

Exploring Drivers of Excess Cancers: An Example From Iowa

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1. Background

The catchment area of the Holden Comprehensive Cancer Center is the state of Iowa. The cancer incidence rate in Iowa has been rising since 2013, and Iowa now has the second highest cancer incidence in the U.S.

2. Goals

We conducted analyses to determine which cancer sites were the top drivers of the high and increasing rate, as well as which counties were experiencing high rates and excess cases, to inform cancer center activities and priorities.

3. Solutions and Methods

Using data from the Iowa Cancer Registry, we examined longitudinal incidence rates by cancer site and calculated linear trends to determine which cancers were driving Iowa's excess cancers. Differences in the annual rate of change for Iowa were compared to the U.S. average, using data from CDC Wonder. To evaluate where age-adjusted incidence rates were increasing, we implemented a Bayesian disease mapping model at the county level and examined change in county-level age-adjusted rates over time and excess cancer cases by county. Finally, we examined changes in rates by age group and county population size.

4. Outcomes

Four cancer types were primarily driving Iowa's excess cancer rates: female breast, prostate, lung, and melanoma. Spatial patterns differed among these cancers: breast cancer rates were highest in population centers, prostate cancer rates were highest in the northwest, melanoma across the northern third of the state, while lung cancer was highest in the southern 3 tiers of counties. Several counties showed both higher excess cases, as well as higher age-adjusted rates and rate differences over time.

5. Lessons Learned and Future Directions

This study has implications for cancer prevention and control in Iowa, and for the priorities of the Holden Comprehensive Cancer Center. Additionally, the methods presented can be used by cancer registries and/or cancer center community outreach and engagement teams to investigate high and/or increasing cancer rates and describe catchment area cancer burden.