

# **Willingness to Pay for Recycling Services: Social Benefits and Policy Implications for the City of Eugene, Oregon**



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# Today's Objectives

- How much more Eugene residents are willing to pay for recycling services as compared to other western United States cities.
- Quantify attitudes and valuations of recycling program (benefit side of CBA)
- Provide economic value for benefits of recycling services—useful for policy.

# Background

Waste imposes both private and external costs

Private cost consist of: wages, fuel, equipment & landfill costs

External costs: added street noise, increased traffic congestion, more air pollution, threats to groundwater, odor, noise, litter, and emissions of methane

In most cities, the price of waste does not capture the above costs, leading to inefficiencies

Porter calculates deadweight loss in the industry of \$3.5 billion per year.

**SOCIAL COST = PRIVATE COSTS + EXTERNAL COSTS**

# **Recycling services: What are the benefits?**

**WTP (=Willingness To Pay) as a measure of social benefit as defined by subjective valuation of the service itself and the perceived benefits from it.**

# How do you quantify the unquantifiable?

Measuring the benefits of recycling services through survey.

CVM: Contingent Valuation Method is used to quantify values that cannot be discerned or observed in a market context.

Commonly used for valuing animal species, forests, fish yields and other \*public goods.

\*nonexcludability & indivisibility

# Method for Getting WTP

**Ask** people their willingness to pay for recycling services each month using a double-bounded dichotomous choice model.

\*Biases could exist, yet DBDC model addresses them.

\*Starting pt bias, strategic bias, hypothetical bias, information bias

# The Data

Acquired from a comprehensive study by David Aadland and Arthur Caplan of 40 cities across the western United States that sampled approximately 100 residents from each as well as conducting in-depth interviews with a number of recycling managers.



Respondents were asked standard demographic questions (e.g. age, income, gender, education...), whether they participate in their recycling programs and what their attitudes towards the environment are.

# The Variables

Income
Education
Gender
Age
Membership in Environmental Orgs.
Ethical Obligation
Monetary Benefit
Existence of Drop off Center
Existence of CRP
Usage of CRP
Job Performance
Received cheap Talk
Eugene

# Hypothesis



We hypothesized that Eugene residents are willing to pay more for recycling services than those from other cities. We predicted that there will be strong statistical evidence for this claim.

Aggregate WTP will be a substantial dollar amount.

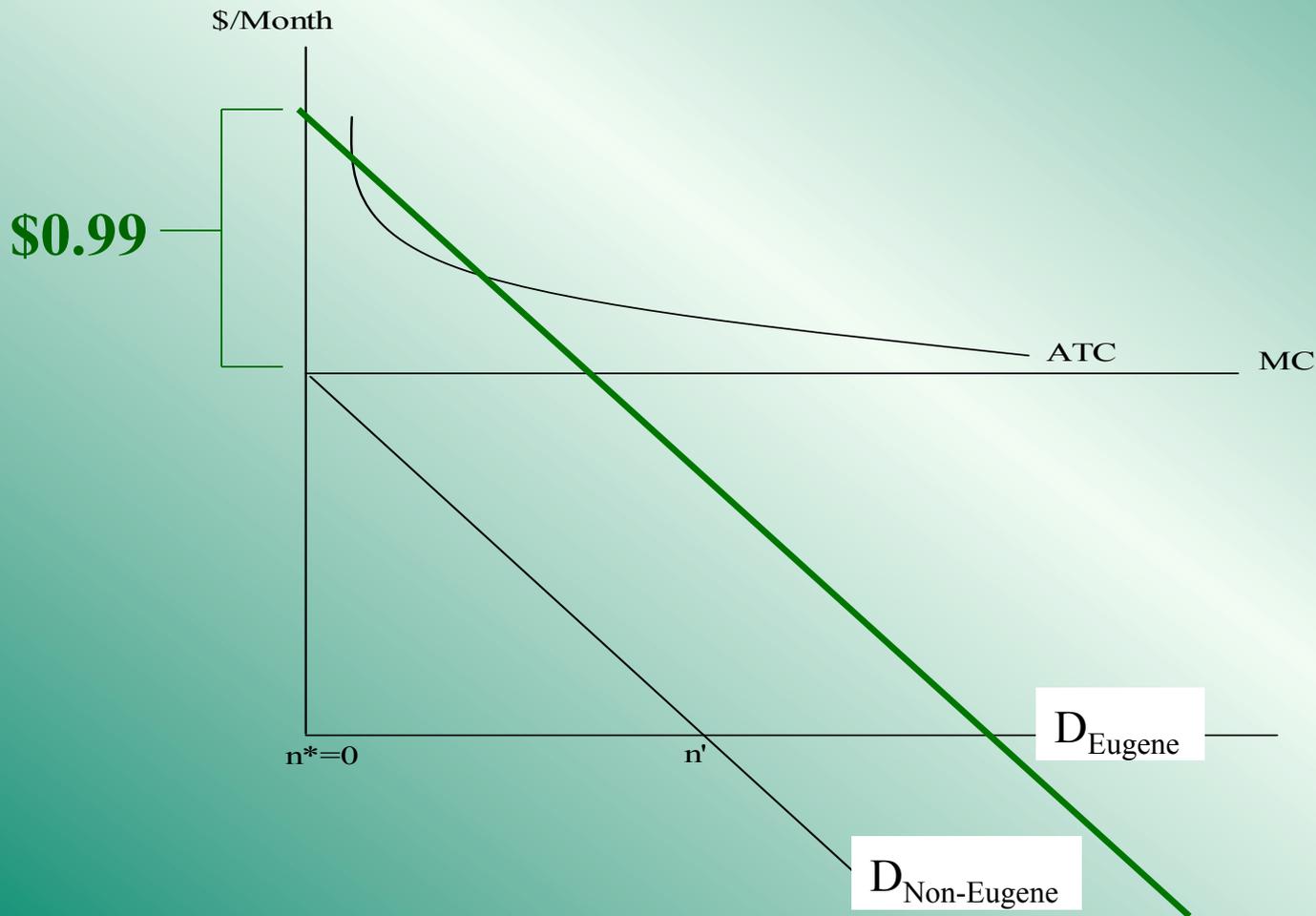
# Econometric Methodology



Developed a model representing relationships between people's WTP and selected characteristics.

We used a statistical model where the dependent variable is a WTP value taking into account the above mentioned characteristics. We use regression analysis to predict a WTP given certain values for the above mentioned variables.

# Eugene: Shifts demand upward



# Eugene's Attitudes



What proportion of Eugene residents...

use the curbside recycling program?	85%
feel an ethical obligation to recycle?	95%
recycle primarily to save money?	58%
are more motivated to by environmental concern than money to recycle?	69%
are members of environmental organizations?	23%
rate the recycling program as “excellent”?	51%
rate the recycling program as “good”?	42%
rate the recycling program as “fair”?	6%
rate the recycling program as “poor”?	2%

# The Results

As a person's Education level increases by one year, WTP increases by \$0.33 (99% confidence)

As Income increases by \$10,000, WTP increases by \$0.10 (91% confidence)

As Age increases by one year, WTP decreases by \$ 0.07 (99% confidence)

Males are willing to pay \$1.01 less than females (99% confidence)

Eugene residents are willing to pay \$0.99 more than nonresidents (98% confidence)

# **THE WTP is:**

**\$8.25\*** per month for  
recycling services

**\*36 years old, female, earns \$48,576, 14 years of  
education**

# WTP Across Income Levels

## for the Average\* Eugenic

(excluding education from the regression)

Income	WTP
15000	8.22
30000	8.5
42500	8.74
(ave) 48576.72	8.85
62500	9.12
87500	9.59
125000	10.31
175000	11.26
250000	12.68

**\*36 years old, female**

# **Aggregate WTP**

**\$478,467 per month**

**Calculated by multiplying the number of households  
by the average WTP for the city of Eugene.**

**Thank you!**