

## Investigating heart disease trends, risk factors, and intervention gaps in high-risk populations in California

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Cardiovascular disease (CVD) remains the leading cause of death in California, particularly among low-income and racially marginalized communities. Despite advances in clinical care, disparities persist due to unequal access to preventative resources, lack of culturally relevant health education, and structural factors tied to income and geography. This study explores trends in CVD burden across California counties and identifies intervention gaps that contribute to ongoing health inequities.

**Methodology & Theoretical Orientation:** This research uses a comparative epidemiological approach, analyzing publicly available crude mortality rates and county-level socioeconomic indicators. Counties with the highest CVD mortality were compared to neighboring counties with lower rates. Statistical and spatial analyses were employed to examine correlations between heart disease burden, healthcare infrastructure, and income inequality.

**Findings:** Data revealed a significant inverse relationship between median household income and CVD mortality. Counties such as Imperial and Del Norte experienced high mortality despite proximity to better-performing regions. This gap aligns with reduced healthcare access, transportation barriers, and minimal public health investment. Moreover, many high-risk counties lacked culturally competent outreach strategies, further limiting access to care.

**Conclusion & Significance:** Addressing cardiovascular disparities in California requires place-based, equity-driven public health strategies. Policy solutions must prioritize expanding preventive care in underserved counties and integrating community-specific outreach models. Findings support the urgent need for resource reallocation and more inclusive health planning.

### Biography

Ryan Nazari is a high school researcher and International Baccalaureate student at Modesto High School. His academic interests focus on public health equity and cardiovascular disease prevention. Drawing inspiration from family members in medicine and firsthand experiences with healthcare access disparities, Ryan's research emphasizes place-based approaches to improve outcomes for underserved communities. His recent work analyzes trends in CVD mortality across California counties and identifies gaps in outreach and care access. He has presented findings to local health advocates and aspires to pursue a career in medicine with a focus on preventive cardiology.

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