

# Michael Cary

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## Education

- 2023 (Exp) **PhD Natural Resource Economics**, *Division of Resource Economics and Management, West Virginia University.*
- 2014 **MA Economics**, *Department of Economics, Virginia State University.*
- 2011 **BA History**, *Department of History, Virginia Commonwealth University.*

## Research Interests

Environmental Economics, Urban/Regional Economics, Transportation Economics, Sports Economics, Network/Graph Theory.

## Teaching Experience

- Spring 2022 ARE 150 - Introductory Agricultural and Agribusiness Economics (Instructor).
- Fall 2021 ARE 150 - Introductory Agricultural and Agribusiness Economics (Teaching Assistant).
- 2019-2020 I taught a seminar at Mylan called "Python for Data Scientists" where I taught analysts the fundamentals of data science in Python. Topics included data structures, functions, pandas, regression analysis (statsmodels), predictive analysis (sklearn), web scraping (urllib, requests, beautifulsoup), and version control with github.

## Other Professional Experience

- 2019–2021 **Data Scientist**, *Mylan (pre-merger) then Viatrix (post-merger)*, Morgantown, WV.  
I managed data pipelines and built workflows designed to create reports for C-suite executives. I also built several in-house data gathering apps for analysts and product specialists. During the merger I managed the assimilation of new data sources into existing workflows.
- 2017–2019 **Data Scientist**, *WVU Center for Alternative Fuels, Engines, and Emissions*, Morgantown, WV.  
I processed EPU and emissions data from vehicles undergoing emissions testing both on chassis dynamometers and on-road via portable emissions measurement systems (PEMS) units. I wrote software which produced analyses and reports in compliance with 40 CFR Part 1065 and other relevant legislation. A marquee project involved training neural networks to predict emissions in real time using EPU data.

## Publication Statistics

Publications: 26. Citations: 420. h-index: 8. i10-index: 7.

## Peer Reviewed Publications

- 25 **Cary, M.** & Stephens, H. (2022). Gender Consequences of COVID-19 Among Professional Tennis Players. *Journal of Sports Economics*, In Press.
- 24 **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.
- 23 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.
- 22 Ahmed, Z., **Cary, M.**, Ali, S., Murshed, M., Ullah, H., & Mahmood, H. (2021). 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.
- 21 **Cary, M.** (2021). Down with the #Doge father: Evidence of a Cryptocurrency Responding in Real Time to a Crypto-Tastemaker. *Journal of Theoretical and Applied Electronic Commerce Research*, 16(6), 2230-2240.
- 20 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.
- 19 **Cary, M.** & Bekun, F. (2021). Democracy and Deforestation: The Role of Spillover Effects. *Forest Policy and Economics*, 125, 102398.
- 18 **Cary, M.** (2021). Dominator Chromatic Numbers of Orientations of Trees. *Open Journal of Discrete Applied Mathematics*, 4(1), 4-11.
- 17 **Cary, M.**, Cary, J., & Prabhu, S. (2021). Independent Domination in Directed Graphs. *Communications in Combinatorics and Optimization*, 6(1), 67-80.
- 16 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.
- 15 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.
- 14 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.

- 13 **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.
- 12 **Cary, M.** (2020). A Linear Algorithm for Minimum Dominator Colorings of Orientations of Paths. *Engineering and Applied Science Letters*, 3(3), 10-14.
- 11 **Cary, M.** (2020). Dominator Colorings of Digraphs. *Open Journal of Discrete Applied Mathematics*, 3(2), 50-67.
- 10 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.
- 9 **Cary, M.** & Rockwell, T. (2020). International Collaboration in Open Access Publications: How Income Shapes International Collaboration. *Publications*, 8(1), 13.
- 8 **Cary, M.** (2020). Molecules of Inefficiency: How tariffs impact carbon intensities, carbon dioxide emissions, and the environment. *Science of The Total Environment*, 136531.
- 7 **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.
- 6 **Cary, M.** (2020) Cycle intersection graphs and minimum decycling sets of even graphs. *Discrete Mathematics, Algorithms and Applications*.
- 5 **Cary, M.** (2019). Increasing Access to Clean Fuels and Clean Technologies: A Club Convergence Approach. *Clean Technologies*, 1(1), 247-264.
- 4 **Cary, M.** (2019). Vertices with the second neighborhood property in Eulerian digraphs. *Opuscula Mathematica*, 39(6) 765-772.
- 3 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. 35 p., 235, 1-35.
- 2 **Cary, M.** (2018). Perfectly regular and perfectly edge-regular fuzzy graphs. *Annals of Pure and Applied Mathematics*, 16(2), 461-469.
- 1 **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.

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## Other Publications

- 1 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*.

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## Academic Presentations

- 2022 *Does Road Network Structure Affect Pollution Stocks and Flows? Evidence from Road Closures in Virginia*. Mid-Continent Regional Science Association Conference, Zoom.
- 2022 *Does Road Network Structure Affect Pollution Stocks and Flows? Evidence from Road Closures in Virginia*. Annual Meeting of the Southern Regional Science Association, Austin, TX.
- 2021 *Ambient Air Pollution and Physical Productivity: Evidence from Ultramarathons*. North America Meetings of the Regional Science Association International, Denver, CO.
- 2020 *Economic, Environmental, and Technical Gains from the Kyoto Protocol: Evidence from Cement Manufacturing*. Division of Resource Economics and Management Graduate Seminar, Morgantown, WV.
- 2014 *The Value of Versatile Alley Cropping in the Southeast US: A Monte Carlo Simulation*. Symposium of the International Society of Forest Resource Economics, St. Louis, MO.

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## Computer Skills

Languages Python, R, Matlab, Stata, Julia, GAMS, Alteryx, Tableau, L<sup>A</sup>T<sub>E</sub>X, Markdown.

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

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## Professional Service

Developer & Moderator **AfricArXiv** (2019 – Present) I help with tech/web development and serve as a moderator for AfricArXiv, the digital archive for African research communication (<https://info.africarxiv.org/>).

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## Professional Affiliations

Economics American Economic Association, Northeastern Agricultural and Resource Economics Association, International Society for Forest Resource Economics.

## Awards / Recognition

Journal Cover The cover of *Publications* 8(1) featured "International Collaboration in Open Access Publications: How Income Shapes International Collaboration" as the featured (cover) article (<https://www.mdpi.com/2304-6775/8/1>).