Application of an Assessment of County-Level Cardiovascular Health Profile and its Association with County-Level Disease Rates

The AHA defines cardiovascular health (CVH) based on seven metrics, known as Life’s Simple 7 (LS7): smoking, diet, obesity, physical inactivity, high blood cholesterol, high blood pressure, and diabetes. The use of LS7 as a county-level measure of CVH has not yet been studied. The objective of our study was to create a modification of LS7 using publicly available data to estimate county-level CVH and to determine its association with CVH outcomes in all 100 counties of North Carolina.

Methods and Results: The modified LS7 metric was a composite of data from the CDC, USDA, BRFSS, and Community Health Assessments. Modified LS7 scores were a positive metric calculated for all 100 counties in North Carolina and used to create a regression model that predicts county-level hospital discharge rates for diseases and disorders of the circulatory system. We found a negative correlation (R-squared= 0.610) between Modified LS7 scores and county-level hospital discharge rates. Counties in the mountain and piedmont regions had significantly higher mean Modified LS7 scores (74.3, 95% CI: 73.5-75.2; 73.9, 95% CI: 72.8-75.0) and lower mean discharge rates (1167.1, 95% CI: 1074.7-1259.5; 1273.9, 95% CI: 1181.4-1366.2) than counties in the coastal plains region (70.7, 95% CI: 69.4-72.0; 1612.3, 95% CI: 1518.5-1706.1).

Conclusions: The coastal region of NC was found to have significantly higher CVH risk and poorer outcomes compared to the piedmont and mountain regions. The Modified LS7 model provides a novel approach to examine county-level variation in CVH.