Temporal Trends and Demographic Disparities in Road Traffic Accident-Related Mortality among Children, Adolescents and Young Adults in the United States between 1999–2020: A CDC WONDER Study

Authors

Romil Maniar MD, Dhruv Gandhi MD, Wajdan Ahmad MBBS, Ayesha Cheema MBBS

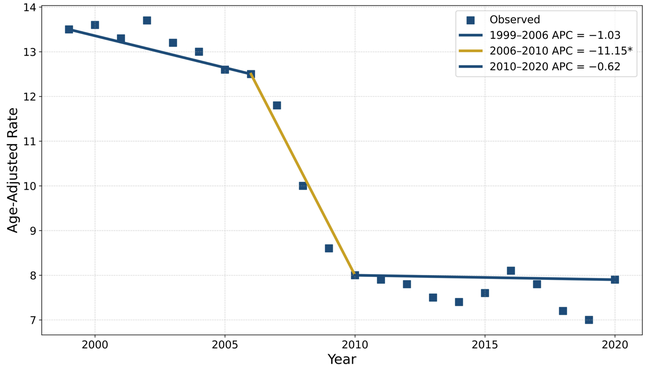
Affiliations

Ascension St Agnes Hospital, MD, USA; St Francis Medical Center, LS, USA; Al Tibri Medical College, Karachi, Pakistan; Al Tibri Medical College, Karachi, Pakistan.

Introduction

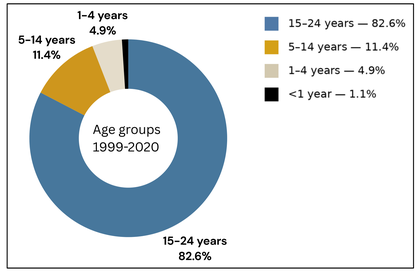
Road traffic accidents (RTA) remain a leading cause of death among children, adolescents, and young adults in the United States. Despite advances in vehicle safety and prevention strategies, mortality remains substantial and disproportionately affects certain demographic groups.

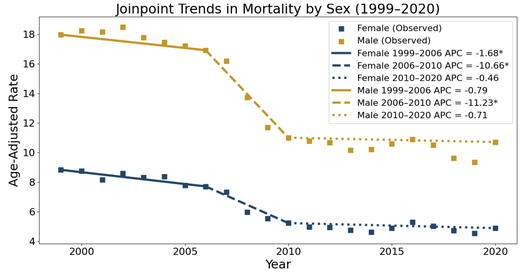
Long-term national trends remain unclear. Understanding these patterns is essential to guide targeted prevention, policy development, and resource allocation to reduce RTA-related deaths.



Objective

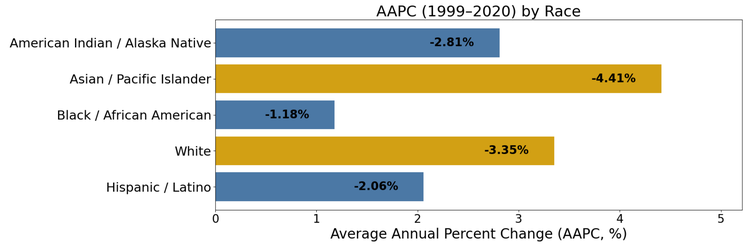
To analyze trends and disparities in road traffic accident (RTA) - related mortality in Americans aged younger than 25 years from 1999-2020.





Methodology

1. A retrospective analysis was conducted using the CDC's Wide-Ranging Online Data for Epidemiologic Research database (CDC WONDER).
2. For road traffic accidents, ICD-10 codes V01–V89 and Y85 were used.
3. Age-adjusted mortality rates (AAMRs) and crude death rates (CDRs) per 100,000 persons were calculated.
4. Trends were analyzed using Joinpoint regression to determine average annual percentage change (AAPC) with corresponding p-values.



Results

- 234,569 deaths due to RTA were reported.
- **Trend:** AAMR declined from 13.52 in 1999 to 7.9 in 2020 (AAPC -2.85%, p < 0.001).
- **Sex:** Males had disproportionately higher AAMR than females (13.5 vs 6.3) but nearly similar decline in mortality (AAPC:-2.83% vs -2.89%).
- **Age:** The majority of deaths occurred in the 15–24 year age group (crude death rate 20.72 per 100,000). Significant decline in mortality was noted for all age groups.
- **Races/Ethnicity:**

1. Non-Hispanic(NH) American Indian/Alaska Native - highest AAMR (21.75).
2. NH Whites - 10.67
3. NH Black/African American - 9.39
4. Hispanics - 9.18
5. NH Asian/Pacific Islanders - 4.05.
6. Largest decline seen in NH Asian/Pacific Islanders (AAPC:-4.41%).

- **Geography:** Mortality was highest in the South (AAMR 12.59), while the Northeast experienced the steepest decline (AAPC −4.03%).
- **Urban vs Rural:** Mortality was higher in non-metropolitan than metropolitan areas (AAMR 17.7 vs 8.66).

Conclusion

RTA mortality among children and young adults has declined from 1999–2020; however, disparities persist. Mortality remained highest among males, NH American Indian/Alaska Native populations, residents of the South and nonmetropolitan areas, with the greatest burden in the 15–24 year age group.

Implications: Targeted public health interventions are needed to address these disparities and further reduce RTA related mortality.

Key Sources & Acknowledgements

Center for disease Control and prevention, CDC WONDER: Underlying Cause of Death 1999-2020. Available from: https://wonder.cdc.gov/controller/datarequest/D76

Surveillance Research Program , National Cancer Institute (2025). Joinpoint Regression Software, Version 5.4.0 - April 2025: https://surveillance.cancer.gov/joinpoint