

Indonesian Tourism: “10 New Bali’s” or Follies?

INTRODUCTION:

The Indonesian government has initiated a grand tourism strategy dined the “10 New Bali’s” project. Bali is the gold standard of tourist destinations, but it is becoming quickly overcrowded and Indonesia wants to replicate this success story nationwide. However, Indonesia is also one of the most disaster-prone nations, and these soon-to-be tourist hotspots are also natural disaster prone. Just this summer 2018, a series of quakes north of Lombok devastated this newly designated destination. As a result, more than 500 lives were lost in Lombok alongside a mass exodus of foreigners from the island. Indonesia's upbeat tourism numbers plunged in the second half of 2018 following the series of quakes as well as the tsunami disaster to follow on Sulawesi island resulting in thousands more casualties. Therefore, as the Indonesian government seeks to prop up the burgeoning tourism industry in underdeveloped regions, they must better understand the vulnerabilities and risks of these provinces given the prevalence of natural disasters. Although tourism can be a driver of economic development, a disaster’s impact is likely to be exacerbated in the interim while capacities are stretched to accommodate an influx of tourists.

SPATIAL QUESTIONS:

1. Which provinces in Indonesia are most at risk of natural disaster?
2. Who are most vulnerable in the case of a natural disaster?

METHOD:

The data used in this study was obtained from a natural disaster dataset from the Humanitarian Data Exchange and the 2015 Census from Statistics Indonesia (Badan Pusat Statistik), the central source for national census data. To conduct a natural disaster impact assessment for each of the designated 10 New Bali locations, I first composited a socioeconomic vulnerability index and a disaster risk index.

Socioeconomic Vulnerability - The vulnerability index for each province was calculated primarily with census data. The variables included (A) percent of children under age 4, (B) percent of elderly aged 65 and above, (C) population density, (D) illiteracy rate, and (E) poverty rate as % of population living on less than 1.5 USD per day. Each variable was ranked from 1-5 using the natural breaks (Jenks) distribution, which is designed to place variable values into naturally occurring data categories, before calculating an average score.

Disaster Risk - The disaster risk index incorporated three key variables from a ten-year natural disaster data set from 2009-2019. The variables included numbers of (F) tsunami and earthquake incidents as well as the associated (G) victims both injured and killed, and (H) homes destroyed. A similar scoring method was used here, but more weight given to (G) as this is a direct measure of human impact. Given that natural disasters occur inconsistently from year to year, it was also more meaningful to compare 10-year totals.

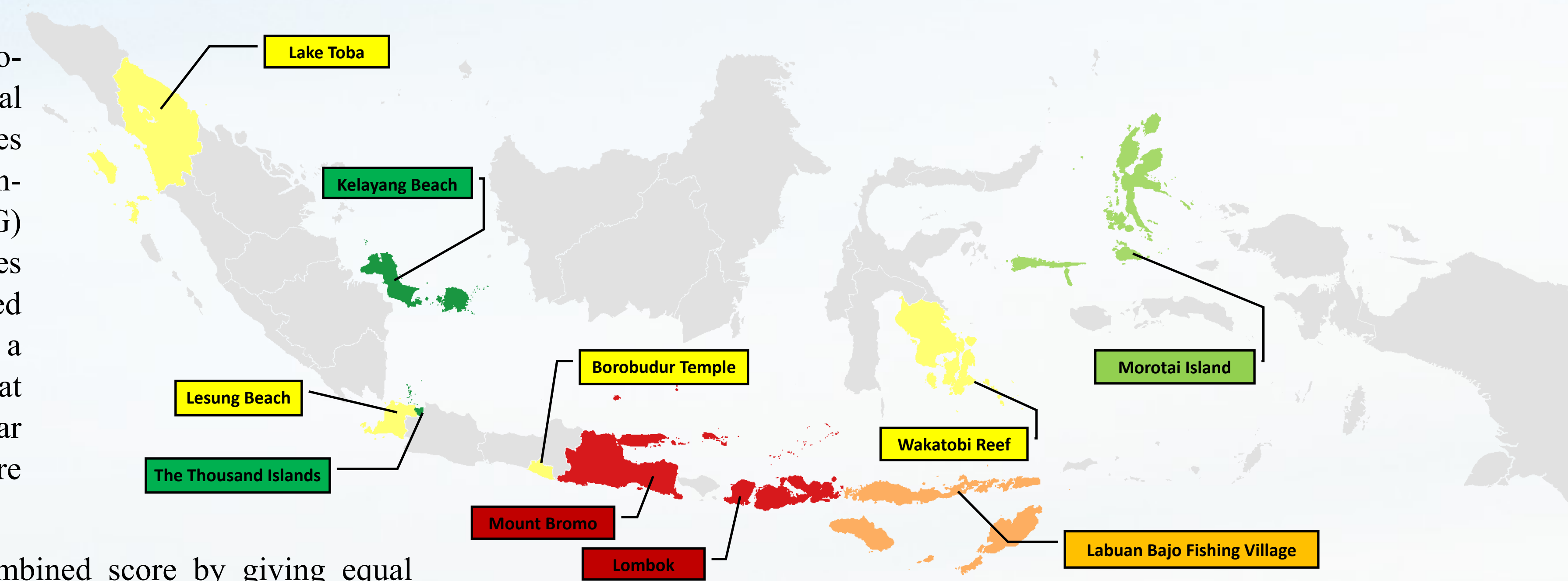
Disaster Impact: - Then, I calculated a combined score by giving equal weight to the vulnerability and risk indices before again applying the Jenks distribution method:

$$.5 * [\text{Vulnerability Index}] + .5 * [\text{Disaster Risk Index}]$$

The New Bali’s range from entire islands, a temple, a fishing village, and a lake. So, it was most sensible to conduct my analysis at the provincial level. Furthermore, Borobudur Temple is technically located in the Central Java province, but tourism most typically flows from the Yogyakarta Province.

FINDINGS:

Disaster Impact	Rank	Destination	Province
High	1.	Lombok	West Nusa Tenggara
	2.	Mount Bromo	East Java
	3.	Labuan Bajo Village	East Nusa Tenggara
Moderate	4.	Lesung Beach	Banten
	5.	Lake Toba	North Sumatra
	6.	Wakatobi Reef	Southeast Sulawesi
	7.	Borobudur Temple	Yogyakarta
Low	8.	Morotai Island	North Maluku
	9.	Kelayang Beach	Belitung
	10.	The Thousand Islands	Jakarta



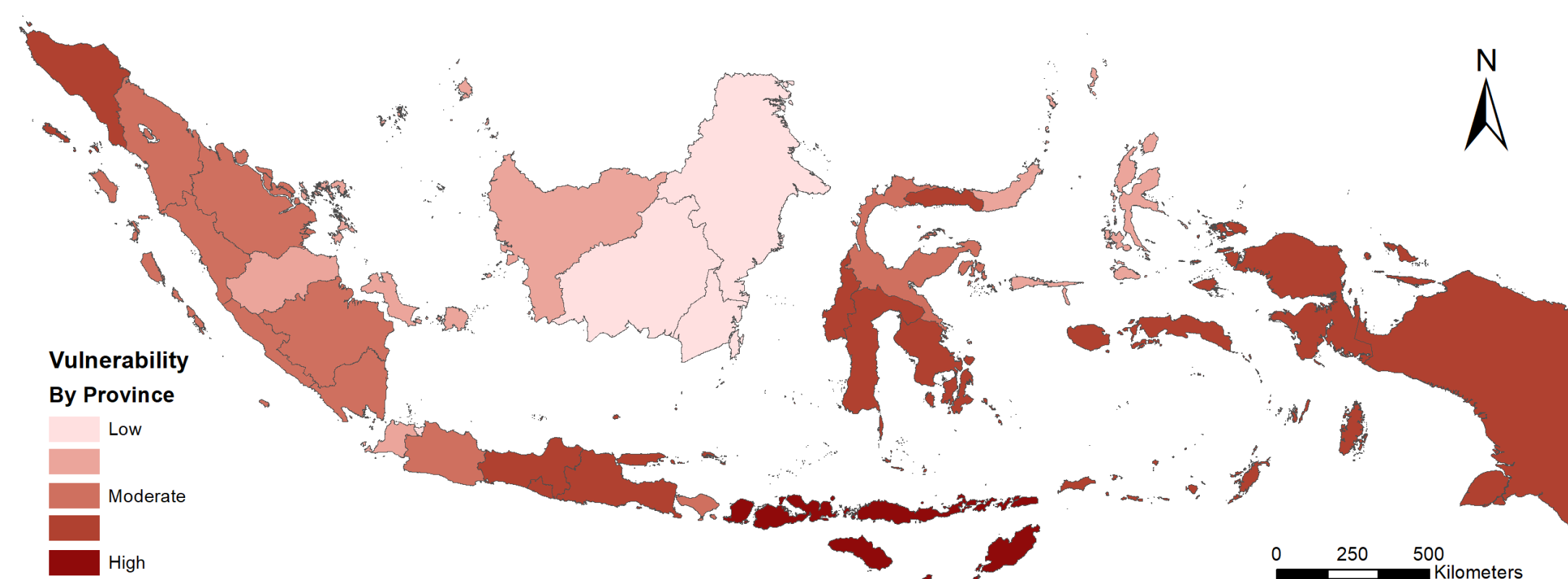
SUMMARY:

The findings show that Lombok, Mount Bromo, and Labuan Bajo Fishing Village face the greatest chance of being negatively impacted by a natural disaster. If Indonesia is to encourage the promotion of tourism to these new hubs, they should consider a phased approach. Promotion can be concentrated initially on the low-impacted provinces, while more well-rounded development efforts focus on the highly-impacted regions. Given the limited capacity of some of these sites, the government can also consider putting a cap on the number of visitors as is already being considered in Bali. Furthermore, it is essential that visitors are well-informed of the inherent risks of the places they visit, effective warnings systems are in place, and disaster relief services and procedures exist. All in all, this new initiative has the potential to steer tourism forward in Indonesia; however, a single tragedy could send things off course.



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 DHP P207 GIS for International Applications
 GIS Sources: Humanitarian Data Exchange, Statistics Indonesia
 (Badan Pusat Statistik)
 Projection: Makassar_NEIEZ

Socioeconomic Vulnerability by Province



Risk of Natural Disaster by Province



Composite Disaster Impact by Province

