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## Incorporating New Zealand Indigenous views into Community Resilience Frameworks for the Built Environment

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### ABSTRACT

Community resilience lacks a standardized definition and methodology to quantify. Many governments and organizations have attempted to construct frameworks for improving community resilience, particularly as related to the built environment. However, few of these frameworks explicitly consider the values and cultural aspects of marginalized communities that are potentially negatively disadvantaged due to colonialization or socio-economic deprivation. To date, little research has worked on integrating Maori cultural views into these resilience frameworks. Using survey results investigating Maori and New Zealand European cultural views on resilience and aspects of the built environment, it has been found that Maori value unity and community cohesion as aspects of resilience more than New Zealand Europeans. Further, communities can increase community cohesion and unity through adapting Maori Marae's or communal gathering places to increase community resilience following a disaster.

### Introduction

Resilience is an important concept for enabling communities to prepare and respond to the threats of natural and manmade hazards. Over the past 20 years, many scholars, researchers, and governments have attempted to define and quantify resilience into achievable frameworks [1]. At the core of many of these frameworks is the strength and resistance of the built environment, however over the past decade, transdisciplinary research has begun to integrate socio-economic indicators into resilience frameworks [2]. While the study and implementation of resilience seeks to better society and improve disaster response, some researchers have argued that many of the existing frameworks are strongly focused on maintaining that status quo and hinder improvement to groups of people already suffering from socio-economical deprivation [3]. Additionally, existing frameworks often lack the inclusion of local cultural and indigenous knowledge. For New Zealand based frameworks, social and environmental resilience can be improved if Maori concepts and practices are incorporated into urban planning [4]. Inclusion of local cultural values and indigenous knowledge into resilience frameworks can greatly increase the implementation and positive outputs of these resilience frameworks. This paper summarizes some key findings from a study on Maori cultural views on resilience, particularly in reference to the built environment. The study looks to identify any key cultural values that can

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be integrated into resilience frameworks, examines differences in the built environment between traditional Maori homes and communities with the current built environment. This paper introduces ongoing research and highlights a few of the significant findings to date. Some conclusions are drawn on culturally specific values that should be included in resilience frameworks. Finally, the paper ends with a suggestion on how to improve community resilience by following the Maori practice of having a central gather place, such as a Marae.

### **Survey Development**

A survey was developed to examine views of resilience and how people view differences between the traditional Maori communities and the current western communities constructed in New Zealand. Among other questions, the survey asked participants to provide one-word definitions for resilience and identify resilience attributes of Maori and Western built environments. The research received ethics approval from the Human Research Ethics Committee of the University of Waikato under HREC(HECS)2021#35. The survey was open between 17 August to 9 September 2021. The survey was distributed through social media, email contacts and the University of Waikato Engineering student email list. The survey was targeted towards people in New Zealand that were familiar with resilience concepts and Maori buildings. The survey received 87 responses. Of the 87 responses, 33 (38%) respondents identified themselves as Maori, 31 (36%) identified as NZ European, with the remaining 23 (26%) identifying as another ethnicity.

### **Survey Results and Discussion**

#### **Defining Resilience**

The survey asked respondents to state the first word that came to mind when they heard the term resilience. Of the 57 participants who responded to this question, 26 were Maori, and 31 identified as other ethnicities, the majority as NZ Europeans. In both groups, strength (12 responses) was the most common followed by adaptability (5 responses). Other words provided included words such as fortitude, perseverance, recovery, and toughness. Of note, several respondents used Maori words such as Kiingitanga (King Movement), Mana (authority or control), and Mana Motuhake (autonomy or self-government). The diversity of word choices indicates that there is not a generally accepted definition of resilience, but that resilience is currently understood through a variety of attributes. The inclusion of Maori words to define resilience, indicates that a wider lens that includes cultural perspectives should be adapted.

The survey also asked participants to provide the top three words that came to mind when defining community resilience. The top three words were considered together, and similar words were grouped. As with defining resilience, there was a wide variety of answers given. While there was not a statistically significant grouping of words, there were some more common words mentioned by the Maori subgroup.

There were 57 participants that responded to this question. Of these, 26 people also identified as Maori. This subgroup provided 36 unique word/word groupings defining resilience. The most common word grouping was Kotahitanga/unity/togetherness, which was given by 16 people (61.5 % of the Maori subgroup). Other words that were listed four or more times include: strength (5), adaptability (4), and aroha/love (4). There were 31 responses from the people not identifying as Maori. This group provided 60 unique words defining resilience. This list of words was varied and represented a wide variety of ideas for community resilience; some words provided include teamwork/cooperation (9), togetherness/unity (8), strength (3), and adaptability (3). The wide range of words provided by both groups represents the range of understanding and expectations of resilience at the community level. It shows that there is not a common definition or standard expectation, which makes it difficult to create a comprehensive resilience framework. However, kotahitanga (unity) is valued by the Maori subgroup more than many of the other potential resilience attributes given. This is a clear indicator that when developing community resilience frameworks for New Zealand, particularly areas with high Maori populations, kotahitanga must be considered.

#### **Housing**

The survey showed participants pictures of two houses (Figure 1), a wharenui (traditional Maori home)

and a more modern home construction for New Zealand. Participants were asked to indicate which house would be more resilient to disasters. 41 people responded to this question, of which 19 were Maori. Across both groups, 66 % of the participants selected the wharenuui as the most resilient. A larger portion of the Maori subgroup (73.7 %) favored the wharenuui over the modern house, compared to the other ethnicities in which 59 % favored the wharenuui. Most of the comments made for those favoring the modern house believe that these would be more likely to be built to higher government standards, had more diversity in the rooms with the house, and was more modern. Whereas those commenting on the wharenuui mentioned the sense of community provided with a wharenuui and the roof design as elements that would increase the resilience. From the comments, those that favored the wharenuui also valued unity and community as values of resilience.



Figure 1. Images from the survey comparing a wharenuui (traditional Maori home), shown on the left, and a typical home constructed in New Zealand, shown on the right (images from wiki commons).

### Community Layouts

Participants were also asked to compare the traditional Maori community layout with the modern urban layout used in many New Zealand cities. The survey showed participants two images, Figure 2, that illustrated the different community layouts. Participants were asked to consider the community resilience in terms of four networked resources, economic development, social capital, information and communication, and community competence [5]. There were 40 responses to this question, of those, 18 (45 %) identified as Maori and 22 (55 %) as other ethnicities. 94 % of the Maori respondent favored the traditional Maori layout over the more modern community layout, and 63 % of all other ethnicities also favored the traditional Maori set up over the modern layout. This is a statistically significant difference between the two groups, with those identifying as Maori much more likely to select the traditional Maori community layout. When asked why, common responses reflected on how the traditional set up focused on community, togetherness, whanau (extended family), and the unity of the community that is brought together around the pā (Maori village). One response related the construction of a pā, “Because the wood used to build pā are whole trees, whereas the modern style of wood used is already cut up pieces of a tree, not the whole thing. ‘Together we stand, divided we fall.’” This sentiment, and the high percentage of people that selected the traditional Maori community, reflects the earlier statements defining community resilience as kotahitanga/unity/togetherness.



Figure 2. Images of community layouts. Traditional Maori community (on the left) and a typical layout for a modern community (right) in New Zealand (images from wiki commons).

## Incorporating into Resilience Framework

In addition to the survey, six in-depth interviews were conducted with selected members of the Maori community that had experience with resilience from either an engineering/built environment perspective or a cultural perspective. The interviews investigated some of the survey results to determine methods for implementing Maori cultural views into resilience frameworks. One element that was emphasized in the interviews is the importance of community centers, such as Marae, for community members to gather in for shelter and supplies after a disaster. These community centers should be constructed to remain functional after different types of disasters and be supplied with enough provisions for those in the area it serves. The centers should also be clearly identified as places for community members to regularly gather and build stronger unity. Figure 3 shows a map of some community centers in Hamilton, New Zealand and highlight the community regions that would be best served by these centers after a disaster.

## Limitations

The survey had several limitations that could affect the results. None of the questions on the survey were required to be answered, which limited the number of results for each question. Additionally, the survey distribution should be enlarged to increase both the number and the diversity of participants. However, the results from this initial survey do provide insights to differences in cultural values towards resilience and some indication of how to address these for the improving resilience of the built environment.

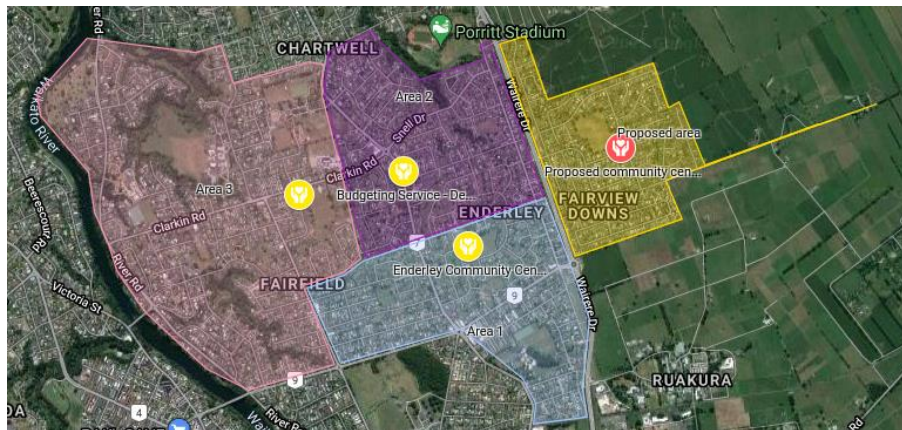


Figure 3. Locations of community centers in Hamilton, New Zealand, and the local neighborhoods that should utilize the centers during emergencies.

## Conclusions

This paper introduces an ongoing study on Maori cultural views towards the resilience of the built environment. Initial survey findings indicate that Maori associate values such as kotahitanga (unity), strength, and adaptability with resilience. Future resilience frameworks for New Zealand should take further account for community unity and look for ways to improve the built environment to allow for more connected communities and to foster greater unity. Further, to improve community resilience, community centers, such as Marae should be strategically placed within communities to provide locations that promote unity and provide shelter and resources after a disaster.

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