Application for NBER Digital Economics and AI Tutorial

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I am writing to apply for the NBER Digital Economics and Artificial Intelligence Tutorial to be held at Stanford University on February 11–12, 2026. I am a third-year Ph.D. student in Economics at the University of California, Berkeley. My research studies behavioral frictions in physician and patient decision-making and how artificial intelligence tools and platform design can alleviate these frictions. I focus on two main settings: clinical decision support tools that help physicians make better diagnostic and treatment decisions, and provider-search platforms that steer patients toward better physician matches. My broader agenda is to understand how to design AI-based algorithms that aid human decision makers and how humans and algorithms can be combined to deliver better outcomes. To answer these questions, I combine tools from industrial organization, labor, and behavioral economics with rich administrative and digital trace data, particularly from the Providence health system, a large non-profit, faith-based provider network.

My graduate training has included field courses in Industrial Organization, Labor Economics and Behavioral Economics, as well as the core sequences in Microeconomic Theory, Macroeconomics, and Econometrics. My primary advisor is Jonathan Kolstad, and my tentative dissertation committee additionally consists of Ben Handel, Carolyn Stein, and Nano Barahona. I have also been serving as a teaching assistant for Michael Jansson in the first-year Ph.D. Econometrics sequence.

Since decisions in health care are high-stakes and information is noisy, the way digital systems structure information and choice is particularly important. In ongoing work with Ben Handel, Jonathan Kolstad, Ulrike Malmendier, and Filip Matejka on "Thinking versus Doing: Cognitive capacity, decision making and medical diagnosis," we use detailed electronic health record and audit-log data to show that higher cognitive load leads physicians to substitute mental deliberation with more numerous but less informative diagnostic actions and to admit more marginal patients. This project brings models of limited attention and cognitive capacity into a field setting and informs my broader agenda on how AI tools may help alleviate cognitive constraints in clinical practice, a key dimension of human–AI complementarity.

Motivated by these findings, one strand of my research focuses on clinical decision support in emergency departments. Systematic reviews of clinical decision support (CDS) document improvements in process measures but mixed impacts on patient outcomes (Jaspers et al., 2011). Sepsis alert systems in particular appear to improve early recognition, with heterogeneous effects on mortality and length of stay (Amland and Hahn-Cover, 2019; Kim et al., 2024). I study a large-scale deployment of a sepsis CDS tool in 51 Providence emergency departments that uses vital signs and laboratory

results to flag possible sepsis and trigger a bundle-based workflow that recommends nursing tasks, order sets, and follow-up monitoring. Clinicians retain full discretion to ignore, partially follow, or fully implement these recommendations. The sepsis CDS has been rolled out since 2021 in a staggered fashion across sites in the Providence health system. Using 2016–present encounter-level electronic health record and click-stream data on orders, test results, and outcomes, combined with quasi-random assignment of patients to physicians within site and time, I can separate physician heterogeneity from patient selection.

Empirically, I exploit the staggered roll-out to estimate dynamic site-level effects in an event-study framework, focusing on sepsis diagnosis rates, the timing and intensity of sepsis-related orders, ICU admission, and hospital length of stay. The event-study design allows me to distinguish immediate implementation effects from medium-run adaptation and to test whether clinicians learn to override or selectively follow alerts more effectively over time – a critical extension of current experimental work that introduces radiologists to completely new tools in one-off decision settings, such as Agarwal et al. (2024).

An additional structural component builds on Chan et al. (2022) to decompose sepsis management into diagnostic skill and diagnostic thresholds by recovering empirical Receiver Operating Characteristic (ROC) curves at the physician level and examining how CDS shifts operating points and the trade-off between false negatives and false positives. This will allow me to characterize which physicians improve or worsen their diagnostic accuracy after CDS deployment and when the tool is particularly effective or ineffective, for example under high measured cognitive load or fatigue. The goal is to provide quasi-experimental evidence on the productivity and welfare effects of AI decision support tools in a high-stakes, time-pressured environment in which humans remain the final decision makers, and to derive implications for the design of future decision aids in clinical care.

A second strand of my research uses Providence's "Find a Doctor" platform to measure how online search, rankings, and reviews shape physician–patient matching and clinical quality. Many health systems now let patients choose primary care physicians or specialists through digital platforms with algorithmically curated lists, filters, and signals such as appointment availability, ratings, and profile text. I combine time-stamped star displays, review counts, profile attributes, and ranking positions with completed bookings and detailed clinical outcomes to study what information patients use, whether subjective star ratings align with objective clinical quality, and whether physicians adjust their practice styles when online reviews and rankings become more salient. Existing work shows that public quality disclosure and online reviews can strongly shift hospital and physician choice, but that patient ratings are only weakly related to physicians' clinical value added and may embed biases (Dranove et al., 2003; Pope, 2009; Kaye et al., 2024; Ginja et al., 2025; Chan, 2024).

My contribution is to study these mechanisms inside an integrated health system where the platform intermediates most new-patient bookings and where I observe both the full search environment and rich measures of clinical quality at the physician level. In this setting, I plan to estimate a demand model that separately identifies patient preferences over ratings, wait times, and other physician and practice attributes, using rating-rounding and scheduling shocks as instruments. I then link

platform-driven reallocation to clinical quality measures such as risk-adjusted health outcomes, low-value care, and prescribing patterns. On the supply side, I will study whether physicians change their practice styles as ratings and rankings become more salient. Together, these analyses yield welfare-relevant counterfactuals for alternative ranking and disclosure policies.

Attending the NBER Digital Economics and AI Tutorial would be an extremely valuable step in my development as a researcher at the intersection of digital economics, AI, and health care. The opportunity to engage closely with faculty and graduate students working on algorithmic decision making, platform design, and human–AI complementarity would directly inform my sepsis CDS and provider-search projects and help me refine both my theoretical and empirical toolkit. Since relatively few students at Berkeley focus squarely on this intersection, the tutorial would also provide a rare chance to build a network of peers pursuing related questions. I would be deeply grateful for the opportunity to participate in the tutorial and the associated NBER meetings, and I appreciate your consideration.

Sincerely,
Louis Heizlsperger

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