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[Lung Cancer](#). 2013 Oct;82(1):55-62. doi: 10.1016/j.lungcan.2013.06.018. Epub 2013 Jul 30.

Spatial and Temporal Distributions of Lung Cancer Histopathology in the State of Maine

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Abstract

Maine has among the highest rates of lung cancer in the United States (US). Maine serves as a geographical representation of US rural communities, and their associated health disparities. As the key risks of tobacco use decrease and radon abatement increases, previously obscured environmental exposures may measurably contribute to the attributable risk fraction of lung cancer. To generate hypotheses of novel environmental exposures associated with lung cancer, we investigated if there was non-random spatial distribution of lung cancer in Maine. Case data (n = 14,038) between 1995 and 2006 were obtained from the Maine Cancer Registry. Population data were obtained from the 2000 US Census. We assessed the spatial distribution of lung cancers among white cases by histopathology subtype [non-small cell lung carcinoma (NSCLC): adenocarcinoma (n = 3680), squamous cell (n = 2801) and large cell (n = 1195); and small cell lung carcinoma (SCLC) (n = 1994)], using spatial scan statistic, assuming a discrete Poisson distribution adjusted for age and population density. Because of time-dependent trends in lung cancer differential diagnostic criteria, we repeated our analyses, limiting it to 2002-2006. While SCLC rates were equivalent across the state, we identified discrete regions with elevated rates of adenocarcinoma among females and squamous cell carcinoma among males. Independent of gender, the most striking geospatial observation was elevated large cell lung cancer specifically in one of the poorest counties in the US. A selective spatial distribution of large cell lung cancer has not been previously reported. More research is needed to identify factors inducing large cell carcinoma pathology, and to determine if in rural communities health disparities are associated with increased risk for this diagnosis.

Keywords: Lung cancer; New England; Radon; Subtype; Wood.

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