



Comparing methodologies to assess vulnerability based on EMS-98

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A comparison of three different methods for estimating earthquake vulnerability of the building stock at an urban area is presented. All methods are based on the EMS98 scale: The first method is based on Fuzzy Set theory (Giovinazzi and Lagomarsino, 2003); the second is based on simple statistics and the third method using the Macbeth algorithm (Bana e Costa and Vansnick, 1997).

The Fuzzi Set approach proposed by Giovinazzi and Lagomarsino (2003) is somewhat difficult to interpret. In this paper two alternative approaches are presented. One is based on very simple statistics considering only expected values of vulnerability index; however, leading to the same results. The other one is a very powerful methodology used in Multiple Criteria Decision Aid (MCDA) based on linear programming; it is, however, of very friendly use and understanding.

Reference:

Bana e Costa, C. A. and J.-C. Vansnick (1997). A Theoretical Framework for Measuring Attractiveness by a Categorical Based Evaluation Technique (macbeth), in Multi-criteria Analysis, J. Clímaco (ed.), Springer-Verlag, pp 15-24.