I am an Applied Economist focusing on policy evaluations related to health, aging, and human capital in the US and India, particularly emphasizing social equity issues in rural areas, gender, and socioeconomic status. My first research theme explores the impact of technologies like the high-speed internet (Broadband) and Green Revolution on health, welfare, human capital, and social security access. The second research theme delves into the lasting effects of early life shocks on later health and intergenerational well-being. The third theme centers on evaluating educational policies. I employ advanced quantitative methods, including recent developments in Difference-in-Differences (DID) and multiple Regression Discontinuity Design (MRDD), along with novel data, to address critical policy questions.

**Dissertation Chapters**

My Job Market paper examines whether high-speed internet (broadband) technology affects the mental health of older adults (50+) in the US. Recent empirical evidence in economics underscores the adverse impact of internet-enabled technology (social media) on college students’ mental health, mainly due to unfavorable social comparisons. Yet, it remains unclear how a comparable technology (high-speed internet broadband) affects a more vulnerable older population. Using a quasi-experimental design and individual panel data at the census tract level, I exploit spatial, temporal, and individual-level variations and employ the latest DID estimators for the dynamic treatment effect. I find that high-speed broadband improves mental health in older adults, i.e., depression symptoms decline by about 5.2%, comparable with other major life events like job loss, recession, and the death of a spouse. These positive effects on mental health are primarily due to increased *social connectedness* and reduced *social isolation.* With recent evidence of social media's adverse impact on college student's mental health, this paper contributes to the policy discussion, highlighting the potential benefits of technology for older adults.

This paper examines the effect of high-speed internet broadband on the mental health of older adults (aged 50+) in the United States. Leveraging the quasi-experimental staggered rollout of high-speed internet broadband, combined with individual panel data, I utilize spatial, temporal, and individual-level variations in broadband availability and employ advanced difference-in-differences (DID) estimators. I find that the introduction of high-speed broadband significantly improves mental health among older adults (decline in depression symptoms by 5.2%), comparable with other major life events like job loss, recession, and the death of a spouse. I find evidence of novel mechanisms like an increase in social connectedness and a decline in social isolation. These contrasting findings for young and old cohorts underscore how similar technologies can affect differently by age and behavior. Heterogeneous effects by race and gender highlight barriers for African Americans and women, while rural older adults benefit more from broadband, suggesting potential benefits for rural areas. The paper further uncovers other underexplored mechanisms, including health literacy, cognitive function, and technological efficiency (telehealth) in nearby hospitals. With recent massive public investments of over $65 Billion in broadband infrastructure, these results carry significant policy implications for broadband policies and emphasize the potential benefits for older adults.

In my second chapter, co-authors and I examine whether early-life exposure to an agricultural technology (Green Revolution) impacts later-life aging-related outcomes in India. The Green Revolution (GR) is arguably the single most significant shock to agricultural productivity gains in developing countries and one of the most significant technological innovations of the 20th century. However, its long-term health impacts are not well understood. We leverage the largest aging data and employ a generalized DID approach, exploiting temporal and spatial variation in the adoption of GR crops. We find the positive and significant effects for the low castes in education and later life cognitive health. However, we also find an increase in chronic conditions and metabolic syndrome (e.g., diabetes, blood pressure, heart disease), supporting the evidence that dietary shifts might explain adverse physical health effects.

In the third chapter, I extend the broadband-related research to examine broadband technology's impact on Social Security Disability Insurance (SSDI) enrollment for older adults in the US. This research holds pivotal policy significance in line with the Social Security Administration's (SSA) service efficiency mandate. I use the staggered broadband rollout and restricted individual panel data from the Health and Retirement Study (HRS) and exploit spatial, temporal, and individual-level variations in broadband availability. Employing the latest DID estimator, I find a 6% increase in the likelihood of receiving SSDI benefits among older adults after high-speed broadband introduction, with more benefits for rural areas.

**Other Ongoing Projects:**

There are mainly three broad aspects in my other ongoing projects. The first theme, *Technological Innovations, and Social Welfare,* investigates the transformative role of broadband technology in the realm of access to social security disability insurance during the events of SSA office closures. I aim to unravel the intricate dynamics between technological advancements, administrative changes, and their consequences for marginalized communities.

Under the second theme, *Labor Market Disparities*, Prof. Jeremy Foltz and I have a paper (revise and resubmit) that evaluates salary differentials between foreign and US-born academic faculty, probing potential sources of wage inequality in academia that have direct policy implications.

Under the third theme, *Education, Health and Human Capital,* I evaluate the impact of a teacher hiring policy on student test scores using the advanced multiple RDD methods, exploring into the intricate web of educational systems and their implications for academic outcomes. Secondly, my co-authors and I have a paper (under review) that estimates the early life exposure to the Great Depression in the US on later-life mortality using unique bank deposit data. Further, my co-authors and I explore the effects of early-life exposures to the Green Revolution on intergenerational human capital development, tracing how historical influences shape long-term individual human capital. Finally, I analyze the unexplored spillover effects of bicycle policies on girls' enrollment in schools, shedding light on how policy interventions can influence educational access and the gender gap.

**Future Research:**

In my future trajectory, I am excited to use increasingly available big data from the US and India with the recent innovations in DID, RDD, and machine learning as they provide valuable insight for better policy recommendations. Using these tools, I plan to expand my research to explore the effects of various technologies on other aspects of health, access to social security insurance, social equity, and intergenerational transmission. I also categorized future research under three broad themes.

First, in the realm of *Health and Technology,* I expect to extend the current work to focus on mental health-related outcomes for younger and older populations since mental health is a relatively understudied research area in economics and public policy but has implications for comprehensive well-being. Secondly, under the theme of *Early-life Shocks and Long-term Outcomes*, I expect to continue research on the enduring effects of early-life shocks on subsequent life trajectories using big data on the aging population from the US and India, which I already have access to. I am working with Prof. Lauren Schmitz and Prof. Kanika Arora to understand the aging outcomes in developing countries and planning to apply for a National Institute of Aging (NIA) grant. I contribute to this work by analyzing data to understand the gender and caste disparities in cognitive functions.

Finally, under the theme of *Technological Advancements and Societal dynamics,* I am poised to evaluate the multifaceted effects of high-speed internet technology, shedding light on its potential to reduce informational friction and facilitate access to vital social capital. This exploratory endeavor encompasses a comprehensive examination, ranging from the propagation of misinformation to the access to financial resources for vulnerable populations in the US. By delving into these domains, I plan to evaluate technology's role in shaping overall welfare and equity.