

# DIFFERENCES IN SURVIVAL OF NON-SMALL CELL LUNG CANCER BY RACE/ETHNICITY/SES

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## INTRODUCTION

- Lung cancer is the leading cause of cancer death in the U.S.
- An estimated 160,340 deaths in the year 2012
- Disparities by race, ethnicity and socioeconomic status (SES) have been found in some cancers, but not others
- Unclear if disparities exist for non-small cell lung cancer (NSCLC)
- Examining the potential role and influence of such disparities is essential for improving survival rates in all patients
- The objective of this study was to determine whether survival disparities by race, ethnicity, and SES occur in patients with NSCLC

## METHODS

- Linked data (1996 -2007) from:
  - Florida Cancer Data System – a population based cancer registry for patients' demographic and clinical characteristics
  - Florida's Agency for Health Care Administration for patients' procedure and diagnosis codes
  - U.S. census
- Main outcome is overall survival that is defined as elapsed time from the dates of NSCLC diagnosis to death or last contact
- Primary Predictors of Interest:
  - Race: White, Black, Asian, Others (to include: Native American, Pacific Islander, Asian Indian or Pakistani, and any other race)
  - Ethnicity: Hispanic, non-Hispanic
  - SES (% of the neighborhood living in poverty)
    - lowest (≥20%) , middle-low (≥10% and <20%), middle-high (≥5% and <10%), highest (<5%)
- Statistical analyses:
  - Descriptive; median survival time and 1-, 3-, 5-year survival rates
  - Univariate and multivariate Cox proportional hazards regression model- are used to estimate unadjusted and adjusted hazard ratios (HR) and corresponding 95% confidence intervals (95%CI)

Table 1. Demographic Characteristics by SES (Row%)

	All patients	Socioeconomic status (%)			
		Lowest	Middle-Low	Middle-High	Highest
<b>All patients</b>	<b>98,541</b>	<b>12,315</b>	<b>31,250</b>	<b>37,049</b>	<b>17,927</b>
<b>Race</b>					
White	90,534	8.9	32.0	39.7	19.3
Black	7,249	57.0	28.2	10.9	3.9
Asian	387	12.7	31.3	36.4	19.6
Other	371	9.7	29.1	41.0	20.2
<b>Hispanic Origin</b>					
No	92,722	11.5	31.3	38.4	18.7
Yes	5,819	28.1	37.9	24.2	9.8

Figure 1. Median Survival (Months) by R/E/SES

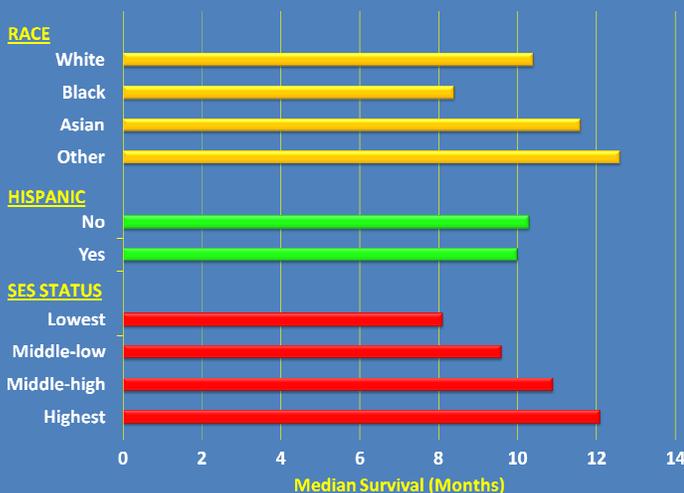


Figure 2. Survival Rates at 1, 3, 5 Years by Race and SES

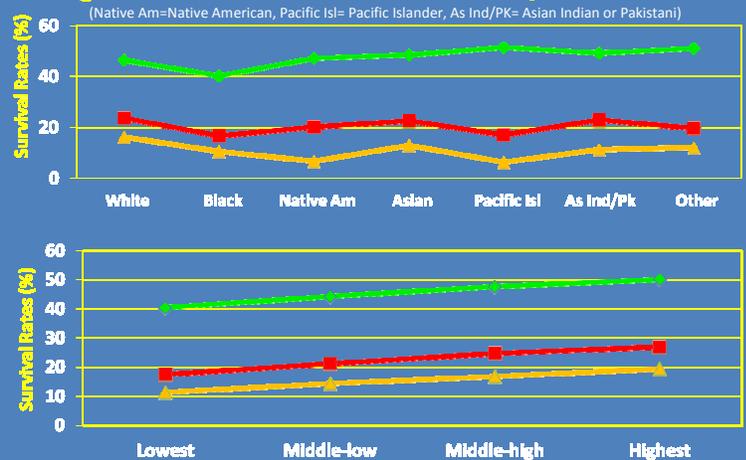


Table 2. Cox Proportional Hazards Regression Models

		Univariate		Multivariate <sup>1</sup>	
		HR (95%CI)	P-value	HR (95%CI)	P-value
<b>Race</b>					
	White	1.00 (reference)		1.00 (reference)	
	Black	1.21 (1.18, 1.24)	<.001	0.99 (0.96, 1.02)	0.525
	Asian	0.99 (0.88, 1.11)	0.799	0.79 (0.70, 0.89)	<.001
	Other	1.01 (0.89, 1.14)	0.925	0.91 (0.80, 1.03)	0.146
<b>Hispanic</b>					
	No	1.00 (reference)		1.00 (reference)	
	Yes	1.02 (0.99, 1.05)	0.256	0.90 (0.85, 0.95)	<.001
<b>SES</b>					
	Lowest	1.00 (reference)		1.00 (reference)	
	Middle-low	0.89 (0.87, 0.91)	<.001	0.97 (0.94, 1.00)	0.023
	Middle-high	0.82 (0.80, 0.83)	<.001	0.92 (0.89, 0.94)	<.001
	Highest	0.75 (0.73, 0.77)	<.001	0.88 (0.85, 0.91)	<.001

Multivariate model includes additional demographic, clinical predictors as well as comorbidities.  
<sup>1</sup> There are no significant interactions between race and ethnicity, race and SES, ethnicity and SES.

## RESULTS

- n= 98,541, the majority of which were white (91.9%) and non-Hispanic (94.1%)
- Significant predictor of worse survival in the unadjusted model was black compared to white (hazard ratio [HR] 1.21; p<0.001)
- Compared to lowest SES, improved survival was seen in: Middle-low (HR 0.89), Middle-high (HR 0.82), and Highest SES (HR 0.75; all P<0.001)
- In the adjusted model controlling for extensive variables and comorbidities:
  - Asians had improved survival (HR 0.79; P<0.001)
  - Blacks no longer had significant worse survival compared to whites
  - Being of Hispanic ethnicity became a protective factor (HR 0.90; P<0.001)
  - A monotonic improvement in survival for each higher SES category was maintained from univariate to multivariate model

## CONCLUSION

- Our results show that race, ethnicity and SES disparities in survival outcomes for patients diagnosed with NSCLC do exist
- Being Asian, Hispanic, or having higher SES confers improved survival; but Black race alone is not predictive of worse survival
- Therefore:
  - Further research is needed to understand the mechanism of these disparities
  - Ensuring equal access to treatments across SES groups would likely reduce survival disparities

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