KENAN LI, Ph.D.

Assistant Professor
College of Public Health and Social Justice
Department of Epidemiology and Biostatistics

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EDUCATION

Ph.D. 2015 Environmental Sciences, Louisiana State University.

M.S. 2011 Environmental Sciences, Louisiana State University.

B.S. 2009 Environmental Sciences (Minor in Applied Mathematics), Nankai University.

ACADEMIC APPOINTMENTS

2022- **Assistant Professor**, Department of Epidemiology and Biostatistics, Saint Louis University, Saint Louis, MO.

2019-2022 **Research Scientist**, Spatial Sciences Institute, University of Southern California, Los Angeles, CA.

2021 **Lecturer**, Spatial Sciences Institute, University of Southern California, Los Angeles, CA.

2017-2019 **Postdoctoral Research Associate**, Department of Population and Public Health Sciences, Keck School of Medicine of USC, Los Angeles, CA.

2009-2016 **Research Assistant**, Department of Environmental Sciences, Louisiana State University, Baton Rouge, LA.

PUBLICATIONS

Refereed Journal Articles:

1. **Li, K.** and Wilson, J.P. (2023). Modeling the health benefits of Superblocks intervention across the City of Los Angeles. *Applied Sciences* 13(4), 2095.

2. **Li, K.**, Eckel, S.P., Chen, Z., Wilson, J.P., and Gilliland, F.D. (2023). Socio-economic Determinants of Census Block Group Mobility Patterns during the early 2020 COVID-19 pandemic in California. *Applied Sciences 13*(4), 2440.

3. Marian, B., Yan, Y., Chen, Z., Lurmann, F., **Li, K.**, Gilliland, F., Eckel, S.P. and Garcia, E. (2022). Independent associations of short- and long-term air pollution exposure with COVID-19 mortality among Californians. *Environmental Advances* 9,100280.

4. **Li, K.**, Sward, K., Deng, H., Morrison, J., Habre, R., Franklin, M., Chiang, Y.Y., Gilliland, F., Ambite, J.L., and Eckel, S.P. (2022). Dynamic time warping self-organizing maps to discover diurnal patterns in the residential exposure time-series of asthmatic patients. *Scientific Reports* 11, 24052.

5. Garcia, E., Marian, B., Chen, Z., **Li, K.**, Lurmann, F., Gilliland, F., Eckel, S.P. (2022). Long-term Ambient Air Pollution Associated with Weekly COVID-19 Mortality in California Census Tracts: Analysis of the first 12-months of the pandemic. *Environment Pollution* 292(B), 118396.

6. **Li, K.**, Deng, H., Morrison, J., Habre, R., Franklin, M., Gilliland, F., Ambite, J.L., and Eckel, S.P. (2021). Using wavelets transformation to discover time series shapelets. *Sensors* 21(17), 5801.

7. Garcia,E., Eckel,S.P., Chen, Z., **Li, K.**, and Gilliland, F.D. (2021). COVID-19 Mortality in California Based on Death Certificates: Disproportionate Impacts Across Racial/Ethnic Groups and Nativity. *Annals of Epidemiology* 58, 69-75.

8. **Li, K.**, Habre, R., Deng, H., Urman, R., Morrison, J., Gilliland, F.D., Ambite, J.L., Stripelis, D., Chiang, Y.Y., Lin, Y., Bui, A.A.T., King, C., Hosseini, A., Vliet, E.V., Sarrafzadeh, M., and Eckel, S.P. (2019) Applying multivariate segmentation methods to human activity recognition from wearable sensors data. *JMIR-mHealth and uHealth* 7(2): e11201.

9. Lam, N.S.N., Qiang, Y., **Li, K.**, Cai, H., Zou, L., and Mihunov, V. (2018). Extending resilience assessment to dynamic system modeling: Perspectives on human dynamics and climate change research. *Journal of Coastal Research* 85: 1401-1405.

10.   Lam, N.S.N., Xu, Y.J., Liu, K.B., Dismukes, D.E., Reams, M.A., Pace, R. K., Qiang, Y., Narra, S., **Li, K.**, Bianchette, T.A., Cai, H., and Zou, L. (2018). Understanding the Mississippi River Delta as a coupled natural-human system: Research methods, challenges, and prospects. *Water* 10(8): 1054.

11.   **Li, K.,** and Lam, N.S.N. (2018). A spatial dynamic model of population changes in a vulnerable coastal environment. *International Journal of Geographical Information Science* 32(4): 685-710.

12.   **Li, K.,** and Lam, N.S.N. (2018). Geographically Weighted Elastic Net: A variable-selection and modeling method under the spatially nonstationary condition. *Annals of the American Association of Geographers* 108(6): 1582-1600.

13.   Zou, L., Kent, J., Lam, N.S.N., Cai, H., Qiang, Y., and **Li, K.** (2016). Evaluating land subsidence rates and their implications for land loss in the Lower Mississippi River Basin. *Water* 8(1): 10.

14.   Li, X.L., Lam, N.S.N., Qiang, Y., **Li, K.**, Yin L.R., Liu, S., and Zheng, W.F. (2016). Measuring county resilience after the 2008 Wenchuan earthquake. *International Journal of Disaster Risk Science* 7(4): 393-412.

15.   Lam, N.S.N., Reams, M., **Li, K.**, Li, C., and Mata, L.P. (2016). Measuring community resilience to coastal hazards along the northern Gulf of Mexico. *Natural Hazards Review* 17(1): 12.

16.   Cai, H., Lam, N.S.N., Zou, L., Qiang, Y., and **Li, K.** (2016). Assessing community resilience to coastal hazards in the Lower Mississippi River Basin. *Water* 8(2): 18.

17.   **Li, K.**, Lam N.S.N., Qiang, Y., Zou, L., and Cai, H. (2015). A cyberinfrastructure for community resilience assessment and visualization. *Cartography and Geographic Information Science* 42 (Suppl. 1): 34-39.

18.   Cai, Z., Zhou Q.X., Peng, S.W., and **Li, K.** (2010). Promoted biodegradation and microbiological effects of petroleum hydrocarbons by *Impatiens balsamina L.* with strong endurance. *Journal of Hazardous Materials* 183(1-3): 731-737.

Book Chapters:

1.   Lam, N.S.N, Xu, Y.J., Pace, R.K., Liu, K.B., Qiang, Y., Narra, S., Bianchette, T.A., Cai, H., Zou, L., **Li, K.**, Joshi, S., and Mihunov, V. (2019). Collaboration across boundaries: Reflections on studying the sustainability of the Mississippi River Delta as a coupled natural-human system. In S.G. Perz (Ed.), *Collaboration across boundaries for social-ecological systems science: experiences around the world* (pp 361–393). Springer, Cham, Switzerland.

Technical Reports and Working Papers:

1. Adiwidjaja, A., **Li, K.**, Owens, A., and Wilson, J.P. (2020). *LA County-Analytics Pilot: Building a Geo-Cyberinfrastructure for Emergency Management of Trail Systems in Los Angeles County*. Spatial Sciences Institute, University of Southern California.

2. de la Haye, K., Wilson, J., Bruine de Bruin, W., **Li, K.**, Livings, M., Xu, M., Miller, S., Solanky, M., Weber, K., and Babboni, M. (2021). *Enough to Eat: The Impact of COVID-19 on Food Insecurity and the Food Environment in L.A. County April 2020 –September 2021*. Dornsife Public Exchange, University of Southern California. https://publicexchange.usc.edu/wp-content/uploads/2021/10/Enough-to-Eat.pdf.

Software and tools:

1. **Li, K.** (2019). Dynamic time warping self-organizing map. https://github.com/Kenan-Li/dtwsom (published at the Python Package Index (PyPI) as DtwSom).

2. **Li, K.** (2019). Geographically weighted elastic net (private library available upon request).

3. **Li, K.** (2017). ABshape: A GIS based platform for agent-based modeling in Python (private library available upon request).

Manuscripts under Review or Construction:

1. Livings, M.S., Wilson, J.P., Miller, S., de Bruin, W.B., Weber, K., Babboni, M., Xu, M., **Li, K.,** de la Haye, K. (2022). Spatial characteristics of food insecurity and food access in Los Angeles County during the COVID-19 pandemic. *Food Security* (Submitted in June 2022).

2. Guo, B., **Li, K.**, Fu, C. (2023). The measurement of neighborhood dynamics in house prices: a multilevel perspective. *Applied Sciences* (Submitted in Jan 2023).

3. Liu, Y., Chen, R., Meng, Y., **Li, K.**, and Xu, Y. (2023) Study on the spatio-temporal evolution characteristics and driving mechanism of China's carbon emissions. *Humanities & Social Sciences Communications* (Submitted in Jan 2023).

PRESENTATIONS

Conferences and Workshops:

2022	Time series clustering using self-organizing maps to identify longitudinal pollutant exposure profiles (co-author). *Annual Conference of the International Society for Environmental Epidemiology*. Athens, Greece.
2021	Building Geo-Cyberinfrastructures for Emergency Management of Trail Systems in LA. *Urban and Regional Information Systems Association GIS-Pro 2021*. Baltimore, MD.
2021	Long-term Ambient Air Pollution Associated with Weekly COVID-19 Mortality Counts in California Census Tracts (co-author). *Annual Conference of the International Society for Environmental Epidemiology*. New York.
2021	Modeling the health benefits of traffic related air pollution abatement across the City of Los Angeles. *The American Association of Geographers' annual meeting*. Virtual Session.
2019	Predicting asthma symptoms with a Long-Short-Term Memory neural network and Automatic Feature Extraction using Convolutional Autoencoder. *The American Association of Geographers' annual meeting*. Washington D.C..
2018	Deep Learning in Geographical Object Detection: The Gap, the Trend and the Future. *The American Association of Geographers' annual meeting*. New Orleans, LA.
2018	A Mobile Health Approach to Improving Personal Exposure Assessment: Using Mobile Sensor Data and Machine Learning to Predict Key Microenvironments (co-author). *Annual Conference of the International Society for Environmental Epidemiology*. Ottawa, Canada.
2017	Introduction to an open-source python platform for agent-based modeling in coupled natural and human systems. *Agent-Based Modeling (ABM): A Symposium That Advances the Science of ABM*. San Diego, CA.
2016	Integrating Geospatial Analytics into Traditional Machine Learning Algorithms. *Southern California Data Science Conference*. Los Angeles, CA.
2016	An Agent-Based Model of Population Changes in a Vulnerable Coastal Environment. *The American Association of Geographers' annual meeting*. San Francisco, CA.
2015	A Cyberinfrastructure for Community Resilience Assessment and Visualization. *The American Association of Geographers' annual meeting*. Chicago, IL

2014   A Hybrid Model of Cellular Automata, Markov, and Logistic Regression for Land Change Prediction in the Lower Mississippi River Basin. *The American Association of Geographers' annual meeting*. Tampa, FL.

2013   Residential Relocation and Local Resilience in the Lower Mississippi River Basin. *The American Association of Geographers' annual meeting*. Los Angeles, CA.

2012   Temporal Changes of Coastal Community Resilience in Gulf of Mexico Region. *State of the Coast Conference.* New Orleans, LA.

2011   Temporal Changes of Coastal Community Resilience in Gulf of Mexico Region (I also chaired this paper session). *The American Association of Geographers' annual meeting*. Seattle, WA.

Invited Lectures, Seminars, & Talks:

2023   Environmental and Occupational Health Study Guide for CPH Exam. *PUBH 5950 Special Study for Examinations* (Guest Lecture). College for Public Health and Social Justice, Saint Louis University, St. Louis, MO.

2022   Introduction to open-source object-oriented databases and NoSQL databases. *SSCI 582 Spatial Databases* (Guest Lecture). Spatial Sciences Institute, USC, Los Angeles, CA.

2022   Agent-Based Modeling: Methods and Platforms. *SSCI 583 Spatial Analysis* (Guest Lecture). Spatial Sciences Institute, USC, Los Angeles, CA.

2022   Challenges and Solutions of Spatiotemporal Analytics in Building Smart and Connected Health. *Bio-statistics seminar* (Faculty Interview). College for Public Health and Social Justice, Saint Louis University, St. Louis, MO.

2021   Introduction to open-source object-oriented databases and NoSQL databases. *SSCI 582 Spatial Databases* (Guest Lecture). Spatial Sciences Institute, USC, Los Angeles, CA.

2021   Agent-Based Modeling: Methods and Platforms. *SSCI 583 Spatial Analysis* (Guest Lecture). Spatial Sciences Institute, USC, Los Angeles, CA.

2021   Agent-Based Modeling: Methods and Platforms. *SSCI 684 Spatial Modeling with GIS* (Guest Lecture). Spatial Sciences Institute, USC, Los Angeles, CA.

2021   Modeling Population Changes under Coastal Hazard Impacts. *SSCI 214 Human Populations and Natural Hazards* (Guest Lecture). Spatial Sciences Institute, USC, Los Angeles, CA.

2020	Introduction to Agent-based Modeling. *SSCI 383 Geospatial Modeling and Customization* (Guest Lecture). Spatial Sciences Institute, USC, Los Angeles, CA.
2020	Programming Fundamentals. *SSCI 383 Geospatial Modeling and Customization* (Guest Lecture). Spatial Sciences Institute, USC, Los Angeles, CA.
2020	Principles and Implementations of Agent-based Modeling. *SSCI 583 Spatial Analysis* (Guest Lecture). Spatial Sciences Institute, USC, Los Angeles, CA.
2020	Modeling Population Changes under Coastal Hazard Impacts. *SSCI 214 Human Populations and Natural Hazards* (Guest Lecture). Spatial Sciences Institute, USC, Los Angeles, CA.
2020	Deep Learning and Complex System Approaches in Geo-informatics. *International Young Scholar Symposium*. College of Surveying and Geo-Informatics, Tongji University, Shanghai.
2020	Deep Learning and Complex System Approaches in Epidemiology: Agents, Dynamics and Networks. *Bio-statistics seminar* (Faculty Interview). Department of Preventive Medicine, USC, Los Angeles.
2019	Assessing the Sustainability of Coupled Natural-Human Systems Using Coupled Differential Equations. *Smart City and GIS Application Training Programs by NSF Spatiotemporal Innovation Center at George Mason University*. USC, Los Angeles, CA.
2019	Spatial data sciences in environmental health. *International Young Scholar Symposium*. College of Surveying and Geo-Informatics, Tongji University, Shanghai.
2018	Integrating deep learning in social resilience assessment. *2nd Donghua University Shangshi Symposium*. Donghua University, Shanghai.
2018	Applying Multivariate Segmentation Methods to Human Activity Recognition from Wearable Sensors Data. *2018 mHealth Collaboratory Inaugural Mobile/Connected Health Symposium*. USC, Los Angeles, CA.
2017	Geographically Weighted Elastic Net: A Variable-Selection and Modeling Method under the Spatially Nonstationary Condition. *Geo-sciences Symposium* (Faculty Interview). Department of Geography, University of Missouri, Columbia, MO.

GRANTS AND CONTRACTS

Saint Louis University

2022-2027   Taylor Fellows Program. Funded by Taylor Geospatial Institute ($226,203). **PI**.

University of Southern California

2021-2026   "Southern California Center for Chronic Health Disparities in Latino Children and Families" by Michael Goran. Funded by National Institute on Minority Health and Health Disparities under National Institutes of Health ($5.05 million). **Co-I**.

2021-2025   "Using Community Partnerships, Novel Data Streams, and a Data Portal to Strengthen Food Systems, Security, & Justice" by Kayla de la Hayle. Funded by National Science Foundation ($2,054,156). **Co-I**.

2021-2022   "Novel characterization of 24-hour air pollution mixtures and their association with airway inflammation" by Erika Garcia. Funded by Southern California Environmental Health Sciences Center ($43,005). **Co-I**.

2020-2021   "Modeling the Human Mobility Impacts on the Spread of the Covid-19 Pandemic" by Kenan Li. Funded by Geospatial Fellows for Advancing COVID-19 Research & Education, the National Science Foundation funded program ($4500). **PI**.

2020-2021   "Modeling the health benefits of near roadway traffic pollution abatement in the City of Los Angeles" by Kenan Li and John P. Wilson. Funded by Southern California Environmental Health Sciences Center ($30,000). **Co-PI**.

2020-2021   "Environmental Determinants of COVID-19 Mortality in California: Development of a mortality database and investigation into air pollution, population mobility, and demographic and socioeconomic factors" by Erika Garcia et al. Funded by USC Keck School of Medicine Covid-19 Research Fund ($54,731). **Co-I**.

2020-2021   "COVID-19 Impacts on Food Access, Food Insecurity, and Informal Food Assistance in Los Angeles County" by Kayla de la Haye et al. Funded by USC Keck School of Medicine COVID-19 Research Fund ($94,105). **Co-I**.

2020   "Automatically Geo-reference and Geo-tag Historical Aerial Images" by Kenan Li and John P. Wilson. Funded by U.S. Army Corps of Engineers and Defense Imagery Management Operations Center. ($81,000). **Co-PI**.

2020	"Developing Los Angeles County Trail Address Systems" by John P. Wilson and Kenan Li. Funded by Los Angeles County and Accenture plc. (Pro Bono). **Co-PI**.
2017-2020	"PRISMS Data and Software Coordination and Integration Center (DSCIC)" by Jose-Louis Ambite and Frank Gilliland. Funded by National Institute of Biomedical Imaging and Bioengineering under National Institutes of Health ($5.25 million). **Co-I**.

Louisiana State University

2014-2016	"Coastal SEES Collaborative Research: Sustainability of Deltaic Coasts - The Trillion Dollar Problem" by Robert Twilley et al. Funded by National Science Foundation ($1.1 million). **Graduate Assistant**.
2011-2015	"CNH: Coupled Human and Natural Dynamics in a Vulnerable Coast System" by Nina Lam et al. Funded by National Science Foundation ($1.5 million). **Graduate Assistant**.
2010-2013	"Development of an Empirical Model for Measuring Community Resilience" by Nina Lam. Funded jointly by the U.S. Department of Agriculture and National Science Foundation ($390,000). **Graduate Assistant**.
2009-2011	"Developing Indicators to Measure Socio-economic Impacts of OCS Activities: A temporal analysis of Counties within the Gulf of Mexico Region" by Margaret Reams and Nina Lam. Funded by Bureau of Ocean Energy Management ($186,000). **Graduate Assistant**.
2009-2011	Geographic Information System part of "Geographic Units for Socioeconomic Impact Analysis in the Gulf of Mexico Region" by Nina Lam. Funded by Bureau of Ocean Energy Management ($440,000). **Graduate Assistant**.

ACADEMIC HONORS AND AWARDS

2017	Top reviewers for University of Southern California (Computer Science) by Web of Science Group – Clarivate.
2017	ABM 2017 Star Award in 2017 Agent-Based Modeling Symposium Sponsored by National Science Foundation (BCS #1638446).
2017	ABM 2017 Professional Enhancement Award in 2017 Agent-Based Modeling Symposium Sponsored by National Science Foundation (BCS #1638446).

2015	STEM Student Research Poster award in the 2015 LSU Board of Supervisors Meeting.
2014	"Top 10 Submission" in ESRI Global Disaster Resilience App Challenge 2014. App name: "Community Resilience Inference Measurement."
2014	"10 Runners Up" in ESRI Climate Resilience App Challenge 2014. App name: "Community Resilience Inference Measurement."
2014	Third Place award in a student poster competition in the 28th Louisiana Remote Sensing and GIS Workshop. Poster title: "A Hybrid Model of Cellular Automata, Markov, and Logistic Regression for Land Change Prediction in the Lower Mississippi River Basin."
2012	The Sustainable Environment Award for Master Thesis from the Department of Environmental Sciences. Thesis title: "Temporal Changes of Coastal Community Resilience in the Gulf of Mexico Region."
2012	First Place award in a student poster competition in the 26th Louisiana Remote Sensing and GIS Workshop. Poster title: "Temporal Changes of Coastal Community Resilience in the Gulf of Mexico Region."
2009	First prize of "Creative Experimental Project of National Undergraduate Students" from National Ministry of Education of China. Research title: "In-situ restoration of oil contaminated soil by plant".
2009	"Hundred Young Teachers" Award from Nankai University (the candidates must have an excellent academic performance with a ranking among the top 5% of their peers).
2007	Third prize of "Excellent Undergraduate Scholarship" from Nankai University.
2006	Second prize of "Excellent Undergraduate Scholarship" from Nankai University.

ACADEMIC JOURNAL/BOOK REVIEWS

A full summary of my verified peer reviews can be found at the following link:

https://www.webofscience.com/wos/author/record/2516222

Here is a list of some of the highlighted journals that I have served as an active reviewer for:

IEEE Access; IEEE Transactions on Cybernetics; Transactions in GIS; ISPRS International Journal of Geo-Information; International Journal of Disaster Risk Reduction; International Journal of Geographical Information Science; International

Journal of Geriatric Psychiatry; Annals of the American Association of Geographers; Applied Sciences; Environmental Research; Expert Systems; Healthcare; IEEE Internet of Things Journal; IEEE Transactions on Computational Social Systems; Applied Geography.

TEACHING EXPERIENCES

Saint Louis University

Instructor:

2023 -	BST 5600 R for Spatial Analysis, SLU
2022 -	BST 5500 Statistical Learning, SLU

Teaching Assistant:

2022 -	PPHS 1050 Medical Scholar Seminar, LSU.
2022 -	PPHS 2930 Pre Health Committee on Evaluation Process

Directed Undergraduate Students:

Riley Demo, Winner of SLU Honors Program.

Directed Graduate Students:

Henli Shih, M.P.H. in Biostatistics, Department of Epidemiology and Biostatistics, SLU.

Avery Lyons, M.P.H. in Maternal & Child Health, Department of Epidemiology and Biostatistics, SLU.

University of Southern California

Instructor:

2020	SSCI 383 Geospatial Modeling and Customization Lab, USC
2019 - 2020	SSCI 265 The Water Planet Lab, USC

Directed Undergraduate Students:

Adam Owen, Winner of USC Student Opportunities for Academic Research; Winner of USC Undergraduate Research Associates Program.

Alicia Adiwajaja, Winner of USC Student Opportunities for Academic Research.

Directed Graduate Students:

Xiangyi Qi, M.S. in Spatial Data Sciences, Spatial Sciences Institute, USC.

Meng Hu, M.S. in Spatial Economics and Data Analysis, Spatial Sciences Institute, USC.

Directed Master Thesis:

Philip Griffin, Automated Assessment of Potential Cell Tower Signal Interference with High Accuracy Surveys in Los Angeles County (Committee Member).

Louisiana State University

Teaching Assistant:

2009 - 2015	ENVS 4149 Design of Environmental Management Systems, LSU.
2009 - 2015	ENVS 7050 Spatial Modeling of Environmental Data, LSU.

PROFESSIONAL SERVICES

2022-	Member, WashU ICTS Geospatial Health Data Analytics Core
2022	Guest Editor, Applied Sciences, Special Issue: Special Issue: AI for Medical, Social, and Geoinformatics.
2022	Guest Editor, Applied Sciences, Special Issue: Geospatial AI in Earth Observation, Remote Sensing and GIScience.
2022	Guest Editor, Sensors, Special Issue: Recent Advancements in Sensor Technologies for Healthcare and Biomedical Applications II.
2022-	Associate Investigator, SLU Water Access, Technology, Environment and Resources (WATER) Institute.
2022-	Member, SLU Advanced HEAlth Data (AHEAD) Research Institute.
2022-	Life-time Member, American Association of Geographers.
2022-	Member, SLU International Faculty and Staff Association.
2022-	Member, WashU Institution of Clinical and Translational Sciences.
2022-	Fellow, Taylor Geospatial Institute.
2022-	Committee Member, SLU Pre-Health Committee on Evaluations.
2020-2022	Consortium Member, USC center for global chain management Covid-19 Healthcare Initiative Consortium. https://uscsupplychain.com/healthcaresupplychain/.
2020-2021	Geospatial Fellows for Advancing COVID-19 Research & Education, UIUC Geospatial Software Institute. https://gsi.cigi.illinois.edu/geospatial-fellows-members/.
2020	Committee Member, 2020 USC Esri Development Center Student of The Year Award Committee.
2019-2022	University Advisor, Chinese Career Assistant USC Chapter.

2019-2022   Vice President, USC AI Innovation Club.

2017-   Editorial Board, Remote Sensing, PiscoMed Publishing.
            http://ojs.piscomed.com/index.php/RS.