A Novel Analysis on the Effects of Changes in the Social Vulnerability Index and Its Subcategories on Changes in Survival Rates for Six Common Cancers From 2000-2020

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The Social Vulnerability Index (SVI) measures health vulnerability through a composite score from 0-1 based on four subcategories: socioeconomic status, household characteristics, housing type, and racial and ethnic minority status. Lower SVI scores indicate better conditions. SVI factors can biologically impact health by altering gene expression, magnifying the need for further research. Previous studies linked static SVI to cancer survival rates; this study examines how changes in county-level SVI affect three-year survival for breast, cervical, colorectal, lung, melanoma, and prostate cancers from 2000-2020. Given past evidence that SVI and cancer survival are directly correlated, trends over extended time periods were hypothesized to follow the same pattern. SVI and Surveillance, Epidemiology, and End Results survival rate datasets underwent exclusion criteria and were categorized based on degree of change. Multinomial logistic regressions were employed to examine the direction of correlations between overall and subcategory-specific SVI values and cancer-specific survival rates. The findings revealed a non-uniform relationship between changes in SVI and cancer survival, with unexpected results such as direct correlations between increased racial and ethnic minority vulnerability and increased survival rates in breast and prostate cancers, partially disproving the original hypothesis. The analysis underscores the varying influence between different SVI factors across cancers, possibly aiding in creating tailored policy interventions that address multifaceted health vulnerabilities. These insights may also help policymakers identify target communities for investment across cancer types. Further research is required to expand these findings to broader populations.

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