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**Disaster Resilience in the Hotel Sector:  
A Mixed Methods Study**

A thesis presented in partial fulfilment of the requirements for the degree of

Doctor of Philosophy

in

Emergency Management

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## **Abstract**

Building disaster resilience before a disaster may aid all types of organisations in speeding recovery post-disaster and returning to full operation sooner. For many communities the tourism sector is integral to their economic stability, therefore the ability of the hotel industry to maintain, or regain operations is essential in supporting the social and economic fabric of the local area. Furthermore, hotels play an integral role in disaster response and recovery, providing accommodations for people responding to disaster as well as local jobs.

The objective of this research was to define the characteristics of disaster resilience within the hotel sector and develop measures to explore strengths and gaps in resilience. This research developed the Disaster Resilience Framework for Hotels, outlining capital-based predictors of resilience customised for the hotel sector. The framework considers economic, social, human, physical, natural, and cultural capitals as components of disaster resilience. Within each capital, a set of predictors and measures was developed from the literature. This view of capitals combines both potential and actual resources to contribute to adaptive capacity; the ability of an organisation to withstand and recover from shocks.

The framework has been explored through a mixed methods study of hotels in two areas in New Zealand (Wellington and Hawke's Bay). The data includes surveys and interviews with managers and staff. The inclusion of staff input provides a novel, innovative look at the connections between organisational policies and procedures and staff understanding, awareness, and integration of those policies.

Hotels in New Zealand were found to have many resources that contribute to their overall disaster resilience. A safety culture combined with social capital stocks as well as human capital skills and knowledge make for a solid foundation. Gaps included a lack of

all-hazard planning, need to integrate staff in the planning process, and a need to better connect with other organisations that may provide support and collaboration during disasters. With a positive growth trend in New Zealand's tourism sector and a history of devastating earthquakes, New Zealand provides an excellent test case.

## Preface

In 2005 Hurricane Katrina caused unprecedented, widespread social and economic disruption across a large geographic area in the southern part of the United States. Like many people worldwide, I watched the event unfold on a 24-hour news cycle. I felt compelled to join in the response effort and signed up with the Red Cross to spend two weeks participating in the response effort. Hotel rooms were at a premium for response workers. The need for hotels to be operational during disaster response was crystallised during these weeks; more than once we ended up sleeping on a cot when area hotels were either closed or fully booked. The experience was life-changing in so many ways and marks the beginning of this PhD journey.

Fast forward three years to 2008. I transferred to the Caribbean country St. Kitts and Nevis with a major hotel company. At that time, one hotel on each island (both international chains) served as the primary employers on these two islands. Just two weeks after I arrived Hurricane Omar made landfall across the region. As a result of the hurricane, the Nevis hotel was closed for operation, taking two years to reopen due to factors which included insurance issues regarding how to make the hotel more resilient in the future. The hotel on St. Kitts, my employer, sustained little damage and continued operations as before. The experience brought the message of disaster resilience home, inspiring me to want to know more about what factors contribute to hotel disaster resilience, and what contributed to the disparity between these two properties' operational capacity in the wake of disruptive events.

Upon moving back to the United States, I began my journey in earnest. I sought out higher education, earning a Master of Science degree in Emergency Services at California State University, Long Beach. While working on that degree I began a position at the Hotels of the Disneyland® Resort in Anaheim as the Emergency Preparedness

Coordinator for the three hotel properties. Developing protocols, trainings, and exercises for staff at all the hotel properties was engaging, but I recognised the need for more education to be able to create a sustainable, comprehensive program of disaster resilience. Thousands of staff and guests could be involved in a disaster response at any one time, impressing upon me the need for empirically based disaster resilience strategies.

The topic of disaster resilience for hotels has been intersecting my life for more than a decade. Like fellow PhD candidates I speak with, I didn't decide on this topic, it found me and demanded my attention. I look forward to taking this knowledge to hotels and working together to build disaster resilience into their operations.

## Acknowledgements

*“Our problems are man-made — therefore, they can be solved by man. And man can be as big as he wants. No problem of human destiny is beyond human beings. Man's reason and spirit have often solved the seemingly unsolvable — and we believe they can do it again.” John Fitzgerald Kennedy American University Commencement, Washington D.C., June 10, 1963.*

Investigating how hotels can build disaster resilience that is both meaningful and attainable, within the time and money constraints of their organisations, is an essential component of this research. To that end, I have solicited help from many people and organisations along the way. It is appropriate that I take the time here to acknowledge and thank these people.

To the hotel managers and staff that participated in the study, how generous they were with their time! While recognising the fast paced business they are involved in I asked for a lot and was not disappointed. I hope they find value in this research and can apply some of the recommendations to assist them in their journey to build disaster resilience within your organisations.

Organisations that work with the tourism sector helped me design a meaningful study and access information to enhance the data. Hawke’s Bay Civil Defence, Tourism Industry Aotearoa, Wellington Regional Economic Development Agency, and the Wellington Resilient Cities group all contributed in various important ways. These organisations were instrumental in the background data collection, helped connect me to members of the hotel community, and ultimately assisted in disseminating my results to hotel managers. The value of their involvement cannot be overstated.

My research was funded by Massey University, GNS Science, and Hawke’s Bay Civil Defence. I am grateful for this funding that allowed me to dedicate myself to the task of research. I would also like to take the time to thank the Massey University Human

Ethics Committee for their careful and thoughtful review of my ethics protocols. Their suggestions expanded my understanding of protecting human subjects.

The Joint Centre for Disaster Research (JCDR) and Massey University offered me a ‘home away from home’ to learn and grow as a researcher. Support from so many colleagues has added to the journey in unique and special ways. Each member of the JCDR took an interest in my research and were happy to lend their expertise. My fellow PhD students offered lively discussions, advice, and kept me moving towards my target every week. It really does take a village! I have learned so much from each of them and feel like the support they provided fueled me on many occasions. I hope this is just the beginning of our long association.

To my family, they were all generous with their time in reviewing and proofing hundreds of pages - 100% commitment to my dream; I love them all so much. I hope in the future I have a chance to support each of them the way they supported me. Moving 6,705 miles (10,790 kilometers for my New Zealander readers) and loving it was a lot to ask, but my partner John was up to the challenge. My mother and sister spent hours discussing word choice and punctuation with me and remained enthusiastic to the very last chapter. My children, brother and sister-in-law, and nieces never doubted me, and that confidence meant the world to me. To Greg Georgantas from Disneyland® Resort whose mentorship has been instrumental in my journey a heartfelt thank you.

Finally, to my supervisors, I started this journey with high expectations and a rigid timeline, and they supported me every step of the way. The time and energy each put into reading, advising, counselling, and encouraging was instrumental in the delivery of this final work; without each of these extraordinary people, it would have been a project without all the parts. Each have such special skill sets; what a privilege to have access to those talents for all this time! Their investment in my success leaves me with nothing but

gratitude for the opportunity to work with each of them. Dr David Johnston was the catalyst for bringing me to New Zealand for the research and created a special team to help me along the way, welcoming me not only to the JCDR family, but also to his own. Dr Jane Rovins worked tirelessly to review and brainstorm the best approaches to the research and the articles within this thesis. She always took the time to provide excellent teaching moments in reviewing material and made me feel she was truly invested in my success with this project. In addition to detailed review of the manuscript and lots of positive reinforcement during the journey, Dr Caroline Orchiston provided expertise in the tourism sector that added quality and depth to the discussion. Last but certainly not least, Dr Shirley Feldmann-Jensen, as a longtime mentor and friend, coached me along the way, reviewed and suggested important additions to the research, and was instrumental in starting me along the journey. Both she and her husband Dr Steve Jensen mentored me through my masters and introduced me to Dr David Johnson. The rest, as they say, is history.

## Table of Contents

<b>Abstract .....</b>	<b>i</b>
<b>Preface .....</b>	<b>iii</b>
<b>Acknowledgements.....</b>	<b>v</b>
<b>List of Tables .....</b>	<b>xiv</b>
<b>List of Figures .....</b>	<b>xv</b>
<b>List of Acronyms .....</b>	<b>xvii</b>
<b>Chapter One: Introduction to Research .....</b>	<b>1</b>
<b>Research Context.....</b>	<b>3</b>
<b>Significance of the Study .....</b>	<b>5</b>
<b>Problem Statement .....</b>	<b>6</b>
<b>Research Question.....</b>	<b>7</b>
<b>Thesis Structure .....</b>	<b>7</b>
<b>Chapter Summary .....</b>	<b>9</b>
<b>Chapter Two: Literature Review .....</b>	<b>10</b>
<b>Exploring Disaster Resilience within the Hotel Sector:</b>	
<b>A Systematic Review of Literature .....</b>	<b>11</b>
Introduction.....	11
Basic Definitions .....	14
Disaster/Crisis.....	14
What is Resilience?.....	16
Systems resilience.....	17
Organisational resilience. ....	18
Economic resilience.....	21
Community resilience. ....	22
Disaster Resilience and Vulnerability in the Hotel Sector.....	24
Sustainability and Disaster Resilience in the Hotel Sector .....	25
Disasters and the Hotel Sector .....	<b>26</b>
Increased Disaster Risk Existing in the Hotel Sector .....	32
Building Disaster Resilience in the Hotel Sector .....	34

Conclusion .....	36
References .....	38
<b>Supplemental Literature Review .....</b>	<b>47</b>
<b>International Implications .....</b>	<b>47</b>
Sendai Framework for Disaster Risk Reduction 2015-2030 .....	49
Sustainable Development Goals .....	52
<b>Theoretical Perspectives .....</b>	<b>57</b>
Cognitive Dissonance Theory .....	58
Theory of Planned Behaviour .....	59
Protection Motivation Theory .....	61
Bias .....	62
<b>Hazards Affecting the Hotel Industry within the Scope of the Study .....</b>	<b>64</b>
Hydrometeorological Hazards.....	65
Geological or Geophysical Hazards .....	66
Environmental Hazards.....	67
Biological Hazards .....	68
Technological Hazards.....	69
Terrorism.....	70
Natural Disaster versus Human-Made Disaster .....	70
<b>Chapter Summary .....</b>	<b>72</b>
<b>Chapter Three: Philosophy, Methodology, and Methods .....</b>	<b>73</b>
<b>Conceptual Frameworks.....</b>	<b>73</b>
Ontology.....	73
Epistemology.....	75
<b>Methodology .....</b>	<b>77</b>
Quantitative Research .....	77
Qualitative Research .....	78
Pragmatic Worldview .....	78
<b>Mixed Method Study Design.....</b>	<b>79</b>
Scoping Study.....	81
Study Area.....	82
Step 1 Literature Review.....	85

Step 2 Framework Development .....	86
Step 3 Exploratory Quantitative Survey .....	87
Step 4 Qualitative Interviews .....	91
<b>Ethics .....</b>	<b>93</b>
<b>Chapter Summary .....</b>	<b>94</b>
<b>Chapter Four: Disaster Resilience Framework for the Hotel Sector .....</b>	<b>95</b>
<b>Investigating Disaster Resilience within the Hotel Sector:</b>	
<b>An Integrative Conceptual Framework .....</b>	<b>96</b>
Abstract.....	96
Introduction.....	97
Research Context .....	99
Disaster.....	99
Hotel.....	100
Disaster Resilience within the Hotel Sector .....	102
Capital .....	103
Identifying Themes for an Integrative Framework of Disaster Resilience Within the Hotel Sector.....	<b>103</b>
An Integrative Framework.....	<b>106</b>
Economic Capital.....	108
Social Capital.....	109
Human Capital .....	112
Physical Capital .....	115
Natural Capital.....	117
Cultural Capital.....	118
Discussion .....	<b>119</b>
Conclusion .....	<b>121</b>
References.....	<b>123</b>
<b>Chapter Summary .....</b>	<b>128</b>

<b>Chapter Five: The Survey .....</b>	<b>129</b>
<b>Disaster Resilience within the Hotel Sector: An Exploratory Survey of     Hotel Staff and Managers in Wellington and Hawke’s Bay.....</b>	<b>130</b>
Introduction.....	131
Background on Disaster Resilience Framework for the Hotel Sector (DRFH) .....	133
Methods .....	136
Study Area.....	136
Participants .....	138
Development of the Survey Instrument .....	139
Survey Findings .....	141
Economic Capital .....	141
Social Capital .....	144
Human Capital.....	146
Physical Capital .....	150
Natural Capital .....	152
Cultural Capital .....	153
Distribution Comparisons .....	154
Discussion.....	201
Conclusion .....	<b>165</b>
References .....	<b>167</b>
<b>Chapter Summary.....</b>	<b>174</b>
 <b>Chapter Six: Interviews and Secondary Data.....</b>	 <b>175</b>
<b>Exploring Disaster Resilience Within the Hotel Sector: A Mixed     Methods Study of Wellington and Hawke’s Bay New Zealand.....</b>	<b>176</b>
Introduction.....	177
Background on the Disaster Resilience Framework for the Hotel Sector (DRFH).....	180
Methods .....	182
Results .....	185
Economic Capital .....	186
Social Capital .....	188

Human Capital .....	189
Physical Capital .....	197
Natural Capital.....	199
Cultural Capital.....	200
Discussion .....	204
Conclusion .....	211
References.....	212
<b>Chapter Summary .....</b>	<b>218</b>
<b>Chapter Seven: Discussion.....</b>	<b>219</b>
<b>Research Overview .....</b>	<b>220</b>
Economic Capital.....	221
Social Capital.....	223
Human Capital .....	226
Physical Capital .....	232
Natural Capital.....	233
Cultural Capital.....	236
<b>Framework Interdependencies .....</b>	<b>237</b>
<b>Capital Groups Weighting .....</b>	<b>238</b>
<b>Barriers to Developing Disaster Resilience for Hotels .....</b>	<b>241</b>
<b>Chapter Summary .....</b>	<b>244</b>
<b>Chapter Eight: Future Research, Summary, Limitations, and Conclusion.....</b>	<b>245</b>
<b>Future Research .....</b>	<b>245</b>
<b>Summary and Recommendations .....</b>	<b>247</b>
<b>Study Limitations .....</b>	<b>250</b>
<b>Thesis Conclusion .....</b>	<b>251</b>
<b>References.....</b>	<b>253</b>

<b>Appendices .....</b>	<b>276</b>
<b>Appendix A: Human Ethics Notifications .....</b>	<b>276</b>
Low risk notification- 4000016054 .....	276
Full Review for Semi-Structured Interviews .....	278
<b>Appendix B: Surveys.....</b>	<b>279</b>
Survey 1 General Managers .....	279
Survey 2 Staff.....	309
<b>Appendix C: Information Sheet, Informed Consent, Interview Guide.....</b>	<b>334</b>
Information Sheet .....	334
Informed Consent Form.....	336
Interview Guide .....	337
<b>Appendix D: TIA Conference Proceedings July 2018 .....</b>	<b>338</b>
<b>Appendix E: Paper 8th ICBR International Conference on Building Resilience November 2018 .....</b>	<b>349</b>
<b>Appendix F: Statements of Contribution for Publications .....</b>	<b>360</b>
<b>Appendix G: PhD Thesis by Publication.....</b>	<b>365</b>

## List of Tables

Table 2.1 Applying SDGs to the Hotel Sector .....	56
Table 3.1 Regional Tourism Estimates .....	83
Table 4.1 Economic Capital .....	109
Table 4.2 Social Capital .....	111
Table 4.3 Human Capital.....	114
Table 4.4 Physical Capital.....	116
Table 4.5 Natural Capital .....	117
Table 4.6 Cultural Capital .....	118
Table 5.1 Disaster Resilience Framework for the Hotel Sector .....	134
Table 6.1 Summary of Findings .....	203
Table 6.2 Recommendations .....	210
Table 8.1 Summary of Findings from Mixed Methods Data Analysis .....	248

## List of Figures

Figure 1.1 Map of New Zealand with study area labelled .....	2
Figure 1.2 International tourism expenditure .....	5
Figure 3.1 Explanatory sequential study design.....	80
Figure 3.2 Study design .....	80
Figure 3.3 New Zealand guest nights monthly 2013-2017 .....	83
Figure 4.1 Disaster resilience framework for hotel sector .....	107
Figure 5.1 Economic capital predictors and percentage of GMs confirming predictor presence.....	143
Figure 5.2 Economic capital predictors for individual staff members and percentage confirming presence.....	144
Figure 5.3 Social capital predictors and percentage of GMs confirming predictor presence.....	145
Figure 5.4 Social capital predictors and percentage of staff confirming predictor presence.....	146
Figure 5.5 Human capital predictors and percentage of GMs confirming predictor presence.....	148
Figure 5.6 Human capital predictors and percentage of staff confirming predictor presence.....	150
Figure 5.7 Physical capital predictors and percentage of GMs confirming predictor presence .....	151
Figure 5.8 Physical capital predictors and percentage of staff confirming predictor presence.....	151
Figure 5.9 Natural capital predictors and percentage of GMs confirming predictor presence.....	152

Figure 5.10 Natural capital predictors and percentage of staff confirming predictor presence.....	152
Figure 5.11 Cultural capital predictors and percentage of GMs confirming predictor presence.....	153
Figure 5.12 Cultural capital predictors and percentage of staff confirming predictor presence.....	154
Figure 6.1 Framework for disaster resilience within the hotel sector.....	182
Figure 6.2 Guest nights by accommodation type .....	187
Figure 6.3 Guest nights by region 2015-2018 .....	187

### List of Acronyms

CAST	Caribbean Alliance for Sustainable Tourism
CDT	Cognitive Dissonance Theory
CSR	Corporate Social Responsibility
DRFH	Disaster Resilience Framework for Hotels
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GM	General Manager
GRI	Global Reporting Initiative
HB	Hawke's Bay
MBIE	Ministry of Business, Innovation & Employment
M <sub>w</sub>	Moment Magnitude Scale
NZD	New Zealand Dollars
PMT	Protection Motivation Theory
SARS	Severe Acute Respiratory Syndrome
SDGs	Sustainable Development Goals
SFDRR	Sendai Framework for Disaster Risk Reduction 2015-2030
TPB	Theory of Planned Behaviour
UNEP	United Nations Environment Programme
UNGC	United Nations Global Compact
UNISDR	United Nations Office for Disaster Risk Reduction
USD	United States Dollars
WBCSD	World Business Council for Sustainable Development
WTTC	World Travel and Tourism Council
WL	Wellington



## Chapter One: Introduction to Research

The tourism sector has seen a series of disruptions due to disaster. Earthquakes, tsunami, wildfires, volcanic eruptions and weather-related effects including climate change, have disrupted tourism systems (Hall, Prayag, & Amore, 2018). A 2001 seminal study by Faulkner (2001, p. 135) stated, “Tourism destinations in every corner of the globe face the virtual certainty of experiencing a disaster of one form or another at some point in their history”. The consequences of a disaster can be felt for months, with post-disaster recovery taking additional months or years. Research into disaster resilience has been undertaken to help understand how communities (Cutter et al., 2008; Mayunga, 2007), organisations (A. V. Lee, Vargo, & Seville, 2013), and the tourism industry (Cahyanto & Pennington-Gray, 2017; Orchiston & Espiner, 2017) can minimise disaster impacts and move to a new normal with the least amount of disruption. Hall et al. (2018, p. 87) wrote, “... to develop industry specific indicators of organisation resilience is omnipresent.” To answer that call this research looks at disaster resilience from the hotel sector’s perspective, defining and developing predictors of resilience that can assist hotels in being better prepared to withstand disaster and recover quickly.

The example of the Kaikōura earthquake serves to illustrate the travel industry’s sensitivity to disasters. On November 14, 2016, an  $M_w7.8$  earthquake occurred along the upper east coast of New Zealand’s South Island, impacting the community of Kaikōura, with effects felt over a wide geographic area (Bradley & Wotherspoon, 2016). Within the immediate area the transportation infrastructure was impacted, causing the highway north and south out of Kaikōura to be impassable as well as the closure of the inland route effectively isolating Kaikōura (Wotherspoon, 2016). Tourism was severely disrupted with 1200 tourists stranded following the earthquake (Stevenson, Becker, Cradock-Henery, Johal, Johnston, Orchiston, & Seville, 2017). Tourists were airlifted

out or transported by sea in the days that followed (Stevenson et al., 2017). By any definition, this event was a disaster for this community and impacted all aspects of economic activity, including their tourism sector.

Beyond the effects felt in Kaikōura on the South Island, this earthquake produced significant land movement in Wellington, located at the southern tip of New Zealand's North Island, 258 kilometres northeast of Kaikōura (see Figure 1.1). Three weeks later 11% of Wellington's office space was still closed due to damage and three buildings had been identified to require total demolition (Elwood, 2016). The extent of damage to buildings has continued to unfold with additional buildings being identified for further inspection in the months following the earthquake (Stevenson et al., 2017). This earthquake gave Wellington, one of the study areas of this research, real-time experience of the effect of an earthquake even though the actual event occurred kilometres away.



*Figure 1.1.* Map of New Zealand with study area labelled.

A New Zealand tourism industry publication stated, “This event has had a negative effect on tourism in Canterbury, Kaikōura and Marlborough, with over 50% of businesses stating that their business would deteriorate over the next twelve months ...”

(Tourism Industry Aotearoa (TIA), 2018, p. 16). Vulnerable locations and tourists' unfamiliarity with local risks, contribute to the impact of disastrous events (United Nations Office for Disaster Risk Reduction (UNISDR), Pacific Asia Travel Association (PATA), & Global Initiative on Disaster Risk Management (GIDRM), 2015). Interviews from this research (Chapter 6) express that following the Kaikōura earthquake, some international conventions in Wellington were delayed for a year or more based on travellers' concerns (Chapter 6).

The interconnected nature of the travel system creates another set of challenges and vulnerabilities. Disruption in travel patterns (following the Kaikōura earthquake) due to the South Island road closures resulted in disruption to tourism in Wellington. The interruption in regular travel patterns had many different ramifications on the tourism sector. One Wellington hotel's reservation agent explained that guests were unable to continue onward in their vacation and were reluctant to vacate rooms, as other guests arrived in the city having altered their plans to visit the southern region (Brown, Feldmann-Jensen, Rovins, Orchiston, Johnston, 2019). Other guests decided to check-out early as they did not feel comfortable in the area after the earthquake struck.

Disastrous events are happening worldwide causing challenges to the stability of the tourism sector (Mahon, Becken, & Rennie, 2013). This research aims to understand better what disaster resilience means for the hotel sector and what can be achieved prior to a disaster to improve the disaster response and recovery post-disaster and minimise the disruptive impacts on hotels.

### **Research Context**

Social science interest in resilience has grown steadily since 2005. Hall et al. (2018) studied the increase in research surrounding resilience for the period from 2005-2015. In the years 2005-2009, 14 social science journal articles related to resilience and

tourism were published and appeared in Scopus. In the years 2010-2014, 71 articles were found, and in 2015 alone this figure increased to 55 articles.

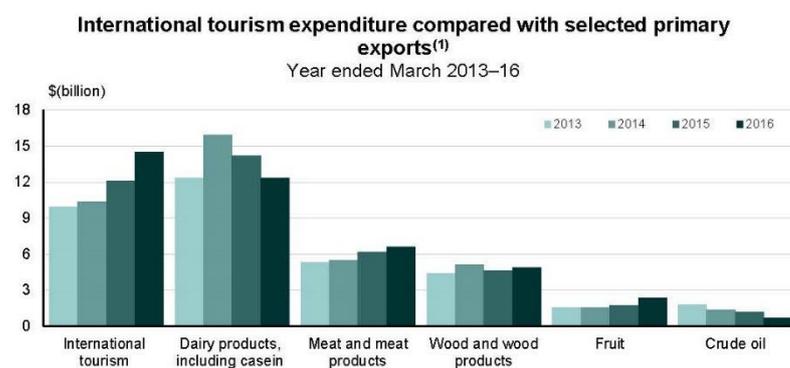
An organisation's resilience, thoroughly discussed later in this thesis (Chapter 2), describes the organisation's ability to overcome disruptions and operate in a *new* normal environment (Dahles & Susilowati, 2015). Disaster resilience focuses on resources developed prior to a disaster that are available during, and immediately following a disaster to aid in response and recovery. For example, Sydnor-Bousso, Stafford, Tews, and Adler (2011, p. 210) found that "...community resilience is an indicator of job resilience in the hospitality industry." In their study, the presence of physical, human, and social capital (resources) in a community before a disaster contributed to the presence of jobs in hospitality after the disaster.

Resilience is always best understood in terms of 'resilience by whom' and 'resilience to what' (Martin-Breen & Anderies, 2011). This research project focuses on disaster resilience within the hotel sector. What disaster resilience means in a hotel context and development of a comprehensive understanding of resources hotels can utilise to build their disaster resilience are at the core of the research. The importance of building disaster resilience is multifaceted for hotels; the local risk landscape is important to understand from a planning and preparedness view, but a hotel's responsibility regarding assisting guests and staff in disastrous situations is also an important concept. Life safety is of primary concern. Additionally, the value of getting back to business quickly is essential - the economy in many tourist destinations is often heavily reliant on tourism income (World Travel and Tourism Council (WTTC, 2017b). Building disaster resilience works towards improving disaster response and recovery in the days, weeks and months following an event.

## Significance of the Study

Tourism plays an increasing role in the economic vitality of the world. The total contribution to global gross domestic product (GDP) was 7.6 trillion United States Dollars (USD) in 2016 and is expected to rise by 3.6% in 2017 and 4% per annum from 2017-2027 (WTTC, 2017b). Additionally, one in ten jobs are tourism related with the employment contribution of tourism expected to rise steadily through 2027 (WTTC, 2017b).

New Zealand's tourism is a source of stable growth (Statistics New Zealand, 2016b). Both international and domestic tourism saw steady increases in 2016 with a 7.4% increase in domestic tourism expenditure and a 19.6% increase in international expenditure. New Zealand international tourism expenditures had a steady upward trend that was not seen in some of the country's primary export industries (Figure 1.2).



1. Exports are valued fob (free on board – the value of goods at New Zealand ports before export) and include re-exports.

*Figure 1.2.* International tourism expenditure- New Zealand (Statistics New Zealand, 2016b, p. 15).

Statistics New Zealand (2016b) reports total tourism expenditure increased 12.2% in 2016 from 2015. Tourism accounted for 7.5% of total employment in New Zealand and tourism generated 2.8 billion New Zealand dollars (NZD) (USD 1.84 billion) in goods and services tax revenue. Recent data shows the trend continuing with New Zealand hotels recording best occupancy rates ever in 2017 (Statistics New Zealand, 2018c). Clearly, tourism is vital to New Zealand's economy.

When considering the effects of disaster, resilience within the hotel sector includes capacity to maintain, or regain, some operational capacity. The primary function of hotels, including providing shelter and welfare, may become integral to the disaster response and recovery effort (Yamamura & Welsh, 2018). For example, hotels provide rooms for the influx of workers needed to assess and rebuild the community as well as on-going employment in the local area (Hayward, 2017). Not only can hotels continue to deliver income for shareholders and local staff, but they also become a part of the recovery through their ability to provide accommodations and meeting space for recovery efforts. A lack of accommodation can disrupt recovery of the tourism sector from a disaster as evidenced in Christchurch, New Zealand (Orchiston & Higham, 2014).

### **Problem Statement**

Attention to the building blocks of disaster resilience prior to an event can improve response and recovery from disaster (Mayunga, 2007; Norris, Stevens, Pfefferbaum, Wyche, & Pfefferbaum, 2008). While tourism as a sector has been investigated (Espiner, Orchiston, & Higham, 2017; Orchiston, Prayag, & Brown, 2015; Sydnor-Bouso et al., 2011) these studies do not offer a lens that applies specifically to the hotel sector in an actionable way. Organisational resilience studies (A. V. Lee et al., 2013; Sawalha, 2015; Whitman et al., 2014) also offer additional insights for tourism organisations but do not drill down to the intricacies of a specific tourism organisational type. Multiple dimensions of resilience exist and need to be defined to move from a conceptual understanding to practical assessment of resilience (Cutter et al., 2008). The problem addressed with this research is the need to better isolate and refine resilience concepts for a specific sector, in this case the hotel sector. Clarifying what disaster resilience is and identifying ways to improve resilience is a way forward for the hotel sector.

## **Research Question**

The following question and sub-questions guide this research. Sub-questions 1c and 1d are aimed at refining and validating the information derived from the sub-questions 1a and 1b. This research contributes to the field of knowledge through the answer of the following questions, leading to practical application of disaster resilience research for the hotel sector.

1. How can the hotel sector increase its disaster resiliency, and be better able to protect the lives of its guests and staff, and the livelihoods and local economy following a disaster?

1a. How is disaster resilience defined in a hotel sector context?

1b. What predictors assist in determining disaster resilience for the hotel sector?

1c. How resilient are hotels in New Zealand to disaster?

1d. What barriers exist to increasing disaster resilience for hotels in New Zealand?

## **Thesis Structure**

Utilising a descriptive analytic approach, which includes both qualitative and quantitative methods, this thesis explores disaster resilience within the hotel sector. Mixed methods research is often based on a pragmatic worldview (Creswell & Plano Clark, 2011), which provides a pluralistic underlying epistemological perspective that values both positivist and interpretivist views (Johnson & Onwhegbuzie, 2016). The objective is to utilise multiple methods that add strength to either method's weaknesses.

A Thesis by Publication presentation has been chosen (see Appendix G for Massey University guidelines). This thesis style is an alternate to that of a traditional thesis. With Thesis by Publication, multiple journal articles (which report aspects of the research) are utilised as chapters within the research thesis. This method provides an opportunity to develop article production skills in tandem with research skills. Chapters

Two, Four, Five, and Six contain journal articles, two of which have been accepted for publication, a third has been revised for final review, and fourth has been submitted and is currently in the review process.

The thesis manuscript's formatting and citation style are based on Publications Manual of the American Psychological Association, Sixth Edition. Those chapters which contain journal articles (Chapters Two, Four, Five, and Six) have formatting variances from the main manuscript based on journal preferences and requirements. This includes numbering of sections as well as alternate table formatting.

Starting with a systematic review of the literature (Chapter Two), the research defines disaster resilience for hotels. The review includes articles about disaster management and resilience within the hotel sector, often drawing from the wider tourism literature due to a lack of more specific research on hotels. The interdisciplinary literature includes foundational and contemporary peer-reviewed articles from the tourism sector, community resilience, organisational resilience, and disaster management research. The literature review provides the basis for further study of the hotel sector and disaster resilience. In addition to a published literature review article (Chapter 2), a supplemental review can be found in Chapter 2 which highlights additional research material not deemed suitable for slightly narrow focus of the published article.

The study scope and design was formulated from the review of the literature. Chapter Three reviews the methods and methodology of this thesis. This chapter includes discussions of the conceptual framework, the study design, and specifies details of both the quantitative and qualitative data collection and analysis methods.

A first step to developing a sector-specific resilience understanding is to use a sector-specific lens to analyse the literature. To that end, Chapter Four presents a

published article, which develops a conceptual framework from the literature, later referred to as the Disaster Resilience Framework for Hotels (DRFH). The article details the DRFH's capitals-based approach to exploring disaster resilience within the hotel sector. Articles aimed at building frameworks, measures, and models for resilience are analysed from a hotel perspective to develop the framework and predictors as well as specific measures of resilience. The DRFH builds on research by Cutter et al. (2008) and Mayunga (2007) on community resilience and A. V. Lee et al. (2013) which focuses on organisational resilience. These conceptual constructs are the foundation for the DRFH developed in this research.

Qualitative and quantitative research is undertaken to further explore the developed DRFH. An exploratory survey and results are discussed in Chapter Five. Chapter Six explores data from semi-structured interviews and secondary data related to the DRFH. The discussion in Chapter Seven provides an analysis of the combined qualitative, quantitative, and secondary data to further analyse disaster resilience using the DRFH. The contextual qualitative data contrasted with the quantitative data allows for new understandings of some of the findings from each method. Chapter Eight concludes the thesis with suggestions for research in the future, identification of limitations and a summary of research findings and recommendations.

### **Chapter Summary**

Chapter One has introduced the research topic, study significance and research questions. This chapter has also outlined the thesis structure. Building on this background information, Chapter Two presents the review of literature which developed the research questions and plan.

## Chapter Two: Literature Review

*“There is one body that knows more than anybody, and that is everybody”* Charles Maurice de Talleyrand-Périgord (1754 – 1838)

The quote begins this section to elaborate on the importance of reviewing the literature when undertaking a study. The academic tradition of first understanding what those who came before have investigated and concluded, and then creating research that adds to the discourse is essential to knowledge production.

The literature review will be presented in two sections. First, literature is presented that includes defining disaster resilience for hotels through a review of disaster and crisis definitions and meanings, resilience literature, and the concepts of sustainability and vulnerability and how these topics inform building resilience to disaster for the hotel sector. This review takes the form of a published article (Brown, Rovins, Feldmann-Jensen, Orchiston, and Johnston, 2017). Following the section, a supplement to the published review covers topics that lie outside the scope of the article. These topics include frameworks of international institutions, theoretical perspectives, and specific disaster types within the scope of this research.

The following article was published in the International Journal for Disaster Risk Reduction, an Elsevier Publication. This article is presented in a pre-production version format and formatting complies with journal formatting specifications which vary from the overall thesis formatting. The journal’s stated mission is to publish research aiming to reduce the impacts of disasters and stimulate the exchange of ideas and information in the disaster field (Elsevier, 2018). The paper was submitted in December of 2016 and accepted for publication on February 5<sup>th</sup>, 2018 after minor revisions. The article has been cited eight times since publication as of August 2018.

## **Exploring Disaster Resilience within the Hotel Sector: A Systematic Review of Literature**

Brown, N. A., Rovins, J. E., Feldmann-Jensen, S., Orchiston, C., & Johnston, D. (2017). Exploring disaster resilience within the hotel sector: A systematic review of literature. *International Journal of Disaster Risk Reduction*, 22, 362-370. doi:<http://dx.doi.org/10.1016/j.ijdr.2017.02.005>

### **Abstract**

Within the tourism industry, the hotel sector's vulnerabilities are multi-faceted. This literature discussion scrutinises how disaster and resilience is framed for the tourism sector, and how the concepts can be applied to the hotel sector. A synthesis of the literature points to the importance of prioritising disaster resilience building for the hotel sector. The body of literature regarding disasters, tourism, and more specifically hotels, has increased over the last 20 years, still, improvements in the hotel sector's disaster preparedness do not appear to be on the same trajectory. Illustrating the predicament of the contemporary hotel industry serves to open a discussion about the value of building resiliency to disaster for hotels. As the numbers of people affected by disasters grow, the importance of providing actionable information to limit the severity of these events on communities also escalates in pace.

### **Key Words**

Disaster; Resilience; Tourism; Vulnerability; Sustainability; Crisis

### **1. Introduction**

An important aspect of the world's increasing interconnectedness is the ease and frequency of travel. Increased numbers of tourists travelling to places of varying risk has exposed new and uncertain vulnerabilities to the tourism sector (Ritchie, 2004).

Tourism is vulnerable to disaster because it relies upon infrastructure, the ability to move around freely, and people's perceptions of safety (Orchiston, 2012).

Within the tourism industry, the hotel sector's vulnerabilities are multi-faceted. A hotel's physical infrastructure (buildings, water, power, sanitation) may be at risk from a variety of natural and man-made hazards placing staff and guests at risk. Beyond guest and staff safety, a hotel's ability to continue operations and profitability is often at risk in disasters. The hotel's surrounding environment (sea, forests, natural beauty) can be affected by hazards making their locale less desirable for future tourists in the short-term (Becken, Mahon, Rennie, & Shakeela, 2013). Hotel vulnerabilities are complex and factors that contribute to risk are often the tourists' motivation to visit.

Disastrous events can influence tourists' choices of destinations (Faulkner, 2001). Management of destination image, disruption from extreme weather, and event impacts causing slow recovery may all affect tourism destinations negatively (Tsai, Wu, Wall, & Linliu, 2016). Examples of this influence can be seen in: the 2001 Foot and Mouth Disease outbreak, which is estimated to have cost the United Kingdom tourist industry between USD 3.3 billion and USD 4.2 billion due to decreased numbers of tourists traveling to the countryside (Thompson et al., 2002); the 2003 Severe Acute Respiratory Syndrome (SARS) epidemic which coincided with Japanese outbound tourism dropping as much as 55% in one month (Cooper, 2005); and Hurricane Katrina's impacts on New Orleans which resulted in 1409 tourism and hospitality businesses shutting down-affecting 33,000 hospitality employees, a decrease of USD 15.2 million per day in business and leisure travel expenditures (Pearlman & Melnik, 2008). These examples highlight how disastrous events can affect tourism.

People's perceptions can be negatively influenced by media coverage of an event (de Sausmarez, 2005; Faulkner, 2001; Mendoza, Brida, & Garrido, 2012; Pearlman &

Melnik, 2008). In the aftermath of the 2004 Boxing Day Tsunami, the hotel industry in Phuket, Thailand successfully reopened 80% of their hotels within a week, only to see occupancy rates drop to 10% (Henderson, 2007). Decrease in tourism can also be due to facility availability and access. In 2005, following Hurricane Katrina and the New Orleans levees failure, the lodging industry in New Orleans, which included an estimated 38,000 rooms, was almost completely shut down (Singal, Wokutch, Ho, & Murrmann, 2010). Following a second major earthquake in five months (February 2011) Christchurch, New Zealand lost two-thirds of its hotel inventory (Orchiston & Higham, 2014). Aggravating the influence of disasters on tourism further is the increasing interdependence of the tourist industry, where a negative event in one location can affect the tourist economy of many countries (Madininos & Vassiliadis, 2008). For example, the 2010 Icelandic Volcanic Ash Cloud caused disruption to air travel throughout Europe (Parker, 2015). “Tourism destinations in every corner of the globe face the virtual certainty of experiencing a disaster of one form or another at some point in their history” (Faulkner, 2001, p. 135).

Illustrating the predicament of the contemporary hotel industry serves to open a discussion about the defining disaster resiliency for hotels. A cross-disciplinary lens may provide an opportunity to identify connections between the hotel sector’s needs (ensuring safety and security of guests and staff as well as remaining operational and profitable) and disaster resilience building. The purpose of this article is to examine the literature and explore important disaster resilience and hospitality industry concepts that can be applied specifically to the hotel industry.

Defining key terms including disaster and resiliency within a hotel context begins with an examination of the literature. These definitions form the basis for discussion of both disasters’ effects on hotels and disaster resilience building within the hotel sector.

The review synthesises current concepts of disaster resilience building in the context of the hotel sector, and extracts concepts to inform further development in building disaster resilience into the hotel sector.

The search words *disaster* and *hotel* provided 143 peer-reviewed articles, after duplicates and articles not on topic were eliminated. Additional articles and grey literature were captured through reviews of selected articles' reference lists. In total 352 articles and papers were identified and thematically coded for this literature review.

## 2. Basic Definitions

In order to discuss disaster resiliency, as it applies to the hotel sector, it is important to first explore the literature aimed at defining these terms. The objective is to synthesise common definitions for disaster and resilience as they will apply to this discussion.

### 2.1 Disaster/Crisis

The concepts of disaster and crisis, as applied to tourism businesses, have been examined by many scholars (AlBattat & Mat Som, 2013; Cutter et al., 2008; Faulkner, 2001; Norris et al., 2008; Ritchie, 2004). Rockett (1999) writes that definitions may be transient over time, but can serve our current need and allow for common understanding. The most prevalent definitions adopted by authors of tourism sector research have been Faulkner's (2001) concept that *crises* often have a component that could have been controlled by the group being affected (e.g. management failing to react to events in a way that minimises effects), while *disasters* occur suddenly and the actual trigger event is out of the control of those affected (e.g. an earthquake hitting a populated area). Ritchie (2008) recognises that an overlap can occur, when leadership actions during a disaster then develop into a related crisis, thus confusing the concepts. Some authors

chose not to tackle the distinction of disaster and crisis but instead use the terms alternately or simultaneously (Ritchie, 2008).

Mileti (1999) describes disasters as events that are the result of interaction with the physical environment, the social and demographic characteristics of the community within the physical environment, and the built environment the community constructed. Disasters are often predictable, and in some cases avoidable (Mileti, 1999). While many disastrous events are not controllable by human societies, effects may be minimised through action.

Disasters are often described as a cycle with phases leading from one to the next. A common cycle is the 4R's; reduction, readiness, response, and recovery (Ministry of Civil Defence & Emergency Management, 2017). In this spectrum one *reduces* (or eliminates) possible risks, *readies* for risk that cannot be reduced or eliminated, *responds* to events with the readied preparation, and works towards *recovery* after the event, including reducing or eliminating possible threats. Faulkner (2001) provides six phases of disaster in a tourism disaster management framework. These phases include: 1) pre-event, where action is taken to reduce effects of, or eliminate, potential events; 2) prodromal, the time immediate prior to an imminent disaster where warnings and plans are initiated; 3) emergency, the actual disaster response activities; 4) intermediate, where short-term issues are resolved and return to normal is being planned; 5) long-term recovery, a continuation of the previous phase; and 6) resolution, the final phase where normal activities resume and review of events takes place. In both of these disaster management cycles the concept remains that the management process begins prior to the onset of an event with planning and risk reduction, continuing through to learning lessons and applying those lessons to future planning.

A key concept in the discussion of disaster is that disasters are social disruptions (Rodriguez, Quarantelli, & Dynes, 2007). The disruption to human society causes the event to be termed a disaster- even though a physical event such as an earthquake may begin the cycle. For example, an  $M_w$  6.5 earthquake that occurs in an undeveloped and unpopulated part of the world is of little consequence. The same earthquake in a developed area has the potential to cause severe disruption and may be termed a disaster.

The term disaster can also illustrate a lack of capacity to manage an event. As a description of the resources needed to stabilise the event, a disaster requires recruitment of resources from outside of the affected community (United Nations Environment Programme (UNEP) & Caribbean Alliance for Sustainable Tourism (CAST), 2008). Examining an event in terms of resources required to respond illustrates that disruption to human systems is integral to defining a disaster. A small hotel with limited resources could experience a disaster that a larger hotel with greater resources might have been able to handle internally with minimal disturbance.

For the purposes of this discussion, the definition proposed by Faulkner (2001) will form the basis for defining disaster with additional wording taken from Mileti (1999), and Rodriguez, Quarantelli, and Dynes (2007). For the remainder of this discussion disaster is defined as:

A sudden event where the trigger is outside the current control of the affected area (community and/or business), the event disrupts the function of that area and requires additional resources (other than those available within the area) to respond to and recover from the event.

## **2.2 What is Resilience?**

The concept of resilience has been explored over many decades among a range of disciplines, including ecology, engineering, psychology, and social science (Bec, McLennan, & Moyle, 2015; Eiser et al., 2012; Folke et al., 2010; Klein, Nicholls, & Thomalla, 2003; A. V. Lee et al., 2013; Martin-Breen & Anderies, 2011; Masten &

Obradovic, 2006; Norris et al., 2008). It is worth highlighting that the meaning of resilience, at its heart, remains similar across disciplines, but the nuances and values vary based on application.

The root *resiliere* comes from the Latin ‘to jump back’; however, in the context of disasters affecting societies this definition falls short, as it may not be possible to go “back” to the state prior to the disaster (Paton, 2006). Going back to the previous state may also be undesirable, if it means building back to the same vulnerabilities (Esnard, 2013). Resilience is a dynamic condition.

Many scholars have worked towards finding a shared meaning of resilience. However, in order to study resilience one must first define: resilience by whom; and resilience to what (Buckle, 2006; Cutter et al., 2008; Martin-Breen & Anderies, 2011).

A universal understanding of resilience is not possible:

Without frameworks tailored to specific populations, levels of analysis, phase of disaster, and even the unique disaster context, our ability to advance the science of disaster response toward more resilient communities is limited (Nowell & Steelman, 2013, p. 233).

For each group, and each circumstance, the meaning of resilience can take on new dimensions. Exploring some of the different ways resilience has been applied can be a constructive process towards defining disaster resilience for hotels. Resilience definitions vary based on the context. The following discussion explores literature concerned with resilience within the context of systems, organisations, economics, and communities in an effort to understand how resilience may apply to the nexus of disasters and hotels.

**Systems resilience.** Resilience concepts for systems have undergone numerous interdisciplinary scholarly reviews (Aldunce, Beilin, Handmer, & Howden, 2014; Comfort, Boin, & Demchak, 2010b; Cutter et al., 2008; Lamanna, Williams, & Childers,

2012; Norris et al., 2008; Orchiston, 2010; Paton & Johnston, 2006). Further insights are gained from research in physics, mathematics, psychology, and psychiatry, and ecology by Aldunce et al. (2014), whose work showed that resilience is not just bouncing back to the previous state, instead resilient systems have the capacity to change and adapt to new stresses, and create a new norm from which to continue forward.

Resilience in complex adaptive systems (CAS) differs from engineer-based systems resilience. Engineer-based systems resilience looks at returning to the previous state of functionality (Rose & Krausmann, 2013). The CAS theory considers a move to a new normal that allows functioning to continue. Four characteristics that help a CAS to be resilient include:

“...capacity for creative innovation, flexibility in relationships between the parts (of the system) and the whole, interactive exchange between the system and its environment, and a crucial role for information in evolving complexity” (Comfort, 1994, pp. 159-160).

A CAS can also vary in size and components, moving, expanding and contracting as needed. In the case of hotels, groups of internal departments working together can function as a CAS, and those same groups working with external partners can also be a CAS. Those same groups unable to be innovative, flexible, and collaborate in the face of disaster can delay response and recovery.

The ability of a system to adapt and change is critical to our understanding of resilience as applied to larger groups, including business organisations like hotels. Tourist destinations can be conceptualised as “... a human-environment system” (Becken et al., 2013, p. 956). During an unfolding disaster a hotel’s management and staff must understand the possible risks to the business, guests, and surrounding area, and have the capacity to cope with those possibilities.

**Organisational resilience.** Organisational resilience considers physical properties as well as organisational structure and capacities (Cutter et al., 2008).

Resilient organisations are able to overcome adversity and continue forward, often thriving as they reinvent themselves (Dahles & Susilowati, 2015). Building organisational resilience includes “...reducing the consequences of failure and assuring business/service continuity under adverse conditions” (Rose & Krausmann, 2013, p. 79).

In studies of resilient organisations, a few common traits have been proposed. Resilient organisations question assumptions about their environment constantly and are competitive (A. V. Lee et al., 2013). Dahles and Susilowati (2015) write there are three components to a business’s resilience: survival, adaptation, and innovation- all working together to make an organisation resilient. For hotels, these actions translate into understanding changing risks in a variety of contexts, and working to limit those risks constantly.

Resilient organisations employ adaptive strategies in a rapidly changing environment; the adaptations may fundamentally change the organisation in some ways, but allow it to survive into the future (Dahles & Susilowati, 2015). Organisational structure and culture influence adaptive capacities (Wang & Ritchie, 2010). As an example, Comfort (1994), in her study of the 1994 Northridge earthquake response, found the response’s networked organisational structure and flexible leadership allowed for higher functioning and quicker decision making. When organisations are too rigid and systematic, with too many layers of bureaucracy, they are less able to create adaptation strategies during dynamic events (Celik & Corbacioglu, 2013; Comfort, 1994). Sawalha (2015) studied resilience of insurance companies in Jordan. Findings included that the Jordanian business model characterised by centralised power and hierarchy, with low levels of autonomy and delegation worked at cross-purpose with resiliency. Organisational structure, adaptability, culture, and flexibility features may all

influence hotel disaster resilience. Large hotel chains may have organisational hierarchies that make quick decision-making, flexibility, and adaptive strategising difficult.

Despite the fact that organisations rarely prioritise resilience building, A. V. Lee et al. (2013) argue that many traits of a resilient organisation are also traits of successful organisations. Obstacles to building resilience in organisations include a lack of tangible ideas and concepts for businesses to adopt or adapt for their organisation (McManus, Seville, Vargo, & Brunson, 2008). These challenges have slowed progress in building resilient organisations. It may be possible to overcome some of these impediments by focusing on the intersection of resilient organisations and successful organisations. Resilient organisations have improved response to more common daily challenges because they have an increased self-awareness, greater ability to manage their vulnerabilities, and are adaptive and innovative (Aldunce et al., 2014). Capitalising on this idea a hotel may be able to build success commercially while building disaster resilience.

In making a case for organisational resilience building, A. V. Lee et al. (2013) proposes adaptive capacity building and pre-planning as components to becoming increasingly resilient to disaster. Paton and Hill (2006) also suggest the ability of an organisation to adapt and change predicts a business's ability to survive post-disaster. Organisations need to integrate elements of resilience into their daily philosophy to improve response in the face of adversity (Sawalha, 2015). Integrating resilience management into everyday business practices through "encouraging increased situation awareness, improved adaptive capacity, and better identification and management of keystone vulnerabilities" is also important (McManus et al., 2008, p. 84). Thus, the

research points to the importance of organisation's adaptive capacity in building resilience.

**Economic resilience.** Economic resilience is another element of disaster resilience building within the hotel sector. Economic resilience is defined as the "...ability or capacity of a system to absorb or cushion itself against damage or loss" (Rose, 2006, p. 228). Hotels are fundamentally businesses that must maintain financial viability to continue operations.

There are two distinct areas of business resilience: the customer considerations and the supply considerations (Rose & Krausmann, 2013). Customer-side resilience takes into account disruptions in customer service, while supply side looks at service disruptions in supply chains. Both areas are important to disaster resilience for hotels. Additionally, economic resilience can be broken into two separate measures: static economic resilience concerns the ongoing ability of an organisation to function; and dynamic economic resilience refers to the flexible capacity of organisations to reorganise and stabilise quickly.

An important economic resiliency implication is that local tourism businesses are critical to the wider community economy in terms of providing jobs and customers for other businesses (Dahles & Susilowati, 2015). Additionally, hotels that can remain operational in the aftermath of a hazard event often maintain strong occupancy through services provided to response and recovery teams (Drabek, 2000; Faulkner & Vikulov, 2001; Pottorff & Neal, 1994; Ritchie, Crotts, Zehrer, & Volsky, 2013).

The individual business resilience is at the micro level of an economy. The industry's resilience (e.g. tourism) is at the meso-economic level, and the community's resilience is the macro-economic level (Rose & Krausmann, 2013). Accordingly, organisational resilience is linked *and* connected to community economic resilience.

**Community resilience.** Community resilience to disaster is the ability of a group to mitigate and withstand the effects of disaster, however, there is little consensus regarding the components and processes that enable communities to be disaster resilient (Chandra et al., 2011). Paton and Johnston (2001, p. 275) write that a community's disaster resilience is built on, "... efficacy, problem-focused coping, and a sense of community..." Community resilience has also been defined as "...a process linking a network of adaptive capacities (resources with dynamic attributes) to adaptation after a disturbance..." (Norris et al., 2008, p. 127). These characteristics are identified as 1) economic development - equitable distribution of economic resources within a group; 2) social capital - relationships as resources; 3) information and communication - creating common meaning and understandings and systems to move information in times of stress; and 4) community competence - the ability to make decisions and take actions as a collective. These diverse facets point to the complexity of community resilience.

Organisations and communities are inextricably linked (McManus et al., 2008). Resilient businesses assist a community in maintaining social continuity in the aftermath of disaster (Moore & Lakha, 2006). Resilient organisations improve the ability of communities to respond to disasters (A. V. Lee et al., 2013; McManus et al., 2008; Sawalha, 2015). Looking at community resilience as a basis for developing a model for building resilience in the tourism sector, Bec et al. (2015) use a definition of community resilience that included a group's ability to harness resources to adapt to change. Buckle (2006, p. 91) reviews definitions of community resilience and finds "...they refer to "community" as a large social group..." While an imminent and potentially disastrous event can pose incredible challenges for a hotel operation, disaster preparedness and resilience building can mitigate the consequences (Lamanna et al., 2012). A hotel is an

integral part of its larger community, but may also be its own community. Building resilience requires participation by all stakeholders, across sectors.

Disasters happen to all members of a community at the same time, and recovery must happen together as well (Norris et al., 2008). Building communities that are resource and capacity rich, and helping them understand risk is at the heart of resilience building.

Furthermore, planning ways to overcome potential hazards allows communities to take advantage of, and enhance, those qualities and capacities already available to their communities.

The sheer number of components that combine to form a community makes assessing dimensions and indicators for community resilience more difficult. Cutter et al. (2008, p. 603) discuss the “multifaceted nature of resilience”, which poses challenges in designing assessments to manage the disaster resilience building process. Furthermore, conditions of resilience are dynamic, not static, so evaluation of components and measures is required on a consistent basis (Paton, Kelly, & Doherty, 2006). However, resilience in communities can be enhanced through preparedness planning, risk awareness, and communication (Cutter et al., 2008; Kwok, Doyle, Becker, Johnston, & Paton, 2016; Paton & Johnston, 2006). Hotels, seen through the community resilience lens, are multifaceted groups and need dynamic and collaborative analysis, preparedness, and communication ideas for handling potential disasters.

Based on a composite of ideas presented in this discussion the definition of hotel resilience to disaster in the context of this discussion will be:

A dynamic condition describing the capacity of a hotel, together with its stakeholders, to assess, innovate, adapt, and overcome possible disruptions that may be triggered by disaster.

### **2.3 Disaster Resilience and Vulnerability in the Hotel Sector**

Resilience and vulnerability are often linked in research; however, they are not opposite ends of the same spectrum (Buckle, 2006; Cutter et al., 2008). It is possible to be vulnerable in some ways, and resilient in others. Vulnerability to disaster describes the extent to which a person, community, organisation, or system is susceptible to negative effects from a hazard (Becken et al., 2013). Understanding vulnerabilities to disaster is an integral part of assessing capacities to overcome potential disastrous situations and implementing risk reduction measures.

One danger in equating resilience to vulnerability is the resultant circular thinking, “a system is vulnerable because it is not resilient; it is not resilient because it is vulnerable” (Klein et al., 2003, p. 40). Both terms are defined by the specifics (who, when, and what) of the situation (Buckle, 2006). For example, elderly people are often considered a vulnerable population, however in some situations they prove to be resilient due to their array of experiences to draw from and reduced expectations that the government will come to their rescue (Pooley, Cohen, & O’Conner, 2006). Circumstances can alter resilience and vulnerability of people and groups and requires careful assessment.

Vulnerability is a condition that is evaluated in a pre-disaster setting, resilience is evaluated by post-disaster outcomes (Rose, 2006). Understanding vulnerabilities that exist in a community is fundamental to building resilience in a community, and ultimately steps to mitigate those vulnerabilities must be taken to build resilience (Kapucu, Hawkins, & Rivera, 2013). Enhancing adaptive capacities in tourism destinations can decrease certain vulnerabilities and build resilience (Price-Howard & Holladay, 2014). “...the concepts of vulnerability, adaptive capacity and resilience are linked: enterprises that are less vulnerable and have more adaptive capacity are likely to

be more *resilient*” (Biggs, Hall, & Stoeckl, 2012, p. 649). Reducing vulnerabilities and embracing sustainable practices are critical to developing disaster resilience (Cutter et al., 2008). Hotels’ evaluation of their vulnerabilities can improve their adaptive capacities and build disaster resilience.

The Sendai Framework for Disaster Risk Reduction 2015-2030 (SFDRR) highlights that disaster continues to hamper efforts to improve sustainability in many economies (United Nations Office for Disaster Risk Reduction (UNISDR), 2015b). The new framework reiterates the essential need of public and private enterprise, and refocuses efforts upon reducing disaster risk and building resilience at all levels.

Specifically the framework challenges the tourism industry to “promote and integrate disaster risk management approaches...given the ...heavy reliance on tourism” in many parts of the world (UNISDR, 2015b, pg. 20). Sawalha, Jraisat, and Al-Qudah (2013) writes that hotels in Jordan are less likely to allocate resources to activities that do not show an ability to generate profits short-term. Short-term thinking can result in a response-oriented approach to disaster management. Building disaster resilience for the hotel sector works in tandem with the objectives and goals of the SFDRR.

#### **2.4 Sustainability and Disaster Resilience in the Hotel Sector**

Sustainable tourism considers what tourism, as a part of a bigger system, works towards sustaining, rather than how to sustain tourism activities (S. McCool, Butler, Buckley, Weaver, & Wheeler, 2015). In a hotel, actions taken as course of business that are unsustainable, may ultimately make the operation of the business unsustainable too. For example, a hotel that does not account for the health of the local reef in planning tourist activities may damage and degrade the reef making their facility less desirable to snorkelers and reef enthusiasts.

“One way to reduce the susceptibility of communities to loss from hazard consequence is to create a community that is sustainable and resilient” (Johnston, Becker, & Cousins, 2006, p. 40). A disaster resilient community contributes to that community’s sustainability (Klein et al., 2003). Resilience and sustainability may use different avenues and methodologies but they work towards the same goals (Lerch, 2015; Redman, 2014). To achieve sustainability a community should “maintain and, if possible, enhance environmental quality” (Schneider, 2006, p. 79). Sustainability can be natural resource centric, but the objective is continued function with no depreciation of quality of life (Mayunga, 2007). A shift that emphasises sustainable practices may ultimately be good for a hotel’s business in the long-term.

While there exists much common ground between sustainability and resiliency, Redman (2014) suggests that some objectives may be in conflict and the study of these two subjects should remain independent. This opposing view considers that the adaptive cycle of resilient systems may adopt a new norm that is not sustainable long-term, in order to continue functioning in the short-term. When building resilience to disasters short-term, non-sustainable adaptations are often critical for survival and are a part of the process. For example, a hotel context considers adaptations like petrol-powered generators to maintain minimum critical functionality; while this is a non-sustainable solution it is also often a short-term solution required to maintain operations.

### **3. Disasters and the Hotel Sector**

The body of literature regarding disasters, tourism, and more specifically hotels, has increased over the last 20 years, yet improvements in the hotel sector’s disaster preparedness have not kept pace. Ritchie (2009) outlines the need of all tourism organisations to assess their vulnerabilities and risks, placing increasing emphasis on planning and prevention, as opposed to the more common focus on response and

recovery strategies. There is a need for businesses to consider how they are creating and/or enhancing risks and act to minimise these effects (United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), 2015). Sawalha et al. (2013) studied five-star Jordanian hotels and found that disaster management was considered a response and recovery activity, as opposed to a proactive management of variables to decrease the possibilities and severities of risks. Faulkner (2001) brings to light that few tourism organisations recognise the importance of risk reduction, planning and preparedness.

A history spanning decades of incidents and accidents in the hospitality industry was published in the *Cornell Hotel and Restaurant Administrative Quarterly* (1985). The account included many well-publicised disasters such as the 1980 Las Vegas fire in the MGM Hotel and the 1982 eruption of Mount Saint Helens (tourism effects on the Pacific Northwest). This 1985 journal editorial explained that the hospitality industry was learning from each of these events, and hotels (as well as restaurants) were reducing their disaster risk with each event. A disagreement is evident in the literature regarding improved disaster management. Some literature reflects that hotels are reviewing past incidents and attempting to learn lessons (*Cornell Hotel and Restaurant Administrative Quarterly*, 1985), and other literature contradicts this assertion (Drabek, 1997).

Procedures and plans for handling disasters were found to be non-existent in a 1997 survey conducted by Drabek, where 827 tourists and hotel guests who had experienced disastrous circumstances participated (Drabek, 1997). Kwornik (2005) argues that the industry seems to be repeating the same mistakes repeatedly, based on a study of some hotels' reactions to the 2003 Blackout in the eastern United States. Chien and Law's (2003) article discussed the hotel industry's widespread concern of the spread of SARS, and the lack of guidance for hotels on epidemic topics. During the 2003 SARS

outbreak, Hong Kong experienced an 80% decrease in tourism as a result of this epidemic (Chien & Law, 2003). These examples highlight that implementing lessons learned in disaster preparedness for the hotel industry may be low priority.

Preparedness planning helps to ensure resources needed for response and recovery are available, by deciding in advance who will do what, when, and where in different circumstances (UNEP, 2008). Complete preparedness planning for disasters can also reduce risk (Pennington-Gray, Thapa, Kaplanidou, Cahyanto, & McLaughlin, 2011). Ritchie (2008, p. 322) writes, "...taking a more strategic or holistic approach to disaster planning and preparation may reduce the likelihood of linked events, 'escalation' or the 'ripple effect' occurring due to the chaotic and complex inter-relationships within an open tourism system." Furthermore, preparedness planning for disasters by the tourism industry should be integrated and viewed as essential in a world where growing numbers of disasters are impacting tourism (Ritchie, 2009).

The uncertainty of hazards complicates the ability to develop detailed preparedness plans (Ritchie, 2008). Even though control over natural forces is rarely possible, the effects of these events on communities can be mitigated and diminished through preparedness efforts. "...surprise is an inevitable event whose magnitude and rippling consequences can be anticipated through knowledge, emerging tools, consensual social collaboration, and preparations to be flexibly innovative" (Comfort, Boin, & Demchak, 2010a, p. 273). In recent years, building disaster resilience in organisations and communities has been studied as one way to combat the unpredictability of disasters.

Disaster related research for the tourism industry tends to be response and recovery centric, with less attention paid to the preparedness and preventative possibilities (Becken & Hughey, 2013; Chien & Law, 2003; Faulkner, 2001; Hystad &

Keller, 2008; Lamanna et al., 2012; B. N. McCool, 2012; Ritchie, 2004; Wang & Ritchie, 2010). The academic discourse on crises and disasters in the tourism sector is often reactive in its approach. Hall (2010) reviewed the literature concerning economic and financial tourism crises between 1977-2010 and found surges in the literature following events like oil shortages and the 2001 attack on the World Trade Center in New York. Combating the response centric focus, some authors have worked to develop frameworks that describe pre-disaster emergency response planning and post-disaster activities.

Frameworks, models, and planning techniques have been explored and developed for the tourism industry, and to a lesser extent hotels (Becken et al., 2013; Faulkner, 2001; Hystad & Keller, 2008; Malhotra & Venkatesh, 2009; B. N. McCool, 2012; Paraskevas, 2013; Prideaux, 2004; Ritchie, 2004; Sydnor-Bousso et al., 2011; Wang & Ritchie, 2010). The tourism industry is encouraged through the growing literature to take action to improve its ability to survive and even thrive in the aftermath of a disaster. In practice, however, a response focused attitude towards disasters seems to continue to be prevalent in the tourism sector.

The recent Hotel Resilient programme provides guidance to strengthen disaster resilience for the hotel sector through design and promotion of a certification programme (UNISDR, GIDRM & PATA, 2014). The certification is focused on larger properties, with a more guidance-oriented approach for smaller hotels. The programme, sponsored by the UNISDR, GIDRM, and PATA aims to build resilience to disaster through encouraging disaster risk reduction strategies in three categories, with 18 sub-categories (Khazai, 2016). These categories include building location, design and structural elements, systems designed to warn and minimise risk, (e.g. fire protection

and evacuation systems), and management risk reduction planning components, which include training, drills, communications planning, and continuity planning.

The Hotel Resilient programme is currently piloting in Indonesia, the Maldives, Myanmar, the Philippines, and Thailand (UNISDR, 2015). A scoping study, of interviews with 17 hotel and tourism professionals, explains that a hotel's disaster risk and resilience is not currently a priority for guests; however, guests' general interest in safety is increasing. The existing barriers to the programme were consistent with the literature; interviewees identified cost, time, and capacity as potential obstacles to engaging in a certification programme (UNISDR, PATA, GIDRM, 2015).

The programme offers a great step forward for hotels; however, focus is on disaster risk reduction strategies (e.g. infrastructure, warning, and risk reduction planning). While disaster risk reduction is a component of disaster resilience, this initiative does not seek to address other possible components of organisational resilience. These include organisational structure and flexibility (Dahles & Susilowati, 2015; Wang & Ritchie, 2010), adaptive capacity (A. V. Lee et al., 2013; Wang & Ritchie, 2010), and less tangible resources such as social capital (Kwok et al., 2016). Qualities such as sense of community and self-efficacy improve resiliency (Finnis, Johnston, Becker, Ronan, & Paton, 2007; Kwok et al., 2016), and may be more influenced by organisational culture than disaster risk reduction strategies. Unfortunately, the Hotel Resilient programme does not delve into these subjects.

Building preparedness and resilience to disasters in the tourism sector lacks significant progress (Hystad & Keller, 2008; Malhotra & Venkatesh, 2009). For example, in 2006, Hystad and Keller (2008) did a follow-up study, three years after a major forest fire affected tourism businesses near Kelowna, British Columbia, Canada. In the original study, 104 tourism businesses were surveyed regarding their

preparedness for disaster. The original 2003 study concluded the businesses were not prepared for a forest fire, although an occurrence of an event like this fire was highly probable (Hystad & Keller, 2006). The 2006 follow-up study identified 38% (up from the previous study showing 26%) of those businesses in their study had a disaster management plan. Further analysis of the data revealed that the majority of those businesses had only informal planning. The study's conclusion was that tourism businesses lack the will to improve and develop their own contingency planning (Hystad & Keller, 2008, p. 157).

Hotel staff, along with the organisations, are unprepared to face disasters that may affect hotels. Staff members were found to be lacking information on disaster practices and hotels failed to carefully assess their risks (Wang & Ritchie, 2010). Mahon et al. (2013) suggest tourism employees may not have confidence that their employer's plans are sufficient to be effective in the face of disaster. The inclusion of stakeholders, including staff, in disaster management activities is important for the success of preparedness planning and emergency response.

Disaster planning undertaken by accommodation managers in Australia was reported to be at 74.9% in a study by Ritchie, Bentley, Koruth, and Wang (2011). However, the authors recognise the study, while a positive trend in increased disaster planning, relied on self-reporting by accommodation managers and did not detail the extent to which the planning had been done. The reactive, rather than proactive, management of disasters and that plans were not necessarily embedded in their organisation was a point that Orchiston's 2013 research highlighted.

Hotels in New Orleans, post-Hurricane Gustav, were closed for up to 7 days, with the median being 3 days (Lamanna et al., 2012). Full service, food and housekeeping, was not restored for 6-12 days following the hurricane (only 6% reported

loss of power as reason for delay). Lack of staff to run the operation was found to be the primary cause. Lamanna et al. (2012) examined New Orleans hotels' response to Hurricane Gustav in 2008. The study showed that while 80% indicated they had a written plan for hurricane evacuation, only 54% involved their staff in the process and 58% had procedures for training staff. A total of 46% provided an annual exercise with staff participation. New Orleans hotels have capitalised on lessons learned from previous hurricanes, yet they still have much room for growth and improved resilience. Based on these reviews it is clear that tourist organisations, including hotels, are not proactively assessing, and planning, to minimise their risk to disaster.

### **3.1 Increased Disaster Risk Existing in the Hotel Sector**

Communities must consider carefully the role they play in creating some of the billion dollar losses attributed to disasters (Mileti, 1999). This idea, viewed through a tourism lens, serves to illustrate that hotels may play a role in creating their risk. High-risk locations and attraction of guests unfamiliar with the area combined with inattention to staff training and preparedness planning can be an expansive and lethal combination. The accommodation sector is vulnerable to disaster based on its 24/7 model and sensitivity to external factors (Ritchie et al., 2011). Hotels are often located in high-risk locations based on guest preference to vacation in coastal or alpine environments (Méheux & Parker, 2006; Orchiston, 2012; Ritchie, 2009).

As an industry, the tourism sector has been found to avoid openly discussing hazards of any sort (Cohen, 2009). The marketing literature of hotels is designed to entice guests, thus chooses to minimise any risk potential while highlighting local activities and positive features. Tourists can be particularly vulnerable in a disaster due to their lack of familiarity with the region, customs, hazards, and local language (Johnston et al., 2007; Lamanna et al., 2012; Mantyniemi, 2012; Méheux & Parker,

2006; North-Eastern Atlantic and Mediterranean Tsunami Information Centre (NEAMTIC), 2012). This lack of familiarity and knowledge can inhibit their ability to take protective actions. It has been argued that lack of community and business preparedness, and official tsunami warnings exacerbated the effects of the 2004 Indian Ocean Tsunami (Malhotra & Venkatesh, 2009). Guests and locals alike simply did not recognise the immediate danger (as the water receded unexpectedly) and the critical need to head to higher ground.

Beyond commercial enterprise, caring for communities, environments, or assistance in social development is an organisation's responsibility, often termed corporate social responsibility (Henderson, 2007; S. Lee & Park, 2009). In addition to the above responsibilities, Henderson expands on this concept, stating that visitors to an area need to be supported and familiarised in their new environment. Hotels have a corporate social responsibility to have plans to care for, and keep safe, their staff and guests (Henderson, 2007).

A study of hotels in Thailand, following the 2004 Boxing Day tsunami, looks further into corporate social responsibility. Common traits of socially responsible organisations include, "...investment and involvement in social welfare... compliance with official regulations and a willingness to exceed these...education and engagement of customers and staff about social and environmental issues of concern (Henderson, 2007, p. 232). The hotel sector's responsibility must include placing high value on ensuring the safety of their staff and guests, while also improving their organisation's ability to come through disastrous events and continue to be operational and profitable (Henderson, 2007).

Hotels have a responsibility to understand their risk and vulnerabilities- and create strategies to prevent or mitigate events stemming from predictable disasters (Mahon et

al., 2013). The expansion of the tourism industry gives rise to the need for disaster preparedness and investigation of ways to return to operative capacity (UNEP & CAST, 2008). Disaster resilience building can decrease effects of events, improve life safety, and get hotels back to operational status.

### **3.2 Building Disaster Resilience in the Hotel Sector**

The hotel sector's around the clock, 365 days a year model elevates the importance of disaster resiliency. Guests will always be present, as will staff. Disaster resiliency for hotels may translate into lives saved, as well as business reputation. However, the idea that disaster preparedness plans, disaster risk reduction activities, and disaster resilience building are separate activities from commercial concerns is reflected in the literature. An example of this disconnect may include managing a profitable hotel business; yet, managers do not prioritise planning for continued operations following a disaster. Competition for support and funds can be difficult as preparedness planning and resilience building are hard to quantify in regards to return on time and investment (A. V. Lee et al., 2013; McManus et al., 2008). Furthermore, tourism operators may not be making headway due to the already voluminous workload, leaving little time to pursue new planning avenues (Orchiston, 2013).

Promoting benefits to building disaster resilience that also work towards improved profitability and functionality may improve the buy-in from management. One study of hotel stock prices indicated socially responsible actions can improve a hotel company's short and long-term profitability (S. Lee & Park, 2009). Illuminating the value of building resilience- for both day to day operations and in times of disaster may also promote a greater understanding of what a resilient organisation truly looks like (McManus et al., 2008). "...elements of resilience and competitive excellence share many of the same features...", for example, organisations with these characteristics

constantly scan for and interpret changes or risks in the environment and develop adaptations as needed (A. V. Lee et al., 2013, p. 31). Disaster resilience building may be a tandem feature of competitive business practice.

The academic literature on resilient organisations suggests that business continuity plans are essential and should provide a range of functions: 1) management and information systems to continue as needed for core business functions; 2) management's ability to transition from routine to crisis mode; and 3) preparedness plans that are designed to ensure operating capacity and capability even under extreme conditions created by a disaster (Paton & Hill, 2006, p. 251). Business continuity planning is focused on establishing a strategic plan to re-establish key business operations to ensure business survival (Moore & Lakha, 2006). Business continuity planning may include such things as audits of facilities, identifying key persons, developing prevention strategies, and acquiring insurance to cover potential losses (Moore & Lakha, 2006). In addition, preparedness planning for organisations must include how to operate in unusual conditions, such as lack of water or power. Resilient enterprises analyse disruptions to find positive actions that will carry the business forward.

The ability to plan for and manage disastrous situations ought to be integral to management training for tourism professionals (Wang & Ritchie, 2010). Disaster planning may be integrated into a business's strategic management and planning as the two concepts share the objective of long-term survival of an organisation (Wang & Ritchie, 2010). Strategic plans allow for quicker reaction. Lack of planning can result in slow decision-making and slow action plan formulation following an incident. Delays can exacerbate the impact. At the same time planning can be challenged by the chaotic nature of an unfolding disaster (Ritchie, 2004).

There is an overlap between business continuity planning, strategic management, and resilience building. However, building resilience also considers flexibility, social capital, and innovation in ways that business continuity planning and strategic management may not. Clearly if managers are building disaster resilience into their continuity and/or strategic planning, an opportunity to shift the paradigm towards improved disaster resilience exists. Tourism's essential and integral ties to the community require a level of responsibility to maintain operative capacity (Henderson (2007). The ability for a business within a community to continue to operate during a disaster is foundational to the overarching recovery of the wider community (McManus et al., 2008).

#### **4. Conclusion**

A synthesis of the literature points to the importance of prioritising disaster resilience building for the hotel sector. As the numbers of tourists affected by disasters grows, the importance of providing actionable information to limit the severity of these events on communities, including hotels, also escalates in pace. The literature discussion above scrutinises how disaster and resilience are framed for the tourism sector, and how these concepts apply to the hotel sector.

Resilience to disasters for the hotel sector is a dynamic condition describing the capacity of the organisation, together with its stakeholders, to assess, innovate, adapt, and overcome possible disruptions triggered by disaster. Integrated into building disaster resilience for hotels is disaster risk reduction activities (including structural and non-structural analysis that looks at operational and service factors from an all-hazards perspective), and preparedness. Sustainability of hotel policies and actions need scrutiny.

Improving resilience requires building adaptive capacity, creating flexible organisations and fostering an organisational culture that promotes self-efficacy and innovation, and questions the status quo. To promote building resilience, all stakeholders at every level of the process must be involved. An interactive exchange of ideas promotes growth of social capital and builds resilience. Clarified framing and simple tools can promote a hotel's ability to understand, measure, and build resilience, moving more hotels towards embracing disaster resilience as an objective of value-worth the time, effort, and resources required.

## References

- AlBattat, A. R., & Mat Som, A. P. (2013). Emergency preparedness for disasters and crises in the hotel industry. *SAGE Open*, 3(3), 1-10. doi:10.1177/2158244013505604
- Aldunce, P., Beilin, R., Handmer, J., & Howden, M. (2014). Framing disaster resilience: The implications of the diverse conceptualisations of “bouncing back”. *Disaster Prevention and Management*, 23(3), 252-270. doi:10.1108/dpm-07-2013-0130
- Bec, A., McLennan, C., & Moyle, B. D. (2015). Community resilience to long-term tourism decline and rejuvenation: a literature review and conceptual model. *Current Issues in Tourism*, 19(5), 431-457. doi:10.1080/13683500.2015.1083538
- Becken, S., & Hughey, K. F. D. (2013). Linking tourism into emergency management structures to enhance disaster risk reduction. *Tourism Management*, 36, 77-85. doi:10.1016/j.tourman.2012.11.006
- Becken, S., Mahon, R., Rennie, H. G., & Shakeela, A. (2013). The tourism disaster vulnerability framework: an application to tourism in small island destinations. *Natural Hazards*, 71(1), 955-972. doi:10.1007/s11069-013-0946-x
- Biggs, D., Hall, C. M., & Stoeckl, N. (2012). The resilience of formal and informal tourism enterprises to disasters: reef tourism in Phuket, Thailand. *Journal of Sustainable Tourism*, 20(5), 645-665. doi:10.1080/09669582.2011.630080
- Buckle, P. (2006). Assessing social resilience. In D. Paton & D. Johnston (Eds.), *Disaster resilience: An integrated approach* (pp. 88-104). Springfield, IL: Charles C. Thomas.
- Celik, S., & Corbacioglu, S. (2013). Interorganizational coordination: Analysis of 2011 Van earthquakes. In N. Kapucu, C. V. Hawkins, & F. I. Rivera (Eds.), *Disaster resiliency: Interdisciplinary perspective* (pp. 308-333). New York, New York: Routledge.
- Chandra, A., Acosta, J., Stern, S., Uscher-Pines, L., Williams, M. V., Yeung, D., . . . Meredith, L. S. (2011). *Building community resilience to disasters: A way forward to enhance national security* (TR 915). Retrieved from Santa Monica, CA: [http://www.rand.org/content/dam/rand/pubs/technical\\_reports/2011/RAND\\_T915.pdf](http://www.rand.org/content/dam/rand/pubs/technical_reports/2011/RAND_T915.pdf)
- Chien, G. C. L., & Law, R. (2003). The impact of the Severe Acute Respiratory Syndrome on hotels: A case study of Hong Kong. *International Journal of Hospitality Management*, 22(3), 327-332. doi:10.1016/S0278-4319(03)00041-0
- Cohen, E. (2009). Death in paradise: Tourist fatalities in the tsunami disaster in Thailand. *Current Issues in Tourism*, 12(2), 183-199. doi:10.1080/13683500802531141

- Comfort, L. K. (1994). Risk and resilience: Interorganizational learning following the Northridge Earthquake of 17 January 1994. *Journal of Contingencies and Crisis Management*, 2(3), 157-170. doi:10.1111/j.1468-5973.1994.tb00038.x
- Comfort, L. K., Boin, A., & Demchak, C. C. (2010a). Resilience revisited: An action agenda for managing extreme events. In L. K. Comfort, A. Boin, & C. C. Demchak (Eds.), *Designing resilience: Preparing for extreme events* (pp. 272-284). Pittsburg, PA: University of Pittsburgh Press.
- Comfort, L. K., Boin, A., & Demchak, C. C. (Eds.). (2010b). *Designing resilience: Preparing for extreme events*. Pittsburg, PA: University of Pittsburgh Press.
- Cooper, M. (2005). Japanese Tourism and the SARS Epidemic of 2003. *Journal of Travel & Tourism Marketing*, 19(2-3), 117-131. doi:10.1300/J073v19n02\_10
- Cornell Hotel and Restaurant Administrative Quarterly. (1985). The bad news. *The Cornell Hotel and Restaurant Administrative Quarterly*, 26(1), 87-91. doi:10.1177/001088048502600114
- Cutter, S. L., Barnes, L., Berry, M., Burton, C., Evans, E., Tate, E., & Webb, J. (2008). A place-based model for understanding community resilience to natural disasters. *Global Environmental Change*, 18(4), 598-606. doi:10.1016/j.gloenvcha.2008.07.013
- Dahles, H., & Susilowati, T. P. (2015). Business resilience in times of growth and crisis. *Annals of Tourism Research*, 51, 34-50. doi:10.1016/j.annals.2015.01.002
- de Sausmarez, N. (2005). The Indian Ocean Tsunami. *Tourism and Hospitality Planning & Development*, 2(1), 55-59. doi:10.1080/14790530500072278
- Drabek, T. E. (1997). Understanding tourists during disaster. *Australian Journal of Emergency Management, Summer*, 14-18.
- Drabek, T. E. (2000). Disaster evacuations: Tourist-business managers rarely act as customers expect. *Cornell Hotel and Restaurant Administration Quarterly, August*, 48-57.
- Eiser, J. R., Bostrom, A., Burton, I., Johnston, D. M., McClure, J., Paton, D., . . . White, M. P. (2012). Risk interpretation and action: A conceptual framework for responses to natural hazards. *International Journal of Disaster Risk Reduction*, 1, 5-16. doi:<http://dx.doi.org/10.1016/j.ijdr.2012.05.002>
- Esnard, A.-M. (2013). Taking action in uncertain environments: Connecting resilience to hazards. In N. Kapucu, C. V. Hawkins, & F. I. Rivera (Eds.), *Disaster resiliency: Interdisciplinary perspectives* (pp. 121-125). New York, NY: Routledge.
- Faulkner, B. (2001). Towards a framework for tourism disaster management. *Tourism Management*(22), 135-147.
- Faulkner, B., & Vikulov, S. (2001). Katherine, washed out one day, back on track the next: A post-mortem of a tourism disaster. *Tourism Management*, 22, 331-344.

- Finnis, K. K., Johnston, D., Becker, J. S., Ronan, K. R., & Paton, D. (2007). School and community-based hazards education and links to disaster-resilient communities. *Regional Development Dialogue*, 28(2), 99-108.
- Folke, C., Carpenter, S., Walker, B., Scheffer, M., Chapin, T., & Rockström, J. (2010). Resilience thinking: Integrating resilience, adaptability and transformability. *Ecology and Society*, 15(4).
- Hall, C. M. (2010). Crisis events in tourism: subjects of crisis in tourism. *Current Issues in Tourism*, 13(5), 401-417. doi:10.1080/13683500.2010.491900
- Henderson, J. C. (2007). Corporate social responsibility and tourism: Hotel companies in Phuket, Thailand, after the Indian Ocean tsunami. *International Journal of Hospitality Management*, 26(1), 228-239. doi:10.1016/j.ijhm.2006.02.001
- Hystad, P. W., & Keller, P. (2006). Disaster management: Kelowna tourism industry's preparedness, impact and response to a 2003 major forest fire. *Journal of Hospitality and Tourism Management*, 13(1), 44-58. doi:10.1375/jhtm.13.1.44
- Hystad, P. W., & Keller, P. C. (2008). Towards a destination tourism disaster management framework: Long-term lessons from a forest fire disaster. *Tourism Management*, 29(1), 151-162. doi:10.1016/j.tourman.2007.02.017
- Johnston, D., Becker, J., & Cousins, J. (2006). Lifelines and urban resilience. In D. Paton & D. Johnston (Eds.), *Disaster resilience: An integrated approach* (pp. 40-65). Springfield, IL: Charles C. Thomas.
- Johnston, D., Becker, J., Gregg, C., Houghton, B., Paton, D., Leonard, G., & Garside, R. (2007). Developing warning and disaster response capacity in the tourism sector in coastal Washington, USA. *Disaster Prevention and Management*, 16(2), 210-216. doi:10.1108/09653560710739531
- Kapucu, N., Hawkins, C. V., & Rivera, F. I. (2013). Disaster resiliency: Interdisciplinary perspectives. In N. Kapucu, C. V. Hawkins, & F. I. Rivera (Eds.), *Disaster resiliency: Interdisciplinary perspectives (1st edition ed.)* (pp. 1-14). New York, New York: Routledge.
- Khazai, B. (2016). *Hotel Resilient*. Paper presented at the Asian Business Forum 2016, Bangkok, Thailand.  
[http://www.adpc.net/igo/contents/blogs/ABF2016/download/presentation/Day%2021%20Apr%202016/04\\_Technical%20Session%204/01\\_AsianBusinessForum\\_Hanna%20Maier\\_Bijan%20Khazai\\_Hotel%20Resilient.pdf](http://www.adpc.net/igo/contents/blogs/ABF2016/download/presentation/Day%2021%20Apr%202016/04_Technical%20Session%204/01_AsianBusinessForum_Hanna%20Maier_Bijan%20Khazai_Hotel%20Resilient.pdf)
- Klein, R. J. T., Nicholls, R. J., & Thomalla, F. (2003). Resilience to natural hazards: How useful is this concept? *Environmental Hazards*, 5(1), 35-45. doi:10.1016/j.hazards.2004.02.001
- Kwok, A. H., Doyle, E. E. H., Becker, J., Johnston, D., & Paton, D. (2016). What is 'social resilience'? Perspectives of disaster researchers, emergency management practitioners, and policymakers in New Zealand. *International Journal of Disaster Risk Reduction*, 19, 197-211. doi:10.1016/j.ijdr.2016.08.013

- Kwortnik, R. J. (2005). Safeguarding hospitality service when the unexpected happens: Lessons learned from the blackout of '03. *Cornell Hotel and Restaurant Administration Quarterly*, 46(1), 13-39. doi:10.1177/0010880404272018
- Lamanna, Z., Williams, K. H., & Childers, C. (2012). An assessment of resilience: Disaster management and recovery for Greater New Orleans' Hotels. *Journal of Human Resources in Hospitality & Tourism*, 11(3), 210-224. doi:10.1080/15332845.2012.668653
- Lee, A. V., Vargo, J., & Seville, E. (2013). Developing a tool to measure and compare organizations' resilience. *Natural Hazards Review*, 14(1), 29-41. doi:10.1061/(asce)nh.1527-6996.0000075
- Lee, S., & Park, S.-Y. (2009). Do socially responsible activities help hotels and casinos achieve their financial goals? *International Journal of Hospitality Management*, 28(1), 105-112. doi:10.1016/j.ijhm.2008.06.003
- Lerch, D. (2015). *Six foundations for building community resilience*. Retrieved from Santa Rosa, CA: <http://www.postcarbon.org/wp-content/uploads/2015/11/Six-Foundations-for-Building-Community-Resilience.pdf>
- Maditinos, Z., & Vassiliadis, C. (2008). *Crises and disasters in Tourism Industry: Happen locally- affect globally*. Paper presented at the Management of International Business and Economics Systems, (MIBES) Conference. [http://mibes.teilar.gr/ebook/ebooks/maditinos\\_vasiliadis%2067-76.pdf](http://mibes.teilar.gr/ebook/ebooks/maditinos_vasiliadis%2067-76.pdf)  
Accessed March 22, 2016
- Mahon, R., Becken, S., & Rennie, H. (2013). *Evaluating the business case for investment in the resilience of the tourism sector of small island developing states. Background Paper prepared for the Global Assessment Report on Disaster Risk Reduction 2013*. Retrieved from <http://www.preventionweb.net/english/hyogo/gar/2013/en/bgdocs/Mahon%20et.al.%202012.pdf>
- Malhotra, R., & Venkatesh, U. (2009). Pre-crisis period planning: lessons for hospitality and tourism. *Worldwide Hospitality and Tourism Themes*, 1(1), 66-74. doi:10.1108/17554210910949896
- Mantyniemi, P. (2012). An analysis of seismic risk from a tourism point of view. *Disasters*, 36(3), 465-476. doi:10.1111/j.1467-7717.2011.01266.x
- Martin-Breen, P., & Anderies, J. M. (2011). *Resilience: A literature review*. Retrieved from [https://docs.google.com/document/d/1xcInW\\_qolqbIScN\\_2KwMCFO24sR4Q-9JXx6CAcYL\\_go/edit](https://docs.google.com/document/d/1xcInW_qolqbIScN_2KwMCFO24sR4Q-9JXx6CAcYL_go/edit)
- Masten, A. S., & Obradovic, J. (2006). Competence and resilience in development. *Annals of the New York Academy of Sciences*, 1094, 13-27. doi:10.1196/annals.1376.003
- Mayunga, J. S. (2007). *Understanding and applying the concept of community disaster resilience: A capital-based approach*. Paper presented at the 2007 Summer

- Academy Megacities: Social vulnerability and resilience building, 22-28 July, Munich, Germany. [https://www.u-cursos.cl/usuario/3b514b53bcb4025aaf9a6781047e4a66/mi\\_blog/r/11. Joseph S. Mayunga.pdf](https://www.u-cursos.cl/usuario/3b514b53bcb4025aaf9a6781047e4a66/mi_blog/r/11. Joseph S. Mayunga.pdf)
- McCool, B. N. (2012). The need to be prepared: Disaster management in the Hospitality Industry. *Journal of Business and Hotel Management*, 01(02). doi:10.4172/2324-9129.1000101
- McCool, S., Butler, R., Buckley, R., Weaver, D., & Wheeler, B. (2015). Is concept of sustainability utopian: Ideally perfect but impracticable? *Tourism Recreation Research*, 38(2), 213-242. doi:10.1080/02508281.2013.11081746
- McManus, S., Seville, E., Vargo, J., & Brunsdon, D. (2008). Facilitated process for improving organizational resilience. *Natural Hazards Review*, 9, 81-90. doi:10.1061//ASCE/1527-6988/2008/9:2/81
- Méheux, K., & Parker, E. (2006). Tourist sector perceptions of natural hazards in Vanuatu and the implications for a small island developing state. *Tourism Management*, 27(1), 69-85. doi:<http://dx.doi.org/10.1016/j.tourman.2004.07.009>
- Mendoza, C. A., Brida, J. G., & Garrido, N. (2012). The impact of earthquakes on Chile's international tourism demand. *Journal of Policy Research in Tourism, Leisure and Events*, 4(1), 48-60. doi:10.1080/19407963.2011.636923
- Ministry of Civil Defence & Emergency Management. (2017). The 4Rs. Retrieved from <http://www.civildefence.govt.nz/cdem-sector/cdem-framework/the-4rs/>
- Moore, T., & Lakha, R. (2006). Business continuity management: Principles and approaches. In T. Moore & R. Lakha (Eds.), *Tolley's handbook of disaster and emergency management; Principles and practice* (3rd ed., pp. 1-39). Oxford, UK: Elsevier Ltd.
- Norris, F. H., Stevens, S. P., Pfefferbaum, B., Wyche, K. F., & Pfefferbaum, R. L. (2008). Community resilience as a metaphor, theory, set of capacities, and strategy for disaster readiness. *American Journal of Community Psychology*, 41(1-2), 127-150. doi:10.1007/s10464-007-9156-6
- North-Eastern Atlantic and Mediterranean Tsunami Information Centre (NEAMTIC). (2012). *A guide of tsunamis for hotels*. Retrieved from Paris, France: <http://neamtic.ioc-unesco.org>
- Nowell, B., & Steelman, T. (2013). The role of responder networks in promoting community resilience: Toward a measurement framework of network capacity. In N. Kapucu, C. V. Hawkins, & F. I. Rivera (Eds.), *Disaster resiliency: Interdisciplinary perspectives*. New York, NY: Routledge.
- Orchiston, C. (2010). *Tourism and seismic risk: Perceptions, preparedness and resilience in the zone of the Alpine Fault, Southern Alps, New Zealand*. (Doctoral dissertation), University of Otago. Retrieved from <https://ourarchive.otago.ac.nz/handle/10523/395>

- Orchiston, C. (2012). Seismic risk scenario planning and sustainable tourism management: Christchurch and the Alpine Fault zone. *Journal of Sustainable Tourism*, 20(1), 59-79. doi:10.1080/09669582.2011.617827
- Orchiston, C. (2013). Tourism business preparedness, resilience and disaster planning in a region of high seismic risk: The case of the Southern Alps, New Zealand. *Current Issues in Tourism*, 16(5), 477-494. doi:10.1080/13683500.2012.741115
- Orchiston, C., & Higham, J. E. S. (2014). Knowledge management and tourism recovery (de)marketing: The Christchurch earthquakes 2010–2011. *Current Issues in Tourism*, 19(1), 64-84. doi:10.1080/13683500.2014.990424
- Paraskevas, A. (2013). Aligning strategy to threat: a baseline anti-terrorism strategy for hotels. *International Journal of Contemporary Hospitality Management*, 25(1), 140-162. doi:10.1108/09596111311290264
- Parker, C. F. (2015). Complex negative events and the diffusion of crisis: Lessons from the 2010 and 2011 Icelandic Volcanic Ash Cloud Events. *Geografiska Annaler: Series A, Physical Geography*, 97(1), 97-108. doi:10.1111/geoa.12078
- Paton, D. (2006). Disaster resilience: Building capacity to co-exist with natural hazards and their consequences. In D. Paton & D. Johnston (Eds.), *Disaster resilience: An integrated approach* (pp. 3-10). Springfield, IL: Charles C. Thomas.
- Paton, D., & Hill, R. (2006). Managing company risk and resilience through business continuity management. In D. Paton & D. Johnston (Eds.), *Disaster resilience: An integrated approach* (pp. 246-266). Springfield IL: Charles C. Thomas.
- Paton, D., & Johnston, D. (2001). Disasters and communities: vulnerability, resilience and preparedness. *Disaster Prevention and Management*, 10(4), 270-277. doi:10.1108/eum0000000005930
- Paton, D., & Johnston, D. (Eds.). (2006). *Disaster resilience: An integrated approach*. Springfield, IL: Charles C Thomas.
- Paton, D., Kelly, G., & Doherty, M. (2006). Exploring the complexity of social and ecological resilience to hazards. In D. Paton & D. Johnston (Eds.), *Disaster resilience: An integrated approach* (pp. 190-212). Springfield, IL: Charles C. Thomas.
- Pearlman, D., & Melnik, O. (2008). Hurricane Katrina's effect on the perception of New Orleans leisure tourists. *Journal of Travel & Tourism Marketing*, 25(1), 58-67. doi:10.1080/10548400802164905
- Pennington-Gray, L., Thapa, B., Kaplanidou, K., Cahyanto, I., & McLaughlin, E. (2011). Crisis planning and preparedness in the United States tourism industry. *Cornell Hospitality Quarterly*, 52(3), 312-320. doi:10.1177/1938965511410866
- Pooley, J. A., Cohen, L., & O'Conner, M. (2006). Links between community and individual resilience: Evidence from cyclone affected communities in North West Australia. In D. Paton & D. Johnston (Eds.), *Disaster resilience: An integrated approach* (pp. 161-173). Springfield, IL: Charles C. Thomas.

- Pottorff, S. M., & Neal, D. D. M. (1994). Marketing Implications for Post-Disaster Tourism Destinations. *Journal of Travel & Tourism Marketing*, 3(1), 115-122. doi:10.1300/J073v03n01\_08
- Price-Howard, K., & Holladay, P. J. (2014). Resorts, resilience and retention after the BP oil spill disaster of 2010. *Journal of Tourism Insights*, 5(1). doi:10.9707/2328-0824.1044
- Prideaux, B. (2004). The need to use disaster planning frameworks to respond to major tourism disasters. *Journal of Travel & Tourism Marketing*, 15(4), 281-298. doi:10.1300/J073v15n04\_04
- Redman, C. L. (2014). Should sustainability and resilience be combined or remain distinct pursuits? *Ecology and Society*, 19(2). doi:10.5751/es-06390-190237
- Ritchie, B. W. (2004). Chaos, crises and disasters: a strategic approach to crisis management in the tourism industry. *Tourism Management*, 25(6), 669-683. doi:10.1016/j.tourman.2003.09.004
- Ritchie, B. W. (2008). Tourism disaster planning and management: From response and recovery to reduction and readiness. *Current Issues in Tourism*, 11(4), 315-348. doi:10.1080/13683500802140372
- Ritchie, B. W. (2009). *Crisis and disaster management for tourism*. Bristol, UK; Buffalo, NY: Channel View Publications.
- Ritchie, B. W., Bentley, G., Koruth, T., & Wang, J. (2011). Proactive crisis planning: Lessons for the accommodation industry. *Scandinavian Journal of Hospitality and Tourism*, 11(3), 367-386. doi:10.1080/15022250.2011.600591
- Ritchie, B. W., Crofts, J. C., Zehrer, A., & Volsky, G. T. (2013). Understanding the effects of a tourism crisis: The impact of the BP Oil Spill on regional lodging demand. *Journal of Travel Research*, 53(1), 12-25. doi:10.1177/0047287513482775
- Rockett, J. P. (1999). Definitions are not what they seem. *Risk Management*, 1(3), 37-47.
- Rodriguez, H., Quarantelli, E. L., & Dynes, R. (2007). *Handbook of disaster research* (H. Rodriguez, Quarantelli, E. L., & R. Dynes Eds.). New York, New York: Springer Science+Business Media, LLC.
- Rose, A. (2006). Economic resilience to disasters: Toward a consistent and comprehensive formulation. In D. Paton & D. Johnston (Eds.), *Disaster resilience: An integrated approach* (pp. 226-248). Springfield, IL: Charles C. Thomas.
- Rose, A., & Krausmann, E. (2013). An economic framework for the development of a resilience index for business recovery. *International Journal of Disaster Risk Reduction*, 5, 73-83. doi:10.1016/j.ijdr.2013.08.003

- Sawalha, I. H. S. (2015). Managing adversity: understanding some dimensions of organizational resilience. *Management Research Review*, 38(4), 346-366. doi:10.1108/mrr-01-2014-0010
- Sawalha, I. H. S., Jraisat, L. E., & Al-Qudah, K. A. M. (2013). Crisis and disaster management in Jordanian hotels: practices and cultural considerations. *Disaster Prevention and Management*, 22(3), 210-228. doi:10.1108/dpm-09-2012-0101
- Schneider, R. O. (2006). Hazard mitigation: A priority for sustainable communities. In D. Paton & D. Johnston (Eds.), *Disaster resilience: An integrated approach* (pp. 66-87). Springfield, IL: Charles C. Thomas.
- Singal, M., Wokutch, R. E., Ho, S., & Murrmann, S. K. (2010). Coping with Katrina: Fairmont's response to Hurricane Katrina. *Business Case Journal*, 17(2), 1-22.
- Sydnor-Bouso, S., Stafford, K., Tews, M., & Adler, H. (2011). Toward a resilience model for the hospitality and tourism industry. *Journal of Human Resources in Hospitality & Tourism*, 10(2), 195-217. doi:10.1080/15332845.2011.536942
- Thompson, D., Muriel, P., Russel, D., Osborne, P., Bromely, A., Rowland, M., . . . Brown, C. (2002). Economic costs of the foot and mouth disease outbreak in the United Kingdom in 2001. *Revue Scientifique et Technique de L'Office International des Epizooties*, 21(3), 675-687.
- Tsai, C.-H., Wu, T.-c., Wall, G., & Linliu, S.-C. (2016). Perceptions of tourism impacts and community resilience to natural disasters. *Tourism Geographies*, 18(2), 152-173. doi:10.1080/14616688.2016.1149875
- UNEP. (2008). *Disaster Risk Reduction: A toolkit for tourism destination*. Retrieved from Paris, France: [http://www.preventionweb.net/files/13875\\_DTIX1116xPADisasterRiskReductioninA.pdf](http://www.preventionweb.net/files/13875_DTIX1116xPADisasterRiskReductioninA.pdf)
- United Nations Economic and Social Commission for Asia and the Pacific (ESCAP). (2015). *Disasters without borders: Regional resilience for sustainable development*. Retrieved from <http://www.unescap.org/sites/default/files/Full%20Report%20%20%5BLow-Res%5D.pdf>
- United Nations Environment Programme (UNEP), & Caribbean Alliance for Sustainable Tourism (CAST). (2008). *Disaster risk management for coastal tourism destinations responding to climate change: A practical guide for decision makers*. Retrieved from Paris, France: [http://www.preventionweb.net/files/13004\\_DTIX1048xPADisasterRiskManagementfo.PDF](http://www.preventionweb.net/files/13004_DTIX1048xPADisasterRiskManagementfo.PDF)
- United Nations Office for Disaster Risk Reduction (UNISDR). (2015a). *Hotel resilient: Strengthening the resilience of the tourism sector*. Retrieved from [https://www.unisdr.org/2015/docs/asiapacific/HotelResilientFactsheet\\_2015.04.pdf](https://www.unisdr.org/2015/docs/asiapacific/HotelResilientFactsheet_2015.04.pdf) Accessed March 22, 2016

- United Nations Office for Disaster Risk Reduction (UNISDR). (2015b). *Sendai Framework for Disaster Risk Reduction 2015-2030*. Retrieved from [http://www.preventionweb.net/files/43291\\_sendaiframeworkfordrren.pdf](http://www.preventionweb.net/files/43291_sendaiframeworkfordrren.pdf)
- United Nations Office for Disaster Risk Reduction (UNISDR), Global Initiative on Disaster Risk Management (GIDRM), & Pacific Asia Travel Association (PATA). (2014). *Hotel Resilience: A certification scheme for hotels and resorts to reduce climate and disaster risks and strengthen resilience across tourism destinations in the Asia-Pacific region*. Retrieved from <https://www.rts.ch/emissions/les-coulisses-de-l-evenement/6394336.html/BINARY/Hotel%20Resilient%20Factsheet.pdf>
- United Nations Office for Disaster Risk Reduction (UNISDR), Pacific Asia Travel Association (PATA), & Global Initiative on Disaster Risk Management (GIDRM). (2015). *Developing strategies to strengthen the resilience of hotels to disasters: A scoping study to guide the development of the hotel resilient initiative*. Retrieved from [http://www.unisdr.org/files/45258\\_scopingstudyhotelresilientinitiativ.pdf](http://www.unisdr.org/files/45258_scopingstudyhotelresilientinitiativ.pdf)
- Wang, J., & Ritchie, B. W. (2010). A theoretical model for strategic crisis planning: Factors influencing crisis planning in the hotel industry. *International Journal of Tourism Policy*, 3(4), 297. doi:10.1504/ijtp.2010.040390

### **Supplemental Literature Review**

A literature review written for publication has some constraints with regard to depth of topics balanced with the length of the article. The following supplemental literature review adds to the literature review found in Brown et al. (2017). This section will discuss components of the Sendai Framework for Disaster Risk Reduction 2015-2030 (SFDRR), and Sustainable Development Goals (SDGs), and their relevance to the thesis. Also included is a discussion of theoretical perspectives which have added to my understanding of the topic.

This section concludes with a discussion of types of disasters. While general all-hazards language is sufficient for publication in a journal, this thesis requires a detailed perspective of disaster.

The publication of literature is ongoing and many new articles and texts in this subject area have emerged since 2017. The subsequent articles in Chapters Four, Five, and Six have incorporated these more recently published articles where appropriate so the thesis, as a whole, has a comprehensive literature overview.

### **International Implications**

International organisations tasked with building consensus and implementing action plans important to worldwide interests have considered the question of disaster resilience building in a number of different forums. The attendees at conferences have agreed that it is in the world's best interest to work together to create solutions to some of the common issues facing humanity as is evidenced by the SFDRR and SDGs. Many of these issues including disaster impacts affect the tourism sector. Building disaster resilience for hotels contributes to a number of the objectives within these global platforms.

The collaborative effectiveness of gathering experts to solve worldwide problems has been transformative in some instances. For example, in 1974, scientists first identified chlorofluorocarbons as a destructed force working towards depletion of the earth's ozone layer (Velders, Andersen, Daniel, Fahey, & McFarland, 2007). In 1987, scientists convened in Montreal and adopted the Montreal Protocol on Substances that Deplete the Ozone Layer and provided recommendations to phase out production and use of chlorofluorocarbons (Velders et al., 2007). Through a series of recommendations, chlorofluorocarbons have been slowly phased out over the last 30 years (Solomon, Ivy, Kinnison, Mills, Neely, & Schmidt, 2016; Velders et al., 2007). This example of an effective worldwide collaboration, designed to take action, has been so successful that today the ozone layer has begun to heal (Parker, 2015; Solomon et al., 2016). As an illustration of successful worldwide collaboration, this case also highlights that networks and partnerships can work to resolve issues that a single entity could not hope to influence. Hotels, as part of the broader tourism sector, and the global community, have a role to play in working towards worldwide disaster related objectives.

The following sections will provide linkage from some important international agreements to the thesis topic. Tourism has experienced the importance of both regional and international cooperation and collaboration. The 2010 Icelandic volcano eruption disrupted a huge sector of the tourism industry due to aviation constraints (Parker, 2015). Areas like the Caribbean depend on neighbouring countries' healthy economies for leisure travellers. The global financial crisis saw a decrease of 9.3% of travellers between 2007-2010 (Moghal & O'Connell, 2018). The increasingly connected world stage is important to any study of tourism. The interconnection is the root of collaborative discussions in the international arena, seeking to work together to resolve issues that affect populations across borders.

Disaster resilience building has been included in many discussions concerning ways to reduce disaster effects worldwide. The SFDRR and the SDGs provide guidance, both directly and indirectly, encouraging disaster resilience building for the hotel sector. The following section discusses this guidance.

### **Sendai Framework for Disaster Risk Reduction 2015-2030**

In March 2015 stakeholders gathered in Sendai, Japan to develop a continuing framework to the Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disaster (HFA) was credited with decreasing effects of disaster (United Nations Office for Disaster Risk Reduction (UNISDR), 2015). The SFDRR builds on the success of the HFA. The SFDRR seeks to continue to strengthen disaster risk reduction efforts worldwide. With the SFDRR, countries renewed their commitment to reducing disaster risk and building greater disaster resilience. This commitment projects an outcome of a substantial reduction in loss of life, health and economic challenges due to disaster (UN, 2015, Annex II, section II ).

The SFDRR includes four priorities for action aimed at focusing worldwide efforts to achieve the goal of preventing new, and reducing existing, disaster risk globally:

Priority 1: Understanding disaster risk

Priority 2: Strengthening disaster risk governance to manage disaster risk

Priority 3: Investing in disaster risk reduction for resilience

Priority 4: Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction (UN, 2015, Annex II section IV para. 20)

The SFDRR emphasises the importance of collaborative and cooperative efforts on a worldwide scale as is highlighted in the following passage of Priority 3 (Annex II section IV para. 29):

Public and private investment in disaster risk prevention and reduction through structural and non-structural measures are essential to enhance the economic, social, health and cultural resilience of persons, communities, countries and their assets, as well as the environment. These can be drivers of innovation, growth and job creation. Such measures are cost-effective and instrumental to save lives, prevent and reduce losses and ensure effective recovery and rehabilitation” (UN, 2015, p. 14).

The SFDRR Priority 3 further recognises the importance of the tourism sector at the national and local level by stating that achieving goals will require promotion and integration of “...disaster risk management approaches throughout the tourism industry, given the often heavy reliance on tourism as a key economic driver” (UN, 2015, Annex II section IV para. 30q).

Priority 3 discusses the need to invest in disaster risk reduction to build resilience. Investment in building resilience includes structural and non-structural investments, including disaster risk prevention and mitigation measures. More importantly, the document stresses the cost-effectiveness of disaster risk reduction (UN, 2015, Annex II, section IV ). Promotion of disaster resilience in the workplace, not only for the safety of workers, but also for protecting livelihoods and economies is also called for in Priority 3. Tourism is an important contributor to local economies; development of disaster management objectives that reduce risk and promote quick recovery when disaster strikes support Priority 3.

The SFDRR Priority 1 emphasises understanding disaster risk. Within the mandate is the need to foster good practices, training and education on disaster risk across all sectors, including the private sector businesses (i.e. hotels) (UN, 2015, Annex II section IV). Priority 1 recognises the critical nature of developing and disseminating location-based disaster risk information as well as building knowledge of all stakeholders through shared experiences, lessons learned, trainings and exercises. This Priority highlights the value of many disaster management activities that build disaster resilience by improving social connections, networks, and knowledge and skills (Biggs et al., 2012; A.V. Lee et al., 2013). When applied in a hotel context developing hazard-based trainings and exercises, as well as connections within the industry and the community, are activities that work towards the SFDRR goals.

One of the expected outcomes of the framework is to “Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030” (UN, 2015, Annex II, section II, para. 18c). Orchiston et al. (2015) write that the 2010-2011 earthquakes in New Zealand amounted to a USD 156 million loss to the country. With tourism contributing 9% of the GDP (UNISDR, 2015a), hotels getting back to business with minimal disruption is essential to the economy of many communities.

The SFDRR discusses the involvement of all relevant stakeholders at all levels and spells out the need to engage all parts of society including private business. The recognition of the roles of stakeholders as enablers in the process is shown in Priority 3, which calls for strengthening business’s disaster resilience through development of public/private collaborative efforts, and integration of disaster risk management into business models and practice (UN, 2015, Annex II, section IV). Developing a framework to describe disaster resilience within the hotel sector will complement this priority by further understanding predictors of hotel disaster resilience.

The SFDRR guides the nations of the world but includes important lessons for individuals, private enterprises and local communities. The development of risk reduction strategies is one component of disaster resilience building. The next section considers the SDGs and their relationship to disaster resilience within the hotel sector.

### **Sustainable Development Goals**

The SDGs are a development agenda which includes 17 interconnected targeted areas to focus world efforts on achieving sustainable development (United Nations Development Programme (UNDP), 2018b). These goals continue the progress made by the Millennium Development Goals from 2000-2015 (UNDP, 2018b). The goals are aimed at root causes of inequality and work towards ending poverty and setting the world on a path where all people enjoy peace and prosperity (UNDP, 2018b). In making a case for businesses to participate and integrate these goals in their planning, the a SDGs guide for businesses writes that organisations working towards SDGs are likely to “...improve trust among stakeholders; strengthen their license to operate; reduce legal, reputational and other business risks; build resilience to costs and requirements imposed by future legislation” (Global Reporting Initiative (GRI), United Nations Global Compact (UNGC), & World Business Council for Sustainable Development (WBCSD), 2015, p. 9). Furthermore, SDGs seek out collaboration with businesses, asking for their assistance and innovation in understanding and resolving problems with sustainable development (GRI et al., 2015). Impacts to the hotel sector from disasters include economic, sociocultural, and environmental (Tsai et al., 2016). With these ideas in mind, the following discussion focuses on how SDGs may interlink with disaster resilience within a hotel context.

The SDGs call for government, business, and civil society worldwide to work together to achieve the 17 goals (UN.org, 2016). These goals ask businesses to take

action by 1) understanding the goals, 2) defining priorities as they apply to individual businesses, 3) setting business goals, 4) embedding those goals into their planning and operations, and 5) reporting to their stakeholders and the wider community the progress made towards the identified objectives (GRI et al., 2015).

With regard to the hotel sector, several of the 17 goals are directly related to building disaster resilience (Table 2.1). Goal 8, *Decent Work and Economic Growth*, describes the need for sustainable economic growth which includes sustainable productive employment (GRI et al., 2015). Tourism is highly sensitive to disruption from disaster. For example Hall et al. (2018) writes that following the September earthquake in Christchurch, 94% of business experienced closures for extended periods of time. Given the potential for disruption from disasters it makes sense for businesses to look to resilience building as a method to minimise future disruptions (Hall et al., 2018). Economic vitality cannot be sustained when businesses are unable to maintain operations and employment levels.

The SDG Goal 9, *Industry, Innovation, and Infrastructure*, aims at building sustainable infrastructure. For hotels, sustainable infrastructure describes a need to look at local hazards and consider what risks may be mitigated through adaptation of infrastructure, for example retrofitting for earthquake risk. In the Hotel Resilient program (discussed in Brown, 2017, Chapter 2) infrastructure components of buildings are one of three primary categories for evaluation of hotel resilience (Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), 2017).

Goal 11, *Sustainable Cities and Communities*, focuses on making communities safe, resilient, and sustainable (GRI et al., 2015). In addition to the aforementioned infrastructure considerations, hotels are often closely tied to the local environment's ecology and need to ensure their practices and access do not degrade the environment

they depend on to attract clients to their properties (United Nations Environment Programme (UNEP) & Caribbean Alliance for Sustainable Tourism (CAST), 2008). The 2018 closure of Boracay Island in the Philippines is an example of negative impacts on a local environment due to the development of tourism (Villamor, 2018). The island's water and sewage facilities were inadequate for the growth of the tourism sector and recently the island was closed to tourism by the government until effective clean-up could be managed (Villamor, 2018).

Keeping the environment safe from the effects of increased use by tourism is a concept for hotels to consider as part of their overall corporate social responsibility agendas. Corporate social responsibility is a related concept to sustainable development, as illustrated by the following quote from Henderson (2007):

The principles of sustainable development have much in common with those of corporate social responsibility (CSR) and the terms are sometimes used interchangeably. A company pursuing sustainable tourism is, by definition, socially responsible while CSR incorporates some of the fundamental tenets of sustainability (Henderson, 2007, p. 231).

Sustainable environmental policies, for example considering tourism impacts on coral reefs, are critical for maintaining economic benefits derived from these environmental assets. In March 2018, Indonesia announced it would have to close the popular Maya Bay to tourists for four months in order to restore the health of the adjacent reef and waters (Associated Press, 2018). In the future, the number of tourists allowed each day will be cut by half, with a 3-month annual closure (Associated Press, 2018). This decision was required as a result of the escalating and unsustainable number of tourists visiting each year. Long-term views were required to ensure future economic gains by local tourism operators.

Goal 13, *Climate Action*, addresses a concern for climate change (GRI et al., 2015) and reiterates the importance of reducing carbon footprints while attending to the local natural environment. Tourism locations, often reliant on natural features to attract visitors, should consider their footprint and ways they can minimise their environmental impact. Additionally, tourism locations need to look at long-term issues that are affected by climate shifts and make long range plans for continued business. The impact of climate change on glacier-based tourism on New Zealand's South Island has necessitated adaptations and resilience planning by local businesses to maintain access for tourists to the retreating glaciers (Orchiston & Espiner, 2017). A resilient business community reduces disruptions in operations and maintains livelihoods and economic stability.

The last link to the SDGs for discussion in this section is Goal 17, *Partnerships for the Goals*. This goal speaks to the importance of worldwide collaboration for implementation of strategies that will achieve the SDGs (GRI et al., 2015). Multi-stakeholder partnerships for sustainable development include private/public collaborations aimed at expanding knowledge and developing implementation strategies that will be effective and sustainable (UNDP, 2018a). Capacity expansion in less-developed countries is integral to this goal. Many hotel organisations are multi-national with facilities in countries at all stages of development. For example, Marriott International, Inc. holdings and franchises include 6,500 properties in 127 countries (Marriott International Inc., 2018), including developing countries like the Philippines, Jamaica, and Vietnam. Organisations like Marriott are well positioned to develop organisational strategies and to collaborate locally to enhance disaster resilience in tourist destinations located in countries at many stages of development. Building organisational resilience to disaster adds to a community's resilience and enhances the

overall resilience of the tourism system (Hall et al., 2018). This idea demonstrates the value of the SDGs' multi-stakeholder approach when considering resilience.

The inference of international organisations collaborative efforts is that attention to disaster resilience building, as it applies to disaster risk reduction and sustainability, is a global responsibility that requires stakeholders' participation. In the discussion (Chapter 7) the ideas put forth in the SFDRR and SDGs will be linked to research findings and recommendations.

Table 2.1

*Applying SDGs to the Hotel Sector. Adapted from GRI et al. (2015)*

Sustainable Development Goal	Priorities addressed relevant to hotels	Hotel application
Goal 8 Decent Work and Economic Growth	Contribution to stable economy and employment	Building resilience to minimise disruption to operations
Goal 9 Industry, Innovation, and Infrastructure	Sustainable infrastructure	Risk analysis to understand and address infrastructure weaknesses
Goal 11 Sustainable Cities and Communities	Making communities safe, resilient, and sustainable	Consider hotels impact on community's members and environment and act according to best practices
Goal 13 Climate Action	Sustainability in the face of climate change	Effects of climate change and need to develop adaptations while minimizing carbon footprint
Goal 17 Revitalise global collaboration and strengthen implementation	Develop relationships and meaningful goals with stakeholders	Connect with local organisations inside and outside the hotel industry to evaluate risks and create sustainable solutions

The following section on theoretical perspectives links some important theories to the further exploration of disaster resilience. This discussion includes a number of ideas that have been influential in creating ways to understand why people behave the way they do and how to influence their actions.

## Theoretical Perspectives

This section is a discussion of related theories that provide a context for research into disaster resilience for the hotel sector. Cognitive Dissonance Theory (CDT), Theory of Planned Behaviour (TPB), Protection Motivation Theory (PMT), and Bias will be discussed, with a connection to disaster resilience within the hotel sector. A deeper understanding of theories that underpin and inform research into disaster resilience will enhance the research design as well as offer context for understanding the results and findings.

These theories have been developed to help understand human behaviour. However, it is unclear how useful the theories are in predicting outcomes (Wells, 2017). For example, CDT may predict dissonance but cannot adequately explain which behaviour a person will choose to overcome that dissonance (Wells, 2017). In the TPB perceived control and self-efficacy may influence intention but people's perceptions of external factors can be hard to predict and will affect individuals' ideas of behavioural control (Terry & O'Leary, 1995). Critics of TPB write that intention, perceived behaviour control, subjective norms, and attitude may play a role in behaviour, but validity and usefulness of the TPB are in question (Sniehotta, Pousseau & Araújo-Soares, 2014).

At the intersection of organisational resilience and disasters Wang and Ritchie (2010) studied the TPB and found significant attitude/intention relationships existed. Their study demonstrates the value of the TPB as a foundation for developing an understanding of the relationships of constructs, and the usefulness in considering the TPB while developing models to understand crisis planning in the hotel industry.

Offering recommendations, an ultimate outcome of this project, requires a deeper understanding of why people may, or may not, take actions that improve their

organisations resilience. For example, do they understand the risks of their property? If so, do their protective actions reflect their risks, or if they don't understand the risk, how can that change? The initial literature review identified these theories in other other's research linked to developing recommendations and ways forward to influence identified behaviours (Klein & Eckhaus, 2017; Price-Howard, & Holladay, 2014; Wang & Ritchie, 2010; Wang & Ritchie, 2012). This study includes these theories as an opportunity to ground recommendations and also considers these theories within the literature identified and used in developing the DRFH (Chapter 4).

### **Cognitive Dissonance Theory**

One of the often-cited theories in research looking at attitudes and actions in relation to disaster is the Cognitive Dissonance Theory (CDT). This theory, first put forth in 1957 by Leon Festinger, describes how people react when their expectations and observations are not in harmony. Festinger's hypothesis states:

1. The existence of dissonance, being psychologically uncomfortable, will motivate the person to try to reduce the dissonance and achieve consonance, and
2. When dissonance is present, in addition to trying to reduce it, the person will actively avoid situations and information, which would likely increase the dissonance (Festinger, 1957, p. 3).

Festinger's theory considers that a person will normalise two ideas that are incompatible. During this process, facts, past beliefs, or previous behaviours may be discounted or re-interpreted to achieve consonance. In relation to disaster resilience and the hotel sector, this concept provides insight into behaviours and actions of hotel stakeholders.

In management research, CDT has been applied in considering modification of employee behaviours and job satisfaction (Hinojosa, Gardner, Walker, Coglisier, &

Gullifor, 2016). CDT research has utilised a variety of methods and looked at issues involving employees, corporate executives, board members, teams, job seekers, and ethics (Hinojosa et al., 2016). One study looked at managers in crisis situations (G. Klein & Eckhaus, 2017). Based on CDT, managers may adapt their strategies and become less confident when faced with unexpected events, or they may project increased confidence for no tangible reason to maintain their identification as leaders of the organisation (G. Klein & Eckhaus, 2017). Along the same lines, when people relocate to an area with hazard risk, those risks may be trivialised to achieve consonance (Burby, 1998). In the case of a disaster, over-confidence, trivialising, or denial of dangers could prove to have detrimental effects on organisations (e.g. hotels) and communities.

### **Theory of Planned Behaviour**

The Theory of Planned Behaviour (TPB), developed by Icek Ajzen in 1985, is a relevant theory for this research because many activities that contribute to disaster resilience, like disaster preparedness, are planned behaviours (Daellenbach, Parkinson, & Krisjanous, 2018). The TPB relates to the intention to perform certain actions based on a combination of attitudes towards behaviour, subjective norms, and perceived control (Ajzen, 1991). Attitudes towards behaviour describes the value to the individual of performing the action, subjective norms consider the social influence on intention, and perceived control includes what the person believes they can accomplish (Wang & Ritchie, 2010). To predict intentions to act, the intentions must be specific and well defined (Ajzen, 1991). Within tourism research, a 2014 study investigated intent to return to a particular vacation spot in relation to the TPB (Price-Howard & Holladay, 2014), and found attitude towards behaviour to be the greatest predictor, but subjective norms and perceived control also played a role. Another study expanded the TPB to include perceived risk and perceived uncertainty's effects on attitude towards behaviour

and perceived control, as they influence intention to visit Australia (Quintal, Lee, & Soutar, 2010). The study found that both perceived risk and uncertainty negatively impact people's intentions but do so in varying degrees based on country of origin (Quintal et al., 2010). This research serves to highlight the complexity of the tourism industry when considering international factors and influences on specific destinations.

The TPB has been considered in some disaster research (Daellenbach et al., 2018). Careful segmentation of the study group may provide useful information in improving the way communications encourage disaster preparedness actions (Daellenbach et al., 2018). These segments include attitudes such as complete lack of engagement in preparedness, some engagement, and those who feel unable to develop preparedness (Daellenbach et al., 2018).

Hotel managers' positive or negative attitudes towards disaster planning are one factor that influences their behaviour (Wang & Ritchie, 2010). Stakeholders in a hotel, clients, shareholders, staff, and guests, can also influence managers' actions, thus confirming subjective norms as another influencing factor (Wang & Ritchie, 2010). In a hotel context, perceived control relates directly to the availability of resources, which confirms the third factor as important to the hotel sector (Wang & Ritchie, 2010). A 2012 study by Wang & Ritchie (2012), utilised the TPB as a conceptual framework to look at influences of behaviour for accommodation manager's disaster planning. The study confirmed the influence factors in the TPB as significant predictors of actions in planning for disaster by accommodation managers (Wang & Ritchie, 2012). The study also found past disaster experience to be positively correlated with intention to engage in disaster preparedness activities.

### **Protection Motivation Theory**

Protection Motivation Theory (PMT) was originally introduced by Rogers in 1975 and then revised in 1983. The theory proposes that the perceived seriousness of a threat, the perceived probability of an occurrence, the ability of actions to remedy the problem, and one's own confidence in undertaking the actions are all contributors to intention to protect oneself from a negative event (Maddux & Rogers, 1983). This theory is helpful in understanding behaviours when confronted with threats.

One application of PMT suggests that, when faced with a threat, collecting information to enhance decision making is an action that people might take (Schroeder & Pennington-Gray, 2014). Today's multi-channel platforms for information seeking provide a wide array of sources for consumers to enhance their stores of knowledge. In applying this information to risk perceptions of tourists, if the perceived risk is high, studies show that tourists will search large quantities of information to reduce their uncertainty during the trip planning phases (Schroeder & Pennington-Gray, 2014). In an extension of this idea, Schroeder and Pennington-Gray (2014) looked at the use of social media when travelling and found that high perceptions of adverse event potential resulted in high intention to use social media to seek information. The data suggests that it is important to provide information to guests (directly or through media outlets) regarding possible threats, and in the case of an event providing reliable information to guests is critical.

Considering ways to modify behaviours, Johnston et al. (2005) looked at the importance of self-efficacy, also one of the components of TPB. Improving preparedness may be achieved through improving people's belief in their ability to counter the effects of disaster (Johnston et al., 2005). Education, policy, training, and

strategies that develop feelings of empowerment may all contribute to improving disaster preparedness (Johnston et al., 2005).

The discussed theoretical perspectives serve to create an underpinning knowledge of varying influences upon the way people and organisations approach disaster resilience building. An overarching objective of this thesis is to develop, not only a concept of what disaster resilience *is* within a hotel context, but also how resilience building can be operationalised. The understanding of these theories supports the development of these prescriptions.

### **Bias**

As people work at making decisions regarding potential disasters, some biases influence how risks are perceived. These biases include Myopia, Amnesia, Optimism, Inertia, Simplification and Herding (Meyer & Kunreuther, 2017). The following provides a brief description of each:

- Myopia Bias refers to a tendency to focus in the short-term
- Amnesia Bias refers to forgetting possible lessons learned from previous events
- Optimism Bias considers a tendency to underestimate possible effects of a disaster
- Inertia Bias describes a tendency to maintain the status quo in the face of uncertainty
- Simplification Bias includes people's tendency to consider only certain information in making decisions pertaining to risk
- Herding Bias describes a tendency to base choices on others' actions (Meyer & Kunreuther, 2017).

The significance of considering the biases in disaster resilience is that as we understand why people take certain actions instead of others, information can be designed to encourage different decision-making types. Disaster resilience building takes place in the time well before a possible event. If these biases are invoked to minimise a person's perception of their risk, it is possible that adaptive strategies and plans to overcome effects of a disaster may be incomplete or non-existent. A 1980 study Weinstein asked people to consider outcomes for themselves and other people to a variety of events (Weinstein, 1980). The study showed that people discounted the possible obstacles in achieving a positive outcome, because they were optimistic that they would have factors in their favour. This seminal study also found that the more perceived control people had over an event, the less likely they were to be optimistically biased (Weinstein, 1980). A 1999 study by Johnston, Bebbington Chin Diew Lai, Houghton, and Paton found that increased and accurate threat awareness does not necessarily promote increased protective actions or preparedness. One could theorise that if people had increased feelings of control over a potential disaster, felt the timeframe was within their purview, and understood the likelihood of an event putting them at risk within their lifetime, then they may be less likely to invoke an "it won't happen to me" attitude (Meyer & Kunreuther, 2017). When applied to hotels, understanding bias is valuable to help understand managers' motivations to take resilience building actions (or not) in advance of a possible disaster.

Past experience of disasters is a significant factor in people's perceptions of future risks (Harris & Hahn, 2011). In a study looking at statistical parameters of research conducted on Optimism Bias, Meyer and Kunreuther (2017) argue that people's estimation of their own potential to experience an event as *less likely* than the *average persons* does not necessarily indicate their estimation is less than realistic. However,

anecdotal information surrounding 2012 Hurricane Sandy showed that people perceived the storm as strong and trusted the weather service data regarding impact possibilities, but also believed their personal property would escape harm (Meyer & Kunreuther, 2017). A study of three New Zealand towns found that people's direct, indirect, and vicarious disaster experience influences their information processing and preparedness actions, and the more direct an experience of disaster was, the more informed and motivated people were to engage in preparedness (Becker, Paton, Johnston, Ronan, and McClure, 2017). Providing vicarious experience for people who have not lived through disastrous events may help encourage resilience building activities (Becker et al., 2017). Considering bias when studying people's behaviour before, during, and after disasters is important in understanding how to influence resilience building activities in hotel organisations, and also provides a key to possible predictors of disaster resilience.

The following section describes the types of disasters that are within the scope of consideration within this research. An all-hazards approach is taken to provide a framework for hotels with a multi-faceted disaster landscape. As mentioned in the literature review by Brown et al. (2017), an important component of understanding disaster resilience is an understanding of resilience 'to what' (Buckle, 2006; Cutter et al., 2008; Martin-Breen & Anderies, 2011).

### **Hazards Affecting the Hotel Industry within the Scope of the Study**

Turning now to disasters, the types of events within the scope of this study are detailed below. Within each of these hazard categories, a definition and short case study is included. Where possible the United Nations (UN) definitions are used. These definitions are internationally adopted and provide an opportunity to develop universal language wherever possible.

## **Hydrometeorological Hazards**

Are of atmospheric, hydrological or oceanographic origin. Examples are tropical cyclones (also known as typhoons and hurricanes); floods, including flash floods; drought; heatwaves and cold spells; and coastal storm surges. Hydrometeorological conditions may also be a factor in other hazards such as landslides, wildland fires, locust plagues, epidemics, and in the transport and dispersal of toxic substances and volcanic eruption material (UNISDR, 2016, p. 19).

Many areas with significant investment in the tourism sector are also risk-prone locations prone to cyclones and storm surge (Sarmiento, Hoberman, Ilcheva... & Duran, 2015). Building resilience to disaster includes essential considerations like hotel site location and design (Khazai, 2016)

**Importance to the hotel sector: Cyclone Pam.** Tourism is susceptible to effects from hydrometeorological disasters. For example, Cyclone Pam hit Vanuatu in March 2015 damaging buildings, displacing people and disrupting economic activities, affecting more than half the island's population (United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), 2015). Before the cyclone, Vanuatu's tourism industry was made up of two-thirds of visitors arriving for the day by cruise ship and the other third arriving by plane and staying in local hotels. Tourism in Vanuatu benefited the local communities through economic activities and jobs (Neef & Wasi, 2017). The cyclone caused damage and losses equivalent to 64% of Vanuatu's GDP (ESCAP, 2015) and total damage to the tourism sector was approximately 5.9 billion Vanuatu dollars (USD 52 million). In some cases, hotels that closed continued to employ their staff by utilising them in repair and maintenance roles (Neef & Wasi, 2017). In other cases, hotels' occupancy rates were boosted by non-government organisation

personnel and other workers arriving to assist in recovery efforts (Neef & Wasi, 2017). These different activities helped to contribute to the overall recovery of the area and illustrate that resilient hotels create adaptive strategies and thereby also contribute to their wider community.

### **Geological or Geophysical Hazards**

Originate from internal earth processes. Examples are earthquakes, volcanic activity and emissions, and related geophysical processes such as mass movements, landslides, rockslides, surface collapses and debris or mudflows. Hydrometeorological factors are important contributors to some of these processes. Tsunami are difficult to categorise; although undersea earthquakes and other geological events trigger them, they essentially become an oceanic process that is manifested as a coastal water-related hazard (UNISDR, 2016, p. 19).

Within this study geologic/geophysical hazards are most often discussed due to the recent seismic activity in the study area of New Zealand. Because seismic activity is central to this thesis data, an alternate type of hazard is chosen for an example to enhance the meaning of the term.

**Importance to the hotel sector: December 2004 tsunami.** On December 26, 2004 an  $M_w$  9.1 earthquake triggered a tsunami which struck a number of coastlines, including Thailand. The tsunami resulted in more than 5395 deaths on the Thailand coast, 2280 of those being foreign tourists (Cohen, 2009). Hotels that were open for business following the tsunami experienced occupancy as low as 10% in the months following (Rittichainuwat, 2016). Some of the occupancy issues were reported to stem from inaccurate media reports (Rittichainuwat, 2016). This decline in business shows that organisational networks and communications are important to disaster resilience (Cutter et al., 2008; A. V. Lee et al., 2013).

The 2004 tsunami example also serves to illustrate the vulnerability of hotel guests to local hazards. Tourists do not seriously consider risks while vacationing and the tourism industry prefers to avoid such as life-threatening dangers (Cohen, 2009). In disastrous situations tourists find themselves isolated from their friends and families, and become completely dependent on their hotels and staff for emergency support and facilities (Cohen, 2009).

### **Environmental Hazards**

May include chemical, natural and biological hazards. They can be created by environmental degradation or physical or chemical pollution in the air, water and soil. However, many of the processes and phenomena that fall into this category may be termed drivers of hazard and risk, rather than hazards in themselves (e.g. soil degradation, deforestation, loss of biodiversity, salinization and sea-level rise) (UNISDR, 2016, p. 19).

For many hotels, their environment is their biggest asset, attracting guests who seek to enjoy sea life, mountainscapes, and panoramic views. Climate change, including sea level rise, is problematic for many tourist resorts located in coastal areas (Becken, Mahon, Rennie, & Shakeela, 2013). Resilience planning can be an effective approach to dealing with a constantly changing and not wholly predictable environment (Lew, 2013).

**Importance to the hotel sector: Franz Josef and Fox Glaciers.** Tourism activities contribute to environmental hazards through CO<sub>2</sub> emissions, primarily through aviation and land transportation (Hall et al., 2018). These activities, while critical to the nature of tourism, also contribute to climate change, sea level rise, and the changing conditions of many tourist attractions. A current example in New Zealand of these changing conditions can be seen at the Franz Josef and Fox Glaciers. These popular

tourist sites are becoming increasingly challenged by glacial recession (Orchiston & Espiner, 2017). Access to these glaciers could affect tourist numbers in the future. Even the most disaster resilient hotel may find challenges well outside their scope of influence that will affect their future business. Identification of risks along with development of strategies aimed at managing those risks are important to long-term business survival.

### **Biological Hazards**

Are of organic origin or conveyed by biological vectors, including pathogenic microorganisms, toxins and bioactive substances. Examples are bacteria, viruses or parasites, as well as venomous wildlife and insects, poisonous plants and mosquitoes carrying disease-causing agents (UNISDR, 2016, p. 19).

Biological hazards have the potential to affected tourism worldwide including the most recent Olympics in Brazil in which Zika virus threatened to affect both athlete and tourist arrivals (Burattini, Coutinho, Lopez, Ximenes, Quam, M., ... and Massad, 2016). Regions are connected through air travel hubs serving thousands of tourists each day. As the world becomes increasingly interconnected this hazard has potential to disrupt tourism activity in many regions simultaneously.

**Importance to the hotel sector: SARS epidemic.** The 2003 SARS epidemic was traced back to one guest who stayed in a Hong Kong hotel and began the transmission of the disease. Over a period of 2½ months, 1,722 SARS cases were reported in Hong Kong (Lo, Cheung, & Law, 2007). The World Health Organisation issued travel advisory recommendations suggesting any non-essential travel be postponed. In addition to the loss of 258 lives and economic consequences, hotels in Hong Kong saw occupancy fall from a projected 85% to 20% (Lo et al., 2007). Hotels found themselves trying to balance economic survival with employing staff during the months of decreases in tourism. Hotels found additional income streams and ways to keep staff

employed, such as offering cleaning services to corporate clients and renting out unused rooms as office space (Lo et al., 2007). Their ability to adapt (A. V. Lee et al., 2013) demonstrates the heart of disaster resilience.

### **Technological Hazards**

Originate from technological or industrial conditions, dangerous procedures, infrastructure failures or specific human activities. Examples include industrial pollution, nuclear radiation, toxic wastes, dam failures, transport accidents, factory explosions, fires and chemical spills. Technological hazards also may arise directly because of the impacts of a natural hazard event (UNISDR, 2016, p. 19).

Technological hazard risk requires investigation by hotels, to understand what possible hazards are capable of affecting their location. The importance of understand local hazards is highlighted here, hotels could be located near technological hazards but unaware of their potential risk. Hazards in this category pose a risk to the tourism activities and also cause concern for the health of guests and staff from external sources.

**Importance to the hotel sector: BP Oil Spill.** In 2010 the Deepwater Horizon offshore drilling rig experienced an explosion that resulted in 11 deaths, 17 injuries and 200 million gallons of oil spilled into the Gulf of Mexico (Price-Howard & Holladay, 2014). While hotel demand in the six months following the spill actually improved in some areas (North-east Florida, Disney/Central, and Texas/Louisiana) other regions, where probable shoreline deposits were expected, experienced a softening of hotel demand (Ritchie, Crotts, Zehrer, & Volsky, 2013). Revenue for the same time period show increases for hotels in some of the affected areas. This data suggests the influx of workers may have alleviated the impact for hotels in some areas (Ritchie et al., 2013). Vacation rentals at the time did not fare as well, suggesting tourism was down in the area. Impacts to the tourism related business were much deeper (Ritchie et al., 2013).

The example of the BP Oil Spill underscores the value of disaster resilience for hotels who were able to adapt to new type of clientele (relief workers), maintaining occupancy and the jobs in their communities during the spill.

### **Terrorism**

Terrorism and conflicts can often have disastrous ramifications. One factor that sets these apart from other incidents is the introduction of intention (Rodriguez et al., 2007), where at least one party is intentionally trying to harm another. Studies of terrorist attacks on hotels in many parts of the world have revealed the importance of specialised anticipatory preparedness, intelligence capacity, and facility security considerations that are terrorism specific requirements (AlBattat & Mat Som, 2013; Paraskevas, 2013; Wernick & Von Glinow, 2012). The number and nature of terrorist attacks in recent years necessitate the inclusion of terrorism in any discussion of disaster resilience for the hotel industry. However, complexities and political nature of these potential disasters make inclusion within this study feasible only in the most general sense. This research takes an all-hazards approach to disaster resilience building but also recognises the need to consider terrorism separately in terms of prevention and mitigation strategies that serve the single function of working to prevent terrorist attacks.

### **Natural Disaster versus Human-Made Disaster**

Language is important. The words we choose can provide hidden meanings and even motivate our action, or inaction. This thesis has defined the term disaster based on important reference to underlying disruption in the society as a result of an event. This leads to an important distinction- there are no natural disasters. Cannon (1994) writes that natural hazards do exist, but disasters are never natural. Potentially disastrous events affect different segments of society differently based on a variety of variables. "...the

workings of social systems have made a disaster out of a situation which otherwise might not have been so serious” (Cannon, 1994, p.16).

While a hazard may have its roots in nature, to be a disaster it must affect people (Cannon, 1994). In agreement, Mileti (1999) writes that disasters are the result of the interface of the human and natural environment, and while humans cannot always control natural hazards, the effects of disaster can be influenced by human actions. Ritchie (2004) writes that the interface of the human/natural environment is complex and it is becoming difficult to distinguish the development of a disaster and the corresponding human actions or inactions.

The distinction between *natural hazards* versus *natural disasters* is important when considering motivations for protective actions. As discussed in the Theoretical Perspectives section, motivations to seek solutions to potential hazards can be associated with perceived control and the ability to take actions that will make a difference. The term ‘natural disasters’ could lead to perceptions that little can be done to affect outcomes. A better understanding of disasters by organisations’ leaders can help them develop disaster management strategies that can limit the impacts of events on organisations (Ritchie, 2004). This research develops predictors of resilience and recommends ways to improve a hotel’s resilience to disaster in an effort to improve outcomes post-disaster, highlighting that there are actions that can be taken to affect the impact from disasters.

### **Chapter Summary**

The above discussions provide a literature review of topics important to this thesis. These include the terminology surrounding disasters, information of disaster resilience and the importance to the hotel sector, international institutional initiatives relating to this thesis, theoretical perspectives, and a platform for defining the types of disaster considered in developing a framework for building disaster resilience within the hotel sector. Chapter Three discusses methodology and methods for the research.

### **Chapter Three: Philosophy, Methodology, and Methods**

*“Ontology is the starting point of all research, after which one’s epistemological and methodological positions logically follow” (Grix, 2002, p. 177).*

Chapter Three introduces research philosophy, methodology, as well as this study’s methods used to answer the research question. The preliminary discussion of ontology, epistemology, and ultimately pragmatism is valuable as it influences not only the research topic choice, but the methods which are utilised to respond to and answer the research question. Understanding a researcher’s philosophy (ontology, epistemology or a combined worldview) allows for insights into methodology (Gray, 2014b). The discussion of methods details steps taken in the research.

#### **Conceptual Frameworks**

Ontological and epistemological ideologies are foundational ways in which a person looks at the world around them and interprets meanings; methodology is built on those beliefs (Tuli, 2010). Research is influenced by these concepts; therefore, it is important to understand a researcher’s belief system. Both the researcher and the consumer of the research outputs gain insight into the questions, data, and conclusions of the research through a deeper understanding of these beliefs (Gray, 2014b).

#### **Ontology**

Ontology is a description of one’s beliefs in how reality is constructed; the study of what is the nature of the world (Grix, 2002). Assumptions in ontology describe how the researcher believes the world works (Scotland, 2012). Two opposing ontological views are realism and constructivism.

Realism, related to objectivism (Gray, 2014b), is the ontological belief that knowledge is independent of inquiry (Grix, 2002; Scotland, 2012). Reality (what is) is not influenced by our interaction with it, but instead is constant and unchanging

(Scotland, 2012). This belief is often associated with a positivist and post-positivist epistemology, and research designs are often quantitative.

Constructivism, related to subjectivism (Gray, 2014b) and relativism (Scotland, 2012), views a constantly changing world where the truth (what is) is being influenced by (and subject to change by) the dynamics of the social world's interactions (Grix, 2002). In this perspective, truth and meaning are a result of experience and interaction, where "meaning is constructed not discovered, so subjects construct their own meaning in different ways, even in relation to the same phenomenon." (Gray, 2014b, p. 20). This ontological view is most often associated with interpretivist epistemology and research designs that are qualitative.

A third choice, the pragmatist worldview, provides an additional point of view (Johnson & Onwhegbuzie, 2016). This worldview considers "the nature of reality (ontology), how we gain knowledge (epistemology)... the process of research (methodology)" and how these variables combine, with values and language, to affect research (Creswell & Plano Clark, 2011, p. 41). Pragmatism, a relatively old philosophy, has gained traction in the last few decades (Gray, 2014b). From a pragmatic stance both the constructivist and the realist point of view offer important and equal claims concerning the state of 'what is'. The two discussions are "two sides of the same coin" (Morgan, 2014, p. 1048). Pragmatism provides a middle ground, bridging the void between realism and constructivism.

The worldview brought to this research is a pragmatic one. Pragmatism provides a departure from the classic philosophical argument of the nature of being (Morgan, 2014). In agreement with Johnson and Onwhegbuzie (2016), the notion of either/or is rejected. Knowledge is an active process with a continual feedback loop between belief and action (Morgan, 2014). The pragmatic philosophy recognises both the physical

world and social world and the importance each has in constructing meaning (Johnson & Onwhegbuzie, 2016).

Some opponents of pragmatism consider it may produce incremental, as opposed to “fundamental, structural, or revolutionary change in society” (Johnson & Onwhegbuzie, 2016, p. 18). However, pragmatic views produce value-oriented problem-centred research with a pluralistic view (Creswell & Plano Clark, 2011). A discussion of epistemology allows for further understanding of these different views and research methodologies.

### **Epistemology**

If ontology is about what we may know, then epistemology is about how we come to know what we know (Grix, 2002, p. 177). Epistemology is how we create, acquire, and communicate knowledge (Scotland, 2012), and “...poses the following questions: What is the relationship between the knower and what is known? How do we know what we know? What counts as knowledge?” (Tuli, 2010, p. 99). A researcher’s epistemological stance, and the methodology and methods they select, are interrelated (Gray, 2014b). Broad categories of epistemological beliefs include positivist, post-positivist, and interpretivist (Grix, 2002).

A positivist considers that knowledge exists independently of social structures and influences; a researcher can uncover the truth (Grix, 2002). Scientific inquiry through observation and comparison of set variables provides hard evidence of facts as an outcome of careful planning (Gray, 2014b). Facts can “exist apart from personal ideas or thoughts; they are governed by laws of cause and effect...” (Tuli, 2010, p. 100). One flaw with positivism is that much of science is based on unobservable, theorised truths. For example, “Black holes and subatomic particles...have been reasoned from only the

most indirect of evidence” (Gray, 2014b, p. 21). This positivism flaw paved the way to the post-positivist ideology.

Post-positivists believe knowledge exists independently, but observation is not always possible (Gray, 2014b). Knowledge is tentative, hypotheses are not proven incorrect, hypotheses are rejected and the testing of theories is ongoing (Creswell & Plano Clark, 2011). Through qualitative observation and measurement, knowledge can be refined and possible truths deducted. As with positivist views, the researcher is not an important variable in the research.

Interpretive epistemology describes meaning as a process of phenomena and social interaction (Gray, 2014b). The interpretive epistemology is closely related to the constructivism ontology. Human interaction makes meaning and interprets what is known. Because people give meaning to knowledge, research considers human points of view, including the researcher’s effect in interpreting what the human reactions are to the line of query (Scotland, 2012). A qualitative methodology provides a deeper understanding of how humans interpret and understand their interactions with phenomena. With the number of variables (individual interpretations are added to the mix of data), large generalisations are not possible in an interpretive philosophy.

A pragmatic worldview considers positivist, post-positivist, and interpretive merits and seeks to fit together their insights into workable solutions to problems (Johnson & Onwhegbuzie, 2016). “Pragmatism acts as a new paradigm to replace an older way of thinking about the differences between approaches to research by treating those differences as social contexts for inquiry as a form of social action, rather than as abstract philosophical systems” (Morgan, 2014, p. 1049). Knowledge is both based in reality and gains meaning through interpretations (Johnson & Onwhegbuzie, 2016). Both views are equally regarded in a pragmatic worldview. Pragmatism offers a solution

for resolving traditional philosophical debate and guides research methodological choices based on research questions and objectives (Johnson & Onwhegbuzie, 2016). A pragmatic worldview can be both a researcher's ontology and an epistemology.

### **Methodology**

Research methodology identifies logic, potential, and limits of research methods (Grix, 2002). Methodology strategizes what plan will best achieve the goals of the research (Scotland, 2012). A research methodology falls into three broad categories: qualitative, quantitative, and mixed method. A realistic view with a post-positivist epistemology seeks to answer questions in quantifiable terms (Gray, 2014b). Conversely, a constructivist view with an interpretivist epistemology explores the relationship between humans and phenomena suited to a qualitative methodology. This research employs a pragmatic worldview. A pragmatic worldview provides a platform for mixed methods research, combining both qualitative and quantitative research to understand the natural world and the interactions of people to that world (Johnson & Onwhegbuzie, 2016).

### **Quantitative Research**

A quantitative study utilises numerical data analysis (Molina-Azorín & Font, 2015). Hypothesis testing, measurement, quantified findings, and generalisability of findings are hallmarks of quantitative research (Phillimore & Goodson, 2004). "Quantitative methodology is concerned with attempts to quantify social phenomena and collect and analyse numerical data, and focus on the links among a smaller number of attributes across many cases" (Tuli, 2010, p. 106). Yet, quantitative methodology does not consider context, researcher bias, or subject's voice in the research (Creswell & Plano Clark, 2011). Criticism suggests the lack of the participant's voice and the use of generalisation are weaknesses in this method.

## **Qualitative Research**

Qualitative studies provide rich and deep descriptions of people's perspectives in relation to specific phenomena (Johnson & Onwhegbuzie, 2016). "Qualitative methodology...is more concerned with understanding the meaning of social phenomena and focus on links among a larger number of attributes across relatively few cases" (Tuli, 2010, p. 106). Participants provide their own meanings regarding their interactions, and context and setting are important to the data's interpretation (Johnson & Onwhegbuzie, 2016). Some criticisms of qualitative methodology include the inability to apply findings to large groups and the researchers' bias in interpretation becomes embedded in the research (Creswell & Plano Clark, 2011).

## **Pragmatic Worldview**

A pragmatic worldview provides the foundation for mixed methods research (Creswell & Plano Clark, 2011). Mixed methods research draws on the strength of qualitative and quantitative research, combining the two to counter each method's weaknesses (Ostlund, Kidd, Wengstrom, & Rowa-Dewar, 2011). With evidence obtained through both a qualitative and quantitative methodology, the criticisms of quantitative and qualitative methodologies can be countered to some degree, allowing for a check and balance of the data through a multiple research methodology (Creswell & Plano Clark, 2011). Mixed methods research answers questions that either method alone could not. For example, in what ways do qualitative interviews explain quantitative data on a subject (Creswell & Plano Clark, 2011)? "...pragmatism insists on treating research as a human experience that is based on the beliefs and actions of actual researchers" (Morgan, 2014, p. 1051).

The study design for the investigation of disaster resilience in the hotel sector uses a mixed methods approach to address the questions being asked. Some issues related to

the resiliency of hotels can be answered through quantifiable data. For example, quantifiable data may include the structural robustness of a hotel; the presence of emergency preparations in the hotel and/or staff's homes; classes and training offered to hotel staff; procedures present for disaster response; and financial data. Other issues require contextual understanding. For example, if classes in preparedness are offered, do staff understand, trust, and believe in the methods being taught? What do the staff believe their responsibility is in a disaster? Seeking answers to both quantitative and qualitative questions requires a mixed methods study.

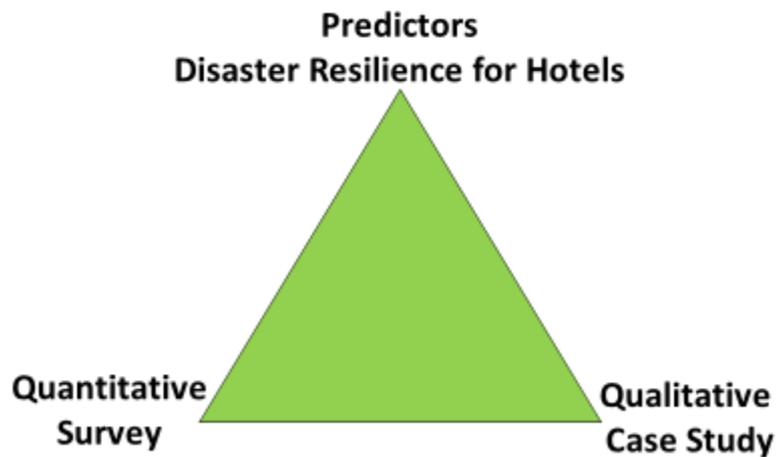
### **Mixed Method Study Design**

The mixed method approach includes a systematic literature review, an exploratory quantitative internet-based survey for hotel management and staff, secondary data collection, and qualitative semi-structured interviews. The objectives of each portion of the research are to answer the research question and sub-questions posed below:

1. How can the hotel sector increase its disaster resiliency, and be better able to protect the lives of its guests and staff, and the livelihoods and local economy following a disaster?
  - 1a. How is disaster resilience defined in a hotel sector context?
  - 1b. What predictors assist in determining disaster resilience for the hotel sector?
  - 1c. How resilient are hotels in New Zealand to disaster?
  - 1d. What barriers exist to increasing disaster resilience for hotels in New Zealand?

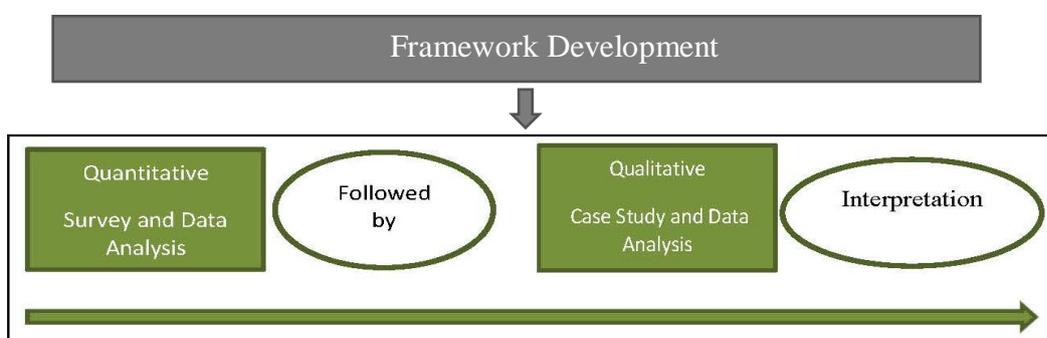
When both quantitative and qualitative methods are combined, the results can be triangulated to offset the weakness of one method with the strengths of the other method, overcoming the weakness of any single method (Molina- Azorín & Font, 2015). In Figure 3.1 the triangle points represent the relationship between the theoretical and

empirical levels; the sides show the relationship between those points (Ostlund et al., 2011).



*Figure 3.1.* Explanatory and sequential mixed methods study design. Illustration adapted from Ostlund et al. (2011, p. 379).

The study is an explanatory sequential design (Figure 3.2), where “the intent of this design is that the second phase qualitative data helps to explain the first phase quantitative results” (Badiee, Wang, & Creswell, 2012, p. 44). After collection and analysis of the quantitative data, qualitative interviews with stakeholders will offer rich insights into specific issues, build a clearer understanding of the context, and add a greater understanding of some of the quantitative results. Additionally, secondary data sources will be utilised to provide triangulation of data where qualitative data is not collected.



*Figure 3.2.* Study Design. Illustration adapted from Creswell and Plano Clark (2011, p. 69).

Equal weight is given to data sets in investigating the research questions, thus creating an equivalent status sequential research design (Molina-Azorín & Font, 2015). While the qualitative data will be collected secondarily, the contextualisation of the quantitative data is equally important in understanding disaster resilience in the hotel sector. Often organisational policies and procedures are designed to improve disaster resilience but the engagement, comprehension, and trust (or lack thereof) of the staff may play an important role in how those policies and procedures are activated and understood in a real-world setting. By following the quantitative survey data collection with qualitative interviews the details gathered through conversation with staff can help to understand the procedural questions of the survey. The following describes research steps and correlates questions to be answered in each step.

### **Scoping Study**

An initial scoping study for this research was done to test how receptive and participative the hotel sector might be in research. The study was conducted in November/December, 2015, as a first step in the research development. The study was designed to gauge receptivity and usefulness of disaster resilience research in the tourism sector and to help define research objectives that would be of interests to potential end users of the research.

Initial contact with Tourism Industry Aotearoa (TIA) resulted in an opportunity to connect with general managers (GMs) from three different hotels in Wellington and two hotels in Christchurch. TIA was receptive to the idea of better understanding disaster resilience in the New Zealand hotel sector. The contact at TIA provided introductions to three hotel GMs, one in Christchurch and two in Wellington. Preliminary scoping interviews were conducted with each GM. The proposed research was well received, and all participants indicated a willingness to allow staff members to be

approached for survey purposes as well as semi-structured interviews. Additionally, all GMs indicated they were highly interested in better understanding disaster resiliency for hotels and how they could improve their own facility's disaster resilience. Contact was also made with Positively Wellington Tourism (a regional tourism organisation), and Resilient Wellington through direct email introduction. Each of the people at these organisations indicated they were supportive of the research and highly interested in the outcomes.

### **Study Area**

Ultimately Wellington and Hawke's Bay, New Zealand were chosen as study areas. Wellington was chosen as a geographically desirable location (the researcher's home base); good access to participants was combined with a midrange number of hotels, making personal contact of each potential hotel possible. One study discussed difficulty in getting participation of hotels in research (Henderson, 2007). Personal contact with each hotel in the sample could help address this possible obstacle. Wellington and Hawke's Bay each had a small enough group of hotels to make contacting each hotel a reasonable objective.

The difference in size of the tourism market offered an opportunity to get contrast in participant areas. Table 3.1 shows market share of tourism by region in New Zealand. Wellington has the third largest market share of the tourism sector while Hawke's Bay has the smallest share. Wellington, as the capital city, offered a number of types and styles of hotels (total number 28). Hawke's Bay, a smaller community, had 17 hotels and Hawke's Bay Civil Defence indicated they were very interested in developing resilience in their growing tourism sector. Hawkes Bay's willingness to participate aided in choosing the second study area. Access to participants was an important consideration so Hawke's Bay Civil Defence's support of the project was important.

Table 3.1  
*Regional Tourism Estimates (year end March 2015)*

RTO (\$ millions)	International	Domestic	Total	Market Share
Auckland	3,227	3,268	6,496	29%
Wellington	476	1,690	2,166	10%
Christchurch	677	1,075	1,752	8%
Queenstown	1,182	506	1,688	8%
Waikato	233	998	1,230	5%
Hawke's Bay	110	581	691	3%
All Other Regions	2,366	6,014	8,381	37%

Note: Data from Ministry of Business Innovation & Employment (MBIE) (2016).

The tourism sector in New Zealand has experienced growth over the last 5 years. This market expansion has outpaced many of New Zealand's traditional industries such as agriculture in terms of constant growth (Statistics New Zealand, 2016b). The chart (Figure 3.3) shows an increase in guest nights by month from 2013 to 2017.

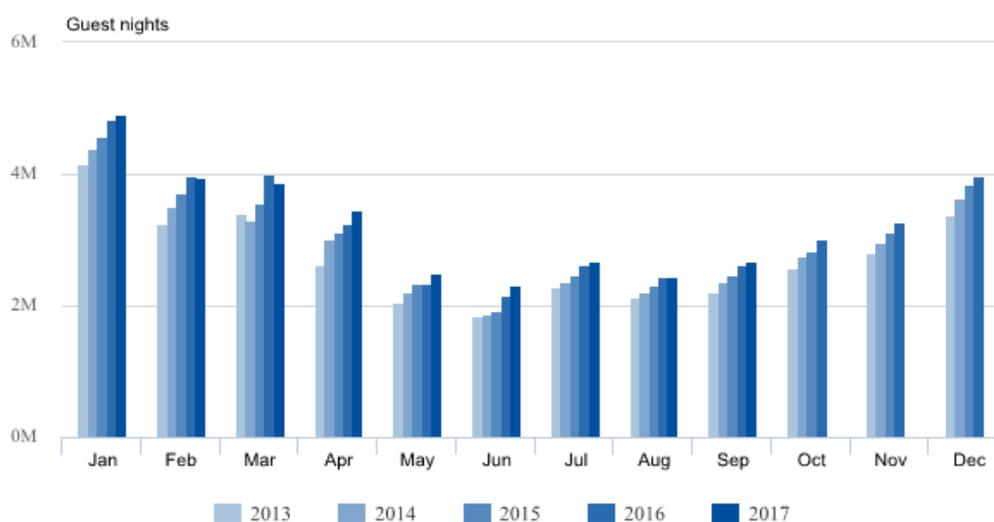


Figure 3.3. New Zealand guest nights - monthly 2013-2017. Data from Statistics New Zealand (2017).

Hotels, as opposed to motels, holiday parks, campgrounds, bed and breakfasts, Airbnb or any other type of accommodations, are the focus of this research. Both TIA and Positively Wellington Tourism utilise the Qualmark New Zealand standards to verify facilities categorisation. Qualmark New Zealand defines a hotel as:

... properties with at least one licensed bar and restaurant, on the premises or adjacent, with charge-back facilities. Types of rooms include standards rooms, suites, and apartments. All rooms have tea and coffee-making facilities and there is on-site management at all times. All provide breakfast whether in a restaurant or breakfast room or via room service. Some hotels have conference and banqueting facilities (Qualmark, 2013, p. 1).

The hotel category was selected as a major segment of the accommodation sector (Statistics New Zealand, 2017) with substantial influence over tourism in the locations being studied. Hotel guest nights were 1,071,000 for 2017 (up 4.2%) compared to the next closest accommodation type, motels, at 890,000 guest nights (down 1.4%) for 2017 (Statistics New Zealand, 2017).

Each accommodation category has unique features and different exposures to risk, types of guests, and staffing requirements. Guests with motorhomes in holiday parks have different resources at their disposal than guests in hotels. Holiday parks have different resources (physical and staff) than hotels. Guests in hotels rely on the different level of service to provide for their needs, for example an on-site restaurant. Hotels may offer banquet and convention facilities not found in other accommodation sector types. While this research may be adapted to apply to other types of lodging, it is outside the scope of this project.

All hotels in the Greater Wellington area and Hawke's Bay were included for data collection. The Greater Wellington Area includes Wellington City and suburbs, Hutt

Valley, Kapiti, Porirua, and Wairarapa and will be referred to simply as Wellington throughout the article. Lists of hotels were obtained from TIA and Positively Wellington Tourism. These lists were then compared to internet databases (Qualmark New Zealand, Orbitz.com, and Hotels.com) to ensure all hotels in these areas were included in the list of proposed research subjects for data collection.

### **Step 1 Literature Review**

Research began with a systematic literature review to define the scope of research and identify current frameworks and state of disaster resilience in the hotel sector. Utilising the systematic approach helps limit the researcher's bias in the literature selection.

Sub-question(s) addressed:

1a. How is disaster resilience defined in a hotel sector context?

1b. What predictors assist in determining disaster resilience for the hotel sector?

The literature review started with key word searches. In the Massey University Library database *Discover*, key words used were: disaster; and hotel; and resilien\*. This search returned 33 hits. When further narrowed to exclude non-peer reviewed 13 articles were left.

Expanding the parameters to capture more articles Massey University Library database *Discover* was then queried with key words disaster and hotel (narrowed by peer-reviewed and English language). This search produced a 644 hits. Articles were first scanned, then abstracts and introductions read to determine applicability. 188 were disregarded as not on topic. Duplicates were removed and 331 remained as part of the review.

A targeted Scopus database search to capture any articles not in the previous searches utilised key words: disaster and resilien\* and hotel. Resilien\* was added to

target material not previously captured with *Discover*. This search resulted in five articles; one new article was included in the literature review. A further expanded Scopus search using key words: disaster and resilien\* and tourism or hotel. The search resulted in 45 articles with five new articles being added to the database.

Articles were then read and coded for relevant themes. A further 25 articles were excluded as not on topic. Review of these identified articles' reference lists resulted in additional articles being added to the literature review. Interestingly, the article which became the foundation for the framework development (Mayunga, 2007) was found within the review of reference lists. Eventually 338 articles were utilised in the literature review.

Next the articles were entered into NVivo database and re-coded using previous emerged themes and adding additional themes as warranted. Finally, themes were reviewed and refined to reflect the content of the body of literature. The article found in Chapter Two communicates the main review of the literature. An additional supplemental review section in Chapter Two completes the chapter review of the literature with subjects that did not fit within the article parameters for publication. This review identified the research area of hotels' disaster resilience as a gap.

## **Step 2 Framework Development**

Identified frameworks developed for more general or parallel purposes were extrapolated from the wider body of research articles used in the literature review. This was a total of 31 articles. As a researcher with practical experience in hotel emergency preparedness, it is important to be conscious of the bias brought to this research based on personal experience. Utilising the different scales, predictors, and indicators from a variety of authors in developing this framework helps to balance researcher bias. While

cognisant of bias it should also be noted that knowledge of the hotel industry provides background for industry-specific components of resilience to disaster.

These articles were placed in chronological order (2001-2016) and fully read again to better understand the progression over time of frameworks for disaster resilience and related topics. The articles were loaded into NVivo for thematic analysis. The emerging themes fell naturally into six categories. Further analysis found these categories to be somewhat aligned with a multi-capital framework put forward by Mayunga (2007). From the NVivo analysis, tables of characteristics were developed to define each of the adopted capitals categories.

Sub-question(s) addressed:

1b. What predictors assist in determining disaster resilience for the hotel sector?

A number of formats for communication of the framework were considered and a final format of a modified Venn diagram provided a clear visual representation for communicating the framework. The article found in Chapter Four describes the Disaster Resilience Framework for Hotels (DRFH) in detail (Brown, Orchiston, Rovins, Feldmann-Jensen, and Johnston, 2018).

### **Step 3 Exploratory Quantitative Survey**

This step developed and administered a survey which explored and investigated the predictors identified in the disaster resiliency framework. The measures from the framework development were designed into two surveys, one for GMs and one for staff. The staff survey contained 70 multiple choice questions using a 5 point Likert scale (strongly agree; strongly disagree). The GM's survey had 84 questions, 80 multiple choice using a 5 point Likert scale, and four that required fill-in data. The additional 14 questions were management-specific knowledge. An online format was selected as a primary distribution option as this choice offers a low cost and wide access for most of

the target audience (Dillman, Smyth, & Christian, 2014). Paper surveys were also offered to all GMs in each correspondence, but no request for the paper option was received.

Qualtrics was chosen to host the survey as Massey University's preferred host platform. To help decrease time needed to complete the survey, a design of multiple questions per page (question blocks) was chosen and the survey platform offered adaptability to a mobile format (Dillman et al., 2014). A recent study of web-based survey length found the median length of 10 minutes with an overall length of no more than 20 minutes to be ideal (Revilla & Ochoa, 2017, pg. 563). The Qualtrics platform estimated the length of time to take the questionnaires to be between 15-16 minutes. The staff survey took approximately 15 minutes to complete online. The GMs took slightly longer due to demographic data questions. An introduction page provided a key definition of disaster, explained the objective of the survey, and provided participants with all information per Massey University. This survey qualified for low-risk ethics based on peer review.

A survey pilot study was first administered to a small sample for refinement (11 hotel managers and staff members in Christchurch and the United States). Feedback from the pilot study was incorporated into the survey for improved readability and understanding. The survey was then administered to the four sample groups: staff of hotels in Hawke's Bay (HB); GMs of hotels in HB; staff of hotels in Wellington (WL); GMs of hotels in WL.

General Managers were contacted via personal phone call, email, and follow-up. The survey was open for a total of 6 months. The GMs were provided with a link to their survey and a link to the staff survey. The TIA supported the survey by having the local chairman of the hotel group also email a request for participation.

Survey results were loaded into IBM SPSS® software for analysis of the data. By correlating the framework predictors with survey answers from hotel staff and management a current state of disaster resilience, based on the DRFH, was established for participating hotels.

Question(s) addressed:

1c. How resilient are hotels in WL and HB to disaster?

**Wellington.** In total GMs representing 15 of 28 identified hotels in WL completed 100% of the survey with an additional eight completing between 18-87% of the questions. Those GMs that completed at least two full sections of the survey totalled five so these were also added to the results for those sections (economic capital and social capital). This brought the total responses to 20 for the survey of WL GMs. Three follow-up phone calls and emails to GMs were done over a period of six months to continue to encourage participation of both GMs and staff. Each repeat contact resulted in a few more responses.

The final number of staff participants in WL was 30 completed 100% and one completed 12%. Because GMs controlled survey distribution the total number of staff who had an opportunity to complete the survey is unknown. A number of general calls for participation through social media produced one additional response. Finally during interviews (see Chapter Six) participants were asked if they had taken the survey; if they had not they were offered an opportunity to complete the survey. These additional surveys lend support to the idea that GMs as gatekeepers limited the circulation of surveys among staff. The final number of usable responses from the staff survey was 33.

**Hawke's Bay.** Hawke's Bay GMs received personal phone calls followed by in-person visits to properties to launch the survey in this area, a strategy used to increase

responses. This strategy resulted in 12 GMs completing the survey 100% and an additional 2 GMs completing at least two full sections. One hotel had the GM and the owner complete the survey (two surveys from one property) so a total of 13 hotels were represented in the data. There were 17 hotels identified in the HB area. While the initial GM response was promising, staff participation was still lower than hoped. Again, GMs controlled survey distribution and the total number of staff who had an opportunity to complete the survey is unknown. From the first solicitation nine completed staff surveys were gathered. Follow-up emails and phone calls resulted in only three additional staff participants, bringing the total to eleven fully completed and two partially completed surveys.

When queried about the low return rates for staff, GMs cited the lack of interest in surveys by the staff. The article regarding this survey (Chapter Five) discusses limitations of the study design which required GMs as gatekeepers to the staff. Choosing to invite participation from all hotels in the area helps to limit selection bias by the researcher, however, the GMs as gatekeepers introduces selection bias to the study that must be recognised. The possible GM bias towards who has access to the link was unavoidable, yet still must be a consideration in reviewing results.

Findings from the surveys can be found in Chapter Five. The small sample size produced an exploratory picture of disaster resilience for these areas. The small sample size of total number of hotels (WL N=28; HB N=17) combined with the unknown common or distinct characteristics of non-participants make generalisability difficult. While generalisability may not be valid for the sample size, there is positive value for data of this type (Gray, 2014a). The exploratory data shows many important trends in disaster resilience for those hotels included in the study.

#### **Step 4 Qualitative Interviews**

As the next step, semi-structured interviews (qualitative) with selected staff and management from the hotels in the quantitative sample (WL and HB) were undertaken to improve understanding of the survey data and give it contextual meaning. The interviewees were determined based on participation in the survey (Creswell & Plano Clark, 2011) and willingness to participate in further research. A cross-section of staff at the hotels were interviewed including hourly and salaried staff members. The interviews were scheduled for 20 minutes each (actual time ranged from 20-30 minutes) and occurred while staff were on shift. This qualitative phase produced 25 interviews (HB n=13; WL n=12). An additional five interviews with GMs were also utilised to provide additional texture to the findings bringing the total to 30 interviews. While the intent was to use a semi-structured format to allow for a flow of information guided by each participant, the reality of the short time frame for each interview (20-30 minutes) ended up limiting the flow and therefore the data from each interview. The interviews ended up being more structured than planned in order to cover important topics with each participant. Data was coded thematically using NVivo software.

Question(s) addressed:

1c. How resilient are hotels in New Zealand to disaster?

1d. What barriers exist to increasing disaster resilience for hotels in New Zealand?

The semi-structured format was selected to provide an opportunity to gather rich contextual detail while collecting observational cues (Barriball & While, 1993; Creswell & Plano Clark, 2017). An interview guideline of five questions was developed to provide a loose structure to the interviews (Appendix C). The interview portion of the study required a full ethics approval from Massey University Ethics Committee (See Chapter 3, Ethics).

Two hotels in HB, and three hotels in WL agreed to participate in the interviews. A minimum of five people at each hotel was requested. Staff from different departments and with different responsibilities were also part of the request. Interviews were completed onsite at each hotel and done consecutively. Hotels in HB provided a total of 13 staff participants. Interviewees included hourly, salaried, full and part-time and seasoned as well as new staff. Staff came from food and beverage, housekeeping, and front desk. Hotels in WL provided 13 interviewees, again from a wide variety of staffing roles and lengths of employment.

Once interviews were completed each day, a full transcription of interviews was undertaken while the details were fresh in my mind. I also wrote an ‘impressions’ synopsis of the overall interview group and observable details to allow for better recall when coding. This same method was used following each interview session. The ‘impressions’ synopsis included observations about the staff, the property, and the group as a whole.

The interview transcriptions and impressions were loaded into NVivo for thematic coding once all were completed. Initial codes used were based on DRFH capitals and subheadings being investigated. These included economic, social, human, physical, natural, and cultural capital and the 18 predictors described in the article in Chapter 4. Review and refinement of codes provided an opportunity to understand the predictors of resilience and the relationship to the surveys with additional clarity. The value of being on-site during interviews enhanced the meaning (for the interviewer) of answers given by staff based on a clearer understanding of the physical position of the property and proximity to potential hazards, facility size, and service levels. For example, in discussing the threat from a tsunami in one hotel the conversation was enhanced by the

proximity to the ocean- directly across the street. In other hotels the view was from a hilltop, helping to explain a decrease in tsunami concern.

Once coding was complete results were analysed and reported in Brown, Feldmann-Jensen (2019) (Chapter Six). Interview data was complemented with secondary data collection in areas that interviews did not cover, for example, economic capital. Secondary data was also included in the article to support (or dispute) findings of the interviews where appropriate. In order to submit for publication the Chapter Six article as a stand-alone piece of research, only data from the interviews and secondary data collected for that article were included. As a stand-alone article, no data from the Chapter Five survey data was included in the article from Chapter Six, but the combined results of the two studies are the subject of discussion in Chapter Seven.

The value of mixed methods research was shown when analysing the data as a whole. Some ideas were well supported by each of the different methods. Others were not, but the contextual details help to clarify any conflicting information. These topics are all covered in Chapter Seven.

### **Ethics**

Massey University's Ethics Application review was completed. This research study has both a low-risk and full ethics component (Appendix A). Important considerations for the production of ethical research are to minimise potential harm to both participants and researcher and to ensure that social benefits outweigh any potential harm the research may cause. These considerations include respect for privacy and confidentiality, avoidance of unnecessary deception, avoidance of conflict of interest, and social and cultural sensitivity to age, gender, culture, religion, social class of participants and justice (Massey University, 2015). For this study confidentiality of subjects is the area of most concern. Potential harm to participants and organisations

exists if the anonymity of the participant is not protected, particularly with commercially sensitive information related to the hotel sector.

Informed written consent (Appendix B; Appendix C) was requested for both quantitative and qualitative research in this study, with that consent stored securely for three years and then destroyed. Every effort to remove identifying information has been made, and no names or identifiers were used when discussing specific participants.

Initially low-risk approval was thought to be sufficient for the both parts of the study (Low risk notification number 4000016054, Appendix A). However, as the interview portion of the research developed, and the post-Kaikōura timing evaluated, a full ethics approval was sought and obtained prior to beginning this step of the research, interviewing subjects. The decision to expand ethics approval beyond low-risk was made because: the interviewer would be asking staff members questions about their employers' processes and protocols; there is potential harm to organisations if their details were recognised; and the interviewer would be discussing topics in Wellington that may be freshly emotional due to the recent November 2016 earthquakes in Kaikōura. The full ethics approval number is SOA 17/28 (Appendix A).

### **Chapter Summary**

Chapter Three has provided details on the research philosophy, methodology, and methods. This chapter is the foundation of the research project and provides information in detail for those wishing to replicate this study or to design their own similar study. From this foundation the project continues forward to answer the research questions. The following Chapter Four discusses the development of the DRFH.

#### **Chapter Four: Disaster Resilience Framework for the Hotel Sector**

The following manuscript presents a framework describing components and predictors of disaster resilience for the hotel sector. The DRFH was developed from the literature and is based on development of capital in six areas: economic, social, human, physical, and cultural. Each capital group is further broken down by predictors of resilience. This article is presented in a pre-production version format and formatting complies with journal formatting specifications which vary from the overall thesis formatting. The article is recently published and was submitted in January 2018 and accepted for publication in July 2018 after minor revisions. The journal chosen is the *Journal of Hospitality and Tourism Management* published by Elsevier. The journal is the official journal for the Council for Australasian Tourism and Hospitality Education and publishes work on a broad range of tourism topics which includes both theoretical and applied research.

## **Investigating Disaster Resilience within the Hotel Sector:**

### **An Integrative Conceptual Framework**

Brown, N. A., Orchiston, C., Rovins, J. E., Feldmann-Jensen, S., & Johnston, D. (2018). An integrative framework for investigating disaster resilience within the hotel sector. *Journal of Hospitality and Tourism Management*, 36, 67-75. doi:<https://doi.org/10.1016/j.jhtm.2018.07.004>

#### **Abstract**

Building disaster resilience within the hotel sector may help hotels experience decreased effects when disasters occur. This article uses a capital-based approach to examining disaster resilience. Factors that have been identified in the literature as contributing to disaster resilience combine to create a conceptual framework of predictors of disaster resilience tailored to the hotel sector.

The conceptual framework explores economic, social, human, physical, natural, and cultural capital as individual groups of predictors, all providing separate entry points to develop disaster resilience for a hotel. Measures for targeted resilience-building action are also discussed for each group of predictors. The aim of the framework is a flexible and pragmatic pathway for organisations in the hotel industry to begin to improve their disaster resilience. Using a full spectrum of predictors across multiple disciplines allows for an integrative assessment of a dynamic issue.

#### **Key Words**

Capital; Disaster; Framework; Hotel; Resilience; Tourism

## 1. Introduction

Tourism activity contributes 9.8% of the world's gross domestic product (World Travel and Tourism Council (WTTC), 2017a). One in eleven jobs worldwide comes from this sector with projected growth rates of 4% annually moving into the future (WTTC, 2017a). Disasters can substantially change this growth trajectory, illustrated by Christchurch, New Zealand following the February 2011 earthquake (Potter, Becker, Johnston, & Rossiter, 2015). The earthquake sequence resulted in a significant downturn in international travellers to Christchurch (Orchiston & Higham, 2014). Additionally, two-thirds of hotel inventory was lost. Eighteen months later the post-earthquake hotel inventory was still one-third of its pre-disaster levels, and direct losses to Christchurch in visitor expenditure had reached NZD 235 million in Christchurch city (Orchiston & Higham, 2014).

Hotels, as an integral part of the tourism system, are vulnerable to the effects of disasters. Building disaster resilience within the hotel sector may be facilitated by developing an understanding of what constitutes disaster resilience for hotels. Resilience building is an ongoing process that requires constant learning, flexibility, adaptation, and evaluation. Disaster resilience contributes to a hotel's ability to withstand and recover from disaster, protecting both lives and livelihoods. This article presents a conceptual framework that enriches our understanding of disaster resilience from a hotel perspective. The integrative framework illustrates components of disaster resilience and highlights the important role that hotels play in contributing to community disaster resilience as tourism increases its role in the world economy.

Disaster resilience can aid in recovery (Bruneau et al., 2003), allowing hotels to return more quickly to an operational status after a disaster. Resilient systems experience reduced consequence, for example, decreased negative economic effects (Bruneau et al.,

2003). Disaster resilience describes a hotel's capacity to assess, innovate, adapt, and overcome possible disruptions that may be triggered by disaster and thereby decreasing the negative consequence of a disaster (Brown et al., 2017).

Conditions related to resilience are clearly dynamic (Cutter et al., 2008; Eiser et al., 2012). Researchers have looked at ways to explore different characteristics, constructs, and capitals, ultimately describing varying elements of disaster resilience in communities, organisations, and the tourism industry (Biggs et al., 2012; Cochrane, 2010; Cutter et al., 2008; Kafle, 2011; Mayunga, 2007; Miles, 2015; Norris et al., 2008; Sydnor-Bousso et al., 2011).

This article presents a disaster resilience framework designed to measure the resilience of hotels, as well as illustrate strengths and gaps when developing strategies to build disaster resilience. One method of building disaster resilience within the hotel sector starts with developing an understanding of the components that can be used to measure resilience. A multiple capital-based approach (Mayunga, 2007) provides a broad spectrum of concepts and predictors to demonstrate what disaster resilience means for the hotel sector and forms the foundation for this research. While a comprehensive list of predictors may not be possible given the dynamic nature of the subject and stage of research, the framework seeks to establish a baseline of disaster resilience predictors that will give hotel leaders an opportunity to assess and review their organisation in terms of disaster resilience, and how they may build increased disaster resilience for their hotel. This framework is designed to provide individual properties, or groups of properties, a tool to evaluate their disaster resilience and identify potential areas for improving resilience.

## 2. Research context

The following section aims to explore key concepts within the context of this research to provide a common foundation for development of a conceptual framework for building disaster resilience within the hotel sector. A common understanding of concepts is needed to engage in the thoughtful debate of any subject. While terms can change over time it is important to have a shared meaning of terms to move forward in conversation (Rockett, 1999).

The literature used to build this conceptual framework comes from research at the intersection of disaster resilience and community, organisational, and tourism sector research. Resilience is a dynamic concept and combines capabilities with capacities (Burnard & Bhamra, 2011). Detailed approaches for assessing resilience are needed to empower managers to develop capacities to withstand future disruptions (Linnenluecke, 2017). To withstand disruptions from disaster organisations need to build resilience and be able to adapt to changing environments (Burnard & Bhamra, 2011). Developing a sector specific framework allows for a tailored and multifaceted conceptual outline of resilience predictors.

### 2.1 Disaster

The term *disaster* has been distinguished from *emergency* by its higher degree of societal disruption (Rodriguez, Quarantelli, & Dynes, 2007). A disaster causes disruption beyond the capacity of the local resources. Disaster can be used to describe what happens when natural phenomena, such as climatic or geological hazards, interact with the built environment and disrupt the functioning of society (Mileti, 1999). Furthermore, disasters may be rooted in terrorist activity, health crises (e.g. pandemics), and technological disruptions which include energy generation disruptions and malfunctions. Regardless of the source of the disruption, a disaster's effects can often

be minimised through human action prior to the occurrence of a disastrous event (Mileti, 1999). Tourism is susceptible to the effects of disaster due to its dependence on the local cultural and natural environment as well as complex networks of organisations (Jiang & Ritchie, 2017). For the purpose of this discussion, disaster refers to: “A sudden event where the trigger is outside the current control of the affected area (community and/or business), the event disrupts the function of that area and requires additional resources ...to respond to and recover from the event” (Brown et al., 2017, p. 363). This term is intended to reflect an all-hazard definition which includes natural hazard events, terrorism, and health-related disasters.

## **2.2 Hotel**

The hotel industry was selected as the dependent variable for the study to provide a narrowed parameter. The larger sector of accommodations, which also includes motels, backpacker lodging, holiday parks, and hosted accommodations, all have different challenges; and thus, their disaster resilience may be based on some predictors that are quite different to hotels. Hotels have unique issues, including the relatively large size compared to other accommodation types, different types of guests and their expectations, and larger numbers of employees. In addition, the hotel sector has resources that may be needed for response and recovery from disaster (Neef & Wasi, 2017; Yamamura & Welsh, 2018). For example, hotels play a role in housing response personnel during a disaster response and recovery. Additionally, the hotel sector provides needed jobs at a time of economic fragility in communities. A community and its organisations are interdependent and response and recovery of community is linked to those organisations (McManus et al., 2008).

By focusing the research effort to a specific type of business the findings can be industry specific and targeted. There is a need to develop industry specific indicators of

resilience (Hall et al., 2018), including a practical understanding of resilience and how to activate and build resilient characteristics (Linnenluecke, 2017). This framework aims to develop a specific and targeted group of predictors of disaster resilience for the hotel sector.

The official tourism quality assurance organisation for New Zealand is *Qualmark*, and its definition of a hotel is widely used, including in the current research:

The Hotel category includes properties with at least one licensed bar and restaurant, on the premises or adjacent, with charge-back facilities. Types of rooms include standard rooms, suites, and apartments. All rooms have tea and coffee-making facilities and there is on-site management at all times. All provide breakfast whether in a restaurant or breakfast room, or via room service (Qualmark, 2013).

This study does not distinguish a facilities' quality or star ratings but is instead focused on the service levels that distinguishes hotels from other types of accommodations per the definition above. Larger hotels (e.g. international chains) have been considered to be more prepared for disaster based on increased numbers of senior management to engage in disaster planning activities (Faulkner, 2001; Hystad & Keller, 2008). However, a 2013 study of disaster management strategies of Five Star hotels in Jordan found this category of hotel was not widely advanced in their management of crises and disasters (Sawalha et al., 2013). A 2018 study of economic and social crisis management of hotels in Greece found that the star category and mode of operation (year round/seasonal) of hotels did affect the crisis resilience (Pappas, 2018). There is also evidence that smaller operators are quite resilient as they are able to rebuild quickly because of smaller capital outlays required (Mahon et al., 2013). Overall, there is not a clear picture of how quality, size and ownership structures affect vulnerability or

resilience (Mahon et al., 2013). Furthermore, star quality ratings vary from country to country, which makes the concept difficult to generalize over geographic boundaries.

### **2.3 Disaster Resilience within the Hotel Sector**

Organisational resilience has been recognised as an important construct, yet often remains vague and unclear in definition (Burnard & Bhamra, 2011). Resilience has been defined differently by different research streams, conceptual similarities and differences have not been understood, and resilience is operationalized differently across research (Linnenluecke, 2017). Resilience research has investigated what human resources exist in a community and how to capitalise on those resources, exploring constructs such as social connectedness, social cohesion, leadership, inclusion, and how these constructs contribute to resilience (Cutter et al., 2008; Kwok et al., 2016). Research surrounding organisational resilience has looked at what features an organisation can cultivate to facilitate and foster adaptation in fast moving disasters (Burnard & Bhamra, 2011; A. V. Lee et al., 2013). Because resilience is best understood in narrow parameters, a well-defined understanding of resilience includes resilience *by whom* and *to what* to define characteristics (Cutter et al., 2008; Martin-Breen & Anderies, 2011). The tourism industry, vulnerable to disaster, often experiences a disaster's effects across organisational and geographical boundaries (Jiang & Ritchie, 2017). Organisations within the tourism sector require many different characteristics and capacities to recover from disaster. In the context of building disaster resilience in the hotel sector, *resilience* means: "A dynamic condition describing the capacity of a hotel, together with its stakeholders (staff, guests, and the local community), to assess, innovate, adapt, and overcome possible disruptions that are triggered by disaster" (Brown et al., 2017, p. 365). For an in-depth discussion of the above definition please see Brown et al. (2017), which provides the full literature review and background foundation for the definition.

## 2.4 Capital

*Capital* is described as a set of resources that can be leveraged to acquire or create additional resources (Miles, 2015; Norris et al., 2008). The resources and assets of a community, or a business, can also be described as capital (National Institute of Standards and Technology (NIST), 2015). Resources can be tangible items (money in the bank), services (utilities), potential resources that may become available (line of credit), human beings, and intangible constructs such as trust and leadership. This view of capital combines both potential and actual resources to contribute to *adaptive capacity* (Norris et al., 2008), or the ability of an organisation to withstand and recover from shocks.

The integrative framework utilises a multi-capital approach (Mayunga, 2007) in framing disaster resilience within the hotel sector. Mayunga (2007) suggests that some resilience frameworks are limited by their narrow view of resilience. Resilience to a disaster may rely on various forms of capital existing prior to a disaster (Cochrane, 2010). “The essence of using the capital approach is that, capital consists of those components, which are necessary for the development of a sustainable community economy” (Mayunga, 2007, p. 6). A disaster specific capital approach can improve our “understanding of how business is impacted by disaster, and what factors may play a key role in recovery and resilience” (Sydnor-Bousso et al., 2011, p. 201). The following discussion further details a capital approach, and how the literature has been analysed to create an integrative framework for disaster resilience within the hotel sector.

### 3. Identifying Themes for an Integrative Framework of Disaster

#### Resilience Within the Hotel Sector

The systematic review of literature relating to disaster resilience for hotels presented in Brown et al. (2017) provides the starting point for the development of this

framework. From the review's 352 articles a subset of articles (n=33) was identified and analysed to extract themes and concepts relevant to measuring and defining disaster resilience as it pertains to the hotel sector (see Tables 4.1-4.6). Within the selected literature, authors tended to present dimensions of resilience that were limited in scope, describing a particular part of business resilience as the focus. For example, effective organisational management (Racherla & Hu, 2009; Ritchie, 2004), or specific tourism destination resilience and/or vulnerabilities (Becken, Mahon, Rennie, & Shakeela, 2013; Biggs et al., 2012; Espiner & Becken, 2013; Holzinger & Laughlin, 2016).

In seeking to develop an integrative framework, it was necessary to broaden the consideration of resilience as widely as practicable, in order to capture all of the most important dimensions within one framework. Mayunga (2007) took a broad and inclusive approach in identifying five capitals for use in defining community resilience: social; economic; human; physical; and natural. In undertaking the analysis of literature, cultural capital was identified as important for hotels, and added to the five identified by Mayunga (2007), in order to capture dimensions of unique location-specific characteristics in the framework.

Within the six capital groups a further breakdown of identified capital themes into predictors provides a more detailed picture of disaster resilience factors. For example, economic capital includes the predictors: availability of financial resources, diversity of income, organisations financial strength, and staff economic resilience. The following discussion further explores those capital themes derived from the literature analysis and used to build the integrative framework.

Common themes related to disaster resilience include social aspects of resilience (Cutter et al., 2008; Kwok et al., 2016), adaptive capacities (Bec et al., 2015; Biggs et al., 2012; Sydnor-Bouso et al., 2011), and trust (Cochrane, 2010; Khazai, 2016; Norris

et al., 2008; Paton, 2008). The themes of social connections, capacity to adapt, trust in stakeholders, and trust in information sources are some of the most developed within the literature.

Another theme in the literature which contributes to resilience is decisive, effective and proactive leadership which is described as integral to organisational resilience (Cochrane, 2010; A. V. Lee et al., 2013; Wang & Ritchie, 2010). Additionally important is having sufficient resources to avoid negative consequences, for example, sufficient numbers of trained personnel to respond to a disaster (Malhotra & Venkatesh, 2009).

Knowledge and skills surrounding disaster planning and response are improved with the inclusion of stakeholders in disaster planning and preparedness activities (Kwok et al., 2016; A. V. Lee et al., 2013; Malhotra & Venkatesh, 2009; Orchiston et al., 2015). Also, the importance of disaster exercises (Arbon, Cusack, Gebbie, Steenkamp, & Anikeeva, 2013; Kafle, 2011; Khazai, 2016; A. V. Lee et al., 2013) and proactive attitudes towards disaster topics (Faulkner, 2001; A. V. Lee et al., 2013; Ritchie, 2004) are critical to the ability of hotels to maintain, or regain, operational status.

A physical structure's ability to withstand the effects of disasters and integration of life-saving measures contribute to an organisation's resilience (Biggs et al., 2012; Bruneau et al., 2003; Cutter et al., 2008; Khazai, 2016; Norris et al., 2008). There are many issues at the intersection of the human-built environment and the natural environment that need to be considered for resilience (Cutter et al., 2008; Khazai, 2016; Sydnor-Bouso et al., 2011; Wang & Ritchie, 2010). An evaluation of how a hotel's built environment might destabilise the natural environment relates directly to resilience. For example, natural hazard defence from floods may rely on mangroves;

however, some sites may decrease or remove mangroves to improve views or access to coastline. The removal may cause coastal degradation and increase flood hazards.

A community's cultural influence on social structure (Arbon et al., 2013), and the importance of special local knowledge (S. S. Patel, Rogers, Amiot, & Rubin, 2017a) may contribute to a hotel's disaster resilience. Conversely, the possible contribution of culture to disaster vulnerability (Birkmann et al., 2013; Miles, 2015) is another area which needs to be considered when building disaster resilience.

Evaluating disaster resilience for the hotel sector requires integration of all of the above ideas. A hotel's ability to maintain, or in some cases regain, operational status and provide for the safety of staff and guests requires resources from many different areas. An integrative capital approach provides a starting place for discussion of many different aspects of resilience important to the hotel sector.

#### **4. An Integrative Framework**

Capitals identified as important for disaster resilience during the analysis of literature include: economic; social; human; physical; natural; and cultural capitals. Figure 4.1 presents a framework to illustrate the capitals and identifies predictors within each that work towards building disaster resilience. The individual capitals remain independent of each other, while hotel, capitals, and resilience rings are all connected. Certainly, a case for the interconnectedness of different capitals can be made; however, for the purpose of this framework, the capitals are shown as independent spheres. This independence illustrates building capital resources of any of the predictors can result in improved resilience. The simplification is aimed at encouraging hotel management to consider improving resilience to disaster in many different ways, instead of considering the process to be 'all or nothing'. Competition for economic and human resources and a lack of management 'bandwidth' for additional tasks beyond day to day operations

result in less emphasis being placed on disaster resilience topics (A. V. Lee et al., 2013; McManus et al., 2008; Orchiston, 2013). With a multi-entry point approach, management can consider smaller inputs into building resilience that may be within their ability to address in the short-term.



Figure 4.1. Disaster resilience framework for hotel sector.

Sections 4.1-4.6 provide detail on each capital, summarise the literature analysis, and describe the predictors of disaster resilience drawn from that analysis (Table 4.1-4.6). An additional column describes possible measures of the predictors related specifically to the hotel industry.

#### 4.1 Economic Capital

Resilience predictors from the literature, which include the availability of financial resources, diversity of income, financial strength and the personal economic resilience of staff members, characterise *economic capital* (Table 4.1). All contribute to a hotel's capacity to maintain, or restart, operations if disaster strikes.

Savings, income, investments, and credit availability are also components of economic capital (National Institute of Standards and Technology (NIST), 2015). Staff economic well-being, or resilience, may be as important as institutional financial viability. Capacity to earn a living wage contributes to disaster resilience by increasing an individual's ability to absorb unexpected changes in income (Mayunga, 2007). Career opportunities and financial resources may give staff a feeling of loyalty to the hotel they work at, and more willingness to work through a disaster to assist during the recovery. Measures of economic capital include insurance coverage, financial resources, customer-base diversity, business age, and size of hotel property. Economic capital is an important component of a hotel's disaster resilience.

Table 4.1

*Economic Capital*

Type of Capital	Predictors of resilience	Measures
<b>Economic Capital</b>	<b>1. Availability of resources</b> <ul style="list-style-type: none"> <li>• Ability to withstand negative consequences (Bruneau et al., 2003)</li> <li>• Economic development including diversity of resources, equity of distribution (Norris et al., 2008)</li> <li>• Insurance as increased capacity to cope (Birkmann et al., 2013)</li> <li>• Adequate funding for adoption of disaster management best practices (Sawalha et al., 2013)</li> <li>• Organisation size (Wang &amp; Ritchie, 2010)</li> </ul>	<ul style="list-style-type: none"> <li>• Insurance coverage</li> <li>• Disaster management budget</li> <li>• Number of rooms</li> <li>• Number of staff</li> <li>• Number of hotel vehicles</li> </ul>
	<b>2. Diversification of income</b> <ul style="list-style-type: none"> <li>• Flexible sources of income, diversification (Arbon et al., 2013)</li> <li>• Ability to act on new markets (Ritchie, 2004)</li> </ul>	<ul style="list-style-type: none"> <li>• Customer base diversity</li> <li>• Marketing priorities</li> </ul>
	<b>3. Financial strength</b> <ul style="list-style-type: none"> <li>• Reserve funds (Malhotra &amp; Venkatesh, 2009)</li> <li>• Financial condition and access to financial resources, also enterprise age and experience (Biggs et al., 2012)</li> <li>• Sustainable economic growth (GRI et al., 2015; Khazai, 2016)</li> </ul>	<ul style="list-style-type: none"> <li>• Profitability</li> <li>• Access to credit</li> <li>• Financial reserves</li> <li>• Length of time in operation</li> </ul>
	<b>4. Staff economic resilience</b> <ul style="list-style-type: none"> <li>• Capacity to achieve livelihoods (Sydnor-Bouso et al., 2011)</li> <li>• Employment and decent work for all, resilience to future legal costs and costs of legislation (GRI et al., 2015)</li> <li>• Income security, economic opportunity for individuals access to fair allocation of resources (Kwok et al., 2016)</li> </ul>	<ul style="list-style-type: none"> <li>• Full-time vs part-time work</li> <li>• Living wage</li> <li>• Organisational policy on promotions</li> <li>• Career development /progression</li> </ul>

**4.2 Social Capital**

Within the context of social capital the predictors are 1) social resources, connectedness, cohesion, 2) capacity to work as a group, and 3) trust (Table 4.2). Evidence in the literature shows that cohesion, networks, support and connectedness, are all integral to social capital (Sydnor-Bouso et al., 2011). For example, connections to emergency management organisations within the community may be important in the case of mass evacuations. Takamatsu (2014) surveyed Okinawa municipalities and found that local municipalities were ready to evacuate residents, but half of those

municipalities did not have plans for visitors. Additionally, while local governments collaborated within the region, hotels and other tourism organisations were not included in the emergency reporting system. The exclusion in the regional emergency network leaves hotels without critical information or a clear pathway to communicate important visitor updates (Takamatsu, 2014). The ability to work as a group in a flexible network with trusted leadership contributes to increased social capital (Cochrane, 2010; Sydnor-Bouso et al., 2011). Trust generated through social networks and associations also contributes to social capital and is included in Table 4.2 (NIST, 2015).

The predictors can be measured in a number of ways. For example, connections to the community could be measured by longevity of employment, membership in local community groups, attendance and volunteering in community events, and readership of local news. A sense of community within the organisation can be determined by social activities available for the staff, the length of employment for the staff at the hotel, and use of gathering spaces by staff. Capacity to work as a group and problem solve can be measured by looking at the organisation's decision-making process. For example, do managers and leaders take a participatory approach or are they hierarchal? Trust can be determined by ascertaining if co-workers have faith in their organisation and leaders, and if they feel they have supportive co-workers. Social capital offers many different entry points for building disaster resilience.

Table 4.2

*Social Capital*

Type of Capital	Predictors of resilience	Measures
Social Capital	<p><b>1. Social networks/connectedness/cohesion</b></p> <ul style="list-style-type: none"> <li>• Social connectedness/team approach (Faulkner, 2001)</li> <li>• Connect between government and people, family and friends, tourism organisations and communication between organisations (Biggs et al., 2012)</li> <li>• Connectedness (Arbon et al., 2013)</li> <li>• Pioneer spirit, cohesion of community (Becken et al., 2013)</li> <li>• Minimise silos for increased adaptive capacity (A. V. Lee et al., 2013)</li> <li>• Social capital-received and perceived support, informal ties, sense of community attachment to place org linkage and cooperation (Norris et al., 2008)</li> <li>• Social inherent resilience- social networks, social embeddedness, demographics, community cohesion (Cutter et al., 2008)</li> <li>• Sense of community, social support (Kwok et al., 2016)</li> <li>• Social capacity influenced by networks (Cochrane, 2010, p. 178)</li> <li>• Availability of public space (Birkmann et al., 2013)</li> <li>• Community gathering place (Kwok et al., 2016)</li> <li>• Effective partnerships across multiple organisations that may be needed in a disaster (A. V. Lee et al., 2013)</li> <li>• Minimisation of silos (A. V. Lee et al., 2013)</li> <li>• Organisational structure- flexible with networked stakeholders (Sawalha et al., 2013)</li> </ul>	<ul style="list-style-type: none"> <li>• Social connections within and across all departments including connections between hotel security personnel and hotel guest service departments</li> <li>• Organisation support and/or sponsorship of staff social events</li> <li>• Connections between other organisations in community including local emergency management organisations</li> <li>• Newspaper/news media readership/viewing</li> <li>• Public meeting spaces</li> <li>• Staff meeting spaces</li> <li>• Team attitude of organisation</li> <li>• Employment longevity</li> </ul>
	<p><b>2. Capacity to work as a group</b></p> <ul style="list-style-type: none"> <li>• Organisational capacity, ability to make decisions and carry out actions (Bruneau et al., 2003)</li> <li>• Organisation structure, culture (Wang &amp; Ritchie, 2010)</li> <li>• Ability to make decisions and act under pressure- leadership, effective communication (Ritchie, 2004)</li> <li>• Social capacity influenced by leadership, (Cochrane, 2010, p. 178).</li> <li>• Staff engagement, empowerment to solve problems (A. V. Lee et al., 2013)</li> <li>• Innovation creativity at all levels of organisation including problem-solving (A. V. Lee et al., 2013)</li> </ul>	<ul style="list-style-type: none"> <li>• Communication- inter/intra organisational</li> <li>• Strong leaders</li> <li>• Group problem solving</li> <li>• Stakeholder input as part of decision making</li> <li>• Creativity, innovation</li> <li>• Situational awareness</li> <li>• Decision-making</li> </ul>

Table 4.2 (continued)

*Social Capital*

Type of Capital	Predictors of resilience	Measures
<b>Social Capital</b>	<p><b>3. Trust</b></p> <ul style="list-style-type: none"> <li>• Beliefs, perceived control, past experience (Wang &amp; Ritchie, 2010)</li> <li>• Networks and norms of trust (Sydnor-Bousso et al., 2011)</li> <li>• Beliefs and values, exposure or sensitivity change, attachment, personality, lifestyle (Bec et al., 2015)</li> <li>• Trust among all stakeholders (Khazai, 2016)</li> <li>• Social capacity influenced by trust (Cochrane, 2010, p. 178)</li> <li>• Information available from trusted sources (Norris et al., 2008)</li> </ul>	<ul style="list-style-type: none"> <li>• Trust in leaders</li> <li>• Trust in co-workers</li> <li>• Trust in organisation</li> <li>• Trust in community relationships</li> </ul>

**4.3 Human Capital**

Human capital describes people's knowledge, health, and skills (NIST, 2015). Basic physical and mental health (contributing to increased capacity), both learned and inherent skills (Cutter et al., 2008), and disaster knowledge (A. V. Lee et al., 2013), including preparedness, plans and mitigation efforts are all components of human capital (Table 4.3). An important component of human capital is the capacity to adapt (Biggs et al., 2012).

An individual's health can be measured by access to healthcare, and general well-being of staff and leaders. Skills can be measured by staff understanding disaster response planning, training, and policies for a hotel. Proactive leadership will include planning and training as part of their disaster management strategy. A hotel's focus on planning and how hotel staff, across departments, are involved and exposed to the planning, training, and exercising of those plans may also influence their disaster resilience. Those with particular role expertise (e.g. security) should be encouraged to interface and cross-train with staff in ways that will enhance the overall skills and

knowledge of the property. The knowledge of staff and leaders is enhanced by their knowledge of the hotel itself and the industry, measured in part by longevity of employment. Previous experience in basic evacuation of a hotel and knowledge of warning systems improves adaptive capacity.

Hotels also gain strength in adversity by having staff who are willing and able to get to the worksite when disaster strikes. A hotel's disaster response may rely on their ability to conduct business without critical services such as electricity, water and power. Manual procedures to perform normally electronic tasks, like check-in and payment, will improve the ability of a facility to continue operations.

The predictors of resilience within the context of human capital are explored in Table 4.3. These predictors are categorised by 1) health, 2) skills, 3) capacity to adapt, 4) knowledge, and 5) business continuity as it applies to human capital. Human capital provides diverse ways for a hotel to build capacities and disaster resilience.

Table 4.3

*Human Capital*

Type of Capital	Predictors of resilience	Measures
Human Capital	<p><b>1. Health</b></p> <ul style="list-style-type: none"> <li>• Counselling service, absence of psychological issues, health and wellness, quality of life (Cutter et al., 2008)</li> <li>• Perceived control, past experience (Wang &amp; Ritchie, 2010)</li> </ul>	<ul style="list-style-type: none"> <li>• Sense of wellbeing</li> <li>• Access to healthcare</li> <li>• Perceived control</li> </ul>
	<p><b>2. Skills</b></p> <ul style="list-style-type: none"> <li>• Inherent institutional competence- participation in hazard reduction programs, hazard mitigation plans, emergency services, response plan, continuity of operation, robust communications (Cutter et al., 2008)</li> <li>• Staff training and competency to act in crisis and current contact lists (Malhotra &amp; Venkatesh, 2009)</li> <li>• Preparedness capacity and rescue persons' availability (Birkmann et al., 2013)</li> <li>• Skills for communication and community competence (flexibility, creative, action, political partners) (Norris et al., 2008)</li> <li>• Highly skilled staff add knowledge when needed to improve actions (A. V. Lee et al., 2013)</li> <li>• Strong leadership to provide management, decision making, and evaluate strategies (A. V. Lee et al., 2013)</li> <li>• Strong leadership (Cochrane, 2010)</li> <li>• Executives (leaders) attitude (Wang &amp; Ritchie, 2010)</li> </ul>	<ul style="list-style-type: none"> <li>• Planning for disaster</li> <li>• Training for disaster</li> <li>• Emergency exercises</li> <li>• Mitigation of disaster risk</li> <li>• On the job exposure to emergency situations</li> <li>• Knowledge of hotel systems</li> <li>• General education level</li> <li>• Strong leadership</li> </ul>
	<p><b>3. Capacity to adapt</b></p> <ul style="list-style-type: none"> <li>• Skills and capacity for change (Biggs et al., 2012)</li> <li>• Adaptive capacity- internal resources, staff engagement, innovation and creativity, decision making, situation monitoring and awareness. (A. V. Lee et al., 2013)</li> <li>• Capacity of people to engage in productive work (Sydnor-Bousso et al., 2011)</li> <li>• Inherent community competence (Cutter et al., 2008)</li> <li>• High degree of self-sufficiency; ability to respond and make adjustments (for example withstand cost increases); ability to reinvent and self-organise (climate change) (Becken et al., 2013)</li> <li>• Individual and community capital contribute to adaptive capacity (Bec et al., 2015)</li> <li>• Staff decision authority and clear delegation in times of crisis. (A. V. Lee et al., 2013)</li> <li>• Organisation has a strategic and behavioural readiness, and ability to recognise changes before they escalate (A. V. Lee et al., 2013)</li> </ul>	<ul style="list-style-type: none"> <li>• Problem-solving skills</li> <li>• Commute distances</li> <li>• Early warning systems</li> <li>• Willingness to respond</li> <li>• Proactive leaders</li> <li>• Planning strategies</li> </ul>

Table 4.3 (continued)

*Human Capital*

Type of Capital	Predictors of resilience	Measures
	<p><b>4. Knowledge</b></p> <ul style="list-style-type: none"> <li>• Organisation provides exercises designed to practise response arrangements and validate plans (A. V. Lee et al., 2013)</li> <li>• Organisation has resources to ensure operational ability even when increased capacity is needed (A. V. Lee et al., 2013)</li> <li>• Skills for communication (Norris et al., 2008)</li> </ul>	<ul style="list-style-type: none"> <li>• Exercises for disaster response including collaborations with local emergency management organisations</li> <li>• Understanding of risks and plans</li> <li>• Participation in training opportunities</li> </ul>
	<p><b>5. Business continuity</b></p> <ul style="list-style-type: none"> <li>• An organisational awareness of priorities following a crisis (A. V. Lee et al., 2013)</li> <li>• Development and evaluation of plans and strategies to manage operational and stakeholder vulnerabilities (A. V. Lee et al., 2013)</li> <li>• High level of disaster preparedness, multiple roles held by people, business and community learning (natural disaster) (Becken et al., 2013)</li> </ul>	<ul style="list-style-type: none"> <li>• Redundant operational systems</li> <li>• Manual procedures</li> <li>• Chain of leadership</li> </ul>

**4.4 Physical Capital**

The physical building and grounds, local geography, and the human interface of these things can be described as physical capital (Table 4.4). Physical capital is both buildings and infrastructure (NIST, 2015). Local infrastructure including roads, utilities, and local housing standards, all which play a role in determining physical capital (Mayunga, 2007). For the hotel sector, physical capital includes features related to life safety beyond the robustness of the facility structure, for example, alarm systems and evacuation pathways. Redundancy of critical utilities, like power generators capable of maintaining minimum standards for sheltering within the facility, is included in life safety measures. A hotel's preparation in terms of supplies to sustain staff and guests in an emergency also falls under physical capital for the purpose of this discussion. Business continuity overlaps between human capital and physical capital. Physical

capital predictors include critical information system redundancies that allow an organisation to remain operational. In measuring redundancies of data and information, for example, does the hotel have practical and regular back-up of data, including hotel guest information, staff details, and data critical to operation? A back-up may be cloud-based, saved at an alternate site, or available as hard copy off-site.

Table 4.4 describes the predictors of resilience for physical capital, divided into the categories of 1) life safety, and 2) business continuity. For hotels many safety measures are required by law, however, others provide alternate ways of considering life safety measures and business continuity to help improve post-disaster outcomes for organisations.

Table 4.4

*Physical Capital*

Type of Capital	Predictors of resilience	Measures
Physical Capital	<p><b>1. Life safety</b></p> <ul style="list-style-type: none"> <li>• Infrastructure inherent for resilience- lifelines and critical systems, transportation networks, residential housing stock, commercial and manufacturing establishments (Cutter et al., 2008)</li> <li>• Inherent institutional resilience-zoning and building standards (Cutter et al., 2008)</li> <li>• Equipment and resources for response ready for immediate deployment- emergency response central command operation for organisation (Malhotra &amp; Venkatesh, 2009)</li> <li>• Site location design, structural elements, fire protection, evacuation system (Khazai, 2016)</li> <li>• Built environment (Biggs et al., 2012)</li> </ul>	<ul style="list-style-type: none"> <li>• Life safety systems</li> <li>• Redundant critical infrastructure</li> <li>• Redundant critical supplies</li> <li>• Facility physical robustness</li> </ul>
	<p><b>2. Business continuity</b></p> <ul style="list-style-type: none"> <li>• Robust built environment and critical infrastructure (Khazai, 2016)</li> <li>• Ability to adapt to changed business environment (Sydnor-Bousso et al., 2011)</li> <li>• Technical systems, equipment (Wang &amp; Ritchie, 2010)</li> <li>• Technical/building water systems (Bruneau et al., 2003)</li> <li>• Infrastructure and skills for communication (Norris et al., 2008)</li> </ul>	<ul style="list-style-type: none"> <li>• Redundant critical information/data systems</li> <li>• Multiple suppliers</li> <li>• Multiple communications tools</li> </ul>

## 4.5 Natural Capital

Predictors for natural capitals include: 1) the inherent environmental risks present at the hotel's location, and 2) the hotel's effects on the environment. The local environment, as well as the interplay between humans and the environment, are part of natural capital (NIST, 2015). The literature includes: biodiversity; access to natural resources; and sustainability of the environment in the face of tourism as components of natural capital (Table 4.5). An understanding of a hotel's exposure to hazards may help hotel leadership and staff appreciate the natural environment's influence on the hazard risk profile of the organisation. Many tourist locations are dependent on the scenic value of the natural environment to attract tourists to their destination (Hall et al., 2018). A hotel's social conscience in the form of attention to environmental issues may indicate how aware and prepared the organisation is to promote sustainable use of the local resources in an effort to maintain the quality of the local environment. Policies regarding activities that impact the local environment may also indicate resilience.

Table 4.5

### *Natural Capital*

Type of Capital	Predictors of resilience	Measures
Natural Capital	<p><b>1. Location's environmental risk</b></p> <ul style="list-style-type: none"> <li>• Hotel location and grounds, environmental safety including exposure to natural hazard risk (Khazai, 2016)</li> <li>• Access to natural resources (Kwok et al., 2016)</li> </ul>	<ul style="list-style-type: none"> <li>• Site vulnerability</li> <li>• Organisations link to environment</li> </ul>
	<p><b>2. Location's effects on environment</b></p> <ul style="list-style-type: none"> <li>• Inherent resilience of ecosystem, wetlands, erosion rates, % of impervious surfaces, coastal defence structures, biodiversity (Cutter et al., 2008)</li> <li>• Natural resources and eco-system (Sydnor-Bousso et al., 2011)</li> <li>• Tourism activities impact on the natural environment (Hall et al., 2018)</li> </ul>	<ul style="list-style-type: none"> <li>• Organisations environmental policy</li> <li>• Organisations link to environment</li> <li>• Organisations considerations for impact to the environment</li> </ul>

## 4.6 Cultural Capital

Cultural capital combines local knowledge (S. S. Patel et al., 2017a), attitudes, orientations, and competencies to provide additional resources (NIST, 2015). Social and cultural capital are sometimes combined or used to explore organisational capital (Gilbert, Butry, Helgeson, & Chapman, 2015; Kwok et al., 2016; A. V. Lee et al., 2013). However, within the context of disaster resilience for hotels, the differentiation may prove valuable. Strategies can be developed to build cultural capital apart from those used to build social capital. For example encouraging local knowledge of hazards and local capacities to be integrated into disaster preparedness plans. For the purposes of this study, the term is used to explore cultural aspects of the staff and local community. Table 4.6 outlines the predictors and measures of cultural capital, including 1) cultural influence on social system, and 2) cultural knowledge.

Table 4.6

### *Cultural Capital*

Type of Capital	Predictors of resilience	Measures
Cultural Capital	<p><b>1. Cultural influence on social systems</b></p> <ul style="list-style-type: none"> <li>• Hotel crisis planning should include a variety of components including cultural aspects (Wang &amp; Ritchie, 2010)</li> <li>• Cultural may influence social connectedness (Arbon et al., 2013)</li> <li>• Shared cultural beliefs contribute to social resilience (Kwok et al., 2016)</li> </ul>	<ul style="list-style-type: none"> <li>• Diversity of staff</li> <li>• Staff integration into the local community</li> </ul>
	<p><b>2. Cultural knowledge</b></p> <ul style="list-style-type: none"> <li>• Consideration of local cultures, customs and values (Norris et al., 2008)</li> <li>• Local knowledge may be useful in mitigation of vulnerabilities to disaster (S. S. Patel et al., 2017a)</li> <li>• Cultural capital includes attitudes, competencies, and orientations of local groups (National Institute of Standards and Technology (NIST), 2015, p. 12)</li> </ul>	<ul style="list-style-type: none"> <li>• Diversity of staff</li> <li>• Staff integration into the local community</li> <li>• Cultural disaster stories</li> </ul>

## 5. Discussion

The dynamic nature of resilience precludes trying to *become resilient*. The framework presented above provides a detailed assessment of six capitals: economic; social; physical; human; natural; and cultural, which can be combined to form a picture of disaster resilience for hotels. In addition, the framework presents groups of predictors and measures, which provide a pragmatic and accessible pathway to developing disaster resilience for a hotel.

The resilience cycle, described first by Holling (2001), explains that after rapid change, reorganisation and use of resources creates a new norm, ready to respond to the next rapid change. Hollings' original loop depiction appeared as a repetitive process. Cochrane (2010) explains that an alternative representation may be a spiral of loops to enhance the understanding that reorganisation results in a *new normal*. The dynamism of resilience has contributed to the difficulty in understanding and developing measures. Defining resilience to disaster for the hotel sector requires a broad base of predictors that link the wide variety of influences integral to disaster resilience.

The integrative framework provides an opportunity to evaluate a comprehensive set of components within a hotel's organisation that contribute to resilience in a disaster context. Consideration of economic, social, human, physical, natural, and cultural aspects of a business provides a new way for hotels to consider their resilience to disaster, and how to build and expand those resources. Evaluation of capital predictors may be quantitative (through surveys of hotel managers and staff), qualitative (through interviews with staff, managers, and local tourism agencies), and/or through collection of secondary data (for example statistics of hotel occupancy rates to determine financial strength as it pertains to economic capital).

Through the interdisciplinary synthesis of frameworks, models, and approaches in the literature, this framework contributes to the literature on disaster resilience by focusing on hotel resilience. The six identified capitals are further broken down into 18 different resilience predictor groups related to hotels. As both a business and an important member of the community, hotels have complex human and physical systems that are required to remain operational. Relying on insufficient predictors may provide an inaccurate picture of the complex nature of disaster resilience (Sydnor-Bousso et al., 2011). A multi-variant approach offers an opportunity to unpack the intricacies of disaster resilience for hotels.

Building resilience can be achieved in a myriad of ways and can include any point of weakness represented by a lack of resources available in any of these six capital groups. Within each capital predictor group, measures are suggested to understand that predictor of resilience better. For example, under economic capital, the predictor of *availability of resources* could be measured by a hotel's insurance coverage and/or size of the property, staff and other assets. The development of a survey instrument based on outlined predictors (see measures sections 4.1-4.6), followed by administering the survey widely across hotel staff will provide a picture of strengths and gaps in disaster resilience for hotel managers. This information can be used to build resilience into hotel policies, procedures, and trainings.

Both objective and subjective measures are included in the Tables 4.1-4.6. For example, to measure economic capital, financial resources and insurance coverage are easily quantified through objective measures. Constructs for social capital, for example social connectedness and team culture, require a more subjective approach. In order to provide a robust picture of the more subjective concepts it will be useful to query outside the management structure. Staff insights will help temper any bias and add additional

validity to strengths and gaps identified by management. In addition to surveys, in-depth qualitative interviews with managers and staff can help to develop a deep understanding of the subjective aspects of the capital groups.

The focus of the framework is to identify disaster resilience predictors which can then be translated into a hotel's strengths and potential gaps. A flexible framework provides an opportunity for hotels seeking to improve their resilience to disaster to customise strategies based on their hotel's capacities. A next step towards operationalising this framework is to validate and test the predictors.

The framework may be applicable to other types of accommodations with slight modifications. Future research exploring the ways that accommodation types differ in terms of needs and challenges during and after disasters could provide important information to further customise this framework for other accommodation types. The accommodations sector has continued to diversify with homestays and Air B&B becoming growing sectors. The application of this framework to other accommodation sub-sectors may prove valuable in developing greater disaster resilience in the wider industry. Additionally, investigation into the how size and quality ratings (e.g. star-rating) may influence resiliency could provide important information for hotel managers.

## **6. Conclusion**

An important role is played by hotels in a community's disaster resilience. Therefore, a hotel's ability to respond to disruption and recover back to an operational state improves resilience. Assessing specifically what disaster resilience means for the hotel sector is derived through a multiple-capital based approach; where a spectrum of factors, predictors, and the inter-relationships were identified through the literature. The

process gave rise to a framework to measure disaster resilience in the context of the hotel sector.

Using a capital approach for examining disaster resilience within the hotel sector provides a comprehensive appraisal of factors that have been identified in the literature. A hotel's ability to respond to disruption from disaster and recover back to an operational state is enhanced through building resilience to disaster.

In developing measures some predictors may be of greater importance than others (Mayunga, 2007), hence, defining weights for each of the predictors may prove useful. However, for the purpose of this research, each capital is considered as equal value in overall disaster resilience building. Future refinements may consider ways to weight predictors to help hotel leadership prioritise activities.

The framework is intended to provide a clearer understanding of the ingredients of disaster resilience; managers of hotels will need to decide how best to explore their own operations to identify gaps and improve their resilience. Lack of resources has often been cited as a reason for inaction regarding disaster risk reduction and preparedness in the tourism industry (Hystad & Keller, 2008; Orchiston, 2013). Providing multiple points of ingress for disaster resilience building is a flexible option for a problem that relies on flexibility at its very core.

## References

- Arbon, P., Cusack, L., Gebbie, K., Steenkamp, M., & Anikeeva, O. (2013). *How do we measure and build resilience against disaster in communities and households*. Retrieved from Adelaide, Australia: <http://www.torrensresilience.org/>
- Bec, A., McLennan, C., & Moyle, B. D. (2015). Community resilience to long-term tourism decline and rejuvenation: a literature review and conceptual model. *Current Issues in Tourism*, 19(5), 431-457. doi:10.1080/13683500.2015.1083538
- Becken, S., Mahon, R., Rennie, H. G., & Shakeela, A. (2013). The tourism disaster vulnerability framework: an application to tourism in small island destinations. *Natural Hazards*, 71(1), 955-972. doi:10.1007/s11069-013-0946-x
- Biggs, D., Hall, C. M., & Stoeckl, N. (2012). The resilience of formal and informal tourism enterprises to disasters: reef tourism in Phuket, Thailand. *Journal of Sustainable Tourism*, 20(5), 645-665. doi:10.1080/09669582.2011.630080
- Birkmann, J., Cardona, O. D., Carreño, M. L., Barbat, A. H., Pelling, M., Schneiderbauer, S., . . . Welle, T. (2013). Framing vulnerability, risk and societal responses: the MOVE framework. *Natural Hazards*, 67(2), 193-211. doi:10.1007/s11069-013-0558-5
- Brown, N. A., Rovins, J. E., Feldmann-Jensen, S., Orchiston, C., & Johnston, D. (2017). Exploring disaster resilience within the hotel sector: A systematic review of literature. *International Journal of Disaster Risk Reduction*, 22, 362-370. doi:<http://dx.doi.org/10.1016/j.ijdr.2017.02.005>
- Bruneau, M., Chang, S. E., Eguchi, R. T., Lee, G. C., O'Rourke, T. D., Reinhorn, A. M., . . . von Winterfeldt, D. (2003). A framework to quantitatively assess and enhance the seismic resilience of communities. *Earthquake Spectra*, 19(4), 733-752. doi:10.1193/1.1623497
- Burnard, K., & Bhamra, R. (2011). Organisational resilience: Development of a conceptual framework for organisational responses. *International Journal of Production Research*, 49(18), 5581-5599. doi:10.1080/00207543.2011.563827
- Cochrane, J. (2010). The Sphere of Tourism Resilience. *Tourism Recreational Research*, 35(2), 173-185. doi:<http://dx.doi.org/10.1080/02508281.2010.11081632>
- Cutter, S. L., Barnes, L., Berry, M., Burton, C., Evans, E., Tate, E., & Webb, J. (2008). A place-based model for understanding community resilience to natural disasters. *Global Environmental Change*, 18(4), 598-606. doi:10.1016/j.gloenvcha.2008.07.013
- Eiser, J. R., Bostrom, A., Burton, I., Johnston, D. M., McClure, J., Paton, D., . . . White, M. P. (2012). Risk interpretation and action: A conceptual framework for responses to natural hazards. *International Journal of Disaster Risk Reduction*, 1, 5-16. doi:<http://dx.doi.org/10.1016/j.ijdr.2012.05.002>

- Faulkner, B. (2001). Towards a framework for tourism disaster management. *Tourism Management*(22), 135-147.
- Gilbert, S. W., Butry, D. T., Helgeson, J. F., & Chapman, R. E. (2015). *Community resilience economics decision guide for buildings and infrastructure systems*. Retrieved from <http://dx.doi.org/10.6028/NIST.SP.1197>
- Global Reporting Initiative (GRI), United Nations Global Compact, & World Business Council for Sustainable Development (WBCSD). (2015). *SDG compass guide: The guide for business action on the SDGs*. Retrieved from [http://sdgcompass.org/wp-content/uploads/2015/12/019104\\_SDG\\_Compass\\_Guide\\_2015.pdf](http://sdgcompass.org/wp-content/uploads/2015/12/019104_SDG_Compass_Guide_2015.pdf)
- Hall, C. M., Prayag, G., & Amore, A. (2018). *Tourism and resilience: Individual, organisational, and destination perspectives*. Bristol, UK: Channel View Publications.
- Holling, C. S. (2001). Understanding the complexity of economic, ecological, and social systems. *Ecosystems*, 4, 390-405. doi:10.1007/s10021-00
- Hystad, P. W., & Keller, P. C. (2008). Towards a destination tourism disaster management framework: Long-term lessons from a forest fire disaster. *Tourism Management*, 29(1), 151-162. doi:10.1016/j.tourman.2007.02.017
- Jiang, Y., & Ritchie, B. W. (2017). Disaster collaboration in tourism: Motives, impediments and success factors. *Journal of Hospitality and Tourism Management*, 31, 70-82. doi:10.1016/j.jhtm.2016.09.004
- Kafle, S. K. (2011). Measuring disaster resilient communities: A case study of coastal communities in Indonesia. *Journal of Business Continuity & Emergency Planning*, 5(4), 316-326.
- Khazai, B. (2016). *Hotel Resilient*. Paper presented at the Asian Business Forum 2016, Bangkok, Thailand.  
[http://www.adpc.net/igo/contents/blogs/ABF2016/download/presentation/Day%2021%20Apr%202016/04\\_Technical%20Session%204/01\\_AsianBusinessForum\\_Hanna%20Maier\\_Bijan%20Khazai\\_Hotel%20Resilient.pdf](http://www.adpc.net/igo/contents/blogs/ABF2016/download/presentation/Day%2021%20Apr%202016/04_Technical%20Session%204/01_AsianBusinessForum_Hanna%20Maier_Bijan%20Khazai_Hotel%20Resilient.pdf)
- Kwok, A. H., Doyle, E. E. H., Becker, J., Johnston, D., & Paton, D. (2016). What is 'social resilience'? Perspectives of disaster researchers, emergency management practitioners, and policymakers in New Zealand. *International Journal of Disaster Risk Reduction*, 19, 197-211. doi:10.1016/j.ijdr.2016.08.013
- Lee, A. V., Vargo, J., & Seville, E. (2013). Developing a tool to measure and compare organizations' resilience. *Natural Hazards Review*, 14(1), 29-41. doi:10.1061/(asce)nh.1527-6996.0000075
- Linnenluecke, M. (2017). Resilience in business and management research: A review of influential publications and a research agenda. *International Journal of Management Reviews*, 19, 4-30. doi:DOI: 10.1111/ijmr.12076

- Mahon, R., Becken, S., & Rennie, H. (2013). *Evaluating the business case for investment in the resilience of the tourism sector of small island developing states. Background Paper prepared for the Global Assessment Report on Disaster Risk Reduction 2013*. Retrieved from <http://www.preventionweb.net/english/hyogo/gar/2013/en/bgdocs/Mahon%20et.al.%202012.pdf>
- Malhotra, R., & Venkatesh, U. (2009). Pre-crisis period planning: lessons for hospitality and tourism. *Worldwide Hospitality and Tourism Themes*, 1(1), 66-74. doi:10.1108/17554210910949896
- Martin-Breen, P., & Anderies, J. M. (2011). *Resilience: A literature review*. Retrieved from [https://docs.google.com/document/d/1xcInW\\_qolqbIScN\\_2KwMCFO24sR4Q-9JXx6CAcYL\\_go/edit](https://docs.google.com/document/d/1xcInW_qolqbIScN_2KwMCFO24sR4Q-9JXx6CAcYL_go/edit)
- Mayunga, J. S. (2007). *Understanding and applying the concept of community disaster resilience: A capital-based approach*. Paper presented at the 2007 Summer Academy Megacities: Social vulnerability and resilience building, 22-28 July, Munich, Germany. [https://www.u-cursos.cl/usuario/3b514b53bcb4025aaf9a6781047e4a66/mi\\_blog/r/11](https://www.u-cursos.cl/usuario/3b514b53bcb4025aaf9a6781047e4a66/mi_blog/r/11). Joseph S. Mayunga.pdf
- McManus, S., Seville, E., Vargo, J., & Brunson, D. (2008). Facilitated process for improving organizational resilience. *Natural Hazards Review*, 9, 81-90. doi:10.1061//ASCE/1527-6988/2008/9:2/81
- Miles, S. B. (2015). Foundations of community disaster resilience: well-being, identity, services, and capitals. *Environmental Hazards*, 14(2), 103-121. doi:10.1080/17477891.2014.999018
- Mileti, D. (1999). *Disasters by Design: A Reassessment of Natural Hazards in the United States*. Washington D. C.: Joseph Henry Press.
- National Institute of Standards and Technology (NIST). (2015). *Community resilience planning guide for buildings and infrastructure systems, Volume I*. Retrieved from <http://www.nist.gov/el/resilience/upload/NIST-SP-1190v1.pdf>
- Neef, A., & Wasi, S. A. (2017). *Disaster response and recovery of tourism sector: The case of Vanuatu in the aftermath of 2015 Cyclone Pam*. Development Studies, School of Social Sciences, The University of Auckland. Auckland, New Zealand.
- Norris, F. H., Stevens, S. P., Pfefferbaum, B., Wyche, K. F., & Pfefferbaum, R. L. (2008). Community resilience as a metaphor, theory, set of capacities, and strategy for disaster readiness. *American Journal of Community Psychology*, 41(1-2), 127-150. doi:10.1007/s10464-007-9156-6
- Orchiston, C. (2013). Tourism business preparedness, resilience and disaster planning in a region of high seismic risk: The case of the Southern Alps, New Zealand. *Current Issues in Tourism*, 16(5), 477-494. doi:10.1080/13683500.2012.741115

- Orchiston, C., & Higham, J. E. S. (2014). Knowledge management and tourism recovery (de)marketing: The Christchurch earthquakes 2010–2011. *Current Issues in Tourism*, 19(1), 64-84. doi:10.1080/13683500.2014.990424
- Orchiston, C., Prayag, G., & Brown, C. (2015). Organizational resilience in the tourism sector. *Annals of Tourism Research*. doi:10.1016/j.annals.2015.11.002
- Pappas, N. (2018). Hotel decision-making during multiple crises: A chaordic perspective. *Tourism Management*, 68, 450-464. doi:10.1016/j.tourman.2018.04.009
- Patel, S. S., Rogers, M. B., Amiot, R., & Rubin, G. J. (2017). What do we mean by "Community Resilience"? A systematic literature review of how it is defined in the literature. *Currents Disasters, February 1*(1-37). doi:10.1371/currents.dis.db775aff25efc5ac4f0660ad9c9f7db2
- Paton, D. (2008). Risk communication and natural hazard mitigation: How trust influences its effectiveness. *International Journal of Global Environmental Issues*, 8(1/2), 2-16. doi:10.1504/IJGENVI.2008.017256
- Potter, S. H., Becker, J. S., Johnston, D. M., & Rossiter, K. P. (2015). An overview of the impacts of the 2010-2011 Canterbury earthquakes. *International Journal of Disaster Risk Reduction*, 14, 6-14. doi:10.1016/j.ijdrr.2015.01.014
- Qualmark. (2013). *Qualmark hotel summary*. Retrieved from <http://www.qualmark.co.nz/index.html>
- Ritchie, B. W. (2004). Chaos, crises and disasters: a strategic approach to crisis management in the tourism industry. *Tourism Management*, 25(6), 669-683. doi:10.1016/j.tourman.2003.09.004
- Sawalha, I. H. S., Jraisat, L. E., & Al-Qudah, K. A. M. (2013). Crisis and disaster management in Jordanian hotels: practices and cultural considerations. *Disaster Prevention and Management*, 22(3), 210-228. doi:10.1108/dpm-09-2012-0101
- Sydnor-Bouso, S., Stafford, K., Tews, M., & Adler, H. (2011). Toward a resilience model for the hospitality and tourism industry. *Journal of Human Resources in Hospitality & Tourism*, 10(2), 195-217. doi:10.1080/15332845.2011.536942
- Takamatsu, M. (2014). The Okinawa tourism crisis management initiatives. *International Journal of Event Management Research*, 8(1).
- Wang, J., & Ritchie, B. W. (2010). A theoretical model for strategic crisis planning: Factors influencing crisis planning in the hotel industry. *International Journal of Tourism Policy*, 3(4), 297. doi:10.1504/ijtp.2010.040390
- World Travel and Tourism Council. (2017a). Economic impact analysis. Retrieved from <https://www.wttc.org/research/economic-research/economic-impact-analysis/>

Yamamura, J., & Welsh, N. (2018). Highway 101 reopens. *Santa Barbara Independent*. Retrieved from <https://www.independent.com/news/2018/jan/23/highway-101-reopens-army-corps-engineers-clears-cr/>

### **Chapter Summary**

Chapter Four has presented, in journal article format, the development and components of the DRFH. The framework focuses on the hotel sector and how best to approach developing disaster resilience. The DRFH is the basis for both quantitative and qualitative data collection and analysis. The following Chapter Five will present findings from the survey designed to test the DRFH.

## **Chapter Five: The Survey**

Following the development of the framework, a survey based on predictors was developed and administered. The following article discusses the survey development, findings, and results. This article is presented in a pre-production version format and formatting complies with journal formatting specifications which vary from the overall thesis formatting. The article has been published by the International Journal of Disaster Risk Reduction following minor revisions requested through peer review which added to the clarity of the data presented.

The survey (Appendix B) was well received by general managers as demonstrated by the response rate by GMs of 70% of hotels in the sample areas. Staff numbers were very low but the value of this added dimension to the data provides a special opportunity to understand the linkages between management expectations and attitudes towards their policies, and the staff understanding and integration of the management perspective into working practice. As discussed in the article, the data is exploratory in nature, due in part to the low participation numbers of staff, but also due to the small sample area. However, with data from a large proportion of the GMs, the staff data adds depth to the overall picture provided by the data. Additionally, the interviews in Chapter Six add further staff perspectives and detail to the research.

**Disaster Resilience within the Hotel Sector: An Exploratory Survey of Hotel Staff  
and Managers in Wellington and Hawke's Bay**

Brown, N. A., Rovins, J. E., Feldmann-Jensen, S., Orchiston, C., & Johnston, D. (2019). Measuring disaster resilience within the hotel sector: An exploratory survey of Wellington and Hawke's Bay, New Zealand hotel staff and managers. *International Journal of Disaster Risk Reduction*, 33, 108-121. doi:doi.org/10.1016/j.ijdr.2018.09.014

**Abstract**

The measure of disaster resilience within the hotel sector is investigated in this exploratory quantitative study. Disaster resilience of hotels describes the organisations' ability to withstand and recover from a disaster. Data collected from hotel general managers and staff in two New Zealand tourist destinations were derived through an Internet-based survey instrument. The survey data queried different aspects of disaster resilience from a capital-based approach. Capitals investigated included economic, social, human, physical, natural, and cultural. Survey insights from both general managers and staff in Hawke's Bay and Wellington regions advance our knowledge of resilience predictors and highlights current and future resilience-building actions and activities, and gaps. The inclusion of employee responses in studies of tourism management is uncommon and provides an added dimension to our understanding of disaster resilience-building in the hotel context. The data shows that hotels in the sample have positive attributes of disaster resilience across all of the surveyed capital predictors. Data also identified some gaps in these hotels' disaster resilience. Recommended areas of future focus for resilience-building include: budgeting disaster management activities, greater emphasis on involving staff in disaster planning, and increased information on hazards and protective actions for guests.

**Key Words**

Disaster; Resilience; Hotel; Tourism; Management; Employees; Staff

## 1. Introduction

As the tourism industry increasingly experiences disruption to the flow of tourists and threats to local tourism-dependent economies from disasters, the concept of building resilience to disasters gains popularity within the tourism sector literature (Hall, Prayag, & Amore, 2018). Popular tourist destinations are frequently exposed to hazards that include weather-related and seismic risks (Tsai, Wu, Wall, & Linliu, 2016), as well as acts of terrorism (e.g. 2003 car bombing at JW Marriott Jakarta [Paraskevas, 2013]), and epidemics (e.g. Zika Virus 2015-2016 [Qureshi, 2018]). Exposure to disasters is the product of tourists' desire to be surrounded by nature's most spectacular sights; at the same time, these beaches, rivers, islands, and mountains exist because of the power of nature (United Nations Office for Disaster Risk Reduction (UNISDR), Pacific Asia Travel Association (PATA), & Global Initiative on Disaster Risk Management (GIDRM), 2015). Disasters can impact an individual hotel, as well as the hotel's workforce, community, and the broader tourism sector.

Within the tourism industry, hotels are essential not only for their service in accommodating guests, but hotels also provide an opportunity for the destination to attract larger groups, conferences, and provide employment opportunities. The resilience of hotels after a disaster has direct relevance to financial investors, but also has broader implications for the recovery of the hotel's wider community. Lack of hotel and meeting space continues to be a factor in the recovery of Christchurch, New Zealand following the earthquakes of 2010/2011 that severely impacted the central business area (Orchiston & Espiner, 2017). A direct relationship exists between economic development and tourism development (Bojanic & Lo, 2016) and economic recovery of a tourism area depends on local tourism businesses (Jiang & Ritchie, 2017).

The aim of this research is an exploratory investigation to test a previously developed Disaster Resilience Framework for Hotels (DRFH) (Brown, Orchiston, Rovins, Feldmann-Jensen, and Johnston, 2018). The DRFH developed predictors of disaster resilience for hotels using six capital groups to categorise the different predictor. This study expands on the foundation of the DRFH by creating an exploratory survey which utilises the DRFH's predictors as the basis for identifying and investigating components of disaster resilience. The survey was administered to hotel managers and staff in the greater Wellington area (WL) and Hawke's Bay (HB), New Zealand

The DRFH is an all-hazards tool describing disaster resilience in terms of capital resources. The framework uses six different capital groups as its basis: economic, social, human, physical, natural, and cultural capitals (see Table 5.1). The multi-capital approach chosen is based on a broad umbrella of ideas that describe a range of disaster resilience predictors, in contrast to a more narrow (e.g. purely economic) approach. The dynamic nature of disasters requires an ability to respond in previously unknown ways, where planning for each scenario is not possible (Paraskevas, 2013). Challenges in measuring disaster resilience emerge from a recognition that resilience is a process best understood in retrospect (Rose & Krausmann, 2013). The DRFH was developed following a systematic review of relevant literature that considered retrospective post-disaster resilience analysis (e.g. Dahles and Susilowati [2015]; Hystad and Keller [2008]).

New Zealand is a country of over 4.8 million people (Statistics New Zealand, 2018) located on two islands in the South Pacific. New Zealand has had a number of major earthquake events in the past seven years including the Christchurch earthquakes in September 2010 ( $M_w7.1$ ) and February 2011 ( $M_w6.3$ ), and the Kaikōura earthquake in November 2016 ( $M_w7.8$ ) (GNS Science, 2016). Each of these events severely

disrupted tourism. The Christchurch earthquake sequence caused major loss of accommodation capacity (Orchiston & Higham, 2014). In the Kaikōura earthquake, the main access route for tourist traffic, State Highway 1, was blocked for twelve months (Hayward, Wright, & Lewis, 2017). The initial impact left 1200 tourists stranded and cut all road access to the township of Kaikōura (Stevenson et al., 2017). The Kaikōura earthquake was felt across a large geographic area; buildings in WL, 258 kilometres northeast of Kaikōura, also suffered damage (Elwood, 2016). These communities are still recovering from the earthquake effects on the built and social environments.

Exploratory data was collected using online surveys. Key outcomes of the analysis are described in this article. The two case study sites compare and contrast the contextual differences, as well as the nature of the general manager (GM) and staff inputs. The research is one of the first to integrate the views of hotel staff at the intersection of hotel and disaster management. Previous studies have focused on hotel managers as the source of data (Chan & Hawkins, 2010; Chan & Hawkins, 2012; Whitman, Stevenson, Kachali, Seville, Vargo, & Wilson, 2014). The employee data is a valuable addition and acts to build a more nuanced understanding of how management policies and processes, related to disaster resilience, are integrated and understood by the staff. The research seeks to test, refine, and support the conceptually-informed DRFH while better understanding the disaster resilience of hotels in these two communities.

## **2. Background on Disaster Resilience Framework for the Hotel Sector (DRFH)**

Agreement is evident in the literature and shows resilience building is a multifaceted endeavour (Cutter, Burton, & Emrich, 2010; Mayunga, 2007). The DRFH, used in designing the inquiry's exploratory survey, considers disaster resilience within a capitals context that includes economic, social, human, physical, natural, and cultural

capital. The six capitals are further broken down into predictors of resilience. For example, social capital predictors include social networks, social cohesion/connectedness, capacity to work as a group, and trust (Table 5.1). The DRFH suggests that if a hotel has developed multiple strong networks (Lee, Vargo, & Seville, 2013), social cohesion and connectedness within the organisation (Norris, Stevens, Pfefferbaum, Wyche, & Pfefferbaum, 2008), the ability to work collectively (Bruneau et al., 2003) with high levels of trust (Sydnor-Bousso, Stafford, Tews, & Adler, 2011) the hotel could utilise these social capital resources to overcome the negative effects of a disaster.

The predictors describe resources that could be drawn on to reduce disaster effects for hotels. These resources aid in achieving a positive recovery trajectory as the hotel works through the process of responding to a disruptive event to return to full operational capacity. Viewing resilience as a process recognises that the disaster will require agile and adaptive approaches throughout the recovery (R. Patel & Nosal, 2017).

Table 5.1

*Disaster Resilience Framework for the Hotel Sector. Adapted from (Brown, et al., 2018)*

Capital Resources	Predictors	Key Sources
<b>Economic Capital</b>	• Availability of resources	(Birkmann et al., 2013; Bruneau et al., 2003; Norris et al., 2008; Sawalha et al., 2013; Sydnor-Bousso et al., 2011; Wang & Ritchie, 2010)
	• Diverse income	(Arbon, Cusack, Gebbie, Steenkamp, & Anikeeva, 2013; Ritchie, 2004)
	• Financial Strength	(Biggs, Hall, & Stoeckl, 2012; Global Reporting Initiative (GRI), United Nations Global Compact, & World Business Council for Sustainable Development (WBCSD), 2015; Khazai, 2016; Malhotra & Venkatesh, 2009)
	• Staff's economic resilience	(Kwok, Doyle, Becker, Johnston, & Paton, 2016; Sydnor-Bousso et al., 2011)

Table 5.1 (continued) <i>Disaster Resilience Framework for the Hotel Sector. Adapted from (Brown, et al., 2018)</i>		
<b>Social Capital</b>	<ul style="list-style-type: none"> <li>• Social networks</li> <li>• Social cohesion / connectedness</li> </ul>	(Arbon et al., 2013; Biggs et al., 2012; Cochrane, 2010; Cutter et al., 2008; Faulkner, 2001; Kwok et al., 2016; A. V. Lee et al., 2013; Norris et al., 2008; Sawalha et al., 2013)
	<ul style="list-style-type: none"> <li>• Capacity to work in a group</li> </ul>	(Bruneau et al., 2003; Cochrane, 2010; A. V. Lee et al., 2013; Ritchie, 2004; Wang & Ritchie, 2010)
	<ul style="list-style-type: none"> <li>• Trust</li> </ul>	(Bec et al., 2015; Cochrane, 2010; Khazai, 2016; Norris et al., 2008; Sydnor-Bouso et al., 2011; Wang & Ritchie, 2010)
<b>Human Capital</b>	<ul style="list-style-type: none"> <li>• Health</li> </ul>	(Cutter et al., 2008; Wang & Ritchie, 2010)
	<ul style="list-style-type: none"> <li>• Skills</li> </ul>	(Birkmann et al., 2013; Cochrane, 2010; Cutter et al., 2008; A. V. Lee et al., 2013; Malhotra & Venkatesh, 2009; Norris et al., 2008; Wang & Ritchie, 2010)
	<ul style="list-style-type: none"> <li>• Capacity to adapt</li> </ul>	(Bec et al., 2015; Becken et al., 2013; Biggs et al., 2012; Cutter et al., 2008; A. V. Lee et al., 2013; Sydnor-Bouso et al., 2011)
	<ul style="list-style-type: none"> <li>• Knowledge</li> </ul>	(A. V. Lee et al., 2013; Norris et al., 2008)
	<ul style="list-style-type: none"> <li>• Business continuity</li> </ul>	(Becken et al., 2013; A. V. Lee et al., 2013)
<b>Physical Capital</b>	<ul style="list-style-type: none"> <li>• Life safety</li> </ul>	(Biggs et al., 2012; Cutter et al., 2008; Khazai, 2016; Malhotra & Venkatesh, 2009)
	<ul style="list-style-type: none"> <li>• Business continuity</li> </ul>	(Bruneau et al., 2003; Khazai, 2016; Norris et al., 2008; Sydnor-Bouso et al., 2011; Wang & Ritchie, 2010)
<b>Natural Capital</b>	<ul style="list-style-type: none"> <li>• Location's environmental risks</li> </ul>	(Khazai, 2016; Kwok et al., 2016)
	<ul style="list-style-type: none"> <li>• Location's effects on the environment</li> </ul>	(Cutter et al., 2008; Hall et al., 2018; Sydnor-Bouso et al., 2011)
<b>Cultural Capital</b>	<ul style="list-style-type: none"> <li>• Cultural influence on social system</li> </ul>	(Arbon et al., 2013; Kwok et al., 2016; Wang & Ritchie, 2010)
	<ul style="list-style-type: none"> <li>• Cultural knowledge</li> </ul>	(Norris et al., 2008; S. S. Patel, Rogers, Amiot, & Rubin, 2017b)

The framework is designed as an all-hazards instrument recognising that responses to the complex and diverse outcomes of disruptive events will require unique combinations of capital resources (Brown et al. (2018)). For example, an earthquake

resistant building (physical capital) is essential to life safety in high seismic hazard zones (Wellington City Council, 2013). In comparison, training of staff to develop critical awareness skills (human capital) is imperative to hotel counterterrorism efforts (Wernick & Von Glinow, 2012).

### **3. Methods**

The study utilises the DRFH's 18 predictors (Table 5.1) as a basis for quantitative exploration of disaster resilience in the hotel sector in New Zealand. Hotel GMs and staff in WL and HB were surveyed to determine the presence of these predictors. The following section provides details on the research area, participant selection, and development of the survey to explore disaster resilience. This research complies with ethics requirements for low-risk research at Massey University, New Zealand.

#### **3.1 Study Area**

Hotel stays in New Zealand grew by 3% for the twelve months ending January 2018 to a total of 14,011,000, making hotels the most popular type of accommodation by nights (Ministry of Business Innovation & Employment (MBIE), 2018b). Two different study areas in New Zealand were chosen. The study areas include one a major tourism market (Wellington), and one smaller tourism destination (Hawke's Bay). Each has had unique experiences with significant disruptive events. While Wellington is the larger destination, Hawke's Bay has a history that makes their understanding and memory of earthquake disasters unique. Each has distinctive experience with significant disruptive events. Wellington, the capital of New Zealand, is one of four gateway cities for inbound New Zealand tourism (Tourism Industry Aotearoa (TIA), 2018). The WL region has a population of 471,315 as of the 2013 census (Statistics New Zealand, 2013b). International tourists spent 64% of their money in the four gateway regions (Auckland, Wellington, Christchurch, and Queenstown) while travelling in New

Zealand (Tourism Industry Aotearoa (TIA), 2018). For the twelve months ending February 2018, Wellington's domestic tourism generated NZD 1,711 million and international visitors spent NZD 800 million. These figures constitute a 9% market share for WL of the total tourism industry in New Zealand. (MBIE, 2018b).

The Kaikōura Earthquake (2016) was felt by most in the WL community and required the cordoning off of several city blocks and the demolition a number of buildings in WL (Elwood, 2016). As of November 2017, fifteen buildings have been demolished in WL, and the fate of a few others is still undecided (Rutherford, 2017). While not a disaster in WL by most definitions, the Kaikōura earthquake significantly impacted the city in ways which continue to resonate across social and economic systems.

Hawke's Bay is the second study area. Hawke's Bay has a population of 151,179 (Statistics New Zealand, 2013a). A devastating Mw 7.8 earthquake struck HB in 1931, resulting in 256 casualties (New Zealand History, 2017). The subsequent rebuild brought about the town's pervasive Art Deco building style which has become a significant attraction for tourists, and a visual reminder of the 1931 event for the residents. The architecture, scenic coastline, and vineyards are integral to the tourism product for HB (New Zealand History, 2017). A popular destination for domestic and international tourists in New Zealand, the 1931 earthquake has become part of the tourism narrative of the area, and its prominence keeps the memory of the earthquake fresh for those who work in the tourism sector.

For the twelve-month period ending with April 2018, HB generated NZD 468.7 million in domestic tourism and NZD 167.2 million in expenditures by international tourists (MBIE, 2018a). These figures represent a 3% market share for HB of the total tourism industry in New Zealand. (MBIE, 2018b).

### 3.2 Participants

For this research the New Zealand tourism quality assurance organisation Qualmark's definition of hotel is utilised.

The Hotel category includes properties with at least one licensed bar and restaurant, on the premises or adjacent, with charge-back facilities. Types of rooms include standard rooms, suites, and apartments. All rooms have tea and coffee-making facilities and there is on-site management at all times. All provide breakfast whether in a restaurant or breakfast room or via room service (Qualmark, 2013).

There are a total of 17 hotels in HB and 28 hotels in WL and all were solicited for participation in this study. No consideration was given to star or quality ratings.

Survey participants were solicited through several communications tools. Hotel GMs were approached by personal phone calls and emails, followed by a reminder phone call and email. The small scale of both case study sites enabled a total population sample (rather than stratified sampling). The GMs were invited to 1) complete the online survey specifically designed for GMs, and 2) forward the link for the staff survey to all of their employees. The GMs served as gatekeepers for the staff survey solicitation and distribution because their approval was needed to access the hotel employees. Gatekeepers are sometimes required for hard to reach populations (Gray, 2014). This was a limiting factor in reaching staff, and potentially resulted in some degree of selection bias (see section 5).

Survey responses were received from 13 of the 18 (one hotel had two GMs) HB GMs (72%). The HB staff responses total 13. In WL, survey responses for GMs totalled 20 of the 28 hotel properties (74%). The WL staff responses were 33. Two additional

hotels in WL were closed for work refurbishment/remodelling during the survey period, and the GMs were unreachable or unavailable.

### **3.3 Development of the Survey Instrument**

The exploratory descriptive survey design included 72 questions for staff and GMs and an additional 12 unique questions for GMs concerning organisational details. Both surveys included a suite of thirteen organisation resilience questions from Lee et al. (2013), which was also applied by Orchiston, Prayag and Brown (2017). The remainder were developed from other measures suggested in Brown et al. (2018). These measures were developed from the literature and from hotel industry experience.

Predictors for economic capital' include diversification of income, financial strength, availability of resources and staff economic resilience Survey questions asked hotel managers if they had a diverse customer base and if their marketing plans were designed to continue developing these diverse markets. Other questions explored financial resources of the hotel and insurance. Staff were asked about their savings, insurance, and length of employment.

The DRFH social capital predictors include social networks and cohesion, capacity to work as a group and trust. Survey questions asked about friendships at work within departments and across departments, work-related activities and team approaches to problem solving. Questions also looked at staff/manager trust and staff participation in day to day planning as well as disaster planning.

Human capital predictors in the DRFH are health, skills, capacity to adapt, knowledge, and some business continuity topics. Survey questions included determining the highest level of education for each participant and whether participants had engaged in exercises and/or training for disaster evacuations and other related trainings in the workplace. Questions also looked at employment longevity and industry longevity to

address some types of skills and knowledge. Questions about disaster planning knowledge, as well as procedures for operations that may provide needed information in disasters were also included.

To determine the DRFH physical capital predictors of life safety and other business continuity topics related to physical structures, questions regarding building code compliance and evacuation paths were asked. Additional questions regarding key system redundancies, like power generation, and staff understanding of the systems were also investigated.

The survey addressed the DRFH's natural capital predictors of environment-based risks and hotel impacts on the local environment through questions regarding environmental policies and processes. Questions were also asked about organisations empowered to act as watchdogs for the local environment. The last predictor category is Cultural capital. Cultural knowledge and cultural influence on the social system are the cultural capital predictors.

Demographic survey questions regarding length of time in New Zealand and cultural identity were used to measure cultural capital. Multiple-choice questions used a five-point Likert scale using 1 for strongly agree and 5 for strongly disagree. A limited number of questions included a *don't know* option. Agreement indicated the presence of the capital predictor, while disagreement indicated the hotel had not applied the predictor from that capital, or that predictor was not present. All participants were able to skip questions if they desired as they completed the survey. Participants could use either a computer, tablet, or smartphone to complete the survey and were provided with information regarding their rights per ethical guidelines and confidentiality was assured.

The three validity measures used by Ritchie, Bentley, Koruth, and Wang (2011) in their research of accommodations in Australia were applied in this study. First, a

robust analysis of the literature was used in development of the DRFH predictors of disaster resilience (Brown, Rovins, Feldmann-Jensen, Orchiston, & Johnston, 2017). Second, a pilot study of 11 staff and managers was undertaken to refine the survey questions and reduce misunderstandings; and third, key term definitions were included in the survey introduction to help reduce misinterpretation.

Survey data were collected over a six-month period for the main study. More than 70% of GMs responded. The small sample size of total hotels combined with low participation numbers of staff data provides an exploratory picture only (see section 5). The data is described with descriptive statistics. Inferential statistics are not appropriate for an exploratory survey and no inference can be made to a larger population based on the data (Gray, 2014).

#### **4. Survey Findings**

The following section highlights the results from surveys of staff and GMs. The presence of the predictors of disaster resilience was overall positive. Key findings include strong economic capital in the form of insurance and financial resources, team approaches in management that add to social and human capital, and the contribution of safety compliant infrastructure and evacuation routes to the physical capital of hotels. Each predictor group and figures illustrating findings are found below. Following the predictor groups there is a section presenting data distributions through the use of medians. This section contrasts GMs and staff, and WL and HB. The discussion in section 5 elaborates on the data and links the findings to disaster resilience in the hotel sector.

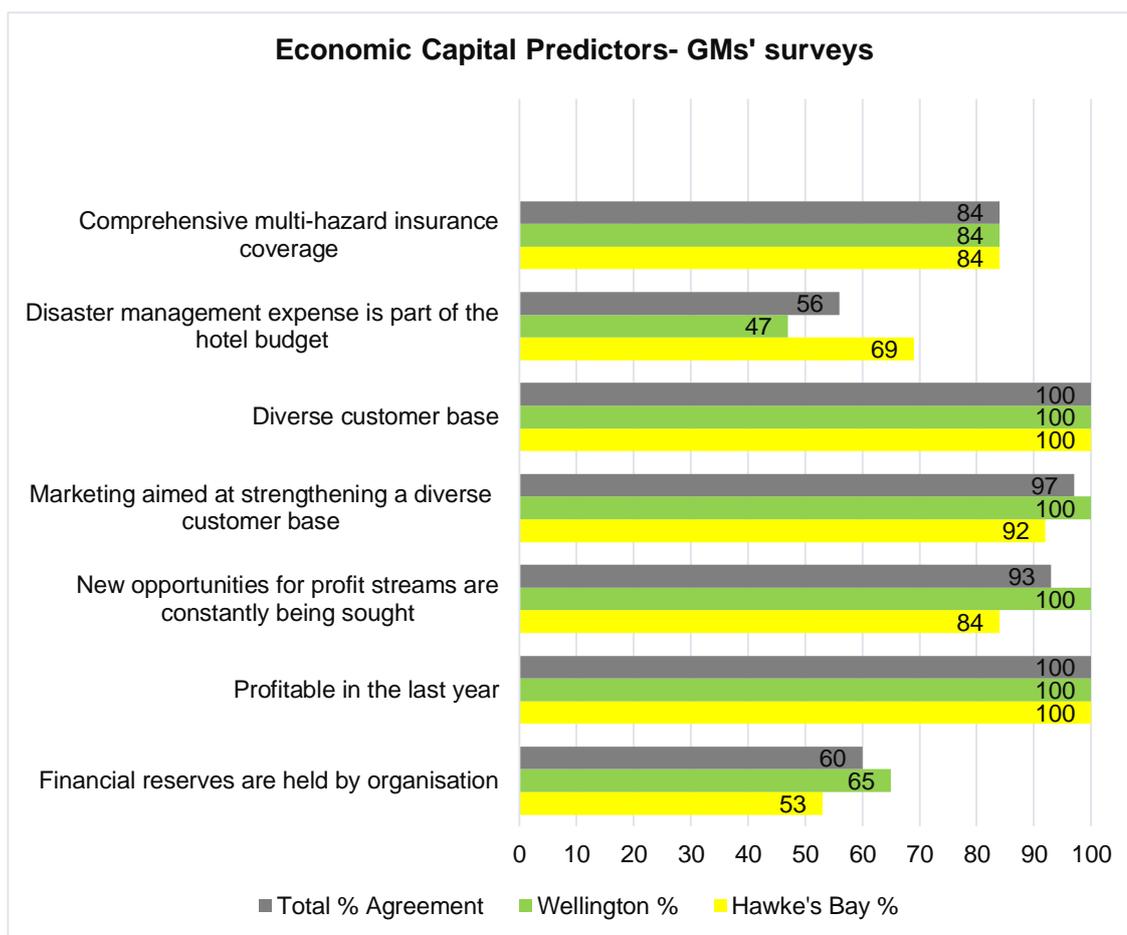
##### **4.1 Economic Capital**

Economic capital is used to determine resource availability in terms of money and other financial means (e.g. insurance) of overcoming disaster. Within the DRFH,

availability of financial resources, diversity of income, and staff members' economic resilience are predictors of overall economic resilience. In figures 5.1-5.12, agreement answering the questions indicates the presence of the predictor of resilience. *Total % agreed* refers to the combined answers from both geographic areas. Figure 5.1 includes the economic capital predictors for questions asked of GMs.

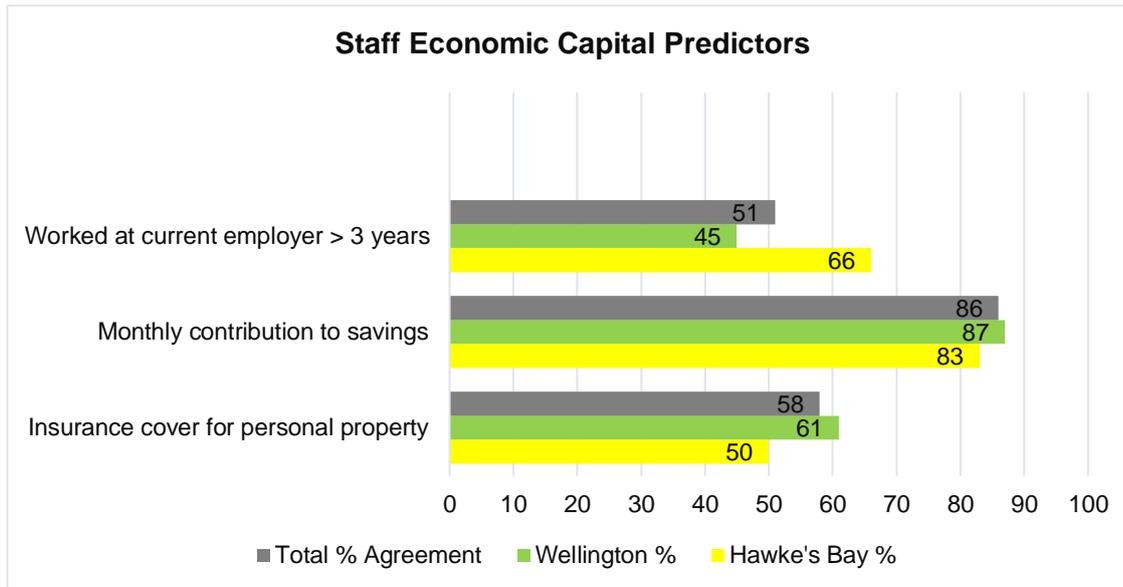
When asked about hotel's insurance coverage 84.4% of GMs agreed that they had comprehensive multi-hazard insurance coverage. The GMs were asked about disaster management expense budgets and 56 % agreed that disaster management is a part of the hotel budget.

All GMs strongly or somewhat agreed that their customer base came from many different markets. Additionally, 97% of GMs agreed that strengthening that client base was their primary marketing aim and 94% agreed that new opportunities for profit streams are constantly being sought. Those GMs that answered questions of profitability reported 100% of those hotels were profitable in the last year. Financial reserves are held by 60% of hotels.



*Figure 5.1.* Economic capital predictors and percentage of GMs confirming predictor presence.

Economic capital for staff was assessed by savings, participation in profit sharing or bonus programs, insurance coverage, and length of time employed (Figure 5.2). For the total sample, 28% had been employed for more than 8 years at their current property, with a median timeframe of 3-5 years. High rates of savings were reported by both groups and 42% of staff did not have insurance cover for their personal property.



*Figure 5.2.* Economic capital predictors for individual staff members and percentage confirming presence.

## 4.2 Social Capital

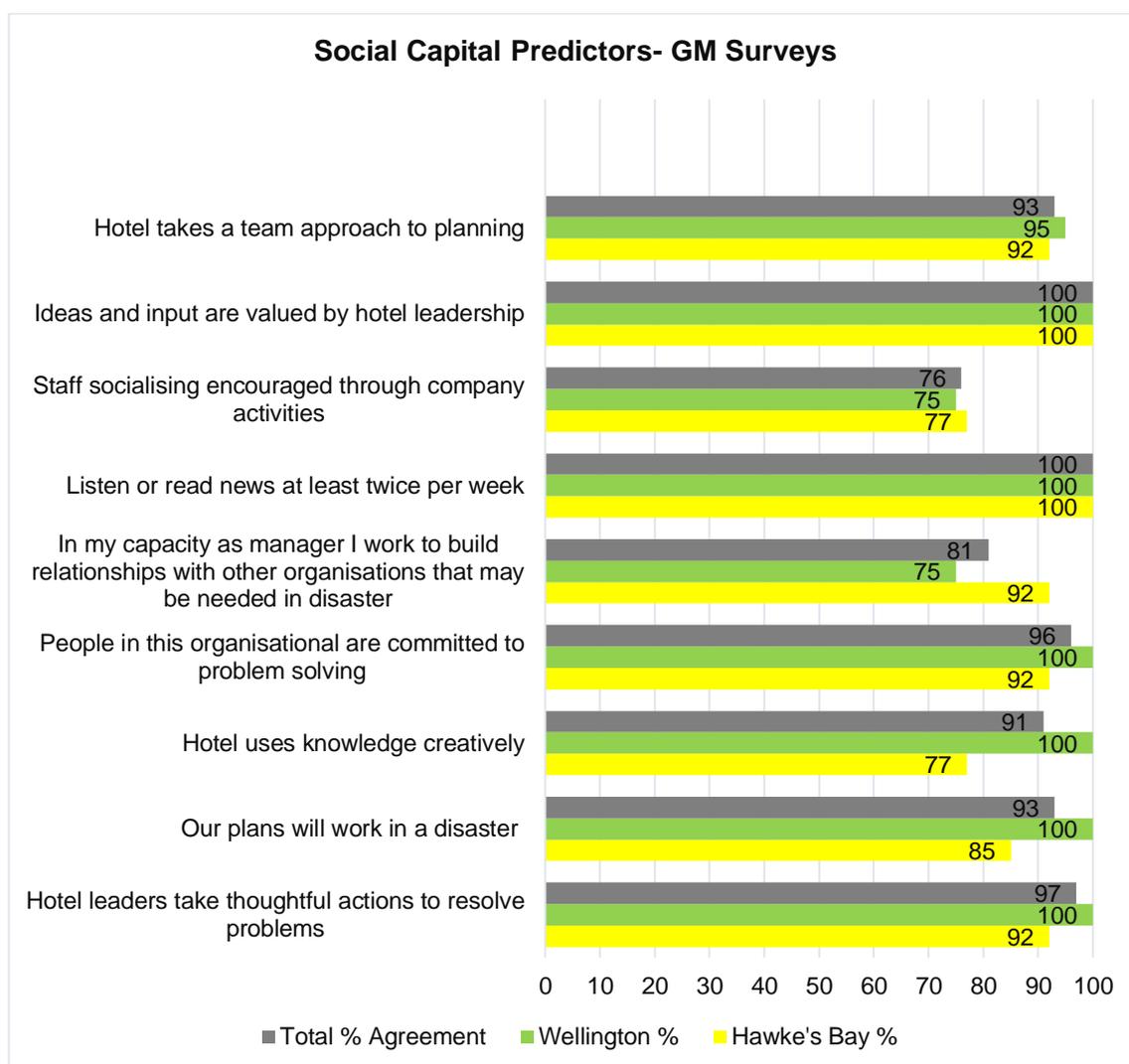
Predictors of social capital included four categories: social networks, social cohesion/connectedness, capacity to work as a group, and trust. Connections to the community were measured by news consumption and connections to other organisations (Mayunga, 2007). Capacity to work as a group was measured by problem-solving, creative use of knowledge, and valued input.

Staff primarily agreed (95%) their facilities were taking a team approach to planning (Figure 5.4). Similarly, the combined GMs agreed at a rate of 93% that their hotels used a team approach to planning (Figure 5.3). Additionally, staff responses indicated they felt their ideas were valued (Figure 5.4) as did the GMs (Figure 5.3). Staff also felt their opinions were asked. These findings point to how well staff members might be included in the decision-making process.

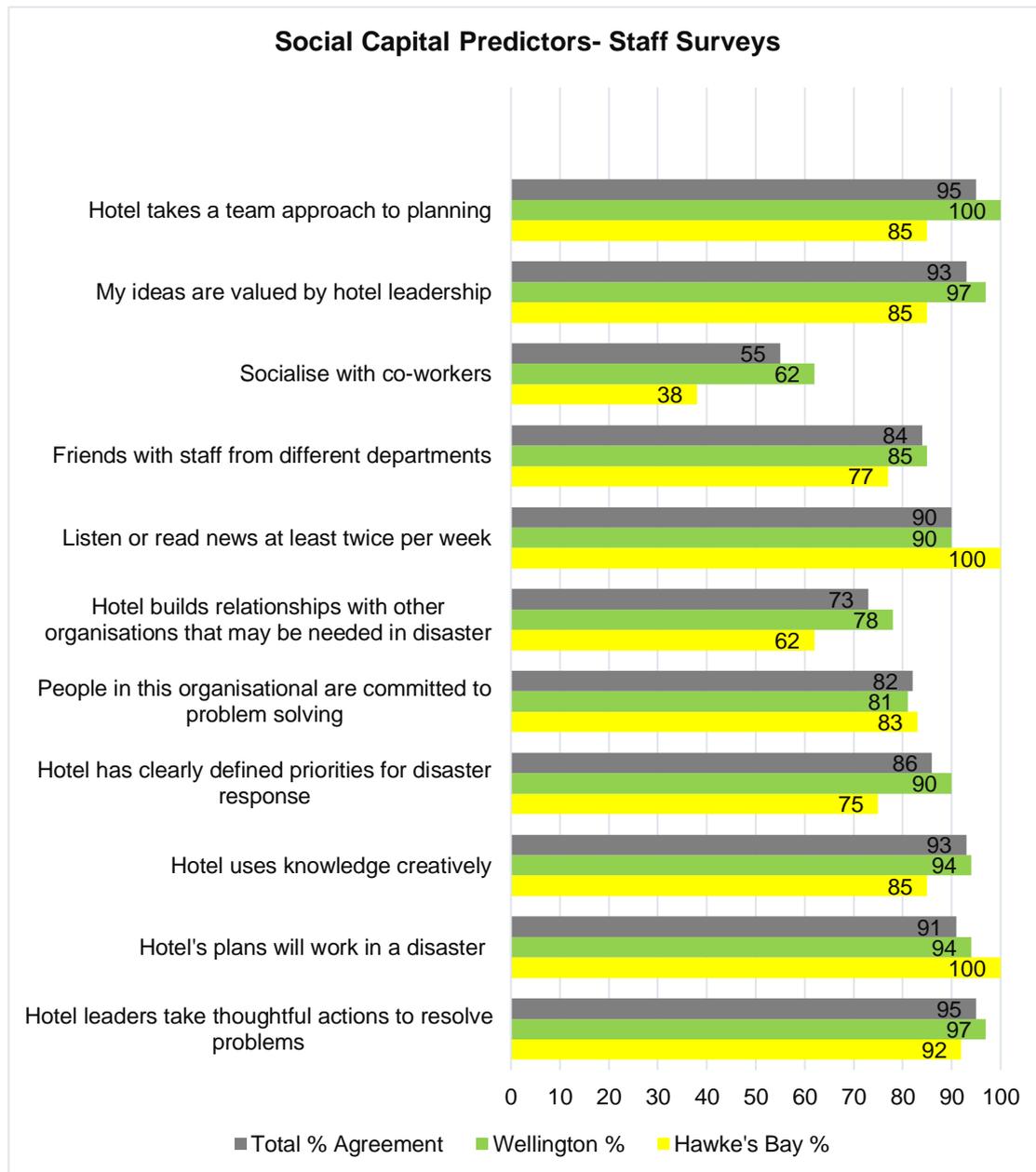
Staff in WL socialise with co-workers at a higher rate than the staff in HB but 84% of staff in both locations have friendships across hotel departments. The GMs (84%) felt they were encouraging socialisation within their organisations. There was also high consensus that organisations were committed to problem solving and that the hotels'

plans for handling disasters were viable. Of the total surveyed, GMs and staff combined, (N=76), 96% agreed (n=72) that hotel leaders take thoughtful actions to resolve problems (Figures 5.3-5.4).

The survey asked if hotels were building relationships with other organisations that would be useful in a disaster (Lee et al., 2013). Answers to the question did not have the same high level of consensus as many of the other questions (Figures 5.3 and 5.4). Staff were less confident than GMs that these relationships were being developed.



*Figure 5.3.* Social capital predictors and percentage of GMs confirming predictor presence



*Figure 5.4.* Social capital predictors and percentage of staff confirming predictor presence.

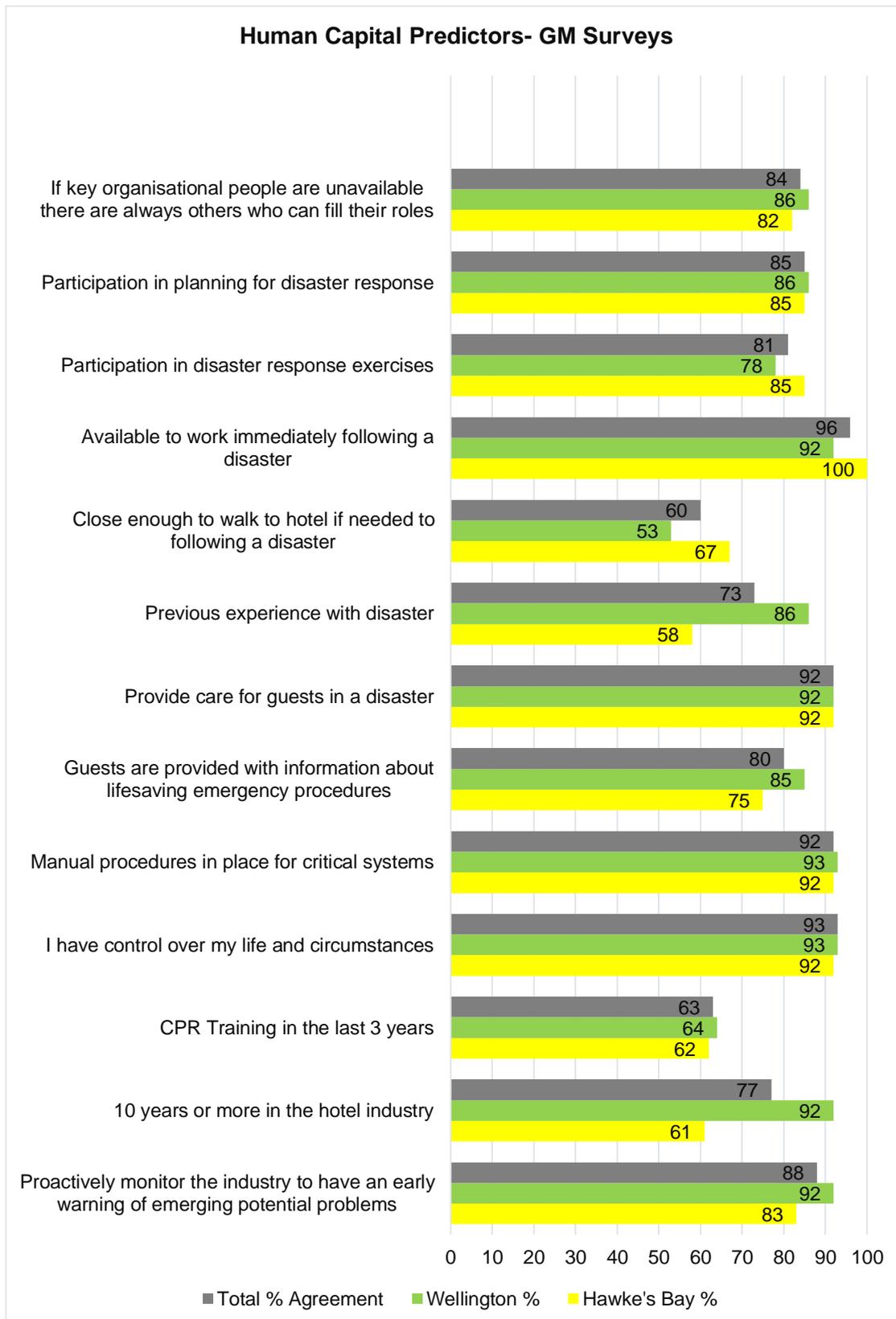
### 4.3 Human Capital

Human capital was assessed in the survey with questions in the five predictor groups of the DRFH: health and well-being, disaster management skills, capacity to adapt, disaster management knowledge, and business continuity (see also physical capital for business continuity) (Brown et al., 2018). Figure 5.5 (GMs) and Figure 5.6 (staff) provide the results of questions in this predictor group.

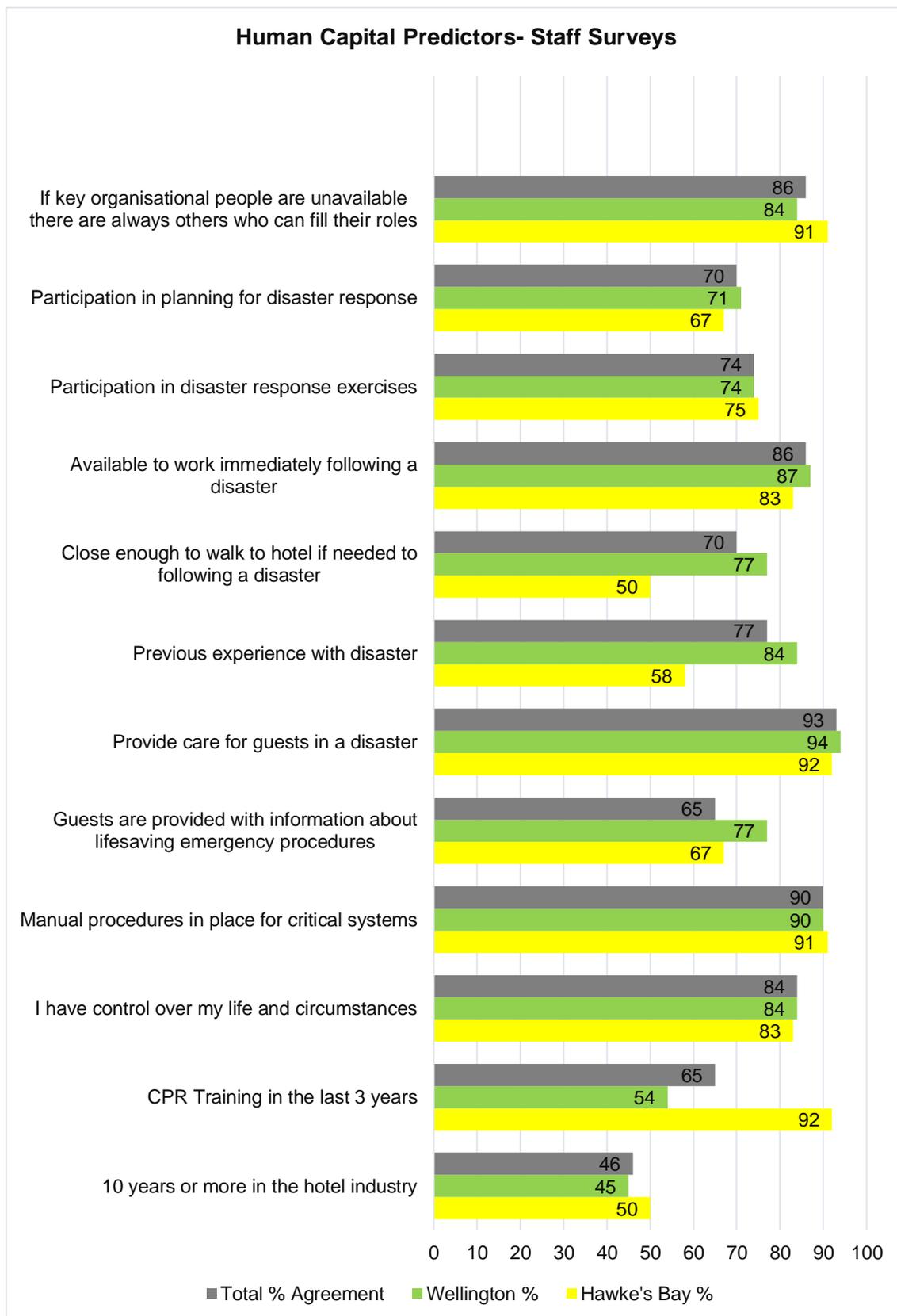
The majority of staff in HB and WL reported participation in planning for disaster response (HB 66%; WL 70%), as shown in Figure 5.6. At the same time, these percentages vary from questions regarding team approach to day to day planning in which HB tallied at 85% and WL at 100% as depicted in Figure 5.4. In both locations, staff (93%) and GMs (92%) agreed that they would be able to care for guests in a disaster; however, when queried about whether the hotel provides hazard information to guests the result was less assured (seen in Figures 5.5-5.6).

An area of diverse results concerns the willingness of staff and managers to get to the job site following a disaster and the actual ability to walk to their properties, which may be needed immediately following a disaster. Notwithstanding other important concerns, such as caring for family, many staff and managers are willing but may be unable to get to the job site. Another interesting finding, a majority of WL staff (80%) and GMs (85%) reported previous experience with disaster either at home or at work in comparison to lower numbers from HB (staff 54%; GMs 58%).

Staff and GMs had similar agreement on many areas that need some work. For example, when asked if key organisational people were unavailable would others be available to step into those roles (Lee et al., 2013), 14% of staff disagreed and 16% of GMs disagreed (Figures 5.5-5.6). Despite this, the majority felt the hotels had coverage for the roles. The combined staff reported that 74% had participated in disaster response exercises and 70% had participated in disaster planning.



*Figure 5.5.* Human capital predictors and percentage of GMs confirming predictor presence.



*Figure 5.6.* Human capital predictors and percentage of staff confirming predictor presence.

#### 4.4 Physical Capital

A positive relationship exists between disaster resilience and physical capital (Mayunga, 2009). In the DRFH, physical capital predictors are broken into two categories: life safety and business continuity. Within the physical capital predictor group, HB and WL showed similar opinions with a few exceptions noted below in Figures 5.7-5.8. The GMs showed some variation from staff in questions concerning life safety.

Some positive predictors include the hotels' compliance with local building codes; HB GMs reported 100% compliance with current codes while 85% of WL GMs agreed they were compliant (note: one WL GM selected strongly disagree). Within the business continuity questions the GMs (100%) strongly agreed or somewhat agreed that critical data was backed-up or printed daily (Figure 5.7). Staff had a slightly different perspective as shown in Figure 5.8 below.

Based on responses from GMs 38% of properties have back-up power generation capability and 69% have emergency supplies of food and water (Figure 5.7). With regard to power generation, 77% of staff believe their properties have back-up power generation, almost twice the percentage of GMs confirming back-up power generation capacities. Redundancies for critical systems were reported by 80% of GMs. Also, within the business continuity questions, the GMs (100%) agreed that critical data was backed-up or printed daily (Figure 5.7). Staff had a slightly different take with 83% of total staff agreeing (Figure 5.8). This question offered *don't know* as a choice, but none of the staff selected this answer.

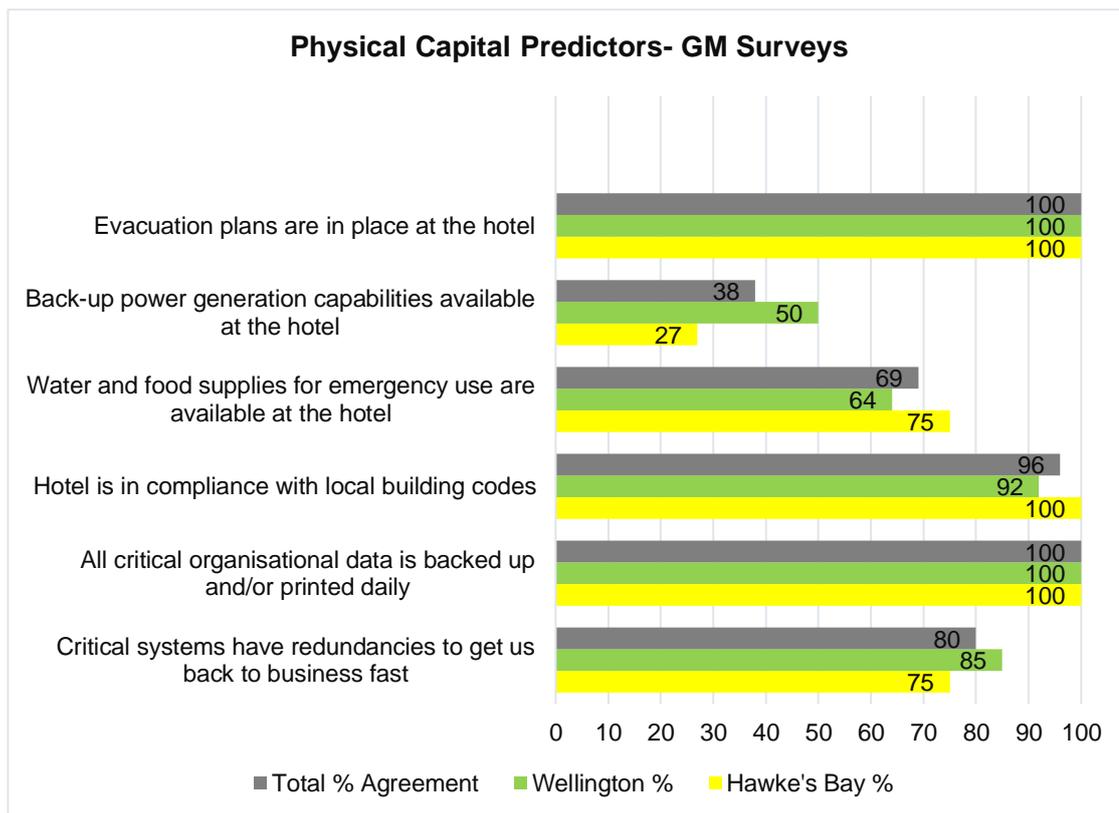


Figure 5.7. Physical capital predictors and percentage of GMs confirming predictor presence.

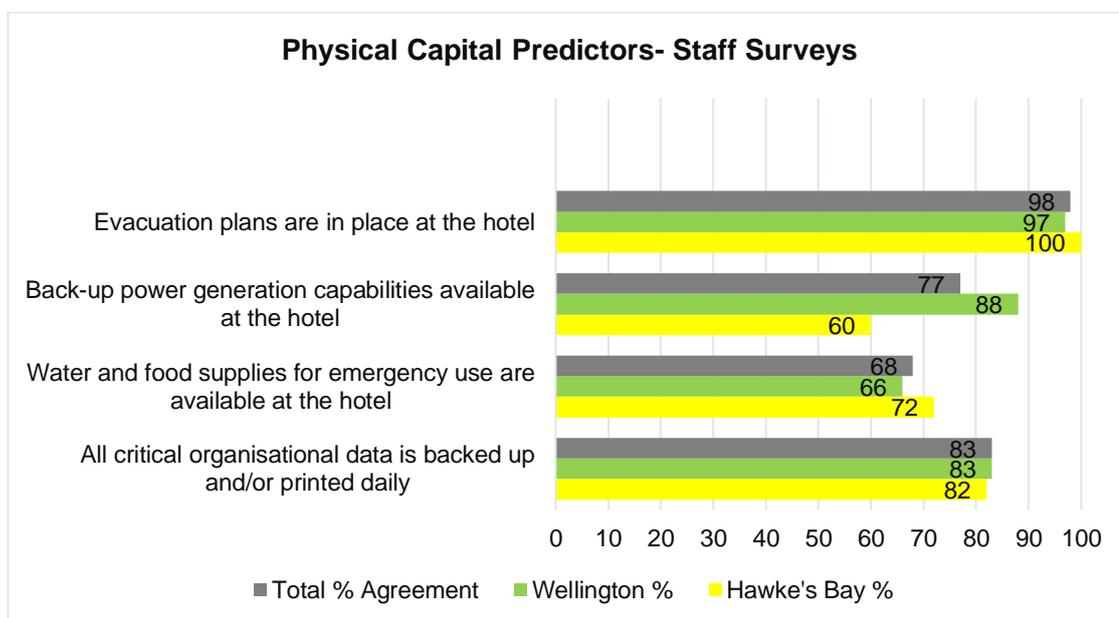


Figure 5.8. Physical capital predictors and percentage of staff confirming predictor presence.

## 4.5 Natural Capital

Natural capital predictors include the hotel's exposure to natural hazard risks and the hotel's effects on the natural environment. Figures 5.9-5.10 provide compilation of GM and staff answers to key questions in this section

Both staff and managers in WL and HB agreed that the hotel considered the local environment in policies, including inclusion of recycling programs. Staff and GMs in both locations also agreed that their locations offered safe evacuation paths if needed with 96% of GMs agreeing and 97% of staff agreeing.

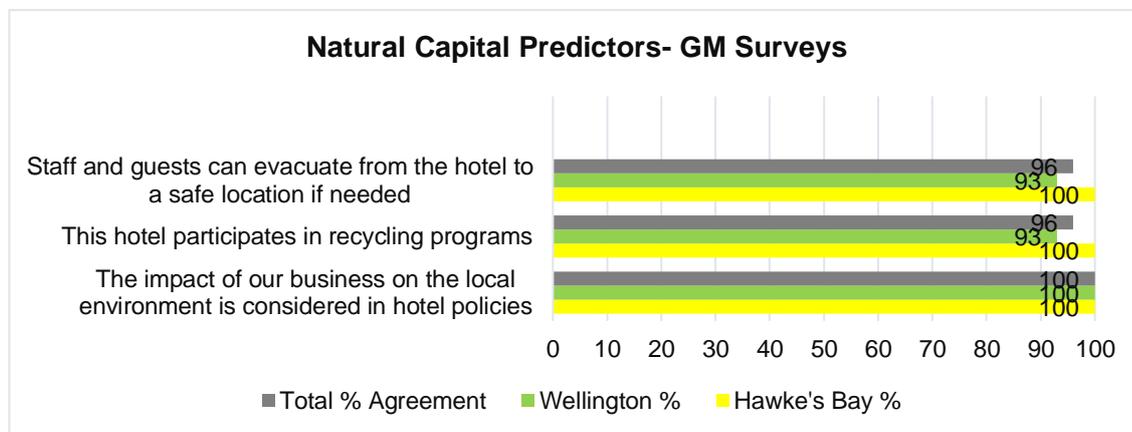


Figure 5.9. Natural capital predictors and percentage of GMs confirming predictor presence.

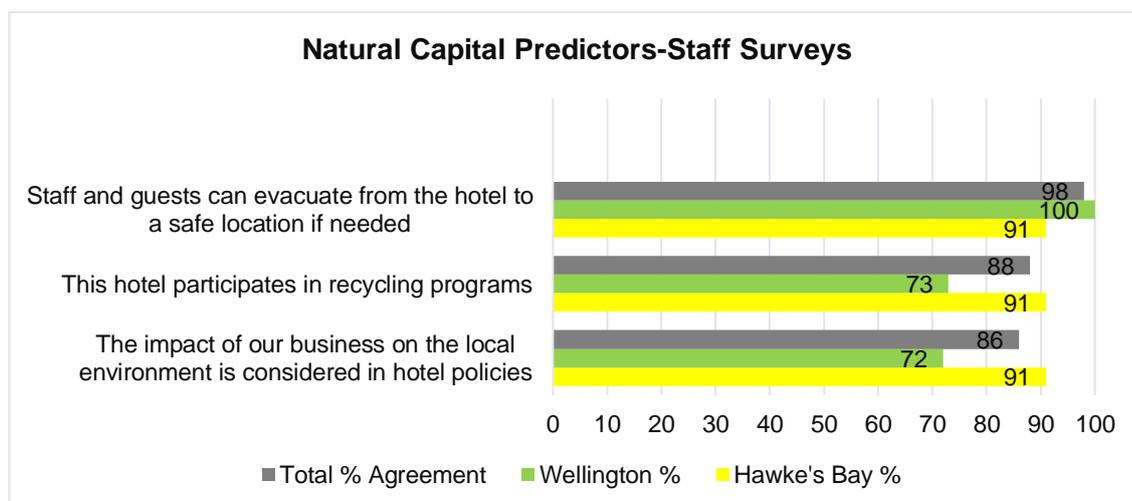
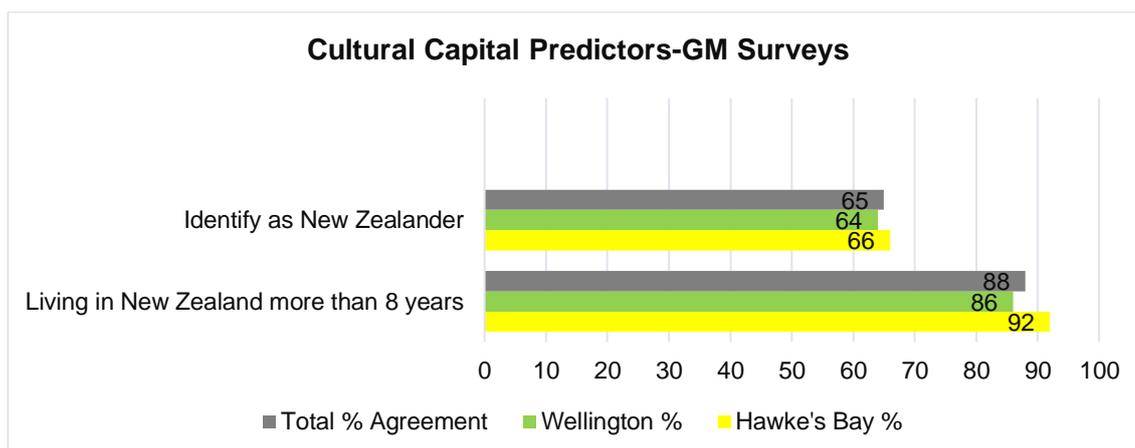


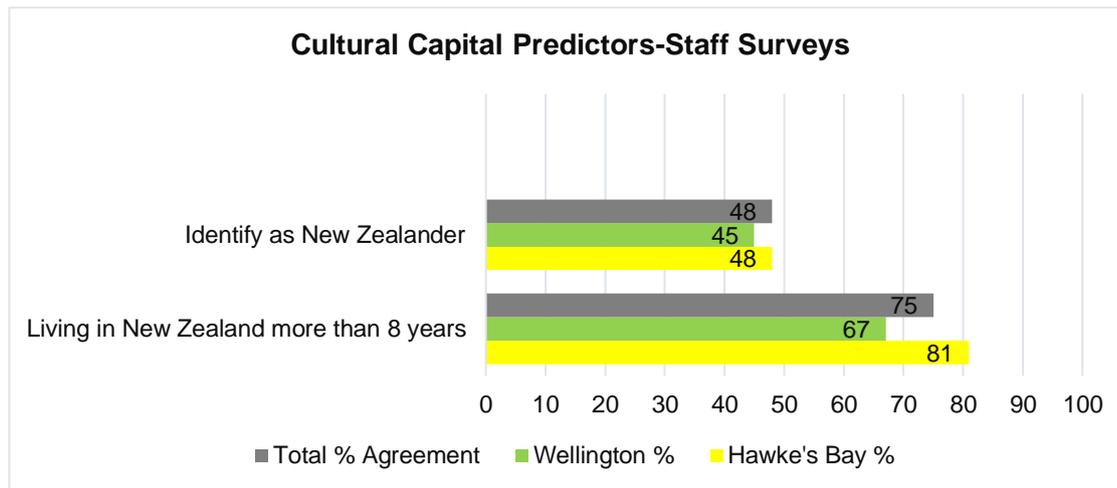
Figure 5.10. Natural capital predictors and percentage of staff confirming predictor presence.

## 4.6 Cultural Capital

Cultural capital can be difficult to measure quantitatively, as many cultural aspects are intangible, suited better to discussion and detailed qualitative exploration (Cochrane, 2010). The exploratory quantitative data collection used nationality and length of time in New Zealand to measure cultural capital. These questions are based on people with strong connections to an area over time having more historical knowledge of events and risks, which will contribute to building risk literacy and resilience. Figures 5.11-5.12 report data for cultural capital predictors. The data (Figures 5.11-5.12) shows GMs identify as New Zealanders (65%) more often than staff (48%), and a majority of both groups have lived in New Zealand for at least 8 years.



*Figure 5.11* Cultural capital predictors and percentage of GMs confirming predictor presence.



*Figure 5.12.* Cultural capital predictors and percentage of staff confirming predictor presence.

#### 4.7 Distribution Comparisons

The distribution of medians is useful to visualise the overall homogeneity (or lack) of the participants and to highlight any differences between the groups. One of the stated aims of the study is to compare and contrast responses between groups, to ascertain if there were differences in their responses to the questions regarding different dimensions of resilience. To compare groups (GM to staff; HB to WL) median scores within each group of questions related to specific capitals were calculated using an aggregate of the Likert Scale scores (1 = Agree - 5 = Disagree). Each individual was represented by a total score for each of the six capitals, for example, participant 1 had an economic capital score of 1.1, social capital score of 1.0, human capital score of 1.35, physical capital score of 1.25, natural capital score of 1.0, and cultural capital score of 1.0.

The median distribution shows most respondents across the two groups agreed in most areas with a few outliers in each group. Of the total staff sample (N=44) 6 had median scores of capital groups higher than 2.0 (13.6%) and 24 scored capital predictors between 1.1 and 2.0 (54.5%). The GMs (N=33) had two groups whose median scores

were greater than 2.0 (6%) and 15 who had total values between 1.1 and 2.0 (45.4%). Staff had only a few medians that were higher than GMs.

Median values across geographic areas of WL and HB are also similar with few outliers. Individual total median scores of capital predictor groups from 1.1-2.0 for HB respondents (N=26) was n=13 (50%) and for WL respondents (N=51) was n=26 (50.9%). Individuals with scores of 2.0 or above in HB totalled 4 (15.3%) and in WL totalled 8 (15.6%).

The overall results from this analysis shows capital resources readily available in most groups, with similar outliers in a few cases. In all four of the median composite charts cultural, and to a lesser extent natural capital scores, stand out as areas of slightly less agreement on capital resources. These areas will be discussed further below (see section 5) together with the other results from the survey and study limitations.

## **5. Discussion**

Resilience to disaster is not an outcome, but rather a process (Cutter et al., 2008; Norris et al., 2008). The process includes constant learning and development of a multitude of skills and capacities (Cochrane, 2010; Cutter et al., 2008). Evidenced most clearly post-disaster, resilience can be seen in the effects and magnitude of disruption on the community (and its stakeholders) (Rose, 2006). However, disaster resilience is built in the days, months, and years prior to an incident (Bosher & Dainty, 2011). With that in mind, this exploratory survey highlights the nature and range of capital resources available for these hotels to draw on if a disaster occurs, based on the DRFH. Cutter et al. (2008) describes two qualities of resilience: inherent qualities that allow for smooth operation during regular times; and adaptive qualities that allow for flexible and positive momentum during and after a disaster. Within the DRFH, both qualities are described by predictors. Adaptive qualities are found primarily within the social and human capital

groups. Inherent qualities include financial conditions, physical building characteristics, the natural environment, and some cultural understandings. All qualities can be improved, increased, and strengthened to allow for improved adaptive qualities.

The financial condition of the hotel before a disaster can affect business recovery (Webb, Tierney, & Dahlhamer, 2002). As an introductory step in refining the DRFH, the surveyed area's responses demonstrate many capital resources will be available in times of disaster to assist with responding to and recovering from disasters. Profitability and financial reserves help strengthen economic capital (Biggs et al., 2012) and hotel GMs reported both profitability and, to a lesser extent, financial reserves are available to their organisations. The importance of economic capital is illustrated in a case study of a hotel in Thailand. Following the 2004 tsunami, financial survival was a major challenge; the disaster response and recovery fell within the property's high season and financial resources were depleted (Henderson, 2005). When a disaster occurs, getting back to business may require additional capital expenditure funds and operating capital to be available in the absence of income from guest receipts. The relatively strong economic capital described by GMs in the New Zealand context provides a measure of resilience in the immediate aftermath of a disaster.

Insurance coverage has traditionally been considered important for disaster recovery, by helping to minimise overall loss (McEntire, 2004). A large percentage of hotels in both areas reported having multi-hazard insurance coverage for disasters. As a predictor of economic capital, insurance coverage among these hotels provides increased resilience. A caveat must be stated, however, that the specific nature of individual insurance policies (including exclusions etc.) will have a significant influence on the net benefit of the insurance cover after a disaster.

Diverse income streams can help a business weather market changes (Arbon et al., 2013). “Due to the global nature of tourism, a catastrophic occurrence in one city, state, or country, has wide-ranging impacts elsewhere” (Todman-Lewis, 2017, p. 17). When considering the hotel industry, for example, a disaster in a traveller’s home may decrease travel from that region while the community responds and recovers to its domestic disaster. Businesses that are heavily dependent on one market segment may suffer in this scenario. Hotel GMs agreed that they have diverse customer bases and are marketing to these bases while constantly scanning for new opportunities for their organisations, all of which enhances their economic capital resilience.

Gaps revealed by this survey could become strategic foci for hotel managers to enhance their organisation’s disaster resilience. For example, regarding economic capital, disaster management expenditure is not currently budgeted by many hotels in either HB or WL. In other business contexts, a lack of a dedicated budget allocation (or budget line item) was cited as a reason for less proactive disaster planning (Ritchie et al., 2011). Even small budgets can provide for important exercises and training that could improve adaptive capacities. Exercises that included cross-department training can minimise silos and provide an improved team approach to operations, something all GMs felt was important to their operations. Strategies that diminish silos are important. Silos can cause disconnection and disjointed communication, which work against building adaptive capacities (Lee et al., 2013).

Hotels in the research case studies reported having social capital resources to draw on in disaster. Social networks and community engagement are important components of social capital and when developed, can reduce the impacts of a disaster (Cutter et al., 2010). An organisation that prioritises relationship building with staff will find that staff are ready to step up and contribute when needed (Hall, Prayag, & Amore, 2018). Also,

an ability to make network connections and work with organisations in the community adds to a hotel's resilience to disasters (Orchiston, Prayag, & Brown, 2015). Networks are present between hotels and organisations that may be valuable partners in a disaster situation, although there is still unrealised potential to expand and extend these networks based on survey results.

Building on existing team approaches to everyday operations offers an opportunity to apply disaster-related activities more uniformly. Staff were less often involved in the process of disaster planning when compared to their involvement in overall operations. Stakeholder involvement (which includes staff) is often cited as a challenge in disaster planning; nevertheless, a commitment to involving stakeholders throughout the process is integral to resilience building (Kapucu, Hawkins & Rivera, 2013). Staff are an important stakeholder group and disaster plans may benefit from a wider perspective, which will also build social and human capital.

Other important social capital factors included social cohesion in the workplace and trust in leadership. Results suggest that social capital, in the form of cohesion and trust, is available in many forms within the hotel sector in both cities. High percentages of staff in both areas reported having friendships within their department, as well as across departments. Trust encompasses both trusted sources of information (Norris et al., 2008) and trust in members of networks (both within and outside the organisation) (Khazai, 2016; National Research Council, 2014). Staff recognised the problem resolution capacity of the organisation showing confidence in the organisations' ability to recognise and resolve issues. Additionally, staff trusted that hotel plans for disaster would work if tested, demonstrating a trust in leaders and co-workers.

Length of employment can also add to social capital through increased social connectedness and long-term relationships. The hotels in both cities reported having a

relatively stable workforce, with a median time of employment being 3-5 years. The longevity of employment exceeded average levels in the New Zealand retail sector. In 2016 the New Zealand retail trade, including accommodation and food service industries, reported 13.5% of employees working at their job more than 10 years with a median time employed of 2 years (Statistics New Zealand, 2016). Staff longevity also contributes to human capital by demonstrating familiarity with their overall facilities and the hotel industry. Furthermore, the relative stability of employment contributes to economic capital for staff members and their households by providing a stable source of income. An individual's sense of well-being contributes to their resilience and is a critical resource for adapting in the face of adversity (Hall et al., 2018). Well-being is a core element of resilience capacity and is linked to adaptive capacity (Kuntz, Näswall, & Malinen, 2016). Resilient staff are more likely to be available to an organisation during disasters. The staff surveyed indicated most have a positive sense of well-being and felt in control of their lives. The majority of GMs also responded that they felt control over their lives and circumstances. The predictors contribute to the organisations' overall resilience (Kuntz et al., 2016). These results are indicative of human capital resources.

Members of an organisation with knowledge and skills covering a variety of possible disasters can act with improved effectiveness when disasters occur (Lee et al., 2013). A study of influence on accommodation managers' intentions to engage in disaster planning found that previous experience with disaster was linked positively with the intention to act (Wang & Ritchie, 2012). Experience in disasters is essential as it provides improved resilience through actual event knowledge and psychological resources to draw on moving forward (Hall et al., 2018; Webb et al., 2002). Staff and GMs reported having experienced previous disasters, particularly in WL. In the case of

New Zealand, the Kaikōura earthquake (magnitude 7.8) in November 2016 gave many hotel staff an opportunity to develop a deeper understanding of hotel earthquake response actions, and to test their knowledge of procedures.

Confidence in organisational response capacity was reported by staff; further, GMs had similar confidence in the organisational planning. Disaster planning is an important core function of hotel managers (Ritchie et al., 2011). Wang and Ritchie (2010) suggest pre-event planning can decrease negative effects; yet, there still exists some negative attitudes towards planning. In a 2011 study of accommodation managers in Australia, Ritchie et al. (2011) found 75% of those surveyed had undertaken disaster planning. Likewise, this exploration of HB and WL hotels found that high numbers of GMs have engaged in disaster planning, participated in disaster response training and exercises, and have confidence their plans will work in a disaster. The majority of staff have a good awareness of hotel disaster plans, have some training, and believe that planning efforts will be effective. The research revealed a strong connection between disaster plans, staff knowledge, and awareness of the plans, which is a valuable addition to the literature because the data links what GMs believe is known by staff to what staff actually know. The total contribution to human capital becomes multifaceted as both managers and staff add value to the level of available resources.

A risk to business continuity after a disaster is presented by the challenges of staff being able to physically make their way to work due to impassable roads and distance from home. Approximately half of the staff in HB and half of the GMs in WL indicated they would be unavailable to work immediately following a disaster. This unavailability is based on their commute distance to work, even though most GMs and staff indicated a willingness to get to work. If a disaster strikes at night when the hotel has many guests in residence and minimal staff on duty, an inability of staff to make their way to the job

site could prove problematic. Staff must play a role in the welfare and safety of those guests even during overnight hours at hotels. Limitations on staff availability have affected hotels' abilities to remain operational and provide service following a disaster (Lamanna, Williams & Chiders, 2012). A proactive approach to training staff across a number of roles can alleviate potential role gaps, and contribute to enhancing human capital within the organisation. Geographical and logistical concerns about distance and challenges to get to work (e.g. road damage) do not have clear solutions.

The resilience of the built environment (including critical lifelines and infrastructure) is important for life safety, response and recovery (Mayunga, 2009). According to respondents, physical capital resources for life safety are high for the surveyed hotels, based on good building standard integration and evacuation route availability. Webb et al. (2002) studied long-term business recovery following the Loma Prieta earthquake and Hurricane Andrew and found that prolonged closure was a strong determinant of business failure. New Zealand's recent earthquake experience confirms the importance of robust buildings codes. Hotel GMs reported the majority of properties comply with building standards. Physical structures built to withstand local hazards is a significant contribution to physical capital. This research does not assess the building standards of the area, only GMs' report of building compliance. Codes are geared to life safety and may not describe the buildings ability to remain operationally viable after an earthquake.

A hotel's physical location and exposure to hazard risks influences its resilience. For example, in an area with tsunami risk, the location of the building and the proximity of high ground has implications for life safety of host guests and staff. Evacuation routes are integral to disaster resilience (Cutter et al., 2008). Staff and managers agreed the hotels offered safe evacuation routes if needed in a disaster.

The research suggests some conflicting knowledge regarding critical data back-up systems and back-up generators for emergency power supply. With regard to emergency systems, results from the staff are contradictory regarding available back-up power generation, which might suggest a lack of staff awareness related to insufficient training. This gap could be significant in the case of a disaster occurrence when hotel managers are not on property and staff need to activate emergency systems. Staff also had less positive responses regarding critical data back-up systems compared to GMs. The Christchurch earthquakes caused major issues for hotels in terms of access to data, with many hotels within the business district cordon being unable to access their buildings to remove hard drives or paper files for months after the February earthquake (Orchiston, Vargo, & Seville, 2012). GMs are encouraged to take a more inclusive planning approach for disasters, including access to back up systems during a disaster. The solicitation of more input from staff can increase understanding of information on hotel disaster systems for staff throughout the hotel. The data suggests staff concerns for some critical data back-up processes that GMs did not identify. Through the collaborative process, gaps in data needed and secured through back-up systems may also be illuminated and ultimately added to physical capital's resilience contribution through improved business continuity resources.

A greater appreciation for natural capital can result in increases in disaster resilience (Mayunga, 2009). Natural capital includes the hotel and local tourism community's respect for the natural resources that attract visitors. Tourism is interlinked with natural resources (Cochrane, 2010). Tourism that negatively impacts the beauty of an area can affect the long-term sustainability of a destination (Hall et al., 2018). The hotel's environmental consciousness affects the ecosystem they are a part of; examples can include internal recycling programs and sustainable environmental policies. Both

GMs and staff surveyed agreed that hotel's actions and policies considered environmental impacts. The natural environment can provide protection from some disasters, as demonstrated by the importance of natural coastline features such as mangroves, dunes, and reefs for mitigating storm surge (Mahon, Becken, & Rennie, 2013). Based on survey data, hotels are advocates of the natural environment and its importance in safety and tourism.

The ability to care for guests in a disaster was expressed by staff and GMs; however, the survey data shows a gap in the availability of information guests are provided with regarding local risks. As a minimum best practice, guests should be informed verbally of where to find important safety information in their rooms (Cheung & Law, 2006). The safety information may include life safety details based on the local hazardscape. For example, safety placards in hotel rooms can also outline the 'drop cover and hold' procedures, and also the location of high ground if in tsunami inundation zones for areas with earthquake and tsunami hazards.

Cultural knowledge of their area, which may be valuable in an unfolding disaster, was indicated for GMs and staff in hotels in WL and HB. Fewer New Zealand staff could mean less awareness of local hazards and safe response reactions. New Zealand's tourism industry relies on migrant staff to supplement their local personnel. Even so, relatively long periods of employment of many staff suggests that they are likely to have experienced earthquakes or been exposed to public education messaging about the appropriate actions to take during an earthquake for their safety. One aspect of cultural capital includes special local knowledge (Norris et al., 2008; S. S. Patel, Rogers, Amiot, & Rubin, 2017a). A study by McAdoo, Moore, and Baumwoll (2008) found that recent arrivals to the Solomon Islands died in disproportionate numbers compared to the indigenous population during the 2007 tsunami. The indigenous population had stories

handed down on what to do and how to recognise the danger of a tsunami and acted appropriately. In contrast, visitors to the region were unaware of the risks, as well as the best actions to take during a tsunami. Community memory is particularly helpful in low-frequency high impact events like a tsunami

Hotels in Jordan did not have systems and strategies in place to reduce risk, prevent, and adapt to disasters according to a study by Sawalha et al. (2013). The data from this study of New Zealand hotels shows quite the opposite. A variety of resources are available for use in a disaster. Furthermore, systems and strategies for disaster preparedness and response are in place at most properties. The difference may be linked to New Zealand's recent experience with earthquakes; hotels in the region may be more conscious of disaster effects than areas that have not had recent experiences effecting large areas.

The research carries some limitations. Insights into disaster resilience within the hotel sector were derived from an exploratory survey of hotels in two New Zealand areas and lay the groundwork for further research. The results of this research are not generalisable across the hotel industry because the sample may not reflect a true cross-section of the target population. For example, all staff who answered the survey reported being employed full-time; however, based on the data of employees from GM surveys HB hotels employ 45% part-time staff and WL GMs' survey reported 48% part-time staff. The staff represented do provide data from a staff perspective, but without a much larger sample that includes both full and part-time staff an inference for the whole organisation is incomplete.

Additionally, the small hotel sample size makes it hard to generalise without a clearer understanding of the hotels which did not participate. The non-participants may have very different answers, changing the data substantially. Still, the exploratory data

provides a starting point to understand and manage disaster resilience building for the hotel sector.

General Managers were quick to respond to the survey but it was more challenging asking for further participation through recruitment of staff as GMs served as gatekeepers (see section 3.2). A richer understanding of staff ideas and attitudes will require a novel approach to collecting data and may not be possible on a community-wide basis due to the difficulty in reaching the group with or without a gatekeeper.

It is unclear what role the organisational resilience of a single entity, such as a hotel, plays in wider destination-level tourism resilience (Hall et al., 2018). Lee et al. (2013, p. 29) suggest “organisational and community resilience are two sides of the same coin” and are intricately reliant on each other. Certainly, those people associated with a more resilient organisation are more likely to continue to have jobs and income after a disaster. In doing so, the resilience of the community is enhanced by having continued economic and social support through business continuity. This argument for improved disaster resilience of hotels supports the value each business brings to the community during good times, and when disaster strikes.

## **6. Conclusion**

Research in the area of hotel resilience to disasters requires an understanding of resilience across the business model (Hall et al., 2018). The application of a capitals approach has presented a useful method for capturing a broad range of resilience practices and behaviours. This exploration focused on hotels in two New Zealand areas; both locations were found to have many available resources to draw on in a disaster. Strengths and gaps highlighted in the text can be used by GMs to consider next steps in building disaster resilience. For example, recommendations include GMs take a more inclusive approach to disaster planning, add disaster management to the budget, and

consider improving back-up power generations systems. Results identified some gaps between staff and management and highlights that staff are a critical human capital resource; investing in them through effective training and involvement in disaster planning is essential. Moreover, a review of safety information provided to guests is recommended for some hotels. The study enhances the DRFH by surveying its predictors of resilience for hotels. Additionally, the discussion offers some practical suggestions and solutions towards building disaster resilience in hotel leadership.

A nationwide study in New Zealand, as well as surveys in different areas with and without recent disasters would improve our current understanding of how hotels are approaching resilience. The enhanced data will enable proactive resilience-building approaches to be developed. Applying these measures, in a case study approach, to areas where disasters have occurred may help to validate and refine the measures. If the survey instrument were to be applied to a larger group of participants this would allow the DRFH to be more robustly reviewed and evaluated through other types of quantitative analysis. This increasingly reliable survey instrument could then be used to review resilience measures by reassessment in post-disaster scenarios.

Academic discourse on disaster resilience continues to build momentum through increased research in the field. Research into resilience has more than quadrupled in recent years as compared to 2005-2009 (Hall et al., 2018). Exploration of disaster resilience with a focus on the hotel industry adds to the literature and sets the stage for studies in other types of accommodations, as well as other types of tourism business. The importance of expanding research to include a wider group of stakeholders, specifically staff, is also underscored in the findings. The increased knowledge will continue to refine our understanding of resilience and how best to keep people and businesses protected from the impact of disaster impacts.

## References

- Arbon, P., Cusack, L., Gebbie, K., Steenkamp, M., & Anikeeva, O. (2013). *How do we measure and build resilience against disaster in communities and households*. Retrieved from Adelaide, Australia: <http://www.torrensresilience.org/>
- Bec, A., McLennan, C., & Moyle, B. D. (2015). Community resilience to long-term tourism decline and rejuvenation: a literature review and conceptual model. *Current Issues in Tourism*, 19(5), 431-457. doi:10.1080/13683500.2015.1083538
- Becken, S., Mahon, R., Rennie, H. G., & Shakeela, A. (2013). The tourism disaster vulnerability framework: an application to tourism in small island destinations. *Natural Hazards*, 71(1), 955-972. doi:10.1007/s11069-013-0946-x
- Biggs, D., Hall, C. M., & Stoeckl, N. (2012). The resilience of formal and informal tourism enterprises to disasters: reef tourism in Phuket, Thailand. *Journal of Sustainable Tourism*, 20(5), 645-665. doi:10.1080/09669582.2011.630080
- Birkmann, J., Cardona, O. D., Carreño, M. L., Barbat, A. H., Pelling, M., Schneiderbauer, S., . . . Welle, T. (2013). Framing vulnerability, risk and societal responses: the MOVE framework. *Natural Hazards*, 67(2), 193-211. doi:10.1007/s11069-013-0558-5
- Bojanic, D. C., & Lo, M. (2016). A comparison of the moderating effect of tourism reliance on the economic development for islands and other countries. *Tourism Management*, 53, 207-214. doi:10.1016/j.tourman.2015.10.006
- Bosher, L., & Dainty, A. (2011). Disaster risk reduction and 'built-in' resilience: towards overarching principles for construction practice. *Disasters*, 35(1), 1-18. doi:10.1111/j.0361-3666.2010.01189.x
- Brown, N. A., Orchiston, C., Rovins, J. E., Feldmann-Jensen, S., & Johnston, D. (2018). An integrative framework for investigating disaster resilience within the hotel sector. *Journal of Hospitality and Tourism Management*, 36, 67-75. doi:<https://doi.org/10.1016/j.jhtm.2018.07.004>
- Brown, N. A., Rovins, J. E., Feldmann-Jensen, S., Orchiston, C., & Johnston, D. (2017). Exploring disaster resilience within the hotel sector: A systematic review of literature. *International Journal of Disaster Risk Reduction*, 22, 362-370. doi:<http://dx.doi.org/10.1016/j.ijdr.2017.02.005>
- Bruneau, M., Chang, S. E., Eguchi, R. T., Lee, G. C., O'Rourke, T. D., Reinhorn, A. M., . . . von Winterfeldt, D. (2003). A framework to quantitatively assess and enhance the seismic resilience of communities. *Earthquake Spectra*, 19(4), 733-752. doi:10.1193/1.1623497
- Chan, E. S. W., & Hawkins, R. (2010). Attitude towards EMSs in an international hotel: An exploratory case study. *International Journal of Hospitality Management*, 29(4), 641-651. doi:10.1016/j.ijhm.2009.12.002

- Chan, E. S. W., & Hawkins, R. (2012). Application of EMSs in a hotel context: A case study. *International Journal of Hospitality Management*, 31(2), 405-418. doi:10.1016/j.ijhm.2011.06.016
- Cheung, C., & Law, R. (2006). How can hotel guests be protected during the occurrence of a Tsunami? *Asia Pacific Journal of Tourism Research*, 11(3), 289-295. doi:10.1080/10941660600753331
- Cochrane, J. (2010). The Sphere of Tourism Resilience. *Tourism Recreational Research*, 35(2), 173-185. doi:<http://dx.doi.org/10.1080/02508281.2010.11081632>
- Cutter, S. L., Barnes, L., Berry, M., Burton, C., Evans, E., Tate, E., & Webb, J. (2008). A place-based model for understanding community resilience to natural disasters. *Global Environmental Change*, 18(4), 598-606. doi:10.1016/j.gloenvcha.2008.07.013
- Cutter, S. L., Burton, C. G., & Emrich, C. T. (2010). Disaster resilience indicators for benchmarking baseline conditions. *Journal of Homeland Security and Emergency Management*, 7(1). doi:10.2202/1547-7355.1732
- Dahles, H., & Susilowati, T. P. (2015). Business resilience in times of growth and crisis. *Annals of Tourism Research*, 51, 34-50. doi:10.1016/j.annals.2015.01.002
- Elwood, K. (2016). Wellington building impacts. *QuakeCoRE newsletter: Kaikoura earthquake*, (Special Edition). Retrieved from <https://us10.campaign-archive.com/?u=c65a2a0813835c484fde76107&id=764a87e2fc&e=9fe74c7450>
- Faulkner, B. (2001). Towards a framework for tourism disaster management. *Tourism Management*(22), 135-147.
- Global Reporting Initiative (GRI), United Nations Global Compact, & World Business Council for Sustainable Development (WBCSD). (2015). *SDG compass guide: The guide for business action on the SDGs*. Retrieved from [http://sdgcompass.org/wp-content/uploads/2015/12/019104\\_SDG\\_Compass\\_Guide\\_2015.pdf](http://sdgcompass.org/wp-content/uploads/2015/12/019104_SDG_Compass_Guide_2015.pdf)
- GNS Science. (2016). Where were New Zealand's largest earthquakes. Retrieved from <https://www.gns.cri.nz/Home/Learning/Science-Topics/Earthquakes/New-Zealand-Earthquakes/Where-were-NZs-largest-earthquakes>
- Gray, D. E. (2014). *Doing research in the real world* (3rd ed.). Thousand Oaks, CA 91320: SAGE Publishing, Inc.
- Hall, C. M., Prayag, G., & Amore, A. (2018). *Tourism and resilience: Individual, organisational, and destination perspectives*. Bristol, UK: Channel View Publications.
- Hayward, M., Wright, M., & Lewis, O. (2017). The road. *Stuff*. Retrieved from Stuff website: <https://interactives.stuff.co.nz/2017/11/the-road/>

- Henderson, J. C. (2005). Responding to natural disasters: Managing a hotel in the aftermath of the Indian Ocean tsunami. *Tourism and Hospitality Research*, 6(1), 89-96. doi:10.1057/palgrave.thr.6040047
- Hystad, P. W., & Keller, P. C. (2008). Towards a destination tourism disaster management framework: Long-term lessons from a forest fire disaster. *Tourism Management*, 29(1), 151-162. doi:10.1016/j.tourman.2007.02.017
- Jiang, Y., & Ritchie, B. W. (2017). Disaster collaboration in tourism: Motives, impediments and success factors. *Journal of Hospitality and Tourism Management*, 31, 70-82. doi:10.1016/j.jhtm.2016.09.004
- Kapucu, N., Hawkins, C. V., & Rivera, F. I. (2013). Disaster resiliency: Interdisciplinary perspectives. In N. Kapucu, C. V. Hawkins, & F. I. Rivera (Eds.), *Disaster resiliency: Interdisciplinary perspectives* (1st edition ed.) (pp. 1-14). New York, New York: Routledge.
- Khazai, B. (2016). *Hotel Resilient*. Paper presented at the Asian Business Form 2016, Bangkok, Thailand.  
[http://www.adpc.net/igo/contents/blogs/ABF2016/download/presentation/Day%2021%20Apr%202016/04\\_Technical%20Session%204/01\\_AsianBusinessForum\\_Hanna%20Maier\\_Bijan%20Khazai\\_Hotel%20Resilient.pdf](http://www.adpc.net/igo/contents/blogs/ABF2016/download/presentation/Day%2021%20Apr%202016/04_Technical%20Session%204/01_AsianBusinessForum_Hanna%20Maier_Bijan%20Khazai_Hotel%20Resilient.pdf)
- Kuntz, J. R. C., Näswall, K., & Malinen, S. (2016). Resilient employees in resilient organizations: Flourishing beyond adversity. *Industrial and Organizational Psychology*, 9(02), 456-462. doi:10.1017/iop.2016.39
- Kwok, A. H., Doyle, E. E. H., Becker, J., Johnston, D., & Paton, D. (2016). What is 'social resilience'? Perspectives of disaster researchers, emergency management practitioners, and policymakers in New Zealand. *International Journal of Disaster Risk Reduction*, 19, 197-211. doi:10.1016/j.ijdr.2016.08.013
- Lamanna, Z., Williams, K. H., & Childers, C. (2012). An assessment of resilience: Disaster management and recovery for Greater New Orleans' Hotels. *Journal of Human Resources in Hospitality & Tourism*, 11(3), 210-224. doi:10.1080/15332845.2012.668653
- Lee, A. V., Vargo, J., & Seville, E. (2013). Developing a tool to measure and compare organizations' resilience. *Natural Hazards Review*, 14(1), 29-41. doi:10.1061/(asce)nh.1527-6996.0000075
- Mahon, R., Becken, S., & Rennie, H. (2013). *Evaluating the business case for investment in the resilience of the tourism sector of small island developing states. Background Paper prepared for the Global Assessment Report on Disaster Risk Reduction 2013*. Retrieved from <http://www.preventionweb.net/english/hyogo/gar/2013/en/bgdocs/Mahon%20et.al.%202012.pdf>

- Malhotra, R., & Venkatesh, U. (2009). Pre-crisis period planning: lessons for hospitality and tourism. *Worldwide Hospitality and Tourism Themes*, 1(1), 66-74. doi:10.1108/17554210910949896
- Mayunga, J. S. (2007). *Understanding and applying the concept of community disaster resilience: A capital-based approach*. Paper presented at the 2007 Summer Academy Megacities: Social vulnerability and resilience building, 22-28 July, Munich, Germany. [https://www.u-cursos.cl/usuario/3b514b53bcb4025aaf9a6781047e4a66/mi\\_blog/r/11. Joseph\\_S.\\_Mayunga.pdf](https://www.u-cursos.cl/usuario/3b514b53bcb4025aaf9a6781047e4a66/mi_blog/r/11. Joseph_S._Mayunga.pdf)
- Mayunga, J. S. (2009). *Measuring the measure: A multi-dimensional scale model to measure community disaster resilience in the U.S. Gulf Coast Region*. (Doctor of Philosophy Dissertation), Texas A&M University, College Station, TX. Retrieved from <http://oaktrust.library.tamu.edu/bitstream/handle/1969.1/ETD-TAMU-2009-05-769/MAYUNGA-DISSERTATION.pdf?sequence=1>
- McAdoo, B. G., Moore, A., & Baumwoll, J. (2008). Indigenous knowledge and the near field population response during the 2007 Solomon Islands tsunami. *Natural Hazards*, 48(1), 73-82. doi:10.1007/s11069-008-9249-z
- Ministry of Business Innovation & Employment (MBIE). (2018a). *Hawke's Bay tourism summary report: April 2018*. Retrieved from <http://www.mbie.govt.nz/info-services/sectors-industries/tourism/tourism-research-data/rto-factsheets/documents/rto-factsheet-hawkes-bay-tourism.pdf>
- Ministry of Business Innovation & Employment (MBIE). (2018b). *Key tourism statistics*. Retrieved from <http://www.mbie.govt.nz/info-services/sectors-industries/tourism/documents-image-library/key-tourism-statistics.pdf>
- National Research Council. (2014). *Civic engagement and social cohesion: Measuring dimensions of social capital to inform policy* (ISBN 978-0-309-30725-3). Retrieved from Washington D.C.: <https://www.nap.edu/catalog/18831/civic-engagement-and-social-cohesion-measuring-dimensions-of-social-capital>
- New Zealand History. (2017). Hawke's Bay earthquake strikes. Retrieved from <https://nzhistory.govt.nz/hawkes-bay-earthquake-0>
- Norris, F. H., Stevens, S. P., Pfefferbaum, B., Wyche, K. F., & Pfefferbaum, R. L. (2008). Community resilience as a metaphor, theory, set of capacities, and strategy for disaster readiness. *American Journal of Community Psychology*, 41(1-2), 127-150. doi:10.1007/s10464-007-9156-6
- Orchiston, C., & Espiner, S. (2017). Fast and slow resilience in the New Zealand tourism industry. In A. A. Lew & J. Cheer (Eds.), *Understanding tourism resilience: Adapting to environmental change* (pp. 102-126). London: Routledge.
- Orchiston, C., & Higham, J. E. S. (2014). Knowledge management and tourism recovery (de)marketing: The Christchurch earthquakes 2010–2011. *Current Issues in Tourism*, 19(1), 64-84. doi:10.1080/13683500.2014.990424

- Orchiston, C., Prayag, G., & Brown, C. (2015). Organizational resilience in the tourism sector. *Annals of Tourism Research*. doi:10.1016/j.annals.2015.11.002
- Orchiston, C., Vargo, J., & Seville, E. (2012). *Outcomes of the Canterbury earthquake sequence for tourism businesses*. Retrieved from <https://resorgs.org.nz/wp-content/uploads/2017/07/tourism-canterbury-earthquakes.pdf>
- Paraskevas, A. (2013). Aligning strategy to threat: a baseline anti-terrorism strategy for hotels. *International Journal of Contemporary Hospitality Management*, 25(1), 140-162. doi:10.1108/09596111311290264
- Patel, R., & Nosal, L. (2017). *Defining the resilient city*. Retrieved from Tokyo, Japan: <http://collections.unu.edu/view/UNU:6079>
- Patel, S. S., Rogers, M. B., Amiot, R., & Rubin, G. J. (2017a). What do we mean by "Community Resilience"? A systematic literature review of how it is defined in the literature. *Currents Disasters, February 1*(1-37). doi:10.1371/currents.dis.db775aff25efc5ac4f0660ad9c9f7db2
- Patel, S. S., Rogers, M. B., Amiot, R., & Rubin, G. J. (2017b). What do we mean by "Community Resilience"? A systematic literature review of how it is defined in the literature. *Currents Disasters, February 1*(1-37). doi:10.1371/currents.dis.db775aff25efc5ac4f0660ad9c9f7db2
- Qualmark. (2013). *Qualmark hotel summary*. Retrieved from <http://www.qualmark.co.nz/index.html>
- Qureshi, A. I. (2018). Economic Impact of Zika Virus. In A. I. Qureshi (Ed.), *Zika Virus Disease: From origin to outbreak* (pp. 137-142). London, United Kingdom: Academic Press.
- Ritchie, B. W. (2004). Chaos, crises and disasters: a strategic approach to crisis management in the tourism industry. *Tourism Management*, 25(6), 669-683. doi:10.1016/j.tourman.2003.09.004
- Ritchie, B. W., Bentley, G., Koruth, T., & Wang, J. (2011). Proactive crisis planning: Lessons for the accommodation industry. *Scandinavian Journal of Hospitality and Tourism*, 11(3), 367-386. doi:10.1080/15022250.2011.600591
- Rose, A. (2006). Economic resilience to disasters: Toward a consistent and comprehensive formulation. In D. Paton & D. Johnston (Eds.), *Disaster resilience: An integrated approach* (pp. 226-248). Springfield, IL: Charles C. Thomas.
- Rose, A., & Krausmann, E. (2013). An economic framework for the development of a resilience index for business recovery. *International Journal of Disaster Risk Reduction*, 5, 73-83. doi:10.1016/j.ijdr.2013.08.003
- Rutherford, H. (2017). The public safety threat hanging over Wellington, a year after the November 14 earthquake. Stuff. Retrieved from <https://www.stuff.co.nz/national/98733780/a-year-on-buildings-remain-empty-and-the-public-could-be-at-risk>

- Sawalha, I. H. S., Jraisat, L. E., & Al-Qudah, K. A. M. (2013). Crisis and disaster management in Jordanian hotels: practices and cultural considerations. *Disaster Prevention and Management*, 22(3), 210-228. doi:10.1108/dpm-09-2012-0101
- Statistics New Zealand. (2013a). Population of Hawke's Bay Region and New Zealand. Retrieved from [http://archive.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-about-a-place.aspx?request\\_value=14018&tabname=](http://archive.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-about-a-place.aspx?request_value=14018&tabname=)
- Statistics New Zealand. (2013b). Population of Wellington Region. Retrieved from [http://archive.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-about-a-place.aspx?request\\_value=14322&tabname=](http://archive.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-about-a-place.aspx?request_value=14322&tabname=)
- Statistics New Zealand. (2016). Selected job tenure groups and median job tenure by industry of main job. Retrieved from [http://archive.stats.govt.nz/browse\\_for\\_stats/income-and-work/employment\\_and\\_unemployment/improving-labour-market-statistics/job-tenure-jun-2016-qtr.aspx](http://archive.stats.govt.nz/browse_for_stats/income-and-work/employment_and_unemployment/improving-labour-market-statistics/job-tenure-jun-2016-qtr.aspx)
- Statistics New Zealand. (2018). Population clock. Retrieved from Population Clock website: [http://archive.stats.govt.nz/tools\\_and\\_services/population\\_clock.aspx?url=/tools\\_and\\_services/population\\_clock.aspx](http://archive.stats.govt.nz/tools_and_services/population_clock.aspx?url=/tools_and_services/population_clock.aspx)
- Stevenson, J. R., Becker, J., Cradock-Henery, N., Johal, S., Johnston, D., Orchiston, C., & Seville, E. (2017). Economic and social reconnaissance: Kaikoura earthquake 2016. *Bulletin of the New Zealand Society for Earthquake Engineering*, 50(2), 343-351.
- Sydnor-Bousso, S., Stafford, K., Tews, M., & Adler, H. (2011). Toward a resilience model for the hospitality and tourism industry. *Journal of Human Resources in Hospitality & Tourism*, 10(2), 195-217. doi:10.1080/15332845.2011.536942
- Todman-Lewis, C. V. M. (2017). *Strategies for crisis preparedness of tourist destinations*. (Doctor of Business Administration), Walden University, Minneapolis, MN. Retrieved from <http://scholarworks.waldenu.edu/dissertations>
- Tourism Industry Aotearoa (TIA). (2018). *State of the tourism industry: 2017*. Retrieved from <https://tia.org.nz/assets/Uploads/State-of-the-Tourism-Industry-2017-final.pdf>
- Tsai, C.-H., Wu, T.-c., Wall, G., & Linliu, S.-C. (2016). Perceptions of tourism impacts and community resilience to natural disasters. *Tourism Geographies*, 18(2), 152-173. doi:10.1080/14616688.2016.1149875

- United Nations Office for Disaster Risk Reduction (UNISDR), Pacific Asia Travel Association (PATA), & Global Initiative on Disaster Risk Management (GIDRM). (2015). *Developing strategies to strengthen the resilience of hotels to disasters: A scoping study to guide the development of the hotel resilient initiative*. Retrieved from [http://www.unisdr.org/files/45258\\_scopingstudyhotelresilientinitiativ.pdf](http://www.unisdr.org/files/45258_scopingstudyhotelresilientinitiativ.pdf)
- Wang, J., & Ritchie, B. W. (2010). A theoretical model for strategic crisis planning: Factors influencing crisis planning in the hotel industry. *International Journal of Tourism Policy*, 3(4), 297. doi:10.1504/ijtp.2010.040390
- Wang, J., & Ritchie, B. W. (2012). Understanding accommodation managers' crisis planning intention: An application of the theory of planned behaviour. *Tourism Management*, 33(5), 1057-1067. doi:10.1016/j.tourman.2011.12.006
- Webb, G. R., Tierney, K. J., & Dahlhamer, J. M. (2002). Predicting long-term business recovery from disaster: a comparison of the Loma Prieta earthquake and Hurricane Andrew1. *Global Environmental Change Part B: Environmental Hazards*, 4(2-3), 45-58. doi:10.1016/s1464-2867(03)00005-6
- Wellington City Council. (2013). *Wellington City Council guide to earthquake prone buildings*. Retrieved from Wellington, New Zealand: [https://wellington.govt.nz/~/\\_media/services/rates-and-property/earthquake-prone-buildings/files/eq-prone-buildings-guide.pdf](https://wellington.govt.nz/~/_media/services/rates-and-property/earthquake-prone-buildings/files/eq-prone-buildings-guide.pdf)
- Wernick, D. A., & Von Glinow, M. A. (2012). Reflections on the evolving terrorist threat to luxury hotels: A case study on Marriott International. *Thunderbird International Business Review*, 54(5), 729-746. doi:10.1002/tie.21496
- Whitman, Z., Stevenson, J., Kachali, H., Seville, E., Vargo, J., & Wilson, T. (2014). Organisational resilience following the Darfield earthquake of 2010. *Disasters*, 38(1), 148-177. doi:10.1111/disa.12036

### **Chapter Summary**

This chapter presented, in journal article format, the findings and discussion of the exploratory survey of hotel staff and managers in WL and HB. The data found resilience predictors present in hotels. Identified gaps include a need to include disaster management activities in budgets, a recommendation to develop a more inclusive disaster management planning, and improve power generation redundancies. The next chapter will further evaluate the predictors in the DRFH through triangulation of interview data and secondary data.

## **Chapter Six: Interviews and Secondary Data**

The interview and secondary data collected during this research are the subject of the journal article in Chapter Six. This data was also collected with the DRFH framework as the foundation for inquiry. The article describes the details of the interview process, findings, and discussion of the data. Secondary data was added to this article to provide further foundation for the capitals in places where interview data was not present or limited. The overall objective was to have at least two sources of data for each predictor to develop a strong basis for the DRFH predictors. The combination of interviews, secondary data, and survey data were able to form a cohesive picture of each predictor and how well developed the resource is for the hotel. Chapter Six discusses only the data from secondary resources and interviews and is presented as a case study.

This article is presented in a pre-production version format and formatting complies with journal formatting specifications which vary from the overall thesis formatting. Submission of this article to the Cornell Hospitality Quarterly was completed in July 2018 with revisions requested and submitted that added to the clarity of the data. Revisions are under review. The revised article is presented in this chapter. Cornell Hospitality Quarterly discusses trends in hospitality management. Based on editorial decisions this article may publish in an alternate journal.

**Exploring Disaster Resilience Within the Hotel Sector: A Case Study of  
Wellington and Hawke's Bay New Zealand**

Brown, N. A., Feldmann-Jensen, S., Rovins, J. E., Orchiston, C., & Johnston, D. (2019). Exploring disaster resilience within the hotel sector: A study of Wellington and Hawke's Bay New Zealand. Re-submitted to Cornell Hospitality Quarterly Feb 2019, 1-40.

**Abstract**

Hotels are an important part of the tourism landscape, providing both a valued service for tourists and a significant contribution to community vitality through generating employment. Disaster resilience is important for hotels because resilience reduces downtime after a crisis, supports tourist welfare, and provides continuity of employment. The objective of this research is to explore hotel disaster resilience with a multiple methods case study approach, utilizing a capital-based framework. The case study describes key informant interviews from managers and employees at hotels in Wellington and Hawke's Bay, New Zealand. Results suggest that many resources are available for hotels, should disaster strike, and uncovers a few gaps to be addressed that will build disaster resilience. Recommendations include the need to develop an all-hazards approach to training and exercises and integrate staff fully in the process. Development of multiple resources prior to a disaster and continued investment afterwards can enhance and build disaster resilience over time.

**Key Words:** Disaster; Hotel; Tourism; Resilience; Staff; Employees; Management

## 1. Introduction

Hotels are important as places of employment, integral to a community's well-being, and as attractions for tourists that combine with other assets to enhance tourism growth. The status of a hotel's disaster resilience can have a profound effect upon the local economy (World Tourism Organization (UNWTO) & International Labour Organization (ILO), 2013). An example of hotels' effects on a tourism sector can be found in 2008 when Hurricane Omar (a Category 3 hurricane) impacted the small island state of St Kitts and Nevis (International Monetary Fund, 2009). Few long-lasting consequences of the hurricane were felt on St. Kitts, despite numerous small beach businesses being devastated. The main beachfront hotel on the island was ready when Omar hit, they had prepared strategies to limit damage, and as a result weathered the storm with only minor damage. Hotels have a responsibility to be prepared to face disaster and recover quickly (Henderson, 2007) and this hotel demonstrated their commitment by their preparations and quick recovery. The sister island, Nevis, experienced very different outcomes. While the hurricane force and strength was the same for the sister islands, the main beachfront resort on Nevis was flooded and sustained major damage. Most of this damage was attributed to the hotel's location, with respect to the shoreline, and insurers requested substantial redesign of the property to limit future flooding (International Monetary Fund, 2009). The hotel was closed for two-years causing far-reaching economic effects for not only Nevis; effects cascaded to St. Kitts and non-tourist industries, including the agriculture industry (International Monetary Fund, 2009).

The study of disaster resilience in the hotel sector has been limited. Recent resilience research has focused on the wider tourism sector (Hall, Prayag, & Amore, 2018; Orchiston & Espiner, 2017) or specific aspects of disaster management activities

(Jiang & Ritchie, 2017; Kato & Charoenrat, 2018). For example Nguyen, Imamura, and Iuchi (2018) studied hotels in three Japanese cities to understand aspects of disaster preparedness. They found barriers to preparedness included challenges in funding disaster management activities, conducting staff trainings, and communication of local hazards to guest. These studies add valuable knowledge at the intersection of disaster and tourism. However, disaster resilience requires a clear understanding of resilience to what, and resilience by whom (Martin-Breen & Anderies, 2011). This case study considers hotels in two areas of New Zealand and the context of their resilience to disaster.

Disaster resilience for hotels has been defined as “A dynamic condition describing the capacity of a hotel, together with its stakeholders (staff, guests, the local community), to assess, innovate, adapt, and overcome possible disruptions that are triggered by disaster” (Brown, Rovins, Feldmann-Jensen, Orchiston, & Johnston, 2017, p. 365). This definition does not seek to define disaster by type (e.g. earthquake, pandemic); rather, it considers available hotel resources and actions, which may overcome or limit the effects of any major disturbance. An all-hazards approach is taken in this view of disaster resilience, exploring the resources needed to regain full operational status regardless of the source of the disrupting event. Orchiston and Espiner (2017) observe that resilience building activities have applications across a variety of scales of change brought on by disaster.

The purpose of this study is to investigate aspects of a case study is to investigate components of a disaster resilience framework developed for the hotel sector with regard to two New Zealand tourist destinations (Brown, Orchiston, Rovins, Feldmann-Jensen, & Johnston, 2018). The Disaster Resilience Framework for the Hotel Sector (DRFH) breaks disaster resilience into capital groups and predictors to measure disaster

resilience. The DRFH was then the subject of an initial exploratory survey. Participants in the survey were from hotels in Wellington and Hawke's Bay New Zealand (Brown, Rovins, Feldmann-Jensen, Orchiston, & Johnston, 2019). This case study aims to further consider aspects of the DRFH through additional data types including secondary data and semi-structured interviews, using the DRFH predictors to better understand how resilient to disaster the studied hotels are, and investigate possible barriers to resilience building. While survey data provided a picture of aspects of resilience for studied hotels, the introduction of additional sources of data can allow for a more robust investigation of these hotels' disaster resilience.

The geospatial context of the case study is Wellington (WL) and Hawke's Bay (HB), New Zealand. Wellington is the capital city of New Zealand located at the southern tip of the North Island; the region captured 10% (NZD 2,166 million) of tourism spend for the year ending March 2015. Wellington is one of four gateways cities for tourism in New Zealand (Tourism Industry Aotearoa (TIA), 2018). Hawke's Bay, also on the North Island, is located on the north-eastern coast. The Hawke's Bay region captured a 3% market share (NZD 691 million) of the 2015 tourism spend for New Zealand (Ministry of Business Innovation & Employment (MBIE), 2016). Hawke's Bay is known for its warm climate and wine industry (100% Pure New Zealand, 2018),

Both Wellington and Hawke's Bay lie within New Zealand's highest seismic hazard zone, and are prone to earthquakes and tsunami from a number of different sources (Stirling, McVerry, & Gerstenberger, 2012). The results of this research highlight that earthquakes in WL and earthquakes and tsunami in HB were identified by staff as the most likely hazard events. Much of the data from interviews discusses these two hazards.

A recent focusing event occurred in November 2016. A magnitude Mw7.8 earthquake took place on the South Island of New Zealand in the Kaikōura area. The earthquake occurred shortly after midnight and was felt strongly in Wellington. As a result of the earthquake, many city blocks were cordoned off in the Wellington central business district and a few buildings required full demolition (Elwood, 2016). This experience, still rich in the memories of many hotel staff, was captured in the interviews. News of the earthquake was prolific and provided the entire country an opportunity to consider their risk factors. The interviews discussed in this study took place within twelve months of this earthquake. The analysis of interviews and secondary data finds many capital resources are being developed in advance of disasters and will be available for hotels in the study area to draw on if disaster strikes.

The combination of staff and manager thoughts and ideas adds to our understanding of how well policy and procedures are understood and integrated throughout hotel properties. Significantly, this study is one of the first to incorporate a wide variety of other employee perspectives in addition to manager input.

## **2. Background on the Disaster Resilience Framework for the Hotel Sector (DRFH)**

The DRFH's primary objective is to add to the understanding of disaster resilience in the hotel sector. The DRFH (see Figure 6.1) was developed from a systematic literature review, and describes six resilience based capitals: economic, social, human, physical, natural, cultural (Brown et al., 2018). Within the capital

groups, 18 predictors describe characteristics of disaster resilience for hotels.



Figure 6.1. Framework for disaster resilience within the hotel sector. (Brown et al., 2018)

The DRFH was developed for the study because it utilises a multi-faceted approach by describing capital groups and predictor subsets, which are specific to the hotel sector. This multi-faceted construct of resilience is substantiated in the literature (Cutter et al., 2008; Mayunga, 2007; Miles, 2015; Norris, Stevens, Pfefferbaum, Wyche, & Pfefferbaum, 2008). A community resilience framework by Mayunga (2007) included five major forms of capital, with multiple indicators to describe each capital. Development of a community resilience model by Cutter et al. (2008) included six dimensions, also with multiple variables further defining each dimension. Another study of community resilience applied 4 constructs with 29 variables to a framework for community resilience defining dimensions across human and infrastructure components

(Miles, 2015). The DRFH is designed in support of these concepts and others, analysing those measures that apply to the hotel sector and applying each to a capital group.

Staff and GMs in both WL and HB were surveyed using the predictors of the DRFH as a basis for questions (Brown et al., 2019). The exploratory survey showed predictors of resilience present for the sample group in each of the capital groups. Some of the areas where hotels had gaps in their resilience included a lack of budget for disaster management activities, limited information regarding hazards available to guests, low rate of back-up power systems, and less inclusion of staff in disaster management planning than in other types of operational plans (Brown et al., 2019). This article adds contextual detail to the previously published survey data as well as substantiation to some data collected using a case study approach. For example, the survey data report that 74% of staff were participating in disaster response exercises (Brown et al., 2019 p. 115). Deeper discussion with staff members reveals that while they are participating in fire drills regularly they would benefit from exercises using an earthquake and tsunami scenario. Many interviewees did not have a clear idea of protocols in non-fire emergencies.

### **3. Methods**

A pragmatic worldview underlies this research, recognising the value of a multiple research methods in answering some questions (Creswell & Plano Clark, 2017). The case study follows an earlier project that explored the DRFH by surveying hotel staff and managers using the DRFH predictors to develop concepts of hotel resilience more fully (Brown et al., 2019) and all data is collected to detail aspects of disaster resilience as described by the DRFH.

The case study includes qualitative data collected for this project in the form of semi-structured interviews with staff and managers from hotels in Wellington and

Hawke's Bay. The semi-structured format allows the interviewer to collect information while probing for insights (Gray, 2014) into the disaster resilience of hotels. Participants shared their views and experiences, contributing to rich and contextualized qualitative data not readily captured through quantitative surveys (Creswell & Plano Clark, 2017). The previous study provides a view of disaster resilience for hotels (Brown et al., 2019). However, qualitative data development offers an opportunity to collect details a survey cannot capture. All interviews were standardized by utilizing a single interviewer and standardised interview protocol to direct the flow of conversation (Gray, 2014). The interviews were guided by discussion prompts covering aspects of resilience. The small sample size makes generalisation across a wide audience difficult, but offers an opportunity to develop a picture of disaster resilience for these hotels but makes generalisation across a wide audience difficult.

This case study is part of a sequential research design. Participant hotels were selected based on their engagement in the previous survey (Brown et al., 2019) and the willingness of the GMs to allow staff members and themselves to continue to engage in the study. Initially two hotels from each area agreed to participate in the interviews. A third hotel in WL was solicited to achieve data saturation. The five participant hotels include local and international brands as well as hotels with rooms ranging from less than 50 to over 200. This is representative of the range existing in the two regions. Staff members were selected by GMs. The GMs were asked to provide staff members from a variety of departments to gain insights from different perspectives throughout the hotel.

Due to the busy schedules of the participants, there was limited time to conduct the interviews. Interviews were 20-30 minutes in length and took place on hotel premises, when the participant was on shift. The focus of the semi-structured questions was designed to add rich meaning to topics; however, the short timeframe did not allow

for detailed coverage of all predictors. Therefore, the interviews were not comprehensive in their exploration of all six capitals in the DRFH.

As a supplement to the interview data, archival and secondary data was collected, where possible, to further explore the DRFH. The additional data extend the information gathered from the interviews. Data sources were selected that informed predictors of resilience from the DRFH. For some capital groups (social, human, physical, and cultural) data from interviews and secondary data combine to form a dual perspective of the data. In other capital groups (economic and natural) the data is primarily secondary. For example, data from the Statistics New Zealand (governmental statistics organisation) archives was used to establish tourism's economic trends in New Zealand.

Sample size was designed to achieve replication of information. Additional validity measures included developing an interview guide to direct the conversation toward areas the interview is intended to explore, using techniques to build rapport with interviewees, and the participants were drawn from a variety of positions within the hotels to provide different points of view (Gray, 2014). The quantity and variety of participants ultimately achieved saturation of data for each of the areas. Answers to prompts and details added by participants began repeating at locations as well as across participants from the same area. To assist in gaining as much information and context as possible field notes were completed briefly after each interview and recorded in detail at the end of each interview day (Gray, 2014).

Semi-structured interviews were conducted with a total of 12 staff and managers in HB from two different hotel properties and a total of 13 staff and managers from three different properties in WL. The hotels' and staff names are not included to assist in protection of confidentiality. Additional data was collected from general managers (GMs) at 3 hotels in HB and 4 Hotels in WL; their identities are also protected herein.

The hotels ranged from private family-owned to multi-national corporate properties. Staff in HB included people from front desk, housekeeping, and food and beverage teams. In WL, staff included front desk, porters, food and beverage, housekeeping, maintenance, marketing, conventions, and human resources. In all cases, the GMs were gatekeepers and selected the interview participants. This limitation is discussed further in Section 5. Prospective participants were provided information sheets and signed an informed consent prior to the interviews. Human subject considerations were made, and the data collection process was approved by the Massey University Ethics Committee.

Initial thematic coding was derived from DRFH predictors. Further coding identified new thematic sub-categories, for instance all-hazard exercises verses single hazard focus on exercises. Both inductive analysis, discovery of new ideas and concepts outside of pre-conceptualised themes, and deductive analysis, based on predetermined concepts, were used to catalogue the interview data (Patton, 2015). For example, the DRFH predictor themes of skills and knowledge were utilised as initial codes, in the deductive analysis. Further inductive analysis of the codes added a code of all-hazard knowledge and skills based on information provided in interviews. NVivo was used for thematic and descriptive analysis. The results below are themed by capital groups.

#### **4. Results**

The six capitals are outlined in the DRFH and their presence was assessed among the hotels in both WL and HB. The semi-structured interview data was coded in relation to the six capitals and supplemented or supported with the secondary data from various published sources. These sources include government compiled data, New Zealand Crown Research Institute, GNS Science, and data and findings from other academic studies. Providing the structure used for analysis, information regarding each capital,

and results for each capital, including qualitative and secondary data follows in Sections 4.1-4.6.

#### **4.1 Economic Capital**

Economic capital describes a range of financial based resources that an organisation has available to enhance its ability to continue to operate through disruptions. Economic capital increases capacity to absorb changes and adapt in the wake of disruptive events (Mayunga, 2009). Financial condition (Biggs et al., 2012) and sustained economic growth (Global Reporting Initiative (GRI) United Nations Global Compact, & World Business Council for Sustainable Development (WBCSD), 2015) contribute to financial strength and bolster economic capital. Other sources of economic capital include business stability and employment opportunities (Calgaro, Lloyd, & Dominey-Howes, 2013).

Business disaster recovery can be affected by the existing tourism climate prior to a disaster event (Webb et al., 2002), therefore plays a role in resilience. A WL participant noted that the conventions market had experienced significant disruption, including postponements for up to two years, following the Kaikōura earthquake. International clients postponed events scheduled to take place in the near future. While the convention business remained on future books, it did leave a gap in some places for the immediate future. Solid financial strength is needed to get through economically challenging periods.

One measure of tourism climate is that of projected or actual growth in the sector. According to Statistics New Zealand (2017), guest nights in hotels have consistently increased since 2012 in New Zealand (Figure 6.2).

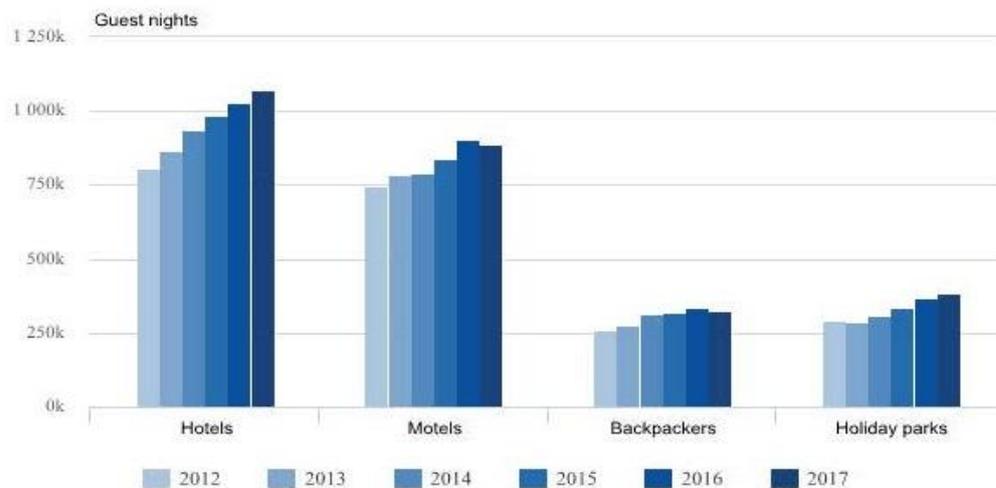


Figure 6.2. Guest nights by accommodation type, 2012-17 (Statistics New Zealand, 2017).

The accommodations sector in both WL and HB have seen consistent growth over the past three years. Both international and domestic nights have shown an increase (Figure 6.3).

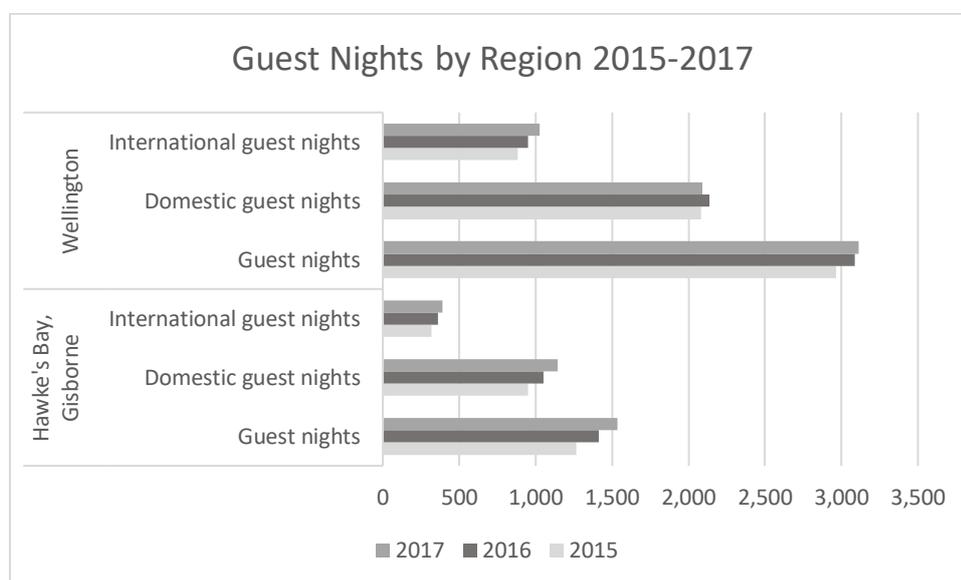


Figure 6.3. Guest nights by region 2015-2017. Adapted from Statistics New Zealand, (2018a).

Total tourism expenditures were up 10% for the year ending March 2015 and 12% for the year ending March 2016 over the previous twelve month period (Statistics New

Zealand, 2016b). These indicators illustrate a growth trend in the tourism sector, as well as growth in the study areas. Good growth patterns in tourism can strengthen a tourism business's finances.

A diversified customer base can help a hotel withstand declines in travel of specific populations. Recent data by Statistics New Zealand (2016) show there have been increases in travel to New Zealand from Asia, 9% in 2014, rising to 20% in 2016. Travel from the Americas increased from 8% in 2014 to 13% in 2016. Diversity of customer base provides greater business stability, particularly when considering disruptive events. For example, when disaster strikes one country and travellers curtail activities, unaffected tourists from other regions will continue to travel. A diverse customer base contributes to hotels' disaster resilience.

A hotel's overall resilience is tied in part to the staffs' economic resilience. Capacity to earn a living is integral to economic resilience for individuals (Sydnor-Bouso, Stafford, Tews, & Adler, 2011). The economic resources of hotel employees can provide stability to their families in times of disruption, allowing staff to be available to the hotel. Stable employment is one way to help staff members maintain a level of economic stability.

The number of people employed in tourism in New Zealand reached a six-year high in 2016 of 188,136 (Statistics New Zealand, 2016). While seasonal versus year-round employment is not distinguished, this does show a potential for long-term employment. One participant in WL said that when a hotel had to close for remodelling, the hotel owners continued to pay salaries and helped secure new jobs, ensuring income continued during the disrupted period. Hotel owners' attention to the importance of continuous income suggest that employees are valuable commodity for hotels.

Consistent income helps people build economic resources and helps to ensure availability of staff

## **4.2 Social Capital**

Social capital predictors include social networks, connectedness, relationships, and trust (Calgaro et al., 2013). The DRFH highlights social networks, social cohesion, capacity to work as a group, and trust as contributors to social resilience (Brown et al., 2018). Interviews conducted in HB and WL with both employees (N=25) and managers (N=5) explored aspects of social capital and their contribution to disaster resilience. The findings are highlighted below.

Hotel staff members often described feeling close to fellow employees and respectful to managers. One participant described their workplace saying, “This place really honours the staff and we are like a family here.” Another WL hotel participant said, “There was really a family feeling after Kaikōura, to see everyone working together was so reassuring.” Businesses that work on internal relationships with staff find that staff are more willing to go ‘above and beyond’ when needed (Hall et al., 2018).

Staff (N=25) and managers (N=5) at all the hotels indicated they felt it their responsibility to ensure guest safety. The warden, usually the duty manager, is charged with guest safety in an emergency, but everyone (N=30) agreed they felt a duty to help and support each other wherever they could. One participant stated, “I try to be proactive, when the alarm goes off I perform my assigned task, but then I run all the floors on my way out to assist with evacuations where I can.” A sense of community and responsibility contributes to the disaster resilience (Cutter et al., 2008; Finnis, Johnston, Becker, Ronan, & Paton, 2007; Kwok, Doyle, Becker, Johnston, & Paton, 2016) and many interviewees commented on their feelings of responsibility for safety toward their fellow staff and the guests.

Collaborative, flexible environments contribute to social capital and resilience (Cochrane, 2010). A WL participant described their hotel's performance following the Kaikōura earthquake, "Everyone really pulled together as a team." The success in handling the earthquake disruption has given WL hotel staff confidence that as a group they can handle future events.

Making decisions and acting under pressure are all important to capacity to work as a group (Ritchie, 2004). A WL participant said, "I was scared for about 5 seconds (during the Kaikōura earthquake) and then training and natural instincts kicked in. I was on the phone with a guest and stayed on the line and calmed her through the whole shake." Another WL participant said they were off shift at the time but stayed on at the property for hours to help the small on shift staff. There was a general willingness from interview participants to come into work during a disaster, even if they were not rostered on, to pitch in and lend assistance when needed. In HB, staff also pulled together following the news of the Kaikōura earthquake. Although no effects from the earthquake disrupted activities in HB, one manager voluntarily arrived at the hotel to assist the overnight staff member if issues were to arise.

Trust is integral in understanding social resilience (Kwok et al., 2016) and therefore a predictor of the presence of social capital. Trust was explored in interviews in WL and HB. The size of the organisation was a factor for some participants, they were not sure the parent organisation could understand and respond to local issues. One participant in HB said:

"A large company can cause slow processes for getting new procedures and it's a long way to filter down to our front line. Lots of different issues (outside of building disaster resilience) could cause lack of priority for those (disaster oriented) issues here."

This comment considers organisational size as a possible barrier to building resilience and the participants' recognises a lack of trust in the organisation's ability to be flexible and targeted. Large hotel chains may have organisational structures that make quick actions difficult (Brown et al., 2017). However, large organisations are also more likely to have disaster plans in place (Hystad & Keller, 2008).

### **4.3 Human Capital**

Quality of life (Cutter et al., 2008), positive attitude (Hall et al., 2018), and perceived control are contributors to resilience (Wang & Ritchie, 2010) and are reflected as health (which includes well-being) in the DRFH. Another aspect of resilience draws upon prior experience with disaster. Previous experience provides increased psychological resources to deal with future stresses (Hall et al., 2018). Additional predictors include knowledge and skills related to disaster preparedness and response and some aspects of business continuity. Interviews provided rich dialogue for consideration of how human capital contributes to disaster resilience for hotels.

The concept of perceived control speaks to a person's confidence that their actions will affect circumstances. In WL, all staff interviewed (n=13) felt they had the ability to use protective actions in a future disaster and keep guests safe. In HB, many of the staff felt the same confidence (n=10) with the exceptions being staff concerned about their exposure to the coastline in an event of a tsunami, and whether there was access to high ground nearby. The high confidence levels provide insight into the employees' perceived control of future situations.

Participants in both WL and HB described fire drill exercises twice yearly as providing a good foundation for emergency procedures. The processes were similar for all hotel sites within the study- with a central meeting point, establishment of a leader for the event (warden), assignments handed out, and staff working to ensure floors were

evacuated and clear. Almost all staff (HB n=11; WL n=13) were very clear about their own roles and responsibilities in a fire scenario. This knowledge extended to all departments interviewed.

When asked about specific safety protocols for earthquakes or tsunamis, staff were less confident in procedures and actions to take. In both WL and HB staff commented they would like to participate in exercises for different types of disasters, like an earthquake or tsunami. One participant commented, “The more drills you do the more confident you become...more drills will give all of us experience to draw on when we really need it.” Understanding the different protective actions that different disasters may require is important for staff.

Self-organisation, as part of adaptive capacity, is paramount to continued operation after a disaster (Hall et al., 2018). Self-organisation refers to ability of hotel staff to adapt to changing circumstances and continue to function effectively, without specific directions. Hotels demonstrated this capacity immediately following the Kaikōura earthquake. Although the earthquake occurred shortly after midnight, these employees felt they could be of help to the small overnight staff, so they voluntarily reported to work. One participant commented that they could not keep themselves from going in, it was “unthinkable”.

The volunteering of employees to come into their hotels post-Kaikōura occurred in HB too. Although the Kaikōura earthquake was far from HB (574 km), there was media attention in the area. In HB, one participant said, “Kaikōura earthquake messages were very confusing so I came in to support the on duty staff, I wouldn’t want to be alone with that going on.”

Staff are an important resource in disaster management (McCool, 2012). Many participants (HB n=10, WL n=7) said they could easily get to work if they had to walk.

Additionally, most of those living nearby (HB n=8; WL n=6) also said they were willing to go in straight away after an earthquake to help. Remaining participants prioritized family that needed care first. Participants heading in to work in WL after the Kaikōura earthquake reported walking, riding their bike, and using a scooter. Availability of staff, and their ability to get to the hotel, is important for disaster resilience. In a study of Greater New Orleans hotels following the 2008 Hurricane Gustov, "...42% (of hotels) lost the minimum base of employees to continue providing full guest service" (Lamanna, Williams, & Childers, 2012, p. 210). Disaster resilience will require a base number of employees available to be operational and hotels sometime rely on the goodwill of their staff to deploy to work during a disruptive event. The participants indicate a relatively small number of volunteer staff (1-4) can make a big difference in managing in the wake of a disruptive event. While some staff need to be at home with their families, those that were available made a difference in operations that night post-Kaikōura.

Unusual events may call for new approaches for everyday operations to maintain customer satisfaction. In WL, two hotels offered guests complimentary snacks and beverages on the day following the Kaikōura earthquake. Comments in Trip Advisor mentioned how generous one of the hotels was in providing complimentary food and beverages during the time following the earthquake. Online reviews are becoming more influential to a hotel's image and bottom line (Kim, Lim, & Brymer, 2015).

Hotel managers state that a guest book in each room contained safety information for the guests, and is the primary safety information available to guests. The types of information varied from hotel to hotel. A fire safety evacuation map was also reported to be on each guestroom door. One hotel manager described a recent addition of an I-Pad that contained details of protective actions to take in different emergencies. In WL

some participants commented that there are so many variations of what can happen, it is too much information to give to guests. A participant pointed out that guests are distracted by many things and, "...90% of people on holiday don't expect anything bad to happen." The attitude observed in guests, by staff, may be due to optimism bias, which describes people's inclination to underrate their exposure to harm in comparison to others (Meyer & Kunreuther, 2017). Nevertheless, all hospitality industry organisations have a responsibility for the welfare of the guests (McCool, 2012).

Knowledge of hazards and what to do when disaster strikes is vital (Cheung & Law, 2006). Many staff in WL and HB recognised that guests are from many different places and are unfamiliar with events like earthquakes. One participant described they felt it was their job to assure the guests the building was safe and built according to the appropriate codes/standards. Another participant said guests from other countries are often alarmed by even small earthquakes and need reassurance of the hotel's ability to withstand a shake. The understanding of the guests' potential lack of information led to all WL hotels, in this study, informing guests checking in (during the weeks following the Kaikōura earthquake) of actions and safety procedures to adopt during an earthquake. The enhanced earthquake information was provided verbally or on a one sheet handout and continued for 4-6 weeks.

One participant hotel had a well-developed induction process that included emergency processes; another hotel was developing a more thorough induction processes at the time of the interview. New employees in both locations confirmed knowledge of important life safety measures. One employee at the hotel with robust induction training in place, with only a month of experience, had complete knowledge of emergency plans, where to report, and what to do in case of emergency evacuation. This participant also knew where to go in a tsunami.

A new staff member, from the hotel developing procedures, suggested helping guests and getting quickly away from the building “made sense” but did not know any hotel guidelines or policy for emergency procedures. This participant knew where high ground was in the event of a tsunami and suggested that informing guests about the safest places to go in an evacuation, and how to help guests with mobility issues should be a priority for new plans being developed. Duty managers have a list of disabled guests and they are a priority in evacuations, staff at three hotels commented. Some staff at one hotel were unclear about how to help guests with mobility issues in the event of an evacuation. A clear understanding of processes and procedures for disabled guests in emergencies does not exist throughout the hotels.

Participants in WL confirmed that emergency action procedures are part of the induction process. A best practice identified at a property in WL, described emergency procedures are explained to a new staff member during induction, and then eight weeks later a refresher is given. The review is done in recognition of the large volume of information given in the first induction. Managers and staff agreed on what was learned during induction showing an important link between managers and staff communications and understanding.

Hotel leadership is often stretched over a number of organisational tasks and has little time available for disaster planning (Orchiston, 2013). The multi-tasking nature of management was confirmed by one hotel manager who relayed that efforts to revamp the disaster planning had been ongoing for months and progress was not where he/she hoped it would be at this point. The manager suggested that enlisting assistance from staff may get the project more forward momentum.

Previous experience with disaster has been linked to disaster resilience (Ostadtaghizadeh et al., 2015). Many of the staff in both locations had experience in

previous disasters, including the Christchurch earthquake sequence in 2010-2011, and tsunami and earthquakes in other counties. A number of participants had emergency preparations in their home, and some in their car. Of the staff interviewed (N=25) only 5 (WL n=3; HB n=2) reported no preparations at all.

Both HB and WL have risk from tsunami. Based on a tsunami evacuation map produced by GNS Science, 11 of 27 hotels in WL are in an orange zone (mid-level risk) (Horspool, Cousins, & Power, 2015). Interviews at one hotel located in an orange zone for tsunami evacuation revealed participants with a lack of concern for tsunamis; yet, they were aware of drop, cover, and hold procedures for earthquakes. A participant at that property said, “We don’t worry about tsunami here.” This gap in risk awareness will be discussed further in the discussion (Section 5).

Business continuity includes organisational awareness of priorities following a disaster and plans to manage operations (Lee, Vargo, & Seville, 2013). A hotel participant in WL said guests wanted lots of information constantly, even when no news was available. A need for constant updates was confirmed in a study of the 2004 tsunami. Guests all wanted as much information as they could gather (Cheung & Law, 2006). One participant in WL highlighted a lesson learned following the Kaikōura earthquake. The participant said, post-Kaikōura earthquake, sample skeleton communications for guests and media will be available on a cloud storage site for use in a variety of disaster scenarios to allow for quick reaction by communications staff. Cloud service access provides value if communications staff cannot immediately come to the property, due to unforeseen circumstances, they may still begin critical communications if internet service is available.

Guest reservation systems are complex and interconnected with many travel partners. A reservation staff member relayed a gap in the guest data available. “I don’t

have enough information about the guests to contact them in many cases. Sometimes we only have tour operator details and have to trust they will be able to reach the guest.” In the case of one hotel closed for renovation, the participant described that guests showed up months into the renovation with no information from their reservations agent that the hotel was closed. After the Kaikōura earthquake some guests hesitated to go onward and kept their rooms; others changed plans and needed rooms. The participant commented that the ease of adjusting reservations was hampered by the inability to connect easily with guests and verify their plans.

#### **4.4 Physical Capital**

If a hotel can remain operational post-disaster, the prospect exists for remaining economically viable as recovery efforts begin. Considerations like level of seismic resistance and evacuation planning are important to disaster resilience (Cutter et al., 2008). This section looks at data in relation to physical capital, which includes life safety considerations and business continuity related to infrastructure and equipment components.

The protection of life is perhaps the most important function of a hotel when faced with disastrous circumstances. Life safety includes building infrastructure and availability of evacuation pathways when needed. The vast majority of buildings in this study meet or exceed current New Zealand building safety standards.

Staff in WL were very confident in their buildings earthquake resilience. At two of the three hotels, every participant interviewed volunteered that their buildings were greater than 100% of building standard with great pride. Managers in WL also felt the properties had the strength required to withstand natural hazards.

Taller buildings were a bit challenging in the hours following the Kaikōura earthquake. Staff at one hotel reported guests who headed downstairs were knocked

around a bit. In addition, the elevators were locked down- so staff had to go up and down the stairs many times in the hours before the building was inspected to provide for some guests needs. One participant in WL said they were exhausted from the trek up and down to see to the needs of guests who chose to stay in their rooms after the shake. A buildings height may have some bearing on guest services provided in some disruptions.

The city of Wellington produced a list of buildings that need strengthening to be at a minimum 34% of current building standards (Wellington City Council, 2017). The list is publicly available; two WL hotels are on the list, but neither was part of the study interviews. Hawke's Bay has no similar list currently available. Robust building standards add to the resilience of those communities (Cutter et al., 2008).

Hawke's Bay staff at one property reported the building was strong and fit to withstand shaking or tsunami. At another HB hotel, staff did not express confidence in the building per se but did have a solid idea of the evacuation procedure in either an earthquake or tsunami event. In both locations, staff expressed life safety for themselves and guests as a priority should an earthquake happen. Employees in both these HB locations also recognised a large earthquake may be a precursor for a tsunami and had high ground evacuation concepts ready to implement, including taking guests with them. One participant commented that a concern was how they would get information for evacuation if a tsunami were caused across the ocean, for example in South America.

As mentioned in the Social Capital (Section 4), WL staff and managers had little concern for tsunami and did not know if the hotels were rated for vertical evacuation in tsunami. In HB consideration had been given for the building's structure in tsunami and staff had strategies which included 1) seek higher ground and, 2) evacuate up, depending on the circumstances and property. Significantly, the strengths and limitations of the

physical structure are important to ensure the correct actions are taken based on the type of disaster event.

Properties in the study had systems and equipment in place to back-up critical data and provide hard copies of things like guest lists and data. Front office staff were taught the back-up procedures during induction. Hotels backed-up guest information and printed it at least once each day. One hotel backed-up every 2 hours and placed data in a folder ready for an evacuation roll call if needed.

#### **4.5 Natural Capital**

Natural capital looks at the intersection of humans and the natural environment and how they interact to improve resilience to disaster (Brown et al., 2018). Factors include the natural hazard risk environment and how exposed hotels are to that risk. A 2016 report on long-term fiscal position by the New Zealand Treasury highlights the importance of New Zealand's natural capital (The Treasury, 2016). In the report, natural capital was included as an important key to intergenerational well-being. The importance of natural capital in attracting tourism to the country is also recognized in this report. A focus on improving the management of New Zealand's natural resources is a report recommendation. The emphasis is important because New Zealand's tourism draw is largely based on nature-based activities (Espiner, Orchiston, & Higham, 2017). Therefore, considering the specific effects hotels may have on the natural environment is important to building and maintaining natural capital.

Natural hazard risk in the two New Zealand study areas include earthquake, tsunami, cyclones, volcanic activity, landslides, floods, and climate change. Both areas have regional organisations actively researching and working on plans to decrease their risk from natural hazards (Civil Defence Emergency Management\_Hawke's Bay, 2018; Greater Wellington Regional Council, 2016). These organisations help add to the local

knowledge of the environment. Additionally, the organisations recommend actions to take, allowing the human/ nature interface to be increasingly better understood.

The coastal location of both area's central business districts is a significant vulnerability. Climate change, cyclones, flooding and tsunami are all factors for sea level locations. The tsunami evacuation zone maps for the areas were used to determine sea level hazard exposure (Greater Wellington Regional Council, 2018; Hawke's Bay Emergency Management Group, 2018). Evacuation maps describe level of risk in zones with red being the highest threat from water inundation and yellow being the farthest from possible water inundation. In WL 48% of hotels are outside the evacuation zone, 11% are in the yellow zone, 41% are in the orange zone and no hotels are in the red zone. In HB 39% of hotels are outside the evacuation zone, 33% are in the yellow zone, 28% are in the orange zone, and no hotels are in the red zone. Both areas have access to higher ground if needed. Nature, in these two areas, is both a vulnerability, due to risks, and contributes to capital based on higher ground topography.

Regulating activities that affects the New Zealand environment falls under the jurisdiction of the Environmental Protection Authority (EPA) (Environmental Protection Authority (EPA), 2018). The organisation manages natural resources, monitors organisms for interactions with the environment, and regulates hazardous substances, emissions, and marine activities. Organisations that work to increase natural capital increase disaster resilience of the community (Mayunga, 2009). Hotels can consider the EPA activities a contribution to their natural capital.

#### **4.6 Cultural Capital**

Cultural capital is one variable that will differ from culture to culture, making the development of widely generalizable capital predictor challenging (Ostadtaghizadeh et al., 2015). Cultural capital is the local knowledge, competencies, and customs that

influence local social systems (National Institute of Standards and Technology (NIST), 2015; Patel, Rogers, Amiot, & Rubin, 2017). The inclusion of cultural capital provides an opportunity to understand disaster resilience within the context of those characteristics.

A resilience strategy was produced in WL as part of their participation in the Rockefeller Foundations 100 Resilient Cities program. The strategy seeks to bring together communities, the public and private sector to develop a resilience culture (Wellington City Council, 2017). This more recent effort to strengthen resilience is not novel to New Zealand.

In interviews with participants, all had basic knowledge of what to do in natural hazard situations like an earthquake or tsunami. One participant mentioned, “We all learn drop, cover, and hold in school from the time we are young, and now long, strong, and be gone for tsunami is out there.” The cultural integration of life-saving measures is a valuable asset to members of the community and hotels benefit from the widespread education efforts. Yet, as mentioned above (Human capital Section 4.3), in Wellington knowing what to do may not be enough; the hotel staff interviewed did not recognise the real potential for a tsunami in the central business area.

Guests have a disadvantage in a disaster due to their lack of local cultural capital. Hotel managers all mentioned a feeling a responsibility for the safety of staff and guests. One manager said, “Guests may have no idea what to do, we have a duty of care for our guests.” Tourists have been recognised as vulnerable in disasters based on lack of knowledge and familiarity with the local area (Johnston et al., 2007; Lamanna et al., 2012)

Feelings of responsibility and duty to guests was widespread among study participants. Staff shared this feeling of responsibility. One participant said, “It is our

responsibility as human beings. I would never leave a guest stranded. I would roll them on a sheet and drag them out if I had to, to ensure their safety.” The attitude of social responsibility is consistently found in the data gathered.

Conducting twice-yearly, fire drills is both an aspect of New Zealand’s safety culture and a New Zealand Fire Service requirement for hotels (New Zealand Fire Service, 2015) (See Section 4). These exercises are another example of the culture of safety New Zealand promotes.

Community culture may be at work in the differences in recognising tsunami threats of WL and HB. Interestingly, HB has visible signs of their previous earthquake in 1931 everywhere. The 1931 Mw 7.8 earthquake caused so much damage in HB that large numbers of buildings were rebuilt at a time when Art Deco architecture was popular (New Zealand History, 2017). The very incident that caused catastrophic loss in 1931 has become a draw for tourists in modern times. As such, the members of the tourism community are well acquainted with the knowledge of the past earthquake. One participant in HB stated, “We are surrounded by reminders of the big quake every day so maybe we think about earthquakes and even tsunami more than other places.” Walking through the town observing signs announcing information on the earthquake and buildings for tourists further illustrates the constant reminder present in HB. The remembrance of local hazard risk provides for a special local knowledge that enhances disaster resilience in HB.

The following Table 6.1 provides a summary of findings. Based on the predictors many capital resources are available for hotels to draw on in a disaster. Some gaps have been identified and will be discussed below (section 5).

Table 6. 1

*Summary of Findings*

<b>Economic Capital</b>
<ul style="list-style-type: none"> <li>Financial strength: Tourism industry experiencing growth including increase in hotel guest nights</li> </ul>
<ul style="list-style-type: none"> <li>Diversity of income: Increase in diversity of customer bases</li> </ul>
<ul style="list-style-type: none"> <li>Staff economic resilience: Growth in tourism jobs</li> </ul>
<b>Social Capital</b>
<ul style="list-style-type: none"> <li>Social cohesion/connectedness/networks: Close inter-organisational networks. Higher in WL post-Kaikōura</li> </ul>
<ul style="list-style-type: none"> <li>Capacity to work as a group: Demonstrated thinking on their feet and pulling together</li> </ul>
<ul style="list-style-type: none"> <li>Trust: Some concerns for organisational and management priorities but confidence in plans</li> </ul>
<b>Human Capital</b>
<ul style="list-style-type: none"> <li>Health and wellbeing: Medical insurance available and high perceived control of possible disruptions</li> </ul>
<ul style="list-style-type: none"> <li>Skills: Employees have some experience in fire evacuations exercises and special trainings (e.g. first aid). Need all-hazards skills and attention to disabled guest processes</li> </ul>
<ul style="list-style-type: none"> <li>Capacity to adapt: Employees are ready willing and able to assist in disaster. Managers showed creative adaptation but need to consider guest satisfaction when possible</li> </ul>
<ul style="list-style-type: none"> <li>Knowledge: Staff and managers have an understanding of basic evacuation protocols. There is a lack of all-hazards protective action knowledge.</li> </ul>
<ul style="list-style-type: none"> <li>Business continuity: Critical data is handled with disruptions of service considered. Pre-disaster communications for emergency response are not commonly developed. Strategies for contacting guests need refinement.</li> </ul>
<b>Physical Capital</b>
<ul style="list-style-type: none"> <li>Life safety: Building standards are being met. Evacuation routes are well known. Building height factors into service levels. Tsunami information not well socialised in WL.</li> </ul>
<ul style="list-style-type: none"> <li>Business continuity: Critical data protection is integrated into basic processes</li> </ul>
<b>Natural Capital</b>
<ul style="list-style-type: none"> <li>Hotel's exposure to natural hazard risks: Natural hazard risk is considered by research and policy organisations and protective actions are available in the natural environment (e.g. higher ground)</li> </ul>
<ul style="list-style-type: none"> <li>Hotels' effects on the local environment: Organisations dedicated to natural environment protection are present. Sustainable activities are being considered and research is ongoing.</li> </ul>
<b>Cultural Capital</b>
<ul style="list-style-type: none"> <li>Cultural influence and knowledge: Safety culture exists. Duty of care for guests in integrated in culture. Some lack of cultural knowledge may influence lack of tsunami strategies in WL.</li> </ul>

## 5. Discussion

Hotels have different roles post-disaster than other tourist organisations. For example, in Vanuatu following Cyclone Pam, hotels and resorts that were operational provided the needed accommodations for humanitarian workers and military personnel arriving in response to the cyclone (Neef & Wasi, 2017). Another example is found in the 2018 mudslide in Santa Barbara, California. The main highway was impassable due to the slide. The local hospital housed 200 employees in local hotels while the highway was closed (Yamamura & Welsh, 2018). The ability of hotels to remain operational during a disaster response is important to the community. Local employment is also important to a post-disaster community. In the aftermath of the 2004 Indian Ocean tsunami some of the hardest hit were those employed in the tourism sector who were left without jobs (Calgaro & Lloyd, 2008). Disaster resilience has been linked with corporate social responsibility for hotels, as both a critical part of community's economic infrastructure and as a part of the disaster response system to house disaster response workers (Dobie, Schneider, Kesgin, & Lagiewski, 2018).

New Zealand's tourism growth trends are shown by guest nights and numbers of people employed (Section 4.1). The positive growth can indicate financial strength for businesses in the tourism sector. Diversity of the tourism base is a positive for disaster resilience. Growth in Asian and Americas travellers means less dependence on, for example Australian tourist. The more diverse economic opportunities are, the more likely to decrease the impacts of disaster (Mayunga, 2007). The predictors studied all show economic capital is likely available for these hotels in WL and HB. Continued growth in the sector can only improve the economic capital for the hotel sector.

Social capital was also found to be strong in the study area. Hotel staff interviewed provided a picture of closeness and dedication to each other and guests. The feeling of

cohesion was more pronounced in WL where staff had a recent event to draw from that required a demonstration of their support of each other. Participants and managers alike stayed on shift, volunteered by arriving on property to assist, and showed their commitment to the group. Examples of their ability to self-organise were demonstrated. Following the Kaikōura earthquake staff on property worked to assure guests, create a safe gather location for those who choose to come to the lobby area, and improvise food and beverage in some cases. Additional volunteer staff arrived and inserted themselves where they could be useful. The team approach (Faulkner, 2001) and ability to act under pressure (Ritchie, 2004) show resilience to the event. Social capital showed itself as a resource that grows with use thereby increasing the available capital while using the resource.

Trust was expressed by staff even as they recognised limitations may be inherent in large organisations. Some staff expressed concern regarding the agility of their larger organisations. However, the staffs' (n=23 of 25) faith in their organisations' plans and in their own ability to carry on in a disaster demonstrates the trust they have placed in their employers and fellow staff members. The confirmation of abilities demonstrates a strong belief in perceived control (Wang & Ritchie, 2010) and networks of trust (Sydnor-Bousso et al., 2011) among the staff. Social capital stocks are present, and the Kaikoura earthquake seems to have worked to further increase those hotels social capital.

The recent experience of the Kaikōura earthquake and other staff members' disaster experience contributes to human capital adding to knowledge (Brown et al., 2018) and the overall resilience of these organisations (Ostadtaghizadeh et al., 2015). Similarly, hotel and resort managers in Vanuatu reported that they improved their facilities' ability to withstand disasters in the wake of Cyclone Pam in 2015 (Neef &

Wasi, 2017). Additionally, in post-cyclone interviews many in Vanuatu commented the event was a call to action for them and they will be much better prepared in the future (Neef & Wasi, 2017). In WL, one participant discussed that the Christchurch earthquake was really “their (Christchurch’s) earthquake” and did not change much in Wellington, however the Kaikōura earthquake really woke people up and got people thinking about disasters and increasing their efforts for preparedness. A WL manager described the Kaikōura earthquake as a call to action for considering and implementing new ideas and strategies which highlights how previous disaster experience can influence disaster management activities and build resilience.

The interviews exposed a tendency of staff in WL to discard tsunami risk. As mentioned in Section 4 participants working in hotels in an orange evacuation zone had no concern for actions to take to ensure safety if a tsunami were to occur. The lack of preparation for low-frequency events like tsunami is not new. In a study of guest safety following the 2004 Indian Ocean tsunami, hotels were found to have no plans for evacuation of guests if a tsunami was threatened (Cheung & Law, 2006). A study of hotels in Okinawa, Japan, found that all hotels were prepared with basic evacuation plans based on fire due to regulations of fire departments, but less than 50% has tsunami specific plans (Takamatsu, 2014). Staff education on the full range of possible risks could provide the increased knowledge needed to be resilient to a variety of threats.

Optimism bias is people’s tendency to under-rate their exposure to risk. A possible remedy for this is communications that enhance belief in a hazard’s likelihood to occur (Meyer & Kunreuther, 2017). Increased hazard risk communication is not traditionally considered for the tourist industry; they are not in the business of promoting possible dangers and do not want to frighten guests (Rittichainuwat, 2013). A study of guest perceptions by Drabek (2000) found that 88% of guests surveyed wanted a full spectrum

of information on disaster evacuations and procedures. One suggestion by Cheung and Law (2006) is that guest information on the back of doors should be more comprehensive (beyond just fire evacuation routes). Once in place the front desk staff could inform guests of the enhanced data's location while checking in the guest. Improved visibility of information may allow guests a chance to review details more easily. Again, training staff on actions related to a wide variety of possible disaster will improve the hotel's overall disaster resilience. Many staff commented that they felt they would benefit from exercises geared toward earthquake or tsunami.

Some potential issues have elusive solutions. For example, all the staff agreed that if a disaster occurred in the middle of the day, it would be very difficult to ascertain guest safety, as this time of day is when most guests are out of their rooms and enjoying the surrounding sights. Recognition of potential obstacles and outlining priorities in advance can help an organisation be more resilient (Lee et al., 2013). For hotels, understanding what they can and cannot focus on allows for pre-disaster planning to be targeted and effective.

One valuable lesson learned post-Kaikōura earthquake applies to business continuity. Pre-planning of the types of communications that may be needed post-disaster (for guests, staff, travel partners, and media) and creating skeletons of those communications in advance can save critical time in the precious time following an incident. Hotels may need prepared advertising, press communications strategies, and a media communications plans (Ritchie, 2008). Identifying types of disasters, audiences, and communications methods in advance can help to develop core messages useful in an event (Bland, 2013). Additionally, communications can be more thoughtful and effective by considering the content in advance instead of creating hurried communications instruments. Included in advanced preparatory work is the

development of contact lists as well (staff, media, and suppliers). Both cloud back-up and printed copies can assist in getting critical information out in a timely and efficient manner.

Both Hawke's Bay and Wellington are exposed to natural hazards that include earthquakes, tsunami, and changes in sea level. Important to disaster resilience is of course exposure to natural hazards (Khazai, 2016). Limiting short-term and long-term effects requires research, monitoring, and careful consideration of risks and possible measures to decrease future harm to both humans and the environment. New Zealand has taken strides with the creation of agencies working toward understanding and educating hazard risk. Wellington, as one of Rockefeller Foundations' 100 Resilient Cities is investing time and money in building resilience for all members of the community. Hawke's Bay also recognises the risks and continues to find ways to work on some of these difficult problems. For example the Hawke's Bay Emergency Management group has a web page for residents to put in their address to ascertain tsunami risk (Hawke's Bay Emergency Management Group, 2018).

New Zealand's safety culture shows in responses to questions. The last seven years' exposure to earthquakes may have improved people's appetite for understanding of hazards and safety responses. Regular fire drills requirements and messaging about what to do in different disaster scenarios has had a positive effect on staff in hotels. Participant hotels have stocks of cultural capital that are helping build resilience to natural hazards.

Disabled guests need special consideration in disasters that require evacuation. Three hotel's staff mentioned the importance of better understanding how to help disabled guests in evacuation. The special consideration of the most vulnerable people should be standard for all properties. In the case of tsunami, hotels need to consider in

advance the time that may be available between warning and the first wave to best plan how to ensure that people with special needs can reach the evacuation area (North-Eastern Atlantic and Mediterranean Tsunami Information Centre (NEAMTIC), 2012). In other types of disasters, when warnings are not available, hotels need to consider the extra time and effort needed for evacuation of disabled guests and plan for those circumstances.

The study has some limitations. Hotel managers as gatekeepers provides access to employees but also imposes limits on the data. Previous studies have focused on manager input which leaves this connection unexplored (AlBattat & Ahmad, 2015; Nguyen et al., 2018; United Nations Office for Disaster Risk Reduction (UNISDR), Pacific Asia Travel Association (PATA), & Global Initiative on Disaster Risk Management (GIDRM), 2015). Unrestricted access to employees could provide data to improve the DRFH and enhance understanding of resilience within the hotel sector.

The short interview format (20-30 minutes) was a limitation which resulted in some topics in some interviews being less developed. Staff members were on shift during interviews so the short format was needed to meet operation requirements. While the intent was to use a semi-structured interview format, the short interview structure inhibited the usual flow of a semi-structured format, resulting in a more structured data set result. An opportunity to interview participants for a longer time period could have provided richer data on the full array of predictors within the DRFH.

The small sample size makes generalisation difficult. While these lessons learned may also apply to other hotels in the region and outside the region more data from additional hotels would be needed to develop conclusions and recommendations for the wider hotel sector.

The circumstances of recent events in New Zealand make the findings based on these two sectors possibly unique in comparison to other areas of the world. Further research in areas that have not experienced disasters in recent years could show different levels of capital and different gaps. In addition, areas with different types of disaster concerns may provide excellent data for improving the DRFH as an all-hazards tool. The following table (Table 6.2) offers a list of key finding and suggested actions for the capital groups. These suggestions pose ways forward for building disaster resilience for the hotels in this study.

Table 6.2

*Recommendations*

<b>Economic Capital</b>
<ul style="list-style-type: none"> <li>• Continue to work towards a diversified customer base</li> <li>• Consider ways organisational structure may inhibit flexibility in disaster and address these</li> </ul>
<b>Human capital</b>
<ul style="list-style-type: none"> <li>• An all-hazard approach needed to ensure correct actions are taken based on disruption. This includes risk assessment and trainings/exercises. Employees need to be an integrated part of this process and guests with disabilities need to be considered specifically.</li> <li>• Pre-disaster communications plan developed for emergency response needs. All-hazards approach with communication skeletons for staff, guests, media, and travel partners, emergency contact list development and all accessible in hard copies and cloud-based formats</li> </ul>
<b>Physical Capital</b>
<ul style="list-style-type: none"> <li>• Develop all-hazard protective action plans and assess buildings' strengths to be used in different scenarios</li> <li>• Business continuity: Critical data protection is integrated into basic processes</li> </ul>
<b>Cultural Capital</b>
<ul style="list-style-type: none"> <li>• Build all-hazards safety culture within the organisation and consider guest and employee safety protocols based on multi-hazard scenarios.</li> </ul>

## 6. Conclusion

Hotels in the study have capital resources to draw from to help overcome disruptions and disaster. Some gaps have been identified; Table 2 provides a summary of key recommendations. This research has provided additional analysis of predictors found in the DRFH (Brown et al., 2018). It is vital to understand predictors of resilience when developing strategies to build disaster resilience. These interviews and secondary data give a deeper understanding of the DRFH. Furthermore, the recommendations provide a tool for hotel managers in these areas to utilise as they work toward building disaster resilience.

The study provides a set of recommendations for hotels to advance building disaster resilience. These recommendations include the need to formalise disaster management as a budget priority and to use an all-hazards approach for all disaster management activities. The theme of the importance of an all-hazards approach is particularly prominent in the data. Interviews revealed staff need more information and practical experience with organisational actions beyond the mandated fire hazard exercises. The New Zealand context may have unique features, including recent focusing events. The findings of this case study may not be generalisable; however, lessons learned may be valuable to a wider audience when considering disaster resilience concepts in hotel's operations. Foundational to this study is the need to understand risks, who all the stakeholders are, and to get as many stakeholders involved in the discussion and creation of solutions as possible.

## References

- 100% Pure New Zealand. (2018). Hawke's Bay. Retrieved from <https://www.newzealand.com/int/hawkes-bay/>
- AlBattat, A. R., & Ahmad, K. N. (2015). Emergency preparedness of the hotel industry: The case of Jordan. *Advances in Environmental Biology*, 9(3), 19-22.
- Biggs, D., Hall, C. M., & Stoeckl, N. (2012). The resilience of formal and informal tourism enterprises to disasters: reef tourism in Phuket, Thailand. *Journal of Sustainable Tourism*, 20(5), 645-665. doi:10.1080/09669582.2011.630080
- Bland, M. (2013). Plans are useless. *Journal of Business Continuity & Emergency Planning*, 7(1), 56-66.
- Brown, N. A., Orchiston, C., Rovins, J. E., Feldmann-Jensen, S., & Johnston, D. (2018). An integrative framework for investigating disaster resilience within the hotel sector. *Journal of Hospitality and Tourism Management*, 36, 67-75. doi:<https://doi.org/10.1016/j.jhtm.2018.07.004>.
- Brown, N. A., Rovins, J. E., Feldmann-Jensen, S., Orchiston, C., & Johnston, D. (2017). Exploring disaster resilience within the hotel sector: A systematic review of literature. *International Journal of Disaster Risk Reduction*, 22, 362-370. doi:<http://dx.doi.org/10.1016/j.ijdr.2017.02.005>
- Brown, N. A., Rovins, J. E., Feldmann-Jensen, S., Orchiston, C., & Johnston, D. (2019). Measuring disaster resilience within the hotel sector: An exploratory survey of Wellington and Hawke's Bay, New Zealand hotel staff and managers. *International Journal of Disaster Risk Reduction*, 33, 108-121. doi:[doi.org/10.1016/j.ijdr.2018.09.014](http://doi.org/10.1016/j.ijdr.2018.09.014)
- Calgaro, E., & Lloyd, K. (2008). Sun, sea, sand and tsunamis: examining disaster vulnerability in the tourism community of Khao Lak, Thailand. *Singapore Journal of Tropical Geography*, 29(3), 288-306. doi:10.1111/j.1467-9493.2008.00335.x
- Calgaro, E., Lloyd, K., & Dominey-Howes, D. (2013). From vulnerability to transformation: a framework for assessing the vulnerability and resilience of tourism destinations. *Journal of Sustainable Tourism*, 22(3), 341-360. doi:10.1080/09669582.2013.826229
- Cheung, C., & Law, R. (2006). How can hotel guests be protected during the occurrence of a Tsunami? *Asia Pacific Journal of Tourism Research*, 11(3), 289-295. doi:10.1080/10941660600753331
- Civil Defence Emergency Management, Hawke's Bay. (2018). Hazards. Retrieved from <http://www.hbemergency.govt.nz/hazards>
- Cochrane, J. (2010). The Sphere of Tourism Resilience. *Tourism Recreational Research*, 35(2), 173-185. doi:<http://dx.doi.org/10.1080/02508281.2010.11081632>

- Creswell, J. W., & Plano Clark, V. L. (2017). *Designing and conducting mixed methods research* (3rd ed.). Thousand Oaks, CA 91320: Sage Publications, Inc.
- Cutter, S. L., Barnes, L., Berry, M., Burton, C., Evans, E., Tate, E., & Webb, J. (2008). A place-based model for understanding community resilience to natural disasters. *Global Environmental Change*, 18(4), 598-606. doi:10.1016/j.gloenvcha.2008.07.013
- Dobie, S., Schneider, J., Kesgin, M., & Lagiewski, R. (2018). Hotels as Critical Hubs for Destination Disaster Resilience: An Analysis of Hotel Corporations' CSR Activities Supporting Disaster Relief and Resilience. *Infrastructures*, 3(4), 46. doi:10.3390/infrastructures3040046
- Drabek, T. E. (2000). Disaster evacuations: Tourist-business managers rarely act as customers expect. *Cornell Hotel and Restaurant Administration Quarterly*, August, 48-57.
- Elwood, K. (2016). Wellington building impacts. *QuakeCoRE newsletter: Kaikoura earthquake*, (Special Edition). Retrieved from <https://us10.campaign-archive.com/?u=c65a2a0813835c484fde76107&id=764a87e2fc&e=9fe74c7450>
- Environmental Protection Authority (EPA). (2018). Environmental Protection Authority: About us. Retrieved from <https://www.epa.govt.nz/about-us/>
- Espiner, S., Orchiston, C., & Higham, J. (2017). Resilience and sustainability: a complementary relationship? Towards a practical conceptual model for the sustainability–resilience nexus in tourism. *Journal of Sustainable Tourism*, 1-16. doi:10.1080/09669582.2017.1281929
- Faulkner, B. (2001). Towards a framework for tourism disaster management. *Tourism Management*(22), 135-147.
- Finnis, K. K., Johnston, D., Becker, J. S., Ronan, K. R., & Paton, D. (2007). School and community-based hazards education and links to disaster-resilient communities. *Regional Development Dialogue*, 28(2), 99-108.
- Global Reporting Initiative (GRI), United Nations Global Compact, & World Business Council for Sustainable Development (WBCSD). (2015). *SDG compass guide: The guide for business action on the SDGs*. Retrieved from [http://sdgcompass.org/wp-content/uploads/2015/12/019104\\_SDG\\_Compass\\_Guide\\_2015.pdf](http://sdgcompass.org/wp-content/uploads/2015/12/019104_SDG_Compass_Guide_2015.pdf)
- Gray, D. E. (2014). *Doing research in the real world* (3rd ed.). Thousand Oaks, CA 91320: SAGE Publishing, Inc.
- Greater Wellington Regional Council. (2016). *Wellington Region natural hazards management strategy: Draft*. Retrieved from <http://www.gw.govt.nz/assets/council-hazards/Draft-Natural-Hazards-Management-Strategy-15-09-16.pdf>

- Greater Wellington Regional Council. (2018). Tsunami evacuation zone maps. Retrieved from <https://gwrc.maps.arcgis.com/apps/Embed/index.html?webmap=d15166c8159c45b194cc358372ac7906>
- Hall, C. M., Prayag, G., & Amore, A. (2018). *Tourism and resilience: Individual, organisational, and destination perspectives*. Bristol, UK: Channel View Publications.
- Hawke's Bay Emergency Management Group. (2018). Tsunami map. Retrieved from <http://hbhazards.intramaps.co.nz/IntraMaps/MapControls/HBHazards/EasiMaps/index.html>
- Henderson, J. C. (2007). Corporate social responsibility and tourism: Hotel companies in Phuket, Thailand, after the Indian Ocean tsunami. *International Journal of Hospitality Management*, 26(1), 228-239. doi:10.1016/j.ijhm.2006.02.001
- Horspool, N., Cousins, W. J., & Power, W. I. (2015). *Review of tsunami risk facing New Zealand: A 2015 update*. Retrieved from [https://www.eqc.govt.nz/sites/public\\_files/GNS%202015%20Update.pdf](https://www.eqc.govt.nz/sites/public_files/GNS%202015%20Update.pdf)
- Hystad, P. W., & Keller, P. C. (2008). Towards a destination tourism disaster management framework: Long-term lessons from a forest fire disaster. *Tourism Management*, 29(1), 151-162. doi:10.1016/j.tourman.2007.02.017
- International Monetary Fund. (2009). *St. Kitts and Nevis: 2009 Article IV consultation and request for emergency natural disaster assistance-Staff report* (IMF Country Report NO. 09/180). Retrieved from <http://www.imf.org/en/Publications/CR/Issues/2016/12/31/St-Kitts-and-Nevis-2009-Article-IV-Consultation-and-Request-for-Emergency-Natural-Disaster-23008>
- Jiang, Y., & Ritchie, B. W. (2017). Disaster collaboration in tourism: Motives, impediments and success factors. *Journal of Hospitality and Tourism Management*, 31, 70-82. doi:10.1016/j.jhtm.2016.09.004
- Johnson, R. B., & Onwhegbuzie, A. J. (2016). Mixed methods research: A research paradigm whose time has come. *Educational Researcher*, 33(7), 14-26. doi:10.3102/0013189X033007014
- Johnston, D., Becker, J., Gregg, C., Houghton, B., Paton, D., Leonard, G., & Garside, R. (2007). Developing warning and disaster response capacity in the tourism sector in coastal Washington, USA. *Disaster Prevention and Management*, 16(2), 210-216. doi:10.1108/09653560710739531
- Kato, M., & Charoenrat, T. (2018). Business continuity management of Small and Medium Sized Enterprises: Evidence from Thailand. *International Journal of Disaster Risk Reduction*, 27, 577-587. doi:<https://doi.org/10.1016/j.ijdrr.2017.10.002>

- Khazai, B. (2016). *Hotel Resilient*. Paper presented at the Asian Business Forum 2016, Bangkok, Thailand.  
[http://www.adpc.net/igo/contents/blogs/ABF2016/download/presentation/Day%2021%20Apr%202016/04\\_Technical%20Session%204/01\\_AsianBusinessForum\\_Hanna%20Maier\\_Bijan%20Khazai\\_Hotel%20Resilient.pdf](http://www.adpc.net/igo/contents/blogs/ABF2016/download/presentation/Day%2021%20Apr%202016/04_Technical%20Session%204/01_AsianBusinessForum_Hanna%20Maier_Bijan%20Khazai_Hotel%20Resilient.pdf)
- Kim, W. G., Lim, H., & Brymer, R. A. (2015). The effectiveness of managing social media on hotel performance. *International Journal of Hospitality Management*, *44*, 165-171. doi:10.1016/j.ijhm.2014.10.014
- Kwok, A. H., Doyle, E. E. H., Becker, J., Johnston, D., & Paton, D. (2016). What is 'social resilience'? Perspectives of disaster researchers, emergency management practitioners, and policymakers in New Zealand. *International Journal of Disaster Risk Reduction*, *19*, 197-211. doi:10.1016/j.ijdr.2016.08.013
- Lamanna, Z., Williams, K. H., & Childers, C. (2012). An assessment of resilience: Disaster management and recovery for Greater New Orleans' Hotels. *Journal of Human Resources in Hospitality & Tourism*, *11*(3), 210-224. doi:10.1080/15332845.2012.668653
- Lee, A. V., Vargo, J., & Seville, E. (2013). Developing a tool to measure and compare organizations' resilience. *Natural Hazards Review*, *14*(1), 29-41. doi:10.1061/(asce)nh.1527-6996.0000075
- Martin-Breen, P., & Anderies, J. M. (2011). *Resilience: A literature review*. Retrieved from  
[https://docs.google.com/document/d/1xcInW\\_qolqbIScN\\_2KwMCFO24sR4Q-9JXx6CAcYL\\_go/edit](https://docs.google.com/document/d/1xcInW_qolqbIScN_2KwMCFO24sR4Q-9JXx6CAcYL_go/edit)
- Mayunga, J. S. (2007). *Understanding and applying the concept of community disaster resilience: A capital-based approach*. Paper presented at the 2007 Summer Academy Megacities: Social vulnerability and resilience building, 22-28 July, Munich, Germany. [https://www.u-cursos.cl/usuario/3b514b53bcb4025aaf9a6781047e4a66/mi\\_blog/r/11\\_Joseph\\_S.\\_Mayunga.pdf](https://www.u-cursos.cl/usuario/3b514b53bcb4025aaf9a6781047e4a66/mi_blog/r/11_Joseph_S._Mayunga.pdf)
- Mayunga, J. S. (2009). *Measuring the measure: A multi-dimensional scale model to measure community disaster resilience in the U.S. Gulf Coast Region*. (Doctor of Philosophy Dissertation), Texas A&M University, College Station, TX. Retrieved from <http://oaktrust.library.tamu.edu/bitstream/handle/1969.1/ETD-TAMU-2009-05-769/MAYUNGA-DISSERTATION.pdf?sequence=1>
- McCool, B. N. (2012). The need to be prepared: Disaster management in the Hospitality Industry. *Journal of Business and Hotel Management*, *01*(02). doi:10.4172/2324-9129.1000101
- Meyer, R., & Kunreuther, H. (2017). *The Ostrich Paradox: Why we underprepare for disasters*. Philadelphia, PA: Wharton Digital Press.

- Miles, S. B. (2015). Foundations of community disaster resilience: well-being, identity, services, and capitals. *Environmental Hazards*, 14(2), 103-121. doi:10.1080/17477891.2014.999018
- Ministry of Business Innovation & Employment (MBIE). (2016). *Key tourism statistics*. Retrieved from <http://www.mbie.govt.nz/info-services/sectors-industries/tourism/documents-image-library/key-tourism-statistics.pdf>
- Molina-Azorín, J. F., & Font, X. (2015). Mixed methods in sustainable tourism research: An analysis of prevalence, designs and application in JOST (2005–2014). *Journal of Sustainable Tourism*, 24(4), 549-573. doi:10.1080/09669582.2015.1073739
- National Institute of Standards and Technology (NIST). (2015). *Community resilience planning guide for buildings and infrastructure systems, Volume I*. Retrieved from <http://www.nist.gov/el/resilience/upload/NIST-SP-1190v1.pdf>
- Neef, A., & Wasi, S. A. (2017). *Disaster response and recovery of tourism sector: The case of Vanuatu in the aftermath of 2015 Cyclone Pam*. Development Studies, School of Social Sciences, The University of Auckland. Auckland, New Zealand.
- New Zealand Fire Service. (2015). *NZFS guide to evacuation schemes*. Retrieved from <https://onlineservices.fire.org.nz/Download/DownloadPublicDocumentsFile/35>
- New Zealand History. (2017). Hawke's Bay earthquake strikes. Retrieved from <https://nzhistory.govt.nz/hawkes-bay-earthquake-0>
- Nguyen, D. N., Imamura, F., & Iuchi, K. (2018). Barriers towards hotel disaster preparedness: Case studies of post 2011 Tsunami, Japan. *International Journal of Disaster Risk Reduction*. doi:10.1016/j.ijdr.2018.01.008
- Norris, F. H., Stevens, S. P., Pfefferbaum, B., Wyche, K. F., & Pfefferbaum, R. L. (2008). Community resilience as a metaphor, theory, set of capacities, and strategy for disaster readiness. *American Journal of Community Psychology*, 41(1-2), 127-150. doi:10.1007/s10464-007-9156-6
- North-Eastern Atlantic and Mediterranean Tsunami Information Centre (NEAMTIC). (2012). *A guide of tsunamis for hotels*. Retrieved from Paris, France: <http://neamtic.ioc-unesco.org>
- Orchiston, C. (2013). Tourism business preparedness, resilience and disaster planning in a region of high seismic risk: The case of the Southern Alps, New Zealand. *Current Issues in Tourism*, 16(5), 477-494. doi:10.1080/13683500.2012.741115
- Orchiston, C., & Espiner, S. (2017). Fast and slow resilience in the New Zealand tourism industry. In A. A. Lew & J. Cheer (Eds.), *Understanding tourism resilience: Adapting to environmental change* (pp. 102-126). London: Routledge.

- Ostadtaghizadeh, A., Ardalan, A., Paton, D., Jabbari, H., & Khankeh, H. R. (2015). Community disaster resilience: a systematic review on assessment models and tools. *PLoS Curr*, 7. doi:10.1371/currents.dis.f224ef8efbdfcf1d508dd0de4d8210ed
- Patel, S. S., Rogers, M. B., Amiot, R., & Rubin, G. J. (2017). What do we mean by "Community Resilience"? A systematic literature review of how it is defined in the literature. *Currents Disasters, February* 1(1-37). doi:10.1371/currents.dis.db775aff25efc5ac4f0660ad9c9f7db2
- Patton, M. Q. (2015). *Qualitative research and evaluation methods* (4th ed.). Thousand Oaks, CA 91320: Sage Publications Inc.
- Ritchie, B. W. (2004). Chaos, crises and disasters: a strategic approach to crisis management in the tourism industry. *Tourism Management*, 25(6), 669-683. doi:10.1016/j.tourman.2003.09.004
- Ritchie, B. W. (2008). Tourism disaster planning and management: From response and recovery to reduction and readiness. *Current Issues in Tourism*, 11(4), 315-348. doi:10.1080/13683500802140372
- Rittichainuwat, B. N. (2013). Tourists' and tourism suppliers' perceptions toward crisis management on tsunami. *Tourism Management*, 34, 112-121. doi:10.1016/j.tourman.2012.03.018
- Statistics New Zealand. (2016). *Tourism satellite account: 2016 The contribution made by tourism to the New Zealand economy*. Retrieved from [http://archive.stats.govt.nz/browse\\_for\\_stats/industry\\_sectors/Tourism/tourism-satellite-account-2016.aspx](http://archive.stats.govt.nz/browse_for_stats/industry_sectors/Tourism/tourism-satellite-account-2016.aspx)
- Statistics New Zealand. (2017). *Accommodation survey: September 2017*. Retrieved from [https://www.stats.govt.nz/topics/accommodation?url=/browse\\_for\\_stats/industry\\_sectors/accommodation/info-releases.aspx](https://www.stats.govt.nz/topics/accommodation?url=/browse_for_stats/industry_sectors/accommodation/info-releases.aspx)
- Statistics New Zealand. (2018). *Accommodations Survey: Guests night by region*. Retrieved from <http://archive.stats.govt.nz/infoshare/ViewTable.aspx?pxID=c3dfa3a1-1b18-458f-b9ad-2ce876af5cb3>
- Stirling, M. W., McVerry, G. H., & Gerstenberger, M. (2012). *New national seismic hazard model for New Zealand: Changes to estimated long-term hazard* (048). Retrieved from <https://www.nzsee.org.nz/db/2012/Paper048.pdf>
- Sydnor-Bouso, S., Stafford, K., Tews, M., & Adler, H. (2011). Toward a resilience model for the hospitality and tourism industry. *Journal of Human Resources in Hospitality & Tourism*, 10(2), 195-217. doi:10.1080/15332845.2011.536942
- Takamatsu, M. (2014). The Okinawa tourism crisis management initiatives. *International Journal of Event Management Research*, 8(1).

- The Treasury. (2016). *2016 statement on the long-term fiscal position*. Retrieved from <http://www.treasury.govt.nz/government/longterm/fiscalposition/2016/he-tirohanga-mokopuna/lfs-16-htm.pdf>
- Tourism Industry Aotearoa (TIA). (2018). *State of the tourism industry: 2017*. Retrieved from <https://tia.org.nz/assets/Uploads/State-of-the-Tourism-Industry-2017-final.pdf>
- United Nations Office for Disaster Risk Reduction (UNISDR), Pacific Asia Travel Association (PATA), & Global Initiative on Disaster Risk Management (GIDRM). (2015). *Developing strategies to strengthen the resilience of hotels to disasters: A scoping study to guide the development of the hotel resilient initiative*. Retrieved from [http://www.unisdr.org/files/45258\\_scopingstudyhotelresilientinitiativ.pdf](http://www.unisdr.org/files/45258_scopingstudyhotelresilientinitiativ.pdf)
- Wang, J., & Ritchie, B. W. (2010). A theoretical model for strategic crisis planning: Factors influencing crisis planning in the hotel industry. *International Journal of Tourism Policy*, 3(4), 297. doi:10.1504/ijtp.2010.040390
- Webb, G. R., Tierney, K. J., & Dahlhamer, J. M. (2002). Predicting long-term business recovery from disaster: a comparison of the Loma Prieta earthquake and Hurricane Andrew. *Global Environmental Change Part B: Environmental Hazards*, 4(2-3), 45-58. doi:10.1016/s1464-2867(03)00005-6
- Wellington City Council. (2017). *Wellington resilience strategy*. Retrieved from [https://wellington.govt.nz/~/\\_/media/about-wellington/resilient-wellington/files/strategy/resilience-strategyj001767-100-web.pdf?la=en](https://wellington.govt.nz/~/_/media/about-wellington/resilient-wellington/files/strategy/resilience-strategyj001767-100-web.pdf?la=en)
- World Tourism Organization (UNWTO), & International Labour Organization (ILO). (2013). *Economic crisis, international tourism decline and its impact on the poor*. Madrid, Spain: World Tourism Organization.
- Yamamura, J., & Welsh, N. (2018). Highway 101 reopens. *Santa Barbara Independent*. Retrieved from <https://www.independent.com/news/2018/jan/23/highway-101-reopens-army-corps-engineers-clears-cr/>

## Chapter Summary

The subject of Chapter Six is findings from semi-structured interviews with hotel staff and managers in WL and HB, and secondary data. These findings and recommendations expanded on the DRFH discussed in Chapter Four. The following Chapter Seven will present findings from all research in a homogenous discussion.

## **Chapter Seven: Discussion**

Building disaster resilience within the hotel industry was the focus of this research. The four articles (Chapters Two, Four, Five, and Six) which precede this chapter discussed findings and contributions regarding specific steps within the research. Chapter Seven brings together the integrative framework and the qualitative, quantitative, and secondary data, to create a complete picture of the study and its overall contributions to the field.

The term resilience has been interpreted by a number of disciplines (Hall et al., 2018). Within the tourism industry, resilience to disasters is becoming increasingly studied, exposing the need for industry-specific measures (Hall et al., 2018). The tourism sector's total contribution to the global gross domestic product (GDP) for 2016 was 10%, generating 1 in 10 jobs in the global economy (World Travel and Tourism Council, 2017b). The tourism sector has proven to be interconnected with global events impacting negatively on tourism as well as individuals (United Nations World Tourism Organization (UNWTO) & International Labour Organization (ILO), 2013). The hotel sector demonstrates its importance to the tourism industry by:

- Contributing to communities' economies and overall employment (A. V. Lee et al., 2013)
- Providing accommodation for tourists and convention attendees (Orchiston & Espiner, 2017) who will ultimately contribute to the communities' economic wellbeing
- Being of special value during disaster recovery to provide accommodation for evacuees (Nguyen, Imamura, & Iuchi, 2017), critical service staff (Yamamura

& Welsh, 2018), and response workers (Neef & Wasi, 2017) as well as local employment.

Organisations that are resilient to disaster recover faster from disruption (Bruneau et al., 2003). The importance of this disaster resilience study has been reiterated with each article. With that in mind, the research was designed to investigate the following research question and sub-questions:

1. How can the hotel sector increase its disaster resiliency, and be better able to protect the lives of its guests and staff, and the livelihoods and local economy following a disaster?

1a. How is disaster resilience defined in a hotel sector context?

1b. What predictors assist in determining disaster resilience for the hotel sector?

1c. How resilient are hotels in New Zealand to disaster?

1d. What barriers exist to increasing disaster resilience for hotels in New Zealand?

The following discussion details how this research has investigated these research questions and makes recommendations for ways forward for the hotel sector.

### **Research Overview**

A systematic literature review was undertaken to define, explore, and better understand disaster resilience for the hotel sector, answering question *1a* (Brown et al., 2017) (Chapter Two). From the review of literature, a subset of journal articles were analysed that discussed frameworks, measures, and metrics for building disaster resilience. The analysis was the foundation for the development of the DRFH (Brown et al., 2018) (see Chapter Four). The multifaceted nature of resilience (Cutter et al., 2008) is best explored with a multi-predictor framework. The DRFH was developed to explore question *1b*.

To investigate question *Ic* and *Id*, the DRHF provided the basis for the surveys (Brown, Rovins, et al., 2019) (Chapter Five) and interviews as well as an exploration of secondary data (Chapter Six) (Brown, Feldmann-Jensen, et al., 2019). The mixed methods approach provides an opportunity for each method to counter the possible weakness of other methods (Johnson & Onwhegbuzie, 2016) and provide a more comprehensive and contextual look at disaster resilience within the selected areas of HB and WL. A triangulated analysis of all the data collected follows in this discussion. These comparisons of data help to support accuracy and validity of the data (Creswell & Plano Clark, 2017). The SDGs and the SFDRR are also discussed in relation to the findings.

Each capital will be described individually, looking at the deeper meanings from the data. Following the individual capitals' discussion, an overview of important learnings will be discussed.

### **Economic Capital**

Sustainable Development Goal 8 describes the need to develop sustained economic growth. Given tourism's sensitivity to disruption, disaster resilience can work to support and encourage continued growth in the sector (Hall, 2018).

The GM and staff responses to survey and interview topics as well as secondary data presented show complementary pictures. In all cases the data shows economic prosperity for the hotel sector and that economic capital resources would be available if needed following a disaster. This reflects the steady growth of international tourism numbers in recent years. Stronger economic conditions before a disaster contribute to decreased impacts from the disaster (H. Kim & Marcouiller, 2015). Data shows some financial reserves, an increasing tourism market, widespread insurance cover for businesses, and diverse customer bases. The importance of economic resources was

highlighted by Henderson (2005). A case study of a hotel following the 2004 tsunami explains that the lack of occupancy in the months following the tsunami was a difficult time financially. The projected 80%+ occupancy fell to below 20% for January and February 2005. AlBattat and Mat Som (2014) found that hotels in Malaysia had reduced international arrivals up to 20% during the 2003 SARS outbreak. These examples illustrate that a hotel cannot altogether avoid disasters; the organisation needs to have the economic capital to make it through a disaster.

Staff economic resources were also present per the high rates of savings and long-term employment (Brown, Rovins, et al., 2019). Staff reported job stability, with an average length of employment of 3-5 years. Staff employment longevity is consistent with the possibility of savings opportunities.

The combination of survey and secondary data does show a gap in staff economic resilience. The survey showed 28 of the 46 staff (61%) reported having insurance to cover their personal property. Insurance to cover losses and damage caused by disasters enhances capacity to cope (Birkmann et al., 2013). In support of this idea, the Wellington 100 Resilient Cities program recognises lack of insurance as a potential lack of resilience in its profile of Wellington residents. As part of economic resilience projects, the Wellington City Council (2017) resilience report proposes a regional project to improve insurance literacy. The report takes lessons learned from Christchurch to heart and states the objective of the project is to educate and engage with Wellington residents to help them make educated decisions about insurance needs (Wellington City Council, 2017). The engagement of the community in addressing this issue could help increase insurance coverage and build economic capital resources for individual staff members, also contributing to the hotels' overall economic capital.

Also, within the economic capital group is the need for disaster management activity funding as standard budget line items. The survey found 56% of hotels had disaster management expense as part of the hotel budget (Chapter 5, section 4.1). All hotel staff interviewed reported participation in fire drills, which shows that funding of exercises is occurring (Chapter 6, 4.3). However, staff (in interviews) indicated a need to have training and exercise for other types of hazards. The ability to address many of the other components of disaster resilience building (for example, training and exercises not related to fire evacuation) requires adequate funding (Sawalha et al., 2013).

The value of investing in disaster management is also present in the SDFRR Priority 1, which develops the value of best practices that include training and exercises (UN, 2015, Annex II section IV). Priority 3 addresses economic capital by highlighting the need to invest in disaster risk reduction activities, integration of disaster management activities into budgets, and points out the cost effectiveness of disaster risk reduction activities (UN, 2015, Annex LL section IV).

Hotels' ability to fund an all-hazards approach may be challenging for some properties, but factoring in the potential cost of not adequately considering multiple hazards may provide a way forward in future budget developments. The SDFRR considers the reduction of direct economic loss from disaster as one important outcome of the framework (UN, 2015, Annex II section II para. 18c).

### **Social Capital**

A range of social capital resources to draw on in a disaster is supported by the data. Survey and interview responses suggest that there is a team approach to day to day operations and ideas and input are welcomed by managers. Silos between departments are being combated by friendships across departments.

One difference between the two areas was socialisation with co-workers. HB staff reported far less socialising with co-workers than WL staff. Socialisation is one measure of cohesion and connectedness. Feelings of working together and being able to depend on each other was conveyed in interviews with HB staff. The lack of socialising is balanced by team approaches to operations as a contribution to social cohesion and networks in these hotels.

Social capital resources were valuable in the time immediately following the Kaikōura earthquake (Brown, Feldmann-Jensen, et al., 2019) supporting the concept of social capital's contribution to overall resilience to disaster (Faulkner, 2001; Kwok et al., 2016; Norris et al., 2008). Staff pulled together, volunteered assistance, and showed capacities to work together under difficult circumstances.

The WL interviews indicated that social capital may increase through real experiences. Staff members interviewed following the Kaikōura earthquake were complimentary of each other's performance and dedication following the earthquake and reported growing confidence in their abilities to manage a disaster as a team. Lo et al. (2007) found there was increased cohesion and unity among the hotel industry in the time following the SARS outbreaks in Hong Kong and a return to a more normal business cycle.

Agreement that existing plans would be effective in disasters was shared by staff in both areas; interviews also supported the confidence in disaster plans. Interestingly, even very new staff, and staff from hotels with less robust plans, felt plans in place and their own skills would be successful in helping the hotel face a disaster. Optimism bias may be integrated into some of these feelings. Weinstein (1980) writes that in some cases (very negative events, perceived as likely events, and events where the person has some experience) people will judge their outcomes as more favourable and negative

events as less likely to happen to them. Harris and Hahn (2011) argue that sampling and statistical constraints of rare negative events may make optimism bias hard to quantify. However, research regarding attitudes in advance of Hurricane Sandy (2012) found that 80% of residents in the area believed their home would experience gale force winds, but only 21% had evacuation plans in place, demonstrating Weinstein's theory of optimism bias (Meyer & Kunreuther, 2017).

Building external relationships was one area managers will find valuable in considering a platform for improving overall disaster resilience. Wellington staff was the lowest in this area in surveys (agree 73%; neither agree or disagree 9%; disagree 12%). However, in WL interviews, staff discussed waiting for engineers to inspect property after the Kaikōura earthquake which may have contributed to the findings. The shaking felt by staff and guests coupled with the time of day, shortly after midnight, provided unique challenges to the few staff on duty at that time.

The best way to truly measure resilience is the organisation's response to and recovery from a disaster, in other words, how resilient were they? Following a disaster, resilience is expected to minimise disruption. In the pre-disaster time period people may overestimate their readiness due to lack of understanding of what may happen in an unfolding disaster (Henderson, 2005). Wellington managers (25%) did not feel they were building the inter-organisational relationships they might need. The SFDRR describes the need to engage and network all stakeholders in disaster management activities. Priority 3 calls for strengthening public/private partnerships (UN, 2015, Annex II section IV). As one manager discussed, the Kaikōura earthquake opened up a lot of considerations and learnings. Their first-hand experience may explain why WL managers showed less confidence in their connections to other organisations they may need in a disaster than HB in the survey (WL 75%; HB 92%).

Working with other organisations to strengthen an organisation's ability to respond to disasters can improve disaster resilience as well as sustainability. Sustainable Development Goal 17 calls for global collaboration and connecting stakeholders in meaningful ways to work towards shared goals (GRI et al., 2015). The experience of needing information and expertise following the earthquake may prompt the future development of better networks of organisations. The development of networks is important for hotels to understand the event, respond, and move forward following a disaster.

The importance of networks in a disaster is highlighted by AlBattat and Mat Som (2014). Their study found tourism and government agencies instrumental in mounting marketing campaigns to get tourism flowing again. Additionally, the media is instrumental in informing the public of the suitability of destinations post-disaster. A. V. Lee et al. (2013) found organisational connections to be an integral component of organisational resilience. Wellington managers experienced first-hand where there were gaps in their organisation's connections, providing a possibly more realist view of their connections (or lack thereof) to other organisations. Experiences concerning what happens in a disaster gauged through lesser events like the Kaikōura earthquake (as experienced in WL) add to the knowledge of disaster management.

### **Human Capital**

The data showed human capital resources were available which enabled hotel facilities to react flexibly and decisively in a disaster to keep the organisation moving forward. The mixed methods design in the study exposed gaps in the human capital resources; additional attention to these areas could improve disaster resilience for hotels.

While surveys showed that staff had participated in trainings and exercises, interviews revealed that these preparations were primarily fire drills. Staff indicated they

would find exercises concerning different scenarios useful. Staff need training in a variety of scenarios; actions can differ based on the threat (Gunter, 2005). A more inclusive approach to disaster planning may also be warranted, which may also help improve staff confidence in the handling of a variety of disaster types. Additionally, training that considers tsunami scenarios is warranted for hotels in tsunami evacuation zones. The SFDRR places understanding risk as Priority 1, stating policies and practices should be based on risk assessments which include evaluation of vulnerabilities and capacities (UN, 2015, Annex II section IV). Smart and effective hotel disaster management procedures need to include exercises, training, and education based on disaster risks (Chapter 2).

Hotel staff and managers indicated they had problem-solving skills and proactive leaders. Many staff agreed they could access the property by foot if needed and felt able to make decisions quickly when needed. These findings show adaptive capacity. Hotels in Hong Kong illustrated the importance of adaptive capacity during the SARS outbreak (Lo et al., 2007). Hotels had to expand their regular business offerings to make up for the decline in occupancy. One hotel offered cleaning services to local businesses to help them reduce the possibility of contamination and converted some unused rooms to temporary office space for organisations trying to arrange staff working in different sites and shifts to minimise cross-infection. Other hotels looked for new markets to fill rooms, such as local residents (Lo et al., 2007). Creative approaches to finding business opportunities were common in hotels that recovered fastest (Lo et al., 2007). WL exhibited adaptive capacity through actions taken in the wake of the Kaikōura earthquake. Food and beverage adaptations, communications with guests and media, and staff volunteerism all point to the hotels' ability to adapt to unfolding situations.

Furthermore, as one manager said, the earthquake brought new urgency to the need to be prepared and plan for the possibility of different scenarios.

Experiences and learnings from the Kaikōura earthquake may prompt WL hoteliers to increase their engagement in disaster resilience building. The Theory of Planned Behavior (TPB) (Ajzen, 1991) considers what affects intention to take actions. Attitudes towards the behaviour, subjective norms and perceived control all play a part in intention (Ajzen, 1991). The ability of hotels to take actions in the time following the event (they had some control) and recognise how additional information and planning could have improved their results (actions may make a difference) may combine to push more positive steps in the future months and years. Interviews in WL showed thoughts of better and more streamlined actions were being discussed and additional planning was being considered for some properties in the time following the Kaikōura earthquake.

The data analysis suggested that most staff did feel that critical roles would be filled in a disaster. Cross-training staff can be valuable when some staff members are unavailable or unable to reach the property in a disaster (Gunter, 2005). However, as mentioned (Chapter 7, Social Capital) social cohesion can help to fill the possible gap in the workforce when staff are willing to come to work in a disaster spontaneously.

The combined data from surveys and interviews regarding the ability of staff to get to work (if they could not drive into the hotel) shows as much as 50% of staff members may be unavailable. However, from the interviews, this research found that in the immediate aftermath even a few key personnel can augment the existing staff to perform critical operational activities. Together the existing and ad hoc staff were able to assist and care for guests while maintaining readiness for possible aftershocks. Hotel managers may want to consider who in their organisation will be available in a disaster.

All the staff are not required, a few individuals can ensure operations are maintained in the short-term.

Based on data gathered, guests may not have easy access to information outside of basic fire evacuation details at some hotels. Both survey data and interview data agreed on this point. In most cases safety information for guests was located in the guest book in the room. Multi-hazard details were rarely included. As mentioned in Chapter Six, detailed information on the doors, in addition to fire evacuation routes, and a brief mention of the information's location on check-in could help guests find critical information when needed and become aware of the multi-hazard nature of the local area. In Drabek's (1997) seminal study of guests' thoughts concerning disasters, guests were asked if they would like information regarding disaster procedures for events other than fire, e.g., earthquakes and hurricanes. The majority (88%) said yes (Drabek, 1997).

Interviews revealed learnings from the Kaikōura earthquake regarding business continuity. Messages communicating important safety information and event guidance (that may be needed in the immediate aftermath of a disaster) can be pre-scripted for general details so pushing out information is facilitated following a disaster. Cloud-based storage and hard copies of messages and critical contact lists are now a standard operating procedure for one hotel post-Kaikōura. Depending on the time of day and circumstances, advanced messaging creation could prove valuable to a skeleton staff or less experienced team. Knowing *how to* say something can be as important as *what to* say for guest perceptions, considering service is as much about perception as actual performance (Kwortnik, 2005).

The ability to answer guest questions quickly and confidently could minimise or mitigate guest concerns. A quality flow of information can shape guest perceptions and satisfaction (Kwortnik, 2005). The adoption of best practice of pre-scripting messaging

for use in a disaster works towards hotels' customer service and satisfaction objective and aligns with industry best practice concepts as seen in customer service indices such as LQI which include responsiveness (responds to requests and solves issues), confidence (knowledge about the area/property including hotel safety), and communication (prompt and correct information) (Getty & Getty, 2003). Staff with access to messaging early in a disaster could meet responsiveness, assurance, and communications criteria for positive customer perception.

Some disaster scenarios were not part of the hazard risk considerations, according to staff and managers. Hydrometeorological hazards such as floods and storms were not listed by interviewees discussing potential hazards. Biological-hazards such as infectious disease outbreaks were also not included as a possible disaster in the interviewee responses. This narrowed view of possible risks could be based on optimism bias, the tendency to underestimate possible risks (Eiser et al., 2012). The need for moving toward an all-hazards method of disaster management is well illustrated when considering infectious disease outbreaks. Outbreaks can be born locally or brought from other areas of the world; international tourism is one factor in the spread of diseases (Stefanica & Butnaru, 2014). No place is safe from a possible outbreaks in the age of daily international flights, reinforcing the value of all-hazard approaches. New Zealand had 3.775,000 international visitors in a twelve month period ending April 2018 (MBIE, 2018b). Planning for, and consideration of skills and knowledge to enhance quick containment of infectious disease outbreaks should be developed for staff training. Lessons learned from others involved in a pandemic situation, for example, cleaning all public areas regularly, throughout the day, with a disinfectant (Lo et al., 2007), should be considered in day to day operational plans.

Terrorism is a hazard that HB and WL staff and managers did not discuss. Terrorism is a rare occurrence in New Zealand. However, the travel industry is affected by local disasters as well as disasters that occur in other places. For example, Malaysian hotels suffered in the months following the bombings in Bali in 2002 and 2005. Malaysian hotel managers commented that events in Indonesia caused indirect repercussions in Malaysia (AlBattat & Mat Som, 2014). Furthermore, the capacity to respond to unusual and unexpected circumstances is useful in today's unpredictable climate. In Hawaii, on January 13, 2018, a false alarm message broadcast was sent to cell phones and mass media outlets warning everyone of an inbound missile attack (Andone, 2018). The message, retracted 38 minutes later, sent tourists and hotel staff scrambling for shelter in hallways, ballrooms, basements, and bathtubs (Hannemann, 2018). According to Hannemann (2018), chief executive officer of the Hawaiian Lodging and Tourism Association, Hawaii has utilised its image as a safe destination to attract guests and conferences for decades. Following the event, the association launched a survey of hotels to better understand what hotels did, how well they were prepared and what lessons could be learned. Hannemann said, in an interview with Hawaiian Public Radio, that the competitive edge of being a safe place is important to marketing Hawaii and actions need to be taken to protect that image in the future.

New Zealand also enjoys a safe reputation. A comprehensive all-hazard knowledge base will ensure that staff and managers have the information they need to take appropriate action in unexpected situations. Additionally, staff exposure to resilience could contribute positively to resilience in the wider New Zealand community. Guests perceptions of safety may differ based on their country of origin. Considering a multi-hazard approach to disaster resilience building may introduce additional measures to improve perceptions by guests.

## **Physical Capital**

From the results of this research, hotels have physical capital resources available in case of disaster. Both life safety measures and business continuity structures are present. Some tsunami evacuation path investigation is needed for enhanced life safety opportunities, and alternate sources of power could enhance operability in the time immediately following some disasters.

Only a very few of the hotels surveyed (n=2) do not meet 100% of current building standards, based on data and GM responses. In agreement with the Hotel Resilient program, and SDG 9, resilient and sustainable business environments must have infrastructure that is resilient to local hazards (GRI et al., 2015; GIZ, 2017). This concept of resilience is reiterated in the SFDRR which calls for reduction in disruption to infrastructure and services (UN, 2015, Annex II, section II para 18d). Based on the data this essential factor is prioritised by most hotels in the study. Furthermore, all are required by law to have evacuation plans in place that have been approved by fire services. Staff are aware of building seismic compliance statistics and in WL, all staff interviewed were able to state the percentage of compliance (e.g., “Our hotel is 110% of standards”). Whether WL hotels that are located within the tsunami inundation zone could be used as a vertical evacuation structure for hotel guests and the public is unclear, this aspect of the buildings has not been evaluated by infrastructure experts. Vertical evacuation suitability should be determined (by appropriate engineer) and socialised among staff.

Another area for improvement is alternate power generation capacity. In WL, 73% of hotels do not have back-up power alternatives, in HB 50% do not. A study of hotels involved in the 2003 black-out in eastern North America found 48% of hotels surveyed afterwards did not have power generators and relied exclusively on a battery back-up

system that is designed to last only one to two hours to allow for evacuation (Kwortnik, 2005). This means building safety and occupancy is questionable at best during a response period, both qualities are imperative for resilience. The extended time of the 2003 black-out caused guest service interruption. For example, important systems like door keys require electricity to make the key cards, although the door locks themselves were battery operated. Technical complications like this required additional workforce; staff had to be stationed on each floor to let guests into their rooms. Inoperable phone systems and vending machines were also a complaint by guests. Hotels without power also had to close all food and beverage facilities. Sources of guest dissatisfaction over the two-day outage almost always stemmed from facility issues (Kwortnik, 2005).

In the 2003 black-out guests expected hotels to have power generation for necessary systems and were not sympathetic or understanding when they did not. The overall effect on the bottom line was that 30% of hotels with power experienced an occupancy increase compared to 9% of hotels without power. Hotels without power experienced a decrease in occupancy at a rate of 36% (Kwortnik, 2005). Electrical service is vulnerable to interruption from a wide variety of disruptions. The addition of back-up power generation capabilities should be considered and analysed by those hotels which have not developed this capability. Kwortnik (2005, p. 37) writes, "Service excellence is a system. The physical plant, service processes, and formal plans are the foundation of the system..." At a minimum, the possible consequences of a longer-term outage should be considered on a facility operations basis and possible remedies considered in advance.

### **Natural Capital**

As with physical capital, there are many positive predictors of natural capital to build disaster resilience in WL and HB. Secondary data and survey data from staff and

managers agreed that the environment is considered in policies and procedures, hotels are participating in recycling, and the life safety risk from natural hazards can be somewhat mitigated through evacuation routes if needed.

Secondary data also shows that New Zealand has paid attention to the sustainability of natural resources that attract tourism (The Treasury, 2016). The value of natural resources is also highlighted in SDG 11, calling for stakeholders to focus on ensuring that practices do not degrade resources (GRI et al., 2015). Reducing hotel and tourist impact on the natural resources is an ongoing need.

Research and study into the risks from natural hazards is robust and continuous. This thesis is one example of New Zealand's dedication to improved understand of disasters and resilience, funded in part by Massey University, GNS Science, and Hawke's Bay Civil Defence. Another example is new communication tools being launched by the HB Emergency Management (and others) web page which allows an address input to show an exact position on tsunami evacuation maps (Hawke's Bay Emergency Management Group, 2018). New Zealand universities and other entities sponsors a number of academic based organisations aimed at ongoing research in the disaster space. These include Resilient Organisation, the Joint Centre for Disaster Research, Natural Hazards Research Centre, and the Centre for Sustainability. Additionally, QuakeCoRE, a Centre of Research Excellence (CoRE), combines engineering and social science perspectives for earthquake topics and the Resilience to Natures Challenges works to build new knowledge for New Zealand's resilience to multiple hazards.

Interviews with HB staff and managers found that the low topography of the area was considered when planning tsunami evacuations and some hotels had unofficial vertical evacuation options while others had clear ideas of best routes for reaching

higher ground. Wellington staff interviewed did not consider tsunami threat in their planning and evacuation. Geographically, 11 of 28 hotels in WL are in a tsunami mid-level risk zone (Horspool et al., 2015). With similar risk of a tsunami to HB, it is interesting that the staff and managers in both cities consider the threat very differently.

Cognitive Dissonance Theory (CDT) describes how uncomfortable and irreconcilable information may be avoided or discounted to achieve consonance (Festinger, 1957). People located in hazard areas may trivialise the hazards to avoid cognitive dissonance (Burby, 1998). Applying CDT, it may be that WL's recent experience with the reality of earthquakes is as much as the staff interviewed can manage within their thoughts, and so they have mentally eliminated the tsunami threat. For some interviewees in WL, evacuation in an earthquake (if deemed necessary) and seeking higher ground in a tsunami would indeed be challenging to accomplish based on the hotel's location and topography. Hawke's Bay has not experienced a major incident for some time, so the reality of the dangers may be further removed; therefore, more comfortable to consider.

Risk analysis that includes assessment of risks from a hotel's geographical location must be part of planning for hotels. This concept is incorporated into SDG 9 calling for resilient and sustainable infrastructure and is further enforced by the SFDRR through the targeting reduction in disaster damage to critical infrastructure (UN, 2015, Annex II, section II para 18d). Resilience requires an understanding of the risks and hazards (GRI et al., 2015). Additionally, increased networking with all stakeholders (including emergency management organisations) may help to clarify risks and protective actions (Nguyen et al., 2018). Networking, while adding to social capital, can also assist with barriers to pre-disaster planning due to knowledge limitations (Nguyen et al., 2018). Hotels with risks from tsunami need to recognise their risk, develop safe

evacuation protocols, and socialise this information to staff who may be required to organise and aid in evacuations of the facility.

### **Cultural Capital**

The importance of cultural capital relates to knowledge of local hazards and protective actions as well as cultural influences on the local system that influence hazard knowledge, risk, and mitigation strategies. Survey findings measured cultural capital available based on length of time in New Zealand. More than 75% of GMs and staff were in New Zealand during the Christchurch earthquake and all were here during the Kaikōura earthquake. Recent disaster experience in the country exposed the staff and GMs across New Zealand to unfolding event disaster news and stories, as well as presented an opportunity to consider how an earthquake may affect them in the future.

The experience with disasters in recent years may also be what drives the safety culture developing in New Zealand. Interviews showed all participants knew slogans of safety like '*drop, cover, hold*' and '*long, strong, get gone*' (for near source tsunami) and understood what protective actions should be taken during earthquakes and tsunami. This safety culture does not clarify people's understanding of local hazards as discussed above regarding tsunami. During interviews 80% of people reported emergency kits in their homes.

One area of consideration in the safety culture being developed is the possible prioritisation of guests over staff. Based on interview responses, many hotels' evacuation policies require staff to report to the warden in the lobby before being deployed by wardens back up to floors to clear the areas of guests. Staff also discussed in interviews their responsibility to ensure the safety of guests. At current levels of training, staff are not equipped to perform rescue operations, and sending them back into a building to evacuate others prioritises the safety of the guest over staff. Managers

may want to consider scenarios where staff safety requires guests to self-evacuate with processes that improve communications of evacuations to all areas of the hotel. Once in the lobby, staff may be safer heading to assembly points, instead of performing roles that may be better suited to professional rescue personnel.

Based on the DRFH, hotels in WL and HB have many resources available to them to draw on in a disaster. The above discussion highlights strengths and possible gaps and provides suggestions for ways that hotel managers can address those gaps. This study, while academic in nature, has always sought to provide workable solutions for managers' challenges to becoming more resilient to disaster. A summary table of findings and recommendations can be found in Chapter 8.

### **Framework Interdependencies**

The DRFH is designed with capital groups independent of each other to visually illustrate to managers that an organisation may enter into disaster resilience building activities from multiple entry points. Research has shown that managers cite lack of time, beyond operational requirements, for disaster preparedness activities (Orchiston, 2013). Confirming how precious time is for managers, a hotel GM described efforts to revamp and improve disaster planning as slow moving due to requirements of day to day operations. Funding can also be challenging for disaster resilience building activities (Nguyen et al., 2018). However, understanding links between capitals and how building capital in one area can lead to improved resources in other capitals, or lack of resources in other areas may be useful. Some of these links have been described in Chapter 7's capital section discussion. Additional linkages are discussed below.

Physical capital includes life safety measures, like evacuation routes. Human capital is also required here, to make use, through knowledge of the evacuation routes, as well as in what circumstances evacuation is called for and when other action may be

more protective. For example, in an earthquake that may be followed by a tsunami, evacuation to the street level may not be the best choice. Staff knowledge of best actions as part of preparedness training is intrinsically linked with physical safety features.

Human capital and social capital share linkages as well. The capacity to work as a group can be vital to adaptive strategies. Skills and knowledge are complemented by social networks to move critical information through the system. Social capital can also link hotels with important cultural knowledge and local resources.

Cultural capital can include valuable knowledge of natural capital as a protective agent to some natural hazards. Additionally, cultures can integrate disaster planning and preparedness as a response to heightened risks. New Zealand has worked hard to integrate protective actions into its community fabric. Based on interviews with staff, ideas like '*long, strong, get gone*', which ask people to recognise the threat of a local source tsunami and seek higher ground quickly, are embedding into the culture. This idea combines the use of natural capital and cultural knowledge to save lives.

How well these ideas promote action has been considered following the Kaikōura earthquake. Many people recognised the strength of the earthquake, but still did not immediately seek higher ground (Blake, Johnston, Leonard, McLaren, & Becker, 2018). Further research into people's knowledge versus actions is needed.

### **Capital Groups Weighting**

An overarching theme is the weighting of capitals. Based on specific disaster scenarios some capitals may have dominant importance over others. For example, in the case of seismic activity, physical capital could be considered a primary capital component (Brown, Feldmann-Jensen, et al., 2019). The need to have the building standing, once the shaking stops, is the first concern; all protective actions and responses rely on this single factor. However, the capital-based approach used in this research is

grounded in the idea that “each capital group has its own contribution” to make to resilience (Mayunga, 2007 p.9). Individual capital group may be incrementally more important based on variables which include temporal qualities, resources, and specific hazards.

Providing weights to different predictors considers the idea that judgements based on theory or evidence, can be made as to the relationship between different capitals (Mayunga, 2007). Weighting predictors may prioritise some predictors over others, but not necessarily in a way that encourages hotel engagement in disaster resilience building. One of the DRFH’s features is the independence of capitals from each other, allowing for ease of entry for management when planning disaster resilience strategies. In considering resilience to disaster for hotels, weighting of variables of predictors would require expanding predictors to include types of disaster based on the study area, making the combinations of weightings highly varied. The following discussion illustrates some of the different interdependencies that specific locations or properties may want to consider in building disaster resilience.

The importance of physical capital is highlighted by examples of hotels failing due to total loss of operability. For example, in the 2011 earthquake in Christchurch, a large hotel in the central business district became unstable and failed on one side causing the building to be declared a total loss (Department of Building and Housing, 2012). Other capitals did come into play in the immediate response. For example, based on interview data, staff members were instrumental in assisting people on upper floors in finding a safe evacuation path down and out of the structure. Leveraging knowledge to save lives is an important human capital resource. However, the hotel's ultimate demolition indicates that physical capital, the building’s actual ability to withstand strong ground motion, played a critical role in future operations.

In other disaster scenarios, different capitals may take priority. For example, in the case of a tsunami, natural capital can play a pivotal role. Mangroves, sand dunes, and reefs can potentially mitigate the negative effects of tsunami (Cohen, 2015). In a tsunami physical capital also becomes a line of defence based on proximity to shoreline, elevation, and potential for vertical evacuation.

Potential threats from terrorism rely on human capital as a critical component. Staff training is integral to counter-terrorism strategies. Training staff to be aware of potentially threatening circumstances can provide much needed warning of potential attacks (Wernick & Von Glinow, 2012). Human capital combined with physical capital infrastructure which includes security mechanisms are two important interdependencies for risks from terrorism.

The potential for the spread of disease requires utilisation of both human and social capital as components to resilience. In the SARS outbreak of 2003 staff at some hotels were trained to perform specialised cleaning tasks to limit the potential spread of disease and were asked to cooperate with management in reducing their working hours to help the hotel remain operational in the wake of reduced guest numbers (Lo et al., 2007). Staff with less financial need voluntarily reduced their hours to allow staff with more financial needs to maintain their income. The adaptive skills and social cohesion of staff members got the hotels through a very challenging period.

Finally, different capitals may become more important as operations pass from pre-event to disaster response, and then recovery. For example, in the pre-disaster time period physical capital and human capital need to be increased by targeting physical strengthening, safety measures, staff training, and increases of knowledge. Cultural capital becomes instrumental in the immediate response to some disasters. Understanding and recognising the impending threat of a tsunami and what protective

actions to take can be cultural knowledge (Gaillard & Mercer, 2012). Cultural knowledge can provide the ability to act quickly and could mean the difference between life and death.

In the later response phase and early recovery, cultural capital and social capital may become critical. In the aftermath of the Kaikōura earthquake accommodation providers were able to connect with the local Takahanga Marae (Maori community centre) for food and shelter while awaiting evacuation of visitors via helicopter (Stevenson et al., 2017). Understanding what and where resources were available in the immediate time following the event required the use of (or development of) network connections.

The importance of economic capital resources during recovery becomes pivotal. Insurance payouts, financial capital to bridge possible slumps in business, and diverse sources of income all become resources of focus when an organisation is recovering from a disaster and trying to reach a new operational equilibrium.

### **Barriers to Developing Disaster Resilience for Hotels**

Barriers to building disaster resilience revealed by this research are: time, awareness, and financial resource allocations. Managers are often fully committed, time-wise, to operational concerns. However, it may be that with limited effort managers can engage their staff in the process and relieve much of the workload. The Theory of Planned Behaviour (TPB) describes intentions to act as being tied to one's ability to perform corrective actions, social norms, and attitudes towards the behaviour (Ajzen, 1991). Based on this theory, providing actions that are achievable and effective for reducing risks are essential if managers and staff are to be encouraged to build disaster resilience. The DRFH's multi-entry format allows organisations with resource constraints an opportunity to make small, incremental changes to their resilience.

Protection Motivation Theory (PMT) discusses how a combination of threat seriousness, perceived probability of occurrence, available mitigation actions, and confidence to perform the actions all contribute to a person's intention to protect themselves prior to an event (Maddux & Rogers, 1983). Development of an all-hazard approach to disaster management has been an important recommendation of this research, however, the threat of some types of disaster are not considered to be a priority for hotels in this study. While many agree the consequences of, for example, tsunami could be disastrous, the perceived likelihood has been shown in this research to be underestimated in some locations. Taking actions to protect relies on the understanding of the seriousness of the threat, therefore, some staff that don't recognise the threat may not consider important protective action any different to other types of threats. In adopting an all-hazard approach risks can be better evaluated based on empirical evidence, and policies can be developed to support the information developed on hazards. Additionally, development of broader networks may improve information regarding hazards and protective remedies, also working towards the improved motivation for protection of staff and properties.

Interviews with staff from many different departments revealed enthusiasm and engagement for disaster management topics. Capitalising on those staff who are interested and engaged in developing organisational resilience can alleviate some of the GMs' time burden, although the ultimate responsibility to ensure plans are adequate rests with managers. Furthermore, engaging staff in this manner also builds human capital in the form of knowledge and skills and social capital gains are achieved by breaking down silos between management and staff as well as an increased sense of community and contribution towards professional development.

Financial challenges as a barrier requires management to analyse the costs of engaging in resilience building versus the cost of doing nothing. This barrier is where the independent nature of the DRFH can best be illustrated as an asset to the framework. In an ideal situation all properties would have a budget for disaster resilience activities and could allocate staff and other resources from that budget to build their disaster resilience. Yet, many different aspects of resilience do not require great investment and may already be part of a business operations to a limited extent. For example, hotel GMs and staff report that a team approach is part of the operation already, but not as often part of disaster planning. The cost of adding staff to the disaster planning efforts could be quite small, in comparison, to gains in social and human capital. Both social and human capital resources are needed daily to provide guests' services so gains in those capital resources through disaster planning may also work towards improving daily service goals at the same time. This study demonstrated that social capital is the one resource that expands with use, as discussed in Chapter Six.

For WL, tsunami risk may also be underestimated due to optimism bias. To combat the bias, Meyer and Kunreuther (2017) suggest considering how this bias is affecting possible planning and consideration of protective actions. This example illustrates the need to actively consider disaster resilience building for hotels, and the value of an all-hazards approach. If managers were to discount a particular risk as unimportant, they may also overlook important differences in actions needed. The all-hazard view provides an opportunity to begin the conversation on multiple fronts. The key here is to start somewhere, doing something, and build on that synergy.

## **Chapter Summary**

The DRFH developed in this research has been used as a basis for collecting both quantitative and qualitative data. Chapter Seven presented the combined data findings and recommendations for building resilience to disaster for hotels in the study. Appendix E contains an abridged version of the discussion developed to present at the 8th International Conference on Building Resilience in Lisbon, Portugal. The condensed version was required to meet conference guidelines. Chapter Seven also explored DRFH interdependencies, considerations for weighting predictors and barriers to improving disaster resilience in the hotel sector. The final chapter will conclude this thesis, discuss limitations of the research, and offer avenues of future research that can build upon this study and further aid the hotel sector in developing disaster resilience.

## **Chapter Eight: Future Research, Summary, Limitations, and Conclusion**

Research in the field of resilience continues to contribute to our understanding of what resilience is, and how to harness resilience attributes when needed in times of disruption. The landscape of hazards and risks continues to get more complicated and relevant as time goes by, especially in consideration of coastal areas and global changes. Building disaster resilience can help hotel managers face many of the challenges that may disrupt their operations.

### **Future Research**

The development of the DRFH and the subsequent research presented in this thesis has contributed to the study of disasters and tourism by developing sector specific predictors of disaster resilience and sampling an area to measure resilience utilising that frame of reference. Recommendations for future action (Table 8.1) can ultimately lead to improved disaster resilience. Beyond this study, there are a number of new research paths that can extend this knowledge and contribute additional information and ideas for building resilience in the hotel sector.

Future research looking at refining predictors through case studies drawn from areas with different risks will add to the knowledge significantly. The DRFH may be enhanced by data drawn from geographic areas that have different hazard priorities. In the interviews (Chapter Six) most staff discussed concerns and actions taken in earthquakes or tsunamis. Expanding the geographic area for a new study may reveal additional predictors of resilience not evident in New Zealand, and enhance the all-hazards perspective of the DRFH. A study by Paraskevas (2013) recommends a strategy to interface security functions at hotels with the terrorist attack cycle. Some of these components could have interesting application to non-terrorist situations. For example, the *connect* component looks at valuable networks, but also redundant communications

platforms and reporting systems for suspicious behaviour (Paraskevas, 2013). These ideas could translate into other types of potential disasters and further refine the DRFH. Also, resilience predictors found present in hotels in New Zealand may not be present (or present in the same levels) in other areas. For example, based on both surveys and interviews, critical data is being backed-up at regular daily intervals, hard copies are available if needed in the majority of hotels. This valuable practice is an industry standard in WL and HB; is the practice the same for other areas? If not, does the lack of this practice also connect with other predictors in any way?

Another avenue for future refinement of the DRFH is to look at factor analysis based on a large survey sample. Factor analysis could develop a deeper understanding of overlaps and other predictor characteristics, adding additional validity to the DRFH's predictors and surveys in the future. Pappas (2018) utilised factor analysis in a study aimed at understanding Greek accommodation providers' responses to crises in Greece. The results identified five areas of focus, including developing competitiveness, operations, marketing, productivity, and financial aspects (Pappas, 2018). The DRFH predictors, drawn from the literature, are a step forward for understanding resilience to disaster for the hotel sector, but further mathematically-based analysis would also be valuable.

Research investigating guest perceptions of safety and risk factors from a multi-hazard perspective would provide valuable links to this research. In 1997 Drabek published a study of people impacted by disasters which included interviews with 520 tourists. The findings of this study highlighted the need to develop policies and procedures for communication and evacuation of tourists in disasters as well as a need to improve public/private collaborations. Guest safety in tsunami was studied by Cheung and Law (2006). Interviews with hotel managers in Macau and Hong Kong

found that a general lack of risk awareness and planning existed. Guest views were not part of this study, with the exception of a small example from Trip Advisor (Chapter Six). Guest perceptions and lessons learned during the blackout in 2003 of the eastern area of the United States and Canada was investigated by Kwortnik (2005), also from the management perspective. When researching guest perspectives, the value of direct input from guests is evident. As more social media data is available, including reviews, exploring guest expectations and opinions becomes an easier premise. One study of Trip Advisor found some reviews, hotel ratings, and comments reflected issues encountered during disasters for guests (Banerjee, & Chua, 2016). Investigating guests' perceptions and safety issues from a combination of surveys, interviews, and social media reviews could provide valuable information for hoteliers that may improve both guest safety and guest satisfaction, adding to the knowledge gained from this research.

Research capturing large samples of staff may illuminate new ideas for consideration. As discussed above, many studies present manager-centric data (Cheung & Law, 2006; Kwortnik, 2005). This study's sample for staff was small largely because it required assistance from GMs as gatekeepers. The value of input from stakeholders throughout the organisation added an important link between the managers' ideas of what policies and protocols are, and staff members understanding of these. Also, staff often have 'front line' daily contact with guests which is a valuable pool of knowledge for future research. This potential group of research participants is challenging to access, but the data would add significant value to this area of research.

### **Summary and Recommendations**

Table 8.1 summarises the findings of both the qualitative and quantitative research undertaken, and lists the recommendations for hotels which were developed from those

findings. The summary presents the main discussion themes from throughout the thesis and is presented as a tool for future disaster resilience planning in the hotel sector.

Table 8.1

*Summary of Findings and Recommendations from Mixed Methods Data Analysis*

Economic Capital	
Research Findings	Recommendations for Hotels
<p>Financial strength:</p> <ul style="list-style-type: none"> <li>• Tourism industry experiencing growth including an increase in hotel guest nights. 40% of hotels do not have financial reserves.</li> </ul> <p>Availability of resources:</p> <ul style="list-style-type: none"> <li>• Disaster management is not part of the budget</li> </ul> <p>Diversity of income:</p> <ul style="list-style-type: none"> <li>• Increases in the diversity of customer bases are happening and supported by marketing efforts</li> </ul> <p>Staff economic resilience:</p> <ul style="list-style-type: none"> <li>• Growth in tourism jobs, longevity of employment, and regular savings by staff promote economic resilience</li> </ul>	<p>Financial Strength:</p> <ul style="list-style-type: none"> <li>• Strategize increasing financial reserves</li> </ul> <p>Availability of resources:</p> <ul style="list-style-type: none"> <li>• Include disaster management activities in budget</li> </ul> <p>Diversity of income:</p> <ul style="list-style-type: none"> <li>• Continue to seek out new markets to increase customer base diversity</li> </ul> <p>Staff economic resilience:</p> <ul style="list-style-type: none"> <li>• Encourage personal property insurance acquisition by staff</li> </ul>
Social Capital	
Research Findings	Recommendations for Hotels
<p>Social cohesion/connectedness/networks:</p> <ul style="list-style-type: none"> <li>• Close intra-organisational networks. Higher in WL post-Kaikōura earthquake.</li> </ul> <p>Capacity to work as a group:</p> <ul style="list-style-type: none"> <li>• Demonstrated thinking on their feet and pulling together. Organisations offer limited opportunities to socialise.</li> </ul> <p>Trust:</p> <ul style="list-style-type: none"> <li>• Some concerns about organisational and management priorities but confidence in plans.</li> <li>• Leadership takes thoughtful actions and values input from staff</li> </ul>	<p>Social network:</p> <ul style="list-style-type: none"> <li>• Improve inter-organisational relationships and networks that may be needed in a disaster</li> </ul> <p>Social cohesion:</p> <ul style="list-style-type: none"> <li>• Increase management support of social activities for staff cohesion development</li> </ul> <p>Capacity to work as a group:</p> <ul style="list-style-type: none"> <li>• Include staff in disaster management planning. Clarify availability of personnel in a disaster</li> </ul>

Table 8.1 (continued)

*Summary of Findings and Recommendations from Mixed Methods Data Analysis*

Human Capital	
Research Findings	Recommendations for Hotels
<p>Health and wellbeing:</p> <ul style="list-style-type: none"> <li>• Medical insurance available and perceived control is high for staff and GMs.</li> </ul> <p>Skills:</p> <ul style="list-style-type: none"> <li>• Employees have some experience in fire evacuation exercises and special trainings (e.g. first aid but limited non-fire related exercise and training experience.</li> </ul> <p>Capacity to adapt:</p> <ul style="list-style-type: none"> <li>• Employees are ready, willing and able to assist in a disaster but may be challenged in getting to workplace.</li> <li>• Managers showed creative adaptation but need to consider guest satisfaction when possible.</li> </ul> <p>Knowledge:</p> <ul style="list-style-type: none"> <li>• Staff and managers have an understanding of basic evacuation protocols and industry experience.</li> </ul> <p>Business continuity:</p> <ul style="list-style-type: none"> <li>• Critical data is handled with disruptions of service considered. Leadership in key areas is available.</li> </ul>	<p>Skills:</p> <ul style="list-style-type: none"> <li>• Need all-hazards training and exercises for all staff.</li> </ul> <p>Capacity to adapt:</p> <ul style="list-style-type: none"> <li>• Many staff and GMs could not get to work in some types of disasters. Clarify skills available in a disaster, consider cross-training to address potential gaps.</li> </ul> <p>Knowledge:</p> <ul style="list-style-type: none"> <li>• Improve staff all-hazards protective action knowledge.</li> <li>• Guests need additional multi-hazard information e.g. additional door signage.</li> <li>• Disabled guests need priority all-hazard evacuation consideration.</li> <li>• Keep public areas cleaned and disinfected on a frequent schedule</li> </ul> <p>Business continuity:</p> <ul style="list-style-type: none"> <li>• Develop information and communications skeletons in advance of disaster.</li> </ul>
Physical Capital	
Research Findings	Recommendations for Hotels
<p>Life safety:</p> <ul style="list-style-type: none"> <li>• Building standards are being met.</li> <li>• Evacuation routes are well known.</li> <li>• Building height factors into service levels when elevators are inaccessible.</li> </ul> <p>Business continuity:</p> <ul style="list-style-type: none"> <li>• Critical data protection is integrated into basic processes.</li> </ul>	<p>Life safety:</p> <ul style="list-style-type: none"> <li>• Consider evacuation from an all-hazard perspective including socialisation of correct actions based on hazard.</li> <li>• Emergency supplies of food and water also need development</li> </ul> <p>Business continuity:</p> <ul style="list-style-type: none"> <li>• Power back-up capacity needs improvement.</li> <li>• Insure redundancies or other options for power dependent systems (i.e. key making capacity).</li> </ul>

Table 8.1 (continued)

*Summary of Findings and Recommendations from Mixed Methods Data Analysis*

Natural Capital	
Research Findings	Recommendations for Hotels
<p>Hotel exposure to natural hazard risks:</p> <ul style="list-style-type: none"> <li>• Natural hazard risk is considered by research and policy organisations and risk mitigation is available in the natural environment (e.g. higher ground).</li> </ul> <p>Hotel impacts on the local environment:</p> <ul style="list-style-type: none"> <li>• Organisational commitment to natural environment protection are present. Sustainable activities are being considered and research is ongoing.</li> </ul>	<p>Hotel exposure to natural hazard risks:</p> <ul style="list-style-type: none"> <li>• Detailed risk assessments are needed in some cases.</li> <li>• Staff need to be aware of risks and protective actions (i.e. tsunami).</li> </ul> <p>Hotel impacts on the local environment:</p> <ul style="list-style-type: none"> <li>• Act as watch dog for natural resource conservation and protection.</li> </ul>
Cultural Capital	
Research Findings	Recommendations for Hotels
<p>Cultural influence on social system:</p> <ul style="list-style-type: none"> <li>• Safety culture exists.</li> <li>• The duty of care for guests is integrated into the culture.</li> </ul> <p>Cultural knowledge:</p> <ul style="list-style-type: none"> <li>• Previous experiences of local hazards are influencing new actions and strategies.</li> <li>• Some lack of cultural knowledge may influence lack of tsunami strategies in WL.</li> </ul>	<p>Cultural influence on social system:</p> <ul style="list-style-type: none"> <li>• Policies need to prioritise all people's safety. Staff safety needs to be balanced with guest safety.</li> </ul> <p>Cultural knowledge:</p> <ul style="list-style-type: none"> <li>• All-hazards approach can ensure protective actions are understood for varied scenarios</li> </ul>

As discussed throughout many chapters of this thesis, taking an all-hazards approach when developing disaster management activities is key for resilience building. This concept repeats in many different ways within the recommendations, which only serves to substantiate the overarching need for hotel disaster resilience building.

### **Study Limitations**

Research has limitations that are important to understand when making meaning of the data. The following is an overview of limitations within the scope of this study.

In order to present a balanced view of subjective concepts both manager and staff participation was required. A limitation of the study was the challenge of access to this group; novel approaches are needed. Many studies have utilised input from hotel management (AlBattat & Ahmad, 2015; Nguyen, Imamura, & Iuchi, 2018; Ritchie et al., 2011). However, this study sought to draw on multiple perspectives within hotel properties to get a fuller, nuanced, picture of data. General managers provided access to staff, but the GMs' personal time limitations made a large survey sample challenging to achieve. Quantitative data often seeks to develop data that can be generalised across a broader group (Johnson & Onwhegbuzie, 2016). Generalisation is not possible with this data. The additional qualitative research adds to the validity of findings from the small quantitative sample (Johnson & Onwhegbuzie, 2016).

A further limitation of the study includes the localised case study nature of the data and variables, also making widespread generalisation inappropriate. Data and recommendations are specific to the study area. The small sample size of total hotels in the two study areas was 28 and 18. While a high percentage of hotels participated, the non-participants of this small sample also may create bias. The reasons hotels did not participate could be significant. However, the small sample size allowed personal contact and may be valuable to future research comparisons of small samples.

### **Thesis Conclusion**

The combined results of this research (Chapter Seven) are the subject of a conference paper and two conference presentations. The academic conference is mentioned in Chapter 7 Summary and the paper can be found in Appendix E. One of the overarching objectives of this research has been to develop practical information for hotel managers to utilise for building disaster resilience. To that end a presentation of results (Chapter Seven) was made at the TIA Industry Annual Conference in July 2018

at the Cordis Hotel in Auckland. Over 300 attendees were presented with findings and recommendations developed from this research. In addition to data dissemination, conference discussions with managers and attendees provided insights into what information was important (they asked questions) and how effective the method of presentation was for hotel managers and owners. The attendees were engaged in the findings and many requested further information to take back to their hotels. The *Authors Link* to the article found in Chapter Four was also sent in the TIA monthly newsletter when it became available in August. One comment that was made by a number of attendees was their new recognition of the importance of considering exercises that are multi-hazard instead of the traditional fire drill format currently used most often. As a key message in the presentation it was valuable that this was picked up by attendees. The TIA representative relayed that many positive comments were received about the value of the findings for the hotel managers and staff. The contents of this presentation can be found in Appendix D.

Brought to this academic study of disaster resilience within the hotel sector was the author's experience working in several multi-national hotel chains. Long-term overarching objectives for ongoing research include the development of pragmatic ways for hotel management to build disaster resilience that also enhance profitability and long-term customer-service goals. This study is the beginning step in that journey. The importance of tourism to the world's economy has been discussed at many points in this thesis. Developing disaster resilience is one critical way to work towards keeping hotels operational and ready to play their vital role in disaster recovery. Finding practical ways to allow the economic value of tourism to continue, while keeping guests and staff safe from harm, will require creative commitment.

## References

- 100% Pure New Zealand. (2018). Hawke's Bay. Retrieved from <https://www.newzealand.com/int/hawkes-bay/>
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Process.*, 50, 179-211. doi:10.1016/0749-5978(91)90020-T
- AlBattat, A. R., & Ahmad, K. N. (2015). Emergency preparedness of the hotel industry: The case of Jordan. *Advances in Environmental Biology*, 9(3), 19-22.
- AlBattat, A. R., & Mat Som, A. P. (2013). Emergency preparedness for disasters and crises in the hotel industry. *SAGE Open*, 3(3), 1-10. doi:10.1177/2158244013505604
- AlBattat, A. R., & Mat Som, A. P. (2014). Disaster preparedness of hotel industry abroad: A comparative analysis. *SHS Web of Conferences*, 12, 1-8. doi:10.1051/shsconf/20141201012
- Aldunce, P., Beilin, R., Handmer, J., & Howden, M. (2014). Framing disaster resilience: The implications of the diverse conceptualisations of “bouncing back”. *Disaster Prevention and Management*, 23(3), 252-270. doi:10.1108/dpm-07-2013-0130
- Andone, D. (2018). From paradise to panic: Hawaii residents and vacationers run for cover, fearing missile attack. Retrieved from <https://edition.cnn.com/2018/01/13/us/hawaii-false-alarm-react/index.html>
- Arbon, P., Cusack, L., Gebbie, K., Steenkamp, M., & Anikeeva, O. (2013). *How do we measure and build resilience against disaster in communities and households*. Retrieved from Adelaide, Australia: <http://www.torrensresilience.org/>
- Associated Press. (2018). Beach from Leonardo DiCaprio film to temporarily close due to tourist damage. *The Guardian*. Retrieved from <https://www.theguardian.com/film/2018/mar/28/thailand-beach-leonardo-dicaprio-closing>
- Badiee, M., Wang, S. C., & Creswell, J. W. (2012). Designing community-based mixed methods research. In D. K. Nagata, L. Kohn-Wood, & L. A. Suzuki (Eds.), *Qualitative strategies for ethnocultural research* (pp. 41-59). Washington DC: American Psychological Association.
- Banerjee, S., & Chua, A. Y. K. (2016). In search of patterns among travellers' hotel ratings in TripAdvisor. *Tourism Management*, 53, 125-131. doi:10.1016/j.tourman.2015.09.020
- Barriball, K. L., & While, A. (1993). Collecting data using a semi-structured interview: A discussion paper. *Journal of Advanced Nursing*, 19, 328-335.
- Bec, A., McLennan, C., & Moyle, B. D. (2015). Community resilience to long-term tourism decline and rejuvenation: a literature review and conceptual model. *Current Issues in Tourism*, 19(5), 431-457. doi:10.1080/13683500.2015.1083538

- Becken, S., & Hughey, K. F. D. (2013). Linking tourism into emergency management structures to enhance disaster risk reduction. *Tourism Management*, *36*, 77-85. doi:10.1016/j.tourman.2012.11.006
- Becken, S., Mahon, R., Rennie, H. G., & Shakeela, A. (2013). The tourism disaster vulnerability framework: an application to tourism in small island destinations. *Natural Hazards*, *71*(1), 955-972. doi:10.1007/s11069-013-0946-x
- Becker, J. S., Paton, D., Johnston, D. M., Ronan, K. R., & McClure, J. (2017). The role of prior experience in informing and motivating earthquake preparedness. *International Journal of Disaster Risk Reduction*, *22*, 179-193. doi:10.1016/j.ijdr.2017.03.006
- Biggs, D., Hall, C. M., & Stoeckl, N. (2012). The resilience of formal and informal tourism enterprises to disasters: reef tourism in Phuket, Thailand. *Journal of Sustainable Tourism*, *20*(5), 645-665. doi:10.1080/09669582.2011.630080
- Birkmann, J., Cardona, O. D., Carreño, M. L., Barbat, A. H., Pelling, M., Schneiderbauer, S., . . . Welle, T. (2013). Framing vulnerability, risk and societal responses: the MOVE framework. *Natural Hazards*, *67*(2), 193-211. doi:10.1007/s11069-013-0558
- Blake, D. M., Johnston, D., Leonard, G. S., McLaren, L., & Becker, J. (2018). A citizen science initiative to understanding community response to the Kaikoura earthquake and tsunami warning in Petone and Eastbourne, Wellington, Aotearoa/New Zealand. *Bulletin of the Seismological Society of America*, *108*(3B), 1807-1817. doi:https://doi.org/10.1785/0120170292-5
- Bland, M. (2013). Plans are useless. *Journal of Business Continuity & Emergency Planning*, *7*(1), 56-66.
- Bojanic, D. C., & Lo, M. (2016). A comparison of the moderating effect of tourism reliance on the economic development for islands and other countries. *Tourism Management*, *53*, 207-214. doi:10.1016/j.tourman.2015.10.006
- Bosher, L., & Dainty, A. (2011). Disaster risk reduction and 'built-in' resilience: towards overarching principles for construction practice. *Disasters*, *35*(1), 1-18. doi:10.1111/j.0361-3666.2010.01189.x
- Bradley, B., & Wotherspoon, L. (2016). Seismology and ground motions. *QuakeCoRE newsletter: Kaikoura earthquake*, (Special Edition). Retrieved from <https://us10.campaign-archive.com/?u=c65a2a0813835c484fde76107&id=764a87e2fc&e=9fe74c7450>
- Brown, N. A., Feldmann-Jensen, S., Rovins, J. E., Orchiston, C., & Johnston, D. (2019). Exploring disaster resilience within the hotel sector: A study of Wellington and Hawke's Bay New Zealand. Revised and resubmitted to *Cornell Hospitality Quarterly* Feb 2019, 1-40.
- Brown, N. A., Orchiston, C., Rovins, J. E., Feldmann-Jensen, S., & Johnston, D. (2018). An integrative framework for investigating disaster resilience within the hotel

- sector. *Journal of Hospitality and Tourism Management*, 36, 67-75. doi:<https://doi.org/10.1016/j.jhtm.2018.07.004>.
- Brown, N. A., Rovins, J. E., Feldmann-Jensen, S., Orchiston, C., & Johnston, D. (2017). Exploring disaster resilience within the hotel sector: A systematic review of literature. *International Journal of Disaster Risk Reduction*, 22, 362-370. doi:<http://dx.doi.org/10.1016/j.ijdr.2017.02.005>
- Brown, N. A., Rovins, J. E., Feldmann-Jensen, S., Orchiston, C., & Johnston, D. (2019). Measuring disaster resilience within the hotel sector: An exploratory survey of Wellington and Hawke's Bay, New Zealand hotel staff and managers. *International Journal of Disaster Risk Reduction*, 33, 108-121. doi:[doi.org/10.1016/j.ijdr.2018.09.014](https://doi.org/10.1016/j.ijdr.2018.09.014)
- Bruneau, M., Chang, S. E., Eguchi, R. T., Lee, G. C., O'Rourke, T. D., Reinhorn, A. M., . . . von Winterfeldt, D. (2003). A framework to quantitatively assess and enhance the seismic resilience of communities. *Earthquake Spectra*, 19(4), 733-752. doi:10.1193/1.1623497
- Buckle, P. (2006). Assessing social resilience. In D. Paton & D. Johnston (Eds.), *Disaster resilience: An integrated approach* (pp. 88-104). Springfield, IL: Charles C. Thomas.
- Burattini, M. N., Coutinho, F. A., Lopez, L. F., Ximenes, R., Quam, M., Wilder-Smith, A., & Massad, E. (2016). Potential exposure to Zika virus for foreign tourists during the 2016 Carnival and Olympic Games in Rio de Janeiro, Brazil. *Epidemiol Infect*, 144(9), 1904-1906. doi:10.1017/S0950268816000649
- Burby, R. J. (1998). *Cooperating with nature: Confronting natural hazards with land-use planning for sustainable communities*. Washington D. C.: Joseph Henry Press.
- Burnard, K., & Bhamra, R. (2011). Organisational resilience: Development of a conceptual framework for organisational responses. *International Journal of Production Research*, 49(18), 5581-5599. doi:10.1080/00207543.2011.563827
- BusinessDictionary.com. (2016). Hotel: Definition. Retrieved from <http://www.businessdictionary.com/definition/hotel.html>
- Cahyanto, I., & Pennington-Gray, L. (2017). Toward a comprehensive destination crisis resilience framework. *Tourism Travel and Research Association: Advancing Tourism Research Globally*, 21.
- Calgaro, E., & Lloyd, K. (2008). Sun, sea, sand and tsunami: examining disaster vulnerability in the tourism community of Khao Lak, Thailand. *Singapore Journal of Tropical Geography*, 29(3), 288-306. doi:10.1111/j.1467-9493.2008.00335.x
- Calgaro, E., Lloyd, K., & Dominey-Howes, D. (2013). From vulnerability to transformation: a framework for assessing the vulnerability and resilience of tourism destinations. *Journal of Sustainable Tourism*, 22(3), 341-360. doi:10.1080/09669582.2013.826229

- Cannon, T. (1994). Vulnerability analysis and the explanation of 'natural' disasters. In A. Varley (Ed.), *Disasters, development and environment* (pp. 13-30). Chichester, England: John Wiley & Sons LTD.
- Celik, S., & Corbacioglu, S. (2013). Interorganizational coordination: Analysis of 2011 Van earthquakes. In N. Kapucu, C. V. Hawkins, & F. I. Rivera (Eds.), *Disaster resiliency: Interdisciplinary perspective* (pp. 308-333). New York, New York: Routledge.
- Chan, E. S. W., & Hawkins, R. (2010). Attitude towards EMSs in an international hotel: An exploratory case study. *International Journal of Hospitality Management*, 29(4), 641-651. doi:10.1016/j.ijhm.2009.12.002
- Chan, E. S. W., & Hawkins, R. (2012). Application of EMSs in a hotel context: A case study. *International Journal of Hospitality Management*, 31(2), 405-418. doi:10.1016/j.ijhm.2011.06.016
- Chandra, A., Acosta, J., Stern, S., Uscher-Pines, L., Williams, M. V., Yeung, D., . . . Meredith, L. S. (2011). *Building community resilience to disasters: A way forward to enhance national security* (TR 915). Retrieved from Santa Monica, CA: [http://www.rand.org/content/dam/rand/pubs/technical\\_reports/2011/RAND\\_TR915.pdf](http://www.rand.org/content/dam/rand/pubs/technical_reports/2011/RAND_TR915.pdf)
- Cheung, C., & Law, R. (2006). How can hotel guests be protected during the occurrence of a Tsunami? *Asia Pacific Journal of Tourism Research*, 11(3), 289-295. doi:10.1080/10941660600753331
- Chien, G. C. L., & Law, R. (2003). The impact of the Severe Acute Respiratory Syndrome on hotels: A case study of Hong Kong. *International Journal of Hospitality Management*, 22(3), 327-332. doi:10.1016/S0278-4319(03)00041-0
- Civil Defence Emergency Management, Hawke's Bay. (2018). Hazards. Retrieved from <http://www.hbemergency.govt.nz/hazards>
- Cochrane, J. (2010). The Sphere of Tourism Resilience. *Tourism Recreational Research*, 35(2), 173-185. doi:http://dx.doi.org/10.1080/02508281.2010.11081632
- Cohen, E. (2009). Death in paradise: Tourist fatalities in the tsunami disaster in Thailand. *Current Issues in Tourism*, 12(2), 183-199. doi:10.1080/13683500802531141
- Cohen, E. (2015). Tsunami and flash-floods—Contrasting modes of tourism-related disasters in Thailand. *Tourism Recreation Research*, 32(1), 21-39. doi:10.1080/02508281.2007.11081521
- Comfort, L. K. (1994). Risk and resilience: Interorganizational learning following the Northridge Earthquake of 17 January 1994. *Journal of Contingencies and Crisis Management*, 2(3), 157-170. doi:10.1111/j.1468-5973.1994.tb00038.x

- Comfort, L. K., Boin, A., & Demchak, C. C. (2010a). Resilience revisited: An action agenda for managing extreme events. In L. K. Comfort, A. Boin, & C. C. Demchak (Eds.), *Designing resilience: Preparing for extreme events* (pp. 272-284). Pittsburgh, PA: University of Pittsburgh Press.
- Comfort, L. K., Boin, A., & Demchak, C. C. (Eds.). (2010b). *Designing resilience: Preparing for extreme events*. Pittsburgh, PA: University of Pittsburgh Press.
- Cooper, M. (2005). Japanese Tourism and the SARS Epidemic of 2003. *Journal of Travel & Tourism Marketing*, 19(2-3), 117-131. doi:10.1300/J073v19n02\_10
- Cornell Hotel and Restaurant Administrative Quarterly. (1985). The bad news. *The Cornell Hotel and Restaurant Administrative Quarterly*, 26(1), 87-91. doi:10.1177/001088048502600114
- Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed methods research*. Thousand Oaks, CA: SAGE Publications, Inc.
- Creswell, J. W., & Plano Clark, V. L. (2017). *Designing and conducting mixed methods research* (3rd ed.). Thousand Oaks, CA 91320: Sage Publications, Inc.
- Cutter, S. L., Barnes, L., Berry, M., Burton, C., Evans, E., Tate, E., & Webb, J. (2008). A place-based model for understanding community resilience to natural disasters. *Global Environmental Change*, 18(4), 598-606. doi:10.1016/j.gloenvcha.2008.07.013
- Cutter, S. L., Burton, C. G., & Emrich, C. T. (2010). Disaster resilience indicators for benchmarking baseline conditions. *Journal of Homeland Security and Emergency Management*, 7(1). doi:10.2202/1547-7355.1732
- Daellenbach, K., Parkinson, J., & Krisjanous, J. (2018). Just how prepared are you? An application of marketing segmentation and Theory of Planned Behavior for disaster preparation. *Journal of Nonprofit & Public Sector Marketing*, 1-31. doi:10.1080/10495142.2018.1452830
- Dahles, H., & Susilowati, T. P. (2015). Business resilience in times of growth and crisis. *Annals of Tourism Research*, 51, 34-50. doi:10.1016/j.annals.2015.01.002
- de Sausmarez, N. (2005). The Indian Ocean Tsunami. *Tourism and Hospitality Planning & Development*, 2(1), 55-59. doi:10.1080/14790530500072278
- Department of Building and Housing. (2012). *Structural performance of Christchurch CBD buildings in the 22 February 2011 earthquake*. Retrieved from Wellington, New Zealand: <http://www.building.govt.nz/userfiles/file/reports/quake-dbh-summary.pdf> Accessed March 22, 2016
- Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). (2017). Hotel Resilient, 1-20. Retrieved from [https://www.gidrm.net/site/assets/files/1198/giz\\_2017\\_pitchbook\\_hotel\\_resilient.pdf](https://www.gidrm.net/site/assets/files/1198/giz_2017_pitchbook_hotel_resilient.pdf)

- Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed-mode surveys: The tailored design method* (4th ed.). Hoboken, New Jersey: John Wiley & Sons, Inc.
- Dobie, S., Schneider, J., Kesgin, M., & Lagiewski, R. (2018). Hotels as Critical Hubs for Destination Disaster Resilience: An Analysis of Hotel Corporations' CSR Activities Supporting Disaster Relief and Resilience. *Infrastructures*, 3(4), 46. doi:10.3390/infrastructures3040046
- Drabek, T. E. (1997). Understanding tourists during disaster. *Australian Journal of Emergency Management, Summer*, 14-18.
- Drabek, T. E. (2000). Disaster evacuations: Tourist-business managers rarely act as customers expect. *Cornell Hotel and Restaurant Administration Quarterly, August*, 48-57.
- Eiser, J. R., Bostrom, A., Burton, I., Johnston, D. M., McClure, J., Paton, D., . . . White, M. P. (2012). Risk interpretation and action: A conceptual framework for responses to natural hazards. *International Journal of Disaster Risk Reduction*, 1, 5-16. doi:http://dx.doi.org/10.1016/j.ijdr.2012.05.002
- Elsevier. (2018). International Journal of Disaster Risk Reduction. Retrieved from <https://www.journals.elsevier.com/international-journal-of-disaster-risk-reduction>
- Elwood, K. (2016). Wellington building impacts. *QuakeCoRE newsletter: Kaikoura earthquake*, (Special Edition). Retrieved from <https://us10.campaign-archive.com/?u=c65a2a0813835c484fde76107&id=764a87e2fc&e=9fe74c7450>
- Environmental Protection Authority (EPA). (2018). Environmental Protection Authority: About us. Retrieved from <https://www.epa.govt.nz/about-us/>
- Esnard, A.-M. (2013). Taking action in uncertain environments: Connecting resilience to hazards. In N. Kapucu, C. V. Hawkins, & F. I. Rivera (Eds.), *Disaster resiliency: Interdisciplinary perspectives* (pp. 121-125). New York, NY: Routledge.
- Espiner, S., Orchiston, C., & Higham, J. (2017). Resilience and sustainability: a complementary relationship? Towards a practical conceptual model for the sustainability–resilience nexus in tourism. *Journal of Sustainable Tourism*, 1-16. doi:10.1080/09669582.2017.1281929
- Faulkner, B. (2001). Towards a framework for tourism disaster management. *Tourism Management*(22), 135-147.
- Faulkner, B., & Vikulov, S. (2001). Katherine, washed out one day, back on track the next: A post-mortem of a tourism disaster. *Tourism Management*, 22, 331-344.
- Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford, CA: Stanford University Press.

- Finnis, K. K., Johnston, D., Becker, J. S., Ronan, K. R., & Paton, D. (2007). School and community-based hazards education and links to disaster-resilient communities. *Regional Development Dialogue*, 28(2), 99-108.
- Folke, C., Carpenter, S., Walker, B., Scheffer, M., Chapin, T., & Rockström, J. (2010). Resilience thinking: Integrating resilience, adaptability and transformability. *Ecology and Society*, 15(4).
- Gaillard, J. C., & Mercer, J. (2012). From knowledge to action: Bridging gap in disaster risk reduction. *The Author*, 37(1), 93-114. doi:10.1177/0309132512446717
- Getty, J. M., & Getty, R. L. (2003). Lodging quality index (LQI): assessing customers' perceptions of quality delivery. *International Journal of Contemporary Hospitality Management*, 15(2), 94-104. doi:10.1108/09596110310462940
- Gilbert, S. W., Butry, D. T., Helgeson, J. F., & Chapman, R. E. (2015). *Community resilience economics decision guide for buildings and infrastructure systems*. Retrieved from <http://dx.doi.org/10.6028/NIST.SP.1197>
- Global Reporting Initiative (GRI), United Nations Global Compact (UNGC), & World Business Council for Sustainable Development (WBCSD). (2015). SDG compass guide: The guide for business action on the SDGs. Retrieved from [http://sdgcompass.org/wp-content/uploads/2015/12/019104\\_SDG\\_Compass\\_Guide\\_2015.pdf](http://sdgcompass.org/wp-content/uploads/2015/12/019104_SDG_Compass_Guide_2015.pdf)
- GNS Science. (2016). Where were New Zealand's largest earthquakes. Retrieved from <https://www.gns.cri.nz/Home/Learning/Science-Topics/Earthquakes/New-Zealand-Earthquakes/Where-were-NZs-largest-earthquakes>
- Gray, D. E. (2014a). *Doing research in the real world* (3rd ed.). Thousand Oaks, CA 91320: SAGE Publishing, Inc.
- Gray, D. E. (2014b). Theoretical perspectives and research methodologies. *Doing research in the real world*. (pp. 16-38). London, UK: SAGE Publications, Ltd.
- Greater Wellington Regional Council. (2016). *Wellington Region natural hazards management strategy: Draft*. Retrieved from <http://www.gw.govt.nz/assets/council-hazards/Draft-Natural-Hazards-Management-Strategy-15-09-16.pdf>
- Greater Wellington Regional Council. (2018). Tsunami evacuation zone maps. Retrieved from <https://gwrc.maps.arcgis.com/apps/Embed/index.html?webmap=d15166c8159c45b194cc358372ac7906>
- Grix, J. (2002). Introducing students to the generic terminology of social research. *Politics*, 22(3), 175-186. doi:10.1111/1467-9256.00173
- Gunter, H. (2005). Planning, training prepare hotels for disasters. *Hotel and Motel Management*, 3,51.

- Hall, C. M. (2010). Crisis events in tourism: subjects of crisis in tourism. *Current Issues in Tourism*, 13(5), 401-417. doi:10.1080/13683500.2010.491900
- Hall, C. M., Prayag, G., & Amore, A. (2018). *Tourism and resilience: Individual, organisational, and destination perspectives*. Bristol, UK: Channel View Publications.
- Hannemann, M. (2018) *Hotel's survey disaster preparedness/Interviewer: C. Cruz*. The Conversation: Tuesday January 23rd 2018, Hawaiian Public Broadcasting, Honolulu, HI.
- Harris, A. J., & Hahn, U. (2011). Unrealistic optimism about future life events: a cautionary note. *Psychological Review*, 118(1), 135-154. doi:10.1037/a0020997
- Hawke's Bay Emergency Management Group. (2018). Tsunami map. Retrieved from <http://hbhazards.intramaps.co.nz/IntraMaps/MapControls/HBHazards/EasiMaps/index.html>
- Hayward, M. (2017). Tough times for Kaikoura backpackers but business as usual for motel. *Stuff*. Retrieved from Stuff website: <https://www.stuff.co.nz/national/nz-earthquake/89320748/tough-times-for-kaikoura-backpackers-but-business-as-usual-for-motel>
- Hayward, M., Wright, M., & Lewis, O. (2017). The road. *Stuff*. Retrieved from Stuff website: <https://interactives.stuff.co.nz/2017/11/the-road/>
- Henderson, J. C. (2005). Responding to natural disasters: Managing a hotel in the aftermath of the Indian Ocean tsunami. *Tourism and Hospitality Research*, 6(1), 89-96. doi:10.1057/palgrave.thr.6040047
- Henderson, J. C. (2007). Corporate social responsibility and tourism: Hotel companies in Phuket, Thailand, after the Indian Ocean tsunami. *International Journal of Hospitality Management*, 26(1), 228-239. doi:10.1016/j.ijhm.2006.02.001
- Hinojosa, A. S., Gardner, W. L., Walker, H. J., Coglisier, C., & Gullifor, D. (2016). A Review of Cognitive Dissonance Theory in Management Research. *Journal of Management*, 43(1), 170-199. doi:10.1177/0149206316668236
- Holling, C. S. (2001). Understanding the complexity of economic, ecological, and social systems. *Ecosystems*, 4, 390-405. doi:10.1007/s10021-00
- Horspool, N., Cousins, W. J., & Power, W. I. (2015). *Review of tsunami risk facing New Zealand: A 2015 update*. Retrieved from [https://www.eqc.govt.nz/sites/public\\_files/GNS%202015%20Update.pdf](https://www.eqc.govt.nz/sites/public_files/GNS%202015%20Update.pdf)
- Hystad, P. W., & Keller, P. (2006). Disaster management: Kelowna tourism industry's preparedness, impact and response to a 2003 major forest fire. *Journal of Hospitality and Tourism Management*, 13(1), 44-58. doi:10.1375/jhtm.13.1.44
- Hystad, P. W., & Keller, P. C. (2008). Towards a destination tourism disaster management framework: Long-term lessons from a forest fire disaster. *Tourism Management*, 29(1), 151-162. doi:10.1016/j.tourman.2007.02.017

- International Monetary Fund. (2009). *St. Kitts and Nevis: 2009 Article IV consultation and request for emergency natural disaster assistance-Staff report* (IMF Country Report NO. 09/180). Retrieved from <http://www.imf.org/en/Publications/CR/Issues/2016/12/31/St-Kitts-and-Nevis-2009-Article-IV-Consultation-and-Request-for-Emergency-Natural-Disaster-23008>
- Jiang, Y., & Ritchie, B. W. (2017). Disaster collaboration in tourism: Motives, impediments and success factors. *Journal of Hospitality and Tourism Management, 31*, 70-82. doi:10.1016/j.jhtm.2016.09.004
- Johnson, R. B., & Onwhegbuzie, A. J. (2016). Mixed methods research: A research paradigm whose time has come. *Educational Researcher, 33*(7), 14-26. doi:10.3102/0013189X033007014
- Johnston, D., Bebbington Chin Diew Lai, M. S., Houghton, B. F., & Paton, D. (1999). Volcanic hazard perceptions: comparative shifts in knowledge and risk. *Disaster Prevention and Management: An International Journal, 8*(2), 118-126. doi:10.1108/09653569910266166
- Johnston, D., Becker, J., & Cousins, J. (2006). Lifelines and urban resilience. In D. Paton & D. Johnston (Eds.), *Disaster resilience: An integrated approach* (pp. 40-65). Springfield, IL: Charles C. Thomas.
- Johnston, D., Becker, J., Gregg, C., Houghton, B., Paton, D., Leonard, G., & Garside, R. (2007). Developing warning and disaster response capacity in the tourism sector in coastal Washington, USA. *Disaster Prevention and Management, 16*(2), 210-216. doi:10.1108/09653560710739531
- Johnston, D., Paton, D., Crawford, G. L., Ronana, K., Houghton, B., & Burgelt, P. (2005). Measuring tsunami preparedness in Coastal Washington, United States. *Natural Hazards, 35*(1), 173-187. doi:10.1007/s11069-004-2419-8
- Kafle, S. K. (2011). Measuring disaster resilient communities: A case study of coastal communities in Indonesia. *Journal of Business Continuity & Emergency Planning, 5*(4), 316-326.
- Kapucu, N., Hawkins, C. V., & Rivera, F. I. (2013). Disaster resiliency: Interdisciplinary perspectives. In N. Kapucu, C. V. Hawkins, & F. I. Rivera (Eds.), *Disaster resiliency: Interdisciplinary perspectives (1st edition ed.)* (pp. 1-14). New York, New York: Routledge.
- Kato, M., & Charoenrat, T. (2018). Business continuity management of Small and Medium Sized Enterprises: Evidence from Thailand. *International Journal of Disaster Risk Reduction, 27*, 577-587. doi:<https://doi.org/10.1016/j.ijdr.2017.10.002>
- Khazai, B. (2016). *Hotel Resilient*. Paper presented at the Asian Business Forum 2016, Bangkok, Thailand. [http://www.adpc.net/igo/contents/blogs/ABF2016/download/presentation/Day%202\\_21%20Apr%202016/04\\_Technical%20Session%204/01\\_AasianBusinessForum\\_Hanna%20Maier\\_Bijan%20Khazai\\_Hotel%20Resilient.pdf](http://www.adpc.net/igo/contents/blogs/ABF2016/download/presentation/Day%202_21%20Apr%202016/04_Technical%20Session%204/01_AasianBusinessForum_Hanna%20Maier_Bijan%20Khazai_Hotel%20Resilient.pdf)

- Kim, H., & Marcouiller, D. W. (2015). Considering disaster vulnerability and resiliency: the case of hurricane effects on tourism-based economies. *The Annals of Regional Science*, 54(3), 945-971. doi:10.1007/s00168-015-0707-8
- Kim, W. G., Lim, H., & Brymer, R. A. (2015). The effectiveness of managing social media on hotel performance. *International Journal of Hospitality Management*, 44, 165-171. doi:10.1016/j.ijhm.2014.10.014
- Klein, G., & Eckhaus, E. (2017). Sensemaking and sensegiving as predicting organizational crisis. *Risk Management*, 19(3), 225-244. doi:10.1057/s41283-017-0019-7
- Klein, R. J. T., Nicholls, R. J., & Thomalla, F. (2003). Resilience to natural hazards: How useful is this concept? *Environmental Hazards*, 5(1), 35-45. doi:10.1016/j.hazards.2004.02.001
- Kuntz, J. R. C., Näswall, K., & Malinen, S. (2016). Resilient employees in resilient organizations: Flourishing beyond adversity. *Industrial and Organizational Psychology*, 9(02), 456-462. doi:10.1017/iop.2016.39
- Kwok, A. H., Doyle, E. E. H., Becker, J., Johnston, D., & Paton, D. (2016). What is 'social resilience'? Perspectives of disaster researchers, emergency management practitioners, and policymakers in New Zealand. *International Journal of Disaster Risk Reduction*, 19, 197-211. doi:10.1016/j.ijdr.2016.08.013
- Kwortnik, R. J. (2005). Safeguarding hospitality service when the unexpected happens: Lessons learned from the blackout of '03. *Cornell Hotel and Restaurant Administration Quarterly*, 46(1), 13-39. doi:10.1177/0010880404272018
- Lamanna, Z., Williams, K. H., & Childers, C. (2012). An assessment of resilience: Disaster management and recovery for Greater New Orleans' Hotels. *Journal of Human Resources in Hospitality & Tourism*, 11(3), 210-224. doi:10.1080/15332845.2012.668653
- Lee, A. V., Vargo, J., & Seville, E. (2013). Developing a tool to measure and compare organizations' resilience. *Natural Hazards Review*, 14(1), 29-41. doi:10.1061/(asce)nh.1527-6996.0000075
- Lee, S., & Park, S.-Y. (2009). Do socially responsible activities help hotels and casinos achieve their financial goals? *International Journal of Hospitality Management*, 28(1), 105-112. doi:10.1016/j.ijhm.2008.06.003
- Lerch, D. (2015). *Six foundations for building community resilience*. Retrieved from Santa Rosa, CA: <http://www.postcarbon.org/wp-content/uploads/2015/11/Six-Foundations-for-Building-Community-Resilience.pdf>
- Lew, A. A. (2013). Scale, change and resilience in community tourism planning. *Tourism Geographies*, 16(1), 14-22. doi:10.1080/14616688.2013.864325
- Linnenluecke, M. (2017). Resilience in business and management research: A review of influential publications and a research agenda. *International Journal of Management Reviews*, 19, 4-30. doi:DOI: 10.1111/ijmr.12076

- Lo, A., Cheung, C., & Law, R. (2007). The survival of hotels during disaster: A case study of Hong Kong in 2003. *Asia Pacific Journal of Tourism Research*, 11(1), 65-80. doi:10.1080/10941660500500733
- Maddux, J. E., & Rogers, R. W. (1983). Protection motivation and self-efficacy: A revised theory of fear appeals and attitude change. *Journal of Experimental Social Psychology*, 19(5), 469-479. doi:10.1016/0022-1031(83)90023-9
- Maditinos, Z., & Vassiliadis, C. (2008). *Crises and disasters in Tourism Industry: Happen locally- affect globally*. Paper presented at the Management of International Business and Economics Systems, (MIBES) Conference. [http://mibes.teilar.gr/ebook/ebooks/maditinos\\_vasiliadis%2067-76.pdf](http://mibes.teilar.gr/ebook/ebooks/maditinos_vasiliadis%2067-76.pdf)  
Accessed March 22, 2016
- Mahon, R., Becken, S., & Rennie, H. (2013). *Evaluating the business case for investment in the resilience of the tourism sector of small island developing states. Background Paper prepared for the Global Assessment Report on Disaster Risk Reduction 2013*. Retrieved from <http://www.preventionweb.net/english/hyogo/gar/2013/en/bgdocs/Mahon%20et.al.%202012.pdf>
- Malhotra, R., & Venkatesh, U. (2009). Pre-crisis period planning: lessons for hospitality and tourism. *Worldwide Hospitality and Tourism Themes*, 1(1), 66-74. doi:10.1108/17554210910949896
- Mantyniemi, P. (2012). An analysis of seismic risk from a tourism point of view. *Disasters*, 36(3), 465-476. doi:10.1111/j.1467-7717.2011.01266.x
- Marriott International Inc. (2018). About Marriott International: Find your world. Retrieved from <https://www.marriott.com/marriott/aboutmarriott.mi>
- Martin-Breen, P., & Anderies, J. M. (2011). *Resilience: A literature review*. Retrieved from [https://docs.google.com/document/d/1xcInW\\_qolqbIScN\\_2KwMCFO24sR4Q-9JXx6CAcYL\\_go/edit](https://docs.google.com/document/d/1xcInW_qolqbIScN_2KwMCFO24sR4Q-9JXx6CAcYL_go/edit)
- Massey University. (2015). Massey University code of ethical conduct for research, teaching and evaluations involving human participants. (pp. 1-18). Palmerston North, New Zealand: Massey University.
- Masten, A. S., & Obradovic, J. (2006). Competence and resilience in development. *Annals of the New York Academy of Sciences*, 1094, 13-27. doi:10.1196/annals.1376.003
- Mayunga, J. S. (2007). *Understanding and applying the concept of community disaster resilience: A capital-based approach*. Paper presented at the 2007 Summer Academy Megacities: Social vulnerability and resilience building, 22-28 July, Munich, Germany. [https://www.u-cursos.cl/usuario/3b514b53bcb4025aaf9a6781047e4a66/mi\\_blog/r/11.\\_Joseph\\_S.\\_Mayunga.pdf](https://www.u-cursos.cl/usuario/3b514b53bcb4025aaf9a6781047e4a66/mi_blog/r/11._Joseph_S._Mayunga.pdf)

- Mayunga, J. S. (2009). *Measuring the measure: A multi-dimensional scale model to measure community disaster resilience in the U.S. Gulf Coast Region*. (Doctor of Philosophy Dissertation), Texas A&M University, College Station, TX. Retrieved from <http://oaktrust.library.tamu.edu/bitstream/handle/1969.1/ETD-TAMU-2009-05-769/MAYUNGA-DISSERTATION.pdf?sequence=1>
- McAdoo, B. G., Moore, A., & Baumwoll, J. (2008). Indigenous knowledge and the near field population response during the 2007 Solomon Islands tsunami. *Natural Hazards*, 48(1), 73-82. doi:10.1007/s11069-008-9249-z
- McCool, B. N. (2012). The need to be prepared: Disaster management in the Hospitality Industry. *Journal of Business and Hotel Management*, 01(02). doi:10.4172/2324-9129.1000101
- McCool, S., Butler, R., Buckley, R., Weaver, D., & Wheeler, B. (2015). Is concept of sustainability utopian: Ideally perfect but impracticable? *Tourism Recreation Research*, 38(2), 213-242. doi:10.1080/02508281.2013.11081746
- McManus, S., Seville, E., Vargo, J., & Brunson, D. (2008). Facilitated process for improving organizational resilience. *Natural Hazards Review*, 9, 81-90. doi:10.1061//ASCE/1527-6988/2008/9:2/81
- Méheux, K., & Parker, E. (2006). Tourist sector perceptions of natural hazards in Vanuatu and the implications for a small island developing state. *Tourism Management*, 27(1), 69-85. doi:<http://dx.doi.org/10.1016/j.tourman.2004.07.009>
- Mendoza, C. A., Brida, J. G., & Garrido, N. (2012). The impact of earthquakes on Chile's international tourism demand. *Journal of Policy Research in Tourism, Leisure and Events*, 4(1), 48-60. doi:10.1080/19407963.2011.636923
- Meyer, R., & Kunreuther, H. (2017). *The Ostrich Paradox: Why we underprepare for disasters*. Philadelphia, PA: Wharton Digital Press.
- Miles, S. B. (2015). Foundations of community disaster resilience: well-being, identity, services, and capitals. *Environmental Hazards*, 14(2), 103-121. doi:10.1080/17477891.2014.999018
- Mileti, D. (1999). *Disasters by Design: A Reassessment of Natural Hazards in the United States*. Washington D. C.: Joseph Henry Press.
- Ministry of Business Innovation & Employment (MBIE). (2016). *Key tourism statistics*. Retrieved from <http://www.mbie.govt.nz/info-services/sectors-industries/tourism/documents-image-library/key-tourism-statistics.pdf>
- Ministry of Business Innovation & Employment (MBIE). (2018a). *Hawke's Bay tourism summary report: April 2018*. Retrieved from <http://www.mbie.govt.nz/info-services/sectors-industries/tourism/tourism-research-data/rto-factsheets/documents/rto-factsheet-hawkes-bay-tourism.pdf>

- Ministry of Business Innovation & Employment (MBIE). (2018b). *Key tourism statistics*. Retrieved from <http://www.mbie.govt.nz/info-services/sectors-industries/tourism/documents-image-library/key-tourism-statistics.pdf>
- Ministry of Civil Defence & Emergency Management. (2017). The 4Rs. Retrieved from <http://www.civildefence.govt.nz/cdem-sector/cdem-framework/the-4rs/>
- Moghal, Z., & O'Connell, E. (2018). Multiple stressors impacting a small island tourism destination-community: A nested vulnerability assessment of Oistins, Barbados. *Tourism Management Perspectives*, 26, 78-88. doi:10.1016/j.tmp.2018.03.004
- Molina-Azorín, J. F., & Font, X. (2015). Mixed methods in sustainable tourism research: An analysis of prevalence, designs and application in JOST (2005–2014). *Journal of Sustainable Tourism*, 24(4), 549-573. doi:10.1080/09669582.2015.1073739
- Moore, T., & Lakha, R. (2006). Business continuity management: Principles and approaches. In T. Moore & R. Lakha (Eds.), *Tolley's handbook of disaster and emergency management; Principles and practice* (3rd ed., pp. 1-39). Oxford, UK: Elsevier Ltd.
- Morgan, D. L. (2014). Pragmatism as a paradigm for social research. *Qualitative Inquiry*, 20(8), 1045-1053. doi:10.1177/1077800413513733
- National Institute of Standards and Technology (NIST). (2015). *Community resilience planning guide for buildings and infrastructure systems, Volume I*. Retrieved from <http://www.nist.gov/el/resilience/upload/NIST-SP-1190v1.pdf>
- National Research Council. (2014). *Civic engagement and social cohesion: Measuring dimensions of social capital to inform policy* (ISBN 978-0-309-30725-3). Retrieved from Washington D.C.: <https://www.nap.edu/catalog/18831/civic-engagement-and-social-cohesion-measuring-dimensions-of-social-capital>
- Neef, A., & Wasi, S. A. (2017). *Disaster response and recovery of tourism sector: The case of Vanuatu in the aftermath of 2015 Cyclone Pam*. Development Studies, School of Social Sciences, The University of Auckland. Auckland, New Zealand.
- New Zealand Fire Service. (2015). *NZFS guide to evacuation schemes*. Retrieved from <https://onlineservices.fire.org.nz/Download/DownloadPublicDocumentsFile/35>
- New Zealand History. (2017). Hawke's Bay earthquake strikes. Retrieved from <https://nzhistory.govt.nz/hawkes-bay-earthquake-0>
- Nguyen, D. N., Imamura, F., & Iuchi, K. (2017). Public-private collaboration for disaster risk management: A case study of hotels in Matsushima, Japan. *Tourism Management*, 61, 129-140. doi:10.1016/j.tourman.2017.02.003
- Nguyen, D. N., Imamura, F., & Iuchi, K. (2018). Barriers towards hotel disaster preparedness: Case studies of post 2011 Tsunami, Japan. *International Journal of Disaster Risk Reduction*. doi:10.1016/j.ijdr.2018.01.008

- Norris, F. H., Stevens, S. P., Pfefferbaum, B., Wyche, K. F., & Pfefferbaum, R. L. (2008). Community resilience as a metaphor, theory, set of capacities, and strategy for disaster readiness. *American Journal of Community Psychology*, *41*(1-2), 127-150. doi:10.1007/s10464-007-9156-6
- North-Eastern Atlantic and Mediterranean Tsunami Information Centre (NEAMTIC). (2012). *A guide of tsunamis for hotels*. Retrieved from Paris, France: <http://neamtic.ioc-unesco.org>
- Nowell, B., & Steelman, T. (2013). The role of responder networks in promoting community resilience: Toward a measurement framework of network capacity. In N. Kapucu, C. V. Hawkins, & F. I. Rivera (Eds.), *Disaster resiliency: Interdisciplinary perspectives*. New York, NY: Routledge.
- Orchiston, C. (2010). *Tourism and seismic risk: Perceptions, preparedness and resilience in the zone of the Alpine Fault, Southern Alps, New Zealand*. (Doctoral dissertation), University of Otago. Retrieved from <https://ourarchive.otago.ac.nz/handle/10523/395>
- Orchiston, C. (2012). Seismic risk scenario planning and sustainable tourism management: Christchurch and the Alpine Fault zone. *Journal of Sustainable Tourism*, *20*(1), 59-79. doi:10.1080/09669582.2011.617827
- Orchiston, C. (2013). Tourism business preparedness, resilience and disaster planning in a region of high seismic risk: The case of the Southern Alps, New Zealand. *Current Issues in Tourism*, *16*(5), 477-494. doi:10.1080/13683500.2012.741115
- Orchiston, C., & Espiner, S. (2017). Fast and slow resilience in the New Zealand tourism industry. In A. A. Lew & J. Cheer (Eds.), *Understanding tourism resilience: Adapting to environmental change* (pp. 102-126). London: Routledge.
- Orchiston, C., & Higham, J. E. S. (2014). Knowledge management and tourism recovery (de)marketing: The Christchurch earthquakes 2010–2011. *Current Issues in Tourism*, *19*(1), 64-84. doi:10.1080/13683500.2014.990424
- Orchiston, C., Prayag, G., & Brown, C. (2015). Organizational resilience in the tourism sector. *Annals of Tourism Research*. doi:10.1016/j.annals.2015.11.002
- Orchiston, C., Vargo, J., & Seville, E. (2012). *Outcomes of the Canterbury earthquake sequence for tourism businesses*. Retrieved from [https://resorgs.org.nz/wp-content/uploads/2017/07/tourism\\_canterbury\\_earthquakes.pdf](https://resorgs.org.nz/wp-content/uploads/2017/07/tourism_canterbury_earthquakes.pdf)
- Ostadtaghizadeh, A., Ardalan, A., Paton, D., Jabbari, H., & Khankeh, H. R. (2015). Community disaster resilience: a systematic review on assessment models and tools. *PLoS Curr*, *7*. doi:10.1371/currents.dis.f224ef8efbdfcf1d508dd0de4d8210ed
- Ostlund, U., Kidd, L., Wengstrom, Y., & Rowa-Dewar, N. (2011). Combining qualitative and quantitative research within mixed method research designs: A methodological review. *International Journal of Nursing Studies*, *48*(3), 369-383. doi:10.1016/j.ijnurstu.2010.10.005

- Pappas, N. (2018). Hotel decision-making during multiple crises: A chaordic perspective. *Tourism Management*, 68, 450-464. doi:10.1016/j.tourman.2018.04.009
- Paraskevas, A. (2013). Aligning strategy to threat: a baseline anti-terrorism strategy for hotels. *International Journal of Contemporary Hospitality Management*, 25(1), 140-162. doi:10.1108/09596111311290264
- Parker, C. F. (2015). Complex negative events and the diffusion of crisis: Lessons from the 2010 and 2011 Icelandic Volcanic Ash Cloud Events. *Geografiska Annaler: Series A, Physical Geography*, 97(1), 97-108. doi:10.1111/geoa.12078
- Patel, R., & Nosal, L. (2017). *Defining the resilient city*. Retrieved from Tokyo, Japan: <http://collections.unu.edu/view/UNU:6079>
- Patel, S. S., Rogers, M. B., Amiot, R., & Rubin, G. J. (2017a). What do we mean by "Community Resilience"? A systematic literature review of how it is defined in the literature. *Currents Disasters, February 1*(1-37). doi:10.1371/currents.dis.db775aff25efc5ac4f0660ad9c9f7db2
- Patel, S. S., Rogers, M. B., Amiot, R., & Rubin, G. J. (2017b). What do we mean by "Community Resilience"? A systematic literature review of how it is defined in the literature. *Currents Disasters, February 1*(1-37). doi:10.1371/currents.dis.db775aff25efc5ac4f0660ad9c9f7db2
- Paton, D. (2006). Disaster resilience: Building capacity to co-exist with natural hazards and their consequences. In D. Paton & D. Johnston (Eds.), *Disaster resilience: An integrated approach* (pp. 3-10). Springfield, IL: Charles C. Thomas.
- Paton, D. (2008). Risk communication and natural hazard mitigation: How trust influences its effectiveness. *International Journal of Global Environmental Issues*, 8(1/2), 2-16. doi:10.1504/IJGENVI.2008.017256
- Paton, D., & Hill, R. (2006). Managing company risk and resilience through business continuity management. In D. Paton & D. Johnston (Eds.), *Disaster resilience: An integrated approach* (pp. 246-266). Springfield IL: Charles C. Thomas.
- Paton, D., & Johnston, D. (2001). Disasters and communities: vulnerability, resilience and preparedness. *Disaster Prevention and Management*, 10(4), 270-277. doi:10.1108/eum0000000005930
- Paton, D., & Johnston, D. (Eds.). (2006). *Disaster resilience: An integrated approach*. Springfield, IL: Charles C Thomas.
- Paton, D., Kelly, G., & Doherty, M. (2006). Exploring the complexity of social and ecological resilience to hazards. In D. Paton & D. Johnston (Eds.), *Disaster resilience: An integrated approach* (pp. 190-212). Springfield, IL: Charles C. Thomas.
- Patton, M. Q. (2015). *Qualitative research and evaluation methods* (4th ed.). Thousand Oaks, CA 91320: Sage Publications Inc.

- Pearlman, D., & Melnik, O. (2008). Hurricane Katrina's effect on the perception of New Orleans leisure tourists. *Journal of Travel & Tourism Marketing*, 25(1), 58-67. doi:10.1080/10548400802164905
- Pennington-Gray, L., Thapa, B., Kaplanidou, K., Cahyanto, I., & McLaughlin, E. (2011). Crisis planning and preparedness in the United States tourism industry. *Cornell Hospitality Quarterly*, 52(3), 312-320. doi:10.1177/1938965511410866
- Phillimore, J., & Goodson, L. (2004). Progress in qualitative research in tourism. In J. Phillimore & L. Goodson (Eds.), *Qualitative research in tourism: Ontologies, epistemologies and methodologies* (pp. 3-29). London, UK: Routledge.
- Pooley, J. A., Cohen, L., & O'Conner, M. (2006). Links between community and individual resilience: Evidence from cyclone affected communities in North West Australia. In D. Paton & D. Johnston (Eds.), *Disaster resilience: An integrated approach* (pp. 161-173). Springfield, IL: Charles C. Thomas.
- Potter, S. H., Becker, J. S., Johnston, D. M., & Rossiter, K. P. (2015). An overview of the impacts of the 2010-2011 Canterbury earthquakes. *International Journal of Disaster Risk Reduction*, 14, 6-14. doi:10.1016/j.ijdr.2015.01.014
- Pottorff, S. M., & Neal, D. D. M. (1994). Marketing Implications for Post-Disaster Tourism Destinations. *Journal of Travel & Tourism Marketing*, 3(1), 115-122. doi:10.1300/J073v03n01\_08
- Price-Howard, K., & Holladay, P. J. (2014). Resorts, resilience and retention after the BP oil spill disaster of 2010. *Journal of Tourism Insights*, 5(1). doi:10.9707/2328-0824.1044
- Prideaux, B. (2004). The need to use disaster planning frameworks to respond to major tourism disasters. *Journal of Travel & Tourism Marketing*, 15(4), 281-298. doi:10.1300/J073v15n04\_04
- Qualmark. (2013). *Qualmark hotel summary*. Retrieved from <http://www.qualmark.co.nz/index.html>
- Quintal, V. A., Lee, J. A., & Soutar, G. N. (2010). Risk, uncertainty and the theory of planned behavior: A tourism example. *Tourism Management*, 31(6), 797-805. doi:10.1016/j.tourman.2009.08.006
- Qureshi, A. I. (2018). Economic Impact of Zika Virus. In A. I. Qureshi (Ed.), *Zika Virus Disease: From origin to outbreak* (pp. 137-142). London, United Kingdom: Academic Press.
- Redman, C. L. (2014). Should sustainability and resilience be combined or remain distinct pursuits? *Ecology and Society*, 19(2). doi:10.5751/es-06390-190237
- Revilla, M., & Ochoa, C. (2017). Ideal and maximum length for a web survey. *International Journal of Market Research*, 59(5), 557-565. doi:10.2501/IJMR-2017-039

- Ritchie, B. W. (2004). Chaos, crises and disasters: a strategic approach to crisis management in the tourism industry. *Tourism Management*, 25(6), 669-683. doi:10.1016/j.tourman.2003.09.004
- Ritchie, B. W. (2008). Tourism disaster planning and management: From response and recovery to reduction and readiness. *Current Issues in Tourism*, 11(4), 315-348. doi:10.1080/13683500802140372
- Ritchie, B. W. (2009). *Crisis and disaster management for tourism*. Bristol, UK; Buffalo, NY: Channel View Publications.
- Ritchie, B. W., Bentley, G., Koruth, T., & Wang, J. (2011). Proactive crisis planning: Lessons for the accommodation industry. *Scandinavian Journal of Hospitality and Tourism*, 11(3), 367-386. doi:10.1080/15022250.2011.600591
- Ritchie, B. W., Crotts, J. C., Zehrer, A., & Volsky, G. T. (2013). Understanding the effects of a tourism crisis: The impact of the BP Oil Spill on regional lodging demand. *Journal of Travel Research*, 53(1), 12-25. doi:10.1177/0047287513482775
- Rittichainuwat, B. N. (2013). Tourists' and tourism suppliers' perceptions toward crisis management on tsunami. *Tourism Management*, 34, 112-121. doi:10.1016/j.tourman.2012.03.018
- Rittichainuwat, B. N. (2016). Tsunami Recovery. *Cornell Hotel and Restaurant Administration Quarterly*, 47(4), 390-404. doi:10.1177/0010880406289994
- Rockett, J. P. (1999). Definitions are not what they seem. *Risk Management*, 1(3), 37-47.
- Rodriguez, H., Quarantelli, E. L., & Dynes, R. (2007). *Handbook of disaster research* (H. Rodriguez, Quarantelli, E. L., & R. Dynes Eds.). New York, New York: Springer Science+Business Media, LLC.
- Rose, A. (2006). Economic resilience to disasters: Toward a consistent and comprehensive formulation. In D. Paton & D. Johnston (Eds.), *Disaster resilience: An integrated approach* (pp. 226-248). Springfield, IL: Charles C. Thomas.
- Rose, A., & Krausmann, E. (2013). An economic framework for the development of a resilience index for business recovery. *International Journal of Disaster Risk Reduction*, 5, 73-83. doi:10.1016/j.ijdrr.2013.08.003
- Rutherford, H. (2017). The public safety threat hanging over Wellington, a year after the November 14 earthquake. Stuff. Retrieved from <https://www.stuff.co.nz/national/98733780/a-year-on-buildings-remain-empty-and-the-public-could-be-at-risk>
- Sarmiento, J. P., Hoberman, G., Ilcheva, M., Asgary, A., Majano, A. M., Poggione, S., & Duran, L. R. (2015). Private sector and disaster risk reduction: The Cases of Bogota, Miami, Kingston, San Jose, Santiago, and Vancouver. *International*

- Journal of Disaster Risk Reduction, 14, 225-237.  
doi:10.1016/j.ijdrr.2014.09.008
- Sawalha, I. H. S. (2015). Managing adversity: understanding some dimensions of organizational resilience. *Management Research Review*, 38(4), 346-366. doi:10.1108/mrr-01-2014-0010
- Sawalha, I. H. S., Jraisat, L. E., & Al-Qudah, K. A. M. (2013). Crisis and disaster management in Jordanian hotels: practices and cultural considerations. *Disaster Prevention and Management*, 22(3), 210-228. doi:10.1108/dpm-09-2012-0101
- Schneider, R. O. (2006). Hazard mitigation: A priority for sustainable communities. In D. Paton & D. Johnston (Eds.), *Disaster resilience: An integrated approach* (pp. 66-87). Springfield, IL: Charles C. Thomas.
- Schroeder, A., & Pennington-Gray, L. (2014). The Role of Social Media in International Tourist's Decision Making. *Journal of Travel Research*, 54(5), 584-595. doi:10.1177/0047287514528284
- Scotland, J. (2012). Exploring the philosophical underpinnings of research: Relating ontology and epistemology to the methodology and methods of the scientific, interpretive, and critical research paradigms. *English Language Teaching*, 5(9). doi:10.5539/elt.v5n9p9
- Singal, M., Wokutch, R. E., Ho, S., & Murrmann, S. K. (2010). Coping with Katrina: Fairmont's response to Hurricane Katrina. *Business Case Journal*, 17(2), 1-22.
- Sniehotta, F. F., Presseau, J., & Araujo-Soares, V. (2014). Time to retire the theory of planned behaviour. *Health Psychol Rev*, 8(1), 1-7. doi:10.1080/17437199.2013.869710
- Statistics New Zealand. (2013a). Population of Hawke's Bay Region and New Zealand. Retrieved from [http://archive.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-about-a-place.aspx?request\\_value=14018&tabname=](http://archive.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-about-a-place.aspx?request_value=14018&tabname=)
- Statistics New Zealand. (2013b). Population of Wellington Region. Retrieved from [http://archive.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-about-a-place.aspx?request\\_value=14322&tabname=](http://archive.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-about-a-place.aspx?request_value=14322&tabname=)
- Statistics New Zealand. (2016a). Selected job tenure groups and median job tenure by industry of main job. Retrieved from [http://archive.stats.govt.nz/browse\\_for\\_stats/income-and-work/employment\\_and\\_unemployment/improving-labour-market-statistics/job-tenure-jun-2016-qtr.aspx](http://archive.stats.govt.nz/browse_for_stats/income-and-work/employment_and_unemployment/improving-labour-market-statistics/job-tenure-jun-2016-qtr.aspx)
- Statistics New Zealand. (2016b). *Tourism satellite account: 2016 The contribution made by tourism to the New Zealand economy*. Retrieved from [http://archive.stats.govt.nz/browse\\_for\\_stats/industry\\_sectors/Tourism/tourism-satellite-account-2016.aspx](http://archive.stats.govt.nz/browse_for_stats/industry_sectors/Tourism/tourism-satellite-account-2016.aspx)

- Statistics New Zealand. (2017). *Accommodation survey: September 2017*. Retrieved from [https://www.stats.govt.nz/topics/accommodation?url=/browse\\_for\\_stats/industry\\_sectors/accommodation/info-releases.aspx](https://www.stats.govt.nz/topics/accommodation?url=/browse_for_stats/industry_sectors/accommodation/info-releases.aspx)
- Statistics New Zealand. (2018a). *Accommodation Survey: Guests night by region*. Retrieved from <http://archive.stats.govt.nz/infoshare/ViewTable.aspx?pxID=c3dfa3a1-1b18-458f-b9ad-2ce876af5cb3>
- Statistics New Zealand. (2018b). Population clock. Retrieved from Population Clock website: [http://archive.stats.govt.nz/tools\\_and\\_services/population\\_clock.aspx?url=/tools\\_and\\_services/population\\_clock.aspx](http://archive.stats.govt.nz/tools_and_services/population_clock.aspx?url=/tools_and_services/population_clock.aspx)
- Statistics New Zealand. (2018c). *Record high occupancy for hotels in 2017*. Retrieved from <https://www.stats.govt.nz/news/record-high-occupancy-for-hotels-in-2017>
- Stefanica, M., & Butnaru, G. I. (2014). Hotel managers' perceptions of the impact of some global phenomena on tourism. Case study Romania - Italy. *Center for European Studies (CES) Working Papers*, 6(1), 154-170.
- Stevenson, J. R., Becker, J., Cradock-Henery, N., Johal, S., Johnston, D., Orchiston, C., & Seville, E. (2017). Economic and social reconnaissance: Kaikoura earthquake 2016. *Bulletin of the New Zealand Society for Earthquake Engineering*, 50(2), 343-351.
- Stirling, M. W., McVerry, G. H., & Gerstenberger, M. (2012). *New national seismic hazard model for New Zealand: Changes to estimated long-term hazard* (048). Retrieved from <https://www.nzsee.org.nz/db/2012/Paper048.pdf>
- Stuff.com. (2016). Stranded Kaikoura tourists overwhelmed by generosity as helicopters fly evacuees out. Retrieved from <http://www.stuff.co.nz/national/86460484/Stranded-Kaikoura-tourists-overwhelmed-by-generosity-as-helicopters-fly-evacuees-out>
- Solomon, S., Ivy, D. J., Kinnison, D., Mills, M. J., Neely, R. R., & Schmidt, A. (2016). Emergence of healing in the Antarctic ozone layer. *Science*, 353(6296), 269-274. doi:10.1126/science.aae0061
- Sydnor-Bouso, S., Stafford, K., Tews, M., & Adler, H. (2011). Toward a resilience model for the hospitality and tourism industry. *Journal of Human Resources in Hospitality & Tourism*, 10(2), 195-217. doi:10.1080/15332845.2011.536942
- Takamatsu, M. (2014). The Okinawa tourism crisis management initiatives. *International Journal of Event Management Research*, 8(1).
- Terry, D. J., & O'Leary, J. E. (1995). The theory of planned behaviour: The effects of perceived behavioural control and self-efficacy. *British Journal of Social Psychology*, 34, 199-220. doi:<https://doi.org/10.1111/j.2044-8309.1995.tb01058.x>

- The Treasury. (2016). *2016 statement on the long-term fiscal position*. Retrieved from <http://www.treasury.govt.nz/government/longterm/fiscalposition/2016/he-tirohanga-mokopuna/ltfs-16-htm.pdf>
- Thompson, D., Muriel, P., Russel, D., Osborne, P., Bromely, A., Rowland, M., . . . Brown, C. (2002). Economic costs of the foot and mouth disease outbreak in the United Kingdom in 2001. *Revue Scientifique et Technique de L'Office International des Epizooties*, 21(3), 675-687.
- Todman-Lewis, C. V. M. (2017). *Strategies for crisis preparedness of tourist destinations*. (Doctor of Business Administration), Walden University, Minneapolis, MN. Retrieved from <http://scholarworks.waldenu.edu/dissertations>
- Tourism Industry Aotearoa (TIA). (2018). *State of the tourism industry: 2017*. Retrieved from <https://tia.org.nz/assets/Uploads/State-of-the-Tourism-Industry-2017-final.pdf>
- Tsai, C.-H., Wu, T.-c., Wall, G., & Linliu, S.-C. (2016). Perceptions of tourism impacts and community resilience to natural disasters. *Tourism Geographies*, 18(2), 152-173. doi:10.1080/14616688.2016.1149875
- Tuli, F. (2010). The basis of distinction between qualitative and quantitative research in social science: Reflection on ontological, epistemological and methodological perspectives. *Ethiopian Journal of Education and Sciences*, 6(1), 97-108. doi:<http://dx.doi.org/10.4314/ejesc.v6i1.65384>
- UN.org. (2016). Sustainable development goals: Seventeen goals to transform our world. Retrieved from <http://www.un.org/sustainabledevelopment/sustainable-development-goals/#>
- United Nations (UN). (2015). Resolution adopted by the General Assembly on 3 June 2015 69/283: Sendai Framework for Disaster Risk Reduction 2015-2030. Retrieved from [http://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A\\_RES\\_69\\_283.pdf](http://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_RES_69_283.pdf)
- United Nation Office for Disaster Risk Reduction (UNISDR). (2016). *Report of the open-ended intergovernmental expert working group on indicators and terminology relating to disaster risk reduction*. Retrieved from [https://www.preventionweb.net/files/50683\\_oiewgreportenglish.pdf](https://www.preventionweb.net/files/50683_oiewgreportenglish.pdf).
- United Nations Development Programme (UNDP). (2018a). SDG Goal 17 Targets. Retrieved from <http://www.undp.org/content/undp/en/home/sustainable-development-goals/goal-17-partnerships-for-the-goals/targets/>
- United Nations Development Programme (UNDP). (2018b). Sustainable Development Goals. Retrieved from <http://www.undp.org/content/undp/en/home/sustainable-development-goals.html>
- United Nations Economic and Social Commission for Asia and the Pacific (ESCAP). (2015). *Disasters without borders: Regional resilience for sustainable*

*development*. Retrieved from  
<http://www.unescap.org/sites/default/files/Full%20Report%20%20%5BLow-Res%5D.pdf>

United Nations Environment Programme (UNEP), (2008). *Disaster Risk Reduction: A toolkit for tourism destination*. Retrieved from Paris, France:  
[http://www.preventionweb.net/files/13875\\_DTIx1116xPADisasterRiskReductioninA.pdf](http://www.preventionweb.net/files/13875_DTIx1116xPADisasterRiskReductioninA.pdf)

United Nations Environment Programme (UNEP), & Caribbean Alliance for Sustainable Tourism (CAST). (2008). *Disaster risk management for coastal tourism destinations responding to climate change: A practical guide for decision makers*. Retrieved from Paris, France:  
[http://www.preventionweb.net/files/13004\\_DTIx1048xPADisasterRiskManagementfo.PDF](http://www.preventionweb.net/files/13004_DTIx1048xPADisasterRiskManagementfo.PDF)

United Nations Office for Disaster Risk Reduction (UNISDR). (2015a). *Hotel resilient: Strengthening the resilience of the tourism sector*. Retrieved from  
[https://www.unisdr.org/2015/docs/asiapacific/HotelResilientFactsheet\\_2015.04.pdf](https://www.unisdr.org/2015/docs/asiapacific/HotelResilientFactsheet_2015.04.pdf) Accessed March 22, 2016

United Nations Office for Disaster Risk Reduction (UNISDR). (2015b). *Sendai Framework for Disaster Risk Reduction 2015-2030*. Retrieved from  
[http://www.preventionweb.net/files/43291\\_sendaiframeworkfordrren.pdf](http://www.preventionweb.net/files/43291_sendaiframeworkfordrren.pdf)

United Nations Office for Disaster Risk Reduction (UNISDR), Global Initiative on Disaster Risk Management (GIDRM), & Pacific Asia Travel Association (PATA). (2014). *Hotel Resilience: A certification scheme for hotels and resorts to reduce climate and disaster risks and strengthen resilience across tourism destinations in the Asia-Pacific region*. Retrieved from  
<https://www.rts.ch/emissions/les-coulisses-de-l-evenement/6394336.html/BINARY/Hotel%20Resilient%20Factsheet.pdf>

United Nations Office for Disaster Risk Reduction (UNISDR), Pacific Asia Travel Association (PATA), & Global Initiative on Disaster Risk Management (GIDRM). (2015). *Developing strategies to strengthen the resilience of hotels to disasters: A scoping study to guide the development of the hotel resilient initiative*. Retrieved from  
[http://www.unisdr.org/files/45258\\_scopingstudyhotelresilientinitiativ.pdf](http://www.unisdr.org/files/45258_scopingstudyhotelresilientinitiativ.pdf)

United Nations World Tourism Organization (UNWTO), & International Labour Organization (ILO). (2013). *Economic crisis, international tourism decline and its impact on the poor (978-92-844-1444-4)*. Retrieved from Madrid, Spain:  
[http://www.ilo.org/wcmsp5/groups/public/---ed\\_dialogue/---sector/documents/publication/wcms\\_214576.pdf](http://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---sector/documents/publication/wcms_214576.pdf)

Velders, G. J., Andersen, S. O., Daniel, J. S., Fahey, D. W., & McFarland, M. (2007). The importance of the Montreal Protocol in protecting climate. *Proc Natl Acad Sci U S A*, 104(12), 4814-4819. doi:10.1073/pnas.0610328104

- Villamor, F. (2018). Idyllic Philippine Resort Island of Boracay is closed to tourists. *New York Times*. Retrieved from <https://www.nytimes.com/2018/04/04/world/asia/boracay-philippines-tourists-closed.html>
- Wang, J., & Ritchie, B. W. (2010). A theoretical model for strategic crisis planning: Factors influencing crisis planning in the hotel industry. *International Journal of Tourism Policy*, 3(4), 297. doi:10.1504/ijtp.2010.040390
- Wang, J., & Ritchie, B. W. (2012). Understanding accommodation managers' crisis planning intention: An application of the theory of planned behaviour. *Tourism Management*, 33(5), 1057-1067. doi:10.1016/j.tourman.2011.12.006
- Webb, G. R., Tierney, K. J., & Dahlhamer, J. M. (2002). Predicting long-term business recovery from disaster: a comparison of the Loma Prieta earthquake and Hurricane Andrew. *Global Environmental Change Part B: Environmental Hazards*, 4(2-3), 45-58. doi:10.1016/s1464-2867(03)00005-6
- Weinstein, N. D. (1980). Unrealistic optimism about future life events. *Journal of Personality and Social Psychology*, 39(5), 806-820.
- Wellington City Council. (2013). *Wellington City Council guide to earthquake prone buildings*. Retrieved from Wellington, New Zealand: <https://wellington.govt.nz/~media/services/rates-and-property/earthquake-prone-buildings/files/eq-prone-buildings-guide.pdf>
- Wellington City Council. (2017). *Wellington resilience strategy*. Retrieved from <https://wellington.govt.nz/~media/about-wellington/resilient-wellington/files/strategy/resilience-strategyj001767-100-web.pdf?la=en>
- Welles, J. (2017). Cognitive-dissonance: A critique. *Annals of Behavioural Science*, 3(1:3).
- Wernick, D. A., & Von Glinow, M. A. (2012). Reflections on the evolving terrorist threat to luxury hotels: A case study on Marriott International. *Thunderbird International Business Review*, 54(5), 729-746. doi:10.1002/tie.21496
- Whitman, Z., Stevenson, J., Kachali, H., Seville, E., Vargo, J., & Wilson, T. (2014). Organisational resilience following the Darfield earthquake of 2010. *Disasters*, 38(1), 148-177. doi:10.1111/disa.12036
- World Tourism Organization (UNWTO), & International Labour Organization (ILO). (2013). *Economic crisis, international tourism decline and its impact on the poor*. Madrid, Spain: World Tourism Organization.
- World Travel and Tourism Council (WTTC). (2017a). *Economic impact analysis*. Retrieved from <https://www.wttc.org/research/economic-research/economic-impact-analysis/>
- World Travel and Tourism Council (WTTC). (2017b). *Travel and tourism: Economic impact 2017 world*. Retrieved from <https://www.wttc.org/-/media/files/reports/economic-impact-research/regions-2017/world2017.pdf>

Wotherspoon, L. (2016). Distributed infrastructure. *QuakeCoRE Newsletter – Kaikoura earthquake*, (Special edition). Retrieved from <https://us10.campaign-archive.com/?u=c65a2a0813835c484fde76107&id=764a87e2fc&e=9fe74c7450>

Yamamura, J., & Welsh, N. (2018). Highway 101 reopens. *Santa Barbara Independent*. Retrieved from <https://www.independent.com/news/2018/jan/23/highway-101-reopens-army-corps-engineers-clears-cr/>

## Appendices

### Appendix A: Human Ethics Notifications

#### Low risk notification- 4000016054

**From:** [humanethics@massey.ac.nz](mailto:humanethics@massey.ac.nz)  
**Date:** July 3, 2016 at 7:28:07 PM PDT  
**To:** [A.Lindsay@massey.ac.nz](mailto:A.Lindsay@massey.ac.nz), [Nancy.Brown.2@uni.massey.ac.nz](mailto:Nancy.Brown.2@uni.massey.ac.nz),  
[D.M.Johnston@massey.ac.nz](mailto:D.M.Johnston@massey.ac.nz), [C.A.Morgan@massey.ac.nz](mailto:C.A.Morgan@massey.ac.nz), [J.H.Liu@massey.ac.nz](mailto:J.H.Liu@massey.ac.nz)  
**Cc:** [M.E.Thomas@massey.ac.nz](mailto:M.E.Thomas@massey.ac.nz)  
**Subject: Human Ethics Notification - 4000016054**  
HoU Review Group  
Prof James Liu  
Prof Mandy Morgan

Ethics Notification Number: 4000016054  
Title: Building disaster resiliency for the hotel sector

Thank you for your notification which you have assessed as Low Risk.

Your project has been recorded in our system which is reported in the Annual Report of the Massey University Human Ethics Committee.

The low risk notification for this project is valid for a maximum of three years.

If situations subsequently occur which cause you to reconsider your ethical analysis, please log on to <http://rims.massey.ac.nz> and register the changes in order that they be assessed as safe to proceed.

Please note that travel undertaken by students must be approved by the supervisor and the relevant Pro Vice-Chancellor and be in accordance with the Policy and Procedures for Course-Related Student Travel Overseas. In addition, the supervisor must advise the University's Insurance Officer.

A reminder to include the following statement on all public documents:

"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named in this document are responsible for the ethical conduct of this research.  
If you have any concerns about the conduct of this research that you want to raise with someone other than the researcher(s), please contact Dr Brian Finch, Director (Research Ethics), email [humanethics@massey.ac.nz](mailto:humanethics@massey.ac.nz). "

Please note that if a sponsoring organisation, funding authority or a journal in which you wish to publish require evidence of committee approval (with an approval number), you will have to complete the application form again answering yes to the publication question to provide more information to go before one of the University's Human Ethics Committees. You should also note that such an approval can only be

provided prior to the commencement of the research.

You are reminded that staff researchers and supervisors are fully responsible for ensuring that the information in the low risk notification has met the requirements and guidelines for submission of a low risk notification.

If you wish to print an official copy of this letter, please login to the RIMS system, and under the Reporting section, View Reports you will find a link to run the LR Report.

Yours sincerely

Dr Brian Finch  
Chair, Human Ethics Chairs' Committee and  
Director (Research Ethics)

## Full Review for Semi-Structured Interviews

Approval- SOA 17/28

HoU Review Group  
Prof James Liu  
Reviewer Group  
Dr David Johnston  
Prof David Johnston

Researcher: Nancy Brown  
Title: Building disaster resiliency for the hotel sector

Dear Nancy

Thank you for the above application that was considered by the Massey University Human Ethics Committee: Human Ethics Southern A Committee at their meeting held on 18/07/2017.

On behalf of the Committee I am pleased to advise you that the ethics of your application are approved.

Approval is for three years. If this project has not been completed within three years from the date of this letter, reapproval must be requested. If the nature, content, location, procedures or personnel of your approved application change, please advise the Secretary of the Committee.

If you wish to print an official copy of this letter, Please logon to RIMS (<http://rims.massey.ac.nz>), and under the Reporting section, View Reports you will find a link to run the Ethics Committee Report.

Yours sincerely  
Dr Brian Finch, Chair  
Massey University Human Ethics Committee

## Appendix B: Surveys

Two surveys are included in Appendix B. Both indicate Hawke's Bay, however, surveys in the two regions were identical.

### Survey 1 General Managers

#### Hawke's Bay Hotels General Manager Survey: Disaster resilience within the hotel sector

##### Start of Block: Information Sheet

##### Building Disaster Resilience within the Hotel Sector Information Sheet

Dear Participant,

My name is Nancy Brown. I invite you to participate in a research study entitled *Building Disaster Resilience within the Hotel Sector*. I am currently enrolled at Massey University in the Emergency Management Department, School of Psychology, College of Health and Human Services. I am in the process of writing my PhD. The purpose of this survey is to measure disaster resilience predictors within hotels located in New Zealand. The enclosed questionnaire collects information regarding perceptions of hotel General Managers on a variety of concepts that contribute to disaster resilience.

This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named above are responsible for the ethical conduct of this research. If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Dr Brian Finch, Director, Research Ethics, telephone 06 356 9099 x 86015, email [humanethics@massey.ac.nz](mailto:humanethics@massey.ac.nz).

You are under no obligation to accept this invitation. Completion of the questionnaire implies consent. If you decide to participate, you have the right to:

- decline to answer any particular question;
- withdraw from the study by not answering the questions;
- ask any questions about the study at any time during participation;
- provide information on the understanding that your name will not be used unless you give permission to the researcher;
- be given access to a summary of the project findings when it is concluded.

Data from this research will be protected and no one other than the researchers will know your individual answers to this survey. Results of this research may be published but individual names and individual organisation's names will not be disclosed.

If you chose to participate please answer to questions as best you can. It should take approximately 15 minutes to complete the survey. Once you start the survey you can leave and come back to finish, if needed, for a period of 5 days. You must be 18 years or older to participate.

If you have any questions regarding this survey feel free to contact Nancy Brown, PhD Candidate at 021-171-9452 or [n.brown1@massey.ac.nz](mailto:n.brown1@massey.ac.nz) or Supervisor David Johnston, PhD. At 027-452-4000 or [David.Johnston@gns.cri.nz](mailto:David.Johnston@gns.cri.nz) Because this research concerns disaster topics it may be helpful to understand the meaning of the word disaster in the context of this research: For the purpose of this survey disaster shall mean: A sudden event where the trigger is outside the current control of the

affected area (community and/or business), the event disrupts the function of that area and requires additional resources ...to respond to and recover from the event.

Thank you for your assistance in this important endeavour,

Sincerely,

Nancy Brown

Principle Investigator

Low Risk Ethics Notification Number: 4000016054

I have read and understand the information above for this study and consent to the collection of my responses **CLICK THIS RESPONSE IF YOU WISH TO PROCEED** (1)

Decline to participate (2)

End of Block: Information Sheet

---

Start of Block: Social capital: Social networks/cohesion/connectedness

SQ\_1\_1\_1 This hotel takes a team approach to planning.

- Strongly agree (1)
- Somewhat agree (2)
- Neither agree nor disagree (3)
- Somewhat disagree (4)
- Strongly disagree (5)
- 

SQ\_1\_2\_1 Staff ideas and input are valued by leadership at this hotel.

- Strongly agree (1)
- Somewhat agree (2)
- Neither agree nor disagree (3)
- Somewhat disagree (4)
- Strongly disagree (5)
-

SQ\_1\_3\_1 Socialising with co-workers is encouraged through activities organised by this hotel.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

SQ\_1\_4\_1 Internally organised social and/or charitable groups are part of our human resource development plan.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

SQ\_1\_5 How often do you read or listen to the news?

- Daily (1)
  - 4-6 times a week (2)
  - 2-3 times a week (3)
  - Once a week (4)
  - More than once per month (5)
  - Less than once per month (6)
  - Rarely or never (7)
-

SQ\_1\_6\_1 In my capacity as manager I build relationships with other organisations we may need to work with in a disaster.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

SQ\_1\_8\_1 There are few or no barriers stopping us from working well with other organisations.

- Strongly agree (11)
  - Somewhat agree (12)
  - Neither agree nor disagree (13)
  - Somewhat disagree (14)
  - Strongly disagree (15)
- 

SQ\_1\_9\_1 Common areas for staff to gather are available at this hotel (for example a lunchroom).

- Yes (1)
- No (2)

End of Block: Social capital: Social networks/cohesion/connectedness

---

Start of Block: Social capital: Capacity to work in groups, problem solving

SQ\_2\_1 People in this hotel are committed to working on a problem until it is resolved.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

SQ\_2\_2\_1 This hotel is known for its ability to use knowledge in creative ways.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

SQ\_2\_3\_1 Clearly defined priorities for what is important during and after a disaster are in place for this hotel.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
-

SQ\_2\_4\_1 Owners or corporate leaders ask for my opinion regarding hotel matters at the hotel where I work.

- Strongly agree (1)
- Somewhat agree (2)
- Neither agree nor disagree (3)
- Somewhat disagree (4)
- Strongly disagree (5)
- I am the senior most person in my organisation (6)
- Other (7) \_\_\_\_\_

End of Block: Social capital: Capacity to work in groups, problem solving

---

Start of Block: Social capital: Trust

SQ\_3\_1\_1 This hotel has plans that will work in a disaster.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
-

SQ\_3\_2\_1 Supervisors and departmental leaders take thoughtful actions to resolve problems at this hotel.

- Strongly agree (1)
- Somewhat agree (2)
- Neither agree nor disagree (3)
- Somewhat disagree (4)
- Strongly disagree (5)

End of Block: Social capital: Trust

---

Start of Block: Economic Capital: Availability of resources

EQ\_1\_1\_1 Comprehensive multi-hazard insurance is carried by our organisation.

- Strongly agree (88)
  - Somewhat agree (90)
  - Neither agree nor disagree (91)
  - Somewhat disagree (92)
  - Strongly disagree (93)
  - Other (94) \_\_\_\_\_
- 

EQ\_1\_2\_1 The insurance carried by our organisation covers any potential loss of business income.

- Strongly agree (4)
- Somewhat agree (6)
- Neither agree nor disagree (7)
- Somewhat disagree (8)
- Strongly disagree (9)
- Other (10) \_\_\_\_\_

---

EQ\_1\_3\_1 The insurance carried by our organisation covers structural damage from disaster to this hotel (for example an earthquake).

- Strongly agree (4)
  - Somewhat agree (6)
  - Neither agree nor disagree (7)
  - Somewhat disagree (8)
  - Strongly disagree (9)
  - Other (10) \_\_\_\_\_
- 

EQ\_1\_4\_1 Disaster management expense is part of the hotel budget.

- Strongly agree (4)
- Somewhat agree (6)
- Neither agree nor disagree (7)
- Somewhat disagree (8)
- Strongly disagree (9)
- Other (10) \_\_\_\_\_

End of Block: Economic Capital: Availability of resources

---

Start of Block: Economic Capital: Diversity of income

EQ\_2\_1\_1 New opportunities for profit streams are constantly sought by our organisation.

- Strongly agree (4)
  - Somewhat agree (6)
  - Neither agree nor disagree (7)
  - Somewhat disagree (8)
  - Strongly disagree (10)
  - Other (9) \_\_\_\_\_
- 

EQ\_2\_2\_1 Strengthening existing client base is our primary marketing aim.

- Strongly agree (4)
  - Somewhat agree (6)
  - Neither agree nor disagree (7)
  - Somewhat disagree (8)
  - Strongly disagree (10)
  - Other (9) \_\_\_\_\_
- 

EQ\_2\_3\_1 Our customers come from many different markets.

- Strongly agree (4)
- Somewhat agree (6)
- Neither agree nor disagree (7)
- Somewhat disagree (8)
- Strongly disagree (10)
- Other (9) \_\_\_\_\_

---

**Start of Block: Economic Capital: Financial Strength**

EQ\_3\_1\_1 Our organisation returned a profit in:

- the last year (1)
- both of the last two years (2)
- all of the last five years (3)
- for more than six years running (11)
- Other (12) \_\_\_\_\_
- 

EQ\_3\_2\_1 Financial reserves are held by our organisation.

- Strongly agree (11)
- Somewhat agree (12)
- Neither agree nor disagree (13)
- Somewhat disagree (14)
- Strongly disagree (15)

**End of Block: Economic Capital: Financial Strength**

---

**Start of Block: Economic Capital: Staff economic resilience**

EQ\_4\_1\_1 State the number of staff that work in your organisation:

- Full time: (1) \_\_\_\_\_
- Part time: (2) \_\_\_\_\_
-

EQ\_4\_2\_1 How many of your staff participate in profit sharing and/or monetary bonuses?

- Number: (1) \_\_\_\_\_
- Other (2) \_\_\_\_\_
- We do not have a profit sharing or bonus system at this hotel (3)  
\_\_\_\_\_
- 

EQ\_4\_3\_1 State the approximate number of staff that have worked for your organisation for:

- Less than 1 year: (1) \_\_\_\_\_
- 1 year- 3 years: (2) \_\_\_\_\_
- More than 3 years-5 years: (3) \_\_\_\_\_
- More than 5 years: (4) \_\_\_\_\_
- More than 8 years: (5) \_\_\_\_\_
- 

EQ\_4\_5 Is your insurance coverage adequate to cover your personal property losses due to a disaster?

- Yes (1)
- No (2)
- I don't know (3)
- I do not have personal property insurance (4)
- I am unsure what my insurance covers (5)

End of Block: Economic Capital: Staff economic resilience

---

Start of Block: Human capital: Health and wellbeing

HQ\_1\_1 Do you consider yourself generally healthy?

- Definitely yes (1)
  - Probably yes (2)
  - Might or might not (3)
  - Probably not (4)
  - Definitely not (5)
- 

HQ\_1\_2 Do you believe you have control of your life and circumstances?

- Definitely yes (1)
- Probably yes (2)
- Might or might not (3)
- Probably not (4)
- Definitely not (5)

End of Block: Human capital: Health and wellbeing

---

Start of Block: Human capital: Skills

HQ\_2\_1\_1 I have participated in planning for disaster response.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
-

HQ\_2\_2\_1 I have participated in training exercises for disaster response.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

HQ\_2\_3 In my home I have engaged in disaster preparedness planning (for example gathered emergency supplies, food, and water).

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

HQ\_2\_4 Within the last 3 years I have had training in CPR (Cardiopulmonary resuscitation) or first aid.

- Yes (1)
  - No (2)
-

HQ\_2\_5\_1 There would be effective leadership at this hotel if a disaster occurred.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

HQ\_2\_9\_1 Leaders at this hotel provide opportunities for staff to discuss disaster preparedness.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

HQ\_2\_6 How long have you worked in the hotel industry (at any hotel)?

- Less than 1 year (1)
  - 1 year-3 years (2)
  - More than 3 years-5 years (3)
  - More than 5 years -10 years (4)
  - More than 10 years (5)
-

HQ\_2\_7 What is your highest level of education?

- High school/college (1)
  - Technical degree (2)
  - Bachelors (3)
  - Masters (4)
  - PhD (5)
  - Did not complete high school/college (6)
- 

HQ\_2\_8\_1 We have taken steps to decrease our risk of loss of life, or disruption of business, due to disaster in the past two years.

- Strongly agree (4)
- Somewhat agree (6)
- Neither agree nor disagree (7)
- Somewhat disagree (8)
- Strongly disagree (10)
- Other (9) \_\_\_\_\_

End of Block: Human capital: Skills

---

Start of Block: Human Capital: Capacity to adapt

HQ\_3\_1 This hotel develops staff with a team approach.

- Strongly agree (1)
- Somewhat agree (2)
- Neither agree nor disagree (3)
- Somewhat disagree (4)
- Strongly disagree (5)

---

HQ\_3\_2\_1 This hotel encourages staff to solve problems in the work place.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

HQ\_3\_3\_1 At this hotel tough decisions can be made quickly.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

HQ\_3\_4 If necessary I could walk to work in a reasonable length of time.

- Extremely reasonable (1)
  - Somewhat reasonable (2)
  - Neither reasonable nor unreasonable (3)
  - Somewhat unreasonable (4)
  - Extremely unreasonable (5)
-

HQ-3\_5\_1 We proactively monitor our industry to have an early warning of emerging potential problems.

- Strongly agree (11)
  - Somewhat agree (12)
  - Neither agree nor disagree (13)
  - Somewhat disagree (14)
  - Strongly disagree (15)
- 

HQ\_3\_6 Guests are provided with information about lifesaving emergency procedures.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

HQ\_3\_7\_1 This hotel maintains sufficient resources to absorb some unexpected change.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
-

HQ\_3\_8\_1 This hotel is focused on being able to respond to the unexpected.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

HQ-3\_9\_1 Given how people depend on our organisation, the way we plan for the unexpected is appropriate.

- Strongly agree (11)
  - Somewhat agree (12)
  - Neither agree nor disagree (13)
  - Somewhat disagree (14)
  - Strongly disagree (15)
- 

HQ\_3\_10\_1 I feel confident we can care for our guests if a disaster occurred.

- Strongly agree (11)
  - Somewhat agree (12)
  - Neither agree nor disagree (13)
  - Somewhat disagree (14)
  - Strongly disagree (15)
-

HQ\_3\_11 I would be available to work in the time immediately following a disaster.

- Strongly agree (1)
- Somewhat agree (2)
- Neither agree nor disagree (3)
- Somewhat disagree (4)
- Strongly disagree (5)
- 

HQ\_3\_12 What factors influenced your answer to the previous question: I would be available to work in the time immediately following a disaster?

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End of Block: Human Capital: Capacity to adapt

---

Start of Block: Demographic

DM\_1\_4 Which hotel do you work for?

---

DM\_1\_8 With respect to your current position at this hotel, what is your status?

- Regular staff (1)
- Seasonal Staff (2)
- Contract Staff (3)
- Other (4) \_\_\_\_\_
-

DM\_1\_9\_1 How many guest rooms are in this hotel?

---

End of Block: Demographic

---

Start of Block: Human capital: Knowledge

HQ\_4\_1\_1 Emergency plans must be practised and tested to be effective.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

HQ\_4\_2\_1 If key organisational people are unavailable, there are always others who can fill their roles at this hotel.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
-

HQ\_4\_3\_1 Meetings are held following any emergency event (for example an evacuation alarm) at this hotel.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
  - I am unaware of any emergency event occurring at this hotel (6)
- 

HQ\_4\_5 In my lifetime I have experienced a disaster either at home or work (for example a serious earthquake or flood)?

- Yes (1)
  - No (2)
- 

HQ\_4\_5\_1 At this hotel I have been on duty during a hotel evacuation.

- Yes (1)
  - No (2)
- 

HQ\_4\_6 Training is provided, by this hotel, concerning what staff should do in case of disaster.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
-

HQ\_4\_7\_1 Awareness of hazards (for example earthquake or tsunami) is provided to staff by leadership at this hotel

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

HQ\_4\_8\_1 Awareness of hazards (for example earthquake or tsunami) is provided to guests at this hotel.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

HQ\_4\_9 At the hotel where I work I have been on duty during a disaster.

- Yes (1)
- No (2)

End of Block: Human capital: Knowledge

---

Start of Block: Human capital: Business continuity

HQ\_5\_1 There are manual procedures for operating critical systems (for example check-in or payment processing) if electronic systems are down.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

HQ\_5\_2\_1 Manual procedures are part of initial staff training at this hotel.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

HQ\_5\_3\_1 A clear chain of leadership for emergency situations exists in this hotel.

- Strongly agree (1)
- Somewhat agree (2)
- Neither agree nor disagree (3)
- Somewhat disagree (4)
- Strongly disagree (5)

End of Block: Human capital: Business continuity

---

Start of Block: Physical capital: Life safety & Business continuity

PQ\_1\_1\_1 Evacuation plans are in place at this hotel.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

PQ\_1\_2\_1 Back-up power generation capabilities are available at this hotel.

- Yes (1)
  - No (2)
  - Don't know (3)
- 

PQ\_1\_3\_1 Water and food supplies, for emergency use, are in place at this hotel.

- Yes (1)
  - No (2)
  - Don't know (3)
-

PQ\_1\_5\_1 This hotel facility is compliant with current building safety codes.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
  - Other (6) \_\_\_\_\_
- 

PQ\_1\_6\_1 This region has robust building codes to mitigate against local risks (for example earthquakes).

- Strongly agree (4)
  - Somewhat agree (6)
  - Neither agree nor disagree (7)
  - Somewhat disagree (8)
  - Strongly disagree (10)
  - Other (9) \_\_\_\_\_
-

PQ\_2\_1\_1 All critical organisational data is backed up to the Cloud or a hard copy is printed daily at this hotel.

- Strongly agree (11)
  - Somewhat agree (13)
  - Neither agree nor disagree (14)
  - Somewhat disagree (15)
  - Strongly disagree (17)
  - Other (16) \_\_\_\_\_
- 

PQ\_2\_2\_1 Hard copies of emergency contacts, staff, and suppliers lists are available in case of emergency.

- Strongly agree (4)
  - Somewhat agree (6)
  - Neither agree nor disagree (7)
  - Somewhat disagree (8)
  - Strongly disagree (10)
  - Other (9) \_\_\_\_\_
-

PQ\_2\_3\_1 Critical systems have redundancies to get us back to business fast.

- Strongly agree (4)
- Somewhat agree (6)
- Neither agree nor disagree (7)
- Somewhat disagree (8)
- Strongly disagree (10)
- Other (9) \_\_\_\_\_

End of Block: Physical capital: Life safety & Business continuity

---

Start of Block: Natural capital: Location's environmental risk & effects on environment

NQ\_1\_1 Staff and guests can evacuate from the hotel to a safe location if needed.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

NQ\_2\_1 This hotel participates in recycling programs.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
-

NQ\_2\_2 The impact of our business on the local environment is considered in hotel policies.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

NQ\_2\_3 This hotel has an environmental policy and green objectives.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

NQ\_2\_4\_1 There is a local organisation empowered to protect and rehabilitate the natural environment.

- Strongly agree (4)
- Somewhat agree (6)
- Neither agree nor disagree (7)
- Somewhat disagree (8)
- Strongly disagree (10)
- Other (9) \_\_\_\_\_

End of Block: Natural capital: Location's environmental risk & effects on environment

---

Start of Block: Cultural Capital & Demographic

CQ\_1\_1 Do you identify as:

- Kiwi (1)
  - Maori (2)
  - Pasifika (3)
  - European (4)
  - North American (5)
  - South American (6)
  - Other (7) \_\_\_\_\_
- 

CQ\_2\_1 How long have you lived in New Zealand?

- Less than 1 year (1)
  - 1 year - 3 years (2)
  - More than 3 years - 5 years (3)
  - More than 5 - 8 years (4)
  - More than 8 years (5)
  - All my life (6)
- 

DM\_1\_1 Marital status:

- Married (1)
  - Single (2)
  - In a partnership (3)
  - Other (4)
  - Decline to state (5)
-

DM\_1\_2 Do you identify as:

- Male (1)
- Female (2)
- Other (3) \_\_\_\_\_
- Decline to state (4)
- 

DM\_1\_3 How old are you?

- Less than 20 (1)
- 21-30 (2)
- 31-40 (3)
- 41-50 (4)
- 51-60 (5)
- 61 or older (6)
- Decline to state (7)

End of Block: Cultural Capital & Demographic

---

Start of Block: Block 17

Q\_1 Please use the space below to add any comments or additional information you think would help in understanding disaster resilience in the hotel sector from your perspective.

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End of Block: Block 17

## Survey 2 Staff

### Hawke's Bay Hotels- Staff Survey: Disaster resiliency within the hotel sector

#### Start of Block: Information Sheet

#### **Building Disaster Resilience within the Hotel Sector** Information Sheet

Dear Participant,

My name is Nancy Brown. I invite you to participate in a research study entitled ***Building Disaster Resilience within the Hotel Sector***. I am currently enrolled at Massey University in the Emergency Management Department, School of Psychology, College of Health and Human Services. I am in the process of writing my PhD. The purpose of this survey is to measure disaster resilience predictors within hotels located in New Zealand. The enclosed questionnaire collects information regarding perceptions of staff on a variety of concepts that contribute to disaster resilience.

This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named above are responsible for the ethical conduct of this research. If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Dr Brian Finch, Director, Research Ethics, telephone 06 356 9099 x 86015, email [humanethics@massey.ac.nz](mailto:humanethics@massey.ac.nz). You are under no obligation to accept this invitation. Completion of the questionnaire implies consent. If you decide to participate, you have the right to:

- decline to answer any particular question;
- withdraw from the study by not answering the questions;
- ask any questions about the study at any time during participation;
- provide information on the understanding that your name will not be used unless you give permission to the researcher;
- be given access to a summary of the project findings when it is concluded.

Data from this research will be protected and no one other than the researchers will know your individual answers to this survey. Results of this research may be published but individual names and individual organisation's names will not be disclosed.

If you chose to participate please answer to questions as best you can. It should take approximately 15 minutes to complete the survey. Once you start the survey you can leave and come back to finish, if needed, for a period of 5 days. You must be 18 years or older to participate.

If you have any questions regarding this survey feel free to contact Nancy Brown, PhD Candidate at 021-171-9452 or [n.brown1@massey.ac.nz](mailto:n.brown1@massey.ac.nz) or Supervisor David Johnston, PhD. At 027-452-4000 or [David.Johnston@gns.cri.nz](mailto:David.Johnston@gns.cri.nz)

Because this research concerns disaster topics it may be helpful to understand the meaning of the word disaster in the context of this research:

For the purpose of this survey disaster shall mean: A sudden event where the trigger is outside the current control of the affected area (community and/or business), the event disrupts the function of that

area and requires additional resources ...to respond to and recover from the event.  
Thank you for your assistance in this important endeavour,

Sincerely,

Nancy Brown

Principal Investigator

Ethics Notification Number: 4000016054

- I have read and understand the above information sheet for this study and consent to the collection of my response. (PLEASE CLICK THIS CHOICE IF YOU WISH TO PROCEED.) (1)
- Decline to participate (2)

**End of Block: Information Sheet**

---

**Start of Block: Social capital: Social networks/cohesion/connectedness**

SQ\_1\_1 This hotel takes a team approach to planning.

- Strongly agree (1)
- Somewhat agree (2)
- Neither agree nor disagree (3)
- Somewhat disagree (4)
- Strongly disagree (5)
- 

SQ\_1\_2 My ideas are valued by leadership at the hotel where I work.

- Strongly agree (1)
- Somewhat agree (2)
- Neither agree nor disagree (3)
- Somewhat disagree (4)
- Strongly disagree (5)
-

SQ\_1\_3 I socialise with co-workers from the hotel where I work.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

SQ\_1\_4 The hotel where I work encourages staff participation in social and/or charitable groups.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

SQ\_1\_5 Do you read or listen to the news?

- Daily (1)
  - 4-6 times a week (2)
  - 2-3 times a week (3)
  - Once a week (4)
  - More than once per month (5)
  - Less than once per month (6)
  - Rarely or never (7)
-

SQ\_1\_6 The hotel where I work builds relationships with other organisations we may need to work with in a disaster.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

SQ\_1\_7 At the hotel where I work I am friends with staff from departments other than mine.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

SQ\_1\_9 The hotel where I work has a common area for staff to gather (for example a lunchroom).

- Yes (1)
- No (2)

**End of Block: Social capital: Social networks/cohesion/connectedness**

---

**Start of Block: Social capital: Capacity to work in groups, problem solving**

SQ\_2\_1 People in this hotel are committed to working on a problem until it is resolved.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

SQ\_2\_2 The hotel where I work is known for its ability to use knowledge in creative ways.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

SQ\_2\_3 The hotel where I work has clearly defined priorities for what is important during and after a disaster.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
-

SQ\_2\_4 Leaders ask for my opinion regarding departmental matters at the hotel where I work.

- Strongly agree (1)
- Somewhat agree (2)
- Neither agree nor disagree (3)
- Somewhat disagree (4)
- Strongly disagree (5)

**End of Block: Social capital: Capacity to work in groups, problem solving**

---

**Start of Block: Social capital: Trust**

SQ\_3\_1 The hotel where I work has plans that will work in a disaster.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

SQ\_3\_2 At the hotel where I work leaders take thoughtful actions to resolve problems.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
-

SQ\_3\_3 At the hotel where I work co-workers support me when I have problems.

- Strongly agree (1)
- Somewhat agree (2)
- Neither agree nor disagree (3)
- Somewhat disagree (4)
- Strongly disagree (5)

**End of Block: Social capital: Trust**

---

**Start of Block: Economic Capital: Staff economic resilience**

EQ\_4\_1 Do you usually work full time (more than 30 hours per week) or part time (less than 30 hours per week).

- Full time (1)
  - Part time (2)
- 

EQ\_4\_2 Do you participate in profit sharing and/or monetary bonuses at the hotel where you work?

- Yes (1)
  - No (2)
- 

EQ\_4\_3 How long have you worked for this hotel?

- Less than 1 year (1)
  - 1 year- 3 years (2)
  - More than 3 years-5 years (3)
  - More than 5 years (4)
  - More than 8 years (5)
-

EQ\_4\_4 Do you save a portion of your income at least one time per month?

- Definitely yes (1)
  - Probably yes (2)
  - Might or might not (3)
  - Probably not (4)
  - Definitely not (5)
- 

EQ\_4\_5 Is your insurance coverage adequate to cover your personal property losses due to a disaster?

- Yes (1)
- No (2)
- I do not have personal property insurance (4)
- I am unsure what my insurance covers (5)
- Other (3) \_\_\_\_\_

**End of Block: Economic Capital: Staff economic resilience**

---

**Start of Block: Human capital: Health and wellbeing**

HQ\_1\_1 Do you consider yourself generally healthy?

- Definitely yes (1)
  - Probably yes (2)
  - Might or might not (3)
  - Probably not (4)
  - Definitely not (5)
-

HQ\_1\_2 Do you believe you have control of your life and circumstances?

- Definitely yes (1)
- Probably yes (2)
- Might or might not (3)
- Probably not (4)
- Definitely not (5)

**End of Block: Human capital: Health and wellbeing**

---

**Start of Block: Human capital: Skills**

HQ\_2\_1 At the hotel where I work I have participated in planning for disaster response.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

HQ\_2\_2 At the hotel where I work I have participated in training exercises for disaster response.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
-

HQ\_2\_3 In my home I have engaged in disaster preparedness planning (for example gathered emergency supplies, food, and water).

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

HQ\_2\_4 Within the last 3 years I have had training in CPR (Cardiopulmonary resuscitation) or first aid.

- Yes (1)
  - No (2)
- 

HQ\_2\_5 There would be effective leadership at the hotel where I work if a disaster occurred.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
-

HQ\_2\_9 Leaders at the hotel where I work provide opportunities to discuss disaster preparedness.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

HQ\_2\_6 How long have you worked in the hotel industry (at any hotel)?

- Less than 1 year (1)
  - 1year-3years (2)
  - More than 3 years-5 years (3)
  - More than 5 years to 10 years (4)
  - More than 10 years (5)
- 

HQ\_2\_7 What is you highest level of education?

- High school/college (1)
- Technical degree (2)
- Bachelors (3)
- Masters (4)
- PhD (5)
- Did not complete high school/college (6)
- Other (7) \_\_\_\_\_

**End of Block: Human capital: Skills**

---

**Start of Block: Human Capital: Capacity to adapt**

HQ\_3\_1 This hotel develops staff with a team approach.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

HQ\_3\_2 At the hotel where I work my ability to solve problems is utilized by my department.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

HQ\_3\_3 At the hotel where I work tough decisions can be made quickly.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
-

HQ\_3\_4 If necessary I could walk to work in a reasonable length of time.

- Extremely reasonable (1)
  - Somewhat reasonable (2)
  - Neither reasonable nor unreasonable (3)
  - Somewhat unreasonable (4)
  - Extremely unreasonable (5)
  - Other (6) \_\_\_\_\_
- 

HQ\_3\_6 Guests are provided with information about lifesaving emergency procedures.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

HQ\_3\_7 The hotel where I work maintains sufficient resources to absorb some unexpected change.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
-

HQ\_3\_8 The hotel where I work is focused on being able to respond to the unexpected.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

HQ\_3\_10 At the hotel where I work I feel confident we can care for our guests in a disaster.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

HQ\_3\_11 I would be available to work in the time immediately following a disaster.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

HQ\_3\_12 What factors influenced your answer to the previous question: I would be available to work in the time immediately following a disaster?

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---

End of Block: Human Capital: Capacity to adapt

---

Start of Block: Demographic

DM\_1\_4 Which hotel do you currently work for?

---

DM\_1\_5 What is your position?

- Manager (1)
- Supervisor (2)
- Hourly staff (3)
- Other (4) \_\_\_\_\_

DM\_1\_6 Which department do you primarily work in?

- Front office/Guest service (1)
- Bell services (2)
- Housekeeping (3)
- Food & Beverage (4)
- Engineering/Maintenance (5)
- Security (6)
- Other (7) \_\_\_\_\_

DM\_1\_7 Which shift do you normally work?

- Day/Morning (1)
  - Afternoon/Evening (2)
  - Overnight/Third shift (3)
  - Other (4) \_\_\_\_\_
- 

DM\_1\_8 With respect to your current position at this hotel, what is your status?

- Regular staff (1)
- Seasonal Staff (2)
- Contract Staff (3)
- Other (4) \_\_\_\_\_

**End of Block: Demographic**

---

**Start of Block: Human capital: Knowledge**

HQ\_4\_1 The hotel leadership where I work believes that emergency plans must be practised and tested to be effective.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
-

HQ\_4\_2 If key organisational people are unavailable, there are always others who can fill their roles at the hotel where I work.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

HQ\_4\_3 Meetings are held following any emergency event (for example an evacuation alarm) at the hotel where I work.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
  - I am unaware of any emergency event occurring at this hotel (6)
- 

HQ\_4\_5 In my lifetime I have experienced a disaster either at home or work (for example a serious earthquake or flood)?

- Yes (1)
  - No (2)
- 

HQ\_4\_5 At the hotel where I work I have been on duty during a hotel evacuation.

- Yes (1)
  - No (2)
-

HQ\_4\_6 Training is provided by this hotel concerning what staff should do in case of disaster.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

HQ\_4\_7 Awareness of hazards (for example earthquake or tsunami) is provided to staff by leadership at the hotel where I work.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

HQ\_4\_8 Awareness of hazards (for example earthquake or tsunami) is provided to guests at the hotel where I work.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
-

HQ\_4\_9 At the hotel where I work I have been on duty during a disaster.

- Yes (1)
- No (2)
- Comment (3) \_\_\_\_\_

End of Block: Human capital: Knowledge

---

Start of Block: Human capital: Business continuity

HQ\_5\_1 There are manual procedures for operating critical systems (for example check-in or payment processing) if electronic systems are down.

- Strongly agree (1)
- Somewhat agree (2)
- Neither agree nor disagree (3)
- Somewhat disagree (4)
- Strongly disagree (5)
- 

HQ\_5\_2 Manual procedures are part of initial staff training at the hotel where I work.

- Strongly agree (1)
- Somewhat agree (2)
- Neither agree nor disagree (3)
- Somewhat disagree (4)
- Strongly disagree (5)
-

HQ\_5\_3 A clear chain of leadership for emergency situations exists in the hotel where I work.

- Strongly agree (1)
- Somewhat agree (2)
- Neither agree nor disagree (3)
- Somewhat disagree (4)
- Strongly disagree (5)

End of Block: Human capital: Business continuity

---

Start of Block: Physical capital: Life safety & Business continuity

PQ\_1\_1 Evacuation plans are in place at the hotel where I work.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

PQ\_1\_2 Back-up power generation capabilities are available at the hotel where I work

- Yes (1)
  - No (2)
  - Don't know (3)
-

PQ\_1\_3 Water and food supplies, for emergency use, are in place at the hotel where I work.

- Yes (1)
  - No (2)
  - Don't know (3)
- 

PQ\_1\_4 The hotel where I work is built to high standards.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

PQ\_2\_1 All critical organisational data is backed up to the Cloud or a hard copy is printed daily at the hotel where I work

- Strongly agree (1)
- Somewhat agree (2)
- Neither agree nor disagree (3)
- Somewhat disagree (4)
- Strongly disagree (5)

**End of Block: Physical capital: Life safety & Business continuity**

---

**Start of Block: Natural capital: Location's environmental risk & effects on environment**

NQ\_1\_1 Staff and guests can evacuate from the hotel to a safe location if needed.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

NQ\_2\_1 This hotel participates in recycling programs

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
- 

NQ\_2\_2 The impact of our business on the local environment is considered in hotel policies.

- Strongly agree (1)
  - Somewhat agree (2)
  - Neither agree nor disagree (3)
  - Somewhat disagree (4)
  - Strongly disagree (5)
-

NQ\_2\_3 This hotel has an environmental policy and green objectives.

- Strongly agree (1)
- Somewhat agree (2)
- Neither agree nor disagree (3)
- Somewhat disagree (4)
- Strongly disagree (5)

**End of Block: Natural capital: Location's environmental risk & effects on environment**

---

**Start of Block: Cultural Capital & Demographic**

CQ\_1\_1 Do you identify as:

- Kiwi (1)
  - Maori (2)
  - Pasifika (3)
  - European (4)
  - North American (5)
  - South American (6)
  - Other (7) \_\_\_\_\_
-

CQ\_2\_1 How long have you lived in New Zealand

- Less than 1 year (1)
  - 1 year - 3 years (2)
  - More than 3 years - 5 years (3)
  - More than 5 - 8 years (4)
  - More than 8 years (5)
  - All my life (6)
- 

DM\_1\_1 Marital status

- Married (1)
  - Single (2)
  - In a partnership (3)
  - Other (4)
  - Decline to state (5)
- 

DM\_1\_2 Do you identify as:

- Male (1)
  - Female (2)
  - Other (3) \_\_\_\_\_
  - Decline to state (4)
-

DM\_1\_3 How old are you?

- Less than 20 (1)
- 21-30 (2)
- 31-40 (3)
- 41-50 (4)
- 51-60 (5)
- 61 or older (6)
- Decline to state (7)

**End of Block: Cultural Capital & Demographic**

---

**Start of Block: Block 14**

Q\_1 Please use the space below to add any comments or additional information you think would help in understanding disaster resilience in the hotel sector from your perspective.

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**End of Block: Block 14**

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## Appendix C: Information Sheet, Informed Consent, Interview Guide

The following documents were used when conducting semi-structured interviews per ethics approved procedures. Participants were first given an opportunity to read the information sheet and ask questions, then asked to sign the consent form.

### Information Sheet



**MASSEY UNIVERSITY**  
 TE KUNENGA KI PŪREHUROA  
 UNIVERSITY OF NEW ZEALAND

**JOINT  
 CENTRE FOR  
 DISASTER  
 RESEARCH**

#### ***Title of study: Building disaster resilience within the Hotel Sector***

You are asked to participate in a research study conducted by Nancy Brown a, student of Emergency Management Massey University, Wellington. This research is part of a Thesis requirement for a Doctorate of Philosophy Degree. You were selected as a possible participant in this study because you work at a hotel in the study area. The hotel where you work has given permission to solicit participation in the project from staff at this hotel, however, you are not obligated to participate. Participation is voluntary.

#### Purpose of the Study

The purpose of this project is to determine what disaster resilience is in a hotel context, and how hotels may improve their disaster resilience. Research will be conducted by a review of current literature, online survey, and semi-structured interviews with hotel staff and leadership in Wellington and Hawke's Bay . This research will inform hotel organizations of best practices for developing best practices to build disaster resilience.

#### Procedures

If you volunteer to participate in this study, you will do the following things: This is a short interview of approximately than 20 minutes conducted at you convenience. You may choose to answer any or none of the questions posed. You will be interview regarding hotel policy and procedures and your specific involvement in those things.

You are under no obligation to accept this invitation. If you decide to participate, you have the right to:

- decline to answer any particular question;
- withdraw from the study (within 30 days of interview);
- ask any questions about the study at any time during participation;
- provide information on the understanding that your name will not be used unless you give permission to the researcher;
- be given access to a summary of the project findings when it is concluded.

#### Potential Risks and Discomforts

There are minimal risks involved with this research. Anonymity will be protected. No identifying information will be collect, but it is possible that someone may recognize your input through unintentional identifying information (speech pattern, ideology). Every effort will be made to avoid this outcome. Data collected will be stored electronically on a password protected hard drive and disposed of after three years by fully deleted the hard drive.

#### Potential Benefits to Subjects and/or to Society

As the field of emergency management matures, disaster resilience has become more recognized as imperative to an organisations disaster plan. It is clear that no government has the capacity to handle these mega-events in the hours, or even days, immediately following. Disaster resilience building for hotels needs to be prioritized; this is where the community will find the strength to save themselves. This research will contribute to this body of knowledge.

Any questions regarding this research may be directed to either:

Nancy Brown- Email: [n.brown1@massey.ac.nz](mailto:n.brown1@massey.ac.nz) Cell: [REDACTED] or her supervisor

Prof. David Johnston- Email: [D.M.Johnston@massey.ac.nz](mailto:D.M.Johnston@massey.ac.nz) Telephone: +64 (04) 801 5799 ext. 63672

This project has been reviewed and approved by the Massey University Human Ethics Committee: Southern A, Application 17/28. If you have any concerns about the conduct of this research, please contact Dr Lesley Batten, Chair, Massey University Human Ethics Committee: Southern A, telephone 06 356 9099 x 85094, email [humanethicsoutha@massey.ac.nz](mailto:humanethicsoutha@massey.ac.nz) .

**Informed Consent Form**

Joint Centre for Disaster Research  
School of Psychology, College of Humanities & Social Sciences  
Massey University, Wellington Campus  
PO Box 756  
Wellington, 6140

***Title of study: Building disaster resilience within the Hotel Sector***

PARTICIPANT CONSENT FORM - INDIVIDUAL

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I agree to participate in this study under the conditions set out in the Information Sheet.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Full Name – printed \_\_\_\_\_

## **Interview Guide**

### ***Building Disaster Resilience within the Hotel Sector***

Semi-Structured interview guide

These are the definitions being used in this research for disaster and resilience:

Disaster refers to: A sudden event where the trigger is outside the current control of the affected area (community and/or business), the event disrupts the function of that area and requires additional resources ...to respond to and recover from the event.

Resilience refers to: A dynamic condition describing the capacity of a hotel, together with its stakeholders (staff, guests, the local community), to assess, innovate, adapt, and overcome possible disruptions that are triggered by disaster

1. What processes or steps are in place for staff during an emergency or disaster?

Are these sufficient in your estimation?

2. What processes or steps are in place for guests during an emergency or disaster?

Are these sufficient in your estimation?

3. Do you think there are any obstacles to disaster resilience building here at this facility?

If so, what are they?

4. Have you experienced a disaster during working hours, for example a severe earthquake?

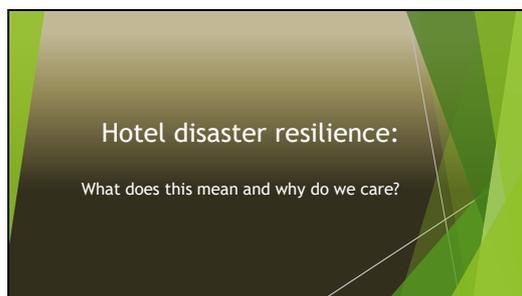
What did you learn from that experience that could inform future planning at this hotel?

5. Which hazards do you think are the most important to prepare for at this hotel?

## Appendix D: TIA Conference Proceedings July 2018

The following slide show and script was presented to approximately 100 hotel managers from New Zealand and the TIA Hotel Industry Conference in Auckland July 4, 2018. The presentation was 30 minutes including questions and also resulted in a number of conversations with GMs following the session. As a stated objective of the research, bringing practical ideas of disaster resilience to hotel managers was a high point in the research process.

Slide 1



Introduce self why doing

I came to New Zealand almost 3 years ago to study disaster resilience and the hotel sector.

I know hotels can't plan for every event that could happen- they are busy places

With resilience you have resources that can be deployed in flexible ways to solve problems of many varieties

Take away one idea

Slide 2



Define resilience

Resilience to disaster means when the unexpected happens you and your team can react quickly and appropriately to save lives and get back to business.

To build resilience, we need to understand what it is.

This research was undertaken to explore disaster resilience in the hotel sector in New Zealand. Two research areas were chosen, Wellington and Hawke's Bay.

The following video provides a quick look at some variables in disaster resilience

Slide 3



People, leaders, and circumstances work together to solve problems, and understanding how different components work together and interact makes a difference.

2009 Belgium commercial for De IJn

<https://www.youtube.com/watch?v=FIIMhPhkoSA>

Slide 4



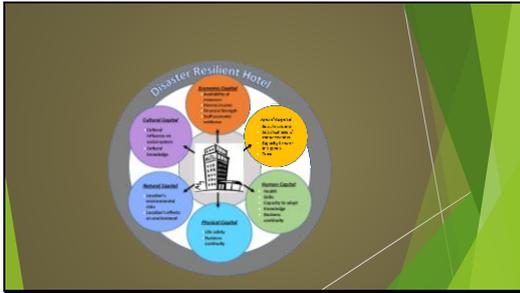
My research looked at resilience from a capital perspective- researching what capital resources a hotel may need in disaster to overcome and get back to business, in other words- to be resilience. Six capitals work towards disaster resilience I'll run through them quickly

Slide 5



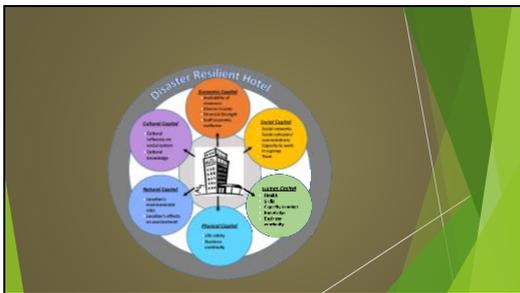
Economic Capital- Money, insurance, tourism growth

Slide 6



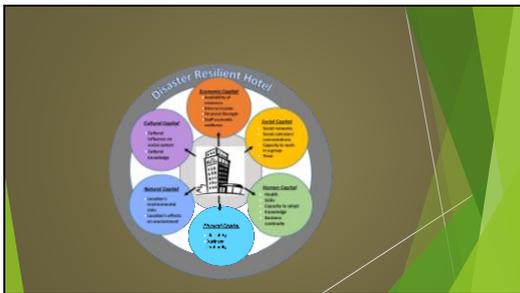
Social Capital- how people within your org connect to each other and how they connect to the wider community

Slide 7



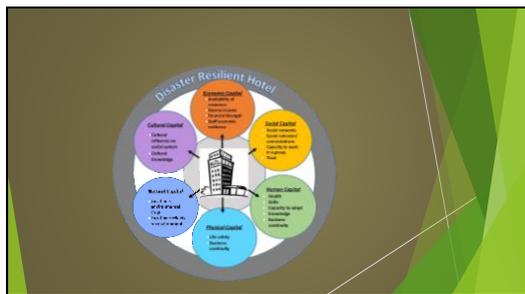
Human Capital- this looks at staff wellbeing, skills, and knowledge and also capacity to adapt, as well as business continuity in terms of personnel  
One key here is knowledge- which in this context includes hazard risk knowledge

Slide 8



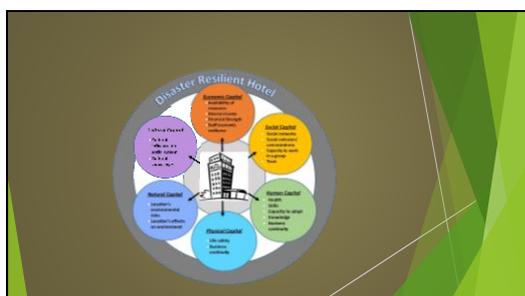
Physical Capital- the hotel itself, life safety systems, business continuity systems

Slide 9



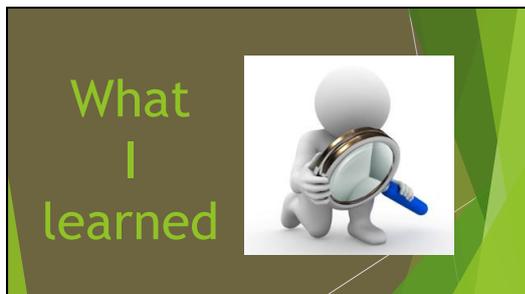
Natural Capital- this looks at the hotels link to the natural resources, both how you effect the resources and how they affect you.

Slide 10



Cultural Capital- local knowledge, cultural influence on the system

Slide 11



So let me share what I learned from my study. Through surveys and interviews with hotels I found a lot of great resiliency, and few places where a little action can make a big difference.

Slide 12



Economic capital is something I am sure we can all agree is important.

Historic flooding in 2010 caused a full evacuation of Nashville's most popular hotel and attraction, the Opryland Hotel.

\*Six months and 50 million dollars later the hotel reopened to landmark crowds in time for the Christmas holidays. This is pretty good considering the amount of damage from the flood. Economic capital, including insurance made this possible.

Economic capital is high in the hotels I looked at, and probably nationwide. Hotels have insurance for all types of coverage, diverse markets are growing, and a strong growth in the tourism sector projected.

Slide 13



It won't surprise you that staff economic resilience is also important- you need staff available in disaster. Following Hurricane Gustov in New Orleans in 2008 hotels were physically ready to open- but staffing shortages made operations challenging and in some cases impossible.

By and large staff have many economic resources. Lots of full-timers, fair wages, most staff report saving regularly- awesome!

One area that was low was the percentage of staff that had insurance for their personal property (like renters insurance). If you lose everything and can't replace it that can make life really hard- and weaken your ties to the area

Now I don't have a solution for this, but I do wonder if organisations looked at group rates for staff personal insurance and promoted their purchase of it would that improve the number insured? It also shows you care, which I know you do based on surveys and interviews.

Slide 14



Slide 15



Let's move to social capital:

Two things stood out in my interviews and surveys. Managers take a team approach to everything **but** disaster planning.

Query your staff. I am willing to bet some members of your team are total disaster preppers and excited to participate in the process and shoulder some of your burden.

Slide 16



What can you do with all that extra time?

That brings me to my second gap- make more connections with organisations needed in emergencies and disaster. Hotels need to connect with and develop relationships with councils, civil defence departments, and local Iwi communities.

This relationship with your tourism association is also important to maintain and develop

Reach out to these different organisations-, tell them you want to know what plans they have, take a tour of the facility. Relationships are key in disastrous events for resources, and for information.

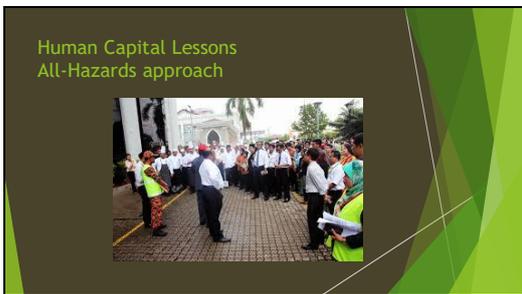
Slide 17



**Take Away Idea**

- Involve staff in disaster planning
- Connect widely to organisations you may need in a disaster

Slide 18



**Human Capital Lessons  
All-Hazards approach**

Hotels in the study do not have an all hazards approach in training and exercises. Some may have detailed plans that managers are familiar with- but the staff, not so much.

You are doing fire drills as required, but not extending that to other types of hazards scenarios.

Even table top discussions regarding challenges you might have in different scenarios is helpful.

Do these sessions across departments with all different levels of staff. This build connections and also helps break down silos!

Once again, this is something people who are engaged in preparedness in your organisation would love to plan for a couple times a year.

Slide 19



**Human Capital**

- Break down Silos
- Close gaps in daily operations

Here are some added benefits to developing a multi-hazard approach and exercising across departments-

First – more staff from different departments get to know each other and become part of each other's network.

This can also be helpful when trying to solve customer issues of all kinds.

Second, also the way you may find gaps in daily operations that the group can solve as well.

Slide 20



Slide 21



Physical capital is also strong for hotels in Wellington and Hawke's Bay. Building standards are valued, hotels are meeting them, evacuation procedures are well known and rehearsed, and backing up critical data seems to be a standard.

This hotel in Taiwan collapsed in a 6.4 earthquake on February 6 of this year. Beyond the importance of the physical structure, this illustrates the importance of excellent evacuation route planning and access to documentation regarding your operation in the aftermath of a disaster including current and future guests. Once everyone was out- no one was going back in to this property!

Slide 22



From the recent experience in Kaikoura, Wellington Hotels share some lessons learned. One area of potential capital increase here is creating sample communications for all types of disaster occasions. These are for current Guests, future guests, tour operators, media, all the people that you need to communicate with in the hours and days following an event.

Following the Kaikoura earthquake hotels in Wellington all created a one pager on earthquake safety to pass out to guests and did so for a few weeks. Additionally, communication to media, tourism partners, and updating guests all had to be handled on the fly.

A lesson learned from this at one hotel was to create a set of communications skeleton templates in advance that could be quickly customised based on an event. Hard copies on site and a cloud file will insure access for everyone in a hurry. Messaging created in advance is bound to be better refined.

Slide 23



Slide 24



Natural capital is looked after by lots of government agencies considering climate change, earthquakes, tsunami, risk modelling all different things and creating policy to help tourism remain a sustainable industry moving forward. Especially in New Zealand tourism's impact on the environment needs to be monitored and understood, the environment is why most of our tourists are here!

Natural Capital is everyone's responsibility! Recent closure for four months of the popular Maya beach in Thailand illustrate how tourism can effect natural environment, to the point that the very reason tourist show up is no longer valid! New Zealand tourism is growing and everyone needs to be involved in monitoring tourism sites and making sure the intrinsic value isn't decimated.

Slide 25



With regard to your facilities risks from nature, there is lots of information out there! However, I would ask each of you to consider risks based on your hotels physical location. Are you at sea level? Is ash a possible problem?

There may be nothing to do now, but as refurbishments and replacements of equipment and things come around you may find that changes at that time will improve your disaster resilience. At a minimum, understanding the risk better will provide you a leg up when something happens and limit the surprise factor.

Slide 26



Slide 27



Cultural capital is also a great resource in New Zealand- people really have become safety focused in many ways. Everyone I talked to knew to drop cover and hold, and if the shake is long and strong be gone. 80% of people have emergency preparedness in their homes- WOW!

Slide 28



One area to think about. Is it possible guest safety is prioritised over staff safety? This is a word cloud of my interviews with 25 staff members in Wellington and Hawke’s Bay . Here’s what I found in interviews- staff really feel an obligation and duty to care for guests- which is awesome!

Staff tell me they evacuate to the lobby, then some are assigned to go back up to the floors to clear the guests. Now in many circumstances this is perfectly great- but I can think of some occasions where maybe it is not.

All hazards training can solve some of this because different scenarios will have different actions. Consider when guests should be able to expect staff to clear floors and when guests need to self-evacuate and anyone on the ground floor can just go to the assembly point.

Slide 29



Slide 30



Thank you very much for your time, I appreciate this opportunity to share my research with you and hope you have taken away at least one valuable idea on how you can build disaster resilience in your organisation. Building resilience is an ongoing process, just chip away at it and you will be surprised the strides made over time.

## Appendix E: Paper 8th ICBR International Conference on Building Resilience

November 2018

Brown, N. A., Rovins, J. E., Orchiston, C., Feldmann-Jensen, S., & Johnston, D. (2018). *Building disaster resilience within the hotel sector: A mixed methods study*. Presentation accepted, Paper under review. 8th International Conference on Building Resilience, Lisbon, Portugal

### Building Disaster Resilience within the Hotel Sector:

#### A Mixed Methods Study

#### Abstract

Understanding what disaster resilience means for hotels, and what gaps organisations may have, is crucial to planning disaster resilience building strategies. The objective of this research was to define the characteristics of disaster resilience in the hotel industry and develop measures to explore strengths and gaps in resilience. This research developed a framework outlining capital-based predictors customised for the hotel sector. The *Disaster Resilience Framework for Hotels* (DRFH) considers economic, social, human, physical, natural, and cultural capital as components of disaster resilience. This view of capitals combines both potential and actual resources to contribute to adaptive capacity; the ability of an organisation to withstand and recover from shocks.

The DRFH is explored through a mixed methods study of hotels in two areas of New Zealand (Greater Wellington and Hawke's Bay). A triangulation of survey data, interviews, and published secondary data provides insight into the status of disaster resilience for these hotels. A safety culture combined with social capital stocks and human capital skills make for a solid disaster resilience foundation. Gaps included a lack of all-hazard planning, the need to integrate staff in the planning process, and a need to better connect with other organisations that may be assets during disasters.

Keywords: Tourism; Disaster; Resilience; Hotel; *Disaster Resilience Framework for Hotels* (DRFH)

#### Introduction

Within the tourism industry, resilience to disasters is becoming increasingly studied exposing the need for industry-specific measures (Hall *et al.*, 2018). The tourism sector's total contribution to the global gross domestic product (GDP) for 2016 was 10.2% generating 1 in 10 jobs in the global economy (World Travel and Tourism Council (WTTC), 2017). The hotel sector demonstrates its importance to the tourism industry as a whole by contributing to:

- The local economy and overall employment (Lee *et al.*, 2013)
- Providing accommodations for tourists and convention attendees (Orchiston and Espiner, 2018) who will ultimately contribute to the economic wellbeing of communities
- Have special value during disaster recovery to provide accommodations for evacuees (Nguyen *et al.*, 2017), critical service staff (Yamamura and Welsh, 2018), and response workers (Neef and Wasi, 2017) as well as local employment.

Organisations that are resilient to disaster recover faster from disruption (Bruneau *et al.*, 2003). The ability to house guests in the aftermath of a disaster is a benefit to the hotel's bottom line. Additionally, as mentioned above, the community needs facilities for persons aiding in recovery and sources of income for local community members.

The study views building disaster resilience from a holistic perspective, refining and supporting an integrative framework with quantitative, qualitative, and secondary data. The goal is to create a complete picture of disaster resilience for the hotel sector. With that in mind, the research was designed to answer the following research question and sub-questions:

How can the hotel sector increase its disaster resiliency, and be better able to protect the lives of its guests and staff, and the livelihoods and local economy following a disaster?

- 1a. How is disaster resilience defined in a hotel sector context?
- 1b. What predictors assist in determining disaster resilience for the hotel sector?
- 1c. How resilient are hotels in New Zealand to disaster?
- 1d. What barriers exist to increasing disaster resilience for hotels in New Zealand?

## Methods

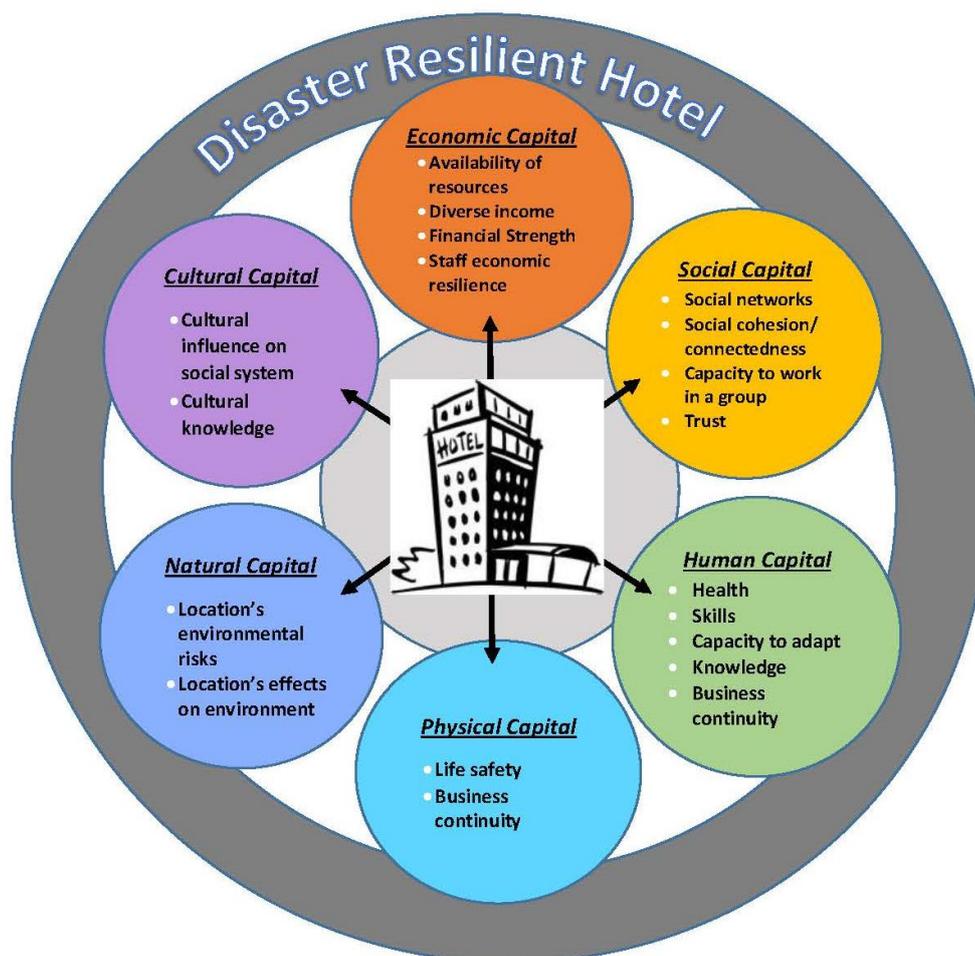
Two tourism destinations in New Zealand, Wellington and Hawke's Bay, were used in the research. The greater Wellington area had a population of 471,315 at the 2013 census (Statistics New Zealand, 2013b). Hawke's Bay population, for the 2013 census, was 151,179 (Statistics New Zealand, 2013a). In the past eight years New Zealand has experienced some significant seismic events including two earthquakes in Christchurch (September 2010 Mw7.1 and February 2011 Mw6.3) and the Kaikōura earthquake, November 2016 (Mw7.8) (GNS Science, 2016). These earthquakes disrupted normal regional tourism flows for extended periods of time.

The size of the study area allowed for a sample of all the hotels in the areas as opposed to a stratified sample. Wellington had 28 hotels open during the study period; Hawke's Bay had 17. Hotels ranged from multi-national corporate properties to smaller boutique hotels. Responses for the survey data included 74% of general managers (GMs) in

Wellington (N=20) and 72% (N= 13) of GMs in Hawke's Bay. Staff numbers included N= 13 for Hawke's Bay and N=33 for Wellington.

A series of in-depth qualitative interviews were conducted with a sample of the hotels from each area. Hotels were selected based on their engagement with the survey and willingness to continue participation in the study. Through a total of 25 interviews at five different hotels (WL N=13; HB N=12) saturation of data was reached. Interviews included staff from a wide variety of departments and duty managers GMs at seven different hotels (N=4; HB N=3) were also part of the data collection.

The *Disaster Resilience Framework for Hotels* (DRFH) developed by (Brown *et al.*, 2018) was used as the foundation for all data collection. This framework was conceptualised based on a review of literature done to unpack the complexity of disaster resilience in the hotel sector (Brown *et al.*, 2017) and expands and customises a previous framework for community resilience by Mayunga (2007). The survey questions were generated from the predictors and measures suggested in Brown *et al.* (2018) (Figure 1). Interview questions were designed based on the six capital groups when possible, supplemented by secondary data collection in areas not covered by interviews. Figure 1 describes each capital group including predictors of resilience. A full discussion of predictors and resources used in their development can be found in (Brown *et al.*, 2018).



*Figure 1. Disaster Resilience Framework for Hotels.*

The DRFH is designed with capital groups independent of each other. The independence is featured to emphasise that managers can enter disaster resilience building activities from multiple points. Research has shown that managers cite lack of time, beyond operational requirements, for disaster preparedness activities (Orchiston, 2013). Confirming how precious time is for managers, a Hawke's Bay GM described efforts to revamp and improve disaster planning were slow moving due to requirements of day to day operations.

## **Results and discussion**

In addition to analysis of the data collected, as a whole, this paper also aims to develop a deeper understanding of disaster resilience for hotels in the study area (Creswell & Plano Clark, 2017)

### 3.1 Economic capital

Tourism industry secondary data and the GM and staff answers to survey questions and interview topics show complementary pictures. In all cases the data shows economic prosperity for the tourism sector and that economic capital resources would be available if needed following a disaster. Stronger economic conditions before a disaster contribute to decreased effects when disaster strikes (Kim and Marcouiller, 2015).

### 3.2 Social Capital

A good range of social capital resources to draw on in a disaster is supported by the data. Survey and interview responses suggest there is a team approach to day to day operations and ideas and inputs are welcomed by managers. Silos between departments are being combated by friendships and social connections across departments.

Social capital resources were valuable in the time immediately following the Kaikōura earthquake, supporting the concept of social capital's contribution to overall resilience to disaster (Faulkner, 2001, Norris *et al.*, 2008, Kwok *et al.*, 2016). Staff pulled together, volunteered assistance, and showed capacities to work together under difficult circumstances.

Building relationships with other organisations (Lee *et al.*, 2013) outside of the hotel was one area managers might find value in considering as a platform for improving overall disaster resilience. In interviews, staff discussed waiting for engineers to inspect property post-Kaikōura Earthquake which may have contributed to the score. Wellington managers (25%) did not feel they were building the inter-organisational relationships they might need. As one manager discussed, the Kaikōura Earthquake opened up a lot of considerations and learnings. The shaking felt by staff and guests

coupled with the time of day- shortly after midnight, provided unique challenges to the minimum staff on duty at that time.

### 3.3 Human Capital

The data showed human capital resources available for both areas. General managers and staff were in agreement overall that the facilities could react flexibly and decisively in a disaster to keep the organisation moving forward. The use of different methods of gathering data exposed some gaps in the human capital resources; additional attention to these areas could improve disaster resilience for hotels.

Surveys showed that staff had participated in trainings and exercises, however, interviews revealed that these preparations were primarily fire drills. Staff indicated they would find exercises concerning different scenarios useful. Staff need training in a variety of scenarios; actions can differ based on the threat (Gunter, 2005). A more inclusive approach to disaster planning may also be warranted, which would also help improve staffs confidence in the handling of a variety of disaster types.

Hotel staff and managers indicated they had problem-solving skills, proactive leaders, some staff could access the property by foot if needed and were able to make decisions quickly when needed. The importance of adaptive capacity was illustrated by hotels in Hong Kong during the SARS outbreak (Lo et al., 2007). Wellington exhibited adaptive capacity through actions taken in the wake of the Kaikōura earthquake. Food and beverage adaptations, communications with guests and media, and staff volunteerism all point to the hotels' ability to adapt to unfolding situations.

Based on the data from surveys, there is no clear picture of how easily staff could get to work if they could not drive into the hotel, which for earthquake hazards can become a factor. The survey showed 50% of Hawke's Bay staff and 25% of Wellington staff lived too far to walk to work if needed. In interviews, 24% of Hawke's Bay and 47% of Wellington felt they would be unable to get to the hotel following a disaster. However, sufficient numbers of staff, after the Kaikōura Earthquake, were able to get to hotels to provide key assistance to minimal staff on duty at midnight. Together the existing and ad hoc staff were able to assist and care for guests while maintaining readiness for possible aftershocks

### 3.4. Physical Capital

Based on all data collected hotels have physical capital resources available in case of disaster. Both life safety measures and business continuity structures are present. Only a very few of hotels surveyed (n=2) do not meet 100% of current building standards. All are required by law to have evacuation plans in place that have been approved by fire services. Staff are aware of building seismic compliance statistics and in Wellington all staff interviewed were able to state the percentage of compliance (e.g. "Our hotel is 110% of standards"). One gap highlighted during the interviews- in Wellington, it is unclear if some of the buildings in the tsunami evacuation zones could be suited to

vertical evacuation. Vertical evacuation robustness should be determined and socialised among staff.

Another area for improvement is alternate power generation capacity. In Wellington, 73% of hotels do not have back-up power alternatives, in Hawke's Bay 50% do not. In a study of hotels involved in the 2003 black-out in eastern North America, 48% of hotels surveyed did not have power generators and relied exclusively on a battery back-up system that lasts only one-two hours to allow for evacuation (Kwortnik, 2005). The extended time of the black-out caused guest service interruption.

Based on both surveys and interviews critical data is being backed-up at regular daily intervals and hard copies are available if needed in the majority of hotels. This important practice is an industry standard in Wellington and Hawke's Bay.

### 3.5 Natural Capital

As with physical capital, there are many positive predictors of natural capital to build disaster resilience in Wellington and Hawke's Bay. In interviews and surveys staff and managers agreed that the environment is considered in policies and procedures, hotels are participating in recycling, and the some risk from natural hazards can be mitigated through good evacuation routes if needed.

Secondary data also shows that New Zealand has put attention to the sustainability of important natural resources that attract tourism (The Treasury, 2016). Research and study into the risks from natural hazards are robust and ongoing. New communication tools are being developed as shown by Hawke's Bay Emergency Management web page which allows an address input to show exact position on tsunami evacuation maps (Hawke's Bay Emergency Management Group, 2018).

### 3.6 Cultural Capital

The importance of cultural capital relates to knowledge of local hazards and protective actions as well as cultural influences on the local system that influence hazard knowledge, risk, and mitigation strategies. Survey findings measured cultural capital available based on length of time in New Zealand. More than 75% of GMs and staff were in New Zealand during the Christchurch earthquake and all experienced the Kaikōura event. Recent disaster experience in the country exposed the staff and GMs to a disaster and an opportunity to consider how an earthquake may affect them in the future.

The experience with disasters in recent years may also influence the safety culture in New Zealand. Interviews showed that literally everyone knew current messaging for earthquake and tsunami, i.e. *drop, cover, hold*, and *long, strong, get gone* and understood what protective actions should be taken. During interviews 80% of people reported emergency kits in their homes. One area of consideration in the safety culture being developed is the possible prioritisation of guests over staff. Based on interview responses, many hotels evacuation policies have staff report to the warden in the lobby

and then send staff back up to floors to clear the floors of guests. Staff also discussed in interviews their responsibility to secure the safety of guests. Managers may want to consider scenarios where staff safety requires guests to self-evacuate with processes that improve communications of evacuations to all areas of the hotel. Once in the lobby staff may be safer heading to assembly points, instead of performing roles that may be better suited to professionals.

The following Table 1 highlights the finding of both the qualitative and quantitative research done with hotels.

<b>Table 1: Summary of findings from mixed methods data analysis</b>
<b>Economic Capital</b>
<ul style="list-style-type: none"> <li>• Financial strength: Tourism industry experiencing growth including an increase in hotel guest nights. 40% of hotels do not have financial reserves. Disaster management is not part of the budget</li> </ul>
<ul style="list-style-type: none"> <li>• Diversity of income: Increases in the diversity of customer bases are happening and supported by marketing efforts</li> </ul>
<ul style="list-style-type: none"> <li>• Staff economic resilience: Growth in tourism jobs and longevity of employment are supported by regular savings by staff</li> </ul>
<b>Social Capital</b>
<ul style="list-style-type: none"> <li>• Social cohesion/connectedness/networks: Close intra-organisational networks. Higher in Wellington post-Kaikoura earthquake. Increase management support of social activities for staff cohesion development</li> </ul>
<ul style="list-style-type: none"> <li>• Capacity to work as a group: Demonstrated thinking on their feet and pulling together</li> </ul>
<ul style="list-style-type: none"> <li>• Trust: Some concerns about organisational and management priorities but confidence in plans. Leadership takes thoughtful actions and values input from staff</li> </ul>
<b>Human capital</b>
<ul style="list-style-type: none"> <li>• Health and wellbeing: Medical insurance available and high perceived control for staff and GMs</li> </ul>
<ul style="list-style-type: none"> <li>• Skills: Employees have some experience in fire evacuations exercises and special trainings (e.g. first aid). Need all-hazards skills and attention to disabled guest processes</li> </ul>

<ul style="list-style-type: none"> <li>• Capacity to adapt: Employees are ready willing and able to assist in a disaster. Managers showed creative adaptation but need to consider guest satisfaction when possible. Many staff and GMs could not get to work in some types of disasters</li> </ul>
<ul style="list-style-type: none"> <li>• Knowledge: Staff and managers have an understanding of basic evacuation protocols and industry experience. Lack of all-hazards protective action knowledge. Guests need additional multi-hazard information</li> </ul>
<ul style="list-style-type: none"> <li>• Business continuity: Critical data is handled with disruptions of service considered. Leadership in key areas is available, but cross-training needs improvement. Pre-disaster communications for emergency response are not commonly developed</li> </ul>
<b>Physical Capital</b>
<ul style="list-style-type: none"> <li>• Life safety: Building standards are being met. Evacuation routes are well known. Building height factors into service levels when elevators are inaccessible. Power back-up capacity needs improvement. Tsunami information not well socialised in Wellington. Emergency supplies of food and water also need development</li> </ul>
<ul style="list-style-type: none"> <li>• Business continuity: Critical data protection is integrated into basic processes</li> </ul>
<b>Natural Capital</b>
<ul style="list-style-type: none"> <li>• Hotel's exposure to natural hazard risks: Natural hazard risk is considered by research and policy organisations and protective actions are available in the natural environment (e.g. higher ground)</li> </ul>
<ul style="list-style-type: none"> <li>• Hotels effects on the local environment: Organisations dedicated to natural environment protection are present. Sustainable activities are being considered and research is ongoing</li> </ul>
<b>Cultural Capital</b>
<ul style="list-style-type: none"> <li>• Safety culture exists. Previous experiences of local hazards are influencing new actions and strategies. The duty of care for guests is integrated into the culture. Some lack of cultural knowledge may influence lack of tsunami strategies in WL. Staff safety needs to be balanced with guest safety</li> </ul>

## Conclusions

Arguably, the most prominent barrier to building resilience to disaster is time, followed by money. This research found managers are often fully committed to business as usual, day-to-day operational concerns. However, it may be that with limited effort managers can engage their staff in the process, relieve much of the workload, and enhance their disaster resilience.

The Theory of Planned Behaviour describes intentions to act as being tied to one's ability to perform corrective actions, social norms, and attitudes towards the behaviour (Ajzen, 1991). Based on this theory it is important to provide actions that are achievable and effective for reducing risks if managers and staff are to be encouraged to build disaster resilience. The DRFH is designed to provide a multi-entry format allowing organisations with limited time and money an opportunity to make small improvements to their resilience. A limitation of the study includes the localised nature of the data and variables making widespread generalisation inappropriate. Future research looking at refining predictors through case studies of areas with different risks and challenges will add to the knowledge significantly. This all-hazards framework could benefit from data from areas with high risk from terrorism and weather-related disasters.

## References

- Ajzen, I. 1991. The theory of planned behavior. *Organizational Behavior and Human Decision Process.*, 50, 179-211. Available: DOI 10.1016/0749-5978(91)90020-T.
- Brown, N. A., Orchiston, C., Rovins, J. E., Feldmann-Jensen, S. & Johnston, D. 2018. Investigating disaster resilience within the hotel sector: An integrative conceptual framework. (under review) *Journal of Hospitality and Tourism Management*.
- Brown, N. A., Rovins, J. E., Feldmann-Jensen, S., Orchiston, C. & Johnston, D. 2017. Exploring disaster resilience within the hotel sector: A systematic review of literature. *International Journal of Disaster Risk Reduction*, 22, 362-370. Available: DOI <http://dx.doi.org/10.1016/j.ijdr.2017.02.005>.
- Bruneau, M., Chang, S. E., Eguchi, R. T., Lee, G. C., O'rourke, T. D., Reinhorn, A. M., Shinozuka, M., Tierney, K., Wallace, W. A. & Von Winterfeldt, D. 2003. A framework to quantitatively assess and enhance the seismic resilience of communities. *Earthquake Spectra*, 19, 733-752. Available: DOI 10.1193/1.1623497.
- Faulkner, B. 2001. Towards a framework for tourism disaster management. *Tourism Management*, 135-147.
- GNS Science 2016. Where were New Zealand's largest earthquakes. Nov 24 2016 ed. Available: <https://www.gns.cri.nz/Home/Learning/Science-Topics/Earthquakes/New-Zealand-Earthquakes/Where-were-NZs-largest-earthquakes>.
- Hall, C. M., Prayag, G. & Amore, A. 2018. *Tourism and resilience: Individual, organisational, and destination perspectives*, Bristol, UK, Channel View Publications. Available: DOI 10.21832/HALL6300.
- Hawke's Bay Emergency Management Group. 2018. *Tsunami map* [Online]. Available: <http://hbhazards.intramaps.co.nz/IntraMaps/MapControls/HBHazards/EasiMaps/index.html>.
- Kim, H. & Marcouiller, D. W. 2015. Considering disaster vulnerability and resiliency: the case of hurricane effects on tourism-based economies. *The Annals of Regional Science*, 54, 945-971. Available: DOI 10.1007/s00168-015-0707-8.
- Kwok, A. H., Doyle, E. E. H., Becker, J., Johnston, D. & Paton, D. 2016. What is 'social resilience'? Perspectives of disaster researchers, emergency management practitioners, and policymakers in New Zealand. *International Journal of Disaster Risk Reduction*, 19, 197-211. Available: DOI 10.1016/j.ijdr.2016.08.013.
- Kwortnik, R. J. 2005. Safeguarding hospitality service when the unexpected happens: Lessons learned from the blackout of '03. *Cornell Hotel and Restaurant Administration Quarterly*, 46, 13-39. Available: DOI 10.1177/0010880404272018.
- Lee, A. V., Vargo, J. & Seville, E. 2013. Developing a tool to measure and compare organizations' resilience. *Natural Hazards Review*, 14, 29-41. Available: DOI 10.1061/(asce)nh.1527-6996.0000075.
- Mayunga, J. S. 2007. Understanding and applying the concept of community disaster resilience: A capital-based approach. *2007 Summer Academy Megacities: Social*

- vulnerability and resilience building, 22-28 July*. Munich, Germany: United Nation University Institute for Environment, and Human Security. Available: [https://www.u-cursos.cl/usuario/3b514b53bcb4025aaf9a6781047e4a66/mi\\_blog/r/11.\\_Joseph\\_S.\\_Mayunga.pdf](https://www.u-cursos.cl/usuario/3b514b53bcb4025aaf9a6781047e4a66/mi_blog/r/11._Joseph_S._Mayunga.pdf).
- Neef, A. & Wasi, S. A. 2017. Disaster response and recovery of tourism sector: The case of Vanuatu in the aftermath of 2015 Cyclone Pam. Auckland, New Zealand: Development Studies, School of Social Sciences, The University of Auckland.
- Nguyen, D. N., Imamura, F. & Iuchi, K. 2017. Public-private collaboration for disaster risk management: A case study of hotels in Matsushima, Japan. *Tourism Management*, 61, 129-140. Available: DOI 10.1016/j.tourman.2017.02.003.
- Norris, F. H., Stevens, S. P., Pfefferbaum, B., Wyche, K. F. & Pfefferbaum, R. L. 2008. Community resilience as a metaphor, theory, set of capacities, and strategy for disaster readiness. *American Journal of Community Psychology*, 41, 127-50. Available: DOI 10.1007/s10464-007-9156-6.
- Orchiston, C. 2013. Tourism business preparedness, resilience and disaster planning in a region of high seismic risk: The case of the Southern Alps, New Zealand. *Current Issues in Tourism*, 16, 477-494. Available: DOI 10.1080/13683500.2012.741115.
- Orchiston, C. & Espiner, S. 2018. Fast and slow resilience in the New Zealand tourism industry. In: Lew, A. A. & Cheer, J. (eds.) *Understanding tourism resilience: Adapting to environmental change*. London: Routledge.
- The Treasury. 2016. *2016 statement on the long-term fiscal position*. Available: <http://www.treasury.govt.nz/government/longterm/fiscalposition/2016/he-tirohanga-mokopuna/ltfs-16-htm.pdf>.
- World Travel and Tourism Council 2017 (WTTC). Travel and tourism: Economic impact 2017 world. Available: <https://www.wttc.org/-/media/files/reports/economic-impact-research/regions-2017/world2017.pdf>.
- Yamamura, J. & Welsh, N. 2018. Highway 101 reopens. *Santa Barbara Independent*. Santa Barbara, CA. Available: <https://www.independent.com/news/2018/jan/23/highway-101-reopens-army-corps-engineers-clears-cr/>.

## Appendix F: Statements of Contribution for Publications



**MASSEY UNIVERSITY**  
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**Paper 1 Statement of Contribution  
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We, the candidate and the candidate's Principal Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated below in the *Statement of Originality*.

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**Name/Title of Principal Supervisor:** Professor David Johnston

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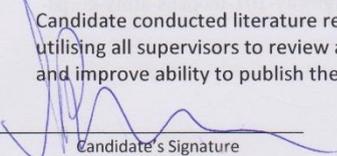
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**In which Chapter is the Published Work: Chapter 2**

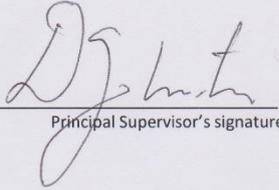
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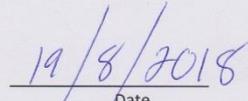
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- Describe the contribution that the candidate has made to the Published Work:

Candidate conducted literature review, performed analysis and wrote article, utilising all supervisors to review and provide feedback to strengthen argument and improve ability to publish the work.

  
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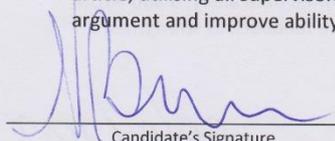
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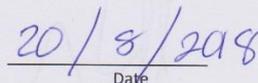
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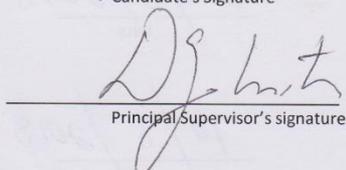
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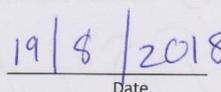
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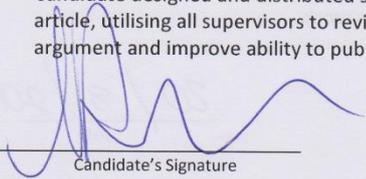
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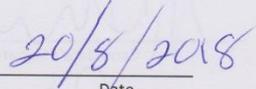
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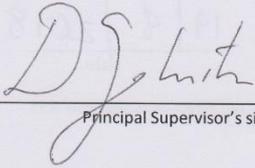
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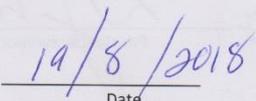
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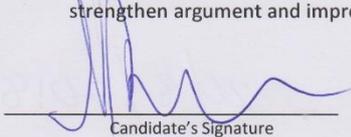
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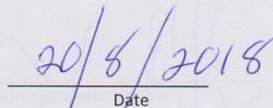
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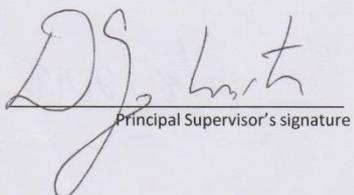
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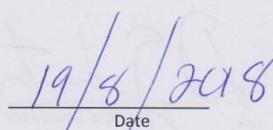
- The percentage of the Published Work that was contributed by the candidate: and / or
- Describe the contribution that the candidate has made to the Published Work:

Candidate designed and conducted interviews, performed data analysis and wrote article, utilising all supervisors to review and provide feedback to strengthen argument and improve ability to publish the work.

  
Candidate's Signature

  
Date

  
Principal Supervisor's signature

  
Date



**MASSEY UNIVERSITY**  
GRADUATE RESEARCH SCHOOL

**Paper 5 Statement of Contribution  
to Doctoral Thesis Containing Publications**

We, the candidate and the candidate's Principal Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated below in the *Statement of Originality*.

**Name of Candidate:** Nancy A Brown

**Name/Title of Principal Supervisor:** Professor David Johnston

**Name of Published Research Output and full reference:**

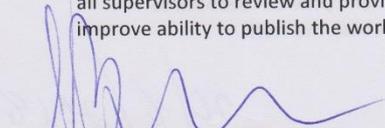
Brown, N. A., Rovins, J. E., Orchiston, C., Feldmann-Jensen, S., & Johnston, D. (2018). *Building disaster resilience within the hotel sector: A mixed methods study*. Paper under review 8th International Conference on Building Resilience, Lisbon, Portugal

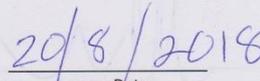
**In which Chapter is the Published Work:** Appendix 5

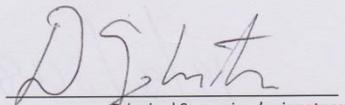
Please indicate either:

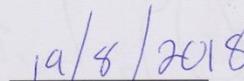
- The percentage of the Published Work that was contributed by the candidate: and / or
- Describe the contribution that the candidate has made to the Published Work:

Candidate performed combined research data analysis and wrote article, utilising all supervisors to review and provide feedback to strengthen argument and improve ability to publish the work.

  
\_\_\_\_\_  
Candidate's Signature

  
\_\_\_\_\_  
Date

  
\_\_\_\_\_  
Principal Supervisor's signature

  
\_\_\_\_\_  
Date

## Appendix G: PhD Thesis by Publication



### PHD THESIS BY PUBLICATION

#### “PhD by Publication” vs “PhD by Monograph”

The “PhD by Publication” is an alternative to the traditional “PhD by Monograph” approach. In a *PhD by Monograph*, the PhD student writes a comprehensive piece of research in a book form, with typically separate chapters for literature review, conceptual development, analyses, and conclusions. The monograph approach is more in line with a view of demonstrating broad knowledge. Traditionally, only once the PhD thesis is completed, an attempt is made to carve out one or more research articles, which are then submitted to academic journals.

In a *PhD by Publication*, the PhD student authors or co-authors multiple articles, which are then joined together to constitute the PhD thesis. *Each* article will have the typical set up for the field, most frequently with sections for literature review, conceptual development, analyses, and discussion. The “PhD by Publication” model is an option for those doctoral candidates seeking to develop skills in writing articles for submission to peer reviewed journals during their PhD enrolment. A “PhD by Publication” teaches the PhD student the skills that are required for a modern academic: being able to write impactful and innovative research articles that are concise and clear, and being able to navigate the review process. The leading business schools in (continental) Europe, Asia, and North America have adopted a PhD by Publication system.

#### Key Differences

There are three key differences between a *PhD by Publication* and a *PhD by Monograph*:

1. **The outcome:** A monograph will typically have more detail in each of the chapters (e.g., a more elaborate literature review, more detail on the analyses, lengthier discussion). In contrast, the PhD by Publication will be typically more concise, because academic journals demand parsimony in writing. Hence each chapter in this kind of thesis will look like a rather concise, but standalone research article.
2. **The process:** In a PhD by Monograph, the supervision tends to be more at a distance; the idea is that each PhD student should show their own mastery of the subject through mostly independently-conducted research. In a PhD by Publication, the supervision is more of the nature of a master (supervisor) and apprentice (PhD student). The PhD student still takes the lead in the whole research process, but obtains rather direct supervision to ensure that the resulting working paper is worthy of being submitted to an academic journal. In the course of the PhD process, the supervision may get less tight to stimulate the development of the PhD student as an independent academic researcher.

3. **The implications for the “pipeline” of PhD students** (by the end of the PhD project): Whereas in a PhD by Publication, the chapters are essentially articles of a submittable standard for quality academic journals (and some of them may have been published already), in a PhD by Monograph the “article pipeline” for PhD by Monograph is typically empty. This may have important consequences for the PhD student on the job market if an academic career is the objective.

It is important to note that *PhD by Publication* is not an approach that will necessarily suit all candidates, all disciplines, or all supervisors, as it does place additional demands on the candidate and supervisors to prepare and submit material for publication. It is possibly harder to write a PhD by Publication, because every word counts and the research must have the potential to be approved by peer reviewers in the field. Undertaking a PhD by Publication requires a) “stronger than average” ability and motivation of a PhD candidate and b) “stronger than average” support of the supervision panel from the point of acceptance of the PhD application through to the thesis completion. *Whether or not both parties are prepared to follow this approach can be reconsidered at the confirmation.*

It should also be noted that the requirements for the “PhD by Publication” can vary by Faculty.

#### Current Massey Guidelines

The publication of papers during candidacy, or at least the attempt, can be highly advantageous. Massey University supports “PhD with Publication,” providing it conforms to the following:

#### Structure of the PhD by Publication thesis:

- The PhD with Publication requires the candidate to present a thesis comprising typically between two and six research papers some of which have been published, while others may be under review or ready for submission. The exact number of publications included in the thesis may vary per discipline, accounting for the significance or major contribution of the work, the rank of the targeted academic journals, expectations within the discipline, etc.
- The normal expectation is that each of those research projects is “publishable” (being prepared for a submission, under reviewer, or accepted for publication) in a recognized peer-reviewed academic journal. Ideally, the PhD candidate should target international and highly ranked outlets for publication. The quality of the targeted publication outlets should be demonstrable through, their impact factor and/or their inclusion in citation indexes and/or the credibility they hold within the field.
- The thesis must still work as an integrated whole, address a significant research question or questions and present a clearly identified original contribution to knowledge of the subject with which it deals. The usual practice is to have the overall introduction that introduces the topic, the problem (also covering the relevant literature in order to justify the topic and the research gaps)

and explains how different chapters address those issues. For some disciplines a separate literature review chapter may be required. At the end of the introductory chapter to the thesis the candidate is expected to outline the structure of the thesis indicating the chapters that have been written as papers for peer-reviewed publication and indicate the target outlets and the current status of each of the chapters with respect to those outlets (e.g., published, in revision following reviewers' comments, in review, to be submitted). The thesis should conclude with the overall conclusions across all the chapters.

- The candidate must ensure that all methods used in the thesis work are clearly described in the thesis, usually within the method sections of the corresponding papers in appendices (e.g., additional methods, derivations, questionnaires). Any data and discussion that was abbreviated due to the strictures of the publication process, including material published as supplementary can also be included in the appendices. It is also acceptable to have a separate chapter just on methodology, for as long as it is clarified whether or not this chapter represent a publication on its own.
- The research must have been conducted during the period of candidature (this stems from CUAP requirements, and it has implications for funding). Candidates cannot present material published prior to enrolment as part of the thesis.

#### Authorship on the publications:

- The authorship on the publications is determined based on the APA authorship guidelines, which also highlights that the supervisors are NOT automatically the authors on all publications. Only supervisors who have contributed sufficiently to an academic paper that is part of a PhD by publication are included as co-authors on the academic paper.
- The candidate may be the sole author of the publication(s), OR, where the candidate was a joint author, the research contributed by the candidate is normally expected to be in the capacity of first/ primary author. It is expected that multi-authored papers (of a submittable standard for quality academic journals) in a thesis would have a *substantial* and *significant* contribution by the candidate. The principal supervisor signs the Declaration for a thesis with publication form specifying the candidate's contribution. To protect the interest of candidates, it is important that authorship is discussed at an early stage of candidacy, ideally with the involvement of an independent party.
- Published material may be submitted for examination once only and by one doctoral candidate, so where team research is involved, it is important to clarify roles at an early stage.
- In special circumstances, different parts of the same publication may be submitted for examination by different candidates (e.g. where experiments and modelling have been done by different people).

- Manuscripts of a submittable standard, submitted manuscripts, manuscripts under review and/or accepted and published work, in part or in full, may all provide the basis for chapters in the thesis. Where work has been previously published, a journal may need to give copyright permission for the material to be included in a thesis which will be placed in the Library's electronic repository. Candidates should gain copyright clearance as early as possible.
- Where appropriate and possible, candidates are strongly advised to standardise the format and referencing of chapters. Copies of articles and/or creative works, as appropriate as published may be included in a pocket in the thesis, or in pdf form on the thesis CD.
- Candidates are advised to fully reference previous publication of their own sole-authored work, including graphs, tables and images that they themselves have generated. Any other intellectual content must be fully and appropriately referenced to the person(s) that supplied them. They are then able to sign a statement that the thesis is their own work.

### Examination

- The University sets the standard by which theses are examined, and acceptance of any part by a publisher does not necessarily mean that it meets examination standards. Examiners will be instructed to examine all parts of the thesis with equal rigour, and may request major or minor changes to any part of the thesis regardless of whether it has been published or not.
- It is advisable to select examiners who are familiar with the *PhD by Publication* format.
- The candidate is expected to have a working knowledge of all parts of the thesis, and to be able to answer questions about the thesis as a whole in the oral examination.
- The candidate is required to complete the form DRC 16 - 'Statement of Contribution to Doctoral Thesis Containing Publications' - for each article/paper included in the thesis.

***NB: Research that has been published (or accepted for publication), does not ensure a successful Doctoral examination.***



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