Contact Information

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Graduate Study I am a fifth-year PhD candidate in Sustainability at Arizona State University, expecting to defend in May 2026. I am also a graduate student at the **Center for Behavior, Institutions and the Environment (CBIE)**, the transdisciplinary research center founded by Nobel laureate Elinor Ostrom to study effective governance of social-ecological systems through the interactions of human behavior, institutional arrangements, and the biophysical environment. In addition, I hold a Graduate Certificate in Environmental and Sustainability Economics, which has provided me with foundational training in economic analysis applied to environmental policy and natural resource management.

My training at CBIE emphasizes the multi-method approach central to institutional analysis—combining field research, controlled experiments, and formal modeling to understand how institutions shape behavior and outcomes. This framework directly informs my dissertation research on how AI systems, as new institutional intermediaries, affect information transmission between citizens and policymakers.

While my home department is not economics, my research addresses questions central to information economics and regulatory policy: How do intermediaries distort information flows? What are the distributional consequences of these distortions? How should institutions adapt when AI systems mediate between citizens and decision-makers?

Research Interests and Dissertation

- **Dissertation Title:** How Large Language Models Systematically Misrepresent American Climate Opinions
- Committee: J. Marty Anderies (Co-chair), Marco Janssen (Co-chair), Joshua Abbott, Jieshu Wang

Research Question and Motivation Federal agencies increasingly deploy large language models to analyze public comments on regulations. The EPA, Interior Department, and CDC now use AI systems to process thousands of citizen submissions on environmental rules. Simultaneously, researchers use LLMs to simulate public opinion for policy analysis and forecasting. When AI mediates between the public and policymakers, systematic errors in how these systems represent citizen preferences become consequential for democratic participation and regulatory outcomes.

My dissertation asks: **Do large language models accurately represent the distribution of public opinion, or do they systematically distort citizen preferences in**

ways that affect whose voices reach policymakers? This question has direct implications for regulatory economics. If AI systems compress opinion diversity or misrepresent particular demographic groups, they may bias the information environment that shapes policy decisions—with potential welfare consequences for affected populations.

Empirical Approach I conduct the first systematic comparison of AI-generated opinion representations against actual human survey responses across demographic groups. Using a nationally representative climate opinion survey (N=978), I prompted six leading LLMs with respondent demographic profiles and compared AI-generated responses to actual human answers across 20 questions. This design allows me to measure both aggregate bias and heterogeneous effects across intersecting demographic categories.

Key Findings I document that LLMs compress the diversity of American climate opinions toward the mean—predicting less-concerned groups as more concerned and vice versa. This compression is not uniform: it exhibits intersectional patterns invisible to standard auditing approaches. Specifically, LLMs apply uniform gender assumptions that match reality for White and Hispanic Americans but systematically misrepresent Black Americans, where actual gender patterns differ from other groups.

The magnitude of these distortions is substantial. LLMs underestimate Black conservative men's climate concerns by 20 percentage points while overestimating Black conservative women's concerns by 12 percentage points. All model architectures tested consistently underestimate women's climate concerns overall. These patterns would be invisible to audits that examine only aggregate accuracy or single-dimension fairness metrics.

Policy Implications These findings suggest that AI-mediated regulatory processes may systematically distort which citizen preferences reach decision-makers. When agencies use LLMs to summarize or categorize public comments, the resulting information environment may underweight perspectives from groups whose opinions deviate from demographic stereotypes embedded in training data. This has distributional consequences: communities already marginalized in environmental policy processes may find their voices further attenuated by AI intermediation.

A related project, accepted to the Women in Machine Learning Workshop at NeurIPS 2025, examines this mechanism directly. I conducted controlled analysis of FedRAMP-authorized LLMs—the specific systems federal agencies are permitted to use—and found that demographic information alone alters how identical environmental concerns are summarized for policymakers. The same substantive comment receives different treatment depending on the stated demographics of the commenter, potentially affecting whose voices influence regulatory decisions at scale.

Broader Research Agenda My dissertation focuses on detection—documenting and measuring AI-induced information distortion. Beyond this core work, I have developed mitigation frameworks grounded in psychological theory that prevent AI systems from homog-

enizing diverse stakeholder perspectives (under review, AAAI 2026 Social Impact Track). I also collaborate with Argonne National Laboratory and the Department of Energy on community-informed AI systems for environmental decisions, with a $150K seed grant proposal under consideration. Our framework for multi-agent systems in high-stakes environmental decisions received the Superior Paper Award at WM 2025.

Interest in This Tutorial The NBER Digital Economics and AI Tutorial offers a unique opportunity to engage with economists who study information distortion, platform design, and the policy implications of AI systems. My research on how LLMs mediate regulatory processes addresses questions at the intersection of information economics and public policy—yet I have developed this work largely within sustainability science and computer science communities. I am eager to learn how economists frame these questions and to understand the theoretical tools they bring to studying AI's effects on information aggregation and welfare.

I see several specific ways this tutorial could advance my research. First, I would benefit from feedback on my empirical approach from researchers with deep expertise in measuring information distortion and its welfare consequences. Second, I am interested in learning about economic frameworks for thinking about AI intermediation in regulatory contexts—how do we model the incentives of platforms that mediate between citizens and governments? Third, I hope to identify potential collaborations with researchers who study digital platforms, regulatory design, and the political economy of AI adoption in government.

As I approach the academic job market and consider postdoctoral opportunities, connecting with the NBER network would be invaluable. My research speaks to audiences in economics, public policy, and computer science, but I have had limited opportunities to present to economists who study digital markets and AI. This tutorial, along with the subsequent NBER Digital Economics and AI meetings, would help me position my interdisciplinary work for economics and policy audiences and identify institutions where my research agenda could thrive.

I recognize that my background differs from a traditional economics PhD. However, I believe my combination of technical skills in AI evaluation, empirical training in survey methods and causal identification, and substantive focus on policy-relevant questions about AI systems complements the perspectives of economists working in this space. My Graduate Certificate in Environmental and Sustainability Economics reflects my commitment to engaging seriously with economic analysis, and I am eager to deepen this engagement through participation in the NBER community.