

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] D. E. Goin and K. E. Rudolph, “Guns, laws, and causality,” *Epidemiology*, vol. 32, no. 1, pp. 46–9, 2021.
- [2] M Cerda, N Krawczyk, L Hamilton, K. E. Rudolph, S Friedman, and K. M. Keyes, “A critical review of the social and behavioral contributions to the overdose crisis,” *Annual Reviews of Public Health*, vol. 42, In Press, 2021.
- [3] 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.
- [4] A. L. 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*, In Press, 2021.
- [5] 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.
- [6] K. E. Rudolph, I Diaz, N Hejazi, M. J. van der Laan, S. X. Luo, M Shulman, A Campbell, J Rotrosen, and E. V. Nunes, “Explaining differential effects on opioid use disorder treatment using a novel approach incorporating mediating variables,” *Addiction*, In Press, 2020.
- [7] K. E. Rudolph, C Gimbrone, and I Diaz, “Helped into harm: Mediation of the effect of a housing voucher intervention on long-term mental health and substance use outcomes in adolescent boys,” *Epidemiology*, In Press, 2020.
- [8] K. E. Rudolph, J Levy, and M. J. van der Laan, “Transporting stochastic direct and indirect effects to new populations,” *Biometrics*, In Press, 2020.
- [9] 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.
- [10] 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.

- [11] —, “Rudolph et al. respond to “power in mediation analysis”.”, *American Journal of Epidemiology*, vol. 189, no. 12, pp. 1571–2, 2020.
- [12] 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, Theory & Methods*, In Press, 2020.
- [13] K. E. Rudolph, E. N. Kinnard, A. E. Rivera Aguirre, D. E. Goin, J Feelemyer, D Fink, and M Cerda, “The relative economy and drug overdose deaths,” *Epidemiology*, vol. 31, no. 4, pp. 551–558, 2020.
- [14] I Diaz, N Hejazi, K. E. Rudolph, and M. J. van der Laan, “Non-parametric efficient causal mediation with intermediate confounders,” *Biometrika*, In Press, 2020.
- [15] P. M. Reeping, C. N. Morrison, K. E. Rudolph, M. K. Goyal, and C. C. Branas, “A comparison and analysis of seven gun law permissiveness scale,” *Injury Epidemiology*, vol. 8, no. 1, pp. 1–8, 2021.
- [16] J. M. Torres, O Sofrygin, K. E. Rudolph, U. A. Mitchell, M. Z. Sharif, R Wong, and M. M. Glymour, “Associations between spousal caregiving and health among older adults in mexico: A targeted estimation approach,” *International Journal of Geriatric Psychiatry*, In Press, 2020.
- [17] 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.
- [18] E. L. Ogburn, K. E. Rudolph, R Morello-Frosch, A Khan, and J. A. Casey, “A warning about using model predictions for epidemiologic inquiry,” *Am J Epidemiol*, In Press, 2020.
- [19] D Paksarian, K. E. Rudolph, E. K. Stapp, G. P. Dunster, J. He, D Mennitt, S Hattar, J. A. Casey, P James, and K. R. Merikangas, “Association of outdoor artificial light at night with mental disorders and sleep patterns among u.s. adolescents,” *JAMA Psychiatry*, vol. 77, no. 12, pp. 1266–1275, 2020.
- [20] C. C. Branas, P Reeping, and K. E. Rudolph, “Beyond laws: Innovative interventions to reduce gun violence in the united states.”, *JAMA Psychiatry*, In Press, 2020.
- [21] 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.
- [22] H Laqueur, A Rivera, A Shev, A Castillo-Carniglia, K. E. Rudolph, J Ramirez, S Martins, and M Cerda, “The impact of cannabis legalization in uruguay on adolescent cannabis use.”, *International Journal of Drug Policy*, vol. 80, p. 102748, 2020.
- [23] J. M. Torres, O Sofrygin, K. E. Rudolph, R Wong, M. N. Haan, and M. M. Glymour, “Adult child us migration status and cognitive decline among older parents who remain in mexico.”, *American Journal of Epidemiology*, vol. 189, no. 8, pp. 761–769, 2020.

- [24] I Schmid, K. E. Rudolph, T Nguyen, H Hong, M Seamans, B Ackerman, and E. A. Stuart, “Comparing the performance of statistical methods that generalize effect estimates from randomized controlled trials to much larger target populations.,” *Communications in Statistics—Simulation and Computation*, In Press, 2020.
- [25] 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.
- [26] R. M. Kagawa, V. A. Pear, K. E. Rudolph, K. M. Keyes, M. Cerdá, and G. J. Wintemute, “Distress level and daily functioning problems attributed to firearm victimization: Sociodemographic specific responses,” *Annals of Epidemiology*, vol. 41, pp. 35–42, 2020.
- [27] 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.
- [28] 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.
- [29] J. M. Torres, K. E. Rudolph, O. Sofrygin, R. Wong, L. C. Walter, and M. M. Glymour, “Having an adult child in the united states, physical functioning, and unmet needs for care among older mexican adults,” *Epidemiology*, vol. 30, no. 4, pp. 553–560, 2019.
- [30] B. Ackerman, I. Schmid, K. E. Rudolph, M. J. Seamans, R. Susukida, R. Mojtabai, and E. A. Stuart, “Implementing statistical methods for generalizing randomized trial findings to a target population,” *Addictive behaviors*, vol. 94, pp. 124–132, 2019.
- [31] R. M. Kagawa, D. S. Gary, G. J. Wintemute, K. E. Rudolph, V. A. Pear, K. Keyes, and M. Cerdá, “Psychiatric disorders and gun carrying among adolescents in the united states,” *Journal of pediatrics*, vol. 209, pp. 198–203, 2019.
- [32] J. P. Schleimer, A. E. Rivera-Aguirre, A. Castillo-Carniglia, H. S. Laqueur, K. E. Rudolph, H. Suárez, J. Ramirez, N. Cadenas, M. Somoza, M. V. Brasesco, *et al.*, “Investigating how perceived risk and availability of marijuana relate to marijuana use among adolescents in argentina, chile, and uruguay over time,” *Drug and alcohol dependence*, 2019.
- [33] K. Farkas, E. C. Matthay, K. E. Rudolph, D. E. Goin, and J. Ahern, “Mental and substance use disorders among legal intervention injury cases in california, 2005–2014,” *Preventive medicine*, vol. 121, pp. 136–140, 2019.
- [34] T. Benmarhnia and K. E. Rudolph, “A rose by any other name still needs to be identified (with plausible assumptions),” *International journal of epidemiology*, 2019.
- [35] S. A. Berkowitz, K. E. Rudolph, and S Basu, “Detecting anomalies among practice sites within multi-center trials: An application of transportability methods to the topcat and accord bp trials,” *Circulation*, In press, 2019.

- [36] E. C. Matthay, K. E. Rudolph, D. E. Goin, K. Farkas, J. Skeem, and J. Ahern, “Within-community variation in violence and risk of self-harm in california: A population-based case-crossover study,” *Epidemiology*, vol. 30, no. 2, e5–e7, 2019.
- [37] K. E. Rudolph, D. E. Goin, D. Paksarian, R. Crowder, K. R. Merikangas, and E. A. Stuart, “Causal mediation analysis with observational data: Considerations and illustration examining mechanisms linking neighborhood poverty to adolescent substance use,” *American journal of epidemiology*, vol. 188, no. 3, pp. 598–608, 2018.
- [38] K. E. Rudolph, O. Sofrygin, N. M. Schmidt, R. Crowder, M. M. Glymour, J. Ahern, and T. L. Osypuk, “Mediation of neighborhood effects on adolescent substance use by the school and peer environments,” *Epidemiology*, vol. 29, no. 4, pp. 590–598, 2018.
- [39] K. E. Rudolph, N. M. Schmidt, R. Crowder, J. Galin, M. M. Glymour, J. Ahern, and T. L. Osypuk, “Composition or context: Using transportability to understand drivers of site differences in a large-scale housing experiment,” *Epidemiology*, vol. 29, no. 2, pp. 199–206, 2018.
- [40] K. E. Rudolph and E. A. Stuart, “Using sensitivity analyses for unobserved confounding to address covariate measurement error in propensity score methods,” *American Journal of Epidemiology*, vol. 187, no. 3, pp. 604–613, 2018.
- [41] J Ahern, E. C. Matthay, D. E. Goin, K Farkas, and K. E. Rudolph, “Spikes in community violence increase deaths and hospital visits due to stress-responsive diseases,” *Epidemiology*, vol. 29, no. 5, pp. 684–691, 2018.
- [42] R. Kagawa, M Cerda, K. Rudolph, V. Pear, K. Keyes, and G. Wintemute, “Firearm involvement in violent victimization and mental health,” *Annals of Internal Medicine*, vol. 169, no. 8, pp. 584–585, 2018.
- [43] J. M. Torres, K. E. Rudolph, O. Sofrygin, M. M. Glymour, and R. Wong, “Longitudinal associations between having an adult child migrant and depressive symptoms among older adults in the mexican health and aging study,” *International journal of epidemiology*, vol. 47, no. 5, pp. 1432–1442, 2018.
- [44] R. L. O’Brien, T. Neman, K. Rudolph, J. Casey, and A. Venkataramani, “Prenatal exposure to air pollution and intergenerational economic mobility: Evidence from us county birth cohorts,” *Social Science & Medicine*, vol. 217, pp. 92–96, 2018.
- [45] D. E. Goin, K. E. Rudolph, and J Ahern, “Predictors of community firearm violence.,” *Health and Place*, vol. 51, pp. 61–67, 2018.
- [46] R. M. Kagawa, A. Castillo-Carniglia, J. S. Vernick, D. Webster, C. Crifasi, K. E. Rudolph, M. Cerdá, A. Shev, and G. J. Wintemute, “Repeal of comprehensive background check policies and firearm homicide and suicide,” *Epidemiology*, vol. 29, no. 4, pp. 494–502, 2018.
- [47] N. Diamond-Smith and K. Rudolph, “The association between uneven sex ratios and violence: Evidence from 6 asian countries,” *PloS one*, vol. 13, no. 6, e0197516, 2018.
- [48] K. Georgiades, D. Paksarian, K. E. Rudolph, and K. R. Merikangas, “Prevalence of mental disorder and service use by immigrant generation and race/ethnicity among us adolescents,” *Journal of the American Academy of Child & Adolescent Psychiatry*, vol. 57, no. 4, pp. 280–287, 2018.

- [49] E. C. Matthay, J. Galin, K. Farkas, K. Rudolph, G. Wintemute, and J. Ahern, “Associations between gun shows and firearm deaths and injuries (response to comments),” *Annals of internal medicine*, vol. 169, no. 1, pp. 66–66, 2018.
- [50] K. E. Rudolph, O. Sofrygin, W. Zheng, and M. J. van der Laan, “Robust and flexible estimation of data-dependent stochastic mediation effects: A proposed method and example in a randomized trial setting,” *Epidemiologic Methods*, In Press, 2017.
- [51] K. E. Rudolph and M. J. van der Laan, “Robust estimation of encouragement-design intervention effects transported across sites,” *Journal of the Royal Statistical Society Series B Statistical Methodology*, vol. 79, no. 5, pp. 1509–1525, 2017.
- [52] E. C. Matthay, J. Galin, K. E. Rudolph, K. Farkas, G. J. Wintemute, and J. Ahern, “In-state and interstate associations between gun shows and firearm deaths and injuries: A quasi-experimental study,” *Annals of internal medicine*, vol. 167, no. 12, pp. 837–844, 2017.
- [53] A. Vable, M. Kiang, S. Basu, K. Rudolph, I. Kawachi, S. Subramanian, and M. Glymour, “Military service, childhood socioeconomic status, and late life lung function: Korean war era military service associated with smaller disparities,” *Military Medicine*, In Press, 2017.
- [54] D. E. Goin, K. E. Rudolph, and J. Ahern, “Drought and crime in california,” *Plos ONE*, vol. 12, no. 10, e0185629, 2017.
- [55] H. Hong, K. E. Rudolph, and E. A. Stuart, “Bayesian approach for addressing differential covariate measurement error in propensity score methods,” *Psychometrika*, vol. 82, no. 4, pp. 1078–1096, 2017.
- [56] Y. Webb-Vargas, K. E. Rudolph, D. Lenis, P. Murakami, and E. A. Stuart, “An imputation-based solution to using mismeasured covariates in propensity score analysis,” *Statistical Methods in Medical Research*, vol. 26, no. 4, pp. 1824–1837, 2017.
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- [58] K. E. Rudolph, B. N. Sánchez, E. A. Stuart, B. Greenberg, K. Fujishiro, G. S. Wand, S. Shrager, T. Seeman, A. V. D. Roux, and S. H. Golden, “Job strain and the cortisol diurnal cycle in mesa: Accounting for between-and within-day variability,” *American journal of epidemiology*, vol. 183, no. 5, pp. 497–506, 2016.
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- [60] K. E. Colson, K. E. Rudolph, S. C. Zimmerman, D. E. Goin, E. A. Stuart, M. van der Laan, and J. Ahern, “Optimizing matching and analysis combinations for estimating causal effects,” *Scientific reports*, vol. 6, 2016.
- [61] J. A. Casey, P. James, K. E. Rudolph, C.-D. Wu, and B. S. Schwartz, “Greenness and birth outcomes in a range of pennsylvania communities,” *International journal of environmental research and public health*, vol. 13, no. 3, p. 311, 2016.

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- [63] K. E. Rudolph and W. W. Eaton, “Previous anxiety and depression as risk factors for early labour force exit,” *Journal of Epidemiology and Community Health*, vol. 70, no. 4, pp. 390–395, 2016.
- [64] K. E. Rudolph, E. A. Stuart, J. S. Vernick, and D. W. Webster, “Association between connecticut’s permit-to-purchase handgun law and homicides,” *American Journal of Public Health*, vol. 105, no. 8, e49–54, 2015.
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- [66] B. Hadley, K. E. Rudolph, M. Mogul, and D. F. Perry, “Providing home visiting to high-risk pregnant and postpartum families: The development and evaluation of the momobile program.,” *Zero to Three*, vol. 35, no. 2, 40 — 48, 2014.
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- [68] K. E. Rudolph, E. A. Stuart, T. A. Glass, and K. R. Merikangas, “Neighborhood disadvantage in context: The influence of urbanicity on the association between neighborhood disadvantage and adolescent emotional disorders,” *Social Psychiatry and Psychiatric Epidemiology*, vol. 49, no. 3, pp. 467–475, 2014.
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Under Review

74. Rudolph KE, Shulman M, Fishman M, Díaz I, Rotrosen J, Nunes EV. Association between dynamic dose adjustment of buprenorphine for treatment of opioid use disorder and risk of relapse.
75. Rudolph KE, Díaz I. When the ends don't justify the means: Learning a treatment strategy to prevent harmful indirect effects.
76. Hejazi NS, Rudolph KE, van der Laan MJ, Diaz I. Nonparametric causal mediation analysis for stochastic interventional (in)direct effects.
77. Stuart EA, Nguyen G, Schmid I, Sarker E, Pittman A, Benke K, Rudolph KE, Badillo-Goicoechea E, Leoutsakos JM. Mediation analysis in the real world: A disconnect between theory and practice.
78. 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?
79. Cerda M, Wheeler-Martin K, Bruzelius E, Ponicki W, Gruenewald P, Mauro C, Crystal S, Davis C, Keyes K, Hasin D, Rudolph KE, Martin S. What impact have pain management clinic laws had on opioid overdose deaths in the United States?
80. Matthay EC, Farkas K, Goin DE, Rudolph KE, Ahern J. Associations of openings and closings of firearm dealers with firearm deaths and injuries: A within-community analysis.
81. Martins SS, Bruzelius E, Stingone JA, Wheeler-Martin K, Akbarnejad H, Mauro CM, Marziali M, Samples H, Crystal S, Davis CS, Rudolph KE, Keyes KM, Hasin DS, Cerda M. Prescription opioid laws and opioid-related harm: Identifying salient opioid law provisions with machine learning.
82. Townsend T, Rudolph KE, Hamilton L, Davis C, Cerda M. Association of Good Samaritan Laws with overdose mortality in Kentucky and Tennessee, overall and by race.

Grants and Fellowships

Current

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

Role on Project: Principal Investigator

Dates: March 15, 2018 – December 31, 2021

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.

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.

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.

Preventing firearm violence: An evaluation of urban blight removal in high risk communities (Ka-

gawa)

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.

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, Site Principal 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 (Cerde)

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 intervention and control sites.

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

2021	Data Science Institute Seeds Funds Recipient—Columbia University
2020	Reviewer of the Year, 2019—American Journal of Epidemiology
2020	Co-Editor—Epidemiologic Reviews, 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)

- 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

- 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 responsiveness. 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

- 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 Causal mediation analysis: review of approaches and application to explain differences in opioid treatment responsiveness, 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

Teaching Experience

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| 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

2020 - present	Robin Richardson	Epidemiology	Postdoctoral K99 Advisor
2020 - present	Alex Perlmutter	Epidemiology	PhD Dissertation Advisor
2020 - present	Karen Huang	Epidemiology	PhD Dissertation Committee
2020 - present	Byoungjun Kim	Epidemiology	PhD Dissertation Committee
2020 - present	Erik Jorgenson	Epidemiology	PhD Dissertation Committee
2020 - 2020	John Pamplin	Epidemiology	PhD Dissertation Committee
2020 - present	Yue Lai	Biostatistics	Masters Practicum
2020- present	Riona Morgan	Epidemiology	Masters Thesis Advisor
2019-20	Matthew Curran	Epidemiology	Masters Thesis Advisor
2019-20	Alexis Colangelo	Epidemiology	Masters Thesis Advisor

Advising (thesis and dissertation only), External Member

2020 - present	Daniel Carter	PhD Dissertation Committee	London School of Hygiene and Tropical Medicine
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Professional Activities

National Committees

2020 - present	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

2021-present	Journal of the Royal Statistical Society
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	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.