

Hospital choice modeling using spline functions

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We consider the problem of translating the theory of economic choice for the empirical analysis of a hospital choice for a surgery. The classical economically rational patient will choose a hospital by weighing the attributes of each available alternative (quality health care services; costs, including travel costs, taxes; patient characteristics, such as age, gender; and so forth). The patient will have a utility U_n for alternative n which is a function of the attributes of this alternative. The patient will choose the alternative which maximizes his utility. Not all attributes of alternatives will be observed. The unobserved variables will have some probability distribution in the population, conditioned on the value of the observed variables. If the observer knows the form of the utility function and the probability distribution of unobserved variables, then probabilistic statements can be made about the expected distribution of choices. We consider the decomposition $U_n = V_n + \varepsilon_n$ of the utility into a term V_n which is a function, specified up to finite vector of unknown parameters, of observed variables, and a term ε_n summarizing the contribution of unobserved variables. Assuming the ε_n to be independently, identically distributed with the extreme value distribution, the probability of choice n is obtained according to the multinomial logit model. The term V_n can be expressed in an additive form including free knot spline functions for the cost effects.