The Geography of Chronic Obstructive Pulmonary Disease Across Time: California in 1993 and 1999

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Abstract:

We investigated changes in the geography of Chronic Obstructive Pulmonary Disease (COPD) hospitalization charges in California over the period of 1993 and 1999. There is little information available at less than the county level for this increasingly costly disease in California. We found, using a uniform grid unit method, (4X4 and 16X16 mile urban and rural grids respectively, using zip codes as the base source for information) positive relationships between COPD charges and age, percentage Hispanics, and number of tobacco outlets. Further, inverse relationships were found between the incidence of COPD charges and income level and the percentage of the population with undergraduate degrees. When examining “hotspot” grid units, we found that COPD was clearly associated with minority/immigrant status and depressed socio-economic measures, suggesting the need for better smoking interventions among persons of color and the poor. In summary, the Los Angeles area had a marked increase in hotspots both in 1993 and 1999, and also experienced a significant increase in COPD hospitalization charges between 1993 and 1999. Transforming zip code level data into a uniform grid allows for relatively simple comparisons across time, without such a transformation, such temporal comparisons are extremely difficult to implement. This more, “fine grained” geographical analysis allows public health planners a better platform than is typically available to assess changes in COPD.

Key Word:
chronic obstructive pulmonary disease, spatial analysis, uniform grid, tobacco related disease, hot spots