Hongyu Duan

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EDUCATION

Stony Brook University — Stony Brook, NY
Ph.D. in Economics — 2022 – Expected 2027

Southwestern University of Finance and Economics — Chengdu, China
M.A. in Economics — 2019 – 2022

Jinan University — Guangzhou, China
B.Mgmt. in Information Management and Information Systems — 2015 – 2019

RESEARCH INTERESTS

Health Economics, Empirical Industrial Organization, Health Policy, Applied Econometrics

PH.D. COURSEWORK

Microeconomics I & II, Macroeconomics I & II, Mathematical Statistics, Econometrics, Applied Econometrics, Industrial Organization I & II, Labor Economics I & II, Game Theory I & II, Mathematical Foundations of Contemporary Economic Theory, Health Economics (Audited)

WORK IN PROGRESS

- **Impacts of the Skilled Nursing Facility Value-Based Purchasing Program** (*Dissertation*)
  U.S. health care policy has increasingly adopted pay-for-performance programs to incentivize better care quality. This paper studies the quality and welfare effects of the Skilled Nursing Facility Value-Based Purchasing (SNF VBP) Program, under which Medicare uses a national, rank-based tournament to reward or penalize SNFs based on their rehospitalization rates. Preliminary results suggest that the introduction of the VBP program was associated with worse aggregate rehospitalization performance, while widening gaps in rehospitalization rates across facilities with different levels of Medicare volume. To better quantify the equilibrium effects on quality and welfare, I develop a structural model of supply and demand in the skilled nursing facility market, where facilities compete locally for demand and nationally for higher incentive payments under the VBP tournament. Leveraging the estimated structural model, I plan to conduct counterfactual analyses of alternative program designs that improve resident welfare.
- **Mental Illness and Mortality Risk in Nursing Homes** (*with Steven Stern*)
  Nursing homes have become one of the largest institutional settings for adults with mental illness in the United States, although they were not originally intended to serve this role. In this project, we examine whether mental illness affects the hazard of death among nursing home residents. Using universe-level resident admission and discharge records from the Minimum Data Set, we plan to estimate a competing risks model across different discharge statuses to capture the effect of mental illness on mortality risk. Through this analysis, the study aims to address an important gap in understanding how mental illness influences survival in nursing homes and to provide evidence that can inform policies to improve the quality of mental health care in long-term care settings.

COMMITTEE

Prof. Yiyi Zhou (Main Advisor)
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Prof. Steven Stern (Co-Advisor)
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Prof. Ting Liu
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Prof. Mark Montgomery
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RESEARCH EXPERIENCE

Stony Brook University
Research Assistant to Prof. Yiyi Zhou & Prof. Robert Millard — Fall 2025

TEACHING EXPERIENCE

Instructor of Record
Health Economics (Undergraduate Online) — Summer 2026
Introduction to Economics (Undergraduate Online) — Summer 2025

Teaching Assistant
Health Economics (Spring 2026), Intermediate Microeconomics (Spring 2025, Fall 2024), Econometrics (PhD-level, Spring 2024), Mathematical Statistics (PhD-level, Fall 2023), Introduction to Economics (Spring 2023, Fall 2022)

SKILLS & OTHERS

Programming: MATLAB, R, Python
Languages: English (fluent), Chinese (native)
Service: Economics Research Group (Treasurer, 2025), Stony Brook International Conference on Game Theory (Volunteer, 2023, 2024)
Citizenship: Chinese

Research Interest and Motivation Statement

Hongyu Duan
Stony Brook University

1 Research Interest

My research combines structural and reduced-form approaches to study economic questions in the skilled nursing facility and nursing home markets in the United States[1]. Skilled nursing facilities and nursing homes are important health care sectors from both demographic and policy perspectives. They primarily serve older adults, and demand for their services continues to grow as the population ages. At the same time, the two markets are largely financed and heavily regulated by the government, making them especially responsive to policy changes. Within this institutional context, my research examines how policies and market structures shape facility behavior, care quality, and health outcomes in skilled nursing facilities and nursing homes.

I mainly apply tools from empirical industrial organization and develop equilibrium models that incorporate both demand-side and supply-side responses to quantify welfare effects and draw policy implications through counterfactual analysis. My dissertation studies how the Skilled Nursing Facility Value-Based Purchasing Program incentivizes quality improvement through a national tournament design and uses counterfactual analysis to evaluate alternative policy designs. I also use reduced-form methods, such as difference-in-differences designs and hazard models, to provide complementary evidence on policy effects and assess resident health outcomes. My second project examines whether nursing home residents with mental illness face a systematically higher mortality risk using a competing risks model to estimate mortality hazards. In developing these projects, I have developed extensive experience working with multiple data sources, including LTCFocus, CMS datasets on nursing homes and skilled nursing facilities, and state-level nursing home cost reports.

2 Motivation

There are two main reasons that motivate me to attend this mentoring program. First, the program would provide me with a valuable opportunity to meet people who share my passion for health care for older adults, especially in institutional settings such as skilled nursing facilities and nursing homes. My department has a relatively small PhD cohort, and I am currently the only PhD student focusing on aging economics. Therefore, I would be very excited to discuss research questions in this field with other scholars and to explore potential opportunities for collaboration. Second, I hope to gain valuable exposure to state-of-the-art empirical methods. Since my department has a strong emphasis on structural approaches, guidance on other methodologies would help me enrich my empirical toolkit and broaden my research agenda.

Through this program, I hope to receive support in three main areas. First, I would value the opportunity to meet with mentors to discuss my current research, receive feedback on my research agenda, and seek guidance as I prepare for an academic career. Second, I would like to receive guidance on suitable datasets and their availability for studying research questions related to nursing homes and skilled nursing facilities, particularly access to more granular patient-level or household-level data. Such data would not only allow researchers to produce more accurate estimates to inform policy design, but also expand the range of research questions that can be addressed. Finally, I hope to receive further training in empirical methods, especially those related to policy evaluation. Since my research focuses on policy-relevant questions, training in research design, identification strategies, and causal inference would help me develop stronger empirical designs and produce rigorous evidence to better inform health policy for older adults.

[1] Skilled nursing facilities and nursing homes differ in the types of care they provide and in their primary payers. However, more than 90% of facilities in the United States are dually certified by Medicare and Medicaid, allowing them to provide both skilled nursing care and long-term care to older adults within the same institution.