



## Michael Baiocchi

Associate Professor of Epidemiology and Population Health and, by courtesy, of Statistics and of Medicine (Stanford Prevention Research Center)

### Bio

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#### BIO

Professor Baiocchi is a PhD statistician in Stanford University's Epidemiology and Population Health Department. He thinks a lot about behavioral interventions and how to rigorously evaluate if and how they work. Methodologically, his work focuses on creating statistically rigorous methods for causal inference that are transparent and easy to critique. He designed -- and was the principle investigator for -- two large randomized studies of interventions to prevent sexual assault in the settlements of Nairobi, Kenya.

Professor Baiocchi is an interventional statistician (i.e., grounded in both the creation and evaluation of interventions). The unifying idea in his research is that he brings rigorous, quantitative approaches to bear upon messy, real-world questions to better people's lives.

#### ACADEMIC APPOINTMENTS

- Associate Professor, Epidemiology and Population Health
- Associate Professor (By courtesy), Statistics
- Associate Professor (By courtesy), Medicine - Stanford Prevention Research Center
- Member, Bio-X
- Member, Wu Tsai Human Performance Alliance

#### PROFESSIONAL EDUCATION

- PhD, University of Pennsylvania , Statistics (2011)
- BA, Williams College , Mathematics (2003)

### Research & Scholarship

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#### PROJECTS

- Rape prevention intervention - Stanford University
- Anti-human trafficking
- Cardiothoracic surgery
- Causal inference methods
- Foundations of machine learning
- Anti-addiction interventions
- Causal inference with free text

## Teaching

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### COURSES

#### 2024-25

- Intermediate Biostatistics: Analysis of Discrete Data: BIOMEDIN 233, EPI 261, STATS 261 (Win)
- Intermediate Biostatistics: Regression, Prediction, Survival Analysis: EPI 262, STATS 262 (Spr)

### STANFORD ADVISEES

#### Doctoral Dissertation Reader (AC)

Julianna Hsing

#### Doctoral Dissertation Advisor (AC)

Jonathan Altamirano, Maggie Wang

#### Doctoral Dissertation Co-Advisor (AC)

Mingyi Li, Michael Salerno

#### Master's Program Advisor

Alice Wang

## Publications

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### PUBLICATIONS

- **STATISTICAL MATCHING AND SUBCLASSIFICATION WITH A CONTINUOUS DOSE: CHARACTERIZATION, ALGORITHM, AND APPLICATION TO A HEALTH OUTCOMES STUDY** *ANNALS OF APPLIED STATISTICS*  
Zhang, B. O., Mackay, E. J., Baiocchi, M. E.  
2023; 17 (1): 454-475
- **Robust Designs for Prospective Randomized Trials Surveying Sensitive Topics.** *American journal of epidemiology*  
Rosenman, E. T., Friedberg, R., Baiocchi, M.  
2023
- **Combining observational and experimental datasets using shrinkage estimators.** *Biometrics*  
Rosenman, E. T., Basse, G., Owen, A. B., Baiocchi, M.  
2023
- **Propensity score methods for merging observational and experimental datasets.** *Statistics in medicine*  
Rosenman, E. T., Owen, A. B., Baiocchi, M., Banack, H. R.  
2021
- **Cohort Profile: WELL living laboratory in China (WELL-China).** *International journal of epidemiology*  
Min, Y., Zhao, X., Hsing, A. W., Zhu, S.  
2021
- **Evaluation of Data Sharing After Implementation of the International Committee of Medical Journal Editors Data Sharing Statement Requirement.** *JAMA network open*  
Danchev, V. n., Min, Y. n., Borghi, J. n., Baiocchi, M. n., Ioannidis, J. P.  
2021; 4 (1): e2033972
- **Longitudinal trends in e-cigarette devices used by Californian youth, 2014-2018.** *Addictive behaviors*  
Lin, C., Baiocchi, M., Halpern-Felsher, B.  
2020; 108: 106459

- **Did internal displacement from the 2010 earthquake in Haiti lead to long-term violence against children? A matched pairs study design.** *Child abuse & neglect*  
Cerna-Turoff, I., Kane, J. C., Devries, K., Mercy, J., Massetti, G., Baiocchi, M.  
2020; 102: 104393
- **Assessment of a Real-Time Locator System to Identify Physician and Nurse Work Locations.** *JAMA network open*  
Li, R. C., Marafino, B. J., Nielsen, D., Baiocchi, M., Shieh, L.  
2020; 3 (2): e1920352
- **Predicting preventable hospital readmissions with causal machine learning.** *Health services research*  
Marafino, B. J., Schuler, A. n., Liu, V. X., Escobar, G. J., Baiocchi, M. n.  
2020
- **Correction.** *Statistics in medicine*  
Baiocchi, M. n., Cheng, J. n., Small, D. n.  
2020
- **A cigarette pack by any other color: Youth perceptions mostly align with tobacco industry-ascribed meanings.** *Preventive medicine reports*  
McKelvey, K., Baiocchi, M., Lazaro, A., Ramamurthi, D., Halpern-Felsher, B.  
2019; 14: 100830
- **Which Deteriorating Ward Patients Benefit From Transfer to the Intensive Care Unit?: Critically Engaging Methods in a Well-Designed Natural Experiment.** *JAMA network open*  
Baiocchi, M.  
2019; 2 (2): e187698
- **Sex-specific association between gut microbiome and fat distribution.** *Nature communications*  
Min, Y. n., Ma, X. n., Sankaran, K. n., Ru, Y. n., Chen, L. n., Baiocchi, M. n., Zhu, S. n.  
2019; 10 (1): 2408
- **Adolescents' and Young Adults' Use and Perceptions of Pod-Based Electronic Cigarettes.** *JAMA network open*  
McKelvey, K., Baiocchi, M., Halpern-Felsher, B.  
2018; 1 (6): e183535
- **Adolescents' and Young Adults' Use and Perceptions of Pod-Based Electronic Cigarettes** *JAMA NETWORK OPEN*  
McKelvey, K., Baiocchi, M., Halpern-Felsher, B.  
2018; 1 (6)
- **An Evaluation of Clinical Order Patterns Machine-Learned from Clinician Cohorts Stratified by Patient Mortality Outcomes.** *Journal of biomedical informatics*  
Wang, J. K., Hom, J., Balasubramanian, S., Schuler, A., Shah, N. H., Goldstein, M. K., Baiocchi, M. T., Chen, J. H.  
2018
- **Youth say ads for flavored e-liquids are for them.** *Addictive behaviors*  
McKelvey, K., Baiocchi, M., Ramamurthi, D., McLaughlin, S., Halpern-Felsher, B.  
2018
- **Near-Far Matching in R: The nearfar Package** *JOURNAL OF STATISTICAL SOFTWARE*  
Rigdon, J., Baiocchi, M., Basu, S.  
2018; 86 (CN5): 1–21
- **Preventing false discovery of heterogeneous treatment effect subgroups in randomized trials.** *Trials*  
Rigdon, J., Baiocchi, M., Basu, S.  
2018; 19 (1): 382
- **The Effect of Combining Business Training, Microfinance, and Support Group Participation on Economic Status and Intimate Partner Violence in an Unplanned Settlement of Nairobi, Kenya.** *Journal of interpersonal violence*  
Sarnquist, C. C., Ouma, L., Lang'at, N., Lubanga, C., Sinclair, J., Baiocchi, M. T., Cornfield, D. N.  
2018: 886260518779067

- **Inpatient Clinical Order Patterns Machine-Learned From Teaching Versus Attending-Only Medical Services.** *AMIA Joint Summits on Translational Science proceedings. AMIA Joint Summits on Translational Science*  
Wang, J. K., Schuler, A., Shah, N. H., Baiocchi, M. T., Chen, J. H.  
2018; 2017: 226–35
- **Second Arterial Versus Venous Conduits for Multivessel Coronary Artery Bypass Surgery in California.** *Circulation*  
Goldstone, A. B., Chiu, P. n., Baiocchi, M. n., Wang, H. n., Lingala, B. n., Boyd, J. H., Woo, Y. J.  
2018; 137 (16): 1698–1707
- **Impact of Discordant Views in the Management of Descending Thoracic Aortic Aneurysm** *SEMINARS IN THORACIC AND CARDIOVASCULAR SURGERY*  
Chiu, P., Sailer, A., Baiocchi, M., Goldstone, A. B., Schaffer, J. M., Trojan, J., Fleischmann, D., Mitchell, R., Miller, D., Dake, M. D., Woo, Y., Lee, J. T., Fischbein, et al  
2017; 29 (3): 283–91
- **Association of Playing High School Football With Cognition and Mental Health Later in Life** *JAMA NEUROLOGY*  
Deshpande, S. K., Hasegawa, R. B., Rabinowitz, A. R., Whyte, J., Roan, C. L., Tabatabaei, A., Baiocchi, M., Karlawish, J. H., Master, C. L., Small, D. S.  
2017; 74 (8): 909–18
- **Evidence That Classroom-Based Behavioral Interventions Reduce Pregnancy-Related School Dropout Among Nairobi Adolescents** *HEALTH EDUCATION & BEHAVIOR*  
Sarnquist, C., Sinclair, J., Mboya, B. O., Langat, N., Paiva, L., Halpern-Felsher, B., Golden, N. H., Maldonado, Y. A., Baiocchi, M. T.  
2017; 44 (2): 297-303
- **Mechanical or Biologic Prostheses for Aortic-Valve and Mitral-Valve Replacement.** *The New England journal of medicine*  
Goldstone, A. B., Chiu, P. n., Baiocchi, M. n., Lingala, B. n., Patrick, W. L., Fischbein, M. P., Woo, Y. J.  
2017; 377 (19): 1847–57
- **Encouraging Earthquake-Resistant Construction: A Randomized Controlled Trial in Nepal** *EARTHQUAKE SPECTRA*  
Sanquini, A. M., Thapaliya, S. M., Wood, M. M., Baiocchi, M., Hilley, G. E.  
2016; 32 (4): 1975-1988
- **Using ICU Congestion as a Natural Experiment.** *Critical care medicine*  
Jopling, J. K., Baiocchi, M., Milstein, A.  
2016; 44 (10): 1936-1937
- **A Behavior-Based Intervention That Prevents Sexual Assault: the Results of a Matched-Pairs, Cluster-Randomized Study in Nairobi, Kenya.** *Prevention science*  
Baiocchi, M., Omondi, B., Langat, N., Boothroyd, D. B., Sinclair, J., Pavia, L., Mulinge, M., Githua, O., Golden, N. H., Sarnquist, C.  
2016: -?
- **Health-related quality of life among veterans in addictions treatment: identifying behavioral targets for future intervention** *QUALITY OF LIFE RESEARCH*  
Oppezzo, M. A., Michalek, A. K., Delucchi, K., Baiocchi, M. T., Barnett, P. G., Prochaska, J. J.  
2016; 25 (8): 1949-1957
- **Evidence That Classroom-Based Behavioral Interventions Reduce Pregnancy-Related School Dropout Among Nairobi Adolescents.** *Health education & behavior*  
Sarnquist, C., Sinclair, J., Omondi Mboya, B., Langat, N., Paiva, L., Halpern-Felsher, B., Golden, N. H., Maldonado, Y. A., Baiocchi, M. T.  
2016
- **Likelihood of Unemployed Smokers vs Nonsmokers Attaining Reemployment in a One-Year Observational Study** *JAMA INTERNAL MEDICINE*  
Prochaska, J. J., Michalek, A. K., Brown-Johnson, C., Daza, E. J., Baiocchi, M., Anzai, N., Rogers, A., Grigg, M., Chieng, A.  
2016; 176 (5): 662-670
- **Peer Assessment Enhances Student Learning: The Results of a Matched Randomized Crossover Experiment in a College Statistics Class** *PLOS ONE*  
Sun, D. L., Harris, N., Walther, G., Baiocchi, M.  
2015; 10 (12)

- **Instrumental variable methods for causal inference.** *Statistics in medicine*  
Baiocchi, M., Cheng, J., Small, D. S.  
2014; 33 (13): 2297-2340
- **Near/far matching: a study design approach to instrumental variables.** *Health services & outcomes research methodology*  
Baiocchi, M., Small, D. S., Yang, L., Polsky, D., Groeneveld, P. W.  
2012; 12 (4): 237-253
- **The Differential Impact of Delivery Hospital on the Outcomes of Premature Infants** *PEDIATRICS*  
Lorch, S. A., Baiocchi, M., Ahlberg, C. E., Small, D. S.  
2012; 130 (2): 270-278