Siyi Wang（王思漪）

Personal Website | LinkedIn

sw91@rice.edu | +1-215-470-5717

Department of Economics, Rice University, Houston, TX, 77005, US

Research Fields

Health Economics, Empirical Industrial Organization, Quantitative Marketing

Education

Rice University *2021 - 2028 (expected)*

Ph.D. in Economics Houston, US

Tsinghua University *2017 - 2021*

B.A. in Economics Beijing, China

Grants & Awards

Social Sciences Research Institute Dissertation Grant ($5,000), Rice University *2026.7 - 2027.12*

Graduate Fellowship, Rice University *2021 - 2027*

Outstanding Student Leadership Award, Tsinghua University *2021*

Publications

[1] Zhang, Z., Li, K., **Wang, S.**, Fashaw-Walters, S., Hou, Y. 2024. Change of Ownership and Quality of Home Health Agency Care. *JAMA Health Forum*. 5(11): e243767. doi:10.1001/jamahealthforum.2024.3767

Working Papers

[1] " **Defensive Promotion in Concentrated Drug Markets: Evidence from GLP-1 Competition**" *Job Market Paper*

Abstract: This paper studies how pharmaceutical firms adjust promotional activity in response to new product entry in concentrated drug markets. Focusing on the U.S. GLP-1 market after the approval of Eli Lilly's Mounjaro, I use physician–date–brand level detailing data to examine whether firms engage in defensive promotion to protect physician attention and market position. I develop a dynamic oligopoly framework in which firms allocate advertising across products while accounting for advertising stock, product vintage, rival entry, and future demand.

[2] " **Every Year Counts: Long Run Effects of Substance Use Initiation Age**" with Ziyue Xu and Justin White

Work in Progress

[1] "**Drug Novelty, Demand-Side Capital, and Firm Dynamics**" with Shihan Shen

Seminar & Conference Presentations

* PRESENTED BY COAUTHOR(S)

2026: Southern Economics Association (SEA) Annual Meeting
2024: American Society of Health Economists Conference (ASHEcon), AcademyHealth Annual Research Meeting*

Teaching & Research Experience

Teaching Assistant, Rice University *2021 - 2027*

◦ Industrial Organization (G), Microeconomics (UG), Macroeconomics (UG), Behavioral Economics (UG), Principles of Economics (UG)

Research Assistant

◦ Research Assistant for Professor David Zhang, Rice University, Summer 2023
◦ Research Assistant for Professor Hanming Fang, University of Pennsylvania, 2019-2020

OTHERS

Software: Stata, Python, R, MATLAB, Julia

Languages: Mandarin Chinese (Native), English (Proficient)

REFERENCES

1. **Professor Jeremy Fox (Advisor)**
   Department of Economics
   Rice University
   Email: fox@ownmail.net

2. **Professor Isabelle Perrigne**
   Department of Economics
   Rice University
   Email: iperrigne@gmail.com

3. **Professor Shihan Shen**
   Department of Economics
   Rice University
   Email: sshen@rice.edu

I am a fifth-year Ph.D. student in Economics at Rice University, working at the intersection of health economics and empirical industrial organization. I am developing a research agenda on how pharmaceutical advertising shapes firms' incentives to innovate. In particular, I ask whether advertising rewards genuinely novel therapies by increasing their market returns, or instead encourages firms to develop more incremental "me-too" drugs. This question is important because pharmaceutical innovation has large consequences for patient health and social welfare, yet prior work has raised concerns that many new drugs represent incremental rather than first-in-class innovation (Angell, 2010[1]). The policy relevance is especially immediate because debates over pharmaceutical advertising restrictions have largely focused on how advertising affects consumer demand, physician prescribing, and potential overuse (Grennan et al., 2025[2]). Much less is known about how such restrictions would affect pharmaceutical firms' innovation incentives.

This omission is important because the long-run welfare consequences of advertising policy may depend not only on whether advertising changes current drug utilization, but also on whether it changes the types of drugs firms choose to develop. My project examines this overlooked margin through a concrete counterfactual: how would firms' incentives to pursue incremental versus genuinely novel innovation change if pharmaceutical advertising were restricted or banned? To answer this question, my project starts from a theoretically ambiguous relationship between advertising and innovation and asks which force dominates empirically: does advertising primarily increase the returns to incremental products, or does it help firms capture the value of genuinely novel therapies? If "me-too" drugs are easier to promote, or if advertising is especially effective at shifting demand among clinically similar products, then promotional spending may raise the expected returns to less novel drugs and encourage firms to invest in follow-on therapies rather than riskier breakthrough products. Conversely, if advertising helps physicians and patients learn about unfamiliar treatment options, it may increase the returns to genuinely novel drugs and support riskier R&D.

Empirically, I first plan to document whether firms' promotional strategies differ systematically by drug novelty. I measure novelty using molecular distance from previously developed compounds, based on the Tanimoto similarity coefficient, and link this measure to drug-level direct-to-consumer advertising and physician-directed promotion. This first step examines whether less novel and more novel drugs receive different levels of advertising, conditional on therapeutic class, launch timing, firm characteristics, and market conditions. I then plan to study whether the returns to advertising differ by drug novelty. A key challenge is that advertising is endogenous: firms advertise drugs that they expect to be more profitable, higher quality, or easier to promote. To make progress on this issue, I am exploring variation from the COVID-19 period, when in-person access to physicians became sharply more difficult and the effective cost of detailing increased. By comparing drugs or markets that were more versus less reliant on physician-directed promotion before COVID, I hope to identify whether changes in advertising exposure had different demand effects for incremental versus genuinely novel drugs. These empirical estimates will inform a counterfactual analysis of how restrictions on pharmaceutical advertising could change firms' incentives to pursue different types of innovation.

This project is at a stage where mentorship would be especially valuable. I have a clear research question and have begun building the data infrastructure for the descriptive analysis, but I am still working through how to turn these empirical patterns into a credible identification strategy and a convincing framework for long-run innovation incentives. In particular, I would benefit from feedback on whether the COVID-related disruption to physician detailing can be used as a credible source of variation, how to address the simultaneous effects of COVID on health care utilization, and how to connect short-run advertising responses to firms' longer-run R&D decisions. Rice has provided me with strong training in empirical industrial organization, but my project would also benefit from mentorship from scholars working more directly on pharmaceutical markets, health economics, and marketing-related firm behavior. Most faculty in my department work outside health economics, and the health-related mentorship available to me is primarily on the consumer side of insurance markets, whereas my research focuses on the supply side of pharmaceutical firms' promotional and innovation decisions.

The guidance I would find most valuable is not only technical, but also conceptual and data-related. I hope to receive feedback on how ambitious the empirical claims should be: whether the COVID-related disruption to physician detailing can credibly identify heterogeneous advertising returns, or whether the project should be framed more cautiously around how promotional incentives differ across drugs with different degrees of novelty. I would also value advice on the data sources needed to connect advertising behavior to innovation decisions, especially data that track drug candidates through the development pipeline, including clinical-trial progression, termination, FDA submission, and approval. More broadly, I hope to learn how to connect short-run evidence on advertising responses and demand effects to longer-run claims about firms' R&D incentives, and what assumptions are needed to discipline a counterfactual advertising restriction. Because my training is primarily in empirical IO, I also hope to learn how to frame this project so that it speaks directly to health economics questions about medical innovation, patient welfare, and the allocation of innovative effort. I hope to leave the program with a sharper dissertation agenda, a more credible empirical design, and a clearer path for positioning myself as a health economist studying pharmaceutical markets and innovation.

---

[1] Angell, M. 2010. Big pharma, bad medicine. *Boston Review*, May 1. http://bostonreview.net/angell-big-pharma-bad-medicine

[2] Grennan, Matthew, et al. "No free lunch? welfare analysis of firms selling through expert intermediaries." *Review of Economic Studies* 92.4 (2025): 2537-2577.