

Fatal Intersections: Sepsis and Leukemia Mortality Trends in the United States, 2001–2020

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INTRODUCTION

- Sepsis remains a major cause of death among leukemia patients, driven by profound immunosuppression from both the disease and its treatment.
- Up to 80% of chemotherapy patients develop febrile neutropenia, often progressing to sepsis
- Whether advances in leukemia therapy have reduced sepsis-related mortality equitably across all populations remains unclear.

OBJECTIVE

- To characterize national trends in sepsis-related leukemia mortality (2001–2020) and identify key disparities and inflection points

METHODS

- Cross-sectional, retrospective trend analysis using the CDC WONDER Multiple Cause of Death database, 2001–2020.
- Decedents with lymphoid (ICD-10 C91) or myeloid (C92) leukemia as the underlying cause and septicemia (A40–A41) as a contributing cause of death.
- Outcome: Age-adjusted mortality rate (AAMR) per 100,000
- Stratified by sex, race/ethnicity, census region, rurality
- Joinpoint regression used to detect trend changes, reporting Annual Percent Change (APC) and Average Annual Percent Change (AAPC) with 95% CIs

RESULTS

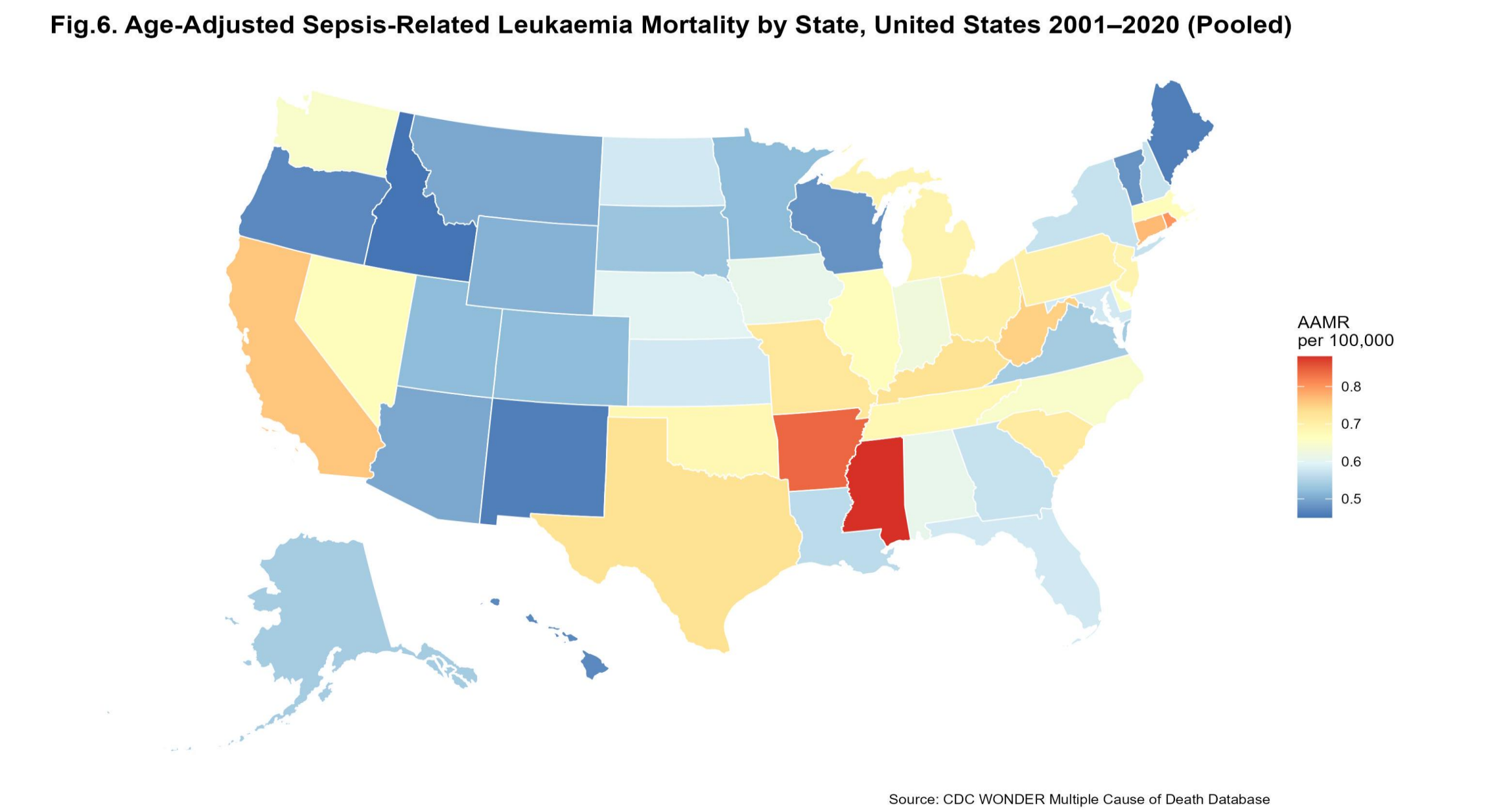
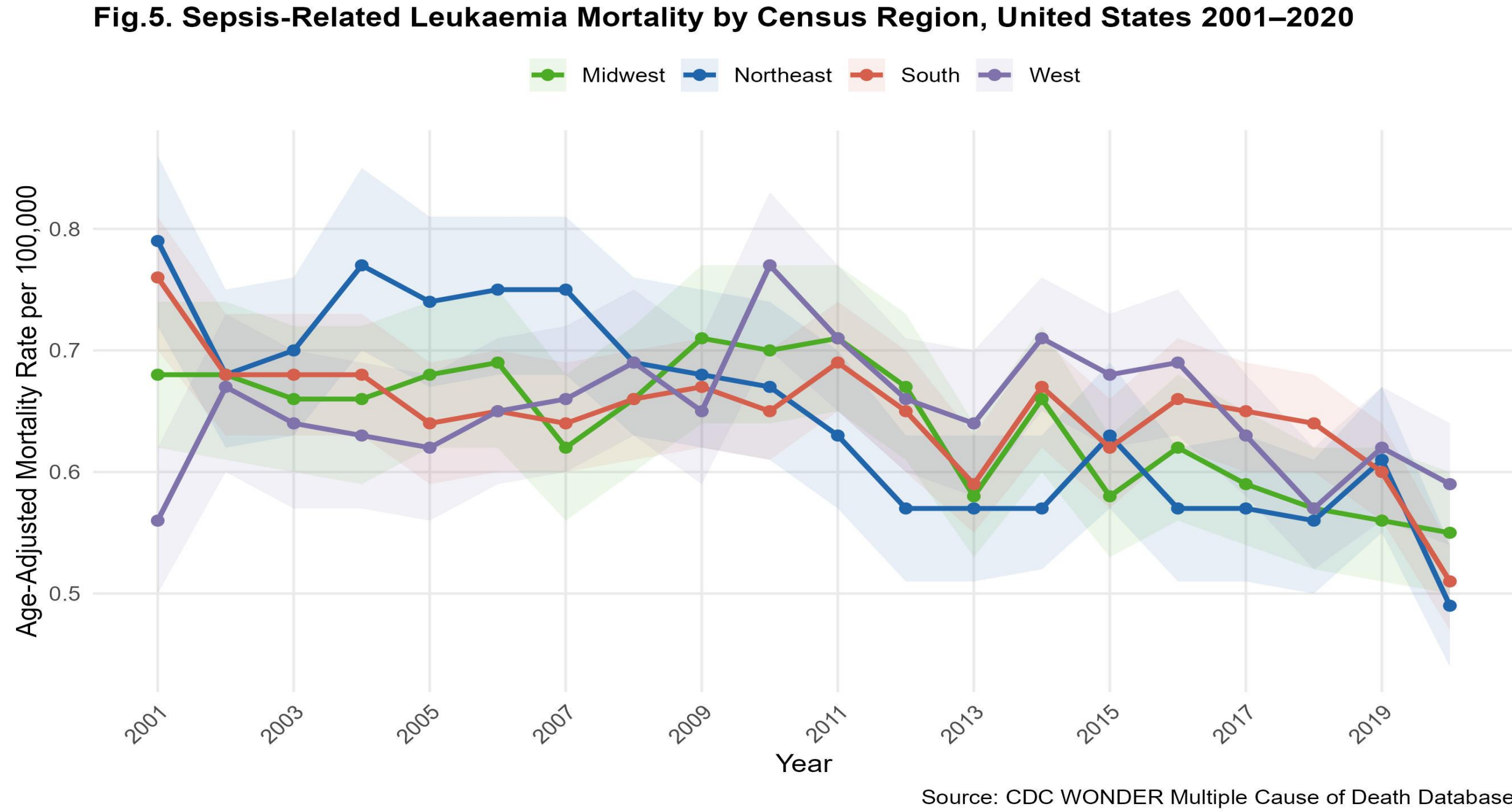
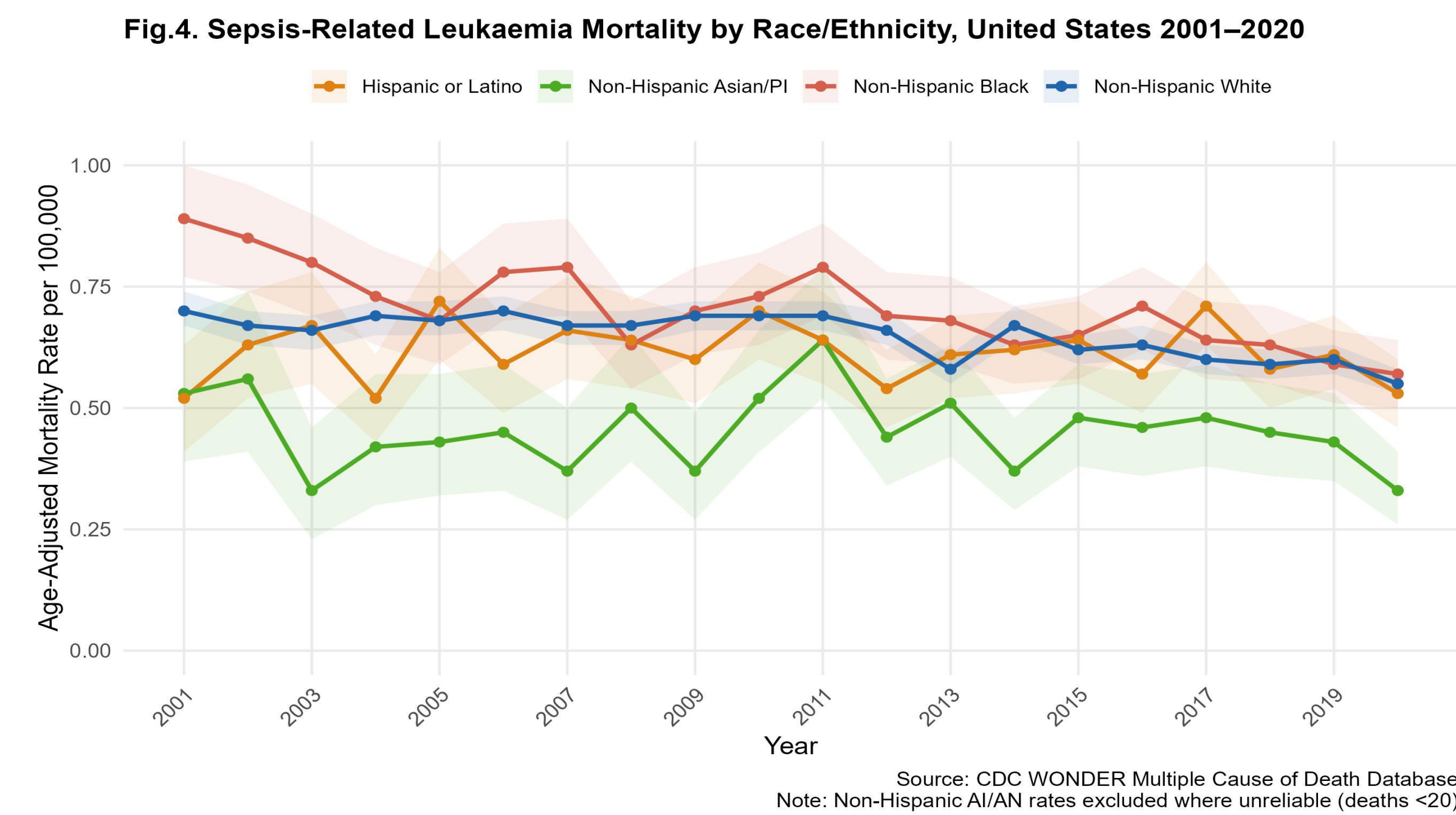
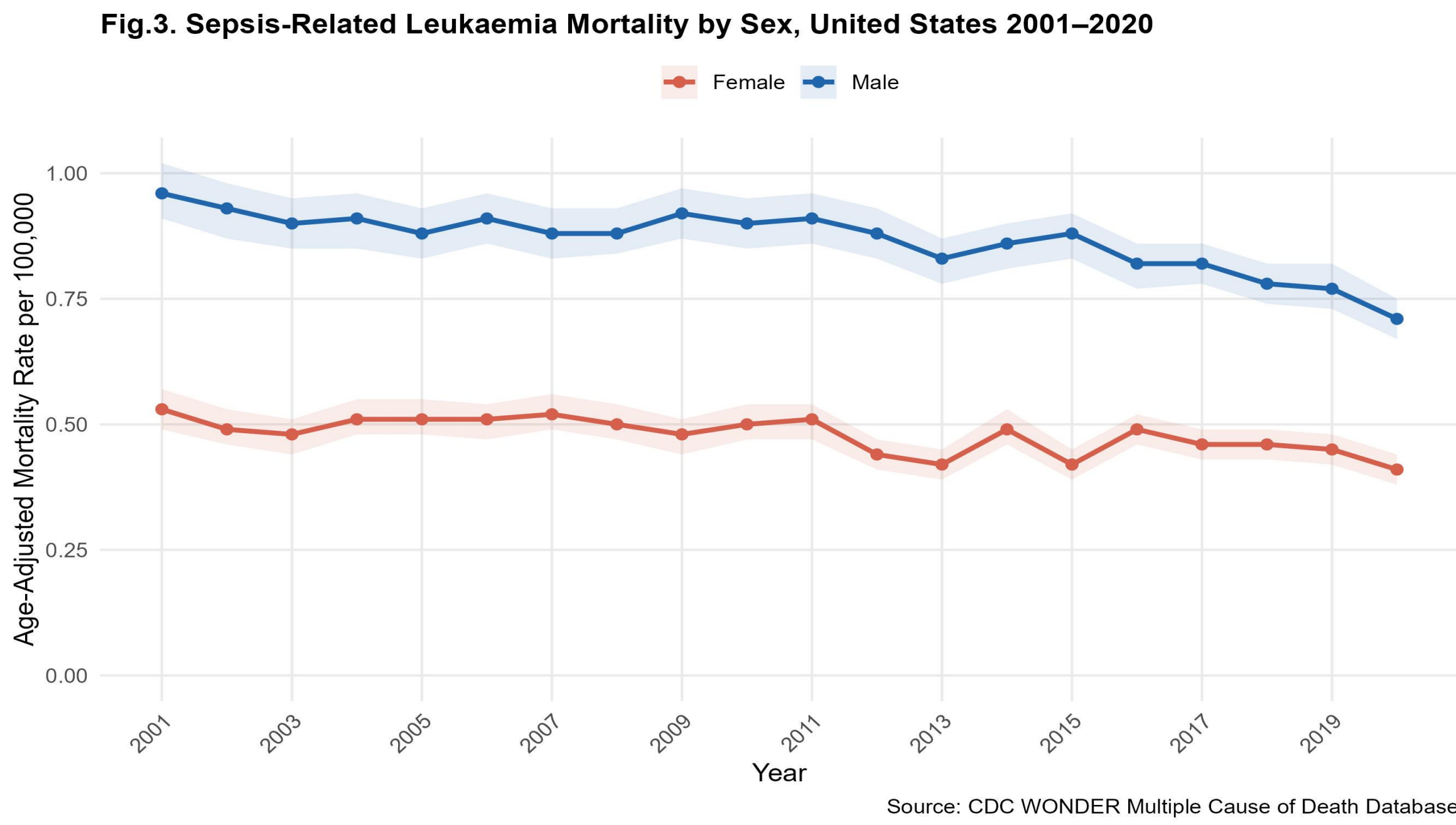
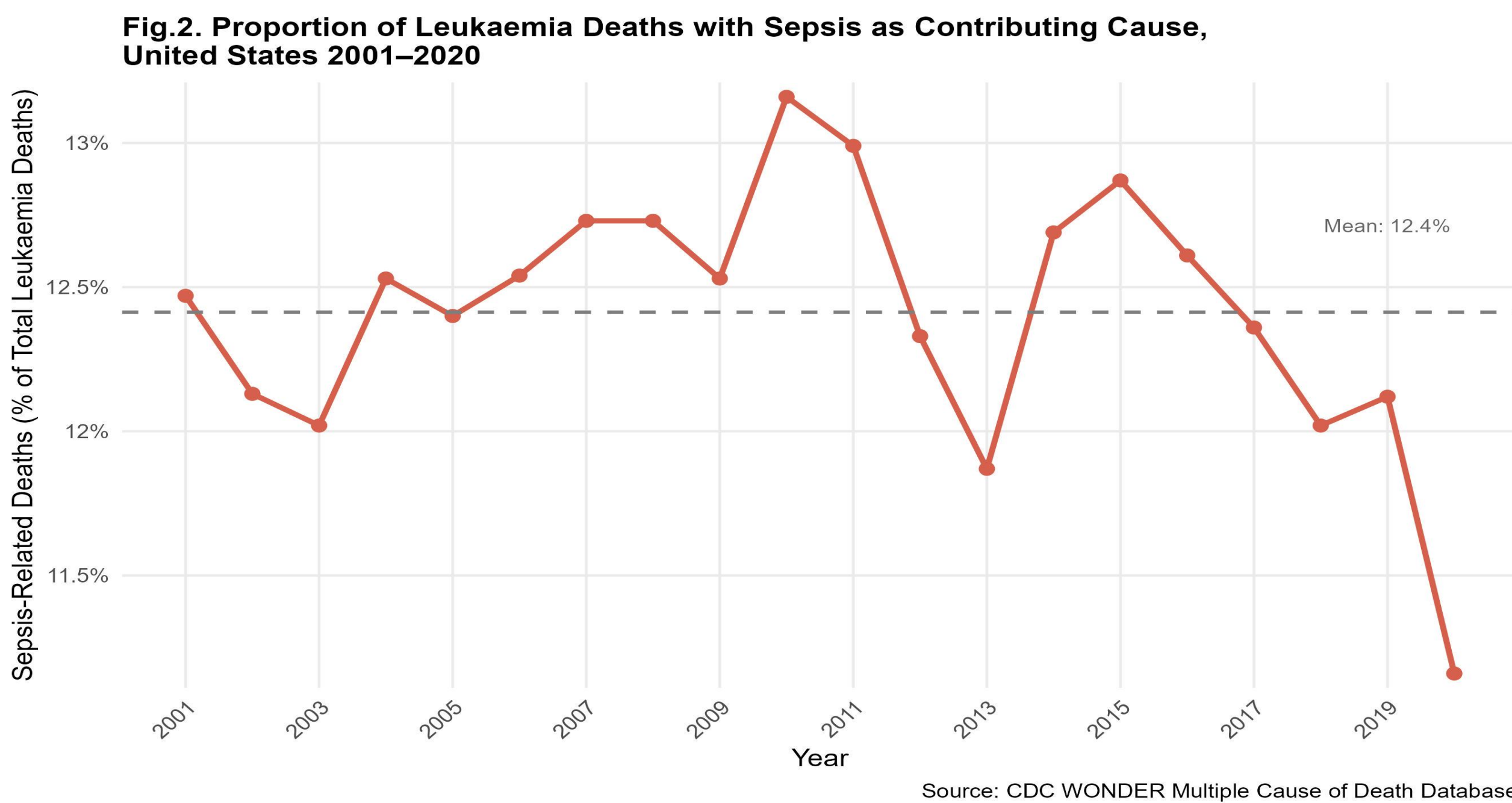
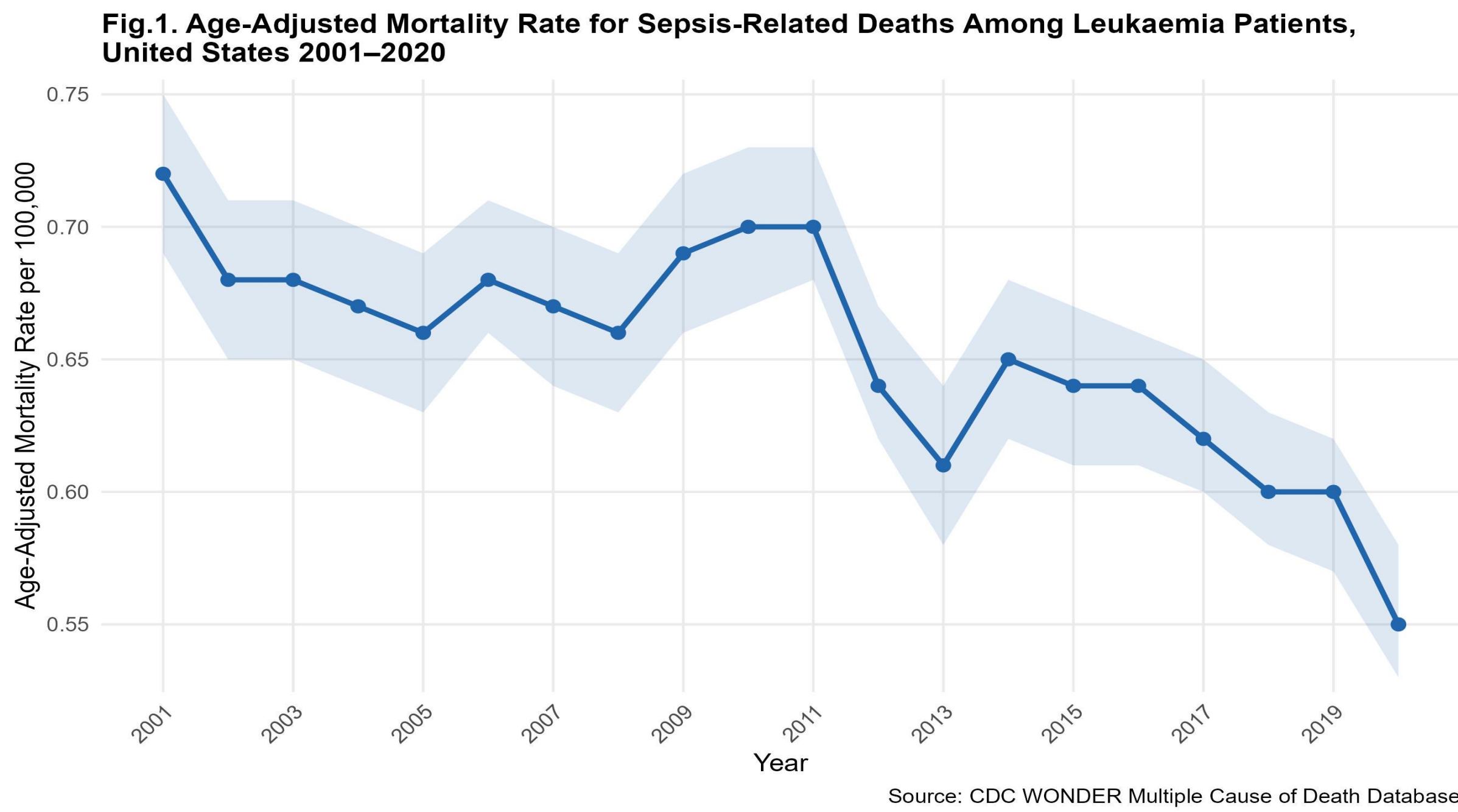
- A total of 43,654 sepsis-related leukemia deaths were identified; AAMR declined from 0.72 to 0.55 per 100,000 (–23.6%) over the study period (**Fig. 1**)
- Joinpoint analysis identified a significant inflection at 2010: stable trend 2001–2010, followed by significant decline through 2020
- Sepsis accounted for a mean of 12.4% of all leukemia deaths annually, with minimal change over 20 years (**Fig. 2**)
- Males had consistently higher AAMR than females; females declined steadily throughout, while males declined predominantly after 2015 (**Fig. 3**)
- Non-Hispanic Black individuals had the highest initial AAMR but the steepest decline, converging with other groups by 2020 (**Fig. 4**).
- Mississippi highest pooled state AAMR; the Northeast had the most consistent decline; the South was stagnant until 2018; the West showed no net change (**Fig. 5, 6**).

DISCUSSION

- Sepsis-related mortality among leukemia patients declined substantially from 2001–2020, with the steepest gains occurring after 2010
- Despite this improvement, sepsis remained a persistent contributor, accounting for ~1 in 8 leukemia deaths throughout the study period
- Disparities by sex, race/ethnicity, and region persist, indicating unequal distribution of these gains
- Findings support sustained, equity-focused investment in infection prevention and access to specialized care for leukemia patients

CONCLUSION

- Weekend admission may represent a modifiable healthcare system-level barrier to timely endoscopic care, and improving weekend procedural capacity may promote more equitable care and outcomes.



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