Description of Research: Donna Gilleskie **August 2024**

As a health economist, I study the economic behavior of individuals as it relates to their health, and vice versa. My research focuses on understanding how individuals make health-related decisions over time, often utilizing forward-looking optimization theory and dynamic empirical models. I've examined a broad range of *health input* behaviors (including medical care consumption, appointment adherence, smoking, drinking, exercise, nutrition, employment, work absence, and criminal charges/convictions) and *health outcomes* (i.e., health production). Additionally, I am interested in how health capital and health behaviors, in conjunction with human capital, influence employment, wages, occupational choice, and retirement.

Interests by subject matter

I study individual behavior and outcomes, focusing on the dynamics of decision-making over time, which is central to my work. My research primarily contributes to the following three applied areas:

- the **effects of policy on medical care utilization and other health behaviors** (e.g., to what extent does health insurance coverage of prescription drugs affect utilization of physician and hospital care both contemporaneously and dynamically through changes in health?). A good example is my *Econometrica* (1998) paper that won the Kenneth J. Arrow Award for the best published paper on health economics worldwide. Other examples include: *International Economic Review* (2018); *Journal of Econometrics* (2010); *Journal of Human Resources* (2007, 2009, 2012); *Review of Economics and Statistics* (2007); *Journal of Health Economics* (2004, 2021); *American Journal of Health Economics* (2015); *Health Economics* (2016, 2021).

- the **effects of health and health-related policies on employment behavior and outcomes** (e.g., to what extent would employment decisions be altered by the introduction of mandatory retiree health insurance coverage by employers?). See, as examples, *International Economic Review* (2008); *Journal of Applied Econometrics* (2006); *Journal of Econometrics* (2010); *Journal of Human Capital* (2014); *Journal of Human Resources* (2002); *Review of Economic Dynamics* (2017); *Review of Economics and Statistics* (2001), and several papers in health services journals such as *Health Services Research* (2023); *Journal of Gerontology: Social Sciences* (2024); *Milbank Quarterly* (2022); and *Frontiers in Medicine | Nephrology* (2023).

- the **effects of medical and non-medical choices on health and health behaviors** (e.g., should policies to promote better health target medical care use or lifestyles?). My publications in *International Economic Review* (2018) and *Journal of Human Resources* (2009) serve as examples. Given an emphasis on health outcomes, this work is often published in top health field journals such as *American Journal of Health Economics* (2015); *Health Economics* (2016), *Demography* (2017); *Genetics in Medicine* (2022); and *Economics of Education Review* (1998).

While describing my research interests by subject is helpful, I've found it increasingly useful to characterize my work in two additional ways: by the ages of individuals in my research sample and by the empirical methodologies I employ.

Interests by age of subjects

Describing my work by the age of individuals in the research sample often allows me to position it in terms of its policy relevance.

Most of my research examines the behaviors and outcomes of **prime-age individuals** from young adulthood through middle age. Several large datasets provide relevant information on medical care utilization and employment behavior of this age group. Additionally, analyses of their decisionmaking and observed choices allows me to shift away from (albeit important) health and health behavior determinants such as education and parental influence that occur at earlier ages. I'm interested in expanding our understanding of the role of employment (and the employer) in promoting healthy behaviors. As individuals, and as a nation considering health care reform, we often focus on physicians' roles in "making us healthier." However, how often do we see a doctor in a year? Physicians may not have the "face time" needed to motivate healthy choices. My work with children (see below) suggests that families and educators have significant opportunities to influence children's health behavior. But what about after we graduate from school, during a period when we may not visit a physician regularly? This phase of life often involves spending five days a week at work. How do incentives (e.g., smoking cessation and exercise programs) or disincentives (e.g., long hours, stress, lack of sleep) in the workplace influence health behaviors and health outcomes?

More recently, I have studied health behaviors and health outcomes of **children, adolescents, and young adults**. I have examined the influence of prices, peer behaviors, and parent's education on childhood behaviors such as smoking, recreational activity, and medical appointment adherence. Currently, I have broadened my interests to educational outcomes such as test scores, grades, misbehaviors, and religious activity of children, adolescents, and young adults.

Lifelong health-related habits, including physical activity and eating patterns, are often established in childhood. Because ingrained behaviors are difficult to change as people grow older, public health measures must reach young people early, before health-damaging behaviors are adopted. Recent Surgeon General's reports highlight diet and physical activity as important components of child wellbeing. Given the importance of these activities for healthy development, rigorous policy-related research on large populations is essential to understand the determinants of good and bad behaviors. Schools, college campuses, teachers, care providers, and families are valuable resources for delivering positive messaging and creating environments that promote healthy behaviors and disincentivize unhealthy behaviors. Efforts to determine effective practices and policies at the individual, school, and community level will enhance desired behaviors and reduce detrimental ones.

These childhood behaviors affect the transition to adulthood. Behaviors such as tobacco use, alcohol and drug use, poor eating habits, and inadequate physical activity have been proven to be detrimental to *long-term* health by numerous researchers. These health-related behaviors also influence the future well being of youths as young adults and productive members of society. Areas of influence include appointment adherence, absenteeism, academic performance, criminal activity, college attendance, employment, work productivity, and wages.

Much of my early work focuses on behaviors of the **elderly and near elderly**. I have examined the effects of employer offerings (e.g., health insurance, pensions, wages) and state and federal policies (e.g., Medicaid, Medicare). The behaviors of interest to me in this age cohort include retirement decisions, asset and gifting behavior, long-term care utilization, and morbidity and mortality outcomes.

Interests by empirical methodology

Another way to categorize my work is by the empirical methodology I employ to understand individual behaviors. Without going into much detail, my approaches can be divided into three categories.

One approach involves developing a theoretical model of dynamic, forward-looking optimization behavior to mimic an individual's decisionmaking over time. Such a model can be solved and estimated using observed data to determine its primitive parameters (e.g., those describing preferences, constraints, and expectations). Optimal decisions under alternative policy scenarios are then evaluated by using these estimated parameters to re-solve the optimization problem. This **structural estimation** approach requires a combination of skills, including a deep understanding of economic theory, econometrics, data and institutions, as well as numerical methods and computer programming. Since closed-form solutions are often infeasible, the structural parameters cannot be estimated using standard regression techniques or statistical routines available in popular software packages.

Due to the extensive process of estimating the models described above, I have often taken another approach to understanding individual behavior. This method involves linearly approximating the functions that describe the value of different alternatives available to a decisionmaker (e.g., whether or not to visit a physician). The resulting dynamic demand and production equations, which describe observed behaviors and outcomes, can then be estimated as functions (e.g., linear Taylor-series approximations) of observable characteristics. In my research, I often examine multiple behaviors and outcomes simultaneously. Since these behaviors and outcomes may be correlated due to unobserved contributing factors, I estimate these demand and production functions jointly, explicitly allowing for (and measuring) the correlation. I refer to this approach as the **joint estimation of approximated dynamic structural equations**.

I have also addressed some empirical questions using common **reduced-form approaches**. In addition to employing estimators such as 2SLS and differences-in-differences, my reduced-form work also includes techniques like conditional density estimation (*Journal of Human Resources*, 2004), forward-looking price expectations formulations (*Review of Economics and Statistics*, 2007) and bootstrapped aggregation (Cho, Gilleskie and Zhang, 2024).

In summary

I am a hybrid of health economist, labor economist, and applied econometrician. As such, my research and approaches do not fit nicely into a single category. Although my work is focused, it bridges several fields and methodologies. My empirical style aligns more closely with that of a labor economist, but my research topics are primarily within health economics. My commitment to rigorous empirical methods reflects my interests in applied econometrics. Given the evolving and complex nature of health, I am drawn to employing theory-based dynamic modeling coupled with detailed panel data sets in my research (despite all the recent advances and intrigue of ML and AI approaches). This approach underscores my dedication to understanding health and employment behaviors and outcomes through robust economic reasoning. By opting for this foundational approach, I aim to produce more meaningful predictions, gain deeper insights into behavior, and assess a broader range of policy scenarios than can be obtained with straightforward or a-theoretical methods.