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CANCER PREVENTION, HEREDITARY GENETICS, AND EPIDEMIOLOGY

Effects of county-level attributes on geographic variation in female breast cancer mortality rates across counties in United States.

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Abstract Disclosures

Abstract

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Background: Though studies have examined geographic disparities in breast cancer mortality among United States (U.S.) counties, county-level risk factors were not accounted for. The aim of this study is to efficiently map the spatial association between female breast cancer mortality rates & socioeconomic attributes across U.S. counties for identifying high risk geographical clusters in terms of socioeconomic attributes. **Methods:** County-specific age standardized breast cancer mortality rates for women ≥20 years in the U.S. were obtained for 3,109 counties in 48 contiguous states from Surveillance Epidemiology and End Results program from 1990-2012. County-level attributes such as percentages of Hispanic white, Non-

Hispanic white, Non-Hispanic black, < high school education, below 200% poverty, urban, foreign born, language isolation, women aged ≥ 40 years with mammography within last 2 years, and median household income were gathered from U.S. decennial census. Factor analysis condensed county attributes into three factor covariates namely Hispanic immigrants, health care access among urban high socioeconomic population, and non-Hispanic black unemployment. Spatiotemporal analysis was carried out by structured additive regression model to incorporate spatial functions & Markov chain Monte Carlo simulation techniques. **Results:** Moran's index suggested existence of spatial dependence for breast cancer mortality among U.S. counties. As mammography screening, %urban population, % with high socioeconomic status and non-Hispanic black unemployment increased in counties of the Southwest region, Rocky mountain region and those in the western border of Midwest region of U.S, risk of breast cancer mortality increased significantly above the national average. As the Hispanic immigrant culture increased, counties of Midwest region of U.S had significantly higher mortality rates compared to national average. **Conclusions:** These initial results describe socio-economic, cultural, and healthcare access factors for observed geographic variations in female breast cancer mortality, and in turn, could support a stronger theoretical basis for public health policy.

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