Research and Teaching in Environmental and Behavioral Economics

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Research Interests

- Broadly, environmental and behavioral economics
- Discrete choice modeling of preferences for environmental amenities and policies
- Integrating economic models with work in other disciplines to tackle difficult environmental research questions

Research Questions Addressed in My Work

- How can policy makers alter agricultural conservation contracts to increase farmer adoption and reduce cost? (Wilson et al. 2014; Howard et al. 2023)
- How do people discount the future, and how does this discounting vary by the type of good or amenity being considered? (Howard 2013)
- How efficient are utility-scale solar and wind electricity generators, and are state policies that encourage renewable energy leading to the inefficient building of these generators? (Lee and Howard 2021)
- How do the modeling decisions made by researchers alter the valuation estimates generated from a data set? (Howard et al. 2017; Howard et al. 2020; Howard et al. 2021)
- How does current land use impact residents' preferences for future development of solar energy in their state? (Gaur et al. 2023)
- Do people exhibit loss aversion, and how does loss aversion impact how people value environmental amenities? (Quainoo et al. 2023)
- How can economic modeling and hydrological modeling be combined to better understand how environmental policies will impact surface water quality and downstream nutrient loading? (Tapas et al. 2022)

References

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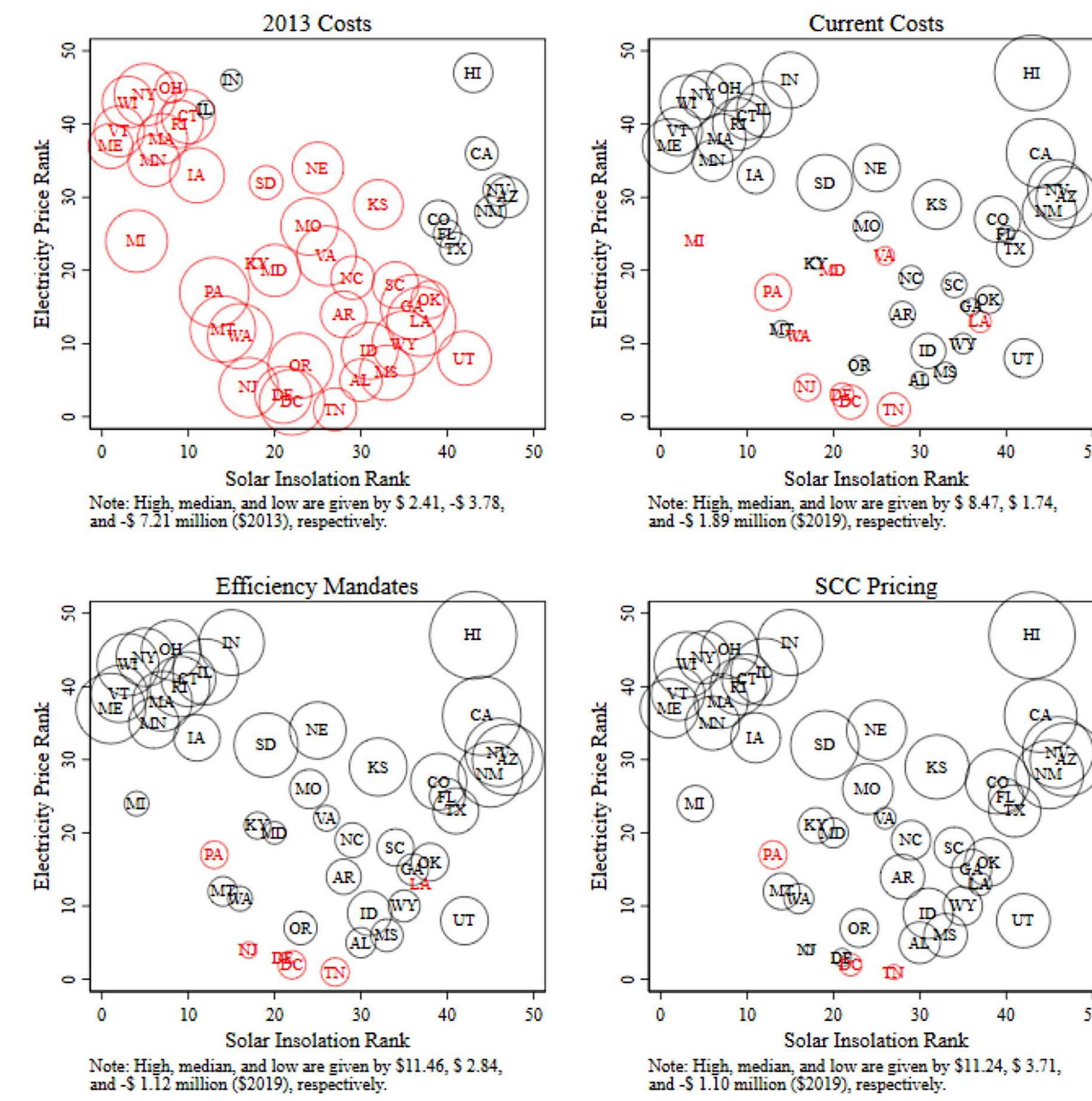
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Tapas, M., Etheridge, J. R., Howard, G., Lakshmi, V. V., & Tran, T. N. D. (2022, December). Development of a Socio-Hydrological Model for a Coastal Watershed: Using Stakeholders' Perceptions. In *AGU Fall Meeting Abstracts* (Vol. 2022, pp. H22O-0996).

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Effects of cost innovation, efficiency mandates, and carbon pricing on the viability of solar. Notes: Red (black) circles indicate negative (positive) Net Present Value (NPV), while the size of the circle indicates the magnitude (positive or negative) of NPV for the state. From Lee and Howard (2021)

"You can tell Professor Howard is passionate about the subject." (ECON 3310)

"This course is very organized, consistent, and overall, very well put together. I have had an amazing experience in Professor Howard's class, he is very good at lecturing and teaching us the material. I am very satisfied!" (ECON 2113)

"I feel like I have gained lots of knowledge about economics like no other teacher or professor has been able to give me. The course is challenging and ultimately makes you learn. I am able to say that I know more about the economy and the world of economics through his course." (ECON 2113)

"The professor's teaching style is refreshing. We were treated as young professionals – while the material clearly went over our heads at times, she did not feel that our intelligence was insulted. The candor with both positive and negative criticism was received very well." (ECON 6390)

"For me, I found much of the concepts and techniques discussed to be salient and thus could be practically integrated in many peoples research. As a grad student, the last thing I want to do is take a class that feels like an undergraduate class, pedantic, redundant, and not actionable. This class was not. The powerpoints were useful and interesting and the lectures were free flowing and fun. Aside from gained insight into methods to improve or expand our research, I learned a lot in this class that helps in my everyday life. We are all just little economists running around making decisions, some of just are just better economists than others." (ECON 7010)

"Dr. Howard explains the economic concepts in a readily understandable way, while also pushing discussions that engage with the class. He provides thought–provoking material." (ECON 7010)

"Professor Howard is a fantastic professor. He has a blatant passion for what he teaches and puts it into real world examples which makes waking up at 8:00am worth it. He is also extremely realistic regarding coursework, understanding that there isn't a need for redundant quizzes and homework if one truly understands the material. This course taught me the material of microeconomics in such a way that I felt like it was worth my time and tuition." (ECON 2113)

"The strengths of this course were how open Prof. Howard was to giving us help and how knowledgeable he was about the subject itself. He also made the class interesting by how enthusiastic and energetic he was! :)" (ECON 2113)

"I really enjoyed this class. I honestly learned more in this class than I have in many other similar classes combined. Dr. Howard does a great job at making class exciting and keeping the students engaged. I appreciated him giving us a chance to spend more time on topics that we were interested in and always being available to discuss assignments or issues we were having. I wish I would have had more classes conducted this way during my time here." (ECON 6390)

Sample of Comments from Student Opinion of Instruction Surveys

Colorful Example: Point #2

Scientists identify a comet passing near Earth this year. They calculate that the comet will return in 300 years and strike the Earth, destroying Florida and causing damages worth $625 trillion*. The only way to stop it is to blow it off course now.

- What is the most we would be willing to spend to do this given
  - A 2% discount rate? ~$1.6 Trillion
  - A 5% discount rate? ~$275 Million
  - A 10% discount rate? ~$240

*estimate value of loss as equal to loss of life and infrastructure (roughly estimated as GSP).

Life: population times VSL: 21.5 million * $9.5 million = $204.25 Trillion
Infrastructure: Current GSP = $1.106 Trillion
Assume 2% growth rate, in 300 years = $420.539 Trillion
$204.25T + $420.539T = $625 Trillion

Florida is a goner in 300 years

Opportunity Cost

Imagine you own and run a miniature golf course on two acres of land in Greenville
- Monthly earnings, net costs, are $2,000

Now imagine your uncle died and left you two acres of land in Manhattan
If you convert this land to a miniature golf course and run it, your monthly earnings, net costs, would be $6,000
Should you sell your Greenville land and move to NYC?

It's more than a comparison of $6k vs. $2k
If I move to NYC, I will no longer use my Greenville land
- Avg. sales price of an acre of land in NC: $54,000
If I keep the Greenville land, how much could I sell the Manhattan land for?
- Avg. sales price for an acre of land in Manhattan $11.5 million

This is part of the opportunity cost: If I didn't build the course in Manhattan, what else could I get for the land?
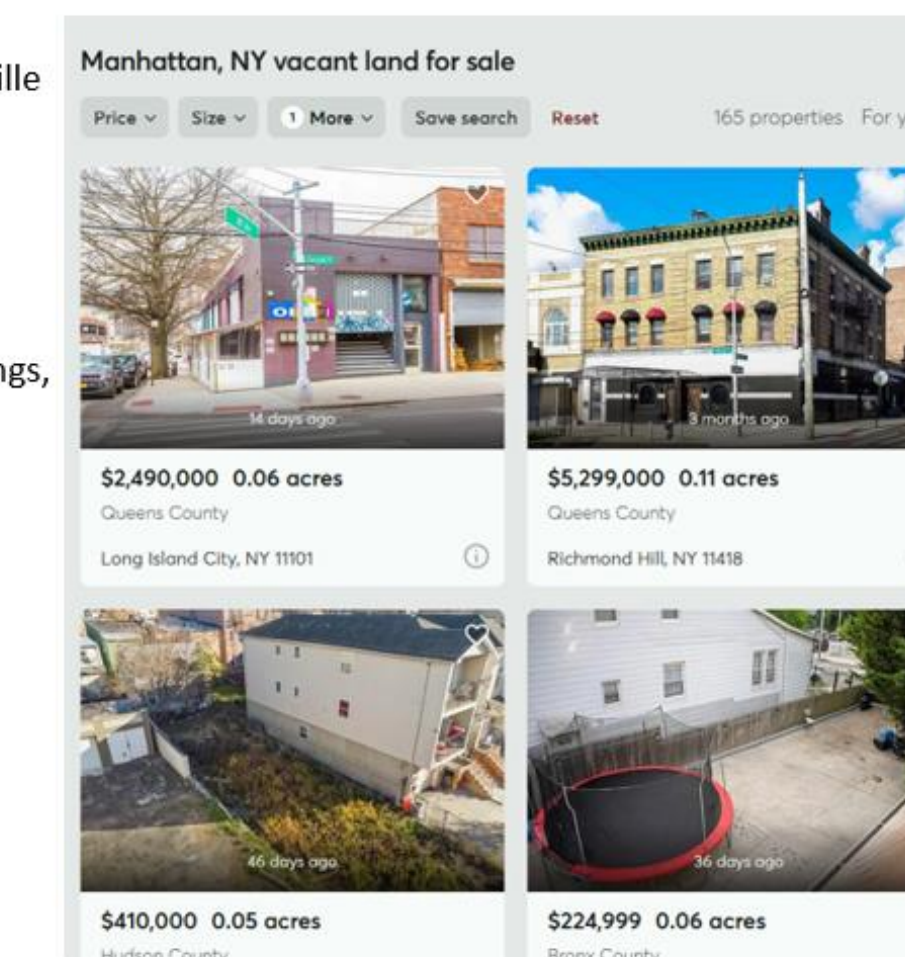
Sample of a discounting and opportunity cost examples from ECON 7010: Coastal and Marine Economics and Policy

Research on Homeowner Willingness to Accept Federal/State Buyouts of Homes at Risk of Flooding

- Likelihood of Accepting Home Acquisition by Floodplain and Timing
- In Economics terminology, home acquisition supply curves
- Homes inside the floodplain are more reticent to accept buyouts than those outside flood plain when the home is not impacted by a hurricane event
- A hurricane event increases likelihood to accept buyouts for both groups. The increase is larger for homes in the floodplain (Frimpong et al. 2019)
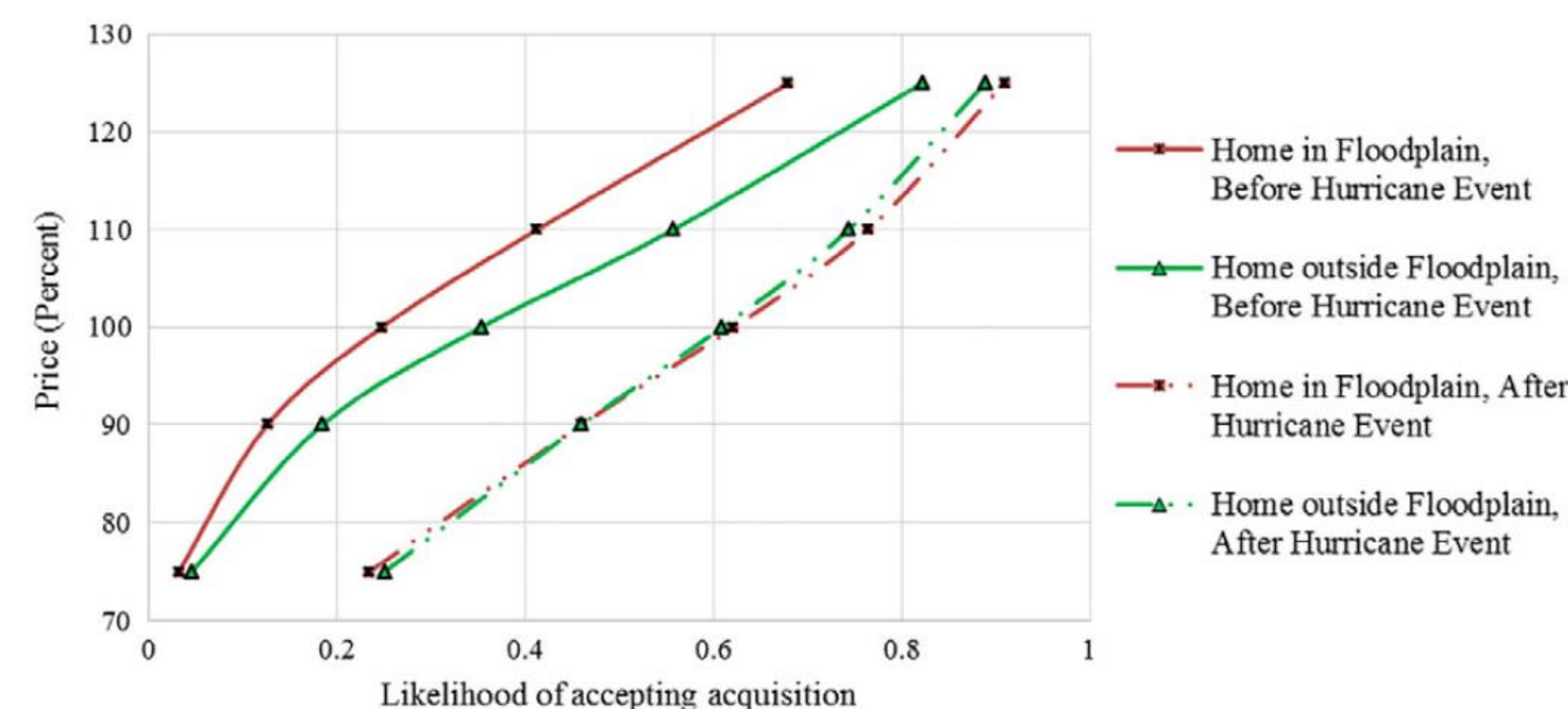
Teaching Interests

- Economics at all levels, from intro-level courses to doctoral courses
- Environmental Economics
- Behavioral Economics
- Statistics and Research Methods
- Discrete Choice Modeling

Bringing Research into the Classroom

- In ECON 6390: Research, several homework assignments require students to work with real data from my past research projects. One involves survey data from farmers in the Maumee watershed, primarily in NW Ohio. The other is secondary data on state policies, wind and solar resources, and total electricity generation from solar sources by state and year in the US.
- In ECON 7010: Coastal and Marine Economics and Policy, we use real survey instruments (both mine and those used by other researchers) to learn about stated preference methods of valuing coastal environmental amenities. Students learn about how different survey design decisions impact the type of data the collect and how it can be used.

Bringing Research into the Classroom

- In ECON 8350: Applied Research Methods, students use real survey data and discrete choice modeling to estimate how farmers and non-farmers will respond to different agricultural conservation policies.
- In ECON 3310: Behavioral Economics, students act as subjects in an economics lab at the start of the semester. Throughout the semester we look at the data generated by different tasks they completed in the lab to see if their actions were in line with behavioral economic theory.