

# Assessment of seismic fragility of historical buildings at the urban scale by typological-mechanical approaches: the case study of Foggia – SAHC2020

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## ABSTRACT

The study of the seismic vulnerability of historical centres, especially in the Mediterranean zone, is one of the main issue in ongoing scientific research. This is due, on the one hand, to the continuous evolution of the seismic demand and, on the other hand, to the higher vulnerability of the masonry existing building stock.

The seismic events of the last few years highlighted the necessity to perform a large-scale survey of the huge amount of masonry buildings that constitutes the historical centres, in order provide prioritization scales for planning the retrofit strategies. With this regard, the scientific literature provides several methodologies, which allow a rapid assessment based on pre-defined survey forms. The data gathering obtained from the surveys is usually involved as input of algorithms able to provide information about the safety level of the building investigated.

The aim of the present work is to propose a general framework for analysing the seismic vulnerability of masonry historical centres and deriving fragility curves basing on multiple data sources. In particular, using the data collected through existing territorial databases, supplemented by a set of vulnerability forms available for the city centre of the Municipality of Foggia, Southern Italy, some vulnerability classes are defined. Based on the mechanical and geometrical features identified for each class, several ideal and representative buildings are generated, and their seismic behaviour is investigated through the variation of significant parameters.

At the end, the capacity of the buildings is evaluated by performing simplified nonlinear analyses and, subsequently, by estimating the safety level of the sample through the definition of regional vulnerability curves.

## REFERENCES

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