

# Noah Hammarlund

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## Education

- 2018–2020 **Senior Fellow**, *Biomedical Informatics and Medical Education, University of Washington*, Seattle, WA.
- 2012–2018 **Ph.D., Public Affairs**, *School of Public and Environmental Affairs (SPEA), Indiana University*, Bloomington, Indiana.  
Focus: Health Economics and Policy. Minor Field: Applied Statistics and Machine Learning
- 2010–2012 **M.S., Economics**, *University of Oregon*, Eugene, Oregon.
- 2010–2012 **Postbacc., Mathematics**, *University of Portland*, Portland, Oregon.
- 2004–2008 **B.S., Economics**, *Western Washington University*, Bellingham, Washington.

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## Doctoral Dissertation

- Title *Racial Treatment Disparities after Machine Learning Surgical-Appropriateness Adjustment*
- Committee Dr. Seth Freedman (Co-chair), Dr. Kosali Simon (Co-Chair), Dr. Coady Wing, and Dr. Predrag Radivojac
- Description Significant differences in inpatient surgery rates between black and non-black patients suggest a racial treatment disparity. However, these rates need to be adjusted for patient surgical appropriateness. In my job market paper I focus on the method of adjustment. Using data from the Nationwide Inpatient Sample, I show that the machine learning variable selection methods reveal surgery appropriateness controls from diagnosis codes that decrease the standard adjusted treatment disparities for the cases of acute myocardial infarction and obstetric surgeries by up to 50%. A significant treatment disparity remains after adjusting for many predictive controls, providing further evidence of a substantial racial treatment disparity.

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## Research Affiliations

- 2018-present **Principal Investigator**, *University of Washington*, National Library of Medicine - Biomedical Informatics and Data Science Research, University of Washington, Seattle.
- 2016-2018 **Principal Researcher**, *IU Data Sciences Consulting - Health*, School of Informatics and Computing, Indiana University, Bloomington.
- 2016 **Research Assistant**, Dr. Matt Baggetta, SPEA Indiana University, Bloomington.
- 2012–2015 **Research Assistant**, Dr. Seth Freedman, SPEA Indiana University, Bloomington.

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## Research

### Published

Freedman, S., & Hammarlund, N. 2018. Electronic Medical Records and Medical Procedure Choice: Evidence from Cesarean Sections. Under Revision. Health Economics.

Hammarlund, N., & Natarajan, S. 2017. Does Race Play a Role in Invasive Procedure Treatments? An Initial Analysis. In 2017 IEEE/ACM International Conference on Connected Health: Applications, Systems and Engineering Technologies (CHASE) (pp. 243-244). IEEE. <https://doi.org/10.1109/CHASE.2017.84>

### In Progress

Freedman, S., & Hammarlund, N. 2017. Electronic Medical Records and Medical Procedure Choice: Evidence from Cesarean Sections.

Freedman, S., Goodman-Bacon, A., & Hammarlund, N. 2017. Observational Studies of the Effect of Insurance on Health: Controls Are Not Enough.

Hammarlund, N. 2017. Racial Treatment Disparities after Machine Learning Surgical-Appropriateness Adjustment.

### Presentations

Hammarlund, N. 2018. Racial Treatment Disparities after Machine Learning Surgical-Appropriateness Adjustment. American Society of Health Economists, Atlanta, GA, June 2018.

Hammarlund, N. 2018. Racial Treatment Disparities after Machine Learning Surgical-Appropriateness Adjustment. Midwest Economics Conference, Evanston, IL, March 2018.

Hammarlund, N. 2018. Racial Treatment Disparities after Machine Learning Surgical-Appropriateness Adjustment. Poster, Conference on Neural Information Processing Systems (NIPS), Causal Inference and ML Workshop, Long Beach, CA, December 2017.

Freedman, S., & Hammarlund, N. 2017. Electronic Medical Records and Medical Procedure Choice: Evidence from Cesarean Sections. Abstract for Presentation, Midwest Economics Association Conference, Chicago, IL, March 2016.

Freedman, S., & Hammarlund, N. 2017. Electronic Medical Records and Medical Procedure Choice: Evidence from Cesarean Sections. Abstract for Presentation, Association for Public Policy and Management Fall Research Conference, Miami, FL, November 2015.

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## Honors and Awards

2018 **Biomedical Informatics and Data Science Research Training Program**, *National Library of Medicine*, University of Washington, Seattle, WA.

2016 **Grant-in-Aid of Doctoral Research**, SPEA Indiana University, Bloomington.

2016 **Doctoral Consortium**, Conference on Health IT and Analytics, Washington, DC.

2012–2016 **Graduate Fellowship**, SPEA Indiana University, Bloomington.

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## Professional Service

### Referee

Journal of Policy Analysis and Management, Health Economics

### Service

2016–2018 Research Project Team Leader - Masters in Data Science Data Consulting Class

2015–2016 Association of SPEA Ph.D. Students, Executive Board

2015–2016 Coordinator, SPEA Health Policy Workshop

### Memberships

Association for Public Policy Analysis and Management, American Society of Health Economists, American Economic Association, Midwest Economics Association, Academy-Health, The Institute of Electrical and Electronics Engineers

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## Teaching Experience

### School of Public and Environmental Affairs (SPEA)

Associate Instructor Health Economics, Fall 2014, Fall 2015, Fall 2016, Spring 2017, Fall 2017

Associate Instructor Management Science, Spring 2016

Teaching Assistant Mathematics Preparation for PhD Students, Summers 2014 - 2017

Teaching Assistant Statistics, Spring 2015