Visitors' perceived value of animal-close encounters at New Zealand Zoos and how this relates to modern zoo objectives

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Dinushi Nadeeka Lankeshwara

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Abstract

Zoos try to give visitors a memorable experience by offering them highly desirable activities. Zoos simultaneously explore ways of transferring an understanding of their five major objectives: Conservation, education, animal welfare, research, and recreation, to the general public. These zoo roles complement each other to enhance zoos' reputation as conservation centres and their future survival.

Animal-close encounters defined in this research as Animal-visitor interactions (AVIs), are a very popular and emerging field of visitor attraction in modern zoo culture. An online survey was conducted among participants of paid AVIs in Zoo and Aquarium Association (ZAA) accredited Zoos in New Zealand to explore their perceived value of the experience, and how their perceptions related to the major zoo objectives. The survey was limited to those who had participated in a paid AVI in New Zealand, and only that eight ZAA-accredited New Zealand Zoos offer paid AVIs. The online survey was distributed mainly through Facebook advertising. A total of 118 responses were received. Data were analysed using descriptive statistics for categorical data, and content analysis of free-text responses.

This study identified several categories/subcategories among participants' responses to what they found most memorable and how the encounter added value to their day. The most mentioned category in participant's free text comments was recreation, indicating that this may have been the primary motivation for engaging in a paid AVI and the component that made the experience the most memorable. Participants' strong agreement with statements about conservation, on the other hand, appears to indicate that the zoos were getting the conservation message across, and visitors' attitudes were also developing with the time beyond entertainement. Paid AVIs were a good way of promoting recreation, education, conservation, and animal welfare objectives among participants. But there appeared to be lack of awareness or understanding of the zoo's research objective among participants.

This knowledge might help zoos organise future paid AVI experiences to better meet participants' expectations. It might also assist with marketing and management strategies, bearing in mind that participants' future expectations and behaviours are often based on the perceived value of their experience. The higher the perceived value, the more satisfied participants will be, resulting in likelihood of more recommendations and thus being a better revenue generator for zoos. In addition, the information extracted on participants views towards the major zoo objectives could provide valuable feedback to Zoos on the role of AVIs in promoting these.

While this preliminary study offers some useful insights into participants' perceptions of AVIs at New Zealand zoos, the small sample size necessitates more research to better understand participants' motives and best promote the major zoo objectives through these experiences.

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Chapter One: Literature review

1.1 Modern Zoological Parks

1.1.1 The evolution of Modern zoological parks and their objectives

The Zoological Park (zoo) is an establishment that maintains a collection of wild animals, typically in a park or gardens, for study, conservation or display to the public (Simpson, 1989). Earlier zoos were travelling menageries, and it was believed that private animal collections eventually evolved into menageries (Kisling, 2000). Many animal species were exhibited in a taxonomical arrangement of barred cages in a menagerie, and the staff were somewhat knowledgeable about animals with limited educational opportunities for visitors. Menageries were mainly established to demonstrate people's prestige and power as well as to provide the public with opportunities for recreation or entertainment and leisure (Carr & Cohen, 2011; Kisling, 2000; Kreger & Mench, 1995).

There was a radical departure in the mid-eighteenth century, with travelling menageries being replaced by zoos, which were merely sophisticated menageries in fixed locations. Moving along the continuum from menageries to zoos, definite transition points are difficult to pinpoint (Kisling, 2000). However, some institutions led the transition from menageries to zoos, such as the Schonbrunn (opened in Vienna in 1765) and Jardin des Plantes (opened in Paris in 1793), and London Zoological Garden (opened in 1828). During the transition, individual ownership switched to government or society ownership and animal collections changed from private to general public interests (Kisling, 2000). People wanted to visit zoos where animals were kept in enclosures that looked more natural than ones with bars. Hence, these zoos had more naturalistic animal exhibits, improved standards of animal husbandry, and staff were increasingly knowledgeable about animals. Apart from recreation, zoos' goals began to shift with this transformation, with a greater emphasis on education and opportunities for scientific research (Kisling, 2000; Roe et al., 2014). In 1847, The London Zoo initiated entrance tickets for zoo visitors and this fee supported the zoo's collection, maintenance, and research (Ballantyne et al., 2007).

In the early twentieth century, European zoos were the first to initiate animal conservation actions. For example, European zoos carried out successful breeding programs and released bison back into the wild when European bison numbers dwindled and were on the brink of extinction due to the First World War and the Russian revolution. (Kisling, 2000).

Modern zoos of the late-twentieth-century received a good income from visitors to enhance their facilities and care for animal exhibits (Kisling, 2000). At the same time, zoos were criticised because of the presence of behavioural stereotypies in some zoo animals, that could be misinterpreted as normal animal behaviour by the public. As a result of these stereotypies, some zoos were described as animal prisons and like animal hospitals (Sommer, 1972). Visitor numbers began to decline with different pressures from anti-zoo groups and increasing concern for animal welfare and awareness of environmental issues among the public (Kisling, 2000). Amid these different pressures, zoos had to develop new roles and goals for their own survival. As a result, zoos began to emphasise their animal conservation work in an effort to defeat critics and survive as conservation parks (Kisling, 2000).

Modern zoos in the twenty-first century are now devoting more of their time and resources to achieve five main interconnected objectives: (1) Conservation, (2) Education, (3) Research, (4) Animal welfare, and (5) Recreation/entertainment (D'Cruze et al., 2019). Also, modern zoos encompass a variety of facility types, such as zoos, conservation parks, safari parks, butterfly parks, endangered species rehabilitation centres, aviaries, herpetariums, and insectariums (Fernandez et al., 2009; Sandford, 1984). National parks and Wildlife reserves are also merging with the zoo concept and becoming megazoos (Sullivan & Shaffer, 1975).

Many modern facilities place their primary emphasis only on the first four objectives, but for many zoo visitors, entertainment is the main attraction (D'Cruze et al., 2019; Fernandez et al., 2009; Kreger & Mench, 1995). Modern zoos allow visitors to see animals in mock-ups of their natural habitats and allow them to interact with less familiar wild animals (termed animal-visitor interactions) to give a premium wildlife

experience. The physical closeness to captive wildlife, either directly or indirectly, increases the attraction of a zoo to visitors and might encourage initial visits and subsequent returns, which produces more significant revenue to accomplish the zoo's other objectives (Anderson et al., 2003; Hosey, 2005).

But according to Hosey (2005), modern zoos often encounter conflicts in the pursuit of achieving these objectives. On the one hand, proximity to and interaction with captive wildlife provide an extraordinary wildlife experience for zoo visitors. However, close proximity to humans could affect the welfare of the interacting animal (Fernandez et al., 2009). On the other hand, if visitors are prevented from close interaction with animals, it might decrease their enjoyment. Hence, fewer zoo visitors might attend and income may be reduced (Fernandez et al., 2009). Zoos must therefore try to maintain an acceptable level of captive animal interactions to maintain or improve both animal welfare and visitor satisfaction, which will be further discussed in the Animal-visitor interaction section.

1.1.2 Social license and the future of zoos

Over the last few decades, public perception of captivity has changed significantly. The main goals of zoos are being overshadowed by moral objections from the public towards keeping animals in captivity (Reh, 2020). By being taken from the wild and exhibited in a confined environment, animals are deprived of many opportunities. For instance, the opportunity to gather their own food, or develop their own social hierarchies and social relations, and general behaviours seen in the natural environment are significantly restricted (Jamieson, 2003). Some animal welfare advocates contend that the welfare of wild animals is diminished under human care and that zoos cannot provide wild animals with the richness of experience, spacious facilities for free movement, and quality of life similar to their natural environment. They also challenge the existence of zoos by arguing that their recreational role alone is insufficient to justify keeping wild animals in captivity, especially for endangered species (Malamud, 1998).

For the continuous existence of zoos amidst rising social pressure, strong justification is required to receive public approval. 'Social License to Operate' (SLO) or 'Social License' is a concept used by organisations that reflects their public approval and the legitimacy of their existence (Edwards & Trafford, 2016). For zoos, the SLO is determined by how well the local community and stakeholders believe zoos are performing their key objectives (Boutilier & Thomson, 2011; Gray, 2017a). Hence, zoos must actively engage in relevant conservation projects, conservation-oriented meaningful research, advanced animal welfare science, and vital education campaigns to protect wildlife and inspire people (Hampton & Teh-White, 2019). Also, progressive zoos must be concerned about determining their visitors' opinions, attitudes, and values towards their activities and consider how these might influence their operations. Society must be confident that zoos are behaving in a socially and environmentally responsible way; this will allow zoos to attain and maintain SLO for their continued existence (Boutilier & Thomson, 2011).

1.1.3 Ethics of keeping animals in captivity

Although modern zoos emphasise different reasons for maintaining their SLO, they should importantly clarify the moral issues of animal captivity for human entertainment. There are some crucial benefits gained by doing so (Jamieson, 2003). The World Associations of Zoos and Aquariums (WAZA), which is considered a "*unifying organisation for the world's zoos and aquarium community dedicated to animal care, conservation of wildlife and its habitats*" (*WAZA Animal Visitor Interaction Guidlines*, n.d, p. 1), recognises zoos' core purpose as wildlife conservation and their core activity as animal welfare (Mellor et al., 2015). Hence, a firm commitment to wildlife conservation and animal welfare provides a powerful ethical justification for keeping animals in captivity in zoos in the 21st century (Hutchins & Conway, 1995).

The accelerating rate of animal extinction has become a significant problem in the world. Only mammals and birds have sufficiently good data collected, and the extinction rate is roughly one species per year (Reid & Miller, 1989). If other taxa have

the same extinction risk as mammals and birds, and if the world's total number of species is 30 million, the annual extinction rate would be around 2300 species per year. This is a large and alarming figure (Whitmore & Sayer, 1992). Approximately half of the animal species on earth presently live in tropical regions, which make up only about 6% of the earth's surface. Because of the high human population growth in tropical countries and the drive to become developed and modernised, mature rain forests in tropical regions are disappearing at an alarming rate. The natural ecosystem is being exploited rapidly in an unregulated pattern for lumber production, farming spaces, and human settlements (Whitmore & Sayer, 1992). As the forest disappears, so too does its inhabiting wildlife. This will ultimately result in an exponentially accelerating wildlife extinction rate and erasing of unique and valuable gene pools from the earth's encyclopedia each day (Sandford, 1984).

Modern zoos attempt to address this challenging situation and conserve wildlife (Sandford, 1984). One of the main priorities of zoos is the *ex-situ* conservation of wild animals, which protects wild animals outside their natural habitats (Engelmann & Engels, 2002). For example, zoos preserve viable animal populations and diverse gene pools by breeding endangered species in captivity, reintroducing them into nature wherever possible, carrying out research to improve their lives, and increasing public awareness through conservation education (Hutchins & Conway, 1995). Zoos' conservation efforts are often focused on flagship species (i.e., species that can capture public attention). These species eventually become ambassadors for their wild counterparts (Hutchins & Conway, 1995; Hutchins & Smith, 2003). For instance, the giant panda in Chinese zoos and kākāpo (*Strigops habroptilus*) in New Zealand (Bexell et al., 2009; Towns & Williams, 1993). However, there is limited space for zoos to keep endangered species in captivity. Therefore, zoos also support *in-situ* conservation, such as habitat restoration and support of protected areas (Keulartz, 2015). Zoos also carry out fundraising activities to support the conservation of endangered wild animal species. If zoos can demonstrate the ability to conduct *ex-situ* and *in-situ* conservation actions, it would be a powerful ethical justification for zoos continued existence (Hutchins & Conway, 1995; Hutchins et al., 2003).

Animal welfare can be characterised as how an animal is experiencing its own life in different circumstances (Green & Mellor, 2011). It is a state within an animal that exist on a continuum from extremely bad to very good (Broom, 2011). Animal welfare has been prioritised in zoos in recent years. Professionals at zoos are concerned about animal welfare, and efforts have been made to establish and improve husbandry for a diverse range of animal species (Powell & Watters, 2017). One of the most common criticisms of zoos is the reduced welfare of animals in captivity, many people believe that an animal's natural environment can never be duplicated. (Hutchins et al., 2003). Hence, animal welfare assessments are important to identify persisting welfare issues in zoo animals that require improvement (Mellor, 2017).

WAZA responds to concerns over the welfare of zoo and aquarium animals by providing a structured approach for assessing and managing animal welfare through accreditation, staff awareness, exhibit design and environmental enrichments (*The World Zoo and Aquarium Animal Welfare Strategies*, 2021). WAZA uses the Five Domains Model to assess individual animal welfare and identify areas of potential animal welfare compromise and enhancement (Mellor, 2017). Areas of attention are categorised into five Domains. The first three Domains are physical/functional Domains: 'Nutrition', 'Physical environment', and 'Health'. The fourth Domain ('Behavioural Interactions') relates to the animal's external situation (Mellor et al., 2020). All subjective negative and positive experiences arising because of compromise or enhancing in these Domains, such as thirst, chilling, sickness, and frustration, can then be used cautiously to determine an animal's associated 'Mental state' in the fifth Domain (Mellor, 2017; Mellor et al., 2020). The overall welfare state of an animal is the summation of all of its mental experiences at a point in time (Beausoleil & Mellor, 2017). Domains 1 to 3 are mostly concerned with animal care-related welfare inputs (Mellor et al., 2020). Modern zoo animals usually have access to enough food, water, and shelter, and have assurance for quality veterinary care (Kagan et al., 2015; Maple et al., 1995); therefore, their needs in the first three Domains are likely to be met, and any compromises could be well assessed and addressed quickly. The fourth Domain,

'Behavioral Interactions,' is a major focus for achieving the goal of good animal welfare in zoos.

The fourth Domain examines an animal's behavioural interactions as indicators of their perception of their external circumstances. It emphasises the adaptable agency-related behaviours (i.e. the ability to voluntarily engage in self-generated and/or goal-directed behaviours) that animals mount when they interact with their environment, with other non-human animals and human beings that are often unpredictable (Špinka, 2019; Špinka & Wemelsfelder, 2011). Restrictions on agency caused by features of their physical and social environment and impacts caused by the presence or absence of non-human animals/humans in the captive environment may negatively or positively affect captive animal welfare (Carlstead et al., 1991; Mellor et al., 2020). For example, one researcher observed a Sumatran tiger (*Panthera tigris sumatrae*) and three African lions (*Acinonyx jubatus*) involved in a protected visitor contact behind the scenes tours where visitors indirectly interact with big cats through a barrier fence, displayed decreased inactivity and increased pacing (a stereotypic behavior), during the tour sessions, suggesting welfare may have been compromised due to visitor presence (Mason, 1991; Szokalski et al., 2013). The same study, which involved three cheetahs in a hands-on behind-the-scenes tour, revealed a variety of behaviour patterns, which were recognised as species-typical normal behaviours, and concluded that human-cheetah interactive sessions positively affected cheetahs' welfare (Szokalski et al., 2013).

Zoos attempt to create an environment for animals resembling their natural environment with an enhanced capacity for agency (Kagan et al., 2015). Further, environmental enrichments (i.e. techniques used to enhance the physical and social environment of the captive animals) are used in zoos to reduce or eliminate behaviour problems such as stereotypies and aggression (Newberry, 1995). For example, placing honey-filled logs in a sloth bear enclosure allows them to engage in rewarding opportunities and encourages normal behaviour in captivity (Newberry, 1995). Animal training and animal-close encounters where captive animals behaviourally interact with humans were also emphasised as ways of engaging animals to do

something different, away from the general routine and are therefore considered an enrichment type (Jones et al., 2016; Laule & Whittaker, 2007; Melfi, 2013). Zoo animals who experience good welfare generally live longer, reproduce well, maintain their population, and help zoos achieve their long-term conservation, education, research, and recreation goals (Barongi et al., 2015).

As a result, wildlife conservation and adherence to the highest welfare standards are acceptable justifications for keeping animals in captivity and have become the key ideals required to become a certified zoo (Maple et al., 1995).

1.1.4 Zoo Accreditation

Zoo accreditation means official recognition and approval of a **zoo** by experts who have many years of experience in zoo education, animal husbandry, veterinary science, and animal welfare. To become accredited, zoos are evaluated by an independent assessor against prevailing standards and best practices across their entire operation, including animal welfare, veterinary care, animal management, involvement in conservation and research work, education programs, safety policies and procedures, security, physical facilities, guest services, and the quality of the institution's staff. If WAZA member zoo meet the required standards, they qualify to be an accredited zoo (*World Association for Zoos and Aquariums (WAZA)*, 2021).

WAZA has different zoo accreditation bodies. The Zoo and Aquarium Association Australasia (ZAA) is a regional accreditation organisation representing the zoos, aquariums, sanctuaries and wildlife parks in Australia, New Zealand, Papua New Guinea, and South Pacific Islands. ZAA list their mission as conservation of wildlife by the best conservation and animal welfare practices with involvement and support from governments and the community (*Zoo and Aquarium Association (ZAA), Australasia.*, 2021). To become or continue as a ZAA member institution, zoos and aquariums must earn and retain ZAA accreditation (Sayers, 2020). As a WAZA member, ZAA also uses The Five Domains Model as a framework for their animal

welfare accreditation standards and to assess animal welfare (Sayers, 2020; *The World Zoo and Aquarium Animal Welfare Strategies*, 2021).

Every five years, institutions are evaluated to determine whether they retain their accreditation (Hutchins et al., 2003; Long et al., 2011). Accreditation standards are a benchmarking tool for a meaningful role in conservation and a commitment to positive animal welfare in these associations. Accredited modern zoos exist to accomplish five major objectives, and to provide visitors with memorable experiences (as recreation) but must reinforce positive animal welfare in all aspects (*Zoo and Aquarium Association (ZAA), Australasia.*, 2021).

1.2 Animal-visitor interactions (AVIs) in zoos

Human-animal interactions terminology has come from the context of companion and agricultural animals (Hosey & Melfi, 2015a). Human-animal interactions are common occurrences in zoos and include routine husbandry practices through to interactions with visitors. The term Animal-visitor interactions (AVIs) was devised to describe activities that provide an opportunity for zoo visitors to have contact with live captive wild animals, directly or indirectly, both inside and outside of animal enclosures (Kreger & Mench, 1995). The presence of visitors outside of the captive enclosure alone is not considered a type of AVI (D'Cruze et al., 2019). AVIs are currently a large part of zoos' experiences, and due to high demand from visitors have also become a large component of zoos' financial viability (D'Cruze et al., 2019; Moss & Esson, 2010). Zoos market AVIs using various terms, such as animal-close encounters, behind the scenes or face2face experiences. For the purposes of this review, I will use the term Animal-visitor interaction (AVI) to encompass all of those terms.

1.2.1 How AVIs evolved historically

In the twentieth century, the major settings that allowed visitors to interact with animals were educational demonstrations, animal rides, public feeding, and children's

zoos (Kreger & Mench, 1995). Children's zoos were very popular in America in the 1970s because they allowed children to get close to farm animals and domestic animals (Hensel, 1978). For instance, they had poultry hatcheries, goats, cow milking demonstrations, pony rides, and nursery rhyme and fairy tailed themes to attract children (Frazier, 1993, as cited in Kreger & Mench, 1995). Here, zoos emphasised rare breeds of farm animals. The domestic animals' section contained animals from different countries. Some of them were uncommon pet species such as honeybees, silkworms, armadillos, and turtles, as well as typical pets like cats, dogs, rabbits, guinea pigs, pigeons, budgerigars, and fish species (Kreger & Mench, 1995). These animals played a role in educating the urban crowd about various human civilisations, discriminating between wild and domestic animals, and showing people how to handle and care for these animals (Kreger & Mench, 1995).

The emergence of AVIs in modern zoos is linked to different factors. On the one hand, providing visitors with an unforgettable recreational experience should be somehow emphasised to draw more visitors and the greater revenue earned can then be utilized to achieve other major objectives (de Mori et al., 2019; Fernandez et al., 2009). Hence, modern zoos may attempt to enhance the zoo visitor experience by capitalising on visitor's desire to interact with wild animals. AVIs have become one of the major zoo attractions where people receive an extraordinary experience by getting close to captive wildlife, even touching or feeding them (D'Cruze et al., 2019). On the other hand, zoos have capitalised on visitors' desire for AVIs, by charging additional fees for most wild animal visitor interactions (Kreger & Mench, 1995), with part of the ticket fee going to the zoo's animal conservation fund. Zoos must be conscious of the image they develop and attempt to fit these active experiences with their overall education, and conservation objectives (Anderson et al., 2003; Kreger & Mench, 1995). At the same time, zoos must satisfy visitors concern about encountered animals' wellbeing and ultimately provide visitors with a greater recreational experience. Keeper's talk/oral presentations during AVI sessions may effectively capture attention and engage participants providing the opportunity to deliver key education, conservation, and welfare messages (Anderson et al., 2003). Eventually, AVIs became

an essential part of zoo operations, contributing to their financial feasibility and achieving their major objectives (de Mori et al., 2019).

All in all, Modern zoos' currently capitalise on different AVI types (Kreger & Mench, 1995). For instance, among the zoos and aquariums with the WAZA membership, a wide range of AVIs are being offered, and 75% of facilities promote AVIs on their official public websites (D'Cruze et al., 2019).

1.2.2 Major types or /categories of AVI

The major categories of AVIs have been identified by analysing official public websites of zoos and aquariums worldwide with WAZA membership (D'Cruze et al., 2019). WAZA consists of about 400 members worldwide, and the number grows annually (*WAZA Animal-Visitor Interaction Guidelines*, 2021). The two major categories of AVI are direct and indirect, depending on whether or not visitors are permitted to have direct physical contact with the encountered animal (D'Cruze et al., 2019). Direct AVIs are then further categorised as feeding, petting, riding, walking with (zoo), and swimming with (aquariums) animals. Indirect AVIs are further classified as non-hand feeding, walkthrough (zoo), swim through (aquariums), drive through (zoos), cage dive (aquariums), and show and performance (D'Cruze et al., 2019). The definitions for each of the AVIs are provided in Table 1. Considering all the WAZA facilities, the most common AVI activity advertised was the direct AVI of petting captive wild animals, which was offered in 43%of facilities (D'Cruze et al., 2019). This was followed by walkthrough and swim through activity (33%), shows and performances (30%), non-hand feeding (28%), hand-feeding (23%), drive-through or cage dives (8%), animal rides (5%), and walk with animal opportunities (5%)(D'Cruze et al., 2019). According to the authors, within WAZA membership facilities, North America and Oceania have higher AVI frequency (D'Cruze et al., 2019). The most advertised type of AVI in the Oceania region was walking with captive wild animals followed by hand feeding. The least advertised category in the Oceania region was animal riding (D'Cruze et al., 2019).

Table 1: Animal-visitor interaction (AVI) definition criteria (D'Cruze et al., 2019)

Number	AVI Type	Contact Type	Definition Criteria
1	Hand Feeding	Direct	Interactions where visitors can enter into close proximity to a captive wild animal, and provide food and water by hand, with or without a physical barrier between them, with or without official staff supervision. Visitors are likely to have a relatively high expectation of direct contact.
2	Non-Hand Feeding	Indirect	Interactions where visitors can enter into close proximity with a captive wild animal and provide food and water, although not by hand, with or without a physical barrier between them, with or without official staff supervision. Visitors are likely to have a relatively low expectation of direct contact.
3	Petting	Direct	Interactions where visitors can enter into close proximity with a captive wild animal to hold and touch them, with or without any physical barrier between them, with or without official staff supervision. Visitors are likely to have a relatively high expectation of direct contact.
4	Riding	Direct	Interactions where visitors can enter into close proximity with a captive wild animal, which will carry them whilst in motion, with or without a harness or equivalent, with or without official staff supervision. Visitors are likely to have a relatively high expectation of direct contact.
5	Walk with or Swim with	Direct or Indirect	Interactions where visitors can experience close proximity to a captive wild animal, which is typically restrained by a harness or equivalent, without any physical barrier, with or without official staff supervision. Visitors are likely to have a relatively moderate expectation of direct contact.
6	Walk or Swim Through	Indirect	Interaction where visitors can experience close proximity to a captive wild animal without any physical barrier, with or without official staff supervision. Visitors are likely to have a relatively low expectation of direct contact.
7	Drive through or Cage dive	Indirect	Interactions where visitors can experience close proximity to a captive wild animal with a vehicle or device acting as a physical barrier, with or without official staff supervision. Visitors are likely to have a relatively low expectation of direct contact.
8	Show and Performance	Indirect	Interactions with trained staff and or visitors where a captive wild animal, provides a demonstration of either natural or non-natural behaviour for visitors, with or without a physical barrier between them, under official staff supervision. Visitors are likely to have a relatively low expectation of direct contact.

1.2.3 AVIs with different taxa

The study by D'Cruze et al. (2019) identified that different taxonomic classes were involved in these AVIs. The most common interactive taxonomic class advertised were Mammalia (53%), followed by Aves (26%), Reptilia (9%), and Chondrichthyes (5%). Mammalia, followed by Aves, were recognised as the most frequently observed taxonomic classes in animal hand-feeding activity. In contrast, animal shows were commonly observed in Aves, followed by Mammalia, 52% and 41%, respectively. Further, interactive animals involved in AVIs varied from vertebrates to invertebrates in facilities (D'Cruze et al., 2019).

1.2.4 How AVIs help to achieve zoo goals

The popularity of AVIs in modern zoos (Sherwen et al., 2018) represents an excellent opportunity for zoos to achieve their five major objectives, earn additional revenue, and meet their customer's needs.

- ***Conservation***

Protecting wildlife and their habitats to maintain a healthy wildlife population is referred to as wildlife conservation. As part of their wildlife conservation activities zoos try to make visitors aware of wildlife conservation and its values and explore different methods to pass conservation messages to the public (Akerman, 2019). It was found that building empathy in zoo visitors towards wild animals is an avenue to engage people more in conservation work (Akerman, 2019). Hence, zoos try to organise empathy-building activities in their daily programmes. Direct animal feeding by visitors was found to increase the positive emotional effect on participants (de Mori et al., 2019). For example, a study of "giraffe feeding" interaction in an Italian zoo found that 90% of the participants reported a high level of satisfaction and tended to use more empathetic and emotionally bound descriptors for giraffes after the interaction. The authors also found a positive pro-conservation attitude shift in zoo visitors (de Mori et al., 2019). Further, wild animal AVIs encourage visitor's

predispositions towards nature. A strong bias on nature and positive emotional experiences produced stronger conservation mindedness in the public (Powell & Bullock, 2014).

- ***Education***

Wildlife education is defined as "*those teaching and learning processes that introduce information about wildlife, habitats, ecological interrelationships, conservation, and wildlife management strategies into public school and community educational programmes*" (Adams & Thomas, 1986, p. 480). According to a main philosophical belief, first-hand involvement with an object provides a better understanding and education (Morgan & Gramann, 1989). Hence, direct contact with captive wildlife is thought to offer a unique, enthralling, lasting, powerful and rewarding learning opportunity (Kreger & Mench, 1995; Morgan & Gramann, 1989). Direct animal contact has also been associated with a favourable attitude change. For instance, when students were exposed to live snakes or a snake slide show, they showed no attitude improvement. However, after being allowed to touch the snakes, students were observed to have a positive attitude change and even a reduction in snake phobia (Morgan & Gramann, 1989). Emotions and learning are said to be highly interrelated. Hence, positive reinforcement training becomes the motivational force for education and facilitates information retention in the participant's mind (Marg, 1995). For example, Sherwood et al. (1989) found that when students with negative attitudes towards horseshoe crabs and sea stars were allowed to 'touch and feel' live specimens, they showed higher information retention (Sherwood Jr et al., 1989). These studies have shown that zoos' educational goals can be accomplished most effectively by direct interaction with animals, such as those offered through AVIs.

- ***Animal welfare***

As described earlier in the ethics of keeping animals in captivity section, accredited zoos prioritise providing captive animals with better animal welfare outcomes. Animal welfare is frequently improved through environmental enrichment. To be termed environmental enrichment, a change in an animal's surroundings (physical or social) must be biologically relevant, functionally significant to the species, and result

in an improvement rather than merely a change in the animal's environment (Newberry, 1995). Some enrichment techniques mainly focus on providing stimuli within the animals' captive environment to positively alter animals' behaviour (Claxton, 2011; Learmonth et al., 2021; Orban et al., 2016). Therefore, some zoos encourage AVIs as a form of environmental enrichment practice (Jones et al., 2016; Learmonth et al., 2021). For example, guest feeding activity helped minimise captive giraffe's stereotypical behaviours by providing an opportunity to engage in visitor feeding. Further, in this example, the enclosure was spacious enough to allow giraffes to exercise agency and to choose whether to interact with humans or not (Orban et al., 2016). Depending on a range of factors such as the type of activity, animal species, history of the individual animal, and familiarity with the person, AVIs can provide a positive experience for some wild animals , thus contributing to improved animal welfare (Hosey & Melfi, 2015b).

- ***Research***

Scientific research is essential for wildlife conservation and better zoo animal care. In the absence of knowledge, both *in-situ* and *ex-situ* conservation initiatives will fail (Bell et al., 2001; Kreger & Mench, 1995). Unfortunately, our understanding of most wildlife and their environments is incomplete. Contemporary zoos are pouring huge sums of money into research, estimated to be about $50 million each year. This provides a unique opportunity to research animal behaviour, physiology, reproduction, growth, and development in a semi-controlled environment (Bell et al., 2001).

Further, empirical research is key to the design of appropriate AVIs (Kreger & Mench, 1995). Interactive animals' behavioural and physiological factors must be thoroughly assessed to determine whether such interactions are harmful or beneficial to their wellbeing in the short and long term and to make recommendations for improving their welfare. Studies of visitor behaviour during AVIs and information gained will provide insight into the messages being communicated and how they contribute to the zoo's objectives (Kreger & Mench, 1995). This acquired knowledge benefits for both the zoo community and the general public. Moreover, revenue generated by

AVIs can be used to promote more zoo research activities while promoting other zoo goals.

Research on the positive effects of AVIs is sparse and currently limited to a few captive wildlife species. For example, lemurs (Jones et al., 2016), leopard tortoise (Learmonth et al., 2021), meerkats (Sherwen et al., 2014), and orangutangs (Pedersen et al., 2019). Hence, AVI research in zoos has steadily increased to meet the increasing demand for interactions among the public, whilst minimising or avoiding unintended consequences (ethics of AVI section), and promoting positive effects on individual animals (Learmonth, 2020; Sherwen et al., 2018).

- ***Recreation***

A recent estimation put zoo visitor attendance at over 700 million annually (Moss et al., 2014). Most visitors come for recreation and the desire to have direct or indirect interactions with captive wildlife (Gray, 2017b). It was found that direct interactions with wild animals greatly increased visitors satisfaction (Lindemann-Matthies & Kamer, 2006). Modern zoos specifically promote AVIs to give their visitors a lasting experience while supporting a good income for conservation purposes and economic viability.

Many people have daily connections with companion animals, but some may feel the need for intimate contact with wild animals. Zoos provide visitors with the opportunity to fulfil these desires. For example, a survey in the U.S, Canada, Australia, and the UK showed that 65% of primary school teachers brought students to the zoo to provide them with the experience of touching wild animals and being close to them (Tunnicliffe, 1994). Further, the possibility of seeing wild animals' diversity is limited, and not like the opportunity available while visiting a zoo (Kreger & Mench, 1995). Modern zoos have securely arranged animal enclosures that resemble animals' natural habitats and exhibit a higher diversity of animals. Over time, zoos have become a refuge for humans by providing a unique opportunity to stay away from complicated civilised living in an urbanised environment for some time and escape to a natural setting, where they could observe the diversity of wildlife and get close to less familiar

captive wildlife (Kreger & Mench, 1995; Sandford, 1984). Therefore, zoos arrange a variety of AVIs to fulfil customer demand.

Moreover, visitors like to see zoo animals moving and engaging with conspecifics, with visitors themselves or with their environment (Fielder & Wheeler, 1985). Sleeping animals hold very little interest to most zoo visitors. As a result, people sometimes pound on enclosure glass, throw objects, and tease animals to get their attention and observe a response. So, direct personal interaction is an excellent opportunity for visitors to elicit animal movements (Mitchell et al., 1992). Direct and indirect physical contact with wild animals has become appealing for many zoo visitors (Hosey, 2005; Kreger & Mench, 1995). For example, being able to groom, feel their proximity, hand feed and make eye contact with less familiar wild fauna definitely provides a unique opportunity for zoo visitors. One of the most effective ways to increase visitor recreation opportunities by these AVIs is to understand their entailed perceived value by these experiences. (Kreger & Mench, 1995; Moss et al., 2014).

1.2.5 Perceived value

Individuals' perceived value is defined as the utility they obtain from tangible things or intangible services; it includes the benefits they receive as well as the expenditures they incur. (Holbrook, 1999; McDougall & Levesque, 2000). Perceived value has attracted much attention from both businesses and academia in recent decades (Tussyadiah, 2014). When consumers perceive high value in consumption, they are more inclined to offer positive comments and to repurchase. While modern zoos can be thought of as businesses (Craig, 2003; Newell, 2020), understanding the zoo visitor's perceived value of AVI is critical in order to make the sessions more appealing and enhance visitor participation and profit. Specifically, most of these close encounters with captive wildlife require paying an additional fee to get that experience (Kreger & Mench, 1995). Visitors' willingness to pay may be aligned with perceived value, which is not explored in previous studies. Further, zoo visitors may have different motivations to choose the selected AVI type. The diversity of species and activities

involved in close encounters may have unique perceived values for participants after the so-called interaction.

The perceived value might also depend on the individual's experience during the session. Sometimes AVIs can have a negative emotional impact on visitors if, for example, the experience does not satisfy their expectations in terms of emotional delight, knowledge learned, staff compassion, ability to do what they want, or, for certain people, if they believe the animals are mistreated (de Mori et al., 2019). Hence, identifying perceived value to visitors may be important for zoos to select the most appropriate AVI type and to design future interactions. Introducing the best AVIs is important for both financial and reputational reasons and, therefore, zoo sustainability.

Although AVIs provide a recreational experience for visitors in tandem with achieving the zoo objectives, conflicts that might arise due to interactive sessions among all participants need to be considered.

1.2.6 Ethics of close interaction

AVIs can be rewarding or beneficial for all stakeholders: participants, encountered animal/s, and the zoos. But they could still result in unintended outcomes such as animal welfare impacts, risk of harm to visitors due to close proximity, and also risks of transferring unintended messages among participants such as conveying a false impression of acceptability towards wild animal pet ownership, unless closely monitored (de Mori et al., 2019; Fernandez et al., 2009; Learmonth, 2020; Mellor et al., 2020). Hence, an ethical evaluation of unintended consequences of AVIs must be considered for all the parties involved.

- ***For Animals***

Accredited zoos and aquariums can claim to be ethical because of their strong commitment to wildlife conservation and animal welfare (Hutchins et al., 2003). If animal welfare is impacted during close encounters, the ethical implications for

animals must be assessed and addressed immediately. AVIs bring three potential categories of animal welfare effects for exhibited zoo animals: initiating physiological stress (negative), a source for enrichment (positive), or being relatively neutral (Fernandez et al., 2009; Hosey, 2008; Hosey & Melfi, 2015b). Contributing factors might include the density of visitors participating in the AVI, the frequency of AVIs, the participant's proximity to animals, noise levels, the type of activity, the familiarity of the visitor involved and the exhibit design. Further, the welfare impact could vary with the temperament of the species or individual involved in the interaction (Anderson et al., 2002; de Mori et al., 2019; Fernandez et al., 2009; Larsen et al., 2014; Szokalski et al., 2013). Most research on the welfare impacts of AVIs has focussed more on the effects of visitors presence alone rather than visitor interactive sessions with captive wildlife (Chiew et al., 2021; Davis et al., 2005; Kreger & Mench, 1995; Kuhar, 2008; Larsen et al., 2014; Quadros et al., 2014; Sherwen et al., 2014). For instance, in a captive group of spider monkeys urinary cortisol levels were quantified with different visitor numbers, and urinary cortisol was shown to rise with increasing visitor numbers (Davis et al., 2005). Cortisol is a steroid hormone and an effective marker to indicate physiological distress (bad-stress) or eustress (good-stress) (Smith & French, 1997). However, exposure to distress condition for a long time may lead to chronic stress and cause serious animal welfare implications (Moberg, 2000). For example, energy originally utilized for growth and reproduction might be needed by the animal to cope with prolonged stress. This might negatively affect the growth and reproduction patterns of the animal and might directly compromise animals' welfare. When it comes to AVIs, the visitor's proximity might worsen the impact on captive wildlife welfare (de Mori et al., 2019).

Public feeding activities have also received criticism for their perceived negative animal welfare effects on psychological and physiological wellbeing. For instance, uncontrolled visitor feeding has been suggested to contribute to captive animals habituation and attraction to humans, interruption of regular activities, increased animal aggregation at feeding sites, nutritional problems, and mortality (Hediger, 1969; Newsome & Rodger, 2008). Further, visitor feeding can initiate inter-animal aggression among socially housed zoo animals (Fa, 1992). Because of competition and

aggression within the group, dominant animals tend to get the most food and became obese, while subordinate animals tend to become undernourished. In both cases, zoo animals health is affected, and animal welfare is compromised (Kreger & Mench, 1995).

According to Freeland et al. (2020), 21% of WAZA member Zoos worldwide allow the public to interact with reptiles. Visitor presence has also been linked to increased agression in reptiles. For instance, Galapagos Tortoises (*Chelonoidis nigra*) were observed to increase aggressive behaviours and showed dominance behaviours like head raising from the carapace and air biting towards conspecifics during visitors' touching and under shell scratching interactions with them (Freeland et al., 2020).

Apart from these negative welfare effects, AVIs may be a possible disease transmission pathway from humans to interactive animals (Jones-Engel et al., 2006; Wallis & Lee, 1999). For instance, Wallis & Lee (1999) stated that close proximity could transmit human-carried diseases like measles to primates. Nevertheless, close animal interactions, including hand-feeding zoo animals, are still common in many zoos (Kreger & Mench, 1995).

- ***For visitors***

There can be both positive and negative consequences for visitors who participate in AVIs. The risk of transmitting zoonosis, which is defined as "*any infection that is naturally transmissible from vertebrate animals to humans*" by The World Health Organization, is a considerable concern in some AVIs (Haider et al., 2020). For example, an outbreak of the zoonotic disease *Escherichia coli* was reported in a petting zoo in the US (Anonymous, 2005). Another incident was reported from a petting zoo in Clermont, Iowa, US, where a black bear cub infected with rabies was exposed to several visitors beforehand (Centers for Disease & Prevention, 1999). But proper hygiene practices after the interaction with the animal could minimise the risk (McMillian et al., 2007), and delivering a visitor guide leaflet would be a best practice when planning AVI events (Erdozain et al., 2015).

Another risk for visitors involved in AVI is the possibility of animal attacks, such as visitors being bitten or severely injured (Fa, 1992). For example, the San Diego Zoo has stopped public feeding of elephants because keepers warned of possible damage at feeding time by elephants pulling visitors into the enclosure (Priest, 1994, as cited in Kreger & Mench, 1995).

Conversely, Akiyama et al. 2021 stated that visiting zoos and attending interactive animal experiences can have health benefits for visitors, specifically for older people, such as reducing blood cortisol and blood pressure and increasing blood oxytocin, an indicator of positive emotions . AVIs presumably have different perceived impacts for visitors that need to be explored.

- ***For zoos***

AVIs are suggested as one of the best activities for zoos' to appeal to visitors. Some people visit zoos purely for entertainment and to experience direct animal interactions, for which they are willing to pay an extra fee. This demand brings success in zoos' operations and financial feasibility (D'Cruze et al., 2019; Moss & Esson, 2010). However, AVIs may result in wild animal exploitation or a desire to keep them as pets in participants minds (Kreger & Mench, 1995). Recreational value or revenue can not be the only mediator for AVIs in modern zoos. To be an ethical justifiable modern zoo, AVIs have to minimise or completely avoid unintended consequences as well as contributing towards achieving zoos' objectives (Learmonth, 2020; Szokalski et al., 2013).

1.2.7 Rules and regulations for AVIs

WAZA guidelines for "The Use of animals in Visitor Interactions" and Welfare Strategy "Caring for Wildlife" require implementing a policy to ensure guaranteed animal welfare at all times during AVIs in accredited Zoos and Aquariums. Further, WAZA guidelines clearly state that "*responsibilities include considering the safety of the public and the animals, regular evaluation of the relevance of the interactive experience and the*

ability of the message being delivered to encourage subsequent responsible behaviours" (Mellor et al., 2015; *WAZA Animal-Visitor Interaction Guidelines*, 2021, p. 2). Additionally, WAZA advises regular animal-focused assessments to evaluate the physical and psychological state of the interactive animals. Adherence to WAZA's Guidelines for interactive experiences and their Welfare Strategy is mandatory for its member institutions and these guide and safeguard the institutions from potential ethical criticisms. Additionally, regular ethical reviews are also recommended to demonstrate member institutions commitment to enhancing animal welfare, education and conservation outcomes of AVIs (Sherwen et al., 2018; *WAZA Animal-Visitor Interaction Guidelines*, 2021). All ZAA member associations are WAZA members. There are several ZAA animal welfare accredited zoos and wildlife parks in New Zealand. All ZAA accredited zoos are required to apply the WAZA guidelines and Animal Welfare Strategy in daily management for different types of experiences. Therefore, we can assume that New Zealand, ZAA accredited zoos prioritise the welfare of animals involved in interactions at all times during these interactive experiences.

1.3 Conclusion and Aim of the research

With the evolution of modern zoos, the primary objectives of zoos have dramatically changed, and currently, five major interconnected objectives are considered: conservation, education, animal welfare, research and recreation. Visitor recreation can not be the only reason for the existence of zoos. Animal conservation and promotion of animal welfare have become strong justifications for the existence of modern zoos in the world.

Animal-visitor interactions are an emergent field of visitor attraction in modern zoos. In an era of conflicting modern zoo objectives, these interactions have been suggested as one of the best activities to meet visitor demand, ensure zoo sustainability, and accomplish zoo objectives. Considering all AVIs, zoos offer both direct interactions, such as: hand feeding, petting, riding and walk with, and indirect interactions, such

as: non-hand feeding, walkthrough, shows and performances. All ZAA accredited zoos are WAZA members and bound by WAZA guidelines for AVIs. After careful analysis of ZAA accredited New Zealand zoo websites, it was found that both direct and indirect AVIs are advertised.

In order to select the most relevant AVI type to visitors and develop future interactions, zoos may need to determine the perceived value of AVI to visitors. This area of research is quite lacking in the literatue. It is essential to introduce the best AVIs for financial and reputational reasons, as well as zoo sustainability. Further, ZAA accredited zoos offer AVIs as a means of achieving multiple goals. But whether or not New Zealand zoos succeed in achieving these is not known. Therefore, the aim of my research is:

- To explore the perceived value to visitors of participating in a close encounter at a ZAA accredited New Zealand Zoo

And as a secondary goal,

- To explore whether visitor perceptions of their encounter relate to the stated objectives of modern zoos

To achieve these objectives, I had developed an online survey. The online survey specifically targeted participants who paid an additional fee for a close animal encounter. Participation in the survey was limited to individuals who took part in encounters at ZAA accredited New Zealand Zoos and limited only to captive wildlife. Also, visitor associated animal observations occurred outside animal enclosures excluded from this study.

1.4 Expected Outcomes

For zoos, the results of this research are an opportunity to identify people's preferences for various close encounters and their perceived values of paid AVIs. It might also help zoos design AVI experiences to enhance the perceived value to the participants by making the experience more satisfying. This could increase likelihood of them recommending their experience and generate higher revenue for zoos. In

addition, to gain a sense of how beneficial it would be to transfer each of the key zoo objectives via AVIs.

Chapter Two: Methodology

My research intended to explore how visitors perceived the value of participating in a close encounter at Zoo and Aquarium Association (ZAA) accredited New Zealand zoos and to find whether visitor perceptions of their experience related to the zoos stated objectives. To achieve these aims, an online survey was developed and distributed among participants of Animal-Visitor Interactions (AVIs) in ZAA-accredited Zoos in New Zealand.

Surveys are now widely regarded as an efficient and convenient data collection approach that assures a relatively short time frame for collecting responses from a wide geographical area and are time and cost-saving (Carbonaro & Bainbridge, 2000; Mertler, 2002). ZAA accredited New Zealand zoos are located throughout the country, in both the South and North Islands, and with limited time availability for data collection, online survey was selected as the best method (Carbonaro & Bainbridge, 2000). Also, it was the best way to reach the target audience during the COVID-19 pandemic, accompanied by the uncertainty of lockdown initiations around the country. Further, participants are more likely to express their real opinion in anonymous online surveys than interviews (Schaefer & Dillman, 1998), where it is easy to enhance the quality of the research aims.

2.1 The rationale for research design

Research using qualitative data is usually exploratory and can be used to uncover trends in thoughts and opinions (value-based). In contrast, research using quantitative data can be used to quantify the problem by generating numerical data or data that can be transformed into usable statistics (numerical based). By ensuring that the limitations of one form of data are balanced by the strengths of another, combining qualitative and quantitative data can improve an evaluation. Understanding is also enhanced by combining several modes (multi-modal) of knowledge (Ashley & Boyd, 2006). Hence, the questionnaire was developed to collect quantitative (numerical) and qualitative (textual) data.

This research opted for a positivist research paradigm when dealing with qualitative data. Qualitative data is suited to promoting a deep understanding of a social setting or activity as viewed from the perspective of the research participants. This approach concentrates on exploration, discovery, and description (Bloomberg & Volpe, 2016). The philosophical orientation that guides this research is the post-positivism theoretical perspective (within the positivist research paradigm), as this survey used multiple methods to claim knowledge from participants because all methods are considered imperfect (Moon & Blackman, 2014). The knowledge gained via a post-positivist lens is the result of careful observation and measurement (Bloomberg & Volpe, 2016). The ontological instance (i.e., what exists in the human world that we can acquire knowledge about) is critical realism, which assumes that only one reality exists but can never be fully comprehended due to essentially flawed human intellectual mechanisms and the fundamentally unpredictable nature of occurrences. Hence, claims about reality must be subjected to the broadest possible critical examination in order to aid in the most accurate understanding of reality (Guba & Lincoln, 1994). All these align with my survey methodology and methods of data collection.

2.2 Keywords for literature review

Initially, a literature review was carried out to identify relevant information on zoo goals, the history and implementation of AVIs, and previous zoo related surveys that might help with an online survey design. Appropriate keywords were decided, and the Web of Science multidisciplinary database was used as the primary search engine to source literature. The search was limited to English-language articles only, and no limitation was selected for publication year. Initially, I used two categories for the search—the first focused on keywords related to zoos such as Zoo OR "zoo animal*" OR "zoological gardens" OR "wildlife park*" OR "wildlife reserve*" OR "nature park*" OR "petting zoo*" OR "children's zoo" OR "eco-sanctuary". The second category focused on keywords about animal-visitor interactions (AVIs) such as "human-animal

interaction*" OR "zoo visitor*" OR "animal visitor interactions" OR "public feeding" OR "close encounters" OR "encounters" OR "visitor interaction*" OR "animal interaction" OR "human interaction*" OR "animal ride*". Five hundred forty-six results were obtained. Then, to refine more related articles, including survey questionnaires focused on zoo visitors, a third category was introduced with the keywords survey OR attitude* OR qualitative OR feedback OR perspective OR customer* OR interview OR question*. This approach was more successful, and 199 articles were retrieved as a result. In addition, the Google Scholar database was used to find related papers that were discovered through article reference lists.

After screening titles and abstracts for relevance, a total of 89 articles were identified. Only those articles related to various AVIs at zoos/aquariums, AVI associated risks, animal welfare impacts of AVIs, value of AVIs to achieving primary zoo goals, zoo visitor perceptions, zoo visitor surveys, zoo accreditation, and ethical background of AVIs were retained. Then, I built up the literature review structure, which was further developed to write the literature review. Ideas for survey questions were assembled after reading a subset of ten articles identified during the screening session that used questionnaires, interviews, or surveys on zoo visitors as the methodology for research data collection. (Ballantyne & Packer, 2016; Coghlan & Prideaux, 2008; de Mori et al., 2019; Dell'Eva et al., 2020; Hacker & Miller, 2016; Kreger & Mench, 1995; Luebke, 2018; Powell & Bullock, 2014; Riggio et al., 2019; Skibins & Powell, 2013).

2.3 Survey question development

A full-text screening was done to extract relevant questions from subset of ten selected articles (Appendix I). The questions were then grouped according to their relevance into participant demographics, AVI characteristics, major zoo goals (conservation, education, animal welfare, research, recreation) and areas of interest (Appendix II). These categories were used to create questions for the online survey.

2.4 Building the online survey

The online survey was developed using a Massey University Qualtrics account. The participant inclusion criteria were: over eighteen years of age, paid an additional fee to participate in an AVI, and the experience had taken place in a ZAA accredited New Zealand Zoo. The survey entailed 42 questions in four different categories: to identify participant demographics, AVI characteristics, participants perceived value after completing the AVI, and visitor perceptions of their encounter in relation to the stated goals of the zoos. In addition, there was a final question to write any other comment, respondents wish to share with the researcher. The questions were a mix of open-ended and close-ended. A copy of the survey is provided in Appendix III.

2.4.1 Participant characteristics

A total of 10 questions were used to identify participant characteristics and factors that influenced their decision to participate in the AVI. Gender, age, ethnicity, whether children participated, and pet ownership were among the participant demographic questions. Respondents could choose the most appropriate answer for gender and ethnicity questions or type another answer in the provided space if they choose the 'other' choice. Respondent's age was an open-ended question. Respondents could choose yes or no for children's engagement in the AVI and yes or no for pet ownership, with the 'other' option to mention the type of pet they currently own or previously owned if the answer was yes. To determine which factors were important in respondents' decision to participate in an AVI, they were asked to rate five motivational factors such as 'I wanted to have contact/proximity to wildlife' and 'I was attracted to a specific feature of the animal', on a scale of 1 to 5, with 1 being 'Not at all important' and 5 being 'Very important'.

2.4.2 AVI characteristics

Seven questions were developed to collect information about AVI characteristics. This included questions on which ZAA accredited zoo the interaction took place in, the type of AVI, when the encounter happened, how respondents found out about this encounter, the activities involved during the session, participant number, and length of the AVI session. Once the Zoo was chosen from the drop-down list, respondents could then select the paid AVI type they took part in, again from a drop-down list. 'When was the encounter' could be chosen from four options: Less than 3 months ago, between 3 and 6 months ago, between 6 and 12 months ago, more than 12 months ago. To identify how the respondent found out about the encounter, five options were given: From a previous visit to the zoo, from the zoo's website, word of mouth/friend recommendation, social media (e.g., Facebook, Twitter, Instagram), or 'other', where participants could enter a different response.

A list of activities that might be incorporated in the AVIs was compiled by gathering information from zoo websites. Respondents were asked to identify all activities that applied to their encounter from the list, such as touching the animal, getting within 1 metre of the animal, and feeding the animal. They could describe any additional activity involved by selecting the 'other' option. An open question was used to determine the total number of people that participated in the encounter. Further, the encounter length was asked to determine AVI duration within respondents. Participants were asked to select one of five different durations provided, such as less than 30 minutes, and 30 to 60 minutes.

2.4.3 The perceived value to visitors of participating in a close encounter

Six questions were formulated to extract information about participants perceived value of the AVI they participated in. Two open-ended questions asked participants to: describe the most memorable thing that happened during the session and how the

animal encounter added value to their day. Respondents' satisfaction with their experience was gauged using a 5-point Likert scale from 1 (Extremely dissatisfied to 5 (Extremely satisfied). Further, the quality of an experience and participants level of satisfaction mediate the likelihood of their recommending the experience to others (Altunel & Erkurt, 2015). Hence, a 5-point Likert scale ranging from 1 (Highly unlikely) to 5 (Highly likely) was used to determine respondents' likelihood of recommending the AVI to a friend. Further, to get an idea about how much money participants paid for their encounter (per person), seven price categories, starting from 0 to $10, and ending over $200, were given. Participants' willingness to pay for their encounter may illustrate their perceived value of the experience. Using the same price categories participants could select how much they willing to pay for the AVI.

2.4.4 Relationship between visitor perceptions of their encounter relate to the stated objectives of modern zoos

A total of 19 slider scale questions were used to discover visitor perceptions following their interactive experience and how these related to the zoo's stated objectives. The slider scales asked respondents to answer questions by dragging the sliding bar to the desired percentage about their perception (continuous data) while also rating on a 5-point Likert scale from one to five from Strongly disagree (1) to Strongly agree (5) (categorical data). Questions related to 'conservation', such as 'My encounter encouraged me to think about animal conservation and environmental issues', were useful for knowing respondents' perceptions about wildlife conservation after the experience. Educational questions, such as 'I learnt a lot about the animal during my close encounter', were asked to check their perception of 'education' after the encounter. Some questions were incorporated related to 'animal welfare', such as 'The staff talked to us in detail about the possible impacts of the close encounter on the animal', to gain their perception of animal welfare after the interaction. Further, questions related to 'Research' and 'Recreation', for example, 'The zoo staff should carry out research to improve the life of this animal species in zoo' and 'My encounter was an enjoyable experience' were asked respectively, to learn about respondents'

perceptions about zoo research and recreation objectives (Appendix 3), and how much they gain information during the encounter.

The last question gave respondents an opportunity to write any comment they wished to share with the researcher. Finally, questions relating to different categories were presented in quasi-random (questions were mixed up, but we selected the order of presentation, so not truly random) order to reduce unintentional bias and encourage respondents to answer questions from different categories. For example, most of the questions about AVI characteristics were asked at the start of the survey, and most of the participant characteristic questions placed at the end of the survey. The questions around visitor perceived value and perception of zoo objectives were asked in the body of the survey (Appendix III).

2.5 Ethical approval

The peer review process was used to discuss and analyse the ethical issues present in this project. During the procedure, I discussed the possible ethical issues that may arise with two supervisors Dr. Nikki Kells, Senior Lecturer in Animal Welfare Science, and Kat Littlewood, Lecturer in Animal Welfare Science (School of Veterinary Science). Both supervisors have extensive experience with animal welfare issues and Kat has experience with social science research, survey design, and human ethics processes. Also, before conducting the full-scale online survey, a pilot survey was undertaken. The draft online survey link was circulated among the Animal Welfare Science and Bioethics Centre (AWSBC), postgraduates' group. Also, a few Wellington Zoo animal care volunteers who have experienced an animal-close interaction at the zoo provided important information feedback on the survey questions.

Further, in contacting zoos to get their involvement in distributing the survey link, survey questions were offered for viewing in draft form before receiving the zoo's consent. Several amendments were made to the survey using all valuable feedback. The survey time was approximately 10 minutes to completion.

The following is a list of the ethical issues identified and how each was addressed.

- Participation in the survey - Animal close encounter participants could select whether they completed the survey or not by pressing a button. There was no obligation to complete the survey, and participants could stop at any point.
- Questions were not compulsory - While answering the survey, participants could skip any question.
- Participant identification - The demographic questions section did not ask for any identifiable information, and the entire survey was anonymous.
- Results and zoo reputation - I am not going to publish any information that could risk harm to the zoo's reputation. Results might be very helpful for zoos to organise more desirable animal visitor interactive sessions in the future, attract more visitors to zoos and upgrade the sessions to achieve the five primary objectives of the modern zoo.

The research project was evaluated by peer review and judged to be a low risk under the Massey University Code of Ethical Conduct for Research, Teaching and Evaluations Involving Human Participants. Consequently, it was not reviewed by one of the University's Human Ethics Committees. The low-risk notification was made to the University on 12th May 2021. (Ethics Notification number: 4000018526). As the researcher, I was responsible for the ethical conduct of this research. Participants were informed that if they had any concerns about the conduct of this research that they wanted to raise with someone other than the researcher (myself), they could contact Professor Craig Johnson, Director (Research Ethics), Massey university. An e-mail address was provided.

2.6 Selection of ZAA accredited Zoos in New Zealand

ZAA accreditation is a benchmarking tool to monitor and maintain its members towards achieving their primary goals. For example, it controls members standards such as to work towards dedicated conservation, carry out education programs and advocacy, animal welfare initiatives, participate in collaborative research, provide visitors with a memorable experience in the zoo, and reinforce positive animal welfare

outcomes at all times (*ZAA Locate*, 2021). The 'Locate' section of the ZAA website (*ZAA Locate*, 2021) was searched to identify ZAA accredited facilities in New Zealand. This resulted in the identification of fourteen facilities based in the North Island and eight facilities in the South Island. Information from each of the facilities' public websites was reviewed to identify those that provided an opportunity for visitors to interact with wild animals. Ten ZAA accredited zoos were identified. Information about each was tabulated as follows: member facility name, type of AVI experience (e.g. close encounter, animal feeding, behind the scene experience, feed-out tour, demonstration, walkthrough free-flight aviary, kiwi night encounter), age group allowed, price of the encounter ticket (e.g. whether included in park entry ticket or additional to park entry), booking procedure (e.g. online, by phone or e-mail, in-store), the animal involved, activities included in the interactive session, and whether the interaction was classified as direct or indirect. Eight zoos required an additional cost from people to participate in AVI, therefore meeting the research inclusion criteria. One other zoo was excluded as it had not been offering animal close encounters for at least three years prior to the survey. The ZAA accredited zoos are shown below (Figure 1).

2.7 ZAA accredited zoo courtesy contact

As a courtesy, each of the selected zoos was contacted using the e-mail addresses supplied on their public website. The purpose of this contact was to inform the zoos about the upcoming survey and ask for their support in distributing the survey. For example, by providing the online survey link to zoo visitors via their e-mail database, social media, or website. In the process of contacting zoos, survey questions were also offered for them to view in a draft form. Two of the zoos contacted agreed to distribute the survey among their AVI participants using the QR code or distribute it in a printed form for participants just after they had completed their AVI.

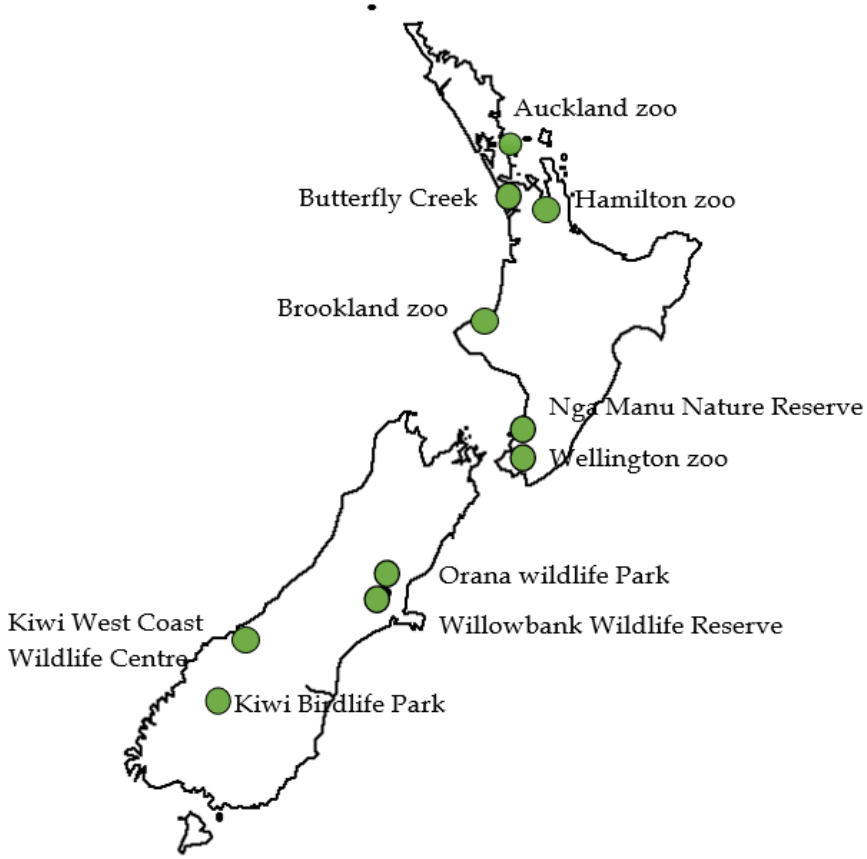


Figure 1: Zoos and Aquarium Association (ZAA) accredited New Zealand zoos that offer Animal-visitor interactions. Inclusion criteria for selected zoos: zoos required an additional cost from people to participate in AVI. One zoo was excluded for not having offered an AVI for more than three years.

2.8 Facebook advertising

Facebook advertising is an effective way to get responses to surveys (Kapp et al., 2013). Hence, this online survey was mainly distributed through Facebook advertising. An advert to pop up on social media was made (Appendix IV). Then, a campaign was created under Facebook Advertising. Targeted audiences make Facebook adverts really effective (Belanche et al., 2019). For this research, the online survey target audience was people who were interested in zoos or wildlife. The advertisement targeted people aged 18 to 65+ years and located within an 80km radius of each zoo (Appendix V). The survey was published on 30th May 2021.

2.9 Data Collection

The online survey was opened to the public on 30th May 2021. Data collection occurred from 30th May to 30th June 2021. Relevant zoos that agreed to distribute the survey by giving the online survey QR code to visitors just after their session were informed of the same arrangement.

2.10 Data Analysis

2.10.1 Categorical data

Descriptive statistics were calculated for all data. For categorical data, the number and percentage of respondents in each category were calculated using Excel and are presented either as tables, bar charts, or pie graphs. The median was calculated for number of participants in AVIs.

2.10.2 Slider scale data

Questions designed to elicit information about respondent's perception of the Zoo's major objectives were presented as slider scales, with five descriptive categories shown above the scale. Slider scales were selected instead of Likert scales to prevent respondents being 'forced' into a particular category, and to permit inferential statistical analyses of the resulting data. It has also been suggested that continuous data more precise for surveys examining people's subjective perceptions (Chyung et al., 2018). However, as the number of responses was relatively low inferential analysis were not warranted. Therefore, slider scale percentage data were subsequently back transformed into Likert scale data as follows: ratings 0-20 were designated Strongly disagree (1), ratings 21-40 were designated Somewhat disagree (2), ratings 41-60 were designated Neither agree nor disagree (3), ratings 61-80 were designated Somewhat agree (4), and ratings 81-100 were designated Strongly agree (5). Similarly, the question asking respondents to rate the importance of specific factors in their decision to participate in the encounter, which was also presented as slider scale, was back transformed into Likert scale data as follows: ratings 0-20 were designated Not at all

important (1), ratings 21-40 were designated Slightly important (2), ratings 41-60 were designated Moderately important (3), ratings 61-80 were designated very important (4), and ratings 81-100 were designated Extremelyimportant. It should be noted that these five category labels were shown above the slider, with category 1 far left, category 5 far right, and the intermediate categories distributed evenly in between. Stacked column graphs were drawn to visualise and capture respondents' ratings to statements on the survey questionnaire and get an idea about how much they agreed with a particular statement.

2.10.3 Content analysis of free-text responses

Qualitative data resulted from participant responses to two open-ended questions, 'Please describe the most memorable thing about your close animal encounter' and 'Please describe how the animal encounter added value to your day'. Initially, reading and familiarisation were carried out by taking note of ideas of potential interest. Content analysis was used to identify codes and patterns of meaning across the written dataset in relation to the research questions (Kapp et al., 2013). Main categories and subcategories were determined from responses to both open-ended questions by deductive coding (i.e., using pre-defined codes identified in the literature), and by performing inductive coding when the extracted ideas did not align with pre-defined codes (Cohen et al., 2017). The frequency of elicitation of each concept was then marked and tabulated.

Please describe the most memorable thing about your encounter

Responses (79%: N=72), were thoroughly read and familiarised to identify major categories and subcategories. The frequency of elicitation was related to the importance of the concept in the consumers' mind (Guerrero et al., 2000). If one response contained more than one identified category, it was counted for all as the frequency of elicitation within the particular response. Eight major categories were identified. Four of these were identified from the existing literature (deductive

coding), and the other four were developed through inductive coding. The four categories identified from the literature were Charisma and appeal of species, Spontaneous behavior (spontaneity), the Novelty of the experience and the Degree of closeness to wildlife (Curtin, 2010). According to Curtin (2010), the findings of a qualitative study based on the stories and experiences of wildlife tourists proved that the most memorable wildlife encounters depend on several key factors. Among those, some of the factors which reflect this study were the charisma of the species, spontaneity, seeing something for the first time, and the degree of closeness. **Charisma and appeal** is a broad term that refers to an animal's compelling attractiveness or charm that can inspire devotion in others, approachability, tendency to interact with humans and playfulness (Curtin, 2010). The fascination and pleasure from looking at animals may be universal, but they are not identical: people from various cultures and value systems view animals differently (Franklin, 1999). The concept of 'the unexpected', is a notion of **spontaneity** or spontaneous behavior. The spontaneity of animals, the possibility and appreciation of surprise, and the idea that people will remember and highlight the surprises of a journey (Rolston III, 1986).

First-time sightings are always memorable due to the **Novelty of the encounter** and the fact that animals previously only seen in books or on television suddenly take on a more natural form and context, there is usually an element of excitement (Curtin, 2010). Inductive coding was performed to identify subcategories under the pre-defined category 'Novelty of the experience'. If a participant feels something for the first time, such as feeling the texture of an animal or hearing something for the first time, such as hearing the real purr of an animal, this was considered as a subcategory.

The idea of close proximity to wildlife has been identified as a key feature of wildlife tourism (Curtin, 2010). AVIs in zoos involve different activities and levels of closeness to the interactive animal. It is almost like visitors are meeting the animals, sharing their space, looking at each other, and wondering rather than just watching them (Curtin, 2010). As a result, the category was termed '**the Degree of closeness to wildlife** and six subcategories were identified through inductive coding: feeding,

touching, scratching, patting/petting, being up close, and animal sitting/walking on the participant.

The other four categories with subcategories were developed through inductive coding: '**Knowledge acquired', 'Animal welfare', 'Recreational'** and '**Human wellbeing'**. Under the theme Knowledge acquired, four subcategories were developed. These were Wildlife conservation: when respondents mentioned learning and value of wildlife conservation and mentioned a change in their attitude towards conservation after encounter; Encountered species: when respondents knowledge about the animal they interacted with was enhanced; and Animal welfare: learning about how the keepers looked after these interactive animals. The category '**Recreational**' was developed, when respondents described how this experience made their free time more fascinating, enjoyable and considered it to be 'fun'.

The category '**Animal welfare'** was separated into seven subcategories: Healthy and happy animal, Dedicated keeper, Voluntary interaction, Awful experience, Animal preference, Animal care and Respect for animal's nature. All were identified by the respondents' various ways of mentioning animal welfare-related practices in their free-text responses. When the respondents expressed how participating in the encounter made their family members happy, which became memorable, the '**Human wellbeing'** category was initiated. The subcategory 'Human relationship building' was used when the AVI experience enhanced respondents' family relationships. The subcategory 'Safe interaction' was used when respondents appreciated how the zoo safely organised the session.

How did your encounter add value to the day?

Responses (65%: N=59), were thoroughly read and familiarised to identify related major categories and subcategories. If one response contained more than one identified subcategory, the response was counted for all subcategories as the frequency for elicitation within the response. Six major categories were identified: Education, Feeling close to nature, Conservation, Animal welfare, Experience and

Human welfare. According to Curtin & Kragh (2014), wildlife tourism reconnects people with nature. The increasing importance of this tourist activity represents a potential reawakening of a society that is disconnected from nature (Curtin & Kragh, 2014). The pre-defined category '**Feeling close to nature'** was thoroughly matched with my study about AVI experience and taken as a category when categorising how the encounter added value (Curtin & Kragh, 2014). Further, different ways of feeling a closeness to nature were separated into four subcategories identified by inductive coding: Proximity to wildlife, Touch wildlife, Appreciate the animal more and Emotional affinity for the animal.

All the other categories and subcategories were initiated by inductive coding. The '**Education**', '**Animal welfare**' and '**Human wellbeing**' categories were coded as described above for the most memorable thing about the encounter. Different subcategories were identified under the '**Conservation**' category: Commitment to wildlife conservation, Attitude change towards conservation, and Existing connection to conservation.

The theme '**Experience**' was built to categorise responses centred on different aspects of the experience itself. It was categorised under the 'Recreational' subcategory if it was something enjoyable. If it was a first-time experience, it was included in the 'Novelty of experience' subcategory. If it was related to a memory of the experience, it was included in the 'Memorable' subcategory. Finally, if the perceived value was a spiritual one, it was included in another subcategory as 'Spiritual value'.

The perceived value to visitors of participating in a close encounter

Curiosity and novelty-seeking personalities motivate people to have interactive wildlife experiences (Coghlan & Prideaux, 2008). So, to increase participants' perceived value, zoos might consider asking participants about their preferred experience and how well the actual experience met their expectations and how satisfied they were with the encounter. Zoos could use this information to design AVI

experiences that meet the needs of all parties involved, i.e., by balancing participant demand for contact with the encountered animal's welfare.

Perceived value is defined as consumer's overall evaluations of the utility of a product or service based on perceptions of what is received and what is given (Zeithaml, 1988). One-dimensional and multi-dimensional views are used to interpret perceived value by researchers. The former demonstrates that a consumer's overall evaluation of a product or service is what determines its value (Yi et al., 2014). The latter underlines the possibility of looking at the whole evaluation from several perspectives (Williams & Soutar, 2009). Although most studies agree that perceived value is a multi-dimensional rather than a one-dimensional construct. They propose various dimensions of perceived value, but use different terminology. These inconsistencies make it challenging to not only comprehend perceived value, but also to attribute value to it (Shen, 2016). I chose to emphasis the multi-dimensional approach to perceive value by using Shen, Y.S. (2016)'s method.

Therefore, to get an idea about perceived value, costs that incurred and benefits received by paid AVIs must be identified. The costs were the AVI fee (monetary value), length of the encounter (time cost), risks during the session (Shen, 2016). The benefits for AVI participants, most memorable thing about the AVI, and how the AVI added value to their day were used to interpret the perceived value. Further, under benefits and future participants' behavioural intentions, participants satisfaction after having completed the AVI, the likelihood of recommendation (favourable word-of-mouth to a friend, and their willingness to pay more for their AVI experience were used to interpret visitor perceived value.

Visitor perceptions of their encounter relate to the stated objectives of modern zoos

The relationship between visitor's perception of their encounter and the five major zoo objectives were explicitly explored through analysis of responses to their level of

agreement with statements presented in the questionnaire. Furthermore, post-hoc exploration of this relationship was carried out by examining the categories and subcategories generated during content analysis of the two open questions "Please describe the most memorable thing about your close animal encounter" and "How did the encounter add value to your day". Subcategories that aligned with the zoo goals of Conservation, Education, Animal welfare, Research or Recreation were extracted and the proportion of responses that fell into each zoo objectives were calculated as a reflection of their awareness of these objectives after completing their interaction. A single response may describe information related to several zoo objectives, and each was counted. This was done to understand how many respondents mentioned something related to the zoos' major objectives within total respondents.

2.11 Issues of trustworthiness

The role of trustworthiness in research is to ensure readers that a study is valuable (Lincoln & Guba, 1985). The study reported here has both qualitative and quantitative data, and the trustworthiness of qualitative research is assessed differently from quantitative research. The main criteria for evaluating the trustworthiness of qualitative research are validity (credibility) and reliability (dependability).

The validity criterion is mainly governed by two validity procedures: the lens researcher(s) use to validate their investigations and the paradigm assumptions that researcher(s) hold. According to the former procedure, researchers can employ a lens based on the perspectives of those who conduct research, research participants, or those who read or review the study (Creswell & Miller, 2000). Most of the information used to identify categories and subcategories were from the free-text responses given by respondents to two open-ended questions (qualitative data): 1) Please describe the most memorable thing about your close-animal encounter, and 2) Please describe how the animal encounter added value to your day. The first step in analysis was for me to develop suitable categories and subcategories to describe the data. Theses descriptions

were provided alongside examples extracted from free-text responses, to allow interpretation of this credibility. Then two supervisors thoroughly assessed the content analysis of qualitative data "over and over again to see if the constructs, categories, explanations, and interpretations make sense" (Patton, 1980, p. 339), and otherwise advised for a credible outcome.

According to the second validity procedure, a researcher's paradigm assumptions also, shape the credibility of the research (Guba & Lincoln, 1994). The philosophical orientation that guides the study reported here was the post-positivism theoretical perspective within the positivist research paradigm; this survey used multiple methods to claim knowledge from participants because all methods are considered imperfect (Moon & Blackman, 2014). For example, the questionnaire was developed to collect quantitative (numerical) and qualitative (textual) data. Further, similar results were found by analysing data in different ways, in other words, triangulation was performed. I merged two different sources of information to discover how visitors engaged in close interactions with animals, perceived major zoo objectives. As a result, the phenomenon under investigation was given a more complete and deeper image (Bloomberg & Volpe, 2016).

Another criterion for trustworthiness, reliability, was also met. Thorough explanations for how data were collected and analysed have been given in the methodology chapter. For example, I clearly documented the procedure and demonstrated the reason for naming inductive and deductive coding categories and subcategories. Data are also available for review by other researchers to check for reliability.

According to the above explanations, I am confident with the trustworthiness of the research reported here.

Chapter Three: Results

A total of 118 responses were received. Of these, 8.5% of respondents accessed the survey using the Quick Response (QR) code distributed by zoos and 91.5% used the anonymous link published through Facebook. Based on information obtained from the websites and some through email contacts of eligible zoos, the number of respondents represented approximately 5.2% of the maximum number of Animal-visitor Interactions (AVIs) offered across all zoos over the period of one week.

Twelve Hamilton Zoo responses were excluded, because no paid AVIs have been offered since 2015. Fourteen incomplete responses, in which survey questions addressing the research aims were not answered, were excluded. One further response was excluded based on the participant number mentioned for their close encounter far exceeding that advertised on the zoo website, therefore casting doubt on the credibility of responses. From the remaining 91 responses, most respondents (N=71) completed the survey (i.e., advanced through all sections presented); however, many did not respond to one or more questions, and only 11 respondents completed all questions in the questionnaire. Among other responses (N=20) there was considerable variation in which specific questions were answered or omitted. These responses were still included as they answered at least some key questions addressing the research aims (Table 2).

Table 2: Number of respondents (out of total N=91) that answered each question in a survey of participants in paid animal-visitor (AVIs) at ZAA-accredited New Zealand zoos

Question Number		Question	Number of Respondents
1		Where was your animal close encounter	91
2		What was your close encounter	91
3		When was the encounter	86
4		What did your zoo encounter involve	87
5		How many other people participated in your encounter	75
6		Did you take children with you to the encounter	82
7		How much money did you pay for the encounter	80
8		did your encounter last	81
9		How did you find out about this encounter	82
10		Please describe the most memorable thing about your close animal encounter	72
11		What is the most money you would be willing to pay for the encounter	73
12		Please indicate how much you agree with following statements about your encounter	
Statement 1	S1	The staff provided detailed information about the animals' conservation status and environmental issues	72
	S2	My encounter encouraged me to think about animal conservation and environmental issues	73
	S3	My encounter made me appreciate the animal more	73
	S4	My encounter was an enjoyable experience	73
	S5	My encounter encouraged me to buy animal-friendly products	72
	S6	My encounter conveyed species conservation messages effectively	72
	S7	My encounter made me more likely to support zoos conservation efforts (e.g., to donate money, as a volunteer, etc..)	73
	S8	The staff provided detailed information about the animal's normal behavior and the diet	73
	S9	The staff provided detailed information about the normal life span of the animal	72
	S10	The staff provided detailed information about how the animal is taken care of in the zoo	71
	S11	The staff talked to us in detail about the possible impacts of the close encounter on the animal	72
	S12	The staff talked in detail about the rules to be followed during the encounter (e.g., how to touch, not to yell, hygiene after encounter)	73
	S13	I learnt a lot about the animal during my close encounter	73
	S14	My close animal encounter was an effective educational vehicle	73

Question Number		Question	Number of Respondents
13		Thinking about the animal species you had your encounter with, please indicate how much you agree with the following statements	
	S15	I am concerned about the wellbeing of this species in the zoo	57
	S16	It is important to have this species in the wild	71
	S17	This species receives appropriate care in the zoo	71
	S18	The zoo should carry out research to improve the life of this animal species in the zoo	70
	S19	The zoo should carry out research to improve the life of this animal species in the wild	71
14		Please describe how the animal encounter added value to your day:	59
15		My overall satisfaction with the experience (Please select):	71
16		How likely are you to recommend this encounter to a friend?	72
17		Based on your most recent encounter, how important were each of the following factors for your decision to participate in this encounter?	
	S20	I wanted to have contact/proximity to wildlife	71
	S21	I attracted to a specific feature of the animal	67
	S22	I wanted to learn or discover something new	71
	S23	I wanted a fun and enjoyable experience	72
	S24	I wanted a rare/exotic experience	70
18		What is your gender?	71
19		Which ethnic group do you belong to?	70
20		What is your age?	70
21		Do you own, or have you ever owned, a pet?	65
22		Use the below space to write any other comments you wish to share with the researcher.	19

3.1 Participant characteristics

Sixty-two percent (N= 56) of respondents identified as female, 13% (N=12) as male, and 2% (N=2) as non-binary. Of the remaining respondents, 1% (N=1) preferred not to disclose and 12% did not respond. Respondents age group and ethnicity are provided in Table 3.2. Of the 70 respondents the three age categories with the most respondents were: 20-24 years (N=27; 39%), 25-29 years (N=18; 26%), and 30-34 years (N=11; 16%). Non- respondents were 12% (N=21).

Of the 70 respondents, most identified as New Zealand European ethnicity (87%, N=61). Other ethnicities were declared as: Korean, Australian, Latin American, Hispanic Asian, Northern Irish, and Chinese/Pakeha (mixed) and 23% of respondents did not respond (Table 3). Of the 82 respondents, the great majority 74% (N=67) of respondents were not accompanied by children to their encounter, while 10% (N=9) did not respond.

Table 3: Age and ethnicity of respondents (N=70) that participated in any paid animal-visitor interaction (AVI) at Zoo and Aquarium Association (ZAA) accredited New Zealand Zoos

Age	N (%)	Ethnicity	N (%)
Under 20	6 (8.57)	New Zealand European	61 (87.14)
20-24	27 (38.57)	Māori	0
25-29	18 (25.71)	Samoan	0
30-34	11 (15.71)	Cook Island Māori	1 (1.43)
35-40	6 (8.57)	Tongan	0
Over 40	2 (2.86)	Niuean	0
		Chinese	0
		Indian	1 (1.43)
		Other	7 (10.00)

Of the 65 respondents to the question, all responded 'yes' to owning/having previously owned pet(s). The frequency of elicitation of different pet type(s) is shown in Figure 2. Mammalian pet species (dog to hedgehog) were the most frequently reported (number of elicitations = 127: 80%).

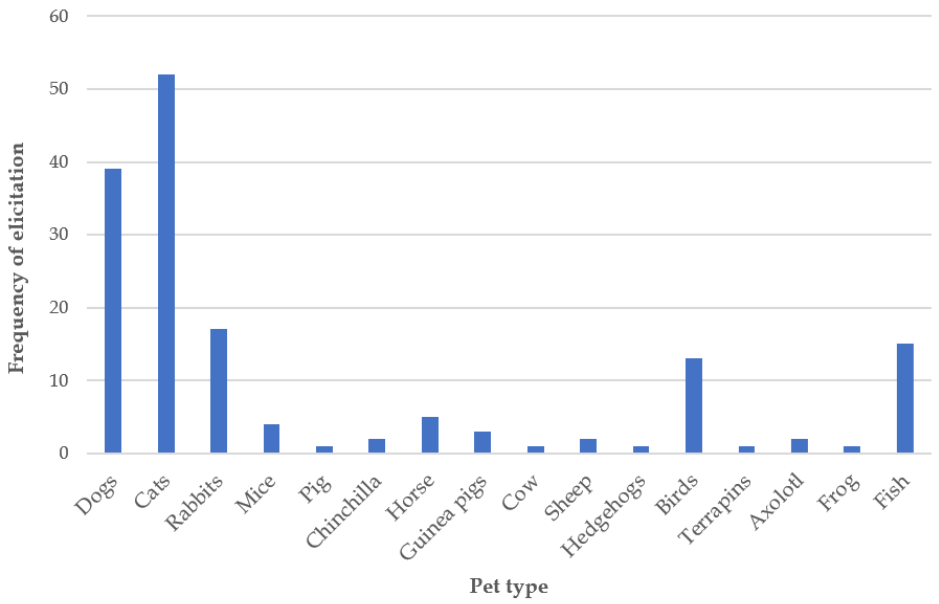


Figure 2: Pet type(s) owned by respondents (N=65) that participated in a paid animal-visitor interaction (AVI) at Zoo and Aquarium Association (ZAA) accredited New Zealand zoos

Based on participants rating of the importance of five factors in their decision to participate in an AVI, having a 'fun and enjoyable experience' was rated 'extremely important' by the highest percentage of participants followed by 'contact/proximity to wildlife' and 'learning or discovering something new' (Figure 3). In contrast, 'wanting a rare/exotic experience' was generally rated as being less important.

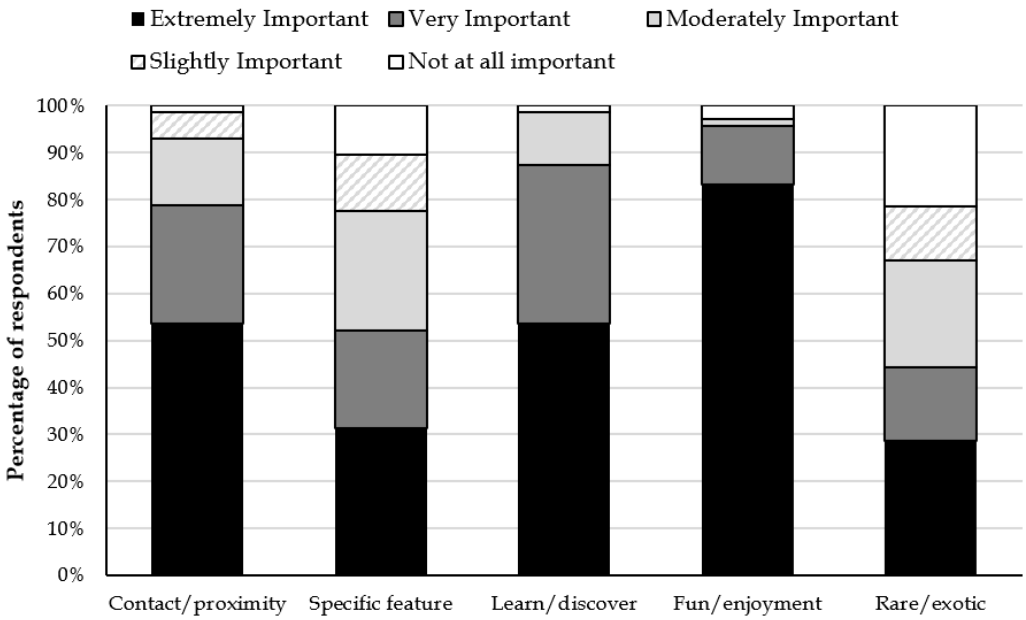


Figure 3: Respondent's rating of the importance of specific factors in their decision to participate in their animal-visitor interaction at ZAA accredited New Zealand zoos

3.2 AVI characteristics

The red Panda was the most frequently encountered animal (25%), followed by the Lemur (15%), Meerkat (14%), and Cheetah (13%) (Figure 4). Collectively, 85% of encounters involved the class Mammalian, with the remaining involved class Aves (11%), class Reptilia (3%), and class Actinopterygii (Ray-finned fish: 1).

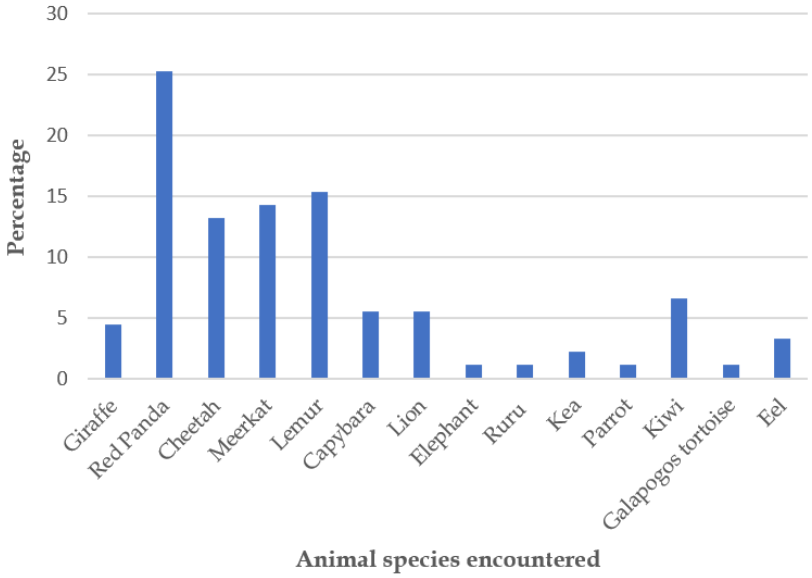


Figure 4: Distribution of animal species encountered by survey respondents (N=91) that participated in a paid animal-visitor interaction (AVI) at Zoo and Aquarium Association (ZAA) accredited New Zealand zoos.

When asked how long ago the encounter happened, of the 86 respondents, 57% (N=49) responded more than 12 months ago, and 20% (N=17) responded less than 3 months ago. Only 5% did not respond to this question (Figure 5). Although all AVIs were advertised on the respective zoos' public websites, respondents were made aware of close encounters through various means (Figure 6). Of the N=82 respondents, a previous zoo visit was the most commonly reported method (N=25: 30%), followed by the zoo's website (N=23: 25%). Among the respondents who selected 'other' (N=12: 13%), responses included: from zoo receptionist, as a surprise birthday gift, from

participating in a zoo workshop (off-site workshop), from being at the zoo, from zoo workers, by participating in a previous AVI, through Google search and by a signpost in the zoo.

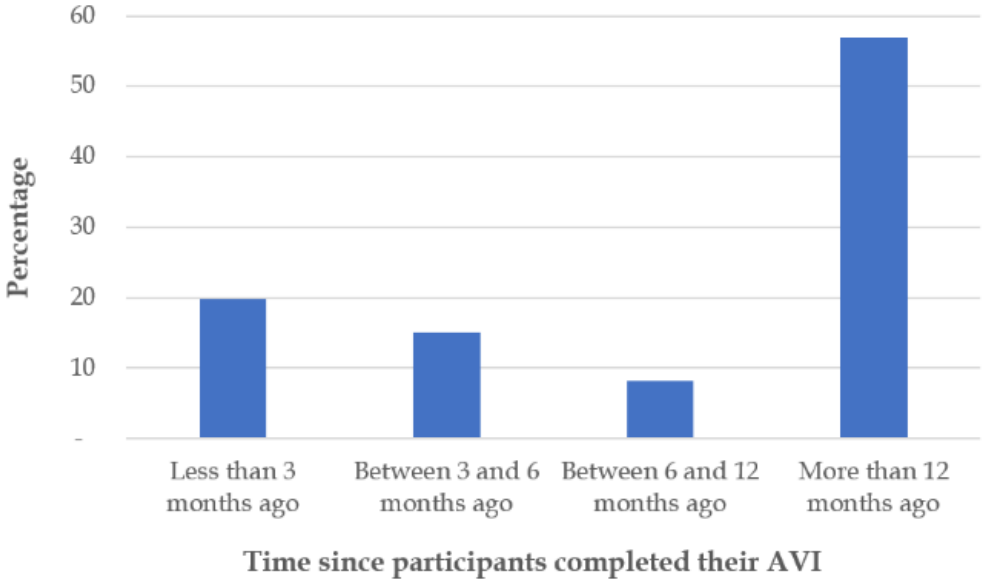


Figure 5: Indication of how time since survey respondents (N=86) participated in a paid animal-visitor interaction (AVI), at Zoo and Aquarium Association (ZAA) accredited New Zealand zoos

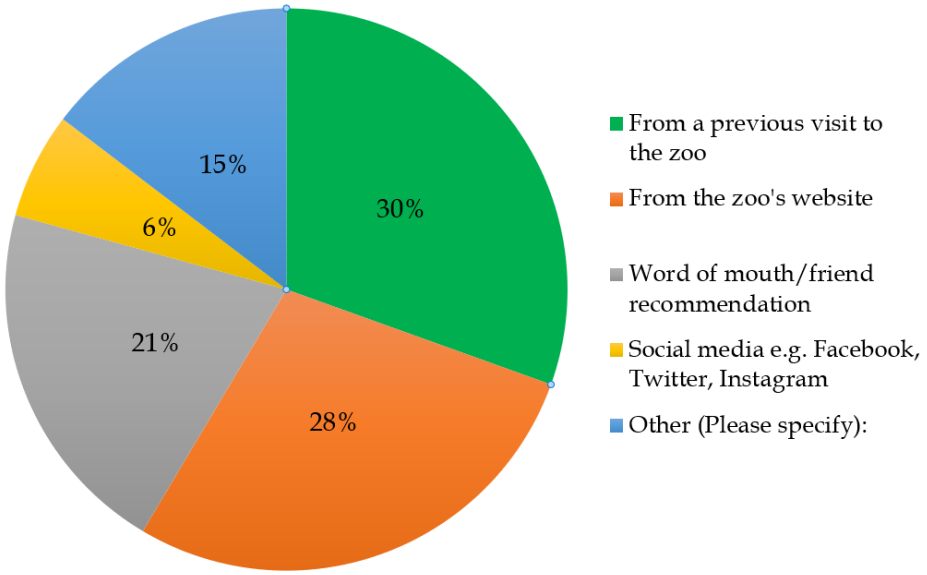


Figure 6: Different means by which respondents (N=82) were made aware of paid animal-visitor interactions (AVIs) at Zoo and Aquarium Association (ZAA) accredited New Zealand zoos

The frequency with which different activities were reported as part of respondent's paid AVIs is shown in Figure 7. Different activities were fairly evenly represented among respondents (N=87). The 'Other' category included: animal able to climb on or interact with participants but participants not allowed to touch animal, scratching back with back scratcher, watching keeper do health checks, and washing elephant. The median number of participants in AVI's reported by survey respondents (N=75) was 3 (minimum 1: maximum 25). Of the 81 respondents, the majority of AVI's reportedly lasted between 30 and 60 minutes (51.85% N=42), with 38.27% (N=31) reportedly lasting less than 30 minutes. The remaining respondents reported AVI durations of 61 to 120 minutes (7.41% N=6), and more than 2 hours (2.47% N=2).

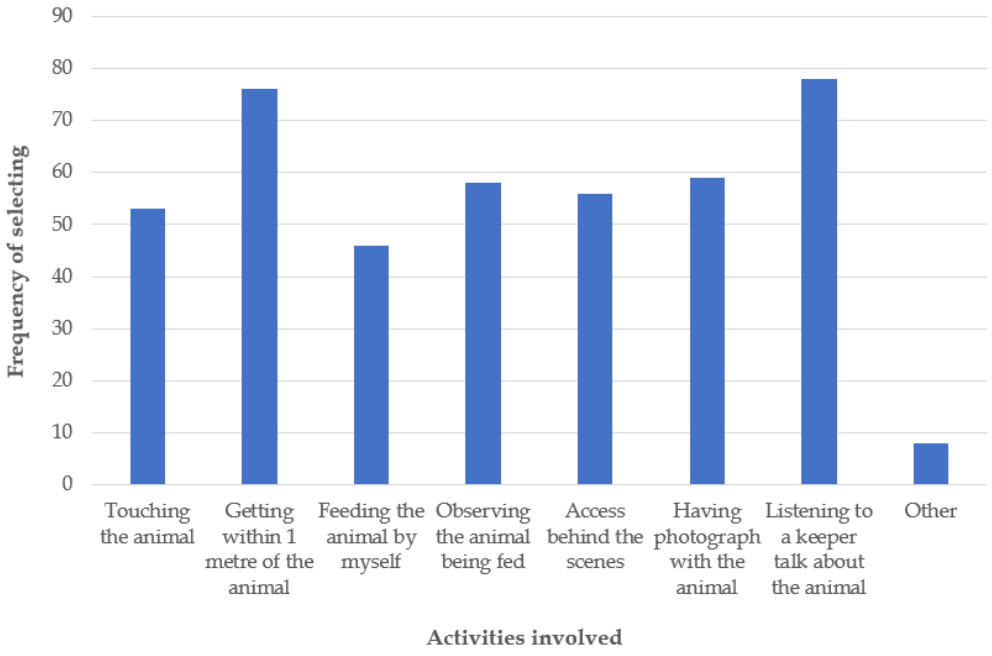


Figure 7: The frequency with which different activities were reported (N= 87 respondents) as part of paid animal-visitor interactions at ZAA accredited New Zealand zoos

3.3 The perceived value to visitors of participating in a close encounter

3.3.1 The most memorable thing about your encounter

Based on content analysis of free text responses for the question "Please describe the most memorable thing about your animal close encounter" (Appendix VI), eight main categories were identified (Table 4). The main categories were (1) Degree of closeness to wildlife (six subcategories); (2) Charisma and appeal of species; (3) Spontaneity; (4) Novelty of the experience (three subcategories); (5) Knowledge acquired (two subcategories), 6) Animal welfare (seven subcategories), 8) Recreation, and 7) Human wellbeing (two subcategories).

'Recreation' was the most frequent category identified in responses, followed by 'degree of closeness to wildlife' (Table 3.3). The third most frequent category was 'animal welfare', which includes statements related to animals being seen happy, healthy, comfortable, and well looked after, and keepers' dedication towards animals being prominent during the session.

3.3.2 Added value to participants day

Free text responses for the question "Please describe how the animal close encounter added value to your day" (Appendix VII) were analysed and six main categories were identified (Table 5). The main categories were: 1) Education (five subcategories); 2) Feeling close to nature (four subcategories); 3) Conservation (three subcategories); 4) Animal welfare (six subcategories); 5) Experience (four subcategories); and 6) human wellbeing (one subcategory). Among those, the most frequently elicited category for how the encounter added value to the visitor's day was Experience, and the most frequently cited Experience subcategories were Recreational value and Novelty of the experience. The second most frequently elicited category was Feeling close to nature, and Proximity to wildlife was the highest elicited added value within the category. The least frequently elicited category was conservation, followed by human wellbeing.

Table 4: Frequency with which eight identified categories, and their subcategories were identified from free text answers to the question "Please describe the most memorable thing about your animal close encounter" from respondents (N=72) who participated in a paid animal-visitor interaction (AVI) at Zoo and aquarium Association (ZAA) accredited New Zealand zoos. Examples of responses are provided within each category.

	Categories and subcategories	Example quotes from respondents	Frequency of elicitation
1	Degree of closeness to wildlife		
	1.1 Feeding	"I did a cheetah close encounter. Being within a meter of cheetah and being able to feed it by myself was amazing"	9
	1.2 Touching	"Getting up close to an otherwise inaccessible animal, purely being in their presence and being able to touch and speak to them"	**6**
	1.3 Scratching	"The capybara enjoyed being scratched with a back scratcher so much"	**1**
	1.4 Patting/petting	"Getting to pat the inside of its shell" "Being up close the animals, letting them snuggle up"	**4**
	1.5 Up close	"Seeing the lions jump on top of cage we were in"	**28**
	1.6 Animal on the participant	"Seeing them up close and letting them run all over me"	**15**
2	Charisma and appeal of species	"Was amazing to be up close and see how big the giraffe's head was went it lent down to our level to feed" "Being close to a beautiful creature, specifically how they looked!!"	**16**
3	Spontaneity	"Seeing the baby meerkats up close and having the meerkats run along our hands" "After we finished washing the elephant, she immediately went over to the dust and covered herself in it again"	28
4	Novelty of the experience		
	4.1 See something for the first time	"Getting to experience how kiwi just roam around in a (semi) natural habitat"	15
	4.2 Feel something for the first time	"The texture was really different to what I expected. After we finished washing the animal, she immediately went over to the dust and covered herself in it again"	2
	4.3 Hear something for the first time	"Being able to hear the cheetahs purr"	2

	Categories and subcategories	Example quotes from respondents	Frequency of elicitation
5	Knowledge acquired		
	5.1 Wildlife conservation	"Great to meet the animal close and learn about them and what is happening to their natural environments and the risks to their population in the wild" "I really fueled me to further continue my conservation efforts. I since gave up palm oil products and even spent two years volunteering at the zoo after this"	8
	5.2 Learning about encountered species	"Seeing the keeper interact with them and talk to us a bit more about the individual cats they care for as well as more general info about the species"	9
6	Animal welfare 6.1 Healthy and happy animal	"The animals themselves were calm, happy, inquisitive and purring"	5
	6.2 Dedicated keeper	"The keeper's dedication to animals was evident"	4
	6.3 Voluntary interaction	"Animals weren't force to interact it was all voluntary"	22
	6.4 Awful experience (compromised welfare)	"Was an awful experience, the guy showed us a Ruru and the poor animal wanted to escape so bad. You could tell it was suffering, and guy at the zoo keep talking about how the ruru can hear your heart beat and at the same time the guy was yelling for a long time practically in the ruru's ear. Awful experience, I think these experiences can make animal suffer"	1
	6.5 Animal preference	"The meerkat running across me, and learning that the life light rescue helicopter is their sworn enemy"	4
	6.6 Animal care	"We got to see how these animals interact with food around one another which I found very interesting, and we were offered to help feed them"	4
	6.7 Respect animal's nature	"Seeing the animal up close and personal while respecting the animal's nature and space"	**1**
7	Recreation	"Having a meerkat stand on my knee was very cool"	**65**
8	Human wellbeing 7.1 Safe interaction	"There's no other way in the world to get that close to lions in a completely safe manner"	1
	7.2 Human relationship building	"Being close to the animal and sharing that with the person I went with"	**4**

Table 5: Frequency with which six categories, and subcategories, were identified from free text answers to the question "Please describe the how the animal close encounter added value to your day" from respondents (N=59) who participated in a paid animal-visitor interaction at ZAA accredited New Zealand zoos. Examples of responses are provided within each category.

	Categories and subcategories	Example quotes from respondents	Frequency of elicitation
1	Education		
	1.1 Learning about the encountered species	"It furthered my knowledge on the species"	11
	1.2 Learning about wildlife conservation	"I am also interested in conservation so, learnt a lot of things of interest to me"	10
	1.3 Learning about how animal is cared for at the zoo	"I enjoyed it a lot and gain useful insight and knowledge into care"	1
	1.4 Learning about environmental impacts	"More detailed information about how consumerism impacts the environment of wild Red pandas"	1
	1.5 Learning in general	"It was educational"	3
2	Feeling close to nature		
	2.1 Proximity to wildlife	"Was wonderful to get so close"	13
	2.2 Touch wildlife	"Touching animal gave me new perspectives"	7
	2.3 Appreciate the animal more	"It gave me more appreciation to the animal"	5
	2.4 Emotional affinity for animal	"I love animals so it made me feel super connected"	5
3	Conservation		
	3.1 Financial commitment to wildlife conservation	"The money being paid for the encounter was going towards in terms of conservation effort"	3
	3.2 Attitude change towards conservation	"I definitely think about it when considering my attitude towards conservation"	1
	3.3 Existing connection to conservation	"I am also interested in conservation so learnt a lot of things of interest to me"	2
4	Animal welfare		
	4.1 Meet dedicated keeper	"Met passionate keepers and learned about the lions"	3
	4.2 Happy and healthy animals	"Awesome to be able to experience animals in a way they were safe and happy. Easy to see they felt comfortable"	2
	4.3 Animal care	"It was obvious that they were cared for well and happy"	4

	Categories and subcategories	Example quotes from respondents	Frequency of elicitation
	4.4 Animal preferences	"Loved seeing them swim and enjoy their environment"	2
	4.5 Animal needs	"Learning more in-depth about their lifestyle and breeding and when they like-do not like-while also keeping the animals needs at the top e.g. no patting the meerkats	1
	4.6 Animal rights	"Just to add-elephants should not kept in zoos"	1
5	Experience		
	5.1 Recreational (Enjoyable/awesome/amazing/good/ incredible/exciting/ fantastic/cool/ great /special	"I enjoyed interacting with Kea" "I still look back on the photos many years later" "Awesome to be able to experience animals" "It was an amazing experience" "Honestly have been a good experience" "Simple and incredible experience" "Really exciting to be up close with such a unique animal" "It was a fantastic experience" "It was memorable and very cool" "It was a great experience" "I remember these cheetahs arriving at the zoo as cubs when I was younger, so it was special"	31
	5.2 Novelty of the experience (rare, exotic, Unique)	"Not many people would see these animals in person in their lifetime, I felt very privileged to see them" "Was an enjoyable and out of norm experience" "It was a unique experience" "Being up close to animals that New Zealand doesn't have in the wild"	34
	5.3 Memorable	"I still look back on the photos many years later"	15
	5.4 Spiritual value	"It added spiritual value to my identity as a New Zealander	1
6	Human wellbeing 6.1 Quality time with family members	"It was nice to spend quality time with my mum and with the cute animals"	3

3.3.3 Benefits and future participants' behavioural intentions

Of the 71 respondents, most respondents were 'extremely satisfied' (83.1% *N=59*) with their experience, with numbers tapering off to 'somewhat satisfied' (14.08% *N=10*), and 'neither satisfied nor dissatisfied (1.41% *N=1*)). Only one participant reported being 'extremely dissatisfied' (4.1% *N=1*) with the experience. Respondents' reported likelihood of recommending of their encounter to a friend after the experience is shown in Figure 8. Of the 71 respondents, more than half (N=48: 68%) were 'highly likely' to recommend the AVI experience to a friend.

Based on responses to the questions "how much did you pay for your encounter" and "How much would you be willing to pay for your encounter", the proportion of respondents who would be prepared to pay more, less, or the same was calculated. Of 71 respondents, 43.7%(N=31) were willing to pay more and only 5.6%(N=4) were willing to pay less for their AVI (Table 6).

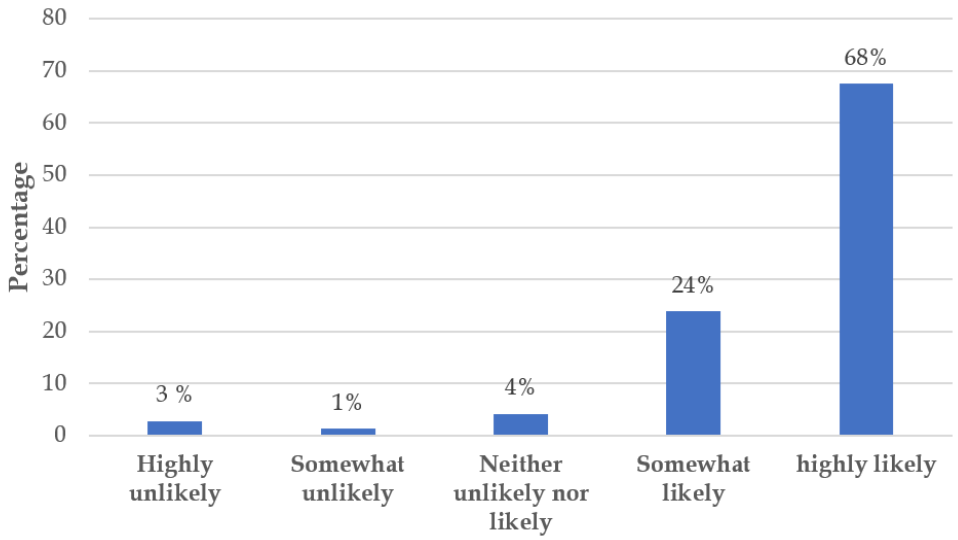


Figure 8: The likelihood of respondents (N=71) recommending their paid animal-visitor interaction (AVI) at Zoo and Aquarium Association (ZAA) accredited New Zealand Zoo to a friend

Table 6: Proportion of respondents (N=71) willing to pay more/less/the same, compared to the actual price paid, after completing an animal-visitor interaction (AVI) at Zoo and Aquarium Association (ZAA) accredited New Zealand zoos

	N=number	%
Willing to pay more	31	43.7
Willing to pay less	4	5.6
Willing to Pay same	36	50.7

3.4 Visitor perceptions of their encounter relate to the stated objectives of modern zoos

Respondents' ratings of statements related to the five major objectives of: conservation, education, animal welfare, research and recreation are summarised in Figures 9 - 13. Responses were recorded on a scale ranging from 1=strongly disagree to 5=strongly agree. Conservation: most respondents (60–100%) agreed/strongly agreed with all five statements (Figure 9). The statement "My encounter encouraged me to think about animal conservation and environmental issues" had the highest level of disagreement (8% disagreed/strongly disagreed) (Figure 9; S2). Education: The majority of respondents agreed/strongly agreed with all four statements. However, some respondents (~10%) disagreed/strongly disagreed with the statement "The staff provided detailed information about the normal lifespan of the animal" (Figure 10; S9). Animal welfare: There was some variability in responses to the five-animal welfare-related statements. For example, for the statement "The staff talked to us in detail about the possible impacts of the close encounter on the animal", 58% of respondents agreed/strongly agreed whereas 25% disagreed/strongly disagreed (Figure 11; S11). In response to the statement "I am concerned about the welfare of this species in the zoo" (S15), the majority disagreed, however ~10% of respondents agreed/strongly agreed. Research: Participants generally agreed that zoos should carry out research to improve the life of the encountered animal, although this was stronger for animals in the wild than those in the zoo (Figure 12). Recreation: The vast majority of respondents (~95%) agreed/strongly agreed that their experience was enjoyable (Figure 13).

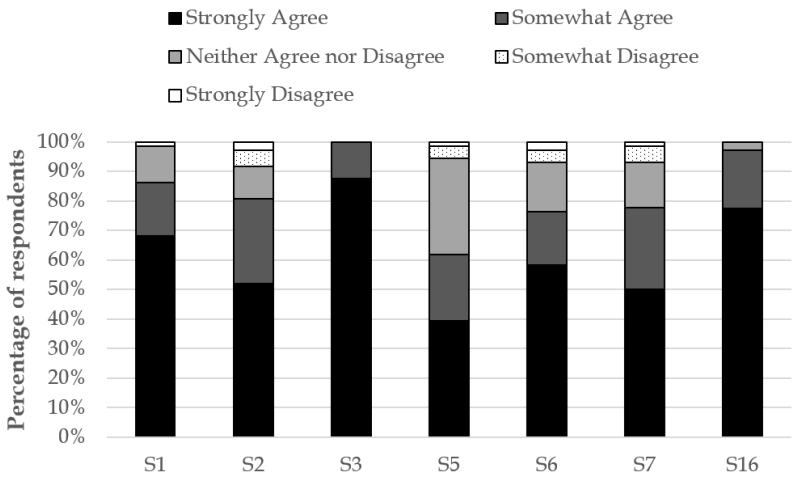


Figure 9: Respondents' rating for "**Conservation**" related statements, S1: The staff provided detailed information about the animals' conservation status and environmental issues, S2: My encounter encouraged me to think about animal conservation and environmental issues, S3: My encounter made me appreciate the animal more, S5: My encounter encouraged me to buy animal-friendly products, S6: My encounter conveyed species conservation messages effectively, S7: My encounter made me more likely to support zoos conservation efforts (e.g., to donate money, as a volunteer, etc..), S16: It is important to have this species in the wild, who participated in paid animal-visitor interaction at ZAA accredited zoos in New Zealand.

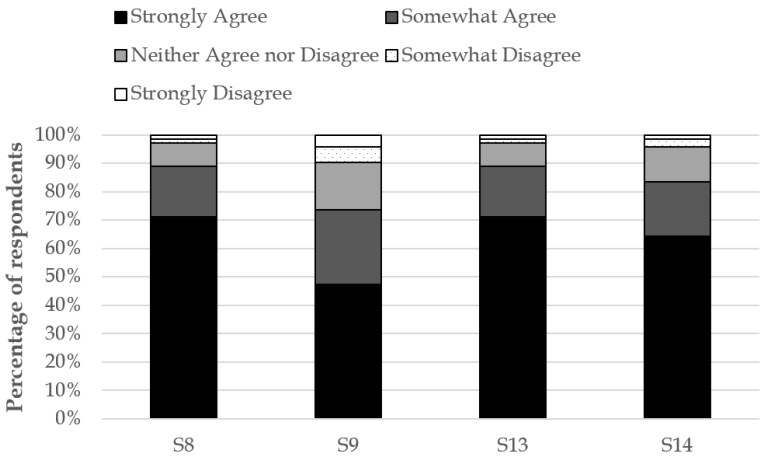


Figure 10: Respondents' rating for "**Education**" related statements, S8: The staff provided detailed information about the animal's normal behavior and the diet, S9: The staff provided detailed information about the normal lifespan of the animal, S13: I learnt a lot about the animal during my close encounter, S14: My close animal encounter was an effective educational vehicle, who participated in paid animal-visitor interaction at ZAA accredited zoos in New Zealand.

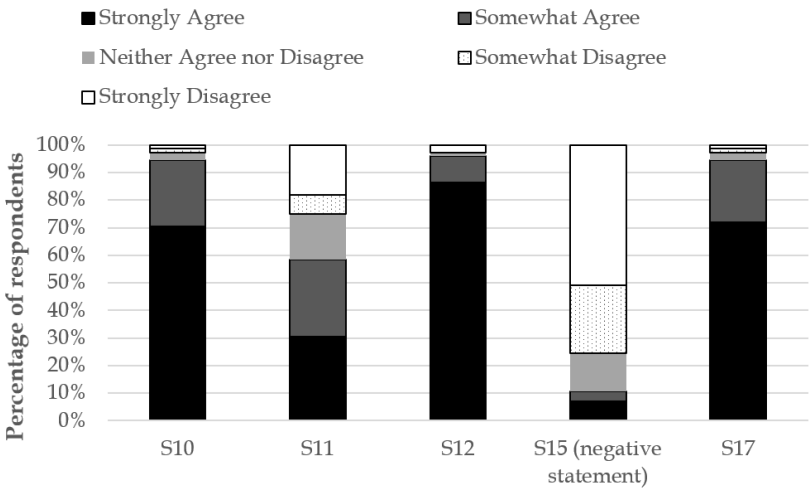


Figure 11: Respondents' rating for "**Animal welfare**" related statements, S10: The staff provided detailed information about how the animal is taken care of in the zoo, S11: The staff talked to us in detail about the possible impacts of the close encounter on the animal, S12: The staff talked in detail about the rules to be followed during the encounter (e.g., how to touch, not to yell, hygiene after encounter), S15 (negative statement): I am concerned about the wellbeing of this species in the zoo, S17: This species receives appropriate care in the zoo, who participated in paid animal-visitor interaction at ZAA accredited zoos in New Zealand.

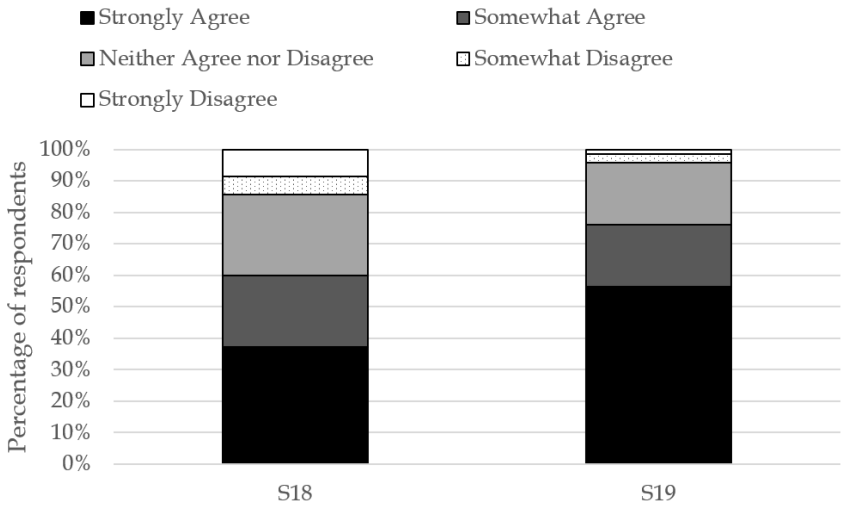


Figure 12: Respondents' rating for "**Research**" related statements, S18: The zoo should carry out research to improve the life of this animal species in the zoo, S19: The zoo should carry out research to improve the life of this animal species in the wild, who participated in paid animal-visitor interaction at ZAA accredited zoos in New Zealand.

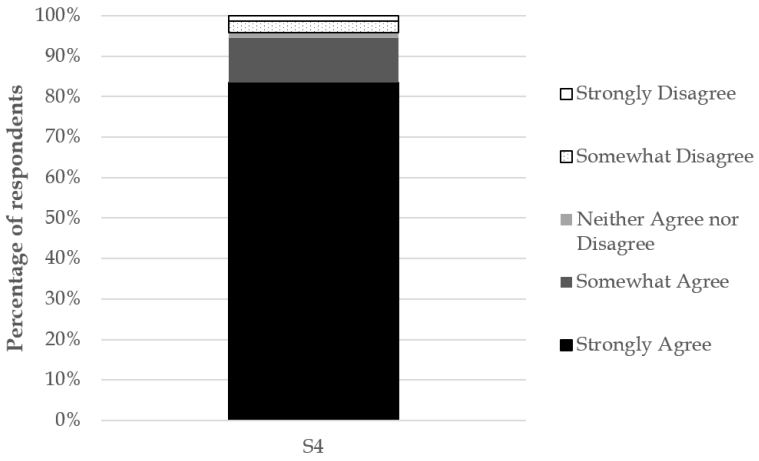


Figure 13: Respondents' rating for "**Recreation**" related statement, S4: My encounter was an enjoyable experience, who participated in paid animal-visitor interaction at ZAA accredited zoos in New Zealand.

During content analysis of the two open questions 'Describe the most memorable thing about your encounter' and 'Describe how the encounter added value to your day', four of five major goals were represented as categories or subcategories: Conservation, education, animal welfare, research, and recreation. During inductive coding, 'Research' was not represented as a category or subcategory, so this objective was not included. A summary of the frequency with which each goal/category was mentioned is shown in Table 7. The zoo objective recreation was most frequently referred to in responses to both questions (90% and 50% of respondents, respectively), whereas conservation was the least frequently mentioned (11% and 10%, respectively).

For the last survey question, 19 respondents chose to share comments with the researcher (Appendix VIII). Most comments were aimed at ensuring our data reflected the steps zoos took to ensure animals involved in AVIs always had positive animal welfare outcomes during the interactive session. Many also shared how the experience had made them appreciate the animal more. For example, respondents mentioned how the keepers guided the participants to treat the animals with respect during the encounter, how the interaction was not at all forced on the animal but instead resulted in purely voluntary animal behaviour, and how the zoo staff valued the interactive animals' wellbeing.

Table 7: Frequency with which comments relating to categories of the zoo goals: conservation, Education, Animal welfare, and Recreation, and subcategories related to the same were identified during content analysis of responses to two open questions in a survey of participants that completed a paid animal-visitor interaction at a ZAA accredited New Zealand zoos

Zoo goals Identified as categories	Subcategories identified in responses(N=72) to the question 'Please describe the most memorable thing about your animal encounter'	Total	Subcategories identified in responses (N=59) to the question 'Please describe how the animal encounter added value to your day'	Total
Conservation	Acquired knowledge about Wildlife conservation	8	Financial commitment to wildlife conservation, Attitude change towards conservation, Existing connection to conservation	6
Education	Acquired knowledge about wildlife conservation, acquired knowledge about encountered species	12	Learning about wildlife conservation, Learning about the encountered species, Learning about how animal is cared for at the zoo, Learning about environmental impacts, Learning in general	21
Animal welfare	Healthy and happy animals, Dedicated keeper, Voluntary interaction, Awful experience (compromised welfare), Animal preference, Animal care, Respect animal's nature	29	Meet dedicated keeper, Happy and healthy animals, Animal care, Animal preference, Animal needs, Animal rights	8
Recreation	Spent leisure time more interesting and enjoyable	65	Enjoyable/awesome/amazing/good/ incredible/exciting/ fantastic/cool/ great / special experience	31

Chapter Four: Discussion & Conclusion

Zoos try to give visitors a memorable experience by offering them highly desirable activities. Zoos simultaneously explore ways of transferring an understanding of their five major objectives: conservation, education, animal welfare, research, and recreation, to the public. These zoo roles complement each other to enhance zoos' reputation as conservation centres among the public and for their future survival (de Mori et al., 2019).

Animal-close encounters, defined in this research as animal-visitor interactions (AVIs), are a very popular and emerging field of visitor attraction in modern zoo culture. Providing the opportunity for visitors to experience close proximity, or even direct contact attracts more people than simply presenting the animals for observation as 'exhibits' alone (Kreger & Mench, 1995). Also, proximity has a positive emotional impact on visitors, making it an excellent opportunity to transmit conservation and education messages (de Mori et al., 2019). Zoo visitors pay an additional fee to have the experience of getting up close to wild animals. This research aimed to find out the perceived value to visitors of participating in a paid AVI at a ZAA accredited New Zealand Zoo. The secondary aim was to explore how AVI participants' perceptions of their encounter related to the major zoo goals. An online survey was designed to capture required information.

The online survey was available to the public for one month (June 2021), and a relatively low number of responses were received (n= 118). This may have reflected the prevailing COVID- 19 pandemic in 2021, accompanied by the initiation of lockdowns around the country. Due to restrictions on public gatherings, zoos were closed to visitors to prevent the spread of the virus. The results clearly showed this, as most AVIs occurred more than 12 months ago and less than three months ago before, and just after the lockdown, respectively. Because of the small number of responses, most responses were still used for data analysis. One respondent, for example, recounted a long-ago experience that

occurred when she was six years old, but still this response was taken for data analysis. Also, responses from more than two years ago would be affected by recall bias and may not have been an accurate. In addition, partially completed responses were considered if they answered the research's key questions.

4.1 Participant characteristics

Sixty-two percent of respondents were females in the current study, and sixty-five percent were aged 20-29. Higher female respondents were consistent with previous research using online surveys (Smith, 2008). Moore & Tarnai (2002) found that younger people were more likely to respond to online surveys than older people. This might be due to the higher intensity of mobile phone use, engagement with social media and familiarity with internet technology than older people (Smith, 2008). Further, it has previously been reported that people aged 20-29 were the most interested in wildlife experiences (Coghlan & Prideaux, 2008).

The greater proportion of New Zealand Europeans among respondents was consistent with statistics from the 2018 New Zealand census, which showed that around 71 percent of the population were NZ European (*2018 Census ethnic group summaries: Stats NZ*).

Most zoos advertised a variety of close encounters that allowed participants to take part with their children. However, results revealed that seventy-four percent of respondents were not accompanied by their children. Conversely, a previous study showed that adults with children engaging in wildlife feeding in parks (non-paid) were more common, and children have been a motivational factor for duck feeding (Jarman, 2019). Although zoos advertise the opportunity for children to participate in animal-close encounters, most participants were a group of friends rather than family tours.

Just over seventy-percent of respondents reported owning/having previously owned a pet/s. Features of pet interaction that have been hypothesised as theoretically important aspects of the human-animal relationship include physical activity engagement, emotional and social support, and proximity(Bures et al., 2019). The high proportion of pet owners that participate in AVIs may reflect that they already have a special affinity towards animals, which might influence their desire to have an AVI experience at a zoo.

The predominant stimulus behind respondents' decision to participate in an AVI was having a fun and enjoyable experience. Previous studies have also shown that interacting with zoo animals may be an enthralling, fun, and memorable experience for visitors (D'Cruze et al., 2019; de Mori et al., 2019; Kreger & Mench, 1995; Reade & Waran, 1996). Presumably, respondents cared less about specific features of the animal and/or whether the animal was rare or exotic if they ultimately got the AVI experience with any animal. The traditional view of zoos as merely places for entertainment, still appears to have impacted the respondents.

4.2 AVI characteristics

In the present study eighty five-percent of encounters involved the class Mammalia, followed by Aves (11%), Reptilia (3%), and Actinopterygii (ray-finned fishes 1%). Actinopterygii encounters in the current study involved both short-fin eels (endangered), and longfin eels (*Anguilla dieffenbachia,* one of the largest eels in the world, and endemic to New Zealand) (*Eels: New Zealand Fresh Water Fish*, n.d). A previous study found that Mammals were the most advertised AVI taxonomic class on the WAZA membership zoos public websites (53%), followed by Aves (26%), Reptilia (9%), and Chondrichthyes (5%)(D'Cruze et al., 2019). The current study results may be due to higher advertising of mammals in New Zealand zoos. Sometimes it might be the comparatively larger body

size of mammals, or because some cute behaviours exhibited by mammals may be attractive to people (Moss & Esson, 2010). Another study confirmed no link between animal attractiveness and size (Balmford et al., 1996). Information obtained in the current study was not sufficiently detailed to explore reasons for higher mammalian encounters.

In New Zealand, animal close encounters mostly involve exotic animals, and a few native species. Many animals included in AVIs are in the International Union for Conservation of Nature (IUCN) Red List of 'Threatened species' Categories. For example, the red panda (*Ailurus fulgens*) is categorised as 'Endangered' and a species threatened with global extinction (*IUCN Red List of Threatened Species*, 2021). A few endemic New Zealand species were also included such as the kea (*Nestor notabilis*): 'Endangered' (Anonymous, 2017a), tuatara (*Sphenodon punctatus*): 'Least concern', only surviving member of order Rhynchocephalia (Hitchmough, 2019), and North Island brown kiwi (*Apteryx mantelli)*: 'Vulnerable'(Anonymous, 2017b). Zoos often use these 'flagship species' (i.e., species chosen to raise support for biodiversity conservation) to attract attention and educate the public about conservation, as well as to conserve these animals from future decline and extinction (Hutchins & Conway, 1995; Hutchins & Smith, 2003). The current study showed the highest percentage of respondents (25%) had red panda encounters, which was also the second most expensive paid AVI for a single species interaction, according to information provided on the zoo websites. Flagship species appear to be used as ambassadors in AVIs to transfer the conservation message to participants, and protect the species from further decline.

Some of the reported encounters have already been phased out within New Zealand at present. For example, elephant close encounter at Auckland Zoo and cheetah encounter at Wellington Zoo.

A total of 78 respondents out of 91 in this study reported having experienced a keeper talk during the session. Keeper talks generally should deliver information regarding species conservation, and conservation should be the overarching message and/or purpose of these AVIs (*WAZA Animal Visitor Interaction Guidlines*, n.d). Further, a talk helps to educate participants about their encountered species and describe the animal welfare and management processes associated with caring for animals to foster awareness and respect for animals and the natural world during the interactive experience. In addition, keeper talks can be used to give instructions on how to interact with the animals for the safety and wellbeing of the animals and the participants involved. This can also be accomplished through signage placement to display information to AVI participants (*WAZA Animal Visitor Interaction Guidlines*, n.d)..

A total of 59 respondents out of 91 in this study were allowed to take photographs with the interactive animal. On the one hand, this would be a good opportunity for participants, enhancing their perceived value of the experience and allowing them to capture permanent memories that they can revisit. For example, a previous study found that encounter images most significantly affected participants positive attitudes towards zoos and wildlife (Shaw, 2020). On the other hand, when people take a picture with a wild animal in captivity during the session (and then share it on social media), it might give the false impression that behaviours such as allowing touching, feeding, and cuddling wild animals is acceptable (Barrantes, 2020 December 8). People might be tempted to act the same way towards non-captive wild animals, resulting in habituation towards human and diminished animals' survival abilities (Orams, 2002). Photographs and participants' memories of their encounter might influence their likelihood of revisiting the zoo, thereby, contributing to increased zoo revenues. Also, the opportunity could be used by zoos to effectively pass on key messages and provide a means for reinforcing the animal conservation message. However, allowing participants to take photographs with the animals, risks transferring faulty messages to the public.

4.3 The perceived value to visitors of participating in a close encounter

4.3.1 The most memorable thing about the AVI

An understanding of what constitutes a memorable experience is an important consideration for zoos in order to provide visitors with new itineraries, experiences, and to enhance the perceived value of their experience (Curtin, 2010). Sometimes, it is not easy for participants to pinpoint the most memorable thing from their experience. Almost everything visitors experience is often reported as astounding, or the experience might not meet what visitors expected at all (Curtin, 2010). In the study reported here, I identified seven main categories, based on content analysis of free-text responses to the question "what was the most memorable thing about your encounter?". Recreational outcomes for the respondents were one of the main factors that made the animal-close encounter a memorable occurrence, followed by the Degree of closeness to wildlife, Animal welfare, Spontaneity, Novelty of the experience, Knowledge acquired, and Human wellbeing.

Recreation was the highest category represented. All activities that people choose to undertake to refresh their bodies and brains and make their free time more fascinating and enjoyable are referred to as 'Recreation' (Yukic, 1970). On the one hand, touching a wild animal might be like a dream come true for participants creating a fun, enjoyable, and lasting experience (Kreger & Mench, 1995). On the other hand, rapid urbanisation promotes the desire for more meaningful, authentic things in life, such as an interest in nature and wildlife. For instance, feeding wild birds and travelling to see natural landscapes and wildlife could replenish and provide an entertaining way to spend leisure time (Clark et al., 2019). Further, people prefer to spend their money on different experiences rather than items, and no matter how transient, experiences provide longer-lasting happiness than objects (Bradberry, 2016). Hence, paid AVIs provide an

opportunity for people to experience extraordinary wildlife and spend their leisure time in an enjoyable way.

The degree of closeness to wildlife was the second-highest category represented in participant responses. Participants mentioned different types of closeness to the interactive animal. Twenty-five respondents mentioned direct contact with the interactive animal by feeding, touching, patting/petting, and scratching. In addition, fifteen respondents were thrilled when the interactive animals voluntarily climbed on them (e.g., meerkats) or sat on their lap/knee or kept their head on the participant's foot and fell asleep while grooming. In contrast, twenty-eight respondents described their close interaction as indirect, such as a drive-through lion encounter, and a walkthrough kiwi night encounter. Some stated that they were not allowed to touch the animal and were only able to see the animals being fed by the keeper at about one meter distance, hence still reporting it as an "up-close" encounter.

Most of the respondents clearly mentioned that during the interaction priority was always given to the animal to decide whether to interact with people or not and it was not at all a forceful occurrence. The keeper's welfare concern towards interactive animal during the experience was also appreciated. For example, one respondent described " *I did love my experience however, I was somewhat disappointed with it as the animal spent most of the time about 2 meters away but I understood that the keepers could not force the animal to do anything and I was pleased that they did not*". While expecting a direct encounter and not getting the chance might be a disappointment for the participants in the current study, this was an ethical way of conducting AVI, without compromising interactive animal welfare (*WAZA Animal Visitor Interaction Guidlines*, n.d).

The category 'Animal welfare' was the third highest represented among participants' responses. It appeared that respondents were quite concerned about how the interactive

animals were treated at the zoo. For example, one respondent stated: " *I must emphasise that touching the animal was discouraged during my encounter and that they are not pets for entertainment but wild animals. We were allowed to feed the red panda (using gloves) and it was explained that the animals come and go at will and are not being forced by the keeper - there was a chance that the animal wouldn't be hungry and so wouldn't appear for the encounter and in that instance, it would be rescheduled*". This directly shows how much zoos care about the interactive animals' welfare, as well as demonstrating compliance with WAZA Animal-Visitor Interaction Guidelines (*WAZA Animal Visitor Interaction Guidlines*, n.d). These moments became memorable and might have positively impacted respondents perceived value of their experience. Animal welfare is further described later in the chapter.

Twenty-eight responses were identified that referred to spontaneous behavior of the interactive animals' when asked to describe the most memorable thing. Specifically, respondents commented on how the animals spontaneously engaged with the respondent without any encouragement. For example, in this study, meerkats reportedly climbed on participants and ran all over them, and the "*capybara came galloping"* towards them for interaction when the gates opened for the session. It is a much more fulfilling experience for visitors when interactive animals fulfil their own desire for interaction (Curtin, 2010). According to Curtin (2010), in wildlife tourism, spontaneity can result from two different experiences: 1) seeing wildlife where you would not expect to see them, and 2) seeing things when you least expected. The former could be experienced when the animals are in their natural environment, and would not be expected in zoo enclosures (Curtin, 2010). But the latter aligns with the results of the study reported here. Some other 'unexpected' behaviours included the meerkats trying to steal one of the participants' glasses, and the elephant covering herself with dust just after bathing. Spontaneous interaction with participants is also a good sign of the level of animal welfare during the experience, in accordance with WAZA guidelines which state "*Provide animals with choice of whether to participate or not in the interactions. Allow adequate rest time*

and assure that an animal displaying any indication that it does not want to participate is immediately removed from the interactive experience" (*WAZA Animal Visitor Interaction Guidlines*, n.d, p. 2). These moments of excitement elicited by spontaneous behaviours will be cherished, enhancing the perceived value of participants.

The category Acquiring Knowledge (e.g., wildlife conservation, learning about encountered species) during the paid AVI experience, was less frequently identified among participant responses to the question of what they found most memorable. This finding agrees with the study of Read & Warrant (1996), which reveals that only 4% of zoo visitors perceived the zoo as a worthwhile educational location. However, the high level of agreement with education statements in the questionnaire (refer to section 3.4 and Figure 10) suggests that while it may not have been the most memorable thing, participants felt that they gained new/valuable knowledge because of their AVI. More studies are required to compare educational gain between visitors who have had zoo visits (no paid AVI), and those who have participated in a paid AVI.

Most paid AVI participants referred to specific features of the encountered animal when describing the most memorable thing about the event. This was categorised as 'Charisma and appeal of species' (Curtin, 2010). Previous research found that the appeal of particular species makes them more attractive, and therefore, memorable, than others (Barstow, 1986; Hammitt et al., 1993; Tremblay, 2002). This might be due to the size, and aesthetic appeal of the animal (Tremblay, 2002). According to the current study results, AVI participants apparently had an affinity for the interactive animal regardless of their size. For example, respondents described memorable features of the animal in the red panda, meerkat, lemur, and cheetah encounters. Further, most of the memorable descriptions were about exotic species, and within native species, kiwi encounters appeared more memorable than other native AVIs.

More studies are required to develop a fuller understanding of participants' attractions to particular species in these interactive sessions to enhance the perceived value of paid AVIs within WAZA Animal-Visitor Interaction Guidelines.

Of the four responses in the Human Wellbeing category, one respondent described the safety and wellbeing of animals and visitors involved as part of what made the experience memorable: "*There is just no other way in the world to get that close to lions in a completely safe manner*". Human and animal wellbeing is covered by the WAZA guidelines for AVIs : "*Assure that interactive experiences are always supervised by experienced and authorised staff or appropriate volunteers for the safety and wellbeing of the animals and visitors involved*" (*WAZA Animal Visitor Interaction Guidlines*, n.d, p. 5). Both visitors and staff involved in the interactions incur health risks (such as those caused by infectious/parasitic agents, allergies, bites/scratches) that are highly likely to negatively impact the participants (Anonymous, 2005) and hence gain negative perceived value. Interactive experiences can be unpredictable and potentially dangerous; thus, visitors should be made aware of the risks and provided with detailed information before the session to mitigate them. This approach might help ensure visitors experience a memorable AVI, while enhancing perceived value and the safety of the encounter.

Three respondents mentioned human relationship building during the session as memorable. These seem to show that sharing the experience with a close friend/family member makes it more memorable. This could be useful information for Zoos to promoting the AVI experience for special days like, Valentine's Day, birthday/ anniversary etc., and attract more participants for the sessions.

4.3.2 How the encounter added value to the participants day

A clear understanding of how an AVI added value to the visitors' day directly relates to the paid AVI's perceived value. Six main categories were identified in the study reported here, based on content analysis of free-text responses to the question "Please describe how the animal close encounter added value to your day". 'Experience', was the most frequent category identified in responses, followed by 'Feeling close to nature', 'Education', 'Animal Welfare', 'Conservation', and 'Human wellbeing'.

'Experience' was identified as the highest added value category with 'novelty of the experience' becoming the highest subcategory within 'Experience'. First-time sightings are usually memorable because of the novelty of the occurrence. For example, when a wild animal, which has previously only been seen in books or on television appears in front of you (Curtin, 2010), there is an element of excitement, which may add value to the participants' day. In the study reported here, one respondent commented: "*Being up-close to animals that New Zealand does not have in the wild*", and this shows how much the participant valued the 'novelty of their experience' with an exotic animal.

AVIs also provide a great opportunity to fulfil people's desire to be with wild animals and feel close to nature (Curtin & Kragh, 2014). Feeling close to nature can reawaken and restore emotional and psychological deficits that arise from disconnection from nature (Curtin & Kragh, 2014). For instance, one respondent stated: "*I love the animals so, it made me feel super connected*", which may have enhanced their perceived value of the experience.

Conservation, education, and animal welfare also added value to participant's day. Learning about the animal and wildlife conservation were frequently mentioned as adding value within the education category. Seeing the animals happy and well cared for

seemed to be valued by participants in the animal welfare category. Although Conservation was less frequently mentioned by the participants. These categories directly align with the major zoo objectives, as discussed in 'Visitor perceptions of their encounter relate to the stated objectives of modern zoos , section 4.4 below.

4.3.3 Benefits and participants' future behavioural intentions

Most of the 71 respondents in this study were 'extremely satisfied' with their AVI experience. Customer satisfaction is viewed as the overall assessment of the service provider, and it is significantly influenced by perceived value, with higher customer satisfaction rates positively impacting their perceived value (McDougall & Levesque, 2000; Shen, 2016). Hence, a high perceived value of the experience was evident by the high degree of customer satisfaction.

Future intentions are the stated likelihood of returning to the service provider again, or in other words, the post-behaviour effect of customer satisfaction directly relates to their intention to revisit and their likelihood of making a positive recommendation (Guerrero et al., 2000; Shen, 2016). In the study reported here, more than half (68%) of the respondents were 'highly likely' to recommend the experience to a friend illustrating how valuable the experience was to them.

Only one respondent marked the experience as 'Extremely dissatisfied'. This rating was due to the involvement of untrained staff and the perceptions that the interactive animal appeared uncomfortable and stressed during the session. Other concerns that can have a negative impact on AVI participants perception of their experience include the experience not satisfying their expectations in terms of emotional enjoyment, knowledge

acquired, staff kindness, freedom to do as they like, or, for some people, if they perceive the animals are not well treated (de Mori et al., 2019).

Further, WAZA recommends its members not to engage in, contribute to, or participate in interactive experiences in which animals show abnormal behaviours (*WAZA Animal Visitor Interaction Guidlines*, n.d). However, clear, and specific definitions, and guidelines for what constitutes unnatural wild animal behaviour are currently lacking and ambiguous. Determining whether or not an AVI treats the animals involved "respectfully" can be subjective, culturally sensitive, and difficult to assess (D'Cruze et al., 2019; *The World Zoo and Aquarium Animal Welfare Strategies*, 2021). All ZAA accredited zoos are bound to work under WAZA guidelines for AVIs, and regular assessments involving staff and staff training are required to be provided when necessary (*WAZA Animal Visitor Interaction Guidlines*, n.d) for zoos to adopt best practices, mitigate negative visitor impacts, and increase perceived value.

Approximately half of the respondents in this study were willing to pay the same, and the other half were willingness to pay more for the experience. Customer willingness to pay is influenced by perceived value, which is an essential antecedent of satisfaction (Yi et al., 2014). Actual value refers to how much it cost participants for their AVI. Perceived value is a more abstract measurement representing how much participants feel the experience is worth. Higher perceived value leads to a higher level of customer satisfaction and contributes to better financial performance and willingness to pay more (Williams & Soutar, 2009; Yi et al., 2014). Maintaining participants' satisfaction through positive perception and minimising risk may influence their willingness to accept a higher fee for an AVI experience at zoos.

4.4 Visitor perceptions of their encounter relate to the stated objectives of modern zoos

The fundamental goal of an AVI is to provide participants with the opportunity to learn and increase awareness of these modern zoo objectives.

4.4.1 Conservation

Most respondents (60–100%) agreed/strongly agreed with all five statements pertinent to conservation. Although, responses were variable, the 'conservation' seems to have been accomplished during most AVIs. With increasing concern for wildlife conservation, there is a perception that the public views zoos as replenishing endangered species, thus as conservation organisations rather than recreational destinations (Aziz, 2021; Rabb & Saunders, 2005). However, several previous studies reported recreation was the main motivational factor for visiting zoos (Kreger & Mench, 1995; Reade & Waran, 1996), similar to the findings of the present study. Content analysis of free-text responses to the two open questions showed that, recreation received a higher frequency of responses than the conservation. In a previous study of a giraffe feeding experience, the authors found that specific conservation information was not provided during the session. But the experience had a positive emotional effect on respondents which lead to participants conservation mindedness and engagement in positive conservation behaviour (de Mori et al., 2019). More research is needed to identify conservational and educational elements that have an emotional impact on participants; hence enhancing zoos conservation objective.

The education role of zoos appears to mostly be about increasing awareness of the importance of wildlife conservation, therefore, there is some overlap between these zoo objectives.

4.4.2 Education

Most respondents agreed/strongly agreed with all four statements relevant to educational gain during the encounter, and mentioned their paid AVI was accompanied by a keeper talk. They described keeper talks that flourished with details about the encountered species, environmental impacts, wildlife conservation, and rated their animal-close encounter as a good educational vehicle. Hands-on keeper talks have a role in educating participants, raising their awareness of species conservation, and foster an appreciation for them. These educational topics should cover both conservation and animal welfare (*The World Zoo and Aquarium Animal Welfare Strategies*, 2021). A previous study found oral interpretations during animal training helped to enhance the participants' interactive experience (Anderson et al., 2003). Apart from keeper talks, zoos use labels, posters, descriptive boards, signage, and touch tables as visitor education materials (Lindemann-Matthies & Kamer, 2006; *WAZA Animal Visitor Interaction Guidlines*, n.d). According to WAZA Animal-Visitor Interaction Guidelines, all interactive experiences and any related presentations should include messaging that promotes conservation knowledge and/or conservation outcomes, as well as respect for animals and the natural world.

Since majority of participants stated that AVIs were either agreed or strongly agreed that they Learn/Discover, this data demonstrated that visitor attitudes are developing with the time, not to think that zoos as only places for entertainment.

4.4.3 Animal welfare

To achieve their objectives as modern conservation organisations, zoos must maintain high animal welfare standards. This directly applies to AVIs, and any animal that takes part in an AVI should have an opportunity for positive welfare outcomes (*WAZA Animal Visitor Interaction Guidlines*, n.d). In the study reported here, the responses were quite varied among different welfare-related statements. But it was evident that dedicated keepers cared for the interactive animals in paid AVIs. More than 60% of

respondents strongly disagreed with the negative statement: " I am concerned about the wellbeing of this species in the zoo", showing most participants did not have any concern about welfare compromise to animals involved in the session. Participants were less aware of the possible impacts of the close encounter on the interactive animal. The keeper might have mentioned the procedures to follow, but the outcome of not obeying instructions may not have been properly communicated to participants. However, one respondent provided a valuable comment on the safety of AVIs: '*I think these kinds of encounters are only appropriate with animals that pose minimal risk to guests (e.g., small mammals or herbivores) and only for animals that have been raised in captivity and as such are highly acclimatised to human handling*.'

A handful of research has been done to assess the effect of AVIs on animals at present though more research is required for a better understanding of the field. Potential welfare effects could vary according to the interactive animal species, among individuals, interactive duration, the way of interaction, the crowd or their behaviour, and arrangement of the interactive enclosure. Identifying all the circumstances is paramount to always ensuring positive animal welfare outcomes. This study showed that most visitors' perceptions directly tally with the animal welfare objective of the zoos during the encounter experience, but that further improvements could be implemented to better meet WAZA guidelines for AVIs.

4.4.4 Research

This study revealed that most paid AVI participants' awareness of zoos' 'Research' objective was comparatively low compared with other objectives. They generally agreed that zoos should conduct research to improve animal lives, particularly for species that live in the wild rather than in zoos. As we move into an era of global mass extinctions, it is critical to approach wildlife study and conservation from a variety of angles, including those provided by wildlife organisations, zoos, and sanctuaries. Studying free-ranging

populations is difficult and/or controlled settings are required, therefore, captive population studies are particularly valuable. Despite zoos' important role in assisting species and ecosystem conservation research work, they are rarely acknowledged in the scientific literature (Smith et al., 2021).

Zoo research frequently focuses on animal behaviour or welfare, assisting in the proper housing and feeding of the animals. Other research investigates the effects of humans on zoo animals, from the visitor effect to the bonds that can be built between animals and their keepers (Kleiman, 1985). Acquired knowledge might help to improve wild population conservation with an increasing focus on exotic and native threatened fauna, as well as engaging and inspiring visitors. AVIs provide a great opportunity for zoos to highlight their dedication to research, because most paid AVIs involve ambassador species. In the study reported here, respondents stated:" *I believe supervised close encounters done with appropriate research, care and management are really important ways to teach the public about popular wild animals whilst also getting a checkup in for them*".

Yet, many members of the public believe this research imposes discomfort or decreases the quality of life of the animals involved (Kleiman, 1985). Hence, it is vital to give a clear picture for visitors about zoos research roles during the AVI using formal or informal ways. For example, by providing information on zoo's dedication to research activities during keeper talk, giving an opportunity for participants to practically engage in ongoing zoo research during AVI sessions, or by putting up signage near the interactive area about previous and current research activities.

4.4.5 Recreation

This study revealed that most respondents (~95%) agreed or strongly agree with the statements related to the recreation outcome of paid AVIs. Modern zoos primarily emphasise the first four objectives with the traditional 'recreation' role being regarded as the least important (Fernandez et al., 2009). But most visitors go to zoos for enjoyment. According to (Reade & Waran, 1996), the main motivations for a zoo visit

are visiting with friends, fun, and entertainment. AVIs increase the appeal of zoos for many visitors. These visits eventually translate into greater revenue which helps zoos to achieve their other goals (Fernandez et al., 2009). Further, 'Recreation' was the most frequently identified category and subcategory in content analysis of free-text responses among respondents. People are going to choose to go to the zoo for recreation, therefore promoting other zoo goals is unlikely to affect participation – in fact, recreation is helping to get the message across. So, there is no need for zoos to explicitly promote recreation aspects.

4.5 Limitations

The most important limitation of this study was how the survey was distributed. The survey was mostly accessed by the people who use Facebook, the majority of which are youths. To adhere to guidelines for the ethical conduct of research involving humans, respondents were allowed to skip any number of questions in the online survey and were not forced to answer. Hence, most of the respondents 'completed' the survey in full but did not answer one or more questions with the results that some data for questions was missing. One zoo accounted for 58% of the respondents. Because of this, many survey answers were based on experiences at this zoo, and the acquired data might not represent all available paid AVIs in this study. In addition, different zoos prioritise different goals and may have different ways of achieving their primary goals. Therefore, these results cannot be generalised among all ZAA accredited New Zealand zoos. However, these results provide a useful starting point for increasing consideration of the impact of AVIs on zoo visitors and animals.

Moreover, another limitation might be the wording of the survey question " How did the encounter add value to your day?". In retrospect, this was a leading question, assuming

that the experience did add value. Non-responders to this question may have believed that the experience did not add value.

It would be great if future studies could look at providing surveys to all participants immediately after completing an AVI. Also, with a larger sample size it would be interesting to compare the results for different species or different zoos or by respondent characteristics in order to provide a more detailed picture of perceived value by respondents, and also to reduce recall bias.

4.6 Conclusion

To present visitors with novel itineraries and experiences through paid AVIs, zoos must have a clear idea of what motivates people to take part in these and what aspects of the experience they find most valuable and memorable. From the results of this study, I identified several categories/subcategories among participant's responses to the question of what they found most memorable and how the encounter added value to their day. This knowledge might help zoos to organise future paid AVI experiences in a way that better meets participants' expectations. It might also assist with marketing and management strategies, bearing in mind that participants' future expectations and behaviours are often based on the perceived value of their experience. The higher perceived value, the more satisfied participants will be, resulting in more recommendations, and thus being a better revenue generator for zoos. In addition, the information extracted on participants' views towards the major zoo objectives could provide valuable feedback to Zoos on the role of AVIs in promoting these.

Recreation was the most frequently identified category among participants' free text comments, suggesting that this may be the primary driver for participating in paid AVI, and the factor that made the encounter most memorable. However, participants' high agreement with conservation related statements seems to show that the zoos were getting

the conservation message across, and simultaneously observed the change in participants attitudes towards zoos other objectives.

For the most part, it seemed that the paid AVIs were a good way of promoting recreation, education, conservation, and animal welfare objectives among participants. They may be a lack of awareness or understanding among participants of zoo's research objective. It may be that involving participants in hands-on research activity during the encounter would capture participants' empathy for the animal while also passing on the zoo's research aims.

Whilst, this preliminary study provides some valuable insights into participants perception of AVIs at New Zealand zoos, the limited sample size means that further research is required to better understand participants motivations and how best to promote the major zoo objectives through these experiences.

References

2018 Census ethnic group summaries: Stats NZ. Retrieved January 16 from New Zealand Governments. https://www.stats.govt.nz/tools/2018-census-ethnic-group-summaries

Adams, C. E., & Thomas, J. K. (1986). Wildlife education: present status and future needs. *Wildlife Society Bulletin (1973-2006), 14*(4), 479-486.

Akerman, S. (2019, Jan 2). Best Practices for Building Empathy Through Live Animal Encounters. *Journal of Museum Education, 44*(1), 89-95. https://doi.org/10.1080/10598650.2018.1496388

Altunel, M. C., & Erkurt, B. (2015). Cultural tourism in Istanbul: The mediation effect of tourist experience and satisfaction on the relationship between involvement and recommendation intention. *Journal of Destination Marketing & Management, 4*(4), 213-221.

Anderson, U. S., Benne, M., Bloomsmith, M. A., & Maple, T. L. (2002, 2002). Retreat space and human visitor density moderate undesirable behavior in petting zoo animals. *Journal of Applied Animal Welfare Science, 5*(2), 125-137. https://doi.org/10.1207/s15327604jaws0502_03

Anderson, U. S., Kelling, A. S., Pressley-Keough, R., Bloomsmith, M. A., & Maple, T. L. (2003). Enhancing the zoo visitor's experience by public animal training and oral interpretation at an otter exhibit. *Environment and behavior, 35*(6), 826-841.

Anonymous. (2005, Dec 23). Outbreaks of Escherichia coli O157:H7 associated with petting zoos - North Carolina, Florida, and Arizona, 2004 and 2005. *Morbidity and Mortality Weekly Report, 54*(50), 1277-1280. <Go to ISI>://BIOABS:BACD200600121036

Anonymous. (2017a). *Nestor notabilis (Kea)*. Retrieved December 5, 2021 from The IUCN Red List of Threatened Species 2017: e.T22684831A119243358. https://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T22684831A119243358.en

Anonymous. (2017b). *Apteryx mantelli (North Island Brown Kiwi)*. Retrieved December 6, 2021 from The IUCN Red List of Threatened Species 2017: e.T45353580A119177586. https://dx.doi.org/10.2305/IUCN.UK.2017-3.RLTS.T45353580A119177586.en.

Ashley, P., & Boyd, B. W. (2006). Quantitative and qualitative approaches to research in environmental management. *Australasian Journal of environmental management, 13*(2), 70-78.

Aziz, N. (2021). *The Conservation Mission of Zoos: Wildlife Welfare*. Retrieved February 2nd from https://wildwelfare.org/the-conservation-mission-of-zoos-nabila-aziz/

Barrantes, N. (2020 December 8). World Animal Protection. *5 Reasons You Shouldn't Touch Wild Animals On Your Vacation.* https://www.worldanimalprotection.us/blogs/5-reasons-you-shouldnt touch-wild-animals-your-vacation

Ballantyne, R., & Packer, J. (2016). Visitors' perceptions of the conservation education role of zoos and aquariums: Implications for the provision of learning experiences. *Visitor Studies, 19*(2), 193-210.

Ballantyne, R., Packer, J., Hughes, K., & Dierking, L. (2007). Conservation learning in wildlife tourism settings: Lessons from research in zoos and aquariums. *Environmental Education Research, 13*(3), 367-383.

Balmford, A., Mace, G. M., & Leader-Williams, N. (1996). Designing the ark: setting priorities for captive breeding. *Conservation biology, 10*(3), 719-727.

Barongi, R., Fisken, F. A., Parker, M., & Gusset, M. (2015). Committing to conservation: the world zoo and aquarium conservation strategy. *Gland: WAZA Executive Office*, 6.

Barstow, R. (1986). Non-consumptive utilization of whales. *Ambio. Stockholm, 15*(3), 155-163.

Beausoleil, N., & Mellor, D. (2017). Validating indicators of sheep welfare. In *Achieving sustainable production of sheep* (pp. 349-370). Burleigh Dodds Science Publishing.

Belanche, D., Cenjor, I., & Pérez-Rueda, A. (2019). Instagram Stories versus Facebook Wall: an advertising effectiveness analysis. *Spanish Journal of Marketing-ESIC*.

Bell, C. E., Fisher, L., & Mizicko, L. (2001). *Encyclopedia of the World's Zoos* (Vol. 1). Taylor & Francis.

Bexell, S. M., Jarrett, O. S., Ping, X., & Xi, F. R. (2009). Fostering humane attitudes toward animals: An educational camp experience in China.

Bloomberg, D. L., & Volpe, M. (2016). *Completing your qualitative dissertation*. SAGE Publications.

Boutilier, R. G., & Thomson, I. (2011). Modelling and measuring the social license to operate: fruits of a dialogue between theory and practice. *Social Licence, 1*, 1-10.

Bradberry, T. (2016). Why You Should Spend Your Money On Experiences, Not Things. *Forbes*. https://www.forbes.com/sites/travisbradberry/2016/08/09/why-you-should-spend-your-money-on-experiences-not-things/?sh=2c5530765208

Broom, D. M. (2011). A history of animal welfare science. *Acta biotheoretica, 59*(2), 121-137.

Bures, R. M., Mueller, M. K., & Gee, N. R. (2019). Measuring human-animal attachment in a large US survey: two brief measures for children and their primary caregivers. *Frontiers in Public Health, 7*, 107.

Carbonaro, M., & Bainbridge, J. (2000). Design and development of a process for web-based survey research. *Alberta Journal of Educational Research, 46*(4).

Carlstead, K., Seidensticker, J., & Baldwin, R. (1991). Environmental enrichment for zoo bears. *Zoo Biology, 10*(1), 3-16.

Carr, N., & Cohen, S. (2011). The public face of zoos: Images of entertainment, education and conservation [Article]. *Anthrozoos, 24*(2), 175-189. https://doi.org/10.2752/175303711X12998632257620

Centers for Disease, C., & Prevention. (1999, 1999-Sep-03). Multiple human exposures to a rabid bear cub at a petting zoo and barnwarming--Iowa, August 1999. *MMWR. Morbidity and mortality weekly report, 48*(34), 761-761. <Go to ISI>://MEDLINE:10499789

Chiew, S. J., Butler, K. L., Fanson, K. V., Eyre, S., Coleman, G. J., Sherwen, S. L., Melfi, V., & Hemsworth, P. H. (2021). Effects of the presence of zoo visitors on zoo-housed little penguins (Eudyptula minor). *New Zealand journal of zoology*, 1-22.

Chyung, S. Y. (Yonnie), Swanson, I., Roberts, K., & Hankinson, A. (2018). Evidence-Based Survey Design: The Use of Continuous Rating Scales in Surveys. Performance Improvement, 57(5), 38–48. https://doi.org/10.1002/pfi.21763

Clark, D. N., Jones, D. N., & Reynolds, S. J. (2019). Exploring the motivations for garden bird feeding in south-east England. *Ecology and Society, 24*(1).

Claxton, A. M. (2011). The potential of the human–animal relationship as an environmental enrichment for the welfare of zoo-housed animals. *Applied Animal Behaviour Science, 133*(1-2), 1-10.

Coghlan, A., & Prideaux, B. (2008). Encounters with wildlife in Cairns, Australia: where, what, who...? *Journal of Ecotourism, 7*(1), 68-76. https://doi.org/10.2167/joe174.0

Cohen, L., Manion, L., & Morrison, K. (2017). Coding and content analysis. In *Research methods in education* (pp. 668-685). Routledge.

Craig, K. (2003). The Houston Zoo Story: How to help your business succeed in an interactive world. *Public Relations Quarterly, 48*(4), 14.

Creswell, J. W., & Miller, D. L. (2000). Determining validity in qualitative inquiry. *Theory into practice, 39*(3), 124-130.

Curtin, S. (2010). What makes for memorable wildlife encounters? Revelations from 'serious' wildlife tourists. *Journal of Ecotourism, 9*(2), 149-168.

Curtin, S., & Kragh, G. (2014). Wildlife tourism: Reconnecting people with nature. *Human dimensions of wildlife, 19*(6), 545-554.

D'Cruze, N., Khan, S., Carder, G., Megson, D., Coulthard, E., Norrey, J., & Groves, G. (2019, Jun). A Global Review of Animal-Visitor Interactions in Modern Zoos and Aquariums and Their Implications for Wild Animal Welfare. *Animals, 9*(6). https://doi.org/10.3390/ani9060332

Davis, N., Schaffner, C. M., & Smith, T. E. (2005). Evidence that zoo visitors influence HPA activity in spider monkeys (Ateles geoffroyii rufiventris). *Applied Animal Behaviour Science, 90*(2), 131-141.

de Mori, B., Ferrante, L., Florio, D., Macchi, E., Pollastri, I., & Normando, S. (2019). A protocol for the ethical assessment of wild animal–visitor interactions (AVIP) evaluating animal welfare, education, and conservation outcomes. *Animals, 9*(8), 487.

Dell'Eva, M., Nava, C. R., & Osti, L. (2020, Aug 3). Perceptions and satisfaction of human-animal encounters in protected areas. *Worldwide Hospitality and Tourism Themes, 12*(4), 441-458. https://doi.org/10.1108/whatt-05-2020-0024

Edwards, P., & Trafford, S. (2016). Social licence in New Zealand—what is it? *Journal of the Royal Society of New Zealand, 46*(3-4), 165-180.

Eels: New Zealand Fresh Water Fish. (n.d). Retrieved March 3 from Department of Conservation. https://www.doc.govt.nz/nature/native-animals/freshwater-fish/eels/

Engelmann, F., & Engels, J. M. M. (2002). Technologies and strategies for ex situ conservation. *Managing plant genetic diversity*, 89-103.

Erdozain, G., KuKanich, K., Chapman, B., & Powell, D. (2015, Mar). Best Practices for Planning Events Encouraging Human-Animal Interactions. *Zoonoses and Public Health, 62*(2), 90-99. https://doi.org/10.1111/zph.12117

Fa, J. E. (1992). Visitor-directed aggression among the Gibraltar macaques. *Zoo Biology, 11*(1), 43-52.

Fernandez, E. J., Tamborski, M. A., Pickens, S. R., & Timberlake, W. (2009). Animal-visitor interactions in the modern zoo: conflicts and interventions. *Applied Animal Behaviour Science, 120*(1/2), 1-8. https://doi.org/10.1016/j.applanim.2009.06.002

Fielder, F., & Wheeler, W. (1985). A survey of visitors to the Woodland Park Zoological Gardens. *Seattle, Washington: The Zoological Foundation of Woodland Park*.

Franklin, A. (1999). *Animals and modern cultures: A sociology of human-animal relations in modernity*. Sage.

Freeland, L., Ellis, C., & Michaels, C. J. (2020). Documenting Aggression, Dominance and the Impacts of Visitor Interaction on Galápagos Tortoises (Chelonoidis nigra) in a Zoo Setting. *Animals, 10*(4), 699.

Gray, J. (2017a). Zoo ethics: The challenges of compassionate conservation.

Gray, J. (2017b). *Zoo ethics: The challenges of compassionate conservation*. CSIRO PUBLISHING.

Green, T., & Mellor, D. J. (2011). Extending ideas about animal welfare assessment to include 'quality of life'and related concepts. *New Zealand Veterinary Journal, 59*(6), 263-271.

Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. *Handbook of qualitative research, 2*(163-194), 105.

Guerrero, L., Colomer, Y., Guàrdia, M. D., Xicola, J., & Clotet, R. (2000). Consumer attitude towards store brands. *Food quality and preference, 11*(5), 387-395.

Hacker, C. E., & Miller, L. J. (2016, Jul-Aug). Zoo Visitor Perceptions, Attitudes, and Conservation Intent After Viewing African Elephants at the San Diego Zoo Safari Park. *Zoo Biology, 35*(4), 355-361. https://doi.org/10.1002/zoo.21303

Haider, N., Rothman-Ostrow, P., Osman, A. Y., Arruda, L. B., Macfarlane-Berry, L., Elton, L., Thomason, M. J., Yeboah-Manu, D., Ansumana, R., & Kapata, N. (2020). COVID-19—zoonosis or emerging infectious disease? *Frontiers in Public Health, 8*, 763.

Hammitt, W. E., Dulin, J. N., & Wells, G. (1993). Determinants of quality wildlife viewing in Great Smoky Mountains National Park. *Wildlife Society Bulletin (1973-2006), 21*(1), 21-30.

Hampton, J. O., & Teh-White, K. (2019). Animal welfare, social license, and wildlife use industries. *The Journal of Wildlife Management, 83*(1), 12-21.

Hediger, H. (1969). Man and Animal in the Zoo. *Food and Agriculture Organization of the United States*.

Hensel, K. (1978). Education in zoos and aquariumstrends and projections. American Association of Zoological Parks and Aquariums Annual Conference Proceedings,

Hitchmough, R. (2019). *Sphenodon punctatus (Tuatara)*. Retrieved December 5 from The IUCN Red List of Threatened Species 2019: e.T131735762A120191347. https://dx.doi.org/10.2305/IUCN.UK.2019-2.RLTS.T131735762A120191347.en

Holbrook, M. B. (1999). *Consumer value: a framework for analysis and research*. Psychology Press.

Hosey, G. (2008). A preliminary model of human–animal relationships in the zoo. *Applied Animal Behaviour Science, 109*(2-4), 105-127.

Hosey, G., & Melfi, V. (2015a, Jan-Feb). Are we Ignoring Neutral and Negative Human-Animal Relationships in Zoos? *Zoo Biology, 34*(1), 1-8. https://doi.org/10.1002/zoo.21182

Hosey, G., & Melfi, V. (2015b). Are we ignoring neutral and negative human–animal relationships in zoos? *Zoo Biology, 34*(1), 1-8.

Hosey, G. R. (2005). How does the zoo environment affect the behaviour of captive primates? *Applied Animal Behaviour Science, 90*(2), 107-129.

Hutchins, M., & Conway, W. G. (1995, 01 / 01 /). Beyond Noah's Ark: the evolving role of modern zoological parks and aquariums in field conservation [Article]. *International Zoo Yearbook, 34*(1), 117-130. https://doi.org/10.1111/j.1748-1090.1995.tb00669.x

Hutchins, M., & Smith, B. (2003). Characteristics of a world-class zoo or aquarium in the 21st century. *International Zoo Yearbook, 38*(1), 130-141.

Hutchins, M., Smith, B., & Allard, R. (2003). In defense of zoos and aquariums: the ethical basis for keeping wild animals in captivity. *Journal of the American Veterinary Medical Association, 223*(7), 958-966.

IUCN Red List of Threatened Species. (2021). Retrieved December 05, 2021 from International Union for Conservation of Nature and Natural Resources. https://www.iucnredlist.org/

Jamieson, D. (2003). Against zoo. In S. J. Armstrong & R. G. Botzler (Eds.), *The animal ethics reader* (pp. 507-512). Routledge.

Jarman, T. E. (2019). *The effects of urbanisation on the feeding ecology and physiology of mallards, Anas platyrhynchos: a thesis presented in partial fulfilment of the requirements for the degree of Masters of Science in Zoology at Massey University, Palmerston North, New Zealand* Massey University].

Jones-Engel, L., Engel, G. A., Schillaci, M. A., Lee, B., Heidrich, J., Chalise, M., & Kyes, R. C. (2006). Considering human–primate transmission of measles virus through the prism of risk analysis. *American Journal of Primatology, 68*(9), 868-879.

Jones, H., McGregor, P. K., Farmer, H. L. A., & Baker, K. R. (2016, May-Jun). The Influence of Visitor Interaction on the Behavior of Captive Crowned Lemurs (Eulemur coronatus) and Implications for Welfare. *Zoo Biology, 35*(3), 222-227. https://doi.org/10.1002/zoo.21291

Kagan, R., Carter, S., & Allard, S. (2015). A universal animal welfare framework for zoos. *Journal of Applied Animal Welfare Science, 18*(sup1), S1-S10.

Kapp, J. M., Peters, C., & Oliver, D. P. (2013). Research recruitment using Facebook advertising: big potential, big challenges. *Journal of Cancer Education, 28*(1), 134-137.

Keulartz, J. (2015). Captivity for conservation? Zoos at a crossroads. *Journal of Agricultural and Environmental Ethics, 28*(2), 335-351.

Kisling, V. N. (2000). *Zoo and aquarium history: Ancient animal collections to zoological gardens*. CRC press.

Kleiman, D. G. (1985). Criteria for the evaluation of zoo research projects. *Zoo Biology*.

Kreger, M. D., & Mench, J. A. (1995). Visitor—Animal interactions at the zoo. *Anthrozoos, 8*(3), 143-158.

Kuhar, C. W. (2008). Group differences in captive gorillas' reaction to large crowds. *Applied Animal Behaviour Science, 110*(3-4), 377-385.

Larsen, M. J., Sherwen, S. L., & Rault, J.-L. (2014). Number of nearby visitors and noise level affect vigilance in captive koalas. *Applied Animal Behaviour Science, 154*, 76-82.

Laule, G., & Whittaker, M. (2007). Enhancing nonhuman primate care and welfare through the use of positive reinforcement training. *Journal of Applied Animal Welfare Science, 10*(1), 31-38.

Learmonth, M. J. (2020, Nov). Human-Animal Interactions in Zoos: What Can Compassionate Conservation, Conservation Welfare and Duty of Care Tell Us about the Ethics of Interacting, and Avoiding Unintended Consequences? *Animals, 10*(11), Article 2037. https://doi.org/10.3390/ani10112037

Learmonth, M. J., Sherwen, S., & Hemsworth, P. (2021). Assessing choice ability and preferences of five Leopard Tortoises (Stigmochelys pardalis) for three stimuli through a novel two-phase preference test. *Journal of Zoo and Aquarium Research, 9*(2), 94-101.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. sage.

Lindemann-Matthies, P., & Kamer, T. (2006, 03 / 01 /). The influence of an interactive educational approach on visitors' learning in a Swiss zoo [Article]. *Science Education, 90*(2), 296-315. https://doi.org/10.1002/sce.20127

Long, S., Dorsey, C., & Boyle, P. (2011). Status of Association of Zoos and Aquariums cooperatively managed populations. *WAZA Magazine, 12*, 15-18.

Luebke, J. F. (2018, Apr). Zoo Exhibit Experiences and Visitors' Affective Reactions: A Preliminary Study. *Curator-the Museum Journal, 61*(2), 345-352. https://doi.org/10.1111/cura.12253

Malamud, R. (1998). Reading zoos: Representations of animals and captivity.

Maple, T., McManamon, R., & Stevens, E. (1995). Defining the good zoo: Animal care, maintenance, and welfare. *Ethics on the ark: Zoos, animal welfare and wildlife conservation*, 219-234.

Marg, E. (1995). DESCARTES'ERROR: emotion, reason, and the human brain. *Optometry and Vision Science, 72*(11), 847-848.

Mason, G. J. (1991). Stereotypies: a critical review. *Animal Behaviour, 41*(6), 1015-1037.

McDougall, G. H., & Levesque, T. (2000). Customer satisfaction with services: putting perceived value into the equation. *Journal of services marketing*.

McMillian, M., Dunn, J. R., Keen, J. E., Brady, K. L., & Jones, T. F. (2007, Oct 1). Risk behaviors for disease transmission among petting zoo attendees. *Javma-Journal of the American Veterinary Medical Association, 231*(7), 1036-1038. https://doi.org/10.2460/javma.231.7.1036

Melfi, V. (2013). Is training zoo animals enriching? *Applied Animal Behaviour Science, 147*(3-4), 299-305.

Mellor, D. J. (2017). Operational details of the five domains model and its key applications to the assessment and management of animal welfare. *Animals, 7*(8), 60. https://doi.org/10.3390/ani7080060

Mellor, D. J., Beausoleil, N. J., Littlewood, K. E., McLean, A. N., McGreevy, P. D., Jones, B., & Wilkins, C. (2020, Oct). The 2020 Five Domains Model: Including Human-Animal Interactions in Assessments of Animal Welfare. *Animals, 10*(10), Article 1870. https://doi.org/10.3390/ani10101870

Mellor, D. J., Hunt, S., & Gusset, M. (2015). Caring for wildlife: the world zoo and aquarium animal welfare strategy. *WAZA Executive Office: Gland, Switzerland*, 1-87.

Mertler, C. A. (2002). Job satisfaction and perception of motivation among middle and high school teachers. *American secondary education*, 43-53.

Mitchell, G., Herring, F., Tromborg, C., Dowd, B., Steiner, S., & Obradovich, S. (1992). Targets of aggressive facial displays by golden-bellied mangabeys (Cercocebus galeritus chrysogaster) at the Sacramento Zoo. *Applied Animal Behaviour Science, 33*(2-3), 249-259.

Moberg, G. P. (2000). Biological response to stress: implications for animal welfare. *The biology of animal stress: Basic principles and implications for animal welfare, 1*, 21.

Moon, K., & Blackman, D. (2014). A guide to understanding social science research for natural scientists. *Conservation biology, 28*(5), 1167-1177.

Morgan, J. M., & Gramann, J. H. (1989). Predicting effectiveness of wildlife education programs: A study of students' attitudes and knowledge toward snakes. *Wildlife Society Bulletin (1973-2006), 17*(4), 501-509.

Moss, A., & Esson, M. (2010). Visitor interest in zoo animals and the implications for collection planning and zoo education programmes. *Zoo Biology, 29*(6), 715-731.

Moss, A., Jensen, E., & Gusset, M. (2014). Zoo visits boost biodiversity literacy. *Nature, 508*(7495), 186-186.

Newberry, R. C. (1995). Environmental enrichment: increasing the biological relevance of captive environments. *Applied Animal Behaviour Science, 44*(2-4), 229-243.

Newell, R. (2020). The Zoo in Forest Park Marketing Plan.

Newsome, D., & Rodger, K. (2008). To feed or not to feed: A contentious issues in wildlife tourism.

Orams, M. B. (2002). Feeding wildlife as a tourism attraction: a review of issues and impacts. *Tourism management, 23*(3), 281-293.

Orban, D. A., Siegford, J. M., & Snider, R. J. (2016). Effects of guest feeding programs on captive giraffe behavior. *Zoo Biology, 35*(2), 157-166.

Patton, M. (1980). Q-(1980)-Qualitative evaluation methods-Beverly Hills.

Pedersen, J., Sorensen, K., Lupo, B., & Marx, L. (2019, May 4). Human-Ape Interactions in a Zoo Setting: Gorillas and Orangutans Modify Their Behavior Depending upon Human Familiarity. *Anthrozoos, 32*(3), 319-332. https://doi.org/10.1080/08927936.2019.1598651

Powell, D. M., & Bullock, E. V. W. (2014, Sep). Evaluation of Factors Affecting Emotional Responses in Zoo Visitors and the Impact of Emotion on Conservation Mindedness. *Anthrozoos, 27*(3), 389-405. https://doi.org/10.2752/175303714x13903827488042

Powell, D. M., & Watters, J. V. (2017). The evolution of the animal welfare movement in US zoos and aquariums. *Der Zoologische Garten, 86*(1-6), 219-234.

Quadros, S., Goulart, V. D., Passos, L., Vecci, M. A., & Young, R. J. (2014). Zoo visitor effect on mammal behaviour: Does noise matter? *Applied Animal Behaviour Science, 156*, 78-84.

Rabb, G. B., & Saunders, C. D. (2005). The future of zoos and aquariums: conservation and caring. *International Zoo Yearbook, 39*(1), 1-26.

Reade, L. S., & Waran, N. K. (1996, Apr). The modern zoo: How do people perceive zoo animals? *Applied Animal Behaviour Science, 47*(1-2), 109-118. https://doi.org/10.1016/0168-1591(95)01014-9

Reh, B. (2020). The Social License to Operate in the Zoo Context. https://www.a4w.org/post/social-license-to-operate

Reid, W., & Miller, K. (1989). Keeping Options Alive: The Scientific Basis for Conserving Biodiversity. Washington DC. *World Resources Institute*.

Riggio, G., Mariti, C., Boncompagni, C., Corosaniti, S., Di Giovanni, M., Ogi, A., Gazzano, A., & Thomas, R. (2019, Jun). Feeding Enrichment in a Captive Pack of European Wolves (Canis Lupus Lupus): Assessing the Effects on Welfare and on a Zoo's Recreational, Educational and Conservational Role. *Animals, 9*(6). https://doi.org/10.3390/ani9060331

Roe, K., McConney, A., & Mansfield, C. F. (2014). The role of zoos in modern society—A comparison of zoos' reported priorities and what visitors believe they should be. *Anthrozoos, 27*(4), 529-541.

Rolston III, H. (1986). Beauty and the beast: aesthetic experience of wildlife. *The Trumpeter, 3*(3).

Sandford, F. (1984, 01//). Modern zoos: new challenges, new responsibilities [Article]. *American Biology Teacher (National Association of Biology Teachers), 46*, 36-42. http://ezproxy.massey.ac.nz/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=eue&AN=507535705&site=eds-live&scope=site

Sayers, J. (2020). The influence of animal welfare accreditation programmes on zoo visitor perceptions of the welfare of zoo animals. *Journal of Zoo and Aquarium Research, 8*(3), 188-193.

Schaefer, D. R., & Dillman, D. A. (1998). Development of a standard e-mail methodology: Results of an experiment. *Public opinion quarterly*, 378-397.

Shaw, M. (2020). The influence of human-animal close-encounter photographs on public attitudes towards zoos and wildlife.

Shen, Y. S. (2016). Perceived value in tourism experience.

Sherwen, S. L., Hemsworth, L. M., Beausoleil, N. J., Embury, A., & Mellor, D. J. (2018). An animal welfare risk assessment process for zoos. *Animals, 8*(8), 130.

Sherwen, S. L., Magrath, M. J. L., Butler, K. L., Phillips, C. J. C., & Hemsworth, P. H. (2014, Jul). A multi-enclosure study investigating the behavioural response of meerkats to zoo visitors. *Applied Animal Behaviour Science, 156*, 70-77. https://doi.org/10.1016/j.applanim.2014.04.012

Sherwood Jr, K. P., Rallis, S. F., & Stone, J. (1989). Effects of live animals vs. preserved specimens on student learning. *Zoo Biology, 8*(1), 99-104.

Simpson, J. A., Weiner, E. S. C. (1989). Zoo. In *The Oxford English Dictionary*.

Skibins, J. C., & Powell, R. B. (2013, Sep). Conservation Caring: Measuring the Influence of Zoo Visitors' Connection to Wildlife on Pro-Conservation Behaviors. *Zoo Biology, 32*(5), 528-540. https://doi.org/10.1002/zoo.21086

Smith, B. P., Palermo, S. G., & Watson, L. (2021). The important role of private wildlife organisations in facilitating scientific research: A case study of the Australian Dingo Foundation. *Australian Zoologist, 41*(3), 568-579.

Smith, G. (2008). Does gender influence online survey participation?: A record-linkage analysis of university faculty online survey response behavior. *ERIC Document Reproduction Service No. ED 501717*.

Smith, T. E., & French, J. A. (1997). Psychosocial stress and urinary cortisol excretion in marmoset monkeys. *Physiology & behavior, 62*(2), 225-232.

Sommer, R. (1972). What Do We Learn at the Zoo? *Natural History*.

Špinka, M. (2019). Animal agency, animal awareness and animal welfare. *Animal welfare, 28*(1), 11-20.

Špinka, M., & Wemelsfelder, F. (2011). Environmental challenge and animal agency. *Animal welfare, 2*, 27-44.

Sullivan, A. L., & Shaffer, M. L. (1975). Biogeography of the megazoo: biogeographic studies suggest organizing principles for a future system of wild lands. *Science, 189*(4196), 13-17.

Szokalski, M. S., Foster, W. K., & Litchfield, C. A. (2013). Behavioral Monitoring of Big Cats Involved in 'Behind-the-Scenes' Zoo. *International Journal of Comparative Psychology, 26*(1).

Towns, D. R., & Williams, M. (1993). Single species conservation in New Zealand: towards a redefined conceptual approach. *Journal of the Royal Society of New Zealand, 23*(2), 61-78.

Tremblay, P. (2002). Tourism wildlife icons: Attractions or marketing symbols? *Journal of Hospitality and Tourism Management, 9*(2), 164-181.

Tunnicliffe, S. D. (1994). Why do teachers visit zoos with their pupils? *International Zoo News, 41*(5), 4-13.

Tussyadiah, I. P. (2014). Toward a theoretical foundation for experience design in tourism. *Journal of travel research, 53*(5), 543-564.

Wallis, J., & Lee, D. R. (1999). Primate conservation: the prevention of disease transmission. *International journal of Primatology, 20*(6), 803-826.

WAZA Animal Visitor Interaction Guidlines. (n.d). Retrieved March 5 from WAZA (World Association of Zoos and Aquariums). https://www.waza.org/priorities/animal-welfare/waza-animal-visitor-interaction-guidelines/

Whitmore, T., & Sayer, J. (1992). Deforestation and species extinction in tropical moist forests. *Tropical deforestation and species extinction*, 1-14.

Williams, P., & Soutar, G. N. (2009). Value, satisfaction and behavioral intentions in an adventure tourism context. *Annals of tourism research, 36*(3), 413-438.

World Association for Zoos and Aquariums (WAZA). (2021). https://www.waza.org/

The World Zoo and Aquarium Animal Welfare Strategies. (2021). Retrieved December 12 from The World Association of Zoos and Aquariums (WAZA). https://www.waza.org/priorities/animal-welfare/animal-welfare-strategies/

Yi, S., Day, J., & Cai, L. A. (2014). Exploring tourist perceived value: An investigation of Asian cruise tourists' travel experience. *Journal of quality assurance in hospitality & tourism, 15*(1), 63-77.

Yukic, T. S. (1970). *Fundamentals of recreation*. Harper & Row.

ZAA Locate. (2021). Zoo and Aquarium Association (ZAA). https://www.zooaquarium.org.au/public/Locate/Public/Locate.aspx

Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: a means-end model and synthesis of evidence. *Journal of marketing, 52*(3), 2-22.

Zoo and Aquarium Association (ZAA), Australasia. (2021). ZAA Accreditation https://www.zooaquarium.org.au/public/public/animal-welfare/ZAA-accreditation.aspx

Appendix I

Subset of ten relevant articles and ideas for survey questions

No	Reference	Aim of the article	Ideas for survey questions
1	Hacker, C. E., & Miller, L. J. (2016, Jul-Aug). Zoo Visitor Perceptions, Attitudes, and Conservation Intent After Viewing African Elephants at the San Diego Zoo Safari Park  Zoo Visitor Perceptions, Attitudes	Analyze visitor perceptions and attitudes toward elephant conservation and outcomes post-exhibit visit (elephant demonstration)	Which best describe your ethnicity? Gender and age? Indicate how much you agree or disagree with below statements Strongly disagree to strongly agree • Experience about up-close encounter • Humans have the right to modify nature even if it impacts animals • I am troubled by the well-being of the elephants in the zoos • It is important to have elephants in the wild • I am concerned about having elephants in zoos • Elephants in the wild cause more harm than good • Elephants in zoos receive appropriate care • Elephants are an important part of the nature • It is important to have them in zoos Thinking about your reaction to visiting the elephant exhibit Strongly disagree to strongly agree • I am going to support a zoo's conservation efforts (volunteer my time/ donate money..) • I am spending more time learning more about elephants (reading books/watch television.) • I am going to have discussions with my friends about elephants (discuss conservation issues, what they can do to help) • I am going to change my daily activities to benefit the environment (recycle more, reduce energy usage) About the zoo keepers talk and how much visitors learn? Total time of the encounter?
2	Dell'Eva, M., Nava, C. R., & Osti, L. (2020, Aug 3). Perceptions and satisfaction of human-animal encounters in protected areas.  Perceptions and satisfaction of.pdf	assess the role of animals in creating a satisfactory experience at a natural park/ overall experience	Push and pull factors for the visit How you can mention the overall recreational experience? Level of satisfaction (unique photograph with animals)? Specific attraction or feature for particular animal? Interest of future visit? Perceived degree of safety with the encounter? Reason for satisfaction or dissatisfaction How much they involved in educational material? Whether zoo/park make people aware of AW effects?

	Reference	Aim of the article	Ideas for survey questions
3	Kreger, M. D., & Mench, J. A. (1995, 1995). Visitor animal interactions at the zoo  VisitorAnimalInteractions-1.pdf	How VAI might enhance or detract from the education and conservation missions of the zoos and describe the potential effect of HAI on zoo animal welfare	Where can I get one of those animals? Passing an inappropriate message to keep exotic animals as pets Information gathered during the encounter by keeper talks Why do visitor enjoy hand feeding animals? Do they have caring and nurturing interest of the animal? Do the public aware of the risks of unnecessary public feeding of wild animals? Whether public feeding give an impression that wild animals are tame or pet- like? Foster animal appreciation? Awareness of AW Acts and zoo policies that regulate these interactions <u>How well/closely align with zoo objectives</u> Have the zoos oversold the message of conservation? Retained level of education and conservation message in public mind? Close animal encounters are effective educational vehicles? Conservation message conveyed more effectively? Pro-conservation attitude shift in public?
4	de Mori, B., Ferrante, L., Florio, D., Macchi, E., Pollastri, I., & Normando, S. (2019). A protocol for the ethical assessment of wild animal–visitor interactions (AVIP) evaluating animal welfare, education, and conservation outcomes.  A protocol for the ethical assessment of	Develop a protocol for the ethical assessment of interaction activities, and describe its application in 'giraffe feeding" programme. (protocol designed to apply WAZA recommendations) Overall ethical assessment = 1+2 1. animal welfare assessment = animal risk assessment + physiological measures+ behavioural observations 2. human outcome assessment = visitor experience survey + human risk assessmnet	Any emotional impact of activity with animal? (moral distress, burn out, compassion fatigue, not meet their expected emotional enjoyment, knowledge gained, kindness of staff, possibility to do what they expected to do, perceive that the animals are not well treated) Whether keeper deliver a short talk about how to interact with the animal during the programme in order not to compromise the welfare of the animal? Animal can choose to come and interact or not? <u>Added value to their day</u> <u>Category</u> <u>example</u> <u>frequency</u> • Experience/emotions -They made me feel happy, Unique experience • Contact/proximity to animal -It was great to touch them, I have never gotten so close to this animal before • Learning/interest -I received information that I did not know before It was wonderful to know these animals • Enjoyment -I enjoyed the experience of giving food to the Giraffe a lot Beautiful and funny experience Disposition to give their email address to be involved in future conservation projects ?

	Reference	Aim of the article	Ideas for survey questions
5	Ballantyne, R., & Packer, J. (2016). Visitors' perceptions of the conservation education role of zoos and aquariums: Implications for the provision of learning experiences.  Visitors' Perceptions of the Conservation E	• visitors' perceptions of the role of zoos and aquariums; • the importance that visitors place on conservation learning as a reason for visiting; • the extent and nature of visitors' interest in animals and wildlife; • visitors' preferences regarding the nature and content of on-site interpretive signage • contributors to visitors' satisfaction • visitors' expectations of, and preferences for, the provision of post-visit, off-site conservation education.	Demographic characteristics of survey respondents. Gender Age Visitor origin? Local or tourist Previous visits Frequency of visitation Visitor's reasons for visiting? Conservation status of the animal? How visitors prefer to observe animals ?(active, variety of species, new species, well cared, natural enclosures) Preferred Animal interactions? (touch animals, getting close to them, animal performances, feeding animals) Conservation learning experiences? (learning about conservation or environmental issues; knowing that the zoo/aquarium contributes to conservation projects; learning something new about animals) Zoo and aquarium visitors' perceptions of the role of zoos and aquariums: scale from 1-7 (not at all to extremely important) • Z/A should provide information about animals • Z/A should be places where you relax and enjoy the beauty of nature • Z/A should provide information about conservation and environmental issues • Z/A should encourage visitors to take action to protect animals in the wild • Z/A should encourage visitors to reflect on, and think about, conservation and environmental issues • Zoos and aquariums should be places where you can go for a fun experience • Zoos and aquariums should exhibit rare, endangered and exotic animals that would be difficult to see anywhere else • Z/A should provide take-away materials to encourage people to continue learning about environmental issues after their visit Visitors preference on below : Not at all important, moderately important, extremely important (in a scale of 1 to 7) Awareness of animal name, species and genus, geographical location. Conservation status? Information about what visitors can do to help conserve animals in the wild? Information on what visitors can do to better care for the environment? Animals place in the ecosystem? Threats to animals in the ecosystem?

	Reference	Aim of the article	Ideas for survey questions
6	Skibins, J. C., & Powell, R. B. (2013, Sep). Conservation Caring: Measuring the Influence of Zoo Visitors' Connection to Wildlife on Pro-Conservation Behaviors.  Conservation Caring Measuring the Influen	two sequential objectives. develop a scale to measure visitors' connection to a species (Conservation Caring). The second was to investigate the relationship of Conservation Caring to pro-conservation behaviors, following a zoo experience.	Why visitors select only certain animal for close encounter (because animals popularity, beauty, attraction, grace, power, certain charismatic megafauna or **price of the ticket**) Easy to pass conservation caring message and pro-conservation behaviors, following a animal encounter
7	Powell, D. M., & Bullock, E. V. W. (2014, Sep). Evaluation of Factors Affecting Emotional Responses in Zoo Visitors and the Impact of Emotion on Conservation Mindedness  Evaluation of Factors Affecting Emotional R	explored relationships between emotional experience, the factors that influence it, visitors' predispositions toward nature, and their reports of conservation mindedness after viewing three carnivore exhibits	up-close encounter with the animals and how it affected the strength of positive emotional experiences at the exhibits? Up-close encounter and eye contact with the animal how it significantly affected emotional responses? Emotional experiences differ between men and women? Difference of positive emotional responses between adult and young? Visitors' predispositions toward nature and emotional responses produce significantly stronger reports of conservation mindedness in visitors as a result of their experience at the exhibit?
8	Riggio, G., Mariti, C., Boncompagni, C., Corosaniti, S., Di Giovanni, M., Ogi, A., Gazzano, A., & Thomas, R. (2019, Jun). Feeding Enrichment in a Captive Pack of European Wolves (Canis Lupus Lupus): Assessing the Effects on Welfare and on a Zoo's Recreational, Educational and Conservational Role  Feeding Enrichment in a Captive Pack of E	aim of assessing whether feeding enrichment programs might affect visitor's perception of captive wolf welfare as well as visitors attitude towards wolf conservation issues	<u>Demographic information for questionnaire respondents.</u> Gender Age Ever been in a zoo before Nationality <u>Likert-scale items and scoring system.</u> Strongly agree to strongly disagree in 1-5 scale 1) I would love to spot a wolf in the wild (2) Wolves are mean animals * (3) Wolves are very dangerous to humans * (4) Wolves in zoos behave like they do in documentaries (5) Wolves in the wild are a serious threat to livestock * (6) It is important to have wolves in zoos for education purposes (7) Wolf reintroduction programs should be implemented in those areas from where the wolf disappeared (8) Wild wolves prey on cattle should be systematically eliminated * (9) Illegal killing of wild wolves should be severely punished (10) Wolves in zoos make me feel sad * (11) The level of welfare of wolves in zoos is worrisome *

	Reference	Aim of the article	Ideas for survey questions
9	Luebke, J. F. (2018, Apr). Zoo Exhibit Experiences and Visitors' Affective Reactions: A Preliminary Study.	The purpose of the present study was to explore the types of personal experiences that were related to zoo visitors' empathic and affective reactions at an animal exhibit	Positive emotional reactions of public Peacefulness, caring, respect, wonder, attraction visitors' positive emotional reactions to animals whether related to their pro-environmental concern and caring behaviors toward wildlife and nature? Positive emotional reactions and visitor's background characteristics? (pre-existing personality traits of visitors regarding empathy, emotional sensitivity/expressiveness, and general animal orientation) Did anything extra special happen to you while you were at this exhibit? If yes, please tell us what it was and how you felt about it: **Focus on animals** – Observing baby animals (e.g., nurturing behaviors of parents with babies) – Observing specific animal behaviors (e.g., observing playful behaviors) – Guest-animal interactions (e.g., eye contact) – Close view of animals – Only listed particular animals or exhibits **Focus on self** – Caring thoughts or reflections about environmental issues and conservation – Caring thoughts or reflections about animals – Thoughts about human-animal relatedness or connectedness with nature – Feelings of relaxation, peacefulness, contentment, or reflection – Remembering something from the past – Learned something new or gained knowledge or information about a specific animal/exhibit or the environment
10	Coghlan, A., & Prideaux, B. (2008, 2008). Encounters with wildlife in Cairns, Australia: where, what, who...?	explores the preferences for wildlife encounters of visitors in Cairns, Australia.	Socio-demographic characteristic of Visitors Gender Age Employment Occupation Preferred type of encounter? Reason for that? Past experiences? Satisfaction with experience? Wildlife interest? Travelled with whom? Preferred wildlife experience ? in a zoo, wild or in a tour Gender and age difference in wildlife experiences?

Appendix II

Categorisation of extracted questions : AVI Characteristic, Major zoo goals, questions of interest, Participant Characteristics

Categorization	Questions
AVI Characteristics	Driving factors for …….(animal/s)-close encounter (tick) Desire to get close to wildlife (Coghlan & Prideaux, 2008) Relax and recover from daily stress Escape from usual leisure routine Attractive specific features of the animal Interest in caring and nurturing of the animal Like to touch and feel the animal Like to hand feed them (Kreger & Mench, 1995) Respondants were asked why they decided to join the "giraffe feeding " interactions: individual motivations according to frequency of mentioning them were identified. • Contact/proximity to animals • Appreciation for animals • Learning/interest • Experience/emotions • Because of the children • Curiosity • Other (de Mori et al., 2019) **<u>Visitor motivations and priority visitors placed on: (yes/no)</u>** learning and discovering something new visiting one of the local things to do engaging in wildlife viewing as a personal interest or hobby sharing quality time with family and friends feeling peaceful and appreciative of nature. (Ballantyne & Packer, 2016) Reasons to join an animal-visitor interaction (open)…….. Expectations of interaction activity(open)…….. (de Mori et al., 2019) *I had the close encounter with ……..animal/s *Direct AVI type Feeding Petting Getting close to them Riding (Ballantyne & Packer, 2016; Coghlan & Prideaux, 2008) Specific attraction or feature for particular animal/s to be selected? (open) …….. or (tick)

Categorization	Questions
	It is popular It is beautiful and attractive Its' grace It's power Charismatic megafauna (Skibins & Powell, 2013) * It is rare and endangered * They are exotic *price of the ticket *Total time of the encounter…… * how many in your group during the encounter…… With whome they came to the zoo? (closed question with "other"option) (Coghlan & Prideaux, 2008; de Mori et al., 2019) Talks already joined in the same day? (close question) The perceived value of the experience ?(yes/no values with opportunity to explain) (de Mori et al., 2019) Previous close-animal encounters ? Yes/No (Ballantyne & Packer, 2016; Riggio et al., 2019) *With which wild animal/s? …… *Name of the zoo/wildlife park…… Frequency of visitation to zoo……. (Ballantyne & Packer, 2016)
Major zoo goals Conservation	**s/disagree to s/agree** • Elephants are an important part of the nature • It is important to have elephants in zoos • I am going to support zoos conservation efforts (volunteer my time, donate money..) • I am going to have discussion with my friends about elephants (discuss conservation issues, what they do to help…) • I am going to change my daily activities to benefit the environment (recycle more, reduce energy usage….) • Foster animal appreciation (Hacker & Miller, 2016; Kreger & Mench, 1995) Passing an inappropriate message to keep exotic animals as pets ? (yes/no) over sold the the message *Do you like to keep them as a pet? (yes/no) Do you know the conservation status of the animal? Disposition to give their email address • Do you like to involve in future conservation projects at zoo (yes/no) • Drop your email address here (open)……(de Mori et al., 2019) •

Categorization	Questions
	Not at all important/moderately important/extremely important (1- 7 scale) • Z/A provide specific information about the animal (tick) • Z/A provide information about the animal's conservation and environmental issue (tick) • Z/A encourage visitors to take action to protect the species • Z/A encourage visitors to reflect on, and think about, conservation and environmental issues(tick) • Close-animal encounters with direct eye contact affect the strength of positive emotional experience at the exhibit (tick) • It is significantly help to raise conservation mindedness, pro-environmental concern, and caring behavior towards wildlife (tick) **(Ballantyne & Packer, 2016)** Close-animal encounters conveyed conservation message more effectively (agree/disagree) (Kreger & Mench, 1995) **Conservation caring** (yes/no) Ensuring this species' survival is my highest priority My emotional sense of well-being will be severely diminished by the extinction of this species I need to learn everything I can about this species I would protest this site if I learned of the mistreatment of this animal I will alter my lifestyle to help protect this species My connection to this animal has increased my connection to the species as a whole Wildlife protection must be society's highest priority (Skibins & Powell, 2013)
Education	Visitor preference on below: not at all important, moderately important, extremely important in a scale of 1-7 Animal name, Species and genus name…….. Geographical location……. Their conservation status ……. Animals place in the ecosystem…… Threats to animals in the ecosystem……. **s/disagree to s/agree** I am spending more time learning more about the species (reading books/watch television..)(Hacker & Miller, 2016) Did the staff give information about the specimens that are involved in the interaction? (Yes/No) If yes, please deccribe…….. Did the staff give information about the biology of the species involved in the interaction? (yes/No) If yes, please describe…… Did the staff give information about animal welfare? (yes/no) If yes, please describe…… Did the staff give information about animal welfare issues for the species involved in the interaction activity? (yes/no) If yes,please describe…….. (de Mori et al., 2019) Did the staff give information about wildlife conservation during the interaction activity?(yes/no) If yes, please describe…….. Did the staff suggest behaviors to promote a more suitable lifestyle in order to promote wildlife conservation?(yes/no) If yes, please describe…….

Categorization	Questions
	Did the staff suggest behaviors to promote suitable lifestyle to promote animal welfare?(yes/no) If yes, please describe……. (de Mori et al., 2019) * Mention any information gathered about the encountered animal during the keepers talk ……(open) or *Tell us an interesting fact about close encountered animal (open)…….. Educational material provided or any other information availability about the animal (satisfied/dissatisfied) How much zoo involved in providing educational material for the species (satisfied/dissatisfied) (Dell'Eva et al., 2020) Close- animal encounters are effective educational vehicles (agree/disagree) (Kreger & Mench, 1995) * What you have learnt about the close-encountered animal (open)……
Research	• Do you recommend to carry out research on Animal welfare effects of these close encountered species (yes/no)
Animal welfare	**Strongly disagree/disagree/neither disagree or agree/agree/strongly agree** • I am troubled by the well being of the elephants in the zoo • It is important to have elephants in the wild • I am concerned about having them in the zoo • Elephants in zoos receive appropriate care • They are important part of the nature (Hacker & Miller, 2016) I know about AW acts and zoo policies that regulate these animal close-encounters (yes/no) (D'Cruze et al., 2019; Kreger & Mench, 1995) Keeper deliver a short talk about how to interact with the animal during the encounter in order to compromise the welfare of the animal? (yes/no) (de Mori et al., 2019) Animal have the opportunity to choose whether to come and interact or not? (yes/no) (de Mori et al., 2019) Whether zoo/park make people aware of AW effects? (yes/no) (Kreger & Mench, 1995)

Categorization	Questions
Recreation	How you can mention the overall recreational experience? (open) …… It is a unique experience (yes/no) I took a unique photograph with the animal (yes/no) Overall satisfaction of the experience (very satisfied/satisfied/not satisfied/not at all satisfied Interest in future close-encounters (like/dislike) Perceived degree of safety with the encounter ?(satisfied/dissatisfied) Reason for satisfaction or dissatisfaction (open)…….. (Dell'Eva et al., 2020) Why AVI Added value to their day ? (open) reasons given by respondants were categorized in to four different categories and frequency of mention of the categories were calculated. (de Mori et al., 2019)
Questions of Interest	Do the public aware of the risks of unnecessary public feeding of wild animal ? Where can I get one of those animal? Over sold the conservation message Awareness of risk factors for animal and human in direct AVI? Have the zoos oversold the message of conservation? Pro-conservation attitude shift in public? Retained level education and conservation message in public mind? (Kreger & Mench, 1995) *Is there any Gender and age difference in close-animal encounter preference ?(Coghlan & Prideaux, 2008) Difference of positive emotional responses of public ? (like peacefulness, caring, respect,wonder,attraction) (Luebke, 2018) Whether emotional experiences differ between men and women? Difference of positive emotional responses between adult and young? (Powell & Bullock, 2014) Visitor's predispositions towards nature and emotional responses produce significantly stronger reports of conservation mindedness in visitors as a result of their experience at the exhibit?(Powell & Bullock, 2014) Did anything extra special happen to you while you were at this exhibit? If yes, please tell us what was and how you felt it? (open)……..(Ballantyne & Packer, 2016) Why AVI added value to their day at the zoo? (de Mori et al., 2019)

Categorization	Questions
Participant characteristics (Demographic)	Which best describes your ethnicity (tick) or (open) New Zealander Maori European Pacific people Asian Other …… Gender : Male Female Neuter Age (tick) <20 years 20-29 years 30-39 years 40-49 years 50-59 years >60 years (Ballantyne & Packer, 2016; Hacker & Miller, 2016) Visitor origin Local Foreign Employment (open)…… Occupation (open)…….. Annual income $50,000 or greater……(Skibins & Powell, 2013) Pet ownership ? have a pet or not have a pet Education? (middle school/high school/graduate/university degree/other) Annual ticket/membership ? (yes/no) Number of past visits? (First time or more than once)

Appendix III

Questionnaire for close-animal encounter participants

1. Where was your close-animal encounter? (drop-down list)
    1. Auckland Zoo
    2. Butterfly Creek
    3. Brookland Zoo
    4. Hamilton Zoo
    5. Kiwi Birdlife Park
    6. Nga Manu Nature Reserve
    7. Orana Wildlife Park
    8. West Coast Wildlife Center
    9. Willowbank Wildlife Reserve
    10. Wellington Zoo

2. What was your close encounter?

If where was your close animal encounter is Auckland Zoo (drop-down list)

- **Giraffe**
- **Squirrel Monkey**
- **Red Panda**
- **Meerkat**
- **Galapagos tortoise**
- **Capybara**
- **Kiwi**

If where was your close animal encounter is Butterfly Creek(drop-down list)

- **Cotton-top tamarin**
- **Otter**
- **Parrot**

If where was your close animal encounter is Brookland Zoo

"Thank you for your interest in participating in this survey. However, because entry is free for visitors to Brookland Zoo, this does not fulfill the primary criteria of the survey and so animal encounters here have not been included"

If where was your close animal encounter is Hamilton zoo

"Thank you for your interest in participating in this survey. However, because Hamilton Zoo has not been offering animal encounters for at least 3 years, they are not included in this survey"

If where was your close animal encounter is Kiwi Birdlife park

"Thank you for your interest in participating in this survey. However, because there is no additional fee for animal encounters at the Kiwi Birdlife Park, this does not fulfill the primary criteria of the survey and so animal encounters here have not been included"

If where was your close animal encounter is Nga Manu Nature reserve(drop-down list)

- **Kiwi night encounter**
- **Feed out tour through aviaries (kakariki, kaka, whio, kea, weka)**

If where was your close animal encounter is Orana Wildlife Park

- **Lion encounter**

If where was your close animal encounter is West Coast wildlife centre

- **Kiwi encounter**
- **Tuatara encounter**

If where was your close animal encounter is Willowbank Wildlife Reserve (drop-down list)

- **Lemur**
- **Capybara**

- **Gibbon**
- **Kiwi**
- **Kea**
- **Ferret**
- **Falcon**
- **Eels**

If where was your close animal encounter is Wellington Zoo(drop-down list)

- **Giraffe**
- **Capybara**
- **Lemur**
- **Meerkat**
- **Red Panda**
- **Sun Bear**
- **Minibeast (scorpion, goliath stick insect, millipede, tarantula)**
- **Cheetah**

Q3 When was the encounter? Please choose ONE option

Less than 3 months ago
Betweenn 3 and 6 months ago
Between 6 and 12 months ago
More than 12 months ago

Q4 What did your zoo encounter involve? Please choose all that apply.

Touching the animal
Getting within 1m of the animal
Feeding the animal by myself
Observing the animal being fed
Accessing behind the scenes
Having a photograph with the animal
Listening to a keeper talk about the animal

Q5 How many other people participated in your encounter?

Q6 Did you take children with you? Yes No

Q7 How much money did you oay for the encounter(per person)

0 to $10 $11 to $25
$26 to $50
$51 to $100
$101 to $150
$151 to $200
Over $200

Q8 How did you find out about this encounter?

From a previous visit to the zoo
From the zoo's website
Word of mouth/friend recommendation

Social media e.g.Facebook, Twitter, Instagram
Other (Please specify)

Q9 How long did your encounter last?
Less than 30 minutes
30 to 60 minutes
61 to 120 minute
More than 2 hours

Q10 Please describe the most memorable thing about your animal close encounter? (open)

Q11 What is the most money you would be willing to pay for the encounter (per person)?
0 to $10
$11 to $25
$26 to $50
$51 to $100
$101 to $150
$151 to $200
Over $200

Q12 Please indicate how much you agree with following statements about the encounter:
Sliders given
strongly agree, somewhat agree, neither agree nor disagree, somewhat agree, strongly agree

S1 The staff provided information about the animals' conservation status and environmental issues
S2 My encounter encouraged me to think about animal conservation and environmental issues
S3 My encounter made me appreciate the animal more
S4 My encounter was an enjoyable experience
S5 My encounter encouraged me to buy animal-friendly products
S6 My encounter conveyed conservation messages more effectively
S7 My encounter made me support zoos conservation efforts (e.g., as a volunter, to donate money, etc.)
S8 The staff provided information about animals normal behavior and diet
S9 The staff provided information about the normal life span of the animal
S10 The staff gave information about how the animal is taken care in the Zoo
S11 The staff talked to you about the possible impacts of the close encounter on the animal
S12 The staff talked about the rules and to be followed during the encounter (e.g., how to touch, not to yell, hygiene after encounter)
S13 I learnt a lot about the animal during my close encounter
S14 My close animal encounter was an effective educational vehicle

Q13 Thinking about the animal species you had your encounter with, please indicate how much you agree with the following statements:

Sliders given
strongly disagree, somewhat disagree, neither agree nor disagree, somewhat agree, strongly agree

S15 I am concerned about the wellbeing of this species in the zoo
S16 It is important to have this species in the wild

S17 This species receives appropriate care in the Zoo
S18 The zoo should carry out research to improve the life of this animal species in the zoo
S19 The zoo should carry out research to improve the life of this animal species in the wild

Q14 Please describe how the animal encounter added value to your day: (open)

Q15 My overall satisfaction with the experience (please select)

Extremely dissatisfied
Somewhat dissatisfied
Neither satisfied nor dissatisfied
Somewhat satisfied
Extremely satisfied

Q16 Would you recommend this encounter to a friend?

Highly unlikely
Somewhat unlikely
Neither unlikely nor likely
Somewhat likely
Highly likely

Q17 Based on your most recent encounter, how important were each of the following factors for your decision to participate in this encounter?

Sliders given
Not at all important, slightly important, moderately important, very important, extremely important

S20 I wanted to have contact/ proximity to wildlife
S21 I attracted to a specific feature of the animal
S22 I wanted to learn or discover soothing new
S23 I wanted a fun and enjoyable experience
S24 I wanted a rare/ exotic experience

Q18 What is your gender?

- Male
- Female
- Prefer not to disclose
- Other (please specify)

Q19 Which ethnic group do you belong to?
New Zealand European
Maori
Samoan
Cook Island Maori
Tongan
Niluean
Chinese
Indian
Other (Please specify)

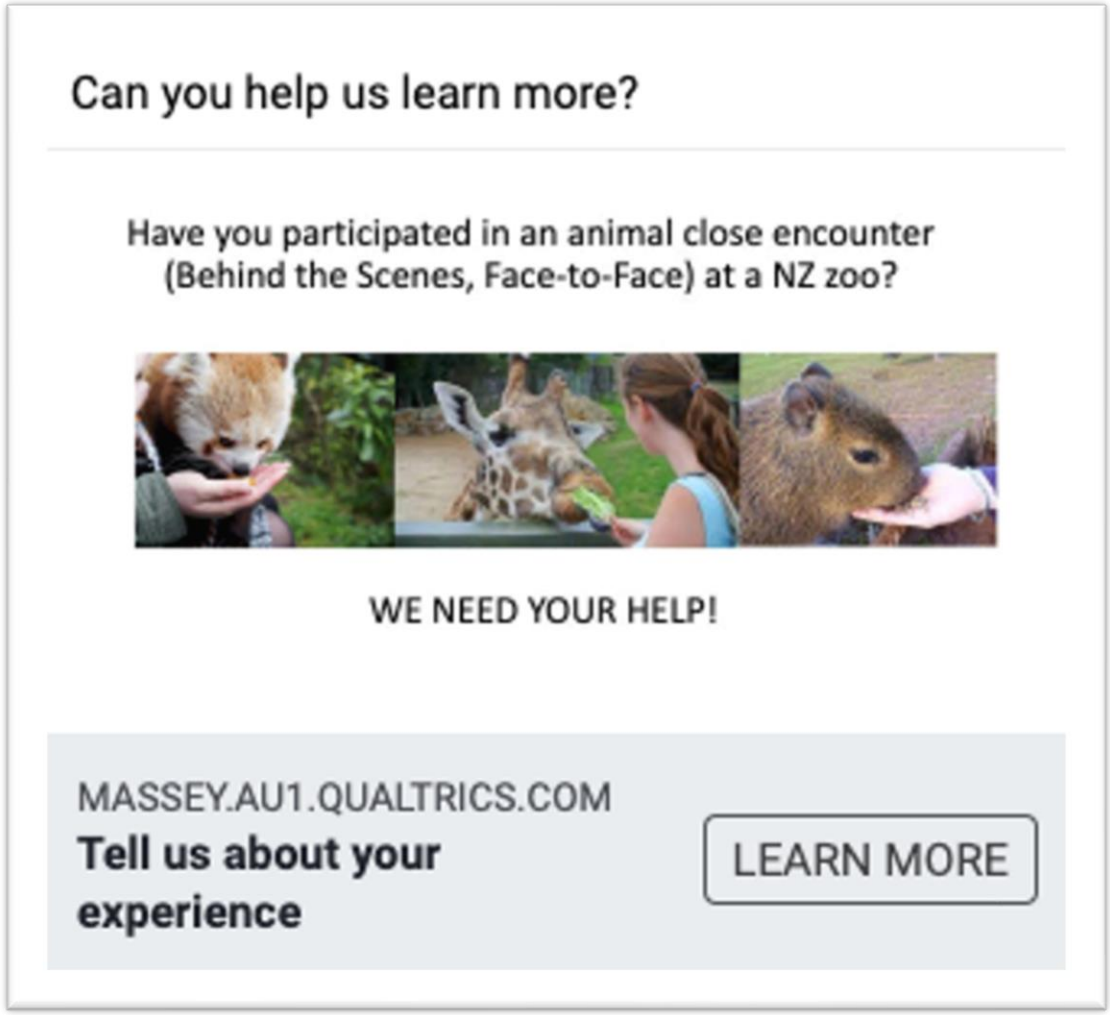
Q20 What is your age? (open)

Q21 Do you own, or have you ever owned, a pet?
No
Yes (please specify)

Q22 Use the below space to write any other comments you wish to share with the researcher.(open)

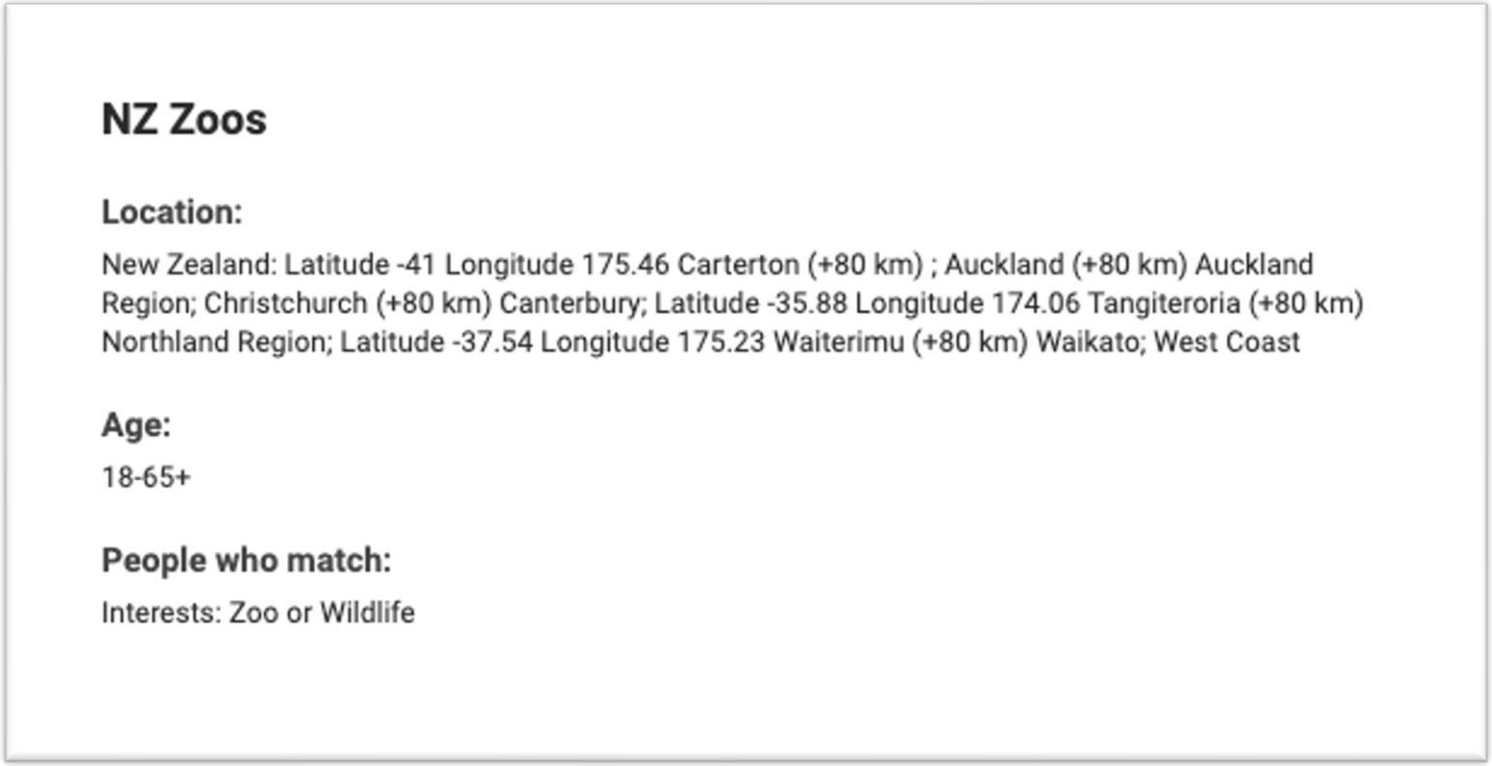
Appendix IV

The advert pop up in the Facebook



Appendix V

Facebook advertising campaign development



Appendix VI

Responses (N=72) for Q10: Please describe the most memorable thing about your close animal encounter

	Responses (N=72)
1	The keeper's dedication to the animals was evident, the animals themselves were calm, happy, inquisitive and purring, the animals weren't forced to interact it was all voluntary, patting the animals was amazing
2	Feeding the red pandas
3	The look of pure joy on my partners face
4	They're cheeky and tried to steal my colleague's glasses
5	Being that close to a beautiful creature, specifically how they looked!!
6	Feeding mango to lemur
7	Watching the capybaras come galloping when the gate opened
8	Seeing the lions jump on top of cage we were in
9	Getting to see animals in real life that you wouldn't normally in everyday life. Learning about the animals and what they need to survive and how we can help them
10	they were all playing with grass in a box in front of us and wandering around sometimes at our feet which was cool
11	touching the animal
12	Having them on my lap and interacting with them
13	Being so up close to the animals, letting them snuggle up and sleep on your lap and running around everywhere. It was also great hearing from their keeper about how they get looked after, what they like etc
14	Seeing a baby one and spending quality time with my husband enjoying animals together
15	Getting to see the animals up close and watch their behaviour, learn about their species and conservation being done for them in the wild.
16	Seeing them up close and letting them run all over me-
17	We were not permitted to touch the animals but they were able to climb on to us which was so cool. One time on my knee and I got to hand it food
18	The surprise at how much personality the lemurs had, and how their hands were so surprisingly soft (not at all what I expected!) when they grabbed my hand to get the food
19	Was an awful experience, the guy showed us a Ruru and the poor animal wanted to escape so bad. You could tell it was suffering, and guy at the zoo keep talking about how the ruru can hear your heart beat and at the same time the guy was yelling for a long time practically in the ruru's ear. Awful experience, I think these experiences can make animal suffer.
20	Getting to pat the inside of its shell
21	There is just no other way in the world to get that close to lions in a completely safe manner
22	Having the red panda so close & bring able to interact
23	Getting to see the animals up close and feed them was amazing.
24	Seeing the meerkats so close up and having the little meerkats running around on your lap
25	Being close to the animal and sharing that with the person I went with
26	Having the animal in my lap
27	Getting up close to a lion, being able to fully appreciate their size
28	Being able to pat the cheetah while it was sitting right next to me
29	Touching the animals and getting to see them up close.
30	Seeing the baby meerkats up close and having the meerkats run along our hands

31	Was amazing to be up close and see how big the giraffes head when it lent down to our level to feed
32	Feeling their little paws and claws as they walked on my lap was so cute
33	Seeing Bo up close & the information from the keeper
34	The muddy little meerkat footprint on my shoe
35	The texture was really different to what I expected After we finished washing the animal, she immediately went over to the dust and covered herself in it again
36	The conservation information given during the talk.
37	Touching their fur. And coming into the zoo during closed hours - 1hr before it opened
38	The red panda didnt want to leave, delaying our exit which was very entertaining.
39	The meerkat running across me and learning that the lifeflight rescue helicopter is their sworn enemy
40	Being able to hear the cheetahs purr
41	Getting up close to an otherwise inaccessible animal, purely being in their presence and being able to touch and speak to them
42	We got to see how these animals interacted with food around one another which I found very interesting, and we were offered to help feed them as well with the help of keepers observing us
43	Learning more about the animals and being able to be close
44	The lemur climbed onto my knee and held my hand to get its food
45	Feeding grapes to the red pandas
46	The ability to get up close and personal with the animals. The fact that they were so relaxed with us there, there wasn't any forcing the animals to do anything they didn't want to.
47	The education about the animal
48	Learning about conservation
49	Female in full cry after waking up and responding to the male
50	Seeing the animal up close and personal while respecting the animals nature and space
51	The kiwis came really close to where we were standing.
52	Getting to experience how kiwi just roam around in a (semi) natural habitat. They didn't really acknowledge we were there and just kept doing their own thing.
53	Having a meerkat stand on my knee was very cool
54	Getting to see the animal up close and feed it
55	Special lights slowly came on and a pair were right in front of us, less than a metre away and everyone was quiet and still so they stuck around. Magic!
56	The gentle nature of the lemurs, the fact that they chose to come over and interact with us
57	The meerkats would run on top of you and sit on your head
58	Great to meet the animal close and learn about them and what is happening to their natural environments and the risks to their populations in the wild.
59	Getting up close to animal previously only seen behind an enclosure.
60	The Kiwi were so close to us, it was amazing to get to just stand there and watch them grubbing around for their dinner less than a metre away from us.
61	Being up close with the cheetahs, they were relaxed around their keepers. Seeing the keepers interact with them and talk to us a bit more about the individual cats they care for as well as more general info about the species. Amazing to learn more and see them up close
62	the cheetahs purr so loud! and they eat vegemite
63	It was back when they did cheetah encounters so it was pretty cool
64	Meeting sundar, hearing about breeding
65	It was awesome in every way. I tell everyone about it

66	Being able to see my favourite animal up close, without being separated by fences or glass, was truly amazing. I was able to connect even more with this creature which really fuelled me to further continue my conservation efforts. I since gave up palm oil products and even spent two years volunteering at the zoo after this
67	Having them climb on us!
68	Seeing my favourite animal up close
69	The lemurs cute hands
70	Watching the animal's personality come out
71	The capybara enjoyed being scratched with a back scratcher so much that her hair stood on end and she closed her eyes and laid her head on my foot
72	I did a cheetah close encounter. Being within a meter of the cheetah and being able to feed it myself was amazing. You can't get that close to such amazing animals so to be that close was cool

Appendix VII

Response (N=59) for Q14: Please describe how the animal encounter added value to your day

	Data for Q14: Please describe how the animal encounter added value to your day
1	It furthered my knowledge on the species, allowed a physical interaction with the species and keepers let us know what the money being paid for the encounter was going towards in terms of conservation efforts
2	Was wonderful to get so close and learn about the capybara face to face.
3	I love animals and I don't know much about the New Zealand species of birds and wildlife. Being up close with one showed me how brilliant and lovely they are. I enjoyed interacting with the Kea
4	I love animals so it made me feel super connected; I am also interested in conservation so learnt a lot of things of interest to me
5	Touching animal gave me new perspective on importance of animal life
6	Getting up close to a usually dangerous animal was new and exciting
7	Felt like a once in a lifetime experience. I wanted to help protect the animal so others could experience it too
8	was a bit of fun
9	it was nice
10	It was such a unique experience being up close to animals that NZ doesn't have in the wild and learning more in-depth about their lifestyle and breeding and what they like/don't like - while also keeping the animals needs at the top e.g no patting the meerkats
11	Loved seeing them swim and enjoy their environment and go behind the scenes. It was an exciting day to spend quality time with hubby and capybaras.
12	Educatuon, and appreciation for meerkats
13	It was my birthday so it made my day and was a lovely treat!
14	It was a truly touching encounter and incredibly memorable. I definitely think about it when considering my attitude towards conservation education and the conservation of endangered species.
15	It was an amazing experience
16	Totally unique experience
17	It made the day more memorable & as if we were a part of the working zoo
18	I found out more about the conservation history and future plans, more detailed information about how consumerism impacts the environment of wild Red pandas and so much more than what's currently displayed. I found real value in the lesson and still think about the information and impact the encounter 12+ months on
19	I was a bit of a tag along for this encounter as a friend wanted to go for a birthday, but it added enjoyment just because I love being bear animals. It honestly would have been a good experience even if we just had a talk with the trainer.
20	Left a lovely memory and moment
21	Simply an incredible experience in every way
22	Met passionate keepers and learned about the lions at orana park
23	It was a fantastic experience that I had never had before so it positively impacted on my day
24	I enjoyed it a lot and gain useful insight and knowledge into the care and conservation of the species
25	It was nice to spend quality time with my mum and with the cute animals, it was so lovely to get up and close with the meerkats as they were so soft. It was an experience I will never forget
26	Made the zoo trip very memorable
27	It made me happy
28	Just to add - elephants shouldn't be kept in zoos.

29	I was 12 years old so I was super stoked to be able to do something like this.
30	Positive experience and message about conservation
31	Being that close with no barriers and being allowed to touch them was something I'll hold with me for a very long time
32	Fun, informative with one of my favorite species who normally is hard to view at the zoo, that made it particularly special
33	It was the highlight of a great day we went earlynin the day and the spent the rest of it walking around the rest of the zoo
34	Through awareness, knowledge, and joy
35	It gave me more appreciation to the animal that I would of never had beforehand
36	Got to be up close to a favourite animal of mine
37	Was an enjoyable, out of the norm experience
38	I love red pandas and it was amazing to see one up close
39	Best birthday present ever
40	I received valuable information about an animal I love and felt lucky enough to see one up close and comfortable around keepers and people in general, it was obvious that they were cared for well and happy
41	It was rememberal and very cool
42	To my day ...?? (Q needs some more work huh!) It added spiritual value to my identity as a New Zealander and to my over commitment to support conservation and the predator free goal by 2050
43	Spending time with my daughter seeing an animal that is wild and needs pretection!
44	It was a great experience
45	It was an enjoyable experience
46	Really exciting to be up close with such a unique animal
47	Learnt so much about them, felt happy knowing I was supporting the zoo and their efforts and was a very happy and memorable experience
48	The experience made me appreciate what amazing wildlife there is and what we would miss out on if this species were to become extinct
49	Unique experience and learned more than I would have off of signage.
50	It was so special to get to see a kiwi so close to us
51	Not many people would see these animals in person in their lifetime, I felt very privleged to see them and have the opportunity to learn from staff who dedicate their life to learning about and caring for them. I remember these cheetahs arriving at the zoo as cubs when I was younger, so it was special.
52	it was educational and fun!
53	Being able to touch a cheetah is wild
54	Made me happy, felt connected
55	I was so happy I didn't stop smiling. I still look back on the photos many years later. I even wore a handmade sweater with a red panda on it for my red panda encounter
56	Awesome to be able to experience animals in a way they were safe and happy. Easy to see they felt comfortable
57	It was a unique experience to see an animal up close and learn about it. You see things you never would have seen
58	It was the most enjoyable thing I did that day. That encounter is in my top two close encounters at the zoo
59	I left feeling happy I got the chance to go amd experience what I did

Appendix VIII

Responses (N=19) for Q22: Use the below space to write any other comments you wish to share with the researcher.

1	I did this encounter when I was 18, in my final year of high school.
2	was quite expensive, would have liked more time in the enclosure for the meerkats to become more comfortable around us, then resultingly walk over us etc more zookeeper knew a lot and was really nice
3	I do wonder if animals acclimatise to the Wellington weather when they are from tropical places or if being born in captivity in the zoo lessens the effects. I also feel sorry for the animals that should have a lot of room to roam and move/run around and donâ€™t e.g tigers, Lion and cheetahs. Also the tiger is by himself and cats are known to be social animals so worry for the well-being of animals who are alone in a small enclosure. Do the animals need stimulation and changes of scenery to help with brain development and reduce boredom/anxiety? Thatâ€™s one of my biggest concerns with Zoos
4	I felt we were guided how to treat the animal with respect well and didnâ€™t feel like an issue for the cabybara they seemed content. Thankful the encounter with such an animal is available.
5	After my encounter, I plan to return to the zoo for more with different animals, hoping that doing this will help the zoo support conservation efforts for these animals. But, personally, for me it is a source of great enjoyment and enlightenment to receive such an appreciation for these animals. Good luck with the study!
6	I believe supervised close encounters done with appropriate research, care and management are really important ways to teach the public about popular wild animals whilst also getting a check up in for them. I found real value in my encounter and speak about it often with friends
7	I also wanted to note why we didnâ€™t get a lot of information on the conservation side. The weather was terrible that day so I think the talk was cut a bit short because of that.
8	Currently volunteer at Wellington Zoo and also partake in work experience there
9	Yeah some of my answers may have been vague because I was 12 when I had the encounter and Auckland zoo doesnâ€™t have elephants anymore
10	I think these kinds of encounters are only appropriate with animals that pose minimal risk to guests (eg. Small mammals or herbivores) and only for animals that have been raised in captivity and as such are highly acclimatised to human handling
12	It was good
14	I did love my experience however I was somewhat disappointed with it as the animal spent most of the time about 2 meters away but I understood that the keepers couldnâ€™t force the animal to do anything and I was pleased that they didnâ€™t :)
15	Suggest you think about your end questions.
16	"Some what" is a some what satisfactory question... But is that really what you want coming before a extremely satisfying question?
17	I grew up in Wellington so trust the zoo and their motives in providing these experiences. I probably wouldn't do an encounter elsewhere without alot of research as I know not all zoos are as focussed on conservation. I know that Wellington Zoo staff value the animal's wellbeing over my own experience of the encounter, which is absolutely how it should be. I've done 4 encounters there over my life and each gives varying access/experience depending on the animal, which I think shows a lot of planning and forethought on the keepers part. Bit of a ramble but wanted to emphasize that the animal welfare and focus on conservation is what really seals the deal for me and wellington zoo's encounters!
18	I must emphasise that touching the animal was discouraged during my encounter and that they are not pets for entertainment but wild animals. We were allowed to feed the red panda (using gloves) and it was explained that the animals come and go at will and are not being forced by the keeper - there was a chance that the animal wouldn't be hungry and so wouldn't appear for the encounter and in that instance it would be rescheduled.

19	I have done 4 close encounters at Wellington zoo, and have based the survey answers off the most recent one.