

# Jacob E. Simmering

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## EDUCATION

*PhD*, Pharmaceutical Socioeconomics  
University of Iowa, Iowa City, IA

2011 - 2016

**Dissertation:** Seasonality, Local Weather and Infectious Diseases: Effects of Heat and Humidity on  
Local Risk for Urinary Tract Infections and *Legionella* Pneumonia

*MS*, Epidemiology  
University of Iowa, Iowa City, IA

2010 - 2013

*BA*, Chemistry  
Grinnell College, Grinnell, IA

2005 - 2009

## PROFESSIONAL EXPERIENCE

*Assistant Professor* January 2019 - Present  
Division of Pulmonary, Critical Care and Occupational Medicine, Department of Internal Medicine, Carver College  
of Medicine, University of Iowa

*Post-Doctoral Scholar* March 2018 - January 2019  
Department of Computer Science, College of Liberal Arts and Sciences, University of Iowa

*Data Scientist* May 2016 - February 2018  
Signal Center for Healthcare Innovation, University of Iowa Health Ventures

*Graduate Teaching Assistant* August 2011 - December 2014  
College of Pharmacy, University of Iowa  
Drug Literature Evaluation, Pharmacy Law & Ethics, Pharmacy Management & Marketing, Topics in Community  
Pharmacy Practice, Pharmacy Practice Lab

*Graduate Research Assistant* May 2011 - May 2016  
Linnea Polgreen, College of Pharmacy, University of Iowa

*Graduate Research Assistant* September 2010 - May 2011  
Ryan Carnahan, College of Public Health, University of Iowa

## TEACHING

### COURSES

- **Public Health as a Public Good**, Department of Health Management and Policy, College of Public Health, University of Iowa, Fall 2019.
- **Fellowship Journal Club**, Division of Pulmonary, Critical Care and Occupational Medicine, Carver College of Medicine, University of Iowa, 2019-Present.
- **Data Resources for Observational Healthcare Studies**, Physician Scientist Training Program, Carver College of Medicine, University of Iowa, 2019.
- **Health Sciences Research Graduate Seminar**, College of Pharmacy, University of Iowa, 2014, 2018
- **HackIowa Data Science with R Workshop**, University of Iowa, 2017.
- **Drug Literature Evaluation**, College of Pharmacy, University of Iowa, 2015-2016.
- **Introduction to Research Methods**, College of Pharmacy, University of Iowa, 2014-Present.

## STUDENTS

- Rebecca Teske. Data science research intern at Carver College of Medicine, June 2019-Present.
- Treyton Krupp. Data science research intern at Carver College of Medicine, January 2019-May 2019.
- Jarren Santos. University of Iowa Masters of Public Health practicum, Summer 2018.
- Jinlin He. Data science internship at UI Health Ventures, Summer 2017.
- Melissa Bain. Data science internship at UI Health Ventures, Summer 2016.

## RESEARCH INTERESTS

Discovering novel environmental risk factors for pulmonary and infectious diseases, the effects of climate and weather on health, applied statistical and modern epidemiological methods using large administrative databases and machine learning (random forests, neural networks, clustering).

## PUBLICATIONS

- KJ Flynn, BA Erickson, PJ Guidos, **JE Simmering**, PM Polgreen, CR Tracy. Longitudinal Assessment of Post-Ureteroscopic Laser Lithotripsy Pain and Opioid Consumption Using Text Messaging: Tailoring Pain Management to the Patient. Forthcoming at *Urology Practice*.
- R Cai, Y Zhang, **JE Simmering**, JL Schultz, Y Li, I Fernandez-Carasa, A Consiglio, A Raya, PM Polgreen, NS Narayanan, Y Yuan, Z Chen, W Su, Y Han, C Zhao, L Gao, X Ji, MJ Welsh, L Liu. Enhancing glycolysis attenuates Parkinson's disease progression in models and clinical databases. *Journal of Clinical Investigation* 2019, 129(10).
- RS Zahr, CA Anthony, PM Polgreen, **JE Simmering**, CJ Goerdt, AB Hoth, ML Miller, M Suneja, AM Segre, BL Carter, LA Polgreen. A Texting-Based Blood Pressure Surveillance Intervention. *Journal of Clinical Hypertension* 2019.
- DK Sewell, **JE Simmering**, S Justice, SV Pemmaraju, AM Segre, PM Polgreen. Estimating the Attributable Disease Burden and Effects of Inter-Hospital Patient Sharing on Clostridium difficile Infections. *Journal of Infection Control and Epidemiology* 40(6), 2019.
- LJ Carr, **JE Simmering**, JF Cremer, AM Segre, LA Polgreen, PM Polgreen. Gamifying Accelerometer Use Increases Physical Activity Levels of Sedentary Office Workers. *Journal of the American Heart Association* 7(13), 2018.
- LA Polgreen, CA Anthony, LJ Carr, **JE Simmering**, NJ Evans, ED Foster, AM Segre, JF Cremer, PM Polgreen. The Effect of Automated Text Messaging and Goal Setting on Pedometer Adherence and Physical Activity in Patients with Diabetes. *PLOS ONE* 13(5), 2018.
- M Witry, AP Comellas, **JE Simmering**, PM Polgreen. The Association Between Technology Use and Health Status in a COPD Cohort. *Journal of Medical Internet Research* 20(4), 2018.
- **JE Simmering**, LA Polgreen, JE Cavanaugh, PM Polgreen. Warmer weather as a risk factor for hospitalizations due to urinary tract infections. *Epidemiology & Infection* 146, 2018.
- CA Anthony, RA Peterson, DK Sewell, LA Polgreen, **JE Simmering**, JJ Callahan, PM Polgreen. The Seasonal Variability of Surgical Site Infections in Knee and Hip Arthroplasty. *The Journal of Arthroplasty* 33(2), 2018.
- **JE Simmering**, LA Polgreen, DB Hornick, DK Sewell, PM Polgreen. Weather-Dependent Risk for Legionnaires' Disease, United States. *Emerging Infectious Diseases* 23(11), 2017.
- **JE Simmering**, F Tang, JE Cavanaugh, LA Polgreen, PM Polgreen. The Increase in Hospitalizations for Urinary Tract Infections and the Associated Costs in the United States, 1998-2011. *Open Forum Infectious Diseases* 4(1), 2017.
- **JE Simmering**, LA Polgreen, AP Comellas, JE Cavanaugh, PM Polgreen. Identifying Patients with COPD at High Risk of Readmission. *Chronic Obstructive Pulmonary Diseases* 3(4), 2016.
- **JE Simmering**, LA Polgreen, DR Campbell, JE Cavanaugh, PM Polgreen. Hospital Transfer Network Structure as a Risk Factor for *Clostridium difficile* Infection. *Infection Control Hospital and Epidemiology* 36(9), 2015.

- **JE Simmering**, LA Polgreen, PM Polgreen. Web Search Query Volume as a Measure of Pharmaceutical Utilization and Changes in Behavior. *Research in Social and Administrative Pharmacy* 10(6), 2014.
- **JE Simmering**, LA Polgreen, JE Cavanaugh, PM Polgreen. Are Well-Child Visits a Risk Factor for Subsequent Influenza-like Illness Visits? *Infection Control and Hospital Epidemiology* 35 (3), 2014.
- AM O'Brien, BM Hanson, SA Farina, JY Wu, **JE Simmering**, SE Wardyn, BM Forshey, ME Kulick, DB Wallinga, TC Smith. MRSA in Conventional and Alternative Retail Pork Products. *PLOS ONE* 7(1), 2012.

#### UNDER REVIEW

- L Vargas Buonfiglio, O Vanegas Calderon, M Cano, **JE Simmering**, PM Polgreen, J Zabner, A Gerke, A Comellas. Airway Surface Liquid Antimicrobial Activity Exhibits a Seasonal Pattern.
- SL Francis, S Kiefer, **JE Simmering**, LJ Carr, PM Polgreen. Validation of a Desk-Based Monitor to Measure Occupational Sitting and Standing Time.
- E Stapleton, **JE Simmering**, PM Polgreen, A Comellas. Effects of Indoor Particulate Matter on Acute Respiratory Risk in People with COPD.

#### WORKING PAPERS

- **JE Simmering**, NS Narayanan, MJ Welsh, A Pottegård. Use of Alfuzosin, Doxazosin and Terazosin is Associated with Reduced Hazard of Developing Parkinson's Disease.
- **JE Simmering**, DK Sewell, LA Polgreen, PM Polgreen. Temperature on Urinary Tract Infection Risk.
- N Evans, SL Francis, **JE Simmering**, PM Polgreen. Predicting Assistive Device Need with the Wii Balance Board.
- **JE Simmering**, DK Sewell, LA Polgreen, PM Polgreen. Temperature on Kidney Stone Risk.

#### CURRENT PROJECTS

- Natural History of Sarcoidosis with AK Gerke.
- Daily UV and Particulate Matter Exposure and Pneumonia Risk with AP Comellas.
- Daily Effects of Temperature, Humidity and Rainfall on Legionnaires' Disease Risk with DK Sewell, LA Polgreen, PM Polgreen.
- Using Weather to Improve Legionnaires' Disease Risk Classification and Antimicrobial Stewardship with DK Sewell, LA Polgreen, PM Polgreen.
- Adverse Outcomes Related to Outpatient UTI Presentation Following Weekends with RA Peterson, LA Polgreen, PM Polgreen.
- Differential effectiveness of singulair in treatment of patients with asthma based on ecologic exposure to black carbon with AP Comellas and E Stapleton.
- Real world effectiveness of medications for IPF with A Gerke and PM Polgreen.
- Healthcare worker movement and hand location in the medical intensive care unit with PM Polgreen, A Serge.

#### PRESENTATIONS

- **JE Simmering**, PM Polgreen, J Kuntz, A Gerke. Evaluation of the Natural History of Sarcoidosis in a Population-Based Cohort. ATS International Meeting, May 2019 (Poster).
- **JE Simmering**, DK Sewell, LA Polgreen, PM Polgreen. Urinary Tract Infection Incidence is Associated with Recent Environmental Temperatures. IDWeek 2018, October 2018 (Oral Presentation).
- **JE Simmering**, DK Sewell, LA Polgreen, PM Polgreen. Urinary Tract Infections Are Associated with Temperature in the Past 1-5 Days. Internal Medicine Research Week 2018, September 2018 (Poster).
- **JE Simmering**, LA Polgreen, DB Hornick, DK Sewell, PM Polgreen. Weather and Legionnaires' Disease Risk. Internal Medicine Research Week 2017, October 2017 (Poster).

- **JE Simmering**, LA Polgreen, PM Polgreen. Hospital Connectivity as a Measure of Unobserved Disease Severity Among COPD Patients. American Society of Healthcare Economists Conference, June 2016 (Poster).
- **JE Simmering**, F Tang, LA Polgreen, JE Cavanaugh, PM Polgreen. Trends in Urinary Tract Infection Incidence and Seasonality. IDWeek 2015, October 2015 (Poster).
- **JE Simmering**, LA Polgreen, PM Polgreen. Temperature as a Risk Factor for Hospitalization for Urinary Tract Infections. University of Iowa Health Sciences Research Week Student Poster Session, April 2015 (Poster).
- **JE Simmering**, LA Polgreen, PM Polgreen. Temperature as a Risk Factor for Hospitalization for Urinary Tract Infections. University of Iowa Jakobsen Conference for Graduate Research, March 2015 (Oral Presentation).
- **JE Simmering**, DR Campbell, LA Polgreen, PM Polgreen. Hospital Transfer Network Structure as a Risk Factor for *C. difficile* Infections. Midwest Social and Administrative Pharmacy Conference, July 2014 (Oral Presentation).
- **JE Simmering**, DR Campbell, LA Polgreen, PM Polgreen. Hospital Transfer Network Structure as a Risk Factor for *C. difficile* Infections. American Society of Healthcare Economists Conference, June 2014 (Oral Presentation).
- **JE Simmering**, DR Campbell, LA Polgreen, PM Polgreen. Hospital Transfer Network Structure as a Risk Factor for *C. difficile* Infections. University of Iowa Interdisciplinary Health Research Week Student Poster Session, April 2014 (Poster).
- **JE Simmering**, DR Campbell, LA Polgreen, PM Polgreen. Hospital Transfer Network Structure as a Risk Factor for *C. difficile* Infections. University of Iowa Health Sciences Research Week Student Poster Session, April 2014 (Poster).
- **JE Simmering**, DR Campbell, LA Polgreen, PM Polgreen. Hospital Transfer Network Structure as a Risk Factor for *C. difficile* Infections. University of Iowa Jakobsen Conference for Graduate Research, March 2014 (Oral Presentation).
- **JE Simmering**, DR Campbell, LA Polgreen, PM Polgreen. Hospital Transfer Network Structure as a Risk Factor for *C. difficile* Infections. IDWeek 2013, October 2013 (Oral Presentation).
- **JE Simmering**, PM Polgreen, A Saftlas. Is Influenza a Risk Factor for Preeclampsia? Evidence from the Novel 2009 H1N1 Pandemic. University of Iowa Department of Epidemiology Research Poster Session, April 2013 (Poster).
- **JE Simmering**, LA Polgreen, PM Polgreen. Using Search Volume for Surveillance of Medication Prescribing. University of Iowa Interdisciplinary Health Research Student Poster Session, April 2013 (Poster).
- **JE Simmering**, LA Polgreen, PM Polgreen. Using Search Volume for the Surveillance of Medication Prescribing. International Society for Disease Surveillance Conference Meeting, December 2012 (Poster).
- **JE Simmering**, C Yang, E Foster, AC Miller, B Urick, LA Polgreen, PM Polgreen. Adverse Drug Events, Utilization and Knowledge Diffusion: 'Insights' from Search Volume. Midwest Social and Administrative Pharmacy Conference, August 2012 (Oral Presentation).
- **JE Simmering**, LA Polgreen, PM Polgreen. Not So Well Children: Temporal Association of Well-Child Office Visits and Influenza-like Illness. American Society of Health Economists Conference, June 2012 (Oral Presentation).
- **JE Simmering**, LA Polgreen, PM Polgreen. Not So Well Children: Temporal Association of Well Child Office Visits and Influenza-like Illness. University of Iowa Health Sciences Research Week Student Poster Session, April 2012 (Poster).
- AC Miller, **JE Simmering**, B Urick, LA Polgreen. Using web search data to measure diffusion of information after changes in pharmaceutical knowledge. American Pharmacists Association Annual Meeting, March 2012 (Poster).
- **JE Simmering**, C Yang, E Foster, LA Polgreen, PM Polgreen. Adverse drug events: 'Insights' from Google search volume. International Society for Disease Surveillance Conference, December 2011 (Oral Presentation).
- C Yang, **JE Simmering**, P Srinivasan, LA Polgreen, PM Polgreen. Early detection of adverse drug events using the full text of letters to the editor. International Society for Disease Surveillance Conference, December 2011 (Oral Presentation).

## **GRANTS**

- K Narayanan, MJ Welsh, DL Weeks, VA Magnotta, EB Taylor, J Schultz, JE Simmering. University of Iowa, Institute for Clinical and Translational Science Pilot Grand Award, \$75,000, February 2019 - July 2020.

## **PROFESSIONAL AFFILIATIONS**

- American Society of Health Economists

## **SERVICE**

- Ad hoc reviewer for BMJ Open 2017-Present
- Ad hoc reviewer for American Journal of Epidemiology 2018-Present
- Ad hoc reviewer for PLOS ONE 2019-Present
- Reviewer for American Society of Healthcare Economists Biannual Meeting 2018

## **HONORS**

- University of Iowa, College of Pharmacy Dissertation Semester Fellowship, 2015
- Jakobsen Conference 3rd Place in Biological and Health Sciences, 2014
- American Foundation for Pharmaceutical Education Pre-Doctoral Fellowship, 2013, 2014
- Interdisciplinary Health Sciences Poster Session Best Poster Award, 2012, 2013
- Department of Epidemiology Scholarship for Academic Excellence, 2011

## **TECHNICAL AND COMPUTING SKILLS**

Expert-level proficiency in the R and the `tidyverse`

Proficient in Python 2.7, Python 3.6, Stan, Keras, R/Shiny, Bash, SQL, Son of a Grid Engine (SGE) High Performance Computing, Amazon Web Services (AWS) Elastic Compute Cloud (EC2), Markdown

Basic proficiency in C/C++, numpy, pandas, HTML, CSS