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New resilience model of communities based on numerical evaluation and observed post seismic reconstruction process

M. Vona^{a,*}, M. Mastroberti^b, L. Mitidieri^b, S. Tataranna^b

^aAssistant Professor Marco Vona, PhD, School of Engineering, University of Basilicata, Viale dell'Ateneo Lucano, 10, Potenza, PZ 85100, Italy

^bSchool of Engineering, University of Basilicata, Potenza, PZ 85100, Italy

*Corresponding author. Tel: +39 0971205063, mobile: +39 348 4599758. marco.vona@unibas.it

ABSTRACT

The recent medium and strong-intensity earthquakes have caused high economic losses and have highlighted a low resilience of communities. The former are due to the high vulnerability of the buildings and the correlated economic system. Thus, for each single building, relatively simple investigations and effective strategies could be defined. The resilience of communities is strongly conditioned by the housing system, and their long recovery time by several social-economic-management issues. In other words, the seismic resilience of communities seems to be very poor. Besides, only in the last years have studies on the seismic resilience of the housing system been developed, but in general only in a qualitative or conceptual way. In this study, some evaluations and proposals are reported about the actual resilience of the communities and its investigation model. Finally, a new model to improve and quantify the resilience of the communities is proposed. It is useful to define mitigation strategies based on the prioritization of the retrofit interventions oriented towards the increase of resilience. Similarly, priority schemes should be able to address the economic resources on the less seismically resilient areas and building types. The proposed model allows a first attempt in the probabilistic quantification of resilience communities based on the housing system.

Keywords: Seismic Communities Resilience; Housing System; Seismic losses; Quantitative Approach; Repair Costs.

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