

EDUCATION

- PhD, Geography** present
University of Tennessee
◊ Chancellor Fellow
- MS, Applied Mathematics, Mathematical Ecology Specialization** 2013
University of Tennessee
- BS, Applied Mathematics** 2010
University of Maryland

PUBLICATIONS

- AUERBACH, J.**, AND E. FITZHUGH. (in preparation for the American Journal of Preventive Medicine). Small changes in street connectivity result in big gains for student walking.
- AUERBACH, J.**, H. BARTON, C. BLACKBURN., AND E. ZEGURA (in preparation for the Journal of the American Planning Association). Coupling data science with crowdsourcing for equity in urban renewal programs.
- AUERBACH, J.**, AND H. KIM. (in review at Scientific Reports). Network connectivity optimization: An evaluation of heuristics applied to complex networks and a transportation case study.
- AUERBACH, J.**, AND H. KIM. (in review at Transportation Research: Part B). Hiking Eulerian Forests: Measuring robustness and coverage in multi-line networks.
- AUERBACH, J.**, H. BARTON, T. BLUNT, V. CHAGANTI, B. GHAI, A. MENG, C. BLACKBURN, E. ZEGURA, AND P. FLORES. 2017. Using data science as a community advocacy tool to promote equity in urban renewal programs: An analysis of Atlanta’s Anti-Displacement Tax Fund. [arXiv:1710.02454](https://arxiv.org/abs/1710.02454).
- GAVRILETS, S., **J. AUERBACH**, AND M. VAN VUGT. 2016. Convergence to consensus in heterogeneous groups and the emergence of informal leadership. *Scientific Reports*. doi: [10.1038/srep29704](https://doi.org/10.1038/srep29704).
- AUERBACH, J.**, A. KANAREK, AND G.M. BURGHARDT. 2015. To play or not to play? That’s a resource abundance question. *Adaptive Behavior*. 23(6): 354-361. doi: [1177/1059712315611188](https://doi.org/10.1177/1059712315611188).
- GANUSOV, V.V., AND **J. AUERBACH**. 2014. Mathematical modeling reveals kinetics of lymphocyte recirculation in the whole organism. *PLOS Computational Biology*. 10(5). doi: [10.1371/journal.pcbi.1003586](https://doi.org/10.1371/journal.pcbi.1003586).
- KANG, J., AND **J. AUERBACH**. 2009. Thermodynamic characterization of dissociation rate variations of human leukocyte antigen and peptide complexes. *Molecular Immunology*. 46(15): 2873-2875. doi: [10.1016/j.molimm.2009.05.184](https://doi.org/10.1016/j.molimm.2009.05.184).

PRESENTATIONS

- Coupling data science with participatory planning for equity in urban renewal programs: An analysis of Atlanta’s Anti-Displacement Tax Fund (paper). 2018. GeoSym 2018, Knoxville, TN.
- Coupling data science with participatory planning for equity in urban renewal programs: An analysis of Atlanta’s Anti-Displacement Tax Fund (paper). 2017. University of Chicago Data Science for Social Good, Chicago, IL.
- Using data science as a community advocacy tool to promote equity in urban renewal programs: An analysis of Atlanta’s Anti-Displacement Tax Fund (paper). 2017. Bloomberg Data for Good Exchange, New York, NY.
- A novel web-based scientific service to foster collaboration around data sets (invited talk). 2017. Georgia Institute of Technology, Atlanta, GA.
- A new tool for geographic collaboration in a connected scientific world (paper). 2017. The Association of American Geographers, Boston, MA.
- Geographic methods to analyze movement in networks (invited talk). 2016. United States Census Bureau, Population Division, Suitland, MD.
- Time to consensus in heterogeneous groups and the benefits of leadership (paper). 2016. The Association of American Geographers, San Francisco, CA.

Wisdom and fairness: The emergence of leadership (poster). 2015. European Human Behaviour and Evolution Association, Helsinki, Finland.

Wisdom and fairness: The emergence of leadership (paper). 2014. Evolution, Raleigh, NC.

To play or not to play, that's a resource abundance question (poster). 2014. Evolution, Raleigh, NC.

Knowledge and fairness: Leadership through reputation (invited talk). 2014. United States Government Accountability Office, Advanced Research and Methods, Washington, DC.

The emergence of despotism or egalitarianism due to simple heuristics and variation in personality types (poster). 2013. Human Behavior and Evolution Society, Miami, FL.

Mathematical modeling reveals kinetics of lymphocyte recirculation between major murine organs (poster). 2012. University of Alabama School of Medicine, Birmingham, AL.

Aggressiveness and the evolution of hierarchies (paper). 2011. Southeastern Population Ecology and Evolutionary Genetics, Reidsville, NC.

EMPLOYMENT

Research Assistant 2017 - present

Center for Physical Activity and Health, University of Tennessee

- ◊ Developing spatial optimization heuristics to create new thoroughfares that maximize student walking.
- ◊ Working with planners to 'nudge' residential developers in designing more walkable communities.

Founder 2016 - present

MyDataLynx.org

- ◊ Created a web-based collaboration service for researchers and scientists.

Research Fellow 2016 - present

Population Division, U.S. Census Bureau

- ◊ Developing record linking algorithms to merge Big Data with granular Census data.
- ◊ Utilizing machine learning to estimate the impacts of socioeconomic events on migration propensities.

Data Scientist for Social Good 2017

Georgia Institute of Technology

- ◊ Led a team of interdisciplinary undergraduate and graduate student researchers for 10 weeks.
- ◊ **Published** a random forest model to forecast Atlanta property values affected by an urban renewal project.
- ◊ Worked with residents to create an online tool to view the forecasts, update the data, and validate the model results.

Teaching Associate 2011 - 2016

Departments of Mathematics and Geography, University of Tennessee

- ◊ Instructed Statistics, Calculus, Geographic Information Science, and GeoStatistics courses.

Geographic Science and Technology Intern 2015

Computational Science and Engineering Division, Oak Ridge National Laboratory

- ◊ Conducted an analysis of geospatial change-detection methods and R algorithms for a government agency.

Applied Research and Methods Analyst Intern 2014

Center for Economics, U.S. Government Accountability Office

- ◊ Published an analysis of spatial models used for a government program.
- ◊ **Published** the impact of debt limit impasses with Google Trends data and a time series analysis of Treasury Rates.

Research Assistant 2013 - 2014

National Institute for Mathematical and Biological Synthesis

- ◊ **Published** a model to analyze decision-making and leadership emergence in social networks.

Combat Development NCO and Fireteam Leader 2001 - 2007

820th Security Forces Group, United States Air Force

- ◊ Developed lesson plans and instructed trainers and operators in the use of new equipment.
- ◊ Supervised four soldiers conducting base defense operations in Iraq and Afghanistan.
- Air Force Achievement Medal and Humanitarian Service Medal under Joint Task Force Katrina
- Afghanistan Campaign Medal and twice the Iraq Campaign Medal
- Military Outstanding Volunteer Service Medal for over 100 service hours with Habitat for Humanity

TECHNICAL SKILLS & SOFTWARE PROFICIENCIES

- ▷ Network Theory ▷ Stochastic Modeling ▷ Geographic Information Science ▷ Optimization
- ▷ Machine Learning ▷ Statistics ▷ Agent-based Simulations ▷ Evolutionary Algorithms

OS	Programming Languages & Software	
Linux	MATLAB	ArcGIS
Windows	R	CPLEX
MAC	Python	SQL

TEACHING EXPERIENCE

Teaching Associate 2011 - present
 Departments of Mathematics and Geography, University of Tennessee

Primary Instructor	Teaching Assistant
Math for Life Sciences I and II (MATH 151/152) Calculus I (MATH 141) Statistics (MATH 115)	Quantitative Geography (GEOG 415) Geographic Information Science (GEOG 411) Population Geography (GEOG344)

LEADERSHIP & PROFESSIONAL SERVICE

- Reviewer**, Journal of Theoretical Biology 2015 - present
- Graduate Association of Research Geographers Officer**, UTK 2015 - 2016
- Geography Co-Representative**, UTK Graduate Student Senate 2015 - 2016
- Vice President and Graduate Student Senator**, UTK Graduate Student Senate 2013 - 2016
- Special Awards Judge**, Southern Appalachian Science and Engineering Fair 2014
- Graduate Student Mentor**, UTK Department of Mathematics 2013 - 2014
- Mathematics Representative**, UTK Graduate Student Senate 2013 - 2014
- Chapter Representative**, AMS Valdosta State University Chapter 2009 - 2010

PROFESSIONAL MEMBERSHIP

- Center for the Dynamics of Social Complexity, **Member** 2017
- American Planning Association, **Student Member** 2017
- Participatory Geographic Information Science Society, **Member** 2017
- Association of American Geographers, **Student Member** 2015
- Spatial Analysis & Modeling specialty group, **Student Member**
- European Human Behaviour and Evolution Association, **Student Member** 2015
- Human Behavior and Evolution Society, **Student Member** 2013
- Society for Mathematical Biology, **Student Member** 2012
- American Mathematical Society (AMS), **Student Member** 2009
- Iraq Veterans Against the War, **Member** 2008

COMMUNITY SERVICE

- Pet Foster**, Young Williams Animal Shelter 2017-present
- Statistical Analyst**, Knoxville Habitat for Humanity 2017-present
- Crew Leader and Construction Volunteer**, Habitat for Humanity 2004-present
- Volunteer**, Back on My Feet Atlanta Chapter 2017
- Volunteer**, Autism Speaks Georgia Chapter 2016 - 2017
- Head of Merchandise**, UTK Darwin Day 2014 2013 - 2014

Media Volunteer , UTK Darwin Day 2013	2013
DJ , Hard Knox Roller Derby	2012 - 2013
Wikipedian	2012 - present

PROFESSIONAL DEVELOPMENT

Hierarchy and Leadership (3rd meeting) . Working Group. NimBIOS.	2014
Hierarchy and Leadership (2nd meeting) . Working Group. NimBIOS.	2013
Play, Evolution, and Sociality (3rd meeting) . Working Group. NimBIOS.	2013
Science Journalism: Curating the Universe . Master Class Conducted by Jeffrey Kluger, senior writer at Time Magazine, UTK	2013
Play, Evolution, and Sociality (2nd meeting) . Working Group. NimBIOS.	2012
Stochastics Applied to Biological Systems . Summer Graduate Workshop Mathematical Biosciences Institute, Ohio State University	2012
Modeling Social Complexity . Investigative Workshop. NimBIOS.	2012
STEM Biomathematics Summer Program . Florida State University.	2009
Non-commissioned Officer Training Airmen Leadership School, Moody Air Force Base ◇ Commandant Leadership Award	2005
USAF Special Operations School Middle East Orientation Course Moody Air Force Base	2005