

# Simple model underpins building safety in the wake of landslides

May 8 2014

---

A simple model that can quickly determine which masonry buildings are most at risk of collapse following a serious landslide has been developed by researchers in Italy. They publish details in a forthcoming issue of the *International Journal of Structural Engineering*.

Fabrizio Palmisano of Politecnico Bari, and Angelo Elia of PPV Consulting, also in Bari, Italy, explain how landslides can represent a significant risk to human life in many parts of the world. Landslides are common in the southern Apennines of Italy causing frequent damage to buildings and infrastructure. There are, the team points out, many ways to assess structural damage and the risk of further damage or collapse in the aftermath of a serious landslide. However, these approaches are often longwinded and require a large amount of active data input from the affected sites as well as sophisticated engineering modelling tools to interpret the data.

The researchers hoped to provide a much simpler model that could give rescue workers and structural engineers a first approximation to the most seriously affected buildings. The problems facing those buildings might then be prioritized for more sophisticated modelling to determine what needs to be done to save the building or to make the decision to demolish it completely for the sake of safety. The researchers have turned to the load path method (LPM) that gives them a rapid quantitative assessment of a damaged masonry building without losing sight of the obvious visual clues offered to [structural engineers](#) monitoring the building. The LPM can be used to quickly reveal

problems with a building's foundations compromised by the landslide as well as looking at the integrity of stonework and the mortar that holds bricks together.

A theoretical comparison with actual case studies in which more sophisticated models were used, such as the finite element method (FEM), is now revealing how effective the LPM can be in assessing structural integrity, or lack thereof, following a [landslide](#).

**More information:** "Behaviour of masonry buildings subjected to landslide-induced settlements" in *Int. J. Structural Engineering*, 2014, 5, 93-114

Provided by Inderscience

Citation: Simple model underpins building safety in the wake of landslides (2014, May 8)  
retrieved 25 April 2024 from  
<https://phys.org/news/2014-05-simple-underpins-safety-landslides.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--