PATRICK CANNING

Phone: 607-233-4779
Email: pnc29@cornell.edu

Research Interests: I am an experienced research leader with extensive and current applied research contributions at the nexus of *sustainable nutrition*, *food security*, and *global food value chains*.

EDUCATION

PhD   George Washington University, Economics   May 2000
          Dissertation: "Tax Induced Production Behavior of Farm Operator
          Households with Shadow Price Endogeneity"
MS   University of Maryland, Agricultural and Resource Economics   May 1990
          Thesis: "An Examination of Three Methods for Measuring Adjustments in
          the Relative U.S. Stock Value of Farmland and Farm Buildings" (awarded
          Departmental Best Thesis and nominated for a National association award)
BS   University of Maryland, Agricultural and Resource Economics   May 1984

CURRENT ACADEMIC POSITION

Charles H Dyson School of Applied Economics and Management, Cornell University   2022 -
Adjunct Professor
   *Teaching Responsibilities: AEM 6940 LEC001 Environmental Economic Accounting and
   Multiplier Models for Agri-food Systems Research: Introduction and Practice*

OTHER PROFESSIONAL EXPERIENCE (PAST 15 YEARS)

Economic Research Service, USDA, Washington, D.C. & Kansas City, MO   2011 -
Senior Research Economist (GS-15):
Advise senior decision makers on food and farm related policy issues with emphasis on food security, supply chain and consumer outcomes, sustainable nutrition, and the spatial food economy. I was named 2018 USDA Economist of the Year by the USDA Economists Group (www.usdaeconomist.org), for "several important breakthroughs in food system modeling", and received a 2016 Abraham Lincoln Honor Award, the highest Department-wide staff award, for my work advancing data quality "to create a culture recognizing data as a resource for the agency."

U.S. Army Corps of Engineers, Dept. of Defense, Washington, D.C.   2005 - 2007
Co-Leader, Interagency Performance Evaluation Task Force (detail)
Co-Leader of 'Consequence Analysis' team tasked to determining the economic, human health and safety, social and cultural, and environmental consequences as part of a comprehensive distributed risk study on the performance of the New Orleans hurricane protection system during hurricane Katrina (https://biotech.law.lsu.edu/katrina/ipet/ipet.html). For this work I was awarded the U.S. Army's Outstanding Civilian Service Medal for my overall leadership role, and the Commanders Award medal for my leadership of USACE, Institute for Water Resources staff.

Economic Research Service, USDA, Washington, D.C. 2005 to 2011
Research Economist (GS-14)
Conducted food and farm related research with emphasis on the agri-food supply chain and homeland security. I produced the first USDA study of energy use in the U.S. food system. I developed the ERS Food Dollar—designated an ERS Premiere Data Product in 2016. I worked with the Office of the President under two Administrations on classified R&D (held a TS/SCI security clearance) related to food and agriculture critical infrastructure. For this work I received a USDA Secretary's Honor Award "For creating a unique system to quantitatively assess agriculture/food emergencies, which is essential for anticipating and managing vulnerabilities in the Nation's food system".

PROFESSIONAL HONORS AND AWARDS (PAST 15 YEARS)

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7. **USDA Economist Group**. 2018. *2018 Economist of the Year*, awarded for "*several important breakthroughs in food system modeling ...*" (*www.usdaeconomist.org*) (February 2).

6. **Secretary of Agriculture**. 2015. Abraham Lincoln Honor Group Award, awarded for '*advancing data quality "to create a culture recognizing data as a resource for the agency."* (September).

5. **Amber Waves Award**. 2013. Best Data Feature, for "*ERS Food Dollar Series Allows an In-depth Look at Farm Level Components of the U.S. Food Dollar*," (May).

4. **Amber Waves Award**. 2012. Best Data Feature, for "*A New Look at Where Our Food Dollars Go*," (June).

3. **Amber Waves Award**: 2011. Best Podcast, for "Fuel for Food: Energy Use in the U.S. Food System" (May).

2. **U.S. Army**. 2007. Outstanding Civilian Service Medal, for "*superior level of performance...which contributed to the reconstruction efforts of the New Orleans Hurricane Protection System*." Awarded by Lieutenant General (3-Star) Carl A. Strock, Commander of Engineering, U.S. Army.

1. **U.S. Army**. 2006. Commanders Award for Civilian Service, for service that "*reflect great credit upon himself, IPET, the U.S. Department of Agriculture's Economic Research Service, and the Nation.*" Awarded by Robert Pietrowsky, Director, Institute for Water Resources, U.S. Army Corps of Engineers.

PUBLICATIONS (PAST 5 YEARS)

ERS Reports
8. Rehkamp, S., P. Canning. 2021. U.S. Food-Related Water Use Varies by Food Category, Supply Chain Stage, and Dietary Pattern, *Amber Waves* (Feature) ERS-USDA, (August).

7. Rehkamp, S., P. Canning, and C. Birney. 2021. "Tracking the U.S. Domestic Supply Chains Freshwater Use Over Time " *Economic Research Report-288* USDA/ERS (July).

6. Canning, P., R. Morrison. 2020. A Shift to Healthier Diets Likely to Affect Use of Natural Resources, *Amber Waves* (Feature) ERS-USDA, (May).

5. Canning, P., S. Rehkamp, C. Hitaj, and C. Peters. 2020. "Resource Requirements of Food Demand in the United States" *Economic Research Report-276* USDA/ERS (May)

4. Canning, P., B. Stacy. 2019. SNAP and the Economy: New Estimates of the SNAP Multiplier, *Economic Research Report-265* USDA/ERS (July).

3. Canning, P., R. Morrison. 2019. Quantifying the Impact of SNAP Benefits on the U.S. Economy and Jobs, *Amber Waves* (Feature) ERS-USDA, (July).

2. Canning, P., S. Rehkamp. 2017. "The Relationship Between Energy Prices and Food-Related Energy Use in the United States," Amber Waves (Feature) ERS-USDA, June.

1. Canning, P., Rehkamp, S., Waters, A., Etemadnia, Hamideh. 2017. The Role of Fossil Fuels in the U.S. Food System and the American Diet, Economic Research Report 224, U.S. Department of Agriculture (Jan).

Peer-reviewed Journal Articles

8. Yi, J., Meemken, EM., Mazariegos-Anastassiou, V., Liu, J., Kim, E., Gomez, M., Canning, P., Barrett, C. 2021. "Post-farmgate food value chains make up most of consumer food expenditures globally." *Nature Food,* 2: 417–425.

7. Ge, H., P. Canning, S. Goetz, A. Perez. 2019. "Embedding Economies of Scale Concepts in Models of Optimal Fresh Produce Aggregation Hub Locations." *Agricultural and Resource Economics Research*, 48 (3): 365-387.

6. Hitaj, C., S. Rehkamp, P. Canning, C. Peters. 2019. "Greenhouse Gas Emissions in the US Food System: Current and Healthy Diet Scenarios." *Environ.Science and Technology*, 53 (9): 5493-5503.

5. Ge, H., S. Goetz, P. Canning, and A. Perez. 2018. "Optimal Locations of Fresh Produce Aggregation Facilities in the United States." *International Journal of Production Economics*, 197: 143-157.

4. Rehkamp, S. and P. Canning. 2018. "Measuring Embodied Blue Water in American Diets: An EIO Supply Chain Approach." *Ecological Economics,* 147: 179-188.

3. Kate Clancy, Alessandro Bonanno, Patrick Canning, Rebecca Cleary, Zach Conrad, David Fleisher, Miguel Gómez, Timothy Griffin, Ryan Lee, Daniel Kane, Anne Palmer, Kristen Park, Christian J. Peters, and Nicole Tichenor. 2018. "Using a market basket to explore regional food systems." *Journal of Agriculture, Food Systems, and Community Development*, 7 (4): 163-178.

2. Ge, H., P. Canning, S. Goetz, and A. Perez. 2018. "Effects of scale economies and production seasonality on optimal hub locations: the case of regional fresh produce aggregation." *Agricultural Economics*, 49 (2): 157-169.

1. Rehkamp, S. and P. Canning. 2017. "The Potential for Healthier and Energy Efficient American Diets." *Choices*. 32 (3): 1-9.

Books and Book Chapters

1. Canning, P., S. Rehkamp, S., and J. Yi. 2022. "Environmental Input Output (EIO) Models for Food Systems Research: Application and Extensions," Chapter 9 in Peters, C., and D. Thilmany (eds). Food Systems Modeling: Tools for Assessing Sustainability in Food and Agriculture, 1st Edition. New York: Academic Press, ISBN: 9780128221129.

A FULL CV WITH PRIOR EXPERIENCE, ALL OUTPUTS, AND LIST OF REFERENCES AVAILABLE ON REQUEST