

## Influence of heat cost allocation on occupants' control of indoor environment in 56 apartments - DTU Orbit (09/11/2017)

### **Influence of heat cost allocation on occupants' control of indoor environment in 56 apartments: Studied with measurements, interviews and questionnaires**

People who pay their energy bills individually based on meter readings tend to spend less energy than people who pay collectively e.g. based on floor areas. It has been hypothesised that these savings are an effect of lower indoor temperatures and ventilation rates during heating seasons. The aim of this paper was to study the indoor environment in buildings with collective and individual heat cost allocation plans, to investigate how the heat cost allocation influenced occupant behaviour and how occupants controlled the indoor environment.

The effects of the heat cost allocation type were studied by comparing indoor environmental measurements between two buildings: one with collective payment and one with individual payment. The measurements were collected at 5 min intervals at a central location in each of 56 apartments in Copenhagen, Denmark over a period of two months.

Questionnaires and semi-structured interviews showed a strong influence of the heat cost allocation plan on the occupants' control strategies. Occupants whose heating bills were based on floor area focused on a healthy and comfortable indoor environment. Occupants whose heating bills were based on meter readings focused on energy conservation and heat cost savings at the expense of thermal comfort and air quality.

The differences in average temperature, average CO<sub>2</sub> concentration and average vapour pressure were 2.8 °C, 161 ppm, and 93 Pa, respectively between apartments with collective and individual heat cost allocation.

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