FICHAS BIBLIOGRÁFICAS - ESTUDIOS PROBABILISTAS DE RIESGO EN COLOMBIA

Título: Probabilistic estimation of annual lost economic production due to premature deaths because of earthquakes

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RESUMEN

A methodology to estimate, in a probabilistic way, the annual cost to society of premature deaths because of earthquakes is proposed in this article. The methodology makes use of results obtained by means of prospective and probabilistic seismic risk assessments where expected deaths caused by the collapse of buildings are obtained. Those results, combined with demographic and macroeconomic indicators such as the age distribution, life expectancy at birth, and per capita gross domestic product, are used to estimate the cost to society in terms of lost productivity due to premature mortality because of earthquakes. The proposed methodology does not attempt to estimate nor assign a cost to human lives at any stage, but the one associated to lost productivity at the societal level. One of the descriptors of the methodology is part of the components of the disability adjusted life year, a widely used metric in the public health field that estimates the burden of diseases based mostly on historical data. As an example, the methodology is applied to Medell_in, the second largest city of Colombia, finding that the cost of lost productivity due to premature mortality because of earthquakes has a similar order of magnitude to the direct physical losses in the public and private building stock calculated in a previous probabilistic seismicrisk assessment.

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Probabilistic estimation of annual lost economic production due to premature deaths because of earthquakes

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INSTITUCIÓN / REVISTA / ORGANIZACIÓN / EDITOR	Human and Ecological risk assessment
PALABRAS CLAVE	Probabilistic seismic risk assessment, average annual deaths, earthquake casualties, disability adjusted life year, CAPRA

COMPONENTES DE LA EVALUACIÓN

AMENAZA	1. Tipo de amenaza: sismo 2. Métricas de intensidad: Peak Ground Acceleration (PGA) 3. Escala/resolución: Local 4. Resultados: - 5. Localización: Medellín, Colombia 6. Metodología: Estudio general de amenaza sísmica de Colombia (AIS et al, 2009), CRISIS 2007 (Ordaz, 2007) 7. Períodos de retorno (años): -
VULNERABILIDAD	1. Tipo de vulnerabilidad: Humana 2. Metodología: Analítica. Salgado (2015) 3. Tipología estructural: - 4. Representación: Función de vulnerabilidad; PGA vs. Letalidad
EXPOSICIÓN	1. Tipo exposición: Humana 2. Portafolios: Población 3. Localización geográfica: Medellín, Colombia 4. Valor de reposición total: - 5. Área expuesta (m2): -
RESULTADOS DE RIESGO	1. Modelo utilizado: Ordaz (2000) 2. Métricas de riesgo: Muertes anuales esperadas 3. PAE: - 4. PML: - 5. Representación del riesgo: Curva de excedencia de pérdidas