

Engineering - Structural Engineering; New Structural Engineering Study Findings Recently Were Reported by Researchers at University of Texas at Austin (Updated Evaluation Metrics for Optimal Intensity Measure Selection In Probabilistic Seismic Demand Models)

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2020 JAN 6 (VerticalNews) -- By a News Reporter-Staff News Editor at Journal of Engineering -- Current study results on Engineering - Structural Engineering have been published. According to news reporting out of Austin, Texas, by VerticalNews editors, research stated, "This study proposes an update on the criteria that are typically used to select the optimal intensity measures (IMs) for development of probabilistic seismic demand models (PSDMs), which relate the input seismic hazard and structural responses. Employing an optimal IM contributes to decreasing the uncertainty in the PSDMs, which, in turn, increases the reliability of the PSDMs used in performance-based earthquake engineering analyses."

Funders for this research include Texas Department of Transportation (TxDOT), state of Texas through the TexNet Seismic Monitoring Project, Center for Integrated Seismic Research (CISR) at the Bureau of Economic Geology of the University of Texas.

Our news journalists obtained a quote from the research from the University of Texas at Austin, "In the literature, the optimality of the IMs is generally evaluated by the following metrics: efficiency; practicality; proficiency, which is the composite of efficiency and practicality; sufficiency; and hazard computability. The present study shows that the current criteria for evaluating the practicality and proficiency features may mislead the selection of the optimal IM when IMs with different ranges and magnitudes are investigated. Moreover, the efficiency metric can provide biased results when comparing IMs for predicting demands of different structural components or types of systems. As a result, alternative solutions are proposed to investigate the efficiency, practicality, and proficiency features of the IMs."

According to the news editors, the research concluded: "The suggested metrics are employed in a case study to evaluate the IMs used to develop PSDMs for multi-span continuous steel girder bridges in Texas subjected to human-induced seismic hazard."

For more information on this research see: Updated Evaluation Metrics for Optimal Intensity Measure Selection In Probabilistic Seismic Demand Models. Engineering Structures, 2020;202():. Engineering Structures can be contacted at: Elsevier Sci Ltd, The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, Oxon, England. (Elsevier - www.elsevier.com; Engineering Structures - www.journals.elsevier.com/engineering-structures/)

Our news journalists report that additional information may be obtained by contacting F. Khosravikia, University of Texas at Austin, Dept. of Civil Architectural and Environmental Engineering, Austin, TX 78712, United States.

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