

County Health Rankings

Relationships Between Determinant Factors and Health Outcomes

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Introduction: The County Health Rankings (CHR) provides data for nearly every county in the U.S. on four modifiable groups of health factors, including healthy behaviors, clinical care, physical environment, and socioeconomic conditions, and on health outcomes such as length and quality of life. The purpose of this study was to empirically estimate the strength of association between these health factors and health outcomes and to describe the performance of the CHR model factor weightings by state.

Methods: Data for the current study were from the 2015 CHR. Thirty-five measures for 45 states were compiled into four health factors composite scores and one health outcomes composite score. The relative contributions of health factors to health outcomes were estimated using hierarchical linear regression modeling in March 2015. County population size; rural/urban status; and gender, race, and age distributions were included as control variables.

Results: Overall, the relative contributions of socioeconomic factors, health behaviors, clinical care, and the physical environment to the health outcomes composite score were 47%, 34%, 16%, and 3%, respectively. Although the CHR model performed better in some states than others, these results provide broad empirical support for the CHR model and weightings.

Conclusions: This paper further provides a framework by which to prioritize health-related investments, and a call to action for healthcare providers and the schools that educate them. Realizing the greatest improvements in population health will require addressing the social and economic determinants of health.

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Introduction

Health is promoted or inhibited by many factors beyond access to health care, including what foods and exercise alternatives are available and affordable, and what educational, employment, and housing opportunities are attainable. As a result, much of the nation's *Healthy People 2020* health goals fall outside the umbrella of the traditional "healthcare" sector.¹

The County Health Rankings (CHR) model describes a more holistic view of population health, highlighting multiple factors and their relative contributions to length of life (as measured by premature death) and quality of life (as measured by low birth weight, and poor mental or physical health). This model, developed by the University of Wisconsin Population Health Institute in collaboration with the Robert Wood Johnson Foundation, delineates the underlying modifiable determinants of health and groups them into four main categories (with associated weights): healthy behaviors (30%), which includes indicators for alcohol use, diet and exercise, sexual activity, and tobacco use; clinical care (20%), including access to and quality of care; physical environment (10%), consisting of air and water quality, housing, and transit; and social and economic factors (40%), including indicators for community safety, education,

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employment, family and social support, and income. Though understood to be an important predictor of health, genetics is excluded from the model because it is, at present, primarily non-modifiable. The specific measures used in the CHR model for each of these main categories are listed in Figure 1.

According to the CHR model, the health determinants exerting the most powerful and sustained influence on health and the distribution of disease, illness, injury, disability, and premature death in the population are social and economic factors. These factors have been

coined by WHO as the Social Determinants of Health (SDoH), and are broadly defined as “the conditions in which people are born, grow, live, work and age.”²

Although there is excellent theoretical support for this CHR model and its weightings, to the authors’ knowledge no previous peer-reviewed publications have

1. empirically estimated the association between the CHR model’s health factors and health outcomes;
2. described the performance of the model’s weighting scheme by state.

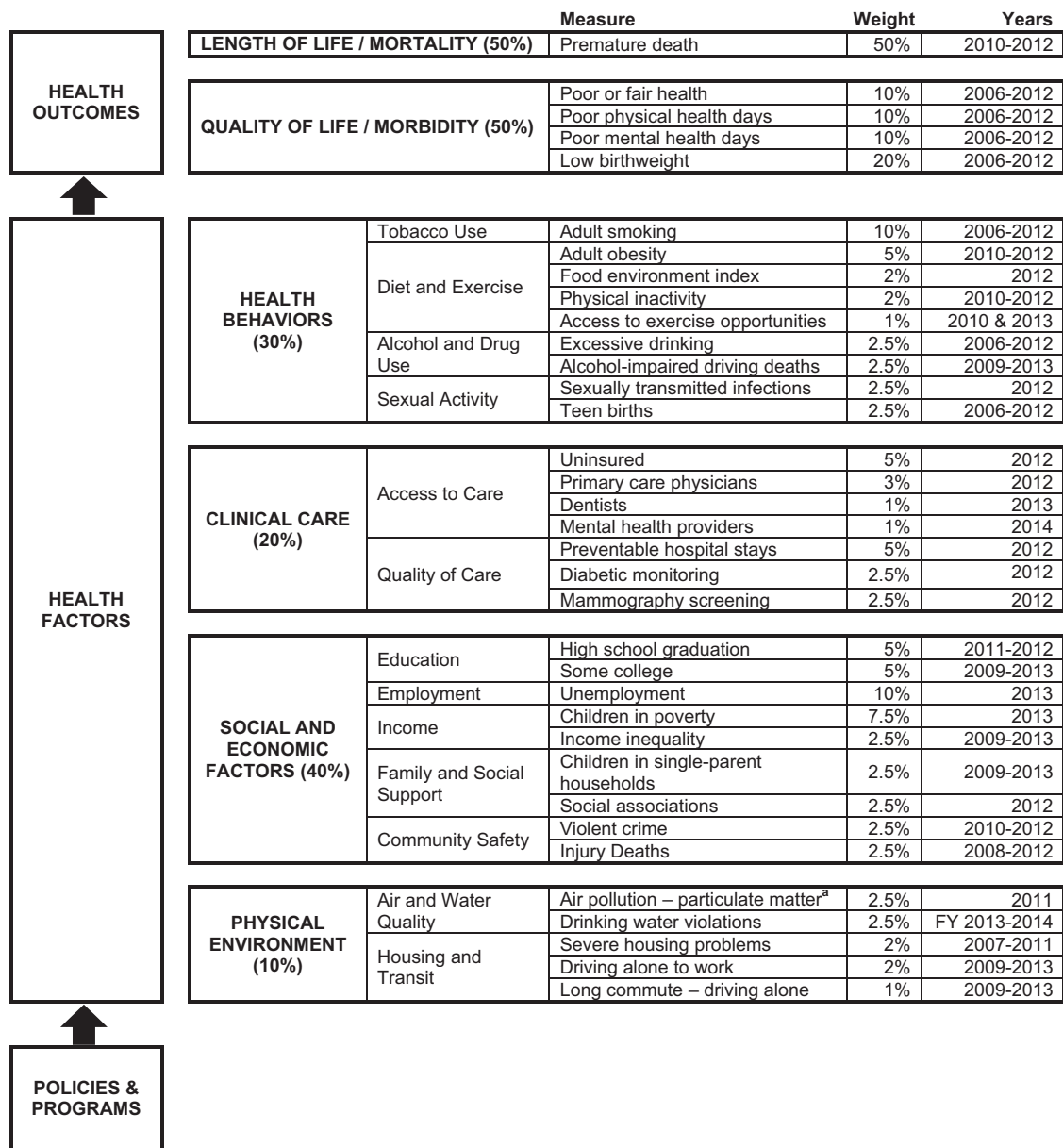


Figure 1. 2015 County health rankings: model, measures, and years of data.

Source: County Health Rankings. Rankings Methods. 2015.

^aNot available for Alaska or Hawaii.

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