

# Sara E. Heins

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## RESEARCH INTERESTS

Opioids, Substance Use, Health Care Quality Measurement, Electronic Medical Records, Health Information Technology, Occupational Health and Safety, Injury Prevention, Maternal and Child Health, Emergency Medical Services

## EDUCATION

- 2018        **Johns Hopkins Bloomberg School of Public Health**, Ph.D., Health Policy and Management (Health Service Research Track, Certificate in Injury and Violence Prevention)  
**Dissertation:** “Morphine Equivalent Daily Dose Policies in the United States: Variations in Structure and Impact on Prescribing Behavior”
- 2011        **Cornell University**, B.A, Biology and Society, *Magna Cum Laude*, (Minors: Global Health, Southeast Asian Studies)  
**Thesis:** “HIV/AIDS Prevention Advertisements in Vietnam: Health Communication and Health Communities”

## PROFESSIONAL EXPERIENCE

- 2022-        Full Policy Researcher, RAND Corporation, Pittsburgh, PA
- 2018-2022    Associate Policy Researcher, RAND Corporation, Pittsburgh, PA
- 2015-2018    Student Research Assistant, Outcomes after Critical Care and Surgery group, Department of Pulmonary and Critical Care Medicine, Johns Hopkins School of Medicine, Baltimore, MD
- 2016        Summer Associate, RAND Corporation, Pittsburgh, PA
- 2014-2017    Student Research Assistant, Center for Population Health Information Technology, Department of Health Policy and Management, Johns Hopkins Bloomberg School of Public Health

- 2013-2014 Sr. Research Assistant/Programmer, Major Extremity Trauma Research Consortium, Department of Health Policy and Management, Johns Hopkins Bloomberg School of Public Health
- 2011- 2013 Research Assistant/Programmer, Center for Injury Research and Policy, Department of Health Policy and Management, Johns Hopkins Bloomberg School of Public Health
- 2009-2011 Research Assistant, Department of Plant Pathology, Cornell University, Ithaca, NY
- 2007-2008 Survey Administrator, Office of Survey Research, Michigan State University, East Lansing Michigan

### **TEACHING EXPERIENCE**

- 2018 Instructor (Gordis Teaching Fellowship), Using Secondary Data for Public Health Research, Johns Hopkins University
- 2017 Teaching Assistant, Introduction to Health Economics, Johns Hopkins University
- 2016-2017 Teaching Assistant, Managed Care and Health Insurance, Johns Hopkins Bloomberg School of Public Health
- 2015-2016 Teaching Assistant, Quality of Medical Care, Johns Hopkins Bloomberg School of Public Health
- 2014 Teaching Assistant, Research and Evaluation Methods for Health Policy I-II, Johns Hopkins Bloomberg School of Public Health
- 2014 Teaching Assistant, Introduction to Health Services Research and Evaluation, Johns Hopkins Bloomberg School of Public Health

### **HONORS AND AWARDS**

- 2017-2018 AHRQ R36 Dissertation Award
- 2017 Student Research Showcase and Research Presentation Award Finalist, ISPOR Annual Meeting
- 2015 Ph.D. Qualifying Exam Honors
- 2015 SAVIR Student Paper Award

### **PROFESSIONAL AFFILIATIONS**

American Public Health Association, International Society for Pharmacoeconomics and, Outcomes Research, Society for Advancement of Violence and Injury Research, AcademyHealth

## **MENTORING, VOLUNTEER, AND SERVICE ACTIVITIES**

- 2022- RAND Research Advisory Council Member
- 2021- National Institutes of Health Early Career Reviewer Program
- 2015- Cornell Alumni Admissions Ambassador, Cornell Alumni Admissions Ambassador Network
- 2014- Ad hoc reviewer: American Journal of Public Health, American Journal of Preventative Medicine, Drug and Alcohol Dependence (Top 5% of reviewers, 2020), Epidemiology, Journal of Addiction Medicine, Journal of the American Medical Association (JAMA), BMJ Open, Medical Care, Medical Decision Making, Pain Medicine, Women's Health Reports
- 2014-2018 President (2015-2018), Healthy Minds Math Teaching and Mentoring Program, Commodore John Rogers Elementary and Middle School, Baltimore, MD
- 2013-2017 Cornell Global Health Mentor, Cornell University

## **PUBLICATIONS**

### **Refereed Journal Articles**

1. **Heins SE**, Seelam R, Schell TL, Wong EC. Predictors of Long-Term Opioid Use in a Racially and Ethnically Diverse Population Following Hospitalization for Traumatic Injury: A One-Year Prospective Observational Study. (2022). *Pain Medicine*.
2. Buttorff CB, **Heins SE**, Al Ibrahim H. Care Settings for Injuries: An Analysis of Health Insurance Claims. (2022). *Medical Care Research and Review*.
3. Faherty LJ, **Heins SE**, Kranz AM, Patrick SW, Stein BD. Association Between Punitive Policies and Neonatal Abstinence Syndrome Among Medicaid-Insured Infants in Complex Policy Environments. (2022). *Addiction*. 117(1): 162-171.
4. **Heins SE**, Buttorff CB, Armstrong C, Pacula RL. Claims-Based Measures of Prescription Opioid Utilization: A Practical Guide for Researchers. (2021). *Drug and Alcohol Dependence*. 228(2021): 109087

5. Faherty LJ, **Heins SE**, Kranz AM, Stein BD. Postpartum treatment for substance use disorder among mothers of infants with neonatal abstinence syndrome and prenatal substance exposure. (2021). *Women's Health Reports*. 2(1): 163-172.
6. **Heins SE**, Faherty LJ, Kranz AM. A Comparison of Approaches to Identify Live Births Using the Medicaid Analytic Extract. (2021). *Health Services and Outcomes Research Methodology*.
7. **Heins SE**, Castillo RC. Changes in Opioid Prescribing Following the Implementation of State Policies Limiting Morphine Equivalent Daily Dose in a Commercially Insured Population. (2021). *Medical Care*. 59(9): 801-807.
8. Buttorff CB, **Heins SE**, Al Ibrahim H. Comparison of Definitions for Identifying Urgent Care Centers in Health Insurance Claims. (2020). *Health Services and Outcomes Research Methodology*. 21(2): 229-237.
9. Newcomb AB, Zadnik M, Carlini AR, Francis MM, Frey KP, **Heins SE**, McNamara L, Staguhn E, Castillo RC. Barriers and Facilitators to the Implementation of Injury Prevention Programs: A Qualitative Exploration and Model Development. (2020). *Journal of Trauma Nursing*. 27(6):335-345.
10. Castillo RC, **Heins SE**, DuGoff E, Roberts ET, Anderson GA, Wegener ST. The Impact of Adherence to Clinical Practice Guidelines on Medical Costs. (2020). *Journal of Occupational and Environmental Medicine*, 62(9): 712-717.
11. Schuler MS, **Heins SE**, Smart R, Griffin BA, Powell D, Stuart EA, Pardo B, Smucker S, Patrick S, Pacula RL, Stein BD. The State of the Science in Opioid Policy Research. (2020). *Drug and Alcohol Dependence*. 214 (2020) 108137.
12. **Heins SE**, Caulkins JP, Kilmer B, Stein BD. Variation in the Degree of Concentration of Prescription Opioid Utilization Using Different Measures. (2020). *Drug and Alcohol Dependence*. 213 (2020) 108101.
13. **Heins SE**, Castillo RC. The Impact of Morphine Equivalent Daily Dose Threshold Guidelines on Prescribed Dose in a Workers' Compensation Population. (2020). *Medical Care*, 58(3):234-240.
14. **Heins SE**, Frey KP, Alexander GC, Castillo RC. Reducing High Dose Opioid Prescribing: State-Level Morphine Equivalent Daily Dose Policies, 2007-2017. (2020). *Pain Medicine*, 21(2): 308-316.
15. Kharrazi H, Chang H, **Heins SE**, Weiner JP, Gudzone KA. Assessing the Impact of Body Mass Index Information on the Performance of Risk Adjustment Models in Predicting Healthcare Costs and Utilization. (2018). *Medical Care*, 56(12): 1042-1050.

16. **Heins SE**, Wozniak AW, Colantuoni E, Sepulveda KA, Mendez-Tellez PA, Dennison-Himmelfarb C, Needham DM, Dinglas VD. Factors associated with missed assessments in a 2-year longitudinal study of acute respiratory distress syndrome survivors. (2018). *BMC Medical Research Methodology*, 18(55).
17. **Heins SE**, Sorbero MJ, Jones CM, Dick AW, Stein BD. High-risk Prescribing to Medicaid-Enrollees Receiving Opioid Analgesics: Individual and County Level Factors. (2018). *Substance Use and Misuse*, 53(10): 1591-1601.
18. **Heins SE**, Crifasi CK. Distinctive injury deaths: The role of environment, policy, and measurement across states. (2016). *Injury Prevention*, 22(4): 247-252.
19. Roberts ET, DuGoff EH, **Heins SE**, Swedler DI, Castillo RC, Feldman DR, Wegener ST, Canudas-Romo V, Anderson GF. Evaluating Clinical Practice Guidelines Based on Their Association with Return to Work in Administrative Claims Data. (2015) *Health Services Research*, 51(3): 953-980.
20. **Heins SE**, Feldman DR, Bodycombe D, Wegener ST, Castillo RC. Early opioid prescription and risk of long-term opioid use among US workers with back and shoulder injuries: a retrospective cohort study. (2015). *Injury Prevention*, 22(3):211-215.
21. Archer KR., **Heins SE**, Abraham CM, Obremskey WT, Wegener ST, Castillo RC. Clinical Significance of Pain at Hospital Discharge Following Traumatic Orthopaedic Injury: General Health, Depression, and PTSD Outcomes at 1 Year. (2015). *Clinical Journal of Pain*, 32(3):196.
22. Wegener ST, Castillo RC, **Heins SE**, Bradford AN, Newell MZ, Pollak AN, MacKenzie EJ. Development and validation of the Readiness to Engage in Self-Management after Traumatic Injury Questionnaire. (2014). *Journal of Rehabilitation Psychology*, 59(2):203.
23. Trujillo AJ, **Heins SE**, Anderson GF, Castillo RC. Geographic variability of adherence to occupational injury treatment guidelines. (2014). *Journal of Occupational and Environmental Medicine*, 56(12):1308-1312.
24. Castillo RC, Wegener ST, **Heins SE**, Haythornthwaite JA, MacKenzie EJ, Bosse MJ, and the LEAP Study Group. Longitudinal relationships between anxiety, depression, and pain: Results from a two-year cohort study of trauma patients. (2013). *Pain*, 154(12):2860-2866.
25. **Heins SE**, Feldman DF, DuGoff EF, Wegener ST, Castillo RC. Development and validation of a categorization methodology for occupational back and shoulder injuries. (2013) *Health Services Outcomes and Research Methodology*, 13(2-4):140-156.
26. Castillo RC, Wegener ST, Newell MZ, Carlini AR, Bradford AN, **Heins SE**, Pollak AN, Teter H, MacKenzie EJ. Early evaluation of the Trauma Survivors Network at a major Level I trauma center. (2013) *Journal of Trauma and Acute Care Surgery*, 74(6):1534-1540.

27. Bradford AN, Castillo RC, Carlini AR, Wegener ST, Frattaroli S, **Heins SE**, MacKenzie EJ. Barriers to implementation of a hospital-based program for survivors of traumatic injury. (2013) *Journal of Trauma Nursing*, 20(2):89-99.
28. Roberts ET, DuGoff EH, Castillo RC, **Heins SE**, Anderson GF. A decomposition analysis of medical expenditure growth among injured workers. (2012). *Journal of Healthcare Finance*, 40 (2):59-74.

### **RAND and Other Publicly Available Reports**

1. **Heins S**, Predmore Z, Hoch E, Baxi S. Linking Medicaid Claims, Birth Certificates, and Other Sources to Advance Maternal and Infant Health. Santa Monica, Calif.: RAND Corporation, 2022. Available at <https://aspe.hhs.gov/reports/linking-medicaid-other-data-pcor>.
2. Carman KG, Dworsky M, **Heins S**, Qureshi N, Schwam D, Shelton S, Whaley C. State All Payer Claims Databases Understanding the Current Landscape and Challenges to Use. Santa Monica, Calif.: RAND Corporation, 2022. Available at <https://aspe.hhs.gov/reports/all-payer-claims-data-bases-2022>.
3. Haffajee RL, **Heins S**. State and Community Efforts to Address Stimulant Use. Santa Monica, Calif.: RAND Corporation, 2021. Available at <https://aspe.hhs.gov/state-community-stimulant-use>.
4. Engel CC, Simmons MM, **Heins S**, Shen M, Azhar G. Limb Salvage and Recovery After Severe Blast Injury: A Review of the Scientific Literature. Santa Monica, Calif.: RAND Corporation. RR-2801-OSD, 2020.
5. Piquado T, Engel CC, McBain RK, McBirney S, **Heins SE**, Simmons MM, Hoch E, Shen M, Broten N, Azhar G. The Impact of Blast-Related Burn Injuries: From Prolonged Field Care to Rehabilitation and Resilience, A Review of Scientific Literature. Santa Monica, Calif.: RAND Corporation. RR-A199-2, 2020.
6. Mulcahy A, Becker K, Cantor J, Ashwood S, Ringel J, Sontag-Padilla L, Buttorff C, Robbins M, Lovejoy S, Goughnour T, **Heins S**, Weidmer B, Martineau M, Oelrich M, Gildner J, Karimi G, Goode T. Medicare's Ground Ambulance Data Collection System: Sampling and Instrument Considerations and Recommendations. Task Order No. HHSM-500-T0052, 2019. Available at: <https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AmbulanceFeeSchedule/Downloads/Ground-Ambulance-Data-Collection-System-Sampling-Instrument-Considerations-Recommendations.pdf>

### **Editorials**

1. **Heins SE**. Prescription opioids, a continuing contributor to the epidemic. (2019). *American Journal of Public Health*. 109 (9), 1166-1167.

## CONFERENCE POSTERS AND PRESENTATIONS

1. Griffin BA, **Heins SE**, Henderson J, Pacula R, Patrick S, Powell D, Schuler MS, Smart R, Smucker S, Stein B, Stuart E. The state of the statistical science in opioid policy research. (2019). Podium presentation at the International Conference on Health Policy Statistics, San Diego, CA.
2. **Heins SE**, Castillo RC. The Impact of Morphine Equivalent Daily Dose Threshold Policies on Prescribed Dose in a Privately Insured Population. (2019). Paper presentation at International Society for the Study of Drug Policy Annual Meeting, Paris, France.
3. **Heins SE**, Castillo RC. Morphine Equivalent Daily Dose Policies: Evaluating Impact on High Dose Prescribing. (2018). Podium presentation at American Public Health Association Annual Meeting, San Diego, CA.
4. **Heins SE**, Frey KP, Castillo RC. Reducing Prescription Opioid Mortality: State-Level Morphine Equivalent Daily Dose Policies, 2007-2017. (2017). Poster presentation at American Public Health Association Annual Meeting, Atlanta, GA.
5. **Heins SE**, Castillo RC. Evaluating the Impact of State Workers' Compensation Guidelines on Opioid Prescribing Practices. (2017). Poster and student podium presentation at International Society for Pharmacoeconomics and Outcomes Research Annual Meeting, Boston, MA.
6. Castillo RC, Carlini AR, **Heins SE**, Jarman MP. Short and long-term opioid utilization in a large dataset of occupational injury patients. (2016). Poster presentation at Academy Health Annual Meeting, Boston, MA.
7. **Heins SE**, Gudzone KA, Lemke KW, Lasser E, Kharrazi H, Richards TM, Weiner JP. Using Body Mass Index from Electronic Health Records to improve claims-based risk adjustment. (2016). Poster Presentation at the ACG System Conference, San Diego, CA.
8. **Heins SE**, Feldman DR, Bodycombe D, Wegener ST, Castillo RC. Early opioid prescription and risk of long-term opioid use among US workers with back and shoulder injuries: a retrospective, longitudinal cohort study. (2015). Podium presentation at the Society for Advancement of Violence and Injury Research meeting, New Orleans, LA.
9. Castillo RC, Wegener ST, **Heins SE**, Abraham C, Obremskey WR, Archer KR. The Course of Hospital Pain Following Orthopaedic Trauma Surgery. (2014). Poster presented at the American Pain Society Annual Meeting, Tampa, FL.
10. Archer KR, Castillo RC, **Heins SE**, Abraham CM, Obremskey WT, Wegener ST. Impact of early postoperative pain on outcomes one year following traumatic orthopaedic injury. (2013). Podium presentation at the Orthopedic Trauma Association Annual Meeting, Phoenix, AZ.

11. **Heins SE**, Feldman DR, DuGoff EH, Wegener ST, Castillo RC. Development and evaluation of a categorization methodology for occupational back and shoulder injuries. (2013). Poster presented at Academy Health Annual Meeting, Baltimore, MD.
12. Roberts ET, DuGoff EH, Canudas-Romo V, **Heins SE**, Swedler D, Feldman DR, Wegner ST, Castillo RC. Measuring the Association between Clinical Practice Guidelines and Return to Work using Administrative Claims Data. (2013). Poster presented at Academy Health Annual Meeting, Baltimore, MD.
13. Castillo RC, **Heins SE**, Feldman DF, Roberts E, Wu A, Simmons M, Medford A, Trujillo A. Development and cost implications of quality of care indicators for shoulder and back injuries. (2013). Poster presented at Academy Health Annual Meeting, Baltimore, MD.
14. Mroz TM, Carlini AR, Archer KR, Wegener ST, Hoolachan JI, Stiers W, **Heins SE**, Castillo RC. A predictive model for high medical and indemnity costs following occupational injuries. (2013). Poster presented at Academy Health Annual Meeting, Baltimore, MD.
15. Castillo RC, Wegener ST, **Heins SE**, Haythornthwaite JA, MacKenzie EJ, Bosse MJ, and the LEAP Study Group. Anxiety and depression in the etiology of chronic pain: Results from a two-year cohort study of trauma patients. (2013). Poster presented at the National Meeting for the Safe States Alliance and the Society for Advancement of Violence and Injury Research, Baltimore, MD.
16. Castillo RC, Knutsen E, Belin E, **Heins SE**, Paryavi E. Validity of the Patient Satisfaction Questionnaire-18 for orthopaedic trauma. (2013). Poster presented at Academy of Orthopaedic Surgeons Annual Meeting, Chicago, IL.
17. Roberts ET, DuGoff EH, Castillo RC, **Heins SE**, Anderson GF. A decomposition analysis of medical expenditure growth among injured workers. (2012). Poster presented at the American Public Health Association Annual Meeting, San Francisco, CA.
18. Castillo RC, Wegener ST, Newell MZ, Carlini AR, Bradford AN, **Heins SE**, Pollak AN, Teter, H, MacKenzie EJ. (2012). Early evaluation of the Trauma Survivors Network at a major Level I trauma center. Poster presented at Orthopedic Trauma Association Annual Meeting, Minneapolis, MN.
19. Archer KA, Castillo RC, Abraham CM, **Heins SE**, Song Y, Wegener ST, Obremskey WT. (2012). Development of a multidimensional postoperative pain tool for orthopedic trauma surgery. Poster presented at Orthopedic Trauma Association Annual Meeting, Minneapolis, MN.