Keith Feldman, PhD

Health Services and Outcomes Research
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Education

PhD in Computer Science and Engineering, University of Notre Dame	2013-2018
MS in Computer Science and Engineering, University of Notre Dame	2013-2017
BS in Computer Science, University of Notre Dame	2008-2012

Current Academic and Professional Positions

Research Faculty, Division of Health Services and Outcomes Research — 2019-present
Children's Mercy Hospital
Kansas City, MO

Assistant Professor, Department of Pediatrics — 2019-present
University of Missouri Kansas City (UMKC) School of Medicine
Kansas City, MO

Prior Positions and Employment

Postdoctoral Research Associate, Dept. of Computer Science and Engineering
University of Notre Dame — 2018-2019
Notre Dame, IN

Research Assistant, Dept. of Computer Science and Engineering
University of Notre Dame — 2013-2018
Notre Dame, IN

Graduate Student Fellow
Computing Research Association – Education Committee (CRA-E) — 2016-2018
Washington, DC

Student Employee, Office of Research Compliance
University of Notre Dame — Spring 2017
Notre Dame, IN

Data Science Intern
IBM Research — Summer 2016
Dublin, Ireland

Data Science Intern
Zirmed — Summer 2015
Chicago, IL

Technical Analyst
Credit Suisse — 2012-2013
New York, NY

Technical Analyst Intern
Credit Suisse — Summer 2011
New York, NY

Independent Researcher
Stony Brook University — Summer 2010
Stony Brook, NY

Professional Memberships and Activities

American Medical Informatics Association (AMIA)	2015-Present
IEEE	2015-Present

Honors and Awards

CSE Outstanding Research Assistant (1/3 selected across dept.)	2019
Winning Team (Tied 1st) BHI Data Challenge – Best Novel Insights	2018
Recipient of IEEE BHI/NSF Student Travel Award	2018
Ethical Leader in STEM Fellow (NSF Funded graduate leadership program	*2015-2016*
NSF Graduate Research Fellowships (GRFP) – Honorable Mention	2015
Featured of cover page of Big Data Journal – Article: Does Medical School Training Relate to Practice? Evidence from Big Data,	2015
Kaneb Center for Teaching & Learning Certificates	
Striving for Excellence in Teaching	2015
Teaching Well Using Technology	2015
Advanced Teaching Scholar	2016
Recipient of IEEE BIBM Student Travel Award	2014
Best Paper Nominee – Scaling Personalized Healthcare with Big Data	2014
Recipient of Outstanding TA Award	2013
Upsilon Pi Epsilon Inductee- Computer Science Honor Society	2013-2018
First place mobile app development class for work on NICU analytics Presented to Notre Dame University Council for Academic Technologies	2012
2nd place Four Horsemen (Entrepreneurship & Innovation Society) PITCH Competition	2012

Teaching Experience

Instructor of Record - Healthcare Analytics: University of Notre Dame Fall 2018

- Designed course curriculum for 23 undergraduate and masters' students.
- Prepared and delivered lectures focused on the modern statistical and machine learning techniques designed to address the complex nature of health data.
- Created interactive labs allowing hands on experience using techniques surrounding the preparation, modeling, and interpretation of a large real-world electronic health record data.

Interim Instructor – Data Science: University of Notre Dame Fall 2017

- Selected by the department chair to act as an interim instructor while the current instructor was unavailable to teach.
- Created and delivered course material covering data exploration, preprocessing, cleaning, and introduced rule-learners over the first six sessions of the semester.

Volunteer Teacher– Summer Coding: Stanley Clark School, South Bend Summer 2014

- Created and instructed a weeklong course introducing students to basic programming concepts.
- Worked 1-1 and in groups with students ranging from 6th to 8th grade.

Teaching Assistant– Healthcare Analytics: University of Notre Dame Fall 2013

- Responsible for grading and providing feedback on quizzes, assignments and project milestones.
- Devised assignments, and managed class materials.
- Provided lectures in professors absence.

Mentorship Activities

Students:

Student	Affiliation	Outcome	Term
Spandana Sama	KCUMB Medical Student	Ongoing research: Neonatology	Summer 2020 – Present
Michelle Klueppelberg	KCUMB Medical Student	Ongoing research: Neonatology	Summer 2020 – Present
Nathália Munck Machado	Visiting Scholar, PhD Candidate: KUMC Dept. of Population Health	Ongoing research: Population Health	Spring 2020 – Present
Fredy Nheme	Master's student: UMKC Dept. of Biomedical and Health Informatics	Manuscript published Digestive Diseases and Sciences	Fall 2020
Mariana Suarez	Notre Dame: Science Computing Undergraduate	Manuscript in Preparation	Fall 2018-Spring 2019

Karthik Pansetty	Summer Researcher (IIT Gandhinagar)	Manuscript submitted to AMIA 2020	Summer 2018-Summer 2019
Catherine Markley	Notre Dame: Computer Science Undergraduate	Full conference manuscript accepted at IEEE BHI 2019	Fall 2017 – Spring 2019
Matthew Schoenbauer	Notre Dame: ACMS Undergraduate	Community census app piloted by Centre for Nutritional Recovery and Education (CREN)	Spring 2019
Christopher Giuffrida	Notre Dame: Computer Science Undergraduate	Community census app piloted by Centre for Nutritional Recovery and Education (CREN)	Fall 2018
Shuyang Li	Notre Dame: Computer Science Undergraduate	Community pilot run in Bendix Clinic, and poster accepted to AMIA Informatics Summit 2015	Fall 2014-Spring 2015
Mayank Shekhar	Visiting Summer Researcher (IIT Gandhinagar)	Community pilot launched at 2 South Bend schools, and poster accepted to AMIA Informatics Summit 2015	Summer 2014
Jacob Rebec	High School Student Researcher	Academic Research Experience	Spring 2014

Other Mentorship Activities:

Class	Affiliation	Role	Term
Neuroscience Class	UMKC SOM Undergraduate Class	Statistical Project Mentor (3 groups)	Fall 2020

Dissertation Committees

Student	Title	Placement	Year
Louis Faust	Modeling Physiological and Behavioral Data Streams Towards Health Insights	Mayo Clinic Research – Data Scientist	June 2020
Xian Wu	Deep Learning for Sensory and Behavioral Time Series Analysis	Pinterest Research	March 2020

Master's Thesis / Candidacy Committees

Student	Title	Placement	Year
Louis Faust	Physiological & Behavioral Data Streams Towards Health Insights	PhD Candidate Notre Dame	March 2019
Xian Wu	Deep Learning for Time Series Analysis: from Methodology to Applications	PhD Candidate Notre Dame	April 2019

Grants and Contract Awards

Funded:

UL1TR002366 **$ 23,597** **Feldman (PI)** **07/01/20 – 06/30/21**
Design of a computational framework to improve the quality of subject matching in case-control study designs.

Major Goal(s): Develop a computational framework to empirically identify the optimal matched control subject(s) for a specific "case" in retrospective case-control studies. Assess the possibility to further improve matching by accounting for temporal relations in patient's medical histories. Evaluate differences between computationally- and manually- selected control patients in the context of a previously conducted case-control study.

Role: PI

Submitted:

FDABAA-20-00123 **$** 1,718,600 **Nitkin (PI)** **07/01/21 – 06/30/25**
Harnessing Neonatal Datasets to Optimize Neonatal Regulatory Science, Clinical Trials & Health Outcomes

Major Goal(s): To advance neonatal regulatory science by identifying and classifying all current sources of neonatal data. These existing neonatal data, housed within various databases and EHR systems, can be used for natural history studies, neonatal trial design, safety signal detection and other regulatory tasks.

Role: CO-I

PA-20-185 **$** 3,309,209 **Chan (PI)** **04/1/21-3/31/2026**
Novel predictive ultrasound biomarkers of hepatic sinusoidal obstruction syndrome in pediatric hematopoietic cell transplant patients

Major Goal(s): The goal of this application is to create and validate an ultrasound based predictive model to diagnose and predict severity of patients who develop veno-occlusive disease after hematopoietic cell transplant earlier than current clinical criteria. The proposed research is relevant to the public health because if the model is effective, then it could help guide treatment decisions that would decrease the high mortality from this condition.

Role: CO-I

PAR-19-100 **$** 274,726 **Goldman/Tillman (Co-PI)** **4/1/21-3/31/22**

RAPiDS (Reevaluating Approaches to Pediatric Drug Safety) in the COVID-19 pandemic

Major Goal(s): The *objective of this application* is to accurately define and efficiently distribute pediatric-specific ADR data to point of care pediatric providers. *Our central hypothesis* is that standardizing pharmacovigilance detection, assessment, and data collection across pediatric institutions will increase ADR identification and lead to the discovery of new ADR phenotypes specific to children.

Role: CO-I

Not Funded:

CDC **Berkley-Patton & Carlson (MPIs))** **09/30/20 – 09/29/25**
Impacts of City-Wide Zero-Fare Bus Transit on Ridership, Physical Activity, Health Determinants, and Diabetes-Related Health Outcomes: A Natural Experiment

Major Goal(s): The goal of this project is to evaluate the impacts of a new policy that eliminates bus fare on changes in bus ridership, physical activity, health markers, and social determinants. In response to RFA-DP-20-002 Natural Experiments of the Impact of Population-targeted Policies to Prevent Type 2 Diabetes and Diabetes Complications.

Role: CO-I

R01NIDDK **Berkley-Patton & Carlson (MPIs))** **07/01/20 – 06/30/25**

Impacts of City-Wide Zero-Fare Bus Transit on Ridership, Physical Activity, Health Determinants, and Diabetes-Related Health Outcomes: A Natural Experiment

Major Goal(s): The goal of this project is to evaluate the impacts of a new policy that eliminates bus fare on changes in bus ridership, physical activity, health markers, and social determinants. In response to PAR-18-854 Time-Sensitive Obesity Policy and Program Evaluation (R01 Clinical Trial Not Allowed).

Role: CO-I *Scored 25th percentile*

Invited Talks

Feldman, K. (2020, July). Beyond Modeling: The Emergent Role of Informatics in Advancing Healthcare Knowledge. Academic Scholarship Conference, Children's Mercy Kansas City, MO.

Feldman, K. (2020, March). Beyond Modeling: The Emergent Role of Informatics in Advancing Healthcare Knowledge. CMH/KU Center for Children's Healthy Lifestyles & Nutrition, Kansas City, MO.

Feldman, K. (2020, February). Beyond Modeling: The Emergent Role of Informatics in Advancing Healthcare Knowledge. KU Tobacco Research Group / Population Health, Kansas City, MO.

Feldman, K. (2019, February). A Brief Introduction to Text Analysis. CMH/KU/Others Biostatistics & Epidemiology Colloquium, Kansas City, MO.

Feldman, K. (2016, April). The Role of Informatics in Nursing. Saint Mary's College, Graduate Program in Nursing, South Bend, IN

National Service

Program Committee:

Conference	Year(s)
Artificial Intelligence in Medicine	2020
TheWebConf | Health on the Web Track	2020
International Workshop on Health Intelligence	2020
BIGDATA4HEALTH	2017

Reviewer:

Venue	Year(s)
BMC Health Services Research	2020
AMIA – Annual Symposium	2020
Transactions on Knowledge and Data Engineering	2015, 2018, 2019, 2020

IEEE Access	2017, 2019
Artificial Intelligence in Medicine	2019, 2020
Journal of Biomedical Informatics	2015, 2018
Scientific Reports	2016, 2019, 2020
Journal of Biomedical and Health Informatics	2016
Big Data	2015
Transactions on Knowledge Discovery from Data	2014
Statistical Analysis and Data Mining	2014
AMIA Joint Summits on Translational Science	2015 - 2020

Regional Service

Activity	Location	Year(s)
Judge	UMKC SOM Health Science Student Research Summit (HSSR)	May 2020
Judge	Project Lead the Way: High School Biomedical Research	April 2020
Judge	Northern Indiana Regional Science & Engineering Fair	February 2016

Departmental Service

Activity	Location	Year(s)
Graduate Mentor	University of Notre Dame	Aug 2017 – Aug 2019
Dept. Representative to the Graduate Student Union	University of Notre Dame	Dec 2015 – Aug 2018
Computer Science Graduate Student Board Member	University of Notre Dame	Aug 2017- Aug 2018

Peer Reviewed Publications

‡- Student / Trainee Author, *Co-first authors

Journal Articles:

‡Nehme, F., & **Feldman, K**. (2020). Evolving Role and Future Directions of Natural Language Processing in Gastroenterology. *Digestive diseases and sciences*, 1-12. PMID: 32107677

‡Faust, L., **Feldman, K**., Mattingly, S. M., Hachen, D., & Chawla, N. V. (2020). Deviations from normal bedtimes are associated with short-term increases in resting heart rate. *NPJ digital medicine*, *3*(1), 1-9. PMID: 32219180

Feldman, K., Solymos, G. M., de Albuquerque, M. P., & Chawla, N. V. (2019). Unraveling complexity about childhood obesity and nutritional interventions: Modeling interactions Among psychological factors. *Scientific Reports*, *9*(1), 1-10. PMID: 31827160

*Faust, L., ***Feldman, K**., & Chawla, N. V. (2019). Examining the weekend effect across ICU performance metrics. *Critical Care*, *23*(1), 207. PMID: 31171026

*Gonya, J., ***Feldman, K**., Brown, K., Stein, M., Keim, S., Boone, K., ... & Butter, E. (2018). Human interaction in the NICU and its association with outcomes on the Brief Infant-Toddler Social and Emotional Assessment (BITSEA). *Early human development*, *127*, 6-14. PMID: 30218893

Gonya, J., Harrison, T., **Feldman, K**., Stein, M., & Chawla, N. (2019). Nursing networks in the NICU and their association with maternal stress: A pilot study. *Journal of nursing management*, *27*(2), 442-449. PMID: 30238539

Feldman, K., Johnson, R. A., & Chawla, N. V. (2018). The state of data in healthcare: path towards standardization. *Journal of Healthcare Informatics Research*, *2*(3), 248-271.

Feldman, K., Kotoulas, S., & Chawla, N. V. (2018). TIQS: Targeted Iterative Question Selection for Health Interventions. *Journal of Healthcare Informatics Research*, *2*(3), 205-227.

Feldman, K., Faust, L., Wu, X., Huang, C., & Chawla, N. V. (2017). Beyond volume: the impact of complex healthcare data on the machine learning pipeline. In *Towards Integrative Machine Learning and Knowledge Extraction* (pp. 150-169). Springer, Cham.

Feldman, K., Stiglic, G., Dasgupta, D., Kricheff, M., Obradovic, Z., & Chawla, N. V. (2016). Insights into population health management through disease diagnoses networks. *Scientific reports*, *6*, 30465. PMID: 27461860

Feldman, K., & Chawla, N. V. (2015). Does medical school training relate to practice? Evidence from big data. *Big data*, *3*(2), 103-113. (**Featured on journal cover page)** PMID: 26487985

Feldman, K., Davis, D., & Chawla, N. V. (2015). Scaling and contextualizing personalized healthcare: A case study of disease prediction algorithm integration. *Journal of biomedical informatics*, *57*, 377-385. PMID: 26254848

Conference Proceedings:

‡Markley, C., **Feldman, K**., & Chawla, N. V. (2019, May). Outside the Hospital Walls: Associations of Value Based Care Metrics and Community Health Factors. In *2019 IEEE EMBS International Conference on Biomedical & Health Informatics (BHI)* (pp. 1-4). IEEE.

Feldman, K., Duarte, M., Mikels-Carrasco, W., & Chawla, N. V. (2018, March). Leveraging health and wellness platforms to understand childhood obesity: A usability pilot of FitSpace. In *2018 IEEE EMBS International Conference on Biomedical & Health Informatics (BHI)* (pp. 418-421). IEEE.

Nagrecha, S., Thomas, P. B., **Feldman, K**., & Chawla, N. V. (2017, August). Predicting chronic heart failure using diagnoses graphs. In *International Cross-Domain Conference for Machine Learning and Knowledge Extraction* (pp. 295-312). Springer, Cham.

Feldman, K., Hazekamp, N., & Chawla, N. V. (2016, October). Mining the clinical narrative: all text are not equal. In *2016 IEEE international conference on healthcare informatics (ICHI)* (pp. 271-280). IEEE.

Feldman, K., & Chawla, N. V. (2014, November). Admission duration model for infant treatment (ADMIT). In *2014 IEEE International Conference on Bioinformatics and Biomedicine (BIBM)* (pp. 583-587). IEEE.

Feldman, K., & Chawla, N. V. (2014). Scaling personalized healthcare with big data. In *2nd International Conference on Big Data and Analytics in Healthcare, Singapore* (pp. 1-14).

Dasgupta, D., **Feldman, K**., Waghray, D., Mikels-Carrasco, W. A., Willaert, P., Raybold, D. A., & Chawla, N. V. (2014, June). An integrated and digitized care framework for successful aging. In *IEEE-EMBS International Conference on Biomedical and Health Informatics (BHI)* (pp. 440-443). IEEE.

Abstract Posters and Presentations:

National/International Meetings

‡Kurland Y., Gurung, K., Staggs, V., **Feldman, K.**, Pallotto, E., Manimtim, W., & Truog, W. (2020) "Neurally Adjusted Ventilatory Assist in Neonates with Congenital Diaphragmatic Hernia" *PAS*, (Presentation) – Canceled due to Covid-19

‡Onishchenko, E. Sandritter, T., **Feldman K**., Fischer, R., & August, K. (2020) "Identifying Risk Factors for Drug Induced Liver Injury in Pediatric Patients with Acute Lymphocytic Leukemia (ALL) Receiving Chemotherapy", *ASPHO* (Poster) – Canceled due to Covid-19

Feldman, K., Rohan, A., & Chawla, N. V. (2017). "Manual, automated, or derived measures: The value of variability in the meaningful use of vital sign data." *AMIA iHealth Clinical Informatics Conference*. (Presentation)

Feldman, K., & Chawla, N. V (2015). "From Data to Insights." *INFORMS Healthcare*. (Presentation)

Feldman, K, et al. (2015) "Leveraging Technology to Assist in Management of Diabetic Conditions." *AMIA Joint Summits on Translational Science*. (Poster)

Local Meetings

Brown, K., **Feldman, K**., Chawla, N. V., Rumpf W., Ray, W, Boone, K., Keim, S., Nelin, L., Butter, E., & Gonya, J. (2017) "Effect of Mesosystemic Variability in the NICU on Early Autism Behaviors in Extremely Preterm Infants" *Nationwide Children's Hospital Neonatal-Perinatal Conference*. (Poster)

Feldman, K., Rohan, A., & Chawla, N. V. (2017). "Manual, automated, or derived measures: The value of variability in the meaningful use of vital sign data." *Stony Brook University's School of Nursing Distinguished Alumni Award Symposium*, (Poster)