

Spatiotemporal Analysis of the Patient Catchment Area for a Southeastern Institution's Gender Affirming Surgery Program

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Background

- An increasing proportion of patients are traveling from out-of-state to receive gender-affirming surgery in the southeast US, particularly from states with more legislative restrictions on transgender care.
- This study aims to assess the catchment area for all gender-affirming surgeries at a single academic institution in the southeastern US.

Methods

- **Design:** Retrospective chart review
- **Study Population:**
 - Over 18 years old
 - Underwent gender affirming surgery including masculinizing and feminizing top and bottom, and facial feminization surgery
- **Setting:** Tertiary academic hospital
- **Interval:** July 1, 2019 – June 30, 2024
- **Statistics:**
 - A two-sample t-test assuming equal variances to compare for distance traveled by academic year (AY)
- **Spatial statistics:**
 - Univariate Local Moran's I
 - Spatial weighting:
 - k-nearest neighbors = 4

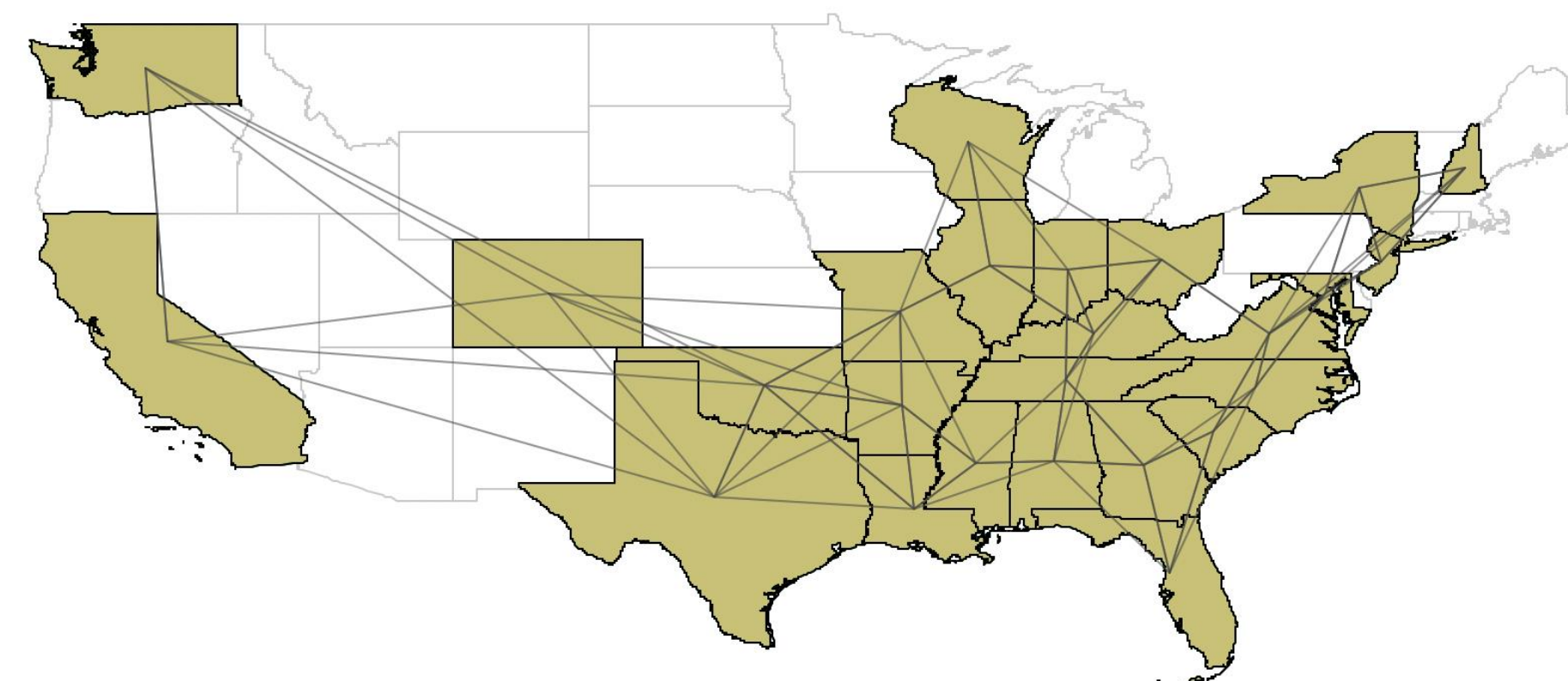


Fig 1. Connectivity map for spatial weighting

Results

- 5-Year Cumulative Results:
 - 25 states represented

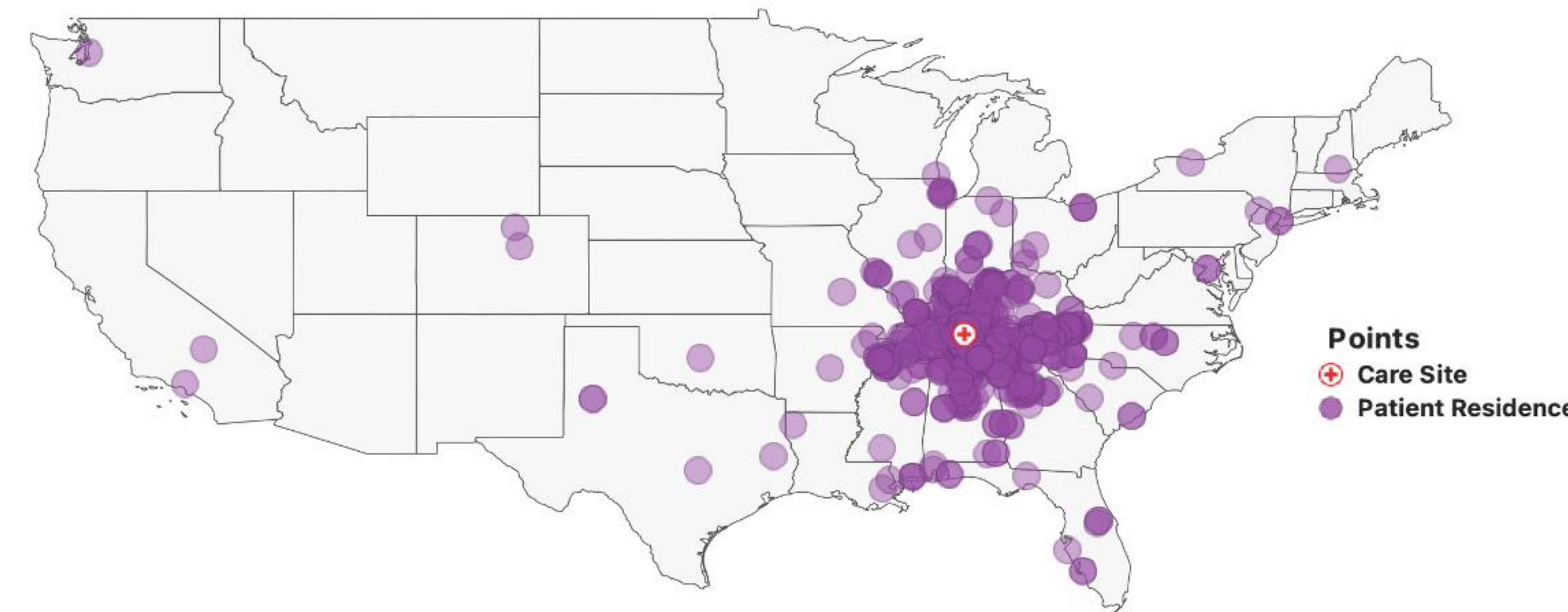
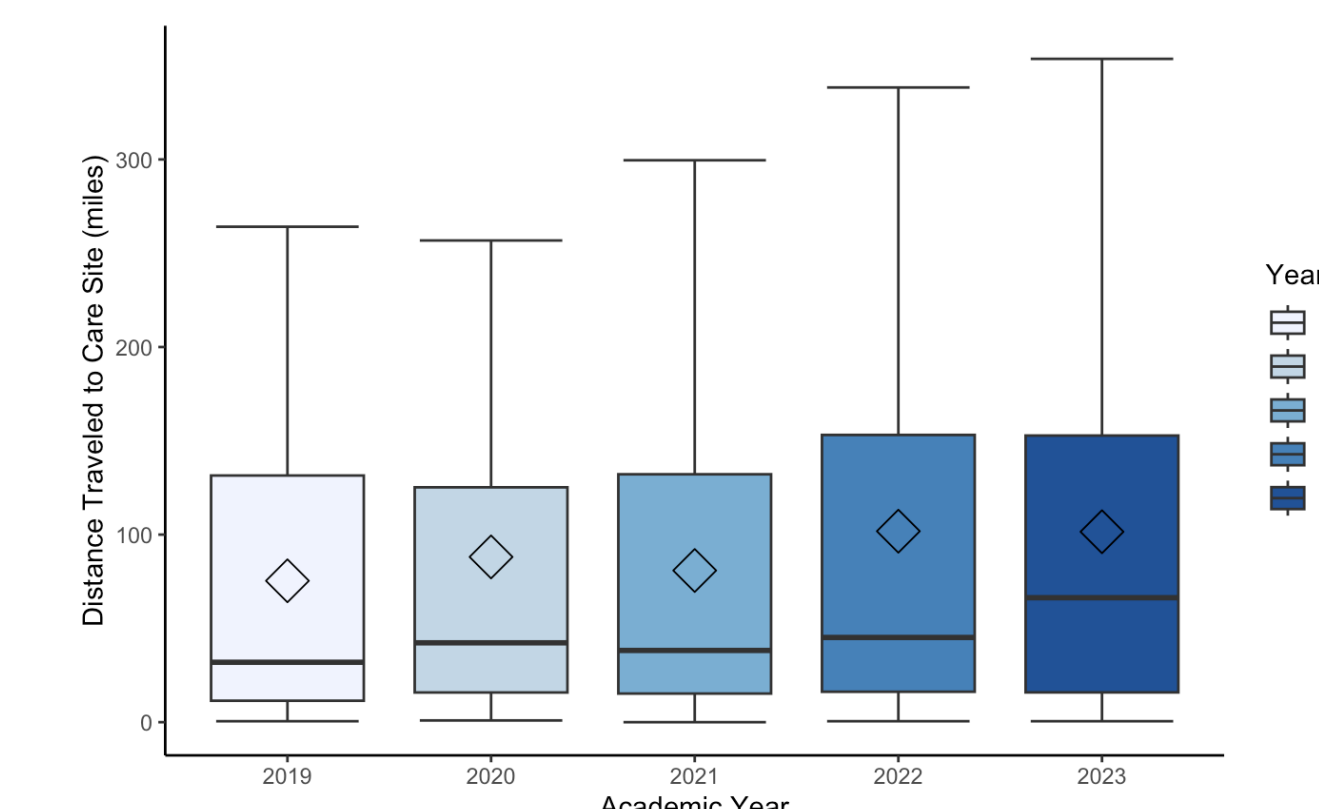


Fig 2. Point Pattern Map of Approximate Patient Residence

- Out-of-State travel by Academic Years (AY) cohorts:
 - 2019 AY Cohort:
 - Patients from 8 states
 - 16.5% out-of-state
 - 2023 AY Cohort:
 - Patients from 17 states
 - 26.7% out-of-state
 - Significantly more patients traveled from outside of Tennessee in the 2023 AY compared to the 2019 AY, $p < 0.05$
- Patients from outside of Tennessee traveled significantly farther in the 2023 AY compared to the 2019 AY, $p < 0.05$



- 4 spatially significant clusters were identified ($p < 0.05$)
 - 3 spatial hotspots – Ohio, Indiana, Alabama, Mississippi
 - 1 spatial outlier - Illinois

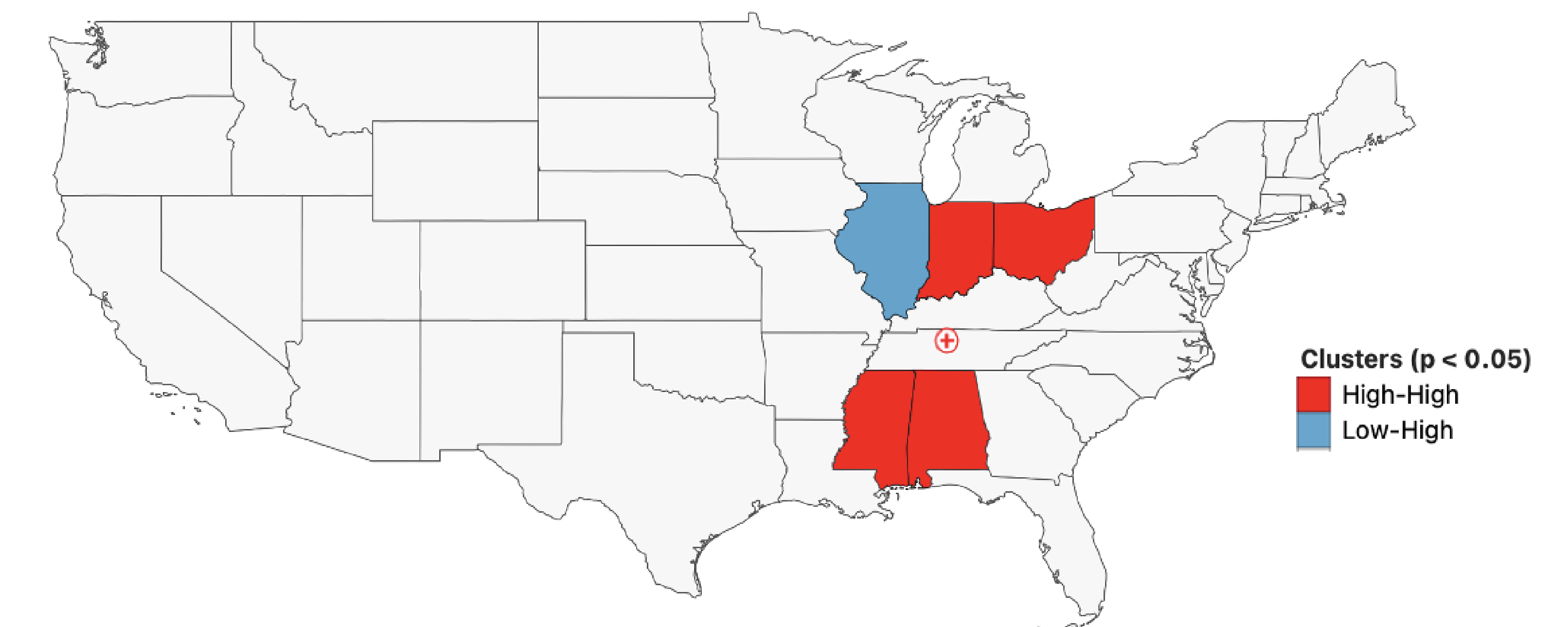


Fig 3. Univariate Local Moran's I for the Change in Out-of-State Patients in the 2019 vs 2023 Academic Year

Conclusion

- Over five years, the catchment area for gender-affirming surgery at a single Southeastern institution has grown significantly.
- Spatial analysis identified regional "hotspots" where patients are more likely to travel out of state for care.
- Identifying emerging "hotspots" of patient outmigration may help surgical centers anticipate future demand, allowing institutions to strategically plan for infrastructure, staffing, and patient outreach.