

# TAYLOR K MCKENZIE

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## EDUCATION

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### **Ph.D. Economics**

*June 2017*

*University of Oregon, Eugene, OR*

*Dissertation: Railroads, Regulation, Efficiency, and Competition*

*Committee: Wesley W. Wilson, Van Kolpin, Jeremy Piger,*

*Diane Del Guercio, Keaton Miller*

### **M.S. Economics**

*December 2013*

*University of Oregon, Eugene, OR*

*Advisor: Dr. Wesley W. Wilson*

### **B.A. Economics and Mathematics**

*May 2012*

*Willamette University, Salem, OR*

*Summa Cum Laude*

*Advisors: Dr. Raechelle Mascarenhas and Dr. Peter Otto*

## WORK EXPERIENCE

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### **Sandia National Laboratories**

*Aug. 2017-Present*

*Senior Cybersecurity Researcher*

- Extended economic and statistical expertise to resilience of cyber and cyber-physical systems.
- Applied knowledge of classical and Bayesian statistics to wide breadth of problems in risk analysis.
- Contributed to economic analyses of resilience of people, communities, and markets to natural and man-made disasters.

### **University of Oregon**

*Fall-Spring 2012-2017*

*Graduate Teaching Fellow*

*Department of Economics*

- 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**

*Summers of 2010 - 2012, 2014*

*National Security Intern*

*902 Battelle Blvd*

*Knowledge Discovery and Informatics Group*

*Richland, WA 99354*

*Mentors: Dr. Courtney Corley and Dr. Satish Chikkagoudar*

- 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.

## PUBLICATIONS

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- 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

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

## WORKS IN PROGRESS

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- McKenzie, Taylor. Estimation of Allocative Inefficiency Using Smooth Non-Parametric Frontier Analysis.
- McKenzie, Taylor. General Bayesian Marginal Likelihood Estimation Using Iterative Density Estimation.

## DEVELOPED SOFTWARE

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- R package: Smooth Non-Parametric Frontier Analysis.

## SKILLS

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- Development and implementation of statistical and econometric models in R, Python, Matlab, and Stata.
- Estimation of structural and reduced-form econometric models using classical, time-series, and Bayesian methods.
- Experience working with diverse teams and developing models that synthesize theories and results from a multitude of disciplines.

## AWARDS AND RECOGNITIONS

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

## PRESENTATIONS

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- “Decomposing Changes in Productivity Using Bayesian Methods.” Western Economic Association International Conference. *July 2016*
- “Markups and Scale Elasticities for Differentiated Railroad Networks.” Western Economic Association International Conference. *July 2015*
- “Simulating Professional Communication with Economic Network Models.” Pacific Northwest National Laboratory. *Aug. 2014*
- “Social Media Analysis.” Pacific Northwest National Laboratory. *July 2012*
- “Air Travel and Infectious Diseases.” Pacific Northwest National Laboratory. *Aug. 2011*
- “Bayesian Networks in Disease Modeling.” Willamette University Mathematics Colloquium. *May 2011*
- “Biosurveillance and FCAT.” Pacific Northwest National Laboratory. *Aug. 2010*