

TITLE:

Multivariate Well-Being Analysis: A Bayesian Networks Approach

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ABSTRACT:

In the economic literature many authors have underlined the necessity of defining individual well-being as a multidimensional concept rather than relying on income or consumption expenditures per capita. A number of contributions have focussed on the multidimensional extension of measures of economic inequality, poverty and deprivation, in order to include into the evaluation indicators of socio-economic and demographic status, such as education, health conditions, life expectancy, housing and wealth.

However, these attempts mainly consist of summarizing at individual level the multidimensional nature of well-being, without any deep preliminary investigation of the correlation between its different dimensions.

Aim of this paper is therefore to provide an insight of the structure of dependence existing among the different components of well-being, by applying the statistical technique of the Bayesian Networks. A Bayesian Network is a probabilistic graphical model that represents a set of variables and their probabilistic dependencies, and offers advantages in implementing models of cause and effect. This paper constitutes one of the first attempt, to the best of our knowledge, to apply Bayesian Networks to the analysis of multivariate well-being.

Literature on well-being typically distinguishes between objective and subjective well-being, or between standard of living and quality of life. Standard of living refers to the availability and distribution of quantity and quality of goods and services among individuals and it is typically measured by level of income, income distribution, access and quality of health care, level of education. Quality of life cannot be measured directly, because of its intangible components, such as physical and emotional states, and it is measured by some self-assessed condition (happiness, job satisfaction, health). In this paper we aim in particular at investigating the relationships between objective and subjective well-being, i.e. whether there exists dependence between standard of living and quality of life.

Our multivariate well-being evaluations will also take into account the evolution in time of the multidimensional distributions of attributes across the population, as well as the differences across regions or countries.

Finally, the analysis will discuss the proposal of a synthetic index of multivariate well-being that is able to include the dependence patterns among the different variables. Empirical applications will be based on the SILC (Survey on Income and Living Conditions) dataset for Italy in the years 2004-2007.