

Academic Positions

- 2019 - **Assistant Professor**
Department of Epidemiology
Mailman School of Public Health
Columbia University, New York, NY
- 2017 - 2019 **Assistant Professor**
Emergency Medicine, School of Medicine
Graduate Group in Epidemiology
Graduate Group in Public Health Sciences
University of California, Davis

Education

- 2016 - 2017 **Postdoctoral Scholar**
Epidemiology, School of Public Health
University of California, Berkeley
K99, National Institute on Drug Abuse
Mentors: Jennifer Ahern and Mark van der Laan
- 2014 - 2016 **Health and Society Scholar**
Robert Wood Johnson Foundation
University of California, San Francisco
University of California, Berkeley
Advisors: Jennifer Ahern, Maria Glymour, Mark van der Laan
- 2014 **Postdoctoral Fellow**
Department of Mental Health
Johns Hopkins School of Public Health, Baltimore, MD
Drug Dependence and Epidemiology
Advisor: Elizabeth Stuart
- 2010-2014 **Ph.D. Epidemiology**
Johns Hopkins University, Bloomberg School of Public Health
Concentration in Methods
Advisor: Thomas Glass
Thesis: Mental health in context: effect heterogeneity and mechanism in the relationship between neighborhood disadvantage and adolescent depression and anxiety.
- 2012-2013 **M.H.S. Biostatistics**
Johns Hopkins University, Bloomberg School of Public Health
Advisor: Elizabeth Stuart
Thesis: Implementation of methods to estimate population marginal treatment effects in the presence of non-randomized treatment assignment and informative selection from a population-based sample.
- 2007-2008 **M.P.H.**
Johns Hopkins University, Bloomberg School of Public Health
Capstone: Evaluation design for a study using community health workers to improve breastfeeding rates among adolescent African American women in East Baltimore.

2006 Graduate course in biostatistics
University of Pennsylvania

2001-2005 **B.S. Biochemistry**
University of Michigan
Highest honors
Thesis: Actin-regulatory proteins $p116^{RIP}$ and *LIMK2* interact with POSH.

Publications

Published

- [1] K. E. Rudolph and K. M. Keyes, “Voluntary firearm divestment and suicide risk: Real-world importance in the absence of causal identification,” *Epidemiology*, vol. 34, no. 1, pp. 107–110, 2023.
- [2] N Jawadekar, K. E. Rudolph, M Odden, K Kezios, J. A. Stingone, S Calónico, and A Zeki Al Hazzouri, “Practical guide to honest causal forests for identifying heterogeneous treatment effects in a randomized setting.,” *Am J Epidemiol*, In Press, 2022.
- [3] J. A. Casey, S. Y. Tartof, M. F. Davis, K. E. Nachman, L Price, C Liu, L Yu, V Gupta, G. K. Innes, A. J. Pressman, and K. E. Rudolph, “Impact of a statewide livestock antibiotic use policy on resistance in human urinary tract infection: A synthetic control analysis.,” *Environmental Health Perspectives*, In Press, 2022.
- [4] B Kim, W. M. Troxel, T Dubowitz, G. P. Hunter, B Ghosh-Dastidar, B Chaix, K. E. Rudolph, C. N. Morrison, C. C. Branas, and D. Y. Duncan, “Neighborhood built environments and sleep health: A longitudinal study in low-income and predominantly african-american neighborhoods.,” *Am J Epidemiol*, In Press, 2022.
- [5] R Kagawa, B Calnin, C Smirniotis, M Cerda, G Wintemute, and K. E. Rudolph, “Effects of building demolitions on firearm violence in detroit, michigan.,” *Preventive Medicine*, In Press, 2022.
- [6] J. M. Torres, Y Yang, K. E. Rudolph, E Meza, M. M. Glymour, and E Courtin, “The effects of adult child schooling on older parents’ cognitive outcomes in europe: A quasi-experimental study.,” *Am J Epidemiol*, In Press, 2022.
- [7] K. E. Rudolph and I Díaz, “When the ends don’t justify the means: Learning a treatment strategy to prevent harmful indirect effects.,” *Journal of the Royal Statistical Society, Series A*, In Press, 2022.
- [8] K. E. Rudolph, N. T. Williams, A. T. Singham Goodwin, M Shulman, M Fishman, I Díaz, S. X. Luo, J Rotrosen, and E. V. Nunes, “How different buprenorphine & methadone dosing strategies reduce risk of relapse in the treatment of opioid use disorder.,” *Drug and Alcohol Dependence*, In Press, 2022.
- [9] K. E. Rudolph, N. T. Williams, I Díaz, S. X. Luo, J Rotrosen, and E. V. Nunes, “Optimally matching patients with opioid use disorder treatments to minimize risk of relapse.,” *American Journal of Epidemiology*, In Press, 2022.

- [10] K. E. Rudolph, M. Russell, S. X. Luo, J. Rotrosen, and E. V. Nunes, “Under-representation of key demographic groups in opioid use disorder trials,” *Drug and Alcohol Dependence Reports*, p. 100 084, 2022.
- [11] B Kim, B Chaix, K. E. Rudolph, C. N. Morrison, C. C. Branas, and D. T. Duncan, “Neighborhoods and sleep health among adults: A systematic review.,” *Sleep Health*, In Press, 2022.
- [12] J. M. Torres, Y Yang, K. E. Rudolph, and E Courtin, “Increased adult child schooling and older parents’ health behaviors in europe: A quasi-experimental study.,” *Social Science and Medicine - Population Health*, In Press, 2022.
- [13] K. E. Rudolph, C Gimbrone, E. C. Matthey, I Díaz, C. S. Davis, K Keyes, and M Cerdá, “When effects cannot be estimated: Redefining estimands to understand the effects of naloxone access laws.,” *Epidemiology*, vol. 33, no. 5, pp. 689–98, 2022.
- [14] A Rivera-Aguirre, A Castillo-Carniglia, H Laqueur, K. E. Rudolph, S Martins, J Ramírez, R Queirolo, and M. Cerda, “Does recreational cannabis legalization increase frequent and risky cannabis use? evidence from uruguay.,” *Addiction*, In Press, 2022.
- [15] T Townsend, L Hamilton, C Davis, M Cerda, and K. E. Rudolph, “Association of good samaritan laws with overdose mortality in kentucky and tennessee, overall and by race.,” *Am J Epidemiol*, In Press, 2022.
- [16] B Kim, W. M. Troxel, T Dubowit, G. P. Hunter, B Ghosh-Dastidar, B Chaix, K. E. Rudolph, C. N. Morrison, C. C. Branas, and D. T. Duncan, “Mediating role of psychological distress in the associations between neighborhood social environments and sleep health.,” *Sleep*, In Press, 2022.
- [17] N. S. Hejazi, K. E. Rudolph, and I. Díaz, “Medoutcon: Nonparametric efficient causal mediation analysis with machine learning inr,” *Journal of Open Source Software*, vol. 7, no. 69, p. 3979, 2022.
- [18] N. S. Hejazi, K. E. Rudolph, M. J. van der Laan, and I. Díaz, “Nonparametric causal mediation analysis for stochastic interventional (in)direct effects.,” *Biostatistics*, In Press, 2022.
- [19] K. E. Rudolph, M Shulman, M Fishman, I Díaz, J Rotrosen, and E. V. Nunes, “Association between dynamic dose adjustment of buprenorphine for treatment of opioid use disorder and risk of relapse,” *Addiction*, In Press, 2021.
- [20] K. E. Rudolph, I. Díaz, S. X. Luo, J. Rotrosen, and E. V. Nunes, “Optimizing opioid use disorder treatment with naltrexone or buprenorphine,” *Drug and Alcohol Dependence*, vol. 228, p. 109 031, 2021.
- [21] K. E. Rudolph and B. Lau, “Epidemiologic methods: Seeing the forest and the trees,” *Epidemiologic reviews*, 2021.
- [22] E. A. Stuart, I. Schmid, T. Nguyen, E. Sarker, A. Pittman, K. Benke, K. Rudolph, E. Badillo-Goicoechea, and J.-M. Leoutsakos, “Assumptions not often assessed or satisfied in published mediation analyses in psychology and psychiatry,” *Epidemiologic reviews*, 2021.

- [23] M. Cerdá, K. Wheeler-Martin, E. Bruzelius, W. Ponicki, P. Gruenewald, C. Mauro, S. Crystal, C. S. Davis, K. Keyes, D. Hasin, *et al.*, “Spatiotemporal analysis of the association between pain management clinic laws and opioid prescribing and overdose deaths,” *American Journal of Epidemiology*, vol. 190, no. 12, pp. 2592–2603, 2021.
- [24] J. A. Casey, K. E. Rudolph, S. C. Robinson, K. Bruxvoort, E. Raphael, V. Hong, A. Pressman, R. Morello-Frosch, R. X. Wei, and S. Y. Tartof, “Sociodemographic inequalities in urinary tract infection in two large california health systems,” in *Open Forum Infectious Diseases*, 2021.
- [25] D. E. Goin and K. E. Rudolph, “Guns, laws, and causality,” *Epidemiology*, vol. 32, no. 1, pp. 46–9, 2021.
- [26] S. S. Martins, E. Bruzelius, J. A. Stingone, K. Wheeler-Martin, H. Akbarnejad, C. M. Mauro, M. E. Marziali, H. Samples, S. Crystal, C. S. Davis, *et al.*, “Prescription opioid laws and opioid dispensing in us counties: Identifying salient law provisions with machine learning,” *Epidemiology*, vol. 32, no. 6, pp. 868–876, 2021.
- [27] E. C. Matthay, K. Farkas, D. E. Goin, K. E. Rudolph, V. A. Pear, and J. Ahern, “Associations of firearm dealer openings with firearm self-harm deaths and injuries: A differences-in-differences analysis,” *PLoS one*, vol. 16, no. 3, e0248130, 2021.
- [28] M. Cerdá, N. Krawczyk, L. Hamilton, K. E. Rudolph, S. R. Friedman, and K. M. Keyes, “A critical review of the social and behavioral contributions to the overdose epidemic,” *Annual review of public health*, vol. 42, pp. 95–114, 2021.
- [29] S Zimmerman, E. C. Matthay, K. E. Rudolph, D. E. Goin, K Farkas, C Rowe, and J Ahern, “California’s mental health services act and mortality due to suicide, homicide, and acute effects of alcohol: A quasi-experimental study,” *American Journal of Epidemiology*, In Press, 2021.
- [30] A. Nardone, K. E. Rudolph, R. Morello-Frosch, and J. A. Casey, “Redlines and greenspace: The relationship between historical redlining and 2010 greenspace across the united states,” *Environmental health perspectives*, vol. 129, no. 1, p. 017006, 2021.
- [31] K. E. Rudolph and I Diaz, “Efficiently transporting causal direct and indirect effects to new populations under intermediate confounding and with multiple mediators,” *Biostatistics*, In Press, 2020.
- [32] K. E. Rudolph, I. Díaz, N. S. Hejazi, M. J. van der Laan, S. X. Luo, M. Shulman, A. Campbell, J. Rotrosen, and E. V. Nunes, “Explaining differential effects of medication for opioid use disorder using a novel approach incorporating mediating variables,” *Addiction*, vol. 116, no. 8, pp. 2094–2103, 2021.
- [33] K. E. Rudolph, C. Gimbrone, and I. Díaz, “Helped into harm: Mediation of a housing voucher intervention on mental health and substance use in boys,” *Epidemiology*, vol. 32, no. 3, pp. 336–346, 2021.
- [34] K. E. Rudolph, J. Levy, and M. J. van der Laan, “Transporting stochastic direct and indirect effects to new populations,” *Biometrics*, vol. 77, no. 1, pp. 197–211, 2021.

- [35] K. E. Rudolph, J Levy, N. M. Schmidt, E. A. Stuart, and J Ahern, “Using transportability to understand differences in mediation mechanisms across trial sites: Applying a novel estimation approach to a large-scale housing voucher experiment,” *Epidemiology*, vol. 31, no. 4, pp. 523–533, 2020.
- [36] K. E. Rudolph, D. E. Goin, and E. A. Stuart, “The peril of power: A tutorial on using simulation to better understand when and how we can estimate mediating effects.,” *American Journal of Epidemiology*, vol. 189, no. 12, pp. 1559–67, 2020.
- [37] —, “Rudolph et al. respond to “power in mediation analysis” .,” *American Journal of Epidemiology*, vol. 189, no. 12, pp. 1571–2, 2020.
- [38] K. E. Rudolph, O. Sofrygin, and M. J. van der Laan, “Complier stochastic direct effects: Identification and robust estimation,” *Journal of the American Statistical Association*, vol. 116, no. 535, pp. 1254–1264, 2021.
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- [40] I Diaz, N Hejazi, K. E. Rudolph, and M. J. van der Laan, “Non-parametric efficient causal mediation with intermediate confounders,” *Biometrika*, vol. 108, no. 3, pp. 627–641, 2021.
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- [43] D. E. Goin, K. E. Rudolph, and J. Ahern, “Firearm violence and preterm birth: Evidence of stochastic mediation by pregnancy complications and health behaviors,” *Am J Epidemiol*, vol. 189, no. 8, pp. 820–831, 2020.
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- [47] A. L. Nardone, J. A. Casey, K. E. Rudolph, D. Karasek, M. Mujahid, and R. Morello-Frosch, “Associations between historical redlining and birth outcomes from 2006 through 2015 in california,” *PloS one*, vol. 15, no. 8, e0237241, 2020.

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- [51] K. E. Rudolph, A. Shev, D. Paksarian, K. R. Merikangas, D. J. Mennitt, P. James, and J. A. Casey, “Environmental noise and sleep and mental health outcomes in a nationally representative sample of urban us adolescents,” *Environmental Epidemiology*, vol. 3, no. 4, e056, 2019.
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- [53] E. C. Matthay, K. Farkas, K. E. Rudolph, S. Zimmerman, M. Barragan, D. E. Goin, and J. Ahern, “Firearm and nonfirearm violence after operation peacemaker fellowship in richmond, california, 1996–2016,” *American journal of public health*, vol. 109, no. 11, pp. 1605–1611, 2019.
- [54] J. A. Casey, D. E. Goin, K. E. Rudolph, B. S. Schwartz, D. Mercer, H. Elser, E. A. Eisen, and R. Morello-Frosch, “Unconventional natural gas development and adverse birth outcomes in pennsylvania: The potential mediating role of antenatal anxiety and depression,” *Environmental research*, vol. 177, p. 108598, 2019.
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Under Review

- 100. Rudolph KE, Williams NT, Miles CH, Antonelli J, Diaz I. All models are wrong, but which are useful? Estimation of causal effects in randomized and observational studies
- 101. Rudolph KE, Williams NT, Diaz I. Nonparametric estimators of interventional (transported) direct and indirect effects that accommodate multiple mediators and multiple intermediate confounders.
- 102. Rudolph KE, Milazzo F, Williams NT, Venkataramani A, O’Brien R. Has the opening of Amazon fulfillment centers affected demand for SSDI? A research note.
- 103. Rudolph KE, Williams NT, Díaz I. Causal mediation with instrumental variables.
- 104. Rudolph KE, Díaz I. Efficient and flexible estimation of natural mediation effects under intermediate confounding and monotonicity constraints.
- 105. Mayeda ER, Dang KV, Gregorich SE, Mehrotra ML, Keyes KM, Rudolph KE, LeWinn KZ, Mungas D, Glymour MM. Accounting for selection probabilities in dementia research: Are estimates of inequalities similar across weighting schemes?
- 106. Diaz I, Williams NT, Rudolph KE. Efficient and flexible causal mediation with time-varying mediators, treatments, and confounders.
- 107. Castillo-Carniglia A, Rivera-Aguirre A, Jent V, Laqueur HS, Rudolph KE, Ramirez J, Queirolo R, Martins SS, Cerdá M. Impact of cannabis legalization in Uruguay on cannabis, alcohol, and tobacco use among adults
- 108. Zeki Al Hazzouri A, Rudolph KE, Calonico S. Regression Discontinuity Design in the Health and Medical Sciences: A Brief Overview and Practical Guide
- 109. Pamplin JR, Rudolph KE, Susser E, Keyes KM, Bates L. Investigating a paradox: towards better understanding the relationships between race, stress, and depression
- 110. Huang D, Susser E, Rudolph KE, Keyes KM. Depression networks: a systematic review of the network paradigm casual assumptions
- 111. Cerna-Turoff I, Waveley Q, Casey J, Keyes K, Rudolph KE, Malinsky D. Longitudinal exposure to natural hazards and young adults’ anxiety and depression symptoms during the COVID-19 pandemic
- 112. Vo TT, Rudolph KE, Diaz I. Heterogeneity assessment in causal data fusion problems

113. Cook R, Arah O, Humphreys K, Rudolph KE, Korthuis PT. Methods to generalize findings from addiction research to real-world settings

Grants and Fellowships

Current

Design and analysis advances to improve generalizability of clinical trials for treating opioid use disorder (Rudolph and Stuart)

Role on Project: Co-Principal Investigator (Contact PI)

Dates: September 15, 2022 – June 30, 2027

Funding Agency: National Institute on Drug Abuse; R01DA056407

Funding: \$3,110,616 (total)

Description: The major goals of this research are to unite design and analytic strategies to bridge MOUD trial evidence to target populations by: 1) empirically identifying those individuals not represented or under-represented in MOUD trials, and 2) accurately and reliably generalize expected MOUD effects on treatment retention to the adult Medicaid population, with the broad goal of optimizing the generalizability and policy-relevance of future clinical trials.

Role of disability and pain in opioid overdose: mechanism and risk mitigation (Rudolph)

Role on Project: Principal Investigator

Dates: March 1, 2022 – January 31, 2027

Funding Agency: National Institute on Drug Abuse; R01DA053243

Funding: \$3,135,545 (total)

Description: The major goals of this research are to: 1) estimate the unique and joint contributions of physical disability and chronic pain conditions to opioid overdose risk and the extent to which pain management practices mediate these relationships; 2) develop novel statistical methods to transport mediated effects from one state to another, and 3) apply those methods to identify SUD and pain management treatment metrics that, if improved, may reduce both overall overdose risk associated with physical disability and chronic pain and disparities in overdose risk by racial/ethnic-gender subgroup.

Causal mediation analysis with machine learning to understand comparative treatment effects (Diaz, Rudolph)

Role on Project: Co-Principal Investigator

Dates: November 1, 2022 – October 31, 2025

Funding Agency: PCORI

Funding: \$108,305 (subcontract direct costs, year 1)

Description: The major goals of this research are to: 1) develop non-parametric, optimal estimators for mediational heterogeneous direct and indirect effects for longitudinal studies, allowing for common real-world complexities, such as continuous or categorical exposures, multivariate mediators, and multiple timepoints; and 2) develop non-parametric, optimal estimators for complier heterogeneous mediational direct and indirect effects using instrumental variables to adjust for unmeasured confounding.

Mechanisms linking neighborhood poverty to problematic adolescent drug use (Rudolph)

Role on Project: Principal Investigator

Dates: March 15, 2018 – December 31, 2023

Funding Agency: National Institute on Drug Abuse; R00DA042127

Funding: \$745,872 (direct)

Description: The major goals of this research are to: 1) advance understanding of how neighborhood and school act together to influence problematic drug use among adolescents, including how these mechanisms differ across adolescent subgroups and places, and 2) develop a flexible statistical method to predict intervention mechanism effects in new target populations, taking into account population composition.

Harnessing big data and machine learning to learn optimal, individualized dynamic treatment rules to prevent Opioid Use Disorder relapse (Rudolph)

Role on Project: Principal Investigator

Dates: January 1, 2021 – December 31, 2022

Funding Agency: Columbia University, Data Science Institute

Funding: \$150,000 (direct)

Description: Pharmacologic treatment of opioid use disorder (OUD) is complicated by the likely absence of a one-size-fits-all best approach; rather, “optimal” dose and dose adjustment are hypothesized to depend on person-level factors, including factors that change over time, reflecting how well the individual is responding to treatment. We propose to use harmonized data from multiple existing clinical trials with natural variability in OUD medication dose adjustments over time to 1) learn optimal dosing strategies and 2) estimate the extent to which such optimal dosing strategies could reduce risk of treatment drop-out and relapse.

Using data science and causal inference to estimate the community-level impact of police behavior on psychological distress: the case of no-knock search warrants in Chicago (Torrats-Espinos)

Role on Project: Co-Investigator

Dates: January 1, 2022 – December 31, 2022

Funding Agency: Columbia University, Data Science Institute

Funding: \$25,000 (direct)

Description: We propose to create a novel linkage of police administrative records that capture highly detailed information on all search warrants that the Chicago Police Department executed 2012-2020. Harnessing these data, we will document spatial and temporal patterns of search warrant use across Chicago neighborhoods.

Interventions to reduce opioid overdose: transportability of evidence-based approaches through agent-based modeling (Rudolph)

Role on Project: Principal Investigator

Dates: August 1, 2021 – July 31, 2024

Funding Agency: Centers for Disease Control and Prevention; R49CE003094

Funding: \$483,947 (direct)

Description: The goal of this research is to model how interventions affect opioid overdose and to

transport these models across US communities.

Building an unbiased pooled cohort for the study of lifecourse social and vascular determinants of Alzheimers Disease and Related Disorders (Zeki Al Hazzouri)

Role on Project: Co-Investigator

Dates: 04/01/2021 – 03/31/2026

Funding Agency: NIA; R01AG072681

Funding: \$611,850 (year 1, direct)

Description: This study will combine eight data sources on lifecourse social and vascular risk factors for Alzheimer’s Disease and Related Dementias (ADRD) to create a large and diverse synthetic birth cohort (age 0 to 90) for research on ADRD.

Evaluation of social policies to reduce intimate partner violence and improve child health in low- and middle-income countries (Richardson)

Role on Project: Co-Mentor

Dates: 04/01/2021 – 03/31/2023

Funding Agency: NICHD; K99HD104896-01

Funding: \$121,150

Description: We will evaluate the effect of social policies that protect and support women on reductions in intimate partner violence (IPV) and improvements in the health of their children under 5 years of age in LMICs.

SOAR: Smartphones for Opioid Addiction Recovery Role on Project: Sub-Award PI

Dates: 08/15/2021 – 05/31/2026

Funding Agency: NIDA; R01DA054220

Funding: \$23,541 (subaward, direct costs, year 1)

Description: We propose to: (1) test the hypothesis that our battery can be used to trigger dose adjustments before reuse events and that this has the effect of reducing reuse and relapse in medication-based OUD treatment; (2) examine the willingness of clinicians to employ this strategy; and (3) examine the cost-effectiveness of these adjustments.

The Impact of Drought on Arsenic Exposure and Cardiometabolic Outcomes in a Rural Aging Population

Role on Project: Sub-Award PI

Dates: 08/15/2021 – 05/31/2026

Funding Agency: NIEHS; R01ES032612

Funding: \$28,721 (subaward, direct costs, year 1)

Description: This community-engaged project in San Luis Valley, Colorado seeks to identify cardiometabolic disease risks posed by drought through arsenic for elderly Hispanic and non-Hispanic white adult men and women, through interdisciplinary team science bringing together hydrogeological and epidemiological modeling.

The contribution of adult child socio-economic status to parents’ risk and outcomes of Alzheimer’s disease and related dementias (ADRDs) in cross-national settings

Role on Project: Sub-Award PI

Dates: 09/01/2021 – 08/31/2026

Funding Agency: NIA; R01AG072448

Funding: \$3,706,808 (total award amount, including indirect costs)

Description: The overall goal of this proposal is to evaluate the “upward” intergenerational influence of adult child educational attainment on older parents’ cognitive decline, dementia risk, and outcomes after dementia onset using global population-based data and applying quasi-experimental and advanced epidemiologic methods for causal inference and mediation.

Historical social and environmental determinants of memory decline and dementia among U.S. older adults.

Role on Project: Co-investigator

Dates: 07/01/2021 – 06/30/2026

Funding Agency: NIA; R01AG074359-01

Funding: \$376,408

Description: Evaluate the effects of early-life community-level social and environmental factors on late-life AD/DRD and the extent to which these factors contribute to racial disparities on AD/DRD in a nationally representative sample.

A nationwide case-control study of firearm violence prevention tactics and policies in K-12 schools

Role on Project: Co-investigator

Dates: 07/01/2021 – 06/30/2026

Funding Agency: NICHD; R01HD103894

Funding: \$3,924,827

Description: A nationwide study of the impact of school safety tactics/policies on school shootings and student disciplinary actions in order to reduce gun violence in K-12 public schools, create safe learning environments, and promote healthy experiences for children across disparate school communities.

Antimicrobial Resistant E.coli before and after CA SB 27(ARES): A natural experiment (Tartoff)

Role on Project: Co-Investigator

Dates: May 9, 2017 – April 30, 2022

Funding Agency: National Institute of Environmental Health Sciences; R01AI130066

Funding: \$109,388

Description: The major goal of this project is to estimate the extent to which a statewide policy to reduce antibiotic use in livestock production affects antibiotic-resistant infections in humans. My responsibility will be to advise on the statistical design and analysis for one of the aims.

Community violence and disparities in maternal and infant health: impacts and mechanisms (Ahern)

Role on Project: Co-Investigator, Subsite PI

Dates: March 1, 2020 – February 28, 2024

Funding Agency: National Institute on Child Health; R01HD098138

Funding: \$87,012

Description: The goal of this project is to determine the complex mechanism by which the community environment may shape maternal and infant health disparities.

Causal mediation methods for studying mechanisms in mental health (Stuart)

Role on Project: Consultant

Dates: April 1, 2018 – March 31, 2022

Funding Agency: National Institute of Mental Health; R01MH115487

Funding: \$32,000

Description: The goals of the proposed project are to extend causal mediation methods to common data structures in mental health research, and to disseminate the existing and new methods to mental health researchers, including providing guidance to facilitate adoption and appropriate use.

Examining the synergistic effects of cannabis and prescription opioid policies on chronic pain, opioid prescribing, and opioid overdose (Cerdeira, Martins)

Role on Project: Co-Investigator

Dates: January 1, 2019 – November 30, 2023

Funding Agency: National Institute on Drug Abuse

Funding: \$94,847

Description: The goal of this project is to examine the extent to which various measures of opioid use, abuse, overdose, and disorders are affected by the enactment of more restrictive prescription opioid policies and less restrictive cannabis laws.

Completed Fellowships and Grants

Mechanisms underlying differential effects of neighborhood poverty on problematic adolescent drug use (Rudolph)

Role on Project: Principal Investigator

Dates: August 1, 2016 – November 30, 2017

Funding Agency: National Institute on Drug Abuse; K99DA042127

Funding: \$308,828

Description: The major goals of this research are to: 1) advance understanding of how neighborhood and school act together to influence problematic drug use among adolescents, including how these mechanisms differ across adolescent subgroups and places, and 2) develop a flexible statistical method to predict intervention mechanism effects in new target populations, taking into account population composition.

The health and social consequences of national marijuana legalization (Cerdeira)

Role on Project: Co-Investigator

Dates: July 1, 2016 – June 30, 2020

Funding Agency: National Institute on Drug Abuse; R01DA040924

Funding: \$260,182

Description: This is a pre/post commercial and non-commercialization (regulation) of marijuana that compares changes in marijuana use, use of other drugs, and increased fatalities between inter-

vention and control sites.

Preventing firearm violence: An evaluation of urban blight removal in high risk communities (Kagawa)

Role on Project: Co-Investigator, Subsite PI

Dates: January 1, 2018 – December 31, 2020

Funding Agency: National Institute of Justice; 2017-IJ-CX-0021

Funding: \$351,523

Description: Longitudinal, observational study to identify the impact that demolishing or rehabilitating vacant and decaying buildings in urban areas has on firearm violence and other crimes and to examine the heterogeneity of effects by neighborhood and property type in order to estimate the context in which these property interventions may have the most impact on firearm violence and other crimes.

Robert Wood Johnson Foundation Health & Society Scholar

Dates: September 1, 2014 – July 31, 2016

Funding Agency: Robert Wood Johnson Foundation

Site: University of California, San Francisco and University of California, Berkeley

Drug Dependence Epidemiology Training Fellow

Dates: February 16, 2014 – August 31, 2014

Funding Agency: National Institute on Drug Abuse

Site: Johns Hopkins University, Bloomberg School of Public Health, Department of Mental Health

Sommer Scholar

Dates: September 1, 2012 – February 15, 2014

Funding Agency: Johns Hopkins University, Bloomberg School of Public Health

Site: Johns Hopkins University, Bloomberg School of Public Health, Department of Epidemiology

Intramural Research Training Award Fellow

Dates: September 1, 2010 – August 31, 2012

Funding Agency: National Institute of Mental Health

Site: Johns Hopkins University, Bloomberg School of Public Health, Department of Epidemiology

Awards

2022	Article of the Year— <i>American Journal of Epidemiology</i>
2022 - present	Editorial Board Member— <i>Epidemiology</i>
2022 - present	Editorial Board Member— <i>Epidemiologic Methods</i>
2022	Data Science Institute Seeds Funds Recipient—Columbia University
2021	Exemplary Reviewer in 2020— <i>Epidemiology</i>
2021	CHOSEN Pilot Award—Columbia University
2021	Brian MacMahon Early Career Award—Society for Epidemiologic Research
2021	Calderone Award for Junior Faculty—Columbia University
2021	Data Science Institute Seeds Funds Recipient—Columbia University
2020	Reviewer of the Year, 2019— <i>American Journal of Epidemiology</i>
2020	Co-Editor— <i>Epidemiologic Reviews</i> , Epidemiologic Methods
2018	Lilienfeld Postdoctoral Paper Award—Society for Epidemiologic Research
2017	Faculty Scholar, Center for the Advancement of Multicultural Perspectives on Science, University of California, Davis
2014	Student Paper Award—American Statistical Association, Social Statistics/Government/ Survey Research Methods Sections
2008	Delta Omega Honor Society—Johns Hopkins School of Public Health

Presentations and Posters (first author only)

- 2022 Rudolph KE, Williams NT, Díaz I. Causal mediation analysis with instrumental variables. Oral presentation at the American Causal Inference Conference, Berkeley, CA.
- 2022 Rudolph KE. Discussant for: Housing and Health: Contemporary Issues and a Call for Research and Action. At the Society for Epidemiologic Research, Chicago, IL.
- 2022 Rudolph KE, Gimbrone C, Matthay EC, Díaz I, Davis CS, Keyes K, Cerdá M. When effects cannot be estimated: redefining estimands to understand the effects of naloxone access laws. Oral presentation at the Society for Epidemiologic Research, Chicago, IL.
- 2022 Rudolph KE, Diaz I, Hejazi N. Causal Mediation: Modern Methods for Path Analysis Workshop at the Society for Epidemiologic Research, Chicago, IL.
- 2022 Rudolph KE. Robust and efficient nonparametric estimation of transported total causal effects and meditational causal effects. Oral Presentation at the Conference on Econometrics and Statistics, Kyoto, Japan.
- 2022 Rudolph KE. Under-representation of key demographic groups in opioid use disorder trials. Oral Presentation at the Society for Clinical Trials, San Diego, CA.
- 2021 Rudolph KE, Diaz I, Hejazi N. Causal Mediation: Modern Methods for Path Analysis Workshop at the Society for Epidemiologic Research, San Diego, CA. (Online due to Covid-19).
- 2021 Rudolph KE, Williams N, Miles C, Diaz I. All models are wrong, but does it matter? On the bias of parametric estimators of causal effects in randomized and observational studies. Oral presentation at the Society for Epidemiologic Research, San Diego, CA. (Online due to Covid-19).
- 2020 Rudolph KE, Diaz I, Hejazi N, van der Laan MJ, Luo SX, Shulman M, Rotrosen J, Nunes EV. Using a flexible, efficient, nonparametric estimator of direct and indirect effects to explain differences in opioid treatment responsivity. Poster presentation at the Society for Epidemiologic Research, Boston, MA. (Online due to Covid-19).
- 2020 Rudolph KE, Diaz I, Hejazi N, van der Laan MJ, Luo SX, Shulman M, Rotrosen J, Nunes EV. Using a flexible, efficient, nonparametric estimator of direct and indirect effects to explain differences in opioid treatment responsivity. Oral presentation at the American Causal Inference Conference, Austin, TX. (Cancelled due to Covid-19).
- 2020 Rudolph KE, Kinnard EN, Rivera Aguirre AE, Goin DE, Feelemyer J, Fink D, Cerda M. The relative economy and drug overdose deaths. Poster presentation at the American Psychopathological Association Meeting, New York, NY.
- 2019 Rudolph KE, Levy J, van der Laan MJ. Transporting stochastic direct and indirect effects to new populations. Poster presentation at the Society for Epidemiologic Research Conference, Minneapolis, MN.
- 2018 Rudolph KE, Sofrygin O, van der Laan MJ. Estimation of direct effects in an instrumental variable setting: a proposed method and example estimating effects of a randomized housing trial on adolescent substance use. Oral presentation at the Society for Epidemiologic Research Conference, Baltimore, MD.
- 2017 Rudolph KE, Sofrygin O, van der Laan MJ. Robust and flexible estimation of stochastic mediation effects: a proposed method and example in a randomized trial setting. Oral presentation at the Society for Epidemiologic Research Conference, Seattle, WA.

- 2016 Rudolph KE. Understanding site differences in the effects of the Moving to Opportunity Study on adolescent outcomes. Oral presentation at the Joint Statistical Meetings, Chicago, IL.
- 2016 Rudolph, KE. Contextual drivers of firearm violence. Oral presentation at the Society for Epidemiologic Research Conference, Miami, FL.
- 2016 Rudolph KE. Understanding site differences in the effects of the Moving to Opportunity Study on adolescent outcomes. Oral presentation at the Robert Wood Johnson Foundation Health & Society Scholars Conference, New Orleans, LA.
- 2015 Rudolph KE. Transportability in Encouragement-Design Interventions. Oral presentation at the Robert Wood Johnson Foundation Health & Society Scholars Conference, Chapel Hill, NC.
- 2015 Rudolph KE, van der Laan MJ. Transportability in Encouragement-Design Interventions. Poster at the Society for Prevention Research Conference, Washington, DC.
- 2015 Rudolph KE, Sanchez BN, Stuart EA, Greenberg B, Fujishiro K, Wand GS, Shrager S, Seeman T, Diez Roux AV, Golden SH. Association between job strain and aspects of the cortisol diurnal cycle: the Multi-Ethnic Study of Atherosclerosis. Poster at the Society for Epidemiologic Research Conference, Denver, CO.
- 2014 Rudolph KE, Diaz I, Rosenblum M, Stuart EA. Estimating population treatment effects from a survey sub-sample. Oral presentation as part of topic-contributed session Fresh Perspectives in Causal Inference II at the Joint Statistical Meetings, Boston, MA.
- 2013 Rudolph KE, Wand GS, Stuart EA, Glass TA, Marques AH, Duncko R, Merikangas KR. The association between cortisol characteristics and neighborhood disadvantage in a population-based sample of U.S. adolescents. Poster at the Society for Epidemiologic Research Conference, Boston, MA.
- 2012 Rudolph KE, Stuart EA, Glass TA, Merikangas, KR. Using propensity score subclassification to examine the association between neighborhood disadvantage and adolescent mental health. Poster at the Society for Epidemiologic Research Conference, Minneapolis, MN.
- 2012 Rudolph KE, Glass TA, Schwartz BS. Neighborhood psychosocial hazards and binge drinking among older adults. Poster at the Society for Epidemiologic Research Conference, Minneapolis, MN.
- 2010 Rudolph K, Gabor V, Morgan R. Environmental supports and barriers to physical activity in D.C. childcare centers. Oral presentation at the Annual American Public Health Association Conference, Denver, CO.

Invited Talks

- 2023 Two strategies for reducing opioid use disorder relapse, New York University, Department of Population Health, New York, New York.
- 2022 Transporting intervention effects across sites, Wake Forest University, Department of Biostatistics and Data Science, Winston-Salem, NC (online).
- 2022 Using transportability estimators to understand reasons for differences in intervention effects across sites, Princeton University, Notestein Seminar Series at the Office of Population Research, Princeton, NJ (in person).
- 2022 Robust and efficient nonparametric estimation of transported total causal effects and mediational causal effects, Drexel University, Department of Epidemiology and Biostatistics, Philadelphia, PA (online due to Covid-19).
- 2022 Two strategies for reducing opioid use disorder relapse, Johns Hopkins University, Department of Epidemiology, Translational Epidemiology Seminar Series, Baltimore, MD (online due to Covid-19).
- 2021 Towards understanding one-size-does-not-fit-all nuances. University of Massachusetts Amherst (online due to Covid-19).
- 2021 Early Career Award. Society for Epidemiologic Research Plenary, San Diego, CA (online due to Covid-19).
- 2021 Causal mediation analysis: review of approaches and application to explain differences in opioid treatment responsivity. Environmental and Occupational Epidemiology course. Emory University, Atlanta, GA (online due to Covid-19).
- 2020 Transporting direct and indirect effects to new populations. PRIISM (Practice and Research at the Intersection of Information, Society, and Methodology) Seminar Series, New York University, New York, NY (online due to Covid-19).
- 2020 Causal mediation analysis: review of approaches and application to explain differences in opioid treatment responsivity. Diabetes LEAD Network Meeting, Drexel University, Johns Hopkins University, New York University, and University of Alabama, New York, NY (online due to Covid-19).
- 2019 The relative economy and drug overdose deaths. Department of Epidemiology Seminar Series. Brown University, Providence, RI.
- 2019 Firearm violence and policy evidence, Pediatric Grand Rounds, UCSF Zuckerberg San Francisco General Hospital, San Francisco, CA.
- 2019 Improving prediction of intervention effects across populations, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD.
- 2018 Bringing Context into Focus—Transportability Framework on the Effect of Housing, University of California, San Francisco, Symposium: Closing the Gap between Rigor and Relevance: Methodological Opportunities for Implementation Science to Address the HIV Epidemic, San Francisco, CA.
- 2018 Improving prediction of intervention effects across populations, Columbia Mailman School of Public Health, New York, NY.
- 2018 Improving prediction of intervention effects across populations, New York University School of Medicine, New York, NY.

- 2018 Improving prediction of intervention effects across populations, University of California, San Francisco, Department of Epidemiology and Biostatistics, San Francisco, CA.
- 2018 Firearm violence and policy evidence, Grand Rounds, UCSF Benioff Children’s Hospital, Oakland, CA.
- 2018 Improving prediction of intervention effects across populations, University of California, Berkeley School of Public Health, Berkeley, CA.
- 2017 Better neighborhoods are harmful? Examining effect heterogeneity and mediation to understand puzzling results of the Moving to Opportunity Experiment, University of California, Davis, Graduate Group in Epidemiology, Davis, CA.
- 2017 Better neighborhoods are harmful? Examining effect heterogeneity and mediation to understand puzzling results of the Moving to Opportunity Experiment, University of California, San Francisco, NIDA T32 Training Program in Substance Abuse Treatment and Services Research, San Francisco, CA.
- 2015 Guns, cities, and statistics: Accurate statistical methods to inform policies to prevent violence and risk behaviors, University of California, Davis, School of Medicine, Department of Emergency Medicine, Sacramento, CA.
- 2014 Neighborhood Disadvantage and Cortisol, Drexel School of Public Health, Department of Epidemiology and Biostatistics, Philadelphia, PA.

Campus Talks

- 2022 Two strategies for reducing opioid use disorder relapse, Columbia University, Department of Psychiatry, Addiction Fellows Lecture Series, New York, NY.
- 2021 Understanding one-size-does-not-fit-all nuances in substance use research, Columbia University, Department of Epidemiology, Chronic Disease Epidemiology Seminar Series, New York, NY.
- 2021 Understanding one-size-does-not-fit-all nuances, Columbia University, Columbia Political Methodology Colloquium, New York, NY.
- 2021 Longitudinal G-Computation and its Practical Use, Columbia University, Department of Epidemiology, Applications of Epidemiologic Research Methods II course, New York, NY.
- 2020 Explaining differential effects of medication for opioid use disorder using a novel approach incorporating mediating variables, Columbia University, Department of Psychiatry, Addiction Fellows Lecture Series, New York, NY.
- 2020 Understanding reasons for differences in intervention effects across sites, Columbia University, Department of Biostatistics, Departmental Seminar Series, New York, NY.
- 2020 Introduction to Causal Mediation Analysis, CTSA Biostatistics, Epidemiology and Research Design (BERD) Biostatistics in Action: Tips for Clinical Researchers Spring 2020 Lecture Series, New York, NY.
- 2020 Longitudinal G-Computation and its Practical Use, Columbia University, Department of Epidemiology, Applications of Epidemiologic Research Methods II course, New York, NY.
- 2020 Causal mediation analysis: review of approaches and application to explain differences in opioid treatment responsivity, Columbia University, Psychiatric Epidemiology Training Program Seminar Series, New York, NY.
- 2019 Transporting Stochastic Direct and Indirect Effects to New Populations, Columbia University, Causal Inference Learning Group, New York, NY.
- 2017 Causal Mediation Analysis, University of California, Berkeley School of Public Health, Causal Inference II Course, Berkeley, CA.
- 2016 Synthetic control group approach for estimating policy effects, University of California, San Francisco, Methods for Evaluating Social Policy Effects on Health, San Francisco, CA.
- 2015 What works in Boston may not work in Los Angeles: Understanding site differences and generalizing effects from one site to another, University of California, Berkeley School of Education, the Berkeley Evaluation and Assessment Research Center, Berkeley, CA.
- 2015 Applying Targeted Maximum Likelihood Estimation, University of California, San Francisco, Doctoral Seminar in Epidemiology and Biostatistics, San Francisco, CA.
- 2015 Instrumental Variables, University of California, Berkeley School of Public Health, Advanced Epidemiology Seminar, Berkeley, CA.

Selected Press

The following articles were associated with:

Rudolph KE, Stuart EA, Vernick JS, Webster DW. Association between Connecticut's permit-to-purchase handgun law and homicides. *Am J Public Health*. 2015; 105(8):e49-54.

- The Washington Post: <http://www.washingtonpost.com/blogs/govbeat/wp/2015/06/12/gun-killings-fell-by-40-percent-after-connecticut-passed-this-law/>
- The New Yorker: <http://www.newyorker.com/news/daily-comment/an-honest-comedian-on-guns?intcid=mod-latest>
- CNN: <http://www.cnn.com/2015/06/12/us/gun-law-homicide-drop/>
- Newsweek: <http://www.newsweek.com/handgun-law-connecticut-helped-decrease-gun-homicides-342363>
- U.S. News and World Report: <http://health.usnews.com/health-news/articles/2015/06/11/tough-handgun-law-linked-to-lower-gun-related-murder-rate-in-connecticut>
- Reddit's front page: http://www.reddit.com/r/science/comments/39pazx/connecticuts_permit_to_purchase_law_in_effect_for/
- The Baltimore Sun: <http://www.baltimoresun.com/news/opinion/readersrespond/bs-ed-handgun-licensing-20150611-story.html> and <http://www.baltimoresun.com/news/maryland/politics/blog/bs-md-van-hollen-gun-20150611-story.html>
- San Francisco Chronicle: <http://www.sfgate.com/news/article/Connecticut-gun-permit-law-prompts-federal-6321880.php>
- Philadelphia Inquirer: <http://www.philly.com/philly/blogs/attytood/And-then-theres-guns.html>
- WNPR: <http://wnpr.org/post/new-analysis-attempts-quantify-impact-handgun-regulations-state#stream/0>

Professional Experience

Grant Review Experience

- | | |
|------|--|
| 2022 | Scientific Reviewer - Brief interventions for adolescent alcohol use
PCORI |
| 2022 | Scientific Reviewer - Interventions Targeting Mental Health in Individuals with Intellectual and Developmental Disabilities
PCORI |

Teaching Experience

2022 - Present	Instructor - Applying the causal roadmap to single timepoint and longitudinal data Department of Epidemiology Columbia University, New York, NY
2021 - Present	Instructor - Introduction to Causal Inference with Longitudinal Data EpiSummer Columbia University, New York, NY
2019	Instructor - Critical Thinking in Epidemiology Epidemiology Graduate Group University of California, Davis, Davis, CA
2017	Instructor - Epidemiology Journal Club for Doctoral Students Division of Epidemiology University of California, Berkeley School of Public Health, Berkeley, CA
2013	Teaching assistant - Spatial Analysis and GIS I Department of Biostatistics Johns Hopkins School of Public Health, Baltimore, MD
2013	Teaching assistant - Spatial Analysis and GIS II Department of Biostatistics Johns Hopkins School of Public Health, Baltimore, MD
2011-2013	Teaching assistant - Fundamentals of Epidemiology and Biostatistics Department of Epidemiology Johns Hopkins School of Public Health, Baltimore, MD
2012	Teaching assistant - Methodological Challenges in Epidemiological Research Department of Epidemiology Johns Hopkins School of Public Health, Baltimore, MD
2012	Teaching assistant - Doctoral Seminar in Epidemiology Department of Epidemiology Johns Hopkins School of Public Health, Baltimore, MD

Advising (thesis and dissertation only), Columbia University

2023 - present	Harsh Parikh	Postdoctoral co-advisor (with Liz Stuart)	
2023 - present	Brian Gilbert	Postdoctoral co-advisor (with Ivan Diaz)	
2021 - present	Ryan Andrews	Department of Psychiatry	K23 Advisor
2020 - 2022	Robin Richardson	Epidemiology	Postdoctoral K99 Advisor
2021 - present	Ilan Ceran-Turoff	Environmental Health Sciences	Postdoctoral Advisor
2020 - present	Alex Perlmutter	Epidemiology	PhD Dissertation Advisor
2021 - present	Anna Krasnova	Epidemiology	PhD Dissertation Advisor
2021 - present	Catherine Gimbrone	Epidemiology	PhD Advisor
2020 - 2021	Debbie Huang	Epidemiology	PhD Dissertation Committee
2020 - 2021	Byoungjun Kim	Epidemiology	PhD Dissertation Committee
2020 - present	Erik Jorgenson	Epidemiology	PhD Dissertation Committee
2020 - 2020	John Pamplin	Epidemiology	PhD Dissertation Committee
2022 - present	Yunlin Zhou	Biostatistics	Masters Practicum
2021 - 2022	Hannah Totte	Epidemiology	Masters Thesis Advisor
2021 - 2022	Xinyan Zhou	Epidemiology	Masters Practicum, Masters Thesis Advisor
2021 - 2021	Matthew Russell	Epidemiology	Masters Practicum
2020 - 2021	Yue Lai	Biostatistics	Masters Practicum
2020 - 2021	Riona Morgan	Epidemiology	Masters Thesis Advisor
2019 - 2020	Matthew Curran	Epidemiology	Masters Thesis Advisor
2019 - 2020	Alexis Colangelo	Epidemiology	Masters Thesis Advisor

Advising (thesis and dissertation only), External Member

2022 - present	Allison Perry	PhD Dissertation Committee	New York University
2020 - present	Daniel Carter	PhD Dissertation Committee	London School of Hygiene and Tropical Medicine
2020 - 2021	Madison Wempe	MSc Project	London School of Hygiene and Tropical Medicine

Professional Activities

National Committees

2022 - present	Editorial Board Member, <i>Epidemiology</i>
2022 - present	Editorial Board Member, <i>Epidemiologic Methods</i>
2020 - 2021	Co-Editor of issue on methods in Epidemiology, Epidemiology Reviews
2019 - present	Society for Epidemiologic Research Education Committee

University Committees and Administrative Roles

2020 - present	Epidemiology Doctoral Admissions Committee
2020 - present	Epidemiology PhD Committee
2020 - present	Co-Director of Research, Columbia Center for Injury Science and Prevention

Reviewer

2022-present	JAMA Psychiatry
2022-present	Drug and Alcohol Dependence Reports
2021-present	Journal of the Royal Statistical Society, Series B
2021-present	Canadian Medical Association Journal
2020-present	Biometrics
2020-present	Journal of Statistical Software
2020-present	Annals of Applied Statistics
2020-present	Proceedings of the National Academy of Sciences
2020	Alcoholism: Clinical and Experimental Research
2020-present	Observational Studies
2019-present	Journal of the American Statistical Association
2019	Nature: Human Behavior
2019	Epidemiologic Methods
2019	BMJ
2019-present	Drug and Alcohol Dependence
2016-present	Epidemiology
2014-present	American Journal of Epidemiology
2014-present	PLOS ONE
2015-2017	Social Science & Medicine
2015	Journal of Clinical Epidemiology
2015	Ethnicity and Health
2015	Epidemiology and Psychiatric Sciences
2014	Journal of Youth and Adolescence
2014	BMC Public Health
2014	Environment International
2013 - present	Journal of Epidemiology and Community Health

Non-Academic

09/2010-12/2010

Consultant

Altarum Institute, Washington, DC

Designed program evaluations for the State of Michigan's Communities Putting Prevention to Work grant programs.

Conducted quantitative data analysis for several CDC-funded projects, including ACHIEVE and the State of Michigan's School Nutrition Standards grant program.

06/2008-08/2010

Policy Associate

Altarum Institute, Washington, DC

Project Management: Managed program evaluation projects contracted by the Health Resources and Services Administration (HRSA) of HHS.

Evaluation Design: Designed program evaluations for the Maternal and Child Health Bureau's Early Childhood Comprehensive Systems Initiative, Texas' Medicaid case management program, HRSA's Bureau of Health Professions' minority health professions grant program, and Michigan's Building Healthy Communities grant program.

Qualitative data analysis: Analyzed data obtained from focus groups, in-depth interviews, and data abstraction using NVivo qualitative analysis software.

Quantitative data analysis: Led teams in analysis of primary and secondary data using STATA and SAS statistical software.

Report writing: Co-authored several reports to HHS' Office of Women's Health, HRSA's Bureau of Health Professions and Bureau of Healthcare Systems, and the Maternal and Child Health Bureau.

08/2007-01/2008

Intern

Howard County Health Department, Columbia, MD

Developed policies for health care access program to provide affordable, comprehensive health care coverage for all Howard County residents.

01/2008

Field Worker

Johns Hopkins Center for American Indian Health, Albuquerque, NM

Field work as a Family Health Liaison for a teen mother health behavior intervention on Navajo and Apache reservations.

06/2005-06/2007

Staff Scientist

Merck & Co. Inc., West Point, PA

Supported demonstration and licensing of Varicella manufacturing facility.

Provided technical and biological support for Varicella processing.

Project and People Management: Led project to re-design sterility testing.