Risk Score Weights by Category

**1. Flood Risk - 40% Weight**

**Scoring Factors and Sub-weights:**

A screenshot of a computer

AI-generated content may be incorrect.  
  
**Score Calculation Example:**

* Property at 5m elevation, 100m from river, flooded 3 times in 10 years, poor drainage
* Elevation score: 7/10 × 30% = 2.1
* Frequency score: 8/10 × 25% = 2.0
* Proximity score: 8/10 × 20% = 1.6
* Drainage score: 7/10 × 15% = 1.05
* Storm surge score: 2/10 × 10% = 0.2
* Total Flood Score: 6.95/10

**2. Seismic/Earthquake Risk - 35% Weight**

**Scoring Factors and Sub-weights:**

A screenshot of a computer

AI-generated content may be incorrect.

**Score Calculation Example:**

* Property 8km from Valley Fault, moderate liquefaction risk, built in 2000
* Fault distance score: 7/10 × 40% = 2.8
* Liquefaction score: 6/10 × 25% = 1.5
* Ground shaking score: 7/10 × 20% = 1.4
* Building vulnerability score: 5/10 × 15% = 0.75
* **Total Seismic Score: 6.45/10**

**3. Landslide Risk - 25% Weight**

**Scoring Factors and Sub-weights:**

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AI-generated content may be incorrect.

**Score Calculation Example:**

* Property on 20-degree slope, clay soil, moderate vegetation, 1 landslide in area
* Slope score: 6/10 × 35% = 2.1
* Soil stability score: 7/10 × 25% = 1.75
* Vegetation score: 5/10 × 20% = 1.0
* Historical score: 6/10 × 20% = 1.2
* **Total Landslide Score: 6.05/10**
* Complete Risk Score Calculation
* Using the example scores above:
* Risk Score = (Flood × 40%) + (Seismic × 35%) + (Landslide × 25%)
* Risk Score = (6.95 × 0.40) + (6.45 × 0.35) + (6.05 × 0.25)
* Risk Score = 2.78 + 2.26 + 1.51 = 6.55/10
* Result: HIGH RISK property with reduced value (-10% to -25%)

**Data Sources for Each Category:**

**Government Agencies:**

* **PHIVOLCS** - Earthquake and fault line data
* **PAGASA** - Meteorological and flood data
* **MGB (Mines and Geosciences Bureau)** - Landslide hazard maps
* **NAMRIA** - Topographic and elevation data
* **DPWH** - Infrastructure and drainage information

**Satellite Data (via PhilSA):**

* **Sentinel-1/2** - Land cover, vegetation, water bodies
* **SRTM/ASTER** - Digital elevation models
* **Landsat** - Historical land use changes
* **ALOS PALSAR** - High-resolution terrain data

**Sources for Risk Score Weight Justifications:**

**Flood Risk - 40%**

**Disaster Breakdown Statistics:**

* Typhoons and storms make up 58% of all disasters in the Philippines, with related flooding accounting for 25% of disasters.
* GHD's Aquanomics model projects floods and tropical storms will amount to over 90% of direct losses (around $89 billion) between 2022 and 2050.
* Storms would have the greatest direct impact on the Philippine economy with losses reaching $47 billion, followed by floods at around $42 billion until 2050.

**Key Source:**

* **GHD Aquanomics Report**: <https://aquanomics.ghd.com/en/philippines.html>
* **ICSC Report**: <https://icsc.ngo/storms-floods-to-cost-phl-124-billion-by-2050/>
* **Philippine Star Article**: <https://www.philstar.com/business/2022/08/31/2206192/water-related-disasters-cost-philppines-124-billion>

**Seismic/Earthquake Risk - 35%**

**Economic Impact Data:**

* A magnitude 7.2 earthquake on the West Valley Fault could result in an estimated 48,000 fatalities and $48 billion in economic losses.
* Modelled total economic losses for Greater Metro Manila from a Magnitude 7.2 scenario is almost 2.5 trillion pesos.
* In 2023, earthquakes resulted in about 2.8 billion Philippine pesos worth of damages.

**Key Sources:**

* **World Bank Blog**: <https://blogs.worldbank.org/en/sustainablecities/seismic-resilience-metro-manila-accessing-healthcare-after-catastrophic>
* **PHIVOLCS Risk Analysis**: <https://gisweb.phivolcs.dost.gov.ph/phivolcs_hazardmaps/NCR/1%20Region/Earthquake%20Risk/Risk%20Analysis%20Project%20-%20Summary%20Report.pdf>
* **Statista Philippines Data**: <https://www.statista.com/statistics/1092988/philippine-value-damages-natural-disaster-by-type/>

**Landslide Risk - 25%**

**Landslide Statistics:**

* Landslides make up six percent of all disasters in the country.
* Small-scale natural hazard incidents resulted in 123 reported fatalities, with 93 deaths or 75.6% caused by landslides in 2024.
* Up to 80% of the country's total land area is landslide prone, making the Philippines the fourth most exposed to landslide risk after Indonesia, India and China.

**Key Sources:**

* **Philippine Statistics Authority**: <https://psa.gov.ph/statistics/environment-statistics/highlights/component-4-extreme-events-and-disaster>
* **ReliefWeb Report**: <https://reliefweb.int/report/philippines/philippines-landslide-risk-increasing>
* **DisasterLink Country Profile**: <https://give2asia.org/philippines-disaster-country-profile/>

**General Philippine Disaster Data:**

**Overall Statistics:**

* The Philippines is visited by an average of 20 typhoons every year, five of which are destructive.
* From 1983 to 2012, economic losses from storms totaled $5.9 billion.
* The Philippines suffers an annual economic loss of US$500-625 million from flooding.

**Key Government Sources:**

* **PHIVOLCS (Philippine Institute of Volcanology and Seismology)**: <https://www.phivolcs.dost.gov.ph/>
* **Philippine Statistics Authority**: <https://psa.gov.ph/>
* **Asian Disaster Reduction Center**: <https://www.adrc.asia/nationinformation.php?NationCode=608&Lang=en>