Landslide Analysis Unit 2: LSI Values for the State of Arizona

Bobak Karimi (Wilkes University) and Stephen Hughes (University of Puerto Rico – Mayaguez)

*This first chart shows the LSI values for classifications used in determining the LSI for the state of Arizona. The minimum, maximum, range, and standard deviation are presented on the next page. Discuss why you think these classifications were used, and what the implications of the LSI values might indicate.*

|  |  |  |
| --- | --- | --- |
| **Layers (Factors)** | **Categories (Classes)** | **LSI** |
| Elevation (m) | <569 | -1.745 |
|   | 570-1056 | 0.694 |
|   | 1057-1533 | 0.142 |
|   | 1534-1976 | 0.03 |
|   | >1976 | -0.643 |
| Aspect | North | -0.175 |
|   | East | -0.028 |
|   | South | 0.178 |
|   | West | 0.006 |
| Slope | <5 | -1.045 |
|   | 6-13 | 0.356 |
|   | 14-24 | 0.827 |
|   | 25-40 | 1.584 |
|   | >41 | 2.148 |
| Mean Annual Precipitation (in) | <7 | -2.227 |
|   | 7-11 | -1.051 |
|   | 12-16 | 0.543 |
|   | 17-21 | 0.661 |
|   | >21 | 0.934 |
| Peak Ground Acceleration (%g) | <8 | -0.537 |
|   | 8-12 | 0.119 |
|   | 13-16 | 0.056 |
|   | 17-22 | 0.892 |
|   | >22 | 0.059 |
| Lithology | Metamorphic | 0.513 |
|   | Fine-Grained Igneous | 0.093 |
|   | Coarse-Grained Igneous | 0.459 |
|   | Quaternary Sediment | -0.891 |
|   | Sedimentary | 0.294 |
|   | Carbonate | -0.619 |
| Landcover | Developed Area | 0.154 |
|   | Open Water | 1.091 |
|   | Forest | -0.224 |
|   | Barren | 0.547 |
|   | Shrubland | 0.072 |
|   | Herbaceous | -0.65 |
|   | Planted/Cultivated | null |
|   | Wetlands | -1.792 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Factor** | **LSImin** | **LSImax** | **LSIrange** | **LSIst.dev.** |
| Elevation | -1.745 | 0.694 | 2.439 | 0.935 |
| Aspect | -0.175 | 0.178 | 0.353 | 0.145 |
| Slope | -1.045 | 2.148 | 3.193 | 1.228 |
| MAP | -2.227 | 0.934 | 3.161 | 1.361 |
| PGA | -0.537 | 0.892 | 1.429 | 0.509 |
| Lithology | -0.891 | 0.513 | 1.404 | 0.590 |
| Landcover | -1.792 | 1.091 | 2.883 | 0.923 |