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Cancer Data Registry of Idaho, Johnson CJ, Pollard J, Berreth T, Cariou C, Mackey M, Carson S

Collaborative Approach to Identifying Disparate Populations in Idaho using Social Determinants of Health Measures

NATIONAL PROGRAM OF CANCER REGISTRIES SUCCESS STORY

SUMMARY: "Your zip code is a better predictor of your health than your genetic code."1 The Notice of Funding Opportunity for the current 5-year CDC project period for NPCR registries included the long-term outcome of increasing collaboration with other cancer and non-cancer chronic disease programs at state and local levels. The Cancer Data Registry of Idaho, Idaho Hospital Association, collaborated with the Division of Public Health (DPH), Idaho Department of Health and Welfare, on a project to measure disparities and geographic patterns in disease outcomes by social determinants of health. The Idaho Comprehensive Cancer Control Program selected cancer outcomes of interest and DPH selected non-cancer outcomes. We selected measures of social determinants of health together.

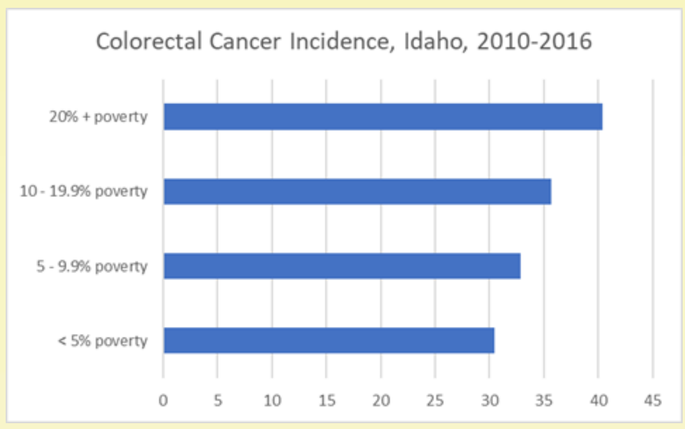
We found significant relationships between measures of social determinants of health and mortality and cancer incidence outcomes: often, there were higher rates of the disease outcomes in areas with lower socioeconomic position (SEP). In addition, much of the geographic variation in outcomes was explained by differences in social determinants of health. Results of the analyses were shared with Division of Public Health program staff in areas including cancer, diabetes, and cardiovascular disease.

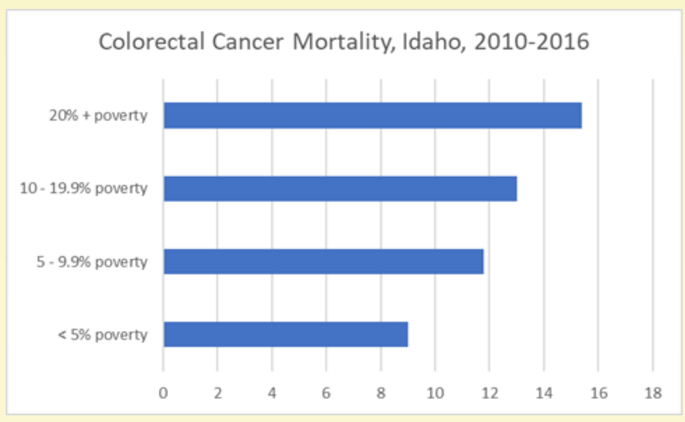
Similar relationships by social determinant measure were found for several cancer incidence and cancer mortality outcomes and also for non-cancer mortality outcomes with shared risk factors. This helped to identify and prioritize areas for public health interventions at state and local levels.

CHALLENGE: An overarching goal of Healthy People 2020 is to "achieve health equity, eliminate disparities, and improve the health of all groups." Although social determinants have a great impact on health, most public health surveillance systems, including population-based cancer registries, do not generally collect information on individual-level SEP. This creates a challenge for measuring socioeconomic inequalities in health and for planning and evaluation of programs designed to lessen health disparities.

SOLUTION: Applying methods derived from the Public Health Disparities Geocoding Project, we used area-based socioeconomic measures of inequalities in health. We geocoded mortality and cancer incidence data; aggregated deaths, cases, and population at the geographic level of census tract; calculated mortality and cancer incidence rates stratified by area-based socioeconomic measure, and mapped the results. Statistical analysis included multilevel modeling using cancer risk factors and spatial hot spot detection.

RESULTS: We often found higher rates of mortality and cancer incidence in areas with lower area-based SEP. For example, colorectal cancer incidence and mortality were significantly higher among persons living in poorer census tracts compared to residents of the most affluent census tracts. Other measures of area-based SEP showed similar relationships, including education, household income, and home ownership.





In a second example, we used a spatial cluster detection technique, to identify geographic areas with significantly higher rates of breast cancer incidence. After adjusting for SEP measures, there were no longer clusters of high rates. This analysis supports the National Breast and Cervical Cancer Early Detection Program strategy to use local-level data with GIS mapping to identify priority populations and communities of need. The analytic framework of multilevel modeling using cancer risk factors and spatial hot spot detection was also applied to lung cancer incidence using smoking, radon, air pollution, and SEP data.

SUSTAINING SUCCESS: We aim to conduct annual geocoding of cancer incidence and mortality data and continue to monitor disparities in health outcomes. Likewise, we will continue to share results with health program staff to aid in program planning and evaluation. It is acknowledged that interpretation of the results of these analyses for incidence of scrutiny-dependent cancers may be challenging.

In partnership with the Division of Public Health, the analytic framework was applied to additional priority areas using geocoded mortality data, including suicide, and opioid overdose. A future direction is to couple different outcomes with shared risk factors to identify geographic areas to target for public health interventions.