and guidance on public involvement, communications, community outreach and education. Other policy issues that the Task Force might address include operations, pricing, access, and violations and enforcement."

MnPass Partnership Team

Shortly after the authorizing legislation, Mn/DOT issued a Request for Proposals for Partners (RFPP) in July 2003 and entered into a contract with the team of Wilbur Smith, SRF Consulting Group, Raytheon and Cofiroute to implement the MnPass project on I-394.

The public/private partnership between Mn/DOT and the Wilbur Smith Team is referred to as the MnPass Partnership Team. (For further information on the Partnership Team, please refer to the Appendix 3.)

III. TASK FORCE DISCUSSION AREAS

The Task Force deliberated on a variety of I-394 Express Lane issues, as follows:

1. Access Points/Traffic Operations
2. Hours of Operation
3. Enforcement
4. Dynamic Message Signs
5. Toll Rates
6. Type of Vehicles Allowed
7. Transponders
8. Expected Revenues
9. Public Outreach
10. Project Evaluation

1. Access Points/Traffic Operations

One of the most often-mentioned issues raised by the Task Force concerns traffic operations related to the limitation of access points on the diamond lane section. Four major concerns were expressed:

(a) HOVs and buses, which can now enter the HOV lane at will, will be forced to enter/exit only at half-a-dozen pre-defined locations;

(b) The Louisiana and Shelard access points are troublesome because of the current level of congestion in the general purpose lanes;

(c) With paying solo drivers being added to the volume of vehicles using these limited access points, weaving problems could increase, creating congestion and safety problems;

(d) The Lowry Tunnel "bottleneck", unless it is improved, could contribute to creating backups in the Express Lane and add to the level of congestion in the general-purpose lanes; and

(e) The shift of traffic from the general-purpose lanes to the Express Lanes has the potential for worsening backups on the ramps to and from downtown Minneapolis.

In response to these Task Force members' concerns, multiple runs of the traffic simulation model (CORSIM) were done in order to better understand the corridor operation without and with pricing. In addition, multiple meetings were conducted with traffic operations experts to discuss the traffic flow dynamics and model inputs. As a result of these traffic simulation and expert discussions, and in response to Task Force concerns, the following findings and conclusions were offered by the Partnership Team:

a. **Concern:** HOVs and buses, which can now enter the HOV lane at will, will be forced to enter/exit only at the half-a-dozen pre-defined locations.

   Because of concerns expressed about limiting the number of access location for buses and HOVs, the following adjustments were made in the Express Lane operation:

   - Serious consideration was given to allowing buses to cross the double white lines, given that their number is relatively low. When this proposed exception was presented to the Federal Highway Administration, they expressed concerns about potential safety and operations problems. At issue is the conflict between high-volume, fast-moving traffic in the MnPass lanes and slower-moving buses accessing the lane at will. This safety and operations issues are the reason why modern HOV lanes are designed with limited access points. Express lane users know, ahead of time, when other vehicles might merge into the lane.

     A detailed modeling of bus operations was conducted, under restricted and unrestricted access scenarios. The results indicate that, overall, the additional delay under restricted access is negligible. The reason is that the frequency and location of access points matches, to a large extent, where buses currently access the HOV lanes. The one exception is the westbound access at Louisiana Avenue, where the additional delay per bus is 30 seconds.

     Based on these findings, and given that FHWA does not support this exemption for transit, the Partnership Team recommends that buses access the MnPass lanes at the designated access points. Because of concerns expressed by several Task Force members, as well as by Metro Transit staff, the Partnership Team will monitor and report quarterly on bus operations to determine if the limited access design results in adverse impacts. If adverse impacts occur, this issue will be revisited and changes will be made, as warranted.

   - When the unrestricted access for buses was initially considered, some Task Force members wanted the same exception granted to HOVs; however, the Partnership Team expressed a number of reservations. First, this would create the need to verify the occupancy of all vehicles crossing the double white lines, a very difficult, if not impossible, enforcement task. Second, given the enforcement difficulty, some solo drivers could take advantage of the situation, moving in and out of the lane to avoid paying the toll. This would introduce serious safety, equity and revenue-reduction concerns. Third, first-time or infrequent users could be confused by the ambiguous behavior and inadvertently cross the double lines unlawfully.

     The Partnership Team did re-examine the proximity of HOV bypass ramps to Express Lane access points to ensure that HOVs could enter the lane as soon as possible after entering I-394. Two types of changes were made: one was to shift the access point to

better meet this objective, and the second was to widen the opening width of the access.

Since the recommendation is that both HOVs and buses be allowed access at only the designated locations, the same rule applies to HOVs and buses. However, to further address the concerns of the Task Force members, the MnPass Partnership Team will closely monitor and report quarterly on the effect on HOV operations of limiting the access points. The independent evaluator will also conduct a similar analysis. Based on these efforts, appropriate changes will be made to the design to address any problems identified.

b. **Concern:** The westbound Louisiana and the eastbound Shelard Park I-394 access points are particularly troublesome because of the current level of congestion in the general-purpose lanes.

The access locations were re-examined; in particular, an option was developed that closes the Louisiana access (westbound direction) and adjusts the location and width of opening of the adjacent access points. In addition, all access points were re-evaluated in terms of their physical location to minimize conflicts between each access point and the corresponding I-394 entrance and exit ramps. Width of openings was maximized to ensure ease of entering and exiting operation.

Regarding the eastbound Shelard Parkway concern, the Partnership Team closely examined the location and opening width of this access and concluded that shifting this access westward would create conflicts with traffic exiting the Express Lanes to go to TH 169.

c. **Concern:** With paying solo drivers being added to the volume of vehicles using the limited access points, weaving problems could increase, creating congestion and safety problems.

Regarding the limited-access points in the diamond lane section, the simulation shows that no backups occur in the Express Lanes. However, congestion in the general-purpose lanes is by no means eliminated.

Regarding the weaving concerns, and the related concerns about congestion and safety at these limited access points, the Partnership Team has pointed out that recent trends in HOV lane design in California, Atlanta and Seattle allow access to HOV lanes at only a limited number of locations, similar to the I-394 MnPass design concept. The HOV lanes in these cities carry similar number of vehicles as those anticipated in the I-394 Express Lane and in the general-purpose lanes. The rationale used in those cities for the limited-access design is better traffic management and safety. Pre-defined, limited access points are considered a better design for managing traffic access than the open, random access previously allowed.

d. **Concern:** The Lowry Tunnel "bottleneck", unless it is improved, could contribute to creating backups in the Express Lane and add to the level of congestion in the general purpose lanes.

While the tunnel currently appears to create a bottleneck condition for I-394 traffic, the backup is largely a result of the 35-mile-per-hour curves that are part of the approaches to

the tunnel. These approaches currently can only handle a limited number of vehicles (about 2,300 – 2,400 vehicles per hour). The simulation of traffic operations at these locations show that the Express Lane traffic can merge with the general-purpose lane traffic without causing backups in the Express Lane.

Because there are some concerns about how realistically the simulation reflects future operations, traffic operations in this bottleneck area will need to be closely monitored, both before and after Express Lane implementation, to determine whether adverse impacts are introduced and to take measures to correct them.

e. **Concern:** The shift of traffic from the general-purpose lanes to the Express Lane has the potential for worsening backups on the ramps to and from downtown Minneapolis.

This operations concern continues to be monitored and analyzed. If actual problems are found due to the increase in total vehicles to downtown, resulting from the Express Lane implementation, toll rates in the reversible section will have to be increased, accordingly, to reduce demand.

2. Hours of Operation

The current hours of operation, which were set in the early 90s, are as follows:

- *Reversible Section:* 6:00 a.m. to 1:00 p.m. eastbound; 2:00 p.m. to 12:00 midnight westbound. Use of the reversible section is limited to HOVs only.

- *Diamond Lanes:* 6:00 a.m. to 9:00 a.m. eastbound; 3:00 p.m. to 6:00 p.m. westbound. Outside of these time periods, the Diamond Lane is open to all users.

The initial recommendation of the Partnership Team was to price the MnPass lanes at all times (i.e., 24/7). Several Task force members have expressed concerns regarding requiring SOVs to pay to use the Diamond Lane portion of the Express Lanes during off-peak time periods when lane use is low. This is seen as a take-away with respect to what SOVs enjoy today, and they would prefer that a zero rate be shown on the Dynamic Message Signs during off-peak periods (instead of the minimum charge of $0.50 that was initially proposed). Due to enforcement concerns, these Task Force members do accept that SOV users be required to have a valid transponder, even if the rate were zero.

In response to this concern, the Partnership Team has revisited this issue in search of an approach that would mitigate this concern, while maintaining the integrity of the MnPass operations and enforcement program. The Partnership Team's reservations about showing a zero rate are based on the following concerns.

1. It is very important that the pricing rules and messages be both easy to convey and easily understood by the public. The clear message should be that SOVs must have a transponder and pay the fee displayed any time they use the MnPass lanes. This simple rule helps avoid ambiguity and confusion, and contributes to consistent enforcement.

2. Pricing the lanes at all times gives MnPass operators the ability to optimally manage flow and speeds in the lanes, thus avoiding congestion. If demand is low in the MnPass lane while congestion is growing in the general-purpose lanes, toll rates can be set sufficiently low to attract additional SOVs. If demand is too high, the rate can be increased to discourage additional SOVs from using the lanes. This demand

management technique ensures not only that free-flow speeds are maintained in the Express Lanes but also that the lanes do not "look empty".

3. If a zero rate were displayed, there is a risk that SOVs without transponders will mistakenly interpret the zero fee to mean that they do not need to have a transponder when using the MnPass lane. Since this would constitute a violation, a ticket could be issued to the SOV driver, thus creating a public relations problem that is the result of an ambiguous message. This creates, in turn, a dilemma for enforcement officers since many violators are likely to plead innocence or claim that they were confused.

4. The zero rate introduces several complicating factors in the operation of the lanes:

   - If SOVs enter the Express Lane while the lane is in the "free" mode, and they are still in the lane when the operation changes to the "toll" mode, the MnPass operator could lose the ability to control the flows and speeds during these transition periods, and congestion could result;

   - Enforcement becomes very difficult during these transition periods since paying and non-paying SOVs will coexist in the Express Lanes; and

   - There will be conditions when, due to weather or to a crash in the general-purpose lanes, SOVs will want to shift to the Express Lanes to avoid severe delays. If this happens while the lane is in the "zero" or "free" mode, the Express Lane would become congested since dynamic pricing would not be in force to manage the excess demand.

To mitigate the concerns expressed by several Task Force members, the Partnership Team offers the following modified 24/7 operations plan for the Diamond Lane section. The modified proposal defines peak and off-peak periods, sets a very low minimum toll rate ($0.25) for off-peak periods, defines traffic flow conditions under which this minimum toll rate will apply, and defines special conditions under which the minimum rate would be modified, if necessary, to maintain speeds.

The modified hours-of-operations plan is as follows:

1. The Dynamic Message Signs that indicate what rate(s) is being charged in the Diamond Lane segment will be set to $0.25 during certain off-peak time periods when Express Lane demand is low. The Partnership Team feels that this low rate of $0.25 will not overburden SOV users during these low-demand, off-peak periods. This minimum rate does not apply to the reversible section, which is currently restricted, at all times, to HOV use only.

2. The dynamic pricing schedule and hours of operation in the Diamond Lane section are as follows:

   <u>Reversible Section:</u>

   In this section, the hours will be 1:00 a.m. to 1:00 p.m. eastbound and 2:00 p.m. to 12:00 midnight westbound. The minimum rate in the reversible section will be set through the dynamic pricing mechanism.

Diamond Lane Section:

- The EB Diamond Lane section will be priced between 6AM and 11 AM and between 2 PM and 8 PM seven days a week. This range of hours includes both peak periods and the shoulders of the peak period.

- The WB Diamond Lane section will be priced between 6 AM and 11 AM and between 2 PM and 8 PM seven days a week. This range of hours includes both peak periods and the shoulders of the peak period.

The rate will be set to $0.25 during all other times, unless the demand is such that Level of Service B is exceeded. This would happen when demand in the Diamond Lane exceeds approximately 750 vehicles per hour, which is about 50 percent of the free-flow lane capacity. Beyond this flow level, the risk of congestion increases, and so does the need to manage the lane through dynamic pricing.

3. The primary reason for the 24/7 proposed hours of operation is to give the Express Lane operator the ability to manage traffic demand at all times so as to prevent congestion in the Express Lanes. To continue to meet this objective under the modified proposal, transponders would be required of all SOVs using the Express Lanes.

Once MnPass is implemented with these modified hours of operations, traffic operations and public response will be closely monitored during the one-year evaluation period. Changes may have to be implemented based on the findings from the evaluation study.

Of all the issues addressed, the MnPass hours of operation elicited the most discussion. In response to the Partnership Team's recommendations outlined above, a Minority Report was received reflecting the concerns of several Task Force members. The Minority Report is reproduced in Appendix 4.

3. Enforcement

The Task Force members were very concerned that adequate enforcement be in place to maintain a low rate of violations. The experience in similar systems elsewhere in the United States is that violation rates do go down. The Partnership Team has been working hard to make sure that the same happens in the Twin Cities. The measures discussed and adopted to achieve this objective are as follows:

- Increase the number of hours currently spent on enforcement on the I-394 HOV lanes, up to about 2,500 per year (12 four-hour shifts per week), using toll revenues. This level of enforcement is considerably higher than the present level, which is done on a very limited, random basis.

- Continue to implement "visual enforcement" to verify vehicle occupancy. Visual enforcement will also be used to ensure that no vehicles (except buses) cross the double white line.

- Use an "enforcement transponder" so that an enforcement vehicle following an SOV in the Express Lane can receive a signal that the SOV has a valid transponder.

- Equip enforcement vehicles with "mobile enforcement readers" that are capable of detecting a valid transponder from an adjacent lane, and can also find out if the transponder has been read at a preceding toll zone.

- Install a "light-emitting diode" mounted near the toll zone reader that will emit a light signal to indicate whether the SOV passing by has a valid transponder.

- Finally, enforcement officers will have software that enables them to detect invalid or illegal accounts, even if the vehicle has a valid transponder (e.g., if it has been stolen).

Enforcement will be implemented jointly by the State Patrol, the Cities of Minneapolis and Golden Valley, and the Metro Transit Police subject to contractual arrangements. The State Patrol will be the lead agency. The MnPass Partnership Team is developing, with the enforcement agencies, a detailed Enforcement Plan to be completed in the Fall.

4. Dynamic Message Signs

The main interest expressed by the Task Force regarding the Dynamic Message Signs (DMS) was that they be easy to read and understand. Some expressed concern about the proposal to show two toll rates: one that would apply to users getting on the Express Lane prior to TH 100 and getting off prior to or at TH 100 (the Diamond Lane section); and a second higher rate that would apply to the same user if he/she were continuing to I-94 (the Reversible Section).

The initial sign was revised several times by the Partnership Team, assisted by Mn/DOT's Signing and Striping Committee, to be easily read and understood. (See Figures 2 and 3 for samples of proposed signs.) As with other elements of MnPass, the response of the public to the signs and the effectiveness of the signs will be monitored during the year-long evaluation process.

5. Toll Rates

The preliminary estimates of toll rates are as follows:

- *Peak periods and shoulders of the peak (during weekdays 6:00 a.m. to 11:00 a.m., and 2:00 p.m. to 8:00 p.m., or during weekend events):* The range of toll rates is estimated as $1.00 to $4.00 depending on demand. The low value of the range is assumed as the minimum toll during these periods.

- *Off-peak periods include all other hours except during special events:* The range of toll rates is estimated as $0.25 to $1.00, depending on demand.

- *Maximum Rate:* Up to $8.00, as needed, to maintain flow in the Express Lane. If demand were to continue to increase, requiring a higher toll rate than $8.00, the lane will be restricted to HOVs only.

It should be pointed out that these ranges are in the range of values reported by participants in five focus groups conducted for the I-394 MnPass project by the Humphrey Institute of Public Affairs, as part of its outreach program.

6. Types of Vehicles Allowed

The discussion about what type of vehicles should be permitted on the I-394 Express Lane (other than HOVs, buses, motorcycles and paying SOVs) centered, primarily, around commercial vehicles. It was agreed that two-axle trucks, with 26,000 or less gross vehicle weight, could be allowed in the Express Lane by purchasing a transponder. The rationale was that, so-called light commercial vehicles have operating characteristics that are not too dissimilar to that of buses.

7. Transponders

Transponders will be leased to customers, and their account will be charged $1.00 to $1.50 per month. The leasing charges cover the cost of the transponder and a three-year warranty. If the transponder needs to be replaced prior to the end of the warranty period, the customer will be issued a replacement overnight, free of charge.

8. Expected Revenues

Preliminary estimates indicate that, under 24/7 operation, with just under 11,000 estimated daily transactions and the range of rates shown above, daily revenues will be approximately $16,000. Annual gross revenues are estimated initially at $2.0M to $2.5M. Once mature, MnPass estimated revenues are $3.0M to $3.5M. Revenue levels will depend on actual demand and ability to maintain desirable level of service conditions.

9. Public Outreach

The Task Force members have repeatedly commented on the importance of ongoing communication with the public, as well as with communities along the I-394 corridor. Mn/DOT, through its own Office of Communications and through the Humphrey Institute of Public Affairs, has prepared press releases and has been available to news reporters for interviews. In addition, they have conducted five focus groups whose participants were selected primarily from among corridor residents. (See Appendix 5 for a Summary of Focus Group results.) A public Open House was conducted in December 2003. And, finally, they have made formal presentations, participated in Question and Answer sessions, and submitted packets of informational materials to the following groups:

- Golden Valley City Council, April 20, 2004
- St. Louis Park City Council, April 26, 2004
- Plymouth City Council, April 27, 2004
- Minnetonka City Council, May 3, 2004
- Hennepin County Board Members, May 6, 2004
- Minneapolis City Council May 18, 2004
- Wayzata City Council, May 18, 2004

The Partnership Team is preparing a marketing plan to help inform and educate the public about upcoming MnPass plans. Mn/DOT is also preparing a Communications Plan to serve the same purpose.

10. Project Evaluation

The Task Force has been kept abreast of the process that will lead to an independent evaluation of the MnPass project. Several Task Force members attended a forum on May 23, 2004, organized by the Humphrey Institute of Public Affairs to discuss the evaluation process. The lead evaluators of the SR 91 project in Orange County, California, the I-15 project in San Diego, California, and the IH 10 (Katy Freeway) in Houston, Texas, were invited to discuss their evaluation project, methodologies, results, lessons learned, etc. Mn/DOT has competitively selected an evaluation team for the technical aspects of the MnPass project. The technical evaluation will address the following measures:

Potential Primary Performance Measures (Before and After)

- Traffic flow and modal use: vehicles and person volumes by mode, time of day and vehicle occupancy
- Speed/travel times by segment and time of day, on Express Lanes and general-purpose lanes; and levels of service on both
- Diversion of trips to/from I-394 and within I-394 on general-purpose and express lanes
- Level of bus service improvements in corridor
- Level of enforcement and violations
- Safety/crashes
- Reliability of implemented technology
- Impact on bus and transit operations at access points

Potential Secondary Performance Measures (Before and After)

- Cost of delays, including enforcement
- Noise levels
- Emission levels
- Capital and operations cost
- Revenues
- Use of TAD Garages

At the same time, the Humphrey Institute, who will lead the market research effort to evaluate attitudes and perceptions regarding MnPass, has selected an independent market research firm. A listing of potential information that would be collected as part of the attitudinal surveys for the MnPass evaluation is provided in Appendix 6.

The technical and attitudinal elements of the evaluation will be closely coordinated during the one-year evaluation period.

IV. NEXT STEPS

1. The MnPass Partnership Team and Project Evaluation Teams will continue to work in the following areas:

   - Continue the Outreach and Education Program
   - Develop a detailed Marketing Plan
   - Finalize the Enforcement Plan
   - Establish the Customer Service Center
   - Implement MnPass on I-394
   - Conduct the before/after data collection activities and perform the Evaluation Plan

2. Potential Legislative Initiatives

   The following initiatives have been discussed by the Task Force:

   - Institute photo enforcement to allow for electronic ticketing of violators
   - Increase the amount of fines for MnPass violations
   - Explore amending the current Toll Lane legislation which requires that the TAD garage funds used to convert the HOV lanes be paid back.

3. Phase II MnPass Improvements

   If Phase I of MnPass is successful, as measured by the evaluation results, implement Phase II changes, including:

   - Corridor spot improvements to enhance overall corridor operations
   - Evaluate the feasibility of restriping the Lowry Tunnel to four lanes (per barrel)
   - Convert the reversible section to directional, reversible operations (two lanes inbound and one outbound in the morning and reversing this lane configuration in the afternoon). This requires installation of a movable barrier in the barrier-separated segment of the HOV Lane.
   - Convert the TH 100 reversible ramps to directional ramps to accommodate operations in both directions.
   - Submit solicitation to FHWA for Value Pricing funds to make the above corridor improvements.

APPENDICES

1. MnPass Enabling Legislation
2. Community Task Force Membership
3. Clarification of Private Partner Role in Partnership Team
4. I-394 Express Lane Task Force Minority Report
5. Summary of Focus Group Findings
6. MnPass Evaluation – Attitudinal Survey Data Needs

APPENDIX 1

MNPASS ENABLING LEGISLATION

Minnesota Statutes 2003, Table of Chapters
Table of contents for Chapter 160

160.93 User fees; high-occupancy vehicle lanes.

Subdivision 1. **Fees authorized.** To improve efficiency and provide more options to individuals traveling in a trunk highway corridor, the commissioner of transportation may charge user fees to owners or operators of single-occupant vehicles using designated high-occupancy vehicle lanes. The fees may be collected using electronic or other toll-collection methods and may vary in amount with the time of day and level of traffic congestion within the corridor. The commissioner shall consult with the Metropolitan Council and obtain necessary federal authorizations before implementing user fees on a high-occupancy vehicle lane. Fees under this section are not subject to section 16A.1283.

Subd. 2. **Deposit of revenues; appropriation.** (a) Money collected from fees authorized under subdivision 1 must be deposited in a high-occupancy vehicle lane user fee account in the special revenue fund. A separate account must be established for each trunk highway corridor. Money in the account is appropriated to the commissioner.

(b) From this appropriation the commissioner shall first repay the trunk highway fund and any other fund source for money spent to install, equip, or modify the corridor for the purposes of subdivision 1, and then shall pay all the costs of implementing and administering the fee collection system for that corridor.

(c) The commissioner shall spend remaining money in the account as follows:

(1) one-half must be spent for transportation capital improvements within the corridor; and

(2) one-half must be transferred to the Metropolitan Council for expansion and improvement of bus transit services within the corridor beyond the level of service provided on the date of implementation of subdivision 1.

Subd. 3. **Rules exemption.** With respect to this section, the commissioner is exempt from statutory rulemaking requirements, including section 14.386, and from sections 160.84 to 160.92 and 161.162 to 161.167.

Subd. 4. **Prohibition.** No person may operate a single-occupant vehicle in a designated high-occupancy vehicle lane except in compliance with the requirements of the commissioner. A person who violates this subdivision is guilty of a petty misdemeanor and is subject to sections 169.89, subdivisions 1, 2, and 4, and 169.891 and any other provision of chapter 169 applicable to the commission of a petty misdemeanor traffic offense.

HIST: 1Sp2003 c 19 art 2 s 7

APPENDIX 2

COMMUNITY TASK FORCE MEMBERSHIP

Task Force Composition:

Governor Appointed Chair	Henry Van Dellen
Senate Appointments	Senator Scott Dibble Senator Ann Rest
House Appointments	Representative Jeff Johnson Representative Lynne Osterman
Mayor or City Council Member	Minneapolis – Golden Valley – Blair Tremere Minnetonka – Dick Allendorf Plymouth – Bob Stein St. Louis Park – Paul Omodt Wayzata – Barry Petit
Hennepin County Board	Commissioner Linda Koblick
Metro Council	Mary Hill Smith
Organizations	AAA Minnesota – Gail Weinholzer Jake Crandall Downtown Minneapolis TMO – Charlie Ferrell Minnesota Trucking Association – John Hausladen (alt. Amber Backhaus) Transit for Livable Communities – Carol Flynn
Citizen Representation	Minneapolis – Julie Sabo Clarence Shallbetter Golden Valley – Peter Knaeble Minnetonka – Linnea Sodergren Plymouth – Anne Naumann (alt. Georgann Bestler Wenisch) St. Louis Park – Steve Fillbrandt Wayzata – Scott Tripps

Mn/DOT	Randy Halvorson Marthand Nookala Adeel Lari Ken Buckeye Lucy Kender Sonia Pitt

APPENDIX 3

Clarification of Private Partner Role in Partnership Team

This explanation is in response to a request for "clarification of the public/private partnership arrangement" for the MnPass project from members of the St. Louis Park City Council. The request was initially made at the St. Louis Park City Council meeting held on Monday, April 26, 2004.

State Statute 174.02 reads: (a) The commissioner may enter into agreements with other governmental or nongovernmental entities for research and experimentation; for sharing facilities, equipment, staff, data, or other means of providing transportation-related services; or for other cooperative programs that promote efficiencies in providing governmental services or that further development of innovation in transportation for the benefit of the citizens of Minnesota.

In July of 2003, the Minnesota Department of Transportation issued a Request for Proposal for Partnership (RFPP) for the MnPass project. Stated in the RFPP was the minimum requirement of a 25% partner contribution. A selection was made and the public/private partnership arrangement was negotiated with Wilbur Smith Associates. This resulted in a contract award including a Mn/DOT contribution of $8 million and a Wilbur Smith Associate Team contribution of $2.68M or 25% of the total contract amount. Without this partner contribution, Mn/DOT's costs for the project would have been $10.68M.

The I-394 MnPass project is the first project in the country to convert an open access High Occupancy Vehicle (HOV) Lane to a limited access High Occupancy Toll (HOT) lane. It is common, and at times, critical for private partners to be willing to contribute to new innovative projects in order to gain the experience required to successfully bid on other similar projects throughout the Country. While the Wilbur Smith Team is making a profit by providing their service to Mn/DOT, they have taken a reduced profit to meet the 25% partner contribution. Mn/DOT strongly prohibited the Wilbur Smith Team from receiving a payback or percentage of the revenues that will be collected from users of MnPass. In addition, the Wilbur Smith Team is not guaranteed any future work since Mn/DOT is required to go through a competitive selection process.

In addition to the infrastructure installation costs, Mn/DOT will be paying our partner for the ongoing administration, operation and maintenance of MnPass until it becomes self-sustaining. The cost for this service will be determined by the level of staff needed to support on-going operations and has nothing to do with the amount of revenue collected. Details related to the on-going operations will be made public once finalized.

APPENDIX 4

I-394 Express Lane Task Force Minority Report
Rep. Jeff Johnson
September 30, 2004

In general, I'm very pleased that the Pawlenty Administration has been willing to take action to better utilize the HOV lanes on I-394. It's a very good thing for daily commuters that we are finally doing something to encourage more efficient use of those lanes, but I am not supportive of the portion of the plan that will require a transponder and toll payment 24 hours per day.

Currently, drivers who are alone in their vehicles are restricted from using the HOV lanes between the hours of 6:00 a.m. and 9:00 a.m. heading into Minneapolis from the west and between 3:00 p.m. and 6:00 p.m. heading out of Minneapolis to the suburbs. The new plan will allow more commuters to use the lanes during those rush hours for a fee, which I strongly support. It will also, however, require that drivers will have to purchase a transponder and pay a fee to use the HOV lanes during the 21 hours of each day that are not considered "rush hour." There have never before been non-rush hour restrictions on at least the western portion of these lanes.

I understand the enforcement concerns about requiring tolls only during part of the day, but the potential difficulties that this might cause are minimal in comparison to the frustration many of my constituents will experience when they realize the lanes they have been appropriately using for free for many years (if you don't count the taxes they paid to build the road in the first place), will now require them to purchase a transponder and pay a fee every time they enter the lane.

I would not be so concerned about this issue if we were building a new lane and charging for its use, but I don't believe it's wise or fair to take lanes that have been in general use 21 hours per day without any problems for many years and now restrict them only to those who are willing to pay an extra toll to use them.

Again, I commend Governor Pawlenty and Commissioner Molnau for having the courage to do something about the "sane lanes" on 394, but I respectfully voice my strong opposition to the decision to make the new toll provision apply 24 hours per day.

Representative Jeff Johnson
District 43A (Plymouth and Medicine Lake)

APPENDIX 5

I-394 MNPASS FOCUS GROUPS

February/March 2004
Conducted by Cook Research & Consulting, Inc.
For the Humphrey Institute of Public Affairs &
Minnesota Department of Transportation

I-394 MnPass Focus Groups

▪ Group 1 Bus Riders	6
▪ Group 2 SOVs	10
▪ Group 3 SOVs (Technology Friendly/ Early Adopters)	11
▪ Group 4 Carpoolers	10
▪ Group 5 SOVs	11
Total	48

Reactions to the Current I-394

- "Something needs to be done with the HOV lanes on I-394."
- HOV lanes vastly underused and far too little done to promote transit usage or to encourage carpooling.
- Many SOV drivers angry with "empty sane lane"; would open HOV lanes to all drivers all the time.

Reactions to MnPass

- "About time" something is done with I-394 HOV lanes; may free up general purpose lanes somewhat.
- Ability to pay and drive express lane could mean difference between being late for work or meeting or picking up a child from day care on time.
- Could reduce "stress" by offering option to sitting in congestion.
- Questions about how revenue would be used; transit dollars should be used to provide more frequent buses throughout the day.

Reactions to MnPass

- A few dollars a day would be acceptable expenditure to travel in a faster lane with less stressful driving conditions.
- Carpoolers and bus riders might use pay express lane occasionally if they had to but generally would not change behavior.
- Several participants understood how "dynamic pricing" works to keep traffic flowing in express lane, but others were unsure it would work.

Questions about MnPass

- Will commercial vehicles be able to use express lane? Will there be a size limit?
- How will "out-of-towners" be treated?
- How will violators be identified and pulled over without causing traffic backup?
- What happens if transponder lost or stolen? Does putting in pouch really mean it can't be read? What if batteries wear out? What if transponder doesn't tell driver about low account balance? Etc.
- Could user pay a deposit for transponder rather than pay a "small monthly service fee"?

Concerns about MnPass

- Carpoolers and bus riders concerned about "clogging up sane lane" and slowing their commute; may be disincentive to carpoolers and bus riders.
- Problems of "bottlenecks" at Lowry Hill Tunnel.
- Unfair to low-income drivers. Serves "privileged" few who drive SUVs from far western suburbs.
- Safety concerns with "swerving" onto and off express lanes west of Highway 100.

Concerns about MnPass

- Concerns about enforcement, interruption of traffic flow, cost of enforcement.
- Why toll during times when there is little traffic?
- Eastbound traffic heavy in afternoon. Could one of lanes between Highway 100 and downtown be opened to eastbound traffic?
- Confusion about two tolls west and east of Hwy 100.
- "Band aid" approach; lanes will be filled by those from other routes and population growth in western suburbs.

Will MnPass Be Used?

- Solo drivers will pay a fee to use express lane on an occasional basis.
- Some familiar with electronic tolling in other cities but need to know more about how it would work here.
- Most drivers willing to pay a low of $.50 to high of $2.50 to use express lanes. Bargain would be $.25 to $1.00. $3 to $4 the most willing to spend. If "really needed to be someplace," $5 to $10 could be a bargain.

Will MnPass Be Used?

- Carpoolers and bus riders generally selected higher prices to use express lane than solo drivers.
- How will low-income users be affected? Some believe discriminatory, others suggest may benefit by freeing up space on general-purpose lanes.
- "Small monthly fee" for transponder seems inappropriate to several participants; prefer a deposit fee or purchase transponder outright.

Other issues

- Some want to widen I-394 and open to all drivers.
- Others encourage pushing for an increase in gas tax and spending more on public transportation.
- A few suggest adding light rail to middle of I-394; others oppose light rail.
- Little knowledge of how I-394 designed, funded or constructed, or involvement of communities. lame Mn/DOT for faults.
- Time for Mn/DOT to do something about I-394. Several believe MnPass concept may prove effective; others remain skeptical.

APPENDIX 6

MnPass Evaluation Attitudinal Survey Data Requirements

Data Category	Required Information	Other Information (Recommendations in BOLD)
Respondent Characteristics	• Income • Auto availability • Household Size • Education • Gender • Age • Employment status	• Home ownership • Years at current address • # of licensed drivers in HH • # of HH members with jobs outside of home • Does (will) HH subscribe to MnPass program? • Who pays toll? • Level of comfort with technology • Number of telephone lines in HH • Number of cell phones in HH
Trip Making Characteristics (All trips on agreed-upon day)	• Trip origin and destination • Mode • Trip purpose • Time of travel • Frequency of travel • Travel time savings • Travel time reliability	• Zip code of origin and destination • Use of corridor (and of HOV or Express Lane) • On-ramp and exit ramp used • Use of Park and Ride Facilities • Use of TAD Garages • Intermediate stops on trip
Travel Behavior Changes	• Mode shift • Time of travel shift • Route shift • Shift from General Purpose Lanes to Express Lanes	
Opinions/Attitudes	• About congestion • About MnPass • Perception of conditions on HOV/Express Lanes versus GP Lanes • Perception about Electronic Toll Collection • About noise • About overall trip quality	• Awareness of MnPass program • Awareness about toll rates • Awareness of how revenues are used • Perception of time saved • Willingness to pay (amount) • Perceptions of equity (GP versus subscribers versus carpoolers and transit users) • Perception of enforcement measures (too strong, too lenient) • Perception of safety • Perception of effect on air quality
Other Categories		• Equity (income, gender, etc.) • Privacy (perception of how data is collected, used) • Transit use (perception of quality and frequency of services offered and how much they are used)

Appendix C:

Pricing Comes to Minnesota: Baseline Attitudinal Evaluation of the I-394 HOT Lane Project

Frank Douma, Johanna Zmud, Tyler Patterson

Pricing Comes to Minnesota:

Baseline Attitudinal Evaluation of the I-394 HOT Lane Project

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ABSTRACT

The I-394 MnPASS lanes opened in Minneapolis, Minnesota in May 2005. The system runs 11 miles in length and is divided into two sections: west of highway 100, the MnPASS lanes are separated by a double white strip line barrier with multiple points of entry; and east of highway 100, the lanes are 2 barrier-separated reversible lanes, with access points only at each end. Tolls are variable and determined by the number of commuters in the HOT lanes. The more congested the lane becomes, the higher the toll. Typical peak period tolls run $1 to $4, but can reach as high as $8 during periods of unusual congestion. As High-Occupancy Toll (HOT) lanes such as these are relatively new to the United States, comprehensive evaluation data is scarce. Consequently, the Minnesota Department of Transportation, which operates the lanes, is sponsoring rigorous evaluation of this facility, including both technical and attitudinal evaluations. This paper discusses the methods and results of the latter, including a description of the development of the longitudinal panel survey methodology, and a summary of the results from the baseline wave.

INTRODUCTION

I-394 MnPASS Overview

In May 2005, Minnesota joined several other states by implementing High-Occupancy Toll (HOT) lanes on Interstate 394 from downtown Minneapolis through its western suburbs (*1*). Branded as the I-394 MnPASS lanes, they operate in a similar fashion to facilities in Southern California, where commuters purchase electronic transponders and drive through gantries, which automatically deduct the toll. Tolls are variable and determined not by the number of commuters in the general purpose lanes, but rather by the number of commuters in the HOT lanes. The more congested the lane becomes, the higher the toll. Electronic signs update commuters as toll prices fluctuate; however, the price paid on entry remains valid for the entire commute. Typical peak period tolls run $1 to $4, but can reach as high as $8 during periods of unusual congestion. The system runs 11 miles in length and is divided into two sections: west of highway 100, the MnPASS lanes are separated by a double white strip line barrier with multiple points of entry; and east of highway 100, the lanes are 2 barrier-separated reversible lanes, with access points only at each end. The toll revenue pays not only for the capital costs, but is also reinvested into the corridor. The goal of the system is to maintain the free flow nature of the managed lane and improve the overall effectiveness of corridor. By imposing a value on the amount of time saved, those with a high value of time (e.g. late for an airplane) pay for a congestion free trip, those that do not, benefit indirectly as fewer cars travel in the general-purpose lanes (*2*,*3*).

Scope of Evaluation

Although other HOT lanes exist, they remain a new enough concept that there is little empirical information on their impacts for transportation planners and policy makers to use when making decisions about similar facilities. As the I-394 MnPASS lanes were the first toll lanes in Minnesota, the Minnesota Department of Transportation (MnDOT) had an interest in evaluating the effectiveness of this tool in achieving objectives for the corridor, and also for potential future variable-toll lanes. In conjunction with the State and Local Policy Program (SLPP) at the University of Minnesota's Humphrey Institute of Public Affairs, NuStats, a statistical survey firm, and Cambridge Systematics, an engineering firm, a two-pronged approach was developed: on the one hand, to collect technical data to measure the performance of the lanes, and, on the other, to conduct a longitudinal attitudinal panel survey to measure how the public perceives its effectiveness. This paper focuses on the design and results of the baseline attitudinal survey.

PROCESS FOR EVALUATING: SETTING THE BASELINE

Michael Scriven defines evaluation as "the process of determining the merit, worth, and value of things, (*4*)" providing a method of synthesizing data produced and collected by a project. However, Patton provides the basis for including evaluation as part of implementing a value-pricing project by emphasizing the importance of applying the results of an evaluation (*5*). "Program evaluation is the systematic collection of information about the activities, characteristics, and outcomes of programs to make judgments about the program, improve program effectiveness, and/or inform decisions about future programming. Utilization-focused program evaluation (as opposed to program evaluation in general) is evaluation done for and with specific, intended primary users for specific, intended uses (*6*)." Patton stresses the importance of knowing for what purpose the evaluation is being performed. Evaluations are more than simply determining whether goals have been met. Patton's evaluation definition contains three interrelated components, a systematic collection of information, potentially broad range of topics, and possibly

multiple judgments and uses. A systematic collection of information involves carefully devised methodologies, which take into account multiple factors designed to yield results. To this end, the evaluation team worked to establish a process that would not only collect comprehensive, reliable data after the project opened, but also collect similar information beforehand, in a baseline survey.

Patton points out that everything from how the data will be collected to budgetary issues remains up in the air until the decision makers or stakeholders are established (*6*). The stakeholders then need to work through and develop a plan for the following six "personal factor" issues as a framework.

- Find people who need or care about the evaluation.
- Identify users of the program. Locate enthusiastic people who will remain committed.
- Decide the quantity, quality, and timing of contact with intended users. Sensitivity to their schedules and lives should be considered.
- Build and sustain interest in the project among users and evaluators.
- Implement a communication plan. Use evaluator's people skills to navigate conflicts and political quagmires.
- Include all stakeholders in the process. Some projects will have multiple levels of stakeholders who may only want to be involved to a limited degree. Tailor communication to accommodate them (*6*).

To ensure the survey design addressed stakeholder interests, an evaluation team was assembled that included representation not only from several offices within MnDOT, SLPP and NuStats, but also from the Federal Highway Administration, MetroTransit (the major transit operator in the area), the consultant team planning for the implementation of the project, the communications and marketing team that would oversee the actual marketing and sale of the toll transponders, and other researchers that with an interest in the data. This team developed an 18 month evaluation that would operate in conjunction with the technical evaluation, sharing data when appropriate for comparison, and which would obtain data of interest to all stakeholders, to the extent financial resources allowed.

Other HOT Lane Projects

With the stakeholders and framework established, the team looked to evaluations of other HOT lane corridors for input regarding best practices, and opportunities for improving them, in setting up longitudinal panel surveys.

SR-91 Orange County

SR-91 opened in December 1995 as the first value-priced roadway in the nation. The 10-mile stretch connects the employment centers of Orange County and southern L.A. County through the addition of two express lanes in each direction. The lanes are separated from the general-purpose lanes by a "soft" barrier consisting of painted lines and pylons. Heavy commercial vehicles are not permitted on the route and carpools travel at a discounted rate. No tollbooths exist, only electronic gantries, users are required to purchase and display small electronic transponders.

Edward Sullivan, from Cal Poly State University in San Luis Obispo, has studied the corridor extensively. The objective of Sullivan's research was "to develop information and insights for improved understanding of travelers' reactions to market-based road pricing and the other innovative features of this unique facility (*8*)." To accomplish this goal, Sullivan's team conducted telephone surveys of approximately 500 drivers whose license plates had been captured while traveling on SR-91 the previous week. They were asked a series of questions in the fall of 1995 (prior to the opening) in regards to tolling. Approval rating for the tolling of roads came back at around 65 percent depending on the user groups. When asked about variable priced tolling, respondents were significantly less enthused with an approval of about 45 percent. Additionally, Sullivan investigated the average number of vehicles per day (AVD) using the roadway. He found that in December 1995 (just prior to opening) that AVD stood at 198,563 with an estimated rate of growth of 450 cars per month. However within 3 to 4 months of the HOT lanes opening, AVD had increased by 22,000. Following this explosive growth, the rate of growth returned to about 450 cars monthly. Sullivan attributed this dramatic increase in usage largely to a shift from alternate routes to the newly added capacity.

Aside from the sheer number of vehicles traveling, Sullivan also examined shifts and changes in travel modes of the vehicles. Although a number of former SOV drivers converted to HOV, the number converting the opposite direction resulted in a net loss of 7 percent in HOV drivers from 1995 to 1996. These results were derived from 620 samples of which 110 reported a mode change. The highway users reported no shift toward transit, however the survey of transit users, specifically on Metrolink, the parallel commuter rail that opened in October of

1995, yielded noteworthy results. Ninety-five percent of riders were former highway users of which 30 percent were HOV, meaning that a disproportionate number of HOV users were removed from the system just prior to opening. A similar pattern was observed with bus riders (*8,9*).

Sullivan's evaluation was accomplished through a variety of opinion surveys, rather than maintaining a longitudinal panel throughout the study. The opinion survey conducted prior to the implementation of the SR-91 HOT lanes yielded results and a baseline from which to work, but it was unable to track the change in an individual's perception of SR-91 road pricing over time. Later Sullivan's team attempted to rebuild the panel, but only 332 participants remained out of the original 500, leaving a panel supplemented with new participants (*8*). Additionally, no control group was included in Sullivan's survey.

I-15 San Diego

The successes on SR-91 contributed to the investigation of utilizing road-pricing solutions on the congestion-clogged I-15 (*10*). In December 1996 (one year after the opening on the SR-91 facility) a demonstration project began on an 8.5 mile stretch of I-15. The underutilized reversible "Express Lanes" were opened to SOV through a tolling system, transforming them into HOT lanes. The reversible lanes, which are separated from the general-purpose lanes by a barrier, allow inbound traffic in the morning hours and outbound traffic in the evening through one point-of-entry and one point-of-departure.

In the first phase, SOV drivers to purchase monthly passes (dubbed ExpressPass) that permitted unlimited use of the facility, while carpools remained within the lanes without a charge. A little over a year later, in March 1998, the second phase introduced windshield-mounted transponders for automatic vehicle identification of SOV drivers wishing to use "FasTrak." The transponders allowed a change in the toll collection method from monthly permits to a per-trip fee that was based on congestion levels. When congestion appeared, variable tolls charged to SOVs rose to maintain free-flow conditions within the lanes. Carpools continued to travel free of charge (*11*).

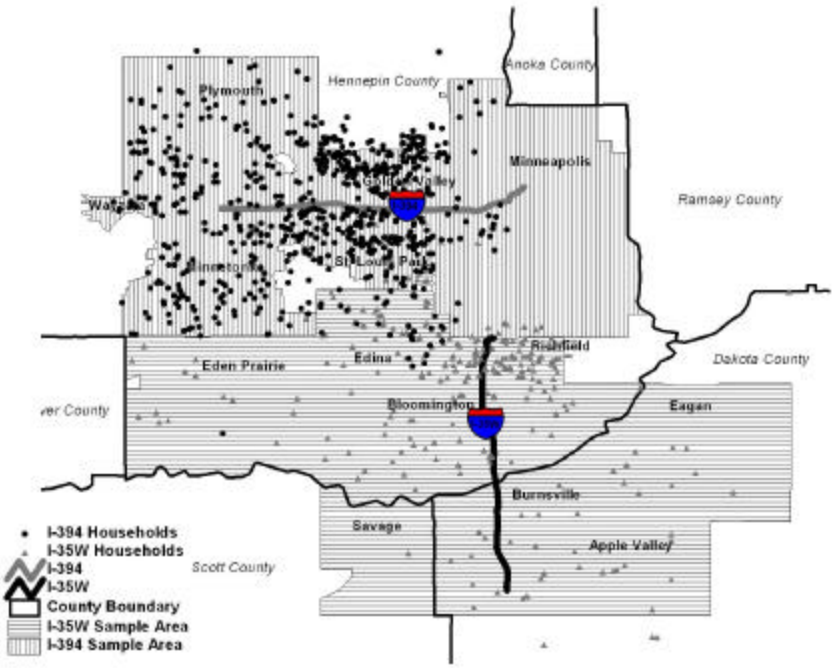
Wilbur Smith Associates and Janusz Supernak, of San Diego State University, have been researching congestion pricing on Interstate 15 since conception. While Wilbur Smith Associates conducted the baseline market survey, Supernak and a host of other researchers have investigated the impacts and attitudes of those directly affected by the changes. In the fall of 1996, Wilbur Smith Associates' baseline survey targeted SOV and HOV drivers as well as transit/vanpool riders who use I-15 from Ted Williams Parkway to the SR-163 split. A random dial telephone survey of 400 homes, three focus groups, and 141 face-to-face interviews with transit riders were employed by the firm to extract the public's attitude prior to the implementation of the changes. Approximately 70 percent of those polled expressed at least "somewhat" favorable view of tolling. Opposition by carpoolers stood at over 70 percent expressing at least a "somewhat" opposed view of tolling (*12*).

Supernak and his team of researchers developed a panel study to assess changing public attitudes over a three-year period with five surveys. A control group was set up within the I-8 corridor to allow for identification of any regional changes and attempt to reduce outside influences, such as gas prices. The Wave 1 survey was administered to approximately 1,500 residents in fall 1997. Researchers concluded that the majority of non-ExpressPass I-15 drivers were unaware of the program. Among those that were aware, a majority believed that it was acceptable to control carpool lane congestion through pricing (*13,14*). During the second wave of the study, in spring 1998, following the switch to variable pricing and FasTrak, researchers replaced those who refused a second interview or could not be found or moved away with similar category users. Thirty-four percent (516 of 1,501) of the participants had to be replaced for Wave 2; similar attrition took place between Waves 2 and 3. As a whole, commuters recognized a reduction in commute time. While carpooling remained fairly constant on the control corridor (I-8), it increased on I-15 (*15*).

I-394 BASELINE SURVEY METHOD

The attitudinal panel survey for the I-394 MnPASS evaluation was developed to build on the work of Sullivan and Supernak. It consists of three periods (or waves) of data collection, with the first wave taking place before implementation of the HOT lane. To assist in determining causality in future waves, a control samples were drawn simultaneously with the treatment sample. The treatment sample consisted of households selected from the I-394 travel shed, and the control sample consisted of households in the I-35W travel shed (See Figure 1). I-35W was selected as the control because it was the other highway in the region to have an HOV lane.

FIGURE 1: Location of Households for 1,000 Completed Interviews



The sample was not only defined geographically as shown in Figure 1, but also defined based on roadway usage. The I-394 stratum was comprised of persons who used I-394 between Highway (Hwy) 101 and I-94, or a parallel segment of Hwy 55, in the five weekdays prior to being interviewed. The I-35W stratum was comprised of persons who used I-35W between Hwy 62 and Hwy 13 or a parallel segment of Hwy 77, in the five weekdays prior to being interviewed. The allocation of sample across each of the waves attempted to optimize the number of interviews within the I-394 stratum. The baseline survey design assumed that 750 interviews (out of 1,000) would be completed with households in the I-394 stratum.

Developing Sample

Population of Inference

The population of inference (or population under study) consisted of those individuals 18 years of age or older, residing within the target travel sheds, who have traveled the target segments of I-394, Hwy 55, I-35W, or Hwy 77 between 6am and 9pm at least once in the five weekdays prior to the day of interview. To efficiently sample this population, specific areas within the I-394 and I-35W travel sheds were pre-identified as being the likely residential locations for I-394 or I-35w users based on empirical data provided by the Metropolitan Council. Origin and destination data from the Household Travel Diary Survey, conducted as one element of the Twin Cities Metropolitan Area Travel Behavior Inventory (TBI), were used to identify the areas that generated the highest proportions of target trips. Sample was then proportionally allocated to those areas. For example, the I-394 travel shed had a total of 62 separate areas of which six were sampled. The I-35W travel shed had a total of 28 separate areas of which seven were sampled. Table 1 provides information on the sampled areas, such as (A) the volume of trips as measured in the TBI, (B), the percent of all trips as measured in the TBI, (C) and the percent of all trips as measured in this baseline survey. (Column B does not total 100% because the sampled areas do not cover all areas contributing to the total trips).

TABLE 1: Sample Areas, I-394 & I-35W

AREA	TBI TRIP VOLUME (A)	PCT OF ALL TBI TRIPS (B)	PCT OF ALL BASELINE TRIPS C)
I-394 Strata			
Total (62 Separate Areas)	386,473		
Golden Valley	44,943	11.6	26.1
St Louis Park	69,000	17.9	26.0
Minnetonka	53,113	13.7	25.1
Plymouth	24,802	6.4	16.1
Wayzata	8,875	2.3	3.4
Minneapolis (Western Tracts)	17,389	4.5	3.1
I-35W Strata			
Total (28 Separate Areas)	295,734		
Apple Valley	17,258	5.8	6.4
Bloomington	68,106	23.0	17.8
Burnsville/Savage	24,985	6.8	7.4
Eagan	17,123	5.8	5.6
Eden Prairie	15,522	5.3	6.0
Edina	67,342	22.8	22.1
Richfield	39,383	13.3	34.7

Sample Objectives

The sample design implemented for the baseline study incorporated three explicit objectives. The first objective was to ensure that dialing productivity would be as efficient as possible given the random nature of travel incidence along I-394 and I-35W. This was achieved by analyzing those areas most likely to generate the highest incidence rates and fielding sample in those areas only (see Table 1).

The second objective consisted of attempting to capture travel behavior on the I-394 corridor that reflected normal commuting patterns (i.e., travel from west to east in the morning and from east to west in the evening) to mirror the operational hours of the current HOV lanes. The baseline survey data indicated that approximately 90 percent of trips reported by respondents traveling on I-394 between 6-9am were in the west-to-east direction. For reported afternoon and evening trips, 60 percent from 3-6pm were traveling east to west, as were 54 percent from 6pm-9pm.

The third and final objective was to profile trips based on set proportions by time of day: 6am-8:59am; 9am-12:59pm; 1pm-2:59pm; 3pm-5:59pm; and 6pm-9pm. Desired proportions were to obtain 80 percent of trips in the peak periods and 20 percent in all other times. Overall, sample percentages were 75 percent in the peak periods and 25 percent in all other times.

Field Data Collection

Data collection for the baseline portion of the Attitudinal Panel Survey was completed between November 19th and December 17th, 2004. A total of 16 interviewers participated in data collection over this time period; dialing times ran from 4pm-9pm during weekdays and 11am-7pm on Saturdays and Sundays. Calls made outside of those times were done so in response to a respondent's request. No interviews were conducted during the Thanksgiving holidays (November 24 to 27); however, interviews were conducted immediately after so some reported travel might have happened during that time.

A total of 1,030 respondents completed interviews, of which 1,000 were full completes, seven were partial completes, and 23 were disqualified after data editing. A response rate was calculated using American Association of Public Opinion (AAPOR). Using AAPOR's most conservative formulae (total completes / (completes + eligible + percent of ineligible sample)) a response rate of 38 percent was experienced. An alternative, widely used, method is to determine the percentage of respondents that complete interviews relative to numbers dialed in which an eligible household was contacted. Based on this calculation, our response rate would be 66 percent (68% in I-394 areas and 64% in I-35W areas).

Survey Materials Design

CATI Instrument

Most of the survey data was collected though the use of a computer-assisted telephone interview (CATI) questionnaire. The questionnaire was developed based upon the objectives and research questions identified by the attitudinal evaluation team described above. In addition, the Attitudinal Panel Survey questionnaire drew from questionnaire items included in instruments used to evaluate SR 91 and I-15. Using this foundation, NuStats and State and Local Policy Program staff developed the survey materials to track following information, among others, over time.

- Reported use of the I-394 corridor by mode, time of day, and purpose, and
- Attitudes and perceptions regarding:
  - The I-394 MnPASS project
  - Congestion in the corridor,
  - Toll rates, and
  - Travel time and travel time reliability.

The final questionnaire contained items to screen for eligibility; to capture attitudes and opinions; to assess awareness, knowledge, and acceptance of MnPASS; to collect both usual travel behavior and also detailed information about a reference trip; to identify the demographic and socio-demographic characteristics of respondents; and to recruit participants into the panel.

Stated Preference questions

An important section of this instrument was the stated preference (SP) questions that were developed to measure willingness to pay for use of the HOT lane. The SP measurements that were used in the Attitudinal Panel Survey were unique in that two different methods were used. The reasons for the two methods were: (1) to add confirmatory credibility to the baseline SP results, assuming similar estimates of demand resulted, and (2) to assess which of the two methods better estimated the demand as measured in the Wave 2 panel survey.
Both methods were introduced with the same text and used the same trade-off question formats, as shown below.

Now assume you're making the same trip in the future that you just told me about.
It's a trip on the same day, at the same time of day, for the same purpose, and you're under the same time pressures. You enter the freeway, I-394, and find out that you can make this trip using a toll lane and paying via electronic toll collection if you want to.

[Either VERSION 1]
If you were to use the general traffic lanes on I-394, your trip would take *TT+Y minutes* and be free. If you were to use the toll lane you would pay *$X* and your trip would take *TT minutes*, saving *Y minutes*. Now under these conditions, which would you choose to do?

Use the toll lane, pay $X and save Y minutes	001
Use the general lane for free	002

[or VERSION 2]
If you were to use the toll lane on I-394, you would pay *$X* and your trip would take *TT minutes.*
If you were to use the general lanes, your trip would take *TT+Y minutes, Y minutes* longer than the toll lane, but it would be free. Now under these conditions, which would you choose to do?

Use the general lane for free	002
Use the toll lane, pay $X and save Y minutes	001

Method A

First, each person received four different scenarios, each with a different amount of time saving (Y = 5, 10, 15 or 20 minutes) and toll (X = 50 cents, $1, $2, $3, $4, $5, $6 or $7). The value TT used for the tolled lane was based on the respondent's estimate of their travel time with no congestion. Nine different sets of four scenarios were used across the sample, with each respondent assigned one of the nine sets at random. So, in total, 36 (9 x 4) different scenarios were used, each identifying a different time/cost tradeoff point. Also, to avoid bias due to ordering effects, the questions were asked in two different ways. Versions 1 and 2 above differ only in the order in which the toll and non-toll options are described to the respondent. Each respondent was assigned one of the two versions at random.

Method B

Next, the same type question was asked again, but this time using the "price meter" approach. Each respondent was assigned a level of time savings (S = 5, 10 or 15 minutes) at random. Then a random toll price point was chosen (P = 50 cents, $1, $2, $3, $4, $5, $6 or $7) and the same question from above was asked. If the person said that they would pay the toll, a higher price point was chosen at random, and if they said they would not pay the toll, a lower price point was chosen at random, and the question was asked again at the new toll level. This procedure was continued until the "switching point" was identified – e.g. the respondent would pay a toll of $2, but not $3.

BASELINE CATI SURVEY RESULTS

Public Acceptance of I-394 MnPASS Project

Respondents who were unaware of the I-394 MnPASS project were read a description (see box below). Then all respondents were asked two questions to examine their levels of acceptance of the project. These questions were whether it was a good idea or bad idea to (1) allow single driver to use carpool lanes by paying a toll and (2) to operate the toll lane program 24 / 7?

> **MnPass Project Description: Read to Unaware Respondents**
>
> The MnPass program will permit single drivers to pay a fee to use the carpool (diamond) lanes. Drivers who pay the fee can use the carpool lanes without being in a carpool. The fee will vary based on how congested the roadway is, but it will average about $2. The program is expected to start by summer of 2005.

As shown in Table 2, most respondents (63%) thought allowing single drivers to use carpool lanes by paying a toll was a good idea. There was no difference in the opinions by awareness – respondents who had said they were unaware of I-394 MnPASS answered it was a good idea at the same rate as those were aware.

TABLE 2: Opinions on Allowing Single Drivers to Use Carpool Lanes by Paying a Toll by Annual Household Income (N=1,000)

OPINION	LESS THAN $50,000	$50,000 - $99,999	$100,000 - $149,000	$150,000 OR MORE	REFUSED	TOTAL
GOOD IDEA	62%	64%	61%	63%	60%	63%
BAD IDEA	27%	26%	29%	28%	31%	27%
NO OPINION	11%	10%	10%	9%	9%	10%
TOTAL	100%	100%	100%	100%	100%	100%
	179 RESPONSES	380 RESPONSES	217 RESPONSES	136 RESPONSES	88 RESPONSES	1000 RESPONSES

Opinions about whether allowing single drivers to use carpool lanes by paying a toll were a good or bad idea were consistent across annual household income levels. Whereas 63 percent of persons in households with an

annual household income over $150,000 thought this was a good idea, so did 62 percent of those with annual household income levels of less than $50,000. Support for the project did not vary across other socio-economic variables such as gender, education, or employment. Of persons living in the I-394 travel shed, supporters comprised 65 percent of those with household incomes of $50,000 or less as well as 65 percent of those with household incomes of $150,000 or more

When compared with the control group, people residing in the I-394 travel shed were slightly more likely to think I-394 MnPASS was a good idea relative to those residing in the I-35W travel shed (64% and 58%, respectively). At the same time, respondents in the I-35W travel shed were more likely to have "no opinion" on this question than those in the I-394 travel shed (15% and 8%, respectively).

Nearly two-thirds of all unprompted statements related to allowing single drivers to use carpool lanes by paying toll were positive (64%). The most frequently cited factors were that the I-394 MnPASS project was a better use of carpool lanes (23%), adds capacity to the roadway (18%), and provides that only users pay, not everyone (12%). It should be noted that these issues did not appear in the text of the prenotification letter sent to respondents nor in the statement that was read to "unaware" respondents. Negative comments were also captured – 8 percent said that it will only benefit the rich, 5 percent that it discourages carpooling, and 5 percent that carpool lanes should be free for all.

Travel Behavior – Reference Trips

Travel behavior is a complex phenomenon that is influenced by socio-economic, household dynamic, and transportation infrastructure factors, among others. To gain an understanding of how respondents used the HOV lanes on I394 and I-35W before the I-394 MnPASS lanes were opened, they were asked about their most recent weekday trip in that corridor. Data collection goals were to ensure that the majority of reference trips took place during the peak periods and to obtain a fairly even distribution of reference trips across days of the week.

An additional dimension for the reference trip was to establish a purpose of the trip. This measure was an aggregation (i.e., trip type) based on the typical trip purposes used in travel demand forecasts. "Subsistence" trips are for work, work-related, or school. "Discretionary" trips are for visiting, recreation, or other purposes. "Maintenance" are shopping, medical or personal trips. The distributions by trip purpose and trip type between the I-394 corridor and the I-35W control corridor are comparable and will work well for the post-implementation analyses.

The association between trip type and time of day was reflected in the trip purposes captured in the baseline survey. The majority of the reference trips are peak period trips. Respondents typically travel for subsistence purposes during the peak period so the majority of trips are subsistence trips.

Characteristics of Reference Trips

Respondents were asked if they were delayed by congestion on their reference trip. Fifty percent (50%) of I-35W users answered, "yes" compared to 40 percent of I-394 users, Congestion delays were most prevalent during peak periods.

In addition to congestion, making stops can increase travel time. Only 10 percent of respondents made stops while on their reference trip. Ten percent (10%) of I-394 users made stops. More than half of these respondents (59%) said that the stops were to take care of personal business like shopping. Another 31 percent said their stops were to drop off or pick up passengers. HOV and transit users were also asked if they stopped at a park-and-ride facility on their reference trip. Seven percent (7% or 18 persons) did use a park-n-ride facility while on their reference trip, and virtually all of them traveled on I-394.

Our baseline data indicated that approximately 75 percent of respondents traveled on their I-394 reference trip via SOV, 23 percent via HOV, and 2 percent via transit. Hwy 55 travelers had a similar travel mode distribution. An intriguing pattern became clear, not all HOV travelers used the carpool lanes for travel on I-394 during the peak period. The patterns of HOV versus general lane use differed by time of day.

BASELINE STATED PREFERENCE RESULTS

Stated preference (SP) questions were used to measure respondents' likelihood of using the I-394 HOT lane as a function of the toll level and time savings. Two different versions of questions (A and B, described in the Survey Materials Design section) were used to ask the SP questions, thus, increasing our ability to confirm and validate the results. The questions were asked of all 412 respondents whose reference trip was made as a solo driver on I-394.

The SP data were also analyzed by estimating logic discrete choice models, a maximum-likelihood statistical technique for inferring the importance of multiple choice factors based on choice responses. The resulting mean VOT of about $10/hour was in the range of values typically used for commute trips in mode choice forecasting models. After taking toll and time savings into account, there was a residual negative constant for the HOT lane, perhaps reflecting the inconvenience or reluctance to pay a toll at all, as well as the restricted ability to change lanes in the HOT lane versus the general lanes. The likelihood of choosing the toll option was somewhat less from Version 2 of the questions, where the toll option was described before the free option. This result indicated that a marginally significant order bias was present, and that it was useful to randomly present the question in both orders so that the overall data across both versions does not contain this bias. When the Method A and Method B data were combined, an extra HOT lane constant applied to Method B data only was not significant. This means that the two data sets were compatible in terms of predicting similar likelihood of using the HOT lane, and thus, were used together in further analysis.

Factors Influencing Willingness to Pay

Willingness to pay for use the I-394 MnPASS Express Lanes is not just about absolute travel time savings, but also about how important the travel time saved is to an individual. For this reason, further analyses (i.e., estimation runs) were done on the model to examine what other variables (both demographic, trip, and attitudinal) correlate with the willingness to use the I-394 MnPASS lanes. And, it was found that quite a few other variables (i.e., age, income, purpose for travel) are associated with willingness to pay. Significant non-linear effects were found for the toll variable, using a polynomial function with square and cube terms. The disutility rose most steeply at low toll levels, then flattened out somewhat, and finally become steeper again at high tolls. The inflection point was at about $4.

Demographic Factors

Income and age were both very strong variables; with the likelihood of paying the toll highest for those with high incomes, and lowest for those under age 25 or over age 60. (Income was also tested in combination with the toll variable and was significant, but the model fit is best when including income as a general variable for HOT lane independent of toll level). Gender and education level were also tested, but had very little influence on willingness to pay the toll.

Trip Factors

The likelihood of paying the toll tended to increase with trip distance/duration and with the frequency of making the trip. Those making commute or work-related trips were more likely to pay the toll than those traveling for other purposes. Interestingly, after other effects were taken into account, those traveling during the AM and PM peak periods would be less likely to pay the toll than those traveling off-peak. The reason for this difference was not obvious, perhaps respondents were not confident that the HOT lanes would actually provide the promised time savings during the peak. Those who actually adjusted their departure time to avoid congestion were more likely to pay the toll, while those with more flexible arrival times were less likely. Finally, those who rated congestion levels in the general lanes as high during their actual trip were more likely to say they would pay the toll. However, no significant effects were found related to the rating to overall enjoyment and satisfaction with the trip or with the rating of congestion in the carpool lane; indicating that such perceptions would not influence respondents' willingness to pay a fee to use the toll lane.

Attitudinal Factors

Even after accounting for respondent- and trip-specific variables, a number of respondent attitudes toward I-394 MNPASS were significantly related to the stated choice of the toll lane. As one would expect, positive statements about I-394 MNPASS and its related benefits were associated with a higher stated willingness to pay the toll. The only negative effect was for those who think that the current enforcement of the HOV lane is not strict enough. Other attitudinal variables were also tested but were not shown to have influence. These included the affect on noise levels and air quality, as well as whether or not the person had previously heard of I-394 MNPASS. This latter

result suggested that people were almost as willing to choose the tolled option in the SP questions even if they were hearing about the idea for the first time.

KEY FINDINGS

Effectiveness of Method

The first wave of data collection for the Attitudinal Panel Survey was administered successfully with 1,000 completed interviews. Refusals to the survey were low (17%) with our response rate driven more by inability to contact respondents than by refusals. With ninety-eight percent (98%) of respondents agreeing to participate in the subsequent waves of data collection, the panel recruitment exceeded expectations.

The three sampling objectives were met. Iteratively sampling travel shed residents worked efficiently with highest eligibility rates within the I-394 sample strata for which the greatest numbers of completed interviews were needed. The data adequately captured the dynamics of travel behavior in the target corridors. One of the objectives was to measure the natural incidence of mode use on I-394 in the baseline survey to determine what level of oversampling may be necessary in subsequent waves to capture adequate samples of HOV and transit users. Our initial assessment indicates that sampling travel shed residents enabled us to adequately capture HOV users in the I-394 sample strata (i.e.170 for the reference trip mode). However, oversampling will be done in subsequent waves to increase both HOV and transit users (i.e., 15 for reference trip mode).

I-394 MnPASS Awareness and Acceptance

The proportion of respondents supporting the ideas of allowing single drivers to use carpool lanes by paying a toll on the I-394 MnPASS project is statistically the same as to Sullivan's findings from the survey he administered prior to the SR-91 opening (65% on SR91 to 63% on I-394). For supporters, the notions that it was a better use of the carpool lanes and that it added capacity to the roadway were important. Social equity issues were only surfaced by the minority of persons who thought allowing single drivers to use carpool lanes by paying a fee was a bad idea.

Managing Demand by Varying Toll

The strategy of managing demand for the HOT lane by varying price appears to be effective. The stated preference survey results indicated a wide distribution of willingness to pay that will facilitate the management of demand by varying the toll. Fifty-nine percent (59%) would pay $2 to save 20 minutes; 40 percent would pay this to save 15 minutes, and 23 percent to save 10 minutes. But 10 percent would be willing to pay $2 to save 5 minutes. The percent of SOV drivers who are willing to pay a fee to use the HOT drops significantly as the toll increases to $4 or more. Few (less than 10%) would be willing to pay $4 to save 15 minutes or less; although 30 percent would be willing to pay $4 to save 20 minutes. Virtually no one appeared willing to pay more than $6 for any amount of time savings.

NEXT STEPS

With this baseline data in place, the foundation is set for providing MnDOT with data regarding how attitudes and travel behavior change as a result of the implementation of the I-394 MnPASS lanes. The next wave will take place in the fall of 2005, with the third wave to follow several months after that. These waves will include significant oversampling of transit users and MnPASS subscribers, to compare their perceptions with those of the general public within the sample. Of particular interest for further analysis of all data will be changes in mode, perceptions of changes in travel time and level of congestion, and overall towards the effectiveness of the system. With 98% of participants agreeing to remain in the panel, and a significant number of participants in the control corridor, reliability of this data should be relatively high.

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The authors would like to recognize the support of the Minnesota Department of Transportation, which provide the financial support that made this study possible. In addition, we would like to thank the MnDOT employees and other members of the evaluation team that have supported and contributed to the development of this evaluation, through their time and input. Finally, we would be remiss to not mention the significant contributions of Mark Bradley of Mark Bradley Consulting in development and analysis of the stated preference items.

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Appendix D:

MnPASS Evaluation Attitudinal Panel Survey – Baseline Report
NuStats

HUMPHREY INSTITUTE OF PUBLIC AFFAIRS, UNIVERSITY OF MINNESOTA

I-394 MNPASS PROJECT EVALUATION ATTITUDINAL PANEL SURVEY

Wave 1:

Final Report

March 4, 2005

NuStats

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1. EXECUTIVE SUMMARY

This report documents the methods and results of the first wave of data collection for the I-394 MnPASS Evaluation Attitudinal Panel Survey (hereafter referred to as the Attitudinal Panel Survey). This baseline survey was conducted among a random sample of residents of the I-394 and I-35W travel sheds during the months of November and December 2004, prior to the opening of the I-394 MnPASS Express Lane project. A total of 1,000 interviews were conducted, with an average length of 19.5 minutes. NuStats conducted the survey under subcontract to the State and Local Policy Program at the Humphrey Institute of Public Affairs at the University of Minnesota for the Minnesota Department of Transportation.

1.1 PURPOSE OF THE ATTITUDINAL PANEL SURVEY

The I-394 MnPASS Express Lane project creates Minnesota's first High Occupancy Toll (HOT) lanes. This project will allow solo drivers to pay a fee to use carpool lanes and avoid congestion on I-394, from Highway 101 to I-94. Because the project's goal is optimize capacity on the HOT lanes, it will be critical to maintain free flow conditions at all times. To do so, fees charged will change dynamically to reflect changing traffic volumes in the HOT lanes, and electronic toll collection (ETC) will be used. The I-394 MnPASS project is new and innovative. It requires a comprehensive monitoring and evaluation plan to inform political, technical, and market demand issues. The Attitudinal Panel Survey is one component in a comprehensive evaluation that includes a separate, but parallel, Technical Evaluation to monitor actual performance data.[1] Unlike the Technical Evaluation, the Attitudinal Panel Survey will measure the attitudes, perceptions, and reported travel behaviors of panel survey respondents. The following information, among others, will be tracked over time.

- Reported use of the I-394 corridor by mode, time of day, and purpose,
- Equity implications of changes in reported use of I-394,
- Attitudes and perceptions regarding:
  - ✓ The I-394 MnPASS project
  - ✓ Congestion in the corridor,
  - ✓ Method of toll collection,
  - ✓ Enforcement issues,
  - ✓ Toll rates, and
  - ✓ Travel time and travel time reliability.

1.2 ATTITUDINAL PANEL SURVEY METHODS

The Attitudinal Panel Survey will track a recruited panel of I-394 corridor users to assess changes in their travel behavior and attitudes associated with the I-394 MnPASS project over time. A small sample of I-35W corridor users will be used as a control group to measure "natural" changes in travel behavior. The Attitudinal Panel Survey will consist of three waves of data

[1] Cambridge Systematics is conducting this Technical Evaluation under contract to the Minnesota Department of Transportation.

collection. Survey respondents were interviewed before implementation of the I-394 MnPASS project and will be interviewed two more times after implementation at approximately nine months apart. The projected sample sizes for each of the three waves are 1,000 for Wave 1, and consecutively larger samples in Wave 2 (1,400) and Wave 3 (1,600). A key objective of the first wave of data collection was to recruit survey respondents to continue as panel members for Waves 2 and 3. Thus, the sample sizes for Waves 2 and 3 assume that Wave 1 panel members will comprise the majority of respondents. Respondents will be added in subsequent waves, as necessary, to increase the numbers of transit and HOV users to enable richer analyses by mode, as well as to include MnPASS subscribers to answer questions specific to I-394 MnPASS Express Lane usage. This report presents the baseline survey results from Wave 1. Data from subsequent waves will be analyzed cross-sectionally (i.e., results at a single point in time), as well as longitudinally to measure attitude, perception, and behavior changes over time.

Data collection for Wave 1 was completed between November 19, 2004 and December 17, 2004, prior to the opening of the I-394 MnPASS Express Lanes. No interviews were conducted during the Thanksgiving holidays (November 24 -27). The baseline questionnaire was designed to collect information regarding household demographics, awareness and attitudes about the I-394 MnPASS project, summary travel behavior in the I-394 or I-35W corridors for the past five weekdays as well as for the most recent trip, and demand for use of the HOT lane.

For Wave 1, 750 users of the I-394 corridor and 250 users of the control corridor (I-35W) were interviewed. Survey respondents included individuals 18 years of age or older who had traveled along one of the target road segments between 6am and 9pm at least once in the five weekdays prior to being interviewed. Sampled respondents tended to be vehicle owners (99%), homeowners (85%), employed (81%), and college educated (51%). There were more persons older than 45 years of age than younger, and more households with an annual income greater than $75,000 than less. The average household in our sample had 2.6 persons, 2.1 vehicles, 1.99 licensed drivers, and 1.5 workers. About one in ten had lived at their current residence for one year or less. As many respondents had resided at their current residence 2-10 years as had 11 or more years.

1.3 KEY FINDINGS AMONG I-394 TRAVEL SHED RESIDENTS

- 64 percent of persons living near I-394 thought allowing single drivers to use carpool lanes by paying a toll was a “good idea”; 28 percent thought it was a “bad idea”, and 8 percent had no opinion.
    - ✓ Support for the project did not vary across income levels. Supporters comprised 65 percent of those with household incomes $50,000 or less as well as 65 percent of those with household incomes of $150,000 or more.
    - ✓ Positive aspects of the I-394 MnPASS project cited by respondents, without prompting, were that it is a better use of carpool lanes (24%), it adds capacity to the roadway (19%), and that only users pay, not everyone (12%).
    - ✓ Negative aspects were less frequently cited and these included, again without prompting, that it only benefits the rich (8%), it discourages carpooling (5%), and carpool lanes should be free for all (5%).
- 58 percent were supportive of the 24/7 operation of a toll lane program on I-394; 31 percent thought it was a “bad idea”, and 11 percent had no opinion.

- 69 percent of I-394 travel shed residents had heard of the I-394 MnPASS project as of November / December 2004.
    - ✓ Persons who were aware of the project knew basic information -- that it allows SOVs to use the carpool lanes for a fee (52%) and/or that it charges tolls (33%).
    - ✓ Newspaper (45%) and TV/radio (43%) were their main sources of information.
- 75 percent usually drive[2] I-394 or nearby Hwy 55 in a single occupant vehicle (SOV); 22 percent drive in a multiple occupant vehicle (HOV), and 2 percent usually travel by transit.
    - ✓ Carpool and transit were used by travelers of the I-394 corridor to a greater extent than was evidenced by reports of their "usual" travel modes. 30 percent said that they sometimes traveled by carpool, and 20 percent reported that they sometimes traveled via transit.[3]
- 96 percent of persons living near I-394 reported that traffic congestion in the Twin Cities was a problem, with 58 percent reporting that it was a major problem.
    - ✓ 38 percent reported that they were delayed by congestion on their most recent weekday trip in the I-394 corridor, while 24 percent reported that they began their most recent weekday trip at a specific time to avoid congestion.

1.4 CONCLUSIONS AND NEXT STEPS

The I-394 MnPASS Express Lane project had strong support among persons living near I-394. Slightly more than two-thirds of them believed that allowing single drivers to use carpool lanes by paying a toll was a good idea, and 58 percent believed that operating the toll lane program on I-394 24 hours per day was a good idea. Support was as strong among lower income households as it was among higher income households. People supported the idea of allowing single drivers to use carpool lanes by paying a toll because they believed it was a better use of carpool lanes (24%) and it added capacity to the roadway (19%).

Levels of support and opposition to the I-394 MnPASS project (and related attitudes and perceptions) will be tracked in the subsequent waves of data collection, as well as changes in travel mode associated with the implementation of the HOT lane. Virtually all respondents in Wave 1 (98%) agreed to be interviewed in the two subsequent waves of data collection. These respondents will receive a postcard thanking them for their participation. Planning will soon begin for the second wave of data collection. The total sample size will be increased for the second wave, from the current 994 recruited panel members to 1,400 respondents. This increased sample size will include more transit and HOV users, as well as I-394 MnPASS subscribers. Finally, the survey team will identify survey questions to be dropped and added to ensure that Attitudinal Panel Survey objectives are fully achieved.

[2] "Usual" mode is defined as the travel mode used most often for trips in the I-394 corridor for the past five weekdays.

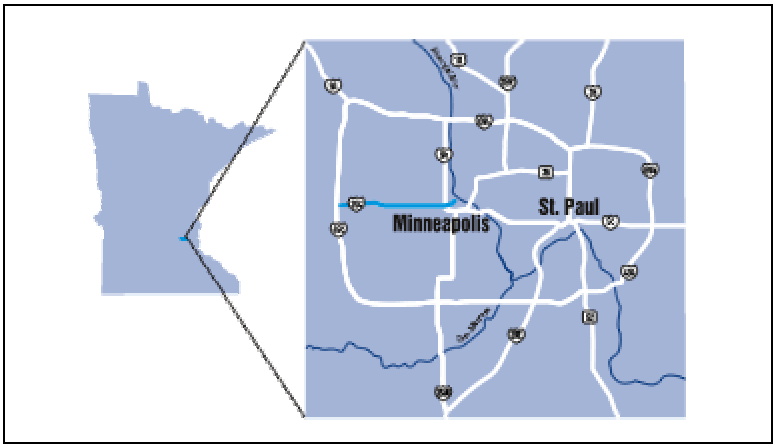
[3] Most respondents reported that they used transit or HOV less often than once per month.

2. ATTITUDINAL PANEL SURVEY DESIGN

2.1 BACKGROUND

The I-394 MnPASS Express Lane project, authorized by the 2003 Minnesota Legislature, creates Minnesota's first High Occupancy Toll (HOT) lanes. This project will enable solo drivers to pay a fee to use carpool lanes to avoid a congested stretch of I-394, from Highway 101 to I-94. The HOT lane will remain open to high occupancy vehicle (HOV) use so that transit riders, motorcyclists, and carpools will continue to use the lane free of charge. The 12-mile long facility will extend from the I-94 interchange on the edge of the Minneapolis central business district west past ten interchanges until I-394 converges with MN-101 in Wayzata. The HOT lanes will have about six intermediate entry and exit points as well as the portals at each end. The facility will have barrier-separated lanes from I-94 to Hwy 100, and the rest of the facility will be diamond lanes (west of Hwy 100).

FIGURE 1:
LOCATION OF I-394 MNPASS PROJECT



The I-394 MnPASS project is an important test-bed for pushing the technology and operational envelope in HOT lane design. To ensure free flow for all vehicles in the I-394 MnPASS lane, fees will be adjusted to limit demand. The highest fee will likely be charged during the morning and afternoon peak periods, with shoulder and off-peak fees adjusted according to demand. The average toll per trip will be in the $2-$4 range to manage demand levels and to maintain the free flow conditions. Electronic signs along the I-394 MnPASS lane will display the variable fees. Furthermore, the I-394 MnPASS project will not utilize traditional tollbooths. Instead, tolls will be deducted electronically from users' pre-paid accounts by means of transponders and readers.

The ultimate goal of the I-394 MnPASS project is to optimize capacity in the I-394 corridor. Ancillary goals are to:

- Ensure continued priority in the corridor and enhanced services for transit and carpoolers,
- Provide a fast and reliable option for all vehicles that is congestion free,
- Improve operating efficiency in the I-394 corridor, and
- Effectively manage the HOT lane utilizing the latest technology.

2.2 OBJECTIVES OF THE ATTITUDINAL PANEL SURVEY

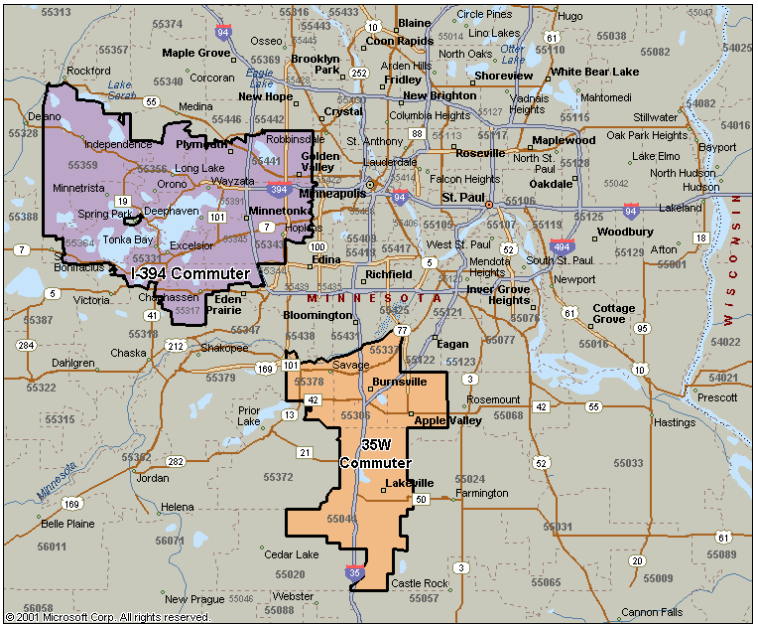
This Attitudinal Panel Survey measures the attitudinal and reported behavioral responses of corridor travelers before and after the implementation of the I-394 MnPASS project. Specific issues to be evaluated include:

- Changes in mode split to measure if HOT lanes encourage or discourage HOV use,
- Changes in travel behavior in terms of time of day, frequency of travel, length of toll trips, and route of travel,
- Characteristics of toll users,
- Attitudes toward the HOT lanes and the toll system, including value pricing acceptance, perceptions of equity, and perceptions of success in congestion management,
- Perceptions of performance of HOT lanes in terms of reliability and safety, and
- Perceptions of performance of toll system in terms ease of payment, payment conditions, and enforcement.

2.3 SAMPLE DESIGN

The Attitudinal Panel Survey consists of three periods (or waves) of data collection. The evaluation design required the use of treatment and control samples. The treatment sample consisted of households selected from the I-394 travel shed (See Figure 2, purple), and the control sample consisted of households in the I-35W travel shed (See Figure 2, orange). I-35W was selected as the control because it was the other highway in the region to have an HOV lane.

FIGURE 2:
MAP OF I-394 AND I-35W TRAVEL SHEDS[4]



[4] The geographic areas displayed in the map present travel sheds for I-394 and I-35W. A travel shed is defined as the area that produces the most trips on a particular corridor. The travel sheds were used to identify the telephone exchanges from which the sample was drawn. See Figure 5 on page 13 for actual locations of households in sample.

The sample was not only defined geographically as shown in Figure 2, but also defined based on roadway usage. The I-394 stratum was comprised of persons who used I-394 between Highway (Hwy) 101 and I-94, or a parallel segment of Hwy 55, in the five weekdays prior to being interviewed. The I-35W stratum was comprised of persons who used I-35W between Hwy 62 and Hwy 13 or a parallel segment of Hwy 77, in the five weekdays prior to being interviewed. The allocation of sample across each of the waves will attempt to optimize the number of interviews within the I-394 stratum. The baseline survey design assumed that 750 interviews (out of 1,000) would be completed with households in the I-394 stratum.

POPULATION OF INFERENCE

The population of inference (or population under study) consisted of those individuals 18 years of age or older, residing within the target travel sheds, who have traveled the target segments of I-394, Hwy 55, I-35W, or Hwy 77 between 6am and 9pm at least once in the five weekdays prior to the day of interview. To efficiently sample this population, specific areas within the I-394 and I-35W travel sheds were pre-identified as being the likely residential locations for I-394 or I-35w users based on empirical data provided by the Metropolitan Council. Origin and destination data from the Household Travel Diary Survey, conducted as one element of the Twin Cities Metropolitan Area Travel Behavior Inventory (TBI), were used to identify the areas that generated the highest proportions of target trips. Sample was then proportionally allocated to those areas. For example, the I-394 travel shed had a total of 62 separate areas of which six were sampled. The I-35W travel shed had a total of 28 separate areas of which seven were sampled. Table 1 provides information on the sampled areas, such as (A) the volume of trips as measured in the TBI, (B)[5], the percent of all trips as measured in the TBI, (C) and the percent of all trips as measured in this baseline survey.

TABLE 1:
SAMPLE AREAS, I-394 & I-35W

AREA	TBI TRIP VOLUME (A)	PCT OF ALL TBI TRIPS (B)	PCT OF ALL BASELINE TRIPS C)
I-394 Strata			
Total (62 Separate Areas)	386,473		
Golden Valley	44,943	11.6	26.1
St Louis Park	69,000	17.9	26.0
Minnetonka	53,113	13.7	25.1
Plymouth	24,802	6.4	16.1
Wayzata	8,875	2.3	3.4
Minneapolis (Western Tracts)[6]	17,389	4.5	3.1
I-35W Strata			
Total (28 Separate Areas)	295,734		
Apple Valley	17,258	5.8	6.4
Bloomington	68,106	23.0	17.8
Burnsville/Savage	24,985	6.8	7.4
Eagan	17,123	5.8	5.6

[5] Column B does not total 100% because the sampled areas do not cover all areas contributing to the total trips.
[6] These tracks were rotated into the sample later than other others but still prior to Thanksgiving. 305 records were dialed resulting in 21 completed interviews.

Eden Prairie	15,522	5.3	6.0
Edina	67,342	22.8	22.1
Richfield	39,383	13.3	34.7

SAMPLE OBJECTIVES

The sample design implemented for the baseline study incorporated three explicit objectives. The first objective was to ensure that dialing productivity would be as efficient as possible given the random nature of travel incidence along I-394 and I-35W. This was achieved by analyzing those areas most likely to generate the highest incidence rates and fielding sample in those areas only (see Table 1).

The second objective consisted of attempting to capture travel behavior on the I-394 corridor that reflected normal commuting patterns (i.e., travel from west to east in the morning and from east to west in the evening) to mirror the operational hours of the current HOV lanes. The baseline survey data indicated that approximately 90 percent of trips reported by respondents traveling on I-394 between 6-9am were in the west-to-east direction. For reported afternoon and evening trips, 60 percent from 3-6pm were traveling east to west, as were 54 percent from 6pm-9pm.

The third and final objective was to profile trips based on set proportions by time of day: 6am-8:59am; 9am-12:59pm; 1pm-2:59pm; 3pm-5:59pm; and 6pm-9pm. Desired proportions were to obtain 80 percent of trips in the peak periods and 20 percent in all other times. Overall, sample percentages were 75 percent in the peak periods and 25 percent in all other times.

SAMPLE PROCESSING

Marketing Systems Group (MSG) of Fort Washington, PA, generated sample for the baseline according to specifications provided by NuStats staff. The amount of sample ordered was determined by an expected distribution of sample based on design parameters. These design parameters were mainly a function of an assumed "eligibility" rate for both strata. This was initially estimated at 35 percent for each stratum (i.e., it was estimated that 35 percent of the individuals we contacted in each of these strata would be eligible to participate in the interview). Another important parameter included the expected interview response rate (the proportion of eligible individuals who actually completed or partially completed the interview), estimated at 65 percent. An initial order of 3,298 records was placed on November 11th; sample pieces were specified based on areas within the I-394 and I-35W strata. Both listed and unlisted sample was ordered based on the proportions that exist in the population (approximately 70 percent listed to 30 percent unlisted).

Sample processing by MSG was done in the following manner. Based on the areas provided by NuStats, geo-demographers mapped these areas to known residential telephone exchanges. In the case where exchanges overlapped between specified areas[7], exchanges were attached to those areas that contained a higher proportion of households. Actual numbers were randomly generated by deriving unique blocks based on area code, exchange, and the 4th and 5th digits of known telephone number, (e.g. 616-555-12). The last two digits were randomly generated and each number was purged against known business listings and in some cases numbers were pre-dialed to purge known non-working numbers. Numbers were also matched against known residential

[7] This was common since our areas are highly contiguous.

listings to append names and addresses for the purpose of mailing advance letters. This process continued until the specified amount of listed and unlisted numbers was generated for each area.

2.4 SURVEY MATERIALS DESIGN

The survey materials consisted of a prenotification letter and a computer-assisted telephone interview (CATI) questionnaire. The questionnaire was developed based upon the objectives and research questions identified by a team that included Mn/DOT and other representatives from the I-394 MnPASS team. In addition, the Attitudinal Panel Survey questionnaire drew from questionnaire items included in instruments used to evaluate predecessor projects, SR91 and I-15 in California. Using this foundation, NuStats and staff of the State and Local Policy Program at the Humphrey Institute of Public Affairs at the University of Minnesota finalized the survey materials. Approval from the Institutional Review Board (IRB) of the University of Minnesota was obtained prior to administering these materials.

PRENOTIFICATION LETTER

A prenotification letter was prepared on letterhead of the Humphrey Institute of Public Affairs. The purpose of this letter was to inform respondents of the survey purpose, benefits, sponsors, and the obligations entailed in survey participation. The voluntary nature of participation was fully explained, and contact information was provided in the event that more information was desired or needed. This letter is included as Appendix A of this report. A magnet (see Figure 3) accompanied the letter, and it served both as a reminder of the subsequent telephone call and as a token of appreciation. Analyses were done to examine whether respondents who recalled receiving these two items provided significantly different responses on awareness and attitude questions. There were no differences in opinions about whether allowing single drivers to use carpool lanes and whether operating the toll lane on I-394 for 24 hours per day were good or bad ideas. Awareness of MnPASS project on I-394 was higher among persons who recalled receiving the letter. However, a follow-up analysis that regressed receipt of the letter along with selected demographic characteristics on I-394 MnPASS project awareness indicated none of these variables were significant predictors of awareness. It should be noted that respondents who did not recall receiving the letter were read a consent statement that contained much of the letter text.

FIGURE 3:
MAGNET

CATI INSTRUMENT

A telephone questionnaire was designed to collect information to meet the objectives of the Attitudinal Panel Survey. This questionnaire contained items to screen for eligibility; to capture attitudes and opinions; to assess awareness, knowledge, and acceptance of MnPASS; to collect both usual travel behavior and also detailed information about a reference trip; to identify the demographic and socio-demographic characteristics of respondents; and to recruit participants into the panel. The questionnaire is contained in Appendix B of this report.

STATED PREFERENCE QUESTIONS

An important section of this instrument was the stated preference (SP) questions that were developed to measure willingness to pay for use of the HOT lane. The SP measurements that were used in the Attitudinal Panel Survey were unique in that two different methods were used. The reasons for the two methods were: (1) to add confirmatory credibility to the baseline SP results, assuming similar estimates of demand resulted, and (2) to assess which of the two methods better estimated the demand as measured in the Wave 2 panel survey.

Both methods were introduced with the same text and used the same trade-off question formats, as shown below.

Now assume you're making the same trip in the future that you just told me about.
It's a trip on the same day, at the same time of day, for the same purpose, and you're under the same time pressures. You enter the freeway, I-394, and find out that you can make this trip using a toll lane and paying via electronic toll collection if you want to.

[Either VERSION 1]
If you were to use the general traffic lanes on I-394, your trip would take *TT+Y minutes* and be free. If you were to use the toll lane you would pay *$X* and your trip would take *TT minutes*, saving *Y minutes*. Now under these conditions, which would you choose to do?

Use the toll lane, pay $X and save Y minutes	001
Use the general lane for free	002

[or VERSION 2]
If you were to use the toll lane on I-394, you would pay *$X* and your trip would take *TT minutes.*
If you were to use the general lanes, your trip would take *TT+Y minutes, Y minutes* longer than the toll lane, but it would be free. Now under these conditions, which would you choose to do?

Use the general lane for free	002
Use the toll lane, pay $X and save Y minutes	001

Method A

First, each person received four different scenarios, each with a different amount of time saving (Y = 5, 10, 15 or 20 minutes) and toll (X = 50 cents, $1, $2, $3, $4, $5, $6 or $7). The value TT used for the tolled lane was based on the respondent's estimate of their travel time with no congestion. Nine different sets of four scenarios were used across the sample, with each respondent assigned one of the nine sets at random. So, in total, 36 (9 x 4) different scenarios were used, each identifying a different time/cost tradeoff point. Also, to avoid bias due to ordering effects, the questions were asked in two different ways. Versions 1 and 2 above differ

only in the order in which the toll and non-toll options are described to the respondent. Each respondent was assigned one of the two versions at random.

Method B

Next, the same type question was asked again, but this time using the "price meter" approach. Each respondent was assigned a level of time savings (S = 5, 10 or 15 minutes) at random. Then a random toll price point was chosen (P = 50 cents, $1, $2, $3, $4, $5, $6 or $7) and the same question from above was asked. If the person said that they would pay the toll, a higher price point was chosen at random, and if they said they would not pay the toll, a lower price point was chosen at random, and the question was asked again at the new toll level. This procedure was continued until the "switching point" was identified – e.g. the respondent would be willing to pay a toll of $2, but not $3.

Pilot Testing

As part of the rigorous testing of the survey instrument, NuStats conducted cognitive interviews prior to the full pilot (or dress rehearsal). The objective of the cognitive interviews was to reveal the thought processes of respondents in interpreting questions and arriving at answers to diagnose potential problems with our questions. Thus, the goal of the cognitive interviews was problem detection and problem repair for specific questions. Each cognitive interview focused on specific questionnaire items that were expected to prove challenging for respondents to answer accurately. The goals of the interview were to assess whether this was indeed the case, to probe as to how or why the question was difficult for respondents to answer, and to provide insight into how the problem could be overcome (i.e., wording changes or additional information provided to respondent). The actual responses to the questions were not as important to the testing process as was the process that the respondent underwent to come up with the answer. Typical probing questions were: *What were you thinking? How did you come up with that? What does [term] mean to you?*

In total, 6 cognitive interviews were conducted. Participants were recruited through two employers located near on/off ramps along I-394 and I-35W. Three interviews were conducted with individuals at Carlson Hospitality, and three additional interviews were conducted at the Minneapolis-St. Paul International Airport. Consent forms stating the purpose of the full study and the cognitive interview were signed by each individual prior to the interview. A monetary incentive in the amount of $25 was provided to each respondent. Each interview was audiotaped for clarification with the main source of our findings provided by notes taken by the moderator. The results were used to refine the wording of the consent statement included in the instrument introduction, to better specify definitions of HOV lanes and the target road segments, and to refine wording pertaining to level of satisfaction of traveling and the recall period for identifying the reference trip.

Subsequent to changes based on the cognitive interviews, a pilot test (or dress rehearsal) of the data collection process was conducted on Monday, October 25th and Tuesday, October 26th with a total of 43 individuals. The process of the dress rehearsal consisted of defining an eligible participant (from the survey universe), selecting areas to be sampled, programming and testing of the CATI instrument, interviewer training, and actually collecting the data. In terms of the CATI programming, no major problems were encountered. Data results were within expected values. Subsequent to the pilot, both the questionnaire introduction and consent statement scripts were shortened. Wording of several questionnaire items and their response categories were refined.

3. DATA COLLECTION PROCEDURES & OUTCOMES

3.1 FIELD DATA COLLECTION

Data collection for the baseline portion of the Attitudinal Panel Survey was completed between November 19th and December 17th, 2004. A total of 16 interviewers participated in data collection over this time period; dialing times ran from 4pm-9pm during weekdays and 11am-7pm on Saturdays and Sundays[8]. No interviews were conducted during the Thanksgiving holidays (November 24 to 27).[9]

Initial fieldwork entailed five days of interviewing. Following this, the dialing results were analyzed in order to determine the exact eligibility rates for each of the sampling areas. These results were then used to modify the sample design parameters and further orders of sample were generated in an iterative fashion. Specific changes of the design parameters included increasing the estimated eligibility rate[10] from 35 percent initially to nearly 70 percent based on dialing results, as well as re-allocating sample away from areas with low incidence to those with higher incidence. Table 2 indicates the final eligibility rates from our sampled areas. Higher eligibility rates were found in the I-394 stratum than in the I-35W stratum.

TABLE 2:
FINAL ELIGIBILITY RATES BY AREA

SAMPLE AREA	ELIGIBILITY RATE
I-394 Strata	
Golden Valley	76.5
St Louis Park	68.1
Minnetonka	68.6
Plymouth	79.6
Wayzata	70.2
Minneapolis (Western Tracts)	50.0
I-35W Strata	
Apple Valley	64.6
Bloomington	55.2
Burnsville/Savage	62.0
Eagan	59.6
Eden Prairie	48.0
Edina	63.5
Richfield	58.1

[8] Not including callbacks in which the respondent specified the time of the callback.
[9] Interviews were conducted immediately after so some reported travel might have happened during that time. The data included a date of interview; however, a date of travel was not captured.
[10] Eligibility was defined as individuals 18 years of age or older who had traveled along one of the target road segments between 6am and 9pm once in the field weekdays prior to being interviewed.

A total of 9,493 sample records were received from MSG, of which 7,852 records were dialed. Sample received from MSG was processed into replicates containing smaller numbers of records prior to fielding. Replicates were created to ensure that the proportions by area inherent in each order of sample were maintained during fieldwork. Figure 4 indicates the number of completes per day by stratum. The pattern observed in number of completed interviews per day reflects the ebb and flow of available sample. As new sample replicates were released, interviewers were more productive in completing interviews. As interviewers "worked" the released sample to make sure all numbers were called a minimum number of times to avoid bias caused by non-contacts, interviewing productivity diminished.

FIGURE 4:
COMPLETED INTERVIEWS BY DATE AND STRATUM

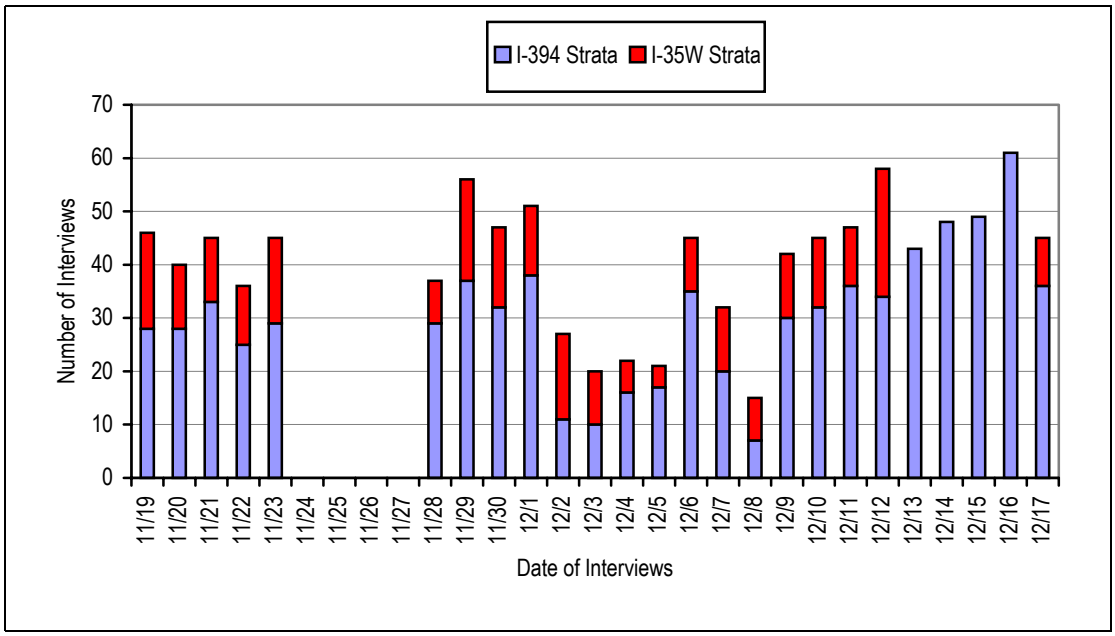


Table 3 provides major production indicators. The numbers of interviews with these specific users were tracked during data collection to ensure that 750 interviews were conducted with users of I-394 or Hwy 55 (with the majority occurring on I-394), and 250 interviews were conducted users of I-35W or Hwy 77 (with majority occurring on I-35W). Interviews with users of the Interstates took, on average, about 2 minutes longer than the interviews with users of the state roads. On average, two to three call attempts were made to complete each interview. And, the higher eligibility rate among the I-394 strata was evidenced by the lower ratio of sample pieces needed to complete an interview (7 versus 9 pieces of sample to complete one interview).

TABLE 3:
MAJOR FIELDWORK INDICATORS

ROADWAY USED MOST FREQUENTLY	AVERAGE INTERVIEW LENGTH	AVERAGE ATTEMPTS PER COMPLETE	SAMPLE DIALED PER COMPLETE
I-394	20.0	2.5	7:1
MN 55	18.4	2.9	
I-35W	19.4	2.2	9:1
MN 77	17.6	2.7	

3.2 DATA EDITING AND CODING

Daily, an analyst reviewed the data for completeness and any potential program errors. Edit checks were then conducted to examine questionnaire responses for reasonableness and consistency across items. Routine checks included such items as:

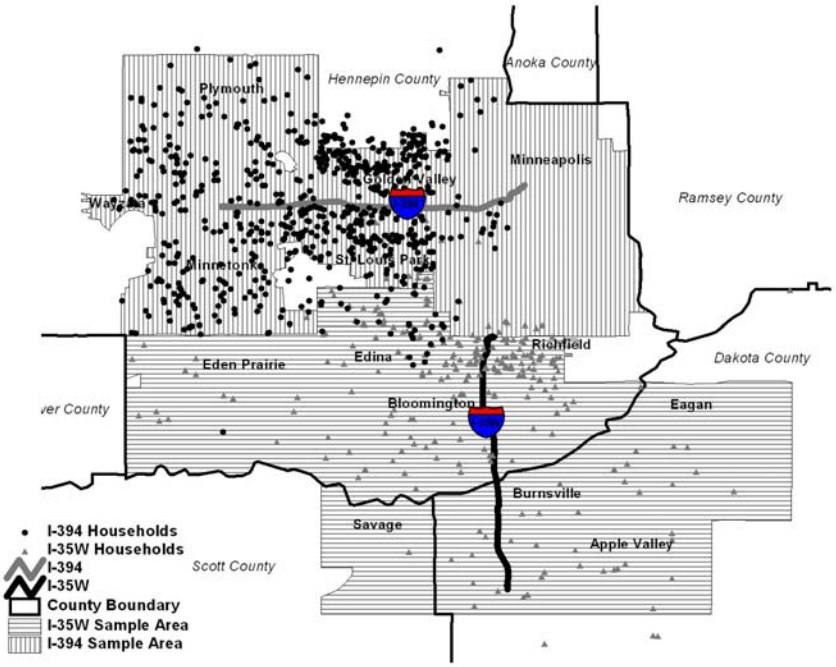
- Response code range checks,
- Checks for proper patterns of answering questions and data skips,
- Consistency checks among associated variables,
- Checks for realistic responses (e.g., trip start and end times),
- Checks for consistency between travel mode and activity, and
- Checks for high frequency of item non-response (missing data).

Extreme values or inconsistent data were corrected when possible. Some extreme or inconsistent data values that could not be corrected were edited to missing values (e.g., number of years at current residence greater than 100). Addresses for home location as well as origin and destination of the reference trip were geocoded. Address information was indexed using Census TIGER files for Hennepin, Ramsey, Dakota, Anoka, Sherburne, Wright, Carver, and Scott Counties. All addresses were coded to an x/y coordinate, if possible. About 5 percent could not be geocoded as such. These addresses were coded to the zip code centroid and identified in the data.

3.3 SURVEY PARTICIPATION

The data set contains 1,000 completed interviews (see Figure 5 for residential locations).

FIGURE 5:
LOCATION OF HOUSEHOLDS FOR 1,000 COMPLETED INTERVIEWS



A total of 1,030 respondents completed interviews, of which 1,000 were full completes, seven were partial completes, and 23 were disqualified after data editing. A response rate was calculated using American Association of Public Opinion (AAPOR) guidelines and was based on the final sample dispositions presented in Table 4. Using AAPOR's most conservative formulae (total completes / completes + eligible + percent of ineligible sample) a response rate of 38 percent was experienced. An alternative, widely used, method is to determine the percentage of respondents that complete interviews relative to numbers dialed in which an eligible household was contacted. Based on this calculation, our response rate would be 66 percent (68% in I-394 areas and 64% in I-35W areas).

TABLE 4:
FINAL SAMPLE DISPOSITIONS (OUTCOMES)

OUTCOMES	TOTAL	
	COUNT	PERCENT
Total Dialed	**7,852**	**100.0**
Ineligible	**3,838**	**48.8**
No Travel on Segments	981	12.5
Moving	34	0.4
Changing Jobs	62	0.8
Other Non-Qualified (No one over 18)	27	0.3
Over Quota	5	0.0
Caller ID	11	0.1
Non-working	2,132	27.2
Business/Government	234	3.0
Fax/Data line	267	3.4
Refused Landline	7	0.0
Language Problem	78	1.0
Unknown Eligibility, Non-Interview	**1,649**	**21.0**
Answering Machine	1,045	13.3
No Answer	531	6.8
Always Busy	73	0.9
Eligible, Non-Interview	**1,343**	**17.1**
Refusals (Total)	680	8.7
Soft Refusal	72	0.9
Hard Refusal	141	1.8
Initial Refusal	460	5.9
Hang Up	529	6.7
Respondent Never Available (Callbacks Only)	134	1.7
Interviews		
Total	1,030	13.1
Partial	7	0.0
Disqualified	23	0.3
Final Completes	**1,000**	**12.7**

One surprising outcome from the baseline survey was the overwhelming willingness of respondents to be re-contacted in wave 2. Ninety-eight percent (98%, or 994 persons) indicated that they would agree to be re-contacted in the next phase of the Attitudinal Panel Survey.

3.4 DATA ANALYSIS

The final data set was prepared as an SPSS database. There were 200 variables in the final data file. The file variables are identified by variable name. For each file variable, the File Information contains:

- Label, which is a brief description of the variable,
- Value labels, which identify the response codes, and
- Column width and alignment.

The analyses conducted with this data file were primarily descriptive – to determine baseline measures. The stated preference data were analyzed by estimating logit discrete choice models.

3.5 SAMPLE COMPOSITION

The next several chapters of this report provide survey data results and their interpretation. It is important to place these results within the context of the socioeconomics represented by our sample. When sample statistics were compared with Census 2000 population parameters as in Tables 6-9), we found that our sample under-represented young adults and lower income households. This outcome was related to several survey design issues.

First, our sampling frame did not cover non-telephone or cell phone-only households. The decision to systematically exclude non-telephone households was made because these households represent less than 1 percent of all households in the metropolitan statistical area. Cell phone-only households were excluded from the frame because there is no comprehensive valid frame for cell phone numbers. Cell phone-only ownership is highest among persons aged 18-24. Our questionnaire did allow for contacting cell phone numbers by random chance; however, less than five contacts were made in this manner. Additionally, our sample over-represented employed persons, who are more likely to report higher household incomes and higher educational attainment than unemployed persons. We related the over-representation of employed persons to the screening criteria based on roadway usage.

TABLE 5:
SAMPLE COMPOSITION: GENDER BY STRATA

Gender	Sample Strata		Total
	I-394	I-35W	
Male	54% (49%)	53% (49%)	54% (49%)
Female	46% (51%)	47% (51%)	46% (51%)
Total	100%	100%	100%
	750 responses	250 responses	1,000 responses

Note: Census 2000 percentages in parentheses (xx).

TABLE 6:
SAMPLE COMPOSITION: AGE BY STRATA

Age	Sample Strata		Total
	I-394	I-35W	
18-24	2% (10%)	2% (10%)	2% (10%)
25-34-	15% (22%)	18% (19%)	16% (20%)
35-44	21% (22%)	21% (24%)	21% (24%)
45-54	27% (19%)	23% (20%)	26% (20%)
55-64	19% (11%)	22% (12%)	20% (11%)
65+	16% (15%)	14% (14%)	15% (15%)
Total	100%	100%	100%
	750 responses	250 responses	1,000 responses

Note: Census 2000 percentages in parentheses (xx).

TABLE 7:
SAMPLE COMPOSITION: EDUCATIONAL ATTAINMENT BY STRATA

Educational Attainment	Sample Strata		Total
	I-394	I-35W	
High School or less	9% (24%)	12% (27%)	10% (26%)
Some College	20% (23%)	27% (25%)	22% (24%)
College Graduate	40% (39%)	40% (37%)	40% (38%)
Graduate Work	31% (14%)	20% (12%)	28% (13%)
Total	100%	100%	100%
	750 responses	250 responses	1,000 responses

Note: Census 2000 percentages in parentheses (xx).

TABLE 8:
SAMPLE COMPOSITION: HOUSEHOLD INCOME BY STRATA

Income	Sample Strata		Total
	I-394	I-35W	
$30,000 or less	5% (22%)	10% (18%)	6% (20%)
$30,000 to $49,999	11% (20%)	14% (20%)	12% (20%)
$50,000 to $74,999	16% (20%)	18% (23%)	16% (22%)
$75,000 to $99,999	20% (14%)	25% (15%)	21% (15%)
$100,000 to $124,999	14% (8%)	11% (9%)	14% (9%)
$125,000 to $149,999	9% (5%)	7% (5%)	8% (5%)
$150,000 or more	16% (11%)	8% (9%)	14% (10%)
Refused	9%	7%	9%
Total	100%	100%	100%
	750 responses	250 responses	1,000 responses

Note: Census 2000 percentages in parentheses (xx). Census does not report, but imputes, missing data.

TABLE 9:
SAMPLE COMPOSITION: EMPLOYMENT STATUS BY STRATA

Employment Status	Sample Strata		Total
	I-394	I-35W	
Employed Full- or Part-time	82% (72%)	80% (73%)	81% (73%)
Retired	16%	15%	16%
Homemaker	14%	20%	15%
Student	4%	4%	4%
Unemployed	2% (2%)	2% (2%)	2% (2%)
Disabled	1%	2%	1%
Total	100%	100%	100%
	750 responses	250 responses	1,000 responses

Note: Census 2000 percentages in parentheses (xx). Census data report information other than employment in significantly different formats than our questionnaire item. For this reason, only employed / unemployed comparisons are provided.

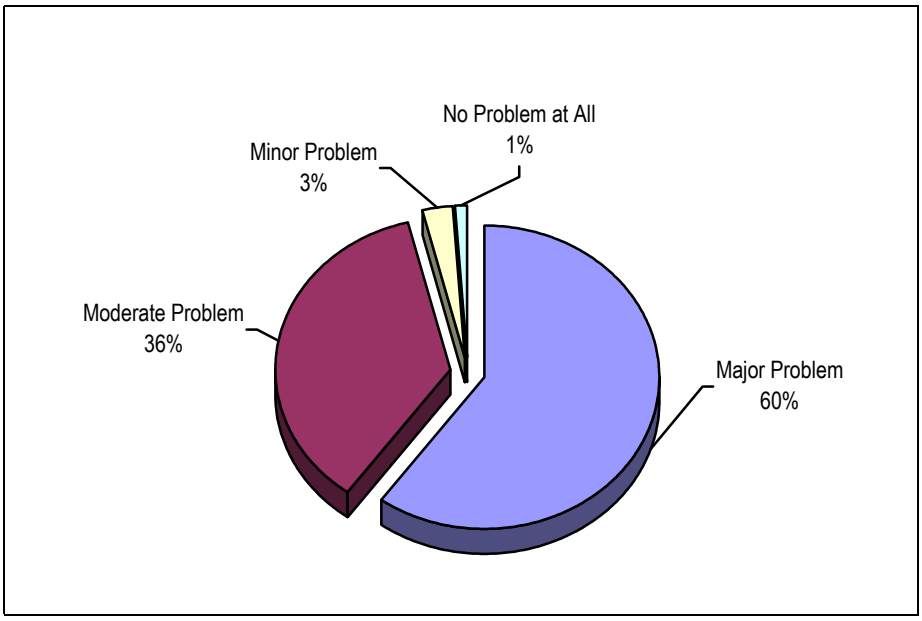
4. OPINIONS ABOUT TRAVEL IN TWIN CITIES

The questionnaire began with several opinion questions about factors affecting travel in the Twin Cities. These questions were used as "starter" questions for the interviewer to develop rapport with the respondent.

4.1 CONGESTION

Most respondents (60%) living in the I-394 and I-35W travel sheds felt that traffic congestion in the Twin Cities was a major problem. Another third (36%) thought it was a moderate problem, for a total of 96 percent that thought congestion was a problem. Less than 5 percent thought traffic congestion was a minor problem or no problem at all.

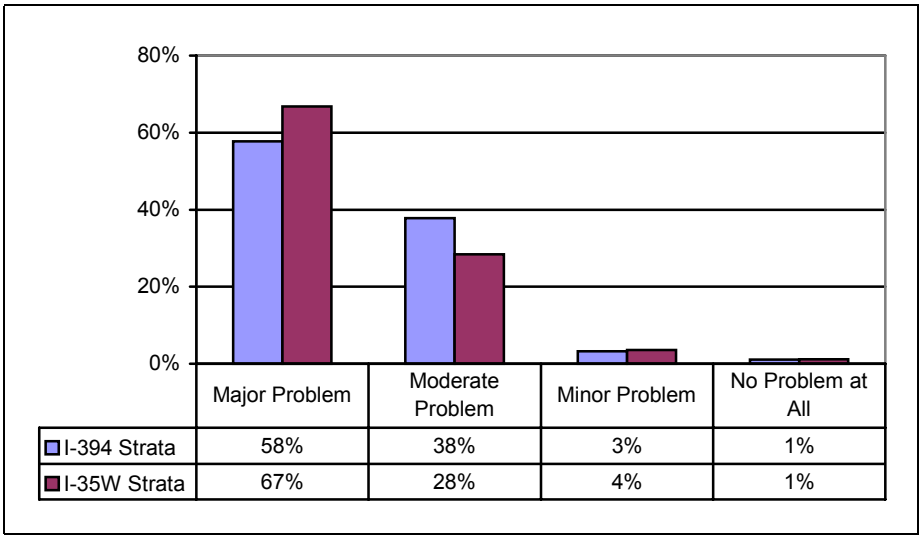
FIGURE 6:
OPINIONS ABOUT TRAFFIC CONGESTION IN THE TWIN CITIES
(N=1000)



Age was also an influencing factor in the belief that traffic congestion was a major problem in the Twin Cities, with older respondents being more likely to hold this view than younger respondents. For example, 41 percent of respondents aged 18 to 34 years thought traffic congestion was a major problem compared with 68 percent of persons aged 45 to 64 years. Likewise, longer-term residents were more likely to view traffic congestion as a major problem than were newer residents. Seventy-two percent (72%) of those who had lived at their current residence for 20 years or more thought traffic congestion was a major problem compared with 45 percent of respondents who had lived at their current residence for 1 year or less.

More respondents in the I-35W travel shed (67%) believed that traffic congestion was a major problem than respondents in the I-394 travel shed (58%). Of those persons who felt that traffic congestion was a major problem, 78 percent usually drove via SOV, 21 percent usually traveled in a HOV, and 1 percent usually traveled via transit.

FIGURE 7:
OPINIONS ABOUT TRAFFIC CONGESTION IN THE TWIN CITIES BY STRATA
(N=1000)



	Major Problem	Moderate Problem	Minor Problem	No Problem at All
I-394 Strata	58%	38%	3%	1%
I-35W Strata	67%	28%	4%	1%

4.2 HIGH OCCUPANCY VEHICLE (HOV) LANES

The opinion that the underutilized HOV lanes contributed to congestion in the general-traffic lanes was held by 68 percent of respondents, with levels of agreement consistent across residents of the I-394 and I-35W travel sheds. This opinion was strongest among respondents age 65 and older (82%). About half of all respondents (53%) felt that enforcement of carpool lane violators was not strict enough, with strongest agreement with this statement (62%) among respondents in the I-35W travel shed. Again, this opinion was strongest among respondents age 65 and older (78%). Almost one-in-five respondents (19%) really did not know if enforcement of carpool lane violators was strict enough or not. Providing a "don't know" answer to this question was associated with age – older respondents were much more likely to provide a "don't know" answer than were younger respondents.

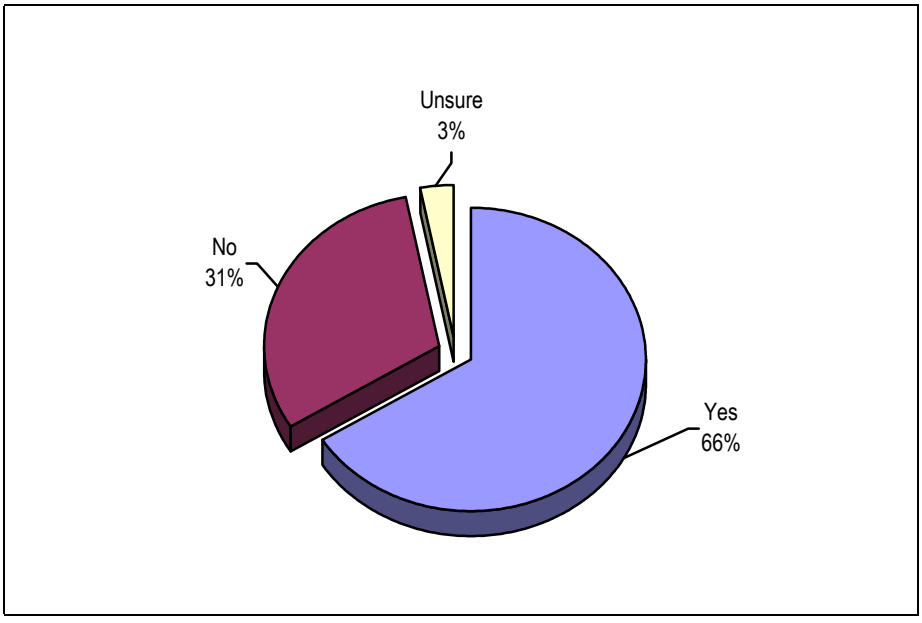
5. AWARENESS AND ACCEPTANCE OF I-394 MNPASS PROJECT

As baseline measures taken in November and December 2004 about six months prior to MnPASS implementation, respondents were asked if they had heard of the MnPASS project on I-394, what their main sources of information were, and what they knew about MnPASS. Public acceptance of the MnPASS road-pricing concept was tested by asking people whether they thought the allowing single drivers to use carpool lanes by paying a toll was a good or bad idea, and whether they thought operating the toll lane program 24 hours per day was a good or bad idea. Acceptance was also measured by asking whether MnPASS would have a positive or negative impact on specific quality of life measures, such as traffic congestion, traffic safety, noise levels on I-394, and air quality.

5.1 I-394 MNPASS PROJECT AWARENESS, INFORMATION SOURCES, AND KNOWLEDGE

Two-thirds of survey respondents had heard of the MnPASS project on I-394. Sixty-nine percent (69%) of I-394 travel shed respondents had heard of the I-394 MnPASS project, while 57 percent of those residing in the I-35W travel shed were aware of the project. Awareness was highest among respondents aged 35 and older, the college educated, and those with household incomes greater than $100,000.

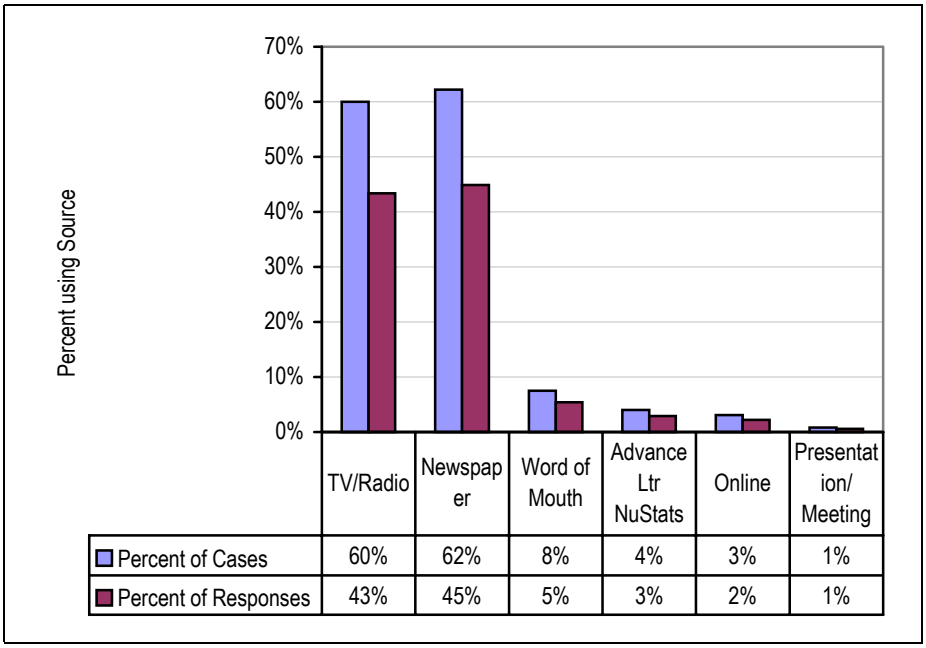
FIGURE 8:
AWARE OF I-394 MNPASS PROJECT
(N=1000)



The question, "what have been your main sources of information on the I-394 MnPASS project" was a unaided multiple response item; however, most respondents (62%) identified only one source of information while 37 percent identified two sources of information. Most people identified newspaper (62%) and TV/radio (60%) as their main sources of information. The

advance letter sent to respondents prior to the interview was cited by 4 percent. Word-of-mouth (friend, family, or co-workers) was cited by 8 percent of respondents. There were not significant differences in information sources by age.

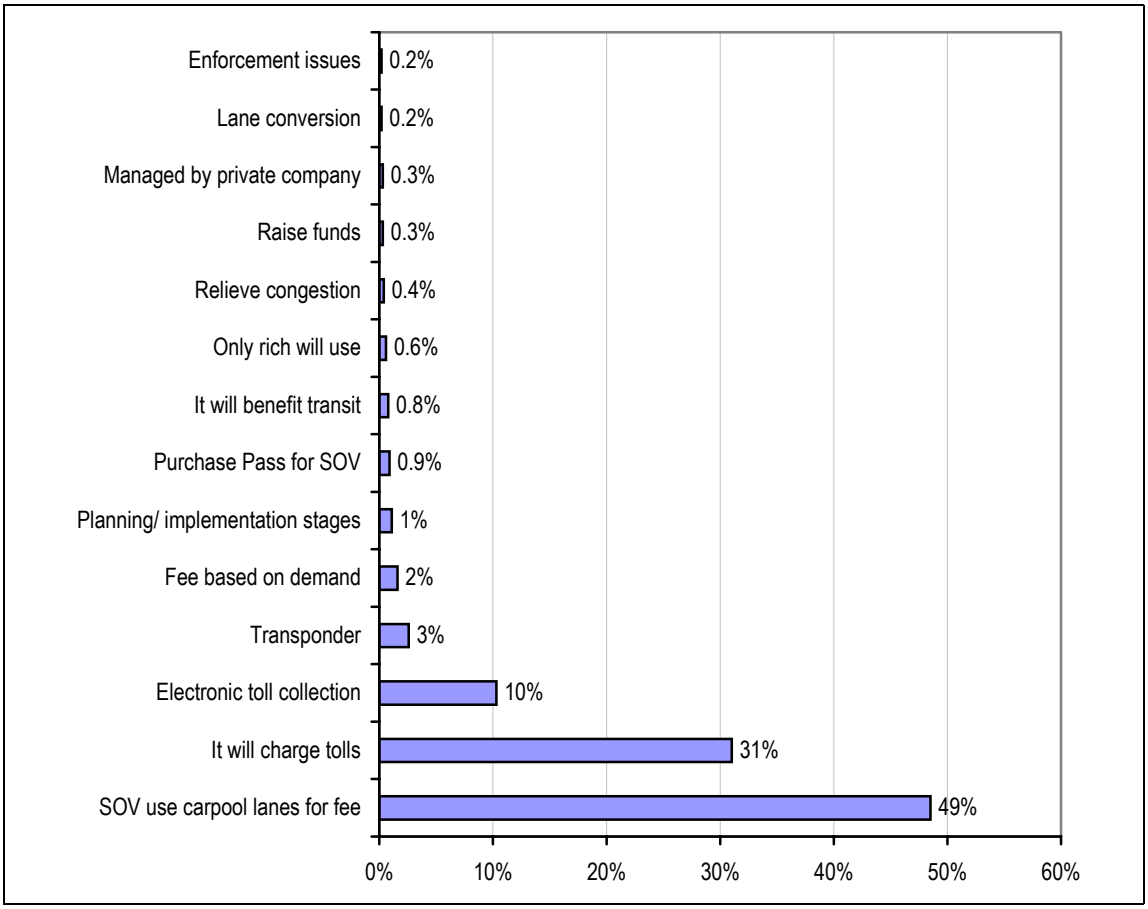
FIGURE 9:
PERCENT OF RESPONDENTS USING INFORMATION SOURCE
(N=653, Unaided Multiple Response Question; 904 Total Responses)



	TV/Radio	Newspaper	Word of Mouth	Advance Ltr NuStats	Online	Presentation/ Meeting
Percent of Cases	60%	62%	8%	4%	3%	1%
Percent of Responses	43%	45%	5%	3%	2%	1%

When asked unaided, "what do you know about I-394 MnPASS", five percent of "aware" respondents said they "were not sure", which effectively reduces the awareness to about 60 percent. The remaining "aware" respondents knew that it would charge tolls and/ or enable single drivers to use carpool lanes for a fee. About one in five knew that electronic toll collection or transponders were involved. After this surface type of information, knowledge of project specifics drops off significantly. Less than one percent of respondents (5 persons) stated they believed only the rich would use it, and fewer persons (2) said they thought there would be enforcement issues.

FIGURE 10:
WHAT RESPONDENTS KNEW ABOUT I-394 MNPASS PROJECT [OPEN-ENDED]
(N=627, Unprompted Multiple Response Question, Percents based on 897 Responses)



5.2 PUBLIC ACCEPTANCE OF I-394 MNPASS PROJECT

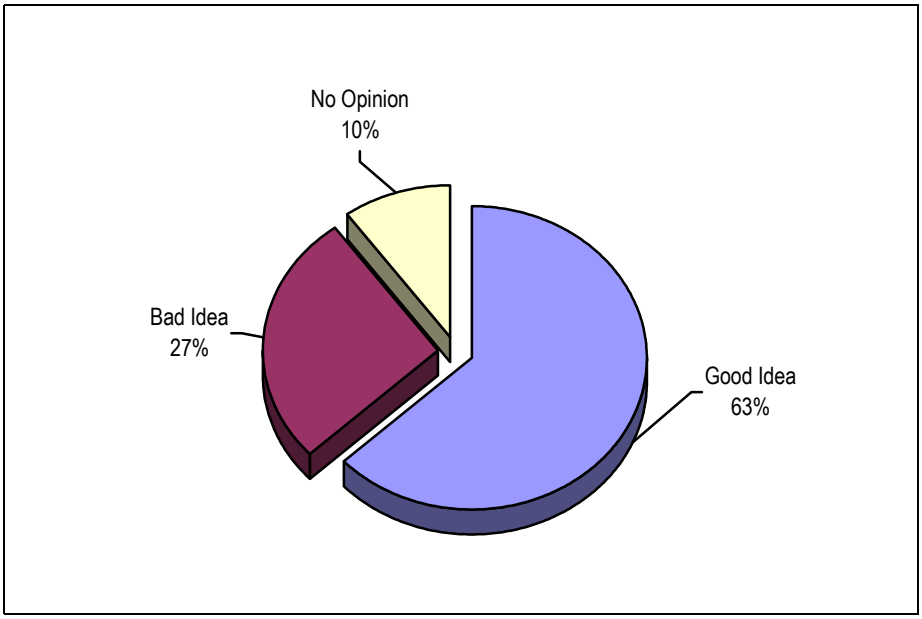
Respondents who were unaware of the I-394 MnPASS project were read a description (see box below). Then all respondents were asked two questions to examine their levels of acceptance of the project. These questions were whether it was a good idea or bad idea to (1) allow single driver to use carpool lanes by paying a toll and (2) to operate the toll lane program 24 / 7?

> ***MnPass Project Description: Read to Unaware Respondents***
> The MnPass program will permit single drivers to pay a fee to use the carpool (diamond) lanes. Drivers who pay the fee can use the carpool lanes without being in a carpool. The fee will vary based on how congested the roadway is, but it will average about $2. The program is expected to start by summer of 2005.

Most respondents (63%) thought allowing single drivers to use carpool lanes by paying a toll was a good idea. There was no difference in the distribution of opinions by awareness – respondents who had originally said they were unaware of I-394 MnPASS answered it was a good idea at the same rate as those were aware.

People residing in the I-394 travel shed were slightly more likely to think I-394 MnPASS was a good idea relative to those residing in the I-35W travel shed (64% and 58%, respectively). At the same time, respondents in the I-35W travel shed were more likely to have "no opinion" on this question than those in the I-394 travel shed (15% and 8%, respectively).

FIGURE 11:
OPINION ON ALLOWING SINGLE DRIVERS TO USE CARPOOL LANES BY PAYING A TOLL
(N=1000)



Opinions about whether allowing single drivers to use carpool lanes by paying a toll were a good or bad idea were consistent across annual household income levels. Whereas 63 percent of persons in households with an annual household income over $150,000 thought this was a good idea, so did 62 percent of those with annual household income levels of less than $50,000. Support for the project did not vary across other socio-economic variables such as gender, education, or employment. Of persons living in the I-394 travel shed, supporters comprised 65 percent of those with household incomes of $50,000 or less as well as 65 percent of those with household incomes of $150,000 or more

TABLE 10:
OPINIONS ON ALLOWING SINGLE DRIVERS TO USE CARPOOL LANES BY PAYING A TOLL BY ANNUAL HOUSEHOLD INCOME
(N=1,000)

Opinion	Less than $50,000	$50,000 - $99,999	$100,000 - $149,000	$150,000 or more	Refused
Good Idea	62%	64%	61%	63%	60%
Bad Idea	27%	26%	29%	28%	31%
No Opinion	11%	10%	10%	9%	9%
Total	100%	100%	100%	100%	100%
	179 responses	380 responses	217 responses	136 responses	88 responses

Nearly two-thirds of all unprompted statements related to allowing single drivers to use carpool lanes by paying toll were positive (64%). The most frequently cited factors were that the I-394 MnPASS project was a better use of carpool lanes (23%), adds capacity to the roadway (18%), and provides that only users pay, not everyone (12%). It should be noted that these issues did not appear in the text of the prenotification letter sent to respondents nor in the statement that was read to "unaware" respondents. Negative comments were also captured – 8 percent said that it will only benefit the rich, 5 percent that it discourages carpooling, and 5 percent that carpool lanes should be free for all.

TABLE 11:
WHAT RESPONDENTS THOUGHT ABOUT ALLOWING SINGLE DRIVERS TO USE CARPOOL LANES BY PAYING A TOLL [OPEN-ENDED]

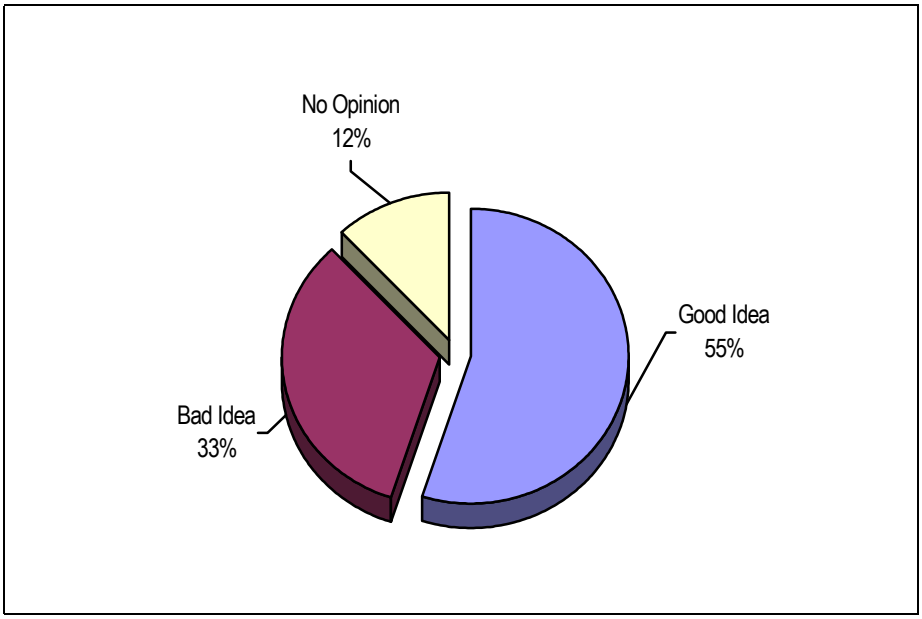
(N=897, Unaided Multiple Response Question, Percents based on 1201 Responses)

Reason	Percent of All Responses
Better use of carpool lane	23%
Adds capacity to roadway	18%
Only users pay, not everyone	12%
Only benefits the rich	8%
Generates extra revenue	6%
Discourages carpooling	5%
Carpool lanes should be free for all	5%
Will not work	3%
Double taxation	3%
Saves time for busy people	3%
Time is money for some people	2%
May increase congestion in HOV lanes	2%
Level of service will be worse in carpool lane	1%
Possible solution, current situation untenable	1%
Will not work	1%
Gives too much money to road agency	1%
Other reasons (<1%)	6%
Total	100%
	1201 Responses

When told that the toll lane program on I-394 would operate 24 hours per day, the percent of respondents who thought the I-394 MnPASS program was a good idea dropped from 63 percent to 55 percent. Residents of the I-394 travel shed were more supportive of the 24/7 operation of the toll lane program than were residents of the I-35W travel shed (58% and 47%, respectively).

FIGURE 12:
OPINION ON OPERATING THE TOLL LANE PROGRAM ON I-394 24 HOURS PER DAY

(N=1000)



Positive statements about the 24/7 operation were provided less frequently than for the concept in general, but they comprised a majority of all responses. The most frequently cited statements were that a 24/7 operation would be a better use of the carpool lane (22%) and that it adds capacity to the roadway (17%).

TABLE 12:
WHAT RESPONDENTS THOUGHT ABOUT OPERATING THE TOLL LANE PROGRAM 24 HOURS PER DAY [OPEN-ENDED]

(N=847, Unaided Multiple Response Question, Percents based on 1032 Responses)

Reason	Percent of All Responses
Better use of carpool lane	22%
Adds capacity to roadway	17%
Now carpool lanes are free to all in non-peak	11%
Only users pay, not everyone	8%
Congestion is only in peak hours	5%
Only benefits the rich	4%
Time is money for some people	4%
Generates extra revenue	3%
Provides transit options	3%
Inefficient	3%
24 hours is simpler	2%
Discourages carpooling	2%
Roads should be free for all	2%

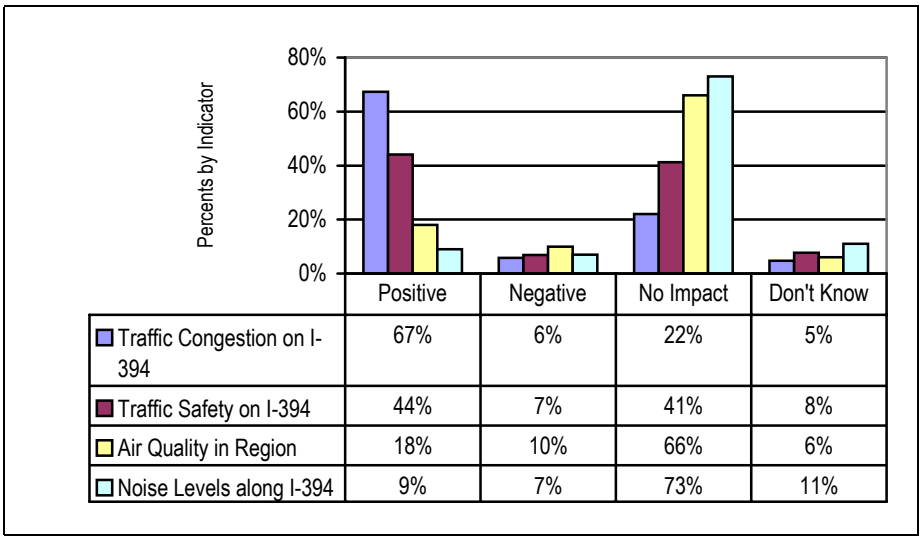
Reason	Percent of All Responses
Double taxation	2%
Unnecessary (misappropriation of funds)	2%
May increase congestion in HOV lanes	1%
Will assist with enforcement	1%
Other reasons (<1%)	5%
Total	100%
	1201 Responses

About 46 percent of respondents answered "good idea" to both questions, and 19 percent answered "bad idea" to both questions. Most people voiced an opinion on at least one of these questions – only 4 percent were unsure to both.

5.3 OPINIONS ABOUT IMPACT OF I-394 MNPASS ON QUALITY OF LIFE INDICATORS

Respondents were asked whether they thought the I-394 MnPASS project would have a positive, negative, or no impact on traffic congestion and traffic safety on I-394, on air quality in the region, and on noise levels along I-394. Respondents did not attribute any negative impacts to the I-394 MnPASS project.

FIGURE 13:
OPINIONS ON IMPACTS OF I-394 MNPASS PROJECT ON QUALITY OF LIFE INDICATORS
(N=1000)



	Positive	Negative	No Impact	Don't Know
Traffic Congestion on I-394	67%	6%	22%	5%
Traffic Safety on I-394	44%	7%	41%	8%
Air Quality in Region	18%	10%	66%	6%
Noise Levels along I-394	9%	7%	73%	11%

6. GENERAL TRAVEL BEHAVIOR

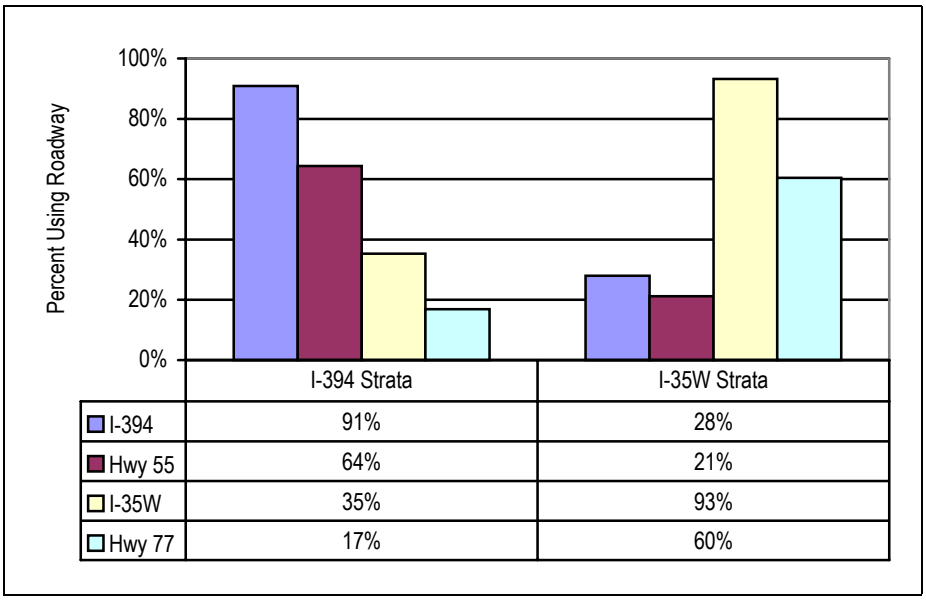
General travel behavior refers to respondents' "usual" travel along the I-394 and I-35W corridors. Our measures included which of the four target roadways were used, which one was used most frequently, the volume of trips made on the most frequently used roadway, and the travel mode(s) used. The behaviors captured in this baseline will be evaluated against reports of "usual" travel after I-394 MnPASS implementation.

6.1 TARGET ROADWAY USE

A primary objective of the baseline survey was to measure current travel behavior on the target roadways so that changes in travel behavior as captured in subsequent waves of the Attitudinal Panel Survey could be tied (or not) to I-394 MnPASS. The target roadways were I-394 between Hwy 101 and I-94; Hwy 55 between Hwy 101 and I-94; I-35W between Hwy 62 and Hwy 13; and Hwy 77 between Hwy 62 and Hwy 13.

Patterns of roadway usage were similar among respondents who reside in the I-394 travel shed and in the I-35W travel shed. Approximately 90 percent of the travel-shed residents used the Interstate within the travel shed, and approximately 60 percent used the alternative road parallel to the Interstate. At the same time, about 30 percent of travel shed residents used the Interstate outside of the travel shed, and about 20 percent used that Interstate's parallel roadway.

FIGURE 14:
ROADWAYS TRAVELED IN PAST 5 WEEKDAYS, 6AM TO 9PM BY STRATA
(N=1000)

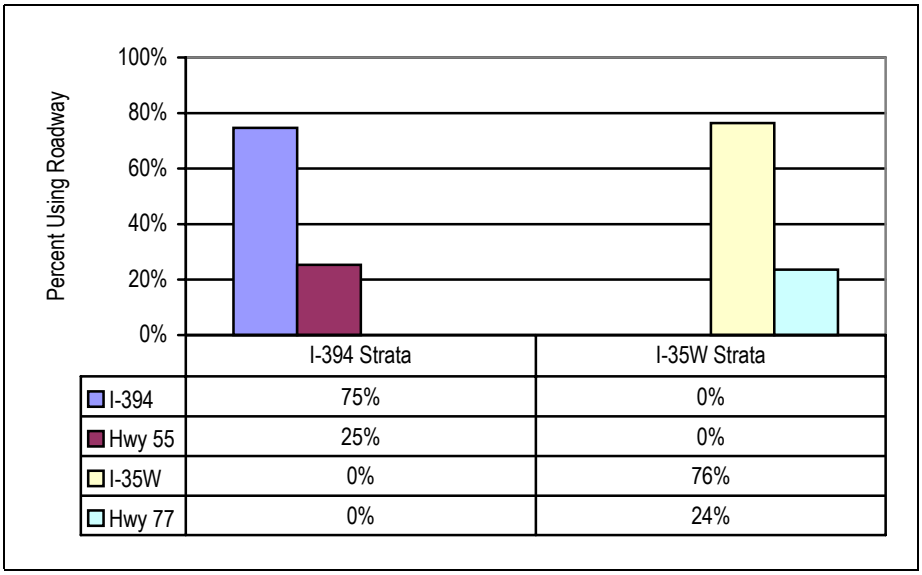


	I-394 Strata	I-35W Strata
I-394	91%	28%
Hwy 55	64%	21%
I-35W	35%	93%
Hwy 77	17%	60%

Within a 5-weekday period, five percent of respondents used all four roadways; 18 percent used three of the four roadways; 45 percent used three of the four roadways; and 32 percent used only one roadway.

For baseline purposes, we identified the roadway used most frequently among the four. Again, the patterns of usage between respondents in the I-394 travel shed and the I-35W travel shed were comparable. About three-fourths of respondents in each travel shed reported using the Interstate most frequently, with the remaining 25 percent using its parallel roadway. We had no reports of "illogical" behavior of using the more distant Interstate or its parallel alternative.

FIGURE 15:
ROADWAY USED MOST FREQUENTLY IN PAST 5 WEEKDAYS, 6AM - 9PM BY STRATA
(N=1000)



	I-394 Strata	I-35W Strata
I-394	75%	0%
Hwy 55	25%	0%
I-35W	0%	76%
Hwy 77	0%	24%

6.2 VOLUME OF TARGET ROADWAY USE

Respondents were asked the volume of their use on the roadway they used most frequently. Respondents made an average of one trip east and west bound (south and north bound) per day on the target corridors. Mean total number of trips taken east / west was significantly higher on I-394 than on Hwy 55. The mean total number of trips taken north / south showed no statistically significant difference on I-35W versus Hwy 77. Regardless of target corridor (east/west or north/south) drive alone trips predominated. Carpooling was most prevalent on I-394. Transit use was most prevalent on I-394 as well.

TABLE 13:
MEAN VOLUME OF TRIPS ON I-394, HWY 55, I-35W, AND HWY 77 IN PAST 5 WEEKDAYS, 6AM - 9PM

TYPE OF TRIP	I-394	HWY 55	I-35W	HWY 77
	(N=560)	*(N=190)*	*(N=199)*	*(N=59)*
East Bound Trips	3.86	3.09	--	--
West Bound Trips	3.97	3.69	--	--
North Bound Trips	--	--	3.09	3.74
South Bound Trips	--	--	3.42	3.61
Total Number of Trips	7.83	6.78	6.51	7.35
Total Number of Drive Alone Trips	5.62	5.37	5.14	6.05
Total Number of Carpool Trips	1.92	1.33	1.28	1.27
Total Number of Transit Trips	0.25	0.07	0.09	0.03

6.3 CURRENT MODE SHARE

Key among the baseline measures was "mode share". Mode share is defined as the proportion of trips for which a specific mode (i.e., single occupancy vehicle (SOV), high occupancy vehicle (HOV), public transit) was used. One of the research questions underlying this Attitudinal Panel Survey is HOT lanes will encourage or discourage more HOV use or other mode share changes.

In the I-394 MnPASS baseline survey, we calculated mode share by determining the modes used for all trips (not just work trips) taken east and west bound or north and southbound as presented in Table 13. We then computed a "usual mode" for each respondent based on the most commonly used travel mode.[11] The mode split among residents of the I-394 travel shed and I-35W travel sheds are comparable, with about three-fourths of respondents (76% traveling via SOV, 22 percent via HOV, and one to two percent via transit.

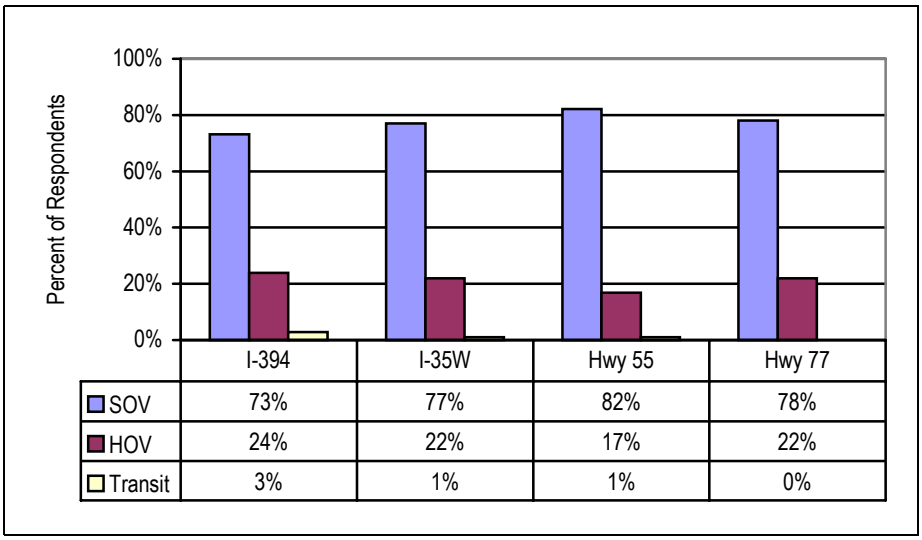
The SOV mode data track well with the SOV mode share for Hennepin County, Minnesota, as cited in the Census Transportation Planning Package (CTPP 2000). The CTPP data indicated that 75 percent drove alone as their means of transportation to work. The baseline data on mode split did not vary significantly by roadway.

[11] For purposes of the mode share variable, drive alone = SOV; carpool as driver or passenger = HOV, and bus passenger = transit.

FIGURE 16:
USUAL MODE IN PAST 5 WEEKDAYS, 6AM – 9PM BY STRATA,
(N=1000)

	I-394 Strata	I-35W Strata
SOV	76%	77%
HOV	22%	22%
Transit	2%	1%

FIGURE 17:
USUAL MODE IN PAST 5 WEEKDAYS, 6AM – 9PM BY ROADWAY USED MOST FREQUENTLY
(N=1000)



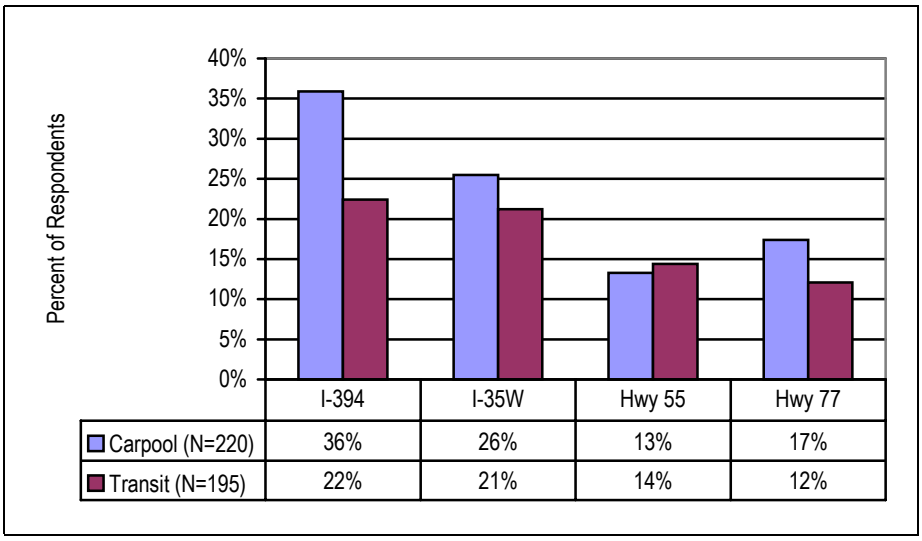
	I-394	I-35W	Hwy 55	Hwy 77
SOV	73%	77%	82%	78%
HOV	24%	22%	17%	22%
Transit	3%	1%	1%	0%

Interestingly, not all HOV travelers use the carpool lanes. Among HOV travelers, 28 percent did not use the carpool lane for at least part of the distance traveled on I-394. And on I-35W, 67 percent did not use the carpool lanes for any of the carpool trips reported.

Because carpooling and using transit are rare behaviors, respondents who did not mention using these modes in the past 5 weekdays were asked about their use of these modes "ever." Carpooling or using transit did vary by road segment. The highest incidence of carpooling or use of transit was found among respondents who most frequently use the Interstates (and I-394 in particular).

FIGURE 18:
"EVER" TRAVELED USING CARPOOL OR TRANSIT IN PAST 5 WEEKDAYS, 6AM – 9PM BY ROADWAY USED MOST FREQUENTLY

(N=1000)

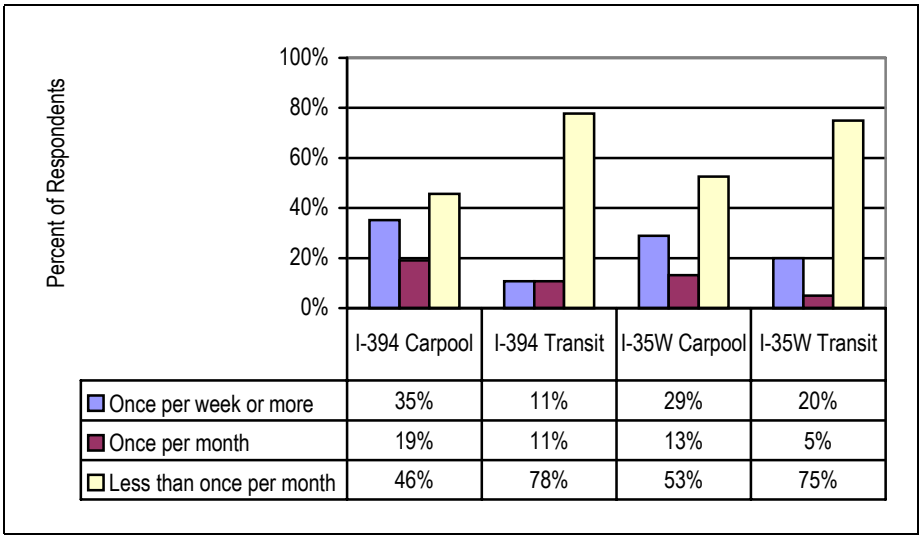


	I-394	I-35W	Hwy 55	Hwy 77
Carpool (N=220)	36%	26%	13%	17%
Transit (N=195)	22%	21%	14%	12%

About half of the 220 respondents who said they "ever" carpooled (47 percent) reported doing so less than once a month. About one-third did so at least once per week; most of these respondents most frequently used I-394. Most of the 195 respondents who said they "ever" used transit (76%) did so less than once per month. Transit usage was more prevalent on the I-35W corridor than on I-394.

FIGURE 19:
HOW OFTEN "EVER" BY CARPOOL OR TRANSIT IN PAST 5 WEEKDAYS, 6AM – 9PM BY ROADWAY USED MOST FREQUENTLY [I-394 AND I-35W ONLY]

(N=1000)



	I-394 Carpool	I-394 Transit	I-35W Carpool	I-35W Transit
Once per week or more	35%	11%	29%	20%
Once per month	19%	11%	13%	5%
Less than once per month	46%	78%	53%	75%

7. REFERENCE TRIP CHARACTERISTICS

Travel behavior is a complex phenomenon that is influenced by socio-economic, household dynamic, and transportation infrastructure factors, among others. For this project, two ways of measuring pre- and post-implementation changes in travel behavior were administered to the Panel. First, general travel patterns were captured (see previous chapter). Second, detailed characteristics were collected about the most recent trip within the past five weekdays between 6am and 9pm, regardless of purpose, on the roadway used most frequently (hereafter, the *reference trip*). In subsequent survey waves, panel respondents will be asked to report travel behaviors related to both general patterns and a reference trip.

There is always the concern that the mode of travel on a selected reference trip will not reflect the usual mode of travel for a particular individual so that change will not be accurately or reliability measured. Table 14 presents the association between the usual mode of travel and the mode of travel on the reference trip. SOV travelers exhibited the greatest stability between the reference trip mode and usual travel mode. Transit users also appeared relatively stable, but the small sample size makes it difficult to generalize. HOV travelers were the most dynamic. Whereas three-fourths (76%) traveled via HOV for usually and for the reference trip, nearly one-fourth (23%) drove alone on their reference trip, and 1 percent used transit. A travel diary will be used in the second and third panel surveys to capture the characteristics of more than one trip similar to the reference trip so that measures of "change" can be more accurate and reliable.

TABLE 14:
REFERENCE TRIP MODE BY USUAL TRAVEL MODE
(N=1000)

USUAL TRAVEL MODE	REFERENCE TRIP MODE		
	SOV	HOV	TRANSIT
	(N=757)	*(N=226)*	*(N=17)*
SOV	93%	23%	12%
HOV	7%	76%	0%
Transit	0.4%	.9%	88%

7.1 REFERENCE TRIPS BY DAY OF WEEK, TIME OF DAY, AND PURPOSE

Data collection goals were to ensure that the majority of reference trips took place during the peak periods and to obtain a fairly even distribution of reference trips across days of the week. The plan was to collect information from panel respondents in the post-implementation surveys for trips made on the same day of week and time of day. The baseline data adequately represents the times of day, but Fridays are over-represented in the sample relative to other days of the week.

TABLE 15:
REFERENCE TRIPS BY DAY OF WEEK AND TIME OF DAY

(I-394 N= 560; Hwy 55 N= 190; (I-35W N= 191; Hwy 77 N= 59))

	DAY OF WEEK					TIME OF DAY				
ROAD	MON	TUES	WED	THURS	FRI	6-9AM	9-1PM	1-3PM	3-6PM	6-9PM
I-394	13%	19%	18%	20%	30%	35%	23%	8%	25%	9%
Hwy 55	21%	17%	14%	20%	28%	31%	26%	7%	30%	6%
I-35W	16%	21%	16%	20%	26%	27%	29%	10%	24%	11%
Hwy 77	12%	47%	14%	24%	37%	41%	17%	19%	17%	7%

An additional dimension for the reference trip was to establish a purpose of the trip. This measure was an aggregation (i.e., trip type) based on the typical trip purposes used in travel demand forecasts. "Subsistence" trips are for work, work-related, or school. "Discretionary" trips are for visiting, recreation, or other purposes. "Maintenance" are shopping, medical or personal trips. The distributions by trip purpose and trip type between the I-394 corridor and the I-35W control corridor are comparable and will work well for the post-implementation analyses.

TABLE 16:
REFERENCE TRIPS BY TRIP PURPOSE AND TRIP TYPE

(I-394 N= 560; Hwy 55 N= 190; I-35W N= 191; Hwy 77 N= 59)

	TRIP PURPOSE							TRIP TYPE		
ROAD	WORK	WORK-RELATED	SCHOOL	SHOP	MED/ PERSONAL APPT	VISITING/ RECREATION	OTHER	SUBSISTENCE	DISCRETIONARY	MAINTENANCE
I-394	44%	18%	2%	6%	7%	13%	10%	64%	23%	13%
Hwy 55	44%	14%	2%	8%	7%	14%	11%	60%	24%	15%
I-35W	35%	19%	4%	6%	12%	16%	10%	58%	24%	18%
Hwy 77	54%	5%	2%	10%	5%	12%	12%	61%	24%	15%

The association between trip type and time of day was reflected in the trip purposes captured in the baseline survey. The majority of the reference trips are peak period trips. Respondents typically travel for subsistence purposes during the peak period so the majority of trips are subsistence trips.

TABLE 17:
RESPONDENTS' REFERENCE TRIP TYPES BY TIME OF DAY

(N=1000)

TRIP TYPE	6AM-9AM	9AM-1PM	1PM-3PM	3PM-6PM	6PM-9PM
Subsistence	89%	42%	49%	63%	29%
Discretionary	7%	32%	23%	25%	57%
Maintenance	4%	26%	28%	12%	14%

7.2 ATTITUDES ABOUT REFERENCE TRIP

The Attitudinal Panel Survey assesses changes in satisfaction with roadway performance pre- and post-I-394 MnPASS implementation. The baseline survey measured travelers levels of stress and satisfaction regarding their reference trips. Respondents perceived travel on the roads parallel to the Interstates, Hwy 55 and Hwy 77, to be significantly less stressful. Of the two interstates, travel on I-35W was perceived as slightly more stressful than travel on I-394.

TABLE 18:
HOW RESPONDENTS DESCRIBED TRAVEL EXPERIENCE
BY ROADWAY USED MOST FREQUENTLY

(N=1000)

TRAVEL EXPERIENCE	I-394	I-35W	HWY 55	HWY 77
Very Enjoyable	11%	10%	13%	20%
Slightly Enjoyable	38%	35%	49%	47%
Slightly Stressful	42%	48%	34%	31%
Very Stressful	7%	6%	2%	0%
Don't Know	2%	1%	2%	2%
Total	100%	100%	100%	100%
	560 responses	191 responses	190 responses	59 responses

Respondents' perceptions of their travel experiences were influenced by the time of day that they were traveling. Travel during the peak periods was perceived as the most-stress producing. Interesting, travel from 6pm-9pm was perceived as only slightly less stressful than during the peak periods.

TABLE 19:
HOW RESPONDENTS DESCRIBED TRAVEL EXPERIENCE BY TIME OF DAY

(N=1000)

TRAVEL EXPERIENCE	6-9AM	9AM-1PM	1PM-3PM	3PM-6PM	6PM-9PM
Very Enjoyable	8%	19%	17%	8%	11%
Slightly Enjoyable	35%	50%	45%	37%	37%
Slightly Stressful	47%	28%	31%	47%	46%
Very Stressful	8%	1%	4%	7%	5%
Don't Know	2%	2%	3%	2%	1%
Total	100%	100%	100%	100%	100%
	330 responses	242 responses	91 responses	254 responses	83 responses

Data on respondents' satisfaction with the overall quality of their travel confirmed respondents' descriptions of their travel experiences by roadway and time and day. Highest levels of satisfied were among travelers on the parallel roadways, particularly Hwy 77. Still few respondents could be described as dissatisfied with the overall quality of the travel. Dissatisfaction was expressed by 20 percent of I-35W travelers, 18 percent of travelers on I-394, 11 percent of Hwy 55 travelers, and 10 percent of Hwy 77 travelers.

TABLE 20:
RESPONDENTS SATISFACTION WITH OVERALL QUALITY OF TRAVEL BY ROADWAY USED MOST FREQUENTLY

(N=1000)

LEVEL OF SATISFACTION	I-394	I-35W	HWY 55	HWY 77
100% Satisfied	37%	35%	39%	49%
60% Satisfied	45%	45%	49%	41%
30% Satisfied	13%	13%	10%	10%
Not at all Satisfied	5%	7%	1%	0%
Don't Know	0%	0%	1%	0%
Total	100%	100%	100%	100%
	560 responses	191 responses	190 responses	59 responses

So how do levels of congestion influence respondents' levels of satisfaction? The roadways parallel to the Interstates are perceived as significantly less congested than the Interstates and levels of satisfaction are highest among uses of these roadways.

TABLE 21:
PERCEIVED LEVELS OF CONGESTION FOR CARPOOL AND GENERAL TRAFFIC LANES BY ROADWAY USED MOST FREQUENTLY

(N=1000)

LEVEL OF CONGESTION	CARPOOL LANES		GENERAL TRAFFIC LANES			
	I-394	I-35W	I-394	I-35W	HWY 55	HWY 77
Not at all Congested	70%	47%	13%	15%	19%	36%
Slightly Congested	15%	22%	44%	40%	58%	44%
Very Congested	2%	4%	32%	29%	17%	12%
Extremely Congested	1%	2%	10%	15%	5%	8%
Don't Know	12%	25%	1%	1%	1%	0%
Total	100%	100%	100%	100%	100%	100%
	560 responses	191 responses	560 responses	191 responses	190 responses	59 responses

Levels of satisfaction are highest in the off-peak and lowest in the peak periods. Respondents expressed slightly lower levels of satisfaction with the am peak than with the pm peak, whereas their descriptions of travel experiences were comparable for the am and pm peaks.

TABLE 22:
RESPONDENTS SATISFACTION WITH OVERALL QUALITY OF TRAVEL BY TIME OF DAY
(N=1000)

LEVEL OF SATISFACTION	6-9AM	9AM-1PM	1PM-3PM	3PM-6PM	6PM-9PM
100% Satisfied	29%	52%	56%	30%	34%
60% Satisfied	47%	40%	35%	49%	53%
30% Satisfied	16%	7%	6%	15%	10%
Not at all Satisfied	8%	1%	2%	5%	3%
Don't Know	0%	0%	1%	1%	0%
Total	100%	100%	100%	100%	100%
	330 responses	242 responses	91 responses	254 responses	83 responses

Mode was certainly a factor in travelers' levels of satisfaction, with transit users[12] expressing the highest levels of satisfaction with the overall quality of the travel on the reference trip, followed by HOV and SOV. Interestingly, there was little difference between HOV users levels of satisfaction and SOVs. Several factors may have influenced the HOV users levels of satisfaction. For example, 7 percent of I-394 carpoolers and 21 percent of I-35W carpoolers said that carpooling increased their travel time on their reference trip.

TABLE 23:
RESPONDENTS SATISFACTION WITH OVERALL QUALITY OF TRAVEL BY TRIP MODE
(N=1000)

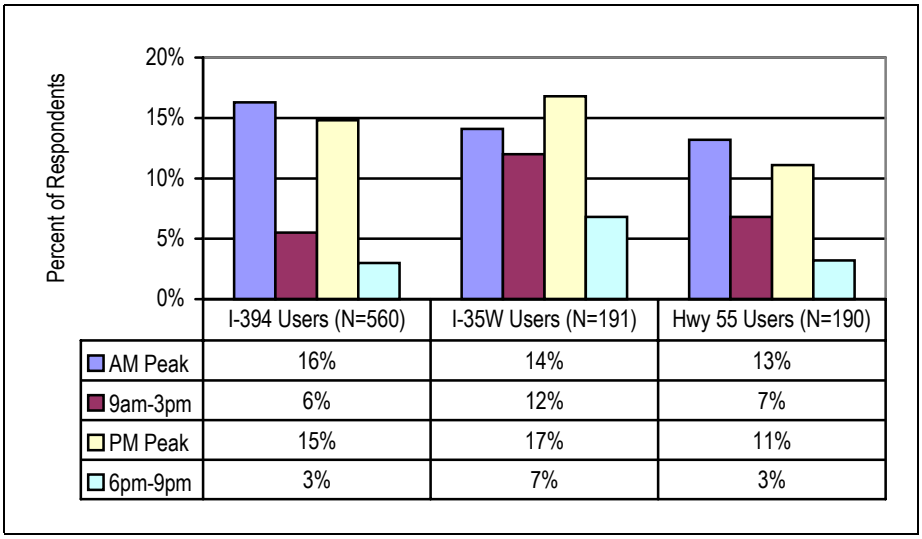
LEVEL OF SATISFACTION	SOV	HOV	TRANSIT
100% Satisfied	35%	43%	65%
60% Satisfied	47%	41%	35%
30% Satisfied	12%	13%	0%
Not at all Satisfied	5%	3%	0%
Don't Know	1%	0%	0%
Total	100%	100%	100%
	757 responses	226 responses	17 responses

[12] The small sample size of transit users needs to be considered when interpreting these results.

7.3 CHARACTERISTICS OF REFERENCE TRIPS

Respondents were asked if they were delayed by congestion on their reference trip. Fifty percent (50%) of I-35W users answered, "yes" compared to 40 percent of I-394 users, 34 percent of Hwy 55 users, and 17 percent of Hwy 77 users. Congestion delays were most prevalent during peak periods.

FIGURE 20:
TIME OF DAY OF CONGESTION DELAYS BY ROADWAY USED MOST FREQUENTLY[13]



Without congestion, respondents felt their travel time on the peak period reference trips would be considerably shorter. Travelers on the Interstates believed their trips would have been 10 to 15 minutes shorter without congestion. For those traveling on Hwy 55, the perceived time saving without congestion was less.

TABLE 24:
MEAN TRAVEL TIMES ON REFERENCE TRIP WITH AND WITHOUT CONGESTION

TIME OF DAY	I-394 USERS (N=560)		I-35W USERS (N=191)		HWY 55 USERS (N=190)	
	CONGESTION	*W/OUT CONGESTION*	*CONGESTION*	*W/OUT CONGESTION*	*CONGESTION*	*W/OUT CONGESTION*
6am-9am	33.19	20.18	31.86	21.85	28.10	22.32
3pm-6pm	38.37	23.46	40.69	23.94	29.17	23.05

In addition to congestion, making stops can increase travel time. Only 10 percent of respondents made stops while on their reference trip. Ten percent (10%) of I-394 users made stops. More than half of these respondents (59%) said that the stops were to take care of personal business like shopping. Another 31 percent said their stops were to drop off or pick up passengers. HOV and transit users were also asked if they stopped at a park-and-ride facility on their reference trip.

[13] Because of the small sample size, Hwy 77 data have not been included in this figure.

Seven percent (7% or 18 persons) did use a park-n-ride facility while on their reference trip, and virtually all of them traveled on I-394.

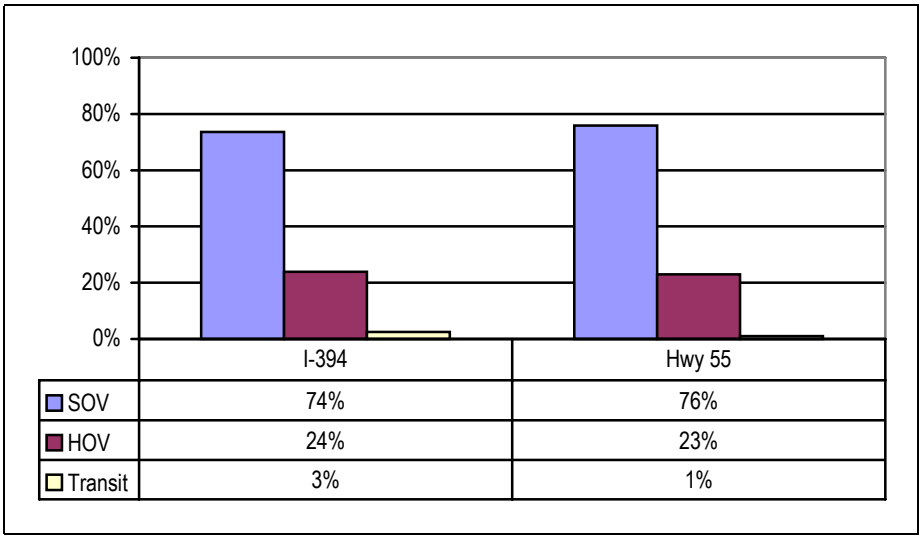
While few travelers in the I-394 corridor made stops on their reference trip, the vast majority (78%) said that they had flexibility in the time they had to arrive at their destination. Most travelers had a great deal of latitude in the time that they needed to arrive at their destinations. As might be expected, the level of flexibility was related to time of day, with respondents reporting the least amount of flexibility in arrival times during the earlier time periods of 6am-9am and 9am-1pm.

TABLE 25:
LEVEL OF FLEXIBILITY IN DESTINATION ARRIVAL TIMES BY ROADWAY USED MOST FREQUENTLY

LEVEL OF FLEXIBILITY	I-394	I-35W	HWY 55	HWY 77
No flexibility	21%	24%	22%	20%
Specific time plus/ minus 10 minutes	18%	19%	15%	22%
Specific time plus/ minus 30 minutes	12%	7%	9%	5%
More flexible than plus / minus 30 minutes	49%	50%	54%	53%
Total	100%	100%	100%	100%
	560 responses	191 responses	190 responses	59 responses

Our baseline data indicated that approximately 75 percent of respondents traveled on their I-394 reference trip via SOV, 23 percent via HOV, and 2 percent via transit. Hwy 55 travelers had a similar travel mode distribution. .

FIGURE 21:
MODE USED ON I-394 CORRIDOR REFERENCE TRIPS
(N=1000)



Not all HOV travelers used the carpool lanes for travel on I-394 during the peak period. Definitely the patterns of HOV versus general lane use differed by time of day.

TABLE 26:
LANE OF TRAVEL FOR HOVS DURING PEAK PERIODS ON I-394

LANE OF TRAVEL	TIME OF DAY	
	6-9AM	3PM-6PM
Carpool Lane Most of the Way	67%	42%
Carpool Lane Some of the Way, General Traffic Lane Some of the Way	14%	11%
General Traffic Lane Most of the Way	17%	47%
Total	100%	100%

8. MANAGING DEMAND FOR I-394 HOT LANE

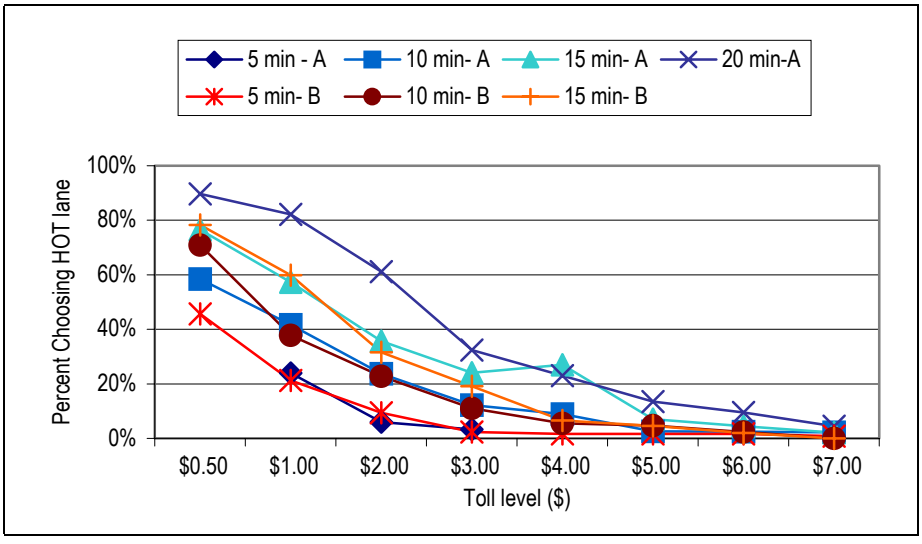
Stated preference (SP) questions were used to measure respondents' likelihood of using the I-394 HOT lane as a function of the toll level and time savings. Two methods (A and B, see page 9 in Survey Design Chapter) were used to ask the SP questions, thus, increasing our ability to confirm and validate the results. The questions were asked of all 412 respondents whose reference trip was made as a solo driver on I-394.

8.1 WILLINGNESS TO PAY TOLL

SOV drivers were willing to a pay a fee to use the HOT lane, but even at a very low level (50 cents) not everyone was willing to pay it. The results show a wide distribution of willingness to pay so that the demand levels can be managed relatively smoothly by varying the toll. About 45 percent would pay that much to save 5 minutes, while about 60 percent would pay it to save 10 minutes, 75 percent to save 15 minutes, and 90 percent would pay 50 cents to save 20 minutes. At the same time, even at fairly high toll levels above $3, a small fraction would be willing to pay for any level of time savings. This result supports the typical finding that there is a wide distribution of willingness to pay in the population. The median (50%) willingness to pay for each level of time saving was about 50 cents for 5 minutes, $1 for 10 minutes, $1.50 for 15 minutes and $2.50 for 20 minutes. This gave an implied median value of time saving (VOT) of 10 cents per minute or $6 per hour.

The chart below shows the percent of respondents who said they would pay the toll and use the HOT lane under each different level of time saving and toll. As average toll rates are expected to range from $1-$3, the data indicate that toll rates higher than the average will serve to dampen demand for the MnPASS -- as is the purpose of the demand-managed variable toll rate. There are seven lines in Figure 22, four from Method A at 5, 10, 15 and 20-minute time saving, and three from Method B (the "price meter" approach) at 5, 10 and 15 minute time saving. The two methods give very consistent results.

FIGURE 22:
WILLINGNESS TO PAY TOLL AMONG I-394 SOV DRIVERS
(N=412)



Another way to display the interaction between travel time savings and toll amount is to observe the percent of respondents who indicated a willingness to pay at various levels. Table 27 indicated that HOT demand will be managed, as intended, by varying the toll amount.

TABLE 27:
PERCENT OF RESPONDENTS WILLING TO PAY TOLL FOR TIME SAVINGS

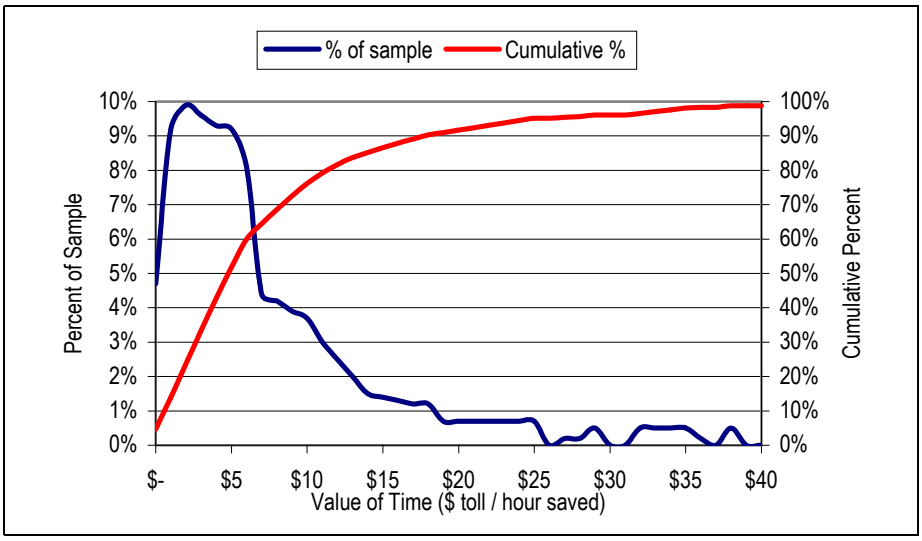
(N=412)

TOLL AMOUNT/ TIME SAVINGS	5 MINUTES	10 MINUTES	15 MINUTES	20 MINUTES
$0.50	34%	53%	72%	84%
$1.00	25%	42%	61%	77%
$2.00	12%	23%	40%	59%
$3.00	5%	11%	21%	37%
$4.00	2%	5%	10%	19%
$5.00	1%	2%	4%	9%
$6.00	0.4%	0.9%	2%	4%
$7.00	0.2%	0.4%	0.8%	2%

With the price meter approach (Method B), we can infer each respondent's value of time savings (VOT) within a fairly narrow range. As the analysis plotted below reveals, the distribution function was skewed to the left with a substantial tail to the right, resembling the log-normal distribution, which was typically found for VOT. The distribution had a mode[14] of about $2 per hour, a median of about $5 per hour, and a mean value of about $8 per hour. The cumulative distribution reached the 90 percent point at about $18 per hour, meaning that there were 10 percent of respondents willing to pay more than three times the median amount. Only one percent of respondents were "off the chart", willing to pay more than $40 per hour.

FIGURE 23:
SAMPLE DISTRIBUTION OF IMPUTED VALUE OF TIME

(N=412)



[14] "Mode" as used here is defined as the most common response provided by survey respondents.

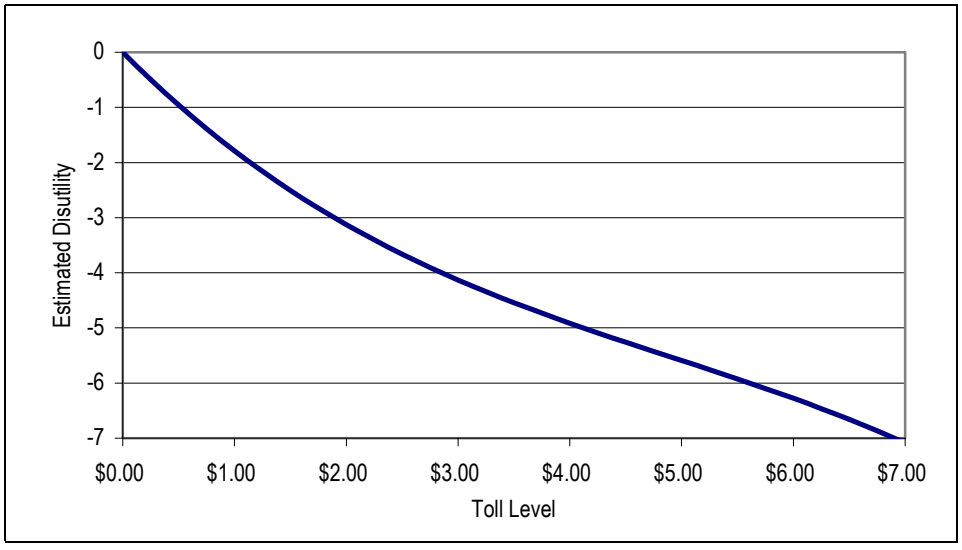
The SP data were also analyzed by estimating logit discrete choice models, a maximum-likelihood statistical technique for inferring the importance of multiple choice factors based on choice responses. The results for the simplest models estimated on the Method A and Method B data separately and combined are provided in Appendix C of this report. The resulting mean VOT of about $10/hour was in the range of values typically used for commute trips in mode choice forecasting models. After taking toll and time savings into account, there was a residual negative constant for the HOT lane, perhaps reflecting the inconvenience or reluctance to pay a toll at all, as well as the restricted ability to change lanes in the HOT lane versus the general lanes. The likelihood of choosing the toll option was somewhat less from Version 2 of the questions, where the toll option was described before the free option. This result indicated that a marginally significant order bias was present, and that it was useful to randomly present the question in both orders so that the overall data across both versions does not contain this bias. When the Method A and Method B data were combined, an extra HOT lane constant applied to Method B data only was not significant. This means that the two data sets were compatible in terms of predicting similar likelihood of using the HOT lane, and thus, were used together in further analysis.

8.2 FACTORS INFLUENCING WILLINGNESS TO PAY

Willingness to pay for use the I-394 MnPASS Express Lanes is not just about absolute travel time savings, but also about how important the travel time saved is to an individual. For this reason, further analyses (i.e., estimation runs) were done on the model to examine what other variables (both demographic, trip, and attitudinal) correlate with the willingness to use the I-394 MnPASS lanes. And, it was found that quite a few other variables (i.e., age, income, purpose for travel) are associated with willingness to pay. Significant non-linear effects were found for the toll variable, using a polynomial function with square and cube terms. A plot of the estimated function is shown below; with the disutility rising most steeply at low toll levels, then flattening out somewhat, and finally becoming steeper again at high tolls. The inflection point was at about $4.

FIGURE 24:
NON-LINEAR EFFECT OF TOLL COST

(N=412)



DEMOGRAPHIC FACTORS

Income and age were both very strong variables; with the likelihood of paying the toll highest for those with high incomes, and lowest for those under age 25 or over age 60.[15] Gender and education level were also tested, but had very little influence on willingness to pay the toll.

TRIP FACTORS

The likelihood of paying the toll tended to increase with trip distance/duration and with the frequency of making the trip. Those making commute or work-related trips were more likely to pay the toll than those traveling for other purposes. Interestingly, after other effects were taken into account, those traveling during the AM and PM peak periods would be less likely to pay the toll than those traveling off-peak. The reason for this difference was not obvious, perhaps respondents were not confident that the HOT lanes would actually provide the promised time savings during the peak. Those who actually adjusted their departure time to avoid congestion were more likely to pay the toll, while those with more flexible arrival times were less likely. Finally, those who rated congestion levels in the general lanes as high during their actual trip were more likely to say they would pay the toll. However, no significant effects were found related to the rating to overall enjoyment and satisfaction with the trip or with the rating of congestion in the carpool lane; indicating that such perceptions would not influence respondents' willingness to pay a fee to use the toll lane.

ATTITUDINAL FACTORS

Even after accounting for respondent- and trip-specific variables, a number of respondent attitudes toward I-394 MNPASS were significantly related to the stated choice of the toll lane. As one would expect, positive statements about I-394 MNPASS and its related benefits were associated with a higher stated willingness to pay the toll. The only negative effect was for those who think that the current enforcement of the HOV lane is not strict enough. Other attitudinal variables were also tested but were not shown to have influence. These included the affect on noise levels and air quality, as well as whether or not the person had previously heard of I-394 MNPASS. This latter result suggested that people were almost as willing to choose the tolled option in the SP questions even if they were hearing about the idea for the first time.

[15] Income was also tested in combination with the toll variable and was significant, but the model fit is best when including income as a general variable for HOT lane independent of toll level.

9. CONCLUSIONS

9.1 DESIGN AND FIELDWORK

The first wave of data collection for the Attitudinal Panel Survey was administered successfully with 1,000 completed interviews. Refusals to the survey were low (17%) with our response rate driven more by inability to contact respondents than by refusals. With ninety-eight percent (98%) of respondents agreeing to participate in the subsequent waves of data collection, the panel recruitment exceeded expectations.

The three sampling objectives were met. Iteratively sampling travel shed residents worked efficiently with highest eligibility rates within the I-394 sample strata for which the greatest numbers of completed interviews were needed. The data adequately captured the dynamics of travel behavior in the target corridors. One of the objectives was to measure the natural incidence of mode use on I-394 in the baseline survey to determine what level of oversampling may be necessary in subsequent waves to capture adequate samples of HOV and transit users. Our initial assessment indicates that sampling travel shed residents enabled us to adequately capture HOV users in the I-394 sample strata (i.e., 166 for usual mode and 170 for the reference trip mode). However, oversampling will be done in subsequent waves to increase both HOV and transit suers users (i.e., 18 transit users for usual mode and 15 for reference trip mode).

The survey instrument worked well with data requiring minimal editing. Data results appear internally consistent and pass the "sniff" test for reliability. The additional work in crafting the text of the consent statement in the interview script and the text of the prenotification letter after pilot testing served its purpose in making respondents feel comfortable with Panel recruitment.

9.2 KEY FINDINGS

PUBLIC ATTITUDES ABOUT TRAVEL AND CONGESTION

Perceptions of quality of current travel on the I-394 and I-35W corridors was mixed. While half of respondents described the travel experience on their most recent weekday trip as enjoyable, for the other half this travel was stressful. Yet, nearly four of five respondents were 100 percent satisfied with the overall quality of their most recent trip. Yet, nearly 100 percent thought that traffic congestion in the Twin Cities was a problem. Nearly two-thirds thought it was a major problem. These data indicate a high tolerance for congestion among a significant portion of the sample.

I-394 MNPASS AWARENESS AND ACCEPTANCE

Information on I-394 MnPASS has been disseminated by the media. Sixty percent (60%) of respondents had heard of the I-394 MnPASS Project on I-394, mainly through newspaper and TV/ radio. The majority of respondents supported the ideas of allowing single drivers to use carpool lanes by paying a toll and of operating I-394 MnPASS project 24 hours per day (63% and 55% , respectively). For supporters, the notions that it was a better use of the carpool lanes and that it added capacity to the roadway were important. Social equity issues were only surfaced by the minority of persons who thought allowing single drivers to use carpool lanes by paying a fee was a bad idea.

ATTITUDES AND TRAVEL BEHAVIOR AMONG I-394 USERS

The current mode share I-394 users captured in this survey (i.e., all travel past five weekdays between 6am and 9pm on target I-394 segment) was 73 percent SOV, 24 percent HOV, and 3 percent transit. Among the SOV drivers, there does appear to be some sporadic HOV use. About one-fifth of them indicated that traveled by HOV about once per month or more. Congestion is a reality among I-394 users, with about 80 percent reporting that they were delayed about 10 minutes by congestion on their most recent weekday trip. But still, half considered their most recent trip enjoyable and 37 percent were 100 percent satisfied with it.

MANAGING DEMAND BY VARYING TOLL

The strategy of managing demand for the HOT lane by varying price appears to be effective. The stated preference survey results indicated a wide distribution of willingness to pay that will facilitate the management of demand by varying the toll. Fifty-nine percent (59%) would pay $2 to save 20 minutes; 40 percent would pay this to save 15 minutes, and 23 percent to save 10 minutes. But 10 percent would be willing to pay $2 to save 5 minutes. The percent of SOV drivers who are willing to pay a fee to use the HOT drops significantly as the toll increases to $4 or more. Few (less than 10%) would be willing to pay $4 to save 15 minutes or less; although 30 percent would be willing to pay $4 to save 20 minutes. Virtually no one appeared willing to pay more than $6 for any amount of time savings.

APPENDIX A: ADVANCE LETTER

UNIVERSITY OF MINNESOTA

Twin Cities Campus

State and Local Policy Program
Hubert H. Humphrey Institute of Public Affairs

Humphrey Center
301-19th Avenue South
Minneapolis, MN 55455-0429

612-626-0347
Fax: 612-626-9833
E-mail: slpp@hhh.umn.edu
http://www.hhh.umn.edu/Centers/SLP/

February 3, 2005

«FNAME» «LNAME»
«HADDR»
«HCITY», «HSTAT» «HZIP1»

«SAMPN»-«REP»-«STYPE»

Dear «FNAME» «LNAME»,

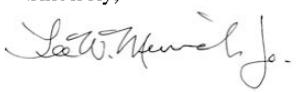
To improve highway congestion, a new transportation project is being implemented in the Twin Cities area. In 2003, the Minnesota Legislature authorized the conversion of carpool lanes to toll express lanes. These lanes permit single passenger vehicles to pay a user fee and use the carpool lanes. Your household has been randomly selected to participate in a study to evaluate this potential congestion solution. The study's sponsors are the State and Local Policy Program of the Hubert H. Humphrey Institute of Public Affairs at the University of Minnesota and the Minnesota Department of Transportation. Full participation in this study requires your consent to be interviewed on three separate occasions over the next 16 months. These interviews will enable researchers to examine changes in behavior, opinion, or attitudes before and after implementation of the toll express lane project. This information will be vital to the effective operation of the region's highways and transportation network.

A representative of NuStats, a professional survey research firm, will telephone your household in about a week to select an adult to be interviewed. Please share this letter with other adults in your household so they will also be familiar with this study. The interview should take about 15 minutes and will examine your opinions on congestion, carpool lanes, and other transportation issues as well as collect travel information relating to your use of the I-394 or I-35W corridors. To ensure a representative sample, you will also be asked some demographic questions.

Confidentiality is critical to the success of our study. We want you to feel secure in providing candid responses to our questions. So, your name and other identifying information will be stored separately from the data files containing your responses. Any information shared with us will be held in strict confidence. Your decision to participate is voluntary. And, you may refuse to answer any question without risk. Such actions will not affect relations with any survey sponsors. The benefit of participation is helping our community deal with congestion.

If you have any questions or concerns about the study, please contact Frank Douma, the co-principal investigator 612-626-9946, fdouma@hhh.umn.edu). If you have questions about the interview, contact Chris Frye of NuStats (1-800-447-8287, cfrye@nustats.com). If you would like to talk to someone other than the researchers, contact Research Subjects Advocate line (612) 625-1650.

Sincerely,



Lee Munnich
Co-Principal Investigator
Director, State and Local Policy Program
Hubert H. Humphrey Institute

APPENDIX B: QUESTIONNAIRE[16]

Research Exempt from IRB Committee Review
Category 2:

IRB Use Only
#

5.4 Describe the tasks subjects will be asked to perform:

Suggested Research Questions for I-394 MnPASS Panel Survey Wave 1

MnPass Panel Survey

INTRO_A: Hello, my name is _____, and I'm calling on behalf of the Minnesota DOT and the Hubert Humphrey Institute of the University of Minnesota. This is not a sales call. We're conducting a survey on driving conditions in the Twin Cities.

Eligibility Screening Questions

S1. May I speak with someone who is at least 18 years of age?

ELIGIBLE, CONTINUE (GOTO S2)	1
NOT ELIGIBLE, TRANSFERRING (GOTO INTRO_B)	2
CALLBACK – NO ONE 18 YEARS OF AGE AVAILABLE (GOTO CB1)	3
CALLBACK – OTHER POTENTIAL TRAVELLER NOT AVAILABLE (GOTO CB1)	4
NOT ELIGIBLE – TERMINATE (GOTO TERM)	5

S2. Have you traveled on I-394, Hwy.55, I-35W, or Hwy. 77 in the past 5 weekdays between 6am and 9pm?

YES (GOTO S3)	1
NO, TRANSFERRING (GOTO INTRO_B)	2

CB1. What would be a good time to call back? Enter date and time.

TERM. Although you do not qualify for our survey today, we appreciate the time you have given us. Thank you and have a good day/evening.

INTRO_B: Hello, my name is _____, and I'm calling on behalf of the Minnesota DOT and the Hubert Humphrey Institute of the University of Minnesota. This is not sales call. We're conducting a survey on driving conditions in the Twin Cities.

[16] The questionnaire follows a standard protocol, whereby response options that are read by interviewers to respondents are in upper and lower case and response options that are not read by interviewers (i.e., unprompted questions) are in all caps.

S1B. Are you at least 18 years of age and have you traveled on I-394, Hwy.55, I-35W, or Hwy.77 in the past 5 weekdays between 6am and 9pm?

ELIGIBLE, CONTINUE (GOTO S3)	1
NOT ELIGIBLE – TRANSFERRING (GOTO INTRO_B)	2
NOT ELIGIBLE & NO OTHER ELIGIBLE RESPONDENTS AVAILABLE (GOTO TERM)	3

S3. Are you talking to me on a cell phone?

YES (GOTO S4)	1
NO (GOTO I1)	2

S4. Is there a better time to call back and talk on a landline?

YES (GOTO CB1)	1
NO – THANK & TERM	2

Informed Consent

I1. We sent a letter about this survey to your home address. You should have received it within the past week. Do you remember receiving and reading this letter?

YES (GOTO I3)	1
NO (GOTO I2)	2
DK/RF (GO TO I2)	3

I2. Can I confirm your name [and mailing address – IF ANSWERED NO]? READ AND CONFIRM.

MAILING CORRECT—GO TO CONSENT	1
MAILING INCORRECT – COLLECT ADDRESS THEN GO TO CONSENT	2

ENTER NEW MAILING ADDRESS:
I2a. NAME
I2b. ADDRESS
I2c. CITY
12d. ZIP

CONSENT. Let me explain why I've called. Your household has been randomly selected to be surveyed as part of an evaluation of a new roadway project in the Twin Cities area, resulting from statewide legislation in 2003. This interview should take about 15 minutes. I'll ask questions on congestion, carpool (diamond) lanes, and other transportation issues. I'll also collect travel information relating to your use of the I-394 and I-35W corridors and some demographic questions. Confidentiality is critical to the success of our study. Your name and other identifying information will be stored separately from the data files containing your responses.

I need your informed consent to be interviewed on three separate occasions over the next 16 months. The reason for these three interviews is to enable researchers to understand any changes in behavior, or attitudes you might have before and after the implementation of the new roadway project. The benefits of participation in the study are truly helping our community identify new ways of dealing with the congestion problem. Your decision to participate is voluntary. And, you may refuse to answer any question without risk. Such actions will not affect any relations with study sponsors.
GO TO I3.

I3. Do you understand about the study and agree to be interviewed?

YES (GOTO O1)	1
NO (THANK AND ASK FOR OTHER ELIGIBLE PERSON IN HH)	2
DK/RF (THANK AND ASK FOR OTHER ELIGIBLE PERSON IN HH)	3

General Opinion / Screening Questions – Warm Up

Great. I'll continue with the survey.

S1. In general, do you think traffic congestion in the Twin Cities is ...?
(ROTATE)

A major problem	1
A moderate problem	2
A minor problem,	3
No problem at all	4
UNSURE	998
REFUSED	999

S. Do you agree or disagree with the following statement.

	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE	DK	RF
2. General traffic lanes on roads like I-394 or I-35W are congested because too few vehicles use the carpool (diamond) lanes on those roads	1	2	3	4	998	999
3. Enforcement of carpool (diamond) lane violators is not strict enough	1	2	3	4	998	999

S4. How many people, including yourself, are currently living in your household? _____#
valid range 1-10

UNSURE	998
REFUSED	999

S5. How many motor vehicles in working condition does your household have available for use? ____#
valid range 0-10

UNSURE	998
REFUSED	999

S6. Do you plan on moving anytime in the next year?

YES (GOTO S7)	1
NO	2
UNSURE	998
RF	999

S7. And, do you plan on moving outside of the Twin Cities area?

YES (GOTO TERM - NOT ELIGIBLE FOR PANEL)	1
NO	2
UNSURE	998
REFUSED	999

S8. Do you plan on changing jobs in the next year?

YES (GOTO TERM - NOT ELIGIBLE)	1
NO	2
UNSURE	998
RF	999

MnPass Awareness / Knowledge

Now, I'd like to ask you a few questions about a new transportation project in the Twin Cities area.

A1. Have you heard of the MnPass project on I-394?

YES (GOTO A2)	1
NO (GOTO DESC)	2
UNSURE (GOTO DESC)	998
REFUSED (GOTO DESC)	999

A2. What have been your main sources of information on the MnPass project? [ALLOW MORE THAN ONE ANSWER]

TV/RADIO	1
NEWSPAPER	2
FREEWAY SIGNS	3
OTHER PRINT ADVERTISING	4
WORD OF MOUTH / FAMILY / FRIEND	5
WORKPLACE / CO-WORKER	6
ADVANCE LETTER SENT BY NUSTATS/HHI	7
OTHER (SPECIFY)	8
UNSURE	998
REFUSED	999

A3. What do you know about MnPass?
[ALLOW MORE THAN ONE ANSWER]

SINGLE DRIVERS USE CARPOOL LANES FOR FEE	1
ELECTRONIC TOLL COLLECTION	2
TRANSPONDER	3
IT WILL CHARGE TOLLS	4
IT WILL BENEFIT TRANSIT	5
ONLY RICH WILL USE	6
OTHER: SPECIFY	7
UNSURE-→READ DESC	998
REFUSED-→READ DESC	999

DESC ONLY FOR PEOPLE WHO ARE UNFAMILIAR WITH MNPASS: The MnPass program will permit single drivers to pay a fee to use the carpool (diamond) lanes. Driver who pay the fee can use the carpool lanes without being in a carpool. The fee will vary based on how congested the roadway is, but it will average about $2. The program is expected to start by the summer of 2005.

ADD QUESTIONS:

What do you think of allowing single drivers to use the carpool lanes by paying a toll? Is it a…[rotate]

Good idea	1
Bad idea	2
No opinion	3

Why do you feel this way? (Not asked of those who state "No opinion")

SAVES TIME FOR BUSY PEOPLE	1
USERS PAY NOT EVERYONE	2
TIME IS MONEY FOR SOME PEOPLE	3
BETTER USE OF CARPOOL LANES	4
ADDS CAPACITY TO ROADWAY	5
UNFAIR, SPECIFY	6
DELAYS ROADWAY IMPROVEMENT FOR ALL	7
LEVEL OF SERVICE WORSE IN CARPOOL LANE	8
INCREASES BUREAUCRACY	9
WILL NOT WORK	10
INEFFICIENT	11
ONLY BENEFITS THE RICH	12
BAD FOR ENVIRONMENT	13
TOO CONFUSING FOR PEOPLE	14
GIVES TOO MUCH MONEY TO ROAD AGENCY	15
OTHER: SPECIFY	16
CARPOOL LANES SHOULD BE FREE TO ALL	17
DON'T KNOW	998
REFUSED	999

The toll lane program on I-394 would operate 24 hours per day, meaning that the only persons who can travel in the carpool lanes at any time would be carpoolers, bus riders, motorcyclists, and those who opt to pay the toll. Is this a…[rotate]

Good idea	1
Bad idea	2
No opinion	3

Why do you feel this way? (Not asked of those who state "No opinion")

USERS PAY NOT EVERYONE	2
TIME IS MONEY FOR SOME PEOPLE	3
BETTER USE OF CARPOOL LANES	4
ADDS CAPACITY TO ROADWAY	5
UNFAIR, SPECIFY	6
INCREASES BUREAUCRACY	9
WILL NOT WORK	10
INEFFICIENT	11
ONLY BENEFITS THE RICH	12
BAD FOR ENVIRONMENT	13
TOO CONFUSING FOR PEOPLE	14
GIVES TOO MUCH MONEY TO ROAD AGENCY	15
NOW CARPOOL LANES ARE FREE TO ALL IN NON-PEAK	17
OTHER: SPECIFY	16
DON'T KNOW	998
REFUSED	999

A5. For the next few items, please tell me if you think MnPass will have a positive impact, a negative impact, or no impact at all. What impact do you think MnPass will have on…

	Positive	Negative	No Impact	DK
a. Traffic congestion on I-394?	1	2	3	998
b. Traffic safety on I-394	1	2	3	998
c. Noise levels along I-394?	1	2	3	998
d. Air quality in the region?	1	2	3	998

General Trip Making Characteristics

Now I need a bit of information about how you currently travel around the Twin Cities, whether by car, carpool, or bus. For these next few questions, I'm interested only in your travel on weekdays between the hours of 6am and 9pm.

TM1. On which of the following freeways have you traveled in the past 5 weekdays between the hours of 6am and 9pm? [READ LANDMARKS AS NECESSARY]

	YES	NO	DK
a. I-394 between Hwy101 and I-94	1	2	998
b. Hwy 55 between Hwy 101 and I-94	1	2	998
c. I-35W between Hwy 62 and Hwy 13	1	2	998
d. Hwy 77 between Hwy 62 and Hwy 13	1	2	998

TM2. IF MORE THAN ONE: On which one do you travel most frequently on weekdays between 6am and 9pm? [ALLOW ONLY ONE ANSWER, AS NECESSARY REMIND THAT WE'RE TALKING ABOUT SPECIFIC STRETCHES OF I-394 AND I-35W]

I-394	1
I-35W	2
HWY 55	3
HWY 77	4
DK – GO TO FLIP	9998

FLIP: RANDOM SELECTION OF ANSWERS GIVEN IN TM1
(W/ APPROPRIATE FOLLOWUP)

TM3. IF TM2 RESPONSE, I-394 / HWY 55: How many eastbound trips [TOWARD DOWNTOWN] did you make on [TM2 response] in the past 5 weekdays between 6am and 9pm? And how many westbound trips?

a. EASTBOUND _____ valid range = 1-10
b. WESTBOUND _____ valid range = 1-10

IF TM2 RESPONSE, I-35W / HWY 77: How many northbound trips [TOWARD DOWNTOWN] did you make in the past 5 weekdays between 6am and 9pm? And how many southbound trips?

c. NORTHBOUND _____ valid range = 1-10
d. SOUTHBOUND _____ valid range = 1-10

TM4. Now consider all [TOTAL TM3] trips you made in both directions on [TM2] in the past 5 weekdays. On how many of those trips did you:

Drive alone (#)
Drive with other passengers (#) (IF > 0, ASK TM10)
Ride as a passenger in a personal vehicle(#)
Ride as a passenger in a bus (#)
Total (calculated)
CHECK AGAINST TM3RESPONSE
VALID RANGE = 1-20

COMPUTE NEW VARIABLE = USUAL MODE

SOV = mostly drive alone trips in TM4
HOV = mostly drive with other passengers or ride as passenger in person vehicle in TM4
TRANSIT= mostly ride as passenger in a bus in TM4

TM6: IF USUAL MODE = SOV or TRANSIT: Have you ever carpooled to travel this route?

YES –ASK TM7	1
NO	2
UNSURE	998
REFUSED	999

TM7: How often have you carpooled to travel this route…

More than once per week	1
About once a week	2
About once a month	3
Less often than that	4
UNSURE	998
REFUSED	999

TM8: IF USUAL MODE = SOV or HOV: Have you ever ridden on a bus to travel this route?

YES –ASK TM9	1
NO	2
UNSURE	998
REFUSED	999

TM9: How often have you ridden on a bus to travel this route…

More than once per week	1
About once a week	2
About once a month	3
Less often than that	4
UNSURE	998
REFUSED	999

TM10. IF USUAL MODE = HOV: About how many of the [TM4] carpool trips used the carpool lane for at least part of the distance on [TM2]?

Valid range 1-20<--------Carpool lane (#)

General Traffic Lane # --*Calculate difference (total carpool trips minus TM10] via software*

TM11. And so for the other [calculated #] trips, you did not use the carpool lane at all?

YES	1
NO – WORK WITH RESPONDENT TO GET CORRECT SPLIT	2
UNSURE	998
REFUSED	999

Detailed Trip Making Characteristics

For the next few questions, please think about your MOST RECENT weekday travel on [TM2].[17]

DT1. On what day of the week was that? (ALLOW ONLY ONE ANSWER)

MONDAY	1
TUESDAY	2
WEDNESDAY	3
THURSDAY	4
FRIDAY	5

[17] IF RECENT SNOW, ASK ABOUT BEFORE RECENT SNOW.

DT2. And on [DT1] at what times of day did you start your travel on [TM2] … [ALLOW MORE THAN ONE ANSWER]

	YES	NO	DK
a. 6-9am	1	2	998
b. 9am-1pm	1	2	998
c. 1pm – 3pm	1	2	998
d. 3pm – 6pm	1	2	998
e. 6pm – 9pm	1	2	998

DT3. What was the main reason for your travel on that [DT1 response] during the hours of [DT2] response? [RANDOMLY SELECT ONE PERIOD IF MORE THAN ONE. AIM FOR 40% 6-9AM, 40% 3-6PM, AND 20%REST OF DAY.

COMMUTE TO OR FROM WORK	1
WORK-RELATED	2
SCHOOL	3
SHOP	4
MEDICAL OR OTHER PERSONAL APPT	5
VISIT FRIENDS OR FAMILY	6
RECREATIONAL OR ENTERTAINMENT ACTIVITY	7
OR SOMETHING ELSE(DO NOT SPECIFY)?	998
REFUSED	999

COMPUTER NEW VARIABLE BASED ON DT3 = TARGET TRIP TYPE

MAINTENANCE = 4, 5,
SUBSISTENCE = 1, 2 3,
DISCRETIONARY = 6, 7, 998

DT4. What time did you start this trip? [military time]

DT5. Did you leave at this particular time to avoid traffic congestion on TM2?

YES	1
NO (GO TO DT7)	2
RF	999

DT6. What time would you have preferred to leave if there was no traffic congestion to avoid? [military time]

DT7. Where did you start this trip? Was it at home, work, or someplace else?

HOME	1
WORK (GOTO DT8)	2
SOMEPLACE ELSE (GOTO DT8)	3
RF	999

DT8. ***IF NOT HOME***: Can you give me a street address or the names of two nearby intersecting streets?

Address (GOTO DT8A)	1
Intersection (GOTO DT8B)	2
DK	998
RF	999

DT8a. Collect address information

DT8b. Collect xstreet information

DT8c. What city was that in? _____

DT9. At which ramp did you get ON [TM2]?
(USE RAMP FOR I-394/I-35W; Cross-street for Hwy 77 or 55)
[DROP DOWN LIST OF RAMPS OR INTERCHANGES]

DT10. And at which ramp did you get off?
(USE RAMP FOR I-394/I-35W; Cross-street for Hwy 77 or 55)
[DROP DOWN LIST OF RAMPS OR INTERCHANGES]

[THERE CAN BE EFFICIENCY BUILT INTO DT10, DT11 DEPENDING ON TM4 RESPONSE.]

DT11. ONLY IF 394 OR 35W: Were you traveling in the …

Carpool lane for most of the way or	1
The carpool lanes for some of the way and the general traffic lanes for some of the way, or	2
The general traffic lanes for most of the way	3
HELP RESP. GIVE SPECIFIC ANSWER - DK / UNSURE	998

ASK OF EVERYONE--→DT12. And were you …

Driving alone (GOTO DT17)	1
Driving with other passengers	2
Riding as a passenger in a personal vehicle	3
Riding as a passenger in a bus	4
DK	998
RF	999

COMPUTE NEW VARIABLE BASED ON DT12 RESPONSE = TARGET TRIP MODE

SOV =1
HOV = 2, 3
TRANSIT = 4

DT13. IF TARGET TRIP MODE = HOV: How many adults, 18 or older, traveled with you on this trip, [not including yourself]? #_____ Valid range = 1-6

DK	998

DT14. IF TARGET TRIP MODE = HOV: And, how many children? #_____ Valid range = 1-6

DK	999

DT15. IF TAGET TRIP MODE = HOV/TRANSIT: When you made this trip, did you park at a park and ride facility?

YES	1
NO	2
DK	998
RF	999

DT16. IF DT15 = 1: At which park and ride facility did you park in? [DROP DOWN LIST]

DT17. Now, I want to know where you ended this trip? Was it at home, work or someplace else? [THEY STARTED FROM [DT4 response] CAN'T BE SAME]

HOME	1
WORK (GOTO DT18)	2
SOMEPLACE ELSE (GOTO DT18)	3
DK	999

DT18. IF WORK/ SOMEPLACE ELSE: Can you give me a street address or the names of two nearby intersecting streets?

Address (GOTO DT18A)	1
Intersection (GOTO DT18B)	2
DK	998
RF	999

DT18A. Collect address information

DT18B. Collect xstreet information

DT18C. IF WORK/ SOMEPLACE ELSE: What city was that in? _____

DT19: How often do you make this trip on [TM2]? [IF LESS THAN 1-2 DAYS PER WEEK WE HAVE PROBLEM.]

3 or more days per week	1
1-2 days per week	2
1-3 days per month	3
Less than one day per month	4
Or less often than that	5
DK	998
RF	999

DT20: About how many miles is this trip from door-to-door? Miles (#) valid range = 5-50

DT21. What time did you arrive at this location? [military time]

COMPUTE NEW VARIABLE, TRAVEL TIME = DT21-DT4

DT22. This means your trip took about [TRAVEL TIME] minutes from door-to-door. Is this about right?

YES	1
NO→TRY TO CLARIFY START (DT4) and END (DT21) times	2
DK	998
RF	999

DT23. How much flexibility did you have in the time you had to arrive at your destination? Did you

Have to be there at a specific time	1
Have to be there at a specific time plus or minus 10 minutes	2
Plus or minus 30 minutes	3
Or did you have more flexibility in the arrival time than that?	4
DK	998
RF	999

DT24. Did you make any stops or side trips as any part of this trip?

YES	1
NO (GOTO DT26)	2
DK (GOTO DT26)	998
REFUSED (GOTO DT26)	999

DT25. Which of the following best describes the type of stops you made? Was it to… [ALLOW MORE THAN ONE ANSWER]

Drop people off	1
Pick people up	2
Take care of personal business, like shopping	3
Do a work-related activity	4
Or, did you make multiple detours for many different purposes?	5
DK	998
RF	999

DT26. Were you delayed by congestion on [TM2] on this trip?

YES	1
NO (GOTO DT28)	2
DK (GOTO DT28)	998
REFUSED (GOTO DT28)	999

DT27. Your trip took about [TRAVEL TIME] minutes door-to-door. If you had not been delayed by congestion, about how long do you think this trip would have taken? # minutes valid range = 5-120

DT29. Which of the following descriptors best captures your travel experience on [TM2 segment i.e., between Hwy 101 and I-94] at that time? [ROTATE]

Very enjoyable	1
Slightly enjoyable	2
Slightly stressful	3
Very stressful	4
DK	998
RF	999

DT30. Based on this trip, how satisfied were you with the overall quality of your travel on that road segment at that time?

100% satisfied	1
60% satisfied	2
30% satisfied	3
Not satisfied at all?	4
DK	998

DT28. How would you describe the general level of congestion in the carpool (diamond) lanes on [TM2 specific segment –e.g., between Hwy 101 and I94] at that time? Would you say the carpool lane was…[ROTATE]

Not congested at all	1
Slightly congested	2
Very congested	3
Extremely congested	4
DK	998
RF	999

DT31. What about the general traffic lanes at that time, would you say the lanes were…

Not congested at all	1
Slightly congested	2
Very congested	3
Extremely congested	4
DK	998

DT32. IF TARGET TRIP TYPE = HOV: Did carpooling in any way increase your travel time for this trip on [TM2]?

YES	1
NO GO TO SP1	2
DK	998

DT33. Your trip took about [TRAVEL TIME] minutes door-to-door. If you had not been delayed by carpooling, about how long do you think this trip would have taken? # minutes valid range = 5-120

Stated Preference Questions -- only asked of TARGET TRIP MODE = SOV and TM2 = I-394

Now assume you're making the same trip in the future that you just told me about. It's a trip on the same day, at the same time of day, for the same purpose, and you're under the same time pressures. You enter the freeway, I-394, and find out that you can make this trip using a toll lane and paying via electronic toll collection if you want to. RANDOMLY ASSIGN [$] AND [#] BELOW – FOUR TIMES SP1-4.

$ = $0.50, 1, 2, 3, 4, 5, 7

= 5, 10, 15, 20

Parameters for these questions are based upon the actual travel time (if the respondent was NOT delayed by congestion on I-394) or the respondent's projected travel time (their estimate of how long it would have taken given no congestion). This value is represented by TOLLTIME.

There are two sets of stated preference questions – one random half is presented with the following:

SP1-4. If you were to use the general traffic lanes on I-394, your trip would take TOLLTIME+[#] and be free. If you used the toll lane you would pay [$] and your trip would take TOLLTIME, saving [#] minutes. Now under these conditions, which would you choose to: [ROTATE]

Use the toll lane, pay [$] and save [#] minutes	1
Use the general lane for free	2
DK	998

Another random half is presented with:

SP1-4. If you were to use the toll lane on I-394, you would pay [$] and your trip would take TOLLTIME. If you were to use the general traffic lanes, your trip would take TOLLTIME+[#], [#] minutes longer than in the toll lane, but it would be free, Now under these conditions, which would you choose to: [ROTATE]

Use the toll lane, pay [$] and save [#] minutes	1
Use the general lane for free	2
DK	998

In order to minimize order effects, the response options are rotated at random (i.e. sometimes the "toll lane" response is first, sometimes second and vice versa).

A second set of questions in the stated preference module present a randomly selected time savings parameter – 5, 10, or 15 minutes. Price points are presented to the respondent iteratively until it is determined they would not travel the toll lane (regardless of price) or they would pay if the toll was $7. Listed below is a random example:

Assume the initial price point is $2 (time savings of some random amount, assume 10 minutes). The respondent states they would pay it, so the highest the respondent would pay (at this point) is $2. A random price point higher than this value is selected for the next question determining whether the respondent would pay that amount, given the time savings. Assume the next price point is $6, and the respondent would not pay that amount; the next price point would be $5, next $4. Let's assume the respondent would pay $4; at this point the questions would end, since there is no space between $4 (which they would pay) and $5 (which they would not pay).

SP5. The actual text of the question is "Now imagine a different scenario. If you were to use the toll lane on I-394, you would pay [$] and you would save [#] minutes. Under these conditions what would you do?

Use the toll lane, pay [$] and save [#] minutes	1
Use the general lane for free	2
DK	998

Respondent Characteristics

So we can make sure this survey represents all persons in the Twin Cities area. I need to ask some questions about you.

R1. What is the highest grade or year of school that you have completed?

HIGH SCHOOL OR LESS	1
SOME COLLEGE, TRADE OR VOCATIONAL SCHOOL	2
GRADUATED COLLECTED WITH A BA DEGREE	3
GRADUATE WORK BEYOND BA DEGREE	4
DK	998
RF	999

R2. And what is your age, are you between...

18-24	1
25-34	2
35-44	3
45-54	4
55-64	5
65+	6
RF	999

R3. Currently are you…[ALLOW MORE THAN ONE RESPONSE]

Employed full or part time (GOTO R4)	1
Homemaker	2
A Student full or part time	3
Retired	4
Disabled	5
Unemployed	6
DK	998
RF	999

R4. Do you work…

Part-time, less than 30 hours	1
Full-time, 30 hours or more	2
DK	998
RF	999

R5. IF S4>1: How many of the other people in your household work outside the home, either full- or part-time? _____ # valid range 1-9

COMPUTE NEW VARIABLE, NUMBER OF WORKERS IN HH = R3 (1) + R5

R6. How many years have you lived at your current residence?
_____ YEARS valid range = 1 - 99

R7. Do you own or rent this residence?

OWN	1
RENT	2
OTHER	3
DK	998
RF	999

R8. Are you a licensed driver?

YES	1
NO	2
DK	998
RF	999

R9. IF S4>1: How many of the other people in your household are licensed to drive? _____ # valid range = 1-9

COMPUTE NEW VARIABLE, NUMBER OF LICENSED DRIVERS IN HH = R8 + R9

R10. What is the total annual income for your household, when you consider the income of all employed individuals? Was it above or below $75,000?

BELOW $75,000 (GOTO R11A)	1
ABOVE $75,000 (GOTO R11B)	2
RF (GOTO R14)	999

R11A. Please stop me when I state the range that best describes your household's total annual income…

$30,000 or less	1
$30,000 to $49,999	2
$50,000 to $74,999	3
RF	999

R11B. Please stop me when I state the range that best describes your household's total annual income…

$75,000 to $99,999	4
$100,000 to $124,999	5
$125,000 to $149,999	6
$150,000 or above	7
RF	999

R12.GENDER (DO NOT ASK)

MALE	1
FEMALE	2

R13. How many telephone numbers are typically answered by someone in the house, not including cell phone numbers? _____ PHONE NUMBERS valid range 1-5

R15. Can you tell me your home address? If did not collect in INTRO This is to make sure that our survey represents people who live throughout Twin Cities area. IF NO: GO ON AND ASK ABOUT PANEL. IF YES TO PANEL, GET HOME ADDRESS.

Address	1
DK	998
RF	999

R15a. CITY
R15b. ZIP

Thank you so much for answering my questions today. Your participation in this survey will make a difference in our evaluation of the MnPass Project. MnPass will start operating by Summer 2005. It would help us very much if you would agree to be re-surveyed next Fall. Would you be willing to help us in the future?

YES	1
NO	2
UNSURE	998
RF	999

IF NO or UNSURE: PROVIDE MORE INFORMATION ABOUT USES OF RESULTS AND BENEFITS OF PARTICIPATION.

IF PARTICIPATING IN PANEL:

P1: We will need to contact you to let you know about next survey. Which of the following ways would be the best ways to contact you?

Home phone	1
Cell phone	2
Email	3

P2: COLLECT CONTACT INFORMATION

Confirm home number
Collect cell phone
Collect email

Model Estimation Results

The coefficients for toll cost and travel time savings are estimated very accurately with t-statistics all greater than 10.

The model fit in terms of adjusted rho-squared is near 0.3 for all models, which is quite good for disaggregate logit models.

The data from Methods A and B give similar results in terms of model fit and the overall size and significance of the parameters.

The imputed value of time saving is larger for Method A than for Method B with the combined model giving an intermediate mean value. This difference is probably due to the fact that the "price meter" approach of Method B tends to emphasize the toll variable relative to the travel time variable.

	Method A Data		Method B Data		Combined Data	
Observations	1613		3248		4861	
Rho-squared(0)	0.409		0.540		0.493	
Rho-squared(adj.)	0.281		0.340		0.319	
	Coeff.	**T.Stat.**	**Coeff.**	**T.Stat.**	**Coeff.**	**T.Stat**
Toll ($)	-0.7733	(-15.5)	-0.9629	(-22.0)	-0.8863	(-27.2)
Travel time(hr)	-9.958	(-12.2)	-8.479	(-10.2)	-9.334	(-16.0)
Imputed VOT($/hr)	$12.88		$8.81		$10.53	
HOT lane constants						
Overall	-1.236	(-5.8)	-0.5848	(-3.4)	-0.9868	(-6.5)
Version 2	-0.3047	(-2.2)	-0.1573	(-1.4)		
Method B					0.0429	(0.5)

Model with Respondent-Specific and Trip-Specific Variables

A number of statistically significant effects were found, as described below. Adding these variables improved the explanatory power of the model significantly, increasing the adjusted rho-squared from .319 to .423.

Observations	4861	
Rho-squared (0)	0.581	
Rho-squared (adj)	0.436	
SP variables	**Coefficient**	**T-statistic**
Toll ($)	-2.050	-8.6
Toll squared	0.2816	3.2
Toll cubed	-0.01905	-2.1
Travel time (hr)	-11.27	-17.2
HOT lane constants		
Overall	-1.931	-7.5
By respondent characteristics		
Household income greater than	1.207	11.2

$125,000/yr		
Age over 60	-0.7131	-6.3
Age under 25	-1.056	-2.8
By reference trip characteristics		
Trip duration (minutes)	0.0122	4.0
Frequency of similar trip (per week)	0.1112	3.3
Commute/work-related trip	0.3079	2.3
PM peak trip (3-6 pm)	-0.9608	-6.4
AM peak trip (6-9 am)	-0.6444	-5.0
Shifted actual departure time to avoid congestion	0.5082	4.7
Flexibility of arrival time	-0.4348	-3.7
Rating of congestion in general lanes	0.6581	3.3
By respondent attitudes toward MNPASS		
Toll option for single drivers is a good idea	0.4426	5.6
Will positively affect congestion	0.6162	5.0
Enforcement of current HOV not strict enough	-0.2553	-3.1
Will positively affect traffic safety	0.2556	2.7
Operating HOT lane 24/7 is a good idea	0.1460	2.3

Appendix E:

MnPASS Evaluation Attitudinal Panel Survey – Wave II Report
NuStats

HUMPHREY INSTITUTE OF PUBLIC AFFAIRS,
UNIVERSITY OF MINNESOTA

MnPASS EVALUATION ATTITUDINAL PANEL SURVEY WAVE 2

Final Report

March 2006

NuStats

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1. EXECUTIVE SUMMARY

This report documents the methods and results of the second wave of data collection for the I-394 MnPASS Evaluation Attitudinal Panel Survey (hereafter referred to as the Attitudinal Panel Survey). The Wave 2 survey, conducted during November and December 2005, occurred one year subsequent to the first wave and about six months into the implementation of the I-394 MnPASS Express Lane project. NuStats conducted a total of 950 interviews. These data were collected to evaluate the attitudinal and behavioral impacts of allowing solo drivers to pay to use carpool lanes. NuStats conducted the survey under subcontract to the State and Local Policy Program at the Humphrey Institute of Public Affairs at the University of Minnesota for the Minnesota Department of Transportation.

1.1 PURPOSE OF THE ATTITUDINAL PANEL SURVEY

In May 2005, the I-394 MnPASS Express Lane project began allowing solo drivers to pay a fee to use a 12-mile stretch of carpool lanes between downtown Minneapolis and the western suburbs. While solo drivers pay to use the MnPASS lanes, carpoolers and bus riders may use the lanes free of charge. This combination of free high occupancy vehicle use and priced solo drivers use is generally referred to as high occupancy toll (HOT) lanes. The I-394 MnPASS Express Lanes are divided into two segments for operations and pricing: (1) east of Hwy 100 to downtown Minneapolis and (2) west of Hwy 100 to Hwy 101. The per-trip fee depends on where users enter and exit the MnPASS Express Lanes. The fee is posted on changeable message signs located just before entrances to MnPASS lanes. The per-trip fee is also variable, depending on the real-time traffic levels to make sure that traffic flows at about 50 to 55 miles per hour. The per-trip fees average $1 to $4 during rush hour. Solo drivers who subscribe to the MnPASS program are issued windshield-mounted transponders for automatic vehicle identification. Each time subscribers use the lanes, their accounts are automatically debited the per-trip fee. MnPASS subscribers also pay a $1.50 monthly fee for leasing the MnPASS transponder.

The I-394 MnPASS Express Lane project represents a dynamic form of voluntary congestion pricing, where solo drivers can choose to pay to reduce their travel time, and the payment is related to the level of congestion. The project is the first of its kind in Minnesota, and is a new and significant change in highway management. Because of this, it requires a comprehensive monitoring and evaluation plan to inform political, technical, and market demand issues. The Attitudinal Panel Survey measures the attitudinal and reported behavioral responses of corridor travelers before and after the implementation of the I-394 MnPASS project.

1.2 ATTITUDINAL PANEL SURVEY METHODS

Survey panels are made up of individuals who are pre-recruited to participate on a more or less predictable basis in surveys over a period of time. The first wave of the Attitudinal Panel Survey was conducted in November / December 2004, prior to I-394 MnPASS Express Lane implementation. In it, 980 respondents were recruited through the use of probability-based sampling and agreed to a second and third wave of interviewing. The second wave of the panel was conducted in November / December 2005, about six months into MnPASS implementation. The start of the second wave was delayed three months to avoid surveying during construction of an auxiliary lane outbound on a section of the MnPASS lanes (i.e., MN100 to US169) to deal with a contra-peak congestion issue.

In addition to the 980 Wave 1 respondents who agreed to participate in the panel, two additional sample types were targeted for inclusion in the Wave 2 Attitudinal Panel Survey – transit users and MnPASS subscribers. The Wave 2 survey materials included a pre-notification letter, Travel Log, and a telephone survey instrument. The telephone instrument was a slightly modified version of the Wave 1 telephone instrument.

A total of 950 respondents completed Wave 2 interviews. Of these, 549 were panel members (interviewed in both Waves 1 and 2), 151 were MnPASS subscribers, and 250 were transit users. The Wave 2 panel experienced an attrition rate of 44% of Wave 1 respondents. Analyses revealed that people "lost" to the panel tended to be renters and age 34 or younger. This outcome is not surprising given that fact that such persons tend to be more mobile, making them difficult to locate and otherwise non-qualified to have participated in a Wave 2 interview. For the other demographic or attitudinal characteristics measured, no significant differences were found between those that were lost to the panel and those that remained.

1.3 KEY FINDINGS

- Support for the idea of allowing single drivers to use carpool lanes by paying a fee remained high after MnPASS implementation (59% "good idea" versus 29% "bad idea").
  - Approval was consistent across all income groups – 71% higher income, 60% middle income, and 62% lower-income.
  - Sixty-four percent of carpoolers were supportive of the MnPASS concept and 29% thought it was a "bad idea," and 45% of transit users were supportive, whereas 39% thought it was a "bad idea."
- MnPASS lane users represented a broad market – 87% used the MnPASS lanes as a carpooler, 7% as a single driver, and 4% as a bus rider.
  - MnPASS usage was reported across all income levels – 66% higher income, 62% middle income, and 54% lower income.
  - While transponder owners tend to be higher educated, higher income, middle-aged adults, transponder ownership cuts across all income levels, age groups, educational attainment levels, and gender.
- Users, regardless of whether they are paying or not, were very satisfied with MnPASS operations.
  - The highest measures of satisfaction were with the speed of traffic flow in the MnPASS lane (85% satisfaction), and the lowest levels were with the enforcement of MnPASS usage (45%).
  - Safety did not surface as a major issue, with 76% reporting satisfaction with the ease of identifying the MnPASS entry points, and 66% satisfied with the safety of merging into the MnPASS lanes.
  - Thirteen percent of MnPASS users did experience problems merging into the MnPASS lane from the general traffic lane, but the majority placed the responsibility for the problem on congestion or rude drivers rather than operational aspects of the lanes.
  - Paying MnPASS subscribers were exceptionally satisfied with details of having a MnPASS subscription as well as with MnPASS communications (i.e., Customer Service Center staff or the website).
- The implementation of MnPASS has not had a negative impact on carpooling on I-394 nor on traveling experiences on I-394.
  - The current mode share was comparable to pre-implementation distributions – 76% drive alone, 23% carpool, and 1% ride bus.

- The percentage of I-394 panelists reporting a congestion delay fell from 38% in 2004 to 28% in 2005.
- Satisfaction with the overall quality of travel on I-394 rose, from 36% being 100% satisfied in 2004 to 46% reporting 100% satisfaction in 2005 (among I-394 panelists).
- The percentage that rated travel on I-394 "enjoyable" after MnPASS (61%) was higher than before MnPASS (50%).

- MnPASS lane users considered the MnPASS toll a good value.
  - Seventy-one percent said the toll paid was "just right."
  - The mean value of time estimated for Wave 2 ($10.50 per hour) was higher than that captured in Wave 1 ($8.50 per hour), indicating that now that MnPASS is operating, people are more willing to pay a higher toll to avoid congestion.

1.4 CONCLUSIONS AND NEXT STEPS

Overall approval and satisfaction with the I-394 MnPASS Express Lane project is strong and broad. Six-to-seven out of ten believed that allowing single drivers to use carpool lanes by paying a toll was a good idea. Support was almost as strong among lower income households as it was among higher income households. Satisfaction among users with MnPASS operations, subscription elements, and communications is high – whether users are paying (SOVs) or not (carpoolers and bus riders). Users do not appear to be having a difficult time entering and exiting the MnPASS lanes. Almost nine out of ten reported having no problems with merging into the tolled lanes. Most users felt that paying the MnPASS toll to avoid congestion was a good value.

The third wave of the Attitudinal Panel Survey is scheduled for May 2006. Eighty-nine percent of the 950 Wave 2 respondents agreed to be interviewed in the next wave. These respondents will receive a postcard thanking them for their participation. Planning will soon begin for the third wave of data collection. The sample will be refreshed with a larger sample of randomly sampled users of the 1-394 and I-35W corridors. Finally, the survey team will identify ways to increase the efficiency of the Wave 3 survey instrument to maximize survey participation.

2. ATTITUDINAL PANEL EVALUATION METHODS

This chapter begins with a brief description of the MnPASS Panel Evaluation, including its significance and goals. It then goes on to review the objectives and outcomes of the baseline survey, followed by a more detailed description of the Wave 2 survey, including objectives, methods, outcomes and panel attrition.

2.1 MnPASS ATTITUDINAL PANEL EVALUATION: SIGNIFICANCE, DESCRIPTION AND GOALS

The I-394 MnPASS Express Lane project created Minnesota's first High Occupancy Toll (HOT) lanes. This project allowed solo drivers to pay a fee to use carpool lanes to avoid a congested stretch of I-394, from Highway 101 to I-94. Because the project's goal was (and remains) to improve the efficiency of the MnPASS lanes by increasing the person and vehicle throughput, it was critical to maintain free flow conditions at all times. To do so, fees charged change dynamically to reflect changing traffic volumes in the carpool lanes, and electronic toll collection (ETC) is used. The project required a comprehensive monitoring and evaluation plan to inform political, technical, and market demand issues. The Attitudinal Panel Survey was one component of this comprehensive evaluation.

The Attitudinal Panel Survey measures the attitudes, perceptions, and reported travel behaviors of panel members. The following information objectives were measured:

- Attitudes toward the HOT lanes and the toll system, including value pricing acceptance, equity, and perceptions of success in congestion management,
- Perceptions of performance of HOT lanes in terms of reliability and safety,
- Perceptions of performance of toll systems in terms of ease of payment, payment conditions, and enforcement,
- Changes in travel behavior in terms of time of day, frequency of travel, and route of travel,
- Characteristics of toll users, and
- Changes in mode split to measure if HOT lanes encourage more HOV use.

The baseline also served to establish a sample base for the conduct of future waves, in addition to testing the survey instrument for use in future waves.

2.2 BASELINE (WAVE 1) SURVEY 2004

Data collection for the Baseline Attitudinal Panel Survey was completed between November 19, 2004 and December 17, 2004, prior to the opening of the I-394 MnPASS express lanes. No interviews were conducted during the Thanksgiving holidays (November 24-27). The design included the use of a treatment sample and control sample. The treatment sample consisted of households selected from the I-394 corridor, and the control sample consisted of households in the I-35W corridor. Segments of each corridor were specifically designated as follows:

- I-394 Strata: Between Hwy 101 (West) and I-94 (East); alternate segment within this stratum includes Minnesota Highway 55.
- I-35W Strata: Between Hwy 62 (North) and Hwy 13 (South); alternate segment within this stratum includes Minnesota Highway 77.

Respondents eligible for inclusion in the Baseline Attitudinal Panel Survey included individuals 18 years of age or older who had traveled along one of the target road segments (I-394, Hwy 55, I-35W, or Hwy 77) between 6 am and 9 pm at least once in the five days prior to the administration of the Baseline questionnaire. A total of 750 users of the I-394 corridor and 250 users of the control corridor (I-35W) were interviewed. Nearly all of the 1,000 respondents (980) agreed to participate in future waves, thus forming the base panel sample for the Wave 2 Attitudinal Panel Survey.

Respondent eligibility rates averaged approximately 70% and the average interview length was just under 19 minutes. An overall response rate of 66% was achieved. In March of 2005, postcards were sent to panel members reminding them of their prior consent to being interviewed for Wave 2 of the Attitudinal Panel Survey.

2.3 WAVE 2 SURVEY 2005

Objectives

The objectives of the Wave 2 Attitudinal Panel Survey focused on the following issues:

- Trends in attitudes toward MnPASS,
- Characteristics of MnPASS customers (transponder owners), including willingness to pay, changes in willingness to pay since the Baseline, and demand,
- Equity issues including MnPASS acceptance, usage, and satisfaction, and
- Impacts on travel behavior as a result of MnPASS.

The Wave 2 Attitudinal Panel Survey also served to establish a sample base for the conduct of Wave 3, the final wave of the Attitudinal Panel Survey.[1]

Sampling Approach

In addition to the 980 Baseline respondents who agreed to participate in the panel, NuStats targeted two supplementary sample types for inclusion in the Wave 2 Attitudinal Panel Survey – transit users and MnPASS subscribers (transponder owners). Both of these sub-groups were targeted to ensure a sufficient sample size for analytical purposes. Transit users were sampled from a list of individuals known to use the local public transportation system supplied to NuStats by Metro Transit. The list contained name, address and contact information for 8,600 regional transit users. NuStats selected 1,076 individuals from this list for inclusion in the survey. MnPASS subscribers were sampled from a list of 650 transponder owners supplied by MnDOT. The list contained name, address, contact information and date of account opening. To maximize dialing efficiency, the entire sample was processed by partitioning it into 21 replicates, or subsamples, which, on average, included 130 sample records. Each replicate contained a proportional amount of records from each sample type.

[1] The objectives of both Wave 1 and Wave 2 were not mutually exclusive. That is to say, the Wave 2 objectives were implicit in Wave 1.

Survey Materials

The Wave 2 survey materials included a pre-notification packet and a telephone survey instrument (see samples in Appendices A - C). The pre-notification packet[2] included a letter prepared on letterhead of the Humphrey Institute of Public Affairs. The purpose of this letter was to inform respondents of the survey purpose, benefits, sponsors, and the obligations entailed in survey participation. The voluntary nature of participation was fully explained, and contact information was provided in the event that more information was desired or needed. The packet also included a Travel Log to be used by respondents to record travel information during the assigned travel week (Monday through Friday) as well as information about a specific reference trip. The reference trip characteristics were pulled from the Baseline data and attached to the Travel Log via a mail-merge label.

The telephone instrument was a slightly modified version of the baseline telephone instrument. It contained the same six sections as the Baseline questionnaire: (1) eligibility screening, (2) attitude / opinion, (3) information about travel during the assigned travel week, (4) reference trip information, (5) stated preference questions, and (6) demographics.[3] The Wave 2 instrument differed from the Baseline instrument in the following aspects:

- Addition of separate and distinct introductions and screening criteria for panel and non-panel (subscribers and transit users),
- Capture of any changes in panel household demographics since the Baseline survey,
- Inclusion of subscriber-specific questions (e.g., number of transponders owned and transponder account information),
- Inclusion of transit user-specific questions (e.g., level of importance of potential transit related improvements),
- Replacement of general toll lane references with MnPASS references, and
- Addition of MnPASS-related questions in the reference trip section.

Stated preference (SP) questions were used to measure respondents' likelihood of using the HOT lane as a function of the toll level and time savings. The questions were asked of all 412 respondents whose reference trip was made as a solo driver on the I-394. The introduction and wording of the questions is shown below.

> **Now assume you're making the same trip in the future that you just told me about. It's a trip on the same day, at the same time of day, for the same purpose, and you're under the same time pressures. You enter the freeway, I-394, and find out that you can make this trip using a toll lane and paying via electronic toll collection if you want to.**
>
> **[Either VERSION 1]**
>
> **If you were to use the general traffic lanes on I-394, your trip would take *TT+Y minutes* and be free. If you were to use the toll lane, you would pay *$X* and your trip would take *TT minutes*, saving *Y minutes*. Now under these conditions, which would you choose to do?**

Use the toll lane, pay $X and save Y minutes	001
Use the general lane for free	002

[2] Prior to mailing, both the advance letter and travel log were tested during cognitive interviews held at the MnPASS Customer Service Center the week of 10/10/2005.

[3] Demographic items were asked of the new sample only – MnPASS subscribers and transit users.

[or VERSION 2]

If you were to use the toll lane on I-394, you would pay *$X* and your trip would take *TT minutes.* If you were to use the general lanes, your trip would take *TT+Y minutes, Y minutes* longer than the toll lane, but it would be free. Now under these conditions, which would you choose to do?

Use the general lane for free	002
Use the toll lane, pay $X and save Y minutes	001

Method A (Trade-off Analysis). First, each person received four different scenarios, each with a different amount of time savings (Y = 5, 10, 15 or 20 minutes) and toll (X = 50 cents, $1, $2, $3, $4, $5, $6 or $7). (The value "TT" used for the tolled lane was based on the respondent's estimate of their travel time with no congestion.) Nine different sets of four scenarios were used across the sample, with each respondent assigned one of the nine sets at random. So, in total, 36 (9 x 4) different scenarios were used, each identifying a different time / cost tradeoff point. Also, to avoid bias due to ordering effects, each respondent was randomly assigned one of two versions of presenting the toll and non-toll options.

Method B (Price Meter). Next, the same type question was asked using the "price meter" approach. Each respondent was assigned a level of time savings (S = 5, 10 or 15 minutes) at random. Then a random toll price point was chosen (P = 50 cents, $1, $2, $3, $4, $5, $6 or $7), and the same question (from Method A) was asked. If the person said they would pay the toll, a higher price point was chosen at random, and if they said they would not pay the toll, a lower price point was chosen at random, and the question was asked again at the new toll level. This procedure was continued until the "switching point" was identified – e.g. the respondent would be willing to pay a toll of $2, but not $3. Note that from the respondents' perspective, there was no obvious difference between the Method A and Method B SP questions—both sets of questions used virtually identical wording.

Fieldwork Process

Wave 2 data collection was originally scheduled to take place in September / October 2005. However, it was re-scheduled to begin in November as a result of construction taking place on I-394 during the early Fall time period. In order to keep panel members abreast of the situation, another postcard was sent to panel members in early Fall reminding them of their consent to be interviewed, as well as providing them with the new schedule established for Wave 2 data collection. Of the 980 postcards sent, 70 (7%) were returned for failed delivery. If a new address was provided by the postal service for the panel member, the contact information was updated in the mail database and the pre-notification packet was sent to the correct address. If a new address was not provided, the respondent was contacted as a "cold call."

Prior to dialing the survey, an interviewer training session was conducted in which the goals and objectives of the survey were outlined for the interviewers. Interviewer supervisors and survey coordinators presented different aspect of the program to all interviewers, until they felt comfortable with the program, including terms, concepts and definitions within the program, as well as the skip logic and progression of data collection tasks. The training session culminated with the conduct of mock interviews, during which time the interviewers were encouraged to ask questions regarding any aspect of the program that was unclear to them.

Data collection for the Wave 2 Attitudinal Panel Survey was completed between November 14, 2005, and January 11, 2006. A total of 21 interviewers participated in data collection over this time period, many of whom also participated in the Baseline Attitudinal Panel Survey; dialing times ran from 4 pm – 9 pm during weekdays and 11 am – 7 pm on Saturdays and Sundays. No interviews were conducted during the Thanksgiving holiday (November 24 to 25), nor the Christmas / New Years holiday (December 24, 2005, to January 2, 2006).

The interviewing process was organized to ensure that respondents would receive the pre-notification packet a few days prior to the start of the assigned travel week (i.e., travel weeks started on Monday), and that the first contact to retrieve their travel information was subsequent to the last day of their assigned travel week (i.e., travel weeks ended on Friday). Assigned travel weeks began the first week in November. The week prior to each assigned travel week, all sample replicates for that assigned travel week were sent to the call center for mailing of the pre-notification packet. Phone sample was delivered to the call center the Friday ending the assigned travel week, and dialing to collect travel information began the following Monday. Respondents who reported not receiving their advance mail packet were rescheduled to a future travel week and re-mailed the pre-notification packet. Respondents reporting zero-trips during their assigned travel week were rescheduled to a future travel week, with their consent.

For the 70 "failed delivery" records noted above, the panel members were "cold called" during the assigned travel week and administered the interview, during which they were asked to reconstruct (from memory) their travel behavior for their assigned travel week. If they were unable to do so, or they did not take trips that matched their reference trip, their correct address information was collected and they were re-scheduled to a future travel week. These actions were taken to maximize participation given a finite number of panel respondents from which valid travel data could be collected, but at the same time, lengthened the data collection period.

Another action taken to maximize participation among panel members included the decision to conduct "short completes" with respondents who reported zero-trips. These short completes collected data identical to the regular complete, minus the reference trip and stated preference information. Short completes were only conducted after the point at which rescheduling was unfeasible due to the data collection deadline. Using this method, an additional 137 surveys were conducted with respondents who would previously have been determined non-qualified. To accommodate these short completes, data collection was extended into 2006.

Data Collection Outcomes

A total of 950 respondents completed Wave 2 interviews. Of these, 549 were panel members (interviewed in both the Baseline and Wave 2), 151 were MnPASS subscribers, and 250 were transit users.

TABLE 2.1: COMPLETION RATES BY SAMPLE TYPE

SAMPLE TYPE	DIALED SAMPLE PIECES	COMPLETED INTERVIEWS	COMPLETION RATE
I-394 Wave 1 Respondents (panel)	736	413	56%
I-35W Wave 1 Respondents (panel)	244	136	56%
MnPASS Subscribers	583	151	26%
Transit Users	1,001	250	25%
Total	**2,564**	**950**	**37%**

Table 2.2 provides additional detail on the panel sample. We were able to contact and complete interviews with 56% of the Baseline respondents (i.e., members of the panel). No differences were observed in the completion rates between the treatment (I-394) and control (I-35W) panel samples. So 44% of the Baseline respondents were not interviewed in Wave 2. This 44% breaks down as follows. Of the Baseline respondents, 15% of the I-394 panel and 13% of the I-35W panel refused to be interviewed in Wave 2. Approximately one-tenth (12%) were not qualified to be interviewed (i.e., indicated they no longer used the corridor, did not make any trips on their assigned corridor during their assigned travel period or would soon be changing their place of residence). Nine percent (9%) were "reschedules or call backs" for which the follow-up contact was never achieved. For about 8%, the sampled telephone numbers were no longer working residential numbers.

TABLE 2.2: DETAILED PANEL SAMPLE OUTCOMES

DISPOSITION	PANEL			
	I-394		I-35W	
Interviewed				
Long Complete	314	43%	98	40%
Short Complete	99	13%	38	16%
Subtotal	413	56%	136	56%
Not Interviewed				
Refuse	112	15%	32	13%
Not Qualified	85	12%	31	13%
Contact made – no interview[4]	75	9%	23	9%
Disconnect / Business / Fax[5]	51	8%	22	9%
Subtotal	323	44%	108	44%
Total	**736**	**100%**	**244**	**100%**

Because of the panel attrition, an analysis was conducted in which the demographic characteristics of respondents participating in both the Baseline and Wave 2 interviews were compared to respondents who agreed to participate in Wave 2, but did not complete a Wave 2 interview. These comparative tables are included as Appendix D to this report. The analysis revealed that persons "lost" to the panel tended to be renters and age 34 or younger. This outcome is not surprising given that fact that such persons tend to be more mobile. They would be more likely to change residences, jobs, or their travel patterns, making them difficult to locate and / or otherwise non-qualified to participate in the Wave 2 survey. For the other demographic characteristics measured, no significant differences were found among those that were lost to the panel and those that remained.

It is important to note that 89% of the 950 Wave 2 respondents (or 847 persons) agreed to be re-contacted in the final phase (Wave 3) of the Attitudinal Panel Survey. Of the 549 panel members, 88% (or 482 persons) agreed to be re-contacted for the final phase of the Attitudinal Panel Survey.

According to Table 2.3 on the next page, completion rates were much higher among panel members than among MnPASS subscribers or transit users. This outcome is due to the greater level of effort that was put into re-contacting panel members than was put into making initial contact with either subscribers or transit members sample records. On average, panel members were contacted 8 times, whereas a non-panel member was contacted an average of 6 times.[6]

If one excludes sample records that resulted in a completed interview for this analysis, the number of attempts per record increases to 11 for panel records. Furthermore, toward the end of the survey, once subscriber and transit quotas were met, eligibility requirements were made less stringent for panel members in an attempt to capture "short completes."

[4] These were reschedules or call-backs for which the follow-up contact was not achieved.
[5] These sample numbers were called multiple times to verify outcome.
[6] This takes into account attempts made on all sample records, not just sample records that resulted in completed interviews.

TABLE 2.3: MAJOR FIELDWORK INDICATORS

SAMPLE TYPE	AVERAGE INTERVIEW LENGTH	AVERAGE ATTEMPTS PER COMPLETE
I-394 Panel	17.4	5.5
I-35W Panel	14.0	6.4
MnPASS Subscribers	21.1	3.9
Transit Users	16.9	4.0

Table 2.4 presents the final sample dispositions for all 2,563 pieces of sample (i.e., panel, MnPASS subscribers, and transit lists) dialed for Wave 2 survey. Survey outcome rates were calculated using the percentage of respondents who completed interviews relative to the total numbers dialed in which an eligible respondent was contacted. This method also takes into account households of unknown eligibility by estimating what percentage of these may have been eligible for participation. Based on this calculation, the overall response rate was 65%.

TABLE 2.4: FINAL SAMPLE DISPOSITIONS

SAMPLE DISPOSITION	TOTAL	
	COUNT	PERCENT
Ineligible	**577**	**23%**
Not Qualified (changing jobs, no trips, moving, does not use corridor, language barrier)	359	14%
Disconnected Phone	202	8%
Business/ Fax/ Modem	16	<1%
Unknown Eligibility, Non-Interview	**1,029**	**40%**
Answering Machine / Caller ID	393	15%
Hang Up / Refused (prior to screening)	400	16%
Ask for Callback (prior to screening)	133	6%
No Answer / Busy	64	2%
Rescheduled -- Pre-Notification Package Never Received	33	1%
Rescheduled -- Zero-Trips	6	<1%
Eligible	**957**	**37%**
Complete	950	37%
Partial Complete	7	<1%
Total Sample	**2,563**	**100%**

Data Analysis

The final data were prepared as two SPSS databases. One database contained all of the variables comprising the Wave 2 final data file, representing all 950 respondents. The second database contained Baseline and Wave 2 data representing the 549 panel members only. The file variables in both data sets are identified by variable name. For each file variable, the File Information contains:

- Label, which is a brief description of the variable,
- Value labels, which identify the response codes, and
- Column width and alignment.

The analyses conducted with this data file were primarily descriptive – to determine current attitudes and behaviors of the sampled respondents, as well as to assess trends and changes within the panel. A logit regression analysis was conducted to model transponder ownership. The stated preference data were analyzed by estimating logit discrete choice models.

It should be noted that the datasets contain computed variables that were created during the analysis. For instance, about 19% of respondents did not report their household income. For this reason, we imputed income for missing records using the hot deck approach[7] utilizing a combination of employment, education and age, and included this variable in addition to reported income.

[7] For information on this approach, see http://stats.oecd.org/glossary/detail.asp?ID=3417.

3. TRENDS: ATTITUDES ABOUT MNPASS

This section examines trends in attitudes about MnPASS by comparing responses to attitude, opinion, and knowledge questions among the 549 panel members who answered these questions both in November / December 2004 (Wave 1) and November / December 2005 (Wave 2).

3.1 MNPASS ACCEPTANCE

Acceptance of the MnPASS concept among panel members had not changed significantly between the Wave 1 and Wave 2 interviews (61% versus 59%, respectively). In 2005, about six out of ten respondents (59%) indicated that allowing single drivers to use the carpool lanes by paying a toll was a good idea. The main reason that panel members thought it was good idea was that it was a better use of carpool lanes (representing 23% of all panel members).[8] Other frequently mentioned reasons included adds capacity to roadway (17%), saves time for busy people and only users pay not everyone (10% each), time is money (6%), eases congestion (5%), and toll used during peak hours (3%).

About three out of ten respondents thought it was a bad idea. The main reason that panel members thought it was a bad idea was because "it only benefits the rich" (representing 9% of all panel members). Other frequently mentioned reasons included carpool lanes should be free for all (6%), it's inefficient (4%), carpool lanes should only be used for carpools (3%), gives too much money to the road agency (3%), carpools are not encouraged (2%), and will not work (2%).

While the aggregate percentages on this opinion question did not change significantly from 2004 to 2005, there was shifting of opinions within the panel. Two-thirds of the panel answered similarly in 2004 and 2005, but slightly more than one-fourth shifted their stance in the intervening year. Almost equal numbers switched from good idea to bad idea (10%) or bad idea to good idea (10%). Another 5% shifted from no opinion in 2004 to good idea in 2005, whereas 2% shifted from no opinion to bad idea.

TABLE 3.1: PERCEPTION OF ALLOWING SOV TO USE CARPOOL LANE BY PAYING TOLL

What do you think of allowing single drivers to use the carpool lanes by paying a toll?

	FREQUENCY WAVE 1 (2004)	PERCENT WAVE 1 (2004)	FREQUENCY WAVE 2 (2005)	PERCENT WAVE 2 (2005)
Good Idea	334	61%	323	59%
Bad Idea	157	28%	158	29%
No Opinion	58	11%	68	12%
Total	**549**	**100%**	**549**	**100%**

Acceptance of a 24-hour operation of MnPASS declined from 2004 to 2005 (54% versus 25%, respectively). The percentage of panel members who thought this was a bad idea increased from 33% in 2004 to 58% in 2005. Of the 296 panel members who thought this would be a good idea in 2004, 30% still felt that way in 2005, but 54% switched their opinion to bad idea and 16% reported no opinion.

[8] Survey respondents were asked for the reasons behind their opinions on these MnPASS acceptance questions in an unprompted (or open-ended) manner.

When the 320 people who thought the 24-hour operation was a bad idea in 2005 were asked, "why," their most frequent response was now carpool lanes are free to all in non-peak hours (representing 16% of panel members). Other frequently mentioned reasons were: it's inefficient (14%), tolls should only be during peak hours (8%), causes congestion (6%), and only benefits the rich (3%). The most frequent reasons provided by respondents who thought it was a good idea were: better use of carpool lanes (representing 9% of panel members), adds capacity to roadway (7%), users pay not everyone (3%), and encourages carpooling (2%).

TABLE 3.2: PERCEPTION OF OPERATING MNPASS 24-HOURS PER DAY

When MnPASS opened, the toll lane program on I-394 operated 24-hours per day. Was this a . . .

	FREQUENCY WAVE 1 (2004)	PERCENT WAVE 1 (2004)	FREQUENCY WAVE 2 (2005)	PERCENT WAVE 2 (2005)
Good Idea	296	54%	136	25%
Bad Idea	180	33%	320	58%
No Opinion	73	13%	93	17%
Total	**549**	**100%**	**549**	**100%**

When asked in November / December 2005, most panel members (61%) thought that it was a good idea that there are no tolls outbound from MN100 from 5:30 am to 2:00 pm weekdays and inbound to MN 100 from 1:00 pm to 5:30 am weekdays. Slightly more than one-fourth (27%) of the panel members had no opinion on this operational element, and 12% thought it was a bad idea. The people who thought this was a good idea thought it eased congestion (representing 21% of panel members), was a better use of the tolled lanes (16%), and that there should only be peak hours tolls (11%).

Those people who thought this revised operational plan was a bad idea tended to provide anti-toll reasons (road already paid for, 5%; tolls not needed, 1%) or reasons that indicated that they preferred the "old" hours (hours should be extended, 1%; or should modify times, 1%). Almost three fourths (73%) of those panel members who had answered "bad idea" to the 24-hour operation of MnPASS, answered "good idea" to the new tolling operational hours. Only 12% answered "bad idea" to both questions. Of those who had answered "good idea" to the 24-hour operation, about 13% thought the new tolling operational hours were a "bad idea."

TABLE 3.3: PERCEPTION OF PEAK / OFF PEAK TOLL HOURS

Now there are no tolls outbound from MN 100 from 5:30 am to 2 pm weekdays and inbound to MN100 from 1 pm to 5:30 am weekdays. Is this a . . .

	FREQUENCY WAVE 2 (2005)	PERCENT WAVE 2 (2005)
Good Idea	337	61%
Bad Idea	63	12%
No Opinion	149	27%
Total	**549**	**100%**

3.2 MnPASS Awareness

Virtually all of the panel members (95%) were aware of the MnPASS project during the Wave 2 interview.[9] The 35 panel members who had not heard of the MnPASS project were almost equally split among those in the I-35W panel sample (54%) and those in the I-394 panel sample (46%). Panel members reported different types of knowledge in their Wave 1 versus Wave 2 interviews. In Wave 2, more panel members were aware of specific operational elements, such as awareness of a transponder, electronic toll collection, and the variable toll. Of the non-panel members (i.e., MnPASS subscriber and transit user samples), 83% reported they had heard of the MnPASS project.

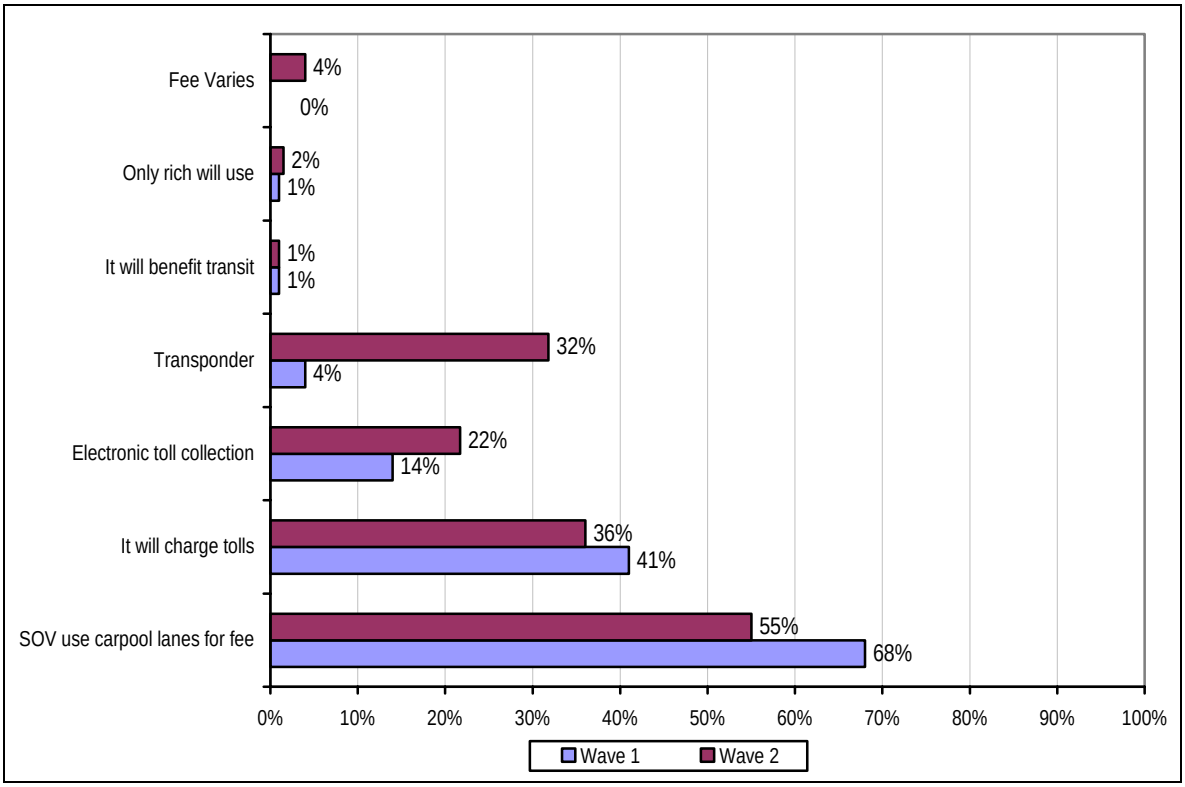
TABLE 3.4: MnPASS PROJECT AWARENESS

Have you heard of the MnPASS project on I-394?

	Frequency Wave 1 (2004)	Percent Wave 1 (2004)	Frequency Wave 2 (2005)	Percent Wave 2 (2005)
Yes	391	71%	513	94%
No	142	26%	35	6%
Unsure	16	3%	1	0%
Total	**549**	**100%**	**549**	**100%**

FIGURE 3.1: WHAT RESPONDENTS KNEW ABOUT I-394 MnPASS PROJECT [OPEN-ENDED]

(Unprompted Multiple Response Question, Wave 1 = 391 valid cases, Wave 2 = 544 valid cases)



[9] This level of awareness is not surprising given that panel members participated in a Wave 1 interview. However, the advance letters and postcards sent to respondents did not reference MnPASS.

3.3 OPINIONS ABOUT TRAFFIC CONGESTION, SAFETY, AND NOISE

About six of ten respondents (62%) considered traffic congestion a major problem in November / December 2004. A similar percentage (58%) expressed that same opinion in 2005.[10] About two-thirds of the panel (65%) provided the same response in Wave 2 as they had in Wave 1. About 21% of panel members showed a downward shift in attitudes about congestion, that is they responded "major problem" in Wave 1 but shifted to "moderate," "minor," or "no problem" in Wave 2. However, 14% revealed an upward shift in their opinions about congestion.

TABLE 3.5: OPINIONS ABOUT TRAFFIC CONGESTION IN THE TWIN CITIES

In general, do you think traffic congestion the Twin Cities is…

	FREQUENCY WAVE 1 (2004)	PERCENT WAVE 1 (2004)	FREQUENCY WAVE 2 (2005)	PERCENT WAVE 2 (2005)
Major Problem	340	62%	319	58%
Moderate Problem	192	35%	183	33%
Minor Problem	13	2%	33	6%
No Problem at All	4	1%	9	2%
Unsure / Refused	0	0%	5	1%
Total	**549**	**100%**	**549**	**100%**

Panel members were less optimistic about MnPASS having a positive impact on traffic congestion on I-394 in 2005 than they were in 2004 (42% versus 69%, respectively). This decrease was statistically significant.

TABLE 3.6: OPINIONS ABOUT IMPACT OF MNPASS ON TRAFFIC CONGESTION

What impact do you think MnPASS has on traffic congestion on I-394?

	FREQUENCY WAVE 1 (2004)	PERCENT WAVE 1 (2004)	FREQUENCY WAVE 2 (2005)	PERCENT WAVE 2 (2005)
Positive	378	69%	229	42%
Negative	34	6%	62	11%
No Impact	113	21%	153	28%
Don't Know	24	4%	105	19%
Total	**549**	**100%**	**549**	**100%**

Of Wave 1 respondents who answered that MnPASS would have a "positive impact" on traffic congestion, half (52%) responded similarly in 2005. Of the remaining, 22% responded "no impact," 18% "don't know," and 9% "negative impact." The increase in those answering "negative impact" from 6% to 11% was not statistically significant.

Panel members were also less optimistic about MnPASS having a positive impact on traffic safety in 2005 than in 2004 (27% versus 43%, respectively). The decrease was statistically significant. Of those who answered "positive impact" in 2004, less than half (40%) responded similarly in 2005. The increase in those answering "negative impact" from 6% to 14% was not statistically significant.

[10] The difference between the two percentages is not statistically significant.

TABLE 3.7: OPINIONS ABOUT IMPACT OF MNPASS ON TRAFFIC SAFETY

What impact do you think MnPASS has on traffic safety on I-394?

	FREQUENCY WAVE 1 (2004)	PERCENT WAVE 1 (2004)	FREQUENCY WAVE 2 (2005)	PERCENT WAVE 2 (2005)
Positive	235	43%	149	27%
Negative	34	6%	75	14%
No Impact	235	43%	207	38%
Don't Know	45	8%	118	21%
Total	**549**	**100%**	**549**	**100%**

Similar to results on the two preceding attitudinal items, panel members tended to shift from a specific pre-MnPASS implementation opinion on the impact of MnPASS on noise levels to a "don't know" response in the post-implementation interview. The large percentage of "don't know" responses in Wave 2 indicated that "noise level" was not a top-of-mind issue among the panel.

TABLE 3.8: OPINIONS ABOUT IMPACT OF MNPASS ON NOISE LEVELS

What impact do you think MnPASS has on noise levels along I-394

	FREQUENCY WAVE 1 (2004)	PERCENT WAVE 1 (2004)	FREQUENCY WAVE 2 (2005)	PERCENT WAVE 2 (2005)
Positive	43	8%	45	8%
Negative	39	7%	23	4%
No Impact	413	75%	286	52%
Don't Know	54	10%	195	36%
Total	**549**	**100%**	**549**	**100%**

4. MnPASS Customers

This chapter examines transponder ownership and customer accounts, and then investigates MnPASS lane usage and satisfaction with several different aspects of MnPASS operation. The chapter culminates with a stated preference (SP) analysis of respondents that participated in both Waves 1 and 2 and strives to assess the accuracy of the Wave 1 SP prediction, as well as how respondent preferences have changed as a function of familiarity with the MnPASS program.

4.1 Satisfaction with MnPASS Operations Among All Paying MnPASS Users

A similar series of satisfaction questions were asked of respondents who had used the MnPASS lanes as a paying single driver (SOV, N=169). Paying users had the highest levels of satisfaction with the all-electronic operation of the tolls and the lowest with the staff at the customer service center.[11] Paying MnPASS users were extremely satisfied with the all-electronic operation of MnPASS, with 9 of 10 (90%) being very satisfied. Only 2% were dissatisfied.

Table 4.1: Satisfaction with All Electronic Operations

Level of Satisfaction	Frequency	Percent
Satisfied	160	95%
Very satisfied	151	90%
Somewhat satisfied	9	5%
Dissatisfied	3	2%
Very dissatisfied	1	1%
Somewhat dissatisfied	2	1%
Don't Know / Refuse	6	3%
Total	**169**	**100%**

Paying MnPASS users were just as satisfied with the ability to use their credit card to automatically replenish their account, with 87% very satisfied and 6% somewhat satisfied. Only 2% expressed dissatisfaction.

Table 4.2: Satisfaction with Using Credit Card to Automatically Replenish Account

Level of Satisfaction	Frequency	Percent
Satisfied	157	93%
Very satisfied	147	87%
Somewhat satisfied	10	6%
Dissatisfied	2	2%
Very dissatisfied	1	1%
Somewhat dissatisfied	1	1%
Don't Know / Refuse	10	5%
Total	**169**	**100%**

[11] Due to the high percentage of respondents that answered "Don't Know" to this question, it is expected that not many respondents have actually visited the customer service center. Only 1% said they were dissatisfied.

Paying MnPASS users were also extremely satisfied with the ease of opening a pre-paid MnPASS account, with 81% being very satisfied and 11% somewhat satisfied.

TABLE 4.3: SATISFACTION WITH THE EASE OF OPENING A PRE-PAID MNPASS ACCOUNT

LEVEL OF SATISFACTION	FREQUENCY	PERCENT
Satisfied	155	92%
Very satisfied	137	81%
Somewhat satisfied	18	11%
Dissatisfied	1	1%
Very dissatisfied	0	0%
Somewhat dissatisfied	1	1%
Don't Know / Refuse	13	7%
Total	**169**	**100%**

Installing the MnPASS transponder was easy – 92% of respondents expressed satisfaction with this element, with nearly three-quarters (73%) being very satisfied. Three percent were dissatisfied, and 5% did not know or refused to provide an answer.

TABLE 4.4: SATISFACTION WITH THE EASE OF INSTALLING THE MNPASS TRANSPONDER

LEVEL OF SATISFACTION	FREQUENCY	PERCENT
Satisfied	154	92%
Very satisfied	123	73%
Somewhat satisfied	31	19%
Dissatisfied	5	3%
Very dissatisfied	3	2%
Somewhat dissatisfied	2	1%
Don't Know / Refuse	10	5%
Total	**169**	**100%**

Nearly 8 of 10 paying MnPASS users were satisfied with the clarity of prices on overhead signs, with more than half (60%) being very satisfied. But 19% were dissatisfied.

TABLE 4.5: SATISFACTION WITH THE CLARITY OF PRICES ON OVERHEAD SIGNS

LEVEL OF SATISFACTION	FREQUENCY	PERCENT
Satisfied	134	79%
Very satisfied	101	60%
Somewhat satisfied	33	19%
Dissatisfied	33	19%
Very dissatisfied	7	4%
Somewhat dissatisfied	26	15%
Don't Know / Refuse	2	2%
Total	**169**	**100%**

Three-quarters (76%) of paying MnPASS users were satisfied with the varying toll amounts that fluctuate with traffic levels, with more than one-third (37%) being very satisfied. One-fifth (21%) was dissatisfied and 3% did not know or refused to provide an answer.

TABLE 4.6: SATISFACTION WITH THE TOLL AMOUNTS THAT VARY WITH TRAFFIC LEVELS

LEVEL OF SATISFACTION	FREQUENCY	PERCENT
Satisfied	128	76%
Very satisfied	62	37%
Somewhat satisfied	66	39%
Dissatisfied	35	21%
Very dissatisfied	11	7%
Somewhat dissatisfied	24	14%
Don't Know / Refuse	6	3%
Total	**169**	**100%**

Nearly two-thirds (64%) of paying MnPASS users were satisfied with the MnPASS website, with 43% being very satisfied. Five percent were dissatisfied. One-third did not know or refused to provide an answer, suggesting they had not accessed the website.

TABLE 4.7: SATISFACTION WITH THE MNPASS WEBSITE

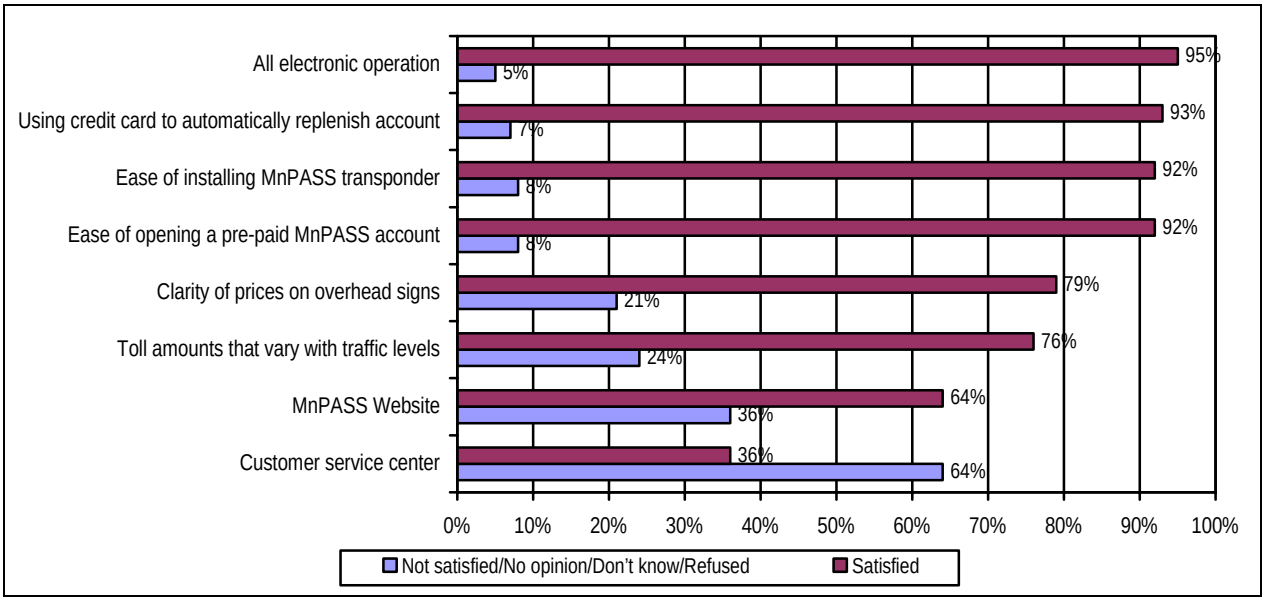
LEVEL OF SATISFACTION	FREQUENCY	PERCENT
Satisfied	109	64%
Very satisfied	72	43%
Somewhat satisfied	37	21%
Dissatisfied	8	5%
Very dissatisfied	2	1%
Somewhat dissatisfied	6	4%
Don't Know / Refuse	52	31%
Total	**169**	**100%**

The majority (63%) of paying MnPASS users were not familiar with or refused to provide their opinion about the staff at the customer service center – expressing lack of knowledge about the customer service center. Of those with an opinion indicating contact with the center, virtually all were satisfied.

TABLE 4.8: SATISFACTION WITH THE STAFF AT THE CUSTOMER SERVICE CENTER

LEVEL OF SATISFACTION	FREQUENCY	PERCENT
Satisfied	59	36%
Very satisfied	48	29%
Somewhat satisfied	11	7%
Dissatisfied	1	1%
Very dissatisfied	0	0%
Somewhat dissatisfied	1	1%
Don't Know / Refuse	109	63%
Total	**169**	**100%**

FIGURE 4.1: COMPARISON OF SATISFACTION LEVELS FOR VARIOUS MNPASS ASPECTS AMONG PAYING MNPASS USERS



4.2 SATISFACTION WITH MNPASS OPERATIONS AMONG ALL MNPASS LANE USERS

MnPASS users, regardless of whether they were paying users or not, were satisfied with MnPASS operations. Of all MnPASS aspects about which they were asked to provide their level of satisfaction, the speed of traffic flow in the MnPASS lane gained the highest satisfaction rating (85% satisfaction). The enforcement of MnPASS usage gained the lowest satisfaction (45%, refer to Table 4.12).

Nearly 9 of 10 (85%) respondents were satisfied with the speed of traffic flow in the MnPASS lanes, with half (50%) being very satisfied. Less than one-tenth (7%) were dissatisfied, 4% had no opinion, and 4% did not know or refused to provide an answer.

TABLE 4.9: SATISFACTION WITH THE SPEED OF TRAFFIC FLOW IN THE MNPASS LANES

LEVEL OF SATISFACTION	FREQUENCY	PERCENT
Satisfied	499	85%
Very satisfied	291	50%
Somewhat satisfied	208	35%
Dissatisfied	43	7%
Very dissatisfied	7	1%
Somewhat dissatisfied	36	6%
No opinion	25	4%
Don't Know / Refuse	18	4%
Total	**585**	**100%**

Nearly 8 of 10 (76%) respondents were satisfied with the ease of identifying the MnPASS entry points, with (39%) very satisfied. Less than one-fifth (17%) were dissatisfied, 4% had no opinion, and 3% did not know or refused to provide an answer.

TABLE 4.10: SATISFACTION WITH EASE OF IDENTIFYING THE MNPASS ENTRY POINTS

LEVEL OF SATISFACTION	FREQUENCY	PERCENT
Satisfied	439	76%
Very satisfied	225	39%
Somewhat satisfied	214	37%
Dissatisfied	99	17%
Very dissatisfied	27	5%
Somewhat dissatisfied	72	12%
No opinion	26	4%
Don't Know / Refuse	21	3%
Total	**585**	**100%**

Most respondents (66%) were satisfied with the safety of merging into the MnPASS lanes, with one-fourth (25%) very satisfied. But one fourth (26%) were dissatisfied. Four percent had no opinion and 4% refused to provide an answer.

TABLE 4.11: SATISFACTION WITH THE SAFETY OF MERGING INTO THE MNPASS LANES

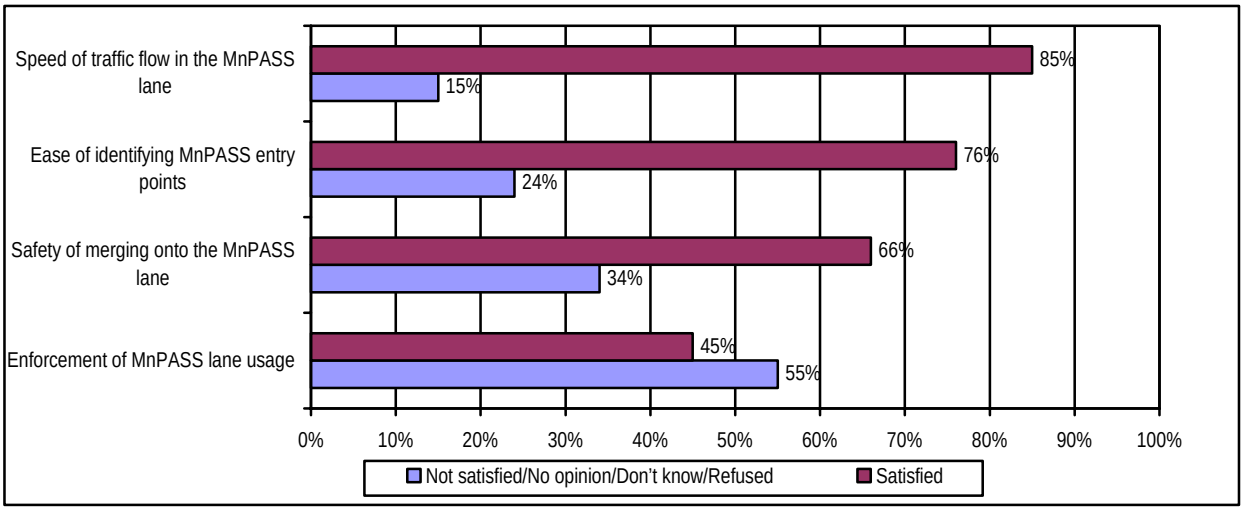
LEVEL OF SATISFACTION	FREQUENCY	PERCENT
Satisfied	384	66%
Very satisfied	145	25%
Somewhat satisfied	239	41%
Dissatisfied	153	26%
Very dissatisfied	55	9%
Somewhat dissatisfied	98	17%
No opinion	25	4%
Don't Know / Refuse	23	4%
Total	**585**	**100%**

Less than half of respondents (45%) were satisfied with the enforcement of MnPASS usage; 21% were very satisfied. Fourteen percent were dissatisfied. A large percentage either had no opinion (24%) or did not know or refused to provide an answer (17%).

TABLE 4.12: SATISFACTION WITH THE ENFORCEMENT OF MNPASS USAGE

LEVEL OF SATISFACTION	FREQUENCY	PERCENT
Satisfied	262	45%
Very satisfied	123	21%
Somewhat satisfied	139	24%
Dissatisfied	81	14%
Very dissatisfied	31	9%
Somewhat dissatisfied	50	5%
No opinion	141	24%
Don't Know / Refuse	101	17%
Total	**585**	**100%**

FIGURE 4.2: COMPARISON OF SATISFACTION LEVELS FOR VARIOUS MNPASS ASPECTS AMONG ALL MNPASS USERS



4.3 SATISFACTION WITH MNPASS OPERATIONS BY TRANSPONDER OWNERSHIP

Similar to what was presented in section 4.2, levels of satisfaction regarding certain aspects of MnPASS operation were compared for respondents who own transponders and respondents that do not own transponders. Overall, MnPASS subscribers were most satisfied with the speed of traffic flow in the MnPASS lanes (93% satisfied). More than 8 of 10 non-subscribers were also satisfied with this aspect of MnPASS. Less than 1 of 10 subscribers or non-subscribers were dissatisfied.

TABLE 4.13: SATISFACTION WITH THE SPEED OF TRAFFIC FLOW IN THE MNPASS LANES

LEVEL OF SATISFACTION	TRANSPONDER OWNER			
	YES		NO	
	FREQUENCY	PERCENT	FREQUENCY	PERCENT
Satisfied	166	93%	333	82%
Very satisfied	116	65%	175	43%
Somewhat satisfied	50	28%	158	39%
Dissatisfied	11	6%	32	8%
Very dissatisfied	2	1%	5	1%
Somewhat dissatisfied	9	5%	27	7%
No opinion	1	1%	24	6%
Don't Know / Refuse	0	0%	18	4%
Total	**178**	**100%**	**407**	**100%**

MnPASS subscribers were also satisfied with the ease of identifying the MnPASS entry points (87% of subscribers satisfied), with over half (59%) very satisfied. Seventy percent of non-subscribers were satisfied. Less than two of ten subscribers and non-subscribers were dissatisfied with this aspect of MnPASS operations.

TABLE 4.14: SATISFACTION WITH EASE OF IDENTIFYING THE MNPASS ENTRY POINTS

LEVEL OF SATISFACTION	TRANSPONDER OWNER			
	YES		NO	
	FREQUENCY	PERCENT	FREQUENCY	PERCENT
Satisfied	154	87%	285	70%
Very satisfied	105	59%	120	30%
Somewhat satisfied	49	28%	165	40%
Dissatisfied	24	13%	75	18%
Very dissatisfied	9	5%	18	4%
Somewhat dissatisfied	15	8%	57	14%
No opinion	0	0%	26	7%
Don't Know / Refuse	0	0%	21	5%
Total	**178**	**100%**	**407**	**100%**

Three-fourths (75%) of subscribers were satisfied with the safety of merging into the MnPASS lanes, with more than one-third (36%) being very satisfied. Six of ten non-subscribers were satisfied with this aspect of MnPASS, with slightly more than one-fourth (27%) dissatisfied.

TABLE 4.15: SATISFACTION WITH THE SAFETY OF MERGING INTO THE MNPASS LANES

LEVEL OF SATISFACTION	TRANSIT USER			
	YES		NO	
	FREQUENCY	PERCENT	FREQUENCY	PERCENT
Satisfied	134	75%	250	61%
Very satisfied	64	36%	81	20%
Somewhat satisfied	70	39%	169	41%
Dissatisfied	44	25%	109	27%
Very dissatisfied	17	10%	38	9%
Somewhat dissatisfied	27	15%	71	18%
No opinion	0	0%	25	6%
Don't Know / Refuse	0	0%	23	6%
Total	**178**	**100%**	**407**	**100%**

Subscribers and non-subscribers alike were least satisfied with the enforcement of MnPASS usage (62% satisfaction with subscribers and 37% satisfaction with non-subscribers). Sixteen percent of subscribers were dissatisfied and 13% of non-subscribers were dissatisfied. More than one fifth of subscribers (22%) and one-half of non-subscribers (50%) either had no opinion or refused to provide an answer.

TABLE 4.16: SATISFACTION WITH THE ENFORCEMENT OF MNPASS USAGE

LEVEL OF SATISFACTION	TRANSIT USER			
	YES		NO	
	FREQUENCY	PERCENT	FREQUENCY	PERCENT
Satisfied	111	62%	151	37%
Very satisfied	68	38%	55	14%
Somewhat satisfied	43	24%	96	23%
Dissatisfied	28	16%	53	13%
Very dissatisfied	17	10%	14	3%
Somewhat dissatisfied	11	6%	39	10%
No opinion	32	18%	109	27%
Don't Know / Refuse	7	4%	94	23%
Total	**178**	**100%**	**407**	**100%**

4.4 SATISFACTION WITH MNPASS OPERATIONS BY TRANSIT USE

Satisfaction questions were also compared among respondents known to be transit users (sampled from the transit list) and non-transit users. In general, the data suggests that transit users were less satisfied with varying aspects of MnPASS operations than were the respondents that do not use transit. Transit users and non-users alike were most satisfied with the speed of traffic flow in the MnPASS lanes (81% satisfaction with transit users and 87% satisfaction with non-users). Less than 1 of 10 users and non-users were dissatisfied with this aspect of MnPASS.

TABLE 4.17: SATISFACTION WITH THE SPEED OF TRAFFIC FLOW IN THE MNPASS LANES

LEVEL OF SATISFACTION	TRANSIT USER			
	YES		NO	
	FREQUENCY	PERCENT	FREQUENCY	PERCENT
Satisfied	125	81%	374	87%
Very satisfied	69	45%	222	52%
Somewhat satisfied	56	36%	152	35%
Dissatisfied	11	7%	32	7%
Very dissatisfied	2	1%	5	1%
Somewhat dissatisfied	9	6%	27	6%
No opinion	12	8%	13	3%
Don't Know / Refuse	6	4%	12	3%
Total	**154**	**100%**	**431**	**100%**

Seven of ten transit users and nearly 8 of 10 non-users were satisfied with the ease of identifying the MnPASS entry points, with less than 2 of 10 from either group showing dissatisfaction. Less than one-fifth (15%) of transit users had no opinion or did not know.

TABLE 4.18: SATISFACTION WITH EASE OF IDENTIFYING THE MNPASS ENTRY POINTS

LEVEL OF SATISFACTION	TRANSIT USER			
	YES		NO	
	FREQUENCY	PERCENT	FREQUENCY	PERCENT
Satisfied	106	69%	333	77%
Very satisfied	49	32%	176	41%
Somewhat satisfied	57	37%	157	36%
Dissatisfied	25	16%	74	17%
Very dissatisfied	6	4%	21	5%
Somewhat dissatisfied	19	12%	53	12%
No opinion	14	9%	12	3%
Don't Know / Refuse	9	6%	12	3%
Total	**154**	**100%**	**431**	**100%**

Just over half of transit users (56%) and slightly more than two-thirds of non-users (69%) were satisfied with the safety of merging into the MnPASS lanes. One-fourth of both groups were dissatisfied with this aspect of MnPASS (28% dissatisfaction among users and 25% of non-users). Less than 2 of 10 users were indifferent or refused to provide and answer, while less than 1 of 10 non-users responded in like fashion.

TABLE 4.19: SATISFACTION WITH THE SAFETY OF MERGING INTO THE MNPASS LANES

LEVEL OF SATISFACTION	TRANSIT USER			
	YES		NO	
	FREQUENCY	PERCENT	FREQUENCY	PERCENT
Satisfied	87	56%	297	69%
Very satisfied	28	18%	117	27%
Somewhat satisfied	59	38%	180	42%
Dissatisfied	43	28%	110	25%
Very dissatisfied	16	10%	39	9%
Somewhat dissatisfied	27	18%	71	16%
No opinion	16	11%	9	2%
Don't Know / Refuse	8	5%	15	4%
Total	**154**	**100%**	**431**	**100%**

Transit users and non-users alike were least satisfied with the enforcement of MnPASS usage (38% satisfaction among users and 47% satisfaction among non users). However, it should be noted that the percent of dissatisfied users and non-users was also low (11% and 15%, for each group, respectively). This may be attributed to the high percentage of users and non-users that had no opinion or refused to provide an answer; half (51%) of transit users and more than one-third (38%) of non-users.

TABLE 4.20: SATISFACTION WITH THE ENFORCEMENT OF MNPASS USAGE

LEVEL OF SATISFACTION	TRANSIT USER			
	YES		NO	
	FREQUENCY	PERCENT	FREQUENCY	PERCENT
Satisfied	59	38%	203	47%
Very satisfied	28	18%	95	22%
Somewhat satisfied	31	20%	108	25%
Dissatisfied	17	11%	64	15%
Very dissatisfied	4	3%	27	6%
Somewhat dissatisfied	13	8%	37	9%
No opinion	44	29%	97	23%
Don't Know / Refuse	34	22%	67	15%
Total	**154**	**100%**	**431**	**100%**

4.5 TRANSPONDER INTEREST

The question, "Are you a MnPASS subscriber?" was asked of panel members and those respondents sampled from the transit user list. Table 4.21 provides the responses of the I-394 panel members only. Four percent of these persons confirmed that they were MnPASS subscribers. When combined with the respondents sampled from the MnPASS subscriber list and the I-35W panel members, the total MnPASS subscriber sample for analysis was 180 persons.

TABLE 4.21: MNPASS SUBSCRIBERS

Are you a MnPASS Subscriber?

RESPONSE	FREQUENCY	PERCENT
Yes	18	4%
No	395	96%
Total	**413**	**100%**

The 395 respondents who said "no" to the question above (Table 4.21) were asked if they had ever considered purchasing a transponder. Of these, 13% had considered it but decided against it. Eighty-five percent had never considered it, and 2% did not know or refused to provide an answer.

FIGURE 4.3: MNPASS PURCHASE INTENT AMONG NON-SUBSCRIBERS

N=395

Have you Considered Purchasing a Transponder?

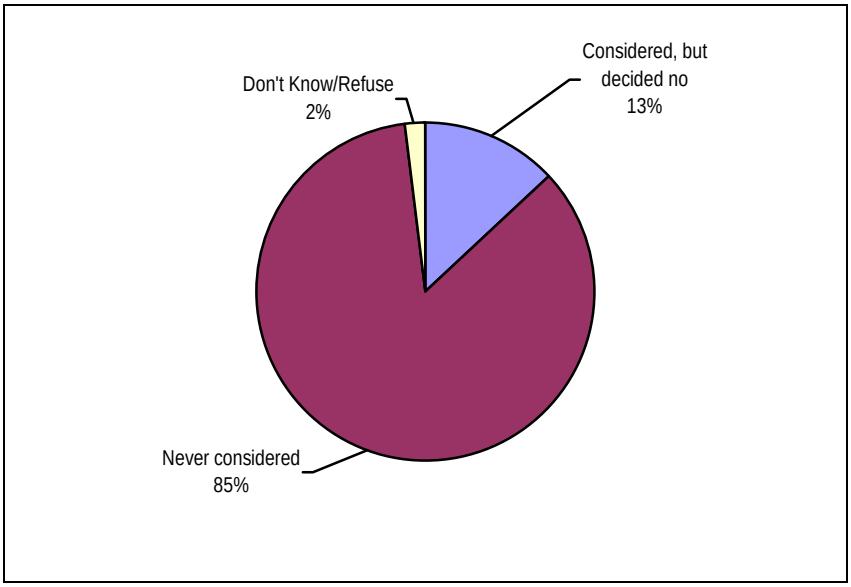
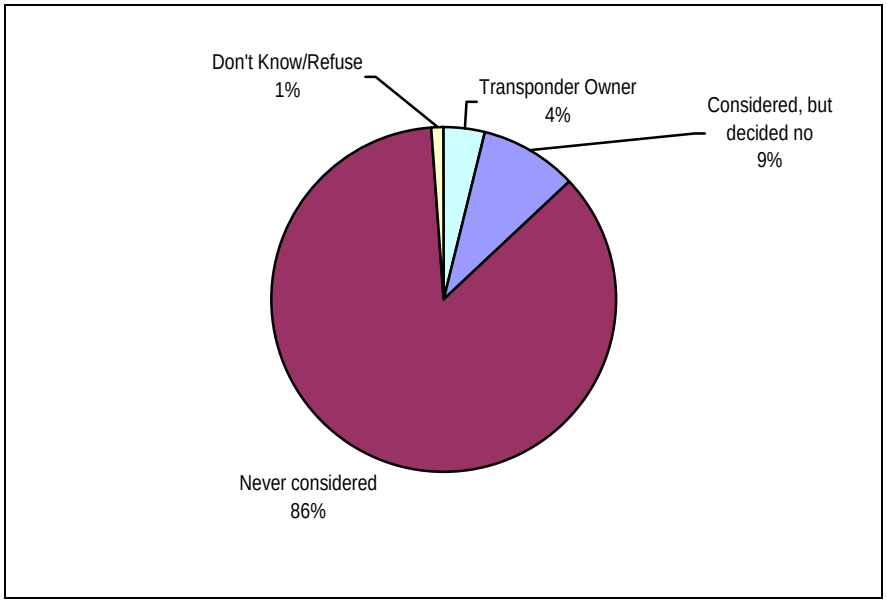


Figure 4.4 graphically combines Tables 4.21 and 4.22, presenting transponder purchase intent of all I-394 panel respondents.

FIGURE 4.4: MNPASS PURCHASE INTENT AMONG PANEL AND TRANSIT USERS

N=413

Have you Considered Purchasing a Transponder?



Four of ten I-394 panel respondents that said they considered purchasing a transponder, then decided against it felt they would not use the MnPASS lane enough to justify the purchase. Current travel behaviors were important factors for about one in four respondents – generally not driving I-394 and using carpools. Slightly more than one of ten thought the transponder was too expensive. Four percent each either procrastinated or lacked sufficient information on how to purchase a transponder.

The main reason why I-394 panel members never considered purchasing a transponder was that they generally do not drive I-394 (34%). Thirty percent felt as if they would not use the MnPASS lane enough to justify leasing a transponder and 10% use carpools. Nine percent didn't want to pay to use MnPASS, 6% didn't think traffic was that bad and 5% felt as if the transponder was too expensive to lease. Only 3% were unaware of MnPASS and 1% commented that they mostly used transit.

TABLE 4.22: REASONS FOR NON-PURCHASE OF TRANSPONDERS

Why?

REASONS TRANSPONDER NOT PURCHASED	PERCENT THAT SAID "YES, AND DECIDED AGAINST IT" N=51	PERCENT THAT SAID "NO" N=335
Generally don't drive I-394	14%	34%
Would not use MnPASS lane enough	40%	30%
I use carpools	6%	10%
Don't want to pay to use MnPASS	6%	9%
Traffic is not that bad	8%	6%
Transponder is too expensive to lease	16%	5%
Unaware of MnPASS	0%	3%
I use transit	0%	1%
Don't know how to purchase	4%	0%
Have not gotten around to it	4%	0%
Other, specify	0%	1%
Don't Know / Refuse	2%	1%
Total	**100%**	**100%**

4.6 CUSTOMER ACCOUNTS

Of the 180-transponder owners, 71% purchased their transponder from April through July of 2005, with half of all transponders purchased in either April or May. Of those respondents that reported purchasing their transponders in either April or May, more than half resided in high-income households (i.e., reported an annual household income of at least $125,000).

TABLE 4.23: MONTH OF TRANSPONDER PURCHASE (CALENDAR YEAR 2005)

In what month did you acquire a transponder?

MONTH	FREQUENCY	PERCENT
April	51	29%
May	47	26%
June	21	12%
July	17	9%
August	7	4%
September	4	2%
October	3	2%
November	1	1%
December	0	0%
Don't Know / Refuse	29	15%
Total	**180**	**100%**

Slightly more than two-thirds of subscribers[12] purchased only one transponder. Of the 63% of households that purchased only one transponder, half (51%) were in one or two person households, and 75% owned two or fewer vehicles. Of the 37% of households that purchased more than one transponder, half (48%) were in 4+ person households and over half (55%) were in 2-vehicle households.

TABLE 4.24: TRANSPONDERS PER HOUSEHOLD

How many transponders does your household have?

TRANSPONDERS	FREQUENCY	PERCENT
One	95	63%
Two	49	33%
Three	5	3%
Four+	2	1%
Total	**151**	**100%**

[12] Tables 4.25, 4.26 and 4.27 based on questions only asked of respondents sampled from subscriber list.

Eight of 10 (79%) subscribers opened their account online, while 1 of 10 (10%) went to the customer service center and opened their account in-person. One of 10 (9%) opened their account over the phone.

TABLE 4.25: METHOD OF OPENING MNPASS ACCOUNT

How did you open your MnPASS Account?

METHOD USED TO OPEN ACCOUNT	FREQUENCY	PERCENT
Online	119	79%
In-person at customer service center	15	10%
Telephone	13	9%
Unsure	4	2%
Total	**151**	**100%**

Virtually all (94%) transponder owners paid for their own MnPASS account. Only 5% were employer subsidized.

TABLE 4.26: HOW IS YOUR MNPASS ACCOUNT PAID?

WHO PAYS FOR ACCOUNT	FREQUENCY	PERCENT
Paid by you	142	94%
Paid directly by employer	6	4%
Paid by you but reimbursed by employer	2	1%
Don't Know / Refuse	1	1%
Total	**151**	**100%**

4.7 MNPASS LANE USAGE

All respondents were asked about their travel during an assigned travel week (Monday through Friday). Half of all trips (50%) on I-394 in both directions were reported by SOV drivers that did not use the MnPASS lanes (i.e., used the general lane for free). Twenty percent of trips were taken by SOVs in the MnPASS lanes – 17% who chose to pay a toll and 3% who reported using the MnPASS lanes for free. Carpoolers reported 17% of I-394 trips, and bus riders reported 14% of I-394 trips.

When examined by sample type, the data suggests that nearly three-fourths (72%) of I-394 trips taken by Wave 2 panel members were taken while driving alone and not using the MnPASS lanes (i.e., used the general lane for free). Nearly two-thirds (63%) of subscriber trips were taken while driving alone and paying to use the MnPASS lane. Finally, half (48%) of all trips taken by transit users were taken while riding a bus.

TABLE 4.27: PRIMARY MODE FOR I-394 TRAVEL DURING ASSIGNED WEEK

Now consider all trips you made in both directions. On how many of those trips did you…

TYPE OF TRAVEL ON I-394 DURING ASSIGNED	PANEL (N=338)		SUBSCRIBERS (N=151)		TRANSIT (N=147)		ALL (N=636)	
	TRIPS	PERCENT TOTAL TRIPS	TRIPS	PERCENT TOTAL TRIPS	TRIPS	PERCENT TOTAL TRIPS	TRIPS	PERCENT TOTAL TRIPS
Drive alone and not use MnPASS lanes	1,900	72%	322	24%	457	32%	2,679	50%
Drive alone and pay a toll to use the MnPASS lanes	43	2%	832	63%	16	1%	891	16%
Drive alone, use MnPASS lanes and not pay a toll	54	2%	87	7%	22	2%	163	3%
Carpool	599	23%	53	4%	253	17%	905	17%
Ride a bus	32	1%	24	2%	699	48%	755	14%
Total	2,628	100%	1,318	100%	1,447	100%	5,393	100%

When the window for reporting MnPASS usage was expanded to "ever used the MnPASS lanes," the percent of users increased from 20% to 62%. Of course, this percent includes persons sampled from the MnPASS subscriber list. But 51% of panel member and 62% of persons sampled from the transit list had used the MnPASS lanes at least once since their implementation.

TABLE 4.28: MNPASS LANE USAGE (BY SAMPLE TYPE)

Have you ever used the MnPASS Lanes?

RESPONSE	PANEL		SUBSCRIBER		TRANSIT	
	FREQUENCY	PERCENT	FREQUENCY	PERCENT	FREQUENCY	PERCENT
Yes	280	51%	151	100%	154	62%
No	269	49%	0	0%	96	38%
Total	**549**	**100%**	**151**	**100%**	**250**	**100%**

Among panel respondents who reported having used MnPASS in the past, carpooling was the most frequently mentioned mode (87%). Subscribers reported using the MnPASS lane most often as a paying SOV (87%), and transit users reported using the MnPASS lane most frequently as a bus rider (49%).

TABLE 4.29: MOST FREQUENTLY MENTIONED MODE OF MNPASS USE (BY SAMPLE TYPE)

When you have used the MnPASS lanes in the past were you: (all that apply) How did you travel on the MnPASS lanes most frequently?

MODE	PANEL		SUBSCRIBER		TRANSIT	
	FREQUENCY	PERCENT	FREQUENCY	PERCENT	FREQUENCY	PERCENT
Paying SOV	20	7%	132	87%	4	3%
Carpooler	243	87%	17	11%	73	47%
Bus Rider	11	4%	1	1%	76	49%
Don't Know / Refuse	6	2%	1	1%	1	1%
Total	**280**	**100%**	**151**	**100%**	**154**	**100%**

5. SOCIAL EQUITY ISSUES

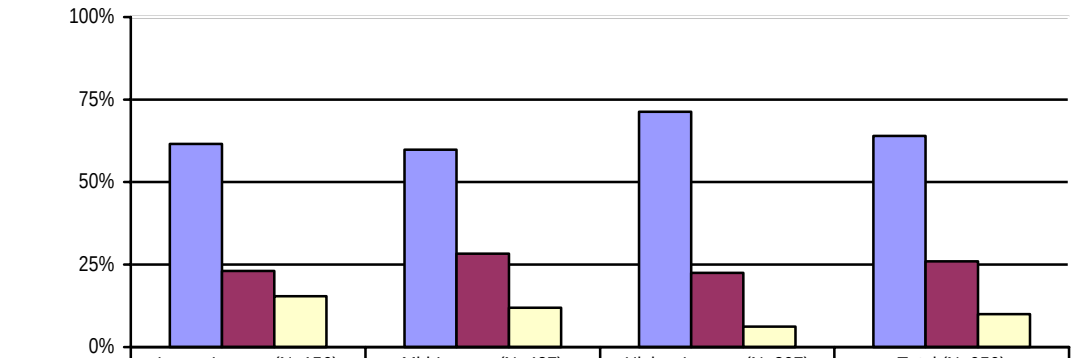
There is extensive academic literature on the subject of social equity, but it is best expressed in everyday language in terms of 'fairness.' In the case of road user charging, this translates to questions of whether the tolling operation is regarded as having a disproportionate impact on some groups relative to others. This section examines social equity issues relative to opinions about current traveling experiences, attitudes about MnPASS tolling operations, and use of MnPASS lanes relative to differences in income, education, employment status, gender, age, and ethnicity.[13]

5.1 MNPASS ACCEPTANCE

A majority of respondents in all income groups responded positively to the idea of allowing SOV drivers to use carpool lanes by paying a toll. At the same time, acceptance was greater among the higher-income respondents (71%), than among lower-income (62%) or mid-income (60%) respondents. [14] There were no significant differences across the income groups in terms of negative response to the concept. About one-fourth of each income group thought this concept was a bad idea (28% of mid-income, 23% of lower-income, and 23% of higher-income).

FIGURE 5.1: OPINION ON ALLOWING SINGLE DRIVERS TO USE CARPOOL LANES BY HOUSEHOLD INCOME

What do you think of allowing single drivers to use the carpool lanes by paying a toll? Is it…



	Lower-Income (N=156)	Mid-Income (N=487)	Higher-Income (N=307)	Total (N=950)
Good Idea	62%	60%	71%	64%
Bad Idea	23%	28%	23%	26%
No Opinion	15%	12%	6%	10%

[13] Many of the tables presented in this section report results by income. About 19% of respondents did not report their household income. For this reason, we have imputed income for missing records using the hot deck approach.

[14] The lower-income group represents respondents reporting total household income less than $50,000, mid-income $50,000 to $124,999, and higher-income greater than $125,000. These breaks were determined based on the income category breaks used in the survey instrument (see Appendix C) combined with the 1999 median household income levels for the 170 sampled census tracks for the I-394 corridor ($42,363) and for the Minneapolis-St. Paul region ($54,304), according to Census 2000.

There were slight differences by income in the reasons given by respondents for their positive responses on questions pertaining to MnPASS tolling operations. Mid- and higher-income respondents were more likely to say that MnPASS provides a better use for the carpool lane than were lower-income respondents. That MnPASS eases congestion and tolls are used during peak hours only were slightly more salient factors for lower-income householders than those in other income groups. Otherwise, the ranking of reasons for supporting MnPASS were consistent across income groups.

There were also slight differences among household income groups in opinions about why the MnPASS concept was a bad idea. A smaller percent of lower-income respondents than higher-income groups said it only benefits the rich, but a larger percent mentioned carpool lanes should be free to all.

TABLE 5.1: REASONS "GOOD IDEA" BY HOUSEHOLD INCOME

(Among Respondents who Thought Allowing Single Drivers to Pay a Toll to Use the Carpool Lane Was a Good Idea)

Why do you feel this way? ***(Multiple response table based on percent of responses.)***

	LOWER-INCOME	MID-INCOME	HIGHER-INCOME	TOTAL
It provides a better use for carpool lanes	22%	33%	34%	31%
Adds capacity to roadway	18%	20%	20%	20%
Saves time for busy people	17%	16%	18%	17%
Only users pay, not everyone	10%	11%	11%	11%
Time is money for some people	10%	8%	8%	8%
Eases congestion	5%	4%	2%	4%
Tolls are used during peak hours only	6%	1%	2%	2%
Carpools are not encouraged enough	2%	0%	0%	0%
Other	7%	4%	4%	5%
Don't Know	3%	3%	1%	2%
Total %	**100%**	**100%**	**100%**	**100%**
Total Number	**125**	**387**	**298**	**810**

TABLE 5.2: REASONS "BAD IDEA" BY HOUSEHOLD INCOME

(Among Respondents who Thought Allowing Single Drivers to Pay a Toll to Use the Carpool Lane Was a Bad Idea)

Why do you feel this way?

(Multiple response table based on percent of responses. Percents do not total 100 due to rounding.)

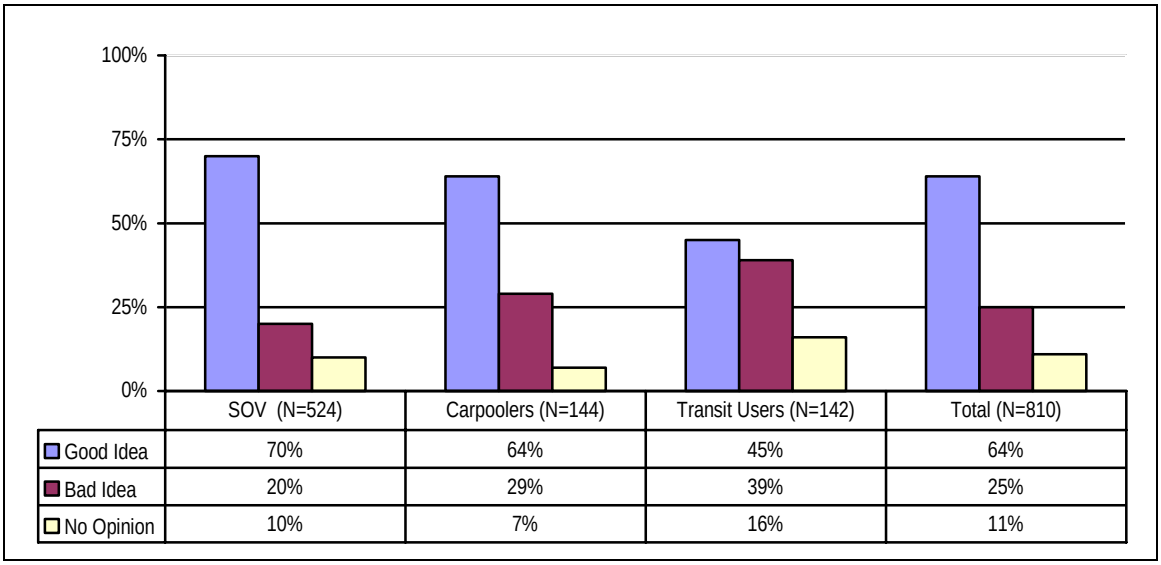
	LOWER-INCOME	MID-INCOME	HIGHER-INCOME	TOTAL
Only benefits the rich	18%	22%	24%	22%
Carpool lanes should be free to all	19%	11%	12%	13%
Inefficient	4%	13%	8%	10%
Carpool lanes should only be open to carpoolers	8%	10%	11%	10%
Carpool lanes are not encouraged enough	4%	7%	7%	7%
Gives too much money to MnDOT	6%	4%	7%	5%
Bad for environment	8%	3%	4%	4%
Will not work	4%	4%	5%	4%
Roads are already paid for	6%	3%	4%	4%
Delays roadway improvements for all	4%	3%	1%	3%
Makes level of service worse in carpool lane	2%	3%	2%	3%
Increases bureaucracy	0%	2%	1%	2%

	LOWER-INCOME	MID-INCOME	HIGHER-INCOME	TOTAL
Unfair	0%	1%	2%	1%
Too confusing for people	0%	1%	2%	1%
Other	15%	8%	8%	10%
Don't Know	0%	2%	1%	1%
Total%	**98%**	**97%**	**99%**	**100%**
Total Number	**48**	**185**	**85**	**318**

When MnPASS acceptance was examined by respondents' usual commute mode, significant differences were observed. MnPASS acceptance is highest among SOV drivers (70%) and lowest among transit users (45%). Yet, acceptance among carpoolers was also high (64%). Two in five transit users (39%) thought allowing paying single drivers to use carpool lanes was a bad idea compared to 29% of carpoolers and 20% of SOV drivers. At the same time, a larger percent of transit users had no opinion on this issue than other groups.

FIGURE 5.2: OPINION ON ALLOWING SINGLE DRIVERS TO USE CARPOOL LANES BY USUAL TRAVEL MODE

What do you think of allowing single drivers to use the carpool lanes by paying a toll? Is it…



	SOV (N=524)	Carpoolers (N=144)	Transit Users (N=142)	Total (N=810)
Good Idea	70%	64%	45%	64%
Bad Idea	20%	29%	39%	25%
No Opinion	10%	7%	16%	11%

Opinions about why the single paying driver concept was a good idea did not differ significantly by usual travel mode. Transit users' most frequent response, like users of other modes, was that MnPASS provides a better use for carpool lanes. Transit users were slightly more likely to respond that MnPASS adds capacity to the roadway. On the other hand, carpoolers were more likely than users of other modes to respond only users pay, not everyone.

TABLE 5.3: REASONS "GOOD IDEA" BY USUAL TRAVEL MODE

(Among Respondents who Thought Allowing Single Drivers to Pay a Toll to Use the Carpool Lane Was a Good Idea)

Why do you feel this way? ***(Multiple response table based on percent of responses.)***

	SOV	CARPOOLERS	TRANSIT	TOTAL
It provides a better use for carpool lanes	32%	32%	31%	32%
Adds capacity to roadway	19%	18%	23%	19%
Saves time for busy people	20%	10%	16%	18%
Only users pay, not everyone	9%	15%	8%	10%
Time is money for some people	9%	8%	6%	8%
Eases congestion	4%	5%	2%	4%
Tolls only during peak hours	2%	3%	3%	2%
Other	4%	3%	6%	4%
Don't Know	1%	6%	5%	3%
Total %	**100%**	**100%**	**100%**	**100%**
Total Number	**556**	**120**	**62**	**738**

There were significant differences by usual travel mode in the reasons cited by respondents who thought the MnPASS concept was a bad idea. SOV drivers and carpoolers were much more likely than transit users to respond it only benefits the rich, whereas transit users were more likely to suggest that the concept is inefficient and carpool lanes should only be open to carpoolers. SOV drivers were also more likely than others to respond carpool lanes should be free to all than were users of other modes.

TABLE 5.4: REASONS "BAD IDEA" BY USUAL TRAVEL MODE

(Among Respondents who Thought Allowing Single Drivers to Pay a Toll to Use the Carpool Lane Was a Bad Idea)

Why do you feel this way? ***(Multiple response table based on percent of responses.)***

	SOV	CARPOOLERS	TRANSIT	TOTAL
Only benefits the rich	24%	23%	14%	22%
Carpool lanes should be free to all	15%	7%	2%	11%
Inefficient	9%	10%	17%	11%
Carpool lanes should only be for carpools	8%	8%	17%	11%
Carpool lanes are not encouraged enough	5%	13%	6%	7%
Gives too much money to MnDOT	5%	7%	2%	5%
Bad for environment	2%	7%	10%	5%
Roads are already paid for	5%	2%	0%	4%
Will not work	5%	3%	2%	4%
Delays roadway improvements for all	2%	5%	2%	3%
Makes level of service worse in carpool lane	2%	2%	6%	3%
Increases bureaucracy	2%	0%	0%	1%
Unfair	0%	2%	6%	1%
Too confusing for people	1%	2%	2%	1%
Other	13%	9%	12%	10%
Don't Know	2%	0%	2%	1%
Total%	**100%**	**100%**	**100%**	**100%**
Total Number	**171**	**60**	**51**	**282**

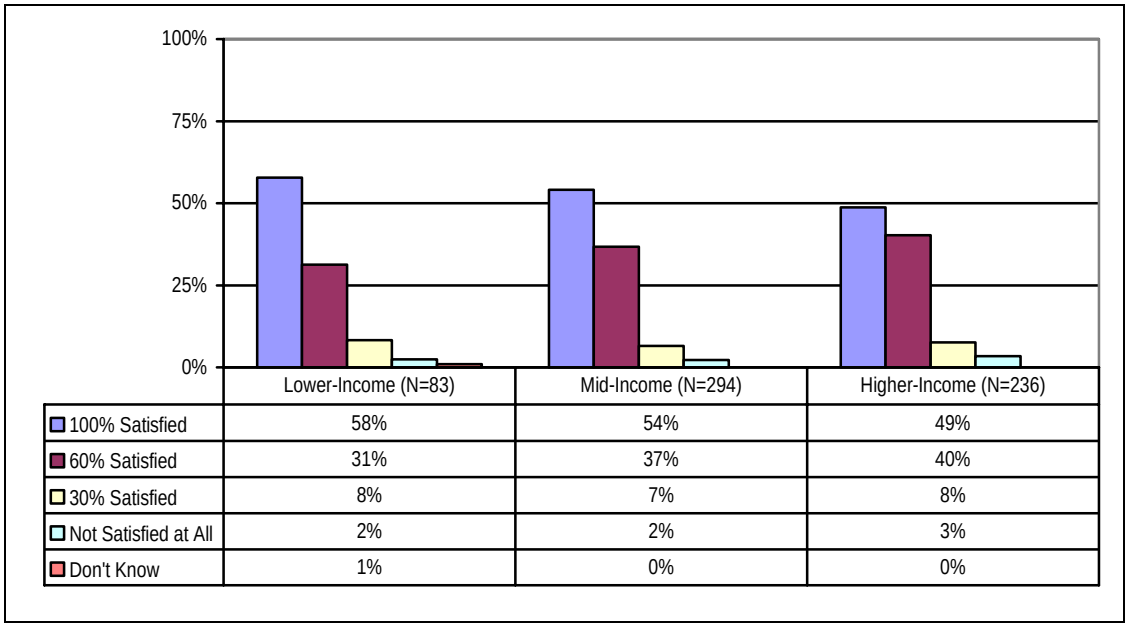
5.2 SATISFACTION WITH CURRENT TRAVEL EXPERIENCES

The implementation of the MnPASS lanes on I-394 did not have a differential impact on the travel experiences of respondents. The majority of respondents, regardless of their income level, were satisfied with the quality of travel on the roadway used for their reference trip.[15] Differences by income were not statistically significant.

FIGURE 5.3: SATISFACTION WITH QUALITY OF REFERENCE TRIP BY HOUSEHOLD INCOME

(Among I-394 Respondents Only)

Based on this trip, how satisfied were you with the overall quality of your travel on this roadway?



	Lower-Income (N=83)	Mid-Income (N=294)	Higher-Income (N=236)
100% Satisfied	58%	54%	49%
60% Satisfied	31%	37%	40%
30% Satisfied	8%	7%	8%
Not Satisfied at All	2%	2%	3%
Don't Know	1%	0%	0%

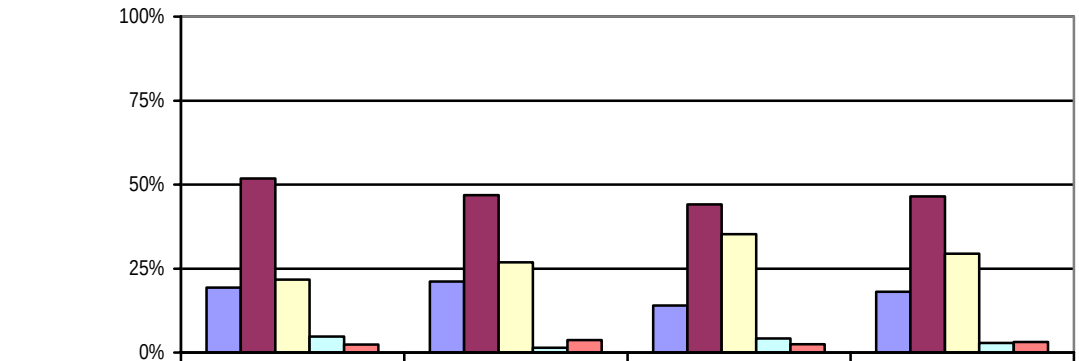
Across all income levels, the majority of respondents reported that their reference trip was more enjoyable than stressful. Lower-income respondents reported the least stressful trips. Only a small percentage of I-394 respondents (ranging from 1% to 5%) found the trip very stressful. Differences by income are not statistically significant.

[15] Reference trip was defined as the most recent trip on I-394 that either matched their Wave 1 trip (in the case of the panel sample) or was a commute trip in the case of respondents sampled from the transit user or MnPASS subscriber lists. These trips were recorded in Travel Logs and subsequently reported to the telephone interviewers.

FIGURE 5.4: OPINION ON REFERENCE TRIP EXPERIENCE BY HOUSEHOLD INCOME

(Among I-394 Respondents Only)

Which of the following descriptors best captures your travel experience on this trip?



	Lower-Income (N=83)	Mid-Income (N=294)	Higher-Income (N=236)	Total (N=613)
Very Enjoyable	19%	21%	14%	18%
Slightly Enjoyable	52%	47%	44%	47%
Slightly Stressful	22%	27%	35%	29%
Very Stressful	5%	1%	4%	3%
Don't Know	2%	4%	3%	3%

In the figure above, higher-income households were more likely than other income groups to characterize their reference trip as stressful. They also reported greater congestion levels in both the MnPASS and general traffic lanes, as indicated in the following two figures.

FIGURE 5.5: OPINION ON CONGESTION IN MNPASS LANES DURING REFERENCE TRIP BY HOUSEHOLD INCOME

(Among I-394 Respondents Only)

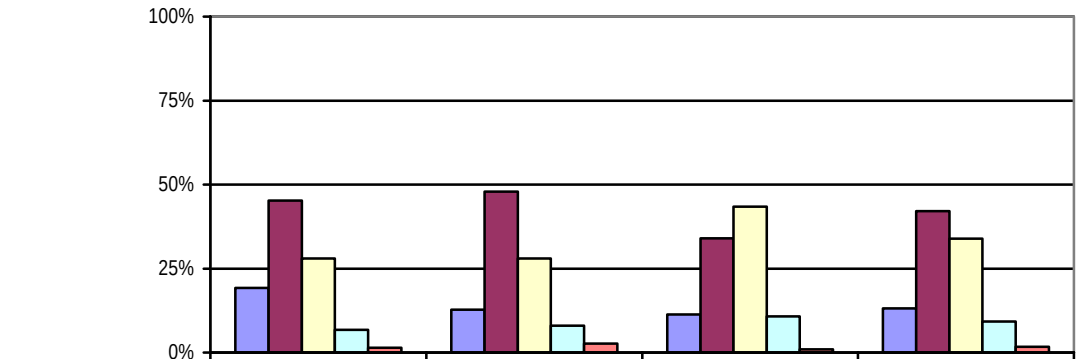
How would you describe the level of congestion in the MnPASS lane at the time of your travel?

	Lower-Income (N=73)	Mid-Income (N=257)	Higher-Income (N=212)	Total (N=542)
Not Congested at All	67%	66%	58%	63%
Slightly Congested	15%	25%	36%	28%
Very Congested	2%	2%	2%	2%
Extremely Congested	1%	0%	1%	0%
Don't Know	15%	7%	3%	7%

FIGURE 5.6: OPINION ON CONGESTION IN GENERAL TRAFFIC LANES DURING REFERENCE TRIP BY HOUSEHOLD INCOME

(Among I-394 Respondents Only)

What about the general traffic lanes at that time, would you say the lanes were…



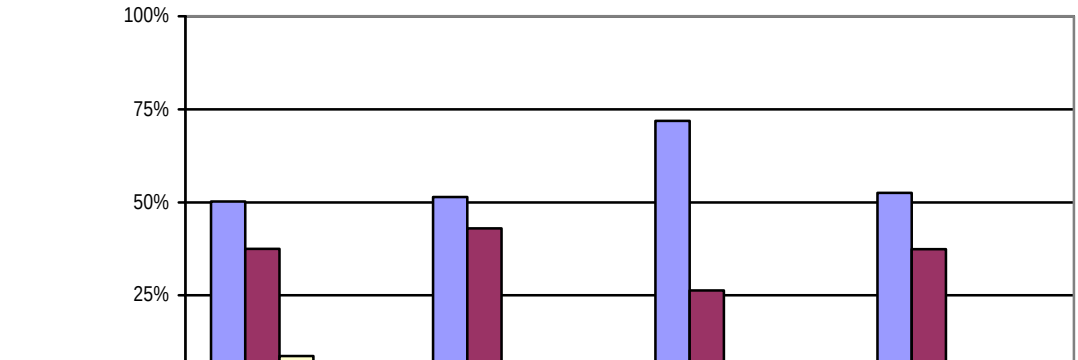
	Lower-Income (N=73)	Mid-Income (N=257)	Higher-Income (N=212)	Total (N=542)
Not Congested at All	19%	13%	11%	13%
Slightly Congested	45%	48%	34%	42%
Very Congested	28%	28%	43%	34%
Extremely Congested	7%	8%	11%	9%
Don't Know	1%	3%	1%	2%

Most respondents, regardless of travel mode, were satisfied with the quality of travel on their reference trip. Transit users had the highest level of satisfaction with the quality of travel on their reference trip; 72% reported being 100% satisfied, compared with 51% of carpoolers and 50% of SOV drivers.

FIGURE 5.7: SATISFACTION WITH QUALITY OF REFERENCE TRIP BY REFERENCE TRIP MODE

(Among I-394 Respondents Only)

Based on this trip, how satisfied were you with the overall quality of your travel on this roadway?



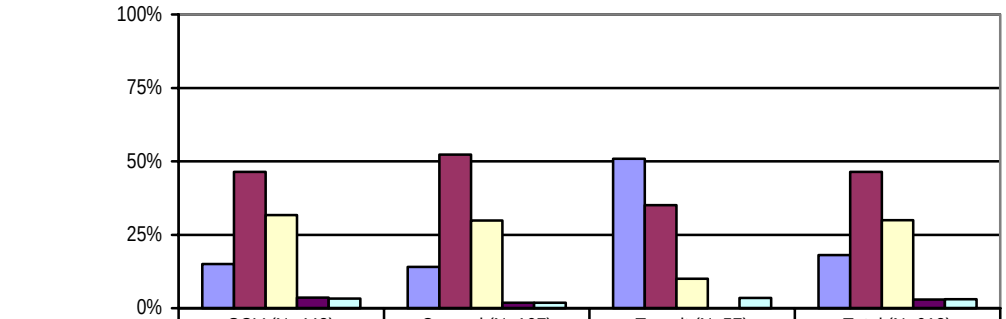
	SOV (448)	Carpool (N=107)	Transit (N=57)	Total (N=612)
100% Satisfied	50%	51%	72%	53%
60% Satisfied	38%	43%	26%	37%
30% Satisfied	9%	4%	2%	7%
Not Satisfied at All	3%	2%	0%	3%
Don't Know	0%	0%	0%	0%

The travel experience was most enjoyable for transit users, though respondents in all travel mode categories were more likely to find the trip enjoyable than stressful. Half (51%) of transit users rated the target trip as very enjoyable compared to 15% of SOV drivers and 14% of carpoolers. Similarly, a third of HOV or SOV users found the trip slightly stressful, compared to only 10% of transit users.

FIGURE 5.8: OPINION ON REFERENCE TRIP EXPERIENCE BY REFERENCE TRIP MODE

(Among I-394 Respondents Only)

Which of the following descriptors best captures your travel experience on this trip?



	SOV (N=448)	Carpool (N=107)	Transit (N=57)	Total (N=612)
Very Enjoyable	15%	14%	51%	18%
Slightly Enjoyable	46%	52%	35%	46%
Slightly Stressful	32%	30%	10%	30%
Very Stressful	4%	2%	0%	3%
Don't Know	3%	2%	4%	3%

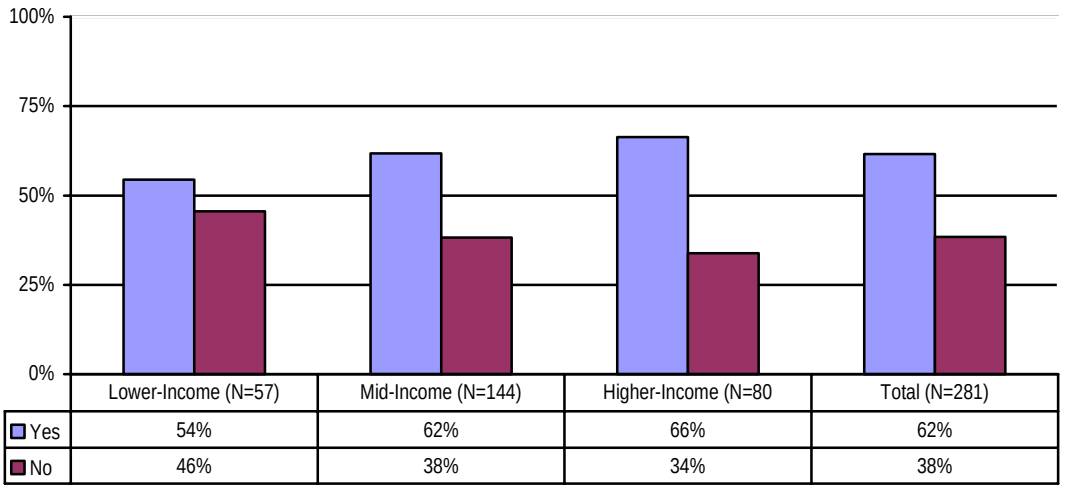
5.3 MNPASS LANE USAGE

Respondents from all income levels are using MnPASS. Over 50% of all income groups among the I-394 respondents reported they have used the MnPASS lanes.

FIGURE 5.9: USE OF MNPASS LANES BY HOUSEHOLD INCOME

(Among I-394 Respondents Only)

Have you ever used the MnPASS lanes?



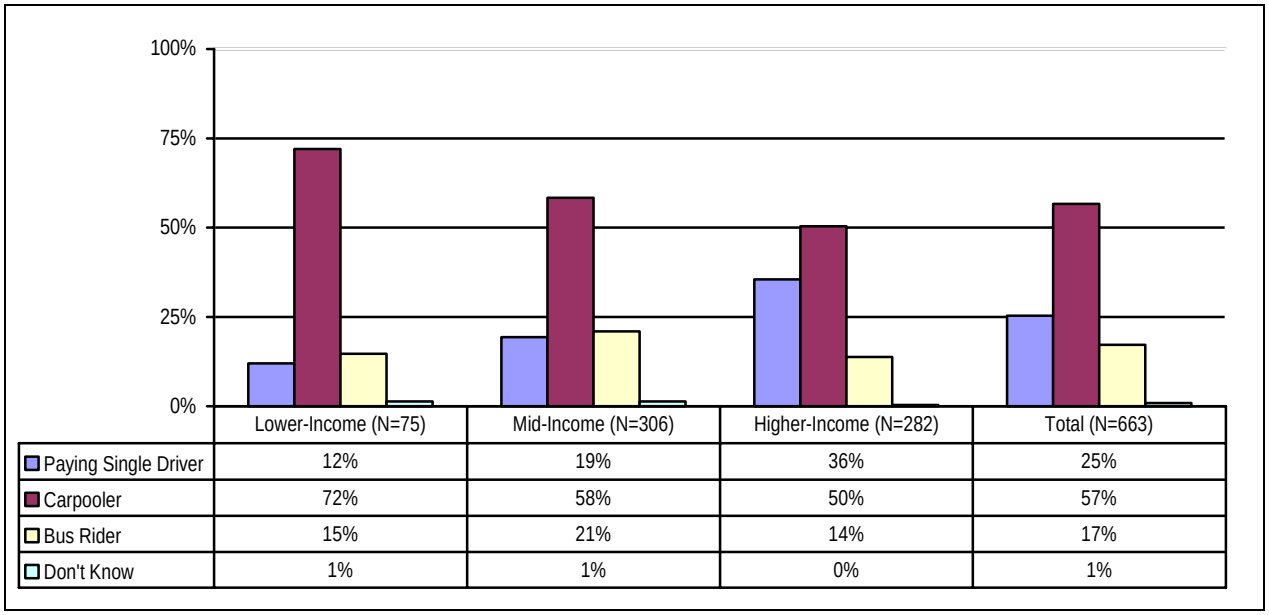
	Lower-Income (N=57)	Mid-Income (N=144)	Higher-Income (N=80	Total (N=281)
Yes	54%	62%	66%	62%
No	46%	38%	34%	38%

Respondents who used the MnPASS lanes were asked if they were a single driver, carpooler, or bus rider when they used the lanes. Significant differences were found. Whereas 36% of higher-income responses were as paying single drivers, only 19% of mid-income and 12% of lower-income responses were as paying SOVs. The majority of lower-income responses (72%) were as a carpooler.

FIGURE 5.10: MODE OF MNPASS USE BY INCOME

(Among I-394 Respondents Only)

When you have used the MnPASS lanes in the past, were you…



	Lower-Income (N=75)	Mid-Income (N=306)	Higher-Income (N=282)	Total (N=663)
Paying Single Driver	12%	19%	36%	25%
Carpooler	72%	58%	50%	57%
Bus Rider	15%	21%	14%	17%
Don't Know	1%	1%	0%	1%

Multiple response table based on percent of responses.

5.4 DEMOGRAPHIC PROFILES OF TRANSPONDER OWNERS

The MnPASS lanes can be used for free by carpoolers and transit riders. Drivers of single occupancy vehicles (SOVs) can use the MnPASS lanes by paying a fee. The fee is assessed through a transponder that is placed on the windshield of the vehicle. The following two tables present demographic profiles of transponder owners.[16] Transponder owners were more strongly represented among respondents with a higher educational attainment and those who were employed full-time. Transponder owners were middle-aged (between 35 and 54 years of age). The sample included very few people representing racial or ethnic minorities. Still, it appears that transponder owners were more likely to be White than Non-White. About the same percentages of males as females reported owning transponders.

[16] The tables in this section include all I-394 respondents (i.e., panel members, MnPASS subscribers, and transit users). This base was chosen to ensure robust numbers for the analysis. Four percent of panel members were transponder owners.

TABLE 5.5: TRANSPONDER OWNERSHIP[17] BY PERSON CHARACTERISTICS

(Among I-394 Respondents Only)

PERSON CHARACTERISTIC	TRANSPONDER OWNERSHIP		TOTAL
	YES	NO	
Educational Attainment			
High School or Less	11%	89%	44 (100%)
Some College / Trade	19%	81%	131 (100%)
Graduated College	25%	75%	293 (100%)
Graduate Work	31%	69%	246 (100%)
Employment Status			
Full or Part-time	27%	73%	617 (100%)
Homemaker	11%	89%	70 (100%)
Retired	8%	92%	79 (100%)
Other / Disabled / Unemployed	0%	10%	12 (100%)
Type of Employment			
Part-Time	14%	86%	71 (100%)
Full-time	29%	71%	546 (100%)
Age			
18-34	15%	85%	81 (100%)
35-44	31%	69%	176 (100%)
45-54	30%	70%	220 (100%)
55-64	26%	74%	156 (100%)
65+	7%	93%	81(100%)
Race / Ethnicity			
White / Caucasian	26%	74%	674 (100%)
Non-White / Minority	15%	85%	40 (100%)
Gender			
Male	24%	76%	430 (100%)
Female	27%	73%	284 (100%)

[17] Transponder ownership was defined as "yes" to the question, "Are you a MnPASS subscriber?" or respondents sampled from the MnPASS subscriber list.

In terms of their household characteristics, transponder owners resided in higher-income households, as well larger households and those with multiple vehicles.

TABLE 5.6: TRANSPONDER OWNERSHIP BY HOUSEHOLD CHARACTERISTICS

(Among I-394 Respondents Only)

HOUSEHOLD CHARACTERISTIC	TRANSPONDER OWNERSHIP		TOTAL
	YES	NO	
Household Income			
Lower-Income	10%	90%	104 (100%)
Mid-Income	18%	82%	351 (100%)
Higher-Income	41%	59%	259 (100%)
Household Size			
One-person	15%	85%	107 (100%)
Two-person	24%	76%	262 (100%)
Three-person	30%	70%	114 (100%)
Four+ person	28%	72%	231 (100%)
Vehicles Available			
One	10%	90%	141 (100%)
Two	28%	72%	385 (100%)
Three+	31%	69%	188 (100%)

The preceding tables indicate that transponder ownership was related to many different demographic variables. So, a predictive model was specified to identify variables that may predict transponder ownership. After a through review and diagnostic tests of demographic, attitudinal, and trip variables, nine variables were specified for inclusion in the model:

- Household income,
- Age,
- Vehicles available,
- Educational attainment,
- Number of licensed drivers in the households,
- Number of workers in the household,
- Distance of reference trip in miles,
- Home tenure in years,
- Opinion on 24-hour toll lane operation.

The model run indicated that annual household income and reference trip distance in miles were the combination of model variables that best explained transponder ownership, explaining nearly 30% of the variability in transponder ownership

6. IMPACTS: TRAVEL BEHAVIOR

The opening of the MnPASS lanes altered the congestion patterns on I-394, which in turn influenced travel behavior in the corridor. As such, this chapter examines the impact of MnPASS implementation on the traveling experience and travel behavior of panel members. It also presents information about the traveling experience of MnPASS users specifically on their reference trip. This chapter concludes with comparative travel profiles of transponder owners and non-owners.

6.1 TRAVELING EXPERIENCE

The reported traveling experiences of I-394 panelists have improved. The percentage of I-394 panelists reporting a delay was lower in Wave 2 (28%) than in Wave 1 (38%). I-394 respondents who did not use the MnPASS lanes for their reference trip were more likely to experience congestion than those who did use MnPASS for their entire trip (30% versus 21%, respectively). However, the percentages of respondents who reported leaving at a particular time to avoid congestion were similar, with about one-fourth in both waves saying that they left at a particular time to avoid congestion. Among I-35W panelists, the percentage reporting a congestion delay was the same in both waves (37%).

TABLE 6.1: CONGESTION DELAY ON REFERENCE TRIP

(Among All Panel Members)

Were you delayed by congestion on this trip?

I-394	FREQUENCY WAVE 1 (2004)	PERCENT WAVE 1 (2004)	FREQUENCY WAVE 2 (2005)	PERCENT WAVE 2 (2005)
Yes	158	38%	89	28%
No	255	62%	223	72%
Total	**413**	**100%**	**312**	**100%**
I-35W				
Yes	50	37%	36	37%
No	86	63%	61	63%
Total	**136**	**100%**	**97**	**100%**

I-394 panelists reported higher levels of satisfaction with their reference trip travel in Wave 2 than in Wave 1-- 46% vs. 36%, respectively (see Table 6.2). Satisfaction was highest among panelists who used the MnPASS lanes for their entire reference trip – 58% reported 100% satisfaction, compared with 44% who did not use the MnPASS lanes. We found virtually no differences in the reported satisfaction levels among I-35W panelists between Wave 1 and Wave 2.

TABLE 6.2: SATISFACTION WITH TRAVEL ON REFERENCE TRIP

(Among All Panel Members)

Based on this trip, how satisfied were you with the overall quality of your travel on this roadway?

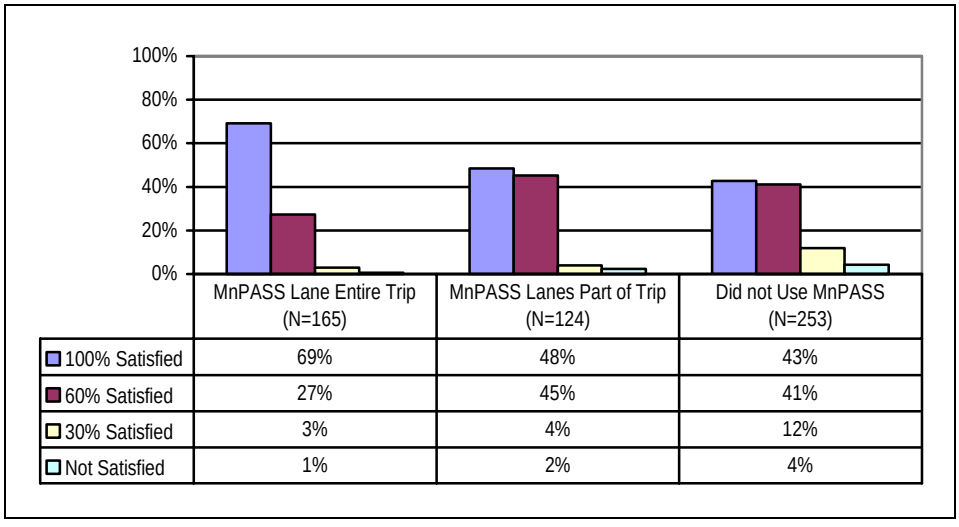
I-394	FREQUENCY WAVE 1 (2004)	PERCENT WAVE 1 (2004)	FREQUENCY WAVE 2 (2005)	PERCENT WAVE 2 (2005)
100% Satisfied	147	36%	144	46%
60% Satisfied	202	49%	129	42%
30% Satisfied	43	10%	29	9%
Not Satisfied	21	5%	10	3%
Total	413	100%	312	100%
I-35W				
100% Satisfied	55	40%	42	43%
60% Satisfied	54	40%	35	36%
30% Satisfied	19	14%	13	14%
Not Satisfied	8	6%	7	7%
Total	**136**	**100%**	**97**	**100%**

Among all I-394 respondents (which provides a larger, more reliable sample), we find that 69% of those who used the MnPASS lanes for their entire trip were 100% satisfied, compared with 48% who used the MnPASS lanes for part of their trip, or 43% of those who did not use the MnPASS lanes at all.

FIGURE 6.1: SATISFACTION WITH TRAVEL ON REFERENCE TRIP BY USE OF MNPASS LANES

(Among All I-394 Respondents)

Based on this trip, how satisfied were you with the overall quality of your travel on this roadway?



	MnPASS Lane Entire Trip (N=165)	MnPASS Lanes Part of Trip (N=124)	Did not Use MnPASS (N=253)
100% Satisfied	69%	48%	43%
60% Satisfied	27%	45%	41%
30% Satisfied	3%	4%	12%
Not Satisfied	1%	2%	4%

Panelists in both corridors (I-394 and I-35W) found their travel more enjoyable and less stressful in Wave 2 than in Wave 1. Sixty-one percent of the I-394 Wave 2 panelists said their travel experience was enjoyable, compared with 50% of Wave 1 panelists. Conversely, 47% of I-394 Wave 1 panelists said their travel experience was stressful, compared to 36% of Wave 2 panelists.

Among I-35W panelists, 57% reported their travel as enjoyable in Wave 2 compared to 47% of Wave 1 respondents. The percentage characterizing their travel as stressful also decreased from 52% in Wave 1 to 41% in Wave 2.

TABLE 6.3: TRAVEL EXPERIENCE ON I-394 DURING REFERENCE TRIP
(Among All Panel Members)

Which of the following descriptors best captures your travel experience on I-394 [I-35W] at that time?

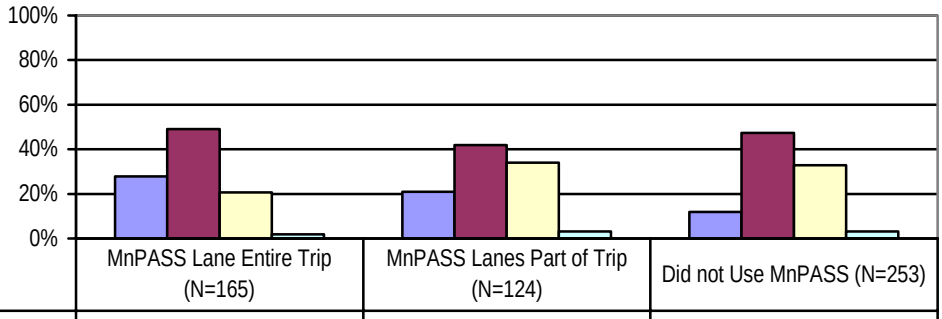
I-394	FREQUENCY WAVE 1 (2004)	PERCENT WAVE 1 (2004)	FREQUENCY WAVE 2 (2005)	PERCENT WAVE 2 (2005)
Enjoyable	**206**	**50%**	**188**	**61%**
Very Enjoyable	41	10%	39	13%
Slightly Enjoyable	165	40%	149	48%
Stressful	**197**	**48%**	**115**	**36%**
Slightly Stressful	170	41%	103	33%
Very Stressful	27	7%	12	3%
Don't Know	10	2%	9	3%
Total	**413**	**100%**	**312**	**100%**
I-35W				
Enjoyable	**64**	**47%**	**55**	**57%**
Very Enjoyable	19	14%	13	14%
Slightly Enjoyable	45	33%	42	43%
Stressful	**71**	**52%**	**40**	**41%**
Slightly Stressful	61	45%	37	38%
Very Stressful	10	7%	3	3%
Don't Know	1	1%	2	2%
Total	**136**	**100%**	**97**	**100%**

Among all I-394 respondents – which provides a larger, more reliable sample – we find that 76% of those who used the MnPASS lanes for all of their trip characterized their travel as enjoyable, compared with 63% of those who used the MnPASS lanes for part of their trip, and 59% of those who did not use the MnPASS lanes at all (see Figure 6.2 on the following page).

FIGURE 6.2: TRAVEL EXPERIENCE ON REFERENCE TRIP BY USE OF MNPASS LANES

(Among All I-394 Respondents)

Which of the following descriptors best captures your travel experience on I-394 at that time?



	MnPASS Lane Entire Trip (N=165)	MnPASS Lanes Part of Trip (N=124)	Did not Use MnPASS (N=253)
Very Enjoyable	28%	21%	12%
Slightly Enjoyable	49%	42%	47%
Slightly Stressful	21%	34%	33%
Very Stressful	2%	3%	3%

6.2 TRAVEL MODE

The Wave 2 survey captured information about travel mode in two ways: (1) "usual" mode and (2) "reference trip" mode. While these two measures were identical to those used in Wave 1, the Wave 2 respondents were provided with a Travel Log in which to record their information for an assigned travel week (see Appendix B: Travel Log).

Usual mode was calculated by determining the most commonly used travel mode for all trips taken in the previous Monday-Friday 5-day period. For about three-quarters of all panelists, drive alone (SOV) was the most commonly used travel mode. Slightly less than one-fourth of panelists carpooled, and 2% or less rode the bus. Carpooling was higher among I-394 panelists (23%) than among I-35W panelists (19%), but the difference was not statistically significant.

TABLE 6.4: CURRENT "USUAL" TRAVEL MODE

(Among All Panel Members)

Now consider all trips you made in both directions. On how many of those trips did you:

	FREQUENCY I-394	PERCENT I-394	FREQUENCY I-35W	PERCENT I-35W
Drive alone	264	76%	88	79%
Carpool	78	23%	21	19%
Ride bus	3	1%	2	2%
Total	**345**	**100%**	**111**	**100%**

The travel mode of the respondents' reference trip was also measured; however, reference trip was not collected for people who were interviewed as a "short" complete (see Methods chapter). All other panelists were asked to report on the same type of trip as they reported in Wave 1. For most panel members, reporting on a similar trip (i.e., same time, trip type, and direction) was possible. But for slightly more than one-fourth of panel members, a similar trip was not captured because we could not continue rescheduling the respondent to collect a similar trip due to the data collection deadline. The reference trips for those respondents who reported a similar trip were distributed as: commute trip (71%), non-commute trip (29%), and peak period trip (73%) and non-peak trip (27%).

TABLE 6.5: COMPARABILITY OF REPORTED WAVE 1 AND WAVE 2 REFERENCE TRIPS
(Among All "Long Complete" Panel Members)

	FREQUENCY I-394	PERCENT I-394	FREQUENCY I-35W	PERCENT I-35W
Reported Similar Trip	218	70%	72	74%
Reported Different Trip	94	30%	25	26%
Total	**312**	**100%**	**97**	**100%**

Very similar travel mode patterns were observed for the reference trip as for "usual" mode – about three-quarters of panelists drove alone, slightly less than one-fourth carpooled, and 4% or less rode the bus. It appears that I-394 panelists were slightly more likely to carpool (24%) than those panelists on I-35W (21%) but the differences are not statistically significant due to small sample sizes.

TABLE 6.6: CURRENT "REFERENCE TRIP" TRAVEL MODE
(Among All Panel Members Reporting Similar Trips)

Now I have questions about the trip that you recorded in your travel log. Were you…

	FREQUENCY I-394	PERCENT I-394	FREQUENCY I-35W	PERCENT I-35W
Drive alone	162	74%	54	75%
Carpool	52	24%	15	21%
Ride bus	4	2%	3	4%
Total	**218**	**100%**	**72**	**100%**

Comparing Wave 1 and Wave 2 usual modes of travel, the share of carpooling among I-394 panelists was slightly higher in Wave 2 than in Wave 1; carpooling share decreased among I-35W panelists.[18]

TABLE 6.7: USUAL TRAVEL MODE

Now consider all trips you made in both directions. On how many of those trips did you:

I-394	FREQUENCY WAVE 1 (2004)	PERCENT WAVE 1 (2004)	FREQUENCY WAVE 2 (2005)	PERCENT WAVE 2 (2005)
Drive alone	318	77%	264	76%
Carpool	88	21%	78	23%
Ride bus	7	2%	3	1%
Total	**413**	**100%**	**345**	**100%**
I-35W				
Drive alone	97	71%	88	79%
Carpool	38	28%	21	19%
Ride bus	1	1%	2	2%
Total	**136**	**100%**	**111**	**100%**

When the responses of individual panelists are explored, about one-fourth of them reported different usual modes of travel in the two panel waves. There were no statistically significant differences observed between I-394 and I-35W panelists.

TABLE 6.8: CHANGE IN USUAL MODE OF TRAVEL (WAVE 1 TO WAVE 2)
(Among All Panel Members)

Now consider all trips you made in both directions. On how many of those trips did you:

	FREQUENCY I-394	PERCENT I-394	FREQUENCY I-35W	PERCENT I-35W
Same Mode	269	78%	83	75%
Different Mode	76	22%	28	25%
Total	**315**	**100%**	**111**	**100%**

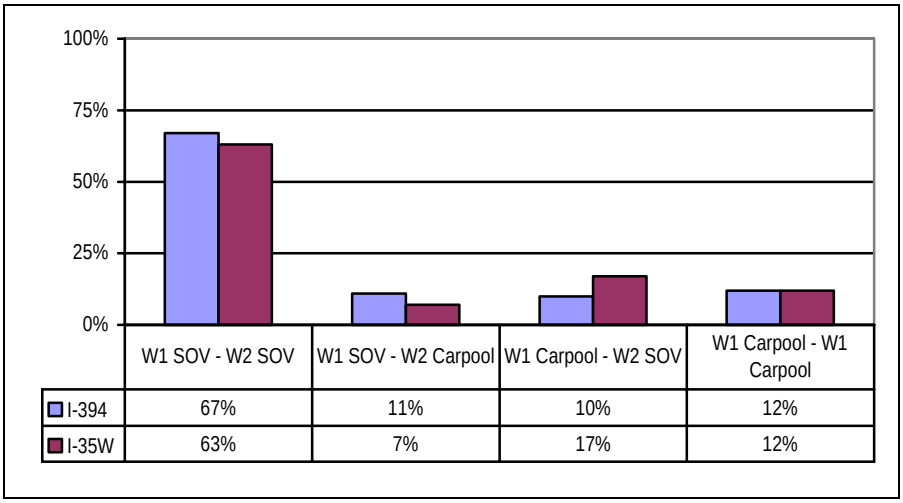
[18] It should be noted that panel attrition affected the mode split distribution as reported in Table 6.7 for the control sample (I-35W). The mode split reported in the 2004 Baseline report was 71% drive alone, 22% carpool, and 1% transit. The panel retained more carpoolers than were found in the Wave 1 survey. The mode split reported for the I-394 sample was not affected by panel attrition. Since these data represent the same people, the mode shift patterns observed between Wave 1 and Wave 2 are still valid.

Consistent with the information presented in Table 6.8, I-394 panelists were slightly more likely than those in the control corridor (I-35W) to switch from SOV to carpool (11% versus 7%), whereas those in the control corridor were more likely to switch from carpool to SOV (17% versus 10%).

FIGURE 6.3: MODE SWITCHING BEHAVIOR BY CORRIDOR (WAVE 1 TO WAVE 2)

(Among Non-Transit Panel Members)[19]

Now consider all trips you made in both directions. On how many of those trips did you:



6.3 ROADWAY USED

Dissimilar methods were used to capture information about roadways used in the past five weekdays in Wave 1 versus Wave 2. In Wave 1, respondents were asked, "On which of the following freeways have you traveled in the past 5 weekdays between the hours of 6 am and 9 pm?" (i.e., I-394, I-35W, Hwy 55, and Hwy 77). Responses were captured in a yes / no format and in Wave 1, all respondents were asked about all four roadways.

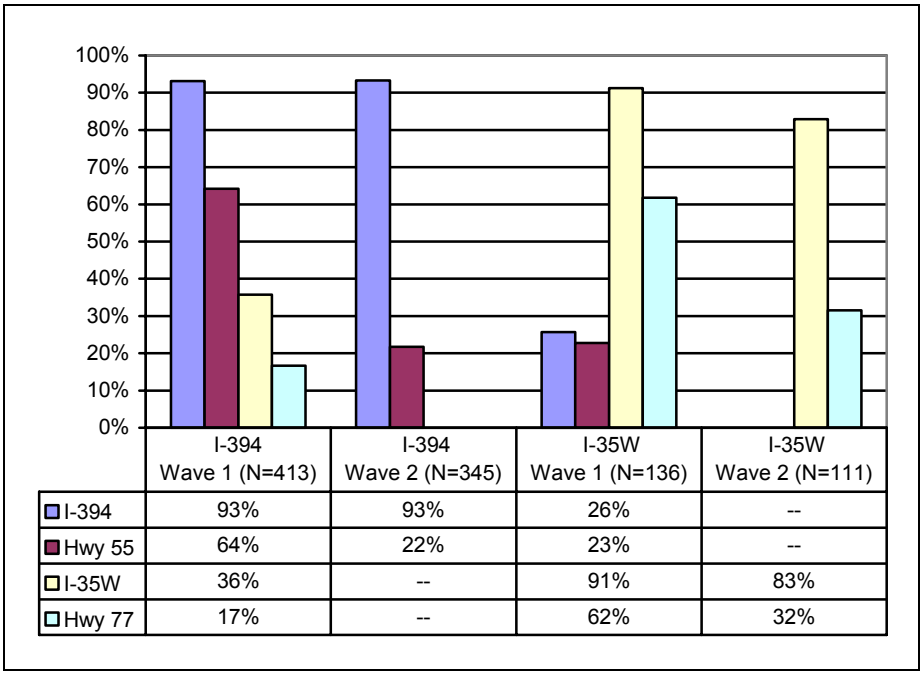
In Wave 2, respondents were asked, "On how many [of those total] trips did you mostly…" I-394 respondents were provided the response categories "use the MnPASS lanes, use the general traffic lanes on I-394, and use Hwy 55." I-35W respondents were provided the categories "use the carpool lanes on I-35W, use the general traffic lanes on I-35W, and use Hwy 77." So in Wave 2, respondents were asked only about the roadways in their specific corridor. This question wording was used to simplify Travel Log completion by Wave 2 respondents.

The differences in question wording between Wave 1 and Wave 2 make us cautious in drawing inferences about trends in roadway use. However, it does appear that I-394 respondents in Wave 2 were less likely to use the alternative roadway (Hwy 55) than were I-35W respondents to use Hwy 77 (22% versus 32%, respectively). In Wave 1, I-394 and I-35W respondents exhibited similar patterns in their use of the alternative roadway.

[19] Transit sample size is too small to report.

FIGURE 6.4: ROADWAYS USED MONDAY - FRIDAY, 6AM - 9PM, ASSIGNED WEEK

(Among Panel Members)



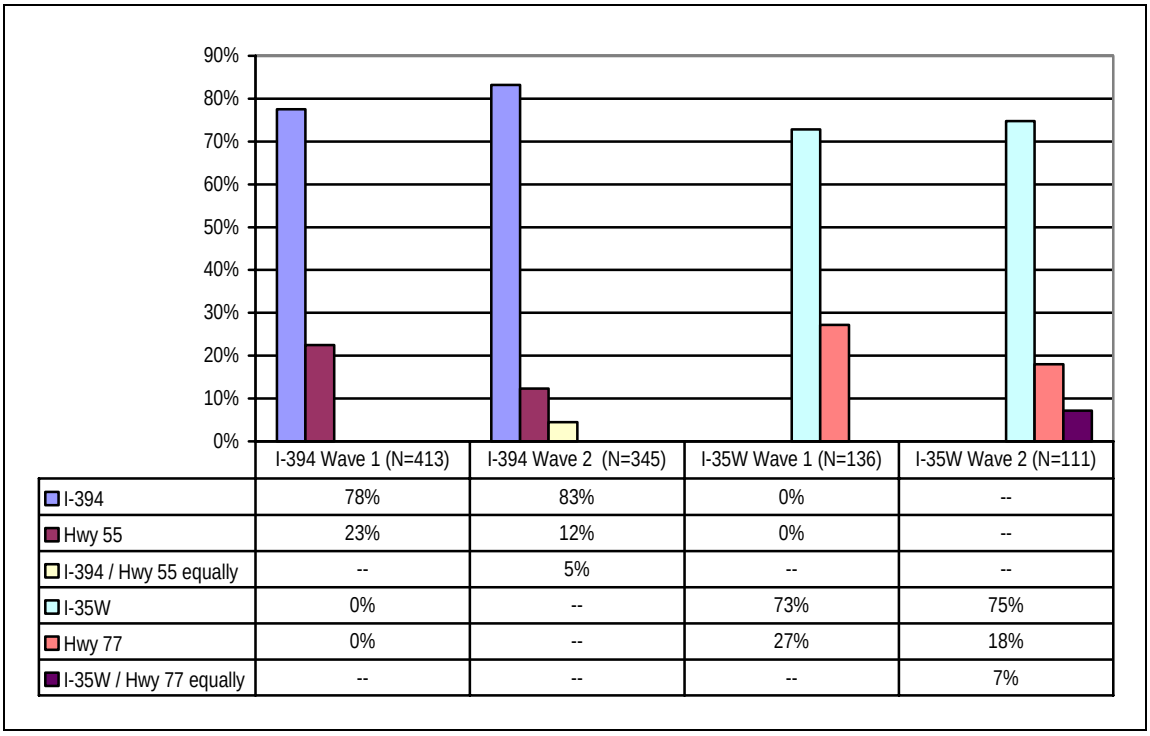
	I-394 Wave 1 (N=413)	I-394 Wave 2 (N=345)	I-35W Wave 1 (N=136)	I-35W Wave 2 (N=111)
I-394	93%	93%	26%	--
Hwy 55	64%	22%	23%	--
I-35W	36%	--	91%	83%
Hwy 77	17%	--	62%	32%

Another way to try to compare Wave 1 and Wave 2 responses on roadway used is in terms of the "most frequently used" roadway. In Wave 1, subsequent to being asked whether respondents used a particular roadway or not, those respondents who reported using more than roadway were asked "which one do you use most frequently." For Wave 2, the most frequently used roadway was statistically computed from the trip data so that there were respondents for whom both the interstate and the alternative were used for an equal number of trips.

Different patterns of the most frequently used roadway were observed for I-394 panel member versus I-35W panel members. In Wave 2, more I-394 panelists (83%) seemed to use the interstate (I-394) as opposed to the alternative highway (Hwy 55) than did the I-35W panelists (75%) use the interstate versus the alternative. Also, there appeared to be differences between Wave 1 and Wave 2 in the percentages of I-394 panelists reporting most frequent use of I-394 (78% versus 83%), whereas the same percentage of I-35W panelists reported using I-35W most frequently in the two waves (73% versus 75%).

FIGURE 6.5: ROADWAY USED MOST FREQUENTLY MONDAY - FRIDAY, 6 AM – 9 PM, ASSIGNED WEEK

(Among Panel Members)

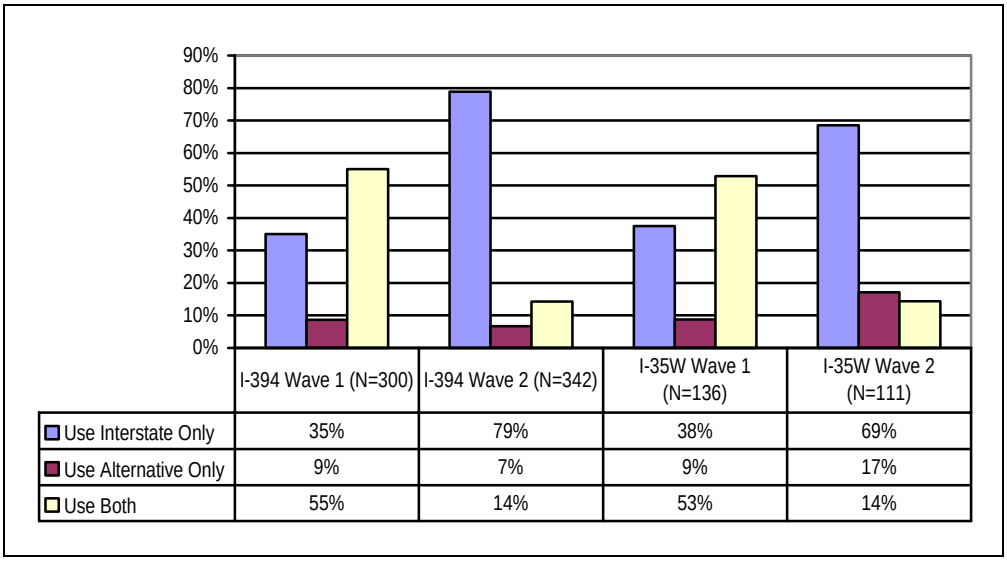


	I-394 Wave 1 (N=413)	I-394 Wave 2 (N=345)	I-35W Wave 1 (N=136)	I-35W Wave 2 (N=111)
I-394	78%	83%	0%	--
Hwy 55	23%	12%	0%	--
I-394 / Hwy 55 equally	--	5%	--	--
I-35W	0%	--	73%	75%
Hwy 77	0%	--	27%	18%
I-35W / Hwy 77 equally	--	--	--	7%

In Wave 1, I-394 and I-35W panelists reported similar types of roadways used. However, differences between these panelists were observed in Wave 2. A larger percentage of I-394 panel members reported using only the interstate (i.e., I-394 versus I-35W) during their assigned travel week (79% versus 69%). A larger percentage of I-35W panelists reported using only the alternative highway (17% versus 7%). About the same percentages said that they used both the interstate and the alternative.

FIGURE 6.6: TYPE OF ROADWAY USED MONDAY - FRIDAY, 6 AM – 9 PM, WAVE 2 ASSIGNED WEEK

(Among Panel Members)



	I-394 Wave 1 (N=300)	I-394 Wave 2 (N=342)	I-35W Wave 1 (N=136)	I-35W Wave 2 (N=111)
Use Interstate Only	35%	79%	38%	69%
Use Alternative Only	9%	7%	9%	17%
Use Both	55%	14%	53%	14%

6.4 VOLUME OF TRAVEL

About the same mean number of trips was recorded among the I-394 panel in Wave 2 (7.62) than in Wave 1 (7.51). Different methods were used to capture volume of trips in the Wave 1 survey (i.e., retrospective recall) versus the Wave 2 survey (i.e., recorded in travel log). The different methods may account for the difference in reported volume of trips. In Wave 2, the mean total number of trips taken by the I-394 panelists (7.62) was higher than I-35W (6.60), regardless of type of trip. But the difference was not statistically significant.

TABLE 6.9: MEAN VOLUME OF TRIPS MONDAY - FRIDAY, 6AM - 9PM, WAVE 2 ASSIGNED WEEK

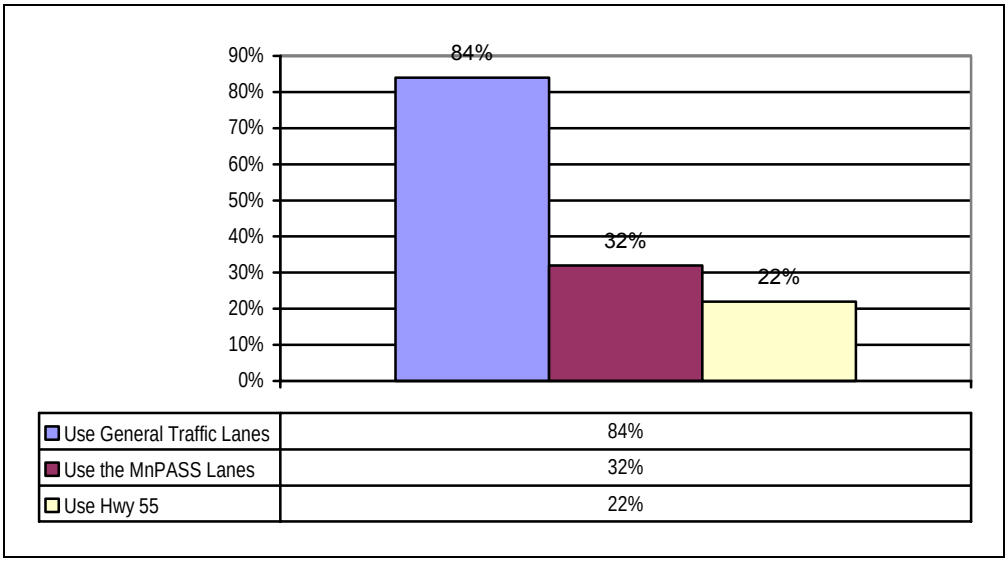
How many trips did you make in total?

TYPE OF TRIP	I-394		I-35W	
	WAVE 1	WAVE 2	WAVE 1	WAVE 2
	(N=413)	(N=345)	(N=136)	(N=111)
Total Number of Trips	7.51	7.62	6.52	6.60
By Direction				
Total Eastbound Trips	3.62	3.77	--	--
Total Westbound Trips	3.89	3.85	--	--
Total Northbound Trips	--	--	3.12	3.22
Total Southbound Trips	--	--	3.40	3.38
By Mode				
Total Number of Drive Alone Trips	5.68	5.80	4.93	5.12
Total Number of Carpool Trips	1.67	1.74	1.52	1.37
Total Number of Transit Trips	.15	.09	.07	.11
By Roadway or Lane				
Total Number of MnPASS Trips	--	1.44	--	--
Total Number of Hwy 55 Trips	--	1.19	--	--
Total Number of General Traffic Lane Trips	--	5.05	--	4.56
Total Number of Carpool Lane Trips	--	--	--	.59
Total Number of Hwy 77 Trips	--	--	--	1.44

One-third of all Wave 2 I-394 panel respondents (32%) reported using the MnPASS lanes for at least one trip Monday through Friday, 6 am – 9 pm, whereas 84% reported using the general traffic lanes and 22% reported using Hwy 55.

FIGURE 6.7: I-394 ROADWAY / LANES USED MONDAY - FRIDAY, 6 AM – 9 PM, WAVE 2 ASSIGNED WEEK

Now consider all trips you made in both directions. On how many of those trips did you use…



6.5 TRAVEL EXPERIENCES OF MNPASS USERS VERSUS NON-USERS

MnPASS lane users reported significantly more trips than non-users (9.07 versus 7.63 trips). Transponder owners averaged 8.7 trips, with a minimum of 2 trips and a maximum of 16 trips. MnPASS lane users also reported longer trips, on average, than non-users (19.41 miles versus 15.42 miles). However, travel time in minutes of the reference trip was virtually the same, which means that speeds for MnPASS lane users were faster, even though their trip lengths were about 25% longer.

TABLE 6.10: TRIP CHARACTERISTICS OF MNPASS USERS AND NON-USERS
(All I-394 Respondents)

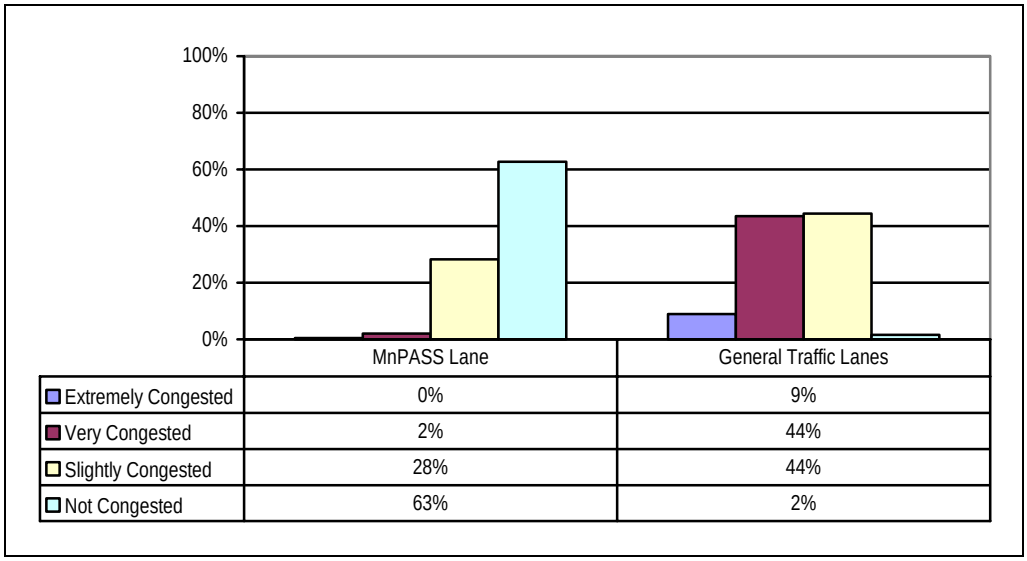
TRIP STATISTIC	MNPASS LANE USER	MNPASS LANE NON-USER
	(N=289)	(N=253)
Total Trips Assigned Week (mean)	9.07	7.63
Total Trips Assigned Week (median)	10.00	8.00
Reference Trip in Miles (mean)	19.41	15.42
Reference Trip in Miles (median)	15.00	12.00
Reference Trip Travel Time (mean)	35.58	35.68
Reference Trip Travel Time (median)	30.00	30.00

At the time of their reference trip travel, half of MnPASS lane users (53%) characterized the level of congestion in the general traffic lanes as very congested or extremely congested. About 44% said congestion in the general traffic lanes was slightly congested. About two-thirds (63%) described the MnPASS lane as not congested at all, indicating that there were free flow conditions.

FIGURE 6.8: CONGESTION IN MNPASS LANE AND GENERAL TRAFFIC LANES

(I-394 Respondents who Used MnPASS Lanes, N=289)

How would you describe the level of congestion in the MnPASS / general traffic lanes at the time of your travel?



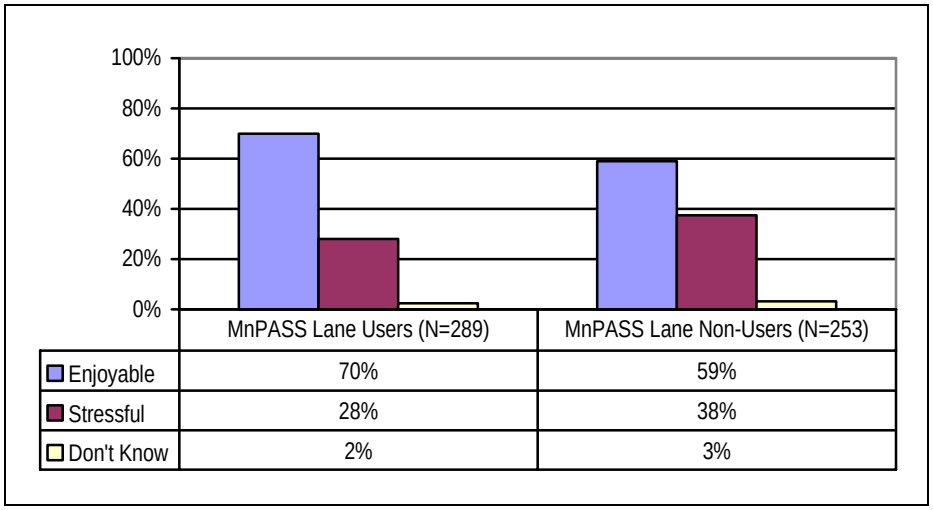
	MnPASS Lane	General Traffic Lanes
Extremely Congested	0%	9%
Very Congested	2%	44%
Slightly Congested	28%	44%
Not Congested	63%	2%

MnPASS lane users were much more likely than non-users to describe their reference trip as "enjoyable" (70% versus 59%, respectively). MnPASS lane users were also more satisfied with their trip than were non-users (60% 100% satisfied versus 43%, respectively).

FIGURE 6.9: TRAVEL EXPERIENCE FOR REFERENCE TRIP OF MNPASS LANE USERS AND NON-USERS

(All I-394 Respondents)

Which of the following descriptors best captures your travel experience on I-394 [I-35W] at that time?

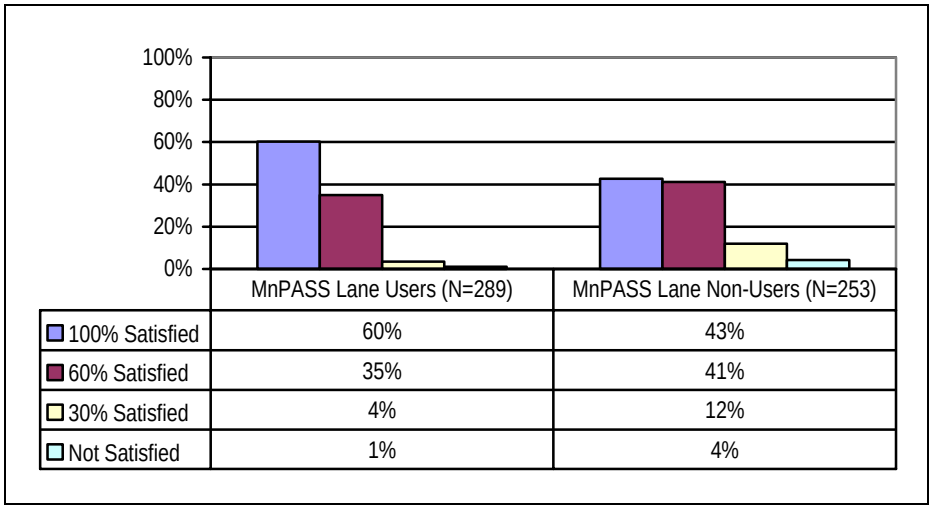


	MnPASS Lane Users (N=289)	MnPASS Lane Non-Users (N=253)
Enjoyable	70%	59%
Stressful	28%	38%
Don't Know	2%	3%

FIGURE 6.10: SATISFACTION WITH REFERENCE TRIP

(All I-394 Respondents)

Based on this trip, how satisfied were you with the overall quality of your travel on this roadway?



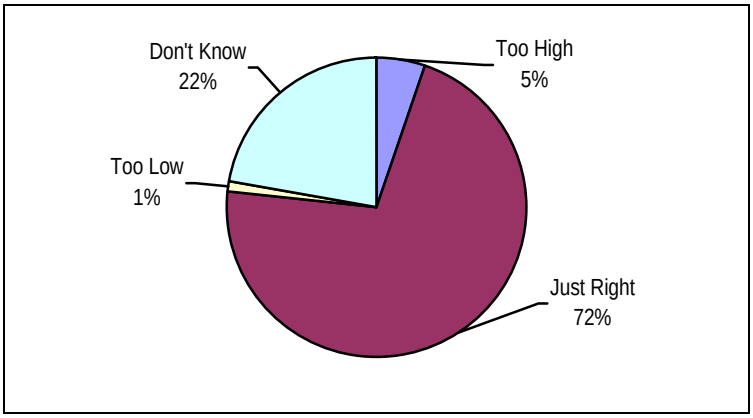
	MnPASS Lane Users (N=289)	MnPASS Lane Non-Users (N=253)
100% Satisfied	60%	43%
60% Satisfied	35%	41%
30% Satisfied	4%	12%
Not Satisfied	1%	4%

Most MnPASS lane users considered the MnPASS toll a good value; 72% said the toll paid for their reference trip was just right – neither too high nor too low. About one in five could not place a value on the toll paid.

FIGURE 6.11: PERCEIVED VALUE OF MNPASS TOLL

(I-394 Respondents who Used MnPASS Lanes, N=289)

Given the time saved using the MnPASS lane for this trip, do you think the toll paid was…

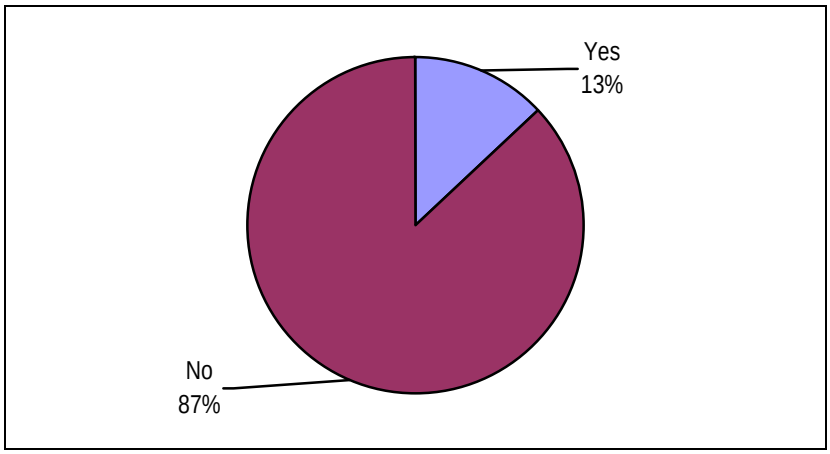


The vast majority of MnPASS lane users (87%) did not experience any problems merging into the MnPASS from the general traffic lane on their reference trip, while 13% experienced problems. Of the total sample, 6% identified the problem as congestion; 4% as lanes were confusing; and 3% said they experienced rude drivers.

FIGURE 6.12: MERGING PROBLEMS ON REFERENCE TRIPS

(I-394 Respondents who Used MnPASS Lanes, N=289)

Did you experience any problems in merging into the MnPASS lane from the general traffic lane?



6.6 TRAVEL PROFILES OF TRANSPONDER OWNERS AND TRANSPONDER NON-OWNERS

Does being a transponder owner influence travel behavior? There was no difference between transponder owners and transponder non-owners in their trip volumes during the assigned travel week (Monday through Friday). Transponder owners averaged 8.7 trips, with a minimum of 2 trips and a maximum of 16 trips. Transponder non-owners averaged 8.2 trips, with a minimum of 1 trip and a maximum of 20 trips. However, there is a significant difference in the number of miles traveled, which was measured in terms of the reference trip. Transponder owners reported a mean distance of 20.4 miles and median distance of 17 miles, whereas non-owners reported a mean distance of 15.9 miles and a median distance of 12 miles. Travel time in minutes of the reference trip was virtually the same, which means speeds for transponder owners were 8 mph and 10 mph faster for the mean and median trip, respectively, even though their trip lengths were 28% and 42% longer, respectively.

TABLE 6.11: MEAN VOLUME OF TRIPS MONDAY - FRIDAY, 6 AM – 9 PM, WAVE 2 ASSIGNED WEEK
(All I-394 Respondents)

How many trips did you make in total?

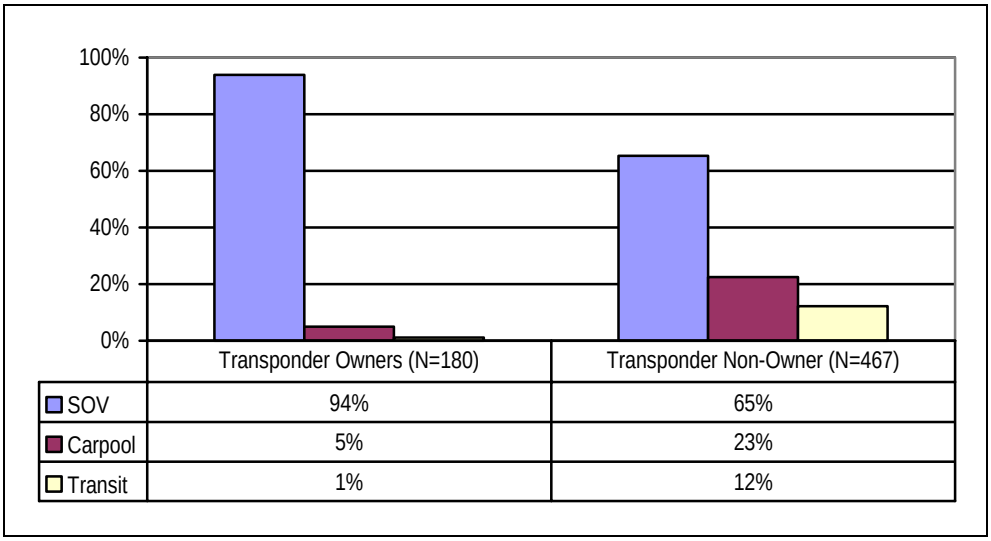
TRIP STATISTIC	TRANSPONDER OWNERS	TRANSPONDER NON-OWNERS
	(N=179)	(N=467)
Total Trips Assigned Week (mean)	8.69	8.22
Total Trips Assigned Week (median)	10.00	8.00
Reference Trip in Miles (mean)	20.43	15.90
Reference Trip in Miles (median)	17.00	12.00
Reference Trip Travel Time (mean)	34.93	34.80
Reference Trip Travel Time (median)	30.00	30.00

Since only SOV users of the MnPASS lane are required to have transponders, the overwhelming majority of transponder owners (94%) was SOV drivers. It is interesting to note, however, that 5% of carpoolers own transponders, probably for occasions when they need to drive alone.

FIGURE 6.13: USUAL MODE OF TRAVEL MONDAY - FRIDAY, 6 AM – 9 PM, WAVE 2 ASSIGNED WEEK

(All I-394 Respondents)

Now consider all trips you made in both directions. On how many of those trips did you:



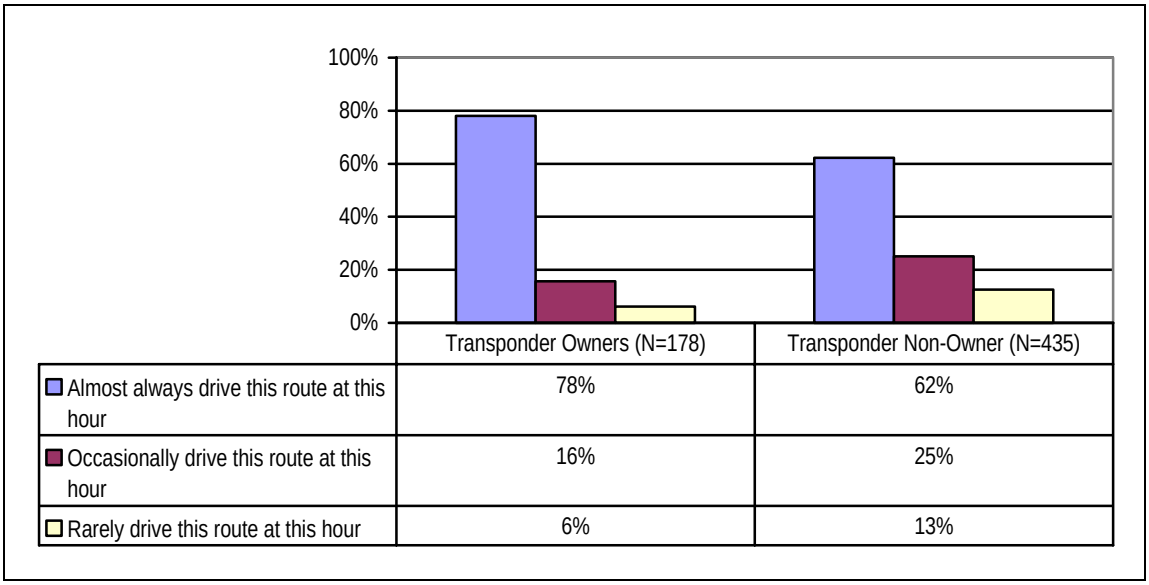
There were significant differences among the two ownership segments in terms of how familiar they were with the traffic conditions at the time of their reference trip. Transponder owners are frequent, regular users of the I-394 corridor. Three-fourths of transponder owners (78%) said they almost always drive this route at this hour (3 or 4 times per week) compared to only 62% of non-owners (see Figure 6.14). There were no differences in the flexibility that transponder owners versus non-owners have in their scheduled arrival times at destinations. Seventy-eight percent of transponder owners report that they "almost always drive [I-394] at this hour," compared to 62% of non-owners.

As shown in Table 6.8 previously, travel speeds experienced by transponder owners are significantly higher. This probably translates into higher travel time reliability and thus an ability to drive the MnPASS route at generally the same hour.

FIGURE 6.14: FAMILIARITY WITH TRAFFIC CONDITIONS RELATED TO REFERENCE TRIP

(All I-394 Respondents)

How familiar are you with the traffic conditions on the freeway at this time? Would you say you…

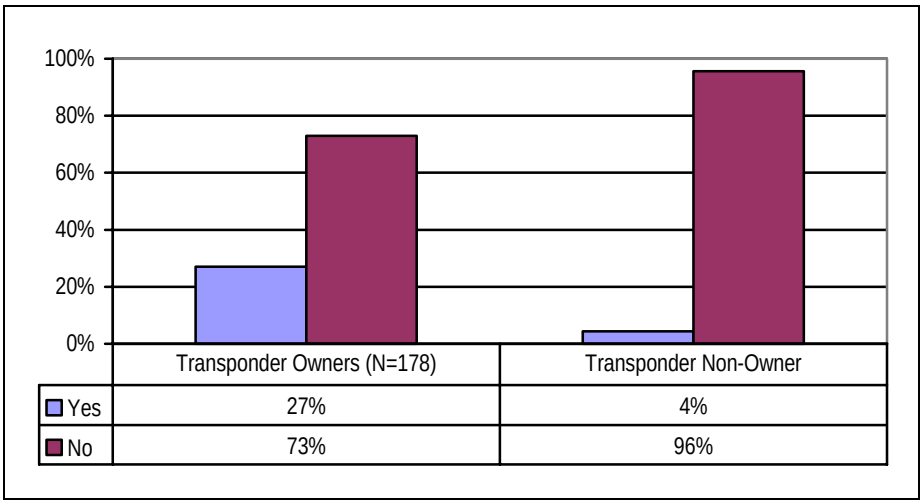


A larger percent of transponder owners reported changes in their typical departure time for their reference trip because of MnPASS (27% versus 4%). This difference is statistically significant. Of those transponder owners who changed their departure time, 88% are leaving later and 12% are leaving earlier. The fact that 73% of transponder owners did not change the time of their trip, compared to 96% for non-owners is an indication that MnPASS affords greater departure flexibility / choice.

FIGURE 6.15: CHANGE IN TYPICAL DEPARTURE TIME RELATED TO REFERENCE TRIP

(All I-394 Respondents)

Have you changed your typical departure time for this trip because of MnPASS?

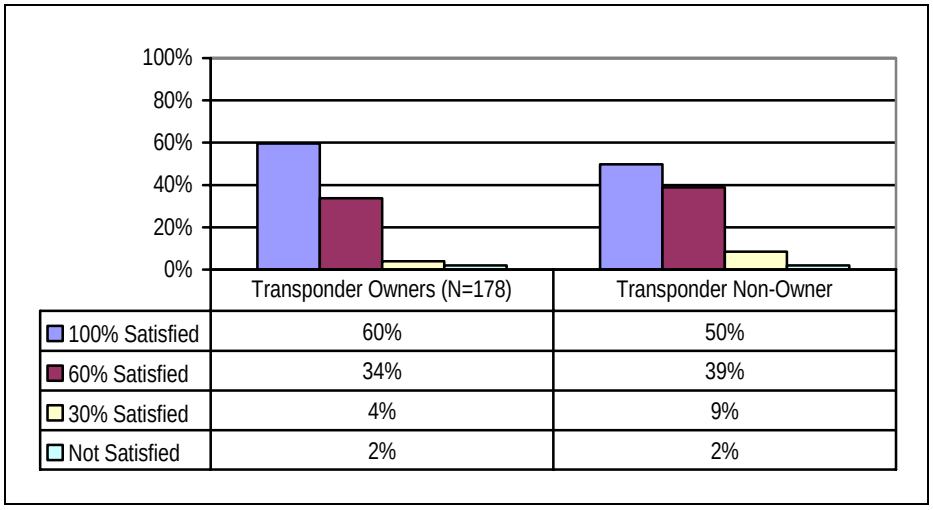


Transponder owners were more likely to report 100% satisfaction with the overall quality of their reference trip than were non-owners (60% versus 50%). But differences between the two groups were not statistically significant. The same finding was observed in terms of their reported travel experience descriptors (i.e., enjoyable versus stressful). About two-thirds of each group reported their trip as being "enjoyable," and one-third reported a "stressful" trip.

FIGURE 6.16: SATISFACTION WITH REFERENCE TRIP

(All I-394 Respondents)

Based on this trip, how satisfied were you with the overall quality of your travel on this roadway?



	Transponder Owners (N=178)	Transponder Non-Owner
100% Satisfied	60%	50%
60% Satisfied	34%	39%
30% Satisfied	4%	9%
Not Satisfied	2%	2%

7. CONCLUSIONS

7.1 KEY FINDINGS

I-394 MnPASS Acceptance

Acceptance of the MnPASS concept remains high (59% "good idea" versus 29% "bad idea"). Actual experience of the MnPASS lanes in operation has not diminished panel respondents' support for the idea of allowing single drivers to use carpool lanes by paying a toll. Approval was consistent across all income groups. Higher-income respondents were the most supportive (71%). Lower-income respondents were also quite supportive, and by a three-to-one margin (62% "good idea" versus 23% "bad idea"). The majority of carpoolers were supportive (64% "good idea"). Just under half of transit users surveyed (45%) expressed support for the MnPASS concept.

The most common reason for supporting MnPASS was that "it provides a better use for carpool lanes." The most common reason for believing it was a bad idea was that it "only benefits the rich." But the most likely groups to have this latter opinion were higher-income respondents and SOV drivers. The high levels of support may be influenced by travelers' appreciation of their current driving experiences on I-394. The majority of I-394 users are 100% satisfied with the overall quality of their travel. Most, regardless of their choice of mode, described their travel experience on a recent trip on the corridor as "enjoyable" rather than "stressful." Citizens of all income levels were satisfied with their travel on I-394. Seventy-one percent of low-income citizens said their travel experience was "enjoyable," versus 68% for middle-income citizens and 55% for high-income citizens.

I-394 MnPASS Use and Satisfaction

The panel captured a 4% incidence of MnPASS subscribers. However, use of the MnPASS lanes represents a much broader market. Of panel members, 87% reported that they have used the MnPASS lanes in the past as a carpooler; 7% said they have used the lanes as a paying SOV driver; and 4% reported usage as a bus rider. MnPASS usage was reported across all income levels, with 54% of lower-income, 62% of middle-income, and 66% of higher-income respondents reporting that they have used the MnPASS lanes.

MnPASS users, regardless of whether they were paying users or not, were satisfied with MnPASS operations. Users had the highest levels of satisfaction with speed of traffic flow in the MnPASS lane. Eight of ten are satisfied with the speeds / flow in the MnPASS lane. In fact, when describing the level of congestion in the MnPASS lanes on their reference trip, 63% described MnPASS lane as not congested at all, whereas 53% characterized the level of congestion in the general traffic lane as very congested or extremely congested. Most MnPASS lane users considered the MnPASS toll as a good value; 71% said that the toll paid for their reference trip was "just right."

Safety issues were not raised in conjunction with MnPASS operations, with 76% reporting satisfaction with the ease of identifying the MnPASS entry points, and 66% satisfied with the safety of merging into MnPASS lanes. Only 13% of MnPASS users had experienced any problems merging into the MnPASS lanes from the general traffic lane; and most of these persons attributed the problems to "congestion" or "rude drivers" rather than to some engineering or operational aspect of the lanes, themselves. Among all users, the lowest levels of satisfaction were with the enforcement of MnPASS usage (45%); still satisfaction of enforcement outpaced dissatisfaction by a three-to-one margin.

Paying MnPASS customers were exceptionally satisfied with the details of having an MnPASS subscription. Virtually all (95%) were satisfied with the all electronic toll collection, ease of opening an account (92%); using a credit card to replenish the account (92%), and the ease of installing the MnPASS transponder (92%). Communications appear to be handled well with virtually no complaints about the staff at the Customer Service Center or about the MnPASS website. About one-of-five paying customers reported dissatisfaction with the clarity of prices on overhead signs or with the toll amounts that vary with traffic levels.

Attitudes and Travel Behavior among I-394 Users

The implementation of MnPASS has not had a negative impact on carpooling on I-394 nor on traveling experiences in the corridor. The current mode share of I-394 panelists is comparable to that captured in the Wave 1 survey: 76% drive alone, 23% carpool, and 1% ride bus. While one in ten (11%) I-394 panelists reported switching from SOV to carpool as their usual mode of travel on the corridor, about the same percent reported switching from carpool to SOV (10%). The control corridor (I-35W) did experience less switching from SOV to carpool (7%) and more switching from carpool to SOV (17%).

The percentage of I-394 panelists reporting a congestion delay was lower in 2005 (28%) than in 2004 (38%). Respondents who did not use the MnPASS lanes were more likely to experience congestion than those who did (30% versus 21%, respectively). Satisfaction with the overall quality of travel on I-394 has also risen, with 46% of panelists now reporting 100% satisfaction compared with 36% in 2004. The percentage of panel members who rated travel on I-394 "enjoyable" after MnPASS (61%) was higher than before MnPASS (50%).

Willing to Pay the MnPASS Toll

The mean value of time estimated for the Wave 2 respondents ($10.50 per hour) was higher than that captured in Wave 1 ($8.50 per hour). This result indicated that now the MnPASS lane is in operation, people are more aware of their willingness to pay a higher toll to avoid congestion. The types of people who expressed a higher willingness to pay the MnPASS toll included those traveling a longer distance, traveling in the peak period and on a commute trip, planning to use the MnPASS lane before their trip started, supporting the MnPASS concept, and, finally, persons who are aged 35-44 and higher-income.

7.2 DESIGN AND FIELDWORK

The Attitudinal Panel Survey has been successfully implemented for two of the three planned panel waves. The first wave of the panel was conducted in November / December 2004, prior to MnPASS implementation. In it, NuStats recruited 980 respondents (using probability-based sampling) who agreed to be re-interviewed in Waves 2 and 3. The second wave of the panel was conducted in November / December 2005, about six months into MnPASS implementation. The start of the second wave was delayed three months to avoid surveying during construction of an auxiliary lane outbound on a section of the MnPASS lanes (i.e., MN100 to US169) to deal with a contra-peak congestion issue. The delay in Wave 2 data collection resulted in a longer than anticipated hiatus in panel contact and contributed to a larger than anticipated rate of panel attrition.

The Wave 2 survey experienced an attrition rate of 44% of the Wave 1 respondents. While this rate of attrition was higher than expected, it is comparable to that experienced in other recent transportation panels.[20] Reasons for the attrition in the Wave 2 survey included: unable to locate or contact target person, target person no longer willing to participate, or target person no longer using corridor. An attrition analysis determined that no systematic bias was introduced into the Wave 2 panel sample. However, the attrition did reduce the effective sample size for longitudinal analysis – particularly those analyses of specific sub-samples, such as those used in the SP analysis. Our use of the "short" completes also diminished the sample size for the reference trip and SP analysis. However, it did serve to increase the Wave 2 sample for all other analytical purposes.

The Wave 3 survey is scheduled to start in May 2006. As such, it would occur five months after Wave 2 and prior to the typical time for household relocations (i.e., summer school break). This schedule should diminish the level of attrition in the Wave 3 sample, which is anticipated to be around 20%. A thank-you postcard will be mailed in March 2006 and used as an interim panel contact.

Eighty-nine percent of Wave 2 respondents agreed to be re-interviewed in Wave 3. Taking 20% attrition into consideration, this would effectively reduce the Wave 3 sample to 680 persons, of which about 400 would be long-term panel members (i.e., interviewed in Wave 1 and Wave 2). The final sample size should be larger. So, NuStats recommends that it be refreshed with new probability samples of I-394 and I-35W corridor users. This refreshment sample would be comprised of 600 new respondents -- of which 450 would be I-394 users and 150 would be I-35W users. The geographic coverage of the I-394 sample should be extended to include the census tracts west of I-94 that analysis of MnPASS subscribers has shown account for MnPASS trips. According to this recommended plan, the Wave 3 sample would total between 1200-1300 respondents. It would be comprised of 600 new randomly sampled corridor users; 400 long-term panel members, and 320 returning targeted respondents (i.e., 120 MnPASS subscribers and 200 transit users).

The data collection schedule will be extended to account for tracing panel respondents, contacting the target respondent, rescheduling assigned travel weeks to ensure capture of similar trips, and the timing of mailing of pre-notification packets and the follow-up telephone data retrieval. In addition, the Wave 3 data collection will include the use of a "reminder" call to the target respondents that is timed to arrive after the receipt of the package and prior to the assigned travel week to ensure that respondents have received their package with the Travel Log, to answer any questions, and to confirm the respondents participation in the Wave 3 interview.

[20] Panel attrition was about 33% per six-month wave in the I-15 panel survey. The German Mobility Panel experienced a 43% attrition rate in the second wave (i.e., 1-year interval). The London Panel survey had an attrition rate of 38% per year.

APPENDIX A: ADVANCE LETTERS

UNIVERSITY OF MINNESOTA

Twin Cities Campus

State and Local Policy Program
Hubert H. Humphrey Institute of Public Affairs

Humphrey Center
301-19th Avenue South
Minneapolis, MN 55455-0429

612-626-0347
Fax: 612-626-9833
E-mail: slpp@hhh.umn.edu
http://www.hhh.umn.edu/Centers/SLP/

March 13, 2006

«FNAME» «LNAME» «SAMPN»-«REP»-«STYPE»
«HADDR»
«HCITY», «HSTAT» «HZIP1»

Dear «FNAME» «LNAME», [MnPASS subscribers and Transit sample]

We need your help. You have been selected to participate in a panel survey to evaluate travel conditions in our region. Your participation will ensure that our transportation system truly meets citizens' needs. The study's sponsors are the State and Local Policy Program of the Hubert H. Humphrey Institute of Public Affairs at the University of Minnesota and the Minnesota Department of Transportation. Full participation in this study requires your consent to be interviewed on two separate occasions. A representative of NuStats, a professional survey research firm, will telephone you in about a week for the first interview. Prior to this interview, please record information about your travel during the week specified in the box below in the **enclosed travel log**.

Your assigned travel week is:

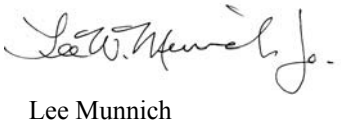
<<assigned week>

What are we asking you to do?

- **First, summarize the number of trips you make during your assigned travel week in Part A: Assigned Travel Week**. Use the enclosed travel log to record the volume of one-way trips you make Monday through Friday during the week of <<assigned week>> by direction of travel and also by your mode of travel.
- **Second, record specific information about a one-way trip you take during your assigned travel week that matches the information provided in Part B: Assigned Trip**. Record information about the a trip you take during the week of <<assigned week>> that matches the day of the week, time of day, purpose and the direction provided under Part B: Assigned Trip.
- **Third, provide us this information in a telephone interview.** An interviewer from NuStats will call after <<assigned week>> to collect your information and also to ask some additional questions. This interview will take about 15 minutes.

Confidentiality is critical to the success of our study. We want you to feel secure in providing candid responses to our questions. So, your name and other identifying information will be stored separately from the data files containing your responses. Your decision to participate is voluntary. And, you may refuse to answer any question without risk. Such actions will not affect relations with any survey sponsors. If you have any questions or concerns about the study, please contact Frank Douma, principal investigator, at 612-626-9946, fdouma@hhh.umn.edu). If you have questions about the interview, contact Chris Simek of NuStats (1-800-447-8287, csimek@nustats.com). If you want to talk to someone other than the researchers, contact Research Subjects Advocate line (612) 625-1650.

Sincerely,



Lee Munnich
Director, State and Local Policy Program
Hubert H. Humphrey Institute

UNIVERSITY OF MINNESOTA

Twin Cities Campus

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Fax: 612-626-9833
E-mail: slpp@hhh.umn.edu
http://www.hhh.umn.edu/Centers/SLP/

March 13, 2006

«FNAME» «LNAME»
«HADDR»
«HCITY», «HSTAT» «HZIP1»

«SAMPN»-«REP»-«STYPE»

Dear «FNAME» «LNAME»,

Thank you for continuing to participate in the **Attitudinal Panel Survey**. Your participation will ensure that our regional transportation system truly meets citizens' needs. A representative of NuStats will telephone you in about a week to complete your next interview. Prior to this interview, please record information about your travel during the week specified in the box below in the **enclosed travel log**.

Your assigned travel week is:

<<assigned week>

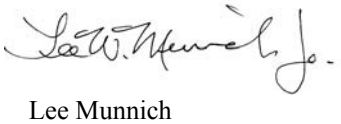
What are we asking of you?

- **First, summarize the number of trips you make during your assigned travel week in Part A: Assigned Travel Week**. Use the enclosed travel log to record the volume of one-way trips you make Monday through Friday during the week of <<assigned week>> by direction of travel and also by your mode of travel.
- **Second, record specific information about a one-way trip you take during your assigned travel week that matches the information provided in Part B: Assigned Trip**. Record information about a trip you take during the week of <<assigned week>> that resembles the one that you detailed for us in your first interview. To assist you, we have indicated the day, time of day, and purpose of your last trip in Part B: Assigned Trip.
- **Third, provide us this information in a second telephone interview.** An interviewer from NuStats will call after <<assigned week>> to collect your information and also to ask some additional opinion questions. At the start of this call, the interviewer will ask if any of the Household Profile information provided in the box below has changed. If so, please report the changes.

Household Profile	
Household size, including you:<<xx>>	No. of Workers, including you? <<xx>>
No. of vehicles available: <<xx>>	Total Household Income: <<xx>>

Remember, all information will be held in strict confidence. If you have any questions or concerns about this study, please contact Frank Douma, the principal investigator 612-626-9946, fdouma@hhh.umn.edu). If you have questions about the interview, contact Chris Simek of NuStats (1-800-447-8287, csimek@nustats.com).

Sincerely,



Lee Munnich
Director, State and Local Policy Program
Hubert H. Humphrey Institute

APPENDIX B: TRAVEL LOG

Attitudinal Panel Surveys

TRAVEL LOG

<<Sampno>>

Part A: Assigned Travel Week

Record information about ALL trips you make on I-394 or Hwy 55, each day during your assigned travel week below between 6 a.m. and 9 p.m.

Assigned Travel Week: <<travel week>>

1 **For each day during your assigned travel week, please record how many trips you make:**

a. Eastbound on I-394 or Hwy 55
b. Westbound on I-394 or Hwy 55

Direction of Travel	Mon	Tue	Wed	Thu	Fri	Total
a. Eastbound on I-394 or Hwy 55						
b. Westbound on I-394 or Hwy 55						

Total Trips East & West bound

2 **For the total trips in question 1, please tell us how many of them you:**

a. Drive alone and do not use the MnPass lanes
b. Drive alone and pay a toll to use the MnPass lanes
c. Drive alone, use the MnPass lanes and not pay a toll
d. Carpool (2 or more persons, regardless of age)
e. Ride a bus

Total Number of Trips should be the same

How Traveled	Mon	Tue	Wed	Thu	Fri	Total
a. Drive alone and do not use MnPass lanes						
b. Drive alone and pay toll to use MnPass lanes						
c. Drive alone, use MnPass lanes and not pay a toll						
d. Carpool (2 or more persons, regardless of age)						
e. Ride a bus						

Total Trips by all travel modes

Part B: Assigned Trip

Record information about a ONE-WAY TRIP you take on I-394 or Hwy 55, during your assigned travel week, that matches your assigned trip below.

Assigned Trip:
Day of Week: <<Day of Week>>
Trip Purpose: (Panel version only)
Direction of Travel: (Panel version only)
Time of Departure: <<Time of day>>

3 **On what day of the week was the first trip you took matching your Assigned Trip above?**

○ Monday ○ Tuesday ○ Wednesday ○ Thursday ○ Friday

4 **How many TOTAL CAR TRIPS (number of times you turned on the ignition) did you make that day?**
(include ALL car trips, not just those on I-394 and Hwy 55)

_____ *# car trips (# times you turned on the ignition)*

Continue on back

5 **What was the purpose of your trip?**

- ○ Work
- ○ Work-related
- ○ School
- ○ Shop
- ○ Medical/Personal Appointment
- ○ Visit friends/relatives
- ○ Recreation
- ○ Other: _____

6 **Which PRIMARY ROADWAY did you use?** ○ I-394 only ○ Hwy 55 only ○ Both I-394 & Hwy 55

7 **IF I-394: At what RAMP or INTERCHANGE did you enter the roadway?** _____

8 **In what DIRECTION were you travelling?** ○ East ○ West

9 **What was your START LOCATION?** ○ Home ○ Work ○ Other: _____

10 **What time did you DEPART?** _____ : _____ ○ am ○ pm

11 **What was your DESTINATION LOCATION?** ○ Home ○ Work ○ Other: _____

12 **What time did you PLAN TO ARRIVE at your destination?** _____ : _____ ○ am ○ pm

13 **What time did you ACTUALLY ARRIVE at your destination?** _____ : _____ ○ am ○ pm

14 **What was your TOTAL TRAVEL TIME** *(from your start location to your destination location)***?** _____ *# minutes*

15 **What was your PRIMARY MODE OF TRAVEL?** ○ Drive alone ○ Carpool ○ Bus

→ Total number of people in vehicle, including yourself: _____ *# people*

16 **How many SIDE TRIPS (or stops) did you make on the way to your destination location?**

_____ *# side trips or stops*

17 **Did you use the MnPASS Lane?**

○ **YES**

a Toll paid *(one-way)* $ _____ . _____

b What do you think your travel time would be if you **had not** used the MnPASS lane? _____ *# minutes*

c Did you **plan to use** the MnPASS lane **before** you left your start location?

○ Yes ○ No

d Why did you decide to use the MnPASS lane? *(mark all that apply)*

- ○ To avoid an unexpected delay.
- ○ To travel more safely.
- ○ To avoid an unexpected levels of congestion.
- ○ I travelled by carpool or bus.
- ○ Other: _____

○ **NO**

a What do you think your travel time would be if you **had** used the MnPASS lane? _____ *# minutes*

b Why didn't you use the MnPASS lane? *(mark all that apply)*

- ○ I am not a MnPASS subscriber.
- ○ Traffic levels were lighter than usual.
- ○ Price was too high.

→ How much would the one-way toll have been? $ _____ . _____

- ○ MnPASS lanes were not available in my direction of travel.
- ○ Other: _____

THANK YOU! DO NOT MAIL. You will receive a call to collect your information.

APPENDIX C: SURVEY INSTRUMENT

MnPASS -- Wave 2 Survey Instrument

SAMPLE TYPE (From sample databases):

PANEL – I-394	1
MNPASS SUBSCRIBERS – I-394	2
TRANSIT LIST – I-394	3
PANEL – I-35w	4
TRANSIT LIST – I-35W	5
Final Refusal ---→ TERM	999

INTRO_A: Hello, my name is _____, and I'm calling on behalf of the Minnesota DOT and the Hubert Humphrey Institute of the University of Minnesota.

PANEL MEMBERS

S1. May I speak with _____(respondent)? He/ she is participating in our Attitudinal Panel Survey.

Continue	1
Callback	2
First Refusal	3
Final Refusal ---→ TERM	4

CB1. What would be a good time to call back? Enter date and time.

CONT: Thank you for participating in our Attitudinal Panel Survey. Did you receive our package with the travel log? Did you complete it? Great. I'll continue with the survey. ***If not: Reschedule.***

I1: Did any of the information in your demographic profile change? IF SO: MAKE CHANGES.
HH Size:
No. Vehicles:
No. Workers:
HH Income:

UNSURE	998
REFUSED	999

THEN PANEL MEMBERS SKIP TO A1.

MNPASS SUBSCRIBERS / TRANSIT USERS

I1. May I speak with _____(subscriber/transit user)? We're conducting a survey on travel conditions in the Twin Cities. This is not a sales call.

Continue	1
Callback	2
First Refusal	3
Final Refusal ---→ TERM	4

CB1. What would be a good time to call back? Enter date and time.

INFORMED CONSENT CONTINUE -- ALL

I2. We sent a letter about this survey to your home address. You should have received it within the past week. Do you remember receiving and reading this letter?

YES (GOTO I4)	1
NO (GOTO I3)	2
DK/RF (GO TO I3)	3

I3. Can I confirm your name [and mailing address – IF ANSWERED NO]? READ AND CONFIRM.

MAILING CORRECT—GO TO CONSENT	1
MAILING INCORRECT – COLLECT ADDRESS THEN GO TO CONSENT	2

ENTER NEW MAILING ADDRESS:
I3a. NAME
I3b. ADDRESS
I3c. CITY
13d. ZIP

CONSENT. Let me explain why I've called. Your household has been randomly selected to be surveyed as part of an evaluation of a new roadway project in the Twin Cities area, resulting from statewide legislation in 2003. This interview should take about 15 minutes. I'll ask questions on congestion, carpool (diamond) lanes, and other transportation issues. I'll also collect travel information relating to your use of the I-394 and I-35W corridors and some demographic questions. Confidentiality is critical to the success of our study. Your name and other identifying information will be stored separately from the data files containing your responses.

I need your informed consent to be interviewed on three separate occasions over the next 16 months. The reason for these three interviews is to enable researchers to understand any changes in behavior, or attitudes you might have before and after the implementation of the new roadway project. The benefits of participation in the study are truly helping our community identify new ways of dealing with the congestion problem. Your decision to participate is voluntary. And, you may refuse to answer any question without risk. Such actions will not affect any relations with study sponsors GO TO I4.

I4a. Do you understand the study??

YES	1
NO (THANK AND ASK FOR OTHER ELIGIBLE PERSON IN HH)	2
DK/RF (THANK AND ASK FOR OTHER ELIGIBLE PERSON IN HH)	3

I4b. Do you agree to be interviewed?

YES (GO TO S1)	1
NO (THANK AND ASK FOR OTHER ELIGIBLE PERSON IN HH)	2
DK/RF (THANK AND ASK FOR OTHER ELIGIBLE PERSON IN HH)	3

CONT: Thank you for participating in our Attitudinal Panel Survey. Did you receive our package with the travel log? Did you complete it? Great. I'll continue with the survey. ***If not: Reschedule.***

General Attitude, MnPASS Awareness , Knowledge

S1. In general, do you think traffic congestion in the Twin Cities is ...?
(ROTATE)

A major problem	1
A moderate problem	2
A minor problem,	3
No problem at all	4
UNSURE	998
REFUSED	999

PANEL MEMBERS SKIP S2-S6

S2. How many people, including yourself, are currently living in your household? _____#
valid range 1-10

UNSURE	998
REFUSED	999

S3. How many motor vehicles in working condition does your household have available for use? ____#
valid range 0-10

UNSURE	998
REFUSED	999

S4. Do you plan on moving anytime in the next year?

YES (GOTO S5)	1
NO	2
UNSURE	998
RF	999

S5. And, do you plan on moving outside of the Twin Cities area?

YES (GOTO TERM - NOT ELIGIBLE FOR PANEL)	1
NO	2
UNSURE	998
REFUSED	999

S6. Do you plan on changing jobs in the next year?

YES (GOTO TERM - NOT ELIGIBLE)	1
NO	2

UNSURE	998
RF	999

Now, I'd like to ask you a few questions about a new transportation project in the Twin Cities area.

MNPASS SUBSCRIBERS SKIP A1-A4

A1. Have you heard of the MnPASS lanes on I-394?

YES	1
NO	2
UNSURE	998
REFUSED	999

A2. Are you an MnPASS subscriber?

YES (GO TO A5)	1
NO	2
UNSURE	998
REFUSED	999

A3. Have you considered getting a transponder?

YES – AND DID GET ONE (GOTO A5)	1
YES – AND DECIDED AGAINST IT	2
NO	3
UNSURE	998
REFUSED	999

A4. Why? **THEN SKIP TO A9**

TRANSPONDER IS TOO EXPENSIVE TO LEASE	1
DON'T WANT TO PAY TO USE MNPASS	2
TRAFFIC IS NOT THAT BAD	3
GENERALLY DON'T DRIVE THE I-394 ROUTE	4
I USE CARPOOLS	5
I USE TRANSIT	6
UNAWARE OF MNPASS	7
WOULDN'T USE MNPASS LANE ENOUGH TO JUSTIFY LEASING TRANSPONDER	8
UNLIKELY TO USE IT: SPECIFY	9
OTHER: SPECIFY	997
UNSURE-→READ DESC	998
REFUSED-→READ DESC	999

A5. In what month did you acquire a transponder?

MONTH: SPECIFY	1

DON'T HAVE ONE	2
UNSURE	998
REFUSED	999

A6. How many transponders does your household have?

1	1
2	2
3	3
4+	4
UNSURE	998
REFUSED	999

A7. How did you open your MnPASS account?

Online	1
Telephone	2
In-Person at Customer Service Center	3
UNSURE	998
REFUSED	999

A8. Is your MnPASS account…

Paid by you	1
Paid directly by your employer	2
Paid by you but reimbursed by your employer	3
UNSURE	998
REFUSED	999

A8. What do you know about MnPASS?
[ALLOW MORE THAN ONE ANSWER]

SINGLE DRIVERS USE CARPOOL LANES FOR FEE	1
ELECTRONIC TOLL COLLECTION	2
TRANSPONDER	3
IT WILL CHARGE TOLLS	4
IT MAY BENEFIT TRANSIT	5
ONLY RICH WILL USE	6
OTHER: SPECIFY	7
NOTHING	8
UNSURE	998
REFUSED	999

READ TO EVERYONE : The MnPASS program permits single drivers on I-394 to pay a fee to use the MnPASS lanes. Drivers who pay the fee can use the carpool lanes without being in a carpool. The fee varies based on how congested the roadway is.

A9. What do you think of allowing single drivers to use the carpool lanes by paying a toll? Is it [rotate]

Good idea	1

Bad idea	2
No opinion	3

A10. Why do you feel this way? (Not asked of those who state "No opinion")

SAVES TIME FOR BUSY PEOPLE	1
USERS PAY NOT EVERYONE	2
TIME IS MONEY FOR SOME PEOPLE	3
BETTER USE OF CARPOOL LANES	4
ADDS CAPACITY TO ROADWAY	5
UNFAIR, SPECIFY	6
DELAYS ROADWAY IMPROVEMENT FOR ALL	7
LEVEL OF SERVICE WORSE IN CARPOOL LANE	8
INCREASES BUREAUCRACY	9
WILL NOT WORK	10
INEFFICIENT	11
ONLY BENEFITS THE RICH	12
BAD FOR ENVIRONMENT	13
TOO CONFUSING FOR PEOPLE	14
GIVES TOO MUCH MONEY TO ROAD AGENCY	15
OTHER: SPECIFY	16
CARPOOL LANES SHOULD BE FREE TO ALL	17
DON'T KNOW	998
REFUSED	999

A11 When MnPASS opened, the toll lane program on I-394 operated 24 hours per day, meaning that the only persons who could travel in the MnPASS lanes at any time were carpoolers, bus riders, motorcyclists, and those who opt to pay the toll. Was this a…[rotate]

Good idea	1
Bad idea	2
No opinion	3

A12. Why do you feel this way? (Not asked of those who state "No opinion")

USERS PAY NOT EVERYONE	2
TIME IS MONEY FOR SOME PEOPLE	3
BETTER USE OF CARPOOL LANES	4
ADDS CAPACITY TO ROADWAY	5
UNFAIR, SPECIFY	6
INCREASES BUREAUCRACY	9
WILL NOT WORK	10
INEFFICIENT	11
ONLY BENEFITS THE RICH	12
BAD FOR ENVIRONMENT	13
TOO CONFUSING FOR PEOPLE	14
GIVES TOO MUCH MONEY TO ROAD AGENCY	15
NOW CARPOOL LANES ARE FREE TO ALL IN NON-PEAK	17
OTHER: SPECIFY	16
DON'T KNOW	998
REFUSED	999

A13 Now there are no tolls outbound from MN100 from 5:30am to 2pm weekdays and inbound to MN100 from1pm to 5:30am weekdays. Is this a…[rotate]

Good idea	1
Bad idea	2
No opinion	3

A14. Why is that?

A15. For the next few items, please tell me if you think MnPASS has a positive impact, a negative impact, or no impact at all. What impact do you think MnPASS has on…

	Positive	**Negative**	**No Impact**	**DK**
a. Traffic congestion on I-394?	1	2	3	998
b. Traffic safety on I-394?	1	2	3	998
c. Noise levels along I-394?	1	2	3	998

General Trip Making Characteristics

Now I'd like to collect the information that you recorded in your travel log about total one-way trips made Monday through Friday during your assigned travel week.

TM1. IF I-394: For this next question, you can refer to #1 on your travel log. How many eastbound trips [TOWARD DOWNTOWN] did you make? And how many westbound trips?

a. EASTBOUND _____ valid range = 1-10
b. WESTBOUND _____ valid range = 1-10

IF I-35W: For this next question, you can refer to #1 on your travel log. How many northbound trips [TOWARD DOWNTOWN] did you make? And how many southbound trips?

c. NORTHBOUND _____ valid range = 1-10
d. SOUTHBOUND _____ valid range = 1-10

TM2 IF I-394: For this next question, you can refer to #2 on your travel log. Now consider all [TOTAL TM1] trips you made in both directions. On how many of those trips did you mostly:

Use the MnPASS Lanes (#)
Use the general traffic lanes on I-394 (#)
Use Hwy 55 (#)

IF I-I35W: For this next question, you can refer to #2 on your travel log. Now consider all [TOTAL TM1] trips you made in both directions. On how many of those trips did you mostly:

Use the carpool lanes on I-35W (#)
Use the general traffic lanes on I-35W (#)
Use Hwy 77 (#)

TM3 For this next question, you can refer to #2 on your travel log. Now consider all [TOTAL TM1] trips you made in both directions. On how many of those trips did you:

Drive alone (and not use MnPASS lanes) (#)

NOT OPTION FOR I-35W TRAVEL SHED<-----Drive alone and pay a toll to use the MnPASS lanes
Drive alone, use MnPASS and not pay a toll (#)

Carpool (#) (IF > 0, ASK TM10)
Ride a bus (#)
Total (calculated)
CHECK AGAINST TM3RESPONSE

COMPUTE NEW VARIABLE = USUAL MODE
SOV = mostly drive alone trips in TM3
HOV = mostly drive with other passengers or ride as passenger in person vehicle in TM3
TRANSIT= mostly ride as passenger in a bus in TM3

IF TM2 OR TM3 IDENTIFY MNPASS LANE USE SKIP TO TM5.

TM4. Have you ever used the MnPASS lanes?

YES	1
NO	2
DON'T KNOW	998
REFUSED	999

TM5. IF TM2, TM3 = MnPASS OR TM4=YES: When you have used the MnPASS lanes in the past were you: CHECK ALL APPLY.

A paying single driver	1
carpooler	2
Bus rider	3
DON'T KNOW	998
REFUSED	999

TM6: IF MORE THAN ONE ANSWER TO TM5: How did you travel on the MnPASS lanes most frequently?

A paying single driver	1
carpooler	2
Bus rider	3

TM7. IF TM2, TM3 = MnPASS OR TM4=YES: Now I'd like to ask how satisfied you have been with certain aspects of the MnPASS program. For each item I mention, please tell me if you are very satisfied, somewhat satisfied, very dissatisfied, or somewhat dissatisfied. First, how satisfied are you with ….

	Very Satisfied	Somewhat Satisfied	Somewhat Disatisfied	Very Disatisfied	DK	RF
a. Ease of identifying the MnPASS entry points along I-394	4	3	2	1	998	999
b. Safety of merging into the MnPASS lane at designated entry points	4	3	2	1	998	999
c. The speed of traffic flow in the MnPASS lanes	4	3	2	1	998	999
d. Enforcement of MnPASS usage	4	3	2	1	998	999

TM8. IF TM5 OR TM6 = 1: Which of the following factors was the most important reason that you use the MnPASS lane?

To reduce overall travel time	1
To reduce amount of time you spend in heavy traffic	2
Too increase reliability of your travel time	3
To increase personal safety while driving in	4

traffic,	
Or something else: SPECIFY	5
RF	999

TM9. IF TM5 OR TM6 = 1: Now I have a few more of the satisfaction questions. For each item I mention, please tell me if you are very satisfied, somewhat satisfied, very dissatisfied, or somewhat dissatisfied. First, how satisfied are you with ….

	Very Satisfied	Somewhat Satisfied	Somewhat Disatisfied	Very Disatisfied	DK	RF
a. The clarity of prices on overhead signs located before MnPASS entrances	4	3	2	1	998	999
b. The MnPASS website	4	3	2	1	998	999
c. The staff at customer service center	4	3	2	1	998	999
d. The ease of opening a pre-paid MnPASS account	4	3	2	1	998	999
e. The ease of installing the MnPASS transponder	4	3	2	1	998	999
f. All electronic operation – no tollbooths, gates, dropping in coins	4	3	2	1	998	999
g. The toll amounts that vary with traffic levels	4	3	2	1	998	999
h. Using your credit card or debit card to automatically replenish your account	4	3	2	1	998	999

TM10. IF TM3= TRANSIT: Revenues from the MnPASS program will be used to make transit system improvements. I'd like to know which of the following transit service improvements would be most important to you. For each item I mention, please tell me if the improvement is very important, somewhat important, or not important at all to you. First, how important is….USE SCALE WHERE 1=NOT IMPORTANT AT ALL, 2=SOMEWHAT IMPORTANT AND 3=VERY IMPORTANT.

More Park and Ride Lots	
More frequent service	
Greater enforcement in the MnPASS lane	
Service routed differently	
Security at Park and Ride Lots	
Light Rail	

Detailed Trip Making Characteristics

Now, I have some questions about the trip that you recorded in your travel log. So use the reference trip information that you provided in the travel log to assist you in answering the next few questions.

DT1. For this next question, you can refer to #3 on your travel log. On what day of the week was your trip? (ALLOW ONLY ONE ANSWER)

MONDAY	1
TUESDAY	2
WEDNESDAY	3
THURSDAY	4
FRIDAY	5

DT1A. For this next question, you can refer to #4 on your travel log. How many total one-way trips (on any roadway) did you make on this day?

DT2. For this next question, you can refer to #5 on your travel log. What was the main reason for the trip you recorded in your travel log?

COMMUTE TO OR FROM WORK	1
WORK-RELATED	2
SCHOOL	3
SHOP	4
MEDICAL OR OTHER PERSONAL APPT	5
VISIT FRIENDS OR FAMILY	6
RECREATIONAL OR ENTERTAINMENT ACTIVITY	7
OR SOMETHING ELSE (DO NOT SPECIFY)?	998
REFUSED	999

COMPUTE NEW VARIABLE BASED ON DT3 = TARGET TRIP TYPE
MAINTENANCE = 4, 5,
SUBSISTENCE = 1, 2 3,
DISCRETIONARY = 6, 7, 998

DT3: For this next question, you can refer to #6 on your travel log. On what roadway were you traveling?

I-394	1
Hwy 55	2
I-35W	3
Hwy 77	4

DT4: For this next question, you can refer to #8 on your travel log. And, in what direction?

East	1
West	2
North	3
South	4

DT5: IF A2 = YES and DT3 = I-394: For this next question, you can refer to #17 on your travel log. Did you use the MnPASS lane for all or part of your trip?

ALL	1
PART	2
DID NOT USE (GO TO DT7]	3

DT6: If DT5 = 1, 2: For this next question, you can refer to #17a on your travel log. What toll amount did you pay?

DT7. IF A2 = YES and DT3 = I-394: For this next question, you can refer to #17c on your travel log. Did you plan to use the MnPASS lane before you left your start location?

YES	1
NO	2
UNSURE	998
RF	999

DT8. IF DT5 = 1, 2: For this next question, you can refer to #17d on your travel log. Why did you decide to use the MnPASS lane?

To avoid unexpected delay	1
To travel more safely	2
To avoid unexpected levels of congestion	3
I traveled by carpool or bus	4
Or some other reason: SPECIFY	997
UNSURE	998
RF	999

DT9. IF DT5 = 3: For this next question, you can refer to #17b on your travel log, under the "no" option. Why didn't you use the MnPASS lane?

I am not an MnPASS subscriber	1
Traffic levels were lighter than usual	2
Price was too high	3
MnPASS lanes were not available in my direction of travel	4
Or some other reason: SPECIFY	997
UNSURE	998
RF	999

DT10 What time did you start this trip? For this next question, you can refer to #10 on your travel log. [military time]

COMPUTE TIME PERIOD VARIABLE:
6AM-9AM = 1
9AM-1PM =2
1PM-3PM =3
3PM-6PM =4
6PM-9PM =5

DT11. How familiar are you with the traffic conditions on the freeway at this time? Would you say you ….

Almost always drive this route at this hour (3 or 4 times / wk)	1
Occasionally drive this route at this hour (1 or 2 time/ wk)	2
Rarely drive this route at this hour (less than 1/ wk)	3
RF	999

DT12 Did you leave at this particular time to avoid traffic congestion?

YES	1
NO (GO TO DT14)	2
RF	999

DT13. What time would you have preferred to leave if there was no traffic congestion to avoid? [military time]

DT14 IF DT3 = I-394 or Hwy 55: Have you changed your typical departure time for this trip because of MnPASS?

YES	1
NO (GO TO DT17)	2

RF	999

DT15: Are you leaving earlier or later?

EARLIER	1
LATER	2
RF	999

DT16. By how much? # minutes____

DT17. For this next question, you can refer to #9 on your travel log. Where did you start this trip? Was it at home, work, or someplace else?

HOME (GOTO DT19)	1
WORK (GOTO DT19)	2
SOMEPLACE ELSE	3
RF	999

DT18. ***IF SOMEPLACE ELSE***: Can you give me a street address or the names of two nearby intersecting streets?

Address (GOTO DT18A)	1
Intersection (GOTO DT18B)	2
DK	998
RF	999

DT18a. Collect address information

DT18b. Collect xstreet information

DT18c. What city was that in? _____

DT19. IF I-394: For this next question, you can refer to #7 on your travel log. At which ramp did you get I-394?
[DROP DOWN LIST OF RAMPS]

DT20. IF DT5 = 1, 2: And, where did you enter the MnPASS lane? DROP DOWN LIST OF ENTRY POINTS (need points)

DT21. IF DT5 = 1, 2: Did you experience any problems in merging into the MnPASS lane from the general traffic lane?

YES	1
NO	2
REFUSE	999

DT22. IF DT21 = YES: What type of problem did you encounter? Open-ended

DT23. And where did you exit the MnPASS lane?DROP DOWN LIST OF EXIT POINTS (need points)

DT24. For this next question, you can refer to #15 on your travel log. And were you …

Driving alone (GOTO DT23)	1
Carpooling	2
Riding a bus	3
DK	998
RF	999

COMPUTE NEW VARIABLE BASED ON DT24 RESPONSE = TARGET TRIP MODE
SOV =1
HOV = 2
TRANSIT = 3

DT25. IF TARGET TRIP MODE = HOV: How many adults, 18 or older, traveled with you on this trip, [not including yourself]? #_____ Valid range = 1-6

DK	998

DT26. IF TARGET TRIP MODE = HOV: And, how many children? #_____ Valid range = 1-6

DK	999

DT27 IF TAGET TRIP MODE = HOV/TRANSIT: When you made this trip, did you park at a park and ride facility?

YES	1
NO	2
DK	998
RF	999

DT28. For this next question, you can refer to #11 on your travel log. Now, I want to know where you ended this trip? Was it at home, work or someplace else? [THEY STARTED FROM DT12 CAN'T BE SAME]

HOME (GOTO DT30)	1
WORK (GOTO DT30)	2
SOMEPLACE ELSE	3
DK	999

DT29. IF SOMEPLACE ELSE: Can you give me a street address or the names of two nearby intersecting streets?

Address (GOTO DT29A)	1
Intersection (GOTO DT29B)	2
DK	998
RF	999

DT29A. Collect address information

DT29B. Collect xstreet information

DT29C. IF SOMEPLACE ELSE: What city was that in? _____

DT30. About how many miles is this trip from door-to-door? Miles (#) valid range = 1-50

DT31. For this next question, you can refer to #12 on your travel log. At what time did you plan to arrive at your destination? [military time]

DT32. For this next question, you can refer to #13 on your travel log. What time did you actually arrive? [military time]

COMPUTE NEW VARIABLE, TRAVEL TIME = DT32-DT10

DT33 For this next question, you can refer to #14 on your travel log. This means your trip took about [TRAVEL TIME] minutes from door-to-door. Is this about right?

YES	1
NO→TRY TO CLARIFY START (DT10) and END (DT32) times	2
DK	998
RF	999

DT34. How much flexibility did you have in the time you had to arrive at your destination? Did you

Have to be there at a specific time	1
Have to be there at a specific time plus or minus 10 minutes	2
Plus or minus 30 minutes	3
Or did you have more flexibility in the arrival time than that?	4
DK	998
RF	999

DT35. For this next question, you can refer to #16 on your travel log. Did you make any stops or side trips as any part of this trip?

YES	1
NO (GOTO DT37)	2
DK (GOTO DT37)	998
REFUSED (GOTO DT37)	999

DT36. Which of the following best describes the type of stops you made? Was it to… [ALLOW MORE THAN ONE ANSWER]

Dropping child off at day care	6
Drop someone else off	1
Pick people up	2
Take care of personal business, like shopping	3
Do a work-related activity	4
Or, did you make multiple detours for many different purposes?	5
DK	998
RF	999

DT37. Were you delayed by congestion on this trip?

YES	1
NO (GOTO DT33DT39)	2
DK (GOTO DT39)	998
REFUSED (GOTO DT39)	999

DT38 Your trip took about [TRAVEL TIME] minutes door-to-door. If you had not been delayed by congestion, about how long do you think this trip would have taken? # minutes valid range = 5-120

DT39: IF DT5 = 1, 2: For this next question, you can refer to #17b on your travel log, under the "yes" option. If you had not used MnPASS for this trip, how long do you think this trip would have taken?

DT40: IF DT5=3: For this next question, you can refer to #17a on your travel log, under the "no" option. If you had used MnPASS, how long do you think this trip would have taken?

DT41. Which of the following experience best captures your travel experience on this trip? [ROTATE]

Very enjoyable	1
Slightly enjoyable	2
Slightly stressful	3
Very stressful	4
DK	998
RF	999

DT42. Based on this trip, how satisfied were you with the overall quality of your travel on this roadway?

100% satisfied	1
60% satisfied	2
30% satisfied	3
Not satisfied at all?	4
DK	998

DT43. IF DT3 = I-394: How would you describe the general level of congestion in the MnPASS lane at the time of your travel? Would you say the MnPASS lane was…[ROTATE]

Not congested at all	1
Slightly congested	2
Very congested	3
Extremely congested	4
DK	998
RF	999

DT44. IF DT3 = 1-394: What about the general traffic lanes at that time, would you say the lanes were…

Not congested at all	1
Slightly congested	2
Very congested	3
Extremely congested	4
DK	998

DT45. IF DT5 = 1, 2: Given the time saved using the MnPASS lane for this trip, do you think the toll you paid was…

Too high	1
Just right	2
Too low	3

DK	998

Stated Preference Questions -- only asked of TARGET TRIP MODE = SOV and TM2 = I-394

Now assume you're making the same trip in the future that you recorded in your travel log. It's a trip on the same day, at the same time of day, for the same purpose, and you're under the same time pressures. You enter the freeway, I-394, and have the option of making this trip using MnPASS if you want to. RANDOMLY ASSIGN [$] AND [#] BELOW

SP1-2. If you were to use the general traffic lanes on I-394, your trip would take TOLLTIME+[#] and be free. If you used the MnPASS lane you would pay [$] and your trip would take TOLLTIME, saving [#] minutes. Now under these conditions, which would you choose to: [ROTATE]

Use theMnPASS lane, pay [$] and save [#] minutes 1
Use the general lane for free 2
DK 998

SP1-2. If you were to use the MnPASS lane on I-394, you would pay [$] and your trip would take TOLLTIME. If you were to use the general traffic lanes, your trip would take TOLLTIME+[#], [#] minutes longer than in the toll lane, but it would be free, Now under these conditions, which would you choose to: [ROTATE]

Use the MnPASS lane, pay [$] and save [#] minutes 1
Use the general lane for free 2
DK 998

SP3. Now imagine a different scenario. If you were to use the MnPASS lane on I-394, you would pay [$] and you would save [#] minutes. Under these conditions what would you do?

Use the MnPASS lane, pay [$] and save [#] minutes 1
Use the general lane for free 2
DK 998

Respondent Characteristics

So we can make sure this survey represents all persons in the Twin Cities area. I need to ask some questions about you.

PANEL SAMPLE SKIP TO R12

R1. What is the highest grade or year of school that you have completed?

HIGH SCHOOL OR LESS	1
SOME COLLEGE, TRADE OR VOCATIONAL SCHOOL	2

GRADUATED COLLECTED WITH A BA DEGREE	3
GRADUATE WORK BEYOND BA DEGREE	4
DK	998
RF	999

R2. And what is your age, are you between...

18-24	1
25-34	2
35-44	3
45-54	4
55-64	5
65+	6
RF	999

R3. Currently are you…[ALLOW MORE THAN ONE RESPONSE]

Employed full or part time (GOTO R4)	1
Homemaker	2
A Student full or part time	3
Retired	4
Disabled	5
Unemployed	6
DK	998
RF	999

R4. Do you work…

Part-time, less than 30 hours	1
Full-time, 30 hours or more	2
DK	998
RF	999

R5. Are you self-employed?

YES	1
NO	2
DK	998
RF	999

R6A. IF S4>1: How many of the other people in your household work outside the home, either full- or part-time? _____ # valid range 1-9

COMPUTE NEW VARIABLE, NUMBER OF WORKERS IN HH = R3 (1) + R5

R6. How many years have you lived at your current residence?
_____ YEARS valid range = 1 - 99

R7. Do you own or rent this residence?

OWN	1
RENT	2
OTHER	3

DK	998
RF	999

R8. Are you a licensed driver?

YES	1
NO	2
DK	998
RF	999

R9. IF S4>1: How many of the other people in your household are licensed to drive? _____ # valid range = 1-9

COMPUTE NEW VARIABLE, NUMBER OF LICENSED DRIVERS IN HH = R8 + R9

R10. What is the total annual income for your household, when you consider the income of all employed individuals? Was it above or below $75,000?

BELOW $75,000 (GOTO R11A)	1
ABOVE $75,000 (GOTO R11B)	2
RF (GOTO R14)	999

R11A. Please stop me when I state the range that best describes your household's total annual income…

$30,000 or less	1
$30,000 to $49,999	2
$50,000 to $74,999	3
RF	999

R11B. Please stop me when I state the range that best describes your household's total annual income…

$75,000 to $99,999	4
$100,000 to $124,999	5
$125,000 to $149,999	6
$150,000 or above	7
RF	999

R12. Which of the following categories best describes your race or ethnic background?

White or caucasion	1
Black/ African American	2
Hispanic	3
Asian	4
RF	999

R13.GENDER (DO NOT ASK)

MALE	1
FEMALE	2

Thank you/ Wrap Up

Thank you so much for answering my questions today. Your participation in this survey will make a difference in our evaluation of the MnPASS Project. Are you still willing to be surveyed one more time next Spring?

YES	1
NO	2
UNSURE	998
RF	999

IF NO or UNSURE: PROVIDE MORE INFORMATION ABOUT USES OF RESULTS AND BENEFITS OF PARTICIPATION.

IF PARTICIPATING IN PANEL:

P1: We will need to contact you to let you know about next survey. Which of the following ways would be the best ways to contact you?

Home phone	1
Cell phone	2
Email	3

P2: COLLECT CONTACT INFORMATION

Confirm home number
Collect cell phone
Collect email

APPENDIX D: PANEL ATTRITION ANALYSIS

TABLE D1: PANEL MEMBERS AND PANEL ATTRITION BY HOUSEHOLD SIZE

WAVE 1		HOUSEHOLD SIZE				TOTAL
		1	2	3	4+	
PANEL	*Count*	108	203	94	144	549
	Row	19.7%	37.0%	17.1%	26.2%	100.0%
ATTRITORS	*Count*	76	170	83	102	431
	Row	17.6%	39.4%	19.3%	23.7%	100.0%
Total	*Count*	184	373	177	246	980
	Row	18.7%	38.1%	18.1%	25.1%	100.0%

Note: Asked of Wave 1 respondents that agreed to participate in Wave 2.

TABLE D2: PANEL MEMBERS AND PANEL ATTRITION BY HOUSEHOLD VEHICLES

WAVE 1		COLLAPSED HOUSEHOLD VEHICLES				TOTAL
		0	1	2	3	
PANEL	*Count*	1	132	284	132	549
	Row	.2%	23.7%	52.8%	23.3%	100.0%
ATTRITORS	*Count*	3	90	231	107	431
	Row	.7%	20.9%	53.6%	24.8%	100.0%
Total	*Count*	4	222	515	239	980
	Row	.4%	22.7%	52.6%	24.4%	100.0%

Note: Asked of Wave 1 respondents that agreed to participate in Wave 2.

TABLE D3: PANEL MEMBERS AND PANEL ATTRITION BY EDUCATION

WAVE 1		EDUCATION					TOTAL
		HIGH SCHOOL OR LESS	SOME COLLEGE, TRADE / VOC.	GRADUATED WITH A BA / BS	GRADUATED BEYOND BA / BS	REFUSED	
PANEL	*Count*	45	119	221	163	1	549
	Row	8.2%	21.7%	40.3%	29.7%	.2%	100.0%
ATTRITORS	*Count*	52	98	172	109	0	431
	Row	12.1%	22.7%	39.9%	25.3%	.0%	100.0%
Total	*Count*	97	217	393	272	1	980
	Row	9.9%	22.1%	40.1%	27.8%	.1%	100.0%

Note: Asked of Wave 1 respondents that agreed to participate in Wave 2.

TABLE D4: PANEL MEMBERS AND PANEL ATTRITION BY AGE

WAVE 1		AGE						TOTAL
		18-34	35-44	45-54	55-64	65+	REFUSED	
PANEL	*Count*	67	112	156	117	96	1	549
	Row	12.2%	20.4%	28.4%	21.3%	17.5%	.2%	100.0%
ATTRITORS	*Count*	110	97	97	76	51	0	431
	Row	25.5%	22.5%	22.5%	17.6%	11.8%	.0%	100.0%
Total	*Count*	177	209	253	193	147	1	980
	Row	15.8%	21.3%	25.8%	19.7%	15.0%	.1%	100.0%

Note: Asked of Wave 1 respondents that agreed to participate in Wave 2.

TABLE D5: PANEL MEMBERS AND PANEL ATTRITION BY EMPLOYMENT

WAVE 1		EMPLOYMENT						TOTAL
		EMPLOYED FULL OR PART TIME	HOMEMAKER	STUDENT FULL OR PART TIME	RETIRED	DISABLED	UNEMPLOYED	
PANEL	*Count*	435	19	3	82	3	7	549
	Row	79.2%	3.5%	.5%	14.9%	.5%	1.3%	100.0%
ATTRITORS	*Count*	352	19	6	47	4	3	431
	Row	81.7%	4.4%	1.4%	10.9%	.9%	.7%	100.0%
Total	*Count*	787	38	9	129	7	10	980
	Row	80.3%	3.9%	.9%	13.2%	.7%	1.0%	100.0%

Note: Asked of Wave 1 respondents that agreed to participate in Wave 2.

TABLE D6: PANEL MEMBERS AND PANEL ATTRITION BY FULL OR PART TIME EMPLOYMENT STATUS

WAVE 1		FULL OR PART TIME EMPLOYMENT			TOTAL
		PART TIME, LESS THAN 30-HOURS	FULL TIME, 30-HOURS OR MORE	DON'T KNOW	
PANEL	*Count*	63	376	0	439
	Row	14.4%	85.6%	.0%	100.0%
ATTRITORS	*Count*	52	306	2	360
	Row	14.4%	85.0%	.6%	100.0%
Total	*Count*	115	682	2	799
	Row	14.4%	85.4%	.3%	100.0%

Note: Asked of Wave 1 respondents that agreed to participate in Wave 2.

TABLE D7: PANEL MEMBERS AND PANEL ATTRITION BY HH WORKERS

WAVE 1		COLLAPSED HOUSEHOLD WORKERS				TOTAL
		0	1	2	3+	
PANEL	*Count*	76	196	230	47	549
	Row	13.8%	35.7%	41.9%	8.6%	100.0%
ATTRITORS	*Count*	41	156	197	37	431
	Row	9.5%	36.2%	45.7%	8.6%	100.0%
Total	*Count*	117	352	427	84	980
	Row	11.9%	35.9%	43.6%	8.6%	100.0%

Note: Asked of Wave 1 respondents that agreed to participate in Wave 2.

TABLE D8: PANEL MEMBERS AND PANEL ATTRITION BY HOUSING TENURE

WAVE 1		HOUSING TENURE				TOTAL
		OWN	RENT	OTHER	REFUSED	
PANEL	*Count*	497	47	5	0	549
	Row	90.5%	8.6%	.9%	.0%	100.0%
ATTRITORS	*Count*	340	82	7	2	431
	Row	78.9%	19.0%	1.6%	.5%	100.0%
Total	*Count*	837	129	12	2	980
	Row	85.4%	13.2%	1.2%	.2%	100.0%

Note: Asked of Wave 1 respondents that agreed to participate in Wave 2.

TABLE D9: PANEL MEMBERS AND PANEL ATTRITION BY LICENSED DRIVERS

WAVE 1		LICENSED DRIVERS IN HOUSEHOLD				TOTAL
		0	1	2	3+	
PANEL	*Count*	1	130	330	88	549
	Row	.2%	23.7%	60.1%	16.0%	100.0%
ATTRITORS	*Count*	2	96	262	71	431
	Row	.5%	22.3%	60.8%	16.5%	100.0%
Total	*Count*	3	226	592	159	980
	Row	.3%	23.1%	60.4%	16.2%	100.0%

Note: Asked of Wave 1 respondents that agreed to participate in Wave 2.

TABLE D10: PANEL MEMBERS AND PANEL ATTRITION BY HOUSEHOLD INCOME

WAVE 1		COLLAPSED HOUSEHOLD INCOME			TOTAL
		LESS THAN $50K	$50K OR GREATER	REFUSED	
Panel	*Count*	106	410	33	549
	Row	19.3%	74.7%	15.5%	100.0%
Attritors	*Count*	69	314	48	431
	Row	16.0%	72.9%	11.1%	100.0%
Total	*Count*	175	724	81	980
	Row	17.9%	73.9%	8.3%	100.0%

Note: Asked of Wave 1 respondents that agreed to participate in Wave 2.

TABLE D11: PANEL MEMBERS AND PANEL ATTRITION BY GENDER

WAVE 1		GENDER		TOTAL
		MALE	FEMALE	
Panel	*Count*	313	236	549
	Row	57.0%	43.0%	100.0%
Attritors	*Count*	212	219	431
	Row	49.2%	50.8%	100.0%
Total	*Count*	525	455	980
	Row	53.6%	46.4%	100.0%
	Column	100.0%	100.0%	100.0%

Note: Asked of Wave 1 respondents that agreed to participate in Wave 2.

APPENDIX E: PANEL DEMOGRAPHICS

TABLE E1: PANEL MEMBERS AND PANEL ATTRITION BY HOUSEHOLD SIZE

WAVE 1		HOUSEHOLD SIZE				TOTAL
		0	1	2	3+	
Baseline Panel	*Count*	0	184	373	423	980
	Row	0.0%	18.8%	38.0%	43.2%	100.0
Wave 2 Panel	*Count*	0	106	204	239	549
	Row	0.0%	19.3%	37.2%	43.5%	100.0

TABLE E2: PANEL MEMBERS AND PANEL ATTRITION BY HOUSEHOLD VEHICLES

WAVE 1		HOUSEHOLD VEHICLES				TOTAL
		0	1	2	3+	
Baseline Panel	*Count*	0	222	515	239	976
	Row	0.0%	22.7%	52.8%	24.5%	100.0%
Wave 2 Panel	*Count*	1	130	290	128	549
	Row	0.2%	23.7%	52.8%	23.3%	100.0%

TABLE E3: PANEL MEMBERS AND PANEL ATTRITION BY EDUCATION

WAVE 1		EDUCATION					TOTAL
		HIGH SCHOOL OR LESS	SOME COLLEGE, TRADE / VOC.	GRADUATED WITH A BA / BS	GRADUATED BEYOND BA / BS	REFUSED	
Baseline Panel	*Count*	97	217	393	272	1	980
	Row	9.9%	22.1%	40.1%	27.8%	0.1%	100.0%
Wave 2 Panel	*Count*	45	119	221	163	1	549
	Row	8.2%	21.7%	40.3%	29.7%	0.1%	100.0%

TABLE E4: PANEL MEMBERS AND PANEL ATTRITION BY AGE

WAVE 1		AGE						TOTAL
		18-34	35-44	45-54	55-64	65+	REFUSED	
Baseline Panel	*Count*	177	209	253	193	147	1	980
	Row	18.0%	21.4%	25.8%	19.7%	15.0%	0.1%	100.0%
Wave 2 Panel	*Count*	67	112	156	117	96	1	549
	Row	12.2%	20.4%	28.4%	21.3%	17.5%	0.2%	100.0%

TABLE E5: PANEL MEMBERS AND PANEL ATTRITION BY EMPLOYMENT

WAVE 1		EMPLOYMENT						TOTAL
		EMPLOYED FULL OR PART TIME	HOMEMAKER	STUDENT FULL OR PART TIME	RETIRED	DISABLED	UNEMPLOYED	
Baseline Panel	*Count*	799	153	40	153	14	18	1177
	Row	67.9%	13.0%	3.4%	13.0%	1.2%	1.5%	100.0%
Wave 2 Panel	*Count*	439	85	10	98	9	10	651
	Row	67.4%	13.1%	1.5%	15.1%	1.4%	1.5%	100.0%

Multiple response table base on percent responses

TABLE E6: PANEL MEMBERS AND PANEL ATTRITION BY FULL OR PART TIME EMPLOYMENT STATUS

WAVE 1		FULL OR PART TIME EMPLOYMENT			TOTAL
		PART TIME, LESS THAN 30-HOURS	FULL TIME, 30-HOURS OR MORE	DON'T KNOW	
Baseline Panel	*Count*	115	682	2	799
	Row	14.4%	85.3%	0.3%	100.0%
Wave 2 Panel	*Count*	63	376	0.0	439
	Row	14.4%	85.6%	0.0%	100.0%

TABLE E7: PANEL MEMBERS AND PANEL ATTRITION BY HH WORKERS

WAVE 1		COLLAPSED HOUSEHOLD WORKERS				TOTAL
		0	1	2	3+	
Baseline Panel	*Count*	117	352	427	84	980
	Row	12.0%	35.9%	43.6%	8.5%	100.0%
Wave 2 Panel	*Count*	77	101	336	35	549
	Row	14.0%	18.4%	61.2%	6.4%	100.0%

TABLE E8: PANEL MEMBERS AND PANEL ATTRITION BY HOUSING TENURE

WAVE 1		HOUSING TENURE				TOTAL
		OWN	RENT	OTHER	REFUSED	
Baseline Panel	*Count*	837	129	12	2	980
	Row	85.4%	13.2%	1.2%	0.2%	100.0%
Wave 2 Panel	*Count*	497	47	5	0	549
	Row	90.5%	8.6%	0.9%	0.0%	100.0%

TABLE E9: PANEL MEMBERS AND PANEL ATTRITION BY LICENSED DRIVERS

WAVE 1		LICENSED DRIVERS IN HOUSEHOLD				TOTAL
		0	1	2	3+	
Baseline Panel	*Count*	3	226	592	159	980
	Row	0.3%	23.1%	60.4%	16.2%	100.0%
Wave 2 Panel	*Count*	1	130	330	88	549
	Row	0.2%	23.7%	60.1%	16.0%	100.0%

TABLE E10: PANEL MEMBERS AND PANEL ATTRITION BY HOUSEHOLD INCOME

WAVE 1		HOUSEHOLD INCOME								TOTAL
		LESS THAN $30K	$30K TO LESS THAN $50K	$50K TO LESS THAN $75K	$75K TO LESS THAN $100K	$100K TO LESS THAN $125K	$125K TO LESS THAN $150K	$150K OR MORE	RF	
Baseline Panel	*Count*	57	118	162	213	133	81	135	81	980
	Row	5.8%	12.0%	16.5%	21.7%	13.6%	8.3%	13.8%	8.3%	100.0%
Wave 2 Panel	*Count*	22	67	78	114	76	37	70	85	549
	Row	4.0%	12.2%	14.2%	20.8%	13.8%	6.7%	12.8%	15.5%	100.0%

TABLE E11: PANEL MEMBERS AND PANEL ATTRITION BY GENDER

WAVE 1		GENDER		TOTAL
		MALE	FEMALE	
Baseline Panel	*Count*	525	455	980
	Row	53.6%	46.4%	100.0%
Wave 2 Panel	*Count*	369	180	549
	Row	67.2%	32.8%	100.0%

Appendix F:

Preliminary Before and After Results of the I-394 HOT Lane Panel Survey

Johanna Zmud, Steven Peterson, Frank Douma

"Preliminary Before and After Results of the I-394 HOT Lane Panel Survey"

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ABSTRACT

This report documents the methods and results of the second wave of data collection for the I-394 MnPASS Evaluation Attitudinal Panel Survey. The Wave 2 survey, conducted during November and December 2005, occurred one year subsequent to the first wave and about six months into the implementation of the I-394 MnPASS Express Lane project. Data were collected through 950 interviews to evaluate the attitudinal and behavioral impacts of allowing solo drivers to pay to use carpool lanes.

Overall approval and satisfaction with the I-394 MnPASS Express Lane project is strong and broad. Six out of ten believed that allowing single drivers to use carpool lanes by paying a toll was a good idea. Support was almost as strong among lower income households as it was among higher income households. Satisfaction among users with MnPASS operations, subscription elements, and communications is high – whether users are paying (SOVs) or not (carpoolers and bus riders). Almost nine out of ten reported having no problems with merging into the tolled lanes. Finally, most users felt that paying the MnPASS toll to avoid congestion was a good value.

I-394 MnPASS OVERVIEW

In May 2005, the I-394 MnPASS Express Lane project began allowing solo drivers to pay a fee to use a 12-mile stretch of carpool lanes between downtown Minneapolis and the western suburbs. While solo drivers pay to use the MnPASS lanes, carpoolers and bus riders may use the lanes free of charge. This combination of free high occupancy vehicle use and priced solo drivers use is generally referred to as high occupancy toll (HOT) lanes. The I-394 MnPASS Express Lanes are divided into two segments for operations and pricing: (1) east of Hwy 100 to downtown Minneapolis and (2) west of Hwy 100 to Hwy 101. The per-trip fee depends on where users enter and exit the MnPASS Express Lanes. The per-trip fee is also variable, depending on the real-time traffic levels to make sure that traffic flows at about 50 to 55 miles per hour. The per-trip fees average $1 to $4 during rush hour.

ATTITUDINAL PANEL SURVEY OVERVIEW

This Attitudinal Panel Survey measures the attitudinal and reported behavioral responses of corridor travelers before and after the implementation of the I-394 MnPASS project. The first wave of the Attitudinal Panel Survey was conducted in November / December 2004, prior to I-394 MnPASS Express Lane implementation. In it, 980 respondents were recruited through the use of probability-based sampling and agreed to a second and third wave of interviewing. The second wave of the panel was conducted in November / December 2005, about six months into MnPASS implementation. The start of the second wave was delayed three months to avoid surveying during construction of an auxiliary lane outbound on a section of the MnPASS lanes (i.e., MN100 to US169) to deal with a contra-peak congestion issue.

In addition to the 980 Wave 1 respondents who agreed to participate in the panel, two additional sample types were targeted for inclusion in the Wave 2 Attitudinal Panel Survey – transit users and MnPASS subscribers. The Wave 2 survey materials included a pre-notification letter, Travel Log, and a telephone survey instrument. The telephone instrument was a slightly modified version of the Wave 1 telephone instrument.

A total of 950 respondents completed Wave 2 interviews. Of these, 549 were panel members (interviewed in both Waves 1 and 2), 151 were MnPASS subscribers, and 250 were transit users. The Wave 2 panel experienced an attrition rate of 44% of Wave 1 respondents. Analyses revealed that people "lost" to the panel tended to be renters and age 34 or younger. This outcome is not surprising given that fact that such persons tend to be more mobile, making them difficult to locate and otherwise non-qualified to have participated in a Wave 2 interview. For the other demographic or attitudinal characteristics measured, no significant differences were found between those that were lost to the panel and those that remained.

KEY FINDINGS

Support for the Idea

Acceptance of the MnPASS concept among panel members had not changed significantly between the Wave 1 and Wave 2 interviews (61% versus 59%, respectively). In 2005, about six out of ten respondents (59%) indicated that allowing single drivers to use the carpool lanes by paying a toll was a good idea. Survey respondents were asked for the reasons behind their opinions on these MnPASS acceptance questions in an unprompted (or open-ended) manner. The main reason that panel members thought it was good idea was that it was a better use of carpool lanes (representing 23% of all panel members). Other frequently mentioned reasons included adds capacity to roadway (17%), saves time for busy people and only users pay (10% each), time is money (6%), eases congestion (5%), and toll used during peak hours (3%).

About three out of ten respondents thought it was a bad idea. The main reason that panel members thought it was a bad idea was because "it only benefits the rich" (representing 9% of all panel members). Other frequently mentioned reasons included carpool lanes should be free for all (6%), it's inefficient (4%), carpool lanes should only be used for carpools (3%), gives too much money to the road agency (3%), carpools are not encouraged (2%), and will not work (2%).

While the aggregate percentages on this opinion question did not change significantly from 2004 to 2005, there was shifting of opinions within the panel. Two-thirds of the panel answered similarly in 2004 and 2005, but slightly more than one-fourth shifted their stance in the intervening year. Almost equal numbers switched from good idea to bad idea (10%) or bad idea to good idea (10%). Another 5% shifted from no opinion in 2004 to good idea in 2005, whereas 2% shifted from no opinion to bad idea.

TABLE 1 Perception of Allowing SOV to Use Carpool Lane by Paying Toll (Among Panel Members)

What do you think of allowing single drivers to use the carpool lanes by paying a toll?

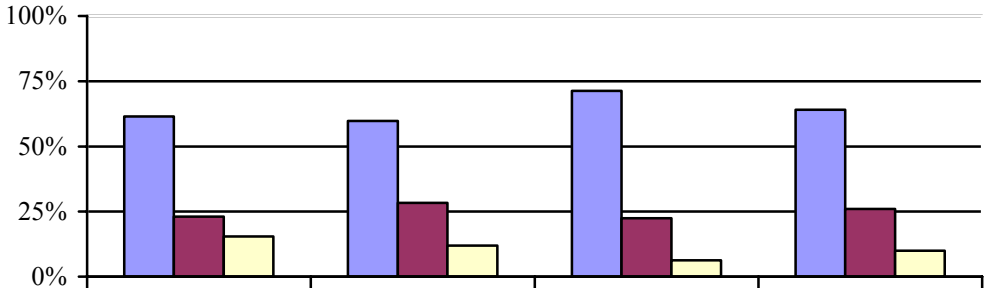
	FREQUENCY WAVE 1 (2004)	PERCENT WAVE 1 (2004)	FREQUENCY WAVE 2 (2005)	PERCENT WAVE 2 (2005)
Good Idea	334	61%	323	59%
Bad Idea	157	28%	158	29%
No Opinion	58	11%	68	12%
Total	**549**	**100%**	**549**	**100%**

Consistent Approval Across All Income Groups

A majority of respondents in all income groups responded positively to the idea of allowing SOV drivers to use carpool lanes by paying a toll. At the same time, acceptance was greater among the higher-income respondents (71%), than among lower-income (62%) or mid-income (60%) respondents. The lower-income group represents respondents reporting total household income less than $50,000, mid-income $50,000 to $124,999, and higher-income greater than $125,000. There were no significant differences across the income groups in terms of negative response to the concept. About one-fourth of each income group thought this concept was a bad idea (28% of mid-income, 23% of lower-income, and 23% of higher-income).

FIGURE 1 Opinion on Allowing Single Drivers to Use Carpool Lanes by Household Income (Among All Wave 2 Participants).

What do you think of allowing single drivers to use the carpool lanes by paying a toll? Is it…



	Lower-Income (N=156)	Mid-Income (N=487)	Higher-Income (N=307)	Total (N=950)
Good Idea	62%	60%	71%	64%
Bad Idea	23%	28%	23%	26%
No Opinion	15%	12%	6%	10%

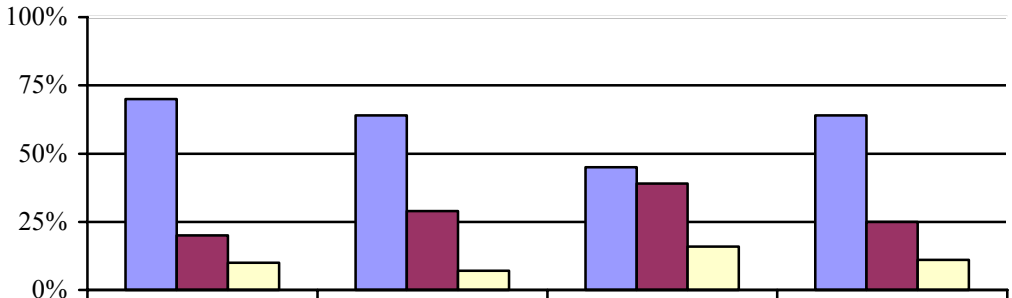
There were slight differences by income in the reasons given by respondents for their positive responses on questions pertaining to MnPASS tolling operations. Mid- and higher-income respondents were more likely to say that MnPASS provides a better use for the carpool lane than were lower-income respondents. That MnPASS eases congestion and tolls are used during peak hours only were slightly more salient factors for lower-income householders than those in other income groups. Otherwise, the ranking of reasons for supporting MnPASS were consistent across income groups. There were also slight differences among household income groups in opinions about why the MnPASS concept was a bad idea. A smaller percent of lower-income respondents than higher-income groups said it only benefits the rich, but a larger percent mentioned carpool lanes should be free to all.

Support of the Concept by Commute Mode

When MnPASS acceptance was examined by respondents' usual commute mode, significant differences were observed. MnPASS acceptance is highest among SOV drivers (70%) and lowest among transit users (45%). Yet, acceptance among carpoolers was also high (64%). Two in five transit users (39%) thought allowing paying single drivers to use carpool lanes was a bad idea compared to 29% of carpoolers and 20% of SOV drivers. At the same time, a larger percent of transit users had no opinion on this issue than other groups.

FIGURE 2 Opinion on Allowing Single Drivers to Use Carpool Lanes by Usual Travel Mode.

What do you think of allowing single drivers to use the carpool lanes by paying a toll? Is it…



	SOV (N=524)	Carpoolers (N=144)	Transit Users (N=142)	Total (N=810)
Good Idea	70%	64%	45%	64%
Bad Idea	20%	29%	39%	25%
No Opinion	10%	7%	16%	11%

Opinions about why the single paying driver concept was a good idea did not differ significantly by usual travel mode. Transit users' most frequent response, like users of other modes, was that MnPASS provides a better use for carpool lanes. Transit users were slightly more likely to respond that MnPASS adds capacity to the roadway. On the other hand, carpoolers were more likely than users of other modes to respond only users pay, not everyone.

There were significant differences by usual travel mode in the reasons cited by respondents who thought the MnPASS concept was a bad idea. SOV drivers and carpoolers were much more likely than transit users to respond it only benefits the rich, whereas transit users were more likely to suggest that the concept is inefficient and carpool lanes should only be open to carpoolers. SOV drivers were also more likely than others to respond carpool lanes should be free to all than were users of other modes.

MnPASS Lane Users Represented a Broad Market

Among panel respondents who reported having used the MnPASS lanes in the past, carpooling was the most frequently mentioned mode (87%). Subscribers reported using the MnPASS lane most often as a paying SOV (87%), however, transit users noted that they were almost as likely to use the lane as a carpool (47%) as they were to use it as a bus rider (49%).

TABLE 2 Most Frequently Mentioned Mode of MnPASS Use (by Sample Type)

When you have used the MnPASS lanes in the past were you: (all that apply) How did you travel on the MnPASS lanes most frequently?

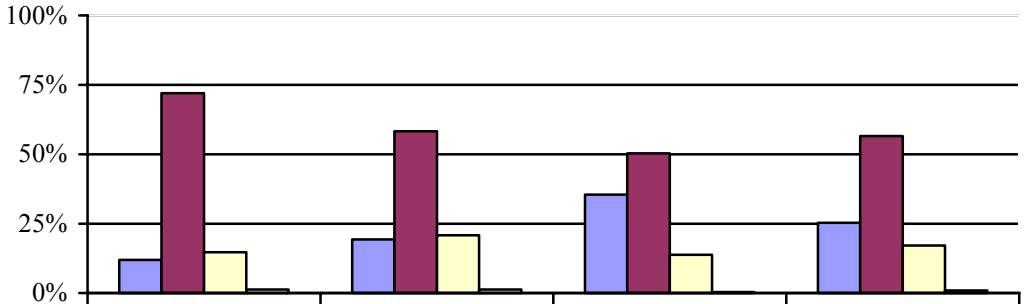
Mode	Panel		Subscriber		Transit	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Paying SOV	20	7%	132	87%	4	3%
Carpooler	243	87%	17	11%	73	47%
Bus Rider	11	4%	1	1%	76	49%
Don't Know / Refuse	6	2%	1	1%	1	1%
Total	**280**	**100%**	**151**	**100%**	**154**	**100%**

People from All Income Levels Use the MnPASS Lanes, Although Mode Changed with Income

Respondents from all income levels are using MnPASS. Over 50% of all income groups among the I-394 respondents reported they have used the MnPASS lanes. Respondents who used the MnPASS lanes were asked if they were a single driver, carpooler, or bus rider when they used the lanes. Significant differences were found. Whereas 36% of higher-income responses were as paying single drivers, only 19% of mid-income and 12% of lower-income responses were as paying SOVs. The majority of lower-income responses (72%) were as a carpooler.

FIGURE 3 Mode of MnPASS Use by Income (Among I-394 Respondents Only).

When you have used the MnPASS lanes in the past, were you…



	Lower-Income (N=75)	Mid-Income (N=306)	Higher-Income (N=282)	Total (N=663)
Paying Single Driver	12%	19%	36%	25%
Carpooler	72%	58%	50%	57%
Bus Rider	15%	21%	14%	17%
Don't Know	1%	1%	0%	1%

Demographics of Transponder Owners

Transponder owners were more strongly represented among respondents with a higher educational attainment and those who were employed full-time. The largest percentage of transponder owners were between 35 and 54 years old. The sample included very few people representing racial or ethnic minorities. Still, it appears that transponder owners were more likely to be White than Non-White. About the same percentages of males as females reported owning transponders.

TABLE 3 Transponder Ownership by Person Characteristics (Among I-394 Respondents Only)

PERSON CHARACTERISTIC	TRANSPONDER OWNERSHIP		TOTAL
	YES	NO	
Educational Attainment			
High School or Less	11%	89%	44 (100%)
Some College / Trade	19%	81%	131 (100%)
Graduated College	25%	75%	293 (100%)
Graduate Work	31%	69%	246 (100%)
Employment Status			
Full or Part-time	27%	73%	617 (100%)
Homemaker	11%	89%	70 (100%)
Retired	8%	92%	79 (100%)
Other / Disabled / Unemployed	0%	10%	12 (100%)
Type of Employment			
Part-Time	14%	86%	71 (100%)
Full-time	29%	71%	546 (100%)
Age			
18-34	15%	85%	81 (100%)
35-44	31%	69%	176 (100%)
45-54	30%	70%	220 (100%)
55-64	26%	74%	156 (100%)
65+	7%	93%	81(100%)
Race / Ethnicity			
White / Caucasian	26%	74%	674 (100%)
Non-White / Minority	15%	85%	40 (100%)
Gender			
Male	24%	76%	430 (100%)
Female	27%	73%	284 (100%)

In terms of their household characteristics, transponder owners resided in higher-income households, as well larger households and those with multiple vehicles.

TABLE 4 Transponder Ownership by Household Characteristics (Among I-394 Respondents Only)

HOUSEHOLD CHARACTERISTIC	TRANSPONDER OWNERSHIP		TOTAL
	YES	NO	
Household Income			
Lower-Income	10%	90%	104 (100%)
Mid-Income	18%	82%	351 (100%)
Higher-Income	41%	59%	259 (100%)
Household Size			
One-person	15%	85%	107 (100%)
Two-person	24%	76%	262 (100%)
Three-person	30%	70%	114 (100%)
Four+ person	28%	72%	231 (100%)
Vehicles Available			
One	10%	90%	141 (100%)
Two	28%	72%	385 (100%)
Three+	31%	69%	188 (100%)

MnPASS Has a Positive Impact on Carpooling and Travel Experiences on I-394

Current Mode Share Was Comparable to Pre-Implementation Distributions

Usual mode was calculated by determining the most commonly used travel mode for all trips taken in the previous Monday-Friday 5-day period. For about three-quarters of all panelists, drive alone (SOV) was the most commonly used travel mode. Slightly less than one-fourth of panelists carpooled, and 2% or less rode the bus. Carpooling was higher among I-394 panelists (23%) than among I-35W panelists (19%), but the difference was not statistically significant.

Comparing Wave 1 and Wave 2 usual modes of travel, the share of carpooling among I-394 panelists was slightly higher in Wave 2 than in Wave 1; carpooling share decreased among I-35W panelists (It should be noted that panel attrition affected the mode split distribution as reported in Table 4 for the control sample, I-35W). The implementation of MnPASS has not had a negative impact on carpooling on I-394. While one in ten (11%) I-394 panelists reported switching from SOV to carpool as their usual mode of travel on the corridor, about the same percent reported switching from carpool to SOV (10%). The control corridor (I-35W) did experience less switching from SOV to carpool (7%) and more switching from carpool to SOV (17%).

TABLE 5 Usual Travel Mode
Now consider all trips you made in both directions. On how many of those trips did you:

I-394	FREQUENCY WAVE 1 (2004)	PERCENT WAVE 1 (2004)	FREQUENCY WAVE 2 (2005)	PERCENT WAVE 2 (2005)
Drive alone	318	77%	264	76%
Carpool	88	21%	78	23%
Ride bus	7	2%	3	1%
Total	**413**	**100%**	**345**	**100%**
I-35W				
Drive alone	97	71%	88	79%
Carpool	38	28%	21	19%
Ride bus	1	1%	2	2%
Total	**136**	**100%**	**111**	**100%**

Fewer Panelists Reported a Congestion Delay
The reported traveling experiences of I-394 panelists have improved. The percentage of I-394 panelists reporting a delay was lower in Wave 2 (28%) than in Wave 1 (38%). I-394 respondents who did not use the MnPASS lanes for their reference trip were more likely to experience congestion than those who did use MnPASS for their entire trip (30% versus 21%, respectively). However, the percentages of respondents who reported leaving at a particular time to avoid congestion were similar, with about one-fourth in both waves saying that they left at a particular time to avoid congestion. Among I-35W panelists, the percentage reporting a congestion delay was the same in both waves (37%).

TABLE 6 Congestion Delay on Reference Trip (Among All Panel Members)
Were you delayed by congestion on this trip?

I-394	FREQUENCY WAVE 1 (2004)	PERCENT WAVE 1 (2004)	FREQUENCY WAVE 2 (2005)	PERCENT WAVE 2 (2005)
Yes	158	38%	89	28%
No	255	62%	223	72%
Total	**413**	**100%**	**312**	**100%**
I-35W				
Yes	50	37%	36	37%
No	86	63%	61	63%
Total	**136**	**100%**	**97**	**100%**

Satisfaction with the Overall Quality of Travel on I-394 Rose
I-394 panelists reported higher levels of satisfaction with their reference trip travel in Wave 2 than in Wave 1-- 46% vs. 36%, respectively (see Table 6). Satisfaction was highest among panelists who used the MnPASS lanes for their entire reference trip – 58% reported 100% satisfaction, compared with 44% who did not use the MnPASS lanes. We found virtually no differences in the reported satisfaction levels among I-35W panelists between Wave 1 and Wave 2.

TABLE 7 Satisfaction with Travel on Reference Trip (Among All Panel Members)

Based on this trip, how satisfied were you with the overall quality of your travel on this roadway?

I-394	FREQUENCY WAVE 1 (2004)	PERCENT WAVE 1 (2004)	FREQUENCY WAVE 2 (2005)	PERCENT WAVE 2 (2005)
100% Satisfied	147	36%	144	46%
60% Satisfied	202	49%	129	42%
30% Satisfied	43	10%	29	9%
Not Satisfied	21	5%	10	3%
Total	413	100%	312	100%
I-35W				
100% Satisfied	55	40%	42	43%
60% Satisfied	54	40%	35	36%
30% Satisfied	19	14%	13	14%
Not Satisfied	8	6%	7	7%
Total	**136**	**100%**	**97**	**100%**

The Percentage that Rated Travel on I-394 "Enjoyable" After MnPASS Rose

Panelists in both corridors (I-394 and I-35W) found their travel more enjoyable and less stressful in Wave 2 than in Wave 1. Sixty-one percent of the I-394 Wave 2 panelists said their travel experience was enjoyable, compared with 50% of Wave 1 panelists. Conversely, 48% of I-394 Wave 1 panelists said their travel experience was stressful, compared to 36% of Wave 2 panelists.

Among I-35W panelists, 57% reported their travel as enjoyable in Wave 2 compared to 47% of Wave 1 respondents. The percentage characterizing their travel as stressful also decreased from 52% in Wave 1 to 41% in Wave 2.

TABLE 8 Travel Experience on I-394 During Reference Trip (Among All Panel Members)

Which of the following descriptors best captures your travel experience on I-394 [I-35W] at that time?

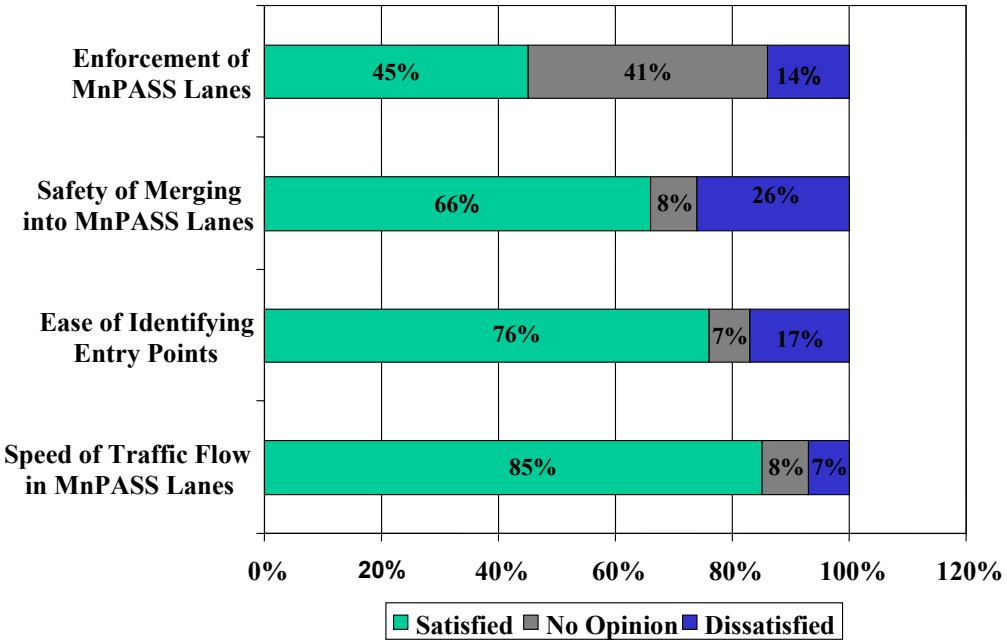
I-394	FREQUENCY WAVE 1 (2004)	PERCENT WAVE 1 (2004)	FREQUENCY WAVE 2 (2005)	PERCENT WAVE 2 (2005)
Enjoyable	**206**	**50%**	**188**	**61%**
Very Enjoyable	41	10%	39	13%
Slightly Enjoyable	165	40%	149	48%
Stressful	**197**	**48%**	**115**	**36%**
Slightly Stressful	170	41%	103	33%
Very Stressful	27	7%	12	3%
Don't Know	10	2%	9	3%
Total	**413**	**100%**	**312**	**100%**

I-35W				
Enjoyable	**64**	**47%**	**55**	**57%**
Very Enjoyable	19	14%	13	14%
Slightly Enjoyable	45	33%	42	43%
Stressful	**71**	**52%**	**40**	**41%**
Slightly Stressful	61	45%	37	38%
Very Stressful	10	7%	3	3%
Don't Know	1	1%	2	2%
Total	**136**	**100%**	**97**	**100%**

Users Were Very Satisfied with MnPASS Operations

MnPASS users, regardless of whether they were paying users or not, were satisfied with MnPASS operations. Of all MnPASS aspects about which they were asked to provide their level of satisfaction, the speed of traffic flow in the MnPASS lane gained the highest satisfaction rating (85% satisfaction), with half (50%) being very satisfied. Less than one-tenth (7%) were dissatisfied, 4% had no opinion, and 4% did not know or refused to provide an answer. The enforcement of MnPASS usage gained the lowest satisfaction (45%); 21% were very satisfied. Fourteen percent were dissatisfied. A large percentage either had no opinion (24%) or did not know or refused to provide an answer (17%).

FIGURE 4 Satisfaction of Operational Elements of MnPASS (All Participants).



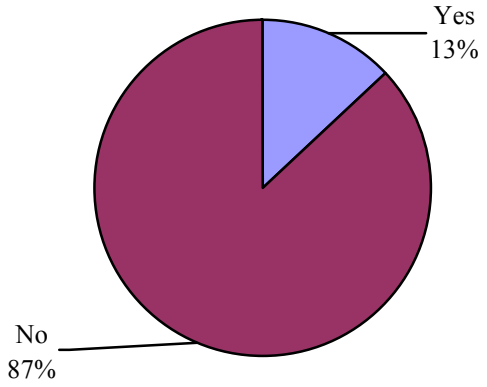
Safety Did Not Surface as a Major Issue

Nearly 8 of 10 (76%) respondents were satisfied with the ease of identifying the MnPASS entry points, with (39%) very satisfied. Less than one-fifth (17%) were dissatisfied, 4% had no opinion, and 3% did not know or refused to provide an answer. Most respondents (66%) were satisfied with the safety of

merging into the MnPASS lanes, with one-fourth (25%) very satisfied. But one fourth (26%) were dissatisfied. Four percent had no opinion and 4% refused to provide an answer.

Users Reported Few Problems Merging into the MnPASS Lane from the General Traffic Lane
The vast majority of MnPASS lane users (87%) did not experience any problems merging into the MnPASS from the general traffic lane on their reference trip, while 13% experienced problems. Of the total sample, 6% identified the problem as congestion; 4% as lanes were confusing; and 3% said they experienced rude drivers.

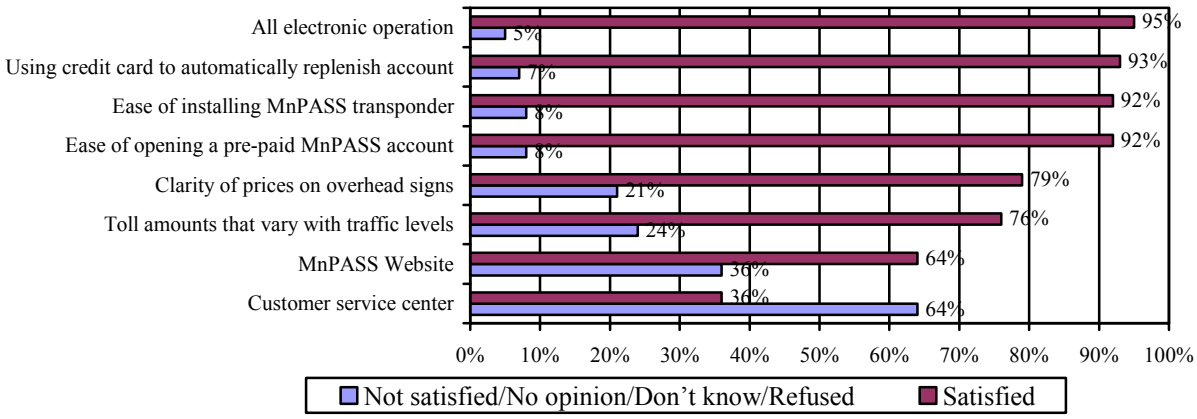
FIGURE 5 Merging Problems on Reference Trips (I-394 Respondents Who Used MnPASS Lanes).
Did you experience any problems in merging into the MnPASS lane from the general traffic lane?



High Satisfaction Reported with the Details of Having an MnPASS Subscription and MnPASS Communications

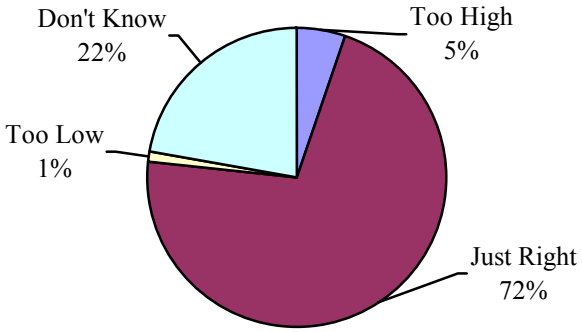
Paying MnPASS customers were exceptionally satisfied with the details of having an MnPASS subscription. Virtually all (95%) were satisfied with the all electronic toll collection, ease of opening an account (92%); using a credit card to replenish the account (93%), and the ease of installing the MnPASS transponder (92%). Communications appear to be handled well with virtually no complaints about the staff at the Customer Service Center or about the MnPASS website. About one-of-five paying customers reported dissatisfaction with the clarity of prices on overhead signs or with the toll amounts that vary with traffic levels.

FIGURE 6 Comparison of Satisfaction Levels for Various MnPASS Aspects (Among MnPASS Users).



MnPASS Lane Users Considered the MnPASS Toll a Good Value
Most MnPASS lane users considered the MnPASS toll a good value; 72% said the toll paid for their reference trip was just right – neither too high nor too low. About one in five could not place a value on the toll paid.

FIGURE 7 Perceived Value of MnPASS Toll (I-394 Respondents who Used MnPASS Lanes).
Given the time saved using the MnPASS lane for this trip, do you think the toll paid was…



People Are More Willing to Pay a Higher Toll to Avoid Congestion
The mean value of time estimated for the Wave 2 respondents ($10.50 per hour) was higher than that captured in Wave 1 ($8.50 per hour). This result indicated that now the MnPASS lane is in operation, people are more aware of their willingness to pay a higher toll to avoid congestion. The types of people who expressed a higher willingness to pay the MnPASS toll included those traveling a longer distance, traveling in the peak period and on a commute trip, planning to use the MnPASS lane before their trip started, supporting the MnPASS concept, and, finally, persons who are aged 35-44 and higher-income.

CONCLUSIONS AND NEXT STEPS
Overall approval and satisfaction with the I-394 MnPASS Express Lane project is strong and broad. Six-to-seven out of ten believed that allowing single drivers to use carpool lanes by paying a toll was a good idea. Support was almost as strong among lower income households as it was among higher income households. Satisfaction among users with MnPASS operations, subscription elements, and communications is high – whether users are paying (SOVs) or not (carpoolers and bus riders). Users do not appear to be having a difficult time entering and exiting the MnPASS lanes. Almost nine out of ten reported having no problems with merging into the tolled lanes. Most users felt that paying the MnPASS toll to avoid congestion was a good value.

The third wave of the Attitudinal Panel Survey was completed in May and June of 2006. Eighty-nine percent of the 950 Wave 2 respondents agreed to be interviewed in the next wave. These respondents received a postcard thanking them for their participation. The sample was refreshed with a larger sample of randomly sampled users of the 1-394 and I-35W corridors. Finally, the survey team identified ways to increase the efficiency of the Wave 3 survey instrument to maximize survey participation.

ACKNOWLEDGEMENTS
The authors would like to thank the Minnesota Department of Transportation for their support and input throughout this project. Chris Simek at NuStats should also be acknowledged for his help in analyzing the data and general guidance. Lee Munnich, Director of the State and Local Policy Program at the Hubert H. Humphrey Institute of Public Affairs, deserves credit for his commitment and involvement in this research. Finally, the authors want to thank all of the other various agencies and individuals who contributed their time, knowledge and effort in making this project a success.

Appendix G:

Value Pricing and Public Outreach: Minnesota's Lessons Learned

Lee Munnich, Joe Loveland

Value Pricing and Public Outreach: Minnesota's Lessons Learned

By Lee W. Munnich, Jr. and Joseph D. Loveland

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4,343 words

Abstract

The feasibility and worth of value pricing transportation projects is well documented, but gaining approval for projects has been thwarted by an inability to sell the public and key stakeholders on the concept. Value pricing advocates in Minnesota struggled with this challenge for over a decade. After several Minnesota value pricing projects failed due to lack of public support, Minnesota supporters implemented a revised public outreach strategy in 2001. Using that strategy, they met with success in 2003 with the approval of the I-394 MnPass project, which will be implemented in the spring of 2005. The communications-related lessons learned in Minnesota during the decade-long case study may be instructive for others struggling to gain approval for their own projects.

INTRODUCTION

Increasingly, transportation officials are looking to value pricing as one tool to manage traffic congestion. While the concept has proven technically feasible, public acceptance has never come easily. Minnesota's struggles with this issue provide an interesting case study for those considering using this tool.

Value pricing, also known as congestion pricing and peak period pricing, is the policy of charging drivers on a congested roadway a fee that varies with the level of usage. The purpose of the policy is to allocate scarce roadway space in an economically efficient manner. Value pricing has been a matter of policy debate for almost half a century. Following the enactment of the Federal Highway Revenue Act of 1956, some looked to the concept to meet financing and urban congestion management needs. Following the initiation of value pricing projects in southern California, Texas, Florida and New York in the 1990s, the technical feasibility, value and public support for value pricing projects have now been established (*1*) (*2*).

Still value pricing projects have not been implemented as aggressively as supporters had hoped. In 1994, a national Committee for Study on Urban Transportation Congestion Pricing described the crux of the problem. "The reasons for rejection of congestion pricing in the past have not changed. Any shift from the current system of financing and using the transportation system toward more marketlike mechanisms can be expected to engender public and political resistance" (*3*).

Numerous studies have shown that the failure to attend to the information needs and concerns of stakeholders too often and too predictably leads to poor performance, outright failure or even disaster (*4*). One such study is Paul Nutt's *Why Decisions Fail* (2002), which analyzed 400 strategic decisions and found that half had failed in large part because decision makers failed to attend to interests and information held by key stakeholders (*5).* Aaron Wildalsky in his classic work on policy analysis argued that one of the keys to effective policy change is "creating problems that could be solved." To be really useful, policy analysis requires linking *technical rationality* with *political rationality* in order "to mobilize support for substance" (*6).*

Value Pricing in Minnesota

Minnesota has experienced a great deal of the kind of "public and political resistance" referred to in the 1994 national study on congestion pricing. Using funding from the Federal Highway Administration's Congestion Pricing and Value Pricing Pilot Programs and the Minnesota Department of Transportation (Mn/DOT), the University of Minnesota's Humphrey Institute of Public Affairs has conducted research and worked with Minnesota transportation and community leaders since 1994 to educate stakeholders and the general public about the concept. The Humphrey Institute's State and Local Policy Program conducted a Citizens Jury with Mn/DOT and the Metropolitan Council in 1995 and has conducted research, education and outreach activities related to political and institutional issues of congestion pricing since that time at both the state and national level (*7*).

Despite these efforts, public opposition to value pricing projects has been a major sticking point in Minnesota. For example, in 1996 a proposed public-private partnership to build a toll road on Minnesota Highway 212 was blocked by a city council veto of one of the suburbs in the corridor due to local opposition to the project. A year later a proposal by the Minnesota Department of Transportation (Mn/DOT) to convert the I-394 high-occupancy vehicle (HOV) lane to a high occupancy toll lane was withdrawn after public concerns were raised in various forums and a local political leader placed full-page ads in papers characterizing it as primarily benefiting wealthy people. Then-Mn/DOT Commissioner James Denn ultimately withdrew the proposal noting, "I do not believe the proposed I-394 demonstration project enjoys the level of public understanding that is necessary for it to receive the objective analysis and fair consideration we seek." At the same time, a Mn/DOT spokesperson said the top two public criticisms were the perceived impact of value pricing on 1) HOV use and 2) economic fairness (*8*).

In the wake of this political setback, Mn/DOT and the Humphrey Institute's State and Local Policy Program (SLPP) with a grant from FHWA's Value Pricing Pilot Program modified their public outreach strategy when they raised the idea again in 2001. Mn/DOT staff involved in the previous efforts had concluded that public education and political leadership were key conditions for any future success of value pricing in Minnesota (*9*). This time, a communications consultant with experience in the political arena was hired to help coordinate and execute public outreach efforts. An engineering firm with knowledge of value pricing and area highway corridors to help answer the public's detailed questions was also hired to support the education and outreach effort. Finally, the Humphrey Institute convened a diverse Value Pricing Advisory Task Force of key community stakeholders, led by a former state senator Carol Flynn, who had chaired the Minnesota Legislature's Senate Transportation Committee.

The Task Force members initially were skeptical about value pricing. However, after an intensive yearlong education process and lengthy committee discussions, the body ultimately decided to recommend three options for piloting the concept in Minnesota (*10*). Among the Value Pricing Advisory Task Force's January 2002 recommendations was, once again, the I-394 HOV lane project that had been rejected due to what local newspapers at the time described as "widespread public opposition." Clearly, the future of the proposal depended on improving communications with key stakeholders and the general public.

Minnesota's Public Outreach Initiative

Extensive research has found that public relations initiatives can help organizations, or in this case a coalition, build constructive long-term relationships with the most strategically relevant stakeholders (*11)*. Starting in 2002, the Humphrey Institute began a new effort to build such strong stakeholder relationships with an organized and disciplined public outreach initiative.

The Humphrey Institute and its communications consultant coordinated a public education effort that included dozens of small group visits with legislators, interest group leaders, state government leaders, municipal officials and transportation and transit advocates. It also included large group dialogues with civic groups, marketing research to learn more about consumers concerns, newspaper editorial board exchanges, news reporter discussions, use of guest commentaries to explain the concept in greater detail, convening of several public policy

roundtable discussions between issue experts and the public, and facilitation of numerous news stories to broaden knowledge about the idea.

Ultimately in 2003, the Minnesota Legislature adopted legislation allowing the I-394 value pricing project to proceed. The legislation passed with strong bipartisan support and surprisingly little controversy. Following the passage of the legislation, newly appointed Commissioner of Transportation Carol Molnau announced her intention to implement the I-394 project, and the newly elected Governor Tim Pawlenty publicly announced his support for the project as well. The project is scheduled to open in Spring 2005.

Lessons Learned

What happened in Minnesota from the time the I-394 proposal was withdrawn under fire in 1997 and to the project's legislative endorsement in 2003? Certainly, external developments during this period supported the case for value pricing, including worsening traffic congestion, record-setting state government budget deficits, a public pledge made by many legislators to not vote for tax increases, and a highly visible analysis documenting the excess capacity in the I-394 HOV lane.

But the multi-disciplinary public education initiative coordinated by the Humphrey Institute also played a supportive role in paving the way for the I-394 project. The lessons learned from this case study are the subject of this paper.

Top-level Champions Helpful

Prior to 2003, value pricing in Minnesota had enjoyed the support of some mid-level state government officials, but not the active support of top legislative leaders or the Governor. During this time, value pricing advocates learned that it is very difficult to maximize public outreach efforts without the support of higher-level officials. These advocates were a small group of academics, transportation leaders, local officials, and community leaders, who strongly believed that value pricing is an important tool to manage congestion and finance transportation improvements and that this tool should be tested in Minnesota. While many factors influenced the Governor's decision to become a value pricing champion, he and his staff did have discussions with several individuals involved in this public outreach initiative and became convinced that this was a "bold, innovative way to reduce congestion for Minnesota drivers" (*12*).

When the Governor decided to back the I-394 project, it quickly became apparent that gubernatorial support is a very powerful asset that can energize a public outreach initiative. Gubernatorial support paid off in Minnesota in at least two ways. First, the support of the Governor helped marshal the active support of his transportation department and entire administration, as well as the Governor's allies in the public, private and non-profit sectors. Second, the Governor's support was an invaluable asset because Governors possess a highly visible communications platform from which to persuasively advocate a public policy agenda. In Minnesota, the Governor was able to use this platform to thoroughly explain the issue to skeptical stakeholders and citizens. Efforts to communicate value pricing to the public through

mid-level officials were successful prior to the endorsement of the Governor and his Administration, but they became more successful after the endorsement.

"Grasstops" Coalition A Prerequisite

Because Minnesota's value pricing proponents saw the need for high-level gubernatorial and legislative support, their public outreach effort was especially directed at those influential with such officials. Governors, top legislative leaders and their staff members all have a group of interest groups, state and local officials, and citizens with whom they consult. In contrast to a "grassroots" coalitions made up of large groups of citizens, this much smaller group of community leaders can be collectively thought of as more of a "grasstops" coalition. In Minnesota, building a broad "grasstops" coalition of respected thoughtful leaders proved to be a valuable tool to help secure the support of higher level elected leaders. Building this coalition entailed briefing such leaders, individually and in groups. If leaders expressed support for the concept, they often would be asked to help participate in grasstops contacts within their sphere of influence. Through this process of peer-to-peer discussion, the grasstops coalition gradually grew over time.

Task Force An Efficient Education Tool

The Value Pricing Advisory Task Force was an effective and efficient tool for building a grasstops coalition of community leaders. In four half-day meetings scheduled over the period of a year, the task force brought together 30 state and local elected officials, businesspeople, environmentalists, and advocates of highways, transit and carpools to learn about the complex issue of value pricing. Members of the task force praised the chair for conducting meetings in an open, inclusive and fair manner. In addition to effectively serving as a sort of "Value Pricing 101" class about the concept and how it has worked elsewhere, the forum also helped open dialogues and build trust within a diverse group.

Task Force Identifies and Mobilizes Champions

Over the years, Minnesota's value pricing supporters had long identified the need for a group of credible messengers to champion their cause for them, but they had experienced difficulty enlisting such champions. The advisory task force served as a very useful tool for identifying, educating, and empowering credible local champions. At the last meeting of the task force, the chair asked if any members would like to help champion the idea to their peers and constituents, and a diverse group of members volunteered. The communications consultant and the Humphrey Institute's public outreach team, a loosely knit group of about a dozen engineers, politicians, transportation planners, and public policy experts from various groups who had a particular interest or expertise in public outreach, helped pair the right champion with the right outreach task. This was one of the most valuable outcomes of the task force process.

Coalition Requires Constant Maintenance

"Politics makes strange bedfellows," the old political adage goes. Perhaps nowhere is this more true than on the issue of value pricing. Minnesota value pricing proponents learned that value pricing appeals to a diverse group of stakeholders who have often been at odds with one another – businesspeople and environmentalists, solo drivers and HOV users, urban interests and suburban interests, Republicans, Democrats and Independents. While this kind of diversity is a source of tremendous strength for any public policy coalition, Minnesota advocates also learned

that maintaining cohesion, trust and cooperation within the coalition is challenging. Maintaining such a "strange bedfellows" coalition required constant monitoring and tending by individual with experience managing diverse public policy oriented coalitions.

Preparation Must Proceed Promotion

Typically, public education initiatives begin with an effort to seek news media coverage. However, Minnesota value pricing advocates have learned from past experience that seeking news coverage prematurely can be problematic. Most Minnesota stakeholders, citizens, and reporters had not yet been adequately informed about the complex concept and the latest findings from value pricing projects in other states. Therefore, news media coverage was not proactively sought by Minnesota's value pricing proponents until the following communications tools were available: diverse and credible messengers, visual tools to explain the concept, and detailed answers to all potential public questions.

In addition to public outreach preparation, Minnesota advocates also did substantial amounts of technical preparation. In the past, Minnesota value pricing supporters had seen that stakeholders and citizens have many extremely detailed questions about how value pricing works. Furthermore, advocates learned that every time they answered a question "we don't know yet," public skepticism about the feasibility of the proposal grew. Therefore, in 2001 the coalition retained an engineering firm to identify preliminary answers to technical issues associated with the 1-394 project. For example, the engineering firm conducted preliminary investigations about the type of technology that could be employed. It also developed rough projects costs. The ability to provide detailed answers to technical questions helped convince the community that the concept of value pricing was a proven traffic management tool, not a risky, speculative experiment.

After advocates completed their preparation work, news media coverage was sought. By that point, supporters were well prepared answer all questions.

No Question Goes Unanswered

In past value price discussions, Minnesota advocates saw how quickly public confidence in value pricing can wane. They learned that an accusation unanswered can quickly become an accusation believed. For that reason, a public outreach team was formed to rapidly answer any and all questions posed by stakeholders, citizens or news reporters. The team met weekly to discuss proactive tactics to preempt criticism and reactive tactics for addressing pending questions. The most frequently raised public concerns had to do with technical feasibility, equity, impact on HOV use, and public acceptance. Armed with solid answers to all of these questions, the team immediately addressed them before misunderstandings could fuel the kind of public opposition that had led to the rejection of value pricing projects in the past.

Seize the Day

Minnesota's value pricing advocates had a communications plan, but they frequently deviated from the original plan to seize unforeseen messaging opportunities. For example, when a local survey showed a surprising amount of local public support for the concept of value pricing, advocates quickly shared the information with Minnesota news reporters, most of whom had years earlier concluded that the idea was infeasible because of lack of public support. When a

Mn/DOT study documented the excess capacity in the I-394 HOV lane, value pricing supporters quickly seized this as an educable moment to make the case that value pricing was a proven way to use the excess capacity without compromising HOV preference. When a 2002 California survey showed that Southern California citizens of all income levels used and supported HOT lanes, that information was widely shared with stakeholders and reporters who had earlier characterized HOT lanes as "Lexus Lanes" that were only for the wealthy. These were all unforeseen developments, but Minnesota advocates learned that once they had a communications infrastructure in place they could seize the opportunities new developments presented.

Customize Messages

Over the years, Minnesota value pricing advocates have searched for a universal set of key messages that would effectively communicate the merits of the concept to the general public. However, starting in 2002 Minnesota advocates abandoned the notion of using a one-size-fits all message strategy. Instead, they customized messages for each individual audience. Different messages were emphasized for conservatives, liberals, business people, environmentalists, transit advocates, carpool advocates and SOV users. For example, the messages to conservatives focused on market-based, non-tax approaches to providing additional road capacity. The messages to liberals, transit-advocates and environmentalists focused on equity, environmental benefits, choice and the potential for improving transit. The messages for businesses focused on reducing the cost of congestion and increasing reliability. The carpool advocates were assured that they would maintain their priority on the HOT lane, that the level of service would not be impaired, and that they would have additional choices if they didn't carpool on some days. The SOV users were shown the electronic tolling technology, assured there were no toll booths, and presented the HOT lane as a new choice that was not previously available.

While some common themes were used for all groups, the messages were tailored to appeal to each individual group's unique values, needs and motivations. Instead of using one set of materials, individualized materials were developed for each major group. This more tailored communications approach helped ensure each group was getting information relevant to them, and ultimately helped build a broad, diverse coalition of supporters.

Accentuate the Positive

In the past, value pricing advocates may have inadvertently overemphasized the costs associated with the concept when communicating with the public. More recently, they have attempted to focus their communications more on the benefits of value pricing, and less on the costs. For instance, terms like "value *pricing*," "congestion *pricing*," "peak period *pricing*," and "high occupancy *toll* lanes" all prominently highlight the cost for consumers. Minnesota advocates more recently have used the term "express lanes" and "MnPass," because this language focuses more directly on the consumer benefit. Similarly, Minnesota advocates intervened to alter a survey that was to ask consumers if they would support paying tolls. Instead, they convinced survey sponsors to rephrase the question to present both the costs and the benefits of the I-394 project: "Would you support or oppose having an option of paying a fee to use an uncongested freeway lane when in a hurry." Phrased in a way that described both costs and benefits, the survey found much more local support than past surveys.

Choice Sells

One of the three pilot projects recommended by the Minnesota task force would have charged peak period tolls in a highly congested construction zone, the I-35W/Highway 62 Crosstown Commons reconstruction project. In this proposed pilot project, the toll would have been used as a way to encourage drivers to travel at off-peak times whenever possible. Notably, this project received much less support in the community than the I-394 HOT lane proposal for one primary reason: On the Crosstown project, tolling would have been charged on all lanes, whereas the I-394 proposal gave drivers a choice of whether to use a tolled or untolled lane. Minnesota advocates quickly learned that is easier to build public support for projects that offer drivers a choice. For that reason, the choice component of the I-394 project was always emphasized when describing the project. For instance, standard language introducing the project emphasized choice: *"With Express Lanes, solo drivers have the option of paying a fee to use the uncongested HOV lane when they are in a hurry."*

Non-Governmental Facilitator Valuable

The fact that the University of Minnesota's Humphrey Institute took the lead in facilitating public outreach activities instead of a governmental body may have been advantageous. To some stakeholders, an educational and outreach initiative led by an academic institution may have seemed more acceptable than an initiative led by governmental agencies. For that reason, the Institute may have been able to convene the diverse group of stakeholders, and build consensus among them, without encountering as much distrust as a governmental entity may have encountered.

Show, Don't Just Tell

Minnesota value pricing supporters have found in their market research that even people who are well briefed on the concept of value pricing have a difficult time fully understanding it. It is particularly difficult for them to understand how variable pricing can keep the tolled lanes from becoming congested. For many, value pricing literally has to be seen to be believed. For this reason, and because visuals have been shown to be more compelling and memorable than words, Minnesota advocates used visuals to explain the concept. For example, videotape of underutilized local HOV lanes and successful HOT lanes in other parts of the country were provided to TV news reporters and stakeholders to help viewers visualize the problem and proposed solution. With some audiences a 13-minute videotape produced by the Humphrey Institute was used to show how "real" people respond to congestion-relief toll projects in California (*13*). In meetings, actual transponders were often passed out to help people see and feel how electronic tolling would work. In speeches given to civic groups, videotape and a photo-intensive PowerPoint presentations were used to paint a vivid picture of what value pricing looks like. These pictures were much more meaningful to most audiences than verbal explanations of value pricing abstractions.

Managing Success Provides New Challenges

For more than a decade, Minnesota's value pricing advocates toiled in relative obscurity. When widespread political support finally did surface, it came relatively quickly. As a result, Minnesota's advocates are learning yet another lesson: Attempting to guide and shape stakeholder enthusiasm for value pricing is proving just as challenging as generating the enthusiasm in the first place. The need to ensure that value pricing is used appropriately is

providing a whole new set of communications challenges for Minnesota's value pricing supporters.

Conclusion

The lessons learned in Minnesota's struggles to build public support for value pricing are not universal lessons that will apply in all cases. Each individual locality is unique and each public outreach initiative has to be tailored to fit local circumstances. But some of Minnesota's lessons may be instructive as the concept and application of value pricing is debated across the nation.

The Minnesota experience supports the need for an effective communications strategy combined with the involvement of key stakeholders in education and outreach. This case study also demonstrates how *technical rationality* and *political rationality* can be linked to mobilize support for substantive policy change.

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Appendix H:

I-394 MnPASS: A New Choice for Commuters

Lee Munnich

I-394 MNPASS:
A NEW CHOICE FOR COMMUTERS

MnPASS

Hubert H. Humphrey
Institute of Public Affairs
University of Minnesota

SINCE 1994, the State and Local Policy Program of the University of Minnesota's Humphrey Institute of Public Affairs has studied and advanced the idea of value pricing (also known as congestion pricing) to address the problem of urban traffic congestion. This research and outreach has been funded through grants from the Federal Highway Administration (FHWA) Value Pricing Pilot Program and the Minnesota Department of Transportation (Mn/DOT). In 2003, Minnesota's governor and state legislature endorsed the state's first value pricing project, a high-occupancy toll (HOT) lane on an 11-mile stretch of I–394 west of downtown Minneapolis, with bipartisan support.

Mn /DOT opened the I–394 MnPASS express lane in May 2005. It allows solo drivers to use an express lane previously reserved for carpools, buses, and motorcycles for a fee. The fee varies dynamically to keep traffic flowing and is displayed and charged electronically. Carpools, buses, and motorcycles continue to use the express lane free of charge. This report highlights the results of the first year of operation of the I–394 MnPASS lane.

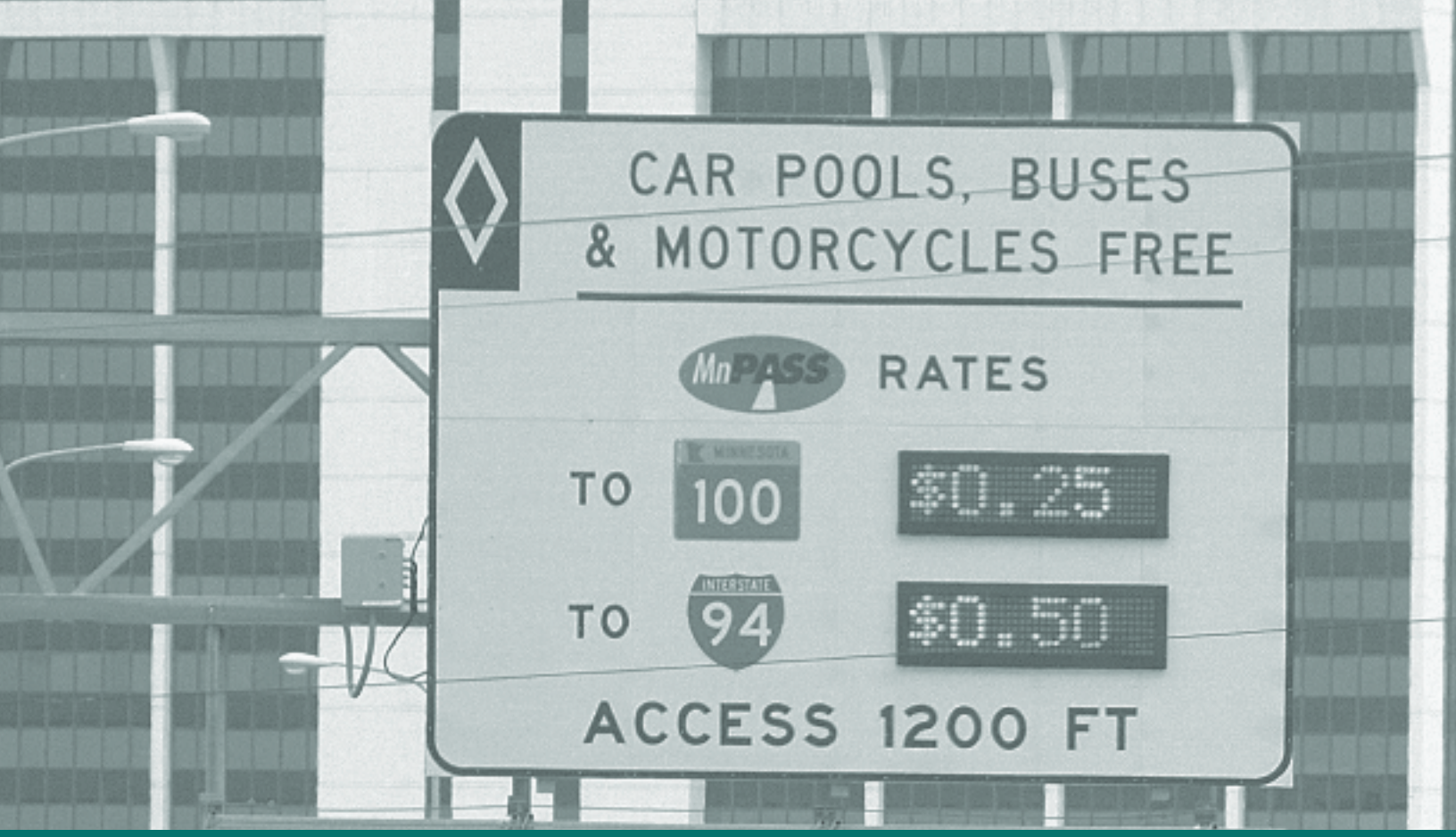
This report was funded through grants from FHWA's Value Pricing Pilot Program and Mn/DOT. For more information about the I–394 MnPASS project, go to www.MnPASS.org. For more information about value pricing, go to www.valuepricing.org.

MnPASS

Minnesota Department of Transportation

U.S.Department of Transportation
Federal Highway Administration

Hubert H. Humphrey Institute of Public Affairs
University of Minnesota



I-394 MNPASS: A NEW CHOICE FOR COMMUTERS

"I have more time for work and more time for my children. And, it's all less stressful."

—Ann Johnson, commuter

For more than a decade, Ann Johnson was a "prisoner of the highway." Johnson's commute from her home in Wayzata, Minn., to the University of Minnesota campus in Minneapolis where she teaches in the department of civil engineering could take as little as 20 minutes—or as much as an hour. The route home was even worse. If she left the University at 4 p.m., it might take her until 5:30 p.m. to get home. A mother with two children still in school, Johnson did what she could to work around the highway. She talked with a neighbor about carpooling, but their schedules did not match. She never taught before 9:30 a.m. or after 2:30 p.m. to avoid rush hours; she allowed extra time to get to after-school events.

"It got so that I was afraid of the highway," says Johnson. "You can be a prisoner on that highway for an hour or more on a bad day."

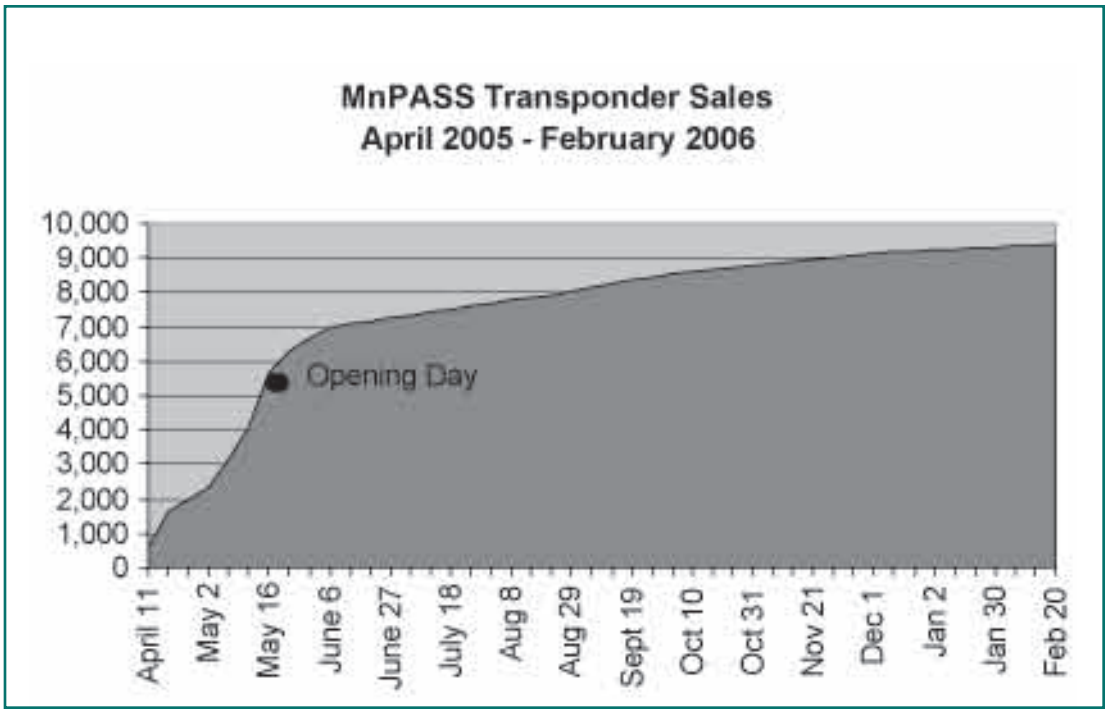
So, when the MnPASS program, which allows single-occupancy vehicle drivers to pay to use HOV lanes, began on Interstate 394, Johnson signed up immediately. MnPASS operates on an 11-mile stretch of freeway from Interstate 494 on the west to downtown Minneapolis. About half of the route is made up of two reversible lanes with several entry points; the rest is a diamond lane in each direction. Johnson now pays about $25 a week to use MnPASS on both legs of her commute, and she says, "It's worth every cent." With MnPASS, Johnson arrives at the University in 25 minutes—give or take five minutes—and she arrives home in about the same amount of time. Because her commute time is so reliable, she's agreed to teach earlier and later classes, and she knows she'll still be home to meet the school bus.

Heading west out of Minneapolis in the I-394 MnPASS lane

"I have more time for work and more time for my children. And, it's all less stressful," says Johnson. For some people, the cost may not be worth the time savings. For instance, Johnson's husband commutes on I-394 as well, but does not use MnPASS because his commute is about half the distance of her trip to work. "For some people, if they get to work late, it doesn't matter; they just work later in the day," Johnson says. "Some people have monetary and emotional penalties for being late that others don't experience. I'll happily pay $4 to be there when my kids get off the bus."

Johnson is not alone. Since the MnPASS program began in May 2005, more than 9,000 people have signed up to participate by leasing a transponder from the Minnesota Department of Transportation (Mn/DOT). The number of tolled trips taken on the highway has increased from about 10,000 per week when the program was first introduced to more than 20,000 per week seven months later. In addition, the project receives high marks from users—more than 95 percent of MnPASS leaseholders like the program. It also has gained acceptance from the public at large. About 60 percent of Twin Cities residents surveyed in late 2005 said that allowing drivers to pay to travel faster on the highway was a good idea, with little variation in support across income, education levels, or gender.

Few people would have imagined this widespread support for the toll lanes a decade earlier when the idea was first introduced—and quickly and noisily shouted down. However, several factors changed over the past 10 years, including congestion levels and the state's budget situation. In addition, a careful effort to educate the public about the benefits of toll lanes helped pave the way for MnPASS to open and prove itself.

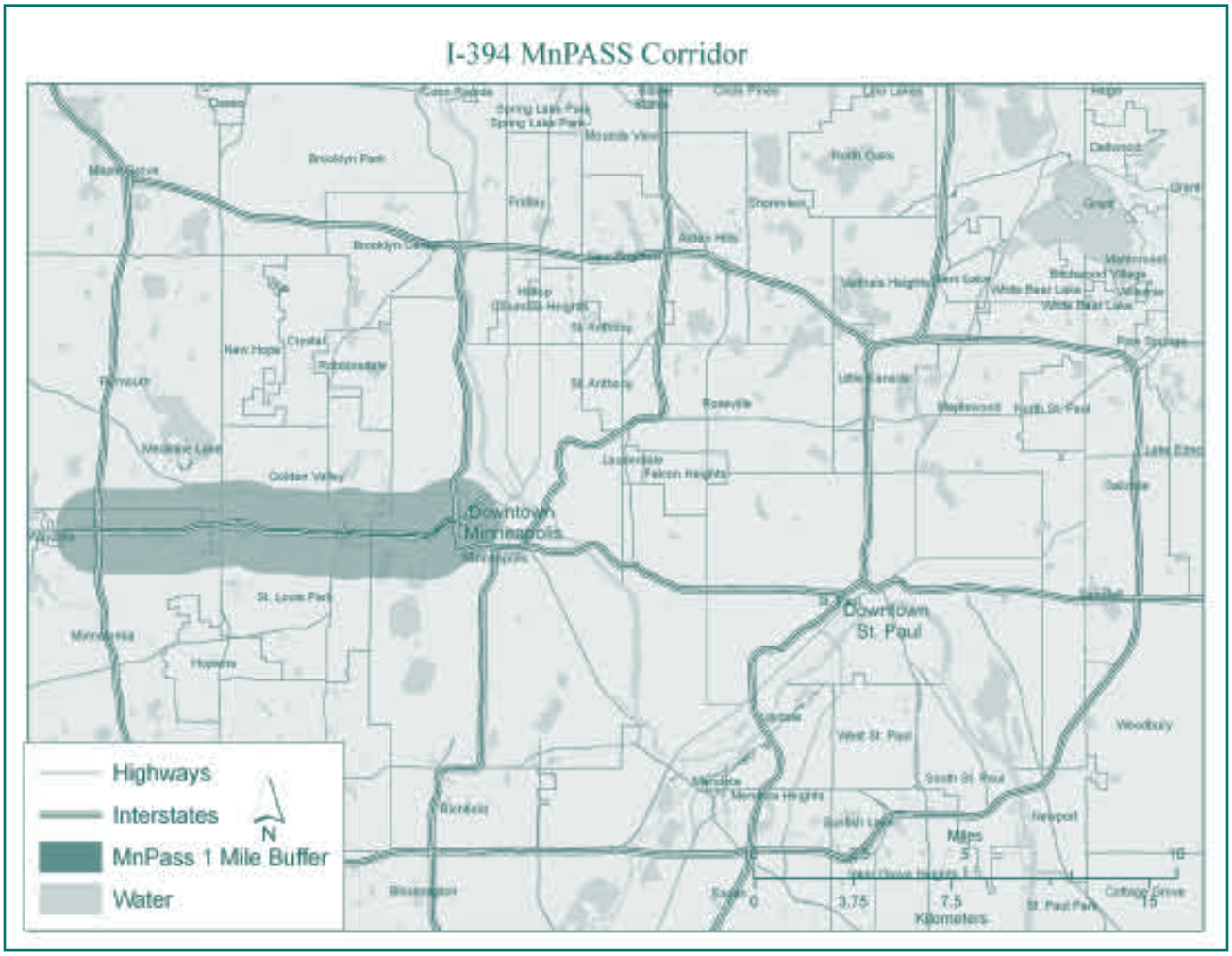


I-394: A SHORT HISTORY

Interstate 394 opened in 1992, connecting Minneapolis to its western suburbs. The six-lane freeway included two reversible lanes from Interstate 94 just outside of downtown to Highway 100, about four miles west. These were reserved for carpools, buses, and motorcycles from 6 a.m. to 9 a.m. and from 3 p.m. to 6 p.m. Past Highway 100, the freeway included one diamond (high-occupancy vehicle) lane for carpools and buses in each direction. Soon after the freeway opened, drivers and public officials could see that the high-occupancy lanes failed to attract enough carpool drivers and were underused.

In the mid-1990s, Mn/DOT officials began to explore congestion pricing, although early efforts indicated most Twin Cities resi-

I-394, looking east toward downtown Minneapolis



dents did not know much about congestion pricing or understand how it would work. In 1997, transportation officials proposed that the Legislature approve a two-year test of toll lanes on I-394. The proposal involved opening the I-394 HOV lanes to single-occupancy vehicles willing to pay a monthly fee. Public reaction to the idea was immediate and negative. Mn/DOT received more than 700 comments about the proposal, 90 percent of them opposed. Many argued that the lanes largely would benefit wealthy individuals who could afford the monthly fee while leaving less-well-off drivers stuck in traffic. Transportation officials removed the proposal from consideration. "Up to that point, I don't think we were ready as an urban area for tolls," recalls Ken Buckeye, program manager in the department's Office of Investment Management, who has been involved in toll-road considerations for more than a decade. "In the first place, traffic was not that bad; though the signs were there that congestion was going to get much worse. Secondly, I think a lot of people didn't know what kind of toll road we were talking about. They had the impression of people throwing coins in a basket, and we didn't do enough to explain tolls."

Working with the State and Local Policy Program at the University of Minnesota's Humphrey Institute of Public Affairs and with a grant from the Federal Highway Administration's Value Pricing Pilot Program, Mn/DOT began an aggressive education program to help the public understand how toll-lanes could work and to change the focus of the discussion from roads for the rich to letting people who value their time pay for speed of travel. The public education effort included conversations with public opinion leaders: elected officials, interest group leaders, editorial boards, and transit advocates.

In 2001, the Humphrey Institute convened an advisory committee to increase information about toll options among civic leaders and elected officials. Chaired by former State Senator Carol Flynn, who previously had led the Minnesota State Senate Transportation Committee, the Value Pricing Advisory Task Force was made up of 30 state and local policymakers. During four half-day meetings, the task force gained a greater understanding of value pricing and formed connections among a diverse group of elected officials. The group considered specific value-pricing proposals, including I-394, and talked about how value pricing might play a role in managing traffic as the Twin Cities changed and grew.

Increasing congestion on the freeways made new ideas a necessity. During the late 1990s, the region experienced significant economic and population growth. With growth, came traffic delays. In the period between 1996 and 2001, only one other metropolitan area in the nation (Fort Lauderdale, Fla.) experienced more congestion growth, according to a study of the Texas Transportation Institute. The study found that the average Twin Cities commuter wasted 43 hours in traffic per year, burning an extra 28 gallons of fuel. The total cost to commuters in time and fuel in 2001 topped $1 billion.

That same year, Mn/DOT asked an independent consultant to study traffic on I-394 again and assess options for improving usage of the lanes, including opening the lanes to all traffic or instituting a toll system. The study found that the lanes were significantly under used. Even during rush hour, the HOV lanes operated at about half of their capacity. While opening the lanes to all drivers would increase overall speeds, reduce gas consumption, and reduce fuel emissions, it also violated federal policies to encourage carpooling and had the potential to penalize transit users. If the lanes were opened to everyone, the state might lose federal highway monies. Moreover, opening the lanes would not coincide with long-term transportation plans for the Twin Cities. This time, when discussions of value pricing occurred in city halls and the state capitol, however, value pricing supporters "finally had a group of folks who could speak with an informed opinion about the project," says Buckeye.

With traffic increasing, awareness of the benefits of value pricing on the rise, and no easy state money available to build roads, the political environment for congestion pricing shifted. In 2003, with support from Governor Tim Pawlenty, the state Legislature passed the project—now called MnPASS—with bipartisan support and relatively little controversy. To address the complex implementation issues involved in value pricing, the governor formed an I-394 Community Task Force, made up of 22 city, regional, and state officials as well as community representatives, transit advocates, and other interested parties. Attorney Henry Van Dellen, who had served in the Minnesota House of Representatives for eight years, led the task force. The community task force provided advice and guidance to the commissioner of transportation on public outreach and education. It evaluated such details as signage options and methods of evaluation. The task force also dug deeply into such technical issues as pricing, access points, transponder technology, and enforcement issues. This high level of community involvement led to a system that, from the start, addressed the needs of typical commuters but also was flexible enough to be modified as needed.

"GRIDLOCK INSURANCE"

When Senator Ann H. Rest introduced the legislation permitting High Occupancy Toll (HOT) lanes on I-394, she described it as "gridlock insurance," and that is how many consumers use the system today. If they are in a hurry or traffic seems especially heavy, they move into the express lane to save time. Most MnPASS users do not use the lane daily—the average is about twice a week. The option of using or bypassing the system is one reason MnPASS has been well received by commuters. Those using the lane are a diverse group in terms of income and motivation. Some drivers carpool in the lane for free every day or

perhaps they carpool some days and pay to use the express lane others. Some users are parents hoping to pick up their child at day care before late fees kick in; others may have an appointment and cannot afford to be late or they may have decided they are willing to pay to bypass traffic delays caused by an accident.

Consumers make their choices based on their own sense of what going faster is worth to them. MnPASS's system of dynamic pricing raises or lowers the fee for the express lane—as often as every three minutes—to ensure that the express lane will always move at 50 to 55 mph. On days when many people choose MnPASS, the price goes up—the maximum fee is $8 for a trip from I-494 to downtown. On days when traffic is light, the fee drops—the minimum is 50 cents during the hours in which MnPASS is in operation. Typically, commuters pay between $1 and $3 during rush hour to use the system. The system works well because sensors in the road convey minute-by-minute data to Mn/DOT computers, which constantly adjust the price to reflect current traffic levels. Signage at the entry points to the MnPASS lanes communicate to drivers exactly what their commute will cost depending on where they want to exit. Dynamic pricing ensures that the lanes remain free flowing for all users.

Dynamic pricing also guarantees that commuters who take transit or have formed carpools are not penalized because of the number of solo drivers on the road. They continue to use the lanes for free—without transponders—and the express lanes move as fast as ever. When traffic is heavy, prices increase, making it more likely that solo drivers will find it too expensive to take the express lane and that those choosing transit or carpools will not be stuck in traffic.

In addition, several features of the system discourage those without transponders from entering the express lane. These enforcement tools use new technology unique to MnPASS. At the access points along the freeway, an amber beacon flashes every time it detects a MnPASS transponder in a car. This signals to the driver (and to others in traffic) that this car is entering the express lane legally. State troopers and other enforcement officers patrolling the area also have enforcement transponders and mobile readers mounted in their cars. This new technology allows officers to unobtrusively determine that drivers are legally in the lane whether the patrol car is behind the other car or alongside it. Finally, the fine for violating the MnPASS lane is significant: $142 for the first offense. Anecdotal evidence also suggests that those who had violated the bus and carpool lane when it was closed to solo drivers were among the first to sign up for a transponder.

As a result of these enforcement efforts, violation rates have been low and are significantly below pre-MnPASS levels. On one segment of the freeway, for example, almost 25 percent of all drivers using the lane in 2002 were violators. That rate has dropped to less than 10 percent since MnPASS began.

MERGING TRANSIT WITH MNPASS

One concern expressed during discussions of MnPASS was that fewer commuters would take the bus or carpool if they could pay to drive alone at decent speeds. Transit ridership did decline after MnPASS went into effect in May 2005; however, other factors seem to have influenced transit ridership more than the presence of an express lane option. For instance, rider-

MNPASS GOALS

The MnPASS project began with several specific goals:

- To improve the efficiency of I-394 by increasing the carrying capacities of HOV lanes, in terms of both vehicles and individuals
- To maintain free-flow speeds (55 mph) for transit and carpools in express lanes
- To use excess revenue, if available, to make transit and highway improvements in the I-394 corridor
- To collect tolls electronically—no toll booths
- To employ the latest technologies to manage traffic and enforce laws in the lane, including dynamic pricing and in-vehicle electronic enforcement

The I-394 HOV Lane was underused before MnPASS

ship declined after July 2005 when bus fares increased. Ridership gained again later in 2005 as gas prices rose substantially. Data on carpool usage has been conflicting, and further study on the impact of MnPASS on carpools may be necessary.

Transit operators have indicated that the presence of more drivers in the express lane has not slowed buses down, and buses have been able to move into and out of the lanes easily. Moreover, Metro Transit—the Twin Cities' largest bus service provider—has signaled interest in improving bus service along the I-394 corridor, using the MnPASS lanes as a focus for developing better transit systems, including bus rapid transit elements.

Since the fall of 2005, transit and highway planners have met regularly to develop strategies to increase transit advantages in the I-394 corridor and surrounding areas in conjunction with future MnPASS improvements.

WHY USE MNPASS?

When asked why they would use MnPASS, commuters offered the following reasons:

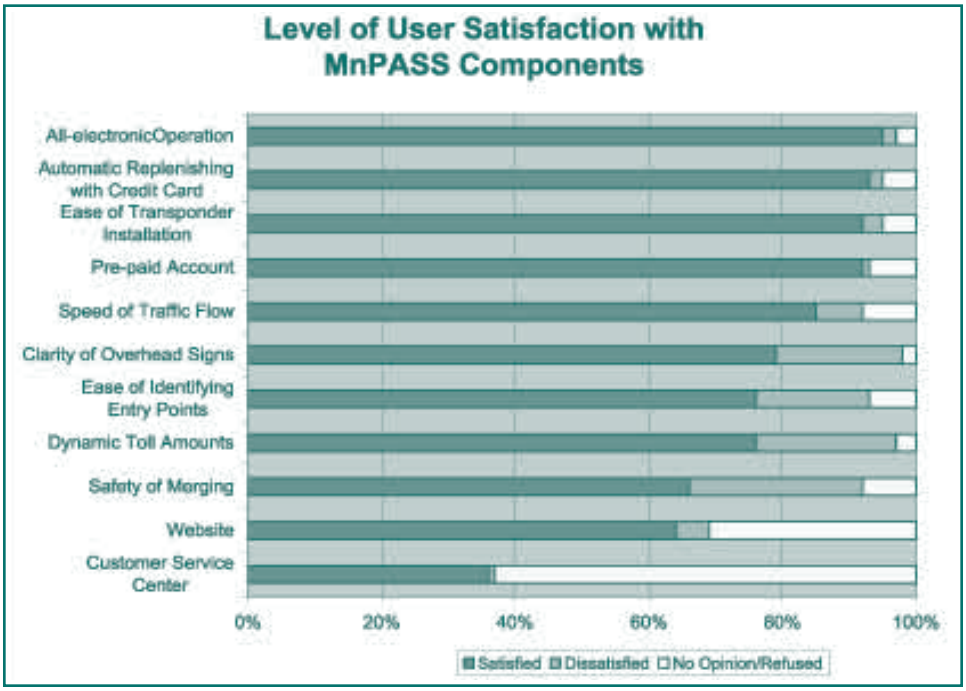
- To reduce overall travel time: 64 percent
- To reduce time spent in heavy traffic: 21 percent
- To increase the reliability of travel time: 9 percent
- To increase personal safety while driving: 4 percent
- Other: 2 percent

EARLY EVALUATION

Several months after MnPASS opened, levels of satisfaction with the system remain high. A survey conducted in late 2005 and early 2006 of about 950 Twin Cities residents who live along I-394 or I-35W, 151 of whom were MnPASS transponder owners, discovered generally strong support for allowing solo drivers to use express lanes for a fee and very strong support for MnPASS among those who use it regularly.

The survey found that transponder owners are not substantially different from other commuters. They are slightly more likely to be full-time workers, homeowners, and between the ages of 35 and 55. They also tend to have slightly larger household sizes, which might indicate children in the home. More transponder owners (75 percent) had incomes greater than $50,000 per year than do those who did not own transponders (68 percent). Interestingly, transponder owners were slightly more likely to be female than those who did not own transponders.

Whether they own a transponder or not, most of those surveyed (about 60 percent) think that congestion is a major problem in the Twin Cities. Another third of those surveyed think congestion is a moderate problem. Most feel that MnPASS reduces traffic delays. Overall, survey respondents support the idea of allowing solo drivers to use express lanes for a fee. About 59 percent of those surveyed consider it a good idea, while 29 percent describe it as a bad idea. The survey results show very little variation in support by income, education level, or gender.



Those who own transponders and use the system regularly are very satisfied with how the system operates. A survey of 151 people who are MnPASS subscribers found exceptionally high levels of satisfaction (90 percent or better) with many aspects of the system, including the all-electronic operations (no toll booths or coins), ease of installing the MnPASS transponder, the MnPASS pre-paid account system, and the speed of traffic flow within the MnPASS lanes. In addition, MnPASS users expressed high levels of satisfaction (65 percent or better) with other aspects of MnPASS, including enforcement, the clarity of signage near MnPASS access points, customer service staff for MnPASS, and the dynamic pricing system. In addition, most of those who use MnPASS rated the amount of the toll as "about right."

The most important evaluation, however, is whether MnPASS has reduced congestion and increased use of the formerly nearly empty HOV lanes. On a typical day, the availability of MnPASS moves 1,000 vehicles each morning and 600 each evening out of general purpose lanes and into the express lanes. Generally, those using MnPASS can expect a 20 mph increase in their speed, and those in the general purpose lanes will see a slight increase in speed as a result of MnPASS. Overall, these improvements not only reduce congestion, but reduce gas use and pollution as well.

Perception of Allowing Single-occupant Vehicles to Use Carpool Lane by Paying a Fee

What do you think of allowing single drivers to use the carpool lanes by paying a toll?

Panel Members			
	Good Idea	Bad Idea	No Opinion
All Respondents	59%	29%	12%

Respondents by Income			
	Good Idea	Bad Idea	No Opinion
Less than $50K	62%	25%	14%
More than $50K	58%	31%	12%

Respondents by Gender			
	Good Idea	Bad Idea	No Opinion
Male	59%	30%	11%
Female	59%	27%	14%

Respondents by Education Level			
	Good Idea	Bad Idea	No Opinion
High School or Less	56%	29%	15%
College/Trade/Vocational	63%	24%	13%
BA/BS Degree	61%	28%	11%
Graduate Work	54%	34%	12%

Panel members are randomly selected residents of the I-394 and I-35W corridors. (Survey conducted between November 2005 and January 2006, N=529)

BUT IS IT FAIR?

While toll roads have been part of the transportation system in some parts of the country for decades, Minnesotans traditionally have thought of roads as a public benefit for everyone in society. Is it fair to allow some people to pay their way out of traffic jams?

MnPASS supporters say, yes, largely because of changes in technology that have made MnPASS a system that is affordable to most people and can be used at no cost, if people wish. Those who do not want to pay to use the express lane can do so easily by finding another person to share the ride. On Twin Cities freeways, a carpool requires only a driver and one passenger. In addition, carpoolers get a break on parking—carpools can park for as little as $20 per month in downtown Minneapolis compared with as much as $150 per month for solo drivers. Buses also run for free in the express lane, and depending on an individual's schedule, bus transit can be a great value.

Those who must drive alone, though, can use MnPASS when they need it, whether that is every day or once a month. The new system involves electronic tolling with the price of a trip changing as often as every three minutes. Rush hour tolls average between $1 and $3, less than the price of a fast-food hamburger. For a person who must be somewhere at a set time—a parent picking a child up from day care, someone with a medical appointment—paying that fare may save them from other costs, financial or emotional. The fare is low enough that people from all economic levels find it worthwhile to use occasionally. A survey of corridor users shows support for allowing drivers to pay to move faster on the highway as strong at lower income levels as at higher income levels.

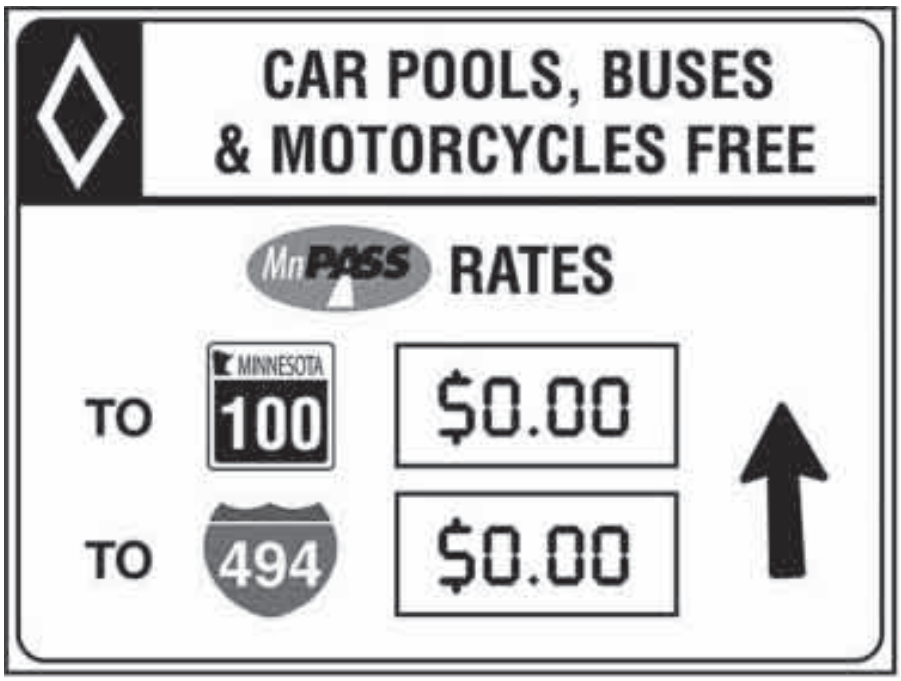
In addition, removing an average of 3,000 cars a day from the general purpose lanes helps all drivers by increasing speeds for everyone. That seems fair.

SO, HOW DOES MNPASS WORK?

MnPASS transponder

Technology makes MnPASS possible. Solo drivers who want to use the toll lane register with MnPASS on its website, by phone or fax, or by visiting the MnPASS customer service office. Drivers supply a credit card, which is pre-charged $40 for tolls to get the driver started. Once drivers register, they get one (or more) transponders—a device about the size and shape of an electronic garage door opener. The transponder is leased to the driver for $1.50 per month. The transponder is attached by a clip to the windshield of the car, so it can be moved from car to car or removed from the car completely, if needed.

As the driver approaches the entry point, signs indicate the current toll, depending on how far the driver is going. When the transponder passes under an antenna at the entry to the express lane, it sends a signal that the driver is on the road, and the appropriate toll is charged against the driver's account. The driver's account is re-charged a set fee whenever it gets below a certain level—usually $15 or one week's worth of tolls based on the driver's average usage.



MnPASS toll rate signs are posted at all entry points

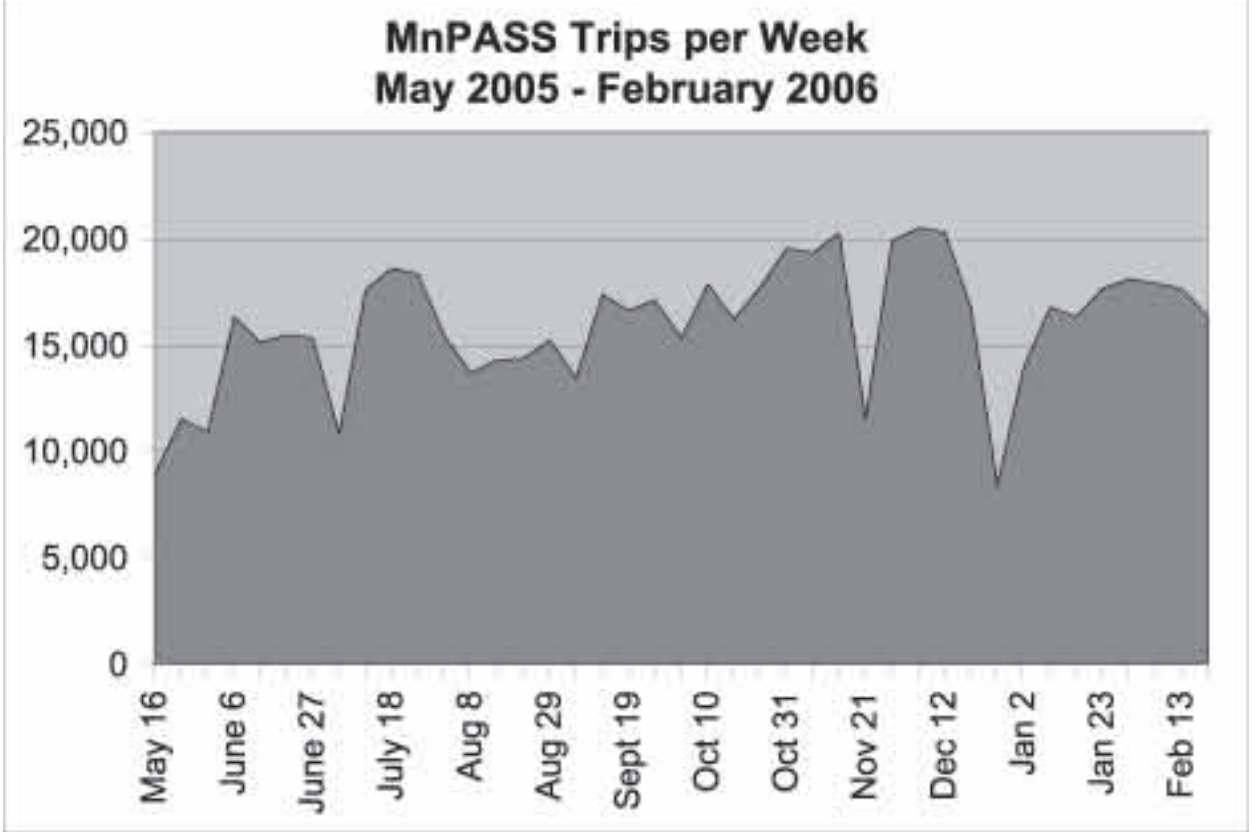
Sensors built into the freeway's pavement record how many cars are on the lane and how fast they are traveling. Every 30 seconds, this information is relayed to Mn/DOT computers, which use a formula to raise or lower the toll depending on traffic levels. The goal is to let price balance traffic levels so that vehicles—including the buses and carpool users who have entered the lane for free—always move at 50 to 55 mph. The price of MnPASS can be changed as often as every three minutes, so drivers always have up-to-date information on the toll and toll levels always match traffic levels on the system. Drivers are charged only the toll they see when entering the lane, even if the fee rises during their trip.

MNPASS: WHAT WORKS

INNOVATION DRIVES MNPASS. The project involves new technologies—as well as established ones—and a different approach to using high-occupancy vehicle lanes in Minnesota. While no definitive conclusions can be drawn about what works and what doesn't in value-pricing operations yet, some early conclusions can be drawn from the project and its implementation.

TECHNOLOGY WORKS. The technology that powers MnPASS—the transponders, dynamic price-setting mechanisms, web registration tools, and enforcement technologies—all appear to work well and enjoy great acceptance from system users. The system for charging tolls is extremely accurate. Dynamic pricing has maintained speeds in the 50 to 55 mph range, and tolls during peak hours average $1 to $3. Carpool and transit service have not been slowed, and solo drivers choosing to use MnPASS are getting a value for their money. An early side-by-side comparison showed that drivers in the express lane saved about an hour a week in commute time at an average weekly toll cost of $10–15.

PHYSICAL BARRIERS AREN'T NECESSARY. The double white lines that limit entry and exit from the express lane to specific access points act as virtual barriers and are, for the most part, respected by drivers. The number of violators in the express lane is lower than it was when the lane was restricted to high-occupancy vehicles. Enforcement officers maintain a strong presence in the area, but generally drivers know the rules and obey them.



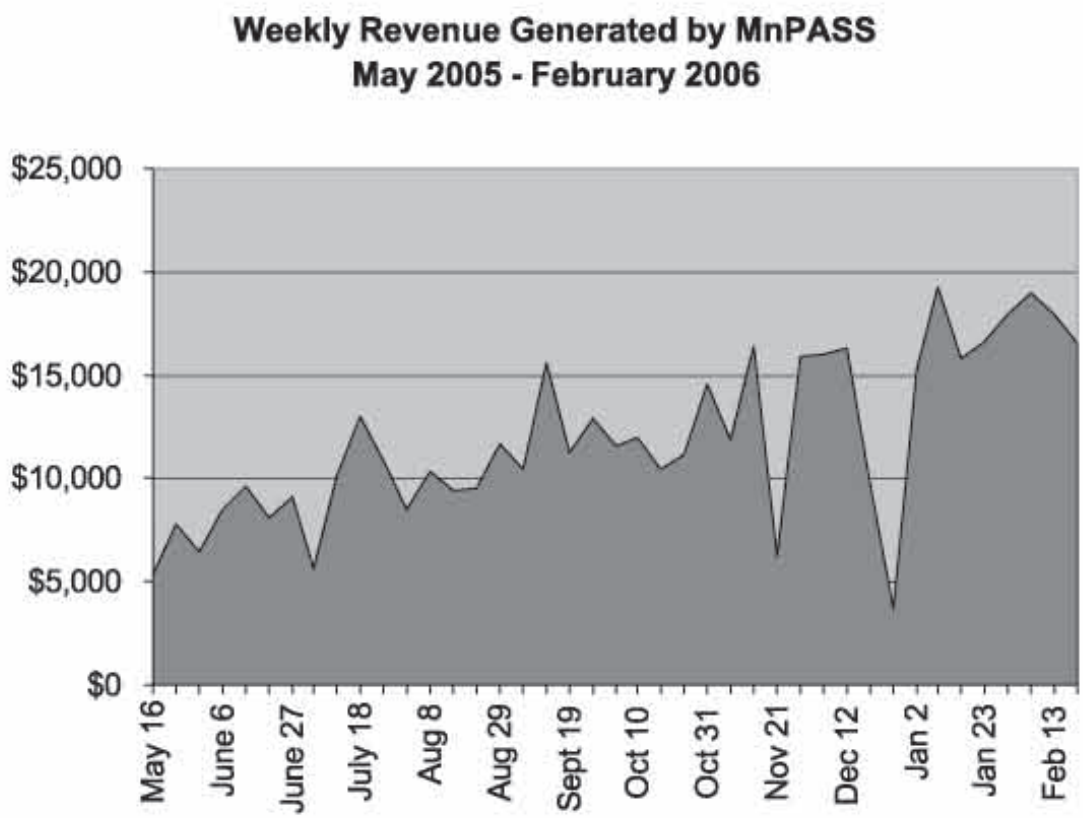
DEMAND IS THERE. In its first eight months of operation, commuters leased 9,200 transponders. Most MnPASS users do not use the express lane every day. On average, one in four users drives in the toll lane each day. Early surveys of MnPASS users indicate high levels of satisfaction with the service.

THE SYSTEM IS FLEXIBLE. When MnPASS was first opened, planners decided to charge the toll rates all the time. This 24/7 approach caused unanticipated congestion outside of rush hours, so operators altered the hours of operation, which relieved the congestion. In addition, toll rates have been adjusted to bring toll collections more in line with system costs. Dynamic pricing offers system operators the flexibility to respond to changing situations.

THE FREEWAY IS BETTER USED. MnPASS began because of concern about the underuse of high-occupancy vehicle lanes along I-394. Allowing solo drivers to use the lanes for a fee will increase their use—by about 20,000 cars per week as of six months after the program started.

PEOPLE NEED INFORMATION ABOUT VALUE PRICING. While gaining acceptance nationwide, value pricing is a relatively new concept. Many drivers imagine that toll lanes mean tossing coins into a basket. The implementation of MnPASS has convinced planners that when people understand how MnPASS works and why it has been implemented, acceptance of the system increases.

MNPASS IS MEETING ITS GOALS. The main purpose of MnPASS is to get better use out of the HOV lanes and, secondarily, to ease congestion. These goals are being met. MnPASS eventually may pay for its own operations and help supplement transit services in the corridor as well.



VALUE PRICING CATCHING ON IN MANY CITIES

The concept of allowing drivers to use express lanes for a fee is catching on all over the United States. Under names like "FasTrak" or "Quick Ride," other congestion pricing systems are finding acceptance with commuters and transportation and transit advocates. The realization that congestion costs billions of dollars in lost work time, decreased productivity, and increased pollution has prompted the Federal Highway Administration to encourage value-pricing projects through a variety of grants. Value-pricing projects are under consideration in about a dozen cities from New York to Portland. The Twin Cities were among the pioneers in value pricing, but were not the first to try it. MnPASS-like systems already are in use in:

SAN DIEGO: The I-15 corridor near San Diego has allowed some form of toll use since 1996 when the eight-mile stretch of road was opened to a limited number of drivers who bought monthly passes. Since 1998, the system has operated with electronic tolling and dynamic pricing, the first such system in the country. The system receives high marks from commuters: 88 percent of users approved of the project in a 2001 survey, as did two-thirds of non-users. Tolls help support transit in the corridor, specifically the Inland Breeze Express Bus.

I-15 FasTrak Lane in San Diego, California

ORANGE COUNTY: State Route 91 in Orange County is one of the most heavily traveled roads in Southern California, with more than 250,000 vehicles traversing it each day. Since 1995, a public–private partnership has operated a 10-mile stretch of the road as a toll lane with no entrances or exits. The toll lanes were built with private investment and operate using electronic tolling. During peak periods, more people travel on the two toll lanes on SR-91 than on the four adjacent "free" lanes. The greater volume of drivers and passengers is due to the toll lanes operating at a more optimal speed, allowing a free flow of traffic while the other lanes often break down into stop-and-go conditions. Women between the age of 30 and 50 are the most likely to use the lanes. The most commonly cited reasons for using the toll lane are time savings (an average of 30 minutes) and safety.

LEE COUNTY, FLA.: To manage congestion before traffic delays grew too much, Lee County, Fla., instituted value pricing in 1998 on two of the four bridges that connect Cape Coral and Fort Myers. The electronically collected toll is only $1, but commuters are offered a 50 percent discount if they travel just before or just after peak travel periods. The county is experimenting with other value-pricing ideas to manage congestion in this busy, growing area.

HOUSTON: The Katy Freeway, just west of downtown Houston, has had high-occupancy vehicle lanes since it opened in 1984. The lanes require three passengers in a car to ride for free. In 1998, the Texas Department of Transportation opened the lanes to two-person carpools during peak hours for a $2 fee. (In off-peak hours, two-person carpools ride free.) The system has helped stabilize usage of the lanes.

SR-91 Express Lane in Orange County, California

THE FUTURE: WHAT'S NEXT FOR MNPASS?

Is congestion pricing the future for more Minnesota drivers? It may well be. MnPASS was created to provide an alternative for drivers and to encourage greater use of the HOV lanes through innovative approaches to operations and technology use. While not perfect, the system has the benefit of being flexible enough to change as needed. System operators made alterations in the program within its first few months and expect to tweak operations as they gain more experience with congestion pricing. "We've been pleased that when we've had some challenges, we've been able to adapt the system," says Nick Thompson, MnPASS director. "It's not like building a bridge where you can't change it. We get really good data on a minute-by-minute basis that we can use to make decisions."

Mn/DOT plans to have at least a full year of operational experience with MnPASS before proposing other projects. However, the initial success of MnPASS—and its potential to improve traffic flow without the expense of building new roads—has made it attractive to regional planners. In August 2005, Mn/DOT entered into a Memorandum of Understanding with the Metropolitan Council, the regional planning organization for the seven-county metropolitan area, to "actively consider MnPASS lanes for all future highway expansion projects in congested corridors." While the memorandum does not require that MnPASS lanes be included in future road projects or that highways with high occupancy vehicle lanes be converted to MnPASS, it acknowledges that congestion pricing can be an effective tool to manage traffic and can help improve other transit systems. The MnPASS law states that one-half of excess revenues from MnPASS operations must be directed toward transit improvements. Income is expected to increase in years to come as

overall traffic in the corridor increases, and MnPASS supporters expect the project to be fully self-sufficient within a few years. Planning to improve transit along the corridor already has begun.

Despite concerns about revenue, MnPASS appears well on its way to achieving its initial goal: increasing use of the HOV lanes and better managing traffic. Says Henry Van Dellen, "Congestion relief is real but not drawing rave reviews." The system's biggest supporters are commuters, like Ann Johnson, who value the reliability congestion pricing ensures. "To me, that is the most important thing," says Johnson. "It gives me reliability so I can schedule my life."

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Appendix I:

Equity and High Occupancy Toll Lanes: A Literature Review and Minnesotans Perceptions About the I-394 High Occupancy Toll Lanes

Megan Mowday

Equity and High Occupancy Toll Lanes: A Literature Review and Minnesotans Perceptions About the I-394 High Occupancy Toll Lanes

By: Megan Mowday

Words: 6250

Introduction

As traffic congestion has worsened across the country, the need to mitigate this growing problem has become urgent. Value pricing, or congestion pricing, has emerged as an innovative concept aimed at reducing congestion by fully utilizing existing road capacity. In this system, single occupant vehicles (SOV) can use high occupancy vehicle (HOV) lanes for a fee. The success of value pricing can be seen through pilot projects in Southern California and Houston, on routes SR-91, I-15 and the Katy Freeway. These projects have gained community acceptance and support, and in the case of I-15, extension of the toll lanes has been given support from nearby residents.

As more and more states have become interested in establishing value-pricing programs, equity issues associated with the program need to be carefully examined. Research on the existing programs show that high occupancy toll (HOT) lanes are widely supported among individuals of all income levels. Experience gained from the pilot projects have demonstrated that the equity concerns have not been validated. Rather individuals residing along the corridors where the projects have been implemented have shown strong support for the program. This support has not varied widely between individuals

from different socio-economic backgrounds. The following literature review of studies on existing value pricing projects clearly demonstrates that toll lanes can and have been operated equitably and gained community support.

Part I: Literature Review of Equity and Pricing

The Income Factor

In order to determine how equitable value pricing is one must determine if the costs and benefits are spread evenly among income classes. If one group of individuals disproportionately pays for the system while not receiving their share of the benefits, then the program must be determined to be inequitable.[1] Studies on existing value pricing programs demonstrate that this is not the case. In the programs currently operating in the United States, observations have been made that a wide range of income groups use the value priced lanes with differing levels of frequency. Studies have shown that individuals with incomes greater than $100,000 are more than twice as likely to use the toll lanes for 50-percent of their peak trips than are commuters earning less than $40,000. Toll increases have the greatest impact on middle-income commuters.[2] On SR-91 in California, the percentage of trips on toll facilities for the $40,000 to $60,000 income category fell from 40-percent in 1996 to 25-percent in 1999. The decline of trips for middle income individuals can be attributed to toll increases, as well as a growing resistance to paying tolls despite the increase in congestion along SR-91.[3] Studies of SR-91 in California have shown that at any given time about one-quarter of the vehicles in the toll lanes belong to high-income individuals, while the remainder of users are low and

[1] Evans IV, John; Bhatt, Kiran and Turnbull, Katherine. Pg. 36
[2] Evans IV, John; Bhatt, Kiran and Turnbull, Katherine. Pg. 37
[3] Sullivan, Edward. 2000. "Continuation Study to Evaluate the Impacts of the SR-91 Value Priced Express Lanes: Final Report." Cal Poly State University. Pg. 80

middle-income individuals.[4] The trend of a greater number of higher income drivers in the toll lanes is observed across all modes and the differences are statistically significant among income groups when observing if a driver chooses a tolled facility or free lane.[5]

A commuter's decision on whether to use the express lanes hinges on many factors and does not solely depend on price or income level. Studies have shown that lower income individuals face the greatest financial harm when they are denied adequate choices. Lack of choice can result in lost work or late fees that could have been avoided had they been provided a viable choice, such as value-priced lanes.[6]

Women's Equity

Value pricing has the ability to positively impact female drivers. The system effectively addresses female specific needs that arise from working full time and being the primary family caretaker.

In a 1993 study, by Rosenbloom and Burns, of commuting trips in the Tucson, AZ region it was found that women were more likely to drive alone to work than men for every income category except household income greater than $80,000. The study also uncovered that for comparable distances women's commuting trips took longer.[7] Potential reasons for the longer trips include dropping children off at day care or other trips related to home maintenance. The study also found that women were less likely to

[4] Federal Highway Administration. 2003. "A Guide for HOT Lane Development." Chapter Four. Pg. 8
[5] Sullivan, Edward. Pg. 80
[6] Poole Jr., Robert and Orski, Kenneth. 2003. "HOT Networks: A New Plan for Congestion Relief and Better Transit." Reason Public Policy Institute. Policy Study 305. Pg. 15
[7] Giuliano, Genevieve, "Equity and Fairness Considerations of Congestion Pricing" School of Urban and Regional Planning, University of Southern California. Published in TRB's: Curbing Gridlock: Peak Period

take advantage of employer offered trip reduction incentives, such as compressed work schedules. In addition to stricter schedules, women have been shown to make more trips than men on a daily basis. As women often have rigid schedules and make more trips, as the above research indicates, HOT lanes provide women with a means of avoiding congestion, while at the same time allowing them to retain their schedule.

In 1999, Rosenbloom found that 23-percent of full-time working mothers and 66-percent of part-time working mothers have non-traditional work hours. These non-traditional work hours emphasis reliance on driving alone, as transit runs more frequently during peak periods and the amount of individuals needing to carpool during non-peak periods decrease.[8]

HOT Lanes Vs. The Traditional Transportation Financing System

The traditional transportation financing system is inequitable. The current means of generating revenue for road improvements is regressive. Currently, the gas tax funnels money for improvements to federal highways into the highway trust fund. All motorists, regardless of income, have to pay exactly the same amount in gas taxes for the same amount of travel, thus placing a more severe impact on lower-income drivers. As might be expected, drivers with higher incomes tend to drive further distances than lower income drivers. Those with higher incomes have been shown to spend more annually on transportation, which indicates that they drive further distances than their low-income

Fees to Relieve Traffic Congestion" Volume 2. 1994, page 263

[8] TCRP Report 49, "Using Public Transportation to Reduce the Economic, Social and Human Costs of Personal Immobility" Transportation Research Board, 1999. pg. 23

counterparts.[9] Therefore, they tend to receive a greater benefit from the nation's road system. Some states have not been able to fund road improvements solely from their share of the highway trust fund. The inability of the highway trust fund to support road improvements is in part due to the nation's vehicle fleet becoming more fuel-efficient, which translates into less gas bought for the same amount of miles traveled. States have been forced to subsidize some road improvements from their general tax fund. The general tax fund is supported by income taxes. In theory, income tax is not as regressive as the gas tax, as individuals are taxed based on their income level.

In contrast, value pricing only taxes direct users and typically dedicates revenues to corridor improvements, whether these improvements are transit or highway related. The user will directly pay for maintenance of the facilities that they use, instead of their taxes being dedicated for road improvements that they may not use, as is the current highway tax system.

Case Study: SR-91 in Orange County, CA

California's first value pricing project was on SR-91 in Orange County. Similar to its counterpart in San Diego, area residents have shown strong support and utilization of the Express Lanes on SR-91. In 1999, 55-percent of drivers in the corridor owned a transponder. The top three reasons for not owning a transponder, include: too expensive; toll lanes are not on their route; and they felt they would not use the toll lanes enough to justify purchasing a transponder.[10]

[9] Rice, Lorien. 2004. "Transportation Spending by Low Income California Households: Lessons for the San Francisco Bay Area." Public Policy Institute of California. Page VII.
[10] Sullivan, Edward. Pg. 80

In a survey, 42-percent of females and 28-percent of males reported using the toll lanes on SR-91 for 50-percent of their trips. Motorists between the ages of 35-54 were shown to be the most willing to pay for peak period travel.[11] The survey also found that use of the lanes is proportional to income level even though significant numbers of customers on the lanes can be found in all income levels.[12] Among the individuals who use SR-91, there has been no significant difference in the degree of approval for the Express Lanes among different income groups.[13]

Between 1996 and 1999, the proportion of commuters who use the toll lanes some of the time increased dramatically from 28.2-percent to 42-percent.[14] However, this increase comes at a time when it was observed that some individuals have shifted their travel pattern out of the corridor. In a 1999 survey, 21-percent of participants stated that they no longer regularly travel in the SR-91 corridor in the peak period, even though they had done so in the past two years and had not switched residences or jobs. 86-percent cited worse traffic conditions; 18-percent relayed increased driving stress; and 9-percent pointed to increased tolls as the major reasons why they no longer used the corridor. It was found that females and low-income commuters were significantly more likely to alter their driving behavior than other groups.[15] The trend of low-income and female commuters changing their travel patterns due to traffic conditions and increasing tolls needs to be examined further in the future to determine how sensitive certain

[11] Evans IV, John; Bhatt, Kiran and Turnbull, Katherine. Pg. 39
[12] Poole Jr., Robert; and Orski, Kenneth. Pg. 16
[13] Evans IV, John; Bhatt, Kiran and Turnbull, Katherine. Pg. 39
[14] Sullivan, Edward. Pg. 78

socioeconomic groups are to changes in toll price and worsening congestion. The sensitivity to toll increases has a large impact on the equity of HOT lanes.

Interviews dealing with perceptions of equity on toll lanes were conducted with 26 toll road leaders involved in the decisions to build and/or manage toll roads and two focus groups, comprised of citizens in north and south Orange County. This research concluded that individual's perceptions of the roads being equitable were closely related to other proposed alternatives to the project and the perceived value relating to the cost of the lanes.[16] Many of the interviewees in Bournet's study viewed the equity of toll roads as it compared to other possible alternatives. Survey results indicated that drivers may accept tolls during peak period travel if the proceeds are dedicated to highway improvements that may not have occurred otherwise. Support for and opposition to toll roads during the survey did not indicate that income level dictated opinion.[17] Bournet further found that the highest levels of support for the toll lanes was given by individuals who viewed toll lanes as providing congestion relief on the general lanes.[18] Bournet identifies the following groups as those most disadvantaged by toll lanes: individuals who are less wealthy, individuals who travel on a small portion of the road where tolls are not charged by distance traveled, and the elderly.

Case Study: Katy Freeway in Houston, TX

The Katy Freeway's HOT lane system differs from the California models. In California, SOVs are allowed to pay a fee to ride in express lanes normally reserved for carpools and

[15] Sullivan, Edward. Pg. 79
[16] Bournet, Marlon; Dimento, Joseph and Macey Gregg. Pg. x
[17] Boarnet, Marlon, Dimento, Joseph and Macey, Gregg. Pg. 16

public transportation. However, the Katy Freeway requires that all users be part of a carpool. Carpools with three or more persons ride for free, while carpools of two persons pay $2 to use the facility. SOVs are not allowed.

Stockton concluded in his study of the Katy freeway that an individual's value of travel time varies widely due to the variety of travel alternatives; the socioeconomic characteristics of the traveler, such as income, wage rates, age, sex and car ownership; and the purpose of the trip being made.[19] Further findings in this study showed that respondents felt that the HOT lane fee on the Katy Freeway was moderately expensive. Despite feeling that the lanes were moderately expensive, users indicated that price is not the primary factor when they decide whether or not to use the lane.[20] The respondents indicated that while decisions to use the toll road were partially based on price, other factors such as purpose of the trip played an important role in their decision.

The study found that 81-percent of the users are between the ages of 26-49 years old, with 56-percent of these users falling between the ages of 38 to 49. Non-users in the survey stated that they had not taken part in the value pricing pilot program because:

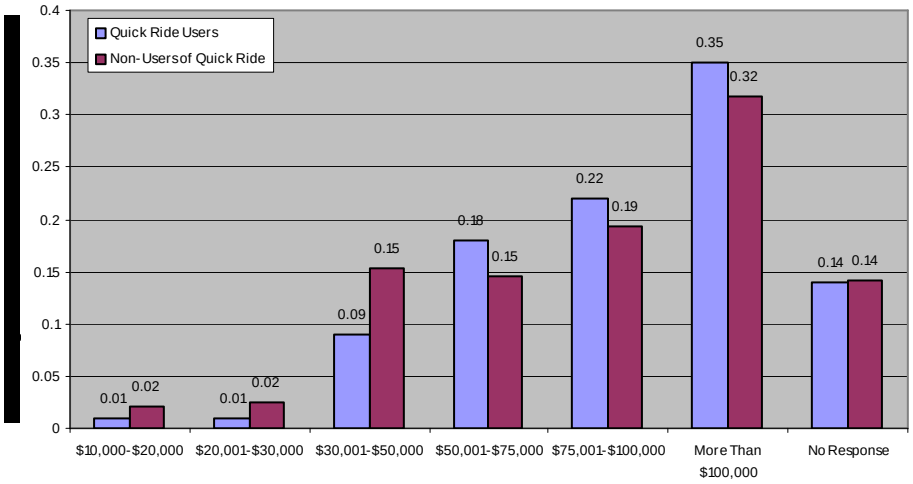
- 16-percent did not have anyone to carpool with
- 15-percent did not know how to sign up
- 14-percent believed that HOV lanes should be free

[18] Boarnet, Marlon, Dimento, Joseph and Macey, Gregg. Pg. 18
[19] Stockton, William; Hughes, Paula; Hickman, Mark; Miranda Alejandro; Brown, Quanta and Shin, Sung Wong. 2000. "An Evaluation of the Katy Freeway HOV Lane Pricing Project." Texas Transportation Institute. Coverpage

- 12-percent believed that the price is too high
- 12-percent did not want to carpool
- 12-percent had other concerns[21]

The survey indicated that individuals with higher income and individuals that hold administrative and clerical positions make more frequent use of the lane.[22] The following chart is the income distribution of users and non-users on Quick Ride as found in the Stockton survey.

Chart One: Income Levels Among Users and Non Users of Quick Ride



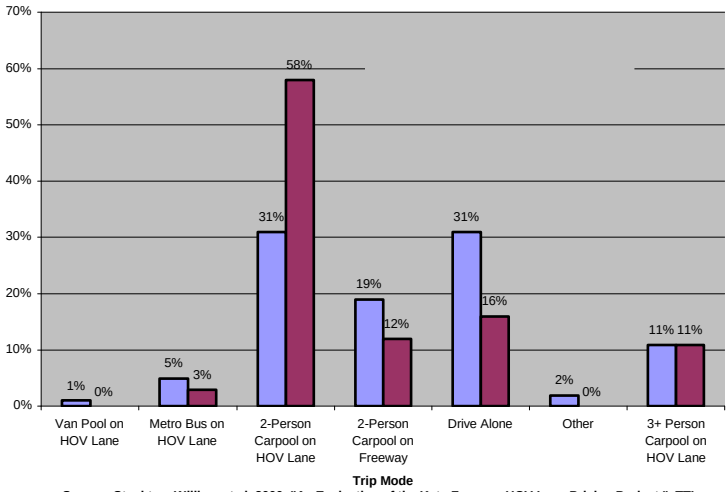
Source: William Stockton, et al. 2000 "An Evaluation of the Katy Freeway HOV Lane Pricing Project." Texas Transportation Institute.

While the data demonstrates that there is not significant income difference between users and non-users in QuickRide, it is interesting to note that the percentage of non-users is

[20] Stockton, William; Hughes, Paula; Hickman, Mark; Miranda Alejandro; Brown, Quanta and Shin, Sung Wong. Pg. 16
[21] Stockton, William; Hughes, Paula; Hickman, Mark; Miranda Alejandro; Brown, Quanta and Shin, Sung Wong. Pg. 27
[22] Stockton, William; Hughes, Paula; Hickman, Mark; Miranda Alejandro; Brown, Quanta and Shin, Sung

larger than the number of users in all income ranges under $50,000. This trend reverses itself in income ranges exceeding $50,000.

Chart Three: Trip Mode Before and After Quick Ride



Source: Stockton, William et al. 2000. "An Evaluation of the Katy Freeway HOV Lane Pricing Project." TTI

The responses indicate that two person carpools on the HOV lane gained a greater share on Katy Freeway after QuickRide was implemented. These gains were received from two-person carpools on the freeway, SOVs and MetroBus users on the HOV lane.

Katy Freeway has been successful in increasing carpooling and decreasing SOVs. While the usage tended to increase with income level, it should be noted that the corridor is generally high income, so it should not be surprising that greater numbers of individuals with high incomes use the facility. Also, at every income interval there was a comparable amount of users and non-users.

Wong. Pg. 46

Additionally, the increase in carpooling should be highlighted. A significant share of the rise in two person carpools came from those who used to drive alone. As the majority of the users of QuickRide are professionals and has higher incomes it is logical to assume that some of the increases in carpooling occurred in this group. This is especially important, as previous work has been done with minimal results on trying to encourage carpooling, especially among those who normally drive alone. One trend that accounts for increases in carpooling is the informal carpooling system at entrance points to the highway or in park and ride lots. In this system, which is also known as "slugging", individuals stand in line at specified points and drivers pick up carpoolers going to similar places in the city, so that they can use the carpool lanes. Slugging corrects some of the problems encountered through formal carpooling, such as inflexible schedules. The QuickRide program has been extremely successful in this regard and should be looked to as an example of how to encourage carpooling among choice riders.

Arguments Against Value Pricing

Value pricing, like any other novel transportation policy aimed at efficient resource allocation, has its critics. These critics have made various assertions that the system will be inequitable or will not work correctly. The claims have been made despite successful pilot projects, which have demonstrated that travelers in all socioeconomic backgrounds are willing to pay a fee to bypass congestion. The following discussion focuses on the arguments that critics of value pricing have made against implementation of HOT lanes.

In Bournet's survey, one respondent thought that HOT lanes would promote land use patterns that force greater reliance on the private automobile, rather than provide transportation alternatives to county residents.[23] This concern emphasizes that HOT lanes encourage continued solo use of private automobiles.

In addition to emphasizing driving over other transportation methods, HOT lanes foster sprawl because they expedite the amount of time necessary to get to larger housing stock in exurban areas. To address this concern, HOT lane proposals should be done in areas that provide strong mass transportation systems and use excess revenue to supplement public transportation in the corridor. The excess revenue dedicated to transit should provide more frequent transit service and upgraded transit vehicles. Through improved transit options, transit riders will benefit from the increased amount of vehicles on the lanes and will be encouraged to keep riding transit even though they now have the option of driving alone on the less congested lanes.

[23] Boarnet, Marlon; Dimento, Joseph and Macey, Gregg. 2002. Toll-Highway Finance in California: Lessons from Orange County. California Policy Research Center. University of California. Pg. 18

Recommendations

Value pricing projects have shown that conversion of HOV lanes to HOT lanes provides choice for drivers that were previously unable to take advantage of existing roadway capacity. The operating value pricing projects demonstrate that individuals of all income levels can be found on the priced facilities. However, agencies implementing value pricing projects should carefully examine the mix of incomes on the roadway and the impact that increasing fees has on lower income individuals. If the higher prices cannot be avoided, agencies can mitigate the negative impact on those individuals priced out of the facility through either a rebate system or investing in public transportation in the corridor.

Part II: Minnesotans Perceptions of HOT Lanes

Introduction

Equity issues associated with HOT lanes are a timely issue in Minnesota, as the state's first toll lane (MnPASS) opened in May 2005 on I-394. As previously noted, opponents of toll lanes usually point to equity issues as an argument against tolling projects. In the past the Minneapolis-St. Paul area has looked at HOT lane projects but never went ahead with implementing toll lanes. The previous effort was defeated after a highly visible political figure publicly announced his opposition. The opposition spurred public resistance to opening a HOT lane in the metropolitan area. Previous public perception of tolling in the Minneapolis-St. Paul metropolitan area can be considered through looking at a Citizen's Jury on HOT lanes held by the State and Local Policy Program in June 1995. The Citizen's Jury did not recommend building a HOT lane in the metropolitan

area. However, by 2003 congestion had worsened in the Twin Cities and residents became more willing to try congestion pricing. Additionally the political climate regarding congestion pricing changed when Governor Pawlentey took office. In 2003 the Minnesota Legislature passed a law allowing conversion of the I-394 carpool lanes into HOT lanes.

Part II of this paper looks at Minnesotans perceptions of the new lanes, as well as past perceptions. For all of the data sources, except the Mn/DOT Omnibus survey, only opinions of residents in the Minneapolis-St. Paul metropolitan area were measured.

Citizens Jury

In June 1995, the State and Local Policy Program, in conjunction with Mn/DOT, Metropolitan Council and the Jefferson Center sponsored a weeklong citizen's jury aimed at identifying the public's perceptions of traffic conditions and the transportation finance system. The citizens' jury focused on congestion pricing as a potential solution. The jury was randomly selected from the thirteen county metropolitan area. Selection for the 24 jury members was based on the following six variables, which were intended to produce a balanced jury: age, race, gender, education, geographic location and commuting status.[24] The jury was instructed to examine the issue of congestion pricing, which includes looking at traffic congestion and projected shortfalls in transportation funding. Expert testimony was provided to the jury and the participants were given a chance to ask those testifying questions.

[24] David Van Hattum, Maria Zimmerman, "Buying Time: Guidebook" State and Local Policy Program, Humphrey Institute of Public Affairs, Volume II, 1996, Pg. 91.

Citizens Jury Findings

After examining the problem for five days, the jury rejected areawide pricing and gave support for spot pricing under certain circumstances. During consideration of pricing, the jury voted on six key questions. The questions and outcomes are:[25]

1. Is there a current problem with traffic congestion in the thirteen county metropolitan area? 8 Yes; 16 No
2. Is there a transportation funding problem? 22 Yes; 1 No; 1 Not Sure
3. Would you like to see a pilot project on congestion pricing tried in some other metropolitan area? 18 Yes; 2 No; 4 Not Sure.
4. Would you like to see the Twin Cities metropolitan area chosen for a pilot project? 7 Yes; 11 No; 4 Not Sure
5. Can congestion pricing be an effective strategy to address present and impending problems of traffic congestion and to provide stable financing for surface transportation improvements? 7 Yes; 17 No
6. Do you support the limited use of spot tolls? 12 Yes; 8 No; 4 Not Sure

The citizens jury indicates that in 1995, residents in the Twin Cities metropolitan area were not convinced that congestion is a problem or that tolling would be the correct solution. One reason for the shift in opinion towards support of the current project is the growth experienced in the metropolitan area. In 1990, the Minneapolis- St. Paul Metropolitan Statistical Area (MSA) had 2,464,124 residents. By 2000, there were 2,968,806 people living in the Minneapolis-St Paul MSA, which is an increase of

[25] David Van Hattum, Maria Zimmerman, Pg. 92.

approximately a half million residents.[26]

Focus Groups

In February and March 2004 the State and Local Policy Program at the Humphrey Institute of Public Affairs conducted focus groups in conjunction with Mn/DOT and Cook Research. The intent of the focus groups was to determine the public's perceptions of the new lanes and driving conditions in the I-394 corridor. Three focus groups were held with SOVs, one with carpoolers and one with bus riders. All participants were randomly selected. This section of the paper relies on videotapes of the proceedings to determine Minnesotans perceptions of HOT lanes.

Focus Group Findings

The majority of participants did not cite concerns with the equity of the proposed HOT lanes when giving initial perceptions of the project. After discussing the project, many participants were concerned about the effect the lanes may have on lower income individuals. One focus group rationalized that society charges for many things that lower income individuals cannot afford and that this is just the latest charge. They went on to predict that the lower income drivers would form carpools or use transit to take advantage of the lane.

Most of the focus groups felt that many drivers would accept the lane. They brought up that small charges, such as those paid for designer coffee, are routinely absorbed into budgets. The fee for using the lanes was compared to the cost of Starbucks coffee and it

[26] U.S. Census, "American Fact Finder" Summary File 1, 1990, 2000, factfinder.census.gov

was predicted that many drivers would end up paying for the convenience of using the lanes. A few individuals were upset that those with money would be able to escape the inconvenience of congestion, while the rest of the working class population would still have to sit in traffic.

Additional concern was voiced in all of the focus groups for the carpoolers and transit riders that are currently enjoying the lanes. Some individuals thought that transit ridership and carpooling would decrease because now there is an alternative to using the lane. Others thought that the lanes are only fair if those currently using the lane are not delayed by the extra cars on the lane. The carpool focus group expressed concerns that their trip would change as a result of the HOT lanes.

While support was mixed for the project, the majority of participants did say that they would use the lanes at least periodically. Acceptance of the project seemed to rely on adequate enforcement, the cost of the lanes, no loss of quality to carpoolers and transit riders and revenue distribution. Most participants indicated that they would be willing to pay an extra fee to avoid traffic on specific occasions. However, they indicated that their willingness to pay was directly linked with the cost of the tolls. The majority of individuals indicated that they would not be willing to pay more than $2.50 for a one-way trip under normal circumstances. None of the participants indicated that they would switch modes in response to the new lanes. Bus riders and carpoolers stated that they would only use the lanes as an SOV on special occasions, but still remain on transit for the majority of the time. The SOV groups were more diverse in their anticipated usage

of the lanes. Some felt that they would pay the fee regularly to reduce stress in their lives, while others were adamantly opposed to using the lanes. The most common sentiment of SOVs was that they would obtain a transponder and use the lanes occasionally.

Panel Survey

In November and December 2004, the State and Local Policy Program, in conjunction with NuStats conducted a random panel survey of residents in the I-394 travel shed. 1,000 surveys were conducted over the phone to determine attitudes and perceptions regarding: the I-394 MnPASS project; congestion in the corridor; method of toll collection; enforcement issues; toll rates and travel time and reliability. Respondents were chosen using random digit dialing.

The panel survey is the first in a series of three. The same respondents will be contacted for the following two surveys, with additional respondents added in. A smaller group of respondents from the I-35W travel shed was included in the survey as a control group. The control group will help decipher if changes in travel behavior result from HOT lanes or are due to other driving conditions or trends affecting the entire metropolitan area.

Panel Survey Composition

Respondents were 18 years of age or older and had traveled on I-394, Highway 55, I-35W or Highway 77 during rush hour at least once in the five weekdays prior to the survey. The following is the age distribution of survey respondents:

18-24	2-percent
25-34	16-percent
35-44	21-percent
45-54	26-percent
55-64	20-percent
65+	15-percent

The following is the income breakdown for survey respondents. The percentage of individuals in that income category in the surveyed travelshed during the 2000 Census is provided in parenthesis.

$30,000 or less:	6% (20%)
$30,000 to $49,999:	12% (20%)
$50,000 to $74,999:	16% (22%)
$75,000 to $99,000:	21% (15%)
$100,000 to $124,999:	14% (9%)
$125,000 to $149,000:	8% (5%)
$150,000 or more:	14% (10%)
Refused:	9%

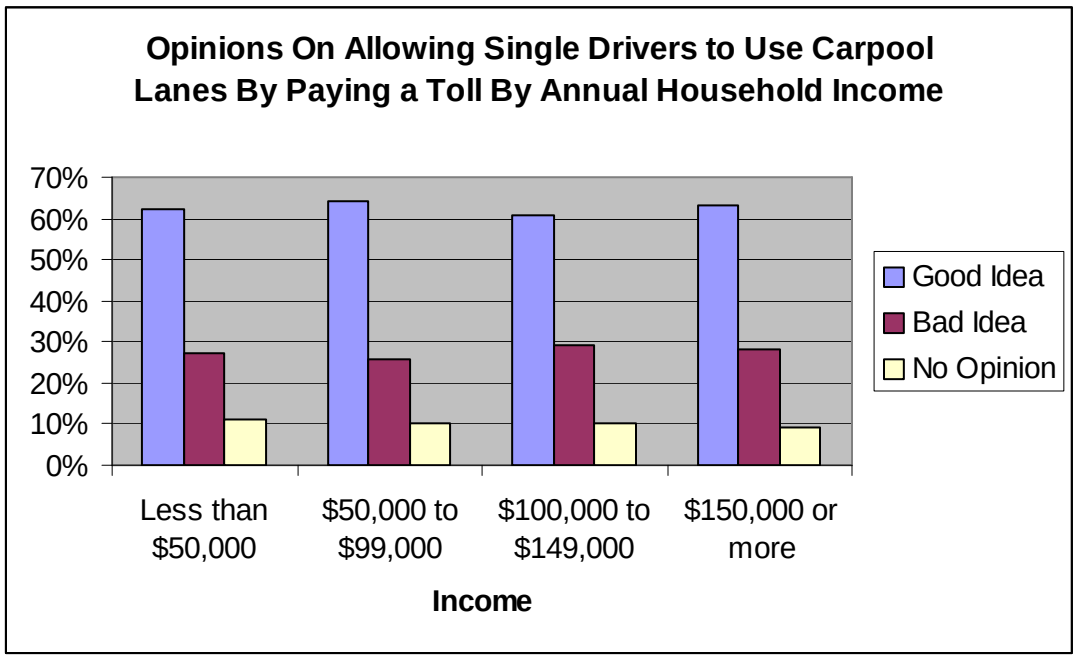
The above income breakdown indicates that survey results are skewed towards upper income individuals, as they under-represent individuals earning less than $75,000 and over-represent individuals earning incomes greater than $75,000.

Panel Survey Findings

The survey asked participants what they knew about the project as an open-ended question. The majority of respondents stated that the lanes would charge a fee and/or charge SOVs to use the carpool lanes. One in five respondents aware of the program knew that electronic toll collection would be utilized. Only five respondents or less than one-percent stated that only the rich would use the lanes. However, when asked what they thought about allowing SOV's to pay a toll to use the carpool lane, 8-percent thought that this concept only benefits the rich. Additionally, when asked what respondents thought about operating the toll lane program 24-hours per day, 4-percent cited again that this project only benefits the rich. Although, this is an increase in respondents citing equity concerns with the concept, the vast majority did not indicate any concerns about only the rich being able to use the new lanes. One reason for the low citation of equity concerns is that more than half of those polled are in households earning more than $75,000 a year. The low percentage of respondents indicating perceived inequity of the program is important when determining the perceptions of Minnesotans in the Twin Cities region regarding HOT lanes. The low incidence of equity being brought up demonstrates that residents do not equate the MnPASS program with unfairly burdening low-income drivers.

The survey also asked participants if allowing single drivers to use the carpool lanes was a good or bad idea. 63-percent of respondents thought that the MnPASS concept was a good idea. Participants in the I-394-travel shed (64-percent) were slightly more supportive of the concept than those in the I-35W travel shed (58-percent). 27-percent

thought that MnPASS is a bad idea and 10-percent had no opinion. 22-percent of respondents thought that operating the toll lanes 24 hours per day would result in a better use of the lanes and 17-percent stated that the toll lanes would add new capacity to the roadway. The following chart is the breakdown by household income groups of opinions on allowing single drivers to use the carpool lanes by paying a toll. The chart clearly shows that there is no difference in opinion across all of the income groups.



The stated preference section explored factors influencing willingness to pay for the HOT lane. They found that income level and age were related to willingness to utilize the MnPASS program. Not surprisingly, those with high incomes were most likely to pay to use the lanes and drivers under 25 and over 60 were the least likely to utilize the program. Commuters were more likely to use the lanes than drivers making trips for other purposes. Drivers who have adjusted the times that they make their trips in response to congestion were more likely to indicate that they would pay the toll. Drivers who

perceived heavy traffic in the general-purpose lanes during their trips were also found to be more likely to pay the toll.

Similar to participants in the focus groups, survey respondents were generally supportive of the I-394 MnPASS lanes. While there were some individuals opposed to the lanes, the majority felt that charging SOVs to use the carpool lanes was a good idea. Most of the participants felt that the lanes would either have a positive impact or no impact on quality of life in the corridor. Additionally, respondents indicated that they would be willing to pay at least a marginal charge to use the lanes. The survey results show that residents in the corridor would accept the MnPASS lanes because they felt that congestion was a problem and that the lanes would add new capacity to the system. Overall, very few respondents indicated that the lanes would be inequitable, even if the system ran 24 hours a day.

Mn/DOT Omnibus Survey

Since 1987, Mn/DOT has annually surveyed Minnesota residents about current transportation projects and perceptions regarding Mn/DOT. In the 2004/2005 Survey conducted this past winter, two questions were asked regarding the MnPASS program. Random digit dialing was used to select residents over the age of 18. The sample size was 800. Although the sample included residents from the entire state an emphasis was placed on those individuals residing in the Twin Cities Metropolitan Area.

Mn/DOT Survey Findings

The first question asked respondents if they would want to have the option to use a toll lane, for a fee, on congested roads. In both the Twin Cities metropolitan area and Greater Minnesota, the majority of respondents stated that they would like to have the toll option

for congested roads. The following chart depicts the findings:

Percentage of Minnesota Residents Wanting Option of Toll Roads

Segment	% Wanting Option	% Not Wanting Option	Sample Size
Statewide	55%	45%	800
Twin Cities Metro	54%	46%	400
Greater Minnesota	55%	45%	400

Source: Mn/DOT Annual Omnibus Survey. Question 19, Page One

The survey also found that the following demographic groups were more likely to indicate interest in having a toll lane: females, persons 18 to 39 years of age, persons 60 years of age or older, persons without college degrees, persons at all income levels, persons residing in Greater Minnesota and persons who commute.

The second question asked respondents to rank the following reasons for building toll lanes, using a scale that goes from Extremely Important to Not At All Important: generate additional revenue for roadways; help manage roadway congestion; provide a reliable bus rapid transit route; and offer motorists an option for faster and more reliable trip times. The two reasons that gathered the most support were to manage roadway congestion and provide a reliable bus rapid transit route. Over 50-percent of respondents indicated that both of these reasons were of high importance when determining whether to build a toll lane. Additionally, almost half of respondents indicated that each of the four reasons for building toll lanes were of high importance. The following chart outlines the responses:

Percentage of Minnesota Residents Ranking Reasons for Toll Lanes By Importance Level

Reasons for Toll Lanes	High Importance (7-10)	Moderate Importance (5-6)	Low Importance (1-4)	Don't Know
Manage Congestion	59%	16%	24%	1%
Provide Reliable Rapid Transit Route	52%	22%	24%	2%
Faster, More Reliable Trip Times	48%	23%	28%	1%
Additional Revenue	47%	23%	28%	2%

Source: Mn/DOT Annual Omnibus Survey. Question 20. Page 2.

Mn/DOT examined the responses given to this question by income level of the respondents. They found that individuals with household incomes of $50,000 or more were more likely to view all four reasons for building toll lanes as less important than their counterparts with household incomes of less than $50,000. 304 respondents identified their household income as less than $50,000. 385 respondents indicated that their household income is greater than $50,000.

The Mn/DOT survey clearly shows that widespread support in both the Twin Cities Metropolitan Area and Greater Minnesota exists for toll lanes aimed at reducing congestion.

Conclusions

Current public outreach efforts indicate the Minnesotans are willing to accept toll lanes on roads that are heavily congested. This acceptance is based on having the option to use free general-purpose lanes; no loss of service to transit and carpoolers; that the tolls help reduce congestion and that excess funding, in part, goes to improve transit in the corridor.

Acceptance of tolls is a new phenomenon in Minnesota, as ten years ago an effort to implement HOT lanes failed, in part, because of negative public backlash. The change in acceptance levels for toll roads indicates that new trends are occurring in Minnesota, such as increased in-migration and congestion.

In other HOT lane projects, it was observed that individuals switched from driving alone to using transit or carpooling. This occurred, because the toll places a price on the lane. Therefore, solo drivers know exactly how much they save by switching to transit or carpools. Hopefully, this trend will occur on I-394 and the number of travelers riding the bus or carpooling will increase.

One area that may be negatively impacted by the presence of toll lanes on I-394 is the amount of open space and increased sprawl in the corridor. As the toll lanes provide drivers with the option of driving further distances in less time than it currently takes on the congested general-purpose lanes, drivers will be able to live further out. The toll lanes could spur greater demand for housing in exurban areas. Increased demand for housing results in development of open space for commercial centers, roads, and public services, such as police, schools, fire, and sanitation services. The end result would be a metropolitan area with an increased amount of sprawl that is difficult to support with transit and less open space in the region.

Overall, I anticipate that the toll lanes on I-394 will positively impact traffic conditions in the corridor and lead to less pollution than would be experienced if the current system

were retained. The expected negative impact on sprawl and open space does not outweigh the other positive benefits achieved by the new toll lanes. For example, one negative impact of sprawl is an increased reliance on the private automobile. However, the new toll lanes will provide additional funding for transit. Through improving transit service in the corridor by increasing the frequency and comfort of the bus, residents will be provided with a viable transit option. In conclusion, I think that the new HOT lane on I-394 will positively impact the corridor.

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Appendix I:

Equity and High Occupancy Toll Lanes: A Literature Review and Minnesotans Perceptions About the I-394 High Occupancy Toll Lanes

Megan Mowday

Equity and High Occupancy Toll Lanes: A Literature Review and Minnesotans Perceptions About the I-394 High Occupancy Toll Lanes

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Words: 6250

Introduction

As traffic congestion has worsened across the country, the need to mitigate this growing problem has become urgent. Value pricing, or congestion pricing, has emerged as an innovative concept aimed at reducing congestion by fully utilizing existing road capacity. In this system, single occupant vehicles (SOV) can use high occupancy vehicle (HOV) lanes for a fee. The success of value pricing can be seen through pilot projects in Southern California and Houston, on routes SR-91, I-15 and the Katy Freeway. These projects have gained community acceptance and support, and in the case of I-15, extension of the toll lanes has been given support from nearby residents.

As more and more states have become interested in establishing value-pricing programs, equity issues associated with the program need to be carefully examined. Research on the existing programs show that high occupancy toll (HOT) lanes are widely supported among individuals of all income levels. Experience gained from the pilot projects have demonstrated that the equity concerns have not been validated. Rather individuals residing along the corridors where the projects have been implemented have shown strong support for the program. This support has not varied widely between individuals

from different socio-economic backgrounds. The following literature review of studies on existing value pricing projects clearly demonstrates that toll lanes can and have been operated equitably and gained community support.

Part I: Literature Review of Equity and Pricing

The Income Factor

In order to determine how equitable value pricing is one must determine if the costs and benefits are spread evenly among income classes. If one group of individuals disproportionately pays for the system while not receiving their share of the benefits, then the program must be determined to be inequitable.[1] Studies on existing value pricing programs demonstrate that this is not the case. In the programs currently operating in the United States, observations have been made that a wide range of income groups use the value priced lanes with differing levels of frequency. Studies have shown that individuals with incomes greater than $100,000 are more than twice as likely to use the toll lanes for 50-percent of their peak trips than are commuters earning less than $40,000. Toll increases have the greatest impact on middle-income commuters.[2] On SR-91 in California, the percentage of trips on toll facilities for the $40,000 to $60,000 income category fell from 40-percent in 1996 to 25-percent in 1999. The decline of trips for middle income individuals can be attributed to toll increases, as well as a growing resistance to paying tolls despite the increase in congestion along SR-91.[3] Studies of SR-91 in California have shown that at any given time about one-quarter of the vehicles in the toll lanes belong to high-income individuals, while the remainder of users are low and

[1] Evans IV, John; Bhatt, Kiran and Turnbull, Katherine. Pg. 36
[2] Evans IV, John; Bhatt, Kiran and Turnbull, Katherine. Pg. 37
[3] Sullivan, Edward. 2000. "Continuation Study to Evaluate the Impacts of the SR-91 Value Priced Express Lanes: Final Report." Cal Poly State University. Pg. 80

middle-income individuals.[4] The trend of a greater number of higher income drivers in the toll lanes is observed across all modes and the differences are statistically significant among income groups when observing if a driver chooses a tolled facility or free lane.[5]

A commuter's decision on whether to use the express lanes hinges on many factors and does not solely depend on price or income level. Studies have shown that lower income individuals face the greatest financial harm when they are denied adequate choices. Lack of choice can result in lost work or late fees that could have been avoided had they been provided a viable choice, such as value-priced lanes.[6]

Women's Equity

Value pricing has the ability to positively impact female drivers. The system effectively addresses female specific needs that arise from working full time and being the primary family caretaker.

In a 1993 study, by Rosenbloom and Burns, of commuting trips in the Tucson, AZ region it was found that women were more likely to drive alone to work than men for every income category except household income greater than $80,000. The study also uncovered that for comparable distances women's commuting trips took longer.[7] Potential reasons for the longer trips include dropping children off at day care or other trips related to home maintenance. The study also found that women were less likely to

[4] Federal Highway Administration. 2003. "A Guide for HOT Lane Development." Chapter Four. Pg. 8
[5] Sullivan, Edward. Pg. 80
[6] Poole Jr., Robert and Orski, Kenneth. 2003. "HOT Networks: A New Plan for Congestion Relief and Better Transit." Reason Public Policy Institute. Policy Study 305. Pg. 15
[7] Giuliano, Genevieve, "Equity and Fairness Considerations of Congestion Pricing" School of Urban and Regional Planning, University of Southern California. Published in TRB's: Curbing Gridlock: Peak Period

take advantage of employer offered trip reduction incentives, such as compressed work schedules. In addition to stricter schedules, women have been shown to make more trips than men on a daily basis. As women often have rigid schedules and make more trips, as the above research indicates, HOT lanes provide women with a means of avoiding congestion, while at the same time allowing them to retain their schedule.

In 1999, Rosenbloom found that 23-percent of full-time working mothers and 66-percent of part-time working mothers have non-traditional work hours. These non-traditional work hours emphasis reliance on driving alone, as transit runs more frequently during peak periods and the amount of individuals needing to carpool during non-peak periods decrease.[8]

HOT Lanes Vs. The Traditional Transportation Financing System

The traditional transportation financing system is inequitable. The current means of generating revenue for road improvements is regressive. Currently, the gas tax funnels money for improvements to federal highways into the highway trust fund. All motorists, regardless of income, have to pay exactly the same amount in gas taxes for the same amount of travel, thus placing a more severe impact on lower-income drivers. As might be expected, drivers with higher incomes tend to drive further distances than lower income drivers. Those with higher incomes have been shown to spend more annually on transportation, which indicates that they drive further distances than their low-income

Fees to Relieve Traffic Congestion" Volume 2. 1994, page 263

[8] TCRP Report 49, "Using Public Transportation to Reduce the Economic, Social and Human Costs of Personal Immobility" Transportation Research Board, 1999. pg. 23

counterparts.[9] Therefore, they tend to receive a greater benefit from the nation's road system. Some states have not been able to fund road improvements solely from their share of the highway trust fund. The inability of the highway trust fund to support road improvements is in part due to the nation's vehicle fleet becoming more fuel-efficient, which translates into less gas bought for the same amount of miles traveled. States have been forced to subsidize some road improvements from their general tax fund. The general tax fund is supported by income taxes. In theory, income tax is not as regressive as the gas tax, as individuals are taxed based on their income level.

In contrast, value pricing only taxes direct users and typically dedicates revenues to corridor improvements, whether these improvements are transit or highway related. The user will directly pay for maintenance of the facilities that they use, instead of their taxes being dedicated for road improvements that they may not use, as is the current highway tax system.

Case Study: SR-91 in Orange County, CA

California's first value pricing project was on SR-91 in Orange County. Similar to its counterpart in San Diego, area residents have shown strong support and utilization of the Express Lanes on SR-91. In 1999, 55-percent of drivers in the corridor owned a transponder. The top three reasons for not owning a transponder, include: too expensive; toll lanes are not on their route; and they felt they would not use the toll lanes enough to justify purchasing a transponder.[10]

[9] Rice, Lorien. 2004. "Transportation Spending by Low Income California Households: Lessons for the San Francisco Bay Area." Public Policy Institute of California. Page VII.
[10] Sullivan, Edward. Pg. 80

In a survey, 42-percent of females and 28-percent of males reported using the toll lanes on SR-91 for 50-percent of their trips. Motorists between the ages of 35-54 were shown to be the most willing to pay for peak period travel.[11] The survey also found that use of the lanes is proportional to income level even though significant numbers of customers on the lanes can be found in all income levels.[12] Among the individuals who use SR-91, there has been no significant difference in the degree of approval for the Express Lanes among different income groups.[13]

Between 1996 and 1999, the proportion of commuters who use the toll lanes some of the time increased dramatically from 28.2-percent to 42-percent.[14] However, this increase comes at a time when it was observed that some individuals have shifted their travel pattern out of the corridor. In a 1999 survey, 21-percent of participants stated that they no longer regularly travel in the SR-91 corridor in the peak period, even though they had done so in the past two years and had not switched residences or jobs. 86-percent cited worse traffic conditions; 18-percent relayed increased driving stress; and 9-percent pointed to increased tolls as the major reasons why they no longer used the corridor. It was found that females and low-income commuters were significantly more likely to alter their driving behavior than other groups.[15] The trend of low-income and female commuters changing their travel patterns due to traffic conditions and increasing tolls needs to be examined further in the future to determine how sensitive certain

[11] Evans IV, John; Bhatt, Kiran and Turnbull, Katherine. Pg. 39
[12] Poole Jr., Robert; and Orski, Kenneth. Pg. 16
[13] Evans IV, John; Bhatt, Kiran and Turnbull, Katherine. Pg. 39
[14] Sullivan, Edward. Pg. 78

socioeconomic groups are to changes in toll price and worsening congestion. The sensitivity to toll increases has a large impact on the equity of HOT lanes.

Interviews dealing with perceptions of equity on toll lanes were conducted with 26 toll road leaders involved in the decisions to build and/or manage toll roads and two focus groups, comprised of citizens in north and south Orange County. This research concluded that individual's perceptions of the roads being equitable were closely related to other proposed alternatives to the project and the perceived value relating to the cost of the lanes.[16] Many of the interviewees in Bournet's study viewed the equity of toll roads as it compared to other possible alternatives. Survey results indicated that drivers may accept tolls during peak period travel if the proceeds are dedicated to highway improvements that may not have occurred otherwise. Support for and opposition to toll roads during the survey did not indicate that income level dictated opinion.[17] Bournet further found that the highest levels of support for the toll lanes was given by individuals who viewed toll lanes as providing congestion relief on the general lanes.[18] Bournet identifies the following groups as those most disadvantaged by toll lanes: individuals who are less wealthy, individuals who travel on a small portion of the road where tolls are not charged by distance traveled, and the elderly.

Case Study: Katy Freeway in Houston, TX

The Katy Freeway's HOT lane system differs from the California models. In California, SOVs are allowed to pay a fee to ride in express lanes normally reserved for carpools and

[15] Sullivan, Edward. Pg. 79
[16] Bournet, Marlon; Dimento, Joseph and Macey Gregg. Pg. x
[17] Boarnet, Marlon, Dimento, Joseph and Macey, Gregg. Pg. 16

public transportation. However, the Katy Freeway requires that all users be part of a carpool. Carpools with three or more persons ride for free, while carpools of two persons pay $2 to use the facility. SOVs are not allowed.

Stockton concluded in his study of the Katy freeway that an individual's value of travel time varies widely due to the variety of travel alternatives; the socioeconomic characteristics of the traveler, such as income, wage rates, age, sex and car ownership; and the purpose of the trip being made.[19] Further findings in this study showed that respondents felt that the HOT lane fee on the Katy Freeway was moderately expensive. Despite feeling that the lanes were moderately expensive, users indicated that price is not the primary factor when they decide whether or not to use the lane.[20] The respondents indicated that while decisions to use the toll road were partially based on price, other factors such as purpose of the trip played an important role in their decision.

The study found that 81-percent of the users are between the ages of 26-49 years old, with 56-percent of these users falling between the ages of 38 to 49. Non-users in the survey stated that they had not taken part in the value pricing pilot program because:

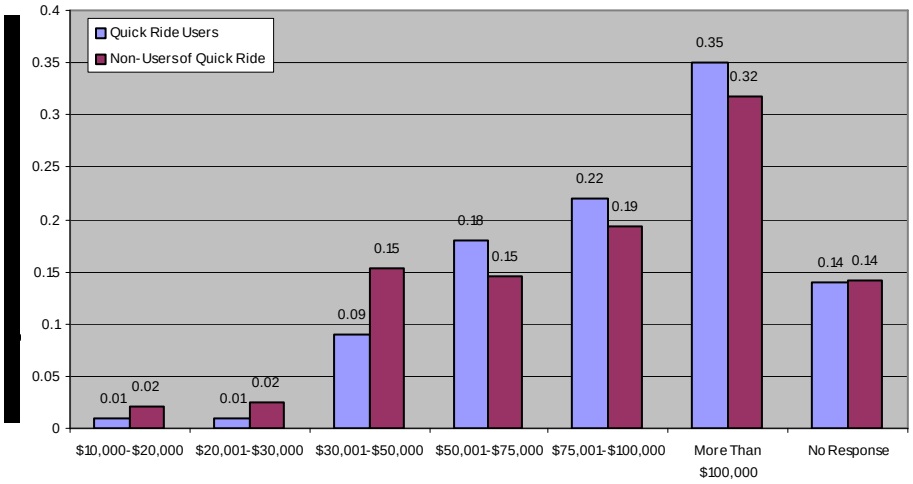
- 16-percent did not have anyone to carpool with
- 15-percent did not know how to sign up
- 14-percent believed that HOV lanes should be free

[18] Boarnet, Marlon, Dimento, Joseph and Macey, Gregg. Pg. 18
[19] Stockton, William; Hughes, Paula; Hickman, Mark; Miranda Alejandro; Brown, Quanta and Shin, Sung Wong. 2000. "An Evaluation of the Katy Freeway HOV Lane Pricing Project." Texas Transportation Institute. Coverpage

- 12-percent believed that the price is too high
- 12-percent did not want to carpool
- 12-percent had other concerns[21]

The survey indicated that individuals with higher income and individuals that hold administrative and clerical positions make more frequent use of the lane.[22] The following chart is the income distribution of users and non-users on Quick Ride as found in the Stockton survey.

Chart One: Income Levels Among Users and Non Users of Quick Ride



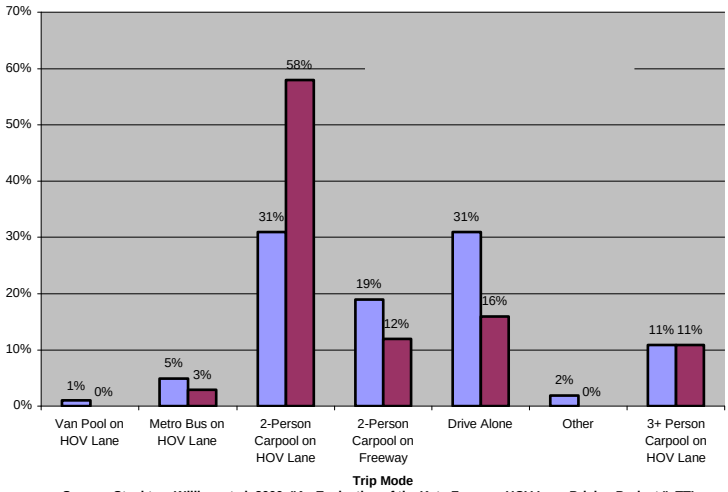
Source: William Stockton, et al. 2000 "An Evaluation of the Katy Freeway HOV Lane Pricing Project." Texas Transportation Institute.

While the data demonstrates that there is not significant income difference between users and non-users in QuickRide, it is interesting to note that the percentage of non-users is

[20] Stockton, William; Hughes, Paula; Hickman, Mark; Miranda Alejandro; Brown, Quanta and Shin, Sung Wong. Pg. 16
[21] Stockton, William; Hughes, Paula; Hickman, Mark; Miranda Alejandro; Brown, Quanta and Shin, Sung Wong. Pg. 27
[22] Stockton, William; Hughes, Paula; Hickman, Mark; Miranda Alejandro; Brown, Quanta and Shin, Sung

larger than the number of users in all income ranges under $50,000. This trend reverses itself in income ranges exceeding $50,000.

Chart Three: Trip Mode Before and After Quick Ride



Source: Stockton, William et al. 2000. "An Evaluation of the Katy Freeway HOV Lane Pricing Project." TTI

The responses indicate that two person carpools on the HOV lane gained a greater share on Katy Freeway after QuickRide was implemented. These gains were received from two-person carpools on the freeway, SOVs and MetroBus users on the HOV lane.

Katy Freeway has been successful in increasing carpooling and decreasing SOVs. While the usage tended to increase with income level, it should be noted that the corridor is generally high income, so it should not be surprising that greater numbers of individuals with high incomes use the facility. Also, at every income interval there was a comparable amount of users and non-users.

Wong. Pg. 46

Additionally, the increase in carpooling should be highlighted. A significant share of the rise in two person carpools came from those who used to drive alone. As the majority of the users of QuickRide are professionals and has higher incomes it is logical to assume that some of the increases in carpooling occurred in this group. This is especially important, as previous work has been done with minimal results on trying to encourage carpooling, especially among those who normally drive alone. One trend that accounts for increases in carpooling is the informal carpooling system at entrance points to the highway or in park and ride lots. In this system, which is also known as "slugging", individuals stand in line at specified points and drivers pick up carpoolers going to similar places in the city, so that they can use the carpool lanes. Slugging corrects some of the problems encountered through formal carpooling, such as inflexible schedules. The QuickRide program has been extremely successful in this regard and should be looked to as an example of how to encourage carpooling among choice riders.

Arguments Against Value Pricing

Value pricing, like any other novel transportation policy aimed at efficient resource allocation, has its critics. These critics have made various assertions that the system will be inequitable or will not work correctly. The claims have been made despite successful pilot projects, which have demonstrated that travelers in all socioeconomic backgrounds are willing to pay a fee to bypass congestion. The following discussion focuses on the arguments that critics of value pricing have made against implementation of HOT lanes.

In Bournet's survey, one respondent thought that HOT lanes would promote land use patterns that force greater reliance on the private automobile, rather than provide transportation alternatives to county residents.[23] This concern emphasizes that HOT lanes encourage continued solo use of private automobiles.

In addition to emphasizing driving over other transportation methods, HOT lanes foster sprawl because they expedite the amount of time necessary to get to larger housing stock in exurban areas. To address this concern, HOT lane proposals should be done in areas that provide strong mass transportation systems and use excess revenue to supplement public transportation in the corridor. The excess revenue dedicated to transit should provide more frequent transit service and upgraded transit vehicles. Through improved transit options, transit riders will benefit from the increased amount of vehicles on the lanes and will be encouraged to keep riding transit even though they now have the option of driving alone on the less congested lanes.

[23] Boarnet, Marlon; Dimento, Joseph and Macey, Gregg. 2002. Toll-Highway Finance in California: Lessons from Orange County. California Policy Research Center. University of California. Pg. 18

Recommendations

Value pricing projects have shown that conversion of HOV lanes to HOT lanes provides choice for drivers that were previously unable to take advantage of existing roadway capacity. The operating value pricing projects demonstrate that individuals of all income levels can be found on the priced facilities. However, agencies implementing value pricing projects should carefully examine the mix of incomes on the roadway and the impact that increasing fees has on lower income individuals. If the higher prices cannot be avoided, agencies can mitigate the negative impact on those individuals priced out of the facility through either a rebate system or investing in public transportation in the corridor.

Part II: Minnesotans Perceptions of HOT Lanes

Introduction

Equity issues associated with HOT lanes are a timely issue in Minnesota, as the state's first toll lane (MnPASS) opened in May 2005 on I-394. As previously noted, opponents of toll lanes usually point to equity issues as an argument against tolling projects. In the past the Minneapolis-St. Paul area has looked at HOT lane projects but never went ahead with implementing toll lanes. The previous effort was defeated after a highly visible political figure publicly announced his opposition. The opposition spurred public resistance to opening a HOT lane in the metropolitan area. Previous public perception of tolling in the Minneapolis-St. Paul metropolitan area can be considered through looking at a Citizen's Jury on HOT lanes held by the State and Local Policy Program in June 1995. The Citizen's Jury did not recommend building a HOT lane in the metropolitan

area. However, by 2003 congestion had worsened in the Twin Cities and residents became more willing to try congestion pricing. Additionally the political climate regarding congestion pricing changed when Governor Pawlentey took office. In 2003 the Minnesota Legislature passed a law allowing conversion of the I-394 carpool lanes into HOT lanes.

Part II of this paper looks at Minnesotans perceptions of the new lanes, as well as past perceptions. For all of the data sources, except the Mn/DOT Omnibus survey, only opinions of residents in the Minneapolis-St. Paul metropolitan area were measured.

Citizens Jury

In June 1995, the State and Local Policy Program, in conjunction with Mn/DOT, Metropolitan Council and the Jefferson Center sponsored a weeklong citizen's jury aimed at identifying the public's perceptions of traffic conditions and the transportation finance system. The citizens' jury focused on congestion pricing as a potential solution. The jury was randomly selected from the thirteen county metropolitan area. Selection for the 24 jury members was based on the following six variables, which were intended to produce a balanced jury: age, race, gender, education, geographic location and commuting status.[24] The jury was instructed to examine the issue of congestion pricing, which includes looking at traffic congestion and projected shortfalls in transportation funding. Expert testimony was provided to the jury and the participants were given a chance to ask those testifying questions.

[24] David Van Hattum, Maria Zimmerman, "Buying Time: Guidebook" State and Local Policy Program, Humphrey Institute of Public Affairs, Volume II, 1996, Pg. 91.

Citizens Jury Findings

After examining the problem for five days, the jury rejected areawide pricing and gave support for spot pricing under certain circumstances. During consideration of pricing, the jury voted on six key questions. The questions and outcomes are:[25]

1. Is there a current problem with traffic congestion in the thirteen county metropolitan area? 8 Yes; 16 No
2. Is there a transportation funding problem? 22 Yes; 1 No; 1 Not Sure
3. Would you like to see a pilot project on congestion pricing tried in some other metropolitan area? 18 Yes; 2 No; 4 Not Sure.
4. Would you like to see the Twin Cities metropolitan area chosen for a pilot project? 7 Yes; 11 No; 4 Not Sure
5. Can congestion pricing be an effective strategy to address present and impending problems of traffic congestion and to provide stable financing for surface transportation improvements? 7 Yes; 17 No
6. Do you support the limited use of spot tolls? 12 Yes; 8 No; 4 Not Sure

The citizens jury indicates that in 1995, residents in the Twin Cities metropolitan area were not convinced that congestion is a problem or that tolling would be the correct solution. One reason for the shift in opinion towards support of the current project is the growth experienced in the metropolitan area. In 1990, the Minneapolis- St. Paul Metropolitan Statistical Area (MSA) had 2,464,124 residents. By 2000, there were 2,968,806 people living in the Minneapolis-St Paul MSA, which is an increase of

[25] David Van Hattum, Maria Zimmerman, Pg. 92.

approximately a half million residents.[26]

Focus Groups

In February and March 2004 the State and Local Policy Program at the Humphrey Institute of Public Affairs conducted focus groups in conjunction with Mn/DOT and Cook Research. The intent of the focus groups was to determine the public's perceptions of the new lanes and driving conditions in the I-394 corridor. Three focus groups were held with SOVs, one with carpoolers and one with bus riders. All participants were randomly selected. This section of the paper relies on videotapes of the proceedings to determine Minnesotans perceptions of HOT lanes.

Focus Group Findings

The majority of participants did not cite concerns with the equity of the proposed HOT lanes when giving initial perceptions of the project. After discussing the project, many participants were concerned about the effect the lanes may have on lower income individuals. One focus group rationalized that society charges for many things that lower income individuals cannot afford and that this is just the latest charge. They went on to predict that the lower income drivers would form carpools or use transit to take advantage of the lane.

Most of the focus groups felt that many drivers would accept the lane. They brought up that small charges, such as those paid for designer coffee, are routinely absorbed into budgets. The fee for using the lanes was compared to the cost of Starbucks coffee and it

[26] U.S. Census, "American Fact Finder" Summary File 1, 1990, 2000, factfinder.census.gov

was predicted that many drivers would end up paying for the convenience of using the lanes. A few individuals were upset that those with money would be able to escape the inconvenience of congestion, while the rest of the working class population would still have to sit in traffic.

Additional concern was voiced in all of the focus groups for the carpoolers and transit riders that are currently enjoying the lanes. Some individuals thought that transit ridership and carpooling would decrease because now there is an alternative to using the lane. Others thought that the lanes are only fair if those currently using the lane are not delayed by the extra cars on the lane. The carpool focus group expressed concerns that their trip would change as a result of the HOT lanes.

While support was mixed for the project, the majority of participants did say that they would use the lanes at least periodically. Acceptance of the project seemed to rely on adequate enforcement, the cost of the lanes, no loss of quality to carpoolers and transit riders and revenue distribution. Most participants indicated that they would be willing to pay an extra fee to avoid traffic on specific occasions. However, they indicated that their willingness to pay was directly linked with the cost of the tolls. The majority of individuals indicated that they would not be willing to pay more than $2.50 for a one-way trip under normal circumstances. None of the participants indicated that they would switch modes in response to the new lanes. Bus riders and carpoolers stated that they would only use the lanes as an SOV on special occasions, but still remain on transit for the majority of the time. The SOV groups were more diverse in their anticipated usage

of the lanes. Some felt that they would pay the fee regularly to reduce stress in their lives, while others were adamantly opposed to using the lanes. The most common sentiment of SOVs was that they would obtain a transponder and use the lanes occasionally.

Panel Survey

In November and December 2004, the State and Local Policy Program, in conjunction with NuStats conducted a random panel survey of residents in the I-394 travel shed. 1,000 surveys were conducted over the phone to determine attitudes and perceptions regarding: the I-394 MnPASS project; congestion in the corridor; method of toll collection; enforcement issues; toll rates and travel time and reliability. Respondents were chosen using random digit dialing.

The panel survey is the first in a series of three. The same respondents will be contacted for the following two surveys, with additional respondents added in. A smaller group of respondents from the I-35W travel shed was included in the survey as a control group. The control group will help decipher if changes in travel behavior result from HOT lanes or are due to other driving conditions or trends affecting the entire metropolitan area.

Panel Survey Composition

Respondents were 18 years of age or older and had traveled on I-394, Highway 55, I-35W or Highway 77 during rush hour at least once in the five weekdays prior to the survey. The following is the age distribution of survey respondents:

18-24	2-percent
25-34	16-percent
35-44	21-percent
45-54	26-percent
55-64	20-percent
65+	15-percent

The following is the income breakdown for survey respondents. The percentage of individuals in that income category in the surveyed travelshed during the 2000 Census is provided in parenthesis.

$30,000 or less:	6% (20%)
$30,000 to $49,999:	12% (20%)
$50,000 to $74,999:	16% (22%)
$75,000 to $99,000:	21% (15%)
$100,000 to $124,999:	14% (9%)
$125,000 to $149,000:	8% (5%)
$150,000 or more:	14% (10%)
Refused:	9%

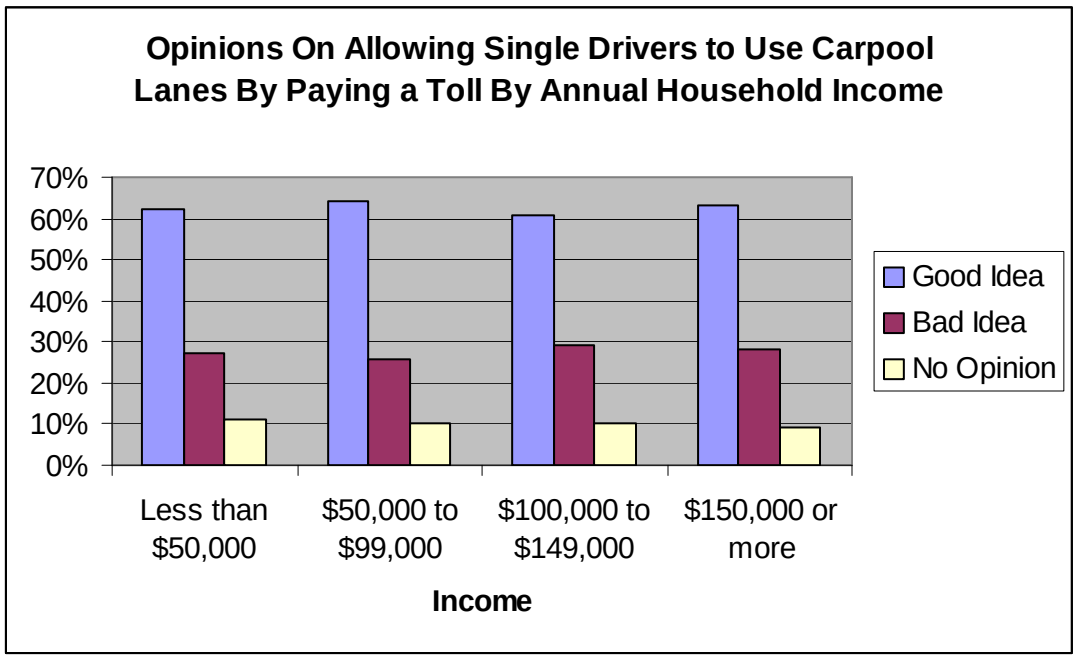
The above income breakdown indicates that survey results are skewed towards upper income individuals, as they under-represent individuals earning less than $75,000 and over-represent individuals earning incomes greater than $75,000.

Panel Survey Findings

The survey asked participants what they knew about the project as an open-ended question. The majority of respondents stated that the lanes would charge a fee and/or charge SOVs to use the carpool lanes. One in five respondents aware of the program knew that electronic toll collection would be utilized. Only five respondents or less than one-percent stated that only the rich would use the lanes. However, when asked what they thought about allowing SOV's to pay a toll to use the carpool lane, 8-percent thought that this concept only benefits the rich. Additionally, when asked what respondents thought about operating the toll lane program 24-hours per day, 4-percent cited again that this project only benefits the rich. Although, this is an increase in respondents citing equity concerns with the concept, the vast majority did not indicate any concerns about only the rich being able to use the new lanes. One reason for the low citation of equity concerns is that more than half of those polled are in households earning more than $75,000 a year. The low percentage of respondents indicating perceived inequity of the program is important when determining the perceptions of Minnesotans in the Twin Cities region regarding HOT lanes. The low incidence of equity being brought up demonstrates that residents do not equate the MnPASS program with unfairly burdening low-income drivers.

The survey also asked participants if allowing single drivers to use the carpool lanes was a good or bad idea. 63-percent of respondents thought that the MnPASS concept was a good idea. Participants in the I-394-travel shed (64-percent) were slightly more supportive of the concept than those in the I-35W travel shed (58-percent). 27-percent

thought that MnPASS is a bad idea and 10-percent had no opinion. 22-percent of respondents thought that operating the toll lanes 24 hours per day would result in a better use of the lanes and 17-percent stated that the toll lanes would add new capacity to the roadway. The following chart is the breakdown by household income groups of opinions on allowing single drivers to use the carpool lanes by paying a toll. The chart clearly shows that there is no difference in opinion across all of the income groups.



The stated preference section explored factors influencing willingness to pay for the HOT lane. They found that income level and age were related to willingness to utilize the MnPASS program. Not surprisingly, those with high incomes were most likely to pay to use the lanes and drivers under 25 and over 60 were the least likely to utilize the program. Commuters were more likely to use the lanes than drivers making trips for other purposes. Drivers who have adjusted the times that they make their trips in response to congestion were more likely to indicate that they would pay the toll. Drivers who

perceived heavy traffic in the general-purpose lanes during their trips were also found to be more likely to pay the toll.

Similar to participants in the focus groups, survey respondents were generally supportive of the I-394 MnPASS lanes. While there were some individuals opposed to the lanes, the majority felt that charging SOVs to use the carpool lanes was a good idea. Most of the participants felt that the lanes would either have a positive impact or no impact on quality of life in the corridor. Additionally, respondents indicated that they would be willing to pay at least a marginal charge to use the lanes. The survey results show that residents in the corridor would accept the MnPASS lanes because they felt that congestion was a problem and that the lanes would add new capacity to the system. Overall, very few respondents indicated that the lanes would be inequitable, even if the system ran 24 hours a day.

Mn/DOT Omnibus Survey

Since 1987, Mn/DOT has annually surveyed Minnesota residents about current transportation projects and perceptions regarding Mn/DOT. In the 2004/2005 Survey conducted this past winter, two questions were asked regarding the MnPASS program. Random digit dialing was used to select residents over the age of 18. The sample size was 800. Although the sample included residents from the entire state an emphasis was placed on those individuals residing in the Twin Cities Metropolitan Area.

Mn/DOT Survey Findings

The first question asked respondents if they would want to have the option to use a toll lane, for a fee, on congested roads. In both the Twin Cities metropolitan area and Greater Minnesota, the majority of respondents stated that they would like to have the toll option

for congested roads. The following chart depicts the findings:

Percentage of Minnesota Residents Wanting Option of Toll Roads

Segment	% Wanting Option	% Not Wanting Option	Sample Size
Statewide	55%	45%	800
Twin Cities Metro	54%	46%	400
Greater Minnesota	55%	45%	400

Source: Mn/DOT Annual Omnibus Survey. Question 19, Page One

The survey also found that the following demographic groups were more likely to indicate interest in having a toll lane: females, persons 18 to 39 years of age, persons 60 years of age or older, persons without college degrees, persons at all income levels, persons residing in Greater Minnesota and persons who commute.

The second question asked respondents to rank the following reasons for building toll lanes, using a scale that goes from Extremely Important to Not At All Important: generate additional revenue for roadways; help manage roadway congestion; provide a reliable bus rapid transit route; and offer motorists an option for faster and more reliable trip times. The two reasons that gathered the most support were to manage roadway congestion and provide a reliable bus rapid transit route. Over 50-percent of respondents indicated that both of these reasons were of high importance when determining whether to build a toll lane. Additionally, almost half of respondents indicated that each of the four reasons for building toll lanes were of high importance. The following chart outlines the responses:

Percentage of Minnesota Residents Ranking Reasons for Toll Lanes By Importance Level

Reasons for Toll Lanes	High Importance (7-10)	Moderate Importance (5-6)	Low Importance (1-4)	Don't Know
Manage Congestion	59%	16%	24%	1%
Provide Reliable Rapid Transit Route	52%	22%	24%	2%
Faster, More Reliable Trip Times	48%	23%	28%	1%
Additional Revenue	47%	23%	28%	2%

Source: Mn/DOT Annual Omnibus Survey. Question 20. Page 2.

Mn/DOT examined the responses given to this question by income level of the respondents. They found that individuals with household incomes of $50,000 or more were more likely to view all four reasons for building toll lanes as less important than their counterparts with household incomes of less than $50,000. 304 respondents identified their household income as less than $50,000. 385 respondents indicated that their household income is greater than $50,000.

The Mn/DOT survey clearly shows that widespread support in both the Twin Cities Metropolitan Area and Greater Minnesota exists for toll lanes aimed at reducing congestion.

Conclusions

Current public outreach efforts indicate the Minnesotans are willing to accept toll lanes on roads that are heavily congested. This acceptance is based on having the option to use free general-purpose lanes; no loss of service to transit and carpoolers; that the tolls help reduce congestion and that excess funding, in part, goes to improve transit in the corridor.

Acceptance of tolls is a new phenomenon in Minnesota, as ten years ago an effort to implement HOT lanes failed, in part, because of negative public backlash. The change in acceptance levels for toll roads indicates that new trends are occurring in Minnesota, such as increased in-migration and congestion.

In other HOT lane projects, it was observed that individuals switched from driving alone to using transit or carpooling. This occurred, because the toll places a price on the lane. Therefore, solo drivers know exactly how much they save by switching to transit or carpools. Hopefully, this trend will occur on I-394 and the number of travelers riding the bus or carpooling will increase.

One area that may be negatively impacted by the presence of toll lanes on I-394 is the amount of open space and increased sprawl in the corridor. As the toll lanes provide drivers with the option of driving further distances in less time than it currently takes on the congested general-purpose lanes, drivers will be able to live further out. The toll lanes could spur greater demand for housing in exurban areas. Increased demand for housing results in development of open space for commercial centers, roads, and public services, such as police, schools, fire, and sanitation services. The end result would be a metropolitan area with an increased amount of sprawl that is difficult to support with transit and less open space in the region.

Overall, I anticipate that the toll lanes on I-394 will positively impact traffic conditions in the corridor and lead to less pollution than would be experienced if the current system

were retained. The expected negative impact on sprawl and open space does not outweigh the other positive benefits achieved by the new toll lanes. For example, one negative impact of sprawl is an increased reliance on the private automobile. However, the new toll lanes will provide additional funding for transit. Through improving transit service in the corridor by increasing the frequency and comfort of the bus, residents will be provided with a viable transit option. In conclusion, I think that the new HOT lane on I-394 will positively impact the corridor.

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Appendix J:

Technical Evaluation of Alternatives in the I-394 Corridor

Ferrol Robinson

MAKING HOV LANES MORE EFFICIENT
AN EXPRESS-LANE APPROACH

The objective of the Express-Lane Plan is to increase the person- and vehicle-carrying capabilities of HOV lanes, which are perceived at present to be underutilized. The Express-Lane Plan for I-394 would continue to allow free access for carpool and bus users. Drivers of single-occupant vehicle (SOVs) may elect to gain access to the express lanes by paying a fee, or they may continue to use the I-394 general-purpose, adjacent free lanes.

Operational Characteristics

A substantially increase in throughput on the I-394 HOV facility would be accomplished as follows:

- Configuration of the barrier-separated section would be changed from two to three lanes (without widening) to provide capacity in both directions: two inbound lanes in the morning (peak direction) and one lane outbound; two outbound lanes in the afternoon (peak direction) and one inbound.
- SOVs would be allowed access only as long as a speed of 50 miles per hour could be maintained. The SOV access fee charged would be adjusted to control SOV demand: a higher fee if demand is too high, and a lower fee if demand is low.

Advantages for Transit and Carpooling

- Transit/carpools continue to have free access.
- Premium speed levels are maintained.
- Transit/carpools have additional capacity and service: an outbound lane is added in the morning and an inbound lane is added in the afternoon and evening.
- Some of the revenues collected from SOVs are used to market carpools and to improve transit use (e.g., increased service frequency, free bus passes for paying SOV users).

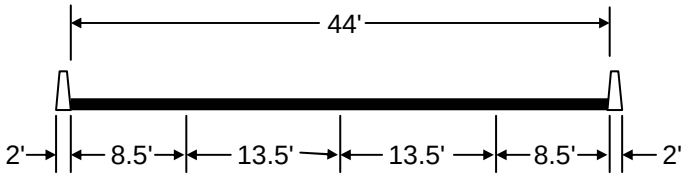
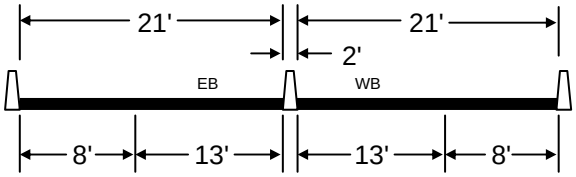
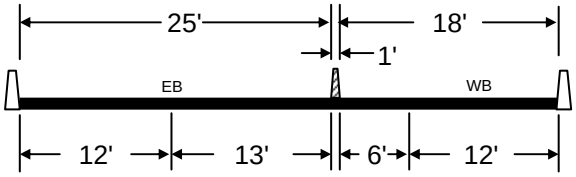
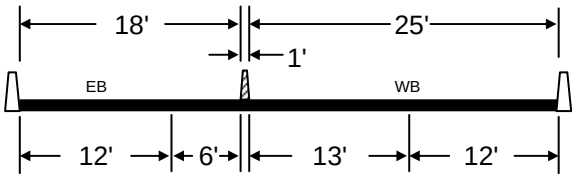
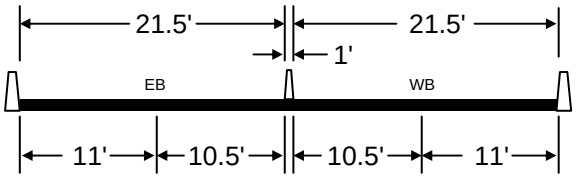
Cost and Revenues

- The expected access fee paid by SOV users during peak periods is one dollar for using the diamond lane section, one dollar for the barrier-separated section and two dollars for using both sections. During off-peak periods, the fee is $0.50.
- Annual opening-day revenues: $5.5 million
- Annual capital cost: $1.1 million (over six-years)
- Annual operating cost: $1.6 million
- Annual opening-day revenues exceed annual capital and operating costs by $ 2.8million annually. This excess revenue could be used to make roadway improvements, market carpooling, provide more transit service, enhance enforcement, etc.

QUALITATIVE COMPARISON OF I-394 LANE CONFIGURATION OPTIONS

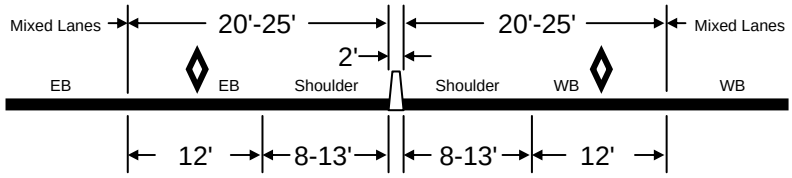
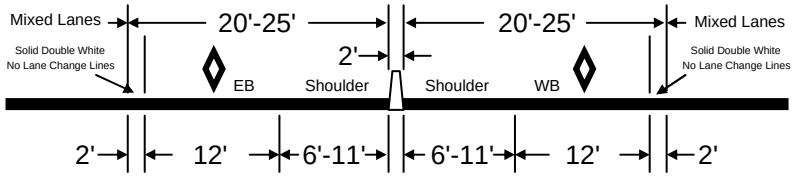
LANE OPTIONS	ADVANTAGES	DISADVANTAGES
2 X 0 Reversible Current Conditions	• Carpoolers like it because it is exclusive • Provides travel time advantages to carpool and transit users	• Underused lanes—HOV empty-lane syndrome • Congested general-purpose lanes • Carries fewer vehicles and persons than general-purpose lanes during entire peak period
1 X 1 Directional	• Adds capacity in off-peak direction all day • Reduces off-peak congestion in general-purpose lanes • Eliminates HOV empty-lane syndrome • Provides travel time advantage to carpool, transit and buy-in customers in both directions all day.	• Limits growth of HOV demand in peak direction • Takes away capacity in peak direction (am/pm) • May not reduce peak congestion in general-purpose lanes • Unlikely to increase overall capacity • Adds cost of median barrier • Lanes widths are over-designed
2 X 1 Directional Reversible	• Maintains capacity in peak direction (am/pm) • Relieves congestion in general-purpose lanes in peak direction • Adds capacity in off-peak direction (am/pm) • Reduces congestion in off-peak direction in general-purpose lanes • Allows growth in HOV demand in both directions • Eliminates empty-lane syndrome • Provides travel time advantage to carpool, transit and buy-in customers in both directions all day.	• No shoulder in two-lanes direction • Adds moveable barrier operation and cost
2 X 2 Directional	• Maintains capacity in peak direction (am/pm) • Relieves congestion in general-purpose lanes in peak direction • Adds capacity in off-peak direction (am/pm) • Reduces congestion in off-peak direction in general-purpose lanes • Allows growth in HOV demand in both directions • Eliminates empty-lane syndrome • Provides travel time advantage to carpool, transit and buy-in customers in both directions all day.	• Non-standard lane width • Eliminates shoulders • Adds cost of median barrier

I-394 Express Lane Configurations (1)

	Barrier-Separated Section
Current Lane Configuration 2x0 Reversable by Peak Direction	
Option 1 1x1 Lane Directional with Permanent Median Barrier	
Option 2 Eastbound Peak Direction 2x1 Lane Directional with Movable Median Barrier	
Option 2 Westbound Peak Direction 2x1 Lane Directional with Movable Median Barrier	
Option 3 2x2 Lane Directional with Permanent Median Barrier	

(1) Note: All dimensions need to be field verified.

I-394 Express Lane Configurations (1)

	Diamond Lane Section
Current Lane Configuration	
Optional Configuration No Lane Changing	

(1) Note: All dimensions need to be field verified.

Appendix K:

Results of Initial Scoping and Stakeholder Analysis
Anne Carroll

Results of Initial Scoping and Stakeholder Analysis

4/13 and 20/04: MnDOT staff John Doan, Gary Thompson (4/13 only), Mike Sobolewski, Ken Buckeye; HHH staff Lee Munnich, Adeel Lari; Joe Lovland, communications consultant for the value pricing project; and Anne Carroll, strategic planning consultant with Carroll, Franck & Associates

The group identified a number of key transportation problems and issues that are driving the discussions of FAST and HOT lanes, as well as broader transportation policy discussions.

Key Transportation Problems

Increasing demand for public transportation, for which "candidate" solutions include:

- Public transit
- Alternative transit
- Road reconfiguration
- Road upgrades
- Road expansions
- New roads
- Employer/employee location changes
- Access constraints such as ramp metering, HOV-limited access/lanes, etc.

Demand for roadways exceeds appropriated or likely-to-be appropriated funds; "candidate" solutions include:

- Reprioritizing of federal and state funding
- Innovative financing, such as increases in gas, license, or sales taxes; or tolls

Increasing congestion is affecting quality of life indicators; "candidate" solutions include:

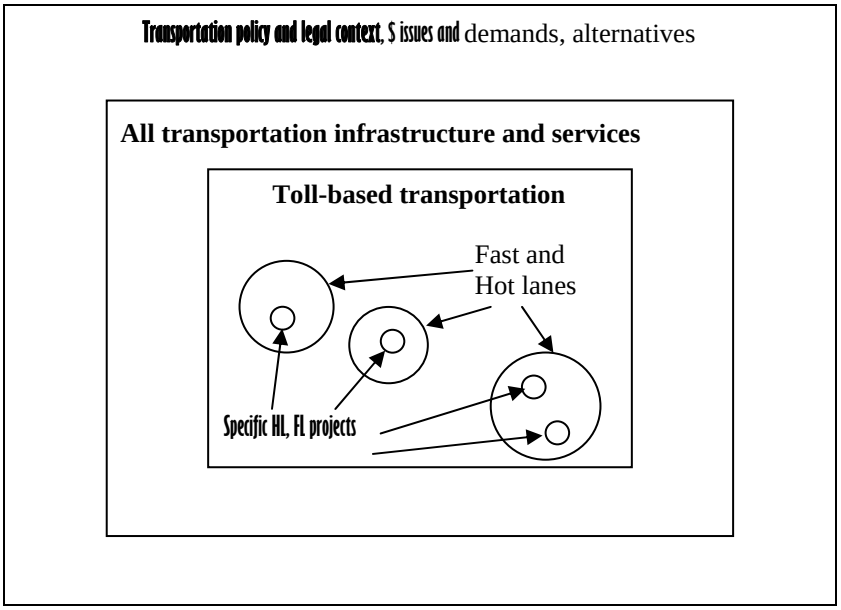
- Congestion pricing

Increasing air pollution from vehicles (no candidate solutions were identified at this time)

Question: Should we look at this using a supply-demand framework or lens???

Context and Process

- Context: policy and legal
- Exploration process
  - Other experiences and options
    - Elsewhere in US
    - Elsewhere in world, especially where transit use is strongly supported and employed
  - bus/HOV lane project that supports toll SOV use
- Decision-making sequence, structure
  - Criteria for toll or not
  - Criteria to select specific projects



Stakeholder Identification and Analysis

Below is an outline of the initial stakeholder and identification tasks that were begun at the 4/13/04 meeting. We completed an initial pass of stakeholder identification and a first draft of identifying their levels of power and interest (see documentation below). It was understood that this was all that could be accomplished on that day, and subsequent meetings will address the remaining items.

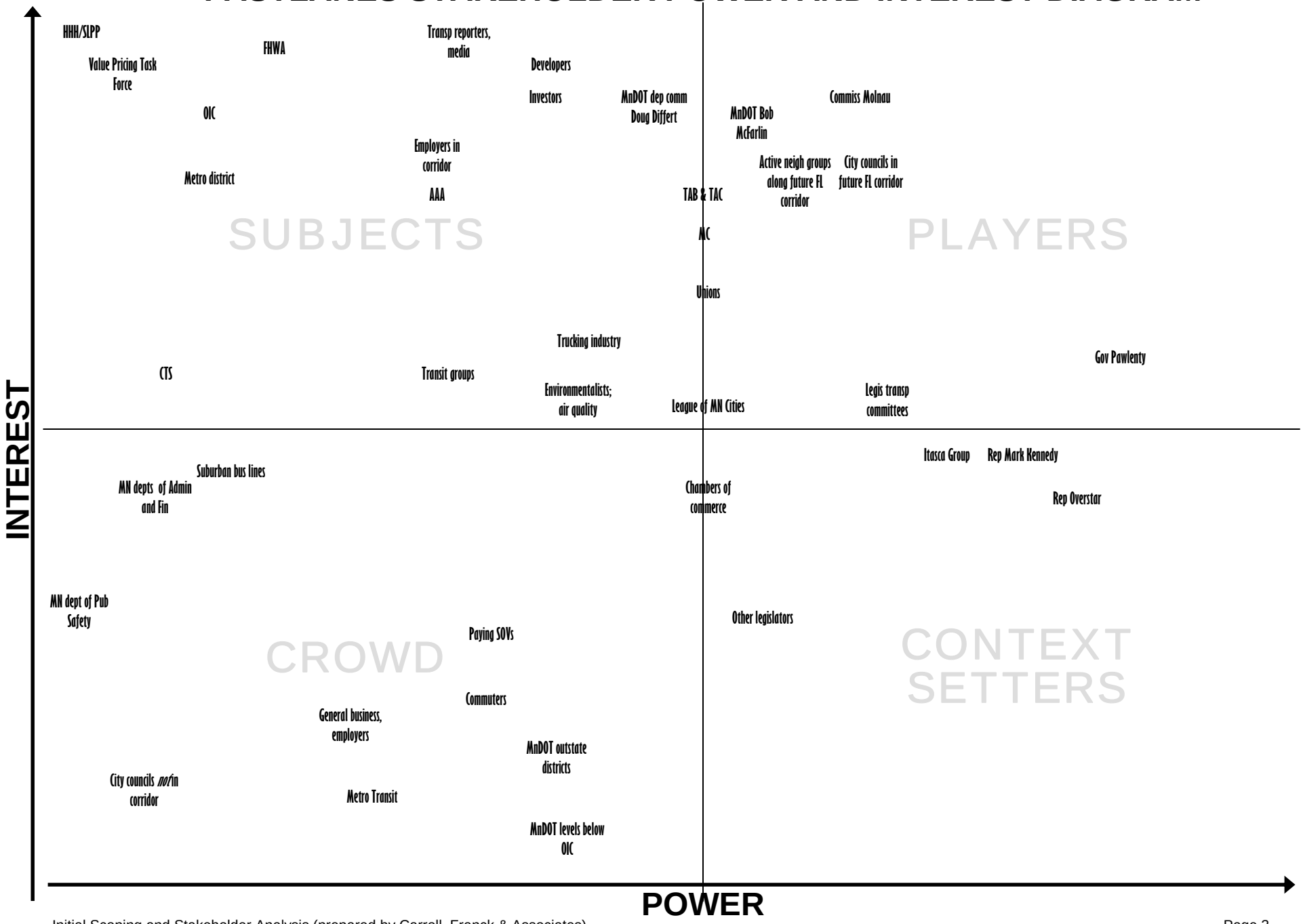
Stakeholder Identification and Analysis Process
Beginning 4/13/04

1. Identify SHs and their positions of power and interest
   - Paper wall with 2 flipchart pages
   - Draw power vs. interest grid
   - Brainstorm list of internal and external stakeholders using post-it notes, and place them immediately on the power vs. interest grid
   - Verify players, context setters, and subjects
   - Rewrite post-its for these
   - (leave on wall)
2. Identify SH position on issue vs. SH importance
   - Paper wall with 2 flipchart pages
   - Draw grid position vs. importance grid
   - Place newly-written players, context setters, and subjects into grid based on importance from power vs. interest grid, and according to their position with regard to FAST Lanes
3. Complete a basic SH analysis for players, context setters, and subjects.
   - Write names of each on a separate flipchart page and address the following:
     - SH expectations
     - SH criteria to judge value or worth of our effort
     - SH criteria to judge effectiveness of our effort
     - SH influence on us
     - What we need from SHs
     - What we can do to satisfy SHs
   - Discuss and reach conclusions on key issues
4. Document stakeholder influence to identify networks among SHs and how to influence these networks (based on power vs. interest grid)
   - Begin with existing power vs. interest grid with SHs placed accordingly
   - Identify formal and informal links between SHs and use pencil to draw arrows to show primary direction of influence with regard to FAST Lanes
   - Discuss, reach agreement, and make lines permanent

The group began identifying FL stakeholders and determining their relative power and interest. <u>This work is not yet complete</u>, but draft results are shown on the following page. The group also determined that the value of this exercise was as described below:

Identify and analyze stakeholders ⇒ in order to identify prospective champions and partners ⇒ then convene groups with common needs and problems relative to transportation ⇒ in order to frame a policy context ⇒ then mobilize champions to support FastLanes ⇒ and eventually implement one or more FastLanes as one part of the solution to problems of increasing demand and congestion.

FASTLANES STAKEHOLDER POWER AND INTEREST DIAGRAM



Roles and Responsibilities

The group also began defining the distinct responsibilities of MnDOT and the Humphrey Institute. This work is not yet complete, but beginning thoughts are outlined below:

MnDOT	HHH
Communications	Provide education on transportation problems
Frame statewide policy context	Explore options w/in education/research context
Respond to governor's demand	Convene public policy conferences
Resist MnDOT's historic internal monovision to simply "build stuff"	Serve as neutral, credible player, especially with the legislature
	Provide external expertise

The group also identified some related tasks; this work is not yet completed, but initial thoughts, not in any particular order, are listed below:

- Address scale and scope of transportation issues, needs, and challenges, and build public awareness of this
- Publicly address look at long-term needs, financing options, and the long-term impact of massive bonding obligations
- More clearly define problem(s)
- Identify partners
- Identify issues and positions that are attractive to different political positions and partners
- Acknowledge and deal with the challenges caused by FL being launched by politicians ahead of broad public awareness and policy context

Appendix L:

MnPASS: A System for Managing Congestion
MnPASS System Study Steering Committee

Transmittal Letter

TO: ***Carol Molnau***, Lieutenant Governor/Commissioner of Transportation
Peter Bell, Chair, Metropolitan Council

CC: ***Steve Murphy***, Chair, Senate Transportation Committee
Mary Liz Holberg, Chair, House Transportation Finance Committee

FROM: **MnPASS System Study Steering Committee**
Jim Hovland, Chair, Mayor of Edina, Transportation Advisory Board Member
Sharon Marko, Minnesota Senate
Ann Rest, Minnesota Senate
Ron Erhardt, Chair, House Transportation Policy Committee
Dennis Berg, Anoka County Commissioner & Transportation Advisory Board Member
Chuck DeVore, White Bear Lake City Council & Transportation Advisory Board Member
Patrick Hughes, Metro District Engineer, Minnesota Department of Transportation
Ken Johnson, Transportation Advisory Board Member
Peggy Leppik, Metropolitan Council Member
Ron Lifson, Transportation Advisory Board Member
Robert Lilligren, Minneapolis City Council & Transportation Advisory Board Member
Lee Munnich, Director, State & Local Policy Program, University of Minnesota
Marthand Nookala, Division Director, Minnesota Department of Transportation
Myra Peterson, Washington County Commissioner & Transportation Advisory Board Member
Richard Stehr, Division Director, Minnesota Department of Transportation

DATE: 4/18/2005

RE: Policy Report of the MnPASS System Study Steering Committee

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After eight months of analysis, review and deliberation, the MnPASS System Study Steering Committee has concluded that a variably priced, interconnected system of MnPASS toll lanes would be an effective tool to manage congestion and provide transit advantages in the Metropolitan Area. The process by which the committee arrived at this primary conclusion, as well as others of import, is detailed in the accompanying policy report.

Both the MnPASS System Study and this Policy Report have been the subject of a rigorous Peer Review Process. The three-member peer review panel, composed of national experts in this field, made no recommendations for changes in the content of our Policy Report, though they did suggest some clarifying language for readers unfamiliar with this topic, which we have incorporated.

The committee believes it is important to share its policy findings and recommendations with a broad range of stakeholders and decision makers to both dispel existing myths regarding tolling and clarify the unique benefits of MnPASS toll lanes as a tool for congestion management.

Questions and comments regarding this policy report should be directed to Committee Chair Jim Hovland via committee staff John Doan at 651-284-3605 or john.doan@state.mn.us.

Attachments: MnPASS System Study Policy Report
Executive Summary of MnPASS System Study Technical Report

MnPASS: A System for Managing Congestion
MnPASS System Study Steering Committee Policy Report
April 2005

Over the last two years, several major surveys by the Metropolitan Council found that Twin Cities residents consider highway congestion to be the number one concern in the region – ahead of crime, education, and housing. This public perception is confirmed by Mn/DOT and Metropolitan Council data that has shown for some time that road and transit options are unable to keep up with growing demand. While some level of congestion reflects a healthy and vibrant economy, chronic congestion results in serious economic and societal costs, and those costs will only continue to escalate as the seven-county Twin Cities metropolitan area absorbs another million people – an increase of 37% – from 2000 to 2030.

Recent data compiled by the independent research organization, the Texas Transportation Institute, illustrate the problem:

- *From 1982-2002, total annual person-hours of congestion delay increased at a higher rate than in any of the other 85 U.S. metro regions studied.*
- *Congestion delays in the region:*
  - *Waste 93 million gallons of fuel annually*
  - *Cost peak-period travelers $740 annually*
  - *Cost the Twin Cities $971 million annually*

Long-term chronic congestion and transportation funding shortfall forecasts, coupled with federal and state interest in optional toll lanes, prompted Mn/DOT and the Metropolitan Council to explore tolling as an innovative approach to congestion relief. These organizations hired the Boston-based consulting firm of Cambridge Systematics to gather, study, evaluate, and report any facts, comparisons, statistics, or other data concerning the impacts of overlaying a potentially viable system of toll lanes in the Twin Cities region.

MnPASS is an interconnected system of uncongested, variably priced, toll lanes (vs. roads) that are adjacent to free lanes. Using electronic toll collection, drivers may choose to pay a toll to achieve more reliable travel times on the MnPASS system. [1]

To provide local policy oversight and advice for the study, Mn/DOT created the MnPASS System Study Steering Committee composed of local, regional, and state officials (see list above).

The Steering Committee met from July 2004 to March 2005 to review technical reports by the consultant and explore the complex policy issues surrounding potential MnPASS lanes in the Twin Cities area. Below is our report. We begin with some of our own myths about tolling, then present our findings and recommendations, and close with outstanding issues that merit further dialogue.

To review the detailed technical analysis and recommendations, please refer to the MnPASS System Study prepared by Cambridge Systematics for Mn/DOT and the Metropolitan Council at www.mnpass.org. For questions regarding this Policy Report contact Steering Committee Chair Jim Hovland at jhovland@krauserollins.com or John Doan, Mn/DOT staff to the Committee at john.doan@dot.state.mn.us.

[1] HOV conversion such as I-394 MnPASS Express Lanes exempt 2-person carpools from paying tolls. Future MnPASS lanes may or may not provide such exemptions (see "For Further Study and Discussion" section and Technical Report).

Myths About Tolling

Steering Committee members represented different parts of the metropolitan region, with quite varied backgrounds, and diverse positions. When we started in July 2004 many of us began the process with preconceptions about toll lanes, including the following:

- Toll lanes would generate enough revenue to pay for themselves.
- The real value of toll lanes is to provide the state with significant amounts of revenue, and those toll revenues would pay for highway projects without the need for additional public funding for transportation.
- Tolls could be removed after a period of time and we could still manage congestion.
- The private sector would own and control new toll lanes, and they were hungry for this kind of partnership.
- Toll lanes benefit only solo drivers, at the expense of other modes
- Toll revenues would reduce the need for additional gas tax revenues.
- Toll lanes would benefit only rich people.
- Toll booths are necessary despite their inconvenience.

Over our eight-month plus journey, we learned about tolling, toll lanes, and systems of toll lanes from the technical findings of the MnPASS System Study; research from other states; travel, demand, planning, and funding information from Mn/DOT and Met Council staff; and dialogue among ourselves. Throughout this process, the myths were slowly dispelled and factual findings emerged.

Findings and Recommendations

Below are our key findings and attendant recommendations for each important policy issue we identified:

Congestion Management

Finding: An interconnected[2] system of MnPASS toll lanes would be an effective congestion-management tool. Such an interconnected system of MnPASS lanes would provide significant time savings and a more reliable travel option to those willing to pay (as well as for emergency vehicles), and more efficient use of capacity. Combining MnPASS lanes with transit enhancements wherever feasible would provide substantial additional congestion-management benefits.

> *"Toll lanes are a good tool to manage congestion, but they are not enough. There must be substantial new funding to meet critical transportation needs."*
> *Sharon Marko, MN Senate, SC member*

***Congestion Management Recommendation**: An interconnected system of MnPASS lanes should be actively pursued, with the primary purpose being to effectively manage congestion.*

Transit

Finding: Operating both transit and bus rapid transit routes on MnPASS toll lanes, wherever feasible, would enhance transit advantages, further reduce congestion, and provide a high level of service. Doing so would require an integrated and adequately funded transit system.

***Transit Recommendation**: Establish transit and bus rapid transit routes on MnPASS lanes wherever feasible, and adequately fund an integrated transit system.*

[2] Interconnected means the ability to travel uninterrupted from a toll lane on one freeway to a toll lane on another freeway, such as from I-494 to I-394.

Public and Private Involvement

Finding: An interconnected system of MnPASS lanes would be an important part of a comprehensive and properly funded approach to managing regional congestion and meeting transportation needs. Toll revenues would cover only a portion of the capital costs of MnPASS lanes; therefore, substantial additional investment would be required. Publicly issued revenue or general obligation bonds would be less expensive than private financing, and public financing would eliminate concerns about noncompete clauses.

> *"I began this project thinking toll lanes would make a significant difference in the ability to fund new lanes and transit to meet regional needs. While it turns out not to be a great revenue generator, it can be an excellent tool to help manage congestion."*
> *Dick Stehr, Mn/DOT Division Director, SC member*

For an interconnected system of MnPASS lanes that effectively serves the region to emerge, construction choices cannot be limited to only those segments that are attractive to the private sector. As is currently done for routine road design and construction, however, private partnerships would make sense for MnPASS lane design and construction. It may also be logical to contract with the private sector for toll collection services since Mn/DOT has no operations staff or expertise. Under any circumstances, private involvement would have to be carefully managed and public control maintained.

***Public Decision-Making Recommendation**: Tolls generated by MnPASS lanes should be used to benefit the public good. The public sector should make the decisions on when, where, and how MnPASS lanes are constructed in order to develop an interconnected system of toll lanes that helps manage congestion, supports integrated transit advantages, and supports regional transportation needs.*

***Public vs. Private Financing Recommendation**: There are no clear benefits to private sector financing for MnPASS lanes. Public investment is necessary to launch an interconnected system of MnPASS lanes to help manage regional congestion and generate new revenues to contribute to construction and operations costs.*

> *"While we found that MnPASS can't solve everything, they still generate new revenues for transportation. No other congestion management tool does that."*
> *Ron Lifson, SC member*

***Public Control Recommendation**: Future MnPASS lanes should be identified, analyzed, financed, regulated, enforced, and owned by the public sector. Private sector partners may provide design, construction, and toll facility operations. Adequate controls must always be maintained to protect the public's investment and interest.*

Variable Tolls

Finding: Variable pricing causes tolls to fluctuate based on demand and thereby provides a congestion-free alternative for those willing to pay a toll. Removing tolls defeats the congestion-management purpose of MnPASS lanes and would quickly lead to congestion of those lanes and eliminate transit advantages. Fully electronic toll collection with effective enforcement would allow unimpeded travel in MnPASS lanes without the need for toll booths.

***Variable Tolls Recommendation**: Variable toll pricing, a fully electronic toll system, and adequate enforcement should be used to effectively manage congestion, and the tolls must permanently remain in place.*

> *"When we started, I couldn't imagine any circumstances where I could support toll lanes. Now I can see them as another important tool to help manage the critical problem of congestion in this region – and we must do something."*
> *Jim Hovland, Edina Mayor and SC chair*

Systems Approach

Finding: An interconnected system of MnPASS toll lanes would provide substantial benefits for siting, funding, and construction, and would provide an effective congestion-management tool.

> ***Systems Approach Recommendation****: MnPASS lane siting decisions should consider a variety of factors and be made within the context of creating an interconnected system of toll lanes, integrated with transit, that provides a congestion-free travel alternative.*

MnPASS Related to Future Transportation Plans

Finding: MnPASS lanes would offer a congestion-free transportation alternative throughout the region. The criteria for considering MnPASS lanes should be their ability to generate toll revenues, the value of time-saved by avoiding congestion, and the benefits of transit enhancements.

> ***MnPASS Related to Future Transportation Plans Recommendation****: MnPASS lanes should be actively considered for future highway expansion projects, but without threatening projects currently underway.*

For Further Study and Discussion

The questions below merit further substantive policy dialogue and serious consideration.

1. The results of the I-394 startup and early operations will be invaluable in making decisions on MnPASS and the system build sequence. For example, what lessons can we learn before beginning other tolling activities? In addition, data from other projects suggest that users of all incomes use toll/express lanes at times, but what do data from I-394 show? What's the community perception of using variable toll lanes to manage congestion?

2. After the results of new toll facilities are rigorously evaluated, should we consider managing congestion in the future by converting some existing free lanes to MnPASS toll lanes?

3. Are growth projections using the most current data, and how will evolving regional economics affect future transportation system needs?

4. The findings from the MnPASS System Study are inconsistent with parts of existing plans. For example, some of the MnPASS segments projected to experience the highest congestion and therefore yield the highest revenue are not even in the 30-year Transportation Policy Plan. How should possible future MnPASS lanes be woven into the Transportation Policy Plan?

5. A policy conundrum exists with regard to the commitment to aggressively manage congestion while also reducing pollution from cars. How can we make future policy decisions that are flexible enough to respond to changing demand, use, and need? For example, congestion pressures may warrant changes in policy regarding free or reduced tolls for high occupancy vehicles or certain types of vehicles, such as hybrids.

Conclusion

Our region is facing rapid congestion growth and extreme delays. With a projected 37% population increase in the Twin Cities metropolitan area from 2000 to 2030, the ability to deal with chronic congestion, reduced air quality, and overall quality of life issues is critical to our collective well being. Continued inadequate funding for transportation and transit will create serious economic and societal costs for all of us. MnPASS offers a tool to deal with rapidly mounting congestion problems.

The most significant finding of the Steering Committee is that a variably priced, interconnected system of MnPASS toll lanes would be an effective tool to manage congestion and provide transit advantages in the Metropolitan Area. Mn/DOT and the Metropolitan Council should actively pursue this. While the Steering Committee believes such a system should be integrated into future transportation plans, our consensus is that such a system should not displace projects currently underway at Mn/DOT.

If such an interconnected system is constructed, the State of Minnesota rather than the private sector should make the necessary public investment to launch such a system, and the revenues generated should contribute to construction and operating costs – something no traditional Minnesota roadway has done in the past.

MnPASS is a system that we believe will help maintain the economic vitality of our region and improve the quality of life for all the region's residents.