

The Urban Concentration of Premature Mortality: Evaluating the Disproportionate Mortality Burden in Early-Onset (<55) Multiple Myeloma in the Modern Era

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INTRODUCTION

- Early-onset MM is rare, representing less than 15% of diagnoses under age 55 and under 2% before age 40.^[1]
- Among younger patients, MM still causes marked premature mortality despite modern therapy, with a standardized mortality ratio of 69.9 and 5-year relative survival of 83.5% versus age-matched controls.^[1,2]
- In Modern era of novel therapeutics (2018 – 2024) ^[3], MM survival has improved substantially, with median survival rising from 53 to 83 months across recent decades and 5-year relative survival increasing from 46.4% to 56.3%.^[3,4]

AIM

- These gains have not been equitable: racial/ethnic minorities, lower-SES patients, rural patients, and some older groups continue to experience worse access, delayed treatment, higher early mortality, or smaller survival gains.^[5]
- This study evaluates the Disproportionate Mortality Burden (DMB) of early-onset MM to determine if structural inequalities continue to dictate premature survival outcomes.

METHOD

Data source & Cohort

- mortality data from CDC WONDER Underlying Cause of Death database data base from year 2018 to 2024 using ICD 10 codes.
- The primary Cause of death restricted to multiple myeloma and malignant plasma cell neoplasm (ICD-10 CODE C90.0), contributing cause of death to fall under the broad ICD-10 Chapter IX: "Diseases of the circulatory system" (Codes I00-I99)

Statistical Approach

- Rates standardized per 1,000,000 population using annual U.S. census estimates
- Trends evaluated via Pearson correlation and linear regression (p < 0.05 significant)

CONCLUSIONS

- In the modern therapeutic era, early-onset MM mortality is heavily concentrated in urban centers and drastically disproportionate among Black young adults.
- However, as this study utilizes an ecological and population-level design, definitive causal conclusions regarding the drivers of these structural and geographic disparities cannot be drawn without further patient-level investigation.

RESULTS

- Total death count (2018- 2024) : 1,857
- Black/African American young adults accounted for 611 out of 1,857 (32.9%) of all early-onset MM deaths, despite comprising only ~13% of the general US population.
- The highest mortality burdens were concentrated in metropolitan centers, with Urban White Males (33.0%) and Urban Black Males (16.5%) suffering the greatest losses. 84.8% of all premature black MM deaths occurred in metropolitan areas.

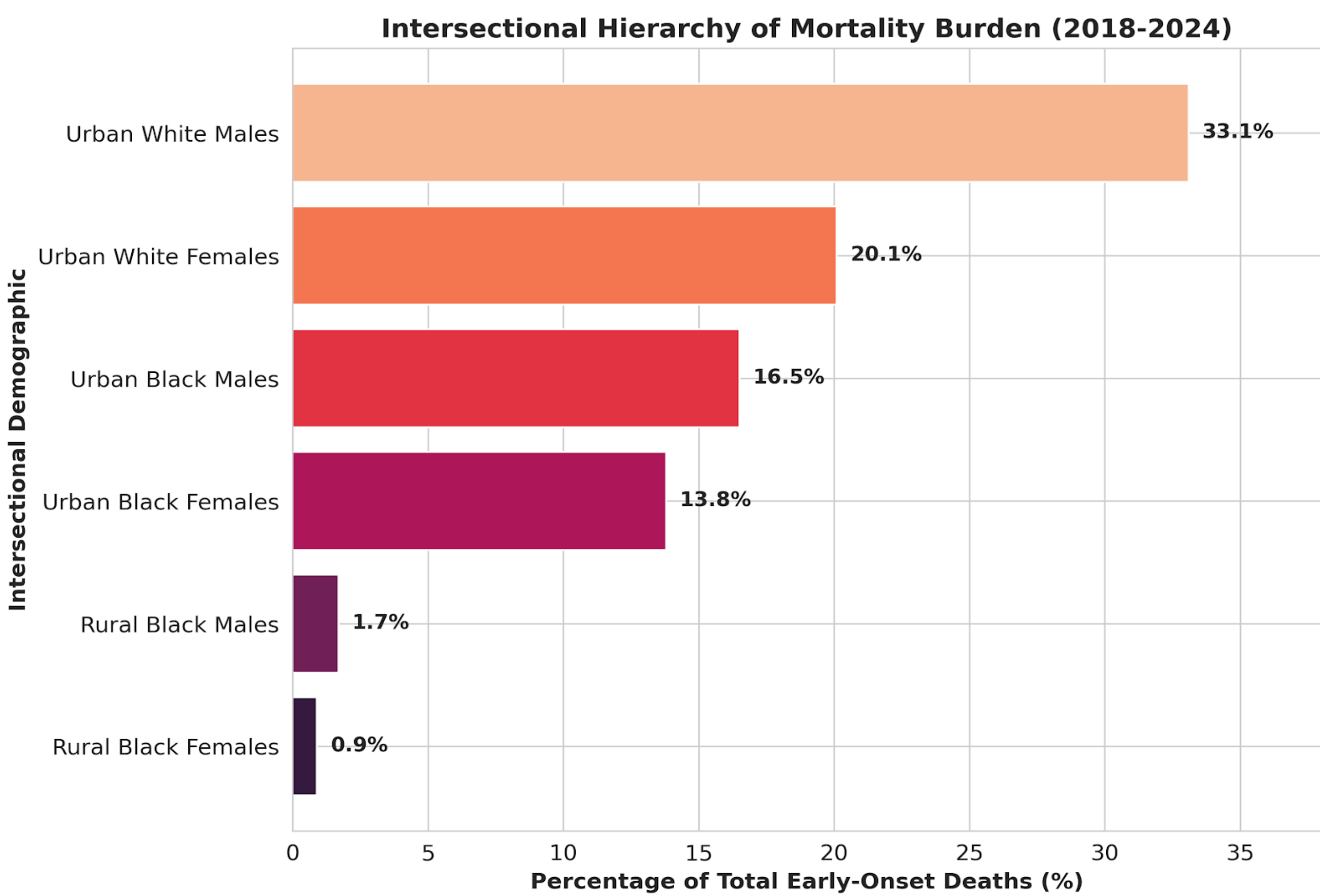


Figure 1

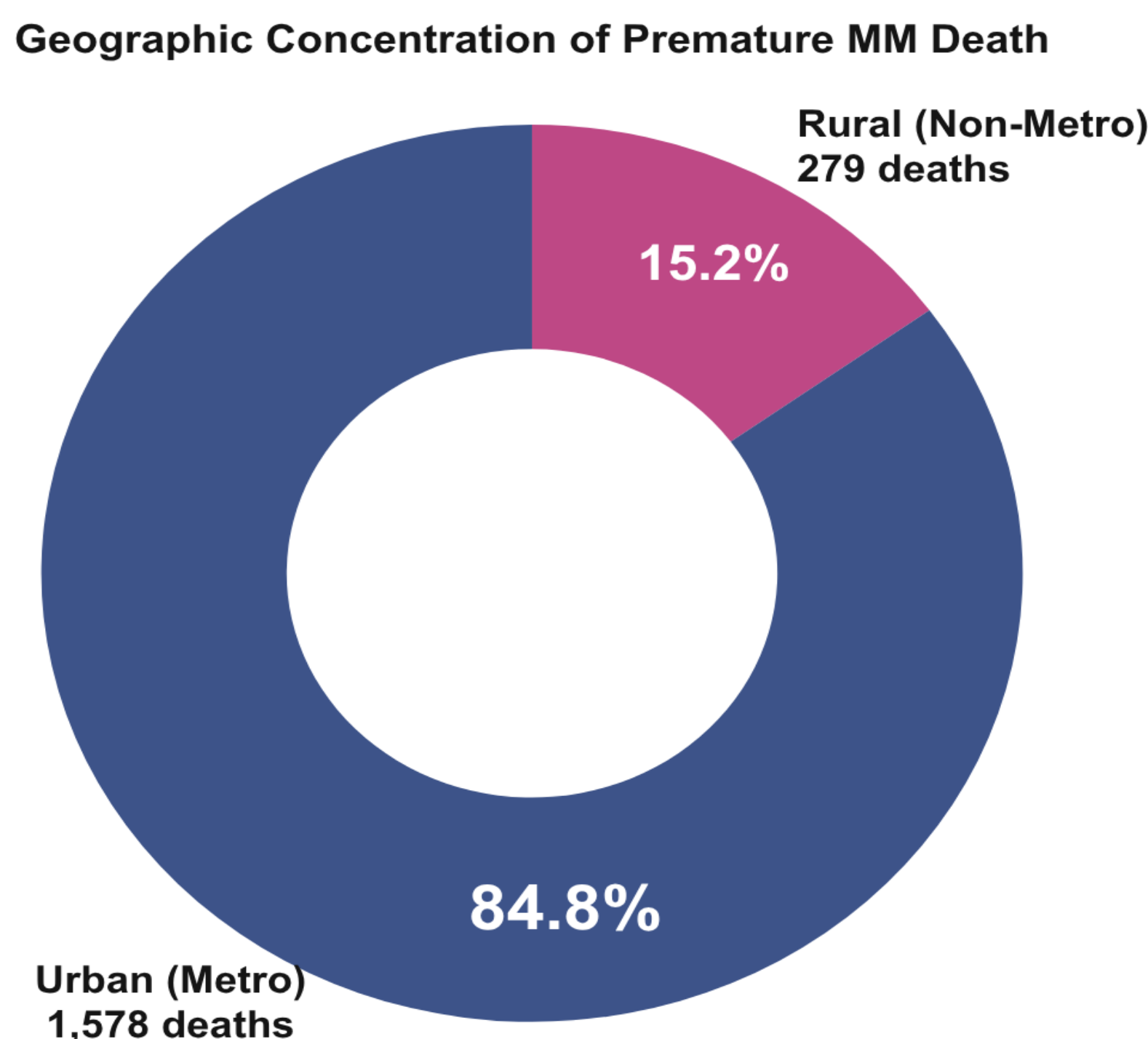


Figure 2

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