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ASSESSING THERMAL COMFORT PERCEPTION IN THE CONTEXT OF SOCIAL HOUSING. CASE STUDY IN NORTHERN SPAIN

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Abstract – The influence of people on building performance in terms of energy efficiency and environmental impact is becoming increasingly significant. It is essential to include users' perspective, their comfort and satisfaction in decision making to ensure not only their well-being, but also the feasibility of interventions and the adequate performance of the building stock. Furthermore, understanding residents' level of thermal satisfaction can enable more appropriate measures to improve the energy efficiency of buildings. Although there are several methods for studying thermal comfort, such as qualitative analyses based on surveys or perceived comfort indices such as PPD and PMV, thermal satisfaction is susceptible to the subjectivity of the responses. It may be necessary to contrast different indices or methods. This study aims to define an indicator that measures the level of thermal satisfaction of social housing occupants so that it can be contrasted with other methods of analysis of perceived comfort and can be replicated in different building contexts. A way to analyse users' thermal satisfaction is proposed in a quantitative way, measured as the difference of the desired temperature and the perceived indoor temperature. The index is applied to a sample of 283 social housing dwellings in the Basque Country, Spain, with the data obtained via surveys that include questions on thermal comfort in winter and households' characteristics. The thermal satisfaction has been analysed and the results have been contrasted with the perceived thermal comfort in winter and the household's capacity to maintain the dwelling at the desired temperature. Moreover, it has been observed whether there may be energy vulnerabilities by contrasting the satisfaction result with the income and expenditure per person in the household. The obtained variable provides occupants' opinion and perception to ensure the suitability of the solutions for improving the energy efficiency of the building and the thermal comfort. It is also possible to apply it to different building typologies and compare the results with other models of perceived thermal comfort.

Keywords – Built environment; occupant perception; thermal comfort; satisfaction; social housing

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