

## Median Household Income and Rural Location Associated With Sudden Unexpected Death in Wake County, NC

Louisa A Mounsey<sup>1</sup>; Feng-Chang Lin<sup>2</sup>; Mary Elizabeth Lewis<sup>1</sup>; Parin Nanavati<sup>1</sup>; Neil Mehta<sup>1</sup>; Anthony Nwosu<sup>1</sup>; Chani J Hodonsky<sup>3</sup>; Irion Pursell<sup>1</sup>; Eugene H Chung<sup>1</sup>; Ross J Simpson<sup>1</sup>; John P Mounsey

### Author Affiliations

<sup>1</sup>Dept of Medicine (Cardiology), Univ of North Carolina Sch of Medicine, Chapel Hill, NC

<sup>2</sup>Dept of Biostatistics, Univ of North Carolina Sch of Medicine, Chapel Hill, NC

<sup>3</sup>Dept of Epidemiology, Univ of North Carolina Sch of Medicine, Chapel Hill, NC

### Abstract

**Introduction:** The incidence of sudden unexpected death (SUD) in a racially and socioeconomically diverse population has been inadequately studied. We collated all SUDs among the 18 to 64 year population over a 12-month period in Wake County, North Carolina, a racially and socioeconomically diverse predominantly urban county, population c1 million. We investigated the socioeconomic differences in incidence of SUD to assist in future development of targeted interventions.

**Methods:** Cases of possible SUD were identified from the Wake County EMS. Expected deaths were excluded and determination for cohort inclusion was made by independent cardiologists from review of medical records and medical examiner's reports. SUD cases were geocoded to the level of census tract using death certificate residence address and the U.S Census Geocoder. Wake County includes 185 census tracts, population  $5022 \pm 2285$  (M $\pm$ SD). Median household income and other demographic data were obtained from the 2013 American Community Survey and 2010 U.S Census. Univariate and multivariable analysis were used to identify associates of SUD.

**Results:** The 2013 incidence of SUD in Wake County was 19.5/100,000. A majority (107 of 185) of census tracts had at least one SUD, with 190 total. Census tracts with  $\geq 1$  SUD had a higher population of African Americans, a greater proportion unmarried, and a lower median household income than those with no SUDs (figure,  $p \leq .001$ ). After multivariable analysis, only median household income and rural tract location remained significantly associated with sudden death.

**Conclusion:** This examination exemplifies the importance of studying sudden unexpected death in a racially and socioeconomically diverse population. Multivariable analysis suggests that low household income and rural location are important potential contributing factors to sudden death. Educational interventions to reduce the incidence of sudden death should be developed with these populations in mind.