

THE IMPACT OF INCOME INEQUALITY ON DISEASE SPECIFIC SURVIVAL IN PATIENTS WITH HEAD AND NECK MALIGNANCIES

Madia Russillo, MD; Zaid Al-Qurayshi, MBChB, MPH; Nitin Pagedar, MD, MPH

Dept of Otolaryngology – Head and Neck Surg, University of Iowa Hospital & Clinics

BACKGROUND

Head and neck cancer (HNC) comprises a heterogenous group of malignancies that may come with significant morbidity or mortality to those who are affected. It accounts for 4% of malignancies detected in the US, with approximately 66,000 patients developing HNC annually and 14,600 dying from the disease. Income inequality that is related to socioeconomic standing can potentially be a factor in the survival of people with HNC. Income distribution across a population can be measured using the Gini index that is often used as a gauge of economic inequality.

OBJECTIVES

In this study we aim to examine the impact of county-level income inequality on survival in patients with head and neck squamous cell carcinoma (HNSCC), differentiated thyroid carcinoma (DTC), and head and neck cutaneous melanoma (HNCM). Income inequality can be measured using the Gini index.

METHODS

A retrospective study utilizing the Surveillance, Epidemiology, and End Results (SEER) database of 18 cancer registries, 2010 - 2016. Gini index data by county were obtained from the U.S. Census Bureau. We categorized counties into quintiles (1st=≤0.43, 2nd=>0.43-≤0.46, 3rd=>0.46-≤0.47, 4th=>0.47-≤0.49, 5th=>0.49). based on Gini index (higher Gini index indicates greater income inequality). County social and health indicators were obtained from County Health Rankings & Roadmaps.

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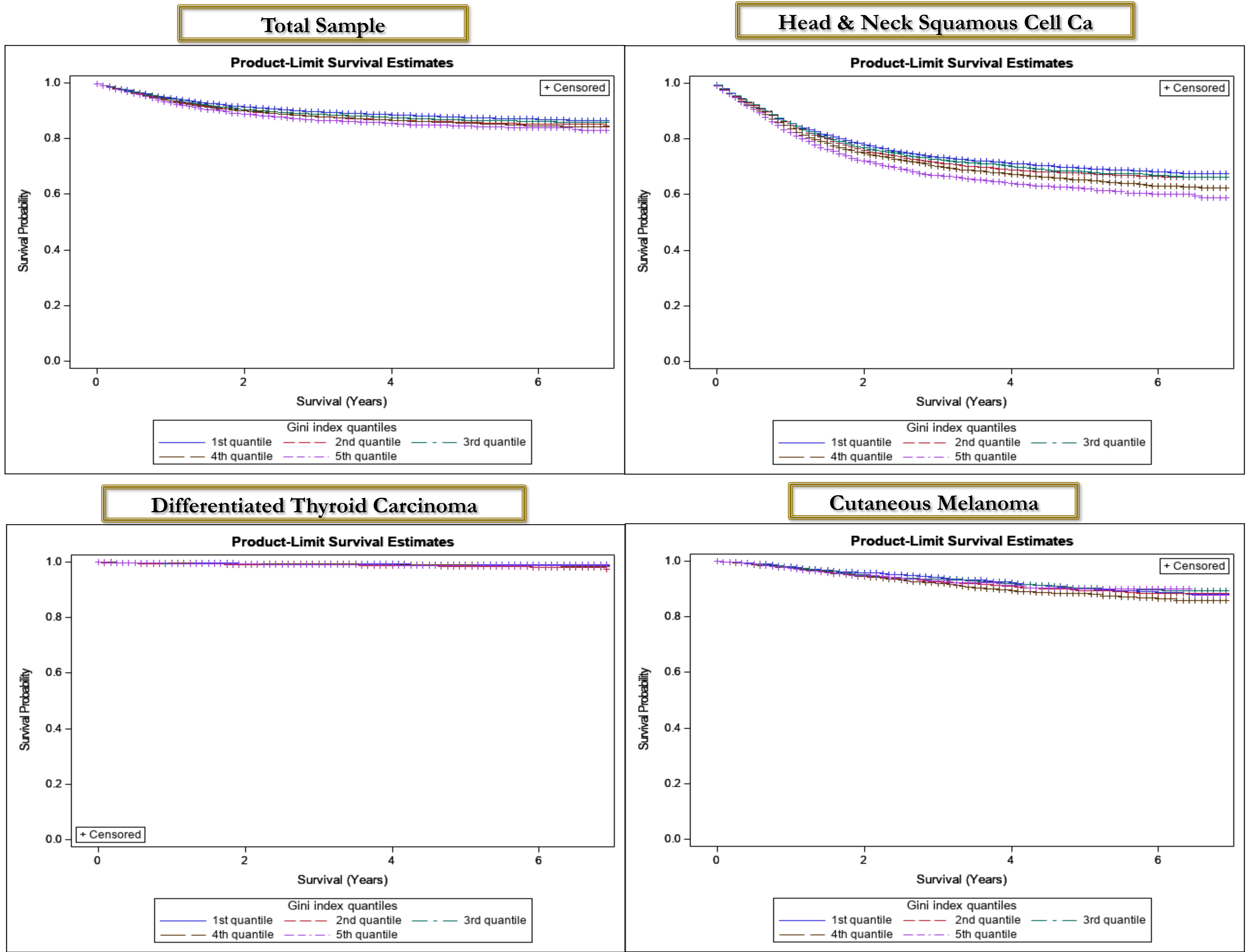
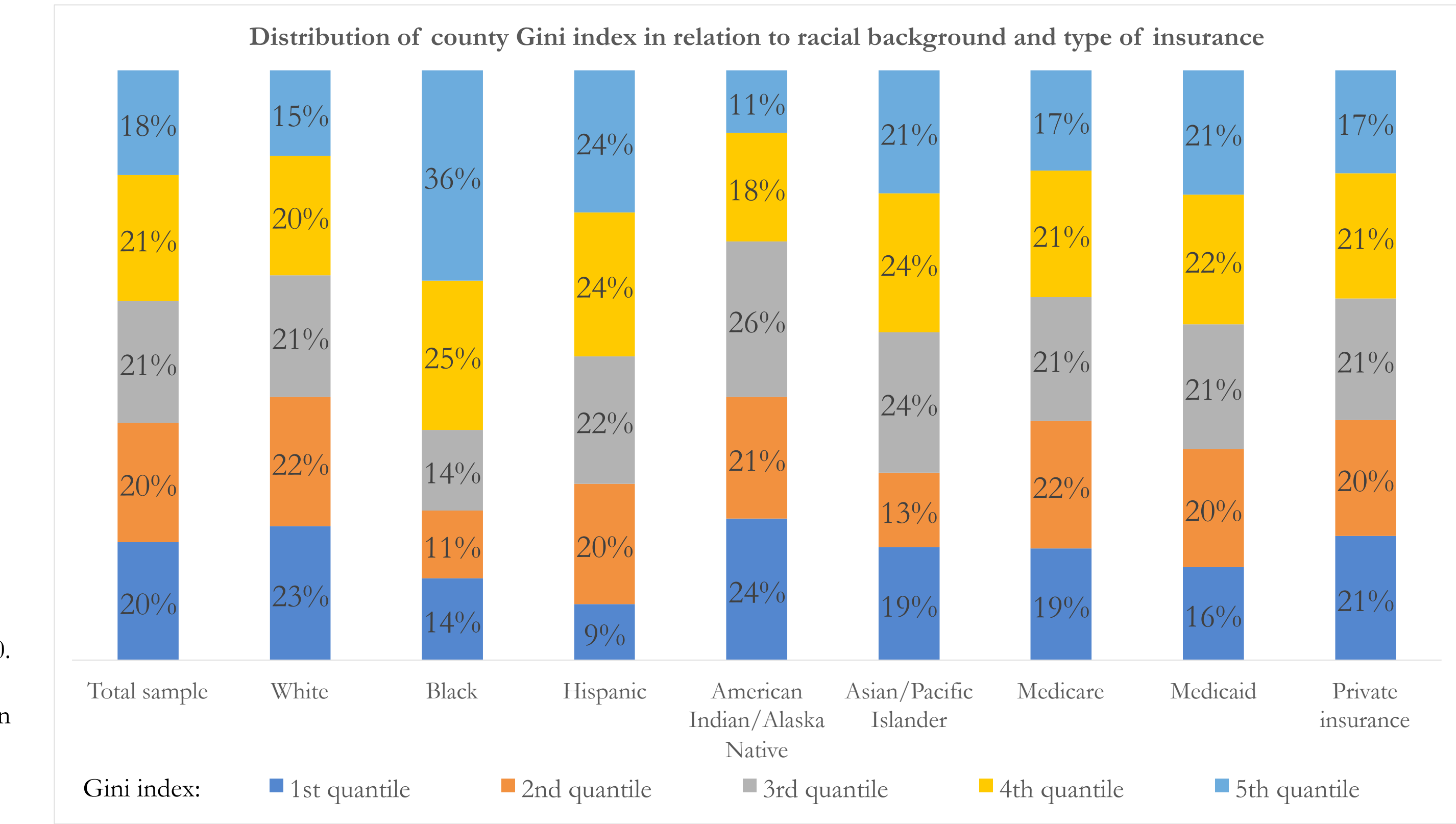
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RESULTS	
Demographic Data: N=132,017. SEER 2010 - 2016.	
Age, yr.	
<25	3506(2.66)
25 - < 45	29978(22.71)
45 - < 65	61377(46.49)
≥ 65	37156(28.14)
Sex	
Male	63817(48.34)
Female	68200(51.66)
Race	
White	93416(70.76)
Black	9766(7.4)
Hispanic	16144(12.23)
American Indian/Alaska Native	630(0.48)
Asian/Pacific Islander	10235(7.75)
Other/Unknown	1826(1.38)
Insurance type	
Medicare	37156(28.14)
Medicaid	12905(9.78)
Private	74620(56.52)
Uninsured	3905(2.96)
Unknown	3431(2.6)
Site and type of cancer	
Oral cavity SCC	21213(16.07)
Pharynx SCC	14793(11.21)
Larynx SCC	12658(9.59)
Thyroid DTC	67341(51.01)
Cutaneous melanoma	16012(12.13)
Stage	
I	72050(54.58)
II	12774(9.68)
III	17561(13.3)

Overall survival in relation to Gini index of patients' county of residence.					
Population	Gini index quantile	5-year survival	aHR ^a	95%CI	P
Total sample	1st	85.79%	Reference		
	2nd	86.64%	1.07	1.01, 1.13	0.013
	3rd	85.61%	1.00	0.95, 1.06	0.90
	4th	87.54%	1.09	1.03, 1.15	0.002
	5th	84.61%	1.10	1.04, 1.17	0.001
Head and neck SCC	1st	69.34%	Reference		
	2nd	67.53%	1.05	0.99, 1.11	0.11
	3rd	68.12%	1.00	0.94, 1.06	0.91
	4th	65.17%	1.08	1.02, 1.15	0.008
	5th	62.22%	1.10	1.04, 1.17	0.002
Differentiated thyroid carcinoma	1st	99.00%	Reference		
	2nd	98.45%	1.42	1.09, 1.838	0.009
	3rd	98.80%	1.05	0.798, 1.394	0.71
	4th	98.86%	0.93	0.697, 1.234	0.61
	5th	98.89%	1.09	0.808, 1.461	0.58
Cutaneous melanoma	1st	90.06%	Reference		
	2nd	89.39%	1.02	0.84, 1.22	0.87
	3rd	91.88%	0.90	0.74, 1.09	0.27
	4th	89.38%	1.19	0.98, 1.44	0.07
	5th	90.95%	1.01	0.81, 1.27	0.93



CONCLUSION

Income inequality in the United States could be an underlying reason for poor health outcomes in patients with HNSCC. Our data shows that income inequality as measured by the Gini index is associated with disease specific survival for HNSCC and should be considered a meaningful social determinant of health by head and neck cancer researchers. Further studies elucidating the interplay between income inequality and health care delivery is warranted.

