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Natural hazard risk awareness, perception and preparedness: A case study of Chinese visitors to the West Coast of New Zealand's South Island

A thesis

submitted in partial fulfilment

of the requirements for the Degree of

Master of Applied Science

at

Lincoln University

by

Qian Cui

Lincoln University

2022

Abstract of a thesis submitted in partial fulfilment of the

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In New Zealand, a destination prone to natural hazards, it is inevitable that dangerous natural hazard events will occur; previous studies have shown that risk communication can increase tourists' natural hazard preparedness, which can reduce their vulnerabilities. Before the COVID-19 pandemic, Chinese tourists were New Zealand's second-largest visitor market. This thesis investigates their risk perceptions and awareness of natural hazards and their preparedness behaviour before and during travel to the West Coast of the South Island, New Zealand.

The study combines online surveys (n = 60) of Chinese visitors who visited New Zealand between 1 January 2018 and 28 February 2019, and in-depth interviews with local tourist service providers and other key stakeholders (local key informants, n = 13) in order to provide an in-depth understanding of these issues at the level of this specific destination: the West Coast of the South Island, New Zealand. Secondary sources, including tourism supply-side risk communication strategies relevant to Chinese international tourists, are analysed alongside the interviews. The results show that while Chinese tourists perceived themselves as having sufficient hazard awareness, risk perception and preparedness; open-ended survey questions and key informant interviews indicate that Chinese tourists only have a limited knowledge about natural hazards and the required natural hazard preparations. During their trip, Chinese tourists self-evaluated levels of hazard awareness and risk perception increased significantly, but their hazard preparedness was not influenced by this, emphasising the importance of pre-trip communication to allow for an increase both in hazard awareness and risk perception and an opportunity to increase their preparedness levels. Furthermore, a number of possible

communication gaps between different parts of the tourism sector and between the tourism sector and the emergency sector were also identified. Collectively, these potential risk communication gaps could influence Chinese tourists' hazard awareness, risk perception and future preparations, which could be improved to potentially increase Chinese tourists' safety.

The social cognitive model of disaster preparedness was used as a theoretical foundation for this research. Although the survey sample size was not large enough to obtain statistically significant results but has shown a potential to model tourists' natural hazard preparations. The findings of this study provide a foundation from which to inform discussion about the implications for future destination preparedness and planning for natural hazard events, including the need for risk communication and preparedness for an important market segment: the Chinese tourist.

Acknowledgements

Writing a thesis is often described as being on a solo journey – the author alone in facing the enviable high highs and low lows, surprises, uncertainties, vulnerabilities, costs and rewards. While solitary at times, my journey was not undertaken within a social void. Rather, it involved the support and trust from my rock and rolls; and the guidance of numerous other people who believed the purpose was worthwhile.

Foremost among the many people who deserve acknowledgement and thanks for their contributions to this thesis, is my mother, Meigui, who taught me to be a beautiful human both inside and out, be resilient and respectful to any situation and every individual who appears in my life. These personal characteristics kept me going and helped me through this solo thesis journey. The debt is inestimable, for supporting me financially and emotionally, and never doubting me. Also, my godfather, Shu Jen Lee, deserves an acknowledgement, who has been my mentor for years and always believed in me.

I want to thank my supervisors, Associate Professor Joanna Fountain and Associate Professor Stephen Espiner, who provided expert guidance and support. They were unwavering about my completion and helped me achieve a great outcome. In particular, the times when I felt lost and off track, they guided me to walk to the bright side of the tunnel. They provided numerous academic writing strategies and knowledge that has made my experience of writing this thesis both effective and more enjoyable.

It would have been challenging to complete this study without the assistance and skills of several other groups and individuals. I am especially grateful to be supported and part-funded by Resilience to Nature's Challenges National Science Challenge through the NZ Ministry of Business Innovation and Employment, as part of the Rural Theme. It was an honour to work with these senior researchers who I admire. I am also grateful for the academic assistance I received from staff from Lincoln University language centre and lecturers who taught me at Lincoln university. Individually, my great friends, Gregory Albertson and Larry Godfarb, without your academic help, I could not imagine I would have been able to have finished my thesis as strongly.

I am truly grateful to my friends who spent a large amount of time with me during my thesis journey; they have taught me to be brave, fearless and confident; they provided me with many opportunities to experience New Zealand's varied landscape and taught me many adventure

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Chapter 1
Introduction

1.1 Introduction

Natural hazards include coastal hazards, storms, droughts, extreme weather – heavy rainfall, winds and tornadoes – floods, marine and geological hazards and so on (National Institute of Water and Atmospheric Research Ltd [NIWA], n.d.-a). Natural hazard events have significantly affected society throughout human history and are likely to continue to do so in the future. These effects involve more than just the loss of human life and the damage and disruption caused to communities – the tourism industry is one of the most vulnerable industries, being susceptible to natural hazard events that continue to affect global and New Zealand tourism (Pforr & Hosie, 2008). The damage caused by natural hazard events can range from minor to severe and can include death or injuries, physical damage to facilities and damage to mental health and a destination's "safe" reputation. From 2008 to 2017, 3,751 natural disasters were reported worldwide, affecting over two billion people and causing losses of $1,658 billion (International Federation of Red Cross and Red Crescent Societies [IFRC], 2018). New Zealand has experienced more than 150 major natural hazard events since 1968; between 2010 and 2019, these caused NZ$26 billion in losses (Insurance Council of New Zealand, n.d.).

New Zealand is an island nation that lies across two active tectonic plates, resulting in it being susceptible to a range of natural hazards. This unique geological location also creates impressive scenery and landscapes, which attract international and domestic tourists. The tourism industry constituted the country's largest export earner and one of the largest industries before the COVID-19 pandemic, with an annual value of NZ$17.2 billion for international and NZ$23.7 billion for domestic tourism (Stats NZ, 2019). Among those visitors to New Zealand were a growing number of Chinese tourists, who are the world's largest inbound and outbound tourist market (Buckley, 2016, Bing, 2021). Chinese tourists first visited New Zealand as coach tourists after the country gained Approved Destination Status (ADS) in 1999 (Tourism New Zealand [TNZ], 2021), and this market has been New Zealand's second-largest since 2012 (TNZ, 2013). In 2017, there were 419,000 outbound Chinese visitors to New Zealand, who contributed NZ$1.5 billion to the New Zealand economy (Ministry of Business Innovation & Employment [MBIE], 2018). In the past few years, their characteristics have

changed, so that by 2018 the market consisted of both free independent (49%) and group tourists (51%), including coach and tailor-made groups (TNZ, 2018a).

In a country with a high number of international tourists present, any natural hazard event often means both residents and tourists face the possibility of injury or death. In New Zealand, on average, six people died in adventure activities per year, four of them caused by natural hazard events (MBIE, 2021). Since international tourists are mobile and harder to contact (Bird, Gisladotti & Dominey-Howes, 2010), and may be unfamiliar with the local language and evacuation routes (Nagai et al., 2020; Jeuring & Becken, 2011; World Tourism Organization, 1998), they are a vulnerable group in hazard events. In December 2019, a significant volcanic eruption happened on Whakaari/White Island, causing 22 deaths and 25 injured; the majority of casualties were international tourists (MBIE, 2021). Survivors of the Whakaari/White Island eruption claimed that they received no information about volcano eruption risk, and therefore they were not able to make a decision about their safety (March, McGregor & Day, 2020). The Whakaari/White Island eruption has drawn extra attention to the tourism and destination industry; and suggests that more research is required about how the tourism operators and other stakeholders could better protect tourists and themselves when a natural hazard event occurs. To better protect future tourists and have a better tourism preparedness plan, the adventure activities industry was in the process of re-proposing and re-editing a preparedness plan in 2021 (MBIE, 2021).

In addition to having to plan to prevent injury or death, the tourism sector is highly sensitive to interruption and damage caused by natural hazard events. A severe natural hazard event can also interrupt or alter current visiting routes or tourists' travel plans (Kozak, Crotts, & Law, 2007; Wang, 2016). Given the scale and significance of the tourism industry in New Zealand, tourism operator staff at destinations need to be prepared to protect people and property from damage due to natural hazard events. If a natural hazard event occurs, appropriate preparations can prevent or minimise injuries or death and improve the capacity to handle any temporary disruption. To reduce tourist vulnerability to natural hazard risks, it is important to enhance their hazard awareness and appropriate risk perception. According to the social cognitive model (SCM) of disaster preparedness, these two factors significantly motivate natural hazard preparation (Paton, 2003). This model is the foundation model for survey design in the current research.

Previous research has focused on the preparedness of organisations and businesses on the tourism supply side (Becken & Hughey, 2013; Bird et al., 2010; Orchiston, 2013). More recently, tourists' awareness and perceptions of natural hazards and their resulting preparedness have been studied (Fountain & Cradock-Henry, 2020; Hall et al., 2019; Ritchie & Jiang, 2019). Regardless of whether the preparedness studies are for the supply side or the tourist side, the key goal is to convert preparedness knowledge to preparedness behaviour on both sides, and, in particular, for international tourists who come from different living environments and have different social-demographic characteristics.

Risk communication plays a key role in helping to increase the preparedness behaviour. A good risk-communication strategy requires an understanding of the social-demographic differences between tourist markets, instead of only providing general preparedness information (Harris, 2008; Johnson & Nakayaki, 2017; Levac, Toal-Sullivan & O'Sullivan, 2005). A recent study shows that Chinese tourists who visited Kaikōura, New Zealand, reported a higher risk awareness before their trip than other tourists, but did not think they needed any preparation beyond their reliance on the Chinese Embassy for help in the case of a natural hazard event (Fountain & Cradock-Henry, 2020). The current study will add to the emerging literature about Chinese tourists' awareness and perception of natural hazard risks and how to effectively communicate preparedness requirements to them.

1.2 The Significance of the Current Research

In New Zealand, a destination prone to natural hazards, it is inevitable that natural hazard events dangerous to tourists will sometimes occur. Having tourists aware of the natural hazards and being fully prepared for them will minimise their vulnerability and enhance the destination's overall preparedness. Tourists' preparedness for a natural hazard event is likely to depend on several factors, including hazard awareness, risk perception, past natural hazard event experience, information sources and the tourists' demographic characteristics. The Whakaari/White Island tragedy has shown the importance of destination and natural disaster management in the tourism sector in New Zealand. This event was a catalyst for selecting a thesis research topic focusing on natural hazards preparedness in New Zealand.

The most recent Tourism New Zealand (TNZ)'s survey of the characteristics of Chinese Active Considerers (thinking of visiting) , who ranked New Zealand on their top destination list for their next trip, has shown that the most important information they wanted was activity safety

(TNZ, 2020a). Although activity safety could be explained in many ways, the Chinese Active Considerers' concerns have highlighted the need for safety studies.

This thesis investigates Chinese tourist risk perception and awareness of natural hazards and their preparedness behaviour. These results add to the literature in this emerging field and help to reduce Chinese tourist vulnerability to natural hazard risks by providing insights into long-term planning and risk communication for tourism natural hazards in New Zealand, as well as assessing the suitability of the existing communication strategies and messaging for the China market.

1.3 Research Objectives

The aim of this research is to understand Chinese tourists' hazard awareness, risk perception and preparedness for natural hazards before their trip and during their trip in New Zealand and the West Coast of the South Island. In addition, the research investigates demographic characteristics, visiting patterns on the West Coast, and the information sources used by Chinese tourists who travelled to New Zealand. Specifically, the research objectives are to:

1. Understand Chinese tourists' awareness of, and risk perception and preparedness for, natural hazards on the West Coast prior to their visit.

2. Investigate the extent to which Chinese visitors prepared for and/or learnt about natural hazard risks on their visit to the West Coast, and the sources they used to become informed.

3. Explore the perspectives of tourism service providers who interact with Chinese tourists in relation to hazard awareness, risk perception, preparedness and behaviour of Chinese visitors to the West Coast.

4. Investigate differences in Chinese tourists' risk awareness and preparedness on the basis of social-demographic characteristics and travel behaviour (e.g., age, education, prior travel experience, free independent tourist (FIT)/group travel, travel party).

5. Identify implications of the case study data for future destination preparedness planning, such as the development of hazard communication approaches appropriate for Chinese visitors to the West Coast region and the rest of New Zealand.

1.4   The Research Approach

To fulfil the research objectives, both primary and secondary data sources were used. The secondary research involved analysis of published material and websites to understand the context of the case study and included natural hazard risk management strategies, risk mitigation and risk communication plans of several government agencies, including the Department of Conservation (DOC) and Civil Defence Emergency Management groups. The marketing and tourism strategies, information and risk communication plans from several national and regional tourism organisations, including Tourism New Zealand and Development West Coast, are also included.

The primary research used a mixed-methods approach of both quantitative and qualitative research running concurrently throughout the research period to provide a comprehensive and thorough understanding of the issues. The quantitative approach used surveys of Chinese international tourists to determine their natural hazard risk awareness, perception and preparedness before they travelled to New Zealand and the West Coast and during their visit. Demographic data, information search sources and past natural hazard experiences were obtained to identify any influencing factors shaping their hazard awareness, risk perception and preparedness behaviour.

The qualitative approach used semi-structured interviews with key informants from agencies and organisations on the West Coast who interact directly with Chinese tourists. The information obtained included the current risk communication methods used by local staff in their interactions with all tourists and with Chinese tourists in particular, as well as their observations of Chinese tourists' understanding of hazard awareness, risk perception and preparedness together with their behaviour in a natural hazard risk environment. This information from local informants was used to complement and help understand the tourist survey results. The two methods together provided an overall understanding of Chinese tourists' risk awareness, perceptions and preparedness actions.

1.5   Thesis Structure

This thesis is presented in eight chapters. Chapter 1 introduces an overview of this research such as research topic, conceptual frameworks and research objectives. Chapter 2 provides the context and background of New Zealand's natural hazards and the case study site.

Chapter 3 provides a theoretical background of destination and natural hazards management, as well as tourists' hazard awareness, risk perception and preparedness. Chapter 4 discusses the methodology of this research including the research method design, the chosen case study site, and data collection and analysis, together with the limitations of the research. Chapter 5 introduces the research contexts including the background of key national and regional organisations who provide risk communication and responses to tourists, and the risk communication those organisations deliver to Chinese tourists before and during the trip. Chapter 6 present the results of the research from local informants' perceptions of Chinese tourist awareness of and preparedness for natural hazards. Chapter 7 present the results of the research from the survey of international Chinese tourists together with statistical analysis. Lastly, Chapter 8 discusses the results of this research to answer the research questions; and offers improvements and suggestions for future research.

Chapter 2
Natural Hazards Context

2.1 Introduction
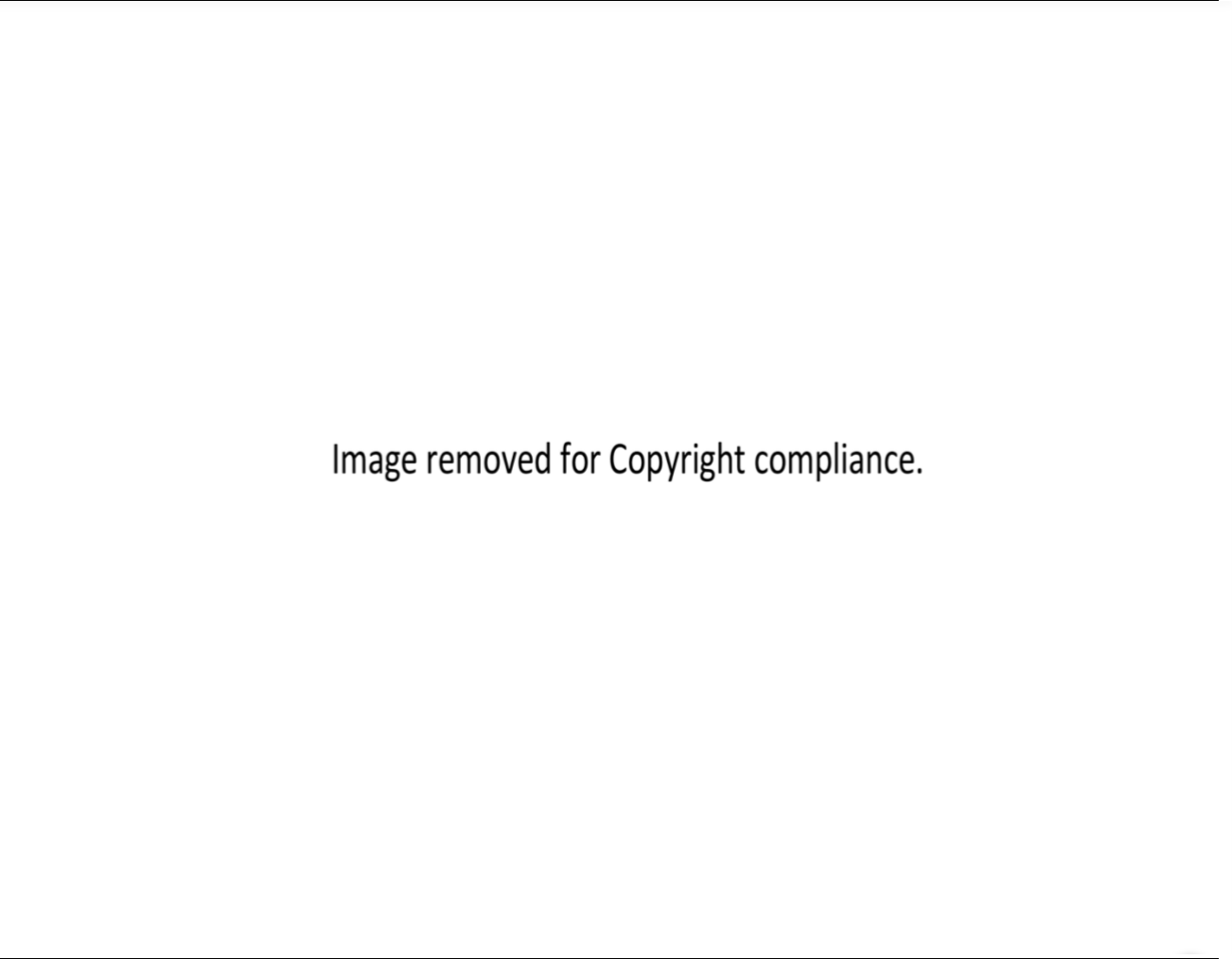
Natural hazard events are a common occurrence, and tourism is one of those economic sectors vulnerable to their impact (Brown et al. 2017). By definition, hazards have the potential to cause harm; when this harm is associated with risk and vulnerabilities, hazards are referred to as natural hazard events/disasters (Coppola, 2015). In this regard, vulnerability refers to "the extent to which a community, system or asset is susceptible to the damaging effects of a particular hazard" (Becken & Khazai, 2017). Natural hazard events include earthquakes, floods, volcanoes, tsunamis, landslides, hurricanes, droughts and heatwaves. They are often sudden and can cause death or injury to either people or animals, cause damage to critical infrastructure and necessitates assistance for recovery.

In terms of tourism, a severe natural hazard event can bring significant damage, either physical or intangible. First, natural hazard events can destroy or damage the tourism infrastructure at a destination, such as hotels, ports or airports (Ghobarah, Saatcioglu, & Nistor, 2006; Parajuli & Haynes, 2016). This physical damage restricts the tourism destination's ability to receive tourists in the immediate aftermath (Huang & Min, 2002). Second, natural hazard events affect the transit routes required by tourists to reach a destination but also can do intangible damage by changing consumers' perception of whether the destination is safe (Prideaux, Laws, & Faulkner, 2003). For example, the 2010–2011 Canterbury earthquake sequence resulted in 185 deaths and 7171 people injured (Tuohy, Stephens & Johnston, 2014); this caused significant infrastructural damage as well as altering the destination image of Christchurch as being a safe place to visit. Tourism New Zealand (TNZ) had to immediately stop marketing Christchurch to international tourists (Orchiston & Higham, 2016). The number of international arrivals in Christchurch dropped by 6.7% compared with 2010 to 5.6 million in 2011 (Stats NZ, 2012); and international arrivals at Christchurch International Airport took six years to finally return to pre-earthquake levels (Stats NZ, 2018). Additionally, core tourism assets such as accommodation establishments and key attractions can be damaged or rendered inoperable or unavailable for business. For instance, the 2015 earthquake in Kathmandu, Nepal, resulted in widespread destruction of UNESCO listed World Heritage sites, and several tracks were deemed unsafe due to the risk of rock falls following further

aftershocks or heavy rain (Itzhaky, Kissel, Weiss-Dagan, 2016). This resulted in serious disruption to the tourism industry, including decreased tourist arrivals, negative impacts on the destination's safe image and damage to tourism infrastructure. A summary of natural hazard events on global tourism is listed in Table 2.1

This chapter describes the impacts of natural hazards and natural hazard events created globally and in New Zealand.

Table 2.1   Summary of the Impacts from Natural Hazards Events on Global Tourism

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Source. Table retrieved from Rossello, Becken & Santana-Gallego, 2020.

New Zealand has experienced a range of natural hazards caused by its specific location sitting across an active tectonic plate boundary. This results in both earthquakes and volcanic activities along the plate boundary. While the Alpine Fault is the major seismic-related hazard in the South Island of New Zealand (Stirling et al., 2000), minor fault lines around the plate boundary have been responsible for several damaging earthquakes in the past and will

probably be so in the future. The thinning of the earth's crust at the plate boundary allows for volcanic activity and the formation of volcanoes in the Taupo Volcanic Zone in the North Island. The country also has extreme weather events, which produce other natural hazards that are either water-related, slope-related, or weather-related, including floods, tsunamis, landslides, storm surges and coastal erosion (NIWA, n.d.-b).

International tourists who come to New Zealand are attracted by beautiful landscapes and outdoor activities (TNZ, 2018b). The country has 13 national parks and more than 9 million hectares of public conservation land, significant parts of which are managed by the Department of Conservation (DOC) for outdoor recreation and tourism opportunities (Molloy 2015). More than 53% of international tourists visit at least one national park during their trips in New Zealand (DOC, 2019; Ministry for the Environment [MfE], 2019). Tourism in the South Island of New Zealand focuses mainly on recreation and outdoor tourism, such as glaciers, skiing, hiking, camping, and wildlife tours. Many of the popular outdoor activities in the South Island are close to the Alpine Fault, from Milford Sound in the south, to Springs Junction and Greymouth in the north (see Figure 2.1). In this situation, tourists have an increased probability of facing one or more natural hazards while travelling in the South Island.
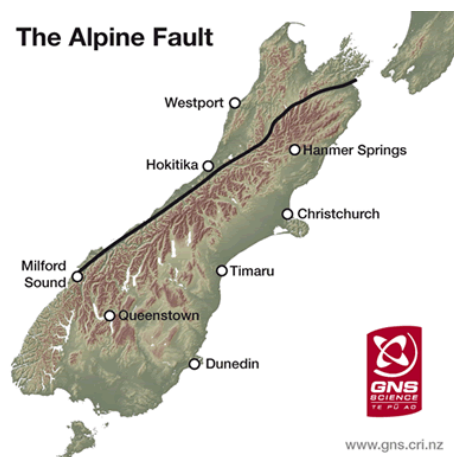
Figure 2-1   Alpine Fault location in the study site, the West Coast region (GNS, n.d.-a)

Detailed assessment of the three major natural hazards (volcanic, seismic and flooding) in New Zealand, together with their effect on tourism are given below. Both earthquakes and flooding are major natural hazards in the case study area and tourism in the past has been affected by these events. Volcanic eruptions are included as the Whakaari/White Island eruption is the most recent major natural hazard event to affect the tourism industry in New Zealand. Since

these hazards have also had significant impacts on tourism, recent natural hazard events affecting tourism will be used as examples. The last section introduces the West Coast of the South Island where the case study area is based, together with the potential impacts that natural hazard events would have on tourism. A deadly volcanic eruption in 2019 is the most recent natural hazard event in New Zealand; therefore, volcanic hazards are covered first.

2.2 Volcanic Hazards and Tourism Impact

Volcanic eruptions have been found internationally to be the costliest natural hazard events (Rossello et al., 2020). The large-scale movement of tectonic plates results in frequent volcanic activity, and New Zealand's location along the plate boundary between the Pacific and Australian plates induces volcanic activities in New Zealand (GNS n.d.-b). While this unique geology attracts tourists to visit New Zealand's volcanoes, there is always some risk. When volcanoes erupt, they can spew hot, dangerous gases, ash, lava and rock that can cause disastrous loss of life and property.

In December 2019, a significant eruption occurred on Whakaari/White Island, New Zealand, the location of the country's most active volcano, creating a 3.7-kilometre-high ash column. Forty-seven people were present on a guided tour exploring the volcano during the eruption, which resulted in 22 deaths and 25 injuries (MBIE, 2021). Volcanologists from GNS Science New Zealand had indicated there were signs of a potential eruption a few weeks before the event happened, but tourists were not banned from visiting the island, so the tourism operator continued with the tours. In interviews after the event, victims mentioned that, as international tourists, they fully relied on the tour operators, and they perceived that the tour would be safe based on the tourism operator's decision (March et al.2020). When the eruption occurred, the ash and zero visibility meant tourists had nowhere to escape to. This tragedy was a wake-up call for the New Zealand tourism industry with one of the main issues identified being "Who should be the decision maker when a natural hazard risk has reached the level that people should be required to stay away" (Cropp, 2021). MBIE has undertaken a review of the adventure activities regulatory regime (MBIE, 2021). One year (November 2020) after the Whakaari/White Island event occurred, a proposed series of reforms to the regulatory regime for natural hazard situations was presented to the Minister for Workplace Relations and Safety; this was then opened to the public for the second phase proposal development before

November 2021. The other major natural hazard in New Zealand caused by plate tectonics is earthquakes, which are detailed next.

2.3 Earthquake Hazard and Tourism Impact

New Zealand in the past has experienced a large number of significant earthquakes due to its location on an active plate tectonic boundary and will most likely continue to do so in the future (Geonet NZ, n.d.). The interaction of these tectonic plates has created a major seismic fault line, the Alpine Fault, which runs down the centre of the South Island; it is the "on-land" boundary of the Pacific and Australian tectonic plates (see Figure 2.2). The northern part of the South Island and the North Island has the Pacific Plate subducting beneath the Australian Plate along the Hikurangi Trench. Most of the South Island has the two plates colliding, and the southern part of the South Island has the Australian Plate subducting eastward below the Pacific Plate along with the Puysegur Trench (Sutherland et al. 2007; Langridge & Beban, 2016). The Alpine Fault, which extends 600 km up the west side of the southern portion of the South Island, is one of the world's major geological features. In the last 8000 years, the Alpine Fault has ruptured 27 times, on average every 300 years. The last significant quake on the Alpine Fault was in 1717 (Orchiston et.al., 2018). It is predicted that the next severe earthquake on the Alpine Fault is likely to occur in the next 50 years. The maximum width of the South Island is only 150 km, if the Alpine Fault fractures; the resulting earthquake has a high probability of causing strong to very strong island-wide ground shaking, particularly in the case study area.
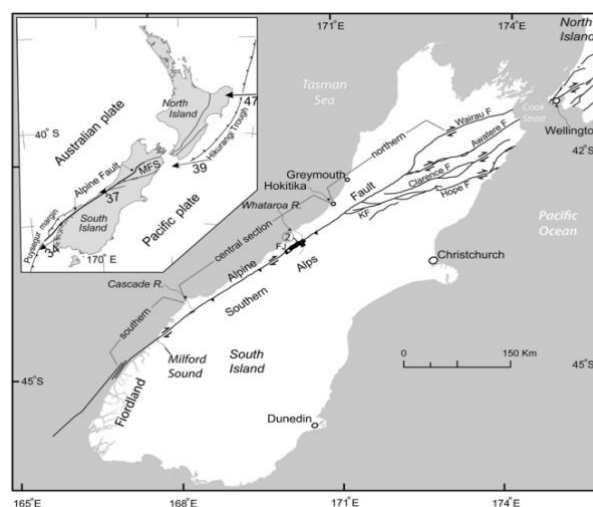
Figure 2-2   Subduction Zone and Major Fault Map of New Zealand (GNS, n.d.-c)

While the Alpine Fault is the major earthquake-related hazard in the South Island there are also many other active fault lines around the plate boundary that have been responsible for several damaging earthquakes in the past and are likely to be so in the future. Earthquakes in populated areas can cause minor to severe injury or death by the direct result of either structural collapse or falling debris from building facades (Orchiston, 2010). Ground displacement or surface rupture can also occur along the fault or near the fault source and can appear as a scarp (up to two metres in height), or as fissures or cracks. When they run through buildings or across transport links (railway lines, runways or roads) this will cause major transport dislocations until they are repaired. Many of the South Island's famous tourist activities and attractions are located within a 90 km zone either side of the Alpine Fault, some are positioned right along the fault, such as Franz Josef township (Langridge et al., 2016). When seismic faults rupture, significant natural hazard events, such as earthquakes and landslides occur that will cause severe impacts on tourism even if they only damage transportation links.

The 2016 Kaikōura earthquake (M_w 7.8) is the most recent large magnitude earthquake in New Zealand to affect tourism. This event caused two deaths and 57 injuries; the shaking lasted for around two minutes and caused the most significant local tsunami since 1947 (Geonet NZ, 2016). The earthquake severed the rail and road access to Kaikōura (SH1 and SH70), a long detour route was open in one month but to restore the main highway (SH1) it took another year, with rail access taking 10 months to be restored. Trapped tourists had to be evacuated by helicopters and military ships (Simmons, Wilson & Doscher, 2017). The Kaikōura region, located in the South Island of New Zealand, is a well-known tourism destination famous for whale and dolphin watching. With only limited access, tourist numbers dropped significantly following the earthquake; this caused an 80% drop in guest nights in December 2016 compared with the same month in the previous year. By the end of September 2017, guest nights were still 40% lower than in the same month in 2016 (Stats NZ, 2017).

As the South Island is expected to continue to have significant earthquakes, New Zealand and the South Island region have been developing comprehensive risk management tourism plans. These include setting up research programmes (such as AF8), deploying natural hazard readiness programmes to both the community and the tourism industry (AF8, n.d.-a; see details in Section 5.6), and understanding and improving tourists' hazard awareness and

preparedness levels. A recent Kaikōura post-disaster study found that although some tourists came back to support the township, many other tourists had limited awareness of the earthquake; the overall understanding of where to go and what to do, were low, particularly for international tourists (Fountain & Cradock-Henry; 2020), and therefore more research and preparedness plans are required for the inevitable future earthquake events.

2.4 Flooding and Tourism Impact

Flooding occurs when water overtops a water channel or when heavy rain causes water to pool more quickly than it can be absorbed. Floods are one of New Zealand's most frequent and costly natural disasters (NIWA, n.d.-c). Between 1968 and 2000, over 70% of natural hazard events in New Zealand were related to flooding, which led to a loss of NZ$626 million, with an average of NZ$16 million per year (Ministry of Civil Defence Management [MCDM], 2010). Historically these floods have often affected tourists, particularly on the West Coast of the South Island.

On the West Coast, flooding is a significant hazard, which has severely affected the township of Franz Josef in the past (Langridge et al., 2016). In 2016, 186 people (mainly tourists) had to leave their accommodation because the Waiho River breached its banks and flooded the Scenic Hotel. This caused more than NZ$30 million (business recovery, consultation with hydraulic engineers and other relevant experts) due to the location of State Highway 6 (SH6), and its bridge abutments and the stop bank system (Ensor, 2019).

In March 2019, a similar flooding situation occurred again causing a significant impact on the tourism industry in the township and region (Carroll, 2019). This time, the SH6 bridge was destroyed cutting off all access to Haast, Wanaka and Queenstown; large landslides also occurred, cutting off access on SH 73 on Arthur's Pass; and the access from the Franz Josef town centre to Franz Josef Glacier valley was also cut off. A few tourists paid for private helicopter or ski-plane flights out of town, but the majority of tourists either could not afford the price or could not leave behind their camper vans or private cars. Fortunately, a road was partially opened on the second day allowing some tourists to exit north; and the main bridge linking with the town with SH6 was restored after three weeks (Carroll, 2019).

These types of closures not only disrupt transportation but also have a significant impact on the economy, causing food shortages, delayed future trips for tourists, and altering the

tourists' future travel route (Waka Kotahi NZ Transport Agency, 2019). Since the flooding occurred in March, it severely affected tourist arrivals for the next few months. This reduction in tourists resulted in a 2.2% reduction in tourism spending on the West Coast; accommodation guest nights also declined (by 5.3%), with international down 7.3% and domestic only down by 1.7% for the year ending June 2019 (MBIE, 2019)

2.5   The Case Study Region, West Coast, South Island, New Zealand

The case study area for the present study is the West Coast/ Te Tai Poutini, an area of approximately 23,245 square kilometres situated on the South Island of New Zealand (see Figure 2.3). From Karamea to Haast, the region covers a distance of 600 km, three districts (Buller District, Grey District and Westland District), three principal towns (Westport, Greymouth and Hokitika) and six national parks. The region is 80% conservation land managed by DOC, and the rest of the region is administered by the West Coast Regional Council. The overall region is marketed by Development West Coast (DWC). The West Coast region is one of the most sparsely populated areas of New Zealand, with a population of only 32,400 residents (StatsNZ, 2020).

From the late 1300s the Māori were living on the West Coast hunting and fishing. An important resource was Pounamu (greenstone or jade) which was traded throughout the country. Initially, the region was only occasionally visited by Europeans until the discovery of gold near Lake Bruner in 1864 by Māori.(Nathan 2016).

The economy of the West Coast region has traditionally relied on natural resources for primary industry, such as mining for gold, greenstone and coal, timber extraction and agriculture; these are still the main contributors to the region's GDP (Stats, 2020). Among them, agriculture, forestry and fishing were ranked as the largest GDP contributor in 2020, accounting for 14.4% ($308 million), and mining, as the third largest GDP contributor, accounted for 8.5% ($181 million) of the overall West Coast GDP. Since 80% of the West Coast's land is part of the "conservation estate", this limits any further primary industry development. Since 1999, the West Coast has had a significant increase in visitation because of the conservation areas becoming more accessible together with better tourism promotion (Conradson & Pawson, 2009). Over the last twenty years, the West Coast has transitioned from a commodity-oriented economy to a more diverse one, where tourism is a key contributor.
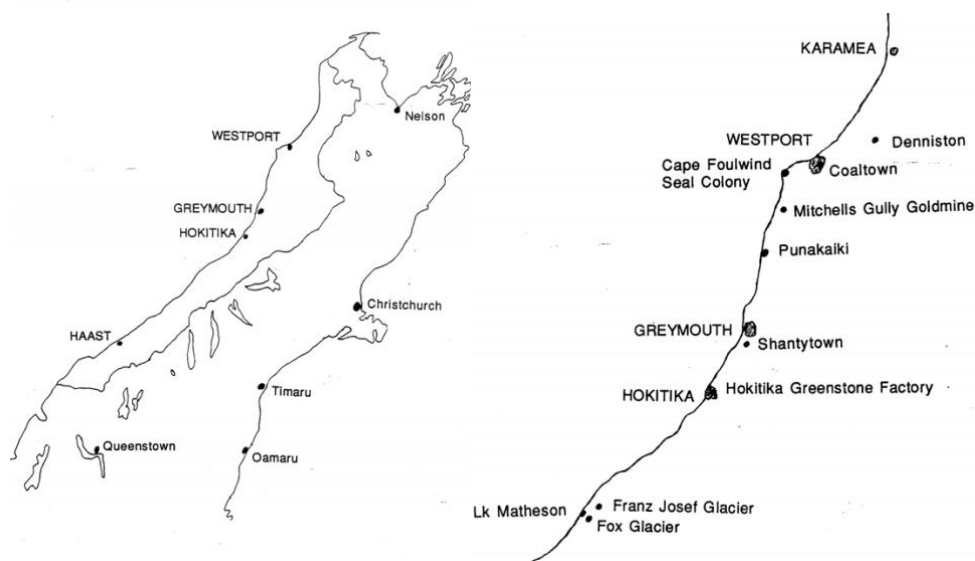
Figure 2-3   Tourists' attractions on the West Coast (Smeaton, 1998)

Before the border closures due to the COVID-19 pandemic, the West Coast region was highly reliant on tourism (Stats, 2021). For the year ending May 2020, the annual overall visitor spending was $151.7 million; this includes two months with the border closed to non-New Zealanders and four months closed to Chinese international tourists (ChristchurchNZ, 2021). According to the West Coast accommodation providers, the current total arrivals are 542,000 per year with an average stay of 1.52 nights (ChristchurchNZ, 2021). According to figures on overnight stay locations (ChristchurchNZ, 2021), popular locations to stay on the West Coast were Hokitika (21%); Greymouth (21%); Franz Josef (16%); Punakaiki (6%); Haast (6%); Reefton (5%); Hector (4%); Karamea (4%) and Fox Glacier (4%). The unspoiled natural environment of the West Coast has offered a wide range of adventure tourism activities, from guided walks in the north around Punakaiki and eco-rafting around Hokitika, to helicopter tours, and guided glacier walks at Franz Josef and Fox Glacier.

Among international tourists, Chinese tourists are one of the top spending groups on the West Coast (States, 2019). However, Chinese tourists generally stay a very short time in New Zealand; in 2017 on average 9 days (Gurden & Stapleton, 2021). For Chinese tourists, Franz Josef and Fox Glaciers, and the Hokitika Gorge are the most popular; other places they visited included Greymouth, the Pancake Rocks and the glow worm dell (Gurden & Stapleton, 2021).

The physical nature of the region is characterised by diversity, with coastlines, mountains and areas of native forest under the influence of a wet and relatively warm climate. To the west is the Tasman Sea (which like the Southern Ocean can be very rough, with four-metre swells common), and to the east are the Southern Alps. A prevailing westerly air stream combines with a sharp change in gradient between the coast and the mountains to produce a high level of precipitation, much of it falling as snow in the areas of greatest altitude (Farm Forest New Zealand [FFNZ], n.d.). Annual rainfall totals at relatively high elevations regularly exceed 10,000 mm, with low elevation coastal locations typically recording between 2,000 and 3,000 mm of rainfall annually (Macara, 2016). Temperatures in lowland areas remain mild throughout the year, with temperatures below 0°C and greater than 25°C occurring infrequently compared to most other regions of New Zealand. The West Coast is not especially windy, and local wind regimes are strongly influenced by the southwest to northeast orientation of the Southern Alps (Coats & Chinn, 1992).

Figure 2-4   Franz Josef Glacier viewed from helicopter (Cui, 2021)

The unique geology of the West Coast exposes the region to a range of natural hazards. Four major flooding events have occurred within the past five years, with significant impacts on road networks (Emergency Management Southland [EMS] 2016; 2019, 2020; 2021). The major Alpine Fault, which has an estimated 30% probability of rupturing (causing a M_w 8.0 earthquake) in the next 50 years, runs adjacent to the region (GNS, n.d.-d) Robinson & Davies, 2013). There are also many natural hazard risks at the popular attractions of Franz Josef and Fox Glacier, and these risks are increasing, largely due to the impacts of climate change. The glaciers are now receding significantly (Purdie et al., 2014), with an estimated 30% loss in ice volume since the late 1970s (Chinn et al., 2012). The receding glaciers tend to become

increasingly "dirty" as ice melt exposes rock, and this can cause glacial valley walls to become unstable, increasing the risk of rockfall, which increases the visitor risks (Purdie, Gomez & Espiner, 2015). Other natural hazards in visiting Franz Josef and Fox Glacier include icefalls, river surges, and river flooding (DOC, n.d.-a). Currently the only way of accessing and getting close to the glaciers safely is by a helicopter flight with a glacier guiding company (see Figure 2.4). Table 2.2 lists the potential natural hazards that may affect tourism in the case study area.

Table 2.2 Summary of natural hazards that potentially could affected tourism attractions on the West Coast of the South Island, New Zealand

	Location	Tourism attraction	Life assets	Seismic-related hazard	Water-related hazard	Weather hazard (short- to long-term impact)
1	Karamea to Westport	Granity, Ngakawau, Charming Creek Walkway	Power, road, fibre broadband, asset and infrastructure	Ongoing slips and debris flow down streams		Coastal erosion
2	Westport	Westport, Reefton	Road, rail, power, fibre broadband, water supply, sewerage, asset management		Storm-related flood	
3	Greymouth	Greymouth, Punakaiki	Road, rail, power, fibre broadband, water supply, sewerage, asset management, infrastructure	Ground shaking, ground rupture	500-year storm-related flood	Coastal erosion; land Instability
4	Stillwater to Jackson	Moana	Road, rail, fibre broadband, stopbank	Ground shaking, ground rupture, slips, bridge damage		
5	Jackson to Springfield	Arthur's Pass	Road, rail, fibre broadband, power	Widespread earthquake damage, rockfall	Alluvial fan	Landslide, dam breach
6	Ross to Fox Glacier	Franz Josef, Fox Glacier	Road, power, fibre broadband	Ground shaking, ground rupture, landslides and bridge damage	River flood, aggradation, alluvial fan, debris flood events	Landslides
7	Fox Glacier to Hawea	Knight's Point Lookout, Bruce Bay, Haast	Infrastructure, road,	Ground rupture, landslides, and bridge damage	Flooding, slips, debris flows	Wind

Sources from Gadsby, 2016; Ministry for the Environment, 2019; West Coast Civil Defence Emergency Management Group, 2017.

2.6 Chapter Conclusion

The present study aims to understand tourists' hazard awareness, risk perception and risk preparedness for natural hazards. Therefore, natural hazards and the impacts of natural hazard events are important background information. This chapter describes how natural hazard events have affected tourism industry in New Zealand. Then it details three major natural hazards in New Zealand (volcanic, seismic and flooding) together with the effects on tourism, illustrated with examples from recent natural hazard events in New Zealand. In the last section, the local government, physical geography and economy (especially the tourism sector) of the case study region (West Coast, New Zealand) are introduced. As it is an important tourism region which also contains many natural hazards, it provides a useful case study. In the next chapter the academic research on natural hazard events and destination post-disaster recovery will be introduced, together with a more detailed review of the research and theories around three important factors (hazard awareness, risk perception and preparedness) in natural hazard safety for tourists.

Chapter 3
Literature Review

3.1 Introduction

Previous studies on the causes and effects of natural hazards and disasters are extensive; this literature review discusses their effect on tourism. It mainly focuses on the methods and processes that tourism destinations use to recover after a natural disaster, with an emphasis on the theory and practice of risk communications and tourist hazard awareness and preparedness for natural disasters. The chapter starts by outlining the relationship between natural hazard events and tourism destinations.

In response to natural hazards and natural hazard events, many organisations started to assist the tourism sector in disaster management (e.g., APEC, 2004; WTO, 1998). Initially most of the research focused on post-disaster recovery, as most plans were reactive. Many researchers pointed out the poor levels of natural hazard preparedness in the tourism industry (Becken & Hughey, 2013; Faulkner & Vikulov, 2001; Johnston et al., 2007; Orchiston, 2013; Virapart, 2011). As the industry developed more proactive disaster recovery management strategies, the researchers have focused on these. Post-disaster recovery management and planning means "the development and implementation of strategies and actions to bring the destination back to normal (pre-event) condition or an improved state" (Mair, Ritchie & Walters 2016).

Table 3.1 lists a selection of studies related to disaster and tourism destination management from around the world and New Zealand. The following section will review the published research in disaster and tourism management.

Table 3.1   Studies on Natural Disasters and Tourism 2001–2020

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Note. Table retrieved from Filimonau & De Coteau, 2020.

3.2   Research into Destination Post-Disaster Recovery

Often after a severe natural hazard event, destinations, businesses and organisations have to quickly respond to the event and deploy the emergency recovery plan. Some of them would use the opportunity to review and reassess the effectiveness of their response strategies and emergency preparedness for both themselves and the tourists they host, to prepare for future natural hazard events (e.g., Becken & Hughey, 2013; Calgaro, Lloyd & Dominey-Howes, 2014; Lew, 2014; Orchiston & Higham, 2016; Scott & Laws, 2006). To this end, considerable research has focused on six main areas: tourists' behaviour (Kozak et al.2007; Wang, 2016; Orchiston & Higham, 2016), destination image and risk perception (Prideaux, Coghlan, A., & Falco-Mammone., 2008; Fountain & Cradock-Henry, 2020), media (Pearlman & Melnik, 2008; Wu & Shimizu, 2020), recovery marketing strategies and messages (Armstrong & Ritchie, 2008; Walters & Mair, 2012; Mair et al., 2016), communication (Orchiston & Higham, 2016), disaster management/future preparedness (Becken & Hughey, 2013; Bird et al. 2010; Hall et al., 2019; Ritchie & Jiang, 2019).

One of the major problems for a destination when a disaster occurs is that it can immediately influence or alter future tourist behaviour. The damage to physical infrastructure can affect tourist visits, which may alter their travel behaviour, including cancelling or changing plans (Kozak et al. 2007; Wang, 2016). Sometimes tourists change their travel routes instead of completely cancelling their trips, which is a positive sign for the region (Orchiston & Higham, 2016). Taking, the 2010–2011 Canterbury earthquakes as an example again, Christchurch saw an immediate reduction in tourist arrivals after the Christchurch earthquakes. However, some regions outside Christchurch reported an increased number of visitors, which shows that tourists changed their travel plans rather than terminate or cancel their New Zealand trip (Orchiston & Higham, 2016).

The tangible damages caused by natural disasters are unfortunately only the tip of the iceberg; restoring a safe destination image to the near future tourists and keeping a long-term safe destination image to active considerer tourists are often more important. Tourists usually evaluate the perceived destination risk when deciding on their travel plans. Interestingly, tourists are more concerned about social, health and personal safety risks, which can result in a less satisfying visitor experience than any potential natural hazard physical risk (Floyd et al., 2004). Once tourists have an inaccurate perception, their planned travel behaviour might change, such as cancellation of trips, postponement of holidays, and so on, although there are cases when tourists visited for positive reasons, for instance, supporting the destination or community after a disaster (Prideaux et al., 2008; Fountain & Cradock-Henry, 2020). Those tourists who support the destination are often frequent travellers in that area, such as those visiting friends and family (Walters & Clulow, 2010; Walters & Mair, 2012).

Research has shown that marketing strategies should be a primary focus in the post-disaster recovery phase (Faulkner & Vikulov, 2001). The 2016 Kaikōura earthquake dramatically affected the region with guest nights down by over 80%. By using a combination of local marketing and a tourism recovery plan based on local and regional cooperation, together with financial support from the New Zealand government, the visitor numbers had almost returned to pre-quake levels after three years (Fountain & Cradock-Henry, 2019; Kaikoura District Council, 2021).

In particular, media reports published immediately after the natural hazard event can sometimes produce negative images and emotions such as risk, shock and disbelief (Mair et

al., 2016). For example, media reports gave the public the impression that the Black Saturday bushfires were more widespread around the state of Victoria, Australia, than they actually were (Walters & Mair, 2012). Normally a destination's negative image will reduce over time (Pearlman & Melnik, 2008; Wu & Shimizu, 2020); however, tourism organisations still need to act quickly to prevent or minimise the damage caused by a negative destination image (Wu & Shimizu, 2020).

Post-disaster marketing can effectively minimise misperceptions about the disaster, by showing that businesses are still operational or that certain areas remain unaffected and that tourists could still safely travel to the destination country or region (Armstrong & Ritchie, 2008; Carlsen & Hughes, 2008). For example, Jiuzhai Valley, a famous national park in Sichuan province, China, successfully marketed itself as suffering only minimal damage from the 2008 Sichuan earthquake and still being open and welcoming tourists (Zhu, 2013).

Furthermore, the message needs to be open, transparent, and consistent to maintain credibility (Ritchie, 2008). Repetitive marketing messages are essential as well. After the Sichuan earthquake, the government and tourism organisations repeatedly sent out the message of "the safety and beauty of Sichuan", successfully reinforcing the news that the destination was attractive and safe. Zhu (2013) found that Chinese domestic tourists felt completely safe, particularly because of good marketing and risk communication. Some tourists had concerns, but after they thought they were being safely taken care of by the destination, which was consistent with the pre-trip marketing, they felt completely safe during their trip.

Post-disaster recovery marketing messaging has also been widely studied; there are challenges in making sure everyone could receive the message (Walters & Mair, 2012). Nine message types are commonly used for effective post-disaster recovery messages: business as usual, community readiness, solidarity, celebrity endorsement, restoring confidence, spinning the unsafe image into assets, curiosity enhancement, short-term discounts and guest/visitor testimonials (Walters & Mair, 2012). The celebrity endorsement was identified as the most effective message to bring visitors back after a disaster. The emotional and empathetic messages were also well received by tourists (Walters, Mair & Ritchie, 2015), but the short-term discount was the least effective (Gan, Liu, & Lu, 2010; Walters & Mair, 2012).

Although short-term marketing can work effectively, management plans and future crisis preparedness are the best long-term solutions. In the early stages of recovery, studies found that most disaster management plans were of a reactive nature. For example, Taiwan developed, disaster management strategies after a series of earthquakes, but rather than being proactive; these plans were instead reacting to the disaster (Tshai & Chen, 2010). The reactive mindset was in both private businesses and national/regional tourism organisations (Henderson, 2002). Crisis preparedness plans have started to be more proactive since Faulkner (2001) developed a practical framework to guide and help industry professionals manage disasters. Six stages were included: the pre-event phase, prodromal phase, emergency, intermediate, recovery and resolution phase. An international framework was then further developed into four phases: prevention/mitigation, preparedness, response, and recovery (Ritchie, 2008). To reduce the impacts and improve recovery time both at an organisational and destination level, effective crisis and disaster management include three steps: (1) planning and preparedness activities before a crisis or disaster; (2) response to, or management of, a crisis or disaster as it occurs, and (3) final resolution to a new, improved state after the crisis or disaster is over (Ritchie, 2009). In recent years, the management of disasters has shifted from a reactive, top-down approach to a more inclusive approach that seeks to proactively reduce the risk of disasters occurring and minimise the negative consequences of disasters (Seraphin, 2018; Becken & Hughey, 2013).

A comprehensive tourism natural disaster emergency system has been developed by both industry and tourism businesses; it also encourages tourists to be prepared and provides warning signs and self-evacuation routes (Becken & Hughey, 2013; Bird et al., 2010; Drabek, 2000; Hall et al., 2019; Johnston et al., 2007; Martin & Kent, 2009). It also requires tourism service providers, with support from the wider destination community, to be prepared to extend support to tourists in the region in the aftermath of a disaster (Hajibaba, Karlsson & Dolnicar, 2016). Although more destinations have started to pay greater attention to disaster planning within the tourism industry, previous research suggests that many destinations and tourism businesses still have a lot of work to do before being fully prepared (Becken & Hughey, 2013; Orchiston, 2013). In particular, for small and medium tourism businesses that only have the resources to focus on day-to-day business (Becken et al., 2014; Ritchie, 2008) or lack the required knowledge, this will result in them being unprepared for disasters and without any

collaborative or support networks (Becken & Hughey, 2013; Fountain & Cradock-Henry, 2020; Orchiston, 2013). When tourism businesses or destinations start to plan for disasters, a communication gap between stakeholders is often identified. Since there are many processes and stakeholders involved, the reality is that not every stakeholder has the same amount of participation (Becken & Hughey, 2013; Jones, 2016; Johnston & Nakayaki, 2017). Previously, Mair et al. (2016) have identified three types of communication gaps, including those among emergency managers and stakeholders (Becken & Hughey, 2013; Hystad & Keller, 2008; Jones, 2016); multiple tourism stakeholders (Orchiston, 2013); and destination promotion organisations and tourists (Carlsen & Hughes, 2008). The next section will introduce the current research on risk communication methods.

3.2.1 Risk Communication

Risk communication is an important consideration in crisis management for the tourism industry (Ghaderi, Mat Som, & Henderson, 2012). A successful risk communication strategy needs to maintain a tourism destination's appeal while minimising undue concerns for visitors, managing visitor safety and increasing future tourists' preparedness (Bird & Gísladóttir, 2020; Gstaettner, Lee & Weiler, 2020). International tourists are particularly vulnerable to natural hazard events that require more communication, as they may lack sufficient knowledge of the natural hazards (Drabek, 1995; Burby and Wagner, 1996; Rossello et al., 2020). In addition, tourists are mobile, and are not easy to reach with relevant warning information (Bird et al., 2010); they have little to no connection to local communities, are unfamiliar with the travel environment, face language barriers, and can be confused about local traffic rules (Jeuring & Becken, 2011; World Tourism Organization, 1998). The appropriate risk communication will help them to reduce their vulnerabilities.

Phillips and Morrow (2007) determined that people go through seven steps between the time that a risk communication message is issued, and an action is taken: (1) warning received, (2) affirming its credibility, (3) confirmation, (4) determining relevance, (5) deciding if action is required, (6) deciding if the action is feasible, and (7) deciding specific actions to be taken. Therefore, a good risk communication strategy and plan needs to consider information sources (Burnside, Millerand Rivera 2007), message timing, and the way different ethnic and cultural groups manifest differences in risk perceptions (Fothergill, Maestas, and Darlington 1999).

In the tourism and outdoor recreation domain, a large range of communication channels are used including mass media, internet, brochures, signage, visitor centres, local tourism personnel, tourism agencies and word of mouth. There are opportunities to communicate with tourist using these methods either before their trip (Mair et al., 2016), during their trip (Saunders et al., 2019), and during the disaster evacuation (Cahyanto & Pennington-Gray, 2015).

Before a trip starts and international tourists leave their home country, they may receive risk information and preparation knowledge including educational campaigns (Paton et al., 2000) by either direct or indirect risk communication methods. The direct methods are used by the tourist destinations, whereas the indirect methods include messages from friends and relatives (Cahyanto & Pennington-Gray, 2015). Each source plays a distinctive role and affects tourists' decision-making differently (Burnside et al., 2007; Fodness & Murray 1999; Fuchs et al. 2013). Educational campaigns provide individuals with the opportunity to understand the natural hazards they may face, and the actions required for mitigation (Paton et al., 2008). They have been shown to shift an individual's risk perceptions, information-seeking behaviour and sense of responsibilities, resulting in them increasing their preparedness (Perry and Lindell, 2008). Educational campaigns on preparedness can bridge the gap between hazard identification (hazard awareness and risk perception) and real preparedness actions, which will help to reduce their vulnerability (Carlino et al., 2008). These campaigns are often created by government officials and have strong credibility (Cahyanto & Pennington-Gray, 2015), but friends and family are often considered to be more trustworthy sources to support a major education campaign. In particular, social media has become a strong way to create social interaction and share knowledge of travel experiences (Buhalis & Amaranggana, 2015; Miah et al., 2017).

During a tourist's trip, hazard warnings are a major direct communication method, often from different sources, including weather services, government officials, tourism staff (guides information centres and accommodation hosts) and other media and warning signs. These warnings could be inadequate if the tourists fail to understand them or think they are not relevant to them. They might be construed as a failure to take reasonable care, exposing park management agencies to legal liability (e.g., Collins, 2008). Determining the most appropriate messaging to use on warning signs in high natural hazard risk areas, particularly in

conservation areas, has been the subject of many studies (Saunders et al., 2019). The function of these warning signs in the conservation areas is to alert visitors to hazards, particularly when staff are not present. A recent study has found that while international tourists are not familiar with local conditions, they can also have a different way of assessing their own personal abilities and even the degree to which they are likely to read hazard signs, let alone comply with these safety signs (Saunders et al. 2019). In a study evaluating tourism readiness plans before the 2020 Tokyo Olympic Games, it was found that language and cultural differences need to be considered in disaster information and evacuations (Nguyen, Esteban & Onuki, 2019). Foreign visitors could fail to understand the evacuation information and did not know when to evacuate. Therefore, tourist risk communication needs to consider the culture and language differences of tourists rather than just hazard and risk information that only reflects the knowledge and expectations of the scientific community (Dominey-Howes & Minos-Minopoulos, 2004; Gregg et al., 2004a; Gregg et al., 2004b; Johnston et al., 2005; Paton, 2006; Haynes et al., 2008a).

In addition, the sources of natural hazard events and evacuation response have been widely studied. Despite the negative media effect mentioned above, media also play an important role in any crisis recovery plan. Lindell, Lu and Prater (2005) found that mass media and other information related sources could provide adequate public warnings during the hurricane season. These communications must be issued through multiple sources (Sorensen, 2000; Mileti, Nathe & Gori, 2004) because individuals prefer to access different media resources (Haynes et al., 2008a). A single media platform is unlikely to build enough credibility and trust with the public (Paton et al., 2008). Internet searching has become the most popular tool in recent years (Mkono & Markwell, 2014; Peters & Pikkemaat, 2005; Skavronskaya et al., 2019 Tzioras, 2018). However, some of the traditional information sources such as guidebooks (Hoogenraad et al., 2004) are still essential for tourists, in particular during their trip. Tourists are more reliant on local tourism office services (Cahyanto & Pennington-Gray, 2015) and hotels (Aliperti & Cruz, 2018) during the on-trip natural hazard events (Fountain & Cradock-Henry, 2020).

Studies have found that despite many education programmes being provided, preparedness levels among international tourists remain low, including for destinations prone to natural hazards (Ronan & Johnston, 2005; Nagai et al., 2020). Therefore, researchers and disaster

planners must also realise the importance of understanding tourists' response abilities and preparedness levels. The next section will introduce the definitions and current studies of tourists' own natural hazard awareness, risk perception and preparedness.

3.3 Understanding Tourist Risk Perception, Hazard Awareness and Preparedness

Risk has been classified in broad interdisciplinary fields involving all elements of human existence, such as health, geography, geology, psychology, economics and social life (Espiner, 2001); therefore, the term *risk*, has a different meaning depending on the context. In general, Kasperson (1992) concluded that risk "involves threats of harm to people and nature and other things or ends that people value, such as community or political freedom" (Kasperson, 1992). Risk, in some situations, has a positive meaning, such as in the field of adventure tourism. Adventure activities attract consumers/tourists who are seeking an adrenaline rush from taking a controllable risk (Buckley, 2007; Soundararajan & Singh, 2019). However, most of the time, the risk is associated with adverse outcomes of a hazardous situation (Espiner, 2001; Johnston, 1989a; Rohrmann, 2003; Sitkin & Pablo, 1992).

In the leisure and tourism domain, different types of risk have been defined, including financial, functional, physical, psychological, social and time (Cui et al., 2016; Espiner, 2001). The financial risk could be caused by the value of money spent not giving an equal return in value. The functional risk can result in mechanical or technical failure. The physical perspective of risk emphasises the probability of events, such as earthquakes, flooding, car crashes, and the magnitude of the consequences, such as infrastructure damage or bodily harm (Kasperson, 1992). The psychological perspective of risk describes individuals applying heuristics to cope with the potential risk (Kasperson, 1992), for example, failing to meet the expectation. The social risk could potentially alter others' perceptions of the individual or organisation. Finally, the time risk could include something not being worth the time it has taken to complete.

Natural hazards or disasters, as a physical form of risk, are inevitable. It has been found that instead of risk itself, the perception of risk is associated with the response behaviour from natural hazards (see Section 3.3.3). Hazard awareness has also been identified as one of the main elements between providing risk information and preparedness behaviour (Dalton et al., 2001; Paton, 2003). Those studies found that only individuals who had a conversation about

the hazard and perceived it as critical were likely to process preparation behaviour. To systematically understand factors that could motivate the behaviour and outcome for preparation, a framework called the social cognitive model (SCM) was introduced by Paton (2003). Both risk perception and hazard awareness are important factors that can motivate individuals to increase their preparedness behaviour.

3.3.1 Social Cognitive Model of Disaster Preparedness

Natural hazard preparedness is important to reduce the risk of injury and damage. A very early assumption was that by simply providing natural hazard preparedness information to the public this would automatically result in an increase in preparedness (Smith, 1993). However, many studies found that this assumption was not correct (Ballantyne, et al., 2000; Lindell & Whitney, 2000; Mulilis & Duval, 1995; Paton, et al., 2000). Moreover, studies found there are factors that influence natural hazard preparedness behaviour, such as hazard awareness (Dalton et.al., 2001; Lindell & Whitney, 2000), risk perception (Lindell & Perry, 1992; Sjoberg, 2002) and natural hazard anxiety (Duval & Mulilis, 1999; Lamontaigne & LaRochelle, 2000).

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Figure 3-1   Social Cognitive Disaster Preparedness model (Paton, 2003)

Therefore, Paton and colleagues (Paton, 2000; Paton, Johnston & Houghton, 2001a; Paton, Millar & Johnston, 2001b; Paton, 2003) developed the SCM of public disaster preparedness. The model proposes that individuals experience three stages before taking any action for increased natural hazard preparation (Figure 3.1). The first stage is "motivation to prepare", which is influenced by personal natural hazard risk perception, risk awareness and hazard anxiety. Motivation would turn into "intention to prepare" only if the above three elements

reached a sufficient level. In this stage, positive self-efficacy and personal belief together shift an individual's opinion for taking the next phase, "intention to act" (Ajzen, 1999). Outcome expectancy is an individual's perception that the action they are taking can reduce or mitigate a problem (Paton, 2003). Self-efficacy refers to an individual's belief in their skill, knowledge, ability and resources to protect themselves in a threatening situation, and the amount of effort they are willing to expend (Paton, 2003). Individuals with poor self-efficacy may allow their negative feelings to overcome them, magnifying the threat and acting to further reduce their ability to cope with a crisis.

In the last stage, "Intention", individuals usually have two types of intention, "intention to prepare" and "intention to seek information". However, only individuals who have the intention to prepare are likely to adopt preparedness measures, whereas intention to seek information is unlikely. The thesis mainly focuses on stage 1 and stage 3 of the model, to understand Chinese tourist risk perception, hazard awareness and preparedness. Each of the three important elements inside the model will be explained below.

3.3.2 Tourist Hazard Awareness

Hazard awareness is the knowledge and understanding of risk in the surrounding environment (Dalton et al., 2001). Smith and Espiner (2007) reported four main findings regarding hazard awareness in natural resource recreation and tourism based on previous studies. Firstly, individuals evaluate hazards and perceive risk differently (Burton, Kates & White, 1993). Secondly, urban people are less informed about natural hazards and terrain, since they have limited experiences in the natural environment (Burton, Kates & White, 1993). Thirdly, the general public have a different assessment of natural hazard awareness. They do not know enough about natural hazards and tend to misjudge natural hazard risk, which brings us to the last point. Individuals with professional knowledge or experience regarding natural hazards tend to understand hazards better (Douglas, 1992; Kasperson & Dow, 1993); experts assessed hazards based on the magnitude of estimated probabilities, whereas the public normally just consider whether they are being exposed to a specific risk (Sjoberg, 2000). However, the implications for outdoor activities or adventure activities are that a large proportion of tourists or participants has low or no experience with these activities, so their ability to assess natural hazard risks tends to be low. In addition, media could be a tool to adjust hazard awareness. Ha (2018) mentioned that media helped the public in Korea to increase their earthquake

awareness. However, for tourists, media can have a negative impact on a destination image and lead people to have an inaccurate perception of the natural hazards risk that their activities would involve, as mentioned in Section 3.2.

Studies have found that tourists generally both lack hazard knowledge and are unaware of the resources available to protect them (Drabek, 1995; Burby and Wagner, 1996; Fountain & Cradock-Henry, 2020; Rossello et al., 2020). Visitors might also only have a positive holiday mindset (Becken & Hughey, 2013; Jeuring & Becken, 2011), and may have a limited capacity to absorb information related to natural hazards. Tourists' hazard awareness can often be limited to only knowing about the hazard itself and not what actions they should do in a natural hazard event. A study of typhoons and earthquakes in Hokkaido and Osaka in 2018 found that international tourists lacked both natural disaster and evacuation knowledge (Okutsu et al., 2018). A survey of tourists in Napier in New Zealand has found that only 15% of tourists reported tidal change or sea waves as tsunami warnings, and only a small percentage of international tourists were aware of the need for evacuation after a sustained earthquake (Fraser et al., 2013). The significant 2004 Indian Ocean tsunami caused a strong global impact due to the high proportion of victims who were tourists and who were unaware of and unprepared for a tsunami event (Kelman et al., 2008; Sharpley, 2005). In a recent post-Kaikōura earthquake study, Fountain and Cradock-Henry (2020) found that even tourists who claimed to have high hazard awareness tended to lack awareness of what to do in response to a natural hazard event. The findings specifically mentioned Chinese international tourists, who did not know where to go and what to do if a natural hazard event happened, emphasising their low level of natural hazard awareness and preparedness. Based on hazard awareness, another key element related to preparation is tourist risk perception, which is explained in the next section below.

3.3.3 Tourists' Risk Perception of Natural Hazards

Risk perception is the subjective assessment and evaluation of risk by individuals posed by a range of hazards (Slovic, 1987; Sitkin & Pablo 1992; Rohrmann 2003). This is different from observed or estimated risk, which are the known risks based on statistical probability and magnitude; instead, risk perception is an individual's feelings and perceptions of objective risks, influenced by intuitive judgement and subjective feelings (Slovic, 1987). Bauer (1960),

who first introduced the concept into psychological studies of consumer behaviour, emphasised that individuals' subjective risk might not be consistent with the actual risk.

Tourism is a service industry in which the nature of its products is an experience. Tourists do not know the quality of the product until after they have experienced it, so their travel decisions tend to be based on image and perception rather than reality. The concept of tourist risk perception emerged as researchers combined tourist risk with the concept of cognitive psychology and consumer behaviour (Sönmez & Graefe, 1998a). The risk often occurs when the tourism service or product fails to meet visitors' expectations, and the situation cannot be controlled during the tourism consumption process. Two main outcomes are (1) various and potential misfortunes during the trip (Tsaur, Tzeng & Wang, 1997), and (2) possible negative outcomes after the travel decision have been made (Schiffman & Kanuk, 2000; Chen, Qiao & Liu. 2009).

Within the literature on risk perception and tourism, two main themes could be identified. Firstly, many studies investigated the general tourists' risk perception. Secondly, many studies have examined the impacts of tourists' risk perception and travel behaviour, which are mentioned in Section 3.2.

Previous studies have found that the destination decisions of potential tourists will be influenced by perceptions of the relative risk or safety of those places (Floyd & Pennington-Gray, 2004; Schroeder et al., 2013; Sönmez & Graefe, 1998b;). Sönmez and Graefe (1998a) observed that, in addition to the typical vacation costs of transport, accommodation and entertainment, other costs that may enter the decision-making process are the potential physical (health, sickness, or injury), psychological (disappointment) and social costs of visiting particular places. Other studies also identified other dimensions of risk that affect tourists' perceptions of safety and security, such as natural hazards, terrorism, crime (Moutinho, 1987), unexpected weather (Schroeder et al., 2015), and cultural and language differences (Basala & Klenosky, 2001; Mitchell & Vassos, 1998). Tourists' risk perceptions can vary depending on their different risk types (Pennington-Gray, Kaplainidou & Schroeder, 2013; Schroeder et al., 2015). Gao (2009) found that domestic Chinese tourists were concerned about the risk of transportation, safety and security, hygiene, accommodation, weather, the trust of a tourism operation, and time. When Chinese tourists travel overseas, they are concerned with six other types of risks: physical safety, traffic, financial, functional, cultural, and social-psychological

(Zhang, 2014). A recent study has shown that Chinese international tourists usually consider culture conflicts, traffic, health and disease, service quality, functioning, and financial risks (Wu, 2017).

Lenggogeni et al. (2019) focused on Asian tourists more generally, and their risk perception when travelling to a famous island in Indonesia prone to natural hazards. They concluded that Asian tourists generally perceive six types of risk: psychological, physical, performance, financial, time and social risk; three of these main risk perceptions relate to natural hazard events. Psychological risk normally leads to negative feelings. Helplessness, as a psychological risks, refers to worries about the effects of their death on their loved ones and anxiety over the possible death of a loved one. Physical risk perception is the anxiety about being trapped in a location for an extended period if a natural hazard event occurs (Huan, 2007). For example, the fear of being separated from family if a natural disaster happens. The third concern was performance risk, related to inadequate knowledge, which leads to inaction and reduces mitigation awareness. For example, a lack of knowledge about tsunamis can cause two main issues for tourists: (1) not knowing what to do in a tsunami, and (2) not knowing where to go. Fraser et al. (2014) studied performance during a hypothetical tsunami evacuation in Napier and Hawke's Bay among New Zealand residents and tourists. The study highlighted that both residents and visitors had a high-risk awareness, but residents had a substantially higher evacuation knowledge than visitors. Rittichainuwat et al. (2018) also confirmed that performance risk perception determines tourists' abilities to cope with natural hazards.

In addition, many factors that influence an individual's risk perception include past experiences (Sönmez & Graefe, 1998b; Schroeder et al., 2013) and information seeking (Aliperti & Cruz, 2018; Sönmez & Graefe, 1998b). Some studies found that past experience positively influenced hazards risk perception (Micheli et al., 2008; Plapp & Werner, 2006). For example, a study found that people without any past experience of floods were likely to underestimate them; whereas people with past experience of floods tended to have more perception to the risk of flooding but can overestimate them (Ruin et al., 2007). Past experiences can also negatively influence risk perception, because of natural events that are frequent but do not lead to significant impacts. For example, before the Christchurch earthquakes in 2010 and 2011, New Zealand had experienced many large earthquakes over

the previous 75 years, but because these had not caused major damage, many residents had developed a lackadaisical attitude towards earthquake preparations and regulations (Stuff, 2018). Demographic factors, such as gender (Carr, 2001), age (Floyd & Pennington-Gray, 2004; Kozak et al., 2007), and culture (Kim & Pennington-Gray, 2016; Zhu, 2015) also influence risk perception. Additionally, media, as an external factor, can influence tourists' perception of a particular destination (Hall, 2010). Hazard awareness and risk perception studies have found these two factors positively influenced each other (Slovic, 1993, Smith & Espiner, 2007); together these two factors influence the natural hazards preparedness and response behaviour of tourists.

3.3.4 Natural Hazard Preparedness

Hazard preparedness is the process by which organisations, communities and individuals take actions to cope with a potential natural hazard event. Tourists' preparedness for natural disasters includes understanding natural hazard warning signs and evacuation routes for self-evacuation (Becken & Hughey, 2013; Bird et al., 2010; Hall et al., 2019; Johnston et al., 2007). Other studies have added identifying the alert system, understanding the priority actions, and improving first aid preparation (Bird, Gisladottir & Dominey-Howes, 2009; Lindell, 2013; Perry & Lindell, 2008).

Studies have found that the tourists' overall understanding of natural hazard warning signs, or their evacuation responses is limited (Fountain & Cradock-Henry, 2020; Fraser et al., 2013; Hall et al., 2019; Kelly & Ronan, 2018). A survey of tourists in Napier, New Zealand, found that international visitors generally did not know how or where to evacuate or find help during an earthquake and potential tsunami (Fraser et al., 2013). The majority of studies found, if a natural disaster happens, the tourists' intended action was to receive warnings through official channels and they would often wait for instructions from tourism personnel on what to do or where to go (Arce et al., 2017; Bird et al., 2010; Drabek, 2000; Fountain & Cradock-Henry; 2020; Fraser et al., 2013; Kelman et al., 2008). This is particularly the case with international or out-of-state visitors, who view the tourist information office, accommodation providers and residents as key sources of information, as detailed in Section 3.2.1 (Bird et al., 2010; Cahyanto & Pennington-Gray, 2015; Drabek, 2000; Fountain & Cradock-Henry; 2020; Jeuring & Becken, 2013). A study found that Chinese tourists had preparedness behaviours similar to

other international tourists, but they specifically mentioned waiting for the Chinese Embassy to provide evacuation and help (Fountain & Cradock-Henry, 2020).

3.4 Summary

The research literature shows that natural hazard events are worldwide and cause substantial damage in terms of lives lost and infrastructure destroyed. The tourism sector is particularly vulnerable to natural hazard events due to their fragile interdependent tourism infrastructure, together with past natural hazard events that have created spectacular natural scenery, which tourists want to visit, but by doing so they expose themselves to a potential hazard.

There is extensive literature published on the best recovery methods for tourism destinations following a natural disaster. This shows that rebuilding physical infrastructure, while expensive, can be a relatively straightforward process, but regaining a destination's "safe image" and protecting tourists in the future is often more complex and can take longer. The consensus from the literature is that the most effective method is to have a pre-planned disaster management system already in place. One of the key elements identified in this system involves educating tourists about natural hazards to increase their risk awareness and hazard perception and hence increase their preparedness, so they can better protect themselves. A major research focus has been to determine the best approaches to increase their preparedness and has included the development of theoretical models about human risk understanding and behaviour. The literature consensus is that before any real change in preparedness will happen, it is necessary to increase tourists' awareness and perception of the risks. The best way to achieve this is by education using risk communication.

The research on risk communication has shown that a multi-channel, multi-staged, diverse methods approach is required. It is also best started early while tourists are still in their home country, so they have time to prepare or purchase any necessary gear. Research has also shown that tourists from different cultural and social backgrounds need different communication processes to help in understanding the risks, and that they can react or perceive natural hazard risks differently. These topics have become an important emerging field of research.

Chapter 4
Method

4.1 Introduction

This chapter starts with an introduction to the methods and tools employed in this study together with the rationale for choosing them, followed by a brief description of the case study area together with the rationale for selection of this site. Next is a detailed explanation of the specific methods and tools developed and used in this study, as well as a discussion of the various ethical issues and safeguards, starting with the qualitative research based on interviews of local tourism experts (Section 4.4) and then the quantitative research using online surveys of Chinese international tourists (Section 4.5).

4.2 Research Methods

The selection of a research method to investigate a particular topic or research objective is dependent on several factors. These include the complexity of the research objective, the amount and ease of data collection together with the final analysis requirements, including statistical analysis. Each potential research method has both theoretical and practical advantages and disadvantages; therefore, the researcher must select the most appropriate and technically feasible method to answer each research objective. The theoretical and practical advantages of both qualitative and quantitative research methods are detailed below, followed by an explanation of the advantages of using a mixed method.

Qualitative research methods provide an opportunity to gain more in-depth information, new possibilities for ideas and results (Babbie, 2013). In-depth interview data will enable the researcher to gain a deeper, broader and better understanding from the perspectives of participants (Amaratunga et al., 2002). However, qualitative research methods are more time- and effort-consuming. They require the researcher to be involved in the entire process while participants provide answers. Additionally, they have a small sample size which means that respondents' opinions may not be totally representative, so results cannot always be generalised.

Quantitative research methods have the advantages that they can not only obtain a large number of responses, but the data obtained can be numerical, which allows for statistical analysis. They are also relatively efficient, and therefore it is easy to compare and summarise

the findings (Babbie, 2013). Also, the results obtained can have a smaller sample bias, as the sample size is often large, and results can be generalised if the sampling method is well controlled. However, answers obtained from quantitative research methods can also be superficial since the method does not provide many opportunities to gain detailed answers compared with qualitative research methods (Amaratunga et al., 2002). It is therefore hard to discover any new in-depth knowledge from participants.

Due to the inherent disadvantages of both qualitative and quantitative research methods, an alternative approach using both methods together have been developed to answer the same research question. This mixed method approach maximises the advantages of each method while minimising their disadvantages. Mixed methods provide a more comprehensive, more detailed, and richer understanding of the research issues than either approach alone (Aarons, Fettes, & Palinkas, 2012; Creswell & Plano Clark, 2011; Robins et al., 2008; Waitzkin et al., 2008). It is particularly good to apply in studies of innovation implementation in health and human service settings, such as adoption decision and preparation (Aarons et al., 2012; Demakis et al., 2000; Greenhalgh et al., 2010; Palinkas et al., 2011; Soh, et al., 2011; Stetler et al., 2006; Welling, Arnason, & Olafsdottir, 2015).

Quantitative research methods, including surveys, explain and predict social and behavioural phenomena using statistics. Qualitative research methods, such as in-depth interviews, tend to use interpretative and disclosure analysis. Strengths and weaknesses apply to both types of research methods. Using more than one research method to explore different facets of a topic can help to minimise inherent biases from each method and maximise the merits (Sarantakos, 1998).

A mixed-methods approach of using both quantitative and qualitative research methods was used concurrently throughout the research period. The two methods together provided an overall understanding of Chinese tourists' risk awareness, perceptions and preparedness actions. The different research methods used to achieve each of the five reserch objectives is listed in Table 4.1.

Table 4.1   The Research Methods Used to Achieve Each of the Research Objectives.

	Method	(Quantitative) Survey	(Qualitative) Interview
1	Understand Chinese tourists' awareness of, and preparedness for, natural hazards on the West Coast prior to their visit.	Chinese tourists	Local informants
2	Investigate the extent to which Chinese visitors prepared for and/or learnt about natural hazard risks on their visit to the West Coast, and the sources they used to become informed.	Chinese tourists	
3	Explore the perspectives of tourism service providers who interact with Chinese tourists in relation to hazard awareness, preparedness and behaviour of Chinese visitors to the West Coast.		Local informants
4	Investigate differences in Chinese tourists' risk awareness and preparedness based on social-demographic characteristics and travel behaviour (e.g., age, education, prior travel experience, FIT/Group travel, travel party).	Chinese tourists	Local informants
5	Identify implications of the case study data for future destination preparedness planning, such as the development of hazard communication approaches appropriate for Chinese visitors to the West Coast region and beyond.	Chinese tourists	Local informants

4.3 The Identification and Selection of the Case Study Area

In order to research Chinese tourists' natural hazard awareness, risk perception and preparedness, the case study area had the following requirements:

- Accessible and attractive to a large number of tourists, particularly Chinese tourists
- Many and varied natural hazard risks
- Business and tourism operators who understand and practise tourism management of natural hazards.

The West Coast of the South Island, New Zealand, was identified as fulfilling the criteria outlined above. As Section 2.5 mentioned, the West Coast's unique location has spectacular natural scenery that attracts many domestic and international tourists, particularly in Glacier Country, where the world-famous Fox and Franz Josef Glaciers attracted 320,605 visitors from June 2018 to July 2019 (Development West Coast, 2020). The Fox and Franz Josef Glacier townships have a number of experienced tourist operators who have operated tours for almost 100 years. These tourism providers also have extensive experience of working with and understanding the needs of tourists. The region's popularity among Chinese international tourists has grown in recent years; China has become one of the top-spending visitor markets on the West Coast (MBIE, 2019).

Importantly, the West Coast is also susceptible to natural hazards, such as flooding, landslides, slips and earthquakes; hence, tourism businesses have an awareness of the need for natural hazard tourism management.

4.4 Qualitative Tool

In addition to the survey, an on-site qualitative approach, including in-depth interviews with local informants, was used to obtain extra information and better explore Chinese international tourists' natural hazard risk awareness, perception and preparedness, and risk communication recommendations. Thirteen interviews were conducted in January and February 2021. Interview subjects were selected from organisations or businesses that were involved in natural hazards risk communication with Chinese international tourists on the West Coast either directly or indirectly. The respondents included managers or volunteers from government agencies, tourism businesses, or tourism operators (see specific details in Table 4.2).

Table 4.2   Interview Participants and Their Strategic or Operational Involvement

Local key informants	Organisations / Companies	Number	Engagement with Chinese international tourists	Length of involvement in the tourism industry
National Regional organisation	Department of Conservation (DOC)	2	Direct/indirect	More than 5 years
	West Coast Civil Defence Management Group (CDEM)	1	Direct	More than 20 years
	West Coast Regional Tourism Organisation (RTO)	1	Indirect	More than 5 years
	Christchurch International Airport Ltd (CIAL)	1	Used to be direct	More than 20 years
Private tourism business	Attraction operator	4	Direct	Two marketing specialists: more than 5 years; Two General Managers: more than 5 years
	i-Site	1	Direct	More than 10 years
	Hotel	2	Direct/indirect	More than 5 years / more than 20 years
	Inbound tourism operator (IBO) and guide	1	Direct	More than 5 years

All interviewees had direct or indirect experience working with Chinese international tourists during the study time frame (1 January 2019 to 31 March 2020) on the West Coast. Their association with the tourism industry ranged from a few years to over 25 years (see Table 4.2). Forms of qualitative interviews can range from highly structured interviews where the objectives are specific, to understand interviews which are characterised by spontaneity (Singleton & Straits, 1999). In this research, interviews were on a semi-structured basis to

ensure specific research objectives were addressed but were conducted in a conversational style.

The qualitative method was designed after the New Zealand's international border closed due to the COVID-19 pandemic. Some disruptions of the qualitative method are described in the next section.

4.4.1 Limitations and COVID-19 Impacts on Interview Method

Due to the COVID-19 pandemic, the border closed from 20 March 2020, and New Zealand went into the first lockdown during March to August 2020. The closed border and lockdown disrupted international tourism in New Zealand and due to the resulting economic dislocation within the tourism sector on the West Coast, several tourism companies were forced to cease operations temporarily or permanently and reduce staff. This meant it was more difficult to track down the most appropriate people for structured interviews as they had either left the company or the West Coast. Another problem was that for the previous year tourism stakeholders had no recent experience in dealing with Chinese international tourists; New Zealand had closed its international border to China on 3 February 2020. This meant their observations of tourist behaviour, or more specifically their observations and opinions of their risk perception, hazard awareness and natural hazard preparedness, had to be based on their long-term memory. Therefore, a number of people had to be recruited using a referral method where the initial contacts were asked to suggest a more appropriate and experienced person to be interviewed.

Naturally, their recollections will be biased towards remembering the most memorable extremes of their past interactions rather than the ideal situation of recounting what happened the previous month. One interview technique often used to obtain details of the "normal or standard" situation rather than just the extreme examples is to ask participants to describe and recount their experiences from the previous month (Sauro & Lewis (2021). As this could not be done, it means that the data they provided is likely to contain more extreme behavioural examples than what they would see in a typical month. Therefore, the interview data will be different from what would have been obtained pre-pandemic, and since the degree of this data change is unknown, it cannot easily be compensated for; all that can be done is to note it as a limitation of their observations.

Another limitation identified was with the reduction in overall tourism on the West Coast, with most tourism businesses only operating at a minimum level and not doing all of the processes they were doing before the pandemic. This is especially true for the safety briefings and hazard information for international tourists, particularly non-English-speaking Chinese tourists. This meant that their recounting of the specific procedures they did for non-English-speaking Chinese international tourists one year before is again from only long-term memory or business process documentation rather than the ideal situation of recounting what they did last week. While it is likely that the "ideal" or "model procedural process" was captured, the more nuanced day-to-day changes and modifications are likely to have been lost, together with their impression of how effective a particular process was in communicating hazard information to tourists.

4.4.2 Implementation

Suitable interviewees were identified and mapped by a combined sampling method of internet searches, personal recommendations from local regional tourism organisations (RTOs), and snowball sampling of those involved in the industry. This is a similar approach to that used to generate a database of commercial operators in other studies (Buckley, McDonald, Duan, Sun & Chen, 2014). The suitable participants were first contacted and invited to participate in the study by email, with an attached information sheet (see Appendix C). Some of those who did not reply were sent another email or phoned to follow up. In some cases, the initial contact agreed to be interviewed, while in many cases, the initial contact forwarded the invitation to colleagues they thought were more suitable. Once a participant confirmed, the researcher sent another email confirming the interview time together with an attached consent form (see Appendix D for the interview consent form). Interviewees were informed that participation was voluntary and were given the time before the interview commenced to read the consent form. Thus, before the interview started, interview participants were well informed about the study's purpose, the likely participation time, and they were then asked to sign a consent form.

Interviews lasted 40–90 minutes; most were conducted face-to-face at the café or the rest areas at the tourism business or close to the business. A few had to be conducted by phone, as some informants were not working on the West Coast during the fieldwork period. Informants were encouraged to share their personal experiences and anecdotes related to

the risk awareness, perception and preparedness of Chinese international tourists, and to compare them with tourists from different cultures (see Appendix B). Topics covered included local natural hazard communication methods, their company emergency plans and future suggestions for improvements in communications with tourists. The interview finished at the point when all the semi-structured interview questions were answered.

All the interviews were audio-recorded with the participants' permission, and then transcribed verbatim into a Word document. Thematic analysis was employed to identify themes and patterns in the interview transcripts (Nowell et al., 2017). This was repeated three times to enable all themes to become apparent.

This interview process was reviewed and approved by the Lincoln University's Human Research Ethics Committee with regard to human ethics principles and guidelines, including participant autonomy and confidentiality.

4.5 Quantitative Tool

A quantitative survey was designed to assess tourists' awareness, risk perception and preparedness for natural hazards (see Appendix A).

The major objectives of the survey were to determine:

1) the West Coast trip pattern and experiences of Chinese tourists.
2) the sources for information-searches for the trip and natural hazards knowledge.
3) the extent to which Chinese tourists were aware of natural hazards before and during their West Coast trip.
4) the extent to which visitors felt safe before and during the West Coast trip.
5) the extent to which visitors were prepared for natural hazards before and during the West Coast trip.
6) the influential factors affecting hazard awareness, risk perception and preparedness including natural hazards past experience and demographic characteristics.

Respondents answered a series of questions using a 7-point Likert scale to show the extent of their agreement or disagreement to the statement. Some open-ended questions were included for in-depth information.

An important consideration in the construction of any survey is its target population. Both the style and content of the survey must be appropriate to the intended respondents. In the current case, the target audience is Chinese tourists. Therefore, the survey was designed in English but translated into Mandarin by the researcher herself, who is fluent in English, and a native Mandarin speaker. To ensure that the Chinese translation was accurate and appropriate (Behling & Law, 2000), the Mandarin version of the survey was back-translated to English by a bilingual expert.

Like the qualitative research method, the survey design was affected by the border closure due to the COVID-19 pandemic.

4.5.1 Development of Survey and Limitations from the Impacts of COVID-19

The survey sample included Chinese tourists who had been to the West Coast, and those who had been to New Zealand but did not visit the West Coast. The latter group was included for two main reasons: (1) to help understand if natural hazard risks influence tourists' choice of going to the West Coast; (2) to find out if Chinese tourists have a different impression of the West Coast compared with other areas of New Zealand regarding natural hazard risks.

There are five question blocks designed in the survey including The West Coast visiting experience (for respondents who had been to the West Coast); Natural hazards past experience; Natural hazards awareness, risk perception and preparedness scale; Cultural theory scale; and Demographic characteristics. Respondents' answers were recorded using Likert scales, as they are the most convenient and appropriate means to assess hazards awareness, risk perceptions and preparedness. These methods are widely used and accepted in psychological testing, and for gathering data on attributes of people, events or activities (Bryman & Cramer, 1997; Kline, 1993; Loewenthal, 1996; Segall, 1984), including those investigating risk perceptions (Hartenian et al., 1993; Roehl & Fesenmaier, 1992; Slovic et al., 1985). Respondents indicated their extent of agreement or disagreement to a statement by choosing a number between 1 and 7. The larger range of 1 to 7 was used instead of 1 to 5 as Guilford (1956, cited in Kline, 1993) showed that using a greater number of steps increases the reliability of a scale.

Based on the social cognitive model (SCM) and three previous surveys (Espiner, 2001; Fountain & Cradock, 2020; Paton et al., 2001b) 19 questions were developed as the major

survey (only 15 statements were used in the New Zealand–only sub-survey) to determine Chinese international tourists' natural hazards awareness, risk perception and preparedness. The questions were presented in both positive and negative directions and later reversed for the analysis. Each question was answered using a 7-point Likert scale with 1 = *strongly agree* and 7 = *strongly disagree* as anchors.

To determine one of the important influential factors of past experience, respondents were asked about their previous natural hazard experiences (earthquake, tsunami, flooding, tornado, storm, volcanic eruption, heatwave, wildlife) in three different situations: at home, on a previous trip, and their last New Zealand trip. If respondents had experienced these natural hazard events before, then a 5-point Likert scale was presented to them (employing 1 = *insignificant* and 5 = *catastrophic* as anchors) for rating the impact of the previous experiences.

It is noteworthy that the survey included a modified Cultural Theory scale (CTS; Xue et al., 2016) based on the standard CTS (Dake, 1991; 1992). The CTS was to be used to examine how cultural factors influence tourists' natural hazard awareness, risk perception and preparation behaviour. The results from this scale are not included here due to the limitation of the small sample size and lack of information to compare with other cultural groups.The survey was tested in a pilot study and modified as required before use. A pilot test was sent out to Chinese nationals resident in New Zealand who were either working in the tourism industry or were students studying tourism at Lincoln University in early December 2020. Twenty-seven of them were collected as a pilot test. The reversed questions were then recoded. In addition, the reliability was tested for the Natural Hazards Risk Awareness, Perception and Preparedness scale and the Cultural Theory scale. Conventionally, the score of Cronbach's alpha was required to be over .7. All-natural hazard risk variables reached .7 for the Natural Hazard Risk Awareness scale (Risk awareness: α =.89, Risk perception: α =.70, Risk preparedness: α =.83), which indicated a high level of consistency. Most of the α scores of the CTS were over .7 (Egalitarianism: α =.76, Individualism: α = .76, Hierarchism α =.84), except Fatalism (α < .7). This is somewhat unexpected as the CTS is an existing scale but could be due to the small sample size. The official survey sent out included the Fatalism question even though the reliability was low because it is a standard scale.

The closure of New Zealand's international border to non-New Zealand residents due to the COVID-19 pandemic meant there were no new Chinese international tourists in New Zealand. Without any international tourism in New Zealand, the researcher was unable to recruit or survey Chinese international tourists while they were still in New Zealand as had been originally planned. Therefore, several processes were changed, and innovative methods were developed to compensate for the lack of international Chinese tourists in New Zealand. The original plan of surveying randomly selected Chinese international tourists on the West Coast, while they still were on holiday, had to change to recruiting survey participants using Chinese social media, referrals from tour agents and even those people referring friends who had also recently visited New Zealand. The benefits of online methods are easy accessibility, relatively low cost, anonymity (Van Selm & Jankowski, 2006), environmentally friendliness, and non-invasive nature (no personal contact). However, the online survey delivery instrument also created limitations for the current study and sampling bias, whereby the survey does not cover the proportion of the population who are not using the internet or Chinese social media. In the case of the current study, the limitation of the online survey has produced a sample set that is unlikely to be as representative as a random sample surveyed on the West Coast. Therefore, the sample demographics will not be representative of Chinese international tourists in New Zealand. So, no meaningful comparisons could be done between free independent tourists (FITs) and group tourists or any other subsection of the Chinese tourist market.

Although the online survey was supposed to produce a larger sample, the reality is that non-response bias or selection bias also occurs due to coverage errors (Hackman & Oldham, 1975). The survey was opened to 200 potential respondents, but only 60 respondents in total finished the survey or fulfilled the validity criteria. The small sample size resulted in fewer statistically significant results. Only major differences could be determined as being statistically significant. This meant that any smaller minor differences detected were found not to be statistically significant. A number of expected results reported by previous studies could not be repeated. There was not enough data to do any analysis on the cultural questions related to risk perception.

Participants were required to answer the survey questions about their trips based on their memories. Previous studies have suggested that tourist experiences are strong enough to

enter long-term memory, which can be recalled after tourists return home (Agapito, Pinto & Mendes, 2017). Agapito, Pinto, and Mendes (2017) successfully received tourist attitudes and loyalty to south-west Portugal from recalled memory after six months. Considering the border closure date, an initial cut-off date of visiting New Zealand was set as 1 July 2019 to be eligible for participation in the survey. However, after observation of collected surveys, the eligibility date was expanded to 1 January 2019, since the majority of Chinese participants travelled to New Zealand around the Chinese New Year period and so were outside the initial travelling period.

4.5.2 Implementation

The online survey was in the field from mid-December 2020 to the end of February 2021. Survey participants were recruited by using a range of methods. Firstly, invitations were sent out through Chinese digital platforms, including QYER and Mafengwo tourism platforms, and QQ and WeChat Chinese chatting apps. Social media has been widely used to understand tourism experiences by capturing and reflecting participants' feelings and memories during and after travel (Buhalis & Amaranggana, 2015; Miah et al., 2017). Recent studies have used WeChat functions including individual and group , and WeChat moments as a tool for data collection of Chinese tourists' experiences (Skavronskaya et al.,2019). By searching keywords, such as "New Zealand trip" or "the South Island New Zealand trip", the researcher joined those travel groups and sent survey invitations.

Another method used was by direct invitations to past tourists sent out using the databases of inbound tourism operators (IBOs) who managed the bookings of Chinese tourists. Lastly, snowball sampling was also used as the survey participants were encouraged to share the survey with other tourists, they knew who might qualify. Depending on the questions that the participant needed to answer, the survey took around 5–15 minutes to complete. The major survey would take 10–15 minutes, and the sub-survey would take 5–10 minutes. Participants were shown an information sheet once they opened the Qualtrics survey link; they were then asked to consent to participate (see Appendix G for information sheet and consent form). Participants were told that the survey was completely anonymous, and the survey data was only going to be reported as aggregated data and no answer could be linked to a particular participant, and therefore no survey participants could be identified.

Data from the online surveys were exported from the Qualtrics survey software as an SPSS file and imported into SPSS for analysis. Statistical manipulations included descriptive statistics, factor and item analysis, cross tabulations (non-parametric) and *t* tests (parametric tests). Any questions that required an additional open-ended response were recorded verbatim, and later post-coded and analysed. Even though the data were complete, some questions did not apply to certain participants, for example, those participants who could not recall any natural hazard events they had been through in their home cities or previous trips and so were not able to give answers to these questions. Due to the international borders being closed due to the COVID-19 pandemic, only a small sample set of participants was collected (60 in total, 41 respondents who had been to the West Coast). A number of questions were analysed and if the results were found to not be statistically significant, they are not reported in Chapter 7 (e.g., Cultural Theory scale and specific natural hazard events that the respondents had experienced).

To aid in coding and to simplify the analysis, the answers from the 7-point Likert scale were also collapsed into three concise groups by pooling the three categories of agreement (*strongly agree*, *agree*, *slightly agree*) together and the three categories of disagreement (*strongly disagree*, *disagree*, *slightly disagree*) together. The 5-point Likert scale from the previous natural hazard experience questions were also collapsed and recoded into *Small* (1–2), *Neutral* (3), and *Large* (4–5).

4.6 Chapter Summary and Conclusions

The study undertook to assess Chinese tourists' awareness of and risk perception and preparedness for natural hazards before and during the trip to New Zealand and the West Coast. The West Coast of the South Island was used as the case study site. The research objectives required the application of multiple methods, the details of which have been outlined in this chapter.

Both quantitative survey and key informant interviews played an important role in examining aspects of the Chinese tourists' awareness of and risk perception and preparedness for natural hazards. The attempt here to embrace and integrate a mixed method represents a strength of the research and is compatible with a case study approach. The use of a single qualitative or quantitative approach would not have yielded the breadth of data realised in this study.

In order that a good level of coherence and narrative is maintained, the research context and results are presented in Chapters 5, 6 and 7 and later combined to form an integrative discussion and summary in Chapters 8. Chapter 6 gives the results from the in-depth interviews, while Chapter 7 gives the results from the quantitative survey, which together allow a great understanding of the significance of natural hazards and the phenomenon of risk in tourism settings.

Chapter 5
Case Study Context: The West Coast Natural Hazards Risk Communication Structure and Contents

5.1 Introduction

Pre-trip and on-trip risk communication are important parts of the destination's crisis management plan, which requires different stakeholders' participation, including national and regional organisations, private businesses, tour guides and other tourism staff. Stakeholders from the tourism sector perform the informing and education role, and stakeholders from Civil Defence perform the preparation and reaction role when tourists visit the case study area if a natural hazard event happens. The current chapter uses both primary and secondary sources to provide contextual information on the structure of natural hazards risk communication for New Zealand's West Coast region, mainly focusing on pre-trip risk communication to international tourists. The secondary research involved analysis of websites, policy and strategic documents; the primary sources were structured in-depth interviews. These interviews were the major qualitative research done for this thesis; the interviews with 13 key informants were conducted between January and February 2021, and all participants had 5 to 20 years' experience working in the tourism industry with extensive experience working with Chinese international tourists (including some interviewees who also were Civil Defence volunteers). Many of the tourism businesses in the case study area have a long history of providing these activities to visitors, and over 10 years' experience providing services to Chinese tourists. In this chapter, the interview results about the local informant's observations about relationships and risk communication between organisations and tourists (specifically Chinese international tourists) are reported. This chapter first introduces the national and regional organisations that provide vital roles in natural hazards risk communication before introducing the current risk communication process in the case study area.

5.2 Civil Defence Emergency Management and its Wider Emergency Response

In New Zealand, the National Emergency Management Agency (NEMA) leads the responsibility to prepare for and respond to natural hazard events, legislated through the Civil Defence Emergency Management Act 2002 (MCDEM, 2002) and the Amendment passed in 2016. NEMA's role is to provide strategic leadership for risk reduction, readiness, and response and

recovery in an emergency (see the 4 Rs detail in Table 5.1), while also coordinating the national emergency management system and regional Civil Defence Emergency Management (CDEM) groups across the country. These regional CDEM groups are made up of local authorities within each region working in partnership with emergency services, lifeline utilities, volunteers and others; they are responsible for all aspects of civil defence in their region. CDEM is a volunteer-based organisation involving businesses and individuals from multiple sectors that provides help and risk communication to communities, including tourists. When an emergency happens, the national and regional levels of Civil Defence groups are in charge of the emergency safety protocols activation and coordination, with a top-down flow of communication. The West Coast Civil Defence Emergency Management group incorporates the three district councils (Buller District Council, Grey District Council, and Westland District Council) and the regional council (West Coast Regional Council).

Table 5.1   The 4Rs used in the CDEM Framework, New Zealand

Reduction	Identifying and analysing long-term risks to human life and property from hazards; taking steps to eliminate these risks if practicable, and, if not, reducing the magnitude of their impact and the likelihood of their occurring.
Readiness	Developing operational systems and capabilities before an emergency happens. These include self-help and response programmes for the general public, as well as specific programmes for emergency services, utilities, and other agencies.
Response	Actions taken immediately before, during or directly after an emergency, to save lives and property, as well as help communities to recover.
Recovery	The coordinated efforts and processes to bring about the immediate, medium-term and long-term holistic regeneration of a community following a civil defence emergency.

Source (NEMA, n.d.-a)

Tourism and crisis management require input from various stakeholders and the CDEM Act specifically mentions the need for coordination across a wide range of agencies, individuals, tourism businesses and government departments in the stakeholder cluster. Previous studies have found this was not always the case, with little connection between CDEM and the tourism sector, for example, Orchiston's (2010) investigation of the implications of a hypothetical earthquake on the Alpine Fault in the South Island of New Zealand and Becken and Hughley's research (2013; 2014), which explored the role of tourism and disaster management stakeholders in Northland, New Zealand.

According to interview informants, tourism businesses in Glacier Country are heavily involved in Civil Defence work because the area has only a small resident population and is economically dependent on tourism. Besides their large involvement with Civil Defence, many

of their staff also volunteer for other emergency organisations, such as New Zealand Fire & Emergency. Many of the tourism businesses in Glacier Country are also part of the Civil Defence emergency plan. For example, some tourism operators are emergency evacuation centres, where food and water are stored, and people can come to shelter. In the case of an emergency, tourism operators and visitor centres assist Civil Defence volunteers in setting up information points for updating progress, and helicopter companies assist with evacuation transportation.

5.3 Department of Conservation

The Department of Conservation (DOC) is the central government agency responsible for administering New Zealand's natural and historical heritage (DOC, n.d.-b). Nearly 30% of New Zealand's land area is managed by DOC, including 13 national parks. Previous research reported that 53% of international tourists visited at least one national park while they were in New Zealand (DOC, 2017; Ministry for the Environment [MfE], 2018), and many tourism activities happen on conservation land. A number of these activities are in natural hazard prone areas which require risk mitigation. Both domestic and international tourism management, including natural hazard safety and risk communication, on conservation land is an important responsibility for DOC. In order to deliver its intended conservation outcomes, DOC works in partnership with iwi and alongside community groups and businesses to ensure local support for the conservation work.

The Department of Conservation headquarters are in Wellington, but DOC has 68 Offices and Visitor Centres throughout the country which are responsible for delivering conservation and recreation outputs (DOC, n.d.-c). On the West Coast there are three Offices (Greymouth, Hokitika and Westport and three Visitor Centres (Haast, Paparoa National Park and Westland Tai Poutini National Park) (DOC, n.d.-d).

DOC achieves its natural and cultural heritage mandate by restoring and protecting natural areas, conserving native species and controlling pest and weeds while also encouraging conservation. To encourage public access and recreation on conservation land, it maintains and constructs facilities (huts, tracks and bridges), provides information and visitor centres, and grants concessions to businesses (DOC, 1996). DOC operates in a complex and political environment due to its dual and conflicting mandates and responsibilities over the whole country. It is required to encourage and facilitate public access into conservation land, and at

the same time it must protect it and minimise the impact these visitors cause. It is required to inform the public about natural hazards and keep people safe with only minimal alteration to the natural environment.

In 2021 DOC released an updated visitor strategy which uses five key elements (Attractions, Awareness, Access, Amenities and Attitudes) to reach three main goals (DOC, 2021):

Protect – New Zealand's natural, cultural and historic resources are preserved and biodiversity, cultural and historic values, ecosystem health, landscapes and natural quiet are maintained.

Connect – Visitors' experiences connect them to the heritage of New Zealand.

Thrive – Tangata whenua, regions and communities' benefit from protecting and connecting visitors with their natural, cultural and historic heritage.

One of the key updates in the new visitor strategy highlights management of visitor safety. Under Goal 2: Connect, DOC aims to enrich and better connect New Zealanders and international visitors with New Zealand's natural, cultural and historical heritage. Although the visitors' safety has always been a focus for DOC, the new strategy focuses on visitors' readiness for hazards and associated risks. *"A well-designed and safe experience will be informed by an understanding of expected demand, its geographic location, the type of environment, risks and visitor expectations" (DOC, 2021).* The strategy emphasises DOC is responsible for identifying and documenting hazards and associated risks for every place; and for taking appropriate steps to mitigate these risks; maintaining and controlling the risks caused by climate change; providing the information that allows visitors to be responsible for their own safety and to choose the right experience for them based on their skill level, experience and equipment. Further, the risk communication structure of DOC is presented in Section 5.6.2.

5.4   National- and Regional-Level Tourism Organisations

Tourism New Zealand (TNZ) is a government national-level agency that markets New Zealand as a world-famous holiday destination (TNZ, n.d.-a). The purpose of TNZ is to enrich the New Zealand economy, nature, society and culture by contributing visitors (TNZ, n.d.-a). TNZ has 15 offices across the globe, with significant cultural diversity between staff who speak different languages. In its offshore offices, TNZ markets and encourages Active Considerers

(those thinking of visiting) to visit more regions of New Zealand and spend more time during their visit. The primary direct communication methods with Active Considerers are through marketing campaigns and websites.

Regional Tourism New Zealand (RTNZ) is a membership-based and -funded organisation representing the interests of all Regional Tourism Organisations (RTO) throughout the country. RTOs play an important role in developing and marketing their regions to grow their tourism economy. An RTO informant stated they play a bridging role between national-level agencies/organisations, such as TNZ and local-level tourism businesses. Development West Coast – Tourism (DWC) is the main RTO that markets the West Coast as a tourism destination. There is also a Destination Tourism Organisation (DTO): Glacier Country falls under the DWC, which markets the glaciers areas. DWC works closely with national-level agencies; other RTOs, including Christchurch International Airport (CIAL) and ChristchurchNZ; DTOs: Glacier Country; and other tourism trade partners. RTOs also regularly exchange information with local tourism businesses and trade partners through formal and informal networking.

The previous sections introduced a range of national and regional agencies or organisations with important roles in natural hazard risk management and response. The next section introduces the current natural hazard readiness programmes in New Zealand organised by these different national or regional organisations.

5.5 Natural Hazard Readiness Programmes

Since "Natural hazards are part of New Zealand's DNA" (GNS, n.d.-e), most New Zealand national-level agencies are researching and producing programmes for readiness to natural hazard for both the general public and tourists. Nationally, Civil Defence operates a programme called "Get Ready", preparing New Zealanders for natural hazard events (NEMA, n.d.-b). This national programme provides preparation knowledge for six major natural hazard types – earthquakes, floods, landslides, storms, tsunami, and volcanic activity – for workplaces, schools and households. Workplaces and schools can use this information to deliver risk communication and preparation to their employees and students. Civil Defence also helps New Zealand's preparedness and resilience to natural hazards through research; it has strong partnerships with a number of programmes including Resilience to Nature's Challenges (RNC) and Alpine Fault magnitude 8 (AF8).

The tourism industry's preparedness for natural hazards is a focus for the Resilience to Nature's Challenges programme (RNC, n.d.). By specifically focusing on the South Island, Alpine Fault magnitude 8 (AF8) is a programme created to research the next Alpine Fault earthquake event (AF8, n.d.-b). The AF8 not only focuses on scientific research but also provides workshops to build community preparedness for natural hazards. In 2021, it delivered public science talks to South Island communities, in areas most likely to be affected by an Alpine Fault magnitude 8 earthquake, giving them direct access to Alpine Fault science and hazard impact information relevant to them and their region.

Tourism organisations have also developed and deployed their own programmes for tourism businesses to better communicate with international tourists prior to arrival, although natural hazard risk preparedness is only a small part of these programmes. The Christchurch International Airport designed and created a programme called "South" to help all 15 South Island regional tourism organisations work collaboratively to increase international tourist arrivals and enhance the tourists' experiences (Christchurch International Airport [CIAL], n.d.). As this programme was initiated after the 2010–2011 Christchurch Earthquakes, it included some contents about natural hazard risks and required preparedness.

The China Market Readiness programme was initiated from a South Island tourism marketing campaign and was deployed six years ago. This readiness programme provided language translation and explained cultural differences to local tourism businesses, to help reduce misunderstanding about risk and hence a lower level of risk preparedness. The programme focuses on helping local tourism businesses get official Chinese translation, encouraging tourism businesses to have Chinese-speaking staff, and developing readiness brochures and flyers that can be delivered through tourism businesses. A DWC representative provided an example of how this operates:

> So, every risk we could think of was written down in simplified Chinese onto manual cards ... We then asked tour operators to give these cards to the Chinese tourists and ask [these tourists] if they understand them.

5.6 Risk Communication to Tourists

5.6.1 Introduction

The above organisations have all been involved in the risk communication process to international tourists, along with other stakeholders such as local tourism businesses, Inbound Tourism Operators (IBO) and international tourism agencies. Tourism operators in the case study area have a wide range of operational experience ranging from almost 100 years to some recent start-ups. A wide range of accommodation is available from five-star hotels to camp sites together with Airbnb. The New Zealand tourism sector uses multiple ways to communicate and deliver the messages about natural hazard risk to international tourists.

Tourists' risk management and communication in New Zealand are delivered at all levels, from national to local. At each level, different organisations have distinct roles and responsibilities. The tourists' risk communication involves both direct and indirect communication, both before the visitors arrive and during their travel in the country and region. Direct communication refers to the risk information/education delivered directly to visitors, whereas indirect communication is the delivery of information created by top-level organisations or agencies, which are then disseminated to lower levels in the tourism sectors before being given to tourists. For example, regional-level tourism organisations receive strategy and plans from national-level organisations about natural hazards and risks in New Zealand, and then deliver this information to tourism agencies, such as inbound tourism operators and international tourism buyers.

Many conservation areas on the West Coast region and around New Zealand have natural hazard risks, and therefore DOC is the main organisation to lead the New Zealand government tourism strategy implementation in conservation areas. Since DOC performs and engages in risk communication at all levels with other sectors, the strategies of DOC for natural hazard risk management and communication are detailed next.

5.6.2 Multiple Level Risk Communication: Department of Conservation

DOC communicates natural hazard information to tourists through multiple channels, including through the official website, leaflets, direct communication at trade shows (see details in Section 5.6.3, visitor centres, local signage and local interpretation programmes

(DOC, 2021). DOC has a strong presence in all of New Zealand's conservation areas, which supports its role as a national-level communicator on natural hazards. The localised presence also allows it to be a local-level communicator and educator. As a national-level pre-trip and on-trip communicator, the official website provides a comprehensive range of New Zealand conservation knowledge, including natural hazards information and alerts, trails status, and preparedness information.
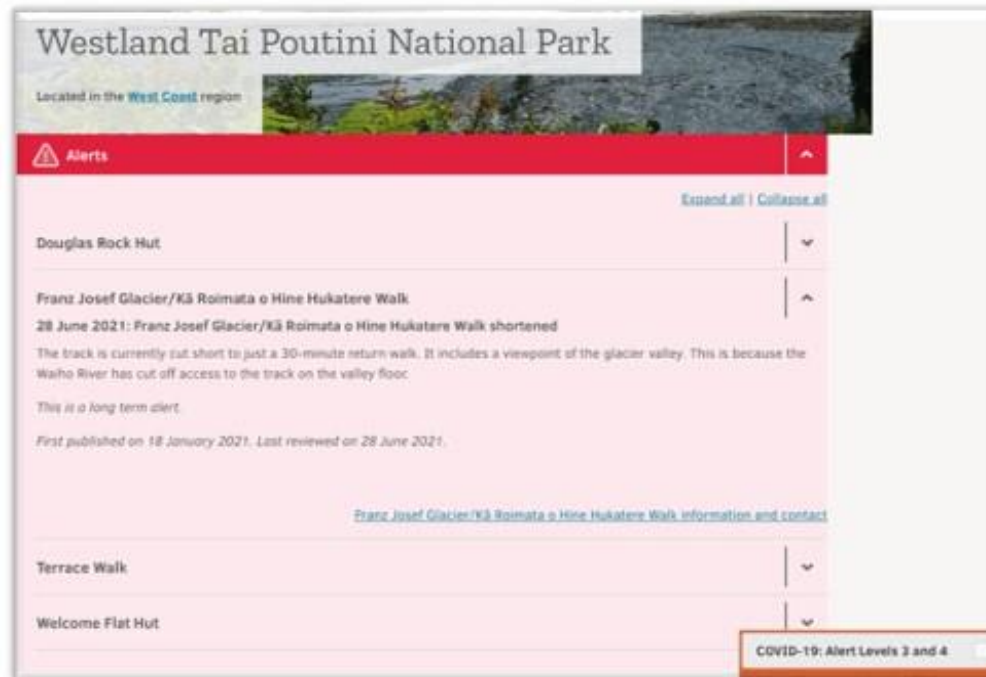
Figure 5-1   A Screenshot of Westland Tai Poutini National Park on DOC's Website

Each national park and associated facilities (such as tracks and huts) have dedicated web pages (see Figure 5.1). Any alerts (if there are any) will show up in the middle of the page in red, for example: if a section of the track is washed out. There is also information related to natural hazards, including expected visit length; current visiting status; natural hazards reminder and preparation tips. External links to national weather forecasts (NIWA n.d.-d) and Search and Rescue (Adventuresmart web site) are also included. DOC also uses social media accounts to communicate risk information before and during a trip. There are nine official accounts, including Facebook, Twitter, Instagram, Conservation blog, YouTube, LinkedIn, Pinterest, Flickr, and Disqus for DOC website comments. However, all of the information is only available in English; there are no language translation tools or material on the official website in any other language, including Chinese. Also, regarding social media, international Chinese travellers use different social media applications and are not able to access the majority of the information on DOC's current social media channels.

Figure 5-2   A Natural Hazards Poster in the Front Door of Franz Josef DOC Visitor Centre; on a Franz Josef Public Toilet (Cui, 2021)

During the trip, DOC's main risk communication tools are visitor centres, leaflets, signage and local interpretation programmes. DOC visitor centres allow tourists to ask questions about visiting national parks and tracks, get updates on track conditions and book retail tours and hut tickets. In addition, in Glacier Country, there are numerous signs and risk preparedness posters around the townships and within the National Park. A small representative selection is presented and includes posters in the front of the DOC visitor centre (Figure 5.2), on the back of the public toilet door (Figure 5.2), and in front of local public services (Figure 5.3.).

Figure 5-3   Different Natural Hazards Posters in Front of Franz Josef Local Public Services (Cui, 2021)

Around glacier trails in the National Parks, more signs are present (Figure 5.4). DOC informants explained that: *"Signs are the last opportunity for tourists to understand natural hazards risk in the immediate area".* Posters are all in the English language. Signs are also in English but also use international warning and hazard images. According to a DOC representative, "Signs were previously translated into a number of different languages, but there was a point that too many languages were being used, so DOC decided to use the international warning and hazard images instead."
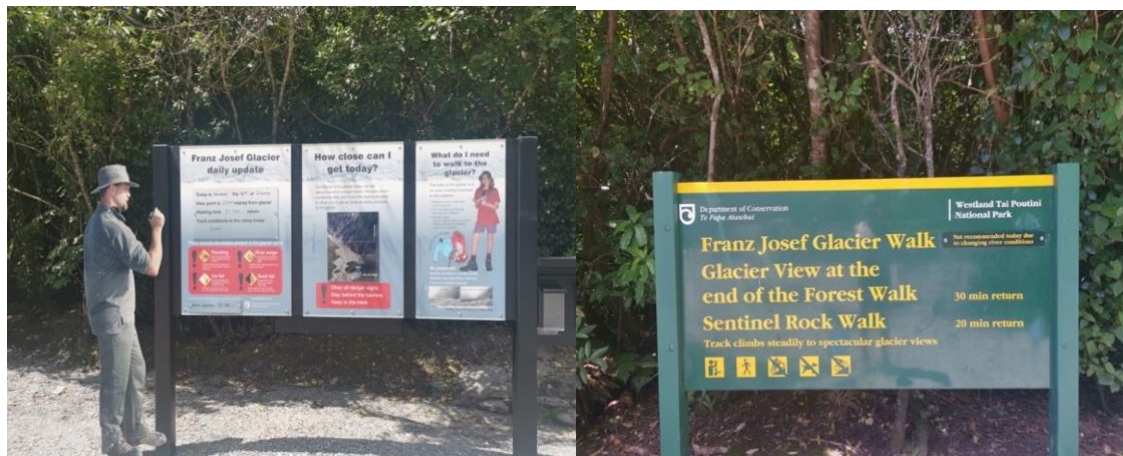
Figure 5-4   Natural Hazards Signage in Front of Franz Josef Glacier Track, with Track Updates from DOC (Cui, 2021)

DOC also runs a local interpretation programme with a ranger to provide on-the-spot local risk communication. The DOC informant stated the interpretation programme is different depending on the region; but all of them aim to educate about risk and also provide conservation knowledge to all visitors (domestic and international).

> In the past two years, we had run an interpretation programme … which allowed us to have a ranger on site … in Franz Josef Glacier Valley, Lake Matheson and Fox Glacier. She would be there to interact with both domestic and international visitors when present and delivered risk information and conservation knowledge.

However, there is no specific interpretation programme focusing on different cultural groups or in different languages.

DOC manages the tourism concession system for businesses operating tourism services on conservation land. Part of the concession process involves ensuring guides and other tourism

operators communicate risks effectively with their clients and have robust safety plans covering natural hazard scenarios (DOC, n.d.-e). To achieve better communication results, DOC maintains regular dialogue with other local-level communicators (such as local tourism operators, local community members and their own park rangers) for monitoring natural hazards and visitor behaviour, particularly in high-risk areas. For example, how fast is a rock fall developing? The DOC informant further explains:

> The stakeholders' insights are very valuable. We are not in the field all the time, so it gives us a better understanding (with what is happening in the conservation areas) throughout the year. Moreover, it is always interesting to hear different standpoints to help us with our health and safety's legal responsibilities. You would not want to risk the reputation for the government, and you also have public perception.

Figure 5-5   Natural Hazards Signage at the End of the Franz Josef Glacier Track (Cui, 2021)

5.6.3 Pre-trip Risk Communication in the Tourism Sector

Informants mentioned the direct pre-trip risk communication to international tourists is mainly from New Zealand national and regional tourism organisations, such as TNZ and DWC. TNZ's tourism marketing website, 100% Pure New Zealand and other social media accounts are the main direct risk communication method to international tourists. The web site includes content about weather conditions, visitor information, things to do, accommodation and transportation categorised by region (see Figure 5.6). Safety information including natural

hazard facts and preparedness tips are not directly accessible from the home page; but can be found by searching using specific terms.
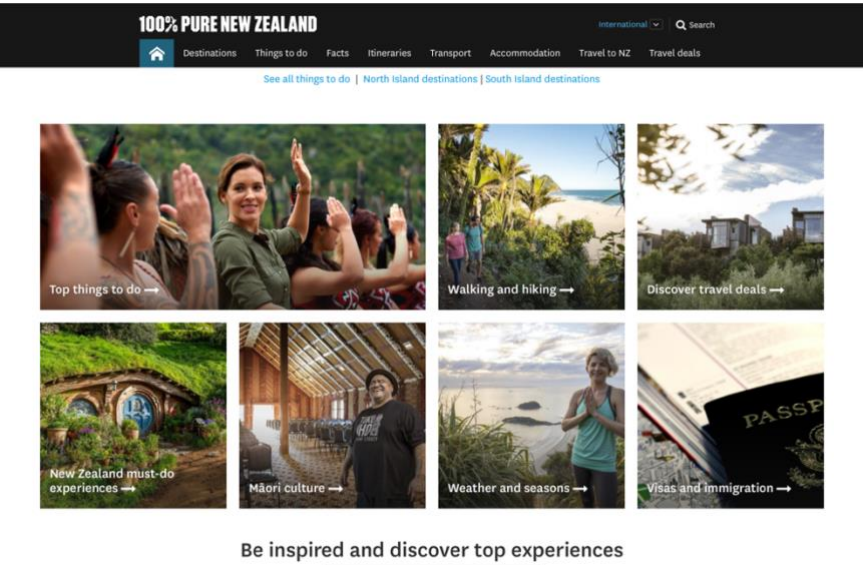
Figure 5-6   TNZ marketing 100% Pure New Zealand Website (TNZ, n.d.-c)

This returns a general health and safety information page, with external links to DOC, Geonet, Water Safety and AdventureSmart (TNZ, n.d.-b). The website has also been translated into Chinese and nine other languages (see Figure 5.7).

Figure 5-7   West Coast Region Website Chinese Language Chosen(TNZ, n.d.-d)

TNZ's 100% Pure New Zealand website also contains a brief visitor introduction for each region. This information is provided by a regional tourism organisation. The website markets the West Coast as a destination of "untamed natural wilderness of rivers, rainforests, glaciers and geological treasures" (see Figure 5.8). Photos on the website show people wearing outdoor clothing, standing, walking, or biking in natural places with sunshine. There is no information about natural hazards, risks or safety on the West Coast page (TNZ, n.d.-e).
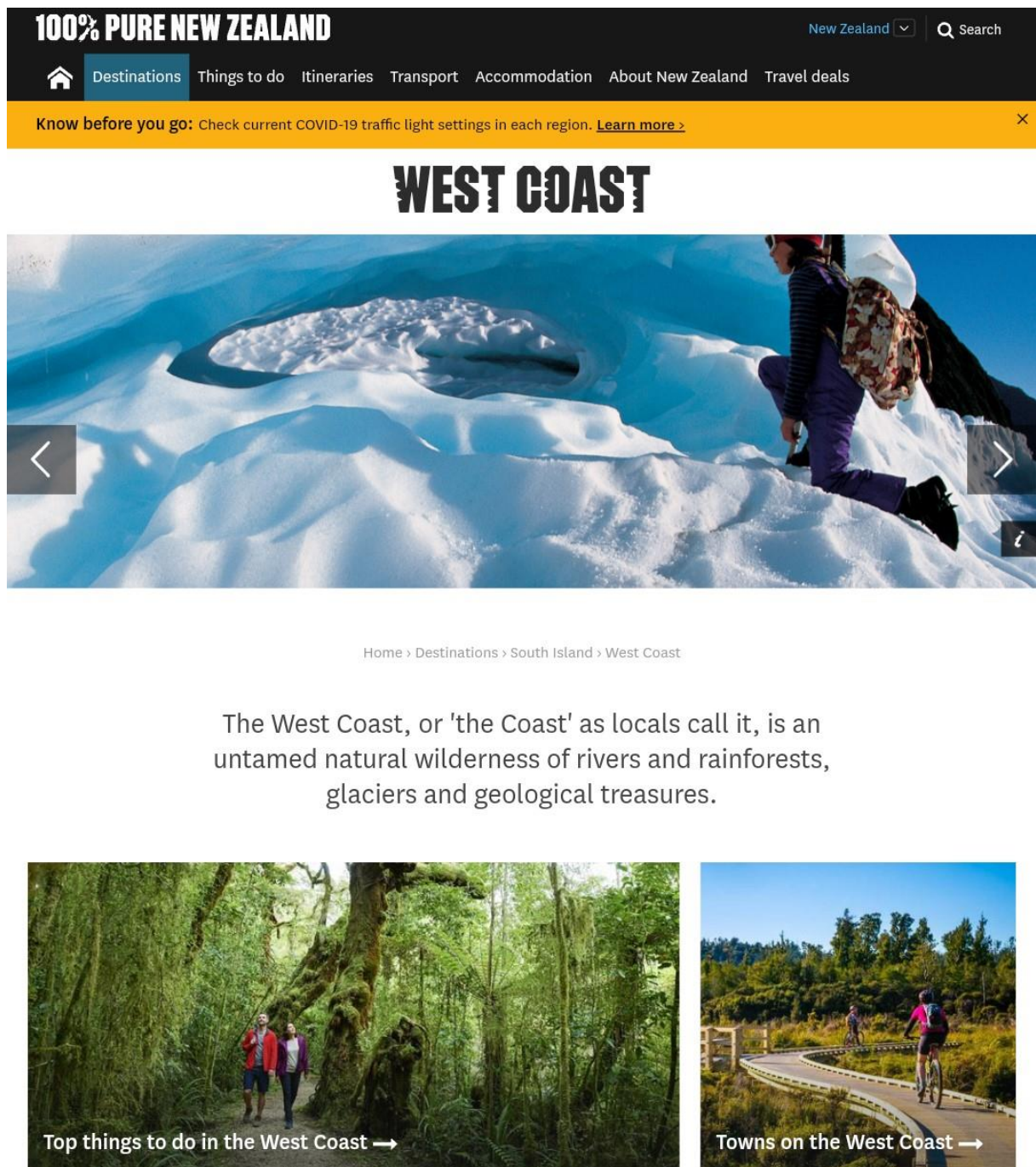
Figure 5-8   TNZ marketing web site 100% Pure New Zealand West Coast (TNZ, n.d.-e)

The official websites of RTOs are also used for direct risk communication. However, in comparison with TNZ's 100% Pure New Zealand fully translated website (in 10 languages), some RTO websites, such as DWC's, have translated only a limited amount of information (major attractions pages) due to a lack of human resources. The DWC website markets the West Coast with the same themes as seen in the TNZ website, with photos of the region's most famous attractions, including Hokitika Gorge, Lake Brunner, Punakaiki (Pancake rocks), Fox and Franz Glaciers, and the Oparara Arches. All these attractions are outdoors but are only shown in bright sunshine, with only some tourists wearing jackets (DWC, n.d.).

The indirect national-level risk communication to Chinese international tourists before their arrival is through RTOs and other local-level tourism suppliers, such as accommodation providers, tourism operators, IBOs and international tourism agencies. Local informants emphasised that they achieved this by attending tourism trade shows (such as TRENZ), which facilitate communication among different sectors of the New Zealand tourism industry and international tourism agencies (TRENZ, n.d.).

The other means is by using TNZ national-level marketing campaigns and visitor information sent to RTOs, which is then delivered to tourism suppliers and trade partners. To assist with developing resources for Chinese travellers, TNZ creates and provides brochures like "Tourism New Zealand Travel Guide" and "i-Site Visitor Information Centres Map" to trade partners (TNZ, n.d.-f). These brochures include some information about natural hazard preparedness, including New Zealand's weather, seasons, and suitable clothing. DOC and TNZ as government organisations work together when the marketing strategy relates to conservation areas, which TNZ then delivers by the above indirect methods(TNZ, n.d.-g). TRENZ in China is an annual (prior to COVID-19 pandemic) roadshow that TNZ organises as their primary offline in-person communication method. Tourism suppliers, government-level marketing agencies, regional-level tourism agencies, inbound operators and Chinese travel buyers all maintain their connections and negotiate business deals through TRENZ (TNZ, n.d.-h). It enables New Zealand tourism suppliers a chance to explain their products and pre-communicate any preparations requirements for using their products. International tourism buyers also have an opportunity to explain the needs of Chinese tourists to local tourism suppliers.

Informants identified that private tourism businesses also perform an important role in pre-trip risk communication, with IBOs and Chinese tourism agencies being particularly influential.

Informants explained that Chinese tourists preferred to book through the digital travel platforms of IBOs and tourism agencies selling New Zealand travel products, regardless of whether they were package tourists or independent tourists. These informants said that independent tourists, who booked their own accommodation and tour products, are informed about natural hazard risk during the consultations and purchasing process, as an Asian Marketer in a glacier-guiding company explained:

> Our products are on different platforms with specific preparation information including what tourists need to prepare, and what gear the company provides. Tourists should know all of the information if they read it thoroughly.

A benefit of these digital travel platforms is that they allow tourists who have already done an activity or booked accommodation to give reviews and leave comments on their experiences. This means tourists looking to book these products can also obtain some risk information by reading these comments:

> Most of the Chinese tourists who came to do this tour had read the comments from social media like from QIER, Mafengwo, C-trip etc. [Chinese tourism platform]. So, they got a brief understanding about what this trip is about; and they know there are risks in visiting the glaciers. (An Asian Marketer, glacier guiding company)

For coach tourists, informants stated that IBOs perform a critical communication role between the destination, tourism operators and Chinese tourists as they communicate directly with the Chinese tourists beforehand, after their arrival, and during their trip. IBOs help Chinese tourists plan their trips, book tourism products, accommodation and coordinate with local tour guides during a tourist's trip. This was all confirmed by IBO informants, who reported that they usually deliver risk communication to Chinese tourists twice before the trip starts, and firstly during their initial consultation with tourists. For example, IBO would inform tourists that the glacier-guiding product allows tourists to see and walk on the beautiful ice caves, but the product is highly weather dependent. The second risk communication messaging is delivered immediately before departure to New Zealand, as one IBO informant explained:

> Before the tour starts, I would give the weather forecast, inform my clients about trip preparation, for example, they needed to prepare suitable shoes for walking in the mud and wet condition, a rainproof jacket, sunglasses, a hat and sunscreen etc.

Analysis of the risk communication context has shown that the pre-trip risk communications to Chinese international tourists were by national-level marketing campaigns, tourism official websites, and IBOs or tourism agencies who sell trips or activities with Chinese translated information to Chinese tourists. After Chinese tourists arrive in New Zealand, local tourism businesses, local tourism operators, and local guides have a more prominent communication role. The majority of the hazard information was translated into Chinese, and many tourism businesses had employed Chinese staff. DOC visitor centres, interpretation programmes, and signage are seen as the last opportunity to communicate risk to tourists. The relationships and the extensive hazard natural risk information flow between all parties and Chinese international tourists is shown in Figure 5.9.
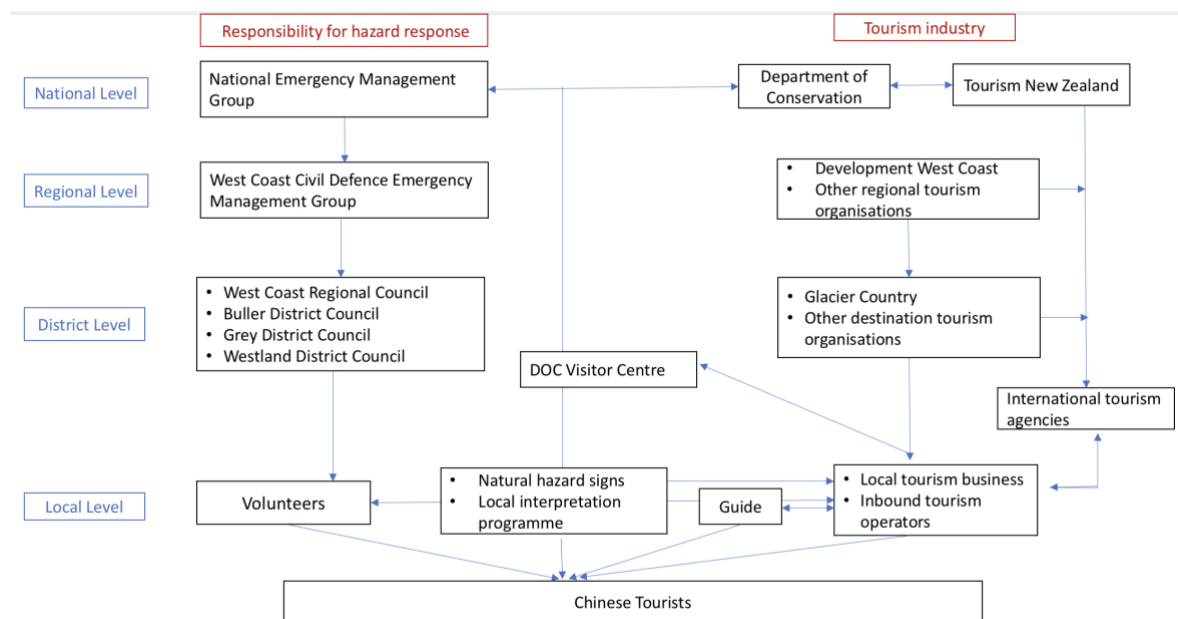
Figure 5.9   Flow of Natural Hazards Risk Communication and Responses

5.7 Conclusion

Due to past natural hazard events, New Zealand has developed a sophisticated and integrated emergency management and response system for any natural hazard. This system uses central, regional and local government, and volunteers, and on the West Coast the local tourism businesses support both local residents and tourists. Both secondary and primary sources have shown that there are multi-integrated systems and plans for communicating natural hazard risk to international tourists. This involves both central government agencies like DOC, Civil Defence, and Tourism New Zealand together with both regional and local tourism organisations, operators and businesses. They work together with the Chinese

tourism sector to provide natural hazard information to Chinese international tourists before they arrive in New Zealand and during their trip. The risk communication is developed, controlled, and disseminated predominantly in a top-down approach but with feedback opportunities encouraged and used at all levels. All of the interviewees agreed that using the Chinese language helps deliver hazard information for better communication and understanding. In the next chapter, local informants' perceptions and observations of Chinese tourists' risk awareness, perception and preparedness for natural hazards will be presented.

Chapter 6
Local Informants' Perceptions and Observations of Chinese Tourists' Risk Awareness, Risk Perception and Preparedness for Natural Hazards

6.1 Introduction

This chapter presents the results obtained from interviews with 13 key informants conducted during January and February 2021. All of the informants had experience working in the tourism industry ranging from five to 20 years (see Section 4.4). In addition, they had extensive experience working with Chinese tourists. Many of the tourism businesses in the case study area have a long history of providing these activities to visitors and over ten years' experience providing services to Chinese tourists (see Section 4.4).

The New Zealand destination and tourism supply side has delivered pre-trip risk communication to international tourists as detailed in the last chapter. This chapter provides the perspective of local informants on Chinese tourists' natural hazards awareness, risk perception and preparedness for natural hazards. This chapter is presented in three sections. Section 6.2 discuss the local informants' opinions about the levels of Chinese tourists' hazard awareness, risk perception and hazard preparedness on their trips to the West Coast. Section 6.3 details the key informants' perspectives on the importance of cultural background. Section 6.4 investigates how tourism businesses delivered risk communications, and the communication challenges (that the informants are aware of) between the national and regional level tourism destination organisations and local tourism providers and Chinese international tourists.

6.2 Chinese Tourists' Hazard Awareness, Perception and Preparedness

While all informants were knowledgeable and experienced at assessing tourists' level of hazard awareness, perception and preparedness, their judgements are largely informed by what they see or hear during Chinese tourists' visits to the West Coast. Key informants' perspectives might not be the same as knowing how aware or prepared the tourists might be, especially their skills and knowledge levels. Local informants' impressions of the visitor hazard awareness and risk perception are formed at least partly by the types of questions asked (or

not asked) by Chinese tourists. For example, nearly all local tourism operators and accommodation providers mentioned that Chinese tourists never asked questions about natural hazards, only questions about the Wi-Fi and if their tours were to proceed or not (but without seemingly realising that natural hazards or weather influences the latter). One key informant from DOC mentioned being asked weather-related questions from FIT tourists. These types of questions gave the impression to local informants that natural hazard risks were not on the minds of Chinese tourists. They did not think their lack of questions was because they fully understood the situation; therefore, their risk perception to natural hazards was interpreted by key informants as low. Inbound tour guide informants also stated that Chinese tourists were not aware or had not thought about natural hazards and never commented or asked any questions about them during their trip. One DOC visitor centre informant said he had experienced Chinese tourists asking questions about track status and weather before visiting public conservation areas. However, based on the number of questions that the visitor centre had received from Chinese tourists, he still reported a similar perception that Chinese tourists generally lacked awareness of natural hazards and perceived natural hazard risk differently. He noticed in particular that Chinese tourists had little awareness of the changeable nature of New Zealand's weather and the effect this has on hiking tracks:

> Chinese tourists do not understand that weather is very changeable, which can also be a common trait with other overseas visitors. They think if it is blue sky in the morning and it will still be blue sky in the afternoon.

He further explained that he often had to suggest to Chinese tourists that a certain track would not be suitable or a safe experience for them because of the afternoon weather forecast. However, Chinese tourists did not seem to understand this; they appeared to have a different perception about the potentially serious consequences of bad weather conditions.

Tourism operator informants also recounted their experiences of Chinese tourists on outdoor activity tours and explained their perception of Chinese tourists' low hazard awareness. All mentioned that Chinese tourists could not imagine or envision that their outdoor activities (such as glacier guiding) could be cancelled due to adverse weather. Informants from adventure activity companies all stated that the possibility of delayed or cancelled tours did not seem to register in Chinese tourists' minds; this observation applies to both tour groups

and independent tourists. Even though most of the independent Chinese tourists said they had read the product guide – and coach tourists had been informed by the tourism agency/guide – which stated that their outdoor activity had a high chance of cancellation, they failed to understand or believe it could affect their own trips. An informant from glacier guiding observed that few Chinese tourists believed it when they were informed that their activity had to be cancelled. She told a poignant story to illustrate this:

> One Chinese lady came to New Zealand for only three days just to visit the glaciers. When we told her the trip got cancelled due to weather conditions, she was so shocked; she sat in the café for half a day and couldn't believe it … She just didn't believe that a cancellation could happen on her trip.

By observing Chinese tourist conversations and facial expressions, informants suggested Chinese tourists had a very limited understanding of how dangerous the situation could be if the tour continued rather than being cancelled, and always pushed for it to proceed. An informant from a glacier guiding company further explained:

> Because seeing the glacier is [for these Chinese tourists] the highlight of their West Coast trip. If the tour got cancelled, they were very disappointed and felt it was a waste of time [to travel to the West Coast].

In other words, they either could not perceive how dangerous it would be to continue or else they evaluated the risk differently.

Furthermore, informants from tourism operators mentioned that Chinese tourists always need extra attention and guidance, as they tend to stop and take photos and completely ignore hazards. An informant from a helicopter company mentioned a similar situation with Chinese tourists: "Chinese tourists tend to be extremely excitable. They like to wave and take photos under the helicopter rotor, and we have to always tell them this was dangerous". One experienced glacier guiding company provides all of the necessary professional gear to tourists to visit the top of the glaciers, as it is not common for visitors to have them. This requires them to develop processes to help tourists with "gearing up"; an experienced guide observed nearly all of the Chinese tourists have no experience wearing outdoor gear, including tying up boot laces correctly:

> Before the COVID-19 pandemic, each year we, had around 20,000 Chinese tourists on our helicopter tours … I or the other guide needed

to help them a lot; we even had to teach them how to correctly tie up
their boot laces during the glacier tour.

These long-term observations gave him the perception that Chinese tourists had only limited knowledge and experience about the natural environment and associated risks, because the requirement for tight shoelaces to help minimise walking injury, therefore helping to minimise some natural hazard risks, might be considered quite basic knowledge.

Besides the observations of Chinese tourists who had participated in their outdoor activity tours, informants also provided their observations of other Chinese tourists who visited conservation areas. As Sections 5.6.2 mentioned, DOC is reliant on tourism operators reporting hazards or potential hazards to them. An experienced glacier guide shared his observation in guiding tours in conservation areas: "I often see the public, particularly Chinese tourists, ignoring rock fall signs and even sitting on top of rocks that had just fallen, they took photos or had a picnic there".

Regarding the hazard preparedness level of Chinese tourists, informants observed that most Chinese tourists wore casual clothes and sneakers. This clothing is not appropriate for long hiking/walking trails, particularly under unpredictable and changing weather conditions. A DOC visitor centre representative explained his experience:

> They generally are unprepared for the walking tracks. However, it also depends on the tracks. If it is just the Pancake Rocks walk across the road, which is only 20 minutes, there is very little risk … But, if you are talking about a winter walk up the Hooker Valley track from Mount Cook village, walking in jeans and a light rain jacket with a cotton t-shirt will potentially lead to some serious consequences. In addition, it happens very often.

He further explained the lack of preparedness for walking or hiking was the main reason for previous tourist evacuations.

> I would not say this has happened to a large number of Chinese [but] when it happens; it would normally be that somebody is cold and tired … They have tried to walk some long tracks, without the right clothing, and it started to rain resulting in them getting hypothermia.

The interview participants also emphasised that the travel patterns of Chinese tourists resulted in different preparation levels, but they were not sure about their hazard awareness and risk perception levels. From their observations, independent tourists seemed to be more prepared. A tourism operator informant suggested that independent tourists always need to

carry everything with them, therefore look more prepared. Group tourists could leave their belongings on the coach bus or at the hotel; they also had the tour guide to remind them. Therefore, they appeared to be less prepared than the independent Chinese tourists. Another factor in the difference with clothing choices and preparedness could be because coach tourists and independent tourists are often targeted by different travel operators and routes. According to the interviewees, coach tourists have a more relaxed and luxurious trip, compared to independent tourists who prefer to have more adventurous activities.

Local informants perceive that international Chinese tourists overall have little awareness and preparedness, and a low-risk perception of natural hazards. They also had the impression that different types of tourists had different preparedness levels.

6.3 Key Informants' Perspectives on the Importance of Cultural Background

Four informants who were originally from China or had a broad knowledge of Chinese culture suggested several social and cultural differences that could explain why Chinese tourists had lower awareness and knowledge of natural hazards. Informants shared their own feeling of living in New Zealand and observations about Chinese tourists and mentioned that the majority of Chinese tourists who visited New Zealand were from urban areas. The urban living environment did not provide many opportunities for them to stay outside or do outdoor activities.

> Most Chinese tourists had not been brought up in an outdoor recreational environment and spent little time outside. And many of them have never worn outdoor gear before. (Chinese marketer, glacier guiding company)

Informants further mentioned that most Chinese tourists visited New Zealand for the natural scenery, but their urban living environment did not require them to think about or consider the effects of natural hazards. For example, changeable weather would not be significant if you spend most of your time indoors. Therefore, informants suggested that the urban living environment might be one of the main reasons that Chinese tourists lacked outdoor recreation preparations. As a DOC informant explained:

> You would not tend to see somebody from the middle of the Chinese countryside travelling. It was somebody from Shanghai, Beijing, Kunming or Chengdu ... They drove expensive vehicles but showed up in front of walking trails without proper [outdoor] gear ... And they would start to walk, even though this afternoon it will be pouring,

because they've never had to worry about anything as they've grown up in big cities, and someone always arranges things for them. (A DOC informant)

Informants suggested that the different social and cultural system that Chinese tourists came from might be another reason that they sometimes acted "dangerously" or ignored the signs. They reported that when visiting New Zealand, Chinese tourists sometimes felt they had not been given clear and direct instructions about natural hazards. As this communication and management appear very variable in places, it was easy for them to just ignore the rules or signs. They explained from a Chinese cultural perspective why some Chinese international tourists felt that this communication and management would appear to be variable in places, so it became easier for them just ignore the rules and signs

Informants noticed that Chinese tourists tended to follow only the direct obligatory rules given to them. Chinese tourists perceive that those risks are already well managed before they visit an area, so they personally do not need to worry about them. If walking a track was risky, it would already be closed and have a high fence around it. However, if the track looks open and only has warning signs on the side, they may think it can be traversed safely.

One of the DOC informants found the current risk communication strategy and methods in the public conservation areas did not fully align with Chinese cultural background.

> In China, if there was a fence around something, people tended to follow and respect it. But if there was no fence, everybody would wander around. Whereas, in the public conservation spaces [New Zealand], there are no fences (generally) and there is no owner. In many situations, you don't need to ask permission to do things. So, you can kind of do whatever you want. That's the reason that Chinese tourists often choose to neglect these signs.

Another DOC visitor centre representative agreed with this perspective; he found Chinese tourists often come into the visitor centre and asked if the track was open. From the Chinese tourists' perspective if it was open, there was no risk in them walking the track.

> New Zealand's tracks in the conservation estate are rarely closed … As soon as they [Chinese tourists] heard "yes, it is opened", they [Chinese tourists] think it must be safe for them to walk it. Then we had to try and convince them not to do this track, based on their clothes or asking them several preparation questions.

An experienced China market informer also agreed, by comparing different perspectives between New Zealand and China:

New Zealanders are very low key, very informal …We [New Zealanders] assume that if we let tourists know the information, then we assume that they know it—however, Chinese tourists like the information in a more direct upfront way …The current way we deal with the China market is, we would rather just give them all the information. So, we have told them everything and given them the choice to decide (what to do). But really, it should be the other way around, that they must obey once they choose to come here. If they do not, then we know how to deal with them and educate them when a problem occurs.

Inbound tour guide informants suggested also that their Chinese tourist clients rely on them for everything including risk preparation and risk avoidance. None of their clients knew anything about natural hazards or the management system in conservation areas, particularly on the West Coast, for example, which track were in good condition to walk and so on. He needs to take the responsibility to interpret New Zealand's natural hazards management system for his clients (Chinese tourists):"My job responsibility is to keep my clients safe and have no fear of travelling around New Zealand".

Overall, informants who understood Chinese culture believed that societal and cultural differences between New Zealand and China played a significant role in Chinese international tourists' observed level of risk perception and, more importantly, natural hazard risk preparedness.

6.4   On-Trip Risk Communication to Chinese Tourists

All the informants who worked for tourism attractions and accommodation showed a high awareness of the need for risk communication to tourists and had a well-planned evacuation and communication strategy. To achieve the best results from risk communication to tourists, tourism businesses in the case study areas documented any natural hazard related incidences for future risk communication. An informant from a glacier guiding company explained:

If we had any issues or events that happened to our customers during the trip, for example, if any client tripped over on a glacier and got injured, we needed to recall the details about the event time, the problem etc.

As all informants had several years of experience working in the tourism industry, they were aware that all tourists generally lack a comprehensive understanding of outdoor adventure activities and the risks involved, but this was particularly the case with Chinese tourists. Informants mentioned that they were aware that Chinese tourists had some barriers in

understanding the risk communication in the public areas of the West Coast. Therefore, some experienced tourism operators had formed their own risk communication strategy and methods for all tourists, and some were specifically focused on Chinese tourists. Other smaller tourism operators have been partially helped under the China Market Readiness programme (see Section 5.5). Having tourism material including natural hazard information translated into Chinese was one of the main ways to communicate risk to Chinese tourists. A guide who has over 20 years' experience with a glacier guiding company explained that the company created its own PowerPoint to comprehensively inform tourists about natural hazard risks. They are constantly modifying and updating it with new photos and videos.

> Twenty years ago, we used completely different materials and methods. Originally, we used to just give a verbal briefing by pointing to one photo of the glacier and talking about the risks. However, most tourists could not understand it fully, so we updated the material through the years.

The PowerPoint has been updated to have Chinese subtitles in recent years. One of the PowerPoint segments now specifically focuses on the issue of tying up boot laces (see Figure 6.1) which Chinese tourists were not familiar with, as mentioned previously.
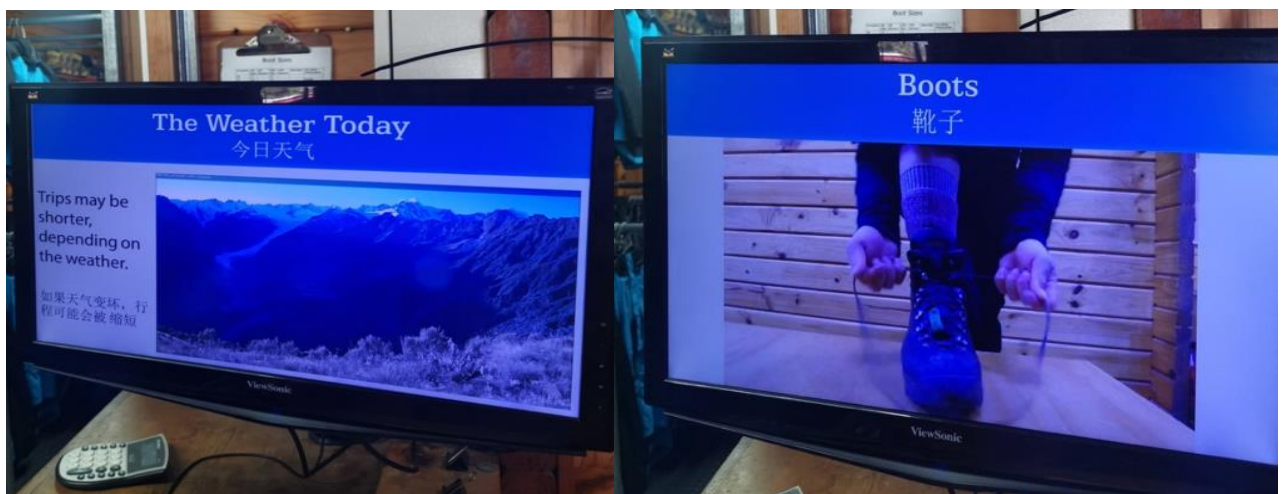
Figure 6-1   PowerPoint Slides of Natural Hazard Communication

Having Chinese staff or guides were another major way to communicate with Chinese tourists about natural hazard risks. The experienced guide further mentioned that Chinese tourists sometimes had misunderstandings or could not understand what the English-speaking staff or guides were explaining about natural hazards. He noticed a significant improvement after the company employed Chinese staff in recent years:

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> In recent years, we have always tried to hire Chinese staff for better communication with our Chinese tourists. So, we have a Chinese marketer that goes overseas for trade shows to better explain our products and potential hazards. Therefore, the international tourism buyers will deliver the message to international Chinese tourists for preparation before coming here [the glacier guiding company]. We also had a Chinese guide before COVID. If tourists mentioned something that should not happen during the tour, our guide could say, "hang on a minute that is not right." … [having Chinese staff] is very helpful.

Those informants who used specific means of risk communication to Chinese tourists reported that Chinese tourists now reacted differently to potential natural hazards, compared with when there was no specific risk communication to Chinese tourists. Tourism operators have also learnt to provide risk communication more than once since they have found tourists tended to forget about the risk situation once they started the tour due to their overall low risk perception to natural hazards. Another representative from a glacier guiding company explained:

> When tourists get on the glacier, the guide gives them another safety briefing before tourists start wearing the crampons. Also, icefalls are one of the main issues that we always need to remind clients about. It is serious.

Informants from tourism operators all agreed that Chinese tourists needed to be constantly reminded and always required extra attention, as they tended to stop and take photos and completely ignore the hazards, as Section 6.2 mentioned.

In addition, inbound tourism operators and inbound tour guides who understand both New Zealand and Chinese culture stated that both culture and language play an important role in risk communication between the tourism destination and Chinese tourists. "Tour guides were all from New Zealand but spoke Chinese, who were more familiar with the local culture, language and geological hazards and characteristics. They [group tourists] need the guide a lot". A DOC visitor centre representative observed that Chinese tourists, particularly group tourists, normally would not come into the Visitor Centre asking questions. It often was just the guide who came in and asked questions about the track condition and the weather forecast. Judging by this, a DOC informant assumed that coach tourists had less natural hazard awareness or less knowledge than independent tourists, as coach tourists only needed to follow their inbound tour guide. Moreover, the inbound tour guide plays an important

bridging role when Chinese tourists are on tour, and acts as a long-term ambassador of New Zealand culture and knowledge. A China market expert said:

> When you have a local guide who becomes knowledgeable about New Zealand, they inform tourists on arrival and during the second day, third day etc. Therefore, they became an educator on tour.

Although public conservation areas don't officially provide specific risk communications to Chinese tourists, an informant from a DOC centre mentioned that they formed their own ad hoc method to evaluate the level of Chinese tourists' natural hazard risk awareness and perception and tried to explain the risks based on their conversations.

> It is quite a delicate process to understand … Usually, Chinese tourists [generally independent tourists] came in asking for the weather forecast, and we said it would be raining and the conditions are not good for walking, but they answered, "we should be ok". These kinds of questions and responses usually give us an idea if this tourist is aware or not aware of natural hazards. As soon as we get a piece of information like this, we know this tourist doesn't understand natural hazards, then we explain more information to them. (A representative, DOC visitor centre)

A DOC informant suggested it was another challenge to understand the natural hazard preparedness level, therefore harder for them to provide further help for them: "you can't unpack somebody's bag to check they've got enough water, they've got enough food, or they've got the right rain jacket". Just as in assessing hazard awareness and risk perception levels, DOC staff have also developed their own checklist to assess a tourist's natural hazard preparedness level. For example, in the DOC visitor centre, the staff ask:

> Do you have a good rain jacket? Have you experienced walking and hiking like this before? And they (tourists) might say no. And then we told them: "if you're walking in this kind of weather, you need a good base layer to keep you warm, a rain jacket to keep the water out, and a hat. You need those kinds of things." In general, if we have to give this level of information, we will point them to a safer track or [tell them] not to do that track they wanted to do. Because then if they asked what they need, they should not be going anyway. But it is a tricky one.

6.5   Risk Communication Challenges with Chinese Tourists

The interviewees were all in agreement about Chinese international tourists' low natural hazard risk awareness and preparedness. Also, all agreed that natural hazard risk communication could and should be improved and would potentially result in an increased

level of natural hazard preparedness for this group. However, they disagreed as to who was responsible for it or the most appropriate ways to deliver it; this increased risk communication, this "responsibility conflict" results in a communication gap. No interviewee was individually willing to provide any extra communications about natural hazard risks to tourists. The reason given was interviewees were worried that increased risk communication might influence their company/destination's safe image. Which in turn could result in reduced tourist numbers; as an inbound tour guide mentioned, "Providing natural hazards information conflicts with my interests. If I make the guests worry too much, they may not want to come."

The communication gap caused by a "responsibility conflict" was further highlighted when local informants were asked to provide suggestions for improving the risk communication plan. Each tourism sector suggested that another sector should play a greater role in risk communication. For example, an inbound tour guide recommended accommodation providers could help by providing better communication to Chinese tourists:

> I think accommodation can provide effective communication because every tourist needs accommodation. Information like the weather forecast and wind direction at reception will be beneficial for tourists and myself [guide] … I understand this information is usually available online, but if it was at reception, it would be great.

However, some accommodation provider informants suggested exactly the opposite; one accommodation representative thought the inbound tour guides should take more responsibilities for risk communication, as the tour guides have more opportunities given to them; they are with a tourist group for a week or two:

> If tourists are about to come to the West Coast tomorrow, the tour guide might need to tell them the basic knowledge of the West Coast. For example, the rain, the preparation, and so on; also inform them (tourists) that (rain) has built this unique landscape … To be a guide or leader, they must look after the group like their family, especially because of the language barrier. (Operation Manager, Franz Josef hotel)

Responsibility differences were also identified between local operators and regional/national marketing organisations. Some tourism operator informants suggested local providers do not have enough influence, and by the time the Chinese visitors have arrived, it will be too late to provide effective risk communication. They therefore suggested that the destination or the national-level tourism organisations need to take more responsibility for risk communication.

According to these informants, the risk communication should be done before the tourists arrive and be delivered by top-level tourism organisations or government agencies, such as Tourism New Zealand and Development West Coast. An Asian marketer from a glacier guiding company explained her ideas:

> Each social media account of a tourism destination needs to create more posts about risk communication for international Chinese tourists, especially young Chinese tourists. They all search for information on social media. When they are preparing for their trip, this is the time to tell them ... When they [tourists] are already in New Zealand, it is probably too late. Even if they know there are some natural hazards, they will not buy a good jacket or other gear only for this trip.

However, the DWC representative mentioned that they had done all the China market readiness requirements, and their official website and other official social media clearly market the West Coast as being a rainforest: "so, we [the West Coast region] portray ourselves as a rainforest, and we have many photos representing the rainforest in our marketing materials. If Chinese tourists read our website, they should know all about it". But one informant from a tourism operator questioned this approach: "to only tell them that the West Coast is a rainforest, but your photos are all full of sunshine; what do these messages mean? It doesn't provide enough information for adequate preparation."

The different opinions from business-level informants and regional-level informants highlight more communication and responsibility gaps and conflicts. An Asian tourism expert indicated that, compared with local tourism businesses who interact with Chinese tourists every day, regional- or national-level tourism agencies do not have this level of interaction so cannot assess the natural hazards situation and the behaviours of Chinese tourists in the case study area. Therefore, there are some potential communication gaps between the national and regional destinations, local tourism businesses and international Chinese tourists. She suggested that the supply side (tourism businesses, inbound tourism operators, tour guides) need to be more proactive in providing their "bottom level" insights of tourists' behaviour to regional- and national-level tourism organisations:

> All tourism sectors need to play their part and take some responsibility to minimise the natural hazard risks for Chinese tourists; tourism providers cannot only rely on government level agencies [to deliver natural hazard risk communication] without them telling them about the region's day-to-day situation. (Asian tourism expert).

6.6 Chapter Conclusion

This chapter details local informants' perspectives on Chinese tourists' awareness of and preparedness for natural hazards. Key informants reported that Chinese tourists were prepared for general travel in New Zealand when judged by their casual clothing but were also unprepared for outdoor adventure activities on the West Coast. Key informants therefore assessed Chinese visitors as having a low level of awareness and preparedness for the natural hazards found on the West Coast. Around six years ago, the tourism supply side had a risk readiness programme for the China market, as the introduction mentioned. Still the current results show that more could and needs to be done to improve Chinese tourists' hazard awareness, risk perception and preparedness levels.

While the top-down approach from the national level to the local level is very efficient at providing tourist information and "selling New Zealand" to international tourists, it is potentially less effective at delivering hazard and risk information. All interviewees agreed that visitors, particularly Chinese international tourists, need to have more knowledge and a better understanding of the natural hazards on the West Coast. This would ensure that when a natural hazard event occurs, tourists will be more likely to know what to do, potentially saving their lives. However, all local informants emphasised their tourism businesses' unwillingness to take the responsibility to perform any extra risk communication since this might conflict with their own interests by potentially decreasing their visitor numbers. These responsibility conflicts reported by local informants have produced several gaps in natural hazard risk communication.

To further understand these communication gaps and conflicts and deliver effective risk communication, it is also vital to understand visitors' views and experiences for areas where there are natural hazards. The next chapter will present the quantitative results of tourists' surveys where they evaluate their own hazard awareness, risk perception and hazard preparedness.

Chapter 7
Chinese tourists' hazard awareness, risk perception and hazard preparedness: self-evaluation

7.1 Introduction

This chapter presents the quantitative data drawn from the survey responses of 60 Chinese visitors who travelled to New Zealand between 1 January 2019 to 31 March 2020. A total of 60 responses were analysed for the respondents' profiles and influencing factors for risk awareness and perception. Among them, 41 participants had visited the West Coast. Starting from the sections of hazard awareness, risk perception and preparedness, the results mainly focus on the respondents who had travelled to the West Coast (n = 41).

The quantitative results are presented in four sections. The first of these describes the participants' profile characteristics including gender, age, education level, group size and composition. The second section emphasises visitation characteristics, which includes places that tourists visited on the West Coast, nights stayed, types of accommodation and mode of transportation. The third section describes the information sources that Chinese tourists used before their trip and while in New Zealand for information on both general tourism and natural hazard risk, and their past experience of natural hazard events. The last section then analyses their hazard awareness, risk perception, and preparedness for future natural hazard events.

7.2 Profile of Respondents

The majority (66.7%) of Chinese tourists who responded to the survey were aged between 26 and 41 years, with 13.3% between ages 18 and 25, 11.7% older than 41 years (the oldest respondent was 54 years old), and 8.3% of unknown age (see Table 7.1). The majority were female (60%), with just over one-third male (36.7%) and 3.3% not reporting their gender. This age distribution pattern was different from the overall Chinese international visitor's characteristics as reported by TNZ (TNZ, 2020a). For example, this sample was much younger than the average profile of Chinese visitors. While tourists aged between 26 and 41 years accounted for 34% of all Chinese visitors to New Zealand, the proportion in the current sample was double this (66.7%). Chinese international tourists aged over 55 years make up a third of all visitors in this market (33%) but were entirely absent from the current sample. The gender

profile was also slightly different from the normal Chinese tourists' pattern of 52% female and 48% males (TNZ, 2018b).

Consistent with TNZ's (2020) recent Chinese tourist statistics, all but one of the respondents were traveling with at least one travel partner (96.7%), with the largest proportion (41.7%) travelling with a group of family and friends, or with just friends (21.7%) or family (18.3%). A relatively small proportion (11.7%) were traveling with a partner only. In addition, 18.3% were accompanied by a child or children under 12 years old during their last New Zealand trip.

Table 7.1　　Demographic Profile of Total Respondents (n = 60)

		n	%
Gender	Male	22	36.7
	Female	36	60.0
	Not willing to tell	1	1.7
Age	18–25	8	13.3
	26–33	24	40.0
	34–41	16	26.7
	41 or above	7	11.7
	Unknown	5	8.3
Travel partners	Partner	7	11.7
	Family	11	18.3
	Family and friends	25	41.7
	Friends	13	21.7
	Travel alone	2	3.3
	Unknown	2	3.3
Highest qualification	High school	1	1.7
	Trade certificate	6	10.0
	University undergraduate	31	51.7
	University postgraduate	17	28.3
	University doctoral	4	6.7
	Unknown	1	1.7
Travel pattern	Free independent travel	57	95.0
	Tailor-made tour	3	5.0

The survey respondents are a highly educated group with most having a university degree (88.3%), 51.7% had a bachelor's degree, 28.3% completed a postgraduate degree and 6.7% had a doctoral degree. This is a similar proportion to that found in national visitor statistics, which show that 95% of Chinese tourists visiting New Zealand have a university degree (TNZ, 2020a). Perhaps the most significant difference between the current sample and national statistics is that nearly all (95%) of the respondents are classified as free independent tourists (FIT), with the remainder (5%) being on tailor-made trips. This distribution is different from the general Chinese tourist travel pattern where only half are FIT and the remainder are coach tourists (TNZ, 2020a). The reason for this difference could in part be due to the survey delivery method, which may account for some of the other demographic differences in this sample, including the lack of respondents over 55 years.

7.3 Visitation Characteristics

To determine the places respondents had visited during their most recent West Coast trip, the survey provided respondents with a map showing prominent West Coast destinations for them to select (see Figure 7.1). Fox Glacier (63%), Greymouth (59%), and Franz Josef (48%) were the most frequently visited tourist destinations, and Westport (5%), near the top of the West Coast region, was the least visited place on the map presented. This is consistent with the observations expressed by the key informants, common FIT and package tourist itineraries and visitor numbers.
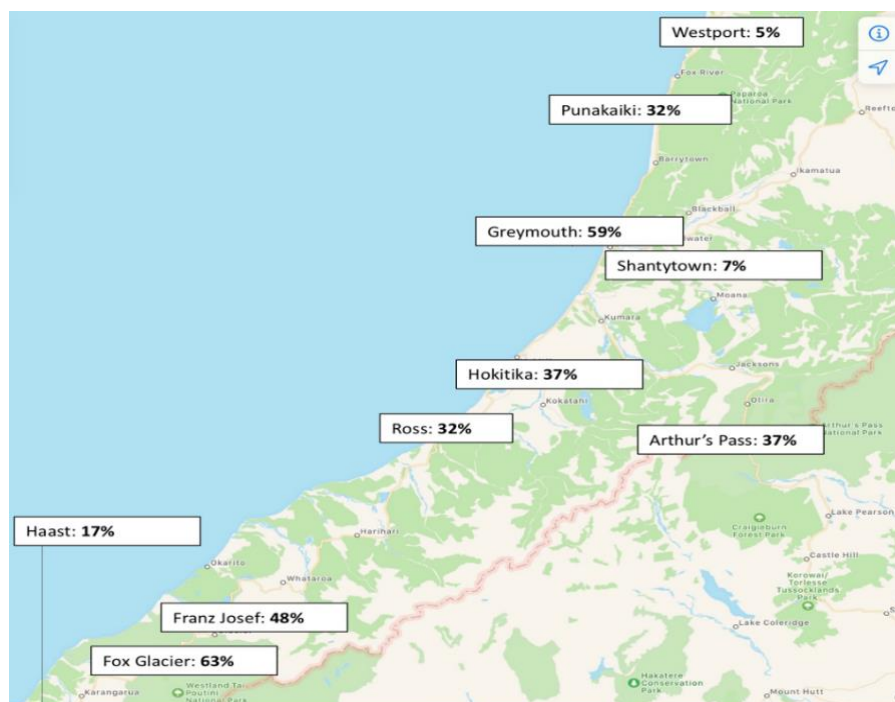
Figure 7-1   Locations Visited by Respondents Who had Been to the West Coast (n = 41)

The survey results showed that most respondents (90%) stayed overnight on the West Coast, with the majority (74%) staying one to three nights in a variety of accommodation types (Table 7.2). This is consistent with the observations of informants:

> They generally stay two to three days in the West Coast … If they stayed last night in the glaciers, they would be going back to Christchurch tonight. If they stayed last night in Christchurch, tonight they would be in the glaciers." (General Manager, West Coast tourism operator)

Farm-stay or Bed and Breakfast was the most frequently used accommodation type (27%) and hostel backpackers (15%), hotel (10%), hostel (15%) and motels (10%) were also popular, with free camping sites the least used (2%).

Table 7.2   Visitation Characteristics of Respondents Who Had Been to the West Coast (n = 41)

		Frequency	Percentage
Length of stay	0 night	4	10
	1 night	9	22
	2 nights	13	32
	3 nights	8	20
	Over 4 nights (include 4)	7	16
Accommodation	Farm stay / Bed & breakfast/Airbnb	11	27
	Hostel/Backpackers	6	15
	Hotel	4	10
	Motor camp/Campground	4	10
	Motel	4	10
	Rented holiday house	3	7
	Private home/Staying with friends	3	7
	Freedom camping site/tent	1	2
	Others	1	2
	N/A	4	10
Transportation	Rental car	26	63
	Private car	11	27
	Camper van	2	5
	Schedule bus	2	5

Note: the numbers do not add to 60 because this table of visitation characteristics includes only the West Coast group (n = 41), and people can have used multi options.

This result is different from TNZ's (2020) sources as Chinese tourists mainly stayed in hotels (69%), motels or apartment (35%) and bed and breakfast (24%) during their stay in New Zealand (TNZ, 2020a). These differences might be due again to the method and sample size limitations. The survey participants might not represent the "standard or traditional" Chinese tourists' characteristics due to the delivery tool used, social media and online chatting apps, so only attracting Chinese tourists who browsed these online applications.

Most of the surveyed Chinese tourists travelled the West Coast using a rental car (63%) or private car (27%), whereas camper vans (5%) and scheduled buses (5%) were the least used modes of transport (see Table 7.2). Tourism New Zealand has found that rental cars were the third most common choice and camper vans one of the least used transport methods among the Chinese tourists (TNZ, 2018b). In the TNZ survey, the most common methods were plane and tour bus, as most of the survey participants are independent travellers, and therefore tour buses were not selected; likewise, air travel was not an appropriate option for traveling around the West Coast.

It is notable that private car was the second highest transportation method reported (27%) but was a much lower (9%) transportation method among Chinese tourists who visited New Zealand in 2017 (TNZ, 2018b). This difference is likely to be due to several factors including that the survey participants were free independent tourists (FIT) so more likely to be travelling by car.

7.4 Information Sources and Past Experience of Natural Hazards

Survey respondents were asked about the information sources they used for the trip experience before arriving in New Zealand, after arriving in New Zealand, and during their visit to the West Coast. All the surveyed respondents reported seeking information about their New Zealand trip before visiting, showing that Chinese tourists are strong information collectors, with the vast majority (93%) using more than one source for information (see Figure 7.2).
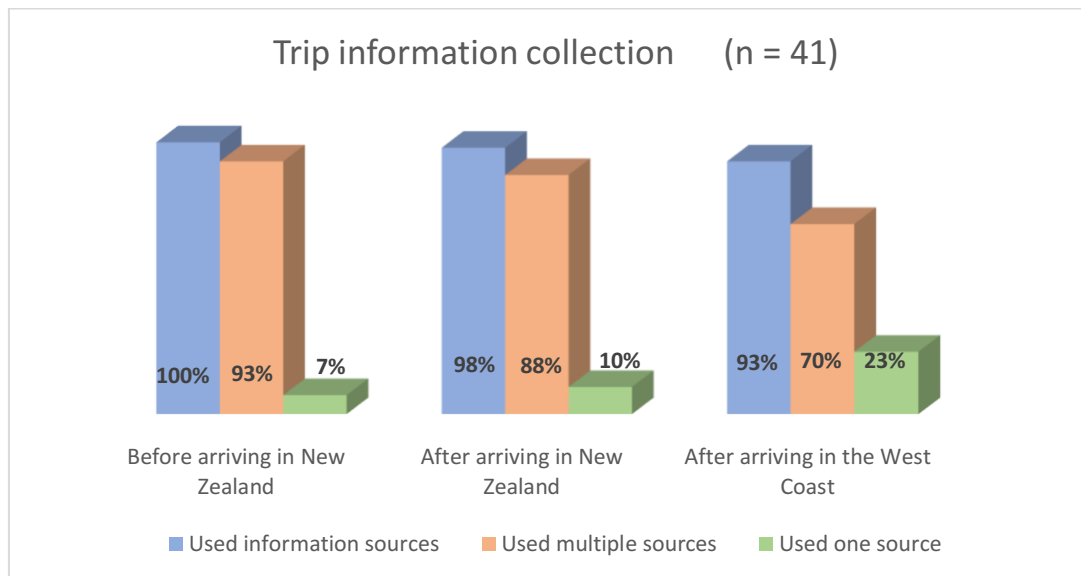
Figure 7-2   Travel information Collection "Before the Trip" and "During the Trip" (n = 41)

Those participants who only used one information source, were tailor-made group tourists, which shows that they tended to rely on their travel agencies/inbound tourism operators more than independent tourists did and who needed to search for all the information themselves. The information searching and gathering continued after the respondents arrived in New Zealand, but more respondents started to only use one information source (7% to 12%). By the time they arrived on the West Coast, the vast majority of the respondents (93%) continued to seek trip information, but again more respondents relied on only a single information source (30%). The single information sources used were local information sources rather than Chinese social media; this emphasises the importance of local risk communicators. Overall, the results show Chinese tourists were information seekers.

The results revealed that online information sources were the main travel information sources used by respondents, which supports previous studies (Lau et al. 2021). The current sampling method might also influence the choices of information source, since the survey was delivered

online. As expected, the three most common types of online information sources used were: Chinese social media (such as WeChat and Weibo); Chinese tourism booking platforms (e.g., QYER, C-trip) and New Zealand tourism official websites (e.g., Tourism New Zealand official website), and online booking platforms.
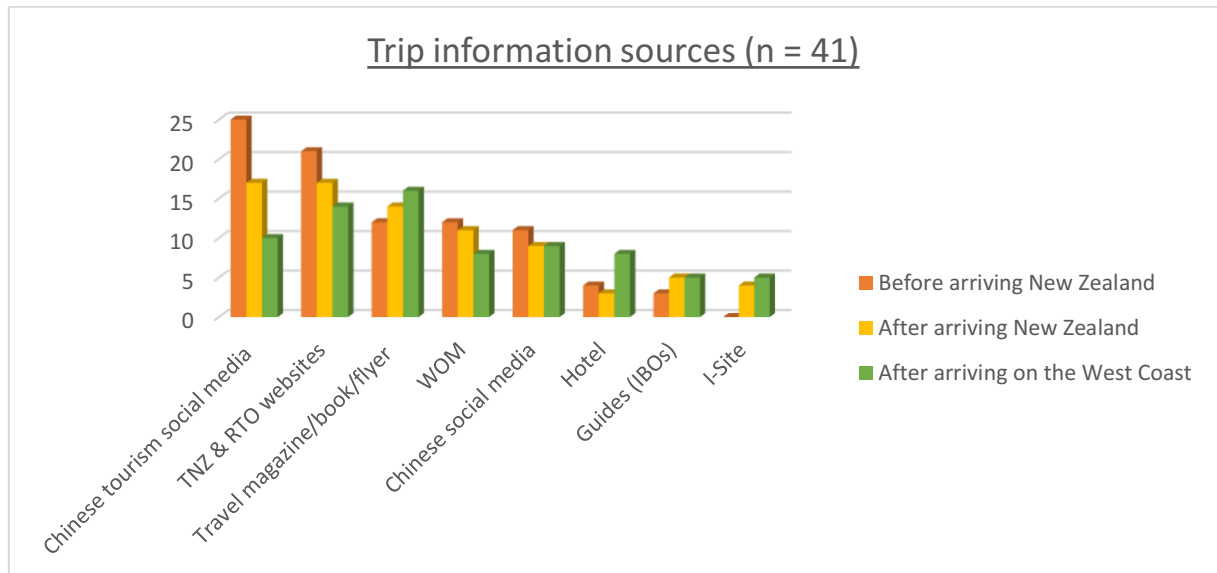
Figure 7-3   Information Sources of Respondents who had been to the West Coast (n = 41)

Tourism New Zealand's website was ranked as the second most used information source among the respondents. Additionally, traditional tourism materials such as travel brochures, travel magazines and travel books were still an important information source, ranking as the third largest source (see Figure 7.3).

The survey questions also asked if Chinese tourists searched for natural hazard risk information before or during their trip (see Tables 7.3 and 7.4). Overall, around one third of the respondents searched for natural hazards information about New Zealand and the West Coast region before their trip. Participants mainly searched for natural hazard information probably because it was before the trip. During their trip, more respondents searched for natural hazard information, with almost half of all respondents having searched for natural hazards information while travelling in New Zealand, and around 40% of them searched for natural hazards information while travelling on the West Coast region. The main information source was still an online method, no matter whether tourists were on the West Coast region or in other parts of New Zealand. The local information sources, local people and guide started to appear, but only 5% in total in each location.

Table 7.3   Natural Hazards Information Collection Before the Trip and During the trip (n=41)

Information source	New Zealand (n)	New Zealand (%)	West Coast (n)	West Coast (%)
Internet	6	15	3	7
News	5	12	5	12
Digital travel platforms	2	5		
Official website	1	2.5		
WOM	1	2.5	1	2.5
Guide			1	2.5
Natural hazard related website			1	2.5
No response	28	63	30	73

Note: These are multiple choices questions therefore the total percentage can be over 100%

Table 7.4   Natural Hazards Information Collection During the Trip in New Zealand or On the West Coast (n = 41)

Information source	New Zealand (n)	New Zealand (%)	West Coast (n)	West Coast (%)
Internet	5	12	5	12
News	5	12		
Digital travel platforms	3	7	3	7
Weather forecast	3	7	3	7
WOM	1	2.5	2	5
Guide	1	2.5	1	2.5
i-Site	1	2.5	1	2.5
Local people	1	2.5	1	2.5
No response	21	51	25	61

Note: These are multiple choices questions therefore the total percentage can be over 100%

7.5 Past Experience of Natural Hazards

Respondents were asked whether they had experienced any natural hazards before, either in their place of residence or on a previous international or domestic trip. Previous studies have shown that past experience was an important factor to shape natural hazards risk awareness (Douglas, 1992; Kasperson & Dow, 1993) and perception (Sönmez & Graefe, 1998b; Schroeder et al., 2013).

Survey respondents were presented with a list of eight different types of natural hazard events (such as earthquake, tsunami, flooding etc.) and asked if they had previously experienced these events. For those events they had experienced, they then had to indicate what the effect of these events had on their trip or in their hometown using a 5-point Likert-scale (1 = *insignificant effect*, 5 = *catastrophic effect*). Half of the respondents had experienced natural hazard events in either their home city (51.7%) or on a previous trip (51.7%). All of the types of natural hazard events had been experienced by some respondents. However, due to the small sample size, it is hard to conclude a pattern. The analysed past experience data will

be reported later as one of the factors influencing risk awareness, perception and preparedness.

7.6 Chinese Tourists' Risk Awareness, Perception and Preparedness for Natural Hazards

An important aim of this study is to understand Chinese tourists' risk awareness, perception and preparedness for natural hazards. To help address this aim, a series of questions were designed for Chinese tourists to evaluate their own levels of hazard awareness, risk perception and preparedness using a 7-point Likert-scale questions (1 = *strongly disagree*, 7 = *strongly agree*). Most of the 7-point Likert-scale questions were analysed by a collapsed scale (see Section 4.5) that emphasising respondents' agreements, disagreements or neutrality to each question. The results were also analysed using socio-demographic factors to see if they correlated with their hazard awareness and risk perception.

7.6.1 Chinese Tourists' Natural Hazard Awareness

Respondents' natural hazard awareness was determined by a series of questions about their awareness of any natural hazards in New Zealand and the West Coast region before their trip; and if they saw any natural hazard warning signs during their trip. Most of the 7-point Likert-scale questions were analysed by grouping similar values into a collapsed scale (see Section 4.5) emphasising respondents' agreement (5–7), disagreement (1–3) or neutrality (4) to a series of statements. The means reported were calculated using the non-collapsed scale; the larger the mean value is, the higher the hazard awareness that the respondents have, with a score of 4 indicating a neutral response.

Table 7.5   Hazard Awareness for the Respondents Who Had Been to the West Coast

Statement	Disagree (%)	Neutral (%)	Agree (%)	Mean
Before my visit to New Zealand, I was aware of the natural hazards in the country. (1)	32	24	44	3.85
Before my visit to the West Coast, I was aware of the natural hazards in this region. (2)	49	20	31	3.51
During my visit to New Zealand, I saw many natural hazard warning signs. (3)	17	19	64	4.75
During my visit to the West Coast, I saw many natural hazard warning signs. (4)	19	15	66	4.82

Overall, less than half of respondents (44%) reported being aware of natural hazards before visiting New Zealand and fewer than one third (31%) said they were aware of natural hazards

before visiting to the West Coast. By looking at the agreement percentage, the respondents were less aware of natural hazards on the West Coast specifically compared with the rest of New Zealand, but looking at the disagreement percentage, nearly half of respondents (49%) were not aware of the natural hazard risk in the West Coast region and one-third (32%) of them were not aware of natural hazards in the country. This result indicates that Chinese tourists might lack an understanding of the West Coast region given the large proportion of respondents did not think about natural hazards in the region.

More respondents noticed natural hazards signs during their trip to New Zealand or the West Coast region, with the majority of Chinese tourists being aware of the natural hazard warning signs during their visit, and around two-thirds of respondents reporting seeing natural hazard warning signs in New Zealand (64%) and the West Coast (66%). As shown in Section 5.6.2, hazard-warning signage is one of DOC's primary communication methods. These hazard warning signs are numerous and widespread, so it would be expected that the percentage reporting seeing them should be higher for these signs to be judged as an effective communication method. Respondents reported that their natural hazard risk awareness increased during their visit compared with when still in China before their trip. Their awareness increased by half as much again (44% to 64%) during their visits to New Zealand and more than doubled (31% to 66%) during their visits to the West Coast.

The survey results suggest that respondents have low to moderate levels of awareness of natural hazard risks on the West Coast and in New Zealand as a whole. These survey results also align with the local informants' observations that Chinese tourists were not aware of natural hazards until they arrived at the case study area (Glacier Country), or until they commenced participation in an outdoor activity.

7.6.2 Chinese Tourists' Risk Perception

Another objective of this study was to determine the extent to which respondents felt safe before and during the trip to New Zealand and the West Coast. Visitors' natural hazard risk perception was determined by asking them a series of questions about their perception of safety before their trip, and during their trip (see Table 7.6), with the same 7-point Likert scale, and collapsing of the scale applied for analysis.

Table 7.6   Risk Perception for Respondents Who Had Been to the West Coast (n = 41)

Statement	Disagree (%)	Neutral (%)	Agree (%)	Mean
Before my visit to New Zealand, I thought I would be safe from any natural hazards. (5)	12	22	66	5.17
Before my visit to the West Coast, I thought I would be safe from any natural hazards. (6)	15	29	56	4.90
Natural hazard risk was not something I was concerned about when I planned my West Coast trip. (7)	20	12	68	5.12
*During my visit to New Zealand, I sometimes felt unsafe from natural hazards. (8)	54	17	29	4.73
*During my visit to the West Coast, I sometimes felt unsafe from natural hazards. (9)	49	17	34	4.59
Any natural hazards on the West Coast appeared to be well controlled by management. (10)	7	49	44	4.76

Notes *Questions' mean scores were coded as the reverse scores

Overall, the respondents appeared to have a moderate to low level of risk perception to natural hazards, the range of means was between 4.73 and 5.17 (two questions had reversed scores). The social cognitive model (Paton, 2003) suggested that the level of an individual's awareness and perception often align with each other. Therefore, based on the low risk awareness scores for New Zealand (44%) and the West Coast (31%) before their trip (see Section 7.4.1) it was expected that the respondents would perceive New Zealand and the West Coast as a safe destination. In fact, only two-thirds of respondents perceived New Zealand as a safe destination from natural hazards (66%), and only 56% of the respondents perceived the West Coast region was safe from any natural hazards when they were planning their New Zealand and the West Coast trip. Although many of the respondents did not perceive New Zealand and the West Coast region as being safe from natural hazards, it did not seem to concern them; 68% of respondents thought natural hazard risk was not something they were concerned about when planning their trip.

Respondents' perception of natural hazards risks more than doubled during their trips to both New Zealand (perceived as unsafe rose from 12% to 29%) and the West Coast (15% to 34%). A similar pattern was found for the risk awareness scale: respondents were more aware of natural hazards during the trip, meaning natural hazards were both noticeable to the respondents and the on-trip risk education/communications was effective in increasing awareness. This resulted in half of all respondents reporting they did not feel safe from natural hazards during the trip in both New Zealand (54%) and the West Coast region (49%).

While it is true that to keep tourist safe in a hazardous environment, they need to have a high perception of risk, the relatively low level of agreement (44%) to the question "Any natural hazards on the West Coast appeared to be well controlled by management" may concern

some tourism managers and operators. This result could mean that they believed the risks cannot be managed or mitigated or it might also mean they were unsure of (or did not notice) the natural hazard management procedures, since half of all respondents gave it a neutral score (49%). The high percentage of neutral scores might also indicate that respondents had little knowledge of the region, consistent with the results of hazard awareness. Local informants also agreed that Chinese tourists seemed to have a good overall knowledge of the country but lacked details about the West Coast region and tended to apply the perception of the country's image to the region.

7.6.3 Chinese Tourists' Hazard Preparations

The last objective – to understand Chinese tourists' natural hazards risk perception – is through the level of risk preparedness. A 7-point Likert-scale was used to determine Chinese tourists' preparation levels, with a high score reflecting that the respondents believed they were well prepared for natural hazards. Questions covered clothing preparation, insurance purchasing, first aid preparation and stocking up, personal communication device, and understanding where to go and what to do in a natural disaster (see Table 7.7).

Table 7.7   Risk Preparedness for the Respondents Who Had Been to the West Coast

Statement	Disagree (%)	Neutral (%)	Agree (%)	Mean
I purchased travel insurance covering natural hazard events for my New Zealand trip. (11)	22	20	59	4.80
The clothing I had on the West Coast was appropriate for the conditions I faced. (12)	27	5	68	4.93
The shoes I had on the West Coast were appropriate for the conditions I faced. (13)	17	7	76	5.15
Our travel party had a First Aid kit on the West Coast trip. (14)	54	12	34	3.71
During the West Coast trip, I made sure my First Aid kit was always fully stocked. (15)	49	17	32	3.62
During the West Coast trip, I was willing to follow health & safety tips from local staff/guides. (16)		15	85	6.02
During the West Coast trip, I always had a personal communication device with me (e.g., mobile phone). (17)		5	95	6.39
*During the West Coast trip, I made no preparation for natural hazards. (18)	20	22	58	3.02
If a natural disaster occurred in the West Coast while I was visiting, I would know what do to. (19)	34	22	44	4.02

*Question's Mean score was coded as the reverse code

The respondents self-evaluated preparedness scores were different for each question, with a wide range of answers (from 95% to 32% agreement). By looking at the clothing, shoes and insurance preparedness scores, most of the Chinese tourists thought they had made good

preparations, with 59% agreeing "I purchased travel insurance covering natural hazard events for my New Zealand trip.", 68% agreed that "the clothing I had on the West Coast was appropriate for the conditions I faced", and 76% agreed that "the shoes I had on the West Coast were appropriate for the conditions I faced". However, when the respondents were asked about first aid kit preparation, the scores were much lower. Only 34% of respondents or their travel party had a first aid kit on the West Coast trip, and 32% of respondents' first aid kits were fully stocked during the West Coast trip. In contrast an indication of a high level of preparedness is shown by 85% of Chinese tourists who were willing to follow health and safety tips from local staff or guides, which is highly consistent with local informants' impressions from previous natural hazard events. In addition, 95% of Chinese tourists carried a communication device all the time, reflecting the importance of mobile phones (or other devices) among Chinese tourists. Local informants also noticed that Chinese tourists had high requirements to Wi-Fi linking with their mobile phones.

When asked if they had made any preparation for natural hazards during their West Coast trip, more than half of the respondents (58%) said they had not made any preparations, only one fifth (20%) had made some preparations, and the rest were uncertain if they had made any preparations. As a high level of awareness is required to have an appropriate preparation level, the varied preparedness scores reflect their relatively low awareness to natural hazards, which is consistent with both the awareness results (see Section 7.6.1) and the interview results (see Section 6.2).

To further explore the level of Chinese tourists' preparedness for natural hazards, the respondents were asked, "If a natural disaster occurred on the West Coast while I was visiting, I would know what to do". Less than half (44%) of the respondents agreed that they knew what to do. Also, respondents were asked two open-ended questions relating to an emergency scenario. In particular, they were asked, "If a natural disaster occurred while you were in New Zealand, what would you do?" and "If a natural disaster occurred while you were in New Zealand, who would you seek out for help and advice?". While there was no specific type of natural disaster mentioned in those two questions, it is acknowledged that the lack of specificity may have affected some people's responses, but only a limited number of participants answered: "depending on the disaster", and most of the responses were vague.

Table 7.8　"If a natural disaster occurred while you were in New Zealand, what would you do?"

	Raw (%)	Gave an answered (%)
Contact Embassy	5	13.5
Call police or other public services	10	27
Follow professionals' guidance	20	54
Depending on disaster/ Drop and cover	10	27
Don't know/no idea/blank	63	N/A

Note As these are open-ended questions, participants could provide more than one answer; therefore, the total response percentage is more than 100%.

Table 7.8 summarises the answers to the open-ended questions categorised into five groups regarding "What would you do if a natural disaster occurred?" where two-thirds (63%) of respondents stated they had no idea of what to do or left the answer blank. Among the limited answers given for "what would you do" questions, higher authorities were important to Chinese tourists, including police and other public services (27%), and the Chinese Embassy (13.5%). Previous studies emphasised the importance of tourism personnel (i-Site, hotel, tour guide; Cahyanto & Pennington-Gray, 2015; Fountain & Cradock-Henry, 2020, Jeuring & Becken, 2013). This was only partially identified in the current results under the category "following professional guidance" (54%); together with the Likert-scale question 16, "were willing to follow health & safety tips from local staff or guide" (85%). However, local guidance or professional guidance is a vague term that could mean either high authority or tourism personnel. Therefore, the current results do not fully provide evidence of the importance of tourism personnel.

Table 7.9 summarises the responses to the question: "Who would you seek out for help and advice?" Once again, two thirds (60%) of respondents did not answer this question. Among the limited answers, higher authorities have also been mentioned the most, including local public service or police (37.5%) and Chinese Embassy (25%). The tourism personnel appeared as the information source when asking for help and included information centres (12.5%) but did not seem important in the current result.

Table 7.9　"If a Natural Disaster Occurred While You Were in New Zealand, Who Would You Seek Out for Help and Advice?"

Answer/response	Raw (%)	Gave an answered (%)
Embassy	10	25
Police/Fire station/Local public service	15	37.5
Internet/radio	5	12.5
i-Site/ tourist information centre	5	12.5
Local residents /local guides	10	25
Don't know/no idea/blank	60	N/A

Note As these are open-ended questions, participants could provide more than one answer; therefore, the total response percentage is more than 100%.

The many unanswered or "do not know" responses to the open-ended questions of "what to do" or "who will you ask for help" if a natural disaster happens, and the varied preparedness scores imply that Chinese tourists might not fully understand what natural hazards preparations are required. Tourism informants had mentioned that Chinese tourists were well prepared with casual clothes but did not have the appropriate clothing or gear for outdoor recreation (see Section 6.2). These answers indicated that respondents may not have an adequate perception about clothing preparation, since the local informants mentioned that the majority of Chinese tourists' clothing were casual clothes that allowed them to do easy outdoor activities (such as short easy walks). Although the clothing and shoe preparation scores were relatively high, they might think casual clothes and sneakers were good enough preparation for natural hazards. However, their lack of high-quality outdoor gear would be inappropriate for longer tracks or facing changeable weather conditions. Therefore, Chinese tourists might consider and rank their clothing preparation scores higher by assuming their casual clothing was enough for a vacation in New Zealand or the West Coast region. Only if the conditions caught them out would they realise that their assumption about the appropriateness of their clothes was incorrect. Over one quarter (27%) discovered or realised that their clothing choices were not appropriate during their trip.

7.6.4 Factors Affecting Hazard Awareness, Risk Perception

Previous studies have found that tourists' natural hazards awareness and risk perception were influenced by different factors including demographic factors and past experience of natural hazard events. To test for factors influencing tourists' natural hazards awareness, the entire sample (n = 60) was analysed to investigate relationships between tourists' natural hazards awareness and risk perception to New Zealand and demographic factors (gender, age, education level and children in a group, travel pattern) and past experience scores. These results showed that there was no statistically significant relationship between the demographic factors and either hazard awareness or risk perception that previous studies had found (Zhang, Xu & Li, 2013). This could be due to the limitations of the small sample size, and possible reasons and limitations will be further discussed in detail in Chapter 8. In addition, as the majority of survey participants were independent travellers, the survey results could not address any relationship between the factors of travel pattern with hazard awareness and risk perception.

Previous studies have found a relationship between both hazard awareness and risk perception and past experience of natural hazards (e.g., Sönmez & Graefe, 1998b; Schroeder et al., 2013). In this study the relationship between hazard awareness and previous natural hazard experience in either one's home city (t = .53, df = 56, two-tailed $p < .05$) or on a previous trip (t = 1.37, df = 56, two-tailed $p < .05$), was found to be statistically significant which is consistent with studies that show previous natural hazard experiences influenced current hazard awareness (Douglas, 1992; Kasperson & Dow, 1993). Regarding risk perception, the results showed a significant relationship between risk perception and past-experiences in the previous trip (t = 1.12, df = 57, two-tailed $p < .05$), but not with past experiences in one's hometown.

7.7 Conclusion

The quantitative results evaluated the visiting characteristics of Chinese tourists to the West Coast, their information sources and more importantly their levels of hazard awareness, risk perception, and hazard preparedness. The survey results suggest that respondents have low to moderate level of awareness and risk perception but rated themselves higher in hazard preparedness for natural hazard risks on the West Coast and in New Zealand as a whole. While the respondents thought their preparedness levels were adequate and gave themselves high scores for clothing, but other preparedness questions scored lower such as first aid kits and natural hazard insurance cover. From the open-ended questions about "what to do" and "where to go" in a natural disaster, only one-third of Chinese tourists knew what to do. These results indicate that Chinese tourists in reality had limited knowledge about natural hazards and natural hazard preparedness.

Many of the respondents perceived a level of natural hazard risk in New Zealand and on the West Coast before their trip, but it did not deter the respondents from choosing the West Coast as a destination. While their level of natural hazard risk awareness and risk perception increased significantly during their trip, particularly while on the West Coast, there was little increase in natural hazard preparedness. Regarding influential factors, the tourists' natural hazard awareness, perception and preparedness were found not to be influenced statistically significantly by the demographic factors but only by their past natural hazard experiences. In the next chapter, all of the results from both the qualitative interviews and quantitative survey

will be analysed and discussed within the broader literature on hazard awareness, risk perception, preparedness and risk communication.

Chapter 8
Concluding Discussion

8.1 Introduction

The intention of this research was to explore the levels of Chinese tourists' risk perception, awareness and preparedness before and during their trip to the West Coast, New Zealand. This chapter starts by examining the key research findings and comparing these findings with the published literature. As some research findings have practical value, sections on risk communication gaps with the future risk communication recommendations are also given. Also, the limitations of this research are discussed and finally, suggestions for future research are given.

8.2 Chinese Tourists' Self-Evaluated Levels of Natural Hazard Awareness, Risk Perception and Preparedness

To describe the findings of this research, it is important to revisit the objectives of the research. The first research objective was to "Understand Chinese tourists' awareness of risk perception and preparedness for natural hazards on the West Coast prior to their visit". The quantitative results evaluated Chinese tourists' levels of hazard awareness, risk perception, and hazard preparedness. Most of the survey participants are free independent tourists, with no coach tourists involved. Although the survey sample is small and non-representative of all international Chinese tourists, many useful observations from the results can be obtained.

The theoretical foundation of the current research and the design of survey questions were based on the social cognitive model (SCM) of disaster preparedness(e.g., Paton, 2003; Paton, 2006). Three main stages influence an individual's decisions to make the preparedness action: motivation, intention formation, and preparedness. Among these three main stages, there are a few elements that influence preparedness intentions, then eventually preparedness actions. Hazard awareness and risk perception are the two main elements of the first stage (motivation). Both hazard awareness and risk perception together influence the intention and action of the preparedness. Previous studies have shown that international tourists lacked hazard knowledge and had low awareness of natural hazards in general (Drabek, 1995; Burby and Wagner, 1996; Fountain & Cradock-Henry, 2020; Rossello et al., 2020), which are two key elements in the motivation stage for tourists' preparedness. This is consistent with the current

survey findings, with Chinese tourists rating themselves as having a low to moderate level of awareness and risk perception before their trip.

Previous studies specifically focusing on Chinese tourists have shown that domestic Chinese tourists were concerned about several risks including weather, safety and security (Gao 2009). When travelling overseas, physical safety was one of their concerns but was not specifically regarding natural hazards (Zhang, 2014). Those previous studies only focused on Chinese tourists' general risk perception, and only a limited number of studies asked Chinese tourists about their pre-trip risk perceptions of a destination; therefore, very little data are available to compare with these current findings. One recent survey from Tourism New Zealand (2020) investigated what Active Considerers' concerns were when they thought about a possible New Zealand trip. One-quarter of Chinese Active Considerers wanted to know more information about the safety of various activities; 31–40-year-old Active Considerers emphasised that activity safety was their major concern. While many of the West Coast adventure activities are often affected by natural hazards or adverse weather conditions, the phrase "adventure activities safety" is too broad, and therefore cannot be assumed to be referring only to natural hazard risks but will also include general concerns of safety. Unfortunately, the data from both surveys are not nuanced or detailed enough to answer complex questions about Chinese tourists' perception of natural hazard risk. As the current questions do not dig into the meaning or criteria of natural hazard risk by either the Chinese tourists or Chinese Active Considerers who have brought up the safety concern in TNZ's survey results, it would be useful to understand what natural hazard risks and other specific risks Chinese tourists are concerned about. In any future study, it would be beneficial to also have interviews with Chinese tourists to gain a greater understanding of their own perceptions of natural hazard risk, and how it links to their New Zealand and their West Coast trip.

According to Chinese tourists' self-assessments, their level of hazard awareness and risk perception increased dramatically during the trip. Almost half of them became aware of natural hazards and perceived New Zealand and the West Coast region as unsafe from natural hazards during their trip. This correlates with the natural hazard information-searching questions: Chinese tourists were found to search more for information about natural hazard risk when they were on-trip than beforehand. More than half of them searched for natural hazard information while on the West Coast, and in other parts of New Zealand.

This significant increase in natural hazard risk awareness and perception together with their increased natural hazard information searching during their trip indicates that tourists' perceptions of New Zealand and the West Coast region regarding natural hazard risk changed after they arrived in the country. It is logical to assume their perception of natural hazard risk is more accurate while they are in New Zealand than when they were in China.

The reason for this inaccuracy is likely to be related to problems and gaps in risk communication while the tourists are in China. A possible factor could be how New Zealand tourism markets itself to the world. New Zealand has been very much committed to the theme of "Pure New Zealand" since 1999 (TNZ, 2020b). The marketing photos for New Zealand and the photos on the official website all contains pure landscapes with sunshine and convey a positive holiday impression. Therefore, further studies are required to understand the criteria of natural hazard risk for Chinese tourists.

Although the results show some level of pre-trip and on-trip risk communication about natural hazards in New Zealand and the West Coast, it was not fully reflected in the results of hazard awareness and risk perception before and during the trip. The substantial increase in awareness and perception during the trip might indicate there is a potential pre-trip risk communication gap for international tourists, acknowledging the potential for natural hazards in the country, and their preparedness tips. Section 8.5 will discuss natural hazards risk communication gaps further.

Previous studies have found that the preparedness levels among international tourists were generally low, including for destinations that are prone to natural hazards (Fraser et al., 2013; Kelly & Ronan, 2018; Ronan & Johnston, 2005; Ritchie et al., 2020). The current survey findings showed international Chinese tourists had variable natural hazard preparedness levels. Some of them perceived they had sufficient knowledge of natural hazards and natural hazard preparedness, but in reality they did not. The findings have shown that although the majority of Chinese tourists thought their clothing were appropriate, and they had purchased insurance covering natural hazard events; they still had lower natural hazard preparations levels based on for first aid kits (one third) compared with the level of clothes preparedness (68%)and shoes preparedness (76%). In addition, Chinese tourists' hazard awareness and risk perception increased significantly during their trip, particularly while on the West Coast, but their preparedness did not increase during the trip. The current findings also emphasise

international tourists need to have more natural hazard preparedness knowledge as previous studies recommended (Fraser et al., 2013; Ronan & Johnston, 2005; Ritchie et al., 2020).

A recent study has shown that Chinese tourists evaluated themselves as having a high level of hazard awareness and preparedness for natural hazards, but the open-ended questions showed their limited knowledge of natural hazards and natural hazard preparations (Fountain & Cradock-Henry, 2020). The current study determined similar results with more than half of the Chinese tourists felt they were not confident in "what to do" or "where to go" if a natural hazard event occurred. Most of the answers were either blank or stated they "never thought about it" and showed their reliance on professional guidance and authorities including the Chinese Embassy, which also aligns with other previous research (e.g., Fraser eat al., 2014; Fountain & Cradock-Henry, 2020; Kerman, 2008; Sharpley, 2005).

The survey was developed using the SCM model which postulates a relationship between both hazard awareness and risk perception leading to an increase in natural hazard preparedness. The positive relationships between hazard awareness and risk perception has been found in the current research, which has determined an alignment between tourist's risk perception and hazard awareness levels (Espiner, 2001; Smith & Espiner, 2007). However, due to the small sample size it was not possible to produce statistically significant results to support the SCM's model. Although, the overall findings show that the preparedness level was related to hazard awareness and risk perception. Since the unconfident hazard preparedness answers from the open-ended questions given by the Chinese tourists emphasised that their hazard awareness, risk perception and preparedness were not as high as they perceived. In addition, the results from the statistical analysis of influencing factors have shown that past experiences of natural hazards at hometown and previous trips (e.g., Sönmez & Graefe, 1998b; Schroeder et al. 2013) are an important factor in influencing tourists' awareness and risk perception but did not directly influence preparedness. Although the limited sample size can be a potential constraint, the SCM was primarily developed for local residents so does not consider previous trip experience. The current findings show that the SCM may potentially be used to model tourists' natural hazard preparations

The fourth research objective was to "Investigate differences in Chinese tourists' risk awareness and preparedness on the basis of social-demographic characteristics and travel behaviour (e.g., age, education, prior travel experience, FIT/group travel, travel party)". Basic

demographic and behavioural profiles of Chinese tourists to the West Coast region were obtained for the survey respondents. Since most survey respondents were free independent tourists, the results were different from the latest TNZ's report (2020) on Chinese tourists' characteristics. Statistical analysis showed no correlation with either hazard awareness, risk perception, or risk preparedness for the factors of age, gender or educational background. These results of non-correlation differ from previous studies, which found that the attributes of age (Floyd & Pennington-Gray, 2004; Kozak et al., 2007) and culture (Kim & Pennington-Gray, 2016; Zhu, 2015) showed correlations with risk perception. The limited sample size might also be the reason that no significant correlation was found between the demographic factors and hazard awareness, risk perception and preparedness. The only factor found to be statistically significant for hazard awareness and risk perception is past natural hazard event experience from previous travel, either international or domestic. Local informants observed that younger and free independent tourists have more understanding than older tourists and coach-trip tourists about natural hazards in New Zealand and outdoor activities. However, the informants' observations did not show up in the survey results, but this is again probably due to the small sample size. Once the border re-opens, a similar study could be done again, which also needs to ensure that comparative samples of both FIT and coach tourists are surveyed.

8.3 Local Informants' Perceptions to the Levels of Chinese Tourists' Natural Hazard Awareness, Risk Perception and Preparedness

The third research objective was to "Explore the perspectives of tourism service providers who interact with Chinese tourists in relation to hazard awareness, risk perception, preparedness and behaviour of Chinese visitors to the West Coast". Key informants' interviews helped to gain a deeper, broader and better understanding from the perspectives of participants (Amaratunga et al., 2002). Local informants were in partial agreement with the Chinese tourists' self-evaluated preparedness levels but thought Chinese tourists had even lower awareness and risk perception for natural hazards than they thought. As the findings from informants are based on their observations and opinions of all Chinese tourists, they have dealt with including both the group tourists and free independent tourists. Therefore, it would be expected for there to be some differences when compared with the survey findings.

Informants who worked in hotels, tourism operators, inbound tourism operators and DOC all stated they rarely heard Chinese tourists ask questions related to natural hazards or natural

hazard preparedness. When Chinese tourists did ask questions about natural hazards, they were mostly concerned whether their tours were going to proceed, but did not seem to understand the consequences of proceeding in hazardous conditions. In addition, informants agree that Chinese tourists were well prepared in terms of casual clothing for general tourist activities but not necessarily for activities that involved adverse weather or potential natural hazards. The interview findings support the survey findings that the perceived level of natural hazard risk awareness and preparations of most Chinese tourists was different from their apparent level or the required level of natural hazard preparation. In reality, they had much lower levels and they probably did not have enough knowledge about natural hazards in New Zealand and on the West Coast and how to prepare for them.

To further investigate what Chinese tourists understand as the appropriate preparedness requirements for outdoor adventure activities in natural hazard prone areas, future studies should consider identifying Chinese tourists' natural hazards and preparedness knowledge. For example, what do they perceive is a natural hazard risk and what type of risks are they concerned about? With this new data and the suggested improvements previously mentioned, a new set of questions could be developed for future studies to re-evaluate the level of hazard awareness, risk perception and preparedness.

Lastly, informants mentioned the tourism sector from the West Coast delivered and provided all of the natural hazard risk information when Chinese tourists are about to book their tours. Although the pre-trip risk communication is delivered as stated by the informants, the findings from both interview and survey showed that there were gaps between pre-trip and on-trip hazard awareness and risk perceptions; and more specific preparedness related to natural hazards or outdoor activities need to be communicated with Chinese tourists. These findings imply that the pre-trip risk communication needs to be adjusted or improved for the future. All of these issues will be discussed in the next sections.

8.4   Information-Search Sources Used by Chinese tourists

The second research objective was to "Investigate the extent to which Chinese visitors prepared for and/or learnt about natural hazard risks on their visit to the West Coast, and the sources they used to become informed". The findings from analysing their information-resource searching have shown that Chinese tourists are highly reliant on official resources and higher authorities (such as the local council, policies, the Chinese Embassy), both before

and during their trip. Before their trip, Chinese tourists frequently used tourism digital platforms and government official websites for pre-trip information; their searches show that Chinese tourists are strong social media/digital platform users (Buhalis & Amaranggana, 2015; Miah et al.,2017). Previous research has shown that government information sources from the country being visited are regarded as highly credible sources by international tourists (Cahyanto & Pennington-Gray, 2015). Interview results and secondary document analysis have shown that the current way that New Zealand delivers direct pre-trip risk communication is through official information resources and many of them use digital platforms. This implies that the pre-trip risk communication gap identified from the results of hazard awareness, risk perception and preparedness are due to either the risk communication contents or formats, or specific channel choices used by Chinese tourists.

8.5 Current Natural Hazard Risk Communication

The interview results analysed both the pre-trip and on-trip risk communication methods (direct and indirect) from national-level agencies, regional-level agencies, tourism businesses, inbound operators and inbound operator guides to Chinese international tourists. Direct communication refers to risk information delivered directly to tourists. Indirect communication refers to information created by top-level organisations or agencies and then disseminated to lower levels within the tourism sector before delivering it to tourists. An analysis of the interview results identified that there are currently many natural hazard preparedness plans on the West Coast within the tourism sector; and the emergency sector covers several potential natural hazard events involving tourists. The current findings show that the natural hazard preparedness plans on the West Coast are comprehensive, they include indirect and direct risk communications about systematic natural hazards. In these preparedness plans, tourism marketing delivers natural hazard preparedness information that has been adjusted for non-native English speakers such as Chinese tourists. Orchiston's (2013) business resilience article mentions the Glacier Country Crisis management plan initiated in late 2011. In 2013, the overall businesses preparedness was rated as low (Orchiston, 2013). The current results indicate an improvement in tourism business preparedness. However, it is unknown how many of them were covered by natural hazard insurance and how many of them stored essential food and water, as this was not one of the current study's objectives.

As outlined in Section 5.6, the China Market Readiness programme is a tourism readiness programme deployed six years ago. Its goal is to help deliver an understanding of the cultural and language differences when tourism businesses communicate with Chinese international tourists. Natural hazard information and preparedness is only a small section of the total programme. The top-down method is the primary approach used to deliver the indirect risk communication and marketing content. It focuses on the supply side, including translation of natural hazard risk and preparedness information, encouraging the employment of Chinese staff and having translated natural hazards risk information flyers available at tourist destinations. This risk communication programme has helped many small businesses who did not have the resources to produce their own translations.

From the interview results, it has been shown that the China Market Readiness programme has produced some useful changes. All of the informants from local tourism businesses or accommodation providers can now provide pre-trip and on-trip risk communication to tourists, with Chinese language translated content. However, the varied range of natural hazard preparations and limited knowledge of natural hazards reflected by the survey results have shown that more targeted risk communication needs to be done, particularly before the trip. Based on Phillips and Morrow's (2007) seven-step risk communication model, the communication strategy needs to consider information sources (Burnside et al., 2007), message timing, and the way different ethnic and cultural groups manifest differences in risk perceptions (Fothergill et al., 1999).

It seems that the current on-trip risk communication delivered from the supply side will only increase the Chinese tourists' risk perception, which has not produced any increase in preparedness but may also induce an unsatisfactory experience for them (see Section 8.2). So, in summary, the current situation results in Chinese tourists in New Zealand now being more worried about natural hazards but only having limited opportunities or time to be able to make any improvements in their preparedness level. By considering other factors that influence the effectiveness of risk communication, the next section will discuss some potential reasons that could have created the risk communication gaps.

8.6 Risk Communication Gaps

The fifth research objective is to "Identify implications of the case study data for future destination preparedness planning, such as the development of hazard communication

approaches appropriate for Chinese visitors to the West Coast region and beyond". The risk communication gap could possibly come from the lack of translated content according to both the primary interview findings and secondary analysis of official websites. The DOC website contains the most comprehensive natural hazard knowledge and preparedness tips, but there is no language translation option or choice. Tourists whose first language is not English, and who do not have a high awareness of natural hazard risk are likely to ignore this information. In addition, none of the Chinese tourists mentioned using the DOC website as an information source, for either trip information or for natural hazard information in New Zealand or the West Coast. Therefore, DOC visitor experience planners need to consider and test the effectiveness of their delivery tools and methods for the pre-trip risk communication and New Zealand conservation knowledge for Chinese international tourists.

The risk communication gap might also be related to the communication channel used. The analysis of the findings shows that, although Chinese international tourists are efficient digital platforms users, they mainly use Chinese-based digital platforms, and it is not easy for them to access some international websites or digital platforms. Having no translated information, together with not using a familiar digital platform for Chinese international tourists, is currently a major constraint for DOC in delivering natural hazard risk and preparedness information to Chinese tourists before their arrival. Therefore, for future pre-trip risk communication, DOC needs to consider some translation of their website, and also using a specific digital communication platform targeting Chinese tourists, for example having one official account on a Chinese digital platform.

With the importance of translated content, the interview findings identified some improvements to be done for direct on-trip risk communication, mainly when tourists were in conservation areas. DOC provides a lot of natural hazard risk communication to tourists when they visit or before they visit a national park, including leaflets, websites, local signs and local interpretation programmes. However, the information from DOC needs to also consider non-native English speakers from a different social or cultural background. A recent evacuation communication study in Japan also suggested a similar point (Nguyen et al., 2019). Chinese tourists' information sources have identified that travel brochures and books are an important information sources when they are on the West Coast. Leaflets are one of DOC's direct risk communication tools, as well as local signs. However, there is no translation included in this

material. Chinese tourists who only had a limited knowledge about natural hazards would find these English-only sources hard to understand and therefore may ignore them.

In addition, as the cultural and social system is different in China, sometimes Chinese tourists are confused by the information on natural hazard signs. New Zealand organisations generally provide all of the necessary information but allow the individual to make a choice instead of forcing one on them. However, Chinese tourists prefer having strict directions, for example, if a track's status is "open" they interpret this to mean that a track can be safely walked. The different communication styles and understandings can make Chinese tourists unaware of the important warning messages and preparation tips on the natural hazard's signs. Like many other international tourists, Chinese tourists often put themselves at risk due to lack of understanding of the local management system towards natural hazards or natural disaster evacuation (Lindell et al., 2005; Nguyen et al., 2019).

Chinese international tourists come from a different social and cultural background than New Zealanders. While it is important for tourism destinations to understand the social and cultural background of international tourists in order to provide a better visitor experience, international tourists who chose to visit a destination should also try to understand the destination's social and cultural environment. The understanding of social and cultural background is particularly important when tourists are in public spaces, especially in conservation areas that also often involve potential natural hazard risk. In order to reduce the confusions of the hazard warning signs, DOC visitor safety planners need to consider pre-educating Chinese tourists about New Zealand's informal ways. For example, DOC could coordinate with Air New Zealand to deliver and produce a DOC information video containing natural hazard warning signs. Ideally, tourists arriving in a conservation area would have a high level of understanding of the associated natural hazard risks and would have chosen to accept these risks as part of their desired experience. DOC visitor safety planners should consider delivering a package of safety and DOC materials at the point when Chinese international tourists arrive.

Although there is still considerable uncertainty about post-COVID-19 international tourism, at some point in the future, borders will open to Chinese visitors again. One opportunity for airlines flying to New Zealand might be to combine visitor safety information with natural hazards information on international tourist flights; this would make the tourists feel safe and

help them understand New Zealand's safety procedures and policies. During the trip, DOC visitor safety planners should consider adding QR codes on signs and other risk communication materials to provide ongoing New Zealand authentic stories and natural hazard preparedness with translated languages.

Despite some potential improvements in direct communication, the indirect risk information and marketing messages coming from the top-down process also appear to have some gaps. These gaps are mainly between stakeholders in the tourism industry, and between the tourism sector and the emergency sector, which was also identified by Mair et.al. (2016). A good risk communication strategy needs to facilitate all stakeholders' engagement (Bier, 2001). Stakeholder involvement is often cited as a challenge in disaster planning; nevertheless, a commitment to involve all stakeholders throughout the process is integral to building resilience (Becken & Hughey, 2013; 2014, Orchiston, 2012; 2013). In regard to natural hazard events or emergency communication flow on the West Coast, many levels of stakeholders are involved in either the tourism sector or the emergency sector.

In the tourism sector, one of the stakeholder communication gaps identified in the interview results is that most tourism operators, ITOs, accommodation providers, and even the regional tourism agencies, have shown no initiative in wanting to increase pre-trip risk communication to international tourists. They are concerned that too much pre-trip risk communication will potentially alter tourists' destination choices. Previous international studies have found these types of concern related to natural hazard risk communication are common within the tourism industry (Arce et al., 2017; Becken & Hughey, 2013; Rittichainuwat, 2013; Bird et al.2010), in particular, small businesses that may not even have the resources to prepare the pre-trip risk communication plan (Becken et al., 2014). Previous studies show that open and transparent messages are received with high trust by tourists (Ritchie, 2008; Zhu, 2013). One solution to this problem of not wanting to scare off tourists would be that before tourists arrive, tell them authentic stories about New Zealand's and the West Coast's special geology in order to provide a correct safety image; this would also reinforce that the destination cares about their safety. For example, a tourism operator could talk about plate tectonics on the West Coast, which is the reason there is a potential natural hazard risk, but it has also shaped the natural landscape; and the operator could finish with hazard preparedness tips that could minimise injuries. Another example is to tell the tourists how potential natural hazards or adverse

weather can influence and affect the tour, together with the West Coast tourism sector's preparedness plans. Once tourists understand the actual expectations and the risk preparedness plan, Chinese tourists could develop more appropriate hazard awareness and risk perceptions to the destinations, and their trip satisfaction will therefore most likely remain or increase (Armstrong & Ritchie, 2008; Carlsen & Hughes, 2008).

The lack of willingness and initiative from business-level tourism stakeholders to deliver pre-trip risk communication and marketing creates another gap in the tourism sector from the interview findings. Business-level stakeholders, including their staff and guides who have more opportunity to interact with tourists, tended to wait for the top-level instructions to come from the risk communication strategy. However, local-level stakeholders generally have more insights into tourists' behaviours and know the best methods to provide this information to allow tourists to be better prepared.

One experienced RTO informant suggested the tourism sector planned to create a comprehensive all-encompassing communication system so that everyone could have a voice, but the tourists' risk communication was still mainly by a top-down method (Becken & Hughey, 2013; Orchiston, 2013). RTOs could encourage tourism businesses to develop their own strategies and provide more feedback; by combining these together they will be able to build a unique communication strategy for the West Coast region. RTOs and business-level communicators could also be more proactive in delivering their feedback to the national level agencies. This will allow them to have the full scope and clear understanding of tourists' risk perception, awareness and behaviour.

Another communication gap was identified from the interview findings – between the emergency sector and tourism sector. Emergency communication in New Zealand uses the top-down strategy, from National Civil Defence Emergency all the way to the local volunteers. However, the tourism industries, and particularly national- and regional-level tourism marketing agencies and organisations, had only limited knowledge about the current emergency plans relevant to tourists' emergency evacuation. Many previous studies have also reported a similar communication gap between emergency and tourism stakeholders (Becken & Hughey, 2013; 2014 Orchiston, 2013). Orchiston (2013) specifically pointed out the communication gaps around organisations in the New Zealand Alpine Fault area; Orchiston suggested that a specific emergency communication strategy needed to be developed with

the tourism industry and the resulting strategy and emergency plan disseminated to tourism businesses. As glacier country has a small population and is also a popular tourism area, the local Civil Defence volunteers are mainly tourism business staff and most of the local tourism businesses will also provide support during a natural hazard event. Therefore, local volunteers have a greater understanding of the required tourism communication than regional or national tourism organisations when a natural hazard event happens. However, a communication gap still exists, which was one of the reasons that the emergency services and the tourism sector have a communication disconnect.

To better connect those two sectors when tourists are involved in the natural hazard events, one suggestion is that tourist maps could consist of tourist information and attractions and hazard information and evacuation routes (Arce et al., 2017; Fountain & Cradock-Henry; 2020). These maps need to be coupled with clear and multi-lingual signs in prominent positions around destinations at risk indicating evacuation routes and zones and the location of the Civil Defence Centres. This method requires the tourism stakeholders and emergency stakeholders to work together. The emergency sector provides the evacuation information, and the map could be delivered at different levels in the tourism sector. If tourists need to be evacuated, the evacuation map can be provided to all tourist locations and personnel, such as information centres, accommodation providers, and guides. In addition, the evacuation map shows that a destination is well prepared for natural hazards and tells tourists more than what to do and where to go.

8.7 Research Limitations

With any research, there are limitations and problems. The current major limitations were related to the COVID-19 pandemic, which resulted in major changes to international tourism in New Zealand and worldwide.

The original plan of surveying randomly selected Chinese international tourists on the West Coast, while they still were on holiday, had to change to recruiting survey participants using Chinese social media, referrals from tour agents and even themselves referring friends who had recently also visited New Zealand. The online survey only collected sixty respondents who fulfilled the research criteria, and a majority of them were free independent tourists. This small and non-representative sample size resulted in fewer statistically significant results and could not be generalised to the broader Chinese tourists' group.

With the economic dislocation within the tourism sector on the West Coast due to the pandemic, several tourism companies had been forced to cease operations temporarily or permanently and reduce staff. With the international border to China closing on February 3rd, 2020, they had no recent experience dealing with Chinese international tourists. This resulted in it being harder to track down the most appropriate people for structured interviews. This meant their observations of tourist behaviour or, more specifically, their observations and opinions of their risk perception, hazard awareness, and natural hazard preparedness had to be based on their long-term memory, potentially influencing the accuracy of the results. Moreover, due to the sample's nature, survey participants cover the majority of the independent tourists, whereas informants provided observations were based on both coach tourists and independent tourists. Therefore, the results could potentially create bias.

8.8 Future Research Avenues

There are several future research opportunities to follow up from this thesis, some of which are listed below, from the simplest to more complex long-term projects. The first research opportunity would be to repeat the survey in a post-COVID-19 world with international Chinese tourists in New Zealand , which would produce a larger sample size with less sample selection bias. This would allow the survey to be delivered and completed before tourists arrived in New Zealand and soon after they finished their trip. To understand tourists' perceived risk is particularly important in post-COVID-19 tourism. Also, it is important to clarify Chinese tourists' concerns towards activity safety, as previous TNZ's reports have shown.

With a large enough sample size, it is possible to make several comparisons that could potentially provide statistically significant results for different subsets of Chinese international tourists. For example, the difference in preparedness levels between FITs compared to group tourists could be made. Lastly, demographic factors could be compared with their hazard awareness, risk perception, and hazard preparedness; for example, comparisons based on age, family group structure, or even education or gender. Suppose any significant differences were detected between either different subgroups or demographic groups of Chinese international tourists, in which case, there may need to be changes and updates in natural hazard education for these groups.

Another research project would be to determine the importance of culture in natural hazard awareness, risk perception and hazard preparedness, especially with Chinese international

tourists. While cultural differences are real, the major research question is to determine what proportion of any differences are caused by different cultural backgrounds or the fact they are non-native English speakers. This could be tested by repeating the research survey with a group or groups from different cultures, for example, another group of non-English speakers (e.g., German vs Chinese) or other Asian cultures (e.g., Chinese vs Japanese vs South Korean).

Additionally, the effectiveness of pre-trip risk communication needs to be measured while tourists are still in China. The current study has shown that the pre-trip risk communication provided certain hazard awareness, risk perception and preparedness, but more empirical data is needed to determine the effectiveness of this programme accurately.

8.9 Conclusion

Hazard preparedness is influenced by different factors such as hazard awareness and risk perception. International tourists are vulnerable to natural hazards when visiting a country or place that they are not familiar with. Good preparations could reduce their vulnerability. Good pre-trip and on-trip risk communications from the destination's tourism supply side will help tourists to increase the appropriate amount of hazard awareness, risk perception and therefore potentially influence their preparedness behaviours.

The current research investigated the level of Chinese tourists' natural hazard awareness, risk perception and preparedness through surveys and local informant interviews. The two research methods show that Chinese tourists' perceived levels of hazard awareness, risk perception and preparedness were different from their apparent levels, emphasising a potential communication gap between Chinese international tourists and the destination. Although the survey results together have shown that Chinese tourists thought they had made good preparations and had an appropriate level of hazard awareness and risk perception, the specific natural hazard preparedness questions and open-ended questions showed that they had only a limited knowledge about natural hazards and natural hazard preparedness, which was also confirmed by the analysis of the interview results. The social cognitive model (SCM) of disaster preparedness was discussed, since the current findings support the broad framework of the SCM, but the results were not statistically significant due to the limited sample size.

The current natural hazard risk communications on the West Coast before and during the trip, and the information search channels used by Chinese tourists were also examined. The findings show that most of New Zealand's national or regional tourism agencies used appropriate communication channels, which were through digital platforms and trusted authoritative official sources. However, more translated content relating to natural hazards and natural hazard preparations would be beneficial for future risk communication. Also, destinations need to consider the different cultural and social backgrounds of international tourists to improve the effectiveness of their on-trip risk communication. Lastly, few communication gaps were identified between the tourism and the emergency sector, and also between different stakeholders within the tourism sector. Enhancing the coordination between sectors in the destination supply side can potentially increase the effectiveness of risk communication to international Chinese tourists.

The thesis has identified several improvements that would increase Chinese tourists' natural hazard preparedness; these include improved pre-trip risk communication, which has been shown to be the most effective method of increasing preparedness. Also, tourism destinations and official government agencies should consider the social and cultural background of international tourists in the delivery of their risk communication. It is important to address the communication gaps between the tourism and the emergency sector and between different stakeholders with the tourism sector, especially as to who is responsible for the delivery of increased risk communication. The results from this thesis will contribute to the literature in this emerging field of natural hazards attitude and preparedness of Chinese tourists, as well as providing many potential opportunities for future research. Also, and importantly, it will help to reduce Chinese tourists' vulnerability to natural hazard risks by providing insights into long-term planning and risk communication for tourists in areas of New Zealand prone to natural hazards.

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Appendix A

Survey Questions

Chinese Tourists' Behaviours While Visiting New Zealand

Summary of Blocks

Part A: Your Visit the West Coast, New Zealand

Did you visit the West Coast between July 1st 2019 and March 31st 2020?

1. Yes   2. No   3. Not Sure

[IF YES] Part B: Risk Awareness, Perception and Preparedness

Part C: Cultural Theory Scale

Part D: Demographic Data

[IF NO or Not Sure] Part E: Sub-Survey: Risk Awareness, Perception and Preparedness

Part C: Cultural Theory Scale

Part D: Demographic Data

Part A: Your Visit the West Coast, New Zealand

Please be aware that your submission of the survey answers will be interpreted as consent to participate, and you have no ability to withdraw. Your partly completed survey will be interpreted as withdraw to participate, then your survey answer will be deleted, as per the information sheet.

Click next to start the survey.

1. Did you visit New Zealand between July 1st 2019 and March 31st 2020?
1. Yes (Go to Q. 2) 2. No (End of the survey)

[If yes] 2. Below is the map of the West Coast of the South Island in New Zealand. During your visit (between July 1st 2019 to March 31st 2020), did you go to the West Coast?

1. Yes (Go to Q.4) 2. No (Go to Q.3) 3. Not Sure (Go to sub-survey)

[If No or Not Sure] 3. Why wasn't the West Coast region included on your itinerary?

Other: _____ **[Go to Sub-survey, please see it in P.10]**

Thinking about your most recent visit to the West Coast, please answer the following questions

[If Yes] 4. Which places in the West Coast did you visit? （Multiple Answer/s）
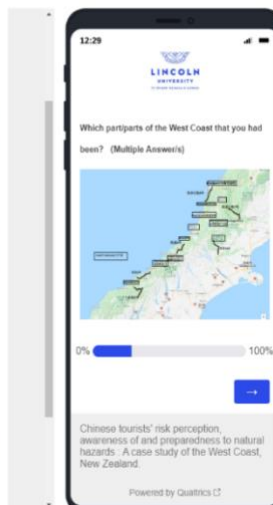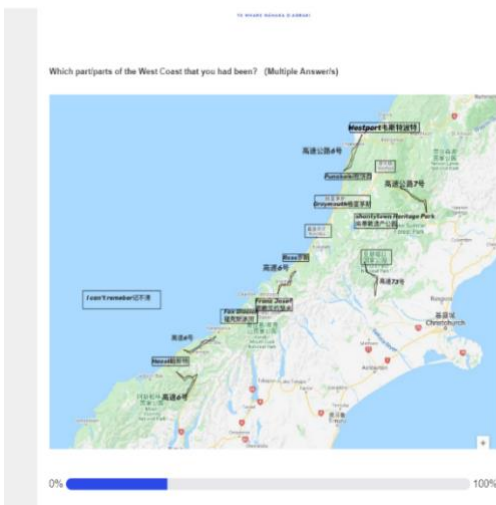
Reefton 里夫顿 (1)

Westport 韦斯特波特 (2)

Punakaiki 薄饼岩 (3)

Greymouth (4)

Hokitika 霍基蒂卡 (5)

Arthur 's Pass 亚瑟口国家公园 (6)

Franz Josef 弗朗茨约瑟夫 (7)

Fox Glacier 福克斯冰川 (8)

Haast 哈斯特 (9)

Ross 罗斯 (10)

Shantytown 尚蒂敦遗产公园 (11)

Highway 73 (13)

Highway 6 (14)

Highway 7 (16)

Highway 6 (18) (20)(21)

I didn't visit the West Coast while I was visiting New Zealand (23)

5. Did you stay overnight in the West Coast?
1. Yes (Go to Q. 6) 2. No (Go to Q.8)

6. How many nights did you stay there? __

7. What was your <u>main</u> type of accommodation in the West Coast （Single answer） ?

Hotel	1	Motel	6
Hostel/ backpackers	2	Freedom camping (tent or vehicle)	7
Farmstay/Bed & breakfast/ Airbnb(single room)	3	Rented holiday room	8
Private home/staying with friends/family	4	Other _____	9
Motor camp/camp ground	5		

8. What was your <u>main</u> form of transport on the West Coast (Single answer)?

Rental car	1	Camper van	3	Tour bus	5	Other_____	7
Private car	2	Scheduled bus	4	Bicycle	6		

9. <u>Before you left China</u>, what sources of information did you use to plan your trip to the West Coast (Multiple answers)?

TV news	Travel platform (C-trip)	Accommodation provider
TV programme	Travel platform (Qiongyou)	Word of mouth
Travel book	Travel platform (Fliggy)	Social media (Tiktok)
Newspaper	Travel platform (Mafengwo)	Brochure
Travel magazine	Tourism New Zealand Website	Radio
Social media (WeChat)	Other websites	_____ Other
Social media (Weibo)	Tourism agent planned for me	None
Social media (Redbook)	Alipay	

10. Once you <u>arrived at New Zealand</u>, what information sources did you use to plan your trip in the area (Multiple answers)?

TV news	Travel platform (C-trip)	Accommodation provider
TV programme	Travel platform (Qiongyou)	Word of mouth
Travel book	Travel platform (Fliggy)	Social media (Tiktok)
Newspaper	Travel platform (Mafengwo)	Brochure
Travel magazine	Tourism New Zealand Website	Radio
Social media (WeChat)	Other websites	_____ Other
Social media (Weibo)	Tourism agent/local guide I paid	None
Social media (Instagram)	Information Centre (i-Site)	

11. Once you <u>arrived on the West Coast</u>, what information sources did you use to plan your trip in the area (Multiple answers)?

TV news	Travel platform (C-trip)	Accommodation provider
TV programme	Travel platform (Qiongyou)	Word of mouth
Travel book	Travel platform (Fliggy)	Social media (Tiktok)
Newspaper	Travel platform (Mafengwo)	Brochure
Travel magazine	Tourism New Zealand Website	Radio
Social media (WeChat)	Other websites	_____ Other
Social media (Weibo)	Tourism agent/local guide I paid	None
Social media (Instagram)	Information Centre (i-Site)	

Part B: Risk Awareness, Perception and Preparedness

The next few questions are about your experience of natural hazards.

12. Have you experienced any of the following natural hazards in your home region (Multiple answers)?
[Carry Forward Statements, each setting if Yes, go to each scale, if No, go to Q.14, for example, if a participant experienced earthquake and tsunami, then go the scale for earthquake and tsunami].

Earthquake	1	Tornado	4	Heat wave	7	No	10
Tsunami	2	Storm	5	Wildfire	8	(If no, go to Q14)	
Flooding	3	Volcano eruption	6	Others	9		

13.To what extent have you previously experienced natural hazards or natural disasters in your home region (1=Insignificant, 2=Minor effect, 3=Moderate effect, 4=Major effect, 5=Catastrophic effect)?

Earthquake	Insignificant 12345 Catastrophic
Tsunami	Insignificant 12345 Catastrophic
Flooding	Insignificant 12345 Catastrophic
Tornado	Insignificant 12345 Catastrophic
Storm	Insignificant 12345 Catastrophic
Volcanic eruption	Insignificant 12345 Catastrophic
Heat wave	Insignificant 12345 Catastrophic
Wildfire	Insignificant 12345 Catastrophic
Others	Insignificant 12345 Catastrophic

14. Have you experienced any of the following natural hazards in your previous leisure trip (domestic or international)(Multiple answers)?
[Carry Forward Statements, each setting if Yes, go to each scale, if No, go to Q.16].

Earthquake	1	Tornado	4	Heat wave	7	No	10
Tsunami	2	Storm	5	Wildfire	8	(If no, go to Q16)	
Flooding	3	Volcanic eruption	6	Others	9		

15. To what extent have you previously experienced natural hazards or natural disasters in your previous leisure trip (domestic or international) (1=Insignificant, 2=Minor effect, 3=Moderate effect, 4=Major effect, 5=Catastrophic effect)?

Earthquake	Insignificant 12345 Catastrophic
Tsunami	Insignificant 12345 Catastrophic
Flooding	Insignificant 12345 Catastrophic
Tornado	Insignificant 12345 Catastrophic
Storm	Insignificant 12345 Catastrophic
Volcano eruption	Insignificant 12345 Catastrophic
Heat wave	Insignificant 12345 Catastrophic
Wildfire	Insignificant 12345 Catastrophic
Others	Insignificant 12345 Catastrophic

16.Have you experienced any of the following natural hazards in your most recent West Coast trip (Multiple answers)?

[Carry Forward Statements, each setting if Yes, go to each scale, if No, go to Q.18].

Earthquake	1	Tornado	4	Heat wave	7	No	10
Tsunami	2	Storm	5	Wildfire	8	(If no, go to Q18)	
Flooding	3	Volcano eruption	6	Others	9		

17. To what extent have you previously experienced natural hazards or natural disasters in your most recent West Coast trip?

Earthquake	Insignificant 12345 Catastrophic
Tsunami	Insignificant 12345 Catastrophic
Flooding	Insignificant 12345 Catastrophic
Tornado	Insignificant 12345 Catastrophic
Storm	Insignificant 12345 Catastrophic
Volcano eruption	Insignificant 12345 Catastrophic
Heat wave	Insignificant 12345 Catastrophic
Wildfire	Insignificant 12345 Catastrophic
Others	Insignificant 12345 Catastrophic

19. Before you left China, did you search for any information about natural hazards in New Zealand?

1. Yes (Go to Q.20) 2. No (Go to Q.21)

[If yes] 20. What information source(s) did you use to learn about natural hazards in New Zealand?

_____

21. Before you left China, did you search for any information about natural hazards on the West Coast?

   1. Yes (Go to Q.22) 2. No (Go to Q.23)

Risk awareness	Before my visit to New Zealand, I was aware of the natural hazards in the country. (1)	
	Before my visit to the West Coast, I was aware of the natural hazards in this region. (2)	
	During my visit to New Zealand, I saw many natural hazard warning signs. (3)	
	During my visit to the West Coast, I saw many natural hazard warning signs. (4)	
Risk perception	Before my visit to New Zealand, I thought I would be safe from any natural hazards. (5)	
	Before my visit to the West Coast, I thought I would be safe from any natural hazards. (6)	
	Natural hazard risk was not something I was concerned about when I planned my West Coast trip (7)	
	During my visit to New Zealand, I sometimes felt unsafe from natural hazards. (8) *	
	During my visit to the West Coast, I sometimes felt unsafe from natural hazards. (9) *	
	Any natural hazards on the West Coast appeared to be well controlled by management (10)	
Preparedness	I purchased travel insurance covering natural hazard events for my New Zealand trip. (11)	
	The clothing I had on the West Coast was appropriate for the conditions I faced (12)	
	The shoes I had on the West Coast were appropriate for the conditions I faced (13)	
	Our travel party had a First Aid kit on the West Coast trip. (14)	
	During the West Coast trip, I made sure my First Aid kit was always fully stocked. (15)	
	During the West Coast trip, I was willing to follow health & safety tips from local staff/guides. (16)	
	During the West Coast trip, I always had a personal communication device with me (e.g. mobile phone). (17)	
	During the West Coast trip, I made no preparation for natural hazards. (18)P	
	If a natural disaster occurred in the West Coast while I was visiting, I would know what do to. (19)	

[If yes] 22. What information source(s) did you use to learn about natural hazards on the West Coast?

_____

23. During your New Zealand trip, did you search for any information about natural hazards in the West Coast?

   1. Yes (Go to Q.24) 2. No (Go to Q.25)

[If yes] 24. Which information source(s) did you use to learn about natural hazards?

While in New Zealand but not on the West Coast: _____

While on the West Coast: _____

_____

25. To what extent do you agree or disagree with the following statements (1=Strongly Disagree to 7=Strongly agree)?

21. If a natural disaster occurred while you were in the West Coast, what would you do?

_____

22. If a natural disaster occurred while you were in the West Coast, who would you seek out for help and advice?

_____

Part C: Cultural Theory Scale

The next few questions concern your cultural background
22. To what extent do you agree or disagree with the following statements (1=Strongly disagree to 7=Strongly agree)?

The world would be a more peaceful place if its wealth was divided more equally among nations. (1)
We need to dramatically reduce inequalities between the rich and the poor, and men and women. (2)
Our society would be better off if the distribution of wealth was more equal. (3)
The government interferes too much in our everyday lives. (4)
The government should stop telling people how to live their lives. (5)
It's not the government's business to try to protect people from themselves. (6)
Respect for authority is one of the most important things that children should learn. (7)
One of the problems with people today is that they challenge authority too often. (8)
People should show more respect to people in positions of authority. (9)
I really do not have much control over my future. (10)
It is no use worrying about public affairs, because I cannot do anything about them anyway. (11)
I feel that I have little value as an individual in society. (12)

Part D: Demographic Data

Finally, we have some questions about you to help us understand our respondents.

23. Which of the following best describes your travel group during your visit to New Zealand? (Single answer)?

Travelling alone	1	Family	4	Other_____	7
Partner/spouse	2	Family & friends	5		
Friends	3	Tour group	6		

24. Did you travel with a child/children under 12 years old?

1. Yes　　2. No

25. What was your travel pattern (Single answer)?

Group tour	1	Tailor-made tour for my travel party	3
Free independent travel	2	Other_____	4

26. What is your gender?

Male	1	Female	2	Gender diverse	3	Prefer not to tell	4

27. What is your age____?

28. What is your highest level of education ？

No formal qualification	1	Degree	4
High school qualification	2	Higher degree	5
Trade qualification /College	3	Other tertiary degree	6

_____Before submission_____

Please be aware that your submission of the survey answers will be interpreted as consent to participate, and you have no ability to withdraw. Your partly completed survey will be interpreted as withdraw to participate, then your survey answer will be deleted, as per the information sheet.

Click next to SUBMIT.

End of the survey
We thank you for your time spent taking this survey.
Your response has been recorded.

Part E: Sub-survey Risk Awareness, Perception and Preparedness

(If the participant visited to New Zealand between July 1 2019 and March 31 2020, but didn't visit to the West Coast, or wasn't sure)

Part E: Risk Awareness, Perception and Preparedness

The next few questions are about your experience of natural hazards.

1. Have you experienced any of the following natural hazards in your home region (Multiple answers)?

[Carry Forward Statements, each setting if Yes, go to each scale, if No, go to Q.3, for example, if earthquake and tsunami, then go the scale for earthquake and tsunami].

Earthquake	1	Tornado	4	Heat wave	7	No	10
Tsunami	2	Storm	5	Wildfire	8	(If no, go to Q14)	
Flooding	3	Volcano eruption	6	Others	9		

2.To what extent have you previously experienced natural hazards or natural disasters in your home region (1=Insignificant, 2=Minor effect, 3=Moderate effect, 4=Major effect, 5=Catastrophic effect)?

Earthquake	Insignificant 12345 Catastrophic
Tsunami	Insignificant 12345 Catastrophic
Flooding	Insignificant 12345 Catastrophic
Tornado	Insignificant 12345 Catastrophic
Storm	Insignificant 12345 Catastrophic
Volcano eruption	Insignificant 12345 Catastrophic
Heat wave	Insignificant 12345 Catastrophic
Wildfire	Insignificant 12345 Catastrophic
Others	Insignificant 12345 Catastrophic

3. Have you experienced any of the following natural hazards in your previous leisure trip (domestic or international)(Multiple answers)?

[Carry Forward Statements, each setting if Yes, go to each scale, if No, go to Q.5].

Earthquake	1	Tornado	4	Heat wave	7	No	10
Tsunami	2	Storm	5	Wildfire	8	(If no, go to Q16)	
Flooding	3	Volcano eruption	6	Others	9		

4. To what extent have you previously experienced natural hazards or natural disasters in your previous leisure trip (domestic or international) (1=Insignificant, 2=Minor effect, 3=Moderate effect, 4=Major effect, 5=Catastrophic effect)?

Earthquake	Insignificant 12345 Catastrophic
Tsunami	Insignificant 12345 Catastrophic
Flooding	Insignificant 12345 Catastrophic
Tornado	Insignificant 12345 Catastrophic
Storm	Insignificant 12345 Catastrophic
Volcano eruption	Insignificant 12345 Catastrophic
Heat wave	Insignificant 12345 Catastrophic
Wildfire	Insignificant 12345 Catastrophic
Others	Insignificant 12345 Catastrophic

5.Have you experienced any of the following natural hazards in your most recent West Coast trip (Multiple answers)?

[Carry Forward Statements, each setting if Yes, go to each scale, if No, go to Q.7].

Earthquake	1	Tornado	4	Heat wave	7	No	10
Tsunami	2	Storm	5	Wildfire	8	(If no, go to Q18)	
Flooding	3	Volcano eruption	6	Others	9		

6. To what extent have you previously experienced natural hazards or natural disasters in your most recent West Coast trip?

Earthquake	Insignificant 12345 Catastrophic
Tsunami	Insignificant 12345 Catastrophic
Flooding	Insignificant 12345 Catastrophic
Tornado	Insignificant 12345 Catastrophic
Storm	Insignificant 12345 Catastrophic
Volcano eruption	Insignificant 12345 Catastrophic
Heat wave	Insignificant 12345 Catastrophic
Wildfire	Insignificant 12345 Catastrophic
Others	Insignificant 12345 Catastrophic

7. Before you left China, did you search for any information about natural hazards in New Zealand?

1. Yes (Go to Q.5) 2. No (Go to Q.6)

[If yes] 8. What information source(s) did you use to learn about natural hazards in New Zealand?

_____

9. Before you left China, did you search for any information about natural hazards on the West Coast?

    1. Yes (Go to Q.7) 2. No (Go to Q.8)

[If yes] 10. What information source(s) did you use to learn about natural hazards on the West Coast?

_____

11. During your New Zealand trip, did you search for any information about natural hazards?

    1. Yes (Go to Q.9) 2. No (Go to Q.10)

[If yes] 12. Which information sources did you use to learn about natural hazards?_____

13. To what extent do you agree or disagree with the following statements (1=Strongly Disagree to 7=Strongly agree)?

Risk awareness	Before my visit to New Zealand, I was aware of the natural hazards in the country. (1)
	During my visit to New Zealand, I saw many natural hazard warning signs. (2)
Risk perception	Before my visit to New Zealand, I thought I would be safe from any natural hazards. (3)
	Natural hazard risk was not something I was concerned about when I planned my New Zealand trip (4)
	During my visit to New Zealand, I sometime felt unsafe from natural hazards. (5)
	Any natural hazards in New Zealand appeared to be well controlled by management (6)
Preparedness	I purchased travel insurance covering natural hazard events for my New Zealand trip. (7)
	The clothing I had in New Zealand was appropriate for the conditions I faced (8)
	The shoes I had in New Zealand were appropriate for the conditions I faced (9)
	Our travel party carried a First Aid kit in New Zealand. (10)
	During the New Zealand trip, I made sure my First Aid kit was always fully stocked. (11)
	During the New Zealand trip, I was willing to follow health & safety tips from local staff/guides. (12)
	During the New Zealand trip, I always had a personal communication device with me (e.g. mobile phone). (13)
	During the New Zealand trip, I made no preparation for natural hazard events. (14)
	If a natural disaster occurred in New Zealand while I was visiting, I would know what do to. (15)

14. If a natural disaster occurred while you were in New Zealand, what would you do?

_____

15. If a natural disaster occurred while you were in New Zealand, who would you seek out for help and advice?

_____

13. Demographic Questions.

_____Before submission_____

Please be aware that your submission of the survey answers will be interpreted as consent to participate, and you have no ability to withdraw. Your partly completed survey will be interpreted as withdraw to participate, then your survey answer will be deleted, as per the information sheet.

Click next to SUBMIT.

End of the survey

We thank you for your time spent taking this survey.
Your response has been recorded.

Appendix B

Interview Questions

Interview Question: Chinese Tourists' Risk Perceptions, Awareness of and Preparedness for Natural Hazard: A case study of the West Coast, New Zealand

1. How long have you worked for the company?
2. What is your role?
3. Have you been working in tourism for a long time?
4. What brought you to your current company, and tourism industry?
5. Have you had much experience with Chinese tourists on the West Coast?
6. If you did, what are your experiences with Chinese tourists?
7. How would you assess the awareness of Chinese tourists to potential natural hazards? Why do you say that?
8. How would you assess the preparation of Chinese tourists to potential natural hazards?
9. Are there differences between different types of Chinese tourists? In what ways.
10. How would you assess the natural hazard communication between the West Coast and tourists?
11. Have your company done any natural hazard communication to tourists?
12. If you did, can you talk about your experience of natural hazard communication with tourists?
13. Are there differences between tourists from different culture backgrounds? In what ways.
14. Any suggestions for future communication method about international tourists' natural hazard preparedness?

Appendix C

Interview Information Sheet

Chinese Tourists' Risk Perceptions, Awareness of and Preparedness for Natural Hazard: A case study of the West Coast, New Zealand

Information sheet for interview participants

My name is Aviva (Qian) Cui, and I am a student of Master of Applied Science, majoring in tourism management at Lincoln University. My study is focusing on New Zealand tourism management and Chinese tourist behaviour. The purpose of the current study is to understand more about how Chinese visitors to New Zealand prepare for and experience their trip, particularly focuses on visiting to the West Coast of the South Island between the period of 1st July 2019 to 31st March 2020. Your answers in this survey will help to minimise the vulnerability of future tourists and to better understand the behaviour of Chinese tourists.

If you choose to take part in this study, your involvement in the project will be complete an in-depth interview with me that should take around 30-60 minutes. You can choose to be interviewed in person (I will come to the West Coast/Christchurch), or by a phone call/Zoom/WeChat meeting. With your permission, I would like to record the interview. If you do not agree to this, then I will take notes during the interview.

The results of this study will be used in the preparation of the researcher's master thesis at Lincoln University. Parts of this results may be published.

Your identity and data will remain private. No one will have access to this information, other than me, my supervisors and the Human Ethics Committee in the event of an audit. To further ensure anonymity, consent forms and individual interview audio recording and transcripts will be seen only by me and my supervisors and will be stored separately in an electronic form with secure password protection. No names will be used in the presentation of data, rather you will be identified by role (e.g. glacier tour guide; accommodation providers). In rare cases, your identity might be discernible to people familiar to the industry in the region, but your name will remain confidential. You will also be given the opportunity to read the transcripts of your interview, particularly segments that may be used in published work.

You may withdraw from the project, including withdrawing any information you have provided, at any time up to 28th February 2021. You can do this by contacting me (Aviva Qian Cui) or my main supervisor (Joanna Fountain) using the contact details below.

This project has been reviewed and approved by the Lincoln University Human Ethics Committee. If you have any queries or concerns about your participation in the project, please contact me or my supervisor; we would be happy to discuss any any concerns you have about participation in the project.

Researcher: Aviva Qian Cui

Qian.cui@lincolnuni.ac.nz

My main supervisor, Dr Joanna Fountain, Senior lecturer, Faculty of Environment, Society and Design

Joanna.fountain@lincoln.ac.nz

 If you agree to participate in the study, you are asked to complete the consent form.

Appendix D

Interview Consent Form

Chinese tourists' behaviours while visiting New Zealand

Interview Consent Form

1. I have read and understood the description of the project above.

2. I have been given sufficient time to consider whether or not to participate in the project and to ask questions.

3. I understand that I may withdraw from the project, including withdrawal of any information I have provided, up to 28th February 2021.

If you agree with all of information above, please tick the consent boxes and sign below to give your consent.

☐ **I consent to participate in the project.**

☐ **I consent to having an audio or video recording made of my interview.**

☐ **I do not consent to having an audio or video recording made of my interview but agree to notes being made.**

Name: _____

Signed: _____

Date: __

Appendix E

Survey Invitation Post

Chinese tourists' behaviours while visiting New Zealand

WeChat invitation Post

Dear xxx,

My name is Aviva Cui and I am a master's research student at Lincoln University, Christchurch, New Zealand. I am currently working on my thesis which focuses on Chinese tourists' risk perceptions, awareness and preparedness for natural hazards in New Zealand.

I am looking to Chinese tourists who have visited New Zealand – particularly the West Coast of the South Island, between 1st July 2019 and 31st March 2020 to complete an online survey. The survey will take 5-15 minutes to complete.

The survey is completely anonymous, and your participation in this research is voluntary. If you are willing to take part, please click the following link to complete the survey, and please feel free to share this link with other people who you think qualify to participate.

Your time and effort are much appreciated.

The research has been reviewed and approved by the Lincoln University Human Ethics Committee. However, Please don't hesitate to ask any questions that you have to me or to my main supervisor.

Researcher: Aviva Qian Cui
Qian.cui@lincolnuni.ac.nz

My main supervisor: Dr Joanna Fountain, Senior lecturer, Faculty of Environment, Society and Design
Joanna.fountain@lincoln.ac.nz

Kindly regards,

Aviva

Appendix F

Interview Invitation Email

Dear xxx,

My name is Aviva Cui and I am a master's thesis research student from Lincoln University, near Christchurch, NZ. My title of my master's thesis focuses on Chinese tourists' risk perceptions, awareness and preparedness for natural hazards.   The study concentrates on hazards of the West Coast, New Zealand. Your participation will help me to better understand the perceptions, awareness and the behaviour of Chinese tourists.

I am searching for local informants to participate in an interview who have experience with Chinese tourists visiting the West Coast– either directly or indirectly. Specific details about this study are presented in the attachment.

The interview will take approximately 30 to 60 minutes to complete at a time and place that suit you. Ideally, it would be best to complete the interview face to face; it is possible to complete the interview by phone, Zoom or WeChat. also. If you are willing to participate, please contact me. If you believe that there may be someone else within your organisation who you feel would be more suitable for the interview, I would appreciate it if you passed this email on to them.

I trust that this research and interview will meet with your approval. I am looking forward to receiving your reply. If I don't hear back from you in a week, I will contact you to verify that you have received the information and to see if you have any questions or require additional information.

The research has been approved by the Lincoln University Human Ethics Committee. However, Please don't hesitate to ask any question that you have to me or to my main supervisor.

Researcher: Aviva Qian Cui
Qian.cui@lincolnuni.ac.nz

My main supervisor: Dr Joanna Fountain, Senior lecturer, Faculty of Environment, Society and Design
Joanna.fountain@lincoln.ac.nz

Regards,

Aviva

Appendix G

Survey Information Sheet

Chinese tourists' risk perceptions, awareness of and preparedness for natural hazard: A case study of the West Coast, New Zealand

Information sheet for survey participants

My name is Aviva (Qian) Cui, and I am a student of Master of Applied Science, majoring in tourism management at Lincoln University. My study is focusing on New Zealand tourism management and Chinese tourist behaviour. The purpose of the current study is to understand more about how Chinese visitors to New Zealand prepare for and experience their trip, particularly focuses on visiting to the West Coast of the South Island between 1st July 2019 to 31st March 2020. Your answers in this survey will help to minimise the vulnerability of future tourists and to better understand the behaviour of Chinese tourists.

If you choose to take part in this study, your involvement in the project will be to complete a survey that should take around 5-15 minutes depends on your response. The survey will be administered through Qualtrics.

The results of this study will be used in the preparation of the researcher's master thesis at Lincoln University. Your participation in this research is voluntary. Your submission of the survey answers will be interpreted as consent to participate. Your partly completed survey will be interpreted as withdraw to participate, then your survey answer will be deleted, as per the information sheet. Parts of the results may be published; however, the survey is completely anonymous, your identity will not be known to anyone. The survey data will be stored in an electronic form with password protection.

This project has been reviewed and approved by the Lincoln University Human Ethics Committee. If you have any queries or concerns about your participation in the project, please contact me or my supervisor; we would be happy to discuss any any concerns you have about participation in the project.

Researcher: Aviva Qian Cui
Qian.cui@lincolnuni.ac.nz

My main supervisor,

Dr Joanna Fountain, Senior lecturer,

Faculty of Environment, Society and Design
Joanna.fountain@lincoln.ac.nz

If you agree with all of information above, please tick the consent boxes <u>that apply to you</u> and sign below to give your consent.

Agree

Disagree. I do not consent to participating this study.

Appendix H

Survey Invitation Post (Deliver by Tourism Operators)

Chinese tourists' behaviours while visiting New Zealand

Hi xxx,

My name is Aviva Cui and I am a master's research student at Lincoln University, Christchurch, New Zealand. I am currently working on my thesis which focuses on Chinese tourists' risk perceptions, awareness and preparedness for natural hazards in New Zealand.

I am looking to Chinese tourists who have visited New Zealand – particularly the West Coast of the South Island, between 1st July 2019 and 31st March 2020 to complete an online survey. Could I kindly ask you to help me passing the survey invitation to your previous customers? This survey is completely anonymous that I could not access any of your data base. The survey will take 5-15 minutes to complete.

If you would like to help me, you could use the invitation letter that I drafted below (feel free to alter), and the information sheet attached.

This project has been reviewed and approved by the Lincoln University Human Ethics Committee. However, please let me know any questions or concerns that you would like to talk with me or to my main supervisor. You might receive a phone call from me to follow up next week.

Researcher: Aviva Qian Cui
Qian.cui@lincolnuni.ac.nz

My main supervisor: Dr Joanna Fountain, Senior lecturer, Faculty of Environment, Society and Design
Joanna.fountain@lincoln.ac.nz

Hi,

Brief introduction of your company (i.e. We are a glacier touring company based in Franz Josef, New Zealand). We are reaching out to you because of your previous xx (such as: New Zealand touring) experience with us.

We would like to pass on a survey about Chinese tourists' behaviour as the researcher has approached us (The survey is a **Chinese survey** 这是一份中文问卷).

Please be aware that we are not involved with this research, and we won't collect any data or your personal information from this research.

If you have an interest in participation, please see the further details attached.

Many thanks.