

Mehak Sachdeva (*she / her*)

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Postdoctoral Research Scholar
Spatial Analysis Research Center
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Education

Ph.D. in GIScience (CGPA - 4.0) 2018 - 2022
School of Geographical Sciences and Urban Planning Tempe, AZ
Arizona State University

Advisor: Prof. Stewart Fotheringham

Committee: Prof. Michael Goodchild, Prof. Peter Kedron, Dr. Levi Wolf

• **Summer Institute in Computational Social Science (SICSS)** June 2022
University of Pennsylvania Philadelphia, PA

• **AAG-UCGIS Summer School (funded by NSF)** July 2019
CyberGIS Center, UIUC Urbana-Champaign, IL

M.S. Urban Planning (CGPA - 3.6) 2014 – 2016
Graduate School of Architecture, Planning and Preservation New York, NY
Columbia University

Bachelor of Architecture (CGPA - 3.82) 2008 – 2013
Department of Engineering and Technology Vadodara, India
The Maharaja Sayajirao University of Baroda

Academic Appointments

Co-Instructor Fall 2022
GIS 563: Local Statistical Modeling (*in-person*) Tempe, AZ

Postdoctoral Research Scholar 2022 - present
Spatial Analysis Research Center, ASU Tempe, AZ

Instructor Summer 2022
GIS 322: Programming Principles in GIS II (*online*) Tempe, AZ

Instructor Fall 2021
GIS 211: Geographic Information Science II (*in-person*) Tempe, AZ

Instructor Summer 2021
GIS 322: Programming Principles in GIS II (*online*) Tempe, AZ

Graduate Course - Assistant Developer Fall 2019
GIS 471: Spatial Statistics Tempe, AZ

Graduate Research Associate 2018 - 2022
Spatial Analysis Research Center, Arizona State University Tempe, AZ

Graduate Teaching Assistant Fall 2015, Spring 2016
Course: Advanced GIS, Columbia University New York, NY

Graduate Research Assistant 2015 – 2016
Climate Change and Resilience Research, Columbia University New York, NY

Graduate Teaching Assistant Spring, 2016
Course: Sustainable Urban Development, Columbia University New York, NY

Awards and Honors

**AAG 2022 - Spatial Analysis and Modeling Specialty
Scholarship: \$200**
3rd Place in the John Odland Research Competition

Spring 2022
Virtual meeting

**ISSR Poster Competition
Scholarship: \$800**
3rd place in Institute for Social Science Research poster competition

Spring 2022
Tempe, AZ

**SGSUP Graduate Service Award
Scholarship: \$1400**
Outstanding achievement in service to the school
School of Geographical Sciences and Urban Planning, Arizona State University

Fall 2021
Tempe, AZ

**UCGIS Symposium 2021 - Student Research Awards
Scholarship: \$250**

2021
Virtual meeting

1st Place in Student Lightning Talks

**Anthony J. Brazel Research Award (Best research paper)
Scholarship: \$1000**
Annual student research paper competition
School of Geographical Sciences and Urban Planning, Arizona State University

2020
Tempe, AZ

**SGSUP Graduate Professional Development Award
Scholarship: \$1400**
Outstanding achievement in teaching and organizing technical workshops
School of Geographical Sciences and Urban Planning, Arizona State University

Fall 2020
Tempe, AZ

**SGSUP Graduate Professional Development Award
Scholarship: \$1400**
Outstanding achievement in teaching and organizing technical workshops
School of Geographical Sciences and Urban Planning, Arizona State University

Spring 2020
Tempe, AZ

**University Graduate Fellowship
Scholarship: \$4000**
Arizona State University

2018
Tempe, AZ

**Research Poster Competition (2nd position)
Scholarship: \$100**

2019
Tempe, AZ

SGSUP Symposium, Arizona State University

**Studio X Research Scholarship
Fully-funded two-week research trip to Amman, Jordan**
Global Center Amman – Columbia University

2015
Amman, Jordan

**K.C. Mahindra Scholarship for Post Graduate Studies Abroad
Scholarship: \$5000**
K.C. Mahindra Education Trust

2014
Mumbai, India

**National Award for Excellence in Architectural Thesis
Awarded to ten best theses in India annually**
National Institute of Advanced Studies in Architecture

2013
Chandigarh, India

University Gold Medal for Best Design Thesis
The Maharaja Sayajirao University of Baroda

2013
Vadodara, India

University Gold Medal for Highest CGPA
The Maharaja Sayajirao University of Baroda

2013
Vadodara, India

University Gold Medal for Best Urban Design
The Maharaja Sayajirao University of Baroda

2013
Vadodara, India

Publications

Chapters in Books

Sachdeva, M., and Fotheringham, A. S. (2020). The Geographically Weighted Regression Framework. The Geographic Information Science & Technology Body of Knowledge (4th Quarter 2020 Edition), John P. Wilson (Ed.). DOI: 10.22224/gistbok/2020.4.7

Sachdeva, M., Oshan, T. and Fotheringham A.S. (*in print*).“Local Modeling in a Regression Framework” Chapter in The Encyclopedia of Spatial Analytics, eds. S. Rey and R. Franklin.

Archiving ‘13 Architectural Thesis

Archiving architectural thesis/Council of Architecture. National Institute of Advanced Studies in Architecture, **2013**

Peer-Reviewed Journal Articles

Sachdeva, M., Fotheringham, A.S. and Li, Z. (2022). “Do places have value? Quantifying the intrinsic value of housing neighborhoods using MGWR” *Journal of Housing Research* 0(0):1–29. doi: 10.1080/10527001.2021.2003505.

Fotheringham, A.S. & **Sachdeva, M.** (2022). “Scale and Local Modeling: New perspectives on the modifiable areal unit problem and Simpson’s paradox” *Journal of Geographical Systems*. doi: 10.1007/s10109-021-00371-5.

Fotheringham, A.S. & **Sachdeva, M.** (2022). “On the importance of thinking locally for statistics and society.” *Spatial Statistics* 50:100601. doi: 10.1016/j.spasta.2022.100601.

Kedron, P., Bardin, S., Hoffman, T. D., **Sachdeva, M.**, Quick, M., & Holler, J. (2022). A Replication of DiMaggio et al. (2020) in Phoenix, AZ. *Annals of Epidemiology*, 74, 8–14. <https://doi.org/10.1016/j.annepidem.2022.05.005>

Oshan, T. M., Wolf, L. J., **Sachdeva, M.**, Bardin, S., & Fotheringham, A. S. (2022). A scoping review on the multiplicity of scale in spatial analysis. *Journal of Geographical Systems*, 24(3), 293–324. <https://doi.org/10.1007/s10109-022-00384-8>

Sachdeva, M., Fotheringham, A.S., Li, Z. and Yu, H. (2021). “Are We Measuring Spatial Nonstationarity or Nonlinearity” *Geographical Analysis*. DOI: 10.1111/gean.12297

Fotheringham, A. S. & **Sachdeva, M.** (2021) Modelling spatial processes in quantitative human geography, *Annals of GIS*, DOI: 10.1080/19475683.2021.1903996

Kedron, P., Quick, M., Hilgendorf, Z. and **Sachdeva, M.** (2021) “Using the specification curve to teach spatial data analysis and explore geographic uncertainties” *Journal of Geography in Higher Education* 46(2):304–14. doi: 10.1080/03098265.2021.1901076.

Gu, H., Yu, H., **Sachdeva, M.**, & Liu, Y. (2020). Analyzing the distribution of researchers in China: An approach using multiscale geographically weighted regression. *Growth and Change*. DOI: 10.1111/grow.12453

Peer-Reviewed Journal Articles under review

Sachdeva, M., & Fotheringham, A. S.(*under review*). A Geographical Perspective on Simpson’s Paradox. *Journal of Spatial Information Science*.

Manuscripts Under Preparation

Sachdeva, M., & Fotheringham, A. S., Li, Z. & Yu, H. On the Local Modeling of Count Data: Multiscale Geographically Weighted Poisson Regression

Mendez, C., **Sachdeva, M.** & Miranti, R.C. The role of spatial heterogeneity in the Okun's law: Evidence from Indonesia during COVID-19.

Presentations and Workshops

Sachdeva, M. & Fotheringham, A.S. (2022) “A Geographical Perspective on Simpson’s Paradox”, Virtual oral presentation at the American Association of Geographers (AAG) Annual Meeting 2022

(This presentation was awarded the 3rd place in the John Odland Research Competition, SAM specialty group)

Sachdeva, M. (2021). Invited Five-hour technical virtual workshop series on Spatial Heterogeneity, Inference and Visualization at The Graduate School of International Development, Nagoya University, Japan, November, 2021.

Sachdeva, M. & Fotheringham, A.S. “Why Scale Matters: Simpson’s Paradox, MAUP and Local Modeling” Virtual oral presentation at University Consortium for Geographic Information Science (UCGIS) Symposium 2021 **(This presentation was awarded the 1st place in student research lightning talks.)**

Sachdeva, M., Fotheringham, A.S., Z. Li and H. Yu “Measuring Spatial Nonstationarity vs Nonlinearity”, Virtual oral presentation at Association of American Geographers (AAG), Seattle, April, 2021.

Sachdeva, M. (2020). Two-hour technical virtual workshop on Multiscale Geographically Weighted Regression at University Consortium for Geographic Information Science workshop series, June and July, 2020 **(two instances)**

Sachdeva, M. (2020). One-hour technical virtual workshop on Multiscale Geographically Weighted Regression at School of Geographical Sciences and Urban Planning (SGSUP), Tempe, AZ, virtual workshop series, May, 2020

Sachdeva, M., Fotheringham, A. S., & Z. Li “Multiscale Hedonic House Price Modeling: An Approach Incorporating Spatial Non-stationarity”. Virtual oral presentation at Association of American Geographers (AAG), Denver, April, 2020.

Sachdeva, M. (2020). An exploration into Simpson’s paradox using Multiscale Geographically Weighted Regression. Virtual oral presentation at Spatial Analysis Research Center Brownbag series, Tempe, AZ, April 2020.

Sachdeva, M. (2019). Where people prefer to live: Insights from local house price modeling. Poster presentation at Institute of Social Science Poster Competition, Tempe, AZ, Nov 2019.

Sachdeva, M. (2019). Multiscale Local House Price modeling. Poster presentation at SGSUP Symposium Poster Competition, Tempe, AZ, April 2019.

Sachdeva, M. (2019). Local Modeling in spatial statistics. Oral presentation at SGSUP Symposium, Tempe, AZ, April 2019.

Research Experience

Google Summer of Code Fellow with Python Software Foundation (PSF)	May - August 2019
<ul style="list-style-type: none">Contributed research and code to Python Spatial Analysis Library under PSFExtending the MGWR model to accomodate Binomial and Poisson response variables	Tempe, AZ

Multi-Scale Local Statistical Modeling Frameworks (funded by NSF)	2018 - Present
<ul style="list-style-type: none">Development and application of multi-scale local modelsPrincipal Investigator: A. Stewart Fotheringham	Tempe, AZ

Geospatial analysis of risk factors related to preterm births across the USA	May - December 2019
<ul style="list-style-type: none">Geospatial solutions and analysis support to Garbha Health, PhoenixClient: Dr. Avi Patil	Tempe, AZ

City Studio - Advances toward the “20-Minute City” vision for Tempe	January - May 2019
<ul style="list-style-type: none">Investigation of the spatial configuration and infrastructure of the cityClient: City of Tempe	Tempe, AZ

Resilient Island Culture, Staten Island	2015
<ul style="list-style-type: none">Neighborhood-wide solution toward a resilient community post SandyClient: Make The Road New York	New York, NY

Urban Resilience and Urban Sustainability, Graduate Thesis	2016
• Identifying gaps in existing frameworks of urban sustainability and resilience	New York, NY
Reclamation Institute for Social Ecology, Undergraduate Thesis	2013 Udaipur,
• Rehabilitation of an abandoned Asbestos mine in rural India for community enhancement	India

Professional Experience

Geospatial Data Scientist	2016 – 2017
Education and Data Intern	May – June 2016
Research and Data Team, CARTO – Location Intelligence Platform	New York, NY
Urban Planner	May – August 2016
GWW Planning and Consultancy	New York, NY
Development Intern	January – May 2016
New York City Economic Development Corporation	New York, NY
Data Analyst and Developer	2015 – 2016
SHoP Architects and Center for Spatial Design	New York, NY
Resiliency Planning Intern	May – August 2015
New York City Department of City Planning	New York, NY
Architect	2013 - 2014
Vastu Shilpa Consultants - Sangath	Ahmedabad, India

Service

Review for peer-reviewed journals	2020 – present
Geographical Analysis	
Environment and Planning B: Urban Analytics and City Science	
Socio-Economic Planning Sciences; Social Forces International	
Journal of Geographical Information Science	
Student Board Member	2021 - present
Spatial Analysis and Modeling Speciality	
American Association for Geographers (AAG)	
Student Representative	2020 – present
Covid Care Committee, SGSUP, ASU	
President	2020 - 2021
Graduate Student Council, SGSUP, ASU	
Volunteer Co-organizer and Speaker	2016 – 2017
CartoCamp Meetup, New York	New York, NY
Guest Juror, GIS I Final Presentation	November 2016
M.A. First Year, Pratt University	New York, NY
Volunteer for Community Engagement Meeting	January 2016
New York City Economic Development Corporation	New York, NY
Graphic and Content Editor	2015 – 2016
Urban Magazine, Columbia University	New York, NY
Volunteer for Construction Service	May - November 2009
Olakh - Feminist Indian Non Governmental Organization	Vadodara, India

Skills

Coding, Mapping and Data Analysis

Python, CARTO, ESRI products, QGIS, PostGIS, SQL, PostgreSQL, Mapbox, JavaScript, Leaflet, R, Stata, SAS

Graphic Design | Drafting and Modeling

Adobe Design Suite (Indesign, Illustrator, Photoshop), Corel Draw, MS Office, AutoCAD (2D & 3D), Revit Architecture, Ecotect Analysis, ArchiCAD, Rhino, 3DS Max, Sketch-up

Interests and Hobbies

Running (Half-marathons: Tempe 2019, 2020; Virtual 2021, Yosemite 2021, San Francisco 2021, Grand Teton 2022), Hiking, Mentoring, Exploring cities, Abstract painting