

A BIO-ECONOMIC ANALYSIS OF GREAT LAKES SPORT FISHING IN INDIANA

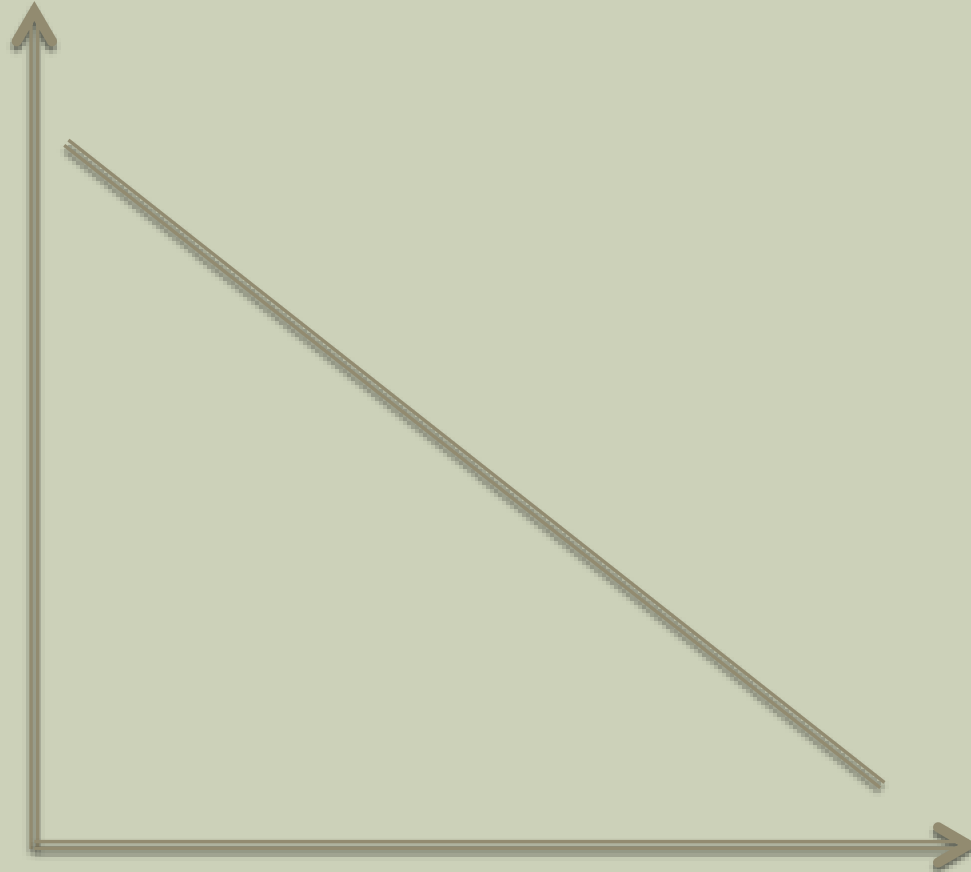
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Honors Program Senior Project

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Price (\$)



Quantity (trips)

VALUING NON-MARKET GOODS

- No formal exchange of a good or service takes place between a consumer and a producer
- No formal market and thus no formal market price
- Economic “good” to be studied:
 - One Great Lakes recreational fishing trip in the state of Indiana

PROJECT OBJECTIVE

- How does decreased environmental quality reduce demand for Great Lakes sport fishing trips in Indiana?
- What potential economic losses could result from this decreased demand?

AQUATIC INVASIVE SPECIES

- “A plant or animal that is non-native (or alien) to an ecosystem, and whose introduction is likely to cause economic, human health, or environmental damage in that ecosystem.”

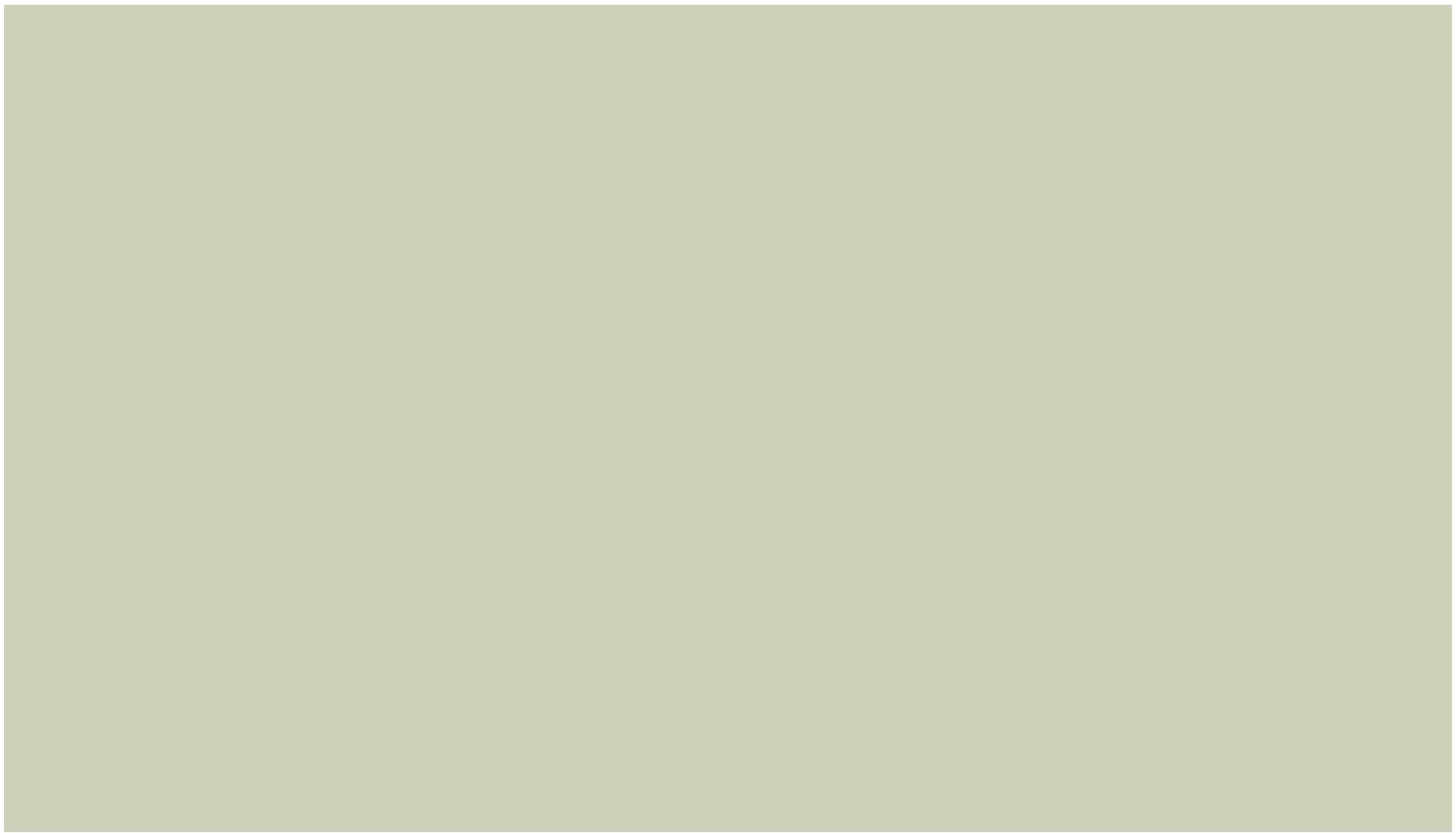
-U.S. Environmental Protection Agency

- **Effects on Great Lakes ecosystem:**

- Decrease in stock of native fish populations and extinction of native fish populations, both due to more competition for food and the fact that some invaders are predators
- Harming pelagic food base and increasing water clarity
- Cause of neurological disorders in some fish, making them weaker and more susceptible to predators
- Increased contamination in food chain

APPROACH / METHOD

- **Travel Cost Method**
- Gives the implicit cost of a fishing trip by calculating the transportation cost to get from home to recreation site and back
- Serves same function as a market price; tells us how much someone is willing to give up to obtain the “good”



WHY INDIANA?



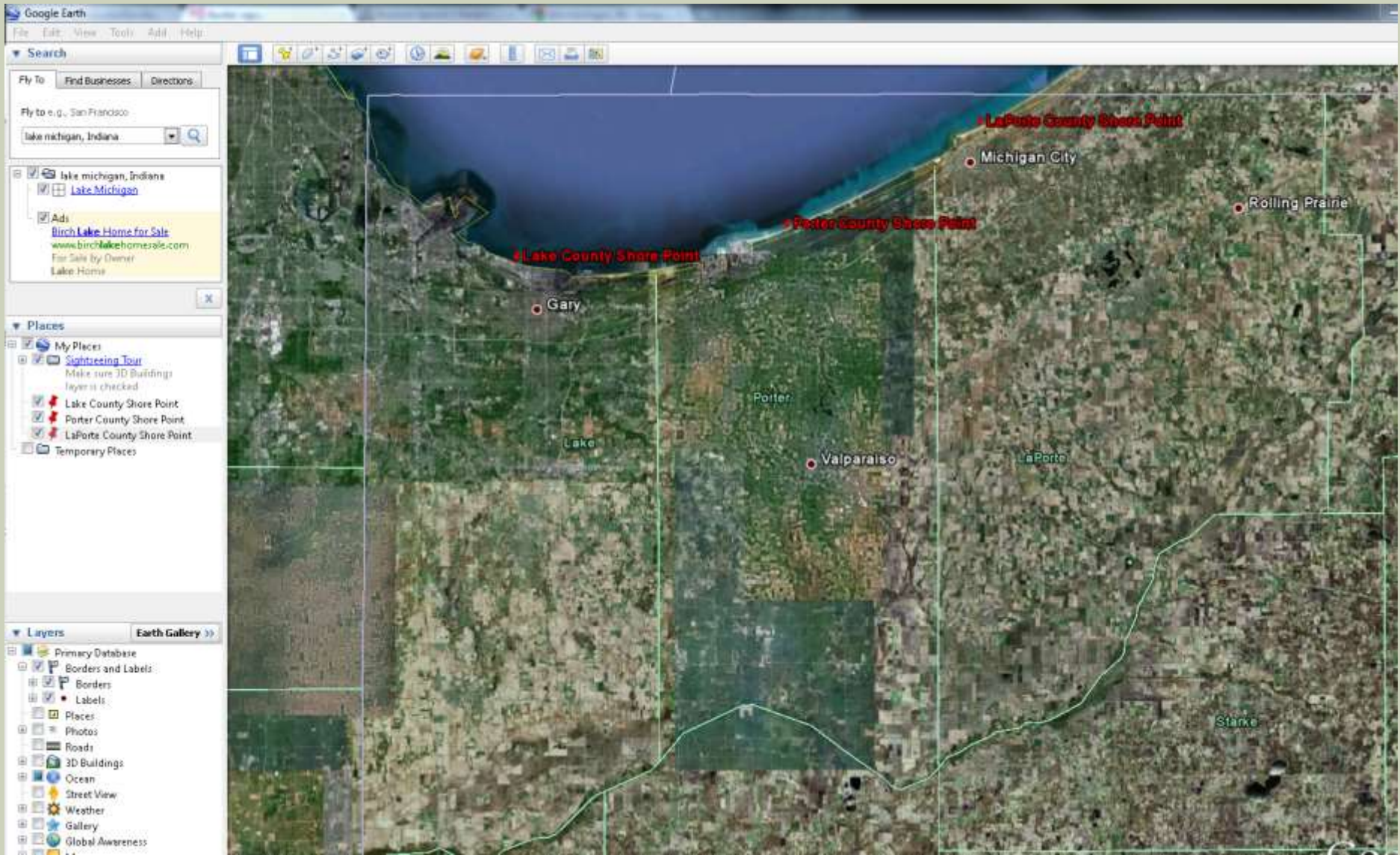
ESTIMATING DEMAND FUNCTION

- 1. Define specific destination site and travel zones**
- 2. Measure/calculate distance from each travel zone to destination site and back**
- 3. Multiply by price of gas in travel zone to obtain round trip transpiration site of traveling to site and back**
- 4. Gather data of quantities of trips taken from each travel zone**
- 5. Compile data on other factors that could affect demand, such as income, substitute sites, and quality of good**
- 6. Run regression to find actual demand function**



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VARIABLES

- Q = number of sport fishing trips from given county to Indiana's portion of Lake Michigan
- P = average approximate round trip travel cost of visiting Indiana's portion of Lake Michigan from a given county
- Y = per capita income in given county
- S = approximate surface area of alternative fishing waters in given county
- F = the existence of the three most popular/most targeted fish species in given county

RESULTS

Specification	Standard Error		P Value	T Stat	R ²
log Q = 6.5880 -2.0084 log P	Constant 2.0084	0.8170 0.2833	0.000 0.000	8.06 -7.09	50.6%
log Q = -8.125 -2.0124 log P + 3.436 log Y	Constant -2.0125 3.436	4.869 0.2618 1.123	0.102 0.000 0.004	-1.67 -7.69 3.06	58.7%
log Q = -10.322 -1.9150 log P + 3.844 log Y + 0.07390 log S	Constant -1.9150 3.844 0.07390	5.145 0.2716 1.163 0.05877	0.051 0.000 0.002 0.215	-2.01 -7.05 3.31 1.26	60.0%
log Q = -11.652 -1.4688 log P + 3.844 log Y + 0.07539 log S +1.136 F	Constant -1.4688 3.844 0.07539 1.136	4.710 0.2833 1.060 0.05359 0.3510	0.017 0.000 0.001 0.166 0.002	-2.47 -5.18 3.63 1.41 3.24	67.5%

QUESTIONS?