

VARUN GOEL

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CURRENT POSITION

current
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2021

- **Postdoctoral Research Associate**
Carolina Population Center, University of North Carolina

 Chapel Hill, NC

EDUCATION

2021
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2016

- **PhD, Geography**
University of North Carolina
 - Title : *Are Deep Tubewells Safe and Equitable? A Geographic examination of Impacts of Deep Tubewell Interventions on Provision of Safe Drinking-water and Diarrheal Diseases in Rural Bangladesh*

 Chapel Hill, NC

2013
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2011

- **M.S., Geography**
University of Illinois
 - Concentration in Health and Medical Geography

 Urbana Champaign, IL

2011
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2008

- **B.A. (hons), Geography (minor C.S.)**
University of Illinois
 - Concentration in Geographic Information Science
 - Awarded Highest Distinction

 Urbana Champaign, IL

RESEARCH EXPERIENCE

2021
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2016

- **Carolina Population Center**
University of North Carolina
 - Conducted population health research on multiple NSF and NIH Projects as a pre-doctoral trainee
 - Lead and co-authored multiple peer-reviewed publications evaluating spatial determinants of diarrheal diseases in Bangladesh and malaria in Sub-Saharan Africa under supervision of [Dr. Mike Emch](#).
 - Conducted analysis and wrote a submitted manuscript with [Dr. Paul Delamater](#) on spatial determinants of vaccine hesitancy in the United States

2016
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2014

- **Indian School of Business**
Hyderabad, India
 - I served as the chief data scientist at a research team led by [Dr. Ashwini Chhatre](#) to acquire, process, integrate, visualize and disseminate data-driven products for evidence based resilient rainfed agriculture in India

2013
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2012

- **Center for One Health**

University of Illinois

- Conducted Master's research involving a spatial risk assessment of Epizootic Hemorrhagic Disease among cattle and white-tailed deer in Illinois under supervision of late [Dr. Marilyn O'Hara Ruiz](#)

2011
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2010

- **CyberGIS and Infrastructure Laboratory**

University of Illinois

- Co-led the development of an Ecological Compliance Assessment WebGIS tool named *EcoCAT* at the Illinois Department of Natural Resources under supervision of [Dr. Shaowen Wang](#)



PEER REVIEWED PUBLICATIONS

2022

- **Race, Place, and HIV: The Legacies of Apartheid and Racist Policy in South Africa**

Social Science and Medicine

- GJ Bell, J Ncyayiyana, A Sholomon, **V Goel**, K Zuma, M Emch

2022

- **Implementation Approaches for Introducing and Overcoming Barriers to Hepatitis B Birth-Dose Vaccine in Africa**

Global Health: Science and Practice

- Boisson A, V Goel, Yotebiang M, Parr JB, B Fried, Thompson P

2021

- **Dihydroartemisinin-piperaquine chemoprevention and malaria incidence after severe flooding: evaluation of a pragmatic intervention in rural Uganda**

Clinical Infectious Diseases

- RM Boyce, BD Hollingsworth, E Baguma, E Xu, **V Goel**, A Brown-Marusiak, R Muhindo, R Reyes, M Ntaro, MJ Siedner, SG Staedke, JJ Juliano, EM Mulongo

2021

- **Malaria prevalence and long-lasting insecticidal net use in rural western Uganda: results of a cross-sectional survey conducted in an area of highly variable malaria transmission intensity**

Malaria Journal

- CM Cote, V Goel, R Muhindo, E Baguma, M Ntaro, BE Shook-Sa, R Reyes, SG Staedke, EM Mulongo, RM Boyce

2021

- **Individual, household and neighborhood risk factors for malaria in the Democratic Republic of the Congo support new approaches to programmatic intervention**

Health and Place

- M Carrel, S Kim, MK Mwandagalirwa, N Mvuama, JA Bala, M Nkalani, G Kihuma, J Atibu, O Diallo, **Varun Goel**, KL Thwai, JJ Juliano, M Emch, A Tshefu, JB Parr

2021

- **SARS-CoV-2 testing in North Carolina: Racial, ethnic, and geographic disparities**

Health and Place

- K Brandt*, V Goel*, C Keeler*, GJ Bell, A Aiello, G Corbie-Smith, E Wilson, A Fleischauer, M Emch, RM Boyce
 - * Joint first author

- 2021
- Effectiveness of a national mass distribution campaign of long-lasting insecticide-treated nets and indoor residual spraying on clinical malaria in Malawi, 2018–2020
BMJ Global Health
 • H Topazian, A Gumbo, K Brandt, M Kayange, JS Smith, JK Edwards, V Goel, T Mvalo, M Emch, A Pettifor, JJ Juliano, I Hoffman
- 2021
- What is the burden of malaria in the DRC
Journal of Infectious Diseases
 • M Deutsch-Feldman, JB Parr, C Keeler, NF Brazeau, V Goel, M Emch, JK Edwards, M Kashamuka, AK Tshefu, SR Meshnick
- 2020
- Considering Alternate Pathways of Drinking-Water Contamination: Evidence of Risk Substitution in Rural Bangladesh
International Journal of Environmental Research and Public Health
 • V Goel, GJ Bell, S Sridhar, Md Islam, Md Yunus, Md Ali, Md Khan, Md Alam, ASG Faruque, Md Kabir, S Babu, K Brandt, V Shelus, MD Sobsey, M Emch
- 2019
- Extending multilevel spatial models to include spatially varying coefficients
Health and Place
 • M Janko, V Goel, M Emch
- 2019
- False-negative malaria rapid diagnostic test results and their impact on community-based malaria surveys in sub-Saharan Africa
BMJ Global Health
 • OJ Watson, KM Sumner, M Janko, V Goel, P Winskill, HC Slater, A Chani, SR Meshnick, JB Parr
- 2019
- Impacts of household sources on air pollution at village and regional scales in India
Atmospheric Chemistry and Physics
 • B Rooney, R Zhao, Y Wang, KH Bates, A Pillarisetti, S Sharma, S Kundu, TC Bond, NL Lam, B Ozaltun, L Xu, V Goel, LT Fleming, R Weltman, S Meinardi, DR Blake, SA Nizkorodov, RD Edwards, A Yadav, NK Arora, KR Smith, JH Seinfeld
- 2018
- Deep tubewell microbial water quality and access in arsenic mitigation programs in rural Bangladesh
Science of the Total Environment
 • V Goel, MS Islam, M Yunus, MT Ali, AF Khan, N Alam, ASG Faruque, G Bell, M Sobsey, M Emch
- 2017
- Individual and household characteristics of persons with Plasmodium falciparum malaria in sites with varying endemicities in Kinshasa Province, Democratic Republic of the Congo
Malaria Journal
 • MK Mwandagalirwa, L Levitz, KL Thwai, JB Parr, Varun Goel, M Janko, A Tshefu, M Emch, SR Meshnick, M Carrel



MANUSCRIPTS UNDER REVIEW

2022

- Malaria Transmission Intensity Likely Modifies RTS,S/AS01 Efficacy Due to a Rebound Effect in Ghana, Malawi, and Gabon

Lancet Infectious Diseases (submitted)

• GJ Bell, V Goel, B Adu, BA Mensah, S Gyaase, F Mougeni, K Wiru, C Sinai, P Essone, D Dosoo, M Osei, P Minsoko, K Niare, JJ Juliano, M Hudgens, P Kamthunzi, ST Agnandji, KP Asante, A Ghansah, JA Bailey, M Emch

2022

- Associations between Deep Tubewell Use and Household Microbial Contamination: A Prospective Cohort Study among Households in Rural Bangladesh

International Journal of Hygiene and Environmental Health (submitted)

• V Goel, B Chan, M Ziade, MS Islam, Md Yunus, MT Ali, AF Khan, N Alam, ASG Faruque, SU Babu, MM Kabir, M Sobsey, M Serre , M Emch

2022

- Provisional entrance, exemptions, and kindergarteners up-to-date on vaccination after a regulatory change in Pennsylvania

Public Health Reports (under review)

• PL Delamater, V Goel, CN Strack, YT Yang



BOOK CHAPTERS

2021

- Spatial Epidemiology: Challenges and methods in COVID-19 research

In: Andrews G.J., Crooks V.A., Pearce J.R., Messina J.P. (eds) *COVID-19 and Similar Futures. Global Perspectives on Health Geography*. Springer

• V Goel, M Emch



SELECTED CONFERENCE PRESENTATIONS

2022

- Evidence of Rebound Malaria: Estimating the Impact of Malaria Transmission Intensity on Reduced Malaria Vaccine Efficacy in Sub-Saharan Africa

Association of American Geographers, Feb 26 - Mar 1

📍 Virtual

2022

- Landscape Genetics of Pandemic Swine Influenza

Association of American Geographers, Feb 26 - Mar 1 (non presenting author)

📍 Virtual

2021

- Investigating COVID-19 Testing in North Carolina: Racial, Ethnic, and Geographic Disparities

Association of American Geographers, April 7-11 (non presenting author)

📍 Virtual

2021

- Spillovers and Risk Substitution in Public Health Interventions: A case study of Deep Tubewell Interventions and Diarrheal Disease in Rural Bangladesh

Association of American Geographers, April 7-11

📍 Virtual

2020

- Are Deep Tubewells Safe Drinking Water Sources? Evidence of Risk Substitution from Rural Bangladesh

UNC Water and Health Conference, Oct 26-30

📍 Chapel Hill, USA

2019

- Measuring spillover effects from a health intervention in Rural Bangladesh

International Medical Geography Symposium, July 1-6

📍 Queenstown, NZ

- 2019 • Climatic Influences on Women's Health and Mobility in Sub-Saharan Africa
Population Association of America, April 11-13 (non-presenting author)  Austin, USA
- 2019 • Risk Substitution through Surface Water Use Among Deep Tubewell users in Rural Bangladesh
Association of American Geographers, April 4-7  Washington D.C, USA
- 2018 • Does Women's Empowerment Reduce the Negative Effect of Climate Change on Child Health? Empirical Evidence from Households in India
Population Association of America, April 26-28  Denver, USA
- 2018 • Impact of Population Modelling Choices on Epidemiological Estimates: Implications for Integrated Disease Control
American Society for Tropical Medicine and Hygiene, Oct 28-30, (non-presenting author)  New Orleans, USA
- 2017 • Finding Safe Drinking Water in Rural Bangladesh - Are Deep Tubewells the Answer?
Association of American Geographers, April 10-14  New Orleans, USA
- 2013 • An integrated One Health approach to evaluating the spatio-temporal risk of hemorrhagic disease in cattle in Illinois
URISA CIS and Public Health Conference, Jun 10-12  Miami, USA
- 2013 • A spatial risk assessment of hemorrhagic disease in cattle in Illinois from 2005 to 2012,
Association of American Geographers, April 22-25  Los Angeles, USA
- 2011 • IMAP: An online GIS tool for disability-friendly pedestrian navigation
Illinois GIS Association Spring Conference, April 1  Los Angeles, USA

INVITED TALKS AND PANELS

- 2020 • Spatial and demographic patterns in SARS-CoV-2 testing and test positivity in North Carolina
Geography Colloquium (Co-presented), Nov 10  Dartmouth College
- 2020 • SARS-CoV-2 Testing in North Carolina: Racial, ethnic, and geographic disparities
Working Group Seminar (Co-presented), Nov 19  NC Covid Surveillance Network
- 2020 • Building Resilience in Water, Sanitation and Hygiene Systems in Developing Countries
STAR-TIDES Invited Panel Speaker, Oct 20  George Mason University
- 2020 • Spatial Components of COVID-19 viral and seroprevalence testing in North Carolina
School of Forest and Environment Resources Seminar, Oct 19  NC State University
- 2018 • Examining the Role of Neighborhood Definitions on Spatio-temporal Distribution of Vaccine Refusal in California
GIS Day Invited talk, Nov 16  Duke University
- 2018 • Evaluating Deep Tubewell interventions in rural Bangladesh: Implications for both drinking and non-drinking water usage
Research Seminar, Sep 25  icddr,b Bangladesh
- 2018 • Mapping Infectious Diseases using R
Workshop at the *Evolutionary Medicine Summer Institute*, June 7  Duke University
- 2017 • Globalization and Health
Guest Lecture, GEOG 110: Geographies of Globalization, Oct 13  UNC Chapel Hill
- 2017 • Morbidity and Health
Guest Lecture: Soc 122: Population and Development, March 28  UNC Chapel Hill

- 2013
 - **Applications of GIS in Natural Resource Management**
Guest Lecture: Natural Resource Governance in Developing Countries, Oct 29
 📍 University of Illinois
- 2012
 - **Open-source GIS tools in criminology and health**
Guest Lecture: Geospatial Tech and Society
 📍 University of Illinois

👤 TEACHING EXPERIENCE

- 2020 spring
 - **Course Instructor**
GEOG 215: Introduction to Spatial Data Science
 - Rated 4.85 out of 5 (Full course evaluations available upon request)📍 University of North Carolina Chapel Hill
- 2013 spring
 - **Teaching Assistant**
GEOG 105: Digital Earth
 - Mentioned in *List of Instructors rated as Excellent by their students*📍 University of Illinois, Urbana Champaign
- 2011 fall
 - **Teaching Assistant**
GEOG 101: Geography of Developing Countries
 - Mentioned in *List of Instructors rated as Excellent by their students*📍 University of Illinois, Urbana Champaign

👤 OTHER TEACHING EXPERIENCE

- 2020 March
 - **Course Instructor**
Introduction to GIS and Spatial Analysis
 - Co-taught a short course on Introduction to GIS and Spatial Analysis to doctors and public health researchers as part of the Malawi HIV Implementation and Research Training Program
 📍 Lilongwe, Malawi
- 2020 december
 - **Teaching Assistant**
Data Matters Workshop Series
 - TA for 3 two-day classes on Introductory, Intermediate and Advanced R
 📍 University of North Carolina Chapel Hill

🏆 AWARDS, HONORS & FUNDING

- 2020
 - UNC Graduate School Dissertation Completion Fellowship (\$18,000)
- 2020
 - Melinda Meade Research Award, UNC Geography (\$3000)
- 2019
 - Melinda Meade Graduate Student Summer Award, UNC Geography (\$2000)
- 2019
 - AAG Health and Medical Geography Specialty Group Travel Award (\$500)
- 2018
 - Ona Impact Grant for using innovative digital technology for field data collection (\$1200)
- 2018
 - Geography Summer Award, UNC Geography (\$3000)
- 2018
 - Summer Institute in Statistics and Infectious Disease Modeling scholarship, UW (\$3300)
- 2016
 - UNC Doctoral Recruitment Merit Assistantship (\$20,000)
- 2013
 - Schlesinger Travel Award, UIUC School of Earth, Society and Environment (\$600)

- 2011 • Outstanding Senior in Geography Award, Illinois Geographical Society
- 2011 • ESRI Development Center (EDC) Scholarship, ESRI (co-shared) (\$500)
- 2011 • 1867 Society Fund Award, UIUC (shared) (\$1100)
- 2011 • Howard Roepke Undergraduate Research Scholarship, UIUC Geography (\$3000)

SKILLS

- **Analytical**
GIS, remote sensing, spatial statistics, geostatistical modeling
- **Programming**
R (*advanced*), Python, Matlab, Bash
- **Software/Tools**
R, ArcGIS, QGIS, Stata, GIT, AWS, PostGIS

DEPARTMENTAL SERVICE

- 2020 | 2017 • **Treasurer**
Geography Association of Graduate Students 📍 University of North Carolina Chapel Hill
- 2017 | 2016 • **Graduate Student Representative, Geography**
Graduate Professional Student Federation 📍 University of North Carolina Chapel Hill
- 2013 • **Chair**
Society of Earth Systems and Environment Research Review 📍 University of Illinois, Urbana Champaign

REVIEWER ASSIGNMENTS

- Health & Place
- Malaria Journal
- Bulletin of the World Health Organization
- Science of the Total Environment
- American Journal of Public Health

MEMBERSHIP IN PROFESSIONAL SOCIETIES

- Association of American Geographers
- Population Association of America
- American Society of Tropical Medicine and Hygiene

LANGUAGES

- **English**
Fluent
- **Hindi**
Native Speaker
- **Mandarin**
Conversational