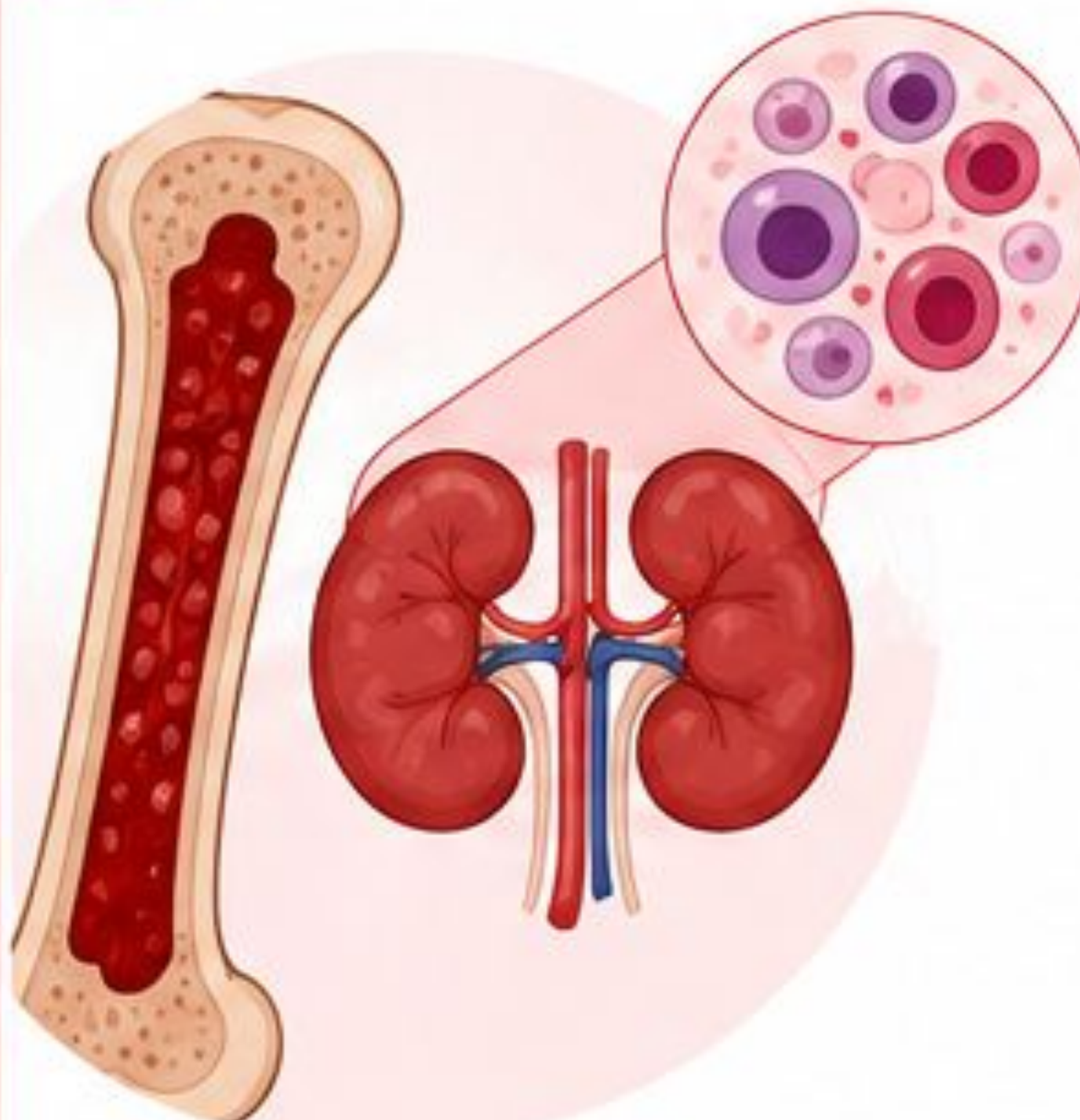


Multiple Myeloma and Chronic Kidney Disease–Related Mortality, 1999–2023: A Population-Based Time-Trend Analysis

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INTRODUCTION



Multiple Myeloma (MM) is the **second most** common hematological cancer.

Chronic Kidney Disease (CKD) represents a **major complication** of MM.

THIS STUDY AIMS TO analyze national mortality trends, demographic differences, and geographic variation related to MM and CKD in the United States from **1999 to 2023**.

METHODS

- DATA SOURCE**
Nationwide mortality records were obtained from the **CDC-WONDER** database.
- STUDY POPULATION**
U.S. adults aged **≥ 45 years**.
- DIAGNOSES (ICD-10)**
 - Multiple Myeloma: **C90.0**
 - Chronic Kidney Disease: **N18**
- CASE DEFINITION**
Deaths **≥** recorded anywhere on the death certificate (multiple-cause).
- STATISTICAL ANALYSIS**
Age-adjusted mortality rates (**AAMRs**) per 100,000 populations were calculated. Joinpoint regression analysis was used to evaluate Annual Percent Changes (**APCs**).

STUDY PERIOD: 1999 – 2023

OUTCOME: Age-adjusted mortality rate (AAMR) per 100,000 population

RESULTS

TOTAL DEATHS (1999–2023)
24,606

OVERALL AAMR (per 100,000 population)
0.65 (1999) → 0.86 (2023)

OVERALL AAPC (per year)
1.22
(95% CI: 0.54 to 2.00)
p < 0.001

SUBGROUP	AAMR (per 100,000)	AAPC (per year)	95% CI	p-value
Sex				
Male	1.09	1.40	0.73 to 2.08	<0.001
Female	0.60	0.71	0.07 to 1.36	0.027
Race / Ethnicity				
Non-Hispanic Black	2.14	–	–	–
Non-Hispanic White	0.79	–	–	–
Residence (1999–2020 only)				
Metropolitan	0.81	–	–	–
Non-metropolitan	0.77	–	–	–

AAMR BY REGION (per 100,000)

Region	AAMR
Northeast	0.74
Midwest	0.75
South	0.83
West	0.80

(Available 1999–2023)

AGE ≥ 65 YEARS
Overall CMR: **1.80** per 100,000 population

PLACE OF DEATH
Most deaths occurred in inpatient medical facilities (**46.27%**).

HIGHEST AAMR BY REGION
South: **0.83** per 100,000 population

CONCLUSION

Mortality from MM and CKD **increased** in the U.S. from 1999 to 2023.

Non-Hispanic Blacks had the highest mortality burden.

Males experienced higher mortality and a more rapid increase than females.

Urban (metropolitan) areas had higher mortality compared to non-metropolitan areas.

The **South region** had the highest mortality rates.

These findings highlight substantial demographic and geographic disparities, underscoring the need for **targeted strategies** to reduce this burden.