# PARKER ROGERS
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## EDUCATION

| University of California, San Diego | Ph.D., Economics | (Expected) 2023 |
| | M.A., Economics | 2018 |
| Brigham Young University | B.S., Economics | 2017 |
| | B.S., Applied and Computational Mathematics | 2017 |

## REFERENCES

| Jeffrey Clemens | UC San Diego | jeffclemens@ucsd.edu |
| Joshua Graff Zivin | UC San Diego | jgraffzivin@ucsd.edu |
| Craig McIntosh | UC San Diego | ctmcintosh@ucsd.edu |

## FIELDS OF INTEREST

Health Economics, Innovation, Redistributive Policy, and Applied Machine Learning.

## WORKING PAPERS

"Regulating the Innovators: Approval Costs and Innovation in Medical Technologies"
*Winner of the Best Paper Award at SOCAE 2021*

**Abstract**: *How does regulation affect innovation and market competition? I examine this question by exploiting FDA deregulation events that affected certain medical device types but not others. I gather new, comprehensive data on medical device innovation, prices, and regulation changes from eight different sources. The analysis of this data yields three core results. First, deregulation significantly increases the quantity and quality of innovation in treated device types relative to controls. These effects are especially large among small and inexperienced firms. Second, deregulation increases firm entry and lowers the prices of medical procedures that use treated medical device types. Third, rates of serious injuries and deaths caused by defective devices do not measurably increase after deregulation. In fact, deregulating some device types lowered these adverse events rates significantly—consistent with firms increasing their emphasis on product safety as deregulation exposed firms to more liability risk.*

"Demand Shocks, Procurement Policies, and the Nature of Medical Innovation: Evidence from Wartime Prosthetic Device Patents" NBER Working Paper No. 26679 (with Jeffrey Clemens).
*Revise and Resubmit at the Review of Economics and Statistics*

**Abstract***: We analyze wartime prosthetic device patents to investigate how procurement policy affects the cost, quality, and quantity of medical innovation. Analyzing whether inventions emphasize cost and/or quality requires generating new data. We do this by first hand-coding the economic traits emphasized in 1,200 patent documents. We then train a machine learning algorithm and apply the trained models to a century's worth of medical and mechanical patents that form our analysis sample. In our analysis of these new data, we find that the relatively stingy, fixed-price contracts of the Civil War era led inventors to focus broadly on reducing costs, while the less cost-conscious procurement contracts of World War I did not. We provide a conceptual framework that highlights the economic forces that drive this key finding. We also find that inventors emphasized dimensions of product quality (e.g., a prosthetic's appearance or comfort) that aligned with differences in buyers' preferences across wars. Finally, we find that the Civil War and World War I procurement shocks led to substantial increases in the quantity of prosthetic device patenting relative to patenting in other medical and mechanical technology classes. We conclude that procurement environments can significantly shape the scientific problems with which inventors engage, including the choice to innovate on quality or cost.*

"Machine Learning for Text Analysis: Pitfalls, Solutions, and Lessons Learned Analyzing Patent Documents" (with Jeffrey Clemens).

**Abstract***: We explore cutting-edge machine learning algorithms for text analysis. We evaluate their relative advantages and disadvantages when predicting variables contained in our newly constructed data set describing the economic attributes of medical and mechanical innovations. To this end, we first provide background regarding our particular application and highlight key issues faced when performing text analysis. We then compare predictive accuracy across a range of deep learning and non-neural network machine learning algorithms. Next, we provide a novel text analysis approach that uses what we term "selective contextualization" to achieve significant gains in predictive performance and computation time over our considered alternatives. We show several dimensions across which key issues in text analysis are more likely to induce large errors in generated data and we show how these errors affect potential economic estimates of interest. Given these pitfalls, we provide best practice approaches to ensure that the key issues are properly addressed.*

## HONORS, AWARDS, AND GRANTS

Best Paper Award, Southern California Graduate Conference in Applied Economics, 2021.
NBER Health Economics Research Boot Camp, 2019.
Advancement to Candidacy Fellowship, 2020-2021.
Graduate Summer Research Scholarship, UCSD 2018, 2019.
Research Grant, Dissertation Development, UCSD 2018,2021.
Regents Fellowship, UCSD 2017 - 2018.
Public Finance Fellowship, UCSD 2017 - 2018.
Research Grant (with Kerk Phillip), Office of Research and Creative Activities, BYU 2017.
Research Grant (with Richard Evans), Office of Research and Creative Activities, BYU 2016.

## RELEVANT POSITIONS HELD

| | | |
|---|---|---|
| Research Assistant | UCSD (Prof. Jeffrey Clemens) | 2018 - 2019 |
| Policy Modeling Team | Open-Source Policy Center | 2016 - 2017 |
| Research Assistant | BYU (Profs. Richard Evans and Kerk Phillips) | 2015 - 2016 |

## PROFESSIONAL ACTIVITIES

### Conference Presentations

2021    American Society of Health Economists Annual Conference (ASHEcon),
Young Economist Symposium (YES), Southern California Graduate Conference in
Applied Economics (SOCAE).

2020    International Conference on Health Policy Statistics (ICHPS).

2019    National Tax Association Annual Conference (NTA).

### Teaching and Mentoring

2018-    Undergraduate Research Assistant Supervision (4 concurrent RAs).

2018-    Teaching Assistant: Principles of Microeconomics ($\times 2$),
Microeconomics A, Microeconomics B, Microeconomics C, Game Theory ($\times 2$).

2015    Teaching Assistant: Economics Principles and Problems, BYU.

### Referee Service

*Review of Economics and Statistics*, *Journal of Public Economics*, *Journal of Health Economics*.

### Other Relevant Activities

2014    Economic Analyst Intern, United States Senate.

## Other Information

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| Fluent Languages: | English, Spanish |
| Computational Languages: | Python, R, MATLAB, STATA, SQL, Git |