

Faculty Development Leave Accomplishments

Yuxia (Lucy) Huang

Professor of Geospatial Science

September 16, 2026

Introduction

- Professional Background
 - Joined TAMUCC in 2008
 - Professor of Geospatial Science
 - Department of Computer Science
 - College of Engineering and Computer Science
 - Affiliated Research Faculty at CBI
 - Director, GCL Lab
 - Program Director/PI (NIFA-funded), [CODE-AG](#), [REEU](#)
- Fall 2025 – My First FDL



Yuxia(Lucy) Huang, Ph.D

Room: RFEB 310A

361.825.2646

lucy.huang@tamucc.edu

Dr. Yuxia (Lucy) Huang is a Professor of Geospatial Science and Director of the GeoCommunity Lab. She holds a M.S. in Computer Science from South China Normal University and a Ph.D. in Geography/Geographic Information Science (GIScience) from University at Buffalo, State University of New York. Her research interests focus on geospatial data science and its applications in public health, including spatial analysis, modeling, machine learning, healthcare accessibility, and participatory GIS.



Our Mission

The mission of the GeoCommunityLab is to advance sustainable and community-centric decision-making through the application of geospatial data science. Leveraging data-driven insights, the lab works collaboratively with communities to address complex challenges and seize opportunities that foster positive societal change.



FDL Fall 2025: Purpose

Main Purpose

- Explore new research directions on GeoAI in public health

Proposed Research Topic

- Apply explainable GeoAI to investigate spatial patterns of opioid use and chronic conditions among Medicare elderly beneficiaries in Texas

FDL Fall 2025: Activities & Timeline

Mid-August – Mid-October | Research

- Developed methods and conducted data analysis using explainable GeoAI to study spatial patterns of chronic opioid use among Medicare elderly beneficiaries in Texas
- Explored a new research topic on the health impacts of outdoor thermal exposure.

Mid-October – Mid-November | Professional Development

- Visited Dartmouth College for research and curriculum development
- Attended the APHA Annual Meeting in Washington DC

Mid-November – Mid-January | Dissemination & Scholarship

- Presented research at the AGU annual meeting
- Prepared research for presentation at the 2026 AAG Annual Meeting (March 2026)
- Continued manuscript development and preparation

Throughout FDL | Student Mentoring

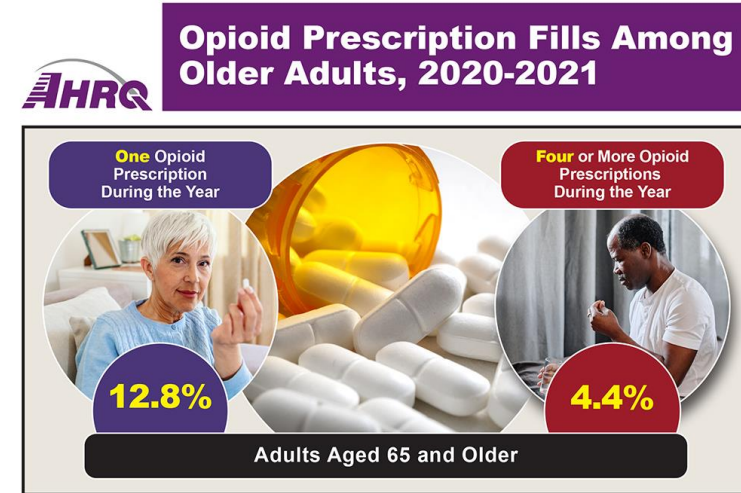
- Continued advising and supporting MS and PhD students
- Maintained progress on student research and academic milestones

Why Do These Topics Matter?

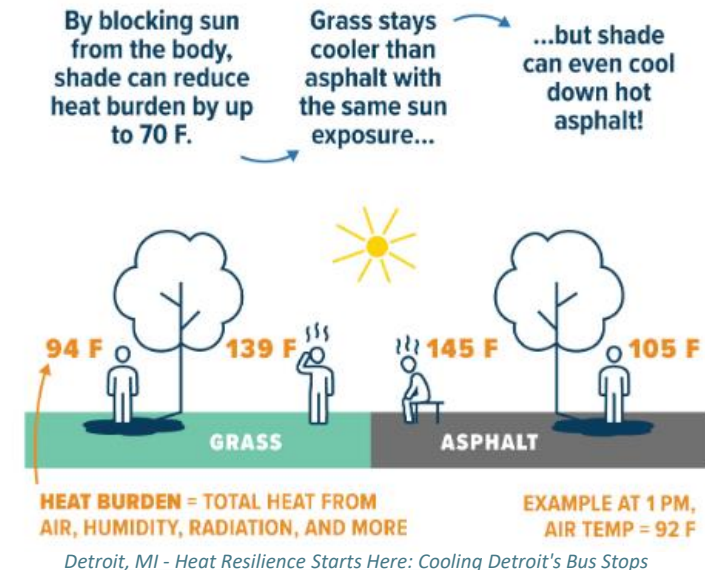
- **Chronic opioid use**
 - How common is chronic opioid use among older adults?
 - Where are the high-risk areas?
 - What factors may explain these geographic differences?
- **Outdoor heat exposure**
 - How much heat do people actually experience?
 - Where are the hottest places?
 - How can we reduce exposure and protect health?

COMMON GOAL

Use location-based information to identify risks, understand geographic disparities, and improve public health

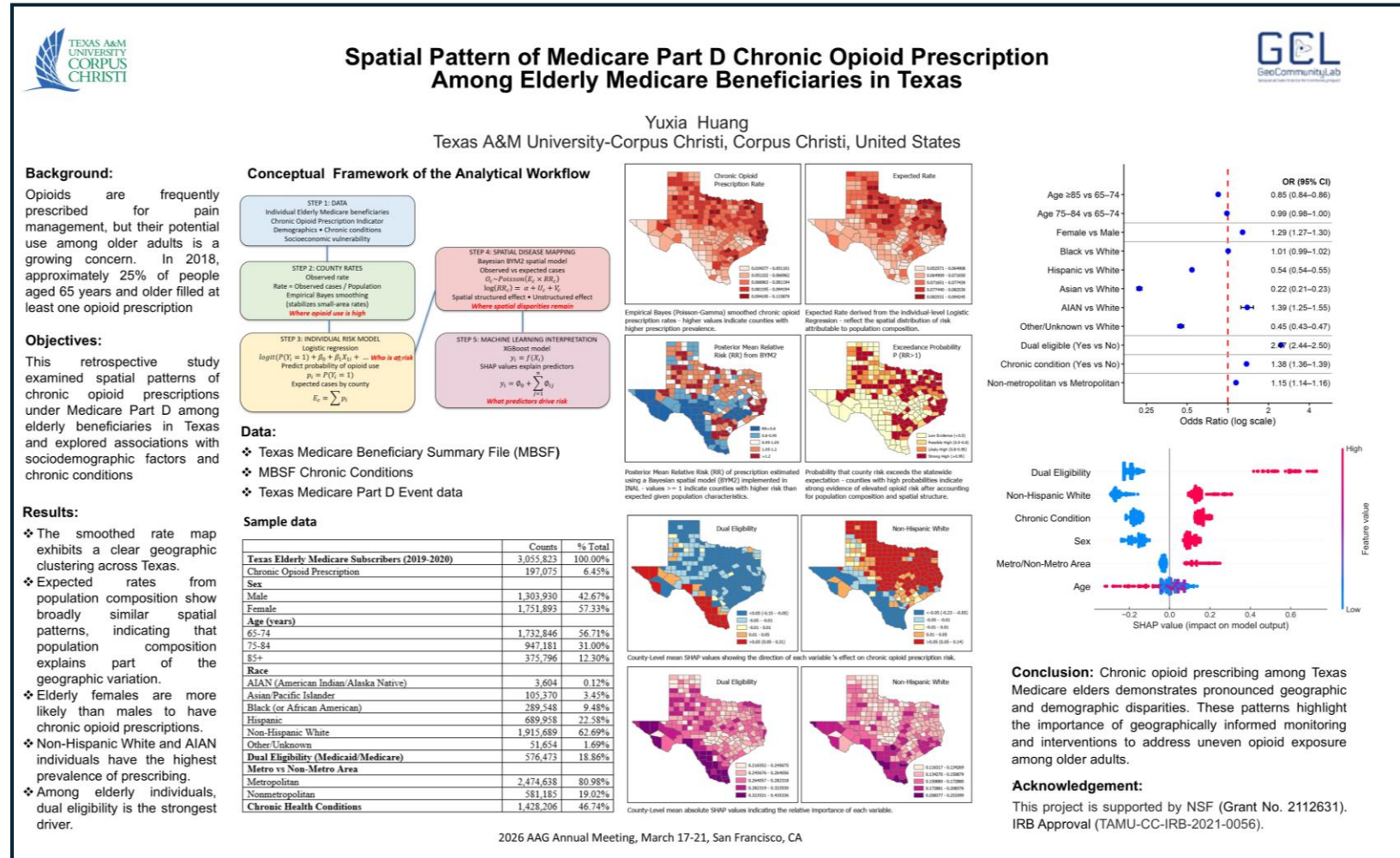


Source: AHRQ Medical Expenditure Panel Survey Statistical Brief #551, Any Use and "Frequent Use" of Opioids among Adults Aged 65 and Older in 2020-2021, by Socioeconomic Characteristics.
https://meps.ahrq.gov/data_files/publications/st551/stat551.shtml



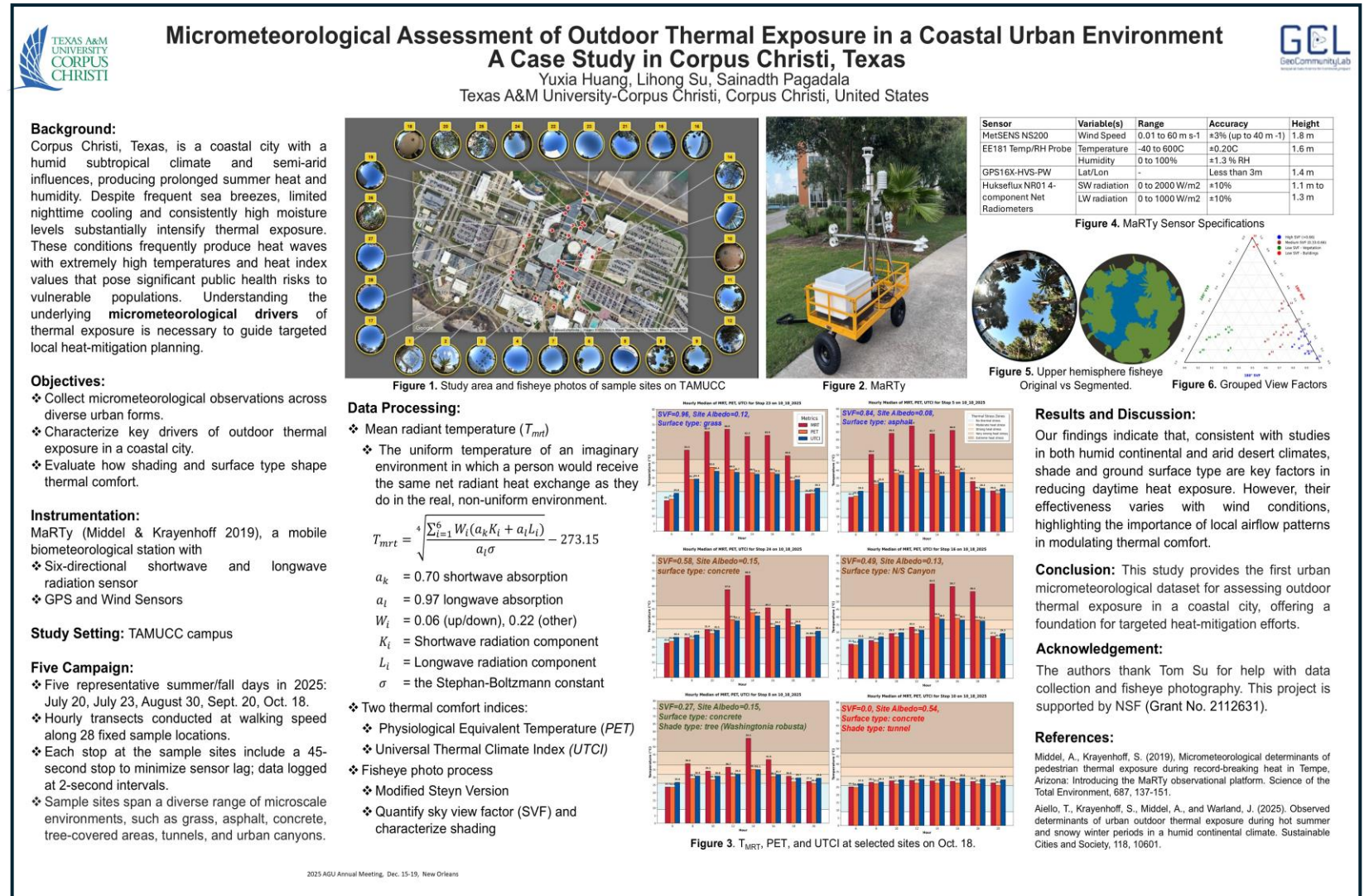
FDL Fall 2025 Accomplishments: Opioid Use Among the Elderly Research

- Conference presentation at the 2026 AAG Annual Meeting
- Journal publication
 - Huang, Y., Lee, J. Determinants for Opioid-Related Hospitalization: Individual- and County-Level Evidence from Texas Elderly Medicare Enrollees, Journal of BMC Public Health (under review)



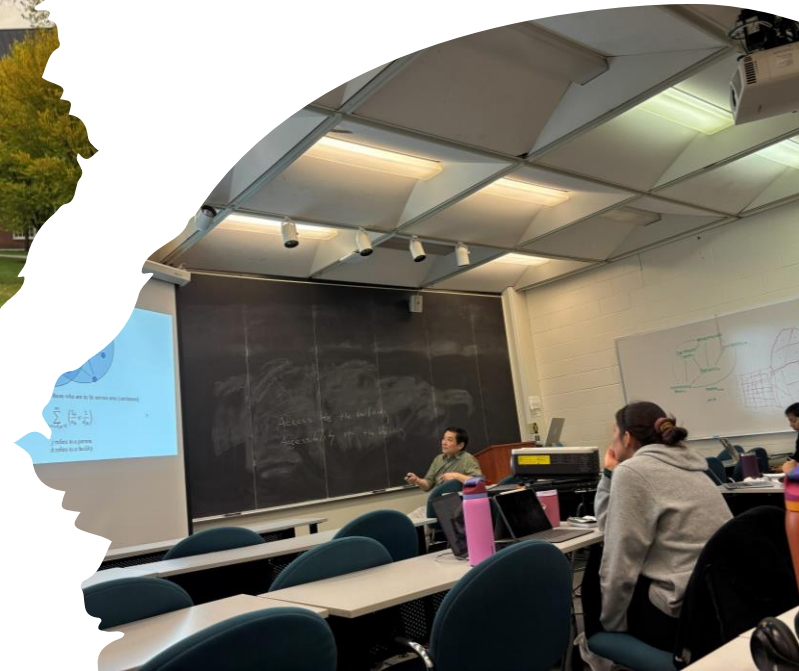
FDL Fall 2025 Accomplishments: Outdoor Thermal Exposure Research

- Developed the first urban micrometeorological dataset for assessing outdoor thermal exposure in a coastal city
- Presented preliminary findings at the 2025 AGU Annual Conference
- Extended the research into an MS thesis topic
- Established a foundation for continued research on outdoor thermal exposure and its health impacts



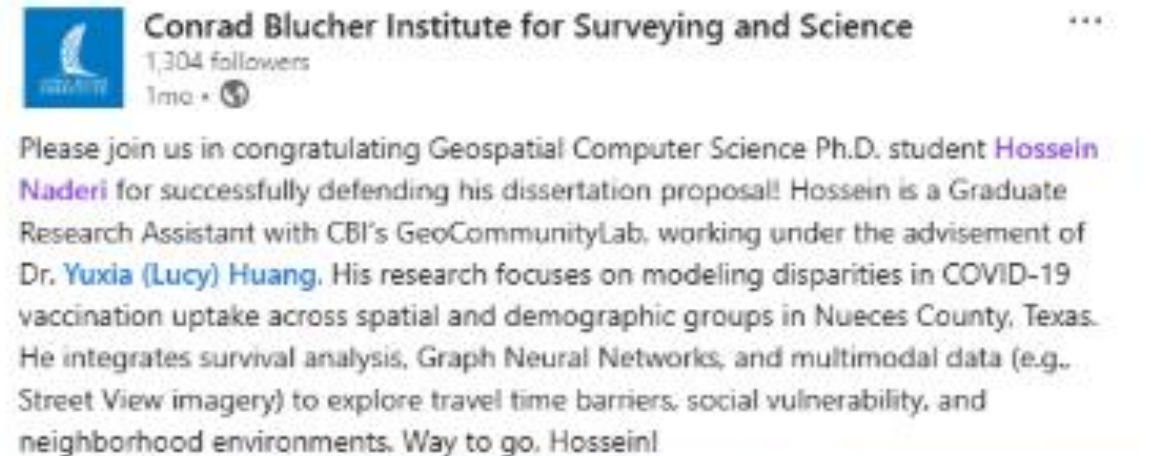
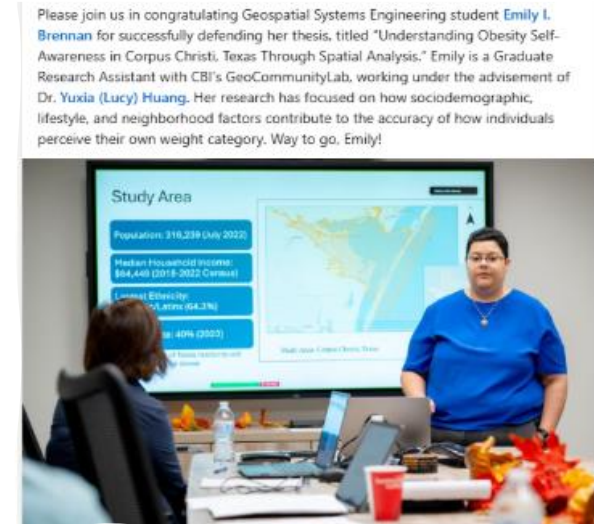
FDL Fall 2025 Accomplishments: Curriculum Development

- Course observation at Dartmouth College
 - Geographic Information Systems
 - Geographies of Health
- New course development based on insights gained during FDL
 - GIS in public health -Graduate
 - AI in Geospatial Science – undergraduate/graduate, scheduled for Fall 2027



FDL Fall 2025 Accomplishments: Student Support

- Hossein Naderi (PhD)
 - Dissertation Proposal - Sept. 2025
 - Dissertation Qualifying exam -Dec. 2025
- Emily Brennan (MS)
 - Thesis Defense - Dec. 2025
 - Journal manuscript on her obesity thesis research submitted - Jan. 26



Lessons learned: Applying for FDL

*Plan Early,
Coordinate Early.*

- Teaching & Supervising Responsibilities
 - Arrange course coverage or replacement instructors
 - Plan around key MS/PhD student milestones (qualifying exam, thesis/dissertation defense)
- Research Plan
 - Define a focused research topic and clear expected outcomes
 - Identify the host institution
- Logistics
 - Plan housing, transportation, and other arrangements
- Funding
 - Secure travel and supplemental research funds
- Department coordination
 - Discuss plans with the department chair early

Acknowledgements

Department Chairs - Dr. Chandra Sekharan (2023), Dr. LD Chen (Interim Chair, Fall 2024), and Dr. Dular Kar (present), Dean - Dr. David Ma, and Provost Office for their support

FDL committee

NSF CREST Project (No.2112631) for research support

NSF, NIFA, and CBI for travel funds