

Douglas H. Wrenn

Curriculum Vitae

Department of Agricultural Economics, Sociology, and Education
 The Pennsylvania State University
 112A Armsby Building
 University Park, PA 16802
 Phone: 1-814-865-9216
 Fax: 1-814-865-3746
 Email: dhw121@psu.edu

EDUCATION

- The Ohio State University**, Columbus, Ohio, USA
 Ph.D., Agricultural, Environmental, and Development Economics 12/2012
 Dissertation Title: "Three Essays on Residential Land Development"
 Advisor: Elena G. Irwin
- M.A., Economics 08/2008
- Eastern Mennonite University**, Harrisonburg, Virginia, USA
 B.S., Economics and Business Administration (Cum Laude) 04/2002

PROFESSIONAL APPOINTMENTS

- The Pennsylvania State University**, Department of Agricultural Economics, Sociology, and Education
 Assistant Professor, Environmental and Resource Economics 08/2013-Present
- The Ohio State University**, Department of Agricultural, Environmental, and Development Economics
 Postdoctoral Researcher (Advisor: Elena G. Irwin) 01/2013-07/2013
 Graduate Research Assistant 08/2007-12/2012
- Mennonite Central Committee**, Ukraine/Formal Soviet Union 02/2003-04/2006
 Coordinator of Economic Development and Rural Lending

PUBLICATIONS (* Indicates student co-authored paper)

Peer-Reviewed Journal Articles

1. **Wrenn, Douglas H.** and H. Allen Klaiber. 2018. "Space and Time: A Competing Risks Analysis of the Impact of Property Taxes and Zoning Restrictions on Residential Development." (Accepted: *International Economic Review*)
2. Hoy, Kyle* and **Douglas H. Wrenn**. 2018. "Unconventional Energy, Taxation, and Interstate Welfare: An Analysis of Pennsylvania's Severance Tax Policy." *Energy Economics*. 73 (June): 53-65.
3. Towe, Charles A., H. Allen Klaiber, and **Douglas H. Wrenn**. 2017. "Not My Problem: Growth Spillovers from Uncoordinated Land Use Policy." *Land Use Policy*. 67 (September): 679-689.

4. Zhang, Wendong, **Douglas H. Wrenn**, and Elena G. Irwin. 2017. "Spatial Heterogeneity, Accessibility, and Zoning: An Empirical Examination of Leapfrog Development." *Journal of Economic Geography*. 17(3): 547-570.
5. **Wrenn, Douglas H.**, H. Allen Klaiber, and David A. Newburn. 2017. "Confronting Price Endogeneity in a Duration Model of Residential Subdivision Development." *Journal of Applied Econometrics*. 32(3): 661-682.
6. Zaveri, Esha*, Danielle Grogan, Karen Fisher-Vanden, Steve Frolking, Richard Lammers, **Douglas H. Wrenn**, Alexander Prusevich, and Robert Nicholas. 2016. "Invisible Water, Visible Impact: Groundwater Use and Indian Agriculture under Climate Change." *Environmental Research Letters*. 11(8):1-13.
7. **Wrenn, Douglas H.**, H. Allen Klaiber, and Edward C. Jaenicke. 2016. "Unconventional Shale Gas Development, Risk Perceptions, and Averting Behavior: Evidence from Bottled Water Purchases." *Journal of the Association of Environmental and Resource Economists*. 3(4): 779-817. (Lead article)
8. **Wrenn, Douglas H.** and Elena G. Irwin. 2015. "Time is Money: An Empirical Examination of the Effects of Regulatory Delay on Residential Subdivision Development." *Regional Science and Urban Economics*. 51: 25-36.
9. **Wrenn, Douglas H.**, Timothy W. Kelsey, and Edward C. Jaenicke. 2015. "Resident versus Non-Resident Employment Impacts Associated with Marcellus Shale Development." *Agricultural and Resource Economic Review*. 44/2 (August 2015) 1-19. (Lead Article; Winner, Best Article Award, 2016)
10. **Wrenn, Douglas H.** and Abdoul G. Sam. 2014. "Geographically and Temporally Weighted Likelihood Regression: Exploring the Spatiotemporal Determinants of Land Use Change." *Regional Science and Urban Economics*. 44: 60-74.
11. **Wrenn, Douglas H.** and Elena G. Irwin. 2012. "How Do Land Use Policies Influence Fragmentation? An Econometric Model of Land Development with Spatial Simulation" *Environmental Economics*. 3: 82-96.

Other Journal Outputs

1. Fetter, T. Robert, Andrew L. Steck, Christopher D. Timmins, and **Douglas H. Wrenn**. 2017. "Learning by Viewing? Social Learning, Regulatory Disclosure, and Firm Productivity in Shale Gas." *Academy of Management Proceedings*. January: 17515. (Abstract Publication from Annual Meetings)

Book Chapters

1. Irwin, Elena G., Geoffrey L. Buckley, Matthew Gnagey, David Newburn, Erin Pierce, and **Douglas H. Wrenn**. 2018. "Land Use Dynamics: Regulations and Norms." S. Pickett et al. (eds.), *Science for Sustainable City: Insights from Baltimore School of Urban Ecology*. (Forthcoming)
2. Irwin, Elena G. and **Douglas H. Wrenn**. 2014. "An Assessment of Empirical Methods for Modeling Land Use." In: J.M. Duke and J. Wu (ed.), *the Oxford Handbook of Land Economics*. Oxford Univ. Press.

Extension

1. **Wrenn, Douglas H.** 2014 (June). "Shale Development and Employment in Pennsylvania." Marcellus Employment." *North American Regional Science Council*. 2(1): 6.
2. Elena G. Irwin and **Douglas H. Wrenn**. 2012 (November). "Developing Spatially Disaggregate Models of Land Change for Policy Simulation." *UGEC Viewpoints*. 8: 41-44. Published by the Urbanization and Global Environmental Change Project, International Human Dimensions Programme.

Under Review/Submitted

1. **Wrenn, Douglas H.**, Junjian Yi, and Bo Zhang.* 2018. "Housing Prices and Marriage Entry in China." (Resubmitted: *Regional Science and Urban Economics*)
2. **Wrenn, Douglas H.**, Klaiber, H. Allen and David A. Newburn. 2018. "Price Based Policies for Managing Residential Development: Impacts on Water Quality." (Revisions Requested: *Resource and Energy Economics*)
3. Zaveri, Esha*, **Douglas H. Wrenn**, and Karen Fisher-Vanden. 2018. "The Impact of Water Access on Short-Term Migration in Rural India." (Revisions Requested: *Australian Journal of Agricultural and Resource Economics*)
4. Zhang, Bo*, **Douglas H. Wrenn**, and Edward C. Jaenicke. 2018. "House Prices, Food Purchases, and Diet Quality." (Under Review: *American Journal of Agricultural Economics*)

Manuscripts/Working

1. Fetter, T. Robert, Andrew L. Steck, Christopher D. Timmins, and **Douglas H. Wrenn**. 2018. "Learning by Viewing? Social Learning, Regulatory Disclosure, and Firm Productivity in Shale Gas." (Manuscript)
2. Dong, Xiao, H. Allen Klaiber, Sathya Gopalakrishnan, and **Douglas H. Wrenn**. 2018. "Silence of Falling Trees: Hidden Carbon Losses from Shale Gas Development." (Manuscript)
3. Dong, Zefeng, Edward C. Jaenicke, **Douglas H. Wrenn**, and Annemarie Kuhns. 2018. "Food Choice and Diet Quality: The Impact of Exogenous Shocks to the Food Environment on the Healthfulness of Household Food Purchases." (Manuscript)
4. Van Hook, Jennifer, Justine Blandford, Yosef Bodovsky, Guangqing Chi, Annelise Hagedorn, Edward C. Jaenicke, and **Douglas H. Wrenn**. 2017. "Accessibility Measures of Community Food Environments and the Healthiness of Home Food Purchases." (Manuscript)
5. Olmstead, Sheila, **Wrenn, Douglas H.**, and Julian Plough. 2018. "Shifting Flood Risk Perceptions and Housing Market Outcomes: A Multi Regional Analysis, Houston, TX and Tampa Bay, FL."
6. Kousky, Carolyn and **Douglas H. Wrenn**. 2018. "The Sociodemographics of Flood Risk."
7. Hoy, Kyle A.* and **Douglas H. Wrenn**. 2018. "The Effectiveness of Candy Taxes in Decreasing Candy Consumption."

TEACHING

Ohio State University

Short Course: Using R for Econometric Analysis

Spring, 2011

Development Economics (AED Economics/International Studies 535)

Spring, 2010

Pennsylvania State University

Undergraduate

Introductory Environmental and Resource Economics (CED 201)

Spring, 2014-Present

Honors Environmental and Resource Economics (CED 297)

Spring, 2018-Present

Guest Lecture: AEREC 590

Fall 2013-2017

Guest Lecture: AEREC 597A – Topics in Environmental Economics

Fall, 2014

Guest Lecture: AEREC 597 – Workshop on Scanner Data

Spring 2018

Graduate

Applied Welfare Analysis (AEREC 597A)

Spring, 2014-2015

Applied Microeconometrics II (AEREC 597A)

Spring, 2016-Present

INVITED SEMINARS

1. Pennsylvania State University, Water Insights Seminar Series, “Price Based Policies for Managing Residential Development and Impacts on Water Quality.” April 3rd, 2018.
2. Andrew Young School of Policy Studies, Department of Economics, “Price Based Policies for Managing Residential Development and Impacts on Water Quality.” January 26th, 2018.
3. Department of Business and Economics, Eastern Mennonite University, “Learning by Viewing? Social Learning, Regulatory Disclosure, and Firm Productivity in Shale Gas.” October 5th, 2017.
4. Smeal College of Business, Pennsylvania State University, “Learning by Viewing? Social Learning, Regulatory Disclosure, and Firm Productivity in Shale Gas.” September 27th, 2017.
5. Department of Applied Economics, Oregon State University, “Learning by Viewing? Social Learning, Regulatory Disclosure, and Firm Productivity in Shale Gas.” May 19th, 2017.
6. Department of Agricultural and Applied Economics, Virginia Tech, “Price-Based Land Use Policies with Heterogeneous Development Outcomes: Impacts on Urban Land Use Patterns.” December 2nd, 2016.
7. Department of Economics, Binghamton University, “Confronting Price Endogeneity in a Competing Risks Model of Residential Subdivision Development.” September 30th, 2016.
8. Center for Urban Environmental Research and Education (CUERE), University of Maryland Baltimore County, Seminar Series, "Local Interactions versus Regulatory Delay: Evaluating Competing Explanations for Residential Land Development." November 22, 2013.

CONFERENCES

Local/Regional

1. Zhang, Bo, Douglas H. Wrenn, and Edward C. Jaenicke. "House Prices, Food Purchases, and Diet Quality." Energy and Environmental Economics and Policy Seminar Series, Pennsylvania State University, October 11th, 2017.
2. Wrenn, Douglas H., Timothy W. Kelsey, and Edward C. Jaenicke. 2016. "Resident versus Non-Resident Employment Impacts Associated with Marcellus Shale Development." Energy Days Poster Presentation, Pennsylvania State University, May 19th, 2016.
3. Hoy, Kyle and Douglas H. Wrenn. "Unconventional Energy, Taxation, and Interstate Welfare: An Analysis of Pennsylvania's Severance Tax Policy." Energy and Environmental Economics and Policy Seminar Series, Pennsylvania State University, October 19th, 2016.
4. Jaenicke, Edward C., Douglas H. Wrenn, and H. Allen Klaiber. "Unconventional Shale Gas Development, Risk Perceptions, and Averting Behavior: Evidence from Bottled Water Purchases." Water Conference, Pennsylvania State University Water Conference, April 22nd, 2015.

Domestic

1. Dong, Xiao, H. Allen Klaiber, Sathya Gopalakrishnan, Douglas H. Wrenn. "The Silence of Falling Trees: Hidden Forest Loss from Shale Gas Development." Selected paper presented at the Annual Meetings of the Agricultural and Applied Economics Association, Washington, DC, July 30th-August 1st, 2018.
2. Wrenn, Douglas H. Allen Klaiber, and David A. Newburn. "Price Based Policies for Managing Residential Development: Impacts to Water Quality." Selected paper presented at the Annual Meetings of the Agricultural and Applied Economics Association, Washington, DC, July 30th-August 1st, 2018.
3. Zaveri, Esha, Douglas H. Wrenn, and Karen Fisher-Vanden. "The Impact of Water Access on Short-Term Migration in Rural India." Selected paper presented at the Annual Meetings of the Agricultural and Applied Economics Association, Chicago, Illinois, August 5th-August 7th, 2017.
4. Jaenicke, Edward C. and Douglas H. Wrenn. "Changes in Retail Organic Price Premiums from 2004 to 2010." Selected paper presented at the Annual Meetings of the Agricultural and Applied Economics Association, Chicago, Illinois, August 5th-August 7th, 2017.
5. Zhang, Bo, Douglas H. Wrenn, and Edward C. Jaenicke. "The Great Recession, Healthy Food Purchases, and Obesity." Selected paper for Northeastern Agricultural and Resource Economics Association Annual Meeting, Washington, DC, June 11th-14th, 2017.
6. Wrenn, Douglas H. Allen Klaiber, and David A. Newburn. "Price Based Policies for Managing Residential Development: Impacts to Water Quality." Selected paper for 6th Annual Summer Meetings of the Association of Environmental and Resource Economists, Pittsburgh, Pennsylvania, May 31st-June 2nd, 2017.
7. Fetter, T. Robert, Andrew L. Steck, Christopher D. Timmins, and Douglas H. Wrenn. "Learning by Viewing? Social Learning, Regulatory Disclosure, and Firm Productivity in Shale Gas." Selected paper for 6th Annual Summer Meetings of the Association of Environmental and Resource Economists, Pittsburgh, Pennsylvania, May 31st-June 2nd, 2017.
8. Wrenn, Douglas H., H. Allen Klaiber, and Edward Jaenicke. "Unconventional Shale Gas Development, Risk Perceptions, and Averting Behavior." Selected paper presented at the Annual Meetings of the Agricultural and Applied Economics Association, Boston, Massachusetts, July 31st-August 2nd, 2016.

9. Zaveri, Esha, Douglas H. Wrenn, and Karen Fisher-Vanden. "Water in the Balance: The Impact of Water Infrastructure on Agricultural Adaptation to Rainfall Shocks in India." Selected paper presented at the Annual Meetings of the Applied and Agricultural Economic Association, Boston, Massachusetts, July 31st-August 2nd, 2016.
10. Wrenn, Douglas and H. Allen Klaiber. "Meeting Water Quality Standards by Altering Land Use Patterns: An Analysis of Price vs. Quantity Based Policy Instruments." Selected paper for 5th Annual Summer Meetings of the Association of Environmental and Resource Economists, Breckenridge, CO, June 9-11, 2016.
11. Wrenn, Douglas H., H. Allen Klaiber, and David A. Newburn. "Confronting Endogeneity in a Duration Model of Residential Subdivision Development." Selected paper presented at the Annual Meetings of the Agricultural and Applied Economics Association, San Francisco, CA, July 26-28, 2015.
12. Hoy, Kyle and Douglas H. Wrenn. "Energy Demand and Severance Taxation in Pennsylvania." Selected paper for Northeastern Agricultural and Resource Economics Association Annual Meeting, Newport, RI, June 28th-30th, 2015.
13. Zaveri, Esha, Danielle S. Grogan, Karen Fisher-Vanden, Steve Frolking, and Douglas H. Wrenn. "Adaptability of Irrigation to Changing Monsoon in India: How Far Can We Go?" Selected paper for Northeastern Agricultural and Resource Economics Association Annual Meeting, Newport, RI, June 28th-30th, 2015.
14. Wrenn, Douglas H., H. Allen Klaiber, and Edward Jaenicke. "Unconventional Shale Gas Development, Risk Perceptions, and Averting Behavior: Evidence from Bottled Water Purchases." Selected paper for the 4th Annual Summer Meetings of the Association of Environmental and Resource Economists, San Diego, CA, June 3-5, 2015.
15. Wrenn, Douglas H., H. Allen Klaiber, and David A. Newburn. "Confronting Endogeneity in a Duration Model of Residential Subdivision Development." Selected paper presented at the 61st Annual North American Meetings of the Regional Science Association International, Washington, D.C., November 12-14, 2014.
16. Zaveri, Esha, Karen Fisher-Vanden, Douglas H. Wrenn, and Robert E. Nicholas. "Adapting to Monsoon Variability in India: The Case for Irrigation." Selected paper for Northeastern Agricultural and Resource Economics Association Annual Meeting, Morgantown, WV, June 1st-3rd, 2014.

International

1. Wrenn, Douglas H., Elena G. Irwin, and David A. Newburn. "The Structural Effects of Zoning in Residential Land Markets." Selected paper for the 3rd Annual Summer Meetings of the Association of Environmental and Resource Economists, Banff, Alberta, Canada, June 6-8, 2013.

HONORS AND AWARDS

1. Winner, Best Article Award, Agricultural and Resource Economics Review, Northeastern Agricultural and Resource Economics Association, (2016).
2. Winner, 27th Charles M. Tiebout Prize in Regional Science, Western Regional Science Association, (2013).

3. Winner, North American Regional Science Council (NARSC) Graduate Student-Led Paper Competition, (2012).

GRANTS

Approved/Funded

1. Horace T. Woodward Faculty Development Fund in Agricultural Science (Travel Grant). Pennsylvania State University. Amount: \$1,815. Dates: 07/2017-06/2018.
2. “A Multi-Model, Multi-Scale Research Program in Stressors, Responses, and Coupled Dynamics and the Energy-Water-Land Nexus and for Concentrated, Interdependent Infrastructures.” Penn State University-Stanford University-Department of Energy. Program PI: John Weyant and Karen Fisher-Vanden. Role: Co-PI. PSU Amount: \$8,925,155. Dates: 8/1/2016-7/30/2021.
3. “How Does an Exogenous Change in Retail Market Structure and Other Food Environment Characteristics Affect the Healthfulness of Consumer Food Purchases?” USDA Economic Research Service. PI: Edward C. Jaenicke. Role: Co-PI. Total Amount: \$60,000. Dates: 09/01/2016-08/31/2018.
4. Horace T. Woodward Faculty Development Fund in Agricultural Science (Travel Grant). Pennsylvania State University. Amount: \$1,775. Dates: 07/2016-06/2017.
5. “Modeling Residential Land and Housing Supply and Integration of Structural Urban Demand and Supply Models.” Cooperative Agreement, U.S. Forest Service USDA Northern Research Station and the Baltimore Ecosystem Study (BES) Long-Term Ecological Research Program. PI: Douglas H. Wrenn. Amount: \$25,000. Dates: 07/01/2015-01/31/2017.
6. “A Household-Level Longitudinal Investigation into the Food Environment’s Impact on Food and Behavior and Health.” SEED Grant Proposal, Pennsylvania State University. Program PI: Jennifer Van Hook. Role: Co-PI. Amount: \$20,000. Dates: 06/1/2015-10/31/2016.
7. Horace T. Woodward Faculty Development Fund in Agricultural Science (Travel Grant). Pennsylvania State University. Amount: \$1,400. Dates: 07/2014-06/2015.

Pending

1. “Pennsylvania 2018 Climate Change Impact Assessment”. Pennsylvania Department of Environmental Quality (DEP). Program PI: James Shortle. Role: Co-PI investigating impact of extreme weather on infrastructure in Pennsylvania. Total Amount: \$91,403 Dates: 07/01/2019-12/31/2019.
2. “Urban Coastal Housing Markets and Flood Risk: How Does Better Information Affect Risk Preferences, Housing Prices, and Welfare?” NSF-DRMS. PI: Sheila Olmstead (University of Texas-Austin). Role: Co-PI. Total Amount: \$1,520,899; PSU Amount: \$846,275. Dates: 06/01/2019-05/31/2019.

Declined

1. “Broadening Access to STEM Skill Acquisition and Enhanced Task Performance through AI-Driven Virtual Reality.” NSF FW-HTF Theme 1. Program PI: Conrad Tucker. Role: Co-PI. Total Amount: \$997,877; PSU Amount: Same. Dates: 08/20/2018-08/19/2021.

2. “Optimal Land and Water Resource Management: Analyzing the Impact of Urban-Rural Land Use on Ecosystem Services in the Lake Erie Watershed.” USDA Agriculture and Food Research Initiative. PI: H. Allen Klaiber. Role: Co-PI. Total Amount: \$497,026. PSU Amount: \$165,077. Dates: 01/01/2017-12/31/2019.
3. “Better Connecting Kids to Community Contexts: Accessibility Measures of Health Community and Home Food Environments” Robert Wood Johnson Foundation. PI: Jennifer Van Hook. Role: Co-PI. Total Amount: \$190,000. Dates: 02/01/2017-07/31/2018.
4. “Modeling Wicked Problems with FEW Solutions: A Multi-Scale Environmental and Economic Assessment of Nutrient Pollution in the Chesapeake Bay.” NSF INFEWS. Program PI: Erica Smithwick. Role: Co-PI. Total Amount: \$2,975,191. Dates: 10/01/2016-09/30/2020.
5. “Opportunities and Constraints for Irrigated Agriculture in India: Coupling Economic and Hydrologic Models to Assess Sustainable Pathways.” NSF CNH. Program PI: Steve Frohling. Role: Co-PI. Total Amount: \$1,626,372; PSU Amount: \$759,712. Dates: 07/01/2016-06/30/2019.
6. “Climate Change, Extreme Events, and Spatial Sorting in the U.S.” National Science Foundation Hazards SEES: Location as Adaptation, 2014. PI: Ian Sue Wing. Role: Co-PI. Submitted: 12/3/2014. Total Amount: \$2,587,318. PSU Amount: \$468,075. Dates: 07/2015-06/2019.

SERVICE

Reviewer – Journals

American Journal of Agricultural Economics
 Applied Economic Perspectives and Policy
 Demography
 Ecological Economics
 Energy Economics
 Environmental and Resource Economics
 Growth and Change
 Journal of the Association of Environmental and Resource Economists
 Journal of Environmental Economics and Management
 Journal of Regional Science
 Land Use Policy
 National Science Foundation
 Regional Science and Urban Economics
 Review of Environmental Economics and Policy

Reviewer – Papers, Abstracts, and Theses for Professional Meetings

Northeastern Agricultural and Resource Economics Association Thesis Award	2015-2017
Agricultural and Applied Economics Association (AAEA)	2017-Present
Association of the Environmental and Resource Economists (AERE)	2016-Present
Topics Leader – AAEA Summer Meetings – Econometrics and Statistics	2018-2020

Graduate Student Advising

2013-2016	Esha Zaveri (Post-Doc, Stanford University, 2016-2018; World Bank, 2018-Present)
2014-2017	Kyle Hoy (Assistant Professor, Shepherd University, 2017-Present)
2015-Present	Bo Zhang

2016-Present	Harshanee Jayasekera
2018-Present	Darrah Peklak (Master's)

Dissertation Committee

2014-2016	Iryna Demko (Post-Doc, the Ohio State University, 2016-2018; Research Associate, Cleveland State University, 2018-Present)
2015-2017	Ben Scharadin (Lecturer, Washington and Lee University, 2017-Present)
2016-Present	Aaron Cook
2016-Present	Dong Soon Choi
2018-Present	Xuan Chen
2018-Present	Zefeng Dong

Outside Committee Member

2016-Present	Hamid Firooz (Economics Department)
2016-Present	Hamed Atrianfar (Economics Department)
2017-Present	Oladipo Ositelu (Energy and Mineral Engineering)

Departmental Service: Agricultural Economics, Sociology, and Education, PSU

2014-2017	Energy and Env. Economics and Policy Seminar Committee
2014	AEREC PhD First-Year Qualifying Exam Committee
2013-2014	CED Committee
2018-Present	EEFE PhD First-Year Qualifying Exam Committee, Chair
2014-Present	AEREC Graduate Committee
2015-2019	AESE (Ag. Econ.) Hiring Committee

Affiliations

08/2013-Present	Institute for Energy and the Environment (Penn State)
08/2016-Present	Population Research Institute (Penn State)

PROFESSIONAL AFFILIATIONS

Agricultural and Applied Economics Association (AAEA)
 American Economic Association (AEA)
 Association of Environmental and Resource Economists (AERE)