Taylor K McKenzie
U.S. Citizen, DOE Q Clearance (DOD TS Equivalent)
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Education

Ph.D. Economics
University of Oregon, Eugene, OR
Dissertation: Railroads, Regulation, Efficiency, and Competition
Committee: Wesley W. Wilson, Van Kolpin, Jeremy Piger,
   Diane Del Guercio, Keaton Miller

June 2017

M.S. Economics
University of Oregon, Eugene, OR
Advisor: Dr. Wesley W. Wilson

December 2013

B.A. Economics and Mathematics
Willamette University, Salem, OR
Advisors: Dr. Raechelle Mascarenhas and Dr. Peter Otto

May 2012
Summa Cum Laude

Work Experience

Sandia National Laboratories
Senior Cybersecurity Researcher

August 2017 - Present

- Led efforts to analyze reproducibility of statistical analyses over a wide array of applications. Advised on designing experiments and structuring analyses to improve the reproducibility of studies.
- Extended economic and statistical expertise to studies of risk and resilience of cyber and cyber-physical systems.
- Applied knowledge of classical and Bayesian statistics to wide breadth of problems in risk analysis, drawing on diverse subject-matter expertise to produce well-founded statistical models.
- Contributed to economic analyses of resilience of communities and markets to natural and man-made disasters.

University of Oregon
Graduate Teaching Fellow
Department of Economics

Fall-Spring 2012-2017

- Served as teaching assistant to both undergraduate and graduate courses.
- Acted as independent instructor of five courses covering intermediate microeconomic theory, industrial organization, and development economics.

Pacific Northwest National Laboratory
National Security Intern
Knowledge Discovery and Informatics Group
Mentors: Dr. Courtney Corley and Dr. Satish Chikkagoudar

Summers of 2010 - 2012, 2014

- Developed a game-theoretic model of inter-organization email traffic and estimated the model and produced simulations using Bayesian methods. Simulations were used to identify risk of cybersecurity threats and develop strategies to mitigate the damage of cyberattacks.
- Developed methods to predict and interpret trends in social media and implemented those methods in Python and R on PNNL's supercomputing cluster. Also co-authored "SociAL Sensor Analytics: Measuring Phenomenology at Scale."
- Developed a predictive disease model describing spread of SARS and cholera worldwide and prototyped both models in Python. Also developed estimates for air travel between countries and the effects of various intervention techniques such as airport screening and quarantine.
- Developed metrics to analyze the effectiveness of biosurveillance systems and models and investigation of economic indicators in nuclear proliferation pathway analysis.

- Development and implementation of classical and Bayesian statistical and econometric models in R, Python, Matlab, and Stata.
- Formal training and practical experience in cybersecurity, ranging from studies of mission and capability resilience of cyber-dependent systems to investigating impacts of specific cyber vulnerabilities.
- Experience working with diverse teams and developing models that synthesize theories and results from a multitude of disciplines.

Publications

- Färe, Rolf, Taylor McKenzie, Wesley Wilson, and Wenfeng Yang (2017). Mergers, efficiency, and productivity in the railroad industry: An attribute-incorporated data envelopment analysis approach. Transportation Policy and Economic Regulation: Essays in Honor of Theodore Keeler.
- Corley, C.D., C. Dowling, S.J. Rose, and T. McKenzie (2013). SociAL Sensor Analytics: Measuring Phenomenology at Scale. *2013 IEEE International Conference on Intelligence and Security Informatics*, 61-66.
- Corley, C.D., et al, including T. McKenzie (2012). Assessing the Continuum of Event-Based Biosurveillance Through an Operational Lens. *Biosecurity and Bioterrorism 10(1)*, 131-41.

Working Papers

- McKenzie, Taylor. Markups and Scale Elasticities for Differentiated Railroad Networks (with Wesley W. Wilson).
- McKenzie, Taylor. Decomposing Changes in Productivity Using Bayesian Methods.
- McKenzie, Taylor. General Bayesian Marginal Likelihood Estimation Using Iterative Density Estimation.

Works in Progress

- McKenzie, Taylor. Estimation of Allocative Inefficiency Using Smooth Non-Parametric Frontier Analysis.

Developed Software

- R package: Smooth Non-Parametric Frontier Analysis.

Awards and Recognitions

- Best Dissertation Award from American Economic Association's Transportation and Public Utilities Group. *Dec. 2017*
- Ph.D. Research Paper Award from the University of Oregon for "Markups and Scale Elasticities for Differentiated Railroad Networks." *May 2016*
- Achievement Award from Pacific Northwest National Laboratory for work on empirical game-theoretic modeling. *Aug. 2014*
- Best Paper Award at Institute of Electrical and Electronics Engineers Intelligence and Security Informatics Conference for "SociAL Sensor Analytics: Measuring Phenomenology at Scale." *June 2013*
- Best First-Year Econometrics Performance Award from the University of Oregon. *June 2013*
- National Security Directorate Outstanding Performance Award from Pacific Northwest National Laboratory for work on predictive disease modeling. *Sept. 2011*
- The Chester F. Luther Mathematics Scholarship from Willamette University. *May 2011*
- Phi Beta Kappa Member, Junior Inductee. *May 2011*