

# Racial Disparities in Cancer Service Gaps in Florida: Comparing Diagnostic and Treatment Access in Counties Within and Outside NCI Cancer Center Service Areas

Aarya Satardekar<sup>1,2</sup>, Nathanael B. Stanley<sup>2</sup>, Namit Choudhari<sup>3</sup>, Benjamin Jacob<sup>1</sup>

<sup>1</sup>Sam P. Bell III College of Public Health, University of South Florida, Tampa, FL  
<sup>2</sup>Office of Community Outreach and Engagement, Moffitt Cancer Center, Tampa, FL  
<sup>3</sup>School of Geosciences, University of South Florida, Tampa, FL



## Background & Objectives

- Florida has four NCI-designated cancer centers covering 51 of 67 counties (76.1%).
- Sixteen counties—representing over one-quarter of rural counties—remain outside NCI catchment areas.
- NCI designation via the P30 Cancer Center Support Grant (CCSG) provides \$2.2M–\$14M annually (FY 2023), NCI-designated centers in Florida can be supplemented by state funding, creating substantial resource advantages over non-NCI centers in research, diagnostics, and prevention outreach [1, 2].
- No current assessment of cancer burden between NCI-covered and non-covered counties in Florida

### Objectives:

- Compare spatial access to diagnostic services in NCI-covered vs non-covered Florida counties.
- Assess county-level cancer mortality by race/ethnicity across NCI coverage status.

## Methods

- Georeferenced 3,228 diagnostic radiology centers and 444 cancer treatment centers across FL, AL, MS, and GA using ArcPro 3.2.
- Used the Origin-Destination Links tool to calculate the number of facilities within fixed distance thresholds of 25, 50, and 100 miles from each county centroid, along with average travel distances.
- Modeled county-level, age-adjusted cancer mortality by race/ethnicity using generalized linear regression.
- Independent variables included NCI coverage status and distance-to-diagnostic-facility measures.
- Assessed spatial autocorrelation using Moran's I.

## Results

- County-level cancer mortality in Florida showed significant spatial autocorrelation ( $z = 3.29, p = 0.001$ ).
- NCI-covered counties had 4.6× more diagnostic facilities and 6.7× more treatment centers within 25 miles than non-covered counties.
- Black/African American populations experienced the largest NCI-coverage effect and strongest distance-mortality association, with 10.1% higher mortality in non-NCI counties.
- Overall cancer mortality was 5.3% higher in non-NCI counties (168.31 vs 159.90 per 100,000).
- Distance to an ACR facility at 50 miles showed the strongest association with mortality (robust  $p = 0.0115$ ).

## Results

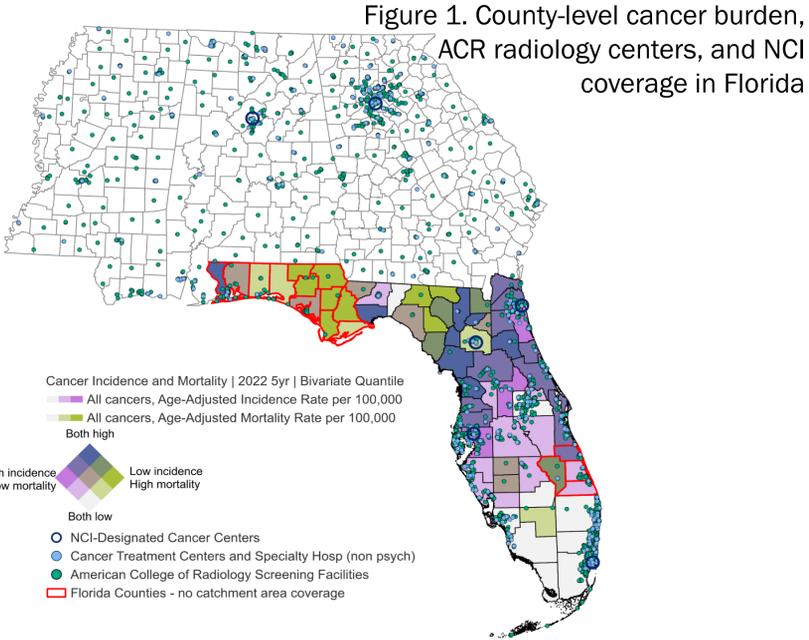


Table 1 – Generalized Linear Regression

Variable	Coefficient	StdError	Robust_Pr	VIF
Intercept	-2.28	121.58	0.98	-----
NCI Coverage (Ref=non-NCI)	-30.00	17.67	0.07	1.51
25 mile distance	-1.97	2.08	0.16	2.48
50 mile distance	2.40	1.71	0.01	1.07
100 mile distance	1.68	1.74	0.26	2.00
Model R <sup>2</sup>	0.464			

Table 2 – Race-stratified Mortality

Population Group	Mortality Difference	B (Distance to Diagnostics)	R <sup>2</sup>
African American	+10.1%	5.155	0.3725
White	+3.1%	3.094	0.2890
Hispanic/Latino	-5.7%	3.674	—
Asian/Pacific Islander	+7.8%	Descriptive only	—

Figure 2. SE coast origin-destination links: 50 mi. to ACR facilities

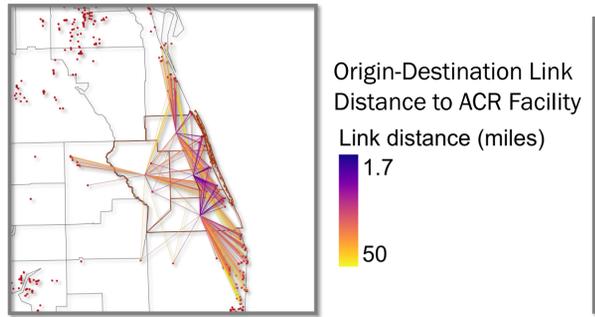


Figure 3. Panhandle origin-destination links: 50 mi. to ACR facilities

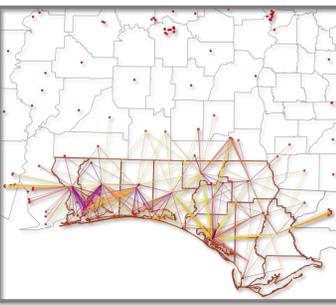


Table 3 Area-based cancer burden in non-NCI covered counties

County (no NCI catchment area coverage)	All cancers, Age-Adjusted Incidence Rate	All cancers, Age-Adjusted Mortality Rate	ACR Facilities	Cancer treatment centers
Bay	480.3	159	16	0
Calhoun	437.8	183	1	0
Escambia	507.8	175.7	30	4
Franklin	403.2	156.4	0	0
Gulf	442.4	181.8	2	0
Holmes	274.1	185.8	1	0
Indian River	519.3	152.6	10	2
Jackson	318.6	183.5	1	0
Liberty	447	175.4	0	0
Martin	461.3	132.3	11	2
Okaloosa	433.6	153.7	15	1
Okeechobee	471.4	197.1	3	2
Santa Rosa	488	158.5	6	1
St. Lucie	469.7	146.6	27	1
Walton	388.7	153.4	3	0
Washington	353	198.2	1	0
Non-NCI county average	431.01	168.31	8.2	0.8
NCI-covered county average	478.03	159.90	32.7	4.9
Florida	464	139.3		
US (SEER+NPCR)	444.4	146		
> US rate				
> both Florida and US rates				

Cancer treatment center NAICS codes: 62231005, 62231007  
 Cancer rates per 100,000  
 Data source: American College of Radiology, 2025; State Cancer Profiles, SEER, 2022; ESRI Business Analyst

### Key Insight

The combination of significant spatial autocorrelation, limited diagnostic and treatment capacity, and higher mortality in non-NCI-covered counties suggests that Florida's cancer care landscape is structurally unequal.

## Discussion and Conclusion

- African American communities in non-NCI counties experience the greatest mortality burden associated with geographic barriers to diagnostic care.
- Counties within NCI catchment areas show lower cancer mortality and greater diagnostic and treatment capacity.

### Limitations

- County-level mortality masks more granular patterns of mortality
- Origin-Destination uses the county centroid as the origin, but a lower spatial scale could reveal different access patterns within counties

### Future Directions

- Use mean distances based on Origin-Destination tool output to diagnostic and treatment centers, instead of pre-defined distances
- Conduct same analysis on breast and lung cancer mortality, calculate distances to ACR facilities providing those screening modalities

References: 1) Burus, T., McAfee, C. R., & Hull, P. C. (2025). Differences in the cancer burden and current funding of NCI-designated cancer centers. *JAMA Network Open*, 8(8), e2524564-e2524564.2) Florida Department of Health. (2025). Casey DeSantis Cancer Research Program. <https://www.floridahealth.gov/provider-and-partner-resources/research/index1.html>