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RESEARCH STATEMENT

As an applied microeconomist, I use theory to inform empirical research designs to test policy-relevant hypotheses. My research interests lie at the nexus of environmental and natural resource economics, health economics and land use. I am motivated to understand how policy shapes land owner decisions in the form of spatial and temporal patterns, which impact community and environmental measures of well-being. I ground my research through answering a common set of questions, which includes: What governs individual and business decisions across space and time? How do we quantify and understand the impact of these decisions throughout a community? How far do individual decisions deviate from a set of socially optimal decisions? What policy interventions may be proposed to close the gap between current and optimal decision making? These questions ensure my research has tangible policy relevance while remaining grounded in an applied setting.

My job market paper builds upon option value theory that governs the decision for coastal land-owners to invest in shoreline armoring. This theory informs a suite of empirical specifications to quantify the determinants of armoring across space and time. Shoreline armoring is the most common adaptive response to erosion and sea-level rise in the Pacific Northwest. My results place a probability value on the influence of peer effects and strategic cost sharing in this decision context. I use these estimates to operationalize a series of Monte Carlo simulations to predict armoring patterns along the Oregon coast. Simulation results are used to highlight how vastly different patterns emerge when appropriately accounting for socioeconomic factors. Simulations are also used to estimate the preservation of natural shorelines given state-level armoring policies. I estimate that current Oregon legislation will preserve over 500 parcels of natural shoreline over the next 40 years. Lastly, simulations are used to identify the impact of climate change on adaptation. While no "optimal" policy is offered, I highlight a variety of expected shoreline outcomes given changes in policy and climactic variables.

My second chapter involves opioid abuse which is expected to claim over 33,000 lives in the US in 2018. Survey results have suggested that patients in chronic pain have greater well-being scores when utilizing a combination of marijuana and opioids. I am exploring the hypothesized relationship between opioid mortality and marijuana access under Oregon's recreational legislation. Through the development of robust methodological procedures and safety protocols, I secured university IRB approval to obtain downscale, quasi-identifiable data with temporal and spatial variation in access to marijuana at the census block group. I extend the Grossman model of health capital by incorporating the cost of access on the adoption of marijuana. Theoretical results suggest that decreased costs of marijuana access will increase usage, which is hypothesized to lead to fewer substance abuse deaths. To finalize this paper, I will incorporate prescription opioid supply quantities which allows decomposition of the impact into substitution and complementary effects on opioid mortality reduction. These results will contribute to the ongoing debate regarding marijuana legalization and anticipated impacts community health.

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I am also involved with a multi-disciplinary project evaluating life safety infrastructure decisions in at risk communities. The use of vertical escapement structures is an example of an engineering innovation that is arising as a solution to reduce mortality in tsunami zones. We utilize an agent-based model of tsunami inundation to quantify the impact of mortality associated with the investment in vertical escapement. We address a multitude of issues surrounding this decision, including the equity of benefits based on the location of the escapement structure. Families, elderly and the disabled are all likely to have higher mortality rates in the event of a tsunami. Through benefit transfer, we incorporate environmental amenity flows from a potential "green" structure (i.e. an elevated park) into the cost-benefit analysis. The provision of environmental services from a park alters the cost-benefit analysis, making investment in life-safety infrastructure more palatable to community planners. Together these two questions will inform at risk community planners of the value of infrastructure investment, the impact of location selection and the additional value that may be absorbed by a community that opts for green elevated evacuation structures.

The remainder of my current research uses nonmarket valuation to answer adaptation and policy relevant questions. Using a novel set of vineyard sales, I estimate the value of climate-adaptation potential. Given longer, dryer and warmer seasons, prior research has theoretically predicted a northward shift in vineyard location. My results empirically identify a price premium in California for only those parcels that are cooler than average, while all Oregon parcels command a price premium. These results suggest Oregon may be a climate-refuge for vineyard owners concerned about the effects of a warming climate on their long-term investments. Finally, I am evaluating the potential capitalization effects of recreational marijuana dispensaries in Oregon. I estimate a first-stage hedonic model to identify the capitalization effect for recreational and commercial properties. A priori, it is possible to hypothesize that benefits (access, freedom, economic boosts) may not outweigh costs (increased foot traffic, unsavory nature, "not in my backyard" attitudes) resulting in a capitalized disamenity. Questions of equity regarding dispensary location and associated disamenities should be answered to ensure the growth of a new industry is not borne by low-income or disadvantaged social groups

In the future, I plan to continue research with themes involving land-use, environmental effects and public health outcomes. I am interested in the development of a coupled human and natural system (CHANS) model through integrating the coastal armoring decision with models of shoreline sediment transportation. This inter-disciplinary evolution of the economic decision process offers exciting possibilities. For example, static measurements may be replaced with dynamic estimates that incorporate feedback effects from human development over time. These changes should offer improvements in long-term simulated outcomes, which is necessary for developing coastal management policy that is proactive instead of reactive. Beyond these extensions, I would broadly like to ensure my future research answers policy relevant questions of impact and equity. I hope to work in areas regarding coastal management, climate adaptation, technology and public health and preservation.