

# CENTER FOR ECONOMIC RESEARCH & POLICY ANALYSIS

## MISSION

The Center for Economic Research & Policy Analysis (CERPA) is a multidisciplinary unit at Appalachian State University. The mission of CERPA is to improve policy- and decision-making by producing rigorous research and disseminating relevant information on current economic and policy issues. To that end, CERPA maintains research programs in the specific areas of economic development, environment & energy, and experimental economics.

## 2019-20 HIGHLIGHTS:

### *Revamping the Western North Carolina Economic Index*

CERPA is looking into the possibility of revamping the old Western North Carolina Economic Index report. CERPA will collect, analyze, and disseminate monthly economic data for all 25 counties (and beyond) in the western portion of the state. Rather than a monthly report, the data will be disseminated through graphs and maps via the Center's Twitter and Facebook pages. CERPA is currently attempting to find funding for this effort.

### *CONCERT Awards*

CERPA, along with the Appalachian Energy Center and the Southern Appalachian Environmental Research and Education Center, works to support and facilitate multidisciplinary research under the umbrella of the Research Institute for Environment, Energy and Economics. To that end, we created and manage the CONducting ComplEx Research Together (CONCERT) internal grant program. Each year, proposals are solicited for possible funding with the goal of supporting new, existing, or developing research projects that involve more than one of the RIEEE core research areas and are performed by collaborative, interdisciplinary teams. This year's program is to be announced in November, 2020, and will look to award \$30,000 to projects across campus.

### *Appalachian Experimental Economics Laboratory*

CERPA continues to manage the Appalachian Experimental Economics Laboratory on the third floor of Peacock Hall. The laboratory supports the experimental economics program in the Department of Economics, which is ranked among the top 10% of institutions in the world. In the 2019-20 academic year the research faculty affiliated with AppEEL conducted a total of 68 experimental sessions, with 1,084 Appalachian State University student participants, with average payments of \$15. In total, student participants earned \$20,018 in the 2019-20 academic year.

The laboratory is also used by student research assistants for coding and preliminary data analysis. Specifically, the lab was used by research assistants for 7 sessions (18 hours).

- a. **Funding.** Experiments were funded through multiple sources, include the National Science Foundation, King's College London, the University of Nevada – Reno, and the Walker College of Business Dean's Club.

- b. Student Research.** Faculty also supervises student research, which provides valuable experiential learning involving the formulation of testable hypotheses, experimental design, primary data collection in the lab, data analysis, as well as summarizing and presenting the results. The experimental faculty supervised 3 student research projects that received \$4,560 in funding from the Barnes Program Student Research Grants. These students conducted 13 experimental sessions conducted in AppEEL and through Prolific.
- c. Participants.** The pool of student participants is diverse in terms of major field of study. The largest fraction is from the business school but the majority of participants are non-business majors. 34% of subjects are non-economics business majors, 10% are economics, 8% are undecided, 7% are psychology, 5% are biology and the remaining come from over a dozen other majors. 52% percent of participants identify as female and 47% identify as male.
- d. Related Activity.** The experimental group also conducts research using participants on Amazon Mechanical Turk (MTurk) and Prolific. In total, 1360 people participated in computerized experiments (roughly \$5500 in payments).
- e. Published Research.** In 2019, faculty associated with AppEEL published 15 research articles in *Experimental Economics*, *Journal Economic Behavior and Organization*, *Games and Economic Behavior*, *Economics Letters*, *Resource and Energy Economics*, *Nature Human Behavior*, *Economic Inquiry*, *Strategic Behavior and the Environment*, *Challenges in Sustainability*, and *Consciousness and Cognition*.

#### **Funded Projects:**

#### ***Completed Projects:***

##### ***The Economic Impact of COVID-19-Related Restaurant Closures on the Regional Economy – A Preliminary Examination***

Principal Investigator: Ash Morgan.

Funding: *N/A*

The purpose of this study is to provide a preliminary examination of the total economic effects of restaurant and bar closures and operation changes due to Executive Order (EO) 121. At the time of the analysis, EO 121 has been in place for one calendar month so this is the duration of the analysis. The analysis examines the regional economic impacts in terms of lost gross regional product, employment, labor income, and state and local taxes.

***The Economic Impact of COVID-19-Related Closures of Restaurant and Accommodation Businesses in Watauga County – A Preliminary Examination***

Principal Investigator: Ash Morgan.

Funding: *N/A*

The purpose of this study is to provide a preliminary examination of the total economic effects of restaurant/bar closures and operation changes, plus accommodation impacts due to EO 121 and the Watauga County State of Emergency.

***Research in Progress:***

***Measuring the Economic Impact of COVID-19 on the Regional Economy***

Principal Investigator: Ash Morgan.

Funding: \$97,850

This study proposes to conduct a series of economic impact studies to capture the total economic effects of COVID-19-related business interruptions on the regional economy. This effort will build both on the expertise of CERPA researchers in economic impact analyses and leverage work that has already begun in the Center to capture the economic impacts of the COVID-19 pandemic.

***Collaborative Research: Implications of Solar Radiation Management for Strategic Behavior and Climate Governance***

Principal Investigator: Todd Cherry.

Co-Principal Investigator: Dave McEvoy.

Funding: \$396,274

The overall objective is to better understand cooperative action and institutional design in the context of a collective-risk social dilemma with the option of a technological solution.

Laboratory experiments will be conducted simultaneously at Colorado State University and the University of Wyoming. Dr. McEvoy will contribute to the design and programming for these experiments, analyze the data and generate manuscripts. He will also help design the field experiment at the UNFCCC COP.

***Commonly Experienced Sleep Restriction and Behavior in Strategic Social Interactions.***

Principal Investigator: David Dickinson.

Senior Personnel: David Bruner, David McEvoy

Funding: \$339,038

The National Science Foundation (NSF) awarded a three-year grant to examine the impacts of sleep deprivation on simple strategic interactions (SR). The investigators will examine ecologically valid (relatively mild) SR effects on decisions in strategic 2-person interactions: win-loss bargaining, positive sum mutual-trust, and cooperation/coordination game interactions. Results will have real world implications for millions of U.S. adults who receive insufficient sleep. For example, sleepiness-induced reductions in cooperation imply reduced social capital and efficiency that has multiplier effects in society.

***A University-Utility Collaboration to Study Consumer Responses to Electronic Notifications***

Principal Investigator: Tanga Mohr.

Funding: \$213,254

This project partners with an electric utility to conduct field experiments to explore how new technologies interact with energy programs to enhance residential demand-side management. Using a previously tested informational nudge – providing consumers with information on peer comparisons of electricity use – we will address three research questions that remain unanswered in the existing literature. We anticipate the findings will improve our understanding about designing and implementing demand-side management programs.

***Economic Impact of Hemlock Woody Adelgid (HWA) in Western North Carolina***

Principal Investigator: John Whitehead.

Funding: \$60,000

Hemlock trees are vital to ecosystem health because they provide dense shade and shelter to small mammals and birds. In the American southeast their shade cools streams, keeping water temperatures in the range needed by native brook trout to survive. The trees alter nitrogen levels in nearby soil, which changes the composition of surrounding plant life. The Hemlock Woolly Adelgid (HWA) is an invasive insect species that harms hemlock trees by feeding on the sap. Nonmarket values affected by the negative economic impacts of HWA include aesthetics, recreation and property values. This study will (a) extend the Sullivan and Whitehead (2017) Watauga County property value study results to the western North Carolina region and (b) estimate the economic impacts of HWA on the recreation and tourism industry.

***Economic Impact Analysis of North Carolina's Commercial Fisheries***

Principal Investigator: John Whitehead.

Funding: \$34,652

The objectives of the study are to increase understanding of the economic impact of North Carolina's commercial fisheries through the collection and analysis of novel cost and supply chain data throughout the seafood harvesting, processing, and distribution sectors, including consumer-facing businesses; the quantification of consumer demand for North Carolina seafood; and assessment of the economic impact of North Carolina's wild-capture seafood industry using methodological best-practices.

***The Economic Impacts of Coastal Groundwater Issues from Sea-Level Rise***

Principal Investigator: Dennis Guignet.

Co-Principal Investigators: Bill Anderson, Ash Morgan, and John Whitehead.

Funding: \$5,000 (RIEEE CONCERT Grant)

The research objective is to conduct surveys of NC coastal homeowners and tourists to gather data on attitudes and experience with groundwater regarding water uses and septic systems. The gathered data will allow for tests of how homeowners may respond to sea-level rise, including behaviors like investing in different water treatment options, or putting their house up for sale and moving. Data will also allow for tests of how tourists may change the frequency and duration of visits to the NC coast, depending on the extent water treatment costs are passed on (e.g., through higher beach house rents and hotel rates). By design, the stated preference questions will enable willingness-to-pay (WTP) for potable and wastewater treatment options to be estimated, which could then be compared to the costs of adaptation strategies and

infrastructure investments (e.g., providing alternative water sources, updating desalinization capabilities of water systems, and installing centralized wastewater treatment facilities).

***Proposals Under Review:***

***Using Food Hub Data to Expand Local Food Production***

Principal Investigator: Jason Hoyle.

Co-Principal Investigator: Ash Morgan.

Average weekly sales at the High Country Food Hub have increased 300% this year, and this project will utilize Food Hub data to provide technical assistance to High Country Food Hub producers and create new publications for regional farmers based on data from the Food Hub, Agriculture Census, and other sources. This work will allow farmers in the rural economically distressed counties of northwest North Carolina to better plan for and adjust to recent significant increases in the demand for local food through season-extension infrastructure investments on their farm, hiring and managing additional labor, updating business plans, improving marketing effectiveness, and planning related to increased crop and livestock production. The project will be jointly implemented as a partnership between Appalachian State University's Center for Economic Research & Policy Analysis (CERPA) and Blue Ridge Women in Agriculture (BRWIA).

***The Economic Impact of MARC on the Economy of Western North Carolina***

Principal Investigator: Ash Morgan.

The overall purpose of the proposed work is to develop geographically-specific input-output models to measure the total economic impact of Watauga Opportunities, Inc. and associated facilities in Western North Carolina on the regional economy. Several models will be run and results reported for each facility and all MARC facilities in general.

***Insufficient Sleep and Dietary Choices: An Ecologically Valid Examination of the Decision Foundations of Eating Behaviors when Sleep Restricted.***

Principal Investigator: David Dickinson.

Insufficient sleep (<7 hrs/night [82]) is a significant global health. Recent data indicate that over 80 million U.S. adults ( $\approx 35\%$ ) suffer from insufficient sleep just under the U.S. adult obesity rate (39%) [48]. Thus, the combined public health concerns of insufficient sleep and obesity have widespread impact and are considered key risk factors for chronic disease. There is a recognized link between poor sleep and obesity, but studies have argued for causation both ways. In other words, poor sleep and obesity are concomitant, but the direction of causation remains difficult to disentangle. A solid understanding of the causation channels through which sleep may impact dietary choice is vital, and our premise is that insufficient sleep impacts key components of decision making relevant to dietary choice.

**CERPA-funded Student Research**

**Economic Impact of Hemlock Woody Adelgid (HWA) in Western North Carolina**

Advisor: John Whitehead

Students: Luis Rangel, Myles Grady

### **Blowing Rock Community Theatre: Economic and Tax Revenue Impacts**

Advisor: Ash Morgan

Students: Destiny Ryder

### **Meetings with Chamber of Commerce Directors**

The CERPA Director continues to meet with regional area Chamber Directors across Northwest North Carolina to discuss CERPA's capabilities and experience in conducting economic analyses for local businesses and resource managers.