William H. Kessler

Harvard-Chan School of Public Health
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EDUCATION

2017 **M.S. Geography** (GPA:3.86)
University of Florida, *Gainesville, FL*;
Thesis: Environmental and Climatic Predictors of Presence of Adult *Amblyomma americanum* in Florida

2014 **B.S. Biology with Honors** (GPA: 3.28)
Mathematics minor, chemistry minor concentrations
New Mexico Institute of Mining and Technology, *Socorro, NM;*

Additional Graduate Coursework

2021 Montana State University, *Bozeman, MT;*
Coursework in Computer Science and Software Engineering
2024 Harvard University Extension School, *Cambridge, MA*;
Coursework in SQL and Database Management

PROFESSIONAL AND RESEARCH EXPERIENCE

01/2023-Present **Geospatial Data Manager**
NIEHS Center for Environmental Health, Geographic and Contextual Measures Core (Supervisor: Dr. Francine Laden)
Harvard-Chan School of Public Health, *Boston, MA*;

- Implement ArcGIS Enterprise infrastructure and PostgreSQL database support for geospatial data delivery to Center members
- Link fine scale environmental exposure datasets to public health cohort studies using parallel processing on super computing cluster in Python and R
- Develop unique geospatial datasets for national scale noise modeling projects
- Advise Center members on the use of geospatial tools and resources
- Produce maps and web mapping applications for publishing
- Develop research study questionnaires using RedCap

08/2022-09/2022 **Independent Contracting- Geographic Information Systems**
Beartooth Group, *Bozeman, MT*;

- Development of custom QGIS Python processing plugin for identifying land parcels with conservation value
- Conducted multi-state data availability assessment, aggregation and acquisition across diverse data sources
- Production of automated project reports using QGIS project atlas and report layouts

09/2021 - 09/2022 **Geographic Information Systems Specialist**
Land Information Systems (Supervisor: Erin Fashoway)
Montana State Library, *Helena, MT*;

- Implementation of Geo-Enabled Elections processes for State of Montana
- Digitization of election district boundaries and precinct splits
- Geocoding of voter address information
- Automation of GIS workflows using Python and ArcPy
- Development of web-based GIS applications for voter information
- Production of maps and other visualizations of voting precincts and redistricting proposals

02/2020 - 09/2021 **Geographic Information Systems Technician**
Water Information Systems (Supervisor: Troy Blandford)
Montana State Library, *Helena, MT*;

- Automation of GIS workflows using Python and ArcPy
- LiDAR processing and production of deliverables
- Construction and maintenance LiDAR inventory database for state of Montana
- Developed integrated online viewer and download platform for state LiDAR collections.
- Applied computational and statistical tools and algorithms for the preprocessing, analysis, and visualization of large datasets
- Development and deployment of visualization tools for analyzing water supply and snowpack using Python and SOAP protocols.
- Development and implementation of Montana land cover change visualization tools using Google Earth Engine, and Rshiny.io

08/2017 - 01/2021 **Technical Support Staff**
Emerging Pathogens Institute & Department of Geography (PI: Gregory Glass)
University of Florida, *Gainesville, FL*;

- Formatted, transformed, and merged multiple data streams of geospatial, remotely sensed, and field collected data into spatial models.
- Developed and published spatial estimates of Ixodid ticks occurrence and tick-borne pathogen distribution in Florida.
- Developed project deliverables for numerous stakeholders - geospatial products, maps, PowerPoints, graphs, and tabular data
- Taught “R” programming language workshops: focus on geographic applications in resource poor environments to Ukraine Ministry of Health (Ukraine).
- Performed field research: on-site tick sampling using transects, ground-truthing and GPS positioning, confirmed data integrity and consistency.
- Trained/supervised research assistants/graduate students in field and data collection methods.
- Analyzed remote sensing data to estimate Florida agricultural herbicide applications for select crops and pesticides under best practices scenarios.

08/2015- 08/2017 **Graduate Research Assistant**
Department of Geography (focus: spatial epidemiology; PI: Gregory Glass)
University of Florida, *Gainesville, FL*;

- Implemented machine learning algorithms using R programming language.
- Developed predictive model of the distribution of Ixodid ticks in Florida with an emphasis on pest species to human spatial overlaps.
- Applied GIS, remote sensing, and field collected data in combination to produce predictive spatial models.
- Performed spatial cluster detection of fine-scale diabetes-related mortality to identify disease hotspots.
- Database development and maintenance of field observations.
- Developed software tools for data formatting and processing input.
- Produced presentation materials- maps, graphs, tables for varied audiences.
- Documented code and analytical approaches for future research.

08/2014-
12/2014 **Undergraduate Researcher**
Department of Biology (PI: Kevin Kirk)
New Mexico Inst. of Mining and Technology, *Socorro, NM*;

- Investigated the effects of thermal and reactive oxygen species stress on bdelloid rotifer fitness. Maintained bacterial cultures and bdelloid rotifer stocks.

04/2013-
08/2014 **Technical Research Intern**
International Biological Threat Reduction (PIs: Reynolds Salerno, Cecelia Williams)
Sandia National Laboratories, *Albuquerque, NM*;

- Literature review of infectious-disease surveillance strategies globally,
- determined system applicability in developing country settings, and identified potential methodological and technological solutions to current system deficiencies.
- Performed systems analysis to develop operational response plans.
- Assessed and analyzed risk and vulnerabilities to mitigate biological threats globally.
- Created tools meant to engage scientific communities worldwide to promote responsible use and handling of biological materials, technologies, and expertise, as well as advance beneficial life science pursuits.

TEACHING

08/2017-
12/2021 **GIS Trainer**
Ukraine Ministry of Health / Metabiota, *Kiev, Ukraine;*
Emerging Pathogens Institute, University of Florida, *Gainesville, FL*

- Instruction on GIS and spatial analytic methods and software
- Led the development of instructional materials and training of Ukrainian national scientists in best practices for modeling spatially explicit risk analysis (part of Metabiota UP-8 project)
- Taught “R” programming workshops: focus on geographic applications in resource poor environments (Ukraine).
    - Topics covered: point pattern analysis, predictive distribution models; statistical and spatial modeling and analysis; Identification, creation, and evaluation of datasets including environmental, climatic, and socioeconomic variables
    - Software used: QGIS, GEODA, SaTScan, R.

01/2015-05/2015 **Adjunct Faculty**
Primary instructor BIOL 112L, Biology Laboratory for Non-Majors
University of New Mexico Valencia Campus, *Los Lunas, NM;*

- Developed syllabus and exercises for laboratory class of 20 students covering biological principles important for the non-scientist in today's world.
    - Topics covered: ecological, evolutionary and molecular issues and techniques, plant and animal structure and diversity, genetics.

08/2011-05/2014 **Learning Coach**
Department of Academic Affairs, Office for Student Learning
New Mexico Inst. of Mining and Technology, *Socorro, NM;*

- Assisted in teaching several calculus laboratory courses.
- Raised average student grade by 14% compared to other calculus classes.
- Provided individualized tutoring services for a range of mathematics, physics, biology, and chemistry courses.

01/2011-05/2012 **Teaching Assistant**
Primary instructor EDUC 189, Introduction to Researching
New Mexico Institute of Mining and Technology, *Socorro, NM;*
Supervisor: Lisa Majkowski

- Led an interdisciplinary research course for 40 college freshmen.

PUBLICATIONS

In Review, Submitted, or In Preparation

1. Justin G. Farmer, Ian W. Tang, Peter James, Laura D. Kubzansky, Rajarshi Mukherjee, Ruby Hickman, William Kessler, Laura T. Germine, Marc G. Weisskopf. Early-Life Neighborhood Resources and Later-Life Cognitive Function. *Amer J of Epidemiology.* 2025 **(in preparation)**
2. Veronica A. Wang; Ernani Choma; Barrak Alahmad; **William H Kessler**; Mary Wright; David M. Hondula; John D. Spengler; Antonella Zanobetti. Heat and dispatched calls for police service in Phoenix, Arizona. *Sustainable Cities and Society.* 2025. **(submitted*)***
3. Andre Zimerman; Francine Laden; Robert P. Giugliano; **William H Kessler**; David A. Morrow; Benjamin M. Scirica; Marc S. Sabatine; Antonella Zanobetti; Stephen D. Wiviott; Andrea Bellavia. Associations Between Extreme Heat and Kidney Function Biomarkers in a large cohort of US participants from Six Cardiovascular Trial. 2024. (***in preparation***)
4. Shelton Lo; Yi Li; Francine Laden; **William H. Kessler**; Michael Lanuti; Justin F. Gainor; Andrea Shafer; David C. Christiani. Neighborhood Sociology-Economics and Lung Cancer Recurrence and Progression. *Lung Cancer*. 2025. (***submitted***)
5. Chan, Marissa; Cabassa, Leopoldo; Tabb, Loni Philip; **Kessler, William H**; Adamkiewicz, Gary; James-Todd, Tamarra. Clean Beauty Gentrification: The Role of Historic and Contemporary Resource Allocation Practices on Hair Product Safety in Boston, MA. 2024. (***submitted***)
6. **Kessler, WH;** Hodik, B. Fine-scale Spatial Heterogeneity of Diabetes Related Mortality Rates and Associated Socioeconomic Determinants in Duval Co., Florida. 2021. (***in preparation****).*
7. **Kessler, WH**; Southworth, J; Khatami, R; Glass, GE**.** Estimating selected commercial

herbicide applications under a 'best practices scenario' in Florida using remote sensing and machine learning algorithms. *International Journal of Environmental Research and Public Health.* 2021. (***submitted)***

Accepted

1. Barrak Alahmad; Yazan Alwadi; **William H Kessler**; Joel Schwartz; Gregory R Wagner; David Michaels.A Nationwide Analysis of Heat and Workplace Injuries in the United States. *Environmental Health*. 2025
2. Youn Soo Jung; Kessler, **William H. Kessler**; et al. Extreme Heat and Hospital Admissions in Older Adults: A Small-Area Analysis in the Greater Boston Metropolitan Area. *Environmental Epidemiology*.
3. Hu, Cindy R.; Wilt, Grete E.; Roscoe, Charlotte; Iyer, Hari S.; **Kessler, William H**.; Laden, Francine; Chavarro, Jorge E.; Coull, Brent; Redline, Susan; James, Peter; Hart, Jaime E. Associations of seasonally available global positioning systems-derived walkability and objectively measured sleep in the Nurses' Health Study 3 Mobile Health Substudy. *Environmental Epidemiology*. 2024.
4. **Kessler, WH**; De Jesus, CE; Wisely, SM; Glass, GE. Ensemble Models for Tick Vectors: Standardized Surveys Compared with Convenience Samples. *Diseases. 2022.* https://doi.org/10.3390/diseases10020032
5. Glass, GE; Ganser, C; **Kessler, WH**. Validating Species Distribution Models with Standardized Surveys for Ixodid Ticks in Mainland Florida. *J Med Ent*. 2021.
6. Lozynskyi, I; Shulgan, A; Zarichna, O; Ben, I; **Kessler, WH**; Cao, X; Nesterova, O; Glass, GE; Spruill-Harrell, B; Taylor, MK; Williams, EP; Jonsson, CB. Seroprevalence of Old World Hantaviruses and Crimean Congo Hemorrhagic Fever viruses in human populations in Northwestern Ukraine. *Front Cell Infect Microbiol*. 2020. DOI: 10.3389/fcimb.2020.589464
7. De Jesus, CE; Ganser, C; **Kessler, WH**; White, ZS; Bhosale, CR; Glass, GE; Wisely, SM**.** A survey of tick-borne bacterial pathogens in Florida. *Insects.* 2019. DOI:10.3390/insects10090297
8. Glass, GE; Ganser, C; Wisely, SA; **Kessler**, **WH**. Standardized ixodid tick surveys in mainland Florida. *Insects.* 2019. DOI: 10.3390/insects10080235
9. **Kessler**, **WH**; Ganser, C; Glass, GE**.** Modeling the Geographic Distributions of Medically Important Ixodid Ticks in Florida. *Insects.* 2019. DOI:10.3390/insects10070190
10. **Kessler**, **WH**; Blackburn, JK; Sayler, KA; Glass, GE. Estimating the Geographic Distribution of Host-Seeking Adult *A. americanum* (Acari: Ixodidae) in Florida. *J Med Ent.* 2018. DOI: 10.1093/jme/tjy147
10. **Kessler**, **WH**; Salerno, RM**.** Infectious Disease Detection and Control in the Developing World. *Sandia National Laboratories Internal Publication.* 2014.

PRESENTATIONS & POSTERS

2025 Veronica A Wang; Ernani Choma; Barrak Alahmad; **William Kessler**; Mary Wright; David M Hondula; John D Spengler; Antonella Zanobetti. Heat and Emergency Police Calls in Phoenix Arizona. International Society for Environmental Epidemiology.

2023 **Kessler, WH**; Utilizing Geospatial Resources at the NIEHS Center, Harvard, and Beyond. NIEHS Center Chalk Talks 2023.

2022 **Kessler, WH**; Fashoway, E; Fashoway, M. Montana Geo-Enabled Elections-Updates and Progress. Montana Association of Clerk and Recorders Conference.

2022 **Kessler, WH**; Fashoway, E. Montana GIS resources for Public Health. MT Epidemiology conference

2022 Burns, M; Fashoway, E; Fashoway, M; Psaltis, C; **Kessler, WH**. Montana's Geo-Enabled Elections. MAGIP Big Sky GeoCon.

2020 Glass, GE; Ganser, C; **Kessler, WH**. Validating Species Distribution Models of Ixodid Ticks in Florida. *CDC Vector Week 2020*.

2019 **Kessler, WH**; Ganser, C; Glass, GE. Modelling the Geographic Distribution of Medically Important Ixodid Ticks in Florida. *University of Florida Emerging Pathogens Institute Research Day.*

2019 Ganser, C; **Kessler, WH**; Wisely, SA; Glass, GE. Habitat Associations of Lone star ticks (*Amblyomma americanum*) in Florida. *University of Florida Emerging Pathogens Institute Research Day.*

2019 Bhosale, C; De Jesus, C; White, Z; Wisely, SA; Ganser, C; **Kessler, WH**; Glass, GE. Investigating the Prevalence of *Theileria spp.* within *Amblyomma americanum* in Florida. *University of Florida Emerging Pathogens Institute Research Day.*

2018 **Kessler, WH.** The Geography of Ticks in Florida. *Florida Master Naturalist Program.*

2018 De Jesus, C; Ganser, C; **Kessler, WH**; Glass, GE.; Wisely, SA. Investigating the Prevalence of Tick-borne Bacterial Pathogens in Florida. *Society for Vector Ecology*

2018 De Jesus, C; **Kessler, WH**; Wisely, S; Glass, GE; Sayler, KA. Investigating Tick Pathogen Distribution in Florida: *Borrelia* and *Anaplasma*. *University of Florida Emerging Pathogens Institute Research Day.*

2017 De Jesus, C; **Kessler, WH**; Wisely, S; Glass, GE; Sayler, KA. Investigating Tick Pathogen Distribution in Florida: A Focus on *Borrelia*. *Wild Futures in Conservation and Climate Change Symposium*

OTHER PUBLICATIONS & MEDIA

1. Harvard-Chan NIEHS Center for Environmental Health. Africatown, AL. "Africatown, AL **Uncited**. 2023
2. Natural Resources Conservation Service. Montana Snow Survey "Daily Interactive Basin and Station Conditions. Daily Plots" **Uncited.** Recurring daily, 2021
3. French, Brett. "Dry March, uncertain spring moisture, concerns Montana officials." Figure showing shortage of precipitation in the Flathead River Basin in March. **Uncited.** *Billings Gazette*. 2021.
4. Cousins, Karen Shears. Miracles and Memory: The Virgin of Chiquinquirá and her People in the Seventeenth-Century New Kingdom of Granada. P*hD Thesis, University of Toronto*. 2018. Maps created by **William H. Kessler**:
   Map 1 The New Kingdom of Granada in the seventeenth century xxiii
   Map 2 Select cities, towns, and pueblos, New Kingdom of Granada xxiv

PROFESSIONAL DEVELOPMENT

2018 **CDC Center of Excellence Tick Workshop**, Georgia Southern University, GA
May 14 – 28, 2018
Participant– Tick and tick-borne pathogen identification and systematics

- Completed workshop on identification and systematics of hard and soft ticks.
- Additional topics included modeling of ticks and their pathogens, in depth characterizations of tick-borne pathogens, and tick surveillance and control.

2018 **The Carpentries Instructor Training**, University of Florida, FL

June 20 – 27, 2018
Participant- R programming instructor certification

- Completed training to organize and run "The Carpentries" R programming workshops.
- Topics included pedagogy, live coding experience, and workshop organization.

SERVICE

Academic

2016- 2017 **UF Geography Graduate Student Association**, *Gainesville, FL*
Vice President, Geography Graduate Student Rep- Graduate Student Council

- Organized department graduate student travel to major conferences.
- Acts as liaison between graduate students and faculty.

2012- 2014 **Beta Beta Beta- National Biological Honor Society**, *Socorro, NM*
President- Epsilon Chi Chapter
Treasurer- Epsilon Chi Chapter

2015- 2017 Alachua County Schools Science and Engineering Fair, Judge, *Gainesville, FL*

2013- 2014 Sandia National Laboratories volunteer outreach program, *Albuquerque, NM*

2014 New Mexico State Science and Engineering Fair, Head Judge, *Socorro, NM*

2012- 2013 New Mexico State Science Olympiad, Judge, *Socorro, NM*

Community

2024-2025 **Navigation Games**, *Cambridge, MA*
Volunteer

- Orienteering map development using Open Orienteering Mapper and QGIS
- Event support

2023-2025 **Bikepacking Roots**, *USA*
Community Routes Steward

- Development of Boston area bikepacking routes as part of BPR's Community Routes Project (CRoP)
- Northeast Bikepacking presenter and ride support

2020-2021 **Friends of the Missouri Breaks Monument**, *Helena, MT*
Volunteer

- Pro bono GIS database management, map creation
- Habitat restoration volunteer,
- Charity boat race volunteer

2020-2021 **Prickly Pear Land Trust**, *Helena, MT*
Volunteer

- Habitat restoration

2012- 2014 **Los Lunas Stingray's Aquatics Club**, *Los Lunas, NM*
Assistant Head Coach

- Organized and taught proper swimming technique to 120 children.
- Additionally, supervised three other members of the coaching staff.
- Improved number of Championship qualifiers from previous years.

2011- 2013 **New Mexico Tech Premed Society**, *Socorro, NM*

Member

HONORS AND AWARDS

2016	Ryan Poehling Graduate Fellowship ($1500)
2010- 2014	New Mexico Institute of Mining and Technology, Silver Scholarship ($20000)
2010- 2014	New Mexico Institute of Mining and Technology, Honor Roll
2010	Boy Scouts of America, Eagle Scout

TECHNICAL SKILLS

Skills:	Machine Learning, Statistical Modeling, Ensemble Modeling, Cluster Detection and Point Pattern Analysis, Spatial Analysis, Network Analysis
Software:	R, ArcGIS, ArcGIS Online, QGIS, Python, Google Earth Engine, PostgreSQL, JavaScript, Git/GitHub, SaTScan, GEODA, ERDAS Imagine, Microsoft Office, SPSS, Matlab, GPS, MS SQL Server, RedCap
Coursework:	Spatial Epidemiology, GIS, Spatial Statistics, Machine Learning, Ecology, Statistics, Remote Sensing, Mathematical Modeling, Epidemiology, Python, Data Structures and Algorithms, Molecular biology, Cell & Microbial Biology, Environmental Toxicology, Operations Research (partial list)
Laboratory:	Tick identification, tick field collections, environmental fieldwork

REFERENCES

Dr. Greg Glass,
Professor, Dept. of Geography
Dept. of Geography, University of Florida
gglass@uf.edu
(352) 392-8855

Dr. Jane Southworth,
Department Chair and Professor,
Dept. of Geography, University of Florida
jsouthwo@ufl.edu
(352)294-7512

Troy Blandford,
Lead GIS Analyst, Montana State Library
tblandford@mt.gov
(406)444-7930

Erin Fashoway,
State GIS Coordinator for Montana
efashoway@mt.gov