

Background

While there has been extensive research elucidating population disparities in relation to stage of Head and Neck Cancer (HNC) diagnosis, treatment, and survival, there has been much less attention on incidence disparities and factors increasing a population's risk of developing disease in the first place

Objectives

1. Assess the geographic distribution of HNC incidence.
2. Compare the incidence to the distribution of otolaryngologists.
3. Assess county-level factors associated with higher rates of HNC.

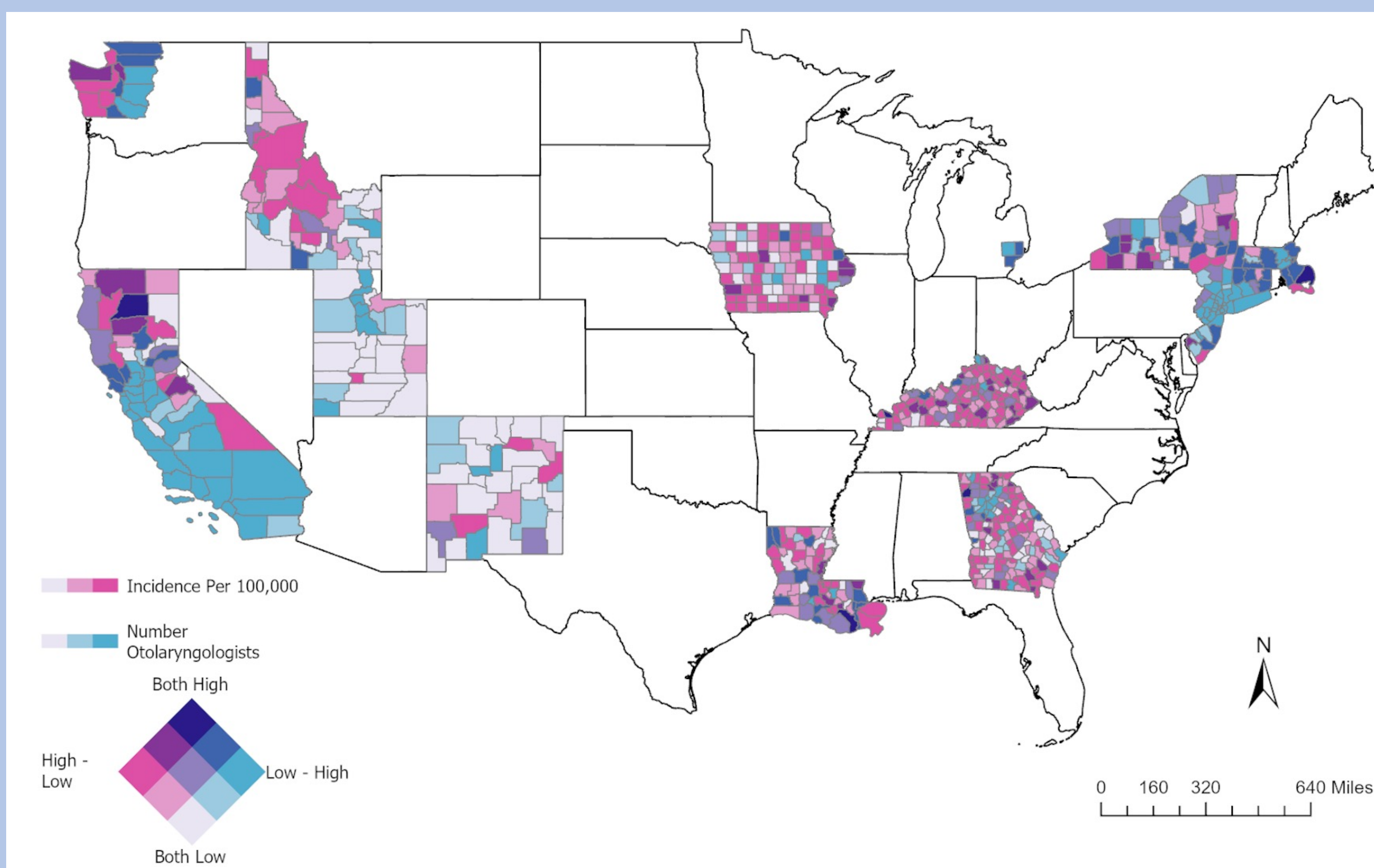


Figure 1. County heat map of head and neck cancer incidence and the number of Otolaryngology providers. Incidence is represented in pink and Otolaryngologists in blue. Only counties included in the SEER registries have data available.

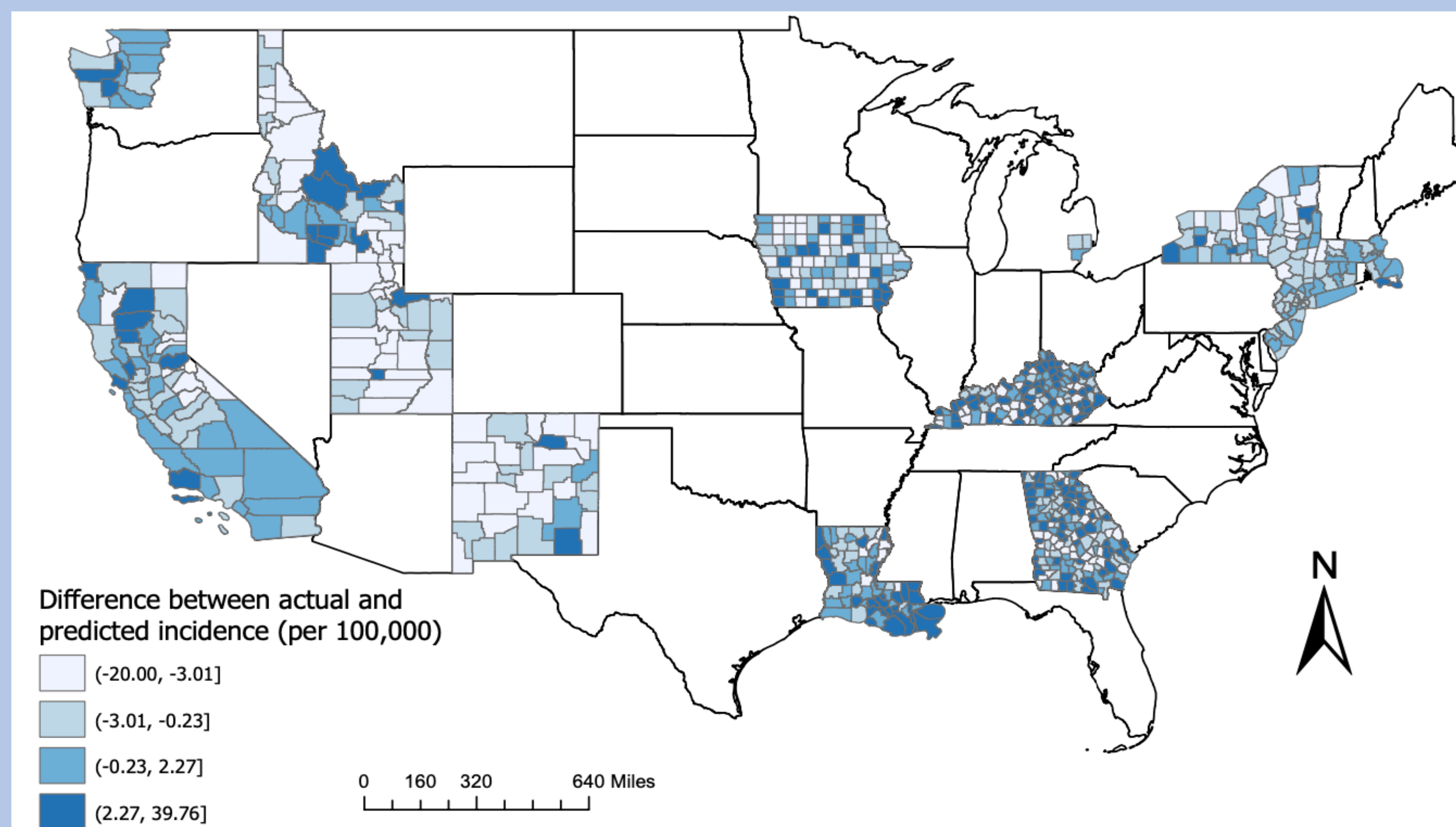


Figure 2. Differences between predicted and actual county incidence of head and neck cancer.

Methods

Study Design: Retrospective cohort database study that analyzed United States county-level HNC cases from 2010-2016.

Databases: The Surveillance Epidemiology and End Result (SEER), Area Health Resource File (AHRF), and American Community Survey (ACS) databases.

Outcome Measures:

Primary outcome: county-level incidence rate.

County Descriptors: Median age, population, the proportion of black and white race, the proportion with Hispanic ethnicity, median income, and proportion uninsured were included in a multivariable model, except social deprivation index (SDI) which was collinear with the other socioeconomic variables.

Statistical Approach: 1) Descriptive statistics for county cohort 2) Associations with county-level incidence after adjustment for population size were assessed by univariable and multivariable Poisson regression models with an offset for county population. 3) Separate sensitivity analysis for the oropharyngeal site.

Results

- Compared to counties with no Otolaryngologist, those with 1-10 had a 19.6% (95% CI: 17.6-21.7%) lower incidence
- Those with 11 or more otolaryngologists had a 41.5% (39.7-43.4%) lower incidence.
- A higher incidence was associated with higher mean age (3.68% increase in cases, CI: 3.46-3.89%), white (1.71%, CI: 1.08-2.35%), and black (1.20%, CI: 0.40-2.00%) race, and a higher percentage of smokers (1.36%, CI: 1.17-1.55%) in the population.
- Sensitivity analysis for oropharyngeal cancer revealed similar risk factors, but a greater effect size of white race (5.91%, CI: 4.37-7.46%).

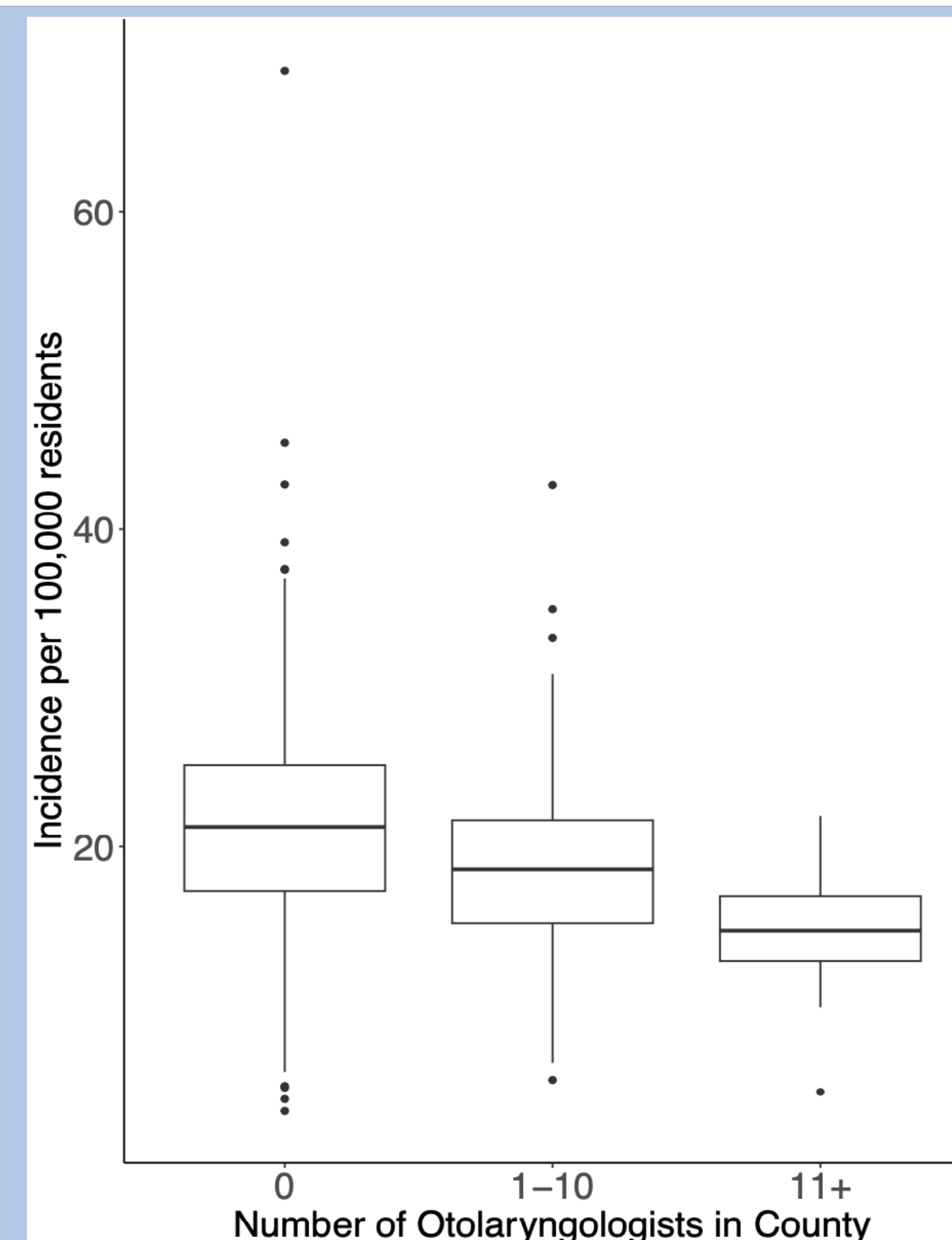


Figure 3. County HNC incidence by number of Otolaryngologists.

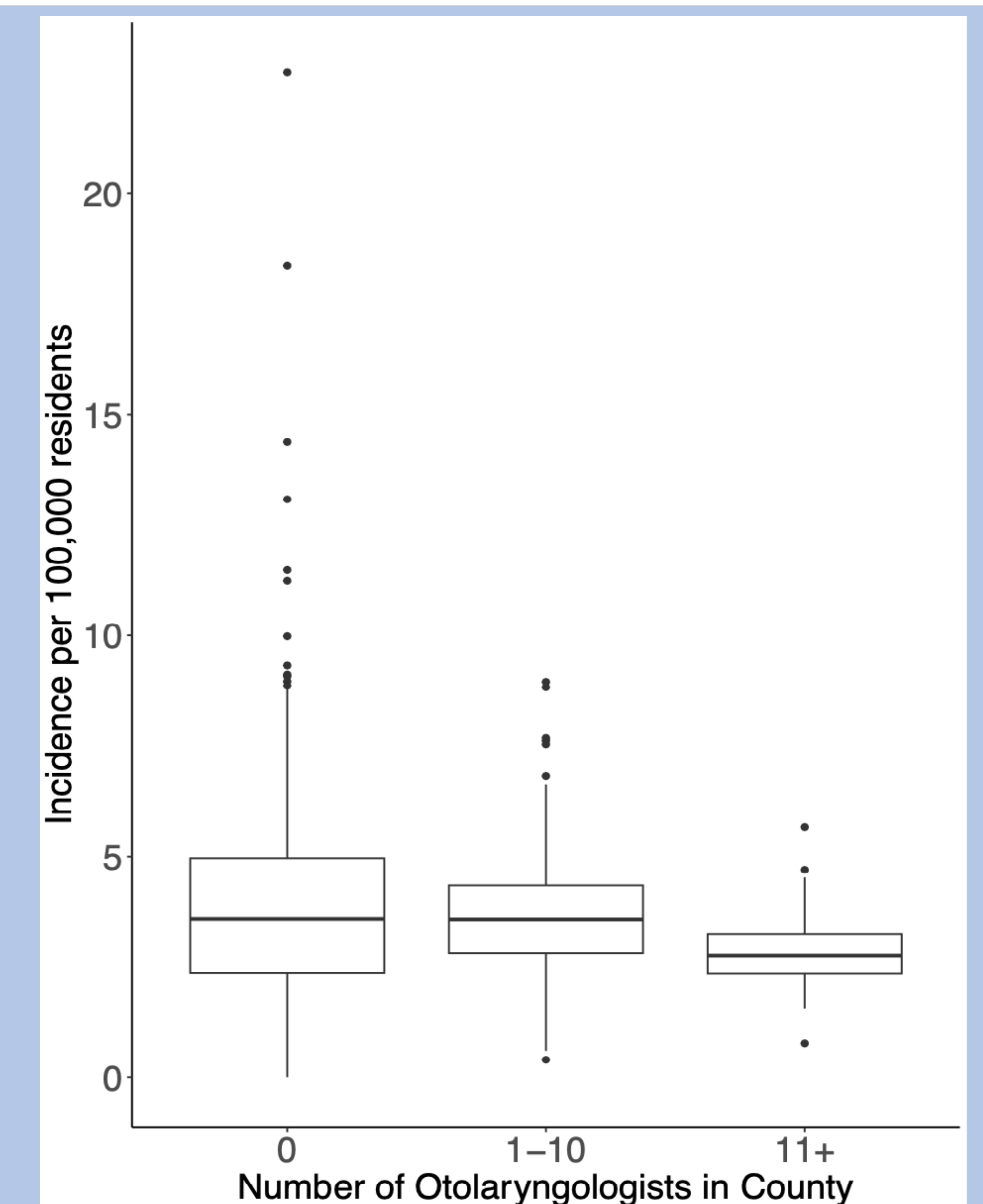


Figure 4. County oropharyngeal cancer incidence by number of Otolaryngologists.

Conclusions

The distribution of otolaryngologists is inversely related to HNC incidence and may currently be inadequate to address the rising incidence of HNC in certain populations.