# Landslide risk assessment for individual buildings. A case study from the Prahova Subcarpathians, ROMANIA

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The aim of this study is to quantify the landslide risk for individual buildings using spatial data in a GIS environment. To document the efficiency of the method, a landslide prone area along Prahova Subcarpathian Valley was chosen, where landslide hazard interacts with human settlement and activities. The bivariate landslide susceptibility index (LSI) was used to calculate the spatial probability of landslides occurrence. LSI is a bivariate statistical approach that compares the spatial distribution of landslides with each individual factor that is being considered. The Landslide Susceptibility Index map was produced by numerically adding the weighted thematic maps for slope gradient and aspect, watertable, soil texture, lithology, built environment and land use. The values obtained were in good agreement with the field observations. Validation curves were obtained using the random-split strategy for two combinations of variables: (a) all seven variables and (b) three variables which showed highest individual success rates with respect to landslides occurrences (slope gradient, watertable and land use). The principal pre-disposing factors were found to be slope steepness and groundwater table. Vulnerability was established as the degree of loss to individual buildings resulting from a potential damaging landslide with a given return period in an area. Risk was calculated by multiplying the spatial probability of landslides by the vulnerability for each building and summing up the losses for a 10 years return period.