

# Volcanic Risk and Vulnerability in Auckland

VISG Annual Seminar  
November 2008



# Theme 3: Risk and Social Model

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1. **Synthesis of existing risk and social data**
2. Fragility of Auckland infrastructure, buildings and population
3. Development of exposure database and model
4. Determining indirect and intangible impacts
5. Development of statistical risk assessment methods
6. Development of tools for improved societal response



# Theme 3: Risk and Social Model

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- Synthesis of existing risk and social data
  - Annotated bibliography
  - Summary of information available
  - Identification of gaps



# Early Information

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- Risk Assessments
  - Hazard scenarios
  - Qualitative/ descriptive analysis of impacts and vulnerability
  - Measuring risk in terms of \$
    - Ash clean up and disposal costs
    - Mitigation measures
    - Damage to the built environment
  - Spatial mapping of risk (not enough data)
    - Social deprivation index



# Early Focus

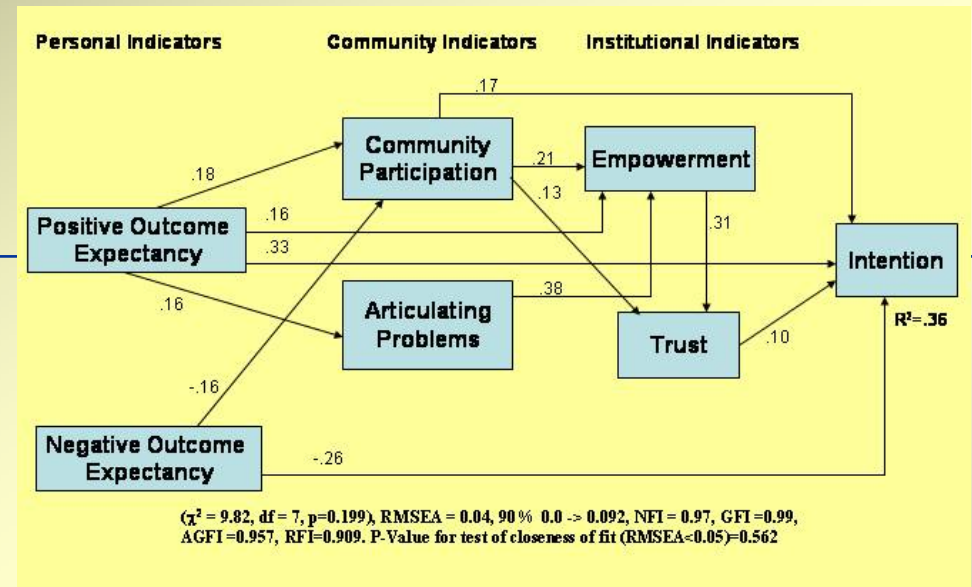
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- Impact on lifeline utilities
  - Auckland Engineering Lifelines Group
  - Volcanic Impacts Study Group
- Public Education
  - Awareness surveys
  - Effectiveness of public education campaigns
- Risk Perception
  - School children



# More recently

- Defining Community Resilience
- Comparative Risk Assessments
  - Prioritising risks
  - Qualitative and descriptive (HESIG)



Hazard	4360			Seriousness					Manageability			Growth	Total			
	Likelihood	Consequences	Level	Human	Economic	Social	Infrastructure	Geographic	Total	Average	Average of 4R's			Difficulty - Effort	Manageability Total across 4R's	
Flooding	A	2	H	1	2	2	3	3	11.0	2.2	1	3	-2.0	-2.0	1	1.2
Ex-Tropical Cyclone	B	3	H	4	4	3	4	3	18.0	3.6	2	2	0.0	0.0	2	5.6
Tsunami - Far-field	B	2	H	2	2	2	3	3	12.0	2.4	2	2	0.0	0.0	1	3.4
Tsunami - Near-field	D	4	H	4	4	3	4	4	19.0	3.8	3	2	1.0	1.0	1	5.8
Volcanic Eruption - Local	C	3	H	3	4	4	4	3	18.0	3.6	2	2	0.0	0.0	2	5.6
Volcanic Eruption - Distant	B	2	H	2	2	2	2	2	10.0	2.0	1	2	-1.0	-1.0	1	2.0
Fire - Rural	B	3	H	3	3	3	3	3	15.0	3.0	1	3	-2.0	-2.0	2	3.0
Biological - Introduced pests and animal diseases	B	3	H	1	5	2	1	3	12.0	2.4	2	1	1.0	1.0	2	5.4
Biological - Human epidemic	C	5	E	5	5	5	3	2	20.0	4.0	3	3	0.0	0.0	2	6.0



# Exercise Ruaumoko



- Economic Futures Model
  - “with business response”
  - “without business response”
  - Macro and micro
- Community behaviours
  - Focus groups
  - On-line survey
  - Street survey

Hazard awareness

Risk perception

Personal reactions to  
scenario and public  
information (evacuation)



# Current/ ongoing

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- Resilience
  - Community
    - Community development
    - Building capacity and capability
  - Organisational
- Behaviours
  - Evacuation
  - Warning systems



# Gaps

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- Spatial representation
  - Demographics
  - Indicator programmes
- Economic data
- Built environment
  - linking damage to service outages
  - building inventories
- Monitoring and evaluation
- Policy effectiveness

