

# Trends of Renal Failure Mortality from 1999 to 2020 in the United States by Demographics

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**Keywords:** Renal Failure, Mortality Rates, Affordable Care Act, Healthcare Disparities, Disease Management, Healthcare Policy, Centers for Disease Control and Prevention, CDC Wonder, Joint Regression Program

Published: 14 December 2023

**Introduction:** Renal failure, encompassing both acute and chronic forms, stands as a formidable public health challenge with far-reaching consequences for individual well-being and healthcare systems. This study delves into the mortality rates of renal failure in the United States over two transformative decades, from 1999 to 2020. Renal failure's significance arises from its escalating prevalence, substantial healthcare costs, and the imperative to understand the multifaceted factors that influence its outcomes.

**Objectives:** The primary objectives of this research are to analyze temporal trends in renal failure mortality rates, explore the impact of the Affordable Care Act (ACA) and advancements in renal care practices on mortality rates, and assess demographic disparities in mortality outcomes.

**Methods:** Utilizing CDC WONDER's multi-cause mortality data, we assessed mortality due to renal failure (ICD-10 Codes: N17-N19). Age-adjusted mortality rates (AAMR) were collected, stratified by sex and race. The Joinpoint Regression Program analyzed trends, calculating annual percent change (APC) and significant average annual percent change (AAPC) from 1999 to 2020. Segmented line regression models were employed for parallel pairwise comparisons.

**Results:** Renal failure mortality rates decreased for both sexes during the late 2000s. The ACA's enactment in 2010 coincided with improved access to healthcare, possibly contributing to the decline. Demographic disparities highlighted variations in mortality rates across racial and gender groups. Advancements in renal care practices were evident, driven by innovations in treatment modalities and disease management. Significant temporal trends were observed by race, with varying periods of decrease or uptrend.

**Conclusion:** The decline in renal failure mortality rates during the late 2000s was potentially influenced by the ACA and advances in renal care practices. Demographic disparities emphasize the need for equitable healthcare access and interventions. These findings underscore the significance of healthcare policies and medical advancements in reducing renal failure mortality rates and addressing disparities. Persistent efforts to mitigate challenges such as healthcare access, cost barriers, and disparities remain crucial to enhancing renal failure outcomes.