Research Statement

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My research interests lie at the intersection of two important policy issues: the health and retirement. In particular, I am interested in answering policy-related questions about the health and retirement.

In my job market paper I analyze the effect of an increase in the age of Medicare eligibility on the health-related outcomes for the near retirement people in the U.S. Initiated in 1965, Medicare is the third largest program in the federal budget that provides cheap health insurance for people 65 years old and older. Unlike other programs which will shrink after the baby boomers wave passes the retirement age, Medicare is growing, due to the increase in the per capita health expenditures. To reduce the increasing burden of Medicare on the federal budget, one policy suggestion is to increase the Medicare Eligibility Age (MEA) which is currently 65. However, there are concerns about the health and welfare effects of such a change. Since Medicare Eligibility has not been changed after initiation, reduced form techniques are of limited use. Instead, I investigate these effects by implementing a dynamic discrete choice model of the health and retirement and estimating the parameters of the model using structural estimation techniques.

Agents choose labor supply and consumption levels. They also decide about smoking, exercise and purchasing private and employer-provided health insurance. The model is designed to incorporate a large state space, detailed timing, and fixed unobserved heterogeneity. To facilitate the large state space, I combine the simulated value (SV) function estimator by Hotz, Miller, Sanders, and Smith (1994) and conditional choice probability (CCP) technique by Arcidiacono and Miller (2011). Integrating SV into CCP helps to resolve the deficiencies of each of them. While SV alone does not allow for the unobserved heterogeneity, CCP estimator requires the finite dependence feature. That is, one needs to define a terminal state in the future which reduces the level of forward-looking which should be computed explicitly by the researcher.

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Integrating SV into the CCP, allows me to relax the finite dependence assumption and incorporate unobserved heterogeneity into model.
The estimation method as explained can reveal the structural parameters. However, it is not a policy sensitive estimator. I follow Keane and Wolpin (1994) to reduce the computational burden imposed by backwards induction and hence avoid the curse of dimensionality trap. I find that increasing the MEA from 65 to 69 induces individuals to work more. Men work 141 hours more annually on average under the counterfactual regime. The change in policy also leads to better health behaviors as tracked in the model by smoking and exercise. Findings are consistent with the existence of the moral hazard in both forms of hidden actions (smoking and exercise) and asymmetric information toward health (Number of nights in hospital and number of doctor visits). The combination of health behavior and a higher level of labor supply improves mental health and physical health and increases life expectancy. The model predicts that under the new policy men live about .9 years longer. Considering the federal budget burden, the findings show cost transfers between Medicare and Social Security program. While delaying the Medicare for four years decreases the costs in the Medicare program, mean lifetime social security benefit collection increases by $ 9119. That is due to the increase in labor supply, postponing the social security benefits claim and the increase in the life expectancy. Finally, welfare will be affected negatively as a result of the increase in MEA, and people on average ask for about $ 28,000 to accept the change at age 50.

Another area of my focus is the analysis of the relationship between sleep and health, specifically for the near retirement people. While the association between sleep and health is well documented in the Medicine literature, the causal relationship is barely investigated, mostly due to the lack of a proper exogenous source of variation in sleep. Gibson and Shrader (2014) introduce sunset time as an Instrumental Variable (IV) explaining that, depending on location in each time zone, sunset time varies while people who work, usually should attend their job at a particular time of day which is determined by the nationwide industry requirements and is not location specific. Also, Roenneberg et al. (2007) show that the human circadian clock is predominantly entrained by sun time rather than by social time", and as a result living in a location with later sunset time induces people to sleep later. Thus, it is reasonable to think that later sunset time enforces less sleep. However, the concern is that the location is a choice that is made by individual and if it is related to other health behaviors, may impact the health status. I combine the sunset time IV and the changes in the Daylight Saving Time (DST) that the U.S. implemented in 2007 and led to one hour later sunset time for 28 days compared to years before 2007. Thus, the identification strategy is based on the geographical differences (IV) and the local time changes induced by the changes in DLST (DiD). I utilize American Time Use Survey (ATUS) to calculate sleep duration, Eating and Health module of ATUS

(2006-08 and 2014-15) for the health outcome as recorded by the Body Mass Index (BMI) and self reported health status, Current Population Survey (CPS) for the socio-economic variables. The preliminary results indicate the negative causal effect of sleep on health. Sleeping for one more hour on average increases the probability of being in poor health. This increase is 0.007 for people between 50 and 60 years old and 0.009 for those older than 60 years old.

In another ongoing project with Tom Mroz, we study the connections between individual-level data like demographics and socioeconomic statuses from US Census Bureau samples and health outcomes measured at aggregate county-level from Centers for Medicare and Medicaid Services. Our research interest targets less common health outcomes like advanced-stage diabetes or amputation-related diabetes. Due to the uncompromised differences in aggregate-level geographic measurements in data, we create a new measurement to capture the relevant overlapping regions between PUMAs (Public Use Microdata Areas) and counties. To retain the relevant underlying features carried over from individual to aggregate levels, we derive statistical models like non-linear least squares and Poisson-binomial. This approach yields important predictive analysis tools for capturing the links between the individual-level characteristics data and individual-level health outcomes

Much of my Ph.D. work focuses on the health of the near-retirement population. I aim to follow this research agenda in two tracks. The first one is more policy inclined by investigating the policy-relevant questions toward health and retirement. Two specific projects in this track are: looking at the health effects of involuntary layoff for the older adults and the analysis of the effect of a change in Medicare policy on the portfolio decisions of individuals. Both of them utilize the adjusted version of the structural model and estimation method that I have developed in my job market paper. In the second track, I target more fundamental issues that their investigation improves our understanding of the mechanisms and important channels affecting health. One of the less explored questions in health economics is the gender gap in utilization of health services. Ek (2013) discusses that men often are unwilling and lack the motivation to engage with health-related information. My preliminary analysis of Health and Retirement Study data confirms that men are under evaluating their health status compared with an objective measure of their health. Given the existence of the gender-specific knowledge gap, one may expect that different genders invest in their health differently. In another word, misinformation leads to a nonoptimal level of investment in health and eventually affects health outcome. The gender-driven difference in the health investment can be a key in explaining the gender gap in life expectancy, and its quantification helps policymakers to improve the design of safety net policies, like Medicare or Medicaid.