# Spatial Structures in the Social Sciences
# 2025 Summer GIS Institute

## Final Presentation Program

June 13, 2025

PSTC Seminar Room (Mencoff Hall 205)
68 Waterman Street, Providence RI 02912

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| **10:30 – 11:00 am** | Brunch & **Opening Remarks** |
| **11:00 am – 12:00 pm** | **Session I:**<br>GIS and Health |
| **12:00 – 1:00 pm** | **Lunch** |
| **1:00 – 1:40 pm** | **Session II:**<br>GIS in Society |
| **1:40 – 2:00 pm** | Certificate Presentation & **Closing Remarks** |

# PARTICIPANTS

**Emma Danes** (Division of Biology & Medicine | Warren Alpert Medical School)

**Victoria Hoffman** (Dermatology | Warren Alpert Medical School)

**Sagen Kidane** (Sociology)

**Bhumi Shah** (Sociology)

**Iju Shakya** (Epidemiology | School of Public Health)

# PROGRAM

## SESSION I:

## GIS AND HEALTH

**[11:00am] Bhumi Shah,** *Assessing Neighborhood Characteristics of Outpatient Dialysis Centers*

**[11:20am] Victoria Hoffman,** *Mapping Access to Dermatologic Care for Unhoused Populations in Rhode Island: A Geospatial Needs Assessment*

**[11:40am] Emma Danes,** *Where You Live Matters: Geographic and Social Patterns in Melanoma Stage at Diagnosis*

**LUNCH BREAK, 12:00 PM – 1:00 PM**

## SESSION II:

## GIS IN SOCIETY

**[1:00pm] Iju Shakya,** *Distribution of Food Pantries in Providence City, Rhode Island*

**[1:20pm] Sagen Kidane,** *Black Diasporic Suburbs and Spatial Advantage in the U.S. South*

# PRESENTATION ABSTRACTS

**Emma Danes – Where You Live Matters: Geographic and Social Patterns in Melanoma Stage at Diagnosis**

Melanoma is a potentially deadly skin cancer whose prognosis is closely tied to the stage at diagnosis. Tumor characteristics such as Breslow depth, ulceration, and mitotic rate are indicators of aggressive disease and often signal a later-stage presentation. In addition to biological factors, social determinants of health may contribute to disparities in melanoma outcomes. Prior studies suggest that barriers to timely diagnosis—including limited healthcare access and socioeconomic disadvantage—can result in more advanced disease at presentation. However, the spatial distribution of aggressive melanoma in Rhode Island and its association with sociodemographic factors remains largely underexplored. In this study, we map 20 years' worth of melanoma data from Rhode Island to examine patterns across zip codes using ArcGIS. We explore geospatial relationships between neighborhood-level indicators such as median income and stage at diagnosis. Our aim is to identify high-risk geographic areas and vulnerable populations who may benefit from targeted interventions such as earlier screening, improved access to care, or public health outreach. This work may inform more equitable strategies for melanoma detection and treatment, ultimately improving outcomes in underserved communities.

**Victoria Hoffman – Mapping Access to Dermatologic Care for Unhoused Populations in Rhode Island: A Geospatial Needs Assessment**

Unhoused individuals face significant barriers to accessing dermatologic care, despite being at heightened risk for both chronic and infectious skin conditions. This project leverages Geographic Information Systems (GIS) to assess the spatial relationship between unhoused populations, shelter and low-income housing locations, and free or low-cost dermatology services across Rhode Island. Using Point-in-Time (PIT) count data from the Rhode Island Coalition to End Homelessness, HUD-subsidized housing datasets, and clinic location data from public health partners and HRSA, we conducted proximity and service area analyses to identify geographic care gaps. Public transit accessibility (RIPTA GTFS data) and census-based social vulnerability indices were incorporated to further contextualize areas of unmet need. Preliminary findings reveal that several high-density unhoused zones, particularly outside of central Providence, lack reasonable walking or transit access to dermatology services. These findings highlight opportunities for mobile outreach programs, clinic partnerships, and targeted resource allocation. This geospatial approach provides a replicable framework for advancing equitable dermatologic care access in vulnerable communities.

**Sagen Kidane – Black Diasporic Suburbs and Spatial Advantage in the U.S. South**

While more than half of the Black U.S. population resides in the suburbs, studies of their neighborhood conditions often focus on disadvantaged, urban environments. Recent demographic shifts, however, necessitate an exploration of black residential experiences in suburbs: the presence of suburbs with a majority Black population is five times greater than it was fifty years ago; steady increases in black internal migration to the U.S. South, where most black suburbs are located; and growing shares of black immigrant populations, who are more likely to reside in suburbs. This project seeks to understand the contemporary landscape of black neighborhood life by identifying levels of advantage within a large, majority-black and ethnically diverse suburban county in the southern United States. Further, it examines the extent to which black suburbs are bordered by spatially advantaged neighborhoods. This regional analysis offers a close portrait of residential conditions in "Black diasporic suburbs" situated in the South.

**Bhumi Shah – Assessing Neighborhood Characteristics of Outpatient Dialysis Centers**
Outpatient dialysis centers form a vital component of the U.S. healthcare system, delivering life-sustaining treatment to more than 780,000 Americans living with end-stage renal disease (ESRD). These patients, many of whom reside in low-income and marginalized communities, require treatment multiple times per week and missed sessions have serious health consequences. Despite the critical role these centers play, especially for medically vulnerable populations, their resilience to climate-related hazards remains poorly understood. While prior research has examined hospital preparedness and climate resilience, there is a significant gap in understanding how outpatient dialysis infrastructure may be exposed to and impacted by climate threats, particularly in communities already burdened by healthcare disparities. Outpatient dialysis centers may be particularly vulnerable to climate disruptions due to their smaller scale, less resilient infrastructure, and frequent location in flood-prone, lower-cost areas.
This study evaluates the location and surrounding social vulnerability of dialysis centers in the Northeastern United States. We integrate Medicare dialysis center facility data with neighborhood-level demographic and social characteristics to assess whether these centers are disproportionately located in high-vulnerability communities. For this analysis, communities are defined at the census tract level and mapped using 2020 U.S. Census boundaries. Each tract is characterized using the CDC's Social Vulnerability Index (SVI), a composite measure that captures factors such as socioeconomic status, household composition, race/ethnicity, and housing conditions. We compare the SVI of tracts with dialysis centers to those without and apply buffer analysis around each facility to examine neighborhood-level vulnerability more comprehensively. Findings from this study will offer a key first step in understanding how neighborhood characteristics impact dialysis center resilience.

**Iju Shakya – Distribution of Food Pantries in Providence City, Rhode Island**
Food insecurity is defined as not having consistent access to enough food required for a healthy and active life and has been shown to be associated with diet-related chronic conditions such as diabetes. Individuals experiencing food insecurity may use charitable food system services such as food pantries to meet their needs. This project aims to assess the spatial distribution of food pantries in Providence city and to describe the characteristics of communities where the pantries are located.