Resilience exposure assessment using multi-layer mapping of Portuguese 308 cities and communities

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Abstract Urban resilience research covers multiple fields of study like earthquakes, floods, and tsunamis, amongst other types of disaster risks. Resilience evaluation systems have been used to aggregate and calibrate multi-dimensional resilience-related inputs. But these evaluation systems do not offer comprehensive outputs nor sufficient analytical capacity to support the design and implementation of city and community recovery and resilience plans. This study focuses on the strategic needs of resilience and recovery plans for Portuguese cities and communities and proposes a sophisticated mapping system to address this gap. The main output of the proposed approach is a multi-layer heatmaps with scores based on various disasters for all Portuguese cities. The resilience score is obtained through real statistical geo-data analysis.

1 Introduction

Urban resilience evaluation is becoming a progressively significant subject, with senior management of public and private organizations focusing on the requirements to protect and maximize the value derived from the urban built environment and its constructed assets (Almeida et al., 2021; Falcão Silva et al., 2020). The authors have previously proposed an Urban Resilience Evaluation System (URES)

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