Qualitative Risk Assessment

By
Md. Mehedi Hasan

Objective:

This exercise shows you a simple method for qualitative risk assessment, using a matrix to combine qualitative vulnerability and susceptibility classes. We take landslide risk as an example here.

Procedure

This exercise involves creating vulnerability and hazard maps and combining them into a qualitative risk map.

1. **Vulnerability Map Creation:**
    - Utilizes a landslide susceptibility map, building blocks, and additional data (high-resolution images, land use).
    - Simplifies vulnerability classification into three levels (low, moderate, high) based on building numbers.
    - Rasterizes and categorizes units based on buildings and population.
2. **Combining Hazard and Vulnerability:**
    - Adjusts the susceptibility map to include active and old landslides, converting it into a hazard map.
    - A risk matrix combines hazard and vulnerability, producing a qualitative risk map with high, moderate, and low-risk areas.

Significance

This exercise lies in its ability to provide a practical, qualitative method for assessing risk in areas prone to landslides. By combining hazard (landslide susceptibility) and vulnerability (number of buildings and population), the exercise creates a risk map that helps identify areas with varying degrees of risk (high, moderate, low). This method is particularly valuable when there is insufficient temporal data to calculate precise hazard probabilities, offering a simplified yet effective approach to disaster risk management and urban planning. It aids in prioritizing mitigation efforts and resource allocation based on risk levels.

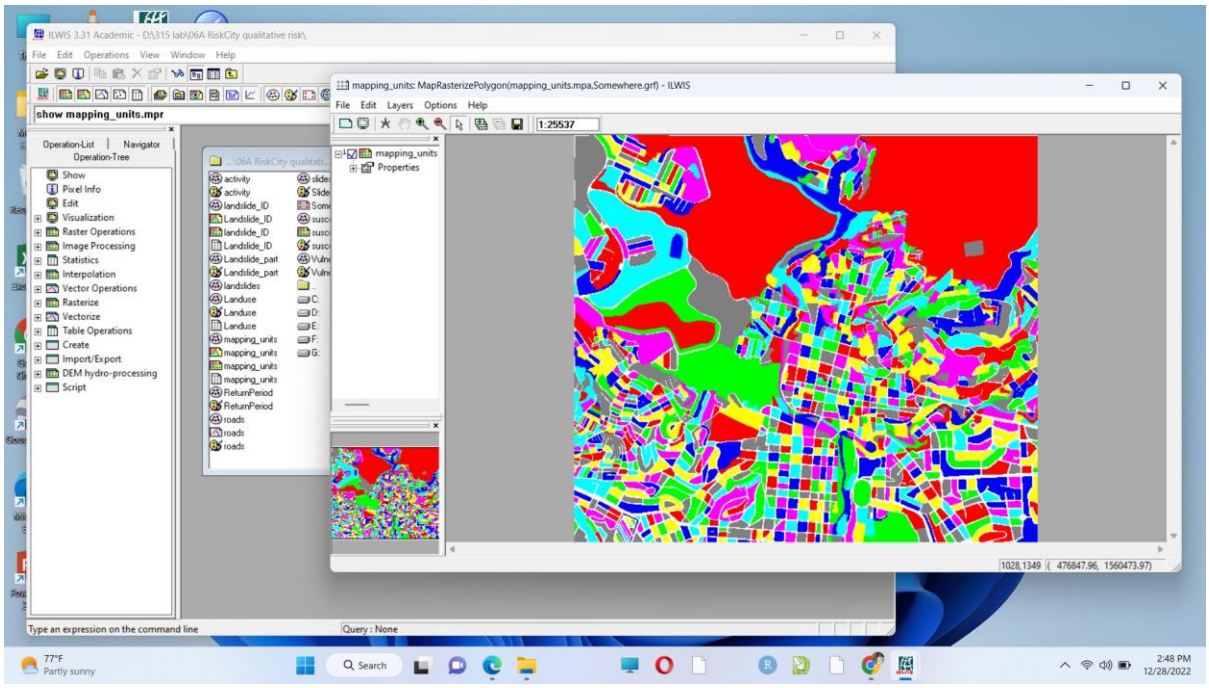

Figure 1: Mapping_units

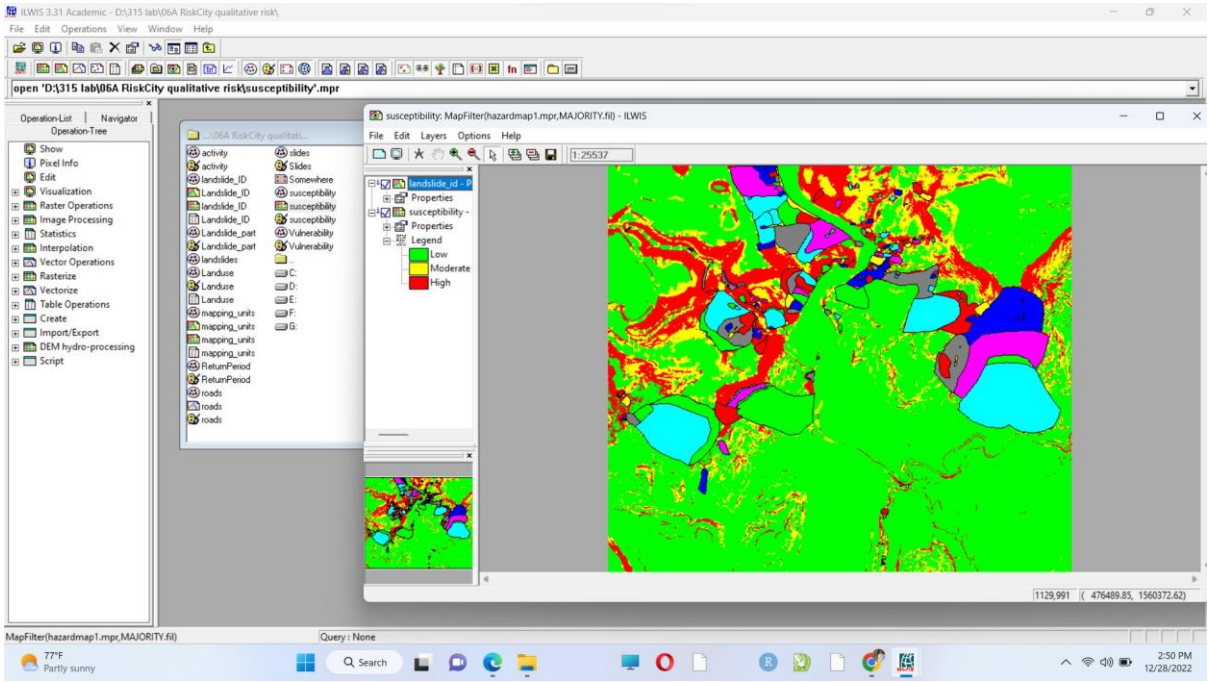

Figure 2: Landslide Susceptibility Map

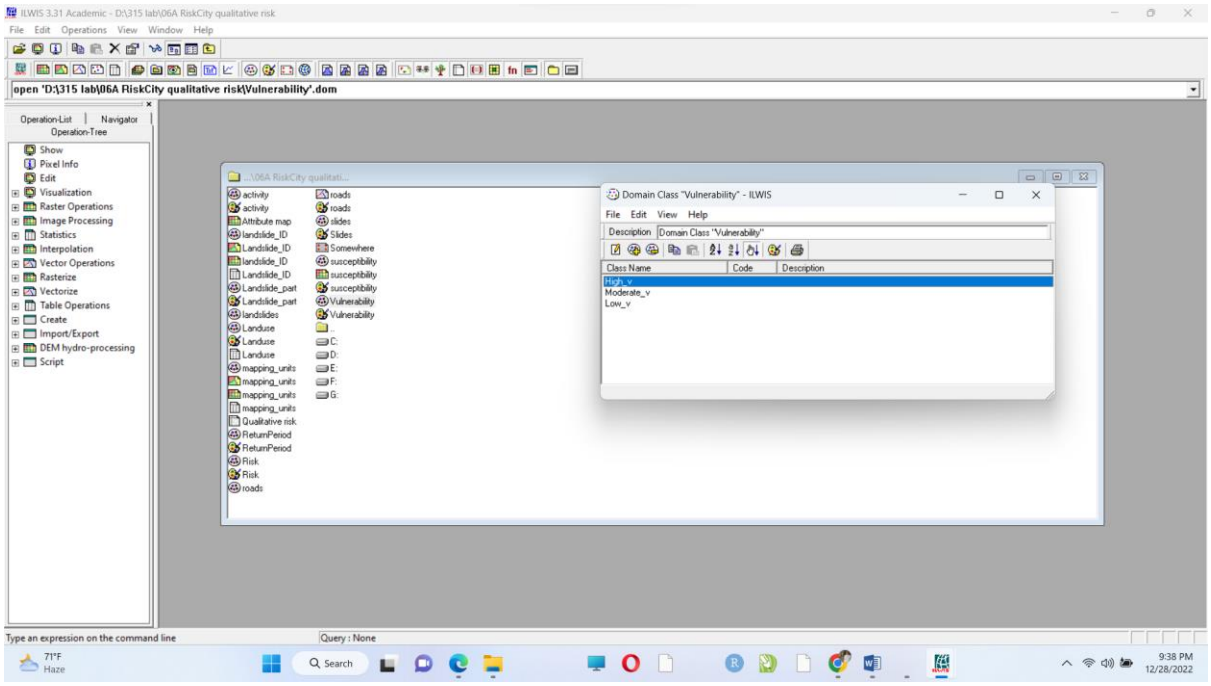

Figure 3: Vulnerability domain

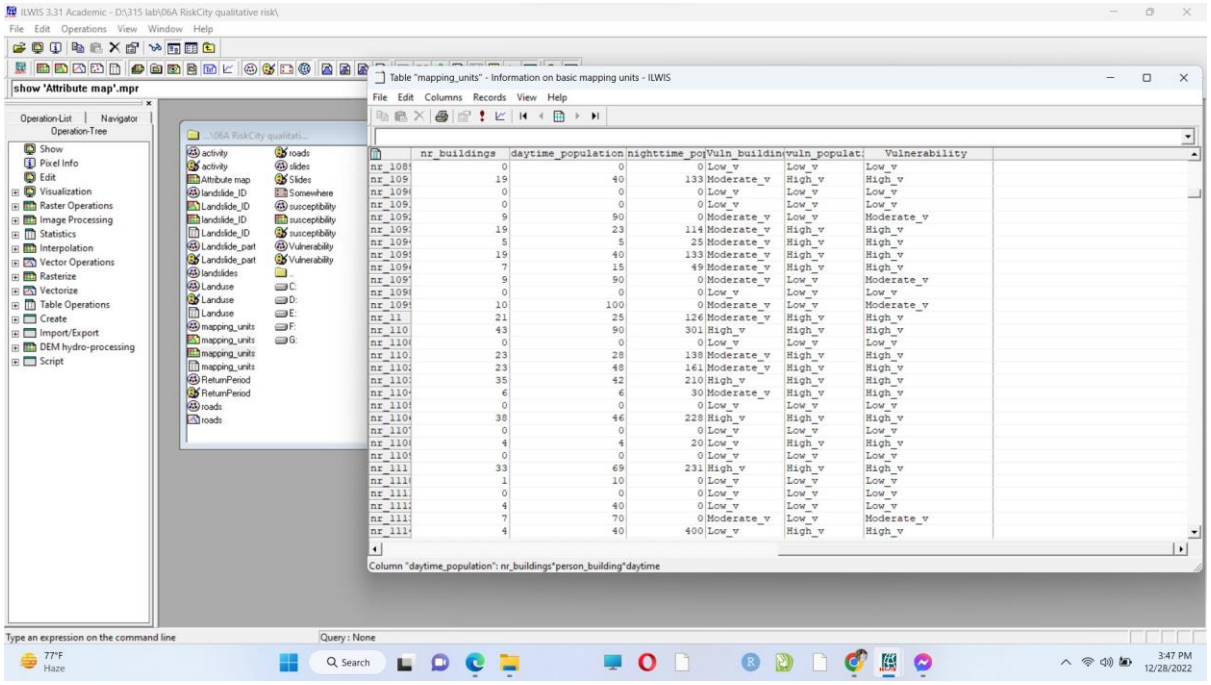

Figure 4: Mapping units including vuln_buildings, vuln_population and vulnerability

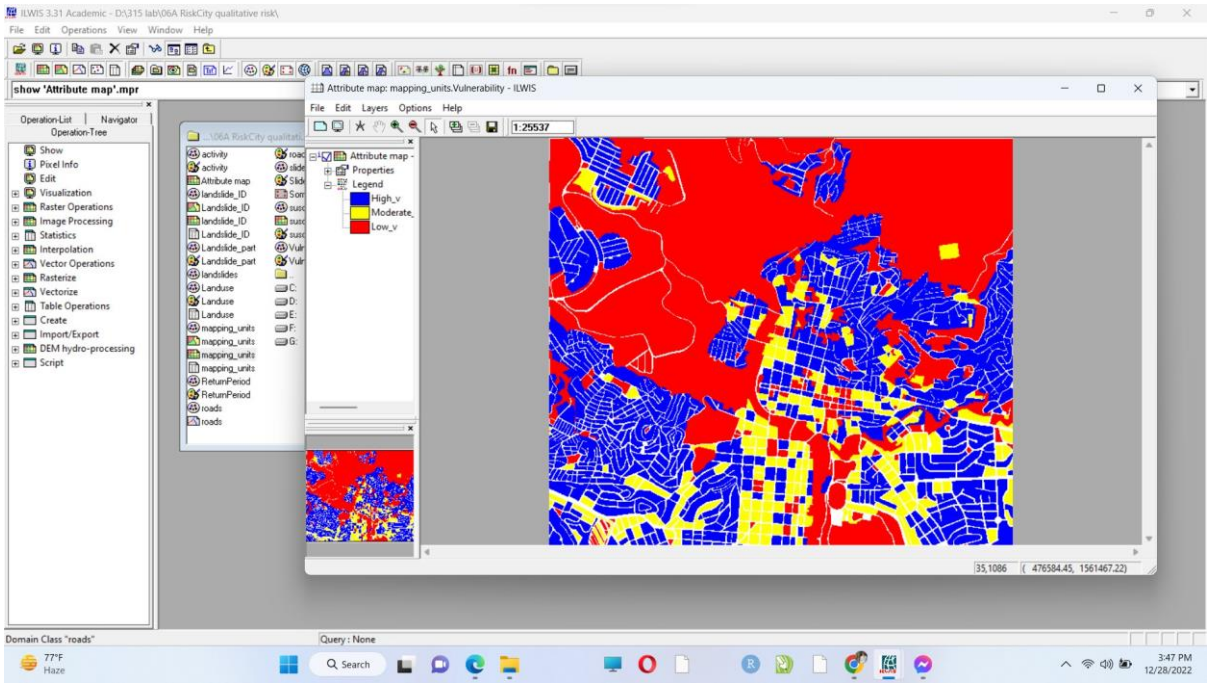

Figure 5: Attribute map mapping units

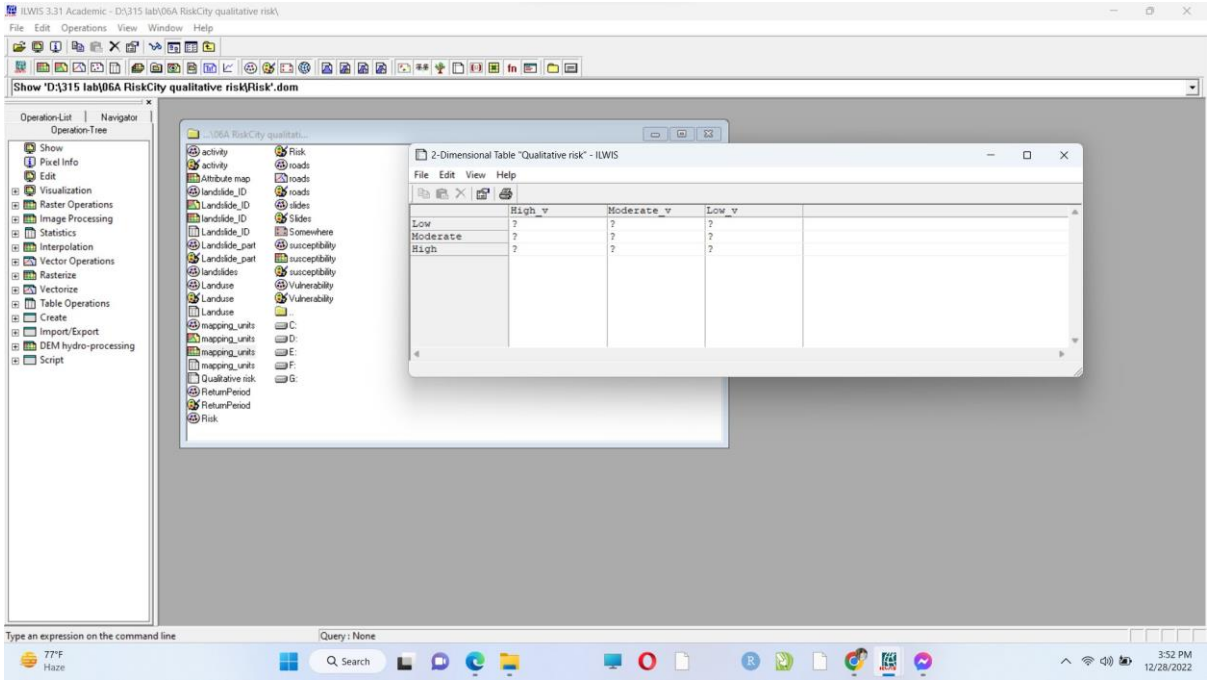

Figure 6: 2-dimensional table of Qualitative Risk

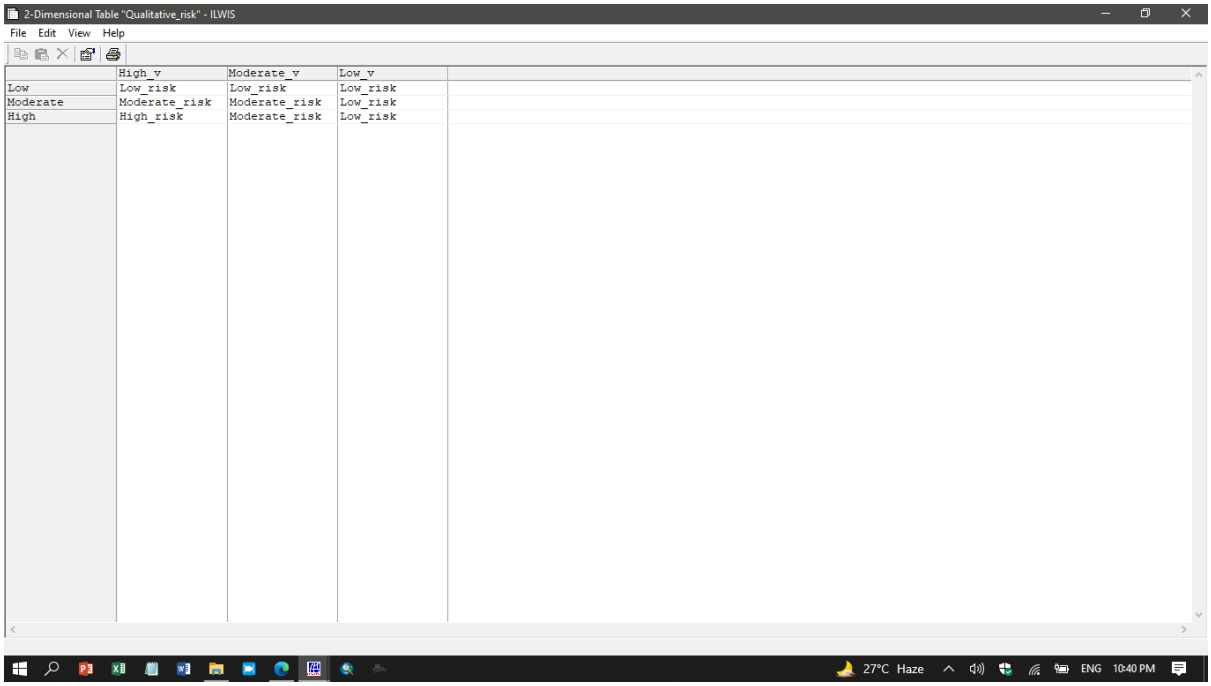

Figure 7: Result of 2-dimensional Qualitative Risk