Determining tourists' valuation of the Big Five

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And whatever you do, whether in word or deed,
do it all in the name of the Lord Jesus,
giving thanks to God the Father through him
Colossians 3:17

ABSTRACT

Abstract. The aim of this study is to determine the value of the Big 5 from a visitor's perspective. This study will focus on determining the stated preference or contingent value (CV) of the Big 5 through a survey of tourists', visiting the Kruger National Park, willingness to pay (WTP) for the conservation. The CV method is based on the principle of stated preferences, since participants are asked to state how much they are willing to pay for specific goods or services. Literature indicates that there is a relationship between education, income, professional standing, marital status, age, characteristics of visit, number of children and nationality and a tourist's willingness to pay. By estimating the effect these variables have on a tourist's willingness to pay will assist parks and private game reserves in future decisions concerning the conservation of wildlife. Additionally this information is also invaluable for marketing as well as pricing purposes since it gives a specific monetary value. The study found that visitors to the Kruger National Park (KNP) assigned a significant amount (34.64%) of total average spending to experience the Big 5. The value per species also differed. The main determinants of visitors' willingness-to-pay for simply viewing the Big 5 include age, the marital status and the role of the Big 5 during decision to visit the KNP. Noticeable differences between international literature and this research are the determinants like education, income, age and country of residence.

***Keywords*:** Big 5, willingness to pay, contingent value, national parks, game reserves

ABSTRAK

Abstrak. Die doel van hierdie studie is om die waarde van die Groot 5 vanuit 'n besoeker se perspektief te bepaal. Hierdie studie maak gebruik van die verklaarde voorkeur of voorwaardelike waarde (CV) metode om die waarde van die Groot 5 te bepaal. Die studie sal geskied deur middel van 'n opname van besoekers aan die Kruger Nasionale Park se bereidwilligheid om te betaal (WTP) vir die bewaring van die Groot 5. Die CV metode is gebaseer op die beginsel van die verklaarde voorkeure, aangesien deelnemers gevra word om te verklaar hoeveel hulle bereid is om te betaal vir 'n spesifieke goedere of dienste. Literatuur dui daarop dat daar 'n verband tussen opvoeding, inkomste, professionele status, huwelikstatus, ouderdom, eienskappe van die besoek, aantal kinders, nasionaliteit asook 'n toeris se bereidwilligheid om te betaal is. Die bepaling van die effek wat hierdie veranderlikes op 'n toeris se bereidwilligheid het om te betaal sal parke en privaat wildreservate instaat stel om toekomstige besluite te kan neem met betrekking tot die bewaring van wild. Verder het hierdie inligting ook kardinale waarde vir bemarkings doeleindes, sowel as pryse vasstellings. Die studie het bevind dat besoekers aan die Kruger Nasionale Park (KNP) 'n beduidende hoeveelheid (34,64%) van hul totale gemiddelde besteding toegeskryf het om die Groot 5 te ervaar. Die studie het ook bevind dat die waarde per spesies verskil. Die belangrikste determinante van die besoekers se bereidwilligheid om te betaal om die Groot 5 te beleef sluit veranderlikes soos ouderdom, huwelikstatus en die rol van die Groot 5 gedurende die besluit om die KNP te besoek in. Merkwaardige verskille tussen die internasionale literatuur en hierdie navorsing is duidelik en sluit determinante soos opvoeding, inkomste, ouderdom en land van herkoms in.

Kernwoorde: Groot 5, bereidwilligheid om te betaal, voorwaardelike waarde, nasionale parke, wildreservate

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1 CHAPTER

INTRODUCTION AND PROBLEM STATEMENT

1.1 Introduction

Recent studies outline the increasing importance of tourism as an engine of growth and development of countries. According to Saayman and Saayman (1997), global tourism is the fastest growing industry in the world. They suggest that it is the leading economic driver of the 21st Century. Pădure and Turtureanu (2005:1) argue that tourism plays a significant role in economies by promoting economic growth and development. They argue that tourism's major contribution to economies is that of foreign exchange earnings. Tourism promotes the financial flows between developed and developing countries, promoting export earnings and economic growth and development of countries (Pădure and Turtureanu, 2005:1). Tourism generates income for both the public and private sector, as well as promoting increased foreign exchange earnings (Pădure and Turtureanu, 2005:1; DEAT, 1996; Saayman, 2000:95; Shackleton *et al*., 2007). Pădure and Turtureanu (2005:1) state that income generated by tourism tends to grow faster than that generated by primary products exports. Tourism tends to be a more reliable source of income for developing countries which depend heavily upon primary product exports. Pădure and Turtureanu (2005:1) and Saayman (2000:129) argue that tourism earnings have a significant impact on a country's balance of payments. An increase in foreign exchange reserves will have a positive effect on a country's balance of payments. Foreign exchange reserves are a necessary source of finance for current account deficits. Increased income and foreign exchange earnings have a significant impact on the development of small businesses, and hence increased job opportunities. Pădure and Turtureanu (2005:1) argue that tourism does not only promote economic growth and employment, but also supports the socio-economic development strategies that are set by the government, the private sector and non-governmental organisations.

In the light of the above, it is important to analyse South Africa's tourism sector and its importance for South Africa's economy. South Africa has been running a current account deficit over the past few years, ultimately reaching its peak in 2008 accounting for 7.4% of GDP (SARB, 2010). It is argued that a current account deficit that exceeds 3% of GDP is unsustainable for a small, open economy (ITRISA, 2010:62). Figure 1.1 indicates South Africa's current account deficit up to 2005 (RMB, 2007:2).

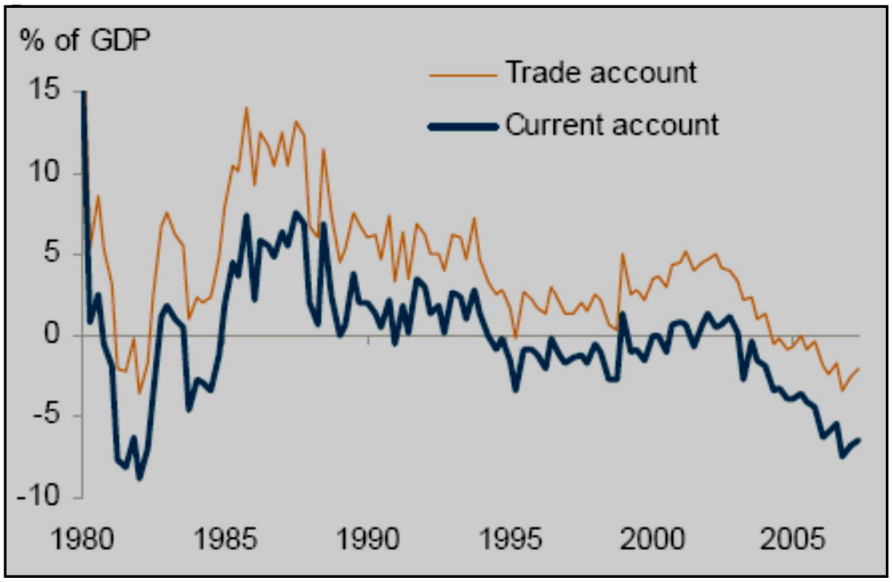

Figure 1.1: South Africa's current account deficit
Source: Rand Merchant Bank, 2007:2

Promoting tourism, and hence increased exports and foreign investment (also in tourism products) will ultimately contribute to South Africa's current account deficit situation (Saayman, 2000:129).

According to South African Tourism (2009:5), although worldwide international tourism declined in 2009, South Africa experienced a growth in international arrivals. South Africa experienced a 3.6% increase in international arrivals from 2008 to 2009, accounting for an increase of 7% in foreign exchange earnings generated by tourism. Since 2003, foreign exchange earnings generated by tourism contributed more to overall foreign exchange earnings than that of gold. Figure 1.2 indicates the contribution of both tourism and gold to foreign exchange earnings.

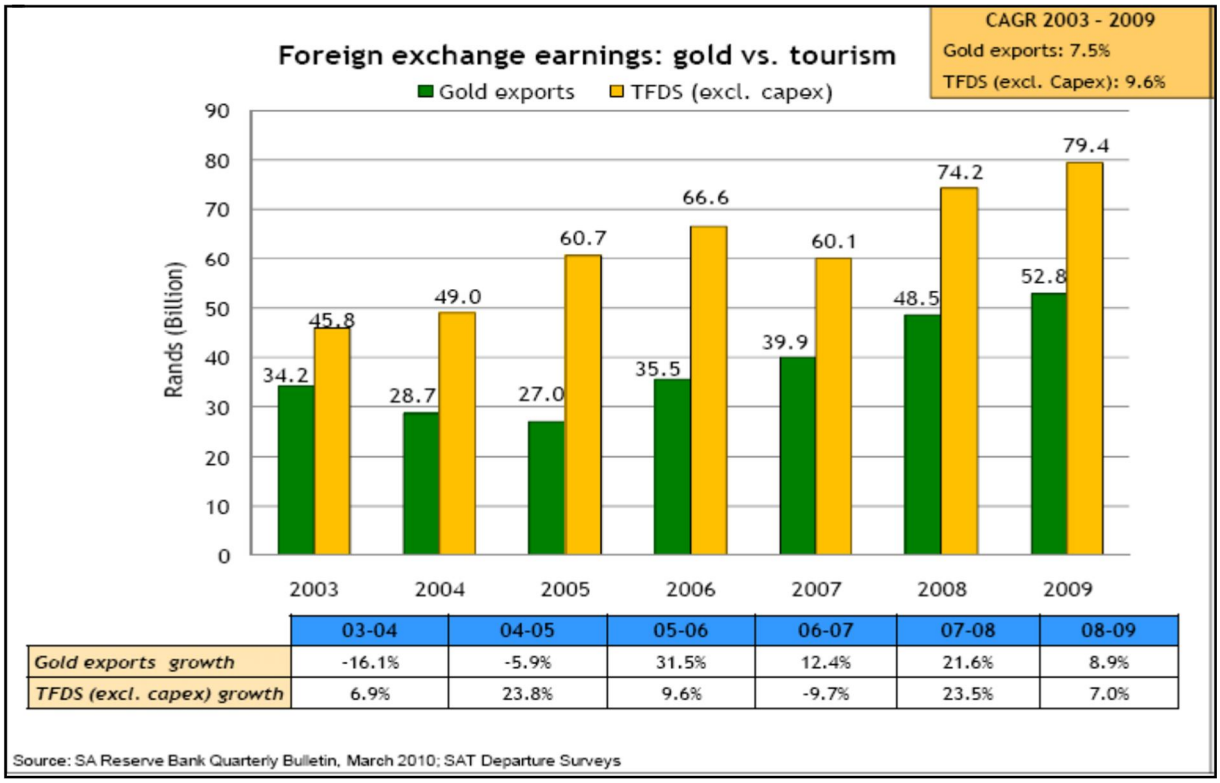

Figure 1.2: Foreign exchange earnings: gold vs. Tourism

Source: South African Tourism Annual Tourism Report. (2009:5)

TFDS (excl. Capex) refers to Total Foreign Direct Spend in South Africa, excluding capital expenditure. Tourism's contribution to foreign exchange earnings increased by 9.6% between 2003 and 2009, while gold's contribution increased only by 7.5% (South African Tourism, 2009:5). Tourism's overall contribution to GDP increased from a estimated 2.7% (R184,4 billion) in 2008 to 7.9% (R189,4 billion) in 2009. However, tourism's contribution to employment decreased by 7.4% in the same period, from 993 400 in 2008 to 919 800 in 2009 (South African Tourism, 2009:5).

Although global foreign arrivals declined by 4.3% in 2009, South Africa still experienced an increase of 3.6% for the same period. South Africa's total foreign arrivals in 2009 were 9 933 966. Revenue/income generated by the increased foreign arrivals contributed to a 7% (R5.2 billion) increase in income earnings between 2008 and 2009 (South African Tourism, 2009:13).

As mentioned above, the literature review also indicates that tourism is a key contributor to employment and economic growth. Tourism has the potential to promote the overall livelihoods of the population by means of higher income levels due to tourism activities. According to Klasen and Woolard (2008:2) and Triegaardt (2007:2), South Africa has some of the highest recorded levels of unemployment, poverty and inequality rates in the world. Half of South Africa's population (50%) lives below the poverty line (Triegaardt, 2007:2; CIA, 2010). According to Leibrandt *et al*. (2010:4), income inequality is also increasing in South Africa. The Gini coefficient rose from 0.66 in 2007 to 0.679 in 2009. The unemployment rate also remains high. According to CIA (2010), South Africa's unemployment rate is 24.9%.

However, Dieke, 2001:9 states that parks have the inherent potential to promote employment opportunities, generate income and promote the overall livelihoods of the people living near and around the parks. Parks are closely associated with nature-based tourism because they are prestige tourism destinations that specifically focus on the conservation and preservation of natural areas (Page & Connell, 2009:645 and Tomczyk, 2010:1). With 22 National parks and more than 7 000 privately owned game reserves/game farms and 171 regional parks, South Africa has the potential to reduce its high unemployment rates and promote economic growth. The Kruger National Park (KNP) is South Africa's most renowned national park (Dieke, 2001:99) with around 60 000 employees, making it an outstanding example as an income generator. In 2002, more than one million people visited the KNP, generating income to not only the park, but the employees as well (Dieke, 2001:99). Shackleton *et al*. (2007) argue that since employees and the KNP use goods and services from the surrounding region, the KNP as a whole supports between 300 000 and 600 000 people.

It is important to understand that conservation cannot solve the problem of poverty but, as stated above, it is essential for helping to reduce poverty by promoting the livelihoods of the people working in and around parks (Naughton-Treves *et al*., 2005). Another economic benefit that stems from eco-tourism is that it promotes the need for adequate infrastructure systems, such as roads, communication, hospitals and schools (Dieke, 2001:9). This, in turn, will enhance the livelihoods of the people in and near the area where eco-tourism is practised, by generating better access to

health care facilities, educational facilities and communication facilities. According to Hökby and Söderqvist (2003), environmental services tend to have a greater effect on lower-income groups than on high-income groups.

Saayman and Saayman (2009:53) identified nature as the primary motive for visitors to South Africa. Previous research by Oh *et al*. (1995) and Swanson and Horridge (2006) and Saayman and van der Merwe (2008) also support these findings. According to Eagles (2002:1), nature-based tourism depends heavily upon high levels of environmental quality and, more often than not, is based in parks and other forms of protected areas. Eagles (2002:133) agrees with this statement, and adds that national parks and game reserves have experienced an ongoing increase in numbers of national and international tourists.

In the light of this, South Africa needs to focus attention on the preservation of the natural environment. Many tourism products include non-market resources. Non-market resources are resources that give people utility, but certain aspects of them do not have a market price, as they are not directly sold. One of these resources includes the so-called Big 5. The reason being is that it is difficult to determine the value of viewing a rhino or elephant in the wild using price-based models.

1.2 Problem statement

In the context of nature-based tourism, the problem often arises that, although consumptive use values of wildlife can be determined, it is nearly impossible to calculate the non-consumptive use value of wildlife. Many products do not enter the market, and hence, does not have a market price and should be valued on the basis of sound estimation of demand and supply. Also, people perceive their experiences differently which makes it difficult to determine. This dissertation aims to determine the value that tourists place on the Big 5 and the predictors of their willingness to pay to view the Big 5 at a national park.

1.3 Rationale behind study

Valuing scarce resources is important to ensure their optimal use. In the case of the Big 5, it is important to determine the value that tourists place on the Big 5 for

conservation reasons, as well as to sustain tourism activities. DEAT (1996) outlines some of the key constraints associated with tourism. One of the key constraints is that the tourism industry in South Africa is inadequately resourced and funded and this causes inadequate protection of the environment. Determining the value that tourists place on the Big 5 will ultimately assist parks like the KNP in determining whether or not they will be able to increase entrance fees for the experience of seeing the Big 5 in their natural habitat. Aziz *et al*. (2010:212) argue that the paying characteristics of tourists are essential for any development plan at protected areas and national parks. They also argue that the willingness-to-pay (WTP) method will help parks identify target groups that will assist authorities in developing relevant and more accurate marketing strategies.

Determining the value of the Big 5 also underlines emotional issues of the Kruger KNP's culling of the elephants, lion hunting elsewhere and the recent poaching of rhino across the country. The KNP alone lost 146 rhinos to poaching in 2011 (Platt, 2011). Furthermore, in an even broader context, conservation and sustainable tourism promote economic growth and development, which is of particular importance in a country facing challenges of low economic growth rates, high unemployment levels and significant poverty and inequality.

Marketing for tourism in the KNP consists mostly of "the Big 5" charismatic large mammals, hence, using the Big 5 as a tourism brand and attraction. However, it is not known if these are in fact the species tourists seek and prefer to see, and how much they are willing to pay to experience the Big 5 in their natural environment. In addition, what variable influence their willingness to pay? These aspects have not been determined before and from a management and marketing perspective it is important.

1.4 Goals and objectives of the study

The goal of this study is to determine the value that tourists place on the Big 5 and the predictors of their willingness to pay to view the Big 5 at the KNP. The main objectives are as follows:

- To analyse the value of the Big 5 in the economic context of non-market resources.

- To raise the issues of the 'tragedy of the commons' and to explain how the market and policymakers can respond.
- To calculate the contingent value of the Big 5 and to estimate the predictors thereof.
- To draw conclusions and make recommendations about how South Africa's most important non-market tourist resource can be managed.

1.5 Method

This dissertation is twofold and consists of a literature study, which encompasses the tourism literature on the importance of nature-based tourism and the Big 5 and puts it in the context of the economics literature on the valuation of non-market resources. Secondly, this dissertation will also undertake empirical analysis of the value of the Big 5 using the stated preference or contingent value of the Big 5 through a survey of tourists' willingness to pay for the conservation. Hence, this dissertation will make use of both primary and secondary data. Primary data encompasses data collected by the researcher for a specific purpose or study under consideration, hence primary data is collected from first-hand-experience (Boslaugh, 2007:1). Secondary data on the other hand encompasses data collected from a previous source that have already been published in any form (Boslaugh, 2007:1).

1.5.1 Literature study

A literature study will be based on specific keywords such as *Big 5, Kruger National Park, willingness to pay, contingent value, national parks, game reserves, ecotourism, hedonic pricing model, travel cost method, consumptive use values, non-consumptive use values, market resources, non-market resources,* and *common goods* to obtain information relevant to the topic. The information will be obtained by means of books, online databases, papers and articles as well as reports. The use of research engines such as EBSCOhost, Sabinet online, ScienceDirect, JSTOR, Google Scholar and other websites will be used for example www.sanparks.org.za.

1.5.2 Empirical survey literature study

The following section describes the methods chosen to conduct the empirical analysis of this dissertation.

a. Research design and method of collecting data

This dissertation is based on quantitative research. Quantitative research can be defined as conclusive research that involves large numbers of groups that are representative of the sample and consist of a structured collection of data. To examine the characteristics of tourists to the KNP and their willingness to pay for simply viewing the Big 5, a survey was conducted between 24 June 2011 and 2 July 2011. Only tourists (per definition) were asked to complete the questionnaire. For the purpose of this dissertation, a tourist is a person who makes an economic input with regard to any other area than that in which he or she generally lives and works or a tourist is a person who voluntarily visits places, away from his or her normal abode, for a period of at least 24 hours (Saayman, 2007:5). For the purpose of this dissertation, any reference to visitors or respondents implies tourists. Any reference to day visitors implies excursionists.

The questionnaire was handed out based on the random sampling method and a total of 280 questionnaires (N=280) were used for the purpose of this dissertation. The research was carried out at the following rest camps within the KNP:

- Olifants
- Letaba
- Mopani
- Punda Maria

The sample size formula as indicated by Israel (2009:3) was consulted to obtain the number of questionnaires needed to conduct this study. The calculation of the sample size is as follows;

$$n = \frac{N}{1 + N(e)^2}$$

$$n = \frac{146667}{1 + 146667(.05)^2}$$

$$n = \frac{146667}{367.67}$$

$$n = 399 \text{ questionnaires}$$

Where:

N is the population size
e is the level of precision (5%)

According to statistics provided by SANParks, there were 440 000(N) overnight visitors to the KNP in the year 2010 (SANParks, 2011). The average travelling group in December 2010 was 3 persons as indicated in Chapter 3. Since the questionnaires were handed out to only one person per travelling group, the total population (N) was divided by 3 and this resulted in 146 667 visitors (N). The required number of completed questionnaires needed for this study to be sufficient is 399. However, the survey was handed out in the northern region of the KNP where there is less accommodation and fewer camps compared to the southern region, hence fewer tourists and thus fewer questionnaires are sufficient to conduct this study. A total of 289 questionnaires were obtained in order to conduct this study.

This dissertation uses explanatory research as a method of collecting data because no other studies on this matter have yet been done. Explanatory research gathers information by means of surveys, case studies and other qualitative methods.

b. Sample method

The survey followed a probability sampling method and a simple random sample was used to conduct the survey. All the overnight visitors that were available and willing to complete the questionnaires at the chalets and camping sites were asked to take part in the survey. Fieldworkers were used to conduct the survey and were briefed before the survey to ensure that they understood the aim of the research and the questionnaire. The fieldworkers distributed the questionnaires in the evenings when all/most of the overnight visitors were at the chalets and camping sites. Respondents were asked to complete the questionnaire and fieldworkers collected

them later on in the evening or the following morning. The data obtained was used to establish a basic profile of tourists to the KNP. This study will also determine the value that tourists place on the Big 5 and the predictors of their willingness to pay to view the Big 5 at the KNP (northern region only).

c. Development of the questionnaire

The survey was conducted by means of a structured questionnaire (Appendix A). The questionnaire was co-developed by the Institute for Tourism and Leisure Studies, and it has been successfully used to gather information on the characteristics of tourists to the KNP for the past 10 years. The questionnaire was developed so that the following aspects could be measured: socio-demographic profile of visitors to the KNP, economic impact, consumer profile, the Big 5 and peacefulness and life satisfaction specific data. However, for the purpose of this dissertation, only the first four aspects will be considered.

Section A captured the socio-demographic information such as home language, age, accompanying children, marital status, country of residence, province of residence, highest level of education and income. These questions determine the profile of tourists to the KNP as well as determining whether or not the socio-demographic characteristics of visitors contribute to their willingness to pay for viewing the Big 5.

Section B captured economic data regarding number of people paid for, number of visits to national parks in the last year, length of stay, reasons for visiting the KNP and overall expenditure during the visit to the KNP.

Section C was designed to determine the consumer profile of visitors to the KNP and included questions such as whether the tourists are Wild card members or not; would the tourists recommend the park to others and when the decision was made to visit the park. This section also included a question relating to the reasons for visiting the KNP. These questions were measured on a 5-point Likert scale (1 = extremely important, 2 = very important, 3 = neither important nor less important, 4 = less important, and 5 = not at all important).

Section D captured Big 5 specific data, such as age introduced to national parks, the role of the Big 5 during the decision to visit the KNP, the ranking of the Big 5, total amount allocated to the Big 5, amount allocated to each individual species of the Big 5 and member of conservation organisation or give money for conservation. These questions were also measured on a 5-point Likert scale (1 = extremely important, 2 = very important, 3 = neither important nor less important, 4 = less important, and 5 = not at all important).

d. Data analysis

All the data obtained from the surveys were captured on Microsoft© Excel© for basic data analysis. Further statistical analysis was carried out with the help of SPSS software. SPSS enabled the author to conduct an Ordinary Least Squares (OLS) regression model to examine the predictors of tourists' willingness to pay to view the Big 5 in a national park. The collection of the data also enabled the author to conduct a CV method that could be used to estimate both use and non-use values of environmental services. The CV method is based on the principle of stated preferences, since respondents are asked to state how much they are willing to pay for specific goods or services (King & Mazzotta, 2000a).

1.6. Defining the concepts

The following concepts are used throughout this study and are defined as follows:

1.6.1 National parks

Page and Connell (2009:645) and Walker and Walker (2011:532) defines a national as park large designated natural area that has a wide variety of characteristics and is accommodate through sensitive management. The protection of natural resources is the priority and therefore hunting, mining, and consumptive activities are not authorized in national parks. Furthermore national parks can be defined as areas that are declared by the national government as public property, with the primary goal of preserving and developing this specific land area for the purpose of recreation and culture. This specific land area is chosen by the national government for its scenic, environmental and historical characteristics (The Free Dictionary, 2009).

1.6.2 Kruger National Park

The KNP is one of the 22 national parks situated in South Africa that is managed by South African National Parks (SANParks). As the definition states (*see* 1.6.1), SANParks focuses on the conservation of the biodiversity, landscapes and the cultural heritage of South Africa (SANParks, 2009:2). The KNP is one of South Africa's most renowned national parks, with over one million visitors each year and supporting between 300 000 and 600 000 people living in and near the park (Shackleton *et al*., 2007 and Saayman & van der Merwe, 2008:154). The KNP was founded in 1926 by the late President Paul Kruger, when the Sabie and Shingwedzi game reserves were merged. The main rationale behind the merging of these two game reserves was to impede and stop the ongoing hunting of wildlife and to preserve the natural environment (Honey, 1999:339).

The KNP covers nearly 2 million hectares of land and is situated in the Mpumalanga and Limpopo provinces and extends into Mozambique (*see* Map 1), making it South Africa's largest national park (SANParks, 2010). These 2 million hectares of fairly untouched natural landscape are home to 336 trees, 49 fish, 34 amphibians, 114 reptiles, 507 birds and 147 mammals (SANParks, 2011)

1.6.3 The northern region of the Kruger National Park

The survey took place in the northern region of the KNP, so it is useful to include a description of this part of the KNP. The northern region is a semi-arid region that covers more than 7 000km^2 and ranges southward from the Tropic of Capricorn to the Olifants River. This semi-arid region is dominated by the Mopani tree that thrives in the hot climate. Five rivers make their way through this region, including the Olifants and Letaba rivers. The Olifants and Letaba Rivers alone are host to 60% of the KNP's hippo population, while birdlife also flourishes here. One can expect to see the following species of wildlife: bushpig, elephant, buffalo, bushbuck, impala, kudu, zebra, tsessebe, and ostrich. Although rare sightings have been made, one can also expect to see, the roan antelope, rhino, lion, leopard and cheetah.

The far northern region's vegetation differs noticeably from other habitats in the KNP. Birdlife abounds here and one can expect to see the knocking sand frog, a number of bat species, bushpig, and the rare Sharpe's grysbok. This region is also host to the endangered wild dog and tropical warm-water fish such as the rainbow killifish that is not found anywhere else in South Africa.

Map 1: Northern region of the Kruger National Park

Source: http://www.tembalodges.co.uk/southafrica/krugerpark/images/kruger%20park%20map.gif

1.6.4 Ecotourism

Ecotourism can be defined as nature-based tourism, or the travel to a natural environment that does not result in negative environmental, economic and social impacts that are associated with mass tourism (McBride, 2008:142*)*. Furthermore, van der Merwe (2004:5) adds to this definition, by stating that ecotourism consists of responsible travel to a fairly untouched natural area, with the main objective of studying, admiring and enjoying the natural scenery and its wildlife. Van Wyk (1995:8) adds to these two definitions by stating that ecotourism compasses the travel to natural landscapes that will ultimately contribute to the conservation of ecosystems.

1.6.5 Big 5

According to Zijlma (2011) the Big 5 refers to the African lion, leopard, rhino, elephant and Cape buffalo. Big game hunters assigned the name 'Big 5' to these five African species because these species are very fierce when cornered and shot at which makes them difficult to hunt.

1.6.6 Common goods

Common goods can be defined as goods that are available to the community as a whole or, in other words, equally available to everyone's advantage (Velasquez *et al*., 1992). Common goods are those goods, typically natural resources, which are non-excludable, but rival in consumption. Deneulin and Townsend (2007:8) define common goods as goods that are intrinsically shared by humans in common. Common resources include fisheries, wildlife, surface and groundwater, range and forests (Feeny *et al.,* 1990:3).

1.6.7 Consumptive use values

Consumptive use can be defined as the use of a resource that will ultimately lead to the diminishing of that resource. In wildlife terms, consumptive use may include auction value or the hunting value of wildlife (Chardonnet *et al*., 2002:16).

1.6.8 Non-consumptive use values

Non-consumptive use encompasses situations where individuals may use, yet not consume certain aspects of wildlife, such as wildlife watching (Chardonnet *et al.*, 2002:16).

1.6.9 Willingness to pay

Willingness to pay can be defined as the price or monetary amount people are willing to pay to acquire a certain good or service. Willingness to pay is associated with the demand side of price of a specific good or service. However, it doesn't require an actual payment (Economic Glossary, 2008).

1.6.10 Contingent Valuation method

The CV method can be used to estimate the economic value of non-market environmental attributes or services. These attributes or services include endangered species, recreational or scenic resources (King & Mazzotta, 2000a; Business Dictionary, 2010 and Frykblom, 1997). This pricing method generally measures people's willingness to pay based on survey questions such as: are they willing to pay for a certain attribute or benefit or accept compensation for a damaged environment.

1.6.11 Hedonic pricing model

According to Gundimeda (2005) the hedonic pricing method can be defined as a statistical technique that uses the price of goods with different measurable characteristics to determine the price of each of those characteristics.

1.6.12 Travel cost method

King and Mazzotta (2000c) define the travel cost method as a method used to estimate economic use values that are associated with the environment. It allows a researcher to conduct a cost-benefit analysis resulting from changes in access cost for a recreational site, the abolition or addition of recreational sites and changes in the environmental quality of the site. People's willingness to pay can be estimated based on the number of trips they make when one or more of these aspects change (King & Mazzotta, 2000b).

1.7 Chapter division

This dissertation will be divided into five separate chapters.

- Chapter 1 consists of the introduction and problem statement.
- Chapter 2 focuses on the methods that will be used as base for all estimations and reviews the different methods used in the willingness to pay literature.
- Chapter 3 will consist of the analysis of the raw data, followed by Chapter 4 where the results of the estimated stated preferences or CV method will be discussed.
- Chapter 5 will consist of the conclusion, where all the findings will be summarised to meet the stated objectives and to answer the problem investigated.

2 CHAPTER

ANALYSIS OF THEORETICAL MODELS

2.1 Introduction

Chapter 1 outlined the increasing importance of tourism as an engine of growth and development of countries. With its abundance on natural resources, South Africa has the potential to accelerate growth and development and hence mitigate problems such as high unemployment levels and significant poverty and inequality. Recent studies argue that parks have the potential to assist government in achieving such macroeconomic goals by means of promoting employment opportunities, generating income and improving the overall livelihoods of the people living near and around the parks (Shackleton *et al*., 2007). South Africa needs to focus on the preservation of the natural environment since environmental services tend to have a greater effect on lower-income groups than on high-income groups (Hökby and Söderqvist: 2003:8). Many environmental products often include non-market resources such as the Big 5.

The value of wildlife can be split into two different categories. These are direct values and indirect values. Direct values encompass the actual use of a good or service. This includes activities such as hunting and fishing (King & Mazzottaa, 2000). However, Chardonnet *et al*. (2002:15) explain that direct values may also include non-market values for goods such as game. It is imperative to understand that direct values, often referred to as consumptive use values, are those values derived from the actual use of a good or service, whether or not it is direct use or indirect use. Indirect values entail the use of a good of service without depleting the resource. Indirect use values include non-consumptive use values such as bird watching and hiking. as well as option value where consumers are concerned with the preservation of wildlife for future generations and, lastly, existence value. Existence values are the ethical feelings that consumers assign to the existence of wildlife (Chardonnet *et al*.,

2002:16). Wildlife-based tourism often includes non-consumptive use values or indirect values (Chardonnet *et al*., 2002:17).

Economists often refer to the economic value when valuing wildlife. This is known as the theory of economic valuation. The theory of economic valuation is based on the assumption of stated preferences rather than revealed preferences (King & Mazzotta, 2000a). During consumer decision making, consumers will often weigh the trade-off between two different goods. Although economic value is often considered as a market value, King and Mazzotta (2000a) argue that indirect values can often be derived from the price people are willing to pay in markets for related goods and services. They further argue that people will often pay a higher price for a beach house with an ocean view, consequently the amount they are willing to pay for recreational experiences can be derived.

However, determining the value of non-market resources is problematic since it is difficult to determine the value of viewing a rhino or elephant in the wild using price-based models. The aim of Chapter 2 is to give an overview of what is meant by the term common resources and to explain why it is difficult to determine the amount that tourists are willing to pay for simply viewing the Big 5. This is followed by an overview of the methods that are typically used to determine willingness to pay and a review of studies that have applied these methods.

2.2 Common resources

In 1968, a professor of biology at the University of California, Garret Hardin, popularised the dilemma of common goods. Ever since, his paper on 'The Tragedy of the Commons' has become popular in environmental studies, economics, ecology and political science (Berkes, Feeny, McCay & Acheson, 1989:91 and Feeny *et al.,* 1990:2). Table 2.1 distinguishes between the two characteristics.

Table 2.1: Common resources characteristics

Characteristics	Definition
Non-excludability in consumption	The exclusion of users (who are not willing to pay) is often costly and sometimes virtually impossible
Subtractability/rivalry in consumption	Each subtracts from the welfare of other users – there is rivalry in the consumption of the resources

Source: Feeny et al., 1990:3

The basic characteristic of common resources, non-excludability and subtractability, are the main reason for the degradation and exploitation of resources. Hardin (1968) emphasised that, for this reason, overexploitation of resources occurs and will eventually lead to the tragic loss of resources for the community as a whole (Feeny *et al*., 1990:2). Hence, the theory of 'the tragedy of the commons' developed. Gifford and Wells (1991:437) distinguished between three different common goods and the likelihood of each one's depletion.

Table 2.2: Depletion of common resources

Commons	Example	Likelihood of depletion
Regenerate relatively quickly	Grass for grazing, river water for electric power	Relatively high
Does not regenerate so quickly	Fish, trees used for lumber	High
Regenerates more slowly than people can harvest them	Oil, endangered species	Danger of resource exhaustion is greatest

Source: Gifford and Wells, 1991:437

As can be seen from Table 2.2, commons are divided into three separate categories according to their likeliness of depletion. Common goods that regenerate at a slower rate than people can harvest them (oil and endangered species) are more likely to be exhausted. Hence the commons dilemma occurs when improved extraction technology or the increase in the number of consumers occurs more quickly than the resource can regenerate.

The theory of the tragedy of the commons is based on the assumption that individuals will always act in short-term self-interest, hence leading to the depletion of common resources. According to Gifford and Wells (1991:438) it is often easier and more rewarding for individuals to act in short-term self-interest, rather than maximise the gain of the entire community, including themselves, over the long term. Edney (1979) also acknowledged this problem and introduced the commons dilemma through the 'nuts game' (Gifford & Wells, 1991:438). The nuts game consisted of a number of respondents who sat around a bowl filled with a dozen walnuts. The respondents were given the option to take as many walnuts as they wished, which could be traded for something valuable, i.e. money, concert tickets or food, at any given time during the game. However, if the walnuts remained untouched for ten seconds, the number of walnuts will be doubled (Gifford & Wells, 1991:438). The end results confirmed the theory that people will act in their short-term self-interest, rather than behave in the long-term public interest. These dynamics threaten scarce natural resources and endangered species.

Hardin (1968), as quoted by Berkes *et al.* (1989:91), argued that the tragedy of the commons has its roots in the absence of property rights. There are no technical solutions and the problem often requires government intervention to correct this market failure. Hardin (1968) suggested that the only way to avoid market failure and prevent depletion of common resources is through privatising common property and implementing government regulation systems where rights to entry are allocated. Burger and Gochfeld (1998:8) and Feeny *et al*. (1990:5) outline the importance of distinguishing between the nature of the resource and the property rights regime under which it is held. There are four categories of property rights under which common property resources are held. These four categories are explained in Table 2.3 below.

Table 2.3: Types of property rights regimes

Type	Description	Example
Open Access	Absence of any well-defined property rights; completely open access to resources that are free to everyone	Recreational fishing in open ocean. But, for example, Bison and passenger pigeon overharvested led to decline and even extinction
Common Property	Resource held by community of users who may apportion or regulate access by members and may exclude non-members	Small fishing village that regulates fishing rights among users
State Property	The resource is held by government, which may regulate or exploit the resource or grant public access; government can enforce, sanction, or subsidise the use by some people	Public lands such as national forests or parks where grazing, lumber, or recreational rights are granted by government
Private Property	Individual owns property and has the right to exclude others from and can sell or rent the property rights	Private ownership of woods where owner can sell or rent the land and cut or sell the trees.

Source: Burger and Gochfeld, 1998:9

According to King and Mazzotta (2000a), non-market goods consist mainly of environmental goods that cannot be traded in markets. These goods include clean air, water, fish and wildlife. The economic value of non-market goods, that is, how much people are willing to pay in monetary value to obtain these goods, is often impossible to determine since the economic value of these goods is not revealed in market prices.

National parks fall under the State Property regime. Hence, the KNP relies on the State Property regime to protect their common resources and to prevent resource degradation. However, according to Sibanda (1995:81), wildlife often suffers a double tragedy. Not only is wildlife a common resource, the environment or habitat of the wildlife is also a common resource. The conservation of species such as the Big 5 presents an interesting challenge. Any specific animal can be privately owned, or be the property of the state. However, the fact that these animals are protected and can be viewed in their natural habitat is a ‘good’ that everyone owns together and

that cannot be allocated through the market. Due to this dilemma, the question thus arises: how do parks, such as the KNP, prevent the depletion of common resources? What can the KNP do to prevent the depletion of their common resources including the Big 5?

As stated in Chapter 1, determining the economic value of the Big 5 involves emotional issues of the KNP's culling of the elephants, lion hunting elsewhere and the recent increase in rhino poaching across South Africa. Three hundred and thirty three (333) rhino were illegally killed across South Africa in 2010, which included 10 endangered black rhino. This is the highest annual total of poaching of rhino ever experienced by South Africa. This number did not decline. South Africa lost 5 rhino to poaching in the first week of 2011. Poaching of rhino in the KNP accounted for 146 of the 333 total for 2010. This is alarming, since the KNP is home to the largest population of white and black rhino in South Africa. The poaching of rhino is a clear violation of the property rights of private game owners and of the property of the state in the case of the KNP. The trade in illegal rhino horn also takes place via the market. However, as argued above, in addition to the private cost and benefits involved, there is also a cost to society. The social cost is the loss of species in their natural habitat. Determining the value of this common good – the value that people attach to knowing that rhino still exist, are out there and that you can go and view them – is problematic. Determining this broader economic value of the Big 5 will assist authorities in developing relevant marketing pricing and conservation strategies to prevent the depletion of the Big 5. The conservation of the Big 5 and the promotion of sustainable tourism will assist not only the KNP in achieving economic growth and development, but also South Africa as a whole.

The environmental methods for determining the total economic value of wildlife can be used when determining the value that tourists place on the Big 5. The first method is the Contingent Valuation (CV) Method, followed by the Hedonic Pricing Method and the Travel Cost Model. Section 2.3 will focus on literature based on the CV method, followed by other methods that can be used; Hedonic Pricing Method (section 2.5) and the Travel Cost method (section 2.7).

2.3 Contingent Valuation Method

The following section will focus on specific aspects regarding the Contingent Valuation Method (CV).

2.3.1 What it encompasses

The CV method is based on the principle of stated preferences, since respondents are directly asked to state how much they are willing to pay for specific goods or services (King & Mazzotta, 2000a). The CV method includes the value people place on simply knowing that some environmental attribute or service exists. A reason why it is popular amongst economists is that the CV method can be used to estimate both use and non-use values of environmental services (King & Mazzotta, 2000a). It is important to understand that the CV method measures participants' stated preferences, rather than their revealed preferences, since they are asked to state how much they would pay, rather than observing their actual behaviour (King & Mazzotta, 2000a). This dissertation takes the question of nature-based tourism and environmental impacts of human activities and asks: what amount of total spending per visit to the KNP are tourists willing to allocate to the Big 5?

The CV method has a number of benefits that makes it ideal for determining tourists' willingness to pay based on stated preferences.

- ***Flexibility***

According to Mitchell and Carson (1989:87) and King and Mazzotta (2000a), the CV method is extremely flexible as a hypothetical method. It allows a researcher to obtain ex-ante judgements and to determine willingness to pay (WTP) amounts (Mitchell & Carson, 1989:89). King and Mazzotta (2000a) support this statement by adding that the CV method is flexible in the sense that it can assign monetary values to virtually any environmental resource such as common resources or non-market resources.

- ***Directly measure specific points on an individual's compensated demand curve***

Mitchell and Carson (1989:90) state that this specific attribute is one of the most important attributes of the CV method. Since a researcher can measure specific points on an individual's compensated demand curve, it eliminates the problem of biased data resulting from wrong assumptions made by the researcher. Since the participant is directly stating how much they are willing to pay for certain non-market environmental attributes or services, the researcher cannot make any wrong assumptions as to how much they are willing to pay.

- ***Widely accepted method and valid and reliable results***

Another benefit of using the CV method is that it is one of the most widely accepted methods for estimating the economic or monetary value of non-market resources. It also allows for use as well as non-use values to be estimated (King & Mazzotta, 2000a).

- ***Not difficult to analyse and interpret***

Monetary values can be estimated in terms of the mean (average) value derived from the questionnaires (King & Mazzotta, 2000a).

Despite its many benefits, there are also limitations associated with the CV method (King & Mazzotta, 2000a).

- ***Individuals are not adequately informed and lack of incentives***

Since individuals may lack incentives and are not adequately informed, respondents may misrepresent their opinions and overestimate or underestimate the values or problems which they are asked to evaluate. Respondents may not have adequate information about the resource they are asked to evaluate. When asked to value a resource, respondents need to consider alternatives and have adequate information about the resource. The decision is not a trivial one. When uniformed about the particular resource, decisions are likely not to be carefully considered and will lead to inaccurate evaluations of the resource.

- ***Misrepresentation of beliefs***

Respondents may believe that the results of the survey could influence public or private decisions in some manner and hence not give the true values of their opinions. They may exaggerate their values to increase the importance of a natural resource, or understate their values to diminish the importance of a natural resource.

- ***External factors may influence respondents' valuations***

A good example of this specific attribute is that respondents may want to please the interviewer and hence over quantify their preferences.

- ***Answers depend on the manner in which questions are asked***

Respondents may misinterpret questions, or misunderstand questions and hence give the wrong estimate of their values.

- ***Variability in past contingent valuation estimates***

It is argued that the estimates derived from contingent valuation surveys are inconsistent and will vary from one survey to another.

2.4 Review of studies that have used the CV method

All of the studies consulted indicate that the socio-demographic characteristics of visitors/respondents are significant predictors of a person's willingness to pay. The next section will concentrate on the various variables that were included in previous studies and have been significant determinants of respondents' WTP.

2.4.1 Factors Influencing the Willingness to Pay for Entrance permit: The Evidence from Taman Negara National Park (Aziz *et al*., 2010)

Aziz *et al*. (2010:212) applied the CV method to determine the maximum amount visitors were willing to pay for an entrance permit in Taman Negara National Park (TNNP) in Malaysia. Factors that had an effect on visitors' willingness to pay included nationality, income, education and marital status. Table 2.4 is a summary of the profiles of visitors to the TNNP.

Table 2.4: TNNP visitors' profiles

Characteristics	Percentage	n
Gender		
Male	62.4	131
Female	37.6	79
Marital status		
Single	47.6	100
Married/partner	48.1	101
Prefer not to say	4.3	9
Age		
18-25	31.9	67
26-35	47.1	99
36-45	10.5	22
46-55	7.6	16
56-65	2.4	5
65+	0.5	1
Nationality		
Malaysian	47.6	100
International	52.4	110
Education level		
No formal education	2.4	5
Primary school	2.4	5
Secondary school	16.7	35
Diploma	25.7	54
First degree	32.8	69
Masters/PhD	20.0	42
Occupation		
Professional	32.9	69
Managerial	31	65
Skilled non-manual	7.6	16
Skilled manual	4.8	10
Unskilled non-manual	2.4	5
Retired	2.8	6
Student	14.3	30
Not working for medical reasons	0.9	2
Unemployed	3.3	7
Monthly gross income		
Lower than US$1000	18.6	39
US$1001 – US$2000	38.1	80
US$2001 – US$3000	21.4	45
US$3001 – US$4000	9.0	19
US$4001 – US$5000	6.2	13
More than US$5000	6.7	14

Source: Aziz et al., 2010:219

Aziz *et al.* (2010:215) found that 79% of visitors to TNNP were aged between 18 and 35 years and argued that, based on previous studies of TNNP, the younger generation tend to visit TNNP, tropical rain forests and national parks. Fifty two per cent (52%) of the visitors to TNNP were international visitors, while the remaining 48 per cent were Malaysians (local residents). They also found that most of the visitors were university educated. These results are in agreement with a study done in 1994, by the Travel Industry Association of America (TIAA), which found that 35% of eco-tourists in the USA have professional or managerial job occupations. Sixty four per cent (64%) of respondents held either a professional or managerial position (Aziz *et al*., 2010:215). The income profile was consistent with a study done by Backman and Potts (1993), as quoted by Aziz *et al*. (2010:215), who indicated that eco-tourists fall in a higher income bracket than any other travellers. They found that 60% of respondents earned between US$1001-US$3000 per month. Table 2.5 is a summary of the results of the Marginal Regression (MR) done by Aziz *et al*. (2010).

Table 2.5: Results of MR

Variable	**Model WTP**
Constant	-0.2314
	(-0.3515)
Monthly income	0.1063*
	(2.8601)
Age	0.2282
	(1.0695)
Nationality	-0.6474**
	(-4.8925)
Gender	0.0378
	(0.3487)
Marital status	0.2601*
	(2.3893)
Education	0.3313*
	(2.4181)
R-Squared	0.3525
Adjusted R^2	0.3319
F	17.1469
d.f	195

Note: Values in parentheses are the corresponding t-statistic, that is, coefficient divided by its standard error.
* p≤0.05
** p≤0.01

Source: Aziz et al., 2010:220

The results in Table 2.6 can be interpreted as follows: monthly income is positively related to WTP. A 1% increase in monthly gross income will increase a visitor's WTP by 0.1063%. Education and WTP is also positively related. A 1% increase in years of education will increase visitors' WTP by 0.3313%. From the results above it is evident that, although income has a positive effect on a visitor's WTP, this effect is smaller than that of education. Hence, both income and education are positively related to WTP, but education has a greater effect than that of income. Aziz *et al*. (2010:215) argue that the reason is that income plays a significant role in a visitor's WTP decision. However, this effect is usually short-term since respondents consider other expenses such as accommodation, transport, food etc. On the other hand, the effect of education is long-term since the increase in knowledge has an impact on a person's rational thoughts and may shape the perception and attitude of the person in a more matured manner.

Nationality and WTP are negatively related. This study found that Malaysian visitors are less willing to pay for an entrance permit compared to international visitors. Marital status, on the other hand, is positively related to a person's WTP. Aziz *et al*. (2010:215) argue that the reason behind this may be that married respondents are willing to pay more for an entrance permit into TNNP because they want to preserve the rain forest for future generations.

2.4.2 Valuing riverside wetlands: the case of the 'Donau-Auen' national park (Kosz, 1996)

Conflict between several organisations, environmentalists and Danube Hydro Austria has been going on for decades (Kosz, 1996:109-110). In 1984, Danube Hydro Austria won the court case by arguing that electricity produced by hydro-electric power is CO_2-neutral and renewable. In December of 1984, Danube Hydro Austria started cutting down trees in the riverside wetlands and flood plain forest to make room for a hydroelectric power station. Ever since, researchers, authorities and scientists have been evaluating all aspects of this project and trying to prevent further destruction of the wetlands (Kosz, 1996:110). Authorities as well as environmentalists are proposing that around 12 000 hectares of the wetlands should be protected and internationally acknowledged as a national park known as 'Donau-Auen'.

Kosz (1996:111) focused his study on reviewing the results of the cost-benefit analysis of establishing a hydroelectric power station as well as conducting a WTP survey on respondents in favour of or against the establishment of a national park. However, for the purpose of this study, only the results derived from the WTP survey will be reported. Table 2.6 is the summary of the empirical results for the Donau-Auen National Park.

Table 2.6: The empirical results for Donau-Auen National Park

Results of the empirical estimation of the linear regression model with the dependent variable 'WTP' (class mean of respondents' willingness-to-pay values for a 'Donau-Auren National park; including zero bids)

Variable	**B-Coefficient (standard error in brackets)**	**t-Statistics**
Future		
1 = plans to visit the national park in the future	92.7261	
0 = others	(53.4047)	1.736***
Profession		
1 = employed	127.0091	
0 = others	(46.0653)	2.757*
Children		
1 = living with children (less than 14 years) in one household	127.4029	
0 = others	(52.2273)	2.439***
Visit		
1 = area already visited	63.9864	
0 = others	(44.2651)	1.446
Education		
Class mean of eduction time	19.8861	
(4 different classes)	(10.6597)	1.866***
Eastwest		
1 = eastern Austria (Vienna, Lower Austria, Styria, Burgenland)	98.0001	
0 = others	(41.8448)	2.342**
Nature		
1 = environment consciousness; strong preference for the protection of natural goods	23.7543	
0 = others	(67.1961)	0.354
Income		

Personal income in ATS (class mean of 13 different classes)	0.0049 (0.0029)	 1.650***
Age		
Age in years (class mean of 4 different classes)	-3.5301 (1.3125)	 -2.682*
Industry		
1 = Respondent lives in industrialised community 0 = others	39.6526 (42.89011)	 0.925
Constant	-55.7453 (19.5865)	 -0.390
Adjusted R^2	0.21533 (11)	
F-Statistics	9.00575	
N (number of respondents included)	572	

* p < 0.01
** p < 0.05
***p <0.1
Source: WTP survey 'Donau-Auen' National park; author's calculations

Source: Kosz, 1996:122

The main findings of this study were as follows: Personal income contributes positively to WTP. As can be seen from Table 2.6, if personal income increases by 1 standard deviation, it will lead to a 0.0049 standard deviation increase in WTP. Education also has a positive relationship with respondents' WTP. This is also the case with future plans to visit, employment (in other words professional standing), children, whether or not respondents previously visited the park, the origin of the participant and, lastly, whether or not the participant is environmentally conscious.

Table 2.6 indicates that a 1 standard deviation increase in education will lead to a 19.8861 standard deviation increase in WTP (Kosz, 1996:121). Kosz (1996:122) also explains that people who have children are more willing to pay for the conservation of the wetlands than those who do not have children. One would expect the WTP to decrease, due to the fact that people with children have more expenses than those who do not have children. However, Table 2.6 indicates that this is, in fact, not the case; if the number of children should increase by 1 standard deviation, WTP will increase by 127.4029 standard deviations.

Kosz (1996:122) explains that another important variable to include when estimating the determinants of WTP is visitors' future plans to visit. He argues that when people plan on visiting the park/area/natural environment in the future, they are willing to pay extra for the conservation of that park/area/natural environment. Table 2.6 indicates that this is the case; a 1 standard deviation increase in future plans to visit will lead to a 92.726 standard deviation increase in WTP (Kosz, 1996:122).

A factor that contributed negatively to WTP is the age of the respondents. Table 2.6 indicates that a 1 standard deviation increase in age will lead to a 3.5301 standard deviation decrease in WTP. This indicates that the older respondents are, less willing to contribute to establishment of the Donau-Auen National Park (Kosz, 1996:121).

2.4.3 Wildlife-based tourism and increased support for nature conservation financially and otherwise: evidence from sea turtle ecotourism at Mon Repos (Tisdell & Wilson, 2001)

The purpose of this study was to determine tourists' willingness to pay for viewing sea turtles at Mon Repos Beach near Bundaberg, Queensland. Tisdell and Wilson (2001:233) proposed that viewing sea turtles at Mon Repos Beach will contribute to tourists' willingness to pay for the conservation of these species. This study highlighted the important relationship between socio-economic variables and tourists' willingness to pay for the conservation of sea turtles. This study also found that on-site experiences, such as viewing sea turtles, had a positive impact on tourists' willingness to pay. However, willingness to pay is still sensitive whether or not wildlife is seen.

The key predictors of willingness to pay include education, income, seeing sea turtles or their hatchlings, and donations made (Tisdell & Wilson, 2001). Education was the most important predictor, followed by income.

2.4.4 Willingness-to-pay for Borivli National Park: evidence from a Contingent Valuation (Hadker *et al*., 1997)

This study was conducted to determine Bombay residents' willingness to pay for the maintenance and preservation of the Borivli National Park (BNP) (Hadker *et al*., 1997:105). The main findings of this study (Hadker *et al*., 1997:112-114) are as follows;

Age did correlate with WTP. However, it had a positive sign, indicating that the older generation are more likely to contribute positively to WTP. Education was statistically significant and had a positive sign but was excluded from the regression model due to strong correlation with per capita income. The years of stay in Bombay was statistically insignificant but had a positive sign, indicating that respondents who stayed in Bombay longer were more likely to contribute to WTP compared to those who have not lived in Bombay for long. Income correlated strongly with WTP, indicating that respondents with higher income are more likely to contribute positively to WTP. Professional standing also correlated strongly with WTP. Businessmen, however, were more willing to contribute towards the conservation of the BNP than professionals, *ceteris paribus*. The variable 'sex', where the reference group is male, correlated with years of schooling and professional standing and was excluded from the regression model. A year of schooling however, correlated with per capita income levels and was also excluded from the model. The variable 'distance', measuring how far respondents lived from BNP, was statistically significant and attained a positive sign.

2.5 Hedonic Pricing Method

The following section will describe specific aspects associated with the Hedonic Pricing Method.

2.5.1 What it encompasses

King and Mazzotta (2000b) explain that the principle of the hedonic pricing method is based on the fact that the price of a marketed good is related to its characteristics, or the service it provides. Using the hedonic pricing model, one can establish the value

of a characteristic of a certain product or service by looking at the overall price of the product or service. For example, the price of a house reflects the characteristics of the house such as how many rooms, swimming pool, location, etc. Each individual characteristic can therefore be determined by looking at how the price people are willing to pay differs between houses with different characteristics. The hedonic pricing method is mostly used in calculating residential property prices.

A simple and brief background on how the hedonic pricing method is used will follow. Consider Figure 2.1, where an example of two similar houses, located in different localities is used to determine the price that buyers are willing to pay for air quality (a common resource).

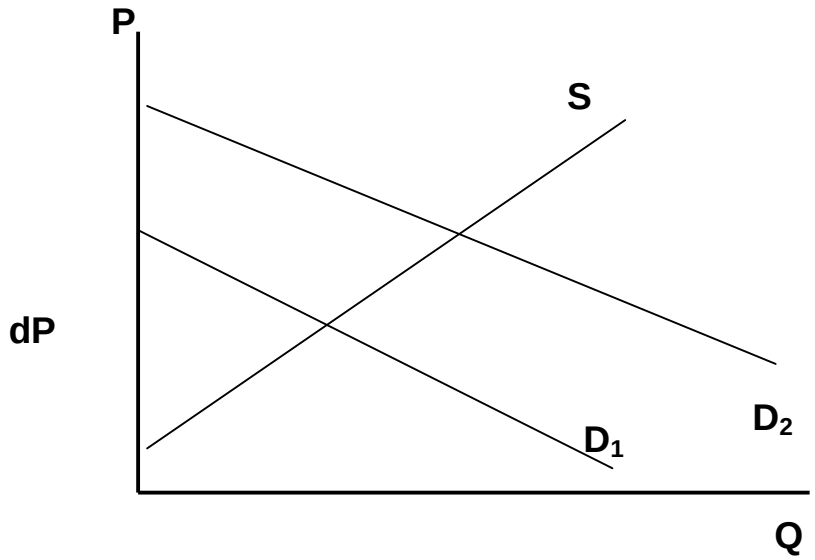

Figure 2. 1: Differential price between the localities with different environmental quality
Source: Gundimeda, 2005:10

Locality A is indicated by the demand curve D_1 and is located near an industrial complex and highly polluted area. D_2 is the demand curve for locality B that is situated in a residential, less polluted area. As can be seen in Figure 2.1, the demand for locality B is greater than the demand for locality A. After considering all the other factors influencing the price of a house, locality B will fetch a higher price than the house in locality A even if all the other characteristics of houses in the different areas were similar. The price differential, given by dP, is calculated as the

marginal willingness to pay for the difference in air quality. The price differential can be calculated by using regression methods.

The Hedonic Pricing Method has a number of benefits that make it ideal for determining the price of each good with different measurable characteristics such as house prices.

- Estimate values are based on actual choices. This overcomes some of the limitations of the hypothetical nature of the WTP methods.
- Property markets respond quickly to information and can hence be a good indication of value.
- Data on property sales and property characteristics are readily available.
- The method is very flexible and can be adapted (King & Mazzotta, 2000).

However, the Hedonic Pricing Method also has its limitations. Limitations associated with the Hedonic Pricing Method are as follows.

- ***Data intensive***

The hedonic pricing method requires a large number of observations that describe the selling price as well as the characteristics of the good to estimate a hendonic price function (Gundimeda, 2005:10). According to King and Mazotta (2000b) large amounts of data are required and must be manipulated to estimate a hedonic pricing function.

- ***The assumption that people have perfect information***

Gundimeda (2005:10) and King and Mazzotta (2000b) argue that if people are not perfectly informed about all the prices and characteristics, for example, of all the properties in the market, and about external factors such as taxes, interest rates and other factors, it is likely that the implicit price they pay will vary from sale to sale.

- ***Complex method***

One of the problems that occur when using the hedonic pricing model is that it requires a high degree of statistical knowledge and the results are complex to interpret (King & Mazzotta, 2000b).

- ***Multicollinearity***

Gundimeda (2005:10) argues that environmental characteristics are often collinear and it can be nearly impossible to separate the independent effect of the various variables on the price of the particular good or service.

- ***Adjustment in the hedonic price schedule is slow***

The hedonic price schedule adjusts slowly to changes in demand or supply conditions. Factors like imperfect information and transaction costs often increase the time it takes for the hedonic price schedule to adjust (Gundimeda, 2005:10).

- ***The application of the hedonic pricing method can be time consuming and expensive***

The application of the hedonic pricing method depends heavily on data availability and data accessibility (King & Mazzotta, 2000b).

2.6 Review of studies that have used the Hedonic pricing method.

The following section will give an overview of a study that has used the hedonic pricing method.

2.6.1 Value of Big Game from Markets for Hunting Leases: The Hedonic, Approach (Livengood, 1983)

Livengood (1983:288) obtained data from a survey of hunters in Texas during the 1987-89 white-tailed deer hunting season to estimate the demand for wildlife stocks. The reason behind her research was that prior studies focused primarily on valuing recreational trips, rather than wildlife stocks. She obtained the following ordinary least squares (OLS) regression function (Livengood, 1983:288). The equations, as listed below, is as indicated by Livengood (1983).

Table 2.7: Results for Equation 1

Results of the empirical estimation of the OLS regression model with the dependent variable $logP_L$ (price paid by each hunter for the lease site)	
Variable	**Model WTP**
Constant	1.6712 (0.3443)
logM	0.2117 (0.0405)
logK	0.0669 (0.0210)
logAC	0.2082 (0.0418)
NH	-0.0017 (0.0006)
Fr	0.4975 (0.1433)
D	1.3690 (0.1415)
R-Squared	0.46
n	222
Note: All the variables are significant at the 5% level.	

Source: Livengood (1983:288)

Where:

M is given as the accessibility measure (distance travelled by the hunter to the lease site)

K represents the lease quality and size (number of deer killed per season by a hunter)

AC represents the number of acres in the lease

NH represents the number of hunters buying the lease

Fr is a zero-one variable indicating whether or not there were free hunting sites available to hunters using the hunting site (zero if no, 1 if yes)

D represents the dummy variable included for whether or not the lease was for a season or a day

From the above equation, she derived the following marginal prices for deer:

Table 2.8: Results for Equation 2

Results of the empirical estimation of the OLS regression model with the dependent variable $logP_K$ (implicit price of deer)	
Variable	**Model WTP**
Constant	9.9769E-5 (4.4799E-5)
logY	0.1115 (0.0170)
$logP_t$	0.1592 (0.0259)
logK	-0.9147 (0.0128)
logAC	0.1520 (0.0238)
Fr	0.4321 (0.0881)
n	234

Source: Livengood (1983:288)

and

Table 2.9: Results for Equation 3

Results of the empirical estimation of the OLS regression model with the dependent variable logT (number of trips to lease site)	
Variable	**Model WTP**
Constant	6.6825E-6 (6.3406E-5)
logY	0.1032 (0.01520)
$logP_t$	0.3833 (0.1361)
logK	0.0285 (0.0180)
D	1.3834 (0.1262)
n	234

Source: Livengood (1983:288)

Where:

Y is the household income

P_t is round-trip travel cost

Equation 3 is the demand function derived by using the travel cost method under the assumption that all hunting sites are close substitutes. All the demand functions are downward sloping with regard to own price changes. The variable 'number of deer' was statistically significant indicating that more hunting initiatives will lead to an increase in the number of trips. Substituting sites are negatively associated with WTP for deer harvested at the lease sites. After estimating all 3 equations, Livengood (1983:290) could estimate the value of deer. Equation 4 was used to determine the marginal willingness-to-pay for deer where all other variables other than price and quantity are held constant. The equation was estimated using log transformations of all the independent variables.

Equation 4:

$$P_K = 25.1891\ K^{-0.9147}$$

Equation 4 was used to derive the marginal willingness-to-pay curve, and is illustrated in Figure 2.

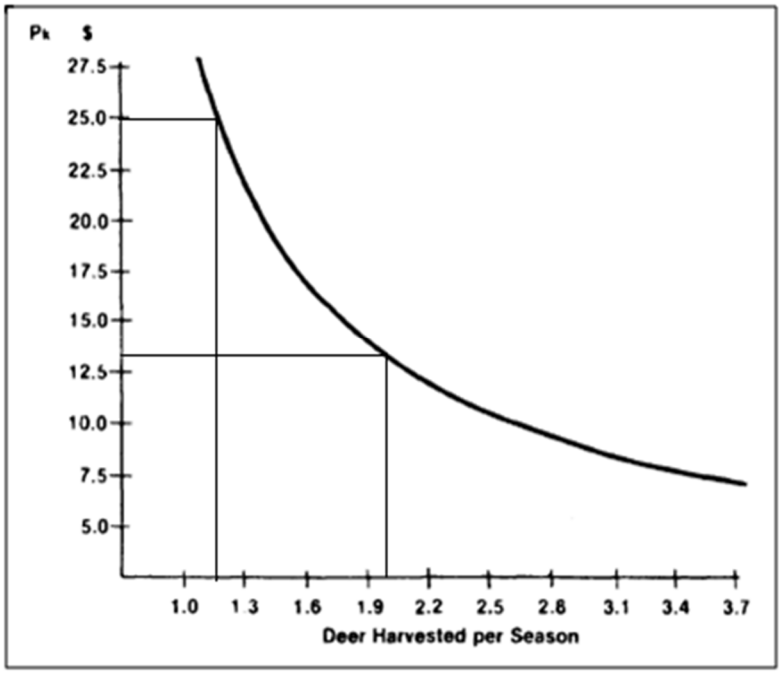

Figure 2.2: Marginal willingness-to-pay for deer

Source: Livengood, 1983:290

As can be seen from Figure 2, lease hunters were willing to pay more or less $25 to be assured of harvesting one deer, followed by about $13 for any additional deer.

2.7 Travel cost method

The following section will describe specific aspects associated with the travel cost method.

2.7.1 What it encompasses

This method is based on quantity demanded at different prices to estimate people's willingness to pay for specific goods or services. This is similar to estimating people's willingness to pay for a marketed good based on the quantity demanded at different prices King and Mazzotta (2000c).

The travel cost method has a number of benefits that make it ideal for determining people's wiliness to pay based on changes in travelling costs.

- The travel cost method is closely associated with other more conventional empirical techniques that allow economists to estimate economic values based on market prices.

- The method is based on revealed preferences (actual behaviour) rather than stated preferences. This allows the researcher to obtain more accurate data regarding a person's willingness to pay.
- The method is relatively inexpensive to conduct.
- A larger sample size can be obtained since more visitors tend to participate in on-site surveys.
- Results are relatively easy to interpret (King & Mazzotta, 2000c).

However, the travel cost method also has its limitations. Limitations associated with the travel cost method, as indicated by King and Mazzotta (2000c) are as follows.

- The travel cost method has two assumptions wherein its limitations lie. The first assumption of the travel cost method is that people perceive and respond to changes in travel cost the same way they would respond to a change in entrance permits. This is a vast assumption, since it is not always the case. The second assumption is that it assumes people only travel for a single purpose, to visit a specific recreational site. Hence, if a tourist should visit more than one place i.e. the recreational site, the value of the site may be overestimated (King & Mazzotta, 2000c).
- The opportunity cost of time or time spent travelling is very complex. However, the opportunity cost must be included in the model to insure that the value of the site is not underestimated.
- The accessibility and availability of substitute recreational sites will affect the values obtained. For example, if two people travel the same distance, they are assumed to have the same value. However, if one person has several substitutes available but travels to this site because it is preferred, this person's value is actually higher. This is also the case for people who choose to live close to the specific recreational site since they value the site. Consequently, they will have a lower travel cost but still have high values for the site that are not accounted for (King & Mazzotta, 2000c).
- Standard travel cost approaches provide information about current conditions, but not about gains or losses from anticipated changes in resource conditions.

- The travel cost method is not appropriate for sites near major population areas, since visits may be from 'origin zones' that are quite close to one another. To estimate the value of a site, there needs to be sufficient differences between distances travelled to affect travel cost and for differences in travel costs to affect the number of trips made.
- The travel cost method is limited in its scope of application because it requires user participation (King & Mazzotta, 2000c).

2.8 Review of studies that have used the Travelling cost method

The following section will give an overview of a study that has used the travelling cost method.

2.8.1 Measuring The Economic Value of Natural Attractions in Rawapening, Semarang District, Indonesia (Hakim, 2010)

The main purpose of this study was to conduct a travel cost method to measure the economic value in Rawapening. This study also aimed to see how far the role of nature-based tourism is seen as an environmentally sound tourist attraction. This study uses two assumptions to obtain the different equations that are used.

The first assumption was that an individual visitor's attraction will receive admission price offers that will maximise their utility, which can be written as follows;

$$V(1,Y - A;S) + \varepsilon_1 \geq V(0,Y;S) + \varepsilon_0 \quad (2.1)$$

Or, vice versa, where an individual visitor's attractions will reject the bid price of admission if they are not able to maximise their utility.

$$V(1,Y - A;S) + \varepsilon_1 \leq V(0,Y;S) + \varepsilon_0 \quad (2.2)$$

Where:

V donates the indirect utility function

Y is the income (monthly household income)

A is the bid or offer price of admission

S is the socio-economic profile of individual (demographic profile)

$\boldsymbol{\varepsilon_j}$ is the error term

Individuals who are faced with the decision as to whether or not to accept the bid will have a probability of P_1. The individuals receiving the bid can be expressed in logarithm or hence, log model;

$$PROB_1 = \gamma + \delta_1 BID_1 + \delta_2 SOCECON_1 + \delta_3 PERCP_1 + \mu_1 \qquad (2.3)$$

Where:

γ is the constant

$\boldsymbol{\delta_j}$ is the coefficient of the variables

$\boldsymbol{\mu_1}$ is the error term

The second assumption is that the individual's demand for recreation to places is affected by travel cost and individual preferences, as well as socioeconomic characteristics or socio-economic characteristics and respondent perceptions. Hence, the following equation is derived;

$$VISITS_i = \alpha + \beta_1 TC_1 + \beta_2 EXPER_1 + \beta_3 SOCECON_1 + \beta_4 PERCEP_1 + \varepsilon_i \qquad (2.4)$$

Table 2.10 indicates the results obtained through estimating these equations.

Table 2.10: Estimation results in OLS and Logit

Variable	OLS N=225	Variable	Logit N=225
Exper	-0.54457** (-0.05912)	Exper	
TC	-0.32774** (-0.07441)	TC	1.50163** (-0.23485)
Income	0.17581** (-0.07334)	Income	0.28094* (-0.17486)
Age	0.22387** (-0.0614)	Age	-0.20758 (-0.23377)
Gend	0.01262 (-0.05287)	Gend	0.21403 (-0.44715)
Educ	-0.06728 (-0.06662)	Educ	0.74907** (-0.27049)
PERCP1	-0.14890** (-0.05794)	PERCP1	0.23516 (-0.2186)
PERCP2	0.07937 (-0.05775)	PERCP2	-0.10184 (-0.18143)
PERCP3	-0.04805 (-0.05438)	PERCP3	0.01185 (-0.16727)
PERCP4	0.16298** (-0.05529)	PERCP4	0.01101 (-0.17165)
R^2	0.47226	McFadden R^2	0.32192
Adj R^2	0.45017	LR statistic (6df)	98.44465

** sig α = 5%
* sig α = 10%

Source: Hakim, 2010:793

As can be seen from Table 2.10, factors influencing the number of visits to attractions in the area are experience (exper), travel costs (tc), the respondent's monthly income (income), age (age), the perception of respondents that associated with the decision to visit the Rawapening area (percp1), and perceptions related to the preference of respondents to the tourism attraction in the Rawapening area (percp4).

Factors influencing the willingness of visitors to accept the bid include respondent (bid), monthly income of respondents (income), and educational level of respondents (educ).

2.9 Conclusions

All three methods of determining willingness to pay have been discussed. The conclusions regarding these methods are as follows: The CV method focuses on measuring people's wiliness to pay based on survey questions such as; are they willing to pay for a certain attribute or benefit or accept compensation for a damaged environment. The hedonic pricing model is ideal for studies that focus on using house prices and specific characteristics of the house when determining WTP for each individual characteristic. The travel cost method is associated with the environment. It relates to changes in access cost to a recreational site, the abolition or addition of recreational sites and changes in the environmental quality of the site and the effect these changes have on people's willingness to pay. By evaluating the literature available on these three methods, it is clear that the CV is the best method for this study.

South Africa needs to focus on the preservation of the natural environment since environmental services tend to have a greater effect on lower-income groups than on high-income groups. This will assist with the formulation of macroeconomic policies for mitigating poverty, inequality and low economic growth rates. Valuing scarce resources is important to ensure their optimal use and, in the case of the Big 5, it is important to determine the value that tourists place on the Big 5 for conservation reasons as well as to sustain tourism activities. The contingent method discussed above is the best alternative method and will be used to determine the value tourists place on the Big 5. Subsequently, chapter 3 will focus on describing the data collected through the survey of visitors to the Kruger National Park.

3 CHAPTER

DESCRIPTIVE RESULTS

3.1 Introduction

Chapter 1 gives insight into the problem statement, the motivation and the objectives for this study. Chapter 2 gives an overview of the three methods that are commonly associated with determining the value that tourists place on non-market resources such as viewing the Big 5, as well as an overview of existing international literature on the willingness-to-pay for nature-based tourism. All three methods were discussed in detail and it was concluded that the CV method is the most appropriate method for this study. The aim of Chapter 3 is to give the rationale behind the questions asked in the questionnaire as well as analysing and describing the raw data.

3.2 The Questionnaire

The method of collecting the data was described in Chapter 1. The following section will focus on the questions asked during the survey. Table 3.1 provides insight to the questions asked for the purpose of this dissertation.

Table 3.1: Analysis of questions

Demographic Information		
Question		**Explanation**
1	Gender	Demographic information was required to establish the profile of visitors to the KNP. The answers also enabled the researcher to establish whether or not different demographic aspects have an influence on a visitor's willingness-to-pay. Questions 2 to 5
2	Age	
3	Are your children accompanying you to the park?	

4	Marital status	were based on literature stating that all of these variables have an influence on a visitor's willingness-to-pay. For example, literature states that people with higher education are willing to pay more than people with lower levels of education.
5	Country of residence	
6	Highest level of education	
Income		
	Question	**Explanation**
7	What is your annual gross income?	Literature such as Aziz *et al*. (2010) found that there is a positive relationship between higher income levels and WTP. This also confirms literature that supports the hypothesis that a higher level of education contributes positively to WTP, since higher education will automatically lead to higher income levels.
Travel behaviour		
	Question	**Explanation**
8	Number of people paying for	Kosz (1996) found that future plans to visit the specific area have a positive relationship with a person's WTP. The authors also included variables such as number of people paying for and number of nights stayed at the KNP on the assumption that people with higher levels of expenditure will ultimately have a negative correlation with WTP.
9	Number of visits to national parks in the last year	
10	Number of nights stayed at the park	

	Consumer profile	
	Question	**Explanation**
11	Wild card holder	As stated above, studies claim that people who are loyal to the park tend to have a greater WTP. The authors also included questions 11 to 14 to establish the consumer profile of visitors to the KNP on the hypothesis that these variables will have a positive effect on a person's WTP.
12	Recommend this park	
13	Reason for visit: Loyalty to the park	
14	Visit to see the Big 5	
	Big 5	
	Question	**Explanation**
15	Age introduced to national parks	Questions 15 to 18 establish visitor's previous knowledge of national parks and the Big 5 as well as their preference of Big 5 species, and whether or not these variables have a relationship with a person's WTP. Studies such as Hadker *et al.* (1997), Kosz (1996) and Tisdell and Wilson (2001) found that donations towards conservation have a positive relationship with a person's WTP
16	Role of the Big 5	
17	Species in the order of preference	
18	Member of a conservation organisation	

Source: Author's (2011)

Following the analysis of the data, the results obtain from the survey will be discussed.

3.3 Results obtained from the survey

The following section will focus on describing the primary data obtained from the survey.

3.3.1 Language

As can be seen from Figure 3, 69% of the respondents were Afrikaans-speaking, while 28% were English-speaking. Three percent (3%) of the respondents indicated that they spoke other languages, which included Danish, French, German, and IsiTsonga.

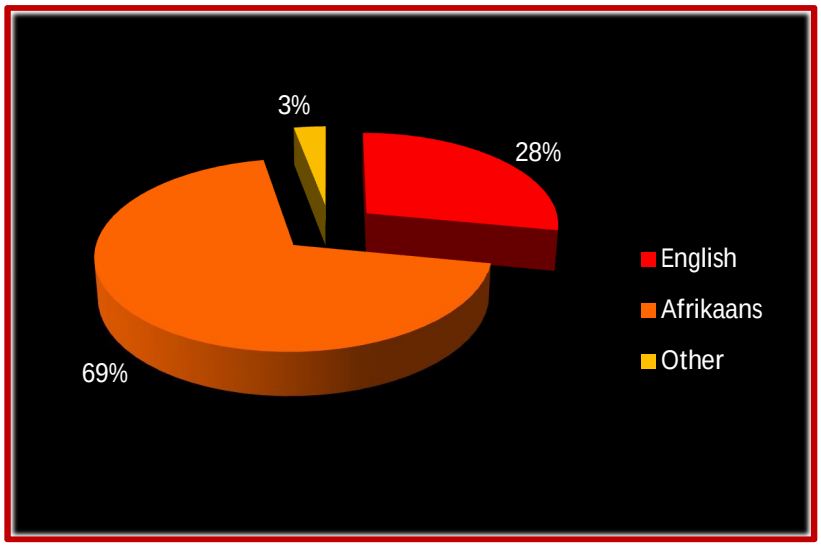

Figure 3.1: Home language

Source: Author's (2011)

3.3.2 Age

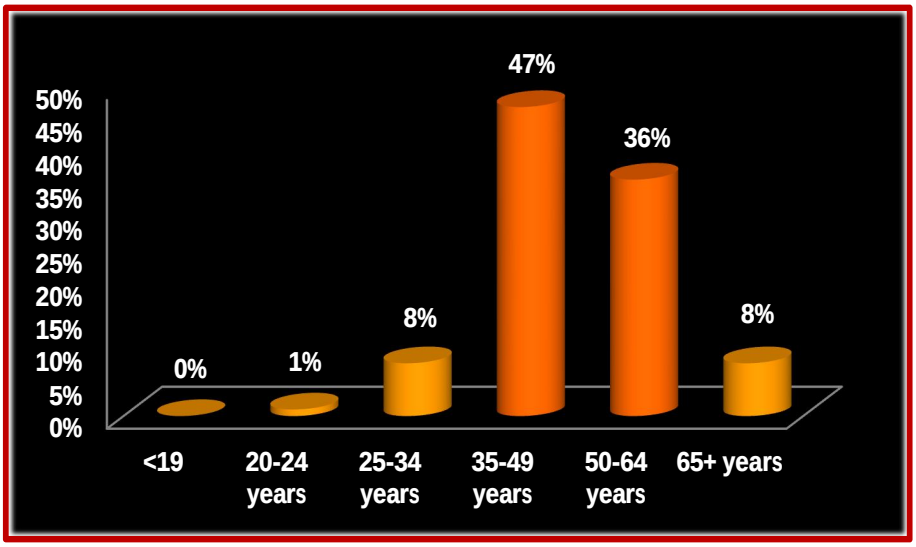

Figure 3.2: Age groups

Source: Author's (2011)

As indicated in Figure 3.2, the highest category of visitors to the KNP (47%) was between the ages of 35 and 49 years, followed by 50 to 64 years (36%). Visitors

aged 65 years and above, as well as visitors between the ages of 25 and 34 each accounted for 8% of the total respondents. A mere 1% of visitors indicated that they were between the ages of 20 and 24 years. From the preceding information, it can be concluded that older people visit the KNP, which is also evident in the average age of the visitors which was 48 years.

3.3.3 Accompanying children

The majority (62%) of respondents indicated that children accompanied them to the KNP while 38% indicated they did not (Figure 3.3).

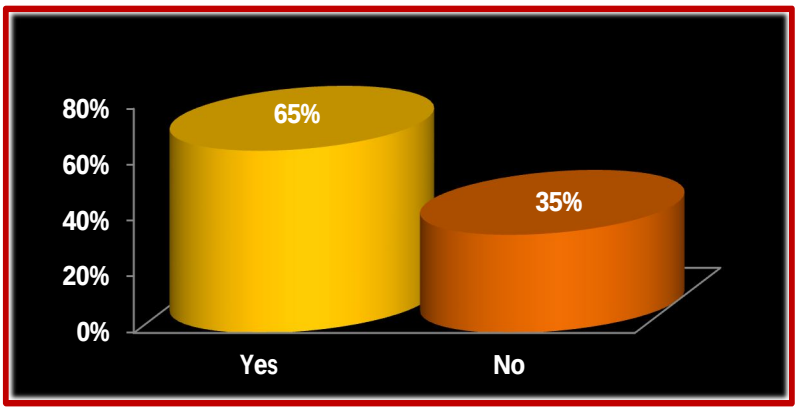

Figure 3.3: Accompanying children

Source: Author's (2011)

3.3.4 Marital status

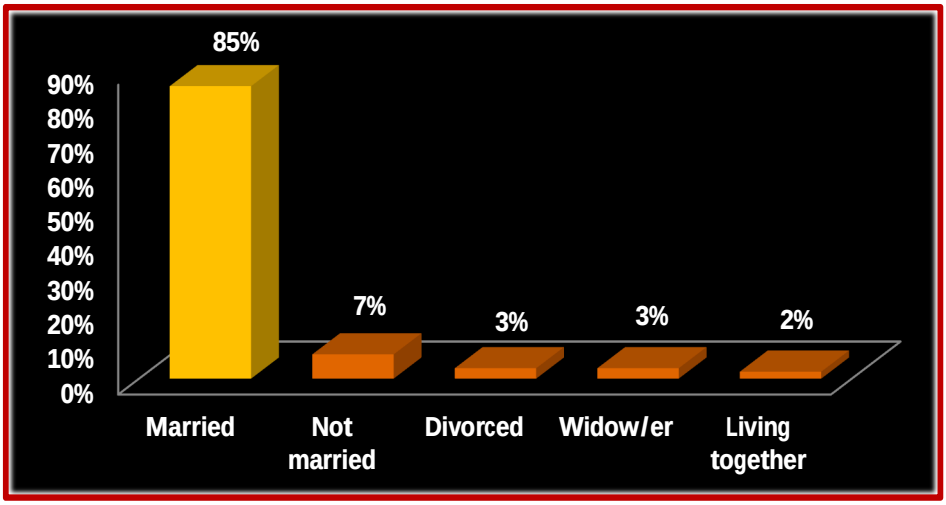

Figure 3.4: Marital status

Source: Author's (2011)

Figure 3.4 above indicates that 85% of the respondents were married, followed by those visitors who were not married (7%). Respondents who were divorced as well as those that were widowed each accounted for 3% of the total respondents. Two percent (2%) of the visitors indicated that they were living together.

3.3.5 Country of residence

An overwhelming 96% of the respondents indicated that they reside in South Africa (see Table 3.5). A mere 4% of the respondents are international tourists who visited the KNP.

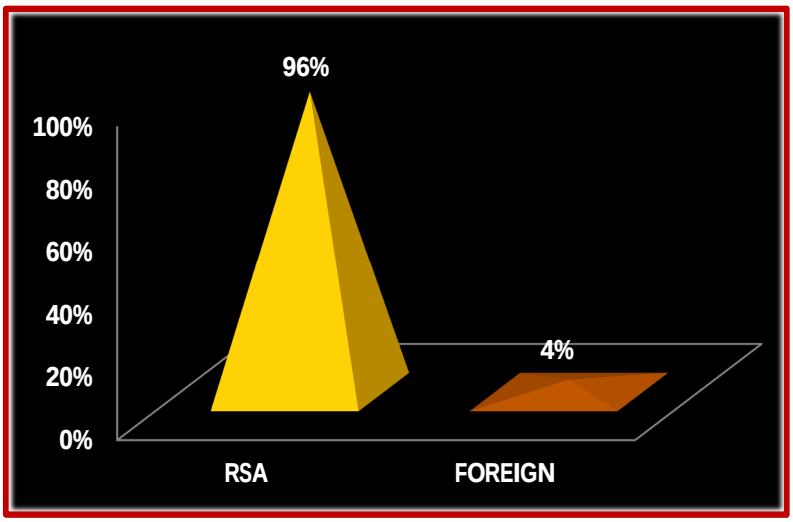

Figure 3.5: Country of residence

Source: Author's (2011)

3.3.6 Province of residence

As indicated in Table 3.3, 48% of tourists to the KNP were from Gauteng, followed by Western Cape (14%), Limpopo (9%) and Mpumalanga (8%) and the Free State (8%). KwaZulu-Natal accounted for only 6% of the visitors to the KNP followed by the North West Province (4%) and Eastern Cape (3%).

Table 3.2: Province of residence

PROVINCE OF RESIDENCE	PERCENTAGE
Gauteng	48%
KwaZulu-Natal	6%
Eastern Cape	3%
Western Cape	14%
Northern Cape	-
Limpopo	9%
Mpumalanga	8%
Free State	8%
North West Province	4%

Source: Author's (2011)

3.3.7 Level of education

When respondents were asked to indicate the highest level of education obtained, 34% indicated Diploma or Degree. Twenty-eight percent (28%) obtained a Post-graduate degree followed by 23% of the respondents that were professionals (Figure 3.5). However, 15% of the respondents indicated that they only had matric as their highest level of education.

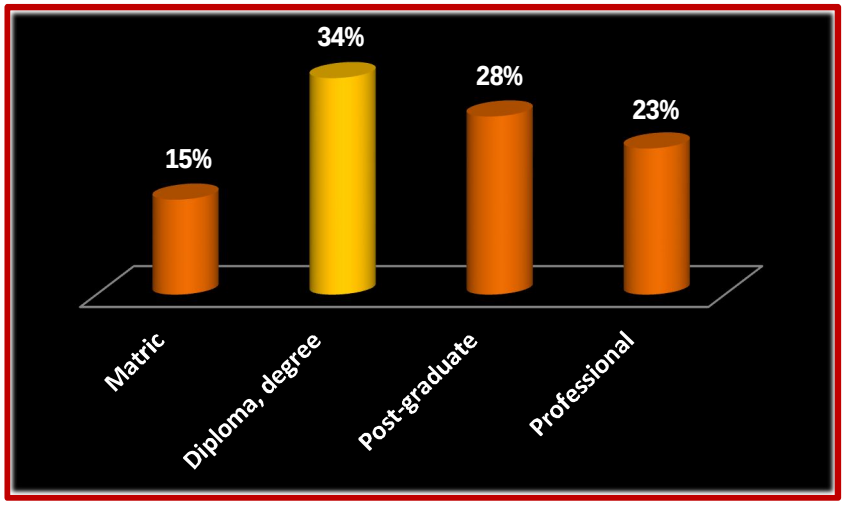

Figure 3.6: Level of education

Source: Author's (2011)

3.3.8 Annual gross income

Thirty-seven percent (37%) of respondents indicated that they receive a gross annual income of more than R552 001 (Figure 3.7). This is followed by the gross

annual income group between R0 and R140 000 (14%). The third highest category, as indicated by respondents, were R305 001 and R431 000 (13%) and 12% of tourists visiting the KNP has an annual income between R140 001and R221 000. Eleven percent (11%) has an annual income between R221 001 and R305 000. A mere 3% of respondents indicated that they have an annual income less than R20 000. Figure 3.6 also shows that just over a third of the respondents fall in the 'high-income' category.

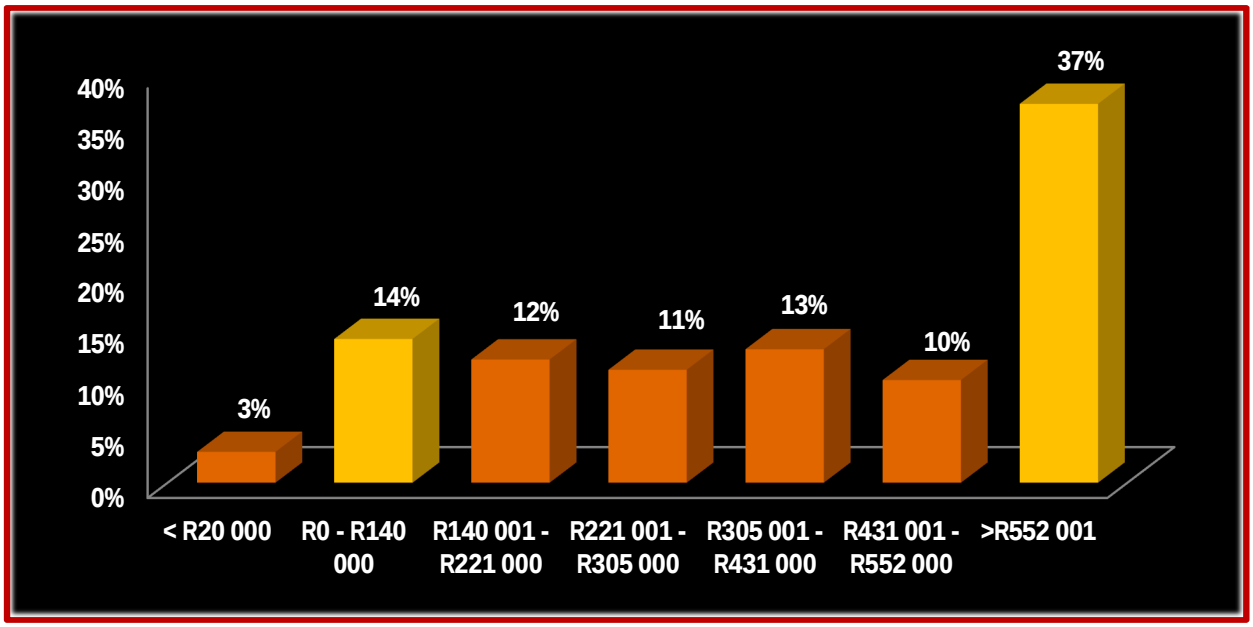

Figure 3.7: Annual income

Source: Author's (2011)

3.3.9 Number of people paid for

The largest group (29%) was those that indicated that they pay for four people. This is followed by 28% paying for two people (Table 3.3). Ten percent (10%) of the respondents indicated that they paid for five people, followed by 8% who indicated that they paid only for themselves. Seven percent (7%) of the respondents paid for six people and 3% of the respondents indicated that they paid for no one, followed by 1% of the respondents who each indicated that they paid for seven and eight people. On average, respondents were financially responsible for 3 people during their KNP visit in June/July 2011.

Table 3.3: Number of people paid for

NUMBER OF PEOPLE PAID FOR	PERCENTAGE
0 people	3%
1 person	8%
2 people	**28%**
3 people	13%
4 people	**29%**
5 people	10%
6 people	7%
7 people	1%
8 people	1%

Source: Author's (2011)

3.3.10 Number of visits to national parks

Fifty-two percent (52%) of respondents indicated that this was their first visit to the KNP this year, while 21% indicated that it was their second visit (Figure 3.8). Twelve percent (12%) of respondents indicated that this was their third visit to the KNP, followed by four times (5%) and more than seven times (5%). Three percent (3%) of the visitors indicated that they this was their sixth visit to the KNP for this year, followed by five times (2%). On average, respondents visited the KNP 3 times for 2011 alone.

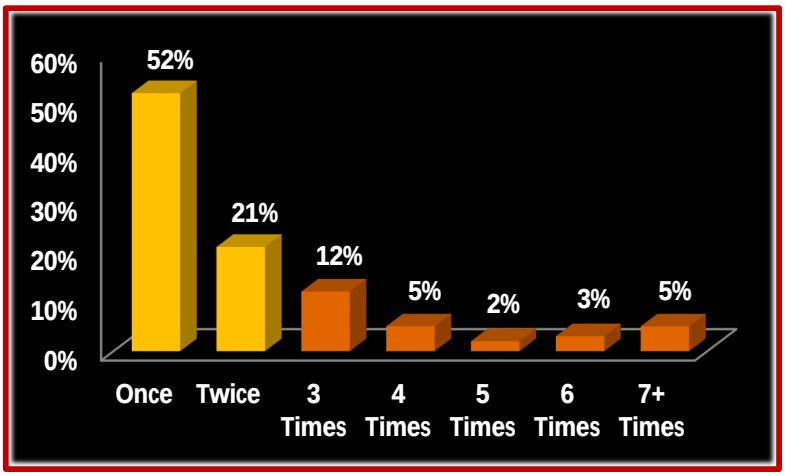

Figure 3.8: Number of visits to National Parks over the past year

Source: Author's (2011)

3.3.11 Length of stay

Table 3.4: Length of stay

LENGTH OF STAY	PERCENTAGE
1 Night	4%
2 Nights	5%
3 Nights	10%
4 Nights	**14%**
5 Nights	**13%**
6 Nights	**16%**
7 Nights	12%
8 Nights	7%
9 Nights	5%
10 Nights	3%
11 Nights	4%
12 Nights	2%
13 Nights	1%
14 Nights	1%
15+ Nights	3%

Source: Author's (2011)

Sixteen percent (16%) of the respondents stayed over in the KNP at least six nights, followed by four nights (14%) and five nights (13%) (Table 3.4). Visitors stayed an average of 6 nights in the KNP during June/July 2011.

3.3.12 Expenditure

The average spending, per group of 3. to the KNP was R10 302.21 (Table 3.5). The highest spending categories (averages) included accommodation (R5 023.07), transport (R1 915.19), food (R1 026.32) and entrance and conservation fee (R544.92). The 'other' category (R441.59) refers to items such as wood, ice, books, magazines, maps, binoculars, camping and hiking equipment, shopping and torches/flashlights.

Table 3.5: Expenditure

CATEGORY	AVERAGE AMOUNT
Entrance & conservation fee	R544.92
Accommodation	**R5 023.07**
Restaurants	R479.06
Food	R1 026.32
Beverages	R381.96
Clothing and footwear	R142.86
Transport	**R1 915.19**
Activities	R177.45
Souvenirs and jewellery	R169.79
Other	R441.59
Average spending per group	**R10 302.21**

Source: Author's (2011)

3.3.13 Wild card

Wild card membership refers a loyalty programme that provides membership holders unlimited access to South African national parks and Cape nature conservation reserves, depending on the type of cluster that membership holders choose. Membership for this programme is valid for one year and can differ from individual membership, couple or family membership, which includes two adults and up to five children under the age of 18 years (SANPARKS, 2011). Figure 3.9 indicates that an overwhelming 83% of the respondents are Wild card holders, whereas only 17% are not members.

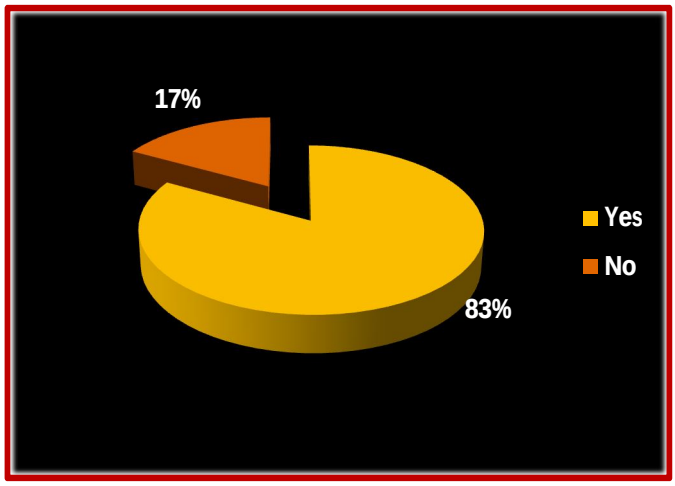

Figure 3.9: Wild card

Source: Author's (2011)

3.3.14 Recommend this park

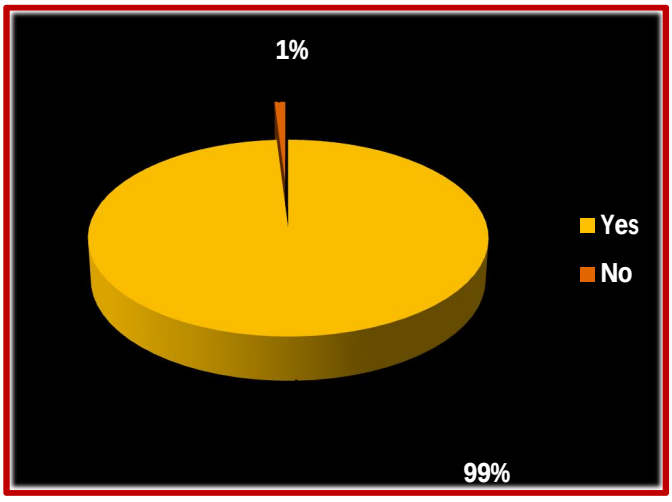

Figure 3.10: Recommend this park

Source: Author's (2011)

An overwhelming 99% of the respondents indicated that they would recommend the KNP to family and friends, while a mere 1% indicated that they would not.

3.3.15 Motivation for visit

Table 3.6 shows that 56% of the visitors to the KNP indicated that they are very loyal to extremely loyal to the KNP, while 19% indicated that they were not at all loyal or less loyal to the KNP. Twenty-five percent (25%) indicated that they were neither loyal nor less loyal to the park, hence unbiased.

Table 3.6: Motivation for visit

Motivation	Not at all important	Less important	Neither important nor less important	Very important	Extremely important
I am loyal to the park	9%	10%	25%	**25%**	**31%**

Source: Author's (2011)

3.3.16 Big 5 as motivation for visit

Table 3.7: Big 5's contribution to motivation to visit the KNP

	Not at all important	Less important	Neither important nor less important	Very important	Extremely important
To see the Big 5	6%	10%	**24%**	**26%**	**34%**

Source: Author's (2011)

Table 3.7 indicates that 60% of the visitors to the KNP indicated that the Big 5 played a very important role to an extremely important role in making their decision to visit the KNP. Sixteen percent (16%) of the visitors, however, indicated that the Big 5 played no role or a less important role during their decision to visit the KNP. Twenty-four percent (24%) indicated that they were neither loyal nor less loyal to the park, hence unbiased.

3.3.17 Age introduced to national parks

As can be seen from Table 3.8, the greatest number of people (22%) indicated that they were first introduced to the national parks between the ages of 9 and 12 years, followed by those who got to know the parks at the even younger age of 3 to 5 years (16%). The third highest category of age introduced to national parks was between the ages of 0 to 2 years (11%), followed by 6 to 8 years (10%) The average age when visitors first visited national parks was 15 years.

Table 3.8: Introduced to National Parks

AGE	PERCENTAGE
0-2 Years	11%
3-5 Years	16%
6-8 Years	10%
9-12 Years	22%
13-15 Years	5%
16-20 Years	7%
21-25 Years	8%
26-30 Years	9%
31-35 Years	3%
36-39 Years	2%
40+ Years	7%
Average age introduced	15 years

Source: Author's (2011)

3.3.18 Role of the Big 5

When respondents were asked to indicate what role the Big 5 played during their decision to specifically visit the KNP, 34% indicated that the Big 5 played a neutral role while 28% indicated that the Big 5 played a very important role (Table 3.9). Twenty-six percent (26%) of respondents indicated that the Big 5 played an extremely important role during their decision to visit the KNP, followed by less important role (7%) and not at all an important role (5%).

Table 3.9: Role of the Big 5

ROLE	PERCENTAGE
Extremely important role	26%
Very important role	28%
Neutral	34%
Less important role	7%
Not at all an important role	5%

Source: Author's (2011)

3.3.19 Ranking of the Big 5

Table 3.10: Ranking of the Big 5

SPECIES OF BIG 5	RANK				
	1	2	3	4	5
Lion	30%	**49%**	13%	4%	4%
Leopard	**59%**	28%	8%	3%	2%
Rhino	6%	13%	**53%**	20%	8%
Elephant	6%	8%	18%	**46%**	23%
Buffalo	3%	3%	7%	25%	**63%**

Source: Author's (2011)

Respondents were asked to rank the different species of the Big 5 according to their preferences on a scale from 1 to 5, where one is the most favoured and 5 the least favoured. As shown in Table 3.10, respondents ranked the leopard (59%) as their favourite species of Big 5. The second favourite species of Big 5 was the lion with 49% followed by the rhino (53%), the elephant (46%) and lastly the buffalo (63%).

Figure 3.11 gives a graphical indication of the ranking of Big 5 according to respondents' preferences.

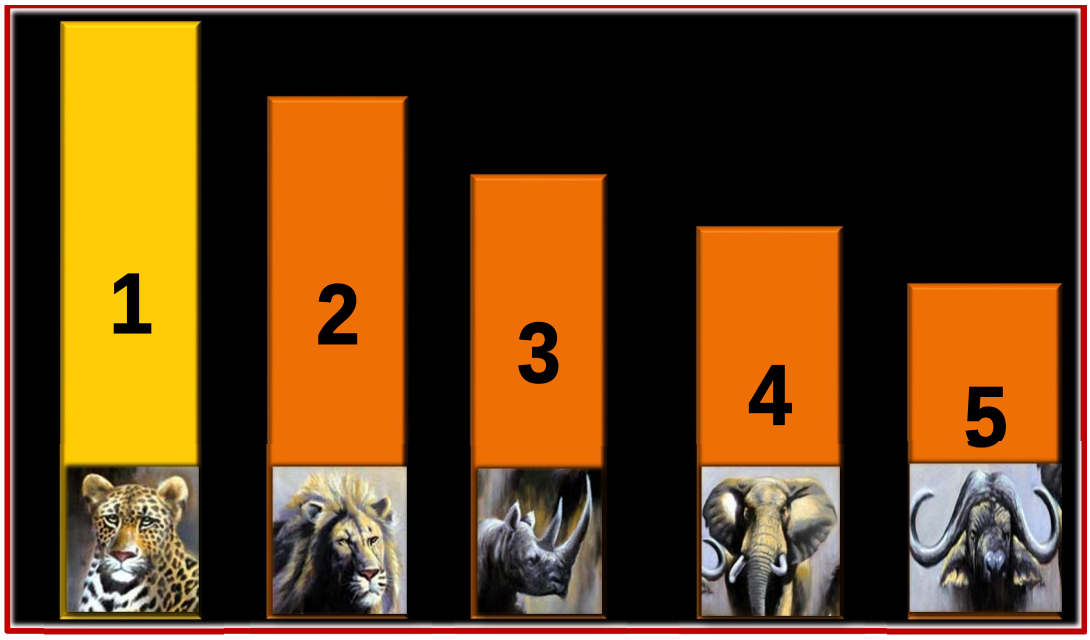

Figure 3.11: Most favourite species of Big 5

Source: Author's (2011)

3.3.20 Member of conservation organisations/ give money for conservation

Seventy-two percent (72%) of respondents indicated that they are not a member of any conservation organisation, nor do they give money to conservation, while 28% indicated that they do (Figure 3.12).

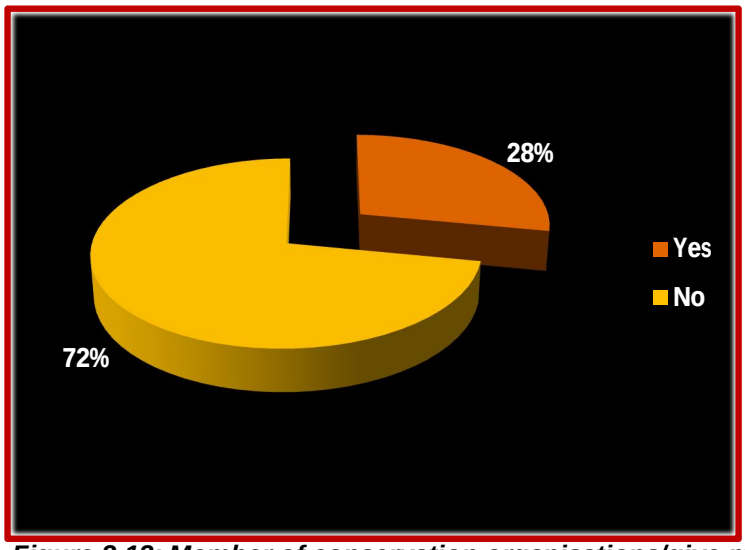

Figure 3.12: Member of conservation organisations/give money to conservation

Source: Author's (2011)

3.3.21 Amount of total spending allocated to the Big 5

Table 3.11: No amount allocated

	BIG 5	LION	LEOPARD	RHINO	ELEPHANT	BUFFALO
Total questionnaires completed	280	245	244	243	245	245
% Not willing to pay	7%	9%	8%	9%	9%	12%

Source: Author's (2011)

When referring to the variable 'amount allocated', the main focus was to determine the amount of total spending that tourists will allocate by simply viewing the Big 5. This question was designed to establish the importance of the Big 5 as well as the amount respondents were willing to pay for viewing the Big 5. Table 3.11 indicates that 7% of respondents indicated that they were not willing to allocate any amount of total spending to the Big 5. Twelve percent (12%) of respondents indicated that they were not willing to allocate any amount to the Buffalo, followed by Lion, Rhino and

Elephant with 9% respectively. Eight percent (8%) of respondents indicated that they would not allocate any amount of total spending to the Leopard.

Table 3.12: Average amount allocated

	BIG 5	LION	LEOPARD	RHINO	ELEPHANT	BUFFALO
Average amount allocated	R3 569.02	R1 007.17	R1 136.43	R753.12	R658.91	R498.50

Source: Author's (2011)

As can be seen from Table 3.12, the average amount allocated to the Big 5 in total is R3 569.02. The highest amount allocated to an individual species is the leopard (R1 136.43), followed by the lion (R1 007.17), the Rhino (R753.12) and the elephant (R658.91). The lowest average amount allocated to an individual species is for the buffalo (R498.50). These statistics correlate with those of the ranking of the Big 5 (Figure 3.11).

3.4 Conclusion

Approximately 85% of the respondents were married, Afrikaans-speaking (69%) people between the ages of 35 and 49 years (47%) and were accompanied by children (65%). The average age as indicated by respondents was 48 years. The majority of respondents (96%) reside in South Africa. In terms of education, 15% of the respondents had only a grade 12 high school qualification; approximately 35% also had a diploma or degree and 28% held a post graduate qualification. Twenty-three per cent (23%) of the visitors to the KNP had a professional qualification. These high levels of education match the high levels of income amongst visitors to the KNP. More than a third of respondents (37%) indicated that they have an annual gross income of more than R552 001. Respondents were also financially responsible for an average of 3 people and stayed and average of 6 nights. The average amount of spending during the visit to the KNP was R10 302.21. A summary of the results obtained from the raw data is given in Table 3.13.

Table 3.13: Summary of results

CATEGORY	OVERNIGHT VISITOR
Home language	Afrikaans (69%)
Age	35-49 years of age (Average: 48)
Accompanying children	65% Yes 35% No
Marital status	Married (85%)
Country of residence	South Africa (96%) Foreign (4%)
Province of residence	Gauteng (48%) Western Cape (14%) Limpopo (9%)
Level of education	Diploma/Degree (35%) Post-graduate (28%) Professional (23%) Matric (15%) No school (0%)
Annual gross income	>R552 001 (37%) R0 – R140 000 (14%) R305 001 – R431 000 (13%)
Number of people paid for	4 people (29%) (Average:3)
Number of visits to national parks over the last year	Average of 3 times
Length of stay	Average of 6 nights
Expenditure	Accommodation (R5 023.07) Transport (R1 915.19) Food (R1 026.32) Average (R10 302.21)
Wild card owner	Yes (83%) No (17%)
Recommend	Yes (99%) No (1%)

Motivation for visit: loyal to the park	65% very to extremely loyal 19% not at all or less loyal
Motivation for visit: to see Big 5	60% very to extremely 19% not at all or less important
Age introduced	9-12 years (22%) 3-5 years (16%) Average: 15 years
Role of the Big 5	34% Neutral 28% Very important role 26% extremely important role
Ranking of the Big 5	Leopard (1) Lion (2) Rhino (3) Elephant (4) Buffalo (5)
Member of conservation organisations/ give money for conservation	72% Non-member 28% Member
Average amount allocated	Big 5: R 3 569.02 Leopard: R1 007.17 Lion: R1 136.43 Rhino: R753.12 Elephant: R658.91 Buffalo: R498.50

Source: Author's (2011)

Table 3.13 indicates that the average amount that tourists allocate to the Big 5 as a whole is R3 569.02. This is a fairly large amount, indicating that the Big 5 plays an important role as an attraction of tourist for the KNP.

4 CHAPTER

RESULTS OF THE ECONOMETRIC ANALYSIS

4.1 Introduction

Chapter 3 analysed the questions asked as well as describing the data obtained from the survey. From the analysis of the survey, correlation between variables and WTP can already be seen, such as high levels of education and income. From the analysis it can be seen that correlations between income, education, nationality, marital status, accompanying children, age professional standing, future plans to visit and donations do exist.

Chapter 4 will consequently focus on modelling the predictors of willingness to pay. This will be done by means of an Ordinary Least Squares (OLS) regression model.

4.2 Method

There are several independent variables in this study that require the use of an OLS regression model to determine whether or not there is a statistically significant relationship between these predictors and WTP. OLS is a method used to estimate the parameters of a multiple linear regression model (Wooldrige, 2009:843).

The OLS estimates are reliable under a number of assumptions: linear in parameters, random sampling, no perfect collinearity, zero conditional mean, homoskedasticity and normality (Wooldrige, 2009:84-118). An explanation of the assumptions follows.

Assumption 1: Linear in parameters

Under this assumption a regression function can be written as follows:

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \ldots + \beta_k x_k + \mu$$

where β_0, β_1, ..., β_k are the unknown parameters and μ the error term.

Assumption 2: Random sampling

This assumption demands that there must be a random sample of the number (n) of explanatory variables. Hence;

$\{(x_{i1}, x_{i2},..., x_{ik}, y_i): i = 1, 2, ..., n\}$

i refers to the number of observations and x denotes the different explanatory variables.

Assumption 3: No perfect collinearity

This assumption states that none of the explanatory variables may have an exact linear relationship with another. It is imperative to understand that some degree of correlation amongst the independent variables is acceptable. However, they cannot be perfectly correlated.

Assumption 4: Zero conditional mean

This assumption is needed to ensure freedom from bias of the model. The assumption states that the error term μ has an expected value of zero for any given values of the explanatory variables. This can be mathematically written as:

$E(\mu|x_1, x_2, ..., x_k) = 0$

Assumption 5: Homoskedasticity

Homoskedasticity refers to where the variance of the error term, μ, has the same distribution for all values of the explanatory variables. Homoskedasticity can be defined as where the error term has the same variance/distribution given any values of the independent variables. This can be written as:

$Var(\mu|x_1, x_2, ..., x_k) = \sigma^2$

This assumption requires no collinearity or dependence between the error term, μ, and the explanatory variables.

Assumption 6: Normality

This assumption states that sample (or population) error, μ, is independent of the explanatory variables x_1, x_2, ..., x_k and is normally distributed with a zero mean and variance. Hence, this assumption encompasses both assumption 4 and 5. This assumption can be written as follows:

σ^2: $\mu \sim \text{Normal}(0, \sigma^2)$

Violating these assumptions will cause the model to be biased. There are several ways in which these assumptions may be violated. Omitting a relevant variable may cause OLS to be biased, while adding irrelevant variables may cause the variance of the OLS to increase due to multicollinearity. It is therefore imperative to ensure that these assumptions will not be violated when estimating an OLS.

A simple OLS regression function can be compiled (*see* Equation 4.1) to determine the relationship between the value that tourists place on non-market resources such as viewing the Big 5 (dependant variables) and a number of explanatory variables.

$$Y_i = X_i\beta + \varepsilon_i \qquad \text{Equation (4.1)}$$

Where $\beta = (\beta_0; \beta_1;...; \beta_p)$ is a vector of $\rho + 1$ parameters describing the relationship between some variables

$X = (1; X_1; X_2; : : : X_p)$ (a constant 1 and p variables) and an error term ε_i

The following section will estimate several OLS regression functions to ultimately determine which explanatory variables have a statistically significant effect on WTP.

4.3 OLS regression models

Before estimating OLS, the variables need to be defined, and a null hypothesis must be stated. Table 4.1 gives a description of the variables.

Table 4.1: Description of variables in OLS model

	Variable name	Type of variable	Definition
1	WTP	Dependant	Amount of spending to viewing the Big 5
2	Language	Independent (comparator = Afrikaans)	Dummy variable for language: Afrikaans = 0 if no 1 if yes English = 0 if no 1 if yes Other = 0 if no 1 if yes
3	Age	Independent	Age in years
4	Accompanying children	Independent	Dummy variable for accompanying children: 0 if no 1 if yes
5	Marital status	Independent (comparator = married)	Dummy variable for marital status: Married = 0 if no 1 if yes Not married = 0 if no 1 if yes Divorced = 0 if no 1 if yes Widow/er = 0 if no 1 if yes Living together = 0 if no 1 if yes
6	Country of residence	Independent	Dummy variable for country of residence: Foreign = 0 RSA = 1
7	Education	Independent (comparator = no schooling)	Dummy variable for education: No school = 0 if no 1 if yes Matric = 0 if no 1 if yes Diploma, degree = 0 if no 1 if yes

			Post-graduate = 0 if no 1 if yes Professional = 0 if no 1 if yes Other = 0 if no 1 if yes
8	Income	Independent (comparator = <R20 000)	Dummy variable for income: <R20 000 = 0 if no 1 if yes R20001 – R140000 = 0 if no 1 if yes R140001 – R221000 = 0 if no 1 if yes R221001 – R305000 = 0 if no 1 if yes R305001 – R431000 = 0 if no 1 if yes R431001 – R552000 = 0 if no 1 if yes >R552000 = 0 if no 1 if yes
9	Number of people paying for	Independent	How many people financially responsible for in travelling group
10	Number of visits	Independent	How many times have national parks been visited over the past year
11	Nights	Independent	How many nights staying at KNP
12	Wild card holder	Independent	Dummy variable for Wild card holder: 0 if no 1 if yes
13	Recommend this park	Independent	Dummy variable for recommend this park: 0 if no 1 if yes
14	Age introduced	Independent	Age introduced to national parks
15	Species in order of preference	Independent	Ranking of species of Big 5 according to preference

16	Role of Big 5	Independent	Role of Big 5 during decision to visit the KNP
17	Member of a conservation organisation or give money for conservation	Independent	Dummy variable for member of conservation organisation: 0 if no 1 if yes
18	Reason for visit: Loyalty to the park	Independent (comparator = extremely important)	Dummy variable for reason for visit: loyalty to the park: Not at all important = 0 if no 1 if yes Less important = 0 if no 1 if yes Do not care = 0 if no 1 if yes Very important= 0 if no 1 if yes Extremely important= 0 if no 1 if yes
19	Reason for visit: to see the Big 5	Independent (comparator = extremely important)	Dummy variable for reason for visit: to see the Big 5: Not at all important = 0 if no 1 if yes Less important = 0 if no 1 if yes Do not care = 0 if no 1 if yes Very important= 0 if no 1 if yes Extremely important= 0 if no 1 if yes

Source: Author's (2011)

Wooldrige (2009:120-124) explains the testing of hypothesis regarding the parameters of the model. For the purpose of this dissertation a one-sided test will be used. A one sided-test allows the researcher to test for the possibility of a

relationship in one direction, disregarding the possibility of a relationship in another direction. Hence, a one-sided test provides the researcher more power to detect an effect in one direction by not testing the effect in the other direction (Wooldrige, 2009:120-124). The significance of each independent variable is based on the null hypothesis that each explanatory variable has a parameter value equal to zero and the null hypothesis that states; H_0:$\beta_j = 0$, can be rejected.

This dissertation will also use significance levels of 5% and 10%. This indicates that when the probability value is smaller than 0.05 and 0.1 the null hypothesis that the explanatory variable has no effect on the dependent variable can be rejected and the explanatory variable is statistically significant, indicating that there does indeed exist a relationship between the explanatory variable and the dependent variable, WTP *ceteris paribus*. When the probability value is greater than 0.05 and 0.1, the null hypothesis cannot be rejected and the explanatory variable is statistically insignificant, indicated that there is no relationship between the explanatory variable and the dependent variable, WTP, *ceteris paribus*.

The coefficients of dummy variables are interpreted relative to the comparator category. For example, if the coefficient on the country of residence variable is positive, it means that, compared to foreign visitors, local tourists are more willing to pay to view the Big 5.

For the purpose of this dissertation, log-level models will also be used. As explained by Wooldrige (2009:45), the main reason for incorporating natural logarithms into a model is to impose a constant percentage effect of independent variables on the dependent variable. Table 4.2 gives a summary of functional forms.

Table 4.2: Summary of functional forms involving logarithms

Model	Dependent variable	Independent variable	Interpretation of β_1
Level-level	y	x	$\Delta y = \beta_1 \Delta x$
Level-log	y	log(x)	$\Delta y = (\beta_1/100)\%\Delta x$
Log-level	log(y)	x	$\%\Delta y = (100\beta_1)\Delta x$
Log-log	log(y)	log(x)	$\%\Delta y = \beta_1 \%\Delta x$

Source: Wooldrige, 2009:46

Log-level models can be interpreted as follows: a one unit increase in the independent variable will lead to a constant percentage increase in the dependent variable.

From the above explanation and definitions of the variables, the following estimating equation will be used throughout the next section while estimating the OLS regression models:

$$WTP = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \ldots + \beta_i x_i + \varepsilon_i \quad (4.2)$$

Where:
WTP = dependent variable
β_0 = constant
$\beta_1, \beta_2, \ldots, \beta_i$ = coefficients for the corresponding independent variables $x_1, \ldots, x_i$
ε_i = model error term
i = 1, 2, ..., 280 hence, the number of observations

4.3.1 Model 1: Demographic profile

From equation 4.2, the following format of the demographic profile regression is given as:

$$Log(WTP) = \beta_0 + \beta_1(language) + \beta_2(accomchildren) + \beta_3(Marital) + \beta_4(country) + \beta_5(educ) + \varepsilon_i \quad (4.3)$$

Table 4.3: OLS regression model 1

Results of the empirical estimation of the OLS regression model with the dependent variable log(WTP) (total amount willing to pay to see the Big5), with standard errors in brackets.

Model 1 **Demographic profile**	
Variable	**Coefficient**
Constant	6.475 (0.899)
Language (comparator Afrikaans)	
English	0.127 (0.195)
Other	0.554 (0.636)
Age	0.003 (0.009)
Accompanying children	0.103 (0.197)
Marital status (comparator married)	
Not married	0.240 (0.409)
Divorced	-0.200 (0.444)
Widow/er	-0.117 (0.507)
Living together	**-1.244**** **(0.697)**
Country of residence	0.487 (0.488)
Education (comparator no schooling)	
Matric	0.673 (0.608)
Degree/grad	0.250 (0.592)
Post-grad	0.548 (0.593)
Professional	0.577 (0.599)
R-squared	0.04
Adjusted R^2	-0.013

* $p < 0.05$
**$p < 0.1$
Source: WTP survey Kruger National park; author's calculations

The comparator used for language throughout this section is Afrikaans. This means that English and other languages will be analysed relative to zero score parameters for the reference group (Afrikaans). This is the same for marital status where the reference group is married and education where the reference group is no schooling. Table 4.3 lists the results for the OLS regression model with reference to the demographic profile of visitors to the KNP.

The following conclusions can be drawn with reference to the visitors' demographic profile:

The only significant explanatory variable is the marital status = living together. However the coefficient is negative, indicating that visitors' living together are less willing to pay than those who are married. This corresponds findings by Aziz *et al*. (2010:216). They argue that married visitors are more willing to pay because they want to preserve nature for future generations.

Although the explanatory variables age and accompanying children are not statistically significant, the coefficients are positive, indicating that these explanatory variables are positively correlated with WTP. While Aziz *et al*. (2010:215) and Kosz (1996:121) found that the younger generation tend to be more willing to pay than the older generation, this is not the case for this study. The results correspond with those of Hadker *et al*. (1997:112) where they found that the older generation can spare more money, and hence has a greater willingness to pay than the younger generation.

The dummy variable, country of residence, where the comparator variable is RSA, has a positive coefficient indicating that South Africans are more willing to pay than international visitors. The same holds for education, were the comparator variable is no schooling. People with higher education levels are more willing to pay than visitors with no schooling. This is consistent with literature where Aziz *et al*. (2010), Hadker *et al*. (1997), Kosz (1996) and Tisdell and Wilson (2001) found that people with higher levels education tend to be more willing to pay than those with lower levels of education.

The R-squared (0.04) indicates that the independent variables explain 4% of the sample variation in the dependant variable, WTP. Hence the demographic profile of visitors to the KNP does not explain a significant amount about WTP.

It is therefore necessary to add more independent variables to the model to get a better fit. Table 4.4 consists of models 2 and 3. Model 2 looks at annual gross income as the only independent variable and Model 3 estimates both demographic and annual gross income as explanatory variables of WTP.

4.3.2 Model 2: Income & Model 3: Demographic profile and Income

From equation 4.2, the format of the demographic profile regression is given as:

$$Log(WTP) = \beta_0 + \beta_1(income) + \varepsilon_i \quad (4.4)$$

Table 4.4: OLS regression model 2 & 3

Results of the empirical estimation of the OLS regression model with the dependent variable log(WTP) (total amount willing to pay to see the Big5) with standard errors in brackets.

Model 2 Income		**Model 3 Demographic profile and Income**	
Variable	**Coefficient**	**Variable**	**Coefficient**
Constant	6.842 (0.313)	Constant	5.232 (0.947)
Income (comparator <R20 000)		**Language (comparator Afrikaans)**	
R20001 – R140000	0.608 (0.371)	English	0.102 (0.192)
R140001 – R221000	**1.005* (0.379**)	Other	0.653 (0.631)
R221001 – R305000	0.340 (0.393)		
R305001 – R431000	**0.871* (0.383)**	**Age**	0.004 (0.009)
R431001 – R552000	**0.743** (0.391)**		
>R552000	**1.121* (0.337)**	**Accompanying children**	0.055 (0.195)
R-squared	0.069	**Marital status (comparator married)**	
Adjusted R^2	0.057	Not married	0.332 (0.414)
		Divorced	-0.108

	(0.438)
Widow/er	-0.091
	(0.500)
Living together	-**1.476***
	(0.706)
Country of residence	0.657
	(0.478)
Education (comparator no schooling)	
Matric	**1.003****
	(0.607)
Degree/grad	0.584
	(0.588)
Post-grad	0.761
	(0.584)
Professional	0.734
	(0.586)
Income (comparator <R20 000)	
R20001 – R140000	0.490
	(0.397)
R140001 – R221000	**1.068***
	(0.403)
R221001 – R305000	0.261
	(0.421)
R305001 – R431000	**0.905***
	(0.404)
R431001 – R552000	0.690
	(0.420)
>R552000	**1.105***
	(0.363)
R-squared	0.111
Adjusted R^2	0.038

* p < 0.05

** p <0.1

Source: WTP survey Kruger National park; author's calculations

The reference category used for annual gross income throughout this section is <R20 000. This means that all the other categories of income will be analysed relative to zero score parameters for the reference group (<R20 000). Table 4.4 lists the results for the OLS regression model with reference to annual gross income of visitors to the KNP.

By analysing Table 4.4, the following conclusions can be drawn with reference to visitors' annual gross income (Model 2);

Income categories: R140 001 – R221 000, R305 001 – R431 000, R431 001 – R552 000 and >R552 000 are significant. The coefficients (β_j's) of these explanatory variables are positive, indicating that they are more willing to pay compared to visitors with a annual gross income of less than R20 000. These results correspond with studies such as Aziz *et al*. (2010), Hadker *et al*. (1997), Kosz (1996) and Tisdell & Wilson (2001), who found that higher income groups have the ability and are more willing to pay towards conservation than lower income groups.

Even though the other income categories were statistically insignificant, the coefficients are positive, indicating that these explanatory variables are positively correlated with WTP, and visitors who fall in these categories are also likely to be more willing to contribute towards payments for viewing the Big 5.

The R-squared (0.069) indicates that the independent variables explain 6.9% of the sample variation in the dependant variable, WTP. Hence the annual gross income of visitors to the KNP does not explain a significant amount about WTP. The adjusted R-squared (0.057), which imposes a penalty for adding additional independent variables, is 5.7%, which indicates that the proportion of total variance that is explained by the model is small.

The R-squared and adjusted R-squared have higher values in Model 2, compared to Model 1, indicating that the independent variable, annual gross income, explains more about the variation in WTP than only the demographic profile of visitors to the KNP.

Model 3 (Table 4.4) consists of both the demographic profile of visitors to the KNP and annual gross income as independent variables.

By estimating a model consisting of both the demographic profile and annual gross income as independent variables, none of the significant variables were affected except the annual gross income category R431 1001 – R552 000. When estimating just annual gross income as an explanatory variable, this category was significant.

However, estimating both these variables as explanatory variables, this annual gross income category became insignificant, indicating that it no longer has an effect on WTP.

However, the R-squared (0.111) and adjusted R-squared (0.038) increased significantly, indicating that by estimating both the demographic profile of visitors to the KNP and annual gross income explains a significant amount more about the variation in WTP rather than estimating these two explanatory variables alone.

However, these values are small, indicating that there may be more independent variables that can explain the variation in WTP. It is therefore necessary to add more independent variables to the model to get a better fit. Table 4.4 consists of two models, Model 4 and Model 5. Model 4 will look at travel behaviour variables as the only explanatory variables and Model 5 will consist of demographic, annual gross income and travel behaviour variables as explanatory variables of WTP.

4.3.3 Model 4: Travel behaviour & Model 5: Demographic profile, Income and Travel behaviour

The format of the demographic profile regression is:

$$Log(WTP) = \beta_0 + \beta_1(paying) + \beta_2(nights) + \beta_3(visits) + \varepsilon_i \qquad (4.5)$$

Table 4.5: OLS regression model 4 & 5

Results of the empirical estimation of the OLS regression model with the dependent variable log(WTP) (total amount willing to pay to see the Big5) with standard errors in brackets.

Model 4 Travel behaviour		**Model 5 Demographic profile, Income and travel behaviour**	
Variable	**Coefficient**	**Variable**	**Coefficient**
Constant	6.964 (0.232)	Constant	4.464 (1.019)
Number of people paying for	0.052 (0.047)	**Language (comparator Afrikaans)**	
		English	0.164 (0.202)
Number of visits to national parks in the last year	0.010 (0.031)	Other	0.816 (0.693)

Number of nights stayed at the park	**0.084* (0.021)**	**Age**	0.010 (0.009)
		Accompanying children	0.219 (0.236)
R-squared	0.069	**Marital status (comparator married)**	
Adjusted R^2	0.057	Not married	0.499 (0.423)
		Divorced	-0.229 (0.473)
		Widow/er	-0.276 (0.511)
		Living together	-1.237 (0.778)
		Country of residence	**0.856** (0.489)**
		Education (comparator no schooling)	
		Matric	0.895 (0.610)
		Degree/grad	0.593 (0.587)
		Post-grad	0.749 (0.581)
		Professional	0.669 (0.585)
		Income (comparator <R20 000)	
		R20001 – R140000	0.201 (0.438)
		R140001 – R221000	0.704 (0.440)
		R221001 – R305000	0.141 (0.458)
		R305001 – R431000	0.629 (0.440)
		R431001 – R552000	0.328 (0.463)
		>R552000	**0.770** (0.407)**
		Number of people paying for	-0.003 (0.064)
		Number of visits to national parks in the last year	-0.013 (0.034)
		Number of nights stayed at the park	**0.085* (0.022)**

R-squared	0.154
Adjusted R^2	0.065

* $p < 0.05$

** $p < 0.1$

Source: WTP survey Kruger National park; author's calculations

By analysing Table 4.5, the following conclusions can be drawn with reference to visitors' travel behaviour (Model 4):

The only significant variable in this model is the number of nights stayed at the KNP. The coefficient (β_j) of this explanatory variable is positive, indicating that one additional night stayed at the KNP, will contribute positively to a person's willingness-to-pay. This variable was included by the author, although no literature to the author's knowledge on this variable exists.

The explanatory variables 'number of people paying for' and number of visits to national parks in the last year' were statistically insignificant. However, the coefficients are positive, indicating that these explanatory variables have a positive contribution to WTP.

The R-squared (0.069) indicates that the independent variables explain 6.9% of the sample variation in the dependant variable, WTP. Hence, the travel behaviour of visitors to the KNP does not explain a significant amount about WTP. The adjusted R-squared (0.057), which imposes a penalty for adding additional independent variables, is 5.7%. This indicates that this is not a good model. However, the R-squared and adjusted R-squared have higher values than in Model 1, but have similar values to Model 2.

Model 5 (Table 4.5) consists of both the demographic profile of visitors to the KNP, annual gross income, and travel behaviour as independent variables explaining WTP.

By estimating a model consisting of demographic profile, annual gross income and travel behaviour variables, the marital variable, living together, as well as the income categories, R140 001 – R221 000; R305 001 – R431 000 becomes insignificant. However, the variable country of residence becomes significant in this model. This corresponds with findings by Aziz *et al*. (2010:216) who found that nationality does have an effect on a person's willingness-to-pay. They found that the nationality of visitors had a negative impact on WTP. This can be interpreted as foreign visitors are more likely to be willing to pay than local residents.

However, as indicated in Table 4.5, country of residence had a positive effect on WTP, indicating that international findings by Aziz *et al*. (2010) differ from the findings in the KNP. Hence, local residents are more likely to be willing to pay than foreign tourists.

The R-squared (0.154) and adjusted R-squared (0.065) increased significantly from Model 3. This indicates that estimating the demographic, annual gross income and travel behaviour dependent variables explains a significant amount more of the variation in WTP.

Consumer profile variables will be included in Model 6 to determine whether these explanatory variables have any impact on WTP. Table 4.6 will consequently consist of two models, Model 6 and Model 7. Model 6 will look at consumer profile variables as the only explanatory variables of WTP and Model 7 will consist of demographic, annual gross income, travel behaviour and consumer profile variables as explanatory variables of WTP.

4.3.4 Model 6: Consumer profile & Model 7: Demographic profile, Income, Travel behaviour and Consumer profile

The format of the consumer profile regression is given as:

$$\text{Log(WTP)} = \beta_0 + \beta_1(\text{wildcard}) + \beta_2(\text{recommend}) + \beta_3(\text{loyalty}) + \beta_4(\text{seebig5}) + \varepsilon_i \qquad (4.5)$$

Table 4.6: OLS regression models 6 & 7

Results of the empirical estimation of the OLS regression model with the dependent variable log(WTP) (total amount willing to pay to see the Big5) with standard errors in brackets.

Model 6 Consumer profile		**Model 7 Demographic profile, Income, travel behaviour and consumer profile**	
Variable	**Coefficient**	**Variable**	**Coefficient**
Constant	6.813 (0.889)	Constant	2.918 (1.331)
Wild card holder	0.210 (0.208)	**Language (comparator Afrikaans)**	
		English	0.285 (0.201)
Would you recommend the park to friends and relatives	0.087 (0.883)	Other	0.458 (0.685)
Reason for visit: loyalty to the park	-0.084 (0.060)	**Age**	0.014 (0.009)
Visit to see the Big 5 (comparator not at all important)		**Accompanying children**	0.293 (0.231)
Less important	0.675 (0.411)		
Do not care	**0.740*** **(0.357)**	**Marital status (comparator married)**	
Very important	**0.939*** **(0.353)**	Not married	0.634 (0.431)
Extremely important	**1.221*** **(0.342)**	Divorced	-0.106 (0.536)
		Widow/er	-0.236 (0.496)
R-squared	0.071	Living together	**-1.344**** **(0.757)**
Adjusted R^2	0.045	**Country of residence**	0.784 (0.500)
		Education (comparator no schooling)	
		Matric	**1.072**** **(0.593)**
		Degree/grad	0.849 (0.569)
		Post-grad	**0.951**** **(0.561)**
		Professional	0.904 (0.566)

Income (comparator <R20 000)	
R20001 – R140000	0.170
	(0.426)
R140001 – R221000	0.532
	(0.428)
R221001 – R305000	0.373
	(0.453)
R305001 – R431000	**0.764****
	(0.425)
R431001 – R552000	0.454
	(0.453)
>R552000	**0.849***
	(0.393)
Number of people paying for	-0.050
	(0.063)
Number of visits to national parks in the last year	-0.016
	(0.033)
Number of nights stayed at the park	**0.099***
	(0.023)
Wild card holder	0.024
	(0.247)
Would you recommend the park to friends and relatives	0.302
	(0.924)
Reason for visit: loyalty to the park	-0.097
	(0.064)
Visit to see the Big 5 (comparator not at all important)	
Less important	**1.045***
	(0.427)
Do not care	**1.029***
	(0.365)
Very important	**1.215***
	(0.359)
Extremely important	**1.622***
	(0.354)
R-squared	0.251
Adjusted R^2	0.139

* $p < 0.05$

** $p < 0.1$

Source: WTP survey Kruger National park; author's calculations

Throughout the results non-Wild card holders will be analysed relative to zero score parameters for the reference group (Wild card holders). This is the same for the independent variable, recommend this park, where visitors that would not recommend the park were analysed relevant to zero score parameters for the reference group (would recommend the park). The comparator variable for the variable, visit to see the Big 5 is the category 'not at all important'. All the other categories of visit to see the Big 5 were analysed relative to 'not at all important'. Table 4.6 lists the results for the OLS regression model with reference to consumer profile. By analysing Table 4.6, the following conclusions can be drawn.

The only significant explanatory variables are those of 'visit to see Big 5' categories. These categories include; do not care, very important role and extremely important role. All of the coefficients (β_j's) for these categories are positive, indicating that compared to visitors who indicated that viewing Big 5 is not at all important, the others are more willing to pay. This corresponds with findings by Tisdell & Wilson (2001) which indicated that people who visit to see sea turtles, or have seen sea turtles are more likely to be willing to pay for conservation.

Although the explanatory variables Wild card holders, recommend this park and the visit to see the Big 5 category, less important, are not statistically significant, the coefficients are positive, indicating that these explanatory variables increases WTP. However, the explanatory variable, reason for visit: loyalty to the park had a negative coefficient, indicating that this independent variable has a negative impact on WTP.

The R-squared (0.071) indicates that the independent variables explain 7.1% of the sample variation in the dependant variable, WTP. The consumer profile alone does not explain a significant amount of WTP. The adjusted R-squared (0.045), which imposes a penalty for adding additional independent variables, is 4.5%, indicating that the proportion of total variance that is explained by the model is small.

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Model 7 (Table 4.6) consists of the demographic profile of visitors to the KNP, annual gross income, travel behaviour and consumer profile categories as independent variables explaining WTP.

Significant explanatory variables include the marital status category, living together, the education category, matric and post-grad, the income category R305 001 – R431 000 and >R552 000, number of nights stayed at the park and, lastly, the visit to see category where all the variables were significant. All the coefficients are positive, except for the coefficient, living together, indicating that all the explanatory variables contribute positively to WTP except for living together that contributes negatively to WTP.

Although all the other dependent variables were insignificant, the coefficients indicated that they all have a positive contribution towards WTP, except for the variables divorced, number of people paying for and reason for visit: loyalty.

The R-squared (0.251) and adjusted R-squared (0.139) show a significant increase from Model 5. This indicates that estimating demographic, annual gross income, travel behaviour and consumer profile independent variables together explain a significant amount more about the variation in WTP.

Explanatory variables for the Big 5 were estimated in Model 8 to determine whether these explanatory variables have any impact on WTP. Table 4.7 will consequently consist of two models, Model 8 and Model 9. Model 8 will look at Big 5 variables as the only explanatory variables of WTP and Model 9 will consist of demographic, annual gross income, travel behaviour, consumer profile and Big 5 variables as explanatory variables of WTP.

4.3.5 Model 8: Big 5 & Model 9: Demographic profile, Income, Travel behaviour, Consumer profile and Big 5

$$Log(WTP) = \beta_0 + \beta_1(ageintroduced) + \beta_2(roleofbig5) + \beta_3(preference) + \beta_4(conservation) + \varepsilon_i \quad (4.6)$$

Table 4.7: OLS regression models 8 & 9

Results of the empirical estimation of the OLS regression model with the dependent variable log(WTP) (total amount willing to pay to see the Big5) with standard errors in brackets.

Model 8 Big 5		**Model 9 Demographic profile, Income, travel behaviour, consumer profile and Big 5**	
Variable	**Coefficient**	**Variable**	**Coefficient**
Constant	8.530 (0.843)	Constant	4.465 (1.712)
What age did you get to know national parks	0.001 (0.006)	**Language (comparator Afrikaans)**	
		English	0.255 (0.226)
Role of Big 5 (comparator extremely important)		Other	0.553 (0.722)
Very important	**-0.357** (0.203)**		
Neutral	**-0.895* (0.199)**	**Age**	0.015 (0.011)
Less important	**-1.470* (0.373)**		
Not at all important	-0.463 (0.520)	**Accompanying children**	0.221 (0.249)
Species in order of preference (comparator Lion)		**Marital status (comparator married)**	
Leopard	-0.164 (0.102)	Not married	0.362 (0.468)
Rhino	0.063 (0.092)	Divorced	-0.133 (0.635)
Elephant	-0.044 (0.087)	Widow/er	-0.194 (0.572)
Buffalo	-0.017 (0.093)	Living together	**-1.449** (0.774)**
Member of a conservation organisation	-0.164 (0.176)	**Country of residence**	0.346 (0.599)
R-squared	0.128	**Education (comparator no schooling)**	

Adjusted R^2	0.089	Matric	**1.045** **(0.615)**
		Degree/grad	0.893 (0.590)
		Post-grad	**0.971** **(0.576)**
		Professional	0.829 (0.582)
		Income (comparator <R20 000)	
		R20001 – R140000	0.281 (0.498)
		R140001 – R221000	0.505 (0.499)
		R221001 – R305000	0.441 (0.515)
		R305001 – R431000	0.476 (0.500)
		R431001 – R552000	0.457 (0.522)
		>R552000	**0.791** **(0.466)**
		Number of people paying for	-0.021 (0.068)
		Number of visits to national parks in the last year	-0.018 (0.035)
		Number of nights stayed at the park	**0.091** **(0.024)**
		Wild card holder	0.213 (0.277)
		Would you recommend the park to friends and relatives	0.417 (0.972)
		Reason for visit: loyalty to the park	-0.106 (0.069)
		Visit to see the Big 5 (comparator not at all important)	
		Less important	**1.337** **(0.515)**
		Do not care	**1.260** **(0.492)**
		Very important	**1.305** **(0.506)**
		Extremely important	**1.457** **(0.502)**
		What age did you get to know national parks?	0.000 (0.008)

Role of Big 5 (comparator extremely important)	
Very important	-0.400
	(0.251)
Neutral	**-.0780***
	(0.268)
Less important	**-1.098***
	(0.511)
Not at all important	0.211
	(0.608)
Species in order of preference (comparator Lion)	
Leopard	-0.159
	(0.114)
Rhino	-0.054
	(0.108)
Elephant	-0.100
	(0.102)
Buffalo	-0.026
	(0.101)
Member of a conservation organisation	-0.101
	(0.209)
R-squared	0.308
Adjusted R^2	0.142

* p < 0.05
** p <0.1
Source: WTP survey Kruger National park; author's calculations

The comparator variable used for the role of the Big 5 is an extremely important role. Throughout this section, all the other explanatory variables on the role of the Big 5 were analysed relative to zero score parameters for the reference group (extremely important role). This is the same for species in order of preference where the comparator variable is lion. All the other species of Big 5 were analysed relevant to zero score parameters for the reference group lion.

By analysing Table 4.7, the following conclusions can be drawn:

As can be seen in Table 4.7, the independent variables, under the category 'role of Big 5', very important role, neutral and less important role are the only significant explanatory variables. However, all of these variables have negative coefficients, indicating that compared to visitors who specified the Big 5 played an extremely important role during their decision to visit the KNP, the others are likely to be less willing to contribute to WTP. Although the explanatory variable, not at all important, is

statistically insignificant, it also has a negative coefficient, indicating that visitors who answered this question are less likely to contribute to WTP than that who indicated that the Big 5 played an important role.

All the other variables are statistically insignificant. However, the variables, member of conservation organisation, leopard, elephant and buffalo have negative coefficients. Hence, Model 8 indicates that visitors who are not members of a conservation organisation are likely to be less willing to contribute to WTP compared with visitors who are members of a conservation organisation. Also, visitors who indicated that they prefer the leopard, elephant or the buffalo are less likely to contribute to WTP than those indicated they prefer the lion.

The variables age introduced and rhino are statistically insignificant but have positive coefficients. It can be concluded that age introduced to the national park has a positive effect on WTP. This result is somewhat counter-intuitive. One would expect that people who were introduced to the park at a younger age would be more willing to pay. People who prefer the rhino are more likely to contribute positively towards WTP than those who indicated they prefer the lion.

The R-squared (0.128) indicates that the independent variables explain 12.8% of the sample variation in the dependant variable, WTP. Hence, the Big 5 model alone does not explain a significant amount about WTP. The adjusted R-squared (0.089), which imposes a penalty for adding additional independent variables, is 8.9%. This indicates that the proportion of total variance that is explained by the model is small.

Subsequently, Model 9 (Table 4.7) consists of the demographic, annual gross income, travel behaviour, consumer profile and Big 5 variables for explaining WTP.

Significant explanatory variables include the marital category, living together, the education category, matric and post-grad, the income category R305 001 – R431 000 and >R552 000, number of nights stayed at the park and, lastly, the visit to see category. All the variables were significant. All the coefficients are positive, except for the coefficient on ‘living together’. This indicates that all the explanatory

variables contribute positively to WTP except for 'living together' that contributes negatively to WTP.

Although all the other dependent variables were insignificant, the coefficients indicated that they all have a positive contribution towards WTP, except for the variables divorced, number of people paying for and reason for visit: loyalty.

The R-squared (0.308) and adjusted R-squared (0.142) indicate a significant increase from Model 7. This indicates that estimating demographic, annual gross income, travel behaviour, consumer profile and Big 5 independent variables explain a significant amount more of the variation in WTP.

Subsequently two separate models were estimated to determine the model that best explained the variance in WTP. Two separate models were estimated because there is correlation between the two variables 'role of the Big 5' and 'visit to see the Big 5'.

4.4 Model 10: Final Model including Reason for visit & Model 11: Final model including Role of Big 5

Table 4.9: OLS regression models 10 & 11

Results of the empirical estimation of the OLS regression model with the dependent variable log(WTP) (total amount willing to pay to see the Big5) with standard errors in brackets.			
Model 10 Visit to see the Big 5		**Model 11 Role of the Big 5**	
Variable	**Coefficient**	**Variable**	**Coefficient**
Constant	4.532 (1.721)	Constant	5.142 (1.719)
Language (comparator Afrikaans)		**Language (comparator Afrikaans)**	
English	0.253 (0.231)	English	0.212 (0.229)
Other	0.376 (0.728)	Other	0.648 (0.719)

Age	0.009 (0.011)	**Age**	**0.019**** **(0.011)**
Accompanying children	0.306 (0.254)	**Accompanying children**	0.225 (0.251)
Marital status (comparator married)		**Marital status (comparator married)**	
Not married	0.372 (0.478)	Not married	0.386 (0.470)
Divorced	-0.097 (0.640)	Divorced	-0.367 (0.619)
Widow/er	-0.100 (0.575)	Widow/er	-0.437 (0.573)
Living together	**-1.413**** **(0.790)**	Living together	**-1.388**** **(0.780)**
Country of residence	0.483 (0.608)	**Country of residence**	0.215 (0.603)
Education (comparator no schooling)		**Education (comparator no schooling)**	
Matric	**1.071**** **(0.625)**	Matric	0.971 (0.624)
Degree/grad	0.921 (0.602)	Degree/grad	0.815 (0.595)
Post-grad	**1.005**** **(0.590)**	Post-grad	0.825 (0.518)
Professional	0.926 (0.595)	Professional	0.750 (0.589)
Income (comparator <R20 000)		**Income (comparator <R20 000)**	
R20001 – R140000	0.117 (0.507)	R20001 – R140000	0.283 (0.495)
R140001 – R221000	0.442 (0.508)	R140001 – R221000	0.520 (0.500)
R221001 – R305000	0.267 (0.525)	R221001 – R305000	0.414 (0.518)
R305001 – R431000	0.532 (0.506)	R305001 – R431000	0.402 (0.505)
R431001 – R552000	0.437 (0.533)	R431001 – R552000	0.447 (0.523)
>R552000	0.695 (0.476)	>R552000	0.751 (0.469)
Number of people paying for	-0.038 (0.069)	**Number of people paying for**	-0.034 (0.067)
Number of visits	-0.022	**Number of**	-0.021

to national parks in the last year	(0.036)	**visits to national parks in the last year**	(0.035)
Number of nights stayed at the park	**0.089* (0.025)**	**Number of nights stayed at the park**	**0.086* (0.025)**
Wild card holder	0.174 (0.280)	**Wild card holder**	0.252 (0.277)
Would you recommend the park to friends and relatives	0.255 (0.975)	**Would you recommend the park to friends and relatives**	1.052 (0.951)
Reason for visit: loyalty to the park	-0.104 (0.069)	**Reason for visit: loyalty to the park**	-0.109 (0.069)
Visit to see the Big 5 (comparator not at all important)		**Role of Big 5 (comparator extremely important)**	
Less important	**1.267* (0.509)**	Very important	**-0.452** (0.236)**
Do not care	**1.211* (0.434)**	Neutral	**-0.946* (0.231)**
Very important	**1.423* (0.440)**	Less important	**-1.684* (0.430)**
Extremely important	**1.824* (0.420)**	Not at all important	-0.502 (0.557)
What age did you get to know national parks?	-0.001 (0.008)	**What age did you get to know national parks?**	0.000 (0.008)
Species in order of preference (comparator Lion)		**Species in order of preference (comparator Lion)**	
Leopard	-0.164 (0.116)	Leopard	-0.141 (0.115)
Rhino	-0.083 (0.111)	Rhino	-0.001 (0.106)
Elephant	-0.100 (0.104)	Elephant	-0.097 (0.102)
Buffalo	-0.058 (0.102)	Buffalo	-0.021 (0.102)
Member of a conservation organisation?	-0.103 (0.211)	**Member of a conservation organisation?**	-0.098 (0.209)

R-squared	**0.255**	**R-squared**	**0.519**
Adjusted R^2	**0.099**	**Adjusted R^2**	**0.269**
Significance	**0.022**	**Significance**	**0.010**

* $p < 0.05$
** $p < 0.1$
Source: WTP survey Kruger National park; author's calculations

On the basis of the R-squared, Adjusted R-squared and the significance of the model as a whole, Model 11 is clearly the best fitted model (Table 4.9). It is significant at the 5% level and explains 51.9% of the variance in WTP. The adjusted R-squared, which imposes a penalty for every additional independent variable, is also high (26.9%), indicating that Model 11 best explains the total variance in WTP.

Hence, for the purpose of this dissertation, Model 11 was viewed as the best model predicting tourists' valuation of the Big 5.

To facilitate the interpretation of Model 11, the variables will be analysed and explained according to the variable category they fall under.

4.4.1 Demographic profile of visitors to the KNP

Following will be the discussion of demographic profile specific variables.

4.4.1.1 Statistically significant variables:

Only two variables are statistically significant under this category. These are age and living together. However, due to dummy variables that can complicate interpretation, each of these categories will be explained separately.

a. Age

Age has a positive coefficient which indicates that the older generation has a greater willingness-to-pay than the younger generation. As stated in the interpretation of Model 1, this finding corresponds with those of Hadker *et al*. (1997:112). They argued that the older generation have more money to spare than the younger generation.

b. Marital status

(Comparator variable married)

The variable living together is statistically significant, however the coefficient is negative. This indicates that visitors who live together are less willing to pay than married couples.

4.4.1.2 Statistically insignificant variables:

Language, not married, divorced, widower, country of residence and all of the education variables are insignificant, indicating that they had no significant impact on WTP.

a. Language

(Comparator variable Afrikaans)

Both English and 'other' languages have positive coefficients, indicating that English-speaking visitors and visitors who speak other languages are more likely to contribute positively towards WTP than Afrikaans-speaking visitors.

b. Accompanying children

(Yes= 1 and No=0)

The variable accompanying children showed a positive coefficient, indicating that people who were accompanied by their children are more likely to contribute towards WTP than people who were not. This corresponds with findings by Aziz *et al*. (2010:216) and Kosz (1996:121). Both these studies argue that people with children are more likely to contribute positively to WTP because they want to preserve natural resources for future generations.

c. Marital status

(Comparator variable married)

The variables divorced and widow/er have negative coefficients, indicating that visitors who are divorced or widowed are less likely to contribute to WTP than those who were married. Aziz *et al*. (2010:216) argued that people who are married are more likely to have children and hence more willing to contribute positively towards WTP. However, the argument can also be made that people who are divorced or widowed may have less money to spare than those who are married because their

income is less than those of married people. The variable not married has a positive coefficient, indicating that visitors who were not married/single are more likely to contribute positively towards WTP than those who were married. No literature to the author's knowledge exists on this finding, however the assumption can be made that visitors who are not married have fewer financial responsibilities than those who are married and likely have children and a family to care for.

d. Country of residence

(RSA = 1 and Foreign = 0)

The variable country of residence has a positive coefficient, indicating that South Africans are more likely to contribute positively towards WTP than international visitors. This finding is in contrast with the findings by Aziz *et al*. (2010:216) that international tourists are more willing to pay than local residents, but this sample contains very few international visitors.

e. Education

(Comparator variable no school)

Although all of the variables were statistically insignificant, the coefficients are all positive. This indicates that people with higher levels of education are more likely to contribute positively towards WTP than those who had no schooling. This finding agrees with literature such as Aziz *et al*. (2010), Hadker *et al*. (1997), Kosz (1996) and Tisdell and Wilson (2001). All of these studies find that this variable contributes positively towards WTP because people with a high level of education are most likely earn higher incomes and can spare more towards WTP.

4.4.2 Annual gross income

Following will be the discussion of annual gross income specific variables.

4.4.2.1 Statistically significant variables:

None of the variables are statistically significant, indicating that they had no significant impact on WTP.

4.4.2.2 Statistically insignificant variables:

Although all of the variables were insignificant, they all have positive coefficients. Keeping in mind that the comparator variable for this category is <R20 000. The results can be interpreted as follows; visitors who have higher income tend to be more willing to pay than those with lower income levels. This finding is supported by literature such as Aziz *et al*. (2010), Hadker *et al*. (1997), Kosz (1996) and Tisdell & Wilson (2001) who also found that people with higher incomes are more likely to contribute positively towards WTP.

4.4.3 Travel behaviour

Following will be the discussion of travel behaviour specific variables.

4.4.3.1 Statistically significant variables:

Only one variable was statistically significant, the number of nights stayed at the park. This variable has a positive coefficient, indicating that the number of nights a visitor stayed at the KNP had a positive contribution towards their willingness-to-pay. As explained in Model 4, no literature to the author's knowledge exists on this variable and was included by the author on the hypothesis that the number of nights stayed at the KNP will effect a visitor's WTP.

4.4.3.2 Statistically insignificant variables:

The variables number of people paying for and the number of visits to national parks in the last year are statistically insignificant.

a. Number of people paying for

This variable has a negative coefficient, indicating that visitors that were financially responsible not just for themselves were less willing to pay. No literature to the author's knowledge exists on this variable but was included by the author based on the hypothesis that people who are financially responsible for more than one person (themselves) are less likely to contribute positively to WTP because they have more expenses than those only paying for themselves or for no one.

b. Number of visits to national parks in the last year

This variable has a negative coefficient indicating that people who have visited national parks a number of times during the last year are less likely to contribute positively towards WTP. No literature to the author's knowledge on this variable is available. However, it was included by the author on the hypothesis that it has an effect on a visitors WTP. This result can be interpreted as follows; people who often visit national parks are less likely to pay because that they often see the Big 5, compared to visitors who do not get to see the Big 5 often.

4.4.4 Consumer profile of the visitors to the KNP

Following will be the discussion of consumer profile specific variables.

4.4.4.1 Statistically significant variables:

None of the variables are statistically significant.

4.4.4.2 Statistically insignificant variables:

Wild card holder, recommend this park and the reason for visit: loyalty to the park is insignificant.

a. Wild card holder

(Yes = 1 and No = 0)

Although Wild card holder is statistically insignificant, the coefficient of this variable is positive. This indicates that visitors who are indeed Wild card holders are more likely to contribute positively towards WTP than those who are not Wild card holders. No literature to the author's knowledge is available on this variable. However, it was included by the author on the hypothesis that Wild card holders will have an effect on WTP. Chapter 3 explains what is meant by Wild card holder. This result can be interpreted as follow; visitors who are Wild card holders are more environmentally conscious than those who are not Wild card holders.

b. Recommend this park

(Yes = 1 and No = 0)

This variable has a positive coefficient, indicating that people who would recommend the KNP to friends and family are more likely to contribute positively to WTP than

those who would not. No literature to the author's knowledge exists on this variable but it was included by the author on the hypothesis that it has an effect on WTP.

c. Reason for visit: loyalty to the park

This variable has a negative coefficient, indicating that people who visit the park out of loyalty tend to be less willing to pay than people who do not visit the park out of loyalty. This result can be interpreted as follows: people who are loyal to the park tend to visit the park more often than people who are not. Hence they often get to see the Big 5 and place lower value on these species.

4.4.5 Big 5

Following will be the discussion of Big 5 specific variables.

4.4.5.1 Statistically significant variables:

There are only two significant variables. These are very important and neutral.

a. Role of the Big 5

(Comparator variable extremely important)

The variable very important has a negative coefficient, indicating that people who specified the Big 5 played a very important role during the making of their decision to visit the park are more likely to contribute negatively to WTP than those who indicated the Big 5 played an extremely important role. This is the same for the variables neutral and less important. Although there is no literature to the author's knowledge confirming these results, the author included these variables based on the hypothesis that the role of the Big 5 during the making of the decision to visit the KNP will indeed contribute to WTP. The interpretation of these variables is quite clear; it is apparent that people who take account of the Big 5 during their decision to visit the KNP are more willing to pay to see these species.

4.4.5.2 Statistically insignificant variables:

There are several insignificant variables in the Big 5 category.

a. Species in order of preference

(Comparator variable lion)

All of the coefficients for these variables are negative. Hence, visitors who indicated that they prefer the leopard, rhino elephant or buffalo are more likely to contribute negatively towards WTP than those who indicated that they prefer the lion. No literature to the author's knowledge is available on these variables but it was included by the author based on the hypothesis that the preference of species will have an effect on a visitor's WTP.

b. Age introduced

The coefficient for this variable is 0, indicating that this variable does not contribute to WTP whatsoever.

c. Role of the Big 5

(Comparator variable extremely important)

The explanatory variable not at all important is the only insignificant variable in this category. However, the coefficient for this variable is negative, indicating that people who indicated that the Big 5 played no role during their decision to visit the KNP are more likely to contribute negatively to WTP than those who indicated the Big 5 played an extremely important role.

4.5 Goodness-of-fit

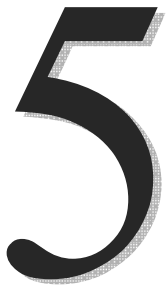
The R-squared (0.519) indicates that the independent variables explain 51.9% of the sample variation in the dependant variable, WTP, while the adjusted R-squared (0.269), which imposes a penalty for adding additional independent variables, is 26.9%. Furthermore, the model significance (0.010) indicates that this model is statistically significant on a 90% confidence level. As can be seen from all the Models above, this is the best model for the purpose of this dissertation.

4.6 Conclusion

It is clear that considerable differences exist between some of the international literature and this dissertation. However, other studies such as Krugell & Saayman (2011), who found that simple socio-demographic variables do not explain

willingness-to-pay, indicating that the South African environment is considerably different from that of international environments. Although the OLS regression model explains 51.9% of the variance in WTP, there may also be other determinants that may have an effect on a visitor's willingness-to-pay to view the Big 5.

The main determinants of willingness-to-pay to view the Big 5 include age, the marital status category, living together and the role of the Big 5. Noticeable differences between international literature and this dissertation are the determinants like education, income and country of residence. Where most international literature found that income categories as well as education categories contribute positively to WTP, this dissertation found that none of these categories were significant. International literature also states that country of residence will contribute negatively towards WTP, this dissertation found that not only is the country of residence insignificant, it also has a positive contribution towards WTP.



CHAPTER

CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The primary objective of this study was to describe tourists' valuation of the Big 5 and to estimate some of the determinants explaining visitors' willingness-to-pay. The reason behind the study was to contribute to literature on tourism economics to ensure the optimal use of scarce resources such as the Big 5. Determining tourists' valuation of the Big 5 will also facilitate sustainable tourism activities, assist the conservation of these species and assist authorities in developing relevant and more accurate marketing strategies by identifying the premium that tourists are willing to pay for viewing or experiencing the Big 5 and also gives a indication of the value of the Big 5 as a brand. As stated in Chapter 1, in a broader context, determining tourists' valuation of the Big 5 will not only facilitate conservation and sustainable tourism but also promote economic growth and development.

Chapter 1 consisted of the introduction and problem statement and highlighted the importance of tourism as an engine of growth and development of countries. Chapter 1 also set the goals that must be met with the key focus on determinants of tourists' valuation of the Big 5.

Chapter 2 provided an overview of the literature on the different methods in determining WTP.

Chapter 3 analysed and interpreted the data obtained from the survey.

Chapter 4 consisted of the empirical analyses where determinants were drawn from literature studies discussed in Chapter 2.

The following section will provide a brief summary of the research and the findings, indicating how the objectives were met.

5.2 Summary

From the literature review (Chapter 2), it was concluded that the CV method is the best choice of method for this study. Literature on the CV method highlighted many explanatory variables that predict tourists' WTP such as income, education, nationality, marital status, children, age, professional standing, loyalty and donations. By analysing the data (Chapter 3), relationships between literature studies and this dissertation could already be drawn. For example, visitors to the KNP consisted of the older, well-educated generation that is married and falls in a high income bracket. The average amount of spending that visitors allocated to viewing the Big 5 was R3 569.02. This amount was also allocated amongst individual species of Big 5. The average amount willing to pay for the leopard was R1 136.43 followed by the lion (R1 007.17), rhino (R753.12), elephant (R658.91) and the buffalo (R498.50). Chapter 4 identified the main determinants of visitors' willingness-to-pay for simply viewing the Big 5. These determinants include age, the marital status category, living together and the role of the Big 5 during the making of the decision to visit the KNP. This chapter also found that some differences between international studies and South African studies on the WTP exists. Consequently, Table 5.1 indicates all the objectives set for this dissertation and where they were met.

Table 5.1: Meeting the objectives

Objectives	Chapter if was reached
To place the issue of the value of the Big 5 in the economic context of non-market resources.	Chapter 2
To raise the issues of the tragedy of the commons and to explain how the market and policymakers can respond.	Chapter 2
To describe the contingent value of the Big 5 and to estimate the predictors thereof.	Chapters 3 and 4
To draw conclusions and make recommendations about how South Africa's most important non-market tourist resource can be managed.	Chapter 5

Source: Author's (2011)

The chapter concludes with recommendations about how South Africa's most important non-market tourist resource (Big 5) can be managed.

5.3 Conclusion

The main objective of this study was to determine tourists' valuation of the Big 5 and to establish the determinants of tourists' willingness-to-pay. This section will be divided into three sub-sections. The first will focus on conclusions drawn from the literature review, followed by the conclusions drawn from the survey as analysed in Chapter 3 and, lastly, conclusions drawn from the empirical analysis conducted in Chapter 4.

5.3.1 Conclusions from literature

There are three methods that can be used to estimate the economic value of non-market resources (non-consumptive use values). The first, the Contingent Valuation Method (CV) is based on stated preferences and measures people's willingness to pay based on structured survey questions. The second is the Hedonic Pricing Model,

which is a statistical technique that uses the price of goods with different measurable characteristics to determine the price of each characteristic. This method is mainly associated with house prices. The last method, the Travelling Cost Method, is a method used to estimate economic use values that are associated with the environment. It allows a researcher to conduct a cost-benefit analysis resulting from changes in access cost for a recreational site, the abolition or addition of recreational sites and changes in the environmental quality of the site.

Literature indicated that the main explanatory variables used to obtain the determinants of WTP included income, age, education, nationality, marital status, accompanying children, professional standing, loyalty to the park and donations. These variables are discussed in Table 5.2.

5.3.2 Conclusions from survey

The majority of respondents were married, Afrikaans-speaking people between the ages of 35 and 49 years of age and were accompanied by children. The average age was 48. The majority of respondents reside in South Africa and are well educated people with either a diploma or degree. The high levels of education correspond with the high levels of income amongst respondents. More than a third of respondents indicated that they have an annual gross income of more than R552 001. Respondents were financially responsible for an average of 3 people and stayed an average of 6 nights. The average amount spent during the visit to the KNP was R10 302.21. The average amount visitors were willing to pay for the Big 5 was R3 569.02. This amount was also distributed amongst individual species of Big 5. The average amount willing to pay for the leopard was R1 136.43 followed by the lion (R1 007.17), rhino (R753.12), elephant (R658.91) and the buffalo (R498.50).

5.3.3 Conclusions from empirical analysis

Statistically significant variables included age, marital status category ‘living together’, number of nights stayed at the park and the role of the Big 5 categories ‘very important’, ‘neutral’ and ‘less important’. Explanatory variables that contradict international literature include age, the marital status category ‘not married’ and country of residence. Although some of the variables were not statistically significant,

such as income and education, the coefficients correspond with those of international studies.

Table 5.2 gives a summary of the findings.

Table 5.2: Summary of findings

Explanatory variable	Dummy	Coefficient & Significance (* p < 0.05 ** p <0.1)	Findings	Corresponding literature	Contradictory literature
Demographic profile					
Language English Other	Afrikaans	Positive Positive	English and other languages more likely to contribute positively towards WTP than Afrikaans-speaking visitors.	n/a	n/a
Age	n/a	Positive**	Older generation more likely to contribute positively towards WTP.	Hadker *et al*. (1997)	Aziz *et al*. (2010) Kosz (1996)
Accompanying children	Yes = 1 No = 0	Positive	Visitors accompanied by children more likely to contribute positively towards WTP than those who aren't.	n/a	Aziz *et al*. (2010) Kosz (1996)
Marital status Not married Divorced Widow/er	Married	Positive Negative Negative	Living together, divorced & widow/er –less likely to contribute positively towards WTP than married visitors.	Not married – Aziz *et al*. (2010)	Aziz *et al*. (2010)

Living together		Negative**	Not married – more likely to contribute positively towards WTP than married visitors		
Country of residence	RSA = 1 Other = 0	Positive	South Africans more likely to contribute positively towards WTP than international tourists	Aziz *et al*. (2010)	n/a
Education Matric Degree/grad Post-grad Professional	No schooling	Positive Positive Positive Positive	Visitors with higher levels of education more likely to contribute positively towards WTP than those with no schooling	n/a	Aziz *et al*. (2010) Hadker *et al*. (1997) Kosz (1996) Tisdell & Wilson (2001)
Annual gross income					
Annual gross income R20 001 – R140 000 R140 001 – R221 000 R221 001 – R305 000 R305 001 – R431 000 R431 000 – R552 000 >R552 000	<R20 000	Positive Positive Positive Positive Positive Positive	Visitors with higher income more likely to contribute positively towards WTP than those who earn less than R20 000	n/a	Aziz *et al*. (2010) Hadker *et al*. (1997) Kosz (1996) Tisdell & Wilson (2001)
Travel behaviour					
Number of people paying for	n/a	Negative	Visitors financially responsible for more than one person less likely	n/a	n/a

			to contribute towards WTP.		
Number of visits to national parks in the last year	n/a	Negative	More visited less likely to contribute positively towards WTP.	n/a	n/a
Number of nights stayed in KNP	n/a	Positive*	The more nights stayed at park, the more likely to contribute positively towards WTP.	n/a	n/a
Consumer profile					
Wild card holder	Yes = 1 No = 0	Positive	Wild card holders more likely to contribute positively towards WTP.	n/a	n/a
Recommend this park	Yes = 1 No = 0	Positive	Those that would recommend park more likely to contribute positively towards WTP.	n/a	n/a
Reason for visit: loyalty	n/a	Negative	Loyal less likely to contribute positively towards WTP.		
Big 5					
Species in order of preference Leopard Rhino Elephant Buffalo	Lion	Negative Negative Negative Negative	Visitors who prefer the leopard, rhino, elephant or buffalo are less likely to contribute positively towards WTP than those who prefer the lion.	n/a	n/a

Age introduced to national parks	n/a	n/a	n/a	n/a	n/a
Role of Big 5 **Very important role** **Neutral** **Less important role** **Not at all important**	Extremely important role	Negative** Negative* Negative* Negative	Visitors indicating that the Big 5 played a very important role, those who indicated a neutral, less important role or not at all important role are less likely to contribute positively to WTP than those who indicated the Big 5 played an extremely important role.	n/a	n/a
Member of conservation organisation	Yes = 1 No = 1	Negative	Members of conservation organisation less likely to contribute positively towards WTP.	n/a	Hadker *et al*. (1997) Kosz (1996) Tisdell & Wilson (2001)

Source: WTP survey Kruger National Park; author'

The main conclusions drawn are as follow: the best alternative method for determining the value that tourists place on the Big 5 and the predictors of their willingness to pay is the CV method. The main explanatory variables, as indicated by literature, include income, age, education, nationality, marital status, accompanying children, professional standing, loyalty to the park and donations. Respondents were mostly married, Afrikaans-speaking people with an average of 48 years of age. Most of the respondents reside in South Africa and are well educated people who have an annual gross income of more than R552 001. Respondents were financially responsible for an average of 3 people and stayed and average of 6 nights, spending on average R10 302.21 during their visit to the KNP. The average amount allocated to the Big 5 by respondents was R3 569.02. This dissertation found that age, marital status category ‘living together’, number of nights stayed at the park and the role of the Big 5 categories ‘very important’, ‘neutral’ and ‘less important’ are all statistically significant variables that predict visitors’ willingness to pay to view the Big 5. Explanatory variables that contradict international literature include age, the marital status category ‘not married’ and country of residence.

5.4 Recommendations

Due to the lack of studies conducted in South Africa on willingness-to-pay, international determinants on willingness-to-pay had to be used which caused some disparities between international literature and this study. Further studies on willingness-to-pay should be conducted in the South African context to minimize this gap.

This was also the first time a study was done on tourists' valuation of the Big 5 and factors that influence visitors' willingness-to-pay to simply see the Big 5 species. A number of suggestions on ways to improve future studies are listed below:

1) Some of the questions, such as accompanying children, need to be formulated differently, since they do not correspond with the questions asked in international literature. International literature, for example, asks how many children under a certain age live in household, not whether the visitor was accompanied by children.
2) Professional standing was also incorporated into the question on education and therefore this study failed to establish the effect of professional standing on WTP. Hence, future studies have to include this explanatory variable as its own category.
3) This study was limited to the northern region of the KNP, where all of the Big 5 are rarely seen. Respondents in the northern region of the KNP indicated that they visited the KNP for leisure and countless respondents indicated that they were there for birdwatching. This may have caused estimates to be one-sided. To obtain better results and estimates, future studies should focus on the KNP as a whole, or on the southern region of the KNP where the Big 5 are more often seen.
4) More of the variation in willingness to pay may be due to tourists' attitudes towards the environment and conservation – though they may enjoy spending time in the great outdoors, their attitudes and lifestyles may not be particularly green or sustainable.

The KNP also needs to focus on the preservation of the natural environment and marketing of the Big 5, since the Big 5 is one of the key reasons for visiting the KNP.

This dissertation found that age, marital status category ‘living together’, number of nights stayed at the park and the role of the Big 5 categories ‘very important’, ‘neutral’ and ‘less important’ are all statistically significant variables that predict visitors’ willingness to pay to view the Big 5. Explanatory variables that contradict international literature include age, the marital status category ‘not married’ and country of residence. Marketing strategies should focus on the older generation that are married and have children, since these categories are likely to contribute positively to payments for the conservation for the Big 5. As indicated by literature, higher income groups tend to visit nature-based areas and are more willing to pay than lower income groups. Hence, the KNP also needs to focus marketing strategies on attracting higher income groups. By focusing on these marketing strategies, as well as the preservation of the natural environment and conservation of the Big 5 will ensure the optimal use of scarce resources at the KNP. This will also allow the KNP to promote sustainable tourism activities, since marketing for tourism in the KNP consist mostly of “the Big 5”.

Appendix

AFDELING A: SOSIO-DEMOGRAFIESE BESONDERHEDE
SECTION A: SOCIO-DEMOGRAPHIC DETAIL

1. Huistaal? / ***Home language?***

English	1
Afrikaans	2
Ander/***Other***(Spesifiseer/***Specify***)	3

2. In watter jaar is u gebore? / ***In what year were you born?*** **19**

3.1. Vergesel u kinders u na die Park? /
Are your children accompanying you to the Park?

	Ja / ***Yes***		1
	Nee / ***No***		2

3.2. Indien ja (3.1) dui asb die ouderdom(me) aan./ ***If yes (3.1), please indicate the age(s).***

1ste kind / ***1st child***	
2de kind /***2nd child***	
3de kind / ***3rd child***	
4de kind ***/ 4th child***	

4. Huwelikstatus? / ***Marital status?***

Getroud / ***Married***	1
Ongetroud / ***Not married***	2
Geskei / ***Divorced***	3
Wewenaar, weduwee / ***Widow/er***	4
Woon saam / ***Living together***	5

5. Land van herkoms (Indien buite RSA)?/
Country of residence (If outside RSA)?

6. In watter provinsie is u woonagtig?/
In which province do you live?

Gauteng	1
KwaZulu-Natal	2
Oos-Kaap / ***Eastern Cape***	3
Wes-Kaap / ***Western Cape***	4
Noord-Kaap / ***Northern Cape***	5
Limpopo	6
Mpumalanga	7
Vrystaat / ***Free State***	8
Noordwes ***/ North West***	9

7. Dui asseblief u hoogste kwalifikasie aan./
Please indicate your highest level of education.

Geen skool / ***No school***	1
Matriek / ***Matric***	2
Diploma, graad / ***Diploma, degree***	3
Nagraads / ***Post-graduate***	4

	Professioneel / ***Professional***	5
	Ander, spesifiseer / ***Other, specify***	6

_____

8. Wat is jou bruto jaarlikse inkomste / **What is your annual gross income?**	**< R20 000**	1
	R0 - R140 000	2
	R140 001 - R221 000	3
	R221 001 - R305 000	4
	R305 001 - R431 000	5
	R431 001 - R552 000	6
	R552 001 >	7

AFDELING B: EKONOMIESE IMPAK
SECTION B: ECONOMIC IMPACT

1. **Insluitend u self,** vir hoeveel persone **betaal** u in u toergroep?/
Including yourself, how many people are you paying for in your travelling group?

2. Met watter tipe vervoer reis u na die Park?/ ***Which mode of transport do you use to travel to the Park?***	**4x4**	1
	Kombi	2
	Rekreasie-voertuig / ***Leisure vehicle***	3
	Sedan	4
	2x4/Bakkie	5
	Ander (spesifiseer) / ***Other (specify)***	6

_____

3. **Insluitende hierdie keer,** hoeveel keer het u Nasionale Parke oor die afgelope jaar besoek? /
How many times have you visited national parks over the past year (including this one)?

Aantal / ***Number***

4. Hoeveel **nagte** bly u in dié Park? / ***How many nights are you staying at thís park?***

Aantal / ***Number***

5. Indien u nie die Park sou kon besoek nie, watter alternatiewe bestemmings en attraksies sou u oorweeg het?/ ***If you could not visit the park, which alternative destinations and attractions would you have considered?***

_____

_____

_____

6. Hoeveel het u tydens u besoek aan die volgende bestee? / ***How much did you spend on the following during your visit to the park?***

1. Ingangs- en bewaringsfooi / ***Entrance and conservation fee***	R
2. Akkommodasie / ***Accommodation***	R
3. Restourante / ***Restaurants***	R
4. Kos / ***Food***	R
5. Drinkgoed / ***Beverages***	R
6. Klere en skoene / ***Clothes and footwear***	R
7. Vervoer na en by die Park / ***Transport to and at the park***	R
8. Aktiwiteite (Wildritte) / ***Activities (Game drives)***	R
9. Aandenkings en juwele / ***Souvenirs and jewellery***	R
10. Ander uitgawes nie hierbo vervat nie (Spesifiseer) /	

Other expenses not listed above (Specify)

10.1 _____ R _____

10.2 _____ R _____

AFDELING C: VERBRUIKERSPROFIEL
SECTION C: CONSUMER PROFILE

7. Besit u 'n Wild card? / ***Are you a Wild card holder?***

Ja/Yes	1
Nee/No	2

8. Sou u hierdie spesifieke Park vir u familie en vriende aanbeveel? / ***Would you recommend this specific park to your friends and relatives?***

Ja/Yes	1
Nee/No	2

9. Beoordeel volgens die skaal waarom u die Park besoek het (beantwoord asseblief al die moontlikhede) / ***Rate on a scale of importance why you visited the park (please answer all possibilities)***

	Uiters belangrik / ***Extremely important***		Baie belangrik / ***Very important***	Nie belangrik of minder belangrik nie / ***Neither important nor less important***	Minder belangrik / ***Less important***	Glad nie belangrik / ***Not at all important***
	1	**2**	**3**	**4**	**5**	
a.Om weg te breek uit my roetine / ***To get away from my routine***	1	2	3	4	5	
b.Om te ontspan / ***To relax***	1	2	3	4	5	
c.Om 'n nuwe bestemming te verken / ***To explore a new destination***	1	2	3	4	5	
d.Om tyd saam met my vriende te spandeer /***To spend time with my friends***	1	2	3	4	5	
e.Tot voordeel van my kinders / ***For the benefit of my children***	1	2	3	4	5	
f.Vir gesinsrekreasie of om tyd saam met iemand spesiaal deur te bring / ***To be with family or to spend time with someone special***	1	2	3	4	5	
g.Sodat ander lede van my geselskap kan leer van die natuur / ***So that other members in my party could learn about nature***	1	2	3	4	5	
h.Sodat ander lede van my geselskap waardering vir bedreigde spesies en wildlewe kan ontwikkel /***So that other members in my party could develop an appreciation for endangered species and wildlife***	1	2	3	4	5	
i.Hoofsaaklik om opvoedkundige redes (om dinge te leer, my kennis te						

verbreed)/ ***Primarily for educational reasons (to learn things, increase my knowledge)***	1	2	3	4	5
j.Om van spesifieke diere te leer / ***To learn about specific animals***	1	2	3	4	5
k.Om diere en plante te fotografeer / ***To photograph animals and plants***	1	2	3	4	5
l.Dit is 'n geestelike ervaring / ***It is a spiritual experience***	1	2	3	4	5
m.Ek is lojaal teenoor die Park / ***I am loyal to the park***	1	2	3	4	5
n.Die Park het goeie akkommodasie en fasiliteite / ***The park has great accommodation and facilities***	1	2	3	4	5
o.Dit is waarde vir geld / ***It is value for money***	1	2	3	4	5
p.Vir die staproetes / ***To do hiking trails***	1	2	3	4	5
q.Dit is 'n ideale vakansiebestemming / ***It is an ideal holiday destination***	1	2	3	4	5
r.Ek verkies die Park vir sy geografiese eienskappe / ***I prefer the park for its geographical features***	1	2	3	4	5
s.Om die Groot 5 te sien. / ***To see the Big 5***	1	2	3	4	5
t.Omdat die Park my nuuskierigheid prikkel / ***Because the park awakens my curiosity***	1	2	3	4	5
u.Omdat die Park fassinerend is (i.e. natuurlike landskappe, wildlewe) / ***Because the park is fascinating (i.e. natural landscapes, wildlife)***	1	2	3	4	5
v.Omdat die Park groot genoeg is om verkenning in baie opsigte moontlik te maak / ***Because the park is large enough to allow exploration in*** **many directions**	1	2	3	4	5
w.Om in die Park te wees pas in by my voorkeure (i.e. persoonlike belangstellings, dinge waarvan ek hou ***/ Being in the park fits my preferences (i.e. personal interests, things I like)***	1	2	3	4	5

10. Wanneer is u besluit om die Park te besoek, geneem? / ***When did you make your decision to visit the park?***

Spontante besluit / ***Spontaneous decision***	1
Minder as 'n maand gelede / ***Less than a month ago***	2
Meer as 'n maand gelede / ***More than a month ago***	3
Ander, spesifiseer / ***Other, specify***	4

AFDELING D: GROOT 5
SECTION D: BIG 5

11. Op watter ouderdom was u eerste bloodstelling aan Nasionale Parke? / ***At which age were you first exposed to a national park?***

_____

12. Watter rol speel die Groot 5 in jou besluit om die Park te besoek / ***What role did the Big 5 play in your decision to visit the park?***

Uiters belangrike rol / ***Extremely important role***	1
Baie belangrike rol / ***Very important role***	2
Neutraal / ***Neutral***	3
Minder belangrike rol / ***Less important role***	4

Glad nie 'n belangrik rol/ ***Not at all an important role***	**5**

13. Plaas in rangorde, waar 1 die gewildste en 5 die minder gewildste, van die Groot 5 is / ***Please rank the following species of the Big 5 according to your preference where 1 is the most favoured and 5 is the least.***

Leeu / ***Lion***	
Luiperd / ***Leopard***	
Renoster / ***Rhino***	
Olifant / ***Elephant***	
Buffel / ***Buffalo***	

14. Watter bedrag van u totale besteding per besoek aan die Park sou u aan die Groot 5 toeken? / ***What amount of total spending per visit to this park would you allocate to the Big 5?***

R _____

15. Gegewe u antwoord in 14, watter bedrag sal jy toeken aan elk van die volgende Groot 5-spesies? / ***Given your answer in 14, what is the amount you would allocate to each of the the following species of Big 5***

Leeu / ***Lion***	**R**
Luiperd / ***Leopard***	**R**
Renoster / ***Rhino***	**R**
Olifant / ***Elephant***	**R**
Buffel / ***Buffalo***	**R**

16. Is u lid van enige omgewingsbewaringsorganisasie of skenk u geld? / ***Are you a member of any conservation organisations or do you give money for conservation?***

Ja/Yes	**1**
Nee/No	**2**

AFDELING E: HERSTELBAARHEID EN LEWENSBEVREDIGING
SECTION E: RESTORATIVENESS AND LIFE SATISFACTION

17. Dui aan hoeveel elk van die volgende stellings van toepassing is op u verblyf in die KNP. Antwoord asb alle moontlikhede. / ***Indicate how much each of the following statements apply to your stay in the KNP. Please answer all possibilities.***

Stem ten volle saam / **Strongly agree**					
Stem saam / **Agree**					
Neutraal / **Neutral**					
Stem nie saam nie / **Disagree**					
Stem glad nie saam nie / **Strongly disagree**					
	1	**2**	**3**	**4**	**5**

a. My lewe is na aan die ideale in meeste opsigte / ***In most ways my life is close to my ideal***	1	2	3	4	5
b.Die stand van my lewe is uitstekend / ***The conditions of my life are excellent***	1	2	3	4	5
c. Ek is tevrede met my lewe / ***I am satisfied with my life***	1	2	3	4	5
d. So ver het ek die belangrike dinge wat ek in die lewe soek / ***So far I have gained the important things I want in life***	1	2	3	4	5
e. As ek my lewe oor kon hê, sal ek bykans niks verander nie / ***If I could live my life over, I would change almost nothing***	1	2	3	4	5
f. Oor die algemeen is ek gelukkig / ***Overall I'm feeling happy***	1	2	3	4	5
g. Oor die algemeen is my ervaringe by die Park onvergeetlik en verryk dit my lewensbevrediging / ***Overall my experience at the park is memorable and enriches my satisfaction with life***	1	2	3	4	5

18.Dui aan hoeveel u elk van die volgende emosies ervaar tydens u verblyf by die Park (antwoord asb al die moontlikhede) / ***Indicate how much you experience each of the following feelings during your current stay in the Park (please answer all possibilities):***

Dikwels of altyd / **Very often or always** Dikwels / **Often** Soms / **Sometimes** Ongereeld / **Rarely** Baie min of nooit / **Very rarely or never**	**1**	**2**	**3**	**4**	**5**
a. Positief / ***Positive***	1	2	3	4	5
b. Onaangenaam / ***Unpleasant***	1	2	3	4	5
c. Sleg / ***Bad***	1	2	3	4	5
d. Negatief / ***Negative***	1	2	3	4	5
e. Goed / ***Good***	1	2	3	4	5
f. Vreugdevol / ***Joyful***	1	2	3	4	5
g. Hartseer / ***Sad***	1	2	3	4	5
h. Tevrede / ***Content***	1	2	3	4	5
i. Kwaad / ***Angry***	1	2	3	4	5
j. Gelukkig / ***Happy***	1	2	3	4	5
k. Bang / ***Afraid***	1	2	3	4	5
l. Aangenaam / ***Pleasant***	1	2	3	4	5

19. Enige aanbevelings of voorstelle? / ***Any recommendations or suggestions?***

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