

NATHANIEL HENDRIX

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Harvard T.H. Chan School of Public Health
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ACADEMIC POSITIONS

Harvard University, T.H. Chan School of Public Health, Department of Global Health & Population
Postdoctoral Research Fellow, 2020 – Present

University of Washington, The Comparative Health Outcomes, Policy & Economics Institute
Research and Teaching Assistant, 2016 – 2020

EDUCATION

Ph.D. Health Economics and Outcomes Research, University of Washington, 2020.

Dissertation Title: “Using Health Economics Tools to Enhance the Clinical Utility of Artificial Intelligence-Based Diagnostics: A Case Study in Breast Cancer Screening”

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

Pharm.D., University of Washington, 2015.

B.A. English Literature, Texas State University, 2004.

RESEARCH INTERESTS

Health Economics, Cost-Effectiveness Methods, Cancer Screening, Clinical Artificial Intelligence

PEER-REVIEWED PUBLICATIONS

* *indicates co-first author*

1. (*Under review.*) S. Jiang, P. Mathias, **N. Hendrix**, D.L. Veenstra, and B. Devine. “Customizing value-based methods to prioritize implementation of pharmacogenomic clinical decision support for learning health systems: A cost-utility analysis.”
2. (*Under review.*) **N. Hendrix**, D.L. Veenstra, M. Cheng, N.C. Anderson, and S. Verguet. “Assessing the economic value of clinical artificial intelligence: Challenges and opportunities.”
3. (*In press.*) **N. Hendrix**, R. Gulati, B. Jiao, A.K. Kader, S.T. Ryan, and R. Etzioni. “Clarifying the trade-offs of risk-stratified screening for prostate cancer: A cost-effectiveness study.” *American Journal of Epidemiology*.
4. B. Jiao, R. Gulati, **N. Hendrix**, J.L. Gore, S. Rais-Bahrami, T.M. Morgan, and R. Etzioni. “Modeling the cost-effectiveness of multi-parametric magnetic resonance imaging and urine-based reflex testing before prostate biopsy in men with intermediate prostate-specific antigen levels.” *Value in Health*. <https://doi.org/10.1016/j.jval.2021.02.009>
5. **N. Hendrix**, D.D. Kim, K.S. Patel, and B. Devine (2021). “Differences in the selection of health state utility values by sponsorship in published cost-effectiveness analyses.” *Medical Decision Making*. doi:10.1177/0272989X20985821
6. **N. Hendrix**, B. Hauber, C.I. Lee, A. Bansal, and D.L. Veenstra (2020). “Artificial intelligence in breast cancer screening: Primary care provider preferences.” *Journal of the American Medical Informatics Association*. doi:10.1093/jamia/ocaa292

7. **N. Hendrix**, Z. Marcum, and D.L. Veenstra (2020). “Medication persistence of targeted immunomodulators for plaque psoriasis: A retrospective analysis of a US claims database.” *Pharmacoepidemiology & Drug Safety*. doi:10.1002/pds.5021
8. **N. Hendrix**, D.A. Regier, A. Basu, D.L. Veenstra, J. Chatterjee, D.S. Dhanda, and J.J. Carlson (2020). “Provider preferences for resolving uncertainty and avoiding harms in precision medicine: Results from a discrete choice experiment.” *Personalized Medicine*. doi:10.2217/pme-2020-0018
9. R. Baral, J. Fleming, S. Khan, D. Higgins, **N. Hendrix**, and C. Pecenka (2020). “Inferring antenatal care visit timing in low- and middle-income countries: Methods to inform potential maternal vaccine coverage.” *PLOS One*. doi:10.1371/journal.pone.0237718
10. F. Debellut, **N. Hendrix**, V.E. Pitzer, K.M. Neuzil, D. Constenla, N. Bar-Zeev, A. Marfin, and C. Pecenka (2019). “Forecasting demand for the typhoid conjugate vaccine in low- and middle-income countries.” *Clinical Infectious Diseases*. doi:10.1093/cid/ciy1076
11. **N. Hendrix**, D.A. Ollendorf, R.H. Chapman, A. Loos, S. Liu, V. Kumar, J.A. Linder, S.D. Pearson, and D.L. Veenstra (2018). “Cost-effectiveness of targeted pharmacotherapy for moderate to severe plaque psoriasis.” *Journal of Managed Care & Specialty Pharmacy*. doi:10.18553/jmcp.2018.24.12.1210
12. J.J. Carlson, D.D. Kim, G.F. Guzauskas, C.S. Bennette, D.L. Veenstra, A. Basu, **N. Hendrix**, D.L. Hershman, L. Baker and S.D. Ramsey (2018). “Integrating value of research into NCI Clinical Trials Cooperative Group research review and prioritization: A pilot study.” *Cancer Medicine*. doi:10.1002/cam4.1657
13. F. Debellut*, **N. Hendrix***, J.R. Ortiz, P. Lambach, K.M. Neuzil, N. Bhat, and C. Pecenka (2018). “Forecasting demand for maternal influenza immunization in low- and lower-middle-income countries.” *PLOS One*. doi:10.1371/journal.pone.0199470
14. W.J. Canestaro, **N. Hendrix**, A. Bansal, S.D. Sullivan, B. Devine, and J.J. Carlson (2017). “Favorable and publicly-funded studies are more likely to be published: A systematic review and meta-analysis.” *Journal of Clinical Epidemiology*. doi:10.1016/j.jclinepi.2017.08.004
15. **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 (2017). “The economic impact of childhood acute gastritis on Malawian families and the healthcare system: A prospective cohort study.” *BMJ Open*. doi:10.1136/bmjopen-2017-017347
16. P.C. Mathias, **N. Hendrix**, W.-J. Wang, K. Keyloun, M. Khelifi, P. Tarczy-Hornoch, and B. Devine (2017). “Characterizing pharmacogenomic-guided medication use with a clinical data repository.” *Clinical Pharmacology & Therapeutics*. doi:10.1002/cpt.611

WORKING PAPERS

1. **N. Hendrix**, A. Bansal, D.S.M. Buist, C.I. Lee, and D.L. Veenstra. “Health outcomes modeling to assess artificial intelligence diagnostics: An application in breast cancer screening.”
2. R. Miles*, **N. Hendrix***, and C.D. Lehman. “Personalization of breast cancer screening intervals using Deep Learning-based risk scores: A cost-effectiveness analysis.”
3. K.P. Lowry*, **N. Hendrix***, W. Lotter, J.G. Elmore, D.S. Hippe, W. Hsu, G. Liao, S. Parsian, A.G. Sorensen, and C.I. Lee. “Radiologist preferences for interface elements of artificial intelligence-augmented mammography interpretation tools.”
4. **N. Hendrix**, X. Jiang Kwete, and S. Verguet. “Economic evaluations of health system strengthening in low- and middle-income countries: A methodological systematic review.”
5. **N. Hendrix** and S. Verguet. “Equitable prioritization of healthcare interventions by weighting outcomes on financial risk protection criteria.”

ABSTRACTS

1. (*Accepted.*) D.L. Veenstra, **N. Hendrix**, C.M. Dolan, K.A. Fisher, D. Lalla, N. Oestreicher, and B. Moy (2021). “Population effectiveness model of the consequences of recurrence despite trastuzumab emtansine (T-DM1) treatment among patients with high risk HER2+ early stage breast cancer in the United States.” ASCO Annual Meeting, online (due to COVID-19).
2. (*Accepted.*) S. Jiang, **N. Hendrix**, D.L. Veenstra, P.C. Mathias, and B. Devine (2021). “Implementation of pharmacogenomic clinical decision support alerts in learning health systems: A cost-utility analysis.” ISPOR Annual Meeting, online (due to COVID-19).
3. (*Accepted.*) B. Jiao, R. Gulati, **N. Hendrix**, J.L. Gore, S. Rais-Bahrami, J.J. Tosoian, M.W. Kattan, T.M. Morgan, R. Etzioni (2021). “Comparative effectiveness and cost-effectiveness of reflex testing men with intermediate PSA levels: A systematic model-based analysis.” ISPOR Annual Meeting, online (due to COVID-19).
4. **N. Hendrix**, B. Hauber, C.I. Lee, A. Bansal, and D.L. Veenstra (2020). “Provider preferences for attributes of artificial intelligence in breast cancer screening: A discrete choice experiment.” ASCO Annual Meeting, online (due to COVID-19).
5. **N. Hendrix**, Z. Marcum, and D.L. Veenstra (2019). “Drug survival of targeted therapies for plaque psoriasis: Evidence from a large U.S. claims database.” International Conference on Pharmacoeconomics & Therapeutic Risk Management (ICPE), Philadelphia, Pennsylvania.
6. D. Dhanda, D. Regier, D. Veenstra, A. Basu, J. Saha, **N. Hendrix**, and J.J. Carlson (2018). “What US healthcare providers value in genomic precision medicine: a discrete choice experiment.” ISPOR Annual Meeting, Baltimore, Maryland.
7. **N. Hendrix**, B. Adamson, A. Basu, and B. Devine (2018). “Increasing trend toward reporting significant digits in utility weights: Behavior implications of ‘flat of the curve’ medicine?” ISPOR Annual Meeting, Baltimore, Maryland.
8. J.J. Carlson, D.D. Kim, G. Guzauskas, C. Bennette, D. Hershman, L. Baker, **N. Hendrix**, A. Basu, D.L. Veenstra, and S. Ramsey (2017). “Impact of value of research analyses on SWOG’s clinical trial capsule scoring.” ASCO Annual Meeting, Chicago, Illinois.
9. **N. Hendrix**, N. Simon, and B. Devine (2017). “Funder effects on reporting of health-state utilities.” AcademyHealth Annual Meeting, New Orleans, Louisiana.
10. **N. Hendrix**, D.A. Ollendorf, R. Chapman, A. Loos, S. Liu, V. Kumar, J. Linder, S. Pearson, and D.L. Veenstra (2017). “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.
11. D. Quach, J. Babigumira, and **N. Hendrix** (2016). “Dinutuximab for high-risk neuroblastoma: A cost-utility analysis.” Academy of Managed Care Pharmacy Annual Meeting, San Francisco, California.
12. **N. Hendrix**, and B. Devine (2016). “Deriving utility weights from patient-reported outcomes in epilepsy.” ISPOR Annual Meeting, Washington, DC.
13. **N. Hendrix**, C. Pecenka, J. Chifaka, R. Wachepa, H. Mvula, R. Heyderman, N. French, N. Cunliffe, N. Bar-Zeev, and D. Atherly (2016). “Household costs for treatment of rotavirus-associated diarrheal disease in Malawi.” Twelfth International Rotavirus Symposium, Melbourne, Australia.
14. L. Chin, P. Mathias, **N. Hendrix**, W.-J. Wang, K. Keyloun, M. Khelifi, P. Tarczy-Hornoch, and B. Devine (2016). “Leveraging a clinical data repository to characterize the landscape of pharmacogenomic biomarker-guided medication use.” Academy of Managed Care Pharmacy Nexus, Baltimore, Maryland.
15. B. Devine, M. Khelifi, K. Keyloun, **N. Hendrix**, P.C. Mathias, C. Bock, and P. Tarczy-Hornoch (2015). “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, California.

16. **N. Hendrix**, C. Pecenka, and C. Keech (2015). “Methods for estimating the global impact of an RSV vaccine.” RSV Vaccines for the World, La Jolla, California.

GRANTS AND SPONSORED PROJECTS

Completed Grants

1. Pre-Doctoral Fellowship (Developing Data-Driven Cancer Researchers)
Role on Project: Pre-Doctoral Trainee
Funder: National Institutes of Health (National Cancer Institute)
Project Period: September 2018 – July 2020
Project Identifier: 5T32CA009168-42
2. Pre-Doctoral Fellowship in Outcomes Research
Role on Project: Pre-Doctoral Trainee
Funder: PhRMA Foundation
Project Period: July 2018 – December 2019
Total: \$37,500
Description: Funds provided for cost-of-living support during my Ph.D. dissertation.
3. Pre-Doctoral Fellowship (Health Services Research Training)
Role on Project: Pre-Doctoral Trainee
Funder: Agency for Healthcare Research and Quality
Project Period: September 2015 – August 2017
Project Identifier: 5T32HS013853-17

INVITED PRESENTATIONS

1. Cost-Effectiveness Analysis to Support the Equitable Implementation of Clinical Artificial Intelligence. Harvard University Center for Research for Computation and Society Health Equity Panel, online (due to COVID-19), April 7, 2021.
2. Cost-Effectiveness of Risk-Stratified Screening for Prostate Cancer. Cancer Intervention and Surveillance Modeling Network (CISNET) Annual Meeting, online (due to COVID-19), June 5, 2020.

TEACHING

Harvard University

Guest lecture: “Visualizing results of cost-effectiveness analyses using R and ggplot2.” Harvard University, GHP 501 (Modeling for Health System Analysis and Priority Setting). March 2021.

University of Washington

MarketScan Summer Bootcamp: Summer 2019, curriculum developer and instructor.

Pharmacy, Healthcare, and Society: Fall 2018, teaching assistant for Josh Carlson and Ryan Hansen.

HONORS & AWARDS

Rubenstein Scholarship Fund (\$5,000), University of Washington School of Pharmacy, 2020.

Rubenstein Scholarship Fund (\$4,000), University of Washington School of Pharmacy, 2019.

Graduate Student Leadership Award, University of Washington School of Pharmacy, 2019.

EDITORIAL SERVICE

Referee for *ClinicoEconomics and Outcomes Research*, *European Journal of Health Economics*, *Journal of Biomedical Informatics*, *Journal of Urology*, *Pharmacoepidemiology & Drug Safety*, *PLOS One* (2), *Psoriasis: Targets and Therapy*, *Value in Health*, and *Value in Health Regional Issues* (3).

SERVICE TO PROFESSION, UNIVERSITY & DEPARTMENT

Extramural

Abstract reviewer, American Medical Informatics Association Annual Symposium (2021)

University of Washington, The Comparative Health Economics, Outcomes & Policy (CHOICE) Institute

Strategic Planning Committee, member (2019)

Incremental Thoughts: The CHOICE Institute's Student Blog, founder and lead student editor (2018-2019)

Ph.D. Admissions Committee, member (2018)

PROFESSIONAL MEMBERSHIPS

Academy of Managed Care Pharmacy, The Digital Medicine Society, International Society for Pharmacoeconomics and Outcomes Research, International Society for Pharmacoepidemiology

MISCELLANEOUS

Programming Languages: R, Python, VBA, SQL