

# Towards a Post-Processor-Based HOT Lane Mode Shift Model

*presented to*

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*presented by*

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# Presentation Outline

- **Introduction**
- **Generalized Approach**
- **Proof of Concept**
- **Choice Experiment Analysis**
- **Implications and Further Work**

# Introduction

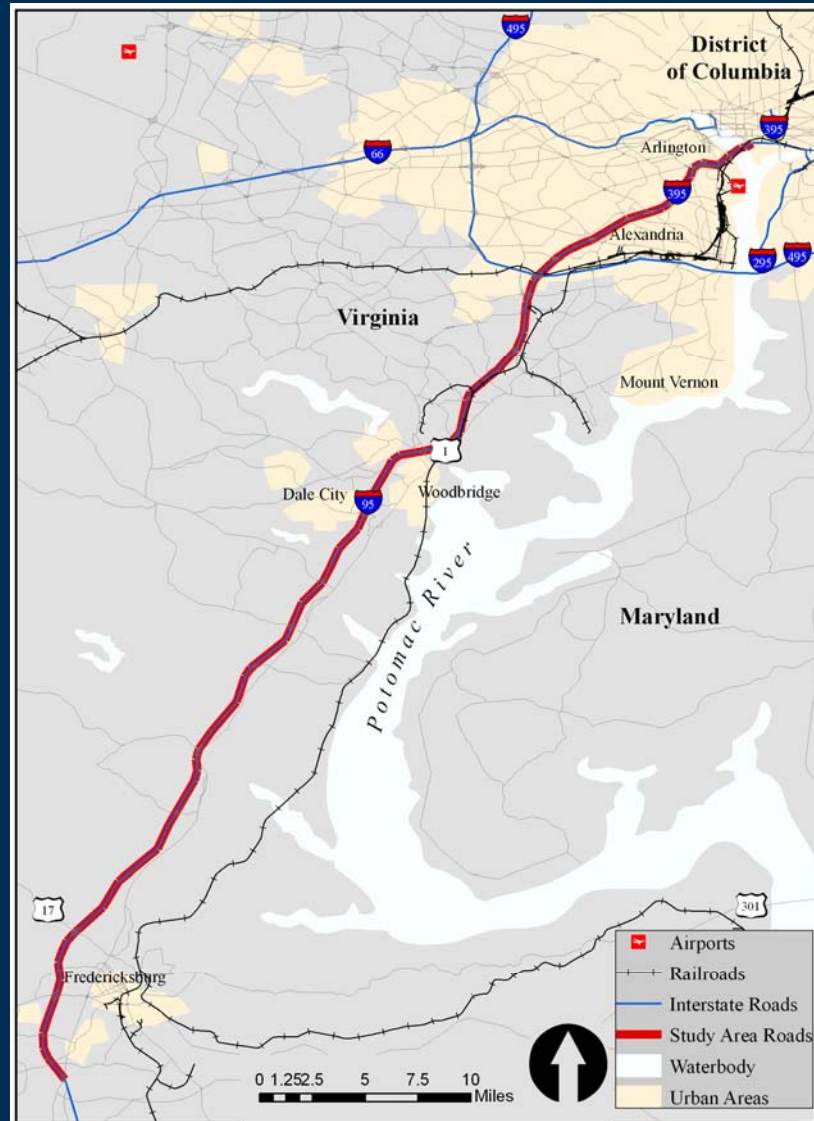
- **Existing methods of incorporating toll modeling**
  - Mode choice, trip assignment, and diversion models
  - Activity-based models
  - Sketch planning methods
  - Post-processor models
- **Revising existing model sets to incorporate tolling is time and resource extensive**

# Generalized Approach

- **Utilize market research stated-preference survey data**
  - Customized questions based on prior answers
  - Adds “realism” to scenarios
- **Develop post-processor mode shift model with the stated preference data**

# Proof of Concept

- Comprehensive HOT lane market research study undertaken in the I-95/I-395 corridor



## Proof of Concept (continued)

- **3,288 completed interviews from household postcard-initiated sample plus direct mail lists**
- **Current commute patterns and choice experiments**
  - **Time savings – 5 to 20 percent of current total travel time (capped for HOV and transit)**
  - **Randomly generated cost of \$0.08 to \$0.50 per minute of time savings presented as a total price**
  - **3-4 choice experiments per respondent**

# Proof of Concept (continued)

## Mode Choices Available

### Drive Alone Respondents

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Pay to use HOT lane  
Switch to an HOV mode to use HOT lane\*  
Continue to use regular lanes  
Other

### Non-Drive Alone Respondents

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Switch to Drive Alone and pay to use HOT lane  
Switch to Drive Alone and use regular lanes  
Continue to use HOV mode  
Other

\* A follow-up question was asked regarding HOV mode chosen

# Choice Experiment Analysis

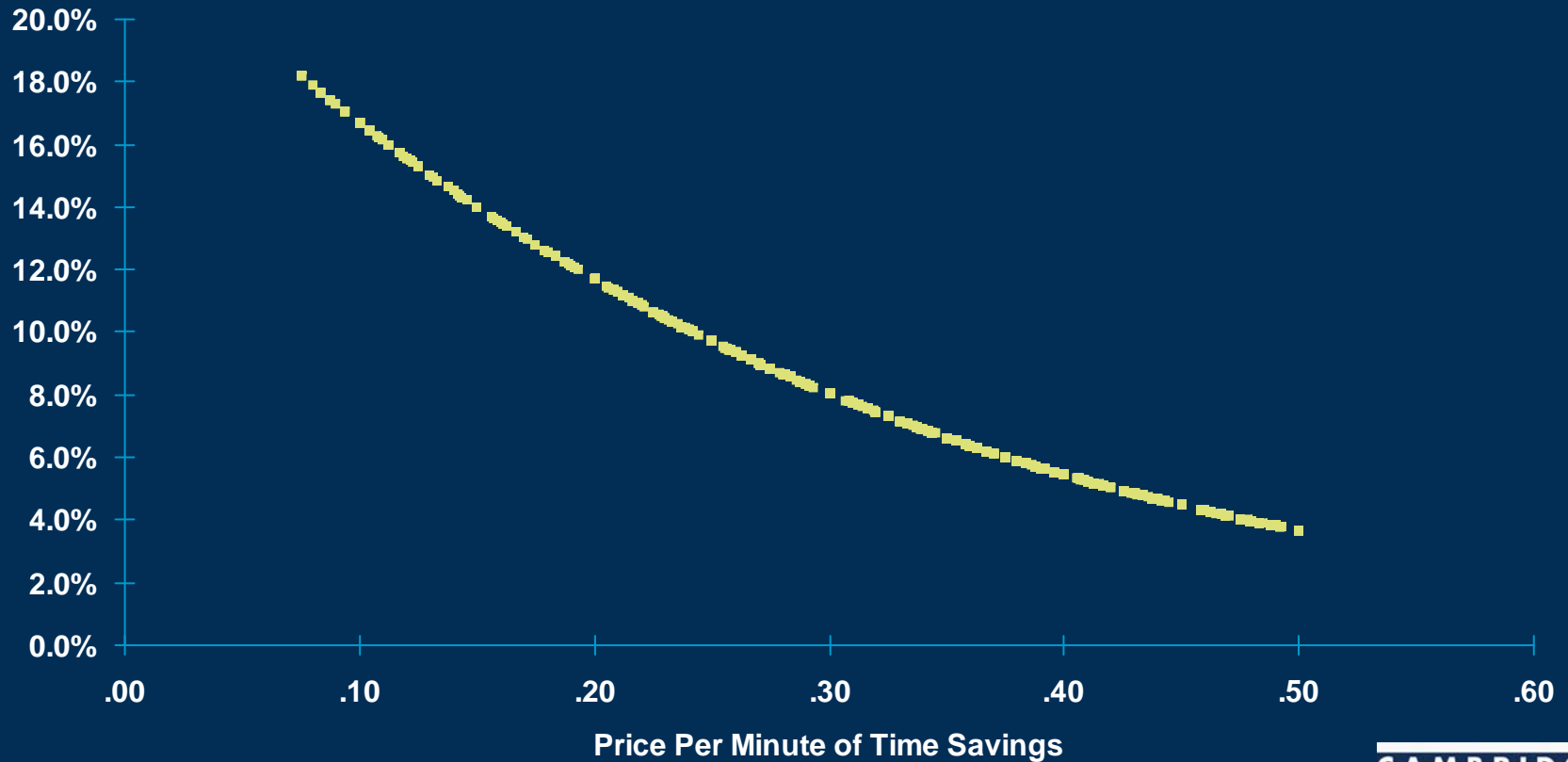
Percentage of Total Respondents



# Choice Experiment Analysis

- **Binomial Logit Model Specification (pay or not pay)**

Probability of Paying  
for Time Savings



# Implications

- **Does not require time-consuming and costly revision of current models**
- **Ability to further analyze mode split outputs from the traditional four-step travel demand model to identify potential shifts to added choices**
- **Permits a post-processor mode-shift tolling model to be used to determine the percentage shifting to pay to drive alone or with one other person in the toll lanes**

# Future Work

- **Alternate model specifications**
  - Multinomial Logit
  - Inclusion of more variables
- **Market segmentation**
  - Socioeconomic
  - Geographic
- **Transferability**
  - Comparison of model parameters across areas could enhance understanding of potential for transferability of findings

# Acknowledgments

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[http://www.drpt.virginia.gov/studies/files/I95\\_I395\\_Transit\\_Final.pdf](http://www.drpt.virginia.gov/studies/files/I95_I395_Transit_Final.pdf)

# Questions?

