

# 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

## 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

## 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 Muneepaerakul. "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.

## 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.

## 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.

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## 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/)

## 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](http://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 'pandecconomy' 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.

## WORKS IN PROGRESS

Waters, Keith, and Shade Shutters. "Trade Tightness in the Global Food Trade Network."

Waters, Keith, and Shade Shutters. "Global Coal Trade Distributions from 1988 to 2021."

Waters, Keith, Shade Shutters, and Rachata Muneepaerakul. "Trade Network Entropy in the World Energy Market."

Altiparmak, Suleyman, Cam Thies, Shade Shutters, 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."

## 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.

## 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.

## 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 SURN-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

## 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