Neighborhood Socioeconomic Status and Lung Cancer Incidence by Race/Ethnicity and Histology: A population-based California Study

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Introduction

- Lung cancer is the leading cause of cancer death and the second most commonly diagnosed cancer in both men and women in the United States.
- Socioeconomic status (SES) has been inversely associated with increased overall lung cancer risk.
- SES may be linked to individual cancer risk behaviors such as smoking and access and use of health care services, and neighborhood factors including tobacco retailers, community norms, and ambient air pollution.
- The association between SES and lung cancer by histology across racial/ethnic groups is not known.

Aims

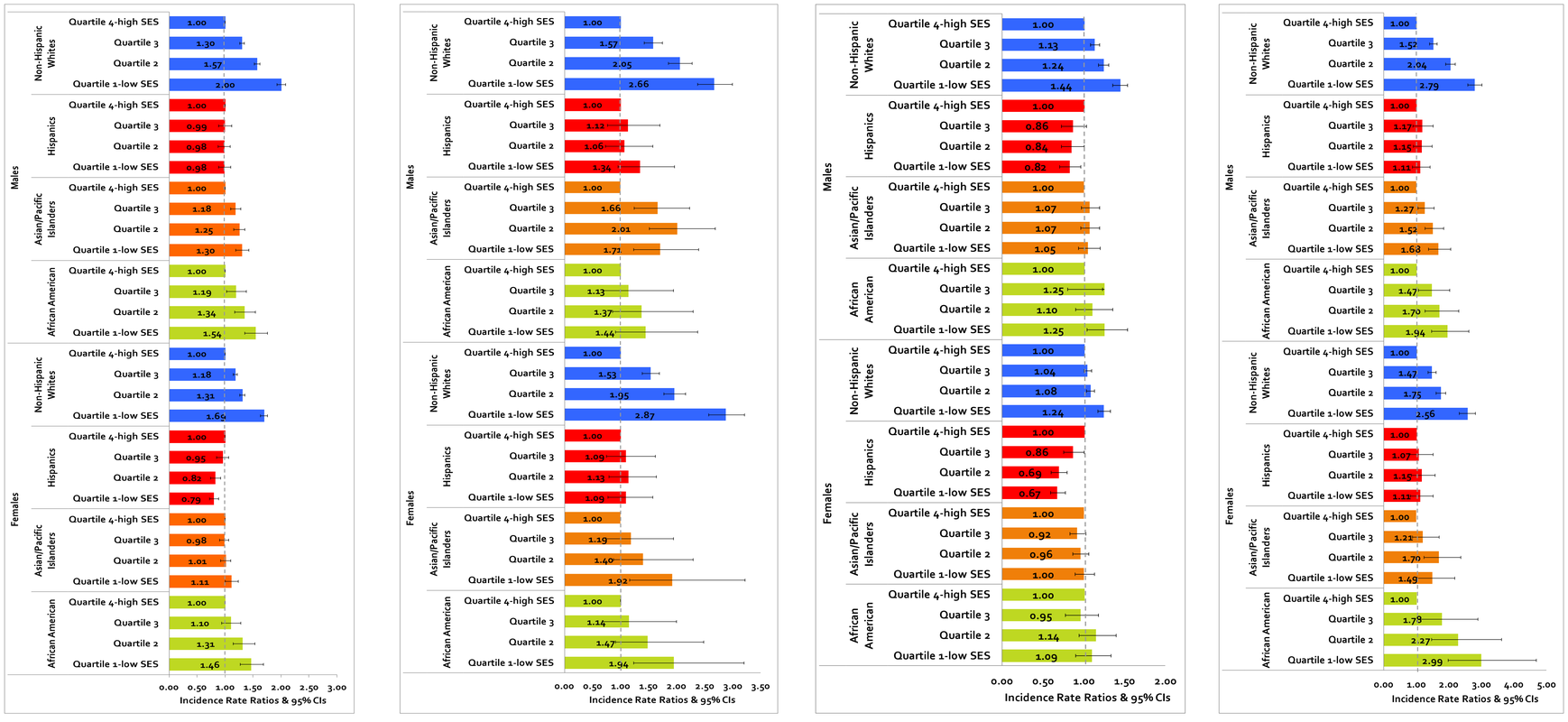
- To evaluate the association between neighborhood SES (nSES) and incidence rates of histologic specific cell-types of lung cancer among African Americans, Asian/Pacific Islanders, Hispanics, and Non-Hispanic Whites in the California Cancer Registry.

Methods

- Study subjects included 68,481 invasive lung cancer cases identified by the California Cancer Registry (2008-2012).
- Residential addresses at diagnosis were geocoded to census block groups and linked to a nSES index based on principal components analysis of Census (2000) and American Community Survey (2010) data on education, housing, poverty, income, employment, and scaled to statewide quartiles.
- Population denominator data was obtained from the U.S. Census data (2000 & 2010).
- Age-adjusted lung cancer incidence rates were calculated per 100,000 individuals.
- nSES quartile-specific incidence rates ratios and 95% confidence intervals were estimated by sex, race/ethnicity, and histological cell type by SEER*Stat.

Results

Figure 1. Associations between incidence rates of overall and histologic-specific cell types of lung cancer and nSES by sex and race/ethnicity



Results

Table 1. Study characteristics of lung cancer cases by race/ethnicity and sex

	African-American Males n=3,221	African-American Females n=2,738	Asian/Pacific Islander Males n=4,856	Asian/Pacific Islander Females n=3,680	Hispanic Males n=4,358	Hispanic Females n=3,922	Non-Hispanic White Males n=26,598	Non-Hispanic White Females n=26,164
Age group								
< 50 years	3.9%	7.4%	5.0%	7.3%	6.2%	7.9%	2.7%	2.7%
50-59 years	22.0%	20.6%	13.8%	16.6%	13.9%	15.5%	12.4%	11.6%
60-69 years	32.5%	30.9%	27.5%	25.3%	26.7%	27.0%	29.3%	27.6%
70-79 years	29.7%	28.3%	32.4%	31.3%	33.0%	31.0%	33.8%	34.2%
80+ years	11.8%	12.8%	21.5%	19.6%	20.2%	18.7%	21.9%	23.9%
Neighborhood SES								
Q4-high	10.0%	9.3%	28.1%	32.1%	10.8%	13.5%	27.5%	29.6%
Q3	20.4%	19.4%	28.8%	27.8%	19.6%	22.5%	28.8%	29.5%
Q2	28.4%	29.7%	26.2%	24.2%	29.1%	28.2%	27.5%	25.7%
Q1-low	41.3%	41.6%	17.0%	15.9%	40.5%	35.9%	16.3%	15.2%
Histology								
SCLC	8.7%	10.9%	8.4%	4.1%	10.8%	10.5%	11.5%	12.5%
Adenocarcinoma	42.6%	48.5%	52.4%	71.8%	43.0%	53.5%	41.9%	49.2%
SCC	23.8%	17.5%	18.8%	8.0%	22.3%	14.0%	24.4%	16.6%
LC+OSC	6.6%	7.8%	5.4%	4.8%	8.5%	9.3%	7.1%	7.9%
Unspecified	18.3%	15.3%	15.0%	11.3%	15.4%	12.7%	15.2%	13.7%
Stage								
Localized	14.2%	16.9%	14.4%	18.5%	12.6%	20.4%	18.2%	22.1%
Regional	21.8%	22.3%	20.3%	19.2%	20.1%	20.4%	22.4%	22.3%
Distant	61.2%	58.0%	61.9%	59.2%	63.9%	56.0%	56.9%	52.7%
Unstaged/Not applicable	2.8%	2.8%	3.4%	3.1%	3.4%	3.3%	2.6%	2.9%

Conclusions & Future Directions

- In a population-based study in one of the most racially/ethnically diverse U.S. states, nSES was variably associated with lung cancer incidence. Larger effects of increased risk with lower SES were seen in:
  - males vs. females
  - Non-Hispanic Whites vs. other racial/ethnic groups
  - squamous cell & small cell lung cancer vs. adenocarcinoma
- Inverse or null associations with nSES were seen for Hispanics across all histologies among males and females.
- Future studies should unpack the underlying factors that place lower nSES Non-Hispanics Whites, African Americans, and Whites at higher risk of lung cancer, and lower nSES Hispanics at lower risk of disease.