

# Curriculum Vitae · Youngseob Eum

Department of City and Regional Planning, The University of North Carolina at Chapel Hill  
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## Education

### Ph.D., Geography

Aug. 2022

UNIVERSITY AT BUFFALO, STATE UNIVERSITY OF NEW YORK

- Dissertation: Inference of Human Activity Patterns from Mobile Phone-based GPS Traces for Influenza Surveillance
- Advisor: Dr. Eun-Hye Enki Yoo
- Committee: Dr. Ling Bian, Dr. Yingjie Hu

### M.A., Geography

Feb. 2015

SEOUL NATIONAL UNIVERSITY, SEOUL, KOREA

- Thesis: The Mapping and Measurement of Regional Inequality of Suicide Risk in Korea: 2008-2012
- Advisor: Dr. Key-ho Park

### B.A., Geography

Feb. 2009

SEOUL NATIONAL UNIVERSITY, SEOUL, KOREA

## Academic Experience

### Postdoctoral Research Associate

Sep. 2022 – Present

DEPARTMENT OF CITY AND REGIONAL PLANNING, UNIVERSITY OF NORTH  
CAROLINA AT CHAPEL HILL

- Project: *Impacts of Medicaid Transformation on North Carolina Public Transit Systems: Lessons Learned and Best Practices* funded by North Carolina Department of Transportation [RP 2023-08]
- Project: *Demand for travel and equity assessment of emerging mobility services for transportation disadvantaged populations* funded by Southeastern Transportation Research, Innovation, Development and Education Center

### Research Assistant

May. 2021 – Aug. 2022

DEPARTMENT OF PSYCHOLOGY, UNIVERSITY AT BUFFALO, STATE  
UNIVERSITY OF NEW YORK

- Project: *Maximizing geospatial methods to understand emotional processes in Stress-Related Drinking Risk* funded by National Institute on Alcohol Abuse and Alcoholism of the National Institutes of Health (NIH/NIAAA) [R21AA029279]

### Research Assistant

Sep. 2015 – Feb. 2021

NATIONAL CENTER FOR GEOGRAPHIC INFORMATION AND ANALYSIS AT  
BUFFALO

- Project: *A Three-population three-scale social network model to assess disease dispersion* funded by National Institute Of General Medical Sciences of the National Institutes of Health (NIH/NIGMS) [R01GM108731]

## Instructor

Spring 2019

DEPARTMENT OF GEOGRAPHY, UNIVERSITY AT BUFFALO, STATE  
UNIVERSITY OF NEW YORK

- GEO281 Web-Based Geographic Information Systems

## Research Assistant

Jan. 2017 – Jan. 2019

RESEARCH AND EDUCATION IN ENERGY, ENVIRONMENT AND WATER  
(RENEW), UNIVERSITY AT BUFFALO, STATE UNIVERSITY OF NEW YORK

- Project: *Modeling ambient air pollution using optimal sensor placement and multiscale spatiotemporal data fusion*

## Research Assistant

Mar. 2014 – Aug. 2015

THE INSTITUTE OF HEALTH ENVIRONMENT, SEOUL NATIONAL UNIVERSITY,  
SEOUL, KOREA

- Project: *Association between Predicted Particulate Matter Air Pollution and Health* funded by Institute of National Research Foundation of Korea, Seoul, Korea

## Research Assistant

Apr. 2014 – Sep. 2014

THE INSTITUTE FOR KOREAN REGIONAL STUDIES, SEOUL NATIONAL  
UNIVERSITY, SEOUL, KOREA

- Project: *Developing Index Table of the Utility Ratio per Floor for Non-residential Multi-story Buildings* funded by Korea Appraisal Board, Daejeon, Korea

## Teaching Assistant

Fall 2013 – Spring 2014

DEPARTMENT OF GEOGRAPHY, SEOUL NATIONAL UNIVERSITY, SEOUL,  
KOREA

- M0000.029300 Spatial Analytics
- 208.317 Geographical Information Systems

## Publications

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### PEER REVIEWED JOURNAL ARTICLES

Jiang, X., **Eum, Y.**, and Yoo, E.-H. The impact of fire-specific PM<sub>2.5</sub> calibration on health effect analyses. *Science of the Total Environment*, 159548. <https://doi.org/10.1016/j.scitotenv.2022.159548>

**Eum, Y.** and Yoo, E.-H. (2022). Imputation of Missing Daily Time-Activity Data with Long-term Gaps: A Multi-scale Residual CNN-LSTM Network Approach. *Computers, Environment, and Urban Systems*, 95, 101823. <https://doi.org/10.1016/j.compenvurbsys.2022.101823>

Yoo, E.-H., Roberts, J. E., **Eum, Y.**, Li, X., Chu, L., Wang, P., and Chen, K. (2022). Short-term exposure to air pollution and mental disorders: a case-crossover study in New York City. *Environmental Research: Health*. Accepted.

**Eum, Y.**, and Yoo, E.-H. (2022). Using GPS-enabled Mobile Phones to Evaluate the Associations between Human Mobility Changes and the Onset of Influenza Illness. *Spatial and Spatio-temporal Epidemiology*, 40, 100458. <https://doi.org/10.1016/j.sste.2021.100458>

Yoo, E.-H., Roberts, J. E., **Eum, Y.**, Li, X., and Konty, K. (2021d). Exposure to urban green space may both promote and harm mental health in socially vulnerable neighborhoods: A neighborhood-

scale analysis in New York City. *Environmental Research*, 112292. <https://doi.org/10.1016/j.envres.2021.112292>

Yoo, E.-H., **Eum Y.**, Roberts, J. E., Gao, Q., and Chen, K. (2021c). Association between extreme temperatures and emergency room visits related to mental disorders: A multi-region time-series study in New York, USA. *Science of The Total Environment*, 148246. <https://doi.org/10.1016/j.scitotenv.2021.148246>

Yoo E.-H., **Eum Y.**, Gao Q., and Chen K. (2021b). Effect of extreme temperatures on daily emergency room visits for mental disorders. *Environmental Science and Pollution Research*, 1-14. <https://doi.org/10.1007/s11356-021-12887-w>

Yoo E.-H., Q. Pu, **Eum Y.**, and Jiang X. (2021a). The Impact of Individual Mobility on Long-Term Exposure to Ambient PM2.5: Assessing Effect Modification by Travel Patterns and Spatial Variability of PM2.5. *International Journal of Environmental Research and Public Health*, 18(4), 2194. <https://doi.org/10.3390/ijerph18042194>

Yoo E.-H., Roberts J., **Eum Y.**, and Shi Y. (2020). Quality of Hybrid Location Data drawn from GPS-enabled Mobile Phones: Does it Matter?, *Transaction in GIS*. 24(2): 462. <https://doi.org/10.1111/tgis.12612>

**Eum Y.**, Yoo E.-H., and Bowen E. (2019). Socioeconomic determinants of pediatric asthma emergency department visits under regional economic development in western New York, *Social Science & Medicine*, 222: 133. <https://doi.org/10.1016/j.socscimed.2019.01.001>

Yoo E.-H., Brown P., and **Eum Y.** (2018). Ambient air quality and spatio-temporal patterns of cardiovascular emergency department visits, *International journal of health geographics*, 17(1): 18. <https://doi.org/10.1186/s12942-018-0138-8>

Kim S. Y., Yi S. J., **Eum Y. S.**, Choi H. J., Shin H., Ryou H. G., Kim H. (2014). Ordinary kriging approach to predicting long-term particulate matter concentrations in seven major Korean cities, *Environmental Health and Toxicology*, 29: 1–8. <https://doi.org/10.5620%2Fehrt.e2014012>

## PEER REVIEWED CONFERENCE PROCEEDINGS

Yoo E.-H. and **Eum Y.**, and Roberts J.E. (2019). Implications of incomplete GPS-enabled mobile phone data on human mobility studies, AGILE 2019, In the Accepted Short Papers and Posters from the 22nd AGILE Conference on Geo-information Science. Cyprus University of Technology 17-20 June 2019, Limassol, Cyprus. ISBN 978-90-816960-9-8, Publisher: Stichting AGILE.

Yoo E.-H. and **Eum Y.** (2016). Using GPS-enabled mobile phones to characterize individuals' activity patterns for epidemiology applications. GIScience 2016, In the Short Paper Proceedings of the 9th International Conference on Geographic Information Science (pp. 388–391), Montreal, Canada, Sep.27–Sep.30, 2016.

## Conference Presentations

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**Eum Y.**, Yoo E.-H., Evaluating mobility changes associated with influenza-like symptoms using mobile phone-based GPS data, GEOMED 2022, Irvine, California, Oct. 12-14, 2022

Jiang, X., **Eum Y.**, Yoo E.-H., The impact of wildland fire-related PM2.5 calibration on health effect analysis, GEOMED 2022, Irvine, California, Oct. 12-14, 2022

Yoo E.-H., Roberts J.E., **Eum Y.**, Community level morbidity between mental disorders and respiratory disease: multivariate spatio-temporal disease mapping, GEOMED 2022, Irvine, California,

Oct. 12-14, 2022

**Eum Y.**, Pu, Q., Yoo E.-H., Air pollution exposure of urban cyclists: Using bike-sharing data and highly-resolved spatiotemporal variation of PM<sub>2.5</sub>, UCGIS Symposium 2022, Syracuse, New York, USA, Jun. 7-9, 2022

**Eum Y.**, Yoo E.-H., The effects of influenza-like symptoms on human mobility patterns in Buffalo metropolitan area, New York, the 2016–2017 influenza season, 2019 AAG Annual Meeting, Washington, D.C, USA, Apr. 3-7, 2019

Bian L., Zhong S., **Eum Y.**, Miller M., Gao P., Pan Y., and Yoo E. Smartphone-Based Survey of Individual Interaction and Mobility Behavior in the Context of Influenza Surveillance, 2017 MIDAS Annual Network Meeting, Atlanta, Main, USA, May 22, 2017.

Yoo E.-H., **Eum Y.**, and Jiang X., Air Pollution and Emergency Department Visits for Cardio Vascular Disease, 2017 AAG Annual Meeting, Boston, MA, USA, Apr. 5 - 9, 2017.

**Eum Y.** and Yoo E.-H., Contextualization of GPS data with applications to epidemiological study, The 112th Annual meeting of the Association of American Geographers, San Francisco, CA, USA, Mar. 29 - Apr. 2, 2016.

**Eum Y.** and Kim S.Y., *Estimation of area-level averages of PM<sub>10</sub> for epidemiological studies in Seoul, Korea*, The 4th Symposium of Environmental Health, Jeju, Korea, June 17-18, 2015.

Min K.-D., **Eum Y.**, Kwon H.-J., and Kim S.Y., *Community air pollution monitoring design for epidemiological application in Seoul*, The 4th Symposium of Environmental Health, Jeju, Korea, June 17-18, 2015.

Yi S.J., Min K.-D., **Eum Y.**, Kim H.C., Leem J.H. and Kim S.Y., *Association between exposure to traffic and children's respiratory outcomes in Seoul, Korea*, The 4th Symposium of Environmental Health, Jeju, Korea, June 17-18, 2015.

**Eum Y.**, Kim H.C., Leem J.H., and Kim S.Y., *Computation of Geographical Variables for Developing Air Pollutant Exposure Prediction Models*, The 3rd Symposium of Environmental Health, Jeju, Korea, Nov. 6-8, 2014.

Jang J., Yi S.J., **Eum Y.**, and Kim S.Y., *PM<sub>10</sub> concentrations and infant mortality across 25 districts in Seoul, South Korea*, The 3rd Symposium of Environmental Health, Jeju, Korea, Nov. 6-8, 2014.

Shin H.S and **Eum Y.**, *Application of CUSUM for effective water-quality monitoring in the Nakdong watershed*, The 1st Annual Meeting of Korean Geographers, Seoul, Korea, June 21-22, 2013 (First prize).

**Eum Y.**, Shin H. S., Choi H. J., Kim H. C., and Kim S. Y., *Integrating Spatial Data from Different Sources into a Unified Database System for Developing Air pollution Exposure Prediction Models*, The 2nd Symposium of Environmental Health, Gwangju, Korea, May 29-30, 2013.

Choi H.J, **Eum Y.**, Yi S. J., Kim H. C., Kim H., and Kim S.Y., *The Association Between Traffic and Particulate Matter Air Pollution in Seoul, Korea*, The 2nd Symposium of Environmental Health, Gwangju, Korea, May 29-30, 2013.

## Awards

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- 2021 **Dr. L. Michael Trapasso Award for Weather and Climate Impacts,**  
Department of Geography, University at Buffalo, State University of New York
- 2013 **First Prize in the Contest of Undergraduate/Graduate Student Poster Session,** Annual Meeting of Korean Geographers, Seoul, Korea

## Professional Services

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### REVIEWER FOR:

- *BMC Pediatrics*
- *Environment and Planning B: Urban Analytics and City Science*
- *Pediatrics*
- *Spatial and Spatio-temporal Epidemiology*

## Software & Computational Skills

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<b>Programming</b>	R, Python, Java, JavaScript
<b>Software/Tools</b>	ArcGIS, QGIS, ENVI, SAS, MATLAB, Google Earth Engine
<b>Machine Learning</b>	Keras, Tensorflow, H2O
<b>Others</b>	High Performance Computing, $\text{\LaTeX}$ , Google Maps/Places API, HTML, CSS