



# CAIT

Center for Advanced Infrastructure & Transportation  
Rutgers, The State University of New Jersey

## QUARTERLY PROGRESS REPORT

Project Title:	Evaluation Study of the NJ Turnpike Authority's Value Pricing Initiative		
RFP NUMBER:			NJDOT RESEARCH PROJECT MANAGER: Nancy Ciaruffoli
TASK ORDER NUMBER/Study Number: 114 / 4-26514	PRINCIPAL INVESTIGATOR: Kaan Ozbay (Rutgers) / Jose Holguin-Veras (RPI)		
Study Start Date: 01/01/2002 Study End Date: 12/31/2004	Period Covered: 3 <sup>rd</sup> Quarter 2004		

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Literature Search	5%	25%	100%	5%
Task 1: Collect socio-economic characteristics of the users.	10%	45%	75%	7.5%
Task 2: Identification of toll structure changes.	2.5%	100%	100%	2.5%
Task 3: Traffic data collection.	5%	100%	100%	5%
Task 4: Assess impacts on users.	5%	40%	100%	5%
Task 5: Monitor media and decision-makers' reaction to value pricing	2.5%	30%	80%	2.0%
Tasks 6-7: Assemble panel of users. Collect travel behavior data.	20%	50%	90%	18%
Tasks 8-9: Behavioral modeling. Estimation of econometric parameters.	10%	20%	20%	2%
Task 10: Traffic modeling.	10%	10%	80%	8%
Task 11: Estimate congestion levels and travel time savings/losses for before and after conditions.	10%	40%	70%	7%
Task 12 : Estimate environmental impacts for before and after conditions.	5%	20%	29%	1%
Tasks 13-14: Estimate economic value of travel time savings. Differential impacts among user classes.	5%	10%	70%	3.5%
Final Report	10%	10%	50%	5%
TOTAL	100%			71.5%

### Project Objectives:

#### Objective I: Descriptive Analysis

##### *A. Operational elements at New Jersey Turnpike Facilities*

Describe:

- ◆ New Jersey Turnpike: access, geographic areas, speeds, toll collection scheme
- ◆ Traffic ordinance violations and enforcement
- ◆ Strategy followed by New Jersey Turnpike Authority in implementing EZ-PASS and Value Pricing

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Collect data on:

- ◆ Traffic volumes by vehicle type and time of day
- ◆ Traffic composition by time of day
- ◆ Traffic counts by toll plaza by time of day
- ◆ Accidents and incidents

**B. Current toll structures and role of electronic toll collection**

Describe:

- ◆ Implementation strategy: passenger cars, trucks

Assess:

- ◆ Acceptance rates and level of penetration of EZ-PASS
- ◆ Acceptance of Value Pricing

**C. Socio-economic profiles of users**

Collect data on:

- ◆ Income, gender, ethnicity, travel profile and overall characteristics of users and non users

Estimate through modeling:

- ◆ Travel time values
- ◆ Direct and cross elasticities
- ◆ Income elasticities

**D. Media and Decision-Makers' Reaction**

- ◆ Monitor media and decision-makers reaction to the various stages of implementation of value pricing

**Objective 2: Behavioral Analyses**

**A. Travel Behavior: Passenger Transportation**

Collect data and investigate through modeling the characteristics of (long term):

- ◆ Vehicle utilization and auto ownership
- ◆ Route choice
- ◆ Departure time
- ◆ Joint processes of route choice and departure time
- ◆ Traffic diversion
- ◆ Mode choice
- ◆ Vehicle occupancies
- ◆ Assessment of trip curtailment and before/after trip generation
- ◆ Joint processes of trip generation and trip chaining
- ◆ User responses to dynamic traffic information and pricing
- ◆ The role of the trip length upon the choice processes described above



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## Objective III: System Wide Impacts

Traffic Congestion Impacts

Environmental Impacts (minor emphasis)

Other Economic Impacts (minor emphasis)

### **Project Abstract:**

The project's main focus is to monitor the impacts of the New Jersey Turnpike Authority's Value Pricing initiative, both at the system wide level and at the user level. The research team is interested, among other things, in assessing the behavioral changes as a consequence of the implementation of value pricing. In order to maximize the cost-effectiveness of the resources available to this investigation, the project team decided to study: (a) the impact of value pricing on the traffic of the entire New Jersey Turnpike; and (b) the behavioral impacts of value pricing on the users of the Northern part of the New Jersey Turnpike. This enables the project team to cover the entire length of the project and, at the same time, conduct advanced behavioral modeling on the most congested section of the NJTPk. The proposal has three main focus areas: *Descriptive Analyses*, *Behavioral Analyses* and *System Wide Impacts*. In each of these focus areas, different items will be analyzed and investigated.

#### 1. Progress this quarter by task:

- Task 4: We finished the aggregate data analysis. A draft working paper is completed. Now, we completed the analysis of the disaggregate car by car EZ Pass data provided to us by NJ Turnpike. We updated the working draft paper to reflect our findings as a result of this analysis.
- Task 5: Allan Lichtensten of TPI is working on a draft working paper.
- Task 6-7: Survey design is completed.
- Task 8-9: We started to work on the survey data.
- Task 10: We completed the building of NJTPk model for the traffic modeling. We calibrated it with traffic data we obtained from the NJTPk.
- Task 11: We determined travel time savings for before and after using real microscopic data. We are also working on the quantification of these benefits. \
- Task 12: We are working on the quantification of the environmental impacts for before and after conditions, if any, mainly based on the travel time changes.
- Tasks 13 and 14: We finished the work on the value of time model that will be used to quantify the economic value of travel time savings in these tasks. We are also going to use "survey results" to estimate the parameters of this model.

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## 2. Proposed activities for next quarter by task

- Continue to work on all the unfinished tasks
- Work on the behavioral and traffic model to assess the impacts of value pricing.
- Use the Paramics model to estimate possible benefits under different demand conditions.

## 3. List of deliverables provided in this quarter by task (product date)

- Draft working paper on aggregate and disaggregate traffic data analysis.
- Draft working paper on traffic modeling.
- Draft working paper Preliminary value of time model
- Presentation of the descriptive study of survey results

## 4. Progress on Implementation and Training Activities

## 5. Problems/Proposed Solutions

Total Project Budget	\$ 477,468.00
<b>Modified Contract Amount:</b>	
Total Project Expenditure to date	\$238,685
% of Total Project Budget Expended	50%

\* These are approximate expended amounts for the project; these estimates are for reference only and should not be used for official accounting purposes. For a more accurate project accounting please review the quarterly invoice for this project.

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