TOWARD A DISASTER RESILIENT KANSAS

Kansas is becoming increasingly at risk of extreme weather, natural disasters, and cyberattacks. While it is impractical to safeguard infrastructure from all hazards, we can boost our resilience.

Kansas ranks

9th
in federal disaster declarations

This is the purpose of **ARISE**, which stands for **A**daptive & **R**esilient **I**nfrastructures driven by **S**ocial **E**quity. Simply put, this novel project seeks to help Kansans rebound faster and suffer less from large-scale disasters. Our research is rooted in community engagement and blended with education to pave the way for statewide benefits.

OUR APPROACH

48

Companies, campuses, municipalities, & other entities linked to ARISE

BUILDING ON THE POWER OF PARTNERSHIPS

We unite more than 12 universities and colleges, connecting engineers, social scientists, students, educators, policy-makers, business leaders, and other voices statewide. Without these connections, our research in resilience would likely fall short in meeting local needs.

LEARNING ACROSS SECTORS

ARISE uses a vast web of knowledge to build tools for improving health, safety, and prosperity in Kansas. This means examining resilience from multiple perspectives—rural and urban, academic and experiential—and using case studies for water, energy, and transport-ation systems. These scenarios will reveal not only how hazards impact infrastructure but which local decisions influence social equity.

PIONEERING A NEW APPROACH TO RESILIENCE

Our research will culminate in a **one-of-a-kind** decision-support tool for resilience analysis that transforms how communities manage their infrastructure. Rather than focusing solely on efficiency like conventional tools, ARISE factors in principals of social equity. Local insights further bolster design efforts, ensuring we meet the needs of the most vulnerable Kansans.

6 dimensions of equity guide research

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PLACE-BASED LABORATORY

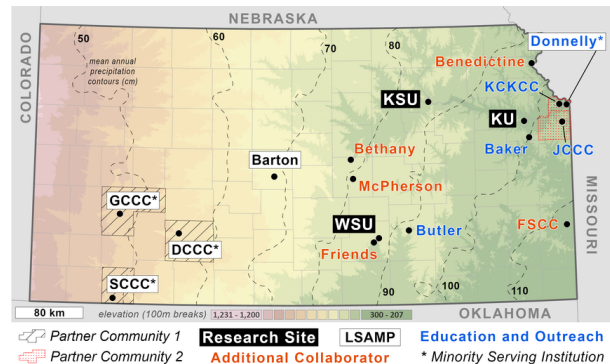## To improve resilience across Kansas, we study both urban & rural regions.

Our research focuses on the Kansas City Metro and the Western counties of Ford, Finney, and Seward. Each region faces unique challenges:

- **Rural areas** have fewer people, but a higher proportion of their population tends to be affected when disasters strike, making recovery significantly more difficult. Federal aid is also less likely for smaller communities due to out-of-reach cut-off thresholds.
- **Urban areas** tend to have a higher human toll from disasters, which is exacerbated by historical legacies of environmental racism.

ANCHORED TO KANSAS PRIORITIES

ARISE serves as a key stepping-stone for Kansas to expand research funding to transition to a Smart State, as envisioned in the 2020 Kansas Science + Technology plan.

ARISE also offers learning opportunities for youth, families, and adults, helping grow the State's workforce. In addition, we connect students with partners in the community, **giving Kansans data-based solutions free of charge as part of a new Kansas Data Science Consortium.**

Embedding research in local communities means results can be immediately adopted.

RESEARCH THAT WORKS FOR KANSAS

ARISE seeks to boost resilience by:

1. Creating a novel framework for analyzing interdependent human systems & physical infrastructure to enable social-equity-guided resilience analysis.
2. Developing new resilience metrics powered by scalable machine learning-based evaluation.
3. Finding decision-support structures to enhance physical & community resilience.
4. Building capacity to harness data.
5. Enhancing education & workforce development.

$20 million
from NSF EPSCoR

$ 4 million
from the State of Kansas

ARISE is a major, 5-year investment in Kansas by the U.S. National Science Foundation (NSF) Established Program to Stimulate Competitive Research (EPSCoR).

NSF uses EPSCoR to ensure every citizen has access to STEM experiences by increasing research capacity in traditionally under-funded regions of the country—like Kansas. **For every dollar it invests in Kansas, the state gets back twice that in non-EPSCoR funding.**

arisekansas.org

KANSAS NSF EPSCoR