

**Session ID:** RES-7

**Title**

A MODEL FOR UNDERSTANDING AND ADDRESSING SEISMIC RISK IN VULNERABLE HOUSING.  
CASE STUDY: COLOMBIA

**Convenors**

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**Description**

By 2030, UN-Habitat estimates that 40% of the global population will not have access to adequate housing. The lack of sufficient habitability measures in inadequate housing is frequently further exacerbated by structural deficiencies that make these houses unsafe to live in, especially when exposed to seismic hazard. In Colombia, IDIGER (risk management agency in Bogotá), reports that 75% of residential buildings in the city are highly vulnerable to seismic events, as they are built with unreinforced masonry. This percentage becomes 70% for Medellín and 60% for Cali, based on seismic exposure models developed by GEM. This vulnerable housing is typically built incrementally, expanding vertically over time without any engineering assessment or design.

There is an urgent need for sustainable and scalable engineered solutions. Stakeholders across the value chain, including public institutions, universities, professional organizations, and risk management agencies, have jointly addressed this by performing new investigations, developing a methodology and carrying out direct field applications. The effort has resulted in a better understanding of the risk, the drafting of AIS-410 Evaluación y Reducción de la vulnerabilidad sísmica en viviendas de mampostería (Evaluation and Reduction of Seismic Vulnerability in masonry houses), and implementation of mitigation programs in several municipalities. AIS-410 is a proposed standard that includes a simplified methodology to evaluate and reduce seismic risk in informally built houses, acknowledging the typical existing conditions not presently covered by the national building code, NSR-10. This technical session will present the Colombian experience through the work performed by some of its main actors, which serves as a model that can be expanded to other contexts and geographies where the reduction of seismic vulnerability in housing is a great need (and challenge) to achieving effective risk mitigation.

**Invited Speakers**

J.C. Reyes Ortiz <sup>3,2</sup>, A.B. Acevedo Jaramillo <sup>4</sup>, S.R. Jerez Barbosa <sup>5,2</sup>, S. Andrade Pardo <sup>6,2</sup>

**Affiliations**

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