

Heterogeneous Preferences and Demographic Differences for Oysters : Evidence from Field Experiments

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Motivation

- Scientific research supports using oysters as a nutrient management practice.
- Rapid growth brings challenges to the oyster industry in terms of economic returns because consumer demand needs to keep up with rapidly expanding production.
- It is important to understand what motivates consumptions and how to identify potential consumers.

Objectives of this study

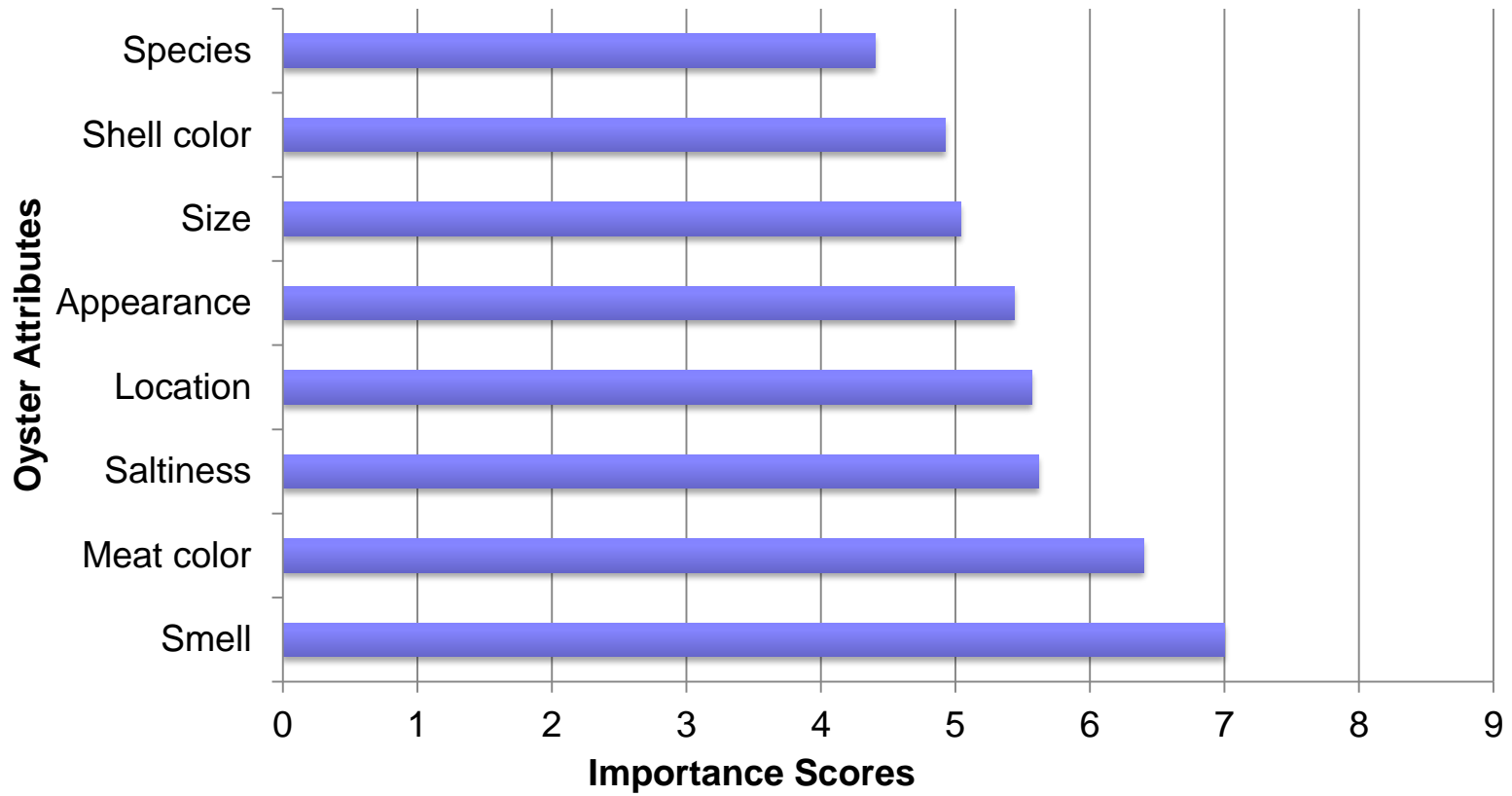
- 1) What demographic characteristics of participants lead them towards a greater willingness to pay (WTP) for oysters?
- 2) How do people prefer their oysters prepared?
- 3) Which oyster attributes do consumers value most, and which do not appear as important?
- 4) What contributes to the heterogeneity in consumer preferences?

Data

Summary statistics for demographic variables			
Number of respondents	486		
Average age (years)	37		
Female	51.4%		
Primary shopper	70.12%		
Education (highest level)			
Some school	2.7%	Political Affiliation	
High school diploma	18.0%	Conservative	26.47%
Some college	37.5%	Moderate	33.61%
Bachelors' degree	24.1%	Liberal	34.24%
Advanced degree or graduate degree	16.1%	Other	5.67%
Household income (in 2015)		Annually oyster consumption	
Less than \$10,000	12.6%	0	24.27%
\$10,000 to \$24,999	12.6%	1-2	35.69%
\$25,000 to \$74,999	35.3%	3-5	22.82%
\$75,000 to \$149,999	27.7%	6-9	8.29%
\$150,000 or more	11.8%	9 or more	8.92%

Data

Importance of Oyster Attributes



Data

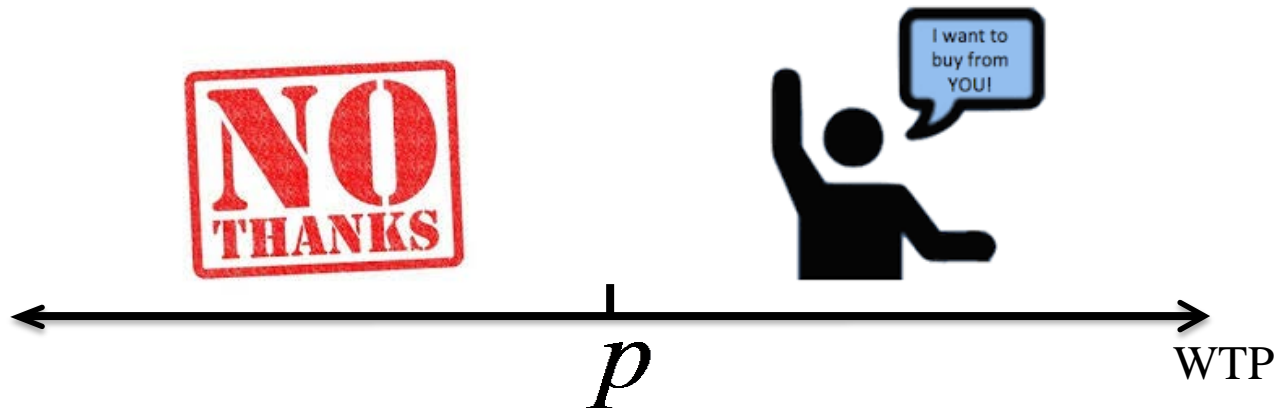
Factor Analysis Results Summary

Variable	Factor Loading	
	Factor 1 (Average)	Factor 2 (Advanced)
Location	0.6158	0.3379
Species	0.5855	0.3144
Size	0.6076	0.1161
Appearance	0.6812	-0.2248
Saltiness	0.5483	-0.1506
Smell	0.5184	-0.2858
Shell color	0.6757	-0.1538
Meat color	0.7204	-0.2740

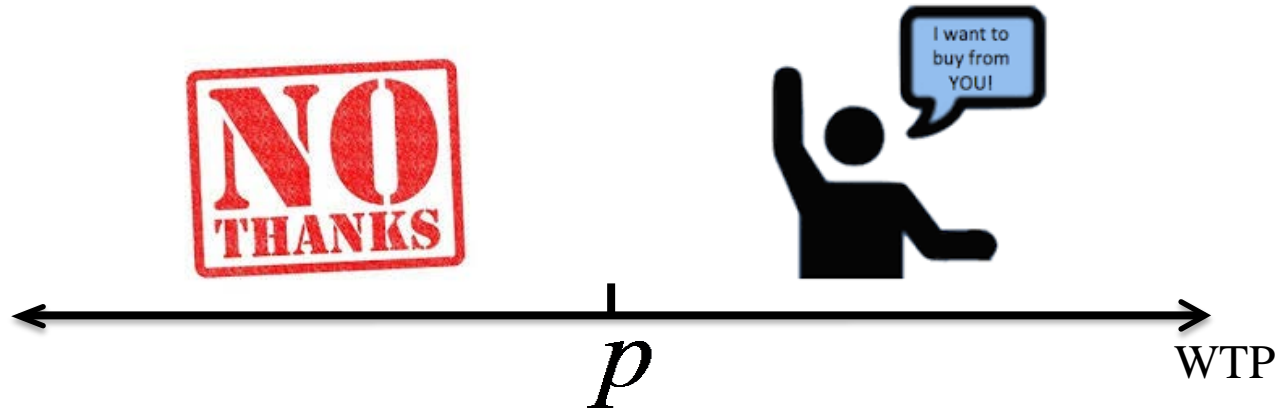
Model

- We use a single-bounded dichotomous choice model to evaluate the respondents' outcomes from our experiment.

$$D = \begin{cases} 0 & WTP < p & (No) \\ 1 & p \leq WTP & (Yes) \end{cases}$$



Model




 Female consumers

 Frequent oyster consumers

 Older consumers

 Primary shoppers

 Participants who have advanced sense for oyster qualities

Results

Marginal Effect of Explanatory Variables on Willingness to Pay

Variable	Marginal Effects on WTP	95% confident interval	
Frequent	0.13**	0.01	0.24
Female	-0.27**	-0.49	-0.04
Age	-0.02***	-0.03	-0.01
Education	0.02	-0.06	0.10
Income	0.04**	-0.01	0.08
Primary shopper	0.20*	-0.04	0.43
Advanced	0.15**	0.01	0.29
Average	0.01	-0.12	0.14
Low nutrient	0.13	-0.03	0.30
Moderate	0.54***	0.37	0.71
High	0.52***	0.35	0.69

Note: *10% significance level, **5% significance level, ***1% significance level.

Average WTP calculated following Hanemann (1984)=\$0.67

Consumers Who Are More Likely to Choose Fried Oysters

Parameters	Coefficient Estimates	Standard Error
Frequent	-0.45***	0.09
Female	0.49**	0.21
Age	-0.00	0.01
Education	-0.14*	0.07
Income	0.04	0.04
Primary shopper	0.26	0.22
Advanced	-0.28**	0.13
Average	0.39***	0.13
Low	-0.40	0.31
Moderate	-0.42	0.29
High	-0.33	0.30
Constant	1.82***	0.48

Note: *10% significance level, **5% significance level, ***1% significance level.



















So What?

- Important oyster attributes
- Demographic differences
- Frequent oyster consumers vs. others

Take-home Messages

- Frequent oyster consumers (\$0.13), primary shoppers (\$0.20) and participants who have advanced sense for oyster qualities (\$0.15) are more willing to pay for oysters.
- Female consumers (\$0.27) and older consumers (\$0.02/year) revealed a lower WTP.
- Consumers are more willing to pay for oysters when they know the nutrient levels of the water where an oyster is grown in.

Who's the Winner?

	Between-Subject Treatments						
	Control	T1	T2	T3	T4	T5	T6
		Water Drop	Olympic Ring	Nutrient Level Text	Nutrient Level Text + NOAA Color-code	Nutrient Level Text + Water	Nutrient Level + Olympic
Baseline Options	<ul style="list-style-type: none"> Oysters from Non-Specified Water Oysters from the East/West Coast Local/Non-Local Oysters 						
Within-Subject Treatments	Non-Specified Water	Non-Specified Water 	Non-Specified Water 	High Nutrient Water	High Nutrient Water 	High Nutrient Water 	High Nutrient Water 
	Non-Specified Water	Non-Specified Water 	Non-Specified Water 	Moderate Nutrient Water	Moderate Nutrient Water 	Moderate Nutrient Water 	Moderate Nutrient Water 
	Non-Specified Water	Non-Specified Water 	Non-Specified Water 	Low Nutrient Water	Low Nutrient Water 	Low Nutrient Water 	Low Nutrient Water 

Thank You, Questions?

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