

OWAIS GILANI

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| Research Interests | Spatial and spatiotemporal statistics; human mobility; spatial epidemiology; spatiotemporal calibration; dynamic spatiotemporal modeling; environmental epidemiology; GIS applications in epidemiology; network analysis; longitudinal data analysis; hierarchical Bayesian modeling; survival analysis; data visualization; <i>R</i> package development. | |
| Employment | Visiting Associate Professor Department of Public Health & Community Medicine, Tufts University School of Medicine | 2022 – Present |
| | Associate Professor Department of Mathematics, Bucknell University | 2022 – Present |
| | Assistant Professor Department of Mathematics, Bucknell University | 2016 – 2022 |
| | Postdoctoral Research Fellow Department of Biostatistics, University of Michigan School of Public Health Advisors: Stuart A. Batterman, Veronica J. Berrocal | 2014 – 2016 |
| Education | Yale University , New Haven, CT, USA Ph.D., Biostatistics Dissertation: “ <i>Spatiotemporal calibration and resolution refinement of output from deterministic models.</i> ” Advisor: Theodore R. Holford | December 2014 |
| | Middlebury College , Middlebury, VT, USA B.A., <i>magna cum laude</i> Mathematics (honors) & International Studies | May 2008 |
| Awards & Honors | New Faculty Fellow Bucknell University | 2016 – 2020 |
| | Dean’s Travel Fund Department of Mathematics, Bucknell University | Dec ’21, Jul ‘19; Jul ‘18; Jun ‘17 |
| | Faculty Advisor of the Year Residential Education, Bucknell University | April 2017 |
| | Conference Travel Fund Award Statistical Methods for Atmospheric and Oceanic Sciences | August 2015 |
| | Research Fellowship NIH/NIEHS Grant R01 ES017416 (Traffic and Respiratory Morbidity in the Northeast. PI: Brian Leaderer) | 2011 - 2013 |
| | Conference Travel Award Graduate Student Assembly, Yale University | October 2012 |

Departmental Fellowship

2008 - 2011

Department of Biostatistics, School of Public Health,
Yale University

Most Distinguished Student Award

August 2006

Summer Arabic Language School, Middlebury College

GrantsAgency: National Science Foundation

Award Number: 2024233/2024335

Title: Data Resources and Analytic Tools to Understand Population Scale Human
Mobility for Applications in SBE Research

PI: Owais Gilani & Michael Kane

Total Costs: \$648,391

Project Period: 09/01/2020 – 08/31/2024

**Peer-reviewed
Publications**

Orozco, G. L.,* Lawrence, M.,* & **Gilani, O.** (2022) *epair*: EPA Data Helper for R.
ROpenSci (<https://github.com/ropensci/epair>)

Covert, C.E.** , Baker, A.M., & **Gilani, O.** (2022) Identifying clinical and demographic
influences on health perception: A translation of the SF-12 for use with NHANES.
SSM - Population Health, 18. DOI: 10.1016/j.ssmph.2022.101081

Kane, M. A. & **Gilani, O.** (2021) The need to incorporate communities in
compartmental models. *Statistics and Its Interface*, 14(1), 29-32.
DOI: 10.4310/20-SII647

Batterman, S.A., Berrocal, V.J., Milando, C., **Gilani, O.**, Arunachalam, S., Zhang,
K.M. (2020) Enhancing models and measurements of traffic-related air pollutants for
health studies using dispersion modeling and Bayesian data fusion. *Research Reports:
Health Effects Institute*, 2020, 202.

Gilani, O., Urbanek, S., & Kane, M. A. (2020) Distribution of human exposure to
ozone during commuting hours in Connecticut using the cellular device network.
Journal of Agricultural, Biological, and Environmental Statistics, 25, 54-73.
DOI: 10.1007/s13253-019-00378-y

Gilani, O., McKay, L., Gregoire, T., Guan, Y., Leaderer, B., Holford, T. (2019)
Spatiotemporal calibration of atmospheric nitrogen dioxide concentration estimates
from an air quality model for Connecticut. *Environmental and Ecological Statistics*,
26(4), 325-349. DOI: 10.1007/s10651-019-00430-7

Gilani, O., Berrocal, V.J., & Batterman, S.A. (2019) Nonstationary spatiotemporal
Bayesian data fusion for pollutants in the near-road environment. *Environmetrics*,
30(7) e2581. DOI:10.1002/env.2581

Kayingo, G., **Gilani, O.**, Kidd, V. D., & Warner, M. L. (2016). Patient-Centered
Medical Home Exposure and its Impact on PA Career Intentions. *Family medicine*,
48(9), 725-730.

Gilani, O., Berrocal, V. J., & Batterman, S. A. (2016). Non-stationary spatio-temporal
modeling of traffic-related pollutants in near-road environments. *Spatial and spatio-
temporal epidemiology*, 18, 24-37. DOI: 10.1016/j.sste.2016.03.003

Gilani, O., McKay, L. A., Gregoire, T. G., Guan, Y., Leaderer, B. P., & Holford, T. R.
(2016). Spatiotemporal calibration and resolution refinement of output from
deterministic models. *Statistics in medicine*, 35(14), 2422-2440.
DOI: 10.1002/sim.6867

Kayingo, G., Kidd, V. D., **Gilani, O.**, & Warner, M. L. (2015). Primary care teams,
composition, roles, and satisfaction of PA students during primary care rotations. *The*

Journal of Physician Assistant Education, 26(2), 88-93.
DOI: 10.1097/JPA.0000000000000022

Baldwin, N., **Gilani, O.**, Raja, S., Batterman, S., Ganguly, R., Hopke, P., Berrocal, V., Robin, T., & Hoogterp, S. (2015). Factors affecting pollutant concentrations in the near-road environment. *Atmospheric Environment*, 115, 223-235.
DOI: 10.1016/j.atmosenv.2015.05.024

Zafar, M.A., Farkas, E.A., Javier, A., Anderson, M., **Gilani, O.**, & Elefteriades, J.A. (2012). Are thromboembolic and bleeding complications a drawback for composite aortic root replacement? *Annals of thoracic surgery*, 94(3), 737-743.
DOI: 10.1016/j.athoracsur.2012.04.007

Manuscripts under Review

Lower, S., **Gilani, O.**, Tuffy, J., Patel, D., Zhu, Z., & Chambers, M. Host condition and pathogen identity influence bacterial infection survival in the Common Eastern Firefly, *Photinus pyralis*. (Conditionally accepted with minor revisions in *Ecological Entomology*)

Gilani, O., Gent, J., Leaderer, B., & Holford, T. Association between daily outdoor nitrogen dioxide concentration and incidence of respiratory symptoms in infants and mothers.

Kane, M. J., **Gilani, O.**, & Urbanek, S. A Statistical Method for Identifying Areas of High Mobility Applied to Commuting Data for the Country of New Zealand.

Wukitch, A., Lawrence, M.* , Satriale, F., Patel, A., Ginder, G., Van Beek, E., **Gilani, O.**, & Chambers, M. Impact of chronic infection on resistance and tolerance to secondary infection in *Drosophila melanogaster*.

Packages under Review

Kane, M. J., Gilani, O., & Urbanek, S. Processing raw mobility data with the *checkin* package

Manuscripts in Preparation

Gilani, O., Massaro, V. A., McGann, C.* , & Kane, M. J. Identifying coherent spatial communities based on human mobility patterns using cell phone telemetry data.

Kane, M. J., Mitra, R., Dodwell, E., **Gilani, O.** Features of human mobility networks clustered into communities across United States of America.

Smith, S.* , Kane, M. J., & **Gilani, O.** Comparing the impact of gentrification on those who leave versus those who stay: a novel application of human mobility networks.

Packages in Preparation

Orozco, G. L.* , Lawrence, M.* , Wang, Y.* , & **Gilani, O.** *noaaGrabber*: R package with wrapper functions for *rnoaa* to improve access to data provided by the National Oceanic and Atmospheric Administration.

Kane, M. J., **Gilani, O.**, & Urbanek, S. *graphmobility*: R package for exploring and analyzing mobility graphs.

* Undergraduate research advisee ** Senior Honors Thesis advisee

Conference Oral Presentations

Network Representation of Human Mobility with Applications in Sociology and Public Health Research. **Oral presentation** delivered at the International Biometrics Conference 2022 Meeting, Riga, Latvia. July 2022.

Network Representation of Spatial Communities with Applications in Sociology and Public Health Research. **Oral presentation** delivered at the ENAR 2021 Spring Meeting (Virtual). March 2021.

Spatiotemporal Data Fusion Model for Air Pollutants in the Near-Road Environment using Mobile Measurements and Dispersion Model Output. **Invited oral presentation** delivered at the ENAR 2020 Spring Meeting, Nashville, TN. March 2020.

Non-stationary spatiotemporal Bayesian data fusion model for pollutants in the near-road environment. **Invited oral presentation** delivered at the 33rd New England Statistics Symposium, Hartford, CT. May 2019.

Non-stationary spatiotemporal Bayesian data fusion model for pollutants in the near-road environment. **Invited oral presentation** delivered at the 28th Annual Conference of The International Environmetrics Society, Guanajuato, Mexico. July 2018.

Non-stationary spatio-temporal modeling of traffic-related pollutants in near-road environments. **Oral presentation** delivered at the Conference on Climate Variability and Change, Baltimore, MD. August 2017.

Spatiotemporal calibration and resolution refinement of output from deterministic models. **Oral presentation** delivered at the Joint Statistical Meetings, Seattle, WA. August 2015.

Spatiotemporal calibration and the change of support problem. APHA Abstracts. 140:155. **Oral presentation** delivered at the American Public Health Association 140th Annual Meeting and Exposition - Student Award Presentation, San Francisco, CA. October, 2012.

Invited Research Presentations

Modeling Air Pollution Concentrations: Challenges and Novel Solutions. **Oral presentation** at San Diego State University Department of Mathematics and Statistics Seminar, San Diego, CA (Virtual). March 2021.

Modeling Air Pollution Concentrations: Challenges and Novel Solutions. **Oral presentation** at Tufts Medical Center Institute for Clinical Research and Health Policy Studies Seminar (Virtual). February 2021.

Quantifying the distribution of exposure misclassification bias in ozone assignment by accounting for human mobility. **Oral presentation** at Yale School of Public Health Department of Biostatistics Seminar, New Haven, CT. January 2019.

Does accounting for human mobility affect air pollution exposure assignment in environmental health studies? **Oral presentation** at Penn State University Department of Statistics SMAC Talk Series. State College, PA. October 2018.

Association between exposure to outdoor air pollutants and incidence of respiratory symptoms in infants and mothers. **Oral presentation** at Aga Khan University Department of Community Health Sciences Colloquium, Karachi, Pakistan. June 2018.

Conference Poster Presentations

Does accounting for human mobility affect ozone exposure assignment in environmental health studies? **Poster presentation** at the 5th Spatial Statistics Conference, Sitges, Spain. July 2019

Predicting traffic-related pollutant concentrations in near-road environments using a Bayesian spatio-temporal model. **Poster presentation** at the Joint Statistical Meetings, Seattle, WA. August 2015.

Other Presentations

Role of science in politics, and how politics shapes the scientific process. **Panel discussant** at Discovery Res College Common Hour session, Bucknell University, Lewisburg, PA. September 2020.

Spatiotemporal interpolation of atmospheric pollutants using Kriging. **Presentation** delivered at Bucknell University Mathematics Department Student Colloquium Series, Lewisburg, PA. January 2018.

What I Know Now - Reflections on first year at Bucknell. **Presentation** delivered at Bucknell University New Faculty Orientation, Lewisburg, PA. August 2017.

Just Mercy – going beyond anecdotes. **Presentation** delivered at Bucknell University New Student Orientation, Lewisburg, PA. August 2017.

Spatiotemporal calibration and resolution refinement of output from deterministic models. **Invited presentation** delivered at University of Miami School of Business Administration, Miami, FL. January 2016.

Spatiotemporal modeling of environmental pollutants. **Invited presentation** delivered at Purdue University Dept. of Statistics Seminar Series, West Lafayette, IN. October 2015.

Spatiotemporal calibration and resolution refinement of output from deterministic models. **Oral presentation** delivered at Yale University Department of Biostatistics Seminar Series, New Haven, CT. September 2014.

Teaching your peers – challenges and lessons learnt. **Panel discussant** for Yale University School of Public Health Teaching 101 Workshop, Yale Teaching Center, New Haven, CT. September, 2012 & September 2013.

Teaching Experience

Bucknell University (as the *primary instructor*)

- Statistics I (MATH 216)
- Statistics II (MATH 217)
- Statistical Inference Theory (MATH 304)
- Statistical Modeling (MATH 405)
- Stat. Designs for Scientific Studies (MATH 407)
- Independent Study: Survival Analysis (MATH 291)

Yale University (as the *primary instructor*)

Introduction to R (Young Scholars Program for high school students)

Yale University (as *co-instructor*)

Introduction to R (Young Scholars Program for high school students)

Yale University (as a *teaching fellow*)

- Nonparametric Statistical Methods (BIS 646)
- GIS Applications in Public Health (BIS 511)
- Applied Regression Analysis (BIS 623)
- Introduction to Statistical Thinking II (BIS 505b)
- Design and Analysis of Epid. Studies (BIS 632)
- Applied Survival Analysis (BIS 630)

University Service (Bucknell University)

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| Faculty Advisor, Muslim Student Association | 2016 - present |
| Faculty Hiring Committee, Member, Department of Mathematics | 2021 – 2022 |
| Mathematical Economics (MECO) Advising Committee, Department of Mathematics | 2021 – 2022 |
| Curriculum Committee, Member, Department of Mathematics | 2020 – 2021 |
| External Review Committee, Member, Department of Mathematics | 2020 - 2021 |

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| | Faculty Advisor, Muslim Student Association | 2016 - 2020 |
| | Retention Investigation Task Force | 2020 |
| | Talks Committee, Chair, Department of Mathematics | 2019 - 2020 |
| | Faculty Hiring Committee, Member, Department of Mathematics | 2019 - 2020 |
| | Presidential Fellows Selection Committee, Member | Spring 2019 |
| | Student Recruitment, Propaganda, and Scholarships Committee, Member, Department of Mathematics | Spring 2019 |
| | Statistics Curriculum Committee, Member, Department of Mathematics | Spring 2019 |
| | Students Activities & Resources Committee, Member, Department of Mathematics | 2016 – 2019 |
| | Curriculum Committee, Member, Department of Mathematics | 2017 - 2018 |
| | Hiring Committee for Muslim Chaplain Candidate, Member | Summer 2017 |
| | Faculty Hiring Committee, Member, Department of Mathematics | 2016 - 2017 |
| Professional Service | Refereed manuscripts for <i>Biometrics</i> ; <i>Environmetrics</i> ; <i>Journal of Agricultural, Biological, and Environmental Statistics</i> ; <i>Journal of Statistics and Data Science Education</i> ; <i>Nature</i> ; <i>Statistics in Medicine</i> | |
| Other Service | Applicant Interviewer, Alumni Admissions Program, Middlebury College | 2008 – 2018 |
| | Representative (School of Public Health), Graduate Student Assembly, Yale University | 2011 – 2012 |
| Memberships | American Statistical Association American Public Health Association International Biometric Society The International Environmetrics Society | |
| Computing Skills | R, SAS, Minitab, Python, Java, ArcGIS, and LaTeX. | |
| Languages | English (native), Urdu (native), Arabic (fluent), Hindi (oral) | |