Environmental Justice Analysis, Tools and Approaches Virtual Workshop

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FEBRUARY 28, 2017
Agenda

- Objectives
- Speaker Introductions
- Introduction to the Congestion Pricing Program
- LA Metro: ExpressLanes Low-Income Impact Assessment
- NCTCOG: Influencing Travel Behavior with Sensitivity to Environmental Justice
- Open discussion
Objectives

- Insight into FHWA’s efforts towards supporting agencies with Environmental Justice (EJ) aspects of their congestion pricing initiatives
- Learn about innovative EJ analysis approaches and tools through real-life examples
- Gain perspective of the role of public perception and EJ population concerns
- Broader conversation through open discussion and suggestions for FHWA
Speaker Introductions

- Angela Jacobs, FHWA Office of Operations, Congestion Pricing Manager
- Natalie Bettger, Senior Program Manager, Congestion Management and System Operations, North Central Texas Council of Governments (NCTCOG)
- Nancy Pfeffer, President, Network Public Affairs, LLC
FHWA’s Congestion Pricing Program

- Congestion Pricing program and website provides information and resources to help equip state agencies and practitioners with an understanding and tools to implement congestion pricing projects and incorporate pricing into transportation planning.

- Relevant Initiatives
  - VPPP supported project in Texas
  - Ongoing support to NCHRP 08-100 “Environmental Justice Analysis when Considering Toll Implementation or Rate Changes”
Impetus for the Workshop

“Agencies looking to implement priced-managed lanes need to be cognizant about both the potential for genuine adverse impacts on low-income populations, as well as the gap in public education leading to a rejection of road pricing as inherently inequitable.”

- There has been a significant amount of interest in the impact of pricing on EJ populations.
- Very limited information filters to practitioners and the public beyond the transportation agency involved in the action.
LA Metro: I-10/ I-110 Express Lanes
Low-Income Impact Assessment
LA Metro – Overview

- Assessment of low-income impacts required by state authorizing bill (SB 1422)
  - Offered guidance as to methodology
- ExpressLane implementation would leave low-income commuters better off:
  - More travel choices
  - Enhanced transit service
- However, some mitigations were recommended and implemented:
  - Transponder account: administrative burdens
  - “Equity Plan” - now called Low-Income Assistance Plan
LA Metro – Methodology

- Define “low-income” -> Recommendation
  - State and local assistance programs
  - Federal poverty threshold
  - Definitions used in project surveys

- Identify potential “low-income” users of express lanes
  - Census data on commuting modes
  - Regional MPO commuting survey
  - Travel demand model: trip origins & demographics by TAZ
  - License plate survey
Income Distribution in ExpressLane Corridors

LA Metro – Methodology

- Evaluate impacts on low-income commuters
  - Travel demand model plus toll optimization model
    - **Toll model can be run to optimize revenue OR optimize travel time**
  - Comparison: *low-income value of time* with *marginal value of time*: the value at which the driver is indifferent between staying in the free lane or entering the Express Lane
- **Conclusion:** no instances where low-income commuters would choose the express lanes, BUT
  - **Minimum toll level affected model results**
  - Average value of time vs. instantaneous (range)
  - Toll credits could help, along with different assumptions about value of time
  - Anyone may decide that the cost of toll is worth the time saved
LA Metro – Additional Findings

- Overall cost-benefit analysis
  - Ensure cost of contemplated toll and transit credits could be covered
  - Overall net social benefit (positive Net Present Value)
- Analysis of transponder account administrative burdens
  - Prevalence of credit cards, bank accounts
LA Metro – Recommendations

- Credit account set-up fees for low-income households
  - Versus on-going toll credit
  - Implemented: one-time $25 credit per household
- Require lower minimum account balance for accounts not linked to credit card
- Ensure wide local distribution of transponders
- Waive or reduce minimum monthly account charges
  - Implemented – monthly $1 fee waived
- Transit credits can be earned
  - Implemented via TAP cards

***Outcome: as of early 2015, over 5,000 low-income households signed up***
Equity of Evolving Transportation Finance Mechanisms, 2011 (TRB Special Report 303) suggests these key questions:

- Who is affected by the project?
- Who makes direct payments, and how are revenues spent?
- What are the benefits and impacts of the project [for low-income drivers]?
- What travel alternatives are available (if needed)?

Just Pricing: the distributional effects of congestion pricing and sales taxes (L. Schweitzer, University of Southern California, and B.D. Taylor, University of California, Los Angeles, 2008)

“Using sales taxes to fund roadways... shift[s] some of the costs of driving from drivers to consumers at large, and in the process disproportionately favors the more affluent at the expense of the impoverished. Others have shown such transfers to be inefficient; we argue it is inequitable as well.”
Elements of Equity Assessment

- Demographic data (focus on low-income)
- Survey data
- Project funding/financing data
- Traffic modeling: time savings
- Toll modeling and value of time
- Travel alternatives
- Transponder issues
Equity Findings – Project Finance Plans

- Funding can come from multiple sources
  - Toll is paid by user for specific benefit (most equitable)
  - Gas tax may be paid by non-users of I-10 & I-15 toll lanes
  - Sales tax may be paid by non-users

- There is no goal or standard for what is equitable
General Purpose Lane Travel Time on I-15 Year 2030 from SR-60 to US 395
(in minutes to travel ~33 miles)

Source: CDM Smith traffic model results September 2013
Overall Recommendations for Tolling Equity Analysis

- Analyze equity concerns early (if you can)
- Coordinate with other project analysts
  - GIS staff
  - Traffic modelers
  - Financial projections
- Consistent findings for HOT lanes
  - Positive findings for equity for low-income travelers: better off with more travel choices, (possible) new transit service, faster GP lanes
  - Subsidy or special policies recommended for low-income households’ accounts
- ***Other forms of tolling may present more equity concerns***
NCTCOG: Influencing Travel Behavior with Sensitivity to Environmental Justice
Project Overview Phases

- Develop Tool to Track Usage and Provide Incentives
  - TryParkingIt
  - DFW Connect-A-Ride

- Enhance Tool to Guide Operational Decisions on Managed Lanes (ML)
  - Goals and Performance Measures
  - Determine and Measure Incentives through Survey
  - Model Incentive Impacts and Incorporate Results into Tool
  - Use the Tool to Help Determine IH-30 ML Policies

- Implement Incentives
  - Marketing and Outreach
  - Track Usage
  - Compare Model Data to Real World Data
IH 30 Corridor Characteristics

- Major East/West Facility
- Connects Dallas and Fort Worth
- Multiple Operators
- Managed Lane Corridor
- Over 80% Households in Corridor are disadvantaged
Usage Tracking Tools and Incentives

- **NCTCOG’s Commuter Tracking & Ride-matching System**
  - Purpose is to reduce journey-to-work trips
  - App and Website
- **NCTCOG’s “real-time” ridesharing program**
- **Drive on TEXpress** is a free mobile app and website for HOV users to receive toll discounts
  - Carpools using the app receive a 50% toll discount on ML
## Traffic Thermostat Modeling Tool

<table>
<thead>
<tr>
<th>Goal</th>
<th>MOEs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safe Travel</td>
<td>Number of Crashes</td>
</tr>
<tr>
<td></td>
<td>Incident Clearance Time</td>
</tr>
<tr>
<td>High-Speed Travel</td>
<td>Average Speed</td>
</tr>
<tr>
<td></td>
<td>Travel Time</td>
</tr>
<tr>
<td>Reliable Travel</td>
<td>Buffer Index</td>
</tr>
<tr>
<td></td>
<td>Days per Month Below Threshold</td>
</tr>
<tr>
<td>Provide Choice</td>
<td>Public Perception of User Choice</td>
</tr>
<tr>
<td></td>
<td>Number of Unique Users</td>
</tr>
<tr>
<td>Maximize Throughput</td>
<td>Person Throughput</td>
</tr>
<tr>
<td></td>
<td>Person Throughput in HOVs</td>
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</tbody>
</table>
## Traveler Characteristics - Survey

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Percentage of Travelers</th>
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<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>55.2</td>
</tr>
<tr>
<td>Female</td>
<td>44.8</td>
</tr>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>18-24</td>
<td>4.3</td>
</tr>
<tr>
<td>25-34</td>
<td>20.1</td>
</tr>
<tr>
<td>35-44</td>
<td>17.6</td>
</tr>
<tr>
<td>45-54</td>
<td>24.1</td>
</tr>
<tr>
<td>55-64</td>
<td>23.5</td>
</tr>
<tr>
<td>65+</td>
<td>10.2</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
</tr>
<tr>
<td>White/Caucasian</td>
<td>78.5</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>6.9</td>
</tr>
<tr>
<td>African American</td>
<td>6.6</td>
</tr>
<tr>
<td>Asian American</td>
<td>2.8</td>
</tr>
<tr>
<td>Native American</td>
<td>1.3</td>
</tr>
<tr>
<td>Other</td>
<td>3.8</td>
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</tbody>
</table>
## Traveler Characteristics - Survey

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Percentage of Travelers</th>
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<tbody>
<tr>
<td><strong>Education</strong></td>
<td></td>
</tr>
<tr>
<td>Less than high school</td>
<td>0</td>
</tr>
<tr>
<td>High school graduate</td>
<td>2.5</td>
</tr>
<tr>
<td>Some college or vocational school</td>
<td>21.9</td>
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<tr>
<td>College graduate</td>
<td>42.5</td>
</tr>
<tr>
<td>Post-graduate college</td>
<td>33.1</td>
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<tr>
<td><strong>Household Income</strong></td>
<td></td>
</tr>
<tr>
<td>Less than $10,000</td>
<td>0</td>
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<td>$10,000 - $14,999</td>
<td>0.3</td>
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<td>$15,000 - $24,999</td>
<td>1.9</td>
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<td>$25,000 - $34,999</td>
<td>4.1</td>
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<td>$35,000 - $49,999</td>
<td>8.8</td>
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<tr>
<td>$50,000 - $74,999</td>
<td>20.7</td>
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<tr>
<td>$75,000 - $99,999</td>
<td>16.3</td>
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<tr>
<td>$100,000 - $199,999</td>
<td>25.4</td>
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<tr>
<td>$200,000 or more</td>
<td>6</td>
</tr>
<tr>
<td>Prefer not to answer</td>
<td>16.7</td>
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### Answer to Stated Preference Question 1

<table>
<thead>
<tr>
<th>Mode</th>
<th>Percentage of Travelers</th>
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<tbody>
<tr>
<td>General Purpose Lane</td>
<td>68.8</td>
</tr>
<tr>
<td>Managed Lane Drive Alone</td>
<td>15.7</td>
</tr>
<tr>
<td>Managed Lane Car Pool</td>
<td>11.7</td>
</tr>
<tr>
<td>Transit</td>
<td>3.7</td>
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</table>

### Average of SP2 and SP3

<table>
<thead>
<tr>
<th>Mode</th>
<th>Percentage of Travelers</th>
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<tbody>
<tr>
<td>General Purpose Lane</td>
<td>60.2</td>
</tr>
<tr>
<td>Managed Lane Drive Alone</td>
<td>19.1</td>
</tr>
<tr>
<td>Managed Lane Car Pool</td>
<td>17.1</td>
</tr>
<tr>
<td>Transit</td>
<td>3.7</td>
</tr>
</tbody>
</table>

Express Lanes chosen 31% of the time without an incentive and 40% when an incentive was offered.
Incentives Chosen for Survey

- Earn a free trip for every X paid trips taken on the ML
- Earn gift cards worth $5 for every X peak-hour trips saved by either telecommuting or by not traveling during the peak hours (7-9 am or 4-6 pm)
- X% discount offered through select businesses
- For every X trips taken by transit, $5 in credits that can be used on the Express Lanes
- A transit fare discount of X%
- Express bus service from park-and-ride lots to downtown
<table>
<thead>
<tr>
<th>RANK USER GROUP</th>
<th>CURERNT STATUS</th>
<th>TRANSPORTATION MODE</th>
<th>GPL VOLUME</th>
<th>ML VOLUME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Free</td>
<td>Transit (number of vehicles)</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>Free</td>
<td>Vanpools</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>Free</td>
<td>Other buses</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>Tolled</td>
<td>HOV3+</td>
<td></td>
<td>250</td>
</tr>
<tr>
<td>4</td>
<td>Tolled</td>
<td>HOV2</td>
<td></td>
<td>1000</td>
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<tr>
<td>5</td>
<td>Tolled</td>
<td>SOVs</td>
<td></td>
<td>2500</td>
</tr>
<tr>
<td></td>
<td>Not Allowed</td>
<td>Low Emissions/&quot;green&quot; vehicles</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not Allowed</td>
<td>Fuel efficient vehicles</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tolled</td>
<td>Motorcycles</td>
<td></td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Not Allowed</td>
<td>Law enforcement/ambulance/fire</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>vehicles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>Not Allowed</td>
<td>Violators</td>
<td></td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Not Allowed</td>
<td>Transportation Agency Vehicles</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not Allowed</td>
<td>Low income traveler program</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not Allowed</td>
<td>Trucks</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Traffic Thermostat Operational Fixes

Overview
Facility Type: HOT
Start Time: 7:00A
End Time: 8:00A
Goals & MOEs:
Goal 1: High-speed Travel 
Average Speed 
Goal 2: Maximize 
Throughput 
Person Throughput Per Hour 

Select possible operational fixes and/or incentives to appear in the framework along with pricing and occupancy solutions. Any incentive value can be entered. However, the incentives’ impact was based on a specific range. More information is available here.

Note: the change of toll would only be applied to these user groups which are allowed.

Select all that apply:

- Pricing (toll per trip)
  - Toll Group 1: HOV3 + Vanpools $2 $3
  - Toll Group 2: HOV2 $2 $3
  - Toll Group 3: Motorcycles, Law Enforcement Vehicles, TAV, Low-income $2 $3
  - Toll Group 4: SOV3, Low Emissions, Fuel Efficient $4 $6
  - Toll Group 5: Trucks
- Allowed user groups
- Increase enforcement (This will remove 50% of the violators from the managed lane)
- Incentive 1: Earn a free trip on the Managed Lanes for every ___ number of trips
- Incentive 2: Earn gifts such as cash or gift cards for every ___ number of trips

- Incentive 3: A ___ percent discount to local businesses
- Incentive 4: Earn $5 in credit for every ___ number of trips taken by transit
- Incentive 5: A Transit discount of ___% during the peak hours
- Incentive 6: Express bus service to downtown

*Others (write in): 
New $x, Ski Rangers Tickets

*Note that the impact of those are unknown

Recommended: 0-10

Previous Next
# Traffic Thermostat Output

**I-30 Traffic Thermostat**

**Overview**
- Facility Type: HOT
- Start Time: 7:00 AM
- End Time: 8:00 AM
- Goals & MOEs:
  - Goal 1: High-speed Travel
  - Average Speed
  - Goal 2: Maximize Throughput
  - Person Throughput Per Hour

**GOAL: High-speed Travel**

- Chosen MOE: Average Speed
- Currently: Failing
- Value assigned to this MOE: 50
- Selected operational fixes for this MOE:
- Pricing:
  - Is 48 mph for the current Average Speed acceptable?

  - Chose No

  - Operational Fix: Allowed User Group. Exclude SOVs?
    - Chose No

  - Operational Fix: Pricing. Change toll for TollGroup($SOV) from $4 to $6?
    - Chose Yes

- Given this change, the average speed on the MLs for your time period is now 51 mph. Are you done implementing fixes?
  - Chose Yes

**GOAL: Maximize Throughput**

- Chosen MOE: Person Throughput Per Hour
- Currently: Failing
- Value assigned to this MOE: 5700
- Selected operational fixes for this MOE:

  - Incentive 5: A Transit discount of 8% during the peak hours
- The Person Throughput Per Hour during your time period is 3644 people. Is this satisfactory?
Marketing & Outreach

Goals & Objectives

- Recruit participants for the I-30 Insider program
- Determine the effectiveness of several types of incentives to encourage alternative commutes
- Specific focus low-income individuals
- October 2016 through April 2017
How it works:

1. Create an account at TryParkingIt.com.
3. Between 10/1/2016 and 4/28/2017, instead of driving alone on I-30, use any of these alternative commutes:
   - Carpool or Vanpool
   - Take Transit
   - Bike
   - Walk
   - Telecommute or Compensated Work Week

4. Log your alternative commute at TryParkingIt.com and select the I-30 Insider option to earn points. The I-30 Insider icon (🎁) will appear on your calendar.
5. Claim your I-30 Insider rewards, as long as supplies last.
Advertisements

- Social Media Advertising
  - Facebook
  - Instagram
- Digital Billboards
- Search Engine Optimization
- Targeted Digital Advertising
  - CBS Radio
  - Dallas Morning News
  - KXAS / NBC 5
Challenges

- Challenging to develop a tool that is both accurate and flexible
  - Quantifying impacts
  - Changing operational fixes
  - Conflicting goals

- Access to demographic data for specific users of the system.
  - Have options not to answer

- Marketing and outreach to specific audience.
  - How best to engage Environmental Justice disadvantaged community?

- Environmental Justice disadvantaged is high along corridor, but not sure about travelers on the facility
Contacts

- Angela Jacobs: Angela.Jacobs@dot.gov
- Sonika Sethi: Sonika.S.Sethi@leidos.com
- Natalie Bettger: NBettger@nctcog.org
- Nancy Pfeffer: nancy@networkpa.net
Q & A
Open Discussion

- Other experiences with performing EJ analysis and equity concerns related to congestion pricing projects
  - Innovative approaches
  - Tools developed
  - Steps taken to mitigate any adverse impacts
  - Communicating equity impacts to public
  - Lessons learned