Profiling Occupant Behaviour in Danish Dwellings using Time Use Survey Data - Part II: Time-related Factors and Occupancy

Occipant behaviour has been shown to be one of the key driving factors of uncertainty in prediction of energy consumption in buildings. Building occupants affect building energy use directly and indirectly by interacting with building energy systems such as adjusting temperature set-points, switching lights on/off, using electrical devices and opening/closing windows. Furthermore, building inhabitants’ daily activity profiles clearly shape the timing of energy demand in households. Modelling energy-related human activities throughout the day, therefore, is crucial to defining more realistic occupant profiles for prediction of energy use to reduce the gap between predicted and real building energy consumptions.

In this study, we exploit diary-based Danish Time Use Surveys for understanding and modelling occupant behaviour in the residential sector in Denmark. This paper is a continuation of “Profiling occupant behaviour in Danish Dwellings using Time Use Survey Data: Part I” that focuses on time-related and time-specific aspects of occupants’ activity profiles. Each activity was analysed in terms of daily time duration and starting/ending times. In detail, a Kaplan-Meier Survival analysis is performed in order to create an estimator of the survival function of the various activities. Finally, this study provides representative occupancy profiles in Danish households during weekdays and weekends.