

Impact of Patient Metropolitan Status and Facility Region on Disparities in Needle Biopsy Receipt for Breast Cancer Diagnosis

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BACKGROUND AND PURPOSE

- Breast cancer incidence and mortality have declined over the past 20 years.¹
- These improvements can be explained, in part, by adherence to breast cancer diagnosis and treatment quality standards endorsed by the National Quality Forum (NQF).^{1,2}
- NQF recommends needle biopsy for breast cancer diagnosis, which helps determine cancer characteristics to guide treatment.^{1,3}
- Socio-demographic disparities have been found in needle biopsy receipt, but few studies have explored geographic disparities in needle biopsy receipt.^{4,5}

Purpose:

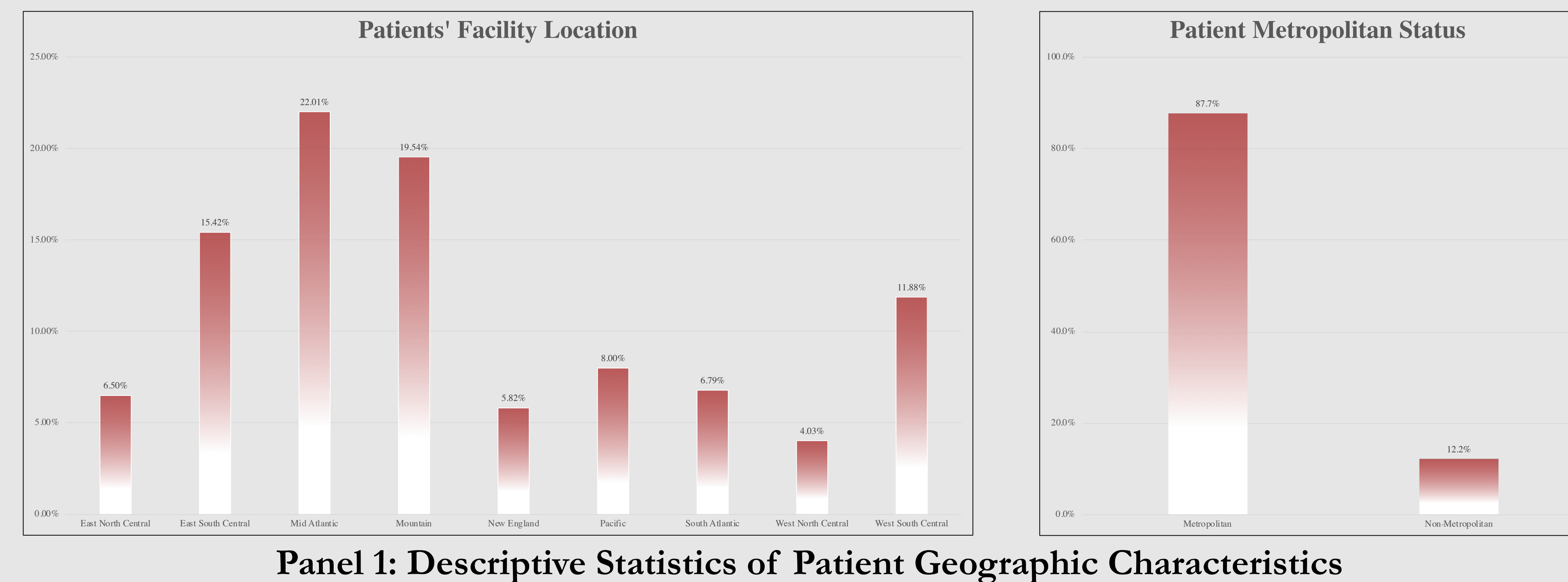
To examine the relationship between geographic patient characteristics and needle biopsy receipt, controlling for patient- and facility-level factors.

METHODS

- We used the US National Cancer Database, a surveillance database of cancer cases diagnosed at Commission on Cancer-accredited facilities, to examine female patients diagnosed with breast cancer between 2004 and 2015.
- Covariates included: race/ethnicity, insurance coverage, age, Charlson-Deyo score, stage at diagnosis, year of diagnosis, distance between patient residence and facility, facility type, and annual average breast cancer case volume.
- We conducted mixed effects logistic regression to assess the effect of metropolitan status and geographic region of the diagnosing facility on needle biopsy receipt, controlling for observed and unobserved patient- and facility-level factors.

RESULTS

- In our cohort of 1.3 million patients, 78.7% received needle biopsy for breast cancer diagnosis. **Panel 1** shows the distribution of patients' facilities across regions and patient metropolitan status.



- Adjusted model results showed that non-metropolitan patients had lower odds of needle biopsy receipt: 7.5% lower (OR = 0.93, CI = 0.91-0.94, p<0.01) for non-metropolitan patients compared to metro patients.
- We also found significant geographic disparities between the regions of the facility where the patient received their diagnosis, shown in **Figure 1**.
- Compared to patients from facilities in the West South Central region, Mid Atlantic patients had decreased odds of needle biopsy utilization by 19% (p=0.02).
- Patients from East North Central, East South Central, and Pacific facilities had increased odds of undergoing needle biopsy by 20% (p=0.04), 40% (p<0.01), and 37% (p<0.01).

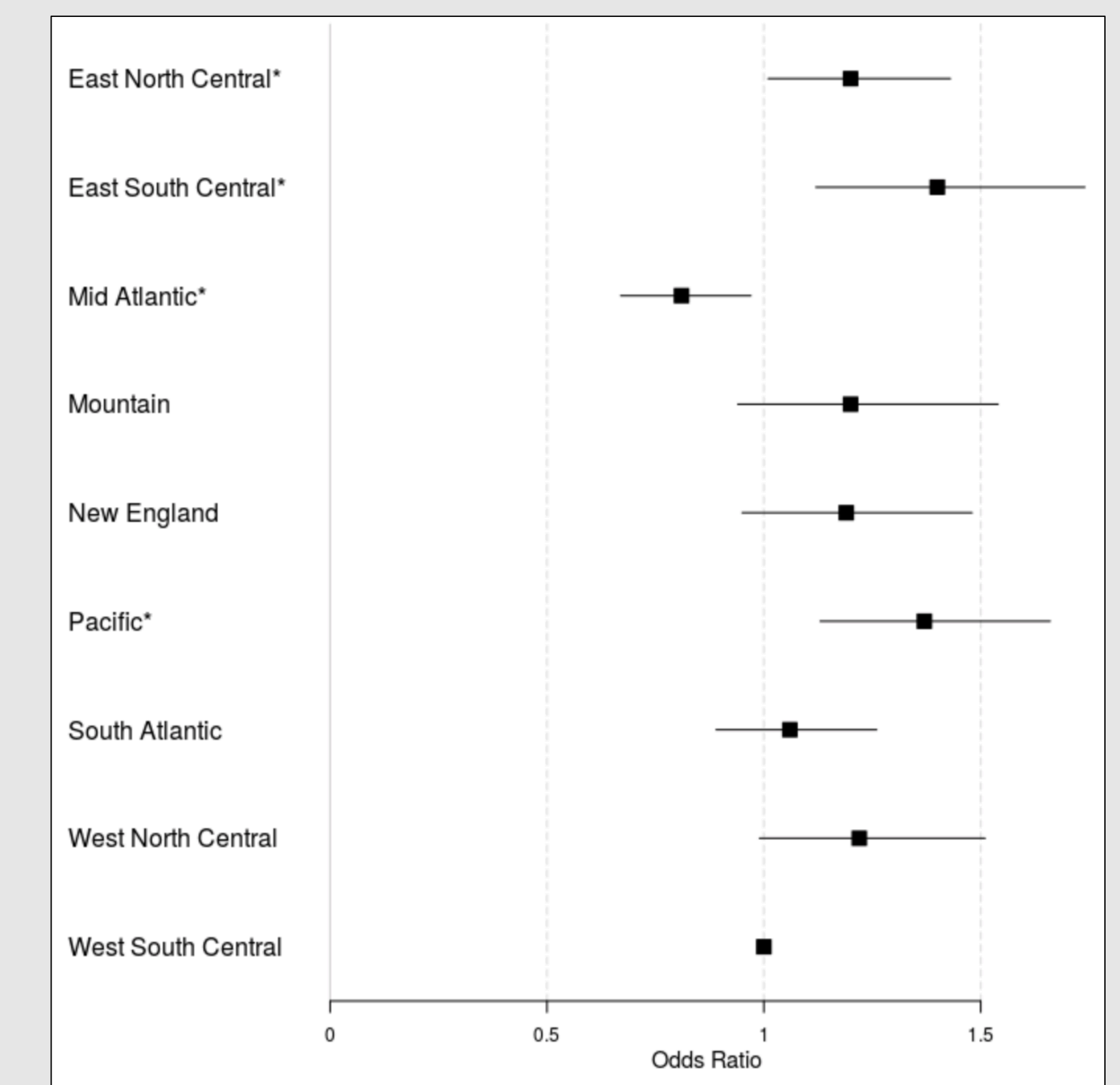


Figure 1: Model Results

Key Findings

- Non-metropolitan breast cancer patients have lower odds of needle biopsy receipt.
- Regional variation in receipt of needle biopsy was identified even after adjustment.

DISCUSSION

- Possible inequities in facility resources may explain geographic deviations from the NQF-recommended utilization of needle biopsy for breast cancer diagnosis.
- Inequities in facility resources could include shortage of personnel or equipment, or reduced financial capacity.
- Geographic factors need to be explored as predictors of utilization of evidence-based diagnostic testing and cancer treatment.
- Addressing care inequities may help improve breast cancer treatment outcomes in underserved patient populations, such as women residing in non-metropolitan areas.

ACKNOWLEDGEMENTS & REFERENCES

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