



Mortality Trends in Lymphoid & Hematopoietic Malignancies With Circulatory System Disease Involvement, United States, 1999–2024

A Cardio-Oncology CDC WONDER Multiple-Cause Mortality Analysis

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414,134

Deaths — lymphoid/hematopoietic malignancy (C81–C96) with circulatory disease (I00–I99), 1999–2024

8.21 → 6.83

Overall AAMR per 100,000 (1999 → 2024) · AAPC –0.70%

+3.54%

Overall APC during the 2018–2021 surge (P<0.001)

–2.12%

Northeast AAPC — the steepest long-term decline

Background

Lymphoid and hematopoietic malignancies frequently involve the **circulatory system** — via shared cardiovascular risk factors, treatment-related cardiotoxicity, and aging. We evaluated 26-year trends in circulatory-disease involvement among these cancer deaths.

Methods

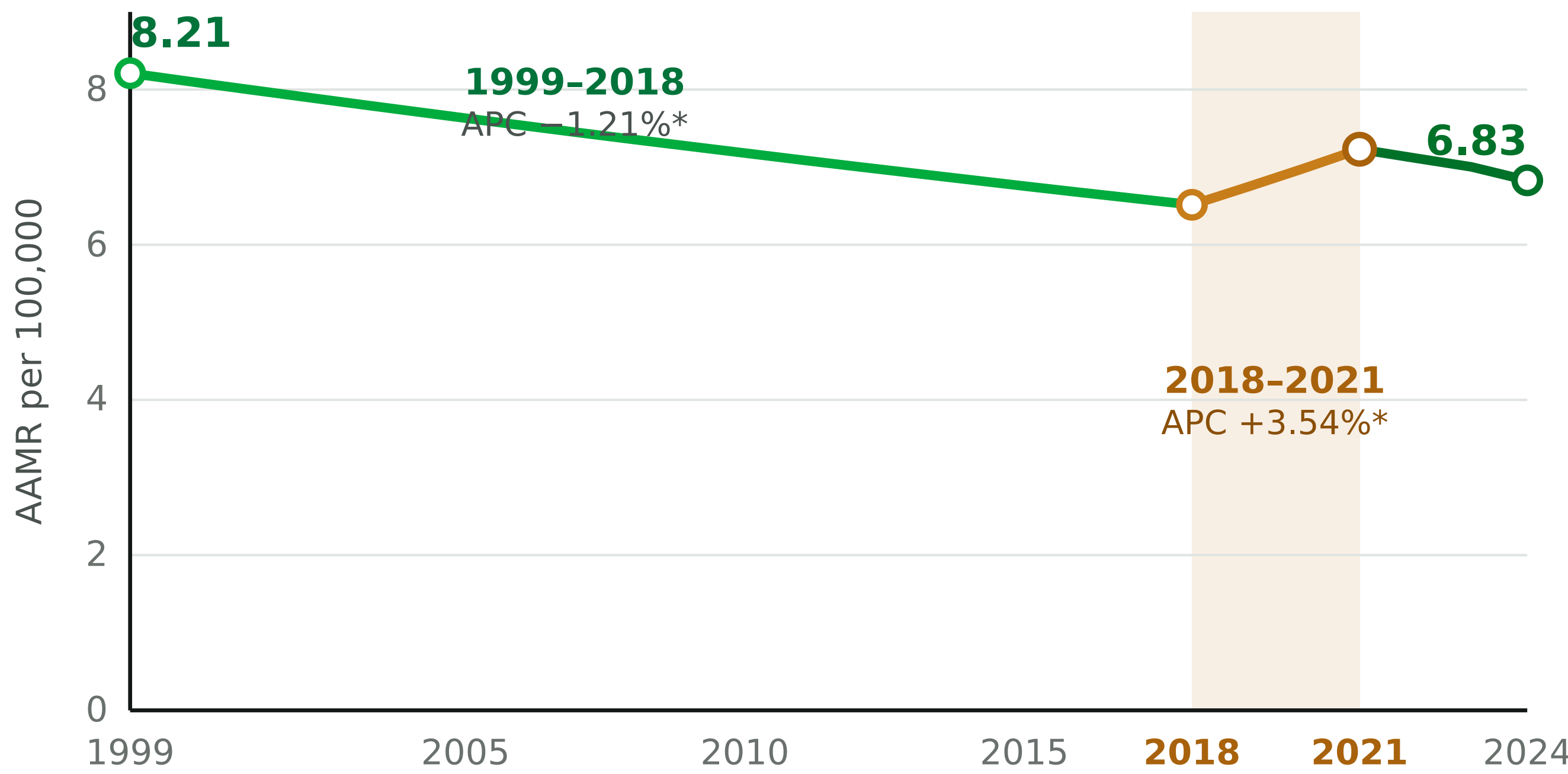
- ◆ **Design.** Cross-sectional mortality analysis, CDC WONDER Multiple Cause of Death, 1999–2024.
- ◆ **Case definition.** Underlying cause lymphoid/hematopoietic malignancy (ICD-10 **C81–C96**) with circulatory disease (**I00–I99**) as a multiple cause.
- ◆ **Rates.** AAMR per 100,000, standardized to the 2000 U.S. Standard Population.
- ◆ **Trends.** Joinpoint APC/AAPC by sex, age, race/ethnicity, region, urbanization.

Where progress stalled

American Indian/Alaska Native populations showed **no significant improvement**, and the **West** stayed relatively flat. **White** individuals saw a recent rise after 2018 (APC +4.51%) — a cardio-oncology signal worth watching.

Decline, a 2018–2021 surge, then decline

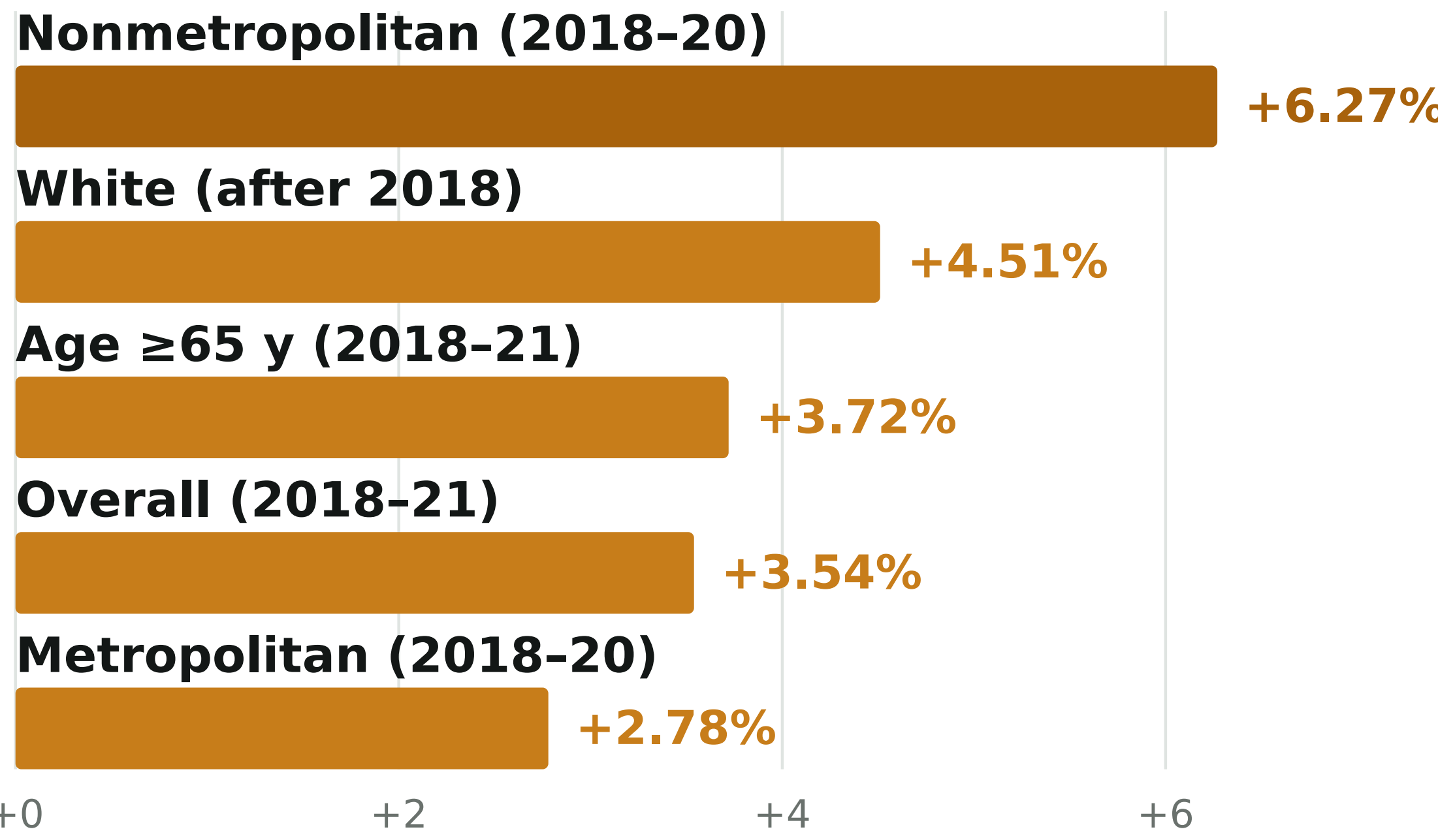
Overall AAMR, 1999–2024 — three Joinpoint phases



*P<0.001. A steady 1999–2018 decline (–1.21%/yr) reversed to a sharp 2018–2021 surge (+3.54%/yr, shaded, overlapping the COVID-19 era), then resumed declining (–1.58%/yr, P=0.0004).

The surge hit some groups harder

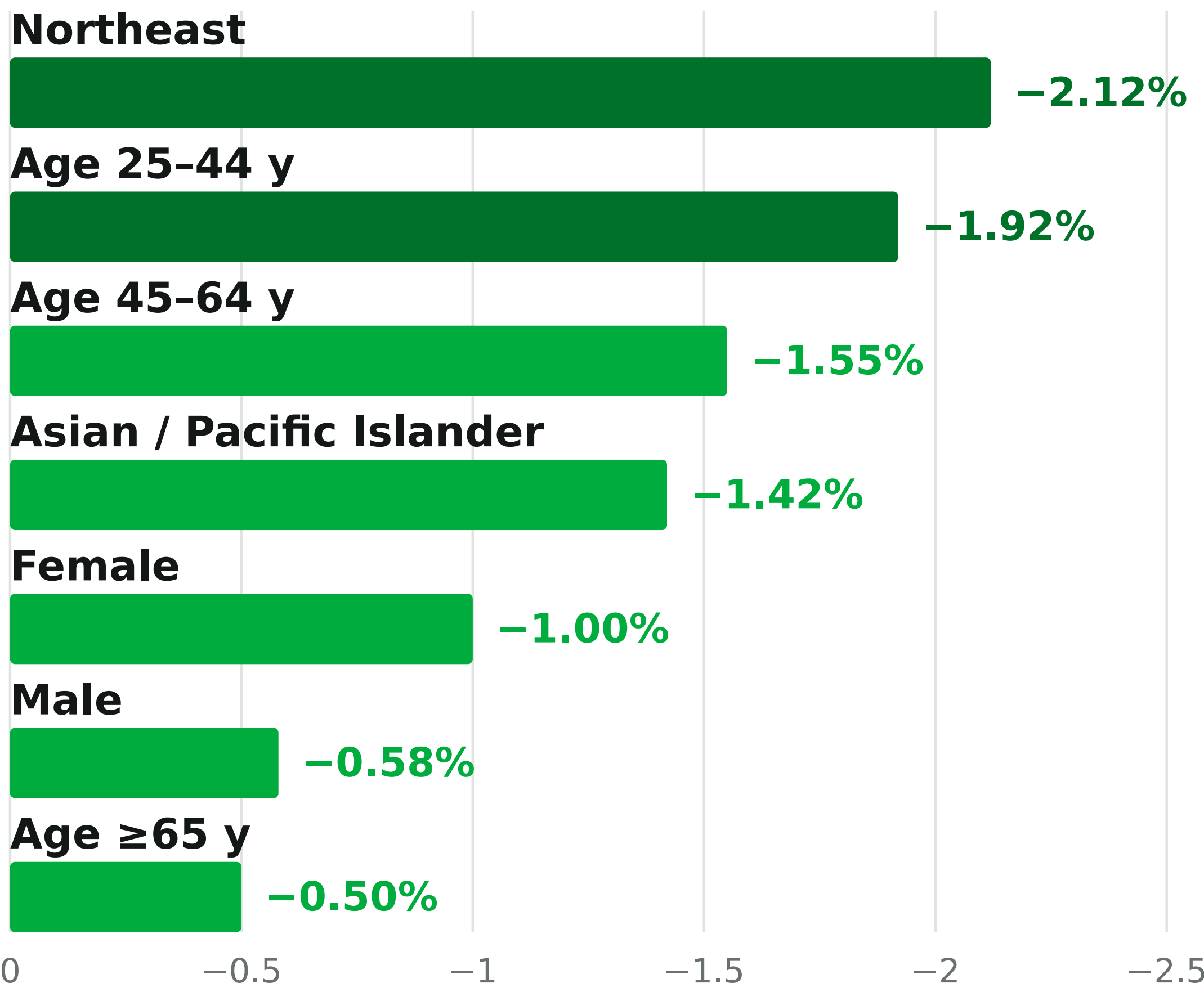
APC during the 2018–2021 surge, by group



Annual % change during the surge window. Nonmetropolitan areas rose more than twice as fast as metropolitan areas (+6.27% vs +2.78%).

Long-term decline by group

Average annual % change (AAPC), 1999–2024



Younger adults, the Northeast, and Asian/Pacific Islander populations improved most; adults ≥65 y and males improved least. (See left for groups without improvement.)

Conclusions

- ◆ Overall mortality declined across 1999–2024, but a **2018–2021 surge** interrupted the trend.
- ◆ Persistent **racial, geographic, and rural** disparities remain — nonmetropolitan areas and White populations rose most in the surge.
- ◆ Findings support enhanced **cardio-oncology surveillance** and targeted cardiovascular risk-reduction in high-risk populations.