Research Collaboration Seed Funding

Proposal Cover Page

Please complete the information in the shaded areas below.
Submit this cover page with your proposal and supporting documents as one document in MS Word or PDF format to: swilmoth@uark.edu

Proposal Title: A prototype to understand spatial spillovers of clinical outcomes for better policy construction.

Submitting Principal Investigator Information:

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Collaborator Information:

Role	Name	Department
Co-PI	Abhijith Anand (aanand@uark.edu)	Walton College of Business (WCOB)
Key Personnel	Shakil Rafi (sarafi@uark.edu)	Department of Agriculture (AFLS)

Key Words (5):

1. Health Outcomes
2. Spatial Analysis
3. Healthcare Policy
4. Clinical Performance
5. Geographic Spillovers

Budget Amount Requested:

$30,000

Research Area(s) Addressed:

Health Outcomes, Deep Learning, Spatial Modeling, Policy Research, Clinical Decision making

Synopsis (1,000 character max):

Patient outcomes are influenced not only by their primary hospitals but also by nearby institutions due to Accountable Care Organizations (ACOs). Existing models often fail to capture the nonlinear and dynamic spillover effects of clinical outcomes across hospitals, limiting policy effectiveness. We address this gap by integrating spatial econometrics with spatio-temporal graph attention networks (ST-GATs) to model how outcomes propagate over time and space.

Using clinical outcomes data from the Centers for Medicare & Medicaid Services (CMS), we will build spatial frameworks to better understand these diffusion patterns. Our interdisciplinary team—combining expertise in health policy, econometrics, and artificial intelligence (AI)—offers both methodological rigor and practical healthcare insight.

In Year 1, we will deliver validated predictive models for Arkansas and generate actionable insights for targeted interventions. In the long-term, this prototype will support proposals to the NSF Smart Health program, the National Library of Medicine (NIH NLM), and the Patient-Centered Outcomes Research Institute (PCORI).