### **CBHDS** wants to hear from you!

## Please grab a Post-it and share your thoughts!

What data analysis challenges have you experienced in your community or research efforts?

What types of statistical and/or quantitative support would be most valuable to your projects?





## **Rural Environments: Addressing Challenges in an Urbanizing World**

- **Objective:** To identify critical barriers encountered during the Helene response in rural Appalachia and support recovery
- Study Design: Quasi-experimental interrupted time series design
- **Data Source:** Zip-code level data with population estimates from rural Appalachia
- **Collaborator:** Faculty member in Virginia Tech's Population Health Sciences
- **CBHDS Role:** Study design, grant proposal preparation, power and sample size estimation, and statistical analysis planning







# Advancing Rural Health in Virginia Through Data: Interdisciplinary **Collaborations in Biostatistics, Epidemiology, and Bioinformatics**

**CBHDS Zoom Public Drop-in Hours** Mon: 10am-2pm Wed: 3pm-7pm Sign-up at: https://biostat.centers.vt.edu/zoomconsulting.html

For more information, please scan the QR code, visit <u> https://biostat.centers.vt.edu, or email biostats@vt.edu</u> Tanner Barbour, BS; Ben Brewer, PhD; Chris Grubb, PhD; Wenyan Ji, MA; Muyao Lin, MA; Alicia Lozano, MS; Emmanuel Nartey, PhD; Rachel Silverman, PhD; Missi Zhang, PhD; Alexandra Hanlon, PhD

# **Center for Biostatistics and Health Data Science (CBHDS)**

internal and external collaborators at Virginia Tech. Our expertise spans the entire research lifecycle, including preliminary study design, solidifying study aims, data collection, quality reporting,

# Types of analyses we support include (but are not limited to):

- **Biostatistical & Epidemiologic Analyses:** Descriptive statistics, regression modeling, Bayesian methods, cluster analysis, longitudinal modeling, structural equation modeling, etc.
- Next Generation Sequencing Analyses & Bioinformatics: Differential expression analysis, pathway analysis, whole genome sequencing data analysis, etc.
- analysis, disease risk prediction, risk factor analysis, etc.

# **Evaluation of New Beginnings as a Diabetes Management Social Support Intervention**

- **Objective:** To examine the effect of a type-2 diabetes lifestyle management program (Balanced Living with Diabetes) on social support outcomes in adults from rural Virginia
- Study Design: Two-arm cluster-randomized controlled trial
- **Collaborators:** Faculty in Virginia Tech's Population Health Sciences & the Center for Public Health Practice & Research
- **CBHDS Role:** Database and data collection instrument design, data management in REDCap, and statistical analyses





REDCap is a secure web platform for building and managing online databases and surveys, specifically geared to support online and offline human-health data capture for research studies and operations. Virginia Tech REDCap is hosted by the Office of Research and Innovation and Fralin Biomedical Research Institute.

- CBHDS offers biostatistics, epidemiology, and bioinformatics resources to
- advanced statistical modeling, analysis, visualization, and dissemination.

Machine Learning and Deep Learning Applications: Medical image

# **Assessing the Impact of Mount Rogers' Behavioral Health Campus Expansion in** Smyth County, Virginia • **Objectives:** To evaluate the cost-effectiveness of the campus expansion, and to examine efficiency, quality, and performance metrics **Areas of Support** from pre- to post-campus expansion Study Design: Pre-post design Data management plans Statistical analysis plans Collaborators: Faculty with Virginia Tech's Power/sample size estimation Institute for Policy & Governance **CBHDS Role:** Study design, statistical analysis planning, and data analyses Data management & building Mount Rogers Data science & statistical CSU Expansion Crisis Receiving Center risis Care Center

- **Grant preparation**

- Weekly Zoom drop-in hours
- Long-term collaboration
- Study design
- in REDCap
- Tailored survey design
- programming
- Statistical analysis
- Manuscript writing
- Poster/presentation preparation
- Educational workshops, lectures, and mentoring

# **Assessing COVID-19 Vaccine Effectiveness in Children: Data from Southwest Virginia**

- **Objective:** To estimate COVID-19 vaccine effectiveness in pediatric populations in Southwest Virginia
- Study Design: Case-control study
- **Data Source:** 2020-2022 surveillance data from the Virginia Department of Health (VDH)
- **Collaborators:** VDH and the Molecular Diagnostics Lab at the Fralin Biomedical Research Institute (FBRI)
- **CBHDS Role:** Study design, data cleaning, statistical analysis, interpretation, and manuscript writing
- **Preliminary Findings:** In children <5 years old who received two doses of the COVID vaccine during post-omicron (Summer/Fall 2022), vaccine effectiveness was 64% (95%) CI: 18% to 88%) when adjusting for age sex, prior positivity, and prior testing frequency.

COVID Vaccine Effectiveness in Children < 5 Years Old

	OR (95%CI)	VE (95%CI)	P-value
1 dose	0.68 (0.29, 1.39)	32% (-39%, 71%)	0.300
2 doses	0.36 (0.12, 0.82)	64% (18%, 88%)	0.030



### **Disparities in High-Risk Nonsteroidal Anti-inflammatory** Drug (NSAID) Utilization in Rural vs. Non-Rural Virginia

- **Objective:** To examine prescribing rates of NSAIDs during the pandemic using population-level data from Virginia
- **Study Design:** Retrospective observational study using a heterogeneous difference-in-differences approach
- Data Source: Virginia All Payers Claims Database (APCD)
- **Collaborators:** Faculty at Carilion Health Services
- **CBHDS Role:** data cleaning, statistical analysis, summarizing results, and interpretation

