

# Nathaniel Hendrix

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## Education

2020 (exp.) PHD in health economics and outcomes research, The CHOICE Institute, University of Washington  
2015 PHARM.D, University of Washington  
2004 BA in English literature, Texas State University

## Dissertation

*Using health economics tools to enhance the clinical utility of machine learning-based diagnostic algorithms: a case-study in breast cancer screening.*

*Committee:* David Veenstra (chair), Aasthaa Bansal, A. Brett Hauber, Christoph I. Lee

*Aim 1:* I will construct and administer a discrete choice experiment survey instrument to evaluate how changing the attributes of a hypothetical mammography interpretation algorithm affects the intention of primary care providers to refer their patients to a service using this algorithm.

*Aim 2:* Using a validated open source model, I will project the quality-adjusted life years (QALYs) associated with the use of algorithms submitted to the Digital Mammography DREAM Challenge, a collaborative competition held for the development of algorithms that interpret breast cancer screening images without radiologist supervision. I will use QALYs to optimize the cut-point that each algorithm uses to separate women who need diagnostic testing from those who do not, then compare performance using this method to receiver-operating curve-based methods of ascertaining cut-point.

## Current positions

2017- Consultant (economic modeling), PATH, Seattle  
2016- Research assistant, University of Washington, Seattle

## Coursework

Econometrics and causal inference • Machine learning • Pharmacoepidemiology • Health economic modeling • Outcomes research • Survey methods

## Previous positions

2018-2019	Consultant (economic modeling, literature review), VeriTech Corporation, Seattle
2016	Consultant (literature review), ISPOR Vaccines Task Force, Lawrenceville, NJ
2015-2016	Economic modelling specialist, PATH, Seattle
2013-2015	Pharmacy informatics intern, Virginia Mason Medical Center, Seattle
2011-2013	Inpatient pharmacy intern, Virginia Mason Medical Center, Seattle

## Grants, honors & awards

2020	Rubenstein Scholarship Fund (\$5,000), University of Washington, School of Pharmacy
2019	Graduate Student Leadership Award, University of Washington, School of Pharmacy
2019	Rubenstein Scholarship Fund (\$4,000), University of Washington, School of Pharmacy
2018-2020	T32 pre-doctoral fellowship (Developing Data-Driven Cancer Researchers, PIs: Etzioni / Schwartz), National Cancer Institute
2018-2019	Pre-doctoral fellow in outcomes research (\$37,500), PhRMA Foundation
2015-2017	T32 pre-doctoral fellowship (Health Services Research Training, PIs: Devine / Grembowski), Agency for Healthcare Research and Quality

## Teaching experience

2019	MarketScan Summer Bootcamp, University of Washington <i>Co-developed and co-taught a seven-week curriculum introducing claims analysis using SAS and R for 13 participants, which is forming the basis for a new elective</i>
2019	“Pharmacy, Healthcare, and Society” course, University of Washington <i>Teaching assistant: wrote and graded assignments and exams for more than 90 PharmD student class members</i>
2018	Introduction to Health Economics, University of Washington <i>Developed and co-taught a three-week introduction to cost-effectiveness and budget impact analysis for student members of Academy of Managed Care Pharmacy</i>

## Programming language proficiencies

R, SQL, VBA

## Publications & talks

### JOURNAL ARTICLES

2020	<i>(Under review)</i> <a href="#">N. Hendrix</a> , D. Regier, A. Basu, D. Veenstra, J. Chatterjee, D. Dhanda, and J. Carlson. “Provider preferences for resolving uncertainty and avoiding harms in precision medicine: Results from a discrete choice experiment.”
2020	<i>(Under review)</i> R. Baral, J. Fleming, S. Khan, D. Higgins, <a href="#">N. Hendrix</a> , and C. Pecenka. “Inferring antenatal care visit timing in low- and middle-income countries: Methods to inform potential maternal vaccine coverage.”
2020	<i>(In press)</i> <a href="#">N. Hendrix</a> , Z. Marcum, and D. Veenstra. “Medication persistence of targeted immunomodulators for plaque psoriasis: A retrospective analysis using a U.S. claims database.” <i>Pharmacoepidemiology and Drug Safety</i> .

- 2019 F. Debellut, N. Hendrix, V. Pitzer, D. Costenla, N. Bar-Zeev, A. Marfin, and C. Pecenka. “Forecasting demand for the typhoid conjugate vaccine in low- and middle-income countries.” *Clinical Infectious Diseases*. 2019 Mar 7.
- 2018 F. Debellut, N. Hendrix, J. Ortiz, P. Lambach, M. Perut, K. Neuzil, N. Bhat, and C. Pecenka. “Forecasting demand for maternal influenza immunization in low- and lower-middle-income countries.” *PLoS ONE*. 2018 June 22.
- 2018 J. Carlson, D. Kim, G. Guzauskas, C. Bennette, D. Veenstra, A. Basu, N. Hendrix, D. Hershman, L. Baker, and S. Ramsey. “A pilot study integrating value of research analyses into NCI clinical trials cooperative group research review and prioritization process.” *Cancer Medicine*. 2018 July 20.
- 2018 N. Hendrix, D. Ollendorf, R. Chapman, A. Loos, S. Liu, V. Kumar, J. Linder, S. Pearson, and D. Veenstra. “Cost-effectiveness of targeted pharmacotherapy for moderate-to-severe plaque psoriasis.” *Journal of Managed Care and Specialty Pharmacy*. 2018 December.
- 2017 P. Mathias, N. Hendrix, K. Keyloun, M. Khelifi, P. Tarczy-Hornoch, and B. Devine. “Characterizing pharmacogenomic-guided medication use with a clinical data repository.” *Clinical Pharmacology and Therapeutics*. 2017 Jan 10.
- 2017 N. Hendrix, N. Bar-Zeev, D. Atherly, J. Chikafa, H. Mvula, R. Wachepa, A. Crampin, T. Mhango, C. Mwansambo, R. Heyderman, N. French, N. Cunliffe, and C. Pecenka. “The economic impact of childhood acute gastroenteritis on Malawian families and the healthcare system: a prospective cohort study.” *BMJ Open*. 2017 Sep 1.
- 2017 W. Canestaro, N. Hendrix, A. Bansal, S. Sullivan, B. Devine and J. Carlson. “Favorable and Publicly-Funded Studies are More Likely to be Published: A Systematic Review and Meta-Analysis.” *Journal of Clinical Epidemiology*. 2017 Aug 22.

#### WORKING PAPERS

- N. Hendrix, R. Gulati, B. Jiao, and R. Etzioni. “Cost-effectiveness of risk-stratified screening for prostate cancer.”
- N. Hendrix and B. Devine. “Sponsorship bias in the selection of health-state utilities in published cost-effectiveness studies.”

#### NON-PEER-REVIEWED PUBLICATIONS

- 2018 O. Olasupo, P. Rai, H. Eldabbas, K. Modi, M. Rezkalla, M. Woloshin, N. Hendrix, B. Adamson, and L. Garrison. “By the Numbers: Cancer Immunotherapy.” *Value & Outcomes Spotlight*. 2018 January / February.
- 2017 J. Linder, S. Pearson, D. Ollendorf, R. Chapman, V. Kumar, C. Segal, A. Loos, S. Liu, D. Veenstra, and N. Hendrix. “Targeted immunomodulators for the treatment of moderate-to-severe plaque psoriasis: effectiveness and value.” Institute for Clinical and Economic Review. [https://icer-review.org/wp-content/uploads/2016/11/NE\\_CEPAC\\_Psoriasis\\_Evidence\\_Report\\_FINAL\\_012317.pdf](https://icer-review.org/wp-content/uploads/2016/11/NE_CEPAC_Psoriasis_Evidence_Report_FINAL_012317.pdf)

#### ABSTRACTS

- 2020 N. Hendrix, A.B. Hauber, C.I. Lee, A. Bansal, and D. Veenstra. “Provider preferences for attributes of artificial intelligence in breast cancer screening: A discrete choice experiment” American Society for Clinical Oncology (ASCO) Annual Meeting. Online. May 2020.
- 2019 N. Hendrix, Z. Marcum, and D. Veenstra. “Drug survival of targeted therapies for plaque psoriasis: Evidence from a large U.S. claims database” International Conference on Pharmacoepidemiology & Therapeutic Risk Management (ICPE), Philadelphia, Pennsylvania. August 2019.

- 2018 N. Hendrix, B. Adamson, A. Basu, and B. Devine. “Increasing trend toward reporting significant digits in utility weights—behavior implications of ‘flat of the curve’ medicine?” ISPOR Annual Meeting, Baltimore, Maryland. May 2018.
- 2018 D. Dhanda, D. Regier, D. Veenstra, A. Basu, J. Saha, N. Hendrix, and J. Carlson. “What US health-care providers value in genomic precision medicine: a discrete choice experiment.” ISPOR Annual Meeting, Baltimore, Maryland. May 2018.
- 2017 N. Hendrix, D. Ollendorf, R. Chapman, A. Loos, S. Liu, V. Kumar, J. Linder, S. Pearson, and D. Veenstra. “Cost-effectiveness of targeted therapy for moderate-to-severe plaque psoriasis: an analysis based on Institute for Clinical and Economic Review (ICER) report.” ISPOR Annual Meeting, Boston, Massachusetts. May 2017
- 2017 N. Hendrix, N. Simon, and B. Devine. “Funder effects on reporting of health-state utilities.” AcademyHealth Annual Meeting, New Orleans, Louisiana. June 2017
- 2017 J. Carlson, D. Kim, G. Guzauskas, C. Bennette, D. Hershman, L. Baker, N. Hendrix, A. Basu, D. Veenstra, and S. Ramsey. “Impact of value of research analyses on SWOG’s clinical trial capsule scoring.” ASCO Annual Meeting, Chicago, Illinois. June 2017.
- 2016 L. Chin, P. Mathias, N. Hendrix, W. Wang, K. Keyloun, M. Khelifi, P. Tarczy-Hornoch, and B. Devine. “Leveraging a clinical data repository to characterize the landscape of pharmacogenomic biomarker-guided medication use.” Academy of Managed Care Pharmacy Nexus, Baltimore, Maryland. October 2016.
- 2016 N. Hendrix, C. Pecenka, J. Chifaka, R. Wachepa, H. Mvula, R. Heyderman, N. French, N. Cunliffe, N. Bar-Zeev, and D. Atherly. “Household costs for treatment of rotavirus-associated diarrheal disease in Malawi.” Twelfth International Rotavirus Symposium, Melbourne, Australia. September 2016.
- 2016 N. Hendrix and B. Devine. “Deriving utility weights from patient-reported outcomes in epilepsy.” ISPOR Annual Meeting, Washington, DC. May 2016.
- 2016 D. Quach, J. Babigumira, and N. Hendrix. “Dinutuximab for high-risk neuroblastoma: a cost-utility analysis.” Academy of Managed Care Pharmacy Annual Meeting, San Francisco, CA.
- 2015 N. Hendrix, C. Pecenka, and C. Keech. “Methods for estimating the global impact of an RSV vaccine.” RSV Vaccines for the World, La Jolla, CA.
- 2015 B. Devine, M. Khelifi, K. Keyloun, N. Hendrix, P. Mathias, C. Bock, and P. Tarczy-Hornoch. “Characterizing the frequency of pharmacogenomic biomarker guided prescribing for drugs with pharmacogenomic biomarker information in the FDA labeling: a pilot study using data from an electronic health record.” American Medical Informatics Association Annual Meeting, San Francisco, CA.

## Professional memberships

- 2019- Member, *International Society for Pharmacoepidemiology (ISPE)*
- 2017-2018 President, University of Washington student chapter of *ISPOR*
- 2016-2017 Vice president, University of Washington student chapter of *ISPOR*
- 2015- Member, *International Society for Pharmacoeconomics and Outcomes Research (ISPOR)*
- 2013- Member, *Academy of Managed Care Pharmacy*

## Service to the profession

- 2019 Reviewer, *European Journal of Health Economics*
- 2018-2019 Chief student editor, *Incremental Thoughts: The CHOICE Institute’s Student Blog*
- 2017-2018 Reviewer, *PLoS One*
- 2016 Reviewer, *Value in Health*

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