Madeline Celi Kitch

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Informed by my experience in environmental advocacy and government and non-profit work, I care that technical decisions, especially those in government and medicine, reflect the needs and values of affected individuals. In my graduate research, I use statistics and machine learning to develop deeply technical solutions that support this aim, and am passionate about engaging with practitioners to bring this work to practice.

EDUCATION

2025-Present	Carnegie Mellon University. PhD Student in Computer Science. Advised by Professor Nihar B. Shah.
2020-2024	Harvard College, GPA 3.98. *Magna Cum Laude.* Applied Math Economics, AB. Harvard University, GPA 3.92. *Concurrent Masters Program.* Applied Math Economics, SM.

AWARDS AND HONORS

2024	**Enel Endowment Prize. Best Harvard undergraduate paper in environmental economics.**
	Pforzheimer House Community Engagement Award. Received for work on house sustainability.
2023	**Phi Beta Kappa Junior 24.** One of 24 Harvard juniors selected based on academic breadth and depth of study.
2022	**Detur Book Prize.** Awarded to students with the highest academic standing after three semesters.
2021 and 2022	**John Harvard Scholar.** Top 5% of college class.
	United States Collegiate Ski Coaches Association All-Academic Ski Team. Awarded for academic standing and NCAA Regional competition.
2020 and 2021	Belmont Garden Club Scholarship. Excellence in community service and pursuit of environmental studies.

RESEARCH PAPERS

Publications	**Learning What Evaluators Value: A Reliable Approach to Modeling Evaluator Preferences.** Madeline Celi Kitch, and Nihar B. Shah.
	Ranking after Dimensionality Reduction: Fairness and Applications to Mechanism Design. Ekaterina Fedorova, Madeline Celi Kitch, Chara Podimata.
	Can Users Fix Algorithms? A Game-Theoretic Analysis of Collective Content Amplification in Recommender Systems. Ekaterina Fedorova, Madeline Celi Kitch, Chara Podimata. *FORC 2026* (non-archival).
	Quantifying Asymmetries in the Societal Impacts of Mass Loss from the Antarctic and Greenland Ice Sheets. Ian Bolliger, Gabriel Cederberg, Sönke Dangendorf, Nicholas J Depsky, Annika Huprikar, Robert E Kopp, Jerry X Mitrovica, Mingzhen Yu, Solomon Hsiang, Peter Huybers, Elio Kennedy-Yoon, Madeline Celi Kitch, Megan

Lickley, Sophia Ludtke, Corinne Mulvey, Ryan Murdock, Rupa Ragavan, Natasha Valencic, and Christian Waltenberg. *Earth's Future*.

Rent Division with Picky Roommates. Yanqing Huang, Madeline Celi Kitch, Natalie Melas-Kyriazi. https://arxiv.org/pdf/2409.14600

Optimal Industrial Clusters. Madeline Celi Kitch, Mikael Støen, Miguel Muñoz Ortiz, Thiago Lima Silva, Marc Juanpera, Pau Fisco-Compte. October 2024.

Presentations

Learning What Evaluators Value: A Reliable Approach to Modeling Evaluator Preferences.
Economics and Computer Science Seminar, Carnegie Mellon University. March 2026.
Institute for Complex Social Dynamics Workshop. February 2026.

A Computation-aided Approach for Facilitating Community Input on Environmental Justice Mapping Tools. *Mobility, Adaptation, and Wellbeing in a Changing Climate Conference*. June 2025.

Senior Thesis

Regulating Polluting Monopolies from an Equity-Efficiency Perspective. Madeline Celi Kitch. *Enel Endowment Prize for best Harvard undergraduate paper in environmental economics. April 2024.

Research assistance

Served as a research assistant for the following books:
Charleston: Race, Water, and the Coming Storm. Susan Crawford. 2023.
Survival of the City. Edward Glaeser, and David Cutler. 2022.
Recession Remedies: Lessons Learned from the US Economic Policy Response to COVID-19. The Hamilton Project. 2022.

RESEARCH EXPERIENCE

September 2025 - Present

Carnegie Mellon School of Computer Science, Pittsburgh, PA.

PhD Student in Computer Science with Professor Nihar B. Shah.

Researching algorithms for reliably learning human and AI preferences, and comparing evaluation policies for social decision-making. Applications of this work include criminal justice, medical care, peer review, and admissions.

September 2024 – May 2025

MIT Sloan School of Management, Cambridge, MA
Predoctoral Research Fellow with Professor Chara Podimata
Worked with Professor Chara Podimata and Ekaterina Fedorova, a PhD student, on a project on incentive-aware learning for recommendation systems.

May 2024 – May 2025

Harvard University, Cambridge, MA

Research with Dr. Bailey Flanigan

Worked on methods to facilitate community engagement in technical decision-making for environmental policy.

Sept. 2023 – April. 2024

Harvard University, Cambridge, MA
Senior Thesis Research with Professor Jesse Shapiro
Developed a theoretical model and computationally tractable formulae for setting the price and tax for polluting monopolies when we care about the distribution of benefits and burdens. Showed quantitatively that the energy burden (the harm to low-income consumers from energy prices) is far larger than concerns about disproportionate burdens from pollution.

Dec. 2020 – Oct. 2022

Harvard University, Cambridge, MA
Economics Research Assistant for Professor Edward Glaeser
One project with Professor Andrei Shleifer and Simeon Djankov on the progression of legal protections for women over time. Used legal gender equality measures from the World Bank's *Women, Business and the Law* report to map relationships between reforms affecting women's legal status and economic outcomes. Showed a universal rise in legal indicators worldwide. Conducted difference-in-difference regressions to demonstrate the complex picture of how these reforms affected economic outcomes.

Added citations and verified factual arguments for two chapters, the forward and the epilogue of *Survival of the City*, a book by Professors Edward Glaeser and David Cutler, referencing over 200 sources in urban policy and economics. Topics include gentrification and police and urban education reform.

Oct 2021 – February 2022 Harvard University, Cambridge, MA

Economics Research Assistant for Professor Chodorow-Reich

Documented the administering and scale of subnational business relief programs during the COVID-19 recession (e.g., eligibility criteria, prioritization schemes, funds allocated). Searched through government websites and application information to create a dataset of 200 government business support programs across 110 cities, ultimately used for a chapter in *Recession Remedies: Lessons Learned from the US Economic Policy Response to COVID-19,* a policy book by The Hamilton Project.

Pointed out the presence of local-level lotteries as a potential avenue for causal inference on these programs' efficacy, which Professor Chodorow-Reich then used in a follow-up study.

June – August 2021 Harvard University, Cambridge, MA

Legal Research Assistant for Professor Susan Crawford

Conducted background research for *Charleston: Race, Water, and the Coming Storm*, a book by Harvard Law School Professor Susan Crawford on race and climate adaptation in Charleston, SC. Discussions included how to approach the topic of managed retreat (namely relocation) in a thoughtful manner, and how city ordinances, local interviews, and community meetings can help us understand and convey the local political forces that contribute to inequality and stalling adaptation.

NONPROFIT AND GOVERNMENT EXPERIENCE

June – August 2023 SINTEF Industry, Trondheim, Norway

Summer Research Student

Interned for SINTEF Industry in Norway working on an EU project (Flex4Fact) on energy use optimization. Led the creation of a code base for jointly optimizing multiple firms' manufacturing schedules to minimize costs while accounting for energy sharing between firms. This work produced a report for Flex4Fact, illustrating the marginal benefit of joint energy optimization and the impacts of different cost-allocation mechanisms.

May – August 2022 Environmental Defense Fund, Boston, MA

Feb. – May 2023 *Economic Policy Intern*

Interned in the Economics and Global Climate Cooperation team on a Total Cost of Ownership (TCO) model for medium and heavy-duty vehicles. Improved transparency and accessibility of the model, taking it from excel to an R Shiny Web App for use by the Economics and Fleet teams. Provided documentation and presented the model in-house. Updated a carbon pricing model and made a Python script for future use. Drafted a policy blog for the impact of West Virginia v. EPA on Net-Zero pathways (not published due to the Inflation Reduction Act).

Conducted spatial analysis regarding EPA's Toxics Release Inventory (TRI) program to assess the distribution of harm based on chemical and facility sites. Drafted data stories for the Climate Vulnerability Index.

May – August 2020 Massachusetts State House, Boston, MA

Policy Intern

Assisted in rewriting a waste-reduction bill under Rep. Rogers' guidance. Researched and wrote subject briefs about state legislation and budgets including environmental and gender policy.

ENVIRONMENTAL ADVOCACY AND VOLUNTEERING

May 2024 – May 2025 Charles River Watershed Association. Boston, MA

Volunteer with River Advocates

Co-wrote an opinion piece in support of forward-thinking and equitable legislation to address flooding in Massachusetts. The op-ed ("Flooding is only getting worse. The time to begin addressing it is now") was published by the representatives who

	filed the legislation, Marc R. Pacheco and Sarah Peake, in CommonWealth Beacon News. Presented to State Senator Will Brownsberger with advocacy director of Charles River Watershed Association, legislative director of Environmental League of Massachusetts, and the policy director of Mass Rivers Alliance on developing stronger climate resilience policy for Massachusetts.
June – August 2024	City Government. Pasadena, CA *Volunteer on Environmental Justice in City Planning* Assisted with the Environmental Justice Element of their General Plan. Created a website to host data resources on environmental justice to (1) help communities understand their risks and advocate for themselves and (2) to help policymakers understand which districts are most disadvantaged.
Sept 2023 – June 2024	Pforzheimer Sustainability Team. Cambridge, MA *President & Co-founder* Helped to make Pforzheimer the first Harvard house with compost; took meeting notes and sent group emails; organized events from mending and thrifting to movie nights. Received Pforzheimer House Community Engagement Award for this work.
2016 – 2020	Race for Snow. Weston, MA *Chief of Race & Co-founder* Head of annual ski race fundraiser for 350.org. $12,000 raised from 2016-2020, and $5,328 in 2020. Responsible for integration into the New England race series; First to be organized and run by juniors. Recognized by Bill McKibben for this work.
2019-2020	Climate Action Club, Belmont, MA *Co-founder* Built an 80-member club. Led student support of Zero Net Energy status for the new high school. Facilitated attendance at climate strikes, lobby days, and local sustainability meetings.