Practicalities of Vulnerability Analysis:

Lessons from St. Vincent, Caribbean

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INTRODUCTION

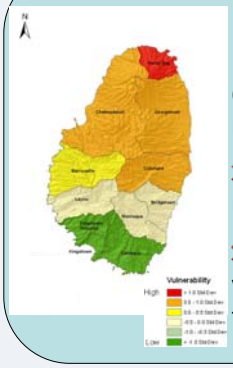
Understanding **people's vulnerability** to volcanic hazards is emerging as a research area that complements the physical studies of volcanoes. In order to better understand **potential losses** from volcanic eruptions we need to investigate the circumstances of those citizens threatened by a future eruption.

Vulnerability to natural hazards is multifaceted with stakeholder groups having different views of vulnerability and individual needs with respect to conducting vulnerability analyses. The literature is awash with **definitions**, **models** and **methods** for vulnerability analysis, and this makes the practical task of conducting a vulnerability analysis all the more complicated.

Research into vulnerability from volcanic hazards on the island of St. Vincent in the eastern Caribbean has utilised three different methods to conduct a vulnerability analysis in order to enable a **comparison** of the results and an **appraisal** of the different models and methods.

AIM – to investigate what makes people vulnerable to volcanic hazards and ***practically*** how does one go about measuring and analysing vulnerability?

Social vulnerability GIS mapping of **census** data using factors taken from interviews with different stakeholders (mapped by census division)



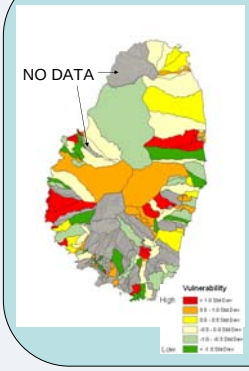
✓ Quick method

✓ No primary data collection required

✗ Large areal units

✗ Unquantifiable vulnerability factors

Residential building survey completed using digital records adds **physical vulnerability** to socio-economic factors (mapped by enumeration district)

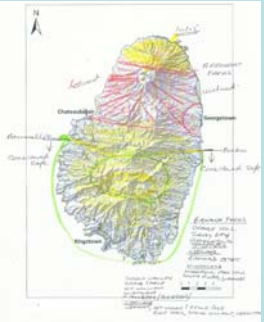


✓ Up-to-date survey

✓ Potential loss calculations for eruption scenario

✗ More detailed survey and engineering analysis would improve results

Stakeholder mental maps of vulnerability can help fill gaps in GIS method, and give insight into stakeholder understanding of vulnerability



✓ Excellent tool during interviews

✗ Problem of terminology

✗ Less spatial detail than hoped

RESULTS

- Areas of high social and building vulnerability do not coincide
- Proximity was the most common vulnerability factor mentioned by stakeholders
- Stakeholder mental maps mirror the existing integrated hazard map
- No single model or method is able to capture all elements of vulnerability identified by stakeholders

KEY ISSUES IDENTIFIED

- **Quantitative** or **qualitative** data collection and analysis?
- Should one measure **actual** or **relative** vulnerability?
- Measure vulnerability to a **single** hazard or **multi-hazards?**
- Problem of **terminology** – hazard vs vulnerability vs risk *and* difference in use of words between academic disciplines and stakeholders
- Are **maps** the most appropriate tool to use as an output?

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