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**Where Should the Cancer Control Interventions Target: A Geospatial Hotspot Analysis for Major Cancer Mortality 2018-2022 in the U.S.**

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**1. Background**
Identifying changes in geographical disparities of cancer mortality reveals locations where national and local cancer prevention and control efforts should be focused/targeted. Public cancer surveillance data has limitations (e.g. data suppression for small areas).

**2. Goals**
We aim to use recent national mortality data to demonstrate the geographical disparity of major cancer mortality rates in the U.S. and its shift compared to previous data.

**3. Solutions and Methods**
This cross-sectional study used the 2018-2022 county-level mortality rates of colorectal, lung, breast, and prostate cancer from the CDC Wide-ranging ONline Data for Epidemiologic Research (WONDER) Underlying Cause of Death data. Counties with suppressed death counts were imputed by spatial error regression models using common cancer risk factors as predictors. Getis-Ord Gi* statistics were used to evaluate spatial clustering of county mortality. Identified hotspot counties were visualized and compared with literature for hotspot pattern change.

**4. Outcomes**
A total of 3,108 U.S. mainland counties were included. Cancer mortality rates were significantly higher in 244 counties for colorectal, 456 for lung, 147 for breast, and 180 for prostate. Hotspot areas were central Appalachia (for colorectal and lung), Lower Mississippi Delta (for colorectal, breast, and prostate), Midwest (for colorectal and lung), north Michigan/Wisconsin (lung and prostate), north Florida (for lung), and the West (for prostate).

**5. Lessons Learned and Future Directions**
West central Appalachia and Lower Mississippi Delta continue to be hotspots for major cancer types, while previously identified eastern North Carolina/Virginia hotspots shrunk, east Oklahoma and north Florida emerged as the new hotspot for lung cancer, and several hotspots emerged in the West for prostate cancer. This study updated the analyses for geospatial disparity in major cancers' mortality since 2018 – illustrating recent changes in the disparity pattern and pinpointing areas that cancer prevention and control efforts should target. The analysis methods for suppression imputation and spatial clustering can be used for cancer mortality in underprivileged population or with concerning trends.

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**Figure**

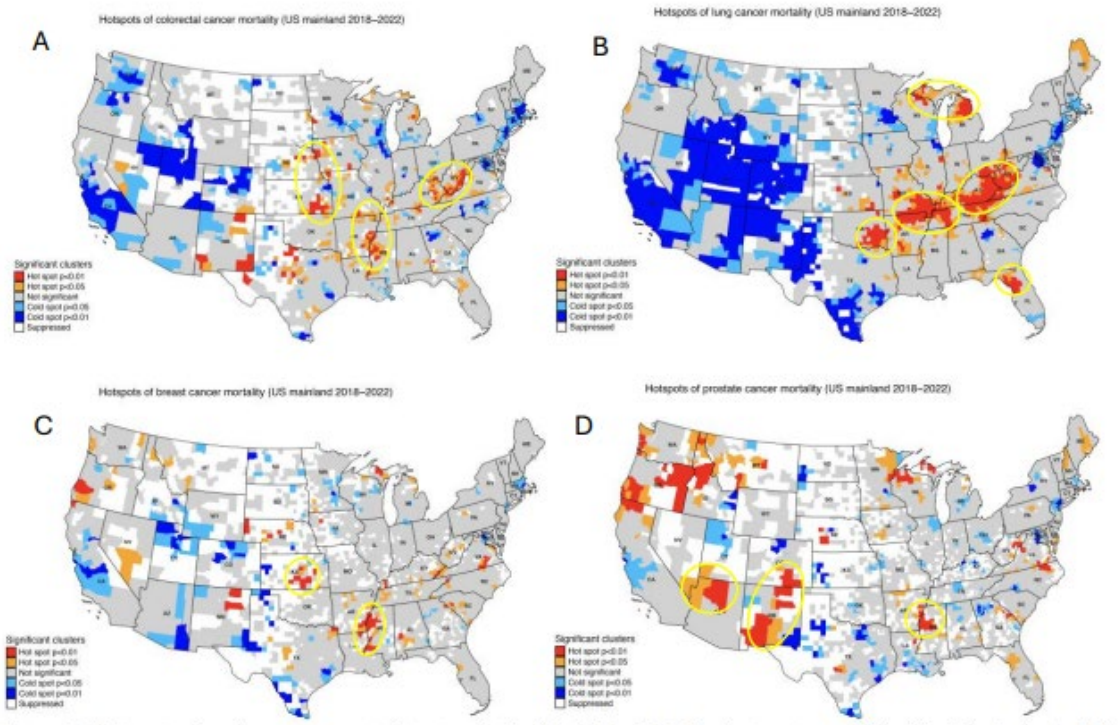


**Figure 1.** Hotspots of major cancer mortality rates in the US, 2018–2022. The hotspots were identified via Getis-Ord Gi* statistics and permutation tested for statistical significance. Hotspot clusters were manually circled. (A) colorectal cancer; (B) lung cancer; (C) breast cancer; (D) prostate cancer. Data from the CDC WONDER website and some counties are suppressed due to small death counts (5-year total between 1 and 9). Higher-resolution maps are presented in Figures S1-4.