David S. Dixon **Curriculum Vitae** **12-Nov-2019**

Educational History:

Ph.D.	30 July 2011	University of New Mexico	Economics (Environmental & Natural Resource Economics
		Dissertation: Computational Methods in Natural Resource Economics: Agent-Based Modeling and Hotelling's Rule	
		Chairs: Janie Chermak and Kristine Grimsrud	
M.S.	31 July 1993	University of New Mexico	Physics (Astrophysics)
		Thesis: Cosmic Ray Production from Type II Supernovae in the Spiral Galaxy NGC 4736	
		Chair: Nebojsa Duric	
B.A.	18 May 1985	University of Vermont	Physics

Employment History

Principle positions since Bachelor's degree

Professional Experience

2019–Present Senior Lecturer III
2017–2019 Lecturer III
Department of Economics, University of New Mexico.

Responsible for curriculum design, textbook selection, lectures, exams, and course administration for undergraduate courses in Introductory and Intermediate Econometrics, Introductory and Intermediate Macroeconomics, Introductory Microeconomics, Math Methods for Economics, and Public Finance. Member of the Economics Undergraduate Committee, chair of the Economics Managed Online Program Committee, and member of the Faculty Senate Information Technology Committee. Mentor graduate students in first-time teaching roles and conduct peer assessmets of graduate students applying for internal and external teaching positions. Advise graduate students with research in areas that include computational and/or econometric techniques in my field of expertise. Advisor to four undergraduates in Independent Study and Honors courses, three of whom presented their papers at a conference.

2013–2017 Visiting Lecturer II, Department of Economics, University of New Mexico.

Responsible for curriculum design, textbook selection, lectures, exams, and course administration for undergraduate courses in Intermediate Econometrics, Intermediate Macroeconomics, Introductory Macroeconomics, Introductory Microeconomics, Introductory Statistics and Econometrics, Math Methods for Economics, and Public Finance.

2012–2013 Visiting Assistant Professor of Economics, Eckerd College.

Responsible for curriculum design, textbook selection, lectures, exams, and course administration for undergraduate courses in Econometrics, Energy Resources, Industrial Organization, and Principles of Microeconomics. Developed econometrics curriculum in R and Dexy so that students could post homework as blog entries.

2011–2019 Consultant, ARES Corporation.

Coding and testing of web application software using JSP, Java, Ajax, Tiles, and JavaScript. SQL, PL/SQL, and shell programming for database maintenance and reporting.

2006–2012 Senior Modeling and Simulation Scientist, ARES Software.

Responsible for design and implementation of agent-based modeling in the AVERT (Automated Vulnerability Evaluation for Risks of Terrorism) software product. AVERT is a risk analysis modeling and simulation environment for evaluating threats to installations like harbors, nuclear facilities, and military bases. AVERT is implemented in Java with high-resolution JOGL graphics. Had primary responsibility for the algorithmic, computational geometry, networking and distributed processing aspects of AVERT. Helped guide the development team to CMMI maturity level 3 certification.

1998–2006 Senior Scientist, Least Squares Software.

Co-founder and senior scientist for agent-based modeling and simulation software consulting provider. Clients included the Center for Adaptive Systems Applications (CASA), United States Marine Corps (USMC), the Maui High Performance Computing Center, the National Center for Genome Resource (NCGR), Bios Group, and the intelligence community.

Co-inventor and developer of the Behavior Action Simulation Platform (BASP) and its implementations, including the Archimedes Combat Modeling Platform for USMC, and the Machiavelli Political Simulation System for the intelligence community. BASP is a modular, portable, network-distributable Java-based system for modeling and simulation with emphasis on agent-based modeling. Original development was in Java with a C++ decision-engine; eventually implemented in 100% pure Java.

1997–1998 Senior Software Engineer, Bios Group LP

Principal architect of software systems for agent-based simulations with startup research and development firm in Santa Fe, New Mexico. Program products included a natural gas distribution and marketing model, an electric utility production optimization, a distribution and marketing model, a commodity market simulation, organization optimization models, robust manufacturing procedure modeling, and real-time process control for a supply-chain/market optimization. Responsible for product design, implementation, deployment, and documentation. Managed five software engineers and a technical writer.

1985–1999 Contract Programmer/Consultant.

Clients included Analog Devices, Inc., BellSouth Chile, Dartmouth College Thayer School of Engineering, Digital Equipment Corp., Environmental Dimensions, Inc., Intel Corp., Lockheed Martin Technical Operations, New Mexico Institute of Mining and Technology, New Mexico Technet, Public Service Company of New Mexico, University Hospital of Vermont, University of New Mexico, and University of Vermont.

Provided design, development and implementation services and direction on various projects.

References

Current Department Chair

Prof. Robert Berrens
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Teaching Interests

Primary:	microeconomics; macroeconomics; statistics and econometrics; mathematics for economics; public finance; industrial organization; game theory
Secondary:	behavioral economics, labor economics

Research Interests

Primary:	renewable and nonrenewable resources, including sustainability, environmental impact and policy; complex systems in health economics; climate change economics and policy; microeconomic modeling; network behavioral and network game theoretical models
Secondary:	behavioral models of experimental results; non-expected utility.

Job Market Paper

Dixon and Stith, 2019. Modeling risk and utility for kidney transplants centers. Working paper.

ABSTRACT:

In the face of government and professional regulation, insurance underwriters, public perception, and the Hippocratic Oath, the medical profession is naturally risk-averse. Simultaneously, the profession is expected to provide state-of-the-art care, especially in rapidly innovating fields. This expectation - often also coming from regulators, insurance providers, the public, and ethical considerations - amounts to an incentive to be early adopters of innovative practices. This paper examines the diffusion of innovative medical practices with a network game theory model in which players face strategic complement payoffs. That is, players receive a payoff that depends on the number of their peers playing the same strategy. Innovations diffuse through the network as the marginal benefit exceeds the marginal cost given each player's risk aversion. A specific application to kidney transplants in the U.S. is presented. The model is calibration to actual transplant data over millions of Monte Carlo simulations. Results show that smaller and newer transplant clinics are more risk averse in general, but that there are notable exceptions.

Professional Service

Reviewer for: *Eastern Economics Journal*; *Natural Resources Research*; *Water Resources Research*; *European Physical Journal Special Topics*.

Sessionorganizer for *Western Economics Association International* annual conference in 2011-2019.

Executiveboard member for *Computational Social Science Society of the Americas (CSSSA)*.

Organizerand program committee for CSSSA annual conferences in 2015-2017.

Organizerand program committee for Complexity-Based Analytics and Policies for Social Good (CAPS) conference 2016-2017.

Memberof *American Economic Association*, *Association of Environmental and Resource Economists*, *Computational Social Science Society of the Americas*, *Eastern Economic Association*, *European Social Simulation Association*, *Society for Computational Economics*.

Economics instructor for senior adult learning programs by *Lifelong Learning for New Mexicans* and *Oasis Lifelong Learning*.

Teaching Experience

Number of course sections taught.

Course	2006-	2015			2016			2017			2018			2019		
	2014	Sp	Su	Fa	Sp	Su	Fa	Sp	Su	Fa	Sp	Su	Fa	Sp	Su	Fa
Energy Resources	1															
Honors								1		1						
Independent Study								1		1						
Industrial Organization	2															
Intermediate Econometrics			1										1			
Intermediate Macroeconomics I	4	2		1	2		3	2		3	1		2	2		2
Intermediate Macroeconomics II											1					
Introductory Macroeconomics	4					1	1	1	1	1	1	1	1	1	1	
Introductory Microeconomics	10										1			1	1	
Introductory Statistics and Econometrics	4	2		1	2			1					1			1
Math Methods for Economics	1			1			1			1						1
Public Finance	1			1												

Publications and Presentations

David S Dixon and Sarah See Stith. Modeling risk and utility for kidney transplants centers. Working paper, 2019.

Agustín León-Moreta, Vittoria Totaro, and David S Dixon. Social heterogeneity, local capacity, and urban parks: Evidence from metropolitan America. *Cities*. In revision.

David S Dixon. Complex systems analysis of transplant center performance metrics. Computational Social Science Society of the Americas, October 2019.

David S Dixon. The marginal effects of immigration enforcement. Western Economic Association International, June 2019.

David S Dixon. The marginal effects of immigration enforcement. Computational Social Science Society of the Americas, October 2018.

David S Dixon and Jacqueline M Doremus. When boycotts fail. Western Economic Association International, June 2018.

David S Dixon. The wall. Western Economic Association International, June 2018.

David S Dixon. Some tools of complexity analysis. CAPS Complexity and Policy Studies, April 2018.

Lidiya Bayliyeva and David S Dixon. Reduced power plant emissions from both cap-and-trade market efficiency and technological progress. Southwestern Society of Economists, March 2018.

Michael Guarino and David S Dixon. Crime and air pollution: microdata evidence from four metropolitan areas. Southwestern Society of Economists, March 2018.

Zuzia Vick and David S Dixon. A bioeconomic disaggregation of Hawai'i Deep 7 fishery data. Southwestern Society of Economists, March 2018.

David S Dixon, Pallab Mozumder, William F Vásquez, and Hugh Gladwin. Heterogeneity within and across households in hurricane evacuation response. *Networks and Spatial Economics*, 17(2):645–680, 2017.

David S Dixon. From Resource Selection Function to System Dynamics to ABM: A cautionary tale. Computational Social Science Society of the Americas, October 2017.

David S Dixon. Sheep, contrarians, and saboteurs: disruptors in friendship games. Computational Social Science Society of the Americas, November 2016.

D. S. Dixon. Classifying outcomes with real-time symbolic dynamics. SwarmFest, August 2016.

David S Dixon and Sarah See Stith. Welfare loss and other unintended consequences of organ transplant metrics. Western Economic Association International, July 2016.

David S Dixon and Sarah See Stith. An agent-based model of innovation in organ transplant data. Computational Social Science Society of the Americas, October 2015.

David S Dixon. Sheep, contrarians, and saboteurs: disruptors in friendship games. Parish Library Fall Lecture Series, University of New Mexico, October 2015. Invited talk.

David S Dixon. Sheep, contrarians, and saboteurs: disruptors in friendship games. Four Corners Association for Behavior Analysis, April 2015. Invited talk.

David S Dixon. Sheep, contrarians, and saboteurs: disruptors in friendship games. Eastern Economic Association, February 2015.

David S Dixon and Sarah See Stith. Organ transplants: innovation and risk aversion in a highly regulated market. Western Economic Association International, July 2015.

David S Dixon. The wage-price spiral in a macroeconomy with sticky, flexible, and adaptive wages and prices. Western Economic Association International, June 2014.

Stephen P Harris, David S Dixon, David L Dunn, and Andrew N Romich. Simulation modeling for maritime port security. *The Journal of Defense Modeling and Simulation: Applications, Methodology, Technology*, 10(2):193–201, 2013.

David S Dixon, Pallab Mozumder, and William F Vásquez. An information entropy approach to salience for survey-driven simulation. Computational Social Sciences Society of the Americas, August 2013.

David S Dixon, Pallab Mozumder, and William F Vásquez. The importance of neighborhood in hurricane evacuation. Western Economic Association International, June 2013.

David S Dixon. An agent-based model of network oligopolies. Western Economic Association International, July 2012.

David S Dixon and Thomas F Turner. Toward an economic model of a genetically sustainable fishery. Association of Environmental and Resource Economists, June 2012.

David S Dixon. An agent-based adaptation of friendship games: Observations on network topologies. Computational Social Sciences Society of the Americas, September 2011.

David S Dixon. *Computational Methods in Natural Resource Economics: Agent-Based Modeling and Hotelling's Rule*. PhD dissertation, University of New Mexico, July 2011.

David S Dixon. Preliminary results from an agent-based adaptation of friendship games. Western Economic Association International, July 2011.

David S Dixon. Cournot equilibrium as emergent behavior in a nonrenewable resource agent-based model. Western Economic Association International, June 2011.

David S Dixon. Policy implications from agent-based models of non-renewable resource production. Eastern Economic Association, February 2011.

David S Dixon. Hotelling's Rule in the limit: An agent-based exploration of the model space. Western Economic Association International, June 2010.

David S Dixon. *Complexity and Policy Analysis: Tools and Concepts for Designing Robust Policies in a Complex World*, chapter Quantitative Models from Qualitative Data: Case Studies in Agent-Based Socio-political Modeling, pages 323–338. ISCE Publishing, 2008.

David S Dixon. The economics of New Mexico natural gas methane emissions reduction. Technical report, New Mexico Environment Department, December 2007. Appendix G of the Oil and Gas Greenhouse Gas Emissions Reductions Final Report.

S.Y. Rhee, W. Beavis, T.Z. Berardini, G. Chen, D.S. Dixon, A. Doyle, M. Garcia-Hernandez, E. Huala, G. Lander, M. Montoya, N. Miller, L.A. Mueller, S. Mundodi, L. Reiser, J. Tacklind, D.C. Weems, Y. Wu, I. Xu, D. Yoo, J. Yoon, and P. Zhang. The arabidopsis information resource (TAIR): a model organism database providing a centralized, curated gateway to arabidopsis biology, research materials and community. *Nucleic Acids Research*, 31:224, 2003.

Guy Davenport, William D. Beavis, Marco C.A.M. Bink, Klaus J. Dehmer, Jo Dicks, David S. Dixon, Vanessa Fens, Matthias Frisch, Gerrit Gort, Eva Kříštová, Aleš Lebeda, Thomas Metz, Albrecht E. Melchinger, Johan Peleman, David Pink, Jochen Reif, Jeroen Rouppe van der Voort, Rob van Treuren, and Theo J.L. van Hintum. GENEMINEing agronomically important traits in germplasm. Plant & Animal Genomes XI Conference (PAG-XI), 2003.

David S Dixon and W N Reynolds. The basp agent-based modeling framework: Applications, scenarios, and lessons learned. 36th Hawaii International Conference on System Sciences (HICSS'03), January 2003.

Guy Davenport, David S. Dixon, Theo J.L. van Hintum, D.C. Weems, Jo Dicks, and William D. Beavis. A generic model for an object oriented interface to a relational database and its application to genebank data. Joint Cold Spring Harbor Laboratory and Wellcome Trust Genome Informatics Conference, September 2002.

W N Reynolds and David S Dixon. *Maneuver Warfare Science 2001*, chapter A Prototype Distillation, pages 119–130. USMC, 2001.

W N Reynolds and David S Dixon. A general framework for representing behavior in agent based modeling. RAND Corporation - Complex Systems and Policy Analysis: New Tools for a New Millennium, September 2000.

David S Dixon. Cosmic ray production from type II supernovae in the spiral galaxy NGC4736. Master's thesis, University of New Mexico, July 1993.

David S Dixon, Nebosja Duric, and Fred A Slane. Resolution of thermal and synchrotron emission regions. American Astronomical Society, 1990.

Wesley L Nyborg and David S Dixon. Calculations of temperature elevation produced by ultrasound. *Journal of Ultrasound in Medicine*, 5(suppl):56, 1986.