

CONFERENCE ABSTRACT

Association between air temperature and heart disease death rates in Georgia counties

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Background: In this ecological study, global warming theory was tested on a local level, in Georgia. The hypothesis was that warmer counties would be associated with higher death rates.

Methods: Heart disease death rates (HDDR) for 2008-2010 by Georgia county were compared to air temperature, also by county for the same years. Three race categories for HDDR were studied: black, white, and all races. Since there is evidence that living at higher land elevations provides a protective effect against heart disease, land elevation by county was included as a second predictor.

Results: Correlation analyses revealed low strength, statistically significant correlations with white and all races HDDR as follows: direct for air temperature and indirect for land elevation. Correlations for blacks were negligible strength and statistically non-significant. Thus, multiple linear regressions (MLRs) were considered appropriate for whites and all race HDDR. In MLRs, temperature and elevation essentially cancelled each other relative to HDDR, resulting in statistically non-significant regression coefficients for each in both race categories ($p > 0.15$). This may have in part been due to the slight collinearity that was observed between the two predictors (variance inflation factor = 10.6 for both predictors in both race categories). The study is limited by: a) its (ecological) design, where individual exposures are unknown; and b) the-less-than ideal regression model that revealed slight collinearity between the predictors. Further research is required to verify these findings.

Conclusions: In conclusion, this study did not reveal an adverse association between warmer counties and HDDR according to MLR.