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An Investigation of Visitor Behaviour in Recreation and Tourism Settings:

A case study of natural hazard management at the Glaciers,

Westland National Park, New Zealand

A dissertation
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D.G. Hayes

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Abstract of a dissertation submitted in partial fulfilment of the

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An Investigation of Visitor Behaviour in Recreation and Tourism Settings:

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Visitor non-compliance with protective recommendations is a major problem faced by recreational managers within natural environments. Although many studies have been conducted on noncompliant visitor behaviour within natural resource areas, few attempts have been made to gain an understanding of the behaviour, or to understand the decision making process. This dissertation seeks to address this gap by exploring salient motivations behind noncompliant behaviour within a natural recreation setting. The study was conducted over the summer of 2007-2008 within the popular tourist attractions of Fox and Franz Josef glaciers, Westland National park, New Zealand.

The Department of Conservation has a legal and increasingly a moral obligation to provide a level of service and ensure a high standard of visitor safety within lands it administers. However, despite its efforts, management actions are criticised as being 'over cautious', and consequently a large number of visitors choose to ignore hazard warnings communicated by management and cross safety barriers, placing themselves and others at considerable risk.

Previous studies at the glaciers have identified a number of causes for visitor non-compliance, including situational factors and the adequacy of current visitor management procedures.

Through a quantitative measure, and qualitative interview responses, study findings show that visitor compliance with protective recommendations was strongly influenced by a number of situational factors including the proximity of track end points from the glacier terminus; the visibility of other visitors beyond the roped barriers; modest hazard perceptions of visitors; estimated visitor age; time of day and weather conditions. Based on visitor interview responses, motives of non-compliance were further explored by classifying behaviour according to Gramann and Vander Stoep's (1987) typologies of normative violations. It is identified, using Ajzen's (1985; 1991) theory of planned behaviour, that non-compliance with protective recommendations at the glaciers is motivated by, (1) a 'belief' that the situation or resource encouraged it; (2), through a release of 'social pressure', because everyone else was going over; and (3), a 'perceived facilitation of the behaviour', in that there were no obvious consequences to self or others. Implications for management to control noncompliant behaviour are discussed in detail.

Keywords: Visitor management, hazard management, tourism, recreation, national parks, non-compliance, protective recommendations, Fox Glacier, Franz Josef Glacier

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[1] All photographs presented in this dissertation are the work of the author.

Chapter One: Introduction

1.1 Introduction:

New Zealand's spectacular scenery is attributed to a sequence of natural events and processes that continue to shape and move the physical environment. It is this spectacular scenery, upon which New Zealand's tourism industry is heavily reliant, that initiates an attraction and creates a desire to travel. As a result of the ever changing environment, many of New Zealand's popular tourist destinations and experiences are situated within areas where natural hazards are a significant risk (Gough, 2000). Many of our natural resource settings have the potential to become inhospitable or dangerous, putting at risk people that are attracted to natural areas by these very qualities (Espiner, 2001).

The Department of Conservation[2] has progressively become an important agent of tourism management in New Zealand, through an increase in visitor demand to partake in nature-based recreation (Higham 1998), and a change in visitor preferences for more independent and dispersed methods of travel, (66% of international visitors opting for independent forms of travel, year ending Sep 2006; New Zealand Tourism Board, 2006). This is coupled with an increase in international arrivals to New Zealand of 240 per cent over the last 15 years (Statistics New Zealand, 2007). The Department of Conservation has a legal and increasingly a moral obligation to provide a level of service and ensure a high standard of visitor safety within lands it administers. This is largely the result of a society preoccupied with liability, safety and risk, resulting in visitors to natural resource areas having higher expectations of levels of service and accountability, and an unwillingness to accept personal responsibility for any undesirable

[2] The administering authority or 'managers' of New Zealand's protected natural areas.

outcomes (Espiner, 2001). While knowingly imposing a risk on oneself may be acceptable, imposing risk on someone else is viewed strongly as unacceptable (Schultze, 1980).

Accidents, in which international tourists are involved, have a profound long term effect throughout the tourism industry. Within New Zealand, the detrimental effects of visitor fatalities can be illustrated by the 1989 fatal mid-air collision in Milford Sound, after which scenic flights in Fiordland immediately fell by 50 per cent, and the 1994 death of an English tourist during a white water rafting incident in Queenstown, resulting in a reported loss to the guiding company of $2 million in income (Greenway, 1996). Past research suggests that it is adventure activities with lower levels of 'perceived risk' associated with them which may have highest 'actual' injury risk (Bentley, Meyer, Page, & Chalmers, 2001). Real risk being the true amount of danger an activity involves, and perceived risk an individual's assessment of the danger that he or she believes is faced (Greenway, 1996). Bentley, et al., (2001) suggested that tourist injuries most often occurred in independent unguided activities such as skiing, mountaineering and tramping. Levels of perceived risk are also likely to be low amongst visitors who are unfamiliar with different activities or environments. Previous research suggests that tourists appear more likely to be injured or killed as a result of accidents while overseas than within their country of residence (Bentley, et al., 2001). Most notably, this is because certain characteristics associated with being a tourist, such as relaxed attitudes towards risk or personal safety, and / or reduced self-consciousness, influence risk perceptions and / or increase the likelihood of risk exposure (Espiner, 2001). These circumstances, compounded by the fact that many tourist destinations within New Zealand are located in areas susceptible to natural hazards, contribute to the difficulty of ensuring visitor safety.

Although visitors will often characteristically comply with protective recommendations put in place by management, situations exist where visitors will choose to do otherwise, either unintentionally, for convenience, or personal gain. Violations of protective rules and damage to natural and cultural resources due to inappropriate visitor behaviour is a major problem facing managers of outdoor recreation resources (Gramann, Bonifield & Kim, 1995; Gramann and Vander Stoep 1987; Ward and Roggenbuck, 2003).

Plate 1.1: Noncompliant visitor

The Glaciers of South Westland National Park provide an ideal setting in which to study hazard management, visitor behaviour and compliance with protective recommendations. Visitor management at the glaciers is made difficult, being largely dictated by the potentially hazardous environment, an expectation to maintain visitor access close to the ice face and a legal and moral obligation to ensure visitor safety. Added to this equation are a high level of visitation (including a high proportion of international visitors), visitors with little or no understanding of the natural processes of a glacier valley or the hazards presented, and the relatively long length of time that the average visitor spends onsite[3]. Despite the management

Plate 1.2: Noncompliant Visitors

[3] Compared with other destinations classified as front country visitor experiences.

actions of the Department of Conservation staff, previous studies of the glaciers (Bogie, 2007; Espiner, 2001) have shown that around 30-40 per cent of non-guided visitors ignore management advice and hazard warnings, choosing to move beyond barriers into a recognised hazardous area near the glacier terminus. As a result, local climbing guides and Police have questioned whether the Department of Conservation has adequately fulfilled its duty of care and moral responsibility with regard to visitor management (Bogie, 2007).

Plate 1.3: Visitors proceeding beyond barriers into a recognised hazardous area.

Accidents associated with icefall at the glaciers have occurred in the past, with a tourist crushed by a block of falling ice at Fox Glacier in October 2000 (Ross, 2000), and two tourists injured in February 2007, who were struck by debris during an ice collapse while standing near the cave at the Franz Josef glacier (Henzell, 2007). Due to the circumstances in which these accidents occurred, it has only been a matter of luck that nobody has been fatally injured. Tourists ignoring the warning signs is a common problem at the glaciers, and there is therefore a belief amongst the local community that it is only a matter of time before someone is killed, and that further safety precautions and better visitor education is needed to prevent such a tragedy from happening[4] (Bogie, 2007; Henzell, 2007). A better understanding of why visitors choose to ignore management recommendations will assist managers in more effectively implementing visitor management strategies.

[4] Prior to this dissertation being published, two tourists were tragically killed during an ice collapse at Fox Glacier, January 2009. The pair were standing under the glacier wall beyond the safety barriers at the time of the collapse.

An understanding of noncompliant behaviour in outdoor recreation is an area of research that is severely lacking, with few previous attempts to gain an understanding of the behaviour from the perspective of those committing the acts (Nesbitt, 2006; Ward & Roggenbuck, 2003). With the aim of adding to the research literature, this study will explore situational factors and salient behavioural influences in an effort to provide a better understanding of the factors that encourage noncompliant behaviour within natural resource settings. Subsequent findings will allow recreational managers to confidently apply different persuasive strategies, depending on which factors are recognised as contributing to non-compliance.

1.2 Research Objectives:

Specifically, the research objectives are:

1. To form a demographic and behavioural profile of visitors to Franz Josef and Fox Glaciers.

2. To determine the extent of visitor compliance with protective recommendations, and establish a standardised method that can be used by recreational managers to establish a level of performance through monitoring changes in compliance over time. Noncompliant behaviour of interest in this study is the proceeding beyond roped safety barriers and disregard of subsequent hazard warnings put in place by management for the purpose of visitor safety.

3. To determine the motivating factors that drive visitors towards, or restrain them from noncompliant behaviour, by identifying situational factors that influence visitor behaviour, and classifying motives of non-compliance according to typologies of normative violations, as identified by Gramann and Vander Stoep (1987). Subsequent analysis will help evaluate the current tendencies of visitor attitudes towards current management techniques.

4. To identify and classify dominant behavioural influences according to either attitudinal, subjective norm or perceived behavioural control elements as identified through Ajzen's (1985; 1991) theory of planned behaviour. Identifying salient behavioural influences will allow suggestions to be made on appropriate communication and management regimes to target a change in behaviour and to reduce non-compliance.

1.3 Structure of the Dissertation:

The dissertation comprises a further seven chapters:

Chapter 2 introduces and describes the study setting, including the range of hazards to which visitors are exposed. Current visitor management approaches are outlined and a range of visitor management issues specific to the study settings are discussed.

Chapter 3 reviews relevant background literature associated with noncompliant behaviour and visitor management within natural recreation settings. Noncompliant behaviour is defined and the factors that influence decisions to comply with protective recommendations made by management are discussed in detail, as are the various direct and indirect management techniques available. The key frameworks, Gramann and Vander Stoep's (1987) typologies of normative violations, and Ajzen's (1985; 1991) theory of planned behaviour, utilised in this study to identify and classify motives of noncompliant behaviour, are introduced.

Chapter 4 discusses the methodology used to carry out and fulfil the research objectives, and a detailed rationale for selecting the case study location is given. Methods and the process of obtaining information are outlined. Because methods were integrative, including both

quantitative observations and qualitative interviews, an explanation is given as to why each were chosen as the most appropriate method for quantifying noncompliant behaviour and exploring salient motivations. Ethical issues and considerations associated with the research are discussed, and limitations to the study outlined.

Chapters 5 to 8 present and discuss research findings in relation to the study's first three objectives, offering comparisons with previous research findings where applicable. Chapter 5 addresses the first research objective, describing characteristics of visitors to the glaciers and the patterns of visitation. Chapter 6 presents levels of non-compliance observed at the study sites through a standardised method, fulfilling the second objective, and describes physical situational factors that were found to influence such behaviour. Chapter 7 makes use of information gained through qualitative interviews to explore visitor attitudes and make a comparison between visitors' perceptions of risk and actual risk. The suitability of current management techniques is discussed in relation to findings. Chapter 8 explores the third research objective, eliciting possible motives for noncompliant behaviour by classifying visitor responses gained through qualitative interviews according to Gramann and Vander Stoep's (1987) typologies of normative violations.

The dissertation concludes in Chapter 9 by revisiting the study situation and a summary of the research objectives. The chapter also addresses the fourth research question; to identify and classify salient behavioural influences according to Ajzen's (1985; 1991) theory of planned behaviour, allowing suggestions to be made on appropriate communication and management regimes to target a change in noncompliant behaviour. Contributions of the study findings to the research field and the implications for relevant resource managers are discussed and recommendations are made on future opportunities for research.

Chapter Two: The Study Sites

2.1 Introduction:

Franz Josef and Fox glaciers are temperate alpine valley glaciers situated within Westland / Tai Poutini National Park, one of 14 national parks administered by the Department of Conservation. The glaciers are two of New Zealand's most popular natural attractions. This is largely because of the low altitude (300m) that the glaciers extend to, the relatively easy foot access to within close proximity of the glacier terminal, and vigorous national and international promotion. The glaciers receive over 600,000 visits annually (Bogie, 2007), with Franz Josef being by far the more popular, receiving more than two thirds of these visitors (Bogie, 2007; Espiner, 2001). This is despite Fox providing easier access that is less likely to be restricted by natural hazards, and a closure point[5] that was located a lot closer to the glacier terminus (at the time of this study).

Plate 2.1: Franz Josef Glacier

Plate 2.2: Fox Glacier

Differences in levels of visitation may be explained by Franz Josef having a higher profile (Espiner, 2001), and because it is the first glacier reached by the majority of visitors

[5] Term referred to by Espiner (2007) for a movable roped barrier and signage set up by management to discourage unguided visitor access beyond that point.

who travel in a north-south direction (Forer & Simmons, 1998). Ensuring continued visitor satisfaction at either glacier is largely dependent on the provision of relatively easy foot access to within close proximity of the ice. However, the recent loss of glacial ice, unpredictable river levels and flows, and falling rock and ice make this a continuous challenge for the Department of Conservation (Espiner, 2001).

Due to their attractiveness and the unique opportunities they provide, the glaciers are acknowledged as the 'backbone' of the West Coast tourism industry. A single highway running the length of the Westland National Park provides access to the glaciers, and plays a critical role as the main tourist route linking the West Coast to visitor attractions in Canterbury (via the Lewis and Arthurs Passes to the north) and Queenstown (via the Haast Pass to the south). As a result, the nearby service towns of Franz Josef and Fox, have increasingly become dependent on the economic benefits of tourism, including the hospitality industry and by the facilitation of a range of recreational activities such as guided walks, ice climbing, 'heli-hiking' and scenic flights year-round. Two local companies at Franz Josef and a single company at Fox provide a variety of daily guided excursions onto the ice.

2.2 Natural hazards:

The research settings are dynamic places where the natural processes of rock, water and ice represent unpredictable and dangerous hazards to visitors who are largely inexperienced and unprepared. Some visitors are potentially lulled into a false sense of confidence over the type of environment they are entering and the associated potential hazards, primarily because of the benign appearance of the glacier and the relative ease of access. Franz Josef and Fox glaciers are recognised as typical New Zealand front-country attractions, with a tendency for visitors to leave the car park ill-prepared. However, the average duration of a site visit is between one and two

hours (Espiner, 2001), being sufficiently long enough for visitors to be exposed to a range of natural hazards. As a result, a potentially risky situation exists, with a large number of inexperienced people, with little or no understanding of the hazards presented, spending a considerable length of time within a hazardous environment. These circumstances are also complicated by the difficulty management have in assessing how significant the potential risk actually is, and how it should be managed (Espiner, 2001). "Management records, the media, and other incident reports document that fatal accidents, injuries, and near misses have occurred at Franz Josef and Fox Glaciers on a regular, although infrequent basis" (Espiner, 2001, p.245). This may be largely attributed to the relatively 'modest' hazard perceptions of visitors (Espiner, 2001).

Plates 2.3 - 2.5: Various pictorial hazard signs

While rock fall is the most identifiable hazard within the glacier valleys (49.2% of visitors at Franz Josef and 67.8 per cent of visitors at Fox identified rock fall as a hazard; Espiner, 2001), other potentially more harmful hazards can go relatively unnoticed (Espiner, 2001 found that less than one third of all visitors were able to identify any other hazard). Outburst flooding and associated ice collapses are known to have happened in the past, especially when glaciers are in a state of advance (Davies, Smart, Turnbull, 2003; Goodsell, Anderson, Lawson, & Owens,

Plate 2.6: Visitors are exposed to a variety of natural hazards onsite

2005; Sara, 1968). Such an event poses a significant risk to the large number of visitors who linger on, or near, the glacier terminus. Glacier floodwaters can be released from within, on, or under a glacier, or from an ice- or moraine-dammed lake, with little warning (Goodsell et al., 2005), putting visitors within the riverbed at risk from a flash flood or sudden change in river course. More extreme, recorded examples of ice collapses and flooding at the glacier snout were described by Sara (1968, 1974) and Alack (1974).

> *"A party of us was looking at the terminal face of the glacier, it appeared as though the Waiho River was boiling from under the whole length of the ice face… A gigantic slice of the face, the full width of the glacier, trembled and began to fall outward… the slice smashed down on the river water with a terrific crash… completely blocking the riverbed, the immense mass of shattered ice acted as a dam… With a deafening roar the dam burst… Huge blocks of ice were hurled into the air, some of them hurtling up into the bush… Great trees were smashed, others uprooted as the frozen bombardment struck them… For many days after the storm had cleared we were able to locate masses of ice well up in the forest"* (Alack 1974, pp. 65-66).

2.3 Existing Management Approaches:

Standard Operating Procedures (SOP) implemented by the Department of Conservation, currently govern access to the glaciers. The overall aim of an SOP is to provide consistency and quality in a number of operational areas, and a subsequent safer experience for visitors. The Franz Josef SOP gives management staff a tool to systematically assess hazards, accurately undertake access closures and re-openings, confidently employ management tools and ensure operations are completed to the appropriate standard within allocated timeframes (Department of Conservation, 2007).

Currently, management tools consist of permanent and temporary signs, route markers and roped barriers. In the first instance, signage is employed to convey safety messages and hazard awareness to visitors (see Plates 1.1 & 2.3-2.5). If it is likely that signage will be ignored and the hazard level is high enough then roped barriers (see Plate 2.7) will also be installed (Department

of Conservation, 2007). In some places the signs incorporate pictorial images, which were found to be effective in improving visitor compliance (Espiner, 1999). Through current methods it should be clear to most visitors that to proceed beyond such points contravenes management advice.

Throughout this study the term 'closure points' will be used to describe roped barriers and signage employed by management to establish an end point to the access track, beyond which access is not recommended for inexperienced or unguided visitors. Due to changing weather conditions and changes in river flow, closure points at Franz Josef alternated between the Forest Walk and Champness Rock during the data gathering stage of this study (See Figure 2.1) – a distance of approximately 2000m and 250m from the glacier terminus, respectively. Alternatively, at Fox Glacier the closure point was located solely at the Terminal Face for the duration of the field work, at a distance of 50m from the glacier terminus (See Figure 2.2).

Plate 2.7: Forest Walk Closure Point

Currently at Franz Josef Glacier, visitors are duly informed of possible hazards via signage at the car park, and then twice more, at the end of the Forest Walk and Champness Rock, with access beyond these points not recommended for inexperienced or unguided visitors. Similarly, at Fox Glacier visitors are advised of possible hazards via signage at the car park, and then once again at the Terminal Face closure point where a sign states "do not proceed". In addition, hazard warnings are sited at key locations along the access track where hazards exist (i.e. rock fall).

Figure 2.1. Franz Josef Glacier: Closure point locations

Figure 2.2. Fox Glacier: Closure point location

2.4 Visitor Management Issues:

At Franz Josef in particular, gaining access nearer to the glacier terminal is often compromised by the Waiho River when it periodically flows on the true left of the valley, where the access track is also located. During such conditions management recommends that independent visitors (non-guided) remain out of the river bed, which limits viewing of the glacier from a substantial distance (Forest Walk closure point). Such recommendations conflict with the

recognition and expectation of easy access, particularly amongst the local community (Espiner, 2007). However, when the river relocates to the opposite side of the valley, it allows safer, unrestricted access nearer to the glacier terminal. Similarly, access to the Fox terminal face closure point is often compromised by both a number of tributaries that cross the access track at various points, and identified areas of rock fall which temporarily restrict access, especially during wet weather.

A number of factors, such as the iconic status and vigorous promotion of the glaciers, the presence of independent visitors and guided visitors, the high proportion of international visitors, the expectation of easy access, and the relatively benign appearance of the glacier and river, make visitor management at Franz Josef and Fox glaciers somewhat complicated.

Despite the management actions of Department of Conservation staff, it has been reported on a number of occasions that a large number of non-guided visitors prefer to ignore management advice. By choosing to move beyond barriers and warning signs into recognised danger zones, some visitor behaviour can be categorised as noncompliant. Observed behaviour by Espiner (2001), at the glaciers have shown that around 40 per cent of visitors choose to ignore warnings and cross safety barriers. It is also interesting to note that levels of non-compliance were much lower when visitors where asked to self-report on their behaviour through a questionnaire (31% Corbett, 2001 and 23.8% Espiner, 2001). This indicated an inconsistency between reported behaviour and actual behaviour, in that some respondents avoided admitting to something they obviously recognise as being 'rule breaking' or socially undesirable. Although most independent visitors comply and do not go further than the barriers, the number of people who put themselves at risk is fairly significant when the number of people that view the glacier annually is considered. Bogie (2007) has estimated that with a general non-compliance figure of 30 per cent

and an annual visitation of around 420,000 visitors to Franz Josef Glacier, between 100,000 - 150,000 people enter a recognised hazardous area near the glacier terminal annually. As a result, aspects of current management have been identified by climbing guides and also Police, as being inadequate, raising questions over whether the department has adequately fulfilled its duty of care and moral responsibility with regard to visitor management (Bogie, 2007). Because 100,000 (or more) people annually take risks that most probably do not appreciate, it can be argued that the department is not meeting these obligations.

> *"if an accident were to happen in the near future prior to any changes being made, then there would be a range of people in the community saying that they had warned the department and the Police are on record as having expressed concerns on this"* (Bogie, 2007, p. 8).

Chapter Three: Literature Review

3.1 Introduction:

More than 200 years ago, Plato fashioned the term 'akrasia', to explain a weakness of willpower, or the state of acting against one's better judgement - if one judges action 'A' to be the best course of action, why would one do anything other than 'A'? (Wikipedia, 2007). Such a concept applies to situations in natural areas where visitors may correctly identify grounds for compliant behaviour, but choose to do otherwise, largely because of convenience or the potential for personal gain.

In most cases, behaviour within natural areas that goes against social norms or regulations put in place by management, would be judged as unethical, amoral or deviant, depending upon the legally consented purposes of the area's managerial goals, and visitor perceptions and preferences (Roggenbuck, 1992). Previous studies that describe visitor behaviour at track closure points at the glaciers, have shown that decisions to not comply with protective recommendations are not unpredictable acts, but calculated actions taken in expectation of some outcome or reward associated with getting closer to the glacier (Espiner, 1999). As a result, such behaviour can be categorised as noncompliant.

The following literature review provides a theoretical context to the present research. The first section discusses motivating factors, including scenarios explaining why visitors might engage in noncompliant behaviour. It describes a range of factors, such as situation interpretation, information retrieval and judgement formation, which may influence visitor compliance. Examples are used from within the field of natural resource recreation, including specific examples from previous studies at the glaciers, where relevant. Section 3.2 defines direct and

indirect visitor management techniques and reviews relevant literature regarding their strengths and weaknesses in increasing visitor compliance with protective recommendations. Section 4.4 outlines Gramann & Vander Stoep's (1987) system for classifying motives of noncompliant behaviour, through 'typologies' of normative violations, which argues that such behaviour can also be explained in terms of a failure to comply with social norms. Section 3.5 introduces Ajzen's (1985; 1991) theory of planned behaviour. This theory is designed to predict and explain motivational influences on human behaviour in specific contexts by examining a person's intention to perform a given behaviour. Finally, the literature review concludes and leads into the dissertation's primary research.

3.2 Motivating Factors of Non-compliance:

Damage to natural and cultural resources due to noncompliant visitor behaviour is a major problem facing managers of outdoor recreation resources (Gramann, et al., 1995; Gramann and Vander Stoep 1987; Ward and Roggenbuck (2003). Research suggests that the reasons behind non-compliance are many and varied, making the management of such behaviour difficult. Ward and Roggenbuck (2003) provide three scenarios as to why individuals might engage in non-compliant behaviour; (1) the individual refuses to comply with social norms, either intentionally or to some extent, unintentionally; (2) the visitor will often be in pursuit of some sort of goal, i.e. of equity, competence or arousal, and; (3) the visitor is human, and therefore possesses somewhat of a 'self-maximising' "tragedy of the commons" attitude, and a need to acquire benefits for the individual over what any rule may say about the costs for others (Hardin, 1968).

Within the field of natural resource recreation, there is a range of factors that may affect decisions not to comply with protective recommendations presented by management. These can

be categorised as; (1) situation interpretation; (2) information retrieval, and; (3) judgement formation (Harding, Borrie, & Cole, 2000).

First, there are a number of situational factors or circumstances that exist within outdoor recreation settings that potentially encourage or justify noncompliant behaviour, such as; environmental cues, hazard awareness, the voluntary nature of recreation, and the probability of enforcement. Research suggests that existing conditions or environmental cues, can influence visitor behaviour in natural recreation settings. For example, Samdahl & Christensen (1985) found that occurrences of vandalism increased where previous evidence of vandalism already existed. Visitors may also alter their behaviour in response to adverse conditions. It is widely found that the effects of crowding within recreational settings, can result in various coping behaviours such as displacement, rationalisation or product shift (Manning, 1999). Studies by Corbett (2001) at Franz Josef Glacier, highlighted the potential for visitors to rationalise their behaviour based on the behaviour of others. For example, seeing guided groups or other individual visitors beyond the safety barriers, may encourage others to follow suit on the grounds that if 'they can, we can'.

Protective rules and recommendations are applied to reduce hazards and protect visitor safety. But because a large proportion of visitors are unfamiliar with the environments in which they are entering, they have no previous experience on which to base hazard perceptions, resulting in a hazard awareness that is likely to be low and inaccurate. The potential therefore exists for visitors to dismiss protective recommendations as implausible, especially when visitors may also have unrealistic goals or expectations. Studies at Franz Josef and Fox glacier by Espiner (1999; 2001) established that visitor perceptions of hazards can at best be described as modest, and

among some visitors, poor. This perhaps suggests that there is little, if any, perceived danger influencing visitors to stay behind safety barriers.

Because recreation is a leisure activity, visitors often associate it with a sense of freedom and free choice in both thought and actions (Manning, 1999). Protective rules and recommendations designed to control visitor behaviour can be seen as 'inherently contradictory' to the very nature of recreation itself (Duncan & Martin, 2002; Frost & McCool, 1988; Lucas, 1982; Manning, 1999). On this basis, there is the potential for rules and regulations to be flouted through a sense of increased behavioural freedom that is commonly associated with recreation. While studies by Espiner (1999; 2000) identified a strong reaction against over-management of natural areas, visitors expressed a reliance on managers to inform them of potential dangers and provide appropriate facilities to allow safe access. Increasingly, it can be argued that visitors become dependent on the Department of Conservation, taking less responsibility for themselves, with a commonly reported belief that 'we wouldn't be allowed to come here if it wasn't safe' (Espiner, 2001). Espiner (1999) suggested that this is partly attributed to the increasing number of international visitors who may have differing assumptions and expectations about risk or the extent to which they are personally responsible for their own safety.

The probability of being 'caught' or action taken for enforcement in natural recreation settings is often minimal. In addition, because a valued part of recreating in the outdoors involves minimal personal contact, the opportunities for behavioural change through social pressure are limited. For example, Hendricks, Ramthun, & Chavez's (2000) study of mountain bikers, found low levels of conformance with standard trail etiquette in the absence of referents, such as walkers, other bikers or a uniformed officer. Visitor perceptions of noncompliant behaviour are therefore

influenced by a perception that protective rules and recommendations are not enforced and are therefore somewhat voluntary.

Second, communications-based strategies are often an effective means of getting visitors to voluntarily alter their behaviour so as to protect park resources (Roggenbuck, 1992), or to manage risk-taking behaviour by increasing visitors' awareness of potential hazards (Espiner, 1999; 2001). However, compliance with protective recommendations is unlikely to change if information is not easily interpreted by visitors onsite. There have been a number of studies that have compared the effectiveness of various approaches of conveying information to visitors, being part of a broader debate over the effectiveness of direct and indirect management techniques (see Section 3.3). These include; the effectiveness of standard, sanctioning and social influence messages, and ethical appeals, conveyed on different signs or brochures (Johnson & Swearingen, 1992; Martin, 1992); the comparison of a sanction sign, a signed pledge and verbal messages via a uniformed officer (Ward and Roggenbuck, 2003); comparing the influence of interpretive and sanction signs (Duncan & Martin, 2002); persuasive messages (McCool & Braithwaite, 1992; Roggenbuck, 1992); pictorial hazard warning signs (Espiner, 1999; 2001); awareness of consequences, and moral and fear appeals (Cohn, Hendricks, & Chavez, 2008; Hendricks, et al., 2000; Parkin & Morris, 2005), and finally, prescriptive versus proscriptive messages (Winter, et al., 2000). Previous research has shown variability in the effectiveness of different techniques, suggesting that results are largely influenced by a variety of situational contexts in which studies have been conducted.

Third, behaviour may be influenced by the judgements that visitors form towards a situation, through a variety of motivating factors such as the ignorance of consequences; social justification; the credibility of management actions and the cost of conforming. Studies by Ward

and Roggenbuck (2003), found that petrified wood theft, was judged tolerable by visitors who were unable to identify with or understand the consequences associated with taking smaller pieces of wood. Visitors defended their actions in a manner such that it appeared socially acceptable. This kind of behaviour has been classified as 'erosive' or 'progressive' vandalism (Christiansen, 1983; Martin, 1992), as violators are unlikely to think of the cumulative effects of such behaviour on a resource, and therefore are not likely to consider their actions as rule breaking (Martin, 1992). Similar behaviour studied by Martin (1992) on the taking of pumice from Mt St Helens National Volcanic Monument, and Nesbitt's (2006) study of off-leash dog use in a public park, identified comparable judgements in that such violations were considered 'minor'. Minor violations are perhaps the most difficult to control in that violators may view rules and regulations as seemingly unimportant, and any subsequent consequences minimal.

The credibility of hazard warnings or environmental protective measures may be doubted if visitors do not agree with the need or the action taken for enforcement. Previous studies at Franz Josef and Fox Glacier (Bogie, 2007; Espiner 2007) concluded that current management techniques, such as locating multiple warning signs and barriers, especially at points where there is no perceivable risk, may contribute to the problem by developing a general attitude that hazard warning signs are not to be taken seriously.

In the situations described above, visitors are also likely to perceive a cost associated with conforming, such as little or no reward. According to Graman et al., (1995) and Gramann & Vander Stoep (1987), when protective rules are obeyed voluntarily, despite a temptation to disobey them, a pro-social act has occurred, because obedience exacts a perceived cost to the conformer without any benefit for obeying. Previous studies at the glaciers by Espiner (2001) found that a majority (69.6%) of visitors surveyed, expressed the desire to get closer (than they

had) to the glacier. Due to anticipated experiences being mismatched with actual experience, visitors often feel that the personal cost of remaining behind the barrier is greater than the costs associated with going further, especially if there is minimal perceived risk, little personal effort, or a very small chance of being reprimanded. Bogie (2007) and Espiner (2007) identify inconsistencies within travel promotion marketing brochures, and the distinction between guided tours and the general public, as possibly contributing to these created expectations. Unrealistic goals or expectations may therefore have an effect on the judgements visitors form towards management recommendations by increasing the perceived cost associated with conformance (i.e., limited visitor experience).

3.3 Indirect and Direct Management Techniques:

A variety of management practices are available to help recreation managers reduce noncompliant or depreciative behaviour within natural settings, and communicate hazard information to visitors onsite. These practices can be classified on the basis of whether they act directly or indirectly on visitor behaviour (Manning, 1999). Direct management can be defined as the strict enforcement through sanctioning of rules and regulations governing visitor actions, leaving little or no freedom of choice (See Figure 3.1) (Gramann, Christensen & Vander Stoep, 1992; Manning, 1999). Such measures may include surveillance, issuance of tickets and fines, imposing limitations or restrictions, rationing, (i.e., permits or lotteries), and activity zoning. Direct management approaches and regulations have been described as anathema to recreation itself (Frost & McCool, 1988). "Recreation is a voluntary, pleasurable, rewarding activity, based on free choice, while regulations are designed to restrict free choice" (Lucas, 1982, p. 148). For these reasons, direct management is widely viewed as justifiable when it is the least that is necessary, or when it is not considered contrary to the desired experience (Duncan & Martin, 2002; Lucas, 1982).

In contrast, indirect management techniques encourage more or less voluntary changes in visitor behaviour by influencing the decision factors upon which visitors base their behaviour, without the explicit threat of sanctions for failure to comply (Manning, 1999; Gramann et al., 1992). See Figure 3.1. Indirect measures may include interpretation and education, identification of alternatives, and site or facility design.

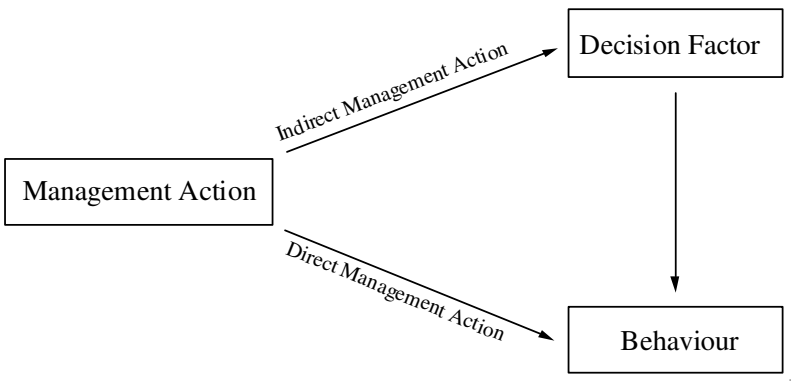


Figure 3.1. Diagram of direct versus indirect management techniques (Source: From Manning, 1999, p.241).

Situations exist within natural recreation settings where visitor regulations may be necessary, such as a need for regulations to reduce hazard concerns and ensure visitor safety, or to protect a resource, for example, the setting of a quota for game species (Lucas, 1982). In most instances, particularly within New Zealand (with the exception of hunting quotas), regulations within natural settings are likely to be self-regulatory or voluntary and not enforced through law.

Although indirect techniques tend to be less controversial, the big question is effectiveness. Indirect management techniques are generally favoured only where they are believed to be effective (Manning, 1999). Drawing heavily on Hardin's (1968) theory of "the tragedy of the

commons", indirect management techniques have been criticised for going against a human tendency - to maximise personal welfare at the expense of public welfare (Gramann et al., 1992). Underlying attitudes of visitors may therefore be difficult to change onsite through the use of interpretation or other indirect approaches (Gramann et al., 1992). A review of relevant literature revealed mixed results when comparing the effectiveness of direct and indirect techniques. While studies by Johnson & Swearingen (1992) and Martin (1992), showed sanction messages to be more effective than standard, interpretive or social influence messages, in contrast, Duncan & Martin (2002) found both interpretive and sanction messages to be equally effective in altering visitors' intended behaviour. Similarly, Ward and Roggenbuck (2003) found no differences in the effectiveness of an interpretive sign in reducing depreciative behaviour, compared with a previous sign that read "removal of petrified wood is prohibited".

Regardless of the methods used, many researchers have demonstrated that when visitors are made aware of the link between their actions and the consequences of those actions, depreciative and rule breaking behaviour declines substantially. Therefore, early interpretive messages that provide a rationale for recommended behaviour are likely to be more effective at promoting personal responsibility to obey rules and protect resources than simple statements or vague suggestions (Gramann et al., 1992). In addition, the greater the consequence to self, the more likely compliance will result, meaning fear appeals are likely to be more effective than moral appeals (Cohn et al., 2008).

3.4 Failure to Comply with Social Norms:

Noncompliant behaviour can also be explained in terms of a failure to comply with social norms. Social norms being widely accepted shared beliefs about what behaviours are right or wrong in a given situation (Gramann & Vander Stoep 1987). Through social development, individuals

become familiar with a set of norms, internalising these into a set of moral standards by which they then evaluate their own actions (Gramann & Vander Stoep 1987). Conformance therefore can be described as a person's sense of moral obligation to do the right thing. Social norms are frequently violated in everyday life, for example - littering, double parking or exceeding the speed limit. The varying degrees by which a norm is considered as inappropriate by society, heavily dictates the frequency by which such an act is committed (Gramann & Vander Stoep 1987).

There are a variety of causes for noncompliant behaviour, for which Gramann & Vander Stoep (1987) offer a practical system of classifying motives, through 'typologies' of normative violations within natural settings. This typology is as follows:

1. *Unintentional* - actions taken by individuals who are unfamiliar with expected behaviour.

2. *Uninformed* - actions that, although often well meant, are committed without awareness of the behaviour's damaging consequences.

3. *Releasor-cue* - violations that occur from seeing others commit a violation, or seeing traces of violation that have gone unpunished through enforcement or indirectly through social stigma.

4. *Responsibility denial* - violations that occur when an individual generally believes an action to be wrong, but does not assume moral responsibility for that action in certain circumstances, because conforming seems unreasonable or impossible.

5. *Status conforming* - violations that occur in response to social influence from important reference groups or social networks.

6. *Wilful violations* – violations that occur freely for financial gain, ideological protest, revenge, malice or fun. Wilful violators will act in defiance of regulatory enforcement or social stigma.

Nesbitt (2006) identifies an understanding of noncompliant behaviour in outdoor recreation as an area of research that is severely lacking. This seems surprising considering non-compliance is reported as one of the most significant problems facing natural resource managers (Ward & Roggenbuck, 2003; Gramann et al., 1995). Although there have been a few studies that have been conducted on noncompliant behaviour in natural resource areas, most have been site-specific attempts to control or reduce such behaviour, and few attempts have been made to gain an understanding of the behaviour, or to understand the behaviour from the perspective of those committing the acts (Ward & Roggenbuck, 2003). A better understanding of the motivations behind noncompliant behaviour may lead to more effective management strategies in behaviour modification, as managers may apply different persuasive strategies, depending on which factors are recognised as contributing to non-compliance.

3.5 Planned Behaviour Theory:

Motivations behind noncompliant behaviour may be better explored through examining a person's intention to perform a given behaviour. "Intentions represent a person's motivation in the sense of her or his conscious plan or decision to exert effort to enact the behaviour" (Conner & Armitage, 1998, p1430). Intentions thereby capture the motivational factors that influence a behaviour, by giving an indication of how hard people are willing to try, or the effort they are willing to put in, to perform a given behaviour (Ajzen, 1991).

Research by Ajzen & Driver (1991) has shown that those who engage in recreational pursuits evaluate their leisure behaviour in much the same manner as other personal decisions such as job hunting, house buying or losing weight. After all, the decision on whether or not to engage in any behaviour is based upon careful consideration regarding the attributes of a likely outcome, attitudes toward the behaviour and the costs associated with performance (Nesbitt, 2006). As a result, the fields of social psychology and sociology have much to offer in understanding the reasoning behind noncompliant behaviour in natural settings. The most influential theories for understanding and predicting behaviour since the 1970s have been Fishbein and Ajzen's theory of reasoned action (1975), and its extension, the theory of planned behaviour (Ajzen 1988; 1991).

Although the theory of planned behaviour has been successfully applied to predict a wide variety of behaviours (Conner & Armitage, 1998), only a limited number of researchers have used the theories of planned behaviour to explain non-compliance within the fields of leisure, recreation, tourism, and natural resource management. Included among these are the act of walking dogs off-leash within a state park (Nesbitt, 2006); factors that limit compliance with low-impact recommendations (Harding, Borrie, & Cole, 2000); understanding park visitors' response to interventions to reduce petrified wood theft (Ward & Roggenbuck, 2003), and predicting hunting intentions and behaviour (Hrubes, Ajzen & Daigle, 2001).

The theory of planned behaviour is a theory designed to predict and explain motivational influences on human behaviour in specific contexts (Ajzen 1991). At a basic level of explanation, the theory of planned behaviour hypothesises that the performance or non-performance of a behaviour is a function of salient information, or beliefs, relevant to the behaviour (Ajzen & Driver, 1991). These salient beliefs are therefore considered as the

prevailing determinants of a person's actions or behavioural intentions (Ajzen & Driver, 1991), and can be placed into the categories of behavioural, normative and control beliefs. Behavioural beliefs are assumed to influence our attitudes about the desirable or undesirable consequences of the behaviour; normative beliefs constitute the underlying determinants of subjective norms, or social pressures to engage in a particular behaviour, and control beliefs, being a person's belief that he or she has the opportunity, knowledge, skill, and resources necessary to perform the behaviour. These three categories provide the basis for perceptions of behavioural control (Fishbein & Manfredo, 1992; Fishbein & Ajzen, 1975).

The theory of planned behaviour could consequently be expressed as a deliberative processing model, as it implies that individuals make behavioural decisions based on careful consideration of available information (Conner & Armitage, 1998). See Figure 3.2.

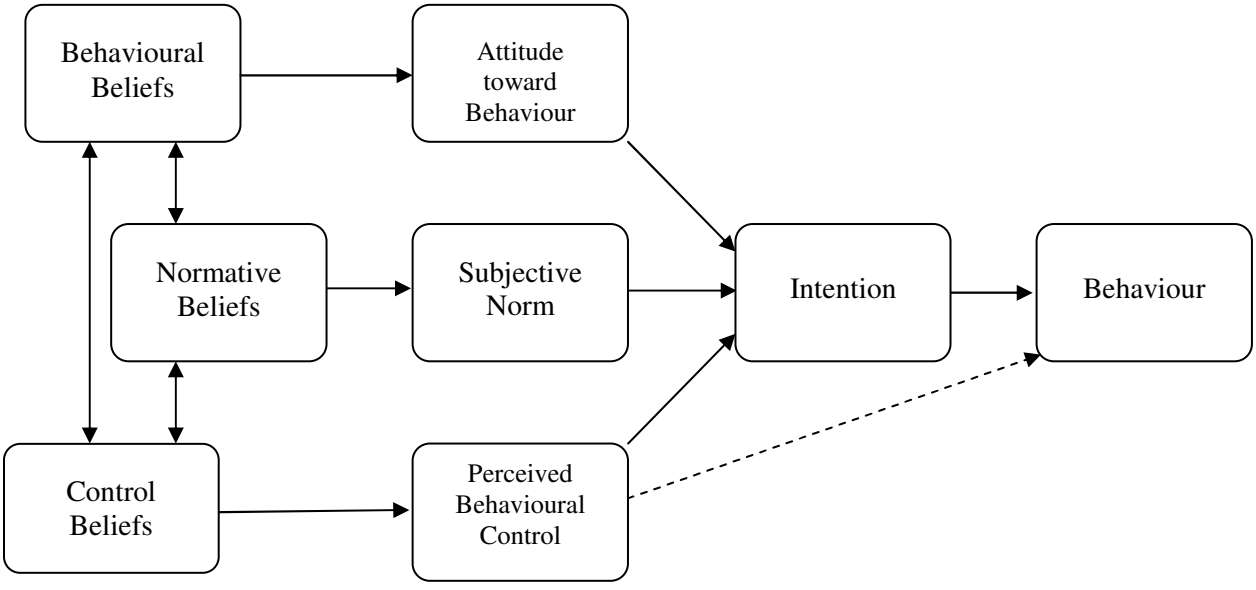


Figure 3.2: The theory of planned behaviour. (Source: From Ajzen, 1991, p. 182)

It should be noted that this study uses Ajzen's theory of planned behaviour as a broad framework for interpreting visitors' behaviours and attitudes, unlike previous studies which used the theory to generate a prescribed research instrument to measure and predict particular social issues and behaviours.

3.6 Chapter Conclusion:

The literature review has provided a definition of noncompliant behaviour within natural areas and described a range of factors that may affect decisions to comply with protective recommendations, such as situation interpretation, information retrieval and judgement formation. It has reviewed the strengths and weaknesses of direct and indirect visitor management approaches, concluding that regardless of the means of conveying information, messages which provide a rationale for recommended behaviour are likely to be more effective than vague suggestions. As a result of this literature review, it has been established that although there have been a number of studies that have investigated noncompliant behaviour in the fields of leisure, recreation, tourism, and natural resource management, most have been site-specific attempts to control or reduce such behaviour, and few attempts have been made to gain an understanding of the behaviour, or to understand the behaviour from the perspective of those committing the acts. This study aims to further explore salient motivations of noncompliant behaviour through Gramann & Vander Stoep's (1987) 'typologies' of normative violations, and Ajzen's (1988; 1991) theory of planned behaviour, so as to suggest appropriate management techniques to target a change in intentions to engage in those behaviours.

Chapter Four: Research Methods

4.1 Introduction:

The aim of this study is to quantify levels of noncompliant activity within a natural resource recreation setting, and to investigate and classify motivating factors of non-compliance with protective recommendations, to help target a change in those beliefs. With a purely quantitative study it is impossible to speculate whether visitors are even aware that protective recommendations exist or whether compliance with these is expected. For this reason different research tools were utilised to investigate the varied aspects of the research question. Qualitative research methods were utilised to provide rich, contextual and detailed data, resulting in a deeper understanding of descriptive information gained through observations, moving research beyond the describing of a situation or event towards an explanation and understanding of the research questions.

> *"At the core of fieldwork is not the collection of facts, or the controlled observation of objective facts but rather a deeper holistic experience of learning about the lives, behaviours and thoughts of others*" (Emerson, 1983, p15).

This chapter presents the design and methods used to reach the study objectives. Section 4.2 provides a rationale for choosing the study setting. Sections 4.3 – 4.6 detail the methods of data collection, management and analysis. Section 4.7 discusses the ethical considerations of the research design and methods. And finally, section 4.8 outlines the limitations of the study.

4.2 Rationale for Choosing the Case Study Area:

This study investigated levels of compliance as a key measure of several interrelated themes: Visitor perceptions, attitudes and behaviour towards natural hazards and management recommendations within protected natural areas. The glaciers of Franz Josef and Fox were chosen as case study locations for a number of key reasons. First, the glaciers are a world-renowned and popular tourist destination, attracting some 600,000 international and domestic visitors annually (Bogie, 2007). Second, the glaciers have been described as a benign and unpredictably hazardous environment where visitors are potentially exposed to a number of risks at any one time. Third, obvious issues have been recognised associated with the low level of visitor compliance with management recommendations. Fourth, the glaciers are protected natural areas, situated within the South Westland National Park and are intensively managed by the Department of Conservation. Finally, by studying two locations, Franz Josef and Fox, the presence of similar physical situations at both will allow comparisons to be made between different visitor management practices (in particular the proximity of closure points to the glaciers), hazard awareness and levels of compliance. These factors result in a highly suitable situation for studying the abovementioned themes; two similar, highly visited environments that are somewhat hazardous, resulting in a recognised problematic situation, that require ongoing intensive visitor management by the Department of Conservation. Concern over visitor compliance with management recommendations at the glaciers is ongoing and there is a clear need to establish levels of noncompliant behaviour and associated motivating factors.

4.3 Quantitative Observations:

Previous study by Espiner (2001), indicated an inconsistency between reported behaviour and actual behaviour, therefore highlighting the efficiency of covert observations over quantitative questionnaires or qualitative interviews in the collection of accurate data. In order to establish a

consistent measure of visitor compliance to management recommendations, a quantitative model was developed and tested, providing a standardised method of using 'covert' observations to establish levels of compliance at various glacier closure points (see appendix 1).

Quantitative observations were undertaken each day for the duration of the fieldwork phase of this study. Weather, access conditions and changing closure point locations largely dictated the location where these observations were carried out.

The observer was located in a pre-determined place, from which a good view of approaching visitors could be gained, as well as the glacier terminal face ensuring visitors who chose to move beyond the closure point barrier remained visible. Usually this was a distance of between ten and twenty metres back from the roped closure, but also making certain the observer remained compliant at all times. As the observations were covert, locating the observer a distance back from the closure barrier reduced visitor awareness, allowing the observer to carry out observations as discretely as possible, ensuring that his presence had minimal impact on visitors' reactions to management recommendations.

Discrete recordings were made of the total number of visitors who reached the closure point, and of those visitors who did not comply with management recommendations (i.e., those who proceeded beyond the roped closure points). Other relevant data was also recorded for each individual visitor including; observed gender, estimated age range, party size / number of individuals within each group, presence of dependent children under the age of 16, and whether or not other non-compliant visitors and/or guided visitors were visible beyond the closure barrier. Altogether, a total of 2265 Visitors were sampled over 9 days during December 2007 and January 2008. Other general information recorded at the beginning of each observation period

included time of day, physical conditions including weather and river flow, and current closure point location. It is believed that each of these factors may potentially have an influence on levels of visitor compliance with management recommendations.

Track counter statistics provided by the Department of Conservation at Franz Josef were also utilised to gain an understanding of total visitor numbers entering the study setting. In addition, counter statistics gave an indication of visitor movements within the site, when compared with total visitor numbers reaching various closure points. Unfortunately, track counter statistics were unavailable for Fox Glacier due to technical difficulties at the time field work was carried out.

4.4 Qualitative Observations:

Informal observations were made during each formal quantitative observation. Information recorded included; description of closure point type (i.e., management techniques through signage and roped barriers to convey messages of hazard awareness); descriptions of actual and potential hazards, and; relevant observed visitor behaviour and reactions to natural hazards and management recommendations.

4.5 Qualitative Interviews:

Research also included onsite qualitative interviews with visitors to both Franz Josef and Fox glaciers, so as to better explore visitor behaviour, perceptions, and attitudes towards natural hazards and management recommendations. Forms of qualitative interviews can range from highly structured interviews where the objectives are specific, to unstructured interviews which are characterised by spontaneity (Singleton & Straits, 1999). In this study, interviews were conducted on a semi-structured basis to ensure specific research objectives were addressed, but allowing the interviewer a degree of freedom to pursue specific topics raised by the respondent.

A general plan of inquiry was used (see appendix 2), although the direction of the interview diverged away from this as necessary.

Twenty seven interviews were conducted onsite at either Franz Josef (19), or Fox (8) during the later stages of the fieldwork phase of this study, January 2008. The selection of respondents for the interviews was done using a convenience non-probability approach (Singleton & Straits, 1999), although interviewees were purposefully sampled so as both compliant and noncompliant visitors were interviewed. Such an approach was chosen because of the small sample size and the 'catch-as-catch-can' attitude needed to obtain participants who were, for the majority of their time spent in the study setting, actively walking. Because of the short period of time allocated to interviews and further restrictions due to bad weather, interviews were generally held on a continuous basis, i.e. the next interview being sought immediately after completion of the previous. A total of 20 men, 5 women and 2 couples (who preferred to be interviewed together) were approached onsite and asked if they wished to take part. Although men are frequently over represented in active outdoor pursuits (Booth & Peebles; 1995), this proportion does not bear a resemblance to the actual population sampled (during quantitative observations), and is most likely to be a case of what has been described as 'male leader bias' (Devlin, 1976, as cited in Espiner, 2001, p. 144). Although attempts were made to randomly select interviewees (on a convenience basis) the majority of groups encountered were couples, of which the male often took the responsibility of answering questions. Interviews were generally of a fairly short duration (ten minutes), because of the relatively short period that visitors remained within the research setting (the majority of which is spent actively walking resulting in a relatively small window of opportunity where visitors remained stationary to view the glacier). Interviews were digitally recorded and later transcribed for analysis.

4.6 Data Analysis:

4.6.1 Quantitative Data Analysis:

Observational survey results were entered into a spreadsheet programme (Microsoft Excel) and later into the Statistical Package for Social Scientists (SPSS) for further analysis.

4.6.2 Qualitative Data Analysis:

Field notes taken during observations were analysed and indexed by theme, using colour or numerical codes to represent recurrent concepts.

Interviews were digitally recorded and later transcribed. verbatim, ensuring information remained contextually accurate. Transcriptions were analysed and indexed by theme, using colour and numerical codes to represent visitor responses and each of the objective themes explored throughout the interviews. Themes were then collated and analysed.

4.7 Ethical Considerations:

> *"While the natural and medical sciences have been singled out for producing some of our most colossal risks, such as nuclear energy and genetic engineering, the social sciences are now also recognized as a risk-producing endeavour"* (Haggerty, 2004, p.392).

As important as it is to use suitable methods in social research, it is also important to ensure we go about it in an appropriate manner. Ethical consideration should be given to ensure proposed research methods do not inflict physical or emotional harm on participants, for example; by asking questions that may cause undue pressure, humiliation or anguish; the creation of situations to deliberately deceive; or the collection of material that would contravene one's

privacy (Singleton & Straits, 1999). Singleton & Straits (1999, p.513), identify "three broad areas of ethical concern in scientific research". First, data collection and analysis, where it should be inherently placed upon the researcher to be assiduously honest, to willingly admit error and place the pursuit of knowledge and understanding above personal gain or the promotion of a particular philosophy or ideology. Second, the researcher's responsibility to society, and the delicate relationship that exists between scientific practice and society. And third, the treatment of participants and ethical implications such as potential harm, forced performance against one's will, lack of informed consent, deception and privacy invasion. Such implications in today's society are considered a violation of human rights (Singleton & Straits, 1999), and should by no means be exempt in research settings. "Ethical issues are an integral part of the research experience as much as they are a part of the experience of everyday life" (Lofland, Snow, Anderson, Lofland, 2006, p28).

This research was conducted in accordance with accepted social research protocols and was approved by the Lincoln University Human Ethics Committee. The following ethical considerations were considered in the conducting of this research.

4.7.1 Observations:

In particular, the use of covert observations within this study raised a number of ethical issues from the perspective of informed consent. There has, in the past, been much debate over the ethical status of covert observations, largely due to the belief that by failing to disclose his or her presence the researcher is guilty of intentional deceit (Erickson, 1967; Lofland, *et al*., 2006, pp. 36-37). Lofland, *et al*., (2006) dismiss such criticism of the method, arguing that in such situations it is simply not possible to remove deceit entirely; that presumably no harm is likely to

come to any of the people observed; and because often nothing more than a 'ho-hum' attitude is exhibited by those who learn that they are under observation.

In this particular study, covert observations are acknowledged as being essential to the collection of accurate data. Previous studies by Espiner (1999; 2001), indicated an inconsistency between reported behaviour and actual behaviour, therefore highlighting the efficiency of covert observations over quantitative questionnaires or qualitative interviews in the collection of accurate data. In light of the argument put forward by Lofland, *et al*., (2006), in this case informed consent was believed to be ethically unnecessary. First, the researcher did not intentionally deceive those observed solely for the purpose of deception, but rather because resulting data would be more valid and reliable. Second, it was ensured that the researcher would remain visible to visitors at all times. Third, observations were unlikely to result in any harm to research participants, as the anonymity of respondents was respected in any published material and through the collection of only non-identifiable information during observations. And finally, because research was conducted within a busy public setting, obtaining consent from every visitor observed during observations was simply not practical, and would potentially result in the collection of inaccurate data. According to Singleton & Straits, (1999, p. 519) "a researcher's desire to observe subjects' spontaneous and natural behaviour is incompatible with the acquisition of consent: to obtain informed consent destroys subjects' naiveté and defeats the purpose of the study". For that reason, informing visitors of the researcher's presence and that their behaviour was being observed, could potentially undermine the objectives of this study; to verify an accurate quantitative measure of non-compliant behaviour, by having an influence on decisions to comply with management recommendations. Such a phenomenon has been referred to as the problem of 'reactivity' or the 'Hawthorne Effect', an influence that can occur in

experiments when subjects know they are being studied and change their behaviour as a result (Babbie, 2007, p290).

Despite this argument, it was advised by the Lincoln University Human Ethics Committee that a sign be displayed at the beginning of each glacier walk (Appendix 5), to advertise the presence of the researcher and alleviate any potential claims of deceit. Although it can be argued that visitors would have most likely made decisions independently of whether or not there was a researcher present, it is impossible to completely dismiss that their behaviour was not modified in reaction to the known presence of the researcher and the nature of the research topic. Although no visitors questioned the purpose of the researcher's presence at the study site, information sheets (detailing the title and brief description of the research study, and contact details of the researcher and supervisor) were carried by the researcher.

4.7.2 Qualitative Interviews:

Before each interview, respondents were well informed about the purpose of research (Appendix 3) and the likely time required of them to participate, and then asked to sign a consent form (Appendix 4). Respondents were informed that participation in this research study was completely voluntary. The anonymity of respondents has been respected in any published material through the use of participant codes allocated to each interviewee. Codes were printed on each interview face sheet and corresponding information sheet (which was handed to each respondent). Respondents were informed prior to the interview commencing that should they decide to withdraw information, it was possible to contact the researcher and, quoting the code from the information sheet, have information deleted from the research study.

Due to the nature of the study setting there were a number of foreseeable physical hazards that research participants were exposed to while taking part in interviews. However, it is emphasised, that in this case physical risks were no more or less prevalent in the research context than if the research was not being conducted at all. The researcher sought to minimise risks to participants by completing interviews away from recognised hazardous areas (i.e., well away from glacial rivers and areas of rock fall).

While there was no foreseeable physical risk directly associated with participation in the research study, interviews did involve questioning visitors about their attitudes towards compliance and what is arguably 'rule breaking' behaviour. Potentially, inquiring about such behaviour could lead to respondents becoming defensive and/or emotionally distressed. In particular, the topic of compliant behaviour was approached sensitively and in a non-judgemental manner by the researcher. Fortunately, during fieldwork there were no interviews that had to be ceased immediately due to respondents becoming upset or agitated.

4.8 Limitations of the Methods:

Because participants for qualitative interviews were sought using a convenient non-probability approach, the sampling procedure does not represent an absolute random sample of visitors to the glaciers for the duration of the research period. According to Singleton & Straits (1999), non-probability sampling does not account for investigator bias in the selection of units, and because variability cannot be predicted, it is not possible to calculate a sampling error. A non-random sample is most noticeable in the over representation of males interviewed as opposed to females.

Due to ethical considerations, it was required that visitors be notified of the observer's presence and that research was being undertaken. It is therefore possible that this knowledge had an

influence on decisions to comply with management recommendations thereby resulting in an inaccurate quantitative measure of noncompliant behaviour.

The use of translators in this study was not feasible. This may have limited interviews, and the sample size, to visitors who were relatively fluent in English and who felt comfortable enough to participate. On several occasions interviews were declined due to language barriers.

Research methods were largely dictated by current management actions, such as the specified location of closure points and hazard warning signs, at the time research was carried out. Because management actions are in turn largely at the mercy of the environment (for example, the position of the Waiho River at Franz Josef) there is no reliability in predicting where observations are able to be undertaken.

Chapter Five: Characteristics of Visitors and Visitation

5.1 Chapter Introduction:

This chapter presents the results collected during the quantitative observations and meets the requirements of the first objective of this study: To form a demographic and behavioural profile of visitors to Franz Josef and Fox Glaciers. Based on a visual analysis of visitors during observations, section 5.2 presents identifiable characteristics including; visitor gender, age, group size and the presence of dependent children. Section 5.3 describes characteristics of visitation, using information obtained through both quantitative and qualitative observations and Department of Conservation track counter statistics. These include, total numbers of visitors observed per hour at various closure points, a description of visitor movements throughout the study settings (Franz Josef only), and the average length of time visitors spend within the study settings. Results are compared with results from previous studies (Corbett, 2001; Espiner, 1999; 2001) where relevant. Other study objectives are addressed in chapters six and seven.

5.2 Characteristics of visitors:

5.2.1 Gender:

The observed gender of non-guided visitors was fairly even at 51 per cent male and 49 per cent female (see Figure 5.1). This is comparable with previous studies where survey respondents were a mix of 52 per cent male and 48 per cent female (Corbett, 2001; Franz Josef Glacier only) and male 55 per cent

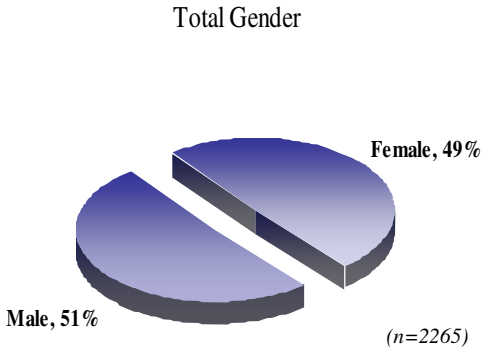


Figure 5.1: Gender

and female 45 per cent Espiner (2001). Generally, studies within outdoor recreation have found a higher male to female ratio, especially in more active outdoor pursuits (Booth & Peebles, 1995). Male to female ratios at the glaciers are likely to be more reflective of the general visitor population due to the relative ease of access to the glaciers and the fairly passive recreational nature of viewing the glaciers. This theory is strengthened by Simmons and Fairweather (2001), where studies found that visitors to the West Coast consisted of a ratio of 50.6 per cent male and 49.4 per cent female, identical to the ratio surveyed at glacier closure points. This indicates that the gender of the visitor population recorded at the glaciers is somewhat reflective of the general West Coast visitor population.

5.2.2 Estimated Age:

The most frequent estimated age groups of unguided visitors observed at both glaciers were equally (29%) 17-30 and 31-44 years of age (see Figure 5.2). Previous studies by Corbett (2001) and Espiner (2001) showed a similar dominance of visitors in the 20-34 year age bracket, but also showed a clear decrease in the number of visitors of 35-49 years of age. It is likely that this study does not resemble this pattern due to the generalisation of observations, and the difficulty of visually assessing the age of individuals in their 'middle' years. In addition, the majority of this study has been conducted during the peak holiday period and the domestic school holidays, leading to a likely increase in the number of family groups and subsequent middle aged parents. This is evident in the fairly high percentage (16%) of dependent children

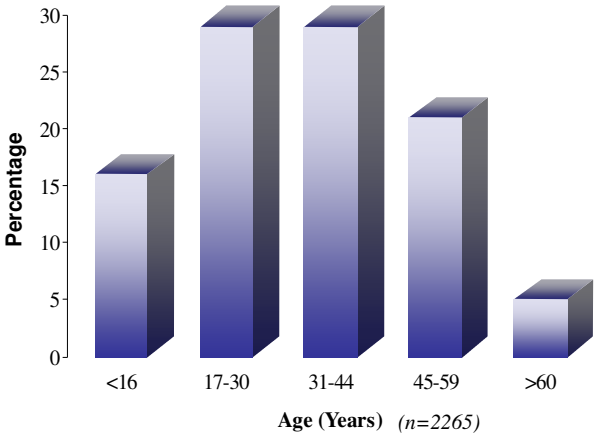


Fig. 5.2: Estimated age

under the age of 16 recorded overall. However, this percentage did not change between observations conducted in December and those conducted in January. In contrast previous studies were conducted in late February (Corbett, 2001) and late January through to March (Espiner, 2001), outside of the peak holiday period. Studies by Simmons and Fairweather, (2001) showed a similar predominance of visitors to the West Coast between the ages of 25-34 years (26.2%), indicating that the age of the visitor population recorded at the glaciers is somewhat reflective of the general West Coast visitor population.

In observing the age demographic of guided tour groups it was noted that they predominantly consisted of younger visitors in their twenties or early thirties. This observation is confirmed by Corbett (2001) who found 75 per cent of guided tour groups consisted of visitors in their twenties to mid thirties. Given this, if the total number of visitors to the glaciers were measured (guided and unguided inclusively), then the proportion of 20 to 34 year olds would be substantially predominant.

5.2.3 Group Size:

The most frequent group size of non-guided visitors to the glaciers was two (47%; see Figure 5.3), the majority of which were male and female couples. The high proportion of couples is consistent with previous research at the glaciers. Corbett (2001) reported 66 per cent of visitors visited with another, and Espiner (2001) reported 42 per cent visiting with a partner. Recorded results were consistent with wider research findings in

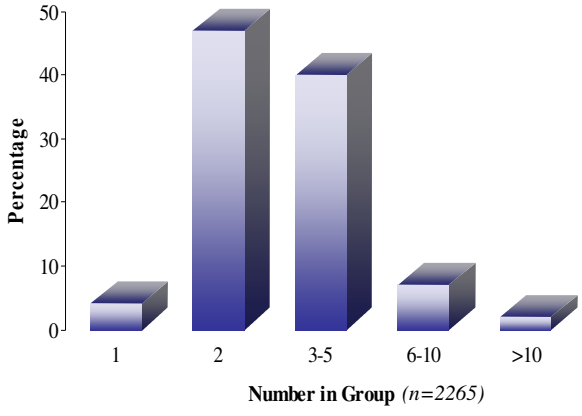


Figure 5.3: Estimated group size

patterns of tourism on the West Coast. Studies by Simmons and Fairweather., (2001), found that 38.8 per cent of visitors to the West Coast travelled with a partner or spouse, while 36 per cent travelled in a family group or with friends. The higher proportion of groups with three to five members (40%) recorded in this study are likely to be correlated with the age of visitors and the increase in family sized groups due to the timing of field work coinciding with the peak holiday period.

There were obvious limitations associated with visually determining the size of visitor groups, especially in situations where two or more families were obviously separate but were socially partaking in recreational activities as a collective group. A similar situation exists with large tour bus groups, which regularly make scheduled stops at the glaciers. These larger tour parties, although travelling together as a group have often broken into individuals, couples or smaller groups by the time they reach track closure points where the observer is located.

5.2.4 Dependent Children:

Results show that 14 per cent of adults were accompanied by dependent children, who made up 16 per cent of total visitors observed. A large majority of visitors (70%) were without children. This is reflective of wider West Coast tourist demographics, with the majority of tourists travelling either earlier or later in life, due to influences associated with family and work commitments Studies by Simmons and Fairweather (2001) found that a high proportion (86.4%) of visitor groups to the West Coast travelled without dependent children.

5.3 Characteristics of Visitation:

5.3.1 Levels of Visitation:

Franz Josef had a higher recorded rate of visitation than Fox (see Table 5.1). It should be noted that total numbers of visitors to Fox were visually estimated only, as Department of Conservation visitor statistics were unavailable. Results compare with annual statistics, with 425,000 visitors recorded at Franz Josef for the year 2007/2008, compared to only 185,000 recorded at Fox for the same period (D. Waters, personal communication, September 17, 2008). Previous studies by Espiner (2001) showed that 79.4 per cent of visitors at Fox said they also intended visiting Franz, compared to only 65 per cent of Franz Josef visitors who stated that they also intended visiting Fox. Those visitors who only intended visiting one of the glaciers (28.2%; Espiner, 2001) were more likely to visit Franz Josef because it has the higher profile of the two glaciers (Espiner, 2001), and because it is the first glacier reached by the majority of travellers who travel in a north-south direction (Forer & Simmons, 1998). Previous studies by Corbett (2001) found that 28 per cent of non-guided visitors and 58 per cent of guided visitors interviewed at Franz Josef had no intention of visiting Fox as well. This 'higher profile' of Franz Josef is made apparent by the fact that Fox Glacier Guides currently markets itself on being privately owned and operated, less crowded and more affordable than the 'other local glacier'.

There was also a substantial increase in visitation between observations carried out in December 2007 and those carried out in January 2008 (January being widely recognised as peak holiday season; see Table 5.1).

Trends associated with levels of visitation at the glaciers are generally influenced by wider tourism network issues, such as 10:00am accommodation check out times and travelling distances from other major accommodation centres.

Closure Point	Dec 07	Jan 08
Franz (Forest Walk)	53	116
Franz (Champness Rock)	38	62
Fox (Terminal Face)	33	74

Table 5.1: Average visitors/hour recorded at closure points during observations in December 2007 and January 2008.

On first appearance, visitor trends showed no sign of any such 'peak' or 'off-peak' periods of visitation (see Figure 5.4). However when results on the total numbers of visitors observed per hour are graphed according to time of day and separated into respective glaciers, several interesting patterns emerge. It is noted that a recognisable pattern is disrupted by occasional chance results caused by a number of possible influences, such as poor weather, location of closure points, or the sudden arrival of several large tour busses, all of which were shown to substantially affect levels of visitation.

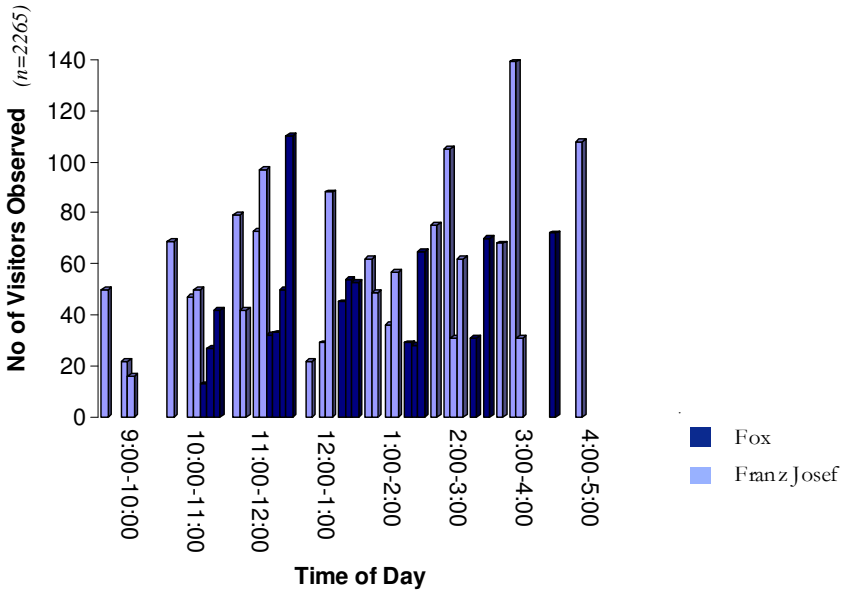


Figure 5.4: Level of visitation according to time of day

At Franz Josef, there was a recorded increase in level of visitation throughout the morning, peaking at 11:00am - 12:00pm. This was promptly followed by a prominent slump in visitation

from 12:00 - 1:00pm, before steadily increasing again in the afternoon. Such a visitation trend is likely to be caused by a large majority of visitors that have spent or are about to spend a bed night in Franz Josef township, and who then either visit the glacier late in the afternoon upon arrival from elsewhere, or early the next morning following check out.

At Fox, visitation trends were different to those at Franz Josef, with levels of visitation extremely low during early morning, rising steadily to peak around midday, and then dropping off again in the afternoon before levelling out. Generally, Fox showed a peak period of visitation that occurred an hour later than peak visitation at Franz Josef. Reasons for this delay are likely to be associated with accommodation check out times and a travelling time of three quarters of an hour from the larger accommodation centre of Franz Josef Township. In contrast to Franz Josef Township, the township of Fox has limited accommodation, and as a result the majority of travellers visit the glacier throughout the later half of the day in the course of their travel from one destination to the next (predominantly from North to South).

5.3.2 Visitation Trends at Franz Josef Glacier

An indication of visitation trends can be gained by utilising Department of Conservation counter statistics and information recorded at various closure points (see Figure 5.5). During observations in which the closure point was located at the end of the Forest Walk, it was recorded that 46 percent of visitors stopped at the barrier, and were happy to view the glacier from that point, while 54 percent proceeded further beyond the roped closure. During observations when the closure point was located at Champness Rock, it was recorded that only 45 percent of visitors reached the Champness Rock closure point. This suggests that 55 percent of visitors either stopped at the end of the Forest Walk, not wanting to complete the forty five minute walk from the car park, or stopped somewhere in between the two closure points. Studies

by Espiner (2001) recorded a much higher percentage (69.5%) of visitors who reported walking at least to the then closure point, located immediately before the terminal face. Similarly, in studies by Corbett (2001) only 19 percent of visitors reported going no further than the end of the Forest Walk. However, these results are largely dependent on where the majority of interviews were carried out (i.e., within or beyond the Forest Walk).

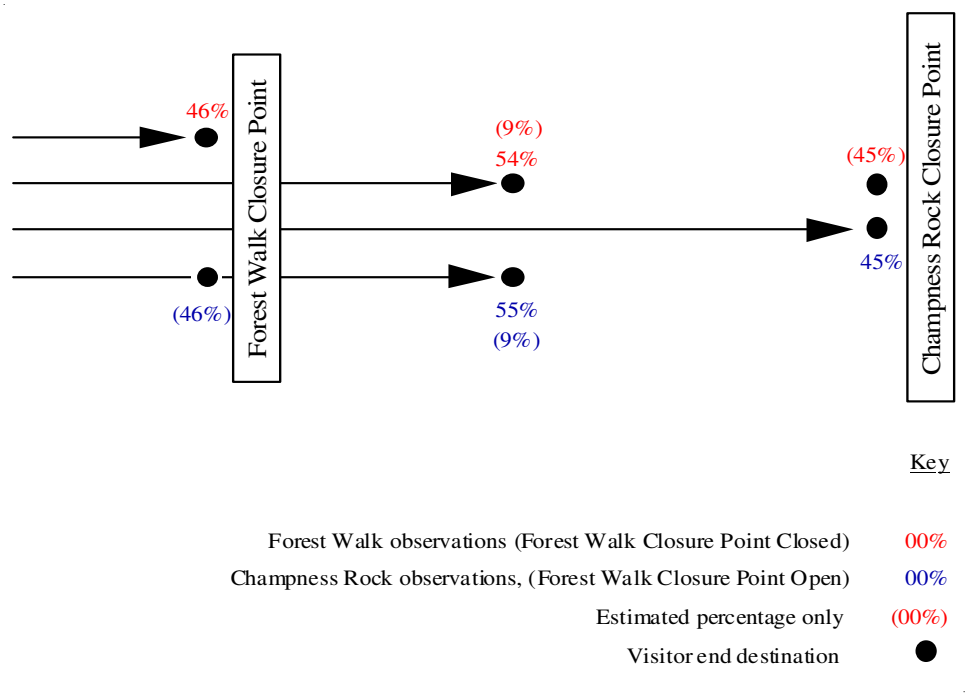


Fig. 5.5: Patterns of visitation at Franz Josef Glacier

Regardless of whether the Forest Walk closure point is open or closed, this location is recognised as a natural turning point for a number of visitors, most likely due to the sudden change in terrain and track condition. These results also suggest that in both situations approximately 9 per cent of visitors go beyond the end of the Forest Walk, but turn back at some point between the two closure points.

It is expected that the status of the Forest Walk closure point (open or closed to public access) would have a fairly strong influence on how far visitors proceed. However, these results suggest

that such an influence may not be that great at all, and that similar numbers of visitors proceed beyond the Forest Walk closure point regardless of whether it is closed or open. Given this, if those visitors who were unlikely to proceed further than the end of the Forest Walk are eliminated, compliance with management recommendations to remain behind the Forest Walk barrier could be as low as zero per cent.

It was observed during observations at Franz Josef that a fair proportion of visitors were encouraged to move beyond the roped barrier by a large whirlpool of floating ice that was visible just below the closure point, having been created after a recent major rainfall event. Because of its proximity, it provided an opportunity to touch ice for very little effort, attracting visitors who would not have walked the considerable distance closer to the glacier and would most likely have remained compliant otherwise. Situational factors such as these are more likely to have a greater effect on levels of compliance than a closure point located so far from the glacier terminus, as was the situation with the Forest Walk closure point.

A more accurate method of measuring influences of the Forest Walk closure point would be to locate an observer at each closure point (Forest Walk and Champness Rock), while the Forest Walk closure point was open, to undertake observations simultaneously. These results could then be compared with observations undertaken when the Forest Walk closure point was closed. It should be noted that such an approach is not feasible in this study.

5.3.3 Average Length of Visit:

Obviously the average length of visit was dependent upon how far visitors were prepared to walk to view the glacier. It was observed that the average length of time visitors remained at each closure point varied depending on how far they had walked to get there, as if to compensate for

the effort in getting there. At Champness Rock for example (a 45 minute walk from the car park) visitors would spend on average half an hour sitting and viewing the glacier. At the Forest Walk closure point however (only 15 minutes walk away) visitors (who remained behind the barrier) would spend on average only 5 minutes viewing the glacier. The Fox closure point was located 25 minutes walk from the car park, and visitors spent on average 10 minutes viewing the glacier. As well as the length of time it took to walk there, factors such as how well the glacier could be viewed and having sufficient space to sit (i.e., being un-crowded) also dictate how long visitors remained. When the length of time spent walking to the closure point and the average time spent at the closure point were added they are similar to findings from previous studies (Espiner, 2001; mode = 90 minutes at Franz Josef and 60 minutes at Fox). It was observed that those visitors who were noncompliant spent a great deal of time beyond the closure point exploring and taking photos.

5.4 Chapter Conclusion:

The main objectives of this part of the research were to form a demographic and behavioural profile of visitors to Franz Josef and Fox glaciers. Visitor characteristics such as gender, estimated age and group size were found to correspond with findings from previous studies at the glaciers (Corbett, 2001; Espiner, 2001). Visitor characteristics were also found to correspond with studies by Simmons & Fairweather (2001), indicating that visitors to the glaciers were reflective of the general West Coast visitor population.

Levels of visitation were found to be influenced by wider tourism patterns and the distance of glaciers from main accommodation centres. This partly explains why Franz Josef is possibly the more popular of the two glaciers, receiving more than double the number of visitors as Fox. It

also suggests that the glaciers can be classified as front-country visitor destinations, in that access to the glaciers is relatively easy and open to all.

The glaciers are further confirmed as popular front-country visitor experiences by the relatively short length of time visitors spend at the sites and the observation at Franz Josef that 46 per cent of visitors proceed no further than the Forest Walk, regardless of whether the closure point was open or closed. This indicated that situational factors such as the distance to the glacier, a change in terrain or the weather have a greater influence on visitor behaviour and levels of compliance than management recommendations, particularly when located so far from the glacier terminus.

Chapter Six: Levels of Visitor Compliance - Situational Factors as Motivation for Non-compliance

6.1 Introduction:

This chapter further analyses the results collected during the quantitative observations and meets the requirements of the second objective of this study - to quantify levels of visitor compliance with protective recommendations using a standardised method (see appendix 1). This will allow management staff to create a performance measure for noncompliant behaviour and ascertain the effectiveness of visitor management approaches. Such a measure will be able to be applied consistently across the two glaciers. To this effect, section 6.2 presents observed levels of visitor compliance at both glaciers.

This chapter also partially addresses the third objective - to further research motivating factors of noncompliant behaviour, by addressing situational factors that may influence non-compliance. Previous studies (Bogie 2007; Espiner, 1999; 2001; 2007) have identified three possible motivating factors of visitor non-compliance at the Glaciers. These were a desire to get closer to the ice; the visibility of other visitors beyond the glacier; and the poor hazard awareness shown by visitors. Each of these is explored further in section 6.3, by correlating quantitative data and / or utilising information gained through qualitative interview responses. In addition, other situational factors which are thought to have an effect on visitor compliance are investigated. These include estimated visitor age, the presence of a uniformed ranger, time of day, weather and dependent children. Results are compared with results from previous studies (Corbett, 2001; and Espiner, 2001) where relevant. Visitor attitudes towards visitor management actions are also explored, to gain a better understanding of behavioural motivations of noncompliant behaviour.

6.2 Total Levels of Compliance:

Results show a considerable difference in the levels of non-compliance between glaciers (Fox 17% and Franz 45% of total visitors observed). See Figure 6.1. Such a result is surprising, given that there is little variance between the two glaciers which have comparatively similar levels of visitation, physical characteristics, management techniques (standard operating procedures), and, although different, similar levels of risk (risks at Franz Josef are more associated with the river and flooding, where as risks at Fox are associated more with rock fall).

Observations undertaken by Espiner (2001) showed that (following the introduction of pictorial hazard signs) of those visitors who reached the final closure point (at the terminal face) only 21 per cent at Franz Josef Glacier, and 18 per cent at Fox Glacier chose to be noncompliant and venture beyond the roped enclosures. Surprisingly, at Fox Glacier there is only a 1 per cent difference in levels of compliance between observational studies undertaken eight years apart. This is not the case with Franz Josef Glacier, however, where results differ considerably.

The dissimilarity in the levels of compliance at Franz Josef is likely to be a result of the location of closure points and their proximity to the glacier's terminus. Observations by Espiner (2001) were undertaken at the terminal face of both glaciers. Observations in this study, while also undertaken at the terminal face at Fox, were undertaken within two different closure point locations at Franz Josef

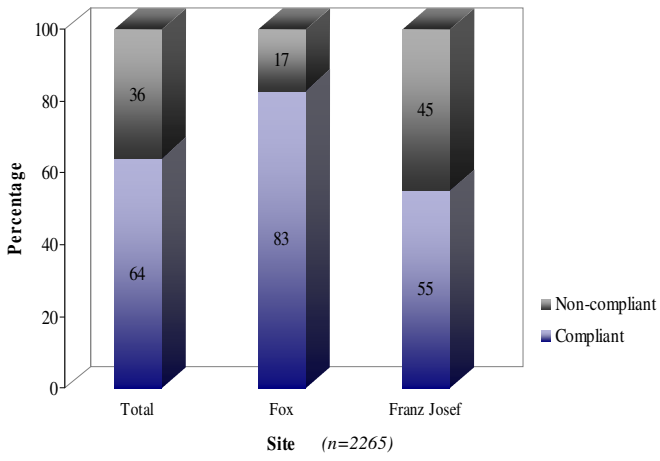


Figure 6.1: Levels of compliance

(Champness Rock and Forest Walk), which are located a greater distance from the glacier terminus.

In establishing a consistent measure of visitor compliance, it is essential to recognise that there are a number of situational factors which may affect visitor compliance, and should therefore be taken into consideration. These are identified and discussed in the following sections.

6.3 Situational Factors:

6.3.1 Levels of Compliance According to the Location of Closure Points:

Previous studies by Bogie (2007) and Espiner (2001; 2007) identified areas within current management, such as the locating of multiple warning signs and barriers at points where there is no perceivable risk, which potentially contribute to the problem by encouraging a common attitude that no warning signs are to be taken seriously.

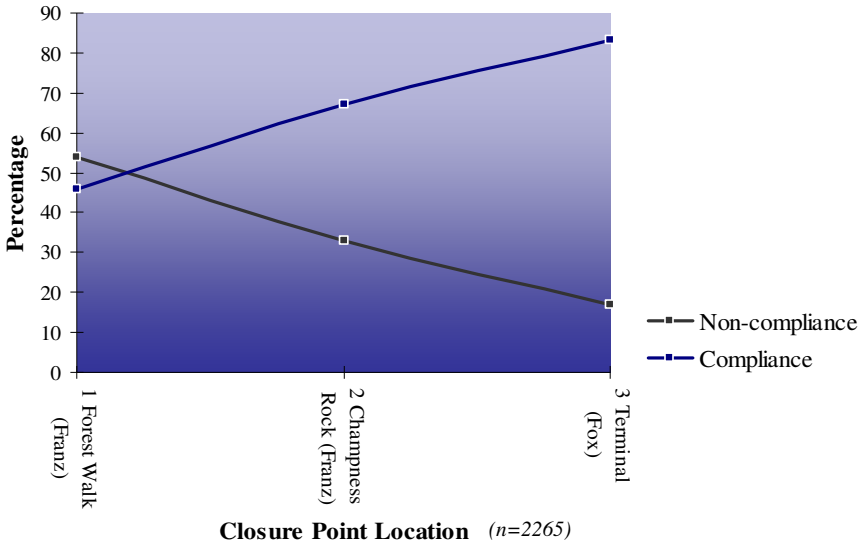


Figure 6.2: Levels of compliance according to closure point location

Location of closure points were recorded for each observation period to determine its effect on levels of visitor compliance. A clear relationship is evident between the proximity of the closure point to the glacier terminus and levels of non-compliance (see Figure 6.2). During field work the closure point at Fox was located a lot closer (50m) to the glacier terminus than those closure points at Franz (Champness Rock 250m; and Forest Walk 2000m).

Studies by Espiner (2001) highlighted the need to touch or get close to the glacier as an important part of the visitor experience (69.6% of visitors interviewed expressed the desire to get closer than they had to the glacier). Similarly, in this study, a number of visitors expressed a strong urge to touch the glacier. In several instances visitors reported a difficulty in visually believing the glacier was actually made of ice, requiring a sense of touch to confirm it as so. For a lot of people a glacier is a new phenomenon, different from common associations of ice, which involve sub-zero climates such as Alaska or Antarctica. In this situation, touching it, as well as seeing it, will make it seem more real.

Understandably, due to such expectations and underlying urges, the majority of visitors interviewed expressed dissatisfaction with current management and the distance between the roped barriers and the glacier terminus:

> *"I would have not been happy stopping at this point, I would have been very disappointed. When I got down here I was like - is that it?"* [Male visitor from India].

> *"Yes I would have been really disappointed if I couldn't go any further. But we have come a long way to see them, so you know"* [male visitor from Sweden].

> *"I think it is because from the end of the barrier here it is only a few meters, so you are quite happy to sit here. Where as the other glacier* (Franz Josef) *is miles away, so you think well I can easily go down that valley and I won't be in the way"* [male visitor from New Zealand, interviewed while at Fox Glacier].

A male visitor from New Zealand, for example, was of the opinion that non-compliance was a direct result of the barrier being located too far from the glacier terminus. With reference to the Champness Rock closure point he suggested the following action:

> *"I honestly wonder whether or not the ropes should be closer, I mean people aren't stupid they can see that they are not going to be hit by a block of ice till they get at least closer to the ice wall. I would have thought that DOC might potentially draw a line and let no one past, but actually make the point closer. People are not silly, well a few are, but they can see that they are not going to be hit, so they go a bit further, they have come all the way from across the world, and they have got a beautiful day".*

This statement questions the credibility of barriers and signage that are located in areas where there is little or no perceivable risk. A male visitor from Scotland was clearly of the opinion that he would have difficulty complying with management recommendations that were not aligned with his own judgment:

> *"I would be tempted to go beyond the barrier if I was refrained from experiencing something for reasons that did not match my own judgement".*

A male visitor from New Zealand expressed a similar view, being more than happy to comply with management recommendations so long as there was a clear reason as to why restrictions may have been put in place:

> *"If they said it was going to be dangerous, then yes I would still be happy to comply. As long as there is a reason".*

It is interesting to note that the total level of non-compliance observed at Franz Josef Glacier (45%), corresponds to observed levels of non-compliance in previous studies; 40 per cent (Espiner, 2001) and 31 per cent [6] (Corbett, 2001), which were undertaken prior to the introduction of the pictorial hazard signs which are currently employed extensively by management, and subsequent departmental reviews of operating procedures (Bogie, 2007). This

[6] Result based on self-reported behavior rather than observations

reinforces the theory that the practice of locating closure points a substantial distance from the glacier terminus has the consequence of reducing the appropriateness and the desired effect of any such signage, simply because visitor's perception of risk is not equal to that of managements. It could therefore be argued that visitor management techniques at the glaciers have done little to address this gap in risk perceptions.

> *"The signs here in New Zealand we perceive as very conservative, they make the danger seem incredibly severe and present and real and we don't perceive it to be quite on the same level"* [male visitor from Scotland].

In addition, because a large number of visitors are international, there is a high possibility that visitors have previously visited glaciers in other parts of the world. There is therefore a tendency in such situations to compare the glaciers with similar experiences or situations in other parts of the world and as a consequence their perceived experiences are somewhat mismatched with their actual experience. For example, a female visitor from Germany was clearly justifying her actions and comparing her experience at Franz Josef with another glacier in Alaska:

> *"We didn't like being told to not go further because when you see a glacier you want to go close to the ice. We have been on glaciers in Europe and in the States, so we know that you could get closer. In Alaska you can go right up to the glacier, so we did what we did".*

International visitors are also likely to be in a position of feeling like they have travelled a long way to get to what could possibly be a once in a life time opportunity to view the glaciers, increasing the justification for non-compliance, so as to get the best experience possible.

There is also some variance in how management recommendations, through the use of roped barriers and signage, are received and understood. Through these statements visitors have expressed a variety of perspectives on whether they perceived it as being permissible to proceed beyond the barrier or not. Some visitors believed that the barrier served merely as a warning,

while others felt as though they had been restricted by management recommendations. This attitude towards management recommendations will be explored further in Section 8.2 (Unintentional Motivations). This perhaps in part explains the previous discussion over the effectiveness of a closure point located so far from the glacier terminus, and the observation that similar numbers of visitors proceed beyond the Forest Walk closure point regardless of whether it is closed or open. Visitors are unlikely to comply with management recommendations if they are unable to understand what it is management is trying to achieve.

Such management techniques also run the risk of reducing the desired effect of any ensuing signage, which are perhaps located in areas where the risk is more significant. A number of visitors expressed such a concern, over the likely pre-emptive behaviour of visitors:

> *"The big problem I had was that the sign was so far back that it kind of loses its credibility in a lot of people's eyes. The first one wasn't really in the right place, and then I had that same feeling standing behind the second, that there was no real danger. Whether or not that is because the second one is also not quite in the right place, or because the feeling I had at the first barrier pre-empted my feelings towards the second, is hard to say. You just feel like the first sign didn't have any credibility, so maybe the second doesn't have a whole lot either"* [male visitor from Scotland].

> *"It diminishes the function of these sort of things, I mean do we respect it, you know, will we ever respect these things again"* [male visitor from Sweden].

These statements emphasise the problems associated with 'over cautious' visitor management and multiple closure points, which potentially result in pre-emptive behaviour that could cause visitors to ignore any subsequent warnings of extreme danger.

A female visitor from New Zealand conveyed concern over the trend towards visitor management becoming over cautious, as a result of the inappropriate locations and frequency of barriers:

> *"The ropes at Franz Josef were probably what made me realise that they have become way too 'PC'. The first one before you get onto the river bed, and it says 'Danger', there was just hundreds of people piling through it, and that therefore just makes a mockery of it. Then when you get to the next one you kind of go well is this one as dumb as the previous one?"*

Bogie (2007) and Espiner (2007) reported that current 'cautious' management techniques were potentially contributing to the visitor management problem by encouraging visitors to dismiss the numerous warnings and closure points as a management system that is being over-cautious in order to cover itself. Similar opinions were evident on more than one occasion, especially amongst domestic visitors, as a male visitor from New Zealand outlined:

> *"About 800m back, there was a sign there saying 'do not go past this point unless you are experienced or guided', and it felt like a bit of nonsense given all the young kids five or six years of age racing up here in just a stream bed essentially. So it slightly undermines you know, it looked like 'butt covering' rather than anything particularly useful".*

A 'culture' of non-compliance towards over-cautious and protective visitor management within protected areas, particularly amongst the domestic population, is of real concern, especially given that domestic visitors make up 52 per cent of the total visitor population (New Zealand Tourism Board, 2007). Studies by Espiner (2001) identified a similar negative attitude towards 'cautious' management amongst the domestic population, with domestic visitors often demonstrating a lack of respect or trust in the expertise of management and the judgements being made. This is largely because domestic visitors may tend to have an objection towards being told what to do in places they perceive as 'their own' resulting in a perceived loss of freedom.

6.3.2 Levels of Compliance According to the Visibility of Noncompliant Others:

Specific observations were made to record how the behaviour of visitors, and compliance with protective recommendations, appeared to be influenced by the behaviour of other noncompliant visitors who were visible beyond the roped barriers. This section reports the effects on visitor behaviour of the visibility of noncompliant others, through quantitative data and qualitative interview responses.

Previous studies at the glaciers (Corbett, 2001; Espiner, 2001) highlighted the potential for visitors to rationalise their behaviour on guided groups or other individual visitors beyond the barriers on a 'if they can, we can' attitude. Figure 6.3 illustrates the total level of compliance, at both glaciers, according to the visibility of other noncompliant visitors. Among those who were noncompliant, a high percentage (90%) went beyond the barriers while other visitors were visible beyond the barrier also. Espiner (2001) likened this behaviour to 'social facilitation', a type of social modelling behaviour that occurs when the behaviour of one (or more) person(s) facilitates a second person's doing the same thing. Figure 6.4 illustrates the behaviour (compliant or noncompliant) of each individual visitor, recorded in the order in which they entered the study site. It clearly shows periods of 100 per cent compliance followed by flurries of noncompliant activity. These patterns support a social facilitation theory where people are obviously encouraged to remain behind the barrier or proceed further, largely depending on whether there are other visitors visible beyond the barrier.

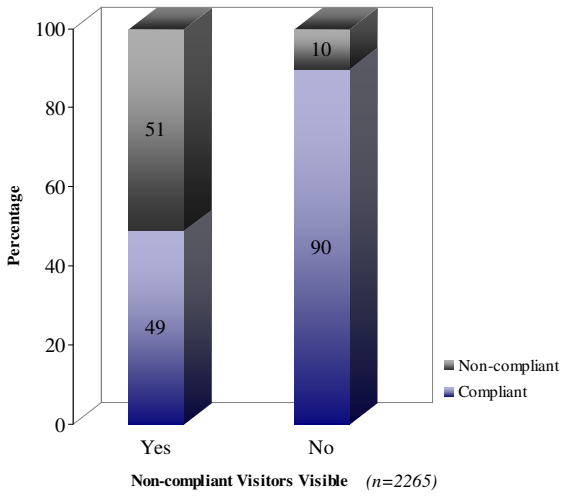
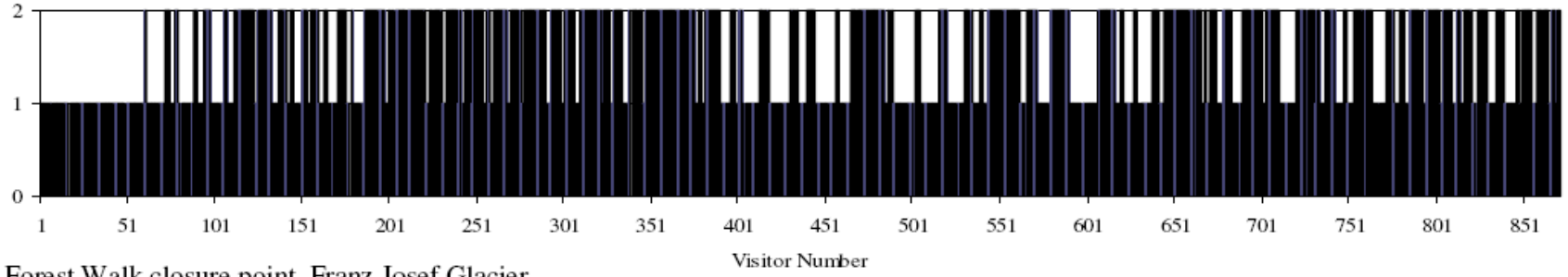
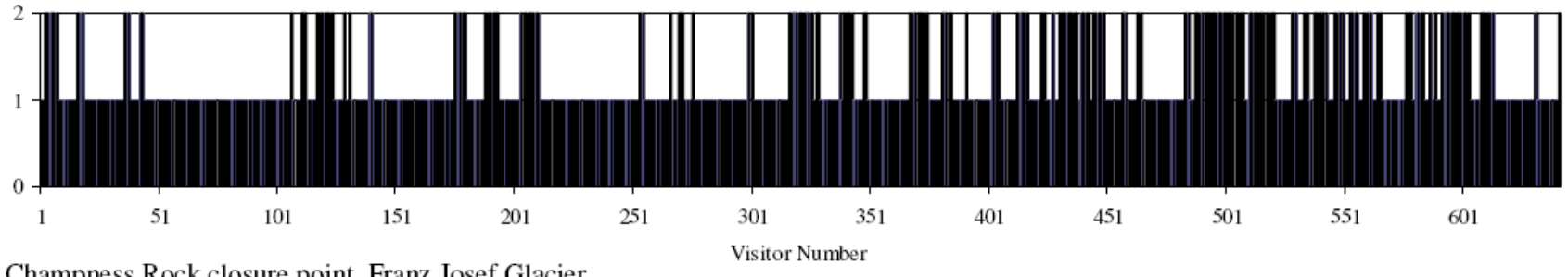


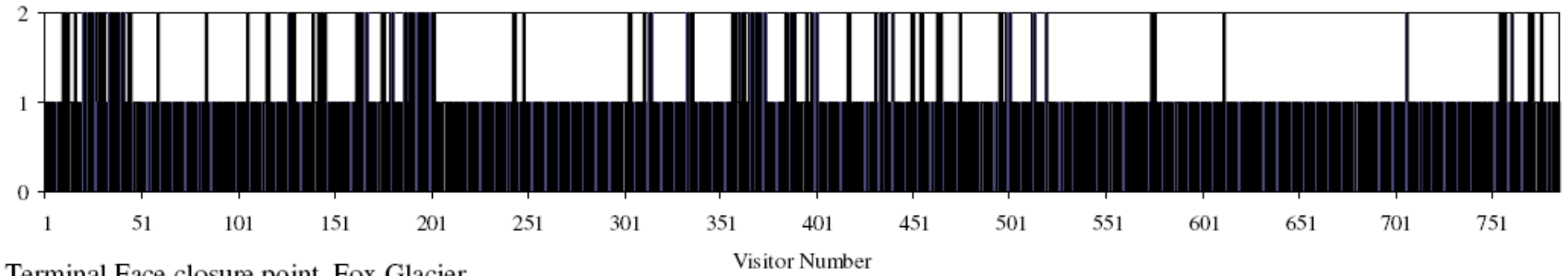
Figure 6.3: Levels of compliance according to the visibility of noncompliant others



Forest Walk closure point, Franz Josef Glacier



Champness Rock closure point, Franz Josef Glacier



Terminal Face closure point, Fox Glacier

Figure 6.4: Patterns of Compliance According to Closure Point (Note: 1 = Compliant visitor, 2 = Noncompliant visitor)

Figure 6.4 also illustrates several instances of prolonged periods of noncompliant behaviour, in particular at the Forest walk closure point. It is likely that prolonged periods of noncompliant activity correspond with periods of high visitation (average of 85 visitors/hr recorded at the Forest Walk closure point), increasing the frequency in which visitors will be visible beyond the barrier. In contrast, the terminal face closure point at Fox has a lower level of visitation (average of 54 visitors/hr), and subsequent periods where zero visitors are present at the closure point, preventing flurries of noncompliant activity from continuing for prolonged periods.

Such an attitude is clearly portrayed by the following visitors who identified the visibility of noncompliant visitors as being a strong motivator:

> *"Yes you see them and you say 'ok if they can do it then I can do it too'. I think it is simple"* [male visitor from Germany].

> *"Maybe I disobeyed because I saw other people, so I did like the sheep, we follow on. That is why I went as far as I went because I saw people going there, when they crossed the barrier I thought I would carry on"* [male visitor from Malta].

There was, in particular, considerable confusion over the barrier at the Forest Walk closure point. It was observed that a number of visitors would stand behind the barrier, see the other visitors on the other side and give it a push expecting it to swing open. A male visitor from the United Kingdom had the following to say:

> *"There were lots of people going past and that's why I thought there was a swing gate there, that provided it points out the dangers to you it is ok to go".*

6.3.3 Levels of Compliance According to the Visibility of Guided Parties:

There is also the potential for visitors to be influenced by guided parties who are visible beyond the barrier. It was observed that guided groups were easily distinguishable from other independent visitors, as they consisted of large groups (15-25 members) walking in a uniform line and wearing identically coloured jackets. It is unlikely that visitors would therefore mistake guided parties for unguided visitors who had proceeded beyond the barrier. It was noted through the interviews that visitors were more likely to be influenced to proceed beyond the barrier by guided parties by assuming that it must be safe if an experienced guide had judged it to be safe enough to take a paying customer.

For example, a male visitor from New Zealand stated that:

> *"Seeing which way the guided party went meant that you could follow their footsteps and know, I mean of course we are not going to go up onto the ice, but you are going to perceive that where you are going is relatively safe".*

A male visitor from Scotland expressed a similar attitude:

> *"We saw a group of ice climbers in an extremely dangerous zone, so it's like its dangerous for me but its not dangerous for them! It made me feel like the extreme danger sign up there was even less valid. I mean obviously the guides know the glacier better than most people, and I felt like well if they were there, then there is no reason why I can't be there. And they were right on the glacier".*

Irrespective of this, data collected from the observations suggest that the visibility of guided parties has very little effect on levels of compliance, with a small percentage (38%) of total visitors who went beyond the barriers, doing so while guided parties were visible in the river bed or on the glacier. In comparison, a high percentage (90%) of independent visitors who went beyond the barriers, did so while other independent visitors were visible beyond the barrier. In addition, the proportion of time and frequency that non-guided visitors were visible beyond the barrier was far greater (being visible during 34 of the total 36 hours observed) than that where

guided visitors were visible (being visible during only 21 of the total 36 hours observed). The potential still exists however for guided parties to be a catalyst for initial noncompliant behaviour.

6.3.4 Hazard Perceptions of Visitors:

Espiner (2001) established that in general visitor perceptions of hazards can at best be described as modest, and among some visitors, poor. In order to understand more about motivations for noncompliant behaviour, visitors were asked about their awareness of hazards within the glacier valleys. This section reports on visitors perceptions of hazards through qualitative interview responses, and results from previous studies conducted at the glaciers.

Previous studies by Espiner (2001) at Franz Josef showed that with the exception of rock fall, less than one third of all visitors were able to identify any other hazard, even though a variety of descriptive hazard warning signs were present throughout the site[7]. As previously discussed, warning signs are possibly dismissed as of no consequence due to the locating of signs in areas where there is no perceivable risk. Additionally, there is an increased potential for management recommendations to be dismissed as implausible if visitors perception of hazards are poor.

During the interviews, the majority of visitors were asked to identify any hazards they were aware of during their time within the glacier valley. The majority of visitors were able to identify at least one or two hazards, but very few visitors were able to identify a range of possible hazards. Rock fall was the most commonly recognised hazard (identified by 11 visitors questioned), followed by ice collapse (identified by 7 visitors). Slipping / tripping on stones were the next most frequently recognised hazard (identified by 6 visitors questioned). Although

[7] Espiner (2001) found that the introduction of pictorial hazard signs (currently employed extensively by management at both glaciers) significantly increased levels of hazard awareness.

not as catastrophic as other hazards identified, this is a very real hazard, especially on the unformed portion of the Franz Josef access track following high river flows, where the majority of visitors who identified this hazard were interviewed. Dam breaks (5 visitors), flooding/high river levels (4 visitors) and falling into river and freezing (2 visitors) were other hazards that were documented. Five visitors were unable to identify any hazards that were directly associated with the glacier.

Hazard identification at the glaciers was more extensively explored by Espiner (1999; 2001). In his studies visitors identified a similar range of hazards, with rock fall (58%) again being the most recognisable. Similarly tripping/slipping on stones was ranked highly in second (33.2%), followed by icefall (31.6%), and falling in river (26.5%). A similar percentage (19%), claimed that there were no hazards at the sites.

Generally interviewees showed poor levels of hazard awareness. A male from the United States, aged 31-44, had the following response when asked if he was able to identify any natural hazards while at the Champness Rock closure point:

> *"Maybe it was a foolhardy thing to do, but I didn't feel it was dangerous. It seems like no matter where you stood at the base of it, you were fairly safe unless of course you fell in the flowing water".*

This visitor obviously believed that one was more likely to suffer an accident as a result of human error, than from a natural occurrence such as being struck by a falling rock or block of ice. Several visitors identified human induced hazards such as slipping or falling over any potential natural hazards. A female from Lithuania, aged 31-44 years, went as far as choosing to ignore any such hazards, most likely so as to not hinder her experience:

> *"Yes, but I don't really think about them, I don't want to think about it".*

It should be noted that this visitor reported getting close enough to touch the ice while continuing to ignore any possible hazards. Similarly, a male visitor from Germany, although he was able to identify several hazards, his perception of these was very casual:

> *"Just if you climb over the loose rocks you can hurt yourself, twist your ankle something like that. But other than that nothing. It is not like it is cloudy or raining today where you wouldn't be able to see what is coming, then it would be more dangerous".*

While this visitor recognises the hidden dangers, a number of hazards associated with glaciers such as icefall, rock fall, and dam breaks can happen out of sight and without warning, regardless of the weather conditions. A female visitor from the Netherlands cited the fine weather conditions as an excuse for her behaviour:

> *"Well, the water seemed low and the weather is ok so we thought we could go a bit further".*

A male visitor from New Zealand, aged 31-44, also assessed the current risk as being low, most likely because of the fine weather conditions and low river levels:

> *"Ok there is a risk, it is a very small risk at the moment, and if I thought it was anything more than a small risk then I wouldn't have done it, especially with our children".*

Future management should recognise that glacial valleys are uniquely different from other natural areas, exposing visitors to a range of different hazards. Although it is agreed that the majority of hazards are caused or compounded by poor weather conditions, it is important that visitors are persuaded away from a common misconception that all hazards are largely weather dependent.

It is of concern that very few visitors were able to identify more than two hazards, despite at least three of the major hazards being clearly portrayed through the use of pictorial signage currently extensively employed throughout both sites. It should be noted, that Espiner (2001) also found that the introduction of pictorial signs had no effect on the reporting of actual hazards, indicating a lack of a connection between those hazards they had been warned about via the signs and those hazards in which they were personally aware of while onsite.

In this study, interviewees commonly identified a range of sources of hazard perception, including past media coverage, the internet, general knowledge and hazard warnings/signage onsite. Given the extensive use of hazard warning signage onsite, one would expect that signage would be a dominant source of hazard identification, but this is by no means the case. Given the level of signage employed by management, the poor levels of hazard identification indicate that either visitors are simply not paying attention to the signage or are dismissing such signage as of no consequence due to their location and frequency. As discussed in 6.3.1 above, the key to improving visitor compliance may lie in more effectively informing visitors of associated hazards, narrowing the gap between visitors perceived levels of risk and that of managements.

Not all visitors, however, showed a limited perception of potential hazards. A male visitor from Germany, although he still chose to proceed beyond the Champness Rock closure point, held a sense of respect for the outdoors, one would assume through past experiences:

> *"For me it is dangerous. It is nice, but I think it is dangerous, as a beach can be too. A beach is nice, but you should know the water before you go in. I accept the risk within the outdoors, especially here, mountains and glaciers they are always dangerous".*

It is interesting that the majority of visitors failed to identify the potential for unseen hazards to occur without warning. After all, exposure to the consequences of uncertainty constitutes a risk

in itself. A male visitor from the United Kingdom, although he also proceeded beyond the Forest Walk barrier, clearly understood and demonstrated a good knowledge of such hidden hazards:

> *"Everybody walks around as though it wouldn't happen, we don't realise that these things can happen so quickly. What is of concern is you may not be able to see it happen, it may be happening beneath the glacier out of sight. Everything I did while I was up there was done as though it could happen at any time".*

It is interesting to note that this visitor was aged 60+ years, supporting a common conception that people of an older generation are more cautious.

6.3.5 Levels of Compliance According to Estimated Visitor Age:

Specific observations were made to record how estimated age may influence whether or not a visitor is more inclined to comply with protective recommendations. This section reports on estimated visitor age and levels of compliance using quantitative data gained through observations and qualitative interview responses.

Age was mentioned as a reason for a 'cautious approach' on more than one occasion by interviewees who were older in years, for example, by the same visitor from the United Kingdom:

> *"As you get older you get a little bit more cautious. It's the experience of life. At a younger age I probably would have walked straight across there without even thinking about it".*

A Female from the United States, aged 45-59, expressed a similar sentiment:

> *"I think if I was younger maybe, then I would have gone straight over without giving it a thought. We are 50 and 60 and we respect these sought of barriers and things".*

Initially, this would explain Figure 6.5 which shows a strong relationship between age and levels of compliance. With the exception of dependent children under the age of 16, levels of compliance showed a steady increase with age. However, it is interesting to note that both of these visitors quoted above, despite claiming to have given it more consideration, still made a decision to proceed beyond the roped barrier. Although one may claim to be more cautious it does not necessarily mean they have a greater awareness of hazards. For example, previous studies by Espiner (2001) at the glaciers proved that international visitors aged 40 years and over had the lowest levels of hazard awareness. It should be stressed that there is the potential for visitors of all ages to have a good understanding of potential hazards yet still choose to be noncompliant, and for visitors to be oblivious to potential hazards yet remain compliant out of a respect for management. The reasons why levels of compliance increased with age may therefore be a matter of respect rather than an awareness of hazards. A degree of respect was expressed by a number of visitors, although this may be largely attributed to personality types.

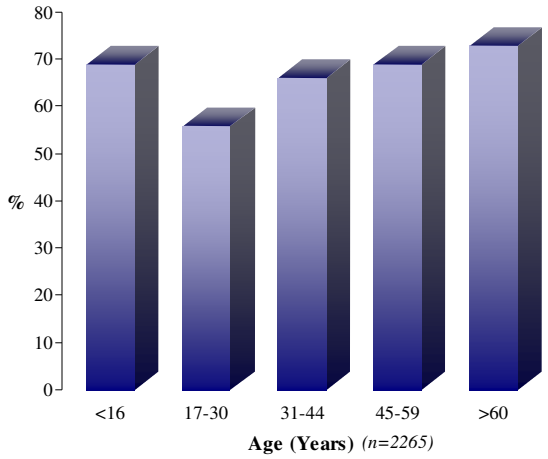


Figure 6.5: Levels of compliance according to estimated age

> *"If I was told to stop there then there probably would be a risk. I think you are best to abide by their decisions because they know what they are doing, we don't".*[male visitor from Australia, aged 45-59 years].

A female visitor also from Australia, aged 45-59 years, demonstrated a similar confidence in management decisions:

> *"I wasn't at all interested in going further. I always stick to what the park people have done. I rely on their good judgement I guess, to keep us safe".*

A female visitor from New Zealand, aged 45-59 years, had a strong belief in the need for restrictions and expressed concern over future access to the glaciers being jeopardised through the reckless non-compliant behaviour of visitors concerned only with the immediate experience:

> *"I completely understand that the barriers are there for a good reason. If people can't obey those signs then in the long term access may be shut down or restricted, and ruined for everyone".*
>
> *"I think the people who have put them there know why they put them there. I respect such signs, they are important"* [male visitor from Germany, aged 17-30 years].

It is interesting to note that although this younger visitor indicated a respect for management recommendations, he still proceeded further than the roped barriers at Champness Rock, highlighting a clear distinction between respecting such recommendations and abiding by them.

6.3.6 Levels of Compliance According to Uniformed Ranger Presence:

The presence of a uniformed ranger onsite has been suggested by Espiner (2007) as the best means of communicating messages to visitors onsite. Coincidentally, there was a period during observations in which a couple of rangers were present at the closure point for approximately one hour. It was observed that the rangers were replacing the roped sections of the barrier and had little interaction with the visitors behind the barrier. Regardless, levels of compliance remained as 100 per cent during the period in which rangers were present. It was observed that although the rangers were busy undertaking maintenance works, the combination of their presence and the roped barriers was enough to convey a strong message to visitors that access beyond this point was not recommended. It should be acknowledged that it is not possible to draw too many conclusions about this one hour period, and that further studies might look at the influence of the presence of uniformed personnel more closely.

It was observed that a number of visitors were clearly upset over being 'told' to go no further. This perhaps suggests that a ranger located onsite to communicate associated dangers to visitors, may mistakenly be interpreted by visitors as preventing access altogether, a situation that could be avoided through improved communication. A male visitor from New Zealand expressed a clear disappointment if freedom of access was to ever become restricted:

> *"Short of policing it, if somebody was there stopping people going, that would really annoy me".*

A male visitor from the United States conveyed a negative attitude towards future access being restricted to visitors who had paid a fee to proceed beyond barriers with a guide:

> *"Something that would certainly colour my view in a negative way is that there is a growing perception that you have to pay for everything, for example if there was a barrier back there, but it was to become regulated by paying a fee of twenty dollars to be taken closer to the glacier with a guide".*

On the other hand, some visitors recognised the safety benefits associated with having a ranger present onsite. Another male visitor from New Zealand had concerns over how well prepared visitors were upon entering what is essentially an alpine environment and believed that a guide was necessary to regulate this.

> *"I would recommend having a guide. To stop people from crossing the barrier. To say hey look, you do not have the appropriate gear or footwear'. To say 'you are not crossing this point unguided or it is not recommended that you continue unguided".*

Some visitors appeared to have an expectation that a ranger would be located onsite. A male visitor from Germany believed that a ranger was necessary to better ensure visitor safety:

> *"There should be a park ranger somewhere here. I mean over the years management has the experience on how dangerous it really is. If that guy comes down in a big piece I don't want to be anywhere near".*

A male visitor from Scotland expressed a similar opinion, that if there was a genuine risk associated with going beyond the barrier then management would be doing more:

> *"At the moment I find it extremely difficult to see what the risk actually is. If management really perceived that it was that great a risk then they would have someone up here to try and discourage people".*

The same visitor believed that locating a ranger onsite was the only realistic way of discouraging non-compliant behaviour:

> *"If the parks really wanted to enforce this, then they would have someone here watching and stopping them, because a sign like this isn't going to stop people".*

6.3.7 Levels of Compliance According to Time of Day:

Time periods of observations were recorded and compared to observed levels of compliance to determine whether visitor compliance with protective recommendations was influenced by time of day.

Levels of compliance show a steady decrease as the day progresses, with noncompliant behaviour becoming increasingly more prevalent as the day progresses (see Figure 6.6). This trend is likely to be a result of a number of influencing factors associated with the time of day. First, levels of visitation are largely affected by the wider tourism industry and associated tourism patterns. For example, visitors arriving to the site later in the day are likely to have more time available to explore beyond closure point barriers than visitors arriving earlier in the morning prior to travelling to other destinations. Second, as previously discussed, visitor behaviour is often rationalised on the behaviour of others. Potentially therefore, levels of non-compliance is compounded as more and more visitors are visible beyond the barriers.

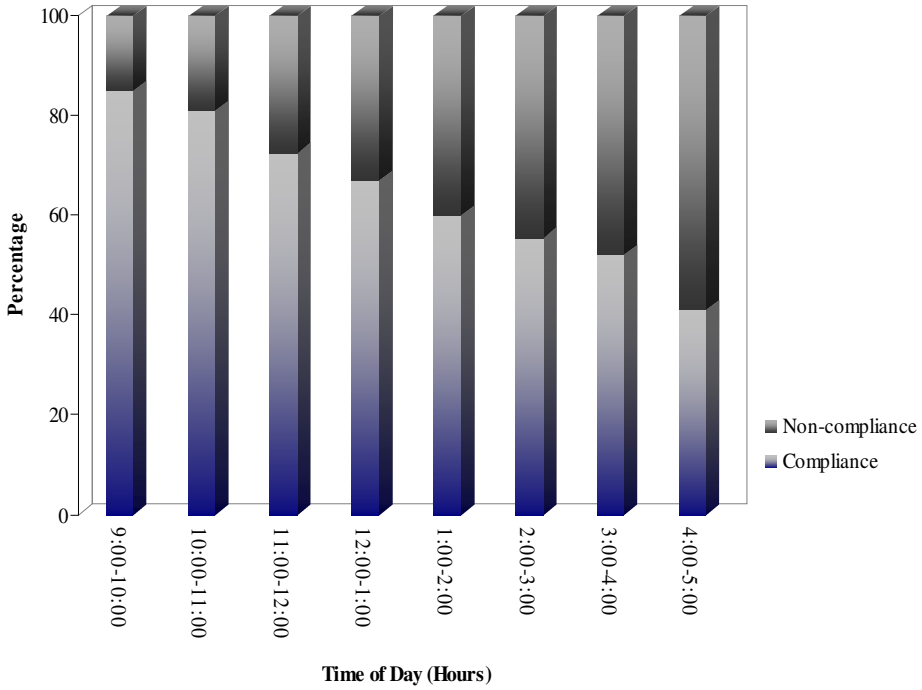


Figure 6.6: Total levels of Compliance at Franz Josef and Fox Glaciers According to Time of Day (n=2265)

6.3.8 Levels of Compliance According to Weather Conditions:

Weather conditions were recorded at the time of each one hour observation, during which a full range of conditions were experienced. Levels of compliance are graphed according to each weather condition (see Figure 6.7). However, it should be noted that results may also be strongly influenced by the location of closure points. Due to study limitations and the restricted number of days in which the observations were carried out, different weather conditions experienced during observations and at each closure point were limited. Because management at Franz Josef quickly restrict access beyond the Forest Walk

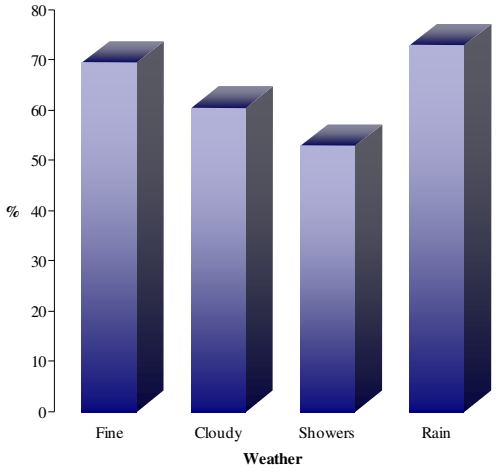


Figure 6.7: Levels of compliance according to weather (n=2265)

during wet weather, observations during such weather were all undertaken at the Forest Walk closure point. What is interesting is the high levels of non-compliance during showers and the sudden decrease in non-compliance as weather worsened to rain. The high levels of non-compliance during showery weather is presumably a result of visitors being unable to clearly see the glacier from the closure point due to low cloud, while assessing the risks involved with proceeding further during such conditions as being relatively low. During heavier rain, levels of compliance increased, most likely because visitors perceived risks to be higher or conditions too uncomfortable to proceed beyond the barriers. There are no obvious reasons for the changes in levels of compliance between fine and cloudy weather, except perhaps visibility of the glacier.

6.3.9 The Effects of Dependent Children on Levels of Compliance:

Specific observations were made to record dependent children, and adults who where directly responsible for their care, and how the presence of dependent children affected levels of visitor compliance with protective recommendations. Differences in observed levels of compliance between adults without dependent children (62% compliant) and adults who had dependent children under their care (68% compliant) were minimal. This perhaps suggests that the majority of visitors perceived conditions as being safe enough to proceed beyond closures points, regardless of whether there were dependent children in their care or not.

6.4 Chapter Conclusion:

The aim of this chapter was to quantify levels of visitor compliance with protective recommendations and explore situational factors that influence these levels. Visitor compliance was found to be most influenced by the distance between closure points and the glacier terminus, the visibility of other visitors beyond the closure points and the limited hazard perceptions of visitors.

It was highly evident through this study that visitors doubted the credibility of warning signs and barriers that differed from their own perceptions, primarily because of their location. Therefore it is likely that locating barriers too far from the terminal face may unintentionally contribute to non-compliance, by unrealistically limiting experiences of the glacier, and that if barriers were limited to the most dangerous zones, visitors may respect these more. In particular, domestic visitors identified a general tendency for management to be 'over cautious' in response to a society concerned with liability and risk, resulting in visitors pre-empting associated risk and choosing to ignore subsequent safety barriers.

The combination of other visitors visible beyond the barrier and the inappropriate location of the barrier, in that visitors' perceptions of danger are so far misaligned with that of management, were clearly giving visitors mixed messages with regards to visitor safety.

> *"I had crossed one barrier, so I thought 'oh well I can cross another one', and I wondered if there was going to be a third one because I was going to cross it as well"* [male visitor from Sweden].

To a lesser extent, non-compliance was found to be influenced by the age of visitors, weather conditions and the time of day.

Chapter Seven: Possible Motives for Noncompliant Behaviour

7.1 Introduction:

This chapter completes the third objective of this study - to further explore salient motivations of noncompliant behaviour by classifying motives for noncompliant behaviour according to typologies of normative violations as identified by Gramann and Vander Stoep (1987) (See section 3.4). Data collected through qualitative visitor interviews is used to classify and further explain visitor non-compliance with safety recommendations at Franz Josef and Fox glaciers. Sections 7.2 to 7.4 define unintentional, releasor-cue and intentional motivations, and suggest that a large proportion of noncompliant behaviour is committed without an awareness of the behaviour's damaging consequences. Section 7.5 defines responsibility denial motivations, and identifies circumstances in which visitors admit that a behaviour is generally wrong, but not in this instance because conforming seems unreasonable or impossible. Sections 7.6 – 7.7 define status conforming and wilful violations, and identifies situations where noncompliant behaviour may be driven by social pressures or personal gain.

7.2 Unintentional Motivations:

Unintentional motivations can be defined as actions taken by individuals who are unfamiliar with expected behaviour and therefore genuinely believe they have not done any wrong (Gramann and Vander Stoep, 1987). Unintentional noncompliant behaviour has the potential to be, and is, a reasonably frequent occurrence at the glaciers. For the majority of visitors, this was their first visit to the glaciers, and those who went beyond the barrier had a common understanding that access beyond the roped barrier was optional. Visitors largely judged themselves as having adequate levels of experience to proceed beyond the roped barrier, and to a degree access was

supported through signage employed by management that clearly states access is permitted for those visitors who are 'experienced'. Such a situation requires a judgement by visitors individually on what constitutes 'experienced' and what does not. It has been previously discussed (see Chapter 6) that there are a number of situational factors that affect levels of non-compliance. A number of these such as weather conditions, visibility of other visitors beyond the barrier and proximity of the closure point from the glacier terminals, are likely to encourage unintentional non-compliance by reducing the perceived level of experience required by visitors to proceed beyond the barriers.

International visitors appeared to appreciate being given the opportunity to proceed beyond the barrier based on levels of experience, possibly because such behaviour is mandated or even prohibited in similar situations in other parts of the world. For example, a male visitor from Denmark was in obvious support of the current techniques employed by management:

> *"I read the sign and it is not prohibited to cross the barrier. I like that you get the option to choose yourself, if you are an experienced person or with a guide you can go across".*

Another male visitor from Denmark expressed a similar support:

> *"I do like the way the sign gives you a choice, it says 'it is dangerous to go beyond this point' it doesn't say 'you are prohibited to go beyond here' it just says don't go here unless you know what you are doing. You have been warned, so you take the risk and that is fair enough I think".*

A number of these visitors who proceeded beyond the barrier had a clear confidence that they had adequate experience to do so and were therefore, in their opinion, complying with management recommendations. For example, a male visitor from Germany had the following comment:

"I saw the sign and said ok I am experienced enough to go there without a guide".

A male visitor from New Zealand expressed a similar confidence in being able to assess the level of risk associated with proceeding beyond the Forest Walk closure point:

> *"What the sign says is you are recommended not to go past this point because of the track access. But because I am familiar with the environment and our kids are aged six and eight I am happy to take them past this point. However, if there had been any clear hazards then I would have weighed up as to what the level of risk was that we were putting them through".*

Domestic visitors typically hold strong feelings towards freedom of access in this country. After all, the concept of free access is a 'birthright' and often regarded as the foundation for New Zealanders who explore this country. Although the behaviour of domestic visitors towards free access might seem somewhat intentional, because this culture is so deeply ingrained, such behaviour may arguably also be unintentional. A male visitor from New Zealand had a strong opinion towards free access, having the following to say about management recommendations:

> *"You cannot actually stop somebody, if they would like to risk their life then that's their choice".*

As it has been previously discussed (section 6.3.4), visitor perceptions of hazards can at best be described as modest, and among some visitors, poor. While interviews showed a number of visitors who went beyond the barriers did have a good knowledge of the possible hazards, a larger proportion of visitors clearly did not. In addition, it was noted that the majority of visitors who remained behind the barrier had a good awareness of potential hazards and because they had chosen to comply with management recommendations, had obviously also given careful consideration to the risks involved. For example, a male visitor from Australia, who remained behind the barrier, had the foresight to think outside the square and focussed on the likelihood of urgent medical assistance in more remote locations.

> *"The sign says 'only proceed beyond this point if you have a guide', I think that is smart. People get killed in crazy situations. Especially in a situation such as this where there is no nearby medical assistance to save you".*

This further suggests that those who did proceed beyond the barriers, although they felt 'experienced', had perhaps not thoroughly thought about the risks. If the majority of visitors who went beyond the barrier were unable to adequately identify hazards associated with the glaciers it is difficult to understand how they could be considered as 'experienced'. Through visitors' genuine misconceptions of the risks involved and the subsequent levels of experience required to ensure a degree of safety, such behaviour could be defined as unintentional non-compliance.

> *"No, I think on a day like this there are no dangers what so ever. The barriers, maybe they do have a function, maybe they do serve a purpose by making you a little bit more careful. But there was no problem today. I wasn't even close to a slip or a fall, or anything like that, I didn't see anyone having trouble, and I went right up to the ice".* [Male visitor from Sweden].

In addition to levels of experience, there were also a number of 'alternative' measures or suggestions made by visitors by which access was restricted beyond the closure points, such as fear, competence, at one's own risk and physical fitness. Such personal opinions may have been learned from a range of similar experiences in other parts of the world with differing methods of visitor management, resulting in visitors who were genuinely unaware of expected behaviour. For example, a female visitor from Germany, when asked if it was 'ok' to proceed beyond the barriers, irrespective of the level of experience or risk, believed that a decision to proceed was best based on a judgement of personal fear:

> *"The people who are scared can stay outside the others can go for a walk. We made a decision to go ahead at our own risk".*

Given that fear is a reaction and given the relatively benign nature of the glaciers, it is unlikely that visitors would feel any great level of fear at any stage during their visit.

There is also the potential for the term 'experienced' to be misinterpreted by visitors. For example, a male visitor from South Africa, when asked if it was 'ok' to proceed beyond the barriers, recommended that access should remain optional for those who can 'handle it' or who are capable, suggesting possible confusion over exactly what is meant by 'experienced'. Any person is able to cope with walking over stones, to stand next to a glacier and to reach out and touch the ice. To be 'experienced' on the other hand suggests that one comprises a knowledge of, or skill in some thing or event gained through involvement or exposure in that thing or event. Given this, it is unlikely that many visitors could be considered as experienced. This brings into question as to whether 'experienced' is the most suitable measure of optional access beyond the barriers. Obviously the term is open to a great deal of interpretation making it unclear as to what management is referring to as being 'experienced'. If few visitors actually qualify, should the signage even say 'only proceed if you are experienced' at all?

> *"Management has still given an out, even up here, where they have not given a definitive 'no', they have said again 'if you are experienced or guided'. But there are a lot of people who would say 'oh well, I have walked up to glaciers in Alaska' or 'I am a New Zealander so I am used to this stuff', or 'what is experience?"* [Male visitor from New Zealand].

Regardless, a large proportion of noncompliant visitor behaviour exhibited at the glaciers is arguably unintentional. Some visitors have genuine beliefs that access beyond the closure points is optional for a variety of reasons, including past experiences, an awareness of the laws governing freedom of access, and possessing adequate levels of experience. What exactly is meant by 'experienced' is currently largely open to personal opinion and interpretation.

7.3 Releasor-cue Motivations:

Releasor-cue violations may result from seeing others commit a violation, or seeing traces of a violation that have gone unpunished through enforcement or indirectly through social stigma (Gramann and Vander Stoep, 1987). Situations of conformity may exist, where the attitudes, beliefs and behaviours of other visitors affect one's own attitudes, beliefs and behaviours. Knowledge of appropriate behaviour in a given situation is not necessarily the only limiting factor in compliance. Even though visitors may be aware of management recommendations, other intervening factors, such as social influences, may also prevent compliance.

Essentially, in natural resource areas non-compliance gives rise to repeated noncompliant behaviour, especially with regard to less widely condemned behaviour, such as the act of crossing a safety barrier where the normative issue may not be as clear cut or as widely accepted, as the act, for example, of littering. For this reason, the physical cues of seeing other visitors beyond the barrier have become important indicators of what behaviour is perhaps tolerated under such conditions. It was previously established (section 6.3.2), that noncompliant behaviour is strongly encouraged by the visibility of noncompliant others beyond the barrier. It was very evident that such conditions released any social inhibitions controlling the behaviour, resulting in visitors concluding that rules and regulations were not to be taken seriously. For example, a male visitor from India, although he recognised his behaviour as possibly being in the wrong, compromised his behaviour by implying that it is a social norm to follow the actions of others:

> *"I would say seeing other people past the ropes encouraged me to go further. It made me think 'oh well, must be safe, yeah, lets just go'. The fact of seeing people, I mean it is sad, but if you see people doing it well then you just follow them. It doesn't mean that it is right to follow, but it is to be expected that you will follow".*

Again a male visitor from New Zealand stated that one of his main motivations for not going beyond the barrier at Fox Glacier was because all other visitors he had observed during his visit had stopped at the barrier and not gone over.

> *"No one has gone over while I have been here, so I didn't think it was done here. Everyone was doing it over at Franz Josef earlier this morning".*

It is interesting that this visitor would rather follow someone else than initiate the behaviour himself. Because he did not think it was 'done' here suggests that he may have experienced a situation elsewhere where non-compliance with protective recommendations was prevalent, indicating a possible 'culture' of non-compliance amongst the visitor population demonstrating just how easily it can develop and influence behaviour between visitor destinations. Similarly, a male visitor from New Zealand who was interviewed at Fox, describes the actions of a female friend as possibly being encouraged by previously observing the behaviour of other noncompliant visitors at other sites:

> *"She has a habit of ignoring signs, because that is what she did at Franz Josef. That time everyone else was just going straight past the signs and through the barriers as if they weren't even there. She wanted to do what everyone else was doing. If there had been no one else there she wouldn't have gone over".*

It was previously mentioned that there was potential for the development of a culture of non-compliance towards over cautious and protective visitor management (see section 6.3.1). Similarly, besides behaviour being copied directly from one visitor to another via visual contact, there is the potential for non-compliance to develop out of a common pool of cultural information. Where non-compliance with management recommendations has become a social norm, a visitor may choose to move beyond a barrier without coming into direct contact with another visitor also exhibiting that behaviour. A 'culture' of non-compliance may partially

explains the 10 per cent of noncompliant visitors who initially proceeded beyond the barrier even though no other visitors were visible.

7.3.1 Irrational Behaviour:

These statements highlight the dangers associated with visitors basing their actions on the behaviour of others rather than assessing the risks involved or consequences for themselves. A decision to proceed beyond the barrier based on the behaviour of others is made in the absence of logical reason and could therefore be described as irrational. Such behaviour could be commonly termed as 'monkey see, monkey do'. A male visitor from New Zealand clearly describes the potential for such an occurrence at the glacier closure points:

> *"I think there is a trend for a lot of people to be encouraged to go beyond the barrier because they see other people touching the ice, and don't stop to think about the possible dangers. I think if you got here and there was no one here then you would think about a decision to go further a lot more carefully, than if you were simply following other people".*

A male visitor from Scotland clearly was influenced to proceed further, basing a decision to do so because others were visible rather than actually assessing the risks himself:

> *"I think if there had been absolutely no-one out there, like zero people, then obviously you would hesitate a lot more. But the fact that you can see 50 people out there wandering around makes you feel well one more isn't going to make a difference".*

A male visitor from Malta obviously felt a degree of safety when following other visitors beyond the barrier, such that he would not have proceeded otherwise:

> *"If I had not seen people I would have not gone. My experience has told me not to venture more than I can manage. Safety in numbers perhaps".*

It is interesting that this visitor perceived going beyond the barrier while no-one else was visible beyond the barrier as going beyond his capabilities. Another visitor reported that seeing other

people beyond the barrier made him think ‘well, it is probably not as bad as they make out’, highlighting the potential for management recommendations and safety messages to be severely undermined by the visibility of noncompliant behaviour.

Ultimately the visibility of others beyond the barrier had an effect on levels of compliance in two ways. First, it encouraged visitors to dismiss access beyond the barriers as being optional. And second, it also lowered the perceivable levels of risk associated with going closer to the glacier. These conclusions made by visitors, caused management recommendations and safety messages to be dismissed as implausible.

7.4 Uninformed Behaviour:

Uninformed behaviour often results in actions that, although often well meant, are committed without knowledge of the recommendations made by management or the risks involved, and with little awareness of the behaviour’s damaging consequences (Gramann and Vander Stoep, 1987). Uninformed violations are likely to take place in situations where changes in regulations are not adequately publicised or when management do not take the necessary steps to provide visitors with the appropriate information. Such visitors are likely to have a disregard for seemingly arbitrary rules or recommendations due to their limited knowledge. Even if they are conscious that such requirements exist, uninformed visitors may well be unaware of the negative consequences for other users, the environment, or themselves. It has been previously discussed (Chapter 6) how visitors to the glaciers show considerable doubt in the credibility of notices and warnings that differ from their own perceptions. As a result, it is questionable as to whether visitors are being adequately informed through current management systems. For this reason, in failing to effectively inform visitors of the risks involved, management may inadvertently encourage uniformed non-compliance.

Like unintentional noncompliant behaviour, uninformed non-compliance was also found to be a fairly common occurrence at the glaciers, seemingly supported by a fair amount of confusion generated by current conveyance of information and hazard warnings. As has been discussed previously, the most identifiable source of confusion was the seemingly inappropriate locating of barriers and warning signs. This reportedly resulted in visitors dismissing such signage as implausible, encouraging pre-emptive behaviour that could cause visitors to ignore any subsequent warnings of extreme danger, thus reducing the effectiveness of any such signage. For example, a male visitor from Scotland had trouble understanding the credibility of safety messages when no such perceivable risk existed:

> *"I read these safety messages before crossing the barrier, but a kilometre away?"*

A male visitor from Denmark voiced a similar concern with regard to signs indicating 'falling ice' located as far away as the Champness Rock closure point:

> *"Where the falling ice sign is now by itself, people will look at it and say 'falling ice, there is no falling ice'. It is located too far away".*

It was also reported that some uncertainty surrounds the actual wording of signage employed by management. While it was noted that messages were relatively consistent between the two glaciers, there was the potential for confusion within each site itself, in particular at Franz Josef. A male visitor from India had the following comment with regard to the Forest Walk closure point:

> *"The signs weren't very rigid, they didn't really tell you whether to do it or not. It is depending on the conditions and stuff and it seems like it is up to you whether or not you want to cross the barrier".*

Signage at the closure point stated that "access was unsafe for inexperienced or unguided parties due to hazards such as steep drops, slippery and unstable surfaces". It is easy to see why visitors

felt as though it was safe enough to proceed when there did not appear to be any steep drops, and slippery or unstable surfaces do not sound particularly hazardous. No mention was made of the potential for sudden changes in the river course, which was the reason given back in the car park for access being restricted. Another sign stated that "Creeks will be difficult to cross after heavy rain", but again, no mention was made of the dangers associated with the actual river. A male visitor from Scotland had similar uncertainties with regard to access:

> *"I took a picture of the official reason that this trail was closed. The official reason was, because I was surprised, it was 'not recommended', so it didn't say closed, it said 'not recommended' which is optional in my opinion, 'today because of changing river courses, now what the heck does that mean, I have no idea, it is not recommended, well ok ill go anyway".*

Even when the roped barrier was removed from the end of the Forest Walk, a sign was put in its place that stated "Access beyond this point is unsafe for inexperienced or unguided visitors". This sign was referred to by visitors on several occasions and was dismissed as 'butt covering' more than anything particularly useful. Conflicting messages were noted at the Champness Rock closure point as well, with one sign repeating that access was unsafe for inexperienced visitors, while directly above it was another sign which stated "Extreme Danger, Do not proceed".

In contrast, signage at Fox Glacier was more straightforward. In addition to the pictorial signage there was one other sign that clearly stated "Extreme Danger. Do not proceed". Signage that states "Do not proceed" is obviously a lot clearer than signage that suggests it is not recommended. It is clear in such instances that visitors are taking a great risk, and do so at their own cost. Alternatively, the 'not recommended' sign indicates no emphasis on any great level of risk, is open to interpretation, with no apparent passing of responsibility. 'Extreme Danger' was reported by several visitors as being very clear:

> *"The signs are clear as to what can happen. 'Extreme danger' is still clear even in English as a non-english person"* [Male visitor from Germany].

A male visitor from Australia expressed a similar view:

> *I mean 'Danger', I think only a fool wouldn't understand that".*

A number of visitors, particularly domestic visitors, may, however, have a problem with being told to go no further. For example, a male visitor from New Zealand expressed a desire for access to remain optional:

> *"The sign says 'do not proceed' but it should be more like a 'proceed at your own risk' sort of thing".*

7.4.1 A Calculation of Risk:

Risk is basically a present estimate of a future event (Elms, 1998), a calculation of the likelihood of an event and the possible consequences. Given this, it is surprising that information detailing the likelihood of risk and the associated consequences are currently not adequately conveyed to visitors onsite. To a degree, likely consequences can be interpreted through the pictorial hazard signs presently located throughout both sites (see plates 2.3-2.5). If visitors are not given adequate information to estimate the probability of a likely hazard, then perceptions of risk are likely to remain uninformed. A number of visitors interpreted signage that stated "Access beyond this point is unsafe for inexperienced or unguided parties" as being at one's own risk. The problem with such a recommendation is that visitors' current perceived levels of risk are so low. Perceived being the subjective degree of risk felt to be the case by someone (Elms, 1998).

> *"I realise they can't actually close the track, but giving a little more information about what could happen and the likelihood of it happening, and then let them make their own decision"* [male visitor from Scotland].

Visitors would be in a better position to calculate risk and perceive that such a risk exists if they were adequately informed not only of the possible risks, but also of the likelihood of those risks happening and the probable consequences. For example, levels of non-compliance were as high as 83 per cent during hour long observations at the Forest Walk closure point during fine/cloudy weather, indicating that the perceivable level of risk held by the majority of visitors was greatly mismatched with that of management. What is clearly missing from this situation is effective risk communication from management and subsequent healthy risk perceptions from visitors, both being essential factors in any human decision making. If visitors were made to feel more uncertain about proceeding beyond the barriers because of the perceived level of risk, as opposed to feeling uncertain about what is actually happening, then compliance with management recommendations would likely increase. After all, uncertainty constitutes a risk in itself.

7.4.2 Thoughtless Behaviour:

Uninformed visitors are likely to lead to an increase in 'thoughtless' behaviour, or acts committed by individuals who do not think about the consequences of their actions or do not understand the effects of an action. A similar situation to what is described as irrational behaviour (see section 7.3.1) in relation to visitors copying the behaviour of other visitors, giving little thought to the consequences involved. A male visitor from the United States, recognised the need for boundaries and the potential for some visitors to rely heavily on the decisions made by management for direction, giving little thought for personal responsibility:

> *"I understand the need for boundaries because there is a lot of people who don't really think too hard about it, they just say 'oh well I can go up to this point because this point has been put up and they deem it to be safe and so it must be safe'. So I guess there is a point to it".*

A similar view was expressed by a male visitor from Sweden:

> *"I think barriers may have some validity, because they would stop some people who wouldn't think twice perhaps and just wander off because they think perhaps it is safe.*

A similar reliance was clearly portrayed by a female visitor from the United States:

> *"There is the temptation to touch it, and probably if there hadn't been a barrier then I would have walked up closer. But I don't know if I would have touched it".*

Such situations highlight the potential for uninformed visitors to move through the site giving little thought for the risks involved, and the importance of management in ensuring that clear directions are given.

7.4.3 The Consequences of Uninformed Behaviour:

An increase in uninformed, thoughtless behaviour is likely to lead to an increase in associated consequences, often being committed without any awareness. Because of the relatively short time that visitors spend visiting the glaciers, they may not necessarily link their specific actions with the possible effects. A female visitor from New Zealand who had made numerous visits to the glaciers, held grave concerns regarding the expected consequences should a fatal accident occur at either of the glaciers through noncompliant behaviour:

> *"The really important thing is that access to this country is also for the future, for people that come after you as well and we shouldn't be doing anything to stop that. I would be furious if I came here in three years time and it said 'due to everyone flaunting the laws you can only come to this sign only'. You may be experienced and you may have climbed glaciers all over the world, but the problem is that if something does happen the consequences are shared by everyone else. They just don't realise the jeopardy they are putting it in".*

In particular many domestic visitors undoubtedly consider that New Zealand has a unique legacy of freedom of access to the outdoors and feel strongly that this should be protected for future generations. However, any feeling about obligations for future visitors are unlikely to be shared by international visitors in what is likely to be their one and only visit to the glacier. A male

visitor from New Zealand felt strongly that a better understanding of the resource would result in a greater respect and appreciation for it:

> *"These people are just not appreciating it. Tourists are coming into our environment and screwing up our resources. If they somehow were able to understand what is going on, then people would not want to do what they are doing".*

Current visitor behaviour would suggest that the majority of visitors are unaware of any damaging consequences of their actions, being either personal harm or costs that are shared by everyone, such as the jeopardy of future access.

7.5 Responsibility denial:

Responsibility denial violations are caused when an individual generally believes an action to be wrong, but does not assume moral responsibility for that action in certain circumstances, because conforming seems unreasonable or impossible (Gramann and Vander Stoep, 1987). One could assume that responsibility denial would be the most commonly referred to motivation for non-compliance at the glaciers, due to the common attitude amongst visitors that the restrictions imposed by management are conservative and unrealistic[8] (see chapter 6). However, through interview responses, many visitors made no recognition that they had committed any wrong doing, genuinely believing that access was optional, largely because of either unintentional, uninformed or releasor-cue motivations. While a large number of visitors believed conforming to management recommendations to be unreasonable. Whether or not they also perceived it as 'wrong' is hard to determine. For example, a male visitor from New Zealand obviously has a strong belief that conforming to management recommendations is entirely unrealistic, but gives no inclination that what he is doing is in any way wrong:

[8] Attitudes towards management recommendations were found to be heavily dictated by the location of the closure point and proximity to the glacier terminus, at the time of interview.

"I think the barriers are fine, if they are easy enough to climb through though".

One visitor even reported that it was a real shame that some 'law abiding' people would remain behind the barrier, 'misinterpreting' it as being prohibited to go further. It is interesting that this visitor uses the term 'law abiding', suggesting that there is perhaps some dishonesty in such behaviour. However, he also had a very casual belief that the barriers are perhaps nothing more than a point at which management suggests 'please be careful' or 'think about what you are doing', indicating a degree of unintentional motivation as well.

Nevertheless, there were a variety of excuses or justifications towards such behaviour that were identified, indicating perhaps some feeling of guilt. A male visitors from South Africa for example, recognised his behaviour to some extent as rule breaking:

"I actually went over, but you know, I don't want to wreck all the rules".

The majority of reasons for responsibility denial violations are again caused by the mismatched perceptions of associated risk between visitors and that of management. As a result, it is frequently conveyed by visitors that it is 'ok' to go beyond the barrier today, because no such danger exists.

There was also common belief, in particular by domestic and younger overseas visitors, that noncompliant behaviour was validated by possessing a level of skill or experience which is above that for which management is catering. For example, a male visitor from New Zealand believed that although access was closed due to a degree of risk, it refers only to those visitors who are largely incapable and inexperienced in such situations:

> *"I knew it wouldn't be closed for good reason. But they are catering for the lowest common denominator, being people who cannot think for themselves or take personal responsibility".*

Alternatively, another male visitor from New Zealand suggested that it was for the most 'adventurous' person that barriers are put in place:

> *"They probably have to put up the barrier to protect us from the most adventurous person who as soon as they get close to it would scale it and go into the caves and that sort of thing. So it is unfortunate that has to be put there because of a few who go to far".*

These two responsibility denial responses suggest that a number of noncompliant visitors defer responsibility by weighing the perceived level of risk against the recommendations made by management. In both instances, the visitors, in terms of their actions, displayed a high level of perceived behavioural control. Subsequent hazard warnings implied by management are likely to be ignored by visitors who believe they have complete control over the situation or circumstances to which they are exposed.

There was also mention that noncompliant behaviour was justified because it appeared to be encouraged somewhat by management. A male visitor from Scotland for example, defended his noncompliant behaviour on the fact that there are times when visitors are expected to walk further than the roped barriers due to the visibility of track markers proceeding beyond the Forest Walk closure point:

> *"There are route markers telling you where to go when you get beyond the barrier anyway, so that was encouraging us to think well most of the time the park service encourages people to walk out there".*

A similar situation was observed at Fox glacier where a formed track continued on from directly in front of the roped barrier.

A number of domestic visitors also identified past experiences and the fact that twenty years ago you could walk up to the glacier and touch it unrestricted as a possible motivator for attempting to do the same now. This may result in recommendations made by management being deemed as unreasonable, with these visitors asking why they cannot continue to do the same. It is certainly a valid question. It would be fairly obvious to the majority of domestic visitors that the associated risks are no different now from previously. Rather, it is bureaucracy that has changed, increasingly conflicting with a number of commonly held values associated with natural and outdoor recreational settings. A male visitor from New Zealand, when asked what motivated him to proceed beyond the barrier had the following reply:

> *"Past experience. I have been to Franz twenty to thirty years ago and you were allowed to get a lot closer and it is no different then as it is now".*

Finally, another reason why visitors perhaps denied any responsibility associated with noncompliant behaviour, was that they preformed expectations or travel plans to which there may be subsequent sudden changes through information conveyed onsite. Visits to the glaciers and subsequent expectations would have been planned or formed prior to arriving onsite, and without any awareness of onsite information such as the likely restrictions or recommendations made by management. In some instances, information communicated onsite may be ineffective if it forces last minute adjustments in visitors' goals. According to Espiner (2001), 69.6 per cent of visitors expressed a desire to 'get closer to' the glacier than was possible at the time of their visit. It suggests that prior to their visit, such visitors would have anticipated as to how close they would get to the glacier. For a number of visitors this would have been to fulfil an inner desire to 'touch' the glacier and see that it is in fact made of ice. A male visitor from South Africa, for example, had clearly anticipated getting close enough to touch the glacier and showed a disappointment with being told not to go further than the Champness Rock closure point:

> *"The main thing is we came here to get to the glacier, but they stop you from getting there. I mean I don't have to walk on top of it, but as long as I can get next to it and touch it we will be happy with that".*

Such expectations are likely to have been formed through a variety of media sources and promotional material distributed by local and international tourism sectors. Upon being suddenly asked to alter their intended goals, a large proportion of informed visitors are more likely to deny any responsibility associated with noncompliant behaviour, as opposed to those visitors who had anticipated viewing the glacier from a prescribed distance. Several visitors expressed disappointment over the lack of information conveyance surrounding the approved distance from which the glacier could be viewed. For example, upon reaching the Forest Walk Closure Point, one visitor reported a feeling of 'is this it,' while another stated that they would not have bothered if they knew that this was as close as they were going to get to the glacier. This need for an adjustment to intended goals opens the way for responsibility denial behaviour. Visitors are forced to believe that no reasonable alternatives exist and therefore they justifiably can deny having a moral responsibility to comply (Gramann and Vander Stoep, 1987).

Most visitors were of the opinion that proceeding beyond the roped barriers was optional, on a 'proceed at your own risk basis', and therefore had no reason to deny or offer any justification for their actions. What is key, however, is that ultimately, noncompliant behaviour will continue if visitors disagree with the need for regulation, or the approach taken for enforcement, or are forced to believe that no reasonable alternatives exist.

7.6 Status Conforming Motivations:

Status conforming behaviour may occur in response to social influence from important reference groups or social networks (Gramann and Vander Stoep, 1987). Although there were references to suggest a culture of non-compliance exists (Section 7.3), no comments where made that directly identified such a culture to be a motivator of noncompliant behaviour.

The majority of visitors who were asked if they felt any social pressure to remain behind the barrier felt strongly that they had made their own independent decision and were not at all influenced by any social pressures. Only one visitor identified a degree of social pressure to remain behind the barrier, stating that he would have felt uncomfortable proceeding beyond the barrier, preferring to wait until other visitors had departed before jumping over the rope. It is noted that this was the sole visitor questioned about social pressures at the Terminal closure point at Fox Glacier, where levels of non-compliance were recorded as being substantially lower (17%), compared to the closure points at Franz Josef (45%), where other visitors were asked this question. The subsequent increase in the visibility of visitors beyond the barrier is likely to alleviate any social pressure to remain behind the barrier. This visitor, from New Zealand, identified both being viewed socially as a responsible adult and of the example he was setting if he visibly proceeded further, as reasons for being wary of what others may think:

> *"If I had been here by myself and no one else had been here to see my bad example I would have gone further".*

Currently there appears to be minimal social influence dictating whether proceeding beyond the closure points is viewed socially as being right or wrong, particularly in situations where there are high rates of visitor non-compliance. If levels of compliance at the glaciers were to be increased, through changes in management strategies, then it is likely that social pressures to

remain behind the barrier will increase also. For example, as the frequency by which other visitors are viewed committing such acts decreases, the degree by which such behaviour is socially considered as inappropriate is likely to increase. Visitors will also feel an increased obligation to do the appropriate thing, if they have a widely shared belief that such behaviour is wrong.

7.7 Wilful Violations:

Wilful violations occur freely for financial gain, ideological protest, revenge, malice or fun. Wilful violators will act in defiance of regulatory enforcement or social stigma (Gramann and Vander Stoep, 1987). According to Ward & Roggenbuck (2003), arousal is a need that drives much of the vandalism and depreciative behaviour in natural resource areas. The visitor is human, and therefore possesses somewhat of a "tragedy of the commons" attitude, described by Hardin (1968) as the need to acquire benefits for the individual over what any rule may say about the costs for others. This may be true with regard to noncompliant behaviour at the glaciers, where the role of entertainment, and the pursuit of optimal experience or arousal, can be identified as a motivating force. For most visitors, visiting the glacier is a once in a lifetime experience and it is only natural that they will want to get as much out of their visit as possible. As mentioned, there will also be less of a feeling about any obligations for future visitors shown by visitors in which this is likely to be their one and only visit to the glacier. For the most part, however, the pursuit of arousal can only be considered as a wilful violation if visitors are consciously behaving in a noncompliant manner. As with responsibility denial motivations, because a large number of visitors genuinely believed that access is optional, they are therefore committing no violation, and their actions cannot be classified as a wilful violation.

7.8 Chapter Conclusion:

This chapter has further explored motives of non-compliance through classifying behaviour according to Gramann and Vander Stoep's (1987) typologies of normative violations. Through this process, it is apparent that there is a wide array of reasoning and motivation behind visitor compliance with management recommendations. In addition, the boundaries defining such motivations are somewhat 'fuzzy', especially between violations caused by unintentional and uninformed motives. In relation to visitor management at the glaciers, it can be argued that the majority of motivations for noncompliant behaviour are closely linked with effective communication, or lack there of. Previous studies report that the three most common justifications for noncompliant behaviour within natural resource settings were (1) if resources are abundant; (2) others are engaging in the same behaviour; and (3) there are no obvious consequences (Ward & Roggenbuck, 2003; Nesbitt, 2006). Through this chapter, clear similarities emerge. First, visitors regularly identified that the situation (resource) encouraged non-compliance, through the perceived inappropriate location of closure points and hazard signage; the relatively benign appearance of the glacier and subsequent low level of perceived risk; the belief that access was optional; and a created desire to get closer to the ice. Second, it was frequently commented that noncompliant behaviour was justified because "everyone else was going over", releasing any social pressure to remain behind the barrier. Third, there were no obvious consequences to self or others, possibly through inadequate conveyance of visitor safety and hazard messages and subsequent low levels of perceived risk amongst visitors.

Chapter Eight: Conclusion

8.1 Concluding Summary:

This study quantified levels of visitor compliance with protective recommendations, and explored salient motivations of noncompliant behaviour, within the natural recreational settings of Franz Josef and Fox glaciers. The Department of Conservation, who manage these resources, has a legal and increasingly a moral obligation to provide a level of service and ensure a high standard of visitor safety within lands in which it administers. However, despite management efforts, a large number of visitors choose to ignore hazard warnings and safety barriers, placing themselves and others at considerable risk. As a result, the question has been raised regarding whether the Department has adequately fulfilled its duty of care?

The literature review defined noncompliant behaviour and discussed associated motivations within natural recreation settings. Background literature was reviewed to illustrate the effectiveness of existing management approaches. Finally, in order to gain a deeper understanding of motivations for visitor non-compliance, Gramann and Vander Stoep's (1987) typologies of normative violations, and Ajzen's (1985; 1991) theory of planned behaviour were introduced as a means of classification and further discussion.

In relation to the first objective, the study presented a basic demographic and behavioural profile of visitors to Franz Josef and Fox glaciers, effectively identifying a target audience for management. Findings indicated that levels of visitation follow a fairly consistent pattern during the day, and that this pattern varies slightly between the two glaciers. Patterns of visitation at

Franz Josef were found to be influenced more by factors such as distance from car park, physical terrain and visitor goals, than by management actions such as signage or roped barriers.

With regard to the second objective, a standardised method of quantifying visitor compliance (and non-compliance) with protective recommendations was trialled. Such a measure can be applied consistently by department staff to establish a level of performance and ascertain the effectiveness of visitor management operations through monitoring changes in compliance over time. A number of situational factors, namely location of closure point, visibility of other visitors beyond the barrier, level of visitation, time of day and weather conditions were identified through observations as having a strong influence on levels of visitor compliance for various reasons. Therefore it is essential that these factors are taken into consideration when applying a measure of visitor compliance. Although levels of compliance with management recommendations were found to vary between Franz Josef and Fox, this is more likely to be a result of the various locations of closure points and their proximity to the glacier terminus, than management operations.

Concerning the third objective, the motivating factors that drive visitors towards, or restrain them from noncompliant behaviour, and tendencies of visitor attitudes towards current management techniques were explored. This was achieved through identifying situational factors that influence visitor behaviour. Results showed that visitor compliance was strongly influenced by locations of closure points and proximity of these to the glacier terminus. It is also likely that the location of track closure points is the initial catalyst for noncompliant behaviour, which is then compounded further by other influencing factors. This raises the issue surrounding the credibility of barriers and signage etc, located in areas where there is little or no perceivable risk. Other influencing factors were found to be the visibility of other independent visitors beyond the

barrier, the modest hazard perceptions of visitors, estimated visitor age, time of day and weather conditions. Motives of non-compliance were classified according to typologies of normative violations, as identified by Gramann and Vander Stoep (1987). Noncompliant behaviour at the glaciers was found to be predominantly associated with unintentional, releasor cue, uniformed and to a lesser extent, responsibility denial motivations. It can be argued that the majority of motivations for noncompliant behaviour are closely linked with the effective communication, or lack of, information, in particular, associated risk and an awareness of consequences.

Finally, strong relationships were found to exist between visitor non-compliance and attitudes, subjective norms and perceived behavioural control. Suggestions on appropriate communication and management regimes to target a change in behaviour and to reduce non-compliance are detailed below (see section 8.2).

8.2 Management Implications: reducing noncompliant behaviour:

With reference to Hardin's (1968) theory 'the tragedy of the commons', Nesbitt, (2006) suggests that if the personal benefit of an achieved outcome appears greater than the cost shared by everyone, then cosmetic measures alone will not be enough to stop depreciative or noncompliant behaviour.

> *"If people really want to do something, and if they are walking from point A to point B, it's really hard to stop them"* [Male visitor from Scotland].

By understanding what influencing factors drive people to make a decision to be compliant/non-compliant, suggestions can be made on effective communication and management regimes to target a change in those beliefs (Fishbein & Manfredo, 1992).

To reiterate, Ajzen's (1985; 1991) theory of planned behaviour states that there are three independent determinants contributing to an intention to engage in any given behaviour. These are; (1) the attitude toward the behaviour, referring to the degree to which a person has a favourable or unfavourable evaluation of a particular behaviour; (2) the subjective norm, or the perceived social pressure to perform or not perform a given behaviour; and (3), the degree of perceived behavioural control, referring to the perceived ease or difficulty of performing the behaviour of interest.

A change in visitor behaviour may therefore be achieved by influencing the salience of beliefs, causing a revised intention to engage in that behaviour (Ajzen, 1985; Nesbitt, 2006). This would result in a reassessment of the following related intentions: For example, influencing a person's behavioural beliefs would affect that person's attitude towards an intended behaviour; an influence on normative beliefs would result in a change in the level of confidence in performing an intended behaviour; and, an influence on control beliefs is likely to effect a change in the level of commitment to perform an intended behaviour.

It has been previously established (Chapter 7) that visitors to the glaciers regularly identified three common justifications for noncompliant behaviour. These are; (1) that the situation (resource) encouraged it; (2) that there were no obvious consequences to self or others; and, (3) that "everyone else was going over". These three common justifications of noncompliant behaviour can each be categorised according to a determinant of behaviour as identified by Ajzen (1991). For example; 'that the situation encouraged it', can be evaluated as an attitude or behavioural belief; there being 'no obvious consequences' is a factor of perceived behavioural control, and; the validation that 'everyone else was going over', a subjective norm or normative belief.

It has been established that a strong relationship exists between attitudes, subjective norms, perceived behavioural control and noncompliant behaviour at the glaciers. It is therefore important that management recognise these salient influences when addressing noncompliant behaviour. Figure 8.1 illustrates a suggested 'tiered' management approach based on the level of management required to curb a behaviour influenced by either a perceived behavioural control, subjective norm or attitude.

8.2.1 Perceived Behavioural Control:

A number of visitors reported that they were motivated to proceed beyond closure point barriers because there were no obvious consequences. Effectively communicating information about risks and associated consequences is an obvious strategy for reducing noncompliant behaviour motivated by a high level of perceived behavioural control. Effective messages would install a degree of fear by describing potential harm to the actor from engaging in a particular behaviour (Gramann and Vander Stoep, 1987), and thus increasing the level of commitment required. Messages could also install a sense of moral fear, appeals that focus on harm to other people or to resources (Gramann and Vander Stoep, 1987; Gramann et al., 1995). For example, the jeopardy of future access being ruined in the future if current privileges are abused.

For the majority of hazards associated with glaciers, the likelihood is largely unpredictable (i.e., they could occur without warning, at anytime). Any subsequent messages should emphasise this unpredictability, conveying a feeling of uncertainty and eliciting subsequent fear amongst visitors. It was identified that visitors were largely uninformed of less obvious hazards, such as the potential for dam breaks, flash floods and sudden changes in the river course, and held a common misconception that all hazards are largely weather dependent.

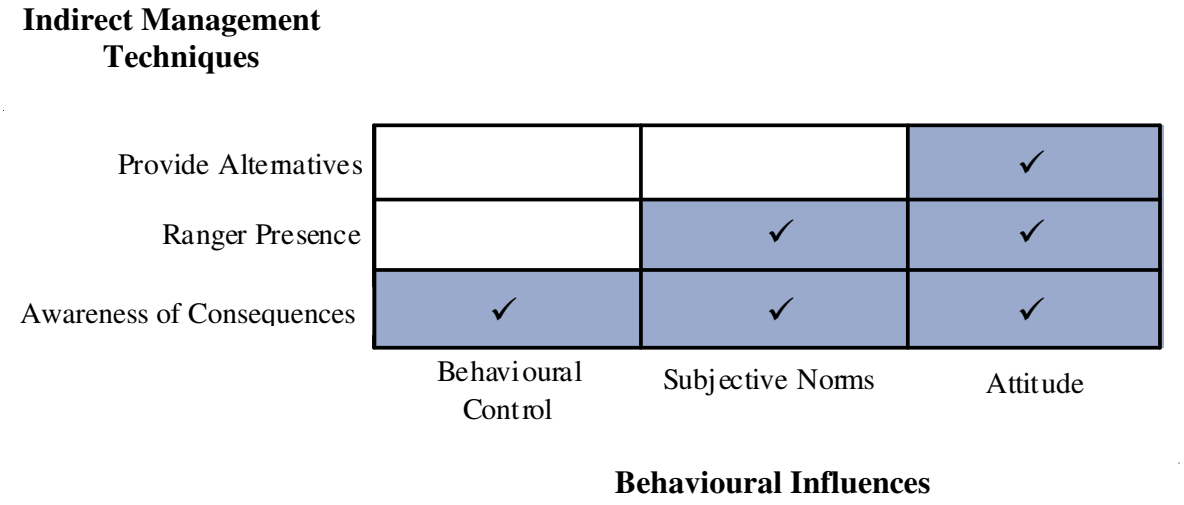


Figure 8.1. A 'tiered' management approach to reducing noncompliant behaviour.

Due to visitors being poorly informed, their perceived levels of risk and associated consequences were largely misaligned with those of management. An effective means of improving compliance would be to ensure visitors are fully advised onsite of the nature of potential hazards, the likelihood of such an event occurring and the severity of probable consequences. The greater the perceived harm and the more likely its occurrence, the greater the perceived effectiveness of recommended actions to avoid harm, i.e. remaining behind the barrier (Gramann et al., 1995).

It is equally important that subsequent messages are adequately conveyed to visitors. Given the volume of people passing through the sites, ample opportunity should be provided for visitors to read and take in information. Hazard messages should also be located in appropriate locations, where corresponding hazards are perceivable.

8.2.2 Subjective Norms:

A number of visitors reported that there was minimal social pressure to remain behind the barrier, and that seeing others beyond the barrier offered encouragement to follow. Changing

beliefs associated with subject norms lie in changing the individual's perception of what others believe as being acceptable behaviour (Nesbitt, 2006). Subsequent created social pressure will therefore reduce a visitor's level of confidence in performing a given behaviour. In addition, if environmental cues (in the form of others' behaviour or traces of that behaviour) encourage normative violations, "logic dictates that removing these cues will reduce violations" (Gramann and Vander Stoep, 1987, p.251). For example, reducing evidence of a behaviour creates a situation where individuals perceive that a realistic choice exists between a moral and an amoral decision, thus activating visitors' feelings of moral responsibility to do the right thing. Currently a number of cues such as the visibility of tracks and marker posts beyond the barrier and the visibility of noncompliant others eliminate any feeling of morality.

Figure 8.1 illustrates that management approaches to reduce non-compliance influenced by subjective norms should include; (1) the effective communication of information about risks and associated consequences, to inspire feelings of moral responsibility amongst individuals (Gramann and Vander Stoep, 1987), and; (2) locating a ranger onsite, particularly during times when visitors perceptions of risk are likely to be low, are likely to increase motivations to comply by installing a respect for authority, distinguishing between acceptable and unacceptable behaviour and increasing the degree to which protective recommendations will be taken seriously. Locating a ranger onsite has the potential to be a valuable public relations exercise for the Department of Conservation. Value can be added to the 'glacier experience' sought by visitors through contact with a ranger onsite who is capable of sharing educational knowledge about the glacier. However, conformity is only likely if visitors agree with the need for protective recommendations.

8.2.3 Attitudes:

A number of visitors reported that the protective recommendations made by management were unrealistic or unworthy of respect, and as a result encouraged non-compliance. It has been discussed that non-compliance may be influenced by the introduction of new knowledge conveying awareness of consequences, and through activating visitors' feelings of moral responsibility to do the right thing. However, compliance is unlikely to improve if protective recommendations are seen as inappropriate, or visitors' disagree with the need for restrictions because no such risk exists.

Currently it can be argued that non-compliance is justifiably forced by targets that are unacceptable and a lack of reasonable alternatives. It was highly evident that visitors held a strong underlying desire to get closer to the glacier and, for some, to touch the ice. Under certain circumstances, such as fine weather, the barrier being located a considerable distance from the glacier and the visibility of noncompliant others, visitors may perceive a situational constraint and may therefore feel a compelling reason exists to disobey protective recommendations.

On several occasions at both glaciers, instances were observed where targets set by management appeared unacceptable to visitors. Figure 8.1 illustrates that under such circumstances a combination of all of the following management actions are needed to reduce non-compliance; (1) reasons for restrictions and associated consequences should be clearly conveyed; (2) the situation may be lessened by locating a ranger onsite to install a sense of moral responsibility, and; (3) provide alternative opportunities, making visitors fully aware of these onsite.

Exactly what alternative opportunities should be provided requires further investigation, but may include the following: Espiner (2007) proposed the advertising onsite of the 'status' (i.e.

proximity from which the glacier can be viewed) of the 'other' glacier, effectively giving visitors an 'out' or option of getting closer to a glacier at an alternative nearby location. The proximity of closure points at either glacier should be clearly stated at the beginning of tracks so as to eliminate false expectations. Second, several visitors identified areas that they perceived as being relatively safe where visitors could get close enough to touch the ice. This may prove difficult given management's moral obligation to ensure visitor safety. It could, however, be viable for local guiding companies to offer such a basic level of service, in addition to providing full guided tours, for minimal cost.

8.3 Avenues for Future Research:

Through an exploratory study, utilising qualitative interview responses of visitors, this dissertation sought to address an apparent gap in natural resource management, by investigating salient motivations behind noncompliant behaviour within a natural recreation setting. Further research is required to gain a better understanding of motivations for noncompliant behaviour and to better predict situations in which such motivations are to be encouraged. Avenues for future research may include a quantitative questionnaire based study in which salient motivations may be more accurately elicited.

Specifically to the study settings of Franz Josef and Fox glaciers, it is suggested that future research develop further a standardised method of quantifying visitor compliance, based on the method trialled in this study. In addition to an observed measure of non-compliance, a qualitative monitor could be developed to consistently establish visitors' perceptions of hazard awareness and individual responsibility. This also will give management staff an indication of the effectiveness of visitor management tools, in particular, the conveyance of information to visitors onsite. In conjunction with these standardised methods, alternative means of

communication such as interpretive signs, may effectively be trialled and tested for effectiveness in reducing visitor non-compliance.

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Quantitative Observation Log

General Information (to be filled out prior/after observation)

Date:

Time - Start:
- Finish:

Glacier: | (1)Franz | (2)Fox |

Visitor Counter Recording - Entry:
- Exit:

Session:	(1)Peak	(2)Shoulder	(3)Quiet

River Condition:	(1)Low Flow	(2)Med Flow	(3)High Flow

Weather:	(1)Fine	(2)Cloudy	(3)Showers	(4)Rain

Observer Location:

Hazards Observed During Observation:

Management Influence (to be filled out prior/after observation)

Closure Pt Location:	(1)Forest Walk	(2)Champness	(3)Terminal
	(1)60's Moraine	(2)White Creek	(3)Terminal

Description of Closure Point Type:

Visitor Observation Tally (to be filled out during observation)

Codes

Gender	(1)Male	(2)Female			
Average Age:	(1)<16	(2)17-30	(3)31- 44	(4)45-59	(5)60+
Party Size:	(1)Single	(2)Couple	(3)Three - Five	(4)Six – Ten	(5)Ten +
Depnt Child:	(1)Yes	(2)No			
Noncomp Vis	(1)Yes	(2)No			
Gided Vis	(1)River bed	(2)Glacier	(3)No		
Comply	(1)Yes	(2)No			

Visitor Code	Gender	Age	Party Size	Depndnt Children	Noncomp Visible	Guided Visible	Comply

Visitor Code	Gender	Age	Party Size	Depndnt Children	Noncomp Visible	Guided Visible	Comply

Appendix 2.

Participant ID

Interview Face Sheet:

Assigned pseudonym:

Date of interview:

Time of interview:

Location of interview:

Weather conditions:

---------- *below line filled in by interviewee* ----------

Gender:

Age:

Education:

Ethnicity:

Occupation:

Country of current residence:

Number of visits to glacier:

Years since first visit:

Children (Y/N):

Semi-structured Interview Script

Visitor experience

1. Why did you decide to visit this glacier?
2. How did you hear about the glacier?
3. What qualities did you enjoy about the glacier and the glacier valley?
4. Did you get a chance to get close enough to touch the ice?
5. Where there any aspects that you didn't enjoy?
6. Following your visit, would you say your desires or expectations of visiting the glacier met?
7. Did your previous image of the glacier valley and glacier prior to your visit match the image you have now following your visit (i.e. is it what you expected)?
8. How could your visit have been made a more memorable experience?
9. If you were given the opportunity, would you have gotten close enough to touch the ice?
10. Describe where a desire to touch the ice might come from?

Attitudes towards non-compliance

11. Do you believe that sometimes it is ok to go beyond the barrier?
12. Would you consider getting closer to the glacier (beyond the closure point) would have allowed / did allow you to have a better experience?
13. Do you feel the warning signs and barriers are valid, or do you feel access to the glacier should remain unrestricted?
14. Did you see other people beyond the barrier closer to the glacier? How did this make you feel? (Seeing other people getting a closer look at the glacier)
15. On what basis do you believe visitors should be allowed to proceed beyond the barrier, i.e. experience in the outdoors?

Perceived behavioural control

16. What would you say it was that motivated you to decide / not to go beyond the closure point?
17. Was this because it was easy / difficult due to physical elements, hazards, social influences?

18. Do you feel as though your perceptions of safety did not match that of management, and felt that conditions where safe enough to proceed closer to the glacier beyond the closure point?

19. Did you feel as though you had complete control over how close you could get to the glacier, or were you most influenced by management recommendations?

Subjective norms

20. How did you feel when you were asked not to go any closer to the glacier than the roped barrier?

21. Did you feel as though you where pressured to remain behind the barrier because it said to do so?

22. Because of what other people may think, did you feel uncomfortable proceeding beyond the barrier/more comfortable remaining behind the barrier?

Hazard awareness

23. Please list any natural hazards that you were aware of during your visit within the glacier valley?

24. Do you consider these natural hazards as being a potential risk to your well being?

25. Under what environmental conditions would you perhaps reconsider natural hazards as being potentially harmful?

Visitor Management

26. Please comment on current visitor management within the glacier valley, did it adequately protect visitors from potential hazards?

27. How do you think the area could be better managed to enhance visitor enjoyment of the glacier?

Other

28. Will you be visiting the 'other' glacier at some stage during your stay?

29. How would you summarise your visit to the glacier?

Appendix 3.

Participant ID

[University Letterhead Here]

10 November 2007

Cover Letter

Dear Sir or Madam:

I would like to invite you to participate in a study about visitor experience at Franz Josef and Fox Glaciers, South Westland National park.

Purpose of the research:
The research study I am undertaking is called "an investigation of visitor behaviour in recreation and tourism settings: A case study of natural hazard management at the Glaciers, Westland National Park, New Zealand. I am interested in how you have used this site, your reactions to hazard and safety messages, and whether or not the visit met your expectations.

Your privacy and confidentiality:
Because we will be identifying participants by identification number only, and not by name, all information will remain anonymous. The information you give will be available only to me and my supervisor. In any oral or written presentation of the results, only pseudonyms will be used; no names or identifiable information will be presented. Participation in the research is voluntary and you may withdraw information at any time during this survey before the 25th January 2008. Please retain a copy of your identification number (located at the top of this page) and quote it to the researcher in the case of you wishing to withdraw and have your information destroyed.

Use of information given:
Information given during interviews will be analysed by Derek Hayes in association with Lincoln University as a partial fulfilment of the requirements for a degree of Master of Applied Science (Parks, Recreation and Tourism management) at Lincoln University. The study findings are also likely to be made available to the Department of Conservation.

If you have any questions about the project, please do not hesitate to contact either myself (Derek Hayes) or my supervisor (Dr Stephen Espiner). I thank you for your time and assistance.

Yours sincerely

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Participant ID

Appendix 4.

Consent Form

Name of Project: An Investigation of Visitor Behaviour in Recreation and Tourism Settings: A Case Study of Natural Hazard Management at the Glaciers, Westland National Park, New Zealand.

I have read and understood the description of the above-named project. On this basis I agree to participate as a subject in the project, and I consent to publication of the results of the project with the understanding that anonymity will be preserved. I understand also that I may withdraw from the project, including withdrawal of any information I have provided, by quoting the participant identification number (recorded on cover letter) to the researcher before the 25th January 2008.

Name (Please print): _____

Signed: _____ Date: _____

Appendix 5.

Public Notification

Research is currently being conducted on the glacier access track, to investigate visitor behaviour.

It should be noted that a researcher may be conducting interviews and observations within the glacier valley, between the times of;

8:00am and **6:00pm** from the **18th December 2007** to the **6th January 2008**

Research is being undertaken by Lincoln University. Any queries shall be directed to the principal researcher; Derek Hayes; Ph 027 406 4017; Email hayesd@lincoln.ac.nz

Thank you for your cooperation