WHAT'S WILDLIFE WORTH? ASSESSING THE RECREATIONAL, EDUCATIONAL AND CONSERVATION VALUE OF THE BC WILDLIFE PARK

by

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ABSTRACT

This thesis quantifies the non-market value of the BC Wildlife Park (BCWP) by evaluating its recreational, educational, and conservation benefits as perceived by visitors. As modern zoological parks increasingly prioritize environmental education and species recovery, understanding public support for these services is vital. To estimate this value, the study applies two economic valuation methods: the Individual Travel Cost Method (ITCM) to assess recreational benefits, and the Contingent Valuation Method (CVM) to measure visitors' willingness to pay (WTP) for key projects, including a new education centre and upgrades to the burrowing owl breeding facility.

A survey of 304 visitors was conducted in summer 2024, combining in-person and online responses. The ITCM used a negative binomial regression to model visitation rates as a function of travel cost and demographics. Estimated average consumer surplus per visit was CAD $84.79 [95% CI: $6.58, $163.01] for Kamloops residents and $41.91 [$31.54, $52.27] for non-locals. Aggregating these values over the park's estimated 100,000 annual visits, assuming a 50/50 split between local and non-local visitors, yields a total annual recreational value of approximately CAD $6.34 million.

The CVM employed a payment card format, and responses were analyzed using a regression model. Kamloops residents were willing to pay $28.34 [95% CI: $13.99, $42.69] for the new education centre and $63.90 [$35.53, $92.26] for conservation upgrades. Non-local Canadian residents were willing to pay $30.11 [$16.31, $43.91] and $34.41 [$22.21, $46.62], respectively. To estimate the broader fundraising potential, it is assumed that 25% of annual visitors are unique individuals willing to contribute a one-time donation. Under this assumption, and applying a 5% social discount rate, the present value of aggregated WTP is approximately CAD $10.88 million for the owl facility upgrades and CAD $2.64 million for the education centre.

Findings offer actionable insights into fundraising, pricing, and marketing, and demonstrate that public support for zoological parks and the services they provide substantially exceeds guests' out-of-pocket expenses. This study provides a replicable valuation framework for institutions seeking to align mission-driven goals with sustainable financial strategies.

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CHAPTER 1: INTRODUCTION

1.1 The Evolution of Zoos

Throughout history and up to the present day, zoological parks (hereinafter 'zoos') have evolved in their function and social roles. Zoos were once primarily designed as sites for public or private entertainment, where animals were kept in poor conditions with the goal of achieving economic profit or social status (Nekolný & Fialová, 2018; Sampaio et al., 2020). There has since been a paradigm shift in the role of modern zoos, moving away from a focus on entertainment towards a more conservation- and education-oriented approach with biological and taxonomical consideration for animal welfare (Powell & Watters, 2016; Sampaio et al., 2020).

Today, accreditation bodies exist to ensure that these institutions adhere to the highest standards of zoo operations. Organizations such as the international World Association of Zoos and Aquariums (WAZA), the Association of Zoos and Aquariums (AZA) in the United States, and Canada's Accredited Zoos and Aquariums (CAZA) are instrumental in setting and evaluating industry standards as well as fostering continuous improvement in zoo management (Loh at al., 2018; Kagan et al., 2018). Accreditation standards often include requirements related to conservation efforts, education programming, research programs, and animal welfare practices, encouraging zoos to prioritize these aspects in their operations (Loh et al., 2018). Accreditation may also shape guest perceptions, adding to public confidence and trust that zoos are having a positive impact on wildlife conservation (Warsaw & Sayers, 2020).

1.2 The Role of the Modern Zoo

Zoos are influential social entities that can shape how their guests perceive and interact with animals and the environment (Fraser & Switzer, 2021). As such, they can influence their visitors' attitudes, leading to a greater appreciation for wildlife and increased commitment to conservation (Fraser & Switzer, 2021). The social value of modern zoos is widely considered in the literature to fall into four categories: conservation, education, research, and recreation (Kleiman, 1985). Understanding each unit of value can provide a comprehensive insight into the social impact of modern zoos as pillars in today's society.

Conservation and education are fundamentally interconnected values in the mission of modern zoos. A content analysis of mission statements from AZA member institutions between 2004 and 2014 found that conservation education was the most common theme (Patrick & Caplow, 2018), highlighting that these values are typically intertwined in practice. Conservation programs are crucial for maintaining ecological balance, supporting ecosystem services, and protecting endangered species from extinction (Jacobson, 2010). Zoos have positively impacted wildlife conservation through initiatives such as captive breeding programs, reintroduction efforts, and public education (Jacobson, 2010). Research has shown that zoos help sustain viable populations of species at risk and restore dwindling wild populations through captive breeding and reintroduction (Conde et al., 2013). Additionally, zoos educate visitors about conservation issues, fostering positive emotional connections to animals and encouraging conservation-related actions in daily life (Skibins & Powell, 2013). By offering educational experiences and showcasing their conservation work, zoos can inspire individuals to support conservation efforts and make informed decisions to protect wildlife (Skibins & Powell, 2013).

Zoos play a significant role in advancing wildlife research which contributes to scientific knowledge, conservation efforts, and animal welfare practices. Many modern zoos function as research institutions that conduct studies on animal behavior, cognition, welfare, and conservation biology, thereby contributing to the advancement of species-specific knowledge and animal husbandry practices (Miller et al., 2013). Zoos offer unique research opportunities, providing access to a diverse range of species in controlled *ex situ* settings where their behaviours and some of their ecological interactions can be studied (Hopper, 2022). Furthermore, zoos play a vital role as study sites for research initiatives that inform enclosure design, welfare standards, and conservation strategies (Meehan et al., 2016), driving improvements in zoo operations.

Lastly, the recreational value of zoos is an important metric to study as recreation plays a significant role in society for numerous reasons. Recreation, and outdoor recreation specifically, provides individuals with opportunities for leisure, relaxation, and enjoyment, contributing to overall well-being and quality of life (Winter et al., 2019). Zoos serve as recreational spaces that offer opportunities for individuals to connect with wildlife, nature, and culture, providing enriching experiences for visitors of all ages (Rose & Riley, 2022). In

addition, recreational activities like zoo visits positively contribute to economic growth, tourism, and local development (Winter et al., 2019; Ezebilo, 2016), showing that the benefits of recreation sites extend outside the individual into society at large.

The social contributions of zoos through recreation, conservation, education, and research can have far-reaching impacts, beyond the facilities themselves. Zoos have been found to partner with conservancy groups and government programs to advocate for policy changes that promote pro-conservation behavior (Gusset & Dick, 2010). A study of *in situ* conservation projects revealed that an increasing number of zoo-affiliated programs were helping to improve the conservation status of species at risk around the world (Gusset & Dick, 2010). In addition, a study by Moss et al. (2014) found that guests exposed to information about biodiversity and taking conservation-focused action during a zoo visit showed significant change in their understanding of and likelihood to make choices that contribute to global biodiversity preservation, indicating the potential for zoos to indirectly contribute to global biodiversity protection targets.

1.3 Gaps in Knowledge

The benefits of zoos have been primarily described qualitatively in the literature, which may limit a work's potential to sway public opinion or influence public policy. Qualitative research approaches can nonetheless be effective - this type of research applied to environmental policy can provide insight into the role of individual human experiences and subjectivity in conservation and environmental decision-making (Fielding, 2019). Furthermore, qualitative evidence in general is increasingly being recognized for its role in informing environmental policy and management decisions, highlighting its growing importance in this field (Macura et al., 2019). On the other hand, quantitative research is more valuable for assessing the economic impacts and outcomes of policies (Slade et al., 2020). Economic considerations play a significant role in shaping conservation policies, as they help policymakers understand the private and social benefits and costs associated with different conservation approaches (Martinuzzi et al., 2015). By quantitatively studying the economic aspects of wildlife conservation, research can inform policymakers of the financial implications of conservation initiatives, help prioritize funding for conservation programs, and evaluate the economic sustainability of conservation efforts.

1.4 The Study Site: History of the BC Wildlife Park

This research takes place at the BC Wildlife Park (BCWP) is a non-profit, CAZA-accredited zoological park in Kamloops, British Columbia. The park was founded in 1965 by John Moelaert, who along with the Kamloops Chamber of Commerce felt that Kamloops was in need of more tourist attractions to benefit the local economy. (Moelaert, n.d.). The Greater Kamloops Zoological Society (later the Kamloops Wildlife Park Society) was soon registered under the Societies Act and the park was created on 106 acres of land donated by Molson Breweries (BC Wildlife Park, 2024a). Early in the park's existence, founder Moelaert coined its slogan "Conservation through Education" which remains to this day (Moelaert, n.d.). Over the decades, the BCWP has been involved in numerous projects aligning with the universal conservation, education, recreation, and research aims of modern zoos.

1.5 The BCWP Master Plan

In 2022, the BC Wildlife Park installed a sign in its main building and published a document on their website detailing the park's five-year master plan. The sign states:

> The plan outlines a combination of physical and operational improvements as well as an eco-friendly tourism accreditation initiative. Incomplete projects from the previous master plan plus new projects create a roster of improvements considered most needed at this time…Project costs range from one million plus to less than ten thousand allowing for progress to be made with minimal capital. (BC Wildlife Park, 2022).

The plan goes on to list twelve target items, notably consisting of several infrastructure upgrades to animal enclosures, the construction of a new education building, and the addition of new recreational attractions including an upgraded playground and a rubber-tire train (BC Wildlife Park, 2022). The items on the park's master plan can only be achieved if adequate funding is secured. The "implementation" section states:

> All of the 2022 Master Plan projects are considered a priority and will be advanced by management and staff on the basis of available funding with multiple projects in motion at one time throughout the implementation period. Higher budget items will require capital campaigns combining donations and available program funding while lower budget projects can proceed without external funding campaigns (BC Wildlife Park, 2022).

Given that the master plan will be relying on the profits made from park operations for many of the projects, it is imperative to maximize attendance and revenue. This research is intended to gain insight into the visitor experience to inform revenue-making strategies in the future.

Keeping in mind the conservation, education, recreation, and research values of modern zoos, this research will aim to assess the value guests place on different aspects of the park's master plan. In discussions with the park's general manager, he stated that two projects of high priority that have not yet been designated funding are the construction of a new education building and infrastructure improvements to the burrowing owl breeding site (personal communication, Jan 2024).

The master plan states that the education building will be a free standing 40,000 sq ft building intended to host education programming and occasional special events with the purpose of "[raising] the profile of the [BC Wildlife Park] environmental education department" (BC Wildlife Park, 2022). Naturally, this target lends itself to the educational value of the park as it will provide a designated space for public and private education programs and events with the intention of increasing the park's current capacity for education program delivery.

The enhancements to the burrowing owl breeding facility fall under the "Other Exhibit Relocation and Upgrades" item on the master plan, stating the purpose of "[upgrading] existing habitat as needed to continually improve exhibit conditions throughout the park on an ongoing basis as funding permits" (BC Wildlife Park, 2022). Upgrades to the breeding facility align with the conservation value of the park, as it will allow this renowned species reintroduction program to continue.

Discussions with the BC Wildlife Park's general manager also revealed a need to uncover the overall recreational value and demand for the park, which could help maximize admissions revenue to fund projects in the master plan such as the playground and train. His wishes for this research were to gain insights into guests' motivations for visiting the BCWP, and whether the BCWP was the sole reason for traveling or if they were visiting multiple destinations (personal communication, Jan 2024).

1.6 Research Questions

Based on the priorities of the BCWP's master plan and management, this research will be designed to answer the following questions:

1. **What is the recreational value of the BC Wildlife Park?**
2. **What are guests willing to pay for a new education centre at the BCWP?**
3. **What are guests willing to pay to support the BCWP's efforts in burrowing owl conservation?**

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CHAPTER 2: THE VALUATION OF RECREATIONAL SERVICES

2.1 Introduction

2.1.1 Recreational efforts of the BC Wildlife Park

Naturally, the BCWP is a recreational attraction in addition to being a site for conservation and education. The park's website advertises interactive displays, a playground and splash park, a farm animal petting area, animal demonstrations, a miniature train, a small restaurant, and a gift shop in addition to over 60 species of animals on display (BC Wildlife Park, 2024a). These attractions draw in individuals and families alike, and the park is listed as number two on Tripadvisor's list of "things to do in Kamloops" (Tripadvisor, 2024). Moreover, the park hosts numerous seasonal events such as an annual country concert, an Easter celebration, and "Wildlights," a holiday light display which brought in a record 28,090 guests over 23 nights during its 2023-2024 edition (BC Wildlife Park, 2024b; Kaisar, 2024). While seasonal events may bring in the highest attendance, the park remains open year-round and had over 108,000 ticket sales in 2023 with over 104,000 of those sales being redeemed (BC Wildlife Park, RocketRez [internal access only], May 15, 2024).

2.1.2 Valuation of Ecosystem Services

To measure the value of a zoo, it is crucial to consider the various benefits they offer and select valuation methods that align with the type of benefits being studied. The economic valuation of ecosystem services places monetary value on the benefits derived from ecosystems, reflecting the worth that society places on these natural resources and their protection (Fernández-Díaz et al., 2022). Ecosystem services valuation methods provide quantitative models for assessing the use and non-use values of ecosystems relative to humans, assigning a dollar value to natural services or abstract commodities which cannot be bought or sold (Costanza et al., 2017).

Economic valuation methods for ecosystem services are highly suitable for assessing the value of zoos due to the connection between zoos and the ecosystem through their environmental conservation, education, and recreation services. These services have economic implications beyond the market value of ticket and product sales which can be

quantified through valuation methods. By using economic valuation methods, the monetary worth of the services provided by zoos can be estimated, revealing the societal willingness to pay (WTP) for these services (Roslinda, 2019).

Willingness to pay (WTP) is crucial in ecosystem services valuation methods and should be considered when assessing the value of a zoo. WTP represents the maximum amount an individual is willing to pay for a specific good or service such as conservation initiatives, reflecting their preferences, priorities, and the perceived value they associate with the services provided by the study site (Bernath & Rochewitz, 2008). In the context of a zoo, understanding visitors' WTP provides insights into the value they place on the recreational, educational, and conservation services. By eliciting visitors' WTP through methods like contingent valuation or the travel cost method, the economic benefits derived from the zoo's services can be quantified and stakeholders can use this data for management decisions (Mamboleo & Adem, 2023).

2.1.3 The Individual Travel Cost Method (ITCM)

To assess the recreational value of the BCWP, this research will use the Individual Travel Cost Method (ITCM). This method originated from the foundational work of Harold Hotelling, who proposed an early version of the method in a 1947 letter as a potential means of valuing national parks (Shaw, 2005). It was conceived as a technique to estimate the economic value associated with recreational activities by considering visitors' travel costs, which are a significant component of the overall cost of outdoor recreation, particularly when sites have no entry fee. Since its inception, the ICTM has evolved into a widely recognized and valuable approach for measuring recreational value, with applications in various fields such as tourism, ecology, and economics (Shaw, 2005).

The ICTM can be applied to research the recreational value of sites including zoos. The ITCM requires the collection of specific information to be effective. Variables of interest include the number of trips made by an individual or group within a defined time frame, the distance traveled during a trip, the value of time used for travel, demographic details of individual travelers, and the mode of transportation (Leh et al., 2018). Put simply, the ITCM involves using individual travel cost data as a proxy for the monetary value of a tourist

location (Leh et al., 2018). This comprehensive data collection process is essential for accurate valuation using the ITCM.

Consumer surplus (CS) is a fundamental concept in economics and one of the key values calculated in studies using the ITCM. CS refers to the additional benefit or utility that consumers derive from a good or service beyond what they paid for it, revealed through the amount one is willing to pay for the service less what they actually paid (Lansdell & Gangadharan, 2003). In the context of recreational activities and tourism, CS plays a role in estimating the net economic value that visitors place on their destinations, as the net CS of a site is represented by the sum of all individual CSs (Lansdell & Gangadharan, 2003). In a study by Pirikiya et al. (2016), for example, the CS for a forest park was calculated at USD $12.53 (CAD $17.17) per visit, highlighting the economic value that visitors attributed to the recreational site. This value represents the difference between what visitors were willing to pay for the experience and the actual costs incurred, indicating the surplus satisfaction gained from the visit.

This research uses the ITCM to gather data on the travel costs guests incur to visit the BCWP, the frequency of their visits, and sociodemographic information about guests and their family or social groups. Put simply, the aim of using this method will be to reveal how the frequency of visits is affected by travel costs, controlling for socio-demographic variables. Examining past research using the ITCM can further inform trends, variables, or specific model design features to consider.

2.1.4 Literature Review of Past Travel Cost Research in Zoos

Zoos have not been researched extensively using the ITCM, but there are select instances where this or other travel cost methods (TCM) were used in valuation studies of zoos and similar facilities. Past research has yielded significant results, demonstrating this method's potential effectiveness for the proposed research.

Gabrielli et al. (2020) conducted TCM research of the Varginha Zoobotanical Park in Brazil. The researchers collected data through online questionnaires given to residents of the city of Varginha. The goal of the research was to obtain the local population's perception of the park's recreational use value. This research used the Zonal Travel Cost Method, however, estimating differences in consumption rates between different cities and regions of origin. CS

per family, per city of origin was calculated and the values ranged from the equivalent of $0.00 to CAD $4.08. The total CS across all families in all cities of origin was equivalent to CAD $305,485.57. Total Wish (TW) or total WTP for the entire study area was also estimated, and it was equivalent to CAD $2,467,162.08. The researchers expected that visitors from outside of the city were more likely to spend money in the park and visit less frequently, but the sample size was too small to make findings that are conclusive beyond a reasonable doubt, highlighting a limitation in the research design (Gabrielli et al., 2020).

Kumar et al. (2021) conducted TCM research at Assam State Zoo cum Botanical Garden to estimate the park's recreational value as a tourist attraction. The research considered the number of visitors, the revenue earned from ticket sales, revenue from parking fees, and revenue from guided tours over the previous four years. In addition, guests were surveyed through in-person interviews to reveal their total travel costs, their willingness to pay to access the park, and their socio-demographic information. The guests were then broken into zones according to their place of departure to assess the rate of visitation within each population. Results showed that the total CS across all guests was equivalent to CAD $18,880.49, and the average individual consumer surplus (ICS) was CAD $11.03. The total annual recreational value of the zoo was estimated to be equal to CAD $5,986,065.42. The research ultimately revealed that guests perceived the zoo's entry fee as too low, and they were willing to pay more. It also revealed that the total recreational value of the zoo was almost 20 times higher than its annual revenue (Kumar et al., 2012).

Kohsaka et al. (2016) conducted an ITCM-based study on the reasons why people visit zoos, specifically the Higashiyama Zoo in Nagoya, Japan. The research focused on CS, aiming to understand the value visitors gained beyond what they paid for. The study was particularly focused on the perceived value of recent renovations made at the zoo. In this study, the researchers employed the ITCM to estimate the recreational value associated with visiting the Higashiyama Zoo. By analyzing the costs visitors incurred to travel to the zoo, the study aimed to quantify the non-market monetary benefits derived from zoo tourism and recreation. The methodological approach involved assessing visitor preferences and behaviors to gain insights into the factors influencing zoo visitation. Through a negative binomial model, the researchers estimated the CS per visitor to be equivalent to CAD $39.00 and also predicted that the recent zoo renovations would have a positive influence on both

CS and frequency of visits, potentially increasing consumer surplus by as much as CAD $24.15. The researchers further stated that the research could be used to inform budgetary decision-making when planning renovations and other improvements requiring funding (Kohsaka et al., 2016).

A study by Rajkumar and Boopathi (2022) focused on assessing the recreational benefits of the Mudumalai Tiger Reserve in India using the ITCM. The research aimed to determine what factors influenced the demand for the tiger reserve and to estimate the recreational value of the reserve in economic terms. The researchers collected data on travel expenses, distance traveled, and sociodemographic information to estimate value. The results indicated that travel cost, respondent income, family size, gender, and site quality were the most significant determinants of recreational demand for the reserve. The research estimated the Individual Consumer Surplus (ICS) for each guest to be equivalent to CAD $2.05, which indicated that guests were willing to pay significantly more than the current entry fee which was equivalent to CAD $0.49. Further, the total annual recreational benefit of the reserve was estimated to be equivalent to CAD $1,875,477.35, a value that emphasizes the importance of the reserve's work in conservation as well as a need for future investment in the reserve (Rajkumar & Boopathi, 2022).

2.1.5 Strengths of the ITCM

The ITCM has been used for this research as opposed to other TCM models as it has been suggested by researchers such as Willis and Garrod (1991) that it produces a more accurate representation of CS. A study by these authors aimed to compare consumer surplus estimates derived by each method. While the ITCM focuses on individual experiences, the Clawson-Knetsch or zonal TCM model groups visitors into zones of origin and seeks to explain differences in demand between zones through the costs of travel (Willis & Garrod, 1991). The research found that the two methods produced significantly different estimates of consumer surplus but determined that the ITCM produced the more accurate estimate as its results most closely matched the results of Contingent Valuation Method (CVM) research conducted concurrently (Willis & Garrod (1991). The zonal TCM model is also not applicable to this research as the BCWP is located on the outskirts of the city of Kamloops, making it likely that the majority of visitors do not live in the same zone as the park.

Moreover, the ITCM is a valuable tool for measuring recreational value in the proposed research as it is based on revealed preferences and tangible measures of the value visitors place on a site. The data collected reveals the resources, money, and time visitors spend when engaging with a recreation site (Costanza et al., 2011). Rather than looking purely at attendance and entry fee revenue, the ICTM accounts for the overall experience of a guest visiting a recreation site and the costs they may have invested in getting there. By investigating the costs visitors are willing to bear to access a recreation site, we develop a more nuanced understanding of the economic benefits derived from the site's services (Costanza et al., 2011).

2.2 Methodology

2.2.1 Study Overview

This research aims to provide insight to BCWP management on the value guests place on the park's recreation services, while contributing to the small body of existing literature examining WTP for such services in zoos around the world. The research uses a quantitative design conducive to regression analysis typical of ICTM research (Lee et al., 2016). Data collection took place on the grounds of the BC Wildlife Park in Kamloops, British Columbia. The BCWP is located within city limits, "on the Trans Canada Highway, 15 minutes East of the Kamloops City Centre" (BC Wildlife Park, 2024c). The survey was open to participants during the months of August and September, 2024 and it was closed in October. Participants were recruited on park grounds and were given the option to complete a survey online or on paper. In the proceeding sections of this chapter, all dollar values are in Canadian currency (CAD $).

2.2.2 Participants and Sampling

A convenience sampling method was used for this research, in which the researcher approached BCWP guests while also having signs displayed around the park in locations such as entrance and exit doors, seating areas, animal exhibits, and bathrooms. This method was the most suitable for the limited timeline of this research as convenience sampling allows for quick and efficient data collection from a diverse group of park guests without the

need for extensive planning or resources (Ruhaized et al., 2023). Guests approached by the researcher were given an informational card stating the purpose of the research and providing them with a QR code and URL to complete the survey at their own convenience. They were also given the option to fill out a physical copy of the survey on-site, though only one participant opted for this. Moreover, signage was displayed to inform and attract participants to enhance the effectiveness of the convenience sampling method. The signage provided similar information to the card given to guests throughout the park and stated the purpose of the research along with a QR code and URL to direct participants to the survey. For the online version of the survey, a post was made on the BCWP's Instagram and Facebook pages describing the research and inviting those who had visited the park within the past year to fill out the survey.

Convenience sampling was chosen as the most accessible method for the given timeline, but it does come with limitations. One of the primary limitations is the inherent selection bias. Participants are not randomly selected but are chosen based on availability and willingness to participate while visiting the park. It is possible that individuals who visit the park during the summer may differ significantly in demographics or motivations from those who visit during other seasons, potentially skewing the results (Speak et al., 2018). As such, we acknowledge that the presented results of this research are a product of the time and place of data collection and may not be generalizable to the entire visitor population of the BCWP.

2.2.3 Materials and Equipment

Materials and equipment needed for this research were minimal due to the nature of quantitative social survey research. The survey was created in SurveyMonkey using an account provided by Thompson Rivers University. Participants were to use their personal phones or computers to complete the survey, and they had the option to fill it out on paper if technology was a limiting factor to their participation. Laminated paper signs were displayed throughout the park to inform and recruit participants, and small cards were given to guests to inform them on the research project and direct them to the survey. Microsoft Excel was used to organize the data and prepare it for statistical analysis, and Stata was used to conduct the statistical calculations and produce the models included in part 2.3.

2.2.4 Survey Design

To estimate the recreational value of the BCWP, the ITCM has been used in the survey design and data analysis. This survey encompasses a wide range of factors that contribute to visitors' experiences and interactions with the BCWP. The survey is divided into three sections, each with a specific function.

Section 1: General Questions about Park Amenities and Visits

The initial section of the survey attempts to capture visitors' perspectives on conservation, education, research, and recreational activities at the park. It also assesses the respondents' level of satisfaction with the current amenities offered within the park. Furthermore, visitors are queried regarding the frequency of visits to the park and their preferred season to visit, with particular emphasis on the "Wildlights" holiday event. The purpose of this section is to collect up-to-date information on the current behaviour and preferences of visitors.

Section 2: Visitation Rate and Travel Costs and Time (Exposed Preferences)

The second part of the survey is designed to gather information about the respondents' travel costs. The survey includes inquiries regarding the duration of the guests' journey to the park and of their visit to the park, and the method of transportation used. This section also asks respondents about their spending behaviours including frequency of visits, the type of ticket purchased to enter the park, and how much money they spent on souvenirs. The objective of this section is to assess the cost of using the park for recreational purposes.

Section 3: The Importance of the BC Wildlife Park

The recreational survey was combined with the survey for the conservation and education portions of this research. This section was not used in the recreational study.

Section 4: Socio-Demographic Questions

The last segment of the survey gathers socio-demographic data specific to each participant. The data helps provide insights into how various socio-demographic

characteristics may influence park usage and it is important to include in the regression analysis.

2.2.5 Data Collection Procedure

Prior to data collection, procedures were followed in adherence to the requirements of the Master of Science program at Thompson Rivers University. A research proposal was presented to a thesis committee as well as to the school's Research Ethics Board (REB). The proposal was approved by the thesis committee and the REB approved the ethics application. The REB determined that the research was low-risk and gave approval for data collection to begin. The proposal was submitted in July 2024 and the ethics approval was granted in August 2024.

Data collection actively took place at the BCWP and online through the Park's social media channels in August and September of 2024, though the surveys remained open until October to give participants a chance to complete it on their own time. In-person, guests were approached at various locations throughout the park, particularly at high-traffic areas such as near the exit, near the train station, at the playground, and near popular animal exhibits such as the Kermode bear (*Ursus americanus kermodei*). Some guests were also approached while gathered at educational talks around the park and events such as birthday parties. Guests were required to be 16 years of age or older to participate in the survey. Interested guests were given a card to link them to the online survey. Guests also had the opportunity to be recruited for the study via signs placed around the park near seating areas, animal exhibits, the train station, the playground, entrance and exit doors, and the bathrooms. Information cards were available for interested guests to take at the admission desk and gift shop as well. The survey typically took around eight minutes for guests to complete. 220 in-person responses were collected in total, with 82% of those participants completing the survey in its entirety. The online survey garnered 82 responses, with a 64% completion rate.

The introductory page of the survey provided guests with information on the purpose of the research as well as information about consent. They were informed that their participation would be anonymous and that no identifying information would be collected. It was also stated on this page that once the participant had submitted the survey, their data could not be withdrawn due to the anonymous nature of the survey. Participants were asked

to click on a checkbox to indicate their consent to participate, and those who clicked the non-consenting checkbox were disqualified from completing the rest of the survey. No incentives were offered for participation in the survey.

2.3 Design and Data Preparation

2.3.1 Experimental Design

To calculate the CS per individual per visit, we are employing a count regression model known as the negative binomial model. This model is useful for analyzing over-dispersed data, as demonstrated by previous studies (Englin & Shonkwiler, 1995). Expanding on the methodology described by M'antymaa et al. (2021), the demand curve for visits to the BCWP is defined using an exponential function:

$$V_i = e^{\beta_0+\beta_1 Cost_i+\gamma X_i+\varepsilon_i}$$

The variable V_i represents the number of visits made by an individual i. The variable "Cost" represents the unavoidable expenses related to travel. The costs consist of the entrance fee to the park, any souvenir the individual purchased, and the cost of travel time to and from the park. The coefficient β_1 shows the impact an increase in the cost has on the number of visits the individual makes. One would expect that the higher the cost of visiting the park, the lower the number of visits, hence $\beta_1 < 0$. The matrix X_i controls for the respondent's socio-economic attributes including gender, age, family size, children, income, education level, and description of residence (urban/rural), and γ represents the assumed parameters affecting the number of visits of an individual based on a change in their socio-economic attributes. In addition, information as to whether the trip to the BCWP is the individual's final destination or if it is a trip with multi-purposes is controlled. Finally, ε_i is a random error term that is specific to the individual's idiosyncratic characteristics assumed to be independently and identically distributed with a mean of zero and a constant variance.

During the summer months many visitors are from outside Kamloops and their demand based on visits and CS will differ from locals that visit the park. To capture this differentiation in the estimation we created a dummy variable $KAM_i = 0$ if the participant is not a local resident and 1 if they are a local resident. We also split costs into the entrance fee

plus souvenirs purchased, Fee_i, and the cost of traveling to and from the park, labelled TC_i. Hence the estimation of the negative binomial regression becomes:

$$AV_i = e^{\beta_0+\beta_1 Fee_i+\beta_2 Fee_i KAM_i+\beta_3 TC_i+\beta_4 TC_i KAM_i+\gamma X_i+\varepsilon_i}$$

We will calculate the CS per visit by using the following formula as suggested by Hellerstein and Mendelsohn (1993) and Englin and Shonkwiler (1995). For visitors not local to Kamloops, CS is:

$$\frac{CS}{AV}|_{KAM=0} = -\frac{1}{\beta_1+\beta_3}$$

For locals, CS is:

$$\frac{CS}{AV}|_{KAM=1} = -\frac{1}{\beta_1+\beta_2+\beta_3+\beta_4}$$

For a detailed derivation of this formula, please refer to Appendix II.

2.3.2 Data Preparation

The complete set of raw data was downloaded from SurveyMonkey as a Microsoft Excel file. We first went through the dataset to screen for completeness and accuracy. Responses that were too incomplete to be used were deleted, such as those missing key dependent and independent variables such as frequency of visits, travel time, or socio-demographic variables. We decided to exclude responses that indicated very large group size as they were outliers with more complicated travel costs than smaller groups. These large groups were likely reported by visitors from bus tours or school groups, and since we have no way of knowing how those respondents individually contributed to the costs of travel, we decided to delete those responses. Finally, we removed entries that seemed to be associated with birthday parties, as the costs for booking a birthday party at the BCWP are not consistent with the costs of a regular visit and therefore could not easily be included in the analysis in a truly representative way. Some other outliers were deleted, such as a response that indicated traveling 20 hours to visit the BCWP, and a response that indicated travel by taxi, as there were simply no other responses like these and therefore, they were not accurate representations of the rest of the dataset. Upon deleting the unusable entries, we were left with 217 responses to use in the analysis when the in-person and online data were combined.

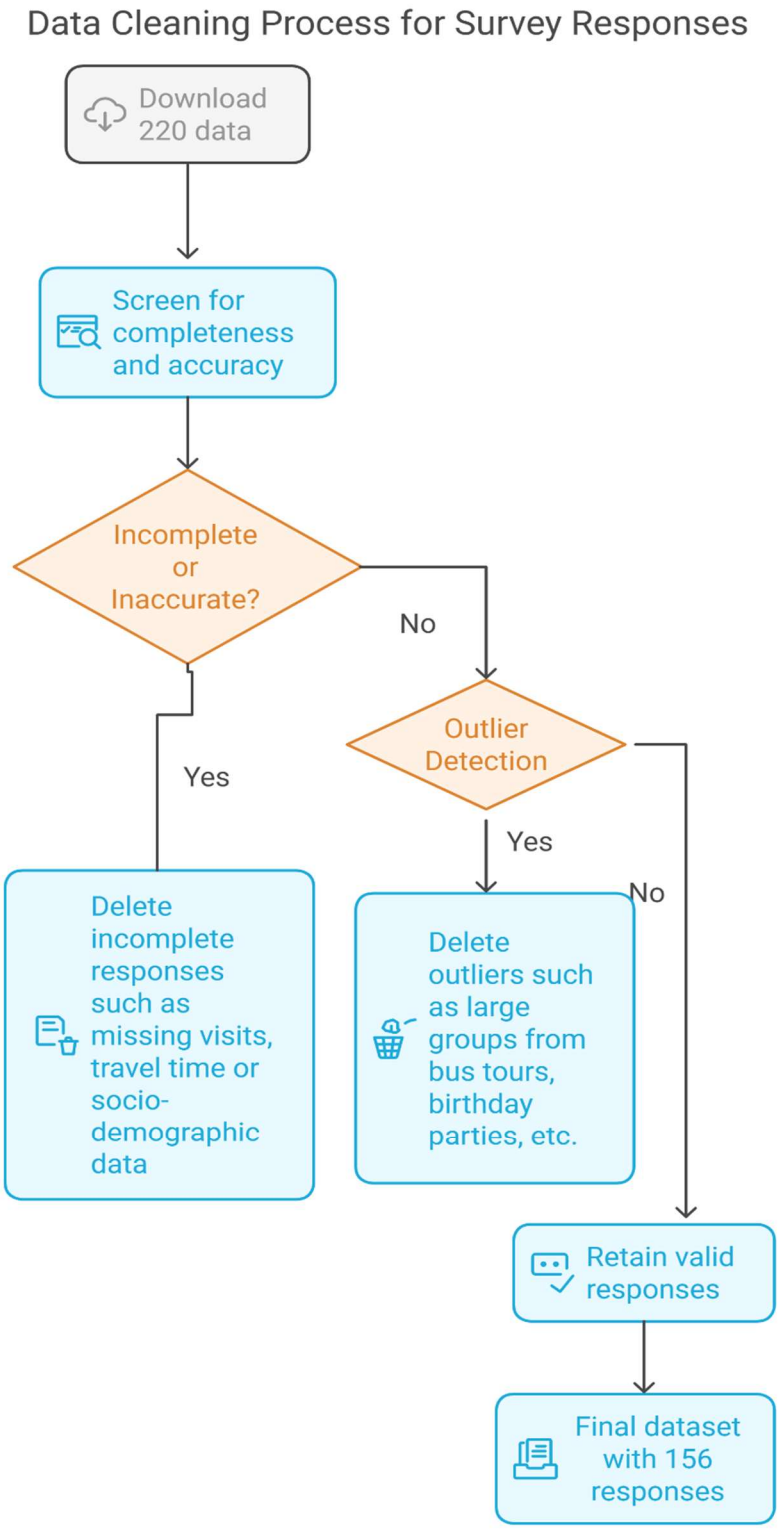

Figure 1: *Data cleaning process for in-person data, produced (Napkin AI)*

After removing unusable data, some of the categories of data needed to be re-formatted in a way that was conducive to the regression analysis. The Excel file was duplicated so changes could be made without corrupting the original dataset should we need to return to it. Yes-no questions and other two-category questions were converted into dummy variables, so new columns were created in the spreadsheet for the re-formatted data.

The survey asked guests to indicate their average annual household income within a set of predefined categories. For the regression analysis, we decided to simplify the income data into "low," "mid," and "high" income categories. Low income was defined as $40,000 or less, mid income was $40,001 to $100,000, and high income was above $100,000. Three new data columns were created for income levels as dummy variables, with each respondent getting a "1" in the category to which they belong and a "0" in the others. Respondents were not directly asked about their costs of travel in the survey, so the data provided needed to be combined to estimate travel costs. In the data analysis process, we realized we had made an error in the survey design in that we did not ask participants to indicate how far they had travelled to reach the BCWP, we only asked them how long it took. This meant that there was an extra step in calculation required to estimate the respondents' travel time. We used the travel time in hours and multiplied it by the highway speed of 100 km per hour to estimate the distance travelled since access to the BCWP is mainly via highway.

Next, the distance travelled needed to be multiplied by the cost of fuel to estimate the travel cost. Gas prices were assumed at $1.72 and diesel at $1.64 based on British Columbia gas prices as of December 2024 (BCUC, 2024). Hybrid vehicle gas price was assumed to be one half of the normal gas price, and electric vehicle gas prices were assumed to be $0. We assigned fuel economy values for different types of cars, generalizing based on Natural Resources Canada's *2024 Fuel Consumption Guide* (Natural Resources Canada, 2024). These values were 9 L/100 km for cars, 15 L/100 km for SUVs, 11 L/100 km for minivans, and 15 L/100 km for trucks. Diesel fuel economy was assigned as 5 L/100 km. We calculated the cost of fuel as follows:

$$P_g = distance \times fuel\ price\ per\ L \times L/km$$

In which P_g represents the price of fuel. The fuel price was then divided by the number of adults in the group, representing the cost being shared among adults in the vehicle. Finally, the fuel price was multiplied by two to represent a two-way trip.

The final value is the out-of-pocket travel cost for the respondent. The opportunity cost of travel for the survey respondent was also calculated and included in the analysis. We assigned a midpoint to each wage category and calculated an estimated wage rate based on these values. The low annual income category was set at $30,000, mid income at $70,000, and high income at $140,000. The hourly wage rate was calculated with the following equation for a single adult household since we asked for household income:

$$w_i = \frac{Household\ Income_i}{Annual\ hours\ of\ work}$$

In the case of two or more adult households, we divided the household income by two to get the effective wage rate. We assumed the time spent working in a year, determined to be 1,750 hours, based on 35 hours of work for 50 weeks a year. The result of this exercise resulted in the following hourly wage rates capturing opportunity cost of travel time:

Table 1: *Effective wage rate for opportunity cost of travel time*

	Effective wage rate for low household income	Effective wage rate for middle household income	Effective age rate of high household income
1 Adult	$17.14 per hour	$40 per hour	$80 per hour
2 Adults or more	$8.57 per hour	$20 per hour	$40 per hour

The resulting wage rates were multiplied by the number of hours spent traveling two ways. Similarly, we calculated the opportunity cost of time spent in the park, but at a lower wage rate than the opportunity cost of travel. We assumed that many people visiting the park were likely visiting on their days off of work, or on vacation time that was not used exclusively for their visit to the park. Therefore, in the visitor's mind they would not be directly giving up time working and earning wages in order to visit the BCWP.

Lastly, to determine the overall cost of the visit to the BCWP for the survey respondent, we had to consider the cost of bringing children. We assumed that the adults in the group would be paying for the children in their group as well as for themselves. We determined the cost of admission for a respondent with the following equation:

$$Cost = (Cost\ of\ all\ adults + Cost\ of\ all\ children) \div Number\ of\ adults$$

In making the calculation, if the respondent indicated they paid with a day pass we assumed this of the whole group, and if they paid with an annual pass, we assumed this of the whole group.

2.4 Results

2.4.1 Descriptive Analysis

There were 102 locals and 115 non-locals that were used in the sample. Figure 2 shows the distribution of the entrance fee and souvenirs purchased by locals and non-locals. On average, locals reported lower costs to enter the park, as confirmed in Table 2.

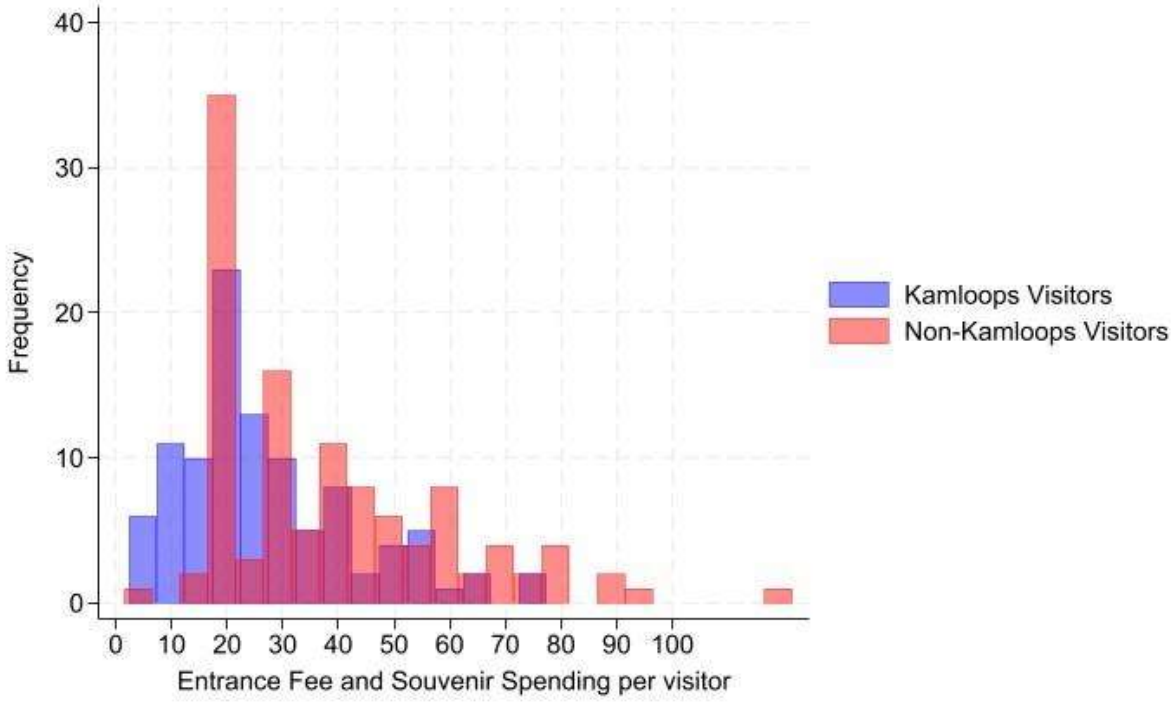

Figure 2: *Frequency of entrance fee and souvenir spending*

Figure 3 shows the distribution of travel costs, both fuel and opportunity cost of travel time. The distribution is positively skewed but the average costs seem to be greater for non-locals relative to locals, which is confirmed in Table 2. Two outliers with exceedingly high travel costs were recorded, with one being a local visitor and one a non-local. The outliers

were retained in the dataset as, due to the small sample size, we could not confidently say that they are true outliers falling outside of an observable trend.

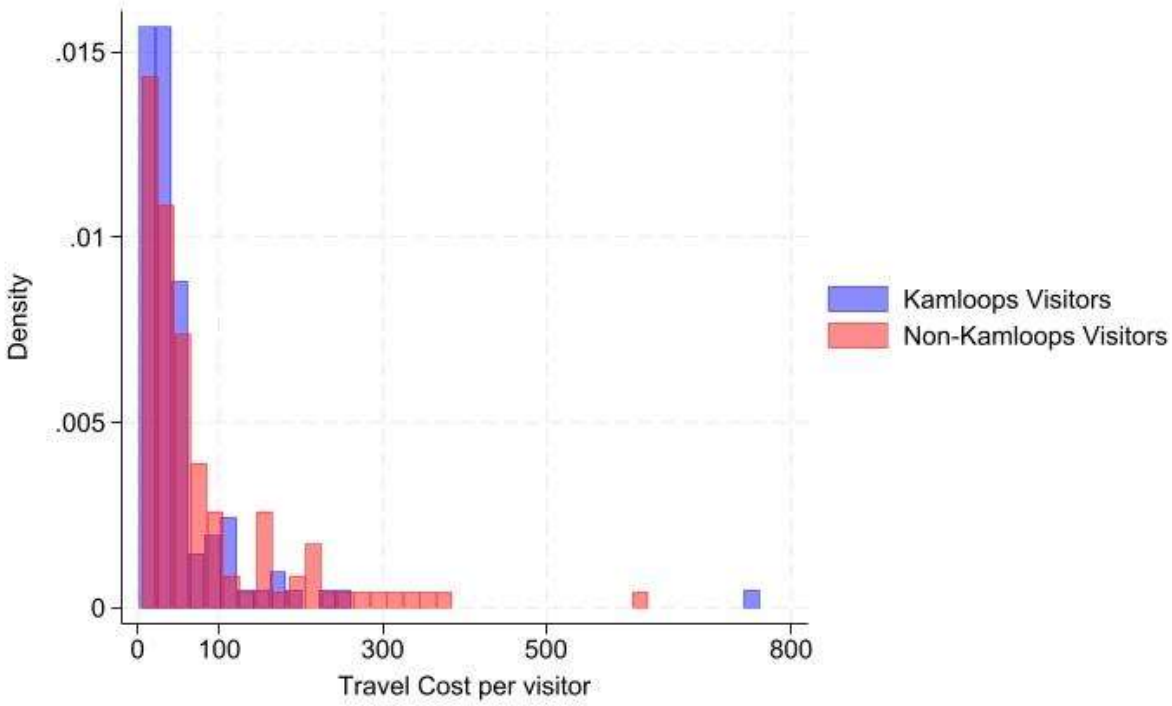

Figure 3: *Distribution of Travel Costs*

Table 2 compares the travel costs and entrance fee expenditures between local and non-local visitors to the BCWP. The average travel cost for locals was $53.40 (SD = $84.44), lower than the $81.27 (SD = $96.34) reported by non-locals. This difference of -$27.87 was statistically significant ($p = 0.024$), indicating that travel costs were, on average, higher for non-locals than locals.

In addition, there was a significant difference in entrance fees and souvenir spending between locals and non-locals. Locals spent an average of $27.04 (SD = $15.80), while non-locals spent $39.04 (SD = $20.88). The difference of -$12 was statistically significant ($p < 0.0001$), suggesting that non-local visitors consistently spend more on entrance fees and souvenirs when compared to locals. These findings highlight that total costs are higher for

non-locals than locals, which we assume should be represented in a lower CS for non-locals relative to locals.

***Table 2**: Comparing costs of visitation between locals and non-local visitors*

Sample	Obs	Mean	StDev	SE Mean	T-Value	P-Value
Travel cost locals	102	$53.40	84.44	8.40		
Travel cost non-locals	115	$81.27	96.34	9.00		
Difference		-$27.87			-2.27	0.024
Entrance fee and souvenir for locals		$27.04	15.75	1.60		
Entrance fee and souvenir for non-locals		$39.04	20.88	1.19		
Difference		-$12.00			-4.81	P < 0.0001

Table 3 presents the summary statistics of variables influencing the number of visits to the BCWP. On average, individuals made 3 visits (SD = 3.71), indicating considerable variability in visitation patterns. Locals made more visits than non-locals on average.

The combined costs of entrance fees and souvenir purchases averaged $33.40 (SD = $19.55), while the opportunity cost of travel time was notably higher, with a mean of $68.17 (SD = $91.97). Approximately 47% of visitors were residents of Kamloops, with their associated entrance fees and souvenir expenses averaging $27.04 (SD = $15.75), compared to $39.04 (SD = $20.88) for non-local visitors. The travel cost for local visitors averaged $53.40 (SD = $84.84), lower than that of non-locals at $81.27 (SD = $96.34). Around 55% of visitors identified the BCWP as their primary destination on their current trip, while 39% reported purchasing souvenirs during their visit. A large majority (74%) held a day pass. In terms of perceived recreational benefits, visitors rated the park an average of 3.00 on a 5-point scale (SD = 0.99), indicating moderate recreational satisfaction. Regarding household

income, 41% of visitors fell within the middle-income bracket ($40,000–$100,000), and 47% reported incomes exceeding $100,000, reflecting a relatively affluent visitor base.

Table 3: *Summary statistics of the variables influencing visits*

Variable	Symbol	Description	Mean	SD
Visits from locals and non-locals				
Visits	V (#)	Number of visits made by an individual	2.99	3.71
Visits by locals		Number of visits by a local	4.82	4.71
Visits by non-locals		Number of visits by a non-local	1.36	0.90
Costs summary				
Fee + souvenir	Fee ($)	Entrance fee and souvenir purchases	33.40	19.55
Travel cost	TC ($)	Opportunity cost of travel time in CAD $	68.17	91.97
Kamloops visitors' fees	Fee*KAM ($)	Entrance fee and souvenir purchases from Kamloops residents	27.04	15.75
Outside visitors' fee	Fee*(1-KAM)	Entrance fee and souvenir purchases from outside visitors	39.04	20.88
Kamloops visitors travel cost	TC*KAM ($)	Opportunity cost of travel time in CAD $ for Kamloops visitors	53.40	84.84
Outside visitors travel cost	TC*KAM ($)	Opportunity cost of travel time in CAD $ for Kamloops visitors	81.27	96.34
Control factors				
Primary destination	PRIM (%)	Dummy for BCWP primary destination visitor	0.55	0.50
Purchase souvenir	SOUVD (%)	Dummy if purchased souvenir	0.39	0.49

Day pass	PASS (%)	Dummy with day pass	0.74	0.44
Recreational benefits	RECBEN (Scale 1-5)	Perception of recreational benefits of park	3.00	0.99
Middle income	MIDINC (%)	Dummy for household income between 40-100K	0.41	0.49
High income	HIGHINC (%)	Dummy for household income higher than 100K	0..47	0.50
Kamloops responses	KAM (%)	Kamloops residents	0.47	0.50

2.4.2 Negative Binomial Regression Results

Table 4 presents the results of the negative binomial regression examining the determinants of visit frequency to the BCWP. The overall model is statistically significant (Wald test $\chi^2(10) = 356.51$, $p < 0.0001$), with a pseudo R^2 of 0.21, indicating a reasonable explanatory power. The overdispersion parameter (alpha = 0.10, $p < 0.0001$) justifies the use of the negative binomial regression over the Poisson model. Additionally, the Wald test for joint significance of the interaction terms ($\chi^2(2) = 43.92$, $p < 0.0001$) confirms that cost factors affect local and non-local visitors differently. For non-local visitors, higher entrance fees and souvenir purchases significantly reduce the number of visits ($\beta = -0.0226$, $p < 0.0001$), as do travel costs ($\beta = -0.0013$, $p = 0.009$). The interaction terms for locals reflect the difference in cost sensitivity between locals and non-locals.

While the coefficients for local visitors are still negative, they are less negative than those for non-locals, indicating that Kamloops residents are less sensitive to these costs. For entrance fees and souvenirs, the interaction coefficient ($\beta = 0.0091$, $p = 0.081$) suggests that while costs still negatively impact local visitors, the effect is less severe than for non-locals. The overall effect for local visitors would be -0.0266 + 0.0091 = -0.0175, implying a smaller reduction in visits compared to non-locals from a fee increase. For travel costs, the interaction coefficient ($\beta = 0.003$, $p < 0.0001$) significantly offsets the negative impact of travel costs on non-locals. The overall effect for local visitors becomes -0.0013 + 0.003 = 0.0017, meaning that, unlike non-locals, higher travel costs correlate with an increase in visits among locals. This could reflect factors such as a higher opportunity cost of travel time

being valued and part of the experience. Other significant factors influencing visits include recreational benefits ($\beta = 0.1065$, $p < 0.029$), which positively affect visit frequency, and souvenir purchases ($\beta = 0.4834$, $p < 0.0001$), suggesting that more engaged visitors tend to visit more often. Holding a day pass negatively affects visits ($\beta = -0.6315$, $p < 0.0001$), indicating that those purchasing single-day access visit less frequently. Additionally, higher household income levels are associated with increased visits, with significant effects for those earning $40,000–$100,000 ($\beta = 0.4300$, $p < 0.0001$) and over $100,000 ($\beta = 0.4019$, $p = 0.005$) relative to low-income households. In summary, the analysis reveals that non-locals are more sensitive to both travel costs and entrance fees than local visitors. While costs still negatively influence visits among local visitors, the effects are less pronounced, highlighting the importance of proximity and familiarity in shaping visitation behaviour.

Table 4: *Negative Binomial Regression Results*

Dependent variable	Visits			
Observations	203.00			
Wald test χ^2 (10)	356.51			
p-value	0.00			
Pseudo R^2	0.21			
Overdispersion: Alpha	0.10			
Likelihood-ratio test Alpha = 0	23.25			
p-value	0.00			
Variables	Coefficient	Robust Std. Error	P>|z|	Level of Significance
Constant	0.9439	0.2065	0.0000	***
Entrance fee and souvenir spending by non-locals	-0.0226	0.0030	0.0000	***
Entrance fee and souvenir spending by locals	0.0091	0.0052	0.0810	*
Travel costs by non-locals	-0.0013	0.0005	0.0090	***
Travel costs by locals	0.0030	0.0006	0.0000	***
Recreational benefits	0.1065	0.0488	0.0290	**
Souvenir purchase	0.4834	0.1354	0.0000	***
Primary destination	0.1984	0.1760	0.2600	
Day pass	-0.6315	0.0915	0.0000	***
Household income 40-100K	0.4300	0.1137	0.0000	***
Household income 100K plus	0.4019	0.1415	0.0050	***

*Note: *** significant at 1%, ** at 5% and * at 10%. Evidence that there is overdispersion in that the variance is greater than the mean and hence Negative Binomial is preferred to Poisson regression. Testing for the joint significance of interaction terms of costs by locals yields a p-value less than 0.0001 for the Wald test $\chi^2(2) = 43.92$ and as a result the cost factors affect Kamloops and non-Kamloops visitors differently.*

Table 5 presents the estimated CS for both local and non-local visitors to the BCWP. The results reveal a statistically significant CS for non-local visitors, estimated at $41.91 (SE = 5.29, $p < 0.0001$), with a 95% confidence interval ranging from $31.54 to $52.27. This indicates that non-local visitors derive substantial net benefits from their visits, likely due to the value they place on the park experience relative to the costs incurred. In contrast, the estimated CS for local visitors is higher at $84.79 ($p = 0.034$) but with a wide confidence interval ranging from $6.58 to $163.01. The broad range suggests considerable variability in how locals perceive the value of their visits, potentially influenced by factors such as more frequent but shorter visits or differing opportunity costs. The difference in CS between the two groups is estimated at -42.89 (SE = 37.89), but this difference is not statistically significant ($p = 0.258$). Despite non-locals appearing to derive a lower CS than Kamloops visitors, the large standard error and lack of statistical significance imply that the observed difference could be due to random variability. However, it is more likely that locals have a higher CS with a 75% CI [-0.69, 86.47]. Overall, while non-local visitors clearly derive meaningful consumer surplus from their visits, the findings for locals are less definitive, suggesting the need for further investigation into factors contributing to variability in their perceived value of the park experience.

***Table 5**: Consumer Surplus of the two groups*

Group	Consumer Surplus	Std. Error	P>|z|		95% CI Lower	95% CI Upper
Non-Kamloops Visitors	41.91	5.29	0.0000	***	31.54	52.27
Kamloops Visitors	84.79	39.91	0.0340	**	6.58	163.01
Difference (Kamloops – Non Kamloops)	42.89	37.88	0.2580		-31.36	117.14

*Note: *** significant at 1%, ** at 5% and * at 10%.*

2.5 Discussion and Conclusion

2.5.1 Key Findings

The analysis of the BCWP's recreational value through the ITCM has yielded insightful conclusions regarding visitor profiles, spending patterns, and consumer surplus. The results highlight the complex relationships between socio-demographic factors, travel costs, and visitation frequencies among local and non-local visitors.

Firstly, the results indicate a significant disparity between local and non-local visitors, particularly regarding their travel costs and overall spending. The average travel costs, including both fuel and opportunity costs of time, were markedly higher for non-locals at $81.27 compared to $53.40 for locals. The difference in spending between locals and non-locals was statistically significant according to the analysis ($p = 0.024$). Similarly, spending on entrance fees and souvenirs was significantly greater among non-locals, which aligns with previously established findings regarding visitor spending behaviours related to travel distance and spending (Kruger et al., 2012; Downward & Lumsdon, 2000). Such disparities show the importance of considering visitor demographics in economic assessments, as different groups exhibit varying sensitivities to price changes, thereby affecting overall CS estimation.

CS calculations reveal particularly striking differences between the two visitor segments. Non-locals exhibited a consumer surplus estimated at $41.91, while locals reported a notably higher consumer surplus of $84.79. This aligns with findings presented by Mwebaze and MacLeod (2013), who assessed marine park visitor behaviours using similar methodologies determining that proximity to recreational sites allows locals to derive greater perceived benefits, translating into higher CS measurements. However, our confidence intervals indicate considerable variability in the locals' perceived value, suggesting that factors such as visit frequency and opportunity costs diverge significantly within this group (Harjanti et al., 2024). Despite the higher consumer surplus for locals, the lack of statistical significance in the difference between local and non-local CS ($p = 0.258$) highlights the variability in the data, further underpinning the need for more comprehensive exploratory research into local visitor attitudes towards the park experience (Zulpikar et al., 2018).

Moreover, the analysis underscores the role of socio-economic factors in influencing visit frequency. The positive correlation between household income and visitation frequency suggests that wealthier visitors are more likely to visit the park, aligning with existing literature on the impact of income on tourism participation (Rahmini et al., 2022; Brida et al., 2013). This establishes a clear linkage between economic capability and visitor engagement levels, emphasizing how socio-economic status serves as a determinant of recreation site visits and could restrict the potential for growth in the visitor base (Li et al., 2019).

2.5.2 Practical Applications

The results from the recreational study of the BCWP can be used in strategic planning to maximize revenue and visitation. Several recommendations can be drawn from the results. Potential strategies could involve tailoring pricing structures according to demographics, enhancing visitor experiences through upgraded exhibits and amenities, and expanding marketing efforts to include both local and non-local populations. Socio-demographic insights gathered through the research can also be considered in the strategy.

i. Pricing Strategies and Fee Adjustments

Given that non-local visitors demonstrated a higher sensitivity to entrance fees and travel costs, a tiered pricing strategy could be advantageous for the BCWP to attract and

maintain a broader visitor base. For example, offering discounts for locals could incentivize more frequent visits among a demographic who already displays a tendency to visit multiple times, in turn increasing revenue and visitation over time as well as associated potential for additional spending on souvenirs and upgraded experiences with each visit. To cater to non-locals who are more sensitive to changes in cost, bundled family or group pricing structures could potentially offset some of the costs for those guests and encourage more non-local groups to visit. Additionally, implementing off-peak pricing might encourage visitation during traditionally slower periods, thus balancing attendance and maximizing overall revenue. The park's current low-season rate for adults is $20.00 and the high-season rate is $21.00 (BCWP, 2024c)—a difference of only $1.00. A larger gap between the low- and high-season pricing could create more appeal to visit in the low season. The park could also consider adjusting their opening hours on school days to encourage off-peak season visitation. The park is currently open from 9:30 a.m. to 4:00 p.m. in March and April and 9:30 a.m. to 5:00 p.m. in May and June (BCWP, 2024c), which gives little time for after-school visits. Shifting the hours slightly later would give families with school-aged children the opportunity to visit the park after school hours.

ii. Enhanced Visitor Experience and Park Features

The findings suggest a correlation between perceived recreational benefits, souvenir purchases, and visit frequency, hinting at a relationship between visitor engagement and enjoyment. From these results we can surmise that enhancing the visitor experience through new attractions or upgraded amenities could increase overall satisfaction and, in turn, visitation.

Past research on zoo visitor motives by Klenosky and Saunders (2007) found that recreational factors such as child- and family-friendly activities and exhibits as well as a variety of activities and exhibits heavily impacted the quality of the visitor experience. As such, the BCWP should consider investing in new attractions or improving existing infrastructure, such as the construction of a new playground and new animal exhibits as proposed in the Master Plan (BCWP, 2022) to improve the recreational environment. Play areas or interactive exhibits designed for families can create compelling reasons for repeat visits. Furthermore, events such as seasonal celebrations, educational offerings, and the

presence of tour guides or interpreters can provide additional value and promote return visits, as past evidence has shown that visitor benefits including recreation as well as educational and social opportunities are important to guests for creating a positive zoo experience (Klenosky & Saunders, 2007).

iii. Targeted Marketing Campaigns

The analysis illustrates variation in visitation patterns between local and non-local visitors, highlighting distinct demographics that the BCWP can leverage in marketing efforts. Development of tailored marketing campaigns focusing on non-locals, emphasizing the attractions that are unique to the BCWP and not found anywhere else in the area. For example, the BCWP is home to the only white Kermode bear (*Ursus americanus kermodei*) in any zoo in the world, an American badger (*Taxidea taxus*) which is highly endangered in British Columbia and an uncommon sight in zoos and in the wild, a pair of endangered Przewalski's horses (*Equus ferus przewalskii*) which are not found in any other zoo in the province, and several burrowing owls which act as ambassadors for the breeding program (BCWP, 2025a). Utilizing social media and geotargeted advertisements to promote unique attractions may further enhance reach and engagement in other cities or other countries and capitalize on non-local visitation and spending (Roult et al., 2016). The park could further profit from its unique animals and attractions by offering related products in its gift shop, which may be of particular interest to non-locals.

iv. Leveraging Socio-Economic Insights

With a significant portion of visitors reporting higher family incomes, targeted offerings could cater to this demographic, such as premium experiences (e.g., behind-the-scenes tours, special animal encounters) that allow for unique engagement at a higher cost. The BCWP previously offered "VIP Experiences" in which guests could join park zookeepers in restricted areas of the park for closer animal encounters or animal feedings, but these experiences have since been discontinued (BCWP, 2025b). Families with children are particularly valuable, and targeting marketing efforts at this group with tailored experiences that emphasize educational benefits can help maximize revenue and foster repeat visitation.

2.5.3 Limitations

There are several limitations that must be addressed with the research and results, including the limited time frame, small sample size, and some oversights in survey design.

i. Scope and Generalizability

This research was conducted at a single zoological park during a single summer season, which may limit the generalizability of the findings to other zoos or even to the BCWP itself across all seasons. The sample size was also quite small, with 217 usable survey responses. With an annual visitation of around 100,000 (BC Wildlife Park, RocketRez [internal access only], February 26, 2025), the sample size is representative of approximately 0.0015% of guests in one year. Additionally, the in-person survey, which sampled guests who were at the park in the summer of 2024, generated responses from guests who had all visited during peak season. A sample of guests who disproportionately visited the park during the summer months may provide an over-representation of a positive recreational experience, as guests who visit in the off-peak season in colder weather would not have access to all of the park amenities including the splash park, possibly the playground, and some animal exhibits including the bears who are off-display in winter for their denning season. On the other hand, the in-person survey did not reach guests who visit for off-season special events such as the Wildlights holiday light display or the Easter celebration. These events then were less likely to be included in respondents' overall assessments of their recreational experiences at the park unless they were frequent visitors. Lastly, the research sampled only the opinions of individuals who had visited the BCWP, and not of those who do not visit but may have opinions on why they choose not to visit. This could be considered a limitation in that guests who have a negative or disinterested opinion of the park or who cannot afford to go to the park are not represented. However, the nature of the ITCM is to consider only those who are actively using the study site, while different travel cost methods such as the Zonal Travel Cost Method may consider individuals who do not visit the site (Willis & Garrod, 1991).

The scope and generalizability limitations could be corrected or addressed in future research by running a longer-term survey for the duration of an entire year or more. A long-term study would ensure that guests visiting the park at all times of the year are sampled and

would likely lead to an increased sample size. Having a larger team of researchers collecting data or training BCWP staff to promote the survey to guests would also help raise awareness of the study to recruit participants. Ultimately, the nature of a voluntary survey without the offer of compensation relies on guests' personal motivations to participate and will likely attract a somewhat biased sample as a result (Carter & Siddiki, 2019). It would also be valuable to replicate the survey at other zoological parks to investigate trends that may occur across institutions.

ii. Survey Design Limitations

A significant limitation in the survey design was the absence of a question on distance traveled. Distance traveled is an important variable for calculating travel costs in the ITCM as gas mileage is part of total travel costs. We included a question on travel time but neglected to include travel distance. We corrected for this error by estimating travel distance using travel time and an arbitrary average speed. However, depending on the speed limits and adherence to those speed limits throughout a respondent's trip, our estimations could be inaccurate. Conversely, given the trends found in the results, with travel costs being significantly higher for non-locals than for locals, it is unlikely that our estimations are inaccurate to the point of weighing heavily on the results.

iii. Analytical Limitations

The use of the negative binomial regression model, as with any statistical model, comes with inherent limitations. One prominent limitation is that the negative binomial model assumes that the response variable follows a negative binomial distribution and is primarily characterized by overdispersion. If the actual underlying distribution breaks this assumption, for instance, if count data exhibits an irregular dispersion pattern, then the results generated from a negative binomial regression can become biased or inconsistent (Zhou et al., 2014; Setayawan et al. 2022). This misalignment could lead to erroneous conclusions about the relationships between independent and dependent variables—in our case, primarily travel cost and the frequency of visits.

Another limitation is the potential for multicollinearity among predictor variables or overlapping influence among independent variables (Koç & Koç, 2023). In this research,

there could be multicollinearity between certain sociodemographic variables such as level of education and income. When highly correlated variables are included in the model, the individual contribution of each variable may be unclear, complicating the interpretability of the results (Koç & Koç, 2023).

A critique of ITCM studies using negative binomial regression models is the lack of zeroes in the data, as the model only accounts for data from research participants who were present at the study site, potentially introducing biases in the results (Bhaskar et al. 2023). A lack of zeroes can compromise the assumptions underlying negative binomial regression, which is intended to model count data that exhibits overdispersion. If zero counts are absent, it can affect the estimation of regression coefficients because the model may not adequately reflect the population characteristics (Hu et al. 2011; Bandyopadhyay et al., 2011). Zero-truncated negative binomial regression is an alternative model that could be considered for further data analysis. Zero-truncation can be used to manage count data where zeroes are not observed and conditions the statistical model on the data including positive integers only (Yehia, 2021).

iv. Uncertainty with Multiple Destinations

The survey design and mathematical model used in this research do not account for how visiting multiple destinations within a trip may affect guests' CS. The model assumes that each visitor's travel cost reflects the value of visiting the BCWP alone, while many visitors—especially non-locals—likely include the park as one stop among multiple attractions during a regional trip. This would make the BCWP a complementary service rather than a standalone one. In such cases, the total travel cost attributed to the park would be overstated, which would cause an over-estimation of CS for non-locals because only a portion of their travel and opportunity costs are truly associated with their BCWP visit. Mendelsohn et al. (1992) noted that traditional approaches to the ITCM often arbitrarily allocate trip costs among different destinations, which can lead to an inflated perception of CS at any single site within a multi-destination journey. To correct for this limitation somewhat, guests in the survey were asked to report only the travel details for the current day, rather than their entire journey from their home. We also asked guests to indicate whether or not the BCWP was their primary destination on their trip, which proved to be a

statistically insignificant determinant of visit frequency, though we did not ask how many destinations in total they were visiting.

Conversely, local visitors may face the opposite bias. As locals presumably have access to substitute recreational sites within Kamloops without being bound to a travel itinerary, their measured demand may be somewhat lower than if the BCWP were the only option. Their easier access to outdoor or educational recreation elsewhere may affect their WTP for a visit specifically to the BCWP. This means that locals would be actively choosing the BCWP over alternative sites and their CS could be underestimated. Alqahtani (2025) supported this assertion by analyzing visitor patterns at recreational sites and found that when alternatives are available, the demand for the primary site typically becomes less elastic, as local users do not perceive the primary location's value as being significantly higher than that of substitutes. However, given that the findings revealed that locals are less sensitive to price changes than non-locals, the BCWP may be perceived by locals as a unique enough attraction within Kamloops that other parks or museums are not considered as true alternatives.

2.5.4 Future Research

To build on the research of the recreational value of the BCWP, several avenues for future study could enhance our understanding of visitor engagement with zoological parks. These future studies could help provide a more comprehensive assessment of factors influencing recreational value and visitor behaviour, ultimately contributing to park management strategies.

i. Comparative analysis of visitor engagement across zoological parks

Future studies could compare the recreational data collected at the BCWP with data collected at other zoos should the study be replicated elsewhere. Comparing the data could reveal the strengths and weaknesses of different institutions and provide valuable insight on how they could improve by learning from one another.

ii. Longitudinal studies on visitor behaviour

Implementing a longitudinal approach to track changes in visitor behaviour and spending patterns over time, particularly in response to newly implemented amenities or exhibits, could yield valuable insights. Such studies could emulate the approach of Zandi et al. (2018), who examined travel costs in relation to visitation patterns at a forestry park over an extended period. Such studies could allow for insight on how future improvements and changes to the BCWP affect visitor satisfaction and engagement. Conversely, a longitudinal study could also be conducted to track visitor response to a change more likely perceived as negative, such as a price increase.

Chapter 2 References

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CHAPTER 3: CONSERVATION AND EDUCATION ASSESSMENT

3.1 Introduction

3.1.1 Conservation Efforts at the BCWP

The BCWP has been recognized for a multitude of conservation efforts. The facility operates the Fawcett Family Wildlife Health Centre, the only full-service wildlife rehabilitation centre in British Columbia's Southern Interior, caring for small mammals, birds, reptiles, and amphibians, with over 400 animals admitted annually (BC Wildlife Park, 2024a). The Fawcett Family Wildlife Health Centre is funded by park admissions and donations and is permitted to release suitably rehabilitated animals back into their natural environment in coordination with the Ministry of Forests, Land, Natural Resources, Operations, and Rural Developments (BC Wildlife Park, 2024a). The BC Wildlife Park is also involved in a Species Survival Plan program for Przewalski's horses, housing a potential breeding pair of this endangered species (BC Wildlife Park, 2025).

The BC Wildlife Park's most highly acclaimed conservation initiative is its Burrowing Owl Captive Breeding Program. In partnership with the Burrowing Owl Conservation society, the BC Wildlife Park has been operating the world's largest burrowing owl breeding program since 1992 (BC Wildlife Park, 2024b). Burrowing owls are an endangered species in British Columbia and were declared extirpated in the 1980s (Blood & Low, 1998). After several translocation attempts to bring burrowing owls back to British Columbia were unsuccessful, a captive breeding program was established. This breeding facility and two others in the province aim to release 100 owls into the wild each year, using soft-release cages—or temporary holding pens—to introduce and acclimate the owls to artificial burrows on private ranches, local Indigenous lands, conservancy groups, and provincial and federal properties in the Nicola Valley, Kamloops and the South Okanagan (BC Wildlife Park, 2024b). The BC Wildlife Park's website states, "the goal of this Species Survival Plan is to achieve a stable and return population of this migratory owl, improve their natural habitat, and educate the public to prevent further habitat loss within British Columbia's grasslands" (BC Wildlife Park, 2024b). Since 1991, the three captive breeding

facilities in British Columbia have released over 1800 owls, over 2600 owls have been born in the wild, and burrowing owls are reportedly beginning to return from migration in stable numbers (BC Wildlife Park, 2024b).

3.1.2 Educational Efforts at the BCWP

The BC Wildlife Park claims that education is fundamental to its mission and philosophy, and it provides numerous opportunities for guests and the wider community to learn about a variety of wildlife and biodiversity topics. The park offers a selection of educational programs designed to complement the BC Curriculum Guide for all grade levels from kindergarten through high school, including in-house education sessions, off-site outreach programs, virtual programming, and free online learning resources (BC Wildlife Park, 2024c). Additionally, the park provides interpretive signage and displays, animal encounters, guided tours, children's day camps, worksheets, and demonstrations by educators and zookeepers to engage visitors and promote conservation awareness (BC Wildlife Park, 2024c).

3.1.3 The Contingent Valuation Method

To assess the conservation and educational values of the BCWP, this research uses the contingent valuation method (CVM). The CVM is a widely used approach to estimate the economic value of ecosystem services which involves directly asking individuals about their maximum WTP or their willingness to accept (WTA) a payment or other form of compensation, for the preservation or improvement of a particular ecosystem service. Through surveys of participants' stated preferences on hypothetical scenarios related to specific ecosystem services, CVM research can quantify the non-market value of these services (Loomis et al., 2000).

Studies have shown that the CVM is effective in valuing ecosystem services that do not have a market price, such as the non-use values of water and forest ecosystem services (Gürlük, 2006). It has also been used to prioritize protection measures for wetlands (Li et al., 2015) and estimate the economic benefits of habitat restoration in reducing disease risk (Morlando et al., 2011). Furthermore, the CVM has been employed to assess the willingness

of firms to invest in water-related ecosystem services (Mulatu et al., 2015) and to measure the economic value of green walls for urban biodiversity (Collins et al., 2017).

In this research, the CVM has been used to assess guests' WTP for improvements to the burrowing owl breeding facility and the new education centre - two of the items from the BCWP's Master Plan. Calculating WTP for these projects will reveal the value guests place on the conservation and education services offered by the BCWP and inform future financial decision-making.

3.1.4 Literature Review of Past Contingent Valuation Research in Zoos

As is the case with ITCM research, minimal research has been conducted in the past using the CVM to study the value of zoos. However, existing studies, while limited, have had significant enough results to demonstrate the effectiveness of the CVM to meet the goals of this proposed research.

In a case study at the Sepilok Orangutan Rehabilitation Centre in Borneo, Malaysia, Musa and Darman (2022) conducted visitor surveys to assess both local and international guests' willingness to pay for orangutan rehabilitation and conservation. The maximum amount respondents were willing to pay was the equivalent of CAD $4.87, with a mean WTP of CAD $2.12. Additionally, the estimated annual economic value of the rehabilitation centre was equal to approximately CAD $2.8 million, while the estimated conservation value was CAD ~ $28.2 million. The study demonstrates the potential benefit of using economic valuation to assist conservation projects and threatened species, and the authors argue that their valuation approach could draw policymakers' attention to wildlife conservation and raise community awareness (Musa & Darman, 2022).

A study of the Kemaman Zoo and Recreation Park in Terengganu, Malaysia by Kamaludin et al. (2021) also used the CVM to assess WTP for orangutan conservation. The researchers issued a questionnaire to guests which detailed a scenario about hypothetically making financial contributions to the zoo's orangutan trust fund. The results revealed that the majority of visitors believed that conservation is a government responsibility rather than a public responsibility, but a significant number of guests were nonetheless willing to contribute to the trust fund. It was estimated that these visitors were willing to nearly double the entrance fee to the park if it would contribute to orangutan conservation. Further, the

researchers hoped that by inviting the public to participate in endangered species conservation, this could provide some economic rationale leading toward policy changes (Kamaludin et al., 2021).

Research conducted by Bal and Jena (2014) at the Bhitarakanika National Park and accompanying wildlife sanctuary in Odisha, India sought to estimate visitor WTP in order to determine new entrance fees to increase park revenue. Survey data was collected and analyzed using multiple regression methods and ultimately revealed that the majority of visitors were willing to increase their entry fee to contribute to improving the national park, with a mean WTP equaling CAD $0.65 per person. The total WTP for the 400 respondents surveyed was equal to CAD $260.33, which was significantly higher than their actual spendings on admissions, valued at CAD $131.31. This indicated a CS equal to CAD $129.01. Based on the survey results, the researchers proposed doubling the entrance fee for the majority of guests, but based on demographic information, they proposed a discounted rate for youth, seniors, and possibly low-income households. Overall, the research revealed significant public support for the betterment of the national park and animal sanctuary, and the authors hoped that the research could be used to implement fee changes (Bal & Jena, 2014).

Adetola et al. (2016) conducted research using the CVM at the University of Ibadan Zoological Garden in Nigeria. The research was interested in guests' WTP for captive wildlife tourism, and the researchers gathered guests' sociodemographic information as well as information on their levels of satisfaction with their visit in order to reveal the determinants of higher WTP. The research found that 89% of visitors felt that an entrance fee should be paid to visit the zoo, but 52% of visitors were not satisfied with what the zoo was providing at its current entrance fee. The results showed that 70% of the respondents would be willing to pay higher fees to visit the zoo if those funds went toward improving the zoo's facilities and conservation strategies. Visitor satisfaction was found to have the highest influence on WTP, followed by increased knowledge about the resident wildlife. The research showed that, while visitors may not have been satisfied with current zoo operations, they were personally invested enough in the zoo's mission to be willing to pay for improvements (Adetola et al., 2016).

3.1.5 Strengths of the CVM

The CVM offers several advantages for valuing ecosystem services, including services offered by zoos. One key advantage of the CVM is its participatory approach, involving stakeholders from the general public in the valuation process by presenting them with hypothetical scenarios they can see themselves in (Brooks et al., 2014). This participatory aspect has the potential to be particularly effective in communicating the value of a project with policymakers and funders to justify and negotiate investments in the projects being studied, as it shows the commitment that the general public is willing to make to support the project alongside them (Ferreira et al., 2017).

Furthermore, the CVM is an advantageous method for measuring guests' WTP for conservation and education services at the BCWP because it is unique in its ability to measure both use and non-use values of ecosystem services (An et al., 2024). As was revealed in the aforementioned zoo research by Adetola et al. (2016), guests were willing to pay for the zoo's conservation initiatives even if they were not satisfied by their visit. This implies that the guests at a zoo place value on more than just the personal utility gained from their visit to a zoo, they value the contribution of the zoo to a greater good, such as wildlife conservation.

In this research, when guests were asked about their WTP for improvements to the burrowing owl breeding facility and the creation of a new education centre, these are services that they will not necessarily benefit from personally, but they may still value their potential contributions to conservation and education.

3.2 Methods

3.2.1 Study Overview

The goal of this section of the research is to reveal park guests' WTP for improvements to the burrowing owl breeding program and for a new education centre. As of the time of data collection, these two proposed projects were hypothetical, so they must be studied separately from the recreation study in the previous chapter. That earlier chapter employed revealed preference methods, surveying guests on their personal experiences with visiting the BCWP. This section instead uses stated preferences, which are particularly

effective when the options presented do not yet exist, making it impossible for individuals to reveal their preferences through previously made choices (Cárdenas & Lew, 2016). Moreover, the burrowing owl breeding site is not on public display to guests, and the current education classroom area is only available to private bookings, further supporting the use of stated rather than revealed preferences.

Data collection for the conservation and education study took place concurrently with the recreation study and used a unified survey. The survey was administered both in-person at the BCWP and online through the park's Facebook and Instagram accounts. Participants were recruited from August to September 2024, with the survey remaining open until October. Those approached on-site could complete the survey either online or on paper, while those reached via social media completed it online only.

All dollar values in the following sections of this chapter will be in Canadian currency (CAD $).

3.2.2 Participants and Sampling

This study employed a convenience sampling approach, where the researcher directly engaged with visitors at the BC Wildlife Park and placed signage throughout key locations such as entrances, exits, seating areas, animal exhibits, and restrooms. This method was chosen due to its efficiency and suitability within the restricted research timeframe, enabling barrier-free access to a diverse range of park guests (Ruhaized et al., 2023). Visitors approached by the researcher received an information card outlining the study's purpose, along with a QR code and URL linking to the online survey. While they also had the option to complete a paper survey on-site, only one participant chose this method. To further boost participation, informative signs displaying the same study details, QR code, and URL were strategically placed around the park. A link to an online version of the survey was also shared on the BCWP's Facebook and Instagram pages along with details about the research. The posts invited those who had visited the BCWP within the past year to participate in the survey.

Although convenience sampling was the most practical option, it carries limitations—chiefly, the risk of selection bias. Participants were not randomly chosen but selected based on availability and willingness to participate, which may make the study overly

representative of individuals who have strong opinions about the content of the survey, whether positive or negative. The in-person survey also provided a sample of guests visiting all in the same season, which could have an impact on their opinions of the park. Furthermore, the sample could consist of a particular demographic that visits during the summer but not in any other season, and could be missing demographics that do not visit in summer, potentially biasing the study's findings in favour of the summer demographic (Speak et al., 2018). Consequently, results should be interpreted within the context of this specific sample and time period and may not fully reflect the broader BCWP visitor population.

3.2.3 Materials and Equipment

Materials and equipment were limited for this section of the research. A survey was created in SurveyMonkey and it included both the recreational study from Chapter 2 and this conservation and education study. The SurveyMonkey account was provided by Thompson Rivers University. The only equipment participants needed were their personal phones or computers as well as an internet connection, though in-person participants had the option to complete the survey on paper if they preferred. Throughout the park, laminated paper signs advertised the study and included QR codes for guests to scan to access the survey. Small cards were given out to in-person participants to provide information on the study as well as the QR code needed to access the survey so they could fill it out during or after their visit. The survey data was downloaded from SurveyMonkey and organized in Microsoft Excel. The cleaned data was analyzed in Stata, producing the models and results.

3.2.4 Data Collection Procedure

Before beginning data collection, all necessary steps were taken in accordance with the Master of Science program requirements at Thompson Rivers University. A research proposal was submitted first to the thesis committee and then to the university's Research Ethics Board (REB) in July 2024. REB classified the project as low-risk, granting ethics approval in August 2024.

Data collection was carried out both on-site at the BC Wildlife Park and online via the park's social media platforms during August and September 2024. To give guests a

chance to complete the survey on their own time, the survey remained open until October. On-site recruitment occurred in high-traffic areas such as the park exit, train station, playground, and popular animal exhibits like the Kermode bear. Additional engagement took place during educational presentations and birthday parties. Eligibility was limited to individuals aged 16 and older. Interested guests received paper handouts with a QR code directing them to the online survey, while signage throughout the park—at locations such as seating areas, exhibits, restrooms, entrances, and exits—also encouraged participation. Information cards were additionally made available at the admissions desk and gift shop. The survey took participants an average of eight minutes to complete

3.3 Design and Data Preparation

3.3.1 Survey Design

The survey's introductory page outlined the study's purpose and included a consent statement. Participants were assured of their anonymity in the data collection and the completed work, but they were informed that, due to the lack of identifying information, data could not be withdrawn after submission. Consent was confirmed by selecting a checkbox; those who opted out were unable to proceed. No incentives were provided for participating.

To estimate guests' WTP for the planned conservation and education projects at the BCWP, the CVM has been used in the survey design and data analysis. The questions relevant to this CVM study were included in the same survey as the questions from the ITCM study from Chapter 2. This survey covers some background information to inform participants of the purpose of the proposed conservation and education projects, guests' WTP to contribute to those projects, and socio-demographic information. It is organized into distinct sections, each designed to serve a specific purpose.

Section 1: General Questions about Park Amenities and Visits

The first section of the survey aims to gather insights into visitors' views on the park's conservation, education, research, and recreational efforts. It also evaluates their satisfaction with existing amenities. Additionally, it explores how often guests visit the park and their preferred visiting season, with a specific focus on the popular "Wildlights" holiday

event. This section is designed to provide current data on visitor behaviour and attitudes towards the park.

Section 2: Visitation Rate and Travel Costs and Time (Exposed Preferences)

The conservation and education survey were combined with the recreational survey from Chapter 2. This section was not used in the conservation and education study.

Section 3: The Importance of the BC Wildlife Park

The third section of the survey provides guests with a statement on the benefits of the BCWP with respect to conservation, education, and social and cultural impact. Participants are then asked to indicate their level of awareness of these benefits prior to reading the statement. The survey then details the BCWP's Master Plan and future projects, specifically the proposed upgrades to the burrowing owl breeding facility and construction of a new education centre. Participants are asked to rank how important they feel each of the projects is, and which one they believe should be prioritized over the other.

"Which of these projects would you prefer to fund first?"
☐ Educational Building
☐ Burrowing Owl Site

Finally, the participants are asked if they would consider making a one-time donation towards their project of choice.

"Would you be open to considering a non-committal donation in the future to help support this project?"
☐ Yes
☐ No

If they respond "yes," they are asked how much money they would donate and from what type of personal budget they would be redirecting these funds.

"What is the **maximum your household would be willing to donate**…(please keep in mind that any money donated will leave less money for other household expenses)?"

☐ $5

☐ $10

☐ $25

☐ $50

☐ $100

☐ $200

☐ Other

"If you were to donate money, where would the money come from to pay the donation?"

☐ Money spent on non-essential food items (candy, snacks...)

☐ Money donated to charities

☐ Money spent on holidays or entertainment

☐ Money being saved

This two-stage structure allowed for project prioritization and conditional donation decisions. Additional follow-up questions asked about donation motivation, budget source, and if applicable, reasons for refusing to donate. This structure helped distinguish between true zero WTP and protest responses which reflected an opposition to the presented method of soliciting donations from guests rather than the projects in question.

Section 4: Socio-Demographic Questions

The final section of the survey collects socio-demographic information from each participant. This data offers valuable insight into how different demographic factors may affect opinions of the park and is useful for supporting the regression analysis and identifying independent variables.

3.3.2 Data Preparation

The raw data was downloaded in excel from SurveyMonkey to be prepared for the regression analysis. A total of 221 in-person responses were gathered while the online version received 83 responses. We went through the survey entries and removed any that were incomplete. This left us with 189 Face-to-Face handouts and 65 online responses for the CV study for a total of 254 observations. The most relevant to this section of the research were the questions about whether the respondent prioritizes the education centre or the breeding facility upgrades more, whether the respondent is willing to pay a donation to support their chosen project, why they would or would not donate to support their chosen project, and their income levels. These variables as well as other less important variables were all kept in the spreadsheet, while all other irrelevant variables were removed. This preparation resulted in 230 observations of which 169 were handed out at the BCWP and 61 were from online. The reduction from 254 observations to 230 is because 24 responders did not reveal their household income level.

3.3.3 Protest Votes and Foreign Respondents

To maintain the integrity of the willingness-to-pay (WTP) estimates, protest responses—cases where a zero WTP reflects objection to the payment vehicle rather than true valuation—were identified and removed from the primary analysis. Respondents who indicated that they would not be willing to contribute were asked to select the most important reason for their refusal from the following list:

"Listed below are some possible reasons why you **would not** be willing to donate. Which of the following is the most important?"

☐ Income/financial situation of my household

☐ The current facilities are sufficient

☐ I think the municipality should pay for the projects through increased property taxes

☐ It is not fair to expect my household to have to pay the higher cost for new developments

☐ Other (please specify)

Responses citing either of the following were treated as protest votes: “The municipality should pay through taxes” and “It is not fair to expect my household to pay.” These objections target the legitimacy or fairness of the payment mechanism rather than the value of the projects themselves. There were 12 responders that fell into this category.

One approach to analyzing the zero WTP responses is to exclude them from WTP regression analysis to avoid introducing downward bias. An alternative approach to deal with protest votes is to use the Heckman selection model to correct for selection bias. The Heckman two-step procedure retains the protest respondents in the estimation process while correcting for the fact that the observed WTP values come from a non-random sample (i.e., only those who are willing to pay or did not protest).

Additionally, responses in the “Other” category were reviewed and found to be exclusively from foreign (non-Canadian) respondents. There were 19 international visitors. These individuals often indicated that they were not permanent residents or taxpayers in Canada, and as such did not consider themselves appropriate contributors to domestic conservation funding. They reported zero altruism and zero WTP for either conservation project. Including them would have skewed the regression estimates, particularly for the altruism variable, and reduced the explanatory power of the model. Since the study aims to inform domestic policy and funding decisions, the analysis was restricted to Canadian respondents, for whom the results are more meaningful and reliable.

Finally, respondents who selected “income/financial situation” or “the current facilities are sufficient” were retained in the dataset, as these reflect legitimate economic constraints or preference-based justifications for a zero WTP. This classification approach follows established best practices in stated preference methodology and ensures the robustness of WTP estimates by isolating responses that reflect true economic valuation.

3.3.4 Estimating Willingness to Pay for Education and Conservation Projects

To assess the monetary value that visitors place on the construction of a new educational building and the upgrading of the burrowing owl breeding site, this study employed the Contingent Valuation Method (CVM). Respondents selected their maximum WTP through a double-bounded dichotomous choice format. The estimation was conducted using the Ordinary Least Squares (OLS) regression, where the dependent variable is the

respondents' explicitly stated maximum WTP from a follow-up question. Respondents were asked to indicate the maximum amount their household would be willing to donate if the BC Wildlife Park were to undertake their preferred project. Response options included preset monetary amounts ($5, $10, $25, $50, $100, $200), as well as an open-ended "Other" field. The selected or written-in amount was used directly as the dependent variable in the regression analysis. This model estimated WTP as a function of key explanatory variables as follows:

- Project preference: A binary variable indicating whether the respondent evaluated the new educational building (1) or the owl conservation upgrade (0).
- Residency status: A dummy for Kamloops residents (1) versus non-resident (0).
- Income: Measured in tens of thousands of dollars.
- Altruism: Altruistic motivation relative to the self, or no motivation. Respondents were altruistic if they selected “My children and other children would benefit from the project” and/or “I want to help endangered species”

Other variables such as age group, education level, gender, group size, and employment status were tested but were consistently statistically insignificant, and their exclusion had negligible impact on the estimates of the key parameters. All regression models were estimated in Stata 18 using bootstrapping procedures to ensure robust standard errors and inference. The core regression model is specified as:

$$Max\ WTP_i = \beta_0 + \beta_1 Resident_i + \beta_2 Education\ project_i + \beta_3 Altruism_i + \\ + \beta_4 Education\ level_i + \varepsilon_i$$

Where:

- $Max\ WTP_i$ is the observed respondent’s maximum willingness to pay
- $Resident_i$ is a dummy variable (1 = Kamloops resident; 0 = Non-resident of Kamloops, but Canadian)
- $Educational\ Project_i$ is a dummy variable (1 = education Centre; 0 = upgrade borrowing owl site)
- $Altruism_i$ is an integer from 0–2 representing the number of altruistic motivations selected (“My children and other children would benefit” and/or “I want to help endangered species”).
- $Income_i$ Household income in units of 10,000 dollars

- $Education\ level_i$ is measured on an ordinal scale ranging from less than high school to post-graduate studies (1 = less than high school, …, 6 = post-graduate).
- ε_i is the random error term assumed to follow a normal distribution

3.4 Results

3.4.1 Descriptive Statistics

Across most socio-demographic and attitudinal measures, Kamloops residents and non-residents look quite similar, but their WTP diverges sharply. Kamloops visitors report the highest average WTP ($53.88, 95 % CI [32.20–75.55]), whereas non-Kamloops visitors range much lower ($32.45, [22.72–42.17]). Foreigners or protesters were not willing to pay anything for either project. But among locals the WTP for the owl-site upgrade ($63.12 [33.68–92.55]) exceeds the donation for an education centre ($30.17 [14.11–46.22]). A similar pattern holds for non-residents ($35.65 vs. $22.83). All four groups rated the education centre as a modest priority (around 0.26–0.28 on a 0–1 scale), except protesters, who placed somewhat more emphasis on the centre (0.42 [0.09–0.74]). Household incomes are broadly comparable in the 100K region, while education levels rise progressively from Kamloops residents (mean 4.17) through non-locals (4.49) to foreigners (4.89) and protesters (5.36). Finally, altruistic motivation is strongest among Kamloops visitors (0.77 [0.61–0.93]), weaker for the other three groups (0.33–0.55), with protesters exhibiting the lowest average score. Residents scored significantly higher than every other group including visitors from other parts of British Columbia and Canada (mean 0.77 vs. 0.55), with a mean difference of 0.23 ($p = 0.03$). In summary, locals demonstrate both the greatest willingness and the strongest altruistic drive, non-residents adopt more moderate stances, and protesters, despite higher education and income, express lowest altruism.

Table 6: *Descriptive statistics*

		Groups (observations)			
Variables	Obs.	Residents (109)	Visiting Non-Residents (121)	International Visitors (19)	Protesters (12)
Willingness to pay (WTP)		53.88 [32.20, 75.55]	32.45 [22.72, 42.17]	[NA]	[NA]
Education Centre as a priority		0.28 [0.20, 0.37]	0.26 [0.18, 0.34]	0.26 [0.05, 0.48]	0.42 [0.09, 0.74]
WTP Kamloops & Education centre	30	30.17 [14.11, 46.22]	[NA]	[NA]	[NA]
WTP Kamloops & Owl site upgrade	77	63.12 [33.68, 92.55]	[NA]	[NA]	[NA]
WTP Non-Kamloops & Owl site upgrade	69	[NA]	35.65 [23.37, 47.94]	[NA]	[NA]
WTP Non-Kamloops & Education centre	23	[NA]	22.83 [9.82, 35.83]	[NA]	[NA]
Household Income (x 1000)		98.30 [88.44, 108.16]	104.79 [96.10, 113.49]	105.26 [80.94, 129.58]	119.17 [81.05, 157.28]
Education level (1–6 scale)		4.17 [3.90, 4.43]	4.49 [4.25, 4.74]	4.89 [4.42, 5.37]	5.36 [4.91, 5.82]
Altruistic Motive (0–2 scale)		0.77 [0.61, 0.93]	0.55 [0.41, 0.68]	0.53 [0.19, 0.86]	0.33 [-0.08, 0.75]

Notes*: Confidence intervals are based on the standard error of the mean. Education is measured from 1 = "Some high school or less" to 6 = "Post-graduate studies." Altruism motive is based on a count of selected altruistic reasons, ranging from 0 (no altruistic reason selected) to 2 (both altruistic motives selected).*

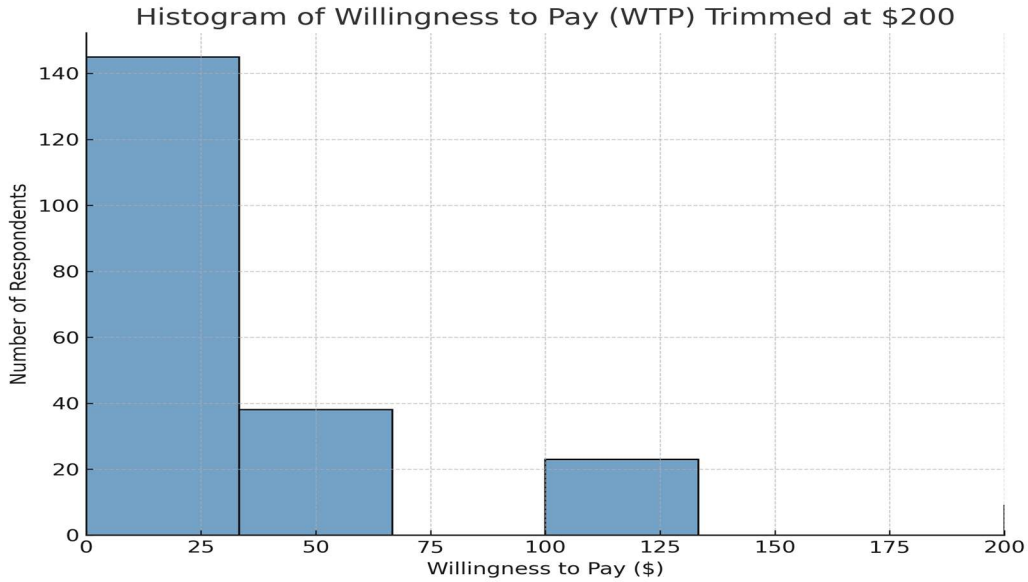

Figure 4: *Histogram of Willingness to Pay (WTP), trimmed at $200 for clarity. Note: Two respondents reported WTP values above $200, and including one extreme value of $1,000 and another $500. These outliers were included in the regression analysis but excluded from this figure for visual clarity.*

3.4.2 Treatment of Outliers

Two respondents reported exceptionally high one-time WTP amounts of $500 and $1,000 values that translate into standardized residuals of roughly 4.6 and 10, well above the usual cutoff of 3. However, these figures appear to reflect genuine donation intentions rather than data errors or protest responses. The $500 donor, a Kamloops resident with a $175,000 household income and the highest recorded education level, endorsed all four altruistic motivations (endangered species protection, child welfare, personal gratification, and a belief that "it's worth it") and achieved the maximal altruism score of 2. The $1,000 donor, also from Kamloops, with post-secondary education and a $90,000 household income, selected the preservation of endangered species as their sole motivation. Because these contributions are one-off payments (not annual pledges), unusually large amounts can legitimately occur at the distribution's tail. Moreover, with only 2 outliers in 230 observations, retaining them preserves the integrity of the sample's full WTP range. For completeness and to assess

robustness, Appendix Table A1 reports all analyses both with and without these two observations.

3.4.3 OLS Regression Results

Table 7 presents the results from two regression models explaining the WTP for wildlife conservation infrastructure. Model 1 includes main effects only, while Model 2 adds an interaction term between residency and project type. Both models explain a modest share of the variation in WTP (adjusted $R^2 \approx 5\%$) and have a statistically significant overall fit according to the Wald chi-square test ($\chi^2 = 12.24$, $p = 0.0157$) based on bootstrapped standard errors with 1,000 iterations. In both models, household income is a positive and significant predictor of WTP ($p < 0.05$), indicating that higher-income respondents are more willing to contribute. Kamloops residents are associated with higher WTP compared to non-residents in both models, reaching significance at the 5% level in Model 1 and at the 10% level in Model 2. There was notably a large increase in the household income coefficient in Model 2 (6.72; $p = 0.081$) compared to Model 1 (0.18; $p = 0.054$). The coefficients indicate that each $10,000 in income corresponds with an average of $1.80 or $67.00 increase in WTP, respectively. The much higher magnitude in Model 2 may reflect the interaction between project type and residency, implying that income has a stronger effect when accounting for differences between Kamloops residents and non-residents.

Education centre priority has a significant negative effect in Model 1 ($p = 0.014$), suggesting lower WTP for that option overall, though this effect weakens when interaction is introduced. The interaction term between Kamloops residency and Education Centre priority is negative but not statistically significant ($p = 0.209$), indicating no strong evidence that Kamloops residents respond differently to the Education Centre compared to non-residents. While the altruism motive has a positive effect on WTP, it does not reach conventional levels of significance in either model. Overall, the results suggest that income and residency are key drivers of WTP, with some variation by project type.

Table 7: *Regression Results explaining WTP*

Sample Size	199
R^2	0.0893
Adjusted R^2	0.0609
Wald χ^2	15.74
p-value	0.0152

	Model 1			Model 2		
Variable	Coeff.	p-value		Coeff.	p-value	
Constant	-17.23	0.607		-24.77	0.298	
Kamloops Residents	20.15	0.082	*	28.32	0.079	*
Education Centre Priority	-22.14	0.015	**	-4.3	0.662	
Kamloops Residents x Education Centre				-31.25	0.138	
Education level	5.89	0.095	*	0.17	0.067	*
Household Income ($10k units)	0.18	0.054	**	6.72	0.081	*
Altruism Motive	19.23	0.004	***	19.92	0.004	***

*Note: Bootstrap standard errors with iterations: 1,000. Significance levels: *** p<0.01, ** p<0.05, * p<0.10*

Table 8 presents predicted WTP by residency group and project type. Kamloops residents show the highest WTP for the Owl Site upgrade ($63.90), more than double their WTP for the Education Centre ($28.34), suggesting strong local support for wildlife conservation. Non-Kamloops visitors also express a higher WTP for the Owl Site ($34.41) relative to the Education Centre ($30.11), but with a smaller difference. These predictions were derived from a regression model with interaction terms, holding income, education level and altruism motive at the respective group means.

Table 8: *Willingness to pay for projects by residency*

Group	**WTP ($)**	**95% CI**
Kamloops, Education Centre	28.34	[13.99, 42.69]
Kamloops, Owl Site	63.90	[35.53, 92.26]
Non-Kamloops, Education Centre	30.11	[16.31, 43.91]
Non-Kamloops, Owl Site	34.41	[22.21, 46.62]

Note: Predicted willingness to pay (WTP) values were derived from the regression model with interaction terms, holding household income, income level and altruism motive at the sample means of the respective subgroups (Kamloops residents and non-Kamloops visitors). Bootstrap standard errors were used to compute 95% CI

Table 9 presents differences in predicted WTP across residency groups and project types. Among Kamloops residents, the WTP for the Owl Site upgrade ($63.90) is significantly higher than for the Education Centre ($28.34), with a difference of $35.55 (p = 0.028). This suggests that Kamloops residents place substantially more value on initiatives related to wildlife conservation than on educational infrastructure. For the owl site upgrade, Kamloops residents express a higher WTP than non-residents by $29.48 (p = 0.067). Comparing residency groups, no significant difference is observed in WTP for the Education Centre (p = 0.858). Finally, the difference in WTP between the two project types among non-Kamloops visitors is small and statistically insignificant (p = 0.662), indicating relatively equal valuation. These findings highlight a particularly strong place-based preference for the owl conservation initiative among local residents, whereas non-locals exhibit more uniform valuations across project types.

Table 9: *Differences in Predicted WTP by Residency and Conservation Project*

Comparison	Intended for	Difference ($)	95% CI	p-value
Education centre versus (-) owl site upgrade	Kamloops	-35.55	[-67.19, - 3.92]	0.028 **
Kamloops versus non-Kamloops	Owl site upgrade	29.48	[-2.07, 61.03]	0.067 *
Kamloops versus non-Kamloops	Education Centre	-1.77	[-21.16, 17.62]	0.858
Education centre versus owl site upgrade	Non-Kamloops	4.30	[-14.99, 23.60]	0.662

3.5 Discussion and Conclusion

3.5.1 Key Findings

The results of the CVM study conducted at the BCWP reveal compelling insights into guests' WTP for conservation and education initiatives. The findings denote strong community support, particularly from Kamloops residents, suggesting important implications for conservation and education funding strategies within the park.

i. Comparative WTP of Proposed Projects

Firstly, the analysis shows that Kamloops residents have a higher WTP for the burrowing owl breeding facility upgrades ($63.90) compared to the education centre ($28.34). This result suggests a strong sense of place-based responsibility and perhaps emotional connection to local wildlife. Past research has found that proximity to wildlife conservation efforts often correlate with increased WTP, reflecting a place-based preference for initiatives protecting and preserving species at risk (Manfredo et al., 2020). Moreover, members of a community typically express a greater willingness to support conservation projects when they recognize direct benefits (Gruntorad et al., 2021). Guests therefore may be perceiving the benefits of the new education centre as indirect and non-immediate, while the upgrades to the burrowing owl facility could be seen as an initiative that can instantly improve the welfare of the owls currently in the park's care.

In contrast to the results representing Kamloops residents, the results from non-residents exhibited a lower WTP for both the burrowing owl facility upgrades and the new education centre. This observation is consistent with past literature that has found that familiarity with and personal investment in local ecosystems increase the likelihood of financially supporting conservation efforts (Maynard et al., 2021). From this result we can also assume that non-Kamloops residents may not represent a viable market for recruiting significant donations. Interestingly, however, the difference between Kamloops residents' WTP and non-Kamloops residents' WTP for the education centre was not significant. As such, non-local visitors may have equal or similar potential of donating toward the education facility as local visitors, albeit at lower quantities than the burrowing owl facility project.

The findings also suggest that altruism–a measure of the respondents' motivations for supporting conservation–was a significant predictor of WTP across the sample. This presence of altruistic motivations indicates that respondents value conservation outcomes beyond their direct benefits, which has been suggested in past studies demonstrating the influence of altruistic behaviours on conservation engagement (Maynard et al., 2020). This finding emphasizes the necessity for conservation education initiatives that have been found to foster altruistic perspectives (Kleespies et al., 2020)–a goal which the BCWP could more easily achieve with the addition of a new education building for hosting increased programming.

ii. Aggregated Value of the Upgraded Burrowing Owl Facility

To estimate the aggregate value of the proposed upgrades to the burrowing owl breeding facility, the analysis draws on the BCWP's approximate annual visitation of 100,000 guests (BC Wildlife Park, RocketRez [internal access only], February 26, 2025). Based on the contingent valuation survey, the average stated WTP was $63.90 for 109 Kamloops residents and $34.41 for 121 non-residents. To simplify the aggregation across Canadian visitors, a conservative weighted average WTP of $50 is applied.
Of the total survey responses received (n = 304), 199 were classified as valid, completed by Canadian residents and not protest responses, yielding a usable response rate of 65.4%. Within this valid sample, 65.4% of respondents indicated that they prioritized the owl site over the education centre. Assuming these proportions are reflective of the broader visitor population, the aggregate one-time donation potential is calculated as:

$$\text{Aggregate WTP} = C\$50 \times 0.654 \times 0.654 \times 100{,}000 = \$2{,}177{,}878$$

However, this figure likely overstates actual fundraising potential for several reasons. First, not all visitors are unique individuals. Survey data indicate that 44% of respondents are frequent repeat visitors, suggesting that many of the 100,000 recorded visits are accounted for by a smaller number of repeat guests. Second, families represent a large proportion of visitors: 54% of survey participants reported bringing children to the park. If we conservatively assume that most repeat visitors are families, then approximately 23.76% of all visits (0.44 × 0.54) are made by households that are both repeated and family-based, who would typically donate once per household, not per individual. Third, the survey was conducted during the summer, when non-local tourist traffic is higher; the winter "Wildlights" event, by contrast, attracts an estimated 20,000 Kamloops-based family groups, many of whom may not visit in other seasons. Taken together, these factors justify the application of a 25% unique-donor adjustment to correct for repeat visits, household-level giving, and seasonal sampling bias. Assuming that only 25% of the 100,000 visitors are unique individuals who follow through with a donation at the same average WTP, the expected annual contribution would be approximately $544,297. Applying a 5% social

discount rate (Treasury Board of Canada Secretariat, 2007; Loomis et al., 2000), the present value of this stream of donations, treated as a perpetuity, is estimated at $10.88 million.

iii. Aggregated Value of the Proposed Education Centre

A parallel calculation was conducted for the proposed new education centre. The average WTP for this project was approximately $29 across both Kamloops and non-Kamloops Canadian respondents. Of the valid survey participants, 27.6% prioritized the educational centre. Applying the same 65.4% valid response rate and the 27.6% prioritization share to the full visitor base yields the following upper-bound estimate:

$$\text{Aggregate WTP} = 29 \times 0.654 \times 0.276 \times 100{,}000 = \$527{,}523$$

As with the owl site, this estimate assumes all valid Canadian visitors donate once. Under a more conservative scenario, assuming only 25% of total visitors are unique and willing to donate, the expected annual WTP falls to $131,880. The present value of this annual donation stream, discounted at 5%, is estimated at $2.64 million.

3.5.2 Practical Applications

From a practical standpoint, the findings from the CVM study offer several valuable applications for the BCWP in terms of seeking funding for the planned upgrades to the burrowing owl breeding facility and the construction of the new education centre.

i. Communication of Direct Conservation Action

The Kamloops residents' evident prioritization of direct conservation action, as shown through the preference for donating toward the burrowing owl facility, over educational initiatives highlight the importance of appealing to guests' interests in fundraising campaigns. Research supports the idea that public awareness and advocacy are vital for garnering financial support for wildlife conservation efforts (Martino & Kenter, 2023). By clearly communicating the need for improved living conditions for the burrowing owls in the breeding program, and how this may set them up for better chances of success upon release into the wild, the BCWP can appeal to the altruism that Kamloops residents

displayed in their survey responses and give them confidence in knowing where their funds are being allocated.

ii. Targeted Fundraising Campaigns

The observed differences in WTP among Kamloops residents and non-residents highlight the necessity of employing targeted campaigns in the BCWP's future fundraising efforts. Specifically, Kamloops residents displayed a strong preference for funding direct conservation initiatives, in this case the burrowing owl breeding facility upgrades, while non-residents showed more balanced support across both the conservation and education projects. This finding suggests that the BCWP might have the most success funding the burrowing owl facility upgrades by specifically targeting Kamloops residents, whereas funding for the new education centre may be sought throughout British Columbia.

Past research suggests that local campaigns can find success by focusing on place-based stewardship and specific conservation initiatives, tailoring messaging to resonate with local pride and the direct ecological impact of their financial contributions (Munro et al., 2017). This strategy can be employed when funding the burrowing owl facility upgrades, appealing to locals' desire to improve this renowned breeding program in their hometown and allowing them to feel a sense of local pride and identity in contributing to the potential ecological benefits that may come from the continued recovery of burrowing owls in British Columbia.

Conversely, fundraising efforts directed at non-Kamloops residents might adopt a broader narrative that emphasizes the overall mission of the BCWP, including its role in conservation education and community involvement throughout British Columbia. Marketing messages should focus on the benefits of conservation education, and how the development of a new education centre at the BCWP would benefit communities outside of Kamloops, as well as Kamloops residents.

iii. Grant Writing and Sponsorship Proposals

While more than half of survey respondents indicated that they would be willing to donate towards either the upgrades to the burrowing owl facility or the construction of the new education centre, a proportion of the protesters indicated that they felt it is not the

guests' responsibility to fund such projects. Furthermore, guest donations alone are not likely to be sufficient in covering all expenses for all projects. Therefore, seeking grants and sponsorships is essential for the BCWP to fund the planned improvements. The quantified WTP from this research serves as powerful evidence of community buy-in, demonstrating to grant agencies and potential sponsors that the projects have broad-based public support. Though Kamloops residents' average WTP for the burrowing owl facility ($63.12) was much higher than their average WTP for the education centre ($30.17), the education centre was still rated as a modest priority, and was similarly rated among non-Kamloops residents, non-Canadians, and protesters alike. This shows that while BCWP guests are not necessarily willing to fund the education centre themselves, they have still indicated that they see value in the project, which is in itself compelling evidence for potential investors.

3.5.3 Limitations

Several limitations exist in the CVM study of the BCWP. These limitations should be considered when interpreting the results and in future research.

i. Scope and Generalizability

Data was collected on the grounds of the BCWP during the summer season of 2024 only, which restricts the results from being applicable to other zoos and only represents a specific demographic of BCWP guests who visited during the timeframe, or who completed the online survey during the timeframe. With a sample size of 230 total responses, the results are also only representative of 0.0023% of the approximately 100,000 annual visitors to the BCWP. Furthermore, the in-person survey collected responses from visitors during the summer season, during which time there is likely to be a much higher proportion of non-local and even international visitors when compared to the off-peak season. Additionally, this research only collected responses from BCWP guests, though people within the Kamloops area and beyond who did not visit the park may still have an interest in donating toward future improvements or, conversely, strong opinions on why they would not.

These scope and generalizability limitations could be addressed in future research by running a longitudinal study for the duration of one year to ensure guests were sampled during all seasons, and to give the study more time to gather a larger sample. Unfortunately,

as stated in the previous chapter, voluntary surveys with no incentives for participants will likely always garner a biased result due to the reliance on guests' intrinsic motivations to participate (Carter & Siddiki, 2019).

ii. Response Bias and Self-Reporting Issues

The research design's reliance on self-reported data and stated preferences introduces the possibility of response bias. Respondents may feel compelled to provide socially desirable answers, particularly in the context of financial support, potentially inflating their stated WTP (Hausman, 2012). Studies have indicated that individuals often rationalize their altruistic behaviour or modify their responses based on perceived social norms, leading to discrepancies between stated intentions and actual behaviour (Juanchich et al., 2024). Combining the stated preference data with revealed preference data, such as actual donation history from similar fundraising initiatives, could provide a more accurate assessment of WTP and help mitigate these biases.

3.5.4 Future Research

While this study provides compelling evidence of guests WTP for future improvements to the BCWP, further research could strengthen the results and address some of the limitations.

i. Revealed Preference Follow-Up Study

Perhaps the most obvious extension of this CVM study at the BCWP would be to collect data on donations made by guests towards the burrowing owl facility upgrades and the new education centre the park should go through with these fundraising campaigns. Ideally, donors would provide the same socio-demographic information that was collected in this study, as well as the information about their visiting habits, such as how frequently they visit the BCWP and whether they are an annual pass holder. The nature of the actual donations could be compared against what was projected in this research to reveal how accurately the participants from this study stated their WTP. The results would help to reveal the true efficacy of this CVM study in predicting guests' donation patterns and inform whether CVM research would be useful to the BCWP or similar organizations in the future.

ii. Targeted Stakeholder Survey on Educational Value

While the proposed education centre was the least popular choice to donate toward in this study, guests across all demographics still perceived it as holding at least modest importance. It should be noted that the survey for this research was conducted during the summer months–a time when few educational programs are booked in the BCWP's current classroom space. As such, it is reasonable to assume that most respondents had never participated in a structured education program at the BCWP and therefore would not be familiar with what is offered. A future survey could be conducted that specifically targets key demographics who participate in the BCWP's educational programming–namely schoolteachers and parents who have attended education programs as part of their students' or children's field trips. Assessing these stakeholders' perceived importance and stated WTP for the proposed education centre would provide valuable insight into the opinions of a demographic who have enough experience with the BCWP's current educational infrastructure and programming to confidently have an opinion on whether it is sufficient.

iii. Comparative Studies Across Similar Organizations

Comparative research examining potential donor preferences in other zoos or conservation organizations may provide broader insights into effective fundraising strategies. Assessing other zoos' guests' WTP for similar conservation and education-based projects across Canada or even other parts of the world could provide insight into behavioural patterns that may be consistent across demographics. Points of interest would be to discover if local visitors are consistently more invested than non-locals overall, if locals always value the conservation projects over the education projects, and if protesters generally report the same reasons for not wanting to donate. Such comparative analyses can help organizations learn from one another in diverse contexts and adapt successful strategies to their own local needs and preferences (Gómez et al., 2022).

Chapter 3 References

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CHAPTER 4: CONCLUSION

4.1 Overall Research Focus

This thesis sets out to assess the non-market value of the BC Wildlife Park (BCWP) by examining its recreational, educational, and conservation services as perceived by guests. As modern zoos have evolved into institutions focused on conservation and public education as well as entertainment and personal enjoyment, understanding how the public values these services become increasingly important–not only to guide strategic planning and funding, but to justify their broader societal role.

The central argument of this thesis is that the BCWP provides significant economic and social value beyond what is captured through ticket sales or direct revenue. By applying the Individual Travel Cost Method (ITCM) to assess recreational value and the Contingent Valuation Method (CVM) to determine guests' willingness to pay (WTP) for educational and conservation projects, this study demonstrates that BCWP visitors derive meaningful surplus value from their experiences and are willing to financially support key improvements to the park's infrastructure.

Three key research questions guided the study:

1. What is the recreational value of the BC Wildlife Park?

2. What are guests willing to pay for a new education centre at the BCWP?

3. What are guests willing to pay to support the BCWP's efforts in burrowing owl conservation?

These questions were addressed using primary data collected from park visitors, analyzed through regression models and WTP estimates. The findings offer valuable insights for park management, policymakers, and the broader field of environmental economics regarding how zoos and other conservation-based institutions can be both socially meaningful and financially supported through community engagement.

4. 2 Summary of Key Findings

This research provides a comprehensive assessment of the value visitors place on the BCWP experience, using both revealed and stated preference methods to estimate recreational value and support for future park developments. The findings offer important

insights for strategic planning and fundraising. All monetary values will be in Canadian dollars (CAD $) for the remainder of this chapter. The key information can be summarized as follows:

i. High Recreational Value and Consumer Surplus

Application of the ITCM revealed significant consumer surplus (CS) associated with guests' visits to the BCWP. Based on the total costs incurred for a visit to the BCWP, we estimated a CS of $84.97 per person, per visit (SE = 39.91, $p = 0.034$) for Kamloops residents, and $41.91 (SE = 5.29, $p < 0.0001$) for non-Kamloops residents. This suggests that, on average, visitors are willing to pay significantly more than they are currently paying. In turn, this also indicates that guests are deriving a high level of satisfaction and personal benefit or utility. Local visitors in particular appear to place a high value on their park visits, perhaps as a result of lower travel costs. However, the difference in CS between the two demographics was not statistically significant ($p = 0.258$) due to wide confidence intervals.

ii. Price Change Sensitivity Differs Between Locals and Non-Locals

The negative binomial regression analysis in the ITCM section revealed that travel costs and entrance fees affect local and non-local visitors differently. For non-local visitors, both entrance fees and travel costs had a significant negative effect on the number of visits ($\beta = -0.0226$, $p < 0.0001$ and $\beta = -0.0013$, $p = 0.009$, respectively). Conversely, for Kamloops residents, these same expenses had a much less negative effect or were even positively associated with visitation. The interaction term for travel cost among locals was significantly positive ($\beta = 0.0030$, $p < 0.0001$), indicating that higher travel costs for locals may be associated with higher frequency of visits. These results suggest that future price increases could be more of a deterrent to non-local guests, while locals are less sensitive to such changes.

iii. Socio-Demographic and Behavioural Variable Influencing Visit Frequency

Several socio-demographic and behavioural variables were included in the negative binomial regression in the ICTM study to test for their potential influence on visit frequency. Household income was found to be a significant predictor of visit frequency, with visitors

from middle income households ($40,000-$100,000 annually) having significantly more visits (β = 0.4300, $p < 0.0001$), as did those from high-income households (>$100,000 annually; β = 0.4019, $p = 0.005$), relative to low-income respondents. Two significant behavioural variables found to be positively correlated with BCWP visits per year were souvenir purchases and visitor satisfaction. Visitors who purchased souvenirs were more likely to return more often (β = 0.4834, $p < 0.0001$), and those who rated the recreational benefits of the park higher also visited more frequently (β = 0.1065, $p = 0.029$), underscoring the importance of visitor satisfaction and on-site engagement.

iv. Strong Willingness to Pay for Conservation and Education Projects

The contingent valuation portion of the research yielded important insights regarding guests WTP for planned improvements to the BCWP, namely upgrades to the burrowing owl breeding facility and construction of a new education centre. Visitors expressed strong willingness to donate towards the two proposed projects, with a preference for the burrowing owl facility. Guests' stated WTP was considered in terms of Kamloops residents and Canadian residents from outside Kamloops, while excluding non-Canadian residents and protesters who were not willing to donate. Kamloops residents expressed the highest average WTP overall at $53.88, while non-Kamloops residents averaged a significantly lower $32.45. When divided by project, locals were willing to contribute an average of $63.12 for upgrades to the burrowing owl facility and $30.17 for the education centre. Non-locals showed a similar but more modest preference, with average WTP values of $35.65 for the burrowing owl facility and $22.83 for the education centre. These results show that while both projects received support from guests, the conservation-focused burrowing owl facility had a higher appeal, especially among Kamloops residents. Further, the data showed that altruistic motivation could often be attributed as a determiner of WTP. Altruistic motivation was highest among Kamloops residents, who scored a mean altruism value of 0.77, significantly higher than the 0.55 average among other Canadians ($p = 0.03$). Protesters and foreigners, despite having high education and income levels, expressed the lowest altruistic motivation.

4.3 Discussion of Combined ITCM and CVM Results

Taken together, the ITCM and CVM sections of this thesis provide a multidimensional understanding of the value guests place on the BCWP–both in terms of their current experiences and behaviours and their future willingness to support the park financially. While the ITCM study assessed visitors' revealed preferences based on their actual behaviour and expenditures, the CVM study measured their stated preferences for supporting specific future projects. By integrating both approaches, this research presents multiple aspects of value in a holistic assessment of the BCWP's economic and social significance.

The ITCM analysis revealed that guests derive considerable CS from their visits to the BCWP. With local visitors experiencing an average CS of $84.97 per person and non-locals an average of $41.91 per person, we can extend this information to estimate the total annual CS for all BCWP guests. With an average of around 100,000 annual visitors, we might assume that half of them is local and half of them are not. 50,000 locals would thus have a combined CS of $4,248,500 and 50,000 non-locals would represent a CS of $2,095,500 for an overall CS of $6,344,000. This surplus value represents an untapped pool of potential financial support, especially if appropriate fundraising, pricing structures, or membership recruitment strategies are implemented.

The CVM study reinforces the conclusions of the ITCM study by demonstrating that a portion of this surplus can realistically be leveraged for conservation and education-focused projects. Kamloops residents had an average WTP of C$63.90 for the upgrades to the burrowing owl facility and $30.11 for the construction of a new education centre (Table 8), which falls comfortably within the CS value of $84.97. Similarly, with non-Kamloops Canadian residents expressing an average WTP of $34.41 and 30.11 for the respective projects, this also aligns with their demographic's CS of $41.91. However, we must consider that the WTP estimates excluded visitors residing outside of Canada as well as protest votes from any origin. This research estimates the value of upgrading the owl facility at $10.88 million and building the new education centre at $2.64 million based on the aggregated WTP calculations. Cross-referencing this number with the total annual CS of $6,344,000, it is reasonable to believe that a substantial sum of money could be raised for the BCWP's proposed projects. This WTP estimate represents a theoretical upper bound, but it

nonetheless suggests that a substantial proportion of visitors are open to donating, especially if fundraising efforts are targeted, emotionally resonant, and clearly tied to specific outcomes.

These findings support the central argument of this thesis: that the BCWP provides significant value beyond ticket sales, and that this value can be partially converted to actual revenue through voluntary donations when fundraising messaging is aligned with the park's conservation or educational missions. The alignment between CS and WTP shows that guests not only benefit from their visits but are also willing to reinvest some of that benefit into the park's future. With the right strategies such as mission-driven public messaging and transparent fundraising goals, the BCWP may be able to capture a significant increase in financial support from its guests.

4.4 Implications of the Research for the BCWP

This research has important implications for the BCWP's operations, fundraising strategies, and public engagement efforts. The practical applications of the research findings for the BCWP are as follows:

i. Capturing Untapped Economic Value Through Pricing and Membership Strategies

The data derived from the ITCM study revealed significant CS among both local and non-local visitors to the BCWP, indicating that guests are deriving much greater value from their visits than is currently being captured through their total costs incurred per visit. This suggests a strong opportunity for the park to implement revised pricing structures or loyalty incentives that could increase revenue without alienating guests, particularly locals who show higher CS and seemingly a stronger emotional attachment to the park. In addition to or instead of raising admission prices, the BCWP may consider offering premium experiences such as behind-the-scenes tours to draw in more revenue from high-income guests without the park becoming altogether inaccessible to low-income demographics.

ii. Harnessing Fundraising Potential for Mission-Aligned Projects

The CVM research demonstrated that guests are willing to financially support specific initiatives at the BCWP, particularly conservation-oriented projects like the proposed

burrowing owl facility upgrades. The average WTP values among Kamloops residents and non-local Canadian residents suggests that donation-based funding models are not only feasible but potentially highly lucrative. By aligning fundraising campaigns with projects that resonate with guests' personal values, particularly with respect to wildlife conservation, the BCWP can transform a significant portion of the surplus visitors are already experiencing into tangible support.

Interestingly, the BCWP has found success in a targeted fundraiser since the data collection for this research took place. In December 2024, a young bald eagle (*Heliaeetus leucocephalus*) was brought to the BCWP's Fawcett Family Wildlife Health Centre, where it was discovered that he was suffering from lead poisoning. Chelation therapy saved the bird's life, but due to complications from the lead toxicity he developed severe cataracts in both of his eyes and became blind. The BCWP launched a fundraiser to cover the $3,500 cost of surgery to partially restore the eagle's vision. Donations were collected online as well as in-person during the park's annual Easter celebration event. The fundraiser was advertised on Facebook, Instagram, and the BCWP's website, sharing the story of the eagle. The campaign surpassed its goal and ultimately raised $6,910. The remaining funds were redirected toward rehabilitation infrastructure (BCWP, 2025, April 16, 22). This example perfectly exemplifies the potential that emotionally resonant, conservation- or rehabilitation-focused fundraising campaigns have in generating community support for the BCWP.

iii. Leveraging WTP and CS Data for Grant Writing and Sponsorship Requests

Even if donations are not directly solicited or collected, the WTP and CS values produced in this research offer compelling evidence of community support for the BCWP's work. Grant agencies and corporate sponsors increasingly look for evidence of public engagement and social impact when deciding which projects to fund (Miller et al., 2018). That local and non-local visitors alike expressed a clear willingness to financially support conservation and education initiatives–in this case the burrowing owl breeding facility–can be presented as proof that there is latent demand for improvements to the BCWP. Grant writers at the BCWP could integrate the results of this research into future proposals, citing valuation metrics as created by guests as justification for investment. As such, guest WTP

becomes a strategic fundraising tool, even if those guests are not directly solicited for donations and the questions remain hypothetical.

4.5 Broader Implications of Research

While this thesis focuses specifically on the BCWP, its findings suggest broader implications on how society values and supports conservation and environmental education initiatives. Several key implications are as follows:

i. Recognition of Zoos as Public Assets

The substantial CS estimated with the ITCM reveals that zoos successfully deliver recreational, educational, and conservation benefits to communities, and this value is far higher than what is captured strictly through ticket and souvenir sales. That guests are deriving a value far beyond the dollar amount they are spending on their visit to the BCWP supports the idea that zoos should be recognized as essential public assets that provide a wealth of recreational enjoyment and learning to those who visit (Gusset & Dick, 2010). Such recognition reinforces the case for continued public funding and support for zoos, which provide valuable recreational and educational opportunities to their communities.

ii. Zoogoers as Contributors in Wildlife Conservation

The demonstrated WTP for conservation projects, particularly among local residents, indicates that communities are open to financially supporting initiatives aligned with ecological stewardship and species protection. Past research by Che-Castaldo et al. (2018) argued that North American zoos are contributing significantly to endangered species recovery efforts. The BCWP's efforts in burrowing owl conservation, in partnership with the Burrowing Owl Conservation Society of BC and two other breeding facilities, have successfully reintroduced a returning migratory population of burrowing owls to British Columbia following their extirpation in the 1980s (Blood & Low, 1998; BCWP, 2025)**.** The BCWP is striving to improve the breeding facility infrastructure to increase the welfare as well as population capacity for the owls housed within. Since the public has shown a strong inclination to support this effort, this research demonstrates the potential for zoos to invite their communities to become contributors in their conservation initiatives through donations

for specific projects. By clearly communicating fundraising goals and donation allocations, zoos can leverage the altruistic motivation of guests to boost financial support for conservation initiatives. Consequently, this will benefit wildlife *in situ* as conservation programs become more successful, while donors can enjoy the satisfaction of having contributed to the cause.

iii. Reinforcing the Societal Value of Environmental Education

The findings of this study highlight how environmental education is valued by zoo guests and considered a priority worth financially supporting. Despite BCWP guests ranking the proposed education centre as a lower priority overall than the burrowing owl breeding facility, a significant number were still willing to contribute financially, with Kamloops residents and non-local Canadians willing to pay an average of $28.34 (95% CI [13.99, 42,49]) and $34.41 (95% CI [22.21, 46.62]), respectively. Interestingly, foreigners and protesters who were not willing to pay a donation for either the burrowing owl facility or the education centre rated the education centre as a more important project on average. This suggests that though the proposed conservation-related project elicited stronger emotional support, particularly from local guests, the education centre was still seen as important by a broad demographic.

Research has consistently shown that environmental education enhances learners' ecological knowledge, promotes critical thinking, and fosters pro-environmental behaviour (Ekenga et al., 2019; Rahman et al., 2023; Nelles & Ressler, 2023). Environmental education opportunities in zoos specifically are increasingly recognized for their importance in fostering awareness and understanding of ecological issues among visitors (Kleespies et al., 2020). Zoos often provide the unique opportunity to combine structured learning experiences with interactive exhibits or engaging live animal presentations, which have specifically been shown to enhance visitor knowledge and attitudes towards conservation (Godinez and Fernández, 2019). By demonstrating that guests are willing to financially support increased educational programming at the BCWP, or at least recognize the importance of expanding educational opportunities, this thesis adds to the existing body of research presenting evidence of the value of environmental education. This evidence has broader implications for other zoos and environmental education institutions seeking funding for their programming.

Zoos should be recognized for their contributions to public education and their educational infrastructure should be treated as valuable public spaces for building an environmentally informed society.

4.6 Limitations of the Combined ITCM and CVM Approach

While integrating the ITCM and CVM approaches to valuation offers a more holistic understanding of the BCWP's services, several limitations should be acknowledged when interpreting these results together. First, the two methods measure different types of value– use value through revealed preferences (ITCM) versus hypothetical support for future initiatives, or stated preferences (CVM). While the cross-analysis of the CS and WTP results strengthens the argument that surplus value could realistically be leveraged through donations, it is important to note that expressed WTP does not guarantee actual financial contributions, whereas CS has been calculated based on guests' actual spending patterns. The two studies align conceptually, but they are not directly measuring the same form of value or under the same decision conditions. Furthermore, the CVM results are inherently based on hypothetical scenarios, and may be influenced by social pressures, warm glow effects, or misinterpretations of the projects in question (Nunes & Schokkaert, 2003).

Additionally, the results are lacking a true assessment of average CS and WTP across all BCWP visitors in one year. Both studies were based on a small sample size of less than 250 participants, which is a small proportion of the approximate 100,000 guests expected to visit in a year. Furthermore, the regression analyses involved splitting the sample into different demographics–Kamloops locals and non-locals for the ITCM portion and Kamloops residents and non-Kamloops Canadian residents, discarding foreigners and protesters, for the CVM portion. Valuations were estimated for the demographics separately, and not all demographics were represented in the CVM study. Because the BCWP does not collect socio-demographic information on all park guests, we do not know the actual proportion of local and non-local guests represented in the total visitor population. The discussions included extrapolated results, using average CS and WTP to estimate aggregate annual values, assuming a 50/50 split between locals and non-locals. However, this requires simplifying assumptions about visitor composition, repeat visitation, and donor behaviour. Further research with a much larger sample size and across multiple seasons would be

needed to confidently estimate average CS and WTP for all visitors over a given period of time.

4.7 Directions for Future Research

Based on the combined results and conclusions from the ITCM and CVM studies, several new research avenues could further expand the understanding of public support for zoos like the BCWP.

i. Follow-Up Travel Cost Study to Assess the Impacts of Park Changes

One compelling direction for future research would be to conduct a follow-up ITCM study after changes have been made to park infrastructure or operations. These changes could be the completion of the two proposed projects, the upgrades to the burrowing owl breeding facility and construction of the new education centre, or new pricing models, membership options, or premium experience options. The resulting data could be compared against the baseline data collected in this research to show how metrics like the total cost of visits, visitation rates, and CS may have changed over time. This would provide evidence on whether or not the changes increased the overall value of the BCWP as perceived by guests. Such a comparative study would also provide general insight into the effectiveness of capital investments in boosting visitor experience and could guide long-term decision making for the BCWP and other similar institutions.

ii. Testing Framing Effects on WTP

Future research could investigate how framing techniques might influence WTP for recreational, educational, or conservation initiatives in zoos. By employing an experimental design that manipulates message framing–for example, emphasizing emotional appeal of a particular conservation project versus objective benefits–future research can assess which approaches successfully activate visitors' altruistic motivations and result in higher stated WTP. Past research has highlighted the significant impact of advertising appeals and framing effects on donation willingness, indicating that underlying psychological responses to various messaging strategies could lead to improved fundraising outcomes (Tang et al., 2022). This

approach could be applied when studying a zoo such as the BCWP to develop strong, evidence-based fundraising strategies.

iii. Predictive Modeling of Donor Potential

Combining insights from both the ITCM and CVM studies could guide future research in the development of predictive models to identify high-potential donors or supporters. The survey used in this research captured visitor behaviour and socio-demographic profiles as well as guests' stated support for future conservation projects. The regression analysis in the CVM portion also tested for altruism as an influence on WTP. By integrating the data from both parts of this thesis, multivariate models such as logistic regression or machine learning classifiers could be created to predict the likelihood that a visitor would respond positively to requests for donations. Integrating the CVM with machine learning is a relatively new concept in environmental economics, but models created with these methods have been found to predict WTP with high accuracy (Khuc & Tran, 2023). Predictive modelling could help zoos such as the BCWP segment their visitor population and target fundraising campaigns more strategically, focusing on demographics who have been identified as most likely to donate.

4.8 Concluding Remarks

The findings of this thesis illustrate that the BCWP is not only a place of recreation, but a valued institution with broad societal relevance. Visitors derive substantial benefit from their experiences, expressed in significant CS values for both local and non-local visitors. Guests' enjoyment and appreciation for the park has led to a clear willingness to invest in the park's future, particularly in its conservation and, to a lesser extent, educational missions. By integrating revealed and stated preference valuation methods, this study offers strong, data-driven evidence of the BCWP's economic and social impact. These results can inform future decision-making by park management and contribute to the broader discourse on how society values wildlife preservation, environmental education, and ecological stewardship. As public opinions of modern zoos shift, research like this plays a vital role in ensuring that these institutions are fulfilling their promises of benefitting both people and wildlife.

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Appendix I: Survey

What's wildlife worth? An assessment of the recreational value of the B.C. Wildlife Park

By Sylvie Lloyd

This survey supports research being conducted as a component of a Master of Science in Environmental Science Degree. The goal of this survey is to provide a better understanding of the value of the B.C. Wildlife Park to inform the policymakers and community its importance.

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What's wildlife worth? An assessment of the recreational value of the B.C. Wildlife Park

Research purpose

My name is Sylvie Lloyd. I am a student in the Master of Science in Environmental Science program at TRU. This survey is a part of my thesis under the supervision of Dr. Peter Tsigaris. This study aims to estimate the value you place on the recreational services provided by the B.C. Wildlife Park with the help of your answers.

Consent Statement:

Your participation in this study is voluntary. Completion of the survey will take approximately 10 minutes of your time. You will be asked to provide information on your overall experience of your visit to the BC Wildlife Park and on your spending patterns and preferences. The data from the surveys will be combined and analyzed to assess the recreational value of the B.C. Wildlife Park.

By participating in this survey, you the participant are providing your consent. You may choose to withdraw at any time while completing the survey, but your submission of the survey provides your consent for your data to be used. If you have questions or concerns at any time please refer to the contact information on the front page of this survey.

Privacy Statement: All the data collected will be kept strictly confidential. We will not collect any identifying information, and the data collected will be stored under supervision for five years. After this period, they will be permanently deleted.

We appreciate your participation in becoming a voice for our community's beloved Wildlife Park. If you would like to know the results of this research project, please feel free to contact my supervisor (ptsigaris@tru.ca) or me (sylvie@bcwildlife.org). We will email a copy of the executive summary of the project.

The results of this project will be used to help inform city policymakers and the community about the value of services provided by the B.C. Wildlife Park. The data will be analyzed using statistical tools and the statistical results will be included in my final thesis in tables summarizing the findings. This thesis will be stored online in the TRU repository. It is possible that other publications will be created from the research. Journals often wish for the full dataset to be made available and open- access, in which case the dataset will be published in a public repository.

We appreciate your participation in becoming a voice for the B.C. Wildlife Park.

Do you consent to participate in this survey?

☐ Yes, I consent

☐ No, I do not consent

What's wildlife worth? An assessment of the recreational value of the B.C. Wildlife Park

Background information

The CAZA-accredited British Columbia Wildlife Park (BCWP) is a zoological park in Kamloops, British Columbia. The park, founded in 1965 with the motto "Conservation through Education," has been a community staple, promoting tourism and environmental conservation.

Conservation Initiatives: The BCWP is renowned for its active role in wildlife conservation, notably through the Fawcett Family Wildlife Health Centre. The only full-service wildlife rehabilitation center in BC's Southern Interior, this facility treats and releases over 400 animals annually. The park's Species Survival Plan for Przewalski's horses and the world's largest burrowing owl breeding facility aim to reintroduce these endangered species to their natural habitats.

Educational Impact: The BCWP prioritizes education. The park offers many BC Curriculum Guide-aligned programs for kindergarten through high school students. In-house education, virtual programming, and extensive online resources supplement these programs. The park's daily animal encounters, guided tours, and special demonstrations raise wildlife conservation awareness and engagement beyond formal education.

Recreational Offerings: The BCWP offers attractions for all ages as a recreational venue. This includes interactive exhibits, a playground, a splash park, and seasonal events like the “Wildlights” holiday display that draws thousands of visitors. The park is a community resource for environmental and wildlife education as well as recreation.

Visit the BCWP to support animal care and conservation efforts. Your participation today helps us continue and expand wildlife and habitat conservation.

PART 1: GENERAL QUESTIONS ABOUT THE PARK AMENITIES AND VISITS

What is the purpose of your visit? (Can answer more than one reason)

- ☐ Recreation, to view animals
- ☐ To educate my children on wildlife
- ☐ To be educated about wildlife
- ☐ To view wildlife conservation efforts at the park To do research
- ☐ Other (please specify)

What was your overall level of satisfaction with your visit to the B.C. Wildlife Park?

- ☐ Extremely dissatisfied
- ☐ Somewhat dissatisfied
- ☐ Neither satisfied nor dissatisfied
- ☐ Satisfied
- ☐ Extremely satisfied

What aspect of the park did you enjoy the most?

- ☐ Animal exhibits
- ☐ Education Centre
- ☐ Educational demonstrations/talks
- ☐ Play areas

☐ Special events
☐ Other (please specify)

Do you live in Kamloops?
☐ Yes
☐ No

Are you a frequent/regular visitor to the park during the warmer seasons?
☐ Yes
☐ No

Do you visit the park during the "Wildlights" event to see the Christmas light display in addition to the other amenities offered by the park?
☐ Yes
☐ No

PART 2: VISITATION RATE AND TRAVEL COST AND TIME

How did you pay to enter the park?
☐ Day pass
☐ Annual pass
☐ Other (please specify - gift card, coupon, etc.)

Did you spend money to purchase souvenirs?
☐ Yes
☐ No

If yes, how much money (in CAD $) did you spend on souvenirs?

Is the B.C. Wildlife Park the primary destination of your current trip?
☐ Yes
☐ No

To the best of your recollection, how many times did you visit the B.C. Wildlife Park within the last year?

How many people (including yourself) are in your group today?
Adults:
Children:

What mode of transportation did you use to get here today?
☐ Car/private vehicle

☐ Tour bus
☐ Taxi
☐ Public transit
☐ Walk/bike
☐ Other (please specify)

If a car, what type of private vehicle?
☐ Small/midsize
☐ Minivan
☐ SUV
☐ Truck

If a car, what fuel?
☐ Gasoline
☐ Diesel
☐ Hybrid
☐ Electric

How long did it take you to reach the park from your residence or other place of accommodation today?
Hours:
Minutes:

On average, how much time do you spend in the park per visit?
Hours:
Minutes:

Have your summer activities been affected by wildfires this year?
☐ Yes
☐ No

PART 3: THE IMPORTANCE OF THE B.C. WILDLIFE PARK

There are a number of benefits for visiting the park:

Recreational benefits: Parks create an environment conducive to recreational opportunities. For instance, people from the city can travel to the park and view animals with other members. Visiting the park can improve health and wellbeing, both physically and mentally

Educational Benefits: The park provides education through its Education Centre, interpretive signage, and informational talks and demonstrations. It is also visited by schools and students to learn about wildlife in a classroom setting.

Conservation benefits: The park provides a variety of ecological benefits such as conservation initiatives, endangered species reintroduction, and wildlife rehabilitation.

Social and cultural benefits: Wildlife parks provide social and cultural activities, such as a sense of place and space for social interactions, a place to observe and photograph wildlife, etc. Visiting the park improves health and wellbeing, both physically and mentally.

How aware were you of these benefits of the B.C. Wildlife Park before your visit today?

	Not Aware	Slightly aware	Somewhat aware	Very Aware
Recreational benefits	☐	☐	☐	☐
Social and cultural benefits	☐	☐	☐	☐
Educational benefits	☐	☐	☐	☐
Conservation benefits	☐	☐	☐	☐

Master Plan and future projects:
The BCWP's five-year master plan outlines projects to improve visitor experience and educational and conservation capabilities. These include building a new education building and upgrading facilities like the burrowing owl breeding site to keep the BCWP a leader in wildlife conservation and public education.

New educational state of the art centre:
In-house education sessions are available from the BCWP to complement the BC Curriculum Guide for kindergarten through high school. Educational programs are usually held in the park's main building's room that is not equipped with the state of the art and was never meant to be a classroom. A freestanding 40,000-square-foot education centre will host education programming and occasional special events to promote the BCWP's environmental education department.

Major structural repairs at the breeding facility:
Since 1992, the BC Wildlife Park has run the world's largest burrowing owl breeding program with the Burrowing Owl Conservation Society. British Columbia's burrowing owls were declared extinct in the 1980s. A captive breeding program was started after several failed translocation attempts to return burrowing owls to British Columbia. This and two other provincial breeding facilities aim to release 100 owls annually. To protect the park's owl breeding population, the breeding facility needs major structural repairs.

How important do you think the following upcoming projects are for enhancing your experience at the B.C. Wildlife Park?

	Not important at all	Somewhat unimportant	Neutral	Somewhat important	Very important
Construction of a new educational building	☐	☐	☐	☐	☐
Upgrading the burrowing owl breeding site	☐	☐	☐	☐	☐

Because funding such projects is expensive and budgets are tight, which of these two projects would you prioritize in being funded?

☐ The new educational building

☐ Upgrading the burrowing owl breeding site

Would you be open to considering a non-committal donation in the future to help support these projects?

☐ Yes

☐ No

What is the maximum your household would be willing to donate if the BCWP was to undertake your priority project from question 22 (please keep in mind that any money donated will leave less money for other household expenses)?

☐ $5 CAD

☐ $10 CAD

☐ $25 CAD

☐ $50 CAD

☐ $100 CAD

☐ $200 CAD

Other (please specify in $CAD)

Why would you be willing to donate money for the project? (Select all that apply)

☐ I would get pleasure knowing that my household had contributed to a good cause

☐ My children and other children would benefit from the project

☐ I want to help endangered species

☐ Helping with such improvements is worth this amount of money to my household

☐ Other (please specify)

If you were to donate money, where would the money come from to pay the donation?

☐ Money spent on non-essential food items (candy, snacks...)

☐ Money donated to charities

☐ Money spent on holidays or entertainment Money being saved

☐ Other (please specify)

Listed below are some possible reasons why you would not be willing to donate. Which of the following is the most important?

☐ Income/financial situation of my household
☐ The current facilities are sufficient
☐ I think the municipality should pay for the projects through increased property taxes
☐ It is not fair to expect my household to have to pay the higher cost for new developments ☐ Other (please specify)

PART 4: SOCIO-DEMOGRAPHIC QUESTIONS

How do you identify yourself?

☐ Male
☐ Female
☐ Non-binary/Other

What is the size of your household?
Adults:
Children:

How old are you?

☐ 16-25 years
☐ 26-35 years
☐ 36-45 years
☐ 46-55 years
☐ 56-65 years
☐ 66 or over

What is your highest education level?

☐ Some high school or less
☐ High school diploma
☐ Trade certificate/diploma
☐ College/vocational
☐ University graduate
☐ Post-graduate studies

What is your current employment status?

☐ Employed part-time
☐ Employed full-time
☐ Not employed but looking for work
☐ Unpaid housework

☐ Student
☐ Retired

What is the average annual income of your household? (In $CAD)

☐ Less than $20,000
☐ $20,000 - $40,000
☐ $40,001 - $60,000
☐ $60,001 - $80,000
☐ $80,001 - $100,000
☐ $100,001 - $150,000
$150,001 and over

What is your postal code?

We owe you a debt of thanks! Every single response is valuable for estimating the recreational value of the B.C. Wildlife Park. Thank you for completing the survey. Please provide any comments or suggestions in the feedback box below.

Appendix II: Sensitivity Analysis

Predicted Willingness to Pay (WTP) and Group Comparisons (Including Outliers)

To assess the influence of high outliers on willingness-to-pay (WTP) estimates, we compared model predictions with and without the two highest values ($500 and $1000). These outliers correspond to respondents who expressed strong altruistic motives and a desire to protect endangered species. While such values may represent genuine preferences, we present below how their exclusion affects the predicted WTP values and statistical differences between groups.

As shown in Table A1, excluding these outliers reduces the WTP for the Kamloops Owl Site group by nearly $18, while estimates for other groups remain relatively stable. Table A2 further reveals that the difference between Kamloops respondents' WTP for the Owl Site versus the Education Centre is still significant at the 10% level (p=0.058). These two high responses had a meaningful influence on that comparison. These results indicate that while outliers affect the magnitude and statistical significance of certain estimates, the overall pattern of findings remains substantively similar. Given that one of the high WTP respondents expressed strong altruistic motives and may represent a genuine valuation, we retain the full sample in the main analysis while documenting the sensitivity here.

Table A1: Comparisons with and without outliers

Group	Without outliers WTP ($)	With outliers WTP ($)
Kamloops, Education Centre	28.58 [14.36, 42.80]	28.34 [13.99, 42.69]
Kamloops, Owl Site	45.98 [34.69, 57.27]	63.90 [35.53, 92.26]
Non-Kamloops, Education Centre	25.77 [14.81, 36.73]	30.11 [16.31, 43.91]
Non-Kamloops, Owl Site	35.10 [23.25, 46.96]	34.41 [22.21, 46.62]

Table A2: Group Comparisons (Pairwise WTP Differences)

Comparison	Without outliers Diff ($)	p-value	With outliers Diff ($)
Owl vs. Education (Kamloops only)	17.40 [−0.56, 35.36]	0.058	35.56 [6.47, 64.65]
Kamloops vs. Non-Kamloops (Edu Centre only)	2.81 [−15.08, 20.69]	0.758	−1.77 [−18.90, 15.36]
Owl vs. Education (Non-Kamloops only)	9.33 [−7.64, 26.30]	0.273	4.30 [−10.82, 19.42]
Kamloops vs. Non-Kamloops (Owl Site only)	10.87 [−5.31, 27.05]	0.186	29.49 [3.60, 55.38]

Appendix III: Stata Codes

Stata 18 Code for Descriptive Statistics

```
* define vars
local vars WTP EDUPRIORD INCOME EDUC ALTRUISM

* Kamloops visitors (KAMD==1)
di as txt "=== Kamloops residents ==="
ci means `vars' if KAMD==1, level(95)

* Non-Kamloops (KAMD==0)
di as txt "=== Non-Kamloops ==="
ci means `vars' if KAMD==0, level(95)

* Foreign visitors
di as txt "=== Foreigners ==="
ci means `vars' if FOREIGN==1, level(95)

* Protesters
di as txt "=== Protesters ==="
ci means `vars' if PROTESTS==1, level(95)

* KAMD=1 & EDUPRIORD=1
di as txt "KAMD=1 & EDUPRIORD=1"
ci means WTP if KAMD==1 & EDUPRIORD==1, level(95)

* KAMD=0 & EDUPRIORD=1
di as txt "KAMD=0 & EDUPRIORD=1"
ci means WTP if KAMD==0 & EDUPRIORD==1, level(95)

* KAMD=1 & EDUPRIORD=0
di as txt "KAMD=1 & EDUPRIORD==0"
ci means WTP if KAMD==1 & EDUPRIORD==0, level(95)

* KAMD=0 & EDUPRIORD=0
di as txt "KAMD=0 & EDUPRIORD=0"
ci means WTP if KAMD==0 & EDUPRIORD==0, level(95)
```

Stata 18 code for Tables 7, 8, and 9

```
* STEP 1: Create interaction term
gen KAMD_EDU = KAMD * EDUPRIORD

* STEP 2: Store sample means by residency group (Kamloops vs. Non-Kamloops)
sum INCOME if KAMD == 1
scalar mean_inc_kam = r(mean)
```

```
sum EDUC if KAMD == 1
scalar mean_educ_kam = r(mean)
sum ALTRUISM if KAMD == 1
scalar mean_alt_kam = r(mean)

sum INCOME if KAMD == 0
scalar mean_inc_nonkam = r(mean)
sum EDUC if KAMD == 0
scalar mean_educ_nonkam = r(mean)
sum ALTRUISM if KAMD == 0
scalar mean_alt_nonkam = r(mean)

* STEP 3: Compare INCOME and ALTRUISM across residency groups
table KAMD, statistic(mean INCOME) statistic(sd INCOME) ///
        statistic(mean ALTRUISM) statistic(sd ALTRUISM)

ttest INCOME, by(KAMD)
ttest ALTRUISM, by(KAMD)

* STEP 4: Bootstrapped regression WITHOUT interaction
bootstrap, reps(1000) seed(123): ///
   regress WTP KAMD EDUPRIORD INCOME EDUC ALTRUISM

estat bootstrap, all

* STEP 5: Bootstrapped regression WITH interaction term
bootstrap, reps(1000) seed(123): ///
   regress WTP KAMD EDUPRIORD KAMD_EDU INCOME EDUC ALTRUISM

estat bootstrap, all

* STEP 6: Define program for WTP predictions and differences
capture program drop predwtp_final
program define predwtp_final, rclass
   regress WTP KAMD EDUPRIORD KAMD_EDU INCOME EDUC ALTRUISM

   scalar kam_edu = _b[_cons] + _b[KAMD]*1 + _b[EDUPRIORD]*1 +
_b[KAMD_EDU]*1 + ///
                _b[INCOME]*mean_inc_kam + _b[EDUC]*mean_educ_kam +
_b[ALTRUISM]*mean_alt_kam

   scalar kam_owl = _b[_cons] + _b[KAMD]*1 + _b[EDUPRIORD]*0 +
_b[KAMD_EDU]*0 + ///
                _b[INCOME]*mean_inc_kam + _b[EDUC]*mean_educ_kam +
_b[ALTRUISM]*mean_alt_kam
```

```
    scalar nonkam_edu = _b[_cons] + _b[KAMD]*0 + _b[EDUPRIORD]*1 +
_b[KAMD_EDU]*0 + ///
                    _b[INCOME]*mean_inc_nonkam + _b[EDUC]*mean_educ_nonkam +
_b[ALTRUISM]*mean_alt_nonkam

    scalar nonkam_owl = _b[_cons] + _b[KAMD]*0 + _b[EDUPRIORD]*0 +
_b[KAMD_EDU]*0 + ///
                    _b[INCOME]*mean_inc_nonkam + _b[EDUC]*mean_educ_nonkam +
_b[ALTRUISM]*mean_alt_nonkam

    return scalar kam_edu = kam_edu
    return scalar kam_owl = kam_owl
    return scalar nonkam_edu = nonkam_edu
    return scalar nonkam_owl = nonkam_owl

    return scalar diff_kam = kam_owl - kam_edu
    return scalar diff_resid = kam_edu - nonkam_edu
    return scalar diff_nonkam = nonkam_owl - nonkam_edu
    return scalar diff_owl_resid = kam_owl - nonkam_owl
end

* STEP 7: Bootstrap WTP predictions and pairwise differences
bootstrap r(kam_edu) r(kam_owl) r(nonkam_edu) r(nonkam_owl) ///
        r(diff_kam) r(diff_resid) r(diff_nonkam) r(diff_owl_resid), ///
        reps(1000) seed(123): predwtp_final

estat bootstrap, all
```