



Why Do Rich People Live Longer? an Analysis using Swedish Longitudinal Data and Monte-Carlo Simulation Methods

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This paper develops an empirical framework to understand how health-related lifestyle choices, major diseases and socio-economic status as measured by permanent and transitory income impact on life expectancy of individuals. This involves use of a structural model involving a system of eleven equations whose parameters were estimated from a Swedish panel data set of 14,531 observations involving 7,321 individuals who were interviewed on up to four occasions over a period of 30 years.

The system of equations were estimated in a recursive fashion: five equations representing disease risk factors (smoking, not exercising, high alcohol use, being obese and having high blood pressure) were estimated using lagged (past) risk factor status, age, sex and permanent and transitory income as explanatory variables; five disease equations (diabetes, heart disease, mental health, cancer and reporting bad health) used risk factors as explanatory variables; all of these risk factors and diseases are used in a Gompertz proportional hazards model that is used to estimate life expectancy.

The system of equations were used to construct a Monte-Carlo simulation model to explore the following questions: 1) to what degree can socioeconomic inequalities in life expectancy be reduced if risk factor behavior and diseases could be equalized across income groups? 2) how much of the changes in inequalities in life expectancy have changed over time due to changes in lifestyle factors over time and which lifestyle factor have had the greatest impact?

Preliminary results suggest: (i) for a male aged fifty years, the gap in life expectancy between those in the highest and lowest income quintiles is around five years and this gap could be reduced by around 40% if the risk factor behaviors could be equalized across income groups; (ii) changes in the patterns of smoking since the 1980s have contributed significantly to changes in life expectancy across income groups.