Title: Using Community-level Life Expectancy to Guide Health Equity Strategies: Marin County, CA

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Problem Statement: Marin is a mid-sized county in the San Francisco Bay Area. Despite its high average socioeconomic level, there are prominent economic disparities by geography and race/ethnicity. Life expectancy (LE) is the "tip of the iceberg" of community health. Identifying leading causes of premature mortality can add specificity to LE findings and inform local initiatives to address disparities. The presence of congregate living sites, including skilled nursing facilities, can differ by neighborhood income level and influence LE. Removing those residents from LE calculations can refine our interpretation of community-based LE estimates. We aimed to calculate LE and describe premature mortality by race/ethnicity and by census tract, with and without congregate living residents, for the development of data-driven public health strategies to advance equity.

Methods: We used the California Vital Records Business Intelligence System for mortality data from 2017 through 2021. Data sources for population estimates were American Community Survey 2015-2019 for census tracts and congregate living residents, and California Department of Finance for race/ethnicity groups. Average LE from birth was calculated by race/ethnicity and census tract from 2017 to 2021. LE by census tract was examined with and without congregate living residents. We used an ecological analysis to measure the relationship between the Healthy Places Index (HPI), a measure of socioeconomic level, and LE by census tract. We identified leading causes of premature (younger than 75) death by census tract, race/ethnicity, and HPI quartile.

Results: From 2017 through 2021, there were 10,027 Marin County resident deaths. Average LE for the population was 85.2 years. There was a 16.7 year difference in LE between the lowest (76.0 years) and highest (92.7 years) census tracts. After removing congregate living residents, LE in over half of Marin census tracts decreased and 16% increased, revealing the influence of these sites on small area LE calculations. We found a moderate positive association between census tract HPI and LE (r=0.59). LE varied by race/ethnicity; the non-Hispanic black population experienced the lowest LE at 76.5 years and the Hispanic population experienced the highest LE at 88.2 years. In all race/ethnicity populations combined, the leading causes of premature death were cancer, circulatory system diseases, and accidental overdoses, with variation by race/ethnicity; in the non-Hispanic black population, the leading cause of premature mortality was circulatory system diseases. Presentations of these data have led to strategies targeted at the underlying causes of death by subgroup.

Future Goals: These data highlight health disparities that persist in Marin by geography and race/ethnicity. Excluding congregate living residents allowed for more accurate depiction of inequities sensitive to community-based programs. Describing premature death by subgroup enhances utility of the data. Marin County's Public Health division will continue to use these local, actionable data to conduct "localized public health." Sharing methods with other jurisdictions could allow for mutual learning in producing small area LE and using these data for local, equity-focused action.