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Overview

We live in a society of increasing risk. How people perceive this risk is a vital determinant in how they react to the impacts of disaster. Thus, understanding how individuals perceive risk and prepare for adverse situations has become very important. To better comprehend this issue, this study aims to achieve an understanding of risk perception and personal preparedness to the hazard of storm surge at high tide for the community of Oak Bay, BC. Based on a random sample of 50 waterfront homes in Oak Bay, 37 respondents successfully completed a 15 question survey. To help validate the survey results, in-depth interviews of 5 subject matter experts were also administered. A mixed methods approach was employed, with qualitative and quantitative assessments of socio-economic and socio-demographic variables utilized to assess risk perception and personal preparedness. Findings suggest that risk perception and personal preparedness are positively correlated, however based on some of the socio-economic variables in this study, the strengths of these correlations vary. Conclusions are drawn and policy suggestions are made regarding improvements for risk communication with the aim of reducing the risks associated with storm surge at high tide events for the community of Oak Bay, BC.



Risk Perception to Storm Surge at High Tide

Rooted in the dimensions of the likelihood and the consequences of hazard activity, risk perception has been identified as a vital predictor of people's decisions for action in the face of disaster. Risk perception has been defined as the decision maker's assessment of the uncertainty of the risk inherent in a particular situation. There has been an evolution of two divergent schools of thought: First is the psychometric approach, which adheres to multi-dimensional factors such as perceived personal controllability of the hazard, while the second, and the one employed for this study, utilizes socio-demographic factors in relation to variations of perceived risk.

How individuals receive and interpret information is characterized by the social contexts that make up demographic diversity. Identified as complex and interdependent, the use of socioeconomic and socio-demographic variables enables researchers to shape the relationship of risk perception between a population and a hazard. As identified throughout this study, the ideal social predictors for understanding risk perception were gender, perceived occurrence of the hazard, threat of injury, and the number of individuals per household.



Personal Preparedness to Storm Surge at High Tide

The safety of the community is determined not only by the effectiveness of the emergency management services, but also by the awareness and preparedness measures taken by individuals and organizations. The main challenge occurs when the impacts of disasters exceed the capacity of the public resource services, therefore, requiring local residents to have sufficient knowledge and preparedness to deal with the event. Promoting disaster household preparedness reduces the risk of injury and damage within the household, and facilitates a capacity for coping with the temporary disruptions.

Disaster preparedness strategies depend on the community's characteristics, conditions, beliefs and values. The purpose of community preparedness is twofold: to anticipate problems in disaster so that methods can be devised to address the problems effectively, and to ensure the resources required for an effective response are in place before-hand. However, certain personal and social characteristics that make individuals more likely to take the initiative to increase their safety are previous experience with natural disasters, higher levels of formal education, middle age, and having family members who live in the same area.

Findings

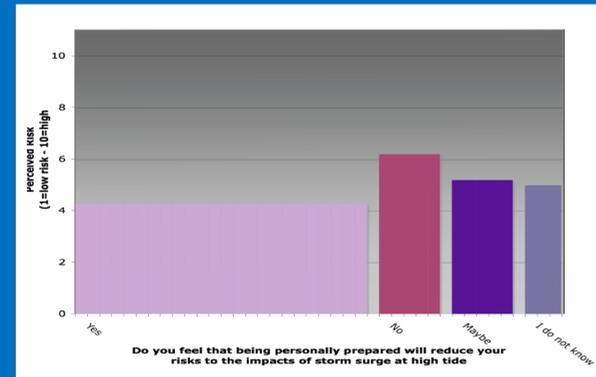
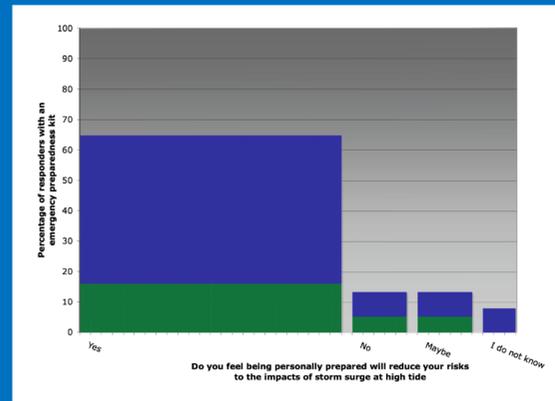
An individual's decision to prepare for disaster has been succinctly linked to their perception of risk from a given hazard. Higher levels of risk perception increase one's motivation to become personally prepared. Conversely, a false sense of security can manifest in individuals where perceived risk is low, resulting in their ability to overlook the risk as a threat that should be heeded.

Risk communication has been identified as a prime mechanism for altering personal behaviour concerning hazards and the motivation to take protective actions. Consisting of information that should both alert and reassure the public, risk communication strategies should inform people of the nature of the hazard and the degree of risk that may exist. This information should encourage disaster preparedness, increasing one's capacity to manage their risks, and ultimately reducing the likelihood of property damage, injury and death.

To better understand the relationship between risk perception and personal preparedness, the following analyzes how these variables interact concerning the hazard of storm surge at high tide for the community of Oak Bay.

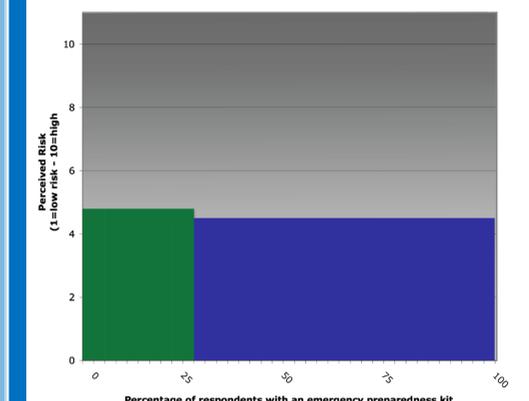
Personal Preparedness and Perceived Impact

Conclusively stated within the findings, the respondents identified that, yes, having an emergency preparedness kit would reduce one's risk to the impacts of storm surge at high tide. However, the reality of the present situation shows that, of the respondents who selected 'yes', only 16% of them have emergency preparedness kits in their homes. This finding clearly identifies that although respondents believe that being personally prepared would reduce their risks, they had not acted upon this knowledge. This begs the question of what does it take to promote a culture of preparedness? Perhaps it is that the risks of this hazard, and other hazards for that matter, are not being properly conveyed to the community of Oak Bay.



Personal Preparedness and Risk Perception

Although interesting to observe, the findings in the following figure are challenging to assess. They identify that when examined against preparedness, the perception of risk is relatively consistent across all respondents. When regards to risk communication, these findings show that risk is in fact being perceived in a similar way across the community; however, there does not seem to be consistency with regards to preparedness, as only 27% of respondents identified themselves as being prepared. It is this correlation that highlights the necessity for further exploration concerning the mechanisms that drive preparedness.



Perceived Risk and Perceived Impact

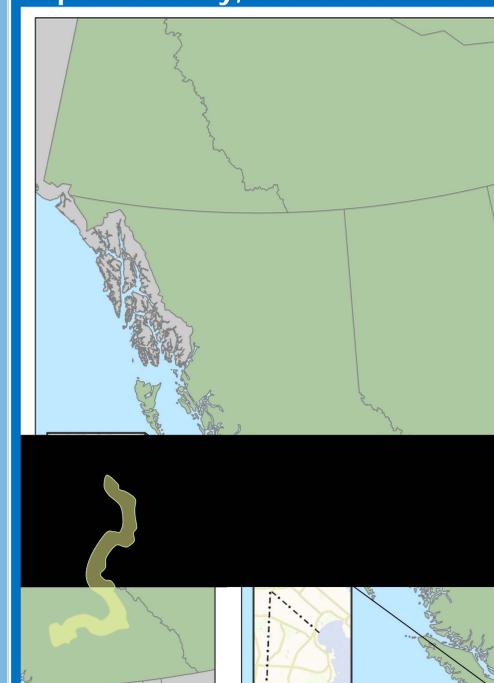
The results of this correlation are somewhat counterintuitive to what one would believe as identified above. As highlighted in the following figure, the respondents that ranked the lowest level of perceived risk (4.3) were those who identified as 'yes', that having an emergency kit would reduce their risk to the impacts of storm surge at high tide. Based on these findings, one could postulate that their level of perceived risk is lower because they are prepared. However, by correlating the findings in this figure and the one above, it is evident that this is not the case as only 16% of the respondents have emergency preparedness kits. Even more concerning, is that the highest rate of perceived risk (6.2) was identified by respondents who identified that 'no', having an emergency kit would not reduce their risks to the impacts of storm surge at high tide. These findings suggest that perhaps risk communication is not meaningfully being translated into preparedness activities within the community of Oak Bay.

Recommended Strategies

Although this research identifies the theoretical aspects of risk perception and personal preparedness to the hazard of storm surge at high tide, it is through the application of policy development that meaningful reductions of risk will be achieved. Based on information collected from in-depth interviews and an analysis of the literature, the following policy options have been identified:

- **Warning Systems:** There has been a discussion within the BC provincial government to implement a warning system; however, this has yet to come to fruition. If implemented effectively, warning systems have the ability to provide trusted information to individuals in a timely manner and prompt them with information on how to act.
- **Enhanced Building Codes and Infrastructure:** Although this project only examined the social implications of risk perception and personal preparedness with regards to storm surge at high tide, it is imperative that planners, citizens, and agencies understand the entire scope of this hazard. As the forces of climate change potentially exacerbate the likelihood of this hazard, damage to roads, telecommunications, power facilities and sewage treatment may become a more common occurrence.
- **Enhancing the Shoreline of Waterfront Properties:** As a sustainable approach to coastal design and development, an initiative known as Green Shores has been developed. Structures in much the same way as the LEED certification for the development of green buildings, Green Shores places an emphasis on coastal development, while utilizing naturalization processes.
- **Incorporation of Social Determinants into Emergency Management Planning:** Socioeconomic and socio-demographic indicators play a significant role by influencing the way individuals perceive and prepare for disasters. When developing plans and risk communication strategies, it is vital that emergency management practitioners be aware of this.
- **Media/Expert Information Partnerships:** Experts in the field of emergency management and disaster sciences need to partner with media outlets to ensure accurate and reliable hazard communication. Due to the infrequent nature of disasters, public messaging and education needs to be done in a way that does not alarm people, but rather informs them.

Map of Oak Bay, British Columbia



Conclusions

Disasters are never completely 'natural'. Although they may manifest through forces of nature, their impacts are invariably social. Based on the findings and throughout the literature, it is evident that social, economic, and demographic variables significantly contribute to one's level of preparedness and response with regards to disaster.

More specifically, the findings of this research suggest that risk perception is a key informant for personal engagement concerning preparedness. In understanding this, one must focus on effective risk communication as a tool for behavioural change. The overarching goal of risk communication is encouraging people to adopt preparedness measures that reduce their risks by increasing their ability to manage the consequences of the hazard. By being prepared and informed on the nature of the risks, individuals will be empowered to not only protect themselves and their property, but by default, they will also be able to protect their community.

The solution to effective communication goes beyond mass media and focuses on the galvanization of community workshops. Such meetings generate greater knowledge to specific hazards, increase the frequency of thought, generate meaningful discussion, and promote personal preparedness at the individual level. This is something that the Oak Bay Emergency Program is already engaged in; however this research suggests that only 22% of respondents have access any of the resources (community workshops, internet information, and/or handouts or other literature). It is clear that future research resides in the area of understanding how community engagement techniques can be used to increase personal preparedness and risk perception within a given community.

The findings of this report highlight the synergistic relationship between risk perception and personal preparedness. Through clear risk communication, a balanced understanding of risk perception can be achieved by the general public; thus, enhancing levels of community preparedness. Although the focus of this research is specifically on the hazard of storm surge at high tide, it is vital to understand that preparedness is not hazard specific. The promotion of an all-hazards approach to emergency management will encourage preparedness across a broad spectrum of disaster.