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Investigating Community Resilience Perspectives: What Can Be Learned From Pacific Communities to Improve the Resilience of the Built Environment?

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ABSTRACT

Background – The lack of a standardised definition of community resilience allows the concept to be applied across various disciplines. However, the community resilience narrative commonly focuses on Western-centric ideas and on protecting high economic industries through robust infrastructure. Common frameworks for measuring or quantifying community resilience often lack the flexibility to adequately address the strengths and needs of Pacific communities. Specifically considering the built environment, there is much to be added to the community resilience conversation from Pacific communities' learned experiences and long history of surviving natural disasters. This paper presents findings from a study investigating the ideas and values of Pacific Islanders on community resilience.

Methods – Using results from surveys and structured interviews investigating Pacific and New Zealand European cultural views on resilience and the built environment. This study compares how individuals define community resilience and aspects of the built environment construction and layout that are important for preserving community function following a natural disaster.

Findings – While there are commonalities between New Zealand European and Pacific participants' views on community resilience. The responses of the Pacific community provide a profound and different perspective on resilience values and actions. Comparing traditional houses and community layouts with modern westernised planning, further highlights the differences in priorities and recovery activities. Pacific participants highly valued a participant-focused response to disasters rather than relying on a robust infrastructure.

Conclusion – Frameworks for community resilience can be strengthened by incorporating values and existing cultural practices from groups represented in a communities' population. Bridging Pacific values with Western values will strengthen the communities' overall resilience and improve the equity of resilience-based outcomes.

Keywords: Community Resilience, Pacific communities, Built Environment, Natural Disasters, Equity

INTRODUCTION

Climate change and natural disasters have changed how communities approach their built environments. In areas with increasing threats of disasters due to the proximity of hazards and escalation of climate change, it is critical to consider how communities can adapt their built environments to be more robust to these hazards and enable communities to continue functioning despite potential disruption. Resilience frameworks have been and are being developed worldwide to help address and alleviate the impacts of climate change and natural disasters [1]. These frameworks often consider a mix of social, economic, and engineering constraints to formulate plans to enable communities to prepare for and recover from various natural hazards. Key to these frameworks' success is the proper consideration and inclusion of relevant stakeholders to ensure that the results are inclusive and equitable [2]. To be successful, it is crucial that these frameworks properly consider and incorporate the local values and traditional practices of the communities they target to help. Traditional building practices, urban layouts, and community values may provide helpful insights into creating societies that can resist and rapidly recover from disasters.

The Pacific Islands have a long history of exposure to natural hazards due to their position in the Pacific Ocean [3]. They also face the direct impacts of climate change [4]. Despite their hazard exposure and history of natural and climate-related disasters, many Pacific island communities have proved resilient, with preservation of their communities and homes after major disasters [5-6]. This leads to questions about what can be learned from how Pacific communities create, construct, and organise their built environment to resist the impacts of natural and climate-caused hazards such as earthquakes and cyclones.

This paper explores and contrasts the Pacific and Western views of resilience and the construction of the built environment. The study used surveys and interviews to examine how the two groups define resilience, to determine similar or contrasting community values supporting resilience, and how groups view constructs of the built environment contributing to resilience. The following section covers the methods used, covering details on the survey participants and interviews. This is followed by a discussion of the study results, considering first the survey and interview responses around resilience definitions, dimensions, and capacities, followed by an analysis of the responses related to the built environment. The limitations of the study are presented next, followed by the conclusions.

STUDY METHODS

This paper presents the results of a pilot study to compare and contrast viewpoints of resilience attributes between Pacific Islanders and those from other backgrounds. The study also compared traditional housing and community layouts to determine opinions on what structures or urban setups are more robust and provide a quick recovery.

The study consisted of two parts, a survey and semi-structured interviews. The survey was conducted online using Qualtrics [7] for ease of distribution and use of the internal statistical analysis packages. The survey was distributed through the University of Waikato Pacific student and alumni network, the University of Waikato School of Engineering, and through personal contacts within the pacific community. Due to the limitations of the ethics approval, the survey was closed once it reached 100 participants. The participants present a range of ethnicities and backgrounds. There were 56% participants that identified as Pacific Islander, 8% Māori, and 18% New Zealand European, and the reaming 18 representing a range of other ethnicities. The participants also represented a range of occupational backgrounds including engineering, education, healthcare, law, and farming. The survey was conducted during August 2021.

The survey was adapted from a previous survey on resilience education focused on academic researchers [8] and ran in parallel with a similar study investigating Māori resilience values [9-10]. The survey began by asking participants to define resilience, community resilience, and resilience of the built environment. Next, participants were asked to rank values commonly associated with resilience, such as resilience dimensions [11], capacities [12], and indigenous values [13]. The results were compared across ethnicities to determine similarities and differences in values. The second part of the survey asked participants to compare a traditional Pacific home to a modern Western home, comment on which was expected to have higher resistance to a natural hazard, and which would be more repairable. This paper addresses the survey results focused on defining resilience and its application to the built environment.

In addition to the survey, six semi-structured interviews were conducted with individuals from different Pacific Islands. Interviews were conducted to gain more descriptive answers than achievable through the survey. The interviewees were asked similar questions to the survey, including defining resilience and comparing traditional homes from their country of origin to modern Western-style homes. Interview participants represented four Pacific islands: Samoa, Papua New Guinea, Fiji, and Tuvalu. The interviews were conducted via Zoom in August 2021 as face-to-face interviews were impossible due to a COVID-19 Lockdown in New Zealand. The study received ethics approval from the Human Research Ethics Committee of the University of Waikato under HREC(HECS)2021#35.

RESILIENCE DEFINITIONS

The first part of the survey asked participants to state the first word that came to mind when they heard the terms resilience, community resilience, and resilience in a built environment. These questions were asked to determine the initial perceptions of resilience before introducing any published or scholarly definitions that could sway how they define it. There were between 84 and 86 participants that responded to these three questions. The results were analysed by separating responses based on ethnicity. Those identified as Pacific Islanders or Māori were compared against those identified as another ethnicity. Māori were considered with the Pacific Islanders as they have a common Polynesian background and used similar defining words for resilience. The results showed some commonalities between the perceptions but also some differences.

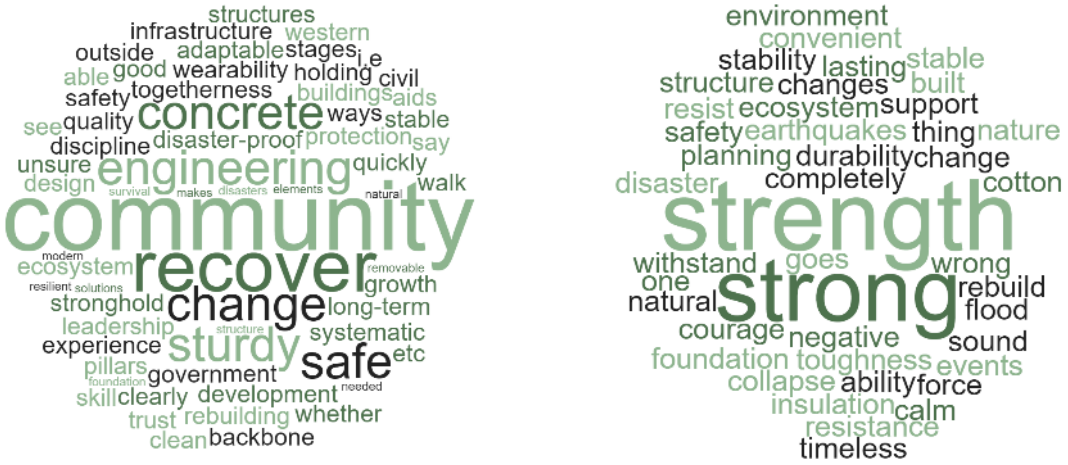
When asked to define resilience, the most frequent response for both groups was derivations of strength/strong (16/51 for Pacific and Māori, 8/35 for others). However, a significant number of other responses indicated that while there is a common thread for defining resilience, there is not one unified answer. Further, when exploring the different defining words for both groups, Figure 1 shows a difference in the type of words used to define resilience. When considering just the Pacific Islander and Māori definitions, words such as 'Pacific', 'toughness', and 'survival' are used. These differ from words used by the other group, where words such as 'determination', 'ability', and 'adaptability' were used more frequently. This variation indicates the importance of considering a wide range of values when defining resilience for a community, especially a Pacific community or a community with a diverse population.

(a) (b)

Figure 1. Common words used to define resilience: (a) Pacific and Māori, (b) other.

The survey also asked participants to define community resilience and resilience of the built environment. When defining community resilience, the frequent terms from both groups included words such as 'togetherness' and 'unity' (16/50 for Pacific and Māori, 11/35 for others). A common theme for community resilience was a sense of bonding or the coming together of a group. This included the use of further terms such as 'collaboration' and 'cooperation'. A much more comprehensive range of answers came from the Pacific Islander and Māori groups, reflecting the diverse lens with which they view resilience. The list of words provided by this group included references to specific places (Samoa and Otara, South Auckland, NZ) and some negative connotations such as 'poverty' and 'lockdown'.

The next question asked participants to define resilience in the built environment. This question had the most considerable divergence of answers between the two groups, as illustrated in Figure 2. While there were still common words used between the two groups, those that did not identify as Pacific or Māori were more likely to use words similar to those used to define resilience, such as 'strength' (7/35) and 'strong' (3/35). The Pacific Islander and Māori participants provided a more varied list of definitions, with few repeated words. The most frequent were 'community' (4/49) and 'recover' (2/49). This indicates that significant differences may exist in how cultures and groups define resilience specific to their communities and built environment. As with defining resilience generally, defining resilience as applied to the built environment requires consideration for the application and those impacted.

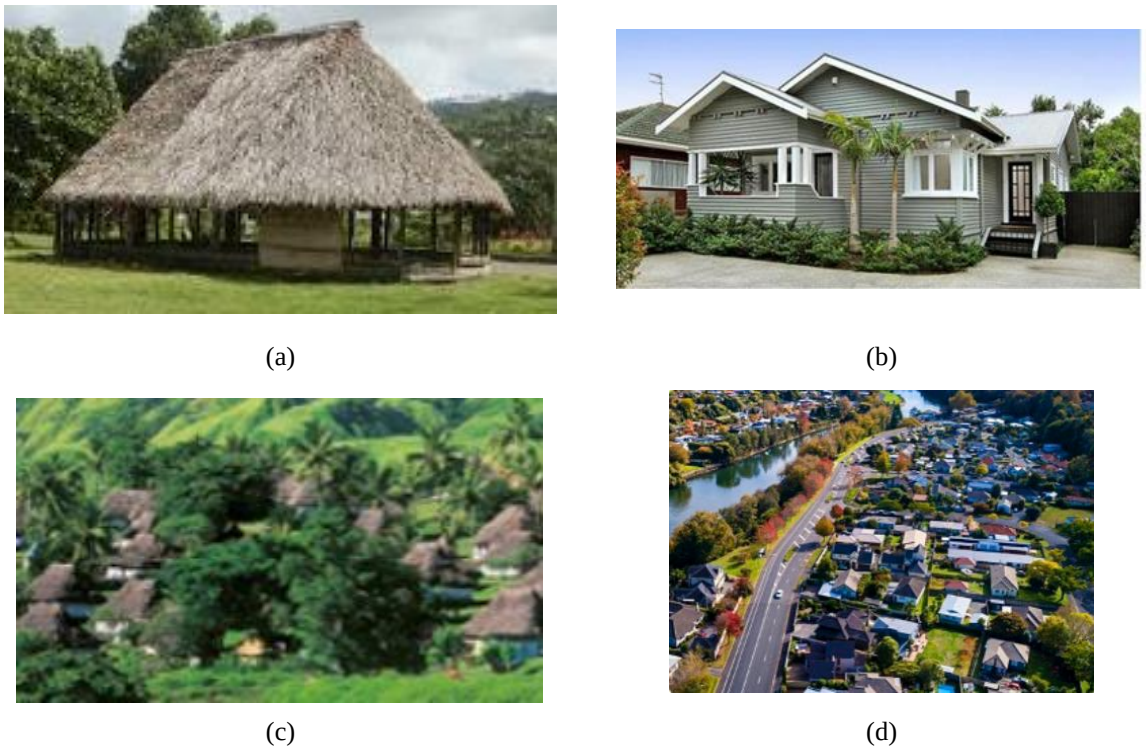


(a) (b)

Figure 2. Common words used to define resilience of the built environment: (a) Pacific and Māori, (b) other.

BUILT ENVIRONMENT

Survey participants answered three questions comparing a modern Western home to a traditional Pacific Island home. An example of the pictures shared in the survey is shown in Figure 3. The participants were asked which house they found more appealing, which they thought would better withstand a natural disaster, and which would be easier to repair after a disaster. Most participants, 85%, found the Western home more appealing. The preference was slightly different when considering only those identified as Pacific Islanders, with 79% finding the Western home more appealing. All groups were more likely (78%) to think a Modern house would be more resistant to a natural hazard. Again, there was only slight variation when considering only the Pacific Islanders in favouring Western homes, with 74% stating that Western homes would be more resistant than traditional Pacific homes. The opinions of all groups shifted when considering the ability to repair or fix a home after a disaster, with 90% of all participants stating that the Pacific Island homes would be easier to repair. This opinion could be due to the simplicity of the traditional Pacific home compared to the modern Western-style home.



(a) (b)

(c) (d)

Figure 3. Examples of traditional Pacific housing and communities compared to modern Western-style homes and communities typical in New Zealand: (a) Traditional Fale, housing in Samoa, (b) Typical home constructed in New Zealand, (c) Traditional Pacific Island community layout, (d) Modern community layout in New Zealand (images from wiki commons).

Further questions in the survey compared community layouts. The survey showed pictures of a modern community layout typical in New Zealand and a traditional Pacific Island community and asked the participants to compare the two in terms of overall damage, speed of recovery, and overall community resilience. For all three questions, no statistically significant difference existed between how people identifying as different ethnicities favoured community layouts. When considering the probability of damage to the town or village, 51% stated that the traditional Pacific village would have more damage. Those of NZ European or Asian ethnicities (57% and 75%, respectively) were more likely to believe the traditional Pacific Islander communities were more prone to damage, whereas 49% of Pacific Islanders thought the same of their communities. Similar to the recovery of houses, the majority of participants, 68%, believe that the traditional Pacific communities will have a faster recovery. This varied slightly by ethnicity, with Māori (83%) more likely to favour the recovery of traditional villages and Asians (75%) more likely to favour the modern western town. These results only varied slightly when considering which layout was more resilient, with 64% of all participants selecting the traditional Pacific village.

The results of these questions demonstrate that for our survey sample, there is not a wide variation of responses due to ethnicity. However, there is some favour towards Pacific buildings and urban layouts by Pacific and Māori populations. Further, many participants indicated that while traditional homes and villages may be more susceptible to damage, the simplicity of their designs would make recovery quicker. Further insights from the six interviews conducted confirmed this point relative to the

houses, with several of the interviewees stating that the simplicity of the design and the building materials that the homes would have a quicker recovery.

LIMITATIONS

The survey and interview methodology used in this study limits the wider applicability of this research. However, the results show how Pacific Islander and Western values for resilience may differ, and these should be investigated further when developing comprehensive and inclusive resilience frameworks for Pacific Communities. The survey was restricted to 100 participants, and a larger sample size could have yielded different responses. While survey distribution attempted to capture a representative range of people, distribution means were restricted due to Covid-19 lockdowns and difficulty reaching a wider audience. Distribution was also limited primarily to Pacific Islanders residing in New Zealand at the time of the survey. The survey did get a significant number of Pacific Islander participants representing a range of backgrounds, Island heritage, and occupations. However, while the results reflect the views of the surveyed population, extrapolation to the wider Pacific community should be done cautiously. A more detailed study should be conducted to validate the results. Further, resilience values could vary between Pacific Island communities, and results representative of one group should not be assumed to represent all groups.

CONCLUSIONS

This paper introduces a pilot study exploring the cultural views of Pacific Islanders on resilience compared to academic or Western definitions. The initial findings outlined in this paper highlight differences in how Pacific Islanders define and view resilience from a community and built environment perspective. Pacific Islanders had an increased emphasis on community and unity for defining the resilience of the built environment compared to other groups that were more likely to use terms related to strength. The study results also indicate that traditional Pacific homes and village layouts have some inherent resilience properties that may make them more resilient than their modern counterparts. When considering resilience for Pacific communities, capturing their values and priorities is necessary while captilising on traditional building practices encompassing resilience attributes.

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