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## Respondent Learning and Fatigue in Stated Choice Experiments

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Derek Lindgren

# RESPONDENT LEARNING AND FATIGUE IN STATED CHOICE EXPERIMENTS

# Outline

- Introduction
- Literature Review
- Data & Methods
- Regression Results
- Conclusions
- Future Implications

# Introduction

- ⦿ Valuation of non-marketed goods
- ⦿ Choice experiments
- ⦿ Survey format
  - Inherent respondent patterns
    - Preference learning
    - Fatigue

# Literature Review

- ⦿ Discovered preference hypothesis
  - Plott (1996)
- ⦿ Fatigue behavior
  - Bradley and Daly (1994)
  - Daly et al. (2012)

# Data & Methods

- ◎ Middle Rio Grande Forest Restoration
  - 70 surveys; 35 hypothetical payment, 35 real-payment
  - 20 questions each, 3 alternatives
- ◎ Source: Broadbent et al. (2010)

# Question Example

## Question #1

	Option A	Option B	Option C
Number of non-native trees to be <b>removed</b>	10	17	Status Quo: No Change
Number of Native trees to be <b>planted</b>	1	4	
Voluntary Donation	\$14	\$5	

# Regression Equation

- Alternative-specific conditional logit model
  - Krinsky-Robb (1986) bootstrapping procedure

$$\begin{aligned} y(\textit{Choice}) &= \alpha \textit{ (Constant)} \\ &+ \beta_1 \textit{ (Exotic)} \\ &+ \beta_2 \textit{ (Native)} \\ &+ \beta_3 \textit{ (Donation)} \\ &+ \beta_4 \textit{ (OptionA)} \\ &+ \beta_5 \textit{ (OptionB)} \\ &+ \varepsilon \textit{ (Error term)} \end{aligned}$$



# Regression Results (Pooled)

Dependent Variable: <i>Choice</i>		First 5 N = 175	Middle 10 N = 350	Last 5 N = 175
<i>Exotic</i>	coefficient	0.085	0.077*	0.076**
	p-value	(0.128)	(0.015)	(0.010)
	std. error	0.056	0.032	0.029
<i>Native</i>	coefficient	0.087	0.287**	0.494**
	p-value	(0.571)	(0.000)	(0.000)
	std. error	0.153	0.037	0.073
<i>Donation</i>	coefficient	-0.194**	-0.137**	-0.261**
	p-value	(0.000)	(0.000)	(0.000)
	std. error	0.038	0.027	0.046

\*\* = statistically significant at the  $p < 0.01$  level

\* = statistically significant at the  $p < 0.05$  level

# MWTP Results

Hypothetical		First 5	Middle 10	Last 5
<i>Exotic</i>	coefficient	0.093	<b>0.808*</b>	0.184
	p-value	(0.850)	(0.044)	(0.358)
	std. error	<b>0.493</b>	<b>0.400</b>	<b>0.200</b>
<i>Native</i>	coefficient	-0.315	<b>2.099**</b>	<b>1.577**</b>
	p-value	(0.772)	(0.001)	(0.000)
	std. error	<b>1.089</b>	<b>0.605</b>	<b>0.280</b>
Real Payment				
<i>Exotic</i>	coefficient	0.798	0.338	<b>0.376**</b>
	p-value	(0.161)	(0.113)	(0.005)
	std. error	<b>0.570</b>	<b>0.213</b>	<b>0.133</b>
<i>Native</i>	coefficient	0.983	<b>2.067**</b>	<b>2.241**</b>
	p-value	(0.414)	(0.000)	(0.000)
	std. error	<b>1.204</b>	<b>0.451</b>	<b>0.332</b>

\*\* = statistically significant at the  $p < 0.01$  level

\* = statistically significant at the  $p < 0.05$  level

## $t$ -tests for Statistical Differences

Hypothetical M10 – L5	t-value
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<i>Native</i>	0.783
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Real Payment M10 - L5	t-value
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<i>Native</i>	-0.441
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Pooled Group M10 - L5	t-value
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<i>Exotic</i>	1.080
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<i>Native</i>	0.476
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# Conclusions

- ⦿ Discovered preference hypothesis is confirmed by both payment groups
- ⦿ *t*-tests prove inconclusive
- ⦿ No fatigue is evident
- ⦿ Concurs with previous study conducted last semester on Constitution Trail

# Future Implications

- ⦿ Optimal construction should be reviewed
  - The first few questions should have little to no weight when analyzing results
- ⦿ This analysis should continue to be used in choice experiment surveys.

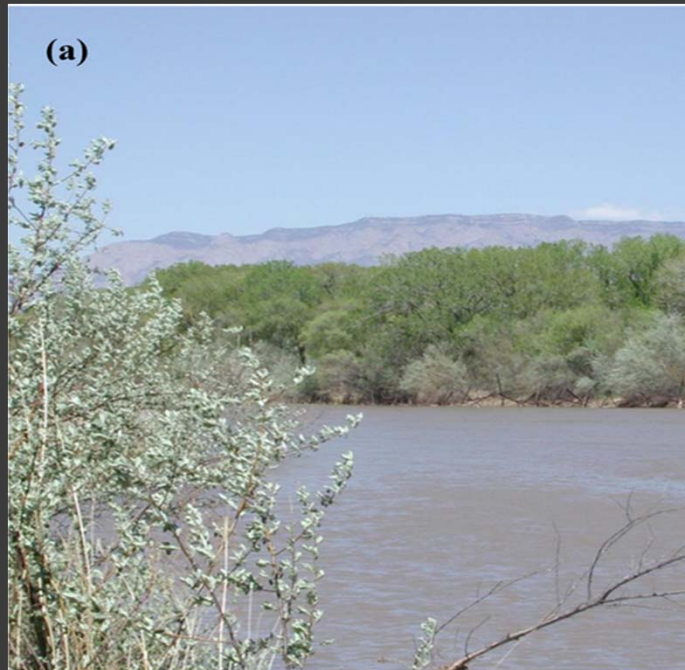
# Acknowledgements

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# Thank you!



## Any questions?