

Temporal Trends and Forecasting of Leukemia Mortality, Incidence, and Disability in Older Adults: United States, 1990–2050

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BACKGROUND

Leukemias are a heterogeneous group of blood malignancies and remain an important cause of cancer-related morbidity, mortality, and disability. This study assessed temporal patterns and future trends in the United States, with emphasis on older adults.

METHODS

GBD 1990–2023 data were analyzed. Age-standardized incidence (ASIR), mortality (ASMR), and disability-adjusted life-year (ASDR) rates were evaluated. Joinpoint regression estimated annual percentage changes (APCs), while ARIMA forecasting projected incidence and mortality through 2050.

OBJECTIVE

To characterize U.S. leukemia burden from 1990–2023 and forecast incidence and mortality to 2050.

RESULTS

5.09

2023 ASMR

11.81

2023 ASIR

131.98

2023 ASDR

25,929

Deaths ≥60 yr

–1.46%

ASMR APC 2010–23

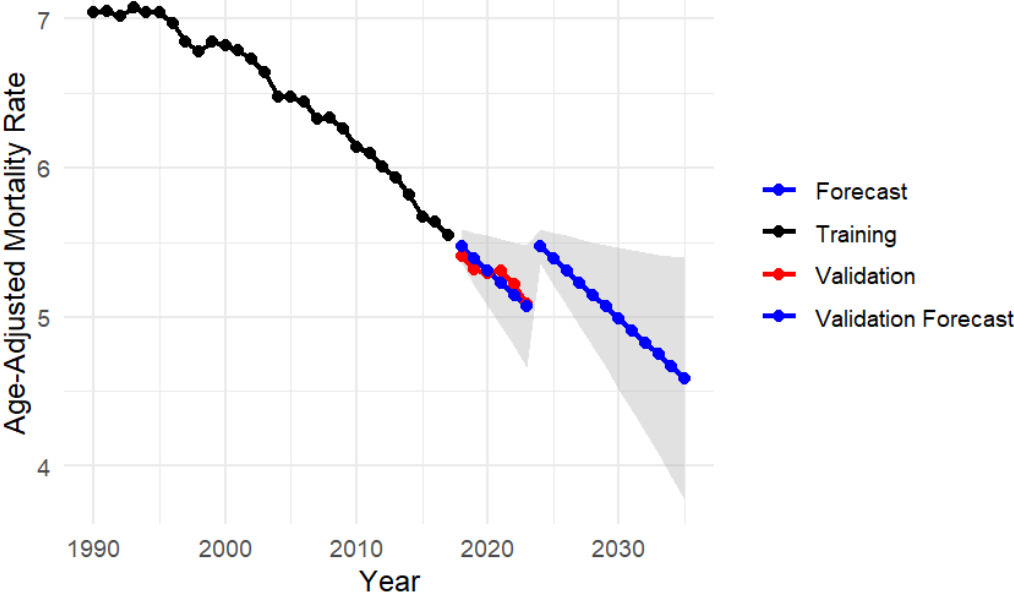
16.87

Peak ASIR in 2000

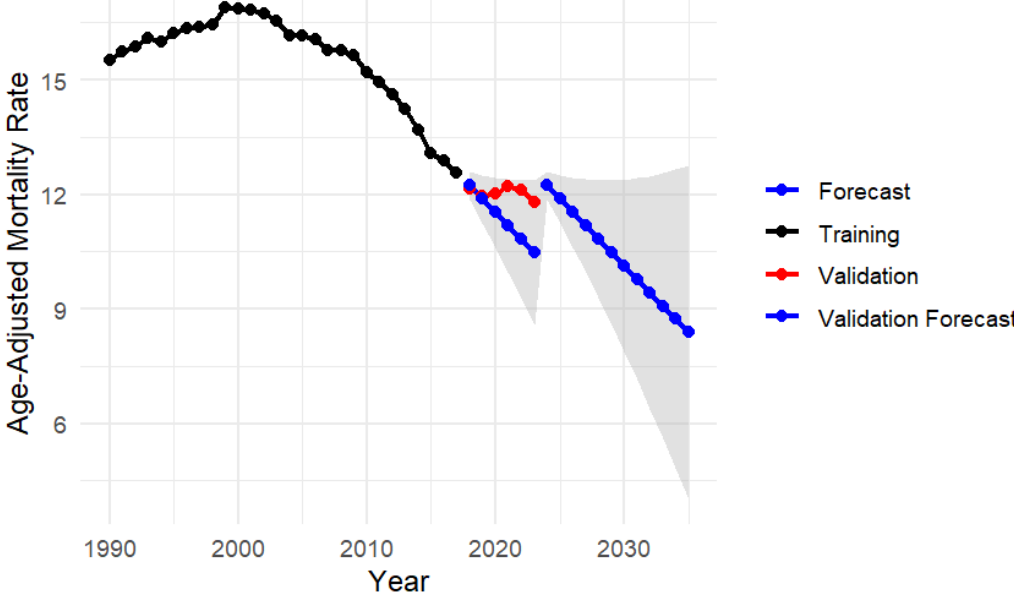
ASMR decreased from 7.04 to 5.09 per 100,000 (1990–2023). ASIR rose to 16.87 in 2000 then fell to 11.81 in 2023. ASDR declined 38.5%. In 2023, AML accounted for 55.4% of deaths among leukemia subtypes; smoking was the leading attributable risk factor.

ARIMA FORECASTS

ARIMA Forecasting of LKM DEATH



ARIMA Forecasting of LKM INCIDENCE



Forecast highlights

ASMR forecast: 5.47 (2024) → 4.99 (2030) → 4.59 (2035)

ASIR forecast: 12.23 (2024) → 10.13 (2030) → 8.38 (2035)

CONCLUSION

Leukemia mortality and disability-adjusted life years declined substantially from 1990 to 2023, but the burden remains important among older adults, particularly for acute myeloid leukemia. ARIMA forecasts suggest that mortality and incidence rates will continue to decrease, supporting continued attention to prevention, safety measures, early diagnosis, and treatment outcomes.

Data source: Global Burden of Disease (GBD), United States, 1990–2023. Forecasting model: ARIMA (0,2,1).