**Spatiotemporal and Socioeconomic Relationships Between Lung Cancer Histologic Type and COVID-19 in Texas Between 1995 and 2015**

**Abstract**

In the United States, lung cancer has the second highest incidence rate and the highest mortality rate of any cancer. This study investigated county-level spatial and temporal trends of four lung cancer histologic types in the state of Texas between 1995 and 2015. In addition, its socioeconomic patterns and associations with the novel COVID-19 pandemic were analyzed. The results were then published on an online interactive dashboard for the purpose of expanding the current knowledge of public health leaders and future research. A combination of the Bernardinelli and Leroux models was used to find the relative risk (smoothed, modeled version of SIR) for each county in each year of the study. Implementation was by R’S INLA software, which is a faster alternative to MCMC sampling for Bayesian models, conducted via a Laplace approximation of the marginal posterior distribution. Although most lung cancer types have been trending downward in recent years due to decreased cigarette smoking use, adenocarcinoma has seen a rise in the last 20 years, driven mostly by females. The areas of the highest modeled relative risk for all years of the study tended to be in the eastern region of the state. While there were no significant associations between relative risk and county-level poverty rate/ COVID-19, the more metropolitan that a county was, the higher its risk, relative to the rest of the state, for lung cancer.