

Time use: The role of sleep

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Abstract

Time use models have been used to estimate the value of leisure - one of the components of the value of travel time savings - usually accepting that sleep duration is an exogenous variable. In this paper, we depart from this belief by considering time asleep as an endogenous decision framed by many elements well documented in the literature which we review using a threediscipline perspective: Social behavior sciences, Medical and health sciences, and Economics. Then we propose a microeconomic model that considers these contributions by capturing four effects: alertness (perception), time use trade-off, performance (productivity) and a series of technical relations linking sleep with other activities and goods consumption. The analytical properties are explored showing that there is a total value of sleep time with different components, that equals the value of leisure; that the value of time assigned to any other activity and the value of leisure increase with sleep time if the person sleeps less than medically recommended; and that the way in which sleep time acts on the value of travel time savings varies according to specific behavioral parameters related with the perception of sleep, work and leisure. A system to estimate behavioral and technical parameters econometrically is proposed.

Keywords

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