Kayleigh N Barnes

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Education:

2017-Present University of California, Berkeley
PhD Student in Economics

2010-2014 University of California, Berkeley
B.A. in Economics, minor in Physics (GPA: 3.6, Econ GPA: 3.9)
Graduation: May 2014

Professional Experience:

May 2018- Aug 2018 Data Science Intern at OODA Health. Took lead role on analytics projects, implemented analyses and generated data visualizations in SQL and Python.

Sept 2014-May 2017: Research Assistant to Dr. Neeraj Sood, Schaeffer Center for Health Policy and Economics. Assist in data analysis, conceptual model development, and writing up reports.

April 2015 – June 2015: Consultant at The World Bank. Conducted literature reviews, cleaned and analyzed survey data, assisted with manuscript preparation.

Teaching Experience:

Aug 2017-Present: Graduate Student Instructor/TA at University of California, Berkeley for Intermediate Microeconomics, Health Economics, and Economics Research Seminar

Research Papers:

Neeraj Sood, Allen P Ugargol, Kayleigh Barnes, Anish Mahajan. (2016) "Applying appropriate-use criteria to cardiac revascularization in India" *BMJ Open*. 6 (3), e010345

Neeraj Sood, Abby Alpert, Kayleigh Barnes, Peter Huckfeldt, Jose Escarce. "Effects of Payment Reform in More versus Less Competitive Markets" (2017) *Journal of Health Economics*. 51: 66-83.

Kayleigh Barnes, Arnab Mukherji, Patrick Mullen, and Neeraj Sood. "Financial Risk Protection from Health Insurance" (2017) *Journal of Health Economics*. 55: 14-29.

Coursework:

Completed: 2 Semesters of Economic Theory (Microeconomics), 2 Semesters of Macroeconomic Theory, 2 Semesters of Econometric Theory, 1 Semester of Economic History

Currently Enrolled: Industrial Organization, Psychology and Economics, Applied Econometrics

USC Price
Sol Price School of Public Policy

Neeraj Sood
Professor and Vice Dean for Research

September 17, 2018

Dear Selection Committee,

I am writing to strongly recommend Kayleigh Barnes for the NBER Health Economics Research Bootcamp. I have known Kayleigh for about four years; for two and half of those years I was her direct supervisor at the Schaeffer Center for Health Policy and Economics. Over the past decade, I have taught and mentored several Ph.D. students at RAND and USC. I would place Kayleigh in the top 10% of students/mentees among this cohort.

What distinguishes Kayleigh from other students are her analytical and theoretical modeling abilities. She has worked on two papers with me, both of which were published in the *Journal of Health Economics*. On both papers Kayleigh took the lead in developing the theoretical model and using the model to derive testable predictions. She also played an active role in the empirical analysis, in revising the model in response to referee comments, and in providing an intuitive explanation for various results from the model. These are important skills for any academic economist and Kayleigh has demonstrated that she has these skills.

The first paper I co-authored with Kayleigh looks at the effects of changes in Medicare reimbursement for providers on the intensity of care; and whether the effects of payment changes on intensity of care vary with the level of competition. Prior theoretical research on this topic shows that reductions in Medicare payment result in decrease in intensity of care. The intuition is that higher intensity of care is akin higher quality of care. With administratively set prices the returns to investing in quality depend on two factors: the quality elasticity of demand and the profit per patient. Both higher quality elasticity of demand and higher profits per patient increase returns to investing in quality. However, these predictions come from a model where there is only one firm in the market and prior work had not explicitly modeled how these predictions might vary with the level of competition in the market. To address this issue, Kayleigh developed a Salop type model where firms are located on a circle and patients are randomly distributed across the circle. Patients decide which firms to choose based on the intensity of care provided by the firm and the distance to the firm. Prices are regulated and firms maximize a utility function that includes firm profits as well as patient health. This model makes several predictions. First, consistent with prior empirical work it predicts that quality increases with competition and with increase in regulated price. Second, it predicts that reductions in regulated prices have greater effects on quality or intensity of care in more competitive markets. Third, it predicts that payment cuts will have greater effects on firm exit in more competitive markets. However, the second and third predictions have not been tested before. We used data from a natural experiment where Medicare significantly reduced payments for health care providers to test these predictions. Consistent with the model we do find that payment cuts have larger effects in more competitive markets. We also find that payment cuts lead to greater firm exit in more competitive market and exiting firms tend to be less efficient.

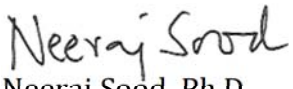
The second paper I co-authored with Kayleigh looks at the impact of insurance on financial risk protection. Kayleigh is the lead author on this publication. In this paper, we use a natural experiment from India to estimate the impact of insurance for catastrophic illness on the distribution of out of pocket health care spending. We show that insurance reduces out of pocket spending with much

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larger effects on the right tail of the distribution. Next, we estimate the welfare gains from this change in the distribution of out of pocket spending. To do so, we start with an existing model of a risk averse agent maximizing expected utility in the face of uncertain health care spending. In such a model the welfare gain from insurance arises from its ability to smooth consumption across health states. We extend this model to the developing country context by including two unique features. First, individuals have access to informal insurance networks such as borrowing from friends and family. Second, individuals have a subsistence level of consumption and this constraint is often binding when consumers face health shocks. Consumers facing a binding constraint need to sell assets to maintain subsistence consumption. With this setup insurance creates value from two sources: consumption smoothing and asset protection. We calibrate this model using empirical estimates from our study as well as estimates from other students in the literature. Using these data we show that the welfare gains from insurance in India fair outweigh the social costs of providing the insurance. This paper was published in the *Journal of Health Economics.*

In summary, Kayleigh is an excellent candidate as (a) she has demonstrated ability to conduct research and publish in top field journals in economics, (b) excellent training in economics and mathematics, and (c) a passion for applying mathematical and economic models to understand the behavior of economic agents. I am confident that she will do well at this workshop. Please do not hesitate to contact me if you have any questions about her application.

Sincerely,



Neeraj Sood, Ph.D.

Professor and Vice Dean for Research
Sol Price School of Public Policy
University of Southern California

Research Associate
National Bureau of Economic Research (NBER)

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To whom it may concern:

I would like to express my interest in the NBER Health Economics Research Boot Camp for Graduate Students. I am a second year Economics PhD student at the University of California, Berkeley interested in health economics, industrial organization and behavioral economics. I believe my academic preparation, prior research experience and research interests makes me an ideal candidate for attending this boot camp. I have attached my essay explaining my rationale for attending this boot camp, C.V., and letter of recommendation. My letter writer is Dr. Neeraj Sood at the University of Southern California and while he is not my advisor at my PhD program, he has worked closely with me on many research projects and has served as my mentor and advisor. At UC Berkeley, I hope to be advised by Dr. Ben Handel and Dr. Jon Kolstad after I take my field exams this upcoming year.

Sincerely,

Kayleigh Barnes

Kayleigh Barnes
NBER Health Boot Camp

Introduction

I am applying to the NBER Health Economics Research Boot Camp because it will afford me the opportunity to further study the health economics literature, learn new techniques, and connect with professors at the forefront of the field and other students that have similar research interests to mine. As a second year Economics PhD student at UC Berkeley, I am about to embark on my first foray into independent research. This puts me in a position to benefit tremendously from the education and resources that this boot camp would provide. I am currently taking field courses in Industrial Organization, Behavioral Economics, and Applied Econometrics and am broadly interested in conducting research at the intersection of these fields and health. Specifically, I am interested in research that examines how insurance contracts and payment systems and how they can incentivize both providers and patients to choose appropriate, high quality care. Because my department does not offer a health specific field course, this boot camp would provide me with the background and knowledge of the field that will enable me to generate novel research ideas and approach topics with accuracy and rigor.

Current Research and Future Plans

After finishing my first year coursework, I spent my summer running analytics for OODA Health, a company that is looking to improve the efficiency with which health care claims are processed and paid. While there, I worked on a variety of projects that identified the drivers of claims processing costs as well as the distributions of payments and billing codes by provider specialties, inpatient status, and facility type. I gained experience working with several large private claims databases, including Blue Cross and Blue Shield claims from California and Arizona, and am in the process of gaining access to electronic health records that will be able to be linked to the existing claims data. The company is interested in providing me access to this data for my own research in the future. This rich, vertically integrated data along with OODA's mission to make claims payments to providers in real time, simplify patient liability, and implement a copay only benefit design will allow for many interesting research projects that tackle economic questions with potentially significant impact for care implementation and costs.

I am currently in the initial stages of working on a project that utilizes this data and setting to analyze the role that physicians play in enforcing insurance contracts. For patients enrolled in the OODA pilot, the patient liability of the cost of care will be removed from the physician or provider's responsibility to collect and will instead be managed and collected by OODA. Physicians and providers will receive real time payment for their services rather than having payments be split between insurance and patient liability and patients will be able to view their explanation of benefits and pay their bills on one unified platform. This policy change offers a unique chance to better understand the mechanisms through which patient cost sharing affects care. In recent years, there has been a large shift towards using cost sharing as a tool to curb rising health care costs, evidenced by high deductible plans becoming increasingly popular. While there is an ever-growing literature on the effects of cost sharing on utilization, care outcomes, and overall health care spending little has been studied on the mechanisms through which patients actually share their care costs and whether or not this process is efficient and

effective. In my research, I hope to identify the efficacy with which providers enforce cost sharing and understand the incentives that this role as "enforcer" places on providers. Learning from and hearing the perspectives of professors who have spent their careers studying patient and physician behavior, insurance contracts, and the drivers of costs in health care will help me formalize and further develop my identification and strategy in tackling this question.

Conclusion

In sum, my rationale for attending this boot camp is this: I am a student that is relatively early on in my PhD and want to expand my horizons in knowledge of health economics literature and research in order to improve my research. The boot camp's focus on the intersection of industrial organization, public, and behavioral economics aligns perfectly with my research interests and will complement the field courses I am currently enrolled in. The privilege of attending this program will be an important boon for me as I transition out of coursework and into independent research next year and will prepare me to be a productive contributor to the field. In addition, being in an environment with such prominent leaders on the forefront of health economics and will assist in the guidance of my research. Having the opportunity to meet and interact with other students who share the same research interests may spur research collaborations in the future that will prove to be invaluable to me as I pursue a career in academia.