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Mortality Trends from Breast Cancer and Ischemic Heart Disease in US Adults: A Retrospective Analysis 1999-2024 with Projections to 2030

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Abstract

Background

Breast cancer (BC) is the most common cancer in women globally, and ischemic heart disease (IHD) is a major cardiovascular complication among BC patients. This study evaluated BC- and IHD-related mortality trends from 1999 to 2024 and projected rates through 2030.

Methods

Mortality data were extracted from the CDC WONDER database (1999–2024) for BC (ICD-10: C50) and IHD (ICD-10: I20–I25). Rates per 1,000,000 were stratified by age, sex, race/ethnicity, U.S. Census region, place of death, and urbanization (1999–2020). Temporal trends were analyzed via Joinpoint regression to estimate average annual percent change (AAPC). ARIMA, ETS, and Prophet models projected trends through 2030 with 95% prediction intervals.

Results

Among 90,662 recorded deaths (1999–2024), overall mortality declined significantly (AAPC: -2.94%; 95% CI: -3.20% to -2.76%; $p < 0.001$). Significant reductions occurred in females (-2.62%), males (-1.33%), Non-Hispanic (NH) White (-2.95%), NH Asian (-2.44%), NH Black (-2.27%), and Hispanic/Latino (-2.13%) populations. Regionally, declines were largest in the Northeast (-3.78%), Midwest (-3.28%), West (-3.22%), and South (-1.79%). Mortality decreased in adults aged ≥65 years (-3.36%) and 45–64 years (-0.95%), but remained stable in those aged 25–44 years (0.99%; $p = 0.120$). Decreases were observed in both metropolitan (-3.42%) and non-metropolitan areas (-2.47%). From 2025 to 2030, overall mortality is projected to decline from 11.48 to 10.84 per 1,000,000 across demographic groups. However, from 2021 to 2030, rates are projected to increase in metropolitan areas (13.27 to 19.11) while decreasing in non-metropolitan areas (13.40 to 9.38).

Conclusion

BC- and IHD-related mortality significantly decreased from 1999 to 2024 across most demographics, though declines were absent in adults aged 25–44 years. Despite overall projected declines through 2030, the projected increase in metropolitan areas highlights emerging disparities requiring targeted cardiovascular prevention.

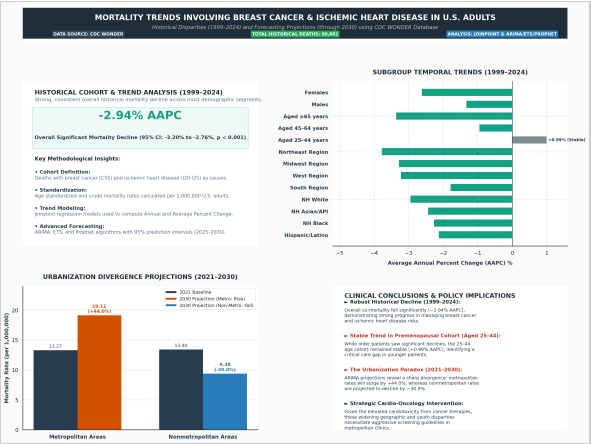


Figure 1. Mortality Trends involving Breast Cancer & Ischemic Heart Disease in U.S. Adults

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