

# Keith Waters

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## EDUCATION

### **Doctor of Philosophy**

George Mason University – Public Policy (Regional Development) 2018

### **Master of Arts**

University of North Carolina at Charlotte – Geography (Urban Analysis) 2013

### **Bachelor of Arts**

Western Michigan University – Economics, Geography, Mathematics 2010

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## EXPERIENCE

### **Center for Regional Analysis/Stephen S. Fuller Institute**

Assistant Director, Winter 2023 – Present

### **ASU School of Complex Adaptive Systems**

Visiting Scholar/Researcher, Winter 2023 – Present

### **ASU School of Complex Adaptive Systems**

Postdoctoral Researcher, Summer 2021 – Fall 2022

### **GMU Center for Regional Analysis**

Senior Research Associate, Fall 2019 – Fall 2022

### **Indiana University**

Postdoctoral Researcher, Winter 2020 – Spring 2021

### **Adaptive Regional Solutions**

Founder, Fall 2019 – Winter 2021

### **Regional Economic Modeling Inc.**

Economist, Summer 2019 – Fall 2019. Amherst, MA

### **GMU Center for Regional Analysis**

Senior Research Associate, Winter 2019 – Summer 2019

### **GMU Center for Regional Analysis & Stephen S. Fuller Institute**

Graduate Research Assistant, 2013 – 2019

### **U.S. Economic Development Administration**

Intern, Winter 2015

### **U.S. Economics and Statistics Administration**

Intern, Summer 2014

### **UNC Charlotte Urban Institute**

Graduate Research Assistant, 2011 - 2013

### **Northwest Michigan Council of Governments**

Regional Planning Intern, 2011

### **W.E. Upjohn Institute for Employment Research**

Regional Economics Research Intern, Summer 2010

### **W.E. Upjohn Center for Geographical Change**

G.I.S. Technician, 2008 – 2010

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## PUBLICATIONS – PEER REVIEWED

- Altiparmak, Suleyman O., Ketih Waters, Cameron G. Thies, and Shade T. Shutters. "Cornering the market with foreign direct investments: China's cobalt politics" *Renewable and Sustainable Energy Transition*. 7 1-9, 2025.
- Waters, Keith, and Terry Clower. "Examining the donut hole: pandemic housing resilience in three Mid-Atlantic (US) core metro areas" *Regional Studies, Regional Science*. 12 (1) 1-12, 2024.
- Waters, Keith, Suleyman O. Altiparmak, Shade T. Shutters, and Cameron G. Thies. "The Green Mirage: The EU's Complex Relationship with Palm Oil Biodiesel in the Context of Environmental Narratives and Global Trade Dynamics" *Energies*. 17 (2) 306-318, 2025.
- Altiparmak, Suleyman O., Cameron G. Thies, Shade T. Shutters, and Keith Waters. "Inducing New Bilateral Oil Interdependencies: The Unintended Impact of 2014 US-led Sanctions on Russia" *Journal of Indo-Pacific Affairs*. 6 (3) 154-165, 2023.
- Waters, Keith, and Shade T. Shutters. "Regional economic tightness from rural to urban regions." *Urban Transformations*. 4 (15) 1-18, 2022.
- Shutters, Shade T., and Keith Waters "Industrial Structure and a Tradeoff Between Productivity and Economic Resilience." *Studies in business and Economics*. 17 (3) 224-240, 2022.
- Waters, Keith, and Shade T. Shutters. "Skills-Approximate Occupations: Using Networks to Guide Jobs Retraining." *Applied Network Science*. 7 (43) 1-13, 2022.
- Shutters, Shade T., Keith Waters, and Rachata Muneeppeerakul. "Triad Analysis of Global Energy Trade Networks and Implications for Energy Trade Stability." *Energies*, 15 (10), 1-15, 2022.
- Waters, Keith, and Shade T. Shutters. "Impacts of Skill Centrality on Regional Economic Productivity and Occupational Income." *Complexity*, 1-7, 2022.
- Shutters, T. Shade, Holger Siebert, Bastian Alm, and Keith Waters. "Industry interconnectedness and regional economic growth in Germany." *Urban Science*, 22, 1-12, 2022.
- Shutters, T. Shade, and Keith Waters. "Inferring networks of interdependent labor skills to illuminate urban economic structure." *Entropy*, 22, 1-12, 2020.

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## BOOK CHAPTERS

- Song, Abraham, and Keith Waters. "A Tale of Two Cities: How Arlington Won and Baltimore lost in battle for Amazon's HQ2." *The Entrepreneurial Ecosystem: A Global Perspective*. 277-297, 2023.
- Irving, Jacob, Keith Waters, Terry Clower, and Will Rifkin. "Pandemic Regional Recovery Index: An Adaptable Tool for Decision-making on Regions." *Pandemic and the City*. 237-260, 2023.

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## REPORTS – SELECTED

- Waters, Keith. "Arlington County Housing Needs Analysis." *Center for Regional Analysis*, George Mason University. Arlington, VA, August 2025.
- Hughes, Elizabeth; Keith Waters, and Terry Clower. "Serving and Older Peninsula." January 2025.
- Waters, Keith, and Terry Clower. "Data Centers and 2023 Home Sales in Northern Virginia." *Center for Regional Analysis*, George Mason University. Arlington, VA, August 2025.
- Scavette, Adam, and Keith Waters. "Urban Marylanders Are Migrating to More Affordable and Smaller Metro Areas." *Federal Reserve Bank of Richmond Regional Matters*. Richmond, VA, March 2024.

- Waters, Keith, Elizabeth Hughes, and Terry Clower. "People, Housing, and Jobs: Demographics Chapter of the City's Comprehensive Plan." *City of Falls Church*. Falls Church, VA, February 2024.
- Sturtevant, Lisa, Keith Waters, and Terry Clower. "How Remote Work Changed the Housing Market." *BrightMLS*. October 2023.
- Scavette, Adam, and Keith Waters. "Parsing the Slow Post-Pandemic Labor Market Recovery of Maryland's Capital Suburbs." *Federal Reserve Bank of Richmond Regional Matters*. Richmond, VA, October 2023.
- Hughes, Elizabeth, Keith Waters, and Terry Clower. "The Economic Impact of Mental Health in Northern Virginia." *The Community Foundation for Northern Virginia*. Fairfax, VA, September 2023.
- Clower, Terry, Brian Hollar, and Keith Waters. "Washington Metropolitan Area Transit Authority Paper 3: Long-Term Considerations." *Center for Regional Analysis*, George Mason University. Arlington, VA, December 2021.
- Clower, Terry, Brian Hollar, and Keith Waters. "Washington Metropolitan Area Transit Authority Paper 2: WMATA Compact Area Sector-By-Sector Travel Typologies, Recovery Strengths and Likelihoods." *Center for Regional Analysis*, George Mason University. Arlington, VA, October 2021.
- Clower, Terry, Brian Hollar, and Keith Waters. "Washington Metropolitan Area Transit Authority Paper 1: Regional Economic Scenarios." *Center for Regional Analysis*, George Mason University. Arlington, VA, August 2021.
- Clower, Terry, and Keith Waters. "The Impact of Prohibiting Pocket-Listings on the NVAR Region." *Center for Regional Analysis*, George Mason University. Arlington, VA, April 2020.
- Clower, Terry, and Keith Waters. "Economic and Development Impacts of New Natural Gas Utility Services in Front Royal, Virginia." *Center for Regional Analysis*, George Mason University. Arlington, VA, June 2019.
- Waters, Keith. "The Impact of Changing Federal Procurement Outlays on Selected Sub-Sectors in the Washington Region's Economy: Custom Computer Programming Services." *Stephen S. Fuller Institute*, George Mason University. Arlington, VA, November 2017.
- Waters, Keith. "The Impact of Changing Federal Procurement Outlays on Selected Sub-Sectors in the Washington Region's Economy: Research and Development in the Social Sciences and Humanities." *Stephen S. Fuller Institute*, George Mason University. Arlington, VA, November 2017.
- Waters, Keith. "The Impact of Changing Federal Procurement Outlays on Selected Sub-Sectors in the Washington Region's Economy: Other Management Consulting Services." *Stephen S. Fuller Institute*, George Mason University. Arlington, VA, November 2017.
- Waters, Keith. "Federal Procurement Spending in the Washington Region: 2008 – 2016." *Stephen S. Fuller Institute*, George Mason University. Arlington, VA, 2017.
- Waters, Keith. "Fortune 500 Companies in the Washington Metropolitan Area." *Center for Regional Analysis*, George Mason University. Working Paper No. 2015-01. Arlington, VA, 2015.
- Waters, Keith. "The Potential Impact of the Panama Canal Expansion on the Port of Virginia." *Center for Regional Analysis*, George Mason University. Working Paper No. 2014-01. Arlington, VA, 2014.

## PRESENTATIONS - CONFERENCES

- Pandemic Housing Market – Impact of Low Interest Rates and Work from Home. *North American Regional Science Association*. San Diego, CA. November 17, 2023.
- Intersecting Market Participant Objectives in Seaport Investments for Post-Conflict Economies. *North American Regional Science Association*. San Diego, CA. November 16, 2023.

Diversity in International Energy Trade Markets. *American Association of Geographers*. Denver, CO. March 25, 2023.

Palm Oil Trade Networks. *Southeastern Division of the American Association of Geographers Annual Conference*. Atlanta, GA. November 21, 2022.

Pandemic Risk and Recovery Index: Understanding Persistent Impacts of a Global Endemic From Home. *Regional Science Academy Lecture Series*. Virtual, August 25, 2022.

Co-Agglomeration Networks. *American Association of Geographers*. Virtual, February 25, 2022.

Coal Trade Networks and Trading Communities: The case of Australia. *Western Regional Science Association*. Scottsdale, AZ. February 19, 2022.

Rural Economic Tightness: From Rural to Populous Regions. *Southern Regional Science Association*. Virtual, April 6, 2021.

Skills-Approximate Occupations: Using Networks to Guide Jobs Retraining. *Western Regional Science Association*. Virtual, February 24, 2021.

Inter-Regional Migration Networks: Social Network Analysis of an Agent-Based Model of a System of Cities. *North American Regional Science Council*. Virtual, November 12, 2020.

Geographic Location of Cities: An Agent-Based Model of Inter-Regional Job Search. *American Association of Geographers Annual Meeting*. Denver, CO. April 6, 2020.

Firm Formation and Regional Labor Allocation. *Eastern Economic Association Annual Conference*. Eastern Economic Association, New York, NY. March 1, 2019.

Poster Presentation: Knowledge Spillovers and Labor Agglomeration. *International Congress on Agent Computing*. George Mason University, Fairfax, VA. November 29, 2016.

Human Capital Agglomeration. *PhD Workshop*. George Mason University, Arlington, VA. October 24, 2016.

Inter-Metropolitan Migration Networks in the United States. *American Association of Geographers Annual Meeting*. San Francisco, CA. March 29, 2016.

Inter-Metropolitan Migration Networks in the United States. *Where I Fare Well, There is My Home: Migration, Past and Present Graduate Conference*. Duke University, Durham, NC. March 4, 2016.

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## PRESENTATIONS – INVITED TALKS

Northern Virginia: Performance and Outlook. *neXco*. Reston, VA. May 22, 2025

Northern Virginia: Performance and Outlook. *Northern Virginia Building Industry Association*. Dulles, VA. May 12, 2025.

Washington Area Economy: Outlook and Potential Implications. *Big Cities Health Coalition*. Virtual. April 21, 2025

Washington Area Economy: Contextualizing Historic Uncertainty. *Prince William Board, Budget and Finance Committee*. Virtual. April 8, 2025

The Washington Region's Economy: Performance and Outlook. *Northern Virginia Building Industry Association: Prince William Chapter*. Old Hickory Golf Club, VA. March 26, 2025.

The Washington Region's Economy – A Period of Historic Uncertainty. Prince William Committee of 100. Prince William, VA. March 20, 2025

The Washington Region's Economy – A Period of Historic Uncertainty. *AIA*. Tysons, VA. March 19, 2025

Falls Church Enrollment Projections. *Falls Church City Council*. Falls Church, VA, November 12, 2024.

The Economic Impact of Mental Health in Northern Virginia. *Blue Cross Blue Shield Community Health Forum*. Alexandria, VA, October 3, 2024.

Washington Area Economy: Performance and Outlook. *Rotary Club of Fairfax*. Fairfax, VA, September 23, 2024.

Washington Area Economy: Performance and Outlook. *Falls Church Chamber of Commerce*. Falls Church, VA, May 21, 2024.

Vienna, VA. Economic Performance. *Vienna Economic Development*. Town of Vienna, VA, January 18, 2024.

The Economic Impact of Mental Health in Northern Virginia. *Community Foundation for Northern Virginia*. Fairfax, VA, October 12, 2023.

Economic Overview of Northern Virginia & Demographics. *Lead Virginia*. McLean, VA, September 21, 2023.

Washington Area Economy: Performance and Outlook. *Falls Church Chamber of Commerce*. Falls Church, VA, May 15, 2023.

Washington Area Economy: Performance and Outlook. *Greater Washington Association for Financial Professionals*. Webinar, May 11, 2023.

Washington Area Economy: Performance and Outlook. *National Economists Club*. Webinar, March 16, 2023.

Washington Area Economy: Performance and Outlook. *RE/MAX Gateway 1st Quarter Meeting*. Haymarket, VA, March 10, 2023.

Washington Area Economy: Performance and Outlook. *Apartment & Office Building Association of Metropolitan Washington*. Downtown, DC, September 7, 2022.

Washington Area Economy: Performance and Outlook. *TTR Sotheby's International*. Georgetown, DC, June 16, 2022.

Southeast Fairfax Economic Summit: Performance and Outlook. *Southeast Fairfax Economic Summit*. Alexandria, VA, April 7, 2022.

Washington Area Economy: Performance and Outlook. *Greater Washington Association for Financial Professionals*. Webinar, February 9, 2022.

Regional Economic Snapshot. *Leadership Alexandria*. November 19, 2021

State of the Maryland Real Estate Market. *Apartment and Office Building Association of Metropolitan Washington*. Webinar, January 11, 2021.

State of Virginia Multifamily and Commercial Housing Market. *Apartment and Office Building Association of Metropolitan Washington*. Webinar, December 17, 2020.

Washington Area Economy: Performance and Outlook. *Greater Washington Association for Financial Professionals*. Webinar, September 9, 2020.

Prince William County and the Greater Washington Area: Recent Trends and Outlook. *Prince William Economic Development Office and the Prince William County Chamber of Commerce*. Strategic Planning Roundtable, December 18, 2019.

Washington Area Economy: Performance and Outlook. *Financial Planning Association of the National Capital Area*. Luncheon, December 5, 2019.

The Economics of Universal Healthcare: Case Study of Vermont Public Option. *REMI*. Webinar, August 27, 2019. [www.remi.com/event/the-economics-of-universal-healthcare-case-study-of-vermont-public-options-keith-waters-remi-recording/](http://www.remi.com/event/the-economics-of-universal-healthcare-case-study-of-vermont-public-options-keith-waters-remi-recording/)

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## MEDIA APPEARANCES – SELECTED

- Panel Discussion To Focus On DOGE Economic Impacts On Prince William County. Print. Patch. March 20, 2025.
- Around Prince William: The DOGE discussion is just beginning. Print. insidenova.com. April 13, 2025.
- Northern Virginia business leaders quickly souring on Trump policies, per survey. *Washington Business Journal*. April 1, 2025.
- Economist: Defense \$ Will Save Region. *Falls Church News-Press*. Print, June 16, 2025.
- A new report shows a surprising region in Virginia has a struggling economy. *WVTF*. Radio. October 10, 2024.
- Here's how long DC's drinking water reserve would last if Potomac is compromised. *NBC4*. Television. September 24, 2024.
- A look back at Biden and ARPA's impact on Alexandria. *ALXnow*. Print. July 4, 2024.
- DCs 'pandaeconomy' is real, and it impacts local businesses. *WAMU 88.5*. Print/Radio. June 17, 2024.
- Figuring Out Maryland's Out-Migration. *Speaking of the Economy*. Radio. April 17, 2024.
- Forecaster Warns of Economic Turbulence. *Falls Church News-Press*. Print. May 17, 2024.

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## WORKS IN PROGRESS

- Waters, Keith, and Shade Shuttters. "Trade Tightness in the Global Food Trade Network."
- Waters, Keith, and Shade Shuttters. "Global Coal Trade Distributions from 1988 to 2021."
- Waters, Keith, Shade Shuttters, and Rachata Muneeppeerakul. "Trade Network Entropy in the World Energy Market."
- Altiparmak, Suleyman, Cam Thies, Shade Shuttters, and Keith Waters. "Inducing New Bilateral Oil Interdependencies: The unintended impact of 2014 US-led sanctions on Russia."
- Waters, Keith. "Firm Formation and the Regional Allocation of Labor."

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## GRANT APPLICATIONS – SELECTED

- Alfred P. Sloan Foundation, 2025. Keith Waters (Principal Investigator). Geoeconomic Constraints on the U.S. Low-Carbon Economic Transition. Amount: \$ 756,451. Result: Not Awarded.
- US Center of Excellence at Arizona State University, 2025. Keith Waters (Principal Investigator). U.S. Vulnerability to International Trade Shocks. Amount: \$375,805. Result: Not Awarded.
- US Department of Defense, 2024. Keith Waters (Principal Investigator). Social Vulnerability to Food System Shocks: Distributions and Trade Network Contagion. Amount: \$1,347,445. Result: Not Awarded.
- US Department of Defense, 2024. Keith Waters (Co-Investigator). Security Implications in the Age of Energy Transition and Climate Change. Amount: \$148,158. Result: Not Awarded.
- National Science Foundation SBE Postdoctoral Fellowship, 2019. Keith Waters (Principal Investigator), and Robert Axtell (Sponsoring Scientist). Inter-Regional Economic Dynamics: An Agent-Based Model of a System of Cities. Amount: \$138,000. Result: Not Awarded.

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## PROPOSAL SUBMISSIONS – SELECTED

Housing Needs Assessment for Arlington County, Va. August 2025. Result: Awarded

School Enrollment Forecasting for the City of Falls Church. October 2024. Result: Awarded

Demographics Projections for the City of Falls Church, Virginia 2020 through 2050. June 2023. Keith Waters (Principal Investigator). Result: Awarded.

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## TEACHING EXPERIENCE

**Instructor**, Fall 2023. George Mason University. POGO – Project Management

**Instructor**, Spring 2023. George Washington University. GEOG 6304 – Geographical Information Systems

**Instructor**, Spring 2021. George Mason University. POGO 511 - Intro Data Analysis for Policy and Government

**Instructor**, Spring 2019. George Mason University. POGO 511 - Intro Data Analysis for Policy and Government

**Guest Lecturer**, Fall 2019. George Mason University. GOVT 464 - Urban Economic Development in the Smart Growth Era

**Guest Lecturer**, Spring 2019. George Mason University. PUBP 602 – Regional Economic Development: Strategies and Applications

**Teaching Assistant and Guest Lecturer**, Spring 2019. George Mason University. PUBP 754 - GIS and Spatial Analysis for Public Policy

**Guest Lecturer** Spring 2019. George Mason University. PUBP 804 – Multivariate Statistical Analysis

**Guest Lecturer**, Fall 2018. George Mason University. GOVT 464 - Urban Economic Development in the Smart Growth Era

**Guest Lecturer**, Fall 2018. George Mason University. POGO 611 – Advanced Data Analysis for Policy and Government

**Co-Instructor**, Summer 2017. George Mason University. PUBP 555 - Economics Math Workshop

**Guest Lecturer**, June 2017. The World Bank SURR-MENA GIS Learning Weeks. Spatial Econometrics and Programming for G.I.S.

**Co-Instructor**, January 2017. George Mason University. PUBP 555 - Economics Math Workshop

**Teaching Assistant**, Spring 2017. George Mason University. PUBP 520 - GIS and Spatial Analysis for Public Policy

**Teaching Assistant**, Fall 2016. George Mason University. PUBP 511 - Statistical Methods for Policy Analysis

**Co-Instructor**, August 2016. George Mason University. PUBP 555 - Economics Math Workshop

**Teaching Assistant**, Spring 2016. George Mason University. PUBP 520 - GIS and Spatial Analysis for Public Policy

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## ACADEMIC SERVICE

Northeast Regional Science Association – Vice President, 2024-2025.

AAG Economic Geography Specialty Group - At-large Board Member, 2022-2023.

WRSA – Strategic Planning Board, 2022.

GMU - Vice President of the Association of Public Policy PhD Students; Conference Chair of the Advancements in Public Policy Conference, 2014.

Western Michigan University, University of North Carolina at Charlotte - Gamma Theta Upsilon Member  
University of North Carolina at Charlotte - Graduate Senator

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## **ADVANCED TECHNICAL SKILLS**

Python, QGIS, ArcGIS, STATA, GeoDa, R, Pajek