Theoretical foundations – 2.3 Example

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Practice quiz.

Question

In order to illustrate the concept of utility, we have introduced a simple example of a transportation mode choice, where two alternatives are considered for a commuter trip: car (alternative i) and bus (alternative j). The utility functions associated with each alternative are written as

$$U_i = -\beta_t t_i - \beta_c c_i, \tag{1}$$

$$U_j = -\beta_t t_j - \beta_c c_j, \tag{2}$$

where t_i and t_j are the travel times of each alternative, c_i and c_j are the travel costs, and $\beta_t > 0$ and $\beta_c > 0$ are parameters.

The same coefficients (β_t and β_c) are used for both alternatives. This implies that a modification of the travel time has the same impact on the utility of car and on the utility of bus. The same applies for travel cost. This assumption is debatable. It can be argued that an additional minute spent in the bus, with the possibility to sleep, listen to music, or read, may not be perceived the same way as spending one more minute driving the car. How would you specify a model where the impact of an additional minute in travel time would be different for the two alternatives?