County-Level Basics of Living Affects Overall Mortality Rate in the United States – 2000

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Abstract Abraham Maslow’s Hierarchy of Needs theory proposed that there is a hierarchy of human needs, which range from the basics of survival to creativity. Building from Maslow’s idea, this paper examines the first level of human needs and empirically constructs a basics of living (BOL) index for every United States county from 28 candidate factors. The final BOL Index includes nine measures of air, water, and income. This study examined whether county-level health would be poor if the BOL were not met. Findings showed a positive correlation between the BOL index and all cause mortality, the fewer BOL, the worse the all cause mortality. Strikingly, poor BOL is most often found in small jurisdictions (<25,000 population) and less often in larger jurisdictions (>150,000 population). In the mapping of the BOL index, areas of greatest need can be observed and in multivariate modeling, highest overall mortality is regional. The BOL index predicts a substantial amount of variation observed in county overall mortality and is independent of county poverty and quality of life.

Keywords socioeconomic factors · poverty · mortality · population health · public health preparedness · community health · public health · United States-counties

Objective

This project creates an index that can characterize county-level basics of living (BOL) and examines whether the BOL index is related to county health measured
as overall mortality. This work will stimulate researchers to continue the effort to expand understanding of community wellbeing through exploratory studies of county health. Although the project incorporated 28 currently available community indicators, the set is not yet comprehensive.

Background

What do communities need in order to thrive and have good health? According to Abraham H. Maslow’s Hierarchy of Needs theory, higher needs for individuals only come into focus once all basic needs that are lower down in his pyramid are mainly or entirely satisfied (Maslow’s Hierarchy of Needs). Maslow described personal physiological needs as the first level of his five tiers of human needs, illustrated in his pyramid, as a combination of warmth, shelter and food (Maslow, 1998). These factors have been conceptualized as “pre-requisites for health” by John Last, exemplified by European Region WHO (Last, 1997; WHO, 1985), often called “essential services” by CDC (2005) and recently unified biologically through allostatic load theory (Szanton et al. 2005). How important are these basic needs to a population’s health and how much do they contribute to overall health in that geographical area? At the community level, do these basic of living components enhance health? Though many predictors of individual mortality such as quality of life (Kanarek & Stanley) have been identified, no one has conducted a comprehensive study of the significance of basic needs to population health outcomes.

Water and air have always been two of the most important measures of public health; history has shown that increasing access to these measures can be highly effective in globally reducing deaths and improving health (Beemer et al. 2005). An example is the report on sewage and emerging industrial communities at the turn of 19th century in New England by Beemer and colleagues, which described that mortality is reduced when the water infrastructure is developed at a rate corresponding to industrial growth (Beemer et al. 2005). In twentieth-century U.S., Cutler and Miller highlight the role of public health improvements and the corresponding health advances; clean water was attributed to significant decreases in all, infant, and child deaths (Cutler & Miller, 2005). A study of Canadian air quality and its impact on population health also demonstrates that changes of air pollutant levels can alter the outcome of non-accidental mortality attributed to these pollutants over time (Burnett et al.). Income disparity and mortality among US states or counties is not a new study interest either; for example, a recent study used data from the Census to quantify the relationship between income inequality and mortality rates among the US states (Lynch et al. 2005). Other investigators have examined the impact on health of single factors such as income and food security (Center for Disease Control and Prevention, 2002, 2003; Winkleby & Cubbin, 2003) in separate studies, though none to our knowledge has considered the effect on health of several factors at once.

County-level indicators measure the community’s experience and investment in these basics for all. Historically, improvements in community hygiene and nourishment have improved overall health dramatically. Ambient air is a measure that pertains to everyone in a community, though modulated by living conditions and life style. Household measures of BOL may include plumbing, food program...