

Living With the Throat of Fire:

The Role of Trust in Impending Volcanic Disaster

Volcán Tungurahua

- Translates to “throat of fire” in Quechua
- Stratovolcano in the Ecuadorian Andes
- Resumed activity after almost 70 years of quiescence
- Monitored by the Geophysical Institute based in Quito (IGEPN) out of the Tungurahua Volcano Observatory (OVT) in the sector Guadalupe N/NW of the crater

Baños de Agua Santa

- Tourist town of ~15,000 people
 - 95% of income is from tourism
 - Would be directly threatened if Tungurahua were to experience a sizeable eruption (e.g. pyroclastic flows, lahars)
- How do decision-makers utilize scientific information to negotiate domestic needs while balancing risk and uncertainty?

Methodology

- Thematic analysis of trust, identifying key subjects and recurring content from 1999-2012
- Timeline of eruptive, political, and social histories of Baños and the surrounding areas

→What factors influenced citizen trust of governmental and scientific authorities, and how did this trust impact perceived certainty of the hazard?

Trust Statements

- Adapted from Haynes et al. 2008
- Statements sourced from interviews, newspaper articles, journal articles, and documentaries
- Generic statements (below) were used to consistently sort statements into their respective categories

Group 1: Trust

- Competence:** Scientists do (not) have the necessary skills/experience to monitor volcano
- Credibility/Reliability:** The information they share is accurate
- Integrity:** Decisions are not influenced by others
- Care:** They look out for all interests of the citizens
- Fairness:** Decisions made are fair to everyone
- Openness:** All information about the volcano is provided to the public
- Value similarity:** Same perceptions of how safe/hazardous volcano is

Group 2: Certainty

- Certainty:** We worry about the state of the volcano.
- We are sure an eruption will not affect us.

Group 3: Agency

- Agency:** I have the means necessary to prepare for an eruption.
- I do not have the support I need to prepare.

1999

- Sept. 1999
- OVT Established
 - Yellow Alert issued

- Oct. 16, 1999
- Orange Alert
 - Evacuation

2000

- Jan. 5, 2000
- ~3000 residents forcefully return to Baños

- March 2000
- Basic services restored
 - Hospital reopens
 - Civil Defense to train emergency responders
 - Official transition from Sucre to US dollar

- 2000 (ongoing)
- Establishment of the “vigías” citizen monitoring program

- June 2000
- Petition to change alert level denied

- Sept. 5, 2000
- Evacuation lifted in Baños

2001

- Aug. 2001
- Movement to quiet the press and scientists

2002

- Aug. 2002
- 30% participate in evacuation exercise

Results

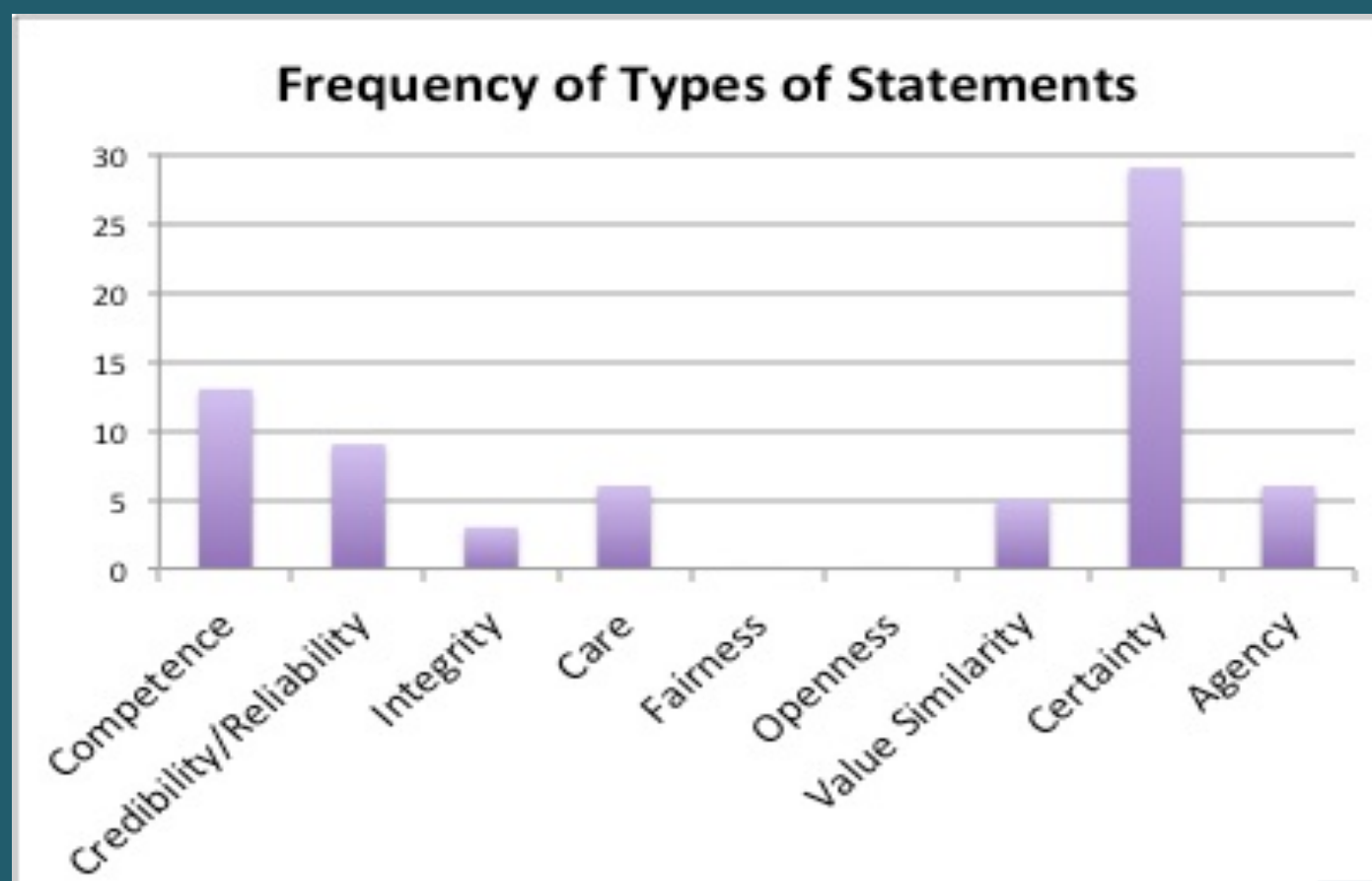


Fig. 1: Number of statements in each category. Total=71

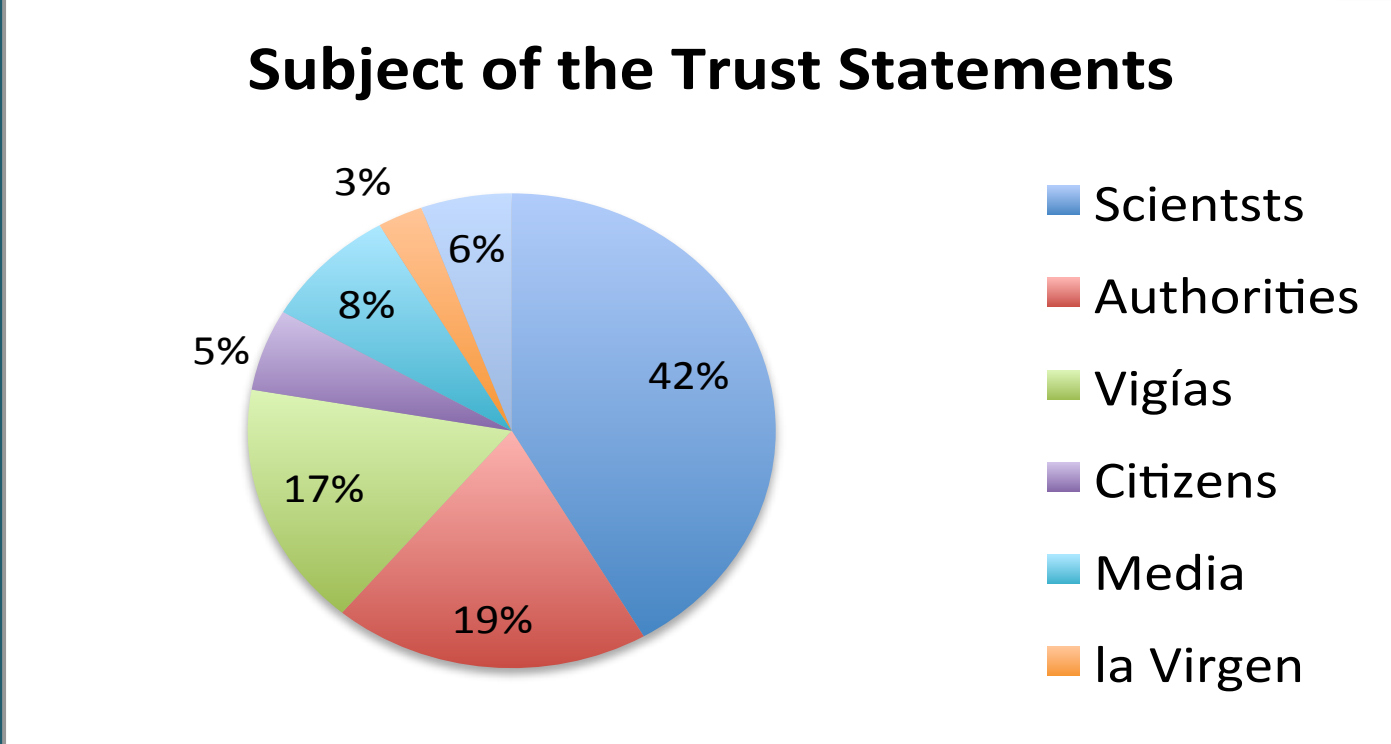


Fig. 2: Distribution of the different subjects referred to in each trust statement

“They didn’t look good, the science, because they look like they’re lying but they were just, I believe, it was because we couldn’t have information so no one was prepared.”
–Oscar, resident of Baños

“You Americans have to understand that this is not a land of opportunity...We cannot expect people to lose everything. The degree of fatilism here is much higher. The people do not have a choice but to stay.”
–Hugo Yepes, IGEPN Director

“Scientists are somewhat higher than us, and they think that they know more than this, but the vigías are people like us and feel too. The scientists only go to talk, not with feelings, like the vigías.”
–Resident of the *faldas*

Emphasis on:
→ Competence, Credibility/Reliability, and Care
→ Scientists, authorities, and vigías

- Trust: 50.7%
- (Un)Certainty: 40.8%
- Agency: 8.5%

Discussion

- Scientists did not noticeably exhibit the desired characteristics of trust (care, competence, and credibility) and consequently received the bulk of the blame for interrupting citizen livelihoods
- This happened in spite of the fact that they are not responsible for deciding to evacuate regions
- Decision-makers prioritized human life over economic prosperity, but only to the point of tangible economic collapse
- Uncertain risk bore weight in the initial risk governance, but the more pressing certainty of losing the tourism industry overshadowed the uncertainty of eruption
- The implementation of the vigía program helped to address some of the distrust toward scientists and increase the belief in risk from volcanic hazards
- Other research attributes this trend to value similarity, but my research found that this factor held less importance than three of the seven categories

Implications

- Early implementation of the vigía program at Volcán Cotopaxi has already been positively received by the residents
- Demonstrates the benefits of participatory disaster management so that all stakeholders feel represented in the decision-making process
- Potential transferability to climate governance amid rampant skepticism

Select References
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