

# Nate C. Apathy, PhD

nate.apathy@penmedicine.upenn.edu | natea@wharton.upenn.edu  
913.530.5741 | nateapathy.com

## Academic Appointments

<b>Postdoctoral Fellow</b> , Health Services Research Perelman School of Medicine, University of Pennsylvania	July 2020 – Present
<b>Associate Fellow</b> , Leonard Davis Institute of Health Economics	Aug. 2020 – Present
<b>Affiliated Research Scientist</b> , Regenstrief Institute	Aug. 2020 – Present
<b>Adjunct Faculty</b> , Health Policy & Management Richard M. Fairbanks School of Public Health, Indiana University	Aug. 2020 – Present

## Education

<b>Ph.D., Health Policy &amp; Management</b> Richard M. Fairbanks School of Public Health Dissertation: <i>Health information exchange use in primary care</i> Committee: Christopher A. Harle, PhD (co-chair); Joshua R. Vest, PhD (co-chair); Justin Blackburn, PhD; Julia Adler-Milstein, PhD; Brian E. Dixon, PhD	Indiana University, 2020 Indianapolis, IN
<b>B.S., Business Administration</b> (summa cum laude) Major: Economics Minor: Behavioral and Cognitive Neuropsychology	Creighton University, 2011 Omaha, NE

## Previous Employment

<b>Department of Health Policy &amp; Management</b> <b>Fairbanks School of Public Health (IUPUI)</b> Predoctoral Fellow, Population & Public Health Informatics (NLM T15) Graduate Research Assistant to Christopher A. Harle, PhD, MS	August 2016 – June 2020 Aug. 2017 – June 2020 Aug. 2016 – June 2020
<b>Cerner Corporation</b> , Kansas City, MO	July 2011 – April 2016

## Honors & Awards

Delta Omega (Public Health Honors Society)	April 2020
Med About Data Hackathon (Haifa, Israel) – Second Place	March 2019
IUPUI University Fellowship	Aug. 2016 – Jul. 2017
Population Health Leadership Development Program	Jan. 2015 – Dec. 2015
Cerner Masters Award	Aug. 2014

## Peer-Reviewed Publications

1. Werner, RM; Templeton, Z; **Apathy, NC**; Skira, MM; Konetzka, RT. Trends in post-acute care in US nursing homes: 2001 to 2017. *Journal of the American Medical Directors Association*. In Press.
2. **Apathy, NC**; Holmgren, AJ; Adler-Milstein, J. A Decade Post-HITECH: Critical Access Hospitals have EHRs but Struggle to Keep Up with Other Advanced Functions. *Journal of the American Medical Informatics Association*. 2021 Jul.
3. **Apathy, NC**; Vest, JR; Adler-Milstein, J; Blackburn, J; Harle, CA. Practice and market factors associated with provider volume of health information exchange. *Journal of the American Medical Informatics Association*. 2021;28(7).

4. Baxter, SL; **Apathy, NC**; Cross, DA; Sinsky, C; Hribar, ME. Measures of electronic health record use in outpatient settings across vendors. *Journal of the American Medical Informatics Association*. 2020; 28(5).
5. Taylor, HL; **Apathy, NC**; Vest, JR. Health information exchange use during dental visits. *AMIA Annual Symposium Proceedings*. 2020 Nov. *Student Paper Competition Finalist*
6. **Apathy, NC**; Everson, J. High rates of partial participation in the first year of the Merit-Based Incentive Program. *Health Affairs*. 2020;39(9).
7. **Apathy, NC**; Harle, CA; Vest, JR; Morea, JG; Menachemi, N. Use of electronic health records on days off: Comparing physicians to other EHR users. *Journal of General Internal Medicine*. 2020;36(4).
8. Holmgren, AJ; **Apathy, NC**. Evaluation of Prescription Drug Monitoring Program Integration With Hospital Electronic Health Records by US County-Level Opioid Prescribing Rates. *JAMA Network Open*. 2020;3(6).
9. Holmgren, AJ; **Apathy, NC**; Adler-Milstein, J. Barriers to Hospital Public Health Reporting and Implications for the COVID-19 Pandemic. *Journal of the American Medical Informatics Association*. 2020;27(8).
10. **Apathy, NC**; Holmgren, AJ. Opt-in consent policies: potential barriers to hospital health information exchange. *American Journal of Managed Care*. 2020;26(1).
11. Comer, AR; **Apathy, NC**; Waite C; Bestmann Z; Bradshaw J; Burchfield E; Harmon B; Legg R; Meyer S; O'Brien P, Sabec M; Sayeed J; Weaver A; D'Cruz L; Bartlett S; Marchand M; Zepeda I; Finnell, JT; Grannis, S; Silverman, RD; Embi, PJ. E-scooters: Assessing the Threat to Public Health and Safety in Setting Policies. *Chronicles of Health Impact Assessment*. 2020;5(1).
12. Holmgren, AJ; **Apathy, NC**. Hospital adoption of API-enabled patient data access. *Healthcare: The Journal of Delivery Science and Innovation*. 2019;8.
13. Balio, CP; **Apathy, NC**; Danek, R. Health information technology and accountable care organizations: synthesis of the literature and future directions. *eGEMs (Generating Evidence & Methods to improve patient outcomes)*. 2019;7(1):24.
14. **Apathy NC**; Yeager VA. Examining Training Motivations Among Public Health Workers. *Journal of Public Health Management and Practice*. 2019;25(2), Public Health Workforce Interests and Needs Survey 2017: S157 –65.
15. Harle, CA; **Apathy, NC**; Cook, RL; Danielson, EC; Dilulio, J; Downs, SM; Hurley, RW; Mamlin, BW; Militello, LG; Anders, S. Information Needs and Requirements for Decision Support in Primary Care: An Analysis of Chronic Pain Care. *AMIA Annual Symposium Proceedings*. 2018 Nov.
16. **Apathy, NC**; Menser, T; Keeran, L; Ford, EW; Harle, CA; Huerta, TR. Trends and gaps in awareness of direct-to-consumer genetic tests from 2007-2014. *American Journal of Preventive Medicine*. 2018 Jun 1;54(6):806-13.
17. Mosa, AS; Yoo, I; **Apathy, NC**; Ko, KJ; Parker, JC. Secondary Use of Clinical Data to Enable Data-Driven Translational Science with Trustworthy Access Management. *Missouri Medicine*. 2015;112(6):443-448.

### Research in Progress

Mazurenko, O; Sanner, LM; **Apathy, NC**; Mamlin, BW; Menachemi, N; Adams, MCB; Hurley, RW; Erazo, SF; Harle, CA. Recruiting primary care providers electronically as research subjects during the COVID-19 pandemic. (Under Review)

**Apathy, NC**; Holmgren, AJ; Werner, RM. Growth in health information exchange with ACO market penetration. (In Preparation)

**Apathy, NC**; Hare, A; Fendrich S; Cross DA. Patients over paperwork: evaluating the effects of billing guideline changes on provider documentation burden. (In Preparation)

**Apathy, NC;** Hare, A; Fendrich S; Cross DA. Trends in clinical notes among outpatient providers. (In Preparation)

**Apathy, NC;** Holmgren, AJ; Greenstein, S. Innovation spillovers from government investment in information technology: evidence from the HITECH Act. (In Preparation)

**Apathy, NC;** Vest, JR; Adler-Milstein, J; Dixon, BE; Blackburn, J; Harle, CA. Team-based use of health information exchange in primary care. (In Preparation)

**Apathy, NC;** Vest, JR; Adler-Milstein, J; Dixon, BE; Blackburn, J; Harle, CA. User-level patterns of health information exchange use. (In Preparation)

**Apathy, NC;** Dixon, BE. Interoperability in the wild: Comparing two exchange networks for data accessibility and consistency. (In Preparation)

### Book Chapters

Dixon, BE; Rahrkar, S; & **Apathy, NC.** Health Information Exchange. In: Magnuson, JA; Dixon, BE, editors. *Public Health Informatics and Information Systems*, 3<sup>rd</sup> edition. Springer London. August 2020.

### Patents

Harle, CA; Mamlin, B; Hurley, RW; **Apathy, NC;** Downs, SM; Dilulio, J. *Methods and Systems for Risk Assessment and Risk Prediction in Opioid Prescriptions and Pain Management Treatment*. US Patent Appln. No. 2021/0050113A1. Pub. Date Feb 18, 2021.

### Peer-Reviewed Conference Presentations

1. **Apathy, NC;** Holmgren, AJ; Greenstein, S. Spillover Effects from the HITECH Act on Innovation in Medical Informatics. *American Medical Informatics Association Annual Symposium*. Nov 2021.
2. **Apathy, NC;** Holmgren, AJ; Adler-Milstein, J. Meaningful Use and the Digital Divide After a Decade. *AcademyHealth Annual Research Meeting*. June 2021.
3. **Apathy, NC;** Holmgren, AJ; Werner, RM. Growth in Health Information Exchange with ACO Market Penetration. *AcademyHealth Annual Research Meeting*. June 2021.
4. **Apathy, NC;** Holmgren, AJ; Werner, RM. Growth in Health Information Exchange with ACO Market Penetration. *AHRQ NRSA Trainees Research Conference*. June 2021.
5. **Apathy, NC;** Holmgren, AJ; Greenstein, S. Innovation spillovers from government investment in information technology: evidence from the HITECH Act. *Conference on Health Information Technology & Analytics*. Oct 2020.
6. **Apathy, NC.** Team-based measures of health information exchange. *Kentucky Bluegrass and Indiana Chapters of HIMSS Annual Conference*. July 2020.
7. **Apathy, NC;** Vest, JR; Adler-Milstein, J; Dixon, BE; Blackburn, J; Harle, CA. Health information exchange in primary care: use among teams. *National Library of Medicine Informatics Training Conference*. June 2020.
8. **Apathy, NC;** Vest, JR; Adler-Milstein, J; Dixon, BE; Blackburn, J; Harle, CA. Factors related to primary care use of health information exchange. *AcademyHealth Annual Research Meeting*. June 2020.
9. **Apathy, NC;** Roberts, A; Hayden, R; Harle, CA; Vest, JR. Visualizing patient-level risk factors from clinical risk prediction algorithms. *American Medical Informatics Association Clinical Informatics Conference*. May 2020.
10. **Apathy, NC;** Vest, JR; Menachemi, N; Morea, JG; Harle, CA. Differing patterns in frequency of electronic health records documentation among clinicians following the replacement of a legacy EHR system. *American Medical Informatics Association Annual Symposium*. Nov. 2019

11. **Apathy, NC**; Yeager, VA. Training Motivations Among Public Health Workers. *American Public Health Association Annual Meeting*. Nov. 2019.
12. **Apathy, NC**. Association between physician usage of health information exchange and quality measures. *National Library of Medicine Informatics Training Conference*. June 2019
13. **Apathy, NC**; Vest, JR; Menachemi, N; Morea, JG; Harle, CA. Impact of Transitioning from a Homegrown to a Commercial EHR on User Satisfaction. *AcademyHealth Annual Research Meeting*. June 2019
14. **Apathy, NC**; Everson, J. Variations in Primary Care Provider Competition Indices across Commonly Used Data Sources. *AcademyHealth Annual Research Meeting*. June 2019
15. **Apathy, NC**; Harle, CA. Patient consent policies for state health information exchange and level of provider exchange. *American Medical Informatics Association Annual Symposium*. Nov. 2018
16. **Apathy, NC**. Measurement of Health Information Exchange & Interoperability. *National Library of Medicine Informatics Training Conference*. June 2018
17. Balio, CP; **Apathy, NC**; Wiley, K; Holmes, A. The association between usual source of care at a patient-centered medical home and high-expense service utilization. *AcademyHealth Annual Research Meeting*. June 2018
18. Harle, CA; Anders, S; **Apathy, NC**; Cook, RL; Danielson, EC; Dilulio, J; Downs, SM; Hurley, RW; Mamlin, BW; Militello, LG. Designing a user-centered electronic health record decision support system for guideline-concordant opioid prescribing. *AcademyHealth Annual Research Meeting*. June 2018
19. **Apathy, NC**; Vest, JR; Menachemi, N; Putz, JW; Morea, JG; Harle, CA. Differing patterns of satisfaction and perception among clinical and non-clinical users following replacement of a legacy EHR system. *American Medical Informatics Association Annual Symposium*. Nov. 2017
20. **Apathy, NC**; Vest, JR; Menachemi, N; Harle, CA. Changes in user perceptions of their electronic health record following the replacement of a legacy system: a longitudinal analysis. *AcademyHealth Annual Research Meeting*. June 2017
21. Bako, AT; **Apathy, NC**; Vest, JR; Harle, CA. User concerns following replacement of a legacy electronic health record: A longitudinal qualitative study. *AcademyHealth Annual Research Meeting*. June 2017
22. **Apathy, NC**; Balio, CP; Danek, RL. Underrepresentation of health information technology studies in the context of accountable care organizations: Using the HSRProj database. *AcademyHealth Annual Research Meeting*. June 2017
23. **Apathy, NC**; Mosa, AS; & Ko, KJ. Protecting Patient Data and Maintaining Site Autonomy: Managing Project Access in a Multi-Site i2b2 Database. *American Medical Informatics Association Annual Symposium*. Nov. 2014

## Web Applications

<a href="#">Economics Seminar Diversity</a>	RShiny Dashboard w/ ggplot2	v2.0.0 deployed August 2019
<i>Interactive visualizations of invited seminar speakers to examine representation of female and under-represented minority economists at university economics departments</i>		
<a href="#">CHF Risk Prediction Tool (Demo)</a>	RShiny, randomForest, & ggplot2	v1.2.1 deployed March 2019
<i>Interactive visualization of risk scores for CHF at the population level, with option to view individual level risk factors underlying low, rising, or high-risk prediction</i>		
<a href="#">Opioid Prescribing Rate Visualization Tool</a>	RShiny, ggplot2, & leaflet	v2.0.0 deployed August 2018
<i>Interactive mapping visualization of CDC prescribing rates and changes over time by county and state</i>		
EHR Survey Response Visualizer	RShiny & ggplot2	v2.0.0 released Dec 2018
<i>Interactive tool to analyze responses to a user satisfaction survey administered during an electronic health record transition at a large public safety net hospital</i>		

## Research Interests

Health Information Technology  
Health Information Exchange

Health IT Policy  
Health IT Use & Quality Measurement

Population Health Informatics  
Health Economics

## Professional Memberships

American Public Health Association	2019 – Present
AcademyHealth	2016 – Present
Health Information & Management Systems Society (HIMSS)	2016 – Present
American Medical Informatics Association (AMIA)	2013 – Present

## Editorial Experience

Peer Review: *Health Affairs*, *Milbank Quarterly*, *Health Services Research*, *American Journal of Managed Care*, *Journal of General Internal Medicine*, *Journal of the American Medical Informatics Association*, *Applied Clinical Informatics*, *Digital Health*, *Risk Management & Healthcare Policy*, *Health Policy & Technology*, *PLoS One*

International Conference on Information Systems, 2019 & 2021	Conference Submission Review
AcademyHealth Annual Research Meeting, 2019-2021 <i>Digital Technologies, Data, and Data Science Theme</i>	Theme Reviewer & Session Chair
AMIA Annual Symposium	Conference Submission Review
AMIA Informatics Summits	Conference Submission Review

## Leadership & Service

NLM and Support for Health Services Research, Invited Panelist	August 2020
National Research Network Audit Log Measures Workgroup, Co-Chair	Spring 2020 – Current
AMIA Annual Symposium, Session Moderator	Fall 2019
Collaborating Across Borders VII Conference, Session Moderator	Fall 2019
Indiana State Department of Health R Training Workshop, Instructor	July 2019
AMIA Policy Response Team, ONC Notices of Proposed Rulemaking <i>Draft Federal Health IT Strategic Plan</i>	Spring 2020
<i>21<sup>st</sup> Century Cures, Information Blocking</i>	Spring 2019
NLM Informatics Training Conference, 2018 & 2019 <i>Student Planning Committee Co-Chair</i>	Nov. 2018 – June 2019
<i>Student Planning Committee Member</i>	Jan. 2018 – June 2018
AcademyHealth Student Competition: Identifying Gaps in HSR, Judge	April 2018
hsR: Using R for Health Services Research, Workshop Instructor	Spring 2018
AcademyHealth Student Chapter at IUPUI, President & Co-Founder	Feb. 2017 – March 2019

## Press Coverage

Critical access hospitals lag behind in advanced EHR use functions, [Healthcare IT News](#), Jul. 2021  
Half of Providers Don't Utilize Health Information Exchange, [EHRIntelligence.com](#), Mar. 2021  
The Practice of Medicine: MIPS and the Social Determinants of Health, Oct. 2020 *Health Affairs* Event  
Barriers to Hospital Public Health Reporting and Implications for the COVID-19 Pandemic, *JAMIA*  
[Healthcare IT News](#), Oct. 2020 | [Becker's Hospital Review](#), May 2020  
[Healthcare IT News](#), May 2020 | [Healthcare Dive](#), May 2020  
What the Fax? [Tradeoffs podcast episode](#), May 12, 2020  
Opt-In Health Information Exchange Drive Administrative Burden, [EHRIntelligence.com](#), Jan. 2020  
API growing pains. [POLITICO Morning eHealth](#), Sept. 2019  
IUPUI PhD student unpacks the impact scooters are having on Indianapolis, [FOX59 Indianapolis](#), April 2019  
Researcher's data shows how Indianapolis is using scooters. [IndyStar](#), Mar. 2019  
Lyft warns it may never make any money. [Oversharing](#), Mar. 2019

## Teaching

H320: Health Systems Administration	Guest Lecturer	Fall 2019
H325: Health Information Technology Management & Policy	Instructor ( <i>rating: 4.7/5</i> )	Fall 2018, Fall 2019
E335: Chronic Disease Epidemiology	Guest Lecturer	Spring 2018
H628: Healthcare Information Systems	Teaching Assistant	Spring 2017, Spring 2019