

# Michael Cary

DEPARTMENT OF AGRICULTURAL AND APPLIED ECONOMICS, VIRGINIA TECH  
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## Academic Appointments

### Research Assistant Professor

DEPARTMENT OF AGRICULTURAL AND APPLIED ECONOMICS, VIRGINIA TECH

May 2023 - Present

Blacksburg, VA

## Education

### Ph.D. Natural Resource Economics

WEST VIRGINIA UNIVERSITY

2023

Morgantown, WV

### M.A.. Economics

VIRGINIA STATE UNIVERSITY

2014

Petersburg, VA

### B.A. History

VIRGINIA COMMONWEALTH UNIVERSITY

2011

Richmond, VA

## Research Interests

Environmental Economics, Urban and Regional Economics, Transportation Economics, Sports Economics, Gender and Economics, Race and Economics, Network/Graph Theory

## Awards

### Westarctica Conservation Scholarship

DISSERTATION AWARD

2022

## Publications

### Journal Articles

Cary, M. (2023). Core-periphery models via integer programming: Maximizing the influence of the core. *Computational and Applied Mathematics*, 42(4), 162.

Cary, M. & Stephens, H. (2023). Gendered Consequences of COVID-19 Among Professional Tennis Players. *Journal of Sports Economics*, 24(2), 241-266.

Cary, M. & Ahmed, Z. (2022). Do heavy-duty and passenger vehicle emissions standards reduce per capita emissions of oxides of nitrogen? Evidence from Europe. *Journal of Environmental Management*, 320, 115786.

Haggerty, T., Stephens, H., Peckens, S., Bodkins, E., Cary, M., Dino, G., & Sedney, C. (2022). Telemedicine versus in-person primary care: impact on visit completion rate in a rural Appalachian population. *Journal of the American Board of Family Medicine*, 35(3), 475-484.

Ahmed, Z., Cary, M., Ali, S., Murshed, M., Ullah, H., & Mahmood, H. (2022). Moving toward a green revolution in Japan: Symmetric and asymmetric relationships among clean energy technology development investments, economic growth, and CO2 emissions. *Energy & Environment*, 0958305X211041780.

Cary, M. (2021). Down with the #DogeFATHER: Evidence of a Cryptocurrency Responding in Real Time to a Crypto-Tastemaker. *Journal of Theoretical and Applied Electronic Commerce Research*, 16(6), 2230-2240.

Ahmed, Z., Cary, M., Shahbaz, M., & Vo, X.V. (2021). Asymmetric nexus between economic policy uncertainty, renewable energy technology budgets, and environmental sustainability: Evidence from the United States. *Journal of Cleaner Production*, 127723.

Cary, M. & Bekun, F. (2021). Democracy and Deforestation: The Role of Spillover Effects. *Forest Policy and Economics*, 125, 102398.

- Cary, M.** (2021). Dominator Chromatic Numbers of Orientations of Trees. *Open Journal of Discrete Applied Mathematics*, 4(1), 4-11.
- Cary, M.,** Cary, J., & Prabhu, S. (2021). Independent Domination in Directed Graphs. *Communications in Combinatorics and Optimization*, 6(1), 67-80.
- Ahmed, Z., **Cary, M.** & Le, H.P. (2021). Accounting asymmetries in the long-run nexus between globalization and environmental sustainability in the United States: An aggregated and disaggregated investigation *Environmental Impact Assessment Review*, 86, 106511.
- Ahmed, Z., Zhang, B. & **Cary, M.** (2021). Linking economic globalization, economic growth, financial development, and ecological footprint: Evidence from symmetric and asymmetric ARDL. *Ecological Indicators*, 121, 107060.
- Frey, G. & **Cary, M.** (2020). Under what management and policy scenarios can alley cropping be a competitive alternative in the United States Southeast? *Agroforestry Systems*, 94(6), 2167-2183.
- Cary, M.** & Frey, G. (2020). Alley cropping as an alternative under changing climate and risk scenarios: A Monte-Carlo simulation approach. *Agricultural Systems*, 185, 102938.
- Cary, M.** (2020). A Linear Algorithm for Minimum Dominator Colorings of Orientations of Paths. *Engineering and Applied Science Letters*, 3(3), 10-14.
- Cary, M.** (2020). Dominator Colorings of Digraphs. *Open Journal of Discrete Applied Mathematics*, 3(2), 50-67.
- Prabhu, S., Murugan, G., **Cary, M.**, Arulperumjothi, M., & Liu, J. (2020). On Certain Distance and Degree Based Topological Indices of Zeolite LTA Frameworks. *Materials Research Express*, 7(5), 055006.
- Cary, M.** & Rockwell, T. (2020). International Collaboration in Open Access Publications: How Income Shapes International Collaboration. *Publications*, 8(1), 13.
- Cary, M.** (2020). Molecules of Inefficiency: How tariffs impact carbon intensities, carbon dioxide emissions, and the environment. *Science of The Total Environment*, 136531.
- Cary, M.** (2020). Have Greenhouse Gas Emissions from US Energy Production Peaked? State Level Evidence from Six Subsectors. *Environment Systems and Decisions*, 40(1), 125-134.
- Cary, M.** (2020) Cycle intersection graphs and minimum decycling sets of even graphs. *Discrete Mathematics, Algorithms and Applications*.
- Cary, M.** (2019). Increasing Access to Clean Fuels and Clean Technologies: A Club Convergence Approach. *Clean Technologies*, 1(1), 247-264.
- Cary, M.** (2019). Vertices with the second neighborhood property in Eulerian digraphs. *Opuscula Mathematica*, 39(6) 765-772.
- Cary, M.** (2018). Perfectly regular and perfectly edge-regular fuzzy graphs. *Annals of Pure and Applied Mathematics*, 16(2), 461-469.
- Cary, M. A.,** Frey, G. E., & Mercer, D. E. (2014). The value of versatile alley cropping in the Southeast US: A Monte Carlo simulation. In: *Proceedings of the Inaugural Symposium of the International Society of Forest Resource Economics*, 6-11.

## US Forest Service Technical Reports

Frey, G. E., **Cary, M. A.,** Goodwin, B. K., & Mercer, D. E. (2018). Agroforestry land-use economic yield and risk (ALLEY) model 2.0: a computer suite to simulate and compare stochastic yield and returns of alley crop, monocrop, and pine plantation systems in the US. e-Gen. Tech. Rep. SRS-235. Asheville, NC: US Department of Agriculture Forest Service, Southern Research Station. 235, 1-35.

## Other Publications

Justin Sègbédji Ahinon, Hisham Arafat, Umar Ahmad, Joyce Achampong, Osman Aldirdiri, Obasegun Tekena Ayodele, Luke Okelo, Louise Bezuidenhout, **Michael Cary**, Nada Fath, Nabil Aziz Ksibi, Fayza Nasr, Carine Nguemeni, Mahmoud Bukar Maina, Priscilla Mensah, Johanssen Obanda, Joy Owango, Ahmed Ogunlaja, Gregory Simpson, Johanna Havemann. (2020). AfricArXiv—the pan-African Open Scholarly Repository. *AfricArXiv*.

## Presentations

### Southern Regional Science Association Conference

AMBIENT AIR POLLUTION AND PHYSICAL PRODUCTIVITY: EVIDENCE FROM ULTRAMARATHONS

2023

Savannah, GA

### Mid-Continent Regional Science Association Conference

DOES ROAD NETWORK STRUCTURE AFFECT POLLUTION STOCKS AND FLOWS? EVIDENCE FROM ROAD CLOSURES IN VIRGINIA

2022

Virtual

## Annual Meeting of the Southern Regional Science Association

DOES ROAD NETWORK STRUCTURE AFFECT POLLUTION STOCKS AND FLOWS? EVIDENCE FROM ROAD CLOSURES IN VIRGINIA

2022

Austin, TX

## North America Meetings of the Regional Science Association International

AMBIENT AIR POLLUTION AND PHYSICAL PRODUCTIVITY: EVIDENCE FROM ULTRAMARATHONS

2021

Denver, CO

## WVU Division of Resource Economics and Management Seminar

ECONOMIC, ENVIRONMENTAL, AND TECHNICAL GAINS FROM THE KYOTO PROTOCOL: EVIDENCE FROM CEMENT MANUFACTURING

2020

Morgantown, WV

## Symposium of the International Society of Forest Resource Economics

THE VALUE OF VERSATILE ALLEY CROPPING IN THE SOUTHEAST US: A MONTE CARLO SIMULATION

2014

St. Louis, MO

## Teaching Experience

### ARE 150 - Introductory Agricultural and Agribusiness Economics

WEST VIRGINIA UNIVERSITY

Spring 2023

### ARE 150 - Introductory Agricultural and Agribusiness Economics

WEST VIRGINIA UNIVERSITY

Spring 2022

## Professional Service

### AfricArXiv

SUBMISSIONS MODERATOR

2019 - Present

## Professional Affiliations

American Economic Association, Southern Regional Science Association, Northeastern Agricultural and Resource Economics Association, International Society for Forest Resource Economics

## Computer Skills

### Languages

Python, R, Matlab, Stata, Julia, GAMS,  $\LaTeX$ , Markdown, Alteryx, Tableau

### Skills

Statistical Analysis, Machine Learning, Textual Analysis/NLP, Web Scraping, Simulation, Mathematical Programming, Data Management, Data Processing, Data Visualization, Dashboard Development

## Industry Experience

### Data Scientist

MYLAN (PRE-MERGER) / VIATRIS (POST-MERGER)

2019 - 2021

Morgantown, WV

### Data Scientist

WVU CENTER FOR ALTERNATIVE FUELS, ENGINES, AND EMISSIONS

2017 - 2019

Morgantown, WV

### Co-Founder

MORGANTOWN FERAL AND STRAY CATS

2015 - 2018

Morgantown, WV